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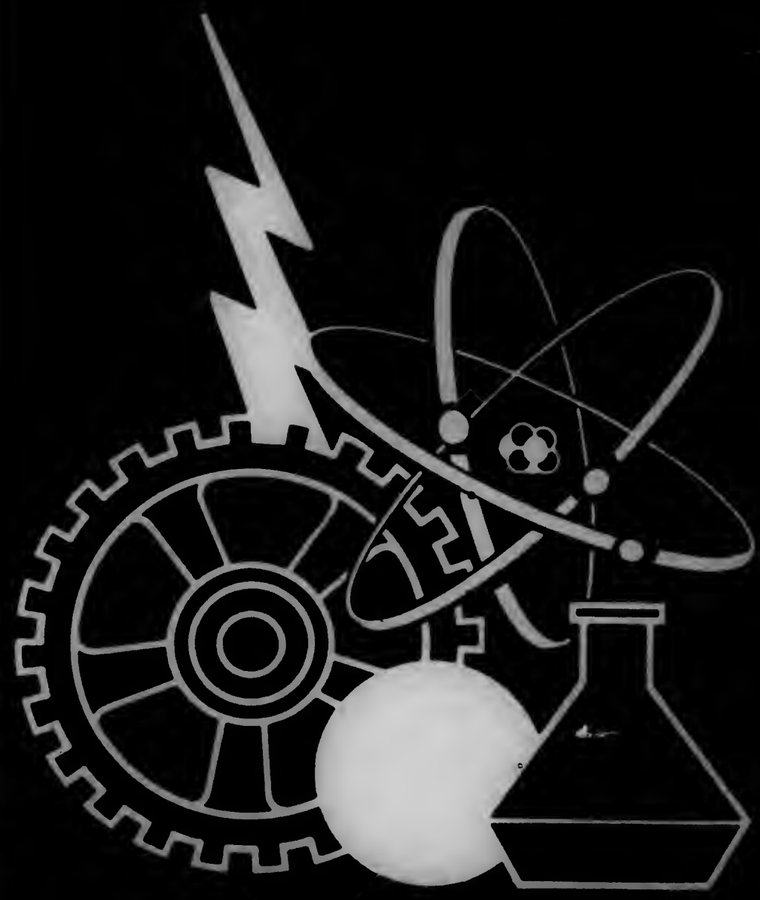
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 2, 1997



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
September 2, 1997 Volume 1202 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1200 O.G. 98, on July 29, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was decreased, effective July 1, 1997, and was announced in the *Official Gazette* at 1200 O.G. 97, on July 29, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1310.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

July 7, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 30, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,341,511 through 5,343,560
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 28, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,951,316 through 4,953,230
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 26, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,607,396 through 4,608,714
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 25, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,821	07/652,703	02/11/92
(4,840,616)	(07/161,574)	(06/20/89)
Re. 34,179	07/538,932	02/16/93
(4,841,170)	(06/939,522)	(06/20/89)
4,524,464	06/650,629	06/25/85
4,524,468	06/494,306	06/25/85
4,524,488	06/410,457	06/25/85
4,524,489	06/584,863	06/25/85
4,524,500	06/476,375	06/25/85
4,524,507	06/451,209	06/25/85
4,524,529	06/526,112	06/25/85
4,524,541	06/587,448	06/25/85
4,524,543	06/541,667	06/25/85
4,524,548	06/487,679	06/25/85
4,524,554	06/306,662	06/25/85
4,524,562	06/368,445	06/25/85
4,524,564	06/413,170	06/25/85
4,524,572	06/524,306	06/25/85
4,524,584	06/531,554	06/25/85
4,524,587	06/598,366	06/25/85
4,524,595	06/533,749	06/25/85
4,524,598	06/540,067	06/25/85
4,524,600	06/574,011	06/25/85
4,524,602	06/587,052	06/25/85
4,524,603	06/529,821	06/25/85
4,524,612	06/563,458	06/25/85
4,524,618	06/585,389	06/25/85
4,524,623	06/583,990	06/25/85
4,524,633	06/377,191	06/25/85
4,524,637	06/400,715	06/25/85
4,524,641	06/436,052	06/25/85
4,524,651	06/363,880	06/25/85
4,524,659	06/434,933	06/25/85
4,524,667	06/523,067	06/25/85
4,524,669	06/381,715	06/25/85
4,524,679	06/543,340	06/25/85
4,524,683	06/569,045	06/25/85
4,524,692	06/601,490	06/25/85
4,524,700	06/385,944	06/25/85
4,524,704	06/486,799	06/25/85
4,524,705	06/359,093	06/25/85
4,524,711	06/512,665	06/25/85
4,524,717	06/485,650	06/25/85
4,524,718	06/521,675	06/25/85
4,524,721	06/586,273	06/25/85
4,524,738	06/530,108	06/25/85
4,524,739	06/555,015	06/25/85
4,524,740	06/480,948	06/25/85
4,524,746	06/598,364	06/25/85
4,524,753	06/440,953	06/25/85
4,524,764	06/529,261	06/25/85
4,524,771	06/437,419	06/25/85
4,524,772	06/516,699	06/25/85
4,524,787	06/398,691	06/25/85
4,524,792	06/512,711	06/25/85
4,524,796	06/422,7[illegible]	06/25/85
4,524,800	06/609,[illegible]50	06/25/85
4,524,801	06/446,[illegible]	06/25/85
4,524,803	06/357,015	06/25/85
4,524,804	06/490,665	06/25/85
4,524,807	06/380,846	06/25/85

Patent Number	Serial Number	Issue Date
4,524,808	06/575,576	06/25/85
4,524,809	06/496,488	06/25/85
4,524,816	06/581,984	06/25/85
4,524,823	06/593,120	06/25/85
4,524,825	06/557,090	06/25/85
4,524,826	06/387,996	06/25/85
4,524,839	06/450,106	06/25/85
4,524,842	06/473,999	06/25/85
4,524,853	06/345,647	06/25/85
4,524,857	06/538,748	06/25/85
4,524,859	06/656,421	06/25/85
4,524,863	06/516,015	06/25/85
4,524,866	06/588,052	06/25/85
4,524,868	06/238,375	06/25/85
4,524,869	06/572,157	06/25/85
4,524,897	06/537,803	06/25/85
4,524,899	06/366,694	06/25/85
4,524,908	06/460,546	06/25/85
4,524,913	06/577,309	06/25/85
4,524,915	06/660,964	06/25/85
4,524,930	06/505,301	06/25/85
4,524,941	06/276,839	06/25/85
4,524,948	06/530,510	06/25/85
4,524,955	06/618,614	06/25/85
4,524,958	06/509,140	06/25/85
4,524,975	06/508,820	06/25/85
4,524,981	06/554,188	06/25/85
4,524,982	06/566,090	06/25/85
4,524,988	06/493,929	06/25/85
4,525,003	06/574,058	06/25/85
4,525,006	06/490,799	06/25/85
4,525,009	06/461,973	06/25/85
4,525,012	06/491,288	06/25/85
4,525,019	06/609,490	06/25/85
4,525,031	06/240,999	06/25/85
4,525,041	06/468,848	06/25/85
4,525,056	06/386,630	06/25/85
4,525,057	06/414,267	06/25/85
4,525,060	06/489,315	06/25/85
4,525,063	06/553,111	06/25/85
4,525,064	06/397,101	06/25/85
4,525,065	06/503,658	06/25/85
4,525,066	06/396,446	06/25/85
4,525,068	06/419,241	06/25/85
4,525,069	06/371,484	06/25/85
4,525,072	06/496,058	06/25/85
4,525,083	06/534,263	06/25/85
4,525,086	06/658,347	06/25/85
4,525,089	06/463,493	06/25/85
4,525,093	06/430,611	06/25/85
4,525,095	06/623,745	06/25/85
4,525,099	06/591,855	06/25/85
4,525,101	06/394,034	06/25/85
4,525,103	06/454,479	06/25/85
4,525,117	06/495,439	06/25/85
4,525,119	06/580,841	06/25/85
4,525,125	06/558,760	06/25/85
4,525,129	06/450,424	06/25/85
4,525,132	06/548,668	06/25/85
4,525,136	06/556,395	06/25/85
4,525,138	06/546,479	06/25/85
4,525,140	06/333,272	06/25/85
4,525,142	06/619,371	06/25/85
4,525,145	06/496,630	06/25/85
4,525,160	06/579,968	06/25/85
4,525,164	06/257,002	06/25/85
4,525,167	06/520,434	06/25/85
4,525,171	06/555,874	06/25/85
4,525,173	06/495,420	06/25/85
4,525,187	06/579,845	06/25/85
4,525,201	06/544,762	06/25/85
4,525,202	06/374,539	06/25/85
4,525,207	06/570,481	06/25/85
4,525,214	06/474,289	06/25/85
4,525,215	06/604,314	06/25/85
4,525,218	06/377,078	06/25/85
4,525,221	06/610,838	06/25/85
4,525,226	06/421,927	06/25/85
4,525,234	06/643,090	06/25/85
4,525,236	06/477,244	06/25/85
4,525,244	06/444,511	06/25/85
4,525,249	06/631,667	06/25/85
4,525,257	06/452,937	06/25/85
4,525,259	06/550,600	06/25/85
4,525,267	06/432,942	06/25/85
4,525,269	06/606,718	06/25/85
4,525,270	06/483,634	06/25/85
4,525,274	06/597,780	06/25/85
4,525,277	06/588,318	06/25/85
4,525,279	06/520,376	06/25/85
4,525,281	06/520,369	06/25/85
4,525,282	06/510,020	06/25/85
4,525,287	06/621,267	06/25/85
4,525,290	06/626,311	06/25/85
4,525,291	06/351,331	06/25/85
4,525,294	06/484,943	06/25/85
4,525,298	06/442,676	06/25/85
4,525,306	06/404,747	06/25/85
4,525,311	06/553,452	06/25/85
4,525,329	06/601,027	06/25/85
4,525,330	06/418,833	06/25/85
4,525,335	06/476,200	06/25/85
4,525,337	06/477,487	06/25/85
4,525,338	06/618,456	06/25/85
4,525,355	06/566,023	06/25/85
4,525,359	06/448,836	06/25/85
4,525,367	06/547,913	06/25/85
4,525,373	06/499,990	06/25/85
4,525,377	06/458,347	06/25/85
4,525,380	06/582,273	06/25/85
4,525,381	06/566,790	06/25/85
4,525,382	06/566,792	06/25/85
4,525,386	06/669,517	06/25/85
4,525,395	06/455,360	06/25/85
4,525,399	06/501,509	06/25/85
4,525,400	06/609,141	06/25/85
4,525,405	06/566,612	06/25/85
4,525,407	06/502,366	06/25/85
4,525,409	06/533,293	06/25/85
4,525,412	06/549,741	06/25/85
4,525,414	06/542,702	06/25/85
4,525,416	06/491,165	06/25/85
4,525,433	06/416,067	06/25/85
4,525,435	06/479,559	06/25/85
4,525,436	06/479,560	06/25/85
4,525,437	06/479,561	06/25/85
4,525,440	06/431,881	06/25/85
4,525,441	06/442,973	06/25/85
4,525,453	06/436,877	06/25/85
4,525,457	06/487,574	06/25/85
4,525,459	06/343,235	06/25/85
4,525,470	06/638,598	06/25/85
4,525,473	06/480,602	06/25/85
4,525,479	06/527,070	06/25/85
4,525,485	06/647,659	06/25/85
4,525,486	06/546,523	06/25/85
4,525,497	06/574,081	06/25/85
4,525,503	06/415,919	06/25/85
4,525,505	06/561,302	06/25/85
4,525,523	06/526,820	06/25/85
4,525,524	06/600,862	06/25/85
4,525,529	06/413,555	06/25/85
4,525,531	06/488,861	06/25/85
4,525,532	06/525,335	06/25/85
4,525,534	06/511,367	06/25/85
4,525,537	06/500,439	06/25/85
4,525,541	06/506,875	06/25/85
4,525,544	06/367,643	06/25/85
4,525,546	06/552,584	06/25/85
4,525,553	06/581,857	06/25/85
4,525,555	06/561,936	06/25/85
4,525,557	06/584,165	06/25/85
4,525,560	06/478,750	06/25/85
4,525,561	06/562,418	06/25/85
4,525,572	06/600,867	06/25/85
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4,525,575	06/520,665	06/25/85
4,525,579	06/592,420	06/25/85
4,525,580	06/634,781	06/25/85
4,525,581	06/572,244	06/25/85
4,525,586	06/533,489	06/25/85
4,525,592	06/557,796	06/25/85
4,525,593	06/601,080	06/25/85
4,525,604	06/502,011	06/25/85
4,525,607	06/567,700	06/25/85
4,525,609	06/550,294	06/25/85
4,525,613	06/572,259	06/25/85
4,525,614	06/438,256	06/25/85
4,525,615	06/571,158	06/25/85
4,525,620	06/418,315	06/25/85
4,525,622	06/574,637	06/25/85
4,525,623	06/513,900	06/25/85
4,525,640	06/481,033	06/25/85
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5,222,207	07/511,734	06/22/93
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,103,905, Re. S.N. 08/774,714, Jan. 3, 1997, Cl. 166/250, METHOD OF OPTIMIZING THE CONDUCTIVITY OF A PROPPED FRACTURE, Harold D. Brannon, et. al., Owner of Record: *Dowell Schlumberger, Inc., Tulsa, Okla.*, Attorney or Agent: John E. Vick Jr., Ex. Gp.: 3506

5,144,358, Re. S.N. 08/780,129, Dec. 26, 1996, Cl. 396, AUTOMATIC FOCUSING CAMERA, Hiroyuki Tsuru, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2101

5,210,563, Re. S.N. 08/801,134, Feb. 14, 1997, Cl. 396/53, CAMERA CAPABLE OF CORRECTING BLURRING, Masataka Hamada, et. al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Platon N. Mandros, Ex. Gp.: 2101

5,233,150, Re. S.N. 08/509,842, Aug. 1, 1995, Cl. 219/76.14, METHOD OF PRODUCTION OF WORKPIECES BY WELDING EQUIPMENT, Fritz Schneebeli, et. al., Owner of Record: *Sulzer Brothers Limited, Zurcherstrasse, Switzerland*, Attorney or Agent: J. Georg Seka, Ex. Gp.: 2106

5,418,853, Re. S.N. 08/858,972, May 20, 1997, Cl. 380/5, APPARATUS AND METHOD FOR PREVENTING UNAUTHORIZED COPYING OF VIDEO SIGNALS, Keiji Kanota, et. al., Owner of Record: *Sony Corp., Shinagawa-ku, Japan*, Attorney or Agent: William S. Frommer, Ex. Gp.: 2202

5,420,241, Re. S.N. 08/856,830, May 15, 1997, Cl. 528/490, PROCESS FOR THE PURIFICATION OF POLYCARBONATE AND POLYESTER CARBONATE SOLUTIONS, Gerhard Fennhoff, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Aron Preis, Ex. Gp.: 1503

Commissioner Ordered Reexamination

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.2(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.24(a)(5) and 1.525(b)).

5,121,430, Reexam. No. 90/004,669, July 15, 1997 Note: Actual request papers were filed on June 2, 1997, Cl. 380/048, STORM ALERT FOR EMERGENCIES, Larry R. Granzer, et. al., Owner of Record: *Quad Dimension, Inc., Kansas City, Mo.*, Attorney or Agent: Litman McMahon & Brown, Kansas City, Mo., Ex. Gp.: 2202, Requester: Commisioner of Patents and Trademarks, Washington, D.C./D. James Baker, NOAA, Washington, D.C.

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,404,972, Reexam. No. 90/004,697, July 11, 1997, Cl. 607/016, IMPLANTABLE DEVICE WITH MICROPROCESSOR CONTROL, Pat L. Gordon, et. al., Owner of Record: *Intermedics, Inc., Freeport, Tex.*, Attorney or Agent: Lyon & Lyon, Los Angeles, Calif., Ex. Gp.: 3305, Requester: Owner

4,678,097, Reexam. No. 90/004,695, June 20, 1997, Cl. 220/288, BREAKAWAY GAS GAP, Billy G. Crute, Owner of Record: *Stant Manufacturing, Inc., Connersville, Ind.*, Attorney or Agent: Mark M. Newman, Barnes & Thornburg, Washington, D.C., Ex. Gp.: 3207, Requester: Raymond F. Lippitt, Cushman Darby & Cushman, Washington, D.C.

4,931,992, Reexam. No. 90/004,696, July 11, 1997, Cl. 365/189.11, SEMICONDUCTOR MEMORY HAVING BARRIER TRANSISTORS CONNECTED BETWEEN SENSE AND RESTORE CIRCUITS, Masaki Ogihara, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-shi, Japan*, Attorney or Agent: Richard L. Schwaab, Foley & Lardner, Washington, D.C., Ex. Gp.: 2511, Requester: Owner

5,340,922, Reexam. No. 90/004,694, July 2, 1997, Cl. 530/350, NEURAL CALCIUM-ACTIVATED NEUTRAL PROTEINASE INHIBITORS, Ralph A. Nixon, et. al., Owner of Record: *McLean Hospital Corp., Belmont, Mass.*, Attorney or Agent: Sterne Kessler Goldstein & Fox, Washington, D.C., Ex. Gp.: 1801, Requester: Owner

5,359,724, Reexam. No. 90/004,698, July 11, 1997, Cl. 395/521, METHOD AND APPARATUS FOR STORING AND RETRIEVING MUTI-DIMENSIONAL DATA IN A COMPUTER MEMORY, Robert J. Earle, Owner of Record: *Arbor Software Corp., Santa Clara, Calif.*, Attorney or Agent: Kenneth M. Kaslow, Fenwick & West, Palo Alto, Calif./Weil Gotshal & Manges, Menlo Park, Calif., Ex. Gp.: 2307, Requester: Gentia Software, c/o Arnold White & Durkee, Houston, Tex.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 10, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
112,347	71/094,158	09/05/1916
112,369	71/089,794	09/05/1916
112,382	71/094,624	09/05/1916
112,396	71/094,155	09/05/1916
338,124	71/377,190	09/01/1936
338,129	71/377,240	09/01/1936
338,132	71/377,208	09/01/1936
338,144	71/364,197	09/01/1936
338,158	71/377,138	09/01/1936
338,166	71/376,227	09/01/1936
338,176	71/376,461	09/01/1936
338,200	71/378,057	09/01/1936
338,208	71/378,038	09/01/1936
338,228	71/375,595	09/01/1936
338,249	71/363,054	09/01/1936
338,251	71/376,358	09/01/1936
338,265	71/376,291	09/01/1936
338,290	71/377,798	09/01/1936
338,302	71/377,868	09/01/1936
338,306	71/377,968	09/01/1936
338,307	71/377,970	09/01/1936
338,315	71/371,751	09/01/1936
338,319	71/376,606	09/01/1936
338,328	71/374,326	09/01/1936
338,330	71/374,356	09/01/1936
338,337	71/374,521	09/01/1936
338,340	71/377,679	09/01/1936
608,247	71/658,101	07/05/1955
633,816	71/692,812	09/04/1956
633,835	71/696,638	09/04/1956
633,843	71/692,524	09/04/1956
633,844	71/692,868	09/04/1956
633,845	71/692,869	09/04/1956

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Reg. Number	Serial Number	Reg. Date
633,852	72/001,958	09/04/1956
633,856	72/002,024	09/04/1956
633,861	72/000,510	09/04/1956
633,864	72/001,065	09/04/1956
633,868	72/002,728	09/04/1956
633,870	72/002,920	09/04/1956
633,876	71/697,591	09/04/1956
633,877	71/700,093	09/04/1956
633,879	71/700,460	09/04/1956
633,882	71/696,676	09/04/1956
633,886	71/698,000	09/04/1956
633,887	71/698,385	09/04/1956
633,890	71/696,038	09/04/1956
633,896	72/002,941	09/04/1956
633,907	71/700,810	09/04/1956
633,928	71/692,503	09/04/1956
633,933	71/694,303	09/04/1956
633,947	71/696,529	09/04/1956
633,948	71/696,530	09/04/1956
633,949	71/696,531	09/04/1956
633,950	71/696,532	09/04/1956
633,951	71/696,533	09/04/1956
633,952	71/696,535	09/04/1956
633,958	71/697,666	09/04/1956
633,965	71/004,923	09/04/1956
633,969	71/690,711	09/04/1956
633,974	71/694,140	09/04/1956
633,977	72/001,302	09/04/1956
633,988	72/003,124	09/04/1956
634,004	72/003,162	09/04/1956
634,010	71/697,906	09/04/1956
634,014	71/696,215	09/04/1956
634,015	71/652,232	09/04/1956
634,019	71/693,943	09/04/1956
634,020	72/000,060	09/04/1956
634,034	71/698,514	09/04/1956
634,043	71/693,797	09/04/1956
634,047	71/699,202	09/04/1956
634,048	71/699,317	09/04/1956
634,051	71/699,703	09/04/1956
634,068	72/000,333	09/04/1956
634,087	71/692,104	09/04/1956
634,089	71/692,547	09/04/1956
634,092	71/696,330	09/04/1956
634,106	71/691,018	09/04/1956
634,111	71/693,026	09/04/1956
634,114	71/700,500	09/04/1956
634,116	72/001,209	09/04/1956
634,117	72/001,288	09/04/1956
634,128	71/633,835	09/04/1956
634,131	71/663,213	09/04/1956
634,135	71/674,050	09/04/1956
634,137	71/681,977	09/04/1956
634,141	71/684,810	09/04/1956
634,148	71/692,964	09/04/1956
634,152	71/693,681	09/04/1956
634,153	71/693,682	09/04/1956
634,160	71/695,704	09/04/1956
634,164	71/696,717	09/04/1956
634,165	71/696,946	09/04/1956
634,166	71/697,112	09/04/1956
634,175	71/700,841	09/04/1956
634,177	71/684,516	09/04/1956
634,180	71/697,415	09/04/1956
634,189	71/671,991	09/04/1956
634,196	71/697,918	09/04/1956
634,206	71/690,966	09/04/1956
634,210	71/683,476	09/04/1956
634,212	71/696,212	09/04/1956
634,214	71/676,920	09/04/1956
634,221	72/001,019	09/04/1956
634,223	71/698,296	09/04/1956
1,034,424	73/052,436	02/24/1976
1,047,089	73/040,147	08/31/1976
1,047,092	73/060,089	08/31/1976
1,047,093	73/063,345	08/31/1976
1,047,097	73/074,054	08/31/1976
1,047,099	73/074,356	08/31/1976
1,047,100	73/074,574	08/31/1976
1,047,101	73/075,112	08/31/1976
1,047,108	73/028,318	08/31/1976
1,047,109	73/037,692	08/31/1976
1,047,113	73/071,799	08/31/1976
1,047,120	73/067,199	08/31/1976
1,047,124	73/072,045	08/31/1976
1,047,127	73/032,097	08/31/1976
1,047,128	73/035,531	08/31/1976
1,047,131	73/046,821	08/31/1976
1,047,133	73/052,623	08/31/1976
1,047,134	73/053,746	08/31/1976
1,047,135	73/057,291	08/31/1976
1,047,139	73/065,268	08/31/1976
1,047,141	73/068,965	08/31/1976
1,047,144	73/074,548	08/31/1976
1,047,145	73/075,268	08/31/1976
1,047,147	73/077,809	08/31/1976
1,047,148	73/078,158	08/31/1976
1,047,149	73/078,160	08/31/1976
1,047,154	73/072,617	08/31/1976
1,047,155	73/030,373	08/31/1976
1,047,158	73/045,830	08/31/1976
1,047,159	73/051,340	08/31/1976
1,047,160	73/053,367	08/31/1976
1,047,163	73/059,372	08/31/1976
1,047,166	73/069,782	08/31/1976
1,047,175	73/076,077	08/31/1976
1,047,178	73/076,849	08/31/1976
1,047,179	73/076,939	08/31/1976
1,047,181	73/078,464	08/31/1976
1,047,184	73/078,683	08/31/1976
1,047,186	73/050,813	08/31/1976
1,047,187	73/054,291	08/31/1976
1,047,190	73/061,384	08/31/1976
1,047,192	73/077,297	08/31/1976
1,047,199	73/077,863	08/31/1976
1,047,200	73/078,062	08/31/1976
1,047,204	73/078,438	08/31/1976
1,047,205	73/015,656	08/31/1976
1,047,206	73/045,970	08/31/1976
1,047,209	73/054,106	08/31/1976
1,047,216	73/069,743	08/31/1976
1,047,218	73/074,478	08/31/1976
1,047,219	73/076,686	08/31/1976
1,047,220	73/076,999	08/31/1976
1,047,224	73/064,601	08/31/1976
1,047,226	73/067,542	08/31/1976
1,047,229	73/021,296	08/31/1976
1,047,230	73/024,166	08/31/1976
1,047,232	73/033,750	08/31/1976
1,047,233	73/034,001	08/31/1976
1,047,234	73/042,594	08/31/1976
1,047,235	73/043,576	08/31/1976
1,047,236	73/045,399	08/31/1976
1,047,239	73/052,190	08/31/1976
1,047,240	73/053,693	08/31/1976
1,047,241	73/054,357	08/31/1976
1,047,250	73/066,460	08/31/1976
1,047,257	73/061,809	08/31/1976
1,047,259	73/070,803	08/31/1976
1,047,260	73/073,853	08/31/1976
1,047,261	73/077,260	08/31/1976
1,047,262	73/077,262	08/31/1976
1,047,263	73/007,706	08/31/1976
1,047,266	73/048,824	08/31/1976
1,047,274	73/059,720	08/31/1976
1,047,275	73/041,538	08/31/1976
1,047,276	73/075,234	08/31/1976
1,047,280	73/068,888	08/31/1976
1,047,282	73/044,228	08/31/1976
1,047,286	73/050,521	08/31/1976
1,047,287	73/056,821	08/31/1976
1,047,288	73/057,150	08/31/1976
1,047,289	73/057,731	08/31/1976
1,047,291	73/059,551	08/31/1976
1,047,292	73/059,552	08/31/1976
1,047,294	73/064,713	08/31/1976

Reg. Number	Serial Number	Reg. Date
1,047,295	73/068,961	08/31/1976
1,047,296	73/073,179	08/31/1976
1,047,306	73/047,184	08/31/1976
1,047,309	73/048,855	08/31/1976
1,047,312	73/053,974	08/31/1976
1,047,313	73/054,341	08/31/1976
1,047,314	73/054,342	08/31/1976
1,047,315	73/054,344	08/31/1976
1,047,317	73/058,471	08/31/1976
1,047,319	73/060,964	08/31/1976
1,047,323	73/067,170	08/31/1976
1,047,325	73/068,770	08/31/1976
1,047,326	73/070,335	08/31/1976
1,047,330	73/048,491	08/31/1976
1,047,336	73/048,404	08/31/1976
1,047,340	73/065,495	08/31/1976
1,047,343	73/069,091	08/31/1976
1,047,344	73/073,770	08/31/1976
1,047,346	73/075,847	08/31/1976
1,047,348	73/041,600	08/31/1976
1,047,363	73/053,726	08/31/1976
1,047,365	73/061,517	08/31/1976
1,047,366	73/066,973	08/31/1976
1,047,367	73/075,766	08/31/1976
1,047,368	73/036,863	08/31/1976
1,047,377	73/035,092	08/31/1976
1,047,380	73/045,948	08/31/1976
1,047,386	73/060,790	08/31/1976
1,047,389	73/075,568	08/31/1976
1,047,390	73/077,957	08/31/1976
1,047,395	73/053,689	08/31/1976
1,047,400	73/060,917	08/31/1976
1,047,401	73/066,219	08/31/1976
1,047,404	73/072,741	08/31/1976
1,047,405	73/075,419	08/31/1976
1,047,406	73/075,932	08/31/1976
1,047,407	73/076,083	08/31/1976
1,047,408	72/458,488	08/31/1976
1,047,412	72/460,197	08/31/1976
1,047,414	72/400,642	08/31/1976
1,047,415	72/452,823	08/31/1976
1,047,418	72/458,528	08/31/1976
1,047,419	72/462,029	08/31/1976
1,047,422	73/053,690	08/31/1976

U.S. Patent No. 4,634,697; Granted: January 6, 1987, to Yoshio Hamashima; Owner of Record: Shionogi & Co., Ltd.; Title: CARBOXYALKENAMINDOCEPHALOSPORINS; Classification: 514/202; Product Trade Name: CEDAX®; Original Expiration Date: October 1, 2004; Term Extended: Five years; Extended Expiration Date: October 1, 2009.

U.S. Patent No. 4,812,561; Granted: March 14, 1989, to Yoshio Hamashima et. al.; Owner of Record: Shionogi & Co., Ltd.; Title: CRYSTALLINE HYDRATE OF ORAL CEPHALOSPORIN AND ITS COMPOSITION; Classification: 540/222; Product Trade Name: CEDAX®; Original Expiration Date: July 1, 2007; Term Extended: 903 days; Extended Expiration Date: December 20, 2009.

Certificates of Correction For the Week of September 2, 1997

D. 363,775	5,511,591	5,578,765	5,608,539
D. 367,332	5,513,564	5,579,951	5,608,910
D. 372,549	5,514,493	5,581,420	5,609,470
D. 377,584	5,522,293	5,582,347	5,609,700
D. 379,233	5,523,705	5,583,254	5,610,051
P. 09,705	5,525,559	5,583,655	5,610,855
4,423,791	5,525,639	5,583,720	5,610,905
4,709,958	5,528,526	5,584,067	5,611,854
4,749,709	5,528,687	5,584,657	5,611,888
4,818,190	5,529,381	5,585,791	5,612,014
4,909,126	5,529,700	5,585,957	5,612,075
4,978,866	5,531,079	5,586,090	5,612,532
5,071,459	5,535,079	5,586,671	5,612,674
5,077,192	5,535,874	5,587,351	5,612,693
5,107,385	5,537,554	5,589,105	5,612,854
5,119,290	5,537,944	5,590,001	5,613,600
5,142,635	5,540,429	5,591,385	5,613,873
5,144,586	5,540,821	5,591,420	5,613,954
5,157,764	5,543,455	5,591,717	5,614,184
5,172,093	5,543,631	5,592,089	5,614,369
5,197,015	5,543,912	5,592,190	5,614,562
5,213,224	5,544,528	5,592,269	5,614,948
5,247,294	5,545,884	5,592,304	5,615,025
5,262,628	5,547,479	5,592,432	5,615,357
5,283,904	5,547,480	5,593,896	5,615,583
5,293,875	5,547,541	5,594,577	5,616,114
5,294,039	5,547,795	5,595,228	5,616,709
5,309,276	5,549,892	5,595,823	5,617,052
5,347,314	5,551,305	5,596,393	5,617,227
5,359,887	5,552,551	5,596,667	5,617,351
5,360,492	5,552,614	5,596,679	5,617,849
5,374,627	5,552,623	5,596,760	5,617,939
5,383,425	5,554,349	5,597,276	5,618,447
5,393,670	5,554,781	5,597,297	5,618,813
5,395,401	5,562,251	5,597,445	5,618,921
5,412,583	5,563,006	5,597,741	5,618,922
5,421,946	5,563,188	5,597,747	5,619,189
5,434,625	5,563,428	5,598,451	5,619,783
5,436,090	5,564,430	5,598,504	5,619,854
5,445,463	5,564,580	5,598,523	5,619,893
5,446,736	5,565,009	5,599,753	5,620,788
5,449,058	5,565,413	5,600,553	5,621,138
5,451,923	5,567,149	5,600,578	5,621,360
5,457,817	5,568,961	5,602,136	5,621,639
5,459,137	5,569,461	5,602,397	5,622,258
5,460,224	5,569,772	5,602,443	5,622,584
5,464,974	5,570,269	5,602,663	5,622,695
5,466,536	5,571,527	5,602,900	5,623,148
5,477,246	5,572,385	5,603,758	5,623,247
5,483,419	5,572,398	5,604,071	5,623,326
5,484,432	5,572,893	5,604,814	5,623,553
5,488,499	5,573,160	5,605,868	5,623,557
5,488,624	5,573,673	5,606,479	5,623,666
5,490,753	5,576,060	5,606,686	5,623,693
5,490,776	5,576,753	5,606,836	5,623,834
5,492,481	5,576,779	5,606,845	5,624,084
5,498,909	5,577,092	5,607,214	5,624,307
5,507,995	5,577,812	5,607,980	5,624,673
5,511,529	5,578,672	5,608,037	5,624,758

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Gene Knutson dba National Golf Charities Hole In One Association, Mishawaka, Ind., Reg. No. 1,736,990, for the mark "NGC HOLE IN ONE ASSOCIATION AND DESIGN", Canc. No. 24,913.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Patent Terms Extended Under 35 U.S.C. § 156

Certificates extending the terms of the following patents were issued on July 31, 1997.

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

July 14-18, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-16	EX	74/331,559	Faultless Starch/Bon Ami Co.	whether matter asserted for registration is capable of registration on the Supp. Reg. [genericness]	Refusal Reversed		"GARDEN CLAW" [hand-operated garden tools, namely, cultivator-weeders]		No
7-16	EX	74/497,740	Charles A. Bruning	2(e)(2)	Refusal Affirmed		"AMERICAN DEPOSITORS INSURANCE CORPORATION" [brokering, selling or servicing insurance policies for depositors against failure of a depositee to fulfill its contract with depositors]		No
7-16	EX	74/507,816	U.S. Olympic Committee	2(e)(2) [as to all applicant's goods and services]; 2(d) [as to applicant's services only]	Refusal Affirmed (on both grounds)		"USA SHOOTING" [gift and party supplies made of paper; entertainment in the nature of shooting and riflery exhibitions and matches; publication of newspapers, magazines and books; educational services, namely, arranging and conducting shooting and riflery clinics; sports officiating services; association services, namely, promoting the interest of member shooting and riflery clubs]	"U.S. SHOOTING TEAM" [fund raising services, namely, for receiving tax-deductable donations to train men and women shooters to represent the United States in international competition]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-16	EX	74/455,676	Brian Moore Guitars, Inc.	whether the matter asserted for registration has become distinctive under Sec. 2(f)	Refusal Affirmed		configuration of a guitar headstock [electric guitars, acoustic guitars and bass guitars]		No
7-16	EX	74/559,227	Ford Motor Co.	2(e)(1)	Refusal Affirmed		"LIMO CARE" [repair and service of motor vehicles]		No
7-16	EX	74/607,814	Revere Ware Corp.	2(d)	Refusal Affirmed		"D-E-C-O-R" [non-electric metal cookware, namely, stainless steel skillets, frying pans, saucepans, Dutch ovens, and stockpots]	"DECOR" [plastic products for household use (ice pails, cups, beakers, mugs, bowls, dishes, plates, etc.); plastic cooking utensils (ladles, spatulas, measuring spoons, potato mashers, whisks, etc.); etc.	No
7-18	OPP	95,464	Digene Diagnostics, Inc. v. National Diagnostics	2(d)	Opposition Sustained	"DIGENE" [diagnostic and research reagents, and DNA-probe based diagnostic kits for the determination and monitoring of human diseases]	"DIOGENES" (in stylized lettering) [chemicals for detecting and enhancing chemiluminescence and bioluminescence for use in the biotechnology industry]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

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Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI²) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
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	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895

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New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
		(214) 670-1468
	Dallas Public Library	(713) 527-8101 Ext. 2587
	Houston: The Fondren Library, Rice University	(806) 742-2282
	Lubbock: Texas Tech University	(801) 581-8394
Utah	Salt Lake City: Marriott Library, University of Utah	Not Yet Operational
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(804) 828-1104
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(206) 543-0740
Washington	Seattle: Engineering Library, University of Washington	(304) 293-2510 Ext. 113
West Virginia	Morgantown: Evansdale Library, West Virginia University	(608) 262-6845
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(414) 286-3051
	Milwaukee Public Library	(307) 237-4935
Wyoming	Casper: Natrona County Public Library	

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/20/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	10/09/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/18/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/13/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	04/07/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/22/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/11/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/20/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/25/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/14/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/22/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/10/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/20/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/23/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/17/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/23/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/30/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of August 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	06/05/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/96	04/30/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/16/96	07/03/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/24/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/96	05/29/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	02/09/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/06/97	04/14/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/18/96	05/19/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/30/97	05/30/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	06/19/97	—0—
Renewals (All Classes)	06/19/97	—0—
Section 12(c) Publications (All Classes)	06/15/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–87[illegible] from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

STATUTORY INVENTION REGISTRATIONS

PUBLISHED SEPTEMBER 2, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1675
HYBRID CAPSULE CHARGE

James M. Barker, Mansfield; Jerry L. Walker, Fort Worth, and Robert S. Riggs, Granbury, all of Tex., assignors to Halliburton Company, Dallas, Tex.

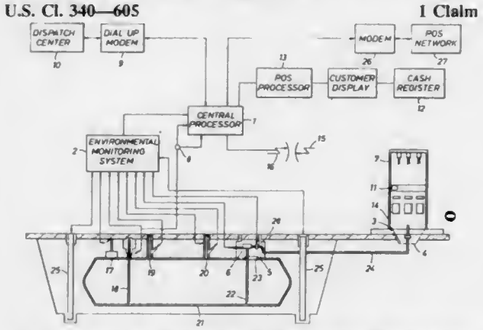
Filed Jul. 22, 1996, Ser. No. 684,719
Int. Cl.[6] F42C *10/00*; E21B *29/00*
U.S. Cl. 166—297 **2 Claims**

2. A method of perforating a high temperature production zone of a oil or gas well, comprising:
inserting at least one capsule charge into said well proximate said zone, said charge comprising:
a high temperature explosive; and,
a booster selected from the group consisting of:
1,3,5-Trinitro-2,4,6-Tripicrylbenzene; and,
2,2',2",4,4',4",6,6',6", -Nonanitroterphenyl; and,
detonating said charge.

H1676
SITE MANAGEMENT SYSTEM FOR CONTAINING HAZARDOUS SPILLS AND LEAKS

Glen Richard Marshall, Kingwood, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 206,291, Mar. 3, 1994, abandoned.
This application Mar. 26, 1996, Ser. No. 622,050
Int. Cl.[6] G21C *17/07*
U.S. Cl. 340—605 **1 Claim**

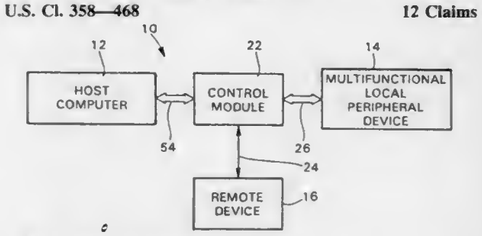


1. In a system for monitoring fuel storage and handling equipment comprising a plurality of containment devices, leak detectors, storage tank level detectors, containment shrouds substantially surrounding each mechanical device for extraction or addtion of fuel from storage tanks, said shroud having fluid sensors providing communications of the detection of fluid in said shroud, and a central processor, said processor receiving all sensor communications and point of sale data originating from a point of sale processor, said processor providing a signal of the presence of fluid from said handling and storage equipment, the improvement comprising:
a fail-safe monitoring means in communication with said central processor wherein said processor integrates point of sale data and accounting data with sensor communications.

H1677
CONTROL MODULE FOR CONTROLLING THE OPERATION OF A MULTIFUNCTIONAL PERIPHERAL DEVICE

Darwin Hu; Jim Lo; Tokuhiro Hasegawa; Banky Mor, and Nobuyuki Sato, all of San Jose, Calif., assignors to Oki America, Inc., Hackensack, N.J.

Continuation of Ser. No. 771,909, Oct. 4, 1991, abandoned.
This application Jan. 28, 1994, Ser. No. 189,261
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—468 **12 Claims**



10. A control module comprising:
a central data bus for accessing a plurality of functional modules;
a computer interface arranged to interconnect a host computer with said control module via said central data bus, said host computer providing digital data signals and compressed data signal inputs to the control module;
a facsimile modem for receiving analog facsimile data from a remote source via a telephone line and converting said received analog facsimile data into first document signals, and for converting second document signals from the host computer into analog facsimile data and transmitting the converted analog facsimile data to a remote source via the telephone line;
a voice recorder for receiving analog voice data signals from a remote source via a telephone line and converting said analog voice data signals into digital data signals;
a control processor arrange to process the data signals received from said host computer, said fax modem and said voice recorder;
a control memory arranged to store the data signals received from said host computer, said facemile modem and said voice recorder; and
a video interface arranged to receive said data signals and to convert said data signals into video signals, said video interface transmitting said video signals to a self-contained multifunctional peripheral device via a video bus, the multifunctional peripheral device including a scanner and a printer, the scanner for optically scanning document information and for converting the scanned document information into third document signals, the multifunctional peripheral device transmitting the third document signals to the control module and receiving fourth document signals from the control module, the printer for producing a recorded form of document information based on the received fourth document signals;
the control module being an intelligent controller controlling and operating the multifunctional peripheral device, the control module being interfaced with a host computer by way of a host computer CPU I/O bus, and the control module being a self-contained unit selected from the group consisting of a plug-in printed circuit card disposed within the host computer,

a plug-in printed circuit card disposed within the multifunctional peripheral device, or a plug-in printed circuit card disposed within a separate stand-alone;

the control module transmitting three types of document signals to the multifunctional peripheral device over an MPD interface, the third type of signal instructing the multifunctional peripheral device to print a particular document based upon particular document signals received from the host computer, the fourth type of signals instructing the multifunctional peripheral device to scan a particular document utilizing the scanner and to transmit the document signals from the scanner to the host computer, and a first type of signals acting as command and response communications to the multifunctional peripheral device, including printer, scanner, and data flow control signals, all signals from the multifunctional peripheral device in response to the transmitted signals also being transmitted over the MPD interface;

the control module for receiving the third document signals from the multifunctional peripheral device and the first document signals from the remote source by way of the facsimile modem and for sending the received third and first document signals to the host computer, the control module also for receiving the fourth document signals and the second document signals from the host computer, for sending the received fourth document signals to the multifunctional local peripheral device and for sending the received second document signals to the remote device by way of the facsimile modem, the control module functioning to require that the third document signals from the local device and the first document signals from the remote source be transmitted to the host computer, that the fourth document signals from the host computer be transmitted to the local device, and that the second document signals from the host computer be transmitted to the remote source.

H1678

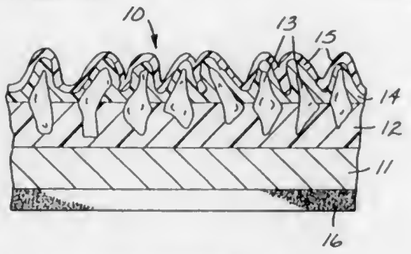
ABRASIVE ARTICLE INCLUDING A POLYVINYL CARBAMATE COATING, AND METHODS FOR MAKING AND USING THE SAME

Albert James Ronning, North Oaks, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1995, Ser. No. 553,073

Int. Cl.[6] B24D *3/28*

U.S. Cl. 428—141 **23 Claims**



1. An abrasive article comprising:

(a) a backing having a first major surface;

(b) an abrasive layer coated on the first major surface, the abrasive layer comprising

(i) an organic-based bond system, and

(ii) a plurality of abrasive particles adhered in the bond system; and

(c) an outermost coating layer comprising a poly(vinyl carbamate) polymer at least partially coated over said abrasive layer.

H1679

PROCESS FOR PREPARING AN OPTICALLY PURE INTERMEDIATE FOR A PHOSPHONOSULFONATE SQUALENE SYNTHETASE INHIBITOR

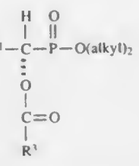
Amit Banerjee, Yardley, Pa.; Ramesh N. Patel, Bridgewater, and Laszlo J. Szarka, East Brunswick, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Nov. 13, 1996, Ser. No. 748,324

Int. Cl.[6] C07F *9/28*

U.S. Cl. 435—280 **17 Claims**

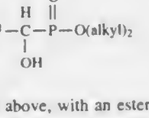
1. A method for preparing a substantially optically pure phosphonate of the structure



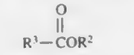
wherein

R^1 is a lipophilic group containing at least 7 carbons;

R^3 is alkyl, cycloalkyl, aryl or arylalkyl; which comprises reacting a racemic phosphonate of the structure



wherein R^1 is as defined above, with an ester of the structure



wherein

R^3 is as defined above; and

OR^2 represents a leaving group and R^2 is alkyl, aryl, arylalkyl or alkenyl, in the presence of an enzyme or microorganism which is a source for enzyme capable of catalyzing transesterification of an alcohol, to form the substantially optically pure phosphonate, and recovering the substantially optically pure phosphonate.

H1680

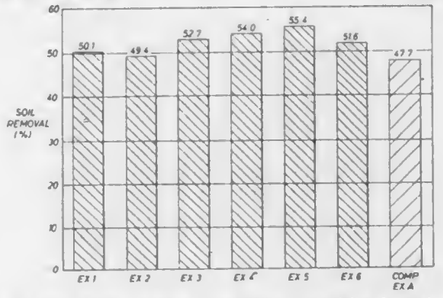
SECONDARY ALKYL SULFATE-CONTAINING HARD SURFACE CLEANING COMPOSITIONS

Nelson Eduardo Prieto, Richmond, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 27, 1993, Ser. No. 143,817

Int. Cl.[6] C11D *1/02*

U.S. Cl. 510—493 **19 Claims**



1. A hard surface cleaning composition comprising from about 0.1 percent by weight to about 50 percent by weight, basis the total weight of the composition, of one or more secondary alkyl sulfate compounds.

REISSUES

SEPTEMBER 2, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,598

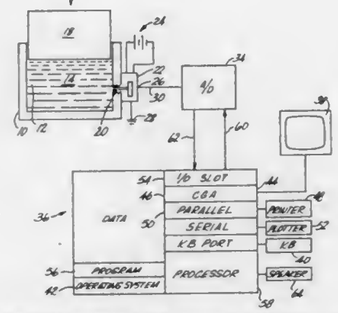
STRENGTH ANALYZER AND METHOD OF USING SAME

Armin M. Sadoff, 465 N. Roxbury Dr., Beverly Hills, Calif. 91210; Richard C. Nelson, 411 Park La., State College, Pa. 16803; Gerald A. Smith, 31739 Barlow Rd., Philomath, Oreg. 97370; Joseph Johnstonbaugh, 113 Harvard Ct., Rt. 1, Port Matilda, Pa. 16801, and Steven J. Sadoff, Merrill Lynch Japan Inc. Ote Center Boulevard 1-1-3 Otemachi, Chiyoda-ku, Tokyo 100, Japan

Original No. 4,884,445, dated Dec. 5, 1989, Ser. No. 276,716, Nov. 28, 1988. Continuation of Ser. No. 329,678, Oct. 26, 1994, abandoned, which is a continuation of Ser. No. 69,453, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 575,920, Aug. 31, 1990, abandoned. Application for reissue Nov. 1, 1995, Ser. No. 551,692

Int. Cl.[6] G01L *3/24*

U.S. Cl. 73—379.01 **37 Claims**



1. A method for measuring grip strength of a subject, comprising the steps of:

(a) providing a grip strength dynamometer with a transducer having an electrical output which produces an analog signal representative of the force with which the dynamometer is gripped;

(b) coupling the electrical output from the transducer to an input of a digital computer via an analog to digital converter;

(c) having the subject grip the dynamometer with a maximal contraction effort for a first predetermined period of time using a designated first hand;

(d) inputting to the computer digital data representative of samples of the gripping force applied to the dynamometer during the first predetermined period;

(e) calculating for the first hand from the sampled force data a first value for a first discriminator;

(f) inputting to the computer digital data samples of the applied force while the subject is gripping the dynamometer with a maximal contraction effort for a second predetermined period of time but with his other hand;

(g) calculating a second value for said first discriminator from the sampled second hand force data;

(h) comparing the calculated first and second hand values of the first discriminator to calculate a value for a second discriminator based on the difference thereof;

(i) combining the calculated second discriminator value with the calculated value of another discriminator having a different statistical distribution to that of the second discriminator to form a combined discriminator value; and

(j) determining whether the combined discriminator value is within a range that has been previously determined experimentally to indicate with a predetermined level of confidence the sincerity of the subject.

Re. 35,599

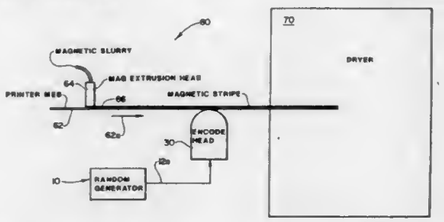
METHOD AND APPARATUS FOR ENHANCING A RANDOMLY VARYING SECURITY CHARACTERISTIC

Kevin J. Pease, Mt. Juliet, Tenn., assignor to DocuSystems, Inc., Skokie, Ill.

Original No. 5,177,344, dated Jan. 5, 1993, Ser. No. 593,037, Oct. 5, 1990. Application for reissue Jan. 4, 1995, Ser. No. 368,546

Int. Cl.[6] G06K *7/08*

U.S. Cl. 235—449 **19 Claims**



16. Apparatus for generating a permanent fixed magnetic security characteristic embedded in a magnetic medium disposed on a support medium comprising;

means for depositing an enhanceable slurry having a generally uniform magnetic characteristic on a moving support medium in a fluid condition;

an electrical signal generator for providing a series of electrical signals, each having a randomly-created characteristic;

a magnetic write-head for creating electromagnetic signals for sequentially altering the enhanceable generally uniform magnetic characteristic of the magnetic slurry in response to said electrical signals to produce substantially altered regions of magnetic characteristics different from said generally uniform magnetic characteristic; and

means for hardening the altered magnetic slurry to permanently fix said altered regions and the remaining regions of generally uniform magnetic characteristic.

Re. 35,600

ZOOM FINDER SYSTEM

Katsuhiko Nozaki, and Tetsuya Abe, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

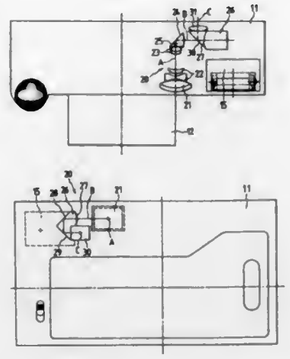
Original No. 4,992,809, dated Feb. 12, 1991, Ser. No. 426,655, Oct. 26, 1989. Continuation of Ser. No. 17,401, Feb. 11, 1993, abandoned. Application for reissue Feb. 10, 1995, Ser. No. 386,348

Claims priority, application Japan, Oct. 28, 1988, 63-140823; Dec. 27, 1988, 63-330466; Dec. 27, 1988, 63-330467

Int. Cl.[6] G03B *13/10*

U.S. Cl. 396—84 **18 Claims**

12. A finder apparatus for a camera having a zoom imaging optical system, said finder apparatus including an objective lens



and an eyepiece and a plurality of optical elements defining an optical path between said objective lens and said eyepiece, said plurality of optical elements comprising:

a first reflecting surface receiving light from said objective lens along a first portion of said optical path and reflecting said light along a second portion of said optical path;

a second reflecting surface receiving light from said first reflecting surface along said second portion of said optical path and reflecting said light along a third portion of said optical path;

a third reflecting surface receiving light from said second reflecting surface along said third portion of said optical path and reflecting said light along a fourth portion of said optical path; and

a fourth reflecting surface receiving light from said third reflecting surface along said fourth portion of said optical path and reflecting said light along a fifth portion of said optical path to said eyepiece;

wherein the length of said second portion of said optical path is substantially greater than the length of each of said third, fourth and fifth portions of said optical path.

Re. 35,601

DELIVERY DEVICE PROVIDING BENEFICIAL AGENT STABILITY

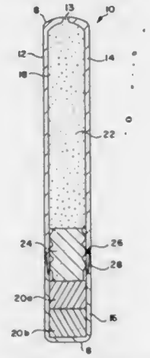
James B. Eckenhoff, deceased, late of Los Altos, Calif., by Bonnie J. Eckenhoff, executrix, assignor to ALZA Corporation, Palo Alto, Calif.

Original No. 5,137,727, dated Aug. 11, 1992, Ser. No. 714,415, Jun. 12, 1991. Application for reissue Aug. 11, 1994, Ser. No. 289,473

The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.

Int. Cl.[6] A61K *9/20*; **A61M** *31/00*

U.S. Cl. 424—422 **49 Claims**



23. An improved fluid-imbibing delivery device for delivering a beneficial agent to a biological environment of use, the dispensing device being of the type having a housing which includes an extremely fluid-impermeable first wall section with an open end and a fluid-permeable second wall section with an open end, the open end of each of the first wall section and the second wall section having reciprocally tapered edges one with the other to form a tapered lap joint for mating engagement of the first and second wall sections, an internal compartment formed by the first and second wall sections, exit means in the housing, a fluid-sensitive beneficial agent formulation in that portion of the compartment formed by the first wall section, expandable driving means in that portion of the compartment formed by the second wall section, and a partition layer between the beneficial agent formulation and the expandable driving means.

PLANT PATENTS

GRANTED SEPTEMBER 2, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,014

MINIATURE ROSE PLANT NAMED 'MEINIPOL'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 4, 1996, Ser. No. 708,112

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance in clusters attractive very double flowers which tend to open slowly and which exhibit a medium pink coloration,
(b) exhibits an erect growth habit, and
(c) is particularly suited for growing on its own roots as an ornamental pot plant;

substantially as herein shown and described.

10,015

MINIATURE ROSE PLANT NAMED 'MEISHULO'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 4, 1996, Ser. No. 706,496

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—10.1 **1 Claim**

1. A new and distinct variety of miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive double flowers which are Mandarin Red in coloration,
(b) exhibits an erect, compact, and regular growth habit,
(c) forms attractive semi-glossy foliage, and
(d) is particularly suited for growing on its own roots as an ornamental pot plant,

substantially as herein shown and described.

10,016

APPLE VARIETY BAIGENT

Barbara Christine Brookfield, and Paul Leighton Purchas Brookfield, both of Havelock North, New Zealand, assignors to Brookfield New Zealand Limited, Hawkes Bay, New Zealand

Filed Jun. 29, 1995, Ser. No. 496,381

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct variety of apple tree which is a mutation of the Royal Gala variety (Tenroy cultivar, U.S. Pat. No. P.P. 4,121) substantially as herein shown and described, characterized by:

(a) a distinctive color patern covering the fruit of predominantly bright red color and flecks of ground color overlain with bold, discontinuous darker red striping,
(b) particularly early development of fruit red color extending throughout the tree at maturity; and
(c) dark coloring of fruit stems, bark and leaves.

10,017

Patent Not Issued For This Number

10,018

VARIETY OF GERANIUM PLANT NAMED 'GYPSY GIRL'

David Lemon, Lompoc, Calif., assignor to John Bodger and Sons Company, South El Monte, Calif.

Filed Dec. 12, 1995, Ser. No. 571,163

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of Geranium plant, substantially as shown and described.

10,019

GERANIUM PLANT NAMED 'SANDRA'

David Lemon, Lompoc, Calif., assignor to John Bodger and Sons Company, South El Monte, Calif.

Filed Dec. 12, 1995, Ser. No. 571,164

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as shown and described.

10,020

VARIETY OF GERANIUM PLANT NAMED 'LUCILLE'

David Lemon, Lompoc, Calif., assignor to John Bodger and Sons Company, South El Monte, Calif.

Filed Dec. 12, 1995, Ser. No. 571,167

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as shown and described.

10,021

GERANIUM PLANT NAMED 'ERIN'

David Lemon, Lompoc, Calif., assignor to John Bodger and Sons Company, South El Monte, Calif.

Filed Dec. 12, 1995, Ser. No. 571,203

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as shown and described.

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PATENTS

GRANTED September 2, 1997

ERRATA

For CLASS	See PATENT NO.
016–114	5,664,520
171–016	5,664,633
271–003	5,664,770
473–600	5,664,774
271–010	5,664,786
029–456	5,665,050
438–014	5,665,199
438–694	5,665,200
438–693	5,665,201
438–692	5,665,202
438–585	5,665,203
438–003	5,665,210
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510–123	5,665,267
510–214	5,665,268
426–450	5,665,379
438–088	5,665,423
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216–020	5,665,650
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264–628	5,665,663
503–216	5,665,675
503–227	5,665,676
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257–751	5,666,007
257–728	5,666,008
257–784	5,666,009
396–281	5,666,186
399–366	5,666,191
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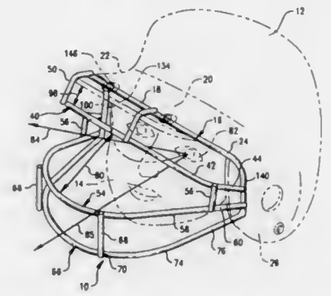
PATENTS

GRANTED SEPTEMBER 2, 1997

GENERAL AND MECHANICAL

5,661,849
PROTECTIVE FACE GUARD FOR SOFTBALL PLAYERS
Lonnie G. Hicks, 7014 62nd Place NE., Marysville, Wash. 98270

Filed Jul. 26, 1996, Ser. No. 687,653
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—9 **7 Claims**



1. A protective softball face guard attachable to a baseball helmet having a frontally extending brim, said face guard adapted to protect against facial injuries during softball activities, comprising:

a first bar member made of a rigid, impact resistant material, said first bar member having a generally semicircular first bar member frontal portion adapted to seat atop an upper surface of a frontally extending brim of the baseball helmet when the face guard is mounted to the helmet, and rearwardly extending first bar member rear leg portions extending rearwardly from the first bar member frontal portion beyond the brim in close juxtaposition to paired lateral ear flagflaps of the helmet when the face guard is mounted to the helmet;

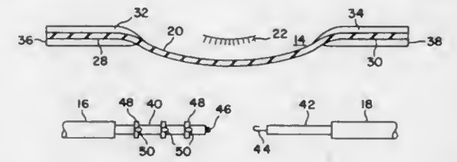
a second bar member made of a rigid, impact resistant material positioned below the first bar member and rigidly connected thereto by a first tier vertical strut member, said second bar member having a generally semicircular second bar member frontal portion positioned below the brim when the face guard is mounted to the helmet, and rearwardly extending second bar member rear leg portions extending rearwardly from the second bar member frontal portion beyond the brim in close juxtaposition to the paired lateral ear flagflaps when the face guard is mounted to the helmet;

a third bar member made of a rigid, impact resistant material positioned below the second bar member and rigidly connected thereto by a second tier vertical strut member, said third bar member having a generally semicircular third bar member frontal portion, and rearwardly extending third bar member rear leg portions extending rearwardly from the third bar member frontal portion beyond the brim in close juxtaposition to the paired lateral ear flagflaps when the face guard is mounted to the helmet; and

a fourth bar member made of a rigid, impact resistant material positioned below the third bar member and rigidly connected thereto by a third tier vertical strut member, said fourth bar member having a generally semicircular fourth bar member frontal portion, and rearwardly extending fourth bar member rear leg portions extending rearwardly from the fourth bar member frontal portion beyond the brim in close juxtaposition to the paired lateral ear flagflaps when the face guard is mounted to the helmet, wherein said second and third bar members are shaped, positioned and dimensioned to define a downwardly oriented visual aperture relative to a player's eye position when the face guard is mounted to the helmet and the helmet is correctly seated on the player's head, said visual aperture generally corresponding to a clear tracking field of sight for the player to visually track a pitched softball approaching the player along an upward path from a point of pitched ball release, said visual aperture having a selected visual aperture width to minimally obstruct the player's tracking field of sight while at the same time reliably excluding a softball from striking the player's face when the softball forcefully impinges upon the face guard between the second and third bar member frontal portions, and wherein a third bar member frontal midpoint is separated from a first bar member frontal midpoint by a maximum first and third bar separation distance of at least four inches.

5,661,850
EYE SHIELD ASSEMBLY
Robert Martinique, 537 Avenue A, Apt. 228, Bayonne, N.J. 07002

Filed Jun. 4, 1996, Ser. No. 658,669
Int. Cl.[6] A61F *9/04*
U.S. Cl. 2—15 **6 Claims**



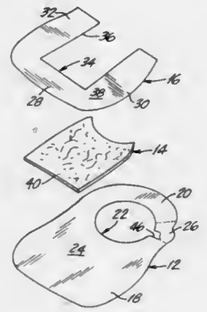
1. An eyeshield assembly for covering an eye, which comprises:

an ovately-shaped cup member defining a chamber of a dept sufficient to be in non-contacting relationship with a user ' eyelash and having an elliptically-shaped upper edge asymmetrically disposed to an elliptically-shaped lower edge;

a first end member mounted to an end of said ovately-shaped cup member having a hook member mounted thereto and a second end member mounted to the other end of said ovately-shaped cup member and having a loop member for cooperating in interlocking relationship with said hook member of said first end member.

5,661,851
DISPOSABLE BIB
Omar Sanchez, 9310 Fontainebleau Blvd., Miami, Fla. 33172

Filed Apr. 1, 1996, Ser. No. 626,052
Int. Cl.[6] A41B *13/10;* **A41D** *13/04*
U.S. Cl. 2—49.4 **9 Claims**

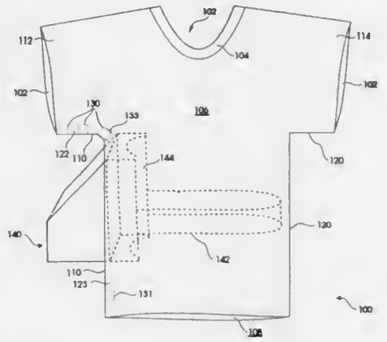


1. A disposable bib comprising:

a water repellent foldable first ply;

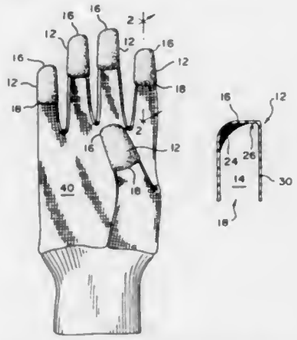
said first ply having a main panel and a neck panel extending from said main panel to define a neck receiving open zone;
said neck panel having an attachable and detachable segment to permit attaching and detaching said bib around the neck of the wearer;
a water absorbent foldable second ply overlying and extending across at least a substantial portion of the upper surface of said main panel of said first ply;
a water repellent third ply;
said third ply having an outer configuration substantially corresponding to the configuration of said main panel of said first ply, and having an enlarged opening which defines inner peripheral edges of said third ply;
said third ply overlying and being attached to said first ply to provide a water repellent border along three edges of said bib, with said water absorbent second ply exposed through said enlarged opening of said third ply; and
said inner peripheral edges of said third ply overlying and being attached to marginal edge portions of said water absorbent second ply.

5,661,852
ORTHOPEDIC SURGICAL SHIRT
Nia M. Kessler, 2709 NE. 30th St., Ft. Lauderdale, Fla. 33306
Continuation of Ser. No. 304,941, Sep. 13, 1994. This application Apr. 1, 1996, Ser. No. 625,239
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—114 **4 Claims**



1. An orthopedic apparatus comprising in combination a garment and an upper limb immobilization appliance comprising, said garment having
a continuous matable fastening device along one of said outer edges;
said first panel free of slits;
said second panel free of slits;
said upper limb immobilization appliance attached to a patient, and permitting said patient free movement of the patient's head;
a sleeve portion defined on said first and second panels;
at least said first outer edges of said first and second panels being releasably interconnected by said continuous matable fastening device disposed along each of said first and second panels to create an opening, for said upper limb immobilization appliance, between said panels of infinitely variable vertical and horizontal size to accommodate a wide variety of differently configured upper limb immobilization appliances for immobilizing said upper limb while permitting free movement of said patient's head; and
said opening, forming an open seam for clearance of a least said upper limb immobilization appliance, and said opening being of sufficient size and shape to accommodate an upper limb of the patient and said immobilization appliance, as well as a least one other therapeutic apparatus including cast, brace, abduction pillow, drainage tube, sling connectable to said patient, and a belt for securing said immobilization appliance upon fastening together said continuous matable fastening device along one of said outer edges of said first and second panels.

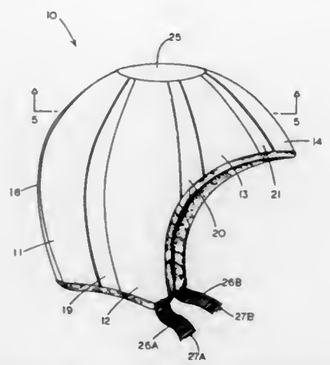
5,661,853
UNITARY FINGERTIP PROTECTOR
Elizabeth C. Wilmot, 4 Ambergate Rise, Pittsford, N.Y. 14534
Filed Dec. 18, 1995, Ser. No. 574,272
Int. Cl.[6] A41D *13/00*; **D05B** *91/04*
U.S. Cl. 2—163 **9 Claims**



1. Hand wear having integral fingertip protection, comprising:
(a) a glove having a plurality of digit receiving receptacles, each receptacle sized to receive a corresponding digit, the digit receiving receptacles formed of a bendable material having a first rigidity;
(b) a plurality of sockets having a second rigidity greater than the first rigidity, a respective socket attached to a corresponding digit receiving receptacle, the sockets including cavities for receiving a distal portion of the corresponding digit receiving receptacle, each socket having a sealed first end and an open second end, each socket having a dorsal wall formed to overlie the corresponding surface of the respective digit receiving receptacle, and a transversely and longitudinally arched palmar wall formed to lie against a tip of the respective digit receiving receptacle, the palmar wall extending outwardly and downwardly from one side of the dorsal wall, the palmar wall having a first thickened area spaced from an intersection of the dorsal wall and the palmar wall, the first thickened area covering the fingerprint region of the respective digit to substantially resist deformation into an adjacent portion of the respective digit receiving receptacle and the dorsal wall and a remaining portion of the palmar wall defining a second area, thinner than the first area, covering the fingernail region and a remaining area of the respective digit.

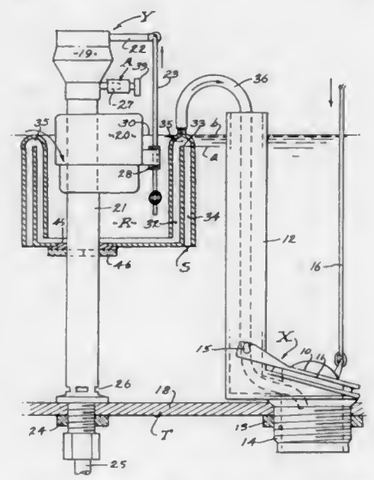
5,661,854
FLEXIBLE HELMET
Richard W. March, II, P.O. Box 264, Franklinton, N.C. 27525
Continuation-in-part of Ser. No. 299,532, Sep. 1, 1994, Pat. No. 5,544,367. This application Aug. 12, 1996, Ser. No. 695,409
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—410 **8 Claims**

1. A flexible protective helmet assembly comprising a plurality of relatively rigid discreet impact resistant and energy absorbent structures arranged into an inner layer of structures, a plurality of relatively rigid impact resistant fixedly attached segments arranged into an outer layer of segments, flexible elastic material fixedly attaching said structures to abutting structures of said inner layer of



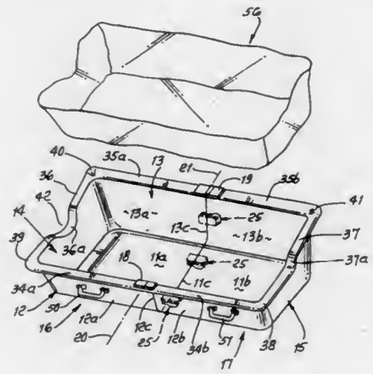
structures and fixedly attaching said segments to said inner layer of structures, said flexible elastic material selected from a group consisting of flexible elastic textile fabric and flexible elastic sheet form material, wherein the upper lateral margins of said structures form a crown area, and wherein means are included fixedly attaching said flexible elastic material to said structures and to said segments, said means including an adhesive chemical compound, whereby said helmet provides a wearer protection from impacts substantially equivalent to that provided by helmets employing and comprising in part substantially unitary relatively rigid outer shells.

5,661,855
RESERVOIR FILL VALVE CONTROL FOR TOILET STORAGE TANKS
John S. Osmond, 2525 14th St., Santa Monica, Calif. 90405
Filed Sep. 11, 1995, Ser. No. 526,381
Int. Cl.[6] E03D *1/00*
U.S. Cl. 4—415 **16 Claims**



1. A reservoir fill valve control system for toilet water storage tanks to prevent continued flow of water from a tank fill valve means as as result of a leaking flush valve or storage tank, the fill valve means being actuated by a reservoir water level responsive means to turn the water ON and OFF at a water shut OFF level below a full level of the reservoir water, and including;
a control reservoir and an inflow-outflow syphon means for filling and depleting said reservoir water and with an inflow-outflow bridge at a water shut OFF level below a full level of storage tank water, for filling said reservoir with storage tank water when it exceeds said shut OFF level and for depleting water from said reservoir when toilet flushing occurs,
the said water level responsive means being responsive to the control reservoir water level for turning ON the fill valve means in response to depletion of water from the control reservoir and alternately for shutting OFF the fill valve means in response to filling of the control reservoir by inflow of storage tank water over said bridge,
the inflow-outflow syphon means having a transfer passage between an inside channel from within the reservoir and over the bridge to an outside channel at the exterior of the reservoir, the bridge level being immediately above the shut OFF level of the control reservoir water, and there being a restricted vent to atmosphere from said passage,
whereby the control reservoir water level is raised to and above said shut OFF level to remain in a passive ready-to-flush condition at the storage tank full water level.

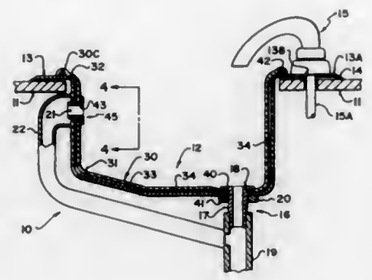
5,661,856
PORTABLE TUB
Dorothy F. Kyte, 3506 Canyon Crest Rd., Altadena, Calif. 91001
Filed Nov. 14, 1995, Ser. No. 558,691
Int. Cl.[6] A47K *3/06*
U.S. Cl. 4—584 **12 Claims**



1. A portable, collapsible bathtub comprising:
a) a foldable tub shell divided into separate sections, each section having a bottom wall, side walls extending upwardly from said bottom wall, and an end wall connected to said side walls and said bottom wall, said bottom and side walls terminating in end edges, said edges being complementarily configured and sealingly engageable with each other,
b) said side walls of each section extending upwardly from said section bottom wall to a side wall terminal end, said terminal ends each being at a different elevation from said bottom wall,
c) said section side walls being hingedly connected to each other such that in an unfolded use position of the bathtub, said edges are substantially engaged and said shell lies flat on a horizontal surface and is upwardly open to receive water therein and in a folded collapsed position said sections are folded such that said terminal ends are adjacent one another, and
d) a hinge provided on each terminal end, bridging said edges, each hinge having an axis, said axes being arranged so as to substantially intersect.

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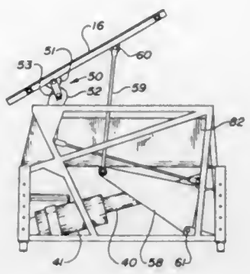
5,661,857
WASH BASIN REPAIR BY A MOLDED INSERT
Vernon Walter McLean, Box 950, Estevan, Saskatchewan, Canada, S4A 2A7
Filed Jul. 31, 1995, Ser. No. 509,342
Int. Cl.[6] A47K *1/06*
U.S. Cl. 4—657 13 Claims



1. A wash basin comprising:
a horizontal top wall having an upper surface;
a bowl recessed from the top wall so as to depend downwardly therefrom and to define a concave inner surface for receiving and containing washing water;
a drain opening at a bottom of the bowl;
an overflow opening in the bowl located below the top wall and above the bottom;
a separate insert previously molded from a sheet of plastics material covering the inner surface of the bowl and a part of the upper surface of the top wall surrounding the bowl;
the insert having a drain opening aligned with the drain opening of the bowl and an overflow opening aligned with the overflow opening of the bowl;
a drain fitting for connection to a drain line having a pipe extending through the drain opening of the insert and through the drain opening of the bowl and a flange at the top of the pipe engaging an upper surface of the insert surrounding the drain opening of the insert;
and an overflow fitting formed from a strip of flexible material of L-shaped cross section which is cut to a length equal to the circumference of the overflow opening of the insert, is curved to follow the shape of the overflow opening and to define abutting ends of the strip, and is inserted into the overflow opening so as to define a pipe portion extending through the overflow opening of the insert and through the overflow opening of the bowl and a flange at an end of the pipe portion inside the insert.

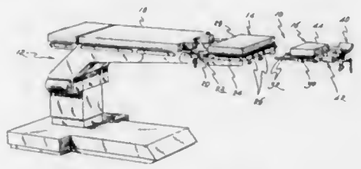
5,661,858
COMPACT POWERED LIFT TOILET SEAT
Edward L. House, 1305 Briar Dr., Batesville, Ark. 72501; Johnny White, 411 Main, Newport, Ark. 72112; Howard L. House, 1775 Highland Rd., Batesville, Ark. 72501; Greg Dollins, 303 W. Center, Apt. 12, Searcy, Ark. 72143, and Ronald Lucy, P.O. Drawer 2236, Batesville, Ark. 72503
Filed Aug. 2, 1996, Ser. No. 691,518
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—667 1 Claim

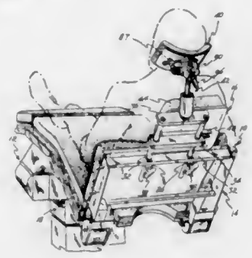
1. A powered lift toilet, comprising:
a toilet seat having a frontward portion and a rearward portion;
a frame for supporting said toilet seat in an appropriate position for use by a user;
cam means having first and second ends and having a pivot point therebetween for rotation about said pivot point in a vertical plane, said pivot point located at an upper front edge of said support frame;
a sun and planet gear set having a sun gear center of rotation and a planet gear center of rotation;



said sun gear being affixed to said second end of said cam means;
said planet gear being affixed to a front underside of said toilet seat;
means attached to said first end of said cam means for rotating said cam means about said pivot point; and
means attached to a rearward point of said toilet seat for raising said rearward point of said toilet seat simultaneously with rotation of said cam means, whereby said toilet seat is moved upward and forward while simultaneously said toilet seat is revolved forwardly such that said rearward point of said toilet seat is moved upward and forward relative to the frontward portion.

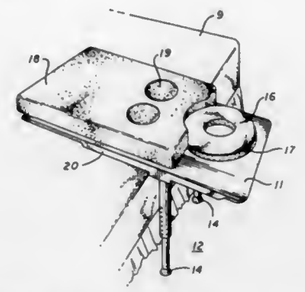
5,661,859
SHOULDER ARTHOSCOPY ATTACHMENT
James A. Schaefer, Versailles, Ohio, assignor to Midmark Corporation, Versailles, Ohio
Filed Oct. 20, 1995, Ser. No. 546,275
Int. Cl.[6] A61G *13/00*
U.S. Cl. 5—621 17 Claims





12. A shoulder arthroscopy attachment comprising:
a frame;
an upper back support mounted on said frame for supporting an upper back portion of a patient;
a head rest mounted on said frame for supporting a head of a patient; and
wherein said upper back support is supported for movement relative to said frame to selectively expose a shoulder of a patient for a shoulder arthroscopy operation, said upper back support remaining attached to said frame during said movement of said upper back support.

5,661,860
EYE SURGERY RECOVERY APPARATUS
Alfred J. Heltz, 2950 E. Dover, Mesa, Ariz. 85213
Filed Sep. 29, 1995, Ser. No. 536,001
Int. Cl.[6] A47C *20/00*
U.S. Cl. 5—632 9 Claims



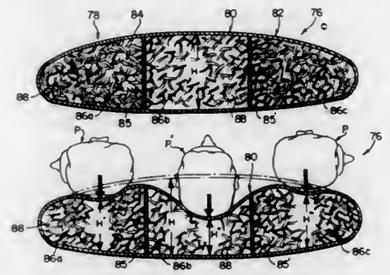
1. An apparatus in combination with a bed for lying prone comprising:
a) a substantially flat, rigid, planar member for supporting a person's head and torso in a same plane, the planar member includes a first end, a second end coplanar with the first end, and an opening proximate the first end for receiving the person's face, the planar member rests on the bed in a substantially horizontal plane with the first end extending beyond an edge of the bed;
b) at least one projection substantially orthogonal to the planar member proximate the first end wherein the projection rests on a support surface carrying the bed thereby supporting the planar member in spaced relation to the support surface and supporting the planar member in substantially horizontal alignment with the bed;
c) at least one face cushion having an opening for receiving the person's face, the cushion resting on the planar member such that the opening of the cushion is substantially aligned with the opening in the planar member; and
d) a torso cushion approximately as long and as wide as the person's torso rests on the planar member; wherein the person lies prone on the apparatus with the torso resting on the torso cushion and the face resting on the face cushion such that the head and back are in substantially linear alignment.

5,661,861
TORSO SUPPORTING METHODS
Susan H. Matthews, 29753 Canterbury Cir., Evergreen, Colo. 80439, assignor to Susan H. Matthews, Evergreen, Colo.
Filed Jan. 24, 1996, Ser. No. 590,653
Int. Cl.[6] A47G *9/00*
U.S. Cl. 5—633 15 Claims



1. A method for providing support to a person's lower torso, comprising:
providing a support pillow comprising a resilient cushion body having a medial region and first and second opposing cantilever arms extending from the medial region, said cantilever arms having respective first and second end portions remote from the medial region, wherein the cantilever arms are curved about a vertical axis to define a substantially toroidal configuration for the cushion body and to position the first and second end portions in a confronting touching relation to one another, said cantilever arms and medial region cooperating to define a generally circular open well, wherein the open well has a diameter in the range from about 4 inches to about 8 inches when the first and second ends are adjacent each other; and
separating the first and second ends from each other and placing the support pillow around the person's lower torso, with the first and second end portions of the cantilever arms being at the front of the person's torso, and with the medial region of the support pillow being adjacent the person's lower back, wherein the cantilever arms are biased around the person's torso sufficient to secure the support pillow to the person's torso and to hold the support pillow vertically positioned relative to the person's torso while the medial region is positioned against the person's lower back.

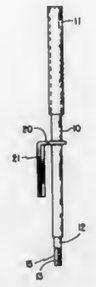
5,661,862
MULTITIERED PILLOW CONSTRUCTION
James D. Ryndak, 3 Hickory La., Barrington Hills, Ill. 60010
Filed Jul. 25, 1996, Ser. No. 687,047
Int. Cl.[6] A47G *9/00*
U.S. Cl. 5—636 12 Claims



1. A multitiered pillow comprising an elongated compressible pillow body having a width, a length and a depth of the pillow body defining a pillow top and a pillow bottom and at least first and second tiers, each tier transversely extending along a different longitudinal region of the pillow, the pillow body length being greater than the pillow body width, the first and second tiers each having an uncompressed height that is about the same and the second tier having an effective compressed height from the pillow bottom of from about two to about three times the effective compressed height of the first tier from the pillow bottom, the effective compressed height of the first tier being suitable for supporting a person's head while in a prostrate position and the effective compressed height of the second tier being suitable for supporting a person's head while laying sideways.

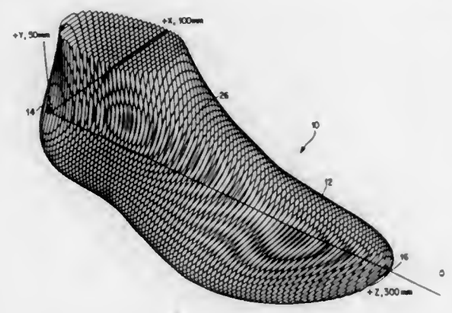
5,661,863
TOP REMOVING TOOL
Willard L. Tracy, 1000 N. Covell Apt. 8, Sioux Falls, S. Dak. 57104, and Andrew Mouw, Sr., P.O. Box 6, Sibley, Iowa 51249
Filed Jan. 16, 1996, Ser. No. 585,947
Int. Cl.[6] B67B *7/00*
U.S. Cl. 7—156 3 Claims

1. A tool for removing a lid having a rim crimped onto a can, said rim being formed with a series of holes therein, said tool



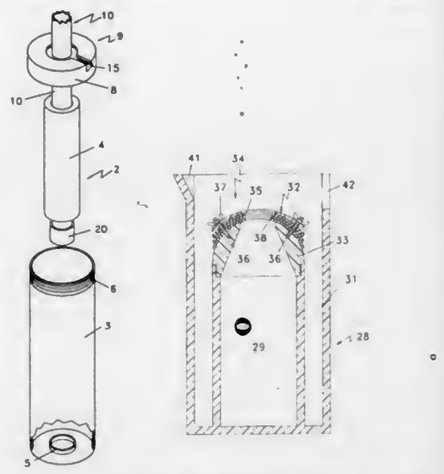
comprising a bar member having a handle and a tip; said tip having a substantially cylindrical cross section with a longitudinally extending cutting edge; said tip adapted to be inserted into any of said holes and then moved over said lid to cut through said holes as said tool is pivoted toward a center of said lid; an arcuate flange secured intermediate said handle and said tip whereby said flange engages an underside of said rim to remove said lid by a prying action.

5,661,864
LAST FOR AN ARTICLE OF FOOTWEAR AND FOOTWEAR MADE THEREFROM
Gordon A. Vallant; Stephen Michael Vincent, both of Beaverton, and Perry W. Auger, Tigard, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Mar. 10, 1995, Ser. No. 402,033
Int. Cl.[6] A43D *3/00;* **A43B** *5/00*
U.S. Cl. 12—133 R **13 Claims**



1. A last for making an article of footwear, said last comprising:
a forefoot portion;
a cone portion rearward of said forefoot portion; and
a heel portion rearward of said cone portion;
wherein said last has dimensions defined by a plurality of cross-sectional contours extending from proximate a proximal end of said heel portion to proximate a distal end of said forefoot portion;
wherein said last dimensions are in accordance with or proportional to said plurality of cross-sectional contours shown in FIGS. 13–97.

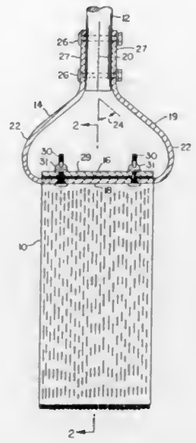
5,661,865
CLEANER FOR PAINT ROLLERS
Glyn W. Humphrey, 3309 Springcrest Dr., Louisville, Ky. 40241
Filed Jan. 3, 1996, Ser. No. 582,577
Int. Cl.[6] B08B *3/04;* **B05C** *21/00*
U.S. Cl. 15—3 **14 Claims**



1. An apparatus for cleaning a compressible portion of a fluid transfer member comprising:
an elongated and longitudinally extending fluid receptacle means having opposite first and second ends and an inner peripheral wall sized to contain a paint receiving and cleaning solvent and maintain said compressible portion of said fluid transfer member in spaced relation from said inner peripheral wall, said fluid receptacle means including an associated receptacle aperture extending inwardly from said inner peripheral wall at one end thereof and sized to allow said compressible portion of said fluid transfer member to pass therethrough into and out of said fluid receptacle means in spaced relation to said inner peripheral wall;
said associated receptacle aperture extending inwardly from said inner peripheral wall adjacent one end thereof including an apertured flexible rim means surrounding and including means for removably fastening the flexible rim means to said fluid receptacle means and sized to flexibly and fully contact to compress the compressible portion of said fluid transfer member to extract liquid therefrom when passed therethrough; and,
an actuator means cooperable with said fluid transfer member to more said compressible portion of said fluid transfer member in either direction through said apertured flexible rim means.

5,661,866
MOP ASSEMBLY HAVING A RIGID CLAMP TYPE SUPPORT FOR THE MOP ELEMENTS
Gary Cameron, 9 Jak-Len Dr., Salisbury, Mass. 01952
Filed Feb. 12, 1996, Ser. No. 606,011
Int. Cl.[6] A47L *13/24*
U.S. Cl. 15—147.1 **1 Claim**

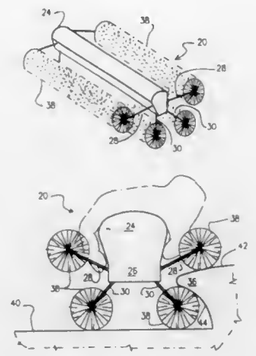
1. A mop assembly comprising:
a flexible dirt pick-up means that includes a plurality of closely spaced rope elements having water-absorbent properties;
an elongated handle having side surfaces, and a longitudinal axis;
a mop head removably secured to one end of said handle for supporting said dirt pick-up means, whereby the handle can be manipulated to guide the dirt pick-up means across a dirt-laden floor surface;



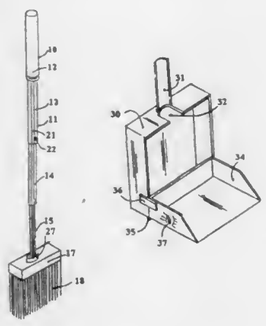
said mop head comprising a triangularly-shaped support bar that includes a central linear bar portion extending transverse to the handle longitudinal axis, two convergent arm portions extending from opposite ends of said central bar portion to the side surfaces of said handle, and two terminal end portions (27) extending from said convergent arm portions in facial engagement with said side surfaces of said handle;
a clamping element coextensive with said central bar portion; and means for drawing said clamping element toward said central bar portion;
said closely spaced rope elements having sections thereof, extending between said central bar portion and said clamping element, whereby the dirt pick-up means is clamped to the mop head;
each convergent arm portion comprising an arcuate curved section joined to said central bar portion, each curved section having a center of curvature located a substantial distance from said linear bar portion, whereby each curved section has a sufficient radius of curvature to prevent local stress points in said triangularly-shaped bar;
said triangularly-shaped support bar being a unitary one piece bar having a rectangular cross-section; the rectangular cross-section of the support bar having its major dimension transverse to the plane of the support bar and its minor dimension parallel to the plane of the support bar; and
said clamping element being a rigid rail having a rectangular cross-section located within the triangular-shaped bar; and said means for drawing said clamping element toward said central bar portion comprises two bolts extending from said central bar portion through said rigid rail, and nuts threaded onto said bolts against said rail.

5,661,867
POOL TABLE BRUSH
LaMar Elliott, 2330 S. Kearney, Denver, Colo. 80222
Filed Jul. 16, 1996, Ser. No. 680,677
Int. Cl.[6] A46B *3/18;15/00*
U.S. Cl. 15—160 **14 Claims**

1. A brush for cleaning a pool table, the brush comprising:
a handle having:
a first mounting means for supporting bristles and a second mounting means for supporting bristles, the first mounting means being substantially parallel to and projecting from said handle, and the second mounting means being substantially parallel to and projecting from said handle, the first mounting means being spaced apart and diverging from the second mounting means, and the first mounting means projecting a greater distance from said handle than the second mounting means; and
bristles projecting from the first mounting means for supporting bristles and from the second mounting means for supporting bristles.

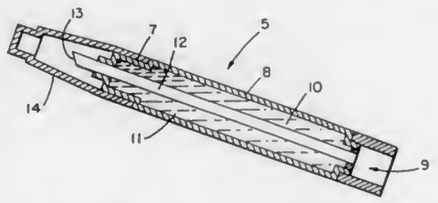


5,661,868
PORTABLE, COLLAPSIBLE BROOM
D'Ann S. Panagakos, 7266 Pajarito Rd. NE.; Jo Beth Aldrich, 1504 Salt River Loop NE., and Peter E. Panagakos, 7266 Pajarito Rd. NE., all of Rio Rancho, N. Mex. 87124
Filed Oct. 4, 1996, Ser. No. 726,087
Int. Cl.[6] A46B *15/00;* **A47L** *13/52*
U.S. Cl. 15—184 **17 Claims**



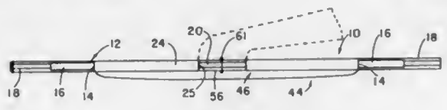
1. A portable, collapsible broom, comprising:
a telescoping handle means that is movable between a fully extended position and a collapsed position;
means for maintaining said handle means in said fully extended position thereof as well as in said collapsed position thereof;
a brush portion disposed at one end of said handle means;
a dust pan that is detachably carried by said handle means; and
a flap hingedly connected to said dust pan such that in a closed position said dust pan and said flap thereof cover said brush portion.

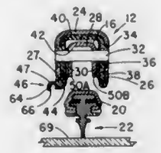
5,661,869
ELECTRICAL CONTACT CLEANER
Kenneth M. Grout, Littleton, N.H., assignor to Tender Corporation, Littleton, N.H.
Division of Ser. No. 204,464, Feb. 28, 1994, Pat. No. 5,607,512, which is a division of Ser. No. 924,680, Aug. 3, 1992, abandoned. This application Nov. 13, 1996, Ser. No. 748,283
Int. Cl.[6] B08B *13/00*
U.S. Cl. 15—209.1 7 Claims



1. An apparatus for cleaning electrical contact surfaces of members selected from the group consisting of batteries and battery mating contacts, the apparatus comprising:
a housing defining a wicking reservoir; a liquid composition comprising a volatile cleaning agent and an oxidation-occluding agent; an abrasive wicking material having a first portion in direct contact with said composition and a second portion protruding from an opening in said housing; and a cap which interfits with said housing.

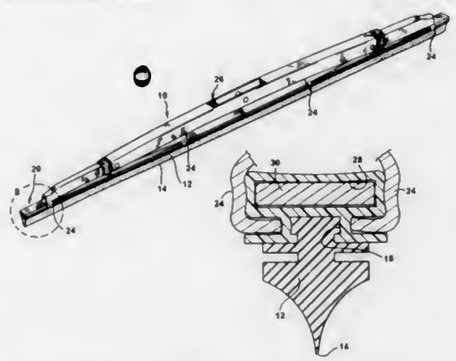
5,661,870
MOTOR VEHICLES WINDSCREEN WIPER COMPRISING A SPRAY LINE ON THE WIPER BLADE
Jean-Pierre Eustache, Antony, and Jean-Louis Roumegoux, Paris, both of France, assignors to Valeo Systemes d'Essuyage, La Verriere, France
PCT No. PCT/FR96/00074, § 371 Date Sep. 19, 1996, § 102(e) Date Sep. 19, 1996, PCT Pub. No. WO96/22206, PCT Pub. Date Jul. 25, 1996
PCT Filed Jan. 17, 1996, Ser. No. 716,383
Claims priority, application France, Jan. 19, 1995, 95 00804
Int. Cl.[6] B60S *1/48;1/52;1/38*
U.S. Cl. 15—250.04 11 Claims





1. A screen wiper assembly for movement over a swept glass surface of a motor vehicle, said assembly comprising:
an elongated wiper arm;
an elongated screen wiper blade supported by said arm;
an elongated ramp having spray means thereon for wetting the swept glass surface, said ramp extending substantially along a lateral face of the screen wiper blade, said screen wiper blade includes an articulated pressure distribution structure which comprises a pair of intermediate yokes, said intermediate yokes articulated on an elongated main yoke about a pair of pivot pins, said pivot pins extend substantially perpendicular to the longitudinal direction of the main yoke and extend through, respectively, two side wing portions of the main yoke and two parallel side portions of the intermediate yoke; and
a pair of noise deadening elements, each having two parallel side walls, are interposed between the side wing portions of the main yoke at opposite ends, respectively, and the parallel side portions of the intermediate yokes, and through which the pivot pins pass, the wetting ramp extends along one of the side wing portions of the main yoke, and the ramp is formed integrally by moulding of one piece with the noise deadening elements.

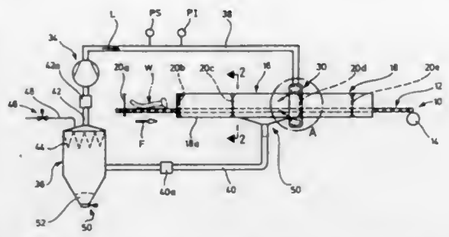
5,661,871
WINDSHIELD WIPER BLADE WITH REINFORCING CORE
Marcello Scorsiroli, Turin, Italy, assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 28, 1996, Ser. No. 671,963
Claims priority, application Italy, Jul. 6, 1995, T0950157 U
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.452 5 Claims



1. A windshield wiper blade for vehicles, comprising:
a wiper element having a lip and a base portion;
a wiper holder having a longitudinal groove that receives and restrains the base portion of said wiper element and which has a longitudinal cavity;
a metal reinforcing core disposed in the longitudinal cavity; and
an arcuate support structure with restraining jaws that grip the wiper holder at predetermined points,
wherein the wiper holder has two longitudinal lateral grooves that are engaged by restraining jaws of the support structure, and
wherein at least two restraining jaws of the support structure exert on the wiper holder a clamping force which deforms the holder such that the holder also clamps the wiper element.

5,661,872
PROCESS AND APPARATUS FOR CLEANING WORKPIECES BY MEANS OF A JET OF COMPRESSED AIR
Otfried Meyer, Nideggen, and Karl-Heinz Wüller, Simmerath, both of Germany, assignors to Durr GmbH, Stuttgart, Germany
Filed Jul. 17, 1995, Ser. No. 502,898
Claims priority, application Germany, Jul. 21, 1994, 44 25 765.1
Int. Cl.[6] A47L *5/00*
U.S. Cl. 15—309.2 11 Claims

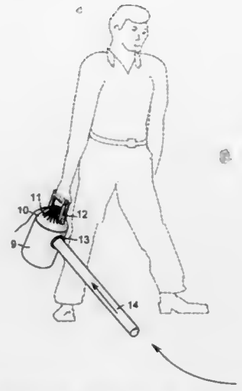
1. Apparatus for cleaning workpieces by means of at least one jet of air, said apparatus comprising:



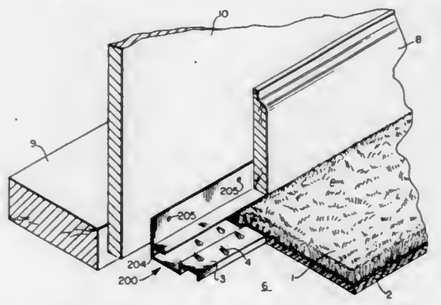
a longitudinal channel for passing workpieces therethrough in a workpiece travelling direction, said channel having two open ends and a cleaning channel section between said ends, said cleaning channel section having sidewalls circumscribing an interior of said channel section in a circumferential direction thereof and defining an inside cross section of said channel section, said inside channel cross section being at least approximately constant along said cleaning channel section;
an endless conveyer with an endless conveyer element extending through said channel for carrying workpieces arranged separately from one another through the channel;
drive means for causing said endless conveyer element to travel through the cleaning channel section in said workpiece travelling direction;
partitions attached to said endless conveyer element for moving the partitions through the channel, said partitions extending generally transversely to a longitudinal direction of said conveyer element and being disposed one behind the other along said conveyer element in such spaced relationship that at least one workpiece to be cleaned can be disposed between two consecutive partitions, said partitions having a shape matching with said inside channel cross section such that two consecutive partitions travelling through the cleaning channel section, together with said channel sidewalls, form a cleaning chamber travelling through the cleaning channel section and being at least essentially air-tight;
at least one blast nozzle for directing an air jet into the interior of the cleaning channel section and onto the workpieces to be cleaned, said blast nozzle being arranged at said cleaning channel section such as to avoid a collision between said travelling partitions and said blast nozzle;
a high-pressure air pump for feeding said blast nozzle with pressurized air;
a waste air outlet opening in at least one of the sidewalls of said cleaning channel section;
a filter for retaining solid impurity particles blown off the workpieces to be cleaned, and
air conducting means between an air outlet of said pump and an air inlet of said blast nozzle, between said waste air outlet opening of said cleaning channel section and a waste air inlet of said filter, and between an air outlet of the filter and an air inlet of said pump for providing an air circulation system.

5,661,873
ANIMAL WASTE VACUUM WITH DISPOSABLE PICKUP TOOL & DISPOSABLE CONTAINER
Ted Michael Karet, 6025 S. Routt St., Littleton, Colo. 80127
Filed Aug. 22, 1995, Ser. No. 517,849
Int. Cl.[6] A47L *5/24*
U.S. Cl. 15—344 4 Claims

1. A vacuum system comprising:
a motor fan unit having a fan rotatably mounted in a fan scroll for drawing air from an inlet and for exhausting the air to an outlet; a pick up tube having a first opening at one end and a second opening at the other end, said openings being located in planes substantially perpendicular to the longitudinal axis of said pick up tube; a stiff thin walled container with an open top and closed bottom and a hole in the wall of said container whose center is at approximately a distance of the diameter of the pick up tube from the edge of the open top so that the edge of the opening is located near the upper edge of the open top of the container and said hole is of sufficient diameter to accept and secure a rubber grommet with an inside diameter just smaller than that of the pick up tube; a rubber grommet with an inside diameter of just smaller than the pick up tube used as a means for attaching and creating an airtight seat between the container and the pick up tube and yet allow for the repetitive insertion and removal of the pick up tube through the grommet and into the container; a mounting cowl and motor housing that has means for supporting the motor fan unit and is constructed of a suitable material so as to be pressed onto and removed by hand from the open lip of the aforementioned container producing an airtight seal and a secure attachment when attached and an easy separation by hand when needed to be separated for various purposes including emptying the container; a filtering device of suitable size and volume and mesh that allows the sufficient amount of airflow to pass and yet keep any small particles of the intended waste and debris entrapped, said filtering device spans the inlet to the fan motor housing and is kept in place by friction between itself and the walls of the inlet housing and a plastic filter gate; a plastic filter gate located between the aforementioned filtering device and the fan at the inlet of the motor fan unit being a permanent integral part of the inlet.



5,661,874
CARPET FASTENING SYSTEM
Lawrence John Latour, 825 Jackson, Thibodaux, La. 70301
Filed Jun. 19, 1992, Ser. No. 904,047
Int. Cl.[6] A47G *27/04*
U.S. Cl. 16—4 22 Claims



1. A carpet fastening system for securing carpet about the periphery of a floor adjacent to a wall made up of a wall board having a front side, and a baseboard having a back side and a

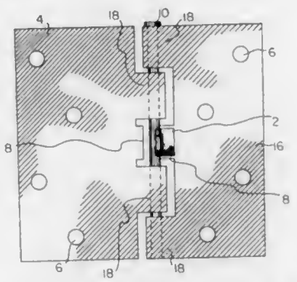
bottom underside, which baseboard is separately fastened on the front side of the wall board after the wall board has been installed, said carpet fastening system comprising:

a base portion having a series of protrusions engageable with and extendable into the underside of the carpet and capable of holding the carpet in position on the floor;

a flat, wall engaging portion affixed to said base portion and being positionable outboard of and above said base portion in juxtaposition to and in contact with the front side of the wall board and capable of affixing said base portion and said wall engaging portion to the Wall board of the wall, while said base portion holds the carpet in place on the floor; and

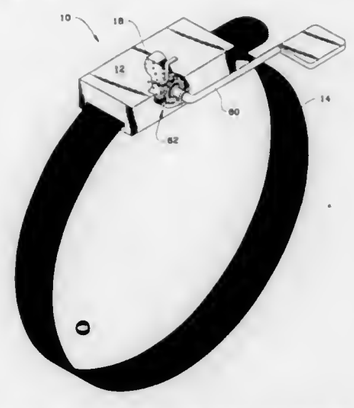
a bridging portion between said wall engaging portion and said base portion, said flat, wall engaging portion also including a substantially flat, horizontal component spaced up from and extending over said bridging portion forming a self-supporting platform capable of interfacing with the bottom underside of the baseboard before the baseboard is fastened to the wall board, said flat, wall engaging portion being located above said horizontal component forming said platform, said base portion, said bridging portion, said horizontal component, and said flat, wall engaging portion being made of a single, unitary, strip of material, with the exterior edge of the strip first forming said base portion, an intermediate, immediately adjacent part of said strip forming said bridging portion with a vertically extending portion, which then extends out into said horizontal component and then up above said horizontal component into said flat, wall engaging portion, with said flat, wall engaging portion ultimately being positionable between the front side of the wall board and the back side of the baseboard after the baseboard is attached on the wall board.

5,661,875
DOOR HINGE WITH CLIP-ON STOPS
Rufus B. Overcash, and Louisa C. Overcash, both of 6711 Pine Lake La., Charlotte, N.C. 28227
Filed Aug. 27, 1996, Ser. No. 697,587
Int. Cl.[6] E05F *5/02*
U.S. Cl. 16—82 **3 Claims**



1. A door hinge for use in selectively limiting the maximum opened position of a door to which it is attached, said door hinge comprising a hinge pin; a pair of hinge plates connected together by said hinge pin, each of said hinge plates having a plurality of mounting holes therethrough and a connecting edge, each of said connecting edges having a plurality of protrusions depending therefrom and at least one stop projection also depending therefrom, said stop projections on each of said hinge plates being in a position opposed to a stop projection on the connecting edge of the other of said hinge plates, each of said protrusions having an aperture therethrough of sufficient dimension for insertion therethrough of said hinge pin, each of said stop projections having a leading edge and being positioned at an oblique angle to the one of said hinge plates to which it is attached; and said door hinge further comprising a plurality of removable clip-on stops each having a block and a U-shaped spring clip depending from said block, said blocks having different length dimensions, a selected one of said clip-on stops being attached to one of said stop projections on one of said hinge plates so that when said hinge pin is inserted through said apertures to connect one of said connecting edges to the other of said connecting edges said clip-on stop will oppose said leading edge on the opposed one of said stop projections to define the maximum opened position of a door to which said door hinge is attached, and when it is desired for said door to have a different maximum opened position a stop having a block with a different length dimension can be selected and positioned over one of said stop projections to define said different maximum opened position for said door.

5,661,876
HOSE CLAMP
Michael Goldenberg, 12791 Oak Knoll Dr., Palm Beach Gardens, Fla. 33418
Filed Jul. 18, 1996, Ser. No. 684,296
Int. Cl.[6] F16L *33/02*
U.S. Cl. 24—19 **19 Claims**



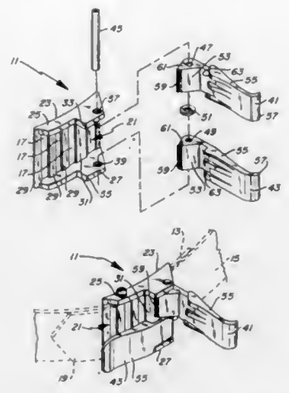
1. A clamping apparatus for constrictably clamping an object by using a variable length band, said apparatus comprising: a housing means; a flexible band means constructed of a fibrous mesh material for encircling an object to be clamped; a cylindrical roller having an inner surface spinably mounted in said housing means, an outer surface having a plurality of spiked elements for engaging said band; and a turning mechanism for rotation of said spinably mounted roller; wherein said band means facilitates non-slip engagement with said roller spikes when said band is advanced through said housing means allowing engagement of said spikes on said roller, with forcible constriction of a clamped object thereby occurring.

5,661,877
BELT OR WEBBING BUCKLE HAVING PLURAL INDEPENDENTLY OPERABLE SECUREMENT AND RELEASE MECHANISMS
Ronald D. Bloomer, 7130 Cedarwood Clr., Boulder, Colo. 80301
Filed Oct. 16, 1995, Ser. No. 543,340
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—170 **17 Claims**

1. A buckle for releasably securing an end portion of at least a first belt or webbing comprising:

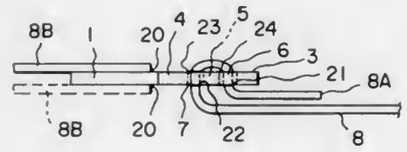
a mount having first and second sides spaced from one another with a path defined therebetween and adapted for movement thereacross of the end portion of the belt or webbing; and

first and second members each having a securement means, each of said members of a size selected to accommodate pivotable



connection adjacent to one another between said spaced sides of said mount with said securement means of said first member positioned between said securement means of said second member and said first side of said mount and with said securement means of said second member positioned between said securement means of said first member and said second side of said mount, said securement means of said members being adjacent to said path of said mount and pivotable in the same direction between securing and releasing positions independent of one another, whereby said buckle is adapted so that the end portion of the belt or webbing is secured by holding the end portion of the belt or webbing at said path of said mount with said securement means of either one of said first and second members when at said securing position, but whereby said buckle is adapted to release the end portion of the belt or webbing from said buckle once secured only by movement of said securement means of both said first and second members to the releasing position.

5,661,878
STRAPPING SYSTEM AND BUCKLE THEREFOR
Walter M. Johnson, III, Tarpon Spring, Fla., assignor to Net/Werk/USA, Inc., New York, N.Y.
Filed Jul. 22, 1996, Ser. No. 685,971
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—200 **3 Claims**



1. A buckle formed as a unitary structure consisting of:

an end portion formed of two substantially flat surfaces, one of which is prepared for attaching a strap; and

a main portion connected to said end portion and having a substantially flat top surface and a substantially flat bottom surface, and consisting of two parallel parts connected perpendicularly to two parallel outer legs and a parallel center leg disposed between said two parallel outer legs thereby forming a pair of gaps therebetween;

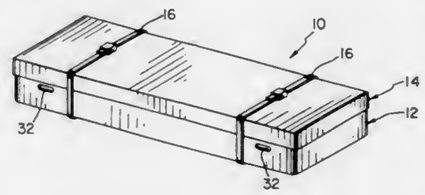
said center leg being substantially rectangular in cross section and having two sides thereof of rough surfaces and three edges thereof formed by sides thereof, said three edges being at at substantially right angles;

one of said two parallel outer legs having an edge formed by sides thereof, said edge being at substantially right angles;

said gaps being of a width dimension substantially matching the width dimension of said strap, and of a thickness dimension substantially matching the thickness dimension of said strap;

wherein one end of said strap is threaded through said gaps as follows: first, under the bottom surface of said center leg, then, through said gap formed between said center leg and an outer parallel leg, then, above the top surface of said center leg, then through said gap formed between said center leg and the other of said two parallel outer legs, and then, below the bottom surface of said other of said two parallel outer legs, and between said bottom surface and said strap, so that said right angled edges contact and securely hold said strap.

5,661,879
CREMATION BOX AND SYSTEM
Dean A. Kelly, 3300 Montura Dr., Bonita Springs, Fla. 33923
Filed Jun. 9, 1995, Ser. No. 489,169
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—2 **1 Claim**



1. A method of loading a cremation box comprising:

providing a cremation box having a side panel that is foldable into substantially coplanar relationship with the box bottom panel;

folding said side panel down to permit access to the interior of the box through a side;

locating a body into the interior of the box by passing the body through the open side of the box adjacent the folding side panel; and

reverse folding the side panel to reform the cremation box back into a complete box form.

5,661,880
METHOD AND APPARATUS FOR PRODUCING A MULTIFILAMENT YARN BY A SPIN-DRAW PROCESS
Heioz Schippers, and Erich Lenk, both of Remscheid, Germany, assignors to Barmag AG, Remscheid, Germany
Filed Feb. 9, 1996, Ser. No. 598,839
Claims priority, application Germany, Feb. 10, 1995, 195 04 422.3
Int. Cl.[6] D01D *4/02;5/08;10/02*
U.S. Cl. 28—240 **16 Claims**

1. A method of producing a multifilament yarn from a heated thermoplastic melt comprising the steps of

extruding the heated melt through a spinneret at a predetermined weight flow rate so as to produce a plurality of advancing filaments, and including applying additional heat to the melt in the spinneret and/or immediately upon its exit from the spinneret,

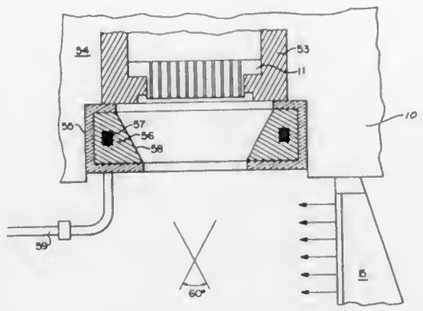
gathering the advancing filaments to form an advancing yarn,

withdrawing the advancing yarn from the spinneret at a speed of at least about 2000 m/min so as to at least partially orient the molecules of the yarn,

drawing the advancing yarn between two feed rolls so as to impart a predetermined draw ratio, and

winding the advancing yarn into a yarn package,

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wherein the withdrawing step and the drawing step include adapting the withdrawal speed and/or the draw ratio to the changed physical relationship between the withdrawal speed and draw ratio resulting from the amount of heat applied in the step of applying additional heat to the melt, and

wherein the extruding step includes adapting the weight flow rate of the melt to the adapted withdrawal speed and/or the adapted draw ratio such that a predetermined total denier is attained.

5,661,881

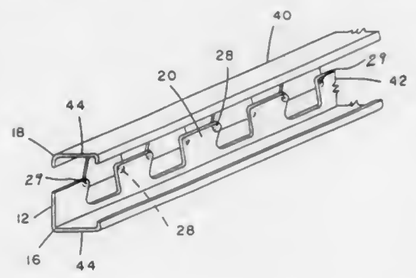
METHOD OF MAKING FRAMING COMPONENTS OF EXPANDED METAL

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Division of Ser. No. 189,051, Jan. 31, 1994, Pat. No. 5,524,410. This application Jan. 30, 1996, Ser. No. 593,820

Int. Cl.[6] B21D *31/04*

U.S. Cl. 29—6.1 **10 Claims**



1. A method of making an expanded metal structural member, comprising the steps of:

severing an elongated strip of sheet metal along a sinuous shear line, thereby forming two substantially identical halves of said strip, with each half including a side portion connected to a continuously repeating pattern of keystone-shaped tabs along said shear line, with each of said tabs having a relatively wide outer edge and a relatively narrow inner end, separating said halves by moving said halves opposite one another until outer corners of said tabs of one of said halves overlap corresponding outer corners of said tabs of the other of said halves, and then affixing said overlapping corners together.

5,661,882

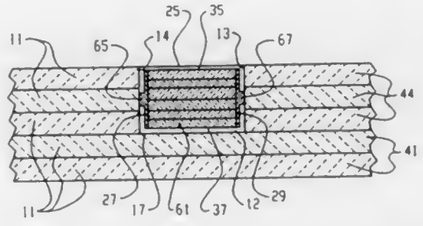
METHOD OF INTEGRATING ELECTRONIC COMPONENTS INTO ELECTRONIC CIRCUIT STRUCTURES MADE USING LTCC TAPE

John H. Alexander, Goleta, Calif., assignor to Ferro Corporation, Cleveland, Ohio

Filed Jun. 30, 1995, Ser. No. 497,239

Int. Cl.[6] H01G *4/12*

U.S. Cl. 29—25.42 **8 Claims**



1. A method of producing a low temperature cofired monolithic electronic structure having one or more electronic components integrated therein comprising the steps of:

A. forming a green circuit component by a method comprising the steps of:

i. providing multiple layers of a green dielectric composition;

ii. forming a metallization pattern on at least one of the layers of green dielectric composition;

iii. stacking and laminating the metallized layers of green dielectric composition;

B. providing a stack of green low temperature cofired ceramic dielectric tape having an opening formed in the stack for receiving the green circuit element, at least one layer of said dielectric tape having an unfired metallized circuit path formed along at least one side of such one layer;

C. placing the green circuit component in the opening in the stack to form a structure; and

D. laminating the structure at a pressure of at least 1000 psi and a temperature of at least 20° C. and then firing the structure so as to provide the cofired monolithic electronic structure.

5,661,883

MACHINE TOOL HAVING REVOLVABLE SPINDLES

Katsuhiro Kajiura, 3-1, Yashiki 4-chome, Narashino-shi, Japan

PCT No. PCT/JP94/01988, § 371 Date Aug. 14, 1995, § 102(e) Date Aug. 14, 1995, PCT Pub. No. WO95/14378, PCT Pub. Date Jun. 1, 1995

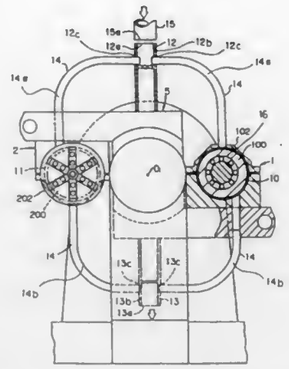
PCT Filed Nov. 25, 1994, Ser. No. 481,283

Claims priority, application Japan, Feb. 15, 1994, 6-18153

Int. Cl.[6] B23B *19/02;* **B23C** *1/04;5/28*

U.S. Cl. 29—38 B **17 Claims**

1. A machine tool comprising: first and second revolvable work spindles arranged in parallel and each having an end portion for supporting a work piece; a first tool disposed opposite to the end of the first work spindle; a second tool disposed opposite to the end of the second work spindle; revolving means for revolving the work spindles about a central revolving axis to place the end of the first work spindle opposite to the second tool and the end of the second work spindle opposite to the first tool; cooling jackets arranged on the outer peripheral surfaces of respective ones of the work spindles and being supplied with a coolant; a pair of inlet and outlet connections revolved integrally with the work spindles and arranged on opposite sides of the central revolving axis; connecting pipes for connecting the inlet and outlet connection on one side of the central revolving axis to the inlet and outlet connection on the opposite side of the central revolving axis through the cooling



jackets; and coolant supplying means for supplying a coolant to the inlet and outlet connections.

5,661,884

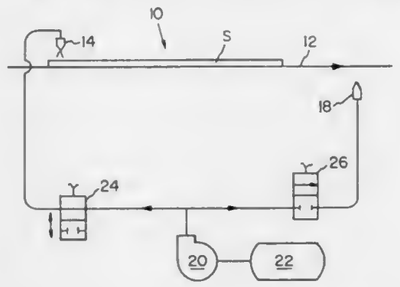
OFFSET HIGH-PRESSURE WATER DESCALING SYSTEM

John E. Thomas, Pittsburgh, Pa., assignor to Tippins Incorporated, Pittsburgh, Pa.

Filed Feb. 20, 1996, Ser. No. 603,326

Int. Cl.[6] B21B *45/04;* **B08B** *3/02*

U.S. Cl. 29—81.08 **19 Claims**



1. A method of descaling metal product in a hot strip or plate mill, said method comprising the steps of:

passing said metal product along a pass line;

descaling a first surface of said metal product using a first descaling means; and

sequentially descaling a second surface of said metal product which is opposed from said first surface using a second descaling means, wherein said first descaling means and said second descaling means act by impinging a descaling substance against the surface of said metal product, wherein action of said first descaling means alternates with action of said second descaling means such that only one of said first and second descaling means is operational at a time.

5,661,885

VALVE-SPRING COMPRESSING TOOL

Carl J. Donato, 15 Edwin Rd., Morris Plains, N.J. 07950

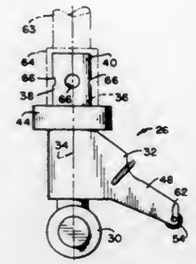
Filed Dec. 15, 1995, Ser. No. 573,072

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—220 **9 Claims**

1. A valve spring compressing tool, comprising:

a housing; wherein



said housing has a longitudinal axis; and

said housing has a bore, extending axially thereof;

a shaft, disposed in said bore, and having opposite ends thereof extending from said housing; wherein

one of said shaft ends comprises a first means for journaling a pivot shaft therewithin;

the other of said shaft ends comprises a second means for rotatably pivoting said housing on a pivot shaft; and

said housing has a third means for (a) engaging a valve spring, and (b) in cooperation with said first and second means, compressing such valve spring.

5,661,886

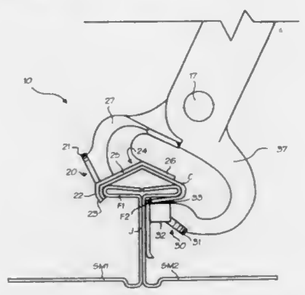
COMBINATION CLIP INSTALLATION AND CRIMPING TOOL

Jimmy M. Smith, HC 33 Box 2580, Boise, Id. 83706

Filed Jun. 15, 1995, Ser. No. 490,712

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—243.56 **6 Claims**



1. A tool for installation and crimping clips for fastening sections of sheet metal fabrication one to another comprising:

a first handle having first and second ends;

a second handle having first and second ends, the second handle being pivotally attached to the first handle;

a pivot pin pivotally attaching the first handle to the second handle;

a die head bridge having a plurality of planar segments configured to substantially conform to the shape of the clip, the plurality of planar segments including a first planar segment having a first edge and a second edge, the first planar segment being attached to the second end of the second handle, a second planar segment being attached to and extending from the first planar segment at an obtuse angle, a third planar segment also being attached to and extending from the first planar segment at an obtuse angle and away from the second planar segment, and a fourth planar segment being attached to and extending from the third planar segment at an obtuse angle toward the second planar segment; and

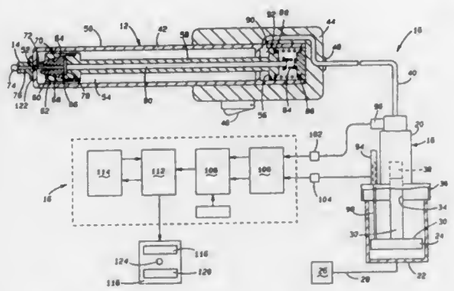
a punch head attached to the second end of the first handle, the punch head having a punch head crimping edge being pivotally opposed to the die head bridge.

5,661,887

BLIND RIVET SET VERIFICATION SYSTEM AND METHOD

Darren S. Byrne, Naugatuck, and Eymard J. Chitty, Trumbull, both of Conn., assignors to Emhart Inc., Newark, Del.

Filed Apr. 20, 1995, Ser. No. 425,621
Int. Cl.[6] B21J *15/28*
U.S. Cl. 29—243.525 **37 Claims**



1. A system for setting a blind rivet and evaluating the acceptability of the set, said rivet being of the type having a frangible tubular body and an elongated mandrel that includes an enlarged head and a stem extending rearwardly of the head and through said frangible tubular body, said system comprising:

a hydraulically operated blind rivet setting tool, said tool including a rivet engaging assembly for engaging said stem of said mandrel and an axially movable piston assembly operatively coupled to said rivet engaging assembly for driving said mandrel in response to the application of pressurized hydraulic fluid to said piston assembly;

a first transducer for monitoring the pressure of the hydraulic fluid applied to said, piston assembly during a rivet setting process and producing pressure output signals related thereto;

a second transducer operatively associated with said tool for producing displacement output signals related to the movement of said piston assembly in the axial direction during the rivet setting process; and

a control circuit, said control circuit having circuitry to:

(a) receive a series of said pressure output signals and a series of said displacement output signals during the rivet setting process;

(b) determine from said series of displacement output signals the velocity of said piston assembly during the rivet setting process;

(c) identify the occurrence during the rivet setting process of the highest value of velocity;

(d) use the occurrence of the highest value of velocity to identify the mandrel breakpoint; and

(e) compare a breakpoint load value determined from the value of the pressure output signal at the mandrel breakpoint with a predetermined desired value.

5,661,888

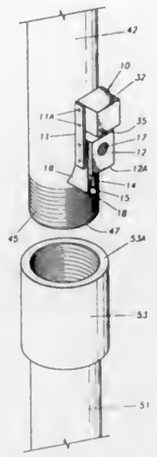
APPARATUS AND METHOD FOR IMPROVED OILFIELD CONNECTIONS

Kenneth J. Hanslik, Pearland, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 478,282
Int. Cl.[6] B23Q *17/00*
U.S. Cl. 29—407.02 **12 Claims**

1. An apparatus for positioning a first threaded pipe having an externally threaded end and a second threaded pipe having an internally threaded end within a target range of relative axial positions, during the threading of the pipes together to form a tubular joint, the apparatus comprising:

(a) a sensor base;



(b) an adjustable calibrating device for positioning the sensor base on the first pipe within an adjustable range of distances from the end of the first pipe;

(c) a sensor head extending from the sensor base, for abutting the end of the second threaded pipe during the threading of the pipes together, to indicate a relative axial position of the pipes;

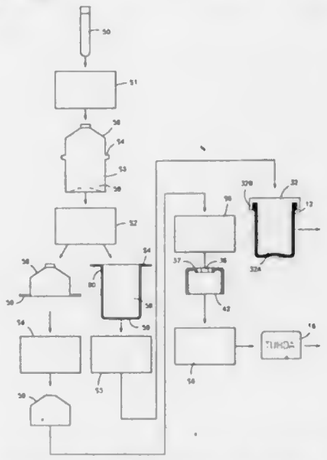
(d) a signal generator that generates a signal once the sensor head indicates that the relative axial position of the pipes is within the target range of relative axial positions.

5,661,889

PROCESS FOR PRODUCING A CONTAINER AND CLOSURE ASSEMBLY

Emery I. Valyi, 102 Moseman Ave., Katonah, N.Y. 10536

Continuation-in-part of Ser. No. 372,021, Jan. 12, 1995. This application Jun. 5, 1995, Ser. No. 465,438
Int. Cl.[6] B29D *22/00;* **B29C** *69/00;* **B67B** *3/00;* **B65D** *53/00*
U.S. Cl. 29—416 **18 Claims**



1. A process for producing a container and closure assembly, comprising the steps of:

molding a preliminary container including a closed bottom portion, a body portion and a shoulder and neck portion;

separating the shoulder and neck portion from the body portion;

forming an open ended second container from the body portion, the second container having a rim at its open end and an encircling wall with an inner and outer surface and closing the open ended second container with a closure of a cap liner and a cap over the cap liner, wherein the closure is fitted over the second container at its open end to close said second container and wherein said liner has a weakened portion therein adapted to be broken by said cap; and

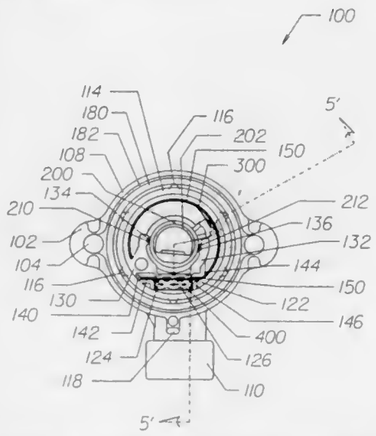
including the step of forming said cap from the shoulder and neck portion, providing said cap liner and attaching the cap liner to the second container, wherein the cap liner engages the second container at its open end to close said second container, and placing said cap over the cap liner.

5,661,890

METHOD OF ASSEMBLING A POSITION SENSOR TO A SHAFT AND A FIXED STRUCTURE

David S. Pfaffenberger, Mishawaka, Ind., assignor to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 82,140, Jun. 23, 1993, Pat. No. 5,460,035. This application Mar. 27, 1995, Ser. No. 411,248
Int. Cl.[6] B23P *19/00*
U.S. Cl. 29—426.6 **3 Claims**



1. A method for assembling a position sensor to a shaft and a fixed structure through which said shaft rotates, said position sensor comprising a stator, a rotor, a rotor support structure retaining said rotor in a fixed position relative to said stator, and location fixing means for fixing said stator from rotation, comprising the steps of:

engaging said rotor with said shaft;

releasing said rotor from said rotor support structure so that said rotor is no longer retained thereby; and

attaching said stator location fixing means to said fixed structure.

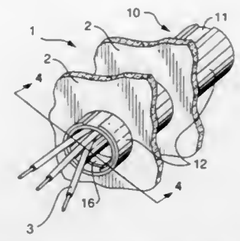
5,661,891

METHOD OF PASSING WIRES THROUGH A FIREWALL USING TELESCOPING CONDUIT ASSEMBLY

Albert J. Miller, 7131 Wilson St.; Eugene A. Miller, 7361 Garfield St., both of Hollywood, Fla. 33024, and William D. Greenbarg, 1054 N. North Lake Dr., Hollywood, Fla. 33019

Division of Ser. No. 162,502, Dec. 3, 1993, Pat. No. 5,560,397. This application May 14, 1996, Ser. No. 645,873
Int. Cl.[6] B23P *11/02*
U.S. Cl. 29—453 **3 Claims**

1. A method of passing a plurality of wires, connectors, or other members through a firewall comprising the steps of:



providing a conduit assembly which consists of an outer telescoping sleeve and an inner telescoping sleeve, said outer telescoping sleeve and said inner telescoping sleeve having an essentially cylindrical cross section with said outer telescoping sleeve having a slightly larger cross section than said inner telescoping sleeve, and said outer telescoping sleeve and said inner telescoping sleeve having essentially the same length and each having longitudinal slots of approximately the same width;

providing a hole through a firewall with a diameter slightly larger than the outer diameter of said outer telescoping sleeve;

aligning said longitudinal slots of said outer telescoping sleeve and said inner telescoping sleeve and passing said plurality of wires, connectors or other members therethrough;

rotating said inner telescoping sleeve within said outer telescoping sleeve until said slot of said inner telescoping sleeve is obstructed by said outer telescoping sleeve; and

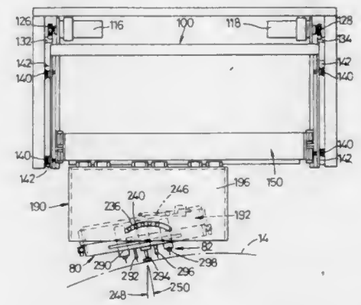
securing said conduit assembly within said hole in said firewall.

5,661,892

METHOD FOR POSITIONING TOOLING

Mark J. Catania, Tonawanda; Jeffrey P. Weaver, East Amherst; Thomas H. Rummell, Cheektowaga, and Robert J. Kellner, Orchard Park, all of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Division of Ser. No. 48,420, Apr. 14, 1993, Pat. No. 5,477,597. This application Jun. 7, 1995, Ser. No. 477,093
Int. Cl.[6] B23Q *17/00;* **B23B** *35/00;* **B23C** *3/00*
U.S. Cl. 29—525.02 **23 Claims**



1. A method of positioning tooling with respect to a curvilinear workpiece having a longitudinal axis comprising the steps of:

a) providing carriage means movable along a supporting surface in spaced relation to said workpiece and in a direction substantially parallel to said longitudinal axis;

b) providing extendable and retractable arm means having one end pivotally connected to said carriage means and extending from said carriage means toward said workpiece;

c) providing head means containing said tooling and located on another end of said arm means;

d) extending and retracting said arm means to move said tooling toward and away from said workpiece;

e) moving said arm means about said one end and along a plane disposed substantially perpendicular to said longitudinal axis of said workpiece;
f) moving said head means along a plane disposed substantially perpendicular to said longitudinal axis of said workpiece;
g) moving said head means along a plane disposed substantially parallel to said longitudinal axis of said workpiece; and
h) rotating said head means about a longitudinal axis of the arm means.

5,661,893

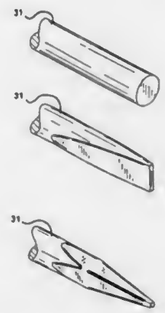
PROCESS FOR MANUFACTURING TAPER POINT SURGICAL NEEDLES

Daniel Smith, Manalapan Township; Bernard M. Willis, East Brunswick; Kenneth P. Marschke, Jr., Medford; Barry Littlewood, Harmony; Vulgens Schoen, Stockton; Carl Gucker, Branchburg; Michael Nordmeyer, Neshanic Station, all of N.J., and Thaddeus Miklewicz, Nazareth, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 486,664, Jun. 7, 1995, abandoned, which is a division of Ser. No. 146,681, Nov. 1, 1993, Pat. No. 5,477,604. This application Nov. 13, 1995, Ser. No. 558,946

Int. Cl.[6] B23P *13/04*

U.S. Cl. 29—558 **1 Claim**



1. A method for manufacturing a taper point surgical needle, comprising:
mounting a plurality of surgical needle blanks to a carrier means wherein the blanks comprise solid wire; and,
moving the carrier means and each surgical needle blank to a first shearing means and then shearing each needle blank on a sufficient number of planes to effectively form a taper point.

5,661,894

METHOD FOR ASSEMBLING AN ELECTRIC MOTOR EMPLOYING A CASING BODY HAVING LOW DIMENSIONAL ACCURACY

Kenji Kawasaki; Takayoshi Inoue, and Yasuo Maki, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01697, § 371 Date May 24, 1995, § 102(e) Date May 24, 1995, PCT Pub. No. WO94/13053, PCT Pub. Date Jun. 9, 1994

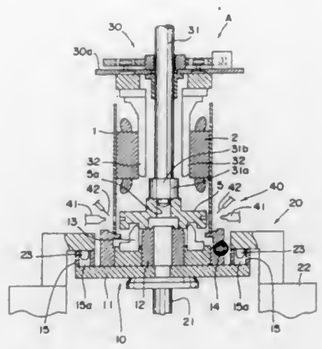
PCT Filed Nov. 19, 1993, Ser. No. 436,424

Claims priority, application Japan, Nov. 24, 1992, 4-337906; Nov. 12, 1993, 5-307175

Int. Cl.[6] H02K *15/14*

U.S. Cl. 29—596 **4 Claims**

1. A method for assembling an electric motor wherein first and second bearings, each having an outer diameter smaller than an inner diameter of a casing body such that a gap is formed between the bearing and the casing, are each mounted to each of both ends of the casing body in which a stator is inserted, with a rotary shaft



around which a rotor is mounted being supported by the bearings at a center portion of the casing body, the method comprising:
a first bearing assembling step of inserting the first bearing into a first end of the casing body in which the stator is inserted and fixed, holding the first bearing in an assembling position with the center of the first bearing placed in a specified position, and plug welding the casing body to the first bearing at a plurality of locations on an outer peripheral surface of the casing body while holding the casing body in an assembling position so that the center of an inner peripheral surface of the stator is aligned with the center of the first bearing to thereby mount the first bearing in said first end of the casing body;
a rotary shaft assembling step of inserting the rotary shaft from a second end of the casing body toward the center portion of the casing body and inserting a first end of the rotary shaft into the first bearing; and
a second bearing assembling step of inserting the second bearing into a second end of the casing body for insertion of a second end of the rotary shaft into the second bearing, holding the casing body in an assembling position so that the center of the first bearing, which has already been mounted in said first bearing assembling step, is placed in a specified position, and plug welding the casing body to the second bearing at a plurality of locations on the outer peripheral surface of the casing body while holding the second bearing in an assembling position so that the center of the second bearing is aligned with the center of the first bearing to thereby mount the second bearing in the second end of the casing body.

5,661,895

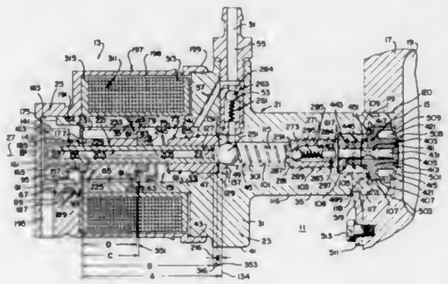
METHOD OF CONTROLLING THE MAGNETIC GAP LENGTH AND THE INITIAL STROKE LENGTH OF A PRESSURE SURGE FUEL PUMP

Christopher R. Irgens, Elm Grove, Wis., assignor to Outboard Marine Corporatin, Waukegan, Ill.

Filed Jul. 25, 1995, Ser. No. 507,646

Int. Cl.[6] H01F *7/06*

U.S. Cl. 29—602.1 **8 Claims**



1. A method of machining and assembling members of a fuel pump to produce an initial stroke length for an armature assembly which is reciprocally moveable relative to a housing member, said method comprising the steps of: fabricating the armature assembly with an end surface, machining on the armature assembly at a first given length from the armature assembly end surface a valve seat which is adapted to engage a valve member, fabricating the housing member to include an axis, an axial bore, a counterbore, and an annular shoulder extending radially relative to the axis and between the axial bore and the counterbore, fabricating a bushing, fixing the bushing in the axial bore of the housing member, and machining on the bushing at a second given length from the annular shoulder a stop surface which is adapted to engage the valve member, and assembling the armature assembly in the axial bore with the armature assembly end surface and the housing member annular shoulder in coplanar relation, whereby the difference between the first and second lengths defines the initial stroke length before engagement of the armature assembly with the valve member.

5,661,896

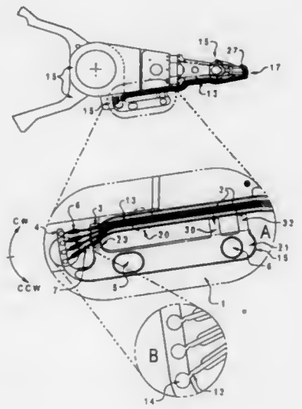
METHOD OF MANUFACTURING A TERMINATION PAD MANIPULATOR FOR A LAMINATED SUSPENSION IN A DATA STORAGE SYSTEM

A. David Erpelding, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 246,025, May 19, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 478,162

Int. Cl.[6] G11B *5/48;21/16;* **H01F** *7/06*

U.S. Cl. 29—603.01 **8 Claims**



1. A method for fabricating an actuator arm assembly, the method comprising the steps of:
attaching a multilayered suspension to an actuator arm;
aligning a termination end of a conductive lead structure extending from the suspension by manipulating a fixture attached to the conductive lead structure in a plane of the termination end until conductor lines contained in the conductive lead structure are properly placed over termination pads located on the actuator arm;
terminating the conductor lines to the termination pads; and
detaching the fixture from the conductive lead structure.

5,661,897

APPLICATOR FOR TERMINAL CRIMPING MACHINE

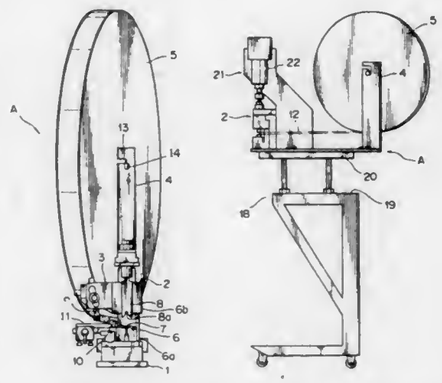
Hideyuki Kaneda, and Yoshiaki Nomoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,493

Claims priority, application Japan, Feb. 9, 1995, 7-021695

Int. Cl.[6] H01R *43/055*

U.S. Cl. 29—753 **11 Claims**



1. An applicator for removably mounting on a terminal crimping machine, said applicator comprising:
a rectangular base plate;
a terminal crimping means for crimping terminals to produce crimped terminals, said terminal crimping means including a crimping anvil and a crimping jig and said terminal crimping means being mounted on a supporting frame and said supporting frame having a bottom portion mounted on a first end of said rectangular base plate;
a terminal supply member having a terminal shifting mechanism, said terminal supply member being provided integrally on said terminal crimping means;
a terminal reel means for taking up said crimped terminals on a take-up line which is wound around said terminal reel means; and
a reel stand means for supporting said terminal reel member, wherein said reel stand means is mounted on a second opposing end of said rectangular base plate.

5,661,898

TERMINAL CRIMPING APPARATUS WITH

Susumu Matsuzawa, Iwate-ken, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

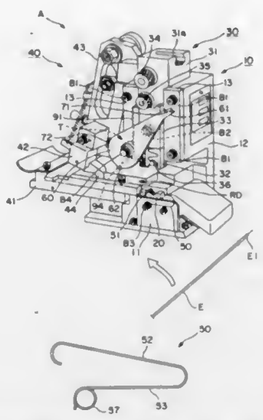
Filed Dec. 14, 1995, Ser. No. 572,511

Claims priority, application Japan, Dec. 15, 1994, 6-312128; Nov. 21, 1995, 7-303101; Nov. 21, 1995, 7-303102

Int. Cl.[6] H01R *43/048;43/28*

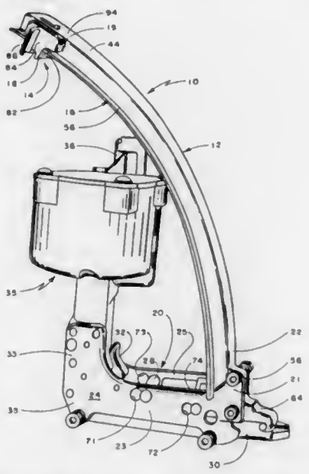
U.S. Cl. 29—753 **15 Claims**

1. A wire processing apparatus (A) for mounting a terminal on an end portion (E1) of a wire (E) comprising:
an anvil (**20**),
a crimper (**32**) movable upward and downward with respect to the anvil (**20**),
wire feeding means for conveying the end portion (E1) of the wire (E) between the crimper (**32**) and the anvil (**20**),
wire receiving means (**50**) adjacent the anvil (**20**) for receiving the end portion (E1) of the wire (E) conveyed by the wire feeding means,
wire position correcting means (**60**) which is movable relative to the wire receiving means (**50**) for guiding the end portion (E1) of the wire (E) along the wire receiving means (**50**) and into a selected correct position relative to the wire receiving means (**50**) and the anvil (**20**),



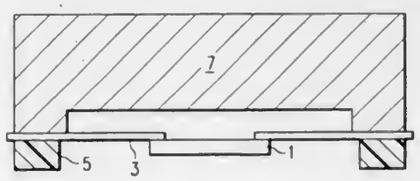
a gearing mechanism (T) connected to the crimper (**32**) and the wire position correcting means (**60**) for translating a portion of the movement of the crimper **32** into the movement of the wire position correcting means (**60**), whereby the wire receiving means (**50**) and the wire position correcting means (**60**) position the end portion (**E1**) of the wire (E) in the selected correct position for crimping the terminal to the end portion (E1) of the wire (E).

5,661,899
CLIP CLAMPING MACHINE
Donald B. Ayres, 8501 Laramie, Skokie, Ill. 60077
Filed Oct. 5, 1995, Ser. No. 539,442
Int. Cl.[6] B23Q *7/10*
U.S. Cl. 29—81.0 **3 Claims**



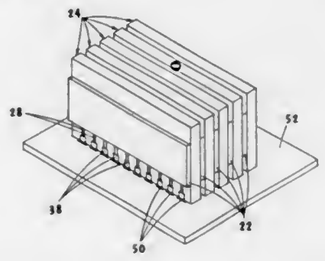
1. In a clip clamping machine comprising a clip dispensing and clamping mechanism, a pneumatic piston and cylinder mechanism mounted to a first end of the clip dispensing and clamping mechanism, a magazine track mounted to a second end of the clip dispensing and clamping mechanism and a pusher member in the magazine track, the improvement residing in: said pusher member being a one piece plastic pusher member and including (a) a generally rectangular body that is received in a U-shaped trough of said magazine track, (b) a flange extending laterally from said body and a cage structure mounted to said flange and disposed above one side flange of said magazine track for receiving one end of a coiled spring, said generally rectangular body having a cavity therein adjacent a front end thereof for receiving a magnet for holding the last clip in a line of clips received in said U-shaped trough of said magazine track.

5,661,900
METHOD OF FABRICATING AN ULTRASONICALLY WELDED PLASTIC SUPPORT RING
Robert N. McLellan, Garland; Anthony M. Chiu, Richardson; Paul J. Hundt, and William K. Dennis, both of Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 7, 1994, Ser. No. 206,814
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 **12 Claims**



7. A method of fabricating a semiconductor device comprising the steps of:
(a) providing an encapsulated semiconductor device bonded to a lead frame;
(b) providing a support ring formed of a material which softens, but does not melt, when subjected to heat insufficient to cause sufficient expansion of said lead frame relative to said support ring to cause buckling of the leads of said lead frame;
(c) disposing leads of said frame over said support ring; and
(d) applying heat to said support ring in quantity sufficient to cause softening of said support ring but not thermal expansion of said lead frame; and
(e) applying pressure to said lead frame leads so as to embed said leads beneath a surface of said softened lead frame.

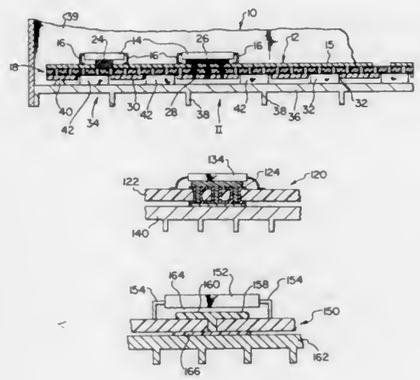
5,661,901
METHOD FOR MOUNTING AND ELECTRICALLY INTERCONNECTING SEMICONDUCTOR DICE
Jerrold L. King, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jul. 10, 1995, Ser. No. 499,931
Int. Cl.[6] H05K *3/36*
U.S. Cl. 29—830 **24 Claims**



1. A method for mounting an unpackaged semiconductor die to a supporting substrate, said method comprising:

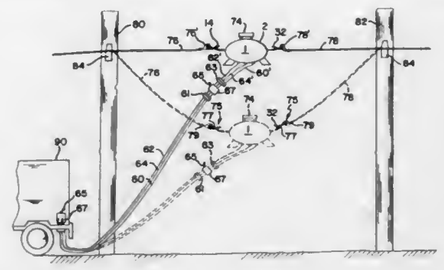
forming an interconnect including a substrate having a plurality conductive traces extending to an edge thereof, each said conductive trace including an insulated trench filled with a conductive material;
attaching a die to the interconnect with contact locations on the die in electrical communication with the conductive traces; and
attaching the interconnect on edge to the supporting substrate with edge portions of the conductive traces in electrical communication with connection points on the supporting substrate.

5,661,902
METHODS OF MAKING PRINTED CIRCUIT BOARDS AND HEAT SINK STRUCTURES
Roman Katchmar, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Division of Ser. No. 133,396, Oct. 8, 1993, Pat. No. 5,467,251.
This application Jun. 29, 1995, Ser. No. 496,649
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **4 Claims**



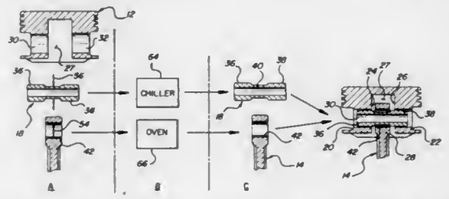
2. A method of making a printed circuit board and heat sink structure comprising:
providing a printed circuit board with a heat conductive layer on each side of the board and with heat conductive material extending through holes formed in the board to thermally interconnect the two conductive layers;
mounting an electronic component in spaced relationship from the conductive layer on the one side of the board and with the component having electrical leads connected to electrical terminals on the board;
injecting a thermally conductive viscous substance through a hole in the board from the other side of the board to cause the viscous substance to thermally connect the electrical component and the conductive layer on the one side of the board and cause flow of the viscous substance in a reverse direction into other holes in the board beneath the electronic component;
and then attaching a heat sink with a thermally conductive material to the conductive layer on the other side of the board.

5,661,903
METHOD FOR SPLICING SUSPENDED WIRES
Mark Antonio Mercurio, 92 Martins La., Yardville, N.J. 08620
Division of Ser. No. 230,293, Apr. 20, 1994, Pat. No. 5,507,471.
This application Mar. 29, 1995, Ser. No. 412,732
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—868 **9 Claims**



1. A method for splicing broken ends of a wire having other ends, respectively, suspended from a given height above ground for retaining the wire out of reach, comprising the steps of:
attaching free ends of first and second belts, respectively, from opposite ends of a device to points on said wire near its respective broken ends;
operating said device in one direction, thereby placing said first and second belts under tension, drawing said broken ends together and raising said device and said broken ends of said wire near to said given height;
splicing said broken ends of said wire;
operating said device in a reverse direction to release the tension on said first and second belts; and
detaching said first and second belts from said wire.

5,661,904
METHOD OF ASSEMBLING PISTON AND CONNECTING ROD WITH STEPPED WRIST PIN
Neil W. Loughlin, Ortonville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 6, 1995, Ser. No. 540,144
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.01 **3 Claims**



1. A method of operatively coupling a metallic connecting rod having an annular connecting pin opening of a predetermined diameter near one end thereof to a metal piston having a pair of laterally spaced pin bosses with axially aligned pin bores of predetermined diameters therein and with a pair of internal shoulders facing one another to provide defining a space therebetween for accommodating said one end of said connecting rod, a generally cylindrical connecting pin of metal having a radially increased rod journal between the end thereof to effect the coupling, comprising the steps of:
a. heating the pin bosses to effect the thermal expansion thereof and the expansion of said pin bores to at least a predetermined expanded diameter,
b. chilling the pin to effect the thermal contraction thereof to a point whereby said pin has sufficiently reduced, diameter so

that it can be inserted into the thermally expanded. pin boss bores and the connecting pin opening in the end of said connecting rod,

c. positioning said rod in said piston so that said pin can be inserted into the pin opening in said rod and in said bores of said pin bosses,

e. axially inserting said pin in said bores and said openings so that said rod is centered on said rod journal of said pin between said pin bosses,

f. bringing said piston and said pin to an ambient temperature to effect the contraction of said pin bores and the expansion of said rod journal so that said pin is axially trapped by said shoulders of said pin bosses and said rod is thereby operatively coupled to said piston.

5,661,905

METHOD OF MAKING A BURNER DEVICE

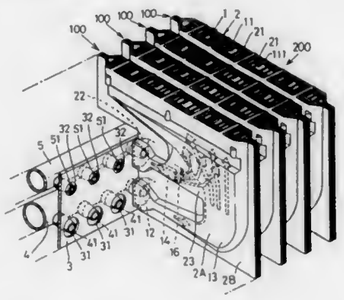
Masaaki Nakaura; Hideo Okamoto; Hideaki Ishikawa, and Kazuo Yagi, all of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Division of Ser. No. 118,626, Sep. 10, 1993, Pat. No. 5,525,054. This application Jun. 7, 1995, Ser. No. 477,885

Claims priority, application Japan, Sep. 11, 1992, 4-243697; Sep. 11, 1992, 4-243698; Sep. 14, 1992, 4-243889; May 24, 1993, 5-121141; Aug. 3, 1993, 5-192593

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890.02 **7 Claims**



1. A method of making a gas burner device comprising the steps of:

symmetrically blanking a first metal plate and deforming it so as to form a first intermediate blank having a bulged portion;

bending the first intermediate blank at a symmetrical center thereof to provide a first burner flow path with the bulged portion, and joining end portions of the intermediate blank to form a first burner;

blanking a second metal plate and symmetrically deforming it so as to form a second intermediate blank having a bulged portion;

bending the second intermediate blank at a symmetrical center thereof to provide a cover plate;

encasing at least an upper end of the first burner with the cover plate to form a slit-like sleeve fire hole between the first burner and the cover plate, and forming a second burner flow path communication with a second burner suction hole and the slit-like sleeve fire hole so as to provide a second burner.

5,661,906

METHOD OF WELDING COMB-SHAPED SEALING STRIPS TO PLATE HEAT EXCHANGERS

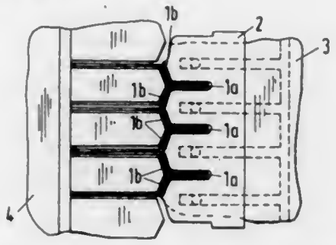
Albert Beier, and Wolfgang Herrmann, both of Ratingen, Germany, assignors to BDAG Balcke-Dürr Aktiengesellschaft, Ratingen, Germany

Filed Jun. 26, 1995, Ser. No. 494,885

Claims priority, application Germany, Jun. 25, 1994, 44 22 283.1

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.039 **3 Claims**



1. A method of manufacturing a plate heat exchanger, said method comprising the steps of:

connecting individual plates to pairs such that said individual plates are parallel to and spaced from one another by edge portions with a common edge;

combining said pairs to a plate stack such that said common edges are parallel to one another;

positioning a comb-shaped sealing strip, having a slotted end face with parallel slots, at an end of said plate stack such that said common edges are received in said slots and said edge portions abut said slotted end face and such that said end of said plate stack projects slightly past an outer surface of said sealing strip which outer surface is perpendicular to said slotted end face;

welding said sealing strip to said common edges by using at least a portion of a material of said end of said plate stack projecting past said outer surface of said sealing strip;

welding said edge portions to said outer surface of said sealing strip by using exclusively the material of said end of said plate stack projecting past said outer surface of said sealing strip; and

dissipating continuously during both welding steps a heat resulting from welding by placing a shaped part, made of a material having good heat-conducting properties, onto a surface of said sealing strip opposite said outer surface.

5,661,907

RAZOR BLADE ASSEMBLY

Domenic Vincent Apprille, Jr., Arlington, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 10, 1996, Ser. No. 630,053

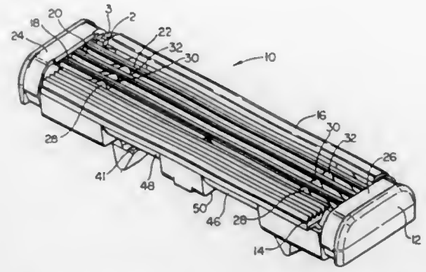
Int. Cl.[6] B26B *21/14*

U.S. Cl. 30—47 **44 Claims**

1. A razor blade assembly for mounting on a handle having a handle pivoting connecting structure, said assembly comprising

a housing having a guard member at the front thereof, a cap structure at the rear thereof, a blade mounting portion between the guard member and the cap structure, upper surfaces at sides of the blade mounting portion, arcuate bearing surfaces below the blade mounting portion that slidably engage said handle pivoting connecting structure and have radii of curvature so as to provide pivotal mounting on said handle about a pivot axis located above said arcuate bearing surfaces, and

first, second, and third blade members mounted in said blade mounting portion, said first blade member being mounted nearest the guard member and the third blade member being mounted nearest the cap structure,



said first, second, and third blade members having respective first, second, and third leading edges generally directed toward said guard member and arranged to sequentially contact skin of a surface being shaved during a shaving operation, said leading edges in an unloaded position being lower than said upper surfaces, and

said pivot axis being located in a region defined by a boundary extending from the first leading edge to the second leading edge when both are in the unloaded position, extending upward and rearward from the second leading edge to a position slightly above the upper surfaces of the housing at a location in front of the third leading edge, extending along and slightly above the upper surfaces of the housing to a position in front of the first leading edge, extending downward and forward to a location within the guard member below and forward of the first leading edge, and extending from the location within the guard member upward and rearward to the first leading edge.

5,661,908

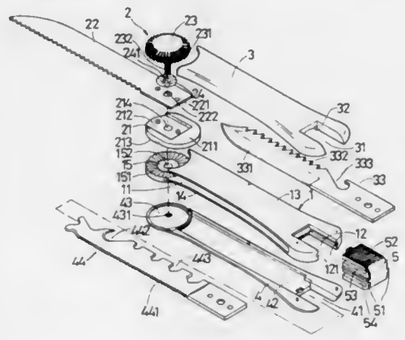
MULTIFUNCTIONAL FOLDABLE SAW

Tsai-Yuan Chen, No.2, Lane 52, Hsin-Jen 3rd St., Ta-Li City, Talchung Hslen, Taiwan

Filed Aug. 16, 1996, Ser. No. 697,005

Int. Cl.[6] B23D *51/01*

U.S. Cl. 30—125 **4 Claims**



1. A multifunctional foldable saw comprising:

a main body formed with a longitudinal slot along a lateral side, a rear end of the main body being disposed with a notch, two channels being respectively formed on two opposite lateral walls of the notch;

a saw blade locating mechanism disposed at a front end of the main body;

an upper cover disposed on an upper wall of the main body, a rear end of the upper cover being formed with a notch, an inner face of the upper cover, which contacts with an upper wall of the main body, being formed with a receptacle extending to the notch of the rear end, whereby the notch serves as an opening of the receptacle for receiving a spare saw blade therein;

a lower cover disposed on a lower wall of the main body, a rear end of the lower cover being formed with a notch, an inner face of the lower cover, which contacts with the lower wall of the: main body, being formed with a receptacle extending to the notch of the rear end, whereby the notch serves as an opening of the receptacle for receiving a spare saw blade therein, a fixing seat being integrally formed at a front end of the lower cover; and

a rear cover formed with two fissures, two rails being respectively disposed on two sides of the rear cover for slidably fitting into the channels of the notch of the main body so as to insert the rear cover into the notch of the main body.

5,661,909

BLADE MOUNTING DEVICE IN CUTTING TOOL

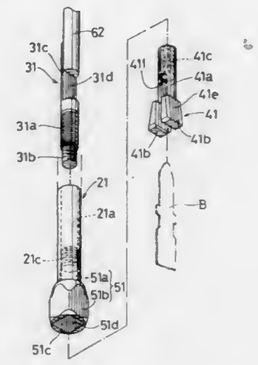
Masayoshi Kondo; Kunio Amano; Katsufumi Takeda, and Hideki Okubo, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed Nov. 30, 1995, Ser. No. 565,722

Claims priority, application Japan, Dec. 2, 1994, 6-299804; Dec. 22, 1994, 6-320209

Int. Cl.[6] B27B *19/09*

U.S. Cl. 30—392 **22 Claims**



1. A blade mounting device for mounting a blade on a movable member of a reciprocating cutting tool said cutting tool having a body, a motor for reciprocally linearly driving the movable member in an axial direction, the blade is moved in a predetermined motion for a cutting operation, said blade mounting device comprising:

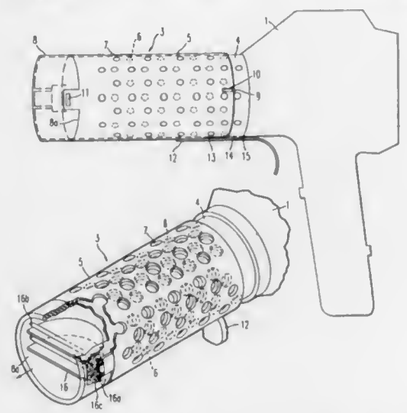
a pair of claws adapted to be mounted on the movable member and operable between a closed position for clamping the blade and an open position for releasing the blade; and

actuation means operable by an operator for moving said claws between said closed position and said open position;

said actuation means includes an actuation member rotatably operable by the operator and motion conversion means for converting the rotational movement of said actuation member into the movement of said claws between said open and said closed positions;

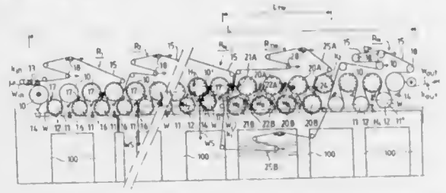
a rotary member being operably connected to said actuation member, so that said actuation member is slidably movable relative to said rotary member in the axial direction of the movable member while said actuation member is rotatable together with said rotary member.

5,661,910
HAND HELD BLOW DRYER HAVING AIRFLOW CONTROL MEANS
Natale Schepisi, Mamaroneck, N.Y., assignor to Vital Hair Tools, LLC, Mamaroneck, N.Y.
Continuation-in-part of Ser. No. 576,592, Dec. 21, 1995. This application Aug. 20, 1996, Ser. No. 697,129
Int. Cl.[6] A45D *20/10*
U.S. Cl. 34—97 **32 Claims**



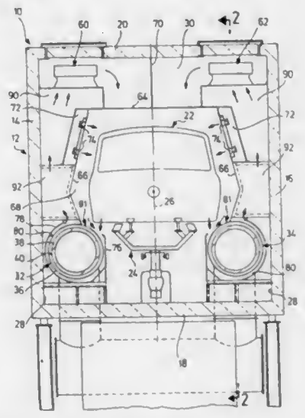
1. A blow dryer comprising:
a body including a barrel having a barrel opening, said barrel comprising a plurality of holes which are disposed around a circumference of the barrel and are spaced along substantially an entire length of the barrel;
a deflector positioned substantially within said barrel, said deflector being movable between at least an open position in which said barrel opening is opened, and a deflecting position in which said barrel opening is substantially closed, wherein in the deflecting position an air flow through said barrel is substantially deflected by said deflector so as to pass through all of said holes, such that a positioning of a surface of the barrel adjacent to hair to be dried and/or styled directs air passing through said holes to the hair, thereby permitting the use of the barrel as a drying and/or styling tool by allowing air to be continuously directed to the hair through said holes; and
an actuator operationally connected to said deflector for moving said deflector between at least said open position and said deflecting position.

5,661,911
DRYER SECTION OF A PAPER MACHINE
Jouko Yli-Kauppila, Muurame, Finland, assignor to Valmet Corporation, Helsinki, Finland
Continuation-in-part of Ser. No. 389,952, Feb. 17, 1995,. This application Mar. 26, 1996, Ser. No. 622,069
Claims priority, application Finland, Feb. 17, 1994, 940749
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—117 **20 Claims**



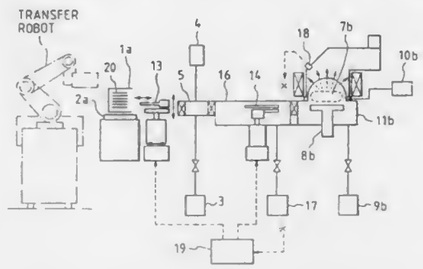
1. A dryer section of a paper machine for drying a paper web, comprising
a plurality of successively arranged normal groups with single-wire draw, each of said normal groups including drying cylinders arranged in a first row, reversing suction cylinders or suction rolls arranged in a second row below said first row, and a drying wire for carrying the web over said drying cylinders and said reversing suction cylinders or suction rolls, the web having closed draws in group gaps formed between adjacent ones of said plurality of successively arranged normal groups,
a single group with twin-wire draw arranged after a last one of said successively arranged normal groups in a running direction of the web, said single group with twin-wire draw including first and second rows of drying cylinders placed one above the other, guide rolls arranged between adjacent ones of said drying cylinders in each of said first and second rows, and a pair of drying wires each pressing the web against the surface of said drying cylinders in a respective row and carrying the web over said drying cylinders in said respective row and said guide rolls arranged between adjacent ones of said drying cylinders in said respective row, the number of said successively arranged normal groups with single-wire draw and number of said drying cylinders in each of said successively arranged normal groups with single-wire draw and the number of said drying cylinders in said single group with twin-wire draw being such that the web attains a dry solids content of 75% at a point within said single group with twin-wire draw and the dry solids content of the web is raised to 90% in said single group with twin-wire draw, and
an additional normal group with single-wire draw following directly after said single group with twin-wire draw in the running direction of the web, said additional normal group constituting the last drying group in the dryer section and including drying cylinders arranged in a first row, reversing suction cylinders or suction rolls arranged in a second row below said first row, and a drying wire for carrying the web over said drying cylinders and said reversing suction cylinders or suction rolls.

5,661,912
DRIER FOR A PAINTING PLANT
Satpal Bhatnagar, Vaihingen-Rosswag; Gunther Küchenthal, Ludwigsburg, and Dietmar Wieland, Stuttgart, all of Germany, assignors to Dürr GmbH, Stuttgart, Germany
Filed Oct. 6, 1995, Ser. No. 540,236
Claims priority, application Germany, Oct. 8, 1994, 44 36 018.5
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—270 **20 Claims**



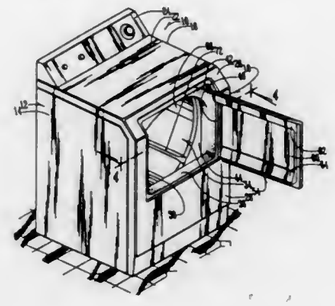
1. Booth-type drier for a painting plant comprising:
a booth interior for receiving painted articles to be dried;
at least one heating element arranged in said drier and having a first side in communication with said booth interior for giving off heat to said booth interior in order to heat said articles, and a second side opposite to said first side;
at least one heating gas pipeline arranged within the drier for flowing a hot heating gas therethrough;
a heating gas duct for flowing hot heating gas therethrough, said duct having an inner wall surface at least part of which is formed by the second side of said heating element in order to expose said second side to hot heating gas for heating said heating element, said duct having an inflow end and an outflow end and being connected in parallel with said pipeline;
and a valve-type control device associated with said duct for controlling the temperature of said heating element by controlling flow rate of heating gas through said duct.

5,661,913
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR
Shigekazu Kato, Kudamatsu; Kouji Nishihata, Tokuyama; Tsunehiko Tsubone, Hikari, and Atsushi Itou, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 443,039, May 17, 1995, Pat. No. 5,553,396, which is a division of Ser. No. 302,443, Sep. 9, 1994, Pat. No. 5,457,896, which is a continuation of Ser. No. 96,256, Jul. 26, 1993, Pat. No. 5,349,762, which is a continuation of Ser. No. 751,951, Aug. 19, 1991, Pat. No. 5,314,509.
This application Jan. 30, 1996, Ser. No. 593,870
Claims priority, application Japan, Aug. 29, 1990, 2-225321
Int. Cl.[6] F26B *5/04*
U.S. Cl. 34—406 **9 Claims**



1. A method of operating a vacuum processing apparatus having a vacuum processing chamber for which a dry cleaning processing is effected after a substrate member to be processed has been processed under a vacuum condition, comprising the steps of:
judging a time for dry cleaning of said vacuum processing chamber in accordance with a contamination degree of said vacuum processing chamber, so as to provide a dry cleaning time judgment, wherein said judging includes counting a number of times for processing said substrate member to be processed in said vacuum processing chamber, and judging the time for dry cleaning of said vacuum processing chamber in accordance with a result of counting the number of times for processing said substrate member; and
carrying out the dry cleaning for said vacuum processing chamber in accordance with said dry cleaning time judgment.

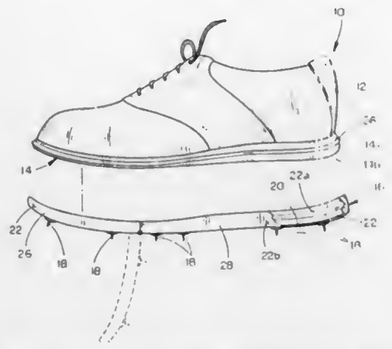
5,661,914
ACCESS LAUNDRY APPLIANCE
J. Christopher Millet, Newton, Iowa, assignor to Maytag Corporation, Newton, Iowa
Continuation of Ser. No. 324,334, Oct. 17, 1994, abandoned.
This application Jun. 10, 1996, Ser. No. 661,146
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—601 **8 Claims**



1. A laundry appliance comprising:
a cabinet defining an enclosed compartment;
a cylindrical drum rotatably mounted within said compartment, said drum forming a fabric enclosure for containing laundry therein, and having an uncovered drum access opening providing communication into said fabric enclosure, the drum including opposite axial ends, said drum access opening being in one of said opposite axial ends;
said cabinet having exterior front and top cabinet surfaces formed by cabinet front and top walls;
said cabinet having a cabinet access opening therein adjacent said drum access opening and providing direct communication through said cabinet and said drum access opening into said fabric enclosure;
said cabinet access opening being formed at least partially in said cabinet front wall and at least partially in said cabinet top wall and having a perimeter extending therearound, said perimeter extending between first and second substantially vertical planes which are spaced apart from one another to provide combined top and front access into said fabric enclosure;
transition structure between said first and second planes for transitioning said cabinet access opening into said drum access opening to facilitate said direct communication into said fabric enclosure; and
a cabinet door operable for movement from an open position providing unhindered combined top and front access into said fabric enclosure through said transition structure to a closed position in covering relation over said cabinet access opening.

5,661,915
SHOE WITH REMOVABLE SPIKE PLATE
Michael R. Smith, P.O. Box 53, Lingle, Wyo. 82223
Filed Jul. 15, 1996, Ser. No. 679,843
Int. Cl.[6] A43C *13/00;* **A43B** *3/24;1/10*
U.S. Cl. 36—15 **9 Claims**

1. In combination:
a shoe having a sole portion and an upper portion; and
a spike plate having top and bottom surfaces, removably connected to the sole portion of said shoe;
said spike plate including a plurality of spikes depending from the bottom surface thereof;
said spike plate including a generally flat base plate of a resilient flexible material to conform to the sole portion of the shoe when attached to the shoe, and an upright wall extending along a peripheral edge of the spike plate;



said spike plate further including a forward portion and a rearward portion, pivotally connected together by a hinge, the hinge oriented transversely to a longitudinal length of the plate;

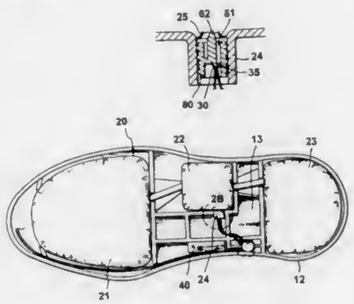
said base plate having a width at the hinge greater than a width forwardly and rearwardly of the hinge;

said spike plate peripheral wall having two vertical breaks therein, one located at each end of said hinge, permitting the spike plate forward portion to pivot downwardly at the hinge, separating the wall at the breaks;

a rib projecting outwardly from an outward surface of a vertical peripheral side wall of the sole portion, said rib extending continuously around the entire peripheral side wall of the sole portion;

a groove formed on an inward peripheral vertical surface of the spike plate wall cooperable with said rib to selectively retain the spike plate in position on the shoe, the groove extending continuously around the entire peripheral surface of the wall.

5,661,916
ELECTRONIC STEP COUNTING SHOE
Tien-Tsai Huang, No. 4-2, Lane 30, Wu Chuan Street, Pan Chiao Clty, Taipei, Taiwan
Filed Jul. 5, 1996, Ser. No. 674,530
Int. Cl.[6] A43B *5/00;13/20*
U.S. Cl. 36—132 **9 Claims**



1. An electronic step counting shoe comprising:

a shoe body having a vamp and an outsole and a receiving chamber defined within said outsole;

a fluid container mounted in the receiving chamber of the outsole of said shoe body and filled up with a fluid;

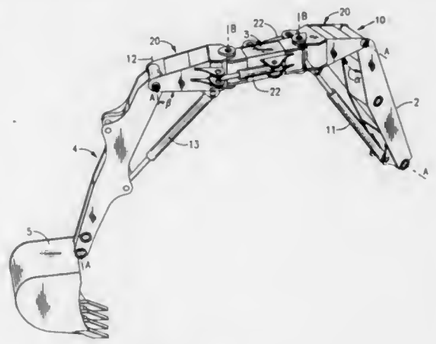
a pressure sensor disposed in contact with the fluid of said fluid container and adapted for detecting the pressure of the fluid;

a temperature sensor disposed in contact with the fluid of said fluid container and adapted for detecting the temperature of the fluid;

a circuit board mounted in the receiving chamber of said shoe body, said circuit board comprising a pressure converter, a temperature compensating circuit, and a microprocessor, said pressure converter being electrically connected to said pressure sensor, and adapted for converting the pressure signal detected by said pressure sensor into a corresponding electric signal and providing the electric signal thus obtained to said microprocessor for processing into a corresponding digital signal, said temperature compensating circuit being electrically connected to said temperature sensor, and adapted for converting the temperature signal detected by said temperature sensor into a corresponding electric signal and providing the electric signal thus obtained to said microprocessor for processing into a corresponding digital signal, so as to provide a compensation for the error resulting from the change of the temperature of the fluid of said fluid container; and

a liquid crystal display electrically connected to said microprocessor and adapted for displaying the digital signals outputted from said microprocessor.

5,661,917
CIVIL ENGINEERING WORKS MACHINE IN WHICH THE WORKING TOOL IS MOUNTED AT THE END OF AN ARTICULATED ARM
Henri Marchetta, Sevrier, and Georges Charles, Limas, both of France, assignors to Mecalac, Annecy le Vieux, France
Filed Apr. 25, 1996, Ser. No. 626,430
Claims priority, application France, Apr. 25, 1995, 95 05184
Int. Cl.[6] E02F *3/38*
U.S. Cl. 37—348 **3 Claims**



1. Civil engineering apparatus that includes

a vehicle having a chassis,

a turret mounted upon said chassis,

a boom pivotally mounted at one end on said turret,

a tool stick connected to the opposite end of said boom by a boom tip,

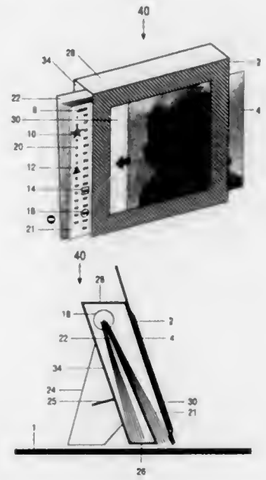
said boom tip further including a body section and a first articulating member on one end of said body section and a second articulating member on the opposite end of said body member,

said first articulating member having a first pivot means for connecting the boom tip to said boom so that the boom tip is pivotable about a first axis and a second pivot means for connecting the first articulating member to the body section so that the boom tip is pivotable about a second axis that is perpendicular to said first axis,

said second articulating member having a third pivot means for connecting the boom tip to said tool stick so that the tool stick is pivotable about a third axis to the tool stick so a fourth pivot means for connecting the second articulating member that the tool stick is pivotable about a fourth axis that is perpendicular to said third axis, and

ram means for selectively displacing the boom tip about said first and second axis and the tool stick about said third and fourth axis.

5,661,918
COMBINED EVENT CALENDAR AND PICTURE FRAME
John J. Malcolm, 1704 Carleton Ct., Redwood City, Calif. 94061-2666, and Thomas Shalvarjian, San Francisco, Calif., assignors to John J. Malcolm, Redwood City, Calif.
Filed Jun. 28, 1996, Ser. No. 672,449
Int. Cl.[6] G09F *3/00*
U.S. Cl. 40—107 **28 Claims**



1. A calendar, comprising:

a cover having a front panel and a back panel,

a support means attached to said back panel for supporting said calendar,

and at least one calendar page, said at least one calendar page attached to said cover,

said front panel of said cover being positionable to cover at least a portion of said at least one calendar page,

wherein said front panel of said cover has a first position and wherein in said first position, said front panel hides a hidden portion of said at least one calendar page and leaves visible a visible portion of said at least one calendar page,

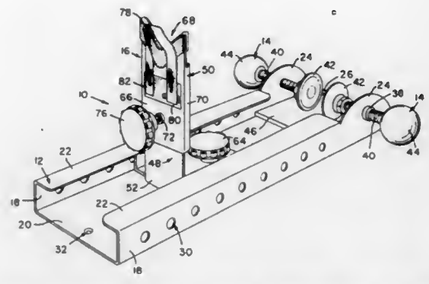
and wherein said front panel of said cover has a second position, and wherein when said front panel is in said second position said hidden portion of said at least one calendar page is exposed.

5,661,919
HANDGUN HOLDER
Gerald Ray Pryor, 114 West Simmons St., Weatherford, Tex. 76086
Filed Nov. 1, 1996, Ser. No. 742,816
Int. Cl.[6] F41A *23/16*
U.S. Cl. 42—94 **19 Claims**

1. A handgun holder, comprising:

an elongated base having a U-shaped cross-section, said base including an intermediate, bottom wall and a pair of first side walls each having an inwardly projecting free edge;

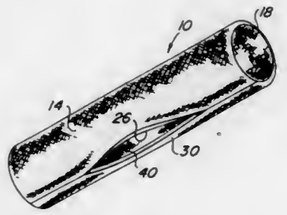
a pair of clamping members rotatably secured to said first side walls in opposition to one another for engaging and clamping the handle of a handgun therebetween;



a support member having a lower end slidable on said intermediate, bottom wall between said first side walls and having an upper end with a notch for receiving the barrel of the handgun; and,

a first set screw rotatably secured to said lower end of said support member for engaging said intermediate, bottom wall of said base and moving said lower end of said support member into engagement with said inwardly projecting free edges of said first side walls so as to selectively fix the position of said support member on said base.

5,661,920
SCOPE COVER
Daniel D. Evans, 3234 N. 20th Pl., Phoenix, Ariz. 85016
Continuation-in-part of Ser. No. 26,116, Jun. 27, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,146
Int. Cl.[6] F41A *35/02*
U.S. Cl. 42—96 **2 Claims**



1. A cover for a mounted telescopic sight comprising in combination:

a first end piece;

a second end piece generally parallel to and spaced apart from the first end piece;

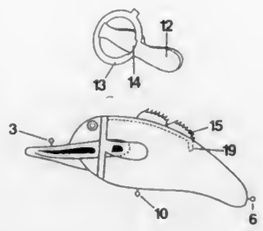
a generally cylindrical element extending between and secured to the first and second end pieces;

a longitudinally extending opening in the cylindrical element having a generally elongated and pointed ended oval configuration through which the telescopic sight extends to be disposed within the cover.

5,661,921
ARTIFICIAL FISHING LURE WITH FINS
Marvin Howard Mason, 545 Harrisburg Rd., Alexandria, Ky. 41001
Filed May 13, 1996, Ser. No. 645,159
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.09 **8 Claims**

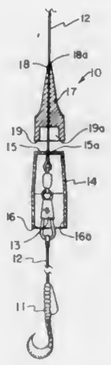
1. An artificial fishing lure, comprising:

a) a lure body having a head portion and a body portion, a bill extending forward of the head portion, and a circumferential groove between the head portion and the body portion;



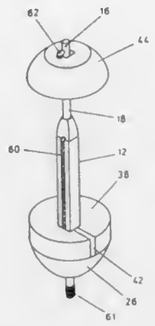
b) a line attachment means on the lure body,
c) hook attachment means on the lure body;
d) a ring fin device including a ring for releasably mating with the circumferential groove, a flexible fin depending from the ring and,
whereby a water passageway is formed between the ring and the circumferential groove providing water pressure to cause movement of the flexible fin.

5,661,922
FISHING SWIVEL WEED GUARD RESONATING SYSTEM
Louis James Bonomo, 118 W. 27th St., Apt. 2F, New York, N.Y. 10001
Filed May 3, 1995, Ser. No. 433,038
Int. Cl.[6] A01K *85/01;85/02*
U.S. Cl. 43—42.31 **12 Claims**



1. A weed guard resonating system for a fishing lure attached to a fishing line, comprising:
a swivel for connecting the fishing lure to the fishing line;
a circular cone having first and second ends for slidably engaging the fishing line to substantially enclose said swivel, thereby protecting said swivel from vegetation and producing a first resonating sound with said swivel; and
a sinker having first and second ends for slidably engaging the fishing line, said sinker positioned adjacent and intermittently engaging said cone, opposite said swivel, for producing a second resonating sound upon impact with said cone.

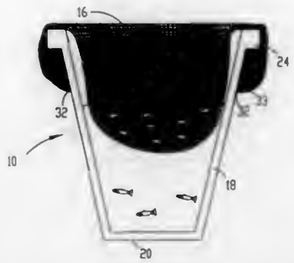
5,661,923
FISHING WEIGHT APPARATUS
Robert Fellowes, 110 Antrim Road., Woodley, Reading, Berkshire RG5 3NY, Great Britain
Filed May 9, 1995, Ser. No. 436,169
Claims priority, application United Kingdom, May 10, 1994, 9409214.5; Dec. 2, 1994, 9424439.9
Int. Cl.[6] A01K *95/00*
U.S. Cl. 43—43.14 **32 Claims**



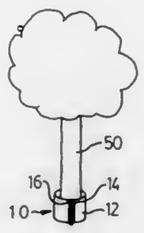
1. An adjustable fishing weight apparatus comprising an elongate support means having longitudinally opposed ends, a plurality of discrete weight units longitudinally slidably supported on said support means, means for releasably retaining said weight units on said support means, line attachment means for attaching said apparatus to a fishing line, said support means having a fixed base adjacent one said end thereof, said retaining means comprising a locking cap member adjacent the longitudinally opposed said end of said support means, wherein said cap member is longitudinally adjustable along and engagable with said support means for said weight units to be disposed between said base and said cap member whereby engagement of said cap member with said support means restricts longitudinal movement of said weight units relative to said support means, said support means comprising an elongate spine having a cross sectional area and said weight units each comprising a longitudinally extending aperture having a width through which said spine is received in a complimentary fit, said spine having a neck portion toward said opposed end remote from said base and having a width and a cross sectional area substantially less than the cross sectional area of said spine, and wherein each said weight unit comprises a slot extending radially outwardly from said aperture to an edge of said weight unit forming a break in said edge, said slot having a width substantially less than said width of said aperture but greater than said width of said neck portion to allow said neck portion to pass through said slot.

5,661,924
METHOD AND APPARATUS FOR STORING AND HANDLING LIVE BAIT
Marjorie Maxwell, 1165 W. Farm Rd. 56, Springfield, Mo. 65803
Filed Sep. 15, 1995, Ser. No. 529,951
Int. Cl.[6] A01K *97/05*
U.S. Cl. 43—55 **24 Claims**

1. In combination:
a bait container having a top, side wall and bottom wall;
a flexible cover composed of a mesh material and presenting a peripheral edge shiftable between a taut position in which said peripheral edge is positioned about said side wall and shifted towards said bottom wall sufficient for drawing said cover tautly over said top and at least a portion of said side wall, and a well-forming position in which said peripheral edge is shifted along said side wall towards said top sufficient to allow formation of a well of said cover within said container for storing bait therein and facilitating removal of bait from said container;
securing means for releasably securing said peripheral edge about said side wall to maintain said peripheral edge in said taut and well-forming positions; and
a removable lid received on said container to cover said top and positioned between said top and said cover so that said cover retains said lid on said container when said peripheral edge is shifted to said taut position.

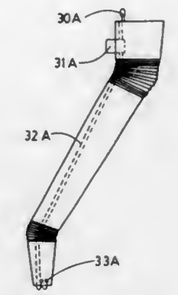


5,661,925
TREE TRUNK PROTECTION BAND AND LOCK
Ross Lee MacMaster, 1665 Spruce Drive, Caledon, Ontario, Canada, L0N 1C0
Filed Jan. 12, 1995, Ser. No. 372,056
Int. Cl.[6] A01G *13/10;17/00*
U.S. Cl. 47—23 **8 Claims**



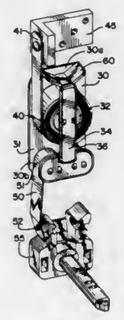
1. A tree guard comprising:
a generally rectangular sheet of flexible plastic having a first face, a second face, a first end and a second end;
a first elongate locking strip attached to and running along said first end of said sheet and including a bottom wall, an inner side wall and an outer side wall, the three walls defining a U-shaped groove and one of said side walls having a retaining bead running along it; and
a second elongate locking strip including a locking flange generally complimentary in shape to said groove and having retaining means for engaging said retaining bead of said first locking strip when said locking flange is inserted into said groove, said second elongate locking strip being attached to said second end of said sheet and arranged generally parallel to said first locking strip; and
a third locking strip attached to said sheet, substantially identical in structure to said first locking strip, spaced between said first locking strip and said second locking strip and generally parallel thereto, and adapted to engage said second locking strip.

5,661,926
CHRISTMAS TREE WATERING FUNNEL WITH INDICATING SYSTEM
Hugh A. Granger, P.O. Box 1399, Fullerton, Calif. 92633
Filed Apr. 26, 1996, Ser. No. 639,201
Int. Cl.[6] A47G *7/02*
U.S. Cl. 47—40.5 **20 Claims**



1. An apparatus for maintaining a water supply in a stand supporting a cut plant comprising:
a conduit rigid along most of its length having a top portion integrally formed to a bottom portion, said top portion having a diameter greater than the diameter of the bottom portion;
a water level device extended through said bottom portion of said conduit; said water level device being attached to a connecting member so that it will reach to the level of said water supply in said stand;
an indicating mans affixed to the top portion of said conduit and coupled to said water level device, said indicating means being activated by movement of water to activate said water level device thereby activating said indicating means when the water supply in said stand drops below a desired minimum level; and
said connecting member being affixed to said water level device and said indicating means for coupling said water level device to said indicating.

5,661,927
SLIDING COUNTERBALANCE ASSEMBLY FOR A SASH WINDOW
Allen D. Polowinczak, Plainfield; James J. Prete, Hinsdale, both of Ill.; Michael P. Bratcher, Munster, Ind., and Mark V. Murphy, Chicago, Ill., assignors to Ashland Products, Inc., Lowell, Ind.
Filed Mar. 6, 1996, Ser. No. 611,366
Int. Cl.[6] E05F *3/06*
U.S. Cl. 49—447 **12 Claims**

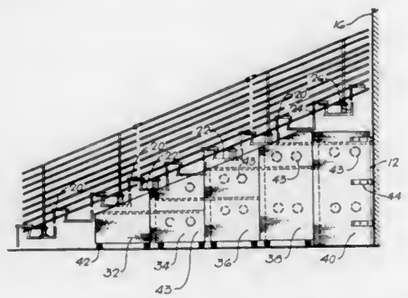


1. In combination with a sash window disposed within a master frame, wherein said master frame is comprised of a pair of opposed

vertical guide rails, said guide rails adapted to slidably guide a pair of sash windows within said master frame, wherein each guide rail is comprised of dual elongated channels, each channel having a top and a bottom portion and an elongated slot opening on the inside of the guide rail which extends the length of the channel, the improvement comprising:

a slidable spring assembly adapted to fit within said guide rail channel and having a backplate with an upper and a lower portion, supporting means mounted on said backplate, a coiled leaf spring spirally wound around said supporting means and having an upper end, said upper end secured to the top portion of said guide rail channel, means for retaining said spring upon said supporting means, a strap having an upper and lower end, said upper strap end attached to a boss rigidly mounted on said backplate and said lower strap end attached to a pivot brake assembly mounted on a sash window.

5,661,928
AUTOMATIC END CLOSURE SYSTEM FOR BLEACHERS
Roger H. Beu, Crystal Lake, Ill., assignor to B & R Erectors, Inc., Woodstock, Ill.
Filed Apr. 26, 1996, Ser. No. 639,169
Int. Cl.[6] E04H *3/12*
U.S. Cl. 52—9 **18 Claims**



1. A closure system for substantially preventing ingress and egress to the open ended undersection of a telescoping bleacher assembly, comprising:

a plurality of vertical panels disposed in adjacent parallelism across the open ends of the undersection and moveable with extension and retraction movements of the bleacher assembly;

a plurality of guidance tracks attached to each panel of said plurality of panels, for guiding the same during movement thereof with the bleacher assembly; and ground engaging wheels mounted at the lower end of each of said panels for moveably undersupporting the same.

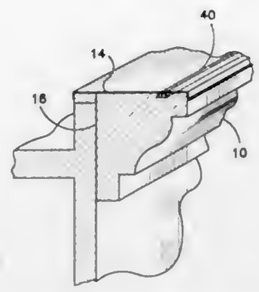
5,661,929
PARAPET MOLDING FLASHING INSTALLATION SYSTEM
Steve Ross, 18712 Rancho Circle La., Yorba Linda, Calif. 92886
Filed Apr. 29, 1996, Ser. No. 638,647
Int. Cl.[6] E04F *13/18*
U.S. Cl. 52—58 **9 Claims**

1. A molding flashing installation method, for anchoring a flashing cap to a molding having an upper surface, an inner surface, and a decorative surface to a building having a parapet, comprising:

forming a channel in the molding, the channel extending lengthwise along the molding, the channel having an upper opening in the upper surface;

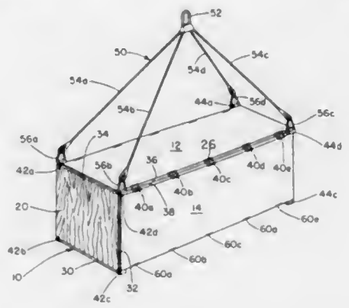
inserting an anchor insert into the channel;

covering the molding with the flashing cap; and



securing the flashing cap to the molding by fastening the flashing cad to the anchor insert.

5,661,930
HOUSE FLOOR SYSTEM AND SHIPPING CONTAINER THEREFOR
William H. Porter, P.O. Box 249, Saugatuck, Mich. 49453
Filed Feb. 21, 1996, Ser. No. 604,734
Int. Cl.[6] B65D *88/52*
U.S. Cl. 52—64 **12 Claims**



1. A building floor system and shipping container therefor comprising:

first and second end panels;

a plurality of rectangular, generally flat floor sections each having a peripheral metal edge portion and floor decking attached to said metal edge portion;

hinge means for pivotally coupling each floor section to one or more adjacent floor sections, wherein said floor sections may be folded to form a substantially closed container with said first and second end panels attached to opposed ends of each of said floor sections for enclosing other building structural members such as for shipping or wherein said floor sections may be unfolded to form a generally flat surface for use as a floor; and

reinforcing members attached to adjacent corners of the metal edge portions of coupled floor sections when said floor sections are folded for increased strength of said closed container, wherein said reinforcing members may be removed to permit said floor sections to be unfolded to form said generally flat floor structure.

5,661,931
JOIST
Lennart Johansson, Mariestad, Sweden, assignor to Nivell System Aktiebolag, Mariestad, Sweden
PCT No. PCT/SE94/00590, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO95/01485, PCT Pub. Date Jan. 12, 1995
PCT Filed Jun. 16, 1994, Ser. No. 556,972
Claims priority, application Sweden, Jul. 1, 1993, 9302270
Int. Cl.[6] E04G *1/22*
U.S. Cl. 52—126.7 **20 Claims**



1. A joist for building constructions, comprising:

an elongated, form-stable joist body with a substantially flat outer side and an inner side, and a central plane, said body being provided with a plurality of circular through-extending holes spaced from each other and extending substantially perpendicularly to and between said outer and inner sides, a circumferential inner surface of the holes being provided with internal threads of a predetermined pitch; and

a plurality of load-bearing space and level adjusters of substantially straight, cylindrical shape, each space and level adjuster having an external thread of substantially the same pitch as the internal threads of the holes and having a portion accessible from outside of the joist body for co-operation with a turning device, said space and level adjusters being screwed into said holes with front portions of the space and level adjusters protruding from the joist body to form an air gap between a supporting surface and the joist body and to adjust the outer side of the joist body at a desired level, a remaining portion of the space and level adjusters being in firm threaded engagement with the joist body so that a rear end of the space and level adjusters is located below or in plane with the outer side of the joist body,

wherein said internal threads are formed directly in the joist body and said external threads on the space and level adjusters extend from end to end, said space and level adjusters having a length such that said remaining portion situated inside the joist body in order to maintain requisite thread engagement has a part-length of at least 10 mm, and said front portion has a part-length of at least 1 mm, in order to form said air gap.

5,661,932
POST ANCHOR AND METHOD OF INSTALLING A POST
David H. Barefield, 1605 Palm Dr., Avon Park, Fla. 33825
Filed Apr. 15, 1996, Ser. No. 631,971
Int. Cl.[6] E02D *5/80*
U.S. Cl. 52—154 **9 Claims**

1. A post anchor to provide for securing a post vertically oriented in earthen ground, the post having an outer surface and extending above grade following installation, the post anchor comprising:

a) a driveable member adaptable for impact driven insertion into the earthen ground during installation, the driveable member comprising:

1) a post engaging channel to receive the post, the post engaging channel having a first end, a second end situated opposite from the first end, an outer surface and an open passage connecting the first end and the second end, the open passage having an inner surface, the open passage to receive the post;

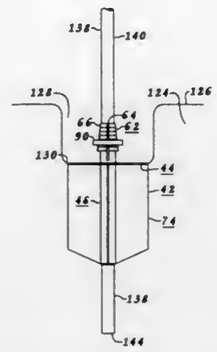
2) a plurality of ground engaging fins, each ground engaging fin contacting the outer surface of the post engaging channel and having a vertical orientation during and following installation of the driveable member, each ground engaging fin to provide for resistance to horizontal displacement through the earthen ground following installation, each ground engaging fin having an upper edge;

3) a sub-grade surface extending outward generally perpendicularly from the post engaging channel, the post engaging channel extending through the sub-grade surface with the first end of the post engaging channel partially extending above the sub-grade surface, the upper edge of each ground engaging fin at least partially secured to the sub-grade surface, the sub-grade surface wherein to provide for compaction of the earthen ground during installation and resistance to displacement of the earthen ground following installation;

b) locking means to provide for securing the post situated within the post engaging channel to the driveable member;

whereby the driveable member provides for impact driven insertion into the earthen ground where the post may be secured within the post engaging channel using the locking means to prevent vertical motion of the post relative to the driveable member while the ground engaging fins and the sub-grade surface cooperate to provide resistance to motion of the post following installation;

c) a compression slot situated in said post engaging channel proximate the first end and extending longitudinally a predetermined distance along the length of said post engaging channel toward the second end, wherein the locking means provides for a compression of said post engaging channel proximate said compression slot to bring a portion of the inner surface of said post engaging channel into contact with a portion of the outer surface of the post.



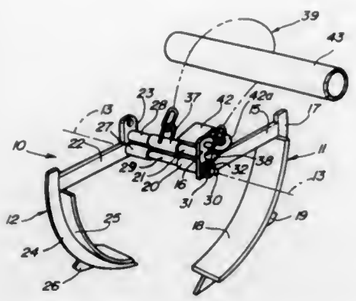
5,661,933
LOCKABLE GROUND ANCHOR FOR SPORTS EQUIPMENT
Leslie A. DeJonghe, 7488 Ridge Hwy., Britton, Mich. 49229
Filed Nov. 22, 1995, Ser. No. 561,841
Int. Cl.[6] E02D *5/74*
U.S. Cl. 52—166 **15 Claims**

1. An anchor apparatus for anchoring an article to the ground comprising:

an axle means, said axle means having a length;

a pair of leg members rotatably mounted in spaced apart relation on said axle means, each said leg member having a base member with a first end rotatably mounted on said axle means, an opposite end and a ground engaging curved tine member with a first end attached to said opposite end of said base member and an opposite free end, said leg members being free to rotate on said axle means independent of one another; and

a lock means having a length substantially equal to said length of said axle means for releasably and simultaneously engaging both of said leg members thereby preventing rotation of said leg members relative to one another about said axle



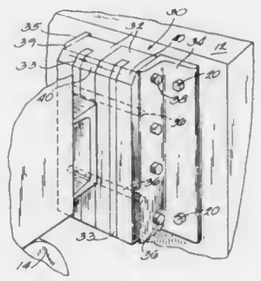
means while coupling said leg members to rotate about said axle means together whereby when said leg members are rotated about said axle means in opposite directions to move said opposite free ends of said tine members toward one another and to drive said tine members into an area of ground and said lock means is subsequently releasably engaged with said leg members, said base members are positionable above a surface of the area of ground and said leg members are prevented from rotation relative to one another about said axle means by said lock means to prevent rotation of said opposite free ends of said tine members away from one another.

5,661,934

LOADING DOCK BUMPER

Clarence R. Weisflog, Cudahy, Wis., assignor to CR Industries, Inc., Cudahy, Wis.

Filed Mar. 20, 1996, Ser. No. 618,586
Int. Cl.[6] E04D *13/18*
U.S. Cl. 52—173.2 9 Claims



1. A loading dock bumper assembly comprising

at least one bracket for mounting the assembly on a surface of a loading dock,

at least one resilient bumper component attached to said bracket, said bumper component being adapted to be vertically mounted and positioned to receive the impact of a motor vehicle backed into abutment with said dock, said resilient bumper being formed of a unitary block of resilient plastic material a side of said block adapted to receive contact with a motor vehicle being provided with a vertical slot, said slot having a metal wear bar secured therein

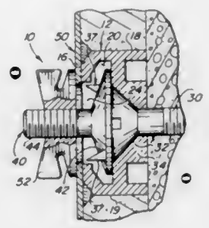
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5,661,935

STORM PANEL TRACK

Glen Erickson, and Linda Erickson, both of 8736 NW. 40th St., Coral Springs, Fla. 33065

Filed May 31, 1996, Ser. No. 657,688
Int. Cl.[6] E06B *3/26*
U.S. Cl. 52—202 15 Claims



1. An assembly for mounting storm panels on a house or building having a wall structure with an exterior surface surrounding glass window and door structures, wherein said storm panels include a plurality of apertures formed therethrough at spaced intervals along a periphery thereof,

said assembly comprising:

an elongate rail having a rear wall with a rear surface, a front wall with a front face, top and bottom edges, an elongate channel extending substantially along a length of said rail between said rear wall and said front wall, and an elongate slot opening formed through said front face and said front wall and extending substantially along a length of said rail and communicating with said channel through said front wall,

a plurality of bolts each having an enlarged head portion and a stud, said plurality of bolts being maintained within said channel so that said bolts are positioned at spaced intervals therealong with said studs of said bolts extending outwardly towards said slot opening,

means for mounting said rail to said wall structure of said house or building adjacent to said window and door closures, and

a plurality of fastening elements removably attachable to said studs to secure said storm panels to said rail so that said storm panels are supported in spaced, covering relation to said window and door closures.

5,661,936

METHOD OF ATTACHING EXTRUDED CELLULAR PANELS

Robert Ellingson, 14101 Industrial Park Blvd., NE., Covington, Ga. 30209

Filed May 18, 1995, Ser. No. 445,214
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—285.1 5 Claims

1. An extruded plastic panel assembly comprising:

a first panel body formed of extruded cellular plastic material;

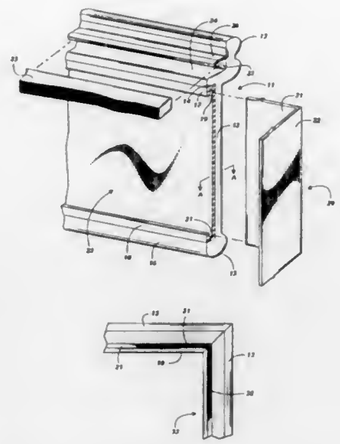
a first key receiving slot coextruded integrally with said first panel body with said first key receiving slot being formed at least partially of a relatively more dense non-cellular plastic material;

a second panel body formed of extruded cellular plastic material;

a second key receiving slot coextruded integrally with said second panel body with said second key receiving slot being formed at least partially of a relatively more dense non-cellular plastic material;

a key having first and second ends;

said first and second key receiving slots being sized and configured to receive and firmly grasp said first and second ends respectively of said key to join said first and second panels together forming an article of predetermined configuration.

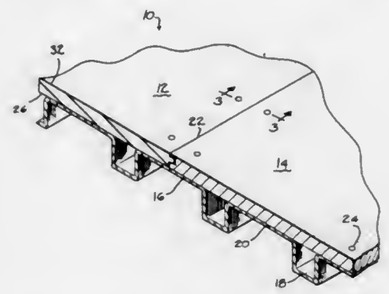


5,661,937

MEZZANINE FLOOR PANEL

Gregory E. Doppler, Loveland, Ohio, and Donald J. French, Louisville, Ky., assignors to Johnson-Doppler Lumber, Cincinnati, Ohio

Filed Apr. 17, 1995, Ser. No. 423,159
Int. Cl.[6] E04B *5/02*
U.S. Cl. 52—410 6 Claims



1. A mezzanine floor panel comprising:

a board of predetermined dimension having a homogeneous composition comprising wood fibers, phenolic resin and wax emulsion, the board having longitudinal and side edges defining first and second surfaces;

each of the first and second surfaces including at least one layer of polyester acrylic covered by at least one layer of acrylic, wherein on at least one of the surfaces an outermost of the acrylic layers has a stippled texture; and

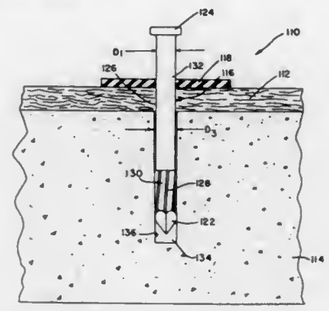
a tongue located along a first of the edges and a complementary shaped groove located along an edge opposite the first edge, the tongue having upper and lower surfaces unequal in dimension.

5,661,938

EASY DRIVE CONCRETE FASTENER SYSTEM

Michael P. Ditka, Deerfield, Ill., and Larry Reinhard, Arvada, Colo., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 2, 1996, Ser. No. 595,742
Int. Cl.[6] E04B *7/00*
U.S. Cl. 52—410 21 Claims



1. A depth-insensitive concrete fastener system for objects to a concrete substructure comprising:

a concrete substructure;

a bore-hole, having a predetermined diametrical extent defined within said concrete substructure;

a material object disposed upon said concrete substructure; and

anchor fastener means for insertion within said bore-hole of said concrete substructure for securing said material object upon said concrete substructure;

said anchor fastener means comprising a tip portion; a head portion; and a shank portion interconnecting said tip and head portions; said shank portion comprising a first portion commencing immediately adjacent to said head portion, extending axially toward said tip portion, and having a first predetermined diametrical extent which is less than said predetermined diametrical extent of said bore-hole defined within said concrete substructure; and said shank portion further comprising a second ribbed portion interposed between said first shank portion and said tip portion, comprising a circumferential array of substantially axially extending rib means, integrally formed upon and from the material comprising said shank portion of said anchor fastener means, having a second predetermined diametrical extent which is greater than said predetermined diametrical extent of said bore-hole defined within said concrete substructure, and having an axial extent which is only a fractional portion of the axial extent of said shank portion of said anchor fastener means, for permitting axial insertion of said anchor fastener means within said bore-hole defined within said concrete substructure in a substantially linear, impact-driven manner with an interference fit defined between said anchor fastener means and said bore-hole defined within said concrete substructure only along said axial extent of said second ribbed portion so as to render said anchor fastener means, and said concrete fastener system, depth-insensitive regardless of the depth to which said anchor fastener means is driven into said bore-hole defined within said concrete substructure.

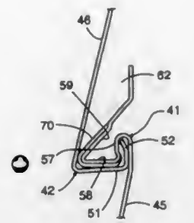
5,661,939

INTERLOCKING PANEL AND METHOD OF MAKING THE SAME

Mark Lawrence Coulis, Brunswick, and Jack Thomas Mowery, Medina, both of Ohio, assignors to Associated Materials Incorporated, Akron, Ohio

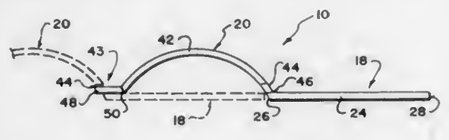
Filed May 16, 1995, Ser. No. 442,310
Int. Cl.[6] E04D *1/00*
U.S. Cl. 52—519 22 Claims

1. A plastic panel comprising a first upper connector portion having a channel shape with a projecting wall and an elongate inclined wall extending upward from said projecting wall, a medial



main portion, and a second lower connector portion also having a channel shape defined by an L-shaped projection having a substantially horizontal arm and an upstanding arm, said first and second connector portions being complementary in shape to enable interlocking with other panels of like construction such that at least a portion of said projecting wall of said upper connector portion abuts against said horizontal arm of said lower connector portion and a portion of said inclined wall abuts against said medial main portion, and at least one strip of high strength material is coextruded with at least one of the panel portions for rigidifying said panel.

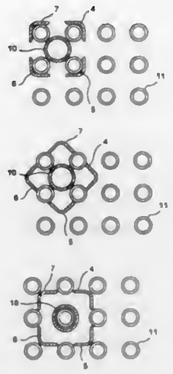
5,661,940
HEAT SHIELD SHINGLE
Clifford Wiens, 240 E. Orange Dr., Phoenix, Ariz. 85012
Filed Apr. 15, 1996, Ser. No. 632,671
Int. Cl.[6] E04D *1/28;1/00*
U.S. Cl. 52—519 **18 Claims**



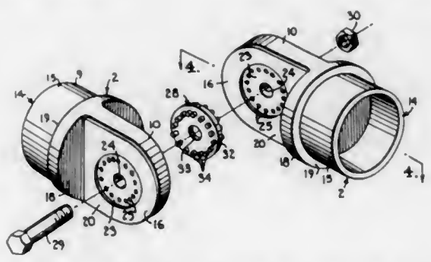
1. A roofing shingle Composed of a rigid water resistant material and comprising:
a substantially flat shingle portion with laterally spaced apart sides; and
a heat shield portion fixed to the shingle portion projecting upwardly from the shingle portion and extending laterally from one of the sides of the shingle portion to provide a substantially L-shape.

5,661,941
CONSTRUCTIONAL BUILDING SET
Synnøve Vataker, Søborg, Denmark, assignor to Interlego AG, Baar, Switzerland
PCT No. PCT/DK94/00357, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/08378, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 21, 1994, Ser. No. 617,914
Claims priority, application Denmark, Sep. 22, 1993, 1068/93
Int. Cl.[6] A63H *33/06;33/08;* **E04C** *1/00*
U.S. Cl. 52—604 **10 Claims**

1. A constructional building set comprising a first building element having coupling means for coupling to at least one other building element included in the building set by cooperation with coupling studs arranged in a pattern on the other building element, the pattern being defined by a number of modular directions and a mutual modular distance between closest neighboring studs, said coupling means comprising flanges whose side faces are adapted to engage a plurality of the coupling studs on the other building element in a first number of orientations of the first building element with respect to the other building element, the first number of orientations being parallel to the modular directions, and wherein the flanges are divided into sections so as to form edge faces which serve as engagement faces with the coupling studs in a second number of orientations of the building element, the second number of orientations being different from the first number of orientations.



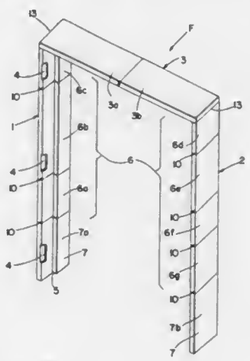
5,661,942
MODULAR CONNECTOR SYSTEM FOR TUBULAR STRUCTURAL MEMBERS
Norwin Palmer, 5882 Tuttle Creek Blvd., Manhattan, Kans. 66502
Filed Aug. 30, 1995, Ser. No. 521,319
Int. Cl.[6] E04H *12/10*
U.S. Cl. 52—653.2 **37 Claims**



1. A modular connection assembly for connecting first and second elongated structural members at a selected mutual orientation, said assembly comprising:
(a) a first connector member having a first connection wall and a generally planar first mating wall with a first aperture formed therethrough and a first recess formed thereinto, said first connection wall enabling connection of a first elongated structural member thereto;
(b) a second connector member having a second connection wall and a generally planar second mating wall with a second aperture formed therethrough and a second recess formed thereinto, said second connection wall enabling connection of a second elongated structural member thereto;
(c) a projection plate having a plate aperture formed therethrough, generally planar opposite sides, and first and second projections respectively from said opposite sides;
(d) said first and said second connection members being positioned with said plate therebetween and said first and second projections positioned respectively in said first and second recesses and said first, second, and plate apertures aligned; and

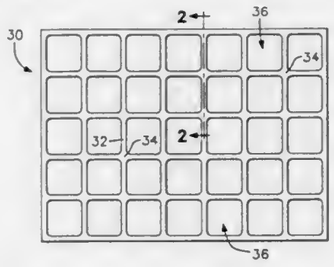
(e) a fastener extending through said first, second, and plate apertures to secure said first and second connector members and elongated structural members connected thereto in said selected mutual orientation.

5,661,943
FRAME WITH INTEGRAL ENVIRONMENT RESISTANT MEMBERS
Richard C. Hagel, Nacogdoches, Tex., assignor to Burns, Morris & Stewart Limited Partnership, Nacogdoches, Tex.
Filed Mar. 8, 1996, Ser. No. 612,757
Int. Cl.[6] E04C *2/38*
U.S. Cl. 52—656.4 **5 Claims**



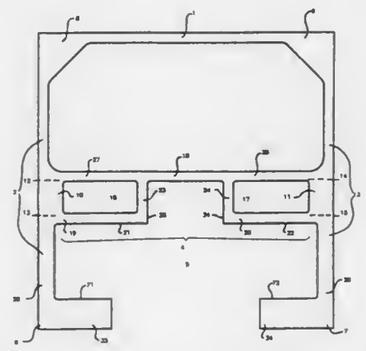
1. A frame, comprising:
a top jam;
two side jambs having upper and lower portions that are integrally formed, said upper portion being made of wood, said lower portion being a durable moisture, decay, and insect resistant made from a wood particulate that is mixed with resins.

5,661,944
PANEL FRAMING SYSTEM AND PRODUCTS PRODUCED THEREBY
Paul Specht, Wilmette, Ill., assignor to The Tensar Corporation, Atlanta, Ga.
Division of Ser. No. 253,127, Jun. 2, 1994, Pat. No. 5,527,500. This application Apr. 26, 1995, Ser. No. 429,540
Int. Cl.[6] E04C *2/38*
U.S. Cl. 52—656.8 **13 Claims**



1. A panel comprising:
a thermoplastic panel member including central panel portions and peripheral portions surrounding said panel portions,
a solid peripheral frame member defining an opening,
said peripheral portions of said panel member being embedded in said solid peripheral frame member with said central portions being in tension across said opening,
said central panel portions and said peripheral portions extending generally in a single plane, and
said panel member comprising a polygrid including a plurality of molecularly oriented strands interconnected by less oriented junctions, said strands and junctions together defining grid openings.

5,661,945
UNIVERSAL BEAM FOR MOVABLE LOAD
Anders Henriksson, Södertälje; Lennart Stenström, and Valter Stenström, both of Trosa, all of Sweden, assignors to Transman AB, Trosa, Sweden
PCT No. PCT/SE94/00749, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/06222, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 17, 1994, Ser. No. 586,695
Claims priority, application Sweden, Aug. 20, 1993, 9302690
Int. Cl.[6] E04C *3/30*
U.S. Cl. 52—726.2 **20 Claims**



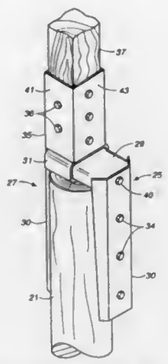
1. A universal beam for supporting a movable load, comprising:
a substantially symmetrical substantially inverted U-shaped profile extrusion having a top, first and second substantially parallel shanks extending downwardly from said top, a bottom, and a connecting member extending between and connected to said shanks and defining on a first side thereof, between said connecting member and said bottom, a load supporting, guiding, and driving volume;
said extrusion having a height and a width, said width being approximately equal to said height;
said shanks, between said connecting member and said top, having a thickness, except at a corner, between said top and said connecting member, that is at most 5% of said extrusion width; and
said shanks having locally reinforced portions, said connecting member extending between locally reinforced portions of said shanks, and comprising a central wall substantially transverse to said shanks, and first and second drums adjacent said locally reinforced portions, said drums having inner and outer walls, and top and bottom portions; said locally reinforced portions forming said outer walls of said drums; said central wall forming said top portion of said drums; each said bottom portion connected to a said outer wall and a said inner wall, and each said inner wall connected to said central wall and said bottom portion; said bottom portion being generally transverse to said shanks and having a generally flat bottom; and said inner walls being substantially parallel to said shanks and having a sustantially flat surface.

5,661,946

POLE TOP EXTENSION

Kenneth Davis, 3224 Lake Albano Cir., San Jose, Calif. 95135

Filed Apr. 9, 1996, Ser. No. 628,099
Int. Cl.[6] E04C *3/30*
U.S. Cl. 52—736.1 **8 Claims**



1. A pole top extension assembly mounting to a top of a cylindrical wooden utility pole comprising:

a) a bracket assembly including a pair of bracket members each having a leg portion adapted to extend circumferentially partially around a side of the pole and formed to extend downwardly from the top of the pole by a distance sufficient for securement of each leg portion to opposite sides of the pole using a plurality of transversely extending fasteners extending through the pole and coupled between the leg portions, each said bracket member further having a transversely extending upper portion formed to matingly interengage with the other upper portion for coupling of the upper portions of said bracket members together over the top of the pole, and at least one of the bracket members including a rectangular collar opening upwardly to receive a bayonet member therein, said rectangular collar having a first and second pair of opposite side walls, said first pair of opposite side walls oriented substantially parallel to said leg portions and said second pair of side walls being oriented substantially perpendicular to said leg portions; and

b) a solid wooden bayonet having a rectangular transverse cross-section substantially mating with said collar, said bayonet being slidably received inside said collar with a first pair of sides thereof oriented substantially parallel to said leg portions, a second pair of sides thereof oriented substantially perpendicular to said leg portions, and a bottom of the bayonet supported on an upper portion of a leg portion; and

c) at least one fastener extending transversely through said collar and said wooden bayonet and coupling said wooden bayonet to said collar.

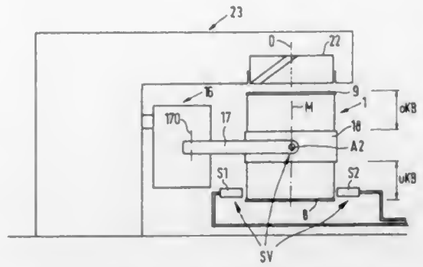
5,661,947

PROCESS TO TRAVERSE A FLAT CAN WHILE BEING FILLED AT A TEXTILE MACHINE DELIVERING A FIBER SLIVER AND ITS DEVICE

Josef Ippy, Mainburg; Otmar Kovacs, Dietfurt; Michael Ueding, Ingolstadt, and Albert Kriegler, Rottenegg, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Continuation of Ser. No. 273,015, Jul. 8, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,926
Claims priority, application Germany, Jul. 24, 1993, 43 24 951.5
Int. Cl.[6] B65B *63/04*
U.S. Cl. 53—118 **37 Claims**

1. A textile machine configured for delivering a fiber silver to a flat can having an elongated cross-section elongated in a longitudinal direction, said machine comprising a traversing device for imparting a traversing back-and-forth movement to said flat can in said longitudinal direction beneath a stationary rotary plate, said traversing device comprising grasping arms configured with grasping plates for grasping said flat can and imparting said traversing movement thereto, said traversing device further comprising means for alternately tilting said flat can in opposite directions around a tilting axis for each back-and-forth movement of said flat can at a predetermined angle, said flat can defining a depositing plane which is delimited by a can bead at the top of said flat can, said tilting means configured to alternately tilt said flat can such that said depositing plane is shifted laterally at each change of direction of said flat can in its back-and-forth movement in a direction essentially perpendicular to said longitudinal direction in a defined manner and held in said laterally shifted position for the length of travel of said flat can in said longitudinal direction so that fiber silver deposited in the flat can is offset laterally in alternate directions with respect to said longitudinal direction within the flat can.

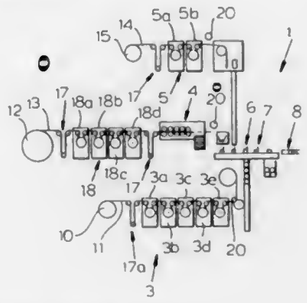


5,661,948

PACKAGING SYSTEM

Heinz F. Odenthal, Zülpich, Germany, assignor to Ostma Maschinenbau GmbH, Zulpich, Germany

Filed Sep. 20, 1995, Ser. No. 531,033
Claims priority, application Germany, Dec. 3, 1994, 44 43 110.4; Mar. 1, 1995, 29503391
Int. Cl.[6] B65B *61/20*
U.S. Cl. 53—131.5 **1 Claim**



1. A packaging system comprising:

a conveyor;

a coil of a web of box material;

box-making means adjacent the coil including a respective looper for continuously pulling the box-material web from its coil, intermittently printing on the box-material web, intermittently cutting the printed box-material web into individual carton blanks, forming the blanks into individual upwardly open boxes, and depositing the open boxes on the conveyor;

a supply of objects to be packaged;

a coil of label material;

label-making means adjacent the label-material coil including a respective looper for continuously pulling the label-material web from the coil, intermittently printing on the label-material web, intermittently cutting the printed label-material web into individual labels, applying the labels to the objects, separating the objects into lots, and loading the lots into respective ones of the open boxes on the conveyor;

a coil of insert material;

insert-making means adjacent the insert-material coil including a respective looper for continuously pulling the insert-material web from its coil, intermittently printing on the insert-material web, intermittently cutting the printed insert-material coil into individual inserts, and putting the inserts into respective ones of the open boxes;

means for closing the boxes after insertion thereinto of the lots of objects and the inserts; and

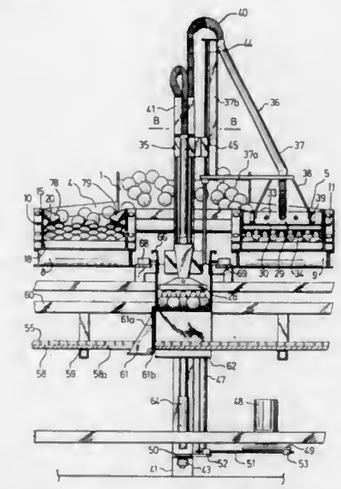
computer means connected to the box-, label-, and insert-making means for synchronously operating same in accordance with a program.

5,661,949

AUTOMATIC PACKING DEVICE FOR THE FILLING OF CONTAINERS WITH SUPERIMPOSED LAYERS OF PRODUCTS

Philippe Blanc, Montauban, France, assignor to Materiel Pour l'Arboriculture Fruitiere, Montauban, France

Filed Feb. 20, 1996, Ser. No. 603,775
Claims priority, application France, Feb. 17, 1995, 95 01957
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—237 **18 Claims**



1. An automatic packing device for filling containers with superimposed layers of products, comprising:

means for transporting a flow of products delivered in bulk and for dividing said flow into two separate streams,

two separate feed stations including means for arranging each stream of products so that said products are aligned one behind another in parallel rows,

a central packing station comprising support means for positioning each container during filling,

gripping means for alternately gripping a number of products forming a layer, and for placing said layer in said container so as to fill said container with superimposed layers of products, said gripping means being dimensioned to fit within the container, wherein

each feed station comprises:

a conveyor belt extending along a descending slope from the transporting means in a direction opposite to the direction in which the products are fed, so as to induce said products to undergo a rotating movement,

a U-shaped cradle comprising two vertical members connected by a horizontal crosspiece which together define an open face, said cradle having a width substantially matching the width of the conveyor belt, said cradle further including fixing means for detachably connecting said cradle above said conveyor belt so that the products exhibiting a rotating movement are distributed inside said cradle, projecting lugs positioned inside the cradle for aligning the products in parallel rows inside the cradle,

the gripping means comprise:

two gripping heads each comprising a detachable lower support bearing a plurality of gripping members disposed according to a distribution identical to the distribution of the products in the cradle,

means for pivoting the gripping heads about a horizontal axis between a first position for gripping a layer of products, and a second position for depositing said layer of products,

means for horizontally displacing the gripping heads alternately between a feed station for gripping a layer of products and the packing station for depositing said layer in a container,

means for vertically displacing the gripping heads between a top position for transfer between a feed station and the packing station, and bottom positions for respectfully gripping a layer of products and depositing said layer in a container,

means for activating the gripping heads between an active state for gripping and transferring a layer of products towards the packing station, and a passive state for depositing said layer of products in a container.

5,661,950

METHOD OF WRAPPING A FLORAL GROUPING

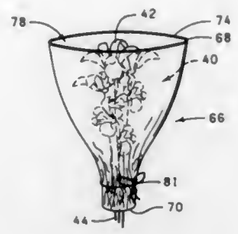
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee

Continuation-in-part of Ser. No. 923,202, Oct. 13, 1992, Pat. No. 5,596,862, Ser. No. 313,675, Sep. 27, 1994, abandoned, and Ser. No. 264,866, Jun. 23, 1994, Pat. No. 5,448,875, which is a continuation of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, said Ser. No. 313,675is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 11, 1995, Ser. No. 439,568
Int. Cl.[6] B65B *11/00;13/00*
U.S. Cl. 53—397 **24 Claims**

1. A method of wrapping a floral grouping and comprising:

providing a floral grouping comprising a bloom portion;

providing a flexible preformed tubular sleeve having an outer surface, an inner surface, an upper end, a lower end and an inner space into which the floral grouping is disposable and which is accessible through the upper end, the sleeve constructed from a material comprising a waxy layer and a



support layer, the waxy layer superposed upon a surface of the support layer and connected thereto and forming the inner surface of the sleeve, and wherein the waxy layer is constructed from a separate sheet of waxed material, and wherein the sleeve, when wrapped about the floral grouping, is less compressible about the floral grouping than would be a sleeve formed from a sheet of the waxed material alone; and

opening the sleeve and placing the floral grouping within the inner space of the sleeve such that the waxy layer is positioned adjacent the bloom portion of the floral grouping forming a wrapped floral grouping.

5,661,951

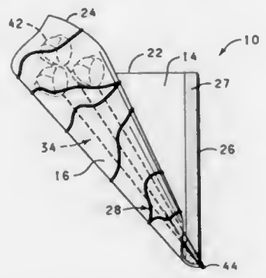
METHOD OF WRAPPING A FLORAL PRODUCT WITH A SHEET OF MATERIAL HAVING A THREE DIMENSIONAL PATTERN PRINTED THEREON

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla., not individually but as Trustee of The Family Trust U/T/A dated 12/8/95.

Filed Jun. 7, 1995, Ser. No. 477,003

Int. Cl.[6] B65B *11/00*

U.S. Cl. 53—397 **39 Claims**



1. A method for providing a decorative cover about a floral grouping, comprising:

providing a sheet of material having a three-dimensional printed pattern thereon wherein the three-dimensional pattern is produced by application of a foamable ink composition to the sheet of material;

providing a floral grouping having a bloom end and a stem end; and

wrapping the sheet of material having the three-dimensional pattern printed thereon about the floral grouping to provide the decorative cover for the floral grouping.

5,661,952

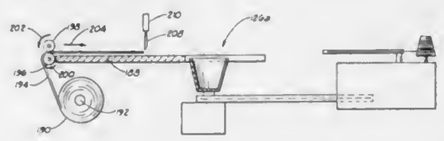
CONVEYABLE COVER FORMER AND FASTENING SYSTEM

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International Inc. trustee

Continuation of Ser. No. 88,976, Jul. 8, 1993, Pat. No. 5,450,707. This application Jun. 5, 1995, Ser. No. 465,294

Int. Cl.[6] B65B *11/18;49/00;51/00*

U.S. Cl. 53—399 **41 Claims**



1. A method for processing an article, comprising:

providing the article having an outer peripheral surface and an upper end;

providing a sheet of material;

positioning the article in a position over the sheet of

forming the sheet of material about the outer peripheral surface of the article so that the sheet is pressed about the outer peripheral surface of the article to form a cover about the article, the cover having an inner surface facing the outer peripheral surface of the article and an exposed outer surface;

providing a fastener applicating means having a fastening station for applying a fastener about the cover;

moving the article having the cover formed about the outer periperal surface of the article to the fastening station of the fastener applicating means;

automatically applying the fastener about a portion of the outer surface of the cover of the article for fastening the cover about the article; and

removing the article with the cover fastened thereabout.

5,661,953

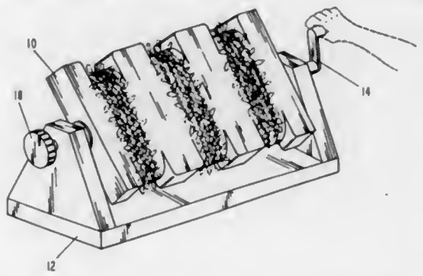
CHRISTMAS LIGHT WRAPPER AND STORAGE APPARATUS

Kathy Marie Jolley, 4409 Sandia Ct., Farmington, N. Mex. 87401

Filed Jun. 26, 1995, Ser. No. 494,708

Int. Cl.[6] B65B *63/04;67/00*

U.S. Cl. 53—430 **12 Claims**



11. A method for wrapping at least one string of lights around a tray, the method comprising the steps of:

a) providing a wrapping tray comprising a substantially flat member with sides thinner than a front and a back;

b) inserting an end of at least one string of lights into at least one slot in the wrapping tray;

c) providing a plurality of compartments for the at least one string of lights; and

d) spinning the wrapping tray whereby the at least one string of lights is wrapped around the wrapping tray within one of the plurality of compartments.

5,661,954

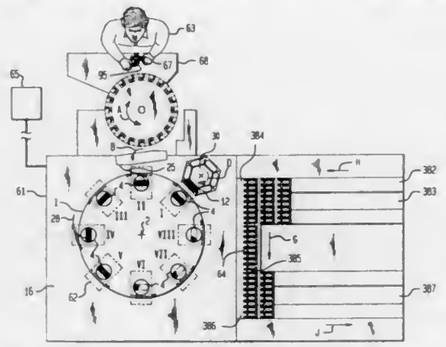
NEEDLE FEED WHEEL AND NEEDLE TRANSFER MECHANISM

Konstantin Ivanov, Bound Brook; James Lotze, Skillman; Donald Pompei, Montville, all of N.J.; Manfred Reiser, Winenden-Hertmannsweiler, Germany; Jost Mucheyer, and Erwin Bauder, both of Waiblingen, Germany, assignors to Ethicon, Inc., Somerville, N.J., and Harro Hofliger Verpackungsmaschinen GmbH

Filed Aug. 31, 1995, Ser. No. 523,521

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—430 **45 Claims**



38. A method of semi-automatically singulating needles having attached sutures for subsequent packaging in a tray to form suture packages, said method comprising the steps of:

(a) arranging a plurality of needles on a horizontal work surface while gathering the sutures into a bundle for tensioning;

(b) singulating one of said needles and its suture and sliding the needle across said worksurface to a rotating needle feed wheel;

(c) semi-automatically sliding and inserting the singulated needle with attached suture into a pocket formed on said rotating needle feed wheel, and advancing the needle feed wheel;

(d) imparting axial tension to the suture to register the needle in said pocket;

(e) automatically gripping, lifting said needle with a robotic handling device, and then indexing the robotic handling device to advance said needle from said pocket to a package tray.

5,661,955

CASE FOR EXPANDABLE PACKING MATERIAL

Richard C. Maida, Staten Island, and Joseph Sferlazza, West Hempstead, both of N.Y., assignors to Prompac Industries, Inc., Staten Island, N.Y.

Filed Sep. 1, 1995, Ser. No. 522,675

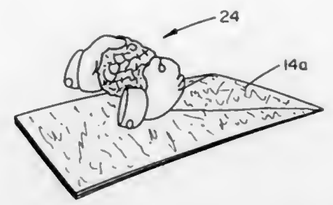
Int. Cl.[6] B65B *23/00;53/00*

U.S. Cl. 53—441 **9 Claims**

1. A method of using a package of expandable wrapping material, the package including a folder and a plurality of sheets of expandable material disposed in the folder, each of said sheets being connected to the folder and being expandable from a relatively thin shape into an expanded three-dimensional shape, the method conprising:

securing the folder to a fixed location;

opening the folder;



stretching at least a portion of one of said sheets into the three-dimensional shape, while said one sheet is connected to the folder;

wrapping an article with said stretched portion of said one sheet while said one sheet is connected to the folder; and

tearing at least said portion of said one sheet from the folder.

5,661,956

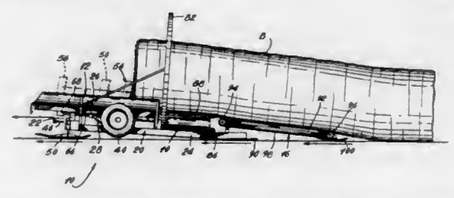
BALE WRAPPING APPARATUS

Jean-Roch Tardif, 19 Anseville, Rivière-Du-Loup, Quebec, Canada

Filed Jun. 12, 1995, Ser. No. 489,585

Int. Cl.[6] B65B *13/12*

U.S. Cl. 53—588 **1 Claim**



1. A bale wrapping apparatus which includes a frame, a loading platform, a bale wrapping station, and a delivery apron, pusher means provided in the bale loading platform wherein the pusher means includes a pusher plate mounted on a carriage, the carriage slidable longitudinally of the platform in tracks provided on the platform, longitudinally spaced-apart first and second end members provided on the platform, a cylinder mounted to the first end member and including a piston extending therefrom, a bracket mounted to the piston, a first elongated flexible stretch resistant tension member attached at one end to the carriage passing about a wheel mounted to the first end member and around a wheel mounted to the bracket and the other end of the first tension member being anchored to the frame while a second elongated flexible stretch resistant tension member is fixedly connected to the second end member and the second tension member extends about a further wheel on the bracket and about a further wheel on the second end member to be connected to the other end of the carriage for advancing and retracting the carriage as the piston mounting the bracket is extended or retracted.

5,661,957

EXTENDABLE STIRRUP

Richard H. Daly, 17605 Black Buble La., Fossil, Oreg. 97830

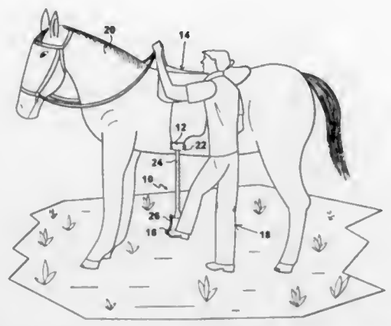
Filed May 28, 1996, Ser. No. 654,213

Int. Cl.[6] B68C *3/00*

U.S. Cl. 54—47 **20 Claims**

1. An extendable stirrup attachable to a conventional stirrup strap of a conventional saddle that has a free end and a throughbore disposed in proximity to the free end of the conventional stirrup strap of the conventional saddle, comprising:

a) a locking device assembly being attachable to the conventional stirrup strap of the conventional saddle;



b) a rack assembly having a lower end and being lockingly extendable from, and lockingly retractable in said locking device assembly;

c) a stirrup assembly being pivotally mounted to said lower end of said rack assembly, so that said stirrup assembly can be lowered and raised to adjust for different height equestrians; and

d) a stirrup assembly mounting, means including a band that has a pair of interlocking free ends and a centrally-disposed throughbore that is disposed midway said pair of interlocking free ends of said band of said stirrup assembly mounting means; said stirrup assembly mounting means further includes a cylindrically-shaped support bar that has an upper portion and extends transversely outwardly from said lower end of said rack assembly and has a pair of ring keepers that are disposed in proximity to a pair of free ends of said cylindrically-shaped support bar of said rack assembly; said rack assembly extends through said centrally-disposed throughbore of said band of said stirrup assembly mounting means with said band of said stirrup assembly mounting means covering said upper portion of said cylindrically-shaped support bar of said rack assembly; said band of said stirrup assembly mounting means is wrapped around a crossbar of said stirrup assembly with said crossbar of said stirrup assembly in substantial abutment with said pair of ring keepers of said cylindrically-shaped support bar of said rack assembly; said interlocking free ends of said band of said stirrup assembly mounting means are interlocked, so that said crossbar of said stirrup assembly is maintained in substantial abutment with said pair of ring keepers of said cylindrically-shaped support bar of said assembly while said pair of ring keepers of said cylindrically-shaped support bar of said rack assembly reduce relative lateral movement between said band of said stirrup assembly mounting means and said rack assembly.

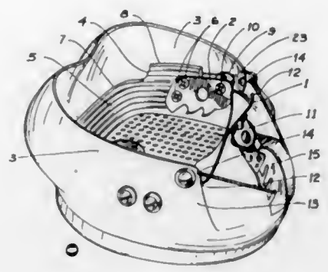
5,661,958

SIZE-ADJUSTABLE COMPOSITION HORSEBOOT

Neel W. Glass, Santa Fe, N. Mex.; Garrett Nolan Ford, Catalina, and Rudolph S. Cyprian, Tucson, both of Ariz., assignors to Easycare, Inc., Oro Valley, Ariz.

Filed Apr. 14, 1995, Ser. No. 423,821
Int. Cl.[6] A01L *3/00;5/00*
U.S. Cl. 54—82 **7 Claims**

1. An improved composition molded horse boot of the type comprising: an integral sole and front, rear, left side and right side walls; re-entrant folds on either side of the front wall; a pair of side brackets affixed to the side walls; a back strap inside the rear wall of the boot attached to the side brackets; a continuous loop cable anchored to the front wall, passing inward through the front wall on either side to engage each of the side brackets, and passing out through the front wall; and an over-center tightness adjusting buckle engaging the cable; the improvement comprising modified side brackets slidably attached to the side walls, enabling the brackets and the back strap to move, responsive to a tightening of the cable using the buckle, forward about one-half inch (1.3 cm) in the plane approximately orthogonal to the plane of the horse's foot bones.

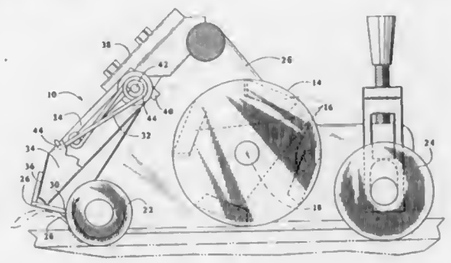


5,661,959

REAR ROLLER SCRAPER FOR GOLF COURSE MOWER

Daniel R. Vargas, Niles, Ill., assignor to The Vargas Corporation, Niles, Ill.

Filed Nov. 8, 1995, Ser. No. 592,134
Int. Cl.[6] A01D *34/62;* **E01C** *19/28*
U.S. Cl. 56—7 **6 Claims**



1. In a lawnmower for trimming the greens of a golf course, the lawnmower having a horizontally disposed mower reel comprising a plurality of horizontally disposed mower blades disposed radially about the reel, the mower reel supported by a mower frame, the mower frame being supported by at least a rearward and a forward roller for contact with the green's surface to be trimmed, and height adjustment means for controlling the depth of cut of the mower blades and thereby the height of the remaining grass of the green's surface, the improvement comprising:

an elongated scraper having a scraper surface disposed along substantially the entire length of said rearward roller for stripping accumulated grass and debris from said rearward roller surface as said rearward roller rotates rearwardly during a mowing operation;

said elongated scraper being mounted upon pivot means for urging said elongated scraper downwardly and into proximity with said rearward roller surface;

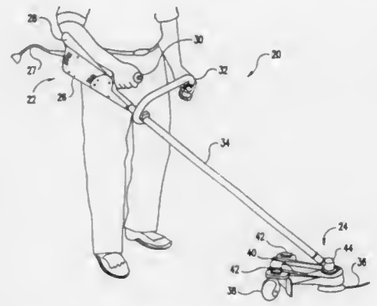
said pivot means comprising least one coil spring operatively connected to said elongated scraper; and and pivot means including a pair of pivot arms attached at respective ends thereof, said said arms being urged downwardly by paid at least said one coil spring to carry said elongated scraper therewith.

5,661,960

POWER TOOL ARM ENGAGING ASSEMBLY AND WHEELED PLATFORM FOR A LINE TRIMMER

Walker Smith, 11045 Treyburn Dr., Glen Allen, Va. 23060, and James H. Bowen, 12190 Richland Dr., Catharpin, Va. 22018

Filed Sep. 7, 1995, Ser. No. 524,622
Int. Cl.[6] A01D *34/68*
U.S. Cl. 56—12.7 **19 Claims**



7. A cutting tool comprising:

a cutting head;

a shaft having first and second ends, said first end being connected to said cutting head;

a handle assembly connected to said second end of said shaft;

a protective shroud connected to said shaft covering at least a portion of said cutting head;

at least one wheel connected to said protective shroud;

a means for pivoting said wheel between a ground engaging and a non-ground contacting position, said means for pivoting being positioned to pivot said wheel towards and away from said cutting head as said wheel pivots respectively between said ground engaging and said non-ground contacting positions; and

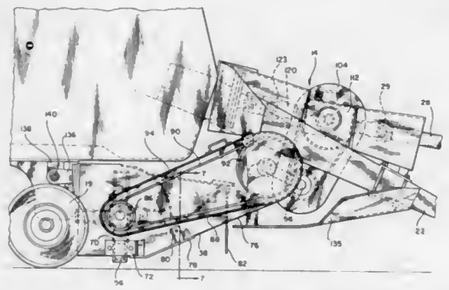
means for locking said wheel in either said ground engaging or said non-ground contacting position.

5,661,961

CROP PROCESSOR FOR ROUND HAY BALERS

Gerald F. Westhoff, P.O. Box 37, New Vienna, Iowa 52065; Loras F. Gravel, 31406 Hickory St., and Cory P. Westhoff, R.R. 2 Box 63, both of Dyersville, Iowa 52040

Filed Sep. 1, 1995, Ser. No. 522,932
Int. Cl.[6] A01F *15/10*
U.S. Cl. 56—16.4 R **9 Claims**



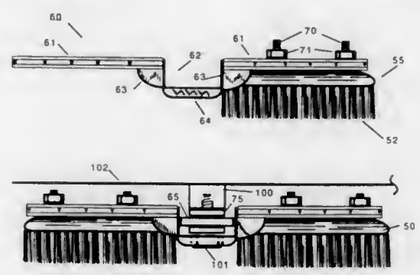
1. A crop processor for a round hay baler comprising a housing, means supporting the housing from the hay baler at a forward lower area thereof generally below a hitch connecting the baler to a towing tractor, said housing being positioned forwardly of the wheels and pickup tines on the baler, said housing having an open bottom area, a generally horizontally disposed driven rotor rotatably mounted transversely in said housing, a plurality of spaced cutting elements pivotally mounted on said rotor with the outer ends of the cutting elements extending through the open bottom area of the housing to engage, chop and shred crop material and discharge the crop material toward the pickup tines for entry into the hay baler in the same location that hay would normally enter the hay baler to enable the round hay baler to form a round bale of shredded crop material, a shear bar mounted generally horizontally in the housing in generally parallel relation to the rotor and oriented forwardly of and in closely spaced relation to the outer ends of the cutting elements as they rotate with the rotor for cooperating with the cutting elements for cutting, chopping and shredding the crop material and means mounting said shear bar from the housing for adjustment toward and away from the rotor to vary the cut length of the crop material, and means driving said hay baler and rotor to drive the outer ends of the cutting elements at a speed to cut, chop and shred the crop material, said driving means including a power takeoff shaft extending above the hitch from a towing tractor to the round hay baler, a gear box mounted on the hitch and driven by said power takeoff shaft from the tractor, said gear box having a rearwardly extending output drivingly connected to the baler and a laterally extending output drivingly connected to the rotor.

5,661,962

THATCHING ATTACHMENT FOR A ROTARY POWER MOWER

John A. Monaco, 2529 W. Cactus Rd., Phoenix, Ariz. 85029

Filed May 3, 1995, Ser. No. 433,547
Int. Cl.[6] A01D *57/12*
U.S. Cl. 56—16.9 **4 Claims**



1. A thatching attachment for powered lawnmowers having a wheel-mounted housing, motive means mounted on said wheel-mounted housing, a vertically disposed drive shaft, and a flat cutting blade removably attached to the vertically disposed drive shaft comprising:

a) a first flat extension arm;

b) a second flat extension arm;

c) a means for connecting said first flat extension arm and said second flat extension arm, said means for connecting said first flat extension arm and said second flat extension arm incorporating a means for removably attaching said first and second flat extension arms to said vertically disposed drive shaft such that said flat cutting blade is mounted above said means for connecting said first and second flat extension arms, and such that said flat cutting blade is mounted at a right angle with respect to the first and second flat extension arms;

c) a first brush, said first brush, having a formed top portion, and a plurality of regularly spaced groups of bristles, fixedly attached to said formed top portion and extending downwardly therefrom;

d) a second brush, said second brush, having a formed top portion, and a plurality of regularly spaced groups of bristles, fixedly attached to said formed top portion and extending downwardly therefrom;

d) means for removably attaching said first brush to said first flat extension arm; and

e) means for removably attaching said second brush to said second flat extension arm.

5,661,963

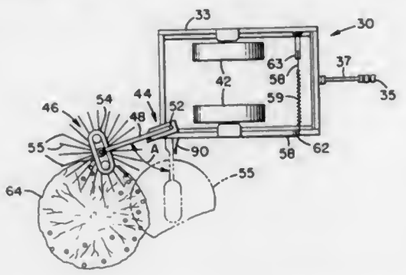
CITRUS HARVESTER

Phillip Ray Scott, Madera, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 21, 1995, Ser. No. 426,389

Int. Cl.[6] A01D *46/24*

U.S. Cl. 56—328.1 **5 Claims**



1. An apparatus for harvesting fruits from bushes and trees, comprising:

a main frame, which is moved in a forward direction;

a plurality of wheels supporting the main frame;

a shaker head with a vertical brush;

a shaker frame mechanically connected to the shaker head;

a hinge connecting the shaker frame to the main frame, wherein the hinge allows the shaker frame to move from a side of the main frame to a rearward part of the main frame; and

means for applying a force to the shaker frame to bias the shaker frame to the side of the main frame.

5,661,964

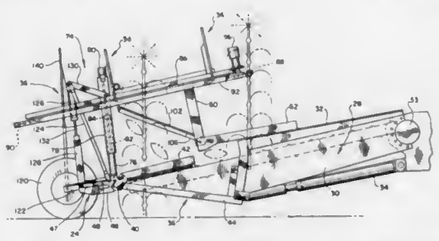
FRESH MARKET SWEET CORN HARVESTER

Bernard S. Paulson, Clear Lake, and Bruce H. Paulson, Clayton, both of Wis., assignors to Pixall Limited Partnership, Clear Lake, Wis.

Filed Oct. 11, 1995, Ser. No. 540,851

Int. Cl.[6] A01D *45/02*

U.S. Cl. 56—64 **20 Claims**



1. A fresh market sweet corn harvester for removing ears of corn from corn stalks, the harvester configured for over-the-ground travel and including:

a mounting frame;

one or more cutters mounted with respect to the mounting frame, for cutting lower portions of the corn stalks at a cut height above the ground;

a cut height actuator mounted with respect to the mounting frame for raising and lowering the cutters to adjust the cut height;

one or more gathering mechanisms mounted with respect to the mounting frame, for engaging the corn stalks cut by the cutters and pulling the stalks through the harvester;

one or more stripping mechanisms mounted with respect to the mounting frame at a stripping window height above the cutters, for removing ears of corn from the cut stalks pulled through the harvester by the gathering mechanisms; and

a stripping window actuator mounted with respect to the mounting frame for raising and lowering the stripping mechanisms with respect to the cutters to adjust the stripping window height.

5,661,965

STEEL CORDS FOR THE REINFORCEMENT OF RUBBER ARTICLES AND HEAVY DUTY PNEUMATIC RADIAL TIRES USING THE SAME

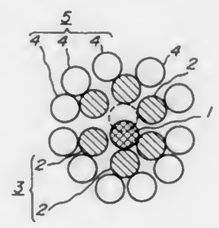
Manabu Yanagisawa, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 47,310, Apr. 19, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,116

Claims priority, application Japan, Apr. 24, 1992, 4-106708

Int. Cl.[6] D02G *3/36*

U.S. Cl. 57—213 **3 Claims**



1. A rubber article-reinforcing steel cord comprising; a core obtained by forming a single filament in a regular two-dimensional wavy shape, an inner sheath formed by arranging 5 to 6 filaments around the core, and an outer sheath formed by arranging 9 to 12 filaments around the inner sheath, and said core, said inner sheath and said outer sheath being twisted together to form said cord, wherein the diameter of each of the filaments of the inner and outer sheaths is not greater than that of the filaments of the core, $5d \leqq L \leqq 30d$ and $1.2d \leqq H \leqq 2.0d$ in which L and H are a wave length and a wave height respectively of a wave shape of the waved filament of the core, and d is a diameter of the filament of the core, and a ratio p_3/p_2 between the twisting pitch p_2 of the inner sheath and the twisting pitch p_3 of the outer sheath is in a range of 1.4 to 2.5.

5,661,966

STEEL CORD FOR REINFORCEMENT OF OFF-ROAD TIRE, METHOD OF MANUFACTURING THE SAME, AND OFF-ROAD TIRE

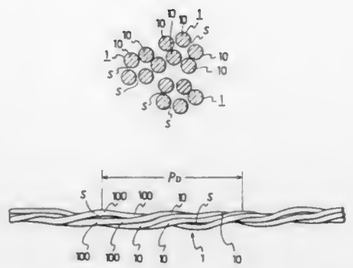
Kazuo Matsumaru, Dejima-mura, Japan, assignor to Tokyo Rope Manufacturing Co. Ltd., Tokyo, Japan

Filed Jun. 27, 1996, Ser. No. 671,529

Int. Cl.[6] D02G *3/02*

U.S. Cl. 57—902 **4 Claims**

1. A steel cord for reinforcement of an off-road tire, comprising a plurality of strands each including three-six steel wires twisted together in a same twisting direction and with a same pitch length, each of said steel wires having a wavy pattern of a pitch length smaller than a lay length of said strands, each of said strands



having a pattern in which a wavy pattern formed by the twisting and said wavy pattern of said steel wires are compounded and gaps are formed between said steel wires by said wavy patterns of said steel wires, three-six of said strands being simultaneously twisted together in a same twisting direction as a strand twisting direction and with a same pitch to form the steel cord, a lay length P1 of the steel cord being 8–15 times diameter D of the steel cord and an elongation of breakage by tension of the steel cord being over 5%.

5,661,967

METHOD OF OPERATING A SEQUENTIALLY FIRED GAS-TURBINE GROUP

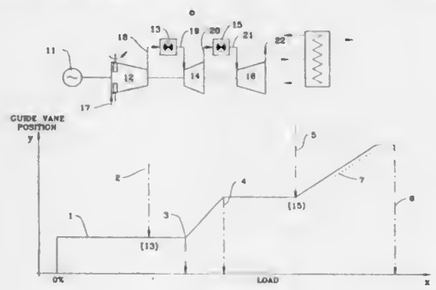
Franz Farkas, Zürich, and Peter Rufli, Fislisbach, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 1, 1996, Ser. No. 609,829

Claims priority, application Germany, Apr. 24, 1995, 195 14 991.2

Int. Cl.[6] F02C *7/26*

U.S. Cl. 60—39.04 **3 Claims**



1. A method of operating a sequentially fired gas-turbine group, essentially comprising a compressor unit, a first combustion chamber which is arranged downstream of the compressor unit and whose hot gases are admitted to a first turbine arranged downstream, a second combustion chamber which is arranged downstream of the first turbine and whose hot gases are admitted to a second turbine arranged downstream, and at least one generator, wherein, during starting (**1**), at least one inlet guide row in the compressor (**12**) is opened up to a maximum up to the pumping limit of the same, wherein the ignition (**2**) of the first combustion chamber (**13**) takes place below the rated speed during idling (**4**) of the gas-turbine group with the opening of the inlet guide row remaining constant, wherein, after the ignition (**2**) of the first combustion chamber (**13**), the inlet guide row is opened further until the rated speed is reached during idling (**4**), wherein the ignition (**5**) of the second combustion chamber (**15**) takes place during operation at this rated speed and with the opening of the inlet guide row remaining constant, and wherein the inlet guide row is then opened successively at constant rated speed until full load (**6**) of the gas-turbine group is reached.

5,661,968

APPARATUS FOR COOLING A GAS TURBINE IN A GAS AND STEAM TURBINE PLANT

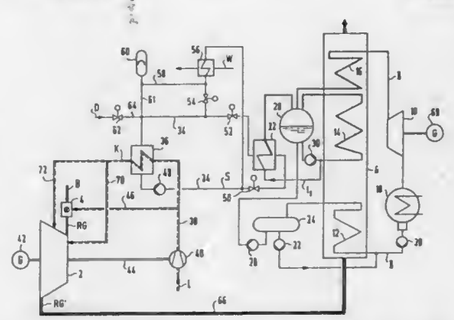
Christian Gabriel, Moehrendorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 1, 1996, Ser. No. 627,774

Claims priority, application Germany, Sep. 30, 1993, 43 33 439.3

Int. Cl.[6] F02C *6/18;7/12*

U.S. Cl. 60—39.182 **9 Claims**



1. In a gas-turbine and steam-turbine plant with a gas turbine and a waste-heat steam generator having heating surfaces located downstream of the gas turbine and connected in a water/steam loop of a steam turbine, the heating surfaces including an evaporator heating surface,

an apparatus for cooling a coolant of the gas turbine, comprising:

a water/steam separating tank connected to the evaporator heating surface of the waste-heat steam generator;

an intermediate circuit including a first heat exchanger for cooling the coolant of the gas turbine, and a second heat exchanger, said second heat exchanger having a primary side communicating with said water/steam separating tank and a secondary side communicating with said first heat exchanger.

5,661,969

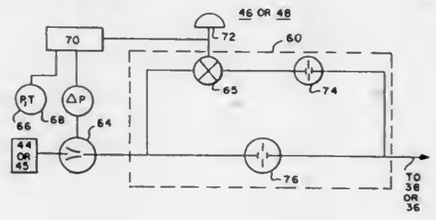
FUEL TRIM SYSTEM FOR A MULTIPLE CHAMBER GAS TURBINE COMBUSTION SYSTEM

Kenneth W. Beebe; L. Berkly Davis, and Robert J. Iasillo, all of Schenectady, N.Y., assignors to General Electric Co., Schenectady, N.Y.

Division of Ser. No. 168,570, Dec. 16, 1993, Pat. No. 5,423,175, which is a division of Ser. No. 996,934, Dec. 30, 1992, Pat. No. 5,319,931. This application Nov. 30, 1994, Ser. No. 346,952

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—39.281 **5 Claims**



1. A combustion section of a gas turbine having a plurality of chambers, at least one of said chambers comprising:

at least one combustion reaction zone receiving air from a compressor and fuel from a fuel distributor;

said fuel distributor having a fuel trim orifice and a fuel trim valve, said fuel trim valve for said at least one of said chambers being individually adjustable to trim the flow of fuel to the chamber, and

means to operate said fuel trim valve to regulate to the air flow to said chamber to maintain a selected fuel air-ratio in said chamber.

5,661,970

THRUST-GENERATING DEVICE

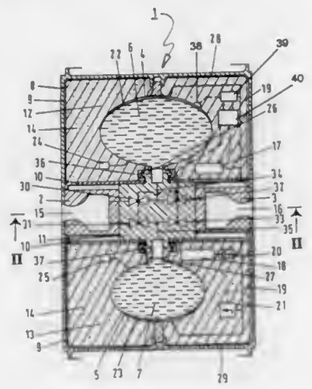
Wolfgang Müller, Möckmühl, and German Munding, Bad Friedrichshall, both of Germany, assignors to Daimler-Benz Aerospace AG, Münich, Germany

Filed Apr. 28, 1995, Ser. No. 431,140

Claims priority, application Germany, Apr. 30, 1994, 44 15 259.0

Int. Cl.[6] F02K *9/38;9/50*

U.S. Cl. 60—223 **20 Claims**



1. A thrust-generating device, comprising:

liquid fuel rocket engines arranged in pairs, said rocket engines of each pair having at least approximately equal thrusts and being disposed directed in opposite or approximately opposite directions of thrust;

fuel storage means for storing an amount of fuel, said fuel storage means being disposed adjacent to said rocket engines, said fuel storage means including tanks with a fuel supply tank separate from an oxidizing agent supply tank, said tanks being installed in a filled state and being in a pressureless state, except for the inherent pressure of the fuel, before activation of the thrust-generating device;

a closed, corrosion-resistant, modular unit, defining means that can be stored, rapidly mounted and removed, and can be activated and operated at any time from the outside via existing connections, said rocket engines and said fuel storage means being disposed in said modular unit, said modular unit including a central bulkhead; engine nozzles and a gas-tight, pressure-resistant outer jacket completely surrounding the device except for said engine nozzles, which are open to the outside, said outer jacket being lined on the inside with a self-sealing film, an inner volume of said modular unit being divided by said bulkhead into two separate chambers, said fuel tank being arranged on one side of said bulkhead, and said oxidizing agent tank, being arranged on the other side of said bulkhead, said tanks being directly or indirectly fastened to the central bulkhead, said module defining space in said two chambers on both sides of the bulkhead, said space being provided with an adsorbent filling;

a fuel distributor connecting said rocket engines to said tanks, said fuel distributor having a block-like design and being integrated with the engines within said central bulkhead; and

temperature-controlled safety means for triggering a pulse-free blow-off of the fuels through one or more of said engine pairs.

5,661,971

METHOD FOR REDUCING POLLUTANTS IN THE EXHAUST GAS OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

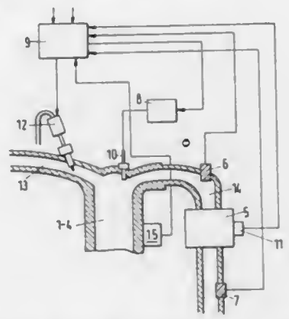
Uwe Waschatz, Meine, and Wolfgang Wehling, Brunswick, both of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed Nov. 17, 1995, Ser. No. 560,297

Claims priority, application Germany, Dec. 2, 1994, 44 42 883.9

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—274 **7 Claims**



1. A method for reducing pollutants in the exhaust gas of a multi-cylinder internal combustion engine of a motor vehicle having an exhaust gas purification device located in an exhaust line of the internal combustion engine comprising supplying at least one cylinder with a relatively lean air/fuel ratio and supplying the remaining cylinders with a relatively rich air/fuel ratio while maintaining the combined air/fuel ratio for all of the cylinders of the internal combustion engine at a level which produces a lambda value of approximately one in the overall exhaust flow from all the cylinders of the engine.

5,661,972

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Akira Katoh; Hiroshi Kitagawa, and Jun Takahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,615

Claims priority, application Japan, May 9, 1994, 6-119516

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—276 **9 Claims**

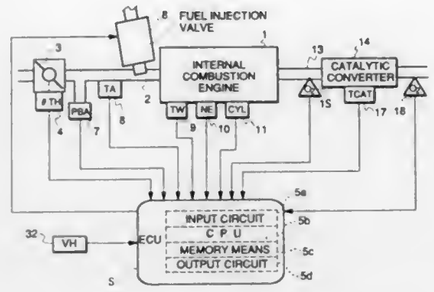
1. An air-fuel ratio control system for an internal combustion engine having an exhaust system, and a catalytic converter having a catalyst arranged in said exhaust system, comprising:

an upstream oxygen sensor arranged in said exhaust system at a location upstream of said catalytic converter;

a downstream oxygen sensor arranged in said exhaust system at a location downstream of said catalytic converter;

feedback control constant-determining means for determining a feedback control constant, based on an output from said downstream oxygen sensor;

feedback control means for determining an air-fuel ratio control amount, based on said feedback control constant determined by said feedback control constant-determining means and an output from said upstream oxygen sensor, and for feedback-controlling an air-fuel ratio of a mixture supplied to said engine by means of the determined air-fuel ratio control amount; and



updating rate-setting means for setting an updating rate of said feedback control constant, based on temperature of said catalyst of said catalytic converter.

5,661,973

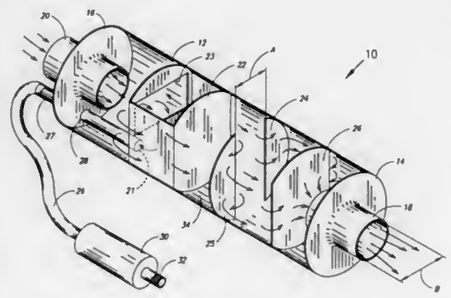
MUFFLER AND FUEL SAVING DEVICE FOR INTERNAL COMBUSTION DIESEL ENGINE

Russell A. Casey, 1010 E. Thompson St., Sapulpa, Okla. 74066

Filed Oct. 23, 1995, Ser. No. 546,981

Int. Cl.[6] F02M *25/06*

U.S. Cl. 60—279 **6 Claims**



1. An improved muffler and fuel saving device for internal-combustion engines, and more specifically, internal-combustion engines of the diesel variety, comprising in combination:

a. elongate cylindrical muffler housing means;

b. entry end-plate means providing closure of the entry end of said muffler housing means;

c. discharge end-plate means providing closure of the discharge end of said muffler housing means;

d. entry-end pipe means traversing said entry end-plate providing an entry for exhaust gasses;

e. discharge-end pipe means traversing said discharge end-plate providing an exit for exhaust gasses;

f. recovery chamber means for the entrapment and recovery of unburned fuel said recovery chamber having a recovery pipe which passes to the exterior of said muffler to connect a return tube for returning exhaust gas to the engine;

g. return tube means for the return of said recovered unburned fuel to an air induction system of the engine;

h. filter means located within said return tube for the removal of particulate matter from recovered unburned fuel;

i. peripheral segmental baffle means within said muffler housing, and;

j. central transverse baffle means within said muffler housing.

5,661,974

CONTROL SYSTEM WITH FUNCTION OF PROTECTING CATALYTIC CONVERTER FOR INTERNAL COMBUSTION ENGINES FOR VEHICLES

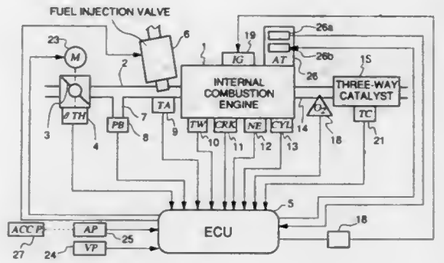
Toru Kitamura; Akira Katoh, and Sakae Suzuki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,570

Claims priority, application Japan, Dec. 14, 1994, 6-333179

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—285 **11 Claims**



1. A control system for an internal combustion engine for use in a vehicle, said engine having an intake system, intake air amount-regulating means associated with said intake system, for regulating an amount of intake air supplied to said engine, an exhaust system, and a catalytic converter arranged in said exhaust system, for purifying noxious components present in exhaust gases emitted from said engine, comprising:

temperature-determining means for determining whether said catalytic converter is in a predetermined high temperature condition;

operating condition-determining means for determining whether said engine has continuously been in an operating condition in which rotational speed of said engine exceeds a predetermined value and load on said engine exceeds a predetermined value, over a predetermined time period; and

control means responsive to at least one of outputs from said temperature-determining means and said operating condition-determining means, for controlling said intake air amount-regulating means in a manner such that said amount of intake air supplied to said engine is decreased.

5,661,975

SOOT FILTRATION DEVICE

Friedrich Abel, Eberdingen, and Hans Erdmannsdoerfer, Dobel, both of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

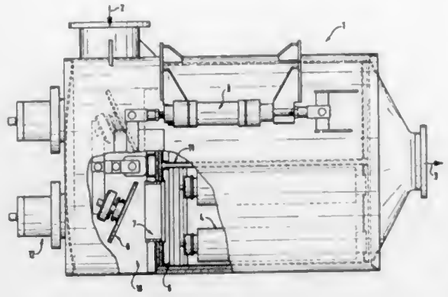
Filed May 15, 1995, Ser. No. 441,655

Claims priority, application Germany, May 14, 1994, 44 17 044.0

Int. Cl.[6] F01N *3/02*

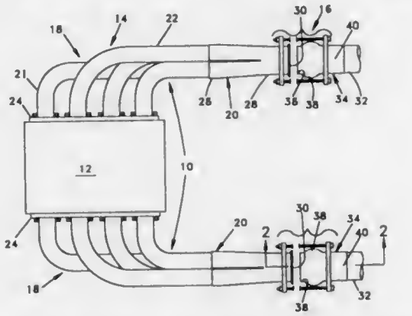
U.S. Cl. 60—288 **5 Claims**

1. A soot filtration device for exhaust gas from a diesel internal-combustion engine, said device comprising a housing with an exhaust gas inlet and an outlet for filtered exhaust gas, a plurality of soot filter cartridges arranged in the housing, and at least one regeneration apparatus, wherein the soot filter cartridges are arranged in at least two separate chambers, and each of said chambers has a closable inlet opening, the inlet openings being closable by means of alternately operable covers mounted respectively on opposite ends of a rocker lever such that when one of the inlet openings is closed by one of the covers, the other inlet



opening is open, said covers being jointly operated by a common control mechanism connected to the rocker lever.

5,661,976
GASKETLESS COUPLING
Robert W. Clanton, 5983 Maysville Rd., New Market, Ala. 35761
Filed Sep. 18, 1995, Ser. No. 529,337
Int. Cl.[6] F01N *7/18*
U.S. Cl. 60—322 **3 Claims**



1. An internal combustion engine gas exhaust system comprising:

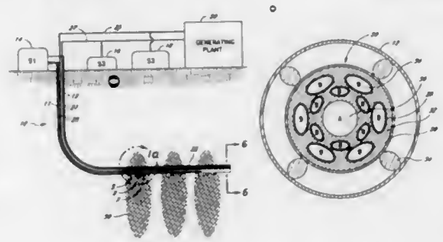
a first section including a plurality of primary exhaust pipes disposed for secured relation with and extending away from said internal combustion engine, and an exhaust header collector having first and second ends, said first end disposed for secured relation with the distal end of said primary exhaust pipes and said second end being flared to provide an annular flange thereon, said annular flange having an inner flared surface;

a second section including an exhaust pipe disposed for attachment to said first section; and

a gasketless connector member disposed for attaching said first and second sections together, said connector member including a body having an enlarged hollow spherical portion provided with inner and outer surfaces, said connector member disposed for attaching said first and second sections together, said connector member including a body having an enlarged spherical portion provided with inner and outer surfaces, and first and second opposite side portions, a first tubular portion defining a guide and alignment member extending in a first direction from said first side portion of said spherical portion and disposed for insertion into said flared end of said header collector for abutting metal-to-metal contact between said outer surface of said spherical portion of said connector member and said flared surface of said header to prevent "cocking" of said first section relative to said second section, said connector member having a second tubular portion extending from said second opposite side portion in a second direction which is opposite from said first direction for secured relation with said exhaust pipe, said first and second tubular portions being of smaller diameter than said spherical portion; and

means for securing said connector member and said header collector together in said metal-to-metal contact.

5,661,977
SYSTEM FOR GEOTHERMAL PRODUCTION OF ELECTRICITY
James H. Shnell, 1371 Smokewood Dr., Santa Ana, Calif. 92705
Continuation-in-part of Ser. No. 486,704, Jun. 7, 1995. This application May 31, 1996, Ser. No. 650,595
Int. Cl.[6] F03G *7/00*
U.S. Cl. 60—641.2 **29 Claims**



1. A system for capturing geothermal heat using electrolytic reactions, said system comprising:

a well having a top and a bottom, where said well is drilled to a sufficient depth to acquire geothermal heat;

a thermocouple residing at least partially within said well, said thermocouple for generating an electric current from said geothermal heat;

an electrolytic device residing at least partially within said well; and

means coupling said electrolytic device and said thermocouple.

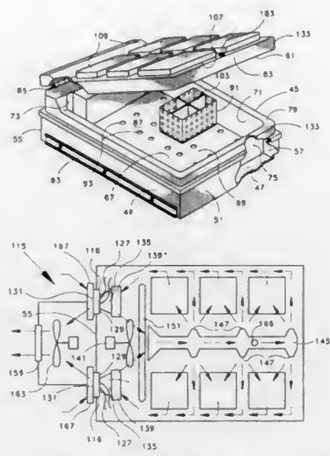
5,661,978
MEDICAL DISPENSING DRAWER AND THERMOELECTRIC DEVICE FOR COOLING THE CONTENTS THEREIN
William K. Holmes, San Diego, and Laird P. Broadfield, Del Mar, both of Calif., assignors to Pyxis Corporation, San Diego, Calif.
Filed Dec. 9, 1994, Ser. No. 353,561
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—3.6 **33 Claims**

1. A refrigerated, medical dispensing drawer for use in a computerized medicine-dispensing station, said station of the type having a cabinet that houses a plurality of openable drawers in stacked arrangement containing pharmaceutical items in locked storage therein for retrieval following instructions inputted into a computer integrated the station, said drawer comprising:

a) a drawer including a base plate, spaced-apart side walls, and spaced-apart front and rear walls, all attached together along their respective mating marginal edges to define an interior compartment of a size and shape available for reciprocal movement on a pair of side rails into and out of the cabinet;

b) a tub reposed in said drawer covered by a tub lid hingedly attached to said drawer to form an air-tight chamber interior thereof and moveable with said drawer into and out of the cabinet;

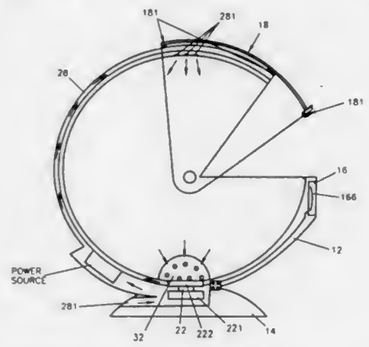
c) at least one basket, formed with fenestrated side walls and a bottom plate joined along their respective mating marginal edges, arranged in said tub with its open top aligned below a



like-sized opening formed in said tub lid and covered over with an openable basket lid held in locked engagement with said tub lid; and,

d) a cooling system powered by a thermoelectric device for cooling the interior and contents of said chamber and maintaining a cool temperature therein, said system completely moveable with said drawer as it is inserted and withdrawn from the cabinet.

5,661,979
SELF-CONTAINED REFRIGERATION DEVICE FOR FRUIT
Ed DeBoer, 2891 Buena Crest Ct., San Jose, Calif. 95121
Filed Apr. 8, 1996, Ser. No. 629,429
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.6 **5 Claims**



1. A refrigeration unit device comprising:

a substantially spherical exterior shell mounted on a base,

a removable shelf,

a control module mounted on an exterior of said shell,

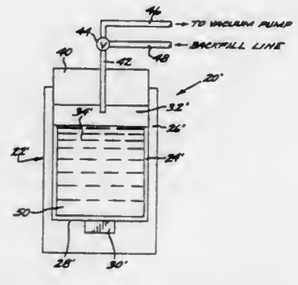
a clear access door pivotally mounted on said shell, said access door is a segment of a sphere such that the effective volume of said device is not increased when said access door is opened,

a vent tower,

a cooling means, and a power source; wherein

air is urged across said cooling means and into an airway, said airway is contained within said exterior shell and said airway extends for a distance of at least half of a circumference of said shell, said airway includes vents to allow air to flow into said airway from an interior of said device and vents to allow air to flow out of said airway into said interior of said device, thereby reducing the temperature of said interior of said device.

5,661,980
THERMALLY STABILIZED DEWAR ASSEMBLY, AND ITS PREPARATION
James R. Gallivan, Pomona, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Jun. 6, 1995, Ser. No. 466,552
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **23 Claims**



1. A method for stabilizing a dewar assembly against film boiling, comprising the steps of:

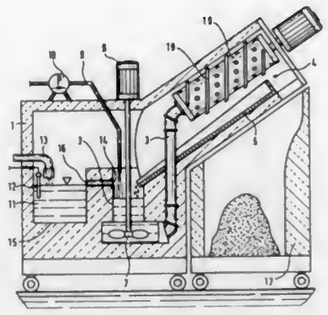
providing a dewar assembly comprising an inner wall defining an interior of the dewar assembly and an electronic device in thermal communication with the inner wall of the dewar assembly, the dewar assembly further having a liquefied gas within the interior of the dewar assembly;

reducing the pressure over the liquefied gas within the interior of the dewar assembly so that the temperature of the liquefied gas is less than the temperature of the inner wall of the dewar assembly, and maintaining the reduced pressure for a time sufficient for the temperature of inner wall of the dewar assembly to fall below an ambient-pressure temperature experienced when the liquefied gas is at ambient pressure; and

increasing the pressure over the liquefied gas within the interior of the dewar assembly at a rate of increase and to a pressure such that the temperature of the liquefied gas is greater than the temperature of the inner wall of the dewar assembly for a period of time.

5,661,981
PROCESS AND APPARATUS FOR THE GRANULATION OF GRANULATABLE AND/OR PELLETIZABLE SUBSTRANCES
Peter Laux, Lutzrath, and Stefan Kosock, Krefeld, both of Germany, assignors to Buse Gese GmbH & Co., Germany
Filed May 17, 1995, Ser. No. 443,232
Claims priority, application Germany, May 31, 1994, 44 19 010.7
Int. Cl.[6] F25D *3/10;* **B65G** *49/04;* **B07B** *13/00;* **B01F** *7/04*
U.S. Cl. 62—64 **16 Claims**

1. A process for the granulation of substances in which the substances to be granulated are introduced from at least one product entry into the volume stream of a liquid refrigerant, which comprises introducing into a reactor the substance to be granulated from the product entry as a closed jet into the refrigerant flowing in circulation essentially in the direction of the jet, the refrigerant flowing in a stream in the reactor to a location out of the reactor in essentially the same direction as the substance to be granulated.



and in the course of this flow in the reactor the flowing refrigerant stream breaking up the substance to be granulated and freezing it.

5,661,982

ELECTRONIC REFRIGERANT COMPRESSOR FOR A COOLING SYSTEM

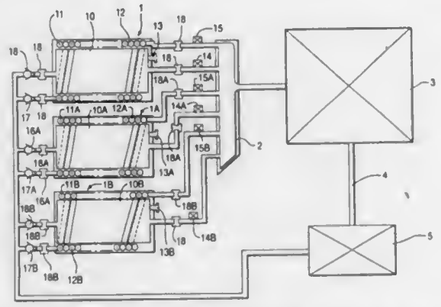
Young-Dawn Bae, Suwon, and Dong-Yul Nam, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suown, Rep. of Korea

Continuation-in-part of Ser. No. 515,748, Apr. 30, 1990, abandoned. This application Nov. 30, 1994, Ser. No. 352,063

Claims priority, application Rep. of Korea, May 1, 1989, 5811/1989

Int. Cl.[6] F25B *15/00;17/00*

U.S. Cl. 62—106 **10 Claims**



1. An electronic refrigerant compressing apparatus for use in a refrigeration system having a condensor for receiving vapor and an evaporator for outputting saturated vapor during a cooling operation, said electronic refrigerant compressing apparatus comprising:

a plurality of compressing portions coupled in parallel to one another for sequentially and repeatedly heating and cooling refrigerant circulating in a refrigerant cycle, each of said compressing portions comprising:

a cylindrical body having the refrigerant charged therein, and

a refrigerant pipe having the refrigerant charged therein, said refrigerant pipe being coiled around said cylindrical body;

a plurality of refrigerant heating loads respectively mounted close to each of said refrigerant pipes so as to enable generation vapor by increasing the temperature and pressure of the refrigerant during respective compression operations by each of said compressing portions;

respective solenoid valves mounted at respective outlets of each of the of the compressing portions for outputting said vapor, each respective outlet of the compressing portions being connected through a respective insulation means to the respective solenoid valve, wherein said solenoid valves are opened/closed according to the control of a microcomputer;

means for detecting the temperature of the refrigerant in said cylindrical body of each of said compressing portions for generating a signal indicative of the detected temperature, said signal being utilized by said microprocessor to control said solenoid valves;

each of said compressing portions having a respective inlet side connected through a respective check valve which controls input of the saturated vapor into each respective compressing portion for recharging said compressing portions with said refrigerant;

a refrigerant output portion mounted to each outlet of the compressing portions to enable said vapor output through said solenoid valves to be supplied to a single input of the condenser; and

said microcomputer controlling the operations of the solenoid valves and the operations of the heating loads in dependence upon said signal generated by said means for detecting the temperature so that each of said compressing portions sequentially perform their respective compressing operation.

5,661,983

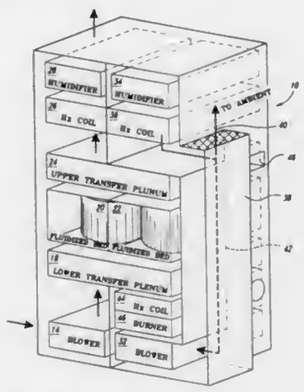
FLUIDIZED BED DESICCANT COOLING SYSTEM

Barney Groten, Bellevue; Tahir Cader, Woodinville, and Richard Tidball, Issaquah, all of Wash., assignors to Energy International, Inc., Bellevue, Wash.

Filed Jun. 2, 1995, Ser. No. 460,500

Int. Cl.[6] F25D *23/00;17/06*

U.S. Cl. 62—271 **9 Claims**



1. An air conditioning unit, comprising:

a first blower received in the unit for driving supply air along a path through the unit and into a space that is to receive conditioned air;

a first fluidized bed desiccator received in the unit, the desiccator being sized and shaped for holding particles of a desiccant material, the first desiccator having a surface for supporting the desiccant material particles, the supporting surface being arranged relative to the supply air path and structurally adapted so that supply air may be selectively driven by the blower upwardly through the supporting surface and into the desiccant material particles, thereby creating a fluidized bed of desiccant material particles for removing moisture from the supply air;

a second fluidized bed desiccator received in the unit, the second desiccator being arranged parallel to the first desiccator for selectively receiving supply air, and further, the second desiccator being sized and shaped for holding particles of a desiccant material, the second desiccator also having a surface for supporting the desiccant material particles held by the second desiccator, the supporting surface of the second desiccator being arranged relative to the supply air path and structurally adapted so that supply air may be selectively driven by the blower upwardly through the supporting surface of the second desiccator and into the desiccant material particles held by the second desiccator, and further including

a first transfer plenum arranged in the supply air path upstream of the first and second desiccators, the first transfer plenum being adapted to selectively direct supply air through only one of the first and second desiccators at a time;

a second transfer plenum arranged in the supply air path downstream of the first and second desiccators, the second transfer plenum being adapted to selectively direct supply air downstream from one of the first and second desiccators.

a first sensible heat exchanger in the supply air path, downstream of the first and second desiccators, the sensible heat exchanger reducing the temperature of the supply air after it exits one of the selected desiccators; and

a first evaporative cooler in the supply air path, downstream of the sensible heat exchanger, for at least partially humidifying the supply air and further reducing its temperature prior to entering the conditioned air space.

5,661,984

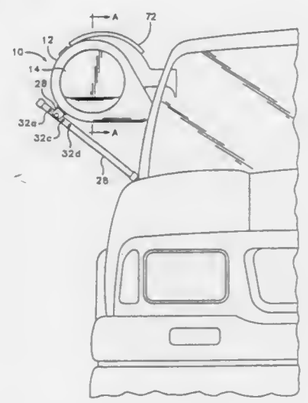
AUTOMOTIVE AIR CONDITIONER

Mark Durrell, and Julianne Durrell, both of 1119 NE. 6th Ave., Camas, Wash. 98607

Filed May 15, 1995, Ser. No. 441,484

Int. Cl.[6] F25D *5/00*

U.S. Cl. 62—304 **15 Claims**



1. An automotive air conditioner comprising:

a housing having an air inlet, an air outlet, a plenum communicating with the air inlet and air outlet, a water reservoir, and surfaces adapted for interlockingly engaging a car door and window assembly;

a self-wetting water wicking assembly removably located in a fixed position in the housing and having an upper portion disposed in the plenum and a lower portion disposed in the water reservoir;

the plenum having a cross-sectional dimension greater than a maximum cross-sectional dimension of the air inlet;

said wicking assembly having a first configuration including a cross-sectional dimension greater than a maximum cross-sectional dimension of the air inlet;

said wicking assembly having a second configuration including a maximum cross-sectional area less than a minimum cross-sectional area of said air inlet; and

said wicking assembly operable to said second configuration wherein said wicking assembly is passable through the air inlet, and operable to said second configuration to engage an inner surface of said plenum.

5,661,985

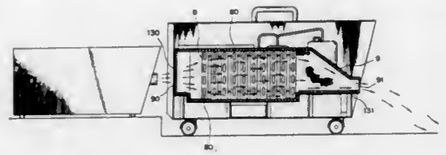
LOW SMOKE SCREEN HANDLER FOR SMOKE GENERATORS

Ping-Fa Heng, 8, Lane 231, Sec. 1, Nan-Kang Road, Lu-Chu, Taoyuan Hsien, Taiwan

Filed Dec. 1, 1995, Ser. No. 566,009

Int. Cl.[6] F25D *19/00*

U.S. Cl. 62—448 **2 Claims**



1. A low smoke screen handler for smoke generators comprising a housing provided therein with a compressor, condensing coils, a mixing cylinder, a dryer, an expansion valve, capillaries, and evaporating coils wherein a refrigerant is used to absorb heat to cool the smoke in an evaporating chamber, the evaporating coils being separated into five sets of evaporators each being connected to a capillary, the outlets for the gas refrigerant being all connected to a converging tube for returning to the compressor, the evaporating coils being placed into the evaporating chamber, the evaporating chamber being roughly rectangular in shape with the left side having a relative small round opening and the right side having a rectangular opening, after receiving the evaporating coils, the evaporating chamber being covered with a cover plate and then secured over a water collecting tray; characterized in that the round opening on the left side of the evaporating chamber is connected to a smoke generator such that after the smoke is introduced into the evaporating chamber, it is cooled down rapidly to become a low smoke screen of relative high specific weight and ejected from the opening on the right of the evaporating chamber.

5,661,986

CHEMICAL REACTOR, REFRIGERATING MACHINE AND CONTAINER PROVIDED THEREWITH AND REAGENT CARTRIDGE THEREFOR

Gilles Labranque, Le Vesinet, France, assignor to Sofrigam, France

PCT No. PCT/FR94/00377, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/23253, PCT Pub. Date Oct. 13, 1994

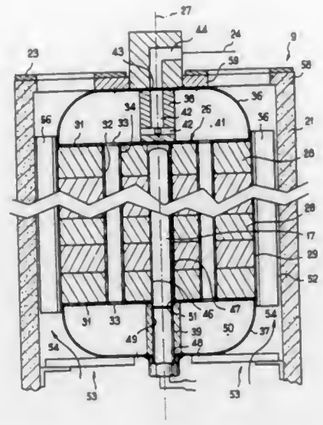
PCT Filed Apr. 5, 1994, Ser. No. 535,268

Claims priority, application France, Apr. 7, 1993, 93 04141

Int. Cl.[6] F25B *17/08*

U.S. Cl. 62—480 **28 Claims**

1. A chemical reactor for a refrigerating machine including a supply of reagent intended to absorb by chemical combination a gaseous flow coming from an evaporator and to desorb this flow by reverse chemical reaction under the effect of a rise in temperature, the reagent being confined between confining faces at least some of which are permeable to mass exchanges, characterized in that the reagent is formed as at least one solid block of reagent prior to its installation in the reactor between said confining faces so that said block is capable of volume variations as a function of the quantity of gas which it has absorbed, and in that the confining faces are part of confining walls configured to exert an initial light clamping

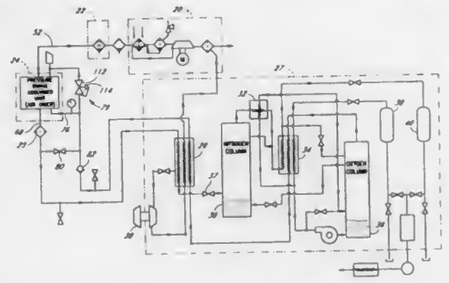


force upon said at least one block which is capable of providing the block with shape stability for resisting said volume variations.

5,661,987
THREE-BED NONIMMOBILIZED RAPID PRESSURE-SWING ADSORBER

Robert A. Zarate, Costa Mesa, Calif., assignor to Pacific Consolidated Industries, Orange, Calif.

Filed Oct. 25, 1996, Ser. No. 738,054
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—641 **14 Claims**

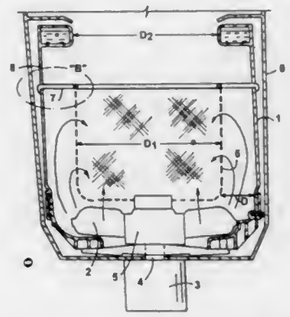


1. An apparatus for distilling liquid oxygen from ambient air, comprising:
- a compressor communicating with an air inlet port and an outlet port, said compressor drawing ambient air containing oxygen and nitrogen through said inlet port and compressing said ambient air into a stream of compressed air and forcing said compressed air stream through said outlet port;
- a filter communicating with said outlet port for filtering said compressed air stream;
- a pressure swing absorber through which said stream of compressed air passes after passing through said filter, comprising:
  - a first molecular sieve bed; through which said air stream can pass after passing through said filter;
  - a second molecular sieve bed; through which said air stream can pass after passing through said filter;
  - a third molecular sieve bed; through which said air stream can pass after passing through said filter; and
  - a main heat exchanger through which said airstream passes after passing through said pressure swing absorber
- a turboexpander through which a portion of said airstream passes after passing through said main heat exchanger;
- an expansion valve through which another portion of said air stream passes after passing through said first heat exchanger, said first expansion valve lowering the pressure of said another portion of said air stream to a temperature at which a substantial portion of said air stream condenses;
- a nitrogen distillation column into which another portion of said air stream passes after passing through said first expansion valve, said nitrogen column having a top and a bottom, said another portion of said air stream separating into condensate and vapor in said nitrogen column, said condensate falling toward said bottom of said nitrogen column and said vapor rising to the top of said nitrogen column, said portion of said condensate reaching said bottom of said nitrogen column being oxygen rich;
- an oxygen collector into which said condensate passes after passing through said nitrogen column; and
- a controller for simultaneously (a) directing said stream of compressed air to a one of said beds for a process interval; (b) depressurizing another one of said beds for a first portion of said process interval and then purging said another of said beds for a second portion of said process interval with an air stream from at least one of said nitrogen distillation column and said oxygen collector; and (c) purging yet another of said beds for a first portion of said process interval with an air stream from at least one of said nitrogen distillation column and said oxygen collector and pressurizing said yet another of said beds for a second portion of said process interval.

5,661,988
WASHING STRUCTURE OF A FULLY AUTOMATIC WASHING MACHINE

Dong Yeop Oh; Gyu Sang Choe, both of Kyungki-do; Kyung Seop Hong, Inchon-Jikhalsi; Kyung Hwan Kim, and Oh Hun Kwon, both of Seoul, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,425
Claims priority, application Rep. of Korea, Nov. 7, 1995, 40139/1995
Int. Cl.[6] D06F *13/06*
U.S. Cl. 68—131 **3 Claims**



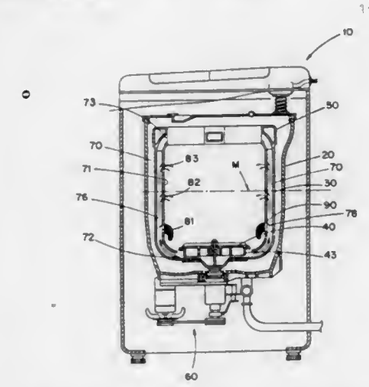
1. A washing structure of a fully automatic washing machine, the washing structure comprising:
- a washtub,
- a driving member configured to vibrate the clothes within the wash tub using a reciprocal ascending and descending movement,
- a basket-shaped washing net configured to be attached or detached within the washtub for being vibrated in up and down directions in accordance with the reciprocal ascending and descending movement of the driving member, and
- a plurality of rotating attachment hooks connected to an upper end of said washing net for attaching said washing net within said washtub to prevent damage to said laundry caused by the rotation of said washing net toward a tangent line of said washtub,

wherein slots are formed in an upper portion of said washtub for attaching said attachment hooks when said washing net is mounted within said washtub.

5,661,989
WASHING MACHINE HAVING VERTICAL WATER GUIDING CHANNELS ON INNER SURFACE OF WASHING BASKET

Yong Byeong Jeon, and Hyeong Reol Lee, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 22, 1996, Ser. No. 620,349
Claims priority, application Rep. of Korea, Mar. 23, 1995, 95-5212
Int. Cl.[6] D06F *39/10*
U.S. Cl. 68—18 F **6 Claims**



1. An automatic clothes washing machine comprising:
- a water container enclosed in a housing for containing water;
- a washing basket mounted inside said water container to rotate about a vertical axis, said washing basket having a bottom and a side wall;
- a driven agitator having a plurality of radial vanes for rotating about said vertical axis to radially outwardly propel said water, said agitator being arranged over said bottom; and
- at least one vertical water-guiding channel arranged on the inside of said side wall of said washing basket, said channel including a water inlet at its lower end for receiving the radially propelled water, a plurality of vertically spaced water outlets disposed above said water inlet for discharging water into said washing basket, and a filter mounted at at least one of said water outlets for filtering the water discharged therefrom, wherein at least one of said water outlets is situated below a vertical midpoint of said water-guiding channel,

said washing machine being operable to fill said washing basket with water at low, medium, and maximum levels, there being a said water outlet adjacent each of said levels.

5,661,990
POWER TRANSFER APPARATUS FOR A WASHING MACHINE

Chan-Ho Chong, Bucheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd, Seoul, Rep. of Korea

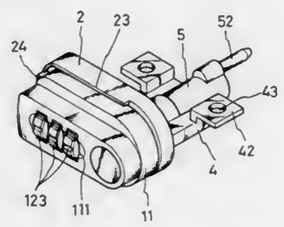
Filed Feb. 16, 1996, Ser. No. 602,930
Claims priority, application Rep. of Korea, May 26, 1995, 95-11467
Int. Cl.[6] D06F *37/40*
U.S. Cl. 68—23.6 **4 Claims**

1. A power transfer apparatus for use in a washing machine provided with a water container, a spin tub rotatable within the water container, a pulsator rotatable within the spin tub, and driving means with a driving shaft, said apparatus comprising:
- a gear shaft fixed to the driving shaft and including a plurality of first connection teeth formed on its periphery;
- a gear case rotatable about the driving shaft, fixed to the spin tub and including a spline gear downwardly extending therefrom;
- planetary gear means including a first gear element connected to the driving shaft, a second gear element connected to the pulsator, and a third gear element secured to the gear case;
- a cylindrical support fixed to the water container to surround the driving shaft and including a plurality of second connection teeth on its inner surface; and
- clutch means for connecting the spline gear of the gear case to the first connection teeth, while keeping the gear case disconnected from the cylindrical support for a dewatering action of the machine, and for connecting the spline gear of the gear case to the second connection teeth, while keeping the gear case disconnected from the gear shaft for a washing action of the machine.

5,661,991
COMBINATION LOCK DEVICE

Chung-Tang Hsu, No. 103, Wu-Kong Rd., Wu-Ku Ind. Park, Taipei Hsien, Taiwan

Filed Mar. 27, 1996, Ser. No. 622,625
Int. Cl.[6] E05B *37/02*
U.S. Cl. 70—312 **4 Claims**



1. A combination lock device for drawers, comprising:
- a combination lock, being a flat oblong structure and comprising a housing, a lock shaft, a lock piece and a lock seat, said housing having a post which projects horizontally from one side thereof, and having said lock shaft fitted with a plurality of number dials and bushings, each of said bushings being provided with a flanged surface and a curved rim and matching one of a plurality of strips provided on said lock piece, said lock piece having a lock hook projecting from a first lateral side thereof, a spring located between a second lateral side of said lock piece and said lock seat such that said lock piece may reciprocate, said lock seat having a notch at a first

side thereof configured to engage said lock hook, and a seat hole at a second thereof for passage of an extension shaft for sealing an open end at a rear side of said housing;

a positioning plate, being a flat oblong structure and having a retain slot at a position matching that of said lock hook and a plate hole at a position matching that of said seat hole;

said extension shaft comprising a first stem portion extending through said plate hole and said seat hole coupled with said post of said housing and a second stem portion extending through a securing seat coupled with an eccentric shaft;

said securing seat coupled with said positioning plate, said securing seat comprising a central hole portion for passage of said second stem portion, a wing extending from both sides of said central hole portion and being at a higher level than that of said central hole portion, each of said wings having a lock hole; and,

said eccentric shaft, having a central hole for passage of said second stem portion and an eccentric rod protruding from a rear end thereof; whereby, by adjusting said number dials to a pre-set code number, said lock piece is enabled to be displaced forwardly so that said lock hook disengages from said retain hole and by turning said housing through 180 degrees, said extension shaft and said eccentric shaft are synchronously caused to turn through 180 degrees in the same direction, thereby allowing opening of the drawer.

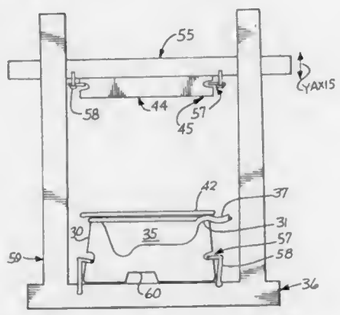
5,661,992

SUPERPLASTIC FORMING SYSTEM

Daniel G. Sanders, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 130,545, Oct. 1, 1993, Pat. No. 5,467,626.
This application Jun. 6, 1995, Ser. No. 467,198
Int. Cl.[6] B21D *26/02*

U.S. Cl. 72—60 **7 Claims**



1. A superplastic forming system comprising:

a free standing generally block-shaped ceramic monolithic die base having a bottom surface on which said die rests, and a top surface, opposite to said bottom surface, in which a forming cavity is formed and which is surrounded by a contact surface, said forming cavity having a shape like the desired shape of sheet metal parts to be formed by superplastic forming in said die;

a die lid having a horizontal cross sectional shape and size approximately equal to said die base, and having a contact surface corresponding in size and contour to said die base contact surface, whereby said lid is placed on said base with said contact surfaces aligning and in contact;

said die base being formed of a ceramic material that provides sufficient compressive strength to resist a compressive load exerted by a press to hold said lid on said die against oppositely directed force generated by gas at superplastic forming pressures within said die, and provides sufficient tensile strength, when in pressure of compressive loads exerted by said press to resist internal bursting forces exerted by gas at superplastic forming pressures within said die.

a compressive assembly having upper and lower platens with substantially parallel upper an lower platen faces for applying compressive force to a die therebetween, a force generating assembly for applying a force on said platens to force said platens toward each other, and a separating means for separating said upper and lower surfaces sufficiently to locate said die therebetween;

attaching hardware for attaching said die to said compressive assembly;

a source for pressurized gas; and

a gas conduit connecting said pressurized gas source to said die cavity.

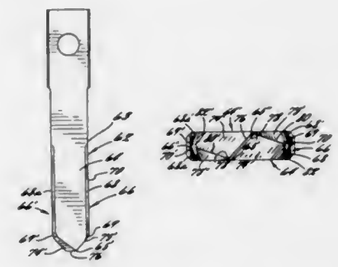
5,661,993

PUNCH TOOL AND METHOD FOR MANUFACTURING TRUSS PLATES

William H. Black, Jr., Edenton, N.C., assignor to Tee-Lok Corporation, Edenton, N.C.

Filed May 22, 1995, Ser. No. 446,223
Int. Cl.[6] B21D *31/02*

U.S. Cl. 72—325 **9 Claims**



1. A punch tool for forming teeth in a truss plate having a generally planar backing member and a plurality of teeth extending from one side thereof, said punch tool comprising:

an elongate shank defined by a pair of opposing, planar, generally parallel side faces and a pair of opposed edge portions, said shank having a base portion at one longitudinal end thereof and a contact end portion at the opposite end thereof, each edge portion comprising a pair of elongate end faces symmetrical about a plane parallel to and equidistant between said side faces, and further comprising an arcuate shoulder at said contact end portion, each end face abutting an edge of the corresponding end face of the pair and also abutting an of a side face, said abutting end faces forming an angle of between about 125 and 145 degrees, each of said side faces terminating at a side face termination point at the contact end thereof; and

a tip portion located on the contact end of said shank, said tip portion comprising a pair of opposed major faces, each of which is bordered by a portion of one of said side faces, a portion of one of said shoulders, a contact edge that extends between two contact edge termination points, each of which is immediately adjacent a respective side face termination point, and one of a pair of dividing edges, each of which extends from a respective contact edge termination point to a central portion of a respective shoulder, each or said major faces extending away from said bordering end face to the most distant contact edge termination point, said tip portion further comprising a pair of minor faces, each of which is bordered by one of said dividing edges, a portion of one of said side faces, and a portion of one of said shoulders, each of said minor facts extending away from said bordering end face to the nearest contact edge termination point.

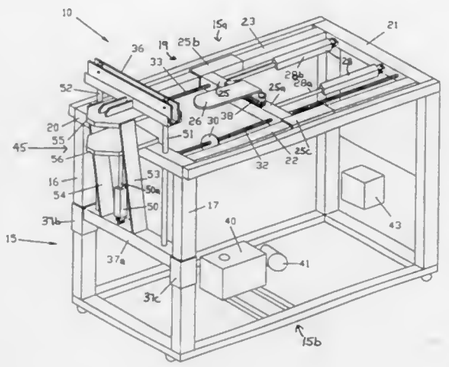
5,661,994

TUBE SHAPING APPARATUS

Kevin E. Sundquist, P.O. Box 212, R.R. 3, Dallas, S. Dak. 57529

Filed Sep. 25, 1995, Ser. No. 532,996
Int. Cl.[6] B21D *9/05*

U.S. Cl. 72—389.6 **9 Claims**



1. A tube shaping apparatus comprising,

a movable frame having plurality of stanchions and an upper portion mounted upon said stanchions;

a tube engagement means mounted upon said movable frame for holding a respective tube to be bent, said tube engagement means including a lower tube engaging member fixedly mounted upon said upper portion of said frame and a means for holding the respective tube upon said lower tube engaging member, said tube holding means further including a carrier means slidably mounted upon a pair of said stanchions, a tube engagement actuator means mounted upon said carrier means for moving said carrier means upon said stanchions, an upper tube engaging member for movement toward and away from said lower tube engagement member, and a means for supporting and mounting said upper tube engaging member upon said carrier means; and

a tube bending means mounted upon said movable frame for bending and shaping the respective tube.

5,661,995

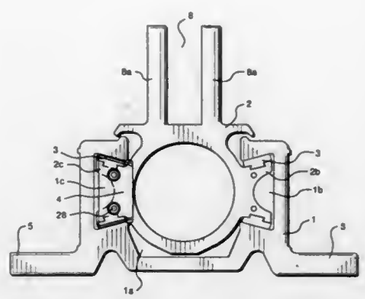
ALIGNER FOR DAMAGED VEHICLE BODYWORK AND VEHICLE CHASSIS

Sten Fagerdahl, Orebro, Sweden, assignor to Josam Lastbilteknik AB, Sweden

PCT No. PCT/SE94/00384, § 371 Date Dec. 29, 1995, § 102(e) Date Dec. 29, 1995, PCT Pub. No. WO94/25192, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 28, 1994, Ser. No. 545,600
Claims priority, application Sweden, Apr. 30, 1993, 9301484
Int. Cl.[6] B21J *13/08*

U.S. Cl. 72—457 **9 Claims**

1. In an aligner for damaged vehicle body and chassis repair having a frame adapted to be secured to a floor or the like, the aligner being equipped with folding wheels capable of adjustment between a working position, in which the aligner is in contact with a floor or the like, and a transport position, in which the aligner adopts a free position relative to the floor, the aligner having a slide supported for movement within the flame to transmit a repair force to the vehicle and an actuating device carried by the frame for moving the slide, the improvement wherein the slide and frame each have uniform cross sectional profiles with inter-engaging dove tails along their lengths, the slide dove tail engaging the frame dovetail throughout the movement of the slide with respect to the frame to provide stable support for the slide throughout its length.



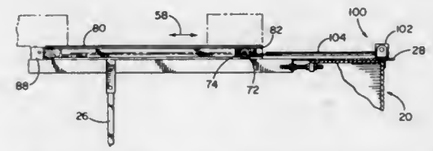
5,661,996

BACK GAGE FOR A BENDING BRAKE

Robert E. Welty, 361 River Pl., Gadadon, Ala. 35901

Filed Feb. 16, 1996, Ser. No. 602,956
Int. Cl.[6] B21D *11/22*

U.S. Cl. 72—461 **25 Claims**



1. A back gage for use with a bending brake of a type that comprises a generally flat bed and a brake edge, the bed of the bending brake providing a support surface for a sheet metal member as a portion of said member is bent around the brake edge in order to form a shape therein, the sheet metal member having a leading edge, the bending brake receiving the leading edge of the sheet metal member, the back gage automatically measuring the distance between the leading edge of the sheet metal member and the brake edge of the bending brake when said member is installed in the bending brake, the back gage comprising, in combination:

a movable carriage assembly arranged to be mounted generally parallel to the brake edge of the bending brake;

a drive assembly for selectively moving said carriage assembly relative to the brake edge of the bending brake; and

a mechanical measuring device adapted to be mounted to the bending brake and coupled to the movable carriage assembly, the mechanical measuring device displaying the distance between the leading edge of the sheet metal member and the brake edge of the bending brake when the leading edge of said member engages the movable carriage assembly.

5,661,997

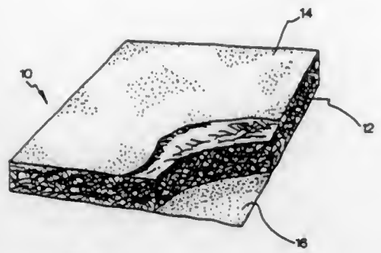
METHOD FOR EVALUATING THE POTENTIAL OF SPHAGNUM MOSS MATERIAL FOR ABSORBING LIQUID

Yvon Levesque, Montreal; Sylvaine Cote, St-Gédéon, and Denis Gallagher, Jonquiere, all of Canada, assignors to Johnson & Johnson Inc., Quebec, Canada

Division of Ser. No. 124,907, Sep. 21, 1993, Pat. No. 5,531,726.
This application May 26, 1995, Ser. No. 452,447
Int. Cl.[6] G01N *5/02*

U.S. Cl. 73—73 **2 Claims**

1. A method for evaluating a liquid-absorbent property of a material containing primarily substantially undecomposed sphag-



num moss plants selected from the group of botanical sections consisting of PALUSTRIA, ACUTIFOLIA, RIGIDA, SUBSECUNDA and CUSPIDATA, said method comprising the steps of:

A) sorting said sphagnum moss plants into predetermined classes on the basis of liquid-absorption properties of said sphagnum moss plants, whereby one class contains sphagnum moss plants more desirable in terms of liquid-absorption than sphagnum moss plants assigned to another class;

B) assigning to each predetermined class a value indicative of an ability of sphagnum moss plants allocated to the predetermined class to absorb liquid;

C) determining the proportions of said predetermined classes with respect to amount of sphagnum moss plants per class; and

D) calculating a mean of the proportions determined at step C adjusted to account for different liquid-absorbency characteristics of the sphagnum moss plants belonging to the different classes, said mean being indicative of an ability of said material to absorb liquid; wherein said mean is a weighted average of the respective values assigned to said predetermined classes.

5,661,998

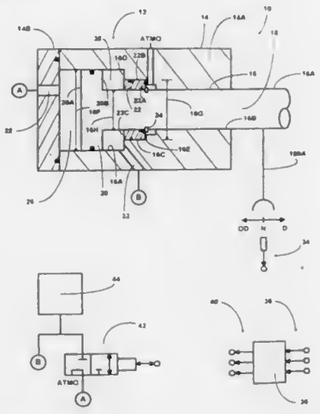
THREE-POSITION ACTUATOR PISTON ASSEMBLY AND ACTUATOR SYSTEM UTILIZING SAME

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 6, 1996, Ser. No. 597,304

Int. Cl.[6] B60K *20/02;* **F16H** *61/28*

U.S. Cl. 74—335 **46 Claims**



1. A pressurized fluid-operated, three-position shift actuator assembly (**12**) for selectably positioning a double-acting clutch (**180**) in a selectable one of a neutral (N) position, a first engaged position (D) axially offset said neutral position in a first axial direction, or a second engaged position (OD) axially offset said neutral position in a second axial direction opposite said first axial direction, said assembly comprising:

a shaft (**18**) operatively associated with said clutch;

a differential area piston fixed for axial movement with said shaft, said differential area piston having a larger face (**20A**) exposed to pressurized fluid in a selectably, variably pressurized first chamber (**26**) and an opposed smaller face (**20B**) exposed to pressurized fluid in a constantly pressurized second chamber (**30**), pressurized fluid on said larger face causing a force urging said shaft in said first axial direction and pressurized fluid on said smaller face causing a force urging said shaft in said second axial direction; and

a secondary piston (**22**) having a face (**22C**) opposed to said smaller face of said differential area piston and exposed to pressurized fluid in said second chamber, said secondary piston effective to apply a force in said first axial direction to said shaft only if said controlled device was previously displaced in said second axial direction from said neutral position.

5,661,999

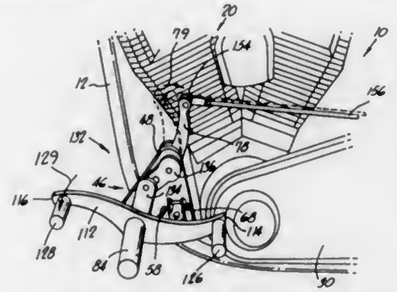
MOTORCYCLE SHIFT PEDAL ASSEMBLY

Robert P. Carone, 1220 Flora Vista Dr., Santa Barbara, Calif. 90101

Filed Apr. 10, 1995, Ser. No. 418,647

Int. Cl.[6] G05G *9/02*

U.S. Cl. 74—474 **12 Claims**



1. A motorcycle shift pedal assembly which is connected to a transmission of a motorcycle to shift the gears upward from a lower gear to a higher gear for acceleration and downward from a higher gear to a lower gear for deceleration where the motorcycle includes a frame, clutch means on said motorcycle that engages said transmission to allow shifting into various gears as desired, wherein said shift pedal assembly comprises:

a shift assembly mounting plate secured to said frame;

a shift pedal arm means having a pair of opposed ends and including a pivot shaft intermediate said opposed ends, said pivot shaft pivotally mounted on said shift assembly mounting plate and connected to said shift pedal arm means for pivotal rotation therewith about a pivot axis, said shift pedal arm means including a foot rest centrally mounted thereon for selective movement about said pivot axis relative to said shift pedal arm means, said foot rest projecting outward from said shift pedal arm means, and a front shift pedal mounted adjacent one of said pair of opposed ends of said shift pedal arm means and a rear shift pedal mounted adjacent said other of said opposed ends of said shift pedal arm means so that downward foot pressure on either of said shift pedals will simultaneously pivot said shift pedal arm means, and said front shift pedal and said rear shift pedal and said pivot shaft;

pivotal lever means including a portion fixedly secured to said pivot shaft of said shift pedal arm means for simultaneous pivotal movement with movement of said shift pedal arm means;

a rod shift lever pivotally associated with said pivotal lever means adapted for backward and forward pivotal movement by downward foot pressure on either of said front shift pedal or said rear shift pedal of said shift pedal arm means; and

a shift rod extending from said rod shift lever to said transmission that upon downward foot pressure on a first of said front shift pedal and said rear shift pedal pivots said shift pedal arm means in a first direction and up shifts the gears from a lower gear to a higher gear and downward foot pressure upon the second of said front shift pedal and said rear shift pedal pivots said shift pedal arm means in a second direction opposite said first direction and down shifts the gears from a higher gear to a lower gear.

5,662,000

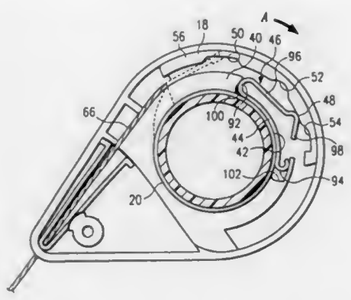
DETENT SPRING FOR ROTATABLE GRIP ACTUATING SYSTEM

Sam Patterson, Solana Beach, Calif.; John David Cheever, Chicago, Ill.; Michael W. Larson, Chicago, Ill.; Tymme A. Laun, Chicago, Ill., and William M. Yaney, Sun City, Calif., assignors to SRAM Corporation, Chicago, Ill.

Continuation of Ser. No. 295,370, Aug. 24, 1994, Pat. No. 5,524,501, which is a continuation-in-part of Ser. No. 207,249, Mar. 7, 1994, Pat. No. 5,476,019. This application Mar. 1, 1996, Ser. No. 609,676

Int. Cl.[6] G05G *5/06;* **B62K** *23/04*

U.S. Cl. 74—475 **19 Claims**



1. A rotatable handgrip actuating system for pulling or releasing a tensioned cable, the system comprising:

a generally cylindrical support member;

a grip fitting over said support member and rotatable by the hand of a user with respect to said support member, said grip having a generally cylindrical interior surface opposed to said support member;

a detent surface including a plurality of notches formed in a first one of said support member and said interior surface;

a detent spring contained by a second one of said support member and said interior surface, the detent spring including a base and a cantilever arm extending from an end of the base so as to form a pivot point therebetween, the cantilever arm having a detent disposed thereon, the detent being angularly displaced relative to the pivot point;

wherein said detent is urged against said detent surface by the detent spring, such that said grip is freely rotatable until said detent is in registry with one of the notches, said detent exhibiting a first resistance to escaping said one notch when the user rotates said grip in a first angular direction, and exhibiting a second resistance to escaping said one notch when the user rotates said grip in a second angular direction opposite the first angular direction, the second resistance being greater than the first resistance.

5,662,001

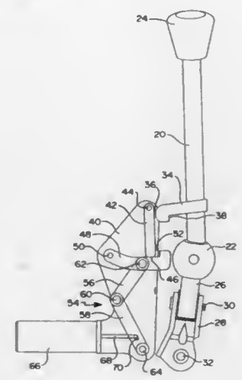
MANUAL SHIFTER AND IGNITION INTERLOCK

Randall D. Smale, Farmington Hills, Mich., assignor to Dura Automotive Services, Rochester Hills, Mich.

Filed Apr. 8, 1996, Ser. No. 629,083

Int. Cl.[6] G05G *11/00*

U.S. Cl. 74—483 R **7 Claims**



1. A shift lever lock for a vehicle having a manual transmission controlled by a shift lever movable between a plurality of operating positions including REVERSE and an ignition movable between RUN and non-RUN positions including OFF, comprising

a first locking member mounted on the vehicle for movement between locking and unlocking positions,

a second locking member mounted on the shift lever for engagement with the first locking member when in locking position upon shift lever movement to REVERSE to lock the shift lever against movement out of REVERSE,

a lock blocking member mounted on the vehicle for movement between positions blocking and enabling movement of the first locking member to locking position,

unblocking means carried by the shift lever for moving the lock blocking member to unblocking position when the shift lever is moved to REVERSE, and

control means responsive to movement of the ignition to a non-RUN position to move the first locking member to locking position when the shift lever is in REVERSE.

5,662,002

MANUAL CONTROL DEVICE FOR CONTROLLING ACCELERATION, BRAKING, AND THE LIKE

Giancarlo Venturini, Rome, Italy, assignor to Guidosimplex S.N.C. Di Giancarlo Venturini & C., Rome, Italy

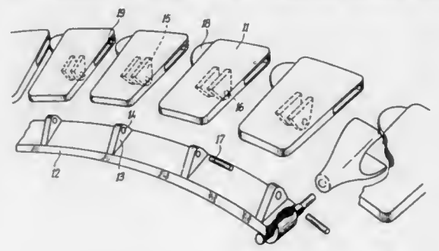
Filed May 15, 1995, Ser. No. 441,691

Claims priority, application Italy, May 13, 1994, RM94A0297

Int. Cl.[6] G05G *11/00*

U.S. Cl. 74—484 R **15 Claims**

1. A manual control device for transmitting manual control



operation from a vehicle steering wheel, comprising a plurality of lever elements, a circular bearing element on which said plurality of lever elements are fixedly mounted, a cable having elastic features when said cable is torsionally stressed, said cable being supported within a seat established by said circular bearing element, said lever elements being connected together and swingable relative to said circular bearing element between a rest position and manual operating control transmission positions that induces torsional stress on said cable where said levers elastically return to a torsionally unstressed rest position once the manual operation is complete and where at least one of said lever elements acts on a potentiometer element.

5,662,003

STEERING WHEEL DEVICE EQUIPPED WITH STOPPER

Toshiya Ohara, Tokyo, Japan, assignor to Namco Limited, Tokyo, Japan

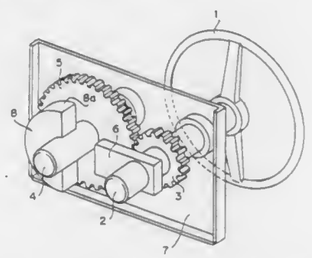
PCT No. PCT/JP94/01771, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995

PCT Filed Oct. 21, 1994, Ser. No. 367,160

Claims priority, application Japan, Oct. 21, 1993, 5-285641

Int. Cl.[6] A63F *9/00*; B62D *1/20*

U.S. Cl. 74—498 **5 Claims**



1. A steering wheel device for a driving game machine having a steering wheel, comprising

a steering wheel shaft integrated with the steering wheel and connected to a servo motor for applying a reaction force to the steering wheel,

an auxiliary shaft arranged separately from the steering wheel shaft and connected to a potentiometer for detecting a rotation angle of the steering wheel,

power transmission means interconnecting the steering wheel shaft and the auxiliary shaft such that a rotation angle of the steering wheel shaft is greater than the rotation angle of the auxiliary shaft,

a stopper arm mounted on the steering wheel shaft for rotating together with the steering wheel shaft, said stopper arm being arranged separately from the power transmission means,

a stopper mounted on the auxiliary shaft for rotating together with the auxiliary shaft, said stopper being disposed opposite the stopper arm and being arranged separately from the power transmission means,

said stopper interfering with rotation of the stopper arm after said stopper arm has rotated through at least one rotation.

5,662,004

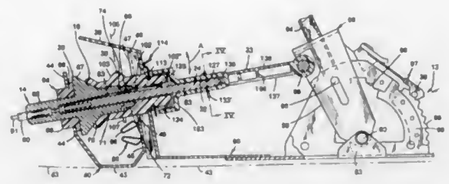
VEHICLE SHIFT CABLE CONNECTION

Charles Osborn, and Andrew K. Ruiter, both of Spring Lake, Mich., assignors to Grand Haven Stamped Products, Div. of JSJ Corporation, Grand Haven, Mich.

Filed Jan. 19, 1995, Ser. No. 375,344

Int. Cl.[6] F16C *1/12*; B60K *20/04*

U.S. Cl. 74—502.4 **28 Claims**



1. In combination, an apparatus comprising:

a vehicle mounting bracket;

a cable assembly including a cable; a sheath engaging said vehicle mounting bracket and including a first bore; and a telescopable member attached to said cable received in said bore and extending from said sheath;

a shifter including a base having a cable assembly mounting bracket and further including a gear shift mechanism;

an anchor attached to said shifter base securing said sheath to said cable assembly mounting bracket of said shifter base;

said anchor including a second bore receiving said sheath and said telescopable member;

said telescopable member being slid able within at least one of said first or second bores;

an elongated connector rod operably securing said telescopable member to said gear shift mechanism; and

a first end of said connector rod including an aperture receiving the telescopable member and a second end of said connector rod connected to said gear shift mechanism.

5,662,005

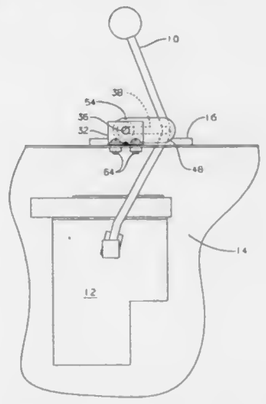
RESTRAINT MECHANISM FOR A CONTROL LEVER

Ronald H. Garman, Pekin, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 26, 1995, Ser. No. 548,627

Int. Cl.[6] G05G *1/04*

U.S. Cl. 74—526 **10 Claims**



1. A restraint mechanism for a control lever, comprising:

a base plate defining a preselected path of movement for the control lever, said pattern of movement defining a preselected location for a neutral position of the control lever;

a bail member having a recess defined therein and being mounted to the base plate for pivotal movement with respect thereto between a first position wherein the recess is in contact with the control lever to maintain said control lever in its neutral position, and a second position wherein the recess is moved away from contact with the control lever to permit movement of the control lever;

means for locking the bail member in one of said first and second positions, said locking means having a first and second detent defined on opposing sides thereof;

a spring member having a base member formed from sheet metal and a leg portion that extends upwardly from the base member, said leg portion further defining a projection thereon that is adapted to engage the first and second detents.

5,662,006

BICYCLE PEDAL

Rune Angeltun, Hunsrødveien 9 A, 3233 Sandefjord, Norway

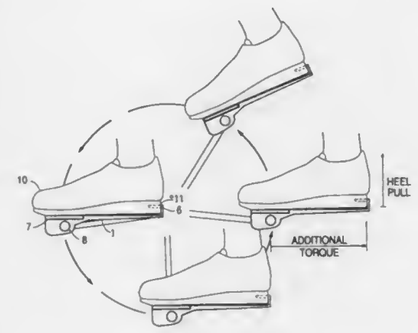
PCT No. PCT/NO92/00130, § 371 Date Apr. 13, 1994, § 102(e) Date Apr. 13, 1994, PCT Pub. No. WO93/03955, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 14, 1992, Ser. No. 196,270

Claims priority, application Norway, Aug. 16, 1991, 913224

Int. Cl.[6] B62M *3/08*; G05G *1/14*

U.S. Cl. 74—594.4 **14 Claims**



1. A bicycle pedal assembly comprising:

a pedal axle to be fixed to a bicycle crank arm and to be rotated by a foot of a cyclist in a direction of drive rotation;

a pedal on said pedal axle and having a length to extend beneath substantially the entire foot of the cyclist, said pedal including a portion to support the ball of the foot of the cyclist, said portion being positioned substantially directly above said pedal axle, and said pedal having at a rear end thereof a heel pulling means to achieve pulling attachment of said rear end of said pedal to the heel of the foot of the cyclist enabling the cyclist to pull said rear end upwardly;

a freewheel device disposed between said pedal and said pedal axle and enabling free rotation of said pedal relative to said pedal axle in a direction opposite to said direction of drive rotation while blocking rotation of said pedal relative to said pedal axle in a direction corresponding to said direction of drive rotation;

whereby during a forward down pedalling phase said pedal rotates freely relative to said pedal axle in said direction opposite to said direction of drive rotation; and

said freewheel device and said heel pulling means together defining means for, only during a forward up pedalling phase during which the heel of the foot of the cyclist attempts to rotate said pedal relative to said pedal axle in said direction corresponding to said direction of drive rotation, blocking such attempted rotation and thereby forming a moment arm extension resulting in an increased upward pulling force during the forward up pedalling phase.

5,662,007

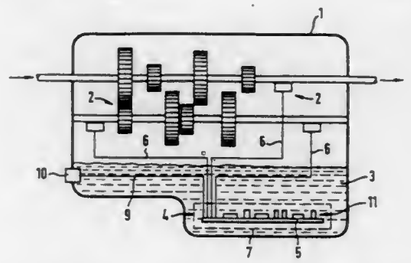
MOTOR VEHICLE GEARBOX CONTROL SYSTEM IN AN OIL-FILLED CASING

Klaus Stärker, Neutraubling, and August Kammerl, Brunn, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 13, 1995, Ser. No. 557,414

Int. Cl.[6] F16H *57/04*

U.S. Cl. 74—606 A **7 Claims**



7. A gearbox control system for a motor vehicle, comprising:

a casing;

oil partially filling said casing;

a control device disposed in said casing;

a functionally associated electronic control system being disposed inside said casing, being at least partially surrounded by said oil and having electrical terminals;

lines being constructed as rigid wires attached to said electrical terminals of said electronic control system and to said control device for electrically connecting said electronic control system to said control device; and

a metal casing in which said electronic control system is fitted, said metal casing being disposed in said casing, and said metal casing being partially surrounded by said oil.

5,662,008

EXTENDED CONTACT HARMONIC DRIVE DEVICES

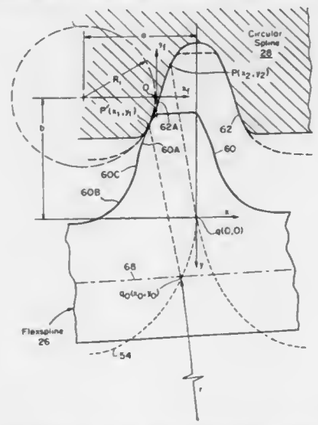
Joseph J. Aubin, Georgetown, Mass.; Yoshichika Yamada, Oogaki, Japan, and Etsuro Komori, Peabody, Mass., assignors to Teijin Seiki Boston, Inc., Peabody, Mass.

Continuation-in-part of Ser. No. 113,285, Aug. 30, 1993, Pat. No. 5,456,139. This application Oct. 6, 1995, Ser. No. 540,195

Int. Cl.[6] F16H *1/32*

U.S. Cl. 74—640 **5 Claims**

1. A harmonic drive gearing apparatus for transmitting rotary



motion from an input drive to an output drive, comprising:

a circular spline having gear teeth thereon said circular spline gear teeth having a face profile and a flank profile;
a flexspline having gear teeth thereon arranged radially adjacent said circular spline, said flexspline gear teeth having a face profile and a flank profile and a transition region therebetween;
a non-circular wave generator having a major axis and a minor axis arranged radially adjacent said circular spline, and adapted to deform said flexspline when rotated, to generate relative motion between the flexspline and the circular spline; and
wherein at least a face profile of the circular spline gear teeth is defined by an arc segment of known curvature while a face profile of the flexspline gear teeth is defined by the equations:

$$x_f = \left[R_i \cdot \left| \frac{dy_o}{d\theta} \right| + \sqrt{\left(\frac{dx_0}{d\theta} \right)^2 + \left(\frac{dy_0}{d\theta} \right)^2} \right] - (x_0 + Ri) - u \cdot h$$

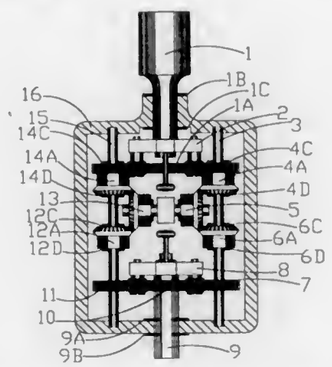
and

$$y_f = \left[R_i \cdot \left| \frac{dx_o}{d\theta} \right| + \sqrt{\left(\frac{dx_0}{d\theta} \right)^2 + \left(\frac{dy_0}{d\theta} \right)^2} \right] + y_0$$

and

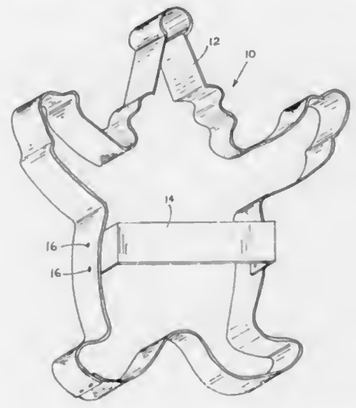
$$h = y_0 - Y_1 \text{ and } u = \tan^{-1}\left(-\frac{1}{r} \cdot \frac{dr}{d\phi} \right)$$

5,662,009
DRIVE MECHANISM PROVIDING AN OSCILLATORY-ROTATIONAL-DRIVE INPUT AND A REVERSIBLE ROTATIONAL-DRIVEN-OUTPUT
Leon Robert Palmer, 81 Pennsylvania Ave., Somerset, Mass. 02726
Filed Oct. 16, 1995, Ser. No. 543,323
Int. Cl.[6] F16H *27/02;31/00*
U.S. Cl. 74—810.1 **8 Claims**



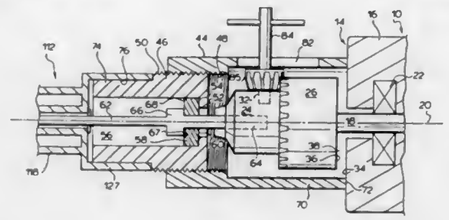
1. A device for mechanically converting oscillatory-rotation of input to forward-rotational-drive and converting oscillatory-rotation of input to reverse-rotational-drive comprising:
an output-member capable of forward-drive by applying forward, reverse and oscillatory-rotation to an input-member,
an output-member capable of reverse-drive by applying forward, reverse and oscillatory rotation to an input-member,
a forward-rotation-mechanism for receiving and transferring forward-rotation from input-member to output-member when forward-drive is desired,
a forward-rotation-mechanism for receiving reverse-rotation from input-member, converting reverse-rotation into useable forward-rotation then transferring the converted forward-rotation to output member when forward-drive is desired,
a reverse-rotation-mechanism for receiving and transferring reverse-rotation from input-member to output-member when reverse-drive is desired,
a reverse-rotation-mechanism for receiving forward-rotation from input-member, converting forward-rotation into useable reverse-rotation then transferring the converted reverse-rotation to output member when reverse-drive is desired,
a geared and spring-loaded input selector mechanism pivotably mounted onto the internal end of input-member and caused to pivot and become retained into engagement with forward-rotation-mechanism thereby providing the mechanical path for transferring rotational motion from input-member to forward-rotation-mechanism then be caused to pivot out of engagement from forward-rotation-mechanism and become retained into engagement with reverse-rotation-mechanism thereby providing the mechanical path for transferring rotational motion from input-member to reverse-rotation-mechanism,
a geared and spring-loaded output-selector-mechanism pivotably mounted onto the internal end of output-member and caused to pivot and become retained into engagement with forward-rotation-mechanism thereby providing the path for transferring rotational motion from forward-rotation-mechanism to output-member and then be caused to pivot out of engagement from forward-rotation-mechanism and become retained into engagement with reverse-rotation-mechanism thereby providing the mechanical path for transferring rotational motion from reverse-rotation-mechanism to output-member,
a three-piece housing for enclosing and supporting aforementioned components.

5,662,010
METHOD FOR MANUFACTURING A BAKERY CUTTING DEVICE
Wayne B. Barnett, 1252 Woodland Ct., Joliet, Ill. 60436
Filed Aug. 2, 1995, Ser. No. 510,381
Int. Cl.[6] B21K *5/20*
U.S. Cl. 76—107.8 **2 Claims**



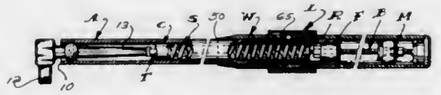
1. A method for manufacturing a bakery cutting device comprising the steps of:
selecting a configuration for the device;
dimensioning said configuration;
selecting a deformable metal strip;
configuring a plurality of dies to deform pre-selected portions of said metal strip;
securing together opposing ends of said metal strip after all portions of said metal strip have been deformed;
attaching handle means to a pre-determined portion of said metal strip; and
providing a positioning slot to prevent deformed portions of said metal strip from being drawn between dies that deform a straight portion of said metal strip that is adjacent to said deformed portion.

5,662,011
POWER DRILL HOUSING EXTENSION COUPLING
G. Lyle Habermehl, 436 Calvert Dr., Gallatin, Tenn. 37066, assignor to G. Lyle Habermehl, Gallatin, Tenn.
Filed Dec. 27, 1995, Ser. No. 579,284
Int. Cl.[6] B25B *23/06*
U.S. Cl. 81—434 **25 Claims**



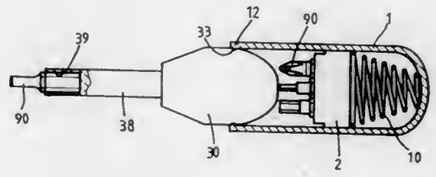
1. In combination, a power tool having a housing, and a coupling mechanism for securing to the housing against movement relative the housing:
the housing including a forwardly directed surface,
the power tool including:
a shaft extending forwardly from the housing beyond the forward directed surface; and
a chuck carried on the shaft forward of the housing,
the coupling mechanism including:
an elongate mandrel secured in the chuck for rotation coaxially with the shaft and against relative movement forwardly relative the shaft;
a thrust bearing carried on the mandrel with the mandrel preventing movement of the thrust bearing forwardly relative the mandrel;
the thrust bearing having a rearwardly directed surface; and
a sleeve member disposed about the chuck;
wherein the sleeve member is sandwiched between the forwardly directed surface on the housing and the rearwardly directed surface on the bearing such that the sleeve is secured to the housing against movement relative the housing.

5,662,012
TORQUE WRENCH STRUCTURE
Bosko Grabovac, Arcadia, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed Nov. 7, 1995, Ser. No. 551,799
Int. Cl.[6] B25B *23/159*
U.S. Cl. 81—483 **7 Claims**



1. An adjustable click-type torque wrench structure comprising an elongate tubular lever arm with front and rear ends and a central longitudinal axis, a head pivotally mounted at the front end of the arm and including a laterally projecting tool-engaging part and an elongate pivot arm projecting freely rearwardly within the pivot arm; a flat rearwardly disposed front seat at the rear end of the pivot arm, an elongate plunger with front and rear ends slidably engaged in the lever arm rearward of the pivot arm; a flat forwardly disposed rear seat at the front end of the plunger, an elongate trip block with flat forwardly and rearwardly disposed faces normally establishing flat opposing engagement with said rearwardly and forwardly disposed seats, a spring seat part within the lever arm rearward of the plunger, an elongate axially extending helical compression spring within the arm in engagement with and between the plunger and the spring seat part; and, manually operable adjusting means to vary the axial biasing of the spring and including a standard machine bolt with an elongate axially extending threaded shank with front and rear ends and a polygonal tool-engaging head at the front end of the shank, the bolt is positioned in the lever arm with its head in engagement with the spring seat part and with the rear portion of its shank projecting from the rear end of the lever arm, a carrier nut which is a standard polygonal/hex machine nut, is positioned and securely set, within the rear end portion of the lever arm against axial and rotary movement relative thereto, and through which the shank of the bolt is threadedly engaged; manually operable drive means is provided to selectively rotate the shank within the carrier nut and includes an elongate tubular hand grip with a forward end portion rotatably carried by the arm and a rear end portion projecting rearward from the arm, an elongate drive ring with a central polygonal opening and front and rear ends is fixed within the rear end portion of the hand grip and through which the rear end portion of the shank freely projects, an elongate axially extending polygonal drive nut with front and rear ends and a radially outwardly projecting stop flange at its front end is threadedly engaged on the shank and is positioned in the ring in rotary driving engagement therewith and with its flange in stopped engagement with the front end of the ring; and, an elongate polygonal lock nut with front and rear ends and a radially outwardly projecting flange at its front end is engaged on the shank with its flange in pressure engagement with the rear end of the ring.

5,662,013
COMPACT TOOL COMBINATION
Chiang-Her Lin, No. 22-8, Her Chuang Lane, Jiann Dong Road, Dah Li City Taichung County, Taiwan
Filed Mar. 1, 1996, Ser. No. 609,826
Int. Cl.[6] B25G *1/08*
U.S. Cl. 81—490 **3 Claims**



1. A tool combination comprising:
a handle including a hollow interior and including an open top having a plurality of spaced protrusions extended upward therefrom, said handle including an upper portion having a projection means formed therein,
a spring means engaged in said hollow interior of said handle,
a slide slidably engaged in said handle and engaged with said spring means, said slide including a plurality of cavities formed therein for engaging with tool bits, said spring means biasing said slide toward said open top of said handle so as to move the tool bits slightly outward of said handle, said projection means being engaged with said slide so as to prevent said slide from disengaging from said handle, and
a block including a middle portion having a plurality of ears extended radially outward therefrom so as to form a plurality of notches therebetween for engaging with said protrusions, said block including a depression means formed therein for engaging with said projection means so as to secure said

block to said handle, said block including a shaft extended therefrom, said shaft including an engaging hole for engaging with and for driving the tool bits,

said slide being depressed inward of said handle when said notches of said block are engaged with said protrusions of said handle and when said projection means is engaged with said depression means.

5,662,014

AUTOMATIC BAR STOCK FEEDING APPARATUS FOR MACHINE TOOLS, IN PARTICULAR AUTOMATIC LATHES

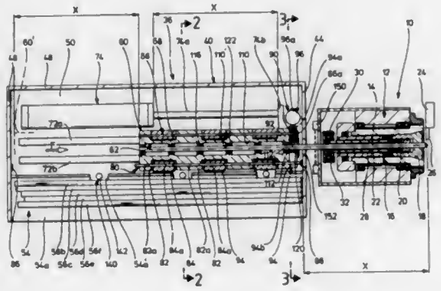
Helmut Friedrich Link, Alchwald, Germany, assignor to Index-Werke GmbH & Co., KG Hahn & Tessky, Esslingen, Germany

Filed Sep. 6, 1995, Ser. No. 524,221

Claims priority, application Germany, Sep. 7, 1994, 44 31 814.6

Int. Cl.[6] B23B *13/04*

U.S. Cl. 82—125 **38 Claims**



1. Apparatus for feeding bar-shaped stock in a feeding direction coinciding with the longitudinal direction of a stock bar to a machining station of a machine tool, said apparatus comprising an elongated receiving and guiding box supported by a fracas and extending in said feed direction, said box having a receiving and guiding passage for receiving a new stock bar and for guiding stock bar in said feed direction in the course of machining said stock bar in said machining station, said guiding passage extending in said feed direction and being open at least at a front end of said box facing the machining station, said box being divided in longitudinal direction and having at least two elongated wall elements extending in said feed direction, each of said wall elements having an inner side facing said guiding passage and providing an elongated channel extending in said feed direction, said apparatus further comprising an actuating device for opening and closing said box by moving at least one of said wall elements transversely to the feed direction such that a new stock bar is insertable into the open box in a direction transverse to the longitudinal direction of said stock bar, and a pushing-in device for pushing a new stock bar in said feed direction into said machine tool, wherein a controllably closable and openable clamping device is associated with said box for securing a new stock bar in place within said box, said box being guided on said frame for displacement in said feed direction and being movable by the pushing-in device in said feed direction and opposite thereto.

5,662,015

CUTTING TOOL HOLDER WITH STRAIN GAUGE DISPLACEMENT INDICATOR

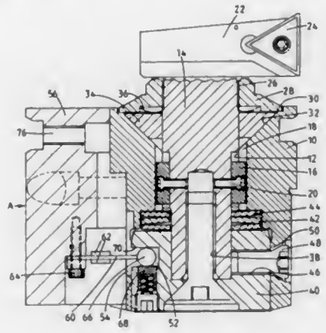
Roger Bassett; Terence Ian Negus, both of Cornwall, and Roger Sidey, Surrey, all of England, assignors to Rigibore Limited, United Kingdom

Filed Aug. 31, 1995, Ser. No. 520,938

Claims priority, application United Kingdom, Sep. 1, 1994, 9417556

Int. Cl.[6] B23B *29/03;* **B23Q** *17/22*

U.S. Cl. 82—158 **11 Claims**



1. A cutting tool holder assembly comprising a body, a shaft mounted in said body for axial movement relative thereto, a cutting tool holder member carried by said shaft externally of said body, means for preventing rotation of said shaft relative to said body, moving means for moving said shaft axially relative to said body to enable adjustment of a cutting tool carried by said cutting tool holder member in use, and indicating means for indicating the position of the shaft relative to the body, wherein said indicating means comprises at least one strain gauge element, mounted on a deflectable member which is arranged to be deflected upon relative movement between said shaft and said body, and wherein said indicating means is adapted to produce an output signal proportional to the deflection of said deflectable member.

5,662,016

PUNCHING DIE

Oriya Fujita, Hadano, Japan, assignor to Amada Metrecs Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 220,254, Mar. 30, 1994, abandoned. This application Sep. 18, 1996, Ser. No. 715,493

Claims priority, application Japan, Mar. 31, 1993, 5-073293

Int. Cl.[6] B26F *1/14*

U.S. Cl. 83—137 **4 Claims**

1. A punching die comprising:

a punch body;

a punch guide fitted on said punch body and movable up and down with respect to said punch body;

a punch head arranged on a top portion of said punch body;

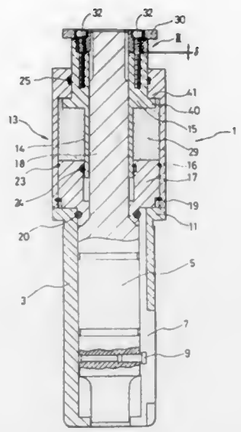
a gaseous spring provided between said punch body and said punch guide for pushing said punch guide downwardly with respect to said punch body, said gaseous spring including:

an inner cylinder fitted on said punch body;

an outer cylinder moving up and down with respect to said inner cylinder, said outer cylinder having a reduced diameter portion extending inwardly; and

a piston provided on said inner cylinder, said piston having a flange extending outwardly for engagement with said reduced diameter portion;

wherein said punch body is configured so as to be inserted into said inner cylinder from an underside of said inner cylinder during assembly;



wherein said punch head is screwed on said top portion of said inserted punch body;

wherein said piston is screwed on said top portion of said punch body under said punch head;

wherein said punch head is separate from said gaseous spring in an axial direction; and

wherein said punching die further includes means for exerting an attractive force between said punch head and said gaseous spring on said punch head and said gaseous spring.

5,662,017

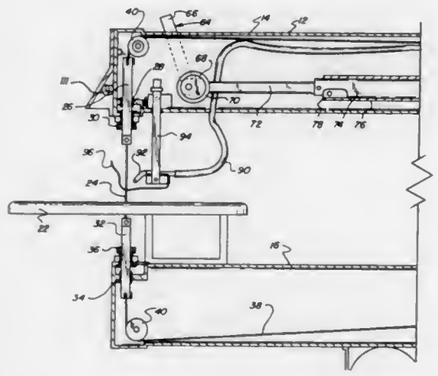
SCROLL SAW

Ernesto Claude Mellon, 11700 Lock La., New Kent, Va. 23124

Continuation-in-part of Ser. No. 314,319, Sep. 28, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 671,610

Int. Cl.[6] B26D *7/18;* **B27B** *19/10*

U.S. Cl. 83—169 **5 Claims**



1. A scroll saw comprising:

a substantially U-shaped main body having an upper leg and a lower leg, with said legs of said main body extending in a substantially horizontal orientation;

a saw blade;

an upper blade chuck slidably mounted to said upper leg of said main body, said upper blade chuck being operable to receive and secure an upper portion of said saw blade;

a lower blade chuck slidably mounted to said lower leg of said main body, said lower blade chuck being operable to receive and secure a lower portion of said saw blade such that said blade is reciprocally mounted between said legs of said main body;

a plurality of guide pulleys rotatably mounted within said main body;

a belt having first and second ends, said belt being coupled at said first end thereof to said upper blade chuck and to said lower blade chuck at said second end thereof, said belt extends over said plurality of rotatably mounted guide pulleys; and

oscillating means with a fixed first stroke for effecting oscillation of said belt over said guide pulleys at a fixed second stroke at about twice the first stroke, thereby resulting in an oscillation of said blade chucks and said associated blade to effect cutting of a work piece;

said oscillating means comprises a drive pulley rotatably mounted within said main body, said drive pulley being engaged to said belt, and an electric motor in mechanical communication with said drive pulley to effect oscillation of said drive pulley;

a crank rotatably mounted within said main body including a cam centrally coupled to a rotor of the motor, the crank further comprising a connecting rod rotatably coupled to the first portion of the cam such that said connecting rod is reciprocated during rotation of said rotor, said connecting rod being eccentrically and pivotally mounted to said drive pulley; and

an air tube terminating in a nozzle, said nozzle being therefore adjustably supported between said legs of said main body proximal to said saw blade, and an air pump means for pumping air through said air tube;

wherein said air pump means comprises a hollow cylinder mounted to a portion of said main body proximal to said drive pulley, a piston rod pivotally mounted to said drive pulley and extending into said cylinder, a piston movably positioned within said cylinder and mounted to said piston rod, a first check valve in fluid communication with said cylinder for permitting entrance of ambient air into said cylinder during a first stroke of said piston, and a second check valve in fluid communication with both said cylinder and said air tube for permitting air within said cylinder to be biased under pressure through said air tube during a second stroke of said piston;

wherein the drive pulley reciprocates the piston rod with a fixed third stroke, with a distance between an axis of rotation of the drive pulley and a point of connection of the piston rod to the drive pulley essentially the same as the distance between said axis of rotation and the point where the connecting rod couples to drive pulley thereby defining the length of the third stroke to be equal in length to the first stroke and half that of the second stroke;

a lubrication system including at least one refillable reservoir means for containing a predetermined amount of lubricating fluid, a first conduit means having a first end coupled to the at least one reservoir and a second end in communication with the upper blade chuck for providing lubrication thereto and further a second conduit means having a first end coupled to the at least one reservoir means and a second end in communication with the lower blade chuck for providing lubrication thereto.

5,662,018

WORKING MACHINE FOR MATERIAL WEBS, PARTICULARLY PAPER FORMAT CROSS-CUTTER

Hansjörg Klein, Aichwald, Germany, assignor to bielomatik Leuze GmbH & Co., Germany

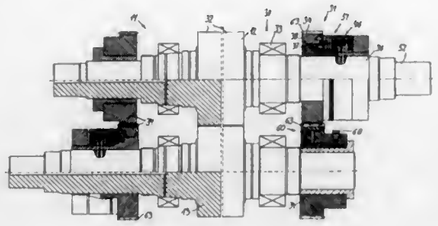
Filed May 17, 1995, Ser. No. 442,947

Claims priority, application Germany, May 19, 1994, 44 17 493.4

Int. Cl.[6] B23D *25/12;* **F16H** *55/18*

U.S. Cl. 83—343 **6 Claims**

1. A working machine for material webs, comprising:



two machine parts rotatable in opposition to one another; at least one pair of toothed gear wheels synchronizing said two rotatable machine parts with one another each gear wheel connected to a respective one of said machine parts, each of said gear wheels having at least one gear body and a toothed gear rim integral with said at least one gear body; and,

at least one of said gear wheels having means for deforming its gear rim radially outwardly to minimize backlash between the teeth of said gear wheels, said deforming means including a separate slot-shaped pressure medium pocket at each of a plurality of circumferential positions, each of said pockets locally deforming said gear rim in a radial direction when separately pressurized by a liquid pressure medium.

5,662,019

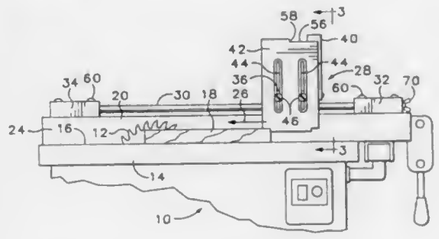
SAFETY DEVICE FOR WOODWORKING TOOLS

Paul M. Denman, 895 Prospect Pl., South Salem, Oreg. 97302

Filed May 3, 1995, Ser. No. 433,589

Int. Cl.[6] B27B *25/10*

U.S. Cl. 83—425 **13 Claims**



7. In combination with a power tool including a table having a top surface and a workpiece guide extending above said top surface, said workpiece guide including a workpiece-guiding surface, a safety device for use in advancing a workpiece into cutting engagement with a blade of said power tool, the safety device comprising:

(a) a guide bar having a longitudinal axis;

(b) a slide body mounted on said guide bar and slidable therealong, said slide body being rotatable through an angle about said longitudinal axis of said guide bar, between a workpiece-advancing position and a retraction position, said slide body including a mating surface extending parallel with said guide bar;

(c) a workpiece-engaging member fastened to said slide body in contact with said mating surface; and

(d) a pair of mounting devices engaging said guide bar and supporting said guide bar in a predetermined position with respect to said workpiece guide.

5,662,020

INCHWORM TYPE OF ACTUATOR

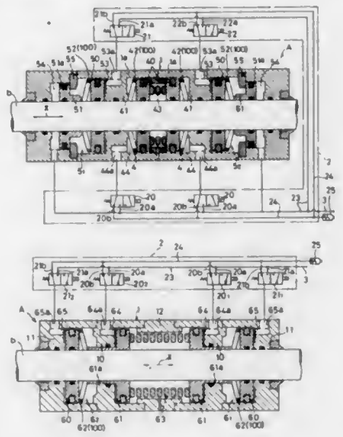
Hirobumi Morita, and Toshikazu Asakura, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1996, Ser. No. 689,016

Claims priority, application Japan, Jul. 31, 1995, 7-195009; Jul. 31, 1995, 7-195010; Jul. 31, 1995, 7-195011; Jul. 31, 1995, 7-195012; Jul. 31, 1995, 7-195013; Jul. 31, 1995, 7-195014; Oct. 20, 1995, 7-273211; Oct. 20, 1995, 7-273212; Oct. 20, 1995, 7-273213

Int. Cl.[6] F15B *15/26*

U.S. Cl. 91—44 **31 Claims**



1. An inchworm type of actuator which moves relative to a bar-like guide member, said actuator comprising:

a brake unit;

a pair of forward-moving and backward-moving inching units, said brake unit and said inching units being built in a casing which is slidable relative to said guide member,

said brake unit comprising: a brake piston fitted onto an outer surface of said guide member; a brake reaction force receiving member lying opposite to said brake piston and fixed to said casing; a brake lock member interposed between said brake piston and said brake reaction force receiving member in a condition of being fitted onto the outer surface of said guide member whereby said brake lock member tightens said guide member upon receipt of an urging force from said brake piston toward said brake reaction force receiving member; urging means for urging said brake piston towards said brake reaction force receiving member; and a pressure chamber for urging said brake piston in a direction away from said brake reaction force receiving member,

each of said inching units comprising: an inching piston fitted onto the outer surface of said guide member; an inching reaction force receiving member urged in a positive direction towards said inching piston; an inching lock member interposed between said inching piston and said inching reaction force receiving member in a condition of being fitted onto the outer surface of said guide member whereby said inching lock member tightens said guide member upon receipt of an urging force from said inching piston in an opposite direction; and a pressure chamber for urging said inching piston in the opposite direction, the forward-moving direction of said forward-moving inching unit being defined as the positive direction and the backward moving direction thereof as the opposite direction, the backward-moving direction of said backward-moving inching unit being defined as the positive direction and the forward-moving direction thereof as the opposite direction; and

fluid supply means for inputting, at the time of forward-moving inching, a fluid pressure into said pressure chamber of said forward-moving inching unit and said pressure chamber of said brake unit and for inputting, at the time of backward-moving inching, the fluid pressure into said pressure chamber of said backward-moving inching unit and said pressure chamber of said brake unit.

24. An inchworm type of actuator which moves relative to a bar-like guide member, said actuator comprising:

a forward-moving inching unit;

a backward-moving inching unit, each of said inching units being built in a casing which is slidable relative to said guide member;

each of said inching units comprising: an inching piston; a brake piston disposed in a direction opposite to said inching piston; a lock member disposed between said inching piston and said brake piston to tighten said guide member when pinched between both said pistons; urging means for urging said brake piston in a positive direction; a first pressure chamber for urging said brake piston in an opposite direction; and a second pressure chamber for urging said inching piston in the opposite direction, the forward-moving direction of said forward-moving inching unit being defined as the positive direction and the backward-moving direction thereof as the opposite direction, the backward-moving direction of said backward-moving inching unit being defined as the positive direction and the forward-moving direction thereof as the opposite direction; and

fluid supply means for inputting, at the time of forward-moving inching, a fluid pressure into said second pressure chamber of said forward-moving inching unit and said first pressure chamber of said backward-moving inching unit and for inputting, at the time of backward-moving inching, the fluid pressure into said second pressure chamber of said backward-moving inching unit and said first pressure chamber of said forward-moving inching unit.

5,662,021

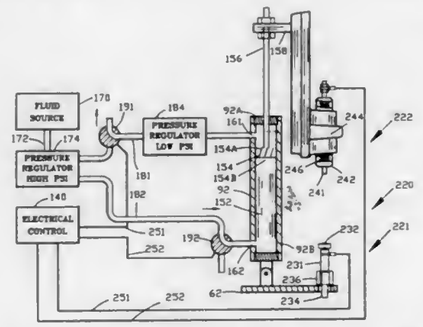
CONTROL SYSTEM FOR A MOVEMENT ACTUATOR

John E. Farmer, and Carl A. Rotenberger, both of St. Petersburg, Fla., assignors to Farmer Mold & Machine Works, Inc., St. Petersburg, Fla.

Continuation of Ser. No. 299,478, Aug. 31, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,194

Int. Cl.[6] F15B *13/16;15/17*

U.S. Cl. 91—361 **17 Claims**



1. An improved control system for a movement actuator for moving a member between a retracted and an extended position, the movement actuator comprising a cylinder with a piston located therein, the piston having a first and a second side with the piston being interposed between a first and a second fluid port, and a first and a second conduit respectively interconnecting the first and second fluid ports to a fluid supply, improvement comprising:

a first pressure regulator for regulating the flow of fluid through the first conduit with a first fluid pressure;

a second pressure regulator for regulating the flow of fluid through the second conduit with a second fluid pressure;

a first and a second valve respectively interposed in the first and second fluid conduits for controlling the flow of fluid between the fluid supply and the first and second fluid ports;

a sensor for sensing a predetermined location of the member between the retracted position and the extended position;

a control for actuating the first and the second valves for respectively applying said first and second fluid pressures on said first and second sides of said piston for moving the member from the retracted position toward the extended position with a force related to a difference between said first fluid pressure and second fluid pressure; and

said control actuating said first valve and deactuating said second valve for applying said first fluid pressure on the first side of said piston upon said sensor sensing the member being in said predetermined location for moving the member into the extended position with a force related to said first fluid pressure.

5,662,022

PISTON-ROD-LESS LINEAR DRIVE

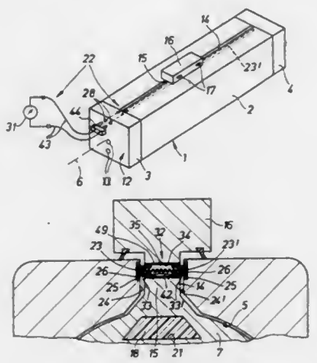
Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany

Filed Apr. 30, 1996, Ser. No. 641,180

Claims priority, application Germany, May 23, 1995, 295 08 517.7

Int. Cl.[6] F01B *31/12*

U.S. Cl. 92—5 R **5 Claims**



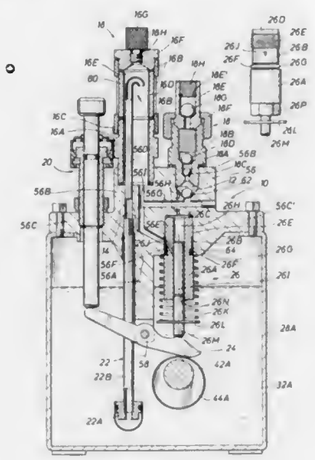
5. A rod-less linear drive comprising a housing possessing a longitudinal slot, a drive part arranged in the housing for longitudinal movement therein, and a transmission part which is connected with the drive part and extends through the longitudinal slot to the outside, wherein on two flanks of the slot a respective resistance strip extends in the longitudinal direction of the slot and is secured to the housing, a wiper contact arrangement is provided on the transmission member adapted to be in contact with both resistance strips simultaneously and during longitudinal motion of the transmission member slide on the resistance strips, and electrical lead means are provided for the connection of the two resistance strips with a position detecting and evaluating means, wherein the wiper contact arrangement possesses two wiper contacts electrically connected together and said wiper contacts are mounted for sliding motion in a guide hole extending through the transmission member transversely and are urged resiliently by a spring means, arranged between the wiper contacts, against the respectively associated resistance strip.

5,662,023

REPLACEABLE CYLINDER PISTON ASSEMBLY FOR A LUBRICATOR PUMP

Richard L. Carson, and Kenneth Farroni, both of Houston, Tex., assignors to Premier Lubrication Systems, Inc., Houston, Tex.

Filed Sep. 15, 1995, Ser. No. 529,277
Int. Cl.[6] F01B 29/04
U.S. Cl. 92—59 18 Claims



1. Apparatus for use with a lubricator holding a lubricant comprising

a pump housing having an inlet and an outlet;

a rocker arm movably attached to said pump housing;

a sight glass assembly having a vacuum chamber and cooperating with said pump housing for receiving lubricant from said pump housing inlet;

a cylinder having a piston chamber; said cylinder being removably attached to said pump housing;

a piston slidably engaged with said piston chamber between a suction position and a discharge position to move lubricant from said vacuum chamber to said pump housing outlet;

an annulus defined by said cylinder and said pump housing;

a port disposed in said cylinder for communicating said piston chamber with said annulus; and

an indicator passage disposed in said pump housing for communicating said annulus with said vacuum chamber to indicate lubricant slippage.

8. Apparatus for use with a lubricator pump housing comprising

a cylinder having a piston chamber, said cylinder having an inner surface and an outer surface, said cylinder outer surface having a reduced diameter portion, said reduced diameter portion having a thread on one end and a groove on the other end,

said cylinder inner surface defining said piston chamber,

said cylinder having a port for communicating said piston chamber with saidreduced diameter portion;

a piston disposed in said piston chamber to provide sliding engagement withsaid cylinder inner surface about said port; and

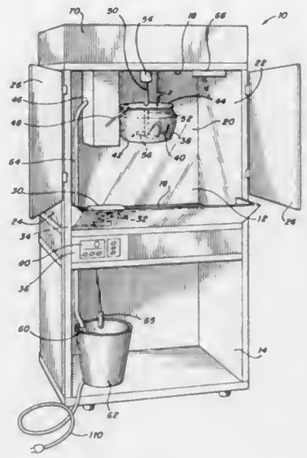
flats disposed on said cylinder outer surface, said port disposed between said thread and said flats.

5,662,024

SOLID STATE CONTROLLED POPCORN MACHINE

Charles D. Cretors, Lake Forest, and Jeffery Taylor, Downers Grove, both of Ill., assignors to C. Cretors & Company, Chicago, Ill.

Filed May 10, 1996, Ser. No. 644,539
Int. Cl.[6] A23L 1/18
U.S. Cl. 99—323.7 15 Claims



1. In combination with a popcorn machine including a case for holding popped corn, an electrically heated popcorn kettle located within the case, a corn agitator positioned within the kettle to stir corn during heating, means for exhausting air from the case and an oil pump operably connected to a source of popping oil to supply oil to the popcorn kettle, a machine operation system comprising:

(a) electrical circuitry for connecting the kettle, agitator, exhaust means and oil pump to a source of electricity;

(b) a microprocessor operably connected to the electrical circuitry to programably control operation of the kettle, agitator, exhaust means and oil pump during a cooking cycle;

(c) manual override means coupled to the microprocessor and the kettle, agitator, exhaust means and oil pump for allowing a user to manually control the operation of the kettle, agitator, exhaust means and oil pump.

5,662,025

CONTROL CIRCUIT FOR AN ELECTRIC COOKER

Chang Hyun Yoo, Suwon, Rep. of Korea, assignor to Samsung Electrnnics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 16, 1996, Ser. No. 698,593
Claims priority, application Rep. of Korea, Aug. 21, 1995, 95-25711
Int. Cl.[6] A47J 27/00;37/00; H05B 1/00;1/02
U.S. Cl. 99—332 11 Claims

1. A control circuit for an electric cooker having a main heater and a warming heater, comprising:

a plurality of voltage sensing means each of which compares a system rated voltage with an input voltage, and judge whether said input voltage is above a rated voltage, rated voltage, or below a rated voltage;

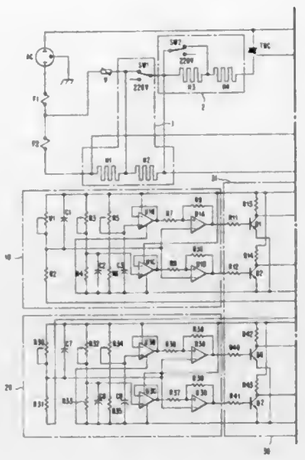
a plurality of temperature controlling means which control a power supply application time according to a control signal from a respective voltage sensing means of said plurality of voltage sensing means;

a time proportion temperature controller which generates a reference voltage by rectifying an external AC power supply to a DC voltage, and generates a time proportion control signal having a constant period, said time proportion control signal being generated according to a signal from said temperature controlling means;

a switching mode temperature controller which has a temperature sensor, and senses whether at least one of a cooking temperature or a warming temperature is higher or lower than a threshold temperature, and controls operation of a heater according to a sensed signal generated by the temperature sensor;

a power supply controller which controls said heater operation by logically processing output signals from both said time proportion temperature controller and said switching mode temperature controller, and controls a heating power by controlling a power supply voltage of a power supply means; and

voltage selection supply means which selects said power supply voltage of said power supply means, rectifies said power supply voltage, and then applies said power supply voltage to said voltage sensing means.

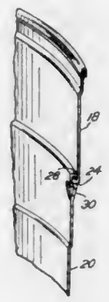


5,662,026

CLIP SYSTEM FOR COOKWARE

Alim Prakasa, Surabava, Indonesia, assignor to P.T. Maspion, Indonesia

Filed Jun. 1, 1995, Ser. No. 456,827
Int. Cl.[6] A47J 27/00; B23P 19/04
U.S. Cl. 99—413 21 Claims



1. A cookware utensil comprising:

a first portion having an integral lip formed at an open lower end of said first portion and projecting radially inward towards a center axis of said first portion; and

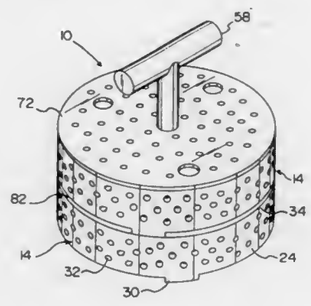
a second portion having an integral lip formed at an open upper end of said second portion and projecting radially outward away from a center axis of said second portion, said second portion also having at least one stamped protrusion integral to said second portion to secure said lip of said first portion into locking engagement with said lip of said second portion, said protrusion being spaced from said lip of said second portion and extending radially outward from said center axis of said second portion.

5,662,027

EGG HOLDING KITCHEN UTENSIL

Rebecca S. Neville, 319 Pearl St., and Scott D. Lommori, 508 E. Bridge St., both of Yerington, Nev. 89447

Filed Oct. 25, 1996, Ser. No. 735,188
Int. Cl.[6] A47J 27/00;27/04;37/00
U.S. Cl. 99—415 7 Claims



1. A new and improved egg holding kitchen utensil for use when boiling eggs in a pot of water comprising in combination:

a pair of cylindrical trays with each tray having a base plate with a plurality of holes therethrough, the base plate having a top surface with an outer wall and a bottom surface with a plurality of feet being opposed the outer wall, the outer wall of each tray having a plurality of holes therethrough;

a spindle being integral the top surface of the base plate of each tray, the spindle being an equal distance from the outer wall, each spindle having an upper portion with exterior threads and a lower portion with interior threads, the spindle of each tray having at least three long radial walls projecting therefrom and attaching to the outer wall for defining interior sections within each tray;

a plurality of arcuate members with each having at least two short radial walls, one of each arcuate member being positioned within one of the interior sections of each tray and interconnecting with two of the long radial walls, each of the short radial walls being attached to the outer wall of the tray when the arcuate member being connected with the two long radial walls of each tray;

a T-shaped handle having a vertical member having an upper end with a horizontal member attached thereto, the vertical member having a bottom end with internal threads, the bottom end being capable of engaging the external threads of the upper portion of the spindle of any one of the pair of trays;

a lid having a large center hole and three large peripheral holes proportionately spaced from the large center hole, the lid having a plurality of small holes being randomly spaced about the lid, the lid being sized for positioning over any one of the pair of trays, the large center hole of the lid being sized for receiving the bottom end of the handle therethrough when the lid being positioned on one of the pair of trays; and

the upper portion of the spindle of one of the trays being capable of coupling with the lower portion of the spindle of another of the trays for allowing the trays to be in a stacked positioned, the lid being positionable over one of the trays when the trays

being stacked, the handle being coupled with one of the pair of trays for raising and lowering the pair of trays when the trays being stacked.

5,662,028

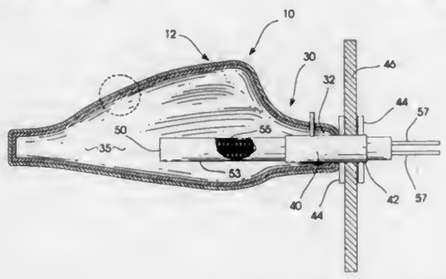
APPARATUS FOR THE PREPARATION OF FOWL

Robert L. Fraga, 886 Cardoza, Tulare, Calif. 93274

Continuation-in-part of Ser. No. 539,309, Oct. 4, 1995, Pat. No. 5,586,489. This application Nov. 4, 1996, Ser. No. 743,349

Int. Cl.[6] **A47J** *37/04;* **A22C** *7/00*

U.S. Cl. 99—419 **20 Claims**



1. An appliance for the preparation of fowl which has been dressed out in such a manner as to leave an interior cavity defined by an interior wall, comprising:

a heat transfer member; said heat transfer member having a longitudinal axis; and further including a bulbous element formed about said longitudinal axis in asymmetrical fashion such that the bulbous element is formed with an exterior surface defining a shape which substantially conforms to the shape of the interior cavity of the fowl,

said exterior surface of said heat transfer member adapted to make heat transfer contact with substantially all of the interior wall of the cavity of the fowl,

said heat transfer member additionally having an internal cavity defined therein,

means defining a heater, said heater being in communication with the internal cavity of said heat transfer member and adapted to uniformly heat said heat transfer member to cooking temperature.

5,662,029

HOT AIR OVEN FOR THE PREPARATION OF FOODSTUFFS

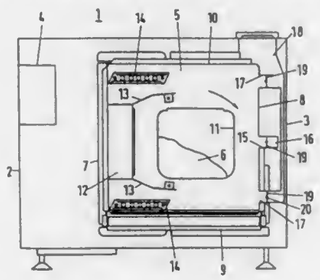
Harald Ubert, Raesfeld, and Joachim Barthel, Reken, both of Germany, assignors to Ubert Gastrotechnik GmbH, Raesfeld, Germany

Filed Jun. 10, 1996, Ser. No. 662,643

Int. Cl.[6] **A47J** *37/04;43/18;* **F24C** *7/00;15/16*

U.S. Cl. 99—427 **15 Claims**

1. A hot air oven for the preparation of foodstuffs, having a



casing:

a refining chamber (**5**) bounded by four side walls (**7**, **8**), a bottom wall (**9**) and a cover wall (**10**);

a first fan (**12**) for producing a hot air flow in the refining chamber (**5**);

a rotatable basket (**11**) for the foodstuffs (**6**) which can be introduced into the refining chamber (**5**) and through which the hot air flow passes during operation;

a control device (**4**) for the performance of the refining process, said control device (**4**) comprising a temperature-regulating system;

and at least one air supply channel (**16**) and at least one air discharge channel (**18**), characterized in that at least one flap (**19**) is provided to open or close the air supply channel (**16**) and/or the air discharge channel (**18**).

5,662,030

DEVICE FOR BAKING HOLLOW PASTRY GOODS

Hans Roecker, Bleidenroeder Strasse 11, D-35315 Homberg/Ohm, Germany

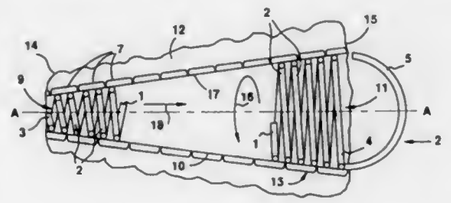
PCT No. PCT/EP94/04019, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/15086, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 2, 1994, Ser. No. 648,019

Claims priority, application Germany, Dec. 2, 1993, 93 18 422.0 U

Int. Cl.[6] **A21C** *9/00*

U.S. Cl. 99—450.6 **18 Claims**



1. Device for baking hollow pastry goods, in the case of which one or more strips of dough are wound onto a hollow body prior to baking, characterized in that the hollow body (**10**, **22**) comprises helically arranged, elastic wire coils (**2**, **21**).

5,662,031

CONTINUOUS FLOW ELECTRICAL TREATMENT OF FLOWABLE FOOD PRODUCTS

Bai-Lin Qin; Gustavo V. Barbosa-Canovas, both of Pullman, Wash.; Barry G. Swanson; Patrick D. Pedrow, both of Moscow, Id.; Robert G. Olsen, Pullman, Wash., and Qinghua Zhang, Columbus, Ohio, assignors to Washington State University Research Foundation, Inc., Pullman, Wash.

Continuation-in-part of Ser. No. 371,261, Dec. 23, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 533,164

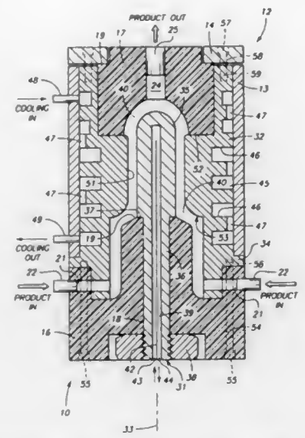
Int. Cl.[6] **A23L** *3/00;3/26;3/32*

U.S. Cl. 99—451 **28 Claims**

1. A processing system for treatment of a flowable food product to reduce the microbial content thereof, comprising:

a flow-through processor having a first electrode and a second electrode; said first and second electrodes being spaced apart and defining therebetween a treatment chamber through which the food product flows; said flow-through processor having at least one inlet through which food product flows into the treatment chamber and at least one outlet through which food product flows from the treatment chamber;

at least one temperature control subsystem which is connected to the flow-through processor and is capable of controlled flow



of heat relative to the treatment chamber to affect temperature of the treatment chamber;

a bipolar electrical pulse generator for generating electrical pulses having pulse durations of less than 100 milliseconds and a bipolar output which charges the first electrode positively relative to the second electrode during positive pulses and which charges the first electrode negatively relative to the second electrode during negative pulses; said pulse generator generating positive and negative pulses during treatment.

5,662,032

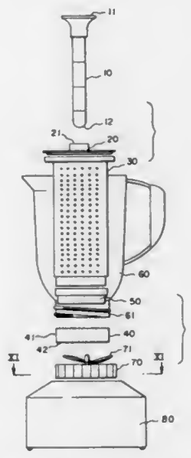
JUICER ATTACHMENT FOR A BLENDER

Joseph P. Baratta, 9035 Flynn Cir. #3, Boca Raton, Fla. 33496-6676

Filed Mar. 15, 1996, Ser. No. 616,210

Int. Cl.[6] **A23N** *1/00;* **B02C** *15/00;* **B04B** *5/10*

U.S. Cl. 99—513 **6 Claims**



1. In combination with a blender having a motor, a blade member having a bore formed therein and being driven by the motor, and a jar having a bottom region protruding into the bore of the blade member, a juicer attachment comprising:

a hollow base having a lip and a side wall, said base being secured in the bore of the blade member when said lip of said base is in contact with the bottom region of the jar;

a hollow filter being disposed in the jar and having perforations formed therein, said filter having at least one step forming a lower side wall and an upper side wall, said side wall of said base being coupled with said lower side wall of said filter;

a lid having a bore formed therein, said lid having a step forming a lower side wall being telescopically coupled with said upper side wall of said filter; and

a plunger having a first end and a second end for dislodging clogged food material around the blade member of the blender in said filter by inserting said second end in said bore of said lid down to the blade member.

5,662,033

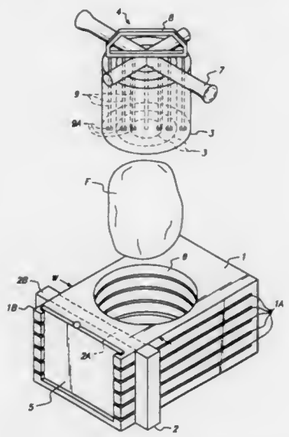
FOOD CUTTING DEVICE

Joseph Yawman, 116 Pine Rd., Big Pine, Calif. 93513

Filed Mar. 14, 1996, Ser. No. 615,450

Int. Cl.[6] **A47J** *17/00;* **A23L** *1/212;* **A23P** *1/00;* **B26D** *3/26*

U.S. Cl. 99—538 **18 Claims**



1. A food slicing device, comprising:

a base member having at least one slot defined substantially laterally therethrough and an aperture defined substantially longitudinally therethrough;

first cutting means, slidably engaged with said at least one slot of said base member, for selectively cutting a food article substantially laterally therethrough, following placement of the food article in said aperture of said base member;

second cutting means for cutting the food article substantially longitudinally, following placement of the food article in said aperture of said base member;

wherein said second cutting means comprises a plurality of concentric cutting members, with each of said concentric cutting members having a cutting edge; and

wherein said second cutting means is selectively telescopically inserted within said aperture over the food article for cutting the food article substantially longitudinally.

5,662,034

POTATO PEELING SYSTEM

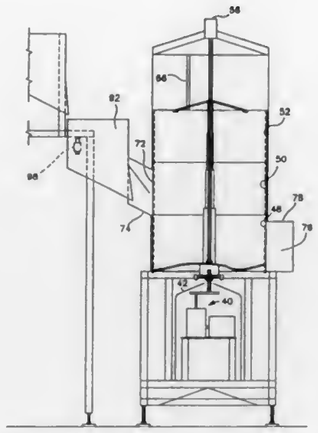
Jeffrey E. Fuhrman, Hanover, Pa., assignor to UTZ Quality Foods, Inc., Hanover, Pa.

Filed Mar. 8, 1996, Ser. No. 613,219

Int. Cl.[6] **A23N** *7/00;* **A47J** *17/00*

U.S. Cl. 99—633 **34 Claims**

1. A peeling machine comprising a vertical drum, a vertical liner located within the drum, a plurality of different grade peeling



bands extending around the interior of the finer, said bands being vertically spaced along the liner, a rotary plate within the drum dimensioned to fit within the liner, a driving feature on the plate, a plate drive connected to the plate to rotate the plate in the liner, an inlet opening in the drum above the plate, a discharge opening in the drum above the plate, and a vertical drive connected between the plate and the liner, such drive operable to move the liner so that the plate is at the bottom of one of said peeling bands.

5,662,035

CLEANING DEVICE OF A SCREW PRESS FOR FILTERING AND DEHYDRATING GARBAGE

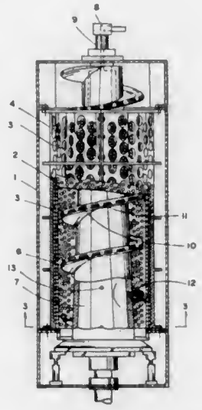
Chung Yup Lee, Jongwon Villa 6-201, 393-78, Daeboug-dong, Dongjak-ku, Seoul, Rep. of Korea, assignor to Young Tae Kim, and Chung Yup Lee, both of Seoul, Rep. of Korea

Filed Nov. 28, 1995, Ser. No. 563,648

Claims priority, application Rep. of Korea, Nov. 28, 1994, 94-31466

Int. Cl.[6] B30B *9/14*

U.S. Cl. 100—112 **7 Claims**



1. A screw press for filtrating and dehydrating garbage, comprising:

a plurality of dehydrate liquid guide grooves circumferentially formed on an inner surface of a support cylinder having a plurality of holes and outwardly supporting a filtration cylinder disposed inside a single body, wherein a filtrated and dehydrated fluid is guided by a cleansing matter along the guide grooves so as to be discharged through the plurality of the holes of the support cylinder;

a tube-type rotating shaft mounted to a supply port connected to a tapered cylinder forming a screw inside the filtration cylinder, the screw comprising a protruded circumferential surface, wherein the supply port supplies the cleansing matter to a plurality of fluid supply holes located in the tapered cylinder;

a supply pipe connected to the fluid supply holes for transporting cleansing matter;

an injection pipe attached at regular intervals along the protruded circumferential surface and connected to the supply pipe for transporting cleansing matter; and,

injection holes located at regular intervals along the injection pipe for discharging the cleansing matter.

5,662,036

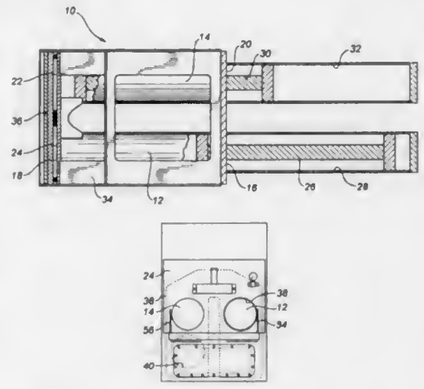
COMPACTING APPARATUS

Douglas Daniel, Alberta, Canada, assignor to Compak Filter Services (Franchising) Inc., Lethbridge, Canada

Filed Feb. 28, 1996, Ser. No. 608,403

Int. Cl.[6] B30B *7/00*

U.S. Cl. 100—209 **3 Claims**



1. A compacting apparatus, comprising:

a first elongate compaction chamber having a first end and a second end;

a second elongate compaction chamber having a first end and a second end, the second compaction chamber being in parallel spaced relation with the first compaction chamber;

a first compaction ram in axial alignment with the first compaction chamber and movable from a starting position at the first end telescopically into the first compaction chamber;

a second compaction ram in axial alignment with the second compaction chamber and movable from a starting position at the first end telescopically into the second compaction chamber;

means for closing the second end of the first compaction chamber;

means for closing the second end of the second compaction chamber;

the first ram and the second ram moving in opposite directions, such that when the first ram is moving toward the second end of the first compaction chamber in a compacting movement the second ram is moving away from the second end of the second compaction chamber, and vice versa; and

the second end of the second compaction chamber is on a common vertical plane with the second end of the first compaction chamber, the means for closing the second end of the first compaction chamber and the means for closing the second end of the second compaction chamber being a common movable gate member that moves along the common vertical plane, the movable gate member having a first port serving the first compaction chamber and a second port serving the second compaction chamber, the first port and the second port being both laterally and vertically spaced apart, when the first port is axially aligned with and allows access to the first compaction chamber, the second port is out of register with the second compaction chamber and the second compaction chamber is completely closed by the gate member, when the second port is axially aligned with and allows access to the second compaction chamber, the first port is out of register with the first compaction chamber and the first compaction chamber is completely closed by the gate member.

5,662,037

CALENDER FOR TREATING BOTH SIDES OF A WEB OF PAPER

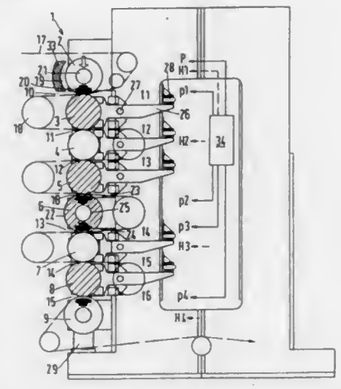
Rolf van Haag, Kerken, Germany, assignor to Voith Sulzer Finishing GmbH, Krefeld, Germany

Filed Mar. 18, 1996, Ser. No. 617,020

Claims priority, application Germany, Mar. 27, 1995, 195 11 145.1

Int. Cl.[6] D21G *1/00*; B30B *3/04*

U.S. Cl. 100—331 **11 Claims**



1. A calender for treating both sides of a web of paper, said calender comprising:

a roller stack having a hard top roller, a hard bottom roller, and a plurality of intermediate hard and soft rollers disposed between said top roller and said bottom roller, said roller stack being loaded in the direction of the stack by means of a force acting upon one of the top roller and the bottom roller;

a working nip being formed between the juncture of each hard roller and soft roller; and

a changeover nip being formed between the juncture of two soft rollers, one of said two soft rollers forming said changeover nip being comprised of a fixed carrier and an outer jacket disposed about and supported on said fixed carrier, said one of said two soft rollers forming said changeover nip being a deflection adjustment roller having an upper support device and a lower support device, each of said support devices exerting a supporting force on said jacket, the supporting force exerted by said upper support device being greater than the supporting force exerted by said lower support device.

5,662,038

CONTROL DEVICE FOR A NUMBERING AND IMPRINTING UNIT OF A ROTARY PRINTING PRESS

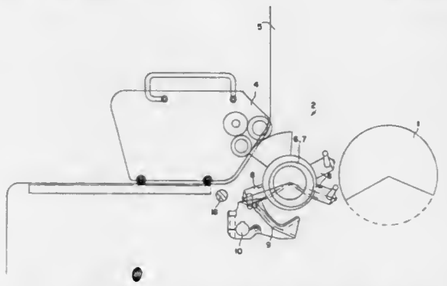
Frank Schaum, Heidelberg; Willi Becker, Bammental, and Jürgen Rautert, Heidelberg, all of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Apr. 26, 1996, Ser. No. 639,222

Claims priority, application Germany, Apr. 29, 1995, 195 15 847.4

Int. Cl.[6] B41L *49/02*

U.S. Cl. 101—76 **20 Claims**



1. A control device for a numbering and imprinting unit of a rotary printing press, which numbering and imprinting unit comprises: a numbering cylinder removably mounted in a printing press side frames; the numbering cylinder comprising at least one number printing element for printing successive numbers; an inking unit comprising a device for inking said at least one printing element and the inking unit being removable from the printing press; said control device comprising:

an arrangement for moving a numbering cylinder between a first position where a number cylinder is in engagement with an impression cylinder and a second position where a numbering cylinder is in disengagement from an impression cylinder;

said arrangement for moving a numbering cylinder comprising:

a first eccentric bearing disposed on a first end of a numbering cylinder;

a second eccentric bearing disposed on a second end of a numbering cylinder;

a device for rotating said first eccentric bearing;

a device for rotating said second eccentric bearing with a rotation of said first eccentric bearing;

a device for adjusting the position of engagement of a numbering cylinder with an impression cylinder;

said device for rotating said first eccentric bearing comprising a pressure medium driven actuating cylinder;

a device for switching a successive number printing element disposed on a numbering cylinder among successive numbers;

an arrangement for maintaining said successive number switching device in a substantially constant position relative to a numbering cylinder;

said device for rotating said second eccentric bearing comprising:

a first shaft for rotating said second eccentric bearing with said first eccentric bearing, said first shaft comprising a first end and a second end;

a first lever non-rotationally mounted on said first end of said first shaft;

said first lever extending radially outward from said first shaft;

a first connecting member disposed to connect said first eccentric bearing to said first lever;

a second lever non-rotationally mounted on said second end of said first shaft;

said second lever extending radially outward from said first shaft; and

a second connecting member disposed to connect said second eccentric bearing to said second lever;

said adjusting device comprising an adjustable stop;

said numbering cylinder moving arrangement comprising a contact surface;

said contact surface being disposed on one of said first eccentric bearing and said second eccentric bearing;

said contact surface being disposed to contact said adjustable stop in the position of engagement of a numbering cylinder with an impression cylinder; and

said arrangement for maintaining said number switching device in a substantially constant position relative to said numbering cylinder comprising:

a second shaft comprising a first end and a second end;

a third eccentric bearing disposed to mount said first end of said second shaft; and

a fourth eccentric bearing disposed to mount said second end of said second shaft;

a first control lever disposed to connect said first eccentric bearing to said third eccentric bearing; and

a second control lever disposed to connect said second eccentric bearing to said fourth eccentric bearing.

5,662,039

RECORDING APPARATUS FOR SELECTIVELY SUPPLYING A SOLVENT TO PERFORATE A STENCIL SHEET

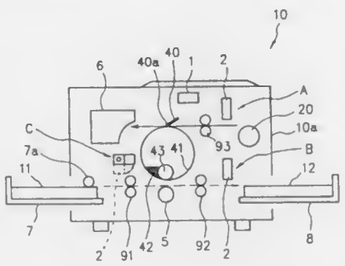
Hideo Watanabe, and Hiroyuki Ikeda, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,141

Claims priority, application Japan, Sep. 16, 1994, 6-221783

Int. Cl.[6] B41F *15/10;* **B41L** *13/06*

U.S. Cl. 101—116 **7 Claims**



1. A recording apparatus for a stencil sheet with a solvent-soluble resin layer, comprising:

a drum rotationally driven around a central axis thereof and adapted to receive the stencil sheet around an outer circumferential surface of the drum,

ink supplying means disposed to an inside of the drum and supplying ink to an inner circumferential surface of the drum,

means for supplying printing sheets one by one from a sheet feed section to the drum, and

one solvent supplying means containing a solvent with a colorant, said solvent supplying means for supplying the solvent selectively to the stencil sheet for perforating the stencil sheet and one of the printing sheets transferred by the supplying means for recording on the one of the printing sheets.

5,662,040

STRUCTURES OF A DRUM AND A STENCIL FOR A STENCIL PRINTER

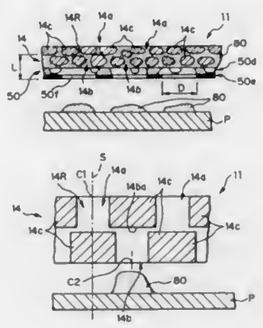
Tomiya Mori, Kakuda, and Kazuyoshi Kobayashi, Murata-machi, both of Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi-ken, Japan

Filed Jun. 14, 1995, Ser. No. 490,451

Claims priority, application Japan, Nov. 21, 1994, 6-286870; Apr. 21, 1995, 7-096952

Int. Cl.[6] B41C *1/14*

U.S. Cl. 101—128.21 **24 Claims**



1. A porous sheet which forms an outer periphery of a drum of a stencil printer, for supplying ink from an inner periphery of said drum to a paper via said porous sheet and a perforated stencil which is wrapped around said drum, said porous sheet comprising:

a main body;

inlet pores formed in said main body for receiving the ink from the inner periphery of the drum;

outlet pores formed in said main body for discharging the ink; and

passages formed in said main body, each of said passages causing the ink which enters any one of said inlet pores to be diverted from a single perpendicular line to the drum at least once, and then flow out via at least one of said outlet pores, wherein said outlet pores provide for an adhesion to the ink so as to reduce an amount of ink drawn to the paper when the paper is separated from the perforated stencil.

5,662,041

DOCTOR BLADES FOR PAD PRINTING MACHINES AND MACHINES INCLUDING SAME

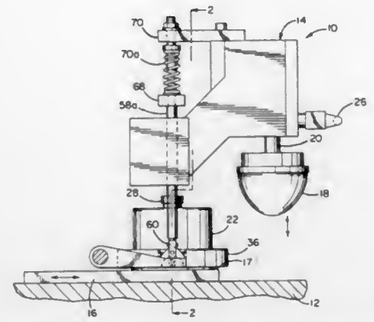
Egon Kleist, Hanover Park, Ill., assignor to Trans Tech America, Inc., Carol Stream, Ill.

Continuation-in-part of Ser. No. 449,817, May 24, 1995, Pat. No. 5,476,040. This application Nov. 13, 1995, Ser. No. 556,501

Int. Cl.[6] B41F *31/00* °

U.S. Cl. 101—163 **34 Claims**

1. An ink cup for a pad printing machine, said ink cup having an open end and comprising a doctoring portion that defines said open end, said doctoring portion having a narrow distal end surface which circumscribes said open end and is of a configuration for



sliding, sealing and doctoring engagement with an opposed gravure surface, said doctoring portion being formed of a polymer.

5,662,042

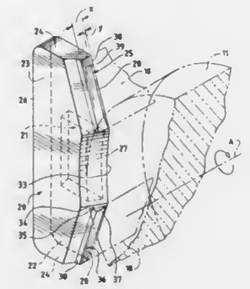
METHOD OF OPERATING INK UNIT FOR PRINTING PRESS

Craig T. Compton, Green Bay, and Dale E. Zeman, Denmark, both of Wis., assignors to Paper Converting Machine Co., Green Bay, Wis.

Filed Jun. 10, 1996, Ser. No. 662,423

Int. Cl.[6] B41F *31/00; 1/46*

U.S. Cl. 101—483 **10 Claims**



1. A method of operating a printing press comprising the steps of providing a fluid fountain unit including a transfer roll and a chamber defined by a holder adjacent said transfer roll, said chamber including doctor and containment blades and unitary end seals all bearing against said transfer roll, applying a first lineal pressure by the end seals against said transfer roll and applying a second and higher lineal pressure against said doctor and containment blades.

5,662,043

METHOD FOR MOUNTING A METERING DEVICE

Christian Martin Michael Fischer, Marktheidenfeld; Josef Höfling, Gemünden, and Helmut Holm, Erlabrunn, all of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Germany

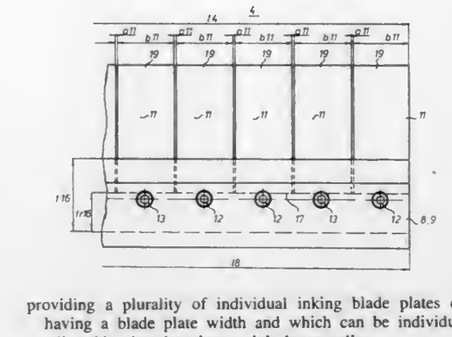
Filed Jul. 12, 1996, Ser. No. 679,249

Claims priority, application Germany, Jul. 13, 1995, 195 25 529.1

Int. Cl.[6] B41F *31/04*

U.S. Cl. 101—487 **5 Claims**

1. A method for mounting a metering device in a rotary printing press including:


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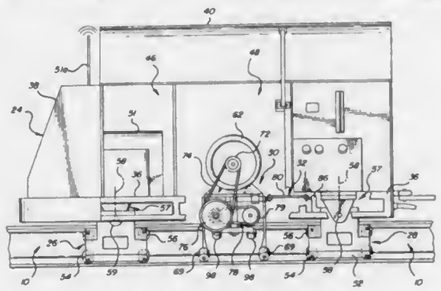
1. Offset printing method wherein ink in the form of screened half-tone dots or pixels and unscreened printing-image elements is applied to a printing surface of a recording medium by means of a printing device; a printing form being generated from signals reproducing a printed image; the printing form being inked with an inking device; and the ink being transferred to the printing surface, upon transport of the recording medium relative to the printing device; the signals being processed in a control device for the printing device; which comprises, near the printing device and before the printing form is generated on a screen or monitor, forming a copy of the printed image from the signals reproducing the printed image and from signals containing parameters of the printing device; whenever the copy deviates from a desired printed image, manually inputting correction values for local inking into the control device, until the copy corresponds to the desired printed image; and generating the printing form and adjusting the elements affecting the inking with the signals reproducing the desired, printed image and from signals containing fixed printing-press characteristics.

5,662,045

LOCOMOTIVE FOR MATERIAL HANDLING TRAIN

Charles E. Miller; John Strand, and James J. Gould, all of Ann Arbor, Mich., assignors to Symorex, Ltd., Ann Arbor, Mich.

Filed Sep. 6, 1995, Ser. No. 524,401
Int. Cl.[6] B61C *11/00*
U.S. Cl. 105—30 **31 Claims**



1. A locomotive for a material handling train comprising:
a locomotive subassembly comprising a truck adapted for movement along a rail and a body structure defining a hollow and mounted on the truck;
a tractor positioned within the hollow of the body structure, disassociated from the body structure and free to move laterally relative to the body structure, and including a motor and a traction drive wheel driven by the motor and adapted to drivingly engage the rail; and
drive means pivotally and drivingly interconnecting the tractor and the truck.

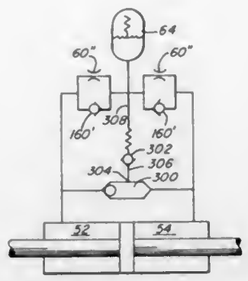
5,662,046

METHOD AND APPARATUS FOR CONTROLLING RAILWAY TRUCK HUNTING AND A RAILWAY CAR BODY SUPPORTED THEREBY

James F. Wright, Washington, and Aubra D. McKisic, Coraopolis, both of Pa., assignors to Hansen Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 167,284, Dec. 14, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,567
Int. Cl.[6] B61F *5/38*
U.S. Cl. 105—167 **11 Claims**

1. In a fluid flow regulating apparatus for controlling a flow of fluid between a pair of fluid containing spaces which are connected by a fluid flow path, said fluid flow regulating apparatus comprising:



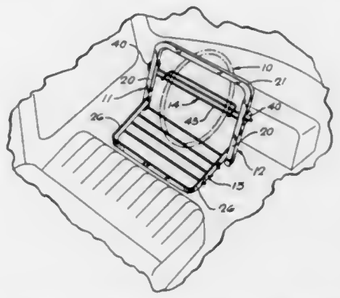
a pair of flow regulating assemblies adapted to be disposed in series relationship with respect to each other in such a fluid flow path with each said flow regulating assembly forming a part of such a fluid flow path;
each said flow regulating assembly having a restricted flow orifice means adapted to restrict fluid flow through such a fluid flow path between such fluid containing spaces;
each said flow regulating assembly further having check valve means adapted to limit unrestricted fluid flow within the respective said flow regulating assembly to flow in only one direction;
pressure relief means adapted to relieve the pressure of fluid within such a fluid flow path between such fluid containing spaces when the pressure differential between such fluid containing spaces exceeds a given pressure;
and said pressure relief means comprising a single relief valve means communicating in fluid pressure relief relation between such pair of fluid containing spaces and such fluid flow path intermediate said pair of flow regulating assemblies.

5,662,047

STEERING WHEEL TRAY

Derek N. G. Metcalf, LaGrange Park, Ill., assignor to Athena Industries, Inc., LaGrange, Ill.

Filed Sep. 23, 1996, Ser. No. 717,714
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—44 **2 Claims**



1. A portable tray assembly attachable to a motor vehicle steering wheel for supporting articles thereon, such as a personal computer, comprising:
a pair of rigid, U-shaped frames, each comprising a pair of parallel linear arms interjoined at one end by a co-planar transverse cross bar, said frames being of unequal size whereby the smaller of said frames is nestable in co-planar relation with the larger of said frame;
coaxial pivot means interjoining said frames adjacent corresponding free ends of said arms thereof,
limit means restricting pivotal movement of said smaller frame toward and away from a front side, of said larger frame; and

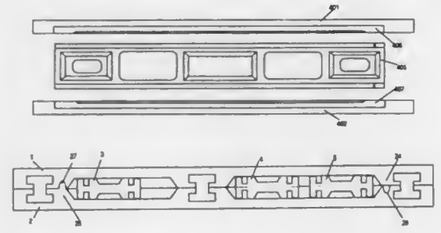
suspension means pivotally connected to the arms of said larger frame for removeably coupling the tray assembly to the vehicle steering wheel;
said suspension means comprising a pair of rigid, linear links pivotally joined to said arms of the larger frame for pivotal movement toward and away from an operationally backside of said larger frame, and plural parallel spaced, rigid rods extending between said links and across said backside for receiving an upper peripheral portion of said steering wheel in a selected space between adjacent said rods.

5,662,048

INTEGRATED REUSABLE PALLET HAVING DATA COLLECTION DEVICES AND METHOD FOR USING SHIPPING CONVEYANCES

Nicholas L. Kralj, 687 Lakeview Rd., Watsonville, Calif. 95076, and Gary A. Upson, 5229 Rio Lobo Dr., San Jose, Calif. 95136

Filed Mar. 8, 1993, Ser. No. 27,838
Int. Cl.[6] B65D *19/12*
U.S. Cl. 108—56.3 **3 Claims**



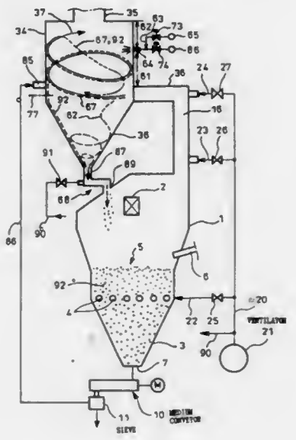
1. A pallet assembly comprising:
a first platform having a length and a first closed-ended channel formed therein, said first closed-ended channel having a length;
a second platform having a length and a second closed-ended channel formed therein, said second closed-ended channel having a length; and
a removable stabilization runner, said stabilization runner having a length, said length of said removable stabilization runner being less than said length of said first platform and less than said length of said second platform, said length of said first closed-ended channel being less than said length of said first platform such that said first closed-ended channel of said first platform is enclosed on both ends of said first closed-ended channel, said first closed-ended channel having a length greater than said length of said removable stabilization runner such that said removable stabilization runner may be placed into said first closed-ended channel of said first platform, said length of said second closed-ended channel of said second platform being less than said length of said second platform such that said second closed-ended channel of said second platform is enclosed on both ends of said second closed-ended channel, said second closed-ended channel of said second platform having a length greater than said length of said removable stabilization runner such that said removable stabilization runner may be placed into said second closed-ended channel of said second platform, said removable stabilization runner thereby securing said first platform to said second platform;
wherein said first platform has a cavity formed therein of sufficient size so as to at least partially contain said removable stabilization runner.

5,662,049

COMBUSTION METHOD AND APPARATUS

Makoto Shimizu, Yokosuka; Yoshio Takeuchi, Yokohama; Minoru Asai, Kamagaya; Takeichi Kondo, Kashiwa; Hiroshi Aramaki, and Masanobu Naito, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 25, 1995, Ser. No. 450,174
Claims priority, application Japan, May 30, 1994, 6-116848; Nov. 14, 1994, 6-279040; Apr. 4, 1995, 7-78810
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—245 **5 Claims**



1. A combustion apparatus comprising a fluidized bed type primary combustion chamber, a secondary combustion chamber provided separately from the primary combustion chamber, a gas inlet for tangentially guiding unreacted gas with unburnt solids entrained therein generated in the primary combustion chamber and secondary air to a lower portion of a side wall of the secondary combustion chamber, a medium circulation passage for connecting a medium outlet on a lower end of the primary combustion chamber to the side wall of the secondary combustion chamber and a medium outlet on a hopper at the lower portion of the secondary combustion chamber connected to the primary combustion chamber, wherein a position of connecting the medium circulation passage to the side wall of the secondary combustion chamber is higher than a position of connecting the gas inlet to the side wall of the secondary combustion chamber.

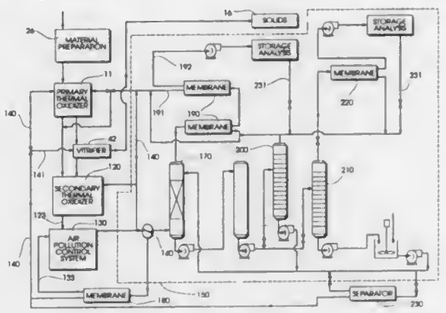
5. A combustion method comprising the steps of:
tangentially guiding unreacted gas admixed with air, with unburned solids entrained therein from a primary combustion chamber to a lower portion of a side wall of a generally cylindrical secondary combustion chamber;
generating a spiral ascending flow of the unreacted gas in the secondary combustion chamber to ensure a predetermined retention time of the gas so that the gas is completely burned;
forming a group of unburned solids with elevated particle concentration along the side wall of the secondary combustion chamber by centrifugal force of the spiral ascending flow which are flown upwardly by the combustion gas for circulation; and
charging a fluidization medium into the side wall of the secondary combustion chamber to contact the medium with said group so that the fluidizing medium accompanies the group of the unburned solid with the elevated particle concentration, thereby contacting the unburned solids with the medium and completely burning the unburned solids.

5,662,050

PROCESS FOR CHEMICAL/THERMAL TREATMENT WITHOUT TOXIC EMISSIONS

James F. Angelo, II, 949 Eagle, Fayetteville, Ark. 72701, and Wilbur L. Kephart, 324 Sugarwood Dr., Knoxville, Tenn. 27922

Continuation-in-part of Ser. No. 435,572, May 5, 1995. This application Aug. 22, 1995, Ser. No. 517,952
Int. Cl.[6] F23D *3/00*
U.S. Cl. 110—246 10 Claims



1. A process for treating feedstock materials to remove contaminants therefrom and to produce a volumetrically reduced, stabilized disposable solid product and/or commercially valuable solid, liquid or gaseous byproducts, said process comprising the steps of:

(a) thermally treating said feedstock and oxidizing organic contaminants present in a rotary kiln, and outputting solids, liquids and gases;

(b) vitrifying, refining and separating solids exiting said rotary kiln and outputting said stabilized products and gases;

(c) reacting gases from steps (a) and (b) in a gaseous thermal treat and outputting gases; and

(d) treating said gases from said step (c) by removing particulate contaminants therefrom and selectively recycling said contaminants to said step (a), (b) or (c).

5,662,051

METHOD OF TREATING SOLID RESIDUE RESULTING FROM COMBUSTION OF A SULFUR-CONTAINING FUEL, AND HEAT TREATMENT APPARATUS FOR IMPLEMENTING THE METHOD

Jean-Xavier Morin, Neuville Aux-Bois, France, assignor to GEC Alsthom Stein Industrie, Velizy-Villacoublay, France

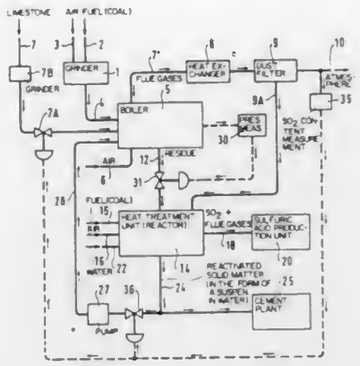
Filed Apr. 5, 1995, Ser. No. 416,974
Claims priority, application France, Apr. 13, 1994, 94 04398
Int. Cl.[6] F23J *3/00*
U.S. Cl. 110—344 12 Claims

1. A method of treating solid residue resulting from combustion of a sulfur-containing fuel in a hearth having a base of a boiler having a circulating fluidized bed, in which method limestone is inserted into said hearth so as to make it possible to absorb sulfur dioxide resulting therefrom as calcium sulfate $CaSO_4$, said method further including the following steps:

1) prior to being inserted into said hearth, the fuel is ground down to less than 100 microns;

2) prior to being inserted into said hearth, the limestone is ground down to a grain-size centered in the range of 100 microns to 150 microns, with a maximum of 1 mm;

3) at said base of said hearth, the combustion residue is collected, which residue includes lime and calcium sulfate resulting from taking up sulfur dioxide SO_2 evolved by the combustion, and said residue is subjected to heat treatment in a reactor, in which both solid matter based on lime CaO, and also a gaseous mixture containing, sulfur dioxide SO_2 are obtained;



4) the sulfur dioxide produced during said heat treatment is routed to a sulfuric acid manufacturing unit; and

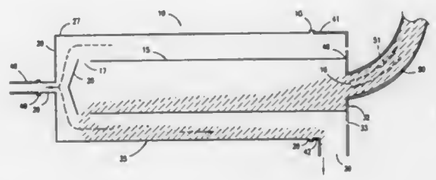
5) the solid matter is quenched with water, and is then ground, these two operations reactivating the specific surface area of said solid matter, and a portion of said solid matter is re-injected into said hearth of said boiler as a suspension in water, a remaining fraction of said solid matter being routed to a cement plant.

5,662,052

METHOD AND SYSTEM INCLUDING A DOUBLE ROTARY KILN PYROLYSIS OR GASIFICATION OF WASTE MATERIAL

Michael J. McIntosh, Bolingbrook, and Gregory G. Arzoumanidis, Naperville, both of Ill., assignors to United States Department of Energy, Washington, D.C.

Filed Nov. 13, 1995, Ser. No. 557,656
Int. Cl.[6] F23G *5/20*
U.S. Cl. 110—346 20 Claims



1. A method of destructively distilling an organic material in particulate form comprising

introducing particulate material through an inlet into one end of an inner rotating kiln ganged to and coaxial with an outer rotating kiln,

the inner and outer kilns defining an annular space therebetween,

maintaining the temperature of the wall of the inner rotary kiln at the inlet not less than about 500° C. to heat the particulate material in a pyrolyzing atmosphere to reduce the particulate material as it moves from the one end toward the other end,

transferring reduced particulates to the annular space between the inner and the outer rotating kilns near the other end of the inner rotating kiln,

transporting the reduced particles in the annular space from near the other end toward the one end in the presence of oxygen at an elevated temperature to produce a waste material including ash,

transferring the waste material including ash from the outer rotating kiln near the one end, and

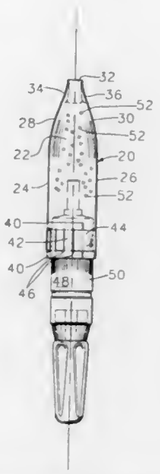
removing pyrolysis vapor through the particulate material inlet.

5,662,053

GUIDE ADAPTED TO FIT ON AN ELECTRO-MECHANICAL DEVICE FOR PLANTING SEEDS

Wilson Porter, 119 Sunnyside Dr., Centralia, Wash. 98531

Filed Jan. 2, 1996, Ser. No. 582,118
Int. Cl.[6] A01C *11/00*
U.S. Cl. III—200 14 Claims



1. A guide for directing the flow of a material and comprising:

a. a base having a first end and a second end;

b. said base on its first end having a funnel end;

c. said base on its second end having an inner central part;

d. said funnel end, said inner central part and said base being continuous;

e. said base having an upper surface for receiving said material and a lower surface;

f. said base extends into a first side from said upper surface and said first side being at an angle to said base and to said upper surface, and said first side being identified as a first elevated side wall;

g. said base extends into a second side from said upper surface and said second side being at an angle to said base and to said upper surface, and said second side being identified as a second elevated side wall;

h. said first side wall and said second side wall are spaced apart and are elevated with respect to the base to form said guide for receiving said material on said upper surface; and

i. said inner central part defining an opening for receiving and positioning in said opening a separate electro-mechanical device for vibrating said guide for directing the flow of said material.

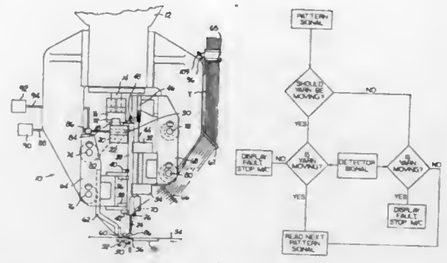
5,662,054

YARN FAULT DETECTION FOR TUFTING MACHINES

Harold Brian Bardsley, Nr. Chorley, England, assignor to Spencer Wright Industries, Inc., Dalton, Ga.

Filed Jan. 30, 1996, Ser. No. 593,942
Claims priority, application United Kingdom, Feb. 16, 1995, 9503001
Int. Cl.[6] D05C *15/08;15/20*
U.S. Cl. 112—80.18 14 Claims

1. In a tufting machine having a cyclically reciprocating bar and a plurality of needles, each needle being selectively latched to said bar in accordance with a pattern to reciprocate with said bar to insert loops of yarn into a base material and when not latched to said bar to be stationary above said base material, and means for feeding yarn from a source to each needle only when said needle is reciprocating,



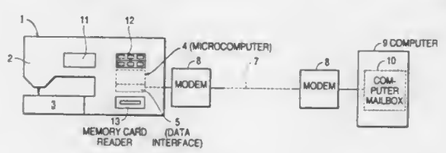
yarn fault detection apparatus comprising, a detector for sensing movement of yarn to a particular needle and for providing a signal indicative of movement and non-movement of said yarn, circuit means for receiving a pattern information signal corresponding to each cycle of said bar indicative of whether said particular needle is latched to said bar and reciprocating therewith or is-not latched and is stationary, and control means associated with said circuit means and said detector for comparing said pattern information signal with the signal provided by said detector to determine whether or not yarn is being fed to said particular needle when said needle is reciprocating and for providing a fault signal when said yarn is not being fed.

5,662,055

PROGRAM-CONTROLLED SEWING OR EMBOIDERY MACHINE AND METHOD OF OPERATING SUCH MACHINES

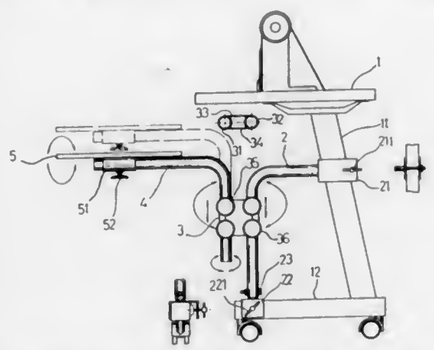
Jürgen Hartwig, Pforzhein, and Christof Reichmann, Karlsruhe, both of Germany, assignors to G.M. PFAFF Aktiengesellschaft, Kaiserslautern, Germany

Filed Jan. 17, 1996, Ser. No. 587,575
Claims priority, application Germany, Jan. 17, 1995, 195 01 117.5
Int. Cl.[6] D05B *19/06;19/12;* D05C *5/02*
U.S. Cl. 112—102.5 7 Claims



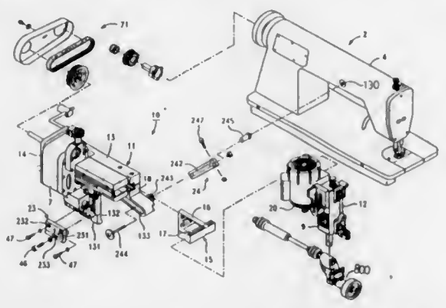
4. A program-controlled sewing or embroidery machine comprising: a stitch-forming device; an integrated microcomputor, including at least one memory, for controlling the stitch forming device according to programs stored in the at least one memory, and at least one serial data interface for receiving and transmitting data; a keyboard and a display disposed on the sewing or embroidering machine, and connected to the microcomputer, for entering and monitoring values for program control; and a modem for connecting said data interface to a data transmission connection for direct connection to a mailbox of a central computer; and wherein programs and functional processes necessary for communication with the mailbox via said means for connecting are stored in said memory so that, using said keyboard and said display, communication with the mailbox necessary for controlling the program of the sewing or embroidery machine can be controlled and monitored by said microcomputer.

5,662,056
MOVABLE CARRIAGE BOARD FOR INDUSTRIAL SEWING MACHINE
Yuan-Kuang Lin, Tu-Chen, Taiwan, assignor to China Textile Institute, Taipei Shien, Taiwan
Filed Apr. 23, 1996, Ser. No. 636,410
Int. Cl.[6] D05B *41/00;75/00;* **A47B** *9/04*
U.S. Cl. 112—217.1 **1 Claim**



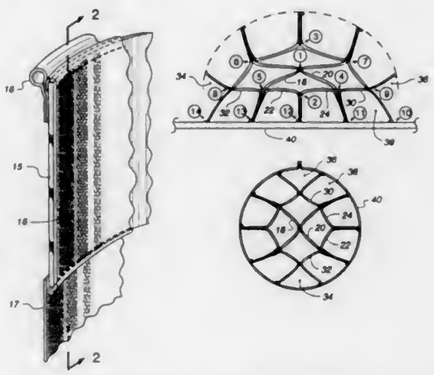
1. A carriage board for use with an industrial sewing machine, including:
a stationary rod being provided at two ends with securing means and fastening bolts by which the rod is attached to a support and a base frame of a sewing machine;
a double pipe sleeve having two tubular portions united by flat portions and two fastening bolts arranged on a side wall of the tubular portions to set in position rods extending through the tubular portions; and
an extension rod having a fixing mechanism and a bolt at one end to which a flat board is mounted and extending at the other end through one of two tubular portions of said double pipe sleeve;
wherein the position and the elevation of the carriage board can be changed by loosening the fastening bolts of said double pipe sleeve to adjust said extension rod and wherein the angle of said flat board with respect to the extension rod can be adjusted by said fixing mechanism and its associated bolt.

5,662,057
CONNECTING DEVICE FOR CONNECTING A CLOTH PULLING ARRANGEMENT TO A SEWING MACHINE
Shueh-Chung Leu, P.O. Box 82-144, Taipei, Taiwan
Filed Apr. 23, 1996, Ser. No. 636,353
Int. Cl.[6] D05B *27/10*
U.S. Cl. 112—322 **1 Claim**



1. A sewing machine and a connecting device for connecting a cloth pulling arrangement to said sewing machine comprising:
a first connecting member having first, second and third connecting portions;
a second connecting member mounted on an arm of said sewing machine;
an adjustable frame including a first rail and a second rail which are slidably engaged with said third connecting portion of said first connecting member;
a first fixing member for fixedly mounting said first connecting portion of said first connecting member to a back of a housing of said sewing machine using one of existing holes of said housing;
a second fixing member for fixedly mounting said first connecting portion of said first connecting member to the back of said housing using another of said existing holes;
means for installing a governor to said second connecting portion of said first connecting member; and
means for mounting said cloth pulling arrangement and a solenoid actuator means to said second connecting member.

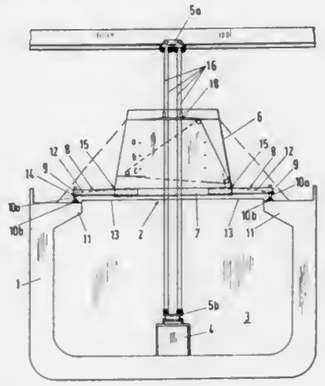
5,662,058
METHOD FOR PARTITIONING A GOLF BAG
Jessie Li-Kuo Wang, 46980 Ocotillo Ct., Fremont, Calif. 94539
Filed Dec. 29, 1995, Ser. No. 578,198
Int. Cl.[6] D05B *97/00;* **A63B** *55/00*
U.S. Cl. 112—475.08 **1 Claim**



1. The method of partitioning a golf bag with full length pockets of fabric equal in length to the length of the golf bag, said pockets having substantially equal cross sections, said method comprising the steps of:
providing ten strips of partitioning fabric having the length of the pockets, two of said strips having a width of approximately four inches and eight having a width of approximately six inches, said six inch width strips having first and second marks dividing said six inch widths substantially in thirds;
stitching said four inch fabric strips together along their longitudinal center lines to form two surfaces for four central partitions, said partitions temporarily having four bare edges;
stitching together a first and second pair of the six inch fabric strips along opposite ones of said longitudinal marks;
stitching together the temporary bare edges of said four central partitions between the remaining marks on said first and second pair of strips and one of the two longitudinal marks on the four remaining fabric strips;
stitching together the four remaining adjacent six inch strips along the remaining marks;
providing a sheet of partitioning fabric having the length of said pockets and a width equal to the inside circumference of the golf bag, said sheet of fabric being divided in half along a longitudinal line and having a stiffener and trim sewn across its top edge, attaching to said sheet said first pair of six inch strips by longitudinally stitching one of the two bare edges of said six inch strips to a line approximately two inches from a

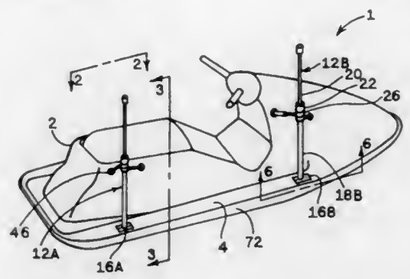
side edge of a sheet of partitioning fabric and continue stitching the next four bare edges a desired spacing of approximately two and a half inches from said centerline to enclose one central and four side partitions;
starting approximately two inches after passing said line dividing said sheet in half, repeating the longitudinal stitching and two and a half inch spacing of the bare edges on said sheet to enclose three additional central, one triangular and four side partitions;
sewing together the side edges of said sheet to enclose one additional triangular partition and forming a tubular golf bag liner; and
inserting said liner into the golf bag and attaching said trim to the top edge of said bag.

5,662,059
DEVICE FOR COVERING A SHIP'S HATCH OR SIMILAR LOADING OPENING
Hermann Franzen, Mönchengladbach, and Janis Moutsokapas, Monheim, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany
Filed Feb. 15, 1996, Ser. No. 602,162
Claims priority, application Germany, May 22, 1995, 195 19 283.4
Int. Cl.[6] B63B *19/14*
U.S. Cl. 114—201 R **5 Claims**



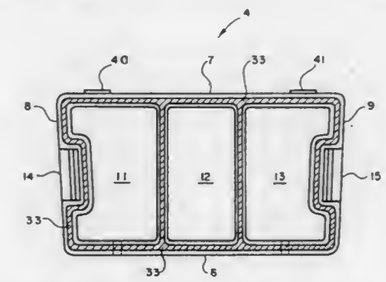
1. A device for covering a ship's loading opening during loading and unloading of a pallet container attached to a load suspension apparatus, comprising:
a loading chute placeable on an edge of the loading opening, and having an upper opening;
a shield attachable to the load suspension apparatus, the shield closing the upper opening of the loading chute when the pallet container is lowered into the loading chute;
a rolling gate connected to the loading chute so as to be movable between a first end position in which the rolling gate covers the loading opening, and a second end position in which the loading opening is uncovered; and
means for moving the rolling gate, the moving means including non-contact transmitters arranged in the loading chute to detect position of the pallet container and output a corresponding signal, the moving means moving the rolling gate in response to the signals from the transmitters.

5,662,060
WATER CRAFT AND STANDOFF ASSEMBLIES THEREFOR
Stuart H. Lemke, 349 River Bluff Rd., Mosinee, Wis. 54455
Filed Sep. 7, 1995, Ser. No. 524,636
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—219 **76 Claims**



1. A boat bumper, for attachment to a water craft propinquant an outer perimeter of the water craft, and for interfacing with objects which are relatively less mobile, relative to the mobility of the water craft, said boat bumper comprising:
(a) a first base support member, having a lower end, including securing apparatus at said lower end for mechanically securing said boat bumper to the water craft at a first lower locus;
(b) a base member extension extending upwardly from said first base support member to an upper end, for interfacing with the relatively less mobile object above said first base support member; and
(c) a second upper support member mounted to one of said base support member and said base member extension above said lower end and below said upper end, and extending laterally from said first base support member and interfacing with the water craft at a second locus above the lower end.

5,662,061
UTILITY CONTAINER HAVING MULTIPLE, SEPARATE COMPARTMENTS WITH STABILITY, LOAD SHIFTING PREVENTION FEATURES
Gregg Joseph Salathe, 4705 S. Connor Ave., Springfield, Mo. 65804-7516
Filed Feb. 29, 1996, Ser. No. 609,103
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—347 **14 Claims**



1. A removable multiple compartment utility container for use in a canoe, comprising:
a. An insulated trapezoid shaped open chest with at least one insulated vertical interior dividing wall;
b. An insulated trapezoid shaped chest cover with at least one insulated vertical interior dividing lip, wherein said chest cover is of a complimentary size, shape and arrangement to cover said open chest and wherein said lip is aligned with said

wall, and wherein said chest cover and said open chest, when said chest cover is covering said open chest, have a combined height sufficient to fit within said canoe;

c. A means for holding said chest cover on said open chest, wherein a sufficiently watertight seal is maintained when said chest cover is covering said open chest;

d. A means for sealing said open chest with said chest cover when said chest cover is covering said open chest, wherein said lip is aligned with said wall and a seal is formed thereby such that any contents which may be contained therein are prevented from shifting.

5,662,062

AERODYNAMIC CREW SHELL FAIRING

Corey J. Veverka, 2405 Garrett Rd., Drexel Hill, Pa. 19026

Filed May 31, 1996, Ser. No. 656,370
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—361 **18 Claims**



1. A crew shell fairing removably mountable onto a crew shell, said crew shell fairing comprising:

a substantially U-shaped end surface having an end surface inner edge and an end surface outer edge;

a substantially U-shaped bottom surface having a bottom surface inner edge and a bottom surface outer edge;

an aerodynamic shell having a substantially convex outer surface extending between said end surface outer edge and said bottom surface outer edge, a substantially concave inner surface extending between said end surface inner edge and said bottom surface inner edge, and at least one lip surface that extends from at least one of said end surface outer edge and said bottom surface outer edge to said substantially convex outer surface; and

at least one mounting member disposed on said bottom surface and removably connected to the crew shell when said crew shell fairing is mounted on the crew shell,

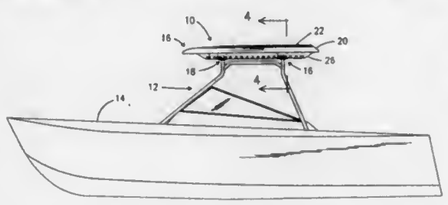
wherein an angle between said end surface and said bottom surface is less than 90 degrees, and wherein said end surface is wider adjacent a closed end of the U-shape of said end surface than at an open end of the U-shape of said end surface.

5,662,063

FLOTATION SAFETY DEVICE

Ernest J. Seijas, 5076 Bluebird Ter., Lecanto, Fla. 34461

Filed Jul. 16, 1996, Ser. No. 682,017
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—361 **35 Claims**



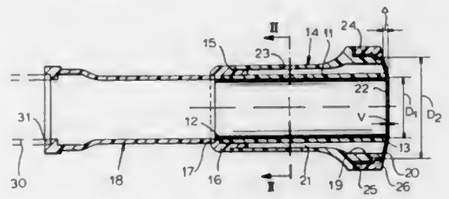
1. A cockpit canopy separably coupled to a superstructure of a boat selectively convertible to a flotation device comprising a buoyant member including an outer surface and an inner surface having a ridge extending outwardly therefrom to cooperatively form an auxiliary cockpit with at least one mounting assembly formed on each side of said buoyant member to selectively secure said buoyant member to the superstructure and to release said buoyant member from the superstructure, each said mounting assembly comprises an attachment element and a corresponding coupling element, each said attachment element comprises a notch formed in said ridge and an attachment member affixed to said ridge.

5,662,064

HIGH ACOUSTIC OUTPUT HORN

Laszlo György, Széchenyi u. 19, H-2013 Pomáz, Hungary

Continuation-in-part of Ser. No. 232,187, Apr. 28, 1994, Pat. No. 5,460,116. This application Mar. 22, 1995, Ser. No. 408,902
Claims priority, application Hungary, Oct. 30, 1991, 3409/91
Int. Cl.[6] G10K *9/04*
U.S. Cl. 116—142 FP **10 Claims**



1. A high acoustic output horn comprising:

a sound tube of substantially cylindrical configuration having a sound-generating end and a sound-emitting end;

a pressure tube coaxially surrounding said sound tube and defining an all-around clearance therewith closed at said sound-generating end of said sound tube and extending to an end of said pressure tube having an axial setback Δ from said sound-generating end;

a polyethylene, polypropylene, cellophane, paper or rubber membrane having a thickness V between 0.01 and 2 mm stretched across said sound-generating end of said sound tube and said end of said pressure tube, said sound tube having an internal diameter D_1 at said sound-generating end and said pressure tube having an internal diameter D_2 at said end thereof;

a retaining ring fitted over said pressure tube and anchoring said membrane thereto; and

a horn-blowing hole formed laterally in said pressure tube and opening into said clearance whereby, upon blowing into said hole sound is generated by said membrane and omitted from said sound-emitting end of said sound tube,

Δ ranging between substantially 0.1 and 0.3,

D_2/D_1 ranging between substantially 1.1 and 1.7, and

D_2/V ranging between substantially 1000 and 2000.

5,662,065

ANIMAL BED AND METHOD OF USING SAME

John K. Bandimere, Carlsbad, and Randall S. Koch, San Diego, both of Calif., assignors to Randall K., Inc., San Diego, Calif.

Filed Jun. 30, 1995, Ser. No. 497,436
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—28.5 **18 Claims**

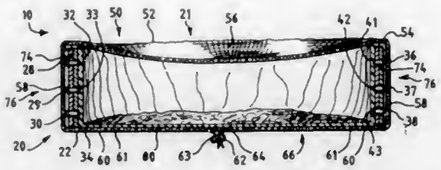
1. A bed for an animal, comprising:

substantially rigid annular bed frame means defining an interior chamber;

an animal supporting pliable perforated top wall supported at its periphery by said bed frame means for receiving and supporting the animal above said chamber, said perforated top wall being slack and dished to form a recess for receiving and supporting the animal;

wherein said perforated top wall is composed of a non-woven fabric material to provide a hammocklike suspension for the animal in a comfortable manner, and wherein said perforated top wall permits small insects carried by the animal to fall therethrough into said chamber; and

said chamber being dimensioned to provide a sufficient space below said perforated top wall to suspend the animal comfortably above a supporting surface and to inhibit small insects from travelling upwardly through said perforated top wall.

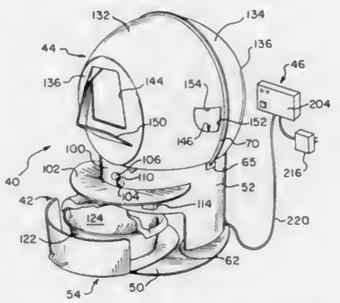


5,662,066

AUTOMATIC CAT LITTER DEVICE AND METHOD

Donald D. Reitz, 8665 Lamar Dr., Arvada, Colo. 80003

Filed Feb. 28, 1996, Ser. No. 608,273
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—163 **24 Claims**



1. An apparatus for receiving and disposing of waste material from an animal, comprising:

a rotatable chamber having a first opening defined in an exterior surface thereof, the opening being suitable for ingress and egress of the animal, the chamber being adaptable to receive and substantially retain litter therein, the chamber having a second opening defined in the exterior surface thereof for selective disposal of the waste material therethrough, the chamber further including:

a septum in the interior of the chamber, the septum being attached to the chamber to form an inner compartment within the chamber, the inner compartment having a port to place the inner compartment in fluid communication with the chamber, the second opening being defined in the exterior surface of the chamber at a position adjacent the attachment of the septum to the chamber; and

a screen operatively associated with the port to screen out objects, including waste material, greater than a predetermined size from entering the inner compartment;

a support base for supporting the rotatable chamber; and

means associated with the rotatable chamber and the support base for automatically rotating the chamber relative to the support base, wherein the means rotates the chamber in a first direction by an amount less than a full rotation to cause the litter to pass through the screen and into the inner compartment and cause the waste material to be caught by the screen and to be expelled downward through the second opening out of the rotatable chamber.

5,662,067

INSECT REPELLING CAT LITTER

John A. Stubbs, Sea Island, Ga., and Donald F. Decker, Miami, Fla., assignors to Cherokee Sun Corporation, Fernandia Beach, Fla.

Filed Apr. 29, 1996, Ser. No. 638,792
Int. Cl.[6] A01K *1/015*
U.S. Cl. 119—173 **20 Claims**

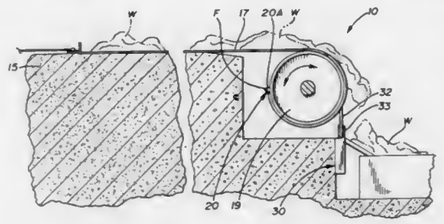
1. An insect repellent litter material comprising particles of a water-absorbent clay impregnated with about 0.5% to about 10% by weight of an insect repellent, said impregnated clay particles including a film of water-soluble polymer on an outer surface of each insect repellent impregnated particle thereof.

5,662,068

ANIMAL STALL CLEANING DEVICE

Raymond Childs, 2632 Rt. 322 East, Orwell, Ohio 44076

Filed Dec. 26, 1995, Ser. No. 578,468
Int. Cl.[6] A01K *31/04*
U.S. Cl. 119—451 **13 Claims**



1. An apparatus for use in removing manure from multiple animal stalls in a building said building having a floor, comprises; a collection belt within said stalls on top of said floor, said belt movable in either direction lengthwise thereof, said belt comprises of a synthetic resin porous material, a take-up reel engaging one end of said belt removing said belt and manure from said stalls, cable means extending from said free end of said belt for deploying said belt within said stall from said take-up reel, means for selective rotation of said take-up reel, means for cleaning said collection belt on said take-up reel, and means for collecting said manure from said collection belt.

5,662,069

ANIMAL BATHING APPARATUS

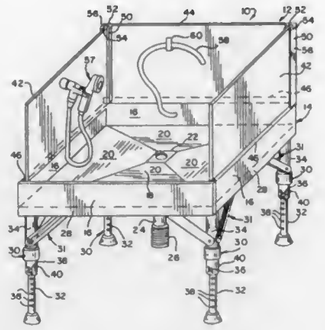
Leonard Smith, P.O. Box 662, Churchill, Manitoba, Canada, R0B 0E0

Filed Sep. 21, 1995, Ser. No. 531,415
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—665 **20 Claims**

1. A unit for bathing an animal comprising:

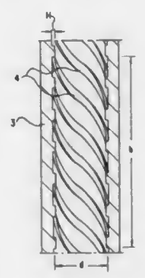
a rigid base portion having an upwardly projecting peripheral wall extending completely thereabout to define a relative shallow tub for supporting an animal; and

a panel assembly hingedly attached to an upper edge of said peripheral wall, said panel assembly being movable between an upwardly projecting extended position to define an open sided enclosure within which the animal can be contained for



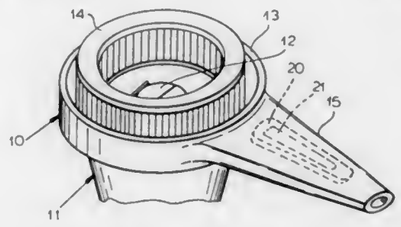
bathing, and a collapsed storage position to facilitate storage and transportation of said unit;
said unit having a drain.

5,662,070
ONCE-THROUGH STEAM GENERATOR WITH A VERTICAL GAS FLUE OF ESSENTIALLY VERTICALLY DISPOSED TUBES
Wolfgang Kastner, Herzogenaurach; Wolfgang Köhler, Kalchreuth, and Eberhard Wittchow, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Continuation of Ser. No. 407,047, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 138,339, Oct. 18, 1993, abandoned. This application Oct. 26, 1995, Ser. No. 548,524
Int. Cl.[6] F22B *37/00*
U.S. Cl. 122—6 A **8 Claims**



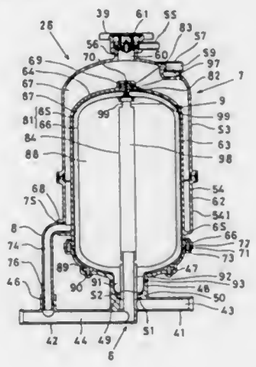
1. A once-through steam generator, comprising:
a vertical gas flue having a given circumference in a horizontal section and being formed of adjacent tubes having tube centers and being gas-tightly welded to one another, and said gas flue being associated with fossil fuel burners,
said given circumference being measured on lines connecting said tube centers of said adjacent tubes;
said tubes of said gas flue being connected in parallel for a coolant flow, being essentially vertically disposed, having an internal tube diameter d, having an inner surface, and having fins on said inner surface forming a multiple thread;
said internal tube diameter d being a function of a quotient K, wherein:
said quotient K is defined as a summed mass through-put of all of said tubes at 100% steam output, divided by said given circumference; and
when said quotient K, expressed in kg/s m, is from 3 to 7, said tube diameter d, expressed in mm, is from 1.975K+6.575 to 5.15K+6.82;
when said quotient K is from 7 to 13, said tube diameter d is from 1.74K+8.50 to 4.15K+6.82; and
when said quotient K is from 13 to 19, said tube diameter d is from 1.40K+12.4 to 4.15K+6.82.

5,662,071
AIR INTAKE ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE
Antonio Robinson, 3850 Hudson Manor Ter., Riverdale, N.Y. 10463
Filed Sep. 30, 1996, Ser. No. 724,068
Int. Cl.[6] F02B *75/12*
U.S. Cl. 123—1 A **8 Claims**



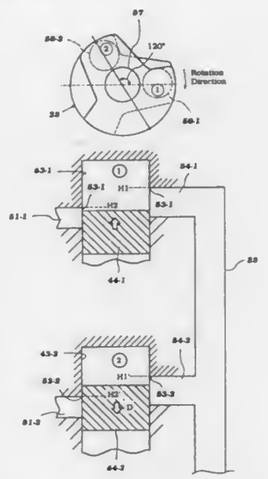
1. An air-intake assembly for an internal combustion engine comprising:
an air cleaner comprising a housing operatively connected to said internal combustion engine and formed with an air intake provided with an air passage projecting from said housing;
an air-cleaning filter in said housing; and
an activator for air passing through said air intake, said activator including:
a paper envelope,
a mixture of potassium chlorate and manganese dioxide powder in said envelope,
a fabric cover enclosing said envelope, and
means for affixing said cover to a wall of said air intake defining said passage.

5,662,072
ENGINE WARMING-UP APPARATUS FOR A VEHICLE AND HEAT INSULATING DEVICE
Kazutaka Suzuki; Yasutoshi Yamanaka, both of Kariya, and Yoshimitsu Inoue, Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed May 23, 1996, Ser. No. 652,362
Claims priority, application Japan, May 26, 1995, 7-128191; Feb. 6, 1996, 8-019921
Int. Cl.[6] F01P *11/02*
U.S. Cl. 123—41.14 **14 Claims**



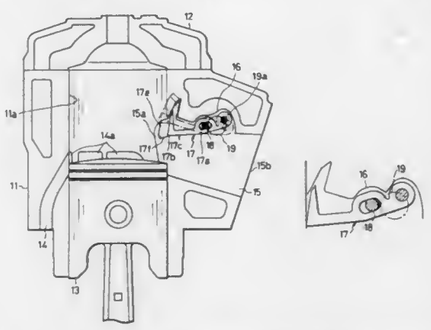
1. An engine warming-up apparatus for a vehicle having a water-cooled engine mounted thereon, said engine warming-up apparatus comprising:
a reserve tank having a water filling opening though which coolant is poured in a cooling system of the water-cooled engine, said reserve tank degassing said coolant of the cooling system; and
a heat insulating device having an upper portion and a lower portion, said heat insulating device being constantly supplied with circulating coolant at said lower portion for accumulating the heat of said coolant therein, said upper portion of said heat insulating device being covered with said reserve tank to form a reserve tank space therebetween, said heat insulating device including a degassing passage located in said upper portion of said heat insulating device for communicating with said reserve tank space and an outlet pipe (**84**) having an opening at said upper portion for directing the coolant out of said heat insulating device.

5,662,073
ENGINE
Seiichi Tanaka, Hamamatsu, Japan, assignor to Sanshin Koygo Kabushiki Kaisha, Hamamatsu, Japan
Filed Aug. 4, 1995, Ser. No. 511,354
Claims priority, application Japan, Aug. 4, 1994, 6-183543
Int. Cl.[6] F02B *27/02*
U.S. Cl. 123—65 PE **20 Claims**



1. An internal combustion engine having at least two cylinders, exhaust ports for discharging the exhaust gases from said cylinders, means for opening and closing said exhaust ports, and an exhaust system for collecting the exhaust gases from said exhaust ports and discharging them to the atmosphere, said exhaust system having at least one common section serving a number of exhaust ports such that even timing of the served exhaust ports would not result in an overlap between the opening of one served port and the closing of another served exhaust port, the relative timing of exhaust ports of the served cylinders being modified from the even timing such that the exhaust port of one of said cylinders opens at a time before the exhaust port of another served cylinder closes.

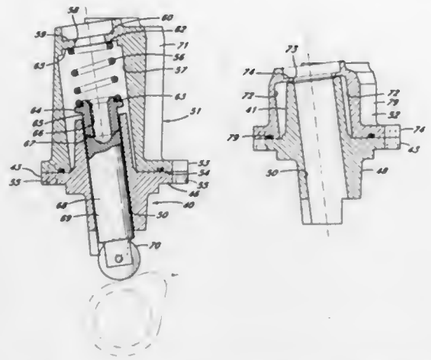
5,662,074
EXHAUST PORT TIMING CONTROL APPARATUS FOR TWO-CYCLE ENGINE
Toshihiro Nagano, Marugasaki, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1995, Ser. No. 571,392
Claims priority, application Japan, Dec. 22, 1994, 6-320539
Int. Cl.[6] F02B *75/02*
U.S. Cl. 123—65 PE **6 Claims**



1. An exhaust port timing control apparatus of a two-stroke cycle engine having, a cylinder block, a cylinder in said cylinder block, an exhaust port provided in said cylinder, a piston inserted in said cylinder, and an exhaust passage for controlling an exhaust port timing by means of opening and closing said exhaust port by said piston reciprocating in said cylinder, comprising:
a control valve body provided adjacent to said exhaust port;
a guide rail provided in said control valve body;
a recess provided in said exhaust passage for accommodating said control valve body;
a supporting axis connected with said cylinder block across said recess for supporting said control valve body slidably along said guide rail and rotatably about said supporting axis;
a pivot provided at an end of said control valve body;
a pivot rotation axis provided in said cylinder block across said recess for rotating said pivot about said pivot rotation axis;
a control valve provided at another end of said control valve body or partly closing or fully opening said exhaust port so as to control said exhaust timing according to a rotation angle of said pivot about said pivot rotation axis;
a lower edge of said control valve for determining said exhaust port timing;
a hollow provided in said exhaust passage for accommodating said control valve; and
linear movement means for slidably moving said lower edge of said control valve body upward and downward in a linear direction across said exhaust port while said lower edge keeps a minimal clearance against said exhaust port when said control valve is moved.

5,662,075
UNIVERSAL VALVE LIFTER BLOCK AND CAP FOR MOTORCYCLE ENGINES
F. Richard Lyndhurst, Costa Mesa, Calif., assignor to Rivera Engineering, a California corporation, Whittier, Calif.
Filed Oct. 7, 1996, Ser. No. 726,766
Int. Cl.[6] F01L *1/14*
U.S. Cl. 123—90.48 **3 Claims**

1. A universal valve lifter block and cap assembly for motorcycle engines of the type that have an engine block, a tappet assembly including an upper cylindrical portion, a push rod, a rocker arm actuating a valve and spring assembly biased to force the push rod and tappet assembly against a camshaft, said lifter block and cap assembly comprising:



a lifter block having a central flange having an upper surface and a lower surface, said upper surface having a peripheral, flat cap-mating surface and said lower surface having a peripheral, flat camshaft housing-mating surface, said lifter block having a pair of downwardly depending, generally cylindrical shaped tappet support cylinders extending downwardly from said lower surface, said downwardly depending, generally cylindrical shaped tappet support cylinders each having a cylindrical opening therethrough sufficient in size to support the upper cylindrical portion of said tappet assembly, and each of said cylindrical openings extending upwardly through said peripheral flat camshaft housing-mating surface, and said lifter block having a pair of upwardly extending, generally cylindrical shaped tappet support cylinders extending upwardly from said upper surface, and said pair of upwardly extending, generally cylindrical shaped tappet support cylinders each having a cylindrical opening comprising a continuation of said cylindrical openings of said downwardly depending tappet support cylinders; and

a lifter cap having a bottom flange having an upper surface and a lower surface, said lower surface being flat and shaped to mate with the peripheral, flat cap-mating surface of the central flange of said lifter block, said lifter cap having a body extending upwardly from said bottom flange, said body having a chamber which surrounds said upwardly extending, generally cylindrical shaped tappet support cylinders, and said chamber having a pair of push rod passage openings each of said push rod passage openings being surrounded by a central ring having a lower surface and an upper surface and an opening for the passage of a push rod, and said upper surface of said central ring being smooth and shaped to mate with a push rod cover.

5,662,076

TAPPET IN AN INTERNAL COMBUSTION ENGINE

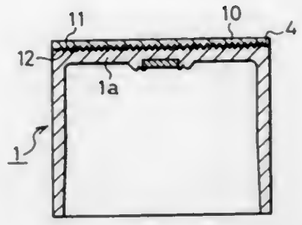
Kizuku Ohtsuho, Kawasaki; Satoshi Fukuoka, Atsugi, and Tatsuo Kanzaki, Yamato, all of Japan, assignors to Fuji Oozx Inc., Japan

Filed Apr. 19, 1996, Ser. No. 634,729
Int. Cl.[6] F01L *1/16*
U.S. Cl. 123—90.51 **3 Claims**

1. A tappet in an internal combustion engine, the tappet comprising:

a cylindrical body made of light metal and having a top wall; and

a wear resistant cam receiving plate which has roughly equal diameter to an outer diameter of the body, the cam receiving plate being brazed on an upper surface of the body, wherein concentric projections and grooves are formed on contact surfaces of the top wall and the cam receiving plate, the projections being engaged with the grooves.

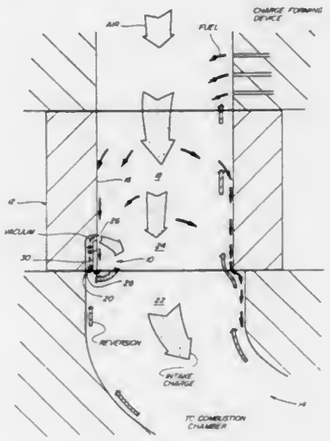


5,662,077

APPARATUS FOR IMPROVING INTAKE CHARGE VAPORIZATION AND INDUCTION FOR AN INTERNAL COMBUSTION ENGINE

George A. Boswell, 806 Burnett, Eagle River, Wis. 54521

Filed Dec. 7, 1995, Ser. No. 568,696
Int. Cl.[6] F02B *47/08*
U.S. Cl. 123—184.21 **25 Claims**



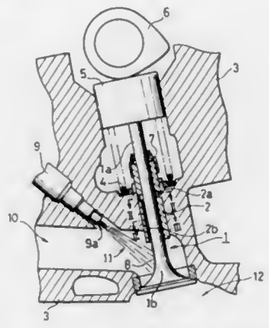
1. Apparatus for improving the intake charge for an internal combustion engine, the engine including charge forming means, a combustion chamber, and a side wall defining an enclosed intake passage communicating the charge forming means with the combustion chamber, the intake passage providing a conduit for the flow of an intake charge stream from the charge forming means to the combustion chamber and for reverse flow in the opposite direction, the apparatus comprising the side wall having an orifice therein positioned in communication with the intake passage such that an intake charge flow stream in the intake passage will flow over the orifice and produce suction therein towards the intake passage, an opening at another location positioned in communication with the intake passage such that reverse flow in the intake passage can enter the opening, and a connecting passage communicating the orifice with the opening, wherein suction produced in the orifice will be communicated through the connecting passage to the opening and along with any reverse flow that enters the opening will cause some of the intake charge to be drawn into the opening, pass through the connecting passage and orifice and reenter the intake charge flow stream along with the reverse flow.

5,662,078

INTAKE VALVE DEVICE FOR PREVENTING ADHESION OF DEPOSITS

Makoto Adegawa, Kawasaki, Japan, assignor to Fuji Oozx Inc., Japan

Filed Apr. 8, 1996, Ser. No. 629,196
Claims priority, application Japan, Oct. 26, 1994, 6-262481
Int. Cl.[6] F01L *3/04;3/08*
U.S. Cl. 123—188.3 **8 Claims**



1. An intake valve device for preventing adhesion of deposits in an internal combustion engine, the device comprising:

an intake poppet valve which comprises a valve head and a valve stem;

a valve guide in which the valve stem is slidably inserted; and

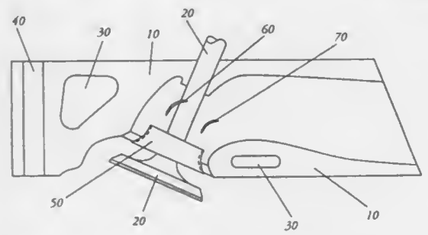
fuel injection means which injects fuel toward the valve head, either of contact surfaces between the valve stem and the valve guide having an annular groove and an elongate groove which communicates with the annular groove, a lower end of the elongate groove opening toward an intake port in the vicinity of the fuel injection means.

5,662,079

MANIFOLD FLOW TURNING VANES IN INTERNAL COMBUSTION ENGINES

John Michael Snider, 2116 Hobbs Rd., N-7, Nashville, Tenn. 37215

Continuation-in-part of Ser. No. 266,266, Jun. 27, 1994, abandoned. This application Dec. 15, 1995, Ser. No. 572,967
Int. Cl.[6] F02M *29/00*
U.S. Cl. 123—188.14 **18 Claims**



1. A method of increasing the gaseous mass flow rate through an internal combustion engine comprising the steps of:

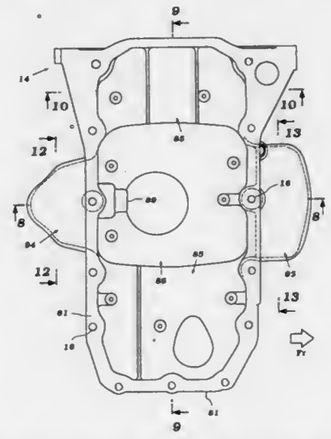
providing at least one turning vane in a bend of an engine gas flow conduit having a flow direction change of greater than about 9° over a bend radius that is less than about twice the effective diameter of said conduit, said turning vane being disposed transversely of said conduit, substantially centered about a bend radius through the angular center of such bend and positioned radially within the conduit bend to divide the cross-sectional area of said conduit bend into a plurality of flow passages, each having substantially identical ratios of inside radius to hydraulic diameter.

5,662,080

ENGINE CRANKCASE

Yoshihiro Isono, and Toshiyuki Takahashi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 13, 1995, Ser. No. 556,375
Claims priority, application Japan, Nov. 12, 1994, 6-303135
Int. Cl.[6] F02F *7/00;* **F16N** *31/00*
U.S. Cl. 123—195 C **12 Claims**



1. An internal combustion engine having a crankshaft rotatable about a longitudinally extending axis, a crankcase member extending along at least a portion of one side of said crankshaft and defining with other components of said engine a crankcase chamber in which said crankshaft rotates, the upper surface of said crankcase member forming a pair of flange portions extending generally parallel to and on opposite sides of the rotational axis of said crankshaft and defining the outer peripheral edges of an opening at the top of said crankcase member for sealing engagement with certain of said other components of said engine, an oil pick-up depending within Said crankcase member at a location along the axis of the crankshaft and between said flanges for drawing oil by an oil pump for lubrication of said engine, said crankcase member having a projection extending from at least one side thereof at a point axially aligned with said oil pick-up and transversely outwardly of the flange at said one side, the lower wall of said crankcase member extending below said oil pick-up being disposed at a deeper level than the lower wall of said projection so that oil can flow into said projection upon maneuvering of an associated vehicle powered by said engine without leaving the oil pick-up dry.

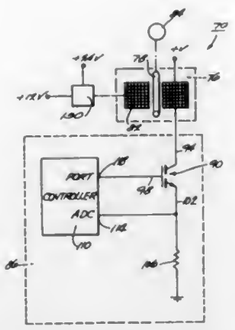
5,662,081

OIL SUPPLY FAILURE DETECTION CIRCUIT

Paul T. Ng, Vernon Hills, Ill., and Michael J. French, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 24, 1995, Ser. No. 506,587
Int. Cl.[6] F01M *1/18*
U.S. Cl. 123—196 S **4 Claims**

1. An engine assembly comprising an internal combustion engine, an electronic control unit for generating control signals for controlling said engine and including a sensing resistor, a controller having an analog to digital converter connected to said sensing



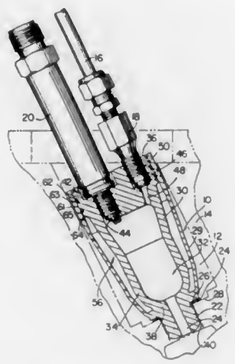
resistor and having an output port, and a transistor having a base connected to said output port, an emitter connected to said sensing resistor and a collector, a solenoid oil pump for supplying oil to said engine and including an armature, and a solenoid winding encircling said armature and being connected to said collector so that said electronic control unit causes current flow in said solenoid winding to move said armature and so that said electronic control unit detects the flow of current in said solenoid winding in order to determine whether said armature is in a stuck condition, and freeing means for freeing said armature from said stuck condition.

5,662,082

PRE-COMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINE AND METHOD OF MANUFACTURE THEREOF

Art Black, Houston, and Tom Riggs, Tomball, both of Tex., assignors to Compressor Engineering Corporation, Houston, Tex.

Filed Dec. 5, 1995, Ser. No. 567,432
Int. Cl.[6] F02B *19/16*
U.S. Cl. 123—254 **18 Claims**



1. A pre-combustion chamber apparatus adapted to be retrofit into the spark plug well of an existing engine, the precombustion chamber including:

a. an inner combustion chamber housing have a fuel inlet and an igniter connector, the inner combustion chamber housing including an outer wall;

b. an outer cooling housing substantially surrounding the inner combustion chamber housing and having an interior wall;

c. a connector secured to and in communication with the interior of the inner combustion chamber and adapted for mounting the pre-combustion chamber in the spark plug well of the engine;

d. a permanent securing and sealing element for securing a portion of the cooling housing to the combustion chamber housing; and

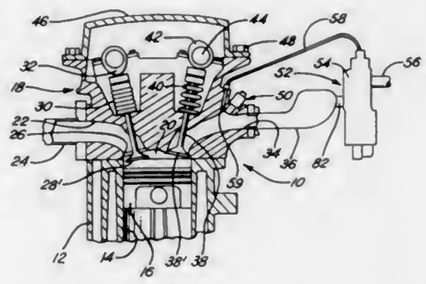
e. a resilient seal positioned between the outer wall of the combustion chamber housing and the cooling housing for defining a cooling jacket chamber therebetween, sealed and closed by the seal and the permanent securing element.

5,662,083

METERING DEVICE FOR AIR ASSISTED FUEL INJECTION

Michael P. Patyi, Troy, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Oct. 9, 1996, Ser. No. 728,024
Int. Cl.[6] F02D *41/16*
U.S. Cl. 123—339.27 **4 Claims**



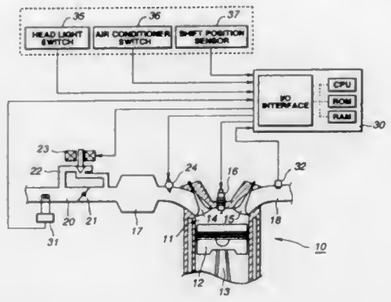
1. An improved air metering device for regulating a supply of air to an internal combustion engine having an air assisted fuel injection system including: a source of air; at least one air assisted type fuel injector mounted relative to an engine combustion chamber for selectively delivering fuel to an intake passage leading to an engine combustion chamber; air distribution means associated with the fuel injector to discharge a patterned flow of air adjacent the spray of fuel delivered by the fuel injector; the improved metering device comprising: a housing with an air inlet port to a first interior chamber therein whereby air is drawn into the metering device; said housing having a first outlet operatively connected so as to deliver air to the air distributing means associated with the fuel injector; said housing having a second outlet operatively connected so as to deliver air to the intake of the engine; said housing having a second interior chamber open to said second outlet; first valve seat forming means located between said first interior chamber and said first outlet; a first valve member operative with said first valve seat forming means to block air flow from the inlet to the first outlet when in a closed operative condition; a shaft mounted within said housing to permit selective axial shifting movement; said first valve member being attached to said shaft and movable therewith away from said first valve seat forming means to allow a flow of air from said inlet to said first outlet when in a non-closed operative condition; a second valve seat forming means located between said first and second interior chambers; a second valve member operative with said second valve seat forming means to block air flow from the inlet and first interior chamber to the second outlet when in a closed operative condition; spring means yieldably urging said second valve member into engagement with said second valve seat forming means; said second valve member being mounted upon said shaft in a manner permitting limited axial movement of said shaft without effecting the closed operative condition of said second valve member; means for causing opening movement of said second valve member by axial movement of said shaft after said limited axial movement thereof whereby air is delivered from said inlet and first interior chamber to said second interior chamber and said outlet.

5,662,084

ENGINE IDLING SPEED CONTROL APPARATUS

Yoshitaka Deguchi, Yokosuka, and Nobutaka Takahashi, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Jul. 18, 1996, Ser. No. 683,145
Claims priority, application Japan, Jul. 18, 1995, 7-181851
Int. Cl.[6] F02B *75/00*
U.S. Cl. 123—339.11 **45 Claims**



1. An apparatus for controlling the idling speed of an internal combustion engine, comprising:

first adjustable means for controlling the amount of air supplied to the engine;

second adjustable means for controlling the timing of the sparks supplied to the engine;

feedback control means for controlling the first and second adjustable means for feedback control of the amount of air supplied to the engine and the timing of the sparks supplied to the engine to cause the engine idling speed to follow a target engine idling speed value;

means for detecting a demand for application of a load to the engine;

means for increasing the amount of air supplied to the engine after the load application demand is detected;

means for predicting the magnitude of the load to be applied to the engine and the time at which the load is applied to the engine when the load application demand is detected; and

means for correcting the spark timing to produce an engine output condition causing the engine speed to follow the target engine speed value after the load application demand is detected with the use of an engine model indicating an engine output characteristic provided when the spark timing, the amount of air supplied to the engine and the predicted load magnitude are inputted to the engine model.

5,662,085

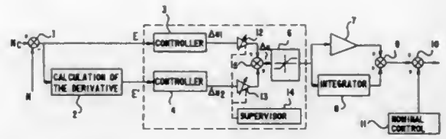
METHOD AND DEVICE FOR CONTROLLING THE SPEED OF AN INTERNAL COMBUSTION ENGINE DURING A DECELERATION PHASE

Alain Michel Jean Aubourg, Saint-Jean; Jean-Michel Le Quellec, and Christophe Raymond, both of Toulouse, all of France, assignors to Siemens Automotive S.A., Toulouse-Cedex, France

PCT No. PCT/EP94/02785, § 371 Date Mar. 1, 1996, § 102(e) Date Mar. 1, 1996, PCT Pub. No. WO95/06810, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 23, 1994, Ser. No. 617,919
Claims priority, application France, Sep. 1, 1993, 93 10423
Int. Cl.[6] F02D *31/00;41/08;41/14*
U.S. Cl. 123—352 **12 Claims**

1. A method of controlling the speed of an internal combustion engine during a deceleration phase,

wherein the speed of the engine is affected with a controlled actuator connected thereto, the method which comprises:



defining a speed error $E=N_c-N$, where N_c is a set-point speed, and N is an actual speed of the engine, and calculating a time derivative E' of the speed error E;

deriving a correction for a control of the actuator from a linear combination of a first partial correction and a second partial correction, wherein the first partial correction is a function of the speed error E and the second partial correction is a function of the time derivative E' of the speed error, and said partial corrections being defined as a function of a relative position of a value of the speed error E and of the time derivative E' thereof, respectively, relative to at least two predetermined values of the speed error E and of the time derivative E' thereof, each of which has an associated predetermined value of the partial corrections; fuzzifying the speed error E and the time derivative E' thereof, processing the speed error E and the time derivative E' with separate sets of fuzzy logic rules, subsequently defuzzifying and producing the first and second partial correction;

filtering disturbances linked to noise at the measurement of the derivative near its null value, by fuzzifying the time derivative of the speed error in the fuzzifying step with a set of membership classes which do not overlap within a predetermined interval of values of E' around E'=0; and

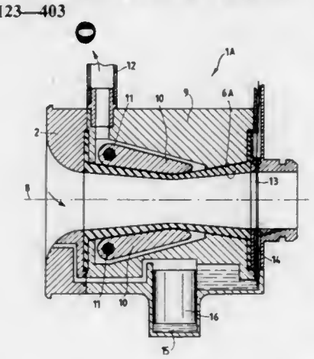
correcting a control of the actuator and thereby affecting the speed of the engine as a function of the time derivative E' thereof.

5,662,086

CARBURATION DEVICE IN PARTICULAR FOR INTERNAL COMBUSTION ENGINES

Giuseppe Raoul Piccinini, Via Strada Nuova per Isorella, Gottolengo (Brescia), Italy

Filed Oct. 25, 1995, Ser. No. 547,936
Claims priority, application Italy, Oct. 25, 1994, CR94A0004
Int. Cl.[6] F02M *35/10;* **F02D** *9/18*
U.S. Cl. 123—403 **6 Claims**



1. A carburation device for an internal combustion engine, comprising:

means for delivering metered amounts of fuel relative to combustion-supporting air according to a desired stoichiometric ratio;

a feed duct for at least one fluid selected from the group consisting of combustion-supporting air, and a mixture of combustion-supporting air and fuel, said feed duct having a longitudinal bore having an inlet end and an outlet end;

means for co-axially constraining the outlet end of said feed duct to an intake duct of an internal combustion engine, for supplying a mixture of fuel and combustion-supporting air to the engine;

means for varying the transverse cross-sectional area of said longitudinal bore of said feed duct for varying the supply of fuel-air mixture through the outlet end, and thereby varying the revolution speed of the engine;

said feed duct being tubular and made of an elastic, flexible material;

said means for varying including means for squeezing said feed duct transversally of the longitudinal axis thereof, from externally of said feed duct so as to cause said feed duct, when squeezed, to have a longitudinal profile, as viewed transversally of said longitudinal axis and transversely of squeezing provided by said means for varying, which includes flattened, maximally to complete closure, axially central segment, preceded by an upstream segment of smoothly converging transverse cross-sectional shape, without any sharp changes in transverse cross-sectional shape, and succeeded by a downstream segment of smoothly diverging transverse cross-sectional shape, without any sharp changes in transverse cross-sectional shape.

5,662,087

INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE WITH DIRECT INJECTION

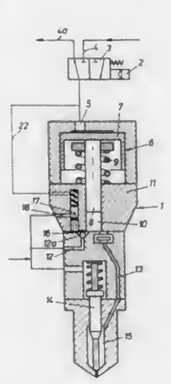
James C. McCandless, Grosse Pointe, Mich., assignor to Avl Gesellschaft Für Verbrennungskraftmaschinen und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List, Graz, Austria

Filed Mar. 28, 1996, Ser. No. 623,253

Claims priority, application Austria, Mar. 20, 1995, 181/95

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—446 **8 Claims**



1. Fuel injection system for an internal combustion engine with direct fuel injection, with an electromagnetic control valve for pressurizing a medium-pressure space from an external medium-pressure reservoir, and a hydraulic amplification plunger comprising a medium-pressure plunger adjacent to the medium-pressure space and a high-pressure plunger adjacent to a high-pressure space, which high-pressure space is connected to a fuel delivery line on the one side and a nozzle space surrounding the fuel needle on the other side, where the high-pressure space can be connected to a fuel bypass line in at least one intermediate position of the high-pressure plunger, wherein a pressure-dependent bypass valve (**17**, **17'**) is provided in addition to the high-pressure plunger (**8**, **8'**) in the flow path between the high-pressure space (**10**, **10'**) and the fuel bypass line (**18**, **18'**), which bypass valve (**17**, **17'**) will open the flow connection between high-pressure space (**10**, **10'**) and fuel bypass line (**18**, **18'**) for a narrow range of pressures in the high-pressure space (**10**, **10'**).

5,662,088

ENGINE

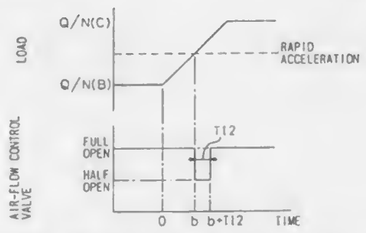
Hiroki Ichinose, Fujinomiya; Keiso Takeda, Mishima; Susumu Kojima, and Shinji Sadakane, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 515,883, Aug. 16, 1995, Pat. No. 5,596,957. This application Oct. 21, 1996, Ser. No. 729,657

Claims priority, application Japan, Aug. 17, 1994, 6-193121; Apr. 7, 1995, 7-82857

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—492 **10 Claims**



1. An engine having an intake passage, a throttle valve arranged in the intake passage, and a fuel injector arranged in the intake passage downstream of the throttle valve for injecting fuel into the intake passage, the engine comprising:

an air-flow control valve arranged in the intake passage between the fuel injector and the throttle valve; and

valve control means for controlling a valve position of the air-flow control valve, the valve control means normally controlling the air-flow control valve to an intermediate open position which is between a closed position and a full open position thereof when an engine load is lower than a reference load depending on an engine speed, and to the full open position when the engine load is higher than the reference load,

wherein the fuel injector carries out a synchronous fuel injection in which a fuel injection by the fuel injector is carried out at an intake stroke of the engine when the air-flow control valve is controlled to the intermediate open position, and carries out an asynchronous fuel injection in which the fuel injection is carried out at an engine stroke other than the intake stroke when the air-flow control valve is controlled to the full open position, and wherein the engine further comprises fuel injection control means for controlling the fuel injector so that fuel injection type is changed regardless of the valve position of the air-flow control valve depending on an engine operating condition.

5,662,089

DEVICE FOR SUPPLYING FUEL FROM SUPPLY CONTAINER TO INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

Stephan Kleppner, Bretton; Kurt Frank, Schorndorf, and Dieter Schreckenberger, Marbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

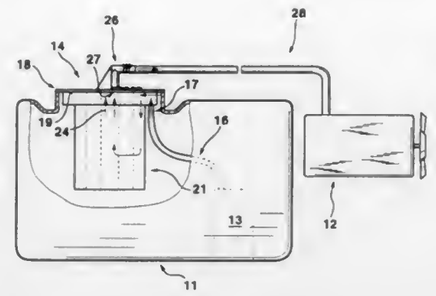
Filed Jul. 1, 1996, Ser. No. 674,155

Claims priority, application Germany, Aug. 26, 1995, 1 95 31 467.0

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—510 **6 Claims**

1. A device for supplying an internal combustion engine of a motor vehicle with a fuel from a supply container, the device comprising a fuel feeding aggregate arrangeable in the supply container, for supplying the fuel through a feeding line; a fuel filter through which the fuel passes; a holder mountable on the supply container, said fuel filter being arranged on said holder and having a clean-side outlet, said feeding line being integrated in said holder; and a connecting pipe which is arranged outside of said holder and to which said clean-side outlet of said filter is connected through said integrated feeding line, said fuel filter having a



housing with at least supply opening, said holder having a cylindrical portion in which said housing is insertable and which is provided with a dirt-side supply and with an outlet, said supply opening and said outlet opening being arranged in the region of said portion, a ring groove arranged between said housing and said holder and communicating said supplying opening of said housing with said dirt-side supply of said holder, and a second groove provided between said housing and said holder and communicating said clean-side outlet of said housing with said outlet of said holder, said firstmentioned ring groove being arranged between said portion of said holder and said supply opening while said second ring groove is arranged between said portion of said holder and said clean-side outlet.

5,662,090

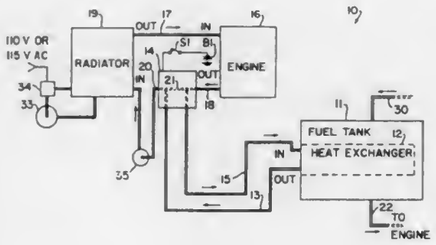
HEAT EXCHANGE SYSTEM FOR USING VEGETABLE OILS AS AN ENGINE FUEL

Jackie L. Ward, 4384 N. Oceanshore Blvd., Palm Coast, Fla. 32137

Filed Oct. 1, 1996, Ser. No. 723,579

Int. Cl.[6] F02M *31/16*

U.S. Cl. 123—557 **17 Claims**



1. A method of regulating the temperature of a viscous fuel in a fuel tank that is supplied to a diesel engine that is cooled by directing water from the engine to a radiator including the steps of:

A. providing a heat exchanger mounted inside the fuel tank for receiving hot water from an engine; and

B. selectively directing the hot water from the engine to the heat exchanger for heating the fuel in the fuel tank when the temperature of the fuel in the tank is below a predetermined temperature range.

5,662,091

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

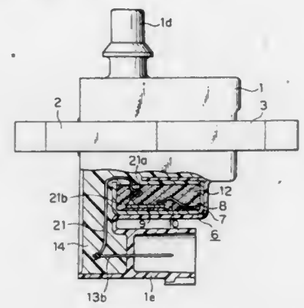
Nobuyuki Sawazaki; Mitsuru Koiwa, and Shigemi Murata, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,147

Claims priority, application Japan, Apr. 24, 1995, 7-098760

Int. Cl.[6] H01F *38/12*

U.S. Cl. 123—647 **11 Claims**



1. An ignition apparatus for an internal combustion engine comprising:

an electrically insulating case;

an ignition coil disposed within said insulating case;

a power switch disposed within said insulating case and comprising a switching unit for intermittently supplying a primary current to said ignition coil, a gel disposed over said switching unit for covering said switching unit and at least one electrical wire conductor having one end connected to said switching unit and the other end extending outwardly of said power switch; and

an electrically insulating resin disposed within said insulating case and supporting and covering said ignition coil and said power switch within said insulating case;

said electrical wire conductor including a flexible bent portion disposed within said gel for absorbing a tension in said electrical wire conductor.

5,662,092

SPHYGMOMANOMETER AND METHOD FOR CONTROLLING OPTIMUM PRESSURIZATION AND MINUTE EXHAUSTION WHILE MEASURING BLOOD PRESSURE

Tae-Young Choi, Seoul; Si-Chul Lee, and Yong-Bum Kim, both of Kyungki-do, all of Rep. of Korea, assignors to Sein Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 21, 1995, Ser. No. 505,603

Claims priority, application Kenya, Jul. 27, 1979, 94-18259; Rep. of Korea, Aug. 31, 1994, 94-21816

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—680 **8 Claims**

7. A sphygmomanometer for controlling minute exhaustion, comprising:

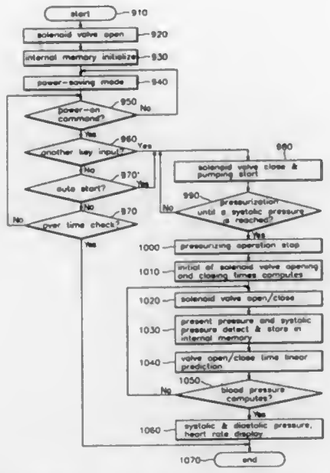
a cuff for compressing an upper arm of a subject;

air pumping means for pumping air into said cuff;

a solenoid valve for exhausting the air from said cuff;

a sensor for converting pressure caused by the air in said cuff to an electrical signal, said pressure being representative of a pressure exerted on said cuff by an artery of the arm;

a microcontroller comprising means for operating said air pumping means based on said pressure until at least a systolic pressure is reached, means for computing closing and opening times of said solenoid valve by linear prediction based on a previous quantity of air exhausted from said cuff, means for controlling said solenoid valve in accordance with said com-



puted closing and opening times so that the air from said cuff is exhausted minutely, and means for computing a blood pressure in response to said electrical signal from said sensor;

a display connected to said microcontroller for displaying the calculated blood pressure;

a key inputting means for controlling said microcontroller; and

wherein said microcontroller further comprises means for reducing power consumption in the microcontroller in response to a predetermined time period between actuation of said key inputting means.

5,662,093

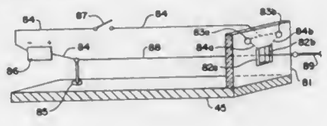
TORQUE SIGHT FOR HAND-HELD BOWS

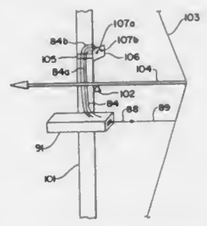
Marvin J. DenHerder, 816 Brookwood Dr., Olympia Fields, Ill. 60461

Continuation-in-part of Ser. No. 353,766, Dec. 12, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 661,678

Int. Cl.[6] F41B *5/00;* **F41G** *1/467*

U.S. Cl. 124—23.1 **12 Claims**





1. In an archery bow for shooting arrows having: a bow handle, including a hand grip, for grasping control by the archer, and an arrow rest; two shaped elongated bow limbs, each having a first end attached to the bow handle and a second end extending therefrom in a plane substantially co-planar with the bow handle; and a bow string, attached to the respective second ends of the bow limbs and having a length selected to hold the bow limbs under tension in a bowed condition; for receiving the rear extremity of an arrow, notched on the bow string at approximately the mid-point thereof, said arrow also being positioned upon the arrow rest to define its lateral plane, the improvement comprising:

(a) a bar attached laterally to the bow handle parallel to the arrow and having front and rear sections;

(b) an elastic, connector line, having first and second ends, attached at the first end thereof to the bar and adapted to pass along at least a portion of the length of the bar and beyond the rear section of the bar, while terminating in attachment of the second end thereof to the bow string at a point above and substantially parallel to the plane of the arrow when the bow is at full draw; and

(c) signal means, supported at least in part by the bar, responsive to lateral movement of said rear section of the bar relative to the connector line;

whereby the lateral movement of the rear section of the bar activates signal means whenever a torque change occurs in the positioning of the bow handle in response to the grasping thereof by the archer when aiming an arrow.

5,662,094

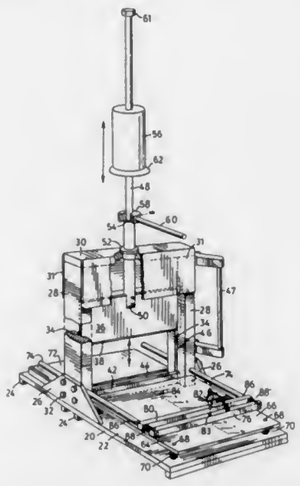
GUILLOTINE CUTTING APPARATUS FOR BRICKS, BUILDING BLOCKS AND THE LIKE

Angelo J. Giacomelli, 7335 Dickenson Road East, Mount Hope, Ontario, Canada, L0R 1WO

Filed Jul. 3, 1996, Ser. No. 675,112

Int. Cl.[6] B28D *1/32*

U.S. Cl. 125—23.01 **20 Claims**



1. Guillotine cutting apparatus for solid bodies having top, bottom, side and end surfaces, the apparatus comprising:

a base member upon which a body to be cut is placed with its bottom surface on a top surface of the base member;

cutter mounting means extending above the base member top surface and mounting a movable cutter member for movement toward and away from the base member top surface in a cutting plane;

a movable cutter member mounted by the cutter mounting means for said movement in the cutting plane, the member having a cutting edge engagable with the top surface of a body when placed on the base member top surface;

cutting force applying means operatively connected with the movable cutter member to impart a cutting force thereto to cut the body; and

body measuring means having a stop member movably mounted thereby, against which stop member the respective end surface of a body to be cut is butted;

the body measuring means being disposed above the base member top surface and mounted for movement toward and away from the cutting plane to change the relative lengths of the parts into which the body is cut;

the body measuring means and the stop member having resilient means between them permitting movement of the stop member and of the respective cut portion of the body away from the cutting plane as the movable cutter member cuts the body.

5,662,095

PLUG CAP FOR INSERTION INTO A BORE

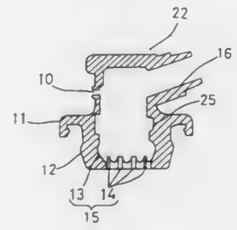
Yoshiyuki Matsuo, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Aug. 17, 1995, Ser. No. 516,390

Claims priority, application Japan, Oct. 14, 1994, 6-249626

Int. Cl.[6] H01T *13/04*

U.S. Cl. 123—143 C **14 Claims**



1. A generally cylindrical plug cap adapted for insertion into an insertion position in a bore complementary thereto, said bore containing a generally cylindrical element axially centered therein, said plug cap comprising a seal adapted to bear against an internal wall of said bore when said cap is in said insertion position, and a holding portion having an inner surface, an annular groove in said inner surface, and a plurality of circumferentially spaced apart protrusions extending radially inwardly from said inner surface and adapted to bear against said element when said cap is in said insertion position, said bore containing a spark plug for an internal combustion engine and said element is an ignition pipe.

14. A generally cylindrical plug cap adapted for insertion into an insertion position in a bore complementary thereto, said bore containing a generally cylindrical element axially centered therein, said plug cap comprising a seal adapted to bear against an internal wall of said bore when said cap is in said insertion position, and a holding portion having an inner surface, an annular groove in said inner surface, and a plurality of circumferentially spaced apart protrusions extending radially inwardly from said inner surface and adapted to bear against said element when said cap is in said insertion position, said plug cap having a vent having an air opening outside said bore.

5,662,096

TRIGGER TO ACTIVATE SUPERCOOLED AQUEOUS SALT SOLUTION FOR USE IN A HEAT PACK

Dale E. Walters, St. Louis, Mo., assignor to Omni Therm, Inc., St. Louis, Mo.

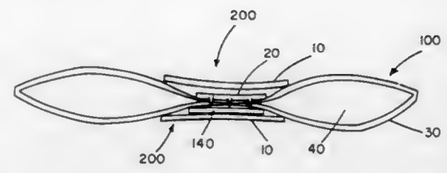
Filed Jul. 3, 1995, Ser. No. 497,826

Int. Cl.[6] A61F *7/00*

U.S. Cl. 126—263.03 **17 Claims**

1. A trigger to initiate crystallization of a supercooled aqueous salt solution encased in a flexible container, comprising a puncturing means, salt crystals and a sealing means,

the puncturing means being attached by a sealing means to the exterior of the flexible container,



the trigger, when activated, being configured for puncturing the flexible container for allowing the supercooled aqueous salt solution to contact the salt crystals, thereby initiating crystallization, and

the sealing means prevents any leakage of the solution from the container when the flexible container is punctured by the trigger.

5,662,097

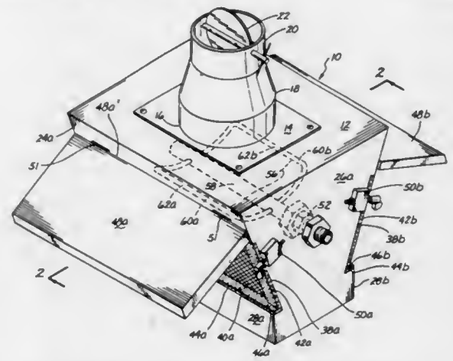
STOVE HOOD WITH FLUID FILTER CLEANING MEANS

Mihail Panos, 2019 W. Hill Ave., Fullerton, Calif. 92633

Filed Nov. 13, 1996, Ser. No. 748,288

Int. Cl.[6] F24C *15/20*

U.S. Cl. 126—299 E **7 Claims**



1. In combination, with a stove in which food is cooked,

an exhaust air duct serving to conduct upwardly to a predetermined area any gaseous medium entrained with particles of grease or other by-products of cooking on the stove, said duct having a lower end, and an upper end in communication with said predetermined area, said lower end being disposed above the stove and having in association therewith means to propel the gaseous medium into and through the duct;

a hood interposed between the stove and the lower end of the duct and said hood being in communication in its upper region with the lower end of said duct, whereby any gaseous medium arriving within the hood passes upwardly into and through the duct at the urging of the propelling means; said hood further comprising:

a rectangular roof, said roof having ends and sides and encompassing the lower end of the duct;

a pair of end members, each of said members being secured to one of the ends of the rectangular roof and extending downwardly to terminate at a bottom wall, said bottom wall being attached to the lower portions of said end members and said lower portions being further connected by partial side walls extending upwardly from the bottom wall to form, with said partial side walls, a trough, said trough having a bottom outlet,

each said partial side wall together with adjacent portions of a member and a side edge of the roof defining a rectangular area,

a framed filter screen removably disposable to cover the inside of said rectangular area;

a pair of closure members, each of said closure members being of a configuration to completely cover one of said rectangular areas, each said closure member being hinged outside of said rectangular areas and being adapted to swing between a first position in which access through the rectangular area is unobstructed, and a second position in which the rectangular area is closed in a substantially water-tight manner;

said roof, said end members, said trough, and said closure members together defining a volume,

a liquid sprayhead supported within said volume, said sprayhead having orifices directed against each filter screen,

a source of fluid under pressure, said fluid being effective for dissolving and removing grease and other particles from the filter screen, said sprayhead being connectable to said source of fluid under pressure; and

control means adapted to connect said sprayhead to said source of fluid whereby when the closure members are disposed in their first positions, the filter screens serve to remove grease and other entrained cooking by-products from the gaseous medium being drawn from above the stove and into and through the duct by the propelling means; but, when the closure members are disposed in their second positions, and the control means is operated to connect the sprayhead to the source of fluid under pressure, the filter screens are flushed and cleaned by the fluid which then passes down through the outlet in the bottom wall.

5,662,098

INJECTOR-TYPE ATOMIZER

Norio Yoshida, Ichikawa, Japan, assignor to Keytron Co., Ltd., Tokyo, Japan

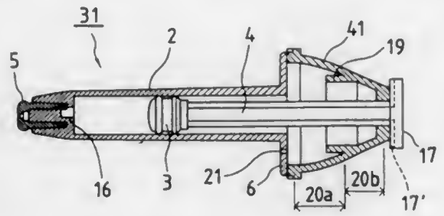
PCT No. PCT/JP95/01026, § 371 Date Jan. 30, 1996, § 102(e) Date Jan. 30, 1996, PCT Pub. No. WO95/32750, PCT Pub. Date Dec. 7, 1995

PCT Filed May 29, 1995, Ser. No. 596,112

Claims priority, application Japan, May 31, 1994, 6-118036; Jul. 21, 1994, 6-190187

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.22 **10 Claims**



1. An injector-type atomizer comprising:

a cylinder having a spray nozzle at a front end thereof;

a piston fitted into said cylinder;

a rod having a front end attached to said piston and a rear end projecting from a rear end of said cylinder; and

an elastic member arranged to connect the rear end of said cylinder and the rear end of said rod, and crushable in a stepwise manner in response to a pushing force applied to said rod in an axial direction thereof by a user, so that the stepwise crushing of said bag is sensible by the user.

5,662,099

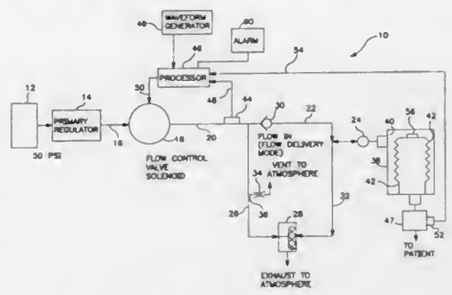
DETECTION OF BELLOWS COLLAPSED CONDITION IN MEDICAL VENTILATOR

Ronald L. Tobia, Sun Prairie; Kevin G. Tissot, Brooklyn; Carl H. Hendrickson, and Steven K. Somerson, both of Madison, all of Wis., assignors to Ohmeda Inc., Liberty Corner, N.J.

Filed Mar. 29, 1996, Ser. No. 624,070

Int. Cl.[6] A62B *7/04;* **A61M** *16/00;* **F16K** *31/26;* **G08B** *3/00*

U.S. Cl. 128—205.15 **19 Claims**



1. A ventilator system for providing a breath to a patient connected to a patient circuit and for receiving exhaled gases from the patient, said system comprising a ventilator, a bellows canister containing a collapsible bellows, a drive conduit fluidly connecting said ventilator to said bellows canister, said ventilator supplying a quantity of gas through said drive conduit to compress said bellows to deliver gas from the interior of said bellows to the patient circuit, a first pressure sensor to detect the pressure indicative of the pressure within the interior of said bellows and to provide a first signal representing that pressure, a second pressure sensor to detect the pressure indicative of the pressure within said bellows canister exterior of said bellows and to provide a second signal representing that pressure, processor means responsive to said first and said second signals to determine that said bellows is in a fully collapsed condition.

5,662,100

EDUCTIVE PRESSURE REGULATOR

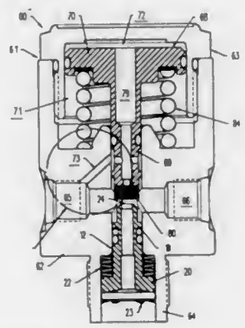
James E. J. Fox, Lockport, and Dennis H. Sattelberg, North Tonawanda, both of N.Y., assignors to Harsco Corporation, Wormleysburg, Pa.

PCT No. PCT/US96/00378, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO96/19761, PCT Pub. Date Jun. 27, 1996

PCT Filed Jan. 11, 1996, Ser. No. 669,549

Int. Cl.[6] F16K *17/14;* **A62B** *7/04*

U.S. Cl. 128—205.24 **11 Claims**



1. A pressure regulator, comprising:

a body provided with a bore;

seat means forming a seat at an intermediate portion of said bore, said seat subdividing said bore into an entrance passage and a guide passage, said entrance passage communicating with an inlet;

said body being provided with an exit passage communicating the end of said guide passage that is arranged adjacent said seat with an outlet;

a valve member mounted in said guide passage for controlled movement toward and away from said seat to selectively vary the area of a main orifice through which fluid is adapted to flow from said inlet to said outlet, said valve member having an outwardly-facing surface arranged in spaced relation to an inwardly-facing surface of said guide passage;

said body also having a sensing passage communicating said guide passage with said exit passage;

said guide passage and valve member facing surfaces being so dimensioned and configured as to provide an elongated open-ended annular space therebetween that extends along said guide passage from its communicative intersection with said exit passage to a point beyond the place at which said sensing passage communicates with said guide passage; and

an annular projection extending from one of said acing surfaces toward the other of said facing surfaces at a location between the open end of said guide passage and said sensing passage to provide a flow restriction between said surfaces to fluid flow from said entrance passage toward said sensing passage;

whereby the magnitude of the outlet pressure at increased fluid flows from said inlet to said outlet will be substantially maintained.

5,662,101

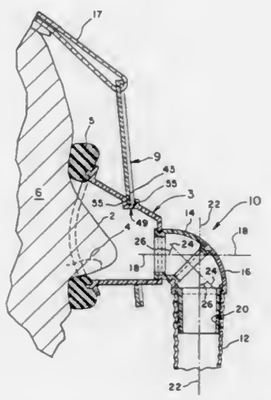
RESPIRATORY FACIAL MASK

Douglas R. Ogden, Arvada, Colo.; Joseph A. Abeyta, Arlington, Tex., and Gregg D. Keefe, Boulder, Colo., assignors to Respironics, Inc., Murrysville, Pa.

Filed Dec. 7, 1995, Ser. No. 568,961

Int. Cl.[6] A62B *18/02*

U.S. Cl. 128—205.25 **36 Claims**



33. A facial mask assembly having a rigid shell, a flexible hose, and a swivel hose coupling for connecting said rigid shell to said flexible hose, said coupling having first and second, rigid sections and means for attaching said first rigid section to said rigid shell for rotation relative to said rigid shell about a first rotational axis and means for attaching said second rigid section to said flexible hose for rotation relative to said flexible hose about a second rotational axis, said coupling further including means for mounting said first and second rigid sections for rotation relative to each other about a third rotational axis.

5,662,102

Patent Not Issued For This Number

5,662,103

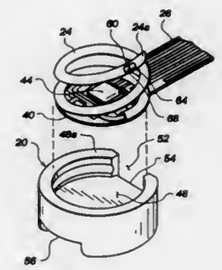
SUBCUTANEOUS RADIATION REFLECTION PROBE

Roger E. Smith, Bountiful, and Jon Neese, Salt Lake City, both of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah

Continuation of Ser. No. 18,936, Feb. 17, 1993, Pat. No. 5,361,757. This application Oct. 4, 1994, Ser. No. 317,858

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **35 Claims**



1. A subcutaneous reflection probe apparatus for measuring E/M radiation from illuminated tissue comprising a probe, said probe comprising;

a hollow needle having a pointed free end for insertion in the tissue and a base end, with a window formed in a wall of the needle,

a radiation emitter means disposed in the hollow of the needle for selectively emitting radiation through the window to illuminate the tissue, the radiation emitter means comprising a radiation generating device positioned at the window,

a base element on which the base end of the needle is secured, and

a radiation detector means, disposed on the probe and toward the tissue when the free end of the needle is inserted therein, for measuring the radiation from the illuminated tissue, the radiation detector means and the radiation emitter means being positioned with respect to each other so that the radiation detector means is substantially off any optical line-of-sight with the window such that the distance traveled by the radiation between the radiation emitter means and the radiation detector means is longer than any straight-line distance between the radiation emitter means and the radiation detector means and such that the radiation received by the radiation detector means is modulated by the tissue.

5,662,104

METHOD OF MEASURING THE QUANTITY OF ATTENUATION OF LIGHT TRANSMITTED THROUGH BLOOD AND PHOTO SENSOR USED FOR THE METHOD

Masayoshi Fuse, and Cheng-tai Xie, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 419,693

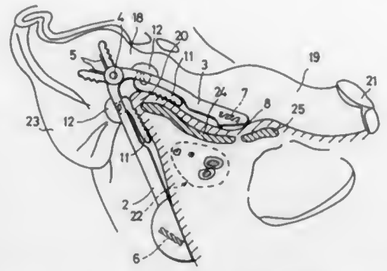
Claims priority, application Japan, Apr. 11, 1994, 6-072033

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **10 Claims**

8. A method of measuring the quantity of attenuation of light when it passes through blood comprising the steps of:

inserting a light emitting element of a photo sensing element into an external auditory canal of a living body and locating the element near a superficial temporal artery region;



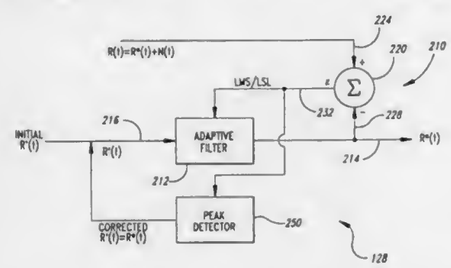
setting the ocher of the photo sensing element or the light emitting element to a location near to the same superficial temporal artery region on the temporofacial skin surface; and detecting a light emitted from the light emitting element and transmitted through the same superficial temporal artery region by the photo sensing element.

5,662,105

SYSTEM AND METHOD FOR THE EXTRACTMENT OF PHYSIOLOGICAL SIGNALS

Jonathan Tien, Redmond, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed May 17, 1995, Ser. No. 442,834
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **20 Claims**



1. A system for the enhancement of physiological signals for the measurement of blood oxygen in a subject, the system comprising:

first and second light sources to direct light toward the subject, said first and second light sources producing first and second light signals of first and second wavelengths, respectively;

a light detector positioned to detect said first and second light signals after interaction with the subject and to generate first and second signals indicative of an intensity of said first and second detected light signals, respectively, said first generated signal having a first portion arising from light transmitted from said first source and a second portion arising from a first interference light source, said second generated signal having a first portion arising from light transmitted from said second source and a second portion arising from a second interference light source;

an adaptive signal processor having a signal input coupled to said light detector to receive said first generated signal, an adaptive filter having an input to receive a reference signal, and an output, and an error output to generate an error signal, wherein said error output is coupled to said adaptive filter to adjust said adaptive filter so that said error signal has a minimum value;

a storage location containing a mathematical relationship of said first and second portions of said first and second generated signals and a first ratio constant;

a reference signal generator to generate said reference signal based on an estimated value of said first ratio constant; and

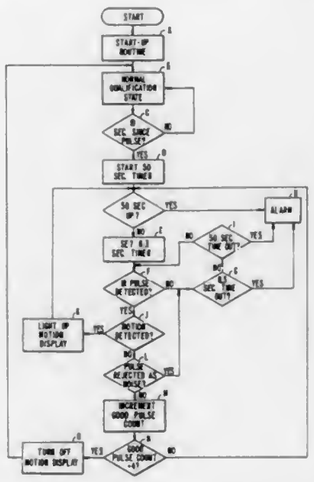
a peak detector to receive an output signal from said adaptive signal processor and determine a calculated value for said first ratio constant corresponding to a first peak value of said output signal over a predetermined range of possible ratios, said reference signal generator generating said first portion of said first detected signal and said first portion of said second detected signal based on said mathematical relationship and said calculated value of said first ratio constant.

5,662,106

OXIMETER WITH MOTION DETECTION FOR ALARM MODIFICATION

David B. Swedlow, Foster City, Calif., and Robert S. Potratz, Lenexa, Kans., assignors to Nellcor Incorporated, Pleasanton, Calif.

Continuation of Ser. No. 304,914, Sep. 13, 1994, abandoned, which is a continuation of Ser. No. 37,953, Mar. 26, 1993, Pat. No. 5,368,026. This application Jan. 29, 1996, Ser. No. 593,188
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **20 Claims**



1. A method of operating a pulse oximeter which emits light, the method comprising the steps of:

(a) qualifying pulses in a detector signal, the detector signal corresponding to absorption by blood constituents of the light emitted by the oximeter;

(b) upon a condition suggesting a possible alarm situation, setting a first timer, the first timer expiring upon elapse of a time interval of a first predetermined duration;

(c) if a pulse is detected in the detector signal after the first timer has been set and before the first timer expires, performing the steps of:

(c1) determining if the pulse has resulted from motion artifact; and

(c2) if the pulse is determined to have resulted from motion artifact, resetting the first timer; and

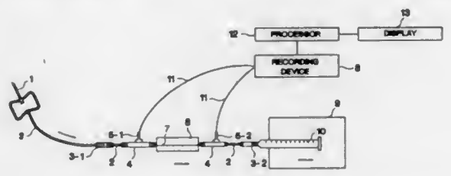
(d) if and when the first timer expires, generating an alarm.

5,662,107

DEVICE AND A METHOD FOR MEASURING THROMBUS FORMATION TENDENCY

Kjell Steinar Sakariassen, Oslo, Norway, assignor to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/NO93/00199, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/16326, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 29, 1993, Ser. No. 464,659
Claims priority, application Norway, Dec. 30, 1992, 925047
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—637 **21 Claims**



1. A device for in vitro measurement of the tendency to form blood clots under conditions which simulate in vivo circulation conditions, the device comprising:

at least one tube of an infusion set for receiving fluid;

at least one upstream T-tube operatively connected to the at least one tube of the infusion set, the at least one upstream T-tube having at least one pressure sensor connected thereto;

at least one thrombogenesis unit connected to the at least one upstream T-Tube, the thrombogenesis unit including a thrombosis chamber with at least one flow channel, the thrombogenesis unit further having at least one of thrombosis tubes and perfusion chambers with measuring chamber devices having cover plates, the cover plates being one of coated and uncoated, at least one of the channel and thrombosis tubes being internally coated with materials which activate thrombogenesis, the at least one flow channel having a known shear rate for fluid flowing therethrough;

at least one downstream T-tube being connected to the at least one thrombogenesis unit, the downstream T-tube having at least one pressure sensor connected thereto;

a pump device connected to the downstream T-tube, the pump device having means for sucking fluid through at least one of the flow channels;

the pressure sensor for the upstream T-tube measures pressures upstream of the thrombogenesis unit and the pressure sensor for the downstream T-tube measures pressures downstream of the thrombogenesis unit;

means for recording a total volume of fluid pumped by the pump device, the means for recording being electrically connected to the pressure sensors for the upstream and downstream T-tube, the means for recording further recording upstream pressures and recording downstream pressures measured by the pressure sensors; and

a data processing device connected to the means for recording, the data processing device calculates and stores changes in pressure drop between an upstream and downstream side of the thrombogenesis unit per time unit.

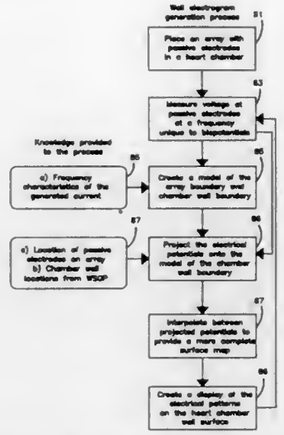
5,662,108

ELECTROPHYSIOLOGY MAPPING SYSTEM

Jeffrey Robert Budd; Graydon Ernest Beatty, both of St. Paul, and John Anderson Hauck, Shoreview, all of Minn., assignors to Endocardial Solutions, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 387,832, Feb. 16, 1995, which is a continuation-in-part of Ser. No. 950,448, Sep. 23, 1992, Pat. No. 5,297,549, and Ser. No. 949,690, Sep. 23, 1992, Pat. No. 5,311,866. This application Apr. 12, 1995, Ser. No. 420,698
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—642 **1 Claim**

1. A process for measuring electrophysiologic data in a heart chamber comprising the steps of:



(a) positioning a set of passive electrodes within a patient's heart;

(b) positioning a set of active electrodes within a patient's heart;

(c) supplying oscillating current to said set of active electrodes thereby generating an electric field in said heart chamber;

(d) detecting said electric field at said passive electrode sites, generating a set of electric field measurement data;

(e) extracting in the frequency domain, from said field measurement data, that component of said field measurement data corresponding to chamber geometry and generating chamber geometry data;

(f) extracting in the frequency domain, from said field measurement data, that component of said field measurement data corresponding to the underlying intrinsic electrophysiologic activity of the heart chamber, and generating electrophysiology data;

(g) graphically displaying said chamber geometry data;

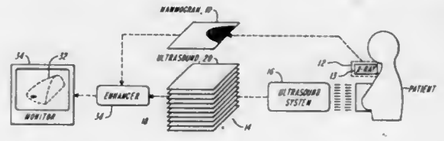
(h) graphically displaying said electrophysiologic data.

5,662,109

METHOD AND SYSTEM FOR MULTI-DIMENSIONAL IMAGING AND ANALYSIS FOR EARLY DETECTION OF DISEASED TISSUE

William H. Hutson, 47 Grange St., Little Compton, R.I. 02837

Continuation-in-part of Ser. No. 367,787, Dec. 30, 1994, Pat. No. 5,455,806, which is a continuation of Ser. No. 119,362, Sep. 10, 1993, Pat. No. 5,379,268, which is a continuation of Ser. No. 978,245, Nov. 18, 1992, Pat. No. 5,245,587, which is a continuation-in-part of Ser. No. 628,337, Dec. 14, 1990, Pat. No. 5,175,710. This application Apr. 14, 1995, Ser. No. 422,031
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—653.1 **14 Claims**



1. A method for imaging a tissue region in a patient, the method including the steps of:

receiving a first set of imaging data of the tissue region from a first imaging source;

receiving a second set of imaging data of the tissue region from a second imaging source, the second imaging source being of a type that is different from the first imaging source; and

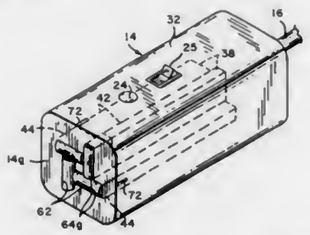
concatenating, compressing, and enhancing the first and second sets of imaging data to produce a third single resulting set of enhanced data representing the tissue region.

5,662,110

MICROWAVE DETECTION APPARATUS FOR LOCATING CANCEROUS TUMORS PARTICULARLY BREAST TUMORS

Kenneth L. Carr, Harvard, Mass., assignor to Microwave Medical Systems, Inc., Acton, Mass.

Filed Apr. 3, 1996, Ser. No. 627,117
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—653.1 **28 Claims**



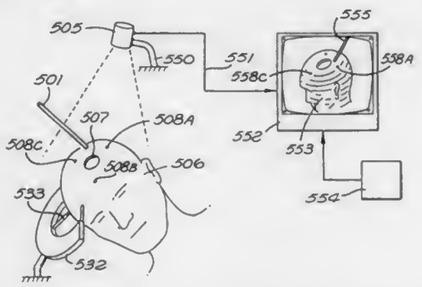
1. Microwave tumor detection apparatus comprising a probe having a working end for contacting tissue, and a plurality of rectangular waveguides positioned in an array of columns and rows within said probe, each waveguide having an aperture at the working end of the probe which is oriented perpendicular to the aperture of the waveguide in any adjacent column and row of the array, each waveguide constituting an antenna tuned to receive thermoradiation emitted from tissue opposite the working end of the probe.

5,662,111

PROCESS OF STEREOTACTIC OPTICAL NAVIGATION

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Continuation of Ser. No. 299,987, Sep. 1, 1994, abandoned, which is a continuation of Ser. No. 47,879, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 941,863, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 647,463, Jan. 28, 1991, abandoned. This application May 16, 1995, Ser. No. 441,788
Int. Cl.[6] A61B *6/03*
U.S. Cl. 128—653.1 **9 Claims**



1. A process for providing in a simultaneous display of representations showing the positional relationship of a surgical instrument in a computer graphics display of a patient's anatomy, comprising the steps of:

scanning the patient's anatomy with an MR or CT scanner to obtain stereotactic image-scanner data representing the patient's anatomy and referenced in scanner-data coordinates, said stereotactic image-scanner data including CT or MR data;

storing said stereotactic image-scanner data in scanner-data coordinates;

optically sensing plural different fields of view with a plurality of cameras, each of said different fields of view containing said patient's anatomy and said surgical instrument, whereby to provide location data on said surgical instrument related to said patient's anatomy and referenced in camera coordinates;

transforming said location data on said surgical instrument referenced in said camera coordinates to transformed surgical-instrument data referenced in said scanner-data coordinates;

combining said transformed surgical-instrument data and said stereotactic image-scanner data to form combined display data referenced in said scanner-data coordinates to provide display signals; and

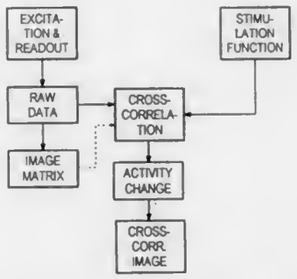
driving a computer graphics display with said combined display data to simultaneously display an image currently representative of said surgical instrument related to said patient's anatomy.

5,662,112

METHOD FOR TIME- AND LOCATION-RESOLVED DISPLAY OF FUNCTIONAL BRAIN ACTIVITIES OF A PATIENT

Oliver Heid, Bern, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 9, 1996, Ser. No. 694,748
Claims priority, application Germany, Aug. 11, 1995, 195 29 639.7
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 **7 Claims**



5. An apparatus for time- and location-resolved representation of functional brain activities of a patient by means of magnetic resonance, comprising:

means for generating a stimulation function f(t) which is non-periodic, and having a minimized number of secondary maxima in its autocorrelation function;

means for stimulating physiological functions in a patient with said stimulation function f(t);

means for emitting a magnetic resonance imaging pulse sequence for the excitation in, and read out of nuclear magnetic resonance signals from, said patient and for obtaining time- and location-resolved nuclear magnetic resonance signals, and for converting said nuclear magnetic signals into image data; and

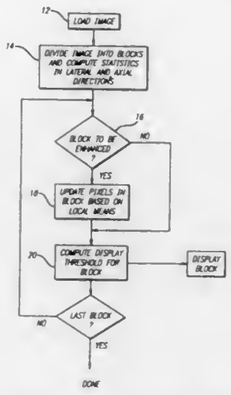
means for detecting location-resolved activity changes in the patient by chronological correlation of said data with the stimulation function f(t).

5,662,113

EDGE ENHANCEMENT SYSTEM FOR ULTRASOUND IMAGES

Dong-Chyuan Liu, Mercer Island, Wash., assignor to Siemens Medical Systems, Inc, Iselin, N.J.

Filed Jun. 30, 1995, Ser. No. 496,992
Int. Cl.[6] A61B *8/00*; **G06K** *9/00*
U.S. Cl. 128—660.07 **9 Claims**



4. A method for enhancing an ultrasound image comprising an ordered array of pixels, each said pixel corresponding to the intensity of the echo generated by a corresponding voxel in an ultrasound energy field, said ordered array having an axial and lateral direction, said axial direction corresponding to voxels on the same radial line from a transducer used to generate said ultrasound energy field, said method comprising the steps of:

dividing the image into a plurality of processing blocks;

selecting a block based on the second order statistics of the pixels in said selected block;

for at least one pixel in said selected block, computing a mean intensity of pixels in the vicinity of said pixel;

increasing the pixel intensity of said pixel if said pixel intensity is greater than said computed mean; and

decreasing said pixel intensity if said pixel intensity is less than said computed mean,

wherein the step of computing the second order statistics includes computing the mean, variance, and correlation in a variable displacement direction using a two-degree-of-freedom co-occurrence matrix for the pixels of the selected block.

5,662,114

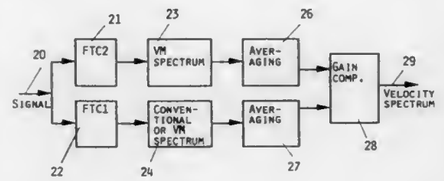
Patent Not Issued For This Number

5,662,115

METHOD FOR DETERMINING THE VELOCITY-TIME SPECTRUM OF BLOOD FLOW

Hans Torp, Trondheim, and Kjell Kristoffersen, Oslo, both of Norway, assignors to Vingmed Sound A/S, Horten, Norway

Filed Jun. 7, 1995, Ser. No. 479,528
Claims priority, application Norway, Jun. 14, 1994, 94.2222
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **7 Claims**



1. Method for determining the velocity-time spectrum of blood flow in a living body by means of an ultrasonic pulsed wave Doppler system, comprising the steps of:

sequentially transmitting pulsed ultrasonic waves at a predetermined pulsed repetition frequency and receiving a corresponding sequence of echo signals,

sampling the received echo signals at one or more predetermined time delays after transmitted ultrasonic pulses, and

processing said sequence of echo signal samples by frequency spectrum analysis to obtain a blood velocity spectrum comprising a number of velocity components within a range of expected blood velocity values, and

repeating said processing a plurality of times to obtain a velocity-time spectrum for substantially real-time display,

wherein said sampling step comprises sampling, for each velocity component in said blood velocity spectrum, the received echo signals with subsequent increase or decrease in said predetermined delay after pulse transmission according to the change in round-trip time of the ultrasonic pulses reflected from blood moving with a velocity corresponding to each said velocity component,

calculating some of said velocity components by conventional frequency spectrum analysis, whereby said signal samples are obtained with a constant delay after pulse transmission, and

processing the resulting sequence of signal samples, to obtain said velocity component.

5,662,116
MULTI-PLANE ELECTRONIC SCAN ULTRASOUND PROBE

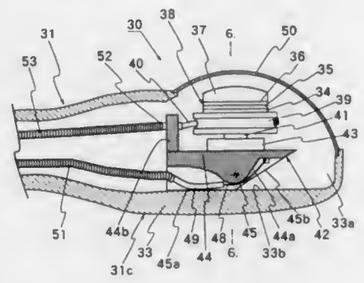
Mituo Kondo; Kenji Abe, both of Omiya; Hisashi Nakamura, and Yasutaka Nagai, both of Otawara, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Sep. 11, 1996, Ser. No. 712,263

Claims priority, application Japan, Sep. 12, 1995, 7-258313; Feb. 28, 1996, 8-065164

Int. Cl.[6] A61B *8/12*

U.S. Cl. 128—662.06 **8 Claims**



1. A multi-plane electronic scan ultrasound probe having a manipulating head, an elongated catheter member extended out from said manipulating head on a front bide thereof, an ultrasound transducer rotatably mounted within a casing on a distal end section of said catheter member and having a row of a large number of ultrasound transducer elements on a rotary body, a rotation control knob provided on said manipulating head to control rotation of said rotary member through rotation transmission wire means extended between said rotation control means and said rotary member through said catheter member via a drive pulley mounted on said manipulation head: said multi-plane electronic ultrasound probe comprising a tilt control mechanism for tilting rotational axis of said rotary member thereby to turn an active face of said ultrasound transducer in a predetermined direction, said tilt control mechanism including a tilt control means provided on said manipulating head, a tiltable support for said rotary member, and a tilt signal transmission means connected between said tilt control means and said tiltable support to transmit a tilt signal to said latter.

5,662,117
BIOFEEDBACK METHODS AND CONTROLS

Barry B. Bittman, Meadville, Pa., assignor to Mindscope Incorporated, Meadville, Pa.

Continuation-in-part of Ser. No. 194,260, Feb. 10, 1994, Pat. No. 5,465,729, which is a division of Ser. No. 850,673, Mar. 13, 1992, Pat. No. 5,343,871. This application Jun. 7, 1995, Ser. No. 482,779

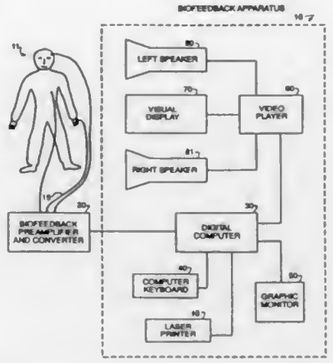
Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—732 **6 Claims**

1. A method of conditioning a desired psychological response in a subject comprising the steps of:

a) monitoring at least one of the subject's electrophysiological parameters indicative of his psychological response; and

b) presenting to the subject a sequence of versions of an audio-visual scene, said versions exhibiting varying speeds of relative motion wherein said speed of relative motion is varied as



said monitored parameters indicate that the subject's psychological response has become more desirable.

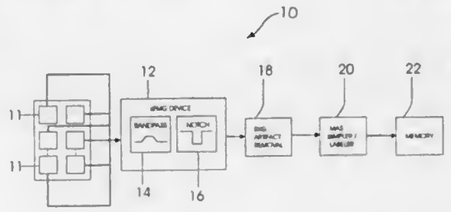
5,662,118
SYSTEM FOR DIAGNOSING MUSCULOSKELETAL DISORDERS

Daniel Lewis Skubick, 1413 Sumneytown Pike, Ambler, Pa. 19002

Filed Jun. 1, 1995, Ser. No. 456,601

Int. Cl.[6] A61B *7/00*

U.S. Cl. 128—733 **22 Claims**



1. A method for identifying muscular abnormalities of a human patient, the method comprising the steps of:

(a) selecting at least one protocol from a series of protocols based on physiological information from the patient;

(b) collecting muscle activity samples from one or more muscles of the patient while the patient performs the selected protocol;

(c) defining at least one index from a selected group of the collected samples by algebraically combining a plurality of specified muscle activity samples or by algebraically combining a plurality of ratios of specified muscle activity samples;

(d) calculating the index from the selected group of collected samples; and

(e) comparing the calculated index to a normative range of values for the index to determine whether the index calculated for the patient is abnormal.

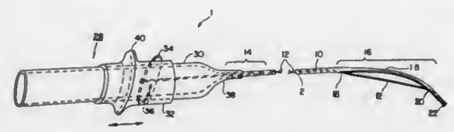
5,662,119
STEERABLE STYLET AND MANIPULATIVE HANDLE ASSEMBLY

Kenneth R. Brennen, Fridley, and Peter J. Pohndorf, Stillwater, both of Minn., assignors to Medtronic Inc., Minneapolis, Minn.

Continuation of Ser. No. 13,126, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 751,278, Aug. 28, 1991, abandoned. This application Apr. 21, 1995, Ser. No. 426,355

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—772 **8 Claims**



5. A stylet and manipulative handle assembly controllable to form selected curvatures in the distal portion of a catheter or lead having a lumen extending therethrough, comprising:

a flexible, elongated tubular member having proximal and distal portions thereof and having an internal axially disposed lumen;

at least one traction element extending through said lumen and attached to said distal portion of said tubular member and having a proximal end projecting from said proximal portion of said tubular member, at least a portion of said traction element outside said tubular member for a distance along said tubular member, and

manipulative handle attached to said proximal portion of said tubular member and to said proximal end of said traction element for exerting tension on said traction element at said proximal end to form the said tubular element to a desired degree of curvature depending upon the amount of tension and whereby said distal portion of said catheter or lead is similarly curved, wherein said manipulative handle comprises:

a longitudinal housing having a distal end thereof attached to said proximal end of said tubular element and receiving said proximal end of said traction element therewithin;

a reciprocating hinge lever coupled for pivotal motion with respect to said longitudinal housing and adapted to be disposed transversely therewithin;

means for attaching said proximal end of said traction element to said lever; and

slide means coupled to said lever and adapted to slide upon said longitudinal housing for advancing and retracting a free end of said lever and thereby releasing and applying traction to said traction element to release or induce curvature in the distal portion of said elongated flexible tubular member.

5,662,120

Patent Not Issued For This Number

5,662,121
MEDICAL DIAGNOSTIC DEVICE FOR APPLYING CONTROLLED STRESS TO JOINTS

Ivan Zucker, 1703 Chippewa Ridge, Ambler, Pa. 19002

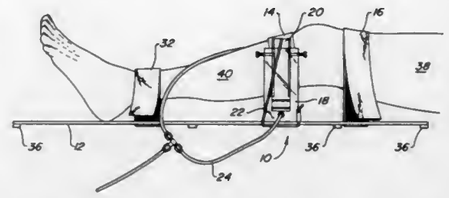
Filed Mar. 14, 1995, Ser. No. 410,023

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—774 **18 Claims**

1. A medical diagnostic device for applying a desired stress to a knee joint of a patient, comprising

a frame,



a restraint at a first end of the frame for immobilizing the patient's thigh,

a cradle at a second end of the frame for receiving and supporting the patient's leg,

a pair of reciprocable pistons between the frame and the cradle for supporting the cradle, the pistons being constrained to move within respective cylinders a distance between a first position in which the cradle is proximal to the frame and a second position in which the cradle is remote from the frame, and

a source of pressurized fluid connected to the cylinders for controllably moving the pistons from the first position to the second position, the second position being a position of equilibrium between the weight of the patient's leg and a force generated by pressure in the cylinders.

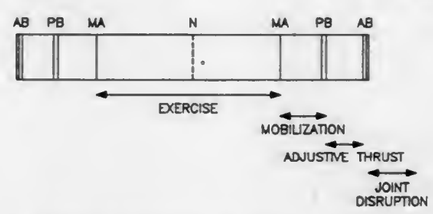
5,662,122
METHOD AND APPARATUS FOR OBJECTIVELY ASSESSING AND CORRECTING THE RELATIVE COMPLIANCE OF VERTEBRAL SEGMENTS

Joseph M. Evans, Box 49, R.D. 3, Export, Pa. 15632

Filed Jan. 19, 1995, Ser. No. 374,982

Int. Cl.[6] A61B *3/16*

U.S. Cl. 128—781 **22 Claims**



1. A method of determining the relative compliance of spinal segments by:

(a) applying an equal energy impulse to at least two spinal segments,

(b) receiving an energy impulse response from each spinal segment,

(c) generating a force waveform in response to the energy impulse response received from each spinal segment, and

(d) determining the peak force and the maximum rate of change of force with time from each force waveform.

5,662,123
CAPACITIVE BIOFEEDBACK SENSOR WITH RESILIENT POLYURETHANE DIELECTRIC FOR REHABILITATION

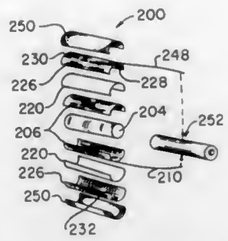
Robert J. Goldman, 3607 Baring St., Philadelphia, Pa. 19104

Division of Ser. No. 908,121, Jul. 1, 1992, Pat. No. 5,449,002. This application Jun. 6, 1995, Ser. No. 467,068

Int. Cl.[6] A61B *5/103*

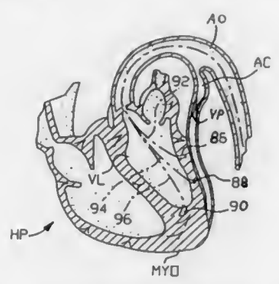
U.S. Cl. 128—782 **2 Claims**

1. A biofeedback sensor responsive to selectively applied loads comprising:



(a) dielectric means having a first and second side;
(b) a first conductor and a second conductor, wherein said first conductor is secured to said first side of said dielectric means and said second conductor is secured to said second side of said dielectric means to establish a predetermined dielectric means contact area responsive to the selectively applied loads;
(c) electronic means connected to said first conductor and said second conductor, wherein upon compression of said dielectric means in response to said selectively applied loads within the predetermined dielectric means contact area, said electronic means detects and measures a linear response in the capacitance through the change in separation within the predetermined dielectric means contact area between said first and second sides of said dielectric means attendant upon dielectric compression through said selectively applied loads and compares said capacitance with a preset value set within said electronic means; and
(d) feedback means for imparting information to a user according to the relation between said capacitance and said preset value,
said dielectric means and said first and second conductors have a cylindrical shape.

5,662,124
CORONARY ARTERY BY-PASS METHOD
Peter J. Wilk, New York, N.Y., assignor to Wilk Patent Development Corp., New York, N.Y.
Filed Jun. 19, 1996, Ser. No. 665,950
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 4 Claims

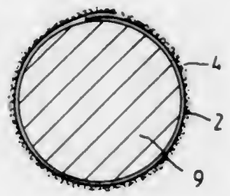


1. A method for supplying blood to the heart, comprising the step of directing blood directly into the myocardium via at least one recess formed surgically in the myocardium and extending only partially through the myocardium and only within the myocardium, said step of directing including the steps of, during diastole, guiding blood into said myocardium through said recess and, during systole, closing said recess.

5,662,125

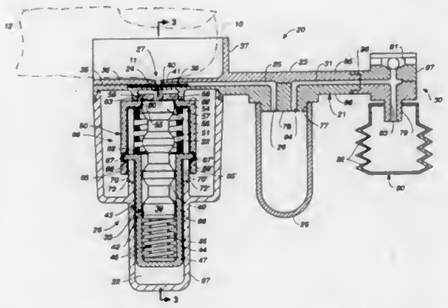
Patent Not Issued For This Number

5,662,126
SMOKE FILTER CONTAINING PARTICULATE SMOKE MODIFYING ADDITIVE
John Charlton, Glebe, and Paul Francis Clarke, South Shields, both of United Kingdom, assignors to Cigarette Components Limited, Slough, United Kingdom
Continuation of Ser. No. 259,121, Jun. 10, 1994, abandoned, which is a continuation of Ser. No. 791,954, Nov. 13, 1991, abandoned. This application Nov. 7, 1996, Ser. No. 739,732
Claims priority, application United Kingdom, Nov. 19, 1990, 9025062; Oct. 14, 1991, 9121787
Int. Cl.[6] A24D *1/02;1/04;3/00*
U.S. Cl. 131—342 3 Claims



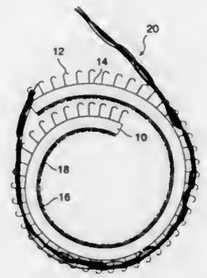
1. A tobacco smoke filter, comprising a tubular element having an inner and outer face and containing, coated on at least one of said faces, a particulate smoke-modifying sorbent additive adhering thereto, wherein said tubular element surrounds a core and comprises a sheet which is adhesively secured at an abutted or slightly lapped longitudinal seam.

5,662,127
SELF-CONTAINED BLOOD WITHDRAWAL APPARATUS AND METHOD
Donald H. De Vaughn, San Francisco, Calif., assignor to Bio-Plas, Inc., San Francisco, Calif.
Filed Jan. 17, 1996, Ser. No. 582,334
Int. Cl.[6] A61B *5/00;17/14*
U.S. Cl. 128—765 22 Claims



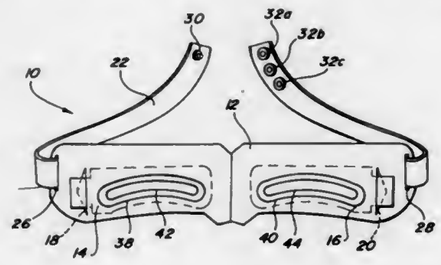
1. A self-contained blood withdrawal apparatus for an appendage comprising:
a base portion defining a cavity and including an upper surface having an opening into said cavity, said base portion being formed with passageway means extending from said opening;
an appendage piercing mechanism formed for drawing blood from the appendage, said piercing mechanism being disposed in said cavity and movable between a retracted position and an extended appendage piercing position;
an operating mechanism positioned relative to said piercing mechanism for moving said piercing mechanism between the retracted and extended positions;
a storage container for storing withdrawn blood coupled to said base portion and communicating with said opening through said passageway means; and
a suction mechanism for facilitating withdrawal of said blood from said appendage, said suction mechanism coupled to said base portion and communicating with said opening through said passageway means.

5,662,128
ADJUSTABLE HAIR CURLER AND METHOD OF USE
Masood Habibi, P.O. Box 71104, Los Angeles, Calif. 90071
Filed Oct. 11, 1995, Ser. No. 540,790
Int. Cl.[6] A45D *7/00*
U.S. Cl. 132—210 9 Claims



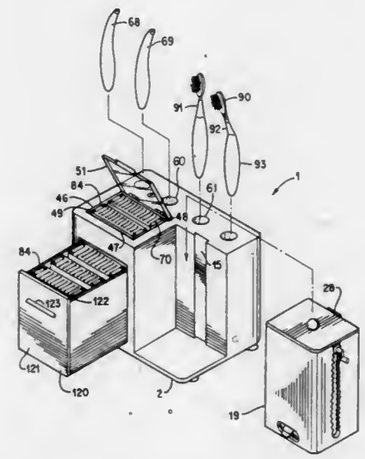
1. An adjustable diameter hair curler comprising:
a thin sheet formed of a flexible material, said sheet having a first planar side and a second planar side;
an array of a plurality of hook-type fasteners disposed on and substantially covering all of said first planar side; and
a material to which said hook-type fasteners will releasably adhere disposed on and substantially covering all of said second planar side.

5,662,129
EYEBROW TEMPLATE
George Grenevitch, 1279 W. Oregon St.; Brenda Lee Sacksteder, 2102 Keeran Dr., both of Lapeer, Mich. 48446, and Charles E. Schiedegger, 2848 Galway Bay Dr., Metamora, Mich. 48455
Filed Apr. 29, 1996, Ser. No. 639,699
Int. Cl.[6] A45D *40/30*
U.S. Cl. 132—319 13 Claims



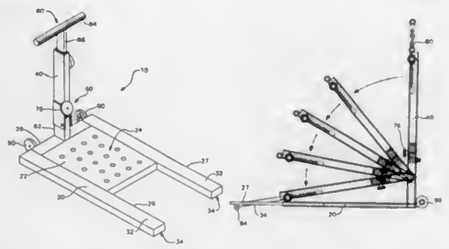
1. An apparatus for applying simulated eyebrows comprising:
a pair of templates having openings in the desired shapes of the simulated eyebrows;
a template holder for receiving each of the pair of templates, the template holder having a pair of slots for receiving the pair of templates, respectively, the template holder also being formed with a pair of apertures generally larger than the openings of the pair of templates to enable a user to paint the simulated eyebrows; and
a fastener for attaching the apparatus for applying simulated eyebrows to the user.

5,662,130
DENTAL HYGIENE STORAGE APPARATUS
Curtis B. Wiltshire, 11 Nomas La., Richmond, Va. 23233
Continuation-in-part of Ser. No. 411,503, Mar. 27, 1995, Pat. No. 5,564,446. This application Aug. 9, 1995, Ser. No. 512,992
Int. Cl.[6] A45D *40/08*
U.S. Cl. 132—323 8 Claims



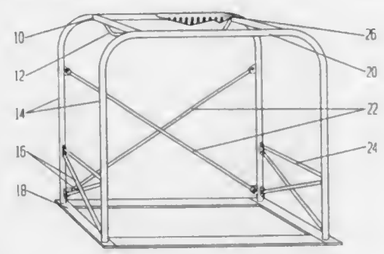
1. A dental hygiene storage apparatus having a dental floss device having first and second dental floss tools, each of said dental floss tools having separate, substantially elongated members with spaced apart top and bottom end portions, a gripping section located between said top and bottom end portions and an attachment means on each of said top end portion for releasably holding a dental floss segment without requiring a user to manipulate with said user's fingers said dental floss segment when attaching said dental floss segment to said attachment means, said members being of sufficient length to allow said user to insert said members into a person's mouth with said dental floss segment attached to said top end portion of said members to clean all surfaces of said person's teeth without requiring said user to insert said user's fingers into said person's mouth, said dental hygiene storage apparatus comprising:
(a) a housing having opposite spaced apart first and second side walls, opposite spaced apart front and rear walls, a top surface and a bottom surface, said opposite spaced apart first and second side walls and said opposite spaced apart front and rear walls each having spaced apart upper and lower ends, said upper ends joined to said top surface, said lower ends joined to said bottom surface;
(b) a storage compartment formed in said top surface and defined by spaced apart third and fourth side walls and spaced apart first and second end walls;
(c) a plurality of tubular cavities formed in said top surface and being spaced from said storage compartment, each of said tubular cavities being defined by tubular cavity walls extending from said top surface to a tubular cavity floor, said first and second dental floss tools removably stored within said tubular cavities; and
(d) a pull out drawer removably inserted in said front wall, said drawer compartment being defined by spaced apart fifth and sixth side walls and spaced apart third and fourth end walls, said drawer having a handle attached to the front side of said pull-out drawer.

5,662,131
PORTABLE FOLDING GRAB BAR
Walter M. Scarborough, 6230 Florida Blvd., Baton Rouge, La. 70806, and Gary P. Allement, Sr., 15776 Russell La., Glynn, La. 70736
Filed Dec. 5, 1996, Ser. No. 760,715
Int. Cl.[6] A45B *1/00*
U.S. Cl. 135—65 15 Claims



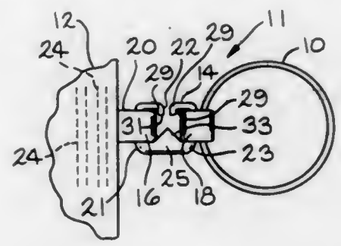
1. A portable folding grab bar device for aiding a person to stand from a seated position comprising:
a base having a platform and a pair of parallel extension members; said platform having a planer standing surface;
a single rigid tubular support column of rectangular cross section;
a pivot means for attaching said support column to said base such that said support column pivots from a first predetermined operational position substantially perpendicular to said base to a second predetermined transport position; and
a handle means attached to said support column opposite said pivot means.

5,662,132
STRUCTURAL PROTECTIVE SHELTER
Herbert A.F. Larsen, 35276 Rockwell Dr., Abbotsford, B.C., Canada, V3G 2C9
Filed Dec. 6, 1996, Ser. No. 761,355
Int. Cl.[6] E04H *15/02*
U.S. Cl. 135—96 10 Claims



1. A structural protective shelter of adequate size to accommodate one or more human occupants, said shelter being of sufficient strength and rigidity to withstand falling debris and/or collapsing building structure with a structural integrity to repel both vertically downward force as well as diagonal and lateral forces, comprising:
(a) a base with adequate dimension to support;
(b) a plurality of vertically upright members, said vertical uprights being divided into pairs with each pair rising vertically upwards and perpendicular to the said base, and becoming continuous with corners and a common horizontal overhead member where said pairs of verticals are located parallel and in mirror to each other at a distance dependent on the dimension of the longitude of the said base;
(c) between and perpendicular to the said two horizontal overhead primary members is attached a plurality of horizontal overhead cross members, said cross members being located parallel to each other at predetermined distance apart;
(d) between one pair of related vertical uprights, said uprights which share a common horizontal overhead primary member, is attached a means of bracing whereby laterally forced, side collapse of the protective shelter is impeded;
(e) between either side of each two pairs of unrelated vertical uprights, said uprights which do not share a common horizontal overhead primary member, is attached a means of bracing whereby laterally forced, longitudinal collapse of the protective shelter is impeded;
(f) between the rectangular shape formed by the outermost horizontal overhead primary members and the two horizontal overhead cross members is attached a means of bracing whereby laterally forced, diagonal collapse of the protective shelter is impeded.

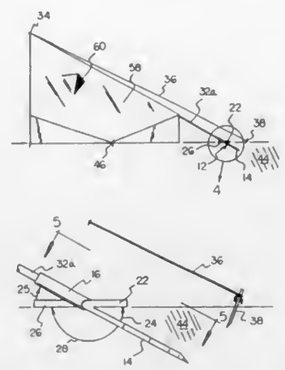
5,662,133
CANVAS HOLD-DOWN SYSTEM AND METHOD
Anthony L. Guido, Jr., 510 N. Davis Rd., Elma, N.Y. 14059
Filed Feb. 5, 1996, Ser. No. 595,399
Int. Cl.[6] E04H *15/64*
U.S. Cl. 135—119 15 Claims



1. In combination with a fabric, means for detachably attaching the fabric to a frame member, said attaching means comprising at least one clip, an elongate strip having an intermediate portion which is attached to the fabric and a pair of end portions, means for attaching said end portions to said clip to thereby define a loop with at least one of said end portions being releasably attachable to said clip, a band composed of elastomeric material and receivable within the loop for engaging a frame member whereby the band is removable for replacement by releasing said at least one end portion from said clip.

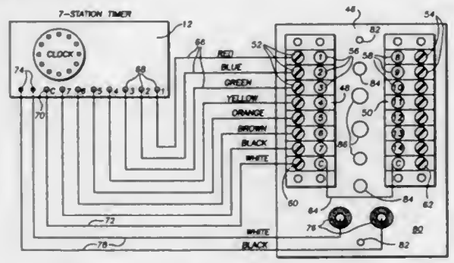
5,662,134
TENT APPARATUS
Martti Z. H. Auer, Mellingebacken, 12.NB., 16364 Spånga, Sweden
Filed Sep. 23, 1996, Ser. No. 717,686
Int. Cl.[6] E04H *15/42*
U.S. Cl. 135—156 8 Claims

1. A tent apparatus, comprising:
a pole-support assembly which includes a ground-penetration member, a pole-receiving member connected to said ground-penetration member, and a ground-stabilizing assembly connected between said ground-penetration member and said pole-receiving member, wherein a first portion of said ground-stabilizing assembly is oriented with respect to said ground-penetration member at an acute first orientation angle and wherein a second portion of said ground-stabilizing assembly is oriented with respect to said ground-penetration member at an obtuse second orientation angle,
a pole assembly which includes a plurality of interfitting pole segments, wherein a proximal pole segment a is received in said pole-receiving member;



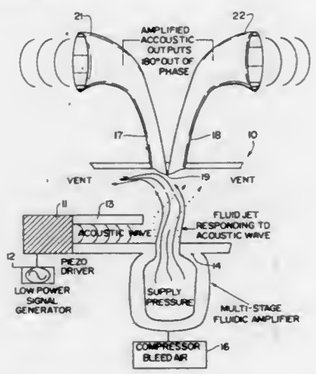
a distal pole portion located at a distal end of said pole assembly,
a plurality of suspension cables connected to said distal pole portion,
a plurality of primary stakes connected to ends of said suspension cables, wherein said primary stakes are driven into a portion of the ground, and
a flexible sheet assembly draped over said suspension cables.

5,662,135
IRRIGATION CONTROL BYPASS APPARATUS AND METHOD
Arthur L. Oppmann, Berlin; John F. Oppmann, Delran, and Charles S. Siedlecki, Berlin, all of N.J., assignors to Arthur's Landscaping & Garden Center Inc., Atco, N.J.
Filed Jul. 16, 1996, Ser. No. 682,082
Int. Cl.[5] F17D *3/00;* G05D *7/06*
U.S. Cl. 137—1 7 Claims



7. A method of bypassing and testing a multiple zoned irrigation field system, the system comprising:
(A) a plurality of water pipe lines connected to a main water source,
(B) a plurality of valve means on each to open and close said pipe lines to supply water to water distribution means connected to said line to irrigate an area of said field, and
(C) a plurality of valve actuation means one each connected to each of said valve means to alternatively open and close said valve means upon receiving electrical current along separate electrical lines from an irrigation timing control means located inside a building with an outside wall, said irrigation timing control means to provide said current at preset time intervals to said separate electrical lines, said irrigation timing control means comprising:
(i) power source connection point means, connection to which provides a source of reduced amperage electrical current, and
(ii) a plurality of electrical zone connection points comprising one for each of said electrical lines capable of conducting electrical currant to the separate electrical lines, the method comprising:
(a) providing an irrigation control bypass apparatus comprising:
(i) a housing,
(ii) at least one terminal strip in the housing comprising a plurality of electrical connector lugs, one lug visually marked identifying each of said electrical lines,
(iii) a plurality of first wires electrically connected to each of the lugs on the terminal strip with free ends extending out of the housing,
(iv) socket means in the housing to provide connection to said reduced amperage current, and
(v) a second wire electrically connected to said socket means with a free end extending out of the housing,
(b) attaching the housing on an outside surface of the outside wall of the building,
(c) electrically connecting each free end of the first wires to each electrical zone connection points in the irrigation timing control means corresponding to a marked lug on the terminal strip,
(d) electrically connecting the free end of the second wire to said power source connection point means in the irrigation timing control means,
(e) providing jumper wire means adapted to alternatively electrically connect the socket means with a chosen lug on a terminal strip, and
(f) connecting said jumper wire means to the socket means and to a chosen lug corresponding to an electrical line to conduct current and actuate the chosen valve actuation means to open the corresponding water line to test the water distribution means supplied by said water line.

5,662,136
ACOUSTO-FLUIDIC DRIVER FOR ACTIVE CONTROL OF TURBOFAN ENGINE NOISE
Tadeusz M. Drzewiecki, Rockville; John B. Niemczuk, Kensington, both of Md.; Christopher R. Fuller, Norfolk, Va.; Russell H. Thomas, Hampton, Va., and Ricardo A. Burdisso, Blacksburg, Va., assignors to Defense Research Technologies, Inc., Rockville, Md., and Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.
Filed Sep. 11, 1995, Ser. No. 498,489
Int. Cl.[6] F15C *1/04;1/12*
U.S. Cl. 137—14 26 Claims



1. The method of reducing noise emanating into an environment, said method comprising the steps of:
(a) sensing acoustic energy in said environment;
(b) providing an acoustic input wave proportional to the sensed acoustic energy;
(c) in response to said acoustic input wave, generating, via fluidic amplification, a fluidically amplified sound signal proportional to the sensed acoustic energy, without using mechanical moving parts and electronic components to effect amplification;

(d) delivering said amplified sound signal to a location in said environment wherein the and amplified sound signal is in phase opposition to said noise to thereby destructively interfere with and cancel said noise.

6. Apparatus for reducing noise emanating from a source into a predetermined environment, said apparatus comprising:

sensing means for sensing acoustic energy in said environment;

input means for providing an acoustic input wave proportional to said sensed acoustic energy;

fluidic amplifier means responsive to said acoustic wave for generating, via fluidic amplification, a fluidically amplified sound signal proportional to the sensed acoustic energy; and

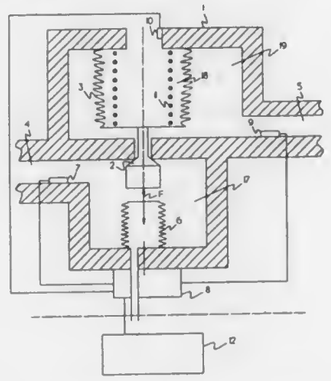
delivery means for delivering said amplified sound signal to a location in said environment where the amplified sound signal is in substantial phase opposition to said noise to thereby destructively interfere with and reduce said noise.

5,662,137

OPTIMAL PNEUMATIC PRESSURE REGULATOR WITH ELECTRONIC COMPENSATION

Robert Schegerin, 4 Chemin Du Vallot, 78350 Jouy En Josas, Paris, France

Filed Apr. 12, 1995, Ser. No. 420,408
Claims priority, application France, Apr. 18, 1994, 94 04591
Int. Cl.[6] G05D *16/20*
U.S. Cl. 137—487.5 **13 Claims**



1. A pneumatic pressure regulator comprising:

an inlet orifice;

an inlet chamber in communication with said inlet orifice;

an outlet orifice which permits exit of fluid under a regulated pressure, PS;

a regulation chamber in communication with said outlet orifice;

a reference chamber defined by an elastic membrane having a sensing area SE which forms a boundary between said regulation chamber and said reference chamber;

an obturator operatively arranged to control flow and regulate pressure of gas flowing from said inlet chamber to said regulation chamber via a passageway therethrough, said obturator actuated by said elastic membrane;

a programmable controller; and,

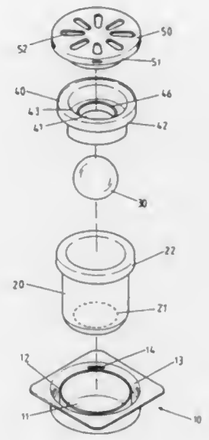
means responsive to said programmable controller for applying a force F to said obturator, said force F being determined as a result of a test of said regulator, said force varying as a function of a parameter P such that said outlet pressure PS=f(P) is exactly equal to a predefined pressure PD=f(P) for each and every value of parameter P.

5,662,138

DROP HEAD STRUCTURE

Wen-Hsing Wang, No. 26, Alley 55, Lane 12, Tzu Chiang 3rd St., Wu Chi Chen, Taichung Hsien, Taiwan

Filed Jun. 12, 1996, Ser. No. 661,914
Int. Cl.[6] F16K *31/22;* **E03F** *7/04*
U.S. Cl. 137—433 **2 Claims**



1. A water drop structure comprising:

a main body having a main through hole in a center, a positioning flange located on an inner edge and a U-shaped flange forming as opening;

a main drum extending through the main hole, the main drum having a lower through hole on a bottom, and a peripheral portion of a top end having an inverted U-shaped flange engaging the U-shaped flange;

a floatable control floating ball located in the main drum having a diameter greater than that of the lower through hole of the main drum;

an upper partition having a spacer with a recess, the spacer having a partition spaced from the recess for engaging said U-shaped flange and a center having an upper through hole; and,

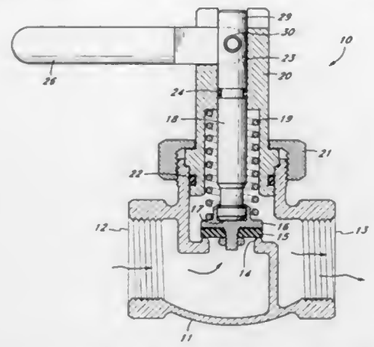
an upper cover having a plurality of drop holes, extending over the upper partition and having a curved extension hood extending from a bottom thereof, the extension hood having a diameter greater than the upper though hole of the upper partition and smaller than an inside diameter of the upper partition so as to form a curved flow passage with the recess of the spacer wherein the control floating ball blocks the lower through hole of the main drum when no water passes through the structure and the floating ball blocks the upper through hole of the upper partition when fluid flows into the main drum through the lower through hole to prevent a fluid flow back-up due to a clogged condition; from passing through the curved flow passage, wherein the peripheral portion of the drum, a peripheral portion of the positioning flange, the inverted U-shaped flange, the U-shaped flange and an outer portion peripheral portion of the cover cooperates with one another to secure these elements to the inner edge of the main body.

5,662,139

PRESSURE RELIEF VALVE WITH LOCKOUT POSITION

Dennis N. Lish, 2501 Greenbier La., La Habra, Calif. 90631

Filed Sep. 8, 1995, Ser. No. 525,125
Int. Cl.[6] F16K *15/18*
U.S. Cl. 137—523 **6 Claims**



1. A lever actuated globe valve having pressure relief capability and a lock out position for use in a conduit containing a fluid under pressure, said valve comprising:

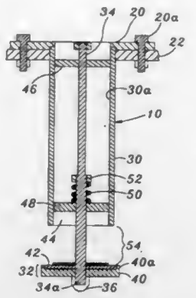
a valve body having an inlet, a valve seat and an outlet;

a valve stem support member affixed to said valve body and said valve stem support member being aligned with said valve seat and said valve stem support member having a valve body end and a remote end and said valve stem support member having a cam surface formed near its remote end, said cam surface having a lowermost portion including a covered recess, said lowermost portion extending radially out from under said covered recess and said cam surface having a lower, generally flat area, a ramped area and an upper, generally flat area;

a valve stem having an inner end and an exterior end, said valve stem being held by said valve stem support member and said valve stem having a valve washer held at the interior end thereof said valve washer being movable into and out of contact with said valve seat, said valve stem and said valve washer being biased toward a closed position and said valve stem extending outwardly from said valve stem support member and said valve stem having a central axis;

an elongated control lever pivotally affixed near the exterior end of said valve stem, said elongated control lever being positionable at about a right angle with respect to said valve stem and said elongated control lever being movable into said covered recess; and

a cam follower pin fixed to said valve stem near the exterior end thereof and extending outwardly from said valve stem to ride along said cam surface whereby said valve washer is securely held against said valve seat when said elongated control lever is under said covered recess, is in a pressure relief mode when said elongated control lever is out from under said covered recess and said cam follower pin is adjacent said lower generally flat area and in an open mode when said cam follower pin is on said upper, generally flat area.



a cylindrically shaped housing mounted substantially within said interior of said water receiving tank, said housing defining a pair of first and second oppositely disposed openings, said second opening disposed within said water receiving tank and said first opening disposed adjacent said interior surface of said water receiving tank adapted to communicate with an external fluid source to facilitate filling said tank with a fluid;

a rod slidably mounted at least partially within said housing to allow said rod to longitudinally translate therein;

a valve cap secured to an end of said rod and adapted to engage said second opening of said housing to provide a seal therebetween, said valve cap comprising;

an end plate having a circumferentially disposed lip portion defining a recess and a centrally located bore through which said rod is disposed;

a retainer plate mounted to said rod;

an annular gasket having a center bore through which said rod is disposed, said annular gasket fitted in said recess of said end plate sandwiched between said end plate and said retainer plate;

a cap nut threadingly engaging a threaded end portion of said rod to urge said end plate towards said retainer plate to retain said annular gasket therebetween;

and a biasing means to urge said rod and valve cap such that said valve cap engages said second opening thereby providing said seal and preventing said fluid from passing through said valve; wherein,

a pressure of said external fluid source above a predetermined level will overcome said biasing means to disengage said valve cap from said second opening to allow said fluid to enter said water receiving tank; said biasing means comprising;

a guide mounted to said internal surface of said cylindrically shaped housing, said guide including a bore through which said rod is slidingly disposed;

a stop nut mounted to said rod; wherein

said stop nut is threadably adjustably secured to said rod to adjust the amount of pressure required to overcome said biasing means;

and a helical spring disposed about said rod and between said guide and said stop nut; wherein

said helical spring urges said rod inward with respect to said cylindrically shaped housing such that said annular gasket engages said second opening thereby providing said seal.

5,662,140

INTERNALLY MOUNTED HIGH PRESSURE HYDRAULIC VALVE FOR VEHICULARLY MOUNTED WATER RECEIVING TANKS

William E. Rucker, Barboursville, W. Va., assignor to Fireman's Friend Engineering, Inc., Silver Point, Tenn.

Filed Oct. 16, 1995, Ser. No. 543,451
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—541 **3 Claims**

1. A hydraulic pressure fill valve in combination with a water receiving tank in a fire truck, said water receiving tank having an interior and an internal surface, said hydraulic valve comprising:

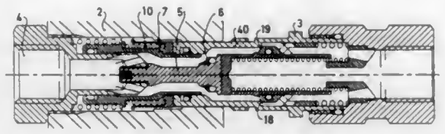
5,662,141

LEAK-RESISTANT FLUID COUPLING ARRANGEMENT

Massimo Arosio, Rivolta D'Adda, Italy, assignor to Faster S.r.l., Milan, Italy

Continuation of Ser. No. 463,313, Jun. 2, 1995, abandoned. This application Aug. 5, 1996, Ser. No. 692,315
Claims priority, application Italy, Jun. 10, 1994, MI94A1218
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.05 **4 Claims**

1. A leak-resistant fluid coupling arrangement, comprising:



a) a first coupling assembly mounted in a passage extending along a longitudinal direction, and a second coupling assembly longitudinally insertable from a disconnected state into the passage to a connected state in which the assemblies are interconnected,

b) said first coupling assembly including

I) a first coupling member having a first fluid port,

ii) a first movable, longitudinally-extending tubular body having an external stop,

iii) a first valve member mounted within the first body and having a first seal for sealingly engaging the first body in the disconnected state, and also having a first end wall,

iv) a first movable, longitudinally-extending sleeve mounted exteriorly of the first body and having a first front surface,

v) means bearing against the sleeve and the stop for resiliently positioning the first front surface adjacent said first end wall in the disconnected state,

c) said second coupling assembly including

I) a second coupling member having a second fluid port,

ii) a second longitudinally-extending tubular body having an internal shoulder and a leading front region,

iii) a second movable, longitudinally-extending tubular part mounted within the second body and having a second end wall and an external collar,

iv) means bearing against the second coupling member for resiliently positioning the second end wall adjacent the leading front region of the second body,

v) a second valve member bearing against the second coupling member and situated radially intermediate the second tubular part and the second tubular body, said second valve member having a second seal for sealingly engaging the internal shoulder in the disconnected state, and also having apertures extending generally radially through the second valve member,

d) said leading front region of the second body engaging the first front surface of the first sleeve to push the first sleeve and the first body relative to the first valve member, thereby moving the first seal out of engagement with the first body in the connected state, and

e) said first end wall of the first valve member engaging the second end wall of the second part to cause the external collar to push the second seal out of engagement with the internal shoulder in the connected state, thereby enabling fluid flow between the ports and through the apertures in the connected state.

5,662,142

VALVE FLAPPER WITH BANDS OF DIFFERENT DEFLECTIBILITY

William K. Ansite, Glendale, Calif., assignor to Gentex Corporation, Rancho Cucamonga, Calif.

Filed Sep. 11, 1995, Ser. No. 526,801

Int. Cl.[6] F16K *15/14*

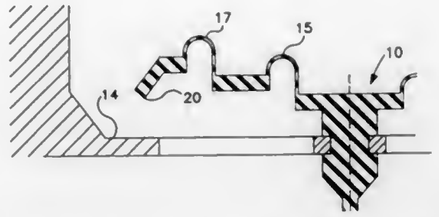
U.S. Cl. 137—854 **5 Claims**

1. A valve flapper for a valve comprising a unitary body of elastomeric material, said body being circular in plan view and having a central axis,

a central stem for mounting the valve flapper,

a first, second, third and fourth band in that order from said stem, said first band interconnecting said stem and second band, said second band interconnecting said first and third bands, and said third band interconnecting said second and fourth bands;

a lip on said fourth band;



an edge seal on said lip lying in a plane normal to said axis;

said first and third bands being inherently more deflectable and than either of said second and fourth bands, said second band and fourth bands being inherently stiffer than said first band and third band;

whereby upon exertion of sufficient gas pressure on the downstream facing face of said flapper, one of said first and third bands first deflects to provide a gap between said edge seal and a seat, without substantial deflection of said other bands, and upon the occurrence of a higher rate of gas flow, the other of said first and third bands deflects to increase said gap.

5,662,143

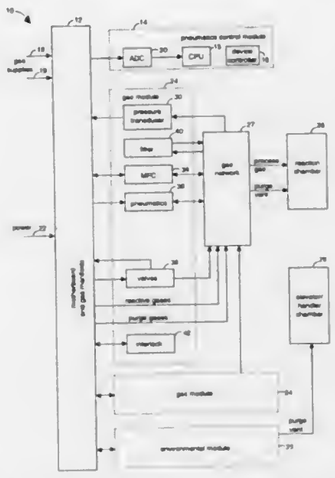
MODULAR GAS BOX SYSTEM

James W. Caughran, Lodi, Calif., assignor to Gasonics International, San Jose, Calif., and MKS Instruments, Inc., Andover, Mass.

Filed May 16, 1996, Ser. No. 648,771

Int. Cl.[6] F16K *11/00*

U.S. Cl. 137—884 **9 Claims**



1. A modular gas box system for the control of process and purge gases to a semiconductor process reaction chamber, comprising:

a rack with an electrical motherboard and a reactive and purge gas manifold having a plurality of addressable docking stations;

a plurality of gas modules each configured to be interchangeable with any of said addressable docking stations and each having a gas input fitting and a gas output fitting at standardized locations at the bottom and top of the gas module near a front end; and

a gas network providing for the connection to each of said gas output fittings and having a plurality of valves to direct a combination of process and purge gases to a semiconductor process reaction chamber.

5,662,144

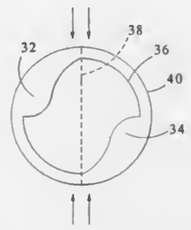
EASY CLAMP TUBING AND A METHOD FOR CLAMPING THE TUBING

Ying-Cheng Lo, Green Oaks; Sanjay V. Odak, Grayslake, and Rafael A. Castellanos, Roselle, all of Ill., assignors to Baxter Healthcare Corporation, Deerfield, Ill.

Continuation of Ser. No. 320,359, Oct. 11, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,216

Int. Cl.[6] F16L *11/04*

U.S. Cl. 138—119 **13 Claims**



1. A conduit for allowing the flow of a fluid therein, the conduit comprising:

a flexible tubing having a length defined by an interior that is defined by interior walls;

means located on the interior wall of the tubing for occluding the flow of fluid through at least portions of the interior during compression of at least a portion of the tubing wherein the means for occluding includes a first member and a second member wherein the first member and the second member are integrally formed with the interior wall at points symmetrically diagonal and entirely between a quadrant defined by a vertical axis perpendicular to the length of the tubing and a horizontal axis perpendicular to the length of the tubing and perpendicularly displaced from the vertical axis and further wherein each of the first member and the second member form only a single S-curve across an entire length of the interior wall within their respective quadrants.

5,662,145

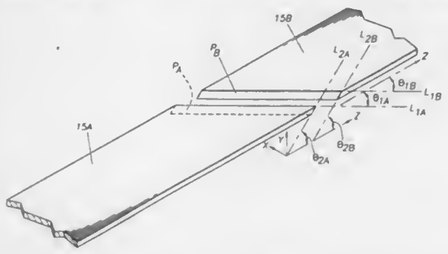
DUAL BIAS WELD FOR CONTINUOUS COILED TUBING

Robert E. Stagg, Kingwood, Tex., assignor to Quality Tubing, Inc., Houston, Tex.

Division of Ser. No. 162,456, Dec. 3, 1993, Pat. No. 5,456,405. This application Jun. 7, 1995, Ser. No. 477,542

Int. Cl.[6] F16L *9/16*

U.S. Cl. 138—171 **20 Claims**



1. A coiled tubing product, comprising:

a first strip having a planar end surface and a first and a second edge surface, the plane of said planar end surface being defined by a line lying along a top surface of said first strip at an acute angle with respect to the longitudinal direction of said first strip and a line lying along the first edge surface of said first strip at an acute angle with respect to the longitudinal direction of said first strip;

a second strip having a planar end surface and a first and a second edge surface, the plane of said planar end surface being defined by a line lying along a top surface of said second strip at an acute angle with respect to the longitudinal direction of said second strip and a line lying along the first edge surface of said second strip at an acute angle with respect to the longitudinal direction of said second strip;

a dual bias weld coupling the planar end surface of said first strip and the planar end surface of said second strip to form a composite strip; and

longitudinal seam coupling the first and second edge surfaces of said first strip and of said second strip to form the coiled tubing product from the composite strip.

5,662,146

WARP FEEDING APPARATUS AND METHOD FOR MULTIFIBER FLAT CARBON YARNS

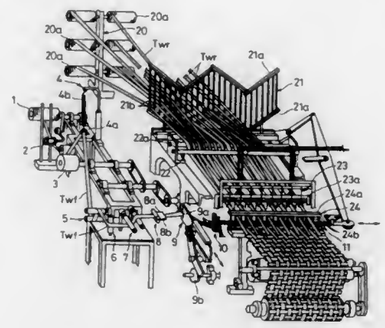
Kiyoshi Homma, Oumihachiman; Akira Nishimura, and Ikuo Horibe, both of Iyo-gun, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 373,642, Jan. 17, 1995, Pat. No. 5,538,049, which is a division of Ser. No. 123,156, Sep. 7, 1993, Pat. No. 5,396,932. This application Mar. 22, 1996, Ser. No. 620,313

Claims priority, application Japan, Sep. 8, 1992, 4-239224; Apr. 5, 1993, 5-077967

Int. Cl.[6] D03D *49/04*

U.S. Cl. 139—97 **5 Claims**



1. A weaving method including a warp supply process for supplying twist-free flat warp having opposed flat surfaces and containing carbon fiber to a weaving loom, said warp supply process including the steps of:

transversely removing a plurality of said flat warps from a plurality of bobbins;

twisting the plurality of flat warps along a longitudinal travelling direction of said flat warps so that the flat surfaces of individual flat warps are oriented at a right angle to an arranged direction;

reeding the plurality of flat warps to a desired density in relation to the arranged direction;

again twisting the plurality of flat warps along said longitudinal travelling direction after reeding the plurality of flat warps so that the flat surfaces of the individual flat warps are oriented to said arranged direction; and

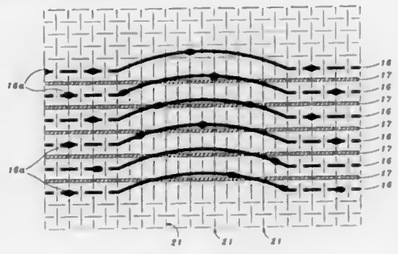
supplying the plurality of flat warps to said weaving loom.

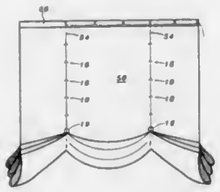
5,662,147

FABRIC PANEL WITH INTER-WOVEN LOOPS

Gerd Haiber, Johanniterstr. 10, 72393, Burladingen, Germany

Continuation of Ser. No. 73,110, Jun. 7, 1993, abandoned.
This application Oct. 10, 1995, Ser. No. 541,761
Int. Cl.[6] D03D *3/00*; A47H *5/032*
U.S. Cl. 139—384 R 20 Claims





1. A fabric panel for use as a window decoration, said fabric panel defining a first side and a second side opposite to said first side and formed by a plurality of warp threads running in a first direction and a plurality of weft threads running in a second direction transverse to said first direction; said panel comprising:

a plurality of loops projecting from said first side, said plurality of loops being formed in the weaving process by a raised portion of a number of float threads intermittently projecting from said first side, each said floats threads having a predetermined diameter, a width of each of said loops being defined by a length of said raised portion of said number of float threads projecting from said first side,

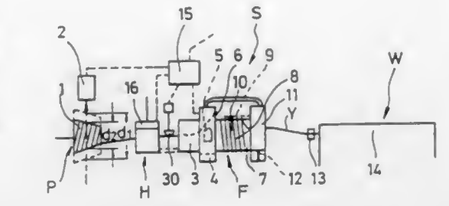
wherein said float threads forming said plurality of loops are formed prior to the weaving process with a plurality of discrete thickened portions disposed along an axial length of said float threads, said thickened portions having an enlarged diameter with respect to said first diameter for locking said float threads relative to adjacent warp and weft threads.

5,662,148

THREAD FEED SYSTEM HAVING AN AUXILLIARY CONVEYOR DEVICE

Kurt Arne Gunnar Jacobsson; Lars Tholander, both of Ulricehamn, and Paer Josefsson, Borås, all of Sweden, assignors to IRO AB, Ulricehamn, Sweden

PCT No. PCT/EP93/03373, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO94/12709, PCT Pub. Date Jun. 9, 1994
PCT Filed Dec. 1, 1993, Ser. No. 454,260
Claims priority, application Germany, Dec. 3, 1992, 42 40 710.9; Feb. 15, 1993, 43 04 496.4
Int. Cl.[6] D03D *47/34*
U.S. Cl. 139—450 18 Claims



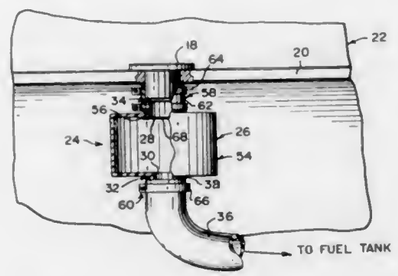
1. A method for controlling a thread feed system comprising at least one measuring feeder which includes a storage drum for storing turns of thread thereon, a supply bobbin associated therewith for supplying said thread to said storage drum, a winding element for winding said thread in said turns on said storage drum and a textile machine which withdraws said thread from said measuring feeder for introduction into a weaving compartment of said textile machine, said thread being withdrawn from said measuring feeder in thread sections of a thread length which is set on said measuring feeder, said method comprising the steps of supplying thread along a thread path from said supply bobbin to said storage drum, winding said thread on said storage drum, and withdrawing said thread from said storage drum to said textile machine, the method being adapted to be performed at least temporarily under operating conditions in which a thread tension in said turns of thread on said storage drum increases with an increasing winding speed and/or an increasing resistance to withdrawal from said supply bobbin, the improvement comprising counteracting an increase in the thread tension in said thread turns on said storage drum in response to said operating conditions by applying an additional frictional conveying action on said thread in said thread path between said supply bobbin and said storage drum so as to convey said thread at an increased delivery rate, and sensing said operating conditions which increase said thread tension, said additional frictional action being applied to said thread in response to said sensing of said operating conditions.

5,662,149

FUEL SPILL COLLECTOR DEVICE

Gary Armellino, 12330 Houston Ave., Talbot Island, Fla. 32226

Filed Apr. 10, 1995, Ser. No. 419,047
Int. Cl.[6] B65B *3/00*
U.S. Cl. 141—86 1 Claim



1. A fuel spill collector device comprising

a) a hollow body being a drum-shaped housing having an opening in the top end and an opening in the bottom end of equal diameters in said housing, said housing located below and spaced from a fuel fill fitting;

b) an exit flow guide member comprising a lower cylindrical collar integral with said housing, surrounding and extending down from said bottom opening;

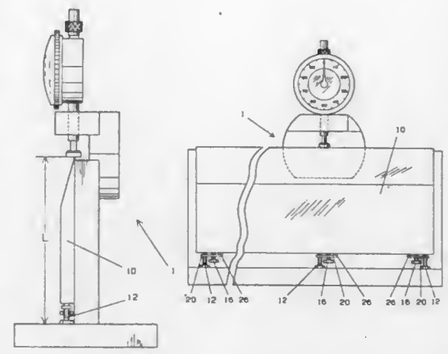
c) an entrance flow guide member comprising an upper cylinder collar integral with said housing, surrounding extending up said top opening;

d) means for connecting said upper cylindrical collar to the bottom end of said fuel fill fitting comprising flexible tube extending between the bottom end of said fuel fill fitting and the top of said upper cylindrical collar and a pair of hose clamps sealing the flexible tube between the bottom end of the fuel fill fitting and the upper cylindrical collar;

e) means for connecting said lower cylindrical collar to fuel filler line comprising a hose clamp to seal said lower cylindrical collar to the top end of said fuel filler line;

f) said drum-shaped housing having a diameter larger than the diameters of said upper and lower cylindrical collars; and

g) a deflector plate mounted in said housing below the top opening to help divert fuel entering therein and prevent a fuel pill, catch a fuel back plash, and suppress fumes when a fuel pump nozzle is inserted into aid fuel fill fitting.

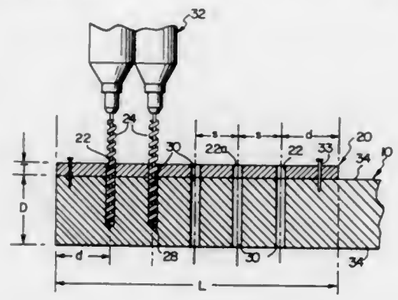


5,662,150

METHOD OF DRILLING TRUE ELONGATED HOLES IN WOOD MEMBERS

Gerald R. McCray, Orange, Calif., assignor to Phyllis J. McCray, Orange, Calif.

Filed Jan. 22, 1996, Ser. No. 589,856
Int. Cl.[6] B27C *1/00*; *3/00*
U.S. Cl. 144—365 8 Claims



1. A method of drilling a plurality of elongated bores in a wood beam for mounting at least one hold down member having holes selectively arranged therein, comprising the steps of:

positioning a wood beam along one longitudinal edge thereof on a flat plane, whereby the opposite free edge thereof is position upwardly therefrom to receive one or more drill bits;

mounting a template along the free edge of said wood beam at the location where the hold down member is to be fixedly secured, and wherein said template has drill bit guide means formed therein;

positioning said template on said free edge, whereby said drill bit guide means are located in a corresponding position to match the holes formed in said hold down member;

providing a drilling means having at least one auger style drill bit the drill bit having a smooth conical pin at the leading end thereof;

aligning said drill bit so as to be received in said guide means of said template; and

drilling a plurality of bores through said drill bit guide template wherein each of said bores is drilled the full depth of said wood beam.

5,662,151

VENEER PEELING KNIFE AND A METHOD OF FIXING A KNIFE ADJUSTING BOLT OF SAID VENEER PEELING KNIFE

Masaru Koike, Obu, Japan, assignor to Meinan Machinery Works, Inc., Obu, Japan

Filed Mar. 8, 1996, Ser. No. 613,129
Int. Cl.[6] B27L *5/00*; B27M *1/00*
U.S. Cl. 144—365 20 Claims

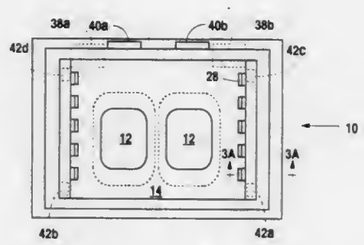
1. A method of fixing an adjusting bolt of a veneer peeling knife for a veneer lathe after an adjustment by said adjusting bolt to position the top cutting edge of said knife at a desired height is over, said knife having formed in the bottom thereof a threaded hole for receiving therein said adjusting bolt by thread engagement, said adjusting bolt being rotatable for adjustably moving said knife relatively to said adjusting bolt and being formed with an external thread having a first flank on the advancing side and a second flank on the retracting side as seen in the direction of forward movement of said adjusting bolt effected when said adjusting said bolt is screwed into said threaded hole in the the bottom, said adjusting bolt receiving threaded hole being formed with an internal thread having a first flank on the upper side thereof and a second flank on the lower side thereof, wherein said knife includes fixing means, and the fixing of said adjusting bolt is accomplished by forcing the adjusting bolt by said fixing means in such a direction that said advancing side flank of the external thread of the adjusting bolt is kept in a pressed contact with said lower side flank of the internal thread of said adjusting bolt receiving threaded hole.

5,662,152

MODULAR AIRCRAFT WINDOW UNIT

Eduardo Sanz; Don M. Ellis, and Donald J. Martin, all of San Antonio, Tex., assignors to MSA Aircraft Interior Products, Inc., San Antonio, Tex.

Filed Sep. 25, 1995, Ser. No. 533,168
Int. Cl.[6] E06B *9/06*
U.S. Cl. 160—84.02 12 Claims



1. A modular window unit, the modular window unit comprising:

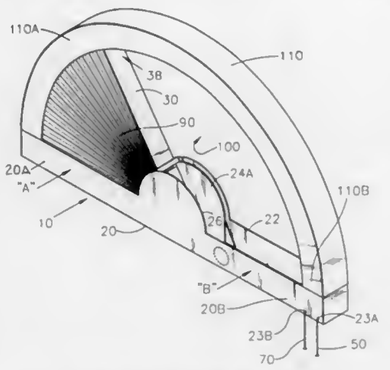
a nonopaque lens;

a reveal, the reveal joining said lens;

a shade, said shade comprising a multiplicity of discrete, elongated panels, at least some of said panels cooperating one with another and movable between a closed position, wherein the panels lay one next to the other so as to substantially cover said lens and an open position where the panels are layered, substantially one atop the other, to substantially uncover the lens, said shade engaging said reveal; and

means for moving the movable panels of said shade between the open position and the closed position.

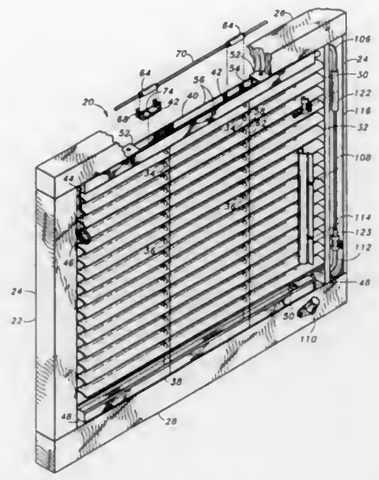
5,662,153
SEMI-CIRCULAR WINDOW SHADE
Milton L. Rosenblatt, 636 Torrey Pines Rd., Banning, Calif. 92220
Filed Jul. 29, 1996, Ser. No. 681,846
Int. Cl.[6] E06B 9/06
U.S. Cl. 160—84.07 5 Claims



1. A window shading device comprising:
a frame having a horizontal member with a downfacing surface for resting the device on a window sill;
a rigid operating slat engaged at a proximal end thereof, by a pivot pin supported in the horizontal member for holding the rigid operating slat for rotation in the horizontal member so that the rigid operating slat is free to swing through a vertical arc, about the pivot pin;
a first cord having one end thereof fixed to the rigid operating slat, the cord extending from the rigid operating slat around a first fixed surface, the first surface providing a first contour so that a tension in the first cord provides a force, away from, and approximately normal to one side of the rigid operating slat throughout said swing when the first cord is pulled;
a second cord having one end thereof fixed to the rigid operating slat, the second cord extending from the rigid operating slat around a second fixed arced surface, the second surface providing a second contour so that a tension in the second cord provides a force, away from, and approximately normal to the other side of the rigid operating slat throughout said swing when the second cord is pulled;
a foldable means for shading having one edge thereof fixed to the horizontal member on the one side of the pivot pin, and an opposing edge thereof fixed to the rigid operating slat, the means for shading resting in a closed and folded state when the rigid operating slat is positioned on one side of the pivot pin, and extending into an open state to cover a semicircular area above the horizontal member when the rigid operating slat is positioned on the other side of the pivot pin.

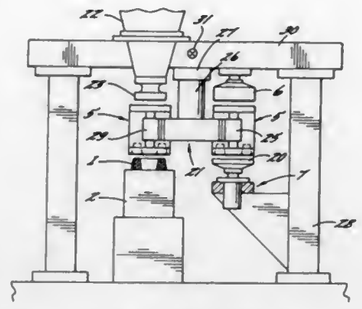
5,662,154
BLIND TILT ACTUATOR AND LADDER SUPPORT THEREFOR
Frank J. Drake, III, Wausau, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.
Division of Ser. No. 227,072, Apr. 13, 1994, Pat. No. 5,497,820.
This application Dec. 21, 1995, Ser. No. 576,002
Int. Cl.[6] E06B 9/30
U.S. Cl. 160—176.1 3 Claims

1. A tilt assembly and venetian blind connected thereto for the tilt adjustment of the venetian blind within a window frame comprising:
a) a ladder support which mounts within a headrail above the venetian blind, the ladder support having two upwardly extending roll mounts, and a floor which extends between the roll mounts, wherein the floor has a front and a rear and opposing sides, each roll mount being located adjacent a respective side, and wherein the ladder support floor has portions defining a ladder string slot, the slot comprising a first elongate segment which extends frontwardly) from a position proximate the rear, and a second elongate segment which extends rearwardly from a position proximate the front, wherein the first segment is spaced sidewardly from the second segment and is generally parallel to the second segment; and
b) a ladder roll rotatably mounted to the roll mounts and extending sidewardly therebetween, the ladder roll extending substantially perpendicular to the first segment and the second segment of the ladder string slot, wherein the ladder roll supports the joined strings of a venetian blind ladder thereon such that a first string extends downwardly from the roll through the slot first segment, and a second string extends downwardly from the roll through the slot second segment, wherein the strings are retained in their respective first and second segments of the slot to prevent the first string from overlying the second string on the ladder roll and thereby disturbing the sideward levelness of the blinds supported by the ladder.



5,662,155
DEVICE AND METHOD FOR PLACING A POURING BASIN ON A SAND MOLD
Werner Landua, Mannheim, Germany, assignor to Adolf Hottinger Maschinenbau GmbH, Mannheim, Germany
Continuation of Ser. No. 379,560, Feb. 3, 1995, abandoned.
This application May 21, 1996, Ser. No. 651,003
Claims priority, application Germany, Aug. 3, 1992, 42 25 577.5
Int. Cl.[6] B22C 9/02;9/08;15/28
U.S. Cl. 164—27 20 Claims

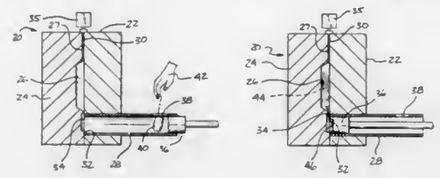
1. An apparatus for molding a pouring basin (1) and placing the same directly upon a casting mold (2), said apparatus comprising
a shooting vessel (5) including a peripheral wall (35) which defines an upper end and a lower end, and an upper chamber (36) defined within the peripheral wall and communicating with the upper end of the vessel, said shooting vessel further including a working frame (8) mounted for limited upward and downward movement in the lower portion of said chamber, at least one nozzle (3) formed in said working frame, means (10,13) for selectively displacing the working frame in the upward and downward directions, and a shooting mold (4) positioned below said working frame and communicating with the lower end of said vessel,



a shooting and clamping head (6) and a counterholding plate (20) disposed in a vertically spaced apart arrangement so as to define a shooting and pressing position therebetween,
means mounting said shooting vessel to a support means for alternate movement between said shooting and pressing position and an ejecting position spaced therefrom and overlying a casting mold (2),
whereby the shooting vessel is moved to said shooting and pressing position where a pouring basin (1) is molded in said shooting mold (4) and then consolidated by displacing the working frame downwardly so as to press the basin against the counterholding plate (20), and then the vessel and the molded and consolidated basin are moved to the ejecting position where the basin is ejected onto the casting mold (2) by downward movement of said working frame.

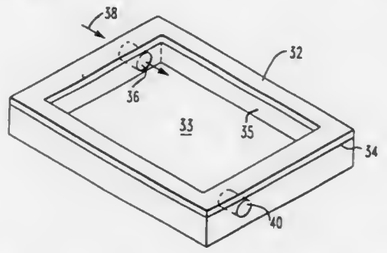
17. A method of molding a pouring basin (1) and placing the same directly upon a casting mold (2) and comprising the steps of providing an apparatus which comprises
(a) a shooting vessel (5) including a peripheral wall (35) which defines an upper end and a lower end, and an upper chamber (36) defined within the peripheral wall and communicating with the upper end of the vessel, said shooting vessel further including a working frame (8) mounted for limited upward and downward movement in the lower portion of said chamber, at least one nozzle (3) formed in said working frame, means (10,13) for selectively displacing the working frame in the upward and downward directions, and a shooting mold (4) positioned below said working frame and communicating with the lower end of said vessel,
(b) a shooting and clamping head (6) and a counterholding plate (20) disposed in a vertically spaced apart arrangement so as to define a shooting and pressing position therebetween, and
(c) means mounting said shooting vessel to a support means for alternate movement between said shooting and pressing position and an ejecting position spaced therefrom and overlying a casting mold (2),
delivering a molding material into said upper chamber of said vessel, then
moving the shooting vessel to said shooting and pressing position, then delivering the molding material from said upper chamber through said at least one nozzle and into said shooting mold so as to mold a pouring basin (1) therein, and then consolidating the molded pouring basin by displacing the working frame downwardly so as to press the basin against the counterholding plate (20), and then
moving the vessel and the molded and consolidated basin to the ejecting position and then ejecting the basin onto the casting mold (2) by downward movement of said working frame.

5,662,156
METHOD OF DIE CASTING MACHINE LUBRICATION WITH UNITIZED LUBRICANT
Lewis Gene Freeman, 1509 Pontiac Dr., Kokomo, Ind. 46902
Filed Dec. 5, 1995, Ser. No. 567,421
Int. Cl.[6] B22D 27/15; B22C 3/00
U.S. Cl. 164—61 20 Claims



1. A method of lubricating a die cavity of a die casting machine, said die cavity formed in and separable at a parting line between a pair of die casting dies movable between closed and open positions, said machine associated with unitized lubricant delivery means including a delivery cylinder and a restricted passage connecting a partially closed end of the cylinder with said die cavity, and a ram in the cylinder and reciprocable between a first position near said end and a second position spaced from the end, said method characterized by:
inserting a unitized lubricant element including flowable lubricant into said cylinder when the ram is retracted;
drawing a vacuum in said die cavity; and
advancing the ram to the first position and against the lubricant element to squeeze the element against the end of the cylinder and force the lubricant to flow through the restricted passage to said die cavity.

5,662,157
PACKAGE AND A METHOD OF FORMING A METAL MATRIX COMPONENT WITH INTERNAL AND EXTERNAL STRUCTURES
Arnold J. Cook, Mt. Pleasant, Pa., assignor to PCC Composites, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 242,278, May 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 27,932, Mar. 8, 1993, Pat. No. 5,311,920, which is a continuation of Ser. No. 737,493, Jul. 29, 1991, abandoned. This application Mar. 20, 1995, Ser. No. 406,632
Int. Cl.[6] B22D 19/14
U.S. Cl. 164—97 7 Claims



1. A method of forming an electronic package comprising the steps of:
disposing at least one insulating material with reinforcement material within a mold chamber of a closed mold;
pressure casting liquid metal into the mold chamber such that the reinforcement material is infiltrated and the insulating material is supported by the metal; and
forming an electrical feedthrough from the insulating material extending through at least one wall of the electronic package.

4. A method of forming an electronic package comprising the steps of:

disposing at least one weld ring with reinforcement material within a mold chamber of a closed mold, the reinforcement material defining a first wall and a second wall and the weld ring being disposed adjacent the second wall; and

filling the mold chamber with the liquid metal such that the reinforcement material is infiltrated and the weld ring is supported adjacent the second wall by the metal to thereby form an electronic package having a weld ring for sealing the electronic package.

5,662,158

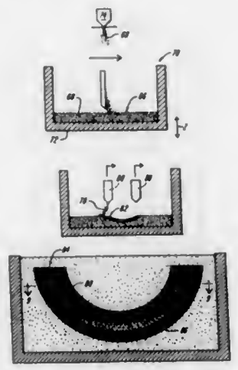
SELF-LUBRICATING IMPLANTABLE ARTICULATION MEMBER

Salvatore Caldarise, Hanson, Mass., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

Division of Ser. No. 198,996, Feb. 18, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,709

Int. Cl.[6] B22C *19/04*

U.S. Cl. 164—456 **5 Claims**



1. A method of making an implantable, self-lubricating articulation member for an artificial joint, comprising the steps of:

a) depositing a layer of a powder material in a confined region;

b) applying a binder material to the powder material in selected regions of the layer to solidify the powder material in selected regions;

c) repeating steps (a) and (b) a predetermined number of times to deposit successive layers of powder, with variations in regions to which binder material is applied such that a solidified portion of each layer is bonded to a preceding layer to form a casting mold that defines a negative of the implantable article, the casting mold including solid, cylindrical regions that correspond to internal, fluid conveying passageways to be formed in the articulation member;

d) removing loose, non-bonded powder material from within the casting mold;

e) casting a metal within the casting mold and hardening the metal to form the articulation member; and

f) removing the articulation member from the casting mold, the articulation member having internal, fluid conveying passageways that are effective to convey synovial fluid from a joint space to the articulation surface of the articulation member.

5,662,159

METHOD AND APPARATUS OF CONTROLLING INJECTION OF DIE CASTING MACHINE

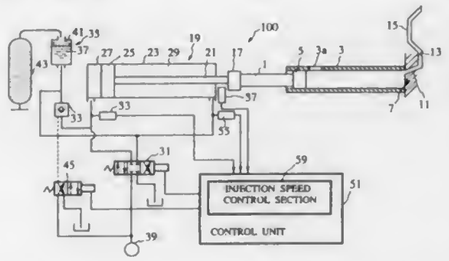
Norihiro Iwamoto, Sagamihara, and Masayuki Takamura, Oyama, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 622,594

Claims priority, application Japan, Mar. 27, 1995, 7-067844

Int. Cl.[6] B22D *17/32*

U.S. Cl. 164—457 **5 Claims**



1. A method of controlling the injection of a die casting machine for injecting molten metal fed to an injection sleeve into a metal mold by means of an injection plunger to charge the metal mold with molten metal, comprising the steps of:

detecting the pressure of a plunger rod charging the metal mold with molten metal;

determining that the molten metal has arrived the gate section, or injection port, of the metal mold at a time when the detected pressure gets to a predetermined value; and

controlling the injection speed on the basis of the time.

4. An apparatus of controlling the injection of a die casting machine for injecting molten metal fed to an injection sleeve into a metal mold by means of an injection plunger to charge the metal mold with molten metal, comprising:

a detection means for detecting pressure of a plunger rod charging the metal mold with molten metal; and

an injection speed control means for receiving a detection signal from said detection means, operating a low injection speed phase for the advancement of the plunger rod until the detected pressure gets to a predetermined value, and switching the operation from the low injection speed phase to a high injection speed phase when the detected pressure gets to the predetermined value.

5,662,160

TURBINE NOZZLE AND RELATED CASTING METHOD FOR OPTIMAL FILLET WALL THICKNESS CONTROL

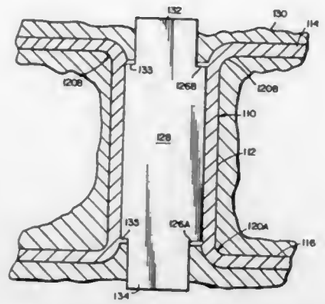
Victor H. Correia, New Lebanon; Theresa A. Brown, and Daniel R. Predmore, both of Clifton Park, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,001

Int. Cl.[6] B22C *9/00;9/02;7/00*

U.S. Cl. 164—516 **5 Claims**

1. In a method of investment casting a turbine nozzle which includes an outer band, an inner band and an airfoil section extending between the inner and outer bands, the improvement comprising shaping a temporary wax form, and external shell and internal core components used in casting such that during pouring of molten metal into a space created by removal of the wax form, shell material lies on opposite sides of a fillet connecting at least one of the inner and outer bands to the airfoil section.



5,662,161

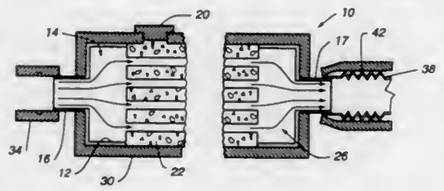
BREATHING GAS COOLING AND HEATING DEVICE

Robert Hughes, Lynn Haven; Billy Courson, Panama City, and Joseph Rudolph, Panama City Beach, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1995, Ser. No. 513,493

Int. Cl.[6] F28D *17/00*

U.S. Cl. 165—10 **15 Claims**



1. A breathing gas heating and cooling device, comprising:

a flow-through housing having opposite spaced apart inlet and outlet ends;

a plurality of separate flow-through heat exchanger tubes being open at opposite ends and disposed in said flow-through housing in side-by-side spaced apart relation to one other for receiving flowing breathing gas from said inlet end of said flow-through housing and transferring heat between said separate tubes and said gas during transit of said gas therethrough to said outlet end of said flow-through housing, said flow-through heat exchanger tubes being affixed within said flow-through housing;

a phase change means for transferring heat between said separate flow-through heat exchanger tubes and said phase change means, said phase change means disposed about and in contact with each of said separate flow-through heat exchanger tubes and between said separate flow-through tubes and between said tubes and said housing; and

a means surrounding said flow-through housing for insulating said flow-through tubes and said flow-through housing from the ambient.

5,662,162

HEAT EXCHANGING APPARATUS

Mikio Fukuoka, Bisai, and Yoshifumi Aki, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

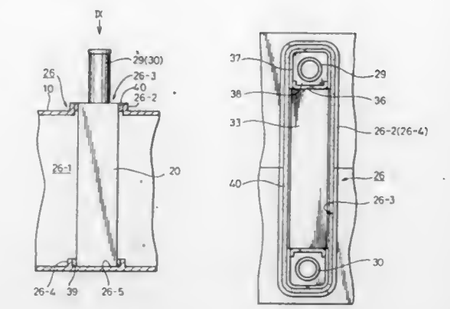
Filed Jul. 27, 1995, Ser. No. 507,939

Claims priority, application Japan, Jul. 28, 1994, 6-176926

Int. Cl.[6] F28D *1/053*

U.S. Cl. 165—41 **12 Claims**

1. A heat exchanging system comprising:



a casing defining a passageway for a flow of air and an opening opened laterally with respect to the passageway, and;

a heat exchanger for receiving therein a heat exchanging medium, the heat exchanger inserted into the casing via said opening to a position where the air flow is contacted wit the heat exchanger, which allows heat exchange to occur between the heat exchanging medium and the air flow in the duct;

the heat exchanger comprising a pair of spaced apart tanks a stack of heat exchanging tubes and fins arranged alternately, and support plates at the top and bottom of the stack;

said tanks as well as said top support plate being under a closely sealed relationship with respect to the opening, while the casing has a portion for firmly fixing said bottom support plate;

said tanks and at the top of support plate, have portions which form a pair of straight lines extending in the direction of the length of the tube and spaced in the direction of the flow of the air in the passageway.

5,662,163

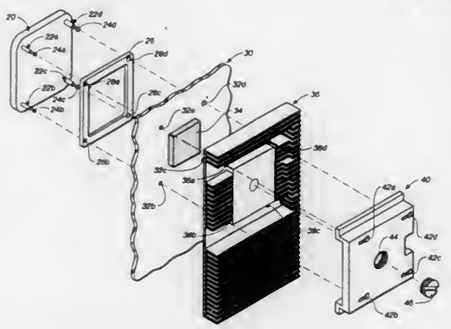
READILY REMOVABLE HEAT SINK ASSEMBLY

Ali Mira, San Jose, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Nov. 29, 1995, Ser. No. 564,404

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—80.3 **20 Claims**



1. A removable heat sink assembly comprising:

a heat sink unit thermally contacting a heat generating device which is disposed on a first surface of a substrate, said substrate having first holes formed therethrough, said heat sink unit having second holes formed therethrough, said second holes in said heat sink unit aligned with said first holes in said substrate;

a backing plate having alignment pins extending therefrom and having heads disposed on distal ends thereof, said backing plate disposed proximate to a second surface of said substrate with said alignment pins extending through said first holes of

said substrate and said second holes of said heat sink unit such that said substrate is disposed between said backing plate and said heat sink unit;

a clasp plate disposed proximate to said heat sink unit such that said heat sink unit is disposed between said clasp plate and said substrate, said clasp plate having slits disposed therethrough, said slits aligned with said second holes in said heat sink unit and said first holes in said substrate, said slits grasping said heads of said alignment pins; and

a fastener coupled to said clasp plate, said fastener compressing said heat sink unit against said heat generating device.

5,662,164

LAMINATED HEAT EXCHANGER

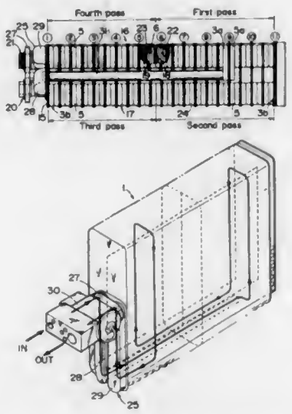
Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 425,064

Claims priority, application Japan, Apr. 21, 1994, 6-106089

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **8 Claims**



1. A heat exchanger constituted by laminating tube elements alternately with fins over a plurality of levels in a lamination direction, wherein

each of said tube elements is provided with a pair of tanks at one end thereof, with said pair of tanks communicating with each other via a U-shaped passage,

tanks in adjacent tube elements are connected to form a first tank group extending in the lamination direction and a second tank group extending in the lamination direction,

said first tank group is partitioned along the lamination direction to divide said first tank group into a first communicating area at a first end of said heat exchanger and a second communicating area at a second end of said heat exchanger,

said second tank group has no partitioning portion and communicates straight through,

an intake port and an outlet port through which heat exchanging medium flows in and out respectively are formed at said second end of said heat exchanger with said intake port communicating with said first communicating area and said outlet port communicating with said second communicating area,

said tube elements having said tanks constituting said first communicating area are greater in number than said tube elements having said tanks constituting said second communicating area,

endmost ones of said tube elements at said first and second ends of said heat exchanger are constituted with flat plates, and

said intake port and said outlet port are constituted by bonding a plate for intake/outlet passage formation to one of said flat plates, and by providing a connecting portion for connecting an expansion valve to said plate for intake/outlet passage formation.

5,662,165

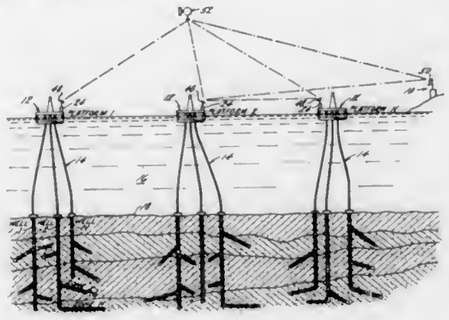
PRODUCTION WELLS HAVING PERMANENT DOWNHOLE FORMATION EVALUATION SENSORS

Paulo Tubel, The Woodlands; Albert A. Mullins, II; Kevin Jones, both of Humble, and Frank D. Richardson, Huntsville, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 526,827, Sep. 11, 1995, which is a continuation-in-part of Ser. No. 386,480, Feb. 9, 1995. This application Aug. 12, 1996, Ser. No. 695,450

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—250.01 **24 Claims**



1. A system for monitoring a formation surrounding a borehole in a production well, comprising:

a production well having at least one borehole, said borehole including at least two production zones, each of said production zones including;

a completion string in said borehole for producing a fluid from the formation surrounding the borehole; and

at least one downhole formation evaluation sensor permanently located downhole for sensing a downhole formation parameter in an area associated with at least a portion of said completion string wherein said sensed downhole formation parameter constitutes a parameter which is not normally present within the wellbore.

5,662,166

APPARATUS FOR MAINTAINING AT LEAST BOTTOM HOLE PRESSURE OF A FLUID SAMPLE UPON RETRIEVAL FROM AN EARTH BORE

Houman M. Shammai, 411 Robinhood Clr., Lafayette, La. 70508

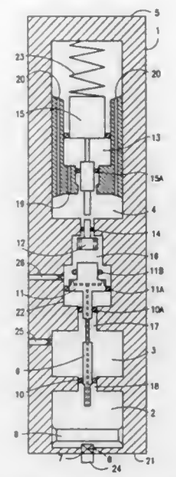
Filed Oct. 23, 1995, Ser. No. 546,663

Int. Cl.[6] E21B *47/00*

U.S. Cl. 166—264 **8 Claims**

1. A downhole sampling tool, comprising:

a sample chamber having an axially slidable piston disposed therein, said piston dividing said sample chamber into a front section and a back section, said piston maintaining pressure of a fluid sample contained in said front section during retrieval of the sampling tool by release of an elastic gas directly to said back section while said sampling tool is downhole, said elastic gas at a pressure at least as great as the downhole pressure of the fluid sample.



5,662,167

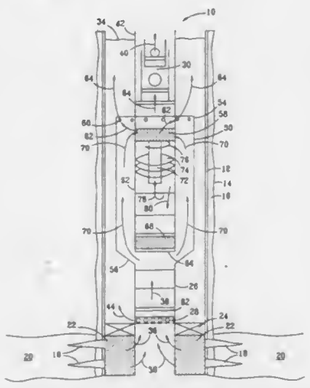
OIL PRODUCTION AND DESANDING METHOD AND APPARATUS

John C. Patterson, Garland, and Harry T. Hong, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 18, 1996, Ser. No. 617,159

Int. Cl.[6] E21B *43/38*

U.S. Cl. 166—265 **13 Claims**



10. A method for desanding oil produced from a subterranean oil-bearing formation through a wellbore, the method comprising:

a) flowing oil from the oil-bearing formation upwardly through a first tubing at a velocity sufficient to carry sand entrained in the oil upwardly through the first tubing;

b) flowing the oil from the first tubing upwardly through a larger tubular section at a velocity sufficient to carry sand entrained in the oil upwardly to a perforated section positioned in a second tubing in the larger tubular section, the perforated section being positioned near the upper end of the larger tubular section,

c) passing the oil through the perforated section and through a circumferential path around a dip tube positioned beneath the perforated section to centrifugally separate sand from the oil so that the sand is passed outwardly toward an inner diameter of the second tubing and downwardly to storage in a lower portion of the second tubing; and,

d) flowing the oil upwardly through the dip tube to a pump and through the pump and a third tubing to oil recovery at the surface.

5,662,168

PROCESS FOR MODIFYING THE WATER PERMEABILITY OF A SUBTERRANEAN FORMATION

Julie E. Smith, Lakewood, Colo., assignor to Tiorco, Inc., Englewood, Colo.

Division of Ser. No. 340,585, Nov. 16, 1994, Pat. No. 5,559,263. This application Jul. 26, 1996, Ser. No. 690,364

Int. Cl.[6] E21B *33/13*

U.S. Cl. 166—295 **6 Claims**

1. A process for decreasing the water permeability of a subterranean formation comprising:

a. injecting into the formation an aqueous solution comprising a water-soluble polymer capable of cross linking in the presence of water and aluminum ions;

b. subsequently injecting into the formation an aqueous solution comprising aluminum citrate having at least about 3.1 percent by weight aluminum, a pH between about 5.0 and about 9.0 and a molar ratio of aluminum to citrate at most about 2.2:1 in an amount sufficient to enhance cross linking of said polymer.

5,662,169

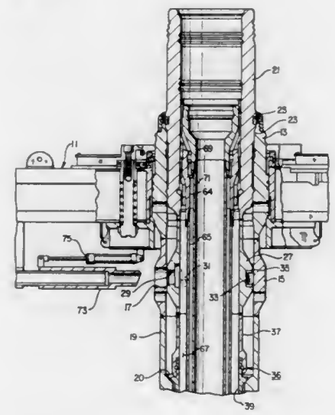
CUTTINGS INJECTION WELLHEAD SYSTEM

Stanley Hosie, Aberdeenshire, Scotland, assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed May 2, 1996, Ser. No. 607,986

Int. Cl.[6] E21B *41/04*

U.S. Cl. 166—344 **11 Claims**



10. A method of disposing of offshore well drilling cuttings, comprising:

forming a well to a first depth and installing an outer wellhead housing at a subsea floor which is connected to a string of conductor pipe that extends to the first depth, forming an outer wellhead assembly;

providing the outer wellhead assembly with a flow port above the subsea floor and an internal landing shoulder below the flow port;

drilling the well to a second depth;

lowering a first string of casing through the conductor pipe into the well;

providing a connector joint which has upper and lower portions that are rotatable relative to each other and capable of supporting tension;

providing a lower portion of the connector joint with an external landing shoulder and an upper portion of the connector joint with an inner flow port;

securing the lower portion of the connector joint to an upper end of the first string of casing and the upper portion to a lower end of an inner wellhead housing;

lowering the first string of casing and the inner wellhead housing into the outer wellhead housing until the external landing shoulder lands on the internal landing shoulder and supports the weight of the first string of casing; then

rotating the inner wellhead housing and upper portion of the connector joint relative to the first string of casing until the inner port is rotationally oriented with the outer port; then

locking the inner wellhead housing rigidly to the outer wellhead housing;

drilling the well to a third depth and installing a second string of casing in the well; and

connecting a conduit to the outer port and pumping cuttings between the first and second strings of casing.

5,662,170

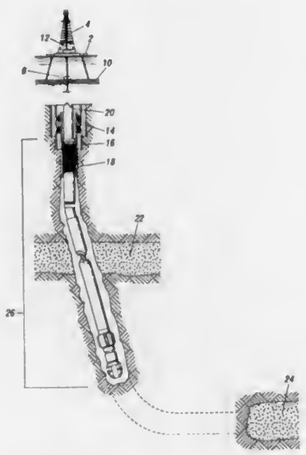
METHOD OF DRILLING AND COMPLETING WELLS

Joseph F. Donovan; Michael H. Johnson, and Daniel J. Turick, all of Spring, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 343,746, Nov. 22, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,865

Int. Cl.[6] E21B *7/20*

U.S. Cl. 166—358 **36 Claims**



1. A method of completing a wellbore comprising:

(a) positioning a stationary string in the wellbore at a first position, said stationary string having connected thereto a completion assembly which is adapted to perform a selected completion operation in the wellbore and a first detachment device for detaching said completion assembly from said stationary string;

(b) positioning a secondary string in the wellbore, said secondary string having a second detachment device for detaching said completion assembly from said stationary string;

(c) engaging said second detachment device with said completion assembly, thereby detaching the completion assembly from the stationary string and attaching it to the secondary string;

(d) positioning said completion assembly at a second position that is spaced from the first position by utilizing the secondary string;

(e) operating the completion assembly to perform the selected completion operation at the second position in the wellbore.

5,662,171

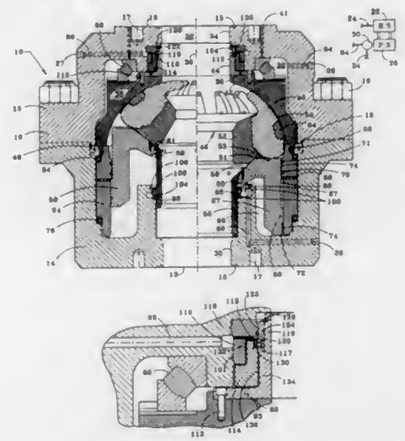
ROTATING BLOWOUT PREVENTER AND METHOD

James D. Brugman, Spring, and Paul L. Tasson, Missouri City, both of Tex., assignors to Varco Shaffer, Inc., Houston, Tex.

Continuation of Ser. No. 513,436, Aug. 10, 1995, Pat. No. 5,588,491. This application Oct. 4, 1996, Ser. No. 725,875

Int. Cl.[6] E21B *33/06;33/08*

U.S. Cl. 166—383 **20 Claims**



1. A rotatable blowout preventer for sealing pressurized fluid in a well exterior of a rotatable tubular member passing through the blowout preventer, the rotatable blowout preventer assembly comprising:

a stationary outer housing defining a bore therein for receiving the tubular member, the outer housing have a central axis generally concentric with an axis of the tubular member, and the outer housing including a fluid closing port and a fluid output port therein;

an inner housing rotatable within the outer housing and having an inner curved surface thereon;

an annular sealing assembly supported within the inner housing for sealed engagement with the tubular member, the sealing assembly including a plurality of rigid elements circumferentially arranged about the bore of the outer housing, each rigid element having an outer surface for sliding engagement with the inner curved surface of the inner housing, and the sealing assembly including a resilient member for sealed engagement with the tubular member;

a rotatable piston axially movable within the outer housing in response to pressurized fluid in the fluid closing port for causing both axial and radial movement of the annular sealing assembly;

a lower rotary seal between the piston and a lower portion of the stationary outer housing for sealing pressurized fluid in fluid communication with the fluid closing port and within the stationary outer housing from a lower end of the bore in the outer housing;

a flow restriction member between the rotatable inner housing and an upper portion of the stationary outer housing for reducing fluid pressure in fluid communication with the fluid closing port and downstream of the flow restriction member to less than 40% of the pressure upstream from the flow restriction member; and

an upper rotary seal between the rotatable inner housing and the upper portion of the stationary outer housing and downstream from the flow restriction member for sealing the reduced pressure fluid within the outer housing from an upper end of the bore in the outer housing.

5,662,172

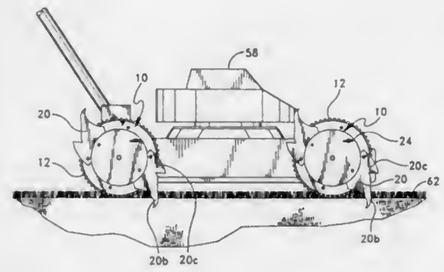
AERATOR APPARTUS WITH RETRACTABLE TURF PENETRATING MEMBERS

James Brown, 7 Country Pkwy., North Providence, R.I. 02911

Filed Mar. 26, 1996, Ser. No. 621,874

Int. Cl.[6] A01D *75/28;34/86*

U.S. Cl. 172—22 **14 Claims**



1. A turf penetrating apparatus for attachment to a vehicle's wheels to aerate a lawn when traversing thereover, comprising:

a support disc having a central support disc pivot axis; said support disc being connected to a vertical outer side of one of the vehicle's wheels and adapted to rotate therewith; said support disc including a pair of support disc slots positioned parallel to one another and on opposing sides of said central support disc pivot axis and located proximal to an outer edge of said support disc;

a pivot disc having a central pivot disc pivot axis being co-axial with said central support disc pivot axis; said pivot disc including a pair of fixed pins connected thereto on opposing sides of said central pivot disc pivot axis and slideably residing within said pair of support disc slots;

a pair of blades being sandwiched between said support disc and said pivot disc; said pair of blades each including a pivot anchor means for securing said blades to said support disc proximal to said pair of slots, respectively; said blades being capable of rotating about said pivot anchor means; said pair of blades each including a pair of blade slots; said fixed pins being slideably positioned within said support disc slots and said blade slots; said fixed pins being closer to said central support disc pivot axis than said pivot anchor means; said support disc slots providing a containment means for guiding said fixed pins, respectively; and

whereby rotation of said pivot disc relative to said support disc causes said fixed pins to controllably slide within said support disc slots and said blade slots simultaneously thereby forcing said blades to rotate about said pivot anchor means to expose said blades for use from between said support disc and said pivot disc.

5,662,173

ROLLING CULTIVATOR

Edward David Blesing, Bangor, Via Wirrabara, State of South Australia, Australia

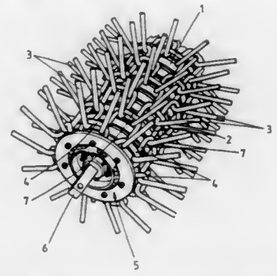
PCT No. PCT/AU94/00542, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/07605, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 14, 1994, Ser. No. 615,310

Claims priority, application Australia, Sep. 15, 1993, PM1223

Int. Cl.[6] A01B *21/04;33/10*

U.S. Cl. 172—526 **17 Claims**



1. An elongate ground working implement rotatably supported about a longitudinal axis, said ground working implement comprising:

an elongate cylindrical support having longitudinal ends,

a plurality of interlocking cultivating elements arranged on a peripheral cylindrical surface of the cylindrical support, at least one tine extending from each cultivating element, and

a support configured to support the cylindrical support rotatably about the longitudinal axis, wherein the peripheral cylindrical surface of the cylindrical support is flexible or resilient in a radial direction.'

5,662,174

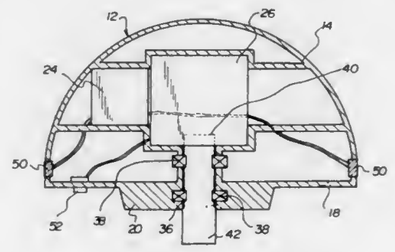
BATTERY POWERED PALM RATCHET TOOL

Gary M. Vermilyer, Rte. #2 Box 384, Winamac, Ind. 46996

Filed Dec. 2, 1996, Ser. No. 753,848

Int. Cl.[6] B25B *13/46*

U.S. Cl. 173—13 **8 Claims**



2. A battery powered palm ratchet tool comprising:

a hemispherical palm grip having an upper body with a gripping ring and an under side being interconnected to a stop, the upper body encasing a battery and a motor powered by the battery, the upper body having a plurality of teardrop-shaped sections interconnected by a plurality of ridges, the plurality of ridges bulging outwardly beyond the teardrop-shaped sections for creating an enhanced gripping surface on the upper body of the palm grip, the palm grip having an axial opening within the upper body and stop for receiving a shaft, the shaft being rotatably mounted within the axial opening and driven

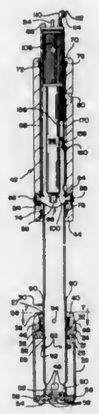
by the motor, the shaft being compressible within the axial opening for activating the motor for actuation thereof, the palm grip being positioned within one hand of a user.

5,662,175

SEA WATER PILE HAMMER

Don C. Warrington, Chattanooga, Tenn.; Vladimir A. Nifontov, Moscow, Russian Federation; Lev V. Erofeev, Moscow, Russian Federation, and Dmitri A. Trifonov-Yakovlev, Moscow, Russian Federation, assignors to Vulcan Iron Works, Inc., Chattanooga, Tenn.

Filed Aug. 8, 1995, Ser. No. 512,459
Int. Cl.[6] E02D 7/10;7/28
U.S. Cl. 173—132 24 Claims



1. A pile hammer for driving a hollow pile having a longitudinal axis by applying repeated axially directed driving blows to an upper end thereof, said pile hammer comprising:

an annular pile cap adapted to rest on the upper end of the pile and having an upper annular anvil surface in vertical alignment with the upper end of the pile;

said pile cap having a central axial bore extending entirely through said pile cap;

a base having an annular intermediate portion supported upon the pile cap and having a lower end portion extending downwardly from said intermediate portion through said central axial bore into said hollow pile below said cap;

said base including a hollow tubular upper portion extending upward from said intermediate portion;

an axially elongated hollow ram encircling and slidably mounted on said hollow tubular upper portion for movement between upper and lower positions and having a lower end hammer face adapted to strike said anvil surface when said ram is in said lower position; and

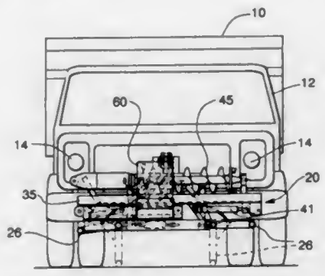
lift means mounted within said hollow tubular upper portion of said base and within said ram when said ram is in said upper position for lifting said ram to said upper position, and means for releasing said ram and permitting said ram to drop downwardly to said lower position to strike a driving blow with said hammer face against said anvil surface.

5,662,176

TRUCK MOUNTED WORK IMPLEMENT

Kenneth B. Madgwick, 2709 N. 7th St., Garden City, Kans. 67846, and Randall M. Friesen, Garden City, Kans., assignors to Kenneth B. Madgwick, Garden City, Kans.

Continuation of Ser. No. 388,155, Feb. 13, 1995, Pat. No. 5,558,169. This application Jul. 5, 1996, Ser. No. 675,859
Int. Cl.[6] E21B 7/02
U.S. Cl. 173—185 14 Claims



9. In a combination of a vehicle and a front mounted work implement, said vehicle including an operator's station having a line of sight looking in a forward direction of travel over said front mounted work implement, the improvement comprising:

a base frame portion detachably connectable to said vehicle; and

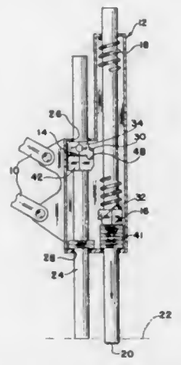
a nestable boom means pivotally connected to said base frame portion to be extendible therefrom through a range of operation and having a transport position in which said boom means is compactly folded into a nested configuration oriented transversely to the forward of travel of said vehicle and being positioned below said line of sight, said boom means having a remote end supporting said work implement.

5,662,177

TRIGGER MECHANISM FOR IMPACTING DEVICE

Marinus A. Bosma, 2234 Marina Park Dr., Fort Myers, Fla. 33905

Filed Oct. 6, 1995, Ser. No. 540,223
Int. Cl.[6] B25D 17/24
U.S. Cl. 173—202 14 Claims



1. A device for impacting the surface of a frangible material with a sudden, concentrated high force in order to demolish said material, said device including an elongated casing; an elongated power plunger in said casing, said power plunger being reciprocable lengthwise of and having opposing ends extending outwardly through openings in opposing ends of said casing; an elongated actuator plunger in closely-spaced lateral and parallel relationship to said power plunger and being reciprocable lengthwise of and having opposing ends extending outwardly through openings in said opposing ends of said casing; guiding means in the ends of said casing maintaining said actuator and power plungers essentially in said parallel relationship along their respective axes; a latch member affixed to said power plunger between its ends within said casing; a coil compression spring associated with said power plunger and extending between said latch member and an abutting surface at the end of said casing remote from the surface to be demolished; a trigger mechanism mounted on said actuator plunger, said trigger mechanism being movable with said actuator plunger relative to the opposing ends of said casing between a first position nearest said material, for engaging and latching with said latch member when said coil spring is fully extended and a second position remote from said material in which said latch member is moved toward the opposite end of said casing to compress said spring and cock aid power plunger for sudden, impacting movement toward said surface upon release of said latch member by said rigger mechanism; and means affixed to said casing for operating said trigger mechanism to release said latch member after said coil spring has been compressed, said release enabling said power plunger to be fired rapidly toward said surface as said spring expands; the improvement comprising:

said trigger mechanism including:

i) a trigger-journaling block affixed to said actuator plunger;

ii) a trigger block pivotally supported on said trigger-journaling block;

iii) means for pivoting said trigger block about an axis perpendicular to said actuator plunger on a side of said trigger-journaling block adjacent said power plunger, said pivoting means comprising a semi-cylindrical recess in said trigger-journaling block and a semi-cylindrical journal on said trigger block corresponding to said recess and seated therein;

iv) spring means biasing a side of said trigger block remote from said pivoting means away from said trigger-journaling block; and

v) means retaining said trigger block journal in intimate contact with said recess and functioning in conjunction with said spring means to normally position said trigger block angularly in a latching position relative to said trigger-journaling block;

said trigger block having a convex essentially spherical latching edge portion adjacent said pivoting means and facing said latch member in interfering relationship therewith; and,

said latch member including:

i) a latch block having a concave essentially spherical edge portion facing and corresponding essentially to the convex spherical portion of said trigger block,

said edge portions being adapted to interfere and latchingly engage while said trigger mechanism moves said latch block between said first and second positions of said trigger mechanism, and said trigger block being adapted to pivot in said recess in response to actuation of said spring means by said trigger mechanism operating means, to release said trigger block edge portion from interfering contact with said latch block edge portion and thereby cause said power plunger to be fired toward said material by said coil spring.

5,662,178

WAVE STRIP PERFORATING SYSTEM

Jay R. Shirley, Crowley, and Harrold D. Owen, Fort Worth, both of Tex., assignors to Owen Oil Tools, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 459,509, Jun. 2, 1995. This application Mar. 29, 1996, Ser. No. 626,392
Int. Cl.[6] E21B 43/116
U.S. Cl. 175—4.53 13 Claims

1. A perforating gun for carrying a plurality of shaped explosive charges connected by a detonating cord to perforate a section of a well in a selected pattern, comprising:

an elongated, non-linear zig-zag strip having an exterior surface defining an outer diameter which is cylindrical when viewed from the top along a longitudinal axis, the exterior surface being sized for convenient entry and removal from a well;



a series of openings spaced in intervals along a length of the non-linear zig-zag strip to serve as mounts for the shaped explosive charges to be arranged in an angular phase relationship to correspond with said selected perforation pattern in the well;

at least selected ones of said shaped explosive charges having a hollow cap with a nose which engages said openings in said strip and having an associated hollow body which contains an explosive;

the cross-sectional area of the strip around each opening being selected to prevent fragmentation of the carrier upon detonation of the shaped explosive charges;

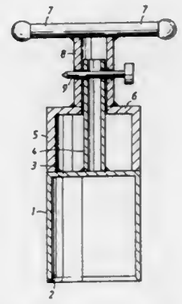
whereby the non-linear zig-zag strip may be positioned in the well, the shaped explosive charges detonated to create perforations in the selected pattern and retrieved from the well.

5,662,179

HOLE-MAKING DEVICE

Johan Falk, Hudiksvall, Sweden, assignor to Hudiksvalls Teknik Centrum AB, Hudiksvall, Sweden

PCT No. PCT/SE94/00516, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/27687, PCT Pub. Date Dec. 8, 1994
PCT Filed May 31, 1994, Ser. No. 525,615
Claims priority, application Sweden, Jun. 1, 1993, 9301854
Int. Cl.[6] E21B 1/02
U.S. Cl. 175—20 13 Claims



1. A device for making holes in the ground which comprises a tubular cutter having an open, first end for insertion into the

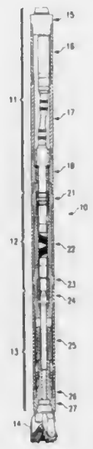
ground, and an opposite, second end from which there extends a guide means along which a percussion weight is guided for movement, said percussion weight being intended to exert a hammering force on said second end, a tubular part connected to the percussion weight at an end thereof which lies distal from the tubular cutter such that the tubular part and percussion weight are guided for axial movement along the guide means, said tubular part being provided with a handgrip for maneuvering the percussion weight, the handgrip being mounted on the end of the tubular part that lies distal from the percussion weight; and a locking mechanism for releasably locking the cutter and associated guide means and the percussion weight and associated tubular part provided with said handgrip together against movement in an axial direction and against rotational movement.

5,662,180

PERCUSSION DRILL ASSEMBLY

James E. Coffman, Tulsa; Paul W. Crites, Broken Arrow, both of Okla., and Paul B. Campbell, Roanoke, Va., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Oct. 17, 1995, Ser. No. 544,296
Int. Cl.[6] E21B *4/14*
U.S. Cl. 175—57 **65 Claims**



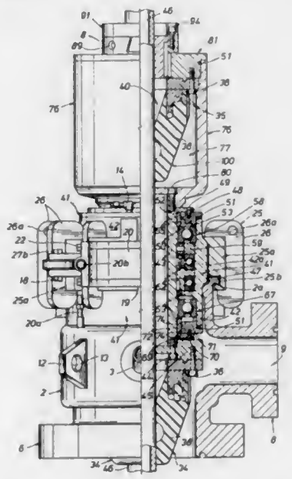
1. A percussion drill assembly for drilling a borehole in a formation, said drill assembly comprising:
- an elongated housing assembly having a first end adapted to removably connect said drill assembly to a drill string, and a second end adapted to receive a drill bit;
- a compartment formed within said housing assembly and having a longitudinal axis;
- a hammer piston positioned within said compartment for reciprocal motion within said compartment along the longitudinal axis of said compartment, said hammer piston dividing said compartment into a first chamber and a second chamber which are substantially fluidly isolated from each other within said compartment by the presence of said hammer piston;
- a fluid compressor positioned within said housing assembly and having a first port in said first chamber and a second port in said second chamber, whereby said compressor and said compartment form a compressor fluid system;
- a driver mounted in said housing assembly and connected to said compressor so as to drive said compressor to produce a high fluid pressure in said first port and a low fluid pressure in said second port during a first half cycle of operation of said compressor and to produce a low fluid pressure in said first port and a high fluid pressure in said second port during a second half cycle of operation of said compressor;
- seals for sealing said compressor fluid system from fluid communication with any fluid received from the drill string, whereby said compressor fluid system is a closed fluid system;
- wherein, when said drill assembly is being operated to impart an impact force to a drill bit, a high fluid pressure in said first chamber and a low fluid pressure in said second chamber causes a movement of said hammer piston toward said second chamber; and
- wherein, when said drill assembly is being operated to impart an impact force to a drill bit, a low fluid pressure in said first chamber and a high fluid pressure in said second chamber causes a movement of said hammer piston toward said first chamber;
- whereby a predetermined extent of movement of said hammer piston toward one of said first and second chambers can impart an impact force to a drill bit connected to said second end of said housing assembly while said drill assembly is being operated to impart an impact force to the drill bit.

5,662,181

ROTATING BLOWOUT PREVENTER

John R. Williams, 3816 Spring Mountain Rd., Ft. Smith, Ak. 72901, and Vinson D. Williams, Rte. 4 box 391, Muldrow, Okla. 74948

Continuation of Ser. No. 653,597, May 24, 1996, abandoned, which is a continuation of Ser. No. 564,933, Nov. 30, 1995, abandoned, which is a continuation of Ser. No. 489,233, Jun. 12, 1995, abandoned, which is a continuation of Ser. No. 310,035, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 954,285, Sep. 30, 1992, abandoned. This application Oct. 22, 1996, Ser. No. 735,050
Int. Cl.[6] E21B *3/02*
U.S. Cl. 175—195 **12 Claims**



1. A rotating blowout preventor for an oil or gas well for resiliently engaging a drill string extending therethrough, comprising:
- a housing having a housing opening;
- a bearing assembly removably seated in said housing opening and having a passage, through which passage a drill string may extend;
- said bearing assembly having an outer generally cylindrical barrel and an inner generally cylindrical barrel having bearing elements positioned therebetween such that said inner barrel is mounted for rotation with respect to said outer barrel;
- a clamp assembly for engaging said housing and said outer barrel for removably securing said bearing assembly;
- a top rubber pot mounted on said inner barrel for rotation therewith;
- a first downwardly-converging seal mounted within said top rubber pot and having resilient engaging means for sealably engaging the drill string, said first downwardly-converging seal adapted to rotate in sealing engagement with the drill string;
- a second downwardly-converging seal mounted on said inner barrel in spaced relationship with respect to said first downwardly-converging seal and adapted to rotate in sealing engagement with said drill string; and

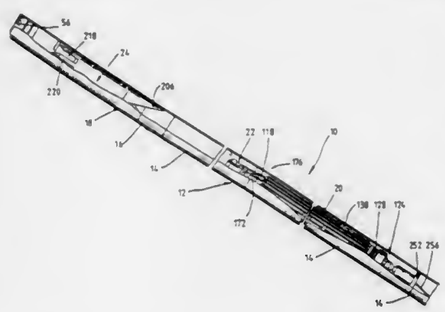
said bearing assembly, top rubber pot, first downwardly-converging seal, said second downwardly-converging seal being removable as a unit for ease of replacement.

5,662,182

SYSTEM FOR IN SITU REPLACEMENT OF CUTTING MEANS FOR A GROUND DRILL

Gavin Thomas McLeod, Bullcreek, and Matthew Vance Egan, Leeming, both of Australia, assignors to Down Hole Technologies Pty Ltd., Myaree, Australia

PCT No. PCT/AU94/00322, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/29567, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 15, 1994, Ser. No. 433,402
Claims priority, application Australia, Jun. 16, 1993, PL9407; Mar. 2, 1994, PM4158; Mar. 2, 1994, PM4159
Int. Cl.[6] E21B *10/64*
U.S. Cl. 175—258 **25 Claims**



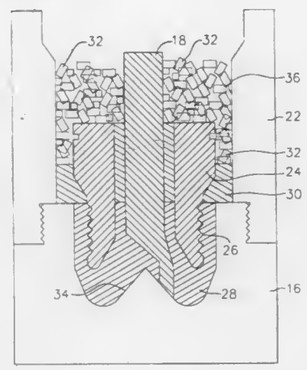
1. A system for in situ replacement of cutting means of a ground drill where the cutting means is composed of a plurality of segments, said system comprising:
- a tubular member adapted for connection to a lower end of said ground drill, said tubular member provided with seating means formed circumferentially about an inner wall of said tubular member for seating said segments in a cutting position in which said segments can contact the ground;
- a substantially cylindrical insert retained in said member, said insert being moveable between an installation position in which said insert locates said segments in said seating means and retains said segments in said cutting position between said insert and said member and, a retrieval position in which said insert is retracted to release said segments from between said insert and said member whereby said segments can be retrieved for replacement.

5,662,183

HIGH STRENGTH MATRIX MATERIAL FOR PDC DRAG BITS

Zhigang Fang, The Woodlands, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Aug. 15, 1995, Ser. No. 515,304
Int. Cl.[6] E21B *10/08*
U.S. Cl. 175—374 **28 Claims**



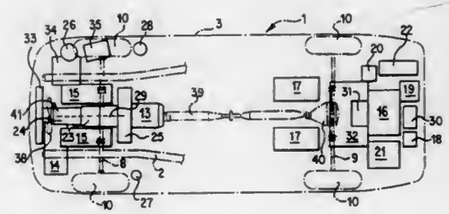
1. A PDC drag bit comprising a body having a face on a lower end of the body, a plurality of pockets in the face of the body, a plurality of inserts in the pockets, and the body including a refractory compound infiltrated with a binder composition, wherein the binder composition comprises at least 60% nickel and at least 8% cobalt.

5,662,184

ARRANGEMENT OF A DRIVE UNIT IN AN ELECTRIC VEHICLE

Bernd Riemer, Stuttgart, and Thomas Klaiber, Weinstadt, both of Germany, assignors to Daimler-Benz AG, Germany

Filed Apr. 12, 1995, Ser. No. 420,600
Claims priority, application Germany, Apr. 12, 1994, 44 12 451.1
Int. Cl.[6] B60K *11/04*
U.S. Cl. 180—65.1 **2 Claims**



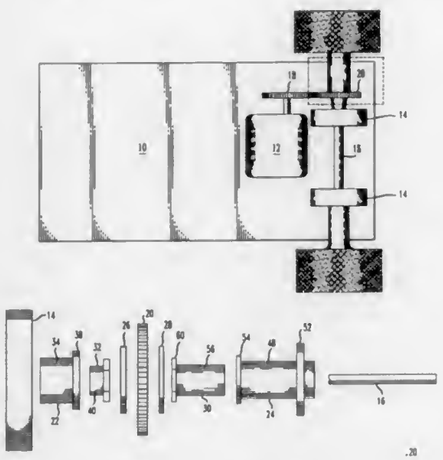
1. Arrangement of a drive unit in a vehicle, which drive unit comprises at least an electric traction motor coupled to receive electric power from a fuel cell, a compressor connected to the fuel cell to supply air thereto and an electric compressor motor connected to the compressor, wherein:
- the compressor and the electric compressor motor are arranged in a front region of the vehicle;
- the fuel cell is partitioned into at least two stacks, which are on opposite sides of the compressor;
- a fuel-cell radiator, having a fuel cell radiator fan, is coupled in thermal communication with the fuel cell; and
- the radiator fan, the electric compressor motor and the compressor are mounted on a common drive shaft.

5,662,185

DRIVE ASSEMBLY FOR RADIO-CONTROLLED CARS

Bruce Mackiewicz, 365 19th Ave., Brick Town, N.J. 08723

Filed Mar. 29, 1995, Ser. No. 412,320
Int. Cl.[6] B60K *17/00*
U.S. Cl. 180—65.6 4 Claims



1. A drive assembly for a racing car, wherein said racing car has a motor, a drive axle, and a gear assembly for transmission of rotational energy from said motor to said axle, said drive assembly comprising:

a spur gear having planar sides, said spur gear mounted on said axle, in communication with said gear assembly, said spur gear having a plurality of spherical ball bearings radially disposed about said axle and partially encapsulated by said spur gear, a spherical portion of said ball bearings exposed on said planar side of said spur gear;

an inner ring bearing and an outer ring bearing disposed on opposing sides of said spur gear, said inner ring bearing and said outer ring bearing in contact with said exposed spherical portion of said ball bearings, said inner ring bearing and said outer ring bearing having an axially disposed geometric aperture therethrough;

an axle hub disposed adjacent said inner ring bearing, said axle hub having a cylindrical body and axial throughbore, said axle hub having an annular flange disposed toward said inner ring bearing;

a drive sleeve comprising a cylindrical body having a throughbore, said cylindrical body of said drive sleeve complimentary to said throughbore of said axle hub, said cylindrical body of said drive sleeve having a geometric flange complimentary to said geometric aperture of said inner ring bearing, said drive sleeve slidably securable in said throughbore of said axle hub;

a wheel hub having a cylindrical body, having a throughbore therethrough, mounted on said axle exteriorly of said outer ring bearing, said wheel hub having a means for mounting a wheel and tire of said racing car;

a second drive sleeve having a cylindrical body, and a throughbore therethrough, said second drive sleeve having a geometrically-shaped flange disposed toward said outer ring bearing, said second drive sleeve slidably securable in said throughbore of said wheel hub and said geometrically-shaped flange complimentary with and engageable with said geometric aperture of said outer ring bearing;

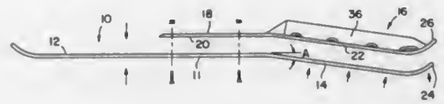
means for securing said drive assembly on said axle.

5,662,186

POWER-DRIVEN SNOWBOARD

Mark C. Welch, 6317 Polk St., Hollywood, Fla. 33024

Continuation-in-part of Ser. No. 498,166, Jul. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 169,063, Dec. 20, 1993, abandoned. This application Jun. 13, 1996, Ser. No. 663,510
Int. Cl.[6] A63C *5/08*
U.S. Cl. 180—181 10 Claims



1. A power driven snowboard, comprising:

a substantially flat forward portion for sliding support on snow or ice and a rear portion for driving the snowboard;

said forward portion being an operator platform and forming about two-thirds of the snowboard and said rear portion connected to said forward portion at a downward angle of approximately 3–10 degrees;

a drive unit removably attached to the snowboard and having a drive belt supported by a plurality of rollers extending through an opening in said rear portion, said drive belt having a plurality of ridges for driving the snowboard across snow or ice; and

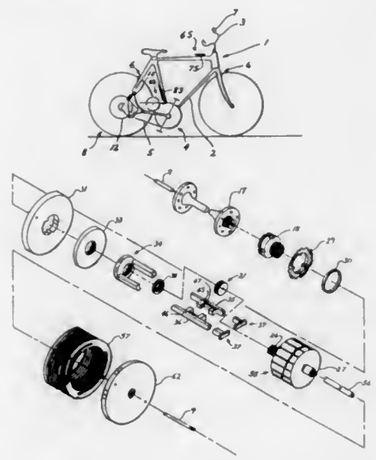
said drive unit having a cover over said drive belt and rollers, said cover having a rearward opening for expelling snow or ice from said drive unit.

5,662,187

ELECTRICALLY ASSISTED PEDALLED BICYCLE

James Robert Mc Govern, 205 E. 239th St., Bronx, N.Y. 10470

Filed Jul. 27, 1995, Ser. No. 508,220
Int. Cl.[6] B62M *7/12*
U.S. Cl. 180—205 5 Claims



1. An electrically assisted pedaled vehicle comprising:

a bicycle having frame, a seat, handlebars, a main sprocket,

a pedal crank, pedals, a chain, and caliper brakes actuated by handlebar mounted hand levers;

a rear wheel having an elongated rear wheel axle having an end;

a freewheel body mounted on said rear wheel and including a larger diameter surface having grooves and a small diameter threaded surface;

a DC motor means comprising a commutator having a negative side and a positive side and an armature, said commutator and said armature affixed to said rear wheel axle;

a sprocket mounted on said larger diameter surface;

a stabilizing spacer ring mounted on said larger diameter surface for stabilizing said sprocket;

a circular motor base plate having a diameter;

a circular motor stabilizing ring having a diameter smaller than the diameter of said circular motor base plate, and a threaded center hole threadably engaged on said small diameter threaded surface of said body for stabilizing said motor base plate;

a brush arm ring comprising an outer surface, a threaded center hole threadably engaged on said small diameter threaded surface of said body, and two brush support arms projecting perpendicularly from said outer surface of said motor stabilizing ring, each said arm including a square shaped tubular motor brush holder having a carbon brush, a brush tension spring and a brush holder spring retaining cap, each said brush holder positioning a respective carbon brush in contact with each of said positive and negative sides of said DC motor commutator;

a brush arm stabilizing ring having a threaded center hole threadably engaged on said small diameter threaded surface of said body for stabilizing said brush arm ring;

a motor back plate journaled to said rear wheel axle by a brass flanged bearing located in a center of said motor back plate,

a laminated motor frame comprising a pair of field coil windings including a negative side coil and a positive side coil, said laminated motor frame being supported on said motor base plate and said motor back plate by through bolts;

a motor enclosing cover having angle brackets fastened to said motor base plate and said back plate;

axle bracket means mounting said axle to said bicycle frame;

a battery supported by a battery holder mounted on said rear wheel axle, said battery holder stabilized by said axle bracket means; and

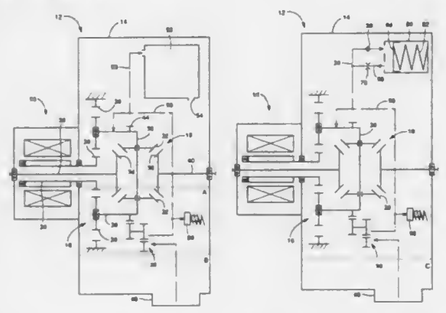
manually controlled series circuit means for manually controlling electric current supplied by said battery to said DC motor.

5,662,188

DEVICE FOR EFFECTIVE LUBRICATION OF VEHICLE POWER TRANSMISSION SYSTEM UPON STARTING OF VEHICLE

Hiroshi Ito; Hideki Yasue, and Daisuke Inoue, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 14, 1995, Ser. No. 502,619
Claims priority, application Japan, Aug. 12, 1994, 6-190253; May 18, 1995, 7-119547
Int. Cl.[6] F01M *9/00*
U.S. Cl. 184—6.3 8 Claims



1. A lubricating device for a motor vehicle including a power transmission system having rotating members which are all at rest upon stopping of the vehicle, a casing which accommodates said power transmission system and which stores a lubricating oil in a bottom portion thereof, and a mechanical oil pump which is driven by said power transmission system and which operates to deliver said lubricating oil from said bottom portion of said casing to lubricating points of said power transmission system, said lubricating device comprising:

an oil reservoir which stores a predetermined amount of said lubricating oil delivered by said mechanical oil pump, when a delivery amount of said mechanical oil pump exceeds a predetermined value with an increase in a rotating speed of said power transmission system, said oil reservoir being positioned above said power transmission system, and having discharging means for discharging said lubricating oil therefrom by gravity for lubrication of said power transmission system even after said mechanical oil pump is turned off with said motor vehicle being stopped; and

a bath of said lubricating oil stored in said bottom portion of said casing having a first oil level when an amount of said lubricating oil stored in said oil reservoir is substantially zero, and a second oil level when said predetermined amount of the lubricating oil delivered by said mechanical oil pump is stored in said oil reservoir, said first oil level being determined such that a portion of said power transmission system is immersed in said bath of said lubricating oil, said second oil level being determined such that a lower end of said power transmission system is located above said second oil level.

4. A lubricating device for a motor vehicle including a power transmission system having rotating members which are all at rest upon stopping of the vehicle, and a mechanical oil sump which is driven by said power transmission system and which operates to deliver a lubricating oil from an oil sump to lubricating points of said power transmission system, said lubricating device comprising:

an oil reservoir having an oil chamber which stores a predetermined amount of said lubricating oil delivered by said mechanical pump;

a discharge line through which said lubricating oil stored in said oil chamber of said oil reservoir is discharged to said lubricating points of said power transmission system; and

flow restricting means for restricting a rate of flow of said lubricating oil discharged from said oil chamber of said oil reservoir through said discharge lines;

wherein said oil reservoir includes moveable means for partially defining said oil chamber and biasing means for biasing said moveable means toward said oil chamber so that said lubricating oil is discharged from said oil chamber to said lubricating points through the flow restricting means even after said mechanical oil pump is turned off with said motor vehicle being stopped.

5,662,189

CABLE LUBRICATING DEVICE AND METHOD

Ronald A. Anderson, 4514 SW. Trenton, Seattle, Wash. 98136, and Matthew P. Veeder, 16110-38th Ave. NW., Stanwood, Wash. 98292

Filed Apr. 29, 1996, Ser. No. 641,099
Int. Cl.[6] F16N *7/16*
U.S. Cl. 184—15.2 31 Claims

1. A lubrication applicator for a sheathed cable comprising:

(a) a top plate that is generally planar;

(b) a bottom plate that is generally planar;

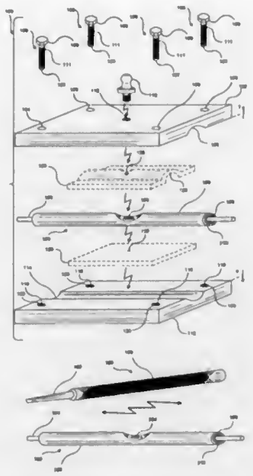
(c) a top channel disposed in a bottom generally planar surface of the top plate and extending along said bottom generally planar surface;

(d) a bottom channel disposed in a top generally planar surface of the bottom plate and extending along said top generally planar surface;

(e) a lubrication port proximally disposed in the top surface of the top plate;

(f) a fluid path extending between the lubrication port and the top channel; and

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(g) a plurality of fasteners that couple the top plate to the bottom plate, with the top channel extending generally in parallel with the bottom channel, said lubrication applicator being thereby adapted to mount on the sheathed cable, with the top channel overlying an access aperture formed in the sheathed cable so that a lubricant can be forced into the sheathed cable through the lubrication port.

20. A method for lubricating a sheathed cable in situ comprising the steps of:

(a) forming an access aperture in a sheath of a previously fabricated sheathed cable, so that an interior longitudinal passage within the sheath is exposed by the access aperture;

(b) clamping a generally planar plate having a groove formed therein over the sheathed cable, a lubrication port that passes through the plate into the groove being aligned with the access aperture, in sealing relationship thereto; and

(c) injecting a lubricant through the lubrication port into the interior longitudinal passage within the sheathed cable.

5,662,190

SELF-SCANNING CHECKOUT APPARATUS HAVING ARTICLE PASSAGE DETECTING SENSOR

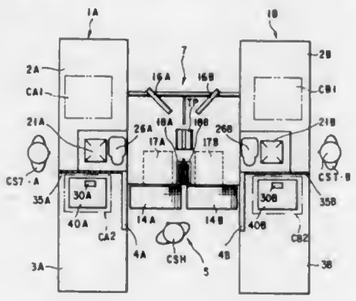
Satoru Abe, Mishima, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed May 30, 1995, Ser. No. 453,021

Claims priority, application Japan, May 30, 1994, 6-115776

Int. Cl.[6] A47F *10/02*

U.S. Cl. 186—61 **10 Claims**



6. A self-scanning checkout apparatus for reading article information of articles to be purchased during a checkout operation carried out individually by a customer and for determining whether the check-out operation individually carried out by the customer is normal or abnormal, said self-scanning checkout apparatus comprising:

first holding means for holding articles to be purchased whose article information is not yet read;

weight variation detecting means, disposed on said first holding means, for detecting a variation in the weight of articles held by said first holding means;

reading means, operable individually by the customer, for reading article information of the articles to be purchased;

second holding means for holding articles to be purchased whose information has been read;

registering means for registering the article information read by said reading means;

passage detecting means, disposed between said first and second holding means and in the vicinity of said reading means, for detecting passage of articles; and

determining means for determining whether the checkout process carried out individually by the customer is normal or abnormal based on outputs from said registering means, said passage detecting means and said weight variation detecting means respectively indicating the detection or non-detection of registration of an article, passage of the article and a weight variation in the weight of articles held by said first holding means.

5,662,191

ASSEMBLY COMPRISING A FRICTION PAD, A SPRING AND A WEAR INDICATOR FOR A MOTOR VEHICLE DISC BRAKE

Gerard Le Delt, Courtry, and Jean Louis Gerard, Bagnolet, both of France, assignors to AlliedSignal Europe Servives Techniques, Drancy, France

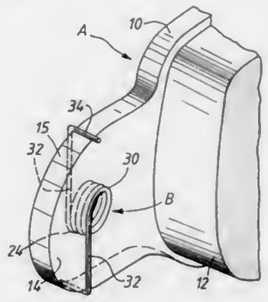
PCT No. PCT/FR95/01207, § 371 Date Oct. 17, 1995, § 102(e) Date Oct. 17, 1995, PCT Pub. No. WO96/12120, PCT Pub. Date Apr. 25, 1996

PCT Filed Sep. 20, 1995, Ser. No. 537,714

Claims priority, application France, Oct. 13, 1994, 94 12183

Int. Cl.[6] F16D *66/02;65/097;65/092*

U.S. Cl. 188—1.11 L **10 Claims**



1. Assembly comprising a friction pad (A), a spring (B) and a wear indicator (C) for a motor vehicle disc brake, the friction pad (A) including a carrier plate (**10**) received with anchorage and sliding in a torque-withstanding member (**16**) of the disc brake, a friction lining (**12**) being fixed to a part of the surface of a first face of the carrier plate (**10**) to enter into frictional contact with a rotating disc (**22**) when a force is applied to a second face of the carrier plate (**10**) opposite the first face, a through-opening (**24**) being formed in the carrier plate (**10**) for fixing a helical part (**30**) of the spring (B), said helical part (**30**) being formed of at least one turn of metal wire and of a fitting part (**46**) of the wear indicator (C) of the friction lining (**12**) passing through the helical part (**30**) of the spring (B), characterized in that the spring (B) includes end parts (**32, 34**) situated on either side of the carrier plate (**10**), the helical part (**30**) of the spring (B) being received in the opening (**24**) of the carrier plate (**10**), and the fitting part (**46**) of the wear indicator (C) being formed with a screw thread interacting with the helical part (**30**) of the spring (B).

5,662,192

BRAKE DISK WITH BUILT-IN ACOUSTIC WEAR-WARNING DEVICE

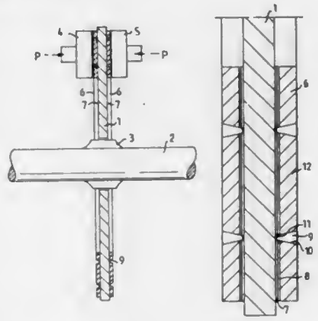
Tim Kingston, and Tord Dahlén, both of Eskilstuna, Sweden, assignors to Volvo Wheel Loaders AB, Eskilstuna, Sweden

Filed Apr. 25, 1996, Ser. No. 637,476

Claims priority, application Sweden, May 8, 1995, 9501702

Int. Cl.[6] F16D *66/00*

U.S. Cl. 188—1.11 W **9 Claims**



1. A disk brake comprising:

a disk;

a secondary friction layer applied to each side of said disk;

a primary friction layer affixed to each secondary friction layer, said secondary friction layer being disposed between the primary friction layer and the disk, said friction layers being applied to the disk in a ring shape, said friction layers being adapted to be actuated by force-exerting means;

cooling grooves provided in the primary friction layer, each of said cooling grooves extending through a full thickness of the primary friction layer and into the secondary friction layer;

whereby when at least one of the primary friction layers is worn away, contact between the secondary friction layer and respective force-exerting means will give rise to an indicating sound.

5,662,193

HOUSING FOR A RETRACTACLE CORD MECHANISM

Randolph Peter Ness, Ryley, Canada, assignor to Reel-Thing Innovations, Inc., The, Sherwood Park, Canada

Filed Dec. 18, 1995, Ser. No. 574,385

Int. Cl.[6] H02G *11/02*

U.S. Cl. 191—12.2 R **6 Claims**

1. A retractable cord assembly mechanism, comprising:

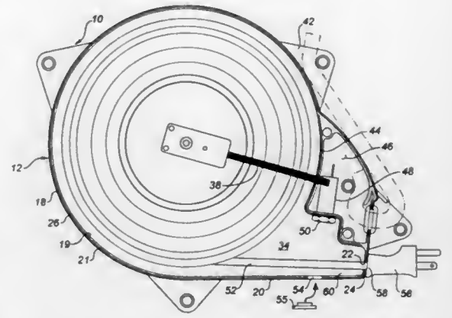
a first body;

a second body;

means for securing the first body to the second body in a water tight manner to create a composite body with an interior cavity, the composite body having a snout-like projection with an opening positioned at a terminus of the snout-like projection; and

means for mounting the composite body with the snout-like projection angled downwardly such that any water splashed up into the interior cavity of the composite body drains by force of gravity out of the snout-like projection; and

the composite body including a water resistant secondary compartment in which a circuit breaker is disposed, the circuit breaker being coupled to wiring of a cord positioned on a retracting mechanism.



5,662,194

HYDROKINETIC TORQUE CONVERTER

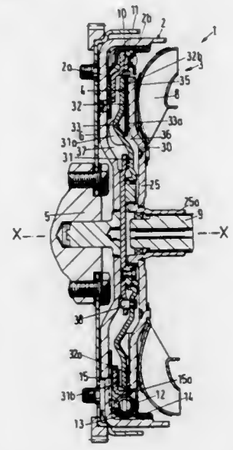
Johann Jackel, Baden-Baden, Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Division of Ser. No. 332,549, Oct. 28, 1994, Pat. No. 5,613,582. This application May 22, 1996, Ser. No. 651,410

Claims priority, application Germany, Oct. 29, 1993, 43 37 118.3; Sep. 19, 1994, 44 33 256.4

Int. Cl.[6] F16D *33/00*

U.S. Cl. 192—3.29 **16 Claims**



1. A hydrokinetic torque converter comprising a housing rotatable about a predetermined axis by an output element of an engine in a vehicle and defining a chamber for a pressurizable hydraulic fluid which circulates in response to rotation of the output element, said housing having a wall extending substantially radially of said axis between a rotary turbine of the torque converter and the output element; an engageable and disengageable lockup clutch disposed in said chamber between said wall and said turbine and including at least one friction disc rotatable with said housing and a piston disposed between said wall and said turbine, at least one of said at least one friction disc and said piston being rotatable relative to the other thereof at least in the disengaged condition of said clutch and said piston dividing said chamber into a first compartment adjacent said wall and a further compartment adjacent said turbine, said piston being movable in the direction of said axis in response to the establishment of pressure differentials between the fluids in said compartments, said clutch being at least partially engaged in

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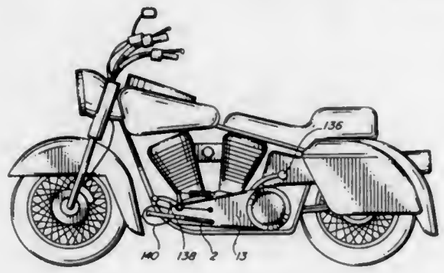
response to a rise of fluid pressure in said first compartment and a resulting movement of the piston away from said wall and being disengaged in response to a rise of fluid pressure in said further compartment entailing a movement of said piston toward said wall; and means provided in at least one of said compartments for reducing the difference between a higher speed of circulation of fluid in said further compartment and a lower speed of circulation of fluid in said first compartment while the engine is coasting and the clutch is at least partially disengaged.

5,662,195

SHIFTER ASSEMBLY CONVERSION KIT

Larry Rush, 5301 Pinedale Clr., Rapid City, S. Dak. 57702

Filed Jun. 30, 1995, Ser. No. 497,433
Int. Cl.[6] B60K *41/22;* **B62K** *23/06;23/08*
U.S. Cl. 192—3.51 **8 Claims**



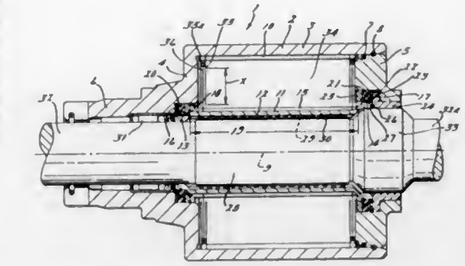
1. A motorcycle gear shift conversion kit for converting a foot operated shift mechanism coupled to a motorcycle transmission and a hand-operated clutch mechanism connected to a motorcycle transmission clutch to a hand-operated shift mechanism connected to the motorcycle transmission and a foot-operated clutch mechanism connected to the motorcycle transmission clutch, comprising:
- a foot-pedal assembly comprising a mounting bracket mountable onto portion of the motorcycle, a foot-pedal axle member coupled to and extending outwardly from the mounting bracket, a foot pedal member coupled to and pivotable about the foot-pedal axle member, a cable receiving cam member coupled to the foot-pedal axle member, and a cable adjustment block member coupled to the mounting bracket;
- a cable member having first and second ends thereof, a first end of the cable member being engageable with the cable receiving cam member and a second end of the cable member being coupled to the motorcycle transmission clutch, whereby movement of the foot-pedal member tensions and causes the cable member to travel thereby actuating the motorcycle transmission clutch; and
- a hand-shifter member coupled to the motorcycle transmission.

5,662,196

VISCOUS COUPLING HAVING A TOOTHED HUB USED AS CARRIER FOR THE INNER PLATES

Makoto Hagiwara, Bonn, and Manfred Hofer, Siegburg, both of Germany, assignors to GKN Viscodrive GmbH, Lohmar, Germany, and Viscodrive Japan PK, Tochigi, Japan

Filed May 31, 1995, Ser. No. 455,101
Claims priority, application Germany, Jun. 1, 1994, 44 19 232.0
Int. Cl.[6] F16D *35/00;13/52*
U.S. Cl. 192—58.41 **8 Claims**



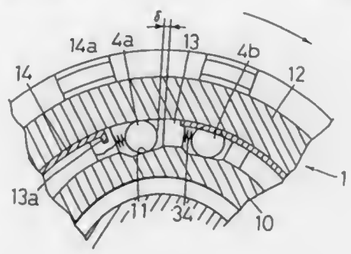
1. A viscous coupling having a housing which consists of:
- a tubular housing casing to whose ends there are attached end walls so as to extend radially relative to a longitudinal axis;
- a hollow hub which is arranged coaxially thereto in the housing and which, at its two ends, is received in bores in the end walls by means of cylindrical bearing faces so as to be rotatable relative to the housing around the longitudinal axis, at a region of one of the bearing faces, an inner diameter of the hub is smaller than a base diameter of an inner toothing of the hub and that in a region of the other bearing face, an inner diameter of the hub is equal to or greater than a base diameter of the inner toothing of the hub;
- annular outer plates and inner plates partially radially overlapping and arranged alternately in a certain sequence in an inner chamber formed between the housing and the hub; and
- a viscous fluid which at least partially fills a part of the inner chamber, the outer plates by means of teeth provided at an outer circumference, being non-rotatable received in inner toothing of the housing extending parallel to the longitudinal axis and the inner plates by means of teeth provided in a central bore, being non-rotatably received in outer toothing of the hub extending parallel to the longitudinal axis and the hub being provided with the inner toothing for being connected to a shaft;
- the hub is manufactured by a non-chip-producing forming operation, starting from a cylindrical tube, with the teeth of the outer toothing of the hub forming gaps between the teeth of the inner toothing of the hub and with gaps between the teeth of the outer toothing of the hub forming the teeth of the inner toothing of the hub.

5,662,197

BICYCLE ROLLER CLUTCH

Koshi Tabe, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Oct. 4, 1995, Ser. No. 539,199
Claims priority, application Japan, Oct. 12, 1994, 6-273055
Int. Cl.[6] F16D *41/06*
U.S. Cl. 192—64 **20 Claims**



1. A one-way clutch comprising:
- an internal rotary member;
- an external rotary member;
- wherein a surface of the internal rotary member and a surface of the external rotary member define a clutch member space so that a width of the clutch member space varies from a wider portion to a narrower portion,
- a clutch member disposed in the clutch member space so that:

(1) relative rotation between the internal rotary member and the external rotary member is inhibited when the clutch member is disposed in the narrower portion of the clutch member space; and

(ii) relative rotation between the internal rotary member and the external rotary member is allowed when the clutch member is disposed in the wider portion of the clutch member space;

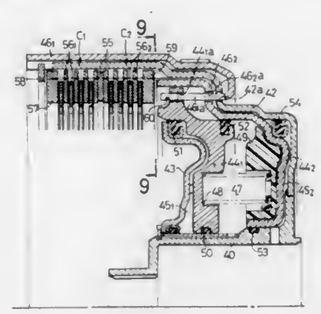
- a clutch member support for supporting the clutch member within the clutch member space; and
- a coupling member for increasing a coupling force between the clutch member support and one of the internal rotary member or external rotary member when the clutch rotates in a drive direction and for decreasing the coupling force between the clutch member support and the one of the internal rotary member or external rotary member when the clutch rotates in an opposite direction.

5,662,198

TANDEM TYPE HYDRAULIC CLUTCH SYSTEM

Yoichi Kojima, and Yoshihiro Kodama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1995, Ser. No. 516,543
Claims priority, application Japan, Aug. 19, 1994, 6-195186
Int. Cl.[6] F16D *25/10;25/0638*
U.S. Cl. 192—87.11 **15 Claims**



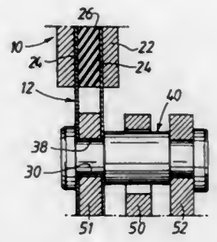
1. A tandem type hydraulic clutch system, comprising: a first hydraulic clutch having first frictional engagement elements for being urged by a first urging member connected to a first clutch piston which is driven by a hydraulic pressure applied to a first clutch oil chamber; and a second hydraulic clutch having second frictional engagement elements for being urged by a second urging member connected to a second clutch piston which is driven by a hydraulic pressure applied to a second clutch oil chamber, said first and second hydraulic clutches being axially juxtaposed, wherein
- said first and second frictional engagement elements are supported on axially opposite sides of a stopper fixedly mounted on a clutch drum, said first frictional engagement elements being urged toward said stopper by said first urging member, and said second frictional engagement elements being urged toward said stopper by said second urging member,
- wherein said first and second clutch pistons are disposed on one axial side of said first and second frictional engagement elements, and
- wherein one of said first and second clutch pistons is located at a position axially closer to said first and second frictional engagement elements than the other of said first and second clutch pistons and said one clutch piston applies an urging engagement force to one of said first and second frictional engagement elements from an axial side opposite said one axial side of said first and second frictional engagement elements whereas said other clutch piston applies an urging engagement force to the other of said first and second frictional engagement elements from said one axial side.

5,662,199

FRICTION WHEEL, ESPECIALLY FOR A MOTOR VEHICLE CLUTCH

Gisèle Chevallier, Bonnac la Cote, France, assignor to Valeo, Paris Cedes, France

Filed Jul. 25, 1996, Ser. No. 687,256
Claims priority, application France, Jul. 28, 1995, 95 09447
Int. Cl.[6] F16D *13/68*
U.S. Cl. 192—107 C **11 Claims**



1. A clutch friction wheel defining an axis of rotation and including a friction disc, the friction disc comprising: two support elements, each support element having a peripheral portion, each said peripheral portion having an inner face and an outer face, the said inner faces thereof being in facing relationship with each other, each support element further having a central fastening portion, each of which defines an inner face thereof, each said central fastening portion being an extension of the associated said peripheral portion radially towards the axis of rotation; two friction liners, each said friction liner being bonded on the said outer face of the peripheral portion of a respective one of the said support elements; a progressive action element of elastic material constituting a spring and interposed between the said inner faces of the peripheral portions of the said support elements, the said progressive action element being fixed to at least one of the support elements; and at least one locating element interposed between, and fixed to, the said inner faces of the central fastening portions of the support elements, wherein the friction disc is a unitary pre-assembled sub-assembly, with the central fastening portion of one of the said support elements, and the said locating element, together defining bayonet fitting means for fitting that support element and the locating element together.

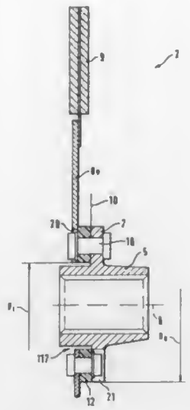
5,662,200

CLUTCH DISC OF A MOTOR VEHICLE, WHICH CLUTCH DISC HAS AN ELASTIC CONNECTION BETWEEN THE CARRIER PLATE AND HUB

Klaus Memmel, Forst-Schonungen; Günter Wawrzik, Schweinfurt; Winfried Stürmer, Euerbach, and Harald Jeppe, Schweinfurt, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jul. 7, 1995, Ser. No. 499,305
Claims priority, application Germany, Jul. 8, 1994, 44 24 186.0
Int. Cl.[6] F16D *13/68*
U.S. Cl. 192—209 **20 Claims**

11. A clutch disc for a motor vehicle clutch, said clutch disc comprising:
- a hub disposed about a rotational axis;
- a carrier plate;
- said carrier plate comprising friction lining means;
- means for fastening said hub to said carrier plate;
- said fastening means comprising means for elastically connecting said hub to said carrier plate;
- said fastening means comprising first fastening means and second fastening means;
- said first fastening means comprising means for fastening said elastic connecting means to said hub;
- said second fastening means comprising means for fastening said elastic connecting means to said carrier plate;



said elastic connecting means comprising at least one elastic element;

said at least one elastic element comprising an elastic portion; and

said elastic portion being disposed between said first fastening means and said second fastening means to separate said first fastening means and said second fastening means to minimize noise conduction between said hub and said carrier plate.

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BANKNOTE READER

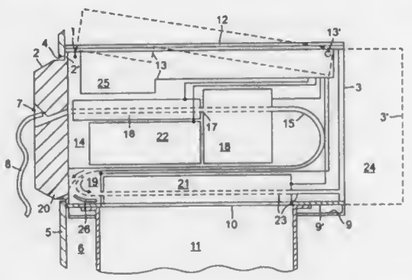
André Gerlier, Sciez, France; Roberto Polidoro; Guillermo Garcia, both of Geneva, Switzerland, and André Delessert, Thonon-les-Bains, France, assignors to Mars Incorporated, McLean, Va.

Continuation of Ser. No. 162,140, Apr. 18, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 551,930

Claims priority, application Switzerland, Apr. 16, 1992, 1271/92

Int. Cl.[6] G07F *7/04*

U.S. Cl. 194—206 **32 Claims**



8. Banknote validator apparatus constructed from a plurality of different component modules, and comprising:

an identity determining device for determining the identity of said different component modules; and

a control device operatively connected to said identity determining device and arranged to carry out a control program which varies in dependence on the determined identity of said component modules.

5,662,202

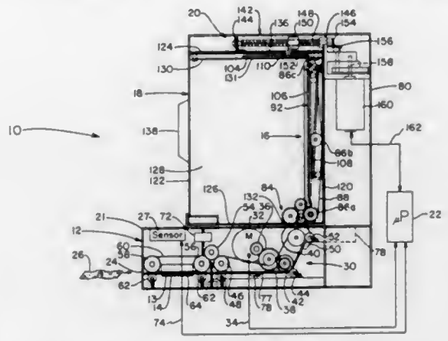
CURRENCY VALIDATOR WITH CASSETTE CASH BOX

Vladimir Suris, Mayfield Heights, Ohio, assignor to Ardac Incorporated, Eastlake, Ohio

Filed Nov. 24, 1995, Ser. No. 562,398

Int. Cl.[6] G07F *7/04*

U.S. Cl. 194—206 **18 Claims**



1. A currency validator with cassette cash box, comprising:

an acceptor module for receiving various sizes of currency;

means for validating whether the currency meets predetermined criteria and for determining a size of the currency, said validating means coupled to said acceptor module;

a stacker for receiving the currency from said acceptor module and inserting the currency into a cassette cash box; and

a screw drive mechanism operative with said stacker, wherein said screw drive mechanism controls an amount of travel of said stacker depending upon the size of the currency as determined by said validating means to insert the currency into said cassette cash box.

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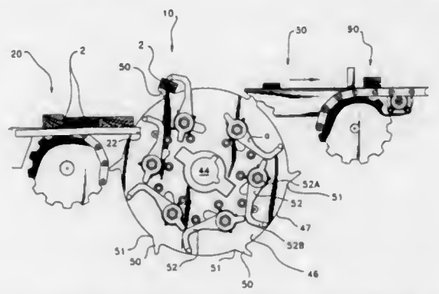
LUMBER TRANSFER SYSTEM

Michel St-Pierre, and Daniel Bussiére, both of Normandin, Canada, assignors to Les Ateliers D'Usinage Normandin Inc., Quebec, Canada

Filed Jun. 14, 1995, Ser. No. 490,403

Int. Cl.[6] B65G *47/04*

U.S. Cl. 198—463.5 **14 Claims**



1. A lumber transfer system for individually transferring substantially parallel lumbers from a feeding conveyor to an outfeed conveyor and regularly spacing the lumbers thereon, the lumber transfer system comprising:

(a) a loader comprising:

a base;

a driving shaft operatively mounted on the base and for extending between the feeding conveyor and the outfeed conveyor;

means for driving the shaft in rotation;

a plurality of carrying disks coaxially mounted on the driving shaft;

a plurality of gasping means mounted on each carrying disk and being equally distributed thereon around the shaft, each grasping means being aligned with a corresponding grasping means on each other disks and comprising:

a tooth provided on an outer edge of the corresponding disk and substantially projecting radially therefrom;

a lumber grasping arm; and

rotary actuator means adjacent to the tooth for rotatably mounting one end of the arm aside and parallel to the corresponding disk, the rotary actuator means rotating alternately the arm towards a closed position where a free end of the arm is extending beyond the outer edge of the corresponding disk near the tooth and is acting as pliers therewith for grasping and holding a lumber lying at a delivering end of the feeding conveyor; and towards an open position where the free end of the arm is not extending beyond the outer edge of the corresponding disk so that the lumber is not held by it, each of the teeth defining an angle with reference to a dial direction of the disks so that each lumber transferred by corresponding teeth is first lifted up by bases of said corresponding teeth and slightly rotated to lay parallel to the corresponding teeth as the lumber leaves the feeding conveyor;

b) stopping means connected to the base and actuatable for stopping a lumber arriving at the delivering end of the feeding conveyor and thereby preventing the lumber from reaching the outer edge of the disks while waiting to be transferred;

(c) first control means for synchronizing the outfeed conveyor and the shaft; and

(d) second control means for synchronizing an operation of the rotary actuator means and stopping means in function of the rotation speed of the shaft so that each lumber arriving at the delivering end of the feeding conveyor is stopped by the stopping means, released to be transferred by one tooth provided on each disk and then grasped by the corresponding arms as they are rotated towards their closed position, the lumber being then transferred to the outfeed conveyor and laid on a loading end thereof as the arms are rotated towards their open position, the lumbers transferred on the outfeed conveyor being regularly spaced apart.

5,662,204

MONEY OPERATED GAMING MACHINE

Wilhelm Menke, and Börge Heidersberger, both of Bingen/Rhein, Germany, assignors to NSM Aktiengesellschaft, Germany

PCT No. PCT/EP94/03080, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO95/13598, PCT Pub. Date May 18, 1995

PCT Filed Sep. 14, 1994, Ser. No. 481,523

Claims priority, application Germany, Nov. 11, 1993, 43 38 611.3

Int. Cl.[6] G07F *17/32*

U.S. Cl. 194—215 **27 Claims**

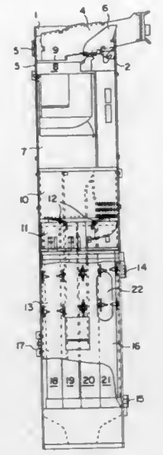
1. A money operated gaming machine comprising

a box-like housing, a door pivoted on one side wall and able to be locked to such housing, such door bearing on an outer side thereof game areas and a design characterizing the game,

a coin unit, arranged in the housing, and provided at least with a coin inlet, with a coin tester, with a coin distribution and guiding means, with coin stack tubes and with a coin counting and paying out means,

rails secured to the side wall, located on the opening side of the door, of the housing, a carriage adapted to run on such rails, a frame held by such carriage, and holding means provided on such carriage for the individual modules constituted by the components of the coin unit,

characterized in that



on the inner side of the rear wall of the frame (**1**) a printed circuit board (**80**) is held having U-like and knife-like limbs (**81**) constituting electrical contacts, which on insertion of a module (**13**) provided with electrical contact springs (**82**) into the frame (**1**) come into electrical contact with such springs.

5,662,205

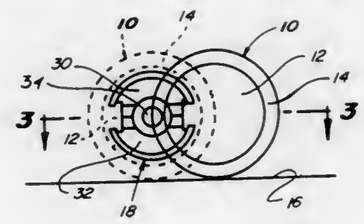
COIN DETECTION DEVICE

Joseph L. Levasseur, St. Louis County, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Nov. 3, 1994, Ser. No. 333,842

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—317 **15 Claims**



13. A device for sensing predetermined characteristics of a coin constructed of a material having predetermined electro-magnetic characteristics comprising a track along which the coin moves, first and second spaced optical sensors positioned along the track in positions to be optically interrupted when the coin moves by, a third sensor associated with one of said first and second sensors to be selectively energizable to generate an electro-magnetic field in a predetermined portion of the coin including a first electro-magnetic field when a central portion of the coin is adjacent thereto and a second electro-magnetic field when a different portion of the coin is adjacent thereto.

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5,662,206

APPARATUS FOR SORTING CONVEYOR WITH A TILTABLE SUPPORTING TRAY

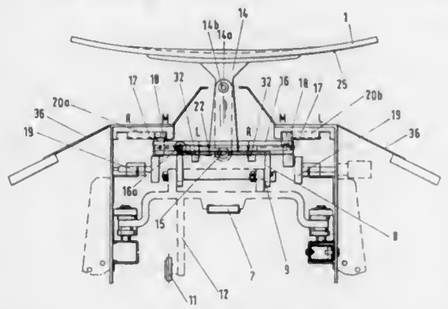
Ingolf Baum, Dietzenbach; Heinrich Droste, Babenhausen, and Holger Humburg, Hanau, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Dec. 22, 1995, Ser. No. 577,872

Claims priority, application Germany, Dec. 23, 1994, 44 47 396.6

Int. Cl.[6] B65G *47/52*

U.S. Cl. 198—370.04 **14 Claims**



1. A sorting conveyor of the type having a tiltable tray which moves in a transporting direction and which is tilted at a preselected location for discharging an item on said tray, said sorting conveyor comprising:

a supporting tray;

a driven car for carrying said supporting tray in said transporting direction;

a pendulum fastened to said supporting tray, said pendulum having a free end;

a slide, a joint for articulably mounting said free end of said pendulum at said slide;

a base body, said slide being slidably mounted on said base body for movement transverse of said base body in response to movement of said base body in said transporting direction;

a tilting axle operatively mounted on said driven car, said tilting axle being stationary with respect to said car, said pendulum being swivelably mounted on said tilting axle;

a plurality of stationary switching elements fixedly mounted at said preselected location;

a plurality of switching rockers supportable at said slide, said switching rockers being rotatable to the left and to the right of said transporting direction, said switching rockers being connected to said switching elements and being actuatable thereby;

a plurality of switching rollers operatively connected to said switching rockers; and

a plurality of stationary switch pieces with which said switching rollers are engagable for tilting said tray, said switch pieces being substantially cam-shaped.

5,662,207

PROCEDURE FOR LOADING A TRANSPORT STAR AND TRANSPORT ARRANGEMENT AS WELL AS USES THEREOF

Martin Lehmann, Obere Farnbühlstr. 1, 5610 Wohlen, Switzerland

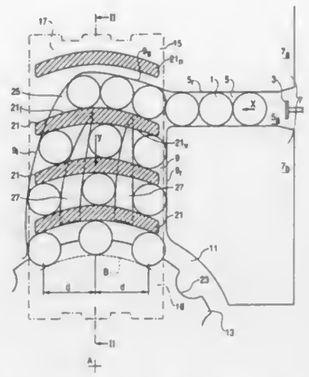
Filed Jan. 20, 1995, Ser. No. 375,661

Claims priority, application Switzerland, Jan. 21, 1994, 192/94

Int. Cl.[6] B65G *47/12;47/26;47/68*

U.S. Cl. 198—447 **6 Claims**

1. Transport arrangement for bulk items with a conveyor, by means of which the bulk items are conveyed in a stream essentially one after the other toward a conveyor star with transport recesses



and are transferred to said star, wherein there is an intermediate conveyor that conveys essentially radially with respect to said conveyor star and whose conveyance width essentially corresponds to the chord length between at least two successive transport recesses on said star and wherein at the intermediate conveyor there are carriers, each designed for a bulk-item group comprising at least two bulk items and having transport surfaces that are curved in accordance with the mutual positions of successive transport recesses on said star.

5,662,208

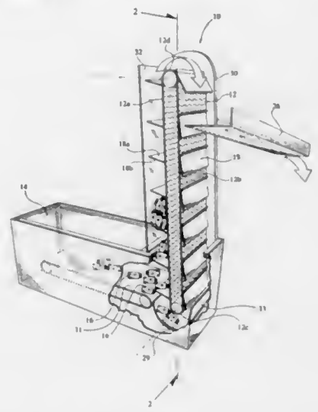
CONVEYOR WITH RETRACTABLE FLAPS FOR TRANSPORTING CONTAINERS

Hugues Drewitz, St-Eustache, Canada, assignor to H.G. Kalish Inc., Canada

Filed Jun. 7, 1995, Ser. No. 474,154

Int. Cl.[6] B65G *15/44*

U.S. Cl. 198—550.7 **11 Claims**



1. A conveyor system, comprising:

a) an endless belt having a first run travelling in a first generally upward direction and a second run travelling in a second generally downward direction;

b) a plurality of flaps mounted to said endless belt in a spaced apart relationship, each flap being movable between an extended condition and a retracted condition, in said extended condition the flap projecting a certain distance from said belt to form a carrying pocket capable of holding material to be transported by said endless belt, in said retracted condition said carrying pocket being collapsed, the flap being angularly movable in a downward direction between said extended condition and said retracted condition for causing said pocket to collapse and allow material therein to be discharged, the flap acquiring said extended condition on said first run and acquiring said retracted condition on said second run; and

c) a receptacle for receiving material transported by said endless belt, said receptacle being located at a distance from said second run that is less than said certain distance.

5,662,209

REVERSIBLE, PORTABLE CONVEYOR SYSTEM

Paul Radmall, Gloucestershire, United Kingdom, assignor to Rako Products Limited, United Kingdom

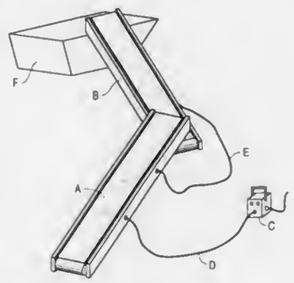
PCT No. PCT/GB93/02077, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/07781, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 6, 1993, Ser. No. 411,680

Claims priority, application United Kingdom, Oct. 6, 1992, 9220961

Int. Cl.[6] B65G *43/10*

U.S. Cl. 198—575 **6 Claims**



1. A conveying system comprising:

a plurality of conveyor units;

each conveyor unit having a frame supporting a roller at each end over which a conveyor belt passes in a continuous loop;

at least one of said rollers driven by an electric motor;

each of said conveyor units moveable relative to the other conveyor unit or units to form a conveyor feed path;

said electric motors of successive conveyor units interconnected by electrical cables via quick release electrical connectors so that said electric motors are powered and controlled in a common power circuit;

each conveyor unit further comprising a pair of quick-release electrical connectors, each of said electrical connectors in said pair of electrical connectors connected differently to the electric motor so that the connection of an electrical cable of the common power circuit to one electrical connector causes said electric motor to rotate in one direction, while the connection of the same electrical cable to the other electrical connector causes said electric motor to rotate in the opposite direction.

5,662,210

FOLDING APPARATUS FOR TRANSPORTING PARTICULATE MATERIAL

Robert J. Toews, Winkler, Canada, assignor to Commercial Welding Ltd., Winkleo, Canada

Filed Mar. 21, 1996, Ser. No. 619,183

Int. Cl.[6] B65G *21/10*

U.S. Cl. 198—632 **14 Claims**

1. A folding apparatus for transporting particulate material comprising:

a tube having a feed end and a discharge end;

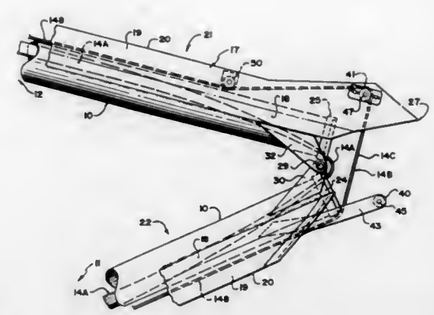
an endless belt having a first belt run and a second belt run with the first belt run passing through the tube and the second belt run passing along the tube outside the tube such that the first run can carry materials through the tube from the feed end to the discharge end;

guide means at the feed end and discharge end around which the belt is wrapped;

and hinge means for folding the tube from an initial operating position about an axis transverse to the tube and generally parallel to the first and second belt runs such that one portion of the tube on one side of the hinge means can fold back to a folded position in which said one portion lies generally alongside a second portion of the tube on an opposed side of the hinge means;

wherein the hinge means is arranged to one side of the tube opposite the second belt run such that the second belt runs is extended relative to the initial operating position by folding around the axis to form an extension portion which is released when the tube is returned to the initial operating position;

and wherein there is provided take up means for taking up the extension portion comprising a first belt guide member carried on the first tube portion adjacent the hinge means and a second belt guide member mounted on the second tube portion adjacent the hinge means with the belt wrapped around the first and second belt guide members such that, in the initial operating position, the first and second guide members take up the extension portion.



5,662,211

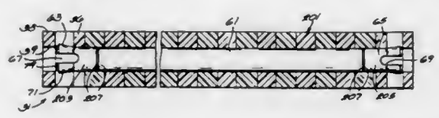
CONVEYOR CHAIN WITH SELF RETAINING HINGE PIN WITH INTERNAL BARBS

Larry E. Quentin, Oak Creek, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.

Filed Feb. 5, 1996, Ser. No. 595,465

Int. Cl.[6] B65G *17/06*

U.S. Cl. 198—853 **16 Claims**



1. A conveyor comprising a first conveyor element including an end comprising an interiorly located eye including therein an opening, and an end eye adjacently spaced from said interior eye to define therebetween a space and including therein an opening located in axial alignment with said opening in said interiorly located eye and having a given dimension, a second conveyor element including an end comprising an eye extending into said space between said end eye and said interiorly located eye and including therein an opening axially aligned with respect to said openings in said end eye and said interiorly located eye, and a hinge pin including a cylindrical portion extending in said opening in said interiorly located eye of said first conveyor element and in said opening in said eye of said second conveyor element, and an

axially outwardly diverging conically shaped end portion extending axially from said cylindrical portion and including an axially extending slot defining opposed barbs having outer ends located in adjacent relation to said end eye and having a dimension greater than said dimension of said opening in said end eye so as to normally be impassable through said opening in said end eye, whereby to normally prevent axially outward passage of said hinge pin through said end eye and whereby to permit passage of said hinge pin through said opening in said end eye when said barbs are displaced toward each other.

5,662,212

RADIUS ACTUATOR FOR A SAFETY SWITCH

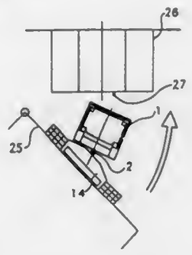
Rolf Wecke, Bückeburg; Roland Mönnings, Porta Westfalica, and Ralph Hoppmann, Minden, all of Germany, assignors to Hans Bernstein Spezialfabrik für Schaltkontakte GmbH & Co., Porta Westfalica, Germany

Filed Oct. 2, 1995, Ser. No. 538,412

Claims priority, application Germany, Oct. 11, 1994, 44 36 199.8

Int. Cl.[6] H01H *27/00*

U.S. Cl. 200—43.04 **20 Claims**



1. A safety switch assembly; comprising:

a safety switch so designed as to be securable to an apparatus to be protected, said safety switch exhibiting an access opening; and

a radius actuator securable to a movable part for displacement in direction toward the safety switch for operation thereof, said radius actuator including

a mounting attached to the movable part,

a slider retained in said mounting for movement therein in back and forth directions,

an operating key received in said mounting and adapted for insertion in the access opening of the safety switch for effecting operation thereof, said operating key being moveable between a slanted initiation position and a switch-actuating position, said operating key being tiltable about a pivot axis outside said slider and having one end resiliently supported by said slider, and

control means received in said mounting and adapted for cooperation with said slider for displacing said slider in either one of the directions.

5,662,213

TRIM SWITCH WITH WATERPROOF BOOT

David R. Kattler, Mantua, and Peter J. Trimble, Jr., Eastlake, both of Ohio, assignors to Delta Systems, Inc., Streetsboro, Ohio

Filed Mar. 4, 1996, Ser. No. 610,379

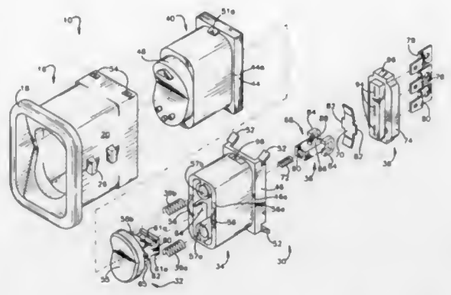
Int. Cl.[6] H01H *19/06*

U.S. Cl. 200—302.3 **13 Claims**

1. A trim switch comprising:

a) an outer housing defining an interior region; and

b) a rocker assembly, a least of portion of which is sized to fit within the outer housing interior region, the rocker assembly including:



i) a rocker support housing defining an interior region;

ii) a rocker mounted on the rocker support housing, the rocker pivotable between a plurality of positions;

iii) a terminal assembly supported by the rocker support housing, the terminal assembly including a plurality of terminals;

iv) a terminal bridging assembly supported within the rocker support housing interior region for pivoting movement with the rocker, the terminal bridging assembly including a terminal bridging contact bridging two terminals in at least one of the rocker positions; and

v) a flexible, waterproof boot overlying at least a portion of the rocker assembly and disposed between the outer housing and the overlied portion of the rocker assembly to prevent contaminants from entering the rocker support housing interior region, the overlied portion of the rocker assembly including the rocker and at least a portion of the rocker support housing adjacent the rocker.

5,662,214

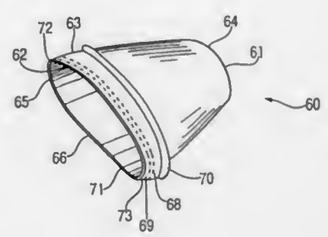
PACKAGE DISPENSER FOR PLURALITY OF GARMENTS

Frederick Wood, Medford, N.Y., assignor to Air Tite Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 229,639, Apr. 19, 1994, Pat. No. 5,456,354. This application Jul. 17, 1995, Ser. No. 502,926

Int. Cl.[6] B65D *85/08;85/14*

U.S. Cl. 206—69 **4 Claims**



1. A package for dispensing a condom directly on a penis comprising:

a container having the elongated shape of a condom closed at one end and open at another end, said container being made of a flexible material permitting said container to be flattened;

said container having a lip forming the open end thereof and a flange encircling the container adjacent said open end;

a first separator conforming to and lining the inside of said container with said first separator having an open end stretched over said flange for achieving a hermetic seal within said container, said first separator having a tear strip on the outside adjacent said flange for providing tearing of said first separator;

a condom within said container lining the inside of said first separator, with the open end of said condom rolled over said first separator and said flange, leaving said tear strip exposed;

a second separator lining the inside wall of said condom with the open end of said second separator rolled over said condom and first separator on said flange to achieve hermetic sealing of said condom, so that removal of said second separator permits the penis to be inserted into said condom and pulling of said tear strip unseals said condom from said first separator resulting in said condom being released so that the penis can withdraw from said container and first separator with said condom on the penis;

said container with the condom and separators therein normally being flattened for convenient storage and being enlargeable to the shape of a penis when said condom is to be dispensed on a penis.

3. A package for dispensing condoms directly on a penis comprising:

a container having the elongated shape of a condom closed at one end and open at another end, said container being made of a flexible material permitting said container to be flattened;

said container having a lip surrounding the open end thereof and a flange encircling the container adjacent said open end;

a first separator conforming to and lining the inside of said container with said separator having an open end stretched over said flange for achieving hermetic sealing of the inside of said container, said first separator having first tear strip means on the outside adjacent said flange for unsealing the inside of said container;

a first condom within said container lining the inside of said first separator, with the open end of said condom rolled over said first separator and said flange, leaving said first tear strip means exposed;

a second separator lining the inside wall of said first condom with the open end of said second separator rolled over said first condom and first separator on said flange achieving hermetic sealing of said first condom, said second separator having second tear strip means on the outside adjacent said flange and said first tear strip means for tearing said second separator;

a second condom within said container lining the inside of said second separator, with the open end of said condom rolled over said first separator, said first condom, and said second separator, leaving said first and second tear strip means exposed;

a third separator lining the inside wall of said second condom with the open end of said third separator rolled over said first and second condoms and separators on said flange achieving hermetic sealing of said second condom and leaving said tear strip means exposed, so that removal of said third separator permits the penis to be inserted into said second condom and pulling of said second tear strip means unseals said second condom from said second separator resulting in said condom being released so that the penis can withdraw with said second condom on said penis, providing access to said container for a second penis to be inserted for later withdrawal with the first condom on said second penis;

said container with the interleaved condoms and separatorso therein normally being flattened for convenient storage and enlargeable to the shape of a penis when said condoms are to be dispensed.

5,662,215

PACK MADE FROM THIN PACKAGING MATERIAL AND PROCESS FOR THE PRODUCTION OF SAID PACK

Heinz Focke, and Jürgen Focke, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

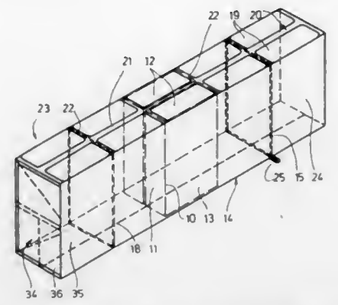
Continuation of Ser. No. 220,880, Mar. 31, 1994, abandoned. This application May 2, 1996, Ser. No. 643,105

Claims priority, application Germany, Apr. 1, 1993, 43 10 646.3

Int. Cl.[6] B65D *85/10*

U.S. Cl. 206—273 **14 Claims**

1. A bundle pack comprising a group of individual cigarette packs (**10**), and an outer wrapping (**14**) made from thin packaging material and enwrapping said group of individual cigarette packs



(**10**), said cigarette packs having large front and rear walls, narrow side faces (**11**), and small end faces (**12**) and bottom faces (**13**), wherein:

said, cigarette packs (**10**) are arranged in two rows of five cigarette packs each come to rest in the bundle pack, the cigarette packs (**10**) resting next to one another with the large front walls or rear walls and, within the same row, with the narrow side faces (**11**), and the cigarette packs have 2×5=10 end faces (**12**) or bottom faces (**13**) facing towards the bundle pack,

b) the outer wrapping (**14**) has a side wall (**20**) containing a plurality of windows (**19**) functioning as means through which markings or stamps may be affixed on the end (**12**) or bottom (**13**) faces which come to rest adjacent said side wall (**20**) of the outer wrapping (**14**);

c) the plurality of windows (**19**) are punched out in a region of the side wall (**20**) and are delimited from one another by only four transverse parallel webs (**22**) of the packaging material, the transverse webs (**22**) extending transversely relative to the side wall and thus transversely over both said rows of cigarette packs; and

d) tear-resistant reinforcing strips (**15** to **18**) are connected to the outer wrapping (**14**) along the transverse webs (**22**), so that the outer wrapping (**14**) consists of the packaging material and the reinforcing strips (**15** to **18**) in the region of the transverse webs.

5,662,216

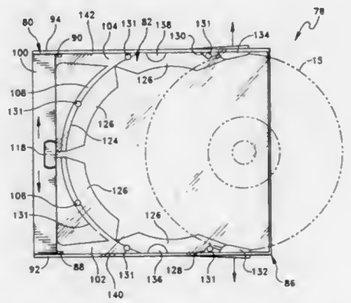
JEWEL CASE FOR COMPACT LASER DISC

Alexander H. Nesbitt, 29 Elm St., Newport, R.I. 02840, and Thomas A. Garland, 76 Reservoir Clr., Jamestown, R.I. 02835

Filed Nov. 15, 1995, Ser. No. 559,443

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **14 Claims**



8. A jewel case for a disc element comprising:

rectilinear base and cover members which are hinge connected along a first side edge thereof, said base member and said

cover member cooperating to define an interior cavity for receiving said disc element when said base member and said cover member are in a closed position, said base member and said cover member further cooperating to define an edge opening along a second side edge thereof when said base member and said cover member are in said closed position

engagement means within said interior cavity for releasably engaging a peripheral side edge of said disc element, said disc element being fully exposed and accessible for removal when said base member and said cover member are in an open position, said engagement means being movable between a normal engagement position for engaging said disc element, and a second release position for releasing said disc element for removal of said disc through said edge opening; and

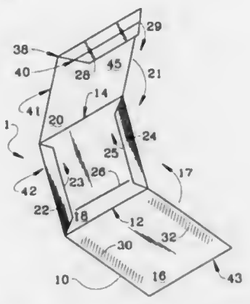
actuator means for actuating said engagement means between said engaging and releasing positions.

5,662,217

COMPACT DISC SLEEVE PACKAGE

Nicole Durr, 2200 N. Florida Mango Rd., West Palm Beach, Fla. 33409

Filed Feb. 23, 1996, Ser. No. 605,903
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **9 Claims**



1. A compact disc containment package comprised of:

a CD containing sleeve formed from a unitary rectangular sheet of material with longitudinal ends and widthwise sides, said sheet being divided into three adjoining sections including a middle section of about 127 mm by 128 mm, an end section of about 127 mm by 128 mm, and a cover section of about 128 mm×128 mm, said cover section including said sealing flap extending from its end, and said middle section including a folding tab of about 20 mm with angle ends disposed on each side and a widthwise slot for receiving said sealing flap;

wherein said CD containing sleeve is formed by:

folding said tabs over onto said middle section, and then folding said end section over upon said tabs and permanently securing the tabs to the contacting portions of said folded end section; and

wherein said package is sealed by folding said cover section over said formed sleeve so that said flap wraps around and is received by said middle section receiving slot.

5,662,218

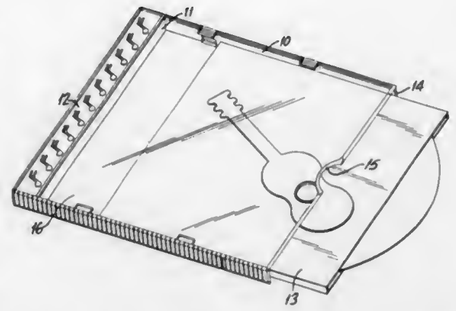
REUSABLE COMPACT DISC PACKAGE

James A. Ladwig, Chicago, Ill., assignor to AGI Incorporated, New York, N.Y.

Filed Apr. 5, 1994, Ser. No. 223,202
Int. Cl.[6] B65D *85/30;85/57*
U.S. Cl. 206—313 **3 Claims**

3. A package for a compact disc, comprising:

a front component having a rectangular flat surface with top and bottom perpendicularly attached segments on opposite sides



of the flat surface, the top and bottom segments extending the width of the flat surface;

the top and bottom segments having lock tabs which protrude outwardly from the segments and inwardly toward the flat surface;

a curved notch on an opening side of the front and rear rectangular component;

a rear component comprising a rectangular flat surface with dimensions similar to the front rectangular component, top and bottom side walls slightly inset from the exterior of the flat surface with small receptacles coinciding with the lock tabs on the front component such that the front component fits securely to the rear component to form the assembled package, and a spine compartment formed by parallel third and fourth segments perpendicularly attached along a spine side of the flat surface; and

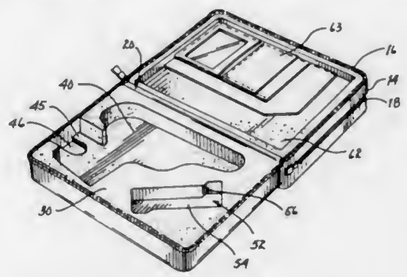
an essentially square display area for displaying the compact disc sleeve.

5,662,219

APPARATUS FOR CARRYING A CONCEALED WEAPON AND METHOD

Daniel W. Tschudy, 3821 N. Apache Way, Scottsdale, Ariz. 85251; Roger L. Otterstein, 13556 N. 103 Way, Scottsdale, Ariz. 85260, and Kenneth M. Grise, 8507 E. Mallory, Mesa, Ariz. 85207

Filed Aug. 28, 1995, Ser. No. 520,306
Int. Cl.[6] B65D *85/00;* **E05B** *65/52;* **A45C** *3/00;13/02*
U.S. Cl. 206—317 **23 Claims**



1. An apparatus for concealing and carrying a weapon comprising, in combination:

support means for supporting the weapon

covering means for enclosing said support means and concealing the weapon; and

fastening means coupled to said covering means for closing said covering means to conceal the weapon and for opening said covering means to remove the weapon from said support means; said support means comprises:

a holder block having a first recess in a first side of said holder block for securing the weapon; and

connection means coupled to a surface of said holder bock located opposite said first side of said holder block for removably coupling said support means to said covering means.

23. A method for concealing and carrying a weapon comprising the steps of:

providing support means for supporting the weapon;

providing covering means for enclosing said support means and concealing the weapon; and

providing fastening means coupled to said covering means for closing said convening means to conceal the weapon and for opening said covering means to remove the weapon from said support means;

said step of providing said support means comprising the steps of:

providing a holder block having a recess in a first side of said holder block for securing the weapon;

providing connection means coupled to a surface of said holder block located opposite said first side of said holder block for removably coupling said support means to said covering means;

said step of providing said recess in said holder block comprising the steps of providing a bottom planar surface for supporting a bottom side of the weapon and a perimeter wall surface extending upward from said bottom planar surface and around a portion of a perimeter area of said weapon when the bottom side of the weapon lies on said bottom planar surface; and

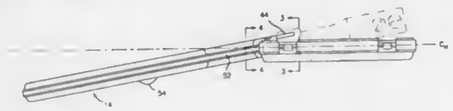
providing quick access means located beneath said bottom planar surface and comprising a depression in said bottom planar surface for permitting a user's fingers to reach beneath said bottom planar surface for quickly removing the weapon.

5,662,220

CASE

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Filed Mar. 22, 1996, Ser. No. 620,459
Int. Cl.[6] A45C *11/26*
U.S. Cl. 206—349 **25 Claims**



1. A case for holding an object, comprising:

a first containment means for containing at least a first portion of said object, said first containment means including means for exposing at least the first portion of said object;

a second containment means for containing at least a second portion of said object; and

wherein said containment means are relatively pivotal in a first and second direction, further including means for limiting the extent of relative pivotal movement between said first and second containment means, wherein said means for limiting comprises first means for stopping pivoting in said first direction and second means for stopping pivoting in said second direction.

5,662,221

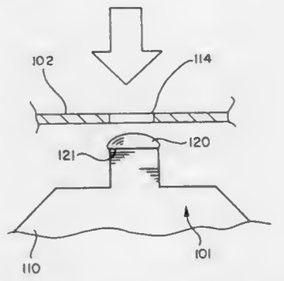
LOW-COST SAFE BLADE PACKAGE FOR SURGICAL PURPOSES

Michael R. Abidin, Birmingham, Ala., and Steven P. Lehmbeck, Baltimore, Md., assignors to Bloom & Kreten, Towson, Md., a part interest

Continuation-in-part of Ser. No. 435,668, May 5, 1995, Pat. No. 5,528,811, which is a division of Ser. No. 245,009, May 18, 1994, Pat. No. 5,433,321. This application Oct. 19, 1995, Ser. No. 547,685

The portion of the term of this patent subsequent to May 18, 2014, has been disclaimed.

Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—354 **14 Claims**



1. A blade package for a blade used for surgical purposes, wherein the blade is intended to be mounted on the cleat of a scalpel handle, and wherein the blade is provided with a slot having a forward portion and is further provided with a tip and a cutting edge, comprising

a base,

means on the base for supporting the blade and assuring that the cutting edge on the blade will not become dulled by inadvertent contact with the base during shipment, storage or handling of the blade package, and

a relatively-thin film secured to the base and covering the blade, the film being provided with at least a frangible portion, such that the film may be torn away or lifted up and away from the base to expose the blade, such that the cleat on the scalpel handle may be inserted into the slot in the blade to mount the blade on the scalpel handle, and such that the blade mounted on the scalpel handle may be lifted out of the base of the blade package.

9. A blade package for a blade used for surgical purposes, wherein the blade is intended to be mounted on the cleat of a scalpel handle, and wherein the blade is provided with a slot having a forward portion and is further provided with a tip and a cutting edge, comprising

a base,

means on the base for supporting the blade and assuring that the cutting edge on the blade will not become dulled by inadvertent contact with the base during shipment storage or handling of the blade package, and

a relatively-thin film secured to the base and covering the blade, the film being provided with at least a frangible portion, such that the film may be torn away or lifted up and away from the base to expose the blade, such that the cleat on the scalpel handle may be inserted into the slot in the blade to mount the blade on the scalpel handle, and such that the blade mounted on the scalpel handle may be lifted out of the base of the blade package,

wherein the means on the base for supporting the blade and assuring that the cutting edge on the blade will not become dulled by inadvertent contact with the base during shipment, storage or handling of the blade package, comprises,

an upstanding pin on the base, and

the blade having a hole formed therein to receive the pin,

wherein the blade further has a rear portion, and

wherein the base has a rear end wall having a notch formed therein and receiving the rear portion of the blade, further

including an interference fit between the pin and the hole, and between the notch and the rear portion of the blade, respectively, such that the blade is received on the base with a "snap" fit.

14. A blade package for a blade used for surgical purposes,

wherein the blade is intended to be mounted on the cleat of a scalpel handle, and wherein the blade is provided with a slot having a forward portion and is further provided with a cutting edge, comprising

a base,

means on the base for supporting the blade and assuring that the cutting edge on the blade will not become dulled by inadvertent contact with the base during shipment, storage or handling of the blade package,

a relatively-thin film secured to the base and covering the blade, the film being provided with at least a frangible portion, such that the film may be torn away and lifted up and away from the base to expose the blade,

such that the cleat on the scalpel handle may be inserted into the slot in the blade to mount the blade on the scalpel handle, and such that the blade mounted on the scalpel handle may be lifted out of the base of the blade package;

wherein the means on the base for supporting the blade and assuring that the cutting edge on the blade will not become dulled by inadvertent contact with the base during shipment, storage or handling of the blade package, comprises an upstanding pin on the base,

the blade having a hole formed therein to receive the pin;

wherein the hole in the blade is disposed between the tip of the blade and the forward portion of the slot in the blade;

wherein the blade further has a tip and a rear portion, and wherein the base has a rear end wall having a notch formed thereon and receiving the rear portion of the blade;

further including an interference fit between the pin and the hole, and between the notch and the rear portion of the blade, respectively, such that the blade is received on the base with a "snap" fit;

wherein the film is transparent so that the blade is visible in the blade package; and

further including a tab on the frangible portion of the film, such that the tab may be gripped to rupture the frangible portion of the film and lift it up and away from the base to provide access to the blade.

5,662,222

INFORMATIONAL MEDIA MAILER WITH REPLY CARD

Bryan Keith Thayer, 1121 E. Eagle Ridge Clr., Sandy, Utah 84094, and Kerri Denise Scarbrough, 672 E. 640 North, Orem, Utah 84057

Filed Dec. 18, 1995, Ser. No. 599,550

Int. Cl.[6] B65D *85/672*

U.S. Cl. 206—387.1 **12 Claims**

1. A mailable package and reply card, comprising:

a front panel having a first end and a second end;

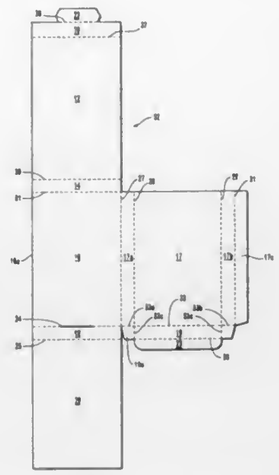
a first top panel having a first end and a second end, said first end of said first top panel being hingedly connected to said second end of said front panel;

a top panel connecting panel having a first end and a second end, said second end of said front panel being hingedly connected to first end of said top panel connecting panel;

a bottom panel having a first end and a second end and first and second sides, said first end of said bottom panel being hingedly connected to said second end of said top panel connecting panel;

a bottom panel connecting panel having a first end and a second end, said first end of said bottom panel connecting panel being hingedly connected to said second end of bottom panel;

a second top panel having a first end and a second end, said first end of said second top panel being hingedly connected to said second end of said bottom panel connecting panel;



a first side panel having a first side and a second side and a top end, said first side of said first side panel being hingedly connected to said second side of said bottom panel;

a third top panel having first and second sides and first and second ends, said first side of said third top panel being hingedly connected to said second side of said first side panel;

a second side panel having first and second sides and a top end, said first side of said second side panel being hingedly connected to said second side of said third top panel; and

an overlapping panel having a first side and a second side, said first side of said overlapping panel being hingedly connected to said second side of said second side panel;

wherein, when said box is closed, said second top panel is disposed between said first and third top panels, and said bottom wall connecting panel is adjacent to said front wall;

wherein said overlapping panel is connected adjacent to said first side of said bottom panel;

wherein said first end of said third top panel, said top ends of said first and second side walls and said first end of said bottom panel form an aperture for receiving informational media; and

wherein said reply card is included on a panel selected from the group consisting of first top panel and said second top panel.

5,662,223

PLASTIC CONTAINER

Ingvar Sylegård, Hässleholm, Sweden, assignor to Perstorp AB, Perstorp, Sweden

PCT No. PCT/SE93/00862, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/10053, PCT Pub. Date May 11, 1994

PCT Filed Oct. 22, 1993, Ser. No. 428,200

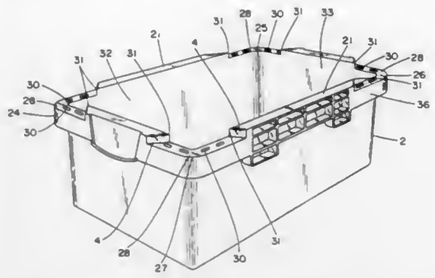
Claims priority, application Sweden, Nov. 4, 1992, 9203254

Int. Cl.[6] B65D *6/02*

U.S. Cl. 206—508 **15 Claims**

1. A plastic container, basket or the like comprising; in combination:

i) a box having a base, four walls extending upwards from the base with adjacent pairs of said walls being joined, each of said four walls having an upper edge wherein said adjacent pairs of said four walls are joined to form four upper corners, and an upper rim formed along said upper edges and said upper corners of said four walls, said upper rim having recesses located in said four upper corners, said recesses having vertical surfaces formed integral with said upper rim



and being arranged so that an angle of less than 135° is formed between the vertical surfaces and the associated walls; and

ii) a lid having four sides being positionable on said box, four lid corners forme dat the juncture of said four sides, an upper surface, a lower surface and an outer surrounding border, said four lid corners having vertical surfaces arranged on the lower surface of said lid that cooperate with the corresponding vertical surfaces of the recesses in the rim of the box, said four lid corners being provided with reinforcing twin-walled sections extending in parallel with said upper and lower lid surfaces, and guiding means extending above the upper surface of said lid being arranged in the four corners of the upper surface of the lid, said guiding means guiding a second container stacked or superimposed upon the lid into a predetermined orientation on said lid.

5,662,224

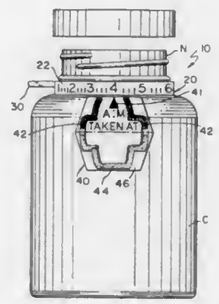
CONTAINER WITH TIME INDICATOR

Nelson E. Nogues, 3115 NW. 96 St., Miami, Fla. 33147

Filed Dec. 17, 1996, Ser. No. 767,930

Int. Cl.[6] B64D *83/04*

U.S. Cl. 206—534 **5 Claims**



1. In a container that includes a neck with a circular cross-section and having first and second ends, said first end includes an opening, and a container body having a larger diameter than the diameter of said neck, said container body being connected to said second end, the improvement comprising:

A) a ring member rotatably mounted on said neck adjacent to said second end and said ring member having a plurality of markings along its periphery; and

B) two reference marking assemblies mounted on said container substantially adjacent to said ring member, each of said marking assembly including a reference member, and including each a foldable pad member with means for selectively covering said reference member.

5,662,225

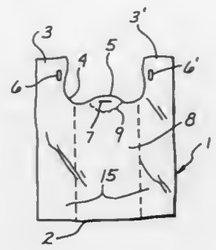
T-SHIRT BAG AND RACK COMBINATION

Robert B. DeMatteis, 1668 Mill Stream Dr., Chino Hills, Calif. 91709

Continuation-in-part of Ser. No. 351,629, Dec. 8, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 626,293

Int. Cl.[6] B65D *33/14*; **A63B** *55/04*; **B65B** *67/04*

U.S. Cl. 206—554 **6 Claims**



1. In combination,

a rack, said rack comprising a transverse support member and a pair of parallel rods extending horizontally forward from said support member, said rods being spaced apart from each other by a predetermined distance and disposed in a common horizontal plane; said rack further having an element disposed intermediate said rods and projecting upwardly above said common plane; and

a pack of plastic T-shirt merchandise bags, each bag of the pack having front and rear panels, said panels being secured to each other along their bottom edges to form a closed bottom end and secured together along their side edges, said side edges terminating in bag handles spaced apart from each other and closed along the upper handle edges; an open bag mouth between the handles and defined by the upper inner edges of the panels, each of the said upper inner edges having a centrally detachable portion extending downwardly into its panel, said centrally detachable portion having a transverse slit, said slit being disposed at a level below the remaining portions of said upper inner edges adjacent the centrally detachable portion to receive the upwardly projecting rack element; each of said centrally detachable portions being adhered to adjacent centrally detachable portions of the pack; and each of the side edges of one of said panels having an orifice spaced apart from the orifice in the other side edge of the panel by said predetermined distance and said orifices being mounted on said rods;

whereby when the front panel of the forwardmost bag of the pack is pulled forward, it is detached from its detachable portion and forms an open bag mouth supported by the rods for loading the bag.

5,662,226

KEGGING FACILITY CONTROL PROCESS AND APPARATUS

Volker Till, Hofheim am Taunus, Germany, assignor to GEA Till GmbH & Co., Kriftel, Germany

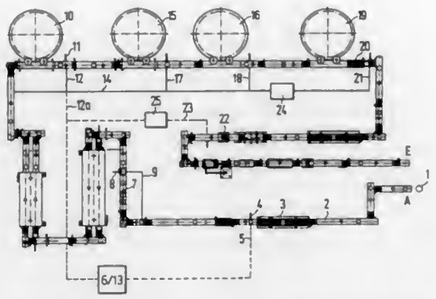
Filed Mar. 16, 1995, Ser. No. 405,301

Claims priority, application Germany, Mar. 16, 1994, 44 08 842.6

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—2 **15 Claims**

1. In a process for the filling of kegs, the process including the delivery of kegs which are to be filled with a product liquid along a transport path to a plurality of successively arranged treatment stations whereby each keg is prepared for use, cleaned and filled, tests being performed at each treatment station to identify abnormalities in the keg and/or treatment step, the improvement comprising:



classifying each identified abnormality either as a keg defect or as treatment step related;

ejecting kegs for which an abnormality has been identified from the transport path; and

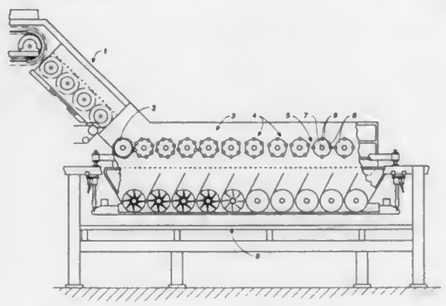
automatically reintroducing kegs for which the identified abnormality has been classified as treatment step related back into the transport path at a point upstream of where the test which identified the abnormality was conducted.

5,662,227

APPARATUS FOR LENGTH SCREENING OF ELONGATED PARTICLES

Jarmo Laitinen, Hyvinkää , Finland, assignor to Sunds Defibrator Lovlisa Oy, Finland

Filed Feb. 2, 1996, Ser. No. 595,539
Claims priority, application Finland, Feb. 6, 1995, 950518
Int. Cl.[6] B07B *13/05*
U.S. Cl. 209—667 **5 Claims**



1. An apparatus for length screening of elongated particles, said apparatus comprising a roll set (2) comprising at least two spaced-apart generally horizontal rolls (4), mounted generally parallel to one another and adapted to rotate with a gap (5) between successive spaced-apart rolls (4), characterized in that at least one of the spaced-apart rolls (4) of the roll set (2) has a circumference defined by longitudinally-extending cage bars (9) aligned parallel with a longitudinal axis of the roll (4), said cage bars (9) being arranged generally equidistantly spaced from one another so as to form a cage and said cage bars (9) having ends attached to planar members (8), said planar members having an annular perimeter, said planar members (8) being attached to a longitudinally-extending shaft (7) of roll (4) such that the plane of said planar members (8) is perpendicular to the longitudinal axis of the roll (4), wherein,

said apparatus has an intake end and an exit end, and

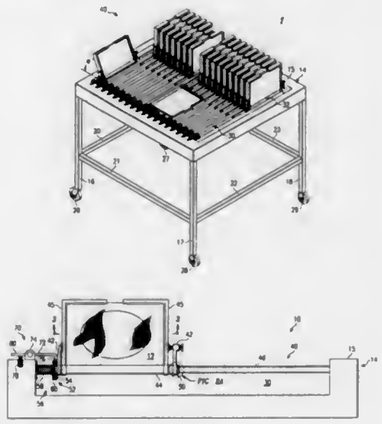
the number of longitudinally-extending cage bars (9) around the annular perimeter of each of said rolls (4) varies incrementally such that the number of longitudinally-extending cage bars (9) continually decreases from the intake end of the apparatus to the exit end of the apparatus, such that the widths of gaps (5) progressively increase in size from the intake end to the exit end of the apparatus.

5,662,228

ANATOMY TABLE

Felipe D. Mendoza, 7009 Lattimore Dr., Dallas, Tex. 75252; Alfredo Armendariz, Lubbock, Tex.; Devin L. Brown, Lubbock, Tex., and Sam L. Montanez, Lubbock, Tex., assignors to Felipe D. Mendoza, Dallas, Tex.

Filed Jan. 26, 1996, Ser. No. 592,810
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—169 **32 Claims**



1. An anatomy table comprising:

a substantially flat panel;

a plurality of clamp assemblies each being slidably engaged in parallel and secured to said panel, each clamp assembly securely holding a cross-sectional anatomy slice substantially parallel with one another; and

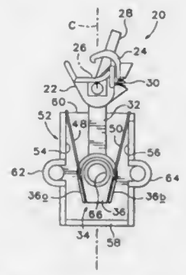
a plurality of rotation assemblies, each being coupled to one clamp assembly and being operable for rotating a cross-sectional anatomy slice to a plurality of predetermined angular viewing positions.

5,662,229

MODEL RAILROAD COUPLER CENTERING SYSTEM

Lawrence D. Edwards, Eagle Point, Oreg., assignor to Kadee Quality Products Co., White City, Oreg.

Filed Nov. 8, 1996, Ser. No. 745,564
Int. Cl.[6] A63H *19/18*
U.S. Cl. 213—75 TC **10 Claims**



1. A model railroad coupler centering system for use with a couple box, comprising:

a coupler having:

(1) a coupler head and a coupler knuckle carried pivotally thereon;

(2) an elongate coupler shank having one end thereof fixed to said coupler head;

(3) a coupler mounting structure carried at the other end of said coupler shank, wherein said mounting structure includes a mounting plate for pivotally mounting said coupler in the coupler box, said mounting plate further including spaced-apart, forwardly-diverging sides, and

(4) plural centering springs fixed to each of said forwardly-diverging sides;

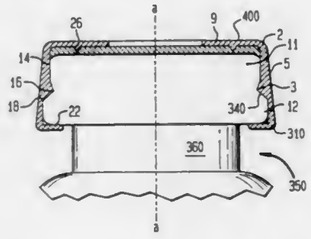
wherein, said centering springs are constructed and arranged to extend, when said coupler is centered, from said mounting plate to the coupler box and to make touching, non-flexed contact therewith; and wherein said centering springs are further constructed and arranged such that, when said coupler is off-center, only one of said centering springs makes contact with the coupler box.

5,662,230

CRIMP TOP SEAL FOR VIALS

James G. Finneran, Vineland, N.J., assignor to J. G. Finneran Associates, Vineland, N.J.

Continuation-in-part of Ser. No. 104,727, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 960,940, Oct. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 801,674, Dec. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,451, Jul. 13, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 477,079
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—252 **19 Claims**



1. A crimp top seal having a vertical axis and an outer diameter and adapted for use with a container which has a neck finish including an upper flange, a lower flange with a bottom, and an intermediate area disposed between the upper flange and the lower flange, said crimp top seal formed of plastic material and comprising:

(a) a top member having an underside,

(b) a dependent skirt, said dependent skirt:

(i) extending axially downward from said top member and having a lower end substantially flush laterally with the bottom of the lower flange of the container upon completed downward movement of said crimp top seal onto the container,

(ii) having a first substantially flat surface adapted to engage the upper flange of the container, a second substantially flat surface located axially below said first surface and adapted to engage the lower flange of the container, and a plurality of angular locking ribs located at an axially intermediate position between said first and second surfaces and at circumferentially spaced locations around said skirt and adapted to engage the intermediate area of the neck finish of the container upon downward movement of said crimp top seal onto the container, and

(iii) being sufficiently stiff to effect alignment and sealing engagement with the container by contact above, at, and below said locking ribs; and

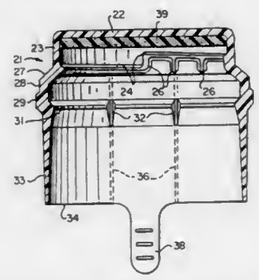
(c) crimping means positioned at said lower end of said skirt for crimping around the lower flange of the container to contact the bottom of the lower flange to further align and seal said crimp top seal on the container.

5,662,231

CAP FOR FLUID CONTAINER WITH THREADED NECK

Brian M. Adams, Newark, and Daniel Luch, Morgan Hill, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 16,577, Feb. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 772,949, Oct. 8, 1991, Pat. No. 5,232,125. This application May 8, 1995, Ser. No. 436,936
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—254 **22 Claims**



1. A cap for use with a container neck having a lip, a cylindrical portion below said lip formed with an external helical first screw thread and a crown bead below said cylindrical portion, said first screw thread having a top end and a bottom end, said top end being formed as a ramp of reduced thickness,

said cap comprising a top and a skirt depending from said top, said skirt having a restricted diameter cylindrical upper stretch formed with an internal helical second screw thread shaped and positioned to mate with said first screw thread, said second screw thread having a top end and bottom end an enlarged diameter stretch below said upper stretch for engaging said crown bead and an internal locking bead for engaging the underside of said crown bead, and at least one barrier extending downward from adjacent said top end of said second screw thread to adjacent said bottom of said second screw thread, said at least one barrier being horizontally aligned with said ramp when said cap is installed on said neck, whereby turning said cap relative to said neck in an unwinding direction causes said cap skin to expand outward and said second screw thread to disengage from said first screw thread.

5,662,232

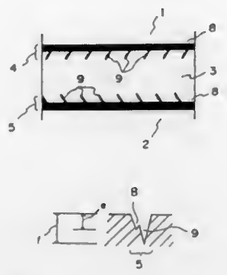
CAPSULE

Tatsuo Eguchi; Yoshitaka Tamura, both of Shiga, and Toshihiro Ueda, Osaka, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 378,323, Jan. 25, 1995, Pat. No. 5,458,251, which is a continuation of Ser. No. 30,270, Apr. 2, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 497,378
Claims priority, application Japan, Aug. 7, 1991, 3-70539 U
The portion of the term of this patent subsequent to Oct. 17, 2012, has been disclaimed.
Int. Cl.[6] B65D *41/32*
U.S. Cl. 215—254 **3 Claims**

1. A capsule for a bottle neck, comprising:

a cap portion;



a skirt portion; and

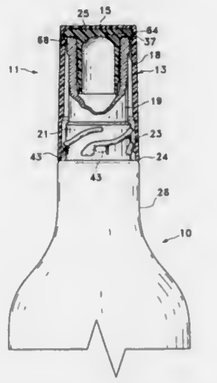
a tearable guarantee strip connecting said cap portion and said skirt portion, said tearable guarantee strip comprising weakening lines formed respectively at the boundary between said tearable guarantee strip and said cap portion and at the boundary between said tearable guarantee strip and said skirt portion, an under weakening line formed at the boundary between said tearable guarantee strip and said skirt portion having a linear compressed part extending along said boundary between said tearable guarantee strip and said skirt portion, and saw-tooth-like compressed parts serrating from said linear compressed part into said tearable guarantee strip, and said saw-tooth-like compressed parts compressed to a greater extent than said linear compressed part.

5,662,233

WINE BOTTLE CLOSURE

Grahame W. Reid, Novato, Calif., assignor to Innovative Molding, Inc., Sebastopol, Calif.

Filed Apr. 12, 1995, Ser. No. 421,492
Int. Cl.[6] B65D *45/00*
U.S. Cl. 215—273 **19 Claims**



1. A wine bottle and closure combination, comprising:

a wine bottle in the general shape and appearance of a wine bottle, and having a neck with a finish and external threads near an upper end,

a closure for the wine bottle, of size and configuration as to fit together in sealed relationship with the bottle, the closure including

(a) a plastic closure capsule with a generally horizontal top portion and an integral, elongated and generally cylindrical depending skirt portion having internal threads complementary to the external threads of the bottle such that the closure capsule can be screwed down onto the bottle,

(b) a sealing gasket positioned below the underside of the generally horizontal top portion of the closure capsule in position to engage the upper edge of the bottle's finish, said gasket being, at least in an annular area over the bottle's finish, not secured fast to the closure capsule,

(c) the closure capsule having engagement means on a lower side of said top portion, above said annular area of the sealing gasket, for engaging downwardly against the sealing gasket when the closure capsule is screwed down onto the bottle, and

(d) connection means between the closure capsule and the sealing gasket, for retaining the sealing gasket with the closure capsule while also providing a vertical clearance between the closure capsule and the sealing gasket such that the closure capsule engages downwardly against the sealing gasket when the closure capsule is screwed downwardly on the wine bottle and lifts upwardly on the sealing gasket when the closure capsule is unscrewed upwardly, the vertical clearance providing that for a portion of its rotational and vertical travel in unscrewing from the bottle the closure capsule is capable of rotation independently of the sealing gasket,

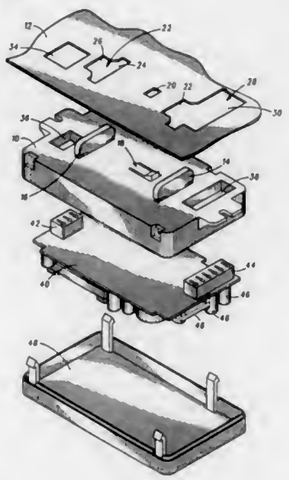
whereby the closure capsule may be screwed onto the wine bottle to press the sealing gasket down against the upper edge of the bottle's finish to tightly and sealingly engage the sealing gasket against the finish without rotation of the sealing gasket on the finish, the closure capsule slipping rotationally relative to the sealing gasket as the closure capsule is tightened down in engagement with the sealing gasket, and whereby, upon opening of the closure, initial unscrewing rotation of the closure capsule is accomplished with the closure capsule slipping relative to the sealing gasket, which initially remains stationary on the bottle's finish as the closure capsule rises through the vertical clearance, then the sealing gasket is engaged upwardly by the closure capsule and is lifted upwardly off the bottle's finish by the closure capsule as the closure capsule is further unscrewed upwardly, thus enabling the closure to be removed without having to rotationally overcome static friction of the gasket with the bottle's finish.

5,662,234

MOUNTING FOR FLUORESCENT LAMP BALLASTS

Jiri Slaby, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 26, 1996, Ser. No. 592,078
Int. Cl.[6] B65D *6/24*
U.S. Cl. 220—4.21 **18 Claims**



1. A ballast mounting comprising:

a housing including a base having at least one key extending away from the base;

a back plate having at least one key port adapted to receive the key and configured to allow the key to be positionally adjusted with respect to the back plate;

a lock structure for locking the base of the housing to the back plate; and

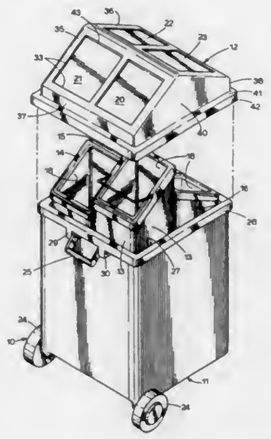
wherein the back plate has two key ports, the two key ports being substantially different in shape.

5,662,235

RECEPTACLE FOR RECYCLABLE MATERIALS

Daniel Nieto, 851 Suellen Dr., Tracy, Calif. 95376-1786

Filed May 13, 1996, Ser. No. 645,085
Int. Cl.[6] B65D *1/24*
U.S. Cl. 220—23.86 **14 Claims**



1. A receptacle for recyclable materials, comprising:

an outer housing having side walls, a bottom wall and an open top;

a plurality of separate containers removably held within the housing for receiving different types of materials to be held separate from one another;

a removable cover on the open top of the housing for closing the open top, but removable to permit access to the containers for removing them from the housing, said cover having oppositely sloping top walls;

a plurality of openings in the sloping top walls of the cover, with a separate pivotable lid closing each opening and with each lid in substantial alignment with a respective container held in the housing, so that the lids may be individually and separately opened for deposit of material through the openings in the cover and into the respective containers without the need for removing the cover from the housing, whereby when one or more containers are full, the cover can be removed and the container or containers lifted out to empty the contents for further disposition thereof, as desired; and

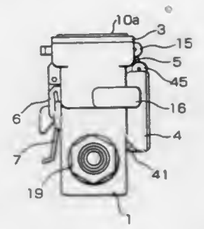
said containers each having side walls, a bottom wall and an open top, said open top being slanted complementally to the slope of the cover top walls so that the open tops of the containers lie closely adjacent and parallel to the underside of the cover when the cover is in place over the open top of the housing, thereby minimizing the likelihood that material placed through a lid in the cover will enter a receptacle other than that aligned with the lid.

5,662,236

WATERPROOF CASE FOR A CONNECTOR

Kazuomi Sato, Tokyo, Japan, assignor to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 461,649
Claims priority, application Japan, Jun. 7, 1994, 6-125295
Int. Cl.[6] B65D *45/20*
U.S. Cl. 220—324 **6 Claims**



1. A waterproof case for preventing a connector from being exposed to water, said waterproof case comprising a hood having opposed sides and an opening portion for containing said connector therein and a cap for closing said opening portion, said cap having a first and a second end opposite to each other, said waterproof case further comprising:

a cap mounting device connected to said cap and said hood for rotatably mounting said first end of the cap to said hood so that said opening portion is opened and closed with said cap being rotatably moved; and

close-keeping means connected to at least one of said cap and said hood for engaging with said second end of the cap and with the hood to keep a specific condition in which said opening portion is closed with said cap,

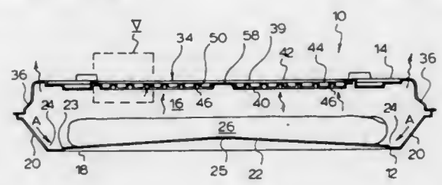
said hood comprising cap holding means for holding said cap from both sides thereof to keep a particular condition in which said open portion is opened.

5,662,237

CONTAINER FOR TRANSPORT OR STORAGE OF FOOD ARTICLES

Deron M. Cain, 909 Norsan Court, Newmarket, Ontario, Canada, L3X 1L1

Filed Aug. 27, 1996, Ser. No. 697,284
Int. Cl.[6] B65D *1/34;43/03*
U.S. Cl. 220—368 **20 Claims**



1. A container for transporting and storing a heated food article comprising,

a base for supporting said heated food article,

a peripheral wall extending generally upwardly about said base, and

a cover portion releasably engaging a portion of said peripheral wall to form a food chamber sized to receive said heated food article therein, said cover portion including,

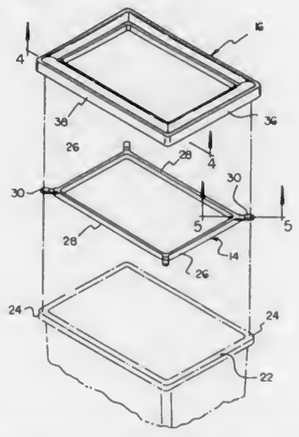
a top wall having inner wall means which when said cover portion forms said food chamber is spaced towards said chamber, and an outer wall means spaced from said inner wall means so as to define a cavity therebetween, and

aperture means extending through said inner wall means to provide gaseous communication between said chamber and

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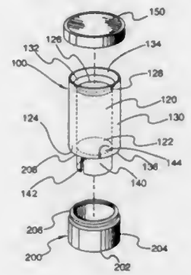
said cavity while substantially preventing return flow of condensation from said cavity into said chamber, whereby steam from said chamber may move through said aperture means into said cavity.

5,662,238
CONTAINER LINER HOLDER ASSEMBLY
Anthony J. Sarno, P.O. Box 1627, Lima, Ohio 45802
Filed May 3, 1996, Ser. No. 643,003
Int. Cl.[6] B65D *1/24*
U.S. Cl. 220—404 **11 Claims**



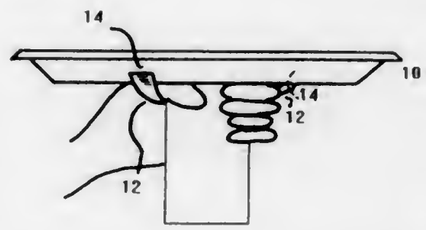
1. A new and improved container liner holder assembly comprising, in combination:
a container formed in a generally rectangular configuration with two wide upstanding side walls and two narrow upstanding sidewalls, each side wall having an upper edge, the container having a floor, an open top, an essentially hollow interior and four corners;
a liner holder including two parallel short rails and two parallel long rails arranged in a generally rectangular configuration, the liner holder having a hollow central region, an upper surface and four corners, each corner of the liner holder including a corner support extending therefrom at about a forty five degree angle with respect to the short and long rails, each corner support being formed in a generally rectangular configuration with a rounded outboard end, each corner support having an upper surface with a centrally positioned semicircular indentation, the liner holder having a smaller length and width than the open top of the container, in an operative orientation the corner supports of the liner holder being positioned upon corners of the container;
a liner fabricated of plastic and adapted to fit within the hollow interior of the container, the liner having a greater vertical height than the container, the liner having an upper edge, in an operative orientation the liner being placed within the container with the upper edge of the liner being positioned through the liner holder, the upper edge being folded over the upper surface of the liner holder and positioned within the hollow interior of the container adjacent the side walls; and
a cap including two parallel short side members and two parallel long side members arranged in a generally rectangular configuration, the cap having a hollow central region and four corners, each side member being formed in an inverted U-shaped configuration with a vertical interior wall, a vertical exterior wall and an upper wall, the upper wall including a flat lower surface and a generally semicircular shaped raised upper surface, the lower surface including a plurality of generally oval shaped prongs positioned therealong, in an operative orientation the cap being positioned over the liner holder and upper edge of the container, the prongs engaging the liner adjacent its upper edge to secure the liner in place against the rails of the liner holder.

5,662,239
MEDICINAL CONTAINER WITH COMPLETE INSTRUCTIONS
George M. Heuvelman, P.O. Box 544, Burlington, Ill. 60109
Filed Oct. 15, 1996, Ser. No. 730,713
Int. Cl.[6] B65D *51/24*
U.S. Cl. 220—506 **20 Claims**



1. A compartmented container for holding usable contents and information about the contents in proximity to the contents, the compartmented container comprising:
(a) an outer container having an inner container secured therein;
(b) a securing means mounting the inner container within the outer container;
(c) a first opening in the compartmented container;
(d) a second opening in the compartmented container;
(e) a first closure means releasably closing the first opening in the compartmented container;
(f) a second closure means releasably closing the second opening in the compartmented container;
(g) the first opening communicating with the inner container; and
(h) the second opening communicating with the outer container.

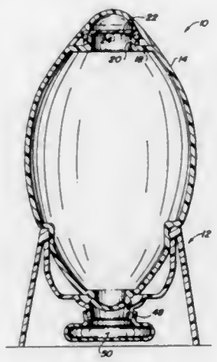
5,662,240
DISPOSABLE PLATE WITH FLEXIBLE HANDLES
Jeffrey W. Norris, 18-17-502B Chiyoda 4-chome, Naka-Ku, Nagoya, Japan, 460
Filed Feb. 13, 1996, Ser. No. 600,494
Int. Cl.[6] A61D *73/00*
U.S. Cl. 220—574 **2 Claims**



1. On a disposable plate comprising a type intended for dispensing food the improvement wherein said plate having an underside with a plurality of loop-shaped members attached whereby a human can conveniently support said plate with a plurality of digits

of one hand placed through their respective opposing loops while simultaneously sandwiching a beverage container between said digits.

5,662,241
CONTAINER AND STAND FOR LIQUIDS
Charles K. Sorensen, 9 Spur Cir., Scottsdale, Ariz. 85251
Filed Jul. 3, 1995, Ser. No. 497,922
Int. Cl.[6] B65D *41/00*
U.S. Cl. 220—630 **5 Claims**



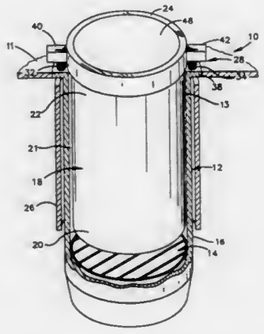
1. A novel combination of a container for liquids and a stand therefor, the container comprising:
a hollow container body, the hollow container body having an upper end and a lower end, the upper end having an opening therethrough,
a top which joins with the upper end of the container body to simulate a shape,
means for sealing and unsealing the opening,
the lower end of the body simulating the top and being removably mounted to the stand,
wherein said shape is a football and said stand is a football tee,
wherein the stand comprises a U-shaped portion having a base and arms extending laterally therefrom, said base further having a notch centered therein, said notch receiving the lower end of said body,
legs being mounted on each arm opposite said base, said legs extending upwardly therefrom to engage said body,
said notch comprising a depression which receives said lower end,
said notch further including channels and the lower end further having raised portions, said raised portions mating with said channels to more firmly mount the container to the stand, and
said stand further comprising a moisture chamber and said notch further including a drip opening providing communication between the notch and the moisture chamber whereby condensation dripping from the container collects in the moisture chamber.

5,662,242
ANTI-DROP PAINT CAN DEVICE
Raymond Steo, 610 S. Clinton St., Denver, Colo. 80231
Filed Nov. 3, 1994, Ser. No. 335,360
Int. Cl.[6] B65D *25/00*
U.S. Cl. 220—695 **5 Claims**

1. A flexible protector for reducing paint flow onto the sides and into the grooves of the top of a paint type can comprising a generally concave top having a circular periphery and having an elongated, substantially rectangular, opening intermediate its sides, sized for insertion of a brush into paint within the can and for stripping excess paint from the brush when withdrawing the brush from the paint, at least one area of reinforcement supporting the elongated opening.
a rim on the outer edge of the top with a shoulder for containing any outward flow of minor amounts of paint and
a depending flange of a width sufficient to fit over the outer, upper edge of a paint can of predetermined size
a projection means encircling the inner side of the flange for gripping adjacent its upper edge.

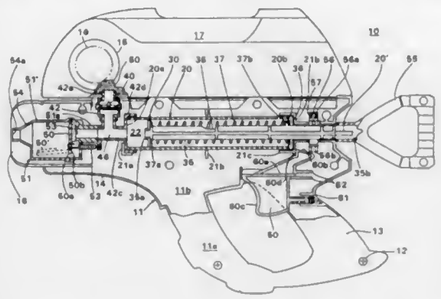


5,662,243
MELTING APPARATUS WITH MATERIAL RELEASE SENSING SYSTEM
Benjamin J. Bondeson, Buford; Paul S. Frates, Lawrenceville, both of Ga., and John E. Jackson, Moreland Hills, Ohio, assignors to Nordson Corporation, Westlake, Ohio
Filed Oct. 4, 1995, Ser. No. 539,085
Int. Cl.[6] B67D *5/62*
U.S. Cl. 222—1 **22 Claims**



13. A method of operating a thermoplastic material melting apparatus including a hopper having a container receiving space and a thermoplastic material receiving space, the method comprising the steps of:
supporting a container of thermoplastic material in said container receiving space and above said thermoplastic material receiving space with an open end of said container facing said thermoplastic material receiving space;
heating the container to promote liquification of the thermoplastic material and downward movement of said thermoplastic material from the open end of said container;
detecting when at least a portion of said thermoplastic material has moved downwardly through the open end of said container and into said thermoplastic material receiving space; and
signaling that the thermoplastic material has moved into said thermoplastic material receiving space.

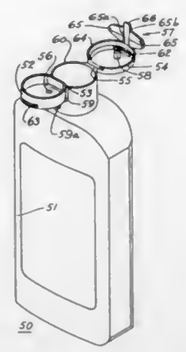
5,662,244
TOY WEAPON FIRING A LIQUID PROJECTILE
Dexter Chih-Teh Liu, Portsmouth, R.I., and Douglas F. Melville, Jr., Simsbury, Conn., assignors to LCD International, L.L.C., Newport, R.I.
Filed Jul. 14, 1995, Ser. No. 502,416
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—79 **19 Claims**



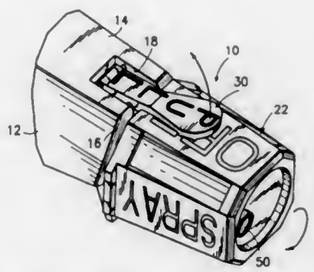
1. A toy weapon for firing a charge of water comprising:
(a) a housing defining a body of a toy weapon;
(b) a tube supported by the housing, the tube defining a firing chamber to hold a charge of water;
(c) a pivotally mounted flap valve located at one end of the tube through which end a water charge exits under pressure upon firing of the charge, so as to effectively close the one end of the tube sufficiently to retain a static charge of water in the tube;
(d) a water reservoir external to the tube;
(e) a conduit coupling the reservoir to the tube in proximity of the flap valve;
(f) a one-way valve located between the reservoir and the tube and oriented to permit water to be drawn from the reservoir into the firing chamber;
(g) a piston mounted to reciprocate within the tube, such that the piston draws the charge of water from the reservoir into the firing chamber on a back stroke and pressurizes the charge in the firing chamber on a forward stroke and
(h) a piston spring positioned to bias the piston in a forward stroke direction.

5,662,245
CONTAINER WITH INTEGRALLY MOLDED CLOSURE/TAMPER INDICATOR
Chris J. Grant, Brentford, United Kingdom, assignor to Schmalbach-Lubeca AG, Manchester, Mich.
PCT No. PCT/US93/12340, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO94/14696, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 17, 1993, Ser. No. 454,303
Claims priority, application United Kingdom, Dec. 18, 1992, 9226420; Feb. 9, 1993, 9302497
Int. Cl.[6] B67B *5/00*
U.S. Cl. 222—153.07 **22 Claims**

1. An integrally molded plastic container for containing a flowable substance to be dispensed, said container comprising: a container body blow molded to form a container neck portion and a shoulder portion interconnecting said container neck portion and said container body, said container neck portion defining an opening to the interior of the container and having a cross-sectional area that is substantially smaller than the cross-sectional area of said container body, and closure means including an orifice cap having an orifice, said orifice cap being flexibly hinged to said container neck portion adjacent to said container opening for pivoting movement from an open position to a closed position where said orifice cap closes said container opening, a sealing cap flexibly hinged to said container neck portion adjacent to said container opening for pivoting movement relative to said orifice cap between a closed position where said sealing cap is located in sealing relation with said orifice and an open position where said sealing cap is out of sealing relation with said orifice permitting the substance to flow out of the container through said orifice, said sealing cap having a fixed edge portion hinged to said container neck portion at a first side of said container neck portion and a free edge portion opposite to said fixed edge portion, said orifice cap having a fixed edge portion hinged to said container neck portion at a second side of said container neck portion which is opposite to said first side, said fixed edge portion of said orifice cap being located within the confines of said sealing cap and spaced inwardly of said free edge portion of said sealing cap when said sealing cap is in said closed position.

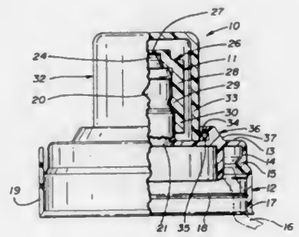


5,662,246
TAMPER-DETERRENT NOZZLE FOR PUMP DISPENSERS
William Contaxis, III, Middletown, Conn., assignor to Owens-Illinois Closure Inc., Toledo, Ohio
Filed Oct. 3, 1995, Ser. No. 538,667
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.07 **9 Claims**



1. A hand-operated dispenser for mounting on to a container, said dispenser comprising;
a. a pump body having a wall portion and a front end;
b. a nozzle assembly comprising a nose bushing at said front end of said body and a nozzle cap rotatably mounted on said nose bushing, the cap having an opening in a side thereof adjacent the front end of the body,
c. an elongate blocking tab having a rear portion unitary with and detachably connected to said wall portion of said body rearwardly of said front end, said tab having a middle portion extending forwardly from said rear portion and disposed in said opening in the nozzle cap, the tab having a forward finger-grippable portion extending forward from said middle portion, said middle portion, by being in the opening, preventing rotary movement between said nozzle cap and said body until said forward portion is pulled upwardly and rearwardly to tear said blocking tab from said wall portion and move said middle portion out of the opening in said nozzle cap.

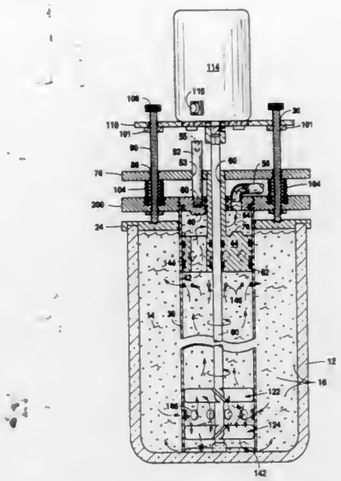
5,662,247
TAMPER EVIDENT PUSH PULL RESEALABLE CAP
Thomas P. Rapchak, and Michael Marino, both of New Castle, Pa., assignors to West Penn Plastics, New Castle, Pa.
Continuation-in-part of Ser. No. 536,623, Sep. 28, 1995. This application Mar. 15, 1996, Ser. No. 616,367
Int. Cl.[6] B67D *5/33*
U.S. Cl. 222—153.07 **12 Claims**



7. A tamper evident bottle cap for a bottle, the bottle having a neck with a spiral thread and an opening, the bottle cap comprising;
a. a lower top portion having a hole and a first annular flange extending from said lower top portion, the inside of said first annular flange having a spiral thread;
b. a first tamper evident ring being attached to the first annular flange;
c. a spout being integrally connected to said lower top portion and being in communication with the hole in said lower top portion, said spout having an aperture therethrough;
d. a top cap being slideably removable on said spout, said top cap having an upper top portion and the upper top portion having an opening, the aperture in the spout being registerable with the opening in said upper top portion;
e. a plug extending from said spout and being registerable with the opening in the upper top portion thereby defining a closure when the top cap is in a down position;
f. an over cap movably secured to said lower top portion and extending in spaced vertical and horizontal relation about said top cap; and
g. a plurality of frangible elements extending from said over cap connecting a second tamper indicating ring, a locking shoulder on said lower top portion being in spaced relation to said pour spout, the locking shoulder engageable on second tamper indicating ring.

5,662,248
SAMPLER FOR LIQUIDS
Thomas H. Collard, Jr., 1901 NW. Military Hwy., #112, San Antonio, Tex. 78213
Filed Nov. 30, 1995, Ser. No. 565,676
Int. Cl.[6] B67D *5/40*
U.S. Cl. 222—235 **14 Claims**

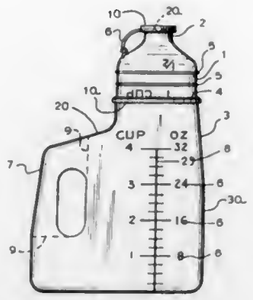
1. An apparatus for dispensing a portion of a liquid sample from a container comprising:
a generally hollow tube disposed within said container, said tube having a first end and a second end, said first end attached to a cap plate releasably attachable to an open top of said container, said cap plate having a discharge port and a cap valve seat, said tube having a first set of ports disposed near said first end of said tube, a second set of ports disposed near said second end of said tube, and a set of intermediary ports disposed between said first and said second set of ports;



a valve piston disposed within said tube movable from a first position to a second position, said valve piston having a passage for fluid communication from a bottom side of said valve to a top side of said valve piston, said passage axially aligned with said cap valve seat, and said valve piston having a discharge port seat, said seat axially aligned with said discharge port in said cap;
a means for continuously agitating remaining liquid sample in said container during dispensing of said portion of said sample liquid; and
a means for moving said valve piston from said first position to said second position wherein when said valve piston is in said first position said first set of ports are uncovered to allow continuous circulation of said liquid sample through tube and said container with discharge port seat seated in said discharge port and said cap valve seat seated in said passage and said liquid sample may not be dispensed from said container, and when said valve piston is in said second position said first set of ports are covered, said discharge port seat is unseated, said cap valve seat is unseated, thereby allowing said portion of liquid sample to be dispensed from said container while a remaining portion of liquid sample circulates through said second set of ports and said intermediary ports in said tube.

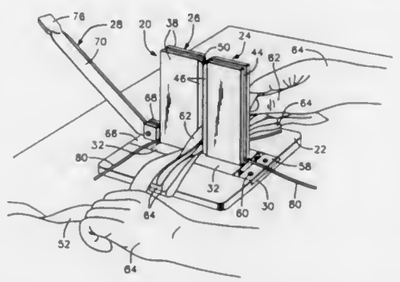
5,662,249
ALL IN ONE MEASURE/FUNNEL/POUR/MIX/SHAKE CONTAINER
Allison Grosse, 79 Woodland Dr., East Islip, N.Y. 11730
Filed Sep. 7, 1995, Ser. No. 525,974
Int. Cl.[6] B67C *11/00*
U.S. Cl. 222—461 **13 Claims**

9. A combination measuring, pouting, mixing, agitating and storing unit for liquid and powders, or any combination thereof, comprising:
a removable measuring cap compartment of light transmitting material having an input mouth end and an output mouth end forming a funnel shape with the input mouth end wider than the output mouth end, and a container compartment of light transmitting material having an opening forming a mouth thereon, said input end of the cap compartment sealable with the mouth of the container compartment, the cap compartment and container compartment each having a plurality of desired indicia positioned to provide measurements thereon,
said cap compartment having a removable and closable cap at the outlet mouth end and a seal thereat, said cap compartment



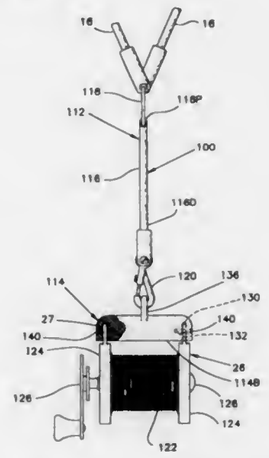
with closable cap positioned on the outlet mouth of the cap compartment being turnable upside down, and whereby a predetermined mount of powder is poured into the input end of said cap compartment up to a set of predetermined measurements located upon said cap compartment, and wherein the input end of the cap compartment with the powder therein is placed upon the mouth of the container compartment and inverted to place the cap compartment above the container compartment, the cap is then removed from the cap compartment, and a predetermined mount of liquid is poured through the cap compartment into the container compartment, the closable cap is inserted on the output end of the cap compartment and the mixture of flowable liquid-powder mixture is vigorously shaken to mix the contents thoroughly together, and wherein said cap compartment may be removed, inverted, and the outlet mouth end of the cap compartment inserted within the mouth of said container compartment, with the funnel shaped sides of the cap compartment forming a seal within the mouth of the container compartment for storage of said unused portion of the flowable liquid-powder mixture in a compact, refrigerated state.

5,662,250
BOW FORMING DEVICE
John M. Werling, Las Vegas, Nev., assignor to Sandy M. Sandler, Henderson, Nev.
Filed Jun. 30, 1995, Ser. No. 497,257
Int. Cl.[6] A41H *43/00;* **B25B** *1/00*
U.S. Cl. 223—46 **20 Claims**



1. A bow making device comprising a base, a pair of planar uprights supported below from said base for receiving portions of bow forming material therebetween to enable bow loops to be formed in the material, means mounting at least one of said uprights on the base for relative movement toward and away from the other upright and maintaining the uprights in opposed parallel and aligned relation generally perpendicular to said base, each of said uprights including a clamping edge at the intersection of two surfaces, said clamping edges being disposed in opposed relation to clamp bow forming material disposed therebetween and means biasing the moveable upright towards the other upright to clampingly engage portions of the bow forming material between the uprights.

5,662,251
FISHING HARNESS ADAPTER
Geoffrey Rossiter, 446 Watchogue Rd., Staten Island, N.Y. 10314
Filed Apr. 29, 1996, Ser. No. 638,648
Int. Cl.[6] A01K *97/10*
U.S. Cl. 224—200 **6 Claims**



1. A fishing harness adapter, for converting a fishing harness assembly having dual reel attachment straps into a single reel attachment strap unit and for converting a fishing reel having a plurality of eyes which provide respective attachment points for the dual reel attachment straps into a single attachment point for the single reel attachment strap unit comprising:

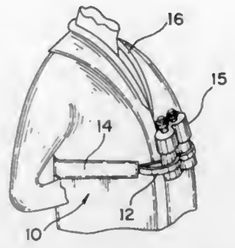
a) a harness lead assembly adapted to permit the dual reel attachment straps from the fishing harness assembly to be joined into a single reel attachment strap; and

b) a reel-eye hub assembly adapted to mate to a plurality of eyes of the fishing reel and allow the harness lead assembly to be secured to the fishing reel, comprising a top, a bottom, eye receptacles for receiving the eyes of the fishing reel extending from the bottom toward the top transverse to the length of the reel-eye hub assembly, side edges, bores extending inward toward the center from the side edges, set screws which are inserted into the bores and through the eyes which are located in the eye receptacles, and a hub flange protruding out from the center of the top of the reel-eye hub assembly for engaging the harness lead assembly.

5,662,252
TORSO STRAP FOR HOLDING TUBULAR BODIES
Sammy Lee Martin, 10805 Thunderhead Dr., Colorado Springs, Colo. 80925
Filed Mar. 21, 1996, Ser. No. 618,996
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—250 **5 Claims**

1. An article stabilizing device for articles suspended from a user's neck by a neck strap in combination with an article, comprising:

said article having a pair of tubular bodies adapted for viewing there through, each body having a length and a circumference,



said article having no external means for attachment of said article stabilizing device,

said article stabilizing device comprising:

an elastic strap having a pair of ends,

said strap being adapted to fit snugly about a user's torso,

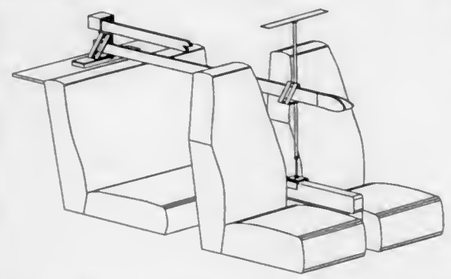
each of said ends having a spaced apart pair of mating fasteners, and

each of said ends respectively extending completely around the circumference of said bodies, and

each of said ends being secured with said mating fasteners,

whereby in use the suspended article is firmly secured to the user's torso by said elastic strap, and is movable to a position adjacent the user's eyes for viewing there through by stretching the elastic strap.

5,662,253
REMOVABLE VERTICAL SKI RACK FOR AUTOMOBILE INTERIORS
Tommy R. Goings, 249-12 Country Club Dr., Concord, N.C. 28025
Filed Aug. 8, 1996, Ser. No. 694,110
Int. Cl.[6] B60R *7/08*
U.S. Cl. 224—311 **1 Claim**



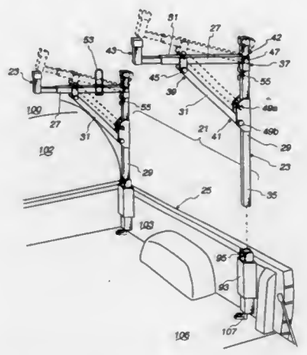
1. A ski rack kit for holding skis in the occupant space of a car, said ski rack kit comprising:

a front support assembly adapted for placement proximate the front of the occupant space, said front support assembly comprising top and bottom mounting bases and a vertically adjustable upright member connected therebetween, said upright member being vertically adjustable to press said top and bottom mounting bases against the roof and floor of the occupant space, respectively, so as to hold the front support assembly in place;

a padded shelf attached to said upright member, said padded shelf having means for securing one end of a pair of skis thereto;

a rear support assembly adapted for placement on a rear deck of the occupant space, said rear deck being located between the rear seat of the occupant space and the rear window of the car, said rear support assembly comprising a bracket having means for releasably securing said bracket in place on said rear deck and means for securing the other end of said pair of skis thereto.

5,662,254
RACK FOR VEHICLES
Scott W. Lemajeur, Carol Stream, and Don Kuball, Franklin Park, both of Ill., assignors to Kar-Rite International, Franklin Park, Ill.
Filed Aug. 16, 1995, Ser. No. 515,994
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—405 **15 Claims**



1. A vehicle rack for attachment to a vehicle having opposing upstanding sidewalls and for carrying elongated cargo comprising at least one frame, the frame comprising:

a post assembly adapted to be secured within a rigid receptacle mounted to one of the sidewalls;

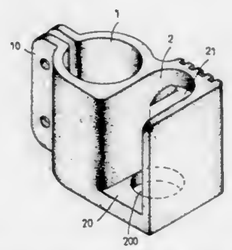
an arm assembly rotatably mounted to the post assembly;

means for releasably securing the arm assembly in two positions; and

a brace having a first end rotatably connected to the arm assembly and a second end rotatably connected to the post assembly;

wherein the securing means comprises a support plate secured to the post assembly, the support plate having two attachment areas, the second end of the brace being alternately securable to one attachment area to secure the arm assembly in the first position and to the second attachment area to secure the arm assembly in the second position.

5,662,255
LOCK HOLDER FOR FASTENING TO A MOTORCYCLE FOR CARRYING A MOTORCYCLE LOCK
Chien-Chzh Lu, No. 24, Chi-An St., Kang-Shan Chen, Kaohsiung Hsien, Taiwan
Filed Nov. 30, 1995, Ser. No. 566,426
Int. Cl.[6] B62J *7/00;9/00*
U.S. Cl. 224—451 **1 Claim**



1. A lock holder comprising a split tube-like mounting unit for fixing to the frame of a motorcycle, and a lock carrier unit at one side of said mounting unit for holding a motorcycle lock of the type comprising a U-shaped casing with a cylinder block project-

ing therefrom at one end and a lock cylinder having a keyway mounted in said cylinder block, and a U-shaped locking bar with a slotted plug rod at one end adapted to be inserted into said one end of said cylinder block for engagement with said lock cylinder, wherein said lock carrier unit comprises a flat bottom wall, and a flat top wall wherein each said wall has opposing peripheral edge portions, a first recess in said top wall extending through one edge portion thereof for receiving said U-shape casing, a round hole at the center of said flat bottom wall for passing the slotted plug rod of said U-shaped locking bar for permitting it to be connected to one end of said said U-shaped casing and locked by said lock cylinder, an upright wall extending between an opposite edge portion of said top wall and said flat bottom wall, a second recess defined in said upright wall at an inner side for receiving said cylinder block, and a through hole through said upright wall for alignment with said keyway of said lock cylinder when said cylinder block is inserted into said lock carrier mount.

5,662,256

BICYCLE RACK

Ken John Bryan, Lot 39 Castle Rd., Orchard Hills, New South Wales, 2748, Australia

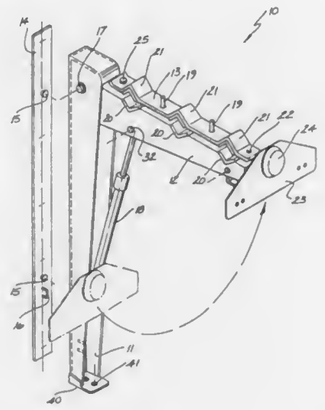
PCT No. PCT/AU93/00385, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO94/27857, PCT Pub. Date Dec. 8, 1994

PCT Filed Jul. 29, 1993, Ser. No. 557,114

Claims priority, application Australia, May 25, 1993, PL8987

Int. Cl.[6] B60R *9/10*; **A47F** *7/00*

U.S. Cl. 224—523 **10 Claims**



1. A bicycle rack comprising:

an upright post to be secured to an object,

an arm pivotably attached to said post and adapted to pivot between a first orientation essentially parallel with said post, and a second orientation essentially normal to said post,

means to lock said arm against pivoting in one or more preselected orientations,

retaining means to lockingly retain at least part of a bicycle to said arm, and

a number plate support pivotally attached to a remote end of said arm.

5,662,257

NAILING MACHINE

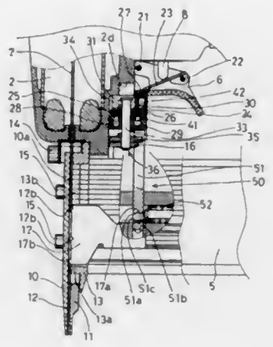
Kenji Mukoyama, and Noriaki Hayashi, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed Mar. 10, 1995, Ser. No. 402,528

Claims priority, application Japan, Mar. 11, 1994, 6-041404

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—8 **8 Claims**



1. A nailing machine comprising:

a body;

a driver extending from said body and vertically reciprocally movable for driving nails in a driving direction;

a driver guide for guiding said driver;

a contact arm mounted to said body for movement relative to said body between a first position and a second position in a direction parallel to the driving direction of said driver, said contact arm having one end for abutment on a work;

said driver guide and said contact arm cooperating with each other to form therebetween a nail driving channel through which the nails are driven into the work;

said driver guide and said contact arm mounted to said body for movement together from said first position to said second position when pressed against a work;

so that said driver guide having one end positioned substantially at the same position in the driving direction as said one end of the contact arm, and said nail driving channel extends to said one end of said contact arm.

5,662,258

SURGICAL STAPLER INSTRUMENT

Bryan Dale Knodel, Cincinnati; Richard Paul Nuchols, and Warren Pyatt Williamson, IV, both of Loveland, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 553,121, Nov. 7, 1995, Pat. No. 5,562,241, which is a division of Ser. No. 191,412, Feb. 3, 1994, Pat. No. 5,465,895. This application Jul. 11, 1996, Ser. No. 680,302

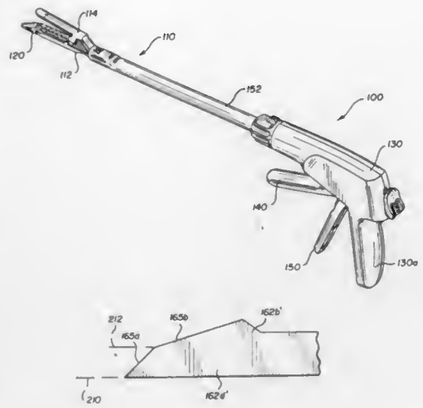
Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 **3 Claims**

1. A wedge work member for use in a surgical stapler having a staple cartridge provided with at least one driver supporting a staple, said wedge work member comprising:

a pusher block; and

at least one wedge, said at least one wedge including an elongated portion and a camming portion, said camming portion having first and second cam surfaces which sequentially engage said at least one driver supporting said staple to effect the firing of said staple, said first cam surface forming a first angle with a first plane and said second cam surface forming a second angle with a second plane, said first plane being generally parallel with said second plane and said first angle being different from said second angle.



5,662,259

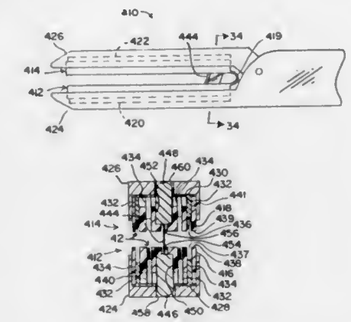
METHOD OF STAPLING ANATOMICAL TISSUE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 274,402, Jul. 13, 1994, Pat. No. 5,551,622. This application Apr. 9, 1996, Ser. No. 629,705

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 **9 Claims**



1. A method of stapling biological tissue comprising the steps of

positioning a first plurality of staples in at least two rows on a first side of the biological tissue to be stapled;

positioning a first plurality of staple-forming anvils in at least two rows on the first side of the biological tissue such that each row of staple-forming anvils is adjacent at least one row of staples;

positioning a second plurality of staples in at least two rows on a second side of the biological tissue in alignment with the first plurality of staple-forming anvils;

positioning a second plurality of staple-forming anvils in at least two rows on the second side of the biological tissue in alignment with the first plurality of staples;

piercing the biological tissue from the first side of the biological tissue with tissue piercing legs of the first plurality of staples;

piercing the biological tissue from the second side of the biological tissue with tissue piercing legs of the second plurality of staples;

bending the tissue piercing legs of the first plurality of staples against the second plurality of staple-forming anvils on the second side of the biological tissue;

bending the tissue piercing legs of the second plurality of staples against the first plurality of staple-forming anvils on the first side of the biological tissue; and

cutting the biological tissue between the rows of staples such that at least two rows of staples extending through the biological tissue in opposite directions are disposed on each side of the cut.

5,662,260

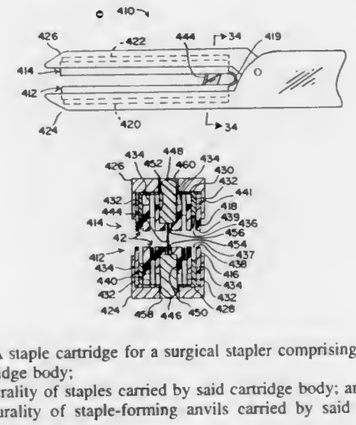
SURGICAL STAPLE CARTRIDGE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 274,402, Jul. 13, 1994, Pat. No. 5,551,622. This application Apr. 9, 1996, Ser. No. 629,706

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 **15 Claims**



10. A staple cartridge for a surgical stapler comprising

cartridge body;

a plurality of staples carried by said cartridge body; and

a plurality of staple-forming anvils carried by said cartridge body;

wherein said cartridge body defines a first plurality of openings holding said staples and a second plurality of openings holding said anvils.

5,662,261

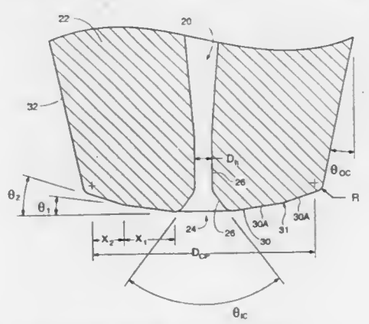
WIRE BONDING CAPILLARY

Rich Fogal, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 11, 1995, Ser. No. 420,237

Int. Cl.[6] B23K *20/10*

U.S. Cl. 228—4.5 **20 Claims**

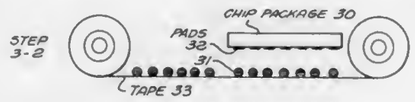


14. A wire bonding capillary, which comprises:

a. a capillary tip having an elongated hole therethrough, the hole terminating at one end of the capillary tip; and

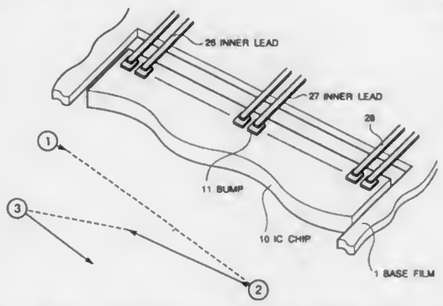
b. a face on the end of the capillary tip extending away from the hole at multiple angles, wherein a distinct vertex is formed at each change in angle.

5,662,262
TAPE WITHH SOLDER FORMS AND METHODS FOR TRANSFERRING SOLDER FORMS TO CHIP ASSEMBLIES
John Francis McMahon, Phoenix, Ariz., and George Chiu, Palo Alto, Calif., assignors to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 299,520, Sep. 1, 1994, Pat. No. 5,497,938.
This application Mar. 28, 1995, Ser. No. 412,292
Int. Cl.[6] B23K *35/00*
U.S. Cl. 228—56.3 **10 Claims**



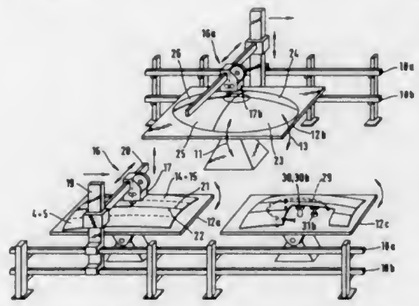
1. An apparatus comprising:
a roll of tape carrier having solder forms, said tape carrier being covered by a solder flux.

5,662,263
SINGLE POINT BONDING METHOD
Michitaka Urushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 30, 1995, Ser. No. 413,907
Claims priority, application Japan, Mar. 30, 1994, 6-061739
Int. Cl.[6] B23K *31/02*
U.S. Cl. 228—102 **12 Claims**



1. A single point bonding method of sequentially bonding a number of inner leads to corresponding electrodes arranged along each edge of a rectangular principal surface of a semiconductor chip, one lead at a time, by using a film carrier tape which has arrays of inner leads arranged on a base film and which is positioned so as to cause each of the inner leads to oppose a corresponding electrode of the semiconductor chip, comprising the steps of:
a) bonding an unbonded inner lead, of one of said arrays arranged along a side of the principal surface of the semiconductor chip located at a first corner of the one edge, to a corresponding electrode of the semiconductor chip;
b) bonding an unbonded inner lead of said one of said arrays located at a second corner of said one edge to a corresponding electrode of the semiconductor chip;
c) bonding an unbonded inner lead of said one of said arrays located next to the bonded inner lead at the first corner of said one edge;
d) bonding an unbonded inner lead of said one of said arrays located next to the bonded inner lead at the second corner of said one edge; and
e) sequentially repeating said step c), progressing from inner leads at the first corner toward inner leads at a central portion of said one edge, and said step d), progressing from inner leads at the second corner toward inner leads immediately adjacent to said inner leads at said central portion of said one edge, until all of said number of inner leads are bonded to corresponding electrodes.

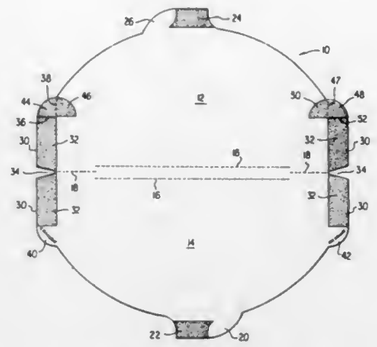
5,662,264
METHOD FOR WELDING ALUMINUM PLATES
Jukka Gustafsson, Mynämäki, and Kalevi Heino, Turku, both of Finland, assignors to Kvaerner Masa-Yards Oy, Helsinki, Finland
Filed Jun. 28, 1995, Ser. No. 495,989
Claims priority, application Finland, Jul. 1, 1994, 943158
Int. Cl.[6] B23K *9/007;37/00;37/04*
U.S. Cl. 228—170 **18 Claims**



1. A method of manufacturing a curved structure of welded together metallic plates, comprising supporting two metallic plate members on a tiltable support structure with two plate edges of the plate members adjacent each other and defining a welding groove, joining the edges together by downhand welding by moving a welding device along said welding groove, and tilting the support structure to provide a substantially constant inclination of the welding groove at the position of the welding device as the latter is moved along the welding groove.

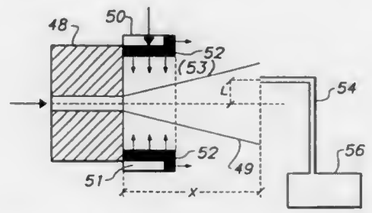
5,662,265
PAPERBOARD CONTAINER WITH INDICIA TABS
Kurt D. Jensen, Cincinnati, Ohio, assignor to International Paper Company, Purchase, N.Y.
Filed Mar. 22, 1996, Ser. No. 620,234
Int. Cl.[6] B65D *5/42*
U.S. Cl. 229—107 **5 Claims**

1. A wrapper for a food product, said wrapper formed from a unitary blank of paperboard, said wrapper having first and second sections folded together about at least one fold axis, said first and second sections each having respective aligned peripheries which are releasably securable together, whereby two exterior and two interior wrapper surfaces are defined by said first and second wrapper sections, and whereby a space for a food product is defined within said folded wrapper, the improvement comprising, said periphery of said first of said sections having an outwardly extending and foldable indicia tab, a first surface of said indicia tab being normally coextensive with said first section exterior surface, a second surface of said indicia tab having a cohesive layer thereon and being normally coextensive with said first section interior surface, said indicia tab being foldable substantially 180 degrees, said indicia tab normally covering a first indicia on said interior surface of said second wrapper section, said indicia tab first surface



having a second indicia thereon, whereby said wrapper normally displays said second indicia, and whereby said indicia tab can be folded substantially 180 degrees prior to folding said wrapper so that said cohesive layer on said indicia tab will attach to said interior surface and maintain said indicia tab folded, whereby upon folding said wrapper sections said first indicia will be exposed and said second indicia will not be exposed, whereby different indicia configurations may be displayed.

5,662,266
PROCESS AND APPARATUS FOR SHROUDING A TURBULENT GAS JET
Zbigniew Zurecki, 344 Village Walk Dr., Macungie, Pa. 18062; John Joseph Kaiser, 3201 Coplay St., Whitehall, Pa. 18052, and John Lewis Green, R.D. 3, Box 3463, Palmerton, Pa. 18071
Filed Jan. 4, 1995, Ser. No. 368,565
Int. Cl.[6] B05B *17/04*
U.S. Cl. 239—8 **12 Claims**

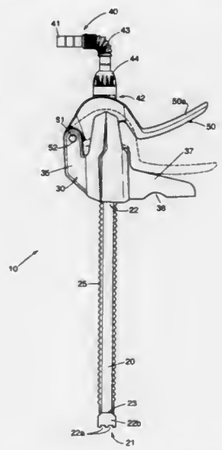


1. A method of shrouding a gas jet in order to control its composition at a point downstream which comprises:
(a) producing a turbulent jet of gas issuing from an orifice along an axis to a control point,
(b) surrounding said gas jet as it issues from said orifice with an annular cushion of shroud gas which is entrained at a given rate into said gas jet, and
(c) replacing said shroud gas at a rate related to said rate at which it is entrained.

5,662,267
CONTROLLED ATMOSPHERE TRANSFER SYSTEM
John Hulls, Point Reyes Station, Calif., assignor to Dauenhauer Manufacturing, Inc., Santa Rosa, Calif.
Filed Jun. 7, 1995, Ser. No. 488,076
Int. Cl.[6] B05B *15/04;17/04;5/08*
U.S. Cl. 239—8 **23 Claims**

14. A method for applying an agent to plants, vines, vegetation, or trees, comprising the steps of:
a) creating a saturated atmosphere at a first pressure in a first chamber, said saturated atmosphere including an agent to be applied to plants, vines vegetation or trees;
b) circulating the saturated atmosphere into a deposition chamber having a second pressure less than the pressure of the saturation chamber, the difference in pressure between the first chamber and the deposition chamber being adequate to cause said saturated atmosphere to become oversaturated and thereby causing the formation of droplets containing the agent in said deposition chamber and on desired surfaces of the plants vines, vegetation or trees.

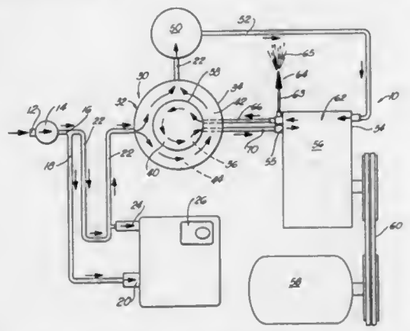
5,662,268
THERAPEUTIC DRINKING STRAW MACHINE
Kathy Katzenberger, Evanston, Ill., assignor to Kathy Murray, Northlake, Ill.
Filed Jun. 15, 1995, Ser. No. 490,754
Int. Cl.[6] A47G *21/18*
U.S. Cl. 239—33 **20 Claims**



1. A liquid delivery device for conveying liquid from a liquid source to the mouth of a user, comprising in combination:
a dip tube including first and second ends, the first end being disposed in a liquid source;
a delivery straw including first and second ends, the first end being adapted for receipt in the mouth of the user; and
a pumping mechanism including a reservoir having a cylindrical well for retaining a predetermined quantity of the liquid, the pumping mechanism disposed and coupled to the respective second ends of the dip tube and delivery straw so that the cylindrical well is coaxial with the dip tube whereby the

liquid flows in a line from the dip tube to the cylindrical well, the pump mechanism also including a manual actuator, the manual actuator being movable from a rest position to an actuated position to cause the predetermined quantity of liquid in the reservoir to be expelled through the delivery straw to the user's mouth, the manual actuator also being movable from the actuated position to the rest position to cause liquid to be drawn from the source through the dip tube to re-fill the reservoir.

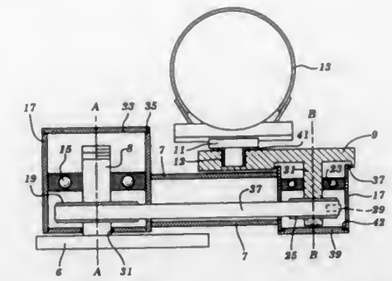
5,662,269
PRESSURE WASHER WITH HEAT EXCHANGER
Dale Francis, 379 Fairfield Ave., Gretna, La. 70056
Filed Sep. 15, 1995, Ser. No. 528,946
Int. Cl.[6] B05B *9/00; 1/24*
U.S. Cl. 239—70 **8 Claims**



1. A high pressure hot water cleaning system, comprising:
a) a water flow line for introducing water into the system at ambient temperature;
b) tank means for receiving the water through the flow line, the tank means comprising a first inner portion and a second outer jacket portion;
c) a water heater for receiving the water flowing from the tank jacket portion for heating the water up to a temperature of at least 150 degrees fahrenheit;
d) a pump for receiving the water flowing from the water heater and pressurizing the water to be used in the system;
e) a flow line for diverting pressurized water into the inner tank, to reduce the temperature of the water through heat exchange with the ambient temperature water in the outer tank jacket, and to return the water from the inner tank to the head of the pump, to reduce the temperature of the water within the pump head below 150 degrees fahrenheit; and
f) means for activating a timer in a time cycle, so that at the end of the time cycle, the system is automatically deactivated.

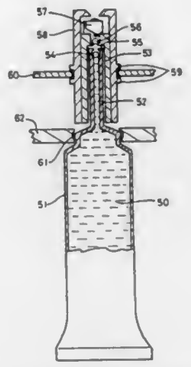
5,662,270
CONTAMINANT RESISTANT STRAIGHT LINE MOTION SHOWER PIPE ASSEMBLY
Robert V. Scarano, 18 Queens Way, Queensbury, N.Y. 12804
Filed Jun. 29, 1994, Ser. No. 267,957
Int. Cl.[6] B05B *3/18;* **F16H** *21/44*
U.S. Cl. 239—264 **42 Claims**

1. A straight line motion producing apparatus comprising:
a base;
a first arm rotatable about a first axis, said first axis being stationary relative to said base during rotation of said first arm;
a second arm rotatable about a second axis extending through said first arm wherein the distance between the first axis and second axis remains constant;



said second arm being of a length relative to the distance between the first and second axis to produce a straight line motion at a particular location of said second arm upon rotation of said second arm about said second axis a constant distance per degree of rotation of said first arm about said first axis; and
means for rotating the second arm about said second axis a constant distance per degree of rotation of said first arm about said first axis to produce a straight line motion at said particular location on said second arm;
wherein said means for rotating comprises:
a first pulley having its central axis being coaxial with said first axis, said first pulley being incapable of rotating relative to said first axis;
a second pulley having its central axis being coaxial with said second axis; and
a belt engaged to the first pulley and the second pulley to prevent slippage between the belt and the first pulley, and to prevent slippage between the belt and the second pulley.

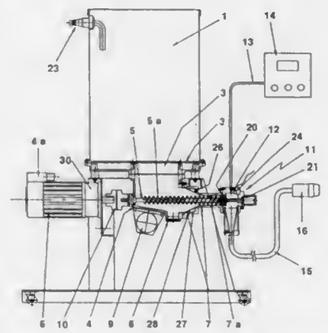
5,662,271
ATOMIZING DEVICES AND METHODS
Terence Edward Weston, Woodbridge, and Stephen Terence Dunne, Ipswich, both of England, assignors to Boehringer Ingelheim International GmbH, Germany
Continuation of Ser. No. 938,174, Nov. 19, 1992, Pat. No. 5,497,944. This application Jun. 2, 1995, Ser. No. 459,458
Claims priority, application United Kingdom, Mar. 21, 1990, 9006340; Nov. 1, 1990, 9023767
Int. Cl.[6] A61M *11/00;* **B05B** *11/00*
U.S. Cl. 239—321 **49 Claims**



1. A device for dispensing fluid as a spray of droplets, comprising:
a chamber for containing fluid at a first pressure;
a piston for pressurizing and discharging the fluid in said chamber, wherein said piston is reciprocable between a loaded position and a discharge position;

resilient biasing means for urging said piston from the loaded position to the discharge position thereby subjecting the fluid in said chamber to a predetermined increase in pressure from said first pressure to a second pressure of at least 50 bar to permit discharge of the fluid from said chamber at said second pressure, wherein said resilient biasing means is in a loaded state when said piston is in the loaded position;
latching means for holding said resilient biasing means in the loaded state;
actuating means for releasing said latching means, wherein release of said latching means releases said resilient biasing means from the loaded state and said resilient biasing means urges said piston from the loaded position to the discharge position thereby initiating discharge of the fluid from said chamber at said second pressure; and
atomising means for atomising the fluid discharged from said chamber.

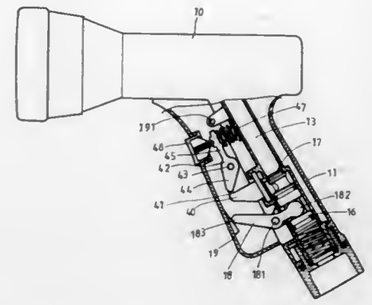
5,662,272
POWDER COATING PRODUCT SPRAYER DEVICE
Thierry Buquet, Saint Pierre d'Allevard; Paul Santarelli, Lyons, and Eric Ghio, Grenoble, all of France, assignors to Sames S.A., Meylan, France
Filed May 31, 1995, Ser. No. 455,291
Claims priority, application France, Jun. 1, 1994, 94 06679
Int. Cl.[6] B05B *5/00*
U.S. Cl. 239—325 **22 Claims**



1. A device for delivery a finely divided coating product to a sprayer, comprising:
a conveyer composed of a tube and a worm screw mounted in said tube for transporting the coating product;
a motor coupled to said worm screw for rotating said worm screw; and
means associated with said conveyer for limiting the torque which must be transferred from said motor to said worm screw for rotating said worm screw wherein said tube surrounds at least a portion of said worm screw and said tube is provided with at least one hole for evacuation of air contained in the coating product.

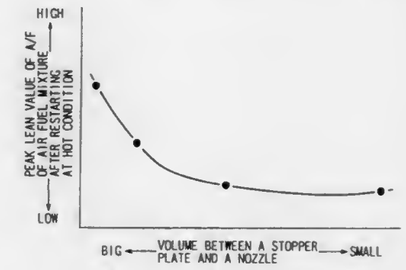
5,662,273
SPRAYER GUN
I-Shun Chih, No. 5, Tyan Yang Lane, Lu Kang Chen, Chang Hua County, Taiwan
Filed Nov. 27, 1995, Ser. No. 561,837
Int. Cl.[6] B05B *9/01*
U.S. Cl. 239—526 **1 Claim**

1. A sprayer gun comprising:
a gun body including a bore and including a handle secured thereto, said handle including a pathway and including a valve seat formed in said pathway,



a valve means slidably engaged in said pathway for engaging with said valve seat so as to block said pathway,
an arm including a middle portion pivotally coupled to said handle and including a first end for engaging with said valve means and including a second end,
a hook means secured to said handle,
a hand grip pivotally coupled to said handle for engaging with said second end of said arm and for disengaging said valve means from said valve seat when said hand grip is pulled toward said handle,
a knob slidably engaged in said hand grip,
a lever including a middle portion pivotally coupled to said hand grip and including a first end for engaging with said hook means so as to secure said hand grip to said handle, and including a second end for engaging with said knob, and
means for biasing said second end of said lever to engage with said knob and for biasing said first end of said lever to engage with said hook means,
said first end of said lever being disengaged from said hook means when said second end of said lever is moved against said biasing means by said knob.

5,662,274
FUEL INJECTOR FOR AN INTERNAL COMBUSTION ENGINE
Nobuhiko Koga, Susono; Keiso Takeda, and Yoshiyuki Tamaki, both of Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Oct. 20, 1995, Ser. No. 546,181
Claims priority, application Japan, Nov. 4, 1994, 6-271190
Int. Cl.[6] F02M *51/06*
U.S. Cl. 239—533.2 **6 Claims**



1. A fuel injector for an internal combustion engine comprising:
a valve body having a nozzle at one end;
a stopper plate located at the other end of said valve body, said stopper plate having a stopper plate path for communicating between upstream and downstream sides of said stopper plate itself;

a needle valve slidably disposed in said valve body for opening and closing said nozzle;

a lift stopper fixed to said needle valve for limiting the stroke of said needle valve by being contacted with said stopper plate;

a first needle guide disposed at a downstream side of said lift stopper, said first needle guide having at least one first path for communicating between upstream and downstream sides of said first needle guide itself; and

a second needle guide disposed at an upstream side of said lift stopper for guiding said needle valve in association with said first needle guide to correctly move said needle valve along its center axis, said second needle guide having at least one second path for communicating between upstream and downstream sides of said second needle guide itself,

wherein the first needle guide is the only needle guide disposed on the downstream side of the lift stopper.

5,662,275

FUEL INJECTION NOZZLE

Malcolm Lambert, London, Great Britain, assignor to Lucas Industries Public Limited Company, Solihull, England

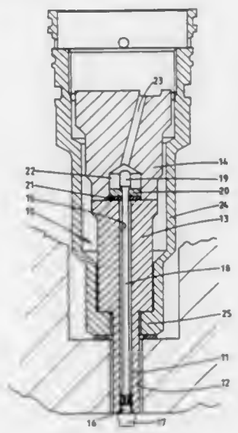
PCT No. PCT/GB94/00169, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/17300, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 28, 1994, Ser. No. 495,648

Claims priority, application United Kingdom, Jan. 29, 1993, 9301793

Int. Cl.[6] F02M *61/08*

U.S. Cl. 239—533.6 **2 Claims**



1. A fuel injection nozzle for supplying fuel to an internal combustion engine and comprising an elongated nozzle body (**10**), a bore (**15**) extending axially between the ends of the body, a seating surface defined on the body at one end of the bore, a valve member (**16**) movable in the bore and having a head (**17**) for engagement with the seating surface, an elastic member (**18**) coupled to the valve member, the elastic member extending within the bore and acting to bias the head (**17**) of the valve member into engagement with the seating surface, means (**23**) for admitting fuel under pressure into said bore whereby when the fuel pressure attains a predetermined value the head (**17**) will be lifted from the seating surface to allow fuel flow from one end of the bore to the associated engine, the end of the elastic member (**18**) remote from the head (**17**) being engaged with a collar (**20**) between which and an adjacent portion of the nozzle body (**10**) is located a shim (**21**), wherein the head (**17**) is located beyond the one end of the bore (**15**) and the thickness of the shim being such as to generate a tension force in the elastic member (**18**) in excess of that required to provide the desired nozzle opening pressure and means (**24**, **25**) for applying a compressive force to a part of said nozzle body (**10**) to reduce the tension force in the elastic member (**18**).

5,662,276

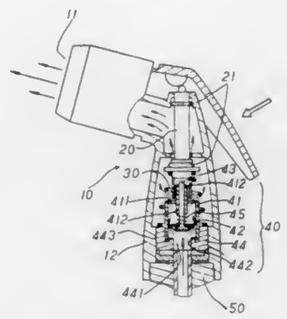
CHECK ASSEMBLY OF A SPRINKLING HEAD FOR A KITCHEN CABINET

Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Taiwan, Taiwan

Filed Sep. 28, 1995, Ser. No. 535,635

Int. Cl.[6] B05B *1/30*

U.S. Cl. 239—571 **1 Claim**



1. A check assembly of a sprinkling head for a kitchen cabinet, the sprinkling head being a hollow L-shaped tube member, having a sprinkling opening at a free end of a short pipe section of the sprinkling head, a controlling depression grip being connected to a bight section of the sprinkling head, a controlling valve stem being disposed in a long pipe section of the sprinkling head, an upper end of the valve stem protruding out of the bight section and two watertight washers being fitted around the valve stem, one of the watertight washers abutting against peripheral wall of a water outlet formed in the sprinkling head, a lower end of the valve stem being fitted with a conic spring and the check assembly and a free end of the long pipe section being connected with a water hose, whereby by means of depressing the depression grip, the controlling valve stem is lifted or lowered to control the sprinkling of the water flow from the sprinkling opening, said check assembly being characterized in that:

the check assembly includes a check valve seat, a plastic pin member fitted in the valve seat, a rubber-made soft conic check pad fitted around the pin member and a water inlet seat fitted with the valve seat, the check valve seat being a cylindrical body having a lower opening, a cross-like rib being formed on a top face of the valve seat and a hollow post extending downward and upward from a center of the cross-like rib, an annular flange being formed on outer wall of a middle section of the valve seat, one end of the pin member being disposed with a pin head and the other end thereof being a pin post, an upper face of the check pad being formed with a large sink and a lower face thereof being formed with a small sink, the two sinks being communicated by a central through hole, the pin post of the pin member being upward passed through the through hole to fit through a spring into the hollow post of the valve seat with the pin head engaged in the small sink of the check pad, the flange of the check valve seat being engaged with the water inlet seat and molten and sealed at an end of the water inlet seat by high frequency wave, an annular lip being formed in a water inlet of the water inlet seat, whereby the conic check pad is plugged into the water inlet and engaged with the annular lip, the water inlet seat having an outer thread section for engaging with inner thread of the long pipe section of the sprinkling head, the free end of the long pipe section being further engaged with the water hose; and

when the depression grip is depressed and the water flows through the water hose into the sprinkling head, the water first passed through the check assembly to upward push the conic check pad and compress the spring, permitting the water to enter the sprinkling head to be sprinkled out from the sprinkling opening and after the water pressure disappears, the check pad is pushed back to abut against the annular lip of the water inlet by the restoring force of the spring so that in case an accident takes place with the sprinkling head placed in a sink after washed, the dirty water is prevented from flowing back into the water hose due to syphon effect.

5,662,277

FUEL INJECTION DEVICE

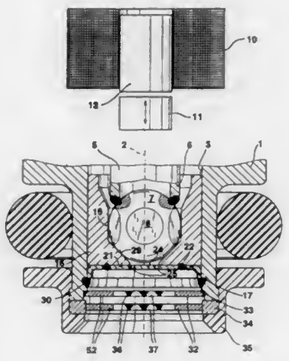
Bernd Taubitz, Schwieberdingen; Michael Mettner, Ludwigsburg, and Thanh-Hung Nguyen-Schaefer, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 2, 1995, Ser. No. 538,065

Claims priority, application Germany, Oct. 1, 1994, 44 35 270.0

Int. Cl.[6] B05B *1/30;* **F02M** *51/00*

U.S. Cl. 239—585.4 **17 Claims**



1. A fuel injection valve for a fuel injection system of an internal combustion engine, the fuel injection valve having a longitudinal valve axis, comprising:

a valve closing body;

a valve seat body including a valve seat face, the valve closing body movably cooperating with the valve seat face;

a spray hole disk having at least one spray orifice disposed below the valve closing body; and

an atomizing grid disposed below the at least one spray orifice, the atomizing grid including an atomizing structure, the atomizing structure having an at least partially varying first cross-section at points along the longitudinal valve axis and defining at least one throughflow region, the at least one throughflow region having an at least partially varying second cross-section at points along the longitudinal valve axis.

5,662,278

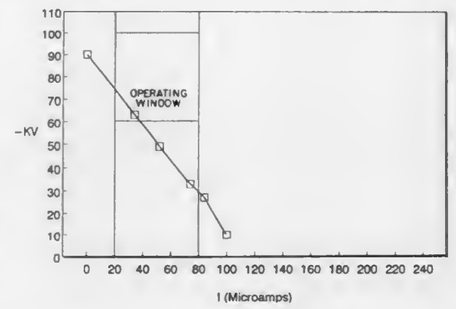
METHOD FOR TREATING NON-CONDUCTIVE ROTARY ATOMIZER

Varce E. Howe, Zionsville; David R. Huff, Indianapolis; Jerry L. McPherson, Jr., Greenfield, and James A. Scharfenberger, Indianapolis, all of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 437,218, May 8, 1995, Pat. No. 5,633,306, which is a continuation of Ser. No. 181,654, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 985,613, Dec. 3, 1992, Pat. No. 5,433,387. This application May 26, 1995, Ser. No. 451,570

Int. Cl.[6] B05B *5/00;* **F23D** *11/32*

U.S. Cl. 239—700 **24 Claims**



1. A method of rendering a non-conductive rotary atomizer conductive comprising the first step of applying to a surface of the atomizer which it is desired to render conductive a composition comprising, by total mass of the specifically identified constituents of the first step, about one-tenth to about one-seventh short oil alkyds, about one-fourth to about one-third phenolic, and about one-half to about two-thirds powdered mixture of oxides of antimony and tin, all in a fluid carrier.

5,662,279

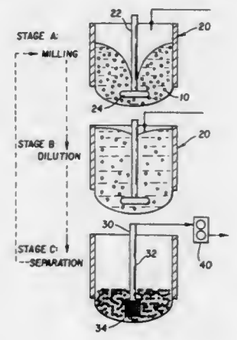
PROCESS FOR MILLING AND MEDIA SEPARATION

David Alan Czekal, Honeoye Falls; Larry Paul Seaman, Mt. Morris, and Dennis Edward Smith, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1995, Ser. No. 567,794

Int. Cl.[6] B02C *17/16*

U.S. Cl. 241—21 **20 Claims**



1. A process for forming a dispersion of solid particles of a compound comprising:

(a) forming a slurry of a liquid medium, milling media, and a solid compound,

(b) contacting said milling media and said compound in a milling chamber of a milling vessel to reduce the solid compound to a desired average particle size to form a dispersion of milled solid particles in said liquid medium, and

(c) separating said dispersion of milled particles from said milling media in said milling chamber by vacuum filtration through a removable filter probe immersed in the slurry, wherein milling step (b) is performed in the absence of the removable filter, which removable filter is immersed into the slurry in the milling chamber after the solid compound is reduced to a desired particle size.

5,662,280

PROCESS AND APPARATUS FOR CONTROLLING PAPER FEED TO A SHREDDER

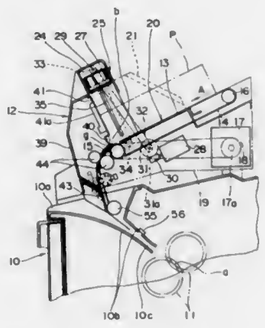
Tatsuo Nishio, Okazaki, and Hirotaka Iwata, Aichi-ken, both of Japan, assignors to Ricoh Elemex Corporation, Aichi-ken, Japan

Filed Aug. 30, 1995, Ser. No. 520,766

Claims priority, application Japan, Aug. 31, 1994, 6-230553; Jul. 13, 1995, 7-200418

Int. Cl.[6] B02C *25/00*

U.S. Cl. 241—30 3 Claims



1. A paper feed device for a shredder for disposable paper, comprising:

a cutter having a paper shredding position;

a paper feed mechanism having a paper feed start position;

a paper detection sensor that detects paper and activates the cutter which then shreds the paper, the paper feed device being activated after disposable paper is loaded and set in place and feeding paper sequentially to the shredder by the paper feed mechanism;

an intermittent activation time adjustment means for adjusting the intermittent activation time of the paper feed mechanism when the paper feed device is attached to the shredder, taking into consideration distance from the paper feed start position of the paper feed mechanism to the paper shredding position of the cutter; and

an activation control means which at first intermittently activates the paper feed mechanism and then switches and activates the paper feed mechanism continuously after an elapse of time adjusted by the intermittent activation time adjustment means.

5,662,281

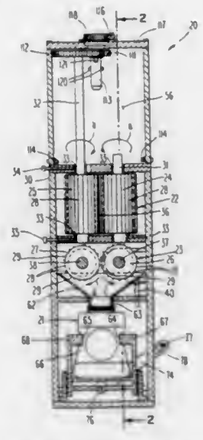
MEDICAL WASTE DISPOSAL DEVICE

Roger Wollert, Brielle; John J. McGovern; William A. McGovern, both of Jamesburg, and Mikhail Zavadski, Ocean, all of N.J., assignors to Safe Sharps, Inc., Corpus Christi, Tex.

Continuation of Ser. No. 102,014, Aug. 4, 1993, Pat. No. 5,429,315. This application Oct. 28, 1994, Ser. No. 331,108

Int. Cl.[6] B02C *19/00;23/02;* G07F *11/54*

U.S. Cl. 241—100 22 Claims



1. In an apparatus for processing medical waste material including a processor having grinding means for grinding medical waste material, a portable cartridge for receiving medical waste material at one location and delivering said medical waste material from said cartridge to said processor for processing, said apparatus comprising:

a) a frame;

b) first grinding means for grinding medical waste material, said first grinding means being supported on said frame;

c) introduction means for introducing medical waste materials into said first grinding means;

d) second grinding means for grinding medical waste material, said second grinding means being supported on said frame;

e) receptacle means for receiving ground medical waste material from said second grinding means;

f) guide means for guiding ground medical waste from said second grinding into said receptacle means.

5,662,282

CENTRIFUGAL MILL WITH EXCHANGEABLE CASSETTE

Hans-Jürgen Meyer, Ratingen, Germany, assignor to F. Kurt Retsch GmbH & Co. KG, Haan, Germany

Filed Feb. 20, 1996, Ser. No. 603,330

Claims priority, application Germany, Feb. 20, 1995, 295 02 787.8

Int. Cl.[6] B02C *19/00*

U.S. Cl. 241—100 9 Claims

1. A centrifugal mill with exchangeable cassette for laboratory use, said mill comprising:

a base body;

a drive motor, including a drive shaft, connected to said base body;

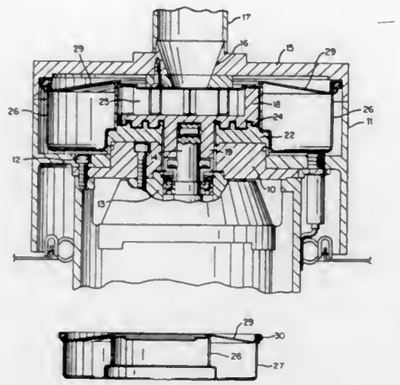
a housing with a cover enclosing said base body and said drive motor;

said housing having a milling chamber;

said cover having an inlet opening for feeding a material to be milled into said milling chamber;

a rotor connected to said drive shaft of said drive motor;

said rotor positioned in said milling chamber;



an exchangeable cassette comprising an annular receptacle and a radially inner wall comprised of an annular sieve connected to said annular receptacle;

said exchangeable cassette positioned in said housing so as to surround said milling chamber and said rotor for catching the material milled by said rotor in said milling chamber; and

said exchangeable cassette comprising a detachable lid covering said milling chamber and said rotor.

5,662,283

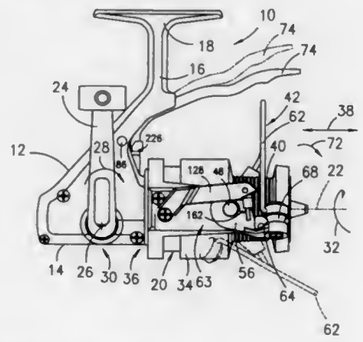
FISHING REEL WITH LINE HOLDING FEATURE

John W. Puryear, Bay St. Louis, Miss.; Robert L. Carpenter, Tulsa, Okla.; John A. Zurcher, Spirit Lake, Iowa, and Hyunkyu Kim, Broken Arrow, Okla., assignors to Zebco Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 914,261, Jul. 15, 1992, abandoned, and Ser. No. 916,226, Jul. 15, 1992, abandoned. This application May 15, 1995, Ser. No. 440,641

Int. Cl.[6] A01K *89/01*

U.S. Cl. 242—233 21 Claims



1. A fishing reel comprising:

a frame;

a rotor;

means for mounting the rotor to the frame for rotation about a first axis;

a line storage spool;

means for rotating the rotor;

means on the rotor for directing line onto the line storage spool as an incident of the rotor being rotated about said axis,

said line directing means including a bail assembly comprising first and second bail arms and means for mounting the bail arms to the rotor for pivotable movement between a) a first position wherein the bail assembly is in a retrieve position and b) a second position wherein the bail assembly is in a cast position;

a bail actuator;

means for connecting the bail actuator to at least one of the frame and rotor for movement relative thereto between rest and operating positions;

means cooperating between the bail actuator and bail assembly for moving the bail assembly from its retrieve position into its cast position as an incident of the bail actuator moving from its rest position in its operating position; and

line holding means for selectively preventing line from freely paying off of the line storage spool with the bail assembly in a cast position,

said line holding means including a third arm pivotably attached to the rotor for movement between third and fourth positions and a fourth arm pivotably attached to the third arm,

at least one of said third and fourth arms being engagable with line projecting off of the line carrying spool with the bail assembly in a cast position to thereby prevent line from freely paying off of the line storage spool.

5,662,284

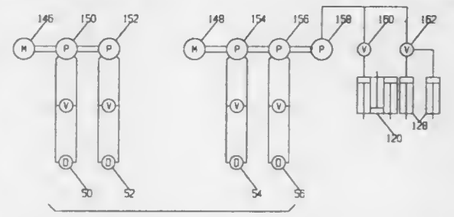
MODULAR SHEAR SHREDDER

Larry E. Koenig, c/o Komar Industries, Inc., 4425 Marketing Pl., Groveport, Ohio 43125

Division of Ser. No. 69,874, Jun. 1, 1993, Pat. No. 5,484,112. This application Jun. 7, 1995, Ser. No. 476,096

Int. Cl.[6] B02C *18/24*

U.S. Cl. 241—236 5 Claims



1. A modular shear shredder comprising:

a shredder housing having a support frame and opposing end walls attached to said frame;

a support bearing mounted on one of said end walls, and a drive motor mounted on the other of said end walls, said drive motor having a swash plate for controlling said drive motor; and

a shear cartridge having a shaft and a plurality of cutter elements mounted on said shaft, said shaft being attached to and extending between said bearing and said motor.

5,662,285

SPINNING REEL FOR FISHING WITH A SLIDER FOR LONGITUDINALLY MOVING A SPOOL

Hiroshi Hashimoto, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,111

Claims priority, application Japan, Apr. 20, 1994, 6-005441 U

Int. Cl.[6] A01K *89/01*

U.S. Cl. 242—241 6 Claims

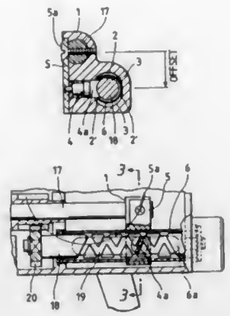
1. A spinning reel for fishing comprising:

a casing;

a spool shaft movably supported by said casing;

a rotary shaft provided with a traverse cam groove and supported in parallel to said spool shaft by said casing;

gear means for rotating said rotary shaft by turning a handle;



a guide tube fitted over said rotary shaft; and

a slider fixed to said spool shaft and slidably fitted over said guide tube through a fitting hole, said slider having a mating part engaged with said traverse cam groove, wherein

a section of said fitting hole is formed into an elliptical configuration as to suppress the generation of rotational clattering of said slider about said spool shaft and to provide a releasing portion in an offset direction in which said guide tube is offset with respect to the spool shaft.

5,662,286

REVERSAL PREVENTIVE DEVICE

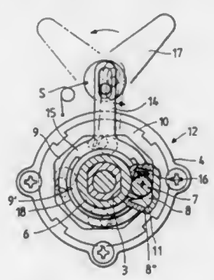
Kazuo Hirano, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 434,795, May 4, 1995, Pat. No. 5,494,232, which is a continuation of Ser. No. 73,925, Jun. 9, 1993, abandoned. This application Nov. 14, 1995, Ser. No. 557,820

Claims priority, application Japan, Jun. 11, 1992, 4-176001; Aug. 5, 1992, 4-227791; Dec. 10, 1992, 4-352169

Int. Cl.[6] A01K *89/02;* **F16D** *63/00*

U.S. Cl. 242—247 **16 Claims**



1. A reverse rotation preventive device for selectively preventing a reverse rotation of a fishing reel rotor member rotatably supported on a fishing reel main body, comprising:

a brake unit mounted between said rotor member and said reel main body, said brake unit including:

at least one rolling member;

an annular holder having a guide recess for accommodating and supporting said at least one rolling member between two opposing sidewalls extending radially on opposite sides of said at least one rolling member along an axial direction;

first positioning means for biasing said at least one rolling member toward a first position where said at least one rolling member is permitted to perform a wedge action on said rotor member wherein said rotor member is permitted to rotate in a first direction and prevented from rotating in a second direction opposite to said first direction; and

second positioning means for moving said at least one rolling member, against a biasing force of said first positioning means, toward a second position where said at least one rolling member is prevented from performing said wedge action wherein said rotor member is permitted to rotate in both said directions,

wherein said second positioning means comprises an annular ring formed with at least one engagement projection extending in an axial direction to engage said at least one rolling member, said annular ring being rotatable relative to said two opposing sidewalls of annular holder.

5,662,287

METHOD FOR AUTOMATICALLY ADJUSTING TAPE TRAVELLING SPEED IN A RECORDER

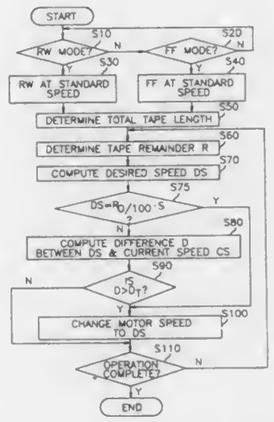
Gie-Cheol Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co, Ltd., Seoul, Rep. of Korea

Filed Feb. 27, 1996, Ser. No. 607,481

Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7272

Int. Cl.[6] G11B *15/44*

U.S. Cl. 242—334.3 **8 Claims**



1. A method for automatically adjusting a running speed of a magnetic tape during fast forward ("FF") and rewind ("RW") modes of operation in a recorder, wherein the recorder includes a capstan motor, a supply reel, a take-up reel, and means for generating a supply reel signal representing a rotational rate of the supply reel, a take-up reel signal representing a rotational rate of the take-up reel, and a motor speed signal representing a rotational rate of the capstan motor, the method comprising the steps of:

(a) detecting if the RW or the FF mode of operation has been selected;

(b) rewinding or fast forwarding the tape by rotating the capstan motor at a predetermined speed S, depending on whether the recorder is in the RW or the FF mode of operation;

(c) determining a total length L of the magnetic tape from the take-up reel signal and the supply reel signal;

(d) computing a tape remainder R, representing the amount of the tape that remains wound around either the supply or the take-up reel, based on the supply reel signal, the take-up reel signal, and the total length L obtained in said step (c);

(e) calculating a desired speed DS corresponding to the tape remainder R obtained in said step (d);

(f) computing a current rotating speed CS of the capstan motor based on the motor speed signal, and calculating a difference D between the desired speed DS obtained in said step (e) and the current rotating speed CS;

(g) if the difference D is larger than a predetermined threshold difference D_n, outputting a capstan motor signal to thereby rotate the capstan motor at the desired speed DS, and if the difference D is smaller than or equal to the predetermined threshold difference D_n, rotating the capstan motor at the current rotating speed CS; and

(h) repeating the above steps (d) through (g) until the RW or the FF mode of operation is completed.

5,662,288

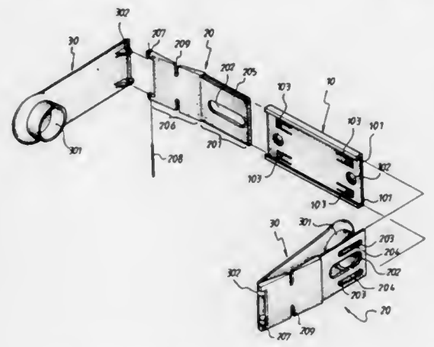
WIDTH CHANGEABLE PAPER TOWEL HOLDER

Mei-Ling Chiang, Taipei, Taiwan, assignor to Taiwan Scott Paper Corporation, Taipei, Taiwan

Filed Jul. 6, 1995, Ser. No. 498,760

Int. Cl.[6] B65H *49/00*

U.S. Cl. 242—596.8 **2 Claims**



1. A width changeable paper towel holder comprising a fixed plate, a pair of pull-out plates and a pair of supporting arm plates characterized in that:

the fixed plate is an elongated plate body, the upper and lower sides thereof being each provided with an opposed grooved rail, the elongated plate body being provided on the four corners with four resilient buttons;

the pull-out plates include an inner plate and an outer plate, the inner plate being provided on the upper and lower edges with flanges and on the back side with recessed slots, said recessed slots are provided on both ends with recessed retaining holes and the outer plate being provided on the side ends with a pivotal connecting mechanism;

the supporting arm plates are each provided at one end with a pivotal portion for pivotal connection to the pivotal connecting mechanism of the outer plate, the inner side of the other end being provided with a fitting tube; wherein the pull-out plates can be each inserted from the sides of the fixed plate by fitting the flanges of the inner plates into the grooved rails on the fixed plate so as to move between a first retained position where the four resilient buttons of the fixed plate are retained in the retaining holes close to the outer side in the upper and lower slots on the inner plates and a second retained position where the four resilient buttons of the fixed plate are retained in the retaining holes close to the inner side in the upper and lower slots on the inner plates.

5,662,289

WINDING APPARATUS FOR COILS FORMED OF WIRE AND FILM IN WHICH STRIPS OF FILMS ARE HELD AT EACH END BY RESPECTIVE CHUCKS

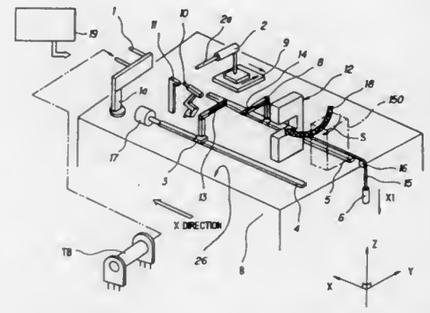
Minoru Ujita, Saitama; Takafumi Kakiuchi, Chiba; Masahiro Otsuka, Aichi, and Takayuki Nakamura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,684

Claims priority, application Japan, Apr. 21, 1994, 6-105953

Int. Cl.[6] B65H *81/02*

U.S. Cl. 242—445 **5 Claims**



1. A winding apparatus for alternately winding a wire and a film to form a multiplicity of layers around a bobbin of a bobbin type transformer, comprising:

film loading means for holding a predetermined length of the film at a film loading position away from a winding position of the film before the film is wound around the bobbin and including a drag chuck for holding a leading end of the predetermined length of the film and a retaining chuck for holding a rear end of the predetermined length of the film;

film retainer means for pressing a leading end of the film being held by said drag chuck into contact with the bobbin;

an X-Y table mechanism movable in two mutually perpendicular directions on a horizontal planar surface;

a winder mounted on said table mechanism for rotating the bobbin and winding the film and the wire around the bobbin; and

a wire feed mechanism arranged adjacent said X-Y table mechanism for feeding the wire to the bobbin rotated by said winder;

wherein when the bobbin is mounted on said winder and the wire is fed from said wire feed mechanism, said winder is rotated, and said table mechanism incrementally moves for every turn of the wire around the bobbin.

5,662,290

MECHANISM FOR THRUST VECTOR CONTROL USING MULTIPLE NOZZLES

Che-Ram S. Voigt, Geyserville, Calif., assignor to Versatron Corporation, Healdsburg, Calif.

Filed Jul. 15, 1996, Ser. No. 679,849

Int. Cl.[6] F42B *10/66;* **B05B** *12/00;* **F02K** *9/80*

U.S. Cl. 244—3.22 **22 Claims**

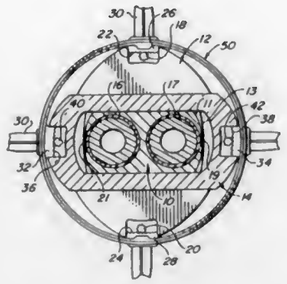
1. A rocket nozzle directing device for controlling a missile in flight comprising:

a first yoke plate;

a second yoke plate;

first mounting means for mounting said first yoke plate for movement in a first plane transverse to the longitudinal axis of the missile;

second mounting means for mounting said second yoke plate orthogonally to said first yoke plate for movement in a second plane transverse to said axis; and



an interface yoke plate for moving at least one rocket nozzle, said interface yoke plate being coupled to said first and second yoke plates for controlled movement thereby.

5,662,291

DEVICE FOR SELF-DEFENSE AGAINST MISSILES

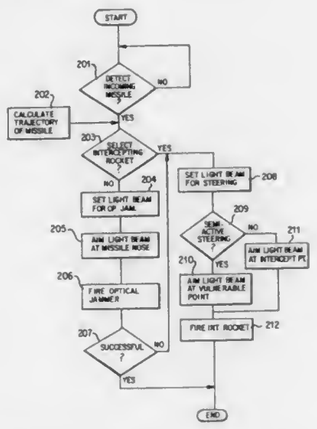
Gunther Sepp, Ottobrunn, and Rudolf Protz, Höhenkirchen-Siegertsbrunn, both of Germany, assignors to Daimler-Benz Aerospace AG, Germany

Filed Dec. 15, 1995, Ser. No. 574,442

Claims priority, application Germany, Dec. 15, 1994, 44 44 635.7

Int. Cl.[6] F41G *7/26;7/22*

U.S. Cl. 244—3.13 13 Claims



1. A missile defense system comprising:

a control computer;

a proximity sensor for detecting the presence of an incoming missile;

an intercepting rocket system which can be guided by a semi-active steering method or by a beam rider steering method; and

an optical jamming device which includes a light source, aiming optics and an aiming control system for controlling said aiming optics to direct a light beam from said light source in a direction determined by the control computer as a function of at least a trajectory of said incoming missile;

wherein said control computer comprises

i) first means for selecting either optical jamming or an intercepting rocket to combat said incoming missile;

ii) second means, operative if an intercepting rocket is selected, for selecting a semi-active steering method or a beam rider steering method for guiding said intercepting rocket;

iii) third means responsive to selection by said first and second means for modulating a light beam from said light source to set parameters which are suitable for optical jamming or for a selected steering method;

iv) fourth means for calculating a trajectory of said incoming missile and a collision point of said incoming missile and an intercepting rocket; and

v) fifth means for selecting a direction of said light beam toward a nose of said incoming missile if optical jamming has been selected, to a point of maximum vulnerability of said missile if semi-active steering of an intercepting rocket is selected, or to said collision point if beam rider steering has been selected.

5,662,292

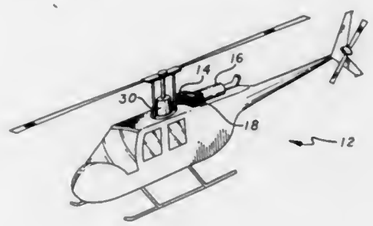
HELICOPTER ENGINE FILTER SYSTEM

Andrew T. Greene, 450 Clark Way, Angwin, Calif. 94508, and Andrew D. B. Rowen, 1005 Elden Way, Beverly Hills, Calif. 90210

Filed May 3, 1995, Ser. No. 434,444

Int. Cl.[6] B64D *33/00*

U.S. Cl. 244—53 B 17 Claims



1. In an induction air filtration system for a turbine of a helicopter, said turbine having an inlet port and the helicopter having a longitudinal axis, the improvement in the induction air filtration system comprising:

a barrier type filter element disposed about said inlet port, said filter element being contoured to have a forward portion and lateral portions, said forward portion of said filter element being oriented substantially perpendicular to the longitudinal axis of the helicopter to receive airflow approaching said inlet port longitudinally, and said lateral portions of said filter element curving from said forward portion to be oriented substantially parallel to the longitudinal axis of the helicopter to receive airflow approaching said inlet port laterally whereby a straight path for airflow through the filter element to the turbine is available for both forward and sideways flight of the helicopter.

5,662,293

POLYIMIDE FOAM-CONTAINING RADOMES

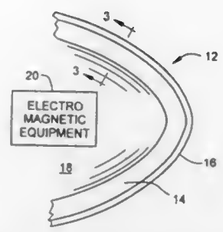
R. Thomas Hower, and Stephen V. Hoang, both of c/o Marion Composites, 150 Johnston Rd., Marion, Va. 24354-3121

Filed May 5, 1995, Ser. No. 435,171

Int. Cl.[6] B64C *1/00*

U.S. Cl. 244—133 15 Claims

1. In a radome suitable for protecting electromagnetic equipment, the improvement comprising a closed cell thermoplastic polyimide foam which is moisture impervious and substantially transparent to electromagnetic radiation.



5,662,294

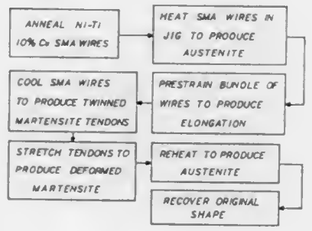
ADAPTIVE CONTROL SURFACE USING ANTAGONISTIC SHAPE MEMORY ALLOY TENDONS

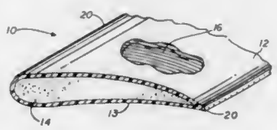
Brian J. Maclean, Daniel, Wyo.; Bernard F. Carpenter, Littleton, and Mohan S. Misra, Golden, both of Colo., assignors to Lockheed Martin Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 203,096, Feb. 28, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 559,860

Int. Cl.[6] B64C *3/18;3/44;9/04;* B63B *3/38*

U.S. Cl. 244—219 11 Claims





1. A controllable contour control surface capable of being deflected to either side of a neutral point in response to a command signal comprising:

a) a first flexible facesheet formed to a first initial contour of said control surface, and a second flexible facesheet formed to a second initial contour of said control surface;

b) said first and second facesheets each having a set of pre-strained shape memory alloy tendons embedded therein, extending from a leading edge to a trailing edge of said control surface;

c) each set of said shape memory alloy tendons connected to a controlled source of electrical current such that tendons of said first and second facesheets can be selectively heated in an antagonistic relationship, to bring about a desired modification of the configuration of said control surface, and

d) a computer based control system for maintaining a constant temperature of the facesheet that at a given moment is in an antagonistic mode to the other facesheet while providing control of the opposing shape memory tendons, accomplished by flowing constant current through the tendons of the antagonistic facesheet while providing proportional/ integral control of said opposing tendons.

5,662,295

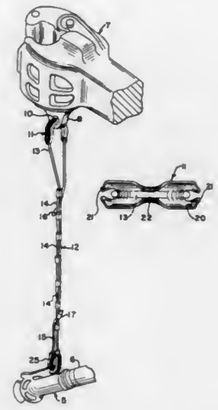
CABLE BIGHT WEAR GUARD ASSEMBLY

Rudolph E. Nadherny, Golden, Mo., and Stephen H. Beals, Libertyville, Ill., assignors to Ireco, Inc., Chicago, Ill.

Filed Dec. 21, 1995, Ser. No. 576,789

Int. Cl.[6] E21F *17/02*

U.S. Cl. 248—58 15 Claims



1. In combination, a cable wear guard and an elongated flexible support, said combination being for use in supporting a glad hand on a rail car from the aperture bracket depending from the coupler on the rail car,

said elongated flexible support comprising a plurality of inelastic, flexible and stiff cables and a plurality of retaining members spaced along and rigidly secured to said stiff cables, said cables and said retaining members forming, in combination, a series of stiff elongated eyes, said stiff cables of the elongated eyes being sufficiently resilient in their generally transverse dimension such that said elongated eyes will expand and snap back to a generally closed position, said stiff cables of the elongated eyes being biased toward a generally closed orientation to provide a wedging portion at which at least a section of each of said stiff cables is substantially juxtaposed with respect to the other, at least one of said inelastic, flexible and stiff cables extends beyond an endmost retaining member, said at least one cable having a free end, said free end includes one-way means, said one-way means having a leading end and a trailing end, each said elongated eye and its wedging portion being sized and structured to permit passage of said one-way means through said elongated eye, said trailing end of the one-way means having an integral stop that is sized to provide a rigid abutment between said elongated eye and said trailing end of the one-way means, and said abutment restrains passage of the one-way means in a direction toward said abutment between the elongated eye and the integral stop, said one-way means being insertable through the aperture in said apertured bracket prior to being inserted through the elongated eye adjacent said endmost retaining member so that said free end will form a loop at the end of said elongated flexible support with said loop having a bight where it passes through said aperture; and

said cable wear guard being generally U-shaped, formed of a wear-resistant material, fitting on said bight in said free end, and being insertable through said aperture whereby the bight of said wear guard will have direct contact with the interior of said aperture thereby shielding said free end from direct contact with said interior surface.

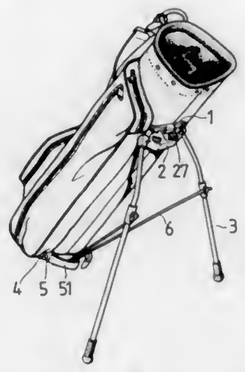
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5,662,296

CONTROLLING MEANS OF A GOLF BAG STAND

Fang-Li Wu, Tainan Hsien, Taiwan, assignor to Sports World Enterprise Co., Ltd., Tainan Hsien, Taiwan

Filed Feb. 5, 1996, Ser. No. 596,610
Int. Cl.[6] A63B *55/00*
U.S. Cl. 248—96 4 Claims



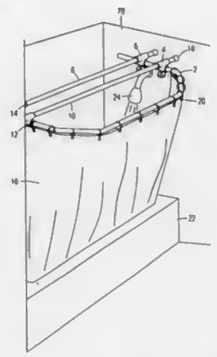
1. A controlling device of a golf bag stand coupled to a golf bag, comprising:
a blocking plate coupled to a bottom portion of the golf bag, said blocking plate having a pair of curved bars coupled thereto;
a fixed plate secured to an upper end of the golf bag, said fixed plate having a guide formed in an intermediate portion thereof, said guide having an upper recess formed in an upper portion thereof and a lower recess formed in a lower portion thereof;
a movable block having a guide holding opening formed therethrough for slidable coupling to said guide of said fixed block, said movable block having a cavity formed therein and a pair of apertures formed respectively in opposing sides of said movable block;
an upper plate coupled to said movable block and covering said cavity, said upper plate having an opening formed therethrough;
a pushing block slidably disposed within said opening in said upper plate and having a lower end extending into said cavity, said pushing block having a protrusion and a first inclined surface formed on said lower end thereof;
a retained element disposed in said cavity and having an end portion thereof engageable with a selected one of said upper recess and said lower recess, said retained element having a second inclined surface adapted to interface with said first inclined surface for disengagement of said end portion of said retained element from said selected one of said upper recess and said lower recess responsive to a downward displacement of said pushing block relative to said upper plate, said movable block being slidably displaceable on said fixed plate responsive to said disengagement of said end portion of said retained element;
a first spring operatively coupled to said lower end of said pushing block for biasing said pushing block away from said retained element;
a second spring operatively coupled to said retained element for biasing said end portion thereof into said engagement with said selected one of said upper recess and said lower recess;
a pair of propping bars pivotally coupled to said movable block, each of said pair of propping bars having an end portion pivotally disposed in a respective one of said pair of apertures of said movable block; and,
a U-shaped bar having opposing ends thereof pivotally coupled respectively to said pair of propping bars and an intermediate portion captured between said blocking plate and said pair of curved bars for rotatively displacing said pair of propping bars responsive to said slidable displacement of said movable block.

5,662,297

ADJUSTABLE SHOWER CURTAIN ROD

James Richard Christensen, 2700 63 St., Sacramento, Calif. 95817, and Kenneth Tarlow, 94 Birch Ave., Corte Madera, Calif. 94925

Filed Oct. 3, 1995, Ser. No. 537,354
Int. Cl.[6] A47K *3/00;3/08*
U.S. Cl. 211—105.1 4 Claims



1. An adjustable shower curtain supporting apparatus for a rectangular shower stall having a main wall connecting opposite end walls, comprising:
a pair of parallel support rods adapted to extend between said opposite end walls of said shower stall, said support rods having extendable tips adapted to apply outward pressure against said opposite end walls so as to be supported thereon by friction;
a pair of brackets attached at opposite ends of each of said support rods, each of said brackets including a tube holding member; and
a U-shaped shower curtain rod having a pair of parallel arms connected by a middle portion, said arms being orthogonal to said support rods, each of said arms being slidably positioned in said tube holding members at adjacent ends of said support rods, a free end of each of said arms being adapted to be positioned away from said main wall of said shower stall, said middle portion of said shower curtain rod being adapted to support a shower curtain, said shower curtain rod being stably supported in a generally horizontal plane by said pair of parallel support rods, said shower curtain rod being adapted to be movable toward said main wall for conserving space outside said shower stall when said shower stall is vacant, said shower curtain rod being adapted to be movable away from said main wall for expanding space within said shower stall when said shower stall is in use.

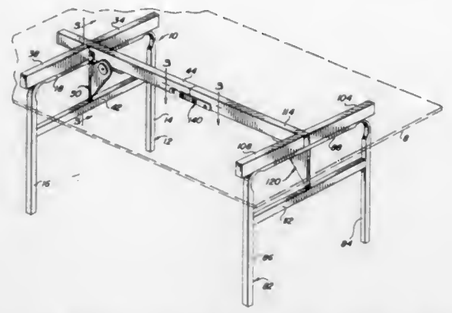
5,662,298

CAM LOCK TABLE SUPPORT APPARATUS

Harold O. Collins, 7551 E. North La., Scottsdale, Ariz. 85258

Filed Nov. 29, 1995, Ser. No. 564,780
Int. Cl.[6] F16M *11/20*
U.S. Cl. 248—188.1 13 Claims

1. Support apparatus comprising in combination:
a first leg assembly, including
a first pair of legs generally parallel to each other and spaced apart from each other, and
a first cross piece secured to and disposed between the first pair of legs;
a first beam pivotally secured to the first cross piece;
a first cam lock assembly, including
a first panel pivotally secured to the first leg assembly,
a first cam roller eccentrically rotatable on the first panel, whereby the first cam roller is disposed against the first beam and is rotated on the first panel to a locked position to lock the first beam to the first leg assembly and is rotated to an unlocked position to allow the first panel and the first cam roller to pivot away from the first beam to allow the first leg assembly to pivot relative to the first beam;
a second leg assembly, including
a second pair of legs generally parallel to each other and spaced apart from each other, and
a second cross piece secured to and disposed between the first pair of legs;
a second beam pivotally secured to the second cross piece;
a second cam lock assembly, including
a second panel secured to the second leg assembly,
a second cam roller eccentrically rotatable on the second panel, whereby the second cam roller is disposed against the second beam and is rotated on the second panel to a locked position to lock the second beam to the second leg assembly and is rotated to an unlocked position to allow the second panel and the second cam roller to pivot away from the second beam to allow the second leg assembly to pivot relative to the second beam; and
means for securing the first and second beams together.



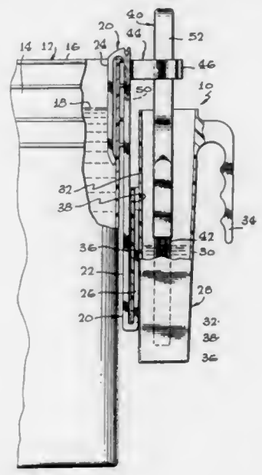
5,662,299

WET PAINTBRUSH KEEPER AND CUTTING BUCKET

Jose Roberto Mejia, 14328 Kittridge St., Van Nuys, Calif. 91405

Filed Jul. 6, 1995, Ser. No. 498,566
Int. Cl.[6] A47K *1/00*
U.S. Cl. 248—213.2 2 Claims

1. The combination of a wet paintbrush keeper and a cutting bucket comprising:



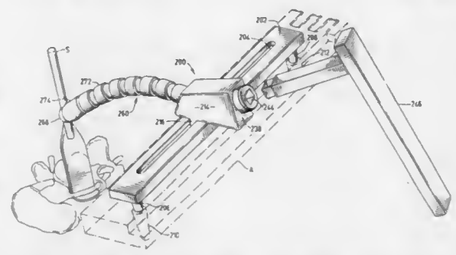
said keeper having a bracket, said bracket having detachable mounting means thereon for detachable mounting on a paint pail, said bracket having detachable attachment means thereon for detachable attachment of said cutting bucket thereto, said cutting bucket being configured to attach to said bracket by said detachable attachment means, said cutting bucket having side walls and a bottom and having an open top so that paint may be held therein;
a paintbrush holder on said bracket, said paintbrush holder comprising first and second fingers positioned with respect to each other and positioned on said bracket above said cutting bucket when said cutting bucket is attached to said attachment means so as to be able to grasp the handle of a paintbrush and hold the paintbrusb with its bristles above said bottom of said cutting bucket, said fingers being resilient with respect to each other so that a paintbrush handle may be inserted therebetween by resilient deflection of at least one of said fingers and the paintbrush handle is retained by force thereon by deflection of at least one of said resilient fingers;
said bracket being bifurcated to define left and right arms, said paintbrush holder being positioned at least partly between said left and right arms and including a pivot pin engaging said arms and said fingers so that said fingers can be pivoted with respect to said bracket away from a position above said cutting bucket.

5,662,300

GOOSENECK SURGICAL INSTRUMENT HOLDER

Gary Karlin Michelson, 438 Sherman Canal, Venice, Calif. 90291

Division of Ser. No. 97,945, Jul. 26, 1993, Pat. No. 5,513,827.
This application Feb. 7, 1996, Ser. No. 552,203
Int. Cl.[6] A61B *19/00*
U.S. Cl. 248—279.1 20 Claims



1. A gooseneck instrument holder comprising a gooseneck portion terminating in means for holding an instrument, said holding means comprising means for limiting the tightening of said holding means to prevent damage to an instrument being held; and means for tightening said holding means from a position remote from said holding means.

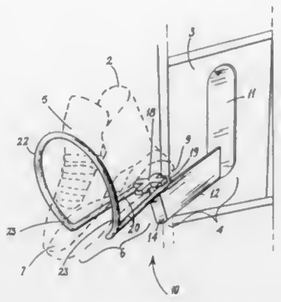
5,662,301

PRODUCT DISPLAY APPARATUS

Kambiz H. Fard, New York, N.Y., assignor to Fila U.S.A., Inc., Sparks, Md.

Filed Oct. 20, 1995, Ser. No. 546,230
Int. Cl.[6] A47F *7/00*
U.S. Cl. 248—315 14 Claims

1. A product display apparatus, comprising:
a support element having a display bracket with at least one connection means for attachment to a display area surface, a display arm attached to the display bracket at its first end and to a female connector at its second end, wherein the female connector contains a plurality of internal spaced apart longitudinal ridges; and



a product holder element comprising a male connector at its first end, the male connector shaded such that it removably mates with the female connector in a plurality of orientations, and a product holder means at its second end for supporting a product,

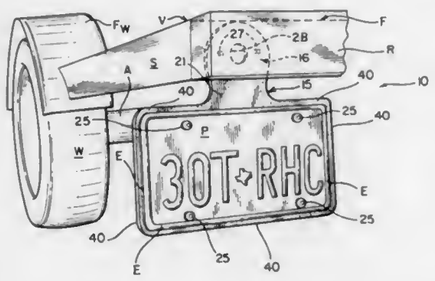
wherein the product may be displayed in a number of different orientations depending upon how the male and female connectors are aligned.

5,662,302

LICENSE PLATE HANGER

George W. Berry, Jr., 305 W. Pine St., West, Tex. 76691-1432

Filed Nov. 22, 1994, Ser. No. 345,737
Int. Cl.[6] A47H *1/10*
U.S. Cl. 248—317 23 Claims



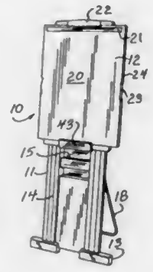
1. A license plate hanger particularly adapted for suspending a license plate from the rear frame of an associated vehicle comprising one-piece nonmetallic, reinforced, multi-ply, resilient, substantially flat and substantially homogeneous plate-like member; said plate-like member being defined by an upper hanger portion and a lower license plate attaching portion, said lower license plate attaching portion being defined by a pair of oppositely projecting arms between and above which is disposed said upper hanger portion, means in each arm for securing a license plate fastener thereto, and means in said upper hanger portion for securing said upper hanger portion to an associated vehicle whereby said license plate hanger is adapted to permit said license plate hanger to rebound to an original position after said license plate hanger has been bent.

5,662,303

PORTABLE EASEL HAVING A HOLLOW BODY

Michael Rellinger, Chicago; Richard R. Gilbert, Barrington; Sara E. Green, Chicago, and John Jepsen, Grayslake, all of Ill., assignors to Quartet Manufacturing Company, Skokie, Ill.

Continuation of Ser. No. 74,773, Jun. 9, 1993, Pat. No. 5,478,040. This application Dec. 22, 1995, Ser. No. 579,047
Int. Cl.[6] A47B *97/04*
U.S. Cl. 248—448 20 Claims



1. A portable easel comprising

a base pedestal portion having leg means pivotally mounted on and foldable toward and away from said base pedestal portion for securing said base pedestal portion upright on a surface;

a display portion telescopically engaged with said base pedestal portion and having means for removably securing thereon display materials;

said portions being movable relative to one another into extended and collapsed positions;

said portions having cooperating interlocking means for securing said portions in one of a plurality of selected positions when said leg means are pivoted and folded away from said base pedestal portion;

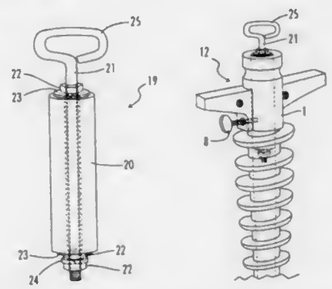
at least one of said portions comprising a hollow body having spaced apart walls, said walls having reinforcing recesses and wall surfaces arranged to provide rigidity across said body.

5,662,304

DEVICE FOR ANCHORING OBJECTS INTO BEACH SAND

William R. McDaniel, 9158 Saddlebow Dr., Brentwood, Tenn. 37027

Filed Jun. 26, 1995, Ser. No. 494,766
Int. Cl.[6] B65D *63/00*
U.S. Cl. 248—499 8 Claims



1. A hollow, cylindrical, screw-threaded device for anchoring objects into sand, comprising:

a molded cylinder with a smooth outer surface on approximately the upper 20 percent of the cylinder is length nearest the top and spiral screw threads on approximately the lower 80 percent the cylinder's length, with said spiral screw-threaded end tapering gradually toward a pointed tip;

a hollow, cylindrical cavity in the center of said cylinder running through its entire length except for approximately the last inch at the tip, thus allowing inserted umbrella poles to penetrate the sand maximally for increased stability;

a pair of short, winglike projections molded as part of the, upper, non-threaded portion of said cylinder in a perpendicular position relative to along axis of the cylinder which provide strong and nearly unbreakable points where torque can be applied to screw said cylinder into and out of the sand, these projections each having a hole bored therethrough near an attachment of the projection to said cylinder for the purpose of attaching a rope if desired;

a thumbscrew which screws into a metal screw insert which in turn is screwed permanently into a hole bored or molded into the wall of the upper, non-threaded portion of said cylinder which, when tightened, serves to prevent removal of umbrella poles or other poles or rods inserted into said hollow cavity inside said cylinder and, when loosened, serves to allow easy removal and interchange of poles after said cylinder has been screwed into the sand;

said spiral screw threads molded into the outside of approximately the distal 80 percent of said cylinder which are of maximal outside diameter and thread depth nearest to the top of said cylinder and which taper in both diameter and depth with each successive thread as the pointed tip is approached to allow the greatest lateral force and hold in looser, superficial sand and facilitated penetration of the tip into compact, deepest sand, respectively;

said spiral screw threads having a rounded and beveled lower edge to aid in pushing sand aside on insertion and a flat upper edge for better holding of sand to make forcible removal by a vertical pull more difficult once the device is screwed into the sand;

a pivoting steel ring which fits loosely in a groove molded into the upper non-threaded part of said cylinder and which has a smaller attachment ring bent into one of the ends of the pivoting/steel ring to serve as a point of attachment of ropes, pet leashes, and beach paraphernalia;

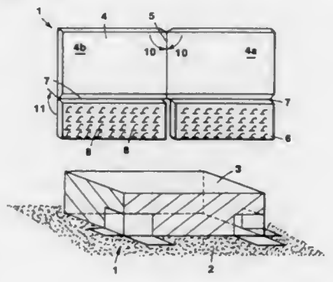
a hollow plastic rod having an outside diameter just smaller than that of the hollow cylindrical cavity which is removably-anchored into said device by tightening said thumbscrew and inside of which freely pivots a threaded steel rod whose uppermost end is bent into a flattened elliptical closed loop which affords a point of attachment for ropes or pet leashes when free rotation with less risk of entanglement is required.

5,662,305

SECURING DEVICE

Kunihiko Shimamura, Okayama Prefecture, and Shunichi Sato, Saitama Prefecture, both of Japan, assignors to Velcro Industries B.V., Castorweg, Netherlands

Continuation of Ser. No. 186,688, Jan. 25, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 639,317
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—500 9 Claims



1. A relatively small, selectively positionable and readily releasable corner securing device for stabilizing an item placed on a relatively broad surface having carpet-type pile elements, comprising

a vertical plate portion comprising at least two panels joined to each other at a flexible vertical hinge joint which enables folding of said panels relative to one another about a vertical axis thereby to enable said vertical plate portion to conform adjustably to the local shape of a selected item to be secured,

two or more floor attachment plates, each joined to the lower edge of a different one of said panels at a flexible horizontal hinge joint enabling folding of said attachment plate relative to the respective panel in the manner that each attachment plate is directed away from said item while the lower surface of each plate is exposed directly to said broad surface, and

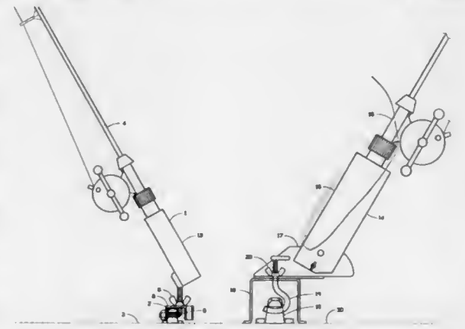
means in the form of touch fastener hook-type gripping elements capable of engaging carpet-type pile elements on said lower surface of each of said floor attachment plates for releasably affixing each of said floor attachment plates to carpet-type pile elements on said surface.

5,662,306

CLEAT MOUNTED CHANNEL HOLDING DEVICE

Edward Dysarz, 11423 Triola La., Houston, Tex. 77072

Filed May 13, 1996, Ser. No. 645,203
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—514 8 Claims



1. A cleat mounted channel holding device for holding a fishing rod or other tools wherein said cleat mounted channel holding device is mounted on a cleat that is mounted on a boat, a dock, a pier or a deck, comprised of;

at least one tube with a first end and a second end;

at least one L rod with a first end and a second end wherein said first end of said L rod is fixed to said second end of said tube; and wherein said L rod has threads formed on the outside surface of said L rod and said L rod is bent to form an L;

at least one wing nut wherein said wing nut has a hole with threads formed in said wing nut and said wing nut is disposed around said L rod and said threads of said wing nut mesh with said threads formed on said L rod;

at least one channel with a first end, a second end a third end, a fourth end and a fifth end wherein a top channel slot is formed in said third end of said channel and a side channel slot is formed in said fourth end of said channel;

at least one side nut wherein said nut has a hole formed in said channel side nut with threads formed in said hole and said threads mesh with said threads of said L rod wherein said L rod is disposed in said wing nut in said top channel slot around said cleat and said L rod is further disposed in said side channel slot and said side nut wherein said side nut is tightened in said fourth side of said channel, and said wing nut is tightened in said third side of said channel wherein said channel and said L rod are compressed around said cleat thereby locking said cleat mounted channel holding device to said cleat and further supporting said tube fixed to said first

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end of said L rod providing a holding device wherein a fishing rod or other tool is inserted into said tube and supported by said tube.

5,662,307

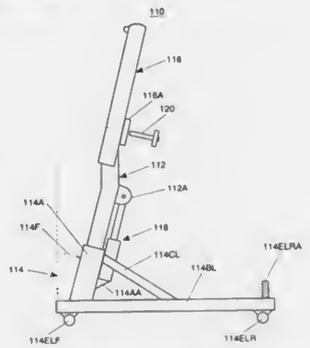
PORTABLE OUTBOARD MOTOR SUPPORT AND LIFT

Salvatore A. Lentine, 3 Lentine Dr., Flemington, N.J. 08222

Filed Jun. 5, 1996, Ser. No. 658,396

Int. Cl.[6] F16M *1/00*

U.S. Cl. 248—640 **9 Claims**



1. A portable outboard motor support and lift comprising:

A) a first portable base (**114**) which comprises:

I) a first portable base left member (**114**BL) having a first portable base left-front castor (**114**ELF) securely mounted on a front distal end and a first portable base left-rear castor (**114**ELR) securely mounted on a rear distal end,

ii) a first portable base right member (**114**BR) having a first portable base right-front castor (**114**ERF) securely mounted on a front distal end and a first portable base right-rear castor (**114**ERR) securely mounted on a rear distal end,

iii) a first portable base rear left support member (**114**CL) securely fastened at an outer distal end to the first portable base left member (**114**BL) and securely fastened at an inner distal end to a first portable base rear middle support member (**114**CM),

iv) a first portable base rear right support member (**114**CR) securely fastened at an outer distal end to the first portable base right member (**114**BR) and securely fastened at an inner distal end to the first portable base rear middle support member (**114**CM),

v) a portable base outer cylinder securely fastened to the first portable base rear middle support member (**114**CM), the portable base outer cylinder is selected from a group of portable base outer cylinders consisting of first portable base outer cylinder (**114**A) and second portable base outer cylinder (**214**A), the first portable base outer cylinder (**114**A) comprises a first portable base outer cylinder bracket (**114**AA) securely fastened thereto, the second portable base outer cylinder (**214**A) comprises a plurality of second portable base outer cylinder opening (**214**AA) positioned longitudinally thereon,

v) a first portable base front left support member (**114**DL) securely fastened at an outer distal end to the first portable base left member (**114**BL) and securely fastened at an inner distal end to the portable base outer cylinder, and

vi) a first portable base rear right support member (**114**DR) securely fastened at an outer distal end to the first portable base right member (**114**BR) and securely fastened at an inner distal end to the portable base outer cylinder;

B) an inner cylinder having a bottom end slidably mounted within the portable base outer cylinder, the inner cylinder is selected from a group consisting of first inner cylinder (**112**) and second inner cylinder (**212**), the first inner cylinder (**112**) comprises a first inner cylinder bracket (**112**A) extending therefrom, the second inner cylinder (**212**) comprises a plurality of second inner cylinder openings (**212**A) positioned longitudinally thereon, the second inner cylinder openings (**212**A) are positioned in a spaced relationship which is complimentary to a spaced relationship of the second portable base outer cylinder openings (**214**AA);

C) an outboard motor support securely fastened to a top end of the inner cylinder, the outboard motor support is selected from a group consisting of first outboard motor support (**116**) and second outboard motor support (**216**), the first outboard motor support (**116**) comprises first outboard motor support left member (**116**L) securely connected to a first outboard motor support right member (**116**R) by a first outboard motor support middle member (**116**M) therebetween, the first outboard motor support left member (**116**L) comprises at least one first outboard motor support left member opening (**116**LA) positioned at a top end therein, the first outboard motor support left member (**116**L) further comprises at least one first outboard motor support left member bracket (**116**LB) securely attached thereto at a bottom end, the first outboard motor support left member (**116**L) further comprises a first outboard motor support left member bracket opening (**116**LBA), the first outboard motor support right member (**116**R) comprises at least one first outboard motor support right member opening (**116**RA) positioned at a top end therein, the first outboard motor support right member (**116**R) further comprises at least one first outboard motor support right member bracket (**116**RB) securely attached thereto at a bottom end, the first outboard motor support right member (**116**R) further comprises a first outboard motor support right member bracket opening (**116**RBA), the second outboard motor support (**216**) comprises a second outboard motor support middle top member (**216**MA) securely connected to a second outboard motor support middle bottom member (**216**MB) by a second outboard motor support left member (**216**L) and a second outboard motor support center member (**216**C) and a second outboard motor support right member (**216**R), the second outboard motor support left member (**216**L) comprises at least one second outboard motor support left member opening (**216**LA) therein, the second outboard motor support right member (**216**R) comprises at least one second outboard motor support right member opening (**216**RA) therein, the second outboard motor support middle bottom member (**216**MB) comprises at least one second outboard motor support middle bottom member right opening (**216**MBR) therein and at least one second outboard motor support middle bottom member left opening (**216**MBL), the second outboard motor support center member (**216**C) comprises a second outboard motor support center member connector (**216**CA) which is attachable to at top end of the inner cylinder;

D) a connecting means which functions to connect the portable base outer cylinder to the inner cylinder, the connecting means is selected from a group consisting of a bottle jack (**118**) and a pin (**218**), the bottle jack (**118**) is attached at a top distal end to the first inner cylinder bracket (**112**A) and is attached at a bottom distal end to the first portable base outer cylinder bracket (**114**AA), the pin (**218**) is removably connectable through the second inner cylinder opening (**212**A) and the second portable base outer cylinder opening (**214**AA).

5,662,308

EXPANDING GATE VALVE ASSEMBLY

Venkatesh R. Nevrekar, 6 Castle Creek Pl., Shawnee, Okla. 74801

Filed Apr. 15, 1996, Ser. No. 631,957

Int. Cl.[6] F16K *3/14*

U.S. Cl. 251—204 **6 Claims**

1. A valve comprising:

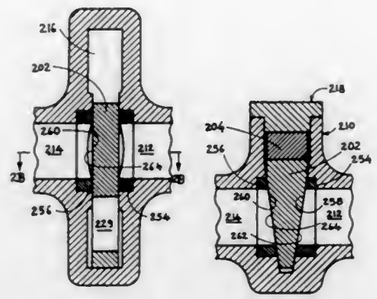
a valve body having a body cavity with a fluid flow passageway therethrough defining a fluid flow path intersecting the body cavity, the valve body having a valve seating surface located on one side of the valve body facing the body cavity and surrounding the fluid flow passageway;

a flow control means disposed in the body cavity for selectively closing and opening the fluid flow passageway, the flow control means comprising:

a gate;

a stem connected to the gate for selectively moving the flow control means; and

a floating segment having a sealing surface configured to wedge against the valve seating surface, the floating segment supported on the gate with a first wedging means between the gate and the segment for causing a wedging movement of the segment in a direction transverse to the fluid flow path and further causing wedging of the sealing surface of the segment against the valve seating surface upon a reciprocating movement of the gate in one direction in selective response to valve stem movement so as to close the fluid flow passageway.



5,662,309

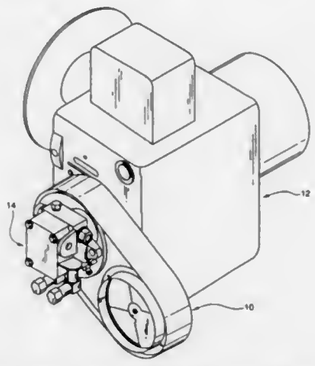
AIR INTAKE ASSEMBLY FOR A COMBUSTION FUEL BURNER HAVING AN ADJUSTABLE AIR INTAKE PORT

Steven E. Guzorek, Kinston, N.C., assignor to Pettibone Corporation, Lisle, Ill.

Filed Aug. 22, 1995, Ser. No. 518,091

Int. Cl.[6] F16K *31/44*

U.S. Cl. 251—212 **11 Claims**



1. An air intake assembly for a combustion oil burner, said assembly comprising:

a housing having a front wall, a back wall and a peripheral side wall between said front wall and said back wall, said housing defining an air intake chamber therein, said front wall having a partly circular air intake hole therein;

an axle mounted to said housing between said front wall and said back wall,

first, second and third rotatable vanes rotatably mounted to said axle and positioned adjacent to said air intake hole, said first rotatable vane being mounted in direct rotational movement with said axle;

means mounted on said rotatable vanes for sequentially rotating said rotatable vanes whereby said air intake hole can be selectively opened from 0° open where substantially no air can pass through said hole and into said air intake chamber, to approximately 270° open where air can flow into the chamber.

5,662,310

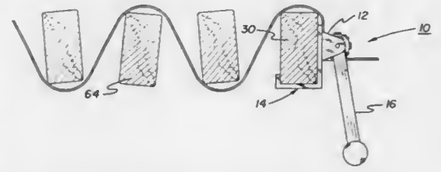
STUD ADJUSTER APPARATUS

Steven L. Carson, Sr., 6208 Twilight Tr., Morrow, Ga. 30260

Filed Dec. 22, 1995, Ser. No. 577,691

Int. Cl.[6] B66D *1/00*

U.S. Cl. 254—218 **7 Claims**



1. A stud adjuster apparatus comprising in combination:

an adjuster including a J-shaped support and a handle with a forked end, the J-shaped support having a long arm, a short arm and an arm connector therebetween, the long arm having an exterior surface with a pair of brackets projecting therefrom, the brackets being coupled with the forked end of the handle, the support being positionable around a generally rectangular stud along an interior surface of the support;

a cylindrical member having a pair of side surfaces and a cylinder surface therebetween, the cylinder surface having a plurality of cylindrical projections spaced evenly therearound, the cylindrical member further having a pair of ratchet members, one of said ratchet members being integral thereto and projecting from one of the side surfaces, and the other of said ratchet members being integral thereto and projecting from another of the side surfaces;

an axial rod positioned through the brackets, the forked end, and the cylindrical member, to rotationally mount the cylindrical member and the forked end of the handle on the brackets;

the forked end of the handle having two legs, each leg having a pawl positioned along an inner area of the leg and attached to the leg with a rivet, each pawl being capable of engaging a respective ratchet member of the cylindrical member when the handle is moved, to cause movement of the ratchet member in a single direction; and

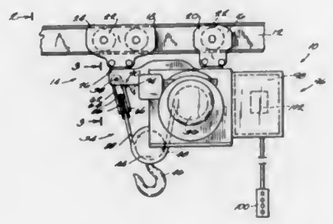
banding material having a plurality of holes therethrough being weaved around a plurality of bowed studs aligned in a series, the banding material being secured by a nail to one of the bowed studs, the banding material being threaded around the cylindrical member when the adjuster is positioned on a stud opposite and spaced from the stud securing the banding material, the holes of the banding material being engaged by the cylindrical projections of the cylindrical member when the handle is moved, wherein the movement of the cylindrical member pulls the bending material in a direction to cause the bowed studs to be straightened and brought flush with each other.

5,662,311

LIFTING APPARATUS INCLUDING OVERLOAD SENSING DEVICE

Curt J. Waedekin, Muskego, and Bradley W. Niemi, Racine, both of Wis., assignors to Harnischfeger Corporation, St. Francis, Wis.

Continuation of Ser. No. 197,315, Feb. 16, 1994, abandoned.
This application May 13, 1996, Ser. No. 645,192
Int. Cl.[6] B66D 1/48
U.S. Cl. 254—273 23 Claims



1. A load lifting apparatus comprising:
a frame;
a load engaging mechanism for engaging a load having a weight;
means for raising said load engaging mechanism, said raising means being mounted on said frame and including a substantially rigid member supporting said load engaging mechanism during lifting of the load, said member having therein an aperture;
a sensor disposed in said aperture for detecting deformation of said aperture and thereby detecting a force exerted by said load engaging mechanism on said member, said sensor providing a variable output indicative of the magnitude of the force; and
control means for disabling said raising means when the output reaches a first predetermined value corresponding to the maximum load of said load lifting apparatus, wherein said control means also records the cumulative period during which said load lifting apparatus is in operation, and wherein said control means also records the cumulative number of occurrences of lifting of loads having weights in a predetermined range.

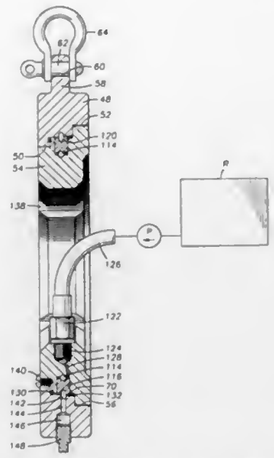
5,662,312

PRESSURIZED SHEAVE MECHANISM FOR HIGH PRESSURE WIRELINE SERVICE

Henry H. Leggett, Hallsville, and Russell C. Gilleylen, Longview, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 304,876, Sep. 13, 1994, abandoned.
This application Jul. 22, 1996, Ser. No. 686,177
Int. Cl.[6] E21B 19/08
U.S. Cl. 254—390 34 Claims

1. A substantially pressure balanced, pressure containing sheave mechanism, comprising:
(a) sheave body means having circular internal pressure exposed surface means and defining an internal opening and defining first and second wireline passages intersecting said internal opening;
(b) sheave housing means having circular external pressure exposed surface means and being located within said internal opening and establishing a circular connection joint with said sheave body means at said internal opening with said internal and external pressure exposed surface means being disposed in substantially radially adjacent relation;
(c) one of said sheave body means and sheave housing means defining a circular sheave chamber;



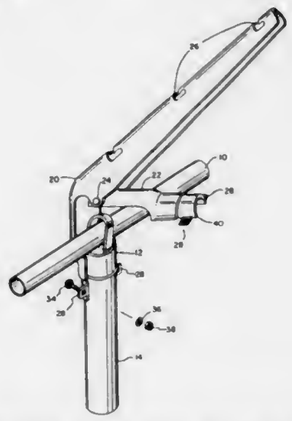
(d) a circular sheave element being located for rotation within said circular sheave chamber and defining an outer peripheral wireline groove in registry with said first and second wireline passages;
(e) bearing means establishing rotatable bearing support for said circular sheave element within said circular sheave chamber; and
(f) means establishing sealing between said sheave body means and said sheave housing means at said internal and external pressure exposed surface means and substantially confining internal pressure of said sheave mechanism to said internal and external pressure exposed surface means at said circular connection joint to substantially confine pressure within said circular sheave chamber to said internal and external pressure exposed surface means and minimize pressure induced side loading of said sheave housing and sheave body.

5,662,313

BARB ARM EXTENSION

Joseph H. Forrester, P.O. Box 505, Buford, Ga. 30518

Filed Mar. 19, 1996, Ser. No. 616,508
Int. Cl.[6] E04H 17/00
U.S. Cl. 256—11 4 Claims



1. In combination with an anchor fence having round metal fence posts, a tubular top rail, and caps mounted on the posts for supporting the top rail, a barb arm extension assembly comprising

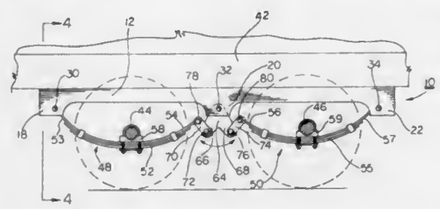
a main body comprising an arm having means for retaining at least one strand of barbed wire and a first half-shell clamp member for engaging a first side of said post only below said cap,
a bracket in the form of a second half-shell clamp member for engaging a second side of said post opposite said first side,
each of said half-shell clamp members having lateral cutouts to clear the top rail of the fence, a central portion with an internal diameter sufficient to contain one of said caps without contacting it, and a semicylindrical necked-down bottom portion having an internal diameter about equal to that of each of said posts,
a hinge connection between the main body and the bracket, said hinge connection being formed respectively at the top of the bracket and at a point on the main body intermediate said arm and said first half-shell, and
means for drawing said first and second half shells together to clamp the post between them below the post cap so as to avoid contact with either the post cap or the top rail.

5,662,314

WHEEL SPRING SUPPORT FRAME FOR VEHICLES

Jacob K. Stoltzfus, Goshen, Ind., assignor to Leland Engineering, Inc., White Pigeon, Mich.

Continuation of Ser. No. 552,913, Nov. 3, 1995, abandoned.
This application Nov. 20, 1996, Ser. No. 752,750
Int. Cl.[6] B60G 11/12
U.S. Cl. 267—271 6 Claims



1. A wheel spring support frame for attaching first a leaf spring, said first leaf spring having a pair of end portions, said support frame comprising parallel longitudinally extending sidewalls having opposite ends and joined together by a web extending between said ends, each sidewall including at least two spaced integral attachment means for attaching said end portions of said leaf spring to said sidewalls, one of said attachment means of one said sidewall and another of said attachment means of the other of said sidewalls being laterally aligned to accommodate said leaf spring therebetween;
wherein each of said attachment means includes an aperture for receiving a fastener for securing said first leaf spring to said attachment means;
and wherein a reinforcing member extends between said sidewalls at each of said attachment means, said reinforcing member being offset from said web and from said apertures of said attachment means.

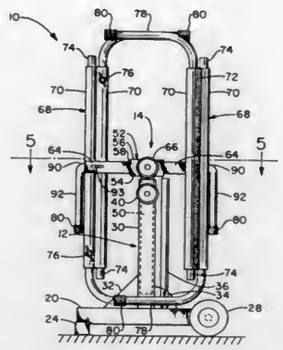
5,662,315

BUMPER HOLDER

Lynn R. Neiss, Navarre, Ohio, and Vinny J. Liotta, Charlotte, N.C., assignors to Brut Manufacturing Company, Navarre, Ohio

Filed May 6, 1996, Ser. No. 643,616
Int. Cl.[6] B23Q 3/00
U.S. Cl. 269—17 19 Claims

1. A collapsible bumper holder, comprising:
a carriage; and



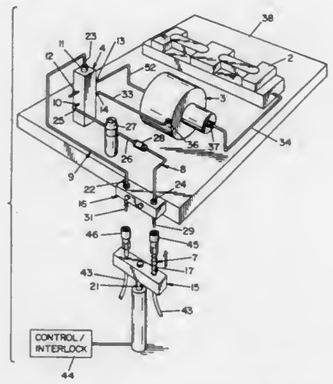
a cradle carried by said carriage, said cradle having a first sleeve connected to said carriage and a pair of arms slidably received in said first sleeve and movable between a collapsed storage position and an expanded holding position adaptable to receive a bumper.

5,662,316

PALLET COUPLE AND DECOUPLE CLAMPING APPARATUS AND METHOD FOR PALLET COUPLING AND DECOUPLING

Kurt D. Schaldach, Strongsville, Ohio, assignor to Automation Enhancements Un Limited, Cleveland, Ohio

Filed Jul. 22, 1993, Ser. No. 95,902
Int. Cl.[6] B25B 1/18
U.S. Cl. 269—25 11 Claims



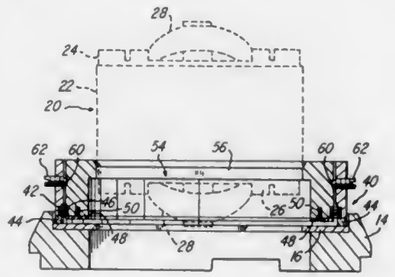
1. A pallet clamping device comprising an air pressure supply means, a hydraulic vice, a pneumatic-hydraulic pressure amplifier supplying hydraulic pressure to said hydraulic vice, a pneumatic pilot control valve having first and second positions, a power port, a control port, an exhaust port, an amplification port and a retraction port, a first pneumatic quick disconnect coupling, a second pneumatic quick disconnect coupling, a conduit means, said first and second pneumatic quick disconnect couplings and said conduit means sequentially applying and removing air pressure to said pneumatic pilot control valve, said conduit means includes a first pneumatic metal conduit guide, an air supply power conduit, an air supply control conduit, said first pneumatic metal conduit guide and said air supply power conduit and said first pneumatic quick disconnect coupling applying air pressure to said power port of said pneumatic control valve, said air supply control conduit and said second pneumatic quick disconnect coupling applying air pressure to said control port of said pneumatic pilot control valve, a pneumatically operated piston, a first mounting block movable

between first and second positions, a second mounting block, said first mounting block and said second mounting block aligned with respect to each other, said first quick disconnect having male and female halves, said second quick disconnect having male and female halves, said second mounting block having first and second bores therethrough, said male halves of said first and second quick disconnects affixed to said second mounting block in alignment with said first and second bores of said second mounting block, said first mounting block having first and second bores therethrough, said pneumatic metal conduit guide having first and second end portions, said pneumatic metal conduit guide residing partially within said first bore of said first mounting block, said first end portion of said pneumatic metal conduit guide affixed to said female half of said first quick disconnect, a spring disposed around said pneumatic metal conduit guide and between said first mounting block and said female half of said first quick disconnect, a fitting affixed to said second end portion of said metal guide, said spring urging said female half of said first quick disconnect and said metal guide away from said first mounting block and toward said second mounting block, said fitting engaging said first mounting block and restraining movement of said female half of said first quick disconnect, said female half of said second quick disconnect affixed to said first mounting block and aligned with said second bore of said first mounting block, said pneumatically operated piston affixed to said first mounting block and urging said first mounting block between first and second positions causing sequential engagement of said male and female halves of said first quick disconnect followed by engagement of said male and female halves of said second quick disconnect as said first mounting block is urged toward said second position and causing sequential disengagement of said male and female halves of said second quick disconnect followed by disengagement of said male and female halves of said first disconnect as said pneumatically operated piston is retracted urging said first and second mounting blocks away from each other, whereby said air pressure is sequentially applied to said power port and then to said control port unlocking said hydraulic vice, and, said air pressure is sequentially removed from said control port and then from said power port locking said hydraulic vice.

5,662,317
PALLET SUPPORT ASSEMBLY FOR USE IN MANUFACTURING STATORS

John M. Beakes, Fairborn, and Danny L. Miller, Union, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Filed Sep. 18, 1995, Ser. No. 529,495
Int. Cl.[6] B23Q *3/18*
U.S. Cl. 269—58 **15 Claims**

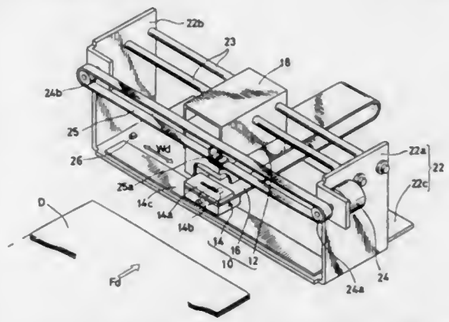


1. A stator support assembly for use during the manufacture of electric motor stator assemblies, comprising:
a pallet;
a stator support nest rotatably mounted on said pallet, said nest having generally horizontal, upwardly-facing, stator core supporting surfaces and generally vertical stator core confining wall portions; and
a lock mechanism comprising a first part on said nest and a second part fixed in relation to said nest that cooperate to resist rotation of said nest.

5,662,318
STAPLER AND SHEET-BINDING SYSTEM USING THE SAME

Takeshi Harada, and Koichi Kitta, both of Yamanashi-ken, Japan, assignors to Nisca Corporation, Yamanashi-ken, Japan

Filed Aug. 7, 1995, Ser. No. 511,689
Claims priority, application Japan, Aug. 8, 1994, 6-206039; Mar. 17, 1995, 7-086550
Int. Cl.[6] B65H *39/02*
U.S. Cl. 270—58.05 **26 Claims**



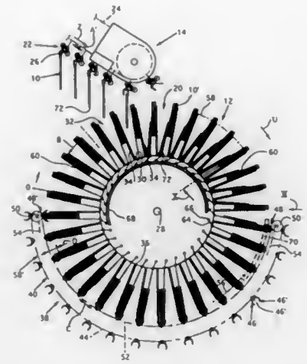
1. A stapler for binding sheets fed in a forwarding direction, comprising:
a staple driving unit including a staple driver for forcing a staple having pointed ends into said sheets, clinching means including an anvil for receiving and bending said pointed ends of said staple piercing through said sheets, into a non-returnable state, and a connecting member for connecting said staple driver with said clinching means; and
moving means including one or more guide rods and a reversible motor, said moving means being connected to said staple driving unit through transmitting means to as to move said staple driving unit in the direction perpendicular to said forwarding direction,
whereby said sheets are introduced into between said staple driver and said clinching means and bound with one or more staples at one or more prescribed stapling positions of the sheets.

5,662,319
APPARATUS FOR PROCESSING PRINTED PRODUCTS

Werner Honegger, Bäch, Switzerland, assignor to Ferag AG, Switzerland

Filed Jun. 28, 1996, Ser. No. 672,443
Claims priority, application Switzerland, Jun. 30, 1995, 1-918/95
Int. Cl.[6] B65H *39/02*
U.S. Cl. 270—58.21 **12 Claims**

1. An apparatus for processing printed products comprising:
a conveying device having a plurality of pocket-like receiving parts driven in a rotary path, the receiving parts being arranged one behind the other and transversely with respect to the rotary path, the receiving parts having a base and an opening opposite the base;
at least one feeder for introducing printed products into the receiving parts; and
a transporting device having a plurality of individually controlled clamps, separate from the conveying device, for transporting the printed products within the receiving parts, the clamps being arranged one behind the other and circulated along a continuous movement path, the movement path having a section running transversely with respect to the rotary path and the receiving parts, the clamps further arranged in the section at the openings of the receiving parts, the clamps having a mouth directed toward an interior of the receiving parts, the mouth retaining and transporting the printed products that are arranged in different receiving parts at a border region of the printed products remote from the base.



5,662,320
APPARATUS HAVING DOCUMENT TRANSPORT MECHANISM

Tatsuo Fujiwara, and Norio Kanemitsu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP93/01451, § 371 Date Sep. 1, 1994, § 102(e) Date Sep. 1, 1994, PCT Pub. No. WO94/09589, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 8, 1993, Ser. No. 244,916
Claims priority, application Japan, Oct. 12, 1992, 4-300332
Int. Cl.[6] B65H *83/00*
U.S. Cl. 271—3.14 **80 Claims**

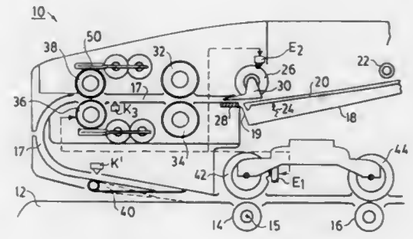


1. An apparatus comprising:
a box shaped case having a top surface, side surfaces, and first and second openings respectively provided on arbitrary side surfaces of said box shaped case;
a drawer provided within said first opening which slides between open and closed positions with respect to said box shaped case, said drawer having a hopper part on which a sheet is placed;
guide means for guiding said drawer with restricted play when said drawer slides between open and closed positions with respect to said box shaped case; and
transport means for transporting the sheet placed on said hopper part within said box shaped case to a stacker part which is within said box shaped case and communicates to said second opening.

5,662,321
AUTOMATIC DOCUMENT FEEDER WITH SKEW CONTROL

Stephen Borostyan, 945 Raccoon Run, Victor, N.Y. 14564, and David M. Borostyan, 706 Stone Cove, Newport News, Va. 23602, assignors to Stephen Borostyan, Victor, N.Y., and David M. Borostyan, Newport News, Va.

Filed Oct. 10, 1995, Ser. No. 541,949
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10.03 **22 Claims**



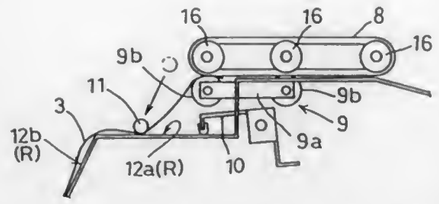
9. An automatic document feeder for feeding documents to an independent document processing machine, the latter having a constant velocity transport for transporting documents through said machine at predetermined speeds, said constant velocity transport having a drive roller mounted for rotation about a constant velocity transport roller axis, said automatic document feeder comprising:
a document flow path oriented perpendicular to said constant velocity transport roller axis for defining a passageway for said documents extending from an upstream entry through a downstream exit in proximity to said constant velocity transport;
a document drive for transporting a document along said flow path at predetermined speeds, said document drive comprising a single row of feed rollers centered for alignment along a line positioned parallel to said document flow path, said single row of feed rollers being arranged above and below said flow path and having:
at said flow path entry, one of (a) a nudger roller associated with a retard pad and (b) a drive roller forming a nip with a brake roller;
a take-away roller forming a nip with a take-away idler; and
an idler roller for forming a nip with the surface of a document moving along said flow path, said idler roller being located in proximity to said exit and to said constant velocity transport of said independent document processing apparatus; and
a document tray, positioned in alignment with said flow path at said upstream entry, for receiving documents for processing, said tray having a single weighted roller positioned in alignment with said feed roller center line.

5,662,322
ACCUMULATING APPARATUS FOR SHEET-LIKE HOLDERS FOR A PLURALITY OF NEGATIVE FILM STRIPS

Masuo Kawaguti, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Mar. 17, 1995, Ser. No. 413,817
Claims priority, application Japan, Mar. 24, 1994, 6-053384; Feb. 8, 1995, 7-020377
Int. Cl.[6] B65H *29/46;31/26*
U.S. Cl. 271—84 **10 Claims**

1. Apparatus for accumulating a sheet-like negative film holder for holding a plurality of negative film strips, said holder having a rear end with respect to a transport direction of the film holder, said apparatus comprising
a receiving table,



a feeding section for feeding the film holder in said transport direction to said receiving table, said feeding section comprising a film holder support body which is movable between a first position, wherein said support body fixes said rear end of said film holder against movement in said transport direction, and a second position, wherein said support body releases said rear end of said film holder,

a first retainer unit disposed adjacent to said feed section, said first retainer unit being selectively movable between a retaining position, wherein said rear end of said film holder is fixed to said receiving table, and a releasing position, wherein said film holder can move on said receiving table,

a second retainer unit disposed downstream of said first retainer unit in said transport direction, said second retainer unit being selectively movable between a retaining position, wherein said film holder is fixed to said receiving table, and a releasing position, wherein said film holder can move on said receiving table,

retainer unit drive means for moving only said second retainer unit to said releasing position when said feeding section is about to feed said film holder to said receiving table, and for moving said second retainer unit to said retaining position when said feeding section has fed said film holder to said receiving table, and for moving said first retaining unit from the retainer position to the releasing position after said second retainer unit is in the retaining position, and

support body drive means for moving said support body from said first position to said second position after said second retainer unit is in said retaining position.

5,662,323

TEMPORARY SUPPORTING DEVICE FOR PLATE-LIKE WORKPIECES WITHIN A DELIVERY STATION OF A MACHINE FOR PROCESSING WORKPIECES

Jean-Pierre Kernen, Villars-Lussery, Switzerland, assignor to Bohst SA, Lausanne, Switzerland

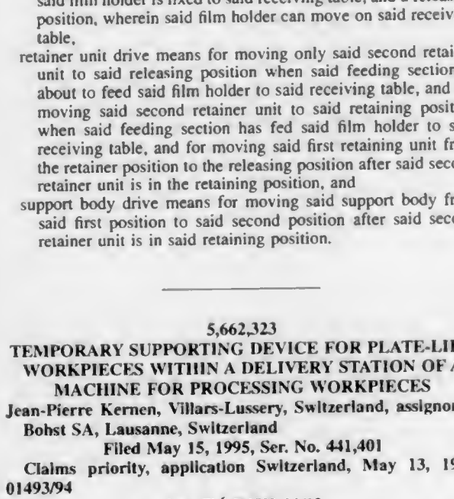
Filed May 15, 1995, Ser. No. 441,401

Claims priority, application Switzerland, May 13, 1994, 01493/94

Int. Cl.[6] B65H *31/12*

U.S. Cl. 271—218 **7 Claims**

1. In a temporary supporting device for plate-like workpieces within a delivery station of a machine that processes plate-like workpieces, said device including a cradle and a non-stop grid which is movable in said cradle between a horizontal oriented sheet receiving position to form a pile of sheets and a retraced position withdrawn from receiving sheets, the improvements comprising a pair of spaced rollers attached to an end of said cradle, a vertically extending guide for guiding said spaced rollers in a vertical path, a vertical jack, said cradle being movable along said vertically extending guide in the station by said vertical jack in response to the amount of the supported plate-like workpieces, and that while being shifted to the retracted position, said grid being partially separated from the cradle in order to allow for a complementary rotational movement of the grid that will bring the grid into a vertical position in the station.



5,662,324

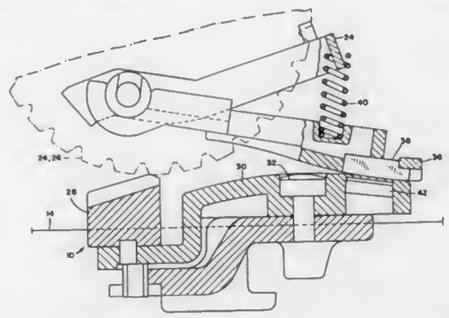
HALL EFFECT SENSOR FOR DETECTING DOUBLE FED SHEETS

Joseph A. Cannaverde, 131 Perry Ave., New Milford, Conn. 06776; Arnold T. Eventoff, 6 Suzanne La., Pleasantville, N.Y. 10570, and Joseph H. Marzullo, 7 Old White Turkey Rd., Brookfield, Conn. 06804

Filed Dec. 19, 1994, Ser. No. 359,100

Int. Cl.[6] B65H *7/12*

U.S. Cl. 271—263 **4 Claims**



1. Apparatus for singulating sheets of paper and detecting a double feed, comprising:

a sheet feeder having a feed deck;

a separator wheel housing secured to said feed deck;

a separator wheel mounted in said separator wheel housing;

a stone mount located beneath said separator wheel, said stone mount secured to said feed deck;

a separator stone mounted in said stone mount beneath said separator wheel;

a Hall effect sensor located in said stone mount downstream of said separator stone; and

a magnet secured to said feeder, said magnet biased against said Hall effect sensor, whereby said Hall effect sensor can detect a double feed without being effected by any fluctuations in said feed deck.

5,662,325

SYSTEM FOR GENERATING RANDOM OUTCOMES USING DISCS

Rudi Weyand, 16776 Bernardo Center Dr., Ste. 110B, San Diego, Calif. 92128

Continuation-in-part of Ser. No. 349,549, Dec. 5, 1994, Pat. No. 5,480,150. This application Dec. 29, 1995, Ser. No. 580,638

Int. Cl.[6] A63F *3/00*

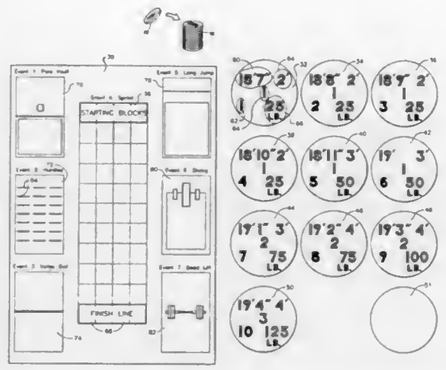
U.S. Cl. 273—138.1 **27 Claims**

1. A method for using a plurality of sets of discs to randomly select an outcome from a predetermined set of outcomes, each set consisting of at least one disc, each disc in said set having an indicia side and a non-indicia side, said indicia side of each said disc in a set having a plurality of indicia, each of a different indicia type than other indicia of said disc and of the same indicia type as indicia of all other discs in said sets, the method comprising the steps of:

stacking said plurality of discs;

impacting said stack with a disc; and

determining said outcome in response to said indicia of one indicia type on all discs resting in an orientation in which said indicia side of said disc is visible.



5,662,326

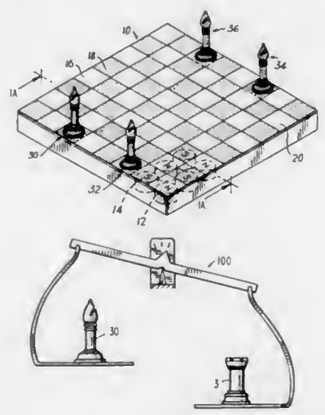
CHESS SET CONSTRUCTION

Nagib Gebran, Forest Hills, N.Y., assignor to Educational Chess Enterprises, Forest Hills, N.Y.

Filed Aug. 26, 1996, Ser. No. 703,062

Int. Cl.[6] A63F *3/02*

U.S. Cl. 273—239 **19 Claims**



1. In a chess set having an eight-row by eight-column pattern of sixty four playing squares on a playing surface of a chess game playing board and two sets of visually distinct playing pieces each comprising eight pawns, two knights, two bishops, two rooks/castles, one queen and one king, the sixty four playing squares comprising thirty-two light squares and thirty-two dark squares arranged in an alternating light/dark pattern in each of said rows and each of said columns, the improvement comprising:

a first set of at least one magnet having a North pole and a South pole arranged in connection with said board and underlying said light squares such that the North pole is oriented toward the playing surface, and

a second set of at least one magnet having a North pole and a South pole arranged in connection with said board and underlying said dark squares such that the South pole is oriented toward the playing surface,

a first one of said bishops of each of said sets movable only on said light squares including a magnet having a North pole and a South pole arranged such that the South pole is oriented toward the playing surface whereby said first bishops attract to said light squares and are repelled from said dark squares, and

a second one of said bishops of each of said sets movable only on said dark squares including a magnet having a North pole and a South pole arranged such that the North pole is oriented toward the playing surface whereby said second bishops attract to said dark squares and are repelled from said light squares.

5,662,327

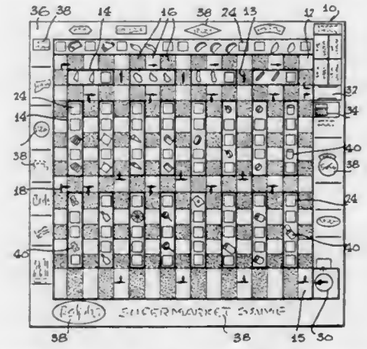
SUPERMARKET BOARD GAME

Maxim D. Levinrad, 5643 Cedros Ave., Van Nuys, Calif. 91411

Filed Oct. 7, 1996, Ser. No. 725,833

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—242 **20 Claims**



1. A board game for play by a plurality of players, comprising:

a plurality of container means;

a board portion having a plurality of paths, each path having discrete places upon which said container means can be moved, some of said paths allowing for uni-directional travel of said container means and some paths allowing for bi-directional travel of said container means, a plurality of non-passage areas adjacent said connected path, said connected paths having an entrance for players' container means to enter, and an exit, for players' container means to exit;

a plurality of tokens placed on discrete areas on said non-passage areas, directly adjacent said discrete places of said paths, said tokens bearing indicia of value, and being claimed by a player's container means when it lands directly adjacent a token on non-passage area.

5,662,328

HALLOWEEN BOARD GAME

Cyrilla Dianne Pecoy, R.D. #1, Box 210 E, Oswego, N.Y. 13126

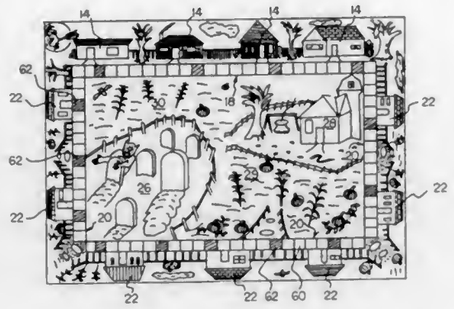
Filed Sep. 8, 1995, Ser. No. 524,991

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—248 **8 Claims**

1. A board game, comprising:

a game board which includes a predetermined number of start/stop positions, a predetermined number of trick or treat positions, a single endless path which includes a start/stop path



portion adjacent to said start/stop positions and a trick-or-treat path portion adjacent to said trick or treat positions, wherein said endless path defines an interior board region which includes a first capture region, a second capture region, a first safe region, and a second safe region, wherein said endless path includes a sequential array of segments which include capture-free segments interspersed with capture-susceptible segments,

a predetermined number of groups of Halloween treat cards, wherein each group of Halloween treat cards includes a predetermined number of Halloween treat cards, wherein the predetermined number of groups of Halloween treat cards corresponds to the predetermined number of trick or treat positions,

a predetermined number of treat-receiving player tokens,

a first player-capturing token associated with said first capture region, wherein, during its turn, said first player-capturing token is enabled to capture a specific treat-receiving player token when said specific treat-receiving player token lands on a capture-susceptible segment of said endless path,

a second player-capturing token associated with said second capture region, wherein, during its turn, said second player-capturing token is enabled to capture a specific treat-receiving player token when said specific treat-receiving player token lands on a capture-susceptible segment of said endless path, and

a random number selection device for determining a number of segments along said endless path that a specific treat-receiving player token advances during its turn.

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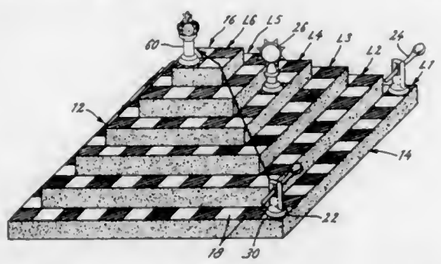
CHESS-TYPE GAME

Richard L. Nason, 4934 Ashelford Dr., Byron, Ill. 61010

Filed Jul. 22, 1996, Ser. No. 681,036

Int. Cl.[6] A63F *3/02*

U.S. Cl. 273—261 **8 Claims**



1. A method of playing a chess-type game by a plurality of players, comprising the steps of:

providing a three-dimensional game board having a right regular square pyramidal shape with four stepped sides and a flat top forming multiple levels of different heights including a lowest level and a highest level, the highest level being the flat top, the levels being divided into a plurality of identifiable playing spaces of alternating colors;

providing each player with a distinguishable set of playing pieces having selected playing pieces of the conventional chess game and at least one catapult playing piece;

placing the playing pieces of each player at predetermined locations, including placing each of the catapult pieces at a playing space at a corner of the lowest level;

each player, in turn, moving one of his playing pieces from one playing space on the game board to another according to movement capabilities assigned to each piece, each of the catapult playing pieces being stationary at its respective position for guarding selected playing spaces on the lower level and along a diagonal line of the game board;

capturing, during moving, another player's playing pieces according to given capturing rules;

removing any playing piece of another player which is moved to a playing space guarded by the catapult playing piece;

continuing the steps of moving and capturing until one of the players wins the game according to a predetermined winning rule.

5,662,330

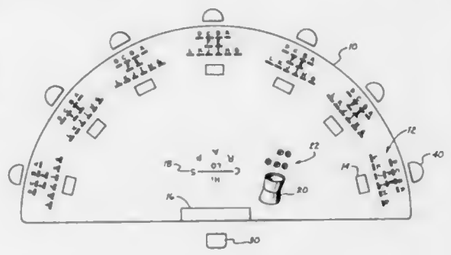
HIGH LOW DICE GAMBLING SYSTEM AND METHOD THEREFOR

Richard L. Spears, 5118 N. Estrella Rd., Golden Valley, Ariz. 86413

Filed Nov. 25, 1996, Ser. No. 755,680

Int. Cl.[6] A63F *9/04*

U.S. Cl. 273—274 **13 Claims**



1. A gaming system comprising, in combination:

table means constructed and adapted for dice means to be used thereupon;

dice means for cumulatively and randomly generating five numbers between the numbers one and six; and

betting spaces located on said table means and having betting indicia for permitting betting on different possible number combinations;

said betting spaces being substantially identifiable as winning spaces if said five numbers generated by said dice means define at least one of the following:

a sum of said five numbers is less than 17;

a sum of said five number is 17;

a sum of said five numbers is 18;

a sum of said five numbers is greater than 18;

said five numbers are identical;

said five numbers are in numerical order;

each of said five numbers is one;

each of said five numbers is two;

each of said five numbers is three;

each of said five numbers is four;

each of said five numbers is five; and

each of said five numbers is six.

5,662,331

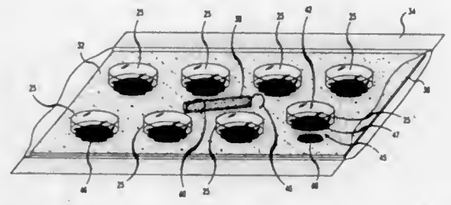
MARBLE CAP GAME PLAYING PIECE

Charles Cucci, 426 Walnut St., Port Monmouth, N.J. 07758

Filed Mar. 11, 1996, Ser. No. 613,333

Int. Cl.[6] A63F *9/00*

U.S. Cl. 273—288 **9 Claims**



1. The combination comprising:

a plurality of game pieces adapted for finger actuating propulsion along a playing field of predetermined configuration, each of which is composed substantially entirely of marble glass having a generally rounded disc shape of diameter 3–4 times greater than its thickness and having a flat bottom;

a backing;

means for mounting each of said plurality of game pieces on said backing; and

a wrapper enclosing said plurality of game pieces and said backing.

5,662,332

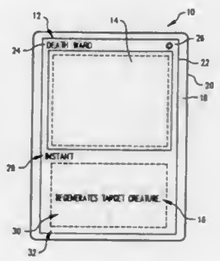
TRADING CARD GAME METHOD OF PLAY

Richard Channing Garfield, Portland, Oreg., assignor to Wizards of the Coast, Inc., Renton, Wash.

Division of Ser. No. 263,447, Jun. 22, 1994. This application Oct. 17, 1995, Ser. No. 544,306

Int. Cl.[6] A63F *1/00*

U.S. Cl. 273—308 **6 Claims**



1. A method of playing games involving two or more players, the method being suitable for games having rules for game play that include instructions on drawing, playing, and discarding game components, and a reservoir of multiple copies of a plurality of game components, the method comprising the steps of:

each player constructing their own library of a predetermined number of game components by examining and selecting game components from the reservoir of game components;

each player obtaining an initial hand of a predetermined number of game components by shuffling the library of game components and drawing at random game components from the player's library of game components; and

each player executing turns in sequence with other players by drawing, playing, and discarding game components in accordance with the rules until the game ends, said step of executing a turn comprises:

(a) making one or more game components from the player's hand of game components available for play by taking the one or more game components from the player's hand and placing the one or more game components on a playing surface; and

(b) bringing into play one or more of the available game components by:

(i) selecting one or more game components; and

(ii) designating the one or more game components being brought into play by rotating the one or more game components from an original orientation to a second orientation.

5,662,333

MISSILE DETECTION AND LOCATION

John Allen, Southsea, England, assignor to Paramount Technologies, Inc., Chicago, Ill.

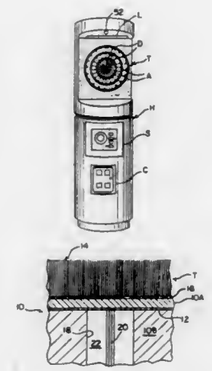
PCT No. PCT/GB94/01619, § 371 Date Jan. 29, 1996, § 102(e) Date Jan. 29, 1996, PCT Pub. No. WO95/04251, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 27, 1994, Ser. No. 586,773

Claims priority, application United Kingdom, Jul. 31, 1993, 9315904

Int. Cl.[6] F41J *3/02*; A63B *71/00*

U.S. Cl. 273—371 **30 Claims**



1. A system for detecting and locating a missile embedded in a target, comprising:

a target having a target face, said target face having a plurality of target areas formed of an electrically nonconductive material and into which material one or more of the missiles may be selectively embedded;

signal receiving elements associated with respective ones of said target areas for receiving and sensing electromagnetic signals which pass through said nonconductive material at each of said target areas from an electromagnetic signal source remote from said target areas, said signal receiving elements being positioned on a side of said nonconductive material opposite said target face; and

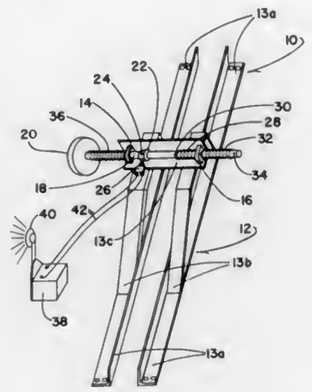
processing means electrically connected to said signal receiving elements, said processing means distinguishing between a first electromagnetic signal which is received and sensed by one of said signal receiving elements in the absence of a missile in close proximity to said target area of said one of said signal receiving elements, and a second electromagnetic signal which results from an alteration of said first electromagnetic signal by the presence of a missile at least a portion of which is formed of an electromagnetic responsive material in close proximity to said target area of said one of said signal receiving elements, wherein the close proximity of the missile to said last mentioned target area permits the detection of the presence and location of the missile.

5,662,334

INSTANT RESPONSE BULL'S -EYE TARGET SYSTEM

James A. Leinen, Sr.; Carolyn Leinen; James A. Leinen, Jr., and Tammy M. Leinen, all of N5392 County Rd. J, Tigerton, Wis. 54486

Filed May 29, 1996, Ser. No. 654,706
Int. Cl.[6] F41J 5/04
U.S. Cl. 273—374 8 Claims



1. An instant response bull's-eye target system comprising;
a) a target support unit comprising a rigid support frame base with first and second bushing guide members secured to said support frame base a selected distance apart;
b) a cylindrical shaft member with first and second ends, said shaft member fitting and movable within and supported by said bushing guide members on said support frame base;
c) a generally circular flat plate target member fastened at its center to the first end of said shaft member;
d) a tapered cam member with larger and smaller ends, said cam member encircling said cylindrical shaft member and oriented with the smaller end nearest said target member, said cam member secured at about the midpoint of said shaft member, said cam member positioned between said first and second bushing guide members;
e) a snap switch attached to said support frame and positioned to contact said cam member, said switch being in the open position when contacting said cam member;
f) biasing means between said cylindrical shaft member and said target support unit, said biasing means reversibly holding said associated tapered cam member against said snap switch; and
g) means for signaling closing of said snap switch, whereby a projectile striking said target member displaces said target and attached cylindrical shaft and associated cam member along the cylindrical axis of the shaft member, the displacement of the shaft moving the associated cam member out of contact with said snap switch, closing said switch, thereby activating said signal means, and whereby said biasing means returns said target, cylindrical shaft and associated cam member into contact with said snap switch, opening said switch, thereby deactivating said signal means.

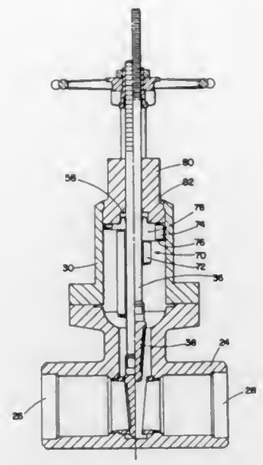
5,662,335

PRESSURE BALANCED BELLOWS SEAL

Richard R. Larsen, 4153 Shady La., Cookeville, Tenn. 38501

Continuation-in-part of Ser. No. 308,797, Sep. 19, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 621,443
Int. Cl.[6] F16J 15/52
U.S. Cl. 277—3 9 Claims

1. A bellows seal assembly for containing process fluid under pressure in a valve comprising:
a first bellows assembly;



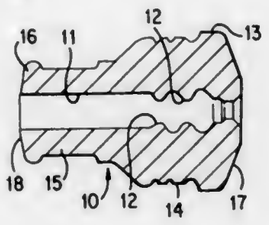
a second bellows assembly substantially concentric with said first bellows assembly;
means sealably interconnecting said first bellows assembly and said second bellows assembly in an end-to-end arrangement and preventing a telescoping relationship therebetween;
a substantially incompressible pressure balancing fluid contacting an inner periphery of said first and second bellows assemblies
said process fluid contacting an outer periphery of said first and second bellows assemblies;
said first bellows assembly sealably attached to actuating means;
said second bellows assembly sealably attached to housing means; and
whereby displacement of said actuating means causes displacement of said first and second bellows assemblies while maintaining a pressure balance between said incompressible pressure balancing fluid and said process fluid.

5,662,336

WATERPROOF SEAL FOR CONNECTOR WITH FRUSTOCONICAL END SURFACES

Hiroyuki Hayashi, and Shinichi Yamada, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Continuation of Ser. No. 496,005, Jun. 28, 1995, abandoned. This application Oct. 21, 1996, Ser. No. 734,483
Claims priority, application Japan, Jul. 20, 1994, 6-190972
Int. Cl.[6] F16J 15/02
U.S. Cl. 277—208 5 Claims



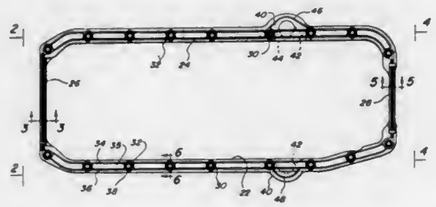
1. A waterproof seal for a connector, comprising a tubular body shaped to receive a wire connected to a metal terminal, said tubular body being insertable into a cavity in a connector housing to form a watertight seal between an outer periphery of said wire and an inner periphery of said cavity, wherein axially opposite ends of said tubular body each have a small contact area and a substantially frustoconical shape, wherein the diameter of the substantially frustoconical shape decreases towards the axial end.

5,662,337

ONE PIECE GASKET FOR COMPLEX OIL PAN CONFIGURATION

Melvin L. Surbrook, Jefferson City, Tenn., and Thomas D. Gacloch, Riverview, Mich., assignors to Indian Head Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 332,484, Oct. 31, 1994, Pat. No. 5,536,023. This application Jul. 15, 1996, Ser. No. 683,573
Int. Cl.[6] F16J 15/00
U.S. Cl. 277—235 B 2 Claims



1. An oil pan gasket comprising:
a one-piece body including two sides and two ends, each of said ends having a central curved portion curving away from a nominal flat surface of said body, said sides being formed with a plurality of bolt holes to receive bolts to attach an oil pan to an engine;
each of said sides being formed with structure to accommodate an oil dipstick, said structure including a first sealing bead portion positioned radially outwardly of an area which is to accommodate an oil dipstick, such that said first sealing portion will seal on a side of said oil pan gasket which actually receives an oil dipstick, and a second sealing portion positioned radially inwardly to seal on the side of said oil pan gasket which does not receive an oil dipstick.

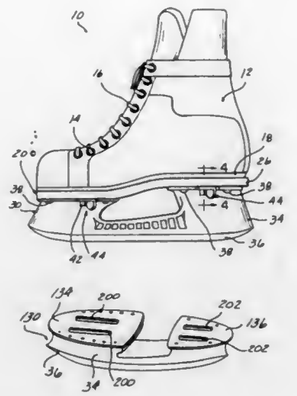
5,662,338

SKATE WITH LATERAL TORQUE SUPPORT MEMBERS

Paul M. Steinhauser, Jr., Davison, Mich., assignor to Victor Posa, Grand Blanc, Mich.

Filed Feb. 15, 1995, Ser. No. 388,980
Int. Cl.[6] A63C 1/16;17/18
U.S. Cl. 280—7.14 17 Claims

1. A skate comprising:
a shoe having a sole, the sole having a central portion and a peripheral edge;
an attachment supporting a use element, the attachment affixed to the sole by at least one fastener extendable through the peripheral edge of the attachment into the sole, the attachment having a central portion and a peripheral edge;
at least one lateral support member formed on the central portion of one of the shoe sole and the attachment and spaced inward from the peripheral edge thereof; and
at least one lateral support engaging aperture formed on the other of the sole and the attachment and complementary to the lateral support member for securely engaging the lateral support member.

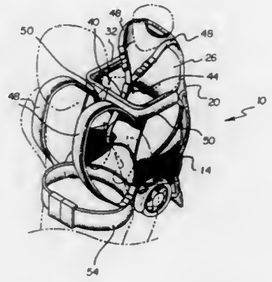


5,662,339

INFANT FRAME CARRIER

Sean Svendsen, Columbus; Paul Kolada, Bexley; David J. Stroud, Dayton, and Steve Courtney, Troy, all of Ohio, assignors to Lisco, Inc., Tampa, Fla.

Filed Nov. 9, 1995, Ser. No. 556,183
Int. Cl.[6] B62B 7/12
U.S. Cl. 280—30 7 Claims



1. A child carrier for use as a two-wheeled stroller and as a child-supporting backpack comprising, in combination:
a frame formed of an upper handle component in an inverted U-shaped configuration and a lower component formed of two downwardly extending legs and a cross-piece coupling the legs at their lower ends with a bracket at the lower ends of the handle and the upper ends of the legs for coupling therebetween;
a fabric seat for a child having a rear face coupled to the bracket, an upwardly extending back and a pair of vertical straps forming a front;
a forwardly-extending U-shaped restraint positioned in front of a child secured at its inboard ends to the bracket supporting the upper edge of the seat;
a pair of wheels rotatably secured to the lower end of the legs;
a chest belt having a releasable buckle at a central extent secured to the frame at the lower cross-piece;
a pair of shoulder straps secured to the frame with their upper ends secured to the restraint and their lower ends secured to the frame adjacent to the cross-piece;
safety straps coupled to the child seat for securing the child in position thereon; and

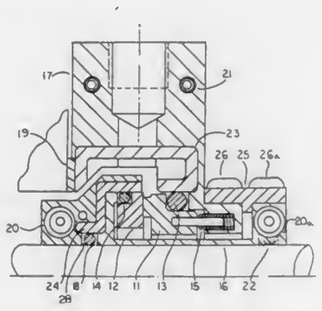
a disk with a plurality of radial recesses rotatably secured with respect to the bracket and an associated rod axially reciprocable through the bracket with a spring resiliently urging the rod in a direction into one of the recesses and adapted to be pulled by a user to allow rotation of the upper handle between an upper orientation wherein the device may be used as a stroller and a lower orientation wherein the device may be used as a backpack.

5,662,340

FULLY SPLIT CARTRIDGE MECHANICAL SEAL ASSEMBLY

Roger F. Bessette, Essex Junction; L. Kimball Simmons, Williston; Gary S. Proulx, Shelburne, and Todd S. Blow, Grand Isle, all of Vt., assignors to Flex A Seal, Inc., Essex Junction, Vt.

Filed Apr. 8, 1996, Ser. No. 629,164
Int. Cl.[6] F16J *15/38*
U.S. Cl. 277—9.5 **6 Claims**



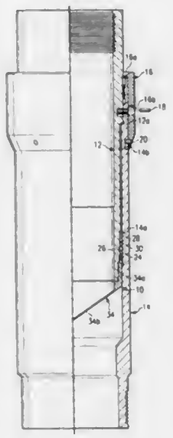
1. A fully split cartridge mechanical seal assembly, for use in situations that require a sealing device on rotating equipment, that can be difficult and time consuming to disassemble, comprising:
two unitized self contained assemblies;
said unitized self contained assemblies having means for attaching said unitized self contained assemblies over a rotating shaft or sleeve;
said unitized self contained assemblies comprising one half of a split gland assembly and one half split sleeve assembly;
said split gland assembly having one half of a split stationary seal ring positioned within said split gland assembly for use as one half of one of the primary seal faces;
said split stationary seal ring having one half of a split stationary seal ring packing for use as one half of one of the secondary seals;
said split gland assembly further having apertures positioned therein;
said split gland assembly further having springs located therein said apertures for providing an axial closing force;
said split gland assembly further having one half of a split gland gasket for use as a seal to the face of the stationary housing or chamber;
said split gland assembly further having locking means for connecting each of said split gland assemblies together;
said split sleeve assembly having one half of a split rotary seal ring positioned within said split sleeve assembly for use as one half of one of the primary seal faces;
said split rotary seal ring having one half of a split rotary seal ring packing for use as one half of one of the secondary seals;
said split sleeve assembly having one half of a split sleeve packing fitted into a groove for use as a static seal between said split sleeve component and said rotating shaft or sleeve;
said split sleeve assembly further having locking means for connecting each of said split sleeve assemblies together;
said unitized self contained assemblies having retaining and setting means;
said retaining and setting means comprising setting clips;
said setting clips having locking screws one inserted into an aperture in said split gland assembly and one inserted into an aperture in said split sleeve assembly for holding together one half of said split gland assembly and one half of said split sleeve assembly;
said setting clips comprising means for setting said fully split cartridge mechanical seal assembly both axially and radially for the purposes of eliminating the typical required measurements, or the using of various shims or special tools to set and align the seal into the proper operating position;
the complete solid cylindrical assembly having setting means for aligning and retaining said complete solid cylindrical assembly in position;
said complete solid cylindrical assembly having fastening means for connecting said complete solid cylindrical assembly to a fixed stationary housing or chamber;
attaching means for connecting said complete solid cylindrical assembly rotating portion to said rotating shaft or sleeve; and
said setting means being removed after said complete solid cylindrical assembly has been permanently attached.

5,662,341

METAL-TO-METAL SEAL ASSEMBLY FOR OIL AND GAS WELL PRODUCTION APPARATUS

Michael Dale Ezell, Carrollton, and Glen E. Pitts, Roanoke, both of Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Mar. 19, 1996, Ser. No. 618,231
Int. Cl.[6] F16J *15/40*
U.S. Cl. 277—27 **30 Claims**



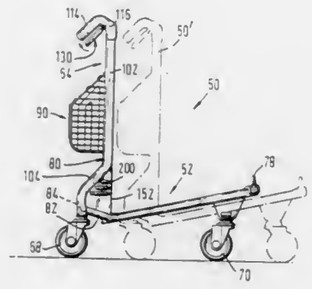
11. A metal-to-metal seal assembly for providing a dynamic fluid seal between two members which move relative to each other, said seal assembly comprising a hollow seal ring extending between the members in an interference fit and having a cross-sectional area defining an opening configured for receiving into the cross-sectional area fluid to be sealed to equalize the fluid pressure across the seal ring.

5,662,342

WHEELED TROLLEY

Abdul Majid Basharat, Bristol, England, assignor to Clares Merchandise Handling Equipment Ltd., Somerset, England

Filed Jul. 20, 1995, Ser. No. 504,695
Claims priority, application United Kingdom, Jul. 21, 1994, 9414759; Jul. 28, 1994, 9415248
Int. Cl.[6] B62B *3/14*
U.S. Cl. 280—33.997 **18 Claims**



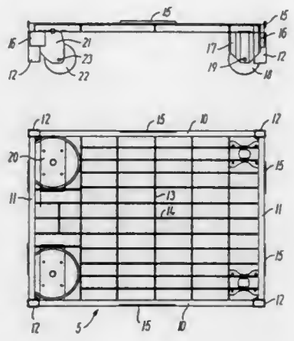
1. A trolley comprising a base chassis which includes a load support platform and a set of ground-contacting wheel elements, an upright support structure fixed to and projecting upwardly from a rear portion of said base chassis, a push-handle assembly mounted in the region of the upper end of the upright support structure, and an upwardly open supplementary load receptacle mounted on said support structure above the level of the platform, wherein:
a) said set of ground-contacting wheel elements includes a pair of rear wheel elements mounted at respective opposite sides of said rear portion of the base chassis;
b) said upright support structure includes a base portion and a main upper portion which is offset forwardly relative to said base portion;
c) said rear wheel elements are mounted at respective mounting positions to said base portion of said upright support structure;
d) said main upper portion defines the rear limit to which the load support platform may be loaded, said rear limit lying forwardly of the mounting positions of said rear wheel elements;
e) said load support platform is upwardly inclined in the forward direction to permit the trolley to be nested with other identical trolleys so that in the nested posltion said platform will overlap with the platform of the trolley in front;
f) said supplementary load receptacle is mounted on the rear side of said main upper portion of said upright support structure and wherein
g) the base chassis includes an interconnecting portion connected to the upright support structure immediately above said pair of rear wheel elements at a first position or positions disposed at a first level, and to the rear of the load support platform at one or more second positions disposed forwardly of the first position or positions at a second level, said second level being lower than the first level.

5,662,343

CONTAINER BASE WITH THREE PERPENDICULAR FIXING ELEMENTS IN THE CORNERS

Erling Kristen Mogensen, Middelfart; Kent Weel Sørensen, Asperup; Berno Holmgaard Jensen, Tommerup, and Peder Hans Ingvartsen, Middelfart, all of Denmark, assignors to Container Centralen A/S, Odense V., Denmark

PCT No. PCT/DK94/00024, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/15845, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 14, 1994, Ser. No. 481,477
Claims priority, application Denmark, Jan. 15, 1993, 0049/93
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—79.11 **10 Claims**



1. A container base adapted to be built together with at least one upper part, the base comprising:
a rectangular frame structure substantially horizontal in use and including pipe parts having a form of hollow profile pipes adapted to be guide and fixing elements for mounting the upper part, the frame structure having pairs of substantially horizontal, mutually perpendicular pipe parts at corners of the frame structure, the pairs of substantially horizontal, mutually perpendicular pipe parts having open exposed ends, at least one of the corners of the frame structure comprising a further pipe section extending substantially perpendicularly to the frame structure, an upper open exposed end of the further pipe section being terminated at a level no higher than a lower side wall of the substantially horizontal, mutually perpendicular pipe parts and secured to an end edge of a lower of one of the pair of pipe parts of the at least one of the corners.

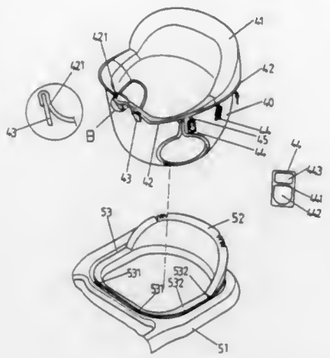
5,662,344

CIRCULAR WALKER WITH IMPROVED SEAT AND WHEEL ASSEMBLIES

Li-Wei Lu, No. 59-16, Chiu She Lane, Chiu She Li, Taichung, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,430
Int. Cl.[6] B62B *9/28*
U.S. Cl. 280—87.051 **5 Claims**

1. A circular walker having an improved seat assembly and wheel structure comprising: a seat assembly including a lace between a seat and a backrest cover, said lace having a plurality of inwardly and downwardly extending engaging sheets located on left, right and rear sides of the lace, and a plurality of buckles attached to the lace by cloth strips, each buckle having a lateral bar located so as to form major and minor slot holes through the buckle the major slot hole having a curved side to provide for insertion of a finger; a carriage having a backrest and a slot located around the backrest, the bottom of the slot having square holes



engaging the engaging sheets and buckles, each square hole having side flange walls to hold the buckles to attach the seat assembly to the carriage.

5,662,345

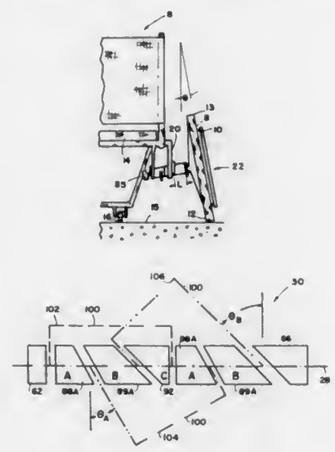
WHEELCHAIR WHEEL CAMBERING APPARATUS

David A. Kiewit, 5901 Third St. South, St. Petersburg, Fla. 33705

Continuation-in-part of Ser. No. 312,531, Sep. 26, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 520,831

Int. Cl.[6] B62M *1/14*; B62D *17/00*

U.S. Cl. 280—250.1 **13 Claims**



1. Apparatus for attaching a wheel system comprising a wheel and a stub axle to a wheelchair at one of a plurality of camber angles, the apparatus comprising:

a bracket extending from the wheelchair, the bracket having inboard and outboard bifurcated legs, the length of one of the legs selectable from a plurality of predetermined leg lengths, each of the leg lengths respectively associated with one of the camber angles;

a plurality of tubular members juxtaposed along the axle, the tubular member closest to the wheel prohibited from sliding along the axle, the other tubular members slideably disposed on the axle;

a plurality of pairs of bracket-engaging faces, each of the pairs of bracket-engaging faces comprising respective exterior surface portions of two different ones of the tubular members, each of the pairs of faces tilted with respect to a line perpendicular to the axle by one of the predetermined camber angles; and

clamping means clamping the bracket legs between ones of the pairs of bracket-engaging faces.

5,662,346

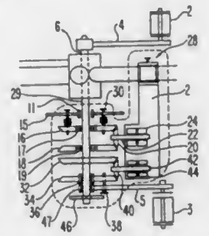
PEDAL MECHANISM FOR CYCLE AND EXERCISE EQUIPMENT

Salvatore Toronto, LaJolla, and Paul Novak, San Diego, both of Calif., assignors to NovaTor, L.L.C., San Diego, Calif.

Division of Ser. No. 191,586, Feb. 4, 1994, Pat. No. 5,551,718. This application May 28, 1996, Ser. No. 654,170

Int. Cl.[6] B62M *1/04*

U.S. Cl. 280—252 **21 Claims**



1. A pedal mechanism for attachment to a bicycle having a drive wheel and a drive chain, said drive wheel being caused to rotate clockwise, when viewed from the right side of said bicycle, by a clockwise force provided through said drive chain, comprising:

a pedal shaft;

pedal arms mounted on said pedal shaft;

pedals mounted on each one of said pedal arms;

first gearing means for interconnecting said pedal arms and said pedal shaft to cause said pedal arms to rotate in the opposite direction with respect to each other while rotating said pedal shaft in the same direction of rotation as one of said pedal arms and in the opposite direction of rotation from the other one of said pedal arms, and

second gearing means for interconnecting said pedal shaft and said drive chain to cause a clockwise force to be applied to said drive wheel when said pedal shaft is driven in a clockwise direction by said pedal arms and to cause a clockwise force to be applied to said drive wheel when said pedal shaft is driven in a counterclockwise direction by said pedal arms.

5,662,347

PEDAL MECHANISM FOR CYCLE AND EXERCISE EQUIPMENT

Salvatore Toronto, and Paul Novak, both of San Diego, Calif., assignors to NovaTor, L.L.C., San Diego, Calif.

Division of Ser. No. 191,586, Feb. 4, 1994, Pat. No. 5,551,718. This application May 28, 1996, Ser. No. 654,208

Int. Cl.[6] B62M *1/04*

U.S. Cl. 280—252 **34 Claims**

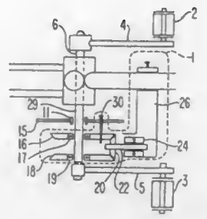
1. A pedal mechanism for attachment to a bicycle having a drive wheel and a drive chain, said drive wheel being caused to rotate in a clockwise direction, when viewed from the right side of said bicycle, by a clockwise force provided through said drive chain comprising:

a pedal shaft;

two pedal arms mounted on said pedal shaft, said pedal arms disposed parallel to one another extending from said pedal shaft in the same direction;

pedals mounted on said pedal arms; and

a gearing means for causing a clockwise force to be applied to said drive wheel through said drive chain simultaneously from both of said pedals by counterclockwise rotation of each of said pedals in addition to causing a clockwise force to be applied to said drive wheel through said drive chain simultaneously from both of said pedals by clockwise rotation of each of said pedals.



5,662,348

SUSPENSION ARM

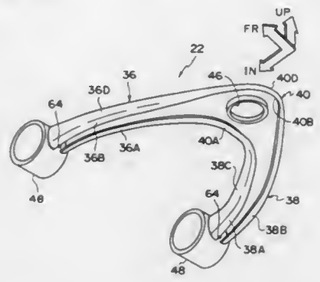
Eiichi Kusama, Anjo; Toru Kawamura; Yukikazu Ueno, both of Toyota; Hiroyuki Nishi, Takahama, and Yoshihisa Kato, Nishikamo-gun, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 20, 1996, Ser. No. 619,888

Claims priority, application Japan, Mar. 23, 1995, 7-064088; Aug. 29, 1995, 7-220803

Int. Cl.[6] B60G *3/00*

U.S. Cl. 280—688 **36 Claims**



1. A suspension arm formed by press working a plate-shaped member,

wherein in a case in which, while a vehicle is traveling, a load is inputted to said suspension arm in a direction intersecting a direction in which said suspension arm swings, at least a region at which a maximum stress is generated is a non-end portion of the plate-shaped member.

5,662,349

SUSPENSION ARM, AND PROCESS FOR PRODUCING THE SAME

Suehiro Hasshi; Toshifumi Yamamoto; Tadayoshi Nakamura, all of Wako; Noboru Ashikawa, Sayama; Tetsuro Saruwatari, Saitama, and Masanobu Nakamura, Kamakura, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha; Yanagawa Seiki K.K., both of Tokyo, and K. K. Tube Forming, Yokohama, all of Japan

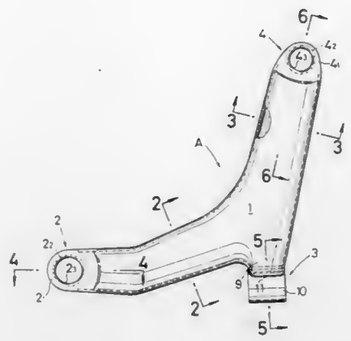
Filed Jul. 19, 1995, Ser. No. 504,333

Claims priority, application Japan, Jul. 20, 1994, 6-167883

Int. Cl.[6] B60G *3/00*

U.S. Cl. 280—690 **6 Claims**

1. A suspension arm for a vehicle, said suspension arm comprising an L-shaped arm body having a first end portion, an intermediate portion, and a second end portion, said first end portion having first connecting means for pivotally connecting said arm body to a vehicle, said intermediate portion having a second connecting means formed as a bulged portion integral with said arm body for pivotally connecting said arm body to the vehicle, and said second end portion having third connecting means for pivotally connecting said arm body to a vehicle wheel knuckle, and wherein said arm body and said second connecting means are formed from a single piece of pipe material having a closed cross-section.



5,662,350

ATTACHMENT OF AN AIR BAG MODULE WITHIN AN INSTRUMENT PANEL

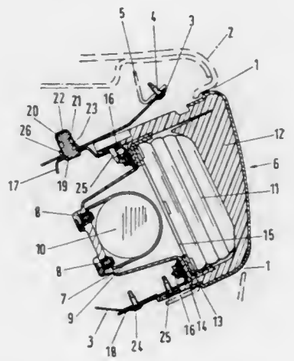
Michael Bathon, Stockstadt; Jürgen Zang, Grossostheim, and Franz-Xaver Weiss, Aschaffenburg, all of Germany, assignors to MST Automotive GmbH, Aschaffenburg, Germany

Filed Dec. 29, 1995, Ser. No. 581,712

Claims priority, application Germany, Dec. 29, 1994, 44 47 045.2

Int. Cl.[6] B60R *21/20*

U.S. Cl. 280—728.2 **8 Claims**



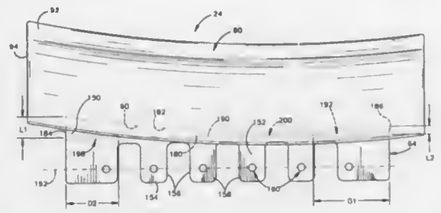
5. In a mounting for an air bag module mountable in an instrument panel, wherein an upper holding plate is connected to a stationary support, the improvement comprising at least one aperture in the holding plate, at least one aperture in the support having an upwardly extending edge and at least one mounting bolt having a plastic cover and inserted upwardly through the apertures, wherein the at least one mounting bolt has at least one recess at an upper portion thereof, wherein the upwardly extending edge destroys the plastic cover and gets caught in the at least one recess upon disengagement after activation of the air bag module.

5,662,351

AIR BAG DEPLOYMENT DOOR

Jack A. Phillion, Shelby Township, and Thomas J. Hawkins, Kentwood, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio, and Lacks Industries, Inc., Grand Rapids, Mich.

Filed Aug. 21, 1995, Ser. No. 517,337
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **31 Claims**



27. Apparatus for use with an inflatable vehicle occupant restraint, said apparatus comprising:

a pivotal deployment door panel; and

a bendable hinge leaf supporting said door panel for pivotal movement about an axis extending along said hinge leaf between first and second ends of said hinge leaf;

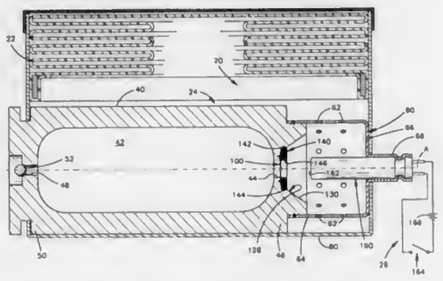
said hinge leaf defining a stress riser which extends partially along said hinge leaf from said second end toward said first end, said stress riser being rupturable under stress induced by pivotal movement of said door panel about said axis.

5,662,352

SWAGED ANNULAR SUPPORT FOR AIR BAG INFLATOR CLOSURE AND METHOD

Paul S. Headley, Mesa; Mitchell P. Zakula, Tempe, and Tom Amherdt, Gilbert, all of Ariz., assignors to TRW Inc., Lyndhurst, Ohio

Filed Sep. 27, 1995, Ser. No. 536,201
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **7 Claims**



1. An apparatus comprising:

an inflatable vehicle occupant protection device;

a one-piece container providing a source of inflation fluid, said container having an opening though which fluid flows from the container to inflate the protection device and a support surface located on the exterior of said container adjacent to and around the opening in said container;

means for connecting said container in fluid communication with said protection device;

surface means for defining a cavity on the exterior of said container adjacent said support surface;

a rupturable closure on the exterior of said container extending across the opening to block the flow of fluid from said container through the opening;

a weld forming a fluid seal between said closure and said support surface of said container; and

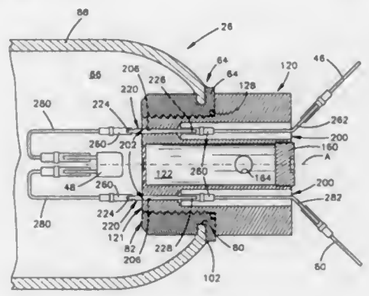
a member located in the cavity and having a first portion engaging said surface means defining the cavity to secure said member to said container and a second portion engaging said closure to hold said closure against said support surface of said container, said member having an opening aligned with the opening in said container through which fluid can flow when said closure is ruptured.

5,662,353

ELECTRICAL CONDUCTOR FOR AIR BAG INFLATOR

Lee D. Bergerson, Fountain Valley; Ivan L. Stonich, Hermosa Beach, and Terrence J. Coultas, Canyon Country, all of Calif., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 6, 1995, Ser. No. 568,351
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **15 Claims**



1. An inflator which provides inflation fluid for inflating an inflatable vehicle occupant protection device, said inflator comprising:

a container having a wall which defines a chamber for holding fluid under pressure;

an electrically actuatable device in the chamber which starts the flow of fluid from said container upon actuation of said device;

first surface means for defining a passage extending through the wall of said container;

an elongated electrical conductor extending through said passage for conducting electrical energy to said electrically actuatable device;

said electrical conductor having second surface means for contacting said first surface means to provide a fluid seal between said first and second surface means; and

an anodic coating on at least one of said first and second surface means providing electrical insulation between said container and said electrical conductor;

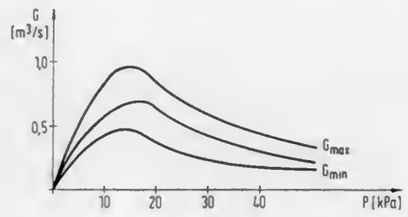
said passage being tapered with a larger end of the passage located closer to the chamber than a smaller end of the passage.

5,662,354

GAS BAG FOR A RESTRAINING SYSTEM IN VEHICLES AND A FABRIC FOR THE PRODUCTION THEREOF

Norbert Ellerbrok, Alfdorf, Germany, assignor to TRW Repa GmbH, Alfdorf, Germany

PCT No. PCT/EP94/02722, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO95/05296, PCT Pub. Date Feb. 25, 1995
PCT Filed Aug. 16, 1994, Ser. No. 416,904
Claims priority, application Germany, Aug. 17, 1993, 43 27 649.0
Int. Cl.[6] B60R *21/16;21/28*
U.S. Cl. 280—743.1 **10 Claims**



1. A gas bag for a restraining system in a vehicle having a wall comprising a plurality of sewn together parts of uncoated fabric, one of which faces a vehicle occupant, wherein the fabric part facing the vehicle occupant possesses a substantially lower permeability to gas than at least one fabric part facing away from the vehicle occupant, characterized in that the gas permeability of the overall wall

a) increases to a value between about 0.4 and about 1.0 m^3/s with a pressure increasing up to a gage pressure of about 10 kPa,

b) between gage pressure levels of about 10 kPa and about 20 kPa further increases, reaches a maximum and then decreases, and

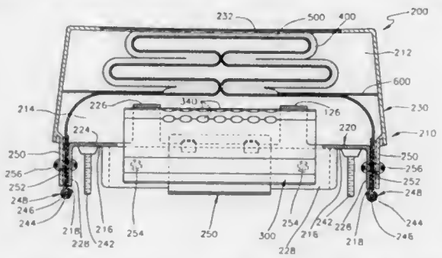
c) above a gage pressure value of about 20 kPa to at least about 40 kPa does not substantially increase.

5,662,355

AIR BAG SYSTEM FOR A MOTOR VEHICLE

Sung-Kwang Byon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co, Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,848
Claims priority, application Rep. of Korea, Apr. 25, 1995, 95-9720
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—743.1 **19 Claims**



1. An air bag system for a motor vehicle, said air bag system comprising:

a housing having a cover at an upper portion thereof, the cover being operable at a collision of the motor vehicle;

an inflator for generating an inert gas, said inflator being provided at a bottom potion of said housing and being filled therein with an explosive material for generating the inert gas by igniting the explosive material when a collision sensing signal which is generated at the collision of the motor vehicle;

an inflatable air bag for being unfolded by introducing the inert gas therein, said inflatable air bag being comprised of a continuous fabric material, said inflatable air bag being folded in said housing and having a front portion which contacts with a human body when unfolded, an inlet portion for introducing the inert gas into said inflatable air bag, a middle portion between the front portion and the inlet portion, the front portion having a flexible foam coated on an outer surface of the front portion, said inlet portion surrounding said inflator; and

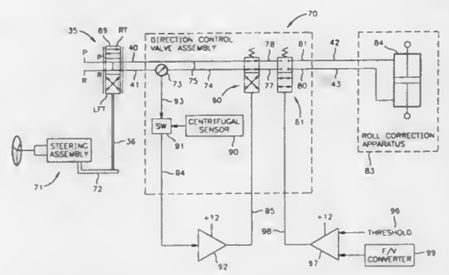
a supporting member for supplying a pressure to said inflatable air bag together with the cover so as to reduce a volume of said inflatable air bag, thereby enabling said inflatable air bag to be installed in said housing, said supporting member being provided between the cover and said inflator and being fixed to an inner bottom portion of said housing.

5,662,356

ROLL CORRECTION SYSTEM WITH COUNTERSTEER COMPENSATION

Mark A. Lund, Escondido, Calif., assignor to TLC Suspension, Chula Vista, Calif.

Filed Apr. 26, 1995, Ser. No. 427,792
Int. Cl.[6] B60G *21/06*
U.S. Cl. 280—772 **11 Claims**



1. A roll correction system for use in a vehicle including a body, wheels, a suspension coupling the body to the wheels, and a steering assembly, comprising:

a roll correction apparatus which is hydraulically actuated by a hydraulic signal indicative of a roll direction;

a hydraulic signal source connected to the roll correction apparatus, the hydraulic signal source including means mechanically linked to the steering assembly and responsive to a first steering direction for providing a hydraulic signal conditioned to indicate a roll direction; and

a countersteer correction means for maintaining the condition of the hydraulic signal to indicate the roll direction in response to countersteer in a second steering direction opposite the first steering direction.

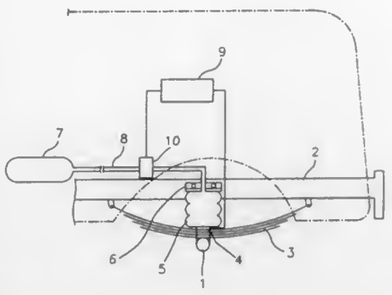
5,662,357

CAR HEIGHT CONTROL APPARATUS

Soo-Hyun Ryu, Seoul, Rep. of Korea, assignor to Daewoo Electronic Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 3, 1996, Ser. No. 582,439
Claims priority, application Rep. of Korea, Jun. 30, 1995, 95018568
Int. Cl.[6] B60S *9/00;* B60G *11/26*
U.S. Cl. 280—840 **3 Claims**

1. A car height control apparatus comprising:



a weight sensing section for sensing a part of a rear shaft force of a car;

a bellows in which one end is fixed at a lengthwise frame, and other end is adhered closely to a leaf spring that supports the lengthwise frame;

an air tank for storing gas to be used in the bellows; and

a control section for controlling the quantity of compressed air that inflows into the bellows by the weight sensing section signal.

5,662,358

BRANCH-OFF CONNECTION

George Albert Lees, Nottingham, and Stuart Nigel Godfrey, Derbyshire, both of United Kingdom, assignors to Uponor Limited, Derbyshire, United Kingdom

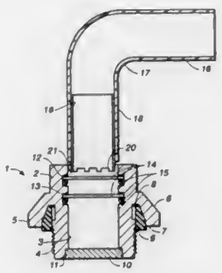
PCT No. PCT/GB93/02121, § 371 Date Jun. 16, 1995, § 102(e) Date Jun. 16, 1995, PCT Pub. No. WO94/09305, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 14, 1993, Ser. No. 416,819

Claims priority, application United Kingdom, Oct. 17, 1992, 9221843; Jul. 7, 1993, 9314003

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—3 **20 Claims**



1. An adaptor for fitting or replacing a branch-off connection in a fluid distribution main, and adapted to be received in a hole of the wall of the fluid distribution, which comprises:

a rigid integral body having an internal bore therein,

the internal bore being adapted to receive a service pipe therein, and

a blocking means positioned so as to close the internal bore, said blocking means being positioned in the internal bore so as to be displaceable and completely detachable upstream of the service pipe by inward pushing movement of the service pipe and without rotation of the rigid body, in order to open the internal bore,

the rigid body having a threaded external section and an external annular seal adapted to form a gas tight seal with the wall of the fluid distribution main.

5,662,359

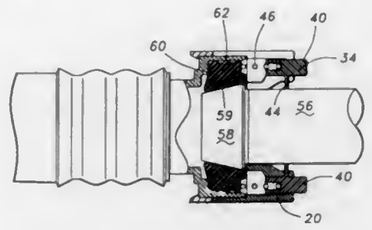
QUICK CONNECT COUPLING WITH LOCK RING AND INDICATOR

Christopher J. Kargula, Sterling Heights, Mich., assignor to Form Rite, Auburn Hills, Mich.

Filed Aug. 28, 1995, Ser. No. 520,465

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—93 **21 Claims**



1. A quick connect fluid coupling comprising:

a retainer having a central bore defining an axis, and having portions which move radially outwardly to allow passage of an enlarged portion of a tube; and

a lock member separate from said retainer and received in a space defined by said retainer and biased to a lock position resisting radially outward movement of said retainer portions such that said lock member holds said retainer locked, movement of a fluid tube axially inwardly into the coupling abutting and moving said lock member axially inwardly to a release position where it no longer resists movement of said retainer portions radially outwardly, and such that said retainer portions may move radially outwardly to allow passage of the tube.

5,662,360

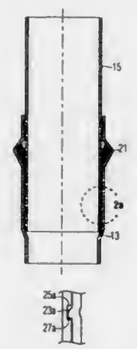
INTERLOCKED RESTRAINT FOR A PLASTIC PIPE JOINING SYSTEM

Samuel Guzowski, San Jose, Costa Rica, assignor to S&B Technical Products, Inc., Fort Worth, Tex.

Filed Jan. 5, 1996, Ser. No. 583,705

Int. Cl.[6] F16L *55/00;47/00*

U.S. Cl. 285—110 **15 Claims**



1. An interlocking restraint plastic pipe joining system for sealed applications, the system comprising:

a pair of female and male integral end connections for adjacent lengths of pipe adapted to be snap fitted together to form an interlocked end connection with adjacent lengths of pipe to form a pipe joint, said female end connections each having a mouth opening with a mouth opening diameter and having an annular groove adjacent the mouth opening thereof for receiving a sealing gasket, the annular groove having an internal diameter which at a maximum point is greater than the remaining mouth opening diameter, the annular groove also forming an exterior upset region in the female end connection, each of the female end connections having at least one surface selected from among a radially extending protrusion or indention within the mouth opening thereof, said male end connection having at least one surface selected from among a radially extending protrusion or indention formed on an exterior surface thereof which is adapted to matingly engage in snap fit fashion, the radially extending indention or protrusion in the mouth opening of the female end connection, said joint being formed by the snap fit of the male end connection axially into the female end connection due to the deformability of the plastic pipe; and

a sealing gasket located within the annular groove provided within the mouth opening of the female end connection, said sealing gasket having a face surface which provides a primary sealing surface for said pipe joint.

5,662,361

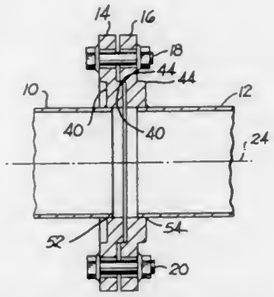
CONICAL WEDGE CONNECTING JOINT

Joseph W. Hodonsky, 8271 Ledgewood Ct., Fenton, Mich. 48430

Filed Jan. 29, 1996, Ser. No. 592,893

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—332 **5 Claims**



1. A releasable frusto-conical wedge connecting joint between two tubular conduits, comprising:

two substantially identically-shaped annular sealing members (**14**, **16**) formed separately from the associated conduits;

each of said sealing members having first and second major flat parallel side surfaces (**34**, **36**), and a central opening centered on a central axis (**24**);

said first major side surface having an annular circular recess (**40**) concentric around said central axis, said circular recess having a first flat radial surface and a concave frusto-conical outer edge surface (**42**) centered on said central axis;

said second major side surface having an annular protruding ridge (**44**) concentric around said central axis, said protruding ridge having a second flat radial surface and a convex frusto-conical outer edge surface (**46**) centered on said central axis;

said central opening comprising an annular axial surface (**22**) interconnecting said first and second radial surfaces;

one of said sealing members having its annular axial surface affixed to an outer side surface of a first fluid conduit; the other sealing member having its annular axial surface affixed to an outer side surface of a second fluid conduit; said sealing members being oriented on the two conduits so that the annular ridge on said one sealing member nests, within the annular recess in the other sealing member; and

fastener means (**18**, **20**) extending through said sealing members parallel to said central axis, whereby the two sealing members are drawn axially toward each other to establish a pressure seal between the convex frusto-conical edge surface on said one sealing member and the concave frusto-conical edge surface on said other sealing member.

5,662,362

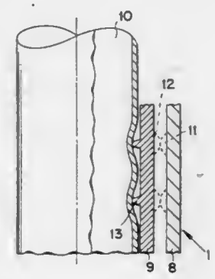
SWAGE COUPLING INCLUDING DISPOSABLE SHAPE MEMORY ALLOY ACTUATOR

Michael Kapgan, Foster City, and Richard H. Kosarchuk, Fremont, both of Calif., assignors to Advanced Metal Components, Inc., Menlo Park, Calif.

Filed Nov. 13, 1995, Ser. No. 555,966

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—381.1 **21 Claims**



1. A coupling device for forming a swaged joint with a member to be joined, the coupling device comprising:

a coupling member having an inner sleeve and an outer ring surrounding the inner sleeve, the inner sleeve including an axially extending opening therein for receiving a member to be joined to the coupling member, the outer ring being movable with respect to the inner sleeve and an inner surface of the inner sleeve being deformed radially inwardly by moving the outer ring with respect to the inner sleeve; and

an actuating member engaged with the outer ring so as to move the outer ring with respect to the inner sleeve upon a temperature induced change in configuration of the actuating member, the actuating member comprising a piece of a material which undergoes the temperature induced change in configuration upon heating the actuating member from a first temperature at which the material is in a first configuration to a second temperature at which the material is in a second configuration.

5,662,363

WINDOW LATCHING MECHANISM

Chandrahas O. Gandhi, Butler, Pa., assignor to CertainTeed Corporation, Valley Forge, Pa.

Filed Feb. 3, 1995, Ser. No. 383,270

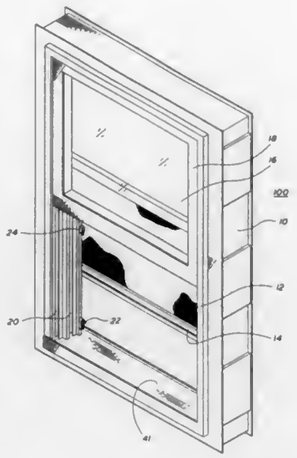
Int. Cl.[6] E05C *3/02*

U.S. Cl. 292—230 **22 Claims**

1. In a window having a support structure including a sill and a pair of vertical jambs, said window including a movable framed panel disposed in a pair of oppositely disposed tracks of said jambs for permitting the sliding of said panel from an open position to a closed position, the improvement comprising:

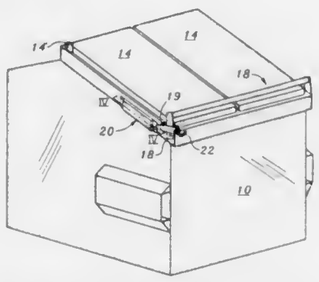
(a) a first latch member pivotally mounted to said support structure, said first latch member having a body portion including first and second transverse ends, said first end comprising a first projecting portion which extends laterally from said body portion, said first projecting portion including a first contact surface thereon for sliding against said panel when said panel is lowered to said closed position so that said first latch member is rotated away from the path of said lowering panel;

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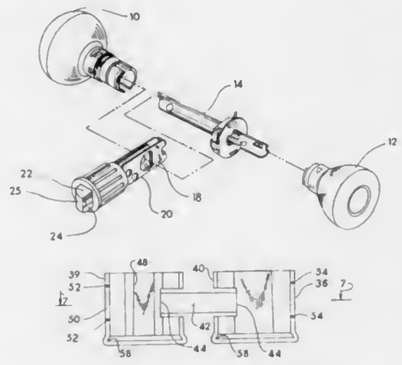
upon said panel obtaining said closed position, said first latch member is then rotated substantially by gravitational force to a latching position along said panel.

5,662,364
LATCHING MECHANISM FOR CONTAINER LID
David L. Reeb, 3752 Esquire Dr., Canal Winchester, Ohio 43110, and Walter Paul Robinette, II, 3551 Parsons Ave., Columbus, Ohio 43207
Filed Jun. 20, 1995, Ser. No. 492,729
Int. Cl.[6] E05C *3/12*
U.S. Cl. 292—230 20 Claims



15. An automatic pivoting latching mechanism for a container having a hinged lid, said latching mechanism comprising:
- a latching arm adapted to be pivotally mounted with respect to said lid between an open position and a closed position, said latching arm adapted to interfere with a movement of said hinged lid in said closed position;
- a slide member connected to said latching arm adapted to be and slidingly disposed on said container for movement along a substantially level plane, said slide member comprising a retaining slot disposed at an angle with respect to said level plane;
- a fixed guide member adjacent said slide member, and comprising a fixed slot disposed at said angle of said retaining slot; and
- a trigger means for automatically latching said slide member to said guide member when said container is in a substantially level position, said trigger means being moved within said retaining slot from a latching position to an unlatching position by gravitational force when said container is tilted to a predetermined angle, wherein said trigger means at least partially disposed in both said retaining slot and said fixed slot in said latching position.

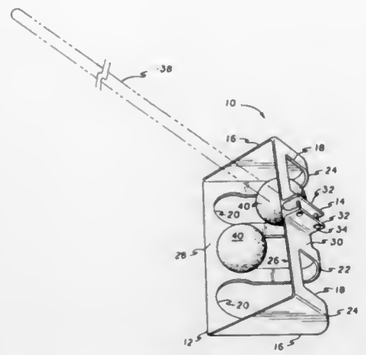
5,662,365
LOCKSET
Thomas J. Ghostley, Anaheim, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jun. 21, 1996, Ser. No. 668,787
Int. Cl.[6] E05B *9/00*
U.S. Cl. 292—337 3 Claims



1. A latch assembly for a lockset comprising
- a cylindrical bolt including at least one axially extending flat portion,
- a cylindrical casing which is to be inserted into a matched bore in a door, said casing including a bore for receiving said bolt,
- said bolt and said casing bore including cooperating means for maintaining a desired orientation of said bolt relative to said casing bore as said bolt is displaced from an extended position to a retracted position, and
- a cylindrical adaptor for effectively increasing the diameter of said cylindrical casing including
- first and second semi-cylindrical portions displaceable into abutting relationship to capture said cylindrical casing and to define a selectively sized outer diameter,
- means for releasably securing said semi-cylindrical portions together when they are in said abutting relationship, and
- said first and second semi-cylindrical portions each having a radially inwardly extending end portion which together define an opening selectively configured to matingly receive said cylindrical bolt thereby defining a facing for said cylindrical casing,
- said semi-cylindrical portions and said cylindrical casing including cooperating means for establishing a desired longitudinal position of said semi-cylindrical portions relative to said cylindrical casing.

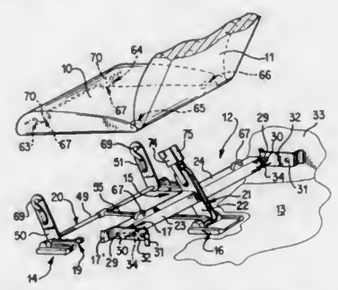
5,662,366
GOLF BALL RETRIEVER
Arthur Edward Fraske, P.O. Box 13, Plover, Wis. 54467
Filed Sep. 4, 1996, Ser. No. 711,944
Int. Cl.[6] A63B *47/02*
U.S. Cl. 294—19.2 5 Claims

1. A golf ball retrieval device comprising:
- an elongated scoop of unitary construction having a flat bottom portion arcuately connected to a flat top portion, and two flat oppositely positioned parallel end walls;
- said flat bottom portion having a leading edge along the length thereof;



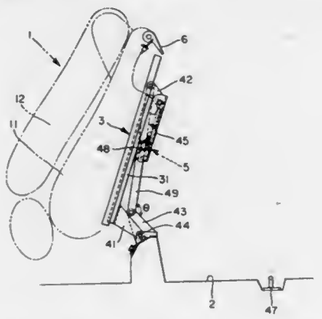
- said flat top portion having a top edge and a U-shaped channel for coupling an elongated handle; and
- a plurality of parallel slots extending from adjacent said leading edge to adjacent said top edge, each said slot having a width and an arcuate end adjacent said leading edge of said flat bottom portion;
- said arcuate end having a diameter greater than said width of said slot for capturing and seating a golf ball in said scoop.

5,662,367
REMOVABLE MOTOR VEHICLES REAR SEAT
Ina Rastetter, Althengstett; Walter Schmid, Maichingen; Werner Hauser, Calw, and Rolf Mitschelen, Kirchheim/Teck, all of Germany, assignors to Mercedes-Benz AG, Germany
Filed Sep. 5, 1995, Ser. No. 523,608
Claims priority, application Germany, Sep. 2, 1994, 44 31 248.2
Int. Cl.[6] B60N *2/32*
U.S. Cl. 296—65.1 17 Claims



1. A removable rear seat for a motor vehicle with a variable-volume loading space and a planar loading surface area, comprising a rigid seat bench, a seat-bench substructure for fixing the seat height, and anchorage locations for fastening the substructure on the floor of the vehicle body such that the seat-bench substructure is selectively releasably connected, at an end thereof remote from the anchorage locations, to the seat bench and is configured to be retained at the anchorage locations so that it can be pivoted into and out of a use position which predetermines the seat height into a stowage position in one of on and in a vehicle body floor, and at least one manually actuatable locking device operatively associated with the seat-bench substructure to lock the seat-bench substructure in the use position thereof at selected ones of the anchorage positions wherein the seat-bench substructure is a two-part configuration and has front and rear substructure parts, as seen in a longitudinal axis of the motor vehicle, the parts each being retained pivotably in the anchorage locations and are connected releasably to the seat bench, and the at least one locking device is associated with each substructure part, wherein the front substructure part has two of the anchorage locations arranged symmetrically with respect to the longitudinal axis of the vehicle, the two anchorage locations having pivot axes extending transversely with respect to the vehicle longitudinal axis, and the rear substructure part has one of the anchorage location arranged centrally on the vehicle longitudinal axis, the one anchorage location having a pivot axis aligned transversely with respect to the vehicle longitudinal axis.

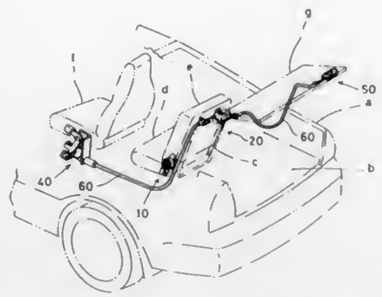
5,662,368
AUTOMOBILE SEAT
Sadao Ito, Anjyo, and Toshimitsu Araki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan
Filed Jun. 21, 1996, Ser. No. 668,161
Claims priority, application Japan, Jun. 22, 1995, 7-156340
Int. Cl.[6] B60N *2/10*
U.S. Cl. 296—65.1 6 Claims



1. An automobile seat comprising:
- an axle mechanism disposed between the seat and a floor of the automobile for rotatably supporting the seat on the automobile floor;
- a rotating member rotatably supported in the seat;
- a first lock mechanism disposed in the rotating member and detachable from the automobile floor;
- a linkage mechanism disposed between the automobile floor and the rotating member and interlocking with rotation of the seat with respect to the automobile floor to rotate the rotating member with respect to the seat; and
- a second lock mechanism disposed in the rotating member and engaged with the seat, to render the rotating member non-rotatable with respect to the seat.

5,662,369
DEVICE FOR COLLAPSING A BACKREST OF A BACKSEAT OF A CAR
Yoshikatsu Tsuge, Nagoya, Japan, assignor to Chuouhatsujou Kabushiki Kaisha, Nagoya, Japan
Filed Jun. 23, 1995, Ser. No. 494,112
Claims priority, application Japan, Jul. 8, 1994, 6-180700
Int. Cl.[6] B60N *2/20*
U.S. Cl. 296—66 2 Claims

1. A device for collapsing a backrest of a backseat of a car comprising:
- biasing means for biasing the backrest of said backseat to collapse forwardly;
- lock means for holding the backrest in an upright position;
- front seat side release means in the proximity of a front seat of the car and a trunk side release means in the proximity of a trunk space of the car for alternatively releasing the backrest from holding by said lock means thereby allowing said biasing means to effect collapsing forwardly of said backrest; and



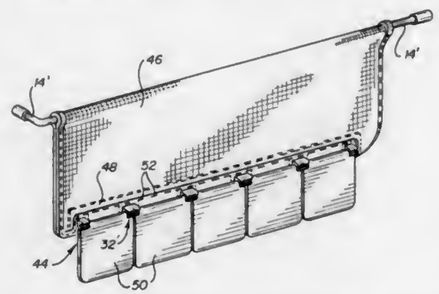
means for connecting one to another the lock means, the front seat release means and the trunk side release means comprising a control cable having a flexible outer casing and an inner cable slidable longitudinally therein extending from each of the front and trunk side release means and a bell crank mechanism connecting said control cable and the lock means.

5,662,370

VEHICLE LOW SUN VISOR

William H. Kassner, R2 368C Tuckahoe Rd., Williamstown, N.J. 08094

Filed Jun. 16, 1995, Ser. No. 491,249
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.6 **16 Claims**



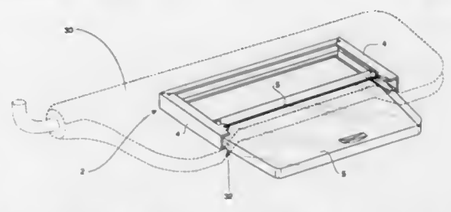
1. An apparatus connected to a sun visor attached proximate a front windshield of a motor vehicle to shield the sun disc close to the horizon from the eyes of a driver, wherein the sun visor comprises:
(a) a visor panel comprising a lower edge along a horizontal length up to about one-half of a width of the front windshield, and
(b) visor attachment means hingeably attaching the visor panel to the motor vehicle inside the front windshield and allowing the visor panel to move to a proximately downwardly vertical position with the lower edge positioned downwardly,
wherein the apparatus comprises:
(a) an elongate member of a length up to about one-half a width of the windshield,
(b) apparatus attachment means attaching the elongate member along the length of the lower edge of the visor panel,
(c) at least three individual panel members, each panel member being of a composition to prevent essentially all sunlight from passing through the panel member to the eyes of the driver and comprising a face comprising:
(i) an upper edge and a lower edge,
(ii) a length from the upper edge to the lower edge sufficient to block off sight all the way to the horizon when the panel member is in a downwardly vertical position,
(iii) side edges, and
(iv) a width from side edge to side edge sufficient to block off sight of the entire sun disc,
(d) panel member attachment means to:
(i) hingeably attach the upper edge of each panel member to the elongate member aligned with the side edges juxtaposed side edge to side edge with a distance between said edges less than about one-sixteenth of an inch, and
(ii) allow each panel member to individually rotate from an upwardly vertical position to the downwardly vertical position wherein the panel member extends downwardly from the elongate member with the lower edge of the panel member at a lowest height.

5,662,371

SUN VISOR GLARE REDUCER EXTENSION

Sanjay Gera, 9068 B Town & Country Blvd., and Alexander Bederak, 8749-E Town & Country Blvd., both of Ellicott City, Md. 21043

Filed Apr. 23, 1996, Ser. No. 636,222
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.8 **5 Claims**



4. A sun visor for an automobile comprising:
a sun visor having an upper surface, a lower surface, and an edge; and
a glare reducing extension for incorporation within said sun visor for discharging a glare reducing shield outward from said edge of said sun visor;
said extension comprising an elongated back frame member having a pair of ends;
said extension further comprising a pair of leg segments, one each of said leg segments pivotally attached to each said end of said back frame member;
each leg segment forming a u-shaped retaining channel having a stopping tab extending inward;
an elastic urging member attached to each said stopping tab for providing a force tending to urge said leg segments toward each other; and
a glare shield slidably retained within said u-shaped retaining channels, said glare shield formed in a generally trapezoidal shape with the long base aligned parallel with said back frame.

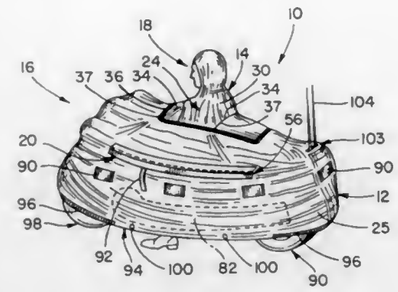
5,662,372

FLEXIBLE WEATHER PROTECTIVE VEHICLE COVER STRUCTURE

Arnold F. Lubkeman, 112 Hill Top Dr., McHenry, Ill. 60056

Filed Nov. 6, 1996, Ser. No. 746,097
Int. Cl.[6] B60J *7/20*
U.S. Cl. 296—136 **20 Claims**

1. In combination, a flexible weather protective vehicle cover structure including a vehicle cover section and a rider cover section for a stationary at least two-wheeled motorcycle-like vehicle with and without a rider thereon,
the vehicle cover section comprising
the vehicle cover section being sized and positionable to cover the motorcycle-like vehicle,
the vehicle cover section having an outer side and an underneath side,



a rider entry door located in an upper edge of the vehicle cover section to enable ingress and egress of the rider,
the rider entry door includes a water tight door closure member for opening and sealing the rider entry door when the flexible weather protective vehicle cover structure is positions to cover the motorcycle-like vehicle,
the water tight door closure member is from the group consisting of a first hook and loop type fastener and a first zipper,
the water tight door closure member being operable from the outer side and the underneath side of the vehicle cover section,
the rider cover section comprising
a rider aperture located in the vehicle cover section at a position overlying a seat of the motorcycle-like vehicle when the flexible weather protective vehicle cover structure is positioned to cover the motorcycle-like vehicle,
a rider aperture edge located adjacent a circumference of the rider aperture,
a poncho-like member sized to fit over an upper torso portion of the rider,
the poncho-like member including a bottom portion,
the bottom portion of the poncho-like member circumferentially sealingly connected to the rider aperture edge,
the rider aperture being adapted to permit entry of the rider from the underneath side of the vehicle cover section into the poncho-like member and thereby protectively cover the motorcycle-like vehicle and the rider,
a rider aperture flap,
the rider aperture flap sized to cover the rider aperture,
the rider aperture flap being connected adjacent the rider aperture edge,
a water tight flap closure member connected coextensive with the rider aperture flap and the rider aperture edge to enable opening and sealing of the rider aperture by positioning the rider aperture flap in a sealed closed position when the poncho-like member is located adjacent the underneath side of the vehicle cover section, and
the water tight flap closure member being from the group consisting of a second hook and loop type fastener and a second zipper.

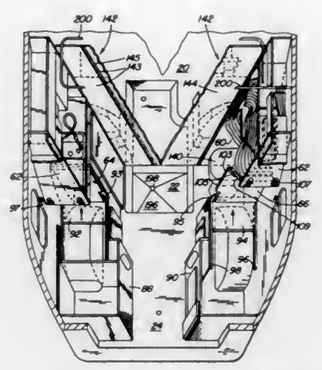
5,662,373

RECREATIONAL VEHICLE HAVING MULTIPLE USE INTERIOR FACILITIES AND SPACES

Jacobus N. Hanemaayer, 100 Shirley Avenue, Kitchener, Ontario, Canada, N2B 2E1

Continuation-in-part of Ser. No. 139,502, Oct. 19, 1993. This application Jun. 30, 1995, Ser. No. 497,280
Claims priority, application Canada, Nov. 27, 1992, 2084020; Jan. 4, 1993, 2086637
Int. Cl.[6] B60P *3/32*
U.S. Cl. 296—164 **5 Claims**

1. A recreational vehicle in the form of a camper van and including a body defining opposed side walls and a floor, the body having a plurality of serially arranged lengthwise extending sections including a frontal section for a driver and at least one passenger; an intermediate section including at least toilet and kitchen facilities and a lengthwise extending aisle space separating said kitchen end toilet facilities; end a rear section having sleeping facilities therein; and wherein the body floor, in said aisle space in the intermediate section, includes a dropped floor section serving as a shower pan having a drain opening thereby to enable a shower stall to be temporarily established in said aisle space for stand-up use by a person.

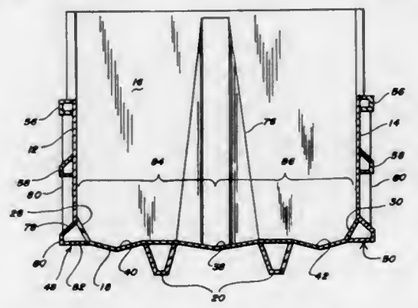


5,662,374

DUMP BODY

Michael E. Wheeler, Oran, Mo., assignor to Wheeler Steel Works, Inc., Morley, Mo.

Continuation of Ser. No. 285,042, Aug. 3, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,128
Int. Cl.[6] B60P *1/28*
U.S. Cl. 296—184 **4 Claims**



1. A dump body comprising a pair of side walls, each side wall with a lower longitudinal hollow reinforcement, a front wall and a floor forming an integral unit supported on a pair of longitudinally extending support beams for mounting the dump body on a frame of a dump truck or trailer, said floor having a top surface and an underneath surface and first, second and third longitudinal channels on the top surface extending to a rear edge of the floor with complementary ridges on the underneath surface, said first channel extending in a wide, shallow V substantially between the reinforcement of a first of said pair of side walls to an adjacent one of said longitudinally extending support beams, said second channel extending in a wide, shallow V substantially between said longitudinally extending support beams and said third channel extending in a wide, shallow V substantially between the reinforcement of a second of said pair of side walls to an adjacent one of said longitudinally extending support beams, said channels being nominally one inch deep, said floor supported proximate its rear edge by an apron having a top surface that follows a contour of the ridges

on the underneath surface of the floor at its rear edge, said floor unsupported between the front wall and the apron and unsupported between the reinforcement of the first of said pair of side walls and the adjacent one of said longitudinally extending support beams and unsupported between the reinforcement of the second of said pair of side walls and the adjacent one of said longitudinally extending support beams.

5,662,375

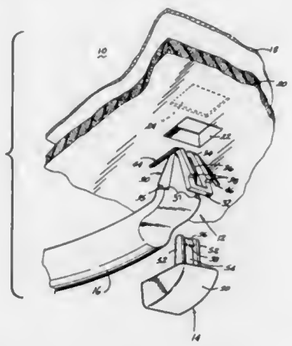
MOUNTING CLIP

Edward R. Adams, Spring Lake, and Bradley D. Miller, Jenison, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 349,031, Dec. 2, 1994, abandoned. This application Aug. 22, 1996, Ser. No. 701,589

Int. Cl.[6] B60N *3/02*; **B60R** *13/01*

U.S. Cl. 296—214 **25 Claims**



1. A mounting clip assembly adapted to mount an accessory to a support structure, the mounting clip assembly comprising:

a mounting clip comprising:

first and second legs resiliently joined at one end to define an apex, the legs diverging from the apex to form a gap between the legs at another end thereof;

one of the first and second legs having a free end and the other of the first and second legs mounted to the accessory;

each of the first and second legs having intermediate the length thereof a lip adapted to pass through an aperture in the support structure upon resilient deflection of the first and second legs toward each other and seat on an upper surface of the support structure to retain the clip in the support structure aperture;

least one stop surface between the lips of the other leg and the accessory and adapted to abut a lower surface of the support structure to arrest movement of the mounting clip legs into the aperture support structure as the first and second legs are inserted into the aperture; and

a bezel having a cover and at least one upstanding lug adapted to extend into the gap between the first and second legs to prevent the legs from moving toward each other and, thus, the inadvertent removal of the clip from the support structure aperture.

21. A mounting clip assembly adapted to mount an accessory to a headliner with an aperture, the mounting clip assembly comprising:

a mounting clip having first and second legs resiliently joined at one end to define an apex, the legs diverging downwardly from the apex at an acute angle to form a gap between the legs at another end thereof;

each of said legs having a first side facing the other of said legs, a second side facing away from the other of said legs, a third side joining the first and second sides and a fourth side opposite the third side and joining the first and second sides;

at least one of the first and second legs having a lip adapted to pass through a support aperture upon flexure of said at least one leg and seat on an upper surface of a support structure to retain the mounting clip in the support structure aperture; and

a first resilient retaining finger that is relatively thin with respect to a thickness of the legs and which projects laterally and downwardly from an upper portion of said third side of at least one of said first and second legs to a free end, the first resilient retaining finger adapted to flex inwardly adjacent the third side of said at least one leg when said first and second legs are inserted through the aperture in the headliner and spring outwardly therefrom behind the headliner when the first resilient finger passes through the aperture in the headliner with the free end of the retaining finger abutting an upper surface of the headliner a spaced distance from the aperture when the clip is inserted into the headliner aperture to thereby mount the clip to the headliner.

5,662,376

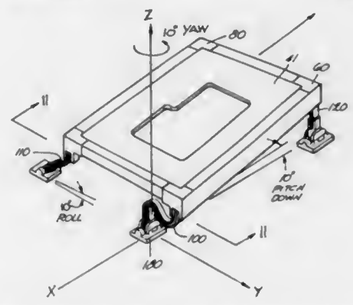
FORCE DISSIPATION SEAT PEDESTAL

Kurt F. Breuer, Marinette, Wis., and Ronald L. Young, Menominee, Mich., assignors to Erda, Inc., Peshitgo, Wis.

Continuation-in-part of Ser. No. 93,771, Jul. 19, 1993, Pat. No. 5,482,351. This application Jun. 27, 1995, Ser. No. 495,218

Int. Cl.[6] B60N *2/42*

U.S. Cl. 297—216.2 **26 Claims**



1. A force dissipation seat pedestal for supporting a seat and an occupant, the pedestal comprising:

a top portion adapted to support the seat, the top portion having a front end and a rear end; and,

a plurality of legs adapted to support the top portion of the pedestal, at least one of the plurality of legs being a multi-strip leg formed by at least three flex straps, each flex strap having a surface and first and second ends, the first end being secured to the rear end of the top portion and the second end being secured to a supporting surface, the multi-strip leg plastically deforming under predetermined conditions to accommodate warping of the supporting surface between the legs and to dissipate some of the energy and forces that would otherwise be imparted on the occupant of the seat during an emergency condition.

5,662,377

VEHICLE SEAT INTERLOCK SYSTEM

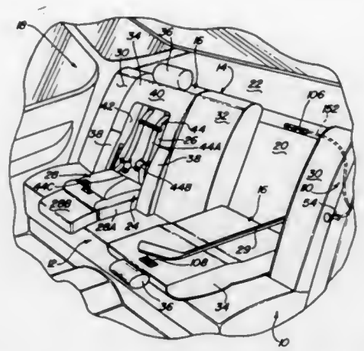
Carl J. Holdampf, and Radesh Vangipuram, both of Farmington Hills, Mich., assignors to Magna Lomason Corporation, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 543,257, Oct. 18, 1995. This application Apr. 26, 1996, Ser. No. 638,336

Int. Cl.[6] A47C *15/00*

U.S. Cl. 297—238 **20 Claims**

1. An interlock system for a vehicular seat adapted to be secured to a mounting structure in a motor vehicle, the vehicular seat of the



type having a seat cushion, a fold-down seatback panel supported for movement between an upright position and a folded position, and an integral child seat built into the seatback panel for movement between a stowed position and a deployed position, said interlock system comprising:

a first latching mechanism operable in a locked mode for releasably locking the seatback panel in the upright position and in an unlocked mode for permitting movement of the seatback panel from the upright position to the folded position, said first latching mechanism including a first striker member secured to the mounting structure and a first latch member supported on said seatback panel for movement between a first position whereat said first striker member is lockingly retained by said first latch member for establishing said locked mode and a second position whereat said first striker member is released from locked engagement with said first latch member for establishing said unlocked mode;

a second latching mechanism operable in a latched mode for locking the integral child seat in the stowed position and in a released mode for permitting movement of the integral child seat from the stowed position to the deployed position; and

an interlock mechanism operably interconnecting said first and second latching mechanisms for preventing shifting of said second latching mechanism from its released mode to its latched mode when said first latching mechanism is in its unlocked mode, and said interlock mechanism further operable for preventing shifting of said first latching mechanism to its unlocked mode when said second latching mechanism is in its released mode.

5,662,378

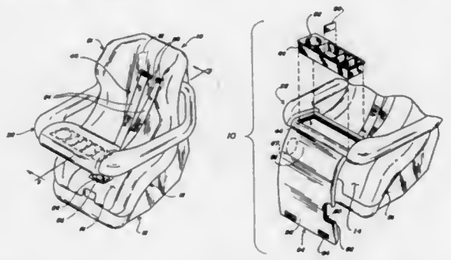
CAR SEAT WITH TRAY FOR USE BY CHILDREN

Adrain E. Carruth, P.O. Box 33, Mt. Vernon, Ill. 62864

Filed Nov. 27, 1995, Ser. No. 562,819

Int. Cl.[6] A47D *1/10*; **B60N** *2/26*;*2/28*

U.S. Cl. 297—256.15 **3 Claims**



1. A child's car seat having a bottom upon which a child can be seated, a back attached to the bottom, side arms attached to the bottom and the back and a shield, said shield being a U-shaped member mounted at its terminal ends to the side arms and movable between a position in front of the child to a position above the child so that the child can be placed in and removed from the car seat, said shield having top and bottom surfaces and front and rear edges, said shield having a recess in the top surface into which is received a tray, said tray divided into sections, at least one of which is circular in cross-section, said shield having an elongated cover of sheet material with first and second ends for wrapping around the front, top and rear of the shield, said cover having an outer layer of fabric over an inner layer of padding material, said cover hiding the tray and having releasable securing means on the first and second ends for making mated engagement with securing means on the shield for retaining the cover in wrapped around condition, said cover having an aperture in registry with the circular section when the cover is wrapped around the shield and secured with said mating securing means, a harness with two shoulder straps and a crotch strap joined to a strap attached to the bottom surface of the shield, said shoulder straps passing through slots provided in the back and said crotch strap passing through a slot in the bottom.

5,662,379

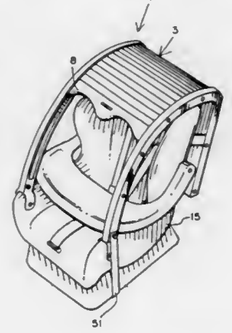
SHIELDED CHILD SEAT AND METHOD

Eric Mark Zimelman, 6920 SW. 44th St., No. 210, Miami, Fla. 33155

Filed Jan. 11, 1996, Ser. No. 585,146

Int. Cl.[6] A47C *1/08*

U.S. Cl. 297—256.15 **33 Claims**



1. A child seat for a child, to be used with a car seat in a vehicle, comprising, in combination:

a rigid frame adapted to be positioned on and removably secured to the car seat, said frame having a vertical back supporting member and a horizontal bottom supporting member to support the back and legs of the child, respectively, said back and bottom supporting members being covered with padding for comfort,

a harness assembly for securing the child to the child seat;

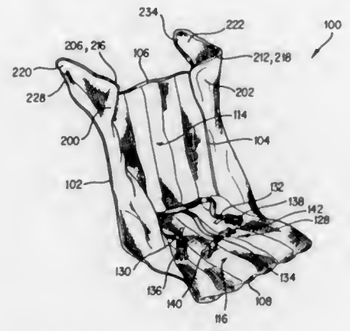
a roll top frame comprising, a back frame, a bulbous front frame, and a top, said roll top frame having a pair of parallel tracks, and said bulbous front frame extending away from the top and then downward to the horizontal bottom supporting member of the child seat;

a roll top shield that slides along the two parallel tracks, said roll top shield being capable of being locked in at least two positions, one being a closed position wherein the shield provides maximum coverage for one child, and the other being an open position wherein the shield provides maximum access for placing and removing the child in the child seat; and

a locking means for securing the roll top shield in the closed and open positions;

whereby the roll top shield can be locked into the closed position and therein provide coverage for the child.

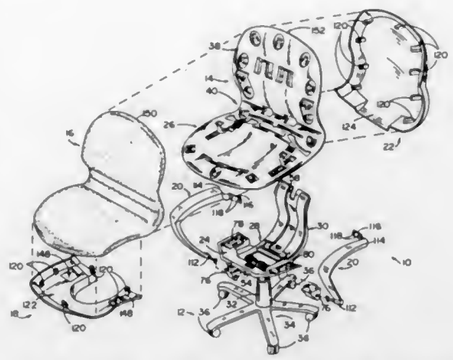
5,662,380
FOLDING SEAT BACK FOR STROLLER
Chun-Wah Tam, Lantau Island, Hong Kong, and John S. Canna, Orchard Park, N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.
Filed Nov. 9, 1995, Ser. No. 554,911
Int. Cl.[6] B60N *2/02;2/24;2/30*
U.S. Cl. 297—354.12 **20 Claims**



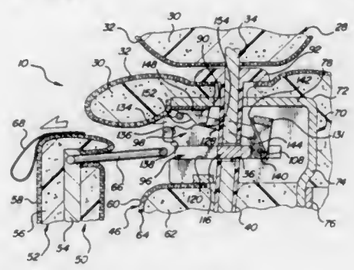
1. A reclining seat, comprising:
a seat support frame;
a first web having a first end coupled to said seat support frame and a second end;
a reclining member having a first web attachment edge coupled to said second end of said first web and being movable with respect to said support frame between a reclined position in which said reclining portion is supported in part by being suspended from said seat support frame by said first web, and an upright position;
a first latch having a support latch portion coupled to said seat support frame and a seat latch portion coupled to said reclining portion, said support latch portion and said seat latch portion being selectively coupleable to support said reclining portion in said upright position;
a first resilient member attached to said first web and urging said first web away from said seat latch portion of said first latch, whereby when said reclining portion is moved from said reclined position toward said upright position, said first resilient member inhibits said first web from interfering with the coupling of said latch portions.

5,662,381
CHAIR CONSTRUCTION AND METHOD OF ASSEMBLY
Charles P. Roossien, Wyoming; David C. Pugh, Howard City; Dale M. Groendal, Jenison; James E. Massey, Wayland; Robert M. Scheper, Grand Rapids; Duane F. Nagel, Grand Rapids; Bruce M. Smith, Grand Rapids; Douglas A. Smith, Grand Rapids, and Brian L. Scholten, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation of Ser. No. 236,335, May 2, 1994, Pat. No. 5,540,481, which is a continuation of Ser. No. 55,927, Apr. 30, 1993, Pat. No. 5,318,346, which is a continuation of Ser. No. 707,465, May 30, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,335
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—301.1 **25 Claims**

15. In a chair having a base, a seat portion operably connected with the base, and a back portion pivotally connected to the base for tilting movement of the back portion between an upright position and a reclined position relative to the seat portion, an improvement comprising:
a pair of side arms each including an upper end and a configured lower end;
said chair including connecting structures corresponding to said pair of side arms for supporting said pair of side arms on opposing sides of said seat portion, each of said configured lower ends being configured to laterally mateably engage the corresponding connecting structure in a first position and then rotatably interlockingly engage said corresponding connecting structure in an interlocked second position; and
a one-piece shell having a back section and a seat section for mateably engaging a back support bracket on the back portion and a seat support structure on the seat portion, respectively, said one-piece shell including first tabs for mateably engaging an upper edge of the back support bracket and second tabs for mateably engaging a front edge of the seat support structure, and further including fastener-receiving attachment structure for attaching said one-piece shell securely to said chair.

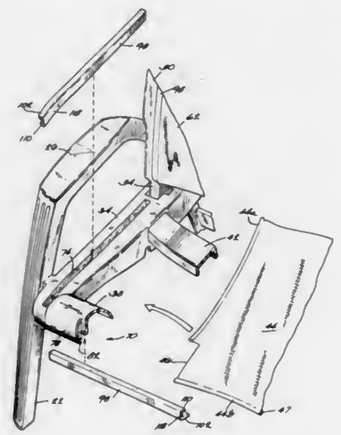


5,662,382
VEHICLE SEAT WITH INTEGRAL CHILD RESTRAINT SEAT AND INTERLOCKING HEADREST ASSEMBLY
Eric J. Kerr, Westland, and Paul J. Rozan, Shelby, both of Mich., assignors to Lear Corporation, Southfield, Mich.
Filed Jul. 15, 1996, Ser. No. 683,576
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—238 **16 Claims**



1. A vehicle seat assembly comprising:
a generally horizontal seat bottom portion;
a generally upright seat back portion;
a child restraint seat pivotal between a folded position against said seat back portion and an unfolded use position extending downwardly to a generally horizontal position against said seat bottom portion;
a headrest member coupled to said seat back portion and selectively moveable between a lower position against said seat back portion and an upper position spaced above said seat back portion; and
an interlocking member secured to said seat back portion and interacting between said headrest member and said child restraint seat for locking said child restraint seat in said folded position in response to said headrest member being raised from said lower position to said upper position and unlocking said child restraint seat to allow pivotal movement to said unfolded use position in response to said headrest member being moved to said lower position.

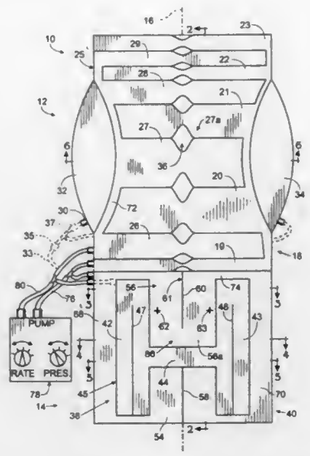
5,662,383
APPARATUS FOR ATTACHING FABRIC TO A CHAIR FRAME
Joseph M. Hand, Sheboygan Falls, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Aug. 1, 1996, Ser. No. 690,797
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.11 **20 Claims**



1. A chair assembly comprising
a frame including an outer wall having an outer surface, said outer surface having therein a channel defined by fixed wall extending inwardly from said outer wall, and a resiliently deflectable wall extending inwardly in cantilever fashion from said outer wall, said deflectable wall being spaced from said fixed wall to define said channel between said fixed wall and said deflectable wall,
a retainer received by said channel and removably secured in said channel by said deflectable wall, and
a web of fabric engaging said outer surface of said outer wall and having an edge located in said channel and engaged with said retainer and said frame, whereby said web is releasably fixed to said frame.

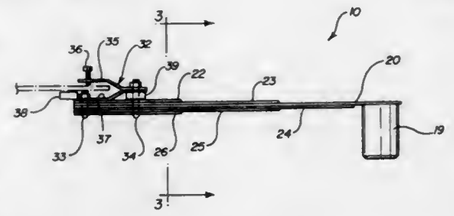
5,662,384
DYNAMIC SEATING SUPPORT SYSTEM
Hugh O'Neill, San Francisco, Calif., and Peter W. Linley, 49 Hawthorne Village Rd., Nashua, N.H. 03062, assignors to Peter W. Linley, Nashua, N.H.
Filed Nov. 14, 1995, Ser. No. 557,906
Int. Cl.[6] A47C *7/02*
U.S. Cl. 297—452.41 **13 Claims**

1. A dynamically inflatable support system comprising:
a seat cushion having first and second mating sets of inflatable cells, the first set including a pair of spaced-apart elongate longitudinal cells extending along a cushion axis corresponding to the longitudinal axis of a person supported on the support system, the second set including inner cell means positioned between the pair of longitudinal cells, at least one of the first and second sets of cells further including transverse cell means extending laterally between the longitudinal cells intermediate the ends of the longitudinal cells; and



pressure means for alternatingly inflating and deflating the first and second sets of cells so that a person seated on the seat cushion is supported primarily by alternate sets of cells.

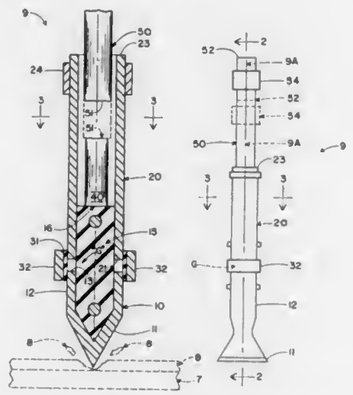
5,662,385
HAMMER FOR DEMOLISHING SIDEWALKS AND THE LIKE
Matt Bishop, 83 Brooksyde Ave., Ringwood, N.J. 07456
Filed Aug. 31, 1995, Ser. No. 522,139
Int. Cl.[6] E01C *23/12*
U.S. Cl. 299—37.3 **5 Claims**



1. A hammer mounted on a backhoe comprises:
a clamp mounted to the backhoe;
a main leaf spring mounted at one end to the clamp and extending outwardly therefrom, said spring having an upper and a lower surface;
a hammer head mounted to the other end of the main spring and extending downwardly therefrom;
a first leaf spring and a second leaf spring mounted to the clamp at one end and extending substantially parallel to the upper surface of the main spring, said first spring being positioned adjacent to the main leaf spring and the second spring being positioned adjacent the first spring and being of a shorter length than the first spring;
a third and a fourth leaf spring mounted to the clamp at one end and extending substantially parallel to the lower surface of the main leaf spring, said third leaf being positioned adjacent a fifth leaf spring and the fourth leaf spring being position adjacent the third leaf spring and being of a shorter length than the third leaf spring;
fifth leaf spring mounted to the clamp at one end and extending between the third leaf and the main spring and being of a greater length than all other leaf springs; and
whereby the first and second leaf springs provide a whipping action to increase the force of the hammer head and the third,

fourth and fifth springs provide a dampening action to prevent damage to the backhoe.

5,662,386
PLUNGER-ACTUATED SURFACE-TREATING DEVICES
Christopher M. Newman, and Clifford W. Newman, both of 310 N. Myrtle St., Glenwood, Iowa 51534
Filed Oct. 31, 1995, Ser. No. 550,599
Int. Cl.[6] B25D *1/12;17/06*
U.S. Cl. 299—37.5 **3 Claims**



1. Surface-treating device having a selectable lower-end surface-impacting tool and which device extends directionally longitudinally along an uprightable central-axis and comprising:

(A) said surface-treating device having structurally-continuous relationship with a lower-end forward-extremity of a rearwardly tubular metallic forward-part surrounding said central-axis and having a rearward-end located above the forward-extremity of said tubular forward-part;

(B) a semi-resilient non-metallic tubular rearward-part surrounding said central-axis and having an annular lower forward-terminus located a finite-gap immediately rearwardly above said forward-part rearward-end and having an upper rearward-terminus located loftily above the said forward-terminus thereof;

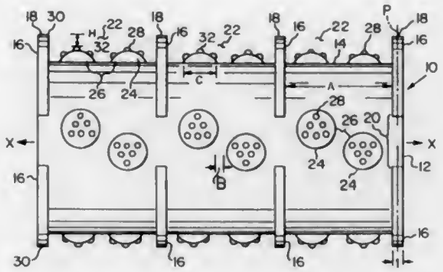
(C) extending along said central-axis from said surface-impacting tool to said finite-gap and upwardly longitudinally beyond into the lower forward reaches of said tubular rearward-part and surrounded thereby, an upright non-metallic plug having rearward topical-end;

(D) means extending between said rearwardly tubular forward-part and said tubular rearward-part, means for maintaining a said finite-gap therebetween;

(E) extending along said central-axis and located immediately rearwardly of said non-metallic plug and loosely associated within said tubular rearward-part immediately rearwardly above said plug, a metallic shock-absorber members; and

(F) extending along said central-axis surrounded by said tubular rearward-part and immediately rearwardly of said shock-absorber member at a lower forward aft-end thereof, a manually-actuatable elongate plunger member having an upper and rearward trail-end located loftily above the plunger member lower forward aft-end and loftily also rearwardly upwardly of the non-metallic tubular rearward-part rear-ward-terminus.

5,662,387
CUTTER HEAD AND METHOD FOR MINING HARD ROCK
James A. Bartkowiak, 1701 Taxville Rd., Apt. 16C, York, Pa. 17404
Filed Nov. 8, 1995, Ser. No. 555,061
Int. Cl.[6] E21C *25/10;27/12*
U.S. Cl. 299—55 **6 Claims**



1. A cutter head comprising:

a drum having an outer cylindrical surface, said drum adapted to be rotated about a longitudinal axis passing through said drum;

a plurality of hemispherical-shaped cutting members secured to said drum; and

a plurality of blades secured to said drum, wherein said hemispherical-shaped cutting members and said blades extend outwardly from said outer cylindrical surface of said drum, said hemispherical-shaped cutting members including a cutting surface and said blades comprising a cutting surface, at least a portion of said blade cutting surface is positioned further away from said outer cylindrical surface of said drum than said hemispherical-shaped cutting member.

5. A cutter head comprising a circular-shaped rotating member having a face surface, said rotating member adapted to rotate about an axis passing through and normal to said face surface, a plurality of hemispherical-shaped cutting members secured to said rotating member positioned about said face surface and a plurality of blades secured to said rotating member positioned about said face surface, each of said blades extending outwardly from said face surface, each of said hemispherical-shaped cutting members having a cutting surface and each of said blades having a cutting surface, at least a portion of said blade cutting surfaces positioned further away from said face surface than said hemispherical-shaped cutting members.

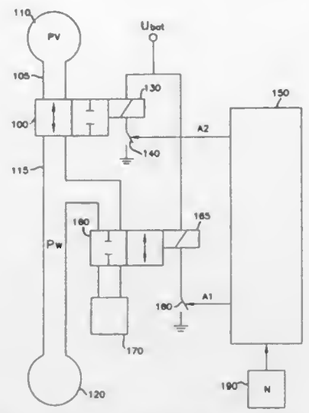
5,662,388
METHOD AND DEVICE FOR IDENTIFYING A PRESSURE VARIABLE
Gebhard Wuerth, Sulzbach-Laufen; Helmut Wiss, Moeglingen, and Alfred Strehle, Fellbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 23, 1995, Ser. No. 546,863
Claims priority, application Germany, Nov. 29, 1994, 44 42 326.8
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—3 **6 Claims**

1. A method for determining a pressure difference between a first pressure in a first line coupled to a first solenoid valve and a second pressure in a second line coupled to the first solenoid valve, the method comprising the steps of:

determining a first duration of an actuation of the first solenoid valve;

determining a previous pressure difference before the actuation of the first solenoid valve;

obtaining a predetermined pressure gradient, the pressure gradient representing a pressure reduction;

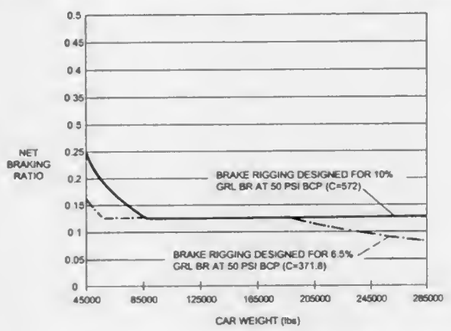


determining the pressure difference as a function of the first actuation duration, the previous pressure difference, the predetermined pressure gradient and a second duration of actuation of a second solenoid valve arranged between the second line and a third line;

comparing an expected actuation duration to an actual actuation duration of the first solenoid valve since a last actuation of at least one of the first and second solenoid valves; and

correcting the pressure difference as a function of the comparison, after actuation of the second solenoid valve.

5,662,389
VARIABLE LOAD EP BRAKE CONTROL SYSTEM
James R. Truglio, and Bryan M. McLaughlin, both of Watertown, N.Y., assignors to New York Air Brake Corporation, Watertown, N.Y.
Filed Sep. 10, 1996, Ser. No. 709,816
Int. Cl.[6] B60T *13/00*
U.S. Cl. 303—7 **30 Claims**



1. A method of controlling the brakes on a car having an electropneumatic brake control valve in a train including at least one locomotive having a train brake controller and a plurality of cars having brake control valves and brake cylinders, the method comprising:

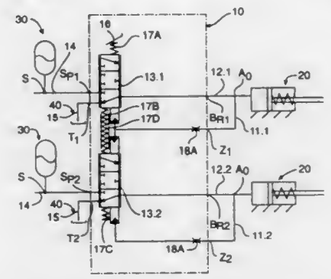
determining the weight of said car;

calculating a ratio of brake cylinder pressure to train brake command for said car using said determined weight;

determining brake cylinder pressure using a train brake command from said train brake controller and said calculated ratio; and

controlling said brake cylinder pressure to said determined brake cylinder pressure.

5,662,390
METHOD AND APPLIANCE FOR CONTROLLING A POWER-BRAKE VALVE
Hubert Mies, Partenstein; Werner Gitter, Neuendorf, both of Germany; Sture Lindblom, and Bo Karlsson, both of Eskilstuna, Sweden, assignors to Mannesmann Rexroth GmbH, Lohr/Main, Germany
Filed Apr. 9, 1993, Ser. No. 46,273
Claims priority, application Germany, Apr. 9, 1992, 42 12 032.2
Int. Cl.[6] B60T *13/16*
U.S. Cl. 303—10 **10 Claims**



1. A method for controlling a power-brake system with closed-loop adjustment, said method comprising the steps of:

providing an at least one circuit power-brake valve having at least one control plunger integrally;

providing at least one brake cylinder operatively connected to said at least one control plunger through a brake conduit:

preloading said at least one control plunger into an initial position by springs which act on a control end of said control plunger;

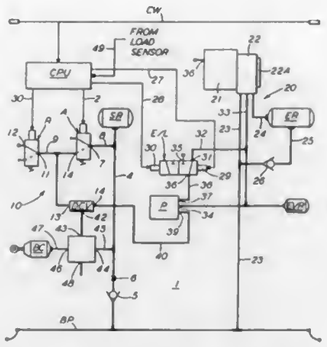
applying an actuating force onto an actuating end of said at least one control plunger, said step of applying said actuating force including communicating said actuating force to said at least one brake cylinder through said brake conduit, and generating a brake pressure through said at least one brake cylinder: and

generating a control pressure on said at least one control plunger so as to adjust said brake pressure at said at least one brake cylinder in proportion to said actuation force from said actuating end of said at least one control plunger, said step of generating said control pressure including providing a control pressure conduit connected to said brake conduit at an immediate vicinity of said at least one brake cylinder and to said control end of said at least one control plunger, and

feeding back said brake pressure generated at said brake cylinders via said external control pressure conduit to said control end of said at least one control plunger, as said control pressure acting against said actuation force, whereby said control pressure at said control end of said at least one control plunger is proportional to said brake pressure generated at said at least one brake cylinder.

5,662,391
PNEUMATIC EMPTY/LOAD PROPORTIONING FOR ELECTRO-PNEUMATIC BRAKE
Albert A. McKay, Stoney Creek, Canada, assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Jan. 16, 1996, Ser. No. 585,629
Int. Cl.[6] B60T *8/18*
U.S. Cl. 303—22.4 **6 Claims**

1. A railroad car brake system including a primary brake portion having a microprocessor controller, a backup brake portion having an emergency valve controller, fluid pressure operated brake means, and a double check valve device via which one of said microprocessor controller and said emergency valve controller is effective to operate said brake means, wherein the improvement comprises:



a) valve means having an activated condition for limiting the fluid pressure effective at said double check valve device when said emergency valve controller is operated;

b) said microprocessor controller outputting a first control signal in accordance with an empty condition of said railroad car; and

c) empty/load selector valve means operable to a first position in response to said first control signal for establishing said activated condition of said valve means, said empty/load selector valve means being stable in said first position in the absence of said first control signal.

5,662,392

ELECTROHYDRAULIC PRESSURE CONTROL DEVICE

Axel Hinz, Neu-Anspach, Germany, assignor to ITT Automotive Europe GmbH, Germany

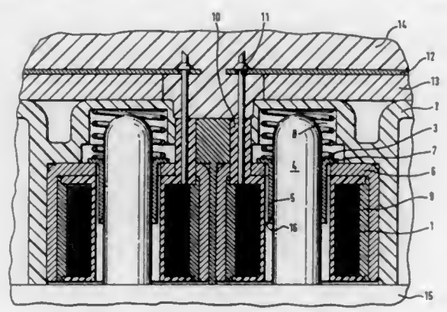
PCT No. PCT/EP94/02925, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO95/07201, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 2, 1994, Ser. No. 612,862

Claims priority, application Germany, Sep. 11, 1993, 43 30 827.9

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—119.2 **10 Claims**



1. Electrohydraulic pressure control device, including electromagnetically operable hydraulic valves which are mounted on a valve accommodating member, coils having electric contact elements on their parts which project from the valve accommodating member, a coil casing conducting the magnetic flux, a cover unit which covers the projecting coil parts and the contact elements, a carrier element for connecting to the coils that is arranged inside the cover unit, the cover unit or part of the cover unit being adapted to accommodate an electronic controller, comprising:

a shaped part attached to the coils wherein the shaped part includes stop means, wherein each stop means contacts a sleeve which is movable into abutment on a valve dome, each sleeve conducting the magnetic flux abutting on a coil casing which conducts the magnetic flux.

5,662,393

BRAKING FORCE CONTROL DEVICE AND METHOD THEREOF

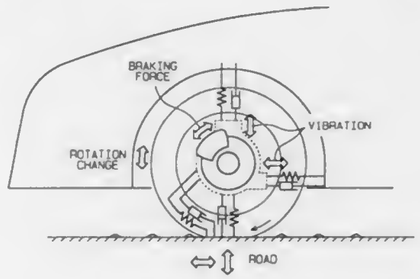
Masahiko Kamiya, Anjo; Yuzo Imoto, Chita-gun, and Masayoshi Oishi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 18, 1995, Ser. No. 544,542

Claims priority, application Japan, Nov. 2, 1994, 6-269874; Aug. 9, 1995, 7-203450

Int. Cl.[6] B60T *8/58*

U.S. Cl. 303—194 **19 Claims**



1. A braking force control device comprising:

means for applying braking force to a vehicle;

means for detecting vibration level of a wheel when said braking force is applied;

means for determining a present brake condition based on a vibration level detected by said vibration level detecting means and a predetermined vibration level range of a maximum braking region; and

means for controlling said braking force applying means so that said vibration level determined by said vibration level detecting means is within said predetermined vibration range based on said present brake condition determined by said present brake condition determining means.

5,662,394

LOW-TEMPERATURE SHOWCASE

Nam-Chul Choi, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 27, 1996, Ser. No. 703,495

Claims priority, application Rep. of Korea, Aug. 28, 1995, 95-26865

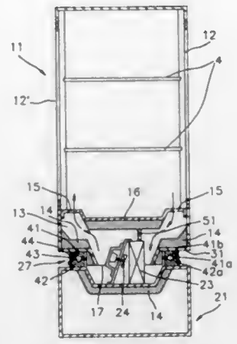
Int. Cl.[6] A47B *81/00*

U.S. Cl. 312—116 **4 Claims**

1. A low-temperature showcase comprising:

an upper case including at least two doors, an intermediate plate provided with a plurality of air passages formed along edges thereof, a bottom plate having an opening and an air duct defined by the intermediate plate and the bottom plate;

a lower case including a cavity in which an evaporator and a fan are installed, the evaporator and the fan for generating a cold air flow which is circulated along the air duct and into an interior of the upper case; and



means for rotatably supporting the upper case, the supporting means being interposed between the upper and the lower cases.

5,662,395

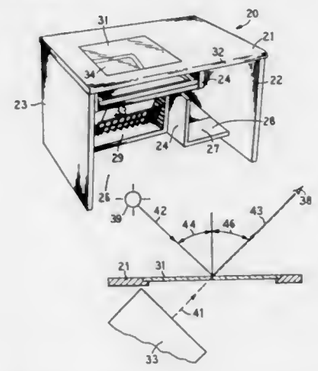
UNDERDESK COMPUTER DESK STRUCTURE WITH ANTIREFLECTING VIEWING WINDOW

John N. Lechman, Effingham, Ill., assignor to Nova Solutions, Inc., Effingham, Ill.

Continuation of Ser. No. 895,511, Jun. 8, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 475,888

Int. Cl.[6] A47B *21/00*

U.S. Cl. 312—194 **5 Claims**



1. A desk structure comprising:

(a) a top member having a working surface portion;

(b) means for supporting said top member in spaced relationship to an underlying floor and defining with said top member an opening along one side of said desk for receiving the knees of a user seated at the desk structure;

(c) transparent window means associated with a portion of said top member; and

(d) means located in said desk structure generally behind said top member for holding a monitor behind said top member, said so held monitor and said window means being positioned relative to one another so that said monitor is viewable through said window means by said seated user;

said window means having generally opposed parallel side surfaces and being transmissive of light images emitted from said monitor and passing angularly through said window means, at least one of said opposed surfaces having a coating which is antireflecting of exterior environmental light striking said window means, said coating being comprised of at least one antireflecting material layer;

said window means being further characterized by having a photopic reflectance of not more than about 1%, a photopic transmittance of at least about 50%, and a resolution capacity of at least about 90%.

5,662,396

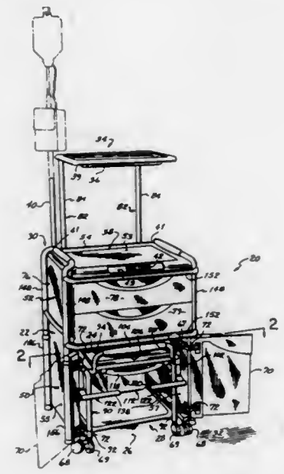
BEDSIDE CABINET FOR STORING APPLIANCES

Ryan Anthony Reeder, Brookville, Ind., and Ares Marasligiller, Villa Hills, Ky., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Jul. 17, 1995, Ser. No. 503,017

Int. Cl.[6] A47B *81/00;46/00*

U.S. Cl. 312—209 **25 Claims**



1. A bedside cabinet located on a floor and comprising:

a generally U-shaped base cabinet section having:

three side walls each having an upper edge, a lower edge, and opposing side edges extending between the upper and lower edges being coupled together to define a rear panel and opposing side panels, the side edges of the opposing side panels opposite the rear panel cooperate to define a front side of the base cabinet section, and the rear and side panels are configured to define an internal storage compartment therebetween and an access opening extending through the front side of the base cabinet section and from the lower edges of the three side walls unobstructed to the floor,

casters connected to the generally U-shaped base cabinet section for supporting the base cabinet section on the floor, and

at least one door operatively connected to the generally U-shaped base cabinet section for selectively covering a substantial portion of the internal storage compartment;

a drawer cabinet section being connected to and above the generally U-shaped base cabinet section and including a hinge mounted thereon; and

a top panel positioned to lie above the drawer cabinet section, the top panel being coupled to the hinge to pivot between a generally horizontal and a generally vertical position with respect to an axis of rotation adjacent the front side of the cabinet.

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5,662,397

OPERATING UNIT

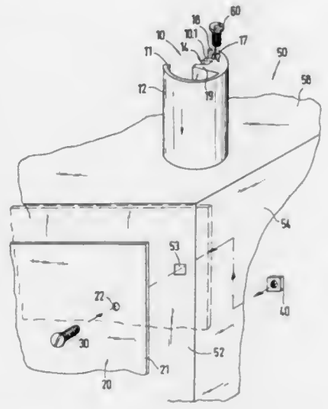
Markus Neuhof, Ehringshausen, and Wolfgang Reuter, Burbach, both of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Germany

Filed Apr. 18, 1995, Ser. No. 423,400

Claims priority, application Germany, Apr. 19, 1994, 44 13 543.2

Int. Cl.[6] A47B *97/00*

U.S. Cl. 312—223.1 **10 Claims**



1. An operating unit with a housing for receiving an electrical or electronic circuit, wherein the operating unit has a plurality of vertical lateral walls and at least one horizontal lateral wall and a front wall, at least one laterally outwardly projecting handle for positioning the operating unit is fixed with respect to said operating unit,

the at least one handle forming at least one profiled section (**10**) and extending over at least a portion of one of the height and width of at least one of the vertical lateral walls (**54**),

the at least one profiled section (**10**) being secured on the housing (**50**) in an area of at least one front edge formed by the front wall (**52**) and at least one of the vertical lateral walls (**54**),

a portion of the at least one profiled section (**10**) extending past the front wall (**52**) and at least one of the vertical lateral walls (**54**) in the area of the at least one front edge,

the improvement comprising:

at least one front panel (**20**) positioned on the front wall (**52**), at least one fastening element (**30**) fixing the at least one front panel (**20**) with respect to the from wall (**52**),

the at least one from panel (**20**) having a shoulder (**21**) extending parallel to the from wall (**52**) beyond an outside surface of an adjacent one of the vertical lateral walls (**54**), the at least one profiled section (**10**) having a receiver (**14**), the shoulder (**21**) positioned within the receiver (**14**); and

a clamping element (**60**) fixing the shoulder (**21**) with respect to the receiver (**14**), and the clamping element (**60**) secured in the at least one profiled section (**10**).

5,662,398

CORNER CABINET DRAWER ASSEMBLY

Clarence Swallow, 3800 McDowell Creek Rd., Manhatten, Kans. 66502

Filed May 9, 1996, Ser. No. 647,235

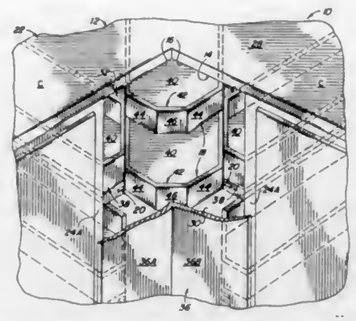
Int. Cl.[6] A47B *81/00*

U.S. Cl. 312—238 **26 Claims**

1. A corner cabinet drawer assembly, comprising:

(a) a corner cabinet frame defining an interior cavity having a front corner opening;

(b) at least one central platform for holding articles;



(c) at least one side platform for holding articles and being disposed along one side of said central platform; and

(d) a plurality of track means for mounting said central platform and said side platform to said corner cabinet frame to undergo extension and retraction movement from and into said interior cavity of said corner cabinet frame with said central platform moving along a path substantially bisecting said corner cabinet frame and said side platform moving along a path extending substantially at an acute angle relative to said path of movement of said central platform such that said central platform and side platform are extendable through said front corner opening at separate times;

(e) wherein said central and side platforms are respective central and side drawers each having a planar base and a continuous sidewall rising substantially perpendicular thereto and from a periphery thereof and wherein said continuous sidewall of said side drawer has an angled inside forward portion for permitting extension and retraction movement of said central drawer through said front corner opening of said corner cabinet frame when said side drawer is retracted within said interior cavity of said corner cabinet frame.

5,662,399

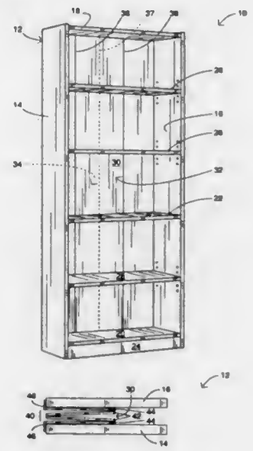
READY-TO-ASSEMBLE CABINET

Richard E. Henkel, Burlington; William A. Matzke, Pinehurst, and James T. Phillips, Sanford, all of N.C., assignors to Doxey Furniture Corporation, Aberdeen, N.C.

Filed Sep. 1, 1995, Ser. No. 523,020

Int. Cl.[6] A47B *43/02*

U.S. Cl. 312—258 **19 Claims**



1. A ready-to-assemble cabinet, comprising:

a) two upstanding side panels and a folding back panel formed separately from said side panels, said folding back panel made of a different and thinner material than said side panels;

b) at least two fixed shelves disposed between said side panels ad fixedly attached to said side panels; and

c) said folding back panel having lateral edges, wherein:

i) said folding back panel includes at least two side edge fold lines scored proximate said lateral edges of said back panel and framing vertically from a top to a bottom of said back panel,

ii) said lateral edges of said folding back panel are pre-attached to said side panels by one or more of the group consisting of fasteners and adhesives to create a back panel/side panel sub-assembly prior to assembly of the cabinet, and

iii) said back panel/side panel sub-assembly can be folded along the scored fold lines into a compact configuration for packaging.

5,662,400

PROJECTION DISPLAY SYSTEM

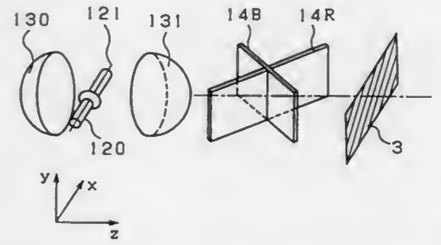
Shinsuke Shikama; Hiroshi Kida, and Akira Daijogo, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 312,770, Sep. 27, 1994, Pat. No. 5,613,749, which is a division of Ser. No. 47,504, Apr. 16, 1993, Pat. No. 5,384,659. This application Sep. 29, 1995, Ser. No. 536,355

Claims priority, application Japan, Apr. 20, 1992, 4-099653; May 6, 1992, 4-113475; Oct. 26, 1992, 4-287671; Nov. 24, 1992, 4-313261

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—31 **9 Claims**



6. A projection display apparatus comprising:

a light source device including a linear emission lamp for emitting white light and a condenser lens receiving the white light;

color separating means, including two crossed dichroic mirrors, for separating the white light into red light, green light and blue light;

image display devices illuminated by separated red light, green light and blue light, and forming a red image, a green image, and a blue image, respectively;

color combining means for combining the red, green and blue images to form a combined image; and

a projection lens for enlarging and projecting the combined image;

said linear emission lamp arranged such that a longitudinal direction of said linear emission lamp is substantially perpendicular to a line formed by the intersection of the two crossed dichroic mirrors and substantially perpendicular to an optical axis of the projection display apparatus.

5,662,401

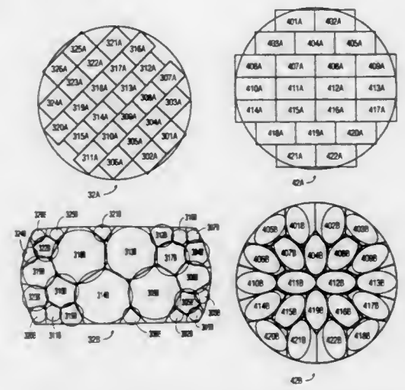
INTEGRATING LENS ARRAY AND IMAGE FORMING METHOD FOR IMPROVED OPTICAL EFFICIENCY

Jeffrey A. Shimizu, and Peter Johannes Michiel Janssen, both of Westchester County, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 13, 1995, Ser. No. 571,420

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—38 **13 Claims**



1. An illumination system for illuminating an output patch, said output patch having a center, comprising:

a first array for receiving light, said first array including a plurality of first lenslets positioned in a first pattern, each of said first lenslets having a substantially uniform size and shape; and

a second array for receiving said light from said first array and for outputting said light to said output patch, said second array including a plurality of second lenslets positioned in a second pattern, said second lenslets having nonuniform sizes and shapes,

wherein said first and second patterns are dissimilar to each other relative to said center of said output patch.

5,662,402

PROJECTOR WITH DETACHABLE LIQUID CRYSTAL PANEL

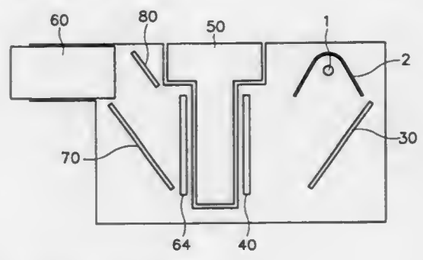
Hoo-Shik Kim, Suwon, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Apr. 11, 1996, Ser. No. 616,231

Claims priority, application Rep. of Korea, Apr. 14, 1995, 95-8813

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—119 **11 Claims**



7. A projector, comprising:

a lamp for emitting source light rays;

a reflector for reflecting the source light rays as uniform light rays;

a planar reflector for reflecting the uniform light rays as parallel light rays;

a first Fresnel lens for focusing the parallel light rays;

a detachable LCD parcel for transmitting the focused light rays from the Fresnel lens in accordance with video signals inputted thereto;

an image-forming optical system for forming display images from light rays transmitted by the LCD panel; and

first and second mirrors between the LCD panel and the image-forming optical system, for shortening a length of the projector.

5,662,403

LUMINAIRE FOR INTERIOR LIGHTING

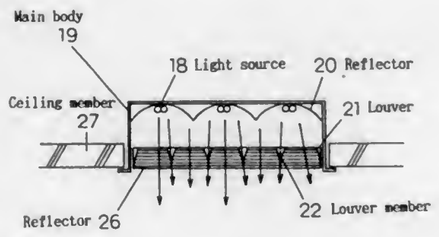
Yukio Akashi; Yoshinori Tanabe; Izumi Akashi, all of Hirakata, and Kenji Mukai, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 11, 1995, Ser. No. 513,722

Claims priority, application Japan, Aug. 12, 1994, 6-190463; Feb. 9, 1995, 7-021865

Int. Cl.[6] F21V *7/04*

U.S. Cl. 362—32 **18 Claims**



2. A luminaire for interior lighting comprising:

a first luminous element having at least one bright region with a luminance L (unit: cd/m^2), wherein:

the at least one bright region of the first luminous element is visible at any position in a specified area, and

a relation of the luminance L of the first luminous element and a solid angle w satisfies one of

$3.3 \leqq \log L \leqq -0.3 \log w + 2.63$

and

$\log L \leqq -0.3 \log w + 2.63$,

where

$3.64 \leqq \log \leqq 3.90$,

the solid angle w (unit: steradian (sr))being an apparent size of the bright region, whereby the specified area is based on the first luminous element of the luminaire.

5,662,404

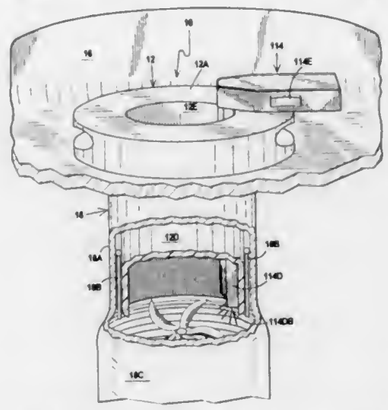
GARBAGE DISPOSAL VIEWER

Richard J. Susat, 11 Conver Dr., Saratoga Springs, N.Y. 12866-9740

Filed Oct. 23, 1995, Ser. No. 546,601

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—32 **9 Claims**



1. A garbage disposal viewer (**10**) capable of insertion into a garbage disposal cylinder of a garbage disposal positioned within a sink, the garbage disposal viewer (**10**) functioning to allow an user to view a garbage disposal grinder, the garbage disposal viewer (**10**) comprising:

A) a viewer (**12**) comprises:

i) a viewer ring top (**12A**) comprises a viewer ring opening (**12E**) therein and therethrough, the viewer ring top (**12A**) further comprises at least one viewer ring top light source female member (**12AA**) therein,

ii) a viewer ring bottom (**12B**) comprises a similar shape and size of the viewer ring top (**12A**), the viewer ring bottom (**12B**) further comprises a viewer ring opening (**12E**) therein and therethrough,

iii) a viewer ring side (**12C**) circumventionally positioned around and between the viewer ring top (**12B**) and the viewer ring bottom (**12B**), and

iv) a viewer cylinder (**12D**) extending outwardly from and securely fastened to the viewer ring bottom (**12B**), the viewer cylinder (**12D**) having sufficient length to extend beyond and thereby depress a garbage disposal deflector (**18B**), the viewer cylinder (**12D**) further comprises an outside diameter slightly smaller than an inside diameter of the garbage disposal cylinder, and

v) a first lighting means (**114**) comprises a first lighting means top (**114A**), a first lighting means bottom (**114B**), a first lighting means side (**114C**), a first lighting means back (**114F**), a first lighting means column (**114D**) extending downwardly from the first lighting means bottom (**114B**), a first lighting means bottom male member (**114BB**) is complimentary to the viewer ring top light source female member (**12AA**), a first lighting means switch (**114E**) is electronically connected by first lighting means battery electrical contacts (**114HA**) to a first lighting means battery (**114H**) and electronically connected by first lighting means battery electrical contacts (**114HA**) to a first lighting means bulb (**114I**), the first lighting means column (**114D**) has a first lighting means column top distal end (**114DA**) and a first lighting means column bottom distal end (**114DB**), the first lighting means column (**114D**) further comprises a plurality of first lighting means fiber optics (**114G**) extending from the first lighting means column top distal end (**114DA**) throughout the first lighting means column (**114D**) to the first lighting means column bottom distal end (**114DB**), the plurality of first lighting means fiber optics (**114G**) functioning to transmit light from the first lighting means bulb (**114I**) to and out of the first lighting means column bottom distal end (**114DB**) to facilitate the user to view into the garbage disposal grinder.

5,662,405

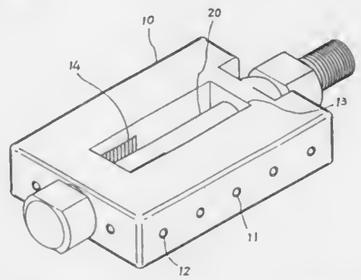
LIGHT-EMITTING PEDAL FOR BICYCLES

Pao-Hsiu Kuo, P.O. Box 82-144, Taipei, Taiwan

Filed Feb. 15, 1996, Ser. No. 602,153

Int. Cl.[6] B62J *6/00*

U.S. Cl. 362—72 **1 Claim**



1. In a bicycle having two pedals, each of said pedals comprising:

a rectangular body portion formed with a plurality of recesses on a circumference thereof, said rectangular body portion being formed with a longitudinal opening at a central portion thereof;

a plurality of light-emitting diodes fitted in respective recesses of said body portion;

an axle extending longitudinally through said rectangular body portion and said longitudinal opening;

a pair of solenoids installed in said rectangular body portion and located at opposite sides of said longitudinal opening; and

a pair of permanent magnets mounted on opposite sides of said axle and disposed between said two solenoids.

5,662,406

LIGHTED BABY BOTTLE

Johnny M. Mattice, 8200 Offenhauser Dr. 103-H, and Elyse L. Mattice, 8200 Offenhauser Dr. 101-H, both of Reno, Nev. 89511

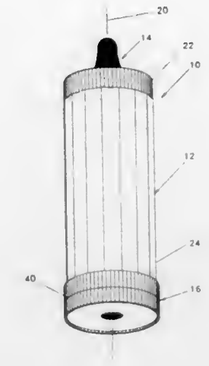
Filed Feb. 6, 1996, Ser. No. 596,082

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—101 **19 Claims**

1. A baby bottle, comprising:

a bottle having a first proximal end relative a feeding baby and a second distal end relative the baby;



a light means for illuminating the bottle, including a light source electrically connected to a power source; and

attachment means for attaching said light means to said bottle.

5,662,407

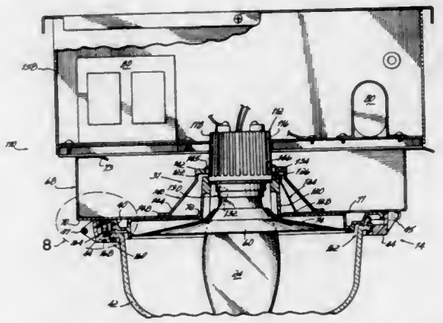
CANOPY LUMINAIRE

Jerry F. Fischer, West Chester, and Robert E. Kaeser, Cincinnati, both of Ohio, assignors to LSI Lighting Systems, Inc., Cincinnati, Ohio

Filed Sep. 22, 1995, Ser. No. 532,901

Int. Cl.[6] F21S *1/02*

U.S. Cl. 362—147 **34 Claims**



1. A canopy luminaire adapted for installation by a single individual into a mounting member having an opening therein, comprising:

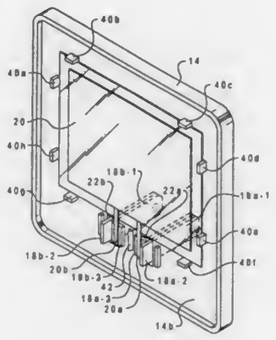
a luminaire housing having a bulbous body configured to receive the light-emitting section of a lamp, and a narrow neck extending upwardly therefrom with an inner end connected to said bulbous body and an outer end;

a lamp socket disposed within said narrow neck opening toward said bulbous body and sized to received the base of a lamp, said socket having an electrical contact and being electrically connectable to the base of a lamp when the lamp base is inserted therein; and

a spring clip having an upper section secured to said narrow neck intermediate said inner end and said outer end and a lower section extending downwardly and biased outwardly from said narrow neck to a securement position spaced from said narrow neck for securement of said luminaire housing to the mounting member when the narrow neck is inserted upwardly through the opening therein sufficiently to locate said lower section of the spring clip in said securement position above the opening in the mounting member to thereby secure said luminaire to said mounting member.

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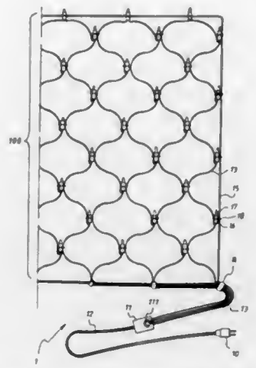
5,662,408
SIMPLE PLUG IN NIGHT LIGHT HAVING A LOW PROFILE
Joseph E. Marischen, Austin, Tex., assignor to Austin Innovations, Inc., Austin, Tex.
Continuation of Ser. No. 270,238, Jul. 1, 1994. This application May 2, 1996, Ser. No. 641,833
Int. Cl.[6] F21V *9/00*
U.S. Cl. 362—226 **11 Claims**



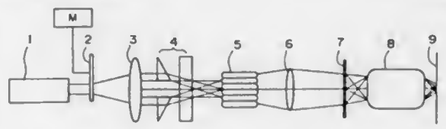
1. A night light, comprising:
a case having a front side and a rear side, the front and rear sides each having an interior and exterior face, and the front side of the case having a portion defining a window;
a lamp covering the window and secured between the interior faces of the front and rear sides of the case, the lamp having a first and second conductor for connection to an electrical supply;
a first and second blade in electrical contact with the lamp conductors, at least one of the first and second blades having a first portion that extends from the rear exterior face of the case for engaging an electrical outlet; and
wherein said at least one of the first and second blades is secured to the case first by the first blade portion being held in a slot through the rear side of the case, and second by a second blade portion extending from the first blade portion and engaging the interior face of the front side of the case, and third by a third blade portion essentially perpendicular to the first and second blade portions, the third blade portion engaging the interior face of the rear side of the case and being compressed between the front and rear sides of the case.

5,662,409
NETWORK TYPE LIGIIT SET STRUCTURE
Peter K. H. Huang, Taipei, Taiwan, assignor to Shining Blick Enterprises Co., Ltd., Taipei, Talwan
Filed May 3, 1996, Ser. No. 642,295
Int. Cl.[6] F21P *1/02*; F21V *21/00*
U.S. Cl. 362—249 **2 Claims**

1. A decorative network type light set comprising:
an AC plug,
an AC wire, and
a plurality of DC lead wires branching from an adapter, said lead wires are interwoven to form a light emitting surface, said light emitting surface includes a plurality of light bulbs equidistantly disposed thereon; wherein
a plurality of fastening elements are affixed at junctions of said lead wires to hold said lead wires in place, said fastening elements include a light bulb holder with a light bulb mounted therein, and
a plurality of securing elements secure at least one of said lead wires to a rope surrounding a periphery of said light emitting surface, thereby facilitating deployment of said network type light set.



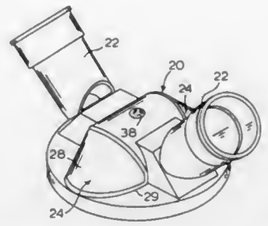
5,662,410
LIGHT EXPOSURE AND ILLUMINATING DEVICE
Hiroshi Suganuma, Ibaragi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1995, Ser. No. 504,413
Claims priority, application Japan, Jul. 21, 1994, 6-169778
Int. Cl.[6] F21V *5/04*
U.S. Cl. 362—268 **5 Claims**



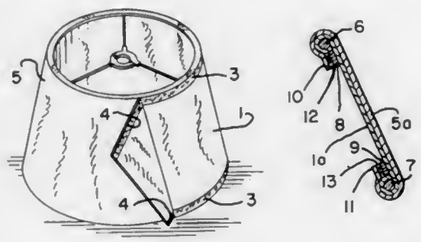
1. A light exposure and illuminating device having an illuminating optical system for conducting an outgoing light from a light source to a portion to be exposed to light, comprising:
a moving scattering medium arranged on a light path between the light source and the portion to be exposed to light, said scattering medium continuously randomly scattering a light wave front passing therethrough;
light condensing means for condensing the scattered light from the moving scattering medium; and
intensity distribution uniforming means for uniforming the intensity distribution of the light condensed by said light condensing means.

5,662,411
MOTION ACTIVATED LIGHT FIXTURE WITH FIXED SENSOR
Gary M. Haslam, Graham, and Andrew J. Parker, Chapel Hill, both of N.C., assignors to Regent Lighting Corporation, Burlington, N.C.
Filed Mar. 20, 1995, Ser. No. 406,732
Int. Cl.[6] F21S *1/02*
U.S. Cl. 362—276 **13 Claims**

1. A light fixture activated by motion, comprising:
(a) a housing having:
(i) a base suitable for mounting said housing on either a vertical or horizontal surface;
(ii) a canopy integral with said base adapted for receiving and fixedly mounting within said canopy selected motion sensor light detection components associated with said fixture and being further adapted for receiving and fixedly mounting within an aperture formed in an outer surface of said canopy at least one other selected motion sensor lens related component associated with said fixture; and
(iii) a centrally located mounting hole enabling said housing including said base and canopy to be rotatably positioned 360° around said mounting hole prior to being mounted in a selected rotated position on a selected said vertical or horizontal surface;
(b) a selected number of sockets mounted on and extending outwardly from said canopy for holding a corresponding number of illumination sources operatively associated with said fixture; and
(c) a selected number of fixedly positioned motion sensor components each comprising:
(i) a lens plate mounted within an aperture formed on an outer surface of said canopy and having a plurality of lens segments positioned thereon, said lens plate having a substantially wide angle of view up to about 180°; and
(ii) detector means located within said canopy operatively associated with said lens plate.

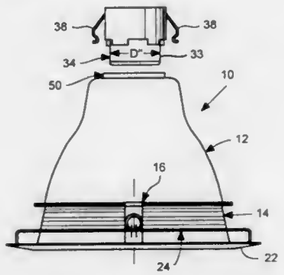


5,662,412
REMOVABLE COVER FOR A LAMP SHADE
Charlotte Glendmyer, 24 Canterbury Rd., Ringwood, N.J. 07456
Continuation-in-part of Ser. No. 398,172, Mar. 2, 1995, abandoned, which is a continuation-in-part of Ser. No. 14,468, Oct. 22, 1993, abandoned. This application Feb. 23, 1996, Ser. No. 606,448
Int. Cl.[6] F21V *11/00*
U.S. Cl. 362—351 **20 Claims**



1. A method of covering an existing lamp shade having at least a base structure covered by an outer decorative material with a removable cover having a new decor comprising the steps of
fastening a selected one of a hook portion and a loop portion of a first VELCRO strip to a first predetermined location adjacent a top of said outer decorative material;
fastening the other of said hook portion and said loop portion of said first strip to a first portion of a piece of new decorative fabric having said new decor to be used as said removable cover to enable mating said hook portion and said loop portion of said first strip to thereby removably secure said first portion of said new decorative fabric to said top of said outer decorative material
fastening a selected one of a hook portion and a loop portion of a second VELCRO strip to a second predetermined location adjacent a bottom of said outer decorative material; and
fastening the other of said hook portion and said loop portion of said second strip to a second portion of said new decorative fabric to enable mating said hook portion and said loop portion of said second strip to thereby removably secure said second portion of said new decorative fabric to said bottom of said outer decorative material to provide with said first strip and said new decorative fabric said removable cover for said outer decorative material of said existing lamp shade without removal of said outer decorative material.

5,662,413
TRIM FOR RECESSED LIGHTING FIXTURE
Steven Randall Akiyama, Park Forest, Ill., assignor to Cooper Industries, Inc., Houston, Tex.
Filed May 7, 1996, Ser. No. 646,102
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—365 **8 Claims**

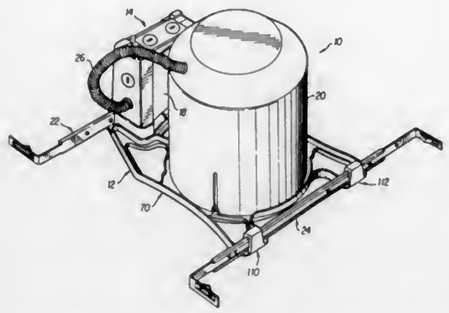


1. A trim for a recessed lighting fixture, comprising:
a trim body having a laterally outwardly extending trim ring at a lower open end of the trim body, and a top wall at an upper end of the trim body, the top wall including a circular aperture, and a pair of slots;
a lamp socket mounted in the aperture, the lamp socket including a lower cylindrical portion projecting through the aperture, and spring legs projecting through respective ones of the slots for releasably locking the socket to the top wall; and
a gasket formed of a pliable material interposed between the socket and top wall for producing an air seal therebetween.

5,662,414
THERMOPLASTIC PAN ASSEMBLY FOR MOUNTING RECESSED LIGHTING FIXTURES IN CEILINGS AND THE LIKE
Mark E. Jennings, Crawfordsville, Ind.; James P. Yates, Charleston, and Greg D. Yates, Casey, both of Ill., assignors to NSI Enterprises, Inc., Atlanta, Ga.
Filed May 3, 1996, Ser. No. 642,313
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—366 **23 Claims**

20. In a recessed lighting fixture assembly having a pan supporting a lamp housing, a junction box, electrical connections between the junction box and the housing and bar hanger assemblies for mounting of the fixture assembly to portions of a building structure, the improvement comprising:
a pan frame formed of a pan body having a floor defining a periphery of the pan body, the floor having an opening formed therein for receiving at least portions of the lamp housing;
a base formed integrally with the pan body at a first end thereof and extending above the floor, the base having perimetric walls extending from the floor, which walls join to and are integrally formed with the floor, the base having aligned slots

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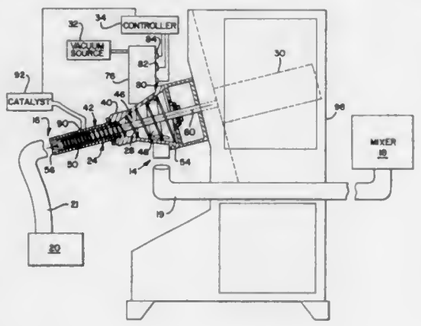


formed in oppositely disposed perimetric walls near outermost portions thereof, the slots receiving at least portions of one of the bar hanger assemblies for support of the pan at said first end of the pan body on mounting to portions of a building structure, the base mounting the junction box and supporting said junction within the periphery of the pan body to provide effective support of said junction box;

support means formed at a second end of the pan body for mounting one of the bar hanger assemblies, the support means having aligned slots formed therein for receiving at least portions of the bar hanger assembly therethrough; and,

a structural wall extending from and above the floor and about major perimetric portions of the floor, the pan frame being integrally formed of a plastic material.

5,662,415
CONVEYOR FOR DEGASSING OF MIXTURES FOR SOLID SURFACE PRODUCTS AND METHOD OF USE
Jerry A. Gisko, Darien, Ill., assignor to Gisco Technology, Willowbrook, Ill.
Filed Jan. 19, 1996, Ser. No. 588,978
Int. Cl.[6] B01F *13/06;7/08*
U.S. Cl. 366—139 **30 Claims**



1. An improved conveyer apparatus for processing a mixture of materials comprising:

a conveyer housing comprising:

an upstream section and a downstream section, wherein said upstream section has a conically shaped wall that defines a conically shaped interior passageway that is larger at an upstream end thereof;

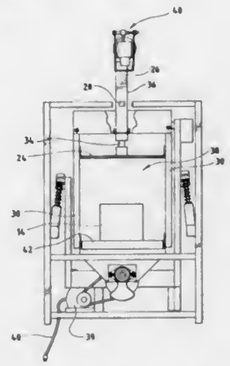
a rotatable screw located in said conveyer housing, said screw having a first section located in said upstream section of said conveyer housing and a second section located in said downstream section, wherein said first section of said screw has a conical shape corresponding to said conically shaped interior passageway;

a first inlet to said conveyer housing for providing a mixture of materials into said conveyer housing, said first inlet connected to said upstream section;

an outlet from said conveyer housing, said outlet connected to a downstream end of said downstream section; and

a vacuum source connected to said conically shaped wall of said conveyer housing to remove gases from the mixture.

5,662,416
AUTOMATIC CLAMPING APPARATUS FOR PAINT MIXERS
Edward Jefferson Dwigans, II, 2985 Little Hurricane Rd., Martinsville, Ind. 46151
Filed Apr. 30, 1996, Ser. No. 640,142
Int. Cl.[6] B01F *3/00*
U.S. Cl. 366—209 **11 Claims**



1. An automatic clamping apparatus for paint mixers which secures a paint container to the bottom plate of a shaking compartment during a shaking process, the shaking compartment defined by side frames and a top frame, comprising, in combination:

a clamping plate having an upper and lower surface and a center, said clamping plate located within said shaking compartment, said upper and lower surfaces being parallel with a horizontal plane;

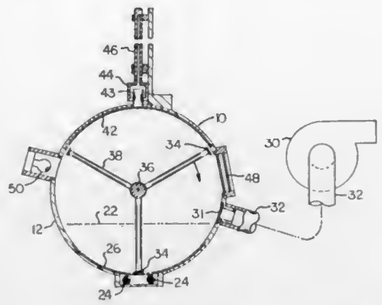
actuating means for effecting vertical movement of said clamping plate by exerting a vertical force thereon, said actuating means having a lower end and an upper end, said lower end connected to said center of said clamping plate, said actuating means fixedly secured to the shaking compartment;

sensor means for detecting a resistant force against said actuating means, said sensor means having an output corresponding to said resistant force; and

control means for adjusting said vertical force exerted by said actuating means, said control means being responsive to said output from said sensor means, wherein said control means decreases said vertical force exerted by said actuating means when said sensor means detects a predetermined amount of said resistant force on said actuating means, and said control means reverses said vertical force when the shaking process is completed, thereby causing said actuating means to retract and lift said clamping plate.

5,662,417
THERMAL STABILITY TESTING APPARATUS
Philranzo M. Tyus, 1120 Atlantic Ave., Long Beach, Calif. 90813
Filed May 15, 1995, Ser. No. 440,982
Int. Cl.[6] G01N *25/00*
U.S. Cl. 374—45 **8 Claims**

1. A thermal stability testing apparatus, comprising:



a closed test chamber having an arcuate lower surface and a roof surface;

means for introducing a test sample into the test chamber;

means for applying heat to the arcuate lower surface;

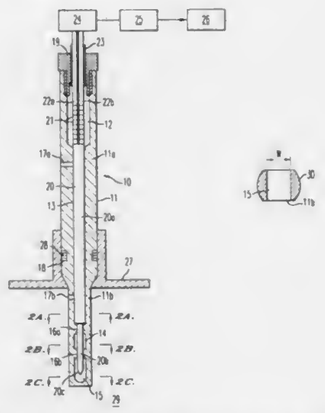
means for scraping the test chamber;

means for venting gaseous products of combustion from the closed test chamber;

a radiation-responsive means on the roof surface of said chamber; and

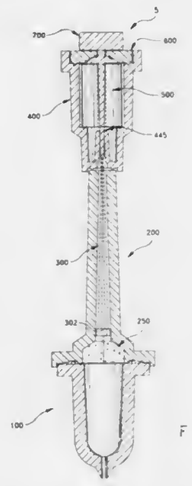
means for measuring the temperature of said radiation-responsive means.

5,662,418
HIGH TEMPERATURE PROBE
Anton F. Deak, Nussbaumen, Switzerland; Dieter Glaser, Lorsch, Germany; Caroline Marchmont, Tegerfelden, Switzerland, and Ung-Lap Ngo-Beelmann, Karlsruhe, Germany, assignors to Asea Brown Boveri AG, Baden, Switzerland
Filed Jun. 29, 1995, Ser. No. 496,412
Claims priority, application Germany, Sep. 2, 1994, 44 31 291.1
Int. Cl.[6] G01K *1/08*
U.S. Cl. 374—144 **19 Claims**



1. A high temperature probe for use in the hot gas stream of a gas turbine at temperatures of up to 1200° C., comprising a metallic probe tube having an internal drilled hole running in the direction of the tube axis of the probe tube and a measurement space arranged at the lower end, which space is separated from the internal drilled hole by a constriction and is in contact with the surroundings of the probe tube, and also at least one thermocouple which is conducted to the measurement space in an insulated manner in the internal drilled hole and through the constriction into the measurement space, wherein the measurement space is configured as a flow-through channel for the hot gases to be measured, which channel is oriented at right angles to the direction of the tube axis and runs through the probe tube with an internal width (W), and wherein the at least one thermocouple is arranged with its connection point within the flow-through channel.

5,662,419
TIME-TEMPERATURE MONITOR AND RECORDING DEVICE AND METHOD FOR USING THE SAME
David J. Lamagna, Andover, Mass., assignor to Andover Monitoring Systems, Inc., Andover, Mass.
Filed Jun. 7, 1995, Ser. No. 487,276
Int. Cl.[6] G01K *11/06*
U.S. Cl. 374—160 **20 Claims**



1. A time and temperature monitor for indicating the amount of accumulated time during which the ambient temperature adjacent to said monitor is above a predetermined temperature, said monitor comprising:

a viscous, non-Newtonian fluid wherein said viscosity of said fluid: (i) has a first value, when said viscous fluid's temperature is below said predetermined temperature, that prevents said viscous fluid from flowing under the influence of a biasing force, and (ii) has a second value, when said viscous fluid's temperature is above said predetermined temperature, that allows said viscous fluid to flow under the influence of said biasing force;

means for defining a flow path for a portion of said viscous fluid wherein said means for defining a flow path is adapted to inhibit said viscous fluid from flowing at temperatures below said predetermined temperature, and also creates a terminal end portion of said viscous fluid;

means for biasing said viscous fluid within said means for defining a flow path so as to provide said biasing force on said viscous fluid;

means for viewing said terminal end portion of said viscous fluid;

means for indicating a relative position of said terminal end portion over a plurality of time intervals, wherein said indicating means are disposed adjacent to said means for defining a flow path and further wherein said indicating means are calibrated so as to indicate the passage of time as a function of the rate of flow of said viscous fluid through said means for defining a flow path; and

means for regulating the flow of said viscous fluid, disposed in fluid communication with said means for defining a flow path, said means for regulating the flow of said viscous fluid being adapted to provide a shearing force to said viscous fluid so as to constrain the flow thereof at temperatures above said predetermined temperature.

5,662,420

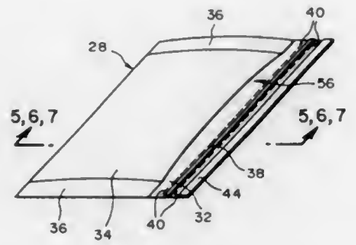
CUSHIONED MACERATED PAPER DISPATCH PACKAGE

Edmund A. Sinda, Lake George; Mark D. Varney, Queensbury, and Thomas G. Lozo, Glens Falls, all of N.Y., assignors to Astro-Valcour, Incorporated, Glens Falls, N.Y.

Continuation of Ser. No. 420,602, Apr. 12, 1995, abandoned. This application Jul. 8, 1996, Ser. No. 676,894

Int. Cl.[6] B65D *30/14;81/03*

U.S. Cl. 383—205 **9 Claims**



1. A flattened, padded envelope for dispatch packages, comprising a rectangular inner paper liner having end portions and a rectangular outer paper sheet having ends having outer portions and a rectangular layer of macerated paper positioned therebetween, said rectangular, macerated paper layer being of such a size that the edges thereof lie away from the edges of said inner paper liner and said outer paper sheet, edge portions of ends of said inner paper liner and said outer paper sheet being affixed together said inner paper liner, said outer paper sheet and said macerated layer of paper being folded so as to form said rectangular envelope having a chamber for shipping material, said envelope thereby having a front wall and a back wall and a bottom and a top, and having facing front wall and back wall, two ends of said facing front wall and said back wall having edge portions, two ends of said envelope being formed by the edge portions of the ends of said facing front wall and back wall of said envelope which are affixed together, the two ends of said envelope being shorter than the top of said envelope, the outer portions of the ends of said outer sheet, which are affixed to the end portions of said inner paper liner, not being folded over so as to contact or be affixed to any other portions of said outer paper sheet, said front wall of said envelope extending beyond said back wall of said envelope so as to form a top flap, said top flap being foldable so as to overlap the top portion of said back wall to form a top fold, the inner top edge portion of said top flap having an adhesive layer longitudinally affixed thereon, a removable strip being positioned on said adhesive layer and a tear strip being longitudinally affixed to said top fold below said adhesive layer.

5,662,421

PRINT SPEED CONTROLLED DOT LINE PRINTER DEPENDING ON PRINT DENSITY

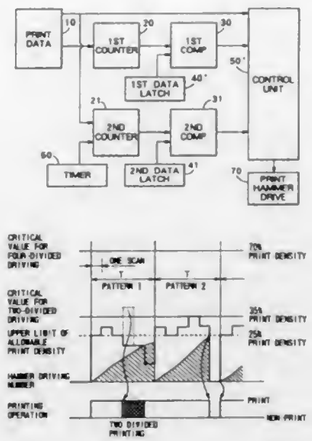
Kiyohito Hagiwara; Yoshikane Matsumoto; Shingo Nakahara, and Masami Iwama, all of Hitachinaka, Japan, assignors to Hitachi Koki Company, Ltd., Tokyo, Japan

Filed Apr. 24, 1995, Ser. No. 426,865

Claims priority, application Japan, Apr. 22, 1994, 6-084822

Int. Cl.[6] B41J *29/38*

U.S. Cl. 400—124.13 **18 Claims**



1. A printer comprising:

a hammer bank reciprocally movable between first and second extremes;

a plurality of print hammers mounted on said hammer bank, each print hammer having a dot pin for printing a dot;

first drive means for selectively driving said plurality of print hammers in accordance with print data;

second drive means for reciprocally moving said hammer bank;

first counting means for counting, based on the print data, a scheduled number of drivings at which said plurality of print hammers are to be driven during a forthcoming single scan wherein said hammer bank moves from the first extreme to the second extreme of vice versa, the scheduled number of drivings corresponding to a number of dots to be printed in one scan;

first comparison means for comparing the scheduled number of drivings counted by said first counting means with a first reference number and for outputting a print mode change instruction when the scheduled number of drivings is greater than the first reference number;

time measuring means for measuring a predetermined time duration;

second counting means for counting an actual number of drivings at which said plurality of print hammers are actually driven from a start of the predetermined time duration;

second comparison means for comparing the actual number of drivings counted by said second counting means with a second reference number and for outputting a print halt instruction when the actual number of drivings is greater than the second reference number; and

control means for controlling said first drive means to complete printing of dots in the scheduled number of drivings with a plurality of scans of said hammer bank in response to the print mode change instruction, and to halt printing of the dots until the predetermined time duration expires in response to the print halt signal,

wherein a ratio of the first reference number to a maximum number of dots that can be printed in one scan is larger than a ratio of the second reference number to a maximum number of dots that can be printed during the predetermined time duration.

5,662,422

BIFURCATED KEYBOARD ARRANGEMENT

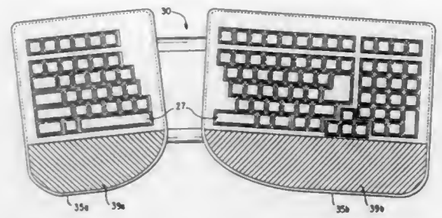
Chris Fort, 111 - 23rd Ave. North, Nashville, Tenn. 37203

Continuation-in-part of Ser. No. 87,364, Jul. 8, 1993, Pat. No. 5,393,150, which is a continuation-in-part of Ser. No. 755,563, Sep. 5, 1991, Pat. No. 5,228,791. This application Oct. 21, 1994, Ser. No. 327,671

Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—489 **13 Claims**

1. A keyboard arrangement of the type having a plurality of keys arranged in a keyboard surface, each key corresponding to a letter, number, symbol, function or other information, said keyboard arrangement being adapted for entry of information into a receiving unit, and comprising:



a first keyboard section bearing a first portion of said keys;

a second keyboard section bearing a second portion of said keys; and

a base arrangement for supporting said keyboard sections;

each of said first and second keyboard sections being supported on said base arrangement by a joint which is rotatable about three orthogonal axes, said joint having a spheroidal convex surface which is in nested engagement with a spheroidal concave surface congruent thereto, one of said convex and concave surfaces having an opening therein, and the other of said convex and concave surfaces having a member fixed thereto which projects through said opening, thereby limiting an extent of rotation of said joint;

wherein said opening has a two dimensional shape which permits rotation of said joint about three orthogonal axes, a first of which axes coincides with an axis of said member and a second and third which axes are perpendicular to the axis of said member and are substantially perpendicular to each other, and which shape is adapted to constrain movement of said joint to achieve a desired predetermined rotational range about said three orthogonal axes.

5,662,423

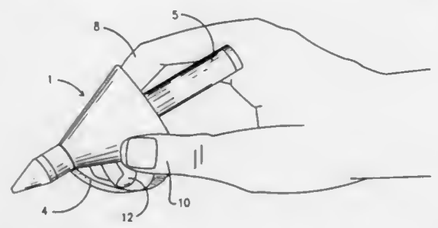
GRIPPING AID FOR WRITING IMPLEMENTS

Deltra G. Walden, 10908 Montrose Ave., Temple Terrace, Fla. 33617

Filed Jun. 25, 1996, Ser. No. 670,407

Int. Cl.[6] B43K *31/00;23/00*

U.S. Cl. 401—7 **11 Claims**



1. A writing implement gripping aid for teaching proper grip orientation, comprising:

a tapered sleeve member, having an external and an internal surface and a first open end and a second open end, wherein said tapered sleeve member is adapted to receive a writing implement there through and said second open end of said tapered sleeve member is dimensioned to retain the writing implement and second finger of a user therein; and

a strap having a first end and a second end coupled to said tapered sleeve member, wherein said first end of said strap is coupled to said tapered sleeve member at said first open end and said second end of said strap is coupled to said tapered sleeve member at said second open end thereby defining an aperture between said strap and said tapered sleeve member, said aperture dimensioned to retain the third finger of a user therein,

wherein said tapered sleeve member and said strap are oriented such that insertion of a writing instrument through the tapered sleeve member, insertion of the second finger of a user's hand into said second open end of said tapered sleeve member, placing the thumb of the user's hand upon the external surface of the gripping aid and inserting the third finger of the user's hand through said aperture defined by said strap to retain said third finger in said strap results in a proper writing grip.

5,662,424

MECHANICAL PENCIL

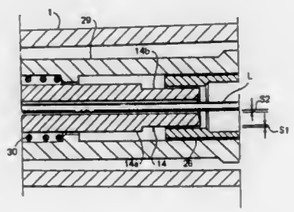
Kageyama Shuhei; Ebinuma Tadayoshi, both of Saitama-ken, Japan, and Thomas Clem, Lincoln, R.I., assignors to A.T. Cross Company, Lincoln, R.I.

Filed Jul. 28, 1995, Ser. No. 508,489

Claims priority, application Japan, Aug. 29, 1994, 6-203741

Int. Cl.[6] B43K *21/16;21/22*

U.S. Cl. 401—65 **7 Claims**



1. A mechanical pencil comprising:

a front sleeve (**1**);

a cap (**4**) rotatably and detachably mounted to a rear end of the front sleeve;

a lead advancing mechanism (**10**) contained in the front sleeve and structured so that rotation of the cap actuates the lead advancing mechanism to advance a lead (L);

a rotation cam mechanism (**23**) disposed behind the lead advancing mechanism (**10**) for actuating a lead advancing operation, said rotation cam mechanism comprising a rotation cam (**24**) for rotating in accordance with rotation of said cap (**4**), and a cam sleeve (**26**) biased (**25**) to engage said rotation cam (**24**);

an inside diameter of a front end of said cam sleeve being larger than an outside diameter of a rear end (**14***b*) of said lead advancing mechanism, said rear end of said lead advancing mechanism positioned at all times in said front end of said cam sleeve with a first clearance (**S1**) in a radial direction; and an inside diameter of said rear end (**14***b*) of said lead advancing mechanism being larger than an outside diameter of a lead (L) by a second clearance (**S2**).

5,662,425

STICK-SHAPED MATERIAL PROPELLING CONTAINER

Yoshihide Mitsuya, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 271,200, Jul. 7, 1994, abandoned, which is a division of Ser. No. 137,616, Oct. 15, 1993, abandoned. This application Aug. 6, 1996, Ser. No. 693,013

Int. Cl.[6] A45D *40/04;* **B43K** *25/00*

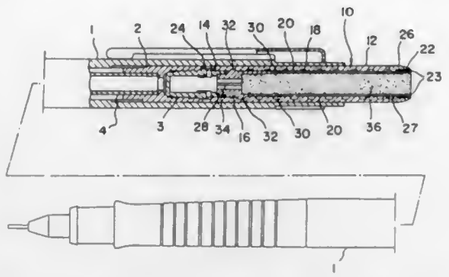
U.S. Cl. 401—68 **3 Claims**

1. A writing instrument comprising;

an outer sleeve;

a storage tank position inside said outer sleeve and having an open end;

receiving means having a forward facing socket, a rearward facing socket, a passageway communicating between said forward facing socket and said rearward facing socket, and at least one key groove;



said receiving means positioned inside said outer sleeve and engaging said open end of said storage tank at said forward facing socket thereof, whereby said passageway of said receiving means communicates with said open end of said storage tank; and

a stick-shaped material propelling container mounted in a rear portion of said outer sleeve, said stick-shaped material propelling container comprising:

a guide sleeve having lengthwise guide grooves and a closed cylindrical end including at least one key;

a stick-shaped material holder movably inserted in said guide sleeve, said stick-shaped material holder having projections engaging said lengthwise guide grooves;

a tubular body having a spiral groove on an inside surface thereof and fitted over said guide sleeve with said projections on said stick-shaped material holder engaging said spiral groove; and

retaining means for retaining said guide sleeve in said tubular body and preventing movement of said guide sleeve in an axial direction relative to said tubular body;

said stick-shaped material propelling container being inserted inside said outer sleeve with a front portion of the tubular body surrounded by the outer sleeve and with said cylindrical closed end of said guide sleeve engaging said rearward facing socket on said receiving means thereby causing said passageway, communicating with said open end of said storage tank, to be closed, with said at least one key on said closed cylindrical end of said guide sleeve engaging said at least one key groove in said receiving means so that said guide sleeve cannot rotate relative to said outer sleeve, but can rotate relative to said tubular body;

whereby said stick-shaped material is selectively extended or retracted by rotation of said guide sleeve relative to said tubular body.

5,662,426

DRIVE HUB AND SPINDLE ASSEMBLY FOR CYLINDRICAL BROOMS

Timothy A. Strickland, Raeford, N.C., assignor to Windsor Industries, Inc., Englewood, Colo.

Filed Sep. 27, 1995, Ser. No. 534,443

Int. Cl.[6] F16B *21/02*

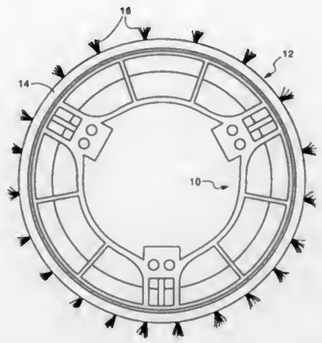
U.S. Cl. 403—348 **13 Claims**

1. A drive hub spindle assembly for use in linking a broom to a rotatable drive so as to transmit power from the drive shaft to the broom, the broom including an internal cylinder defining an opening for axially receiving the drive shaft, said drive hub-spindle assembly comprising:

a spindle adapted for mounting on the drive shaft;

an annular hub structure including an outer portion for engaging the internal cylinder of the broom and an inner surface defining an opening dimensioned for receiving said spindle; and

first, second and third lugs extending inwardly from said inner surface of said annular hub structure for engaging mating recesses of said spindle, each of said lugs bearing against one of said recesses of said spindle so that power is transmitted from said spindle to said annular hub structure via said lugs;



said first, second and third lugs being substantially equally spaced relative to a circumference of said annular hub structure, whereby said lugs facilitate engagement of said annular hub structure to the drive shaft via said spindle as well as power transmission;

wherein said spindle has a tapered end portion terminating in a first end, said first end having a first diameter less than a second diameter defined by said lugs, said tapered end portion further including a location having a third diameter substantially equal to said second diameter defined by said lugs, wherein said lugs contact said tapered end portion at said location such that said annular hub structure is substantially centered relative to said spindle.

5,662,427

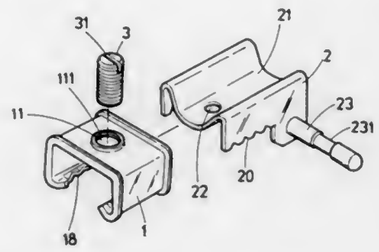
UNIVERSAL WIPER ARM CONNECTOR

Liang-Yuan Chen, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 8, 1996, Ser. No. 629,073

Int. Cl.[6] F16B *7/18*

U.S. Cl. 403—362 **1 Claim**



1. A universal wiper arm connector comprising:

a generally inverted U-shaped outer seat having a central threaded hole at a top thereof and two downwardly depending arms each having an inwardly extending toothed portion;

a generally M-shaped inner seat adapted to fit into said outer seat, said inner seat having a recessed portion with a curved bottom and two downwardly depending arms formed at a lower edge with teeth adapted to engage with the toothed portion of said outer seat, said recessed portion being formed with a hole adapted to receive a protuberance of a wiper arm; and

a locking bolt having external threads engageable with the threaded hole of said outer seat.

5,662,428

SHAFT ASSEMBLY

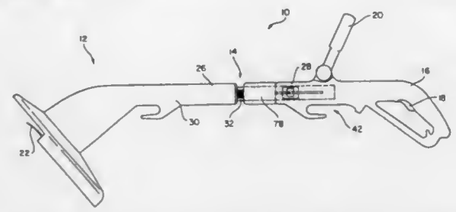
Michael Wilson, Durham, United Kingdom, assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 336,814, Nov. 9, 1994, abandoned. This application Nov. 20, 1996, Ser. No. 760,013

Claims priority, application United Kingdom, Nov. 9, 1993, 9323110

Int. Cl.[6] A01G *3/06;* **A01D** *50/00*

U.S. Cl. 403—374 **8 Claims**



1. A shaft assembly for a tool, which assembly comprises a first shaft part and a second shaft part and is adapted to be arranged between a handle and a working head of the tool wherein

the first shaft part comprises first and second mating parts and is slideable and/or rotatable within the second shaft part;

pin means is trapped within the first shaft part and is free to move between a first location in the first shaft part corresponding to maximum extension of the shaft and a second location in the first shaft part corresponding to minimum extension of the shaft, the pin means being adapted to engage with co-operating receives means in the second shaft part; and

clamp means is provided to secure the second shaft part relative to the first shaft part.

5,662,429

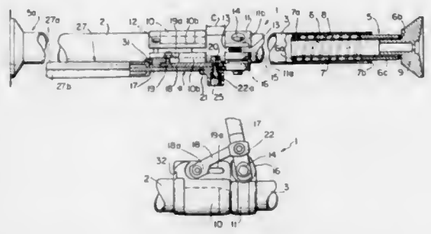
EXTENDIBLE ROD

Gilberto Battocchio, Bassano Del Grappa, Italy, assignor to Lino Manfrotto & Co., S.p.A., Bassano Del Grappa (VI), Italy

Filed May 10, 1995, Ser. No. 438,469

Int. Cl.[6] B25G *3/00*

U.S. Cl. 403—377 **8 Claims**



1. An extendible rod including at least two rod-shaped elements slidable telescopically inside each other, and an expander device acting between said elements to extend said rod and lock said rod-shaped elements in the extended position, said expander device comprising:

a first constraint member attached to one of said rod-shaped elements;

a second constraint member slidable over the other of said rod-shaped elements;

frictional clamping means for clamping said second constraint member on the corresponding rod-shaped element to prevent relative movement therebetween;

linkage means pivotally connected to said constraint members for pivotal movement in a first direction to release said clamping means to permit relative movement between said second constraint member and the corresponding rod-shaped element and pivotal movement in an opposite direction to clamp said second constraint member on the corresponding rod-shaped element and move said second constraint member away from said first constraint member; and

means for locking said linkage in a working position corresponding to a position of maximum separation of said constraint members from each other.

5,662,430

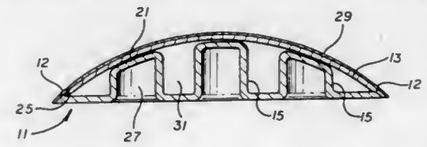
UNIVERSAL GROUND MARKER

Fang Ming Lee, 11 E. California St., Arcadia, Calif. 91006

Filed Oct. 26, 1995, Ser. No. 548,749

Int. Cl.[6] E01F *9/06*

U.S. Cl. 404—15 **30 Claims**



30. A marker comprising: first and second elements, said first element having at least a first surface with a generally curved configuration, said second element having a retaining lip arranged to confront a peripheral edge of said first element, at least one of said first and second elements having at least one projection, said first and second elements being fixedly attached to each other in a confronting relationship with said retaining lip of the second element confronting the peripheral edge of the first element and with said at least one projection confronting an interior surface of the other of said first and second elements thereby providing structural support in the event of deformation of said first surface.

5,662,431

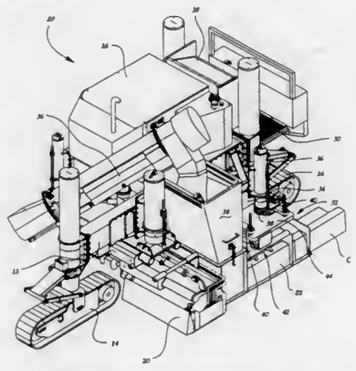
SELF-PROPELLED SLIP-FORM PAVING APPARATUS

John C. Colvard, Wilkesboro, N.C., assignor to Power Curbers, Inc., Salisbury, N.C.

Filed Oct. 27, 1995, Ser. No. 549,564

Int. Cl.[6] E01C *19/12;11/22*

U.S. Cl. 404—105 **7 Claims**



1. A self-propelled construction apparatus for continuously slip-forming a flowable paving material into a predetermined cross-sectional shape along a ground surface, the apparatus comprising a frame, means for propulsion of the frame over the ground surface,. means mounted to the frame for continuously depositing the paving material onto the ground surface during propulsion of the

frame thereover, a mold configured for slip-forming the deposited paving material in the predetermined cross-sectional shape, and means for selectively mounting and demounting the mold to and from the frame to receive the paving material from the depositing means, the mounting and demounting means comprising a support member fixed to the mold or the frame and a latching member movably attached to the other of the mold or the frame for selective movement between an unlatched position out of engagement with the support member for permitting mounting and demounting of the mold to and from the frame and a latched position engaging the support member to secure the mold to the frame and relative to the depositing means.

5,662,432

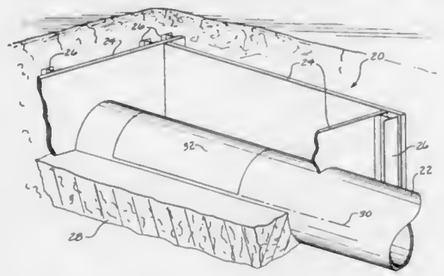
PIPE INSERTION MACHINE AND METHOD

H. Scott Colter, Austin, Tex., assignor to Cook Construction Company, Inc., Albuquerque, N. Mex.

Filed Mar. 27, 1995, Ser. No. 411,571

Int. Cl.[6] E02F *5/10;* **E03F** *3/06;* **F16L** *1/00*

U.S. Cl. 405—184 **20 Claims**



1. A pipe insertion machine for pushing new pipe sections into an existing pipeline, the pipe insertion machine comprising:

(a) a support structure; and

(b) translating components including:

(i) a winch supported by the structure, the winch having a winch drum;

(ii) translating lines in rotational communication with the winch, each translating line having first and second ends attached to the winch drum in opposite angular directions, each translating line forming a loop;

(iii) a pushing mechanism having a pushing head engagable with an end of the new pipe section, the pushing mechanism being attached to the translating lines; and

(iv) one or more guides for guiding the loops formed by the two or more translating lines;

whereby rotation of the winch dram causes translation of the translating lines in a first direction, further causing the simultaneous wrapping and unwrapping of the translating lines at the winch drum and the translation of the pipe pushing mechanism and insertion of the new pipe section into the pipeline in the first direction.

5,662,433

BODY CONFORMING VEST, BUOYANCY COMPENSATOR, AND BACKPACK

Scott P. Seligman, Carlsbad, Calif., assignor to Sea Quest, Inc., Carlsbad, Calif.

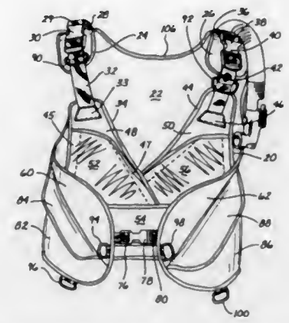
Filed Oct. 17, 1995, Ser. No. 544,020

Int. Cl.[6] B63C *11/08;11/02*

U.S. Cl. 405—186 **15 Claims**

1. A combination spider and buoyancy compensator comprising:

a spider comprising two shoulder portions, two chest portions and a back portion extending from said two shoulder portions,



and two waistband portions which extend from said back portion for fastening around a diver's waist;

said two chest portions each comprise a substantially triangular framework of fabric having a top formed with downwardly extending legs and a bottom, each framework defining a substantially triangular opening adapted to surround one breast of a diver;

said top of said triangular framework is attached to said two shoulder portions and said bottom is attached to said two waistband portions;

stretchable material disposed within said framework;

a backpack attached to said back portion of said spider for holding a cylinder of pressurized breathing gas; and,

a buoyancy compensator disposed at least partially around said backpack and at least partially secured to said spider.

5,662,434

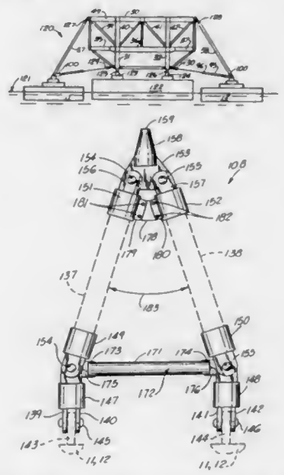
METHOD AND APPARATUS FOR THE OFFSHORE INSTALLATION OF MULTI-TON PREFABRICATED DECK PACKAGES ON PARTIALLY SUBMERGED OFFSHORE JACKET FOUNDATIONS

Jon E. Khachaturian, 5827 Rhodes Ave., New Orleans, La. 70131

Continuation-in-part of Ser. No. 501,717, Jul. 12, 1995, which is a continuation-in-part of Ser. No. 404,421, Mar. 15, 1995. This application Mar. 14, 1996, Ser. No. 615,838

Int. Cl.[6] E02B *17/00*

U.S. Cl. 405—204 **17 Claims**



1. A lifting apparatus for placing a multi-ton deck package on an offshore jacket or partially submerged foundation, comprising:

a) a pair of barges, each defining a base that can support a large multi-ton load;

b) truss means supported by the barges about the periphery of the deck package for forming a load transfer between the barges and the deck package to be placed, said truss means including a plurality of diagonally extending lift booms, each lift boom having a lower end attached to a barge and an upper end which enables attachment to the deck package;

c) each boom comprising:

i) a pair of longitudinally extending members;

ii) a plurality of end caps that each removably connect to at least one longitudinally extending lift boom;

iii) the end caps forming part of the connection between the deck package and a barge;

d) upper and lower connection means for forming attachments of the truss means to the deck package at upper and lower respective elevational positions;

e) said upper and lower connection means including corresponding connecting portions that enable the barges and package to quick disconnect, one of said corresponding quick connecting portions including the upper end portion of the lifting boom, said other quick connecting portion being positioned at said upper elevational position; and

f) means for lowering the combination of the truss means and the supported deck package with respect to the jacket or partially submerged foundation during placement of the deck package on the jacket or partially submerged foundation.

5,662,435

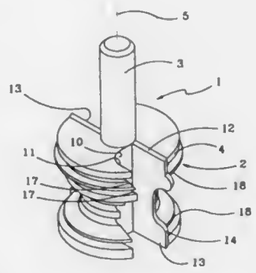
CUTTER BIT

Michael M. Sherman, Lockport, N.Y., assignor to Oldham Saw Co., Inc., Burt, N.Y.

Filed Aug. 14, 1995, Ser. No. 514,770

Int. Cl.[6] B23C *5/12*

U.S. Cl. 407—31 **18 Claims**



1. A rotary cutter bit for imparting a profile to a workpiece comprising:

a body formed with an axial length;

at least one cutting knife formed with a continuous profile edge carried by the body;

a shank integrally formed with the body adapted for mounting the cutter bit to a motor;

a plurality of arcuate ribs integrally formed with the body and extending at least partially around the body and terminating at the cutting knife whereby the at least one cutting knife is attached to each of the plurality of arcuate ribs; and

a plurality of recesses formed in, and extending circumferentially around the body and located intermediate the ribs.

5,662,436

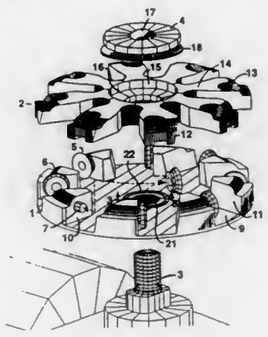
ROTATING TOOL STAR SHAPED HOLDING MEMBER INTERFITTED TO INSERT MOUNTING DISK

Todd N. Bishop, P.O. Box 6170, Bellingham, Wash. 98226, assignor to Todd N. Bishop, Bellingham, Wash.

Continuation-in-part of Ser. No. 225,958, Apr. 8, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 558,249

Int. Cl.[6] B23C *5/06;5/22*

U.S. Cl. 407—35 **44 Claims**



1. A rotary tool adopted to hold at least one cutting insert or plunge limiter, said tool having an axis of rotation comprising: a first generally disk shaped member having a plurality of axially projecting rim segments forming a plurality of cutting insert pockets that are generally radially oriented, each pocket comprising a leading and trailing surface oriented at an angle to said plane normal to the axis and extending generally axially to said plane, said member having an outer rim and first and second faces;

a second member having an outer diameter substantially equal to an outer diameter of said first disk shaped member and having a plurality of radially extending protrusions, each protrusion having two surfaces that correspond dimensionally to the cutting insert pockets, one surface engaging surface of a cutting insert pocket and the other surface sized to engage a cutting insert or plunge limiter mounted in a pocket of the first member when said cutting insert or plunge limiter is mounted in said pocket wherein when said first and second disk shaped members are assembled and interfitted with one another, the second disk shaped member will block or wedge cutting inserts or plunge limiters mounted in the cutting insert pockets into place while allowing a portion of the cutting insert to project above at least one face of the tool or beyond said outer rim.

5,662,437

Patent Not Issued For This Number

5,662,438

METHOD FOR PRODUCING CONTINUOUS CORRECTIONS IN HYPOID GEARS

Dieter Wiener, Ettlingen, and Hartmuth Müller, Karlsruhe, both of Germany, assignors to Klingelnberg Sohne, Remscheid, Germany

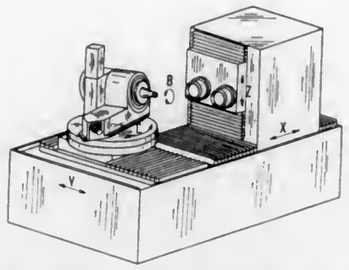
Filed Dec. 6, 1995, Ser. No. 569,912

Claims priority, application Germany, Dec. 7, 1994, 44 43 513.4

Int. Cl.[6] B23F *9/10*

U.S. Cl. 409—26 **2 Claims**

1. A method for producing continuous tooth flank corrections on hypoid bevel gears, with teeth of the hypoid bevel gears being machined on concave and convex flanks in a single operation by



one of plunge grinding or plunge milling using a CNC-controlled bevel gear cutting machine, comprising:

changing a machine base angle (δ) defined by an intersection of a face of a cutting surface and a normal to a tooth being cut, removing by plunge grinding or plunge milling material from inner and outer gear tooth ends at a toe and/or a heel thereof, controlling a depth of the plunge grinding or plunge milling over one axis of the machine in such fashion so that when the machine base angle (δ) is reduced at the outer gear tooth end at the heel one of camber change or change of twists or a positioned correction of the heel is produced and so that when the machine base angle (δ) is increased at the inner tooth end at the toe one of camber change or a change of twists or a positioned correction of the toe is produced, the controlling being produced by entering a corresponding number of correction positions in the CNC controlled machine and interpolating therebetween to produce a continuous machine adjustment to make one of the corrections, camber change or a change of twists on tooth flanks by superimposition of the correction positions of the toe and the heel of the inner and the outer gear tooth ends with the correction positions being made with the plunge grinding or the plunge milling.

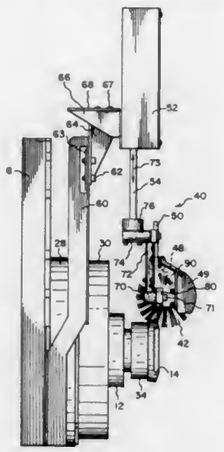
5,662,439

COMPOUND APPLICATION APPARATUS AND METHOD FOR GEAR TESTING MACHINE

John L. Reese, Farmington, and Kim R. Hancock, Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Jun. 26, 1996, Ser. No. 670,922
Int. Cl.[6] B23Q *17/20*
U.S. Cl. 409—61 **19 Claims**

1. An apparatus for applying marking compound to the tooth



surfaces of a gear or pinion member, said apparatus comprising:

a brush having a central shaft and a plurality of bristles emanating from said shaft, said brush being rotatable about an axis of rotation coincident with said shaft,

a marking compound manifold adjacent said brush, said manifold having an inlet in a first side thereof, an inner distribution chamber communicating with said inlet, and a plurality of outlets in a second side of said manifold communicating with said inner chamber, said outlets facing said bristles,

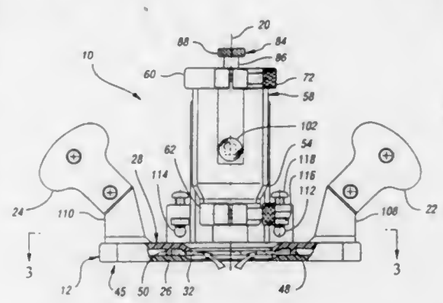
wherein said brush is rotated by engaging said bristles with the tooth surfaces of said gear or pinion member and rotating said engaged gear or pinion member about its respective axis.

5,662,440

ROUTER ATTACHMENT

Naoki Kikuchi, Chandler; Kenneth M. Brazell, Phoenix, both of Ariz., and Shumi Akazawa, Fuchu, Japan, assignors to Ryobi North America, Easley, S.C.

Filed Aug. 8, 1996, Ser. No. 689,332
Int. Cl.[6] B23C *1/20*; B23B *45/00*
U.S. Cl. 409—182 **10 Claims**



1. A router attachment for use with a small hand-held rotary cutting tool enabling an operator to use the rotary cutting tool as a miniature router, the router attachment comprising:

a base having a planar lower surface for engaging a workpiece, a central aperture extending through the planar lower surface, an upright column forming a U-shaped guideway oriented perpendicular to the planar lower surface, and a handle for an operator;

a tool holder having a clamp for removably attaching a rotary cutting tool having a tool chuck rotatable about a central axis, and a slide comprising a rib parallel to the central axis cooperating with the guideway for orienting the central axis of the rotary cutting tool perpendicular to the planar lower surface of the base;

a height adjustment mechanism for moving the tool holder axially relative to the base, including an adjustment screw for rotation by the operator, a threaded member affixed to one of the tool holder and base cooperating with the adjustment screw and an engagement member affixed to the other one of the tool holder and base for cooperation with the adjustment screw so that the rotation of the adjustment screw by the operator causes the tool holder to move axially relative to the base; and

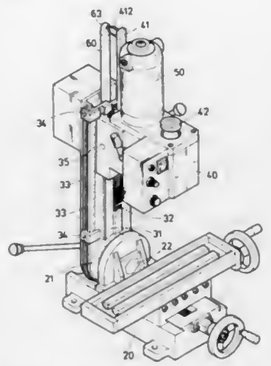
a lock mechanism for releasably affixing the tool holder to the column of the base to maintain the position of the rotary cutting tool relative to the planar lower surface of the base when the rotary cutting tool is in use and permitting the tool holder to be released relative to the column so that the operator can adjust the position of the rotary cutting tool utilizing the height adjustment mechanism.

5,662,441

SMALL SCALE MILLING MACHINE

Ching Chih Wang, P.O. Box 82-144, Talpei, Taiwan

Filed Jun. 5, 1995, Ser. No. 465,009
Int. Cl.[6] B23C *1/12*
U.S. Cl. 409—185 **2 Claims**



1. A small scale milling machine of the type comprising a machine base having an upright rotary wheel, a rotary column sleeve fixedly secured to said rotary wheel, a machine head mounted on said rotary column sleeve and moved vertically along a longitudinal track on said rotary column sleeve, and a driving motor mounted on said machine head and controlled to turn a cutting metal-working tool against the workpiece, wherein: said rotary column sleeve comprises a longitudinal dovetail tongue at a front side thereof engaged with a longitudinal dovetail groove on said machine head, a unitary longitudinal rack raised from said longitudinal dovetail tongue and engaged with the inside of the longitudinal dovetail groove of said machine head, a longitudinal track at one lateral side of said rotary column sleeve, two stop blocks fixed to said longitudinal track at different elevations to limit the vertical moving distance of said machine head, a scale on the front side along said longitudinal track for measuring the distance between said stop blocks, a transverse through hole near a circularly curved bottom end of said rotary column sleeve and fixed to said upright rotary wheel of said machine base by a screw bolt; and said machine head is suspended from a vertical mounting frame being fixedly secured to a retractable support on said rotary column sleeve, said retractable support having a fixed bottom end inserted into said rotary column sleeve and fixedly secured to the inside of said rotary column sleeve and a movable top end fixedly connected to said vertical mounting frame, said vertical mounting frame having a top end fixedly secured to the movable top end of said retractable support and a bottom end terminating in a transverse bottom plate fixedly secured to the topmost side of said machine head by screws.

5,662,442

TOOL CLAMPING MECHANISM

Yukio Taki, Kounan, and Hiroyuki Suzuki, Niwa-gun, both of Japan, assignors to Okuma Corporation, Nagoya, Japan

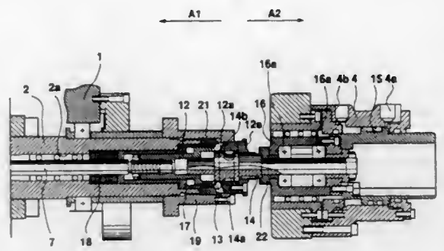
Filed Apr. 3, 1996, Ser. No. 627,073
Claims priority, application Japan, Apr. 14, 1995, 7-113984
Int. Cl.[6] B23Q *3/12*
U.S. Cl. 409—233 **4 Claims**

1. A tool clamping mechanism for clamping a tool by drawing a pull stud of the tool via a front end of a spindle, comprising:

(a) a first draw bar including a collet for holding the tool and being axially movable in the spindle;

(b) a first spring for urging the first draw bar in a direction for pulling the tool;

(c) a first sleeve which is fixed at a first end of the first draw bar, extends at an opposite end from a rear end of the spindle, and, on an outer surface, has at least two through-holes extending toward an axis center;



(d) a plurality of rolling members movable in the through-holes;

(e) a second draw bar fitted into the first sleeve, being axially movable therein and having a groove on an outer surface into which the rolling members fall when the second draw bar moves forward;

(f) a second sleeve being axially movable on the outer surface of the first sleeve, the second sleeve having one end portion which is tapered toward the front end of the spindle and with which the rolling members come into contact;

(g) a second spring in contact with the second sleeve, the second spring urging the second sleeve in the direction for pulling the tool;

(h) a third sleeve surrounding the outer surface of the spindle, and being capable of coming into contact with the second sleeve; and

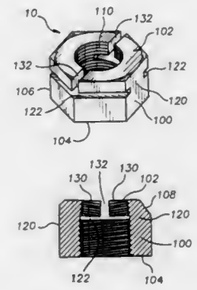
(i) an actuator for axially moving the second draw bar in the direction for pulling the tool, the actuator causing the rolling members to be thrusted out of the outer groove of the second draw bar, and the tool to be clamped by transmitting an urging force of the second spring to the first sleeve via the rolling members, and when the second draw bar is moved in a direction opposite to the direction for pulling the tool, the actuator causing the rolling members to be put into the groove of the second draw bar, a flange of the third sleeve to be contacted with the second sleeve, the transmission of the urging force of the second spring to the first sleeve to be interrupted, and a force for clamping the tool to be reduced.

5,662,443

PREVAILING TORQUE NUT

Roman J. Dziaba, Buffalo Grove, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 8, 1996, Ser. No. 628,923
Int. Cl.[6] F16B *39/28*
U.S. Cl. 411—291 **6 Claims**



1. An article engagable and retainable about a threaded shaft, the article comprising:

a body member having a threaded bore with a bore axis for receiving the threaded shaft;

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a plurality of resilient posts extending along the body member, each resilient post inclined inwardly toward the bore axis to provide a prevailing torque on a threaded shaft disposed in the threaded bore;

a pair of resilient arms with end portions extending from substantially opposing sides of each resilient post, each resilient arm of the pair of resilient arms extending from a substantially opposing side of the corresponding resilient post, each resilient arm inclined toward the body member to provide a prevailing torque on a threaded shaft disposed in the threaded bore,

wherein the resilient posts and resilient arms contribute to retention of the body member about the threaded shaft, the body member having a relatively low first installation torque when receiving the threaded shaft in the threaded bore of the body member, and a relatively consistent torque performance with reduced statistical spread over several installation and removal cycles of the threaded shaft in the threaded bore of the body member.

5,662,444

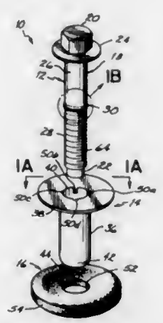
FASTENER ASSEMBLY WITH AXIALLY CAPTIVATED WASHER

Rudolph Schmidt, Jr., Nicholasville, Ky., assignor to Crest Products, Inc., Lexington, Ky.

Continuation-in-part of Ser. No. 254,644, Jun. 8, 1994, Pat. No. 5,489,177. This application Sep. 12, 1995, Ser. No. 526,946

Int. Cl.[6] F16B *21/18;33/00*

U.S. Cl. 411—369 **7 Claims**



1. A fastener assembly adapted to be preassembled, comprising:

an elongated screw having a shank portion, said shank portion including a driving head at one end and an entering tip at an opposite end thereof, said shank portion further including an unthreaded portion of predetermined axial length and diameter extending below said driving head, a threaded portion of predetermined axial length and diameter extending between said tip and said unthreaded portion, and a radially outwardly extending shoulder disposed intermediate said threaded and unthreaded portions, said shoulder having a diameter greater than the diameters of said threaded and unthreaded portions;

a washer having an elongated cylindrical sleeve of predetermined length along an axis and an inner diameter, said sleeve having two ends, a first radially outwardly directed flange of predetermined outer diameter extending outwardly from one end of said sleeve, and at least two inwardly extending detents disposed within said sleeve proximate and below said one end, said detents having inwardly facing surfaces elongated and flattened in the direction of extension of said axis, defining a detent diameter less than said inner diameter, said threaded and unthreaded portions of said screw each having a diameter less than said detent diameter, and said shoulder having a diameter greater than said detent diameter and less than said inner diameter, whereby said detents yieldably engage said shoulder when said screw is forcibly inserted into said washer such that said washer is axially captivated by said screw along said shank portion between said driving head and said shoulder, and

wherein said inwardly facing surface of said detents further includes a radiussed portion leading into said elongated and flattened surfaces.

5,662,445

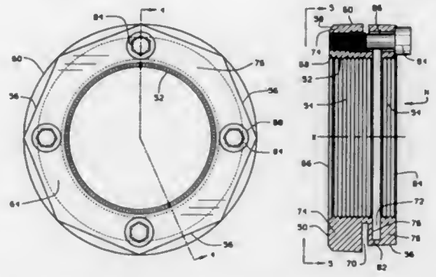
LOCKING NUT

William E. Harbottle, North Canton, and Mark A. Joki, Dover, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Mar. 6, 1996, Ser. No. 611,721

Int. Cl.[6] F16B *29/00*

U.S. Cl. 411—433 **19 Claims**



1. A locking nut comprising: a body having first and second axially directed surfaces surrounding an axis, with one of the surfaces being presented inwardly toward the axis and forming a through bore in the body and the other being presented outwardly away from the axis, the body also having a back face extending generally between the first and second axially directed surfaces at one end of the body and a front face extending generally between the first and second axially directed surfaces at the other end of the body, the back face being machined to a prescribed angle with respect to the axis, the body further having a first groove that opens out of its first axially directed surface and a second groove that opens out of its second axially directed surface, with the grooves dividing the body into a clamping section that lies generally between the back face and the second groove, a locking section that lies between the front face and the first groove, and a web that lies generally between the grooves, the web having the capacity to flex so that the locking section may move axially toward the clamping section upon the application of sufficient force, the first axially directed surface having a thread along it on both sides of the first groove without any variation in the pitch of the thread across the first groove, there being a greater length of thread on the side at which the clamping section lies than on the side at which the locking section lies, the second axially directed surface providing a gripping area between the second groove and the front face; and screws which extend axially between and located within the locking section and the clamping section, driving the locking section toward the clamping section, whereby the web will flex to accommodate the displacement and the initial uniform pitch between the portion of the thread on the clamping section and the portion on the locking section will be disrupted.

5,662,446

EASY LOCK SAFETY SPRING COTTER PIN

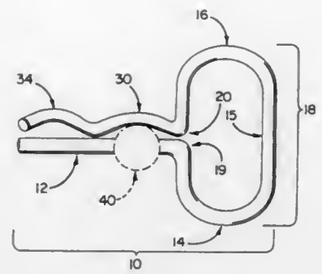
Louis R. Haan, 3747 W. Rte. 64, Mt. Morris, Ill. 61054

Filed Apr. 26, 1995, Ser. No. 429,516

Int. Cl.[6] F16B *21/14;21/18*

U.S. Cl. 411—514 **8 Claims**

1. A spring cotter pin comprising a body formed of a single length of spring steel stock, bent to provide a substantially



U-shaped pin with a handle portion at one end and two legs extending from the handle portion, one of said legs being straight and constituting a lock pin, adapted to be inserted through an aperture formed in a structural element, and the other said leg having plural outwardly bowed sections which assist in retaining the lock pin in the aperture.

5,662,447

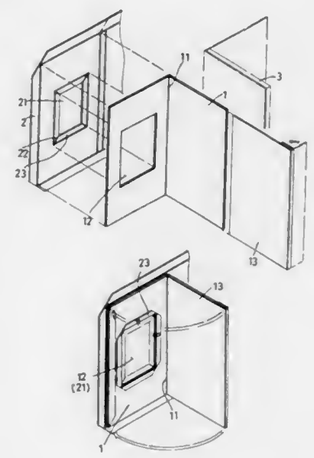
FRONTCOVER MOUNTABLE WITH A PHOTOGRAPH FOR BOOKS AND ITS MANUFACTURING METHOD

B. H. Tsai, Tainan, Taiwan, assignor to Jiun Wey Industrial Co., Ltd., Tainan, Taiwan

Filed Aug. 25, 1995, Ser. No. 519,348

Int. Cl.[6] B42D *3/08*

U.S. Cl. 412—1 **1 Claim**



1. A frontcover mountable with a photograph for books and its manufacturing method, said frontcover being made to have an opening for a photograph to expose out thereof after inserted through an entrance of an unadhered side of the frontcover adhered with a cover paper according to eight steps of the manufacturing method comprising:

a first step: cutting incompletely a center vertical line on a hard board cut properly so as to permit said hard board folded with a first half on a second half at said center vertical line to form a slight gap between said two halves folded on each other;

a second step: cutting out an opening in said first half of said hard board, said opening located at a proper place of said first half;

a third step: adhering a beautiful background paper on an inner side of said second half;

a fourth step: cutting out an opening in a cover paper to be adhered on an outer side of said first half, said opening being a little smaller than that of said opening of said first half of said hard board but corresponding to the shape of said opening of said first half;

a fifth step: cutting plural short cuts at four corners of said opening of said cover paper to form plural foldable portions;

a sixth step: placing said cover paper on the outer side of said first half of said hard board and folding said foldable portions over edges of said opening of said first half onto the inner side of said first half;

a seventh step: adhering inner sides of said folded portions on said inner side of said first half of said hard board; and

an eighth step: adhering an inner side of said cover paper on the outer side of said first half of said hard board, leaving an unadhered side with an entrance for inserting a photograph therethrough to be exposed out of said opening of said first half of said hard board.

5,662,448

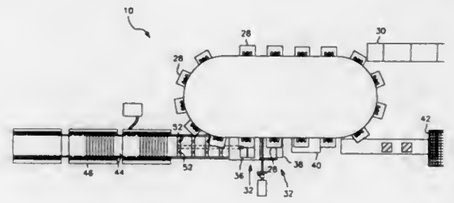
METHOD AND APPARATUS FOR REGISTERING A COVER WITH A BOOK BLOCK

William T. Graushar, Wauwatosa, and Calvin Lee Wade, Waukesha, both of Wis., assignors to Quad/Tech, Inc., Sussex, Wis.

Filed Sep. 11, 1995, Ser. No. 526,752

Int. Cl.[6] B42C *11/02*

U.S. Cl. 412—4 **17 Claims**



1. An apparatus for registering a cover with a book block, comprising:

a book block holder;

a cover feeder;

a lateral positioning device for laterally positioning a cover fed from said cover feeder;

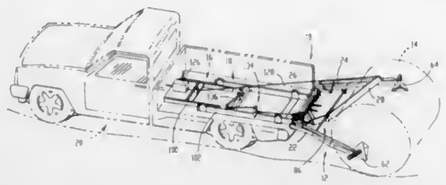
a cover position sensor positioned to detect a lateral position of the cover;

a control mechanism operatively interconnected with said cover position sensor, said control mechanism including a comparator that compares a measured lateral position to a predetermined value; and

adjusting means for adjusting a relative lateral position between said lateral positioning device and said book block holder.

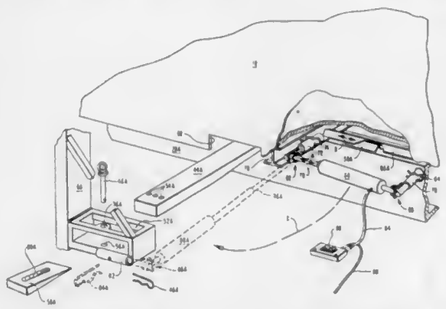
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5,662,449
LIFTING DEVICE FOR BIG ROUND BALES
Robert E. Krinhop, 3334 Camp Rd., Manchester, Kans. 67410
Filed Dec. 26, 1995, Ser. No. 578,331
Int. Cl.[6] A01D *87/12*
U.S. Cl. 414—24.5 **11 Claims**



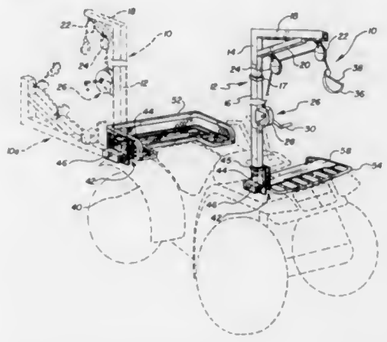
3. A handling device for handling bales of material comprising:
a lifting arm assembly including;
an axle rotatable about an axis,
a pair of spaced apart lifting arms,
lifting arm coupling means for coupling said lifting arms with said axle for rotation therewith between lowered and raised positions, said lifting arm coupling means further including means for allowing shifting of said lifting arms between spread and drawn positions;
selectively actuatable motive means for rotating said axle about said axis; and mounting means for mounting said lifting arm assembly on a vehicle, said mounting means including axle displacement means for allowing shifting of said axle in a direction generally transverse to said axis between an extended position and a retracted position after shifting said lifting arms to said raised position.

5,662,450
SECTIONAL VAN TRAILER HAVING DETACHABLE AND INTERCHANGEABLE COMPARTMENTS FOR TRANSPORTING BOTH HOUSEHOLD BELONGINGS AND COMMERCIAL FREIGHT
Hardy G. Roberts, Orem, Utah, assignor to Transwest Management, Orem, Utah
Continuation of Ser. No. 301,138, Sep. 6, 1994, abandoned, which is a continuation of Ser. No. 219,032, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 62,147, May 13, 1993, Pat. No. 5,326,213, which is a division of Ser. No. 948,333, Sep. 18, 1992, abandoned, which is a division of Ser. No. 708,893, May 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 460,655, Jan. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 296,575, Jan. 12, 1989, abandoned. This application Apr. 15, 1996, Ser. No. 632,768
Int. Cl.[6] B65G *67/02*
U.S. Cl. 414—347 **10 Claims**



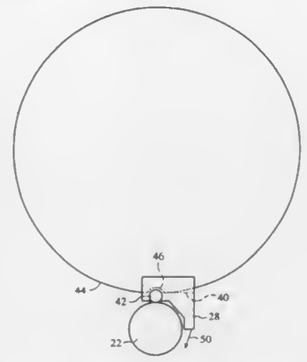
1. A system for transporting goods by way of a semitrailer pulled by a tractor, the system comprising:
a trailer frame having a longer longitudinal dimension and a shorter latitudinal dimension;
at least one pair of wheels mounted adjacent a first end of the trailer frame;
a plurality of van sections, each of the compartments being individually securable to form a weather-tight barrier between the interior and the exterior of the compartment;
means for individually securing the plurality of the van sections to the trailer frame such that the van sections may be removed and interchanged among a plurality of trailer frames;
means for interconnecting adjacent van sections together such that a plurality of van sections may be joined to form a continuous van body;
means for mounting a hydraulic ram on the trailer frame; and
means for receiving the hydraulic ram on the van section such that the van section is moved on the trailer frame as the hydraulic ram is operated.

5,662,451
GAME HOIST
Vincent Muzzi, Shaw, and Joe Muzzi, Jr., Greenville, both of Miss., assignors to Pa-Paw's, LLC, Greenville, Miss.
Filed Jun. 18, 1996, Ser. No. 665,382
Int. Cl.[6] B60P *1/00*
U.S. Cl. 414—540 **7 Claims**



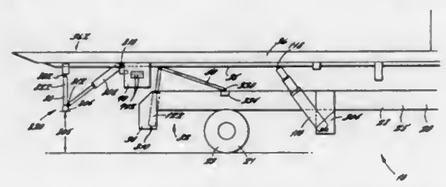
1. A hoist for lifting an animal carcass, said hoist being attachable to an all terrain vehicle, said hoist comprising:
a vertical support shaft having a first end and a second end;
a horizontal boom having a first end and a second end, said horizontal boom having said first end fixed to said first end of said vertical support shaft;
a pulley provided at said second end of said horizontal boom;
a winch attached to said vertical support shaft;
a cable wound around said winch and routed around said pulley for allowing the carcass to be suspended below said second end of said horizontal boom; and
a base attachable to the all terrain vehicle, said base having a vertical hollow shaft section and a horizontal hollow shaft section, each said section selectively receiving said second end of said vertical support shaft, said vertical hollow shaft section for deploying said hoist and said horizontal hollow shaft section for storing said hoist, each said section having a substantially similar cross-section.

5,662,452
APPARATUS AND METHOD OF ALIGNING NOTCHES USING A FREE-FLOATING ROD
Quincy D. Allison, Boulder Creek, Calif., assignor to H-Square Corporation, Sunnyvale, Calif.
Filed Aug. 26, 1996, Ser. No. 703,129
Int. Cl.[6] B65G *47/24*
U.S. Cl. 414—757 **15 Claims**



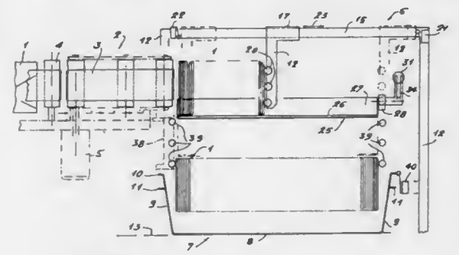
1. An apparatus for aligning a plurality of disk-shaped members having indexing notches comprising:
support means for supporting said disk-shaped members;
a free-floating alignment rod positioned relative to said support means to contact edges of said disk-shaped members;
a drive roller on a side of said free-floating alignment rod opposite to said support means;
reciprocating means for securing said free-floating alignment rod into contact with said drive roller and for supporting said disk-shaped members when said indexing notches are aligned along said free-floating alignment rod;
means for rotating said drive roller, said rotation being translated to said free-floating alignment rod; and
means for selectively displacing said reciprocating means and said free-floating alignment rod to allow said disk-shaped members to rest on said drive roller, said reciprocating means thereby having a first position for a notch-aligning operation and having a second position in which said disk-shaped members are rested on said drive roller.

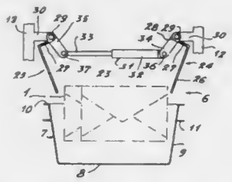
5,662,453
TRUCK BED LIFT SYSTEM AND METHOD
Steven R. Gerstner, and Donald D. Roberts, both of 715 Orange St., Auburndale, Fla. 33823
Filed Mar. 28, 1995, Ser. No. 412,192
Int. Cl.[6] B60P *1/04*
U.S. Cl. 414—786 **6 Claims**



1. A method for transferring an object between a loading platform and a truck having a bed, the truck bed supported in spaced relation above a frame of the truck, wherein the truck frame and the platform are noncoplanar, the method comprising the steps of:
sliding the truck bed rearward until a rear end of the truck bed is in vertical alignment with the loading platform;
elevating a forward end of the truck bed with forward lifting means to the height of the loading platform;
elevating a rear end of the truck bed relative to the truck frame with rear lifting means to the height of the loading platform, wherein the rear lifting means comprises:
a left and a right rear hydraulic lift member affixed, respectively, to a left and a right truck frame rail; and
a lift support member, comprising a support frame comprising:
a left brace member having a forward end and a rear end, the forward end pivotally affixed to the left truck frame rail;
a right brace member having a forward end and a rear end, the forward end pivotally affixed to the right truck frame rail; and
a rear cross brace member affixed at a left end adjacent the rear end of the left brace member and at a right end adjacent the rear end of the right brace member, the rear cross brace member liftable by the left and the right rear hydraulic lift members;
sliding the truck bed further rearward until it overlaps the loading platform; and
transferring the object between the loading platform and the truck.

5,662,454
DEVICE FOR AUTOMATICALLY FILLING A CONTAINER FOR COLLECTING FLAT OBJECTS
Laurent Baufreton, Nantes; Henri Barjolle, Haute Goulaine, and Didier Thieriot, Nantes, all of France, assignors to La Poste, Paris, France
Filed Aug. 21, 1995, Ser. No. 517,403
Claims priority, application France, Jun. 20, 1994, 94-07536
Int. Cl.[6] B65H *31/06*
U.S. Cl. 414—798.2 **12 Claims**





1. A device for automatically filling a container for collecting flat objects comprising:
a receiving location where envelopes are received, one-by-one and stood up on their edge, from a conveyor with driving belts pinching the envelopes between them until they are released into the location in order to form a stack,
the receiving location including at least two opposite parallel jogging edges extending perpendicularly to the planes of the successive envelopes in the stack formed between the edges, and a horizontal bearing sole,
the first envelope in the stack being pressed against a moving stop which moves in a horizontal direction as the stack is formed,

wherein the bearing sole comprises two retractable flaps placed in the same horizontal plane in order to support the stack of envelopes,

wherein the flaps are mounted so that they can pivot about a respective one of two parallel axles and,

wherein the flaps are operated in synchronism by a means for tilting the flaps about the axles so that the stack is released and drops under gravity between the pivoted flaps into the container located under these flaps at the receiving location.

5,662,455

FUEL PUMP ASSEMBLY HAVING REDUCED VAPOR DISCHARGE NOISE

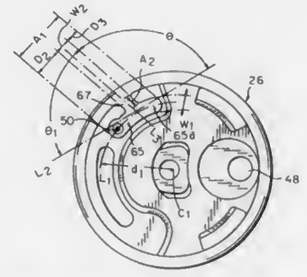
Koulchi Iwata; Kiyoshi Kato, and Takehide Nakamura, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Jun. 19, 1996, Ser. No. 667,952

Claims priority, application Japan, Jun. 23, 1995, 7-157638

Int. Cl.[6] F04D *9/00*

U.S. Cl. 415—55.1 **6 Claims**



1. A fuel pump assembly comprising:

a motor;

an impeller rotated by said motor; and

a housing body surrounding said impeller for forming a pump chamber;

said housing body having a vapor by-pass port communicating with said pump chamber, a vapor introducing passage communicating with said vapor by-pass port, and a vapor discharge port communicating said vapor introducing passage with an interior of a fuel tank;

said vapor by-pass port communicating with said vapor introducing passage in the vicinity of one end thereof, the other end of said vapor introducing passage being closed, the vapor discharge port communicating with said vapor introducing passage at a central portion between said one end and said other end of said vapor introducing passage.

5,662,456

FRICTION VACUUM PUMP WITH BEARING SUPPORT

Heinrich Engländer, Linnich, Germany, assignor to Leybold Aktiengesellschaft

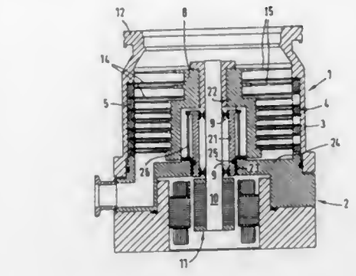
PCT No. PCT/EP94/00785, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/25759, PCT Pub. Date Nov. 10, 1994

PCT Filed Mar. 14, 1994, Ser. No. 545,645

Claims priority, application Germany, May 3, 1993, 43 14 419.5

Int. Cl.[6] F04D *29/66*

U.S. Cl. 415—90 **12 Claims**



1. Friction vacuum pump (1), comprising:

a housing (2,3);

a rotor (8);

two rotor bearings (9) which are supported in the housing (2,3) via a common sleeve-like support (21); and

the sleeve-like support (21) is in turn supported in the housing (2,3) via at least three substantially axially extending rods (26), wherein a displacement of the rotor (8) is permitted only in a radial direction and axial movement of the rotor (8) is substantially limited.

5,662,457

HEAT INSULATION ASSEMBLY

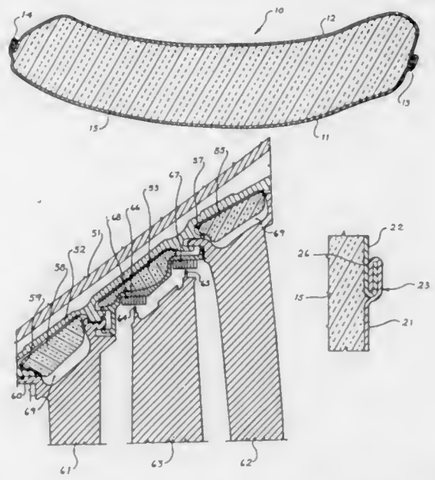
Hans-Peter Bechtel, Ludwigshafen, and Winfried Schneeberger, Ludwigshafen/Ruchheim, both of Germany, assignors to G&H Montage GmbH, Ludwigschfen, Germany

Continuation of Ser. No. 218,671, Mar. 25, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 458,026

Claims priority, application Germany, Sep. 13, 1993, 43 31 060.5

Int. Cl.[6] F01D *25/08*

U.S. Cl. 415—135 **45 Claims**



1. In a turbine engine including a housing surrounding a turbine rotor wherein a plurality of spaces are defined within said housing and said spaces each have an inner wall, the improvement comprising:

a) a thermal insulation assembly disposed in at least one of said spaces, said thermal insulation assembly comprising a cover formed of heat resistant material, and heat insulating material within said cover;

b) said heat insulating material being expanded in-situ within said space by heat generated to cause said heat insulation assembly to expand into contact with said inner wall of said space.

5,662,458

BLADED ROTOR WITH RETENTION PLATES AND LOCKING MEMBER

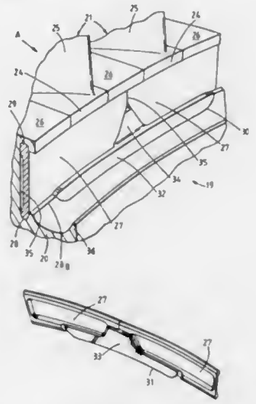
Brian C. Owen, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Aug. 8, 1996, Ser. No. 694,090

Claims priority, application United Kingdom, Aug. 24, 1995, 9517369

Int. Cl.[6] F01D *5/10;5/32*

U.S. Cl. 416—145 **11 Claims**



1. A bladed rotor for a gas turbine engine comprising a rotor disc having a peripheral region, a plurality of rotor aerofoil blades, said rotor aerofoil blades being attached to and extending radially from said peripheral region, each of said aerofoil blades having a root portion, which is located in a correspondingly shaped generally axially extending slot provided in said rotor disc peripheral region to facilitate radial fixing of each of said aerofoil blades on said rotor disc, and an annular array of circumferentially adjacent retention plates axially adjacent said aerofoil blade roots to facilitate axial aerofoil blade fixing on said rotor disc at least in one axial direction, at least said disc defining confronting radially spaced apart annular slots to receive and axially locate said retention plates, and at least one locking member, a first portion of which is interposed between an adjacent pair of said retention plates and is contiguous with exposed surfaces of said pair of retention plates, a second portion of said locking member being so configured as to interact with a corresponding feature on said disc to prevent circumferential movement of said locking member, and hence circumferential movement of said retention plates, relative to said rotor disc, said second portion of said locking member being configured to be contiguous with exposed surfaces of said rotor disc, said locking member being provided with a third portion adapted to co-operate with said adjacent pair of retention plates to prevent axial movement of said locking member relative to said disc.

5,662,459

PRESSURIZED GAS DRIVEN LIQUID PUMP HAVING THE OUTLET PIPE CONNECTED TO A VARIABLE BUOYANT FLOAT

John C. Newby, P.O. Box 989, Cobb, Calif. 95426

Filed Dec. 1, 1995, Ser. No. 565,917

Int. Cl.[6] F04B *53/00*

U.S. Cl. 417—61 **5 Claims**

1. A pump mechanism adapted to float on the surface of a liquid, said liquid interfaced with a source of pressurized gas or steam, said pump mechanism comprising:

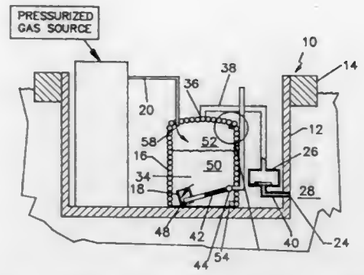
(a) a enclosure provided with a float and with a chamber, said chamber further having an upper surface with inlet means coupled to said source for allowing flow of pressurized gas into the chamber, a gas input pipe permitting communication between said pressurized gas source and said chamber, a liquid orifice permitting communication between said liquid reservoir and said chamber, a hollow cycling container, buoyant when empty, coupled to output orifice with said orifice permitting communication between said cycling container and said output pipe;

(b) said cycling container, located within said chamber; adapted to sink when said liquid rises above a predetermined level;

(c) first swivel joint means coupled to said cycling container and output pipe to allow vertical circular arc travel of said cycling container, as liquid rises, or said cycling container sinks;

(d) first check valve means associated with said liquid orifice to allow one way flow of liquid into said chamber; and

(e) the chamber formed of a continuous coiled robe ceiling and walls, an upper side of the walls including a vent to allow drainage.



5,662,460

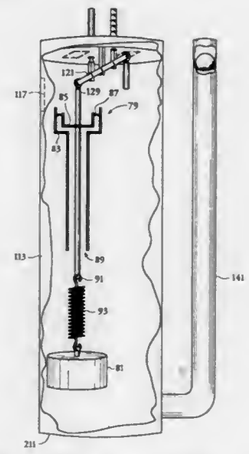
DOWNHOLE PNEUMATIC PUMP WITH VARIABLE BOUYANT ACTUATOR

D. Bruce Modesitt, 120 Wingate Ave., San Carlos, Calif. 94070

Divislon of Ser. No. 470,674, Jun. 5, 1995, Pat. No. 5,611,672, which is a continuation-in-part of Ser. No. 157,689, Nov. 24, 1993, abandoned. This application Feb. 26, 1996, Ser. No. 605,526

Int. Cl.[6] F04B *9/08*

U.S. Cl. 417—127 **22 Claims**



1. A pneumatic pump for fluid, comprising:

a housing defining a longitudinal axis and having an opening, a bottom wall opposite to said opening, and a sidewall extending between said opening and said bottom wall, maid housing including a sealable fluid entry aperture;

a switchable valve control mechanism for closing said opening, said control mechanism having a plurality of valve seats and a plurality of corresponding valve elements, with said plurality of valve meats defining at least one fluid inlet port and at least one fluid outlet port;

a variable buoyant actuator connected to said control mechanism to alternatingly place said valve elements in sealing engagement with said inlet and outlet ports in response to a level of fluid in said housing, said variable buoyant actuator including a neutral buoyancy member and a rod having first and second opposed ends, said first opposed end connected to said control mechanism said second opposed end connected to said neutral buovancy member; and

a pipe communcating between an interior and an exterior of said housing to allow flow to the exterior of the housing in response to gas pressure on fluid in the housing.

5,662,461

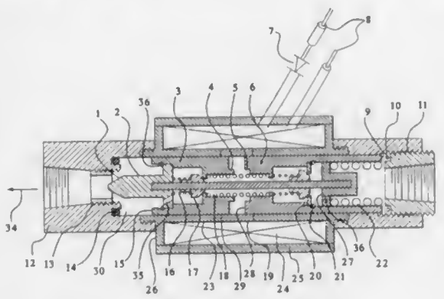
DUAL PISTON PUMP WITH MAGNETICALLY ACTUATED PISTONS

Harry Ono, c/o Coax, Inc. 1890 Big Bend Dr., Des Plaines, Ill. 60016

Continuation of Ser. No. 332,092, Oct. 31, 1994, abandoned. This application May 31, 1996, Ser. No. 656,079

Int. Cl.[6] F04B *17/04*

U.S. Cl. 417—418 **10 Claims**



1. A hydraulic pump comprising, in combination:

a tube, a pair of pistons comprising an upstream piston and a downstream piston, both of said pistons being formed of magnetic material and freely slidably disposed within said tube, connector means connected to said downstream piston and extending through an aperture in said upstream piston, magnetic means for selectively generating magnetic flux to urge said pistons together, each of said pistons having valve means for supporting the fluid flow in one direction through said tube, and first spring means disposed within the tube and connected said connector means for urging said downstream piston toward a downstream direction of said flow, and second spring means between said pistons for urging them apart.

5,662,462

SEALING ARRANGEMENT FOR A HYDRAULIC MOTOR AND PUMP

Edward D. Paley, Grosse Pointe; Kerry A. MacHesney, Farmington Hills, and Eugene S. Tarrence, Warren, all of Mich., assignors to Hydraulic Power Systems, Inc., Oak Park, Mich.

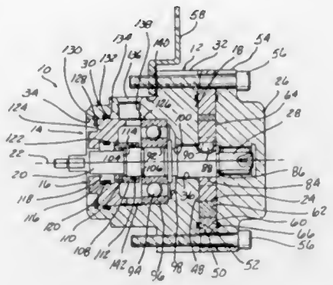
Filed Jun. 7, 1995, Ser. No. 476,012

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—61.3 **10 Claims**

1. A hydraulic motor comprising:

a housing having an output end and an input end and having an opening extending therebetween;



a shaft extending through said opening along a longitudinal axis of said housing;

a gerotor connected to said input end of said housing and having an outer tooth gear coaxially mounted to said shaft and an inner tooth gear meshing with said outer tooth gear for forming at least one actuating chamber;

a cover connected to and covering said gerotor and rotatably supporting one end of said shaft;

means for communicating a fluid to and from said at least one actuating chamber of said gerotor;

means for rotatably supporting said shaft in said housing;

a first seal disposed in said housing and spaced along said longitudinal axis between said rotatable supporting means and said output end of said housing;

a second seal disposed in said housing and spaced along said longitudinal axis between said first seal and said output end of said housing; and

a third seal disposed in said housing and spaced along said longitudinal axis between said second seal and said output end of said housing.

5,662,463

ROTARY SCREW COMPRESSOR HAVING A PRESSURE BEARING ARRANGEMENT

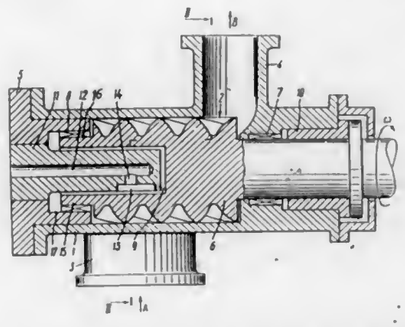
Timur B. Mirzoev; Ahmet M. Galejev; Valeriy A. Maksimov; Sergey N. Soskov; Rustam R. Ishmuratov, and Alfered I. Abaldullin, all of Tatarstan, Russian Federation, assignors to Thomassen International B.V., Netherlands

PCT No. PCT/NL93/00150, § 371 Date Apr. 22, 1996, § 102(e) Date Apr. 22, 1996, PCT Pub. No. WO95/02767, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 13, 1993, Ser. No. 583,123

Int. Cl.[6] F04C *18/16;27/00;29/02*

U.S. Cl. 418—73 **13 Claims**



1. A rotary screw compressor comprising a casing defining a working space having a high pressure end and a low pressure end, a male rotor and a female rotor cooperating with the male rotor, the male and female rotors being enclosed in the working space

defined by the casing, the casing having an outlet port at the high pressure end of the working space, a discharge outlet connected to the outlet port at the high pressure end of the working space and a suction inlet at the low pressure end of the working space, at least one rotor being rotatably supported at an end thereof through a bearing arrangement comprising a bearing bracket, means fixing the bearing bracket relative to the casing, the bearing bracket having a substantially cylindrical outer circumferential surface, the bearing bracket projecting into an axial cavity provided in the rotor so as to form a first chamber between the bracket and the rotor, the bracket being provided with an oil feed channel to feed oil into the first chamber, wherein at least one rotor is rotatably supported at the low pressure end thereof through the bearing arrangement, the corresponding bearing bracket being mounted at the low pressure end of the working space and having an outer circumferential surface that is provided with at least a groove connected to the oil feed changed and a recess connected to an oil drainage channel provided in the bearing bracket, and sealing means provided between the first chamber and the working space of the compressor.

5,662,464

MULTI-DIRECTION AFTER-AIR PORTS FOR STAGED COMBUSTION SYSTEMS

Jeffrey A. LaRose, Stow; Mitchell W. Hopkins, Uniontown, and Melvin J. Albrecht, Homeworth, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 11, 1995, Ser. No. 526,617

Int. Cl.[6] F23D *14/58;1/00*

U.S. Cl. 431—8 **5 Claims**

1. A multi-directional air control device for an after-air port for passing secondary air from an opening of a windbox to an opening of a furnace, the port being of the type having a longitudinal conduit defining a chamber through which the air from the windbox passes to the furnace, the device comprising:

a continuous inner shroud located inside the chamber, radially spaced from a wall of the conduit, defining a central path and an outer swirl path through the chamber and extending from the furnace opening toward the windbox opening;

a plurality of outer swirl vanes disposed in the outer swirl path;

a plurality of first louvers rotatably mounted within and to said continuous inner shroud about a first axis oriented perpendicular to the longitudinal axis of the conduit;

a plurality of second louvers rotatably mounted within and to said continuous inner shroud about a second axis oriented perpendicular to the longitudinal axis of the conduit and perpendicular to the first louvers; and

means for rotating each of the first and second louvers for controlling an air flow direction through the furnace opening.

5,662,465

CONTROLLING FLOW OF FUEL GAS TO A BURNER

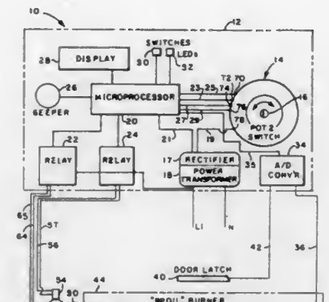
Yoshio W. Kano, Barrington, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 9, 1995, Ser. No. 489,207

Int. Cl.[6] F23N *5/00*

U.S. Cl. 431—12 **15 Claims**

1. An electrical control system for controlling gaseous fuel flow to an oven burner comprising:



(a) temperature sensor means operable to sense oven temperature and provide an oven temperature signal indicative thereof;

(b) a user operated rotary control having a push-to-release or push-to-turn function and rotatable thereafter and including a potentiometer rotated by the control for providing a reference voltage representative of a selected control position corresponding to a desired temperature;

(c) an electrically operated burner valve effective, upon connection to a source of gaseous fuel for controlling flow of the gaseous fuel to the oven burner;

(d) circuit means having a microprocessor operable to compare said oven temperature signal and said reference voltage and provide a temperature control signal based on said comparison; and,

(e) relay means connected to said microprocessor for operating said burner valve in response to said temperature control signal.

5,662,466

SAFETY STRUCTURE FOR ELECTRONIC LIGHTERS

Mei-Jung Cheng, 2F, No. 3-1, Alley 15, Lane Shui Ching, Peitun District 406, Taichung City, Taiwan

Filed Apr. 12, 1996, Ser. No. 635,261

Int. Cl.[6] F23D *11/36*

U.S. Cl. 431—153 **5 Claims**

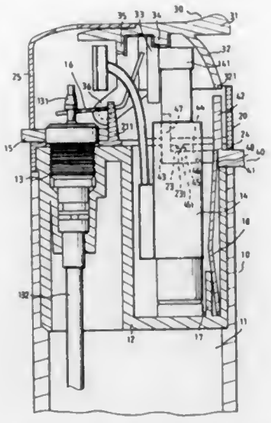
1. A safety structure for electronic lighters, comprising a housing containing liquefied gas, said housing having its interior divided by a partition into respective spaces for accommodating a nozzle means and an electronic igniter, an upper side of said housing having an upper cover fitted thereon and a press means pivotally disposed thereon, said upper cover having two corresponding side walls at an upper side thereof near a front rim thereof, said two side walls having corresponding pivot holes respectively, said upper cover further having a notch at a rear end thereof and a safety button mounted therewithin, wherein,

said housing is provided with a projecting plate and a resilient piece at the space containing said electronic igniter;

said upper cover has corresponding retain bosses;

said press means having a trigger press portion, said press portion having a hollowed frame disposed at a bottom side thereof, and two corresponding press posts, a press block and a stop plate vertically disposed therein, a pivot portion being mounted at a front side of said frame, said pivot portion being pivotally provided at said pivot holes of said side walls; and

said safety button has a push block accommodated in said notch at the rear end of said upper cover, said push block having a rectangular urge plate and an L-shaped rod respectively and



vertically disposed at a front side thereof, said L-shaped rod having two horizontal portions each of which has a positioning boss provided on an upper surface thereof, each of said horizontal portions bending upwardly to form a vertical urge post, and a slot being formed at a predetermined position at a bottom side of said safety button for receiving and positioning one end of said resilient strip.

5,662,467

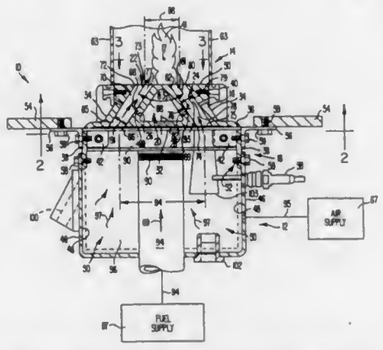
NOZZLE MIXING LINE BURNER

Andrew P. Jones, Muncie, Ind., assignor to Maxon Corporation, Muncie, Ind.

Filed Oct. 5, 1995, Ser. No. 539,712

Int. Cl.[6] F23C *5/28*

U.S. Cl. 431—175 **49 Claims**



1. A burner apparatus comprising a combustion chamber having opposite side walls and

a one-piece nozzle body made of a metal material and including a front face coupled to the combustion chamber and positioned to lie substantially perpendicular to the opposite side walls, and a back face facing away from the combustion chamber, the one-piece nozzle body being formed to include a first channel having a first inlet receiving air and being formed in the back face, a second inlet receiving fuel, an air and fuel mixing chamber communicating with the first and second inlets, and an outlet formed in the front face for discharging a fuel/air mixture created within the air and fuel mixing chamber along a first flow being formed from the one-piece nozzle body into the combustion chamber, and the one-piece nozzle body also being formed to include a second channel having a first opening receiving air and being formed in the back face, a second opening receiving fuel, an air and fuel combining chamber communicating with the first and second openings, and an exit formed in the front face for discharging a second fuel/air mixture created in the air and fuel combining chamber along a second flow path out from the one-piece nozzle body into the combustion chamber, and wherein the second flow path intersects the first flow path in the combustion chamber to cause impingement of the mixtures carried along the first and second flow paths to create flame stability.

5,662,468

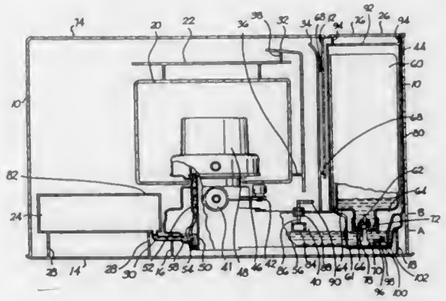
DEVICE THAT PREVENTS FLAREUP IN LIQUID FUEL BURNERS

Richard W. Henderson, P.O. Box 12681, Florence, S.C. 29504

Filed Aug. 14, 1995, Ser. No. 514,583

Int. Cl.[6] F23D *3/02*

U.S. Cl. 431—302 **6 Claims**



1. In an apparatus for preventing flareup in a liquid fuel burner of the type comprising (a) a removable liquid fuel tank, (b) a fuel chamber, (c) an automatic wick extinguishing unit, (d) a combustion chamber having a wick, (e) a reflector, (f) a cabinet having a lid over said removable tank, and (g) a tank guide which holds said tank in a vertical position in said cabinet, where said fuel chamber carries liquid fuel from said removable tank to said wick of said combustion chamber, the improvement comprising a vapor containment closure around said removable tank.

6. A method of preventing flare-up in a liquid-fuel burner of the type comprising a liquid-fuel removable tank, a fuel chamber, an automatic wick-extinguishing unit, and a combustion chamber having a wick, a reflector, and a cabinet having a lid over said removable tank, where said fuel chamber carries liquid fuel from said removable tank to said wick of said combustion chamber, comprising the steps of:

containing vapors around said removable tank in a fuel containment sump that encloses said removable tank, said fuel containment sump being closed at the top by a cover plate; and

preventing said removable tank from operatively reseating in said fuel chamber when the fuel level in said fuel chamber exceeds a predetermined level.

5,662,469

HEAT TREATMENT METHOD

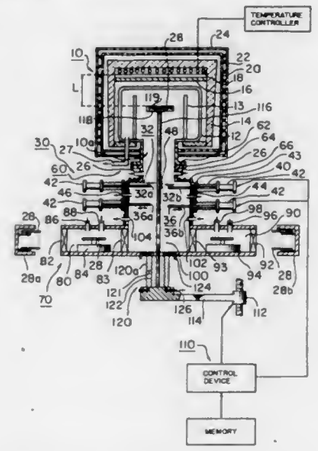
Wataru Okase, Sagamihara; Yasushi Yagi, Zama, and Satoshi Kawachi, Yokohama, all of Japan, assignors to Tokyo Electron Tohoku Kabushiki Kaisha, and Tokyo Electron Kabushiki Kaisha, both of Japan

Continuation-in-part of Ser. No. 341,047, Nov. 16, 1994, which is a continuation of Ser. No. 987,024, Dec. 7, 1992, Pat. No. 5,429,498. This application Mar. 24, 1995, Ser. No. 410,538

Claims priority, application Japan, Dec. 13, 1991, 3-351331; Dec. 18, 1991, 3-353010; Jan. 27, 1992, 4-33992; Apr. 21, 1992, 4-126688; Apr. 23, 1992, 4-130192; Apr. 23, 1992, 4-130193; Aug. 26, 1992, 4-252138; Mar. 31, 1994, 6-087472

Int. Cl.[6] F27D *5/00;3/12*

U.S. Cl. 432—6 **10 Claims**



1. A method of thermal processing comprising:

controlling temperatures in a heating region formed in the interior of a process tube such that the heating region has a temperature gradient which progressively lowers from a first side of the process tube to a second side of the process tube;

lifting a workpiece from the second side and positioning the workpiece in the heating region; and

slowly lowering the workpiece toward the second side of the process tube.

5,662,470

VERTICAL FURNACE

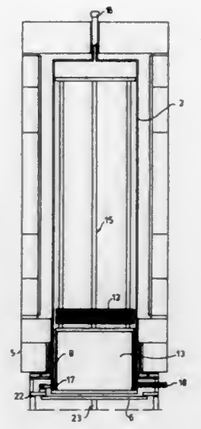
Frank Huussen, Bilthoven; Gerard Berenpas, Zuidwolde; Albert Hasper, Meppel, and Chris G.M. De Ridder, Hoogland, all of Netherlands, assignors to ASM International N.V., Bilthoven, Netherlands

Filed Mar. 31, 1995, Ser. No. 414,294

Int. Cl.[6] F27D *3/12*

U.S. Cl. 432—241 **11 Claims**

1. A vertical furnace for processing wafers, said furnace being mounted on a support structure and comprising an inner sleeve having a removable lid either on its lower end or its upper end, wherein the other end is provided with closing means, electrical heating means surrounding said inner sleeve, insulation surrounding both the heating means and the inner sleeve and an outer sleeve, the inner sleeve comprising a first material having a first heat conductivity and being resistant to temperatures of at least 1200° C. and provided with connecting means to engage the upper part of a support sleeve arranged around the inner sleeve at said lower end of the inner sleeve, a lower part of said support sleeve resting on said support structure, said support sleeve comprising a second material having a second heat conductivity, said second heat conductivity being lower than said first heat conductivity.



5,662,471

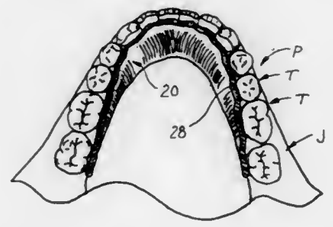
ORTHODONTIC SHIELD AND METHOD OF MAKING

Bruce A. Fogerty, 4419 Rawlins, Dallas, Tex. 75219

Filed May 4, 1995, Ser. No. 434,772

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—22 **8 Claims**



1. A method forming an orthodontic shield for use in conjunction with an orthodontic appliance mounted on the lingual surfaces of teeth of a patient comprising the steps of:

providing a strip of thermoplastic material having a predetermined length, a predetermined width, and a predetermined thickness;

heating the strip of thermoplastic material sufficiently to render the material thereof malleable under predetermined pressure;

engaging the heated strip of thermoplastic material with the orthodontic appliance and with the adjacent lingual surfaces of the teeth above and below the orthodontic appliance, wherein said shield does not contact the occlusive surface of the teeth of the patient while applying pressure thereto and thereby conforming the strip of thermoplastic material to the configuration of the orthodontic appliance and the adjacent lingual tooth surfaces;

allowing the formed strip of thermoplastic material to cool within the mouth of the patient and thereby forming a snap fit

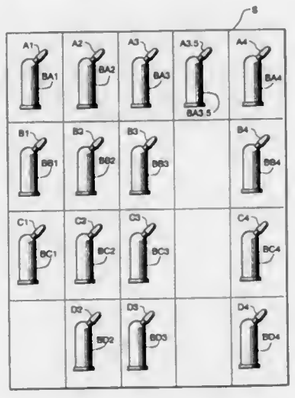
engagement with the orthodontic appliance therein during diction and eating while facilitating removal of the strip of thermoplastic material from the mouth of the patient to facilitate cleaning.

5,662,472

HUE AND LIGHTNESS IDENTIFICATION SYSTEM FOR DENTAL PRODUCTS

Andreas Grutzner, Reichenan, Germany, assignor to Dentsply GmbH, Germany

Filed Aug. 18, 1995, Ser. No. 516,594
Int. Cl.[6] A61C 5/04
U.S. Cl. 433—90 19 Claims



1. A system for identification of hue and lightness of dental products formed from dental material within enclosures, comprising:

an alpha series of at least three caps (A) having an alpha cap hue and supported by enclosures enclosing dental materials which are polymerizable to form an alpha series of dental products having a first product hue,

a beta series of at least three caps (B) having a beta cap hue supported by enclosures enclosing dental materials which are polymerizable to form dental products having a beta product hue,

a first series of at least three caps (1) having a first cap lightness and each of said first caps being supported by an enclosure enclosing a dental material which is polymerizable to form a dental product having a first product lightness,

a second series of at least three caps (2) having a second cap lightness, and each of said second caps being supported by an enclosure enclosing a dental material which is polymerizable to form a dental product having a second product lightness,

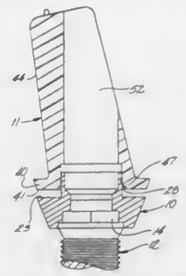
said beta cap hue being more reddish-yellow than said alpha cap hue, said beta product hue being more reddish-yellow than said alpha product hue, said alpha cap hue being more reddish-brown than said beta cap hue, said alpha product hue being more reddish-brown than said beta product hue, said second cap lightness being darker than said first cap lightness, said second product lightness being darker than said first product lightness the difference in hue between said alpha cap hue and said beta cap hue being substantially greater than the difference in hue between said alpha product hue and said beta product hue, and the difference in lightness between said first cap lightness and said second cap lightness being substantially greater than the difference in the lightness between said first product lightness and second product lightness.

5,662,473

ADJUSTABLE-ANGULATION PATTERN FOR MAKING A DENTAL-IMPLANT ABUTMENT

Kazem Rassoll, Anaheim, Calif., and James G. Ironside, Sydney, Australia, assignors to Vident, Brea, Calif.

Continuation-in-part of Ser. No. 162,662, Dec. 2, 1993, abandoned. This application Sep. 14, 1995, Ser. No. 528,480
Int. Cl.[6] A61C 13/12;13/225;8/00
U.S. Cl. 433—172 12 Claims



1. A system for making a model from which a customized dental abutment can be cast for attachment to an implant body embedded in a patient's jawbone, comprising:

a base made of a cast-to material, and configured to make a precision fit on the implant body, the base defining a sleeve with a first central axis;

an abutment pattern made of a burn-out material, and having a mounting flange centered on and extending radially from the first central axis when the base and pattern are mated, the pattern further having a post extending from the mounting flange, the post having a second central axis, the pattern having a bore extending through the mounting flange and post, the bore being centered on the first central axis, the flange end of the bore defining a cylindrical socket which makes a fit over at least a portion of the base sleeve; and

engaging means cooperating between the base and pattern for supporting the pattern on the base in two different positions, the pattern having a first engaged position on the base sleeve in which the pattern is freely rotatable about the first central axis with respect to the base, and a second engaged position on the base sleeve in which the pattern and base sleeve are locked together.

5,662,474

SPACING MEMBER FOR TOOTH IMPLANT

Lars Jorneus, Riabergsvagen; Anders Boss, Krokslatts Parkgata, and Halvar Hanssen, Runslingan, all of Sweden, assignors to Nobel Biocare AB, Goteborg, Sweden

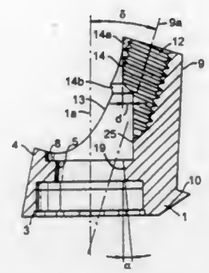
PCT No. PCT/SE95/00131, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO95/21589, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 9, 1995, Ser. No. 530,121
Claims priority, application Sweden, Feb. 11, 1994, 9400448
Int. Cl.[6] A61C 13/12;13/225;8/00
U.S. Cl. 433—172 6 Claims

1. A spacing member for an angulated prosthetic tooth implant removably attachable to an embedded threaded fixture:

said spacing member having first and second intersecting through bores,

the first of said through bores having its axis parallel with that of the threaded fixture to enable detachable fixation of said spacing member to said fixture by means of a threaded screw passing through said first through bore and threadably engaging with a threaded bore in said fixture,

the second of said through bores having its axis inclined at an acute angle to said first through bore to enable detachable fixation of the angulated tooth implant with said spacing member,



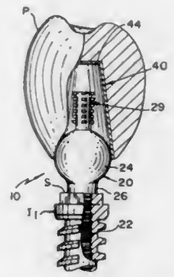
said first through bore having an upper portion laterally offset from a lower portion in a direction opposite to the direction in which said second through bore is inclined to thereby enable removable fixation of the spacing member to the fixture.

5,662,475

UNIVERSAL PROSTHETIC AND IMPLANT ABUTMENT

Raul R. Mena, 201 N. University Dr., Suite 101, Plantation, Fla. 33324

Filed Mar. 8, 1996, Ser. No. 612,699
Int. Cl.[6] A61C 13/12;13/225;8/00
U.S. Cl. 433—172 16 Claims



1. A device for supporting a dental prosthesis and providing a rigid engagement to dental implants or natural dentition, comprising:

A) abutment means having a spherical portion and anchorage means for mounting said abutment means to a dental implant or natural dentition;

B) tubular engaging means for supporting a dental prosthesis having first and second ends and said tubular engaging means having an internal diameter that is smaller than the diameter, throughout said tubular engaging means, of said spherical portion and housing part of said spherical portion; and

C) means for securing said tubular engaging means to said part of said spherical portion housed by said tubular engaging means.

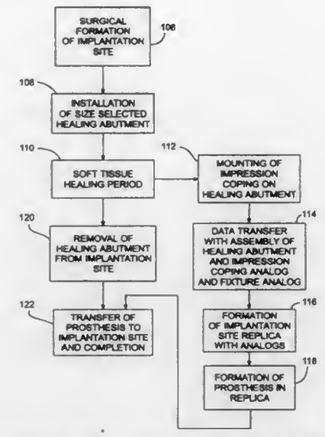
5,662,476

PROSTHETIC IMPLANT RESTORATION METHOD

Abraham Ingber, Potomac, and Vincent Joseph Prestipino, North Bethesda, both of Md., assignors to Nobel Biocare AB, Gothenburg, Sweden

Continuation-in-part of Ser. No. 377,502, Jan. 24, 1995, Pat. No. 5,571,016, which is a continuation of Ser. No. 908,580, Jun. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 488,280
Int. Cl.[6] A61C 11/00
U.S. Cl. 433—213 8 Claims

1. In a dental implant method of installing a restorative tooth prosthesis in an implantation site formed within edentulous bone surgically exposed through gingival tissue and wherein said prosthesis is constructed within a replica of the implantation site, comprising the steps of:



dimensionally selecting a healing abutment to fit into the implantation site;

implanting the selected healing abutment within the implantation site in contact with the gingival tissue for contouring thereof;

transferring data from the implanted healing abutment to the replica of the implantation site prior to formation of the prosthesis therein without removal of the healing abutment from the implantation site; and

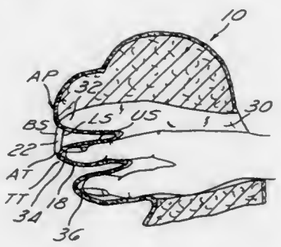
replacing the implanted healing abutment within the implantation site with the prosthesis after healing of the gingival tissue contoured by the implanted healing abutment.

5,662,477

DEMONSTRATIVE PUPPET FOR PHONETIC TRAINING OF PERSONS HAVING SPEECH AND/OR HEARING DISORDERS

Janet A. Miles, 3 Windflower, Coto De Caza, Calif. 92679

Filed Jul. 17, 1995, Ser. No. 502,967
Int. Cl.[6] G09B 19/04
U.S. Cl. 434—185 19 Claims



1. A speech demonstration puppet, said puppet comprising:

a puppet body having an oral cavity, an upper jaw, a lower jaw, a tongue and at least one tooth extending downwardly from the upper jaw;

a hand insertion passageway formed in said puppet body to facilitate insertion of a human hand thereinto, said hand insertion passageway extending into a plurality of digit receiving spaces comprising:

i) an upper jaw space formed within the upper jaw of the puppet body;

ii) a tongue space formed within the tongue of the puppet body; and,

iii) a lower jaw space formed within the lower jaw of the puppet body;

said puppet being thereby configured such that the human hand may be inserted through said hand insertion passageway, and selected digits of said hand may be positioned within selected ones of said digit receiving spaces such that movement of said digits will cause selective movement of at least one of said upper jaw, tongue and lower jaw.

5,662,478

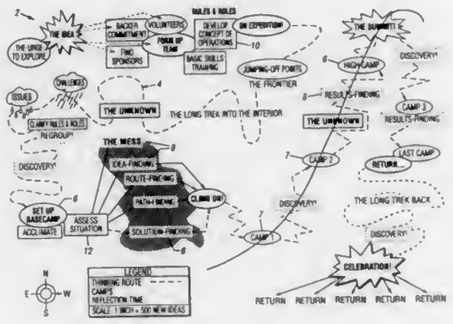
METHOD FOR TRAINING FACILITATOR AND METHOD FOR TEACHING GROUP OF PEOPLE IN THE USE OF AN EXPEDITIONARY MAP TO PRACTICE A PROCESS FOR GENERATING IDEAS

Rolf C. Smith, Jr., 10682 Beinhorn Rd., Houston, Tex. 77024

Filed Mar. 27, 1995, Ser. No. 411,244

Int. Cl.[6] G09B *19/00*

U.S. Cl. 434—237 6 Claims



1. A method for teaching a group of people to practice a process for generating ideas for solving a problem by executing a plurality of creative thinking sessions, said method comprising

providing the group of people with a facilitator;

providing the group of people with a map which illustrates an expeditionary path leading through the process for generating ideas for solving a problem, said map depicting a path which illustrates a flow for an expeditionary process and having a first information set alongside the path to illustrate steps of an expeditionary process as such steps may occur during the flow of an expeditionary process, and a second information set alongside the path to illustrate a flow of steps for a process for generating ideas for solving a problem from one or more creative thinking sessions as such steps may occur in a process for generating ideas for solving a problem;

conveying information to the group of people through the facilitator relating to comparing certain aspects of a process for generating ideas for solving a problem to certain aspects of an expeditionary process;

providing audio and visual information to the group of people so that the group of people can estimate its present position in the flow of the process for generating ideas for solving a problem, and

leading the group of people through the facilitator in a continuous flow of increasingly creative thinking sessions.

5,662,479

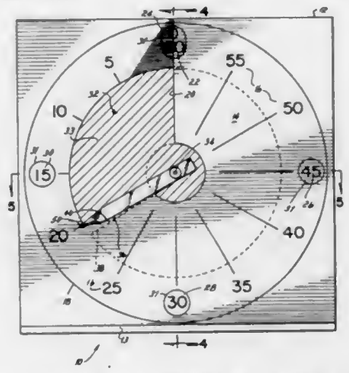
APPARATUS AND METHOD TO AID IN THE TEACHING OF THE CONCEPT OF TIME

Janice L. Rogers, 7695 Cayuga Dr., Cincinnati, Ohio 45243

Continuation-in-part of Ser. No. 35,618, Mar. 3, 1995, Pat. No. Des. 369,619. This application Mar. 13, 1996, Ser. No. 614,520

Int. Cl.[6] G09B *19/12*

U.S. Cl. 434—304 17 Claims



1. A time teaching aid for teaching the concept of remaining time and elapsed time to persons unfamiliar with determining time comprising:

a generally flat stationary face;

a plurality of numerical indicia marks arranged around the flat face in a generally clockwise pattern, successive numerical indicia marks decreasing in value in a clockwise direction from a twelve-o'clock position;

a rotating face operable to rotate clockwise with respect to said stationary face, the rotating face generally exposing a portion thereof in front of the stationary face during rotation;

the rotating face further operable to expose an ever-decreasing portion thereof during clockwise rotation;

a time hand operable for rotating in synchronization with said rotating face and pointing to the numerical indicia marks as the face rotates;

said time hand further operable for progressing in a clockwise fashion from the twelve o'clock position, through the decreasing numerical indicia marks and back to the twelve-o'clock position so that the ever-decreasing exposed portion of the rotating face corresponds to the time hand pointing to decreasing values of the numerical indicia marks to simultaneously indicate to a viewer the decreasing time remaining both proportionally and numerically on the stationary face;

whereby a viewer may readily visually associate numerical remaining time values with a decreasing portion of the rotating face to understand remaining and elapsed time.

5,662,480

SURFACE MOUNT TYPE COAXIAL CONNECTOR CONNECTING COAXIAL CABLE TO SUBSTRATE

Kouji Togashi, Tokyo, Japan, assignor to SMK Co., Ltd., Tokyo, Japan

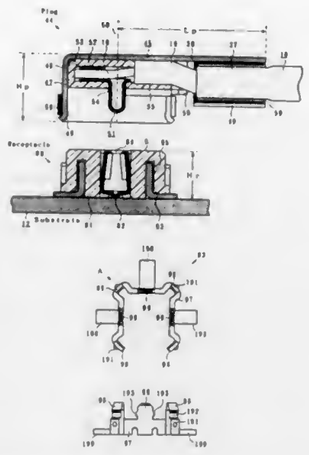
Filed Jun. 2, 1995, Ser. No. 459,996

Claims priority, application Japan, Jun. 28, 1994, 6-167541; Jul. 22, 1994, 6-192036; Jul. 22, 1994, 6-192037

Int. Cl.[6] H01R *17/04*

U.S. Cl. 439—63 6 Claims

1. A surface-mount type coaxial connector comprising: a plug connected to the end of a coaxial cable and a receptacle surface-mounted on a substrate for electrically connecting the coaxial cable with the substrate, said plug having a male central contact and a shell for fitting onto a female central contact and a shell of the receptacle,



wherein substantially the entire electrical connection of the male central contact of the plug with a central conductor of the coaxial cable is positioned opposite the fixation portion of the plug into the coaxial cable as seen from the central contact.

5,662,481

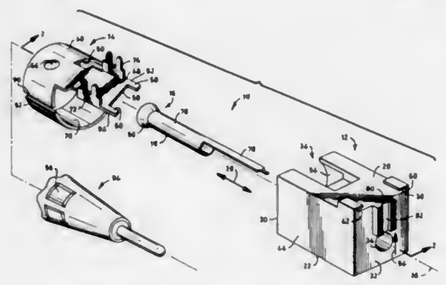
CONNECTOR AND CONNECTOR KIT

John O. Wright, York, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Mar. 13, 1996, Ser. No. 614,557

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—63 20 Claims



1. A connector comprising:

an insulative housing having a first surface, an opposite second surface, a cavity extending into said insulative housing from said first surface towards said opposite second surface, said cavity further extending in the direction of a longitudinal axis of said housing from a first end of said housing towards an opposite second end of said housing, and a bore extending into said housing in the direction of said longitudinal axis from said opposite second end towards said first end, said bore opening into said cavity, said first surface comprising at least one slot which extends in the direction of said longitudinal axis and is positioned between said opposite second end and said cavity;

a conductive shell comprising a first segment and a second segment extending from said first segment, said first segment being positioned in said cavity and said second segment extending out of said cavity and into said at least one slot; and

a contact comprising a first portion and a second portion extending from said first portion, said first portion being positioned in said bore and said second portion extending from said bore at said opposite second end.

5,662,482

PCMCIA CONNECTOR HAVING A PROTECTION COVER

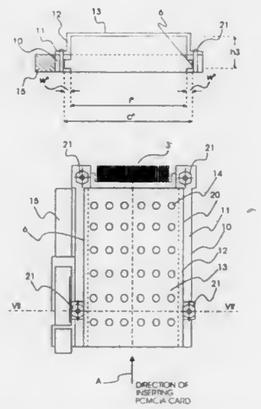
Seung-Kee Shin, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 16, 1995, Ser. No. 558,546

Claims priority, application Rep. of Korea, Nov. 17, 1994, 30317/1994

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—64 13 Claims



1. A personal computer memory card international association card connector assembly, comprising:

a connector plate having a plurality of pins arrayed at one end for electrical connection by mating with sockets in an electrical connection base of a personal computer memory card international association card having a substrate exhibiting a first height and first width, and by mating with sockets in any electrical connection bases of personal computer memory card international association cards having a substrate exhibiting said first height and said first width with an upper housing mounted on said substrate exhibiting one of a plurality of greater heights all substantially larger than said first height and a second width less than said first width, said connector plate having a pair of longitudinal side rails extending perpendicularly to said pin array to form an opening for receiving an upper housing of the personal computer memory card international association card having a greatest one of said greater heights, each said side rail including a longitudinal groove formed within a plane including said pin array, each said longitudinal groove forming a pair of opposing side walls spaced apart by said first width for accommodating reciprocal movement of opposite lateral edges of any substrate of said personal computer memory card international association card while maintaining alignment of the sockets during mating of the sockets with said plurality of pins; and

a cover attached to a periphery of said connecter plate, said cover having a pair of parallel side walls each extending from a corresponding said longitudinal groove by not less than said greatest one of said greater heights, said side walls being spaced apart by said second width to refuse entry between said side walls of any substrate of said personal computer memory card international association card.

5,662,483

SURGE VOLTAGE PREVENTING D-SUB CONNECTOR

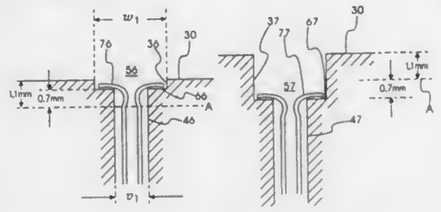
Sung-un Park, Kyonggi-do; Noh-byung Park, Seoul, and Ju-seo Park, Kyonggi-do, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 14, 1995, Ser. No. 572,723

Claims priority, application Rep. of Korea, Dec. 15, 1994, 94-34408; Jan. 20, 1995, 95-987

Int. Cl.[6] H01R *4/66*

U.S. Cl. 439—101 13 Claims



1. A surge voltage preventing D-sub connector, comprising:

a plurality of female signal terminals disposed within corresponding different ones of a first plurality of pinholes opening onto an exterior mating surface;

a plurality of female ground terminals disposed within corresponding different ones of a second plurality of pinholes opening onto said exterior mating surface, with a certain point internal to said first plurality and said second plurality of pinholes and spaced apart from said exterior mating surface is set as a basis-point and distal terminal ends of said plurality of female ground terminals are positioned nearer than said basis-point by a substantially constant distance to the exterior mating surface and distal terminal ends of said plurality of female signal terminals are positioned farther than said basis-point by a substantially constant distance from the exterior mating surface, with said distal terminal ends of said plurality of female ground terminals being positioned nearer than said distal terminal ends of said plurality of female signal terminals to the exterior mating surface of the connector:

an annular protrusion formed in each of said first plurality of pinholes and said second plurality of pinholes;

said distal terminal ends of said plurality of female ground terminals being hung on and extending partially coextensively with said protrusion within said second plurality of pinholes; and

said distal terminal ends of said plurality of female signal terminals being hung on and extending partially coextensively with said protrusions of said first plurality of pinholes.

5,662,484

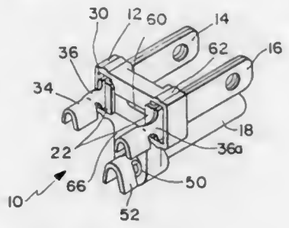
BRIDGED ELECTRICAL PLUG

Stephen A. Blanche, Warwick, R.I., assignor to ETCO Incorporated, Warwick, R.I.

Filed Aug. 31, 1995, Ser. No. 522,018

Int. Cl.[6] H01R *19/00*

U.S. Cl. 439—106 7 Claims



1. A plug assembly comprising

an integral contact blade element, said element including a contact blade portion as one end, a second contact portion toward a second end, and a neck intermediate thereof,

said neck being twisted relative to said blade portion,

said second contact portion being at said second end, and said neck being adjacent each said portion and twisted 90 degrees,

and a bridge carrying said bridge element and a second contact element,

in which each said second contact portion is generally cup-shaped to accept a wire through an opening into said portion.

5,662,485

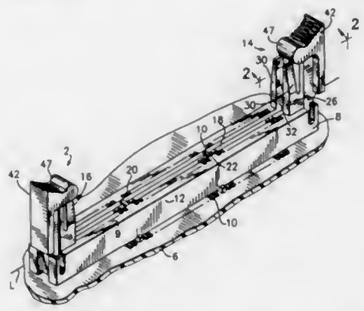
PRINTED CIRCUIT BOARD CONNECTOR WITH LOCKING EJECTOR

Maxwell K. Yip, Hamden; Fredrick D. Hooper, Norwalk; James J. Keating, Bridgeport, all of Conn., and Carl C. Petersen, Mentor, Ohio, assignors to Framatome Connectors USA Inc., Norwalk, Conn.

Filed Jan. 19, 1996, Ser. No. 588,661

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—157 20 Claims



1. In an edge card connector an ejector comprising:

an elongated body portion integrally formed with a finger contact section at one end and a mounting section at the other end;

said mounting section further including a foot section integrally formed therewith;

said foot section extending outwardly of said body section; and

wherein said body portion includes at least one detent member formed by spaced apart removed portions of body section material allowing said detent to be laterally deflectable relative to the body portion with said detent member further including a laterally extending tooth engageable with a corresponding surface on said housing.

5,662,486

ROTARY CONNECTOR

Hironori Kato, and Masanori Nakao, both of Miyagi-ken, Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,411

Claims priority, application Japan, Nov. 4, 1994, 6-271155

Int. Cl.[6] H01R *35/00*

U.S. Cl. 439—164 9 Claims

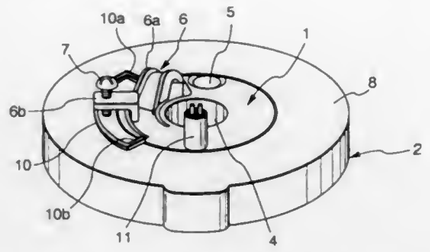
1. A rotary connector comprising:

a first housing and a second housing which are interconnected rotatably;

a flexible cable accommodated and wound between said first and second housings;

a holding member formed integrally with said first housing through a weakened portion;

a tapping screw connected to said holding member; and



an engaging projection formed integrally with said second housing,

wherein a free rotation between said first and second housings is prevented by abutment of a front end of said tapping screw with said engaging projection, and a locked state between said first and second housings is released upon removal of said holding member from said first housing at said weakened portion.

5,662,487

CONNECTOR

Kenji Okamura; Shigeki Murayama; Masamitsu Chishima, and Yutaka Noro, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

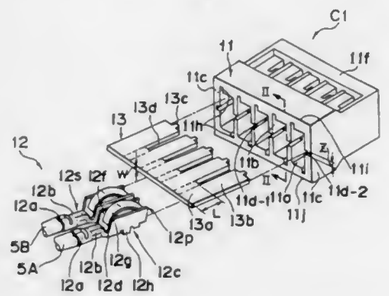
Division of Ser. No. 161,573, Dec. 6, 1993, Pat. No. 5,496,188.

This application Nov. 22, 1995, Ser. No. 562,191

Claims priority, application Japan, Dec. 9, 1992, 4-329476

Int. Cl.[6] H01R *31/08*

U.S. Cl. 439—189 7 Claims



1. A method for assembling a connector having a first terminal; a second terminal; joint terminal means, said joint terminal means being formed of a substantially flat metal plate having an elongated base portion and a plurality of electrical connection portions, each of said electrical connection portions extending from one side of said elongated base portion and being in alignment with each other; and housing means having a rear wall and side walls extending around the perimeter of said rear wall, and an opening at a front wall, said opening being opposed to said rear wall, said housing means having a plurality of interior terminal housings between adjacent interior spacing walls, said interior spacing walls extending from said rear wall to said front wall, each of said interior terminal housings accommodating at least one of said first and second terminals therein, each of said interior terminal housings being in alignment with each other side by side, said housing means being provided with an elongated groove extending between an opposed pair of said side walls through said interior spacing walls and opening at said front wall for receiving said joint terminal means therein, so that when said joint terminal means is placed in said elongated groove, said first and second terminals accommodated in said interior terminal housings are electrically connected by corresponding electrical connection portions, said method comprising the steps of:

(a) inserting said joint terminal means in said elongated groove so as to extend across said interior terminal housings;

(b) placing each of electrical connection portions inside a corresponding interior terminal housing, said electrical connection portions dividing each of said interior terminal housings into substantially equal corresponding spaces;

c) inserting said first and second terminals into respective corresponding spaces defined by each interior terminal housing and corresponding electrical connection portion; and

d) electrically connecting said first terminal and said second terminal through said corresponding electrical connection portion for electrical connection between said first and second terminals through said joint terminal means.

5,662,488

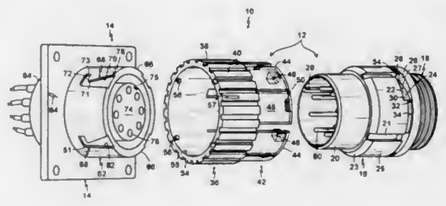
QUICK CONNECT COUPLING SYSTEM FOR RAPIDLY JOINING CONNECTORS AND/OR OTHER ELONGATED BODIES

Peter H. Alden, P.O. Box 375, N. Easton, Mass. 02356

Filed Oct. 31, 1996, Ser. No. 742,245

Int. Cl.[6] H01R *4/54*

U.S. Cl. 439—314 5 Claims



1. A connector system comprising:

(a) a first connector body comprising a housing and a collar, said housing comprising a longitudinal direction and a plurality of cam recesses, each of said cam recesses comprises an innermost portion and an outermost portion, said collar comprising a first end having at least one engagement boss and a second end having a plurality of rotational rib members which extend parallel with the longitudinal direction and are elastically deformable, each of said rotational rib members comprises a cam follower portion, said collar being resistingly rotatable around an outerside of said housing by said cam follower portions being slidingly moveably within corresponding said cam recesses from respective said innermost portions to respective said outermost portions of said cam recesses causing said rotational rib members to become increasingly elastically deformed;

(b) a second connector body comprising at least one engagement recess, said engagement recess comprises a tapered wall portion and a locking portion; and

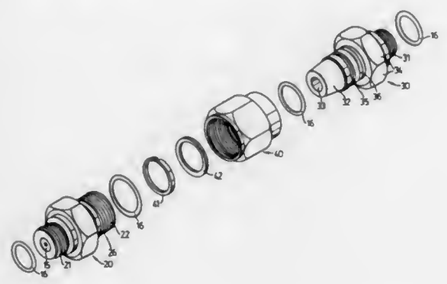
(c) said first connector body being telescopingly with said second connector body from a first position wherein said engagement boss is in contact with said tapered wall portion and said cam follower portions are positioned at respective said uppermost portions of respective said cam recesses to a second position wherein said engagement boss is not in contact with said tapered wall and is forcibly driven and locked within said locked portion.

5,662,489

ELECTRICAL COUPLING WITH MATING TAPERS FOR COAXIAL CABLE HOUSINGS

Albert Stirling, Markham, Canada, assignor to Stirling Connectors Inc., Markham, Canada

Filed Jun. 12, 1995, Ser. No. 458,636
Int. Cl.[6] H01R *4/38*
U.S. Cl. 439—322 8 Claims



1. An electrical coupling body for connecting two coaxial cable housings, comprising:

a female component with a bore therethrough adapted to receive a conducting pin insulated therein, one end of said female component having a nipple adapted to mount into a receptacle on one of said housings, the other end having a recess shaped generally as a tapered surface of revolution,

a male component with a bore therethrough adapted to receive such conducting pin insulated therein, one end of said male component having a nipple adapted to mount into a receptacle on the other one of said housings, the other end having a tapered arm adapted to fit matingly into said recess of said female component,

a nut rotatably mounted to one of said components, adapted to screw onto the other of said components,

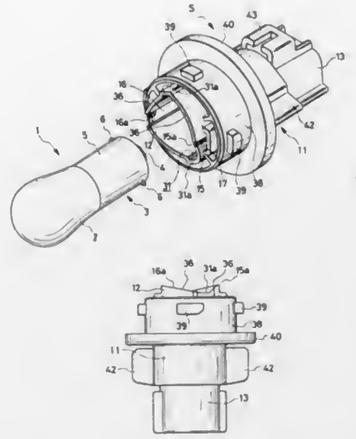
said components being engageable to one another without rotational re-orientation after each has first been mounted to one of said housings, with such conducting pin extending therethrough and insulated therefrom, by sliding said tapered arm of said male component into said tapered recess of said female component and screwing said nut onto said other component to draw said tapered arm and recess of said components tightly together, thereby securing the engagement of said female and male components to resist rotational displacement due to subsequently applied to torsional forces.

5,662,490

BULB SOCKET AND METHOD FOR USING

Shinji Ogawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Nov. 6, 1995, Ser. No. 554,539
Claims priority, application Japan, Nov. 18, 1994, 6-309697
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—336 19 Claims



1. A light bulb socket including a socket body having a bulb engaging hole in one end portion, the bulb engaging hole comprising an opening and a base opposite the opening, the light bulb socket comprising:

a socket body edge at the opening, the socket body edge having a plurality of portions more distant from the base and a plurality of points less distant from the base;

contactor inserting slits that allow insertion of contactors into said bulb engaging hole, each of said contactor inserting slits having a slit inlet portion along the socket body edge; and

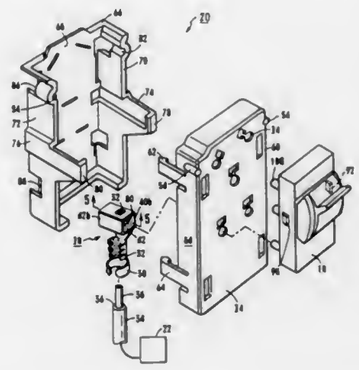
bulb inserting grooves formed on an inner cylindrical surface of said bulb engaging hole for fixedly inserting locking pins that protrude from a light bulb base, wherein said contactor inserting slits and said bulb inserting grooves are angularly spaced along the socket body.

5,662,491

ELECTRICAL CONNECTOR FOR VEHICLE POWER COMPONENT SWITCHES

John V. Antilla, Sterling Heights; Samuel G. Griffith, West Bloomfield, and Michael R. Olechiw, Hartland, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 7, 1995, Ser. No. 568,929
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—342 16 Claims



1. An electrical connector for engaging a power switch of a vehicle, comprising:

a receptacle base configured for operatively engaging the power switch; and

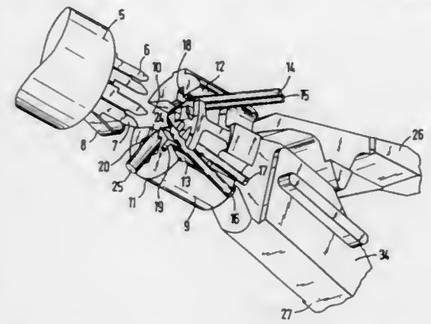
a locking cover reciprocatingly engaged with the receptacle base and including opposed retainer ears, the locking cover being movable between a locked position, wherein the retainer ears engage the power switch to hold the power switch in a fixed relationship with the receptacle base, and an unlocked position, wherein the power switch can be disengaged from the receptacle base and moved past the locking ears substantially without deforming the locking ears.

5,662,492

ELECTRICAL CONNECTOR ELEMENT

Christopher John Weiss, Cheltenham, Australia, assignor to Alcatel Components Limited, Moorabbin, Australia

Filed Jun. 7, 1995, Ser. No. 480,345
Claims priority, application Australia, Jul. 4, 1994, PM6587
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 8 Claims



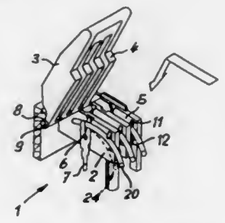
1. An electrical connector arrangement for making electrical connection between at least one contact element (**8**) and a corresponding conductor (**25**), the arrangement including a contact element carrying part (**5**) from which at least one contact element (**8**) protrudes having a resilient formed end (**8***c*) at a rearward end and a contact element part (**8***a*) at its other end dimensioned for receipt of a contact, and a conductor holding part (**9**) dimensioned for mateable engagement with the contact element carrying part (**5**), including at least one slot (**20**) to receive said at least formed end (**8***c*) of the at least one contact element (**8**) and an end of said conductor (**25**), wherein said formed end (**8***c*) is shaped to be a compression fit in said slot so that contact pressure is established between the contact element resilient formed end (**8***c*) and the conductor (**25**) within said slot upon mating said contact element carrying part and said conductor holding part.

5,662,493

MULTIPLE CONTACT PIN HOLDER FOR WEAK CURRENT INSTALLATIONS

Hans Reichle, Wetzikon, Switzerland, assignor to Reichle + De-Massari AG, Wetzikon, Switzerland

Filed Mar. 9, 1995, Ser. No. 401,621
Claims priority, application Switzerland, Mar. 10, 1994, 716/94
Int. Cl.[6] H01R *4/26;4/24*
U.S. Cl. 439—409 6 Claims



4. A multiple contact pin holder of a modular connection device, comprising:

a body having a plurality of slits formed therein for receiving respective wires, each slit being defined by two slit walls with at least one of the slit walls having at least first and second lateral retaining projections arranged above one another and projecting into the respective slit;

a plurality of contact pins, each being located within a respective slit, and each having an insulation displacer located on an end thereof; and

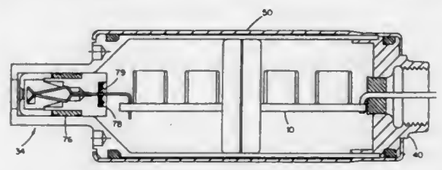
at least one cover pivotably attached to said body, said cover having a surface facing said body with a plurality of ribs located on the surface, said ribs being in registration with the slits so that when said cover is pressed onto said body, each said rib enters a respective slit to press a respective wire into a respective insulation displacer to form a solderless insulation displacement wiring connection; whereby the respective first lateral retaining projections are located in a wire insertion region of said body to retain the respective wires in the slits before the cover is pressed onto said body, and the respective second lateral retaining projections are located in an insulation displacer region of said body to engage and fix the respective wires in the slits after the respective wires are pressed into the respective insulation displacers using the cover, said cover being laterally clamped by said body and separable from said body.

5,662,494

FILTER STRUCTURE WITH SELF-SEALING COLLET ASSEMBLY

Joseph A. Zennamo, Jr., Skaneateles, and Joseph N. Maguire, Syracuse, both of N.Y., assignors to Eagle Comtronics, Inc., Syracuse, N.Y.

Continuation-in-part of Ser. No. 155,135, Nov. 22, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 416,637
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—589 4 Claims



1. A filter structure comprising: a circuit board assembly including a collet assembly comprising a front cap, a rear insert body including a rear end portion, a collet contact extension passing through the rear insert body, and a seal located between the front cap and the rear insert body; a filter housing including at least one open end and a connector coupled to a second end, wherein the circuit board assembly is placed within the filter housing such that the collet assembly is located within the connector; wherein the seal of the collet assembly seals an interface between the collet assembly and the connector, and a region of the housing that surrounds the rear end portion is not covered by sealant material.

5,662,495

METHOD OF CONNECTING SHIELD WIRE TO CONNECTOR

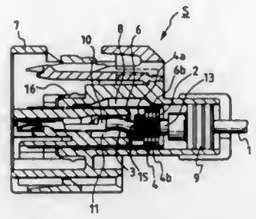
Shigemitsu Inaba; Hidehiko Kuboshima, and Satoki Masuda, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 23, 1995, Ser. No. 448,312
Claims priority, application Japan, May 23, 1994, 6-108650
Int. Cl.[6] H01R *9/03*
U.S. Cl. 439—610 6 Claims

1. A connector assembly comprising:

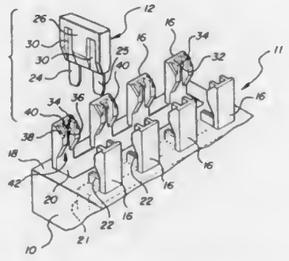
a housing containing an electrically-conductive, hollow cylindrical shell having an open exposed end, said shell having a terminal receiving chamber disposed within said shell; and

a shield contact member having at its front portion a wire fixing portion for fitting on a shield mesh of a shield wire, and at its rear portion a shell contact portion formed integrally with said



wire fixing portion in electrically-connected relation thereto, wherein said wire fixing portion and said shell contact portion each includes spring-like coils and said shell contact portion is larger in diameter than said wire fixing portion.

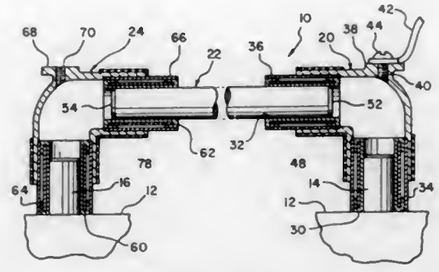
5,662,496
FUSE JUNCTION BOX
Hiryasu Kanamori, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jun. 7, 1995, Ser. No. 484,300
Int. Cl.[6] H01R *13/68*
U.S. Cl. 439—621 **6 Claims**



1. A junction box for use in establishing respective electrical connection between a series of terminal pairs positioned within the junction box utilizing a series of fuses with each fuse including a body and a pair of blades insertable into the junction box from a surface thereof to establish electrical connection between the terminals of the respective terminal pairs, the junction box including a plurality of pairs of locking arms extending from the junction box surface with each locking arm pair positioned in bracketing relation to the respective terminal pair, each locking arm of at least one pair having an inner side, a pair of parallel guide rails extending from the inner side to define therebetween a longitudinal channel for receiving the fuse, and a lock projection extending from the inner side into the channel for releasably securing the fuse within the channel, each of the guide rails having an inner surface facing the channel and an outer surface facing away from the channel, a pair of cam surfaces being formed on said outer surfaces of the guide rails.

5,662,497
MODULAR BATTERY TERMINAL CONNECTOR ASSEMBLY
Christopher J. Reilly, Endicott, N.Y., assignor to New York State Electric & Gas Corporation, Binghamton, N.Y.
Filed Nov. 3, 1995, Ser. No. 553,055
Int. Cl.[6] H01R *19/00*
U.S. Cl. 439—627 **31 Claims**

1. A modular battery terminal connector assembly for electrically interconnecting a first terminal of a first battery to a first terminal of a second battery, comprising:



a first electrically conductive elbow member having first and second ends, said first conductive elbow member being substantially rigid;

a first battery terminal connector having first coupling means for releasably engaging and gripping the first terminal of the first battery, said first battery terminal connector being coupled to said first end of said first conductive elbow member;

a second electrically conductive elbow member having first and second ends, said second conductive elbow member being substantially rigid;

a second battery terminal connector having second coupling means for releasably engaging and gripping the first terminal of the second battery, said second battery terminal connector being coupled to said first end of said second conductive elbow member;

an electrically conductive connecting member having first and second ends, said conductive connecting member being substantially rigid;

third coupling means for releasably connecting said second end of said first conductive elbow member to said first end of said conductive connecting member; and

fourth coupling means for releasably connecting said second end of said second conductive elbow member to said second end of said conductive connecting member.

5,662,498

Patent Not Issued For This Number

5,662,499
ELECTRICAL TERMINAL STRIP
Holger Strack, Bamberg, and Gerhard Kubernus, Hirschaid-Sassanfahrt, both of Germany, assignors to F. Wieland Elektrische Industrie GmbH, Bamberg, Germany
Filed Sep. 29, 1995, Ser. No. 536,252
Claims priority, application Germany, Oct. 1, 1994, 9415801 U
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—709 **12 Claims**

1. An electrical terminal strip for potential multiplication, comprising:

(A) an insulating terminal housing having a plurality of openings arranger in a row;

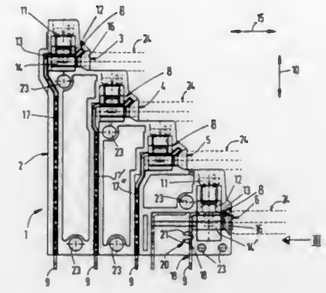
(B) a comb yoke extending in a direction of the row, end being located within said terminal housing;

(C) at least one terminal contact row located in the insulating terminal housing, and having a plurality of contact connections disposed side by side in the direction of the row, each said contact connection comprising:

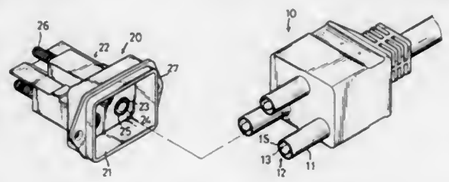
(1) a conductor terminal element having a receiving space therein, each receiving space being in registration with a respective terminal housing opening, and extending in a direction approximately perpendicular to the direction of the row, the receiving spaces receiving respective conductors, for example protective conductors inserted from an outside of said terminal housing and through the respective terminal housing opening; and

(2) a conductor protecting element inserted into the respective receiving space; each said conductor protecting element being attached to said comb yoke to collectively form a one-piece comb-shaped contact bar for electrically connecting said contact connections of said at least one terminal contact row to one another, said conductor protecting elements forming the prongs of said comb-shaped contact bar; means for clamping the conductor between said conductor protecting element and said conductor terminal element to contact said conductor protecting element and said conductor terminal element; and

(D) at least one connector pin protruding out from terminal housing and being electrically connected to a contact connection.



5,662,500
PLUG-AND-SOCKET POWER CONNECTOR
Solomon Yeah, 20th Fl., No. 105, Sec. 2, Tunhwa S. Rd., Taipei, Taiwan
Filed Apr. 8, 1996, Ser. No. 629,233
Int. Cl.[6] H01R *15/00*
U.S. Cl. 439—732 **4 Claims**

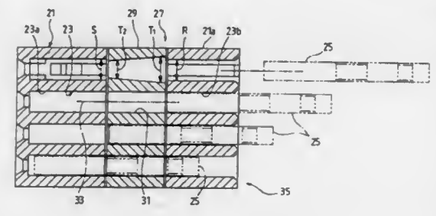


1. A plug-and-socket power connector comprising:

a plug having a back end and a forward end, a plurality of tubes made of insulating material extending longitudinally from the forward end, and a plurality of pins extending from the forward end, each pin enclosed within one of the plurality of tubes, each pin having a distal end, an insulating head at the distal end, and a plurality of flexible contact strips each curved radially outward at a middle portion thereof disposed within the associated tube; and,

a socket having a front end and a rear end, a housing element located at the front end forming a recess at the front end configured to receive at least a portion of the forward end of the plug therein, and a supporting body located behind and supporting the housing element, said supporting body having a plurality of holes extending longitudinally therethrough, a tubular conductor in each hole, each tubular conductor spaced from a wall bounding the hole, each tubular conductor configured to receive a pin of the plug while the tubes of the plug means extend into the space between the walls bounding the holes and the conductors; whereby the flexible contact strips are located such that they contact the tubular conductors only after at least a portion of the forward end of the plug is received in the recess of the housing element of the plug and wherein the insulating head contacts the tubular conductor prior to the flexible contact strips moving into contact with the conductors as the plug means is pushed into the socket.

5,662,501
DOUBLE-RETAINING CONNECTOR
Sakai Yagi; Masanori Tsuji, and Keishi Jinno, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Division of Ser. No. 385,304, Feb. 7, 1995. This application Apr. 15, 1996, Ser. No. 632,138
Claims priority, application Japan, Feb. 10, 1994, 6-016628
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **7 Claims**



1. A double-retaining connector comprising:

a connector housing having terminal receiving chambers and a cavity formed in the connector housing across the terminal receiving chambers, said cavity opened to an outer surface of the connector housing; and

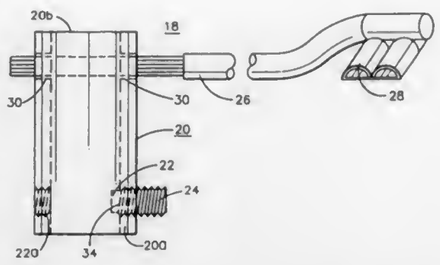
a spacer inserted into the cavity, said spacer having openings which are aligned respectively with the terminal receiving chambers for allowing terminals to pass through the openings, respectively,

wherein each of the terminal receiving chambers are divided by the cavity into a front receiving chamber at a front side of said connector housing in a terminal inserting direction and a rear receiving chamber at a rear side of said connector housing in such a manner that the cavity is interposed between the front and rear receiving chambers, one end of each of the openings is larger than an open end of the rear receiving chamber at a boundary between the one end of each of the openings and the rear receiving chamber, and an open end of the front receiving chamber is larger than the opposite end of each of the openings at a boundary between the front receiving chamber and the opposite end of each of the openings.

5,662,502
ADAPTOR FOR AC CONNECTOR
John E. Allen, Winter Haven, and Johnny L. Hackedy, Auburndale, both of Fla., assignors to Term-Lok, Inc., Haines City, Fla.
Filed Sep. 20, 1995, Ser. No. 530,615
Int. Cl.[6] H01R *4/36*
U.S. Cl. 439—814 **12 Claims**

1. An electric power connection system for coupling electric power to an electric power terminal substantially encapsulated in an electrically insulative block whereby said terminal protrudes from a surface of said block, said connection system comprising:

a generally cylindrical tube of electrically conductive metallic material having at least one end with an inner diameter sized to admit said terminal in general sliding engagement within said tube, said tube further having a threaded aperture extending through a sidewall thereof adjacent said at least one end;



a set screw threadedly inserted in the threaded aperture and adapted for compressive engagement with said terminal for establishing retention and electrical continuity between said terminal and said tube;

an electrical lead connected to an end of said tube opposite said at least one end for coupling power to said terminal; and

at least one aperture passing through said sidewall of said tube adjacent said opposite end, said electrical lead extending through said at least one aperture.

5,662,503

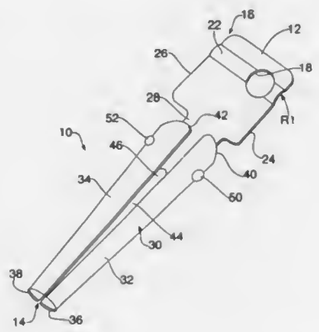
MULTI-WIRE LOCKING SYSTEM

Cosmo Castaldo, Westbury, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 183,591, Jan. 18, 1994, Pat. No. 5,413,509. This application May 8, 1995, Ser. No. 437,254

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—851 **1 Claim**



1. A unitary one-piece ground contact for use as a component within an electrical connector, comprising, in combination:

a body formed from a single black, said body including:

a mounting tab portion formed with an opening therethrough,

a neck portion integral with said mounting tab portion,

a tube grip portion integral with said mounting tab portion via said neck portion;

said tube grip portion comprising:

a plurality of spring members formed in arcuate configuration with their respective concave inner surfaces facing one another, said spring members being disposed so as to define a pair of gaps therebetween, and a receiving end flared to receive a ground pin of an electrical plug,

and self-centering means for aligning said contact within a bore in which the contact is disposed when in a functioning mode, said self-centering means including a plurality of protuberances formed as an integral part of said spring members for contacting the inner surfaces defining said bore.

5,662,504

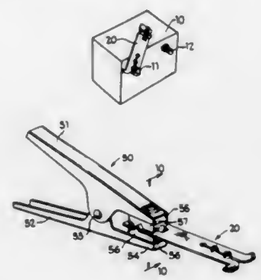
SIDE TERMINAL ADAPTER

Bert Krivec, Waukesha, Wis., assignor to Snap-on Technologies, Inc., Lincolnshire, Ill.

Filed Jun. 2, 1995, Ser. No. 459,482

Int. Cl.[6] H01R *4/30*

U.S. Cl. 439—857 **19 Claims**



1. An elongated side terminal adapter for use with a jumper cable clamp, comprising:

a clamp connecting portion mateably engageable with the jumper cable clamp; and

a terminal connecting portion having laterally opposing terminal gripping plates disposed substantially in a common plane and cooperating to define an opening therebetween, said plates being laterally resiliently deflectable to facilitate sliding said side terminal adapter onto a side terminal of a battery and including a first plurality of terminal engaging prongs bent out of said plane in a first direction and a second plurality of terminal engaging prongs bent out of said plane in a second direction opposite to the first direction,

said first and second pluralities of prongs being disposed along said opening and cooperatively arranged to completely define at least one terminal-receiving slot having oppositely facing substantially straight sides to facilitate clipping onto the battery side terminal, with each of said first and second pluralities of prongs including prongs respectively disposed along said oppositely facing sides of the at least one slot.

5,662,505

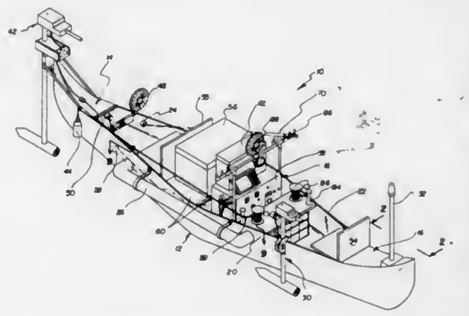
ELECTRICALLY POWERED CANOE WITH FISHING ACCESSORIES

Charles Spriggs, Gingerwood Ct., Wilmington, Del. 19808

Filed Nov. 18, 1996, Ser. No. 751,746

Int. Cl.[6] B60L *11/02*; **B63B** *00/00*

U.S. Cl. 440—6 **10 Claims**



2. An electrically powered canoe with fishing accessories comprising:

a canoe having an essentially hollow interior, the canoe including a bow, astern, a central region, a port side and a starboard side; and

the central region including a center console with a bow portion, a stern portion and a central portion, the center console including a plurality of accessories, the accessories including a seat and a cooler positioned on the bow portion of the center console, the accessories further including a primary battery, a secondary battery, a compass, a fish finder and a rod rack positioned on the central portion of the center console, a fan and a fishing rod being positioned upon the rod rack, the primary battery including a plurality of buttons and switches operatively coupled to the accessories of the bow, stern and central section, the stern portion of the center console including an electrical control panel operatively coupled to the primary and secondary batteries.

5,662,506

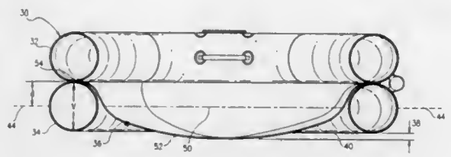
RAFT WITH WATER DISPLACING FLOOR AND METHOD THEREFOR

Kenneth G. Reinhardt, Jr., Coral Springs, and Dennis Liong, Parkland, both of Fla., assignors to Hoover Industries, Inc., Miami, Fla.

Filed Jun. 10, 1996, Ser. No. 661,066

Int. Cl.[6] B63B *35/58*

U.S. Cl. 441—40 **10 Claims**



1. A raft with a water displacing floor comprising:

first and second peripherally disposed, inflatable tubes stacked one atop the other, said peripheral tubes when inflated defining a periphery and a substantially planar spatial area within said periphery of said raft, each one of said peripheral tubes, when inflated, having a substantially similar vertical, cross-sectional dimension;

a flexible floor having a surface area larger than said planar spatial area of said raft when said tubes are inflated and said flexible floor having a peripheral floor region entirely attached in a watertight seal near an interface between the stacked tubes, a lower region of said floor hanging below said peripheral floor region a distance at least 50% greater than said vertical cross-sectional dimension of either of said first and second tubes when said raft is elevated in a horizontal, free-standing position;

when said tubes are inflated, said planar spatial area of said raft and all said floor surface being free of all obstructing rigid elements and open to a load;

whereby said floor provides at least 50% of the total buoyancy of said raft when said raft is loaded, said floor buoyancy being provided by a predetermined volume of water being displaced by said floor in said loaded condition; and

when said tubes are inflated and said raft is deployed in water, said raft forms an operable raft with said floor buoyancy when said first inflatable tube is principally buoyant in said water and forming a substantially identical operable raft with said floor buoyancy when said second inflatable tube is principally buoyant in said water.

5,662,507

HEAT-RESISTANT FELT FOR HOT PRODUCTS

Akizo Ohba, Yokohama; Hironori Misawa, Noda, and Yukihiro Nomura, Kashiwa, all of Japan, assignors to Ichikawa Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 635,594

Claims priority, application Japan, Apr. 24, 1995, 7-123094

Int. Cl.[6] C08K *7/14*

U.S. Cl. 442—320 **4 Claims**



1. A heat-resistant felt for hot products manufactured by needle-punching so as to compactly intermingle a heat-resistant fiber web comprising a blend of glass fibers and para-aromatic polyamide fibers at a ratio of 60:40.

5,662,508

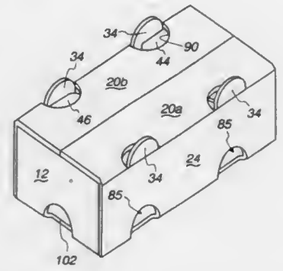
TOY BUILDING BLOCKS

Mark Andrew Smith, Anderson, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Nov. 13, 1995, Ser. No. 556,079

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—128 **7 Claims**



1. A box comprising an integral monolithic paperboard blank, folded to form a toy building block comprising:

first and second sidewalls comprising a first pair of opposed sidewalls, third and fourth sidewalls comprising a second pair of opposed sidewalls, the first and the second pair of opposed sidewalls cooperating to form a double-ended hollow tube;

a pair of opposed end walls at the ends of the tube and cooperating therewith to enclose an interior volume;

a plurality of tabs extending from the first sidewall and spaced apart in a preselected pattern, the second sidewall located opposite the first sidewall and defining a corresponding plurality of spaced apart primary apertures, arranged with the same pattern as that of the tabs;

the third and the fourth sidewalls defining a plurality of secondary apertures cooperating with the primary apertures to form a continuous opening for receiving the tabs of another paperboard box; and

two spaced-apart pairs of spaced-apart interior walls, carrying the tabs, the third and the fourth sidewalls completely overlying the first pair of opposed interior walls.

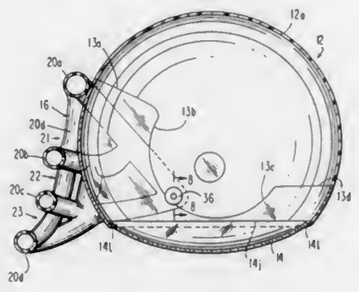
5,662,509
INFLATABLE NON-WEARABLE FOOTBALL HELMET

Marvin S. Lieberman, New York, N.Y., assignor to Alvimar Manufacturing Company, Inc., Long Island City, N.Y.

Continuation of Ser. No. 197,098, Feb. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 945, Oct. 29, 1992, abandoned. This application Nov. 2, 1995, Ser. No. 552,247

Int. Cl.[6] A63H *3/06;33/00*

U.S. Cl. 446—220 **2 Claims**



1. A toy formed as an inflatable football helmet which cannot be put on a person's head, comprising: a substantially air-impermeable shell inflatable to a generally spherical shape formed of a single layer of thin flexible plastic sheet material, said shell including front, rear, top, bottom, left and right parts which define a first enclosed space, and a face mask fixed to said shell and situated forward of said front part of said shell, said front and bottom parts being generally transparent and said remaining parts are opaque, said face mask formed of thin flexible air-impermeable plastic sheet material and defining a second space that is inflatable and communicates with said first space, said face mask having at least one opening there through generally adjacent said transparent front part of said helmet, whereby the front part of the said helmet is visible through said at least one opening in said face mask, and valve means for allowing introduction of and retaining therein a fluid in said first and second spaces for inflating same, wherein said generally spherical shape defines a first radius of curvature, and wherein said bottom part of said shell has a second radius of curvature much greater than said first radius of curvature.

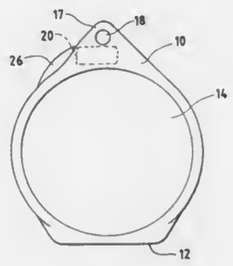
5,662,510
BALLOON ANCHOR WITH SOUNDER AND DISPLAY AREA

John Wolens, Glencoe, Ill., assignor to 24th and Dean, Inc., Chicago, Ill.

Filed Mar. 20, 1996, Ser. No. 618,961

Int. Cl.[6] A63H *5/00;3/06*

U.S. Cl. 446—397 **6 Claims**



1. A musical balloon weight for use in connection with an inflatable balloon comprising:

a housing having top and bottom portions and constructed of first and second halves which are joined together to form a substantially smooth and enclosed surface having an interior space;

said first and second halves of said housing having increased surface areas forming graphic display portions for the display of visual material;

at least one speaker hole located in said housing for the transmission of sound;

a flat surface located at the bottom portion of said housing and adapted to provide a support surface that allows for the upright and free standing operation of said device;

a tie-down located at the top portion of said housing, said tie-down is adapted to securingly retain an inflatable balloon;

a means for emitting a sound incorporated into said interior space of said housing; and

an activatable switch located on said housing, said switch in communication with and controls the activation of said sound emitting means.

5,662,511
HONEY FRAME FEEDING APPARATUS

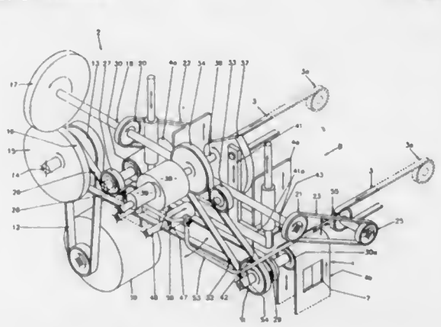
David F. Penrose, Christchurch; Roland A. Hitchcox, and Neil M. Hitchcox, both of Timaru, all of New Zealand, assignors to David Frederick Penrose, Christchurch, New Zealand

Filed Jun. 28, 1995, Ser. No. 496,194

Claims priority, application New Zealand, Jun. 29, 1994, 260872

Int. Cl.[6] A01K *51/00*

U.S. Cl. 449—50 **12 Claims**



1. Apparatus for feeding honey frames one by one into an automatic rotary cutter uncapping machine, said apparatus comprising:

a pair of continuous spaced parallel horizontal conveyors adapted to convey a plurality of honey frames from a first position at which said frames are loaded onto said conveyors to a second position at which said frames are removed one by one from said conveyors, each said frame being supported upon said horizontal conveyors by a lug formed at each upper corner of said frame and projecting outwards therefrom;

a pair of continuous spaced parallel vertical conveyors extending downwardly from adjacent said second position, said vertical conveyors being formed with opposed gaps therein each sized to receive one of said lugs therein;

a movable stop which is arranged to prevent frames on the horizontal conveyors from moving onto the vertical conveyors until said gaps are at a predetermined position, and there is sufficient room for a frame to hang vertically between said conveyors; and

a reciprocating picker bar which is arranged to draw the single frame closest to said second position on the horizontal conveyors onto the vertical conveyors, when said gaps reach said predetermined position, such that said frame lugs are received within said chain gaps.

5,662,512
POSTURAL BRA

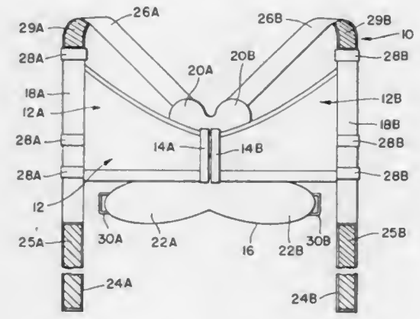
Theo Jose Cohen, Rio de Janeiro, Brazil, assignor to Cotrauma-Centro Ortopedico Traumatologico Ltda., Rio de Janeiro, Brazil

Filed Nov. 9, 1995, Ser. No. 555,599

Claims priority, application Brazil, May 8, 1995, PI950 1947-2

Int. Cl.[6] A41C *3/02;3/12*

U.S. Cl. 450—1 **4 Claims**



1. A postural bra, comprising:

a bra body formed of two breast cups provided at adjacent lateral edges thereof with vertical strips adjustably connectable with each other;

a posterior support having two upwardly extending vertical portions and two horizontal portions provided at respective lower ends of the vertical portions; and

two straps provided, respectively, at remote lateral portions of the cups and connected at one end portions thereof to upper portions of the vertical portions of the posterior support and adjustably connected to free ends of the horizontal portions of the posterior support, the two straps having respective adjusting end strap portions for adjusting the bra on a wearer's body,

wherein the free ends of the horizontal portions of the posterior support are provided each with a guide for a respective strap to provide for attachment of the straps to the horizontal portions of the posterior support, and

wherein the two straps have respective should portions provided with first fasteners, respectively, and the adjusting strap portions are provided, at free ends thereof with second fasteners cooperating with the first fasteners for adjustably securing the bra on the wearer's body after attachment of the two straps to the posterior support.

5,662,513
BRASSIERE STRAP FASTENER AND METHOD USING SAME

Rostislav Cuhel, Jamestown, N.Y., assignor to Koh-I-Noor, Prague, Czech Rep.

Filed Feb. 13, 1996, Ser. No. 600,463

Int. Cl.[6] A41F *15/02;9/00*

U.S. Cl. 450—28 **17 Claims**

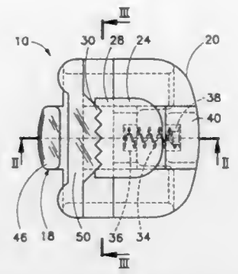
1. A clothing accessory device comprising:

a first body part;

a second body part slidably coupled to said first body part;

first fastener means on said first body part for coupling said first body part to a strap of a brassiere;

second fastener means including a first jaw on said first body part and a second jaw on said second body part for releasably clamping an article of clothing overlying the brassiere during use thereof, thereby coupling said first body part and said second body part to said article of clothing; and



spring means engaging said first body part and said second body part for biasing said first jaw and said second jaw towards one another.

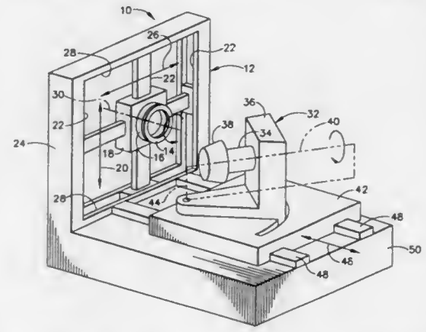
5,662,514
METHOD FOR PRODUCING CUTTING BLADES

John Edward Masseth, Fort Wayne, and Joseph Henry Bradfield, Columbia City, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed May 5, 1995, Ser. No. 437,144

Int. Cl.[6] B24B *3/02*

U.S. Cl. 451—5 **14 Claims**



1. A method for producing a cutting blade, comprising the steps of:

(a) obtaining a cutter head having a plurality of blade-receiving slots formed in a face thereof;

(b) positioning said cutter head in a coordinate measuring machine;

(c) inspecting a selected one of said slots using said coordinate measuring machine;

(d) recording inspection data obtained during said inspecting step and an identifying indicium of said cutter head on a recording medium;

(e) transmitting said inspection data and said identifying indicium of said cutter head from said recording medium to a computer numerical control grinding machine;

(f) positioning a cutting blade blank in said computer numerical control grinding machine; and

(g) grinding said cutting blade blank, wherein said grinding step comprises the steps of:

(i) generating selected finished surfaces of said cutting blade from said cutting blade blank; and

(ii) selectively removing a calculated amount of material from at least one of a toprem relief surface, a cutting relief surface and a shoulder relief surface of said cutting blade blank to compensate for at least one dimensional variation of said inspection data of said selected one of said slots relative to dimensional design requirements of said selected one of said slots.

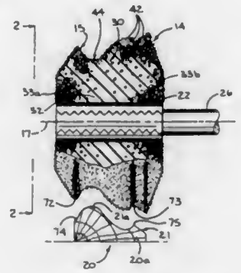
5,662,515
METHOD AND APPARATUS FOR ABRADING WITH A PROFILED SOFT ROLLER

Kenneth Evensen, 1429 Fremont Ave., Bartlett, Ill. 60103

Continuation-in-part of Ser. No. 409,863, Apr. 26, 1995, Pat. No. 5,567,197, which is a continuation-in-part of Ser. No. 324,806, Oct. 18, 1994, Pat. No. 5,564,971, which is a continuation-in-part of Ser. No. 168,042, Dec. 15, 1993, Pat. No. 5,365,628. This application Apr. 17, 1996, Ser. No. 632,794

Int. Cl.[6] B24D *9/02*

U.S. Cl. 451—59 18 Claims



14. A method of abrading a contoured surface on a substrate, comprising the steps of:

providing a profiled, abrading surface on a roller body having an outer layer of soft, compressible material;

forcing the profiled, abrading surface on the roller with enough force to make a flat surface in the soft, outer layer of the roller body in the direction of linear travel of the substrate relative to roller body;

expanding the profiled surface laterally relative to the contoured substrate surface while abrading;

traveling the substrate relative to the roller body in a linear travel direction; and

rotating the roller body and abrading the contoured surface of the substrate while the soft roller body is flattened in the linear direction and expanded in the lateral direction.

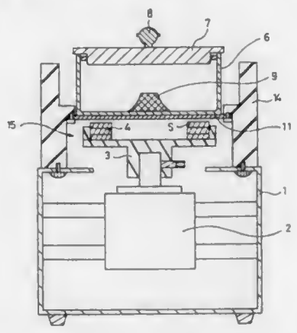
5,662,516
MAGNETIC BARREL TUMBLER

Jae Ilyun You, 99 Bongik-Dong, Jongro-ku, Seoul, Rep. of Korea

Filed Sep. 27, 1995, Ser. No. 534,511

Int. Cl.[6] B24B *19/00*

U.S. Cl. 451—113 10 Claims



1. A magnetic barrel tumbler comprising:

a motor case adapted to firmly support a motor therein;

an outer housing mounted to an upper portion of the motor case;

a magnetic disc placed in a space defined by both the outer housing and the motor case, the magnetic disc including a disc plate coupled to a shaft of the motor, and a plurality of magnets attached to an upper surface of the disc plate, the magnets being arranged in a fashion that those having opposite polarities face each other diametrically so that variations in magnetic field are induced during rotation of the disc plate;

a fixed plate spaced from an upper surface of the magnetic disc and fixedly mounted at an outer edge thereof to an inner surface of the outer housing, the fixed plate being made of a nonmetallic material;

a polishing barrel laid on the fixed plate, the polishing barrel having a protrusion at a central portion of an inner bottom surface thereof and with a chamber for containing articles to be polished and abrasives; and

a lid mounted to an upper end of the polishing barrel and adapted to prevent contents of the polishing barrel from being outwardly discharged and to facilitate a replacement of the polishing barrel contents and a washing of the polishing barrel;

wherein the disc plate of the magnetic disc is made of steel.

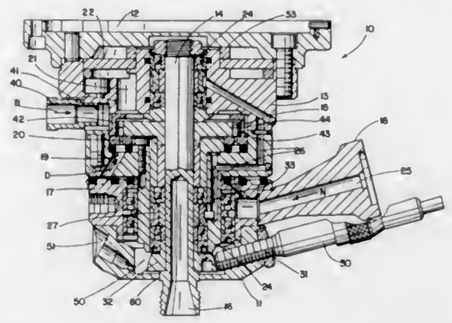
5,662,517
COMPRESSED-AIR-DRIVEN METAL WORKING MACHINE

Hans-Werner Trojahn, Bergisch-Gladback, Germany, assignor to Joisten & Kettenbaum GmbH & Co. Joke KG, Bergisch-Gladbach, Germany

Filed Dec. 15, 1994, Ser. No. 357,120

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—295 3 Claims



1. A metal working machine having a machine head comprising:

a rotatable working spindle;

a turbine wheel operably connected to said rotatable working spindle, said turbine wheel being in the form of a disk and having a peripheral surface, said peripheral surface having pockets;

a first oil-free compressed air inlet and duct, oil-free compressed driving air from said first oil-free compressed inlet being directed toward said turbine wheel in an operating direction capable of turning said turbine wheel in said operating direction;

a second oil-free compressed air inlet, oil-free compressed braking air from said second oil-free compressed inlet being directed toward said pockets on said peripheral surface of said turbine wheel in a direction oppositely to said operating direction for braking said turbine wheel;

at least one oil-containing air inlet and duct, oil-containing air from said oil-containing air inlet for lubricating said rotatable working spindle; and

a sound absorber disposed in said first oil-free compressed air duct downstream of said turbine wheel.

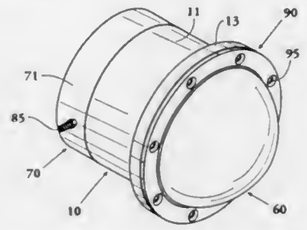
5,662,518
PNEUMATICALLY ASSISTED UNIDIRECTIONAL CONFORMAL TOOL

Michael D. James, Ft. Gibson, and Fritz R. Kruis, Tulsa, both of Okla., assignors to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed May 3, 1996, Ser. No. 642,351

Int. Cl.[6] B24B *41/06*

U.S. Cl. 451—384 25 Claims



1. A tool for polishing/fining a lens comprising:

a pair of oppositely disposed planar resiliently elastic diaphragms;

a plurality of rods, each rod of said plurality of rods extending longitudinally from one said diaphragm to another said diaphragm; and

means for holding said plurality of rods in sliding abutment in a cluster between said diaphragms,

whereby continuous distorting force applied longitudinally to an exterior surface of said one diaphragm is transmitted by longitudinal displacement among said cluster of rods to an interior surface of said another diaphragm to cause said another diaphragm to dynamically comply to a surface of a lens disposed across said another diaphragm as said another diaphragm and said lens are relatively laterally displaced.

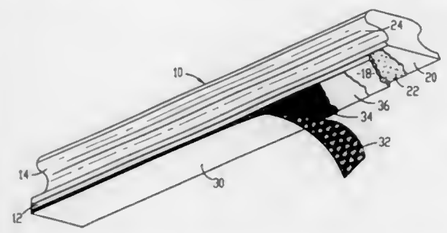
5,662,519
CONTOUR SANDER

Robert A. Arnold, 1900 High Dr., Liberty, Mo. 64068

Filed Oct. 18, 1996, Ser. No. 731,396

Int. Cl.[6] B24D *15/00*

U.S. Cl. 451—525 41 Claims



1. A contour sander for sanding a curved surface, said sander comprising:

a hard backing plate having an elongated support face for supporting a sheet of sandpaper; and

an elongated handle upon which a sanding pressure may be exerted, said handle being operatively attached to said plate and disposed to transfer sanding pressure to the plate,

said plate being uniformly flexible along substantially the entire length of the support face for conforming generally to the curvature of the surface when the sanding pressure is applied,

said plate having sufficient memory to return to its original configuration when said sanding pressure is relieved,

said handle being so configured and constructed as to not limit the flexibility of the plate, said handle being axially stretchable to accommodate flexure of said plate when said sanding pressure is exerted.

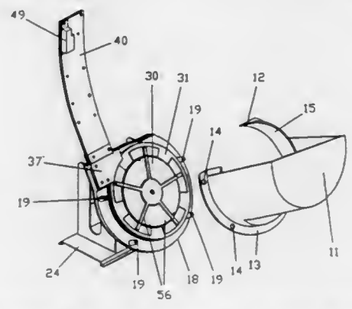
5,662,520
COIN HANDLING APPARATUS WITH COIN FILTER AND IMPROVED COIN INTERLOCK

Allen J. Evdokimo, 1720 Terrace Heights La., Reno, Nev. 89523

Division of Ser. No. 221,727, Apr. 1, 1994, Pat. No. 5,484,334. This application Jun. 16, 1995, Ser. No. 491,062

Int. Cl.[6] G07D *3/00*

U.S. Cl. 453—3 18 Claims



10. For use with a coin hopper, a coin feeder assembly for transporting coins from a coin mass volume in the hopper to a transfer station, said coin feeder assembly comprising:

a coin filter device for rejecting coins having a predetermined characteristic, said coin filter device including means for defining coin inlets facing away from an axis of rotation of said coin feeder assembly, and

a coin transport disc coupled to said coin filter device and defining therewith an internal coin volume for receiving a plurality of coins entering said internal coin volume through said coin inlets, said coin transport disc including means for moving coins entering through said coin filter device along said transport path.

5,662,521
SAFETY WORK BENCH WITH ARM REST

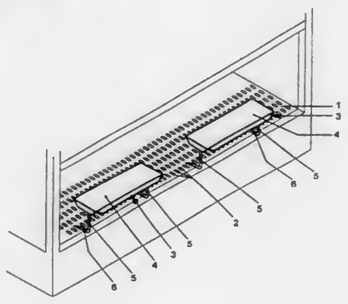
Christopher Latz, Hanau, and Walter Glück, Hasselroth, both of Germany, assignors to Heraeus Instruments GmbH, Hanau, Germany

Filed Mar. 29, 1996, Ser. No. 625,476

Claims priority, application Germany, Apr. 6, 1995, 195 12 889.3

Int. Cl.[6] B08B *15/02*

U.S. Cl. 454—57 7 Claims



1. A safety work bench comprising a work opening having as its lower boundary a boundary plate in which ventilation openings are arranged for generating a vertical air current, and at least one arm rest positioned in a lower area of the work opening, the arm rest (3) being constructed as a separate structural member for detachable mounting on the boundary plate (1), the arm rest (3) comprising a support plate (4) and supports (5), the supports (5) at their lower ends being insertable in the ventilation openings (2) for mounting on the boundary plate (1) and holding the arm rest (3) at distance from the boundary plate (1) when mounted.

5,662,522

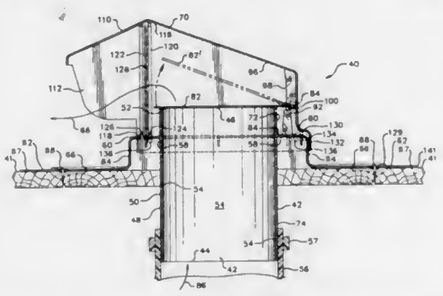
EXHAUST VENT

Arthur L. Waltz, Ridgefield, Wash., assignor to Noll Manufacturing Co., Fife, Wash.

Filed Nov. 12, 1993, Ser. No. 152,288

Int. Cl.[6] F23L *17/00*

U.S. Cl. 454—359 **28 Claims**



1. An exhaust ventilator, said ventilator adapted to provide a conduit for passage of exhaust gases through the roof or wall of a selected building structure while protecting said conduit against entry of water from the outdoors, said ventilator comprising:

a. a base member, and

b. a continuous one-piece tubular member having a jointless through passageway with a top and a bottom, said tubular member extending through said base member and integrally formed therewith, so as to provide a downwardly extending interior flange and a upwardly extending exterior flange portion of said tubular member relative to said base member, wherein said interior flange is configured to be sufficiently long so as to extend downwardly into a selected building structure to said bottom of said tubular member; and

c. a hood, said hood adapted to engage said base member, said hood sized to protect said exterior flange portion of said tubular member against entry of water from the outdoors.

5,662,523

GAME APPARATUS USING A VIDEO DISPLAY DEVICE

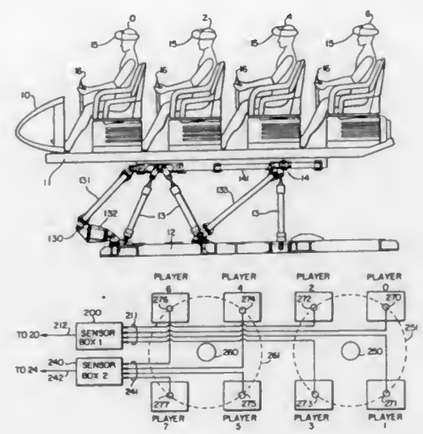
Shingo Yasumaru; Kazunari Shimamura, and Nobuyuki Takano, all of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,298

Claims priority, application Japan, Jul. 8, 1994, 6-157238

Int. Cl.[6] A63G *31/16*

U.S. Cl. 463—30 **25 Claims**



1. A game apparatus for a plurality of players comprising:

a plurality of video display devices provided to each of said players for displaying video which is watched by each of the players;

a position sensor device for detecting the position of each of the players and for outputting a position information signal for each of the players; and

a plurality of player control units, operatively connected to each of said video display devices and said position sensor devices, for controlling said video display of the corresponding video display devices;

wherein, in response to said position information signal of a first player detected by said position sensor device, said player control units for each of the other players control corresponding video display devices to provide a video picture of the first player in the displaying video watched by at least some of each of the other players with any corresponding change of the first player video picture based on a movement of the first player.

5,662,524

DEVICE FOR THE MACHINING OF TUBE ENDS

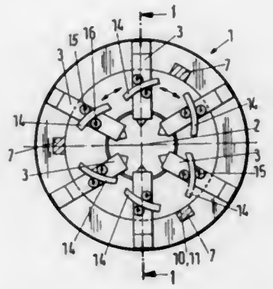
Karl-Josef Esser, and Hermann-Josef Barth, both of Mönchengladbach, Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Oct. 20, 1995, Ser. No. 546,490

Claims priority, application Germany, Oct. 20, 1994, 44 38 818.7

Int. Cl.[6] B23B *3/26;* **B23G** *5/08*

U.S. Cl. 470—190 **8 Claims**



1. An apparatus for machining an end of a tube having an axis extending therethrough comprising:

a tool head having a face side and being mounted rotatable about the axis of the tube;

a plurality of slide bars movably arranged about said face side of said tool head in a direction radial to the tube axis;

a tool connected to a respective one of said plurality of slide bars;

a plurality of push rods uniformly distributed about the tube axis and each of said plurality of push rods including a first end, a second end, and first oblique toothing positioned proximate said first end;

a frame connected to said second end of each of said plurality of push rods and being displaceable with said push rods along the tube axis; and

transmission means for imparting radial movement to both said plurality of slide bars and said tools upon axial movement of said plurality of push rods, said transmission means being connected to said plurality of slide bars and including an outer surface and second oblique toothing positioned about said outer surface, said second oblique toothing corresponding to and disposed for engaging said first oblique toothing on said plurality of push rods, said transmission means comprising a rotatably mounted ring (**12**) having an end side facing and extending coaxially around said tube end and being turnable by said push rods (**7**); said ring comprising cam portions (**14**) on its end side facing the tube end; and guide elements connected to said slide bars (**3**) and cooperating with said cam portions so that said slide bars (**3**) are moved radially upon the turning of said ring (**12**).

5,662,525

PARTICIPATORY WATER PLAY APPARATUS

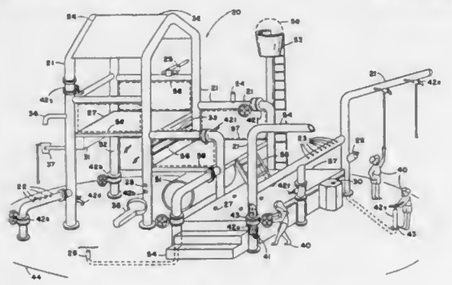
Rick A. Briggs, Sixty-four Maple Grove, Springfield, Ill. 62707

Continuation of Ser. No. 333,373, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 25,143, Mar. 2, 1993, Pat. No. 5,405,294, which is a continuation of Ser. No. 604,946, Oct. 29, 1990, Pat. No. 5,194,048, which is a continuation-in-part of Ser. No. 438,220, Nov. 20, 1989, Pat. No. Des. 330,579.

This application Jun. 2, 1995, Ser. No. 460,101

Int. Cl.[6] A63G *21/00*

U.S. Cl. 472—128 **50 Claims**



1. An interactive water play apparatus, comprising:

a play structure formed of a plurality of interconnected pipes, said pipes having sufficient size and strength for safely supporting one or more play participants playing on, in or around said play structure;

at least one water forming device disposed on said play structure for selectively directing or spraying water onto said play participants and/or for creating desired water effects; and

at least one control valve mounted so as to be readily accessible to said play participants, said control valve allowing said play participants to selectively activate said water forming device whereby interactive water play is thereby attained.

5,662,526

AUTOMATIC GOLF BALL TEEING MACHINE

Dave Sutherlin, 30 S. Tuxedo St., Indianapolis, Ind. 46201

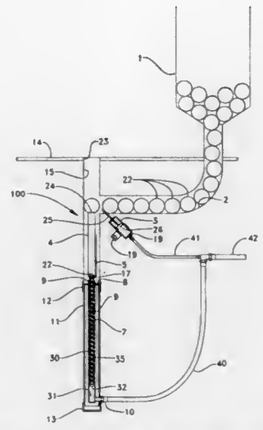
Filed Apr. 2, 1996, Ser. No. 626,357

Int. Cl.[6] A63B *57/00*

U.S. Cl. 473—135 **13 Claims**

1. An automatic golf ball teeing machine comprising:

a housing that includes a substantially horizontal plate;



a fluid pressure cylinder with an inlet and a piston above said inlet, and being attached to said housing below said plate, and said piston being moveable between an advanced position and a retracted position;

means for biasing said piston toward said retracted position;

a tee connected to said piston and being moveable with said piston between a loading position and a maximum height position in which a portion of said tee extends above said plate;

a supply conduit sized to carry golf balls attached to said housing with one end adjacent said tee when in said loading position;

a source of high pressure fluid connected to said inlet of said fluid pressure cylinder;

a pressure regulating valve positioned between said inlet and said source of high pressure fluid and being capable of adjusting pressure acting on said piston to balance said tee between said loading position and said maximum height position; and

a reset switch capable of relieving pressure on said piston to allow said piston to retract under the action of said means for biasing.

5,662,527

GOLF PRACTICE DEVICE

Chuck Robert Jacquinot, 1824 Overlook Dr., Fort Collins, Colo. 80526, and John Phillip Jacquinot, 15497 Rockbluff Rd., Ottumwa, Iowa 52501

Filed May 6, 1996, Ser. No. 643,335

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—138 **2 Claims**

2. A golf practice apparatus for use with a conventional golf club having a head, a handle, and a shaft, said apparatus comprising:

a. a retrieval reel adapted to attach to the shaft of the golf club;

c. a retrieval line stored within said retrieval reel;

d. said retrieval reel configured to discharge and retrieve said retrieval line;

e. a guide eye adapted to attach to the shaft of the golf club;

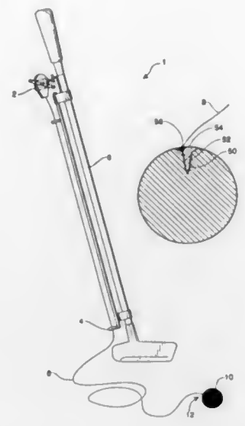
f. a golf practice ball;

g. a receiving hole formed within said golf practice ball;

h. a screw configured to threadedly engage within said receiving hole;

i. said screw having a threaded shaft and a head, the head comprising a substantially planar surface oriented substantially perpendicular to said threaded shaft, a hole penetrating through said surface, said hole configured to create a communicating path from outside of said golf practice ball to inside said receiving hole when said screw is engaged within said receiving hole;

j. wherein to prepare said apparatus for use, said retrieval reel is affixed to the shaft of the golf club near the handle, said guide

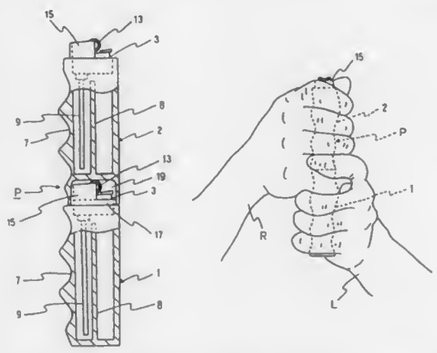


eye is affixed to the shaft of the golf club between said retrieval reel and the head, said retrieval line is guided through said guide eye and threaded through said hole penetrating through said head, and said screw is threadedly engaged in said receiving hole, thereby wrapping said retrieval line around said threaded shaft and securely engaging said retrieval line within said golf practice ball.

5,662,528

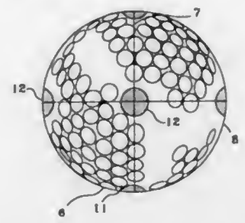
Patent Not Issued For This Number

5,662,529
COMBINED LIGHTER AND GOLFER'S TRAINING DEVICE
Shoei Hashimoto, 150, Ootaki, Fukuoka-machi, Nishitonami-gun, Toyama-ken 939-01, Japan
Filed May 2, 1996, Ser. No. 641,941
Int. Cl.[6] A63B *69/36;* **F23D** *11/36*
U.S. Cl. 473—203 **9 Claims**



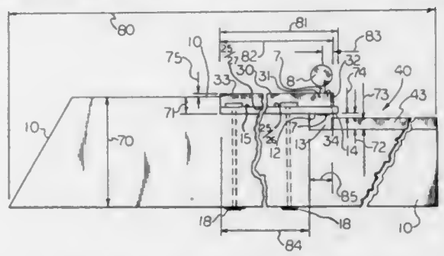
6. A golf training tool for mastering grips comprising a gripping body having a lighter, said lighter including an ignition unit at an upper end of said gripping body, an outer surface, and a finger touching portion formed by a plurality of grooves in said outer surface conforming to a finger positioning in a basic golf grip.

5,662,530
GOLF BALL
John G. Sellar, 6045 W. Evans Pl., Lakewood, Colo. 80227
Filed Aug. 10, 1994, Ser. No. 288,606
Int. Cl.[6] A63B *69/36;37/14*
U.S. Cl. 473—268 **10 Claims**



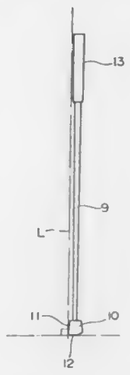
1. A golf ball having a surface substantially made up of dimples and lands, all of said lands being substantially undifferentiatable from each other when viewed by a golfer who is in position and putt said ball, the but for a plurality of substantially smooth, discrete lands which are visually differentiatable from the remainder of the lands when viewed by the golfer who is in position to putt said ball and which are located at the intersections of, when viewed in cartographic projection, at least one, longitudinal great circle and, perpendicular thereto, at least one intersecting latitudinal circle with the at least one intersecting latitudinal circle being located at the equator of the surface of the ball.

5,662,531
GOLF SWING TRAINING MAT FOR HIGHLY AUTHENTIC PRACTICE
Joseph M. Durso, Reston, Va., assignor to IBEX Golf, L.C., Reston, Va.
Continuation-in-part of Ser. No. 541,734, Oct. 10, 1995, abandoned. This application Aug. 13, 1996, Ser. No. 695,974
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—278 **19 Claims**



1. A golf swing training mat for highly authentic practice comprising the following:
a support surface;
a standing surface;
a hitting surface separate from the standing surface and removably attachable to the support surface and having an area thereof designated as a front hitting area, at least partly overhanging an underpass space, unsupported about the front hitting area but having and being supported on at least one forwardly directed side, and which hitting surface is made of a material that nearly looks and gives a feeling of real grass and that is not easily destroyed by repeated swings of a golf club striking the material; and
a follow through notch ahead of the hitting surface in part defined by an obliquely-angled edge generally obliquely angled to and abutting a front edge of the hitting surface, which envoids an area such that a golfer when swinging an iron can properly continue downwardly after striking a golf ball with the iron into the downwardmost portion of the swing after the ball is struck near the front hitting area, and which also allows for the golfer to follow through in a practice swing without striking the obliquely-angled edge segment such that the golfer is able to and can be encouraged to realistically practice hitting down and through the ball as is to be done with an iron shot to obtain good backspin, and hence, loft, and such that bounce-back or shock can generally be eliminated, and the golfer can thus practice a fluid iron stroke generally without mat-caused interruption.

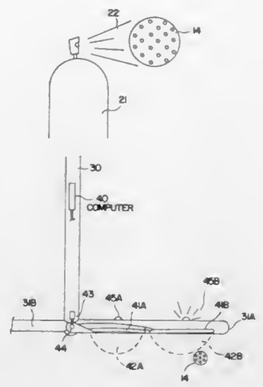
5,662,532
GOLF CLUB
Shoichi Mizumura, 7-40-13, Takashimadaira, Itabashi-ku, Tokyo, Japan
Filed Dec. 7, 1995, Ser. No. 568,588
Claims priority, application Japan, Dec. 9, 1994, 6-306427
Int. Cl.[6] A63B *53/00*
U.S. Cl. 473—314 **8 Claims**



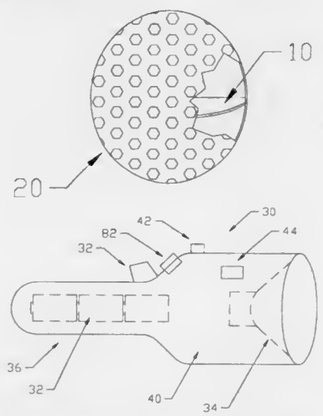
1. A-golf club comprising:
a club head having a face for striking a golf ball, said club head having a weight which is distributed such that the weight is greatest at a side of said club head including said face;
a shaft attaching portion connected to said club head and located a predetermined distance substantially directly behind a longitudinal center of said club head face; and
a shaft having a first end and a second end, said second end being connected to said shaft attaching portion, said shaft being inclined from said shaft attaching portion in a direction toward said club head face.

5,662,533
GOLF BALL LOCATOR APPARATUS
Donald Chadwell, 416 W. Country Club Dr., Edmond, Okla. 73003
Filed Nov. 21, 1994, Ser. No. 343,032
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—353 **13 Claims**

1. A golf ball locating combination comprising:
a golf ball;
means for applying a coating to said golf ball;
a handheld locating apparatus having,
means for sensing said coating on said golf ball, and,
an operator interface means for identifying a location of said golf ball relative to said locating apparatus,
wherein said handheld locating apparatus includes a shaft portion having an operator handle on a first end thereof and two hinged wing portions swivelly attached to a second end of said shaft portion, each of said hinged wing portions having antenna means for sensing said coating.



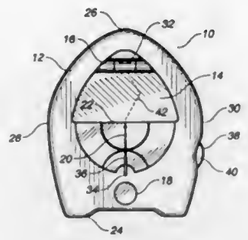
5,662,534
GOLF BALL FINDING SYSTEM
Braden W. Kroll, and Mark W. Kroll, both of 13011 Brenwood Trail, Minnetonka, Minn. 55343
Filed Jun. 26, 1995, Ser. No. 494,331
Int. Cl.[6] A63B *37/00;43/00*
U.S. Cl. 473—353 **6 Claims**



1. A system for finding lost golf balls comprising:
a golf ball with an internal corner reflector,
a hand-held radar transponder communicating with the internal corner reflector,
human detectable signaling means within the hand-held radar transponder, so that the system will signal to the human operator when the transponder is pointed at the golf ball.

5,662,535
GREEN READER DEVICE
Glenn E. Smith, 4872 Pacemont Ave., Dayton, Ohio 45415
Filed Jun. 14, 1996, Ser. No. 665,086
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—404 **19 Claims**

1. A reader device for a green comprising:
a body;
a green viewing area formed in said body;



bubble level means affixed to said body for indicating a horizontal orientation of said green viewing area; and

an indicator means adjustably affixed to said body and positioned adjacent said green viewing area, said indicator means for indicating a proper putt direction relative to a slope of the green.

5,662,536

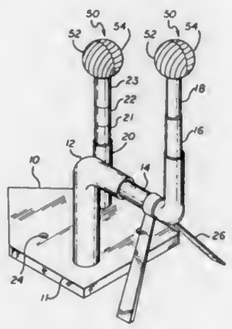
BATTING PRACTICE APPARATUS

Rodolfo Martinez, 3413 Linda Vista Ter., Los Angeles, Calif. 90032

Filed Oct. 12, 1994, Ser. No. 322,061

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—417 **10 Claims**



1. An apparatus comprising:

a plate;

ball support means movably connected to said plate for supporting a ball at a position removed from said plate, said ball support means including:

a first vertical member connected to said plate and extending upward from a plane of said plate a predetermined distance,

a radial member connected to said first vertical member and extending radially outward therefrom, and

a second vertical member connected at a first end thereof to said radial member and extending upward therefrom, said second vertical member supporting said ball at a second end thereof, wherein said radial member is connected to said first vertical member at a second end thereof, said device further including support means for supporting said radial member at a location spaced from said first vertical member.

5,662,537

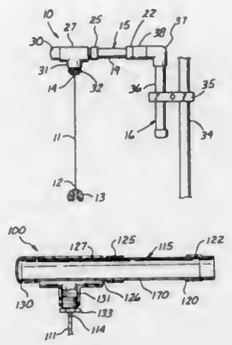
TETHERED BASEBALL BATTING PRACTICE APPARATUS

Gary T. Zuber, 4962 Caroline La., Fallbrook, Calif. 92028

Filed Jun. 11, 1996, Ser. No. 665,018

Int. Cl.[6] A63B *69/40*

U.S. Cl. 473—426 **13 Claims**



1. An apparatus for batting practice, comprising:

a ball, an elongated support arm fabricated at least partially from PVC components, and a strand of flexible material tethering the ball from the support arm, the strand having a first end portion attached to the ball and a second end portion connected to the support arm, and the support arm having a first end portion and an opposite second end portion with a specific outside diameter;

first PVC-fitting means for removably attaching the first end portion of the support arm to a separate mounting member that is adapted to mount on an existing support structure, the first PVC-fitting means including a first PVC fitting that has a slip-on port and a threaded port, the slip-on port being secured on the first end portion of the support arm;

second PVC-fitting means for providing a rotatable structure on the second end portion of the support arm, the second PVC-fitting means including a second PVC fitting that has first, second, and third ports, the first and second ports facing oppositely, and each of the first and second ports having an inside diameter slightly larger than the outside diameter of the second end portion of the support arm, the second PVC fitting being disposed on the second end portion of the support arm in a position such that the second end portion of the support arm extends through the first and second ports of the second PVC fitting and the third port faces radially away from the support arm; and

third PVC-fitting means for connecting the second end portion of the strand to the second PVC fitting, the third PVC-fitting means including a third PVC fitting to which the second end portion of the strand is attached, the third PVC fitting being secured to the third port of the second PVC fitting.

5,662,538

DEVICE FOR ADJUSTING PITCH DIAMETER OF SHEAVE OF VARIABLE SPEED MECHANISM

Fue-Jye Wang, No. 29-20, Dong-Tsuen Road, Talping, Taichung Hsien, Taiwan

Filed Mar. 11, 1996, Ser. No. 614,975

Int. Cl.[6] F16H *59/00*

U.S. Cl. 474—11 **12 Claims**

1. A device for adjusting sheave pitch diameter of a variable speed mechanism comprising:

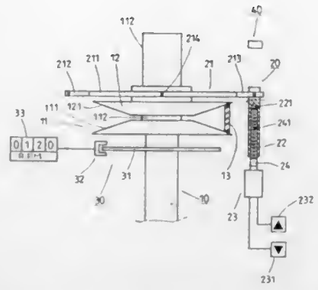
an output shaft fastened with a fixed wheel member provided with a movable wheel member capable of moving up and down in relation to said fixed wheel member for changing a pitch diameter of a belt engaging said fixed wheel member and said movable wheel member;

a linking member having a midsegment, a first rod extending from one end of said midsegment and a second rod extending from another end of said midsegment, with said midsegment being fastened pivotally with said movable wheel member, and with said first rod being fastened pivotally at one end thereof with a predetermined point;

an upper urging rod fastened pivotally at one end thereof with said second rod and provided with an inner threaded hole;

a motor mounted securely at a predetermined point and provided with a forward revolution switch and a reverse revolution switch; and

a lower urging rod fastened with a rotary shaft of said motor and provided with a male threaded portion engaging said inner threaded hole of said upper urging rod.



5,662,539

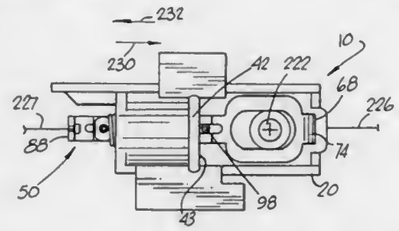
TENSIONING DEVICE FOR A FLEXIBLE DRIVE MEMBER

Gregg S. Schmidtke; Paul Coffin, both of Fort Collins, and Leslie G. Christie, Greeley, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 16, 1995, Ser. No. 491,440

Int. Cl.[6] F16H *7/08*

U.S. Cl. 474—101 **4 Claims**



1. A tensioning device for a flexible drive member having a first end portion and a second end portion comprising:

a first elongate member having a first end connected to said flexible drive member first end portion and a second end containing a first pin member;

said first elongate member having an intermediate portion between said ends thereof, said first elongate member intermediate portion containing an elongate slot;

a second elongate member having a first end connected to said flexible drive member second end portion and a second end containing a second pin member;

said second elongate member having an intermediate portion between said ends thereof, said second elongate member intermediate portion containing an elongate slot;

said first and second elongate members being arranged in overlying relationship with said first pin member located in said second elongate member intermediate portion slot and said second pin member located in said first elongate member intermediate portion slot; and

a biasing member compressed between said first and second pin members.

5,662,540

TENSIONING DEVICE FOR A CHAIN OF AN INTERNAL COMBUSTION ENGINE

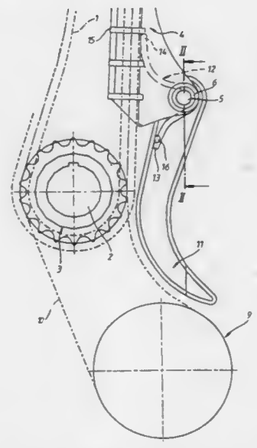
Hubert Schnuepke, Stuttgart, and Albert Pietsch, Illingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 24, 1995, Ser. No. 547,368

Claims priority, application Germany, Oct. 24, 1994, 44 37 926.9

Int. Cl.[6] F16H *7/08*

U.S. Cl. 474—111 **15 Claims**



1. A tensioning device for a chain of an internal combustion engine, having a crank case, comprising in combination:

a chain guide for guiding at least one further chain of the internal combustion engine, said chain guide having a common support point;

a tensioning arm mounted on said common support point of said chain guide; and

a spring device for preloading said tensioning arm.

5,662,541

TRANSMISSION WITH FIXED TRANSMISSION RATIO

Gijsbertus Cornelis Franciscus Roovers, Goirle, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

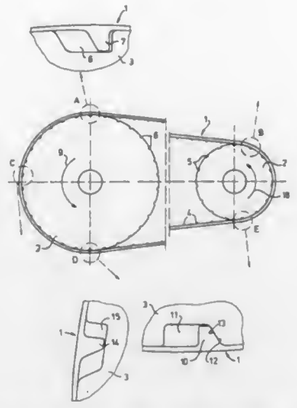
Continuation of Ser. No. 416,933, Apr. 4, 1995, abandoned. This application Mar. 20, 1996, Ser. No. 619,136

Claims priority, application Netherlands, Apr. 13, 1994, 94 00586

Int. Cl.[6] F16H *7/00*

U.S. Cl. 474—149 **16 Claims**

1. In a transmission with a fixed transmission ratio, comprising a flexible endless belt which is stiff in its longitudinal direction and which is provided with a profile of mainly transversely oriented teeth having a tooth pitch, and at least a driving pulley and a driven pulley which are each provided, on their circumferential surface, with recesses which mate with the teeth; the improvement wherein the pitch of the recesses of the driving pulley is greater than the tooth pitch, and the pitch of the recesses of the driven pulley is smaller than the tooth pitch, the thickness of the teeth, as seen in



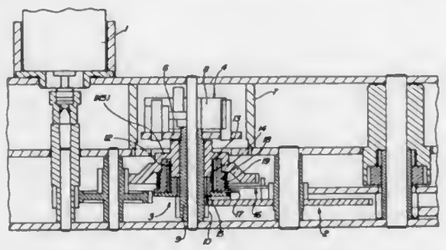
the driving direction, being smaller than the width of the recesses, the belt slipping relative to both pulleys such that each tooth enters a forward portion of a recess on the driving pulley and leaves a rearward portion of that same recess on the driving pulley, whilst each tooth enters a rearward portion of a recess on the driven pulley and leaves a forward portion of that same recess on the driven pulley.

5,662,542

ACTUATING DRIVE HAVING A SPRING RETURN FEATURE

Werner Birchmeier, Schweiz, Germany, assignor to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 1, 1995, Ser. No. 509,772
Claims priority, application European Pat. Off., Aug. 17, 1994, 94112825
Int. Cl.[6] F16K *31/02*
U.S. Cl. 475—154 9 Claims



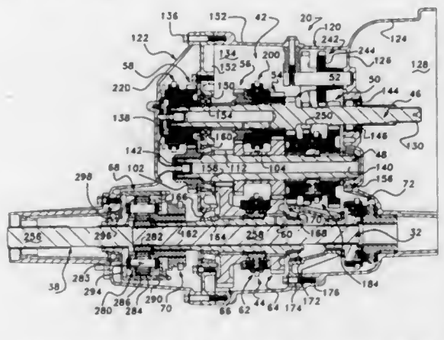
1. An actuating drive having a spring return feature for valves in heating, ventilating and air-conditioning systems, comprising:
an electric drive (1);
a reduction gearing (2) having a return spring for the spring return feature, the spring being
tensionable by the actuating movement;
a clutch (3) between the electric drive (1) and the reduction gearing (2), and
a brake device (4) actuated on the spring return movement, the clutch (3) having a first member (5) on the drive side and a second member (6) on the transmission side, the second being releasable from the first member (5) on the drive side in the spring return movement, wherein the brake device (4) is in the form of a centrifugal brake having a stationary brake drum (7) and a rotatably mounted brake shoe carrier on which brake shoes (8) movable radially by centrifugal force are disposed, and wherein the brake shoe carrier serves as the clutch member (6) on the transmission side, has a reduction gearing (2) and wherein the clutch member (5) on the drive side is rotatably mounted on the journal (9) of the brake shoe carrier (8).

5,662,543

TRANSMISSION FOR FOUR-WHEEL DRIVE VEHICLES

John R. Forsyth, Romeo, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Nov. 13, 1995, Ser. No. 556,332
Int. Cl.[6] F16H *37/08*
U.S. Cl. 475—198 47 Claims



1. A transmission for use in a four-wheel drive vehicle having an engine and front and rear drivelines, said transmission comprising:
a housing;
a first shaft supported for rotation in said housing and driven by the engine;
a second shaft supported for rotation in said housing;
a plurality of constant-mesh gearsets arranged for selectively coupling said second shaft to said first shaft for driven rotation at various speed ratios;
a third shaft supported for rotation in said housing;
first gear means supported for rotation on said third shaft and rotatably driven by said second shaft at a direct speed ratio relative thereto;
second gear means supported for rotation on said third shaft and rotatably driven by said second shaft at a reduced speed ratio relative thereto;
clutch means for selectively coupling one of said first and second gear means to said third shaft for causing driven rotation thereof at one of said direct and reduced speed ratios; and
an interaxle differential mounted in said housing and having an input member rotatably driven by said third shaft, a first output member coupled to the front driveline, and a second output member interconnected to the rear driveline, said interaxle differential operable for permitting speed differentiation between said first and second output members while delivering drive torque to the front and rear drivelines from said third shaft.

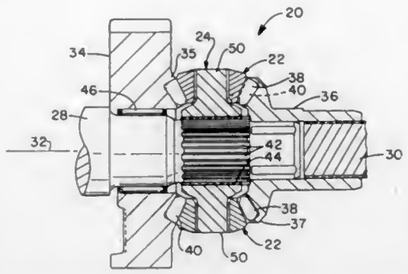
5,662,544

SIDE GEAR RETENTION OF PINION MATES

Kraig J. Schlosser, Fort Wayne, and Ted J. Kaufman, Ossian Wells, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 22, 1995, Ser. No. 532,165
Int. Cl.[6] F16H *48/06*
U.S. Cl. 475—230 10 Claims

1. A different assembly for a vehicle axle comprising:
a differential frame having a center hub with a plurality of stub shafts extending radially outwardly of said center hub;



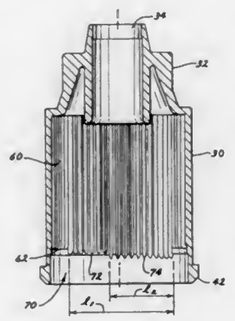
a pinion gear having an axial inner surface and an axial outer surface received upon each of said stub shafts, said pinion gears being rotatable about said stub shafts and having a plurality of teeth formed in an axial inner surface; and
at least one side gear having an axis of rotation perpendicular to said pinion gear and a plurality of teeth formed in an axial inner surface such that said teeth rotatably mesh with said teeth of said pinion gear; said side gear having a portion radially outward of said teeth which extends at least partially over said axial outward surface of said pinion gear to retain said pinion gear on said stub shaft.

5,662,545

PLANETARY GEAR DRIVE ASSEMBLY

James W. Zimmerman, Walnut; John L. Staylor, and Jeff R. McKenzie, both of Riverside, all of Calif., assignors to The Toro Company, Minneapolis, Minn.

Filed Feb. 22, 1996, Ser. No. 605,710
Int. Cl.[6] F16H *1/46;57/12*
U.S. Cl. 475—344 14 Claims



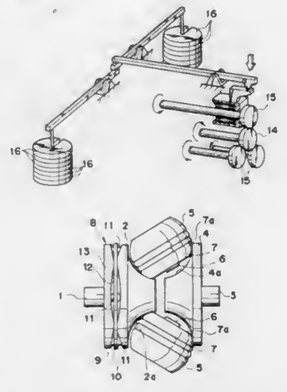
1. A planetary gear drive assembly, which comprises:
(a) a drive housing having an internal ring gear on an inner diameter of the drive housing;
(b) a planetary gear train within the drive housing, wherein the planetary gear train includes at least one planetary gear stage comprising:
(i) a central sun gear; and
(ii) a plurality of planetary gears spaced around and in engagement with an outer diameter of the sun gear such that rotation of the sun gear rotates the planetary gears, each planetary gear further being in engagement with the internal ring gear on the drive housing; and
(c) means for causing the planetary gears in each planetary gear stage to self align with the internal ring gear in an automatic fashion and without manual intervention responsive to the movement of each planetary gear stage towards the ring gear during assembly of each planetary gear stage within the drive housing.

5,662,546

METHOD OF POWER TRANSMISSION WITH OPTIMUM TRACTION COEFFICIENT OF DRIVING AND DRIVEN MEMBERS

Hirotoshi Takata, Yokohama, and Susumu Suzuki, Minami-ashigara, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 63,334, May 19, 1993, abandoned.
This application May 2, 1995, Ser. No. 434,124
Claims priority, application Japan, Jun. 8, 1992, 4-171498
Int. Cl.[6] F16H *15/38;55/32*
U.S. Cl. 476—40 1 Claim



1. A method of transmitting power in a power transmission device including a driving member having a driving surface and a driven member having a driven surface, said driving surface and said driven surface having juxtaposed contact areas for performing a power transmission from said driving member to said driven member by relative displacement of said driving surface and said driven surface, said method comprising the following steps:
determining, as a function of contact surface pressure on said contact areas, a traction coefficient μ expressed as a ratio T/N for a predetermined driving speed and a predetermined slip coefficient of said driving surface and said driven surface, where T is a driving force transmitted from said driving member to said driven member and N is a pressing force acting on said contact areas in a direction perpendicular to said contact areas;
from results of said determining step, obtaining a contact surface pressure at which the traction coefficient μ is maximized and beyond which the traction coefficient μ decreases; and
based on results of said obtaining step, controlling the contact surface pressure on said contact areas such that the traction coefficient μ is maximized.

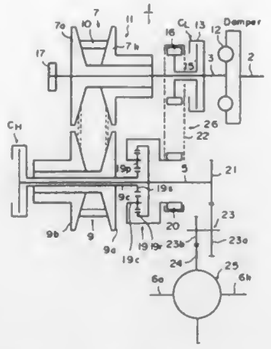
5,662,547

CONTINUOUSLY VARIABLE TRANSMISSION

Shuzo Moroto, Nagoya; Takao Taniguchi; Shoichi Miyagawa, both of Okazaki; Shiro Sakakibara, Anjo; Kazumasa Tsukamoto, Toyota; Takeshi Inuzuka, and Masashi Hattori, both of Anjo, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Mar. 25, 1996, Ser. No. 621,503
Claims priority, application Japan, Mar. 24, 1995, 7-066234
Int. Cl.[6] F16H *9/26*
U.S. Cl. 477—48 15 Claims

1. A continuously variable transmission system for speed change of rotation received from an engine output shaft and for transmitting that rotation, at the changed speed, to vehicle wheels, said system comprising:
an input shaft for receiving engine torque from the engine output shaft;
an output shaft for outputting torque to the vehicle wheels;



a belt type continuously variable transmission unit having a first pulley for receiving engine torque from said input shaft, a second pulley, and a belt trained around both of said first and second pulleys;

a planetary gear unit having a first rotatable element rotatable with said input shaft, a second rotary element rotatable with said second pulley and a third rotary element rotatable with said output shaft;

axial force operating means for applying axial forces to both pulleys to change the pulley ratio between said primary and secondary pulleys, direction of torque transfer between the pulleys and the direction of torque at said output shaft being changed in accordance with said change of the pulley ratio;

detecting means for detecting vehicle driving demand and for generating a demand signal;

judging means for determining a need for output torque at said output shaft in accordance with said demand signal;

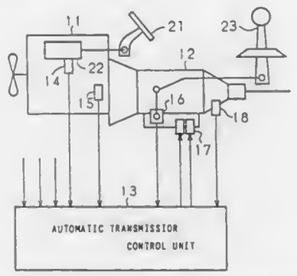
control means for switching, based on the determination of said judging means, said axial force operating means between a drive state, wherein a difference between said axial forces is established to achieve a target pulley ratio, and a non-drive state not requiring the output torque, wherein the axial forces exerted on the primary and secondary pulleys are equalized.

5,662,548

START CONTROLLER FOR AUTOMATIC TRANSMISSION

Akimasa Mori, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed May 13, 1996, Ser. No. 647,256
Claims priority, application Japan, May 16, 1995, 7-141065
Int. Cl.[6] B60K *41/10*
U.S. Cl. 477—114 **3 Claims**



1. A start controller of an automatic transmission including control means for controlling speed change operation of the automatic transmission using allocation regions of speed change gears corresponding to combinations of throttle openings and vehicle speeds to set a predetermined low speed gear and control means for setting a high speed gear higher at least one gear or more than said predetermined low speed gear when a vehicle speed is lower than a predetermined level including stoppage, the improvement being such that the start controller further includes:

throttle speed detection means for estimating the changing rate of said throttle opening in an acceleration state;

means for switching a range over which said control means for setting said high speed gear is used to a predetermined first control pattern of the throttle opening and the vehicle speed when a changing rate of said throttle opening is higher than the predetermined rate in the state where said high speed gear is set; and

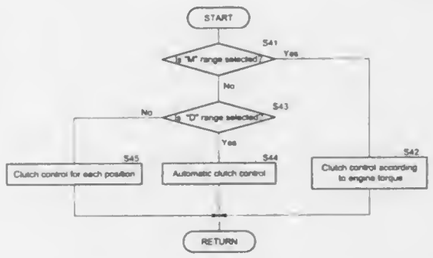
means for switching a range over which said control means for setting said high speed gear is used to a second control pattern of a wider range of the throttle opening than said first control pattern when said changing rate is lower than said predetermined rate in a state where said high speed gear is set.

5,662,549

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION FOR VEHICLE

Noboru Kondo, and Kenzo Nishida, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,450
Claims priority, application Japan, Feb. 6, 1995, 7-017639
Int. Cl.[6] F16H *59/04;59/14;59/36;61/06*
U.S. Cl. 477—122 **4 Claims**



1. A control system for an automatic transmission for a vehicle, which is capable of selecting automatic and manual shifting modes, comprising:

a vehicle speed detecting means for detecting a value corresponding to a vehicle speed;

an engine load detecting means for detecting a value corresponding to an engine load;

an automatic shifting mode capable of controlling a transmission gear ratio based on outputs from said vehicle speed detecting means and said engine load detecting means, and based on a previously established shifting characteristic;

a shifting command means for outputting a shifting command for shifting to a predetermined transmission gear ratio by a manual operation;

a manual shifting mode for conducting a shifting based on an operation of the shifting command means;

a plurality of hydraulic engage elements for establishing a transmission gear ratio selected in each of said automatic shifting mode or said manual shifting mode; and

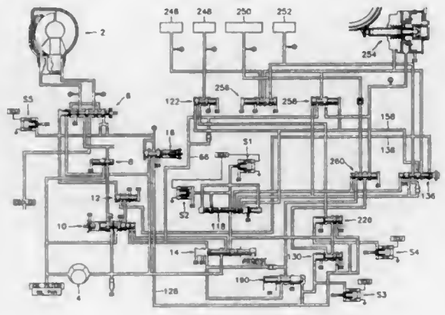
a control means for controlling a hydraulic pressure of a working oil supplied to said hydraulic engage elements, wherein said control means establishes a hydraulic pressure of said working oil based on an engine output torque or a transmission input torque, at the time of shifting in a state in which at least the manual shifting mode has been selected.

5,662,550

HYDRAULIC CONTROL SYSTEM OF A 4-SPEED AUTOMATIC TRANSMISSION FOR VEHICLES

Jaeduk Jang, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,345
Claims priority, application Rep. of Korea, Dec. 28, 1994, 94-37993
Int. Cl.[6] F16H *61/26*
U.S. Cl. 477—130 **9 Claims**



1. A hydraulic control system of a 4-speed automatic transmission for vehicles which comprises:

a torque converter for transmitting the engine power to the transmission;

an oil pump for producing a hydraulic pressure;

a pressure control valve for varying a line pressure produced in the oil pump with a damper clutch by a duty operation of a damper clutch solenoid valve at times when the traveling mode is changed and in a high speed cruising;

a high-low pressure valve for varying the line pressure by operating the pressure control valve with the operation of the damper clutch by the duty operation of the damper clutch solenoid valve in the high speed cruising of a third or fourth speed stage in drive "D" range;

a reducing valve for providing a reduced pressure which is lower than the line pressure;

a manual valve for providing pressure to a drive pressure passage in the "D" range and a rear pressure passage in a rearward "R" range according to a port change by selection of the manual valve;

a shift control valve for providing a drive pressure to each shift valve by the operation of two shift control solenoid valves which are on/off controlled by a transmission control unit according to the vehicle speed and an opening of a throttle valve and which are connected with the drive pressure passage;

a rear clutch releasing valve in which the port change for providing the drive pressure to a second friction element at first, second, and third speed stages in the "D" range is made;

a first pressure control valve in which the port change for providing the drive pressure to a fifth friction element at second, third, and fourth speed stages in the "D" range by a first pressure control solenoid valve is made;

a second pressure control valve in which the port change for providing the drive pressure to the second friction element at first, second, and third speed stages in the "D" range by a second pressure control solenoid valve which performs a duty control is made;

a 1-2 shift valve for operating the fifth friction element, and providing the pressure in the rear pressure passage to a third friction element in said "R" range;

an end clutch valve to whicb the second speed line pressure is applied by said shift control valve, for controlling when the pressure for a fourth friction element is supplied resulting from the port change by the operating pressure of the first friction element;

a 2-3/4-3 shift valve for providing a part of the pressure flowing through a 1-2 shift valve to the fifth friction element as an operation-releasing pressure or to a first friction element as an operation pressure by the port change resulting from third and fourth speed line pressures of the shift control valve; and

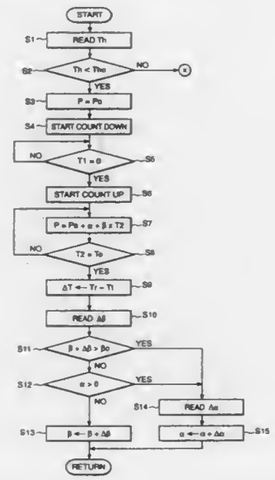
a front clutch releasing valve for either providing the pressure from the end clutch valve to the first friction element at the third speed range in the "D" range by the control of the operation pressure of the fourth speed friction element, or for exhausting said pressure provided to the first friction element.

5,662,551

GEAR SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Shinya Kamada, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 26, 1993, Ser. No. 157,261
Claims priority, application Japan, Nov. 26, 1992, 4-341499
Int. Cl.[6] F16H *59/00*
U.S. Cl. 477—152 **11 Claims**



1. A gear shift control system for an automatic transmission having a plurality of hydraulically operated frictional elements which are selectively locked and unlocked with a locking pressure changed according to engine output conditions so as to automatically shift gear, said gear shift control system comprising:

pressure control means for gradually changing a locking pressure at a rate so as to lock a specific one of said frictional coupling elements, thereby causing a specific gear shift in said automatic transmission;

engine output detecting means for detecting an engine output; and

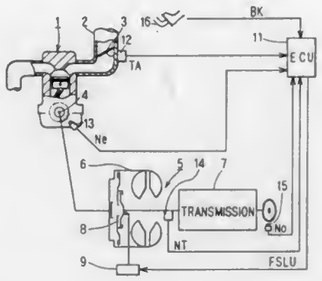
learning control means for detecting a shifting time required to complete said specific gear shift and, when an engine output detection less than a specified engine output is made by said engine output detecting means, correctively changing said rate according to a shifting time difference between said shifting time and a target shifting time so as to cause another said specific gear shift for said target shifting time.

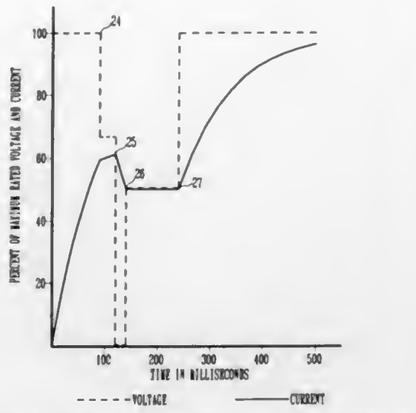
5,662,552

LOCK-UP CLUTCH SLIP CONTROL DEVICE

Osamu Fukasawa, Obu, and Mitsuo Hara, Haguri-gun, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 14, 1995, Ser. No. 502,649
Claims priority, application Japan, Jul. 26, 1994, 6-174162
Int. Cl.[6] F16H *61/14*
U.S. Cl. 477—169 20 Claims





1. A lock-up clutch slip control device comprising:
a fluid coupling having an input shaft and an output shaft connected via a fluid turbine, said input shaft being capable of receiving operative power from an engine;
a lock-up clutch selectively directly connecting and disconnecting said input shaft and said output shaft together;
a slip control mechanism to control said lock-up clutch to selectively directly connect and disconnect said input and output shafts so that a difference in rotational speed of said input and output shafts is a target slip amount;
a change rate detector capable of detecting a throttle aperture change rate of a throttle valve of said engine;
slip amount computation means for selecting as said target slip amount a slip amount associated with operating range selected from a plurality of operating ranges responsive to said throttle aperture change rate and a rotational speed of said turbine; and
range-specific learning means for, when said throttle aperture change rate is above a predetermined value, changing slip amounts of multiple operating ranges in said plurality of operating ranges based on said target slip amount of said associated operating range.

5,662,553

ELECTROMAGNETIC CLUTCH AND ENGINE CONTROL

Gary Reichlinger, P.O. Box 4, York, Nebr. 68467

Filed Aug. 7, 1995, Ser. No. 512,125
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—179 22 Claims

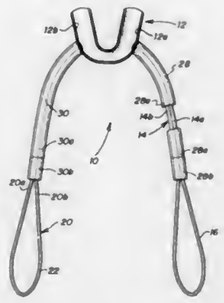
1. An device to cause the driven load of an internal combustion engine to start in motion comprising:
an electromagnetic clutch;
a means to position a throttle or regulate fuel flow of the engine to cause the engine to develop an amount of torque appropriate to starting the load in motion;
a detection means to designate the point in time when said torque output has been achieved by the engine;
a variable voltage power supply with timing means to output a series of voltages to the clutch, beginning at the time designated by the said detection means, with such series of voltages comprising a first voltage or voltage sequence to ensure engagement of the clutch, a second lower voltage to rapidly reduce holding torque to induce clutch plate slippage, a third voltage to maintain a desired rate of slippage, and a fourth voltage to lock the clutch plates together.

5,662,554

NECK EXERCISE DEVICE

Michael J. Schaefer, Richardson, Tex., assignor to Schaefsco, Inc., Garland, Tex.

Filed Dec. 13, 1994, Ser. No. 354,549
Int. Cl.[6] A63B *23/03*
U.S. Cl. 482—10 6 Claims



1. An exercise device for use in exercising the neck of a user by performing rotation, lateral bending, flexion, or extension exercises, the device comprising:
a mouthpiece adapted to be received by the mouth of a user and held in the user's mouth;
a first elastomeric band having first and second ends, said first end thereof being attached to said mouthpiece;
a second elastomeric band having first and second ends, said first end thereof being attached to said mouthpiece; and
said second ends of said first and second elastomeric bands being adapted to be grasped by the hands of a user to permit neck movement during neck exercise based upon positioning of the hands of the user.

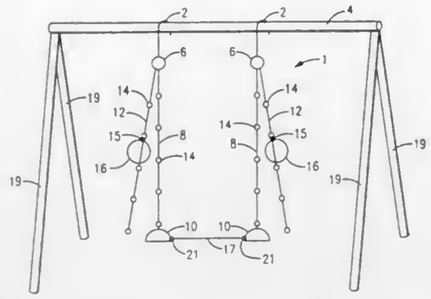
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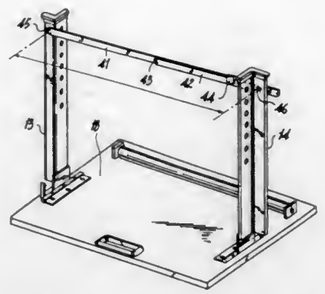
AERIAL EXERCISE SYSTEM AND METHOD OF USING THE SAME

Normand P. Cloutier, 69 Depot Rd., Auburn, N.H. 03032

Filed Oct. 24, 1995, Ser. No. 556,296
Int. Cl.[6] A63B *26/00*
U.S. Cl. 482—23 17 Claims

17. An portable exercise system comprising:





a support member comprising an elongate rod and a pair of support legs supporting each opposed end of said elongate rod, and a pair of exercise devices being suspended from said support member;
each said pair of exercise devices comprising:
a rigid coupling member having a ring and a attachment mechanism for securing and suspending each said coupling member of a desired support member in a spaced apart relationship;
a fixed length first elongate flexible member having a first end thereof secure to said ring of said coupling member, and a stirrup being secured to a second end of said first elongate flexible member for engagement with a foot of a user;
a fixed length second elongate flexible member having a first end thereof secured to said same ring of said coupling member and having a second free end, and a plurality separate connectors being successively spaced along said second elongate flexible member; and at least on body engageable device being releasably attached to a desired one of said plurality of connectors, and said body engageable device being engaged, during use, with a hand of a user; and
said first and said second elongate flexible members, of each separate exercise device, both being secured to said same coupling member so as to be freely movable, relative to one another, along their entire lengths to facilitate a user performing exercises with said exercise system when the user's feet are supported by said stirrups and the user's hand are supported by said body engageable devices.

5,662,556

PORTABLE EXERCISE BAR DEVICE

Robert B. Gangloff, 54 Dorchester St., Huntington Station, N.Y. 11746

Continuation-in-part of Ser. No. 337,272, Nov. 10, 1994, Pat. No. 5,527,242, which is a division of Ser. No. 236,349, May 2, 1994, which is a continuation-in-part of Ser. No. 139,538, Oct. 20, 1993, Pat. No. 5,389,055. This application Feb. 12, 1996, Ser. No. 600,401
Int. Cl.[6] A63B *1/00*
U.S. Cl. 482—38 13 Claims

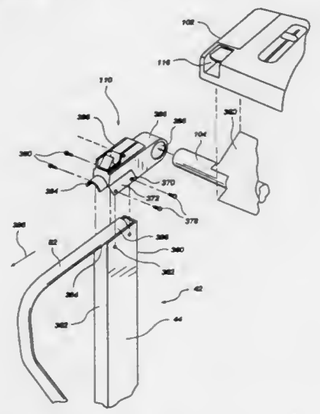
1. An exercise apparatus for allowing a user to perform at least one of a pull-up exercise and a chin-up exercise while lying supine on the user's back with the user's heel touching the ground, the apparatus comprising:
a base having a front edge and a rear edge;
a movable horizontal bar, having a pair of ends;
a pair of substantially parallel upright frame posts removably connected to and extending in a substantially vertically direction from said base;
each of said upright frame posts having a plurality of holding means located at a plurality of vertically spaced positions above said base, said holding means corresponding to a plurality of vertical height locations for said movable horizontal bar above said base;
each of said upright posts positioned along a peripheral edge approximately midway between said front and said rear edge of said base;
said horizontal bar including a handle portion and a pair of insertion members at opposite ends thereof;
said insertion members of said horizontal bar being selectively insertable within a pair of respective holding means of said pair of upright posts at one of said plurality of vertical height locations above said base, and,
a cross brace connecting said upright frame members,
wherein said cross brace member comprises a hinged cross brace member hingeably connected at one end thereof to one of said upright frame posts and removably engagable with another of said upright frame posts.

5,662,557

REORIENTING TREADMILL WITH LATCH

Scott R. Watterson; William T. Dalebout, both of Logan, and Timothy O. Armstrong, Providence, all of Utah, assignors to ICON Health & Fitness, Inc., Logan, Utah

Filed Jan. 30, 1996, Ser. No. 593,793
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 17 Claims

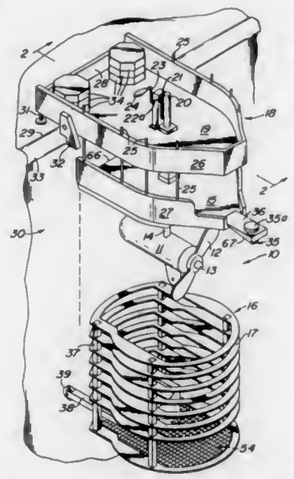


1. A treadmill comprising:
support structure configured to be freestanding and having feet means for positioning on a support surface and having an upright structure extending upwardly from said feet means;
a tread base having a front, a rear, a left side and a fight side, said fight side being spaced from said left side and in general alignment therewith, and said tread base having an endless belt positioned between said left side and said fight side, said tread base being connected to said support structure to be movable between a first position in which said endless belt is positioned for operation by a user positioned thereon and a

second position in which said rear of said tread base is positioned toward said upright structure, said tread base being rotatably attached to said support structure proximate to and spaced inwardly from said front toward said rear; and

latching means adapted to said tread base and to said upright structure and operable for releasably attaching said tread base in said second position to said upright structure.

5,662,558
WATER STREAM GENERATOR
Byron T. Shannon, III, 1371 Stokes Rd., Medford, N.J. 08055
Filed Jul. 25, 1996, Ser. No. 690,325
Int. Cl.[6] F04F *5/02*
U.S. Cl. 482—55 **14 Claims**



4. A device for generating a water current in a swimming pool against which a person can swim comprising, generator means for generating a stream of water flowing in a given direction substantially along the surface region of the water, and an anti-cavitation plate mounted with at least its lower surface immersed in the water substantially parallel to the water surface in a position to influence the path of travel of said stream and intermediate the water level and the top of said generator means, the anti-cavitation plate having a width perpendicular to said given direction sufficient to prevent substantially the formation of whirlpool currents feeding air bubbles into said generator means, and having a length, taken in direction parallel to said given direction, sufficient to prevent substantially the formation of a current of water of said stream bulging upwardly above the normal water level downstream of the generator means.

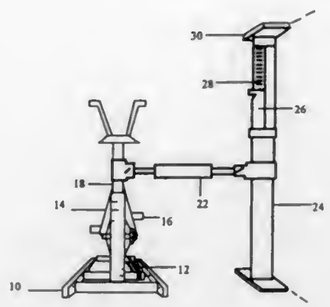
5,662,559
BICYCLE SIDE-SUSPENSION SYSTEM
Oscar Vasquez, 1430 SE. Bayshore Dr. #107, Miami, Fla. 33131
Filed Dec. 12, 1995, Ser. No. 570,748
Int. Cl.[6] A63B *21/00*; **G09B** *9/04*
U.S. Cl. 482—61 **1 Claim**

1. A bicycle side-suspension device for restraining a bicycle on a roller type training device comprising:

a support system having a length adjustable, vertically aligned support tube,

a pair of rubber pads attached to the ends of said tube,

a handle and a pawl lock means mounted on said tube for adjusting the tube length and frictionally affixing the rubber pads to the ceiling and floor of an exercise room,



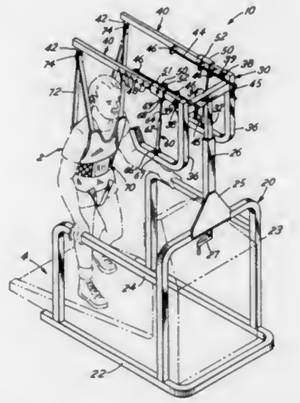
a horizontally aligned support bracket connected to said tube at a proximal end,

means for adjusting and locking said bracket at a desired elevation on said tube,

a distal end of said support bracket including means for removably attaching the frame of a bicycle, and

said bracket including an internal spring which permits lateral movement and tilting of the bicycle across the roller type training device during use.

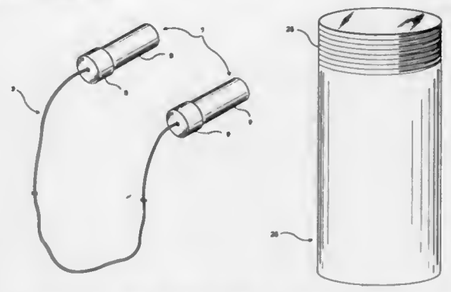
5,662,560
BILATERAL WEIGHT UNLOADING APPARATUS
Bjorn W. Svendsen, 276 Malden La., Pleasant Lake, Mich. 49272, and Jandane E. Christianson, Berrien Springs, Mich., assignors to Bjorn W. Svendsen, Pleasant Lake, Mich.
Filed Jul. 10, 1995, Ser. No. 500,269
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—69 **19 Claims**



1. A therapeutic weight unloading apparatus for suspending a user to support a portion of the weight of said user while standing or exercising, comprising:

a frame, two boom arms independently pivotally connected to said frame and laterally spaced from each other, a body harness to be worn by said user and connectable between said boom arms for suspending said user therebetween, and means connected between said frame and each said boom arm for imparting an upward force on each said boom arm to independently support each said boom arm, whereby said boom arms support said portion of weight when said user is suspended between said boom arms.

5,662,561
WEIGHTED HANDLE FOR A JUMP ROPE
Thomas McNamara, 435 W. 23rd St., Apt. 4C, New York, N.Y. 10011
Continuation of Ser. No. 393,087, Feb. 22, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 692,980
Int. Cl.[6] A63B *5/20*
U.S. Cl. 482—82 **3 Claims**



1. A weighted handle jump rope kit consisting essentially of:

a jump rope having two ends;

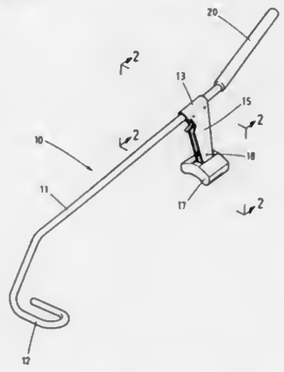
two cylindrical cup attachments connected to each end of the jump rope, each attachment having an internally threaded open end and a closed end defining a central aperture for receiving the end of the jump rope;

a ball bearing connector housed in the closed end of each attachment and attached to the end of the jump rope to rotatably secure the rope in the closed end; and

a pair of solid cylindrical weighted handles configured for being grasped, each handle having an externally threaded end for being screwed into the internally threaded open end of each attachment;

whereby the handles may be screwed to the attachments to create a weighted-handle jump rope, and unscrewed from the attachments for use as a free-weights.

5,662,562
LEG EXERCISE DEVICE
Robert Martin Wohlenberg, Adelaide, Australia, assignor to Orthopaedic Rehabilitation Products Pty Ltd, Flinders Park, Australia
PCT No. PCT/AU95/00328, § 371 Date Feb. 2, 1996, § 102(e) Date Feb. 2, 1996, PCT Pub. No. WO95/33526, PCT Pub. Date Dec. 14, 1995
PCT Filed Jun. 2, 1995, Ser. No. 592,335
Claims priority, application Australia, Jun. 3, 1994, PM6063
Int. Cl.[6] A63B *26/00*
U.S. Cl. 482—91 **9 Claims**

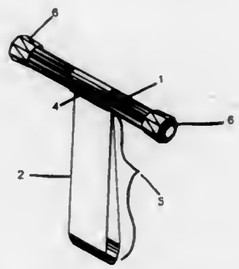


1. A leg exercise device for exercising the knee joint of a patient's leg, comprising an elongate rod, the rod being a lever having a cradle at one end of a shape to cradle a lower portion of a patient's leg,

a fulcrum member pivotally connected to said lever intermediate its ends and having a leg engagement surface shaped to bear against a patient's leg near its knee joint when said one end cradles such lower leg portion, the pivotable connection of the fulcrum to the lever having an axis transverse to the elongate dimension of said lever; and,

a handle carried by the other end of said rod, the handle being useable by a patient to effect articulation of said knee joint.

5,662,563
FLEXIBLE ELASTIC EXERCISE DEVICE WITH HANDLE
James T. Maerzke, 3810 60th Pl., Kenosha, Wis. 53142
Filed May 13, 1996, Ser. No. 645,078
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—126 **4 Claims**



1. An exercise device comprising;

a handle assembly, having three identical rods, where an external longitudinal surface of the first rod is on top and centered over an external longitudinal surface of the second and the third rod and where a left and right end of the first red are aligned with a respective left and right end of the second and third rod, two semi-rigid end caps, sufficiently sized to receivably attach the aligned left and right ends of the three rods, to secure the rods together, and

a length of flexible elastic material, folded in half, matched first end to second end, and positioned between the longitudinal surfaces of the three rods where a section of the folded elastic material closest to the matched ends is wrapped around the longitudinal surface of the first top rod and cinched between the longitudinal surfaces of the second and third bottom rods thereby forming a loop of the elastic material whereby the loop can be engaged by a user to perform exercises.

5,662,564
EXERCISE DEVICE
Keith A. Nelson, 4555 Sawmill School Rd., Granite Falls, N.C. 28630
Filed May 15, 1996, Ser. No. 648,389
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—129 **20 Claims**

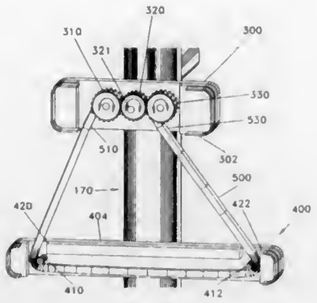
1. An exercise device comprising:

a base;

a column extending from said base;

a handle rotatably mounted to one side of said column, said handle rotatable about an axis extending through said column upon exertion of pressure by a body part of a user against said handle;

a shaft attached to said handle and extending through said column for rotation therewith;



a first housing;

means for mounting said first housing to said shaft on a side of said column opposite said handle, the rotatable movement of said shaft causing said first housing to swing in movement about an imaginary axis passing through said column;

a second housing attached to said column and spaced from said first housing; and

an elastic extending between said housings, said elastic resisting said movement of said first housing and said handle coupled thereto, said handle resistance resisting movement of a body part exerting pressure against said handle.

5,662,565

Patent Not Issued For This Number

5,662,566

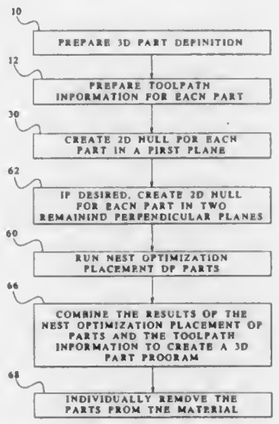
METHOD AND APPARATUS FOR PRODUCTION OF THREE DIMENSIONAL COMPONENTS

Gerhard Marxrieser, Chesapeake, Va., and Erich Alexander Zarzer, Linz, Austria, assignors to American Gem Corporation, Chesapeake, Va.

Filed Jul. 17, 1995, Ser. No. 503,721

Int. Cl.[6] B23Q *3/157*

U.S. Cl. 483—1 **22 Claims**



12. A method for cutting a plurality of three dimensional parts out of a piece of material with minimal waste with a cutting tool wherein the tool has a predefined cutting width, comprising the steps:

defining a three dimensional shape for each part;

mapping each shape as a two dimensional contour onto a plane of said material, including in the contour said cutting width;

nesting the mapped contours to allocate the two dimensional contours in an optimal manner within said material to minimize the material not contained within the resulting three dimensional shapes;

operating said tool to cut said material along the contours determined during said mapping and nesting steps to achieve each of said three dimensional parts.

5,662,567

MACHINE TOOL

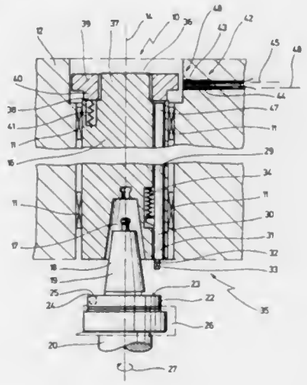
Eugen Rütschle, Mühlheim; Rudolf Haninger, Seltingen, and Hans-Henning Winkler, Tuttlingen, all of Germany, assignors to Chiron-Werke GmbH & Co. KG, Germany

Filed Apr. 21, 1995, Ser. No. 426,153

Claims priority, application Germany, Apr. 30, 1994, 44 15 306.6

Int. Cl.[6] B23Q *3/157*

U.S. Cl. 483—10 **11 Claims**



1. A machine tool comprising:

a headstock having a rotatable spindle;

at least one gripper for gripping a tool holder and for transferring same from a first, uncoupled position outside said spindle into a second, ready-to-couple position within said spindle; coupling means arranged at said headstock for coupling said tool holder in said second, ready-to-couple position with said spindle, such that said tool holder assumes one of at least two coupled conditions, whereby in said at least two coupled conditions said tool holder is locked on said spindle for rotation therewith, said at least two coupled conditions being different from one another with respect to a relative angular alignment between said tool holder and spindle; and

control means for controlling said spindle and having sensor means for detecting said tool holder to be in one of said coupled conditions and for differentiating between said at least two coupled conditions,

wherein said coupling means comprises a catch on said spindle for displacement along said longitudinal axis relative to said spindle between at least three positions, said catch in each of said at least two coupled conditions of said tool holder engaging in a respective one of recesses provided on said tool holder, said catch engages in a different manner in the different recesses, to a different depth, and said sensor means arranged to detect said relative position of said catch with respect to said spindle.

5,662,568

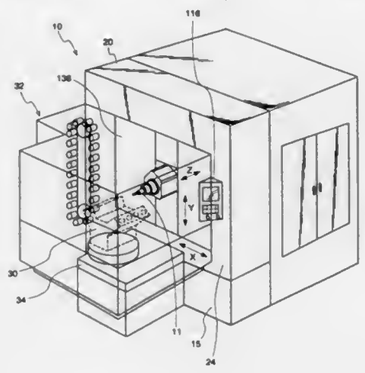
SYMMETRICAL MULTI-AXIS LINEAR MOTOR MACHINE TOOL

Thomas Jules Lindem, Rockford, Ill., assignor to Ingersoll Milling Machine Co., Rockford, Ill.

Filed May 12, 1995, Ser. No. 440,416

Int. Cl.[6] B23Q *3/157*; B23B *39/00*; B23C *1/02*

U.S. Cl. 483—30 **28 Claims**



1. A machine tool for advancing a tool, such as a rotary cutting tool, along at least three mutually transverse axes comprising:

a spindle having a tool mounted thereon;

a frame to support the spindle and cutting tool while cutting and being advanced along the transverse axes;

a vertical gantry mounted in frame for slidable movement in a first axis relative to the frame;

a saddle mounted on the gantry and carried therewith and mounted for slidable movement along a second axis perpendicular to the first axis and along the vertical gantry;

a ram carried by a portion of the saddle for movement along a third axis perpendicular to the second axis and carrying the spindle and rotary cutting tool for movement along the third axis;

a first linear drive having at least one linear motor having portions mounted on the gantry and mounted on the frame and extending in the direction of the first axis for moving the gantry relative to the frame along the first axis;

a linear saddle drive for moving the saddle along the gantry and along the second axis;

a first linear motor in the linear saddle drive having portions mounted on a first side of the gantry and on a first side of the saddle and each extending in the direction of the second axis;

a second linear motor in the linear saddle drive having portions mounted on a second side of the saddle and a second side of the gantry and each extending in the direction of the second axis;

the ram and the portion of saddle carrying the ram being disposed between the first and second linear motors of linear saddle drive with the saddle portion splitting the first and second motors and applying loads to the gantry on the opposite sides of the saddle portion; and

a third linear drive having at least one linear motor for moving the ram and spindle along the third axis and supported by the spindle and ram and saddle.

5,662,569

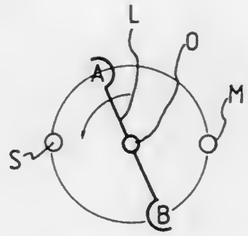
STEPPING APPARATUS CAPABLE OF LARGE ANGLE OSCILLATION

Chun-Hsien Liu, 3F, 20, Lane 65, Hsiao-San Rd.,, Keelung, and Ching-Huan Tseng, 2-30, Bo-Ai St., Lui-Shuei Li, Hsinchu, both of Taiwan

Filed Aug. 26, 1996, Ser. No. 697,294

Int. Cl.[6] B23Q *3/157*; B66C *3/00*; G05G *1/00*

U.S. Cl. 483—38 **5 Claims**



1. A stepping apparatus capable of large angle oscillation comprising:

a driving shaft connected to a power source for generating rotating force;

an output shaft spaced parallel to the driving shaft;

first and second plate cams coaxially juxtaposed on the driving shaft;

roller wheel plate having first and second sides, and centrally disposed on the output shaft; and

a plurality of rollers rotatably mounted and circumferentially alternately spaced on the first and second sides for driving in combination with the first and second plate cams, respectively; wherein the profiles of the first and second cams are formed with sections for the output shaft to perform dwell, forward angular rotation and reverse angular rotation in combination with the rollers, and any two adjacent rollers in camming contact with the cams are located on the opposite sides of the line connecting between the driving shaft and the output shaft so as to maintain in positive driving with the cams; characterized in that in the initial standby position, the two adjacent rollers maintaining in positive driving with the cams are offset for an angle θ with respect to the line connecting between the driving shaft and the output shaft such that the output shaft can have large oscillating angles with the rollers not moving across said connecting line and maintaining in positive driving.

5,662,570

DEFLECTION ADJUSTED ROLL

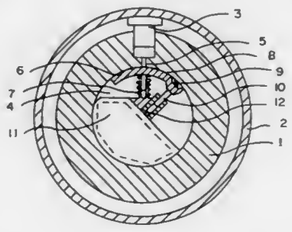
Wolf Gunter Stotz, Ravensburg, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Jul. 24, 1995, Ser. No. 505,849

Claims priority, application Germany, Jul. 27, 1994, 44 26 512.3

Int. Cl.[6] D21F *3/08*

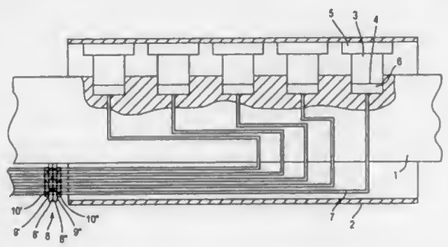
U.S. Cl. 492—7 **29 Claims**



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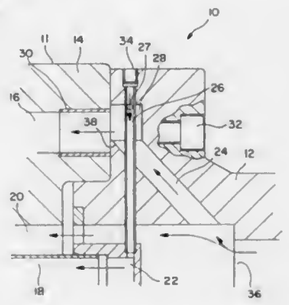
1. A deflection adjusted roll comprising a fixed carrier and a roll jacket, with the roll jacket being rotatable about the carrier, wherein the roll jacket is supported on a plurality of hydraulic support elements, with the support elements being provided with a hydraulic pressure medium via a bore axially extending in common with the carrier as well as via further bores, discharging into the axially extending bore, with the further bores also being in communication with at least each one of the support elements and being substantially radially extending, wherein each one of the radially extending bores is associated with a controllable throttling element, with the throttling element being slidably disposed within the axially extending bore of the carrier, for influencing the flow-through of the pressure medium, with the throttling elements being so shaped being are pressed, via at least one biasing element each, against an inside surface of the axially extending bore, so that at least one connecting gap, for the pressure medium, between each of the radially extending bores and the axially extending bore, is one of being provided and created via a plurality of first elements arranged in the axially extending bore, and wherein at least the cross section of the connecting gap, between the throttling element and the axial bore is controllable via one of the plurality of first elements and a plurality of additional elements also located in the axially extending bore.

5,662,571
DEFLECTION CONTROLLED ROLL
Herbert Brandtser, Mochenwangen, and Christoph Link, Weingarten, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany
Filed Aug. 28, 1995, Ser. No. 520,248
Claims priority, application Germany, Aug. 29, 1994, 44 30 667.9
Int. Cl.[6] B29C *43/46*
U.S. Cl. 492—7 **13 Claims**



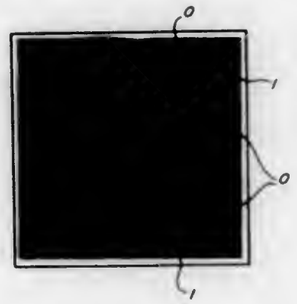
1. A deflection controlled roll comprising:
a fixed carrier; and
a roll jacket rotatable about the carrier, the roll jacket being supported on the carrier via a plurality of support elements,
each of the support elements including at least one cylinder-piston device for the formation of a contact force, at least one bearing shoe with a lubricating fluid supply, at least one pressure chamber, and at least one pressure fluid supply member associated with a pressure fluid supply; and
the pressure fluid supply members, coupled to the pressure chambers of the cylinder-piston devices, comprising a plurality of pressure conduits, each of the pressure conduits being at least one of approximately the same length and approximately the same volume capacity for pressure fluid.

5,662,572
HEATING ROLLER
Heinz-Michael Zaoralek, Königsbronn, Germany, assignor to Schwabische Huttenwerke GmbH, Germany
PCT No. PCT/EP94/01285, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO94/25670, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 25, 1994, Ser. No. 356,244
Claims priority, application Germany, Apr. 23, 1993, 43 13 379.7
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—20 **14 Claims**



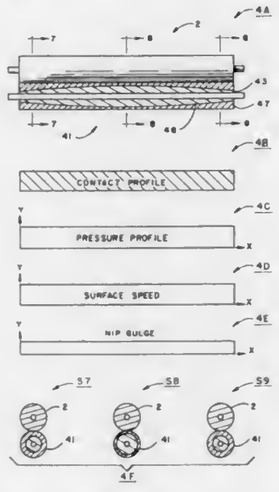
1. A heating roller for web-like materials, in particular paper, comprising:
cylindrical roller body,
at least one flange journal,
at least one feed line and discharge line for a heating medium, in particular steam,
several, at least approximately axis-parallel, preferably peripheral passages for passing the heating medium through the roller body,
the improvement comprising at least one collecting chamber disposed within the heating roller at the ends of the peripheral passages in order to receive the condensate formed by the condensation of the heating medium, preferably steam.

5,662,573
METAL INKING ROLL FOR USE IN FLEXOGRAPHIC PRINTING
Renato Della Torre, Via Di Vittorio 9, 21057 Olgiate Olona (Varese), Italy
Division of Ser. No. 322,097, Oct. 12, 1994, Pat. No. 5,514,064, which is a continuation of Ser. No. 348,006, Oct. 29, 1991, abandoned. This application Nov. 7, 1995, Ser. No. 553,148
Int. Cl.[6] F16C *13/00*
U.S. Cl. 492—31 **2 Claims**



1. A metal inking roll for use in flexographic printing, said inking roll having a surface hardness of up to 77 HRC, an eccentricity lower than 0.02 mm, and a nitrided surface, wherein said roll is further mechanically engraved to produce a screen on a surface of said roll.

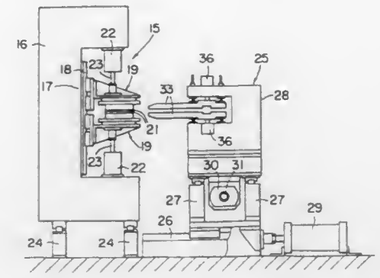
5,662,574
PRESSURE ROLLER
John A. Slotten, 3432 W. Highview Dr., Appleton, Wis. 54915
Filed Mar. 20, 1995, Ser. No. 406,456
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—56 **9 Claims**



2. A resilient pressure roller comprising:
a) a central core of deflection resistant construction and said core has a length of at least twenty-four inches,
b) a body of resilient rubber which has a first durometer and the body is vulcanized to the core by vulcanization and said body has a nonlinear outer profile,
c) a thin outer shell of resilient rubber which has a second durometer different from the first durometer of the body with which it is associated and the shell is secured to the body and the shell has a longitudinal outer profile that is different from the longitudinal outer profile of the body and the outer shell has minimum outer diameter of at least two and one half inches, and
d) the core, the body and the shell interact when the roller is running in a pressure nip so that values for pressure, contact area, nip bulge, and surface speed are substantially uniform along the length of the nip, and thereby provides a pressure roller having low hystereis heating and fatigue characteristics.

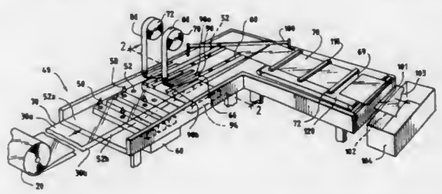
5,662,575
METHOD AND APPARATUS FOR CONTINUOUSLY FORMING BAGS
Hisatoshi Saito, Kawasaki; Masamitsu Yano, Hino, and Satoshi Takane, Kawasaki, all of Japan, assignors to Kewpie Kabushiki Kaisha, Japan
Filed Oct. 13, 1992, Ser. No. 959,655
Claims priority, application Japan, Oct. 16, 1991, 3-267841; Oct. 17, 1991, 3-269599; Oct. 23, 1991, 3-275776; Nov. 13, 1991, 3-297485
Int. Cl.[6] B31B *23/16*
U.S. Cl. 493—190 **1 Claim**

1. A bag making apparatus for forming bags from a continuous tubular plastic film the apparatus comprising:



heat-sealing means for sealing the tubular film widthwise at given positions thereof, said heat-sealing means including a pair of heat-sealing members which are disposed on one side of a track of conveyance to the tubular film, opposing each other so as to hold the tubular film therebetween, and are movable to and from each other;
driving means for driving the heat-sealing members to and from each other;
cooling means for cooling the tubular film including a pair of cooling sandwiching members which are supported on a movable member disposed movably in directions of width of the tubular film and conveyance thereof, and intrude in-between the heat-sealing members; and
driving means for driving the cooling sandwiching members to and from each other, whereby the tubular film is conveyed by a movement of the movable member to a next step while the heat-seals are sandwiched by the cooling sandwiching members.

5,662,576
METHOD OF MANUFACTURING AN IMPROVED BAG FOR THE CULTIVATION OF MUSHROOM SPAWN AND APPARATUS THEREFOR
Gregory S. Sprehe, Carbondale; Lester Siebert, Cobden, and William Towne, Carbondale, all of Ill., assignors to Compac International, Inc., Carbondale, Ill.
Continuation-in-part of Ser. No. 128,886, Sep. 29, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,747
Int. Cl.[6] B31B *37/18*
U.S. Cl. 493—195 **20 Claims**

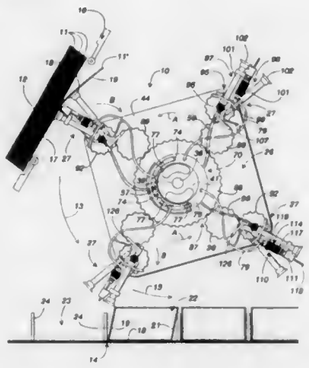


1. An improved method of manufacturing gas permeable water vapor barrier bags for the production of mushroom spawn comprising the steps of:
dispensing a web of thermoplastic film;
cutting a series of substantially aligned apertures in said film to form a series of openings;
removing resulting cut film from said serious of apertures;
dispensing at least one continuous strip of gas permeable hydrophobic film onto said web and over said series of openings, said at least one continuous strip of gas permeable hydrophobic film being of sufficient size to cover and be circumferentially sealed around each of said series of openings and to contribute to manufacturing ease of said bag and a reduction in the amount of labor associated with the production thereof;

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continuously sealing said continuous strip of gas permeable film to said web in a pattern which circumscribes and seals said continuous strip of gas permeable film around each of said series of openings;
cutting said strip to a desired length;
folding said web;
sealing said web along at least two edges thereof to form a series of interconnected bags; and
cutting said series of interconnected bags from said web to form a bag having enhanced moisture retention within the bag to thereby reduce dry spots in said mushroom spawn and improve spawn yield.

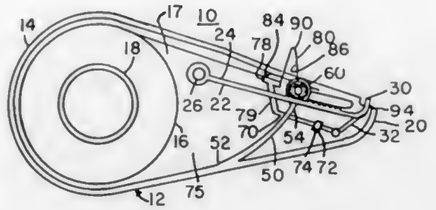
5,662,577
CARTON TRANSFER SYSTEM
Urs Reuteler, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Oct. 30, 1995, Ser. No. 549,989
Int. Cl.[6] B31B *1/80*
U.S. Cl. 493—315 **21 Claims**



18. An article transfer system for moving articles from a stack of articles to a transport conveyor and having primary and secondary vacuum engagement members through which a suction force is drawn for selectively engaging and pulling articles from the stack of articles and holding the articles as the articles are moved toward the transport conveyor, the improvement therein comprising:
a contact member mounted adjacent the vacuum engagement members and communicating with a vacuum supply means for the secondary vacuum engagement member such that as the suction force is applied to the article through said secondary vacuum engagement member, said contact member is moved to an extended, operative position, engaging the article to urge the article into a spread apart, open position.

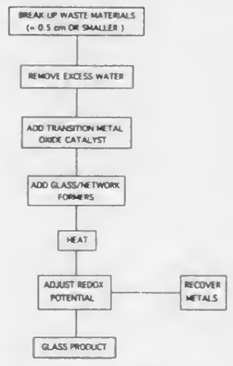
5,662,578
TAPE DISPENSER
David Y. Phelps, 2815 Stratford Ave., Louisville, Ky. 40205
Filed May 26, 1995, Ser. No. 394,374
Int. Cl.[6] B31B *49/00*
U.S. Cl. 493—353 **10 Claims**

1. An adhesive tape dispensing unit for the dispensing of successive strips of adhesive tape, each strip having at least one non-sticky section thereon for the non-adhesive utilization thereof, comprising:
a tape dispensing support;
a roll of adhesive tape arranged in said support; and
a movable pad and a movable cylindrical member cooperatively arranged with respect to one another in said tape dispenser support, to form a graspable tab on said strip of tape as said



pad and said cylindrical member pivot towards one another, with a portion of said tape attached between them;
said movable pad arranged on a pivot to move into tape pinching engagement with said dispenser support as said cylindrical member moves with respect to said pad so as to form a fold of tape to create the non-adhesive gripping tab at the distal end of said tape; wherein said cylindrical member is supported by a flexible arm having a proximal end which is attached to a base of said support.

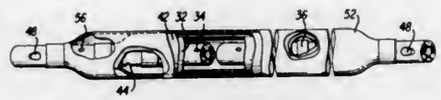
5,662,579
VITRIFICATION OF ORGANICS-CONTAINING WASTES
Dennis F. Bickford, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 21, 1995, Ser. No. 408,157
Int. Cl.[6] A62D *3/00;* **B09B** *3/00;* **G21F** *9/00*
U.S. Cl. 588—256 **20 Claims**



8. A process for stabilizing waste, said waste containing organic materials and at least one metal, said at least one metal having a melting point, said process comprising the steps of:
mixing at least one metal oxide with said waste to form a mixture, said mixture having a redox potential;
heating said mixture to a temperature at least approximately equal to said melting point of said mixture in such a way that said organic materials are oxidized in the presence of said metal oxide and said at least one metal oxide buffers said redox potential to reduce said at least one metal;
recovering said metal from said oxidized mixture; and
vitrifying said oxidized mixture.

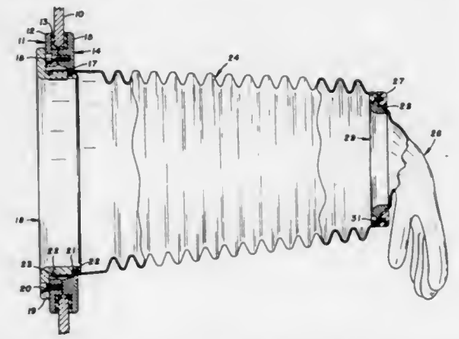
17. A waste glass composition, said composition made from waste containing organic materials, said composition made by a process comprising the steps of:
mixing at least a stoichiometric amount of at least one transition metal oxide with said waste to form a mixture;
heating said mixture so that said organic materials are oxidized in the presence of said at least one transition metal oxide;
continuing to heat said mixture until said mixture vitrifies; and
cooling said vitrified mixture to form a glassy product.

5,662,580
COMBINED ANGIOPLASTY AND INTRAVASCULAR RADIOTHERAPY METHOD AND APPARATUS
Anthony J. Bradshaw, Missouri City; Richard T. Thornton, League City, and Wayne W. Snyder, Houston, all of Tex., assignors to NeoCardia, LLC, Houston, Tex.
Continuation-in-part of Ser. No. 352,318, Dec. 8, 1994. This application Feb. 10, 1995, Ser. No. 386,419
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3 **22 Claims**



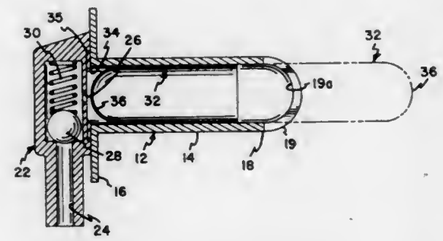
1. An apparatus for localized intravascular radiotherapy of a blood vessel, such as a coronary artery, comprising:
a catheter, said catheter comprising an elongate member having a proximal and a distal end, said elongate member being sized and of sufficient flexibility to be introducible into a patient's body through a cardiovascular lumen until the distal end is disposed at a target area within the blood vessel, said elongate member further including first and second longitudinal holes therethrough defining an angioplasty balloon inflation lumen and an IRT treatment balloon inflation lumen;
an angioplasty balloon, said angioplasty balloon having an interior chamber, said angioplasty balloon being secured to the distal end of said elongate member with said interior chamber in fluid communication with said angioplasty balloon inflation lumen;
an IRT treatment balloon, said IRT treatment balloon comprising an inflatable balloon having an interior chamber, said IRT treatment balloon being secured to the distal end of said elongate member with said interior chamber surrounding said angioplasty balloon; and
means for introducing a liquid containing a radioactive material into said IRT treatment balloon inflation lumen to fill the interior chamber of said treatment balloon for exposure of said target area to said radioactive material.

5,662,581
EASILY STERILIZABLE GLOVE SYSTEM
Carleton E. Jennrich, Welch, and Rudolph O. Marohl, Red Wing, both of Minn., assignors to Delaware Capital Formation, Inc., Wilmington, Del.
Filed Jan. 5, 1995, Ser. No. 369,125
Int. Cl.[6] A61G *10/00;10/02*
U.S. Cl. 600—21 **12 Claims**



1. An easily sterilizable system for effecting access to a sealed sterile enclosure for performing work therein, said system comprising:
A) an annular flanged port ring having inner and outer peripheries and being adapted to be fixedly secured in leak-proof sealed relation in a port in the wall of said enclosure, the flange of said ring having an outside face adapted to lie parallel to the enclosure wall,
B) an annular lip integral with said inner periphery of said port ring extending inwardly from a surface of said port ring,
C) a removable sleeve clamp ring having innermost and outermost edges and inner and outer peripheral faces, said clamp ring extending into and being receivable within said port ring with a loose slide fit,
1) a radially outwardly extending flange on the outermost edge of said sleeve clamp ring releasably engaging outside face of said port ring,
2) a first O-ring-receiving channel having an outer edge and being located in the outer peripheral face of said sleeve clamp ring adjacent the innermost edge thereof, and closely spaced radially inwardly from said annular lip of the port ring,
3) a resilient O-ring having an outer periphery and being seated within said first channel, the outer periphery of said O-ring extending beyond the outer edge of said first channel, and
4) a second sleeve bead-receiving channel in the outer peripheral face of said sleeve clamp ring intermediate of the first channel and flange,
D) an elongated arm-length impermeable leak-proof flexible sleeve having an outermost shoulder end and innermost wrist end and having a flexible impermeable leak-proof glove at its innermost wrist end, said sleeve being fitted over the outer periphery of said sleeve clamp ring, said sleeve having an annular bead at its outermost shoulder end seated in said second channel, the wall of said sleeve being in leak-proof easily sterilizable sealing engagement between said lip and O-ring, said glove having one closed finger and thumb receiving end and an open opposite end.

5,662,582
EVERTING INCONTINENCE PLUG
Dezso K. Levius, Bloomington, and David W. Anderson, Maple Grove, both of Minn., assignors to Iotek, Inc., Minneapolis, Minn.
Filed Feb. 27, 1995, Ser. No. 394,459
Int. Cl.[6] A61F *2/00*
U.S. Cl. 600—29 **1 Claim**



1. A plug for treating incontinence comprising:
a stop means for limiting insertion at the meatus of a urethra; and
a plug member secured to said stop means and sized to extend therefrom in an extended position into a urethra in sealing engagement, said plug member sized to have substantially the same length and width as the urethra when said plug member is in said extended position;
said plug member secured to said stop means in an everted position and responsive to a force for said plug member to extend from said everted position to said extended position in response to said force;

a housing having a top portion and having an inner surface defining a hollow cylindrical area, said plug member contained within said housing when said plug member is in said everted position; and

said top portion is domed with at least one incision such that said plug member is forced through said top portion in response to said force, said plug member extending axially through said housing when said plug member is in said extended position.

5,662,583

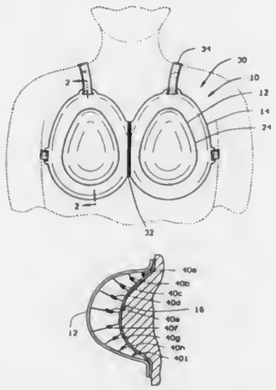
MECHANICAL SOFT TISSUE ENLARGER

Roger K. Khouri, St. Louis, Mo., assignor to Khouri Biomedical Research, Inc., St. Louis, Mo.

Filed Aug. 18, 1995, Ser. No. 516,598

Int. Cl.[6] A01F *5/00*

U.S. Cl. 600—38 **18 Claims**



1. An appliance for enlarging a patient's soft tissue, said appliance comprising:

an adhesive for adhering to a surface of said soft tissue;

a tensioner connected to said adhesive for applying a normal tensile force to the adhesive to thereby develop a normal tensile stress in said soft tissue; and

a support attached to said tensioner, said support having a surface area configured for engaging said patient about a periphery of the surface of said soft tissue for counterbalancing said tensile force with a compressive force against said patient.

5,662,584

ENDOSCOPE WITH POSITION DISPLAY FOR ZOOM LENS UNIT AND IMAGING DEVICE

Koichiro Hori, and Herbert A. Thaler, both of Framingham, Mass., assignors to Vista Medical Technologies, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 319,886, Oct. 7, 1994, Pat. No. 5,582,576. This application Oct. 20, 1995, Ser. No. 545,927

Int. Cl.[6] A61B *1/045;1/05*

U.S. Cl. 600—103 **14 Claims**

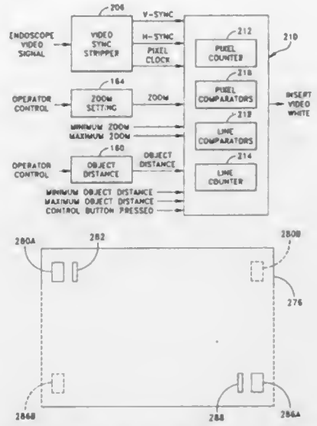
1. An endoscope apparatus comprising:

a handle assembly;

a tube having a distal end and a proximal end, said tube being mounted within said outer tube and having its proximal end anchored to said handle assembly;

an objective lens unit mounted in the distal end of said tube;

a shaft having a distal end and a proximal end, said shaft being disposed within and movable along the axis of said tube;



a solid state imaging device disposed within said tube and attached to said distal end of said shaft so as to be movable therewith along the axis of said tube, said imaging device having an light receiving surface for receiving an image transmitted by said objective lens unit and being capable of generating an output signal representative of the image transmitted by said objective lens unit;

a zoom lens unit disposed within said tube between said objective lens unit and said imaging device for transmitting images seen by said objective lens unit to said imaging device, said zoom lens unit being moveable along the axis of said tube relative to said objective lens unit so as to cause the magnification of the image passed by said objective lens unit to be changed in accordance with the axial position of said zoom lens unit in relation to said objective lens unit;

first and second drive means attached to said handle assembly;

a first motion-transmitting means coupling said first drive means to said shaft, whereby operation of said first drive means will cause axial movement of said imaging device relative to said objective lens unit;

a second motion-transmitting means coupling said second drive means to said zoom lens unit whereby operation of said second drive means will cause axial movement of said zoom lens unit relative to said objective lens unit and said zoom lens unit;

control means for operating said first and second drive means;

display means responsive to said imaging device output signal for generating a video reproduction of the image passed by said objective lens unit; and

electronic means responsive to said imaging device output signal for causing said display means to generate a video image representative of the position of at least said zoom lens unit or said imaging device.

5,662,585

ENDOSCOPE WITH PROTRUDING MEMBER AND METHOD OF UTILIZING THE SAME

Allan Francis Willis, Moorpark; Richard Lee Quick, Trabuco Canyon; Hien Van Nguyen, Santa Ana; Tuoc Tan Nguyen, Westminster, and John Patrick Greelis, Aliso Viejo, all of Calif., assignors to Imagyn Medical, Inc., Laguana Niguel, Calif.

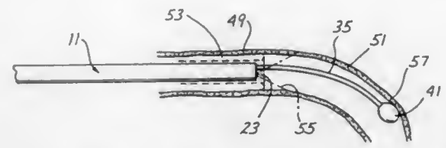
Division of Ser. No. 238,314, May 5, 1994, Pat. No. 5,505,686. This application Mar. 11, 1996, Ser. No. 613,483

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—104 **17 Claims**

1. A method of viewing an interior passage of a patient comprising:

advancing an elongated body and a displacing member into the passage in the patient with the elongated body having a distal end and with the displacing member extending beyond the distal end of the elongated body when the elongated body is at a region of the passage;



relatively displacing the distal end of the elongated body and material within or forming the passage within a zone of the interior passage utilizing the displacing member; and

viewing the interior passage through the elongated body and within said zone while the distal end of the elongated body and said material are relatively displaced.

5,662,586

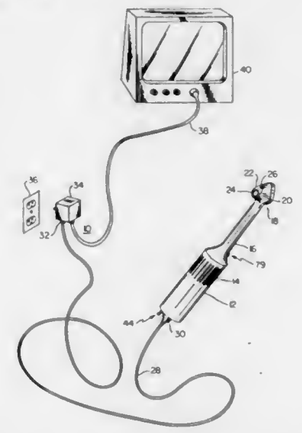
HAND HELD DIAGNOSTIC INSTRUMENT WITH VIDEO IMAGING

Richard A. Monroe, Liverpool; Robert J. Wood, Syracuse; Gregory E. Pasik, Auburn, and Robert R. Huntley, Skaneateles Falls, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation of Ser. No. 531,889, Sep. 22, 1995, Pat. No. 5,527,262, which is a continuation of Ser. No. 292,712, Aug. 18, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,247

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—110 **9 Claims**



6. A hand-held diagnostic instrument comprising:

a casing including a hand-holdable body portion, a neck portion extending distally from the body portion, and a head portion;

circuit board means within said casing including video processing circuitry, said circuit board means further including a flexible board extending from said body portion through said neck portion of said casing and having a head member positioned in said head portion of said casing;

a solid state imager affixed to said head member and in circuit communication with said video processing circuitry;

a lamp within said head member for illuminating a target object or area;

means in said head portion for directing illumination from said lamp into said field of view;

focusing means on said head portion for focusing onto the imager an image of said target object or area positioned within said solid state imager's field of view; and

conduit means for carrying power to said video processing circuitry and to said lamp, and for carrying from said video processing circuitry a video signal representing said target object or area in said field of view,

said focusing means including an adjustable lens cell that is manually actuable to adjust its focal length thereby providing said solid state imager with a variable field of view.

5,662,587

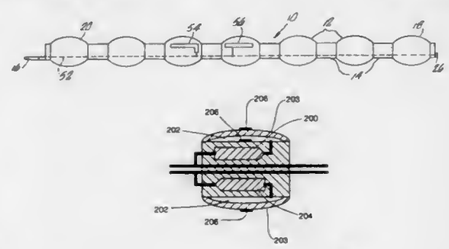
ROBOTIC ENDOSCOPY

Warren Scott Grundfest, Los Angeles; Joel W. Burdick, IV, and Andrew Brett Slatkin, both of Pasadena, all of Calif., assignors to Cedars Sinai Medical Center, Los Angeles, and California Institute of Technology, Pasadena, both of Calif.

Continuation-in-part of Ser. No. 945,806, Sep. 16, 1992, Pat. No. 5,337,732. This application Aug. 16, 1994, Ser. No. 291,428

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—114 **25 Claims**



1. A robotic endoscope comprising:

a first traction module;

an extensor module attached to the first traction module;

a second traction module attached to the extensor module;

each of the first and second traction modules including a central module body, and a cylindrical shell having a traction surface, with the cylindrical shell displaceable from the central module body;

the first and second traction modules having means for moving the cylindrical shell outwardly from the central body module; and

the extensor module having means for increasing and decreasing its length.

5,662,588

ENDOSCOPE APPARATUS

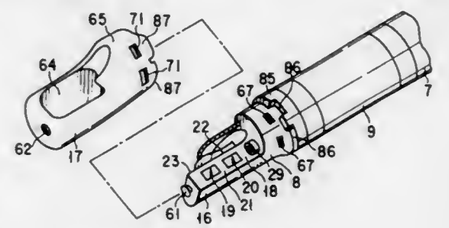
Yoshihiro Iida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 429,234

Claims priority, application Japan, May 31, 1994, 6-118153

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—121 **20 Claims**



1. An endoscope apparatus comprising:

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an insertion portion to be inserted into a body cavity, the insertion portion having a tip portion;
said tip portion of the insertion portion including a tip structure;
a tip cover detachably mounted on the tip structure from a side of a tip portion of the tip structure, the tip cover covering the tip structure;
an engagement device provided on the insertion portion for detachably engaging the tip cover; and
a hard finger-driven engaging/disengaging member provided on an outer periphery of a portion of the insertion portion which is located in the vicinity of the engagement device.

5,662,589

Patent Not Issued For This Number

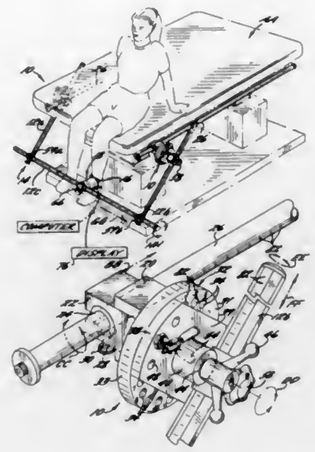
5,662,590
APPARATUS AND METHOD FOR VASODILATION
Ralph de la Torre, Brookline, Mass., and Kenton W. Gregory, West Linn, Oreg., assignors to The General Hospital Corporation, Boston, Mass.
Continuation of Ser. No. 192,948, Feb. 7, 1994, Pat. No. 5,472,406, which is a continuation of Ser. No. 770,553, Oct. 3, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 458,488
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 **15 Claims**



1. An apparatus for dilating a blood vessel in vasospasm filled with a first fluid comprising
a catheter comprising a lumen containing a second fluid, wherein said first and second fluids can be the same or different,
a wave generator arranged within said catheter lumen for generating a hydraulic wave front that propagates through the second fluid in said lumen and is transmitted from a distal end of said catheter to propagate through the first fluid in the blood vessel, wherein said wave generator is controlled and located at a distance from the distal end of said catheter such that no shock wave is propagated in the blood vessel, and
an energy source connected to said wave generator to provide energy to produce said wave front.

5,662,591
APPARATUS FOR EXERCISING AND MEASURING STRENGTH OF A PATIENT'S LIMB AND AN ADJUSTABLE PIVOT CLAMP
Richard D. Peindl, Charlotte, N.C.; Melissa Lee McCarthy, and Ellen Jane MacKenzie, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md., and The Charlotte-Mecklenburg Hospital Authority, Charlotte, N.C.
Filed May 26, 1995, Ser. No. 451,173
Int. Cl.[6] A61B *5/103*
U.S. Cl. 601—24 **32 Claims**

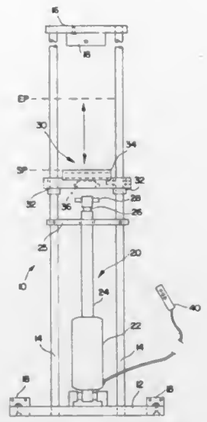
18. An apparatus adapted for use with a table and a load frame having a pair of first opposed frame members and a second frame



member attached generally transverse to the pair of first frame members, said apparatus comprising:
a pair of slide rails adapted to be connected to the table;
a pair of pivot clamps, each of said pair of pivot clamps having a first plate defining an opening in a first end, each said first end also including a clamping mechanism for connecting each said first plate in a desired location and orientation to a respective one of said pair of slide rails, and each of said pair of pivot clamps having a second plate rotatably connected about a generally horizontal axis to said first plate, said second plate having a first adjustable bracket attached at a second end thereof adapted for connecting said first opposed frame members in a desired location relative to the patient's limb, wherein said pair of pivot clamps each provides selected rotational and translational movement between the table and said first opposed frame members;
a limb engaging member adapted to be connected to the load frame and movable therewith for engaging the patient's limb in the desired location; and
a force transducer connected to said limb engaging member for detecting a force transmitted between said limb engaging member and the patient's limb, said force transducer producing an output representative of the force detected between the patient's limb and said limb engaging member.

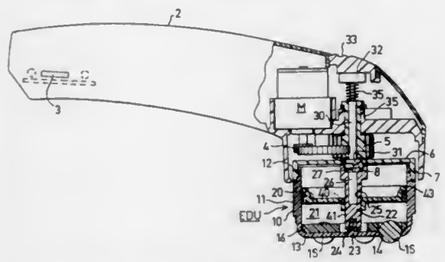
5,662,592
VERTICAL LEG STRETCHING APPARATUS
Thomas L. Brady, 54 Wakefield St., Hamden, Conn. 06512
Filed Jul. 21, 1995, Ser. No. 505,077
Int. Cl.[6] A61H *1/02*
U.S. Cl. 601—34 **3 Claims**

1. A leg stretching apparatus for a user in a standing position, comprising
a base,
a pair of upright bars having lower ends fixed to the base and upper ends extending in a vertical direction,
a leg rest member aligned horizontally between the upright bars having opposite ends slidably engaged therewith so that said leg rest member can be slidably moved between selected vertical positions for stretching posterior leg muscles of a user's leg rested thereon, and
a linear drive mechanism fixed to the base which is positioned vertically below the leg rest member and between the lower ends of the pair of upright bars and is provided with a drive motor and a linear drive member having an end coupled to the leg rest member, said linear drive member being extendable and retractable in the vertical direction by operation of the



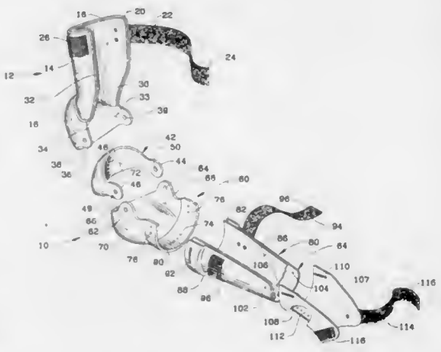
drive motor for moving the leg rest member between selected start and end positions,
wherein said linear drive member has an end with a keyed head and said leg rest member has a keyed slot for securely holding the keyed head of the linear drive member, and further
wherein an extension tube of selected length is attachable to the end of said linear drive member for varying the range of the start and end positions.

5,662,593
MASSAGING APPLIANCE AND CREAM DISPENSER UNIT THEREFOR
Menahem Tillman, Hofit; Daphne Topaz, and Avraham Topaz, both of Even Yehuda, all of Israel, assignors to T. Top (1994) Ltd., Netanya, Israel
Filed Dec. 22, 1995, Ser. No. 576,975
Int. Cl.[6] A61H *9/00;15/00*
U.S. Cl. 601—159 **18 Claims**



1. A massaging appliance for dispensing a massaging cream, comprising: an appliance housing enclosing a rotary motor; and a cream dispenser unit attached to said appliance housing and coupled to said rotary motor to be rotated thereby; said cream dispenser unit comprising: a dispenser housing rotated by said rotary motor and having an end wall at the end thereof distal from the appliance housing and formed with a cream dispenser opening therethrough; a piston within the dispenser housing and normally rotated therewith to define with said distal end wall a compartment for containing a supply of cream to be dispensed; a piston stem threadedly receiving said piston; and a manual control for manually stopping the rotation of the piston stem while permitting rotation of the piston therein to advance the piston on the piston stem, and thereby to force cream through said dispenser opening; characterized in that said manual control includes: a displaceable rod within said appliance housing and axially displaceable towards and away from said dispenser housing but not rotatable within said appliance housing; a spring normally biassing the displaceable rod to a retracted position within the appliance housing normally spaced from said piston stem in the dispenser housing; and a depressible button carried by said appliance housing for manually moving said displaceable rod to an extended position engageable with said piston stem in the dispenser housing, to block rotation of the piston stem and thereby to cause the piston, while rotating with the dispenser housing, to move axially towards said end wall and thereby to force cream through said dispenser opening.

5,662,594
DYNAMIC EXOSKELETAL ORTHOSIS
Marc Rosenblatt, P.O. Box 659, Monsey, N.Y. 10952
Filed Jun. 9, 1995, Ser. No. 489,150
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—16 **15 Claims**

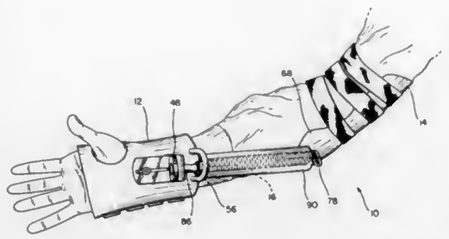


1. A dynamic exoskeletal orthosis apparatus comprising: an upper member constructed from a single piece of rigid material securable to a limb adjacent a joint; a first and second junctional member each constructed from a single piece of rigid material, said first junctional member pivotally coupled to said upper member allowing pivotal movement of said upper member and said first junctional member in the form of a hinge joint; means for limiting said pivotal movement; a lower member constructed from a single piece of rigid material rotationally coupled to said second junctional member allowing rotational movement of said lower member along a longitudinal axis in relation to said second junctional member; a means for limiting said rotational movement; said first and second junctional members hingably connected to allow pivotal movement therebetween; and a means for securing said upper member and lower member to the limb.

5,662,595
SUPINATION-PRONATION ORTHOSIS FOR A JOINT
Stephen P. Chesher, 6617 Holly Lake Ct., Louisville, Ky. 40291; James E. Tittle, 4400 Bishop La., Suite 220, Louisville, Ky. 40218, and Kenneth A. Patchel, 124 Honey Tree La., Chadds Ford, Pa. 19317
Filed Sep. 19, 1995, Ser. No. 529,973
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—20 **26 Claims**

1. A supination-pronation orthosis for treating a joint in an elongate limb of a patient, said limb having a longitudinal axis, comprising,
a lower cuff adapted to be secured to the limb of the patient below the joint to be treated and in spaced relationship thereto;

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an upper cuff adapted to be secured to the limb of the patient above the joint to be treated to extend from adjacent to the joint outwardly along the limb;

and torsion means connected between said lower cuff and said upper cuff to provide a bias to selectively oppose rotation of the limb of the patient in one direction from the joint to the lower cuff about said longitudinal axis, said torsion means including an elongate torsion spring having first and second ends with a longitudinal spring axis extending between said first and second ends and a bias adjustment mechanism connected to said torsion spring for rotating said spring about said longitudinal spring axis.

5,662,596

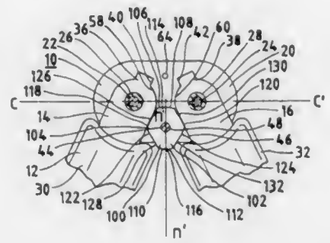
TRUE BI-PIVOTAL ORTHOPEDIC AND ORTHOTIC HINGE WITH INCREMENTAL MOTION CONTROL

David Ernest Young, Bowler's Piece, 16 Couching Street, Watlington, Oxfordshire, OX9 500, United Kingdom

Filed Aug. 30, 1995, Ser. No. 521,547

Int. Cl.[6] A61F *5/01*

U.S. Cl. 602—26 **7 Claims**



1. An orthopedic bi-pivotal hinge comprising a hinge body having a pair of plates defining a space therebetween; two hinge arms having extended adjacent end portions located in said space and independently pivotally connected to said plates for pivotal movement of said each arm in directions of extension and flexion independent of the other of said arms; and a generally diamond-shaped insert element removably secured between said plates having a central body portion and a plurality of corners with a pair of angularly-oriented stop faces adjacent to each corner; said pairs of stop faces constituting abutment surfaces; each said hinge arm being engagable with one of said surfaces for limiting the extent of pivotal movement in extension and being engagable with the other of said surfaces for limiting the extent of pivotal movement in flexion said body portion being generally coplanar with said hinge arms and extending partially therebetween; and connecting means removably securing said body portion of said insert element to said hinge body.

5,662,597

GRAVITY TRACTION DEVICE

Ralph M. Chitwood, Kalispell, Mont., assignor to Glacier Cross, Inc., Kalispell, Mont.

Continuation-in-part of Ser. No. 327,021, Oct. 21, 1994, Pat. No. 5,569,175, which is a continuation-in-part of Ser. No. 303,691, Sep. 9, 1994, Pat. No. 5,454,781, which is a continuation-in-part of Ser. No. 120,602, Sep. 13, 1993, Pat. No. 5,441,479. This application Aug. 16, 1995, Ser. No. 516,007

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—32 **4 Claims**



1. A gravity traction device comprising: an inclined platform or table which is inclined to the horizontal at an angle of between 10° and 80° and which has an upper inclined surface for supporting a user's upper body or torso; a generally U-shaped, head receiving member mounted to said platform adjacent an upper end of said platform and having a top, a bottom, a right side, a left side, an outer, upper end, an inner end surface and a generally U shaped surface extending downwardly from said top and outwardly from said inner end surface of said head receiving member and having a contoured head receiving surface for receiving and supporting a user's head and neck, said contoured surface including a ridge extending downwardly from a location below said top on either side of said U-shaped surface and an adjacent lift surface, said contoured head receiving surface of said head receiving member extending downwardly to said bottom of said head receiving member within said head receiving member and said head receiving member at said bottom has a U-shaped notch extending inwardly from said outer, upper end whereby a patient's head can rest partially on said contoured head receiving surface and partially on said platform upon which said head receiving member is positioned, said ridge being pronounced at the location of a junction between said U-shaped surface and said contoured head receiving surface and each lift surface extending from said ridge laterally toward one of said sides and toward said outer, upper end of said head receiving member for engaging against the occipital bone of the user's head received in said head receiving member; and, a head strap releasably connectable to said head receiving member and about a user's or patient's head received in said head receiving member.

5,662,598

SILICONE OCCLUSIVE DRESSING FOR PENETRATING THORACIC TRAUMA

Joshua M. Tobin, 2400 E. Cary St., Apt. No. 309, Richmond, Va. 23223

Filed Jun. 27, 1996, Ser. No. 671,404

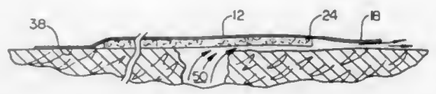
Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—41 **17 Claims**

1. A wound dressing comprising:

a. a generally rectangular gauze pad having a top and a bottom and having a perimeter defining in area sufficient to occlude the wound;

b. silicone impregnated into said gauze pad;



c. a thin, flexible, generally rectangular outer sheet having a perimeter which overlaps the pad on all four sides and having:

i. a generally rectangular marginal area extending along one side of the generally rectangular sheet, one side of said marginal area aligned co-linearly with an adjacent portion of the pad perimeter and

ii. an adhesive area covering at least a major portion of remainder of said sheet;

d. at least one adhesive layer securing said sheet adhesive area to said top of said pad and overlapping three sides of said pad so that the dressing may be adhesively affixed to the patient's skin about the wound and leaving the dressing unadhered to the skin on the remaining side of the pad so that undesired fluids can escape from the wound and drain out of the dressing.

5,662,599

DISPOSABLE WOUND DRESSING AND SUPPORT UNIT

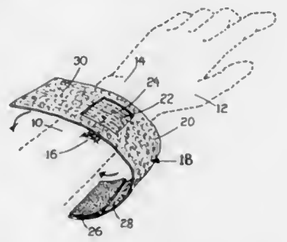
Marshall P. Reich, and Barry F. Slesol, both of Aurora, Colo., assignors to No Mulligans, LLC, Aurora, Colo.

Filed Feb. 20, 1996, Ser. No. 603,466

The portion of the term of this patent subsequent to Nov. 15, 2013, has been disclaimed.

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—79 **15 Claims**



1. A disposable wound dressing and support unit for holding a gauze pad in place on top of a wound and providing for painless access to the wound, the unit adaptable for conforming to various parts of the anatomy of a patient, the unit comprising:

an elongated wrap having a top and a bottom, said wrap having a window opening therethrough, said window opening adapted for receipt above and on top of the gauze pad disposed on top of the wound;

fastener means disposed on the bottom of said wrap and along a side of said window opening for permanently engaging a portion of the gauze pad; and

securing means attached to a first end portion of said wrap for engaging a portion of said wrap at any desired location along its length and securing said wrap on the patient.

5,662,600

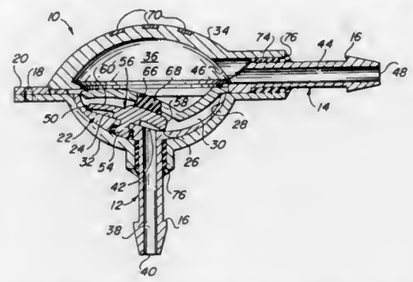
BURR-HOLE FLOW CONTROL DEVICE

David A. Watson, Goleta, and Paul S. Vaskelis, Santa Barbara, both of Calif., assignors to Pudenz-Schulte Medical Research Corporation, Goleta, Calif.

Filed Sep. 29, 1995, Ser. No. 536,651

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—8 **20 Claims**



1. A surgically implantable flow control device for controlling the flow of fluid from one portion of a body to another, the device comprising:

a base including an inlet port and a valve seat surrounding the inlet port;

a flow control member secured to the base and including an asymmetric membrane resiliently biased to contact the valve seat in a manner forming a releasable seal therebetween to provide controlled resistance to proximal-to-distal fluid flow through the device, the membrane including a septum portion overlying the inlet port and a relatively thin portion responsive to fluid pressure differentials on inlet and outlet sides thereof;

an outlet separated from the inlet port by the flow control member;

a flexible encasement which, in connection with the base, defines a fluid reservoir between the inlet port and the outlet; and

a membrane shield within the fluid reservoir.

5,662,601

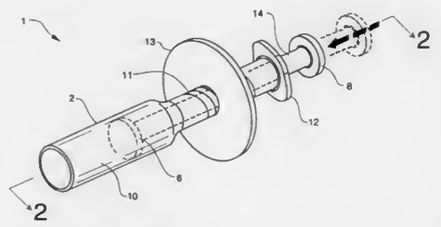
SUPPOSITORY APPLICATOR

Patty B. Snead, 2911 10th Ave. South, Birmingham, Ala. 35205-1001

Filed Dec. 8, 1995, Ser. No. 569,494

Int. Cl.[6] A61F *13/20;* **A61M** *5/00;31/00*

U.S. Cl. 604—15 **7 Claims**



1. A suppository applicator comprising:

a cylindrical barrel, said barrel being hollow and having a front end being open for holding a suppository and a back end;

a grippable lip formed at said back end of said barrel;

a plunger disposed within said barrel for sliding transversely between an extended position and a withdrawn position, said plunger entering said front end of said cylindrical barrel when in said extended position;

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a stop shield mounted in an annularly extended manner about said barrel; and

said stop shield threadedly engaged on said barrel in such a manner as to permit longitudinal movement of the stop shield along the barrel only when a rotational force is applied to the stop shield, said stop shield both for preventing over insertion of said front end of said barrel and for maintaining hygiene integrity at said back end of said barrel.

5,662,602

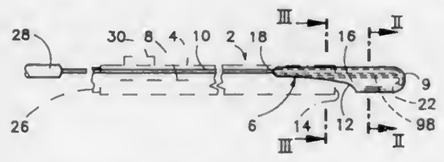
Patent Not Issued For This Number

5,662,603

MEDICAL MATERIAL REMOVAL METHOD AND ASSOCIATED INSTRUMENTATION

Gary A. Gelbfish, 2502 Ave. I, Brooklyn, N.Y. 11210

Filed May 29, 1996, Ser. No. 654,834
Int. Cl.[6] A61B *17/32*
U.S. Cl. 604—22 23 Claims



1. A cutting member for a medical material removal instrument, comprising a cutting head having an axis and an elongate drive rod eccentrically attached at a distal end to said cutting head at a location spaced from said axis, said drive rod extending substantially parallel to said axis, said cutting head having a cutout on a proximal side in part for enabling a drawing of material in a proximal direction internally from a patient into a distal end of a tubular member upon a partial ejection of said cutting head from said distal end of said tubular member during a material removal operation, said material being severed in a scissor-type action of said cutting head against said distal end of said tubular member upon a drawing of said cutting head via said drive rod into said distal end of said tubular member, said cutting head having a maximal transverse cross-section conforming in a close fit to an inner surface of said tubular member, said cutting head being tapered from said maximal transverse cross-section in a proximal direction to facilitate a drawing of said cutting head into said distal end of said tubular member, said cutting head having an at least approximately semicylindrical outer surface located between said maximal transverse cross-section and a most proximal end of said cutting head for ensuring a locating of said drive rod eccentrically relative to said tubular member upon the drawing of said cutting head into the distal end of said tubular member.

5,662,604

MONITORING METHOD OF RENAL LESIONS WITHOUT CLINICAL SIGNS

Etsuro Ogata; Kiyoshi Kurokawa; Shunya Uchida, all of Tokyo, and Akiko Kishida, Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP93/00178, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995
PCT Filed Feb. 12, 1993, Ser. No. 495,635
Int. Cl.[6] A61K *38/00*
U.S. Cl. 604—28 8 Claims

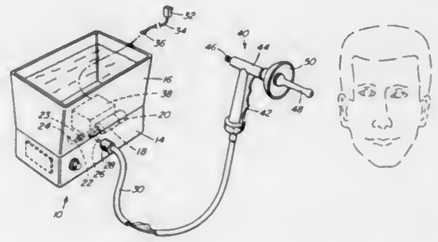
1. A screening method for renal lesions in diabetic patients not yet exhibiting symptoms of nephropathy, comprising administering a predetermined dose of a parathyroid hormone, analogue or derivative thereof to the patients, and measuring urinary excreted N-acetyl-β-D-glucosaminidase (NAG).

5,662,605

EAR IRRIGATION DEVICE AND METHOD

Stanley Hurwitz, 5600 Williams Road, Richmond, British Columbia, Canada, V7E 1K3

Filed Nov. 24, 1995, Ser. No. 562,569
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—54 5 Claims



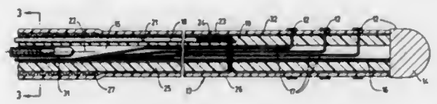
4. A method of irrigating a person's ear, which comprises the steps of inserting a nozzle into the ear, discharging water via said pump through the nozzle into the ear at an initial low water discharge pressure to counteract discomfort to the patient, timing the discharge of the water from the nozzle via a control circuit and said control circuit automatically effecting an increase in the water discharge pressure via said pump after a predetermined interval of time.

5,662,606

CATHETER FOR ELECTROPHYSIOLOGICAL PROCEDURES

William W. Cimino, Temecula; Robert Abrams, Carlsbad; Miriam H. Talmisto, Anaheim Hills; Marc Jenson, San Marcos, and Patrick E. Macaulay, Murrieta, all of Calif., assignors to Heart Rhythm Technologies, Inc., Temecula, Calif.

Continuation of Ser. No. 31,249, Mar. 12, 1993, Pat. No. 5,364,352. This application Nov. 14, 1994, Ser. No. 339,125
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—95 30 Claims



1. A catheter comprising:

a body member having a distal end and a proximal end;

a deflection control line slidable in a direction parallel to the longitudinal axis of the body member, the control line having a distal end attached to the body member wherein movement of said deflection control line controls deflection of the distal end of the body member; and

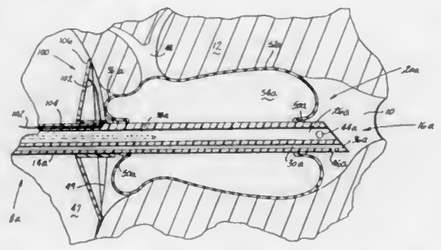
a stiffening member disposed within the body member and slidable in a direction parallel to the longitudinal axis of the body member, said stiffening member providing increased rigidity to the portion of the body member in which the stiffening member is located.

5,662,607

CARDIOPLEGIA CATHETER WITH ELONGATED CUFF

William M. Booth, Paw Paw, Mich., and Jean-Aubert Barra, Brest, France, assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 146,293, Oct. 29, 1993, Pat. No. 5,505,698. This application Jun. 7, 1995, Ser. No. 475,072
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 2 Claims



1. A catheter for supplying perfusion liquid to the coronary sinus, comprising:

a tubular catheter body having an interior lumen, a proximal end, and a distal end;

an inflatable cuff on the catheter body adjacent to the distal end thereof; and

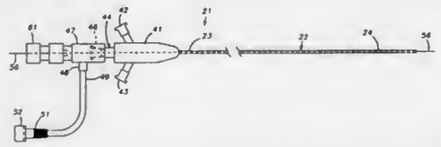
a stop on the catheter body, the stop being formed of flexible material in a configuration to extend radially outwardly from the catheter body in a relaxed condition and spaced a predetermined distance proximally from the cuff, the distance being so measured that when the distal end of the catheter is inserted into the coronary sinus until the stop abuts the heart muscle surrounding the opening of the coronary sinus, the cuff will be correctly disposed within the coronary sinus.

5,662,608

LOW PROFILE BALLOON CATHETER AND METHOD

Mir A. Imran, Palo Alto; Deepak R. Gandhi, San Jose, and Anant V. Hegde, Newark, all of Calif., assignors to Intelliwire, Inc., Sunnyvale, Calif.

Filed Jul. 26, 1995, Ser. No. 507,655
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 6 Claims



1. A low profile catheter comprising a flexible elongate tubular member with a smooth outer surface and having proximal and distal extremities, said flexible elongate tubular member having a guide wire lumen and at least first and second balloon inflation lumens extending from the proximal extremity to the distal extremity, said first and second balloon inflation lumens being offset eccentrically with respect to said guide wire lumen, first and second inflatable balloons having proximal and distal extremities carried by the distal extremity of the flexible elongate tubular member and having respectively first and second interiors in communication, respectively, with said first and second balloon inflation lumens, at least one of said first and second inflatable balloons having a wall thickness which decreases in a direction away from the guide wire, said first and second inflatable balloons being formed of the same material as the flexible elongate tubular member with smooth transitions between the proximal and distal extremities of the first and second balloons and the smooth outer surface of the flexible elongate tubular member so there are no discontinuities at the proximal and distal extremities of the first and second inflatable balloons and the flexible elongate tubular member.

5,662,609

METHOD AND APPARATUS FOR TREATMENT OF FOCAL DISEASE IN HOLLOW TUBULAR ORGANS AND OTHER TISSUE LUMENS

Marvin J. Slepian, Cleveland Heights, Ohio, assignor to Endoluminal Therapeutics, Inc., Tucson, Ariz.

Continuation of Ser. No. 101,966, Aug. 4, 1993, Pat. No. 5,328,471, which is a continuation of Ser. No. 14,043, Feb. 5, 1993, abandoned, which is a continuation of Ser. No. 869,907, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 759,048, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 485,287, Feb. 26, 1990, abandoned. This application Apr. 13, 1994, Ser. No. 226,945
Int. Cl.[6] A61M *25/00;29/00*
U.S. Cl. 604—101 22 Claims



1. A device for providing localized therapy with a therapeutic agent to a diseased region in a tissue lumen, comprising:

an elongate tubular shaft having a distal region adapted for insertion into a patient and a proximal region adapted to remain outside of the patient;

a monomer or prepolymer solution or an at least partially preformed polymeric product associated with the device so as to be formable into a layer of polymeric material in intimate and conforming contact with an irregularly contoured tissue surface proximal to the distal region of the shaft; and

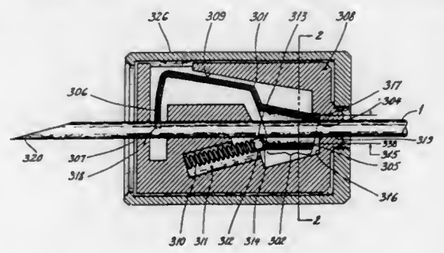
a therapeutic agent in fluid communication with the distal region of the shaft selected to influence the behavior of cells, selected from the group consisting of vasodilating agents, calcium channel blocking drugs, anti-proliferative agents, intercalating agents, growth modulating factors, and anti-inflammatory agents.

5,662,610

AUTOMATIC NEEDLE GUARD TIP PROTECTION

Richard C. Sircom, 19 Richards Drive, Dartmouth, N.S., Canada, B3A 2P1

Continuation-in-part of Ser. No. 272,598, Jul. 11, 1994, Pat. No. 5,611,781, which is a continuation of Ser. No. 672,651, Mar. 20, 1991, Pat. No. 5,328,482, which is a continuation-in-part of Ser. No. 309,305, Feb. 1, 1989, Pat. No. 4,921,517. This application Jun. 7, 1995, Ser. No. 488,294
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—110 12 Claims



1. A needle tip protecting device for covering the tip of a needle comprising protecting means having engagement means for automatically, non-removably, directly engaging the outer surface of needle with said protecting means when said protecting means is moved from a position on said needle spaced from said tip, to a position where said protecting means encloses said tip, said engagement means comprising:

(a) locking means adapted to lockingly engage with said needle and thereby restrain axial displacement of said protecting means with respect to said needle in the direction proceeding towards the tip of said needle, when said protecting means encloses said tip; and

(b) means to prevent re-emergence of said tip from said guard body upon attempted movement of said protecting means in the opposing axial direction

wherein the locking means comprises:

(i) a jamming surface contained within said protecting means and obliquely aligned with said needle to provide a narrowing opening therebetween; and

(ii) jamming means contained within said protecting means and biased by spring means to move into the narrowing opening and lockingly engage said needle when said protecting means is positioned so as to envelop the tip of said needle.

5,662,611

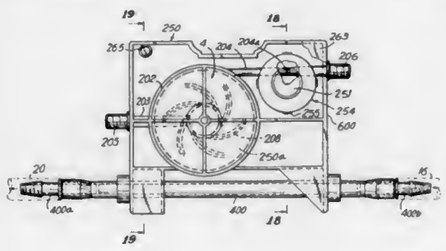
FLUID MANAGEMENT SYSTEM

David G. Beiser, Brookline; Steven B. Woolfson, Boston, both of Mass., and Kenneth W. Krause, Sandown, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Division of Ser. No. 255,281, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 867,981, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned, and Ser. No. 838,465, Feb. 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,609

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—118 **5 Claims**



1. A disposable plastic pump cassette for use in an endoscopic surgical procedure, comprising a housing; an inflow pump means in said housing for supplying liquid under pressure to a body cavity during the endoscopic procedure, and conduit means within said housing for supplying liquid to and delivering liquid under pressure from said inflow pump means; and an outflow suction pump means in said housing for aspirating liquid from a body cavity during the endoscopic procedure, and conduit means within said housing for supplying liquid to and delivering liquid from said outflow pump means.

5,662,612

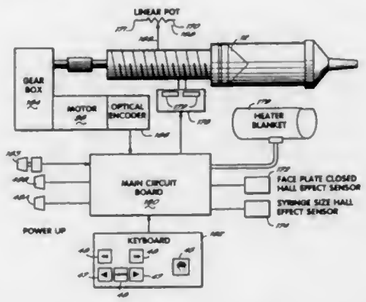
CONTROLLING PLUNGER DRIVES FOR FLUID INJECTIONS IN ANIMALS

Kenneth J. Niehoff, Cincinnati, Ohio, assignor to Liebel Flarsheim Company, Cincinnati, Ohio

Continuation of Ser. No. 157,823, Nov. 24, 1993, abandoned. This application Jun. 26, 1995, Ser. No. 494,795

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—155 **12 Claims**



1. An injector of the type having a motor which advances and retracts a plunger located within a syringe toward and away from a nozzle located in the front of the syringe to inject fluid into or out of an animal subject, adapted for use with a syringe including an extender attached to said plunger, comprising:

a control circuit which causes said motor to move, said control circuit tracking the location of said motor while moving said motor, and

a memory storing an offset value representative of the length of the extender which is attached to said plunger, wherein

said control circuit computes a value indicative of the location of said plunger within said syringe by relating said stored offset value to the tracked location of said motor, and ceases motion of said plunger when said computed value indicates that said plunger is at an end of said syringe.

5,662,613

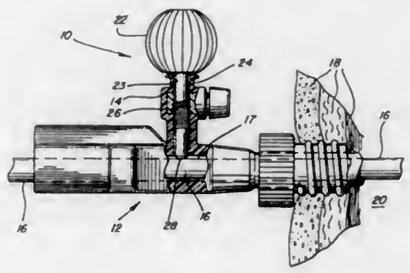
ENDOSCOPIC INSTRUMENT LOCK

Denis C. Astarita, 801 N. Tustin Ave., Ste. #305, Santa Ana, Calif. 92705

Filed May 14, 1996, Ser. No. 649,118

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—165 **16 Claims**



1. A locking means for holding an instrument in a trocar inserted into a body cavity comprising, in combination:

an enlarged head;

an elongated shaft secured at a first end to said enlarged head and having a second soft end;

a thread formed only a limited portion of said elongated shaft; and

said thread being self-tapping so that it may be threaded into an unthreaded passage in said trocar by rotation of said enlarged head so as to secure the instrument in position in the trocar and extending into said body cavity, by said second soft end.

5,662,614

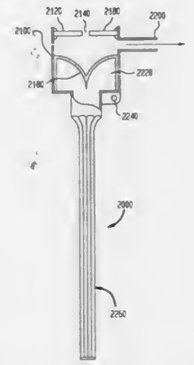
BALLOON EXPANDABLE UNIVERSAL ACCESS SHEATH

John K. Edoga, 10 Franklin Pl., Morristown, N.J. 07960

Filed May 9, 1995, Ser. No. 437,393

Int. Cl.[6] A61M *39/22*

U.S. Cl. 604—167 **5 Claims**



1. An apparatus for introducing a second apparatus into the body of a patient and for collecting blood comprising: a hollow sheath having a longitudinal axis extending between a first and second end, a hollow housing defining a housing chamber communicating with said first end of said hollow sheath, first valve means disposed within said housing chamber, said first valve means for allowing insertion of said second apparatus into said housing chamber and through said sheath but substantially retarding blood from exiting said housing chamber, a second valve means disposed within said housing chamber, for allowing passage of said second apparatus from said first chamber into said second chamber, but substantially retarding blood from entering from said second chamber and into said first chamber, said housing chamber thereby comprising a first chamber defined by said housing, said first valve means and said second valve means, said housing chamber further comprising a second chamber defined by said housing, said second valve means and said first end of said sheath, and blood removal means connected to said housing chamber for removing blood from said housing chamber, said blood removal means being disposed within said first chamber.

5,662,615

VALVE AND VALVE CARTRIDGE FOR TROCAR

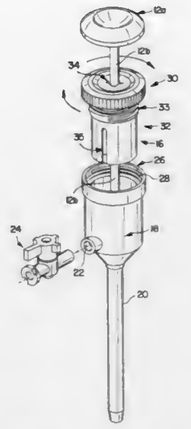
Joseph W. Blake, III, 77 Locust Ave., New Canaan, Conn. 06840

Filed Sep. 1, 1995, Ser. No. 523,108

Int. Cl.[6] A61M *29/02*

U.S. Cl. 604—167 **15 Claims**

1. A trocar tube for receiving trocar obturators and surgical instruments, the trocar tube comprising a housing in the form of a hollow shell with aligned first and second openings in opposite sides of the housing defining a central passage therethrough, the first opening being in the top side of the shell, the second opening being in the bottom side, a tube depending from the second opening, the tube having an axis aligned with the central passage, a cartridge removably nested within the housing in alignment with the central passage, the cartridge having an upper collar and a depending cylindrical skirt, means for securing the cartridge to the first opening of the housing, a primary seal positioned in the cartridge around the first opening and encompassing the central passage, a secondary seal positioned in the cartridge within the skirt to encompass the central passage, the secondary seal having upper and lower peripheral rims joined by a generally cylindrical air tight tube, the tube portion of the valve between the rims being in the general form of upper converging and lower diverging planar wall sections which meet along a diametric sealing line defined by touching interior surfaces of the planar wall sections, the lower planar walls comprising return planar walls which protect the integrity of the seal line by resisting the tendency of instruments to disturb the seal line by inverting the upper planar walls when passing through the seal valve.



5,662,616

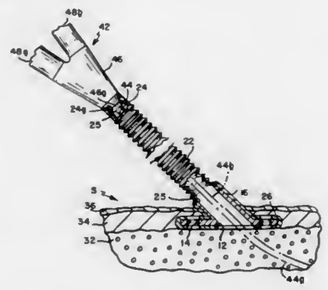
TRANSCUTANEOUS ACCESS DEVICE

Gerald G. Bousquet, 29 Village Sq., P.O. Box 201, Chelmsford, Mass. 01824

Filed Jul. 7, 1995, Ser. No. 499,543

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—175 **7 Claims**



1. A transcutaneous access device and catheter comprising

a cylindrical tubular neck having opposite ends and a lumen, said neck adapted to protrude from the skin;

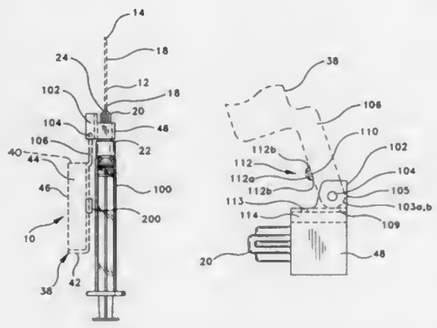
an annular skirt at one end of the neck for anchoring in subcutaneous tissue;

a flexible, extensible sleeve extending from the opposite end of the neck, said sleeve having a free end and defining with said neck a lumen through the device;

a catheter tube received in said lumen as defined by said sleeve and said neck and having opposite ends, and

connector means for releasably connecting the free end of the sleeve to the catheter tube.

5,662,617
MANUALLY PIVOTED BARRIER ASSEMBLY FOR PIERCING ELEMENT
Robert B. Odell, Franklin Lakes; Sandor Szabo, West Orange, and James A. Burns, Elizabeth, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 375,841, Jan. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 310,538, Sep. 23, 1994. This application Feb. 6, 1996, Ser. No. 597,329
Int. Cl.[6] A01M *5/32*
U.S. Cl. 604—192 14 Claims



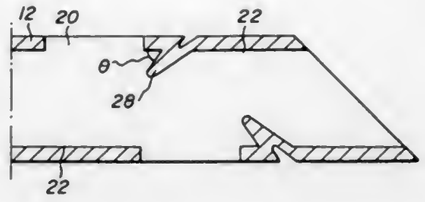
1. A protective barrier assembly for a piercing element, comprising:
an elongate piercing element having a distal end and a proximal end; and
a barrier element for selectively averting touch contact with said piercing element, said barrier element including an elongate channel portion dimensioned to receive said elongate piercing element, a collar secured adjacent the proximal end of the piercing element, and an arm having one end affixed to said channel portion and having a second end pivotably affixed to said collar, said barrier element pivotable between a first portion, wherein the distal end of said piercing element is exposed, and a second position, wherein the distal end of said piercing element is substantially enclosed within the channel portion to protectively cover the distal end of the piercing element, said arm including a retaining means for lockingly engaging with said collar to secure said barrier element in said second position.

5,662,618

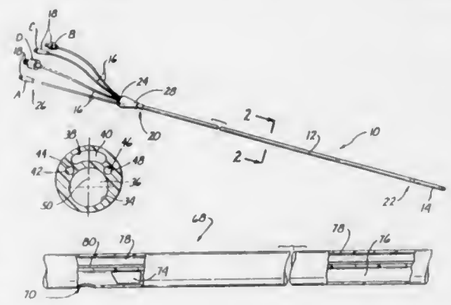
Patent Not Issued For This Number

5,662,619
VENOUS DIALYSIS NEEDLE
Alfredo R. Zarate, 8128 Hamilton Springs Rd., Bethesda, Md. 20817
Filed Nov. 27, 1995, Ser. No. 563,210
Int. Cl.[6] A61M *5/32;5/00;25/00*
U.S. Cl. 604—272 11 Claims

1. A dialysis needle comprising:
a hollow shaft having an exterior surface, an interior surface, a central axis, an open proximal end, an open distal end, and at least two lateral openings; and
at least two non-pivotable diverters located on said interior surface of said hollow shaft, each of said diverters positioned adjacent an associated one of said lateral openings, each of said diverters being fixed in position and projecting into a lumen of said hollow shaft at an angle toward said central axis of said hollow shaft.



5,662,620
TRANSPORT CATHETER
Clement E. Lieber, Yorba Linda; Miriam H. Taimisto, Sierra Madre, and Mark A. Konno, Costa Mesa, all of Calif., assignors to Baxter International, Inc., Deerfield, Ill.
Continuation of Ser. No. 369,056, Jan. 5, 1995, abandoned, which is a continuation of Ser. No. 83,105, Jun. 24, 1993, Pat. No. 5,437,637, which is a division of Ser. No. 790,724, Nov. 8, 1991, Pat. No. 5,246,016. This application Jul. 2, 1996, Ser. No. 675,365
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—280 14 Claims



1. A catheter for accepting probes and for introducing fluid through the catheter and into a body cavity, the catheter comprising:
a catheter body having a continuous outer edge surface with a corresponding maximum outer dimension and having a proximal end and a distal end and having walls defining, in transverse cross-section, lumens including a first wall defining a first lumen having a first cross-sectional dimension approximately half the maximum outer dimension of the catheter body, and a second wall defining a curved lumen wherein the lumen occupies at least a quarter of an arc around the catheter body; and
a first lumen exit port opening the first lumen to the outside of the catheter proximal of the distal end of the catheter body.

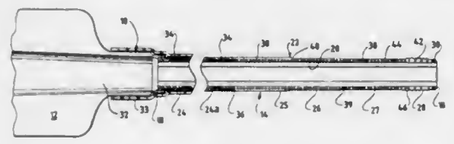
5,662,621
GUIDE CATHETER WITH SHAPE MEMORY RETENTION
Daniel M. Lafontaine, Plymouth, Minn., assignor to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Jul. 6, 1995, Ser. No. 498,887
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—281 26 Claims

1. A catheter assembly comprising:



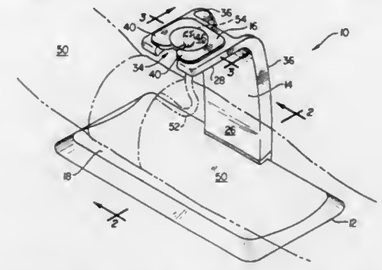
a generally elongate shaft having a proximal end and a distal end, with a lumen extending longitudinally between the proximal end and the distal end;
means for selectively providing a stimulus to at least a portion of the shaft including a core member insertable within the lumen; and
wherein at least a portion of the shaft is formed of a material responsive to the stimulus for selectively changing at least a portion of the shaft between a generally softened, ductile state and a second, curved stiff state relative to the softened, ductile state.

5,662,622
INTRAVASCULAR CATHETER
Susana M. Gore, Fort Lauderdale; Mark Mueller, Miramar, both of Fla.; Nicholas Green, Kinnelon, N.J.; Jeffrey G. Gold, Parkland, Fla., and Peter P. Soltesz, San Jose, Calif., assignors to Cordis Corporation, Miami Lakes, Fla.
Filed Apr. 4, 1995, Ser. No. 409,973
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 14 Claims



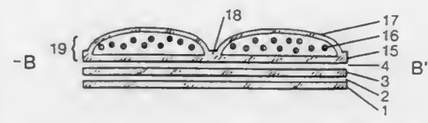
1. An intravascular catheter which comprises a flexible tubular wall, said wall carrying a helical reinforcement member embedded within said tubular wall, said helical reinforcement member comprising a helical first portion having helical coils of greater pitch than the pitch of helical coils of a second helical portion of said reinforcement member, said helical reinforcement member being connected to but spaced from a proximal end portion of said catheter, said proximal end portion comprising at least half of the catheter length, said proximal end portion comprising a portion of said tubular wall embedded along most of its length with a second reinforcement member, said second reinforcement member comprising a crossing-strand, tubular reinforcement; said catheter carrying, distal to said proximal end portion, an integrally attached, second tubular wall portion comprising part of said tubular wall, said second tubular wall portion carrying some of said embedded second helical portion of said reinforcement member, and, distal to said second tubular wall portion, an integrally attached, third tubular wall portion comprising part of said tubular wall, said third tubular wall portion carrying some of said embedded, second helical portion of said helical reinforcement member, said third wall portion being of less outer diameter than said second wall portion; said catheter carrying, distal to said third tubular wall portion, an integrally attached, fourth tubular wall portion comprising part of said tubular wall, said fourth tubular portion being made of a tubular plastic material which is softer than the corresponding tubular plastic materials positioned proximal to said fourth tubular wall portion.

5,662,623
INTRAVENOUS INJECTION CAP SUPPORT APPARATUS
Trinet Stockwell, 1342 West Ave., Fullerton, Calif. 92633
Continuation of Ser. No. 313,336, Sep. 7, 1994, Pat. No. 5,478,332. This application Sep. 25, 1995, Ser. No. 533,309
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—283 20 Claims



1. Apparatus for securing and supporting infusion therapy tubing, said apparatus comprising:
a) supporting means for supporting said apparatus on a surface;
b) receiving means engaged with said supporting means for receiving said tubing, said receiving means being adapted to disengage from said supporting means upon movement of said tubing, when in a received position, in a direction away from said supporting means.

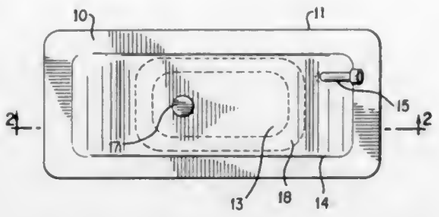
5,662,624
HEAT DRESSING COMPRISING A HEAT GENERATING UNIT AND AN ADHESIVE LAYER
Staffan Sundström, Helsingborg, Sweden; Lars Schønfeldt, Helsingør, and Peter Boman Samuelsen, Rungsted Kyst, both of Denmark, assignors to Coloplast A/S, Denmark
PCT No. PCT/DK93/00115, § 371 Date Sep. 26, 1994, § 102(e) Date Sep. 26, 1994, PCT Pub. No. WO93/19706, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 26, 1993, Ser. No. 307,750
Claims priority, application Denmark, Mar. 27, 1992, 0409/92
Int. Cl.[6] A61F *5/00*
U.S. Cl. 604—291 3 Claims



1. A heat dressing, comprising a substantially planar heat generating unit being coated on one side surface thereof with a layer of liquid absorbing adhesive material which prior to use of the bandage is coated with a strippable cover layer, characterized in that the heat generating unit comprises metal powder, and that the unit is so shaped that it is possible to bring the oxygen in the air in contact with the said metal powder.

5,662,625
PRESSURE CONTROLLABLE HYPERBARIC DEVICE
Joseph R. Westwood, Glen Mills, Pa., assignor to GWR Medical, L.L.P., Chadds Ford, Pa.
Filed May 6, 1996, Ser. No. 643,486
Int. Cl.[6] A61F *13/00;* A61G *10/00*
U.S. Cl. 604—305 2 Claims

1. A topical hyperbaric device for treatment of a patient's wound with a therapeutic gas comprising flexible substantially gas imper-



meable sheet material; and adhesive layer to affix said material to said patient to form a restricted therapeutic gas treatment zone that includes the area of said wound, wherein said gas is in contact with said wound and is restricted from escaping; means for introducing said gas into said treatment zone; and a pressure release valve that automatically releases gas from said treatment zone when the set maximum gas pressure of said valve is exceeded in said treatment zone, characterized by said valve being constructed to be

i) manually adjustable,

ii) adjustable before therapeutic gas treatment of said wound to an initial desired maximum gas pressure of said treatment zone, and

iii) adjustable during uninterrupted therapeutic gas treatment to another desired treatment pressure.

5,662,626

PLASTER ACTING AS A DOSING DEVICE

Jussi Matias Ruotoistenmäki; Juhana Ruotoistenmäki, both of Helsinki, and Jouko Artturi Nyman, Hyvinkää, all of Finland, assignors to Diomedes Oy, Helsinki, Finland

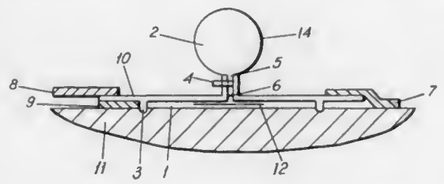
PCT No. PCT/F194/00107, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO94/21322, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 23, 1994, Ser. No. 525,759

Claims priority, application Finland, Mar. 23, 1993, 931285; Mar. 22, 1994, 941336

Int. Cl.[6] A61F *13/00;13/02*

U.S. Cl. 604—306 **21 Claims**



1. A plaster to be attached to the skin, having a film (**10**) impermeable to an active ingredient, which film contains a fixing means (**7**, **8**, **9**) for the attachment of the plaster, by which the plaster is attached to a desired spot tightly and without permeating the active ingredient, characterized in that on the one side of the film (**10**) there is at least one store chamber (**2**) and on the other side at least one dosing chamber (**1**) for the active ingredient, with thresholds (**3**) on at least peripheral edges of said dosing chamber (**1**) directed from the film (**10**) towards the skin to prevent the plaster from coming in contact with the active ingredient in the dosing chamber, at least one connecting channel (**5**) between the store and the dosing chambers (**2**,**1**) and at least one valve (**4**) in said at least one connecting channel (**5**).

5,662,627

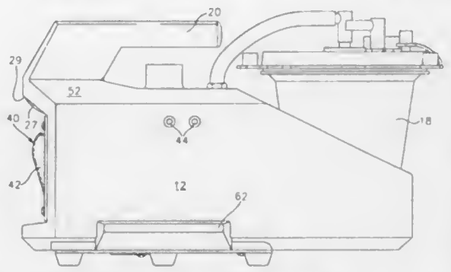
ASPIRATION APPARATUS

Samuel L. Say, La Canada, Calif., assignor to SSCOR, Inc., Sun Valley, Calif.

Filed Aug. 9, 1995, Ser. No. 512,803

Int. Cl.[6] A61M *1/00;15/00;* **A47L** *5/24*

U.S. Cl. 604—319 **31 Claims**



1. A portable aspiration apparatus comprising:

a rechargeable means for generating suction;

a single-piece housing molded from a rigid material for encasing and providing a waterproof shield to the rechargeable means, wherein the housing comprises a first opening on the bottom of the housing to accommodate the means for generating suction, a second opening to accommodate controls for operating the apparatus, and a set of openings to accommodate a set of two recharge sockets;

a container for collecting fluids using the generated suction; and

an external depression on the housing for accommodating the container.

5,662,628

COUPLING

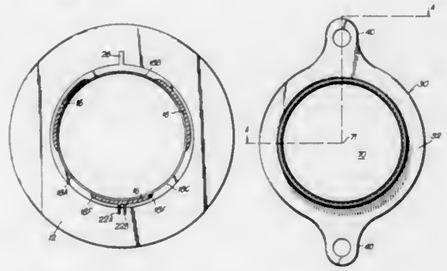
Keith G. M. Hollands, Sompting, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1996, Ser. No. 631,459

Claims priority, application United Kingdom, Apr. 13, 1995, 9507667

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—342 **17 Claims**



1. A coupling comprising:

a first coupling member and a second coupling member which are mutually interengageable and which surround an orifice, at left one of said coupling members having tab receiving slots; and

a resilient split ring encircling said two coupling members having radially inward extending lockable tabs, said split ring being manipulatable to cause said split ring to be deformed so that said radially-inwardly extending tabs on said ring are shifted between first positions in which said split ring is undeformed and said tabs are received in said slots and said two coupling members together and respective second positions in which said lock split ring is deformed so as to shift said tabs radially outwardly to locations where they permit separation of said two coupling members by retracting said tabs from said slots.

5,662,629

OSTOMY COUPLING

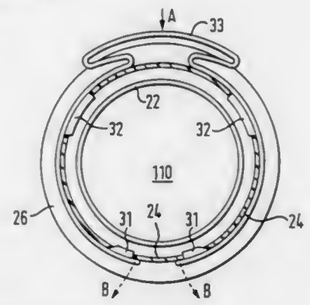
Peter L. Steer, Sussex; Keith G. M. Hollands, Sompting; Graham Emery Steer, London; Ronald A. Plass, West Sussex, and Howard Barratt, Surrey, all of England, assignors to E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1996, Ser. No. 631,460

Claims priority, application United Kingdom, Apr. 13, 1995, 9507666

Int. Cl.[6] A61F *5/44;* **B65D** *45/30*

U.S. Cl. 604—342 **5 Claims**



1. An ostomy coupling comprising:

first and second coupling members capable of being coupled together, each of said members having a central stomal opening, said first coupling member having a flange with a projection receiving channel, said channel being defined at least in part by a concentric inner and outer wall, said inner wall being positioned closer to said stomal opening, said outer wall having a plurality of tab-receiving slots extending therethrough, said second coupling member having a projection receivable in said channel when said first and second members are properly pushed together, said projection being lockable in said channel, and

a resilient, releasably lockable locking ring including a circular portion positionable circumferentially about said outer wall, said locking ring including a plurality of tabs projecting radially inwardly through said slots so as to lock said projection in said channel when said coupling members are coupled together, said locking ring including a compressible portion projecting radially outwardly from said circular portion, said compressible portion being compressible radially inwardly so as to move said circular portion of said locking ring radially outwardly and withdraw said tabs from said slots of said coupling member releasing said projection and facilitating uncoupling of said coupled members, said locking ring resiliently returning to lock said projection in said channel upon release of said compressible portion when said coupling members are coupled together.

5,662,630

BIODEGRADABLE URINE COLLECTION DEVICE

Arthur D. Raynie, San Antonio, Tex., assignor to Peapod Systems, Inc., San Antonio, Tex.

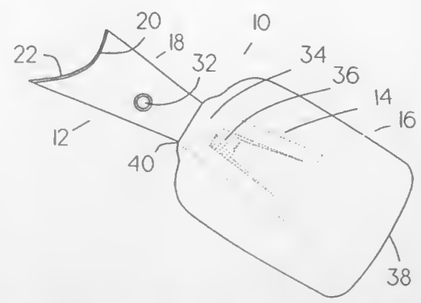
Filed Feb. 22, 1994, Ser. No. 199,096

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—349 **7 Claims**

1. A urine collection device for use with a urine carrying tube, the urine collection device comprising:

a bag for storage of the urine therein;



engagement means capable of releasably engaging the urine carrying tube, wherein said engagement means comprise a multiplicity of leg members moveable between a splayed, normally open position out of engagement with the tube and a closed position for engaging the tube, wherein said engagement means further comprises a sliding collar for cooperating with the leg members, urging the leg member from the normally open position to the closed position for engagement with the tube; and

dispersal means having a multiplicity of orifices therein through which to disperse urine received from the urine carrying tube, into the interior of said bag.

5,662,631

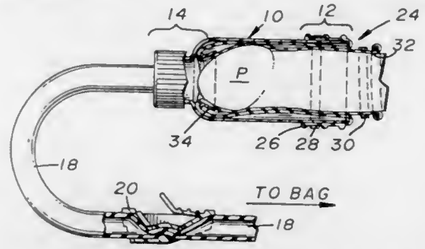
MALE EXTERNAL CATHETER ASSEMBLY WITH VACUUM RETENTION

Sherwood D. Marx, 6478 S. M, Tacoma, Wash. 98408

Filed Aug. 13, 1996, Ser. No. 689,765

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—352 **15 Claims**



1. An external catheter attachment assembly for use on the penis of a male patient without concern as to leakage or discomfort, said catheter attachment assembly being characterized by use of vacuum to aid in installation and retention of the assembly in place on the male patient and comprising:

a catheter sleeve with an open proximal end and a reduced diameter distal end including means for coupling said distal end to a drainage tube;

a drainage tube in fluid communication with the interior of the distal end of said sleeve;

manually actuatable valve means in communication with the interior of the distal end of said sleeve and the drainage tube;

a thin elastic open-ended sheath having a nominal cross-sectional diameter throughout which is somewhat less than that of said sleeve, with a distal end attached in an airtight manner to the open proximal end of said sleeve and with an open proximal end installable on the penis of the male patient; and

means including said valve means for selectively applying a vacuum to the interior of said sleeve and the interior portion of said sheath in open communication with said interior of said sleeve;

said catheter attachment assembly being installable on the penis of the male patient by installing said elastic sheath proximal end on the penis, then applying vacuum interiorly of the sleeve to draw the penis and a portion of said sheath into said sleeve under the force of the external air pressure resulting from the applied vacuum and bring the distal end of the user's penis substantially into engagement with the interior of said sleeve at the distal end thereof, then utilizing said valve means to close off further application of vacuum to retain the penis in the catheter sleeve on a continuing basis at least in part by the continuing reduced pressure condition existing within said catheter sleeve.

5,662,632

Patent Not Issued For This Number

5,662,633

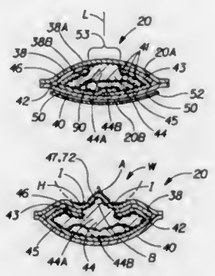
ABSORBENT ARTICLE HAVING A WINDOW WITH A BODY-CONFORMING ACQUISITION ELEMENT POSITIONED THEREIN

Nancy Beck Doak, Cincinnati, Ohio; Theresa Louise Johnson, New Castle, Del.; Hugh Ansley Thompson, Fairfield, and Robb Eric Olsen, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 84,048, Jun. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 734,404, Jul. 23, 1991, abandoned, Ser. No. 734,405, Jul. 23, 1991, Pat. No. 5,334,176, Ser. No. 915,134, Jul. 23, 1992, abandoned, Ser. No. 915,201, Jul. 23, 1992, abandoned, Ser. No. 915,202, Jul. 23, 1992, abandoned, Ser. No. 915,285, Jul. 23, 1992, abandoned, Ser. No. 915,286, Jul. 23, 1992, Pat. No. 5,382,245, and Ser. No. 934,585, Aug. 24, 1992, Pat. No. 5,281,208, which is a continuation of Ser. No. 734,392, Jul. 23, 1991, abandoned. This application May 17, 1995, Ser. No. 444,079

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—378 **33 Claims**



1. An absorbent article for wearing in a crotch region of a wearer's undergarment, said absorbent article having a body surface, a garment surface, a longitudinal centerline, and a transverse centerline, said absorbent article comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

an absorbent core positioned between said topsheet and said backsheet, said absorbent core comprising a first layer and a second layer wherein said second layer underlies said first layer; and an acquisition component positioned such that at least a portion of said acquisition component is disposed above at least a portion of said absorbent core and at least a portion of said acquisition component is disposed between said first layer and said second layer of said absorbent core, said acquisition component being in liquid communication with said absorbent core and comprising a mass of wet and dry resilient material, said acquisition component having a compressed configuration when it is subjected to inward compressive forces in the direction of and along said transverse centerline and an uncompressed configuration when said compressive forces are absent, wherein when said acquisition component is in its uncompressed configuration, the body surface of said absorbent article overlying said acquisition component forms a continuous curve having a curvature, and when said acquisition component is in its compressed configuration, said acquisition component forms a hump on said body surface.

5,662,634

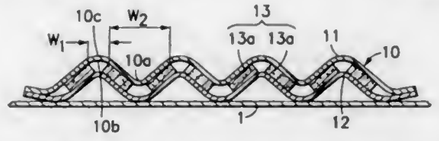
METHOD FOR MAKING A LIQUID ABSORBENT PAD

Masamitsu Yamamoto, Ehime-ken; Yoshihisa Fujioka, Kagawa-ken, and Yoshio Ono, Ehime-ken, all of Japan, assignors to Uni-Charm Corporation, Kawanoe, Japan

Division of Ser. No. 488,803, Jun. 8, 1995. This application Apr. 23, 1996, Ser. No. 637,943

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—378 **8 Claims**



1. A method for making a liquid absorbent pad comprising the steps of:

applying a tension for stretching a first substantially planar element along an axis;

forming first and second alternating linear parallel portions in a second substantially planar element, at least one of said first and second linear portions including an absorbent material;

said first alternating linear parallel portion having at least one of reduced rigidity and increased flexibility compared to said second alternating linear parallel portion;

periodically affixing said second substantially planar element to said first substantially planar element along a plurality of lines generally parallel to said first and said second alternating linear parallel portions, and perpendicular to the direction of said tension; and

releasing said tension, whereby said second substantially planar element is corrugated along said parallel portions.

5,662,635

Patent Not Issued For This Number

5,662,636

ABSORBENT ARTICLE HAVING CUFFS WITH UNSECURED REAR DISTAL EDGES

Joyce Marie Benjamin; Elizabeth Ashley Taub, and David Mark Sageser, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

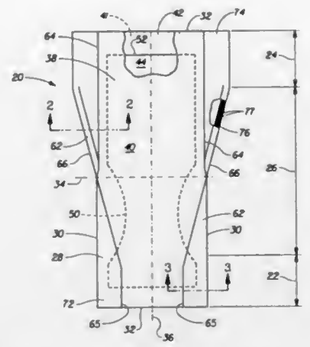
Continuation-in-part of Ser. No. 299,032, Aug. 31, 1994, Pat. No. 5,454,803. This application Sep. 21, 1994, Ser. No. 310,173

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—385.2 **18 Claims**

1. A disposable absorbent article of the type to be fitted to a wearer having a front waist region, a rear waist region, and a crotch region between said front waist region and said rear waist region, the absorbent article comprising:

a chassis comprising a liquid pervious topsheet; a liquid impervious backsheet joined with said topsheet; and an absorbent core interposed between said topsheet and said backsheet;



a pair of side panels, said side panels each having a proximal edge, a distal edge laterally spaced apart from said proximal edge, a first segment, and a second segment comprising said distal edge; and

a spacing means operatively associated with each said side panel for spacing said distal edge away from said topsheet of the absorbent article in at least said crotch region;

said first segment being folded inwardly in a first fold and joined to underlying structure in said front waist region and said second segment is folded back outwardly over said first segment in a second fold such that said distal edge is disposed outboard of said second fold in said front waist region, said second segment being joined to said first segment in said front waist region, said distal edge being unsecured to any underlying structure of the absorbent article in said rear waist region such that when fitted to the wearer said side panels are inverted in said rear waist region relative to said front waist region.

5,662,637

DISPOSABLE ABSORBENT ARTICLE

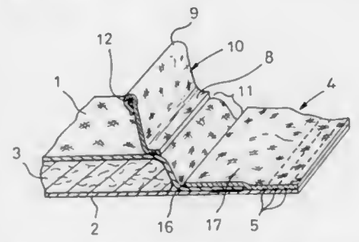
Hideaki Kitaoka, Funabashi; Isamu Yamazaki, Tokyo, and Makoto Suekane, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Nov. 30, 1994, Ser. No. 351,190

Claims priority, application Japan, Dec. 2, 1993, 5-302929

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **2 Claims**



1. A disposable absorbent article having a liquid-permeable topsheet, a liquid-impermeable backsheet, a liquid-absorbent core sandwiched between said topsheet and said backsheet, first stretchable side flaps comprised of portions of said topsheet and said backsheet extending outwards from transversely opposite side edges of said liquid-absorbent core, second stretchable side flaps disposed along the respective side edges of said liquid absorbent core, said second side flaps each having a proximal edge, a distal edge and longitudinally opposite ends fixed in a collapsed state, wherein said second stretchable side flaps substantially function as liquid-barriers and have said proximal edges bonded to a top surface of said topsheet overlying a top surface of said liquid-absorbent core, and said first stretchable side flaps, outwardly adjacent said side edges, have top surfaces covered with side sheets functioning as liquid-barriers to prevent diffusion of liquid excretions from said liquid-absorbent core which is liquid-permeable along surfaces of said transverse opposite side edges of said core cover sheet centrally provided with an opening extending in a longitudinal direction thereof, said cover sheet covering an outer peripheral zone of the topsheet as well as the longitudinally opposite ends of the respective second stretchable side flaps, an outer peripheral zone of said cover sheet is bonded to said outer peripheral zone of the topsheet as well as to said longitudinally opposite ends of the respective second stretchable side flaps and wherein respective outer side zones of said cover sheet define said side sheets.

5,662,638

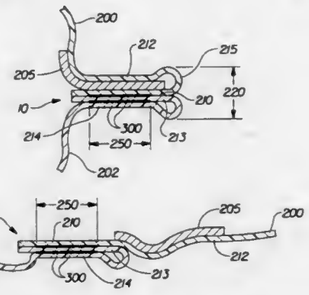
FLANGELESS SEAM FOR USE IN DISPOSABLE ARTICLES

Larry Kenneth Johnson, Pleasant Plain, and Stephen Joseph Lange, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 10, 1995, Ser. No. 541,377

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—386 **20 Claims**



1. A flangeless seam for joining front and rear portions of a disposable article, the seam comprising:

a first member;

a second member, at least a portion of the second member overlapping at least a portion of the first member;

a barrier member disposed between at least a portion of the overlapping portions of the first member and the second member forming a laminate having a seam area; and

a joining means disposed in at least a portion of the seam area joining at least a portion of the first member to at least a portion of the second member, the barrier member preventing at least a portion of the first member from becoming joined with at least a portion second member.

5,662,639

WINGED SANITARY NAPKIN

Yoshikazu Tanaka, Kagawa-ken; Takaaki Shimada, Shizuoka-ken, and Wataru Yoshimasa, Ehime-ken, all of Japan, assignors to UNI-Charm Corporation, Ehime-ken, Japan

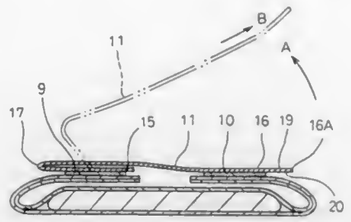
Filed Oct. 20, 1995, Ser. No. 546,257

Claims priority, application Japan, Oct. 27, 1994, 6-263965

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—387 **3 Claims**

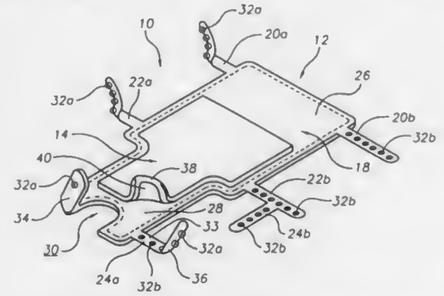
1. A sanitary napkin comprising a liquid-permeable topsheet, a liquid-impermeable backsheet bonded to said topsheet, a liquid-absorbent core disposed between said topsheet and said backsheet, said napkin having transversely opposite side edges and first and second wings having upper and lower surfaces and extending outward from said transversely opposite side edges of said napkin



and folded back onto said topsheet above said core respectively, and a separator having outer and inner surfaces and peelably applied to first and second adhesive zones on the lower surfaces of said first and second wings, wherein:

said separator further has first and second end portions, the first end portion being folded back onto the inner surface of said separator, the outer surface of the first end portion being peelably applied to said first adhesive zone, said second end portion being peelably applied to the adhesive zone of said second wings such that said separator can be peeled off the left and the right wings by a single hand of a user by holding and pulling one of the first and the second end portions of said separator up and away from said napkin.

5,662,640
PUPPY TRAINING DIAPER
Alan L. Daniels, 1845 Pelkey, Detroit, Mich. 48205
Filed Jan. 11, 1996, Ser. No. 584,258
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—392 **1 Claim**

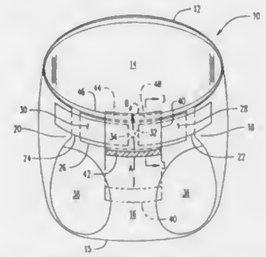


1. A puppy training diaper comprising:

a harness member having a flexible, impermeable member formed from a sheet of flexible, stretchable, liquid impermeable material, said impermeable member including a chest/abdominal portion having a width two inches greater than and integrally formed with a genital/rectal portion, a pair of chest straps integrally formed with and extending from opposed side edges of a forward section of said chest/abdominal portion, a pair of abdomen straps integrally formed with and extending from opposed side edges of a rearward section of said chest/abdominal portion located nearer said genital/rectal portion than said forward section, a tail notch formed into a perimeter edge of said genital/rectal portion sized to receive therein a tail of a dog, a first snap fastener half secured to an exteriorly facing surface of said genital/rectal portion at a location thereon adjacent said tail notch, a first tail strap integrally formed with and extending from said genital/rectal portion, said first tail strap having a plurality of second snap fastener halves extending from an inwardly facing surface thereof and a plurality of third snap fastener halves extending from an outwardly facing surface thereof, said plurality of second snap fastener halves being mateable with said first snap fastener half, and a second tail strap integrally formed with and extending from a central point of one of said pair of abdomen straps, said second tail strap having a plurality of fourth snap fastener halves extending from an inwardly facing surface thereof, said plurality of fourth snap fastener halves being mateable with said third snap fastener halves, said first tail strap forming a closed loop with said genital/rectal portion about said tail notch when said first snap fastener half is mated to one of said plurality of said second fastener halves in a manner to secure a tail of a dog within said tail notch, said plurality of third snap fastener halves being connectable with said plurality of fourth snap fastener halves in a manner such that an adjustable connection between said first and said second tail strap is achieved; and

an absorbent liner member having a liquid absorbing layer and a releasable adhesive layer disposed between said impermeable member and said liquid absorbing layer and removably securing said absorbent layer to said impermeable layer.

5,662,641
DISPOSABLE DIAPER WITH FLAP FOR CONCEALING TAPE TABS
Lanoma Gulsby, 2364 Cattleman Rd., Sarasota, Fla. 34232
Filed Jan. 19, 1996, Ser. No. 589,354
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **3 Claims**



1. An absorbent disposable baby diaper comprising:

a sheet of absorbent, flexible, disposable material defining front, back and intermediate portions;

first and second waistband portions disposed at an end of said front and back portions, said first and second waistband portions adapted to overlap each other when encircling a waist of a baby;

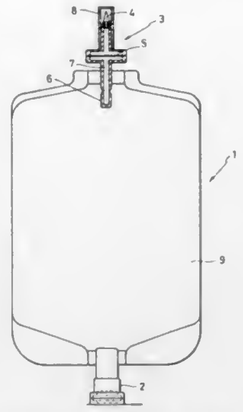
tab means disposed at each end of said first waistband portion for releasibly connecting said first and second waistband portions to one another in overlapping fashion around the waist;

flap means formed of flexible, disposable sheet material for covering at least each distal end portion of each said tab means, and including means for concealing a distal margin of said flap means whereby the baby may not inadvertently detach either of said tab portions or said flap means.

5,662,642
INSTILLATOR WITH MEDICATOR-CONNECTING MOUTH
Keinosuke Isono, Saitama-ken, and Tatsuo Suzuki, Tokyo, both of Japan, assignors to Material Engineering Technology Laboratory, Inc., Tokyo, Japan
Filed Dec. 30, 1994, Ser. No. 366,751
Claims priority, application Japan, Aug. 9, 1994, 6-209204
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—403 **4 Claims**

1. An instillator comprising:

a hollow body having an outlet member and a medicator-connecting mouth, said connecting mouth being composed of



a communicating pathway, a sealing means, a germ-trapping filter and a connecting means,

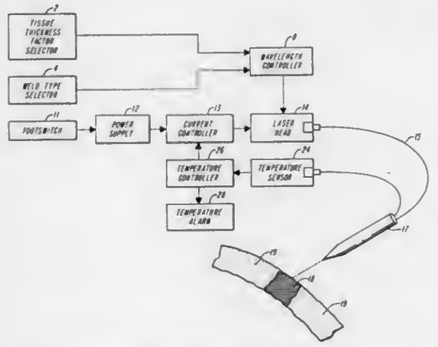
said communication pathway being closed by said sealing means for separating an interior of said body and an exterior of said body,

said sealing means being a breakable seal,

said connecting means being a needle portion,

wherein said germ-trapping filter is provided between said needle portion and said breakable seal.

5,662,643
LASER WELDING SYSTEM
Robert T. V. Kung, Andover; Robert B. Stewart, Ipswich, and Meir Rosenberg, Newton, all of Mass., assignors to Abiomed R & D, Inc., Danvers, Mass.
Filed Sep. 28, 1994, Ser. No. 314,191
Int. Cl.[6] A61B *17/32;* **A61N** *5/06*
U.S. Cl. 606—3 **20 Claims**



1. Apparatus for performing laser surgery to weld tissue of predetermined thickness comprising,

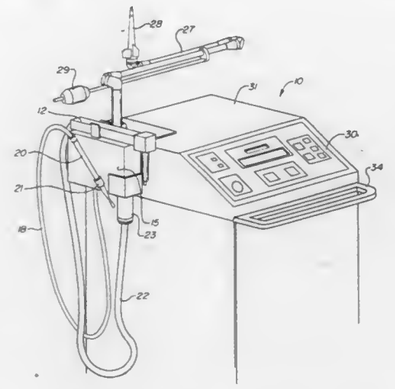
a laser source producing a beam of coherent light at a center wavelength of 1.9 μm impinging on said tissue

means for varying said laser source wavelength, such that said wavelength is at a value corresponding to substantially full absorption of said light entirely throughout said predetermined thickness of said tissue,

temperature sensing means for sensing the temperature at the surface of said tissue to determine the temperature for substantially the entire thickness of said tissue when said laser beam is impinging on said tissue,

means for controlling the energy of said laser beam in response to said sensed temperature for maintaining said sensed temperature below a predetermined tissue temperature.

5,662,644
DERMATOLOGICAL LASER APPARATUS AND METHOD
William T. Swor, Sulphur Springs, Tex., assignor to MDLT, Inc., Russellville, Ark.
Filed May 14, 1996, Ser. No. 647,476
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—9 **13 Claims**



1. A laser apparatus comprising:

at least three laser means for producing at least three laser outputs;

a plurality of handpieces;

optical delivery means optically connected for receiving said laser outputs and delivering each of said laser outputs to a receiving end for receiving said laser output of a respective one of said plurality of handpieces;

a console operatively connected to said at least three laser means and housing at least one of said laser means;

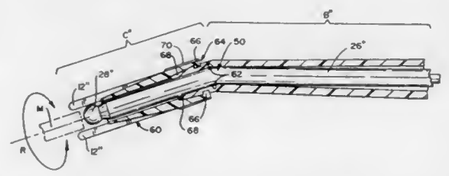
and wherein at least one of said laser means is located in one of said handpieces.

5,662,645

Patent Not Issued For This Number

5,662,646
METHOD AND APPARATUS FOR LASER SURGERY
Robert Mark Fumich, P.O. Box 397, Gates Mills, Ohio 44040
Division of Ser. No. 971,316, Nov. 4, 1992, Pat. No. 5,352,221.
This application Sep. 30, 1994, Ser. No. 315,423
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 **18 Claims**

1. A method of laser surgery for tissue ablation using an elongate



laser knife emitting a laser light at a first distal end and having a manual grip, the method comprising the steps of:

receiving a guide sheath over said first end of the laser knife;

fastening said guide sheath to said grip by engaging a first surface of said guide sheath with a first surface of said grip;

moving said first distal end of the laser knife toward said tissue guided by a pair of spaced apart guide members on a first end of the sheath; and,

ablating said tissue with said laser light emitted from the laser knife when said first distal end is positioned proximate said tissue received between the sheath guide members.

5,662,647

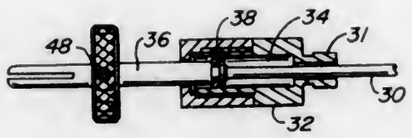
ELECTRODE ASSEMBLY FOR ELECTROSURGICAL INSTRUMENT

Lowell Crow, Danville, and Allen R. Howes, San Ramon, both of Calif., assignors to Transamerican Technologies International, Pleasanton, Calif.

Continuation-in-part of Ser. No. 207,245, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 724,689, Jul. 22, 1991, abandoned. This application Mar. 17, 1995, Ser. No. 406,035

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—41 **21 Claims**



1. An electrode assembly for use in combination with a cannula having an open distal end, a proximal housing, and a lumen extending from the open distal end through the housing, said electrode assembly comprising:

a sleeve having an axial passage from a distal end to a proximal end, a distal half with a distal limit, a proximal half with a proximal limit which is proximal of the distal limit, and a means for detachably securing the sleeve to the proximal housing of the cannula;

a shaft translatably and rotatably disposed within the axial passage, the shaft having a proximal end, a distal end, and a holder structure attached distally of the proximal end, the holder being disposable between the distal limit and the proximal limit;

an electrode tip disposed at the distal end of the shaft;

a connector plug disposed at the proximal end of the shaft and electrically coupled to the electrode tip; and

a thumb wheel disposed on the shaft proximal of the sleeve, wherein the thumb wheel precisely rotationally and axially positions the electrode relative to the sleeve while the sleeve contains the holder between the proximal limit and the distal limit.

5,662,648

METHOD AND APPARATUS FOR THE EXTERNAL SETTING OF FRACTURES

Giovanni Faccioli, Monzambano, and Daniele Venturini, Veronese, both of Italy, assignors to Orthofix S.r.l., Bussolengo, Italy

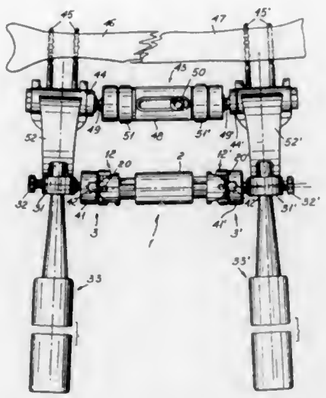
Filed Sep. 11, 1995, Ser. No. 526,406

Claims priority, application Italy, Mar. 15, 1993, VR93A0021

Int. Cl.[6] A61F *5/04*; **A61B** *17/60*

U.S. Cl. 606—54 **16 Claims**

12. Fracture-setting apparatus for the external setting of fractures adapted for use in association with an external axial splint (**43**) having bolt-holding clamps (**44**, **44'**) with spherical joints (**49**, **49'**) for fixing bone bolts which can be implanted into fractured pieces of bone, said apparatus comprising first and second elongate manipulation-forcep members (**33**, **33'**) each of which has at one end means for selectively and rigidly coupling one of said forcep members to one of said bolt-holding clamps (**44**, **44'**) with the forcep member extending transversely when attached to one of the bolt-holding clamps, said fracture-setting apparatus further comprising a central body (**2**) which can be elongated axially and has end portions (**3**, **3'**) which can be releasably coupled to the respective manipulation-forcep members and thereby to corresponding bolt-holding clamps (**44**, **44'**) of an associated external axial splint, said end portions (**3**, **3'**) being attached to the central body (**2**) by means of corresponding hinges (**12**, **12'**) which have hinge axes (**20**, **20'**) and means to retain the hinge axes parallel to each other and perpendicular to the axis of the body, and selectively adjustable securing means (**39**, **39'**) for selecting the orientation of the axes (**20**, **20'**) of said hinges (**12**, **12'**) so as to allow the end portions (**3**, **3'**) to rotate in an identical single plane at a time of predetermined position.



5,662,649

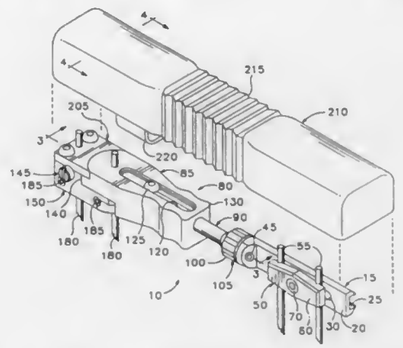
EXTERNAL FIXATOR FOR REPAIRING FRACTURES OF DISTAL RADIUS AND WRIST

Randall J. Huebner, 18560 S.W. Hart Rd., Aloha, Oreg. 97007

Continuation-in-part of Ser. No. 389,056, Feb. 15, 1995, Pat. No. 5,545,162. This application Apr. 22, 1996, Ser. No. 636,326

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—57 **21 Claims**



1. A bone fixator for repairing fractures of the distal radius and wrist, comprising:

at least one elongate distal mounting pin with a lower end for mounting in the metacarpal bone;

at least one elongate radial mounting pin with a lower end for mounting in the radius;

an elongate distal member;

a distal pin clamp assembly for securing the distal pin relative to the distal member;

a proximal pin mounting carriage for securing the radial pin; and

an elongate medial assembly connected at one end to the pin mounting carriage to allow gear-driven independent linear translational motion relative to the pin mounting carriage along an a generally perpendicular to the elongate axis of the proximal mounting pin and the elongate axis of the medial assembly and coupled articulably at an opposed end to the distal member.

5,662,650

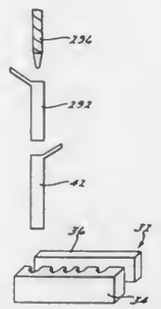
METHOD AND APPARATUS FOR EXTERNAL FIXATION OF LARGE BONES

Kirk Jay Bailey, Andover; Sean P. Curry, Hoboken, and John Scott Mahaffey, Hackettstown, all of N.J., assignors to Electro-Biology, Inc., Parsippany, N.J.

Filed May 12, 1995, Ser. No. 439,707

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—59 **14 Claims**



1. An apparatus for securing a first bone portion in a fixed relationship to a second bone portion, the apparatus comprising:

a first bone screw operable to be connected to the first bone portion, said first bone screw having a first diameter;

a second bone screw operable to be connected to the second bone portion;

means for guiding a drill bit for drilling a hole in the first bone portion, said means for guiding a drill bit having a second diameter which is greater than said first diameter;

means for receiving said first bone screw, said means for receiving said first bone screw defining a channel and being operative for selectively clamping said first bone screw and said means for guiding a drill bit in said channel;

means for receiving said second bone screw: and

means for securing the means for receiving said first bone screw to said means for receiving said second bone screw.

5,662,651

EXTERNAL OR INTERNAL FIXATOR FOR REPAIRING FRACTURES OR ARTHROPLASTIES OF THE SKELETON

Alain Tornier, Saint-Ismier, France, and Patrick Kluger, Erbach, Germany, assignors to Tornier S.A., Saint-Ismier, France

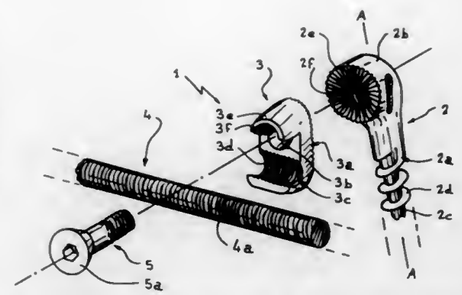
Filed Sep. 5, 1995, Ser. No. 523,760

Claims priority, application France, Sep. 15, 1994, 94 11224

Int. Cl.[6] A61B *17/68*

U.S. Cl. 606—60 **9 Claims**

1. A fixator for repairing a fractured bone or arthroplasty comprising,



an implant screw having a head and an anchor portion adapted to be anchored in a bone or arthoplasty, said anchor portion extending along an axis, a tapped hole in said head oriented transversely with respect to said axis, a first support jaw member having a first face adapted to be indexed with respect to said head of said implant screw, and a second oppositely oriented face, a semi-cylindrical cavity in said second face which includes at least along a portion thereof screw threads having a first thread pitch, an opening through said first support jaw member adjacent said cavity, a connecting rod having a screw threaded outer surface defined by a second thread pitch which is different than said first thread pitch, said connecting rod being seated within said cavity of said first support jaw member so that the threaded outer surface thereof is intermeshed with said screw threads of said cavity of said first support jaw member, and a locking member extending through said opening in said first support jaw member and into said tapped hole of said implant screw for simultaneously anchoring said first support jaw member to said head of said implant screw and for forcing said connecting rod into said cavity of said first support jaw member to thereby prevent movement of said retention rod relative to said first support jaw member.

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BONE SURGERY HOLDING APPARATUS

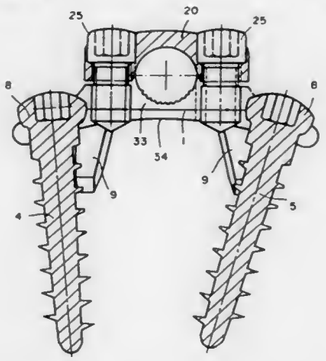
Bernd Schäfer, Schorndorf; Klaus Zielke, Bad Wildungen, and Günther Rehder, Winterbach, all of Germany, assignors to Schafer micomed GmbH, Schorndorf, Germany

Filed Apr. 27, 1995, Ser. No. 430,900

Claims priority, application Germany, Apr. 28, 1994, 44 14 781.3; Jul. 19, 1994, 44 25 392.3

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **42 Claims**



1. A bone surgery holding device for a fixing rod, comprising:

a bone plate for fastening to a bone;

a fixing plate; and

at least one screw for securing said fixing plate to said bone plate, wherein:

said bone plate and said fixing plate define a receiving device for receiving the fixing rod;

said bone plate has a longitudinal axis and includes a contact surface adapted to fit the surface of a bone; and

said receiving device has a longitudinal axis and is adapted so that the fixing rod can be received in said receiving device after said fixing plate is fastened to a bone.

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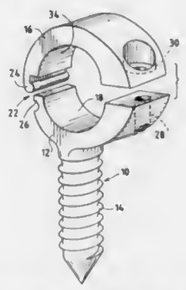
SURGICAL ROD-TO-BONE ATTACHMENT

Robert J. Songer, Northbrook, Ill.; Matthew N. Songer, Marquette, and Francis J. Korhonen, Negaunee, both of Mich., assignors to Pioneer Laboratories, Inc., Marquette, Mich.

Filed Feb. 22, 1996, Ser. No. 603,847

Int. Cl.[6] A61F *2/30*

U.S. Cl. 606—61 **18 Claims**



1. A link for connecting surgical rods to bone, which comprises: a bone connector and a head formed as one piece said head defining an outwardly facing first recess for receiving a portion of a surgical rod; a cover, proportioned to fit in a position to oppose and to cover said first recess; a hinge member carried by said cover and head to permit retention between said cover and said head on one side of said recess; said cover defining a second recess proportioned to form a substantially cylindrical space with the first recess, with the cover occupying said position, said first and second recesses receiving a surgical rod in said recesses and exclusively holding said rod with a substantially uniform area of compressive contact about substantially the entire outer rod surface within said first and second recesses; and a closure on the cover and head at a position opposed to said hinge member.

5,662,654

BONE ANCHOR, INSERTION TOOL AND SURGICAL KIT EMPLOYING SAME

Ronald J. Thompson, Ft. Thomas, Ky., assignor to Ineont, Inc., Ft. Thomas, Ky.

Continuation-in-part of Ser. No. 490,272, Jun. 4, 1995. This application Aug. 25, 1995, Ser. No. 519,606

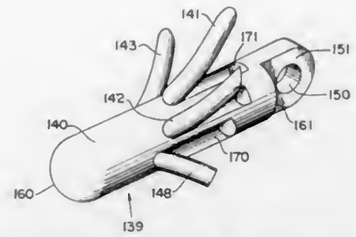
Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—72 **43 Claims**

1. An anchor securable within a bore created in bone, said anchor comprising:

(a) a body having a longitudinal axis, and proximal and distal ends;

(b) at least three wing members extending outwardly from, and secured to said body, each of said wing members capable of being elastically flexed from a normal deployed position to a compressed position, each of said wing members further having an external end positioned away from said body, at least a portion of said external ends of each of said wing members substantially aligned along a first imaginary plane extending through said body at an angle to a transverse



cross-section through said body, said transverse cross-section perpendicular to said longitudinal axis; and

(c) an aperture positioned adjacent said proximal end of said body.

5,662,655

OSTEOSYNTHESIS PLATE-STAPLE

Jacques Philippe Laboureau, 24, rue Fontaine Billenois, Dijon F-21000, France, and Gerard H. Dericks, 3087 Noela Dr., Honolulu, Hi. 96815

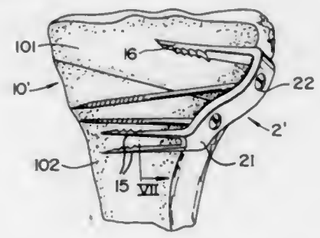
PCT No. PCT/FR93/00754, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/02073, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 23, 1993, Ser. No. 367,321

Claims priority, application France, Jul. 24, 1992, 92 09149

Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—75 **31 Claims**



1. Osteosynthesis plate-staple intended to produce by elastic reaction a compression of bone fragments on either side of a fracture line, said plate-staple comprising:

side legs comprising free sharpened ends and anti-return elements, said side legs having different configurations with respect to each other and extending in longitudinal directions divergent from each other;

a cross member joining said side legs, said cross member comprising a length and an interior surface, and a convex profile on at least about a half of said length and said interior surface; and

openings in said cross member permitting additional fixings to pass through said openings.

5,662,656

INSTRUMENTATION AND METHOD FOR DISTAL FEMORAL SIZING, AND ANTERIOR AND DISTAL FEMORAL RESECTIONS

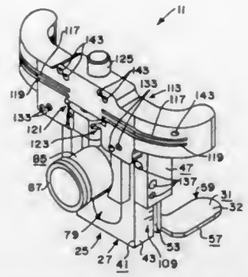
Stephen E. White, Cordova, Tenn., assignor to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Dec. 8, 1995, Ser. No. 569,711

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—88 **8 Claims**

1. Instrumentation for use by a surgeon to size the end of a distal femur, and to guide a bone resection tool to resect the end of the distal femur; the instrumentation comprising:



(a) an instrument body construct including an instrument body and a valgus module for attachment to the instrument body; the instrument body construct having a distal aspect abutting surface with a planar face for abutting the distal aspect of a distal femur at a fixed angle to the longitudinal axis of the distal femur, having a posterior aspect abutting surface with a planar face for abutting the posterior aspect of the distal femur, and having a passageway therethrough;

(b) an anterior feeler gauge attachable to the instrument body construct for contacting a portion of the anterior aspect of the distal femur; and

(c) a resection guide attachable to the instrument body construct for guiding a bone resection tool to resect the distal femur; the resection guide including a body member having a slot therethrough for guiding the bone resection tool to perform a resection of the distal femur; the body member of the resection guide is attachable to the instrument body construct in a first position to orient the slot therethrough to guide the bone resection tool to perform an anterior femoral resection of the end of the distal femur and is attachable to the instrument body construct in a second position to orient the slot therethrough to guide the bone resection tool to perform a distal femoral resection of the end of the distal femur.

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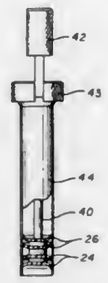
INTRAMEDULLARY BONE PLUG

Ronald M. Carn, Redding, Calif., assignor to SunMed, Inc., Redding, Calif.

Filed Jan. 17, 1996, Ser. No. 587,491

Int. Cl.[6] A61F *2/28*

U.S. Cl. 606—95 **17 Claims**



1. An intramedullary bone plug and installation tool therefor, comprising, in combination:

a generally cylindrical plug body having a size and shape for slide-fit reception into the medullary canal of a patient bone;

at least one flexible distal fin on said plug body and extending radially outwardly therefrom, said at least one distal fin defining a distally turned outer edge when positioned within the medullary canal;

at least one flexible proximal fin on said plug body and extending radially outwardly therefrom, said at least one proximal fin defining a proximally turned outer edge when positioned within the medullary canal; and

an installation tool including a retainer sleeve for slide-fit reception of said bone plug with said at least one distal fin having its outer edge turned distally and with said at least one proximal fin having its outer edge turned proximally, said retainer sleeve defining a bore with a cross sectional size at least slightly less than the diametric size of said distal and proximal fins;

said plug body being slidably inserted into said retainer sleeve with said distal and proximal fins having the outer edges thereof turned proximally upon engagement with the interior of said retainer sleeve, said plug body being advanced through said retainer sleeve to position said distal fin axially beyond a distal end of said retainer sleeve, and then retracted back into said retainer sleeve whereby said outer edge of said distal fin is re-oriented in a distally presented direction.

5,662,658

BONE ANCHOR INSERTER, METHOD FOR LOADING SAME, METHOD FOR HOLDING AND DELIVERING A BONE ANCHOR, AND METHOD FOR INSERTING A BONE ANCHOR IN A BONE

Richard F. Wenstrom, Jr., Norwood, Mass., assignor to Mitek Surgical Products, Inc., Westwood, Mass.

Filed Jan. 19, 1996, Ser. No. 589,137

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—104 **20 Claims**



1. A bone anchor inserter for insertion of a bone anchor into a bore in a bone, said inserter comprising a handle, a sleeve extending from said handle, said sleeve having an opening in a side wall thereof for the passage of a bone anchor therethrough into said sleeve, and means operative from said handle to push said bone anchor out an open end of said sleeve and into said bore.

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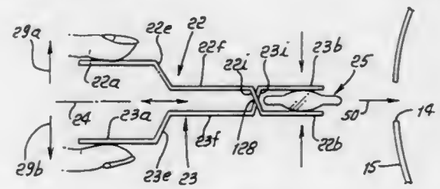
ENDWISE ADJUSTABLE EYE FORCEPS

Henry H. McDonald, 319 Arlington Dr., Pasadena, Calif. 91105

Continuation of Ser. No. 155,598, Nov. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 33,377, Mar. 18, 1993, Pat. No. 5,292,324. This application Nov. 17, 1995, Ser. No. 560,348

Int. Cl.[6] A61F *9/00*

U.S. Cl. 606—107 **26 Claims**



14. An improved intraocular lens forceps, comprising

a) first and second arms, the first arm having a first handle and a first eye element engagement blade spaced from the first handle, the second arm having a second handle and a second eye element engagement blade spaced from the second handle, the blades extending generally longitudinally in laterally spaced relation and at opposite sides of a bisecting plane,

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b) the first arm having a primary section and a secondary section, the primary and secondary arm sections extending between the first handle and first blade, the second arm having a primary section and a secondary section, the primary and secondary arm sections of the second arm extending between the second handle and second blade, the blades being movable by the handles and arm sections between closed and open positions relative to the lens, the arm primary sections extending in cross-over relation to define a cross-over locus, when the blades are in said closed position, the arms having an additional cross-over locus when the blades are in said open position,

c) the arm secondary sections extending generally longitudinally in substantially parallel and elongated relation, and with spacing therebetween less than about 4 mm,

d) said blades having jaw edges to engage and separate opposite sides of a groove in an eye lens hardened nucleus when the blades are increasingly separated, thereby to fracture said hardened nucleus,

e) and wherein said jaw edges diverge relatively away from one another, in the direction of said plane.

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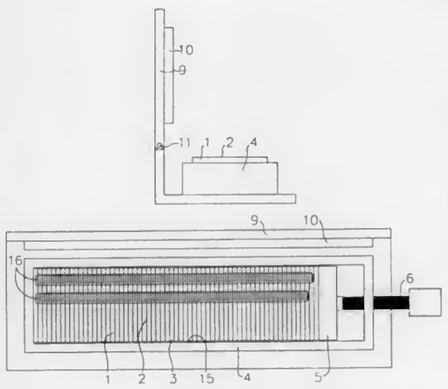
Patent Not Issued For This Number

5,662,661

INSTRUMENT FOR CUTTING CALIBRATED HAIR GRAFTS

Pascal Boudjema, Paris, France, assignor to Medicamat S.A., Malakoff, France

Filed Apr. 20, 1995, Ser. No. 425,381
Claims priority, application France, May 13, 1994, 94 05884
Int. Cl.[6] A61B *17/50*
U.S. Cl. 606—132 **10 Claims**



1. A device for surgical cutting of strips of scalp having thicknesses into multiple calibrated hair grafts, of identical small size comprising:

a blade holder;

a plurality of vertically positioned blades projecting from a support surface, lying in parallel planes, and spaced at equal distances from each other, and the blades being disposed in the blade holder;

a plurality of cutting edges on the blades, the edges being aligned in a horizontal plane relative to the vertically positioned blades;

an intermediate plate of flexible material which is positioned to be flush with the cutting edges of the blades;

an applicator connected to the intermediate plate for pressing the intermediate plate onto the cutting edges of the blades when the intermediate plate is parallel to the support surface; and

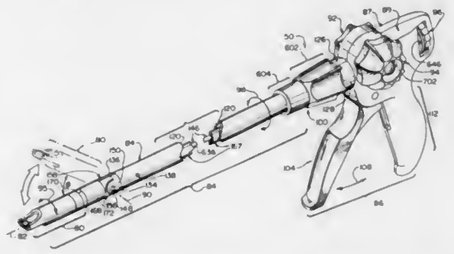
means for preventing the intermediate plate from moving beyond a limit position which is at a distance from the support surface that is greater than the thicknesses.

5,662,662

SURGICAL INSTRUMENT AND METHOD

Gregory D. Bishop, Hamilton, Ohio; Michel A. Paul, Naperville, Ill.; Narinderjit Sambi, Mason, and Edward Rhad, Fairfield, both of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 442,783, May 17, 1995, Pat. No. 5,626,587, which is a continuation-in-part of Ser. No. 259,322, Jun. 10, 1994, Pat. No. 5,601,224, which is a continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application Sep. 16, 1996, Ser. No. 713,135
Int. Cl.[6] A61B *17/68*
U.S. Cl. 606—143 **5 Claims**



1. In a surgical instrument wherein said instrument has (1) a frame having a pistol handle grip which is adapted to be held in the palm of the hand while the fingers of the hand extend around one side of the grip and the thumb of the hand extends around another side of the grip, (2) an elongated shaft mounted to said frame for rotation relative thereto, (3) a support defining a longitudinal axis and movably mounted to said shaft for movement to an angled orientation relative to said shaft, and (4) an end effector mounted to said support for rotation about said longitudinal axis, an operating system comprising:

a rotatable first knob on said shaft located adjacent said frame to be turned by a digit of the hand for rotating said shaft;

a rotatable second knob on said frame operatively engaged with said support for effecting movement of said support to an angled orientation relative to said shaft, said second knob being located on said frame to be turned by a digit of the hand for moving said support to a selected orientation;

a rotatable third knob on said frame operatively engaged with said end effector for effecting rotation of said end effector on said support, said third knob being located on said frame to be turned by a digit of the hand for rotating said end effector; and

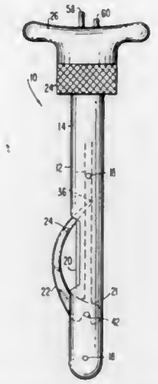
a trigger lever mounted distally of said handle grip on said frame and operatively engaged with said end effector for effecting operation of said end effector, said trigger lever being located adjacent said handle grip to be pulled by a digit of said hand toward said handle grip to operate said end effector.

5,662,663

SURGICAL SUTURE INSTRUMENT

Richard W. Shallman, Richland, Wash., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 13,244, Feb. 3, 1993, which is a continuation of Ser. No. 872,212, Apr. 22, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,571
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **10 Claims**



1. A surgical suture instrument, which comprises:

a) a shaft;

b) a suture needle having a tapered portion and a base portion, said base portion extending from the shaft and being generally longitudinally fixed relative thereto; and

c) means disposed on the shaft for shielding the tapered end portion, whereby the shielding means and the tapered end portion are relatively positionable from a first orientation to shield the tapered end portion to a second orientation to expose the tapered end portion such that said needle base portion remains generally radially fixed relative to the shield means during such relative positioning from said first orientation to said second orientation.

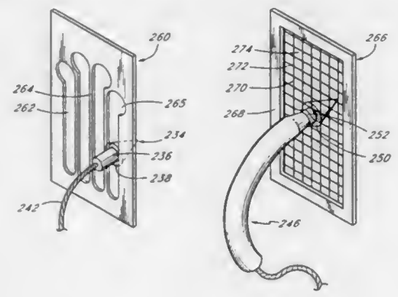
5,662,664

ENDOSCOPIC SUTURE SYSTEM

Norman S. Gordon, Irvine; Robert P. Cooper, Yorba Linda, and Richard L. Quick, Trabuco Canyon, all of Calif., assignors to Laurus Medical Corporation, Irvine, Calif.

Continuation of Ser. No. 57,699, May 4, 1993, Pat. No. 5,458,609, which is a continuation-in-part of Ser. No. 941,382, Sep. 4, 1992, Pat. No. 5,364,408. This application May 18, 1995, Ser. No. 444,207
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **13 Claims**

1. A passive needle catch for receiving and retaining a shouldered surgical needle, said catch comprising a single structural support member which supports a plurality of adjacently positioned flexible apertures, wherein said single structural support member further comprises a sheet of foundation material in which said plurality of adjacently positioned flexible apertures are formed, wherein entrance of the shouldered surgical needle into one of said flexible apertures expands said aperture to allow passage of the needle shoulder into said aperture which then contracts after the needle shoulder has passed through said aperture, wherein each of said flexible apertures further comprises a removal aperture portion, said removal aperture portion of said flexible aperture having a dimension which is larger than the needle shoulder, thereby allowing the needle to be removed from said needle catch when the needle is moved to said removal aperture portion of said flexible aperture.

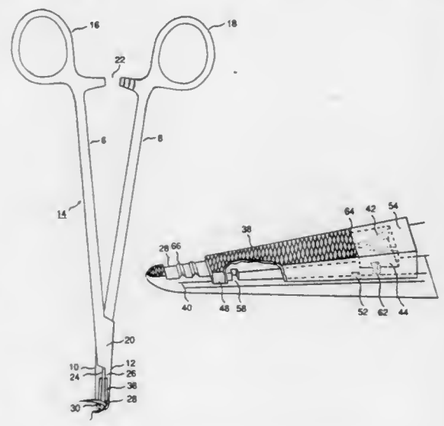


5,662,665

SUTURE NEEDLE HOLDING SURGICAL INSTRUMENT

Jack Rydel Ludwick, 201 Rocky Pt. Rd., Palos Verdes Estates, Calif. 90274

Filed Jun. 6, 1995, Ser. No. 471,405
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—147 **6 Claims**



1. A suture needle holding surgical instrument comprising:

first and second elongated members, each of which form finger loops at a first end and jaws to hold a suture needle at a second end; said first and second elongated members being pivotally mounted in a scissors configuration;

at least one jaw with a specialized transverse channel in an inner jaw surface;

a sliding member; and

a biasing member associated with said sliding member and said at least one jaw, for moving said sliding member to adjust the width of said transverse channel in response to the introduction of a suture needle into said transverse channel.

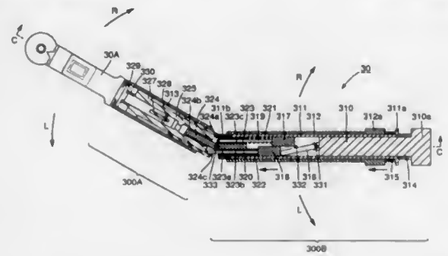
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LIGATIVE SUTURER

Takamasa Onuki, 150 Yamashita-cho, Naka-ku, Yokohama-cho, Kanagawa; Masayoshi Yokoyama, Tokyo, and Tetsuya Yamamoto, Osaka, all of Japan, assignors to Takamasa Onuki, Kanagawa; Masayoshi Yokoyama, Tokyo, and Sugan Co., Ltd., Osaka, all of Japan

Filed Mar. 28, 1996, Ser. No. 623,265
Claims priority, application Japan, Nov. 13, 1995, 7-294208
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 13 Claims



1. A ligative suturer comprising a ligative sutural member being provided on the forward end of a rod with a body part being of a substantially concave sectional shape along the axial direction of said rod and having an opening communicating with the forward end and right and left sides, and a movable body being provided in said opening of said body part with a trunk part being movably held by said body part, a forward end part protruding toward the forward end of said opening, and a thread support part being provided in the vicinity of its forward end for supporting an operative thread,

for supporting a first side of said operative thread by said thread support part of said movable body and winding or sewing a second side of said operative thread around or on a portion to be operated along a prescribed rotational direction for arranging an intermediate portion of said operative thread on the upper side of said rod along said rotational direction while inserting said second side of said operative thread in said opening along said rotational direction, downwardly moving the same from above said movable body and drawing out said operative thread from said opening, thereby forming a knot of said operative thread on said portion to be operated, wherein

said rod comprises:

a first rod being connected with said ligative sutural member, and a second rod being horizontally bendably connected with said first rod,

said first rod is provided with:

a first rod member being connected with said ligative sutural member on its forward end, and

a first connection block being provided to protrude from the rear end of said first rod member with a diameter being smaller than that of said first rod member, and having a first connection part being connected with said second rod on its rear end, and

said second rod is provided with:

a second rod member being provided to be movable along the axial direction of said rod and capable of storing said first connection block protruding from said first rod member on its forward end, and having a first grip member on its rear end,

a third rod member being stored in said second rod member for guiding movement of said second rod member in the axial direction of said rod on its outer peripheral surface and having a flange part on its rear end in a region being exposed from said second rod member,

a first elastic member being provided on the outer peripheral surface of said third rod member between said first grip member and said flange part of said third rod member for regularly urging said second rod member toward the forward end, storing said first connection block and bringing the same into contact with the rear end of said first rod member,

a fourth rod member having a forward end being stored in the rear end of said second rod member, a lever member having an end being pivotally supported on said forward end side to be horizontally movable, and a second grip member being provided on its rear end,

a second elastic member being provided on the outer peripheral surface of said fourth rod member between said flange part of said third rod member and said second grip member for urging said fourth rod member toward the rear end with elastic force being larger than that of said first elastic member,

first and second slide members having first and second slide blocks being stored in said third rod member on portions closer to the forward end than said lever member for horizontally holding said first connection part and being forwardly pushed by said lever member following movement of said fourth grip member toward the forward end, and first and second contact bars being provided on the forward ends of said first and second slide blocks respectively to be in contact with said first connection block,

a second connection block being stored in the forward end of said third rod member and having a second connection part being horizontally movably connected with said first connection part and first and second guide passages storing said first and second contact bars therein for guiding sliding of said first and second contact bars on its forward end, and

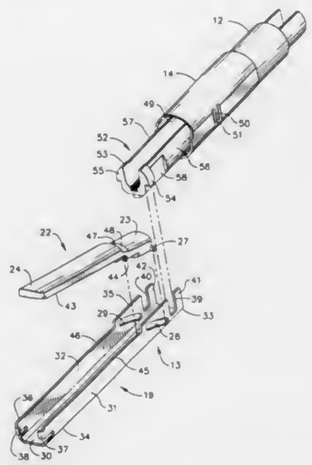
a third elastic member being provided on the outer peripheral surfaces of said first and second contact bars between said first and second slide blocks and said second connection block for regularly urging said first and second slide members toward the rear ends.

5,662,667

SURGICAL CLAMPING MECHANISM

Bryan D. Knodel, Cincinnati, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Sep. 19, 1995, Ser. No. 530,931
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—151 18 Claims



1. A surgical instrument comprising:

a) a rigid frame for gripping said instrument;

b) an elongated shaft extending from said frame and having a distal end;

c) an end effector extending from said shaft distal end, said end effector including first and second jaws each having proximal and distal ends, said jaws movable relative to each other from an open position for receiving bodily tissue therebetween to a closed position for clamping or grasping said tissue, said first jaw including an elongated channel having a base and first and second sidewalls each having proximal and distal ends, said sidewalls extending from said base toward said second jaw, each of said sidewalls having a mutually opposed elongated slot, each of said slots disposed diagonally upwards from a lowermost end adjacent said proximal end of said sidewall to an uppermost end toward said distal end of said sidewall, said second jaw including a tissue-contacting surface;

d) a first post cooperatively engaged with said proximal end of said second jaw, said first post being received within said mutually opposed elongated slots for sliding movement therein;

e) a pusher member at said proximal end of said second jaw and adjacent said tissue-contacting surface, said pusher member being movable from a rearward position to a forward position, wherein when said pusher member is in said rearward position, said first post is positioned at said lowermost ends of said slots and said distal end of said second jaw is rearward of said distal end of said first jaw so as to position said jaws in said open position, and a mechanism for affixing the pusher member and said second jaw so that when said pusher member is moved forwardly from said rearward position to said forward position, said second jaw is moved forwardly in tandem with said pusher member, said first post has traveled to said uppermost ends of said slots, and said distal end of said second jaw is positioned adjacent to said distal end of said first jaw so as to position said jaws in said closed position; and

f) an actuator at least partially housed in said frame and operatively connected to said pusher member in cooperation with said elongated shaft to effect movement of said pusher member from said forward to said forward positions so as to move said jaws from said open to said closed positions.

5,662,668

BLADE FOR INTRASTROMAL RADIAL KERATOTOMY

Badrudin Kurwa, 1035 Singlewood Dr., Arcadia, Calif. 91006

Filed Apr. 24, 1995, Ser. No. 427,404
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—166 18 Claims



1. A blade for a keratotomy procedure adapted to make an intrastromal incision in stromal lamellae intermediate Descemet's and Bowman's membranes which are separated from each other by a predetermined distance, said blade being placed in a radial incision through an epithelial layer of a cornea which has a distal end terminating at an edge of a central optic zone in the cornea and a bottom near Descemet's membrane,

said blade including

a base and an arm which are substantially flat members connected together edgewise to lie in essentially the same plane and are thin so that said base and arm fit edgewise within said radial incision,

said base having non-cutting bottom and top edges separated by a distance which is less than said predetermined distance between Descemet's and Bowman's membranes,

said non-cutting top edge terminating at a distal end at a cutting edge and at a proximal end at a junction formed between the base and a non-cutting leading edge of the arm, and the bottom edge terminating at a distal end at said cutting edge and at a proximal end connected to the arm,

said non-cutting leading edge of the arm acting as a stop upon inserting the base into the radial incision with the bottom edge adjacent the bottom of the radial incision and advancing the cutting edge towards the optic zone so that the non-cutting leading edge engages the distal end of the radial incision,

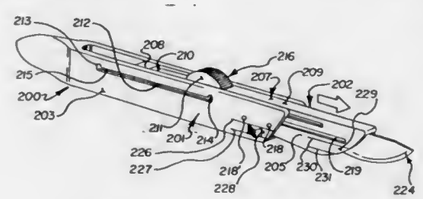
said cutting edge extending between the non-cutting bottom and top edges, with the distance between the cutting edge and the non-cutting leading edge of the arm being sufficient to enable the cutting edge to extend the radial incision inward towards the optic zone and beyond said distal end of the radial incision to make an intrastromal incision in the stromal lamellae intermediate Descemet's and Bowman's membranes but beneath the central optic zone in the epithelial layer of the cornea without cutting Bowman's membrane.

5,662,669

COMBINATION GUARDED SURGICAL SCALPEL AND BLADE STRIPPER

Michael R. Abidin, Birmingham, Ala., and Steven P. Lehmbeck, Baltimore, Md., assignors to Bloom & Kreten, Towson, Md., a part interest

Continuation of Ser. No. 277,165, Jul. 19, 1994, Pat. No. 5,496,340, which is a continuation-in-part of Ser. No. 150,843, Nov. 12, 1993, Pat. No. 5,411,512, which is a continuation-in-part of Ser. No. 40,165, Mar. 30, 1993, Pat. No. 5,275,606, which is a continuation-in-part of Ser. No. 825,556, Jan. 24, 1992, Pat. No. 5,250,063. This application Nov. 7, 1995, Ser. No. 592,784
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 3 Claims



1. In a surgical scalpel having a blade mounted thereon, the combination of first manually-manipulatable guard means carried by the scalpel for guarding the blade when the scalpel is not being used on a patient, and second manually-manipulatable stripping means mounted on the scalpel and enabling the first manually-manipulatable guard means to strip the blade from the scalpel without manually touching the blade.

5,662,670

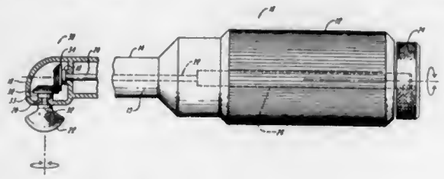
SURGICAL CUTTING INSTRUMENT

Peter Michalos, 157 E. 72nd St., New York, N.Y. 10021

Continuation of Ser. No. 303,399, Sep. 9, 1994, Pat. No. 5,522,829, which is a continuation-in-part of Ser. No. 162,807, Dec. 3, 1993, abandoned, which is a continuation of Ser. No. 871,265, Apr. 16, 1992, abandoned. This application May 10, 1996, Ser. No. 644,536

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **23 Claims**



1. A surgical knife comprising:

a tubular main body having a primary axis extending from one end to another end of the tubular main body;

a blade mount attached to the tubular main body near the one end and journaled for rotation about a secondary axis disposed at an angle with respect to the primary axis;

a movement control element disposed to extend from the tubular main body and spaced from the blade mount a distance along the primary axis toward the other end;

a turning unit disposed interiorly of the tubular main body and operatively connected to the blade mount and to the movement control element to rotate the blade mount upon movement of the movement control element; and

a blade having a cutting edge, the blade mounted to the blade mount, whereby the orientation of the blade with respect to the main body is alterable by movement of the movement control element.

5,662,671

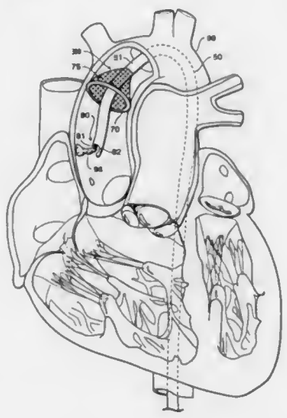
ATHERECTOMY DEVICE HAVING TRAPPING AND EXCISING MEANS FOR REMOVAL OF PLAQUE FROM THE AORTA AND OTHER ARTERIES

Denise Barbut, New York, N.Y.; Jonathan D. Root, San Francisco, Calif.; Robert Rizzari, Haverhill, Mass.; James M. Sellers, Hampstead, N.H.; Giovanni Pastrone, Los Gatos, and John McKenzie, San Carlos, both of Calif., assignors to Embol-X, Inc., Portola Valley, Calif.

Filed Jul. 17, 1996, Ser. No. 683,503

Int. Cl.[6] A61M *25/00*

U.S. Cl. 606—170 **34 Claims**



1. An arterial catheter system for removing plaque from the aorta or other arteries, said catheter system comprising:

a flexible elongate member having an outer surface, a distal region adapted to enter an artery, and a proximal region;

expansion means disposed within the distal region of the elongate member which is expandable between a contracted condition and an enlarged condition;

a mesh having a first edge attached circumferentially and continuously to the expansion means and a second edge disposed circumferentially about and in contact with the outer surface of the flexible elongate member; and

an atherectomy assembly disposed within the distal region of the elongate member, the atherectomy assembly comprising means for plaque removal and trapping means, wherein during use said first edge of said mesh is positioned at a distance from the outer surface of the flexible elongate member, and said plaque is trapped and held by the trapping means and excised from the arterial lumen by the means for plaque removal.

5,662,672

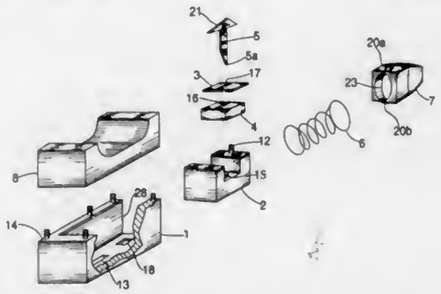
SINGLE USE, BI-DIRECTIONAL LINEAR MOTION LANCET

Michael S. Pambianchi, New Milford, Conn., and Dominick F. Grube, Ogdensburg, N.J., assignors to Array Medical, Inc., Bridgewater, N.J.

Filed May 23, 1996, Ser. No. 653,712

Int. Cl.[6] A61B *17/14*

U.S. Cl. 606—181 **9 Claims**



1. A disposable lancet device comprising:

a) generally elongated housing having an internal channel,

b) a cutting blade-holding assembly disposed within said channel and carrying a blade having a pointed end and a slicing edge at said end for piercing and slicing tissue and an end opposite thereto, said blade disposed generally in a direction perpendicular to said channel, said blade and said assembly being movable longitudinally in said channel from a cocked first retracted position to and through an extended piercing position, and then to a second retracted position wherein the second retracted position is downstream of the piercing position,

c) biasing means in contact with said holding assembly and disposed to move said assembly in a longitudinal direction through said channel from said first cocked retracted position into said extended piercing position and into said second retracted position,

d) stop means associated with said housing, and ejection and retraction means associated with said end opposite said pointed end of said blade and with said holding assembly and with said housing, whereby when said holding assembly is moved upon its longitudinal pathway said stop means cooperate with said ejection means and retraction means to convert the longitudinal movement of the blade into transverse movement of said blade out of said housing and into skin piercing position, followed by retraction of said blade back into said housing.

5,662,673

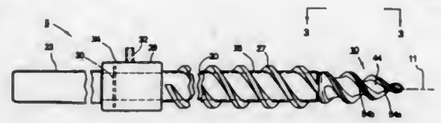
SURGICAL TROCAR AND METHOD FOR PLACING A TROCAR SLEEVE IN A BODY WALL

Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070

Filed Apr. 5, 1995, Ser. No. 417,009

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—185 **15 Claims**



1. An incising assembly for an incising end of a surgical instrument, comprising:

an incising assembly having first and second elements mating along helical interfaces and being at least partly moveable relative to one another along said interfaces, thereby transforming said assembly between an incising position providing at least a distal portion of said assembly in a sharp configuration capable of incising tissues and a non-incising position providing said at least distal portion in a dull configuration not capable of incising tissue; and

a spring structure coupled to said incising assembly, thereby urging said assembly toward said non-incising position from said incising position.

5,662,674

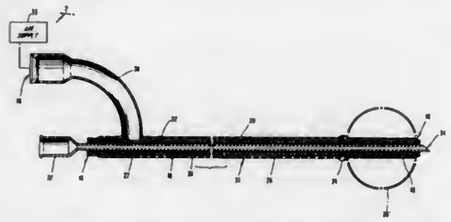
APPARATUS FOR LOCATING A BREAST MASS

Elie Debbas, 800 Southern Ave., SE. Sulte 407, Washington, D.C. 20032

Continuation of Ser. No. 181,026, Jan. 14, 1994, Pat. No. 5,445,645, which is a division of Ser. No. 948,320, Sep. 22, 1992, Pat. No. 5,301,682, which is a division of Ser. No. 604,092, Oct. 29, 1990, Pat. No. 5,183,463, which is a continuation-in-part of Ser. No. 305,965, Feb. 3, 1989, Pat. No. 4,966,583. This application Jun. 6, 1995, Ser. No. 466,140

Int. Cl.[6] A61B *17/34*

U.S. Cl. 606—192 **7 Claims**



3. A medical apparatus for localizing and palpating a mass in body tissue, comprising:

a tubing having an open proximal end and an open distal end, said tubing including an inner wall extending along the entire length of said tubing, and an outer wall spaced from said inner wall and extending along the entire length of said tubing, said inner wall and said outer wall being connected at said proximal end and said distal end of said tubing, a gap created between said inner wall and said outer wall extending substantially the entire length of said tubing, said outer wall including distinct proximal and distal portions, said distal portion forming an inflatable balloon with said inflatable balloon being located at a distalmost end of said tubing;

a needle having proximal and distal ends, said distal end being sharp, said needle being insertable through said proximal end of said tubing so that said distal end of said needle extends beyond said distal end of said tubing, with means for preventing said distal end of said needle from extending more than slightly beyond said distal end of said tubing; and

means for supplying fluid to said inflatable balloon via said gap between said inner and outer walls of said tubing, said inflatable balloon being expanded upon receiving said supply of fluid to identify the location of a mass by positioning said tubing with said needle located therein adjacent to the mass in the body tissue so as to be palpable through the body tissue.

5,662,675

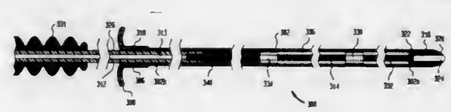
DELIVERY CATHETER ASSEMBLY

Odarka Polanskyj Stockert, Millburn, N.J., and Frederick W. Kornahrens, Palm Harbor, Fla., assignors to InterVascular, Inc., Clearwater, Fla.

Filed Feb. 24, 1995, Ser. No. 394,907

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **18 Claims**



1. A catheter assembly, for intraluminally delivering a plurality of grafts to a repair site, each graft having a predetermined length, said catheter assembly comprising

an elongated positioning member having a forward end, a rearward end and a passageway extending from said forward end to said rearward end,

an elongated tubular sheath slideably assembled on said positioning member for movement between an extended position in which a forward end of said sheath is located adjacent said forward end of said positioning member, and a fully retracted position in which said forward end of said sheath is located at a spaced distance from said forward end of said positioning member, said sheath and said positioning member together defining an elongated annular space,

a first spacer fixedly connected to said positioning member at a preselected spaced distance from said forward end thereof to define a first receiving zone between said first spacer and said forward end of said positioning member,

a second spacer fixedly connected to said positioning member at a preselected spaced distance from said first spacer to define a second receiving zone between said first spacer and said second spacer, said sheath in said extended position overlying said first and second receiving zones, whereby movement of said sheath from said extended position to a first intermediate retracted position in which said forward end of said sheath is coextensive with said first spacer entirely exposes said first receiving zone, and movement of said sheath from said first intermediate retracted position to a second intermediate retracted position in which said forward end of said sheath is coextensive with said second spacer entirely exposes said second receiving zone, and

elongated annular reinforcing means arranged in said annular space substantially continuously from said second spacer to a rearward end of said sheath for radially supporting said sheath.

5,662,676

INSTRUMENT SET FOR LAPAROSCOPIC HYSTERECTOMY

Philippe Robert Koninckx, Bierbeek, Belgium, assignor to K.U. Leuven Research & Development, Leuven, Belgium

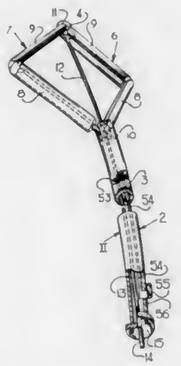
PCT No. PCT/BE93/00040, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/00061, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 23, 1993, Ser. No. 356,370

Claims priority, application Netherlands, Jun. 24, 1992, 92.01118

Int. Cl.[6] A61B *17/02*

U.S. Cl. 606—198 **18 Claims**



1. An instrument for laparoscopic vaginal hysterectomy, comprising:

a uterine rotator including a rod with a uterine end for insertion into uterus and a control end;

coupling means;

a control member; and

at least one wing, with the at least one wing movable from a folded-in position in the uterine end to a folded-out position in which the at least one wing makes contact with an inner wall of the uterus and with the at least one wing connected by the coupling means to the control member located at the control end, and wherein the uterine end of the rod is rotatably connected to the control end of the rod by a rotation means.

5,662,677

CUPPING INSTRUMENT FOR A CUPPING TREATMENT OF SKIN AND BODY PORTIONS

Erwin Wimmer, Thurnsdorf 3, A-4300 St. Valentin, Austria

Filed Nov. 21, 1995, Ser. No. 560,998

Claims priority, application Austria, Jan. 4, 1995, A 10/95

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—201 **5 Claims**

1. A cupping instrument for a cupping treatment of skin and body portions, comprising

(a) a vacuum cup integrally comprising

(1) an end wall defining an outlet hole,

(2) an annular socket on the end wall concentrically surrounding the outlet hole, and

(3) a cylindrical tubular extension extending from the end wall and surrounding the outlet hole and the annular socket,

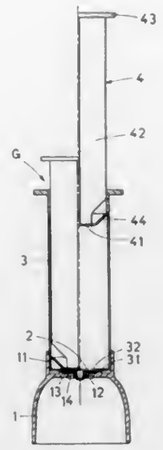
(b) a suction valve for opening and closing the outlet hole, the suction valve being disposed in the annular socket and comprising

(1) a sealing disk,

(2) a centrally disposed die-cut valve disk,

(3) an annular outer portion surrounding the valve disk, and

(4) at least one bridge integrally connecting the annular outer portion to the valve disk, and



(c) an aspirator connected to the vacuum cup, the aspirator comprising

(1) an aspirator cylinder detachably mounted in the cylindrical tubular extension and having a forward end wall facing the outlet hole and defining an aspirating opening concentrically surrounding the outlet hole, the outlet hole being smaller in diameter than the aspirating opening, the annular socket having an outside diameter which is larger than the diameter of the aspirating opening, and the valve disk being smaller in diameter than the aspirating opening and larger in diameter than the outlet hole, the aspirating opening being adapted to communicate with the outlet hole through the suction valve, and

(2) an aspirating piston slidably mounted in the aspirator cylinder and comprising a piston head facing the forward end wall and a piston skirt having an extended end remote from the piston head to form a handle protruding out of the cylinder.

5,662,678

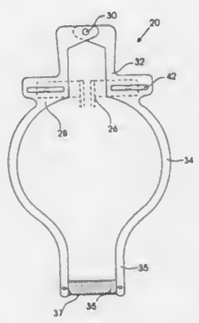
SELF INJECTION ARM CLAMP

John W. Macklin, S1110 10531 90 St., Edmonton, Alberta, Canada, T5H 4E7

Filed Oct. 11, 1996, Ser. No. 724,329

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—201 **11 Claims**



1. An injection clamp for lifting and holding skin on an upper arm comprising:

a pair of mating parallel elongated jaw members;

a pair of mating arm members hinged together at one end, each arm member having a hinge end portion which carries one of the elongated jaw members extending laterally therefrom, each arm member having a rounded central portion adapted to extend around one side of the upper arm, and a spring end portion, said spring end portion being the end of the arm member opposite the hinge end; and,

tension means extending between the spring end portions of the pair of mating arm members.

5,662,679

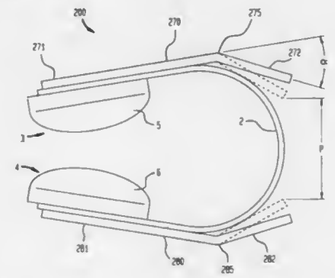
TRAGUS ACUPRESSURE CLIP WITH OVER-OPENING PREVENTION AND PRESSURE ADJUSTMENT

Theodore N. Voss, and Karl D. Kirk, III, both of New York, N.Y., assignors to Shatzu Health Products, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 343,014, Nov. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 994,195, Dec. 21, 1992, Pat. No. 5,366,475. This application Mar. 26, 1996, Ser. No. 625,516

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—204 **8 Claims**



1. A tragus acupressure clip which prevents over-opening comprising:

a concave spring having two opposing jaws separated by an opening of a slot delineated by an inner surface of said concave spring,

two opposing pressure pads, each attached to the end of a different one of said jaws on said inner surface of said concave spring, and separated by said slot,

two finger tabs, which are mutually non-touching when said spring is in a state of rest, each of said finger tabs having one end attached to the end of a different jaw, on an outer surface of said spring, and having a second end extending away from said end of said jaw, along an outer surface of said spring approximately only as far as a portion of said spring opposite to said opening of said slot separating said jaws,

whereby said second ends of said finger tabs are urged towards one another, against a compression bias of said spring to enlarge said slot separating said pressure pads, and

wherein each of said finger tabs comprises a bend between said first and second ends of said finger tabs so that said second ends are angled towards each other, said bend in said second ends of said finger tabs decreasing an ability to grip said second ends of said finger tabs as said second ends of said finger tabs are urged towards one another, said decrease in ability to grip said finger tabs limiting an opening of said slot beyond an elastic limit of said concave spring.

5,662,680

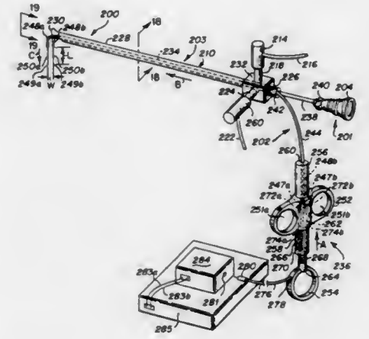
ENDOSCOPIC SURGICAL INSTRUMENT

Asbvin H. Desai, 2195 Trade Zone Blvd., San Jose, Calif. 95131

Continuation-in-part of Ser. No. 259,712, Jun. 14, 1994, Pat. No. 5,562,703, which is a continuation-in-part of Ser. No. 25,003, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 779,108, Oct. 18, 1991, Pat. No. 5,322,503. This application Oct. 28, 1994, Ser. No. 331,046

Int. Cl.[6] A61B *17/50*

U.S. Cl. 606—210 **20 Claims**



1. An endoscopic surgical instrument comprising:

a) a housing;

b) a single access conduit being disposed within said housing, and having a proximal conduit end and a distal conduit end;

c) an irrigation port formed in said housing;

d) an evacuation port formed in said housing, each of said irrigation and said evacuation ports being in fluid communication, through independent valves, with said proximal conduit end of said single access conduit;

e) an aperture and a closure therefor, said aperture being formed in said housing, and said closure being openable to allow the ingress of microsurgical instrumentation into said proximal conduit end of said single access conduit; and

f) RF electrode means insertable into said aperture and into said single access conduit and having a length so as to protrude beyond said distal conduit end of said single access conduit, said RF electrode means for engaging a body tissue portion, and for simultaneously ablating said body tissue portion and measuring an impedance value associated with said body tissue portion, said RF electrode means including at least three electrodes in a non-linear pattern.

5,662,681

SELF LOCKING CLOSURE FOR SEALING PERCUTANEOUS PUNCTURES

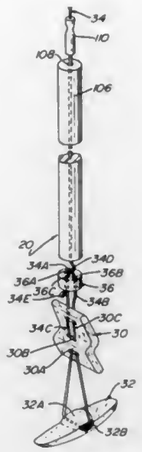
John E. Nash, Downington, and Herbert G. Kephart, Glen Mills, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

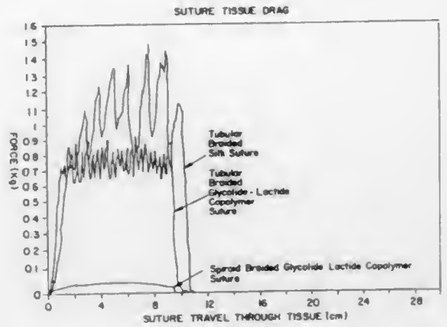
Filed Apr. 23, 1996, Ser. No. 635,166

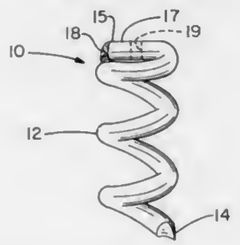
Int. Cl.[6] A61B *17/08*

U.S. Cl. 606—213 **26 Claims**

1. A closure device for sealing a percutaneous puncture in the wall of a blood vessel, duct, or lumen of a living being, the puncture comprising an opening in the wall of the blood vessel, duct, or lumen, and a tract contiguous with the opening and extending through tissue overlying the vessel, duct, or lumen, said closure device comprising anchoring means, sealing means, filament means, and locking means, said anchoring means being arranged to be brought into engagement with the interior tissue of







the vessel, duct, or lumen contiguous with the opening, said sealing means and said locking means being arranged to be located within the tract, said filament means being coupled to said anchoring means, said sealing means, and said locking means, said sealing means being arranged to be moved toward said anchoring means to a puncture sealing position in the tract, said filament means comprising an engagement portion, a first filament portion, and a second filament portion, said engagement portion being coupled to said locking means, said first filament portion extending between said locking means and said anchoring means, said second filament portion being arranged for extending from said anchoring means through the tract, said second filament portion being arranged to be pulled in a proximal direction to cause said engagement portion of said filament means to engage said second filament portion to hold said locking means in position, whereupon said sealing means is held in said puncture sealing position.

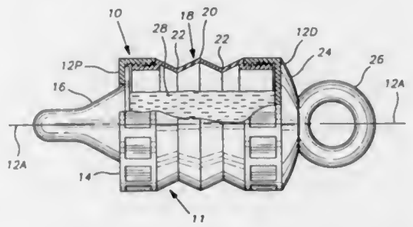
5,662,682
SPIROID BRAIDED SUTURE
Michael P. Chesterfield, Norwalk; Ilya Koyfman, Orange, and Matthew E. Hain, New Haven, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 897,576, Jun. 11, 1992, abandoned, which is a continuation of Ser. No. 651,758, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 499,173, Mar. 26, 1990, Pat. No. 5,059,213. This application Jan. 15, 1993, Ser. No. 5,935
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[6] A61B *17/06*
U.S. Cl. 606—228 **21 Claims**

1. A suture of solid spiroid braid construction.

5,662,683
OPEN HELICAL ORGANIC TISSUE ANCHOR AND METHOD OF FACILITATING HEALING
David B. Kay, Akron, Ohio, assignor to Ortho Helix Limited, Barberton, Ohio
Filed Aug. 22, 1995, Ser. No. 517,259
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 **16 Claims**

1. An organic tissue anchor comprising a rigid, biocompatible, elongate member having a diameter of from about 0.4 millimeters to about 3 millimeters comprising surgical-grade titanium or stainless steel wire or a bioabsorbable material which forms an open, helical structure having a length from about 3 millimeters to about 75 millimeters, an outer diameter of a constant dimension of from about 1.5 millimeters to about 15 millimeters, a slope from about 0.5 to about 10 turns per centimeter and having at a first end an insertion tip and at a second end an attachment head which is capable of connecting organic tissue to said anchor and which comprises a crossbar having an eyelet for receiving a suture.

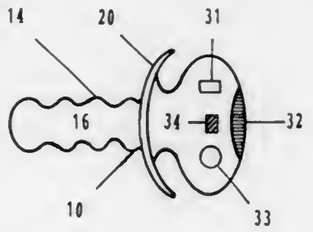
5,662,684
LIQUID DISPENSING PACIFIER APPARATUS
Jeffrey S. Caso, 418 Merrick Ave., Merrick, N.Y. 11566
Filed Jan. 2, 1996, Ser. No. 581,774
Int. Cl.[6] B65D *1/40;* **A61J** *9/00*
U.S. Cl. 606—234 **4 Claims**



1. A liquid dispensing pacifier comprising:
a) a body having a proximal end, a distal end and a proximal-distal axis extending between said ends,
b) a nipple base having a plane which extends transverse to the proximal-distal axis and defines the proximal end of said body;
c) a resilient nipple affixed to said nipple base extending outward therefrom, away from said body;
d) an aperture base having a plane which extends transverse to the proximal-distal axis and defines the distal end of said body;

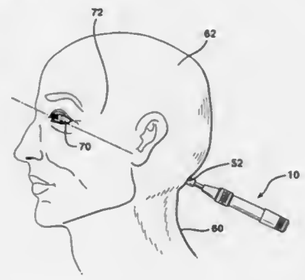
e) an aperture extending outward from the aperture base away from the body, the aperture forming a loop having a plane which extends perpendicular to the plane of the aperture base and functions as a handle to be grasped by an infant; and
f) a reservoir for storing fluids, said reservoir in fluid communication with the resilient nipple and located within the body, wherein the body further comprises a plurality of pleats located between the proximal end and the distal end of the body, said pleats circular in shape and comprising a major fold line and two minor fold lines, each minor fold line shared in common with an adjoining pleat, each major fold line larger in diameter than the minor fold line, and both fold lines concentric to each other so that said pleats are capable of compressing and allowing the body to collapse into a compact position upon an infant withdrawing liquid from the reservoir, preventing the infant from ingesting air, and causing the liquid dispensing pacifier to thereafter function as an infant suckling pacifier.

5,662,685
SOUND PRODUCING PACIFIER
Gary S. Uhler, 10-B Alder Ct., Woodland, Calif. 95695
Filed Aug. 13, 1996, Ser. No. 696,259
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—234 **4 Claims**



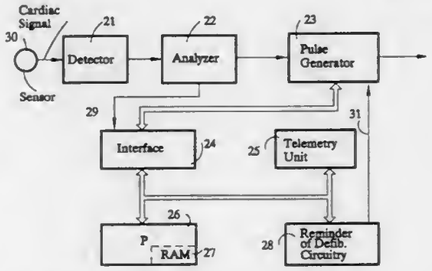
1. A baby pacifier having a responsive nipple, a shield attached to the nipple and between the nipple and an operations package which package includes an energy source, a music source powered by the energy source, an activation button connected to initiate the music source and an activation receiver which when activated by a remote source is connected to initiate the music source.

5,662,686
METHOD AND DEVICE FOR CORRECTING STRUCTURAL IMBALANCE IN A HUMAN SPINE
Lawrence E. Newsum, 25039 Narbonne Ave., Lomita, Calif. 90717
Filed Jan. 16, 1996, Ser. No. 585,641
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—238 **2 Claims**



1. A method of balancing the muscles of the spine of a patient comprising:
applying a controlled mount of impact force of no greater than about five pounds to the rear of a patient's neck beneath one side of the patient's head and against the splenius muscle adjacent the attachment of the sternocleido mastoideus muscle to the base of the skull and directing said force forwardly and upwardly in linear alignment with the eye socket-temple area on the opposite side of the patient's head, wherein said impact force is applied using a device formed of an elongated hollow body having an open end and an opposite, axially aligned, closed end, and an annular guide ring located between said open end and closed ends; a hammer disposed for reciprocal movement within said hollow body and located between said guide ring and said closed end; a compressed tensioning spring located in said hollow body between said hammer and said closed end of said body; a push rod longitudinally reciprocal relative to said hollow body and emanating from said open end of said hollow body and having a proximal end entrapped within said hollow body and a distal end projecting therefrom for contacting the rear of a patient's neck; a clutch mechanism for cocking said hammer within said hollow body and which releases said hammer at a predetermined distance from said guide ring when said push rod is forced toward said closed end of said hollow body to compress said tensioning spring; and a compressible clutch spring disposed within said hollow body and biasing said push rod toward said open end of said body; comprising the steps of:
placing said distal end of said push rod in contact with the rear of a patient's neck as aforesaid and pressing said hollow body toward said patient's neck to compress said tensioning spring until said clutch mechanism releases said hammer.

5,662,687
IMPLANTABLE HEART DEFIBRILLATOR
Sven-Erik Hedberg, Kungsaengen; Martin Obel, Danderyd, and Kurt Hoegnelid, Villavägen, all of Sweden, assignors to Pacesetter AB, Solna, Sweden
Continuation-in-part of Ser. No. 114,344, Sep. 1, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 407,046
Claims priority, application Sweden, Sep. 16, 1992, 9202664
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **20 Claims**



1. An implantable cardiac defibrillator comprising:
pulse generator means for delivering pulses in vivo to a heart; and
control means for operating said pulse generator for emitting, within one refractory period of said heart, a plurality of low-energy pulses respectively having an electrical field associated therewith and an energy insufficient to defibrillate said heart and said pulses in combination having a total energy which is less than a defibrillation energy which is capable of defibrillating the entirety of said heart, and said energy of each low-energy pulse being in a range of 2 to 5 times less than said defibrillation energy for giving each low-energy pulse sufficient energy for depolarizing heart tissue cells ori-

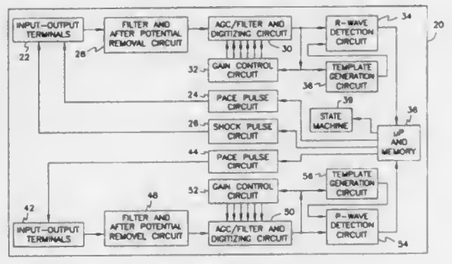
ented in a favorable direction in relation to the electrical field associated with the low-energy pulse.

5,662,688

SLOW GAIN CONTROL

Paul A. Haefner, Crystal, and Mark A. Stockburger, Inver Grove Heights, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Aug. 14, 1995, Ser. No. 514,931
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **60 Claims**



1. A method of automatically controlling a gain of a cardioverter/defibrillator which receives electrical activity of the heart and provides shock pulses in response thereto, the method comprising the steps of:

amplifying the electrical activity according to a variable gain;

detecting cardiac events representing depolarizations in the amplified electrical activity which exceed a sensitivity threshold; and

increasing the variable gain if a first selected number (M) of peak values of the amplified electrical activity of a second selected number (N) of cardiac events are below a selected low threshold, wherein M is an odd integer number equal to or greater than 3 and N is an integer number equal to or greater than M; and

decreasing the variable gain if M peak values of the amplified electrical activity of the N cardiac events are above a selected high threshold.

5,662,689

METHOD AND APPARATUS FOR ALLEVIATING CARDIOVERSION SHOCK PAIN

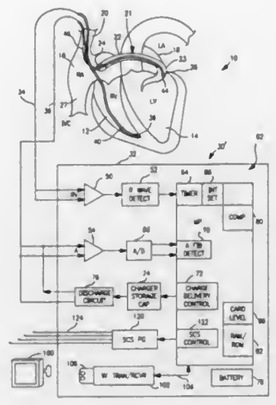
Dennis D. Elsberry, New Hope; Rahul Mehra, Stillwater; Lynn M. Otten, Blaine; Mark T. Rise, Monticello, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 8, 1995, Ser. No. 525,995
Int. Cl.[6] A61N *1/39;1/34*
U.S. Cl. 607—5 **56 Claims**

1. An implantable medical device system for delivering cardioversion energy to at least one chamber of a patient's heart in need of cardioversion and for alleviating pain attendant to delivery of cardioversion energy comprising:

detecting means for detecting activity of a chamber of the patient's heart;

determining means responsive to the detecting means for determining when the chamber of the patient's heart is in need of cardioversion;



cardioverting means responsive to the determining means for delivering cardioversion energy to the chamber of the patient's heart when the chamber is in need of cardioversion; and

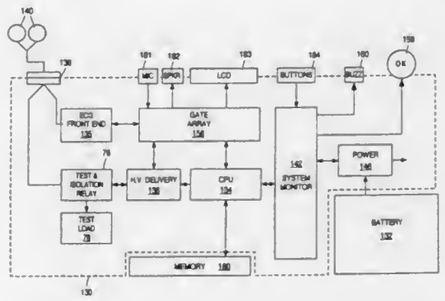
means for delivering neurostimulation pulses to the patient's nervous system to effect analgesia at an appropriate site in the patient's body in conjunction with delivery of cardioversion energy to the heart chamber to reduce pain felt by the patient arising from delivery of the cardioversion energy.

5,662,690

DEFIBRILLATOR WITH TRAINING FEATURES AND PAUSE ACTUATOR

Clinton Cole, Seattle; Carlton B. Morgan, Bainbridge Island; Judi Cyrus, Preston, and Daniel Powers, Bainbridge Island, all of Wash., assignors to Heartstream, Inc., Seattle, Wash.

Continuation of Ser. No. 351,897, Dec. 8, 1994, Pat. No. 5,611,815. This application Jun. 28, 1996, Ser. No. 672,739
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **9 Claims**



1. A method for a user to operate an automatic or semiautomatic external defibrillator to treat a patient, the method comprising the following steps:

providing an automatic or semiautomatic external defibrillator to the user;

activating the defibrillator to provide therapy to the patient;

placing the defibrillator in a pause state by the user actuating a pause actuator;

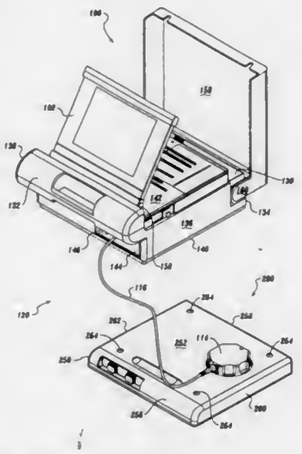
ending the pause state.

5,662,691

SYSTEM AND METHOD FOR IMPLANTING AN IMPLANTABLE CARDIAC DEVICE

Edgar G. V. Behan, Issaquah; David P. Finch, Bothell, and Craig S. Siegman, Redmond, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Nov. 22, 1995, Ser. No. 561,884
Int. Cl.[6] A61N *1/372*
U.S. Cl. 607—32 **2 Claims**



1. A cardiac system comprising:

an external device including means for operation responsive to a set of operating parameters;

an external programmer for providing the set of operating parameters, the external programmer including transmitting means for transmitting the set of operating parameters; and

receiving means within the external device for receiving the set of operating parameters transmitted by the external programmer,

wherein the external programmer includes an enclosure, wherein said transmitting means includes a first antenna positionable at a first predetermined position within said enclosure, wherein said external device includes a housing, wherein said receiving means includes a second antenna positioned at a second predetermined position within said housing, wherein said enclosure and said housing include alignment means for aligning said enclosure and said housing in an aligned immediately adjacent relation to each other, and wherein said first antenna and second antenna are aligned with each other when said enclosure and said housing are in said aligned immediately adjacent relation, and

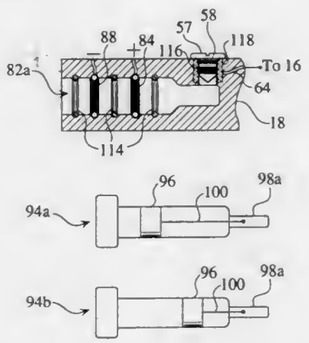
wherein said housing includes a top surface, wherein said alignment means includes a plurality of recesses within said top surface, wherein said enclosure includes a bottom surface, wherein said alignment further includes a plurality of pendent projections extending from said bottom surface, and wherein said recesses receive said pendent projections to place said enclosure and said housing in said aligned immediately adjacent relation.

5,662,692

CARDIAC DEFIBRILLATOR HAVING SELECTABLE POLARITY CASE

Paul M. Paspa, Santa Clara, and M. Elizabeth Bush, Fremont, both of Calif., assignors to Pacesetter, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 353,422, Dec. 9, 1994, Pat. No. 5,534,019. This application Jun. 5, 1995, Ser. No. 463,527
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—37 **6 Claims**



1. An implantable cardiac defibrillator kit comprising:

a pulse generator case having an electrically conductive portion;

defibrillation pulse generator circuitry housed in said case, said pulse generator circuitry having first and second high voltage terminals of first and second polarity;

a header attached to said case, said header including first and second cavities, a conductive block electrically coupled to at least a portion of said pulse generator case, a first garter spring located in said first cavity at a first distance from said conductive block and electrically coupled to said first high voltage terminal, a second garter spring located in said first cavity at a second distance from said conductive block and electrically coupled to said second high voltage terminal and a conductive block located in said second cavity in electrical communication with said pulse generator circuitry;

a defibrillation lead having a de fibrillation lead connector pin for insertion in said second cavity;

a first device for insertion into said first cavity, said device including a pin electrically coupled to a conductive ring, said ring located approximately said first distance from said first device pin; and

a second device for insertion into said first cavity, said device including a pin electrically coupled to a conductive ring, said ring located approximately said second distance from said second device pin, whereby insertion of said first device into said first cavity makes said pulse generator case conductive portion said first polarity for defibrillation and insertion of said second device into said first cavity makes said pulse generator case conductive portion said second polarity for defibrillation.

5,662,693

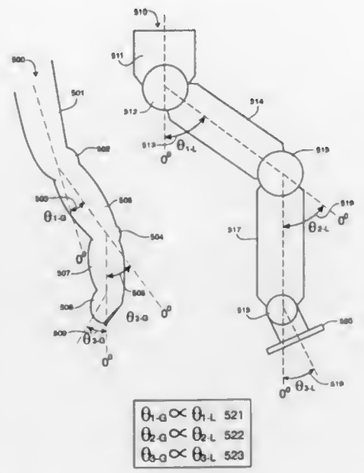
MOBILITY ASSIST FOR THE PARALYZED, AMPUTEED AND SPASTIC PERSON

David C. Johnson, Gilford, N.H., and Daniel W. Repperger, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Jun. 5, 1995, Ser. No. 461,085
Int. Cl.[6] A61F *5/00*
U.S. Cl. 607—49 **2 Claims**

1. An orthosis for assisting locomotion in a patient, said orthosis comprising:

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a brace device, with means for attaching the brace device to a leg of said patient; actuator means coupled to the brace device;

goniometer means for sensing patient finger motion;

control means having input from the goniometer means and output to the actuator means;

wherein the control means is driven by the patient's fingers by signals from the goniometer means in an anthropomorphic manner similar to the leg motion, and the motion of fingers replicates motion that is desired for the legs to perform.

5,662,694

MAGNETIC FIELD DETECTOR

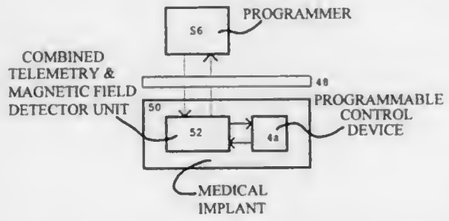
Johan Lidman, Stockholm, and Kenth Nilsson, Akersberga, both of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Dec. 14, 1995, Ser. No. 572,068

Claims priority, application Sweden, Dec. 15, 1994, 9404374

Int. Cl.[6] A61N *1/02*

U.S. Cl. 607—60 **7 Claims**



1. A combined telemetry and magnetic field detector unit for a medical implant, comprising:

a source of voltage;

a telemetry circuit;

a magnetic field detector;

a coil containing a core and connected to said source of voltage and being connected to each of, and shared by, said telemetry circuit and said magnetic field detector;

said telemetry circuit comprising means connected to said coil for transmitting and receiving telemetry signals via said coil;

control means connected to said telemetry circuit and to said magnetic field detector for switching between a telemetry mode for transmitting or receiving said telemetry signals, and a magnetic field detection mode; and

said magnetic field detector comprising means connected to said coil and to said source of voltage for, during said magnetic field detection mode, charging said coil with voltage from said source of voltage for a defined period of time and for subsequently discharging said coil, said coil having a discharge time associated therewith, and magnetic field indicator means for measuring said discharge time of said coil and for identifying a presence of a magnetic field in which said coil is disposed, and for generating a detection signal indicating the presence of said magnetic field, if said discharge time is less than a defined time threshold value.

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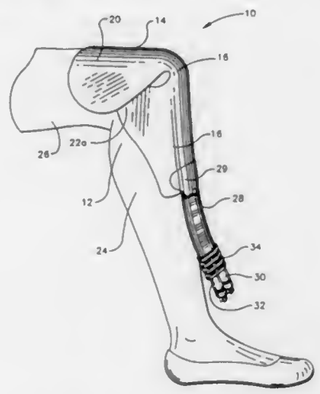
OCCLUSION-RESISTANT FLUID PAD CONFORMABLE TO A BODY FOR THERAPEUTIC TREATMENT THEREOF

Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.

Continuation-in-part of Ser. No. 69,195, May 27, 1993, which is a continuation-in-part of Ser. No. 906,407, Jul. 1, 1992, Pat. No. 5,324,319, and a continuation-in-part of Ser. No. 851,345, Mar. 12, 1992, Pat. No. Des. 345,609, said Ser. No. 906,407, said Ser. No. 851,345is a continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Dec. 21, 1993, Ser. No. 172,022

Int. Cl.[6] A61F *7/00*

U.S. Cl. 607—96 **22 Claims**



1. A pad positionable on a body part of a patient to therapeutically treat the body part with a nonambient temperature fluid flowing through said pad, wherein said pad is configured to conform to the body part, said pad comprising:

a flexible bladder having an internal flow channel and a substantially planar configuration; and

a tube penetrating said bladder and having an open end within said bladder providing fluid communication between said tube and said internal flow channel, wherein a portion of said bladder adjacent and proximal to said open end of said tube is substantially less flexible than the remainder of said bladder to resist occlusion of said bladder at said portion adjacent and proximal to said open end of said tube when said pad is configured to conform to the body part, and further wherein said tube is substantially less flexible than the remainder of said bladder.

5,662,696

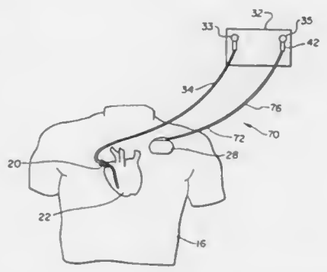
ONE PIECE DISPOSABLE THRESHOLD TEST CAN ELECTRODE FOR USE WITH AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR SYSTEM

Mark W. Kroll, 13011 Brenwood Trail, Minnetonka, Minn. 55343; Roger W. Dahl, 112 150th La. NW., Andover, Minn. 55304; Stephen K. Sundquist, 18027 Turnberry Cir., Minnetonka, Minn. 55345, and Randall S. Nelson, 7419 Pinehurst Ct., Pine Springs, Minn. 55115

Filed Sep. 28, 1995, Ser. No. 535,666

Int. Cl.[6] A61N *1/375;1/39*

U.S. Cl. 607—116 **21 Claims**



11. An active housing emulation system comprising:

an integral, disposable emulator housing and a lead unit wherein the housing forms an active electrode and has substantially the same conductive geometry as a desired implantable pulse generator, and wherein the lead unit has proximal and distal ends wherein the proximal end is permanently, fixedly attached to the housing such that the housing and the lead unit are permanently secured to each other;

an implantable electrode lead implantable in a desired permanent location of a patient's body; and

an external test system electrically connected to the distal end of the emulator housing lead unit and to the implantable electrode lead.

5,662,697

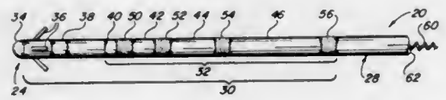
TRANSVENOUS INTERNAL CARDIAC DEFIBRILLATION APPARATUS HAVING LEAD AND ELECTRODE PROVIDING EVEN DISTRIBUTION OF ELECTRICAL CHARGE

Hong Li, Arcadia, Calif., and John R. Helland, Redmond, Wash., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Oct. 17, 1995, Ser. No. 544,334

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—122 **22 Claims**



1. An apparatus for ventricular cardioverting or defibrillation of a heart comprising:

an implantable pulse generator;

a lead having a proximal end and a distal end;

a connector assembly attached to the proximal end of said lead, said connector assembly allowing connection of said lead to said pulse generator;

an electrode assembly located at the distal end of said lead, said electrode assembly including a defibrillation electrode positioned proximally from the distal end of said lead;

a defibrillation conductor extending from said connector assembly at the proximal end of said lead to the defibrillation electrode at the distal end of said lead; and

means for evenly distributing electrical charge emitted by said defibrillation electrode comprising at least one insulator dividing said defibrillation electrode into at least two electrically interconnected segments, each segment having an axial length, and wherein the respective axial lengths of said electrically interconnected segments decreases from a proximal end of said defibrillation electrode to a distal end of said defibrillation electrode.

5,662,698

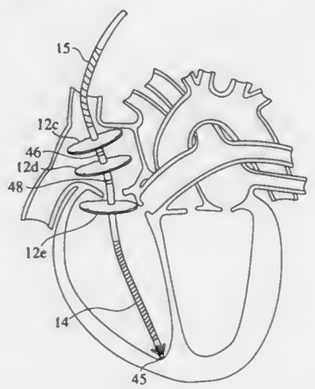
NONSHUNTING ENDOCARDIAL DEFIBRILLATION LEAD

Peter A. Altman, San Francisco; William D. Miner, II, Santa Clara, and M. Elizabeth Bush, Fremont, all of Calif., assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Dec. 6, 1995, Ser. No. 568,034

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—123 **24 Claims**



1. An endocardial lead having a device for steering current between a first electrode and a second electrode, wherein said first electrode is positioned on said endocardial lead, said device comprising:

electrical insulation positioned on and extending outwardly from said endocardial lead such that an outer edge of said insulation extends beyond a perimeter of the endocardial lead by at least 5 mm continuously for at least 50% of said perimeter of said lead, and positioned between said first and second electrodes, and being capable of interrupting a current path between said first electrode and said second electrode.

5,662,699

METHOD AND APPARATUS FOR STIMULATING OR MONITORING THE EXERCISE OF MUSCLES ADJACENT A BODY CAVITY

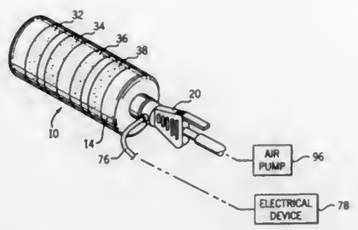
Hassan Hamedi, Milwaukee; H. Wilfred Lynch, New Glarus, and Vaughan B. Weeks, Racine, all of Wis., assignors to Myo Kinetic Systems, Inc., Menomonee Falls, Wis.

Continuation-in-part of Ser. No. 168,705, Dec. 16, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 525,330

Int. Cl.[6] A61N *1/04*

U.S. Cl. 607—138 **14 Claims**

1. A method of monitoring electrical energy generated by exercising muscles near a body cavity by transmitting such energy from a wall of the body cavity to an electrical processor, comprising the steps of:



(a) providing a substantially airtight sheath having a resilient skeleton which in the absence of opposing forces provides the sheath with a shape and size such that the sheath yieldingly impinges on the body cavity wall when the sheath is installed in the body cavity, the sheath having at least a pair of electrically conductive portions insulated from each other and an airflow aperture in the sheath;
(b) providing a pump and placing it removably in communication through the aperture with air in the sheath such that operating the pump evacuates air from the sheath and thereby collapses the sheath;
(c) collapsing the sheath by operating the pump;
(d) removing the pump and closing the aperture;
(e) inserting the sheath in the body cavity;
(f) opening the aperture to allow air to return into the sheath so that the resilient skeleton expands and the conductive portions yieldingly and conductively engage the body cavity wall;
(g) electrically connecting the conductive portions to the electrical processor;
(h) exercising muscles near the body cavity so that muscle-activity electrical energy flows from the body cavity wall through one conductive portion to the electrical processor and thence into the other conductive portion and back to the body cavity wall;
(i) electrically disconnecting the electrical processor from the conductive portions; and
(j) placing the pump in communication with the aperture, operating the pump to collapse the sheath and removing the insert.

5,662,700

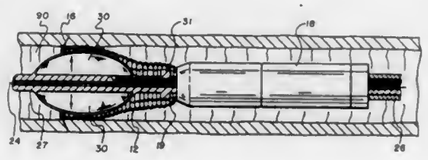
ARTIFICIAL GRAFT AND IMPLANTATION METHOD

Harrison M. Lazarus, Salt Lake City, Utah, assignor to Endovascular Technologies, Inc., Menlo Park, Calif.

Continuation of Ser. No. 175,491, Dec. 29, 1993, Pat. No. 5,397,343, which is a continuation-in-part of Ser. No. 34,587, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 752,058, Aug. 29, 1991, abandoned, which is a division of Ser. No. 166,093, Mar. 9, 1988, Pat. No. 5,104,399, which is a continuation-in-part of Ser. No. 940,907, Dec. 10, 1986, Pat. No. 5,787,899, which is a continuation of Ser. No. 559,935, Dec. 9, 1983, abandoned. This application Nov. 18, 1994, Ser. No. 342,438

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **9 Claims**



1. A method for implanting a prosthesis within a body lumen, the method comprising:
intraluminal emplacement of a vascular graft, said vascular graft being disposed about a catheter having an inflatable member;
expanding said inflatable member thereby expanding said vascular graft radially outwardly into contact with said body lumen; and
providing a substantially fluid-tight seal between said vascular graft and an interior surface of said body lumen.

5,662,701

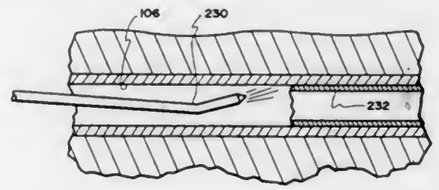
ANTI-STENOTIC METHOD AND PRODUCT FOR OCCLUDED AND PARTIALLY OCCLUDED ARTERIES

Mark Plaia, Tigard; Vincent A. Reger, Portland, and Gregory N. Nordgren, Wilsonville, all of Oreg., assignors to Endovascular Instruments, Inc., Vancouver, Wash.

Division of Ser. No. 73,002, Jun. 7, 1993, Pat. No. 5,571,169, which is a continuation-in-part of Ser. No. 56,224, May 4, 1993, abandoned, which is a continuation of Ser. No. 922,115, Jul. 28, 1992, Pat. No. 5,282,484, which is a continuation of Ser. No. 616,240, Nov. 20, 1990, abandoned, which is a division of Ser. No. 395,500, Aug. 18, 1989, abandoned. This application Mar. 13, 1995, Ser. No. 403,096

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **5 Claims**



1. A minimally invasive method of lining a vessel of a medical patient to alleviate reduced blood flow, comprising the steps of:
removing plaque through a small arteriotomy which was obtained from an arterial segment remote from the small arteriotomy;
immediately thereafter grabbing a tubular vascular graft with a clamping device without materially altering a lengthwise dimension of the graft;
forthwith introducing the tubular vascular graft into the vessel through the small arteriotomy under control of the clamping device;
immediately thereafter placing the tubular vascular graft within the vessel at the plaque removal site under control of the clamping device;
promptly causing adherence between the tubular vascular graft along the entire length of the graft and a theretofore unexposed interior surface of the vessel where plaque was removed, free of the clamping device.

5,662,702

INTRAVASCULAR GRAFT AND CATHETER

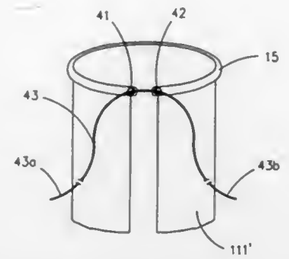
Victor J. Keranen, 410 Murray Hill Rd., Fayetteville, N.C. 28303

Continuation of Ser. No. 425,833, Apr. 20, 1995, Pat. No. 5,609,628. This application Aug. 30, 1996, Ser. No. 698,449

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **2 Claims**

1. An intravascular graft comprising: an elongate body having a flexible wall defining a tubular passageway, and opposite proximal and distal ends, and having a gap formed in and extending the length of said elongate body;
a proximal collar extending generally radially outwardly from said body proximal end;
a distal collar extending generally radially outwardly from said body distal end having a first tip and a second tip, said first tip having a first aperture formed therein and said second tip having a second aperture formed therein; and



a removable drawstring having a first end and a second end, said drawstring passing through said first aperture and said second aperture.

5,662,703

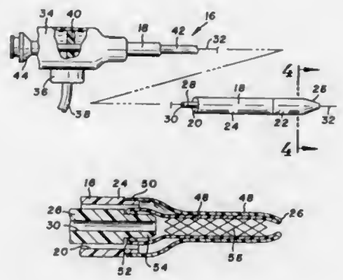
ROLLING MEMBRANE STENT DELIVERY DEVICE

Matthew T. Yurek, Bloomington, and Richard S. Kusleika, Eden Prairie, both of Minn., assignors to Schneider (USA) Inc., Plymouth, Minn.

Continuation-in-part of Ser. No. 421,960, Apr. 14, 1995, abandoned. This application Sep. 19, 1996, Ser. No. 716,052

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **54 Claims**



1. A device for deploying an expandable stent at a treatment site within a body; comprising:
a first catheter having a proximal end region and a distal end region;
a stent retaining member disposed at the distal end region of the first catheter and including an inner layer extending distally beyond the first catheter, said member being turned back upon itself to form an outer layer extending toward the first catheter, said inner layer adapted to retain an expandable stent in a reduced state along an axial length of the stent with the stent located distally of the first catheter; and
a moving means operable to displace the outer layer relative to the first catheter, thereby to displace the inner layer remove the member from its retaining relation to the stent, thus to release the stent for expansion at the treatment site;
wherein a distal end of the first catheter is positioned near a proximal end of the stent when the inner layer of the stent retaining member retains the stent, to abut the stent and thereby prevent any substantial proximal migration of the stent as the retaining member is removed.

5,662,704

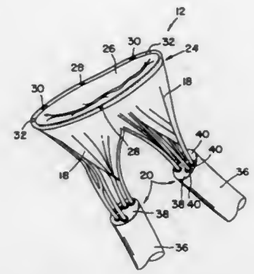
PHYSIOLOGIC MITRAL VALVE BIOPROSTHESIS

Jeffrey M. Gross, Mission Viejo, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 1, 1995, Ser. No. 566,229

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **27 Claims**



1. An implantable replacement mitral valve comprising:
a xenograft mitral valve including an annulus, cordae tendineae, unaltered papillary heads and a portion of the endocardium containing the papillary heads;
a sewing robe attached to the unaltered papillary heads and extending away from the cordae tendineae.

5,662,705

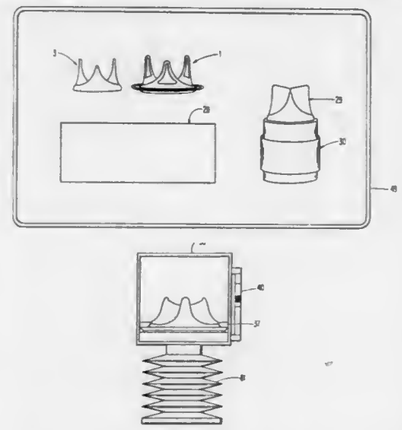
TEST DEVICE FOR AND METHOD OF TESTING RAPID ASSEMBLY TISSUE HEART VALVE

Charles S. Love, Camarillo; Jack W. Love, Santa Barbara, and John H. Calvin, Carpenteria, all of Calif., assignors to Autogenics, Glasgow, United Kingdom

Continuation of Ser. No. 209,598, Mar. 10, 1994, Pat. No. 5,531,784, which is a continuation of Ser. No. 925,586, Aug. 3, 1992, abandoned, which is a division of Ser. No. 646,001, Jan. 24, 1991, Pat. No. 5,163,955. This application Mar. 7, 1996, Ser. No. 610,809

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **3 Claims**



3. A method of testing a tissue heart valve during open heart surgery in which the tissue heart valve, manufactured during the open heart surgery, is sized to the open annulus remaining after the patient's heart valve has been excised, comprising the steps of:
cutting a piece of autologous tissue from the body of the patient during said open heart surgery;

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cutting said piece of autologous tissue into an appropriately sized and precisely-cut tissue having a plurality of holes configured to be registered with corresponding tissue alignment members of an appropriately sized first stent so that the tissue may be mounted between appropriately sized first and second stents without any additional cutting or trimming;

situating the tissue between the first and second stents and registering the plurality of holes in said tissue with corresponding tissue alignment members of said first stent, thereby preventing the tissue from substantially moving during valve assembly;

positioning the stents together to securely clamp the tissue therebetween thereby forming a heart valve;

mounting the constructed tissue heart valve on an appropriately sized mount in a test chamber;

displacing a volume of solution through the heart valve in a primary direction of fluid flow; and

visually inspecting the heart valve for any leakage through the heart valve after the solution has been displaced through the valve.

5,662,706

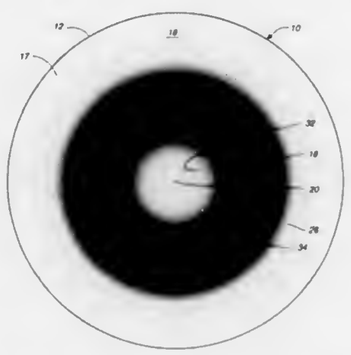
VARIABLE TRANSMISSIVITY ANNULAR MASK LENS FOR THE TREATMENT OF OPTICAL ABERRATIONS

Jerome A. Legerton, Los Gatos; Chun-Shen Lee, Cupertino; John M. Evans, Fremont, and Praful C. Doshi, Poway, all of Calif., assignors to PBH, Inc., Sunnyvale, Calif.

Filed Jun. 14, 1996, Ser. No. 663,622

Int. Cl.[6] A61F *2/16*

U.S. Cl. 623—6 **32 Claims**



1. A lens adapted to be worn on or implanted in the eye for correcting optical aberrations, comprising:

an aperture having a diameter of sufficient size so as not to be effective as or a substitute for refractive correction; and

an annular mask region surrounding the aperture wherein the annular mask region transmits less light energy than the aperture in a portion adjacent to an outer region of the aperture and more light energy towards an outer edge of the annular mask region than the portion adjacent to the outer region of the aperture without demarcation in the change in transmissivity within the annular mask region.

5,662,707

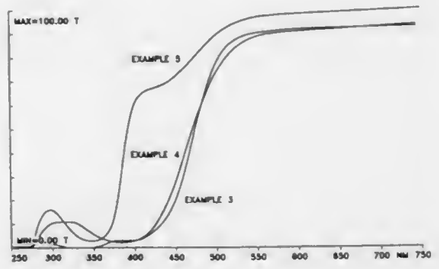
POLYMERIZABLE YELLOW DYES AND THEIR USE IN OPHTHALMIC LENSES

David L. Jinkerson, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 445,809, Jul. 5, 1995, abandoned, which is a continuation of Ser. No. 138,663, Oct. 18, 1993, Pat. No. 5,470,932. This application Jun. 21, 1996, Ser. No. 667,347

Int. Cl.[6] A61F *2/16;* **C08F** *226/02;220/10*

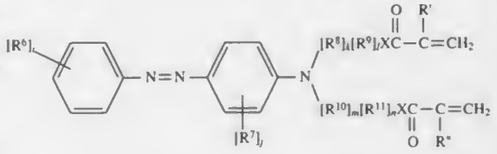
U.S. Cl. 623—6 **8 Claims**



1. A polymeric intraocular lens comprising:

one or more monomers selected from the group consisting of acrylate and methacrylate monomers, and

one or more polymerizable yellow dyes of the formula



wherein

R' and R" independently= H or CH_3;

R^6 and R^7 independently= H, C_1 to C_{20} alkyl, OCH_3, OC_2H_5, OC_3H_7, or OC_4H_9;

R^8, R^9, R^{10} and R^{11} independently= an acyclic organic spacing group of up to 10 atoms consisting of C, H, Si, O, N, P, S, Cl, Br or F, alone or in any combination;

i and j independently= the integer 1 or 2;

k and m independently=an integer from 1 to 6;

n and l independently= an integer from 0 to 6;

X= O, NH, NR^5;

R^5= C_1 to C_{10} alkyl.

5,662,708

RHEOLOGICALLY MODIFIED AND OSMOTICALLY BALANCED FILL MATERIAL FOR IMPLANT

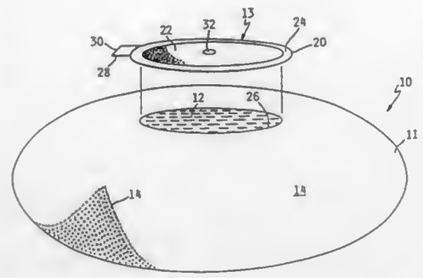
Thomas G. Hayes, Minneapolis; Kenneth C. Kredovski, Roseville, and Robert M. Hume, III, Woodbury, all of Minn., assignors to Novamed Medical Products Manufacturing, Inc., Minneapolis, Minn.

Filed Aug. 8, 1995, Ser. No. 512,584

Int. Cl.[6] A61F *2/12*

U.S. Cl. 623—8 **15 Claims**

1. A safe, rheologically modified, osmotically balanced, biocompatible, lubricating, water based, implant fill material for an implant for the body, the implant having an inner face, the implant fill material comprising, in combination: an aqueous dispersion which comprises a first polymeric agent and a second polymeric agent, with the first polymeric agent comprising a polymeric



osmotic control agent and with the second polymeric agent comprising a polymeric rheological agent selected from the group consisting of guar gum and guar gum derivatives, with the polymeric osmotic control agent being present in the dispersion in an amount effective to substantially balance the osmotic pressure of the implant with the osmotic pressure of the portion of the body into which it is implanted and such that the dispersion has an osmolarity of between about 250 and about 350 milliosmoles, with the osmotic control agent further being a lubricant to lubricate an inner face of the implant, with the polymeric rheological agent forming a three-dimensional network and being present in the dispersion in an amount effective such that the fill material forms a responsive gel, with the polymeric osmotic control agent being movable through the three-dimensional network, and with the fill material being biocompatible.

5,662,709

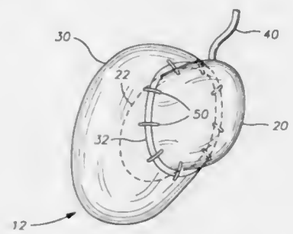
IMPLANT FOR IMPROVING THE SIZE AND SHAPE OF A TESTIS

James J. Elist, 9301 Wilshire Blvd., Suite 401, Beverly Hills, Calif. 90210

Filed May 9, 1996, Ser. No. 647,298

Int. Cl.[6] A61F *2/02*

U.S. Cl. 623—11 **4 Claims**



1. An implant device for improving the shape of, and expanding the girth of a testis, the device comprising:

a soft, flexible and generally spherical implantible body for implanting within a scrotum, the body providing a wall, defining an aperture in the wall and an aperture rim;

the aperture rim being of a size for fitting around a portion of the testis and for being attached thereto such that a testicular cord of the testis extends from the testis, and externally to the body, the body enclosing at least a portion of the testes.

5,662,710

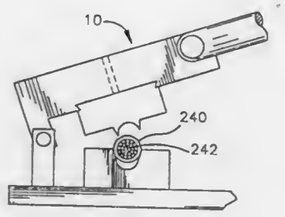
TISSUE PRESS METHOD OF USE

Peter M. Bonutti, 1303 W. Evergreen Pla., Effingham, Ill. 62401

Division of Ser. No. 273,028, Jul. 8, 1994, Pat. No. 5,545,222, which is a division of Ser. No. 728,247, Aug. 12, 1991, Pat. No. 5,329,846. This application Jan. 23, 1996, Ser. No. 590,193

Int. Cl.[6] A61F *2/02*

U.S. Cl. 623—11 **10 Claims**



7. A method of using human tissue, said method comprising the steps of removing tissue from a human body, enclosing the tissue removed from the human body with a retainer, said step of enclosing the tissue removed from the human body includes enclosing human tissue with a retainer formed of a material which expands when the material comes into contact with body fluids, and inserting the human tissue into a human body with the tissue in the retainer, said step of inserting the human tissue into a human body includes inserting the retainer into a human body at a location where the retainer is exposed to body fluids.

5,662,711

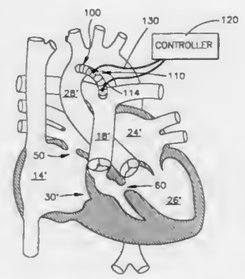
FLOW ADJUSTABLE ARTERY SHUNT

William Douglas, 18401 Newell Rd., Shaker Heights, Ohio 44122

Filed Jun. 7, 1995, Ser. No. 477,184

Int. Cl.[6] A61F *2/04*

U.S. Cl. 623—12 **27 Claims**



1. A method for treating a congenital heart defect, comprising the steps of:

a) implanting a shunt within a patient's chest cavity for communicating arterial blood to a pulmonary artery;

b) providing an adjustable flow restriction within said shunt for adjusting the blood flow rate in said shunt;

c) adjusting said flow restriction to maintain the oxygen level in said blood within desired limits.

5,662,712

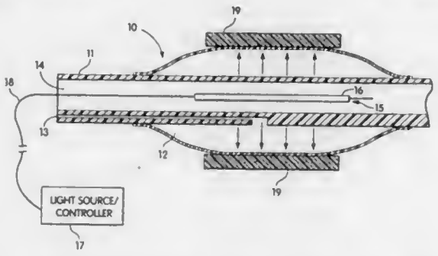
APPARATUS FOR INTRALUMINAL PHOTOTHERMOFORMING

Chandrashekhar P. Pathak, Waltham; Amarpreet S. Sawhney, Newton; Jeffrey A. Hubbell, Concord; Stephen J. Herman, Andover, all of Mass.; Laurence A. Roth, Windham, N.H.; Patrick K. Campbell, Georgetown; Kevin M. Berrigan, Woburn, both of Mass.; Peter K. Jarrett, Southbury, Conn., and Arthur J. Coury, Boston, Mass., assignors to Focal, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 54,385, Apr. 28, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,194

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—12 28 Claims



1. A device for implanting a formable polymeric article into a patient at a tissue surface, comprising:

an elongated shaft having a proximal region and a distal region that is adapted for insertion into a patient;

an article-forming element at the distal region of the shaft;

an emitter of a predetermined wavelength range of electromagnetic radiation at the distal region of the shaft; and

a polymeric article positioned on the device in association with the article-shaping element, the polymeric article containing a chromophore in an amount sufficient to absorb sufficient radiation from the emitter to soften the article to the extent that it becomes formable, the wavelength range of the emitter and the chromophore being matched such that, in conjunction with the arrangement of the emitter and the article, a surface of the polymeric article facing the tissue surface can be rendered sufficiently fluent to be moldable in vivo into intimate and conforming contact with the tissue surface without damaging the tissue surface.

5,662,713

MEDICAL STENTS FOR BODY LUMENS EXHIBITING PERISTALTIC MOTION

Erik Andersen, Roskilde, Denmark, and Ernst Peter Strecker, Karlsruhe, Germany, assignors to Boston Scientific Corporation, Watertown, Mass.

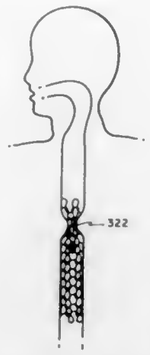
Continuation of Ser. No. 960,584, Oct. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 773,847, Oct. 9, 1991, Pat. No. 5,234,457. This application Sep. 14, 1995, Ser. No. 528,061

Int. Cl.[6] A61F 2/04;2/06

U.S. Cl. 623—12 21 Claims

1. A method for providing reinforcement to a selected region of a selected body lumen having a wall that is subject to characteristic peristaltic motion in which a localized radial contraction of the lumen progresses in a wave-like manner down the lumen, said lumen, because of said peristaltic motion, characteristically exhibiting transient localized lengthening of the lumen wall in an amount that conforms to a profile of the peristaltic contraction wave, the method comprising the steps of:

selecting for use in said lumen a tubular structural stent formed of a filament extending in a pattern of axially adjacent interlocked loops, the pattern and arrangement of said loops selected such that from a relaxed state of said loops, each of said loops is permitted to shift in the axial direction of the stent relative to and independently of loops distal thereof and proximal thereto, to permit transient localized lengthening of the stent with localized lengthening of corresponding portions of said lumen wall, the amount of said permitted shifting of said loops being sufficient to accommodate said wave profile without disturbing loops that engage other, at-rest portions of the lumen wall distal of and proximal to said wave profile, said shifting to permit localized stent lengthening being accommodated by bending of said filament, said permitted localized stent lengthening being by a factor (ϵ) defined by the ratio $\epsilon = l/s$, where l is the maximum extended length of said portion of said lumen that corresponds to said wave profile during contraction and s is the wall length of that portion of said lumen when at rest;



delivering said selected stent into said body lumen; and

positioning said stent in contact with said wall at said selected region in said body lumen;

whereby said stent can locally lengthen and shorten with the physiologic motions of said body lumen during peristalsis and thereby resist migration from said selected region.

5,662,714

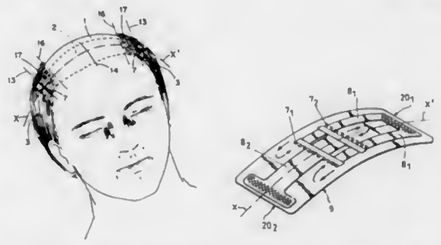
DEVICE FOR EXTENDING LIVING TISSUES

Guy Charvin, Antibes, and Patrick Frechet, 92, Avenue Mozart, 75016 Paris, both of France, assignors to M.X.M., Antibes, and Patrick Frechet, Paris, both of France

Continuation of Ser. No. 184,964, Jan. 21, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,195

Int. Cl.[6] A61F 2/10

U.S. Cl. 623—15 10 Claims



1. A device for permanently stretching a selected area of skin tissue, said skin tissue having an underneath side formed of one of a galea and hypoderma region and an outer surface comprising:

an integrally formed support plate having first and second ends and a mid-section therebetween and made from a semi-rigid biocompatible material;

at least two resilient means for placing skin tissue under a continuous tensile stretching force, each of the resilient means having a fixed end and a free end, each of the fixed ends of the resilient means respectively fixed to one of the ends of the support plate, each of the resilient means having a pre-biased resting length and a biased extended length, each of the resilient means being biased by displacement of the free end toward the end of the support plate opposite that resilient means fixed end;

at least two fastening means for securing skin tissue to the resilient means without sutures, each of the respective fastening means being attached to a respective free end of the resilient means and each of the fastening means adapted to be fixedly located along a respective region of skin tissue thereby defining respective lines of traction, wherein skin tissue to be stretched within each region is laterally outward of each of said lines of traction, said skin tissue regions opposed to each other and separated by an extent of skin tissue that is not to be stretched;

the mid-section of said support plate corresponding to the pre-biased resting length for each of the free ends of the resilient means when each of the resilient means are respectively at a pre-biased resting position, each of the resilient means disposed closely along a surface of the plate;

the plate adapted to be deformed into a contour matching underlying coextensive tissue underneath the skin tissue and being stationary relative to the underlying tissue when the device is implanted and operable under the skin tissue, the resilient means guides along the contour of the plate to closely follow the shape of the underlying coextensive tissue,

wherein each of the fastening means grip the skin tissue from said underneath side thereof and along a respective line of traction without extending through said outer surface of the skin tissue, each of the resilient means being at a biased extended position when initially fastened to said skin tissue and continuously exerting a force on the fastening means thereafter, thereby urging the lines of traction toward each other while stretching the skin tissue which lies outward of said lines of traction, until each of the resilient means returns to its respective pre-biased resting position, said skin tissue between the lines of traction being left unstretched.

5,662,715

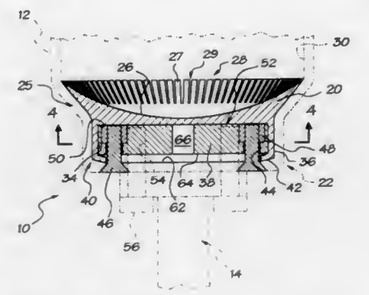
MODULAR INTERFACE CONNECTOR FOR A PROSTHETIC LIMB

Tracy C. Slemker, Clayton, Ohio, assignor to Materials Engineering and Development, Inc., Brookville, Ohio

Filed Jul. 19, 1995, Ser. No. 504,320

Int. Cl.[6] A61F 2/80

U.S. Cl. 623—36 4 Claims



2. A prosthetic limb, comprising:

a socket for receiving a wearer's residual limb, said socket having a distal end, an inner surface, and an extended portion at said distal end;

an upright assembly;

a coupling, releasably mounted within said extended portion, for attaching said upright assembly to said extended portion of said socket; and

an interface cushion having a proximate end and a distal end, releasably mounted within said extended portion over said coupling, such that said interface cushion protects the wearer's residual limb from said coupling;

said interface cushion includes a cavity in said distal end for receiving said coupling, said cavity having a mouth; and

a projection extending inwardly around said mouth, said projection providing an air-tight seal between said coupling and said inner surface of said socket.

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5,662,716

PROCESS FOR INCREASING STAIN-RESISTANCE OF CATIONIC-DYEABLE MODIFIED POLYAMIDE FIBERS

Yanhui Sun, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 28, 1996, Ser. No. 653,897
Int. Cl.[6] D06P *3/00;1/39*
U.S. Cl. 8—539 7 Claims

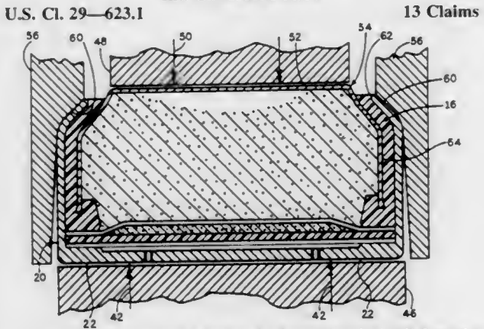
1. An improved process for dyeing polyamide fibers with an acid dyestuff in a dyebath, wherein the fibers comprise a polyamide copolymer which contains cationic-dyeable aromatic sulfonate salt group substituents along the polymer chain, and wherein the improvement comprises adding a water-soluble salt selected from the group consisting of ammonium, potassium, and sodium salts, and mixtures thereof to the dyebath at a concentration of at least 20% based on the weight of the fiber to produce acid dyed fibers having a stain-resistance rating of at least 8.0 on the AATCC Red 40 Stain Scale.

5,662,717

METAL-AIR CATHODE CAN HAVING REDUCED CORNER RADIUS AND ELECTROCHEMICAL CELLS MADE THEREWITH

John David Burns, Durham, United Kingdom, assignor to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 435,770, May 5, 1995. This application Mar. 18, 1996, Ser. No. 617,043
Int. Cl.[6] H01M *10/38*
U.S. Cl. 29—623.1 13 Claims



1. A method of making a metal-air electrochemical cell from the combination of an open-ended anode, received in an open-ended cathode, and an electrically insulating seal between adjacent elements of the anode and the cathode, the anode including an anode can and reactive anode material contained in the anode can, the cathode including a cathode can and a cathode assembly contained in the cathode can, the cathode can having a bottom, at least one side wall extending upwardly from the bottom, and an intermediate element extending between the bottom and the at least one side wall, the bottom having a first inner surface and a first outer surface, the first outer surface having a substantially flat portion extending radially outwardly to a finished outer perimeter of the first outer surface, the at least one side wall having a second inner surface defining a finished inner perimeter of the at least one side wall and a second outer surface defining a finished outer perimeter of the at least one side wall, the cathode can having a finished depth, the substantially flat portion of the bottom extending radially outwardly of the second inner surface of the at least one side wall, the method comprising the steps of:

(a) fabricating a metal pre-form can, the pre-form can having an inside surface and an outside surface, defined by a pre-form bottom, and at least one pre-form side wall extending upwardly from the pre-form bottom, the pre-form bottom having a pre-form first inner surface, a pre-form first outer surface, and a pre-form first outer perimeter, the at least one pre-form side wall having a pre-form second inner surface and a pre-form second outer surface, a pre-form intermediate element extending between the pre-form bottom and the at least one pre-form side wall, the at least one pre-form side-wall comprising a pre-form inner perimeter extending about the pre-form first inner surface thereof, and a pre-form second outer perimeter extending about the pre-form second outer surface, the pre-form can having a pre-form depth, the pre-form intermediate element comprising a pre-form curvilinear third outer surface extending between the pre-form second outer surface and the pre-form first outer perimeter, a pre-form curvilinear third inner surface extending between the pre-form second inner surface and the pre-form first inner surface, the pre-form curvilinear third outer surface extending inwardly of the preform second inner surface, such that a force directed against the bottom of the pre-form can can be transmitted away from the bottom, and into the pre-form at least one side wall in a straight line only where the line is transverse to the pre-form second inner surface of the pre-form at least one side wall;

(b) press-forming the pre-form can fabricated in step (a) in a pressing step to make the finished cathode can having the finished dimensions, comprising (i) forming the pre-form can on the inside surface thereof with a first die element of a die set, the first die element comprising a small radius edge disposed against the pre-form curvilinear third inner surface to thereby reduce the pre-form curvilinear third inner surface, and (ii) concurrently forming the pre-form can on the outside surface thereof with a second die element of the die set, to re-shape the pre-form curvilinear third outer surface, and to thereby make the curvilinear third outer surface to be disposed substantially entirely outside the finished inner perimeter of the at least one side wall;

(c) placing the anode and cathode in juxtaposed relation to each other, with the seal disposed in position for being assembled between adjacent elements of the anode and the cathode; and

(d) urging the cathode and the anode toward each other, and the cathode against a crimping die element with a first force sufficient to bring the anode into assembled relation inside the cathode can, with the seal between adjacent elements of the anode can and the cathode can, and to concurrently crimp the distal edges of the at least one side wall of the cathode can, through use of the crimping die element, against the seal and against the anode can, to thereby join the cathode to the anode in assembling the electrochemical cell; and

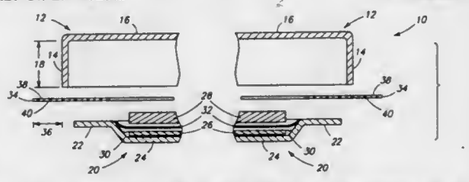
(e) while urging the cathode against the crimping die element and crimping the distal edges of the cathode can against the seal and the anode, urging the anode can toward the cathode with a force of no more than 135 pounds.

5,662,718

METHOD OF FORMING THIN PROFILE BATTERIES AND A THIN PROFILE BATTERY INSULATING AND SEALING GASKET

Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.

Continuation of Ser. No. 348,543, Dec. 1, 1994, abandoned. This application May 16, 1996, Ser. No. 649,925
Int. Cl.[6] H01M *10/12*
U.S. Cl. 29—623.1 19 Claims



1. A method of forming a thin profile battery defined by a thickness which is less than a maximum linear dimension of its anode, comprising the following steps:

providing a conductive first terminal housing member having a surrounding peripheral portion and a central portion intermediate the surrounding peripheral portion, the surrounding peripheral portion comprising a transversely projecting peripheral container wall;

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providing a conductive second terminal housing member having a surrounding peripheral portion and a central portion intermediate its surrounding peripheral portion;

positioning the second terminal housing member and the first terminal housing member in facing juxtaposition to one another, and providing an anode, a cathode and an electrolyte intermediate the first and second terminal housing member central portions;

providing a peripheral insulative sealing gasket in an intermediate position between the first and second terminal housing members, the insulative sealing gasket being in the shape of an annulus and having a radial extent which extends radially outward beyond the surrounding peripheral portions of the first and second terminal housing members, the insulative sealing gasket having opposing first and second faces, the first face facing the first terminal housing member, the second face facing the second terminal housing member;

moving at least one of the juxtaposed first and second terminal housing members in the direction of the other to push the first terminal housing member container wall against the first gasket face and to simultaneously force the second terminal housing member peripheral portion against the second gasket face, and continuing such moving to bend the insulative gasket about the container wall and force it to be received within the first terminal housing member; and

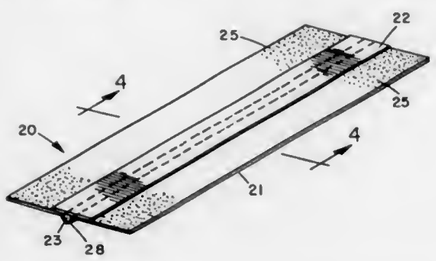
after the moving step, crimping the container wall and sealing gasket against the peripheral portion of the second terminal housing member to form an enclosed housing which retains and protects the anode, cathode and electrolyte; the insulative gasket insulatingly sealing between the crimped container wall and the second terminal housing member peripheral portion.

5,662,719

LIGHTER APPARATUS

Robert Dawson, New South Wales, and Clive Featherby, Queensland, both of Australia, assignors to Four-D Enterprises, Inc., San Diego, Calif.

Filed May 9, 1996, Ser. No. 644,174
Claims priority, application Australia, May 9, 1995, PN2878
Int. Cl.[6] C10L *11/06*
U.S. Cl. 44—506 **10 Claims**



1. An igniter tape, comprising:

an elongate carrier tape having opposite first and second faces and opposite longitudinal side edges;

a fuel supply disposed in a continuous strip extending lengthwise along the first face of the carrier tape, the fuel supply strip being spaced inwardly from the side edges of the carrier tape; and

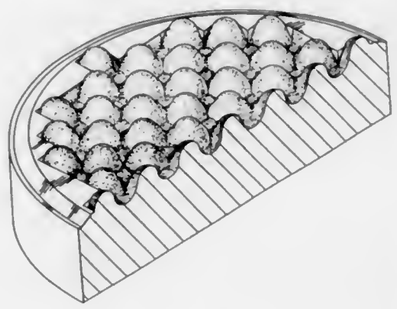
a closure layer for enclosing the fuel supply on the carrier tape.

5,662,720

COMPOSITE POLYCRYSTALLINE DIAMOND COMPACT

Eoin M. O'Tighearnaigh, Dublin, Ireland, assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 26, 1996, Ser. No. 591,879
Int. Cl.[6] B24D *11/00*
U.S. Cl. 51—295 **8 Claims**



1. A cutting element, comprising:

a polycrystalline material layer; and

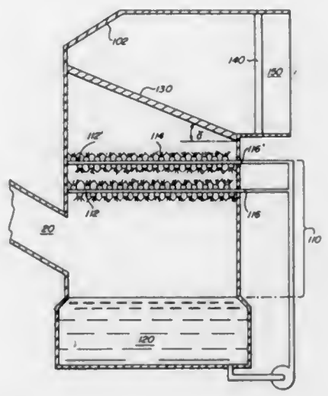
a substrate comprising metal carbide; wherein said polycrystalline material layer and said substrate form interface, said interface comprises a plurality of alternating arc-shaped concaves and convexes.

5,662,721

ENTRAINMENT SEPARATOR FOR HIGH VELOCITY GASES

Gerald E. Bresowar, Homewood, Ala., assignor to ABB Environmental Systems, Div.of ABB Flakt, Inc., Knoxville, Tenn.

Division of Ser. No. 257,085, Jun. 9, 1994, Pat. No. 5,486,341.
This application Jan. 18, 1996, Ser. No. 588,427
Int. Cl.[6] B01D *47/00*
U.S. Cl. 55—257.1 **10 Claims**



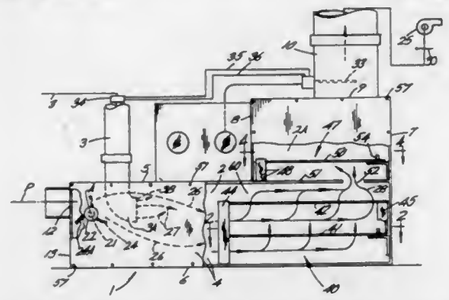
1. A gas-liquid contact apparatus for scrubbing flue gases in a scrubbing tower comprising a vertical scrubbing section and positioned above and across said scrubbing section, a single pass entrainment separator positioned in a manner effective to reduce the quantity of droplets entrained in the gas and to turn the direction of flow of the flue gases to an orientation effective for passage through a well-drained, horizontal-flow mist eliminator.

5,662,722

AIR AND GAS MIXING APPARATUS WITH REMOVABLE BAFFLE PLATES

Samir S. Shiban, Beaverton, Oreg., assignor to Innovative Engineering Solutions, Inc., Beaverton, Oreg.

Filed Aug. 1, 1995, Ser. No. 509,829
Int. Cl.[6] B01D *45/08*
U.S. Cl. 55—413 **4 Claims**



1. In an air and hazardous gas mixing apparatus having a chamber defined by walls, the improvement comprising,

perforate metal plate members each defining a multitude of apertures, said plate members each having oppositely disposed surfaces thereon for the deposit of particles resulting from the reaction of air mixing with a hazardous gas, and

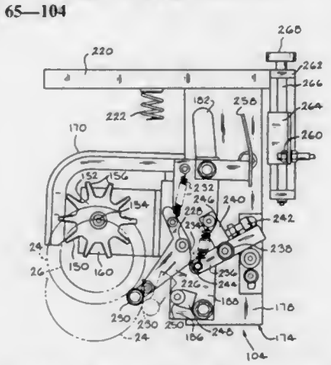
support means supporting said plate members in a fixed manner relative said walls and permitting removal and reinstallation of the plate members, said support means including retention means in inserted engagement with one of said plate members, said retention means including a post, said post located in the apparatus chamber in a manner to locate said plate members in abutment with at least one of said walls of the apparatus.

5,662,723

APPARATUS AND METHOD FOR FORMING A DECORATIVE PATTERN ON GLASSWARE HAVING AN EDGE

Robert R. Dickens, Toledo, Ohio, assignor to Libbey Glass Inc., Toledo, Ohio

Filed Mar. 22, 1996, Ser. No. 620,595
Int. Cl.[6] C03B *23/00;23/09*
U.S. Cl. 65—104 **17 Claims**



1. An apparatus for forming a decorative pattern on glassware having an edge positioned adjacent a moil burnoff spindle machine including at least one spindle for holding said glassware, comprising:

a base;

a forming tool mounted on said base, said tool being movable between a first position and a second position, said tool engaging said edge of said glassware at said second position to form said decorative pattern on said edge;

actuating means for moving said tool from said first position to said second position;

control means for controlling said actuation means; and

tracking means for causing said tool to follow said spindle.

5,662,724

ARTIFICIAL SOIL COMPOSITION AND A METHOD OF GROWING VEGETATION ON A SLOPED SURFACE

Young Koo Kim, 481-5 Galhyun-dong, Eunpyung-gu, Seoul, Rep. of Korea, 122-050

Division of Ser. No. 97,888, Jul. 28, 1993, Pat. No. 5,607,494.
This application Sep. 30, 1996, Ser. No. 722,984
Int. Cl.[6] C05F *11/02;11/08*
U.S. Cl. /1—6 **4 Claims**



1. A method of growing vegetation on a sloped surface comprising the steps of:

a) affixing a meshing over the sloped surface;

b) applying a composition comprising peat in a concentration range of between about 10% to 30% by weight, granular soil in a concentration range of between about 10% to 30% by weight, sewage sediment in a concentration range of between about 40% to 60% by weight and pulp sludge in a concentration range of between about 25% to 45% by weight, wherein the pulp sludge has a chemical composition comprising about 12% to 49% by weight organic matter; about 0.1% to 0.7% by weight total nitrogen; about 0.05% to 3% by weight phosphorous; about 0.1% to 0.4% by weight potassium; about 2.1% to 2.4% by weight calcium; about 3% to 5% by weight cellulose; and about 15% to 20% by weight lignin over the meshing so as to form a layer of artificial soil; and

c) planting vegetation in said layer of artificial soil.

5,662,725

SYSTEM AND DEVICE FOR REMOVING IMPURITIES FROM MOLTEN METAL

Paul V. Cooper, 11247 Lake Forest Dr., Chesterland, Ohio 44026

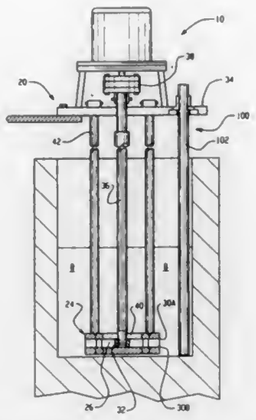
Filed May 12, 1995, Ser. No. 439,739
Int. Cl.[6] B22D *41/58*
U.S. Cl. 75—680 **22 Claims**

1. A system for removing impurities from molten metal comprising:

a) a pump for creating a molten metal stream, said pump having a pump chamber including an outlet port with a top, a bottom, and two upwardly extending sides, through which said molten metal stream passes;

b) a gas-release device positioned outside of said pump chamber adjacent the bottom of said outlet port, said gas-release device having one or more gas-release bores; and

c) a gas-transfer device for transferring gas to said gas-release device, said gas-transfer device connected to said gas-release device;



Whereby molten metal is pumped through said outlet port past said gas-release device and gas is introduced into said gas-transfer device to said gas release device where gas escapes through said gas-release bores and rises into the molten metal stream.

5,662,726

METHOD FOR SEPARATION OF NITROGEN AND CARBON DIOXIDE BY MEANS OF SEPIOLITE AS SEPARATION MEDIUM

Masakazu Horio, Konan; Kenzi Suzuki, Aichi-ken; Shinji Tomura, and Keiichi Inukai, both of Nagoya, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 5, 1996, Ser. No. 610,875

Claims priority, application Japan, Mar. 24, 1995, 7-091695

Int. Cl.[6] B01D *53/04*

U.S. Cl. 95—139 **3 Claims**

1. A method for separating carbon dioxide and nitrogen from a mixed gas consisting of carbon dioxide and nitrogen, which comprises treating sepiolite with nitric acid, subjecting the treated sepiolite to an ion-exchange treatment with Mg ions, heating the sepiolite resulting from said ion-exchange treatment to form a heat treated sepiolite, and exposing said heat treated sepiolite to said mixed gas.

5,662,727

TWIN TOWER AIR DRYER FOR AN AIR COMPRESSOR UNIT

T. Kevin Castle, Wellford, and Michael V. Kazakis, Simpsonville, both of S.C., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 6, 1996, Ser. No. 597,076

Int. Cl.[6] B01D *29/66*

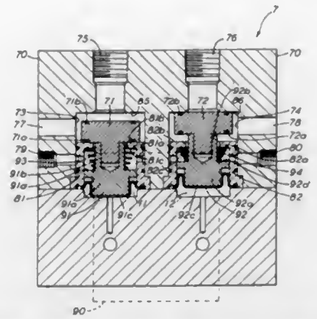
U.S. Cl. 96—130 **22 Claims**

1. A twin tower gas drying system for cleaning and drying a stream of unpurified pressurized gas received from a source thereof for use by a pneumatic system, said gas drying system comprising:

(a) a means, disposed within said gas drying system, for initially separating from such stream of unpurified gas moisture and other particulates suspended therein as such unpurified gas flows through said separating means;

(b) two coalescing elements each of which for removing moisture remaining within such stream of unpurified gas flowing from said separating means;

(c) a first tower having a first desiccant material therein for removing moisture remaining within such stream of unpurified gas received from a first of said coalescing elements so as to supply a first stream of purified gas therefrom;



(d) a second tower having a second desiccant material therein for removing moisture remaining within such stream of unpurified gas received from a second of said coalescing elements so as to supply a second stream of purified gas therefrom; and

(e) a means for controlling flow of such unpurified and purified streams of gases through said gas drying system such that said gas drying system alternately switches between (i) extracting moisture from such unpurified gas passing through said first coalescing element then through said first desiccant material so as to supply such pneumatic system with an output percentage of such first stream of purified gas while purging moisture both previously collected in said second desiccant material and in said second coalescing element by passing a purge percentage of such first stream of purified gas through said second tower then through said second coalescing element and expelling such remoisturized gas to atmosphere via said means for controlling flow and (ii) extracting moisture from such unpurified gas passing through said second coalescing element and then through said second desiccant material so as to supply such pneumatic system with an output percentage of such second stream of purified gas while purging moisture both previously collected in said first desiccant material and in said first coalescing element by passing a purge percentage of such second stream of purified gas through said first tower then through said first coalescing element and expelling such remoisturized gas to atmosphere via said means for controlling flow.

5,662,728

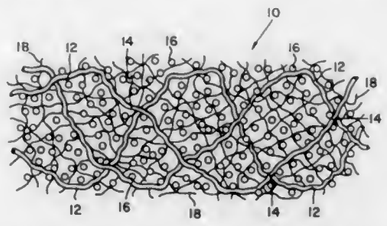
PARTICULATE FILTER STRUCTURE

Herbert Gunter Groeger, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 31, 1992, Ser. No. 999,029

Int. Cl.[6] B01D *50/00;53/02*

U.S. Cl. 96—153 **16 Claims**



1. A particulate filter structure comprising a thermally bonded, three dimensional, fibrous framework comprising composite structural fibers having a denier of at least 30 dpf and comprising a structural component and a first lower melting component, said first lower melting component bonding said fibrous framework together at the cross over points; composite filtration fibers of relatively smaller denier than said structural fibers distributed within and bonded to said fibrous framework and comprising a higher melting component and a second lower melting component, wherein said filtration fibers have a denier of from about 1 to 30 dpf; and functional particulate distributed within said fibrous framework and entrapped in interstices formed by said filtration fibers and bonded by said second lower melting component to said filtration fibers; wherein said structural fibers comprise up to about 10 percent of the total weight of said particulate filter structure.

5,662,729

SHAPED BODY OF HYDROGEN ABSORBING ALLOY AND CONTAINER PACKED WITH HYDROGEN ABSORBING ALLOY

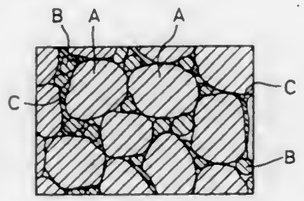
Koichi Nishimura, Suita; Takahiro Yonesaki, Ora-gun; Shin Fujitani, Hirakata; Hiroshi Nakamura, Neyagawa; Yumiko Nakamura, Moriguchi; Ikuo Yonezu, and Hiroshi Watanabe, both of Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 3, 1995, Ser. No. 538,371

Claims priority, application Japan, Oct. 4, 1994, 6-239939; Oct. 7, 1994, 6-270508; Oct. 31, 1994, 6-266444

Int. Cl.[6] C22C *19/03*

U.S. Cl. 75—252 **14 Claims**



1. A hydrogen absorbing alloy shaped body comprising a press shaped mixture of a first hydrogen absorbing alloy powder A having a first particle-size distribution, a second hydrogen absorbing alloy powder B having a second particle-size distribution and a binder C, wherein the powder A has a larger mean particle size than the powder B, wherein the mean particle size ratio r_B/r_A of the powder B to the powder A, wherein r_A and r_B are the mean particle sizes of the respective powder A and B, is at least 0.03 to not greater than 0.50.

5,662,730

METHOD FOR PYROMETALLURGICAL SMELTING OF COPPER

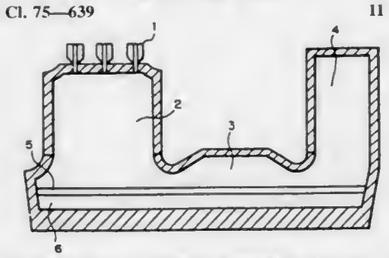
Susumu Akagi; Takayoshi Fujii; Masatoshi Maeda, and Yoshiaki Suzuki, all of Oita, Japan, assignors to Nippon Mining & Metals Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1995, Ser. No. 567,839

Claims priority, application Japan, Dec. 8, 1994, 6-330439

Int. Cl.[6] C22B *15/00*

U.S. Cl. 75—639 **11 Claims**



1. A method for pyrometallurgical smelting of copper, comprising

providing a flash smelting furnace having a reaction shaft;

charging a concentrate into the furnace, said concentrate containing copper, iron and an amount of sulfur sufficient to enable flash smelting of copper to occur, thereby forming a matte and a slag in said flash smelting furnace;

charging a carbonaceous material in said reaction shaft, wherein said carbonaceous material comprises at least 80% by weight fixed carbon content, and said carbonaceous material is in the form of grains, such that a proportion of said grains having a grain size of less than 100 μm is at least 65%, and a proportion of said grains having a size of 44 to 100 μm is at least 25%;

burning a part of the carbonaceous material in the reaction shaft;

incorporating another part of the carbonaceous material in the slag, such that almost no floating layer of the carbonaceous material is formed on the slag.

5,662,731

COMPOSITIONS FOR MANUFACTURING FIBER-REINFORCED, STARCH-BOUND ARTICLES HAVING A FOAMED CELLULAR MATRIX

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 288,664, Aug. 9, 1994, and Ser. No. 288,667, Aug. 9, 1994, which is a continuation-in-part of Ser. No. 218,971, Mar. 25, 1994, Ser. No. 109,100, Aug. 18, 1993, abandoned, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, and Ser. No. 982,383, Nov. 25, 1992, abandoned, each which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 288,664is a continuation-in-part of Ser. No. 929,898. This application Oct. 21, 1994, Ser. No. 327,524

Int. Cl.[6] C04B *14/38;* **C08L** *3/02*

U.S. Cl. 106—206.1 **31 Claims**

1. A starch-based composition for molding into an article having a starch-bound cellular matrix, the starch-based composition comprising water, a starch-based binder in a concentration greater than about 20% by weight of the starch-based composition, and a fibrous material having an average fiber length greater than about 2 mm and an aspect ratio greater than about 10:1, wherein the fibers are substantially homogeneously dispersed throughout the starch-based composition, wherein the starch-based binder includes a substantially ungelatinized component comprising unmodified starch granules in an amount in a range from about 50% to about 90% by weight of the starch-based binder and a substantially gelatinized component comprising gelatinized starch in an amount in a range from about 10% to about 50% by weight of the starch-based binder prior to molding the composition into the article.

5,662,732

POLISH COMPOSITION

Julie A. Kelley, Huntington Valley, and Susan M. Grillo, Lansdale, both of Pa., assignors to BPSI Holdings, Inc., Wilmington, Del.

Filed Aug. 9, 1996, Ser. No. 689,398

Int. Cl.[6] A61K *9/42*

U.S. Cl. 106—271 **20 Claims**

1. A wax polish composition for coating pharmaceutical tablets and food/confectionery items to impart gloss thereto, comprising

wax,

water, and

an emulsifier,

the emulsifier comprising a combination of polyoxyethylene 80 sorbitan monolaurate and acetylated monoglyeride,

the emulsifier being in a range of about 9.46% to 9.60% by weight of the composition, and

the emulsifier having an HLB value of about 9.45.

5,662,733

VISCOSITY AND GEL STRENGTH OF ORGANIC ADHESIVE COMPOSITIONS BY THE ADDITION OF ACIDIC MATERIALS

Alice P. Hudson, Jupiter, and James E. Nevin, Boynton Beach, both of Fla., assignors to Surface Chemists of Florida Inc, Riviera Beach, Fla.

Filed Apr. 10, 1996, Ser. No. 630,160
Int. Cl.[6] C09J *195/00*
U.S. Cl. 106—278 9 Claims

1. An organic coating composition comprising:
at least one asphalt cutback,
at least one clay mineral,
at least one cationic surfactant, and
at least one polyfunctional acid with a pK_A value less than about 5;
wherein said clay mineral is present at about 2 to about 25 percent by weight of said asphalt cutback, said cationic surfactant is present at about 5 to about 33 percent by weight of said clay mineral, and said acid is present at about 5 to about 50 percent by weight of said cationic surfactant; the weight ratio of clay mineral to acid is at least about 5 to 1, and the acid is present at a maximum level of about 1 percent by weight of the final composition.

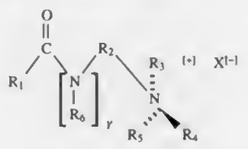
5,662,734

INK COMPOSITIONS HAVING IMPROVED OPTICAL DENSITY CHARACTERISTICS

Richard G. Crystal, Los Altos, Calif., assignor to Graphic Utilities, Inc., Concord, Mass.

Filed Nov. 13, 1995, Ser. No. 558,143
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.75 13 Claims

1. An aqueous pigment-based ink jet ink composition having improved optical density and print sharpness, comprising:
a) a water-based carrier medium;
b) pigment particles stabilized by a dispersing agent; and
c) an optical density enhancer, said optical density enhancer is selected from the group consisting of hydroxy sultaines, quaternary ammonium compounds, and solutions of quaternary ammonium compounds, said quaternary ammonium compounds having the general structure:



wherein:
i) R_1 is selected from the group consisting essentially of a hydroxyl radical; C_1–C_{22} alkyl, alkene or aryl radical; and C_{10}–C_{22} alkyl, alkene or aryl oxide radical;
ii) R_2 is selected from the group consisting essentially of linear alkyls having from about one to about five carbons;
iii) R_3, R_4, and R_5 are selected from the group consisting of linear alkyls, and branched alkyls having from about one to about five carbons;
iv) R_6 is selected from the group consisting essentially of H, C_1–C_3 alkyls, and C_1–C_3 alkenes;
v) Y is 1 or 0; and
vi) X is selected from the group consisting of halide anions, hydroxyl radical, sulfur-based anions, nitrogen- based anions, and phosphorus-based anions.

5,662,735

CHEMICAL SOLUTION FOR DETECTING COUNTERFEIT PAPER CURRENCY

Piergiorgio Pifferi, Bologna, Italy

PCT No. PCT/IT94/00107, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/02869, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 6, 1994, Ser. No. 569,237
Claims priority, application Italy, Jul. 14, 1993, BO93A0324
Int. Cl.[6] C09D *11/00;* B41M *3/14*
U.S. Cl. 106—31.2 23 Claims

1. A chemical solution to detect counterfeit paper currency comprising metallic iodine of 99.9% purity, and a solvent selected from the groups consisting of alcohols, polyalcohols, ketones, esters of the alcohols or the polyalcohols, with formic, acetic, propionic or lactic acid, ethers of methyl, ethyl, propyl, or butyl alcohols, or of the polyalcohols, mixtures of solvents selected from one or more of the groups, the selected solvent being not completely soluble in water and being mixed, at a temperature of 20° C. with distilled water in a volumetric ratio ranging from 99 percent to the volume of saturation of the selected solvent with the distilled water, at the temperature of 20° C., the metallic iodine dissolved at a temperature of 20° C., in the selected solvent.

5,662,736

HOT MELT INK

Jun Sakai, and Yoshito Toyoda, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 16, 1996, Ser. No. 633,034
Claims priority, application Japan, Apr. 25, 1995, 7-100815
Int. Cl.[6] C09D *11/12;11/08*
U.S. Cl. 106—31.29 22 Claims

1. A hot melt ink comprising:
at least one wax;
at least one color ink material;
a first resin having a softening point ranging from room temperatures to 100° C.; and
a second resin having a softening point ranging from 50° C. to 150° C. and higher than the softening point of the first resin, wherein the first and second resins are analogous resins.

5,662,737

METHOD FOR MAKING RARE EARTH METAL OXIDE CERAMIC PRECURSOR COMPOUNDS AND USE THEREOF

Kuo-Chun Chen, Encinitas, Calif., assignor to Quantum Group, Inc., San Diego, Calif.

Filed May 13, 1996, Ser. No. 645,105
Int. Cl.[6] C07F *5/00;* C09K *3/00*
U.S. Cl. 106—287.18 12 Claims

1. A rare earth metal oxide ceramic precursor composition made by:
reacting a rare earth metal alkoxide with a complexing agent in a reaction solvent to give a mixture of complexing agent-alkoxide rare earth metal compounds in the reaction solvent;
hydrolyzing the mixture of complexing agent-alkoxide-rare earth metal compounds to give the rare earth metal oxide ceramic precursor composition mixed with the reaction solvent; and
isolating the rare earth metal oxide ceramic precursor composition from the reaction solvent.

5,662,738

LUSTER PIGMENTS BASED ON MULTIPLY COATED PLATELETLIKE METALLIC SUBSTRATES

Raimund Schmid, Neustadt, and Norbert Mronga, Dossenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 54,091, Apr. 30, 1993, Pat. No. 5,364,467.
This application Jul. 22, 1994, Ser. No. 278,969
Claims priority, application Germany, May 27, 1992, 42 175 11.9
Int. Cl.[6] C09C *1/62*
U.S. Cl. 106—404 6 Claims

1. A process for preparing a luster pigment, comprising the following successive steps:
(A) decomposing a volatile metal compound in the gas phase in the presence of oxygen and/or water vapor to coat a platelet-shaped substrate of aluminum or an alloy thereof with a first colorless or selectively absorbing layer of metal oxide, then
(B) coating said first colorless or selectively absorbing layer of metal oxide with a non-selectively absorbing carbon layer by thermally decomposing an oxygen-containing hydrocarbon having a ratio of oxygen atoms to carbon atoms of at least 1 to 2, and
(C) if desired, decomposing a volatile metal compound in the gas phase in the presence of oxygen and/or water vapor to coat a second colorless or selectively absorbing layer of metal oxide on said non-selectively absorbing layer.

5,662,739

USE OF FATTY ACID TAURIDES FOR THE DISPERSION OF POLYCYCLIC PIGMENTS

Manfred Urban, Wiesbaden, Germany, and Erwin Dietz, Wilmington, Del., assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jan. 5, 1995, Ser. No. 368,898
Claims priority, application Germany, Jan. 7, 1994, 44 00 329.3
Int. Cl.[6] C09B *48/00*
U.S. Cl. 106—497 13 Claims

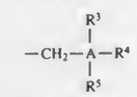
1. A pigment preparation consisting essentially of
a) a pigment from the class of the quinacridones or dioxazines,
b) one or more of the fatty acid taurides of the formula (I)

$$R^1—CO—NR^2—(CH_2)_n—SO_3^- M^+ \quad (I)$$

in which
R^1 is a straight-chain or branched alkyl group having from 10 to 24 carbon atoms and
R^2 is a hydrogen atom or a C_1–C_6-alkyl group,
M^+ is a hydrogen ion, alkali metal ion or alkaline earth metal ion and n is 1 or 2, and
c) optionally a pigment dispersing agent of the formula (II)

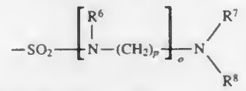
$$P\text{-}[X]_m \quad (II)$$

in which
P is an m-valent radical of a pigment based on a quinacridone or dioxazine,
m is from 1 to 4 and
X is a group of the formula (III)



(III)

in which A is a five- or six membered aromatic heterocycle which optionally is fused and which contains from 1 to 3 identical or different heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, and the heterocycle is attached to the methylene group via a carbon atom, R^3 and R^4 are a hydrogen atom, a C_1–C_4-alkyl, C_2–C_4-alkenyl or aryl group, and R^3 and R^4 optionally together form an aliphatic or aromatic ring, and R^5 is a hydrogen atom or a C_1–C_4-alkyl, C_1–C_3-hydroxyalkyl or C_2–C_4-alkenyl group, or in which
X is a group of the formula (IV)



(IV)

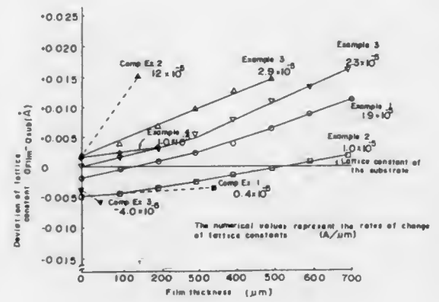
in which R^7 and R^8 independently of one another are each a hydrogen atom or a C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl or C_5–C_7-cycloalkyl group, or in which R^7 and R^8 together with the adjacent nitrogen atom are an aliphatic or aromatic five- or six-membered heterocyclic system containing as ring members in each case from 1 to 3 identical or different heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur, and R^6 is a hydrogen atom or a C_1–C_4-alkyl group, p is 1 to 6 and o is 1 or 2.

5,662,740

PROCESS FOR PRODUCING THIN FILM BY EPITAXIAL GROWTH

Kazuhito Yamasawa; Atsushi Oido; Akio Nakata, and Nobuya Uchida, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 25,193, Mar. 2, 1993, Pat. No. 5,434,101.
This application Oct. 17, 1994, Ser. No. 323,961
Claims priority, application Japan, Mar. 3, 1992, 4-078765
Int. Cl.[6] C30B *21/02*
U.S. Cl. 117—11 5 Claims



1. A process of producing a single crystal film by epitaxy on a single crystal substrate by continuously contacting a liquid or gaseous material for said single crystal film with a surface of said single crystal substrate having a lattice constant, characterized in that an initial lattice constant of the single crystal film and the lattice constant of the single crystal substrate deviate from each other by not more than ±0.2% and, with the progress of growth, deviation of the lattice constant of the single crystal film from the initial lattice constant of the single crystal film is continuously increased.

5,662,741

PROCESS FOR THE IONIZATION OF THERMALLY GENERATED MATERIAL VAPORS AND A DEVICE FOR CONDUCTING THE PROCESS

Horst Ehrich, Dorsten, Germany, assignor to Plasco Dr. Ehrich Plasma-Coating GmbH, Heldesheim, Germany

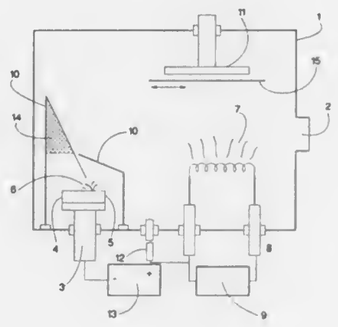
PCT No. PCT/EP93/00009, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO93/14240, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 6, 1993, Ser. No. 256,556

Claims priority, application Germany, Jan. 10, 1992, 42 00 429.2

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 VE 11 Claims



1. A process for ionizing thermally generated material vapors comprising, in combination:

(a) generating said vapors in a vacuum chamber by applying a thermal evaporation device to vaporize a solid in said chamber, said thermal evaporation device operating at an evaporation speed and being activated by an energy supply;

(b) generating electrons from cathode spots of a cold cathode in said chamber, said cold cathode being powered by a power supply substantially independent of the energy supply of said thermal evaporation device;

(c) exposing said vapor to said electrons by operating said thermal evaporation device as an anode in relation to said cold cathode, so that a vacuum arc discharge having an arc discharge current forms between said cold cathode and said thermal evaporation device as anode, whereby said vapor is ionized by said electrons;

(d) controlling said evaporation speed by adjusting power input to said thermal evaporation device from said energy supply, substantially independent of said arc discharge current; and

(e) controlling ionization of said vapor by adjusting power supplied to said cathode by said power supply and thereby adjusting said arc discharge current.

5,662,742

EQUIPMENT FOR MANUFACTURING A SEMICONDUCTOR DEVICE USING A SOLID SOURCE

Hiroshi Kohno, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

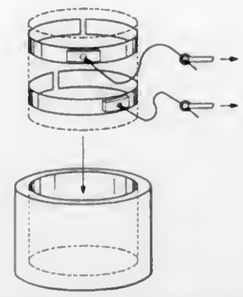
Filed Sep. 27, 1996, Ser. No. 723,985

Claims priority, application Japan, Oct. 26, 1995, 7-278679

Int. Cl.[6] C23C *14/00*

U.S. Cl. 118—726 5 Claims

1. An equipment for manufacturing a semiconductor device, comprising:



a solid source that generates one of molecular beams and atomic beams from an upper surface thereof; and

means for measuring resistance of said solid source.

5,662,743

METHOD OF CLEANING SILICON WAFERS IN CLEANING BATHS WITH CONTROLLED VERTICAL SURFACE OSCILLATIONS AND CONTROLLED IN/OUT SPEEDS

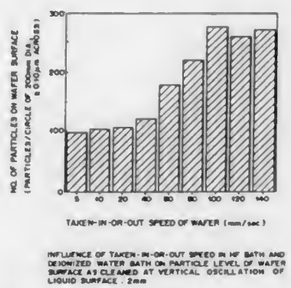
Masami Nakano; Isao Uchiyama; Hiroyuki Takamatsu, and Morie Suzuki, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,560

Claims priority, application Japan, May 19, 1994, 6-105116

Int. Cl.[6] B08B *3/04;* C23G *1/02*

U.S. Cl. 134—3 9 Claims



INFLUENCE OF TAKEN-IN-OR-OUT SPEED IN HF BATH AND DEIONIZED WATER BATH ON PARTICLE LEVEL OF WAFER SURFACE AS CLEANED AT VERTICAL OSCILLATION OF LIQUID SURFACE : 2mm

1. A method of cleaning a silicon wafer which comprises immersing the silicon wafer in a HF bath, followed by immersing the silicon wafer in a deionized water bath, wherein the silicon wafer is lowered into and lifted out of each of the baths along a direction which is substantially vertical with respect to a surface of each bath at a rate of from 1 mm/sec to 50 mm/sec, and wherein a vertical oscillation of the surface of each bath is in the range of less than 4 mm throughout said cleaning.

5,662,744

WASH ARM FOR DISHWASHER

Barry E. Tuller, and Thomas M. Johnson, both of Newton, Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Jun. 5, 1996, Ser. No. 659,169

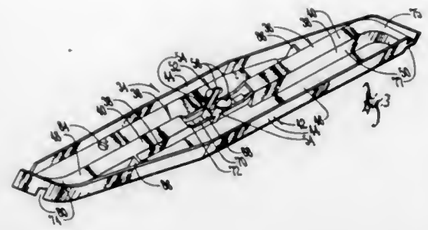
Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—25.2 32 Claims

28. A method of providing a controlled spray of water within a washing chamber of a dishwasher, comprising:

providing a rotatable wash arm mounted in the washing chamber;

directing water to the rotatable wash arm;



diverting the water in opposite directions through an elongated open channel having opposite ends with discharge openings and a central water inlet by positioning a diverting member entirely within the channel in line with the central water inlet;

substantially maintaining the water in the channel between the water inlet and discharge openings; and

discharging the water through the openings at the opposite ends of the channel for spray into the washing chamber.

5,662,745

INTEGRAL ENGINE VALVES MADE FROM TITANIUM ALLOY BARS OF SPECIFIED MICROSTRUCTURE

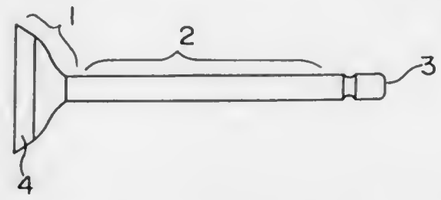
Isamu Takayama, Futtsu; Satoshi Yamamoto, and Masanori Kizaki, both of Hikari, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 204,382, filed as PCT/JP93/00874, Jun. 28, 1993, published as WO94/02656, Mar. 2, 1994, abandoned. This PCT application Jun. 28, 1993, Ser. No. 685,800

Claims priority, application Japan, Jul. 16, 1992, 4-189754; Oct. 21, 1992, 4-283259; Dec. 24, 1992, 4-344950; Apr. 15, 1993, 5-088912

Int. Cl.[6] F01L *3/04;* C23C *8/02*

U.S. Cl. 148—237 6 Claims



1. An engine valve of titanium alloy with at least a valve stem thereof having a microstructure consisting essentially of an acicular α-phase consisting of acicular α crystals with a width of not less than 1 μm and not more than 4 μm, wherein at least said valve stem has high wear resistance imparted by oxidation or nitriding.

5,662,746

COMPOSITION AND METHOD FOR TREATMENT OF PHOSPHATED METAL SURFACES

John C. Affinito, McHenry, Ill., assignor to Brent America, Inc., La Mirada, Calif.

Filed Feb. 23, 1996, Ser. No. 605,959

Int. Cl.[6] C23C *22/83*

U.S. Cl. 148—247 37 Claims

1. A rinse solution for the treatment of conversion-coated metal substrates for improving the adhesion and corrosion resistance of siccative coatings, comprising an aqueous solution of a Group IVA metal ion, selected from the group consisting of zirconium, titanium, hafnium, and mixtures thereof, and a phenolic resin in a concentration of about 0.01 to 0.40% w/w, with the Group IVA metal ion in a concentration of about 0.00035 to 0.0050% w/w, and the pH for the entire solution about 3.5 to 5.1, with the phenolic resin being a water soluble base catalyzed condensation product of the reaction between phenol and formaldehyde.

5,662,747

BAINITE WIRE ROD AND WIRE FOR DRAWING AND METHODS OF PRODUCING THE SAME

Akifumi Kawana; Hiroshi Oba; Ikuo Ochiai, and Seiki Nishida, all of Chiba-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

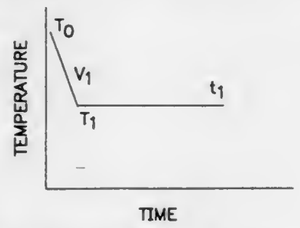
PCT No. PCT/JP94/00577, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/23084, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 6, 1994, Ser. No. 530,122

Claims priority, application Japan, Apr. 6, 1993, 5-079901

Int. Cl.[6] C21D *8/06;* C22C *38/18;38/00*

U.S. Cl. 148—320 8 Claims



1. Bainite wire rod or wire for drawing which consists essentially of, in weight percent,

C : 0.90–1.10%,

Si : not more than 0.40% and

Mn : not more than 0.50%,

is limited to

P : not more than 0.02%,

S : not more than 0.01% and

Al : not more than 0.003%,

the remainder being Fe and unavoidable impurities, and has tensile strength and reduction of area determined by the following equations (1) and (2),

$$TS \leqq 85 \times (C) + 60 \quad (1)$$

$$RA \geqq 0.875 \times (TS) + 158 \quad (2)$$

where

C : carbon content (wt %),

TS : tensile strength (kgf/mm^2), and

RA : reduction of area (%).

5,662,748

THIN CAST STRIP AND THIN STEEL SHEET OF COMMON CARBON STEEL CONTAINING LARGE AMOUNTS OF COPPER AND TIN AND PROCESS FOR PRODUCING THE SAME

Toshiaki Mizoguchi; Yoshiyuki Ueshima; Takashi Moroboshi, and Kiyomi Shio, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP94/00313, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO94/19503, PCT Pub. Date Sep. 1, 1994

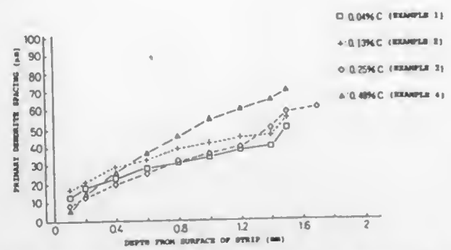
PCT Filed Feb. 25, 1994, Ser. No. 325,321

Claims priority, application Japan, Feb. 26, 1993, 5-037164

Int. Cl.[6] C22C *38/16;* B22D *11/00*

U.S. Cl. 148—332 8 Claims

1. A thin cast strip of a common carbon steel, consisting essentially of 0.15 to 10% by weight of Cu and 0.03 to 0.5% by weight of Sn, the balance consisting of ingredients constituting a common



carbon steel, the primary dendrite spacing of the cast strip on its surface layer portion being in the range of from 5 to 100 μm, said surface layer portion being a layer having a depth of 2 mm from the surface of the cast strip.

5,662,749

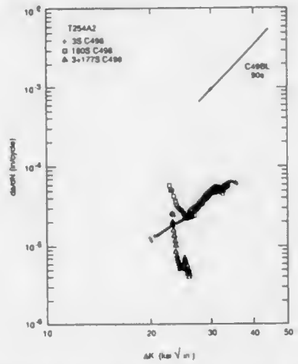
SUPERSOLVUS PROCESSING FOR TANTALUM-CONTAINING NICKEL BASE SUPERALLOYS

Keh-Minn Chang, Morgantown, W. Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1995, Ser. No. 487,223

Int. Cl.[6] C22F *1/10*

U.S. Cl. 148—514 **1 Claim**



1. A method for making a forged nickel base superalloy body having fatigue crack growth rates at elevated temperatures essentially independent of frequency of cyclical stress applied thereto comprising the sequence of steps of:

a. making a casting of a nickel base superalloy having a composition consisting of about

14–22	cobalt
10–14	chromium
2–6	molybdenum
3–5	aluminum
3–5	titanium
0.5–6	tantalum
0–0.6	zirconium
0.01–0.1	boron
0.03–0.1	carbon
balance	nickel,

b. forming a shaped body by forging said casting at a temperature about 5° C. to about 25° C. above the solvus of the γ precipitate phase,

c. solution annealing the shaped body at a temperature about 5° C. to about 25° C. above the recrystallization temperature of the alloy in the range of about 1175° C. to about 1200° C.,

d. cooling the shaped body, and

e. aging the shaped body.

5,662,750

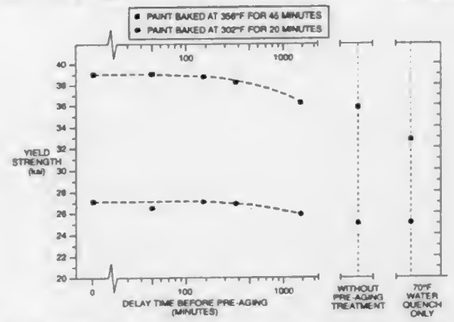
METHOD OF MANUFACTURING ALUMINUM ARTICLES HAVING IMPROVED BAKE HARDENABILITY

Tien H. Shen, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.

Filed May 30, 1995, Ser. No. 452,815

Int. Cl.[6] C22F *1/043*

U.S. Cl. 148—690 **16 Claims**



1. A method of producing an aluminum article comprising the steps of:

(a) providing stock including an aluminum alloy comprising about 0.40 to 1.50 wt.% silicon, about 0.20 to 1.50 wt.% magnesium, not more than about 0.70 wt.% copper, about 0.2 to 0.20 wt.% of an element selected from the group consisting of manganese and chromium, the remainder substantially aluminum, incidental elements and impurities;

(b) hot working the stock;

(c) solution heat treating at a temperature ranging from about 900° to 1100° F. for a time period of about 2.0 seconds to about 30 minutes;

(d) rapid quenching at a rate of at least about 200° F./second from the solution temperature to a threshold temperature of 350° F. or lower;

(e) holding at the threshold temperature for a time period of at least 30 seconds;.

(f) cooling from the threshold temperature to room temperature;

(g) holding at room temperature for not more than 24 hours; and

(h) reheating to a temperature ranging from about 150° to 360° F. for a time period of about 24 hours to 2.0 minutes.

5,662,751

TIRE WITH A SPECIFIED TWO-PLY STEEL-ARAMID BELT PACKAGE

Dean Bradley Creech, Easley, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Sep. 20, 1994, Ser. No. 308,909

Int. Cl.[6] B60C *9/18;9/20*

U.S. Cl. 152—527 **8 Claims**

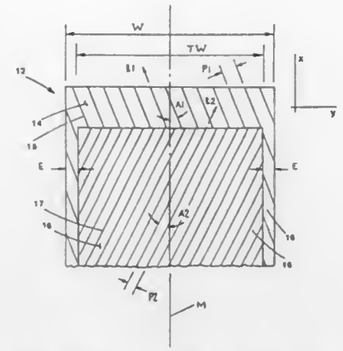
1. A radial pneumatic tire comprising:

a toroidal carcass having at least one reinforced ply extending from a first bead portion to an axially displaced second bead portion;

a circumferentially extending ground engaging tread portion disposed radially outward of a crown portion of the carcass;

a sidewall portion extending radially inward from each axial edge of the tread portion to a respective bead portion; and

a belt package between and adjacent both the tread portion and the crown portion of the carcass and having a predetermined width and consisting of a single unfolded first belt ply having essentially parallel metallic reinforcing members at a first angle from a mid-plane and positioned radially outward of the carcass and a single unfolded second belt ply having essentially parallel aromatic polyamide reinforcing members at a second angle from the mid-plane and positioned radially outward of the first belt ply, said first angle being less than



said second angle by at least one degree, wherein (1) the breaking strength of each of the individual metallic reinforcing members is greater than the breaking strength of each of the individual aromatic polyamide reinforcing members and (2) a bending stiffness of the first belt ply about a lateral y-axis is in a range of values of about 5 percent to about 150 percent greater than another bending stiffness of the second belt ply about the lateral y-axis, said lateral y-axis being parallel to a rotational axis of the tire.

5,662,752

PNEUMATIC TIRES WITH CENTRALLY PROTRUDING INCLINED BELT LAYER

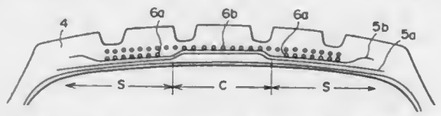
Tatsuo Nakano, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,489

Claims priority, application Japan, Dec. 27, 1994, 6-325458

Int. Cl.[6] B60C *9/18;9/20;9/28*

U.S. Cl. 152—531 **8 Claims**



1. A pneumatic tire comprising; a belt and a tread disposed radially outside of a toroidal carcass extending between a pair of beads, the belt comprises at least one circumferential belt layer having rubber coated reinforcing elements extending substantially along the circumferential direction of the tire and at least one inclined belt layer having rubber coated reinforcing elements extending at an angle with respect to the tire equatorial plane, wherein at least one said inclined belt layer protrudes radially outwardly at the center portion in the widthwise direction of the belt with respect to both its side portions, and wherein said at least one circumferential belt layer is disposed on both side portions of said at least one inclined belt layer except for the center portion in the widthwise direction.

5,662,753

INSTALLATION OF MOLDINGS

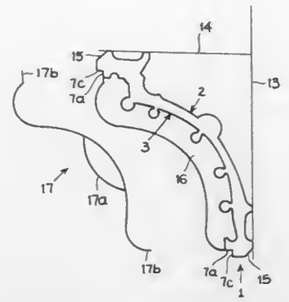
James H. Loos, 4742 Paseo Tubutama, Tucson, Ariz. 85715

Filed Dec. 5, 1994, Ser. No. 469,533

Int. Cl.[6] E04F *19/04*

U.S. Cl. 156—71 **7 Claims**

1. An ornamenting method, comprising the steps of: at least partly recessing a substance having adhesive properties in a molding; attaching said molding to a support structure using said substance, said molding having a side which faces away from said support structure; applying a flowable material to said side of said molding; shaping said flowable material by moving a tool over said molding; and guiding said tool on said molding during the shaping step, said tool having at least one tool guide surface and said molding having at least one molding guide surface, and the guiding step including moving said at least one tool guide surface along said at least one molding guide surface.



5,662,754

METHOD OF MAKING A HIGH FREQUENCY NON-RECIPROCAL CIRCUIT ELEMENT

Hiroshi Marusawa; Takashi Kawanami; Takehiro Kounoike, and Kunisaburo Tomono, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

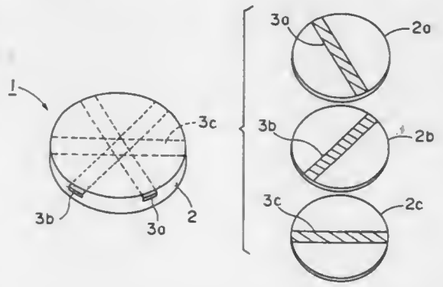
Division of Ser. No. 101,895, Aug. 2, 1993, Pat. No. 5,379,004.

This application Oct. 12, 1994, Ser. No. 321,925

Claims priority, application Japan, Aug. 5, 1992, 4-208963

Int. Cl.[6] B32B *31/26;31/12*

U.S. Cl. 156—89 **10 Claims**



1. A method of manufacturing a high frequency non-reciprocal circuit element, said method comprising the steps of:

forming an unfired laminate having a plurality of center electrodes which are located between a plurality of unfired magnetic layers such that said center electrodes are embedded in said laminate and said center electrodes are electrically insulated from each other by said unfired magnetic layers such that said center electrodes intersect but do not totally overlap each other; and

firing said laminate.

5,662,755

METHOD OF MAKING MULTI-LAYERED CERAMIC SUBSTRATES

Kazuhiro Miura, Osaka; Yoshihiro Bessho, Higashiosaka; Satoru Yuhaku, Osaka; Yasuhiko Hakotani, Nishinmiya; Minehiro Itagaki, Moriguchi; Yoshifumi Nakamura, Neyagawa, and Akihiko Miyoshi, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 176,079, Dec. 30, 1993, abandoned. This application Sep. 11, 1995, Ser. No. 526,312
Claims priority, application Japan, Oct. 15, 1993, 5-257378
Int. Cl.[6] B32B *31/26;31/12*
U.S. Cl. 156—89 11 Claims



1. A method of making a multi-layered ceramic substrate which comprises the steps of:

laminating a desired number of green sheets to provide a green sheet laminate, each of said green sheets being made of glass ceramics containing at least an organic binder and a solvent, each of said green sheets having a pattern of electrodes formed thereon by the use of an electroconductive paste which contains an inorganic composition including particles capable of forming said electrodes upon firing, glass and at least a binder and a solvent,

printing, on the electrodes on opposite surfaces of the green sheet laminate or an entire surface layer of the green sheet laminate, a paste comprising a Zn composition and at least an organic binder and a solvent, with said Zn composition dispersed in said paste;

laminating, on each surface of the laminate printed with the Zn-composition containing paste, a green sheet made of an inorganic composition incapable of being sintered at a temperature of crystallization of the glass ceramics, thereby providing a laminate plate;

firing the resultant laminate plate; and

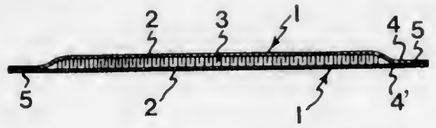
removing both the inorganic composition incapable of being sintered and the Zn composition from the opposite surfaces of the laminate, whereby Si contained in said glass of said electroconductive paste crystallizes with Zn in said Zn composition, resulting in removal of glass from said electrode with improved solder wettability of said electrode.

5,662,756

METHOD FOR REUSING SCRAPPED, LOOSE MATS

Gunnar Andréen, Lund, Sweden, assignor to S. Berendsen Aktiebolag, Malmo, Sweden

PCT No. PCT/SE93/00976, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/10888, PCT Pub. Date May 26, 1994
PCT Filed Nov. 15, 1993, Ser. No. 436,217
Claims priority, application Sweden, Nov. 13, 1992, 9203394
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—94 18 Claims



14. A method for fabricating a second mat from a first mat and a rubber sheet, said first mat and said rubber sheet being essentially the same size and said first mat having a front surface and a rubber back surface, said front surface having a textile pile portion incorporated thereon and a pile-free edge portion perimetrically disposed about said textile pile portion and said rubber back surface being continuous, said method comprising:

arranging said first mat and said rubber sheet such that said pile textile portion of said first mat faces said rubber sheet, and

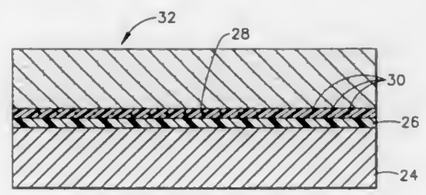
attaching said pile-free edge portion of said first mat to an edge portion of said rubber sheet.

5,662,757

METHOD OF REMOVING AN ABRADABLE SHROUD ASSEMBLY FOR TURBOMACHINERY

Leslie L. Langenbrunner, and Paul F. Proffitt, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 323,978, Oct. 17, 1994, abandoned. This application May 20, 1996, Ser. No. 650,680
Int. Cl.[6] B32B *3/00*
U.S. Cl. 156—94 8 Claims



1. A method comprising the steps of:

providing a turbomachine fan section having an abradable shroud assembly and casing member, the abradable shroud assembly comprising an abradable surface formed by an abradable material that is bonded to the casing member with a heat-curable adhesive;

heating the heat-curable adhesive with a heating element disposed between the abradable material and the casing member, the heat-curable adhesive being heated to a temperature at which the heat-curable adhesive sufficiently degrades to cause the abradable material to debond from the casing member;

removing the abradable material and heat-curable adhesive from the casing member;

applying a new layer of the heat-curable adhesive to the casing member;

applying a new layer of the abradable material over the new layer of heat-curable adhesive such that the heating element is positioned between the new layer of abradable material and the casing member; and

heating the new layer of heat-curable adhesive with the heating element to a temperature at which the heat-curable adhesive cures, such that the new layer of heat-curable adhesive bonds the new layer of abradable material to the casing member;

wherein the method is performed without the abradable shroud assembly being removed from the fan section.

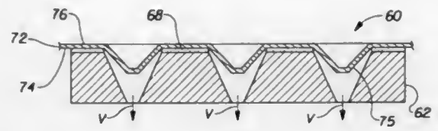
5,662,758

COMPOSITE MATERIAL RELEASABLY SEALABLE TO A TARGET SURFACE WHEN PRESSED THEREAGAINST AND METHOD OF MAKING

Peter W. Hamilton, Cincinnati, and Kenneth S. McGuire, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 10, 1996, Ser. No. 584,638
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—221 10 Claims

1. A method for making a flexible film having pressure sensitive adhesive protected from inadvertent adherence, said flexible film being stickable to a target surface only when pressed thereagainst, said method comprising the steps of:



a) coating a forming screen with a pressure sensitive adhesive, said forming screen having a top surface, said top surface having a plurality of recesses therein, said coating step applying said pressure sensitive adhesive to said top surface without bridging said recesses;

b) placing a piece of flexible film in contact with said pressure sensitive adhesive on said top surface of said forming screen, said pressure sensitive adhesive preferentially adhering to said piece of flexible film;

c) forming said piece of flexible film to create a plurality of protrusions extending into said recesses of said forming screen, said plurality of protrusions being registered with said pressure sensitive adhesive; and

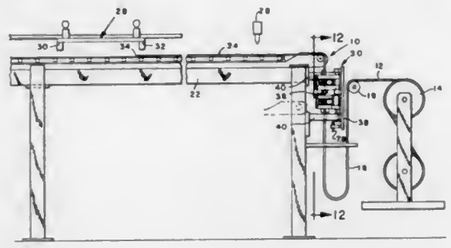
d) removing said piece of flexible film together with said pressure sensitive adhesive from said forming screen.

5,662,759

APPARATUS AND METHOD FOR PROVIDING UNIFORM STRETCHED EDGES OF STRIP MATERIAL FOR SPLICING

Francis Cornet, Habay-la-Neuve, Belgium; Robert Albert Lammlein, Jr., Cuyahoga Falls, Ohio; Roger Marthoz, Arlon, Belgium, and John Kolbjorn Roedseth, Bissen, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 9, 1994, Ser. No. 352,531
Int. Cl.[6] B32B *31/18;* B29C *55/06*
U.S. Cl. 156—229 4 Claims



4. A method of reducing the thickness and cutting a strip of material comprising:

a. clamping a first portion of said strip of material with a first clamping assembly at a first position on said strip of material;

b. clamping a second portion of said strip of material with a second clamping assembly at a second position on said strip of material adjacent said first position;

c. stretching a section of said strip of material between said first position and said second position by separating said first clamping assembly and said second clamping assembly a distance sufficient to stress said strip of material beyond the elastic limit of said material providing a section of said strip material between said first position and said second position having a reduced thickness;

d. returning said first clamping assembly and said second clamping assembly to a spaced apart distance less than said distance necessary to stress said strip of material beyond the elastic limit; and

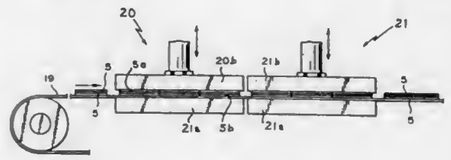
e. cutting said section between said first position and said second position to provide edges of said strip of material having corrugations and a reduced thickness.

5,662,760

METHOD OF MANUFACTURING LAMINATED VENEER LUMBER AND DECORATIVE LAMINATED SHEET UTILIZING THE SAME

Sotaro Tsuda, 4-13, Nekogahora-dori, Chikusa-ku, Nagoya, Aichi-ken, Japan

Continuation-in-part of Ser. No. 149,985, Nov. 10, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,044
Claims priority, application Japan, Nov. 11, 1991, 3-322491
Int. Cl.[6] B32B *31/20;31/12;* B27D *1/00;3/00*
U.S. Cl. 156—264 16 Claims



1. A method for manufacturing laminated veneer lumber stabilized to be free of warps or waviness, comprising the steps of:

(a) cutting a thin sheet of veneer obtained by cutting a log with one of a rotary lathe or a slicer into a plurality of veneers of predetermined length, placing a stack comprising said plurality of veneers onto a conveyor belt, transferring said stack into a hot press which comprises a fixed lower hot plate and an upper hot plate which moves vertically with respect to said lower hot plate, operating both said upper hot plate and said lower hot plate while pressing the stack towards the side of the lower hot plate by repeatedly moving the upper hot plate toward the fixed lower hot plate to apply pressure for durations of 40–60 seconds 2–3 times every hot press cycle, thereby softening the "lignin" in each of the veneers which constitute the stack while smoothing each veneer by evaporating a moisture content therein, transferring the stack by said conveyor belt into a cold press which comprises a fixed lower cold plate and an upper cold plate which moves vertically with respect to said lower cold plate, cooling the stack, which has been made flexible and smoothed by heat, the cooling stack being pressed for a duration in the range of 15–30 seconds towards the side of the lower cold plate by moving down the upper cold plate, and stabilizing each veneer in a smoothed and flattened state;

(b) separating said stack into respective veneers and cutting the flattened veneers on both edges thereof in a grain direction to form symmetrically diagonal end faces;

(c) bonding pluralities of thus obtained cut veneers at said symmetrically diagonal end faces to obtain a plurality of elongated sheets of veneer; and

(d) cutting the elongated sheets of veneer in the grain direction into sheets of predetermined length and laminating plural sheets with seams therein with their respective grain directions aligned.

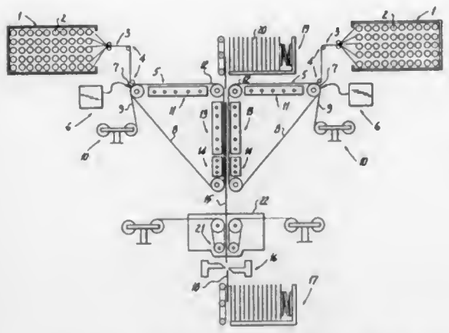
5,662,761

METHOD OF MANUFACTURING A UD-REINFORCED PWB LAMINATE

Erik Middelman, Arnhem, and Pieter Hendrik Zuuring, Nijmegen, both of Netherlands, assignors to AMP-Akzo Lin Lam VOF, Arnhem, Netherlands

PCT No. PCT/EP93/01919, § 371 Date Feb. 2, 1995, § 102(e) Date Feb. 2, 1995, PCT Pub. No. WO94/02306, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 20, 1993, Ser. No. 374,592
Claims priority, application Netherlands, Jul. 21, 1992, 9201303
Int. Cl.[6] B65C *9/25;* B32B *3/00;* H05K *1/00*
U.S. Cl. 156—324 26 Claims

1. A process of manufacturing a composite laminate comprising



providing unidirectionally oriented (UD) fibres (**3**) disposed in a single direction with not yet consolidated matrix material passing UD fibres provided with not yet consolidated matrix (**7**);

passing UD fibres provides with not yet consolidated matrix material (**12**) together with pre-formed, non-flowing composite (**20**) selected from UD composite and cross-ply laminate through a laminating zone (**13**) in layers of at least two different orientational directions, and the matrix material is consolidated.

5,662,762

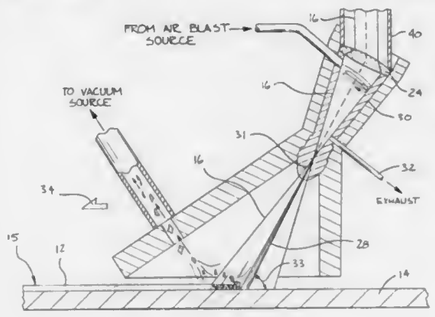
LASER-BASED SYSTEM AND METHOD FOR STRIPPING COATINGS FROM SUBSTRATES

Ronald J. Ranalli, Caledonia, Mich., assignor to Clover Industries, Inc., Grosse Pointe Woods, Mich.

Filed Jul. 7, 1995, Ser. No. 499,358

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—344 **15 Claims**



9. A method for stripping a coating from a substrate, said method including the steps of:

applying a de-focused laser beam to the coating to cause heating of the coating in a manner to cause at least partial ablation thereof; and

directing a blast of gas through a venturi of a nozzle against the coating and the substrate at an angle oblique to the coating to shatter and strip the coating from the substrate whereby the venturi generates a vortex flow of gas splitting the flow of gas into a superheated component directed away from the coating and substrate and a superchilled component of gas directed at the coating and the substrate.

5,662,763

MOUNT APPARATUS

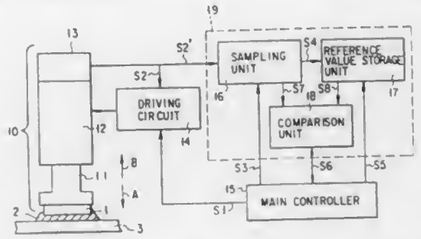
Kazuyuki Yamanaka, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 159,506, Nov. 30, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 409,938

Claims priority, application Japan, Dec. 1, 1992, 4-321983

Int. Cl.[6] B32B *31/00;* **G05G** *15/00*

U.S. Cl. 156—358 **12 Claims**



1. A mount apparatus used in manufacturing a semiconductor device, comprising:

means for pressing a semiconductor chip on an adhesive layer on a mount substrate;

means for detecting variation of position of said semiconductor chip during a period of time from a first time point, at which said semiconductor chip at least contacts said adhesive layer, to a second time point; and

means for determining whether or not said semiconductor chip is correctly adhered to the mount substrate, said determining means including

means for sampling variation of the position of the semiconductor chip,

means for preparing a data string representing variation of the position on the basis of the position sampled by said sampling means,

means for storing a reference value, and

means for comparing said data string with said reference value.

5,662,764

APPARATUS FOR PRODUCING CORRUGATED TUBE

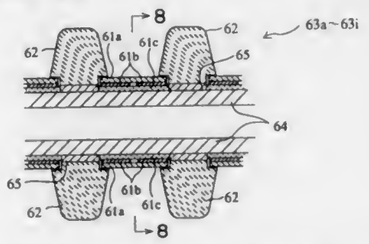
Noboru Hasegawa, Ichihara; Mitsuo Kagabu, deceased, late of Ichihara, and Setsu Kagabu, heir, Akita, all of Japan, assignors to Toyo Chemical Co., Ltd., Kanagawa-Ken, Japan

Division of Ser. No. 256,620, Nov. 21, 1994. This application Oct. 27, 1995, Ser. No. 549,576

Claims priority, application Japan, Nov. 13, 1992, 4-328723; Nov. 13, 1992, 4-328724

Int. Cl.[6] B29C *47/88;53/22;53/62;53/72*

U.S. Cl. 156—428 **5 Claims**



1. An apparatus for producing a corrugated tube comprising a roller assembly composed of a plurality of rollers, each being rotatable at equal speed, said roller assembly substantially forming a single rotating axial body so that said rollers are arrayed on a cylindrical surface of an imaginary cylinder, roller supporting means mounted axially opposite said roller assembly for rotatably supporting said rollers, means for continuously supplying a synthetic resin strip to an outer circumferential surface of said roller assembly from a lateral side thereof, and driving means for rotating said rollers at equal speed, each axis of said rollers being inclined in a circumferential direction of the roller assembly, plural convexed rings provided along the axial direction of each of said rollers being arrayed so that the convexed rings form a helix in their entirety, a follower ring being provided at each recessed valley portion between neighboring convexed rings, said follower rings being rotatable responsive to circumferential speed at an apex of said convexed rings.

5,662,765

HEATING UNIT FOR A CORRUGATED-BOARD MANUFACTURING PLANT

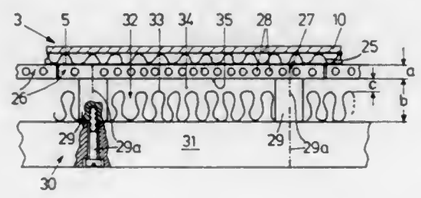
Felix Titz, Weiherhammer, and Gerald Frischholz, Weiden, both of Germany, assignors to BHS Corrugated Maschinen- und Anlagenbau GmbH, Weiherhammer, Germany

Filed Oct. 12, 1995, Ser. No. 542,133

Claims priority, application Germany, Oct. 18, 1994, 44 37 159.4

Int. Cl.[6] B31F *1/20;* **B32B** *31/26*

U.S. Cl. 156—470 **9 Claims**



1. A heating unit for a corrugated-board manufacturing plant, comprising

at least one heating element (**3**, **3'**) having a continuous heating surface (**5**) extending in a direction of passage (**2**) of at least two webs (**19**, **22**) to be glued to each other,

a drivable continuous conveyor belt (**6**) having a lower strand (**10**), whereby a space is located between said lower strand (**10**) and the heating surface (**5**), within which space the webs to be glued to each other are accommodated, and

at least one pressing device (**15**) for charging the lower strand (**10**) in a direction towards the heating surface (**5**),

wherein the at least one heating element (**3**, **3'**) comprises a heating plate (**26**, **26'**) of a substantially low thickness (a) and a supporting structure (**30**) disposed at a distance (b) from, and below, the heating plate (**26**, **26'**), the heating plate (**26**, **26'**) being supported on the supporting structure (**30**) by thermally insulating props (**29**, **29'**), and a heat insulation layer (**33**) being disposed between the heating plate (**26**, **26'**) and the supporting structure (**30**), and

wherein an air gap (**34**) with a height (c) is provided between the heating plate (**26**, **26'**) and the heat insulation layer (**33**), and the thermally insulating props (**29**) consist of a material of at least one of little thermal conductivity and a low coefficient of temperature expansion, said thermally insulated props (**29**, **29'**) being joined to said heating plates (**26**) by a thermally separate screwing means (**29***a*) for permitting heat expansion of the heating plates (**26**).

5,662,766

TOOL HORN CONVERTING LONGITUDINAL VIBRATION TO TORSIONAL VIBRATION

Takehisa Ishikawa; Tomio Maruzoe, and Yoshiaki Nagata, all of Atsugi, Japan, assignors to Taiji Mishima, Atsugi, Japan

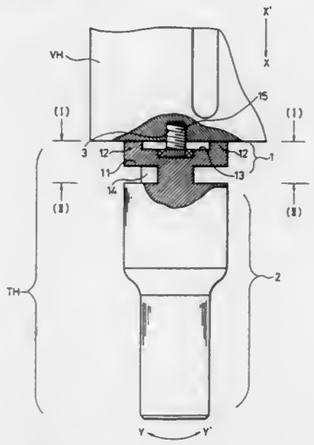
PCT No. PCT/JP94/00533, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO94/23935, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 31, 1994, Ser. No. 347,316

Claims priority, application Japan, Apr. 8, 1993, 5-104896

Int. Cl.[6] B29C *65/08*

U.S. Cl. 156—580.2 **5 Claims**



1. A tool horn comprising an integrally formed structure including a vibration converter for converting longitudinal ultrasonic vibrations to torsional vibrations and a vibration tool for providing torsional vibrations to a workpiece, said vibration converter including an elongated metal bar having first and second longitudinal sides arranged opposite to each other, said first longitudinal side receiving said longitudinal vibrations and said second longitudinal side providing said torsional vibrations to said vibration tool.

5,662,767

METHOD FOR APPLYING AN ADHESIVE-COATED MATERIAL

John L. Getz, Blachly, and Terry Lee Weeks, Junction City, both of Oreg., assignors to Industrial Adhesives, Inc., Eugene, Oreg.

Filed Nov. 29, 1995, Ser. No. 563,990

Int. Cl.[6] B32B *31/00;* **C09J** *5/06*

U.S. Cl. 156—498 **11 Claims**

1. A method of applying an elongate continuous reinforcing material having an intimately associated adhesive, said adhesive being a coating on said reinforcing material, comprising:

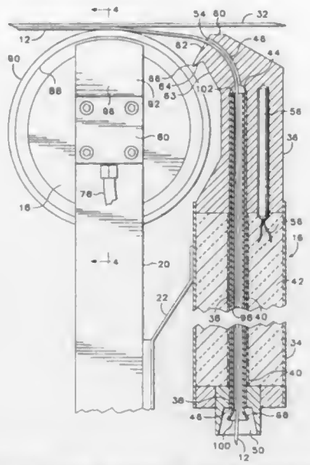
(a) heating a length of said reinforcing material by moving said length through a heating unit from an inlet orifice to an outlet orifice, said outlet orifice on an inclined planar surface sloped outwardly and downwardly;

(b) during step (a), heating and softening said adhesive to a flow point of said adhesive, at least a portion of said adhesive flowing and becoming disassociated from said reinforcing material when said reinforcing material exits said outlet orifice;

(c) pressing said length of reinforcing material heated in step (a) onto a bottom surface of a substrate located proximate said outlet orifice;

(d) said inclined planar surface intercepting said portion of said adhesive, said inclined planar surface terminating above a cooling wheel;

(e) said cooling wheel further intercepting said portion; and



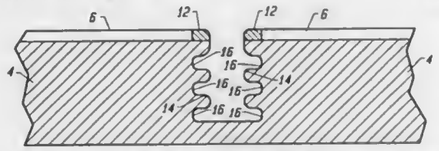
(f) applying at least said portion to said bottom surface of said substrate.

5,662,768

HIGH SURFACE AREA TRENCHES FOR AN INTEGRATED CIRUIT DEVICE

Michael D. Rostoker, Boulder Creek, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 21, 1995, Ser. No. 531,659
Int. Cl.[6] H01L *21/00*
U.S. Cl. 257—301 **37 Claims**



1. A method of etching a trench in a substrate having a top surface, the method comprising the following steps:

providing one or more impurity regions in the substrate beneath the top surface of said substrate, said one or more impurity regions laterally extending over a first width and defining a vertical concentration profile which is substantially nonlinear;

defining an etchant access region of specified second width on said top surface above the one or more impurity regions, said second width being narrower than said specified first width; and

providing etchant through said etchant access region to etch said trench such that said trench has one or more sidewalls of substantially nonlinear shape corresponding to said vertical concentration profile.

5,662,769

CHEMICAL SOLUTIONS FOR REMOVING METAL-COMPOUND CONTAMINANTS FROM WAFERS AFTER CMP AND THE METHOD OF WAFER CLEANING

Diana M. Schonauer, San Jose, and Steven C. Avanzino, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 21, 1995, Ser. No. 391,812
Int. Cl.[6] H01L *21/00*; C09K *13/00*
U.S. Cl. 438—633 **13 Claims**

1. In a process for manufacturing semiconductor integrated circuits comprising:

forming circuits on the surface of a semiconductor wafer by photolithographic processes, including use of W metal layers bound to said surface as portions of said circuits;

planarizing said surface by W-CMP, wherein said W-CMP includes chemical-mechanical scrubbing of said wafer with an abrasive slurry including an Fe oxidant;

cleaning Fe contaminants remaining bound to said semiconductor surface after adequate surface planarization is achieved without damaging said W layers, said cleaning step including applying a pH stable solution to said wafer to chemically bind to said Fe and to produce Fe-ion complexes in solution;

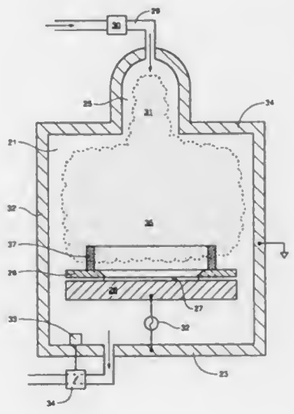
wherein one ingredient of said solution is selected from a ligand group consisting of citrates and EDTA.

5,662,770

METHOD AND APPARATUS FOR IMPROVING ETCH UNIFORMITY IN REMOTE SOURCE PLASMA REACTORS WITH POWERED WAFER CHUCKS

Kevin G. Donohoe, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Apr. 16, 1993, Ser. No. 48,991
Int. Cl.[6] H01L *21/302*
U.S. Cl. 438—716 **12 Claims**



1. A method of etching a wafer in a high density source plasma etch reactor, comprising:

(a) providing a high density source plasma etch reactor having:

walls defining an etch chamber,

a plasma source chamber remote from, and in communication with, said etch chamber for providing a plasma to said etch chamber, and

a wafer chuck disposed in said etch chamber for seating a wafer,

(b) disposing a wafer on the wafer chuck;

(c) forming a plasma within the plasma source chamber and providing this plasma to said etch chamber;

(d) applying electrical energy to the wafer chuck for assisting etching of said wafer, thereby forming electric fields between an upper surface of said wafer and said walls of said etch chamber; and

(e) providing a dielectric wall around a periphery of said wafer, said dielectric wall having walls that extend above a plane defined by the upper surface of said wafer, thereby affecting an electromagnetic characteristic impedance for electromagnetic fields coupled between an upper peripheral surface of said wafer and said walls of said etch chamber.

5,662,771

SURFACE MICROMACHINING PROCESS

Rosario C. Stouppe, Lawrence, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 1, 1994, Ser. No. 347,701
Int. Cl.[6] H01G *7/00*; B44C *1/22*
U.S. Cl. 438—52 **8 Claims**

1. A method for forming polysilicon pinpoint members on micromachined polysilicon structures, comprising the steps of:

forming at least a first layer of material on a substrate;

forming a spacer layer of material on the first layer of material;

forming a pattern of holes in the spacer layer with each hole having a diameter and depth;

forming a microstructure polysilicon layer on the spacer layer such that microstructure polysilicon material fills the pattern of holes in the spacer layer;

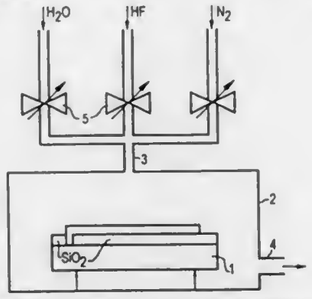
forming a micromachined polysilicon structure from the microstructure polysilicon layer and removing the spacer layer to expose a pattern of polysilicon pinpoint members formed by the microstructure polysilicon material in the pattern of holes in the spacer layer.

5,662,772

METHOD FOR THE SELECTIVE REMOVAL OF SILICON DIOXIDE

Thomas Scheiter; Ulrich Naeher, and Christofer Hierold, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 24, 1996, Ser. No. 637,237
Claims priority, application Germany, Apr. 28, 1995, 195 15 796.6
Int. Cl.[6] H01L *21/00*; C03C *15/00*
U.S. Cl. 216—2 **14 Claims**



1. A method for selective removal of SiO_2 relative to semiconductor materials and/or metal on semiconductor components, comprising the steps of:

a) placing a semiconductor component containing SiO_2 into a chamber having at least one gas admission opening and one gas outlet opening;

b) admitting, using controllable valves at the gas admission opening, dosed quantities of hydrogen fluoride gas and water vapor into the chamber, so that said gas and said water vapor proceed to the SiO_2 in said semiconductor component in a quantity sufficient for etching, quantities of said gas and said water vapor being limited such that condensation of the water vapor, that forms liquid water on said semiconductor component during the etching event, is avoided;

c) implementing an etching event at the semiconductor component;

d) eliminating water vapor that arises as a reaction product during the etching of the semiconductor component through the gas outlet opening before occurrence of condensation and, simultaneously, admitting an inert gas into the chamber through the gas admission opening; and

e) repeating steps b) through d) until the SiO_2 is selectively removed, movable micromechanical function elements of polysilicon thereby being etched free.

5,662,773

PROCESS FOR PREPARATION OF CELLULOSE ACETATE FILTERS FOR USE IN PAPER MAKING

Tim J. Frederick; Melvin G. Mitchell, and Lee R. Partin, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 19, 1995, Ser. No. 375,765
Int. Cl.[6] D21H *13/06*
U.S. Cl. 162—4 **21 Claims**

1. A process for treating cigarette filter rods comprising cellulose acetate tow comprising the steps of:

a. cutting said filter rods so that fiber of said cellulose acetate tow has a fiber length of less than about 4 inches; and

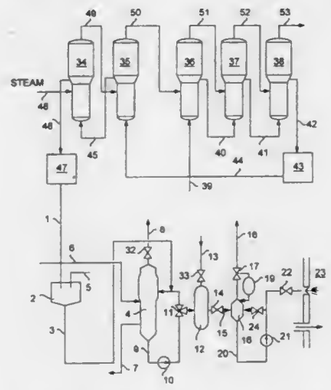
b. treating said cut filter rods with an aqueous base until about 5% to about 15% of acetyl groups on said cellulose acetate has been hydrolyzed.

5,662,774

ADJUSTING THE SULPHUR BALANCE OF A SULPHATE CELLULOSE PLANT BY HEAT TREATING BLACK LIQUOR IN A LAST EVAPORATION STAGE

Jari Ekholm, and Esa Pikkujämsä , both of Tampere, Finland, assignors to Tampella Power Oy, Tampere, Finland

Continuation-in-part of Ser. No. 40,448, Apr. 1, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 399,987
Claims priority, application Finland, Apr. 1, 1992, 921444
Int. Cl.[6] D21C *11/10*
U.S. Cl. 162—16 **8 Claims**



1. In a sulphate cellulose pulping process in which wood is cooked in a cooking liquor at a cooking temperature to produce a cellulose pulp slurry and a residual black liquor, and water is evaporated from said black liquor in a series of evaporation stages to produce concentrated black liquor, said concentrated black liquor is burned to form a smelt which is converted into said cooking liquor, the improvement comprising a method for adjusting the amount of sulfur removed from black liquor by the steps comprising:

(a) further evaporating water from said concentrated black liquor in the last evaporation stage to form a concentrated black liquor having a dry solids content of at least 80% while heating the thus formed concentrated black liquor to a temperature that is greater than said cooking temperature and holding at said heated temperature for a time sufficient to separate the sulfur compounds contained in the heated concentrated liquor by forming separable gaseous sulfur compounds;

(b) reducing the pressure of said heat treated concentrated black liquor immediately after said last evaporation stage to allow said separable sulfurous compounds to separate as a gas from said concentrated liquor; and

(c) removing the sulfur as said separated gaseous sulfur compounds in an amount sufficient to adjust the sulfur content of said cooking liquor.

5,662,775

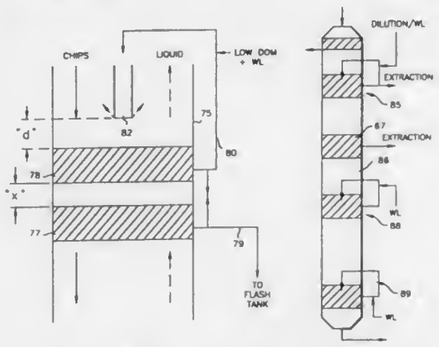
CONTINUOUS DIGESTER WITH DISSOLVED SOLIDS HANDLING

Bruno S. Marcoccia, South Glens Falls; J. Robert Prough, Queensbury; Richard O. Laakso, Queensbury, and R. Fred Chasse, Queensbury, all of N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Division of Ser. No. 148,269, Nov. 8, 1993, Pat. No. 5,536,366, which is a continuation-in-part of Ser. No. 127,548, Sep. 28, 1993, Pat. No. 5,547,012, which is a continuation-in-part of Ser. No. 56,211, May 4, 1993, Pat. No. 5,489,363. This application Jun. 7, 1995, Ser. No. 484,315

Int. Cl.[6] D21C *7/14*

U.S. Cl. 162—41 16 Claims



1. A single vessel hydraulic continuous digester comprising:

a substantially upright vessel having a top and bottom with a slurry of comminuted cellulosic material to be digested introduced adjacent the top, and pulp withdrawn adjacent the bottom;

a countercurrent continuous cooking zone disposed at a first level of said digester, and including a first screen for removing liquor from the cooking zone, and a cooking circulation loop associated with said first screen for circulating the removed liquor to the interior of said digester near the vicinity of said first screen;

means for adding dilution liquor, having a lower dissolved organic material concentration than the removed liquor in said cooking circulation loop, and cooking liquor to said cooking circulation loop; and

an extraction screen with extraction conduit located at a second vertical level in said vessel, below said first level.

5,662,776

GLASS FIBER NON-WOVEN FABRIC, A METHOD OF PRODUCING GLASS FIBER NON-WOVEN FABRIC AND A METHOD OF PRODUCING A LAMINATE

Masayuki Ushida, Anzyo; Masaru Ogata, Shiga-ken; Akihiro Hachiya, Hikone; Yukihiro Yamashita, Ohmihachiman, and Masayuki Noda, Hikone, all of Japan, assignors to Shin-Kobe Electric Machinery Co., Tokyo, Japan

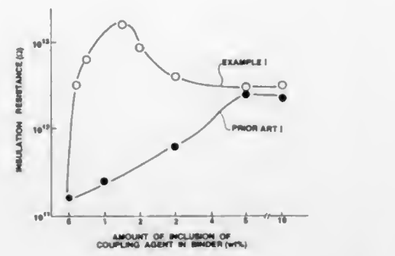
Filed Aug. 11, 1994, Ser. No. 289,245

Claims priority, application Japan, Aug. 24, 1993, 5-209289

Int. Cl.[6] D04H *1/58;1/42;* B32B *17/04*

U.S. Cl. 162—156 5 Claims

1. Glass fiber non-woven fabric for use in forming a laminate to be impregnated with a thermosetting resin, said non-woven fabric



comprising glass fibers bound to each other by epoxy binders including a phenyl amino-silane coupling agent having the formula:

$$C_6H_5CH_2N^+H_2C_2H_4NHC_3H_6Si(OCH_3)_3Cl^-.$$

5,662,777

SHOE PRESS ROLL FOR PRESS DEVICE FOR A PAPER MACHINE

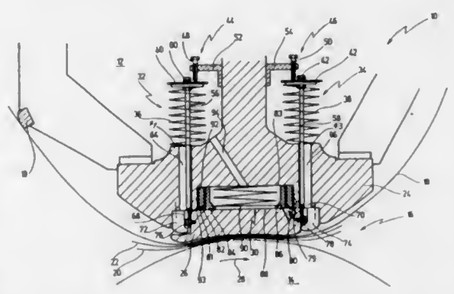
Christian Schiel, Heidenheim, and Ulrich Wieland, Berg, both of Germany, assignors to Voith Sulzer Paplermaschinen GmbH, Germany

Filed Apr. 5, 1996, Ser. No. 628,470

Claims priority, application Germany, Apr. 15, 1995, 195 14 142.3

Int. Cl.[6] D21F *3/02*

U.S. Cl. 162—358.3 23 Claims



1. A shoe press roll for a press device of a paper machine, wherein the shoe press roll comprises:

a stationary support; a press jacket at the support;

a press shoe supported on the support for being pressed toward the press jacket and for pressing the press jacket toward a backing roll with which the shoe cooperates;

hydraulic elements at the support and acting on the shoe for pressing the shoe toward the backing roll, the hydraulic elements being arrayed along the length of the shoe across the web; each of the hydraulic elements comprising a recess located in the support on the side of the press shoe away from the backing roll for containing hydraulic pressure, means for transmitting hydraulic pressure to each recess;

return means connected between the support and the press shoe for pulling the shoe away from the backing roll, the return means being positioned and arranged to act on the press shoe and on the support member outside of and not within the hydraulic elements and outside of the recesses of the hydraulic elements.

5,662,778

PRESS SECTION WITH AN EQUALIZING NIP IN A PAPER MACHINE

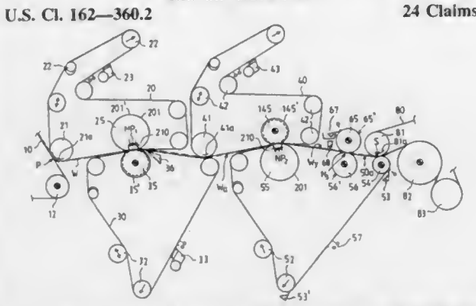
Jorma Laapotti, Palokka, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Oct. 6, 1995, Ser. No. 540,084

Claims priority, application Finland, Oct. 6, 1994, 944674

Int. Cl.[6] D21F *3/00*

U.S. Cl. 162—360.2 24 Claims



1. A press section in a paper machine in which a paper web has a closed and supported draw, comprising

at least first and second separate press nips successively structured and arranged in a running direction of the web such that the web after passing through said second nip has a different roughness on one side thereof than on the other side thereof,

first means for passing the web into said first press nip and between said first press nip and said second press nip,

a third press nip separate from said second press nip arranged after said second press nip in the running direction of the web, said third press nip constituting an equalizing nip,

second means for passing the web from said second press nip through said equalizing nip, said second web passing means comprising a substantially non-water-receiving transfer belt carrying the web on the less rough side thereof and having a first substantially straight run between said second press nip and said equalizing nip and a second substantially straight run after said equalizing nip in a direction which is substantially the same direction as said first run,

said equalizing nip comprising a non-water-receiving press member having a smooth surface structured and arranged to directly contact the web on the rougher side thereof, and such that elongation of the web in the running direction of the web occurs in said equalizing nip, and

regulation means for regulating a running speed of said transfer belt to stretch said second substantially straight run of said transfer belt to compensate for the elongation of the web in said equalizing nip.

5,662,779

PORTABLE WATER PURIFICATION APPARATUS

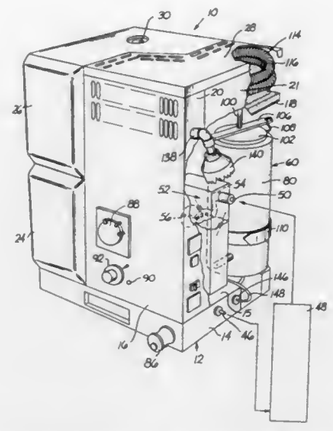
Ralph G. Greene, Dalton, Ga., and David G. Palmer, Lincoln, Nebr., assignors to Market Design & Development, Inc., Dalton, Ga.

Filed Feb. 16, 1995, Ser. No. 389,307

Int. Cl.[6] B01D *3/42;* C02F *1/04*

U.S. Cl. 202—181 17 Claims

1. Water purification apparatus comprising a feedwater tank for receiving water to be purified, an upstanding boiler having an electrical heating element disposed therein adjacent a lower end for boiling water, a water level control tank having a water reservoir communicating said feedwater tank to said boiler, means for mounting said feedwater tank relative to said water reservoir such that when water within said feedwater tank is above a preselected level there is water in said reservoir, valve control means in said control tank for controlling the level of water in said reservoir from exceeding a predetermined level, means for mounting said control tank at an elevation wherein said predetermined level is above said heating element, whereby said heating element is submerged in water in said boiler, a chamber associated with said level control tank for storage of an anti-foaming agent for limiting formation of foam in said boiler, means for dispensing a controlled amount of anti-foaming agent from said chamber to said reservoir, a condenser for receiving steam from said boiler and for condensing said steam to form distilled water, a distillate tank, means communicating said condenser with said distillate tank for supplying distilled water to said distillate tank, and means for dispensing water from distillate tank selectively.



5,662,780

PROCESS FOR PURIFYING ACETIC ACID

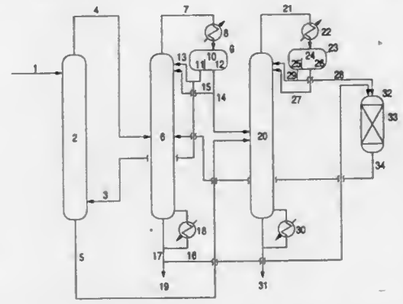
Takaharu Sasaki; Masayuki Fujimoto; Takashige Miyanari, and Hiroshi Nishino, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 613,204

Claims priority, application Japan, Sep. 29, 1995, 7-254004

Int. Cl.[6] B01D *3/36*

U.S. Cl. 203—81 6 Claims



1. A process for purifying acetic acid which comprises:

introducing a feedstock aqueous solution of acetic acid having an acetic acid concentration of from 10 to 50% by weight into an extractor;

supplying an extracting medium containing isopropyl acetate in an amount from 0.6 to 3.0 times by weight the amount of said feedstock solution thereinto in such a manner that said extracting medium contacts said feedstock solution;

extracting acetic acid into said extracting medium;

separating said extracting medium containing acetic acid from an extraction residue;

supplying said extraction medium containing acetic acid into an azeotropic distillation column;

distilling off said isopropyl acetate contained in said extraction medium from a top of said azeotropic distillation column via azeotropic distillation with water;

condensing a distillate from said top of said azeotropic distillation column, to divide said distillate into a water-poor phase being rich in isopropyl acetate and a water-rich phase being rich in water;

returning at least a portion of said water-poor phase into said extractor as said extracting medium; and

recovering said acetic acid, which has been thus dehydrated and purified, from a bottom of said azeotropic distillation column.

5,662,781

ELIMINATION OF NITRILE IMPURITIES FROM POLYMERS

Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof; Michael Kroener, Mannheim, and Claudia Nilz, Roedersheim-Gronau, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02082, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/02615, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 27, 1994, Ser. No. 569,137

Claims priority, application Germany, Jul. 12, 1993, 43 23 234.5

Int. Cl.[6] C07B *63/00;* C08J *3/28*

U.S. Cl. 204—158.21 **18 Claims**

1. A process for eliminating nitrile impurities from polymers which contain acyclic N-vinylcarboxamide and/or vinylamine units, which comprises treating the polymers containing nitrile impurities from starting materials with at least one oxidizing agent and with exposure to light.

5,662,782

METHOD AND APPARATUS FOR ADJUSTING A RESONANCE FREQUENCY OF PIEZOELECTRIC ELEMENTS

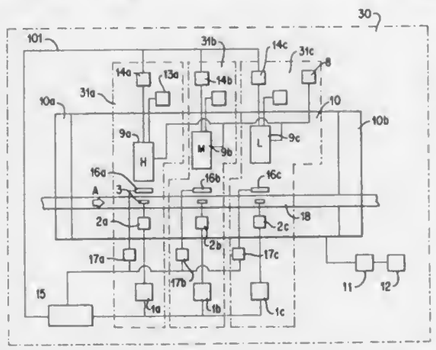
Takeshi Gomi, and Yukihiro Endo, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,836

Claims priority, application Japan, May 26, 1994, 6-113041; Dec. 21, 1994, 6-318928

Int. Cl.[6] C23C *14/32;* H01L *21/3063;* B05D *5/12*

U.S. Cl. 204—192.34 **33 Claims**



1. An apparatus for processing a piezoelectric element including an electrode, comprising:

means for emitting particles toward said electrode of said piezoelectric element for removing material from a surface of said electrode by collision of said particles with said surface;

frequency measurement means for measuring a resonance frequency of said piezoelectric element while said means for emitting particles is emitting particles and removing said material from said surface of said electrode;

electrical connection means for connecting said piezoelectric element to said frequency measurement means; and

a high-pass frequency filter including an electrical coil, wherein said electrical connection means is between said electrode and said electrical coil, said electrical coil connecting the electrode to ground.

5,662,783

ELECTROCHEMICAL MACHINING OF AEROFOIL BLADES

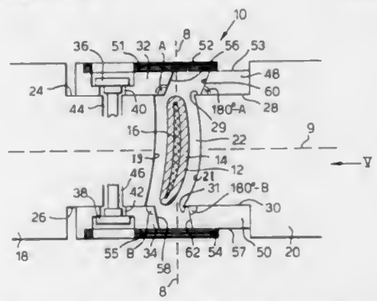
Alan J. Cannon, Chepstow, and Alan D. Staines, Bristol, both of Great Britain, assignors to Rolls-Royce plc, London, Great Britain

Filed Apr. 23, 1996, Ser. No. 636,693

Claims priority, application United Kingdom, May 11, 1995, 9509587

Int. Cl.[6] B23H *3/00*

U.S. Cl. 204—224 M **11 Claims**



1. An electrode assembly for an electrochemical machining apparatus, the assembly comprising first and second electrodes positioned on a common axis so as to define a space adapted to receive a workpiece to be electrochemically machined, the electrodes being relatively movable along the axis during an electrochemical machining operation, the first electrode having a machining face shaped to a desired contour and a first side member fixed to a first side of the first electrode movable with the first electrode and arranged to extend over the space as the first electrode moves towards the second electrode, during the electrochemical machining operation.

5,662,784

APPARATUS FOR APPLYING THIN LAYERS TO A SUBSTRATE

Manfred Schuhmacher, Alzenau; Erwin Winter, Hanau; Andreas Sauer, Hösbach, and Dietmar Marquardt, Erlensee, all of Germany, assignors to Leybold AG, Hanau am Main, Germany

Filed Mar. 25, 1996, Ser. No. 622,443

Claims priority, application Germany, Apr. 11, 1995, 195 13 691.8

Int. Cl.[6] C23C *14/34*

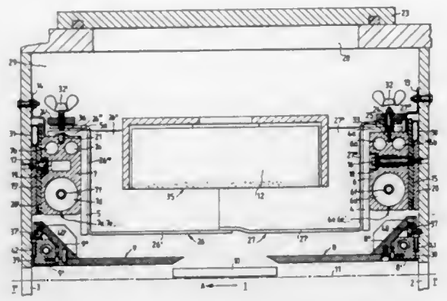
U.S. Cl. 204—298.07 **10 Claims**

1. Apparatus for coating a substrate by sputtering a target, said apparatus comprising

a vacuum chamber having walls,

hollow members mounted in parallel on respective walls, each hollow member having therein conduit means for coolant and process gas, and holes for dispensing process gas into said vacuum chamber,

anode members mounted to respective hollow members, each anode member having an L-shaped cross section formed by a short shank and a long shank, said short shanks extending



over said hollow members, said long shanks extending vertically from said short shanks,

pins extending upward from said hollow members and bores in said short shanks, said pins being received in said bores to position said anode members on said hollow members, and

a cathode mounted between said anodes.

5,662,785

METHOD FOR MASKING A WORKPIECE AND A VACUUM TREATMENT FACILITY

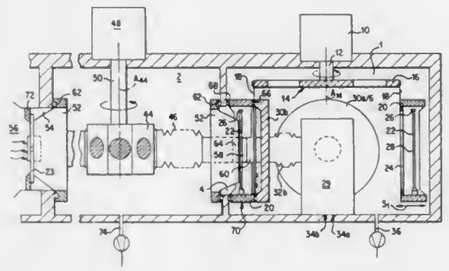
Roman Schertler, Wolfurt, Austria, assignor to Balzers Aktiengesellschaft, Liechtenstein

Continuation of Ser. No. 131,639, Oct. 5, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 382,399

Claims priority, application Switzerland, Oct. 6, 1992, 3118/92

Int. Cl.[6] C23C *14/56;16/04;* C23F *1/02*

U.S. Cl. 204—298.25 **5 Claims**



1. A vacuum treatment facility for surface treatment of disk-shaped workpieces, comprising at least two vacuum chambers configured and arranged to communicate with each other, at least selectively, via a transition opening; a first of said at least two vacuum chambers having a first transport apparatus and at least one surface treatment station; said first transport apparatus configured to accommodate at least one disk-shaped workpiece with one disk surface thereof facing said first at least one surface transport apparatus and another disk surface thereof arranged to be exposed to said treatment station as said workpiece is operatively positioned relative to said at least one surface treatment station via said first transport apparatus; a second of said at least two vacuum chambers having a second transport apparatus; a mask applicator and removal apparatus arranged in relation to said transition opening so as to apply at least one mask to said another disk surface before exposure thereof to said at least one surface treatment station and to remove said mask member from said another disk surface after said exposure and so as to then apply said removed mask member to a following workpiece disk surface arranged to be next exposed to said at least one surface treatment station.

5,662,786

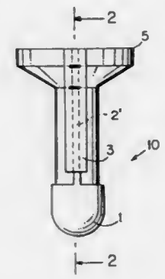
ELECTROCHEMICAL SENSOR

Karl-Hermann Friese, Leonberg; Helmut Weyl, Schwieberdingen; Werner Wieland, Kornwestheim, and Hans-Martin Wiedenmann, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 372,363, Mar. 19, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,163

Int. Cl.[6] G01N *27/409*

U.S. Cl. 204—429 **11 Claims**



1. An electrochemical sensor for determination of an oxygen content of exhaust gases, comprising a probe element including a tube made from a raw material mixture consisting essentially of an ionically conductive solid electrolyte, said tube having an open end and a closed end and also having an outer surface, and an inner electrode; an outer electrode located on the outer surface; a substantially pore-free conductor strip layer located on the outer surface, connected to said outer electrode, and extending toward said open end from said outer electrode, the conductor strip layer having a portion in close proximity to the open end of the tube; and a substantially pore-free cover layer hermetically covering the portion of said conductor strip layer in close proximity to the open end of the tube, said cover layer being made from a cover layer material including the ionically conductive solid electrolyte, said cover layer material having a sintering activity which is at least equal to that of said raw material mixture from which said tube is made, said conductor strip layer consisting essentially of a ceramic binder and an electron-conducting material, said ceramic binder having at least the same sintering activity as that of said cover layer material.

5,662,787

DEVICE FOR PROFILING OLIGOSACCHARIDES RELEASED FROM GLYCOPROTEINS

Andras Guttman, Fullerton, and Nelson H. Cooke, Anaheim Hills, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 19, 1996, Ser. No. 589,042

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—455 **4 Claims**

1. An electrophoresis channel for the electrophoretic separation of oligosaccharides, said channel comprising a conduit containing a lithium acetate buffer and an electrophoresis gel.

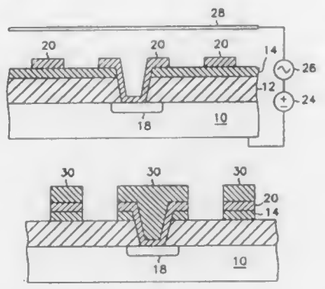
4. An electrophoresis channel for the electrophoretic separation of oligosaccharides, said channel comprising a conduit containing a lithium acetate buffer and said channel having a wall, said wall having a polymeric coating.

5,662,788

METHOD FOR FORMING A METALLIZATION LAYER

Gurtej Sandhu Sandhu, Boise, Id., and Chris Chang Yu, Aurora, Ill., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 3, 1996, Ser. No. 656,712
Int. Cl.[6] H01L 21/445
U.S. Cl. 205—87 15 Claims



1. A method for forming a metallization layer outwardly from a semiconductor substrate, the method comprising the steps of:
forming a first layer of a material outwardly from the semiconductor substrate;
forming contact vias that extend through the first layer to the semiconductor substrate;
forming a layer of a second material outwardly from the first layer;
selectively removing portions of the second layer such that the remaining portion of the second layer defines the layout of the metallization layer and the contact vias;
placing the first and second layers at different surface potentials;
electro-depositing the first and second layers in a solution of metal ions by applying a bi-polar modulated voltage having a positive duty cycle and a negative duty cycle, the voltage and surface potentials selected such that the metal is deposited on the remaining portions of the second layer and that metal deposited on the first layer during a positive duty cycle is removed from the first layer during a negative duty cycle; and
selectively removing exposed portions of the first layer.

5,662,789

REMOVAL OF ORGANICS FROM AQUEOUS SOLUTIONS

Barry R. MacDougall, Ottawa; Michael A. Gattrell, Kanata, and Olga Kargina-Power, Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Mar. 3, 1995, Ser. No. 398,077
Int. Cl.[6] C02F 1/461
U.S. Cl. 205—688 20 Claims

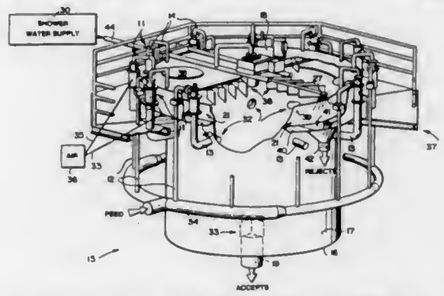
1. A process for the electrochemical collection in an electrochemical cell of an organic compound amenable to electrochemical coupling in an aqueous solution, said electrochemical cell including a working electrode, a counter electrode and an electrolyte, the process comprising applying a sufficient potential to said working electrode to collect the organic compound as a deposit of a higher molecular weight substantially water-insoluble coupling product of said organic compound on the working electrode, but below a potential where a significant side reaction involving hydrogen or oxygen gas evolution occurs.

5,662,790

AIR CONTACTOR WITH FOAM SEPARATION VESSEL SYSTEM

Keith A. Carlton, Glens Falls, N.Y.; Scott M. Clum, Columbus, Ind.; Joseph R. Phillips, Queensbury, N.Y., and Todd A. Salvato, Adams, Mass., assignors to Ahlstrom Machinery Oy, Karhula, Finland

Filed Oct. 4, 1995, Ser. No. 539,242
Int. Cl.[6] B03D 1/24; B04C 9/00;5/00
U.S. Cl. 269—170 18 Claims



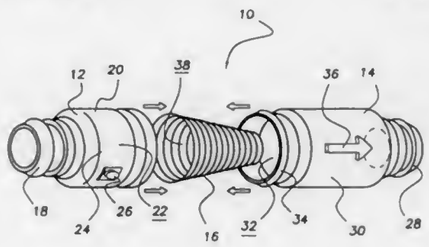
1. A deinking system, for deinking a slurry, comprising:
a plurality of gas sparged hydrocyclones, each having first and second ends, a tangential slurry inlet adjacent said first end, and a slurry outlet adjacent said second end;
a foam separation vessel having an outer periphery, a liquid level therein, a top, and a bottom;
said plurality of gas-sparged hydrocyclones comprising at least three hydrocyclones mounted to and spaced substantially evenly around said outer periphery of said foam separation vessel;
a slurry accepts outlet from adjacent said foam separation vessel bottom;
a conduit connecting each said slurry outlet of said hydrocyclones to said foam separation vessel and having a discharge opening passing through said outer periphery and below the liquid level in said foam separation vessel and above said accepts outlet of said foam separation vessel; and
means for removing foam at or above the liquid level, with ink particles and contaminants therein, from said foam separation vessel.

5,662,791

RADIATOR COOLING SYSTEM FILTER ASSEMBLY

John P. Hurst, and Jeanette W. Hurst, both of 280 Pigeon River Rd., Sevierville, Tenn. 37862

Filed Nov. 29, 1995, Ser. No. 563,119
Int. Cl.[6] B01D 35/02
U.S. Cl. 210—94 4 Claims



1. A radiator cooling system filter assembly comprising:
a first housing member;
a second housing member;
a snap connector for connecting said first and second housing members together in use; and

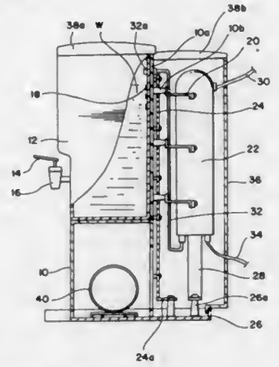
a filter element;
said first housing member being constructed from a clear plastic material and including a first cooling hose fitting, a first filter housing portion having a first filter element cavity formed therein; an interior peripheral channel that forms a portion of said snap connector utilized to secure said first and second housing members together in use; and a pressure relief valve;
said second housing member being constructed from a clear plastic material and including a second cooling hose fitting; a second filter housing portion having a second filter element cavity formed therein; an exterior peripheral lip that forms said second portion of said snap connector and mateably fits within said interior peripheral channel of said first housing member;
said filter element being a conical shaped screen having a open end of a diameter that corresponds with an internal diameter of said first filter element cavity;
said first and second housing members forming a complete filter element cavity of a size sufficient to completely house said filter element when interconnected with said snap connector.

5,662,792

WATER PURIFIER HAVING REINFORCEMENT PREVENTING DEFORMATION OF A TANK-SUPPORTING WALL

Sang-Wook Suh, Songtan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 9, 1995, Ser. No. 556,095
Claims priority, application Rep. of Korea, Nov. 14, 1994, 94-30241 U
Int. Cl.[6] B01D 27/08
U.S. Cl. 210—104 3 Claims



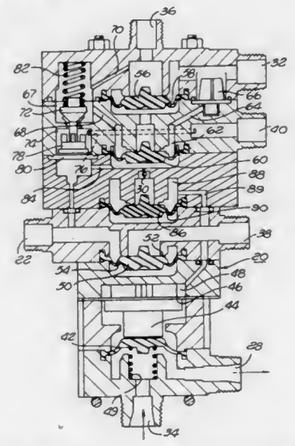
1. A water purifier, comprising:
a housing body including a base member, a horizontal support surface disposed above the base member, and an upwardly extending wall;
a plurality of filtering members for filtering water, each of the filtering members including an outer container having a water inlet and a water outlet, the filtering members connected to the wall and disposed adjacent a first side of the wall;
a water storage tank for storing water purified by the filters, the tank being seated on the horizontal support surface and bearing against a second side of the wall;
a first supporting structure for supporting the outer containers of the filters on the base member;
a reinforcing member including a plate disposed between the filters and the wall and oriented parallel to the wall, the plate being fixedly connected to the wall for reinforcing the wall against deformation; and
a second supporting structure comprising connectors affixed to the wall and protruding through the plate, the connectors being connected to the filters at locations above the first supporting structure and being separate from the water inlet and water outlet.

5,662,793

VALVE ASSEMBLY OF A REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Richard W. Beall, Jr., 229 4th Pl., Manhattan Beach, Calif. 90266

Filed Jan. 5, 1996, Ser. No. 583,405
Int. Cl.[6] B01D 21/30;63/00
U.S. Cl. 210—134 28 Claims



24. A reverse osmosis water purification system that is coupled to a raw water line, a tap line and a drain line, comprising:
a reverse osmosis membrane which has a raw water inlet port, a waste water outlet port and a pure water outlet port;
an accumulator which has a single pure water inlet/outlet port and a squeeze water inlet port;
a housing that has a first pure water inlet port coupled to the pure water outlet port of the accumulator, a second pure water inlet port coupled to the pure water outlet port of the reverse osmosis membrane, a pure water outlet port coupled to the tap line, a drain outlet port coupled to the drain line, a waste water inlet port coupled to the waste water outlet port of the reverse osmosis membrane and a squeeze water outlet port coupled to the squeeze water inlet port of the accumulator;
a first pure water check valve that moves between an open position and a closed position to control a flow of water from said first pure water inlet port to said pure water outlet port of said housing;
a squeeze water valve that moves between an open position and a closed position to control a flow of water from said waste water inlet port to said squeeze water outlet port of said housing;
a squeeze water pilot valve that is coupled to said pure water outlet port and said drain outlet port said squeeze water pilot valve moves from a closed position to an open position when a pure water outlet port pressure falls below a predetermined level wherein said squeeze water valve moves to the open position in response to said squeeze water pilot valve moving to the open position;
a second pure water check valve that moves between an open position and a closed position to control a flow of water from said second pure water inlet port to said pure water outlet port of said housing; and,
a diverter valve that is coupled to said pure water outlet port, said drain port and said second squeeze valve, said diverter valve moves between an open position and a closed position, wherein said diverter valve moves to said open position when

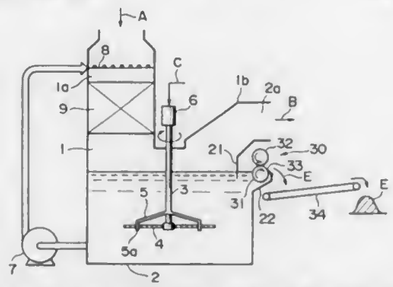
a pure water outlet port pressure exceeds a predetermined level, movement of said diverter valve to the open position allows water to flow from said waste water inlet port through said squeeze water valve and, said diverter valve moves to the closed position and fluid communication between said waste water inlet port and said drain outlet port when the pure water outlet port exceeds the predetermined level said squeeze water pilot valve to said drain outlet port.

5,662,794

SOLID-LIQUID SEPARATOR AND WET FLUE GAS DESULFURIZATION APPARATUS

Kiyoshi Okazoe; Atsushi Tatani; Taku Shimizu, all of Tokyo, and Naohiko Ukawa, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,500
Claims priority, application Japan, Aug. 29, 1994, 6-203153
Int. Cl.[6] B01D *53/34*
U.S. Cl. 210—151 **5 Claims**



1. A wet flue gas desulfurization apparatus of the tank oxidation type for absorbing sulfur dioxide present in a flue gas into an absorbent slurry and for oxidizing the spent absorbent slurry to form gypsum as a by-product, said apparatus comprising an absorption tower having in a lower part thereof a tank for receiving an absorbent slurry containing a calcium compound; a circulating pump for feeding the absorbent slurry within said tank to a flue gas inlet section in an upper part of said absorption tower and bringing the absorbent slurry into contact with the flue gas; air supply means for supplying air to said tank for purposes of oxidation; a first roller disposed on one side of said tank with a lower part thereof immersed in slurry present in said tank, for lifting slurry from the tank, when rotated, by adherence of the slurry to an outer surface of the first roller, and a second roller disposed above said first roller and facing said first roller for removing water from the slurry adhering to the first roller by pressure contact of the second roller with the first roller thereby forming slurry solids.

5,662,795

SWIMMING POOL CHEMICAL DISPENSER

Stanley R. Pickens, Monroeville; Paul T. Rice, Sewickley, both of Pa., and Richard H. Ferguson, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1995, Ser. No. 574,879
Int. Cl.[6] B01D *11/02;* **C02F** *1/76*
U.S. Cl. 210—169 **10 Claims**

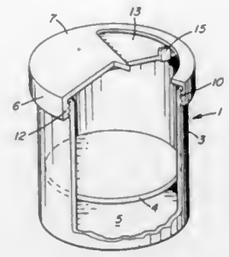
1. A dispenser for dispensing a solid swimming pool chemical into water when the dispenser is immersed in water comprising, in combination,

(a) a container for holding the pool chemical, said container having a closed bottom and a lid with a dispensing opening, and

(b) a plate member having

(1) a specific gravity of less than 1.0,

(2) a color marking that is readily discernible when the member is covered with water, and



(3) a size larger than the opening in the lid,

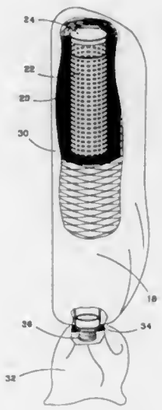
said plate member being contiguous to the bottom of the container and being freely movable vertically.

5,662,796

PORTABLE SWIMMING POOL MAKEUP WATER TREATMENT APPARATUS

Robert Charles Jan Kerecz, 2304 SW. 53rd St., Cape Coral, Fla. 33914

Filed Mar. 25, 1996, Ser. No. 615,138
Int. Cl.[6] E04H *4/16;* **B01D** *27/14*
U.S. Cl. 210—169 **1 Claim**



1. A portable apparatus for treating make-up water for a swimming pool having an interior surface and water and comprising:

a threaded connector for connecting the apparatus to a make-up water fill hose;

a perforated hollow core in fluid communication with the threaded connector for holding pool chemicals or diatomaceous earth;

an inner filtration media surrounding the hollow core for removing sand, silt, clay, ferric metals, algae and organics from the make-up water;

an outer filtration media having a closed upper end and an open lower end and enclosing the inner filtration media and the threaded connector with the open lower end forming a skirt for preventing the threaded connector from contacting the interior surface of the swimming pool; and

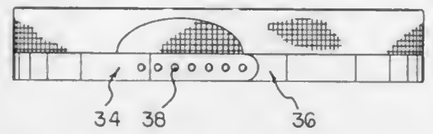
buoyancy means for floating the apparatus in the water of the swimming pool.

5,662,797

FINE MESH PRE-FILTER

Anthony Varrassi, 680 Reeceville Rd., Coatsesville, Pa. 19320

Filed May 6, 1996, Ser. No. 642,931
Int. Cl.[6] E04H *4/16*
U.S. Cl. 210—169 **1 Claim**



1. A new and improved fine mesh pre-filter for use in association with an existing swimming pool filter, the apparatus comprising, in combination:

a filter disc being fabricated of fine mesh plastic and formed in a generally circular configuration with a periphery and an outer diameter, the filter disc including a plurality of generally rectangular apertures extending therethrough; and

an outer binding fabricated of plastic and formed as a generally circular adjustable band, the band having an inboard end including a plurality of apertures and a outboard end having a plurality of detents, in an operative orientation the detents being positioned within the apertures, in an operative orientation the filter disc being postioned upon an existing pool filter, the outer binding securing the filter disc to the pool filter, the filter disc filtering water before it is filtered by the pool filter thereby minimizing contamination of the existing pool filter.

5,662,798

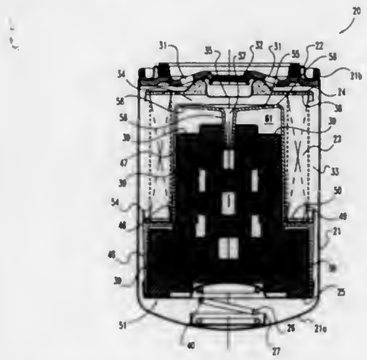
Patent Not Issued For This Number

5,662,799

SLOW RELEASE COOLANT FILTER

R. Douglas Hudgens, and Charles L. Matheson, both of Cookeville, Tenn., assignors to Fleetguard, Inc., Nashville, Tenn.

Filed Jun. 21, 1996, Ser. No. 667,673
Int. Cl.[6] B01D *27/04*
U.S. Cl. 210—192 **27 Claims**



1. A coolant filter for use in filtering a coolant solution which flows through the coolant filter and being designed for the release of a supplemental coolant additive into said coolant solution, said coolant filter comprising:

a filter housing assembly defining a flow outlet and flow inlet means;

a filter element positioned inside said filter housing assembly;

an endplate member which is configured with an interior chamber, said endplate member in cooperation with said filter element defining an interior space for receiving filtered coolant solution;

a source of supplemental coolant additive positioned within said interior chamber; and

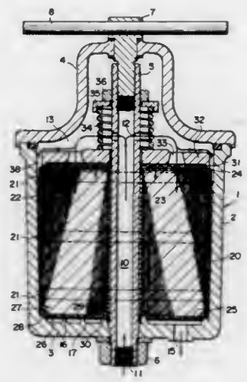
slow release means disposed between said source of supplemental coolant additive and said flow outlet for permitting a portion of said filtered coolant solution from said interior space to enter said interior chamber to dissolve said supplemental coolant additive and for controlling the rate of release of said supplemental coolant additive from said interior chamber into said filtered coolant solution in said interior space.

5,662,800

OIL/WATER PURIFYING APPARATUS

Eiichi Sugiura, 149, Matsumotocho, Hekinan-shi, Aichi, Japan

Filed Dec. 17, 1987, Ser. No. 133,953
Claims priority, application Japan, May 8, 1987, 62-112732
Int. Cl.[6] B01D *25/00*
U.S. Cl. 210—234 **8 Claims**



1. A liquid purifying apparatus comprising:

a casing positionable in an upstanding position and having an upper end, a lower end, and a side wall interconnecting the upper and lower ends, the side wall tapering inwardly in the downward direction such that the casing has a larger inner diameter at its upper portion than at its lower portion; a conduit extending coaxially within the casing through a central portion of the end of the casing for introducing liquid to be purified into the casing; a roll filter member disposed coaxially within the casing and surrounding the conduit such that the upper end portion of the conduit extends above the upper end of the roll filter member, the roll filter member having a length dimension less than the casing and being oriented so as to define within the casing an open space above an upper end face of the roll filter member; a sheet-like filler element disposed on and covering the upper end face of the roll filter member; a disc-like retainer having a pair of opposed flat surfaces and movably disposed within the casing and resting on the sheet-like element so as to press the sheet-like filter element against the upper end face of the roll filter member, the disc-like retainer having openings therethrough which open at the flat surfaces thereof to define first liquid flow paths from the open space within the casing above the roll filter member down to the sheet-like filter element; means for biasing the disc-like retainer to press the sheet-like filter element against the upper end face of the roll filter member; means encircling the outer periphery of the roll filter member to hold the roll filter member in a substantially cylindrical configuration having an outer diameter substantially equal to the inner diameter of the casing side wall at its lower portion, the cylindrically configured roll filter member

coacting with the inwardly tapering casing side wall to define therebetween a tapered annular gap defining a second liquid flow path which opens at its upper end into the open space within the casing; an inlet in the upper end portion of the conduit in the region where the conduit extends in the open space above the upper end of the roll filter member for introducing the liquid to be purified into said open space so that the liquid can flow downwardly through the first and second liquid flow paths and through the roll filter member; and an outlet in the lower end of the casing for removing purified liquid after it has flowed through the roll filter member.

5,662,801

METHOD OF REMOVING ORGANIC COMPOUNDS FROM AIR AND WATER COLUMNS

Herbert W. Holland, 2314 Chimney Rock, Houston, Tex. 77056

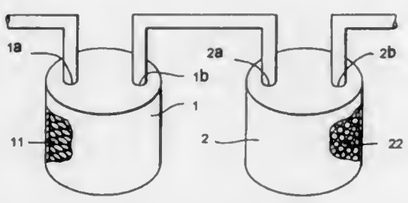
PCT No. PCT/US95/05629, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO95/30628, PCT Pub. Date Nov. 16, 1995

PCT Filed May 8, 1995, Ser. No. 663,156

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[6] C02F *1/28*

U.S. Cl. 210—266 **2 Claims**



1. An apparatus for removing, containing, and collecting organic contaminants from a fluid column, comprising:

a container having an inlet port for receiving a feed stream of organic contaminants carried within a fluid column and an outlet port for discharging, as a processed feed stream, fluid from the container for release into the environment; and

a plurality of absorbent devices arranged in stratification within the container to establish chambers of distinct organic compound absorption units, each absorbent device comprising an outer envelope layer of textile material having a plurality of stacked layers of textile material disposed within the envelope layer and forming a plurality of chambers in stratification with a polymer material having the property of absorbing and solidifying liquid hydrocarbons being disposed in each of the chambers, and a seam joinder of the envelope layer and the stacked layers wherein said plurality of stacked textile material layers dispersively conduct liquid hydrocarbons under capillary attraction throughout the interior of said envelope layer for absorption and solidification by said polymer.

5,662,802

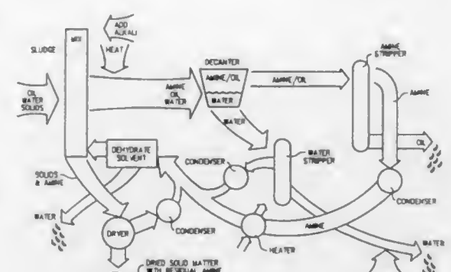
SOLVENT EXTRACTION PROCESS USING WATER ABSORBING SOLVENT AT PRESELECTED TEMPERATURE

William F. Heins, Redmond, and James C. Nowak, Bellevue, both of Wash., assignors to Ionics, Incorporated, Watertown, Mass.

Filed Jul. 7, 1994, Ser. No. 272,886

Int. Cl.[6] B01D *11/02;11/04*

U.S. Cl. 210—634 **24 Claims**



18. A process for extraction of organic material from contaminated material, wherein said contaminated material comprises a mixture of solid material, water, and organic material, said method comprising the steps of:

(1) mixing the contaminated material and the solvent to provide a resulting mixture of solvent and contaminated material at a preselected temperature;

(2a) dissolving a portion of said organic material in said solvent, to thereby at least partially decontaminate said contaminated material;

(2b) adding water to said mixture of said solvent and contaminated material in an amount effective to cause said solid material to settle;

(3) separating said solvent from said solid material;

(4) wherein, prior to or during the step of mixing said solvent with said contaminated material, the temperature of said solvent is adjusted to said preselected temperature, said preselected temperature being above the inverse critical solution temperature of said solvent for water, if said inverse critical solution temperature exists, and

(5) and wherein, during mixing of said solvent with said contaminated material, the actual amount of water in said solvent at the preselected mixing temperature is maintained approximately 1.5% by weight below the capacity of the solvent for water,

(6) so that organic material is effectively removed from said contaminated material.

5,662,803

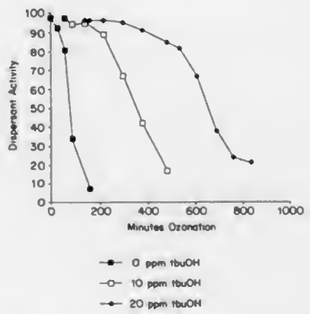
STABILIZERS FOR ADDITIVES IN AQUEOUS SYSTEMS CONTAINING OZONE

Paul R. Young, Wheaton, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 9, 1996, Ser. No. 629,671

Int. Cl.[6] C02F *5/14*

U.S. Cl. 210—698 **18 Claims**



1. A method for increasing the effectiveness of a water-soluble polymeric additive in an aqueous system being treated with ozone, wherein an effective amount of ozone is added to the aqueous system to control microbiological growth, and an effective amount of the polymeric additive is added to the aqueous system to prevent hardness precipitation, which comprises the step of adding to the aqueous system being treated with ozone and containing said water-soluble polymeric additive an effective amount of a compound in a weight ratio of from about 1:10 to about 10:1 of said polymeric additive to said compound selected from the group consisting of alkyl alcohols having at least four carbon atoms, alkyl carboxylic acids, alkyl amides, alkylamines, dimethyl sulfoxide, lauryl sulfate, and combinations thereof.

5,662,804

METHOD AND APPARATUS FOR SEPARATING NON-SOLUBLE PARTICLES FROM A LIQUID

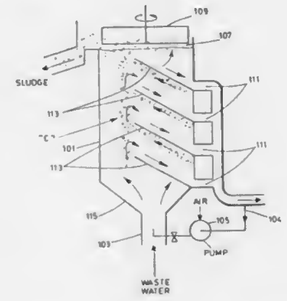
Reneau Dufour, Breakeyville, Canada, assignor to Les Traitements des Eaux Poseidon Inc., Outremont, Canada

Filed Mar. 22, 1996, Ser. No. 620,884

Claims priority, application United Kingdom, Mar. 23, 1995, 9505891

Int. Cl.[6] C02F *1/24;* B01D *17/035*

U.S. Cl. 210—703 **13 Claims**



11. A method for treating a liquid containing non-soluble particles in suspension in order to separate these particles from the liquid, said method comprising the steps of:

providing a tank of a given height having a top portion, a bottom portion with a liquid supply duct and a plurality of internal plates extending at an angle with the tank, said plates defining a set of upwardly inclined channels each having an upper end that is opened and each channel not including a liquid supply duct therein, and a lower end that is closed;

injecting a gas under pressure into some of the liquid to be treated in order to saturate said liquid with said gas;

feeding said gas-saturated liquid in the duct at the bottom portion of the tank under the plates, the liquid that is so fed being subject to depressurization, thereby generating gas bubbles that adhere to the particles in suspension in the liquid and lift them up to form a floating layer of sludge in the top portion of the tank;

skimming off the layer of sludge while it is formed in the top portion of the tank; and

collecting and removing the liquid treated within the tank at the lower end of each channel.

5,662,805

PROCESS AND APPARATUS FOR CONTROLLING THE DEWATERING OF SUSPENSIONS

Timothy Ian Cameron, Mt. Keira, Australia; John Rodney Field, West Yorkshire, United Kingdom; Mark Stephen Glachan, Toronto, Australia, and Peter James Tovey, West Yorkshire, United Kingdom, assignors to Allied Colloids, Ltd., Bradford, United Kingdom

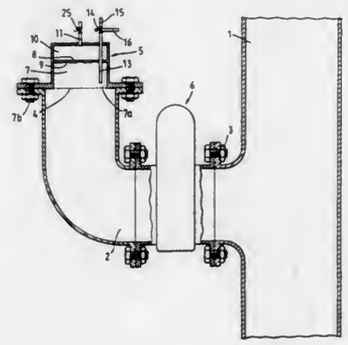
PCT No. PCT/GB94/00130, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO94/17895, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 24, 1994, Ser. No. 495,453

Claims priority, application United Kingdom, Feb. 4, 1993, 9302151

Int. Cl.[6] C02F *1/52;* B01D *21/30*

U.S. Cl. 210—709 **30 Claims**



1. Apparatus for controlling the addition of chemical dewatering modifier by chemical dosing equipment to a suspension that flows through a service line towards a dewatering plant, the apparatus comprising

testing means for measuring a test parameter of the suspension in the service line, and

dose control means for automatically controlling the addition of the chemical by the dosing equipment in response to the measured test parameter,

wherein the testing means includes;

a filtration assembly comprising a chamber which is open at one end across which a filter element is fitted and inlet means connectable to the service line for providing fluid communication between the filter element and the service line whereby suspension can be caused to flow from the service line to, and to be filtered through, the filter element, and

means for measuring a filtration rate parameter of the suspension during the filtration of the suspension through the filter element,

wherein the filtration rate parameter can be utilized by the dose control means as the measured test parameter for automatically controlling the addition of the polymeric flocculant, and

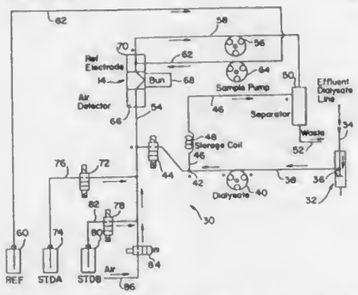
wherein the apparatus includes;

a plurality of sprays permanently mounted with respect to the chamber and positioned to direct water against substantially the entire surface of the filter element,

means for supplying pressurized water to the sprays, and

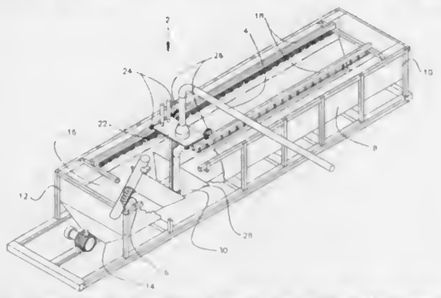
a sequential filtration control for sequentially causing the filtration of the suspension through the filter element and subsequently supplying pressurized water to the sprays to wash filtered solids off the filter element.

5,662,806
HEMODIALYSIS MONITORING SYSTEM FOR HEMODIALYSIS MACHINES
Prakash Keshavlah, Plymouth, Minn.; James P. Ebben, Hudson, Wis.; Paul F. Emerson, Minnetonka, and David A. Luhring, Savage, both of Minn., assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 239,936, May 9, 1994, Pat. No. 5,518,623, which is a continuation of Ser. No. 959,922, Oct. 13, 1992, abandoned. This application Apr. 29, 1996, Ser. No. 641,097
Int. Cl.[6] B01D *61/32*
U.S. Cl. 210—739 **20 Claims**



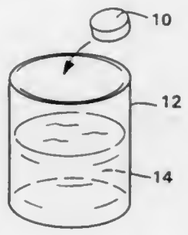
1. A method of monitoring a hemodialysis treatment in real time for utilization with a hemodialysis machine including a dialyzer and with dialysate waste effluent removed from the dialyzer, comprising:
providing a dialysate effluent constituent sensor and separately coupling a plurality of separate, selected volume, fluid portions of the dialysate effluent to said constituent sensor during a dialysis treatment;
detecting and measuring concentrations of said constituent in each of said dialysate effluent portions;
determining a dialysate constituent concentration-time profile from said constituent concentration measurements; and
directly determining an indication of adequacy of said dialysis treatment from said dialysate constituent concentration-time profile prior to the end of a treatment period of, whereby treatment can be adjusted by an amount effective to result in adequate hemodialysis for fixed time-period hemodialysis treatments if the determination indicate the dialysis treatment having its adequacy determined is inadequate.

5,662,807
APPARATUS AND METHOD FOR HANDLING WASTE
Clinton J. Angelle, 1584 Grand Anse Hwy., Breaux Bridge, La. 70517
Filed Dec. 12, 1995, Ser. No. 570,910
Int. Cl.[6] B01D *21/18*
U.S. Cl. 210—744 **6 Claims**



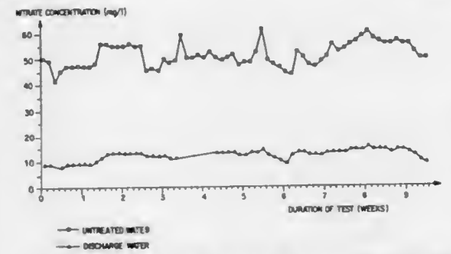
3. A process for handling a discharged drilling fluid from a drilled bore hole, the process comprising:
placing the discharged drilling fluid into a container, the container containing: a rail; a trolley, positioned on said rail; a pump means for pumping the discharged drilling fluid from said container; a handling means, operatively associated with said trolley, for handling said discharged drilling fluid from a first position within said tank to a second position within said tank, and wherein the handling means contains an elongated member capable of pivoting; and, an auger positioned at the second position;
transporting said trolley from a first position to a second position;
pumping the discharged drilling fluid from said container
pivoting said handling means;
stirring the discharged drilling fluid;
pumping the discharged drilling fluid from said container;
terminating the pumping;
allowing the waste to separate into a fluid phase and a solid phase;
adjusting the pump means with the level of the fluid phase;
pumping the waste from said container;
transporting said trolley from a first position to a second position;
pushing the solids to the second position;
removing the solids from said container with the aid of said auger.

5,662,808
PROCESS AND ARTICLE FOR DISINFECTING WATER
Carol Ann Blaney, Roswell; Kristi Lynn Kiick-Fischer, Alpharetta, and Rosann Marie Kaylor, Cumming, all of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Division of Ser. No. 368,833, Dec. 15, 1994, Pat. No. 5,538,629. This application Jul. 11, 1996, Ser. No. 678,131
Int. Cl.[6] C02F *1/50*
U.S. Cl. 210—749 **15 Claims**



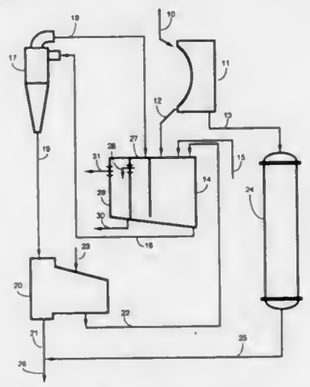
1. A process for disinfecting water which provides a visual indication after the disinfection is complete, the process including the steps of:
providing water;
intermixing the water with a disinfectant for a time period T_k, where T_k is sufficient to allow the disinfectant to render harmless substantially all pathogens present in the water;
intermixing the water with a colorant;
intermixing the water with a material adapted to remove substantially all of the disinfectant and colorant from the water over a time period T_r, where T_r is greater than T_k;
wherein the water, disinfectant, colorant and material are intermixed for a time period of T_r or greater; and
whereby substantially all pathogens in the water are rendered harmless, substantially all of the disinfectant is removed from the water and substantially all of the colorant is removed from the water.

5,662,809
CATALYTIC FLUIDIZED BED PROCESS FOR TREATING AQUEOUS LIQUIDS
Michael Bischoff, Braunschweig; Dirk Bonse, Lehrte, and Michael Sell, Peine, all of Germany, assignors to Solvay Umweltchemie GmbH, Hannover, Germany
PCT No. PCT/EP93/00524, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/17973, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 8, 1993, Ser. No. 295,908
Claims priority, application Germany, Mar. 13, 1992, 42 07 962.4
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **3 Claims**



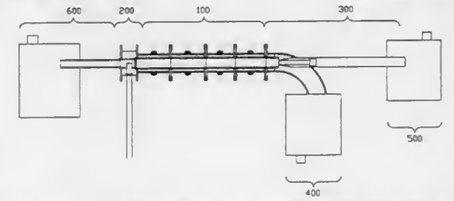
1. A process for catalytically treating an aqueous liquid contaminated by microorganisms, said process comprising the steps of continuously
guiding the liquid through a reactor and contacting the liquid with catalyst particles in the reactor in the absence of hydrazine, hydrazide and hydrazone
maintaining the catalyst in a fluidized bed to prevent microorganism contamination of the catalyst without a separate microorganism decontamination step, the catalyst particles having a particle size of from 0.1 to 10 mm; and
removing at least one ion selected from the group consisting of nitrite and nitrate from the liquid by reduction with selective formation of nitrogen.

5,662,810
METHOD AND APPARATUS FOR EFFICIENTLY DEWATERING CORN STILLAGE AND OTHER MATERIALS
Ralph H. Willgohs, 7805 Falknor Rd., Covington, Ohio 45318
Filed Aug. 29, 1995, Ser. No. 520,409
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—781 **14 Claims**



1. A process for dewatering a feed stream of aqueous solids residual from fermentation and distillation, said process comprising the steps of:
(a) classifying by size the feed stream of aqueous solids slurry into at least a first sub-stream and a second sub-stream, whereby solids in said first sub-stream are predominately particles larger than a predetermined size and solids in said second sub-stream are predominately particles smaller than said predetermined size, wherein said predetermined size is between about 15 microns and about 500 microns;
(b) thereafter dewatering said first sub-stream in a primary dewatering device; and
(c) recovering solids from said second sub-stream with a secondary recovery device.

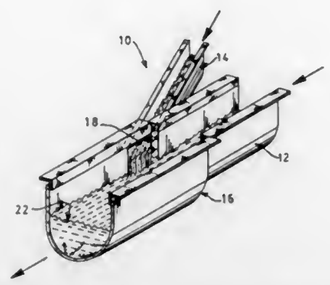
5,662,811
METHOD FOR CREATING GAS-LIQUID INTERFACIAL CONTACT CONDITIONS FOR HIGHLY EFFICIENT MASS TRANSFER
Thomas L. Grisham, Tyler; Janet K. Peters, Kilgore; Keith W. Sharp, Richmond, and Edward E. Ebel, Mabank, all of Tex., assignors to Revtech Industries, Inc., Kilgore, Tex.
Continuation-in-part of Ser. No. 406,502, Mar. 20, 1995, Pat. No. 5,531,904, and Ser. No. 492,766, Jun. 21, 1995, Pat. No. 5,529,701. This application Mar. 18, 1996, Ser. No. 617,416
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—788 **40 Claims**



34. A method of separating gas from a two phase gas-liquid froth including bubbles of gas surrounded by liquid and moving said gas into a zone adjacent to said froth and separated from said froth across an interface between said froth and said zone while preventing the presence of liquid in said zone, comprising the step of imposing accelerational force upon said gas and upon said liquid acting so as to accelerate said gas and said liquid through said froth in a direction generally perpendicular to said interface.

5,662,812
TROUGH SYSTEM FOR MACHINE TOOL COOLANT COLLECTION FLUMES
Stephen N. McEwen, Bowling Green, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio
Continuation of Ser. No. 386,223, Feb. 9, 1995, which is a continuation of Ser. No. 222,963, Apr. 5, 1994, which is a continuation of Ser. No. 905,444, Jun. 29, 1992, Pat. No. 5,300,220. This application Jun. 11, 1996, Ser. No. 661,801
Int. Cl.[6] B01D *17/12*
U.S. Cl. 210—805 **4 Claims**

2. A method for transporting machine tool coolant comprising:
providing a main trough having upstream and downstream end portions;
introducing a forced coolant flow in the upstream end portion of said main trough through a single coolant source, the flow being of sufficient volume and low velocity to substantially prevent the formation of misting and foaming;
introducing additional coolant from a tributary into the main trough between the upstream end and the downstream end portions;
wherein said main trough has an enlargement portion having a greater cross-sectional area at the downstream side of its intersection with the tributary to smoothly accommodate the additional flow of coolant from the tributary trough while maintaining the flow in the main trough at a sufficient velocity so that the sus-



pended contaminants remain continuously suspended in the coolant without the need for flush nozzles intermediate of the upstream and downstream end portions.

5,662,813

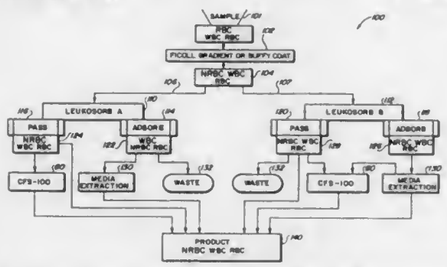
METHOD FOR SEPARATION OF NUCLEATED FETAL ERYTHROCYTES FROM MATERNAL BLOOD SAMPLES

David W. Sammons; Garland E. Twitty; Joseph G. Utermohlen, all of Tucson, Ariz., and Rizwan Sharnez, Sicklerville, N.J., assignors to BioSeparations, Inc., Tucson, Ariz.

Filed Oct. 21, 1994, Ser. No. 327,483

Int. Cl.[6] G01N *27/26;33/49;* **B01D** *37/00*

U.S. Cl. 210—806 **8 Claims**



6. A method for recovering nucleated fetal cell fractions from a maternal whole blood sample, comprising the steps of:

a) depleting a major fraction of unwanted cells from the maternal whole blood sample, thereby concentrating nucleated fetal cells in a concentrated maternal whole blood sample;

b) passing the concentrated maternal whole blood sample through a charge-flow separator apparatus, thereby separating at least one nucleated fetal cell fraction from other blood components in the concentrated maternal whole blood sample; and

c) analyzing the at least one nucleated fetal cell fraction for the presence of nucleated fetal cells therein.

5,662,814

MICRO-MACHINING MINUTE HOLLOW USING NATIVE OXIDE MEMBRANE

Rinji Sugino, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 304,779, Sep. 12, 1994. This application May 28, 1996, Ser. No. 653,977

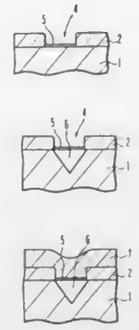
Claims priority, application Japan, Dec. 27, 1993, 5-332727

Int. Cl.[6] C03C *25/06*

U.S. Cl. 216—2 **23 Claims**

1. A method of forming a hollow comprising the steps of:

(a) forming a film having a number of holes at least on a partial area of a surface of a substrate, said film being formed to pass an etchant therethrough;



(b) etching said substrate by said etchant through the holes in at least a partial region of said film to form a hollow under at least said partial region of said film; and

(c) forming an upper layer at least on said film by film deposition to cover and close the holes and seal the hollow, wherein said upper layer does not contact a bottom surface of said hollow.

5,662,815

FABRICATING METHOD OF A MULTIPLE MICRO-TIP FIELD EMISSION DEVICE USING SELECTIVE ETCHING OF AN ADHESION LAYER

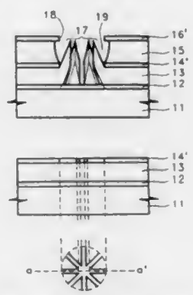
Jong-min Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 31, 1995, Ser. No. 509,459

Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6748

Int. Cl.[6] H01J *1/30*

U.S. Cl. 216—11 **11 Claims**



1. A method of fabricating a field emission device having multiple micro-tips comprising the steps of:

a) forming an adhesion layer on a substrate;

b) forming a cathode having a striped pattern on said adhesion layer;

c) depositing aluminum with an electron-beam on said adhesion layer and said cathode;

d) forming a mask of a radial pattern using a lift-off method by patterning said deposited aluminum;

e) etching radially said cathode by a reactive ion etching method using said mask to form portions where multiple micro-tips are to be formed;

f) forming an insulation layer on said adhesion layer, said cathode and said portions where the multiple micro-tips are to be formed;

g) forming a gate electrode on said insulation layer having a stripe pattern perpendicular to the striped pattern of said cathode;

h) patterning said gate electrode using the lift-off method to form an aperture for electron passage;

i) etching said insulation layer under said aperture to form a hole therein; and

j) forming the multiple micro-tips by selectively etching said adhesion layer so that said portions where the multiple micro-tips are to be formed are lifted up.

5,662,816

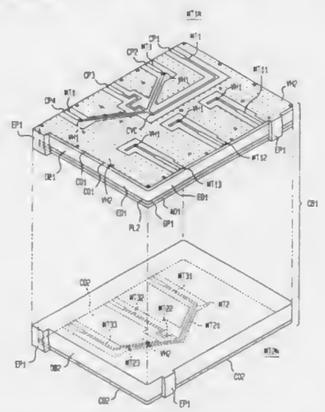
SIGNAL ISOLATING MICROWAVE SPLITTERS/ COMBINERS

Steven C. Andry, Brooklyn, N.Y., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 4, 1995, Ser. No. 566,817

Int. Cl.[6] B44C *1/22;* **C23F** *1/00*

U.S. Cl. 216—18 **20 Claims**



16. A method, comprising the following steps in any sequence:

sandwiching a ground plane between a pair of dielectric boards so as to form outer faces away from the ground plane;

forming a plurality of microstrip traces on the outer faces;

forming a plurality of openings in the ground plane;

forming a plurality of conductive signal via holes passing through the openings in the ground plane

connecting said microstrip traces on the face of one of said boards to the microstrip traces on the face of the other of said boards with said signal via holes; and

forming a plurality of conductive ground via holes extending from said ground plane to each of said faces at locations between said microstrip traces so as to carry the potential of said ground plane.

5,662,817

METHOD FOR FORMING TIP OF ARRAY OPTICAL FIBER USING ETCHING PROCESS

Hiroshi Honmou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,574

Claims priority, application Japan, Jun. 28, 1994, 6-146343; Dec. 27, 1994, 6-324568

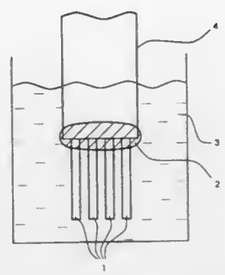
Int. Cl.[6] B05D *1/00;* **C03C** *25/00*

U.S. Cl. 216—24 **7 Claims**

1. A method for forming a tip of an array of optical fibers using an etching process, said method comprising the steps of:

applying, before an etching step, an etching resistive material on an end portion of a coated material covering constituent optical fibers of the array of optical fibers such that said etching resistive material extends to ends of said optical fibers; and then

etching, in an etching solution, said tip of the array optical fiber such that said coated material is prevented from being dissolved by the etching solution, an outer diameter of each of said optical fibers remaining substantially unchanged.



5,662,818

METHOD OF PRODUCING A PYROELECTRIC INFRARED RADIATION DETECTOR

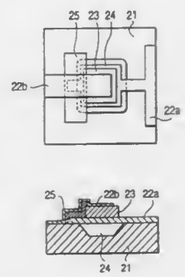
Koji Nomura; Tutomu Nakanishi; Tokumi Kotani, all of Osaka, and Keizaburo Kuramasu, Tsuzuki-gun, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 220,450, Mar. 30, 1994, Pat. No. 5,471,060. This application Jul. 31, 1995, Ser. No. 501,932

Claims priority, application Japan, Aug. 23, 1993, 5-207660; Aug. 23, 1993, 5-207661; Aug. 23, 1993, 5-207662; Aug. 23, 1993, 5-207663

Int. Cl.[6] G01J *5/06*

U.S. Cl. 216—41 **7 Claims**



1. A method of producing a pyroelectric infrared radiation detector comprising:

a first step of forming a first electrode directly on one surface of a substrate made of a (100) magnesium oxide single crystal material;

a second step of forming on a portion of the first electrode a pyroelectric thin film having a crystal orientation;

a third step of forming on the pyroelectric thin film a second electrode for absorption of infrared radiation;

a fourth step of providing etching apertures in another portion the first electrode, said apertures providing openings to the substrate; and

a fifth step of providing by a wet etching process using a phosphoric acid solution fed through said apertures at least one recess in the surface of the substrate where the first electrode is seated.

5,662,819

PLASMA PROCESSING METHOD WITH CONTROLLED ION/RADICAL RATIO

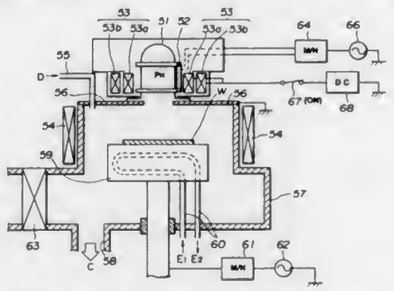
Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,227

Claims priority, application Japan, Feb. 10, 1994, 6-016563; Feb. 21, 1994, 6-022478; Aug. 30, 1994, 6-205282

Int. Cl.[6] B44C *1/22;* **C03C** *15/00;25/06;* **C23F** *1/00*

U.S. Cl. 438—711 **5 Claims**



1. A method for plasma processing a substrate comprising the steps of:

providing a vacuum vessel;

placing a substrate to be processed in the vacuum vessel;

introducing a process gas into said vessel;

generating an inductively coupled plaima in said vacuum vessel by providing a high frequency electric field in the vessel sufficient to create an inductively coupled plasma;

generating a helicon wave plasma in the vacuum vessel by providing a magnetic field in the vessel sufficient to create a helicon wave plasma;

controlling the ratio of ions to radicals in the plasma by switching the magnetic field on and of such that when the magnetic field is on a higher ratio of ions to radicals is provided and when the magnetic field is off, a lower ratio of ions to radicals is provided; and

contacting said substrate with said helicon wave plasma.

5,662,820

WELDING PROCESS FOR DRAWN ARC STUD WELDING

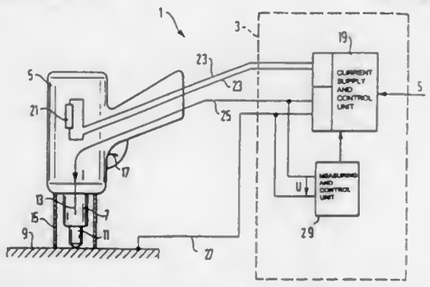
Bernd Schwiete, Witten; Ulrich Citrich, Gevelsberg, and Madsak Jurgen, Breckerfeld, all of Germany, assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 12, 1996, Ser. No. 614,300

Claims priority, application Germany, Mar. 14, 1995, 19509172

Int. Cl.[6] B23K *9/20*

U.S. Cl. 219—99 **20 Claims**



1. A welding process for drawn arc stud welding wherein:

a) after ignition of a main current electric arc, a voltage (U) is measured and

b) depending upon the measured voltage (U), at least one of the course of the current of the continued main current electric arc and the movement of parts which are to be welded, is regulated or controlled.

5,662,821

METHOD AND DEVICE FOR PRODUCING A SCREEN PRINTING STENCIL

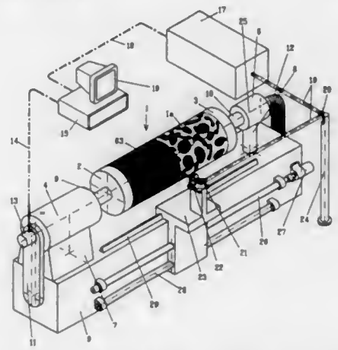
Siegfried Ruckl, Laogkampfen, Austria, assignor to Schablonentechnik Kufstein Aktiengesellschaft, Kufstein, Austria

Filed Feb. 2, 1995, Ser. No. 382,799

Claims priority, application European Pat. Off., Feb. 2, 1994, 94101572

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.67 **16 Claims**



12. A device for producing a screen printing stencil, comprising:

a clamping device for rotatably clamping a screen printing cylinder having a light responsive layer on a surface thereof, the clamping device consists of only two centering flanges, of which in each case one can be inserted into one of end faces of the screen printing cylinder;

a laser which outputs a laser beam;

a carriage which can be moved parallel to the longitudinal direction of the screen printing cylinder and has a deflecting device which deflects the laser beam in such a way that the laser beam impinges at least approximately radially on the screen printing cylinder; and

an internal duct connecting the screen printing cylinder in at least one of the centering flanges to a gas delivery device which generates a gas pressure in the interior of the screen printing cylinder such that the screen printing cylinder assumes a circular cross-section.

5,662,822

DAM BAR CUTTING APPARATUS AND DAM BAR CUTTING METHOD

Nobuhiko Tada, Ushiku; Kojiro Ogata, Ishioka; Naoki Miyanagi; Yoshiaki Shimomura, both of Ibaraki-ken; Shigeyuki Sakurai, Tsukuba; Yoshinari Nagano; Shinya Okumura, both of Ibaraki-ken, and Yasushi Minomoto, Tsukuba, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02064, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO96/12300, PCT Pub. Date Apr. 25, 1996

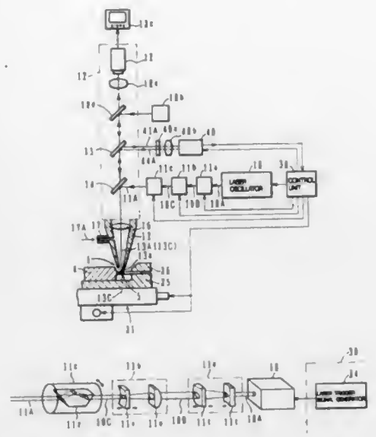
PCT Filed Oct. 9, 1995, Ser. No. 648,026

Claims priority, application Japan, Oct. 13, 1994, 6-247952

Int. Cl.[6] B23K *26/04;26/06*

U.S. Cl. 219—121.67 **5 Claims**

1. A dam bar cutting apparatus for irradiating a pulsed laser beam (**13A**) to dam bars (**5**) of a lead frame (**2**) in a semiconductor



device (**1**) and cutting said dam bars (**5**) successively, said dam bar cutting apparatus comprising a laser oscillator (**10**) for oscillating a pulsed laser beam (**10A**), a cutting optical system (**14**, **16**) for guiding said pulsed laser beam (**10A**) to the cut position of a workpiece, a work nozzle (**13**) for emitting said pulsed laser beam (**13A**) guided by said cutting optical system (**14**, **16**) therethrough and being provided at its tip end with an opening (**13***a*) for ejecting assist gas (**17A**) therethrough, carriage means (**21**) for relatively moving an optical axis (**13C**) of said pulsed laser beam (**13A**) at a constant speed with respect to said workpiece, detection light generating means (**44**) for irradiating detection light (**44A**) to each of said dam bars (**5**) to be cut and thereabout on said lead frame (**2**), light detecting means (**41**) for receiving the detection light (**41A**) reflected by said lead frame (**2**) and generating a corresponding detection signal, and control means (**30**) for determining the timing to irradiate said pulsed laser beam (**13A**) based on the detection signal from said light detecting means (**41**) and controlling said laser oscillator (**10**) so that said pulsed laser beam (**13A**) is irradiated to a predetermined position on said dam bar (**5**), wherein said dam bar cutting apparatus further comprises:

longitudinal beam transforming means (**11***a*) for transforming said pulsed laser beam (**10A**) oscillated from said laser oscillator (**10**) into a pulsed laser beam (**10B**) having an oblong cross-sectional shape so that the longitudinal size (W_4) of a spot (**13B**) of said pulsed laser beam (**10A**) on said dam bar (**5**) is twice or more the width (W_1) of said dam bar (**5**),

transverse beam transforming means (**11***b*) for transforming said pulsed laser beam (**10B**) so that the transverse size (W_3) of said spot (**13B**) of said pulsed laser beam (**10B**) on said dam bar (**5**) is not less than ½ but not more than ⅘ of the length (W_2) of said dam bar (**5**), and

beam rotating means (**11***c*) for rotatively displacing said spot (**13B**) about the optical axis (**13C**) of said pulsed laser beam (**13A**).

5,662,823

IMPACT PAD

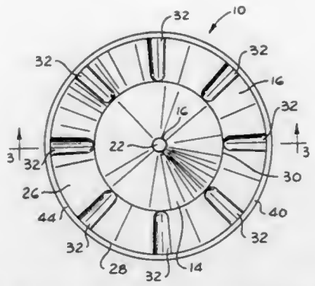
Brian P. Claar, Oxford, and Jeffrey W. Weyant, Downington, both of Pa., assignors to A. P. Green Industries, Inc., Mexico, Mo.

Filed Jan. 4, 1996, Ser. No. 582,723

Int. Cl.[6] C21B *3/04*

U.S. Cl. 222—594 **15 Claims**

1. An impact pad for use on the bottom of a vessel into which molten metal is poured for suppressing turbulence of the molten metal; said impact pad having a central formation having a center and an outer circular periphery and diminishing in height from the center to said outer circular periphery and an outer annular formation surrounding said central formation and having an outer periph-



eral surface and an inner edge at the outer circular periphery of the central portion and an upper surface flaring outwardly from said inner edge, said outer annular formation having a plurality of channels formed therein extending radially outward from said inner edge, said channels extending down from said upper surface.

5,662,824

MAGNETICALLY ATTRACTABLE PARTICLES AND METHOD

Jean Victor Sang, Kingston, Canada; Paul Groves, Charlbury, England; Robert Edward Burrell, Kingston, Canada, and Gerard Flynn, Bloxham, England, assignors to Aifa Biotech SpA, Castagnetta, Italy

Continuation of Ser. No. 62,146, May 14, 1993, abandoned, which is a continuation of Ser. No. 712,079, Jun. 7, 1991, abandoned, which is a division of Ser. No. 440,500, Nov. 22, 1989, Pat. No. 5,039,559. This application Nov. 29, 1994, Ser. No. 346,358

Claims priority, application United Kingdom, May 24, 1988, 8812218; Canada, Jun. 20, 1988, 569920

Int. Cl.[6] C01G *49/08;* **B01J** *13/02;* **C04B** *35/26;35/624*

U.S. Cl. 252—62.56 **10 Claims**

1. Water-dispersible magnetically attractable particles comprising a mass of finely divided super-paramagnetic material encapsulated in an inorganic oxide, the particles having the property of being readily brought out of dispersion by application of a magnetic field and of being readily redispersed after removal of the magnetic field.

2. Particles as claimed in claim 1, wherein the superparamagnetic material comprises a ferrite.

3. Particles as claimed in claim 2, wherein the ferrite is Fe_3O_4.

5,662,825

USE OF 1,1,1,3,3,3-HEXAFLUOROPROPANE IN CENTRIFUGAL COMPRESSORS

Donald Bernard Bivens, Kennett Square, Pa.; Richard Edward Fernandez, Bear, Del.; Mark Brandon Shiflett, Newark, Del., and Tuneen Chisolm-Carter, New Castle, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 165,562, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 788,464, Nov. 6, 1991, abandoned. This application Jan. 27, 1995, Ser. No. 379,108

Int. Cl.[6] C09K *5/04*

U.S. Cl. 252—67 **2 Claims**

1. A process for producing refrigeration comprising providing a centrifugal compressor designed to use 1,2-dichlorotetrafluoroethane as a refrigerant compressing a replacement refrigerant in the centrifugal compressor, and evaporating the refrigerant in the vicinity of a body to be cooled,

wherein said replacement refrigerant consists essentially of 1,1,1,3,3,3-hexafluoropropane in the centrifugal compressor.

2. A process for producing refrigeration comprising providing a centrifugal compressor designed to use 1,2,2-trichlorotrifluoroethane as a refrigerant, compressing a replacement

refrigerant in the centrifugal compressor, and evaporating the refrigerant in the vicinity of a body to be cooled:

wherein said replacement refrigerant consists essentially of 1,1,1,3,3,3-hexafluoropropane in the centrifugal compressor.

5,662,826

PROCESS FOR THE PREPARATION OF A COAGULATING CHEMICAL COMPRISING DISSOLVING A SOLID ZEOLITE IN A SOLUTION OF TRIVALENT METAL SALT

Rolf Olof Nilsson, Mölle, and Kjell-Erik Stendahl, Helsingborg, both of Sweden, assignors to Kemira Kemi Aktiebolag, Helsingborg, Sweden

Continuation of Ser. No. 986,920, Dec. 8, 1992, abandoned. This application Jan. 10, 1995, Ser. No. 370,839

Int. Cl.[6] C02F *1/52*

U.S. Cl. 252—179 **5 Claims**

1. A process for the preparation of a coagulant for water purification, in particular purification of sewage water, for pulp and paper manufacturing, for dewatering organic matter, for concentrating minerals, and containing a metal salt and a silicate, comprising dissolving a solid zeolite in a solution of a salt selected from the group consisting of a trivalent aluminum salt and a trivalent iron salt in a molar ratio of Me^{3+}:Si of greater than 2:1 to form a reaction product.

5,662,827

DIQUATERNARY COMPOUNDS USEFUL AS BLEACH ACTIVATORS, AND COMPOSITIONS CONTAINING THEM

Philip H. Steiger, Powell, Ohio; Shaun F. Clancy, Westport, Conn., and Owen Portwood, Columbus, Ohio, assignors to Witco Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 192,455, Feb. 7, 1994, Pat. No. 5,399,746. This application Feb. 23, 1995, Ser. No. 393,063

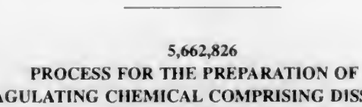
Int. Cl.[6] C09K *3/00;* **C01B** *15/10;* **C11D** *3/39;* **C07C** *67/02*

U.S. Cl. 252—186.38 **18 Claims**

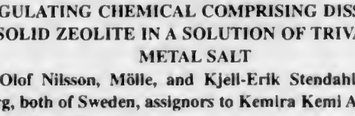
1. A bleaching composition comprising

(a) a peroxygen bleaching component which comprises one or more compounds capable of yielding hydrogen peroxide in aqueous solution; and

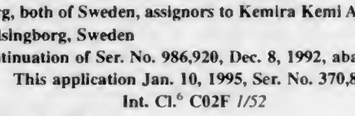
(b) one or more compounds of the formula (1), (2) or (3)



(1)



(2)



(3)

wherein A^1, A^2, A^3, A^4, A^5 and A^6 are the same or different and are selected from the group consisting of alkyl containing up to 6 carbon atoms, and alkoxyalkyl containing up to 6 carbon atoms; provided that in formula (1), one of A^1 and A^4 is optionally $—(CH_2)_{1-4}CO_2^-$ or $—(CH_2)_{1-4}SO_3^-$; in formula (2), two of A^1, A^2, A^4, and A^5 are selected from the group consisting of $—(CH_2)_{1-4}CO_2^-$ and $—(CH_2)_{1-4}SO_3^-$; and in formula (3) three or four of A^1, A^2, A^3, A^4, A^5, and A^6 are selected from the group consisting of $—(CH_2)_{1-4}CO_2^-$ and $—(CH_2)_{1-4}SO_3^-$;

X^{-1} is an anion;

M^{+1} is a cation;

a is 1 to 4;

b is 1 to 4;

c is 5 to 8;

x is 1 or 2 and is selected so that the compound of formula (1) is ionically neutral; and

m is 1 or 2 and is selected so that the compound of formula (3) is ionically neutral.

5,662,828

COMPOUND HAVING UNSATURATED SIDE CHAIN, PROCESS FOR PREPARING THE SAME, LIQUID CRYSTALLINE POLYMER PREPARED FROM THE SAME, LIQUID CRYSTAL MIXTURE AND DISPLAY ELEMENT

Yoshiaki Tsubata; Kayoko Ueda; Koichi Fujisawa, all of Tsukuba; Takayuki Higashii, Yokohama; Masayoshi Minai, Moriyama; Naoyuki Takano, and Yukari Fujimoto, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

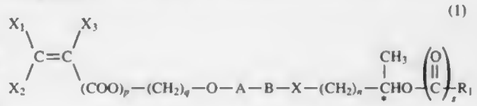
Division of Ser. No. 274,315, Jul. 13, 1994, Pat. No. 5,554,317. This application Jun. 6, 1995, Ser. No. 471,018

Claims priority, application Japan, Jul. 13, 1993, 5-173337; Aug. 3, 1993, 5-192380; Oct. 7, 1993, 5-251683; Feb. 3, 1994, 6-011895

Int. Cl.[6] C09K *19/34;* **C07D** *239/02;241/02;* **C08F** *120/00*

U.S. Cl. 252—299.61 **12 Claims**

1. A compound having an unsaturated side chain represented by the formula:



(1)

wherein A and B are the same or different and represent a group selected from the group consisting of 1,4-phenylene, 2,5 -pyridine, 2,5-pyrimidine, 2,5-pyrazine, 3,6-pyridazine, 4,4' -biphenyl, 5-(2-phenylpyrimidine), 2-(5-phenylpyrimidine), 2-(5 -phenylpyridine), 2,6-naphthalene, 2,6-quinoline, 2,6-quinoxaline and 2,6-quinazoline, or either one of A and B represents a single bond, and at least one of A and B represents 2,5-pyridine, 2,5 -pyrimidine, 2,5-pyrazine, 3,6-pyridazine, 5-(2-phenylpyrimidine), 2-(5-phenylpyridine), 2,6-quinoline, 2,6 -quinoxaline or 2,6-quinazoline, provided that the phenyl ring may be optionally substituted with at least one fluorine atom; X_1, X_2 and X_3 are the same or different and represent a hydrogen atom or a lower alkyl group having 1 to 5 carbon atoms; R_1 represents a saturated or unsaturated alkyl group having 1 to 20 carbon atoms which may be optionally substituted with at least one halogen atom or an alkoxyalkyl group having 2 to 20 carbon atoms which may be optionally substituted with at least one halogen atom; X represents $—CH_2CH_2—$, $—CH=CH—$, $—C\equiv C—$ or a single bond; n is an integer of 0 to 6; q is an integer of 1 to 15; p is 1 and s is 0 or 1; and the asterisk * indicates an asymmetric carbon atom.

5,662,829

FLUOROCYCLOHEXENE-DIOXANE DERIVATIVES

Richard Buchecker, Zurich, Switzerland, and Guy Marck, Rixheim, France, assignors to Rolic AG, Basel, Switzerland

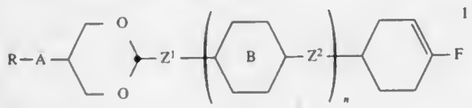
Filed Feb. 23, 1996, Ser. No. 606,117

Claims priority, application Switzerland, Mar. 3, 1995, 608/95

Int. Cl.[6] C09K *19/34;* **C07D** *319/06*

U.S. Cl. 252—299.61 **29 Claims**

1. A compound of the formula:



I

wherein

R is a C_1–C_{12} alkyl or a C_2–C_{12} alkenyl;

A is a single bond or trans-1,4-cyclohexylene;

Z^1 and Z^2 are independently a single bond or $—CH_2CH_2—$, except that Z^1 and Z^2 cannot simultaneously be $—CH_2CH_2—$;

ring B is trans-1,4-cyclohexylene or 1,4-phenylene; and

n is 0 or 1.

5,662,830

DIENE DERIVATIVE

Atsuko Fujita; Shuichi Matsui; Yuichi Onji; Makoto Ushioda, and Yasuyuki Goto, all of Chiba-ken, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

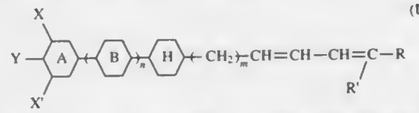
Division of Ser. No. 450,805, May 25, 1995, Pat. No. 5,609,791, which is a division of Ser. No. 41,184, Apr. 1, 1993, Pat. No. 5,449,810. This application Jul. 11, 1996, Ser. No. 678,098

Claims priority, application Japan, Apr. 3, 1992, 4-82209

Int. Cl.[6] C07C *13/615*

U.S. Cl. 252—299.63 **3 Claims**

1. A diene derivative expressed by the formula (1)



(1)

wherein R and R' each independently represent a hydrogen atom or an alkyl group of 1 to 5 carbon atoms; A represents 1,4-cyclohexylene and B represents 1,4-cyclohexylene or 1,4-phenylene; n represents 0 or 1; m represents an integer of 0 to 2; X and X' each represents a hydrogen atom; Y represents an alkyl group of 1 to 5 carbon atoms, an alkoxy group of 1 to 5 carbon atoms, a methyl group substituted by 1 to 3 halogen atoms or a trihaloalkoxy group of 1 to 5 carbon atoms; and R and R' do not represent simultaneously an alkyl group of 4 or more carbon atoms.

5,662,831

LUMINESCENT PHOSPHOR AND METHODS RELATING TO PRODUCTION THEREOF

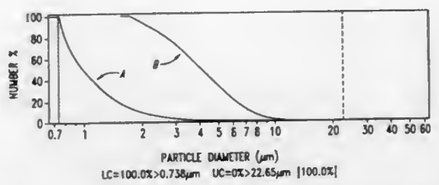
Surjit S. Chadha, Meridian, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed May 31, 1996, Ser. No. 655,884

Int. Cl.[6] C09K *11/78;11/84*

U.S. Cl. 252—301.4 R **37 Claims**

1. A method of manufacturing a luminescent phosphor with very small particle size, comprising mixing a host material selected from a yttrium compound and a gadolinium compound, a europium dopant and a liquid to form a slurry, and pulverizing the slurry to yield the luminescent phosphor having an average particle size of less than 3 microns and a luminescence of at least about 0.28 au, and then heating the luminescent phosphor at a temperature and for a period of time sufficient to yield a bright luminescent phosphor having a luminescence ranging from about 1 au to about 12 au.



5,662,832

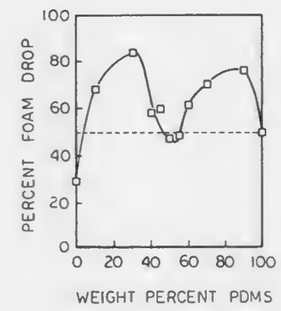
BLENDED COMPOSITION OF 2-METHYLPROPENYL-TERMINATED POLYISOBUTYLENE WITH POLYDIMETHYLSILOXANE

Dale Earl Hauenstein; Thomas Matthew Gentle; Linda Denise Kennan, all of Midland, and Paul Joseph Popa, Auburn, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 4, 1994, Ser. No. 317,272

Int. Cl.[6] B01D *19/04*

U.S. Cl. 252—321 **22 Claims**



1. A composition comprising:

(A) a polydimethylsiloxane having a viscosity greater than about 2 cS at 25° C.; and

(B) a polyisobutylene oligomer having a number average molecular weight of about 200 to about 2,300 and having at least one end terminated with a 2-methylpropenyl group, wherein the weight ratio of said polydimethylsiloxane (A) to said polyisobutylene (B) is within the range of 10:90 to less than 50:50 or said ratio is within the range of greater than about 55:45 to 99:1.

5,662,833

ELECTRICALLY CONDUCTING THERMOSET POLYMER COMPOSITIONS WITH HYDROXY CONTAINING PROTONIC ACID DOPANT

Jukka Laakso, Helsinki; Jan-Erik Österholm, Porvoo, and Hannele Järvinen, Vantaa, all of Finland, assignors to Neste Oy, Espoo, Finland

Continuation of Ser. No. 266,355, Jul. 1, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 562,245

Int. Cl.[6] H01B *1/12;* **C08L** *61/10;63/00;61/28*

U.S. Cl. 252—500 **24 Claims**

1. An electrically conducting thermoset polymer composition comprising:

(1) a thermoset resin that is (a) at least partially curable by a protonic acid containing at least one hydroxy group; and (b) a

member selected from the group consisting of a phenol formaldehyde resin, a melamine formaldehyde resin, and a polyester resin; and

(2) a conductive polymer complex which is completely or partially soluble in said thermoset resin, and which is capable of at least partially curing said thermoset resin, which comprises:

(a) a conjugated polymer, selected from the group consisting of polyaniline, substituted polyanilines, and co-polymers thereof; and

(b) a protonic acid having at least one hydroxyl group, and capable of forming a complex with, and imparting electrical conductivity and solubility to, said conjugated polymer.

5,662,834

ALLOYS OF TI RU FE AND O AND USE THEREOF FOR THE MANUFACTURE OF CATHODES FOR THE ELECTROCHEMICAL SYNTHESIS OF SODIUM CHLORATE

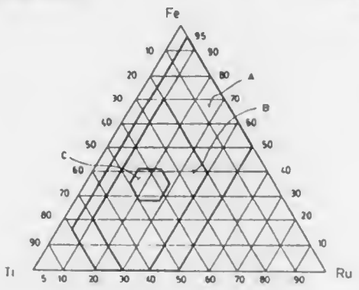
Robert Schulz, Ste-Julie; André Van Neste, Ste-Foy; Sabin Boily, Montréal, and Shize Jin, Ste-Foy, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Nov. 30, 1995, Ser. No. 565,586

Claims priority, application Canada, Jul. 21, 1995, 2154428

Int. Cl.[6] H01B *1/08;1/02*

U.S. Cl. 252—513 **24 Claims**



1. A nanocrystalline alloy of formula:

$$Ti_{30+x}\ Ru_{15+y}\ Fe_{25+z}\ O_{30+t}\ M_u$$

wherein:

M represents at least one metal selected from the group consisting of chromium, manganese, vanadium, tungsten, antimony, platinum and lead;

x is an integer ranging between −30 and +50;

y is an integer ranging between −10 and +35;

z is an integer ranging between −25 and +70;

t is an integer ranging between −28 and +10; and

u is an integer ranging between 0 and +50;

with the proviso that x, y, z, t and u are selected so that:

x+y+z+t+u=0.

5,662,835

APPARATUS FOR EMANATING A CHEMICAL AGENT

Keith Collingwood, Hull, England, assignor to Reckitt & Colman Products Limited, London, England

Filed Feb. 28, 1996, Ser. No. 607,422

Claims priority, application United Kingdom, Mar. 4, 1995, 9504359

Int. Cl.[6] B01F *3/04*

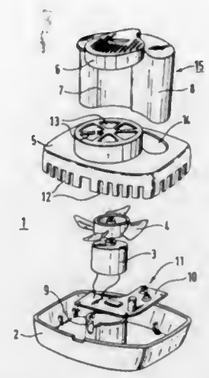
U.S. Cl. 261—26 **18 Claims**

1. Apparatus for emitting a volatile chemical agent comprising:

a supply of the chemical agent;

a movable emanator from which the chemical agent can diffuse;

means for transporting the chemical agent from the supply to the emanator;



means for interrupting the transportation of the chemical agent from the supply to the emanator; and

means for providing a flow of air over the emanator to promote the diffusion of the chemical agent from said emanator;

said emanator being adapted to move between a first position in which the emanator is in communication with the means for transporting the chemical agent and a second position in which the communication is interrupted.

5,662,836

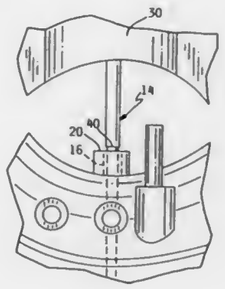
FUEL JET HAVING STEPPED NEEDLE

Robert M. Yost, 10838 Olive St., NW., Coon Rapids, Minn. 55448

Filed Oct. 25, 1995, Ser. No. 547,843

Int. Cl.[6] F02M *9/06*

U.S. Cl. 261—44.3 **14 Claims**



1. A fuel discharge assembly for an engine, which comprises:

(a) a slow fuel jet for supplying fuel to an air flow passage at idle or at low speeds of the engine;

(b) a main fuel jet for supplying fuel to the air flow passage at midrange or high speeds of the engine, wherein the main fuel jet has a fuel flow passage that is operatively connected to the air flow passage for conducting fuel from a supply of fuel through the main fuel jet and into the air flow passage;

(c) a flow controlling needle reciprocally mounted in the fuel flow passage of the main fuel jet to control the amount of fuel that flows therein, wherein the flow controlling needle is movable relative to the main fuel jet to increase the fuel flow through the fuel flow passage of the main fuel jet; and

(d) a stepped portion on the flow controlling needle circumferentially extending at least partially around the needle, the stepped portion being positioned on the needle such that it is located within the fuel flow passage of the main fuel jet in at least one position of the needle.

5,662,837

METHOD AND APPARATUS FOR DISSOLVING AND ISOLATING CARBON DIOXIDE GAS UNDER THE SEA

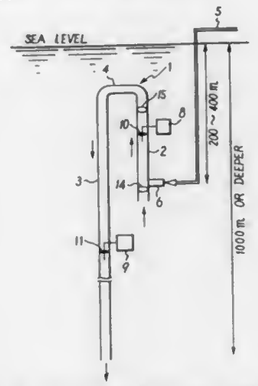
Takayuki Saito, and Takeo Kajishima, both of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,802

Claims priority, application Japan, Oct. 6, 1994, 6-268309

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—77 **5 Claims**



1. A method for dissolving and isolating carbon dioxide gas under the sea, comprising:

an inverted U-shaped gas lift having a shorter pipe and a longer pipe being connected with each other at the top, said shorter pipe is held at shallow sea level as a gas lift dissolving pipe, carbon dioxide gas is injected into the pipe through the lower end thereof, seawater is introduced from the lower end of the dissolving pipe by gas lift action of the carbon dioxide gas in the pipe, said carbon dioxide gas is completely dissolved into the seawater until it reaches the upper end of the dissolving pipe; and

said longer pipe of the inverted U-shaped gas lift is used as a descending pipe with its lower end opened at deep sea level, and the seawater with density increased due to dissolving of the carbon dioxide is moved to deep sea level by gravity.

5,662,838

LIQUID VAPORIZING APPARATUS

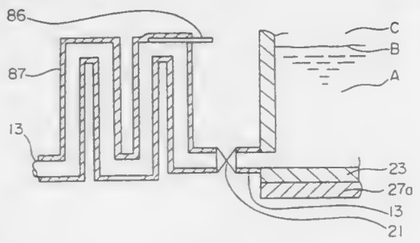
Tooru Yamaguchi; Kouichirou Tsutahara, and Takayuki Suenaga, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan

Division of Ser. No. 244,265, Jul. 25, 1994, Pat. No. 5,520,858. This application Jan. 26, 1996, Ser. No. 592,449

Claims priority, application Japan, Sep. 21, 1992, 4-251461

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—130 **2 Claims**



1. A liquid vaporizing apparatus comprising:

a container for holding a liquid to be vaporized;

a bubbling tube inserted into said container for vaporizing the liquid by blowing a gas into the liquid;

a gas ejection pipe connected to an upper surface of said container for ejecting blown gas and vaporized liquid outside of said container;

a liquid-supply pipe connected to said container at a position below the liquid in said container for supplying the liquid to said container;

first temperature-detection means for detecting the temperature of the liquid in said container;

first temperature-adjustment means responsive to said first temperature-detection means for maintaining the liquid in said container at a predetermined temperature;

second temperature-detection means for detecting the temperature of the liquid in said liquid supply pipe; and

second temperature-adjustment means for controlling the temperature of the liquid in said liquid-supply pipe to be the same temperature as the temperature of the liquid in said container in accordance with the temperatures detected by said first and second temperature-detection means, wherein a volume of a portion of said liquid-supply pipe subjected to temperature adjustment is larger than a volume of the liquid supplied to said container in one supply operation.

5,662,839

METHOD OF FILLING A MOLD FOR MANUFACTURING AN OPTICAL LENS

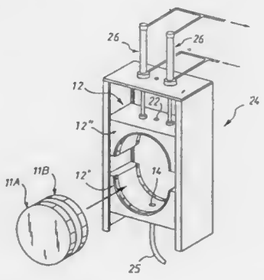
Jean-Francois Magne, Creteil, France, assignor to Essilor International Compagnie Generale d'Optique, Charenton Cedex, France

Filed Jan. 10, 1995, Ser. No. 370,972

Claims priority, application France, Dec. 12, 1994, 94 14926

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.38 **10 Claims**



1. Method for molding an optical lens comprising the steps of:

providing a mold including two molding shells disposed on edge and substantially vertically oriented, and an annular closure member disposed at the periphery of the molding shells thereby defining a molding cavity, a casting opening disposed in a lower portion of the mold and communicating with the molding cavity; introducing molding material into the molding cavity through the casting opening located in the lower part of the mold; exposing the molding material to ultraviolet radiation for at least initial partial polymerization less than two hours after the mold is filled; and removing the resulting optical lens from the molding cavity.

5,662,840

PROCESS FOR MAKING GEL MICROBEADS

William R. Thomas, Newtown, Pa.; Henry A. Pfeffer, Mercerville, N.J.; Basil A. Guiliano, Lawrenceville, N.J.; Christopher J. Sewall, Princeton, N.J., and Stephen Tomko, Mercerville, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 10, 1994, Ser. No. 257,854
Int. Cl.[6] B29B *9/10*
U.S. Cl. 264—12 18 Claims

1. A method for preparing a gel bead, comprising

spraying a sol of a hydrocolloid, or a hydrocolloid mixture, which gels on cooling, and an atomizing gas stream from a nozzle whose effective configuration produces sol droplets having a mean size of less than 50 microns; and

simultaneously contacting the hydrocolloid sol in a complete and intimate manner with the atomizing gas to evaporatively cool the sol;

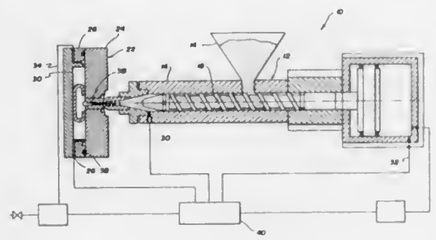
wherein the atomizing gas and the sol being atomized are present in a rate ratio that is sufficient to flash cool the sol to a temperature at least as low as the gelation temperature of the sol.

5,662,841

METHOD AND APPARATUS FOR INJECTING A MOLTEN MATERIAL INTO A MOLD CAVITY

Milko G. Guergov, 615 Washington, #5, Monroe, Mich. 48161

Continuation of Ser. No. 236,471, May 2, 1994, Pat. No. 5,441,680. This application Aug. 15, 1995, Ser. No. 515,522
Int. Cl.[6] B29C *45/34*
U.S. Cl. 264—40.1 13 Claims



1. A method of manufacturing a mold for use with an injection molding machine, the mold including first and second halves with a mold cavity formed therebetween, the method comprising:

providing a plurality of vents in one of said halves, said vents having first and second ends, said first end being in fluid flow communication with said cavity, said vents being sufficiently sized to maintain a substantially constant air pressure in said cavity as said cavity is being filled with plastic;

providing a channel in one of said halves in fluid flow communication with said second end of each of said plurality of vents;

providing at least one valve in selective fluid flow communication with said channel to selectively receive pressurized air therethrough into the channel and to selectively allow discharge of pressurized air from the channel; and

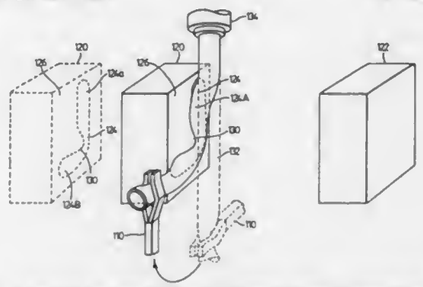
providing a seal circumscribing said cavity and said channel, and positioned between said first and second halves to selectively prevent unwanted discharge of pressurized air from the cavity and the channel as molten plastic is injected into the cavity from the injection molding machine.

5,662,842

PROCESS FOR BLOW MOLDING HOLLOW OBJECTS WITH INDEPENDENT MOVEMENT OF MOLD HALVES

Changize Sadr, Toronto, and Roger Elgner, Woodbridge, both of Canada, assignors to Salflex Polymers Ltd., Weston

Filed Jul. 18, 1994, Ser. No. 276,581
Int. Cl.[6] B29C *49/04;49/56*
U.S. Cl. 264—40.5 18 Claims



1. A process for making a blow molded product comprising:

i) extruding a parison from an extrusion head so that said parison hangs from said extrusion head substantially vertically and substantially between first and second complimentary mold halves;

ii) independently controlling first and second complimentary mold halves;

iii) moving one of said mold halves independently of the other of said mold halves, toward the other of said mold halves from a mold open position toward a mold closed position until at least a portion of said mold half is in contact with a portion of said parison;

iv) grasping at least one first portion of said parison in a manipulator and manipulating said portion of said parison after a second portion of said parison is contacted by one of said mold halves said manipulation step occurring before blow moulding said product and said manipulation of said parison being in a direction other than a direction in or parallel to the vertical plane containing the direction of mold closure;

v) closing said mold halves over said parison to create a closed mold, and

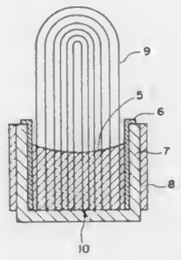
vi) blow molding said product in said closed mold.

5,662,843

METHOD FOR THE PRODUCTION OF POLYOLEFIN HOLLOW FIBER FILTER BUNDLES

Takashi Monzen, and Masaharu Watanabe, both of Kitakomagun, Japan, assignors to Kitz Corporation, Japan

Division of Ser. No. 220,195, Mar. 30, 1994, Pat. No. 5,505,858. This application Dec. 13, 1995, Ser. No. 571,433
Claims priority, application Japan, Dec. 17, 1993, 5-343355
Int. Cl.[6] B01D *67/00;69/08;71/26*
U.S. Cl. 264—41 4 Claims



1. A method for the production of a filter element, comprising the steps of:

(a) preparing a bundle of hollow fibers made of a first polyolefin having a melting point;

(b) melting a second polyolefin having an average molecular weight in the range of 1,000 to 16,000 and a melting point lower than the melting point of said first polyolefin;

(c) attaching the molten second polyolefin to at least one end of said bundle;

(d) allowing the attached second polyolefin to set, thereby providing said bundle with a sealed portion; and

(e) cutting off one end of said sealed portion at said at least one end of said bundle,

wherein step (b) is carried out in a mold, step (c) is carried out by immersing said at least one end of said bundle into the molten second polyolefin in said mold, and step (d) is carried out after said bundle is removed from said mold; and further comprising the steps of (f) immersing said sealed portion of said bundle into a separately prepared molten second polyolefin contained in another mold, and (g) allowing said separately prepared molten second polyolefin attached to said sealed portion to set, said steps (f) and (g) being carried out before step (e), and

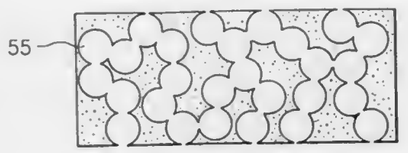
wherein said another mold further contains in a molten state one polyolefin, selected from the group consisting of low-density polyethylene, linear low-density polyethylene, high-density polyethylene and polypropylene, admixed with said separately prepared molten second polyolefin.

5,662,844

PROCESS FOR THE PRODUCTION OF A FILTER

Akira Goto, Yokohama, and Toshiaki Sasaki, Abiko, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/01128, § 371 Date Mar. 9, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO95/01878, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 11, 1994, Ser. No. 397,189
Claims priority, application Japan, Jul. 9, 1993, 5-170099
Int. Cl.[6] B29C *67/20*
U.S. Cl. 264—49 9 Claims



1. A process for producing a filter for the filtration of a liquid, comprising the steps of: dispersing a number of microballoons each having a shell constituted by a solvent-soluble resin in an activation energy setting resin to obtain a dispersion, subjecting said dispersion to heat treatment to expand each of the microballoons, hardening the activation energy setting resin, treating the resultant with a solvent having a selective solubility to only the shell of each of the microballoons to remove all the shells of the microballoons whereby pores formed on the basis of the microballoons are communicated with each other.

5,662,845

Patent Not Issued For This Number

5,662,846

ONE-STEP PROCESS FOR PRODUCING SOLID SURFACE MATERIAL WITH FOAM BACKING

Donald Eugene Swarts, Grand Island, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1995, Ser. No. 412,793
Int. Cl.[6] B29C *39/12*
U.S. Cl. 264—69 2 Claims

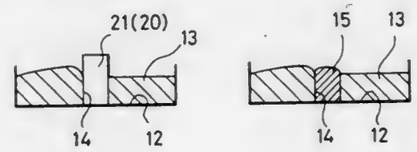
1. A process of producing a cast composite article comprising a polymer matrix and two zones of different filler, said article being substantially flat with two opposing faces, a first zone of such article including one face of the article having filler at a level in the range of 10 to 80% by weight of the filler plus matrix, and a second zone including the second face opposing said first face having filler of 5 to 60% and 3 to 30% of bubbles, both by weight of the filler and bubbles plus matrix, said first and second zones forming a continuum with essentially no layer of unfilled matrix between the two zones, said process comprising the steps of mixing together a curable mix comprising polymerizable monomer(s), polymerization initiator, filler and bubbles, said filler having a density at least 1.0 g/cc higher than that of the bubbles, casting the mix on a flat surface, applying vibration to aid the separation as the bubbles rise and a large part of the filler settles and allowing it to cure to polymerize the monomer(s), forming a cast article having said two zones.

5,662,847

METHOD OF PRODUCING PATTERNED SHAPED ARTICLE USING SCRAPER

Hiroshi Uchida, Ashikaga; Mituhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

PCT No. PCT/JP94/01397, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO95/05946, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 24, 1994, Ser. No. 325,185
Claims priority, application Japan, Aug. 24, 1993, 5-229642
Int. Cl.[6] B29C *67/02*
U.S. Cl. 264—101 7 Claims



1. A method of producing a patterned shaped article, comprising the steps of:

forming a dry particle course on a base surface;

forming a cavity in a portion of the dry particle course on which a pattern is to be expressed, by moving a scraper located at a prescribed position above the base surface in accordance with the pattern;

charging the cavity with a different type of dry particles; and

allowing the particles to set into an integral mass as they are.

5,662,848

PLASTIC MOLDING METHOD FOR SEMICONDUCTOR DEVICES

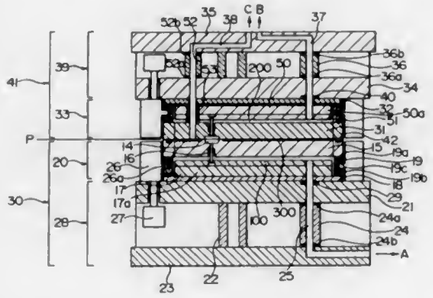
Sueyoshi Tanaka; Zyunzi Sakakibara, and Yasutsugu Tsutsumi, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 300,533, Sep. 6, 1994, abandoned, which is a division of Ser. No. 113,823, Aug. 31, 1993, Pat. No. 5,366,364. This application Feb. 16, 1996, Ser. No. 602,679

Claims priority, application Japan, Sep. 1, 1992, 4-233488

Int. Cl.[6] B29C *33/10;45/02;45/14*

U.S. Cl. 264—102 **13 Claims**



1. A plastic molding method for semiconductor devices, said method comprising the steps of:

placing semiconductor devices mounted on leadframes between lower die cavities in a lower die chase block containing a lower ejector plate and upper die cavities in an upper die chase block containing an upper ejector plate and clamping the upper and lower die chase blocks together between an upper and a lower die common surface table;

evacuating an ejector chamber in said lower die chase block through said lower die common surface table, evacuating an ejector chamber in said upper die chase block through said upper die common surface table, and evacuating a parting chamber at a parting surface between said lower die chase block and said upper die chase block through one of said lower die common surface table and said upper die common surface table; and

injecting a sealing resin into said upper die cavities and said lower die cavities to plastically package the semiconductor devices.

5,662,849

METHOD AND APPARATUS FOR FORMING COMPRESSION DOSAGE UNITS WITHIN THE PRODUCT PACKAGE

Beuford Arlie Bogue, Broad Run, and Garry L. Myers, Reston, both of Va., assignors to Fulsz Technologies Ltd., Chantilly, Va.

Continuation-in-part of Ser. No. 276,244, Jul. 18, 1994, which is a continuation-in-part of Ser. No. 259,496, Jun. 14, 1994, abandoned, and Ser. No. 259,258, Jun. 14, 1994, which is a continuation-in-part of Ser. No. 133,669, Oct. 7, 1993, Pat. No. 5,597,416, and Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551. This application May 9, 1995, Ser. No. 438,239

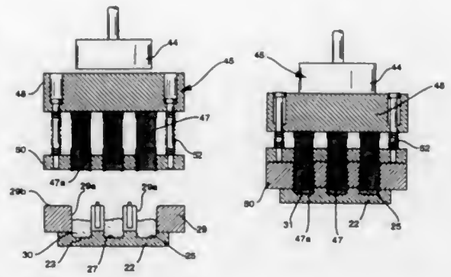
Int. Cl.[6] B29C *43/08*

U.S. Cl. 264—112 **31 Claims**

1. A tablet forming method comprising the steps of:

providing a tablet package having an open ended cavity generally in the shape of said dosage tablet;

dispensing a premeasured volume of tableting feedstock into said cavity; and



compacting said premeasured volume of tableting feedstock into a removable low density compression dosage tablet within said cavity.

5,662,850

METHOD OF MANUFACTURING A TAPE GUIDE ROLLER FOR TAPE CASSETTE

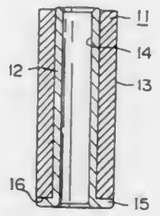
Toshikazu Konno; Takashi Oogi, both of Miyagi, and Susumu Morita, Hyogo, all of Japan, assignors to Sony Corporation, and APLS Co., Ltd., both of Japan

Division of Ser. No. 30,382, May 28, 1993, Pat. No. 5,454,501. This application Mar. 30, 1995, Ser. No. 413,946

Claims priority, application Japan, Jul. 31, 1991, 3-213114

Int. Cl.[6] B29C *59/02;45/14*

U.S. Cl. 264—162 **8 Claims**



1. A method of manufacturing a tape guide roller for a tape cassette using a double molding machine, comprising the steps of:

forming, as a first molded portion of said roller, an elongate inner cylindrical body having an axis, a first axial end, and a second axial end, said inner cylindrical body including a radially extending flange at the first axial end thereof, said inner cylindrical body being formed by injecting a first synthetic resin in a direction substantially perpendicular to the axis and toward an outer circumferential surface of the second axial end thereof, said radially extending flange imparting mechanical strength on said inner cylindrical body and preventing contraction after the inner body is molded; and

thereafter forming, as a second molded portion of said roller, an elongate outer cylindrical body by injecting, onto an outer circumferential surface of said inner cylindrical body, a second synthetic resin in the direction substantially perpendicular to the axis and toward the outer circumferential surface of the second axial end, thus forming a roller having an extremely high level of circularity and linearity.

5,662,851

METHOD OF PRODUCING A MOLDING

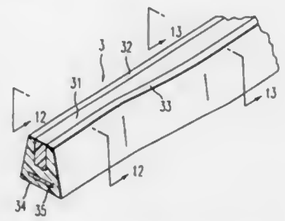
Yukihiko Yada, and Tosikazu Ito, both of Nagoya, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Division of Ser. No. 427,685, Apr. 24, 1995, Pat. No. 5,474,817, which is a continuation of Ser. No. 195,837, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 835,504, Feb. 14, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 473,781

Claims priority, application Japan, Feb. 15, 1991, 3-44376; Feb. 22, 1991, 3-50841

Int. Cl.[6] B29C *47/06;47/16*

U.S. Cl. 264—167 **14 Claims**



1. A method for forming a molding comprising:

providing a laminated foil, said laminated foil including an upper layer and a lower layer;

extrusion molding an ornamental core, and joining a surface of said ornamental core to said upper layer of said laminated foil during said extrusion molding and before said ornamental core has completely cured such that said surface of said ornamental core is melt bonded to said upper layer of said laminated foil; and

extrusion molding a trimming, and joining a surface of said trimming to said lower layer of said laminated foil before said trimming has completely cured such that said surface of said trimming is melt bonded to said lower layer of said laminated foil;

wherein the step of extrusion molding said trimming includes extrusion molding said trimming with a base and first and second side portions, wherein said surface of said trimming which is melt bonded to said lower layer of said laminated foil is disposed on said base.

5,662,852

MASS-COLORED FORMED STRUCTURES BASED ON AROMATIC POLYAMIDES, MASS-COLORED FIBER, AND PREMIX FOR PRODUCING MASS-COLORED FORMED STRUCTURES

Uwe Kampschulte, Hattersheim; Peter Klein, Wiesbaden, and Richard Neuert, Winkelhaid, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jan. 4, 1995, Ser. No. 368,435

Claims priority, application Germany, Jan. 6, 1994, 44 00 248.3

Int. Cl.[6] D01F *6/00*

U.S. Cl. 264—204 **10 Claims**

1. A process for producing mass-colored fiber or film, comprising the steps of:

a) preparing a premix by grinding a composition comprising a polar aprotic organic solvent, 5 to 30% by weight of an aromatic polyamide and 0.5 to 5% by weight of a color-conferring solid component so that the color-conferring solid component has particles with an average diameter of less than 200 nm,

b) preparing a forming solution by mixing the premix produced in step a) and a solution comprising a polar aprotic organic solvent and an aromatic polyamide which corresponds to the aromatic polyamide used in step a), just upstream of a forming die,

c) extruding the forming solution through the forming die which comprises orifices in a predetermined number and shape to produce primary fiber or film,

d) removing the polar aprotic organic solvent to leave solvent-leaner or-free fiber or film of sufficient mechanical stability and nontackiness for further processing, and

e) optionally orienting the resulting fiber or film.

5,662,853

AFFIXATION MEMBER FOR DECORATING OR PROTECTING STRUCTURES AND METHODS OF MAKING SAME

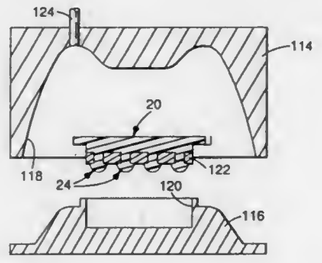
Jiro Hattori, Atsugi; Shinji Torigoe, Sagamihara; Norihito Shibahara, Hachioji, and Osamu Sawajiri, Sagamihara, all of Japan, assignors to Minnesota Mining Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 285,861, Aug. 4, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 563,903

Claims priority, application Japan, Aug. 5, 1993, 5-194685

Int. Cl.[6] B29C *45/32*

U.S. Cl. 264—219 **3 Claims**



1. A method of making an affixation member comprising a body for affixation to a surface of a structure and means for fastening the body to the surface, the fastening means comprising an interengaging fastener member which includes a base secured to the body and a plurality of headed stems arranged on the base in a predetermined spaced relationship, each of the headed stems including a stem adjoining and projecting from the base and a head connected to a distal end of the stem, the method comprising the steps of:

a) providing a permanent base mold having a cavity for molding the base of the interengaging fastener member, a destructible stem mold having a plurality of cavities for molding the stems of the headed stems, and a permanent head mold having a plurality of cavities for molding the heads of the headed stems;

b) providing a permanent body mold having a cavity for molding the body of the affixation member;

c) securing the destructible stem mold adjacent the permanent base mold with the cavities of the stem mold in fluidic communication with the cavity of the base mold, and securing the permanent head mold adjacent to the destructible stem mold with the cavities of the head mold in fluidic communication with the cavities of the stem mold;

d) flowing a molten polymeric material into the base mold, the stem mold and the head mold through an inlet passageway in one of these molds, and integrally forming the base, and the stems and the heads of the interengaging fastener member from the polymeric material;

e) separating the base mold and the head mold from the destructible stem mold and the molded interengaging fastener member;

f) placing the destructible stem mold and the molded interengaging fastener member at a predetermined position within the cavity for molding the body in the permanent body mold;

g) flowing a molten polymeric material into the body mold through an inlet passageway in the body mold;

h) molding the affixation member fixedly supporting the interengaging fastener member at the predetermined position from the polymeric material within the body mold;

i) separating the body mold from the molded affixation member; and

j) destructibly removing the stem mold from the interengaging fastener member fixedly supported on the molded affixation member.

5,662,854

METHOD FOR MANUFACTURING A MAGNETIC TAPE CASSETTE ACCOMMODATING CASE

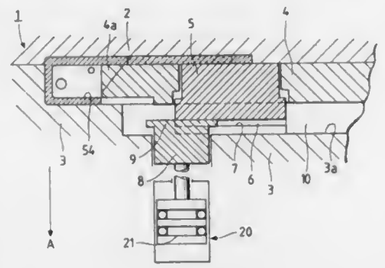
Shingo Katagiri; Teruo Ashikawa, and Kiyoo Morita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 845,604, Mar. 4, 1992, Pat. No. 5,323,904. This application Oct. 27, 1993, Ser. No. 141,746

Claims priority, application Japan, Mar. 5, 1991, 3-18693 U; Apr. 12, 1991, 3-106510

Int. Cl.[6] **B29C** *33/76;45/17;45/33*

U.S. Cl. 264—255 **8 Claims**



1. In a method for forming a magnetic tape cassette accommodating case comprising a cover member having a pocket for receiving a portion of a magnetic tape cassette and a casing member confronting said cover member, said cover member and said casing member being pivotally assembled so as to be opened and closed freely, wherein a first slide core defining inner wall surfaces of a cavity for forming said cover member is provided so as to be slidable in a direction of inserting a cassette, a second slide core is provided so as to be movable in said first slide core substantially orthogonally to said direction of moving said first slide core, said method comprising the steps of:

projecting said second slide core from said first slide core into the cavity for forming said cover member;

determining a position of said second slide core relative to said first slide core in said projecting step by abutting a stepped portion of said first slide core against a shoulder portion of said second slide core;

injecting a first resin into the cavity;

retracting said second slide core to form another cavity;

injecting a second resin into said another cavity;

thereafter, retracting said first slide core together with said second slide core in said direction of moving said first slide core;

retracting said first and second slide cores along a line substantially orthogonally to said direction of moving said first slide core, thereby opening the cavity; and

ejecting the thus formed cover member.

5,662,855

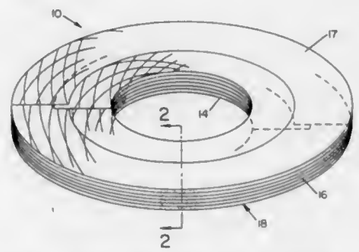
METHOD OF MAKING NEAR NET SHAPED FIBROUS STRUCTURES

Ronnie Sze-Heng Liew; Edward Lee Morris, Jr., both of Pueblo, and Philip William Sheehan, Pueblo West, all of Colo., assignors to The B.F. Goodrich Company, Akron, Ohio

Filed May 17, 1994, Ser. No. 245,383

Int. Cl.[6] **B22D** *19/14;* **B29D** *22/00*

U.S. Cl. 264—258 **32 Claims**



1. A method of making an annular near net shape multi-layered fibrous structure having a first radial width defined as the radial distance between the inside diameter periphery and the outside diameter periphery of the annular shape and a thickness comprising the steps of: providing a flat stack of annular layers of fibrous material one layer on top of another, each layer having a second radial width generally corresponding to the first radial width radial distance between the inside diameter periphery and the outside diameter of the fibrous structure to be formed; forming at least one of said layers of at least two portions of fibrous tape that are laterally adjacent substantially throughout their entire length and of a width less than the first radial width of the fibrous structure to be formed; and needlepunching the stacked layers to produce cross-linking of the layers by fibers displaced out of the layers and extending in a direction generally perpendicular to the faces of the layers.

5,662,856

LOW-PRESSURE METHOD FOR THE PREPARATION OF HOLLOW PLASTIC ARTICLES

Ernst Dieter Wunderlich, Warren, N.J., assignor to Imesco, Inc., Warren, N.J.

Filed Jul. 12, 1995, Ser. No. 501,310

Int. Cl.[6] **B29C** *45/12*

U.S. Cl. 264—297.2 **20 Claims**

1. A method for forming hollow articles by introducing molten material into a plurality of mold cavities having in each case a slidable outside wall-forming sleeve forming an outside configuration of a hollow article and a fixed-position core pin forming an inside configuration of the hollow article, which comprises the steps of

(a) introducing a molten material into a transfer reservoir consisting of a movable transfer housing and stationary displacement plug;

(b) displacing a molten material into a slidable cavity bottom of said slidable outside wall-forming sleeve when in a retracting motion relative to the fixed position core pin;

(c) retracting the slidable outside-wall-forming sleeve and the slidable cavity bottom in a continuous motion together with a preform mold manifold system to enlarge the cross-section between the outside configuration of a mold cavity of the plurality of mold cavities and the fixed-position core pin to facilitate the filling of said mold cavities with molten material at low pressure;

(d) shifting a secondary distribution spool within a preform mold manifold block up to a land area of the secondary distribution spool to close off molten material in the mold cavity from the circumferential melt flow passages;

(e) approaching the slidable cavity bottom together with the slidable outside-wall-forming sleeve towards the fixed-position core pin to condense the molten material concentrically within the mold cavity and around the fixed-position core pin, thereby forming the final configuration of the hollow article.

5,662,857

PROCESS OF MAKING AN LED REFLECTOR

Ming Shi Fu, Taipei Hsien, Taiwan, assignor to Taiwan Liton Electronic Co., Ltd., Taipei, Taiwan

Filed Aug. 29, 1995, Ser. No. 521,288

Int. Cl.[6] **B29C** *45/00*

U.S. Cl. 264—328.18 **2 Claims**

1. A LED reflector manufacturing method including the steps of:

i) preparing an injection molding material by mixing about 70% of polycarbonate+about 10% PBT+about 20% titanium dioxide+about 0.012% carbon powder mixture, which is obtained from one part of carbon powder with **50** parts of talc powder said mix resulting in 100% of the injection molding material; and

ii) injection-molding the injection molding material into desired LED reflectors at about 260° C.±15° C.

5,662,858

PROCESS FOR THE PRODUCTION OF CELLULOSE FIBRES HAVING A REDUCED TENDENCY TO FIBRILLATION

Heinrich Firgo, Vöcklabruck; Markus Eibl, Lambach, and Johann Schickermüller, Vöcklamarkt, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Continuation-in-part of Ser. No. 223,578, Apr. 6, 1994, abandoned. This application Jun. 28, 1995, Ser. No. 495,890

Claims priority, application Austria, Apr. 28, 1993, 787/93

Int. Cl.[6] **D01D** *10/02;10/06;* **D01F** *2/02*

U.S. Cl. 264—474 **6 Claims**

1. A process for the production of cellulose fibers having a reduced tendency to fibrillation comprising the steps of:

spinning a solution of cellulose in a tertiary amine oxide into fibers, and

contacting the freshly spun fibers with a textile agent in an aqueous alkaline medium comprising alkali carbonate and alkali hydroxide, the textile agent having at least two reactive groups, thereby producing cellulose fibers having a reduced tendency to fibrillation.

5,662,859

CONSTANT MOLTEN METAL SURFACE LEVEL RETAINING FURNACE INTEGRALLY PROVIDED WITH MELTING UNIT

Sabrou Noda, Atsugi, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 25, 1996, Ser. No. 639,276

Claims priority, application Japan, Apr. 26, 1995, 7-102636

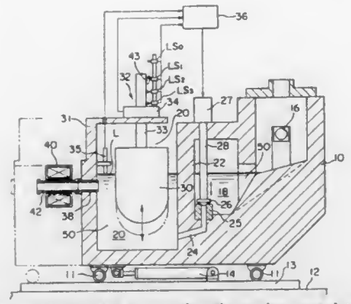
Int. Cl.[6] **C21D** *11/00*

U.S. Cl. 266—94 **7 Claims**

1. A constant molten metal surface level retaining furnace integrally provided with a melting unit adapted for supplying a molten metal to a casting machine, the furnace comprising:

a heating unit for heating a casting material to produce the molten metal;

a furnace body having a molten metal treatment and storage chamber for storing the molten metal after having undergone molten metal treatment, and a molten metal retaining chamber for storing the molten metal to be delivered to the casting machine, which is partitioned from the molten metal treatment and storage chamber;



transfer passage means connecting the molten metal treatment and storage chamber and the molten metal retaining chamber in communication with each other;

passage opening and closing means for opening and closing the transfer passage means;

molten metal surface level control means for opening and closing the opening and closing means in dependency upon change of the quantity of the molten metal in the molten metal retaining furnace to control a surface of the molten metal in the molten metal retaining chamber to be maintained at a desired level; and

molten metal force-feeding means for supplying the molten metal within the molten metal retaining chamber to the casting machine.

5,662,860

APPARATUS FOR PRODUCING MOLTEN PIG IRON BY DIRECT REDUCTION

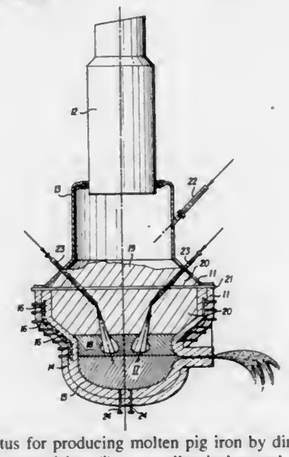
Antonius A. M. Klaassen, Santpoort-Noord, and Hendrikus K. A. Meijer, Uitgeest, both of Netherlands, assignors to Hoogovens Staal B.V., Ijmuiden, Netherlands

Filed Mar. 27, 1996, Ser. No. 624,315

Claims priority, application Netherlands, Mar. 29, 1995, 9500600

Int. Cl.[6] **C21B** *7/22;11/00*

U.S. Cl. 266—158 **11 Claims**



1. Apparatus for producing molten pig iron by direct reduction of iron ore, comprising (i) a metallurgical vessel, in which in operation of the apparatus the iron ore undergoes a final reduction with production of a process gas and said process gas undergoes a partial post-combustion, said metallurgical vessel having

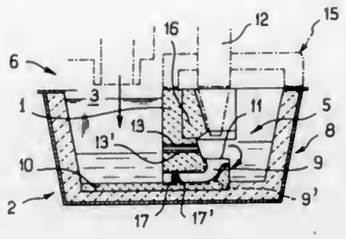
(a) a top part, in which said partial post-combustion of said process gas takes place, in the form of a pressure-resistant hood having an interior wall comprising cooling water pipes for cooling said interior wall, and (b) a bottom part for

accommodating an iron bath having a slag layer in which said final reduction of said iron ore takes place, said bottom part having an internal refractory lining and means for water cooling said internal refractory lining,

(ii) means for supplying coal to said metallurgical vessel,

(iii) means for supplying oxygen to said metallurgical vessel, and

(iv) a melting cyclone in which in operation of the apparatus said iron ore undergoes a pre-reduction and is melted, said melting cyclone being in communication with said metallurgical vessel for transfer of the pre-reduced iron ore thereto and for flow of the post-combusted process gas from the metallurgical vessel; wherein said top and bottom parts of said metallurgical vessel have, adjacent a mutual connection, a larger horizontal internal cross-sectional area than at respective areas above and below said mutual connection zone, for accommodating said slag layer.



ensure that a liquid-steel flow coming from the outlet zone is guided unidirectionally towards the predefined zone of the heating chamber.

5,662,861

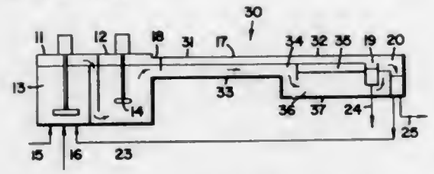
LIQUID EXTRACTION

Alan Taylor, Blackburn South, Australia, assignor to Mincorp Ltd., Victoria, Australia

Continuation of Ser. No. 376,154, Jan. 20, 1995, abandoned. This application Jul. 3, 1996, Ser. No. 675,518

Int. Cl.[6] C22B *13/08*

U.S. Cl. 266—170 **9 Claims**



1. A forward flow mixer-settler apparatus, said apparatus comprising a mixer to which a feed stream and a solvent stream are fed and in which they are mixed to form a flow stream, and a settler arranged to receive the flow stream overflowing from the mixer into the settler for phase separation, wherein said settler comprises first and second settling stages through which the flow stream continuously and sequentially flows under gravity for said phase separation, said first and second settling stages dimensioned such that primary phase separation of the flow stream into an aqueous layer, a solvent layer and dispersion band interposed therebetween takes place in said first settling stage and coalescence of the dispersion band and separation of the aqueous layer and solvent layer occurs in said second settling stage, and wherein the volume and depth of said first settling stage is less than the volume and depth of said second settling stage.

5,662,862

DEVICE FOR GUIDING MOLTEN STEEL IN A TUNDISH

Yves Braud, Maurepas, and Jean-Paul Hertault, Neufchatel-Hardelot, both of France, assignors to Societe des Terres Refractaires du Boulonnais, Neufchatel-Hardelot, France

PCT No. PCT/FR95/00679, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/32069, PCT Pub. Date Nov. 30, 1995

PCT Filed May 24, 1995, Ser. No. 583,022

Claims priority, application France, May 24, 1994, 94 06279

Int. Cl.[6] B22D *41/15*

U.S. Cl. 266—229 **8 Claims**

1. A molten metal guiding device, located between an outlet zone and a distribution zone of a tundish provided with a reheat system, including a plasma torch located at one side of a heating chamber, the device comprising a refractory unit pierced by at least a first conduit having the shape of a truncated cone curved towards a predefined zone of the heating chamber and flared at this zone, to

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5,662,863

PROCESS FOR PRODUCING STRUCTURAL MEMBER OF ALUMINUM ALLOY

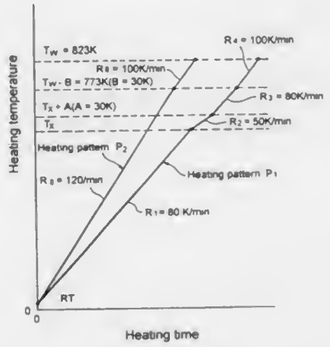
Kenji Okamoto; Hiroyuki Horimura, and Masahiko Minemi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1995, Ser. No. 516,583

Claims priority, application Japan, Aug. 19, 1994, 6-195783

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—44 **5 Claims**



1. A process for producing a structural member of aluminum alloy by subjecting a powder preform of aluminum alloy powder to a heating treatment and then to a compacting and hardening process under a pressure, wherein

said aluminum alloy powder used is an aluminum alloy powder having a non-equilibrium phase which shows a calorific value C $6 \geqq 10$ J/g at a temperature-increasing rate of 20 K./min in a differential scanning calorimetry/and in said heating treatment, an average temperature-increasing rate R_2 from Tx to Tx+A (wherein Tx (K.) represents a heat-generation starting temperature of the aluminum alloy powder, and $A \geqq 30$ K.) is $R_2 \leqq 60$ K./min, an average temperature-increasing rate R_4 from Tw−B to Tw (wherein Tw (K.) represents a temperature in said compacting and hardening process, and $B \geqq 30$ K. and Tw B−Tx+A) is $R_4 \geqq 60$ K./min.

5,662,864

FE-CR ALLOY EXHIBITING EXCELLENT RIDGING RESISTANCE AND SURFACE CHARACTERISTICS

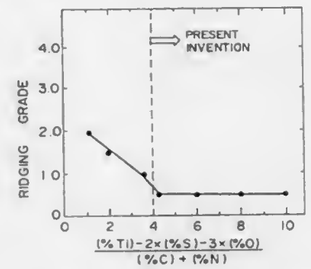
Yasushi Kato; Takumi Ujiro; Susumu Sato, and Koji Yamato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 14, 1996, Ser. No. 696,619

Claims priority, application Japan, Aug. 14, 1995, 7-206972

Int. Cl.[6] C22C *38/28;30/00;27/06*

U.S. Cl. 420—70 **2 Claims**



1. An Fe—Cr alloy exhibiting an excellent ridging resistance and surface characteristic, comprising:

0.01% (percent by weight; the same as below) or less of C;

1.0% or less of Si;

1.0% or less of Mn;

0.01 or less of S;

9% or more to 50% or less of Cr;

0.07% or less of Al;

0.02% or less of N;

0.01% or less of O; and

the balance being Fe and inevitable impurities;

wherein the C and N contents satisfy the following equations:

$$N(\%)/C(\%) \geqq 2.07$$

and

$$0.007 \leqq |C(\%)+N(\%)| \leqq 0.025;$$

and

the Ti content satisfy the following equations:

$$\{Ti(\%)-2\times S(\%)-3\times O(\%)\}/[C(\%)+N(\%)] \geqq 4,$$

and

$$[Ti(\%)]\times[N(\%)] \leqq 30\times 10^{-4}.$$

5,662,865

FUMIGATION CHAMBER

Bevin Henry Shenton Blatchford, Pretoria, South Africa, assignor to Degesch GmbH, Laudenbach/Bergstrasse, Germany

Filed Sep. 21, 1995, Ser. No. 531,909

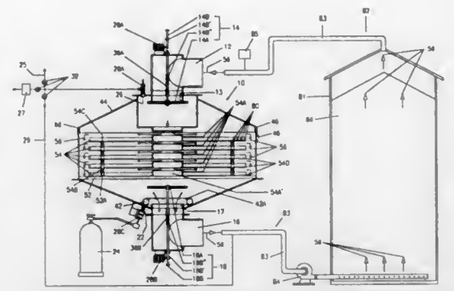
Claims priority, application South Africa, Sep. 22, 1994, 94/7377

Int. Cl.[6] A61L *9/00;* **A01M** *7/00;* **A23N** *4/00*

U.S. Cl. 422—29 **43 Claims**

1. A method of fumigating a bulk commodity in an enclosed fumigation space forming a circulatory loop gas flow system together with a gas duct and a gas propulsion device, said method comprising:

generating a fumigant gas mixture, supplying the fumigant gas mixture to the loop gas flow system so as to provide a pesticidal concentration of fumigant gas mixture in the enclosed fumigation space and circulating the fumigant gas mixture through the commodity, wherein the fumigant gas mixture is generated in a chamber including:



an inlet port controlled by an inlet valve connectable to an end of the gas duct of the loop gas flow system, leading from the fumigation space,

an outlet port controlled by an outlet valve connected in downstream position to another end of the gas duct of the loop gas flow system, leading into the fumigation space,

a flushing gas inlet valve for connection to a source of inert flushing gas and

a vent valve,

the chamber having access means openable for access to its interior from a position outside of the fumigation space,

said method further comprising:

charging the chamber through the access means with a fumigant gas generation means, connecting the chamber by way of the inlet port and the outlet port to form part of the circulatory loop gas flow system, keeping the flushing gas inlet valve closed, opening and keeping open the inlet and outlet valves and operating the gas propulsion device to maintain a circulatory gas flow through the circulatory loop gas flow system, while generating the fumigant gas mixture.

5,662,866

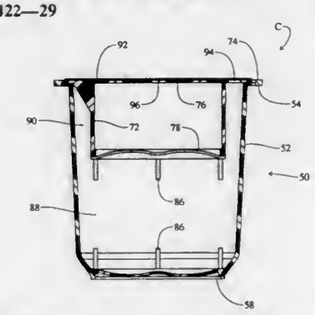
TWO COMPARTMENT CUP FOR POWDERED STERILANT REAGENT COMPONENTS

Norman L. Siegel, Mentor; Lewis I. Schwartz, Bratenahl; Raymond C. Kralovic, Willoughby; Joseph J. Switka, Garfield Heights; Craig M. Saunders, Rocky River; Nick E. Stanca, Westlake; Gregory A. Dale, Grafton, and Jeffrey S. Plantz, Seven Hills, all of Ohio, assignors to Steris Corporation, Mentor, Ohio

Filed Sep. 25, 1995, Ser. No. 533,245

Int. Cl.[6] A61L *9/00*

U.S. Cl. 422—29 **18 Claims**



18. A method for decontamination comprising:

transporting a reagent package which include an outer first cup portion having a first peripheral wall which has a first opening at a first end and a second opening at a second end, a first detachable base portion secured to and closing the second opening at the second end of the outer first cup portion, an inner second cup portion having a second peripheral wall, an overhanging flange connected at a first end of the second

peripheral wall and having an opening at a second end of the second peripheral wall, the first and second cup portions being configured such that a first chamber holding a first reagent is defined in the first cup portion and a second chamber holding a second reagent is defined in the second cup portion, a second detachable base portion secured to and closing the second opening at the second end of the inner second cup portion to a site at which decontamination is to be performed;

applying a detaching force to both the first and second detachable base walls to detach the base walls from the first and second cups, respectively;

mixing the first and second reagents with water to form a decontamination solution; and,

immersing items to be decontaminated in the decontamination solution.

5,662,867

SYSTEM FOR CREATININE DETERMINATION

Michael J. Pugia, Granger, Ind.; Michael Salvati, St. Paul, Minn., and Christos Galiatsatos, Athens, Greece, assignors to Bayer Corporation, Elkhart, Ind.

Filed Dec. 9, 1991, Ser. No. 803,851

Int. Cl.[6] G01N *21/00*

U.S. Cl. 422—56 **2 Claims**

1. In a dry reagent system comprising paper as an absorbent matrix which has dispersed therein 3,5-dinitrobenzoic acid as a dye precursor which is reactive with creatinine under alkaline conditions to provide a colormetric response together with an alkali or alkaline earth metal hydroxide in sufficient concentration to maintain the pH of the system at a level of from about 12–13 upon rehydration of the dried reagent system, the improvement which comprises the presence of poly(diallyl dimethyl ammonium chloride) having a degree of polymerization of at least 9 as a moderating agent for the hydroxide, said moderating agent being substantially uniformly dispersed throughout the paper matrix.

5,662,868

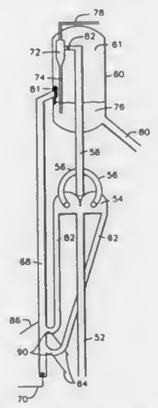
SHORT RESIDENCE TIME CRACKING APPARATUS AND PROCESS

Warren S. Letzsch, and Gerald Earl, both of Houston, Tex., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Sep. 22, 1994, Ser. No. 310,529

Int. Cl.[6] F27B *15/08;* **C10G** *11/00*

U.S. Cl. 422—144 **19 Claims**



1. A short residence time cracking apparatus comprising:

(a) a riser reactor for catalytically cracking a hydrocarbon feed in the presence of catalyst to produce cracked product and spent catalyst;

(b) separating means operatively connected to said riser reactor for separating at least a substantial portion of said spent catalyst from said cracked product;

(c) stripper vessel inlet means for receiving the cracked product from said separating means;

(d) a stripper vessel having an upper dilute phase and a lower dense phase, wherein said upper dilute phase is operatively connected to said stripper vessel inlet means for receiving the cracked product from said stripper vessel inlet means;

(e) a catalyst dipleg for removing spent catalyst from said separating means; and

(f) a steam stripper riser operatively connected to said catalyst dipleg for steam stripping said spent catalyst and delivering stripped catalyst to said stripper vessel.

5,662,869

EXHAUST GAS PURIFICATION METHOD AND APPARATUS THEREFOR

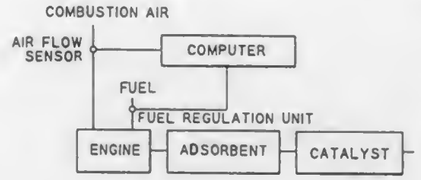
Fumio Abe, Handa; Junichi Suzuki, Kuwana, and Masato Ogawa, Komaki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 280,529, Jul. 26, 1994, abandoned, which is a continuation of Ser. No. 8,784, Jan. 27, 1993, abandoned. This application Apr. 29, 1996, Ser. No. 638,852

Claims priority, application Japan, Dec. 6, 1992, 4-335937

Int. Cl.[6] B01D *50/00;* **F01N** *3/10*

U.S. Cl. 422—171 **16 Claims**



1. An exhaust gas purification method, comprising the stops of:

providing an exhaust gas purification system including an adsorbent containing an adsorbent element for adsorbing hydrocarbon compounds in an exhaust gas and a catalyst containing a catalyst element for lowering said hydrocarbon compounds in said exhaust gas, each disposed in an exhaust gas pipe of an internal combustion engine, wherein said catalyst is provided downstream of the adsorbent; and

regulating amounts of combustion air and fuel which are supplied to said internal combustion engine (i) substantially at the same time as the start of said internal combustion engine or prior to the desorption of said hydrocarbon compounds from said adsorbent, and (ii) during desorption of said hydrocarbon compounds from the adsorbent, to provide an oxygen rich exhaust gas with respect to a stoichiometric point, wherein during cold start-up said hydrocarbon compounds in said exhaust gas are adsorbed by said adsorbent and desorbed from said adsorbent as the temperature of said adsorbent is increased by said exhaust gas, said oxygen rich exhaust gas being present during at least desorption of the hydrocarbon compounds whereby the desorbed hydrocarbon compounds are oxidized on said catalyst.

5,662,870

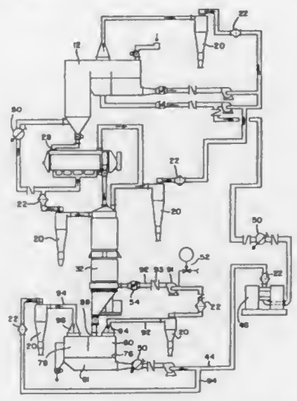
FLUID BED COOLING SYSTEM FOR POLYMER PROCESSING

John J. Walsh, Shoreview, Minn., assignor to Hosokawa Bepex Corporation, Shoreview, Minn.

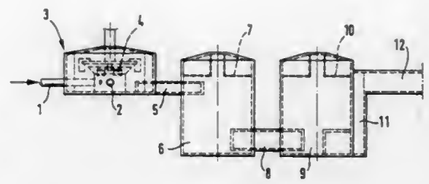
Division of Ser. No. 496,762, Jun. 29, 1995, Pat. No. 5,536,880. This application Nov. 27, 1995, Ser. No. 563,180

Int. Cl.[6] B01D *9/00*

U.S. Cl. 422—245.1 **6 Claims**



1. In an apparatus for the solid phase polymerization of polymers wherein a cold amorphous polymer is introduced to one or more crystallizers and heated to crystallize the polymer, the crystallized polymer is discharged to a reactor for polymerization of the polymer, and the hot polymer product of the reactor is discharged to a fluid bed cooler for cooling of the polymerized product, said fluid bed cooler including an inlet for the hot polymer and an inlet for the cooling gas, and means for discharging the cooled polymer and the heated gas from the cooler after contact of the gas with the polymer, said cooler including a bed portion in which the polymer moves while in contact with the cooling gas, and an upper chamber collecting heated gas, the temperature of the polymer gradually decreasing from the location of the inlet for the polymer to the location of the discharge for the polymer, and the gas in the upper chamber being hotter in the area of the upper chamber adjacent the inlet for the hot polymer than in the area of the upper chamber adjacent the means for discharging the cooled polymer, the improvement wherein said upper chamber defines at least two outlets to serve as said means for discharging the heated gas, means separating an upper chamber zone containing the hotter gas from the balance of the upper chamber, and wherein one of said upper chamber outlets communicates with the upper chamber zone whereby the hotter gas is recovered through said one outlet.



overflow pump immediately beneath the turbine, a conduit for conducting dispersion from the bottom part of the overflow pump to the top part of a first mixer, the first mixer and other mixers being interconnected by a connecting channel located near the bottom of each mixer, said other mixers being provided with horizontal plates serving as lids, and an uptake shaft placed tangentially with respect to the rotational direction of a rotating agitator of a last mixer of said other mixers rising upwards from the bottom part of said last mixer for conducting a flow of mixed dispersion to a settler at a height between the bottom of the settler and the surface level of liquid in the settler.

5,662,872

PROCESS FOR CLEANING HARMFUL GAS

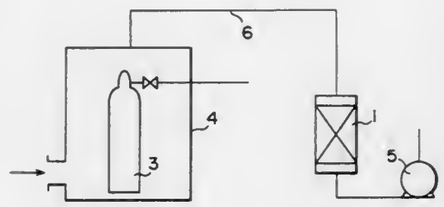
Takashi Shimada; Toshio Okumura, and Toshiya Hatakeyama, all of Hiratsuka, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 236,343, May 2, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,171

Claims priority, application Japan, May 11, 1993, 5-132719; May 19, 1993, 5-132720

Int. Cl.[6] B01D *53/54;53/58*

U.S. Cl. 423—236 **17 Claims**



1. A process for cleaning a gas containing a basic gas component which comprises contacting the gas with a cleaning agent consisting essentially of a cupric salt which is at least one cupric salt of an acid selected from the group consisting of carbonic acid, nitric acid, sulfuric acid, phosphoric acid, boric acid, chloric acid, perchloric acid, chlorous acid, hypochlorous acid, hydrogen halogenide and an organic acid supported on a carrier composition of metallic oxides comprising cupric oxide and manganese oxide, said cupric salt being in an amount of 5 to 100 parts by weight based on 100 parts by weight of said carrier composition, wherein said cupric oxide and manganese oxide are contained in an amount of 60% or more by weight based on the total amount of the carrier to remove the basic gas component from the gas, wherein the cleaning agent is present in a bulk density of about 1.0 to 1.5 g/mL, and wherein the linear velocity of the gas is 0.5 to 50 cm/sec when the basic gas component is present in lower than 0.1% by volume, and the linear velocity of the gas is 0.05 to 20 cm/sec when the basic gas component is present in 0.1 to 1% by volume, and the linear velocity of the gas is 10 cm/sec or less when the basic gas component is present in higher than 1% by volume.

5,662,871

METHOD FOR EXTRACTING METALS FROM LARGE SOLUTION FLOWS AND APPARATUS FOR REALIZING THE SAME

Bror Nyman, Ulvila; Valto Mäkitalo, Pori; Launo Lilja, Pori; Sti-Erik Hultholm, Pori, and Timo Saarenpää , Espoo, all of Finland, assignors to Outokumpu Engineering Contractors Oy, Finland

Filed Dec. 2, 1994, Ser. No. 349,052

Claims priority, application Finland, Dec. 2, 1993, 935393

Int. Cl.[6] B01D *11/04*

U.S. Cl. 422—259 **7 Claims**

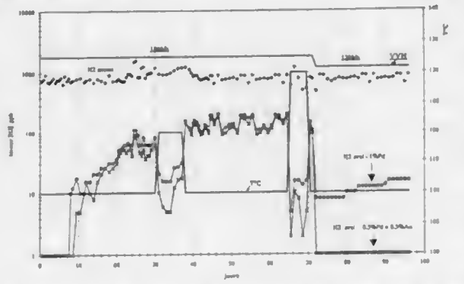
1. An apparatus for extracting metals in multi-stage liquid—liquid extraction by subjecting a flow of aqueous and organic phases in each extraction stage successively to pumping and mixing and settling, the apparatus for each extraction stage comprising: an overflow pump having a turbine encased by shell structures, conduits for the aqueous and organic phases connected to an

5,662,873

PROCESS FOR THE ELIMINATION OF IMPURITIES CONTAINED IN A GASEOUS COMPOUND

Daniel Gary, Montigny le Bretonneux, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed May 22, 1996, Ser. No. 651,494
Int. Cl.[6] C01B 21/04;3/58;31/18
U.S. Cl. 423—247 15 Claims



1. Process for the substantial elimination of at least one of the impurities carbon monoxide and hydrogen contained in a gas, the process comprising:

(a) reacting at least one of the impurities carbon monoxide and hydrogen contained in said gas with oxygen, in contact with a catalyst comprising particles of (i) a first member consisting of silver, and (ii) at least a second member selected from the group consisting of the platinum group metals wherein the particles are supported on a support consisting of titanium dioxide, to form respectively carbon dioxide and water from the catalytic oxidation of the carbon monoxide or hydrogen; wherein the temperature of the gas in contact with the catalyst is between 80° and 130° C., the weight ratio between the particles of the first member and the second member is between 90/10 and 10/90, and the weight content of the particles of the first member is between 0.1% and 5% relative to the total weight of the catalyst;

(b) eliminating carbon dioxide and water from said reacted gas; and

(c) recovering a purified gas which contains less than 5 ppb of carbon monoxide and less than 10 ppb of hydrogen impurities.

5,662,874

PREPARATION OF AMMONIUM RARE EARTH DOUBLE OXALATES AND RARE EARTH OXIDES PRODUCED THEREFROM

Claire David, Paris, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 154,486, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 791,158, Nov. 13, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 427,737
Claims priority, application France, Nov. 13, 1990, 90 14031
Int. Cl.[6] C01F 17/00; C07F 5/00
U.S. Cl. 423—263 18 Claims

1. A process for the preparation of an ammonium rare earth double oxalate, comprising (a) intimately admixing, in an aqueous medium, (i) at least one precursor compound capable of liberating oxalate ions in aqueous solution with (ii) at least one water-soluble rare earth compound containing a rare earth metal having an atomic number of 39 or ranging from 57 to 71 and (iii) at least one ammonium salt to form an ammonium rare earth double oxalate precipitate, (b) separating the double oxalate precipitate thus formed, and (c), optionally, washing and drying said double oxalate precipitate; wherein the double oxalate precipitate is precipitated without prior precipitation of a rare earth hydroxide and said compound (i), compound (ii) and salt (iii) are different from each other, and wherein said ammonium salt comprises ammonium nitrate, ammonium chloride or ammonium acetate.

5,662,875

CONTINUOUS PROCESS FOR THE PREPARATION OF SILICON NITRIDE BY CARBONITRIDING AND SILICON NITRIDE THEREBY OBTAINED

Roland Bachelard; Jean-Pierre Disson, both of Lyons, and Bruno Morlhon, Villeubanne, all of France, assignors to Elf Atochem S. A., Paris, France

Division of Ser. No. 273,070, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 16,393, Feb. 11, 1993, abandoned. This application May 8, 1996, Ser. No. 646,599
Claims priority, application France, Feb. 18, 1992, 92 01806
Int. Cl.[6] C01B 21/068
U.S. Cl. 423—344 19 Claims

1. A process for the manufacture of fine powder of silicon nitride, comprising the reaction, in a nitrogen countercurrent and in continuous fashion, of silica, carbon and a seed crystal, in the presence of a volatile compound of a metal chosen from the group consisting of Be, Mg, Ca, Sr, Ge, Sn, Ti, Hf, Na and Ba, in a reaction zone possessing a temperature gradient comprising a hot zone in which the said metal compound passes into the gaseous state and a cold zone in which the said metal compound in the gaseous state condenses, the said metal compound in the gaseous state being carried from the hot zone to the cold zone by the nitrogen countercurrent.

5,662,876

PURIFICATION OF FULLERENES

James M. Tour; Walter A. Scrivens, both of Columbia, S.C., and Peter V. Bedworth, Pasadena, Calif., assignors to University of South Carolina, Columbia, S.C.

Continuation-in-part of Ser. No. 896,193, Jun. 10, 1992, Pat. No. 5,310,532. This application May 5, 1994, Ser. No. 238,640
Int. Cl.[6] C01B 31/00
U.S. Cl. 423—445 B 11 Claims

1. A method of purifying a mixture of fullerenes to obtain a preparation enriched in a fullerene of a selected molecular weight comprising:

adding a fullerene mixture to the top end of a column comprising activated carbon,

passing an eluting solvent comprising a chlorinated aromatic solvent in which said selected molecular weight fullerene is soluble through said column, and

recovering a fraction enriched in the fullerene of a selected molecular weight relative to said fullerene mixture from the bottom end of the column.

5,662,877

PROCESS FOR FORMING DIAMOND-LIKE THIN FILM

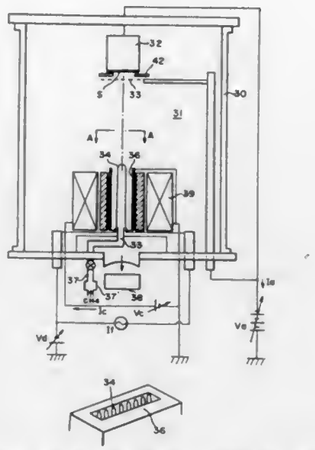
Masanori Shibahara; Kunihiro Ueda, and Masatoshi Nakayama, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 547,732, Jul. 2, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 827,853
Claims priority, application Japan, Aug. 23, 1989, 1-214913
Int. Cl.[6] C30B 29/04
U.S. Cl. 423—446 5 Claims

1. A process for forming a diamond-like thin film on a substrate selected from a group of alloys containing at least one of Co, Ni and Fe, ceramics and glass which have a poor affinity to said diamond-like thin film, which consists essentially of

a) disposing said substrate in a vacuum chamber, introducing into said vacuum chamber a bombardment gas, forming a stream of ions by ionizing said bombardment gas with an ionizing means which consists essentially of a thermal filament cathode and an anode arranged around the cathode and accelerating the resulting stream of the ionized bombardment gas by a grid which is at a lower potential than said anode without neutralization to bombard the surface of the substrate which is positioned proximate to the grid and at substantially the same potential as the grid, and, after evacuation of the bombardment gas,

b) introducing into the vacuum chamber a hydrocarbon of a low molecular weight or a material gas capable of producing a hydrocarbon of a low molecular weight upon decomposition or reaction under a pressure of about 10^{-1} torr, forming a stream of hydrocarbon ions by ionizing said hydrocarbon or material gas with an ionizing means which is comprised of a thermal filament cathode and an anode arranged around thereof, and accelerating the resulting stream of hydrocarbon ions by a grid which is at a lower potential than said anode to cause a film forming reaction on the substrate which is positioned proximate to the grid and at substantially the same potential as the grid.

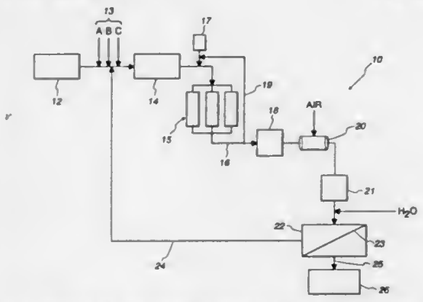


5,662,878

PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Rathin Datta, Chicago; Sarabjit S. Randhava, Evanston, and Shih-Perng Tsai, Naperville, all of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Apr. 25, 1996, Ser. No. 637,864
Int. Cl.[6] C01B 15/023
U.S. Cl. 423—588 20 Claims



1. A method for producing hydrogen peroxide comprising

a.) supplying an anthraquinone-containing solution;

b.) subjecting said solution to hydrogen to hydrogenate the anthraquinone;

c.) mixing an oxygen-containing gas stream with said solution containing hydrogenated anthraquinone to oxidize the solution;

d.) contacting said oxidized solution with a hydrophilic membrane and adding water to a permeate side of the hydrophilic membrane to produce a permeate containing hydrogen peroxide; and

e.) recovering the hydrogen peroxide from said permeate.

7. A method for producing hydrogen peroxide comprising:

a.) supplying an anthraquinone-containing solution;

b.) subjecting said solution to hydrogen to hydrogenate the anthraquinone;

c.) mixing an oxygen-containing gas stream with said solution containing hydrogenated anthraquinone to oxidize the solution;

d.) contacting said oxidized solution with a hydrophilic membrane to produce a permeate; and

e.) recovering the hydrogen peroxide from said permeate wherein the step of mixing an oxygen-containing gas with the solution containing hydrogenated anthraquinones further comprises:

f.) supplying a perfusion membrane having a first side and a second side;

g.) contacting the solution with the first side of said perfusion membrane; and

h.) contacting the second side of the perfusion membrane with an oxygen-containing gas so as to cause the gas to pass through the-membrane and mix with the solution.

5,662,879

METHOD FOR PREPARATION OF FERRITE POWDERS AT ROOM TEMPERATURE

Karl F. Schoch, Jr., Pittsburgh; Theodore R. Vasilow, Irwin, and Daryl V. Stough, Huntingdon, all of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 29, 1996, Ser. No. 639,642
Int. Cl.[6] C01G 49/00
U.S. Cl. 423—594 3 Claims

1. A method for producing a ferrite at room temperature comprising the steps of:

dissolving metal salts in deaerated water sufficient for forming a ferrite;

adding thereto a base solution to precipitate metal hydroxides;

adding an oxidizing agent to the reaction mixture of metal salts and base solution, said oxidizing agent being selected from the group consisting of hydrogen peroxide, ammonium peroxydisulfate, ozone, nitrous acid, NO, and N_2O to obtain a suspension of ferrite powder in solution; and

separating said ferrite powder from said solution.

5,662,880

METHOD FOR PRODUCING CATALYST-GRADE ALUMINA FROM ALUMINUM SULPHATE

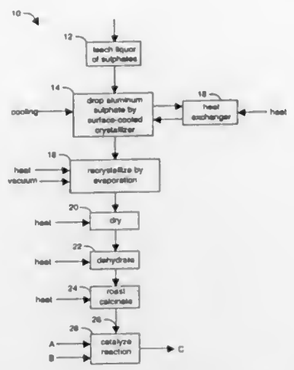
John S. Rendall; Massoud Ahghar, and Stephen J. Lane, all of Albuquerque, N. Mex., assignors to Solv-Ex Corporation, Albuquerque, N. Mex.

Filed Apr. 19, 1996, Ser. No. 635,322
Int. Cl.[6] C01F 7/02; C22B 13/00
U.S. Cl. 423—628 7 Claims

1. A method for producing activated alumina suitable for use as a catalyst, comprising the steps of:

crystallizing a leach liquor of potassium and aluminum sulphates in a surface-cooled crystallizer to precipitate crystals of aluminum sulphate;

recrystalizing said precipitated crystals of aluminum sulphate to improve their purity by evaporation in a vacuum and at an elevated temperature to yield a quantity of purified crystals of aluminum sulphate;



drying said purified crystals of aluminum sulphate to drive off a quantity of water to yield a quantity of dried aluminum sulphate crystals;

dehydrating said dried aluminum sulphate crystals to yield a quantity of dehydrated aluminum sulphate crystals; and

roasting and recalcinating said dehydrated aluminum sulphate crystals until a sulphate has been separated out and a remainder comprises only a high-grade catalyst alumina.

5,662,881

APPARATUS AND METHOD FOR THE PRODUCTION OF ACTIVE MAGNESIUM HYDROXIDE

Akihiko Higuchi, Himeji, Japan, assignor to Daicel Abosl-sangyo Co., Hyogo, and Kubota Tower Mill Corp., Tokyo, both of Japan

Filed Oct. 29, 1993, Ser. No. 143,115

Claims priority, application Japan, Oct. 29, 1992, 4-316397

Int. Cl.[6] C01F *5/16*

U.S. Cl. 423—636 **12 Claims**

1. A process for producing magnesium hydroxide comprising (i) hydrating coarse particles of light burned magnesia having a mean diameter of at least about 0.5 mm and a maximum diameter of not larger than 10 mm and (ii) conducting a wet-pulverization treatment concurrently or subsequently to step (i), wherein step (ii) is conducted in the presence of an alkaline aqueous medium at a temperature of not less than 70° C. to produce magnesium hydroxide particles having a mean particle size of about 10 to 25 μm.

5,662,882

RADIOPHARMACEUTICAL FORMULATIONS HAVING NON-STANNOUS REDUCTANTS

James W. Brodack, Florissant; Mark A. DeRosch, St. Charles; Edward A. Deutsch, and Mary Marmion Dyszlewski, both of Maryland Heights, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation of Ser. No. 40,739, Mar. 31, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 410,642

Int. Cl.[6] A61K *51/00*

U.S. Cl. 424—1.11 **7 Claims**

1. In a method for forming a radiopharmaceutical imaging agent, the improvement comprising combining a non-reduced radionuclide solution with a multidentate ligand and a chemical agent, the chemical agent reducing the radionuclide and complexing with the radionuclide in a manner incorporating the chemical agent into the radiopharmaceutical imaging agent.

5,662,883

MICROPRECIPITATION OF MICRO-NANOPARTICULATE PHARMACEUTICAL AGENTS

Pranab Bagchi, Webster; Robert C. Stewart, Spencerport, both of N.Y.; Gregory L. McIntire, West Chester, Pa., and John R. Minter, Rochester, N.Y., assignors to NanoSystems L.L.C., Collegeville, Pa.

Filed Jan. 10, 1995, Ser. No. 370,936

Int. Cl.[6] A61K *9/14;49/04*

U.S. Cl. 424—9.4 **53 Claims**

1. A process of forming nanoparticulate dispersions of therapeutic pharmaceutical agents comprising:

first step of dissolution of the pharmaceutical agent in a liquid medium base in which said agent is poorly soluble and a non toxic solvent, miscible with the liquid medium,

a second step of adding to it an aqueous solution of one or more surface modifiers and a third step of neutralizing the formed alkaline solution with an acid to form a dispersion,

wherein, the pharmaceutical agent is formed by linkage between a photographic coupler molecule and a pharmaceutically useful chemical composition.

5,662,884

Patent Not Issued For This Number

5,662,885

PEPTIDE DERIVED RADIONUCLIDE CHELATORS

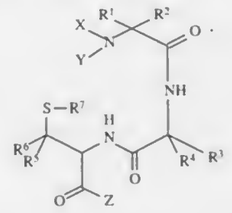
Alfred Pollak, and Anne Goodbody, both of Toronto, Canada, assignors to Resolution Pharmaceuticals Inc., Ontario, Canada

Filed Jul. 22, 1994, Ser. No. 279,155

Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **18 Claims**

1. A compound of the general formula:



wherein

X is a linear or branched, saturated or unsaturated C_{1-4} alkyl chain that is optionally interrupted by one or two heteroatoms selected from N, O and S; and is optionally substituted by at least one group selected from halogen, hydroxyl, amino, carboxyl, C_{1-4} alkyl, aryl and C(O)Z;

Y is a substitutent defined by X;

X and Y may together form 5- to 8-membered saturated or unsaturated heterocyclic ring optionally substituted by at least one group selected from halogen, hydroxyl, amino, carboxy, oxo, C_{1-4} alkyl, aryl and C(O)Z;

R^1 through R^4 are selected independently from H; carboxyl; C_{1-4} alkyl; C_{1-4} alkyl substituted with a group selected from hydroxyl, amino, sulfhydryl, halogen, carboxyl, C_{1-4} alkoxy-carbonyl and aminocarbonyl; an alpha carbon side chain of a D- or L-amino acid other than proline; and C(O)Z;

R^5 and R^6 are selected independently from H; carboxyl; amino; C_{1-4} alkyl; C_{1-4} alkyl substituted by hydroxyl, carboxyl or amino; and C(O)Z;

R^7 is selected from H and sulfur protecting group; and

Z is selected from hydroxyl and a targeting molecule, wherein the targeting molecule is a peptide.

5,662,886

ADHESIVE AMALGAM SYSTEM

Joel David Oxman, Minneapolis, and Jon Wallace Fundingsland, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1991, Ser. No. 638,614

Int. Cl.[6] A61K *6/05*

U.S. Cl. 424—49 **6 Claims**

1. A dental restorative system comprising a modified amalgam for application to tooth structure in combination with a dental adhesive for application to tooth structure so that at least a portion of the modified amalgam shall contact tooth structure precoated with said dental adhesive, the modified amalgam comprising silver, mercury and particulate additive, said particulate additive having the property of rendering said modified amalgam adherent to said precoated tooth structure, wherein the particulate additive is selected from the group consisting of acrylate- and methacrylate-functional polymers.

5,662,887

FLUOROCARBON CONTAINING COATINGS, COMPOSITIONS AND METHODS OF USE

Sharon M. Rozzi, West Lakeland Township, Washington County; Sumita B. Mitra, West St. Paul; Brant Lawrence Kedrowski, Minneapolis, and Charles E. Shelburne, Brooklyn Park, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1994, Ser. No. 347,717

Int. Cl.[6] A61K *7/16*

U.S. Cl. 424—49 **13 Claims**

1. A coating on hard tissue surfaces or surfaces of the oral environment, which coating comprises a polymer that is less than 0.1 percent soluble in water comprising repeating units

A) 1–80% by weight of a polar or polarizable group

B) 0–98% by weight of a modulating group

C) 1–40% by weight of a hydrophobic fluorine-containing group, wherein said coating has a Wilhelmy Balance Test Advancing Contact Angle greater than 55°.

5,662,888

TOOTHPASTE FOR SMOKERS FOR SOLUBILIZING AND REMOVING TOBACCO TARS

Jeffrey H. Diamond, Palm Beach, Fla., assignor to Jeffrey Mitchell Laboratories, Lake Worth, Fla.

Division of Ser. No. 453,353, May 30, 1995, Pat. No. 5,514,366, which is a continuation of Ser. No. 291,054, Aug. 15, 1994, abandoned, which is a continuation of Ser. No. 043,891, Apr. 7, 1993, abandoned. This application May 3, 1996, Ser. No. 642,358

Int. Cl.[6] A61K *7/16;* **C11D** *7/50*

U.S. Cl. 424—49 **21 Claims**

1. A toothpaste for smokers for solubilizing and removing cigarette tar deposits on the teeth, gums, tongue, other surfaces of the oral cavity, and dentures of smokers, comprising:

at least one nonionic surfactant in a concentration range of from about 0.3% to about 6.5% by weight;

methyl salicylate in a tobacco tar solubilizing concentration range of from about 0.06% to about 0.20% by weight;

at least one essential oil in a concentration range of from about 0.30% to about 2.0% by weight;

ethyl alcohol in a concentration range of from about 12.0% to about 20.0% by weight;

at least one anionic surfactant in a concentration range of from about 0.3% to about 4.5% by weight; and

a gelling agent.

5,662,889

ORAL COMPOSITION CONTAINING A DNA-SODIUM SALT AND METHODS OF MAKING AND USING THE SAME

Yuri Petrovich Vainberg; Elli Nicoltevna Kaplina, and Ideya Grigorievna Anosova, all of Moscow, Russian Federation, assignors to PharmecCompany, Moscow, Russian Federation

Division of Ser. No. 16,014, Feb. 10, 1993, Pat. No. 5,547,684. This application Aug. 14, 1996, Ser. No. 696,623

Int. Cl.[6] A61K *7/16;31/70;35/52*

U.S. Cl. 424—49 **9 Claims**

1. An oral composition for use in the mouth comprised of oral formulation base and a DNA-sodium salt composition, obtained by extracting DNA with a sodium chloride solution, from the reproductive cells of a member selected from the group consisting of sturgeon, seruga and beluga milt.

5,662,890

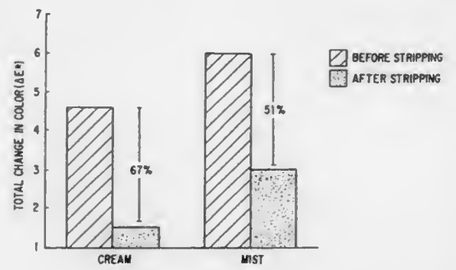
SELF-TANNING COSMETIC COMPOSITIONS AND METHODS OF USING THE SAME

Louis L. Punto, Northport, N.Y.; Jules R. Zecchino, Closter, N.J., and Peter J. Lentini, Glen Oaks, N.Y., assignors to Estee Lauder, Inc., New York, N.Y.

Continuation of Ser. No. 980,001, Nov. 23, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 320,772

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **14 Claims**



1. A sprayable cosmetic composition, for artificially tanning the skin wherein said composition is applied to the skin in an atomized droplet form, comprising from about 2.5 to about 10% by weight of dihydroxyactone and from about 5 to about 75% by weight of one or more penetration enhancers, in an aqueous base which is free of oil or alcohol.

5,662,891

NAIL COATING COMPOSITON FREE OF AROMATIC AND KETONE SOLVENTS AND FORMALDEHYDE RESINS

Frederick L. Martin, St. John, Ind., assignor to Almell, Ltd., Dallas, Tex.

Filed Dec. 28, 1995, Ser. No. 580,153

Int. Cl.[6] A61K *7/043*

U.S. Cl. 424—61 **20 Claims**

1. A nail coating composition comprising nitrocellulose, a rosin polymer, polyester, sucrose acetate isobutyrate, butyl benzyl phthalate, glyceryl tribenzoate, and a mixture of aliphatic and cycloaliphatic solvents, the composition being substantially free to totally free of aromatic solvents, ketones, and formaldehyde containing resins.

5,662,892

PERSONAL CARE COMPOSITIONS CONTAINING HYDROPHOBIC LINEAR COPOLYMER AND HYDROPHOBIC, VOLATILE, BRANCHED HYDROCARBON SOLVENT

Raymond Edward Bolich, Jr., Mainville, and Sanjeev Midha, Blue Ash, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 15, 1996, Ser. No. 616,402
Int. Cl.[6] A61K *7/06;7/075*
U.S. Cl. 424—70.1 21 Claims

1. A hair care composition comprising:

a) a hydrophobic linear random copolymer formed from the copolymerization of A monomer units and B monomer units, said A monomer units being copolymerizable with said B monomer units and selected from monomer units that form a homopolymer having a T_g of at least about 90° C., said B monomer units being copolymerizable with said A monomer units and selected from monomer units that form a homopolymer having a T_g of less than about 25° C.; wherein said copolymer comprises:

(i) from about 5% to about 90% by weight of said A monomer units, and

(ii) from about 95% to about 10% by weight of said B monomer units;

said copolymer comprising randomly repeating units of said A monomer units copolymerized with said B monomer units, said copolymer having a weight average molecular weight greater than about 10,000 and a Tg of at least about 30° C.; and

(b) a hydrophobic, volatile, hydrocarbon solvent for said copolymer, said solvent consisting essentially of one or more branched chain hydrocarbons containing from 10 to 16 carbon atoms;

wherein the weight ratio of said copolymer to said solvent is from about 1:100 to about 5:1.

5,662,893

CLEAR PUMP HAIR SPRAY FORMULATIONS CONTAINING A LINEAR SULFOPOLYESTER IN A HYDROALCOHOLIC LIQUID VEHICLE

Scott E. George; Vicki L. Underwood, both of Kingsport, and D. Michael Garber, Jonesborough, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 523,312, Sep. 5, 1995, Pat. No. 5,660,816, which is a continuation of Ser. No. 81,897, Jun. 25, 1993, abandoned. This applicatlon Jun. 3, 1994, Ser. No. 254,010
Int. Cl.[6] A61K *7/11*
U.S. Cl. 424—70.11 5 Claims

1. A clear pump hair spray formulation exhibiting less than 20 NTU's and consisting essentially of the following ingredients:

(1) 0.5 to 15 weight percent of a linear sulfopolyester having a Tg of 40° C. to 50° C. and an inherent viscosity of 0.24 to 0.60 dl/g containing repeat units consisting essentially of the reaction product of 20 to 26 mole percent dimethyl-5-sodiosulfoisophthalate and 74 to 80 mole percent isophthalic acid, based on 100 mole percent of the dimethyl-5-sodiosulfoisophthalate and isophthalic acid, and 70 to 30 mole percent 1,4-cyclohexanedimethanol and 90 to 90 mole percent diethylene glycol, based on 100 mole percent of the 1,4-cyclohexanedimethanol and diethylene glycol;

(2) 80 to 99 weight percent of a water/alcohol liquid vehicle comprising 20 to 61.5 percent water and 35 to 60 percent alcohol, based on the total weight of the pump hair spray formulation, wherein the alcohol is an aliphatic straight or branched chain monohydric alcohol having 2 to 4 carbon atoms; and

(3) 0.5 to 10 weight percent based on the weight of ingredients (1), (2) and (3) of a water-soluble polymer having a weight average molecular weight of 1,000 to 100,000, which is prepared from at least one vinyl monomer selected from the group consisting of alkyl vinyl ethers, alkyl acrylates, vinyl esters, n-vinyl lactams, alkyl acrylamides, half vinyl esters/half amides, half esters of maleic anhydride vinyl pyrrolidone, acrylic acid, crotonic acid, methacrylic acid, and combinations thereof.

5,662,894

SUNSHIELD SHAVING COMPOSITIONS

JT McManus, P.O. Box 4021, Carson City, Nev. 89702

Filed Aug. 3, 1993, Ser. No. 101,524
The portion of the term of this patent subsequent to Feb. 3, 2013, has been disclaimed.
Int. Cl.[6] A61K *7/15*
U.S. Cl. 424—73 4 Claims

1. A process providing hair removal, sunscreen protection and skin conditioning to the skin which comprises the topical application of a shaving formulation comprising a sunscreen agent, a carrier selected from the group consisting of an organic solution, a gel and an aerosol, an emulsifier in an amount sufficient to provide lubricity to the skin, followed by the application of a mechanical shaving means for a period of time until the skin is shaved, said process leaving a coating on the skin which is subsequently massaged in the skin.

5,662,895

METHOD OF ADMINISTERING HUMAN PLURIPOTENT HEMATOPOIETIC COLONY STIMULATING FACTOR

Karl Welte, New York, N.Y.; Erich Platzer, Spardorf, Germany; Janice L. Gabrilove, New York, N.Y.; Roland Mertelsmann, Mainz, Germany, and Malcolm A. S. Moore, Larchmont, N.Y., assignors to Sloan-Kettering Institute, New York, N.Y.

Continuation of Ser. No. 280,582, Jul. 26, 1994, Pat. No. 5,532,341, which is a continuation of Ser. No. 132,240, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 835,270, Mar. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 716,844, Mar. 28, 1985, abandoned. This application Jun. 7, 1995, Ser. No. 481,946
Int. Cl.[6] A61K *38/18;38/19*
U.S. Cl. 424—85.1 5 Claims

1. A method for inducing differentiation of human leukemic cells which comprises contacting human leukemic cells with a therapeutically active dose of purified human pluripotent colony stimulating factor, wherein said purified human pluripotent colony stimulating factor has the following characteristics:

a) a molecular weight of about 19,600 daltons under reducing and non-reducing conditions as determined by SDS-PAGE;

b) a molecular weight of about 32,000 daltons as determined by gel filtration;

c) an isoelectric point of about 5.5;

d) the ability to induce differentiation of the leukemia cell line WEHI-3B (D^+); and

e) the ability to stimulate growth of early hematopoietic progenitor cells.

5,662,896

COMPOSITIONS AND METHODS FOR CANCER IMMUNOTHERAPY

Jack R. Barber, San Diego; Douglas J. Jolly, Leucadia, and James G. Respess, San Diego, all of Calif., assignors to Chiron Viagene, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 965,084, Oct. 22, 1992, abandoned, which is a continuation of Ser. No. 586,603, Sep. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 565,606, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 395,932, Aug. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 170,515, Mar. 21, 1988, abandoned. This application Mar. 17, 1993, Ser. No. 32,846
Int. Cl.[6] A61K *48/00;* C12N *15/86;15/23;15/26*
U.S. Cl. 424—93.2 4 Claims

1. A method for inhibiting the growth of a selected solid tumor in a warm-blooded animal, comprising directly administering to said tumor a recombinant retroviral vector which directs the expression of gamma-interferon, such that the growth of said tumor is inhibited.

5,662,897

INSECT VIRUSES, SEQUENCES, INSECTICIDAL COMPOSITIONS AND METHODS OF USE

Lois K. Miller, Athens, Ga.; Bruce Christian Black, Yardley, Pa.; Peter Michael Dierks, Yardley, Pa., and Nancy C. Fleming, Yardley, Pa., assignors to U. of GA Research Foundation, Athens, Ga., and American Cyanamid Co., Wayne, N.J.

Filed Jul. 27, 1994, Ser. No. 281,916
Int. Cl.[6] A01N *63/00;* C12N *7/01*
U.S. Cl. 424—93.2 7 Claims

1. An isolated and purified recombinant *Autographa californica* Nuclear Polyhedrosis Virus (AcMNPV) having incorporated within its genome a segment of heterologous insect virus DNA derived from *Rachiplusia ou* Nuclear Polyhedrosis Virus, said segment of DNA conferring improved and faster killing properties as reflected in a lower LT_{50} value for at least one insect pest as compared with an isogenic parental AcMNPV lacking said segment of DNA, and wherein said segment of DNA comprises a V-8 nucleotide sequence as given in SEQ ID NO:3, from nucleotide 534 to nucleotide 1763.

5,662,898

GENES FOR THE SYNTHESIS OF ANTIPATHOGENIC SUBSTANCES

James M. Ligon, Basel; Thomas Schupp, Möhlin, both of Switzerland; James Joseph Beck; Dwight Steven Hill, both of Cary, N.C.; John Andrew Ryals, Durham, N.C.; Thomas Deane Gaffney, Chapel Hill, N.C.; Stephen Ting Lam, Raleigh, N.C.; Philip E. Hammer, Cary, N.C., and Scott Joseph Uknes, Apex, N.C., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 937,648, Aug. 31, 1992, abandoned, , which is a continuation-in-part of Ser. No. 87,636, Jul. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 908,284, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,184, Aug. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 937,648, Aug. 31, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,342
Int. Cl.[6] A01N *63/00;* C12N *1/20*
U.S. Cl. 424—93.2 5 Claims

1. A method for protecting a plant against a phytopathogen, comprising treating said plant with a biocontrol agent transformed with one or more vectors collectively capable of expressing all of the polypeptides in the biosynthetic pathway of pyrrolnitrin, whereby pyrrolnitrin is produced in amounts which inhibit said phytopathogen.

5,662,899

MACROPHAGES, PROCESS FOR PREPARING THE SAME AND THEIR USE AS ACTIVE SUBSTANCES OF PHARMACEUTICAL COMPOSITIONS

Mohamed Chokri, Deuil-la-Barre, and Jacques Bartholeyns, Bures-sur-Yvette, both of France, assignors to I.D.M. Immuno-Designed Molecules, Paris, France

PCT No. PCT/EP93/01232, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/26875, PCT Pub. Date Nov. 24, 1994
PCT Filed May 18, 1993, Ser. No. 374,629
Int. Cl.[6] C12N *5/08;* A61K *35/14;35/26;35/28*
U.S. Cl. 424—93.7 13 Claims

1. Macrophages having at least one of the following properties:

their cytotoxic activity without IFN-γ is increased by about 20 to 30% with respect to standard macrophages;

their cytotoxic activity with IFN-γ is increased by about 20 to about 40% with respect to standard macrophages;

deactivation of the cytotoxic activity following activation of IFN-γ is such that sixty hours after activation with IFN-γ, the residual cytotoxic activity is at least 30% of the maximum cytotoxic activity presented by the macrophages due to IFN-γ activation, with said cytotoxic activity being measured as a percentage of the inhibition of 3-H thymidine incorporation by target tumoral cells, particularly U 937 cells;

said macrophages being prepared by culturing healthy human monocytes and lymphocytes in a culture medium containing 1,25-dihydroxy vitamin D_3 and GM-CSF.

5,662,900

METHOD OF INCREASING INTERFERON PRODUCTION IN HUMANS

Tsunataro Kishida, Kyoto, Japan, assignor to Institut Pasteur De Kyoto, Kyoto; Shinwa Pharmaceutical Co., Ltd., Toyama, and Nitto Pharmaceutical Industries, Ltd., Kyoto, all of Japan

Division of Ser. No. 141,599, Oct. 27, 1993, Pat. No. 5,556,785. This application Jun. 19, 1996, Ser. No. 666,745
Claims priority, application Japan, Nov. 24, 1992, 4-313268
Int. Cl.[6] A01N *63/00;* C12N *1/20*
U.S. Cl. 424—93.45 7 Claims

1. A method of increasing interferon production in a human, comprising administering to the human an effective interferon production increasing amount of a composition comprising powdered Lactobacillus brevis subsp. coagulans FERM BP-4693.

5,662,901

ENZYMATIC GRAIN CONDITIONER AND METHODS OF USING IT

James F. Tobey, Jr., Roanoke, Va.; J. Stanley McGee, Longmont, Colo.; Charles W. Cobb, Hereford, Tex., and William Cortner, Maysville, Mo., assignors to Loveland Industries, Inc., Greeley, Colo.; George A. Jeffreys & Co., Salem, Va., and Creative Research Laboratories, Inc., Wisner, Nebr.

Division of Ser. No. 544,022, Jun. 26, 1990, which is a continuation of Ser. No. 407,726, Sep. 14, 1989, abandoned, which is a continuation of Ser. No. 76,114, Jul. 21, 1987, abandoned. This applicatioo Aug. 22, 1994, Ser. No. 294,087
Int. Cl.[6] A61K *38/54;38/47;* C12N *9/14;* A23B *7/10*
U.S. Cl. 424—94.2 20 Claims

1. A method of increasing the weight gain and feed utilization efficiency of an animal comprising the steps of:

providing a grain conditioner comprising:

a pectinase,

a protease,

a beta-glucanase,

an amylase, and

a non-ionic, food grade surfactant;

applying the grain conditioner to grain sorghum; and
feeding the animal the conditioned grain sorghum.

5,662,902

COMPOSITIONS FOR THE PREVENTION AND TREATMENT OF VIRAL-INDUCED TUMORS

Ernest W. Boyer, and Robert L. Charles, both of Elkhart, Ind., assignors to Genencor International, Inc., Rochester, N.Y.

Division of Ser. No. 126,660, Sep. 27, 1993, Pat. No. 5,500,359.
This application Jun. 5, 1995, Ser. No. 463,363
Int. Cl.[6] A61K *35/70;* C12N *1/14*
U.S. Cl. 424—115 3 Claims

1. A prophylactic and therapeutic composition for the prevention and treatment of viral-induced tumors in mammals, comprised of an Aspergillus fermentation extract or a derivative thereof in a pharmaceutically-acceptable carrier,

wherein the Aspergillus fermentation extract or derivative thereof is a fermentation extract or derivative thereof of *Aspergillus niger* strain NRRL Accession No. 21139 or *Aspergillus niger* strain NRRL Accession No. 21126.

5,662,903

COMPOSITIONS FOR THE PREVENTION AND TREATMENT OF VIRAL-INDUCED TUMORS

Ernest W. Boyer, and Robert L. Charles, both of Elkhart, Ind., assignors to Genencor International, Inc., Rochester, N.Y.

Division of Ser. No. 126,660, Sep. 27, 1993, Pat. No. 5,500,359.
This application Jun. 5, 1995, Ser. No. 463,364
Int. Cl.[6] A61K *35/70;* C12N *1/14*
U.S. Cl. 424—115 7 Claims

1. A method for treating papillomavirus-induced tumors in mammals comprising administering a therapeutically-effective amount of a therapeutic composition comprising an *Aspergillus niger* fermentation extract or a derivative thereof and a pharmaceutically-acceptable carrier to a mammal in need thereof,

wherein said *Aspergillus niger* is a strain selected from the group consisting of NRRL Accession No. 21139 and NRRL Accession No. 21126.

5,662,904

ANTI-SCARRING COMPOSITIONS COMPRISING GROWTH FACTOR NEUTRALIZING ANTIBODIES

Mark William James Ferguson, Stockport, England; David Michael Foreman, Chorlton, and Mamta Shah, Withington, both of United Kingdom, assignors to The Victoria University of Manchester, Manchester, England

PCT No. PCT/GB92/00570, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/17206, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 30, 1992, Ser. No. 122,508
Claims priority, application United Kingdom, Mar. 28, 1991, 9106678
Int. Cl.[6] A61K *39/395;39/44;* C07K *16/22;17/04*
U.S. Cl. 424—130.1 28 Claims

1. A method of inhibiting scar tissue formation during the healing of wounds, comprising the steps of administering to a host suffering from tissue wounding a growth factor neutralizing antibody specific against a growth factor selected from the group consisting of TGF-β_1, TGF-β_2 and PDGF, wherein the antibody neutralizes the stimulation of macrophage infiltration, fibroblast migration, extracellular matrix synthesis or deposition by fibroblasts, in the wound area before the granulation phase in a dosage effective to reduce activity of the growth factor.

2. A method according to claim 1, wherein the growth factor neutralizing antibody is selected from the group consisting of anti-TGF-β_1 antibody, anti-TGF-β_2 antibody, and anti-PDGF-antibody.

5,662,905

MONOCLONAL ANTIBODY COMPOSITIONS CROSS-REACTIVE AND CROSS-PROTECTIVE AGAINST *P. AERUGINOSA* SEROTYPES

Anthony W. Siadak, and Mae J. Rosok, both of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 66,604, May 24, 1993, Pat. No. 5,378,812, which is a continuation of Ser. No. 931,179, Nov. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 807,394, Dec. 10, 1985, abandoned. This application Dec. 29, 1994, Ser. No. 366,204
Int. Cl.[6] A61K *39/40;39/395;* C07K *16/00;16/12*
U.S. Cl. 424—150.1 8 Claims

1. A pharmaceutical composition comprising a therapeutically or prophylactically effective amount of a human monoclonal antibody or antigen binding fragment thereof which specifically binds to an accessible determinant of outer membrane of *P. aeruginosa* lipopolysaccharide of a plurality of, but not all, IATS serotypes of *Pseudomonas aeruginosa;* and a physiologically acceptable carrier.

5,662,906

NON-A NON-B HEPATITIS-SPECIFIC ANTIGEN AND ITS USE IN HEPATITIS DIAGNOSIS

Noboru Maki; Kenjiro Yamaguchi, both of Iruma-gun; Ayumi Toyoshima, Kamifukuoka, and Michinori Kohara, Tokorozawa, all of Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 81,072, Jun. 22, 1993, which is a continuation of Ser. No. 726,141, Jul. 8, 1991, abandoned. This application May 24, 1995, Ser. No. 449,093
Claims priority, application Japan, Jul. 9, 1990, 2-180889; Nov. 30, 1990, 2-339589; Dec. 20, 1990, 2-413844
Int. Cl.[6] A61K *39/29*
U.S. Cl. 424—184.1 2 Claims

1. A recombinant non-A non-B hepatitis-specific antigen polypeptide consisting of the amino acid sequence shown in SEQ ID NOS: 1 or 14.

5,662,907

INDUCTION OF ANTI-TUMOR CYTOTOXIC T LYMPHOCYTES IN HUMANS USING SYNTHETIC PEPTIDE EPITOPES

Ralph T. Kubo, San Diego; Howard M. Grey; Alessandro Sette, both of La Jolla, and Esteban Celis, San Diego, all of Calif., assignors to Cytel Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 159,339, Nov. 29, 1993, which is a continuation-in-part of Ser. No. 103,396, Aug. 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 27,746, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,666, Aug. 7, 1992, abandoned. This application Jan. 25, 1994, Ser. No. 186,266
Int. Cl.[6] A61K *39/39;* C07K *7/00*
U.S. Cl. 424—185.1 23 Claims

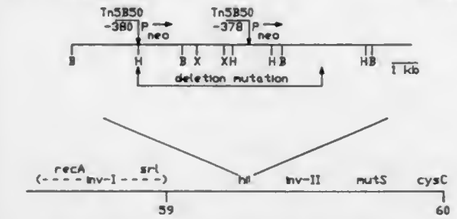
1. A composition comprising: a helper peptide having a T helper epitope, and an immunogenic peptide having the sequence EVD-PIGHLY (SEQ. ID. No.2).

5,662,908

INVASIVE MICROORGANISMS

Stanley Falkow, Portola Valley, Calif.; Ralph Isberg, Brookline, Mass.; Virginia Miller, Van Nuys; Joseph W. St. Geme, III, Redwood City, both of Calif., and Catherine A. Lee, Newton, Mass., assignors to The Board of Trustees of the Leland Stanford Jr. University, Palo Alto, Calif.

Continuation of Ser. No. 844,470, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 644,826, Jan. 23, 1991, Pat. No. 5,239,066, which is a continuation-in-part of Ser. No. 559,904, Jul. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 340,375, Apr. 19, 1989, Pat. No. 5,310,654, which is a continuation-in-part of Ser. No. 761,222, Jul. 31, 1985, abandoned. This application Mar. 21, 1994, Ser. No. 216,086
Int. Cl.[6] A61K *39/112;39/116;* C12N *1/20;1/21*
U.S. Cl. 424—200.1 9 Claims



1. A mutant *Salmonella typhimurium* microorganism wherein a hil gene of the hyper-invasive locus located on the 20 kb fragment shown in FIG. 1A has been modified to alter the invasive phenotype of said mutant *Salmonella.*

5,662,909

POTENTIATION OF IMMUNOGENIC RESPONSE

Robert S. Becker, Henryville; Karen Biscardi, South Sterling; Laura Ferguson, Bethlehem, and Lorne Erdile, Stroudsberg, all of Pa., assignors to Connaught Laboratories, Inc., Swiftwater, Pa.

Continuation of Ser. No. 943,173, Sep. 14, 1992, abandoned. This application Feb. 8, 1995, Ser. No. 385,587
Int. Cl.[6] A61K *39/295;39/02;39/00;39/002*
U.S. Cl. 424—201.1 18 Claims

1. A method for achieving an enhanced immune response to an antigen in an animal which is a naive animal, wherein a naive animal is an animal which has not been previously immunized by a highly immunogenic form of the antigen, which method comprises the steps of:

simultaneously administering the antigen to the naive animal in at least two different physiochemical forms to provide a synergistic immune response to the antigen in the naive animal greater than the immune response to the individual physiochemical forms of the antigen in the naive animal,

wherein said antigen is a bacterial protein.

5,662,910

METHOD OF MAKING GIARDIA VACCINES

Merle E. Olson; Howard Ceri, both of Calgary, and Douglas W. Morck, Airdre, all of Canada, assignors to University Technologies International, Inc., Calgary, Canada

Division of Ser. No. 294,047, Aug. 24, 1994, Pat. No. 5,549,899, which is a continuation of Ser. No. 985,489, Dec. 4, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,970
Int. Cl.[6] A61K *39/002;39/005;39/008*
U.S. Cl. 424—269.1 4 Claims

1. A method of preparing a vaccine composition comprising:

(a) culturing a vaccine strain of giardia in media comprising bile so as to make it protectively immunogenic;
(b) isolating said vaccine strain;
(c) disrupting or inactivating said vaccine strain; and
(d) combining said vaccine strain with an adjuvant.

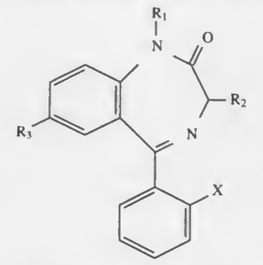
5,662,911

BENZODIAZEPINE PROTEIN CONJUGATES

Erasmus Huber, Finning; Christian Klein; Hans-Peter Josel, both of Weilheim, and Bruno Zink, Uffing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jan. 24, 1996, Ser. No. 590,830
Claims priority, application Germany, Feb. 2, 1995, 195 03 320.5
Int. Cl.[6] A61K *45/00;* C07D *243/28*
U.S. Cl. 424—278.1 9 Claims

1. A benzodiazepine protein conjugate of the formula I



(I)

wherein

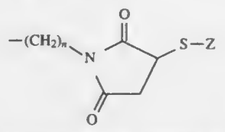
R_1 is selected from the group consisting of hydrogen, a methyl group and R;

R_2 is selected from the group consisting of hydrogen, a hydroxyl group and an OR group, with the proviso that when R_1 is hydrogen or a methyl group, then R_2 is an OR group; and with the further proviso that when R_2 is hydrogen or a hydroxyl group, then R_1 is R;

R_3 is selected from the group consisting of halogen, NO_2 and NH_2;

X is selected from the group consisting of hydrogen or halogen; and

R is a group of the formula II



(II)

wherein Z is a macromolecular immunogenically active carrier substance and n is 2 or 3.

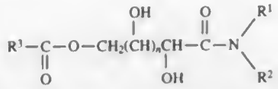
5,662,912

SUGAR MONOACID AMIDES IN COSMETIC PREPARATIONS

Hinrich Moeller, Monheim, and Rolf Wachter, Duesseldorf, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

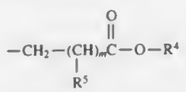
Filed Jun. 28, 1996, Ser. No. 672,901
Claims priority, application Germany, Jun. 28, 1995, 195 23 479.0
Iot. Cl.[6] A61K *7/48;7/06*
U.S. Cl. 424—401 10 Claims

1. A skin-care or hair-care composition containing acylated sugar monoacid amides corresponding to formula I



(I)

in which R^1 and R^3 may be the same or different and, independently of one another, represent a linear or branched alkyl or alkenyl radical having 6 to 30 carbon atoms or R^1 represents a group corresponding to formula II:



(II)

where

R^4 is a linear or branched alkyl or alkenyl radical having 6 to 30 carbon atoms,

R^5 is hydrogen or a linear or branched alkyl or alkenyl radical having 1 to 6 carbon atoms and

m is a number of 1 to 10,

R^2 represents hydrogen or an alkyl group having 1 to 4 carbon atoms and

n may be a number of 0 to 4.

5,662,913

ANTIMICROBIAL COMPOSITIONS USEFUL FOR MEDICAL APPLICATIONS

Christopher C. Capelli, 4500 7th St., Kenosha, Wis. 53142

Continuation-in-part of Ser. No. 82,168, Jun. 28, 1993, Pat. No. 5,326,567, which is a continuation of Ser. No. 683,436, Apr. 10, 1991, abandoned. This application Jul. 1, 1994, Ser. No. 268,616

Int. Cl.[6] A61K *33/38*

U.S. Cl. 424—405 **4 Claims**

1. In a foam composition comprised of a foam matrix which is dermatologically acceptable, moisture vapor-permeable, resistant to dissolution when exposed to water, and further comprising an antimicrobial composition,

the improvement wherein said antimicrobial composition is the antimicrobial composition consisting essentially of

(a) a stabilizing acyclic polyether polymer;

(b) silver ion; and

(c) a stabilizing anion, wherein said anion is selected from the group consisting of chloride, bromide, iodide and thiocyanate, wherein the ratio of equivalents of said anion to equivalents of said silver ion is greater than 4 to 1, when said anion is chloride; is greater than 2.1 to 1, when said anion is bromide; and is greater than 1.1 to 1, when said anion is iodide; is greater than 3.5 to 1 when said anion is thiocyanate; and

wherein said antimicrobial composition has long-term photostability of greater than 72 hours in direct sunlight.

5,662,914

METHODS AND COMPOSITIONS FOR REPELLING ANTS, WASPS AND TERMITES WITH REPELLENTS

Harry H. Shorey, Fresno, and Lyle K. Gaston, Riverside, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

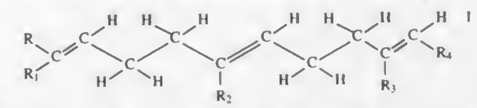
Continuation of Ser. No. 939,897, Sep. 4, 1992, abandoned. This application Jul. 18, 1994, Ser. No. 274,736

Int. Cl.[6] A01N *25/08;27/00;29/00;31/02*

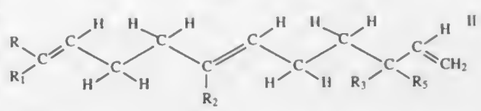
U.S. Cl. 424—405 **24 Claims**

1. A method for retarding ants, wasps, and/or termites from moving to a specific locus which comprises:

a) selecting a compound of formula I or of formula II:



(I)



(II)

; and

b) applying a non-insecticidal composition consisting essentially of a repellent effective amount of said compound and a compatible matrix between the ants, wasps, and/or termites and the locus to thereby prevent the ants, wasps and/or termites from moving to said locus

wherein R, R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen and lower alkyl of 1 to 3 carbon atoms,

R_4 is selected from the group consisting of $—CH_3$, $—CH_2OH$, $—CH_2Cl$, $—CH_2Br$, $—CH_2OC(O)R_6$, and $—COOR_7$ wherein R_6 is hydrogen or alkyl of from 1 to 4 carbon atoms and R_7 is hydrogen, alkyl of from 1 to 4 carbon atoms,

R_5 is selected from the group consisting of hydrogen, hydroxyl, chloro, bromo, and $—OC(O)R_6$ wherein R_6 is hydrogen or alkyl of from 1 to 4 carbon atoms.

5,662,915

PESTICIDE PRODUCT DERIVED FROM THE PLANT *TAGETES MINUTA*

David Mocheo Okioga, P.O. Box 14441, Nairobi, Kenya, and Ambrose Harry Rajamannan, 2120 Argonne Dr., Minneapolis, Minn. 55421

Filed Feb. 1, 1995, Ser. No. 382,287

Int. Cl.[6] A01N *25/34*

U.S. Cl. 424—408 **7 Claims**

1. A product for killing subsurface and surface soil pathogens including nematodes, wire worms, cut worms, insects, fungi, and plant and soil surface pests, consisting of an extract derived from the plant *Tagetes minuta.*

5,662,916

PESTICIDAL FORMULATIONS

Rudolf Nastke, Rehbrülke; Andreas Leonhardt, Freiburg, both of Germany, and Ernst Neuenschwander, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 193,815, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 941,586, Sep. 8, 1992, abandoned. This application May 26, 1995, Ser. No. 451,690

Claims priority, application Switzerland, Sep. 11, 1991, 2670/91

Int. Cl.[6] A01N 25/28

U.S. Cl. 424—408 **4 Claims**

1. A process for the preparation of microcapsules by rapidly stirring an aqueous solution of a precondensate of urea and formaldehyde, in the molar ratio of 1:3.0 to 1:3.5, into an acidified aqueous dispersion of a water-immiscible herbicide.

5,662,917

RELEASE-CONTROLLED IMPLANTABLE SOMATOTROPIN COMPOSITION

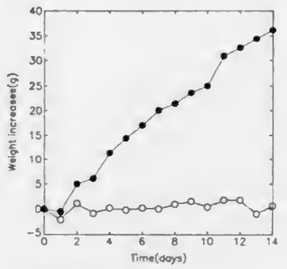
Nam Joong Kim; Heung Soo Cho; Maeng Seok Song; Yun Jeong Choi, and Byung Geon Rhee, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Continuation of Ser. No. 171,533, Dec. 22, 1993, abandoned. This application Mar. 22, 1996, Ser. No. 601,275

Claims priority, application Rep. of Korea, Dec. 28, 1992, 92-25904

Int. Cl.[6] A61K *9/22;38/27*

U.S. Cl. 424—422 **9 Claims**



1. A release-controlled implantable composition consisting of polyethylene glycol in an amount ranging from 30 to 50% by weight and a biocompatible wax in an amount ranging from 30 to 50% by weight based on the total amount of the composition, and somatotropin in an effective amount to exhibit its biological activity in vivo.

5,662,918

PHARMACEUTICAL AGENTS CONTAINING DIPHOSPHONIC ACIDS AND SALTS THEREOF

Gerhard Winter, Dossenheim; Bernhard Pichler, Ketsch; Heinrich Woog, Laudenbach, and Werner Heller, Grunstadt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

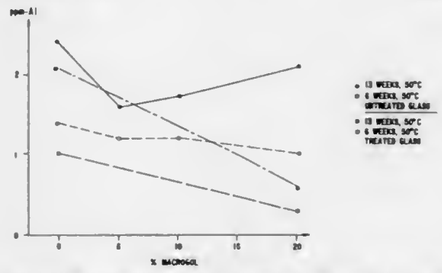
PCT No. PCT/EP93/02217, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/05297, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 19, 1993, Ser. No. 387,818

Claims priority, application Germany, Aug. 27, 1992, 42 28 552.6

Int. Cl.[6] A61F *2/02*

U.S. Cl. 424—423 **22 Claims**



1. Injection solution which is stable on storage in a glass container, said solution being an aqueous solution containing at least one bone-reabsorption-inhibiting diphosphonic acid or physiologically acceptable salt or ester thereof as the active substance, said solution being stabilized by having a pH value of the solution of about 3.0 to 4.5 or by having a pH value of the solution of about 3.0 to 4.2 and the presence of polyethylene glycols.

5,662,919

SULFATED POLYVINYL ALCOHOL POLYMERS TO STABILIZE PHARMACEUTICAL DRUG COMPOUNDS

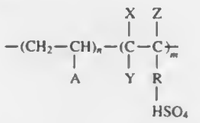
Ernesto J. Castillo, Arlington; Yusuf Ali, and Ruma P. Sarkar, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 21, 1994, Ser. No. 342,523

Int. Cl.[6] A61K *9/10;47/32*

U.S. Cl. 424—427 **26 Claims**

1. A hydrolytically stable, aqueous pharmaceutical composition having a pH of about 3.2 or greater comprising a therapeutically-effective amount of a positively charged, hydrolytically unstable drug compound and a sulfated polyvinyl alcohol block or random copolymer in an amount effective to hydrolytically stabilize the drug, wherein the sulfated polyvinyl alcohol copolymer has the formula



wherein n and m represent degrees of polymerization and

n=5–2,500;

m=10–7,000;

A=OH;

X and Y independently=H or CH_3;

Z=H or C_1–C_6 alkyl; and

R=nothing, C_1–C_6 alkyl, or benzyl; provided that if Z=C_1–C_6 alkyl, R=nothing;

provided that the drug compound is not an anthracycline antibiotic having an amino sugar residue, and further provided that the composition does not contain an antiviral amount of zinc ions.

5,662,920

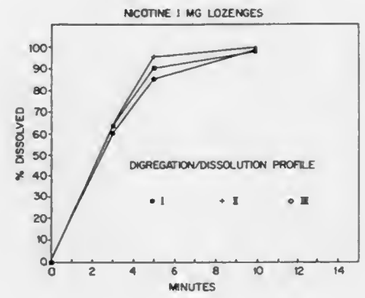
NICOTINE LOZENGE AND THERAPEUTIC METHOD FOR SMOKING CESSATION

Gian Carlo Santus, Milan, Italy, assignor to Pharmacia AB, Helsingborg, Sweden

Division of Ser. No. 97,962, Jul. 26, 1993, Pat. No. 5,549,906. This application May 15, 1996, Ser. No. 648,653

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—435 **12 Claims**



1. A method of smoking cessation therapy comprising administering bucally to a patient a nicotine lozenge, said lozenge comprising nicotine, an absorbent excipient, and a nonnutritive sweetener, wherein said buccal administration of said nicotine lozenge results in a decrease in the patient's craving for nicotine as measured by a nicotine craving protocol.

5,662,921

THERAPEUTIC USES OF EMU OIL

Elaine Fein, Scarsdale, N.Y.; John Caputo, Westport, Conn.; Ann Karrey Nagal, and Karrey-Lynn Nagal, both of Mamaroneck, N.Y., assignors to Elf Resources, Inc., New Rochelle, N.Y.

Division of Ser. No. 344,269, Nov. 23, 1994, Pat. No. 5,472,713. This application Jun. 7, 1995, Ser. No. 476,300

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—436 4 Claims

1. A method of lowering cholesterol and triglycerides comprising administering an amount of emu oil effective for lowering cholesterol and triglycerides.

5,662,922

IRON-CONTAINING COMPOSITION FOR THE PREVENTION OF ANAEMIA AND A METHOD FOR PRODUCING THE COMPOSITION

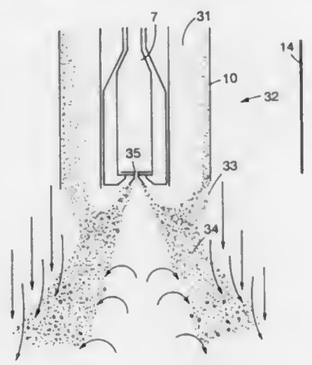
Børge Holm Christensen, Odinshøjvej 116, DK-3140 Ålsgaarde, Denmark

Continuation of Ser. No. 244,769, Jul. 15, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 590,069

Claims priority, application Denmark, Jan. 20, 1992, 0064/92; WIPO, Dec. 17, 1992, PCT/DK92/00384

Int. Cl.[6] A23K *1/18;* A61K *9/14;33/26*

U.S. Cl. 424—438 55 Claims



1. A composition containing gastrointestinally absorbable iron, comprising 0.1 to 25 wt % of ferrous or ferric iron and 1 to 99 wt % of an amino acid or an amino acid-containing ingredient selected from the group consisting of a milk protein and a partially hydrolyzed protein, the composition being in the form of a free-flowing powder of particles comprising a continuous coating layer containing the amino acid or amino acid-containing ingredient and an inner core surrounded by said coating layer, said inner core comprising at least one component selected from the group consisting of a ferrous iron containing compound and a ferric iron-containing compound, said composition having a palatability to a newborn suckling piglet such that it is ingested voluntarily by said piglet in an amount sufficient to provide adequate iron supplementation.

5,662,923

PLASTER FOR THE TRANSDERMAL APPLICATION OF STEROID HORMONES, CONTAINING DEXPANTHENOL

Michael Roreger, Neuwied, Germany, assignor to LTS Lohmann Therapie-Systeme GmbH & Co., Neuwied, Germany

PCT No. PCT/EP93/02182, § 371 Date May 16, 1995, § 102(e) Date May 16, 1995, PCT Pub. No. WO94/06436, PCT Pub. Date Mar. 31, 1994

PCT Filed Aug. 16, 1993, Ser. No. 397,168

Claims priority, application Germany, Sep. 12, 1992, 42 30 588.8

Int. Cl.[6] A61L *15/00*

U.S. Cl. 424—445 10 Claims

1. In a self-adhesive plaster for the transdermal application of a systemically active steroid hormone which plaster comprises

(1) an active substance-impermeable flexible backing layer

(2) an active substance reservoir connected to said layer and comprising a pressure-sensitive hot melt adhesive, and

(3) a protective layer covering the skin-facing adhesive surface of the plaster and being detachable prior to application of the plaster to the skin,

the improvement wherein the pressure-sensitive adhesive is a pressure-sensitive hot melt adhesive from which an active substance-containing layer is formed by processing at a temperature of between 60° and 100° C. in molten condition, which leads to the formation of adhesive and cohesive forces in the process, and wherein the pressure-sensitive hot melt adhesive contains the following components:

(a) 10 to 30%-wt. ethylene-vinylacetate copolymer,

(b) 15 to 45%-wt. flexible resin having a melt-viscosity of below 10 Pa.s at 60° C.,

(c) 10 to 30%-wt. aliphatic hydrocarbon resin having a melt viscosity above 10 Pa.s at 100° C.,

(d) 15 to 25%-wt. dexpanthenol as recrystallization inhibitor,

(e) 0.1 to 10%-wt. female sex steroid hormone,

(f) 0 to 5%-wt. filler, and

(g) 0 to 5%-wt. ageing protecting agent,

the sum of the percentages of the components being 100.

5,662,924

WOUND DRESSING

Tanya Rhodes, Harbour Bluffs, Fla., assignor to Smith & Nephew plc, United Kingdom

Continuation of Ser. No. 119,054, Dec. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,558

Claims priority, application United Kingdom, Mar. 21, 1991, 9105995

Int. Cl.[6] A61L *15/00*

U.S. Cl. 424—445 18 Claims

1. A wound dressing containing a water insoluble, water swellable cross-linked cellulose derivative selected from hydroxy lower alkylcelluloses having 1 to 6 carbon atoms and from carboxycelluloses, water and a polyol component, wherein the dressing comprises a gel which consists essentially of the cellulose derivative, water and polyol component and optionally one or more of wound therapeutic substances, active substances used as wound treatment agents; and the cellulose derivative comprises less than 10% by weight of the gel and wherein the gel promotes wound healing.

5,662,925

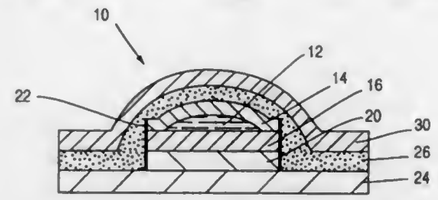
TRANSDERMAL DELIVERY SYSTEM WITH ADHESIVE OVERLAY AND PEEL SEAL DISC

Charles D. Ebert; Werner Heiber; William R. Good, and Srinivasan Venkateshwaran, all of Salt Lake City, Utah, assignors to TheraTech, Inc., Salt Lake City, Utah

Continuation of Ser. No. 361,800, Dec. 21, 1994, abandoned. This application Apr. 26, 1996, Ser. No. 638,440

Int. Cl.[6] A61L *25/00*

U.S. Cl. 424—447 20 Claims



1. A device for administering an active agent to the skin or mucosa of an individual comprising a laminated composite of:

(a) a backing layer defining an upper portion of a reservoir and extending to the periphery of a peel seal disk;

(b) an active agent-permeable membrane extending to the periphery of the peel seal disk and the backing layer, and underlying the backing layer, the backing layer and membrane defining

(c) the reservoir therebetween that contains a formulation of the active agent;

(d) the peel seal disc underlying an active agent-permeable membrane;

(e) a heat seal about the periphery of the peel seal disc, the active agent-permeable membrane and the backing layer;

(f) an adhesive overlay having a central portion overlying the backing layer and a peripheral portion that extends beyond the periphery of the peel seal disc; and

(g) a removable release liner underlying the peripheral portion of the adhesive overlay and the peel seal disc.

5,662,926

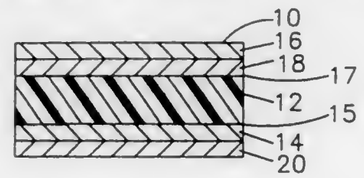
TRANSDERMAL PATCH INCORPORATING A POLYMER FILM INCORPORATED WITH AN ACTIVE AGENT

John Wick, Essex Junction; Ludwig J. Weimann, Burlington, both of Vt., and Wayne C. Pollock, Riverton, N.J., assignors to Bertek, Inc., St. Albans, Vt.

Continuation of Ser. No. 861,534, Apr. 1, 1992, abandoned. This application Apr. 20, 1995, Ser. No. 426,492

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 23 Claims



1. A device for the controlled release of an active agent to the skin or mucosa of a host, said device comprising a laminate of:

(a) A monolithic polymer film carrier layer having a first surface and a second surface, said carrier layer comprising an active ingredient melt-blended with a thermoplastic matrix polymer capable of controllably releasing said active ingredient without first dissolving or suspending said polymer or active ingredient in a solvent therefor, so that said carrier layer is substantially free of residual solvent, wherein said polymer has a melt temperature between about 170° C. and about 200° C. and is selected from the group consisting of polyether block amides, ethylene methacrylic acid copolymers, ethylene acrylic acid copolymers, copolymers of polyether prepolymers with polybutylene terephthalate and polyisobutylene terephthalate and polyether polyurethanes, and said active ingredient is heat stable at said melt temperature of said matrix polymer, and is selected from the group consisting of active agents, active agent enhancers, and mixtures thereof;

(b) An active ingredient-impermeable backing layer having an inner surface and an outer surface, wherein said second surface of said carrier layer and said inner surface of said backing layer are extruded together without an adhesive layer therebetween, so that said active ingredient cannot permeate from said second surface of said carrier layer through said outer surface of said backing layer; and

(c) Pressure-sensitive adhesive means for affixing said laminate to said skin or mucosa of said host so that said active ingredient is capable of being continuously released from said first surface of said carrier layer thereto.

5,662,927

METHOD OF HORMONAL CONTRACEPTION

Marika Ehrlich, Bahnhofstr. 1, D55234 Framersheim, and Herbert Kuhl, Hotzelstr. 18, D63741 Aschaffenburg, both of Germany

Filed Dec. 21, 1994, Ser. No. 360,297

Claims priority, application Germany, Dec. 24, 1993, 43 44 405.9

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 24 Claims

1. A method of hormonal contraception comprising the steps of:

sequentially administering a composition for the total number of days of a desired cycles beginning with the first day of menstruation that includes a first hormonal component and a second hormonal component, the first hormonal component composed of a plurality of daily hormone units including a therapeutically effective amount of an estrogen preparation to cause disturbance of the follicle stimulation, the second hormonal component composed of a plurality of daily hormone units including a therapeutically effective amount of an estrogen preparation and a progestogen preparation to inhibit ovulation, the estrogen preparation of the second hormonal component not being a combination of a biologically produced estrogen and a synthetic estrogen;

separately packaging the first hormonal component and the second hormonal component in a joint packaging unit in separate packages which are individually removable from the joint packaging unit, with the plurality of daily hormone units equaling the total number of days of the desired cycle;

providing the daily units of the first hormonal component in a plurality which is lower that the plurality of daily units of the second hormonal component; and

arranging the plurality of daily units of the second hormonal component in the joint packaging unit to cause a first daily unit of the second hormonal component to be administered on the first day of menstruation and further to cause said plurality daily units of the second hormonal component to be taken before the plurality of daily units of the first hormonal component.

5,662,928

METHOD FOR THE PREVENTION OR REMOVAL OF CRYSTALLINE SCOPOLAMINE IN A NON-AQUEOUS MATRIX OF A TRANSDERMAL SYSTEM

Richard L. Braun, Colts Neck, N.J., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,166

Int. Cl.[6] A61K *9/70;31/395;* **A61M** *5/44*

U.S. Cl. 424—449 **20 Claims**

1. A process for the production of a scopolamine free base containing transdermal system substantially free of crystals of hydrated scopolamine free base, comprising annealing scopolamine free base containing layers of said transdermal system at a temperature of at least 67° C. for about 5 minutes-about15 minutes within about 24 hours of casting a scopolamine free base containing formulation onto a web for use in constructing said transdermal system.

5,662,929

THERAPEUTIC LIPOSOMAL FORMULATION

Jacqueline Lagacé , St.-Laurent; Christian Beaulac, Yamachiche, and Sébastien Clément-Major, St-Lambert, all of Canada, assignors to Universite de Montreal, Montreal, Canada

Filed Dec. 23, 1994, Ser. No. 363,416

Int. Cl.[6] A61K *9/127;31/70*

U.S. Cl. 424—450 **11 Claims**

1. A low rigidity liposomal formulation, free of cholesterol and phospholipids with high phase transition temperature (T_C) comprising a neutral and anionic phospholipids at a molar ratio of 5:1 to 20:1 wherein the mean value of T_C is below 37° C. or below the body temperature of the animal to be treated and at least one antimicrobial agent, wherein the liposomal formulation enhances the penetration of the antimicrobial agent inside a bacterial cell by direct interaction.

9. Method of treating a bacterial infection in mammals comprising an administration of an antimicrobial suitable dose of the liposomal formulation of claim 1 to said mammals.

5,662,930

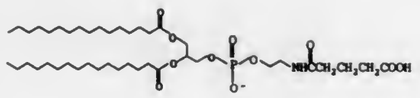
REDUCTION OF LIPOSOME-INDUCED ADVERSE PHYSIOLOGICAL REACTIONS

Patrick L. Ahl, Princeton; Suresh K. Bhatia, Plainsboro; Sharma R. Minchey, Monmouth Junction, all of N.J., and Andrew S. Janoff, Yardley, Pa., assignors to The Liposome Company, Inc., Princeton, N.J.

Division of Ser. No. 247,053, May 20, 1994, which is a continuation-in-part of Ser. No. 207,651, Mar. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 65,928, May 21, 1993, abandoned. This application May 4, 1995, Ser. No. 433,665

Int. Cl.[6] A61K *9/127;9/133*

U.S. Cl. 424—450 **17 Claims**



1. A method of reducing a blood pressure decrease associated with the administration of a liposome to an animal which comprises incorporating a surface agent-modifying lipid comprising a phosphatidylethanolamine conjugated to a dicarboxylic acid into a liposome such that the surface agent-modifying lipid comprises at least about 2 mole percent of the lipid component of the liposome's bilayer and then administering the liposome to the animal wherein an anti-inflammatory agent is administered to the animal prior to administration of the liposome composition and wherein the liposome has an average diameter of from at least about 200 nm to about 5000 nm.

5,662,931

PROCESS FOR PREPARING LIPOSOME COMPOSITION

Koji Munechika; Tomoyo Seki; Norihide Kishi; Hiroshi Matsuda, and Yasuo Ueda, all of Osaka, Japan, assignors to The Green Cross Corporation, Osaka, Japan

PCT No. PCT/JP94/00075, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/18948, PCT Pub. Date Sep. 1, 1994

PCT Filed Jan. 20, 1994, Ser. No. 505,180

Claims priority, application Japan, Feb. 23, 1993, 5-056378

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **9 Claims**

1. A process for preparing a drug-containing liposome composition comprising the following steps: (1) dissolving a lipid capable of forming liposomes in which a drug can be incorporated in a first organic solvent to form a lipid solution, (2) adding a drug-containing aqueous solution to the lipid solution, followed by emulsification to obtain an emulsion, (3) mixing the emulsion with a second organic solvent in which the lipid is sparingly soluble, (4) collecting precipitates formed in step (3), and (5) suspending the precipitates in an aqueous medium.

5,662,932

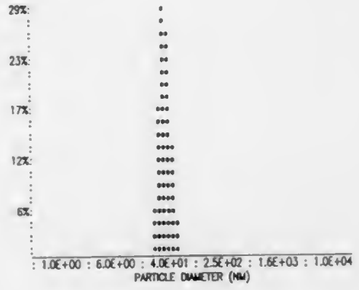
SOLID FAT NANOEMULSIONS

Shimon Amselem, Rehovot, and Doron Friedman, Carmei Yosef, both of Israel, assignors to Pharmos Corporation, New York, N.Y.

Continuation of Ser. No. 63,613, May 18, 1993, Pat. No. 5,576,016. This application Aug. 27, 1996, Ser. No. 697,704

Int. Cl.[6] A61K *9/127;9/16*

U.S. Cl. 424—450 **39 Claims**



1. A nanoemulsion comprising a plurality of noncellular lipid particles having a mean diameter of about 10 to 250 nm in a pharmaceutically acceptable carrier solution, wherein each lipid particle has a core of a lipid which is in a solid phase at a temperature of at least about 25° C., said lipid core being surrounded by at least one phospholipid bilayer which has two phospholipid layers separated by an aqueous compartment.

5,662,933

CONTROLLED RELEASE FORMULATION (ALBUTEROL)

Anand Baichwal, Wappingers Falls, N.Y., and Troy W. McCall, New Milford, Conn., assignors to Edward Mendell Co., Inc., Patterson, N.Y.

Continuation-in-part of Ser. No. 118,924, Sep. 9, 1993, Pat. No. 5,455,046. This application Nov. 3, 1995, Ser. No. 553,008

Int. Cl.[6] A61K *9/14;9/22*

U.S. Cl. 424—457 **48 Claims**

1. A controlled release solid dosage form for oral administration of a therapeutically active medicament to a patient in need thereof, comprising:

a pharmaceutically effective amount of a medicament to be administered to a patient in need of said medicament;

a sustained release excipient comprising a gelling agent comprising a heteropolysaccharide gum and a homopolysaccharide gum capable of reciprocally cross-linking when exposed to an environmental fluid, the ratio of said heteropolysaccharide gum to said homopolysaccharide gum being from about 1:3 to about 3:1; an inert pharmaceutical diluent selected from the group consisting of a pharmaceutically acceptable saccharide, polyhydric alcohol, a pre-manufactured direct compression diluent, and mixtures of any of the foregoing, the ratio of said inert diluent to said gelling agent being from about 1:8 to about 8:1, said dosage form providing a sustained release of said medicament when exposed to an environmental fluid and

a pharmaceutically acceptable hydrophobic material.

5,662,934

COMPOSITIONS AND METHODS FOR LOWERING CHOLESTEROL WHILE MAINTAINING ANTIOXIDANT LEVELS

Thomas Najarian, 18 Manuix Cir., Belmont, Mass. 02178

Continuation-in-part of Ser. No. 890, Jan. 5, 1993, abandoned. This application May 27, 1993, Ser. No. 68,431

Int. Cl.[6] A61K *9/14;9/20;9/48*

U.S. Cl. 424—464 **12 Claims**

1. A method of lowering serum cholesterol levels in an individual comprising administering to the individual beta-carotene in conjunction with gemfibrozil, in an amount effective to maintain serum antioxidant levels and reduce serum cholesterol levels in the individual.

5,662,935

PROCESS FOR PREPARING CONTROLLED RELEASE PHARMACEUTICAL FORMS AND THE FORMS THUS OBTAINED

Giuseppe Motta, Bologna, Italy, assignor to Saitec S.R.L., Castel Guelfo de Bologna, Italy

PCT No. PCT/IT93/00136, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO94/14421, PCT Pub. Date Jul. 7, 1994

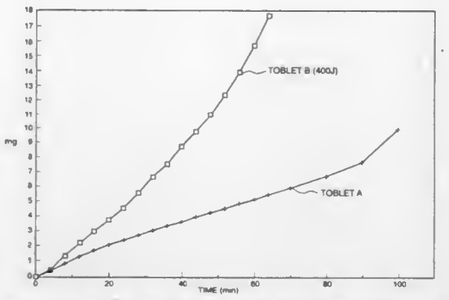
PCT Filed Dec. 23, 1993, Ser. No. 464,708

Claims priority, application Italy, Dec. 23, 1992, B092A0455; Jun. 24, 1993, B093A0294; Nov. 12, 1993, B093A0460

Int. Cl.[6] A61K *9/14;9/22;9/24;9/26;9/52*

U.S. Cl. 424—465 **20 Claims**

1. A process for preparing controlled release pharmaceutical forms, characterized in that a mixture containing from 30 to 75% by weight of an active ingredient and from 70 to 25% by weight of one or more excipients is compacted by means of mechanically or electromechanically generated ultrasonic energy, said ultrasonic energy having a frequency of up to 2 MHz and being emitted for a period of time of from 1/10 to 20 seconds, to give a tablet, matrix, simple or multilayer film, said tablet or matrix having a diameter of from 2 to 15 mm and said film a size of from 4 mm to 30 cm, the thickness being generally of 0.1 to 10 mm.



5,662,936

SUGAR-COATED PHARMACEUTICAL DOSAGE UNIT

Pieter de Haan, Oss, and Marcus Johannes Maria Deurloo, Rosmalen, both of Netherlands, assignors to Akzo Nobel, N.V., Arnhem, Netherlands

Filed Dec. 20, 1994, Ser. No. 360,157

Claims priority, application European Pat. Off., Dec. 23, 1993, 93203645

Int. Cl.[6] A61K *9/34;9/36*

U.S. Cl. 424—479 **7 Claims**

1. A process for inhibiting transfer of a steroid from a tablet core or a granule that comprises a steroid having two hydrogen atoms at position 3 of the steroid skeleton, comprising subcoating, syruping and finishing the tablet core or granule whereby it becomes sugar-coated.

5,662,937

LONG LIFE DEODORANT COMPOSITION

Dorothy McCuaig, Box 238, Eastend, Saskatchewan, Sonoto, Canada

Filed Aug. 17, 1995, Ser. No. 516,062

Claims priority, application Canada, Aug. 26, 1994, 2310967

Int. Cl.[6] A61K *7/36;9/14;33/30*

U.S. Cl. 424—489 **20 Claims**

1. In a deodorant composition comprising zinc oxide and citric acid, the improvement comprising a starch spreading agent having an average particle size up to about 14 microns.

5,662,938

BIORESORBABLE-POLYMER MICROSPHERES OF HYDROXY ACID POLYMER FREE FROM SURFACTANT, THEIR PREPARATION AND THEIR APPLICATION AS A DRUG

Michel Vert, Castelnau le Lez; Jean Coudane, Montpellier; Christine Ustariz, Montpellier, and Gregoire Schwach, Montpellier, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR93/00576, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO93/25191, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 15, 1993, Ser. No. 347,380

Claims priority, application France, Jun. 15, 1992, 92 07186

Int. Cl.[6] A61K *9/16*

U.S. Cl. 424—501 **13 Claims**

1. Microspheres consisting of a composition selected from the group consisting of (a), a polymer matrix and (b) a polymer matrix and at least one active substance encapsulated in the said polymer matrix, said matrix being made of a plurality of hydroxy acid polymer or copolymer, said plurality of polymer or copolymer having a bimodal distribution of molecular masses wherein a first of said plurality of polymer or copolymer has a molecular mass at

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least equal to 20,000 and a second of said plurality of polymer or copolymer has a molecular mass of less than 5000.

5,662,939

Patent Not Issued For This Number

5,662,940

BIOCIDAL METHODS AND COMPOSITIONS FOR RECIRCULATING WATER SYSTEMS

Terry V. T. Hight; Jack V. Matson, both of Houston, Tex.; Lawrence F. Rakestraw, Chesterfield, Mo.; Zhihe Zhang, Houston, Tex., and Thomas C. Kuechler, St. Louis, Mo., assignors to University of Houston, Houston, Tex.

Continuation of Ser. No. 212,287, Mar. 14, 1994, Pat. No. 5,464,636, which is a continuation of Ser. No. 750,744, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 366,936, Jun. 16, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 476,432

Int. Cl.[6] A01N *59/08*

U.S. Cl. 424—661 **64 Claims**

1. A method of providing prolonged and controlled release of hypobromous acid in a recirculating water system comprising

(i) determining the rate of loss of bromide ion from the system due to blow-down, volatilization and formation of stable organobromine compounds; and

(ii) adding to the system a solid biocidal composition comprising a hypochlorite donor and a bromide ion donor in amounts sufficient to make said composition perform as a bromine biocide in said recirculating water system;

(iii) wherein said hypochlorite donor is selected from the group consisting of trichloro-s-triazinetrione, dichloroisocyanuric acid, or mixtures thereof; and

(iv) wherein said bromide ion donor is sodium bromide.

5,662,941

METHOD FOR TREATING DISEASES CAUSED BY BACTERIAL MICROORGANISMS WITH A COMPOSITION CONTAINING FLUORINE F– AND LITHIUM LI+

Pierre Bourbon, 36, rue Volta, 31000, Toulouse, France; Pierre Lagny, Castle Town Court 6, Celbridge, C/O Kildare, Ireland, and Pierre Billot, 20 bd. de la Saussaye, 92200 Neuilly/Seine, France

Continuation of Ser. No. 691,472, Apr. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 246,982, Sep. 20, 1988, Pat. No. 5,063,064. This application Sep. 22, 1993, Ser. No. 125,526

Claims priority, application France, Sep. 22, 1987, 87 13086

Int. Cl.[6] A61K *33/14*

U.S. Cl. 424—673 **12 Claims**

1. A method for treating diseases caused by pathogenic bacterial microorganisms in a human or an animal, which method comprises administering to said human or animal an antibiotic composition which comprises an effective amount of ionic or ionizable lithium.

5,662,942

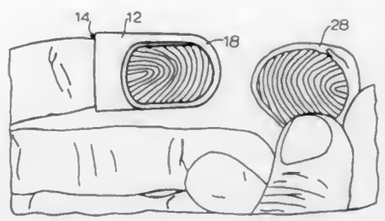
KIT FOR OBTAINING FINGERPRINT IMPRESSION AND METHOD OF USING SAME

Anthony Kim, II, 2717 Sparger Rd., Durham, N.C. 27705

Filed Apr. 15, 1996, Ser. No. 623,697

Int. Cl.[6] B29C *33/40;7/02*

U.S. Cl. 425—2 **7 Claims**



7. A unitary finger sleeve, generally hollow and tubular in form, adapted for use with an appropriate impression material for easily and conveniently obtaining a fingerprint impression, the sleeve having at a proximal end a first opening sized to receive substantially snugly a person's finger of comparable size and permitting the distal end of the finger to extend through the sleeve, a second opening being oval and formed in a side portion of the sleeve and being sized and shaped to permit the fingerprint of the finger to be exposed through the second opening, and a third opening formed partially in a distal end and partially in a distal side portion of the sleeve on a side opposite of the second opening and being sized and shaped to permit the outermost extremity and fingernail portion of the finger to extend outwardly of the sleeve when the fingerprint is exposed in the second opening.

5,662,943

FABRICATION METHODS AND EQUIPMENT FOR GRANULATED POWDERS

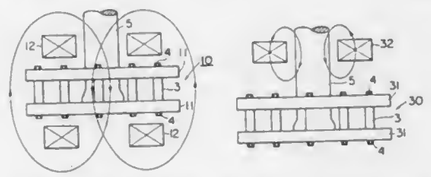
Osamu Yamashita, Ibaraki; Tsunekazu Saigo, Mtsubara; Seiichi Kohara, Osaka; Hirokazu Kitayama, Osaka, and Hiroshi Hashikawa, Osaka, all of Japan, assignors to Sumitomo Special Metals Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 466,141, Jun. 6, 1995, abandoned, which is a division of Ser. No. 360,632, Dec. 21, 1994, Pat. No. 5,575,830. This application Apr. 30, 1996, Ser. No. 641,772

Claims priority, application Japan, Dec. 27, 1993, 5-350285; Dec. 27, 1993, 5-350286; Dec. 27, 1993, 5-350287; Dec. 27, 1993, 5-350288; Sep. 14, 1994, 6-247325; Sep. 14, 1994, 6-247326

Int. Cl.[6] B28B *1/00*

U.S. Cl. 425—3 **5 Claims**



2. An apparatus for preparing an anisotropic granulated powder which comprises:

chamber means forming an airtight granulation chamber, said chamber means defining an upper portion and a lower portion;

a rotary shaft means which extends into said upper portion of said chamber means;

a rotary disk mounted on said rotary shaft means so as to be horizontally placed;

nozzle means located within said chamber means for discharging inert gas downwardly around said rotary disk;

magnetic field-generating means for creating a magnetic field;

slurry supply means for supplying an aqueous slurry of rare earth-containing alloy powder and a binder to said rotary disk and through said magnetic field so as to be horizontally discharged from said rotary disk and into said inert gas to thereby form anisotropic granulated powder; and

powder recovery means located in said lower portion of said chamber means for recovering said formed anisotropic granulated powder.

5,662,944

SEALING ASSEMBLY FOR MOLDS USED FOR CASTING SANITARY FIXTURES

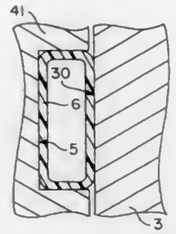
Toffolo Renato Petrucco, Roveredo, Italy, assignor to American Standard Inc., Piscataway, N.J.

Filed Oct. 5, 1995, Ser. No. 539,642

Claims priority, application Italy, Oct. 10, 1994, RE940058

Int. Cl.[6] B28B *1/26;* **B29C** *41/16*

U.S. Cl. 425—84 **6 Claims**



1. A sealing assembly for male elements of molds for casting sanitary fixtures having one or more female dies which are capable of defining a molding cavity of a fixture, one or more male dies which are designed to be introduced into and withdrawn from said molding cavity, said male dies each having a mating surface capable of interacting with an associated mating surface of at least one said female die and capable of closing and completing said molding cavity, comprising:

a tubular elastic body of annular shape, said mating surface of said male die including a peripheral groove, said tubular elastic body placed in said groove so as to project beyond the mouth of said groove when undeformed, said tubular elastic body connected to an assembly capable of alternately deflating and inflating said tubular elastic body so that said tubular elastic body assumes a first transverse shape which is completely accommodated within the corresponding transverse shape of said groove when in deflated form, and a second transverse shape which projects beyond the mouth of said groove, where it comes to rest against the facing associated mating surface of said female die when in inflated form.

5,662,945

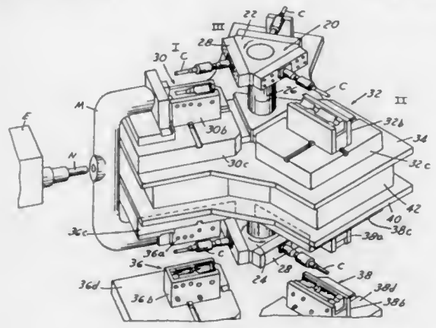
INJECTION BLOW MOLDING MACHINE WITH STACKED MOLDS

Robert S. Konefal, Wilton, N.H., assignor to Owens-Brockway Plastic Products Inc., Toledo, Ohio

Division of Ser. No. 388,928, Feb. 15, 1995, Pat. No. 5,552,105. This application Feb. 12, 1996, Ser. No. 599,917

Int. Cl.[6] B29C *49/06;49/36*

U.S. Cl. 425—136 **20 Claims**



1. An injection and blow molding machine with stacked molds for forming plastic hollow articles comprising

a stationary platen,

means for supporting said stationary platen in horizontal position with said platen having an upper and lower surface,

an upper injection mold,

said upper injection mold including an upper injection mold half and a lower injection mold half which cooperate to define a plurality of cavities,

said lower injection mold half being mounted on the upper surfaces of the stationary platen,

first means for supporting said upper injection mold half for movement toward and from said lower injection mold half,

an upper blow mold for blowing hollow articles such as containers,

said upper blow mold including an upper mold half and a lower mold half which cooperate to define a plurality of cavities,

said lower blow mold half being mounted on the upper surface of the stationary platen,

second means for supporting said upper blow mold half for movement toward and from said lower blow mold half,

a lower injection mold,

said lower injection mold including an upper mold half and a lower mold half defining a plurality of cavities,

said upper injection mold half of said lower injection mold being mounted on the lower surface of the stationary platen,

means for supporting said lower injection mold half of said lower injection mold for movement toward and from said upper injection mold half of said lower injection mold,

a lower blow mold said lower blow mold including an upper mold and a lower mold defining a plurality of cavities,

said upper mold half of said lower blow mold being mounted on the lower surface of the stationary platen,

means for supporting said lower blow mold half of said lower blow mold for movement toward and from said stationary upper mold half of said lower blow mold,

a first upper turret having a triangular configuration having three surfaces,

a plurality of core rods,

means supporting a first plurality of core rods along each of said surfaces of said first turret in horizontal position,

a second lower turret having a triangular configuration having three surfaces,

a plurality of core rods,

means for supporting a second plurality of core rods on each of said surfaces of said second turret in horizontal position,

shaft means extending through said stationary table and supporting said first turret and second turret for rotation and vertical movement with said first turret being associated with said upper injection mold and said upper blow mold and said second turret being associated with said lower injection mold and said lower blow mold,

means for intermittently rotating said turrets,

means for moving said first turret for reciprocating vertical movement to bring the core rods of said first turret into and out of position with respect to said upper stationary injection mold half and said upper stationary blow mold half and to bring said core rods of said second turret into and out of position with respect to said lower stationary injection mold half and said lower stationary blow mold half,

first means for moving said upper movable mold halves into and out of mold closed position, and

second means for moving said lower movable mold halves into and out of closed position.

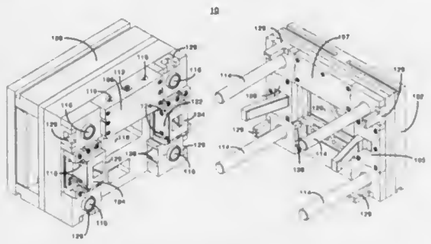
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5,662,946

ADAPTABLE MOLD BASE

Steven Duane Pratt, Plantation; Robert W. Pennisi, Boca Raton, and Glenn F. Urbish, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1994, Ser. No. 318,311
Int. Cl.[6] B29C *33/20*
U.S. Cl. 425—190 11 Claims



1. An adaptable mold base assembly for forming a variety of parts having side holes or undercuts by injection molding, comprising:

first and second mold halves arranged to mate with each other, forming an adaptable mold base assembly having a draw direction;

at least one mold half having mechanically, hydraulically, pneumatically or electrically actuated interchangeable side actuation modules for forming the side hole or undercut, the modules slideably attached to the mold half to move independently of and relative to the mold half in a direction different from the draw direction;

at least one mold half having one or more interchangeable process control modules to perform process control or process monitoring; and

said mold halves having common mounting features that permit the adaptable mold base to be modified to form a part having different undercuts or side holes by removing an interchangeable side actuation module and replacing it with a different interchangeable side actuation module or with a process control module.

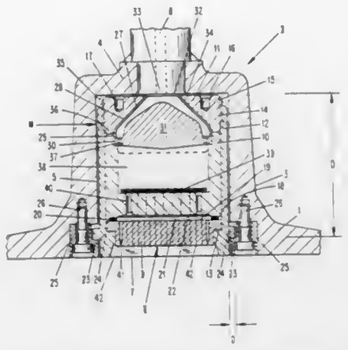
5,662,947

NOZZLE PLATE HOLDING DEVICE FOR SPINNING OF CONTINUOUS FILAMENTS

Willi Kretzschmar, Grosswallstadt, and Erik Orthmayer, Linsengericht, both of Germany, assignors to Rieter Automatik GmbH, Grossostheim, Germany

PCT No. PCT/CH94/00123, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO95/00684, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 20, 1994, Ser. No. 381,910
Claims priority, application Switzerland, Jun. 21, 1993, 1853/93
Int. Cl.[6] D01D *4/08*
U.S. Cl. 425—192.5 8 Claims

1. A holder for a nozzle plate for continuous filament spinning apparatus, said holder comprising a hollow, generally cylindrical, body provided with an upwardly facing, radially extending, step on its inner surface for supporting the periphery of the nozzle plate; means for cooperating with said body for clamping the nozzle plate against said step; and diametrically opposed supports projecting radially outwardly from the outer cylindrical surface of said body for attachment by a bayonette connection to a spinning beam.

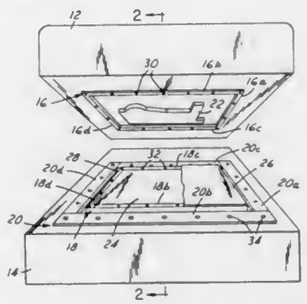


5,662,948

ADJUSTABLE AND REMOVABLE TRIMLINE INSERTS FOR A MOLDING TOOL

Roy H. Sjoberg, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jan. 29, 1996, Ser. No. 593,382
Int. Cl.[6] B29C *43/36*
U.S. Cl. 425—195 2 Claims



1. A molding tool having a cavity half and a core half for molding a workpiece, the cavity half and core half having confronting surfaces and the cavity half having a part mold disposed on the confronting surface thereof,

the cavity half and the core half being relatively movable toward and away from one another between open and closed positions,

a male trimpiece comprising four trimlines arranged end to end in a rectangle and each attached to the confronting surface of the cavity half by screws for individual removal and replacement when worn,

a female trimpiece comprising four trimlines arranged end to end in a rectangle and each attached to the confronting surface of the core half by screws for individual removal and replacement when worn,

an adjustable stop plate on the confronting surface of the core half extending around the female trimpiece comprising stop plate segments arranged end to end in a rectangle and each removably attached to the core half by screws,

each segment being parallel to and spaced laterally outwardly from a respective one of the female trimlines,

the stop plate being engageable with the confronting surface of the cavity half to establish the closed position of the molding tool and being vertically adjustable to provide for a desired thickness of the workpiece, and

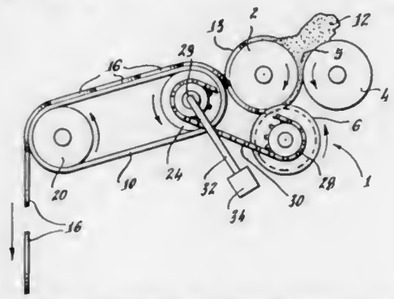
a trimline retention reservoir in the confronting surface of the core half between the female trimpiece and the stop plate for receiving the male trimpiece when the molding tool is in the closed position.

5,662,949

TORTILLA MANUFACTURING APPARATUS

Manuel Jesus Rubio, Miami, Fla., and Ramiro Montelongo, Sector Guadalupe, Mexico, assignors to Roberto Gonzales Barrera, Lomas de Chapultepec Delegacio Miguel Hidalgo, Mexico

Division of Ser. No. 377,213, Jan. 23, 1995, Pat. No. 5,569,220. This application Jun. 24, 1996, Ser. No. 669,110
Int. Cl.[6] B26D *5/22*
U.S. Cl. 425—310 2 Claims



1. Apparatus for separating and removing articles of desired peripheral configuration and dimensions from a sheet of flexible material out of which they have been cut comprising

a gas transmissive conveyor belt that is backed by

a suction roll which is adapted to back said conveyor belt and movingly retain said conveyor belt in proximity to the exposed surface of a moving sheet of flexible material from which articles of desired dimensions and configurations have been cut,

said suction roll being adapted for having an internal vacuum and including passageway means which

expose said vacuum to the outer surface of said suction roll in the region where said suction roll movingly retains said conveyor belt in proximity to said sheet, and are in configurations substantially corresponding in dimension and shape to the leading portion of each of said articles,

and synchronization means for causing said passageway means to register with the leading portion of articles which have been cut but not yet removed from said sheet.

5,662,950

ROLL BENDING DEVICE FOR FORMING PLASTIC SHEET

Toshihiko Kusago, Susono, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1996, Ser. No. 613,938
Claims priority, application Japan, Mar. 13, 1995, 7-080674
Int. Cl.[6] B29C *43/24*
U.S. Cl. 425—367 2 Claims

1. A roll bending device for forming plastic sheet, comprising:

a first roll having a first shaft at its both end portions;

a second roll, having a second shaft at its both end portions, and arranged in parallel with said first roll with a gap portion therebetween for pressing and forming plastic sheets;

a pair of first housings, having a bearing for supporting said first shaft, and positioned at both end portions of said first shaft;

a pair of second housings, having a bearing for supporting said second shaft, and positioned at both end portions of said second shaft;

a pair of third housings, having a bearing for supporting said first shaft, positioned at the inside of the first housing, and fixed to a frame;

a pair of fourth housings, having a bearing for supporting said second shaft, positioned at the inside of the second housing, and fixed to said frame;

a pair of main cylinders for supporting said fourth housings having a base portion fixed to said frame, pressing said second roll in a direction of said first roll; and

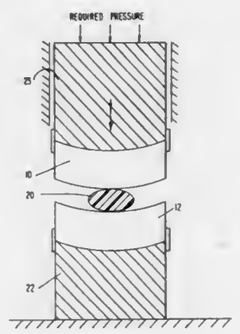
a pair of gap adjusting means, provided between said first housings and said second housings, for adjusting a gap therebetween.

5,662,951

APPARATUS FOR MAKING LENSES

Martin Greshes, 70 Corey La., East Meadow, N.Y. 11554

Division of Ser. No. 932,088, Aug. 19, 1992, Pat. No. 5,368,790. This application Aug. 15, 1994, Ser. No. 290,179
Int. Cl.[6] B29C *43/36;51/30*
U.S. Cl. 425—384 8 Claims



1. An apparatus in making a lens having surfaces free of bubbles and entrapped air from a plastic preform, comprising:

a pair of molds,

each of said molds having a predetermined shaped lens cavity, and each of said molds being positioned in said apparatus;

means for providing a monolithic preform of thermoplastic lens material which is able to make point or line contact on opposite surfaces thereof with said lens cavities of said pair of molds;

means for applying pressure to said molds to urge the molds towards each other and against said preform to a predetermined pressure value and for maintaining said predetermined pressure value;

means for heating said pair of molds to heat said preform while said pressure applying means maintains said predetermined pressure value on said monolithic preform; and

terminating means for stopping said heating by said heating means, while said pressure applying means maintains substantially said predetermined pressure value, once said monolithic preform is changed by compression molding into a lens defined by said pair of molds, whereby the formed compression molded lens is free of surface irregularities and warpage due to bubbles and air being entrapped between said molds and said monolithic preform, due to said monolithic preform making point or line contact with said pair of molds so as to preclude air entrapped in the compression molded lens.

5,662,952

INJECTION MOULD WITH A PRE-OPENING JACK

Hendrik Den Uyl, Vianen, and Johannes Teijgeler, Leerdam, both of Netherlands, assignors to TPP Axxicon B.V., Vianen, Netherlands

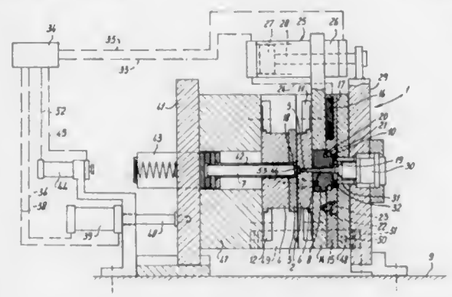
PCT No. PCT/NL94/00026, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/17978, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 2, 1994, Ser. No. 491,941

Claims priority, application Netherlands, Feb. 2, 1993, 9300206

Int. Cl.[6] B29C *45/40;45/64*

U.S. Cl. 425—556 **4 Claims**



1. In an injection mould comprising a stationary injection head (**30**) and at least two mould sections which delimit a mould cavity and are movable relative to one another, a gate (**5**) being fitted in one mould section (**2**) and a movable bush (**8**) being fitted adjoining said mould section (**2**) remote from the other said mould section (**3**), through which bush (**8**) the gate also extends, means being present to move the bush (**8**) relative to said mould section (**2**), as well as stop means to limit said movement; the improvement wherein said means for moving the bush (**8**) relative to said mould section (**2**) comprises a mounting plate (**14**) to which said one mould section (**2**) is adapted to be fixed, a connecting plate (**15**) which is movable to a limited extent relative to said mounting plate (**15**) and to which the bush (**8**) is adapted to be fixed, and jack means which operate between said plates (**14**, **15**).

5,662,953

REDUCED CALORIE TRIGLYCERIDE MIXTURES

Edward L. Wheeler, Fairfield, N.J.; Ronald P. D'Amelia, Hicksville, N.Y.; Gilbert A. Leveille, Denville, N.J.; Michael S. Otterburn, Randolph, N.J.; Lawrence P. Klemaon, Somerville, N.J.; John W. Finley, Whippany, N.J.; Allan D. Roden, Nobelsville, Ind.; Michael M. Chrysam, Blairstown, N.J.; Turiddu A. Pelloso, Carmel, Ind., and Peter S. Given, Jr., Glencoe, Ill., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, abandoned, and Ser. No. 410,161, Sep. 20, 1989, abandoned, and a continuation of Ser. No. 477,009, Jun. 7, 1995, Pat. No. 5,565,232, which is a continuation of Ser. No. 175,020, Dec. 29, 1993, Pat. No. 5,456,939, which is a division of Ser. No. 83,795, Jun. 28, 1993, Pat. No. 5,378,490, which is a division of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, which is a continuation of Ser. No. 665,629, Mar. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 732,518, Jul. 19, 1991, abandoned. This application Nov. 8, 1995, Ser. No. 555,234

Int. Cl.[6] A23G *1/00*

U.S. Cl. 426—2 **31 Claims**

1. A method for reducing calories in a food composition containing a fat ingredient comprising replacing a portion of the fat ingredient with low calorie triglycerides bearing both long chain saturated fatty acid residues derived from fatty acids having 16 to 22 carbon atoms and short chain acids selected from the group consisting of acetic acid, propionic acid, butyric acid, and mixtures thereof.

5,662,954

METHOD FOR PREPARING MINERAL-ENRICHED CITRATE COMPOSITIONS

Margie Joiner, c/o Howard Johnson, #613, US Highway 11&80, Meridian, Miss. 39302

Continuation-in-part of Ser. No. 270,283, Jul. 5, 1994, abandoned. This application May 22, 1996, Ser. No. 651,222

Int. Cl.[6] A23L *1/304;* **A23P** *1/04*

U.S. Cl. 426—74 **1 Claim**

1. Method for preparing mineral-enriched citrate compositions for enhancement of fingernail growth, comprising:

a. immersing cracked eggshells within a bath of fruit juice from the group including lemon and lime, having a pH in the range 2.30 to 2.50;

b. stirring the eggshells with the fruit juice until all eggshells are covered with lemon juice; thereafter stirring every half hour for the first 2–4 hours to ensure lemon juice coverage of the eggshells;

c. reacting eggshells and juice as a mixture at ambient temperature (70° to 75° F.), such that the mixture has a pH of 4.5 to 6.5 and over a period of 22–24 hours;

d. removing egg shell residue from the mixture and freeze-drying, so as to remove moisture;

e. heating so as to pasteurize said mixture at 184°–190° F. for approximately five minutes;

f. refrigerating said mixture prior to ingestion, and

g. encapsulating said mixture.

5,662,955

CALIBRATION METHOD AND APPARATUS FOR COFFEE GRINDER AND BREWER

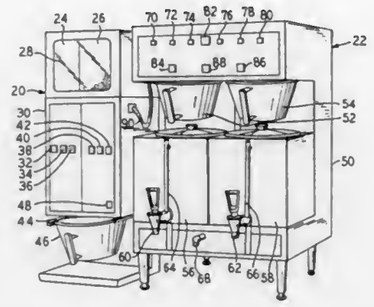
William A Joseph, Jr., Elburn; Donald R. Buttle, Geneva, and David G. Motkowski, North Aurora, all of Ill., assignors to National Controls Corporation, West Chicago, Ill.

Division of Ser. No. 123,607, Sep. 17, 1993, Pat. No. 5,417,145. This application Feb. 10, 1995, Ser. No. 386,464

Int. Cl.[6] A23F *5/00*

U.S. Cl. 426—432 **10 Claims**

1. A method for calibrating a coffee brewer for automatic operation, comprising the steps of:



determining whether a control circuit for the coffee brewer is in a calibrate mode or a normal run mode;

setting said control circuit to said calibrate mode if said determining step determines that said control circuit is in said normal run mode;

initiating a brewing operation of the coffee brewer for a predetermined quantity of water;

timing a running of said brewing operation;

halting said brewing operation when said predetermined quantity of water is output from the coffee brewer during said brewing operation and simultaneously halting said timing to define a time from said initiating step, said time being a calibrated brew time; and

setting said control circuit to said normal run mode which automatically operates said coffee brewer for said calibrated brew time.

5,662,956

PAN AND MOLD RELEASE FOR FOODS

William H. Knightly, Wilmington, Del., assignor to Emulsion Technology Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 852,395, Mar. 16, 1992, abandoned. This application Mar. 30, 1995, Ser. No. 413,688

Int. Cl.[6] A23D *7/00*

U.S. Cl. 426—601 **22 Claims**

1. An oil-in-water emulsion composition comprising:

a water phase comprising water in an amount up to about 75%; and

a lipid phase comprising oil and about 10 to about 15% of hydrophilic lecithin wherein said hydrophilic lecithin is capable of forming the emulsion and providing release properties and

wherein said emulsion has a lipid solids content of at least about 5% at 70° F.

5,662,957

OIL CONTAINING LIPID VESICLES WITH MARINE APPLICATIONS

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Columbia, Md.

Filed May 3, 1996, Ser. No. 643,171

Int. Cl.[6] A23D *7/005;* **A23K** *1/18;* **A61K** *9/127*

U.S. Cl. 426—605 **21 Claims**

1. A method of forming a composition containing oil encapsulated in a lipid structure comprising the steps of:

blending a surfactant with a wall-forming material and an excess of oil to form a lipid pre-blend, said surfactant being selected from the group consisting of polyoxyethylene sorbitan fatty acid esters, sorbitan fatty acid esters, polyoxyethylene nonylphenyl ethers, octylphenoxypolyethoxyethanols, and mixtures thereof; and said wall-forming material being selected from the group consisting of egg yolk solids and whole egg solids; and

blending said lipid pre-blend with an aqueous based diluent to form said composition, said lipid pre-blend being greater in volume than said aqueous diluent, said composition having said oil encapsulated in said lipid structure.

8. A food for marine filter feeders comprising a lipid structure encapsulating an oil, said lipid structure being formed of a surfactant, a wall-forming material, an excess of oil, and an aqueous diluent, said surfactant being selected from the group consisting of polyoxyethylene sorbitan fatty acid esters, sorbitan fatty acid esters, polyoxyethylene nonylphenyl ethers, octylphenoxypolyethoxyethanols, and mixtures thereof; and said wall-forming material being selected from the group consisting of egg yolk solids and whole egg solids.

15. A lipid structure comprising a surfactant selected from the group consisting of polyoxyethylene sorbitan fatty acid esters, sorbitan fatty acid esters, polyoxyethylene nonylphenyl ethers, octylphenoxypolyethoxyethanols, and mixtures thereof; a wall-forming material selected from the group consisting of egg yolk solids and whole egg solids; an oil; and an aqueous based diluent, the combined amounts of said surfactant, wall material and oil being greater in volume than said aqueous diluent.

5,662,958

METHOD FOR MODIFYING CANOLA SEEDS FOR USE IN RUMINANT FEED

John Joseph Kennelly, Edmonton, Canada; Debra Diane Nielsen, Newark, Del.; William Isaac Lewis, Kingston, Canada, and Mary Ellen Rowland, Highland, Ill., assignors to Ducoa, L.P., Highland, Ill.

Continuation of Ser. No. 372,267, Jan. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 46,711, Apr. 16, 1993, abandoned. This application Sep. 16, 1996, Ser. No. 713,594

Int. Cl.[6] A23L *1/20;* **A23K** *1/18*

U.S. Cl. 426—630 **10 Claims**

1. A method for treating intact oil seeds of the genus Brassica, excluding rapeseed, which are indigestible in the rumen of ruminant animals, to provide improved digestibility of the seeds in the abomasum and small intestine of such animals comprising the sequential steps of:

(1) while subjecting the seeds to mixing, during which the seeds are free-flowing, heating the free-flowing seeds to a temperature of 30°–90° C.; and

(2) while continuing mixing and heating of the seeds, maintaining the seeds in free-flowing form and spraying the heated seeds with an aqueous alkaline solution having a pH of 10–14 and continuing mixing of the coated seeds for a period of 1–30 minutes to effect adsorption of the alkaline solution onto the seed and swelling of the seeds without substantially impairing the integrity of the seed coat.

5,662,959

METHOD FOR STEAM COOKING A MEAT PRODUCT

Eugene R. Tippmann, 2509 E. 1200 N., Roanoke, Ind. 46783

Division of Ser. No. 310,756, Sep. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 99,418, Jul. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 852,785, Mar. 17, 1992, Pat. No. 5,235,903. This application Feb. 14, 1996, Ser. No. 601,604

Int. Cl.[6] A23L *1/31;1/314*

U.S. Cl. 426—641 **4 Claims**

1. A method for producing a skinless meat product comprising the steps of:

placing a piece of meat into an air-tight cooking chamber;

generating steam from a source of water;

introducing said steam into said air-tight cooking chamber containing the meat;

reducing the steam pressure within said cooking chamber to achieve a low temperature steam in a range of 150° F. to 180° F.;

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heat treating the meat with said low temperature steam to cook the meat; and

creating an atmospheric humidity of 100% within said chamber using said low temperature steam,

said atmospheric humidity of 100% preventing any water present within the meat from evaporating into the atmosphere of said cooking chamber.

5,662,960

PROCESS FOR PRODUCING SLIPPERY, TENACIOUSLY ADHERING HYDROGEL COATINGS CONTAINING A POLYURETHANE-UREA POLYMER HYDROGEL COMMINGLED WITH A POLY (N-VINYLPYRROLIDONE) POLYMER HYDROGEL

Fritz Hostettler, Lambertville, N.J.; David Rhum, New York, N.Y.; Michael R. Forman, Ramsey, Calif.; Michael N. Helmus, St. Louis Park, Minn., and Ni Ding, Plymouth, Minn., assignors to Schneider (USA) Inc., Plymouth, Minn.

Filed Feb. 1, 1995, Ser. No. 384,711

Int. Cl.[6] B05D *3/10;3/04;* **C23C** *14/02*

U.S. Cl. 427—2.3 **80 Claims**

1. A process for producing a material bearing thereon a coating of a wet, slippery, adhering, commingled hydrogel of a hydrophilic polyurethane-polyurea polymer hydrogel and a poly(N-vinylpyrrolidone) polymer hydrogel, said process comprising:

a) affixing reactive chemical functional groups, at least some of which are amine-containing groups, to a surface of a hydrophilic or hydrophilicized hydrophobic polymer substrate or a metal substrate to make a reactive substrate surface;

b) coating the resulting reactive substrate surface of (a) with a first coating comprising a hydrophilic polyurethane-urea prepolymer intermediate, which is capable of forming a polyurethane-polyurea hydrogel-forming polymer, and which contains terminal isocyanate groups, such that at least some of said terminal isocyanate groups are reacted with and are covalently bonded to said reactive chemical functional groups on said reactive substrate surface, forming covalent polyurea bonds therewith, resulting in the formation of a tie coat of a polyurethane-polyurea hydrogel-forming polymer, which adheres to said reactive substrate surface, and wherein at least some of said terminal isocyanate groups in said polyurethane-polyurea hydrogel-forming polymer remain free to react with other species; and

c) treating said resulting tie coat of (b) with a treatment selected from the group (i–ii) consisting of:

(i) applying a second coating comprising an aqueous solution of a poly(N-vinylpyrrolidone) hydrogel-forming polymer; and

(ii) applying a second coating comprising an aqueous solution of a poly(N-vinylpyrrolidone) hydrogel-forming polymer, followed by application, in a vapor phase, of a moisture-containing substance, such that a barrier coat which is a commingled hydrogel of a hydrophilic polyurethane-polyurea polymer hydrogel and a poly(N-vinylpyrrolidone) hydrogel is formed;

wherein water of said aqueous solution or said moisture: containing substance is bound with said polyurethane-polyurea hydrogel-forming polymer forming said polyurethane-polyurea polymer hydrogel;

wherein water of said aqueous solution or said moisture: containing substance is bound with said poly(N-vinylpyrrolidone) hydrogel-forming polymer forming said poly(N-vinylpyrrolidone) polymer hydrogel; and

wherein said poly(N-vinylpyrrolidone) polymer hydrogel is adherent to said substrate surface as a result of being commingled with said polyurethane-polyurea polymer hydrogel.

5,662,961

METHOD FOR FORMING A PROTECTIVE COATING FILM ON ELECTRONIC PARTS AND DEVICES

Katsuya Tanitsu, Kanagawa-ken; Atsushi Kawakami, Tokyo-to; Hatsuyuki Tanaka, and Toshimasa Nakayama, both of Kanagawa-ken, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Division of Ser. No. 274,021, Jul. 12, 1994, Pat. No. 5,520,952. This application Mar. 15, 1996, Ser. No. 616,378

Claims priority, application Japan, Jul. 16, 1993, 5-177040; Oct. 1, 1993, 5-247163

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—58 **4 Claims**

1. A method for the formation of a protective coating film on the surface of a substrate which comprises the steps of:

(a) coating the surface with a liquid coating composition containing, as the principal ingredient, a partial cohydrolysis-condensation product of a first silane compound represented by the general formula

$$Si(OR)_4,$$

in which R is an alkyl group having 1 to 4 carbon atoms or a phenyl group, and a copolymerization product of a second silane compound represented by the general formula

$$R^2{}_nSi(OR)_{4-n},$$

in which R has the same meaning as defined above, R^2 is a polymerizable group selected from the class consisting of a vinyl group, 3-acryloxypropyl group and 3-methacryloxypropyl group and the subscript n is 1, 2 or 3, and a polyfunctional acrylic monomer to form a coating layer; and

(b) drying and heating the coating layer at a temperature in the range from 140° to 300° C. for 15 to 120 minutes.

5,662,962

TRANSPARENT, ELECTROCONDUCTIVE SUBSTRATE AND METHOD FOR FORMING THE SAME

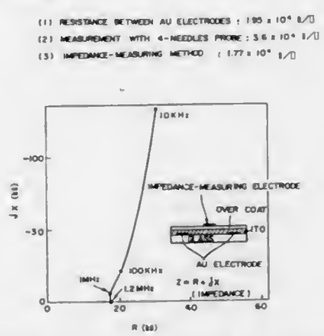
Munekazu Kawata, and Masaya Yukinobu, both of Niihama, Japan, assignors to Sumitomo Metal Mining Company, Limited, Tokyo, Japan

Division of Ser. No. 329,404, Oct. 27, 1994, abandoned. This application Mar. 20, 1995, Ser. No. 406,408

Claims priority, application Japan, Oct. 28, 1993, 5-270816; Dec. 28, 1993, 5-334856; May 26, 1994, 6-136523

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—126.2 **13 Claims**



1. A method for forming a transparent, electroconductive substrate, in which a transparent, electroconductive ink, which is a solution having dispersed therein indium-tin oxide particles having a mean particle size of from 0.01 to 0.05 μm and a binder, is coated and dried on a support capable of transmitting visible rays therethrough to thereby form thereon a transparent, electroconductive film consisting solely of said indium-tin oxide particles, and thereafter an overcoating sol solution consisting essentially of silica sol is coated on said transparent electroconductive film and then dried or dried and baked.

5,662,963

METHOD FOR PREPARING COLORED THERMO PLASTIC RESIN PELLETS

Iwao Hishida, 4-16 Hattori, Minami-machi 4-chome, Toyonaka-shi, Osaka 561, Japan

Division of Ser. No. 246,238, May 19, 1994, Pat. No. 5,536,576. This application Dec. 11, 1995, Ser. No. 570,629

Claims priority, application Japan, May 21, 1993, 5-119756

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 **13 Claims**

1. A method for preparing colored thermoplastic resin pellets, characterized in that uncolored thermoplastic resin pellets, a powdery colorant and a liquid thermoplastic adhesive having a water content of 5% by weight or more are mixed in such a way that the amount of water is 0.05% by weight or more relative to the pellets, and thereafter the resulting mixture is dried whereby the powdery colorant is made adhered to the surfaces of the pellets.

5,662,964

PROCESS FOR COATING THE INTERNAL SURFACE OF HYDROTHERMOSANITARY PIPES, PARTICULARLY MADE OF ALUMINIUM, WITH RESINOUS PRODUCTS AND PIPES OBTAINED THEREWITH

Severino Zecchin, Onara di Tombolo, Italy, assignor to Lenair SRL, Onara di Tombolo, Italy

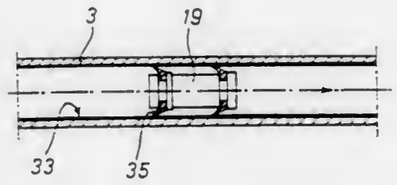
PCT No. PCT/EP94/00436, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/23845, PCT Pub. Date Oct. 27, 1994

PCT Filed Feb. 15, 1994, Ser. No. 347,361

Claims priority, application Italy, Apr. 22, 1993, PD93A0091

Int. Cl.[6] B05D *7/22*

U.S. Cl. 427—232 **5 Claims**



1. Process for coating the internal surface of metallic hydrothermosanitary pipes wound in coils or rod-configured with resinous products, said resinous products also being of the atoxic type which can be used in contact with foods, characterized in that said process comprises the steps of:

injecting resinous liquid inside a pipe;

blowing-in air to make said resinous liquid turbulent and to remove an excess part of said resinous liquid;

generating a film of said resinous liquid on the internal surface of said pipes; and

inserting a head, equipped with flexible gaskets shaped as a ring;

advancing said head, with the force of pressurized air;

carrying out a shaving with said advancing head, said shaving including gauging and smoothing the film of said resinous liquid on the internal surface of said pipe;

ejecting through said head said excess part of said resinous liquid;

stabilizing said film of said resinous liquid.

5,662,965

METHOD OF DEPOSITING CRYSTALLINE CARBON-BASED THIN FILMS

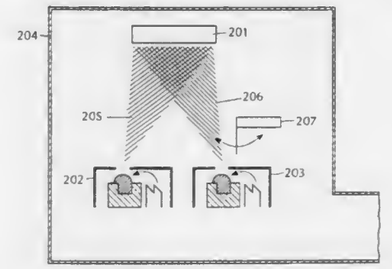
Masahiro Deguchi; Masatoshi Kitagawa, and Takashi Hirao, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 724,383, Jun. 28, 1991, abandoned. This application Dec. 8, 1994, Ser. No. 351,739

Claims priority, application Japan, Jun. 29, 1990, 2-173463

Int. Cl.[6] C23C *16/00;14/30;* **B05D** *3/06*

U.S. Cl. 427—249 **13 Claims**



1. A method for hetero-epitaxial growth of crystalline silicon carbide or crystalline diamond film on a substrate comprising a substrate material, said method comprising the steps of:

a) providing sources for generating a flux of said substrate material and carbon in a reaction chamber evacuated to a predetermined pressure;

b) depositing under hetero-epitaxial growth conditions a compositionally-graded intermediate layer including said substrate material and carbon on said substrate, wherein the composition of a lower surface of said compositionally-graded intermediate layer in contact with said substrate is substantially that of the substrate material and the composition of an upper surface thereof is substantially that of said crystalline silicon carbide or crystalline diamond film and wherein the carbon content increases in a direction away from said substrate, said hetero-epitaxial growth conditions allowing said substrate material and carbon to migrate; and

c) depositing said crystalline silicon carbide or crystalline diamond film on said compositionally-graded intermediate layer.

5,662,966

PROCESS FOR PRODUCING AQUEOUS POLYURETHANE COATING AND COAT THEREFROM

Tatsuhiko Kobayashi, Yokohama, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,304

Claims priority, application Japan, Mar. 22, 1995, 7-062892

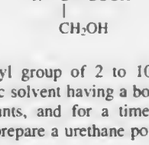
Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—385.5 **20 Claims**

9. A method of forming a polymer urethane coating from an aqueous polyurethane composition, which comprises:

a) applying an aqueous polyurethane composition to a substrate;

b) drying the composition on said substrate to thereby form a dry coat, wherein the aqueous polyurethane composition results from a process consisting essentially of:



wherein R is an alkyl group of 2 to 10 carbon atoms, in the presence of an organic solvent having a boiling point of about 50° to 120° C., in amounts, and for a time and at a temperature effective, to thereby prepare a urethane polymer solution;

ii) dissolving or dispersing the resultant urethane polymer in water; and

iii) removing said organic solvent from the urethane polymer solution, whereby the amount of said organic solvent remaining in said dry coat is not more than about 0.1% by weight.

5,662,967

NON-CHROMIUM PASSIVATION METHOD FOR GALVANIZED METAL SURFACES

Jiangbo Ouyang, Flemington, N.J., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Jun. 3, 1996, Ser. No. 657,121

Int. Cl.[6] B05D *1/36;1/38;7/14*

U.S. Cl. 427—409 20 Claims

1. A process for passivating a galvanized metal surface comprising contacting the galvanized surface with a treatment solution containing an alkyl methacrylate polymer, wherein said treatment solution is substantially free of chromium and siloxanes.

5,662,968

METHOD OF PAINTING BUILDING BOARD BY SPRAY PAINTING APPARATUS

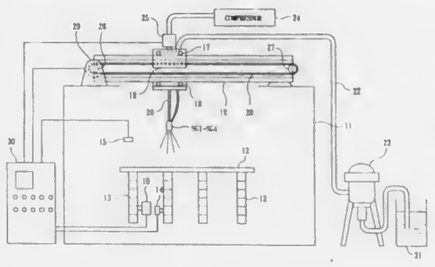
Takahiro Yamaguchi, Ichinomiya, Japan, assignor to Nichiha Corporation, Nagoya, Japan

Filed Jul. 23, 1996, Ser. No. 681,502

Claims priority, application Japan, Jul. 24, 1995, 7-186780

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—421 4 Claims



1. A method of painting a surface of a building board being conveyed on a conveyor by means of a spray painting apparatus so that a plurality of colors of gradated or shaded patterns are formed thereon, the method comprising the steps of:

arranging a plurality of spray guns supplied with paints of colors different from one another in parallel to a direction in which the building board is conveyed; and

while the spray guns are being reciprocated in a direction crossing the direction in which the building board is conveyed, intermittently turning on and off each of the spray guns so that the paints of colors different from one another are sprayed from the respective spray guns onto the surface of the building board;

wherein the relation between a speed of the reciprocation of each spray gun and a speed of conveyance of the building board is expressed by $L \leqq P \times N$ where L is a distance that the building board is conveyed during one reciprocation of the spray guns, P is an average arrangement pitch of the spray guns, and N is the number of the spray guns.

5,662,969

HOT COATING BY INDUCTION LEVITATION

Ping Ling, Yagoona, Australia, assignor to Graham Group, Yagoona, Australia

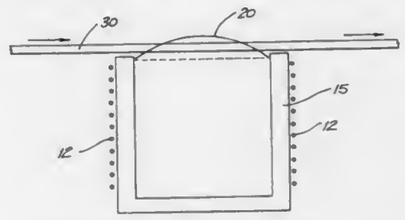
PCT No. PCT/AU95/00040, § 371 Date Jul. 26, 1996, § 102(e) Date Jul. 26, 1996, PCT Pub. No. WO95/20684, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 25, 1995, Ser. No. 687,534

Claims priority, application Australia, Jan. 31, 1994, PM3606

Int. Cl.[6] H05B *6/02*

U.S. Cl. 427—591 15 Claims



1. A coating apparatus, for applying a coating to a workpiece, comprising:

a vessel to contain a molten metal;

an induction coil disposed about said vessel; and,

temperature regulation means;

wherein, in use, said induction coil induces a magnetic field within said vessel such that a meniscus of molten metal is formed above said vessel, through which said workpiece is passed for coating, whilst said temperature regulation means regulates temperature of said molten metal and/or controls the meniscus height of said meniscus.

5,662,970

SEALED ORNAMENT OF DRIED AND PRESSED FLOWER

Makoto Noguchi, Kyoto, Japan, assignor to Mieko Sakai, Tokyo, Japan

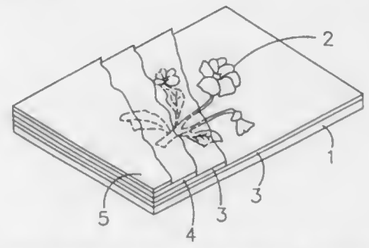
PCT No. PCT/JP91/00705, § 371 Date Jun. 11, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/18752, PCT Pub. Date Dec. 12, 1991

PCT Filed May 27, 1991, Ser. No. 761,743

Claims priority, application Japan, Jun. 7, 1990, 2-149130

Int. Cl.[6] A01N *3/00*

U.S. Cl. 428—24 14 Claims



1. A sealed ornament of a dried and pressed flower comprising:

a dried and pressed flower;

a film having a low melting point, said film permeating said dried and pressed flower substantially without the presence of air and moisture, and

said sealed ornament having a base portion directly contacting said dried and pressed flower,

wherein said dried and pressed flower is vacuum-sealed to said base portion in a substantially dried state and substantially free of air and moisture.

5,662,971

CELLULOSE-BASED FOOD CASING HAVING IMPROVED RIPENING PROPERTIES

Klaus-Dieter Hammer, Mainz; Manfred Siebrecht, and Theo Krams, both of Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 11, 1994, Ser. No. 288,268

Claims priority, application Germany, Aug. 12, 1993, 43 27 020.4

Int. Cl.[6] A22C *13/00*

U.S. Cl. 428—34.8 20 Claims

1. A fiber-reinforced cellulose food casing which has a cellulose matrix and which comprises mixed in the cellulose matrix

(a) 3 to 25% by weight based on the weight of cellulose in the casing of at least one first component selected from the group consisting of alginic acid and alginates, and

(b) 1 to 20% by weight based on the weight of cellulose in the casing of at least one second component selected from the group consisting of fats, compounds selected from one or more of the group consisting of salts of fatty acids, fatty amines, fatty alcohols, and ethoxylates of fatty alcohols, and oils.

5,662,972

TUBULAR LAMINATE AND PROCESS FOR PRODUCING THE SAME

Kazuhiko Shimada; Yutaka Nakata, and Kenjiro Idemori, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/00688, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/24299, PCT Pub. Date Dec. 9, 1993

PCT Filed May 24, 1993, Ser. No. 185,852

Claims priority, application Japan, May 26, 1992, 4-133492

Int. Cl.[6] B29D *22/00;* B32B *1/08*

U.S. Cl. 428—35.7 20 Claims

1. A process for producing a tubular laminate which comprises, discharge-treating an outer surface of a tubular fluorine-containing resin molded article in an inert gas atmosphere containing an organic compound having a functional group, extruding a molten resin onto the treated surface, and coating the treated surface with the molten resin, the coating resin having a melting point lower than an inner layer of the fluorine-containing resin and a surface tension of not less than 30 dyn/cm.

5,662,973

VASE FOR CONTAINING A FLORAL GROUPING

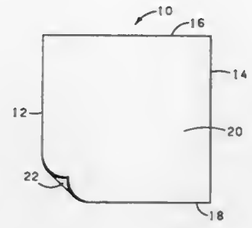
Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee

Continuation-in-part of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 19, 1984, abandoned, said Ser. No. 242,583and a continuation-in-part of Ser. No. 868,821, Apr. 14, 1992, Pat. No. 5,254,072, is a continuation of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817. This application May 13, 1994, Ser. No. 242,583

Int. Cl.[6] B29D *23/00*

U.S. Cl. 428—36.9 48 Claims

1. A container for a floral grouping, comprising: a sheet of material formed into a vase, the vase comprising an upper end, a closed lower end having a bottom, an upper end opening, and a peripheral wall extending from the closed lower end to the upper end, the peripheral wall having an outer surface and an inner surface which encompasses and defines an inner space and wherein the bottom of the closed lower end has an outer surface continuous with the outer surface of the peripheral wall and an inner surface continuous with the inner surface of the peripheral wall, and wherein the peripheral wall comprises a plurality of folds in the sheet of material with adjacent portions of at least some of the folds being connected via a bonding material to form connected folds, which connected folds cooperate to maintain the vase in the shape of a vase; and



a bonding material disposed on a portion of the outer surface of the bottom of the vase for enabling the vase to be bondingly connected to a surface in a vertical orientation.

5,662,974

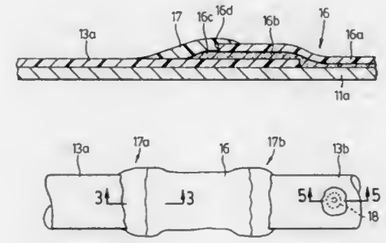
SUPERIMPOSED COVERINGS HAVING INCREASED STABILITY

Alfredo Andrenacci, Toronto; Michael A. Romano, Dundas, and John H. Oliver, Huntsville, all of Canada, assignors to Shaw Industries Ltd., Rexdale, Canada

Continuation of Ser. No. 262,069, Jun. 17, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,114

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—36.9 26 Claims



1. An article having superimposed coverings providing increased stability, comprising an elongate tubular article extending along a longitudinal axis and having a first circumferential covering thereon with an outer surface and extending in the direction of said longitudinal axis, a second circumferential covering with an outer surface at least partially superimposed over the first covering and bonding thereto, said second covering having edges with faces extending transverse said axis, and a cured deposit of thermoset resin applied at least over said edges of the second covering and bonding to said outer surfaces of said first and second coverings and providing the second covering with increased stability against displacement with respect to said first covering in the direction of said axis.

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5,662,975

COMPOSITE TUBULAR ARTICLE CONSISTING OF A . . . PETROL PIPE AND PROCESS FOR THE PREPARATION OF SUCH AN ARTICLE

Marius Hert, Serquigny; Christian Dousson, St. Victor de Chretienville, and Serge Nawrot, Serquigny, all of France, assignors to ELF Atochem S.A., Puteaux, France

Continuation of Ser. No. 180,384, Jan. 12, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,044
Claims priority, application France, Jan. 13, 1993, 93 00226
Int. Cl.[6] B29C *35/06;* F16L *11/08*
U.S. Cl. 428—36.91 28 Claims

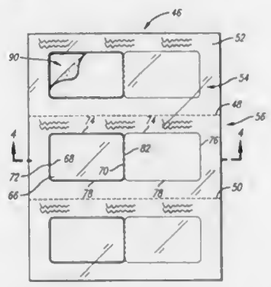
1. A composite tubular article substantially resistant to separation comprising (a) at least an outer sheathing of a vulcanized elastomer containing carboxylic acid or dicarboxylic acid anhydride functional groups, used directly in combination with (b) a binder tube of thermoplastic elastomer containing polyamide blocks, and optionally (c) an inner sealing layer.

5,662,976

LAMINATED CARD ASSEMBLY

Ghanshyam H. Popat, Alta Loma; Thomas Mammen, La Verne; David Robertson, Upland, all of Calif., and André M. Saint, Tonawanda, N.Y., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Oct. 24, 1994, Ser. No. 327,981
Int. Cl.[6] B65D *65/28*
U.S. Cl. 428—40.1 28 Claims



1. An assembly for creating laminated cards for printing by a laser printer, ink jet printer or photocopier comprising:

a sheet of cardstock, said cardstock having a first face comprising a printing surface and a second face on the opposite side of said sheet from said first face, said second face comprising areas having a release coating and other areas that are free of release coating;

a sheet of transparent plastic film juxtaposed to and adhering to said second face of said sheet of cardstock, said sheet of plastic film having a coating of pressure sensitive adhesive which adheres said plastic sheet to said second face of said sheet of cardstock;

a plurality of cards cut from predetermined positions of said sheet of cardstock, said cards remaining in the same said predetermined positions on said sheet of cardstock from which they were cut;

said sheet of plastic film being cut into a plurality of symmetrical lamination members each having a line of symmetry, each of said lamination members covering and adhering to a corresponding one of said cards to form a card/lamination set, each of said lamination members also removably adhering to said sheet of cardstock in at least one of said areas having a release coating;

said assembly being divided into individual sections by at least one line of microperforations that extends through both said plastic film and said cardstock, each of said individual sections comprising at least one of said card/lamination sets, such that said sections may be individually separated along said line of microperforations from the assembly for individual printing in a laser printer, ink-jet printer or photocopier;

each of said cards being substantially free of a release coating and therefore being securely adhered to a corresponding one of said lamination members;

each said lamination member having an extent approximately equal to twice the extent of each said card;

said sheet of cardstock and said sheet of plastic film being substantially coextensive, each having substantially the same width and length as the other; and

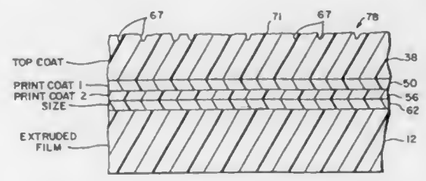
said assembly being substantially flat and having substantially constant thickness across the entire width and length of the assembly so as to prevent jamming in a laser printer, ink jet printer, or photocopier, wherein each of said card/lamination sets may be individually detached from said assembly, and each lamination member may be folded over at its line of symmetry after detachment from said assembly to laminate its corresponding card.

5,662,977

PROCESS FOR MANUFACTURING PLASTIC SIDING PANELS WITH OUTDOOR WEATHERABLE EMBOSSED SURFACES

Patrick Leon Spain, Lowell, and Keith Lawson Truog, Crown Point, both of Ind., assignors to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 192,422, Feb. 7, 1994, Pat. No. 5,506,031, which is a division of Ser. No. 954,554, Sep. 30, 1992, Pat. No. 5,284,693, which is a division of Ser. No. 599,034, Oct. 17, 1990, Pat. No. 5,203,941, which is a continuation-in-part of Ser. No. 424,130, Oct. 19, 1989, abandoned. This application Apr. 8, 1996, Ser. No. 628,903
Int. Cl.[6] A61F *13/02*
U.S. Cl. 428—42.1 8 Claims



1. A transfer sheet for forming a decorative outer surface coat on a substrate panel, the transfer sheet comprising a flexible carrier sheet having coated thereon (a) a matte release layer bonded to the carrier sheet, and (b) a decorative coating on the matte release layer for facing toward the substrate panel, the decorative coating being releasable from the matte release layer under heat and pressure for bonding it to the substrate panel and for applying a low gloss surface to the transferred decorative coating from the matte release layer, the matte release layer comprising (1) a synthetic resinous coating dried to a film thickness and containing therein a thermosetting resinous component bonding the resinous coating to the carrier sheet, (2) a fine particulate filler dispersed in the resinous coating so that when the resinous coating is dried to its film thickness, the dispersed filler transfers a low gloss surface to the surface of the transferred decorative coating, (3) a wax component contained in the synthetic resinous coating for enhancing release of the matte release layer from the transferred decorative coating, and (4) a silicone resin component in the synthetic resinous coating further enhancing release properties.

5,662,978

PROTECTIVE COVER FABRIC INCLUDING NONWOVENS

J. Page Brown, Smyrna, and Ty J. Stokes, Suwanee, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Filed Sep. 1, 1995, Ser. No. 522,787
Int. Cl.[6] B32B *7/10*
U.S. Cl. 428—57. 14 Claims

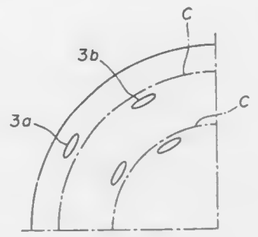
1. A protective cover comprising a thermoplastic polymer-comprising conjugate fiber nonwoven fabric having a basis weight between about 1 and 8 osy, laminated by extrusion to a film having at least one layer and having a thickness between about 0.5 and 8 mils.

5,662,979

SUBSTRATE FOR OPTICAL DISC

Takashi Tomita, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP95/01696, § 371 Date Apr. 24, 1996, § 102(e) Date Apr. 24, 1996, PCT Pub. No. WO96/96431, PCT Pub. Date Feb. 29, 1996
PCT Filed Aug. 25, 1995, Ser. No. 632,427
Claims priority, application Japan, Aug. 25, 1994, 6-200876
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—64.1 10 Claims



1. A substrate for an optical disc comprising:

a flat surface portion including at least a portion on which a recording layer and/or a reflecting film layer are formed; and

a portion capable of generating a tracking error signal, said substrate being formed of a synthetic resin material and having a thickness of 1 mm or less at least at said portion on which the recording layer and/or the reflecting film layer are formed.

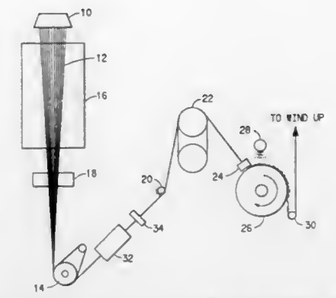
5,662,980

CARPETS MADE FROM POLY(TRIMETHYLENE TEREPHTHALATE) BULKED CONTINUOUS FILAMENTS

James Milton Howell, Greenville, N.C.; Wae-Hai Tung, Seaford, Del., and Frank Werny, West Chester, Pa., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 501,492, Jul. 12, 1995, abandoned, which is a continuation of Ser. No. 268,585, Jun. 30, 1994. This application Dec. 12, 1996, Ser. No. 764,778
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—88 8 Claims

1. A carpet comprising tufts ply-twisted, heat-set yarns, said yarns containing multiple hot-fluid jet bulked and entangled continuous filaments having random 3-dimensional curvilinear crimp, wherein said filaments are of poly(trimethylene terephthalate) having an intrinsic viscosity between about 0.6 and 1.3, wherein each of said yarns has a boil off BCE between 20–95% and a shrinkage from 0 to 5%, and whereby said carpet has a texture retention of at least 4.0 and a pile height retention of at least 90% after 11,000 cycles of human traffic.

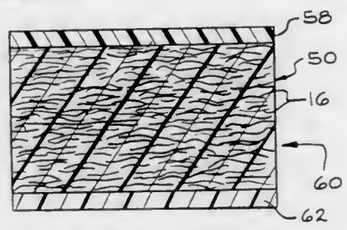


5,662,981

MOLDED COMPOSITE PRODUCT AND METHOD OF MAKING

John L. Olinger, Newark; Jean E. Schelhorn, Granville, and Ralph B. Jutte, Hebron, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Apr. 30, 1996, Ser. No. 641,462
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—113 20 Claims



1. A molded composite product comprising:

a resinous core layer containing reinforcement fibers; and

a resinous surface layer which is substantially free of reinforcement fibers, where the resinous surface layer includes a nonresinous additive at a concentration, measured as a weight percentage of the resinous material in the surface layer, which is higher than the concentration of the additive in the resinous core layer, measured as a weight percentage of the resinous material in the core layer, where the nonresinous additive is one or more materials selected from the group consisting of colorants, toughners, antioxidants, UV stabilizers, flame retardants, fungicides, algaecides, electrically conductive particles and fibers, antimicrobials, antistats, color concentrates, heat stabilizers, mold release agents, smoke suppressants, surface active agents, pigments, and flexibilizers.

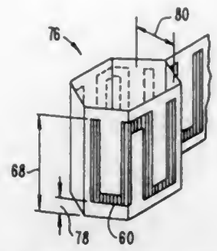
5,662,982

MATERIAL WITH ARTIFICIAL DIELECTRIC CONSTANT

Rodolfo E. Diaz, Phoenix, Ariz., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Division of Ser. No. 890,757, May 29, 1992, Pat. No. 5,385,623. This application Jan. 27, 1995, Ser. No. 379,243
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 32 Claims

1. A cellular core structure having a first frequency dependent complex permittivity along a first principal axis, a second frequency dependent complex permittivity along a second principal axis, and a third frequency dependent complex permittivity along a third principal axis; and further in which a frequency of interest



and a polarization is chosen for a wave of interest relative to each principal axis, the frequency dependent complex permittivity along each principal axis being determined such that the wave of interest for the chosen polarization encounters the desired frequency dependent complex permittivity, said structure comprising:

a plurality of sheets of non-electrically conductive material,

an electrically conductive material applied to the sheets according to a pattern including a plurality of parallel lines interconnected by lines disposed at right angles thereto, said lines being characterized by predetermined length, width, orientation and spacing dimensions, as well as a conductivity characteristic for each line,

said sheets and applied conductive lines being folded and interconnected to form said pattern into the walls of a honeycomb core structure having a geometry defining said first principal axis, said second principal axis, and said third principal axis and in which the dimensions, orientation and conductivity characteristics of the pattern and the dimensions and the geometry of the cellular core structure are chosen to achieve the desired frequency dependent complex permittivity along each principal axis for that cellular core geometry.

5,662,983

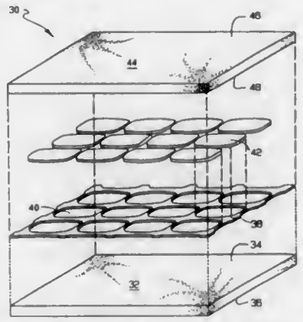
STABILIZED CONTAINMENT FACILITY LINER

Timothy D. Stark, Urbana, Ill., assignor to Geosynthetics, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 299,778, Sep. 1, 1994, Pat. No. 5,501,753. This application Aug. 30, 1995, Ser. No. 520,803

Int. Cl.[6] B32B *27/14;3/12;* **C02F** *1/00;* **E02D** *19/18*

U.S. Cl. 428—117 **22 Claims**



1. A stabilized containment facility liner, comprising:

a first outer sheet member having a top surface and a bottom surface;

a stabilizer element overlying at least part of the top surface of said first sheet member and abutting said top surface along at least a portion thereof, said stabilizer element having a plurality of interstitial apertures adapted to contain a selectively fluid-impervient barrier material and for substantially preventing said barrier material from flowing out of said liner, notwithstanding the angular inclination at which said liner is oriented; and

at least one selectively fluid-impervient barrier material contained within the interstitial apertures of said stabilizer element,

wherein said first sheet member and said stabilizer element are bonded together along at least a portion of their abutting surfaces to form a laminate having a sufficient tensile resistance and shear strength to maintain stability of said liner upon a sloped surface and sufficient compressive strength to prevent any substantial change in liner thickness after manufacture thereof, wherein the stabilizer element is in contact with and bonded to at least a portion of said first outer sheet member.

5,662,984

MAGNETIC RECORDING MEDIUM

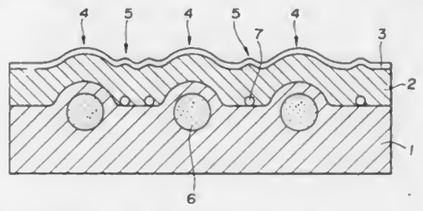
Hidetoshi Honda; Yasumi Sato; Taketoshi Sato; Jota Ito; Yoshihito Ebine, and Toshikazu Sasaki, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,432

Claims priority, application Japan, May 28, 1993, 5-127518

Int. Cl.[6] G11B *5/66;* **B32B** *3/10;9/00;5/16*

U.S. Cl. 428—141 **7 Claims**



1. A magnetic recording medium comprising:

a non-magnetic substrate,

a magnetic metal layer formed on said non-magnetic substrate, and

a carbon protective film formed on said magnetic metal layer,

the carbon protective film having a thickness in a range of 3 nm to 30 nm,

said carbon protective film presenting first and second protrusions,

said first protrusions having a height in a range of 65 nm±15 nm to 95 nm± 15 nm,

said second protrusions having a height in a range of from 18 nm±5 nm to 28±5 nm and substantially no protrusions having a height in a range from 33 nm to 50 nm.

5,662,985

TWO-SIDE COATED LABEL FACESTOCK

Terry O. Jensen, Middlesex, and Dan-Cheng Kong, Fairport, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 21, 1996, Ser. No. 646,784

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **24 Claims**

1. A printable facestock structure comprising a polymeric film substrate having on a first surface thereof (A) an adhesive anchor layer and on a second surface thereof (B) an ink base layer, the (A) and (B) layers are selected from the group consisting of:

(i) a prime coating having on an external surface a functional coating of an interpolymer of (a) an α,β-monoethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof; and (b) a neutral monomer ester comprising an alkyl acrylate ester and an alkyl methacrylate ester; and

(ii) an iminated polymer of methyl methacrylate, C_2 to C_8 alkyl methacrylate or C_1 to C_8 alkyl acrylate and an ethylenically unsaturated carboxylic acid;

or the (A) adhesive anchor layer is selected from the group consisting of:

(iii) a mixture of the functional coating of (i) an interpolymer of (a) an α,β-monoethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof; and (b) a neutral monomer ester comprising an alkyl acrylate ester and an alkyl methacrylate and (ii) an iminated polymer of methyl methacrylate, C_2 to C_8 alkyl methacrylate or C_1 to C_8 alkyl acrylate and an ethylenically unsaturated carboxylic acid;

(iv) a linear water dissipatable polyester condensation product of the following monomers or their polyester forming equivalents: terephthalic acid, an aliphatic dicarboxylic acid, a sulfomonomer containing alkali metal sulfonate group attached to a dicarboxylic aromatic nucleus; and stoichiometric quantities of about 100 mole % of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having from 2 to 11 carbon atoms; and

(v) a polyester comprising repeating units of the following components: isophthalic acid, 5-sulfoisophthalic acid, 1,4-cyclohexanedimethanol and diethylene glycol; or

the (B) ink base layer is selected from the group consisting of:

(vi) a prime coating having on an external surface a functional coating of a copolymer of a C_1 to C_8 acrylate, C_1 to C_8 methacrylate and acrylic acid or methacrylic acid; and

(vii) a prime coating having on an external surface a functional coating of a styrene copolymer of a C_1 to C_8 acrylate, C_1 to C_8 methacrylate and acrylic acid or methacrylic acid,

provided that each of the (A) adhesive anchor layer and the (B) ink base layer is different.

5,662,986

HOLOGRAPHICALLY TRANSFERABLE IMAGES

Michael J. Stepanek, Hollis, N.H., assignor to Hampshire Holographic Manufacturing, Corp., Milford, N.H.

Filed Jul. 9, 1996, Ser. No. 679,347

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **7 Claims**



1. A holographically enhanced tissue paper wrapping element comprising a tissue paper substrate having at two, flat surfaces, wherein said holographic enhancement is achieved by laminating at a temperature of between 25° C. and 150° C. and a pressure of greater than 1 pound per square inch a holographic image contained on a polymeric substrate to one of said surfaces of said tissue paper substrate and subsequently delaminating said paper tissue substrate from said polymeric substrate whereby said holographic image is transferred to said paper tissue substrate.

5,662,987

MULTILAYER PRINTED WIRING BOARD AND METHOD OF MAKING SAME

Shogo Mizumoto, Ohtsu, and Yutaka Tsukada, Shiga-Ken, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1996, Ser. No. 595,063

Claims priority, application Japan, Feb. 17, 1995, 7-029704

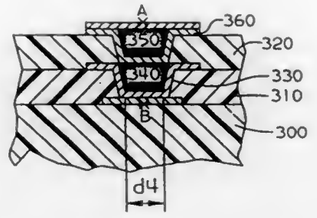
Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **8 Claims**

1. A multilayered printed wiring board comprising:

a first insulating layer defining a first via hole therein, said first via hole including a first conductive layer thereon and substantially filled with a first quantity of filler material, said first quantity of filler material having a smooth upper surface; and

a second insulating layer formed above and in contact with said first insulating layer and having a second via hole located directly above said first via hole and including a second conductive layer thereon and a second quantity of filler material therein, said second conductive layer being positioned on said smooth upper surface of said first filler material in said first via hole.



5,662,988

MAGNETO-OPTICAL RECORDING MEDIUM

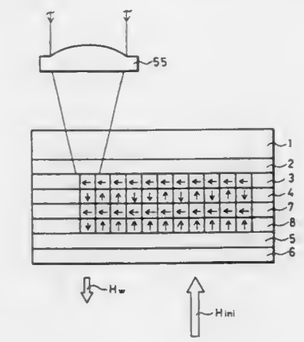
Junichiro Nakayama, Shiki-gun; Hiroyuki Katayama; Akira Takahashi, both of Nara; Kenji Ohta, Kitakatsuragi-gun, and Yoshiteru Murakami, Nishinomiya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 185,570, Jan. 21, 1994, abandoned. This application Feb. 10, 1995, Ser. No. 387,294

Claims priority, application Japan, Jan. 22, 1993, 5-9440

Int. Cl.[6] G11B *11/10;13/04*

U.S. Cl. 428—212 **20 Claims**



1. A magneto-optical recording medium comprising:

a substrate;

a readout layer which shows in-plane magnetization at room temperature and in which a change occurs from in-plane magnetization to perpendicular magnetization when temperature is not less than a first temperature;

a memory layer, provided on one side of the readout layer, for recording thereon information magneto-optically;

an intermediate layer, formed on a side of the memory layer, this side being opposite to a side provided with the readout layer, and having in-plane magnetization from room temperature to its Curie temperature and having a film thickness thinner than a film thickness of the readout layer;

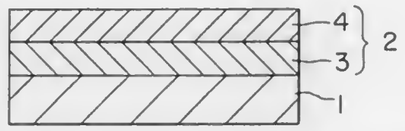
a writing layer, having a Curie temperature higher than a Curie temperature of the memory layer, and having a coercive force lower than a coercive force of the memory layer at room temperature, formed on a side of the intermediate layer, this side being opposite to a side provided with the memory layer.

5,662,989

THERMAL TRANSFER SHEET

Hitoshi Obata, and Masashi Narita, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Continuation of Ser. No. 168,257, Dec. 17, 1993, abandoned.
This application Feb. 28, 1996, Ser. No. 608,214
Claims priority, application Japan, Dec. 25, 1992, 4-359263
Int. Cl.[6] B41M 5/26
U.S. Cl. 428—212 2 Claims



1. A thermal transfer sheet usable a plurality of times with a printer, comprising:
a substrate film;
a first ink layer formed on said substrate film, said first ink layer comprising a colorant and a wax; and
a second ink layer formed on said first ink layer, said second ink layer comprising a colorant and a supercooling resin incompatible with said wax of said first ink layer, the incompatible relationship between said wax of said first layer and said supercooling resin of said second ink layer being such that, when said wax and said supercooling resin are fused by heating at 120° C. and then cooled to room temperature, said wax and said supercooling resin are separated from each other, whereby said first ink layer and said second ink layer are mixed with each other in such a manner that they give rise to fine phase separation upon heating for printing, said first ink layer colorant and said second ink layer colorant having the same color,
said supercooling resin consisting of a saturated linear polyester resin having a solidifying point of about 20° to about 55° C. and a melt viscosity at 100° C. of about 100 to about 20,000 mPas,
the content of said supercooling resin in the second ink layer being in the range of from about 65 to about 80 parts by weight.

5,662,990

GLASS FABRIC PRODUCED WITH ZERO-TWIST YARN

Diego Scari, and Marco Scari, both of Brugherio, Italy, assignors to Gividi Italia S.p.A., Milan, Italy

PCT No. PCT/EP95/02757, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO96/02692, PCT Pub. Date Feb. 1, 1996
PCT Filed Jul. 14, 1995, Ser. No. 615,316
Claims priority, application Italy, Jul. 19, 1994, MI94A1498
Int. Cl.[6] D03D 3/00
U.S. Cl. 442—189 9 Claims

PROFILE OF FABRIC



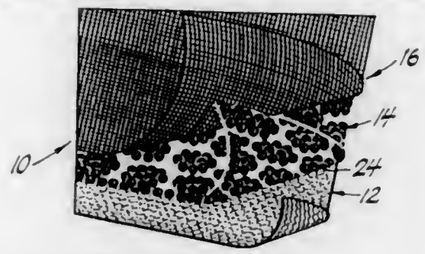
1. In a woven glass fabric for use as a reinforcement in a printed circuit board and comprised of continuous glass filament warp yarns and weft yarns, the improvement wherein at least one of the warp yarns and the weft yarns is zero-twist yarns made of glass filaments having a diameter of between about 5 and 9 microns and a yarn count of between about 5.5 and 136 Tex.

5,662,991

LAMINATED BIOCIDAL FABRIC

Tayyibe Smolik, Gefrees, Germany; Mark E. Carr, Clarks Summit, and Robert A. Sallavanti, Dalton, both of Pa., assignors to Gentex Corporation, Carbondale, Pa.

Filed Dec. 23, 1994, Ser. No. 363,700
Int. Cl.[6] A61L 15/16; A61K 9/70; A61F 13/00
U.S. Cl. 442—319 14 Claims



1. A biocidal fabric including in combination
a gas-permeable lower layer of material,
a single intermediate layer comprising a plurality of spaced biocidal beads,
an upper layer of material,
first means for adhering the beads to the lower layer, and
second means for adhering the beads to the upper layer, wherein both adhering means comprise an adhesive.

5,662,992

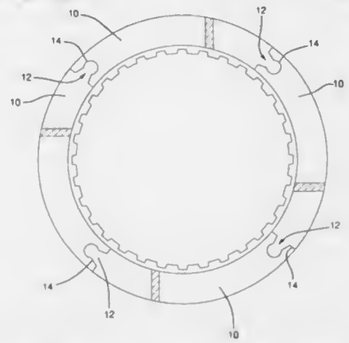
Patent Not Issued For This Number

5,662,993

CARBON-BASED FRICTION MATERIAL FOR AUTOMOTIVE CONTINUOUS SLIP SERVICE

Peter Stanhope Winckler, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1995, Ser. No. 525,486
Int. Cl.[6] B32B 7/00
U.S. Cl. 442—101 26 Claims



6. A product comprising a friction material, said friction material comprising a plurality of fibers formed into strands woven or braided together into a fabric, said strands having a binder wicked along each of said fibers so that said fibers are bound together along points of contact thus leaving gaps between fibers substantially free of binder so that the friction material has a microtexture and microporosity that is open to provide a flow path for oil through the friction material substantially eliminating hydrodynamics across an engagement surface of the friction material whereby consistent and stable friction performance is achieved and

shutter, chuggle and squawk is controlled, and wherein said binder in a dried state comprises about 18 to 40 weight percent of the binder and fiber together.

5,662,994

MOLDED PART AND METHOD OF ITS PRODUCTION

Bernhard Funger, Krefeld, and Heinz Grüber, Tönisvorst, both of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Germany

Filed Jun. 23, 1994, Ser. No. 264,659
Int. Cl.[6] D04H 11/00
U.S. Cl. 442—413 20 Claims



1. A compressed part comprising:
a used-carpet layer comprising finely shredded carpet fiber material, at least a portion coming from uncleaned used carpets, and a thermoplastic binder in a proportion of 5 to 30 percent by weight of the used-carpet layer; and
a cover layer on at least one side of the used-carpet material, the cover layer comprising wood chips.

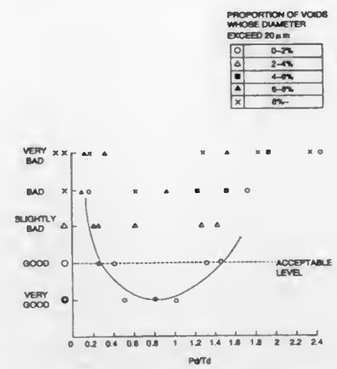
5,662,995

TRANSFER PAPER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME

Kunio Sakurai; Tsukasa Matsuda; Kyoko Inoue, all of Kanagawa; Harumi Watanabe, and Masaru Kato, both of Tokyo, all of Japan, assignors to Fujl Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1995, Ser. No. 497,739
Claims priority, application Japan, Jul. 4, 1994, 6-152305; Aug. 12, 1994, 6-190420; Oct. 28, 1994, 6-265416; Oct. 28, 1994, 6-265417
Int. Cl.[6] B32B 3/26
U.S. Cl. 428—304.4 18 Claims

1. Transfer paper for electrophotography comprising:
base paper; and
a coating layer provided on at least one side of said base paper, wherein said coating layer comprises a pigment and a binder, has a solid content in the range of 2 to 10 g/m^2 per side, and has first areas containing no voids having a equivalent circle diameter equal to or more than 1 μm and second areas containing voids having an equivalent circle diameter equal to or more than 1 μm;
wherein a proportion of said second areas having equivalent circle diameter more than 20 μm is equal to or less than 2%, and the average equivalent circle diameter of said second areas and that of said first areas, as observed on the surface of said coating layer, satisfy at least one of the following conditions:
(1) the average equivalent circle diameter of said second areas and that of said first areas are each from 1.5 to 10 μm;



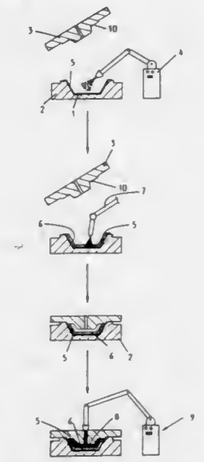
(2) the average equivalent circle diameter of said second areas and that of said first areas are each 0.2 to 1.5 times the volume average particle size of the toner used for image formation; and
(3) the average equivalent circle diameter of said second areas is from 1.0 to 10.0 μm and that of said first areas is from 1.5 to 10 μm.

5,662,996

METHOD FOR MANUFACTURING SELF-SUPPORTING SYNTHETIC TRIM PARTS AND THUS MANUFACTURED TRIM PARTS

Lucien Jourquin, Wetteren; Bernard Debaes, Sijsele, and Eddie Du Prez, Brakel, all of Belgium, assignors to Recticel, Brussels, Belgium

PCT No. PCT/BE93/00026, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO93/23237, PCT Pub. Date Nov. 25, 1993
PCT Filed May 19, 1993, Ser. No. 338,463
Claims priority, application Belgium, May 18, 1992, 09200455
Int. Cl.[6] B29C 44/06;44/12
U.S. Cl. 428—318.8 23 Claims



1. A method for manufacturing a self-supporting synthetic trim part having a leatherlike touch and including an elastomeric polyurethane skin, a rigid synthetic carrier and a mainly open-cell polyurethane foam layer therebetween, said method comprising applying, in a first step, an elastomeric polyurethane skin having a thickness of from 0.3 to 1.3 mm of a polyurethane elastomer

against a mold surface; applying, in a second step, by spraying against said elastomeric polyurethane skin, a reaction mixture for obtaining a mainly open-cell polyurethane foam layer having a thickness of from 1 to 7 mm and an integral skin thereon opposite said elastomeric polyurethane skin; and applying, in a third step, a suitable polyurethane or polyisocyanurate reaction mixture for obtaining a rigid synthetic carrier against said integral skin of said polyurethane foam layer.

5,662,997

INK JET RECORDING FILM COMPRISING CATION-MODIFIED POLYVINYL ALCOHOL AND RECORDING METHOD USING THE SAME

Hiroyuki Onishi; Junichi Iida, and Akio Owatari, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

Filed May 22, 1995, Ser. No. 446,217

Claims priority, application Japan, May 23, 1994, 6-108692

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—331 **18 Claims**

1. An ink jet recording film, comprising:

a transparent substrate,

an anchor coat layer formed on one side of the substrate, and

an ink-receptive layer laminated on the anchor coat layer,

wherein the ink-receptive layer comprises a mixture of two or more types of polyvinyl alcohols, including a cation-modified polyvinyl alcohol and a non-cation modified polyvinyl alcohol, and wherein the polyvinyl alcohols have a degree of saponification of 80 to 95% by mole and a degree of polymerization of 1,000 to 2,000.

5,662,998

OVEN PRETREATMENT AND CLEANING FILM CONTAINING SILICONE

David R. Harry, Jr., Oak Ridge, N.C., assignor to Kay Chemical Company, Greensboro, N.C.

Division of Ser. No. 339,258, Nov. 10, 1994, Pat. No. 5,480,493, which is a division of Ser. No. 41,227, Mar. 31, 1993, Pat. No. 5,389,138. This application Jun. 7, 1995, Ser. No. 475,643

Int. Cl.[6] B29C *33/64;* **B32B** *9/04*

U.S. Cl. 428—332 **5 Claims**

1. A continuous film adhered to a surface which is liable to soiling by organic food deposits, said film having been dried and consisting essentially of:

a. a food-safe, inorganic thickening agent, which thickening agent is present in an amount sufficient so that, during application to the surface, the film forms a continuous coating adhered to all desired portions of the surface;

b. an alkaline, food-safe, water-soluble inorganic salt in an amount sufficient so that the film is readily removable with water or an aqueous solution after the film has been dried and soiled; and

c. A food-safe silicone polymer of the formula I

$$(CH_3)_3SiO\{SiO(CH_3)_2\}_nSi(CH_3)_3 \qquad (I)$$

wherein n represents the number of repeating units needed to give the overall silicone polymer a minimum viscosity of 350 centistokes, which is present in an amount sufficient so that the film is transparent or trahslucent after it adheres to the surface, dries, and is heated; and optionally

d. a food-safe mineral oil, wherein, when said food-safe mineral oil is included in said film, said mineral oil and said silicone polymer are present in a combined amount sufficient so that the film is transparent or translucent after drying and heating.

5,662,999

MOLD AND METHOD OF MANUFACTURING THE SAME

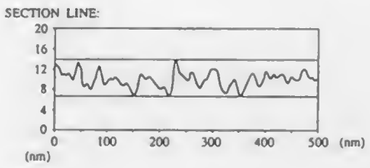
Yasushi Taniguchi, Kawasaki; Tetsuo Kuwabara, Urawa, and Masaaki Yokota, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 336,106

Claims priority, application Japan, Nov. 15, 1993, 5-284721

Int. Cl.[6] C03C *23/00;* **B30B** *15/00*

U.S. Cl. 428—408 **19 Claims**



1. A mold comprising: a matrix, a molding surface of said mold and a carbon film on said molding surface of said mold, said carbon film having a thickness from 1 to 100 nm and being formed so that a plurality of projections having an average height ranging from 0.5 to 30 nm are serially arranged on said molding surface at an average pitch ranging from 5 to 30 nm.

5,663,000

HARD MULTILAYER FILM FORMED MATERIAL OF TITANIUM AND CARBON/SILICON

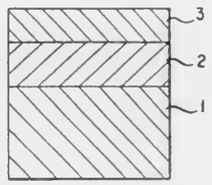
Minoru Yamada, Kurobe, and Shingo Kawamura, Toyama-ken, both of Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 90,924

Claims priority, application Japan, Jul. 31, 1992, 4-205042

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—457 **8 Claims**



1. A hard multilayer film coated material, which comprises a substrate and a multilayer film including a hard wear-resistant layer of titanium-containing compound selected from the group consisting of TiN and TiC and coated on a surface of said substrate and a carbon layer containing silicon in a concentration in the range of about 20 to about 40 atomic percent.

5,663,001

ALUMINUM SURFACES

Marcus Textor, Schaffhausen; Roman Fuchs, Neuhausen, both of Switzerland; Volkmar Gillich, Jestetten, and Erich Simon, Singen, both of Germany, assignors to Alusuisse Technology & Management Ltd., Neuhausen Am Rheinfall, Switzerland

Division of Ser. No. 351,719, Dec. 8, 1994, abandoned, which is a division of Ser. No. 44,451, Apr. 9, 1993, Pat. No. 5,403,657, which is a continuation of Ser. No. 812,750, Dec. 23, 1991, abandoned. This application Mar. 25, 1996, Ser. No. 623,893

Claims priority, application Switzerland, Jan. 11, 1991, 0068/91

Int. Cl.[6] B32B *15/04;* **G02B** *5/08*

U.S. Cl. 428—469 **5 Claims**

1. Articles of aluminum which comprises at least a part of at least one unanodized surface suitable for the deposition of at least two layers from the gas phase thereon, wherein the unanodized surface has a peak-to-valley height Ra of from 0.001 to 1 micron, and wherein said unanodized surface is selected from the group consisting of (1) refined aluminum with a degree of purity equal to or greater than 98.3% by weight aluminum and (2) aluminum alloys with at least one of the elements from the series Si, Mg, Mn, Cu, Zn, Fe, a ceramic adhesive layer deposited on said unanodized surface, and at least one reflecting layer deposited on said adhesive layer, said layers being deposited from the gas phase for the reflection of radiation with wavelengths in the optical range, said reflecting layer being selected from the group consisting of aluminum, silver, gold, copper and alloys containing at least one of said elements.

5,663,002

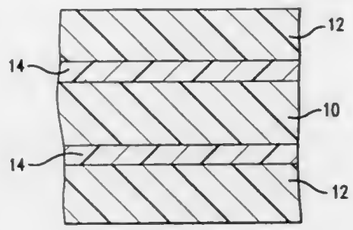
ORIENTED FILM WITH IMPROVED HEAT SEALABILITY

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Feb. 23, 1995, Ser. No. 392,590

Int. Cl.[6] B32B *27/06;27/08;27/30;27/34*

U.S. Cl. 428—475.8 **11 Claims**



1. A multilayer film comprising:

(a) a core layer; and

(b) two outer layers each comprising a blend of

a first styrene butadiene copolymer having a butadiene content of 50 weight percent or more; and

a second styrene butadiene copolymer having a butadiene content of 50 weight percent or less,

wherein, the total butadiene content of said blend ranges from about 30 weight percent to about 50 weight percent.

5,663,003

(METH)ACRYLATED, AROMATIC POLYESTER/HIGHLY ETHOXYLATED (METH)ACRYLATE BLEND FLOOR COVERING WEAR LAYER

Wendell A. Ehrhart, Red Lion, and Songvit Setthachayanon, Elizabethtown, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation of Ser. No. 418,873, Apr. 6, 1995, Pat. No. 5,543,232, which is a continuation of Ser. No. 223,760, Apr. 6, 1994, abandoned. This application May 10, 1996, Ser. No. 644,207

Int. Cl.[6] B32B *27/36*

U.S. Cl. 428—482 **4 Claims**

1. A floor covering comprising a wear layer, the wear layer being the product resulting from the curing of a composition including a blend which results from the combination of the following constituents (1) a resin composition comprising a (meth)acrylated polyester, the polyester being the reaction product of a diol and an aromatic polycarboxylic acid or anhydride, the diol being in excess of the aromatic polycarboxylic acid or arthydride on an equivalent basis, the reaction product of the diol and the acid or arthydride being (meth)acrylated and (2) an ethoxylated triacrylate having the formula

$$CH_3-CH_2C\left[CH_2-O\left(CH_2-CH_2-O\right)_n\overset{O}{\overset{\|}{C}}-CH=CH_2\right]_3$$

where n is 1 to 7.

5,663,004

RECORDING SHEETS CONTAINING MILDEW PREVENTING AGENTS

Shadi L. Malhotra, Mississauga; Brent S. Bryant, Milton, and Arthur Y. Jones, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, N.Y.

Filed Feb. 15, 1994, Ser. No. 196,605

Int. Cl.[6] B41M *5/00;* **B41J** *2/01*

U.S. Cl. 428—500 **20 Claims**

1. A recording sheet which comprises a substrate and an image receiving coating situated on at least one surface of the substrate, said entire image receiving coating containing a biocide which is 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one, 2-(thiocyanomethylthio) benzothiazole, bis (trichloromethyl) sulfone, N-hydroxymethyl-N-methyl dithiocarbamate salts, 2-mercapto benzothiazole salts, mixtures thereof, or a mixture containing a quaternary ammonium salt and one or more of 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one, 2-(thiocyanomethylthio) benzothiazole, bis (trichloromethyl) sulfone, N-hydroxymethyl-N-methyl dithiocarbamate salts, or 2-mercapto benzothiazole salts, wherein the image receiving coating further comprises a quaternary acrylic copolymer latex.

5,663,005

SELF-SUPPORTING OR SUPPORTED PHOSPHOR SCREEN OR PANEL

Philip Dooms, Edegem; Marc Van Damme, Heverlee, and Frank Louwet, Diepenbeek, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 29, 1996, Ser. No. 688,097

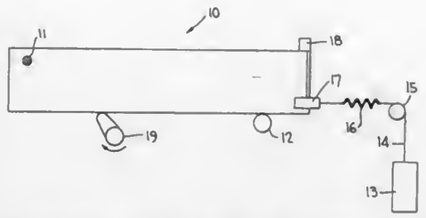
Claims priority, application European Pat. Off., Aug. 8, 1995, 95202159

Int. Cl.[6] B32B *5/16;* **C09K** *11/02*

U.S. Cl. 428—690 **10 Claims**

1. A screen, comprising a self-supportin or supported phosphor layer with phosphor particles (PP) dispersed in a polymeric binder (B), said phosphor particles (PP) being present in said binder (B) in a volume ratio PP/B of at least 80/20 characterized in that

(i) said polymeric binder comprises at least one polymer (P) having a $T_g \leqq 0°$ C.,



(ii) said polymer (P) has an average molecular weight (MG_{avR}) between 5000 and 10^7,

(iii) said polymer (P) is soluble in ethylacetate for at least 5% by weight (% wt/wt) and (iv) a self-supporting layer of said polymer P, comprising 82% by volume of phosphor particles and having a thickness so as to comprise 100 mg of phosphor particles per cm^2, has an elongation at break of at least 1%.

5,663,006

CORROSION-RESISTANT MAGNETIC FILM AND MAGNETIC HEAD USING THE SAME

Hitoshi Nakamura, Hachioji, and Shigekazu Otomo, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,715

Claims priority, application Japan, Aug. 3, 1992, 4-206435

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 R **29 Claims**

1. A corrosion resistant ferromagnetic film made of an alloy of FeMQC-R having crystal grains of Fe, wherein M is at least one element selected from the group consisting of Hf, Zr, Ta, Nb, W, Ti, Mo and V; Q is at least one element selected from the group consisting of Cr, Rh and Ru; and R is at least one rare earth element, said M being contained in the concentration of 0.5 to 20 atomic %, said Q being contained in a concentration of 0.5 to 12 atomic %, said C being contained in a concentration of 2 0 to 20 atomic %, said R being contained in a concentration of 0.5 to 10 atomic %, and Fe being contained in a remaining concentration, with a total concentration of Fe, M, Q, C and R being 100 atomic %.

5,663,007

SEALED STORAGE BATTERY AND METHOD FOR MANUFACTURING THE SAME

Munehisa Ikoma, Shiki-gun; Akinori Yokota, Moriguchi; Shinji Hamada, Hirakata; Hiromu Matsuda, Kawabe-gun, and Kanji Takata, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 290,167, Aug. 15, 1994, Pat. No. 5,510,203. This application Jun. 19, 1995, Ser. No. 491,650

Claims priority, application Japan, Feb. 23, 1994, 6-025460; Jul. 11, 1994, 6-158597

Int. Cl.[6] H01M *2/02*

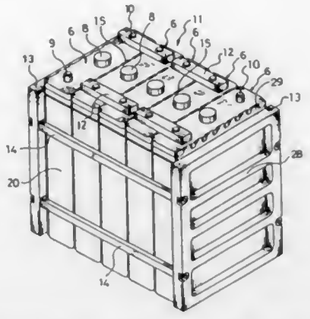
U.S. Cl. 429—53 **8 Claims**

1. A sealed storage battery comprising a plurality of abutting cells, each cell having:

a casing including opposing substantially parallel outer side faces and an open top, each outer side face for facing an outer side face of an abutting cell, the casing being constructed from a synthetic resin;

an electrode group and an electrolyte residing within the housing;

a plurality of longitudinally extending ribs arranged substantially in parallel with each other on each outer side face of the casing, the ribs forming longitudinally extending cooling medium channels therebetween on each outer side face of the casing; and



a lid constructed from a synthetic resin, the lid being sealingly welded to the top of the casing at a welding juncture at the outer side faces, the lid sealingly enclosing the electrode group and the electrolyte within the casing, the welding juncture at each outer side face being substantially flat with respect to the outer side face, whereby a cooling medium passing along the cooling medium channels on the outer side faces of the casing is substantially unrestricted at the welding juncture.

5,663,008

MODULE BATTERY OF SEALED ALKALINE STORAGE BATTERY

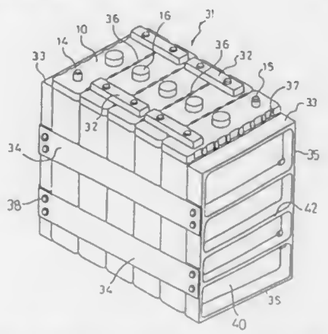
Shinichi Shimakawa, Moriguchi; Shinji Hamada, Hirakata; Hiromu Matsuda, Kawabe-gun; Manabu Kakino, Uji, and Munehisa Ikoma, Shiki-gun, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Mar. 12, 1996, Ser. No. 614,436

Claims priority, application Japan, Mar. 14, 1995, 7-054801

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—53 **10 Claims**



1. A module battery of a sealed alkaline storage battery comprising:

a cell group including a plurality of cells stacked in the same direction as a lamination direction of electrodes thereof, the power generation elements of the cells being contained in a rectangular battery casing formed of a synthetic resin sealed with a lid having a safety valve;

an end plate disposed at each end surface in the stacking direction of said cell group; and

band-like binding members for coupling said end plates to each other and binding said cell group in the stacking direction,

wherein each end plate includes a rectangular flat plate portion and a rectangular frame portion extending outwardly from four side edges of said flat plate portion in a continuous manner, said binding members being connected to said rectangular frame portion of each of said end plates.

5,663,009

COVERING ELEMENT FOR THE CONNECTORS CONNECTING THE POLES OF THE ELEMENTS FORMING ELECTRIC ACCUMULATORS

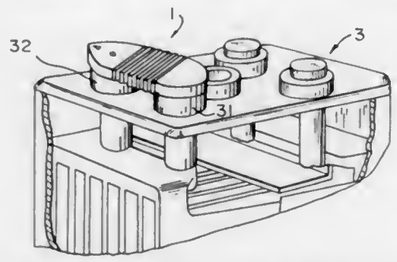
Olimpio Stocchiero, via Kennedy, 5 - 36050 Montorso Vicentino (VI), Italy

Filed Jul. 23, 1996, Ser. No. 681,571

Claims priority, application Italy, Dec. 9, 1994, VI94A0178

Int. Cl.[6] H01M *2/20*

U.S. Cl. 429—65 **14 Claims**



1. A cover for connectors of various lengths adapted to couple adjacent positive and negative poles of an electric accumulator comprising:

an elongated hollow body having opposite ends and formed with an opening in a major side for receiving such connector therein, said elongated hollow body being otherwise closed and formed with an elastically flexible central portion comprising a bellows allowing axial variation in the length of said cover between the opposite ends whenever the cover is strained by an axial force, said variation in length for allowing the cover to extend over coupling elements of differing lengths.

5,663,010

DEVICE TO EXHAUST THE FUMES PRODUCED INSIDE ACCUMULATOR BATTERIES

Olimpio Stocchiero, via Kennedy 5-36050 Montorso, Vicentino (VI), Italy

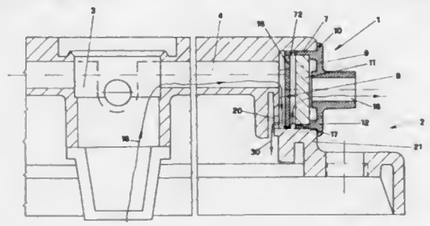
PCT No. PCT/EP94/03907, § 371 Date Apr. 23, 1996, § 102(e) Date Apr. 23, 1996, PCT Pub. No. WO95/15585, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 25, 1994, Ser. No. 602,815

Claims priority, application Italy, Nov. 30, 1993, VI93A0190

Int. Cl.[6] H01M *2/12*

U.S. Cl. 429—86 **11 Claims**



1. A device for exhausting fumes formed within the lid of an accumulator comprising:

a chamber formed in the accumulator lid having inlet opening and an outlet opening, said lid having an exhaust duct in communication with one side of the chamber through the inlet opening and on the opposite side of the chamber communicating with the outside environment through the outlet opening;

a removable cap having a central through opening located in the outlet opening of the chamber, including an annular support having a free marginal edge extending into the chamber and projecting elements extending inwardly of the chamber from the free marginal edge of said annular support;

a gas permeable explosion-proof disc located in the annular support; and

a condensing disc located in the chamber in spaced relation with the explosion-proof disc, said condensing disc having a diameter smaller than the annular support forming an annular space therebetween and having an edge portion for engaging the projecting elements for supporting the condensing disc in said spaced relation and being in communication with the exhaust duct forming a pre-chamber between the condensing disc and the inlet opening, said pre-chamber for collecting condensed electrolyte vapors from the accumulator and said annular space allowing gas to pass to the explosion-proof disc for passage therethrough.

5,663,011

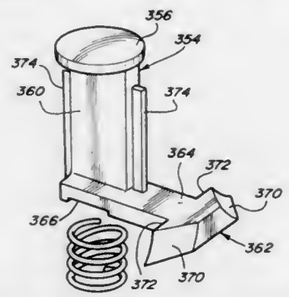
BATTERY PACK RETAINING LATCH FOR CORDLESS DEVICE

Roderick F. Bunyea, Westminster; Alfred H. Judge, Millersville; Alvydas P. Karasa, Fallston; Philip T. Miller, Lutherville; Allen P. Smith, and Thomas J. Wheeler, both of Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation-in-part of Ser. No. 289,158, Aug. 11, 1994, abandoned. This application Jul. 27, 1995, Ser. No. 479,586

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—97 **30 Claims**



1. A retention latch adapted to be positioned within a device for retaining a battery, said retention latch comprising:

an overall L-shaped retaining member adapted for engaging with the battery;

a release member integral with said retaining member, said release member adapted to be activated to move said retaining member to a release position to enable the battery to be removed from the device; and

biasing means for positioning said retaining member within said device and for returning said retaining member to a normally engaged position upon deactivation of said release member, said biasing means coupled with said retaining member.

5,663,012

APPARATUS FOR GANG-CONNECTING BATTERIES

John K. Shannon, and James M. Shannon, both of Racine, Wis., assignors to Enersafe Corporation, Racine, Wis.

Filed Mar. 8, 1995, Ser. No. 400,711

Int. Cl.[6] H01M *2/20;* **H01R** *11/00*

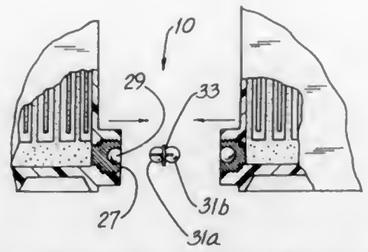
U.S. Cl. 429—121 **6 Claims**

1. A battery connection apparatus including:

a terminal member on a battery;

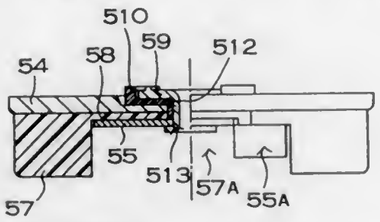
a connector member coupled to the terminal member, and wherein:

the connector member and the terminal member extend along an axis;



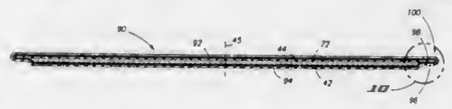
the connector member has plural grooves angularly oriented to one another and dividing such connector member into plural finger members;
the finger members are urged radially outwardly from the axis in at least three different directions;
the connector member has an interior region;
the finger members are urged radially outwardly by a resilient core in the region;
when separated from one another, the terminal member and the connector member are conformably-shaped; and
when the terminal member and the connector member are coupled to one another, the connector member is resiliently snap-fitted to the terminal member.

5,663,013
BATTERY WITH A SPACER BETWEEN THE ELECTRODE GROUP AND THE COVER
Satoshi Narukawa, Sumoto; Toru Amazutsumi, Tsuna-gun; Hideki Fukuda, and Yasuhiro Yamauchi, both of Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed May 30, 1996, Ser. No. 657,936
Claims priority, application Japan, May 31, 1995, 7-134104
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—164 **19 Claims**



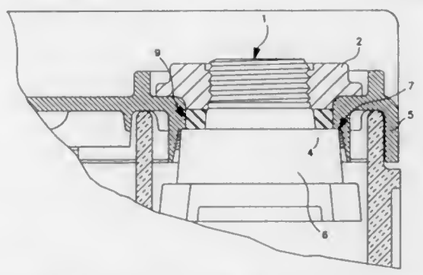
1. A battery comprising:
a case having a first end and a second end, said first end being an open end;
an electrode group mounted in said case;
a cover fixed to and blocking said open first end of said case, said cover having an inner face and an outer face;
an electrically conductive battery electrode fixed to and insulated from said cover, said battery electrode being exposed at least partially to an outside of said case;
an electrically conductive cover tab mounted to said inner face of said cover and being electrically connected to said battery electrode;
an insulator member interposed between said cover tab and said cover such that said cover tab and said cover are electrically insulated from one another;
an electrically insulative spacer member interposed between said cover and said electrode group so as to prevent said electrode group from shifting position in said case;
wherein said spacer member and said insulator member are formed as a single body; and
wherein said spacer member has a connection opening through which said cover tab is accessible when said cover and said spacer member are mounted on said electrode group and said spacer member is directly contacted against said electrode group but before said electrode group, said cover and said spacer member are inserted into said case, to thereby allow said cover tab to be welded, through said connection opening, to said electrode group.

5,663,014
THIN PROFILE BATTERY WITH IMPROVED SEPARATOR AND GASKET CONSTRUCTION
Peter M. Blonsky, and Mark E. Tuttle, both of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.
Continuation of Ser. No. 205,611, Mar. 2, 1994, Pat. No. 5,547,781. This application Jun. 4, 1996, Ser. No. 659,137
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—175 **11 Claims**



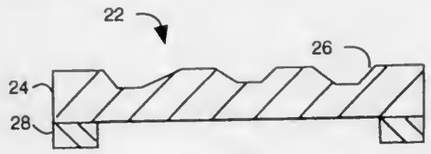
1. A button-type battery comprising:
a first terminal housing member, and a second terminal housing member; and
wherein the entirety of at least one of the first and second terminal housing members is substantially planar.

5,663,015
SEALANT GASKETING PLASTIC NUT BATTERY TERMINAL SEAL
John Willard Hooke, and Mary Jo Elwing, both of Warrensburg, Mo., assignors to Hawker Energy Products, Inc., Warrensburg, Mo.
Filed Oct. 18, 1995, Ser. No. 544,813
Int. Cl.[6] H01M 2/30
U.S. Cl. 429—181 **26 Claims**



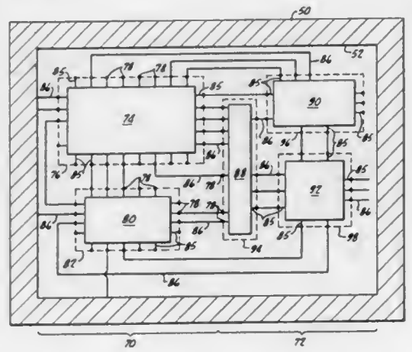
1. A method of making a terminal seal comprising:
coating with gasketing material a terminal having a top portion, a bottom portion and axially disposed external threading on said top portion, an inner top having a bottom surface, a top surface, at least one side and a portion defining an orifice sized to receive said terminal and a fastener having a portion defining a fastener orifice with internal threading axially disposed on said portion defining said fastener orifice sized to matingly receive said terminal;
inserting said terminal coated with said gasketing material through said top orifice from said bottom surface of said inner top;
placing said fastener onto said terminal top portion with said internal and external threading matingly aligned;
torquing said fastener onto said terminal to releasably secure said terminal and to compress said gasketing material while in an uncured state; and
restricting radial and axial travel of said gasketing material with the combination of said terminal, said fastener and said inner top.

5,663,016
ALL-POLYMERIC PHASE SHIFT MASKS
Gilbert H. Hong, 12820 Alta Tierra, Los Altos Hills, Calif. 94022
Division of Ser. No. 207,878, Mar. 8, 1994, Pat. No. 5,468,324. This application Jun. 2, 1995, Ser. No. 456,663
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **3 Claims**



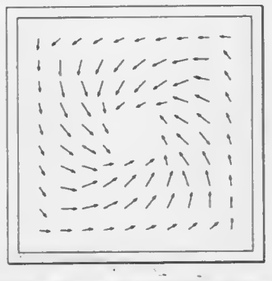
1. An all-polymeric phase shift mask having one or more layers of image-featured polymeric material made by a process comprising the steps of:
preparing a liquid solution of polymers;
spinning-on said solution onto a rotating mask;
drying said solution on said rotating mask; and
peeling-off a hardened and unsupported polymer thin film formed from a drying of said solution on said rotating mask.

5,663,017
OPTICAL CORRECTIVE TECHNIQUES WITH RETICLE FORMATION AND RETICLE STITCHING TO PROVIDE DESIGN FLEXIBILITY
Richard Schinella, Saratoga, and Keith Chao, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.
Filed Jun. 7, 1995, Ser. No. 477,827
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **25 Claims**



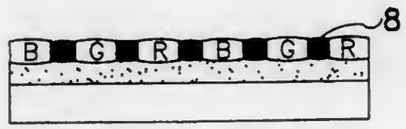
1. A method for forming an integrated circuit comprising:
forming a first reticle set using optical proximity correction techniques for a standard portion of an integrated circuit;
forming a second reticle set using conventional photolithographic techniques for a custom portion of the integrated circuit;
transferring said first reticle set and said second reticle set to a substrate; and
interconnecting lines of said standard portion and said custom portion to form said integrated circuit.

5,663,018
PATTERN WRITING METHOD DURING X-RAY MASK FABRICATION
Kevin D. Cummings, Phoenix; William A. Johnson, Paradise Valley, both of Ariz., and Daniel L. Laird, Madison, Wis., assignors to Motorola, Schaumburg, Ill.
Filed May 28, 1996, Ser. No. 654,457
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **16 Claims**



1. A pattern writing method for membrane structure fabrication comprising the steps of:
forming a membrane structure; and
forming a material system on the membrane structure including the steps of providing a layer of material with internal stresses, the internal stresses being altered by exposure of the material to radiation to produce altered internal stresses in exposed areas, and exposing the layer of material to radiation to define a pattern, the exposing being performed in associated areas such that the internal stresses within the layer of material and altered internal stresses in the associated areas are substantially offset to reduce distortion in the material system and in the membrane structure.

5,663,019
PROCESS FOR PRODUCING MULTICOLOR DISPLAY
Akira Matsumura, Hirakata; Masashi Ohata, Neyagawa; Atsushi Kawakami, Suita, and Katsukiyo Ishikawa, Kuze-gun, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
PCT No. PCT/JP92/00079, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO92/14172, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 29, 1992, Ser. No. 930,514
Claims priority, application Japan, Feb. 1, 1991, 3-012018
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—7 **4 Claims**



1. A process for producing a multicolor display which consists essentially of the following steps:
(a) a step for forming a transparent electroconductive layer on a transparent substrate;
(b) a step for forming a layer of a positive photosensitive resin composition comprising a polymer having a branched group which is unstable to an acid of a tert-butyl ester of a carboxylic acid or a tert-butyl carbonate of a phenol, and a photoinitiator which forms an acid upon exposure, on the transparent electroconductive layer;
(c) a step for placing a mask having a pattern on the photosensitive resin layer followed by exposure and development to expose part of the transparent electroconductive layer;

(d) a step for forming a colored layer on the exposed transparent electroconductive layer; and

(e) a step for repeating the steps (c) and (d) such that a multi-color display is formed; and

wherein a black matrix is present between a gap of colored patterns.

5,663,020

DISPLAY APPARATUS HAVING A TWO-TERMINAL DEVICE INCLUDING A ZINC SULFIDE LAYER AND A METHOD FOR PRODUCING THE SAME

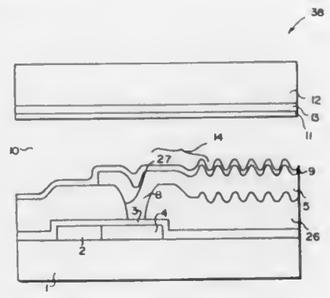
Satoshi Yamaue, Tenri; Masahiro Adachi, Nara; Hiroshi Morimoto, Kitakatsuragi-gun; Masaru Yoshida, Ikoma-gun, and Yasuyoshi Kaise, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 191,198, Feb. 2, 1994. This application May 30, 1995, Ser. No. 453,360

Claims priority, application Japan, Feb. 3, 1993, 5-16568; Sep. 16, 1993, 5-230579; Dec. 15, 1993, 5-315620

Int. Cl.[6] G09K *19/00;* G02F *1/1343*

U.S. Cl. 430—20 19 Claims



1. In a method for producing a liquid crystal display apparatus including a two-terminal element, the steps comprising:

step (a) of forming a first conductive layer on an insulating substrate;

step (b) of patterning the conductive layer into a specified pattern so as to form a scanning line having a first electrode;

step (c) of forming a zinc sulfide layer entirely on the substrate to cover the scanning line, including step (c1) of determining the thickness and the composition of the zinc sulfide layer in order to control the I–V characteristic thereof which includes steepness, symmetry and continuity, the continuity being expressed by a continuous curve of the I–V characteristic;

step (d) of forming a second electrode on the zinc sulfide layer, the second electrode being superimposed over at least a portion of the first electrode;

step (e) of forming a pixel electrode on the zinc sulfide layer in such a pattern as to be electrically connected to the second electrode,

wherein the two-terminal element includes the first electrode, the zinc sulfide layer, and the second electrode.

5,663,021

FILM FOR ELECTROPHOTOGRAPHIC TRANSFER, COLOR TONER, AND METHOD OF COLOR IMAGE FORMATION

Kiyoshi Hosoi; Tsukasa Matsuda, both of Ebina; Masanori Ichimura, Minami-ashigara; Yuka Ishihara, Minami-ashigara, and Takashi Sakai, Minami-ashigara, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 657,093

Claims priority, application Japan, Jun. 6, 1995, 7-139284

Int. Cl.[6] G03G *13/16*

U.S. Cl. 430—47 8 Claims

1. A developed electrophotographic transfer film comprising a color toner having a binder resin fused to an electrophotographic transfer film, wherein the electrophotographic transfer film comprises a transparent plastic film having a heat resistance temperature of 100° C. or higher, having provided on at least one side thereof a transparent resin layer comprising a polyester transparent resin, wherein a peak count value (A) of a molecular weight distribution of said transparent resin as measured by gel-permeation chromatography (GPC) and a peak count value (B) of the binder resin of the color toner used for fixing as measured by GPC satisfy relationship (1):

$$-30 \leq A-B \leq +20 \quad (1)$$

an initial count value in the GPC molecular weight measurement of said transparent resin (Cp) and an initial count value in the GPC molecular weight measurement of the binder resin of the color toner used for fixing (Ct) satisfy relationship (2):

$$-500 \leq Cp-Ct \leq -200 \quad (2)$$

said transparent resin layer has a thickness ranging from 1 to 8 μm, and said transparent resin layer forms a contact angle of not more than 50° with the color toner binder resin, the transparent resin layer and the color toner binder resin being dissolved in one another.

5,663,022

RECORDING SHEETS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 196,927, Feb. 15, 1994, Pat. No. 5,451,466, and a continuation-in-part of Ser. No. 33,932, Mar. 19, 1993, Pat. No. 5,302,439. This application May 22, 1995, Ser. No. 445,825

Int. Cl.[6] G03G *13/06*

U.S. Cl. 430—97 26 Claims

1. A process for generating images which comprises (1) generating an electrostatic latent image on an imaging member in an imaging apparatus; (2) developing the latent image with a toner which comprises a colorant and a resin selected from the group consisting of (A) copolymers of styrene and at least one other monomer; (B) copolymers of acrylic monomers and at least one other monomer; and (C) mixtures thereof; and (3) transferring the developed image to a recording sheet which comprises (a) a substrate; (b) a coating on the substrate which comprises (i) a polymeric binder selected from the group consisting of (A) copolymers of styrene and at least one other monomer; (B) copolymers of acrylic monomers and at least one other monomer; and (C) mixtures thereof; and (ii) an additive having a melting point of less than about 65° C. and a boiling point of more than about 150° C. and selected from the group consisting of (A) diphenyl compounds; (B) phenyl alkanes; (C) indan compounds; (D) benzene derivatives; (E) benzyl alcohols; (F) phenyl alcohols; (G) menthol; (H) aromatic amines; (I) aliphatic amines; (J) aldehydes; (K) aldehyde derivatives; and (L) mixtures thereof; (c) an optional filler; (d) an optional antistatic agent; and (e) an optional biocide.

5,663,023

SIMULATED PHOTOGRAPHIC-QUALITY PRINTS USING A TRANSPARENT SUBSTRATE CONTAINING A WRONG READING IMAGE AND A BACKING SHEET CONTAINING A RIGHT READING IMAGE OF THE SAME INFORMATION

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 583,913

Int. Cl.[6] G03G *15/22*

U.S. Cl. 430—97 21 Claims

1. A method of creating simulated photographic-quality prints using non-photographic imaging, including the steps of:

providing a coated transparent substrate having a wrong reading formed thereon using a non-photographic imaging process;

providing a coated substrate having a right reading image formed thereon using a non-photographic imaging process, said right reading image containing the same information as the wrong reading image; and

adhering said substrates to each other at a temperature of about 140° C. and a pressure of about 100 psi with said wrong and right reading images in a superimposed relationship.

5,663,024

LIQUID TONERS WITH HYDROCARBON SOLVENTS

Terrance P. Smith, Woodbury; S. Prabhakara Rao, Maplewood, and David W. Macomber, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 314,952, Sep. 29, 1994, Pat. No. 5,521,271. This application Nov. 1, 1996, Ser. No. 742,328

Int. Cl.[6] G03G *13/22*

U.S. Cl. 430—97 13 Claims

1. A method of forming an image comprising the steps of:

(1) providing a dielectric medium having at least one region of electrostatic charge on the surface thereof,

(2) intimately contacting said dielectric medium with a liquid toner comprising a hydrocarbon carrier liquid and having suspended therein charged particles of a polymeric dye, said polymeric dye comprising a polymeric moiety, a chromophore moiety, a surface release-promoting moiety, and an optional charge-directing chelating moiety, said polymeric moiety comprising macromeric segment(s) that render said polymeric dye dispersible in a hydrocarbon solvent,

thereby depositing said toner on said dielectric medium in a pattern corresponding to the surface charge on said dielectric medium.

5,663,025

MAGENTA TONER AND DEVELOPER COMPOSITIONS

Roger N. Ciccarelli, Rochester; Thomas R. Pickering, Webster, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 332,313

Int. Cl.[6] G03G *9/09;13/16;9/097*

U.S. Cl. 430—106 25 Claims

1. A toner composition consisting essentially of resin particles, first magenta pigment particles of a molybdate silicate salt of rhodamine, second magenta pigment particles of a 2,9-dimethylquinacridone, and a negative charge enhancing additive; and wherein the first pigment is present in an amount of from about 0.5 to about 1.2 weight percent, and the second pigment is present in an amount of from about 1.5 to about 10.2 weight percent.

5,663,026

MAGNETIC TONER, PROCESS CARTRIDGE AND IMAGE FORMING METHOD

Takashige Kasuya, Sohka; Hiroyuki Suematsu; Koichi Tomiyama, both of Yokohama; Hiroshi Yusa, Machida; Takakuni Kobori, Kawasaki, and Masaichiro Katada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 534,922, Sep. 28, 1995, abandoned, which is a continuation of Ser. No. 321,040, Oct. 6, 1994, abandoned. This application Mar. 20, 1996, Ser. No. 619,873

Claims priority, application Japan, Oct. 8, 1993, 5-275928

Int. Cl.[6] G03G *9/09;9/083;15/09*

U.S. Cl. 430—106 29 Claims

1. A magnetic toner comprising magnetic toner particles containing a binder resin and magnetic iron oxide particles; wherein

the magnetic toner has a weight-average particle size of at most 13.5 μm;

the magnetic toner has a particle size distribution such that magnetic toner particles having a particle size of at least 12.7 μm are contained in an amount of at most 50 wt. %;

the magnetic iron oxide particles have a silicon content of 0.4–2.0 wt. % based on iron;

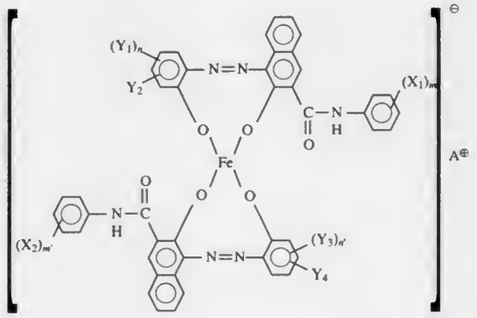
the magnetic iron oxide particles have an Fe/Si atomic ratio of 1.2–2.8 at the utmost surfaces thereof;

the magnetic iron oxide particles have a smoothness of 0.45–0.7; and

the magnetic iron oxide particles have an aluminum content from 0 to 0.8 wt. % based on iron.

20. The magnetic toner according to claim 1, wherein the magnetic iron oxide particles further contain a negative charge control agent.

21. The magnetic toner according to claim 20, wherein the magnetic charge control agent is a monoazo iron complex salt represented by the following formula:



wherein

X_1 and X_2 independently are hydrogen, lower alkyl, lower alkoxy, nitro or halogen;

m and m' independently are an integer of 1–3;

Y_1 and Y_3 independently denote hydrogen, C_1–C_{18} alkyl, C_2–C_{18} alkenyl, sulfonamide, mesyl, sulfonic acid, carboxy ester, hydroxy, C_1–C_{18} alkoxy, C_2–C_{18} acetylamino, benzoyl, amino or halogen;

n and n' independently are an integer of 1–3;

Y_2 and Y_4 independently are hydrogen or nitro;

$A^{\oplus}$ denotes H^+, Na^+, K^+ or NH_4^+.

5,663,027
TWO-COMPONENT DEVELOPER COMPRISING SPECIFIC MAGNETIC TONER AND SPECIFIC MAGNETIC CARRIER

Toshitaro Kohri, Higashiosaka; Akihiro Nakamura, Toyonaka, and Yoshimasa Nishihara, Amagasaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 118,284, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 891,926, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 634,395, Dec. 27, 1990, abandoned. This application Oct. 18, 1994, Ser. No. 324,532

Claims priority, application Japan, Dec. 28, 1989, 1-339951; Dec. 28, 1989, 1-339952

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 **28 Claims**

1. A two-component developer for developing electrostatic latent images comprising;

carrier particles having a mean particle size of 42–90 μm and comprising a binder resin and 350–900 parts by weight of magnetic particles on the basis of 100 parts by weight of the binder resin, the magnetic particles which are dispersed in the binder resin, the magnetic particles being $(MO)_xFe_2O_3$ in which M is a metal atom selected from the group consisting of Mg, Co, Ni, Cu, Zn and Mn, and X is an integer of 1, 2 or 3, and

toner particles having a mean particle size of 3–20 μm and comprising at least a binder resin, a colorant and 0.5–10 parts by weight of magnetic particles on the basis of 100 parts by weight of the binder resin, the magnetic particles being selected from the group consisting of ferrite particles and magnetite particles, and the ferrite particles being $(MO)_xFe_2O_3$ in which M is a metal atom selected from the group consisting of Mg, Co, Ni, Cu, Zn and Mn, and X is an integer of 1, 2 or 3;

the ratio (a/b) of the content (a) of the magnetic particles on the basis of 100 parts by weight of the binder resin in the carrier particles to content (b) of the magnetic particles on the basis of 100 parts by weight of the binder resin in the toner particles being in the range between 30–1800.

5,663,028
ELECTROSTATIC TONERS CONTAINING AMINODIACETIC ACID DERIVATIVES

Alfred Oftring, Bad Durkheim; Juergen Schneider, Freinsheim; Rainer Dyllick-Brenzinger, Weinheim, and Karin Heldrun Beck, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02635, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO95/05624, PCT Pub. Date Feb. 23, 1995

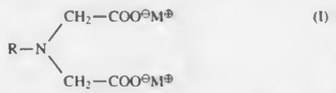
PCT Filed Aug. 9, 1994, Ser. No. 513,801

Claims priority, application Germany, Aug. 13, 1993, 43 27 179.0

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **20 Claims**

1. An electrostatic toner, comprising a polymeric binder and, as a charge stabilizer, a compound of the formula (I):



(I)

wherein:

$M^{\oplus}$ is one equivalent of a cation and R is C_1–C_{21} alkyl, which is unsubstituted or substituted by:

(i) carboxyl, or

(ii) phenyl, which is unsubstituted or substituted by: C_1–C_{10} alkyl, hydroxyl or a radical of the formula $L—N(CH_2—COO^{\ominus}M^{\oplus})_2$,

where L is C_1–C_4-alkylene and $M^{\oplus}$ has the above-mentioned meaning, and

R is uninterrupted or interrupted by from 1 to 4 ether oxygen atoms, from 1 to 4 imino or C_1–C_4-alkyl imino groups or a radial of the formula $N—CH_2—COO^{\ominus}M^{\oplus}$, where $M^{\oplus}$ has the above mentioned meaning, or R is phenyl, which is unsubstituted or substituted by carboxyl, with the proviso that, when R is alkyl, which has one or more heteroatoms, at least 5 carbon atoms in the interrupted alkyl chain are present in R.

5,663,029
ELECTROSTATIC IMAGING PROCESS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 24, 1996, Ser. No. 590,660

Int. Cl.[6] G03G *13/16*

U.S. Cl. 430—126 **25 Claims**

1. A process for generating images which comprises (1) generating an electrostatic latent image on an imaging member in an imaging apparatus; (2) developing the latent image; and (3) transferring the developed image to a recording sheet which comprises (a) a substrate; (b) a coating on the substrate which comprises (1) a binder selected from the group consisting of (A) polyesters; (B) polyvinyl acetals; (C) vinyl alcohol-vinyl acetal copolymers; (D) polycarbonates; and (E) mixtures thereof; and (2) an additive having a melting point of more than about 65° C. and a boiling point of more than about 150° C. and selected from the group consisting of (A) furan compounds; (B) pyrone and pyran compounds; (C) dioxane compounds; (D) aromatic anhydrides; (E) aromatic esters; (F) alkoxy compounds; (G) methylene dioxy compounds; (H) quinone compounds; and (I) mixtures thereof; (c) an optional filler; (d) an optional antistatic agent; and (e) an optional biocide.

5,663,030
ELECTROSTATIC IMAGING PROCESS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 24, 1996, Ser. No. 590,791

Int. Cl.[6] G03G *13/14;* **B41M** *5/00*

U.S. Cl. 430—126 **24 Claims**

1. A process for generating images which comprises (1) generating an electrostatic latent image on an imaging member in an imaging apparatus; (2) developing the latent image; and (3) transferring the developed image to a recording sheet which comprises (a) a substrate; (b) an image receiving coating which comprises (i) a polymeric binder selected from the group consisting of (A) copolymers of styrene and at least one other monomer; (B) copolymers of acrylic monomers and at least one other monomer; and (C) mixtures thereof; and (ii) an additive having a melting point of more than about 65° C. and a boiling point of more than about 150° C. and selected from the group consisting of (A) norbornane compounds; (B) phenyl compounds; and (C) mixtures thereof; (c) an optional filler; (d) an optional antistatic agent; and (e) an optional biocide.

5,663,031
DIAZO BASED IMAGING ELEMENT HAVING IMPROVED RESISTANCE AGAINST PHYSICAL DAMAGE

Guido Hauquier, Nijlen; Joan Vermeersch, Deinze; Eric Verschueren, Merksplas; Dirk Kokkelenberg, St. Niklaas, and Willem Cortens, Booischot, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jan. 29, 1996, Ser. No. 593,354

Claims priority, application European Pat. Off., Feb. 15, 1995, 95200360

Int. Cl.[6] G03F *7/11*

U.S. Cl. 430—159 **9 Claims**

1. An imaging element comprising on a support in the order given a coated composition of at least two hydrophilic layers being in water permeable contact with each other and each containing a hydrophilic (co)polymer or (co)polymer mixture and having been hardened with a hydrolysed tetraalkyl orthosilicate and a light sensitive layer containing a diazo resin or a diazonium salt characterized in that the ratio by weight in the top layer of said coated composition of said hydrophilic (co)polymer or (co)polymer mixture versus said hydrolysed tetraalkyl orthosilicate (expressed as silicon dioxide) is at least 1.1 and the ratio by weight in an underlying layer of said coated composition of said hydrophilic (co)polymer or (co)polymer mixture versus said hydrolysed tetraalkyl orthosilicate (expressed as silicon dioxide) is not higher than 0.9.

5,663,032
PHOTOSENSITIVE COMPOSITION CONTAINING PHOTOSENSITIVE AND HEAT DEVELOPABLE ELEMENT AND POLYMER ELEMENT AND IMAGE-FORMING METHOD UTILIZING THE SAME

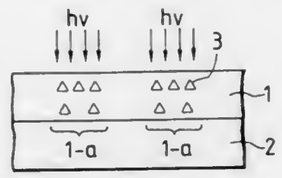
Tetsuro Fukui, Kawasaki; Masato Katayama, Yokohama; Kozo Arahara; Hiroshi Fukumoto, both of Kawasaki; Yoshio Takasu, Tama; Kenji Kagami; Akihiro Mouri, both of Atsugi; Kazuo Isaka, Tokyo, and Kyo Miura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, and Oriental Photo Industrial Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 912,576, Jul. 13, 1992, abandoned, which is a continuation of Ser. No. 532,128, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 302,270, Jan. 27, 1989, abandoned. This application Jan. 12, 1994, Ser. No. 180,460

Claims priority, application Japan, Jan. 29, 1988, 63-017155; Jan. 30, 1988, 63-018502; Jul. 25, 1988, 63-183441; Oct. 7, 1988, 63-251958; Jan. 9, 1989, 1-001153

Int. Cl.[6] G03C *8/02*

U.S. Cl. 430—203 **25 Claims**

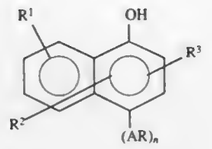


1. A photosensitive composition, comprising: (a) a photosensitive and heat-developable element, wherein said photosensitive and heat-developable element comprises:

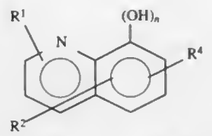
(i) an organic silver salt,

(ii) a photosensitive silver halide,

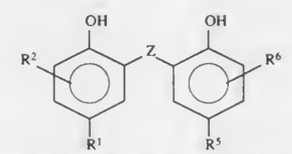
(iii) at least one compound selected from the group of compounds consisting of one of Formula (I), (II), and (III):



(I)



(II)



(III)

wherein R^1, R^2, R^3, R^5, and R^6, each represent a hydrogen atom, a halogen atom, a hydroxyl group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, an alkoxy group, or a substituted or unsubstituted cycloalkyl group, R^4 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted aryl group, a substituted or unsubstituted cycloalkyl group, a carboxyl group, or a carboxylic acid ester group, A represents an oxygen atom, or a sulfur atom; R represents a hydrogen atom, an unsubstituted alkyl group, or a substituted or unsubstituted aralkyl group, n represents 0 or 1; and Z is a divalent linking group and represents an alkylidene group, an aralkyl group, or a sulfur atom; and

(b) a photopolymerizable element, wherein said polymerizable element comprises at least:

(iv) a polymerizable polymer precursor having at least one reactive vinyl group, and

(v) a photopolymerization initiator, wherein said photopolymerization initiator is a carbonyl compound selected from the group consisting of a diketone, a benzophenone, an acetophenone, a benzoin alkyl ether, a thioxanthone, a chalcone, a styrylketone and a coumarin;

wherein said composition is subjected to imagewise exposure and heating to form silver metal on the imagewise exposed area thereof, then subjected to whole areal exposure to polymerize an area of the photosensitive material where metal silver is not formed.

5,663,033
PEEL-APART PROOFING SYSTEM COMPRISING A HYDROPHILIC BARRIER LAYER

David Warner, St. Paul, Minn., and Terence William Baldock, Harlow, Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 6, 1993, Ser. No. 162,632

Claims priority, application United Kingdom, Dec. 9, 1992, 9225687

Int. Cl.[6] G03C *11/12;* **G03F** *7/34*

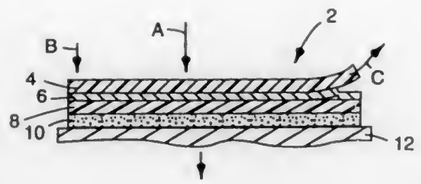
U.S. Cl. 430—257 **18 Claims**

1. A method of preparing a color image which comprises the steps of:

(a) providing a color sheet suitable for use in peel-apart color imaging, said sheet comprising a substrate having a surface bearing a layer of pigmented photopolymerizable material overcoated with a hydrophilic barrier layer and an outer layer of an adhesive,

(b) laminating said color sheet,

(c) imagewise exposing said sheet through its substrate.



(d) peeling said substrate from said sheet to remove either exposed or unexposed regions of said layer of pigmented photopolymerizable material, and

(e) repeating steps (a) to (d) with two additional color sheets to build up a color image comprising cyan, magenta, and yellow layers.

5,663,034

SILVER HALIDE RECORDING MATERIAL FOR MAKING NEGATIVE IMAGES HAVING ULTRAHIGH CONTRAST

Reinhold Rüger, Rodermark, Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1996, Ser. No. 632,859

Claims priority, application Germany, Apr. 28, 1995, 195 15 619.6

Int. Cl.[6] G03C *1/295;1/10*

U.S. Cl. 430—264 **11 Claims**

1. A photosensitive silver halide recording material, for making ultrahigh contrast, black-and-white, negative images, the material having at least one photosensitive layer which includes a silver halide emulsion on at least one side of a support, the photosensitive layer containing at least one hydrazine compound, characterized in that the photosensitive layer contains at least one contrast-enhancing compound having in its molecule at least one tertiary amino group and at least one nitrile group.

5,663,035

RADIATION-SENSITIVE MIXTURE COMPRISING A BASIC IODONIUM COMPOUND

Seiya Masuda; Munirathna Padmanaban; Takanori Kudo; Yoshiaki Kinoshita; Natsumi Suehiro; Yuko Nozaki; Hiroshi Okazaki, all of Saitama, Japan, and Klaus Jürgen Przybilla, Frankfurt, Germany, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,787

Claims priority, application Japan, Apr. 13, 1994, 6-075000

Int. Cl.[6] G03F *7/039*

U.S. Cl. 430—270.1 **16 Claims**

1. A positive-working radiation-sensitive mixture comprising in admixture

a) a binder which is insoluble in water but soluble in an aqueous alkaline solution,

b^1) a compound having at least one bond which can be cleaved by an acid,

c) a compound which generates an acid when irradiated, and

d) a basic iodonium compound.

2. A negative-working radiation-sensitive mixture comprising in admixture

a) a binder which is insoluble in water but soluble in an aqueous alkaline solution,

b^2) a compound having at least one bond which is crosslinked with the compound a) by an acid,

c) a compound which generates an acid when irradiated, and

d) a basic iodonium compound.

5,663,036

MICROLITHOGRAPHIC STRUCTURE WITH AN UNDERLAYER FILM COMPRISING A THERMOLYZED AZIDE

Willard Earl Conley, Cornwall; James Thomas Fahey, Poughkeepsie; Wayne Martin Moreau, Wappingers Falls, all of N.Y.; Ratnam Sooriyakumaran, San Jose, Calif., and Kevin Michael Welsh, Plymouth, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1994, Ser. No. 354,579

Int. Cl.[6] G03C *1/492;1/52;1/815;1/06*

U.S. Cl. 430—271.1 **5 Claims**

1. A microlithographic structure comprising:

a) a microlithographic substrate;

b) applied to a surface of said substrate, an underlayer film comprising a polymeric binder and a basic species, wherein said basic species has been produced by thermolyzing a precursor of said basic species, wherein the precursor is an azide selected from the group consisting of 1-azidopyrene, methyl 2-(4'-methoxyanilino)-5-azidobenzoate, 2-anilino-5-azidobenzoic acid, 2-(4'-azidophenyl)-6-methylbenzothiazole, and 2-(4'-azidophenyl)-(naphtho-1',2'-4,5oxazole); and

c) overlaying said underlayer film, a chemically amplified photoresist film, wherein an acid is generated in said photoresist film upon exposure to radiation.

5,663,037

RADIATION-SENSITIVE COMPOSITION CONTAINING A RESOLE RESIN, A NOVOLAC RESIN AN INFRARED ABSORBER AND A TRIAZINE AND USE THEREOF IN LITHOGRAPHIC PRINTING PLATES

Neil Frederick Haley, Wellington, and Steven Leo Corbiere, Windsor, both of Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 212,434, Mar. 14, 1994, abandoned. This application Sep. 26, 1995, Ser. No. 534,135

Int. Cl.[6] G03L *1/73*

U.S. Cl. 430—178.1 **27 Claims**

1. A radiation-sensitive composition useful for the preparation of an imaging layer of a lithographic printing plate that is sensitive to both ultraviolet and infrared radiation and capable of functioning in either a positive-working or negative-working manner; said radiation-sensitive composition comprising (1) a resole resin, (2) a novolac resin, (3) a haloalkyl-substituted S-triazine, and (4) an infrared absorber in amounts such that the solubility of said imaging laver in aqueous alkaline developing solution is reduced in exposed areas and increased in unexposed areas by the steps of imagewise exposure to activating radiation and heating.

5,663,038

PROCESS FOR THE PREPARATION OF PARTIALLY PROTECTED PHENOLIC RESINS

Carl-Lorenz Mertesdorf, Bad Krozingen, Germany; Bertold Nathal, Rodersdorf, and Hans-Jorg Kirner, Prattein, both of Switzerland, assignors to OCG Microelectronic Materials, Inc., Norwalk, Conn.

Filed Dec. 14, 1995, Ser. No. 572,344

Claims priority, application Switzerland, Dec. 20, 1994, 3835/94; Jun. 7, 1995, 1673/95

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—326 **14 Claims**

1. A process for preparing a purified phenolic resin comprising the steps of:

(1) reacting a phenolic resin with an enol ether in the presence of an acidic catalyst, thereby forming a reaction mixture comprising a converted phenolic resin of which at least a portion of the hydroxyl groups of the phenolic resin have been converted to acid-labile acetal or ketal protecting groups; and

(2) subsequently treating said reaction mixture with a basic anion exchanger.

5,663,039

SOLID PROCESSING AGENT FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

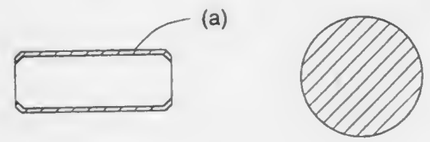
Yutaka Ueda; Hiroshi Yamashita, and Koji Takemura, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 538,224, Oct. 3, 1995, abandoned, which is a division of Ser. No. 379,898, Jan. 30, 1995, abandoned. This application Sep. 4, 1996, Ser. No. 707,359

Claims priority, application Japan, Feb. 3, 1994, 6-011828; Apr. 8, 1994, 6-070860

Int. Cl.[6] G03C *5/38*

U.S. Cl. 430—465 **8 Claims**

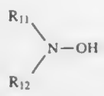


1. A method of manufacturing a covered solid processing agent for a silver halide photographic light-sensitive material, the method comprising the step of:

forming granules;

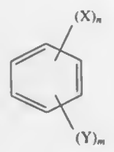
molding the granules into a tablet to form a solid processing agent;

dissolving or dispersing in a solvent an additive selected from the group consisting of a sulfite and a compound represented by the following Formula (1), (3) or (4):



Formula (1)

wherein R_{11} and R_{12} independently represent a hydrogen atom or a substituted or unsubstituted alkyl group, provided that R_{11} and R_{12} may be the same or different or R_{11} and R_{12} may combine with each other to form a ring,



Formula (3)

wherein X represents an alkyl group or —OH; n represents an integer of 0 to 3; provided that when n is 2 or more, X may be the same or different; Y represents —COOM or $—SO_3M$ wherein M represents a hydrogen atom, an alkali metal or $—NH_4$; and m represents an integer of 1 to 3, provided that when m is 2 or more, Y may be the same or different;

A—COOM Formula (4)

wherein A represents a substituted alkyl or alkenyl group, in which the substituent is —OH or —COOM; and M represents a hydrogen atom, an alkali metal or $—NH_4$; and

spray coating the surface of the solid processing agent in the form of the tablet with the resulting solution or dispersion to cover at least a portion of the surface of the tablet solid processing agent with the additive, wherein the weight content of the additive is 0.05 to 5% by weight of the agent.

5,663,040

SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING 2-EQUIVALENT 5-PYRAZOLONE MAGENTA COUPLERS

Massimo Bertoldi, Fossano; Enzo Coraluppi, Carcare; Anna Marie Canuti, Genoa, and Ferdinando Orengo, Altare, all of Italy, assignors to Imation Corp, Oakdale, Minn.

Filed Feb. 22, 1996, Ser. No. 605,573

Claims priority, application European Pat. Off., Mar. 28, 1995, 95104545

Int. Cl.[6] G03C *7/384*

U.S. Cl. 430—555 **10 Claims**

1. A silver halide photographic element comprising a support and at least one silver halide emulsion layer having therein a 2-equivalent 1-phenyl-3-anilino-4-phenylthio-5-pyrazolone magenta coupler, wherein both the 3-anilino and 4-phenylthio groups comprise a ballasting group, and the 4 -phenylthio group comprise an alkylaryloxyalkylenecarbamoyl group being in 2-position with respect to the carbon atom attached to the sulfur atom and bearing said ballasting group, and the sum of sigma values of substituents on the 1-phenyl and the 3-anilino groups is less than 1.3.

5,663,041

HIGH CHLORIDE (100) TABULAR GRAIN EMULSIONS CONTAINING LARGE, THIN TABULAR GRAINS AND A PROCESS FOR THEIR PREPARATION

Yun Chea Chang; Rajesh Vinodral Mehta, and Lois Ann Buitano, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 20, 1996, Ser. No. 603,792

Int. Cl.[6] G03C *1/035;1/015*

U.S. Cl. 430—569 **6 Claims**

1. A process of preparing a high chloride {100} tabular grain emulsion comprised of a dispersing medium and silver halide grains, at least 70 percent of total grain projected area being accounted for by tabular grains having {100} major faces, containing greater than 50 mole percent chloride, based on silver, having a mean equivalent circular diameter in the range of from 2.0 to 5.0 μm, and exhibiting a mean thickness of 0.1 μm or less, comprising

(a) precipitating up to 10 percent of the total silver forming the high chloride {100} tabular grains to create a first grain population under conditions forming crystal lattice structures that allow high chloride {100} tabular grains to emerge during subsequent grain growth,

(b) thereafter rapidly introducing silver and halide salts to create a second grain population, and

(c) growing the first grain population to create the high chloride {100} tabular grains by ripening out the second grain population.

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5,663,042
DEVELOPING AGENTS FOR (PHOTO) THERMOGRAPHIC SYSTEMS

Duncan McL. A. Grieve, Saffron Walden, Great Britain; Justine A. Mooney, Austin, Tex.; William E. Bottomley, Harlow, Great Britain; John H. A. Stibbard, Bishops Stortford, Great Britain; Andrew W. Mott, Harlow, Great Britain; Robert J. D. Nairne, Loughton, Great Britain; David C. Bays, Harlow, Great Britain; Stephen S. C. Poon, Woodbury, Minn.; Raymond J. Kenney, Mahtomedi, Minn.; Gilbert L. Eian, Woodbury, Minn.; Takuzo Ishida; Doreen C. Lynch, both of St. Paul, Minn.; Roger A. Mader, North Lake Elmo, Minn.; Sharon M. Simpson, and Kim M. Vogel, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 3, 1995, Ser. No. 382,899

Claims priority, application United Kingdom, Mar. 11, 1994, 9404805

Int. Cl.[6] G03C *1/498*

U.S. Cl. 430—619 **29 Claims**

1. A photothermographic element comprising a support bearing at least one photothermographic emulsion layer comprising:

(a) a photosensitive silver halide,

(b) a non-photosensitive reducible silver source,

(c) reducing agent for the non-photosensitive reducible silver source, and

(d) an oleophilic polymeric binder,

wherein said reducing agent comprises a compound comprising more than one leuco dye releasing moiety.

5,663,043
METHOD FOR INACTIVATING NON-ENVELOPED VIRUSES USING A VIRICIDE-POTENTIATING AGENT WITH A PHOTOACTIVATIBLE VIRUCIDE

Charles M. Zepp, Hardwick, and Donald L. Heefner, Hudson, both of Mass., assignors to Hemasure Inc., Marlborough, Mass.

Filed Jan. 4, 1995, Ser. No. 368,780

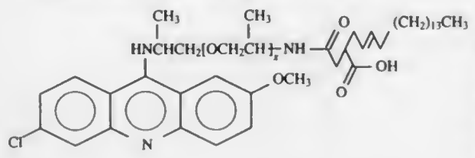
Int. Cl.[6] A01N *1/02;* **C12N** *7/06*

U.S. Cl. 435—2 **19 Claims**

1. A method for inactivating a non-enveloped virus, the non-enveloped virus having a viral capsid, said method comprising the steps of:

(a) administering a photoactivatable viricide to the non-enveloped virus; and

(b) administering a viricide-potentiating chemical agent to the non-enveloped virus in a concentration that enhances the efficacy of the photoactivatable viricide against the non-enveloped virus, said viricide-potentiating chemical agent being selected from the group consisting of cationic lipopolyamines, 2-methoxy-6-chloro-9-octadecylaminoacridine and the following compound;



wherein x=5–6; and

(c) activating said photoactivatable virucide.

5,663,044
METHODOLOGY FOR COLORIMETRICALLY DETERMINING THE CONCENTRATION OF WHITE BLOOD CELLS IN A BIOLOGICAL FLUID

James Noffsinger, Goshen; Michael J. Pugia, and Melvin D. Smith, both of Granger, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Continuation of Ser. No. 339,797, Nov. 15, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 606,871

Int. Cl.[6] C12Q *1/00;1/34;1/37;* **G01N** *33/53*

U.S. Cl. 435—4 **21 Claims**

1. A composition for determining the presence of an analyte selected from the group consisting of leukocyte, esterase and protease in a test sample, the composition comprising a mixture of the following components:

a diazonium salt, an ester subject to hydrolysis in the presence of leukocyte, esterase or protease, and at least 8.3 mM of an added salt of an alkaline earth metal.

5,663,045
METHOD FOR TESTING BLOOD UNITS FOR VIRAL CONTAMINATION

John R. Chapman, Lake Villa, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 37,525, Mar. 24, 1993, Pat. No. 5,498,520. This application Jun. 1, 1995, Ser. No. 456,443

Int. Cl.[6] C12Q *1/70;1/68;* **B01D** *33/15;21/26*

U.S. Cl. 435—5 **5 Claims**

1. A method for providing a blood component to a recipient comprising the steps of:

removing and collecting, using a centrifugation process, from a blood unit that includes at least a buffy coat layer containing leukocytes, a red blood cell rich layer and a platelet rich layer, the buffy coat layer without rendering the red blood cell rich layer and the platelet rich layer unusable for therapeutics;

using a nucleic acid sequencing technique to test the leukocytes that have been collected for the presence of viral nucleic acid sequences; and

administering at least one of the red blood cell rich layers or the platelet rich layer to the recipient if the test demonstrates that the blood unit does not contain viral contamination.

5,663,046
SYNTHESIS OF COMBINATORIAL LIBRARIES

John J. Baldwin, Gwynedd Valley, Pa., and Eric G. Horibeck, Plainsboro, N.J., assignors to Pharmacopeia, Inc., Princeton, N.J.

Filed Jun. 22, 1994, Ser. No. 263,804

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—6 **8 Claims**

1. In a process for synthesizing a combinatorial library of compounds in a plurality of reaction vessels, wherein for each step of the synthesis each of the plurality of reaction vessels is subject to unique reaction conditions such that different compounds of the library are produced by said unique reaction conditions, said library exhibiting a minimum variance in distribution of products in each vessel, which comprises the steps of(1) partitioning a set of particles into a first group of reaction vessels wherein each reaction vessel is subject to a unique set of reaction conditions, (2) repartitioning the treated particles into a second group of reaction vessels wherein each reaction vessel is again subject to a unique set of reaction conditions, and (3) repeating step (2) at least once, wherein the improvement comprises repartitioning the treated particles by directly dividing the contents of each reaction vessel into each of the succeeding reaction vessels for every step in said process, whereby the number of reaction vessels is the same as the number of unique reaction conditions at each step.

5,663,047
HLA-DR ANTIGEN GENE AND ITS NUCLEOTIDE SEQUENCE AND ITS USE

Fumiya Obata, Sagamihara, and Noboru Kashiwagi, Tokyo, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., and The Kitasato Institute, both of Tokyo, Japan

Continuation of Ser. No. 745,444, Aug. 15, 1991, abandoned. This application Jun. 22, 1994, Ser. No. 264,250

Claims priority, application Japan, Aug. 20, 1990, 2-217209

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **11 Claims**

1. A method of genetic typing which comprises the steps of (1) hybridizing denatured and immobilized test DNA with a DNA probe labelled with a substance selected from the group consisting of radioisotope, fluorescent substance, color former, and luminescent substance, said DNA probe being selected from the group consisting of the sequence described in SEQ ID NO. 3 and the sequence described in SEQ ID NO. 4, and (2) detecting the labelled DNA hybridized to immobilized test DNA by x-ray film exposure, fluorescence, photometry or luminescence; and (3) correlating detected DNA from step (2) with a specific human leukocyte antigen DR.

5,663,048
Y-CHROMOSOME SPECIFIC POLYNUCLEOTIDE PROBES FOR PRENATAL SEXING

Robert J. Winkfein, and Gordon H. Dixon, both of Calgary, Canada, assignors to University of Calgary, Calgary, Canada

Continuation of Ser. No. 30,485, May 13, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 330,537

Claims priority, application Canada, Oct. 4, 1990, 2026926

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **30 Claims**

1. A labeled or unlabeled Y-chromosome specific nucleic acid isolate which comprises the same sequence as that of either strand of an isolate selected from the group consisting of:

(1) one or both strands of the PstI fragment SEQ ID NO:1; BtY1, and

(2) one of both strands of the SacI fragment SEQ ID NO:3; BtY2.

5,663,049
DETECTION OF CAMPYLOBACTER

Susan M. Barns, Hopkinton; Ray A. McMillian, Shrewsbury; David J. Lane, Milford; Mark L. Collins, Holden; James E. Awell, Norfolk, all of Mass., and Ayoub Rashtchian, Gaithersburg, Md., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 216,679, Jul. 7, 1988, Pat. No. 5,447,848, which is a continuation-in-part of Ser. No. 821,393, Jan. 22, 1986, abandoned. This application May 30, 1995, Ser. No. 453,756

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **16 Claims**

1. A method for detecting the presence of Campylobacter bacteria in a sample, comprising:

a) obtaining at least one nucleic acid probe that hybridizes to 16S rRNA or rDNA of Campylobacter bacteria under stringent hybridization conditions and does not hybridize to 16S rRNA or rDNA of *Pseudomonas aeruginosa, Escherichia coli*, or *Salmonella typhimurium* under the same hybridization conditions, said probe consisting of an isolated nucleic acid and none, one, or both of a polynucleotide tail and a reporter group, said nucleic acid consisting of a sequence of nucleotides that is fully complementary or identical to at least ten consecutive nucleotides selected from any one of regions 124 to 225, 391 to 501, 973 to 1049, or 1424 to 1489 (using the *E. coli* position numbering convention) of the 16S rRNA of *Campylobacter jejuni* bacterial;

b) contacting the sample with at least one of said probes under conditions that allow said probe to hybridize to rRNA or rDNA of Campylobacter, if present in said sample, to form probe/target duplexes; and

c) detecting said duplexes as an indication of the presence of Campylobacter in said sample.

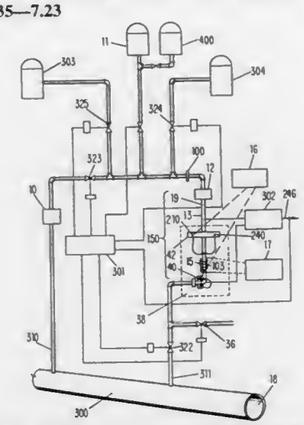
5,663,050
SENSOR FOR ANTIGEN-ANTIBODY REACTIONS

Glenn W. Bedell, Las Cruces, N. Mex., assignor to Intelligent Monitoring Systems, Inc., Las Cruces, N. Mex.

Continuation-in-part of Ser. No. 970,682, Nov. 3, 1992, Pat. No. 5,543,329. This application May 11, 1994, Ser. No. 240,847

Int. Cl.[6] G01N *33/536;33/558;33/574*

U.S. Cl. 435—7.23 **36 Claims**



1. Apparatus for detecting an analyte by using selected antigen-antibody reactions comprising:

tube shaped reaction chamber means for mixing a preselected amount of a pH adjusted aqueous solution to be tested with an antibody;

heater means for increasing a speed of an antigen-antibody reaction of said pH adjusted aqueous solution and said antibody;

a first sensor means affixed to said tube shaped reaction chamber means for detection of an analyte and interference from said antigen-antibody reaction, said first sensor means producing a first sensor output;

a second sensor means affixed to said tube shaped reaction chamber means at a predetermined distance from said first sensor means for detection of the analyte relative to the interference, said second sensor means producing a second sensor output;

means for nulling said second sensor output from said first sensor output to negate the interference; and

means for producing a differential signal representative of a presence of said analyte.

5,663,051
SEPARATION APPARATUS AND METHOD

Peter Van Vlasselaer, Sunnyvale, Calif., assignor to Activated Cell Therapy, Inc., Mountain View, Calif.

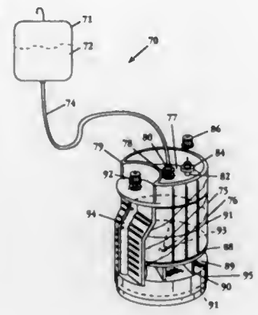
Continuation-in-part of Ser. No. 299,469, Aug. 31, 1994, Pat. No. 5,474,687, Ser. No. 299,468, Aug. 31, 1994, Ser. No. 299,467, Aug. 31, 1994, and Ser. No. 299,465, Aug. 31, 1994. This application Dec. 11, 1995, Ser. No. 570,397

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 **41 Claims**

16. A method of enriching a selected cell from a cell mixture containing one or more other cell types with densities different from that of the selected cell type, comprising

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adding the cell mixture to a centrifugation device having side walls and a closed bottom,

a constriction member disposed within the device, said constriction member positioned and constructed to retain fluid in the bottom portion of the device below the constriction member, when the device is inverted,

a closed top,

at least a first and a second port in said top, said first port positioned for introduction of fluid material into said device,

a closed fluid channel communicating between said second port and the bottom of the device below said constriction member, and

a cell separation medium contained in the bottom portion of the device and extending above said constriction member to a level above an opening formed by said constriction member, such that cells which are captured at an interface between the cell-separation medium and a lower-density medium, after centrifugation, are discharged with the lower-density medium when the device is inverted;

centrifuging said centrifugation device at a gravitational force sufficient to pellet cells having specific densities greater than the specific density of the density gradient material in said device; and

collecting from said device a cell fraction containing the selected cell.

5,663,052

Patent Not Issued For This Number

5,663,053

INHIBITION OF INFLAMMATORY LIPID MEDIATORS

James David Winkler, Fort Washington, Pa.; Deirdre Mary Bernadette Hickey, Welwyn, England, and Floyd Harold Chilton, III, Pilot Mountain, N.C., assignors to SmithKline Beecham Corporation, Philadelphia, Pa., and The Johns Hopkins University, Baltimore, Md.

PCT No. PCT/US93/01247, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO93/16674, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 11, 1993, Ser. No. 284,564

Claims priority, application United Kingdom, Feb. 11, 1992, 9202827

Int. Cl.[6] **A61K** *31/675;31/41;31/415;* **C12Q** *1/00;* **A01N** *59/100*

U.S. Cl. 435—7.91 **1 Claim**

1. A method of screening compounds for potential activity against lipid mediator formation which method comprises

1) preparing a membrane for testing of a compound for CoA-IT;

2) measuring CoA-IT activity of said compound;

3) preparing an inflammatory cell for testing;

4) treating the prepared cell preparation with said compound to be tested;

5) measuring the amount of PAF formed and/or the amount of arachidonic acid released; and

6) correlating the ability of said compound to inhibit CoA-IT activity and the ability of said compound to inhibit the formation of lipid mediators of inflammation to direct selection of novel anti-inflammatory compounds.

5,663,054

DETERMINATION OF STEROIDS BY COMPETITIVE IMMUNOASSAY

Gregg T. Williams, Villa Park; William R. Groskopf; Harold N. Baker, both of Libertyville, and Dalmacio A. Agdeppa, Morton Grove, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 3, 1995, Ser. No. 398,226

Int. Cl.[6] **G01N** *33/53;33/542;33/537;33/543*

U.S. Cl. 435—7.93 **24 Claims**

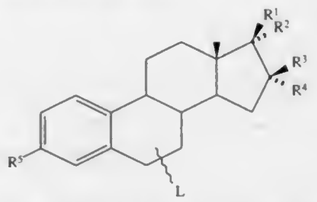
1. A method for determining the amount of estradiol in a test sample comprising the steps of:

a. incubating a mixture of a test sample suspected of containing estradiol, a solid phase coupled to an antibody specific for estradiol, and a conjugate of an estradiol analogue to form estradiol/antibody complexes and conjugate/antibody complexes on said solid phase;

b. separating said solid phase from said mixture;

c. measuring the amount of label present in said mixture or in said solid phase; and

d. determining the amount of estradiol in said sample from the amount of label, wherein said conjugate of said estradiol analogue has the formula:



Formula Ia

where R^1 represents a member selected from the group consisting of OH, H, an alkyl group, an alkenyl group, an alkynyl group, and an alkoxy group;

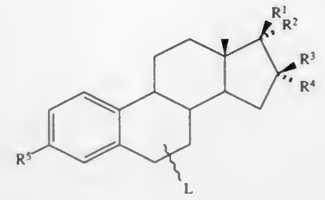
R^2 represents a member selected from the group consisting of OH, H, an alkyl group, an alkenyl group, an alkynyl group, and an alkoxy group;

R^3 represents a member selected from the group consisting of OH, H, an alkyl group, an alkenyl group, and an alkynyl group, and an alkoxy group;

R^4 represents a member selected from the group consisting of OH, H, an alkyl group, an alkenyl group, and an alkynyl group, and an alkoxy group;

R^5 represents an alkoxy group, or OH;

L represents a label group; provided that the carbon atom at position 16 does not contain two substituents that are attached to the carbon atom at position 16 by an oxygen atom, and further provided that the carbon atom at position 17 does not contain two substituents that are attached to the carbon atom at position 17 by an oxygen atom, wherein said estradiol analogue has the formula:



Formula Ia

5,663,055

METHODS FOR DIAGNOSING HUMAN INFLUENZA AND 4-POSITION MODIFIED CHROMOGENIC N-ACETYLNEURAMINIC ACID SUBSTRATED FOR USE THEREIN

Gregory A. Turner, Independence, Mo.; James F. Maher, Broken Arrow, Okla.; C. Worth Clinkscales, Tulsa, Okla., and Michael D. Roark, Owasso, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

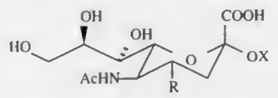
Continuation-in-part of Ser. No. 254,653, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 866,186, Aug. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 458,805, Dec. 29, 1989, abandoned. This application Dec. 13, 1994, Ser. No. 354,914

Int. Cl.[6] **C12Q** *1/34;1/70;* **C12N** *9/26*

U.S. Cl. 435—18 **31 Claims**

1. A method of detecting human influenza neuraminidase activity in a clinical sample suspected of having such activity, said method comprising:

(a) incubating the clinical sample with a chromogenic modified N-acetylneuraminic acid substrate of the formula:



where Ac represents acetyl, R represents hydrogen, fluorine, methoxy, or ethoxy and X represents a chromogenic group that exhibits a distinct color when cleaved from the substrate or a salt of the substrate by the human influenza neuraminidase activity; and

(b) detecting human influenza neuraminidase activity by observing whether the incubated clinical sample exhibits the distinct color after step (a).

5,663,056

METHOD FOR DETERMINING THE ANTIMICROBIAL AGENT SENSITIVITY OF A NONPARAFFINOPHILIC MICROORGANISM AND AN ASSOCIATED APPARATUS

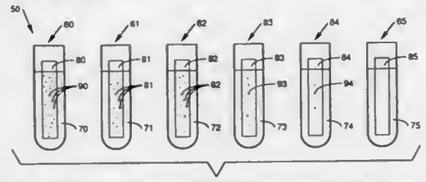
Robert-A. Ollar, Milford, and Mitchell S. Felder, Sharon, both of Pa., assignors to Infectech, Inc., Sharon, Pa.

Filed Sep. 14, 1995, Ser. No. 528,192

The portion of the term of this patent subsequent to Nov. 9, 2015, has been disclaimed.

Int. Cl.[6] **C12Q** *1/02;1/04;1/24;1/18*

U.S. Cl. 435—29 **13 Claims**



1. A method for determining the sensitivity of at least one nonparaffinophilic microorganism from a specimen obtained from a patient to different antimicrobial agents and predetermined quantities thereof, said method comprising:

providing at least one receptacle containing an aqueous solution;

inoculating said solution with said specimen;

placing into said receptacle (i) a slide coated with a carbon source and (ii) a predetermined quantity of an antimicrobial agent;

observing said nonparaffinophilic microorganism growth or lack thereof on said slide to determine whether said predetermined quantity of said antimicrobial agent is effective in inhibiting growth of said nonparaffinophilic microorganism on said slide; and

employing as said slide one coated with a gelatinous matrix containing said carbon source.

5,663,057

PROCESS FOR RAPID AND ULTRASENSITIVE DETECTION AND COUNTING OF MICROORGANISMS BY FLUORESCENCE

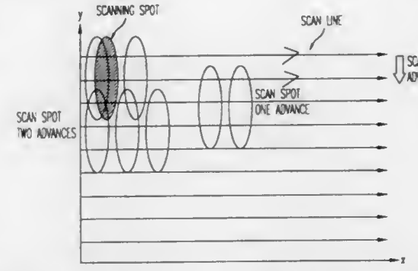
Jean-Louis Drocourt, Yerres; Patrick Desfetes, Saint Brice Sous Foret, both of France, and Jaspal Sanghera, Foxton, United Kingdom, assignors to Chemunex, Maisons-Alfort, France

Filed Jun. 21, 1995, Ser. No. 493,130

Claims priority, application European Pat. Off., Nov. 17, 1994, 94402610

Int. Cl.[6] **G01N** *33/53;33/00;* **C12N** *11/00;11/16*

U.S. Cl. 435—40.5 **4 Claims**



1. Method for detecting and counting separated fluorescent microorganisms arrayed in two dimensions on a solid support and spaced apart by a distance greater than a diameter of an incident laser beam, comprising the steps of:

scanning said solid support on which a specimen potentially containing microorganisms has been deposited, said specimen having been subjected to fluorescent staining, with the incident laser beam, forming a laser spot having said diameter on the solid support, said laser spot diameter being greater than the microorganism to be detected wherein said laser spot diameter is between 4 and 14 μm, and wherein a distance between two adjacent scanning lines is such that the entirety of the support is scanned at least twice, by partial overlapping of adjacent scanning paths; and simultaneously:

detecting the resultant fluorescent light at least at one wavelength, by selecting as samples only detected signals exceeding a given threshold, wherein a set of adjacent samples on a scan-line represents a feature;

establishing a set of correlated-features by line-to-line correlation of individual features, by comparing features on each pair of adjacent lines in time-synchrony, counting the number of lines over which said set of correlated-features occur, each set of correlated-features forming an event, and eliminating any single uncorrelated-feature;

comparing said correlated-features on each pair of adjacent lines in time synchrony, at least at two different wavelengths λ_1 and λ_2 for selecting the correlated-features having an emission intensity ratio at said two wavelengths lower than a predetermined number, said predetermined number being determined

by a spectral nature of the fluorescent staining and said predetermined number being specified that if the emission ratio at said wavelength generated by any correlated samples is greater than a predefined value, the complete event is eliminated;

determining if, for retained events, the events energy profile in three dimensions is within predetermined Gaussian shape criteria predetermined by the Gaussian energy profile of the laser beam and rejecting events not within said predetermined Gaussian shape criteria.

5,663,058

PROCESS FOR PRODUCING SOYBEAN PROTEIN MATERIAL

Tatsumi Miyazaki, Izumisano; Toru Kudo, Tsukuba-gun; Yasuo Otani, Izumisano, and Motohiko Hirotsuka, Kaizuka, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

PCT No. PCT/JP95/02504, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO96/18311, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 7, 1995, Ser. No. 693,099

Claims priority, application Japan, Dec. 12, 1994, 6-306769

Int. Cl.[6] **C07K** *1/12;* **A23C** *11/10;* **A23J** *1/14;3/16*

U.S. Cl. 435—68.1 **7 Claims**

1. A process for producing a soybean protein material which comprises the steps of: hydrolyzing soybean protein with a protease in an aqueous system to a hydrolysis degree of 5 to 20; emulsifying an oil-and-fat ingredient with soybean protein in an amount of 5 to 50 parts by weight per 100 parts by weight of the soybean protein before or after the hydrolysis step; and drying the resultant emulsified mixture.

5,663,059

HUMAN PHOSPHOLIPASE INHIBITOR

Phillip R. Hawkins, Mountain View, and Lynn E. Murry, Portola Valley, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 644,754, May 10, 1996. This application May 23, 1996, Ser. No. 652,859

Int. Cl.[6] **C12N** *15/00;15/12;15/63;15/85*

U.S. Cl. 435—69.2 **5 Claims**

1. A purified polynucleotide encoding a polypeptide with an amino acid sequence shown in SEQ ID NO: 2.

5,663,060

HYBRID HUMAN/ANIMAL FACTOR VIII

John S. Lollar, Decatur, and Marschall S. Runge, Atlanta, both of Ga., assignors to Emory University, Atlanta, Ga.

Continuation-in-part of Ser. No. 864,004, Apr. 7, 1992, Pat. No. 5,364,771. This application Mar. 11, 1994, Ser. No. 212,133

Int. Cl.[6] **C07K** *14/755;14/745;* **C12N** *15/12;* **A61K** *38/37*

U.S. Cl. 435—69.6 **23 Claims**

1. A purified hybrid factor VIII molecule comprising non-human mammalian and human amino acid sequences, wherein the molecule has procoagulant activity in an in vitro coagulation assay and wherein the molecule is selected from the groups consisting of

human factor VIII protein comprising one or more non-porcine, non-human mammalian A1, A2, B, A3, C1 or C2 domains substituted for the corresponding human factor VIII domains;

non-porcine, non-human mammalian factor VIII protein comprising one or more human A1, A2, B, A3, C1 or C2 domains substituted for the corresponding non-porcine, non-human mammalian factor VIII domains;

human factor VIII protein comprising one or more porcine A1, B, A3, C1, or C2 domains substituted for the corresponding human factor VIII domains; and

porcine factor VIII protein comprising one or more human A1, B, A3, C1, or C2 domains substituted for the corresponding human factor VIII domains.

5,663,061

EXPRESSION VECTORS FOR THE SYNTHESIS OF PROTEINS IN THE FISSION YEAST SCHIZOSACCHAROMYCES POMBE

Michael Bröker, Marburg, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 117,345, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 905,215, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 486,221, Feb. 28, 1990, abandoned. This application Jan. 12, 1995, Ser. No. 371,576

Claims priority, application Germany, Mar. 2, 1989, 39 06 540.6

Int. Cl.[6] **C12N** *15/12;15/80;15/81*

U.S. Cl. 435—69.6 **8 Claims**

1. The expression vector pMB332.

2. A process for the preparation of a foreign protein comprising the steps of

a. cloning DNA encoding said foreign protein into the vector as claimed in claim 1,

b. transforming said vector into Schizosaccharomyces cells,

c. expressing said foreign protein, and

d. isolating said foreign protein.

5. The ATG expression vector pMB340.

6. A process for the preparation of a foreign protein comprising the steps of

a. cloning DNA encoding said foreign protein into the vector as claimed in claim 5,

b. transforming said vector into Schizosaccharomyces cells,

c. expressing said foreign protein, and

d. isolating said foreign protein.

5,663,062

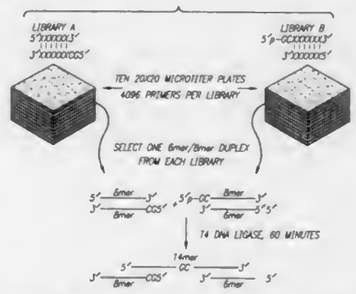
OLIGONUCLEOTIDE LIBRARIES USEFUL FOR PRODUCING PRIMERS

Joseph A. Sorge, Rancho Santa Fe, and Dan Shoemaker, Del Mar, both of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 863,412, Apr. 3, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 159,719

Int. Cl.[6] **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—91.1 **34 Claims**



1. A library for producing an oligonucleotide of preselected nucleotide sequence comprising a plurality of oligonucleotide members having different nucleotide sequences, each of said oligonucleotide members having the same length and being from 6 to 10 nucleotides in length, said oligonucleotide members all having a sequence according to the formula XN, where N is any nucleotide sequence from 5 to 9 nucleotides in length and X is any nucleotide sequence of at least one nucleotide in length that is common to all oligonucleotide members in the library.

5,663,063

METHOD FOR PRODUCING POLYESTER BIOPOLYMERS

Oliver P. Peoples, Arlington, and Anthony J. Sinskey, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 418,868, Apr. 7, 1995, which is a continuation of Ser. No. 234,721, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 73,603, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 944,881, Sep. 14, 1992, abandoned, which is a division of Ser. No. 700,109, May 8, 1991, Pat. No. 5,245,023, which is a continuation of Ser. No. 378,155, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 67,695, Jun. 29, 1987, abandoned. This application May 10, 1995, Ser. No. 438,611

Int. Cl.[6] **C12P** *7/62*

U.S. Cl. 435—135 **11 Claims**

1. A method for constructing polyester biopolymers in a host comprising:

selecting a host for expression of genes encoding enzymes required for synthesis of polyhydroxyalkanoates,

introducing into the host isolated structural genes encoding enzymes selected from the group consisting of beta-ketothiolases, acetoacetyl-CoA reductases, polyhydroxybutyrate polymerases, and polyhydroxyalkanoate polymerases in combination with regulatory sequences for expression of the genes in the host,

expressing the enzymes encoded by the introduced genes, and

providing appropriate substrates for the expressed enzymes to synthesize polyhydroxyalkanoates.

5,663,064

RIBOZYMES WITH RNA PROTEIN BINDING SITE

John M. Burke, Burlington, and Bruno Sargueil, Colchester, both of Vt., assignors to University of Vermont, Burlington, Vt.

Filed Jan. 13, 1995, Ser. No. 371,986

Int. Cl.[6] **C12Q** *1/68;* **C12N** *15/85;* **C07H** *21/04*

U.S. Cl. 435—172.3 **15 Claims**

1. An enzymatic RNA molecule comprising: a protein binding site formed as a double-stranded RNA and a single-stranded loop, wherein said enzymatic RNA molecule is capable of specifically cleaving a separate RNA molecule, wherein said site is selected from a group shown in FIGS. **2** and **12–17** (SEQ. ID. Nos. 4, 10–16 and 18–28) inclusive, and wherein said enzymatic nucleic acid is in a hairpin motif.

4. An enzymatic RNA molecule comprising: a protein binding site formed as a double-stranded RNA and a single-stranded loop, wherein said enzymatic RNA molecule is capable of specifically ligating separate RNA molecules, wherein said site is selected from a group shown in FIGS. **2** and **12–17** (SEQ ID Nos. 4, 10–16 and 18–28) inclusive, and wherein said enzymatic nucleic acid is in a hairpin motif.

13. A method for increasing the activity of a an enzymatic RNA molecule in a hairpin motif by including a RNA protein binding site in the helix 4 region of said enzymatic RNA molecule.

14. A method for decreasing the activity of a hairpin ribozyme by including a RNA protein binding site in helix 4.

15. A method for localizing an enzymatic RNA molecule in a hairpin motif by providing a RNA protein binding sequence in said enzymatic RNA molecule and binding said site with a localizing protein.

5,663,065

DNA ENCODING INFECTIOUS RUBELLA VIRUS

Teryl K. Frey, Atlanta; Geraldina Dominguez, Tucker, and Chin-Yen Wang, Roswell, all of Ga., assignors to Georgia State University Research Foundation, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 93,453, Jul. 19, 1993, Pat. No. 5,439,814, which is a continuation of Ser. No. 722,334, Jun. 28, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,041

Int. Cl.[6] **C12N** *15/00;7/00;15/40;15/63*

U.S. Cl. 435—172.3 **4 Claims**

1. An isolated DNA molecule comprising a nucleotide sequence encoding an infectious rubella virus, which corresponds to the cDNA sequence of SEQ ID NO. 1.

5,663,066

ASSAY USING RECOMBINANT HISTIDYL-TRNA SYNTHETASE

Nina Raben, Rockville; Ralph Nichols, Columbia, both of Md.; Paul Plotz, Washington, D.C., and Richard Leff, Charleston, S.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and National Institutes of Health, Bethesda, Md.

Division of Ser. No. 52,404, Apr. 22, 1993, Pat. No. 5,484,703. This application Jun. 7, 1995, Ser. No. 479,156

Int. Cl.[6] **C12N** *9/00;5/00;* **C12P** *21/06;* **C07K** *1/00*

U.S. Cl. 435—183 **2 Claims**

1. Recombinant Histidyl tRNA synthetase protein produced by expression of a polynucleotide encoding mammalian Histidyl tRNA synthetase transfected into insect host cells, wherein said recombinant Histidyl tRNA synthetase is substantially free of proteins which are endogenous to mammalian cells.

5,663,067

METHOD FOR CLONING AND PRODUCING THE SAPI RESTRICTION ENDONUCLEASE IN *E. COLI*

Shuang-yong Xu, Lexington; Jian-ping Xiao, Wenham, and Robert E. Maunus, Danvers, all of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed Jul. 11, 1996, Ser. No. 678,304

Int. Cl.[6] **C12N** *9/22;15/55;15/70*

U.S. Cl. 435—199 **6 Claims**

1. Isolated DNA coding for the SapI restriction endonuclease, wherein the isolated DNA is obtainable from Saccharopolyspora sp.

5,663,068

CYANOBACTERIAL Δ6-DESATURASE

Terry L. Thomas, College Station; Avutu S. Reddy, Bryan; Michael Nuccio, College Station, all of Tex., and Georges L. Freyssinet, Saint Cyr au Mont d'Or, France, assignors to Rhone Poulenc Agrochimie, France

Division of Ser. No. 307,382, Sep. 14, 1994, Pat. No. 5,552,306, which is a continuation of Ser. No. 959,952, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 817,919, Jan. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 774,475, Oct. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 478,727

Int. Cl.[6] **C07K** *14/405*

U.S. Cl. 435—220 **2 Claims**

1. An isolated cyanobacterial Δ6-desaturase encoded by a nucleic acid from a cyanobacteria that produces gamma linolenic acid.

5,663,069

MODIFIED LAMBDA BACTERIOPHAGE

Bryan L. Ray, Burlington; Edmund C. C. Lin, Boston, and Roberto Crea, Belmont, all of Mass., assignors to Medical Science Partners, Wellesley, Mass.

Continuation of Ser. No. 53,866, Apr. 27, 1993, abandoned.
This application Dec. 8, 1995, Ser. No. 590,708
Int. Cl.[6] C12N *7/02;7/01;* C07H *21/04;* C07K *14/005*
U.S. Cl. 435—235.1 5 Claims

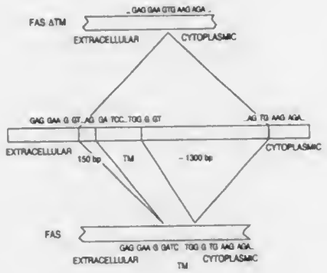
1. An infective bacteriophage lambda comprising a head and a tail, the tail having on its outer surface a modified gpV protein, the modified gpV protein having the sequence set forth in SEQ ID NO:1, wherein a chemically reactive amino acid residue selected from the group consisting of histidine, cysteine, tryptophan, and tyrosine is substituted at amino acid position **246**, and wherein the tail has a proteinaceous target molecule chemically coupled to said chemically reactive amine acid residue.

5,663,070

RECOMBINANT PRODUCTION OF A SOLUBLE SPLICE VARIANT OF THE FAS (APO-1) ANTIGEN, FAS TM

Philip J. Barr, Berkeley; John P. Shapiro, Albany, and Michael C. Kiefer, Clayton, all of Calif., assignors to LXR Biotechnology Inc., Richmond, Calif.

Filed Nov. 15, 1993, Ser. No. 152,443
Int. Cl.[6] C12N *15/12;* C07K *14/715*
U.S. Cl. 435—325 8 Claims



1. A purified nucleic acid comprising a contiguous nucleotide sequence encoding a FasΔTM polypeptide which has an amino acid sequence corresponding to the sequence of a human Fas antigen which is capable of signaling in response to a ligand therefor, wherein the FasΔTM polypeptide comprises the intracellular and extracellular domains of said Fas antigen but lacks a portion of the transmembrane domain of said Fas antigen sufficient to produce a soluble, secreted protein upon the translation of said nucleic acid in a suitable mammalian host cell.

3. The nucleic acid according to claim 1, encoding the FasΔTM amino acid sequence shown in SEQ ID NO:19.

5,663,071

HUMAN THYMOSIN β 15 GENE, PROTEIN AND USES THEREOF

Bruce R. Zetter, W. Newton, and Lere Bao, Brookline, both of Mass., assignors to Children's Medical Center Corporation, Boston, Mass.

Filed Jun. 17, 1996, Ser. No. 664,856
Int. Cl.[6] C07H *21/02;21/04;* C12N *5/00;15/00*
U.S. Cl. 435—325 10 Claims

1. An isolated polynucleotide encoding human thymosin β15 comprising the amino acid sequence as set forth in SEQ ID NO:2.

5,663,072

FOOD SPOILAGE DETECTION METHOD

Colin Lucas Honeybourne, Wotton-Under-Edge, England, assignor to British Technology Group Ltd, London, England

PCT No. PCT/GB93/00155, § 371 Date Jun. 24, 1994, § 102(e) Date Jun. 24, 1994, PCT Pub. No. WO93/15403, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 25, 1993, Ser. No. 256,095
Claims priority, application United Kingdom, Jan. 24, 1992, 9201568
Int. Cl.[6] G01N *33/12;21/31*
U.S. Cl. 436—20 13 Claims

1. A method of determining the presence of diacetyl in a gaseous environment comprising:

exposing to said gaseous environment an aromatic ortho-diamine transition metal complex at acid pH;

detecting any change in absorption or reflection of electromagnetic radiation by the ortho-diamine, and determining the presence of said diacetyl from said detected change.

5,663,073

EARTH FORMATION POROSITY ESTIMATION METHOD

Moustafa E. T. Oraby, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1992, Ser. No. 989,863
Int. Cl.[6] E21B *49/00;* G01N *15/08*
U.S. Cl. 436—28 6 Claims

1. A method for determining porosity of an earth formation surrounding a borehole without knowledge of the formation minerals or lithology comprising:

(a) using a logging tool in the borehole to measure thermal neutron porosity, epithermal neutron porosity and formation absorption cross section;

(b) assuming a first porosity value;

(c) using said first assumed porosity, calculating matrix diffusion length from measured thermal neutron porosity and epithermal neutron porosity;

(d) using said first assumed porosity, calculating matrix diffusion length from measured thermal neutron porosity, epithermal neutron porosity, and formation absorption cross section;

(e) repeating steps (c) and (d) for a plurality of other assumed porosities;

(f) comparing the diffusion lengths from steps (c) and (d) for each assumed porosity to find the highest assumed porosity for which the calculated diffusion lengths are substantially the same, and selecting said highest assumed porosity as the actual formation porosity.

5,663,074

NUCLEOPHILIC POLYSUBSTITUTED ARYL ACRIDINIUM ESTER CONJUGATES AND SYNTHESES THEREOF

Say-Jong Law, Westwood, Mass., assignor to Chiron Diagnostics Corporation, Walpole, Mass.

Continuation-in-part of Ser. No. 871,601, Apr. 17, 1992, which is a continuation of Ser. No. 249,620, Sep. 26, 1988, abandoned. This application Mar. 17, 1993, Ser. No. 32,947
Int. Cl.[6] G01N *33/533;33/531;* C08H *1/00;* C07D *219/08*
U.S. Cl. 436—546 53 Claims

1. A method for preparing a conjugate of an acridinium ester and folate or a folate derivative comprising:

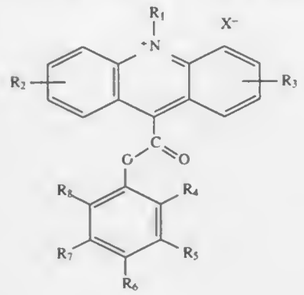
A. incubating the folate or folate derivative with an amino-reactive compound to couple an acyl or alkyloxy carbonyl group to the C-2 amino group of the folate or folate derivative, to form a protected folate intermediate;

B. activating at least one carboxylic group of the protected folate intermediate of step A;

C. incubating the activated protected folate intermediate of step B with an acridinium ester to form an acridinium ester-protected folate intermediate conjugate; and

D. incubating the acridinium ester-protected folate intermediate conjugate in an acidic medium for a time sufficient to remove the amino-protecting group from the C-2 amino group, to form an acridinium ester-folate conjugate or an acridinium ester-folate derivative conjugate,

wherein the acridinium ester has the formula:



wherein:

X^- is an anion;

R_1 is (a) attached to the ring nitrogen of the acridine nucleus of the acridinium ester through a carbon, (b) comprises up to 20 heteroatoms, and (c) is selected from the group consisting of alkenyl, alkyl, alkynyl, aralkyl, and aryl;

R_2, R_3, R_5, and R_7 are selected from the group consisting of alkoxyl, amino, halide, hydrogen, hydroxyl, nitro,

$-CN$, $-NHCR$ (‖ O), $-CR$ (‖ O), $-COR$ (‖ O), $-CNHR$ (‖ O),

$-SCN$, $-COOH$, and $-SO_3H$;

R_4 and R_8 are selected from the group consisting of alkenyl, alkoxyl, alkyl, alkynyl, and aralkyl;

R_6 is selected from the group consisting of Q—R—Nu ,

(Q—R—Nu, and Q—Nu)

where:

Nu is a nucleophilic group;

Q is selected from the group consisting of diazo,

$-C(=O)-$, $-NHCNH-$ (‖ S), $-NHCNH-$ (‖ O), $-NHCO-$ (‖ O),

$-NHC(=O)-$, $-CNH-$ (‖ O), $NHC-$ (‖ $^+NH_2$), $-O-$, $-S-$,

and $-NH-$;

and —NH—; and

1 is selected from the group consisting of $—SO_3H$, $—OSO_3H$, $—PO(OH)_2$, $—OPO(OH)_2$, and —COOH;

except that, where R_6=QNu, the condition where Q= $-C(=O)-$

and Nu=—OH is excluded; and

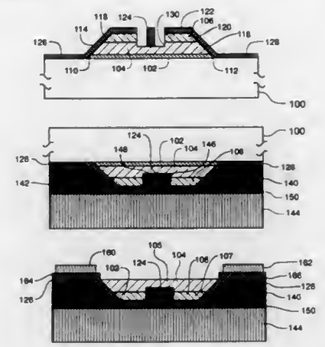
R comprises up to 20 heteroatoms and is selected from the group consisting of alkenyl, alkyl, alkynyl, aralkyl, and aryl.

5,663,075

METHOD OF FABRICATING BACKSIDE ILLUMINATED FET OPTICAL RECEIVER WITH GALLIUM ARSENIDE SPECIES

Gerald D. Robinson, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1994, Ser. No. 274,931
Int. Cl.[6] H01L *31/18;21/265;21/203;21/20*
U.S. Cl. 438—92 20 Claims



1. A method of fabricating a light sensitive photo field effect transistor comprising the steps of:

growing a plurality of layers on a surrogate first substrate member;

forming a mesa on said surrogate first substrate member, wherein said mesa includes said plurality of layers;

depositing ohmic contact metal on said mesa and on a portion of said surrogate first substrate member adjacent said mesa;

forming a recessed area in said mesa to define a source, a drain, and a transistor active region;

forming a Shottky barrier gate electrode within said recessed area between said source and said drain;

forming a filler layer over said surrogate first substrate member adjacent said mesa, over the sidewalls of said mesa, and within said recessed area;

forming an adhesive layer on said filler layer and on said ohmic contact metal located on the crown of said mesa;

attaching a permanent second substrate member to said adhesive layer, said filler layer and said ohmic contact metal located on said crown of said mesa;

removing said surrogate first substrate member and one of said plurality of layers to uncover a input light receptor planar backside surface area of said active region, and to expose the backside of said ohmic contact metal; located adjacent said mesa;

forming electrical pads on a portion of said backside of said ohmic contact metal.

5,663,076

AUTOMATING PHOTOLITHOGRAPHY IN THE FABRICATION OF INTEGRATED CIRCUITS

Michael D. Rostoker, Boulder Creek; Nicholas F. Pasch, Pacifica, and Ashok K. Kapoor, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

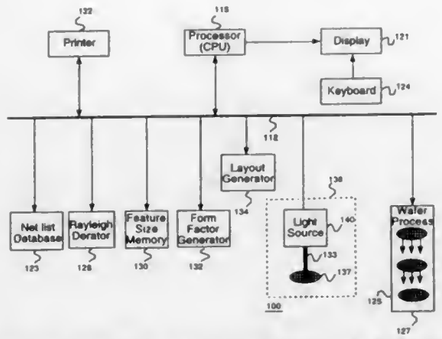
Filed Aug. 8, 1995, Ser. No. 512,678
Int. Cl.[6] H01L *21/66*
U.S. Cl. 438—14 19 Claims

1. A method for automating the manufacture of an integrated circuit by means of a computer having a processor, a display, input means, output means, and a memory storing information, said method comprising the steps of:

measuring at least one process parameter for a wafer process;

storing said parameter in said memory;

electing a light source by said input means;



utilizing information stored in said memory to determine a wavelength and a numerical aperture associated with said selected light source;

determining a select minimum device feature size which can be manufactured in the wafer process based on said process parameter and said determined wavelength and numerical aperture;

reading a net list stored in said memory for said integrated circuit to determine, for a given device in said circuit, based on the select minimum device feature size, a minimum manufacturable feature size;

repeating the previous step for the other devices in said circuit;

sizing the individual devices of the integrated circuit in accordance with said minimum manufacturable feature sizes to produce sizing information; and

obtaining said sizing information through said output means to complete the design of said integrated circuit.

5,663,077

METHOD OF MANUFACTURING A THIN FILM TRANSISTOR IN WHICH THE GATE INSULATOR COMPRISES TWO OXIDE FILMS

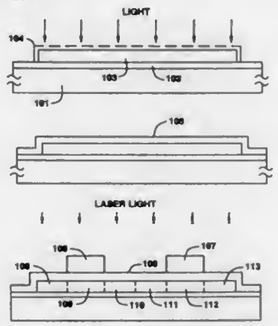
Hiroki Adachi; Akira Takenouchi; Takeshi Fukada; Hiroshi Uehara, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1994, Ser. No. 280,461

Claims priority, application Japan, Jul. 27, 1993, 5-204773; Aug. 27, 1993, 5-235463

Int. Cl.[6] H01L *21/336*

U.S. Cl. 438—151 **14 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film on a substrate having an insulating surface;

oxidizing a surface of said semiconductor film to form an oxide film by irradiating said surface with light having a wavelength of 0.5 μm to 4 μm in an oxidizing atmosphere;

depositing an insulating film on the oxidized surface of said semiconductor film to form a gate insulating film of said semiconductor device; and

forming a gate electrode on said insulating film.

5,663,078

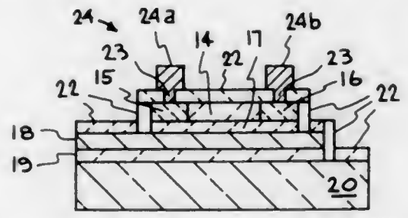
METHOD FOR FABRICATING TRANSISTORS USING CRYSTALLINE SILICON DEVICES ON GLASS

Anthony M. McCarthy, Menlo Park, Calif., assignor to Regents of the University of California, Oakland, Calif.

Division of Ser. No. 137,402, Oct. 18, 1993, Pat. No. 5,414,276. This application Jan. 17, 1995, Ser. No. 373,716

Int. Cl.[6] H01L *21/786*

U.S. Cl. 438—157 **10 Claims**



1. A method for fabricating microelectronic devices using crystalline silicon on glass, comprising:

forming at least one etch stop layer on a silicon substrate;

forming at least one layer of silicon on the etch stop layer;

providing the layer of silicon with at least one patterned doped and activated region therein;

forming an oxide layer over at least the doped and activated region;

forming a layer of conductive material over the oxide layer and exposed areas of the silicon layer;

forming an amorphous silicon containing layer over the conductive material layer;

bonding the amorphous silicon layer to a glass substrate;

removing the silicon substrate;

removing the etch stop layer;

forming at least one island in the at least one silicon layer; and

patterning the oxide and the conductive material layer.

5,663,079

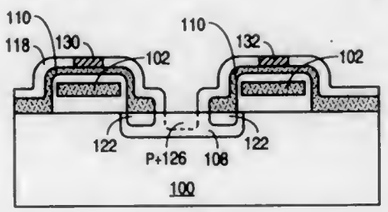
METHOD OF MAKING INCREASED DENSITY MOS-GATED SEMICONDUCTOR DEVICES

Richard A. Blanchard, Los Altos, Calif., assignor to Calogic Corporation, Fremont, Calif.

Continuation of Ser. No. 409,615, Mar. 22, 1995, Pat. No. 5,528,063, which is a continuation of Ser. No. 151,336, Nov. 12, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,169

Int. Cl.[6] H01L *21/265;21/225*

U.S. Cl. 438—138 **6 Claims**



1. A method of forming a transistor comprising the steps of:

providing a semiconductor body;

forming a gate electrode overlying a portion of a principal surface of said body;

forming a first region of a first conductivity type in said body and extending to said principal surface;

forming an insulating layer overlying at least a portion of a side of said gate electrode and at least a portion of a top surface of said gate electrode;

forming a layer of polycrystalline silicon overlying said insulating layer and contacting said principal surface;

implanting charged ions of a second conductivity type into said layer of polycrystalline silicon; and

diffusing a portion of said charged ions into said body at a location wherein said layer of polycrystalline silicon contacts said principal surface, thereby forming a second region of said second conductivity type in said body;

wherein the step of forming said first region comprises the steps of:

implanting ions of said first conductivity type into said layer of polycrystalline silicon; and

diffusing said ions into said semiconductor body; and

further comprising the steps of:

implanting additional ions of said first conductivity type into only portions of said layer of polycrystalline silicon; and

diffusing said additional ions into said semiconductor body.

5,663,080

PROCESS FOR MANUFACTURING MOS-TYPE INTEGRATED CIRCUITS

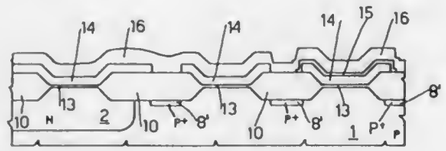
Manlio Sergio Cereda, Lomagna; Giancarlo Ginami, Bergamo; Enrico Laurin, Monza, and Andrea Ravaglia, Vercurago, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.L., Agrate Brianza, Italy

Continuation of Ser. No. 980,453, Nov. 23, 1992, abandoned. This application Sep. 6, 1995, Ser. No. 524,080

Claims priority, application Italy, Nov. 29, 1991, T091A0929

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—450 **13 Claims**



1. A method for producing a MOS transistor and a memory cell array on a common substrate comprising the steps of:

selectively growing field insulating regions of insulating material to extend partly within the common substrate in a MOS transistor area and a memory cell array area;

depositing a first layer of semiconductive material on the substrate across the MOS transistor area and the memory cell array area;

patterning the first semiconductive layer using a mask;

selectively implanting ions of a first conductivity type through the mask and the field insulating regions and into the substrate for forming channel stopper regions beneath the field insulating regions in the MOS transistor area and the memory cell array area;

depositing an electrically insulating layer on the first semiconductive layer in the MOS transistor area and the memory cell array area;

removing the electrically insulating layer only from the MOS transistor area; and

depositing a second semiconductive layer on the first semiconductive layer and the electrically insulating layer such that the electrically insulating layer will insulate the first semiconductive layer from the second semiconductive layer only in the memory cell array area.

5,663,081

METHOD FOR MAKING A HIGH-TEMPERATURE SUPERCONDUCTING FIELD-EFFECT TRANSISTOR WITH THICK SUPERCONDUCTING CHANNEL LAYER

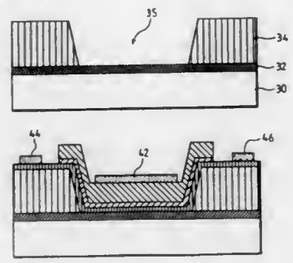
Gun-Yong Sung, and Jeong-Dae Suh, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 352,045

Claims priority, application Rep. of Korea, Nov. 21, 1994, 94-30618

Int. Cl.[6] H01B *12/00*

U.S. Cl. 505—330 **10 Claims**



1. A method for making a high-temperature super-conducting field-effect transistor with a thick super-conducting channel, the method comprising the steps of:

preparing an oxide crystal substrate;

depositing a template layer on a main surface of the oxide crystal substrate by using a pulse laser depositing apparatus;

forming a $YBa_2Cu_3O_{7-x}$ layer on the template layer;

patterning the $YBa_2Cu_3O_{7-x}$ layer to form a patterned $YBa_2Cu_3O_{7-x}$ layer having an opening and expose a surface portion of the template layer;

depositing a $YBa_2Cu_3O_{7-x}$ channel layer on the surface portion of the template layer and over the patterned $YBa_2Cu_3O_{7-x}$ layer, the $YBa_2Cu_3O_{7-x}$ channel layer having a thickness of from 60 to 100 nm;

sequentially forming an $SrTiO_3$ protective layer and an $SrTiO_3$ insulating layer on the $YBa_2Cu_3O_{7-x}$ channel layer;

dry-etching back portions of the insulating and protective layers using an etching mask so as to expose surface portions of the $YBa_2Cu_3O_{7-x}$ channel layer; and

forming source and drain electrodes on both the surface portions of the $YBa_2Cu_3O_{7-x}$ channel layer and at the same time forming a gate electrode on the $SrTiO_3$ insulating layer in the opening.

5,663,082

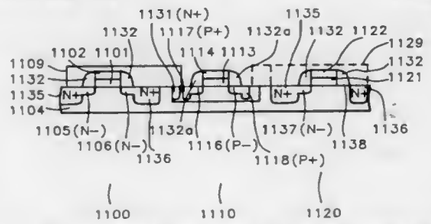
ELECTROSTACTIC DISCHARGE PROTECTION STRUCTURE FOR LIGHTLY DOPED CMOS INTEGRATED CIRCUIT PROCESS

Jian-Hsing Lee, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed May 28, 1996, Ser. No. 654,516

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—234 **4 Claims**



1. A process for the fabrication of an integrated circuit device simultaneously with an electrostatic discharge protection device

structure upon a semiconductor substrate of a material of a first conductivity type, having a property of bulk resistance, comprises the steps of:

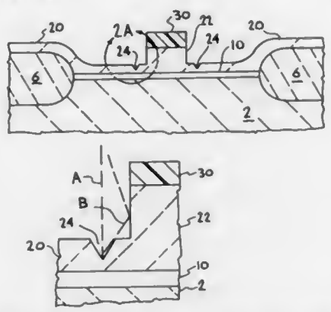
a) forming a gate oxide region by the deposition of an insulating film upon the semiconductor substrate;
b) forming of a gate metalization upon the gate oxide region;
c) placing of first resist area over the semiconductor substrate to prevent areas on the semiconductor substrate from being effected by subsequent steps of said process;
d) diffusion of a material of a second conductivity with a low doping concentration on to areas of the semiconductor substrate to form areas of lightly doped drains on each side of the gate oxide region;
e) removal of the first resist area and placing of a second resist area in contact with the gate oxide region to protect the semiconductor substrate beneath said second resist area from subsequent processing;
f) diffusion of a material of a second conductivity with a high doping concentration on to areas of the semiconductor substrate to sources and the drains of the integrated circuit device and the electrostatic discharge protection device structure;
g) removal of the second resist area;
h) contacting of selected areas of the integrated circuit device and the drain of the electrostatic discharge protection device structure to an input pad; and
i) contacting of other selected areas of the integrated circuit device and the source and gate of the electrostatic discharge protection device structure to a reference voltage source, such that upon an application of an extremely high voltage from an electrostatic discharge event will cause the electrostatic discharge protection device structure to conduct and prevent the extremely high voltage from contacting said integrated circuit device.

5,663,083

PROCESS FOR MAKING IMPROVED MOS STRUCTURE WITH HOT CARRIER REDUCTION

Sungki O, Milpitas, and Philippe Schoenborn, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 374,195, Jan. 18, 1995, Pat. No. 5,598,021. This application Aug. 12, 1996, Ser. No. 695,569
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—303 **12 Claims**



1. A process for forming an MOS structure in a semiconductor substrate having protection against bombardment of gate oxide by electrons energized by high electric fields in the substrate comprising:

a) forming a first trench in said substrate in between and laterally adjacent to:
   i) a drain region in said substrate; and
   ii) a channel region of said substrate over which said gate oxide and a gate electrode are formed;
b) spacing said first trench from said gate oxide and said gate electrode a distance sufficient to inhibit damage to said gate oxide and said gate electrode during said step of forming said first trench;
c) forming a lightly doped (LDD) region in said substrate beneath said first trench between said channel region and said drain region and laterally contiguous with both said drain region and said channel region; and
d) forming an oxide spacer over and in said first trench to fill said first trench, and on a sidewall of said gate electrode, to permit subsequent formation of said drain region in said substrate adjacent said LDD region formed beneath said first trench and said oxide spacer;

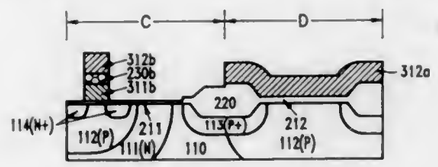
whereby electrons traveling through said channel region to said drain region will follow a path deeper in said substrate and farther spaced from said gate oxide in the portion of said channel region of said substrate adjacent said first trench where high electric fields are encountered.

5,663,084

METHOD FOR MANUFACTURING NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Jeong-hyong Yi, Kwacheon, and Jeong-hyuk Choi, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 11, 1995, Ser. No. 439,086
Claims priority, application Rep. of Korea, May 13, 1994, 94-10489
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 438—453 **20 Claims**



1. A method for manufacturing a nonvolatile memory device having a memory cell array portion and a peripheral circuit portion, comprising the steps of:

forming a field oxide layer on a major surface of a semiconductor substrate, said field oxide layer having first portions separated by second portions, with said first portions being thicker than said second portions;
forming a first dielectric layer on said second portions of said field oxide layer;
forming a first conductive layer on said first dielectric layer and on said first portions of said field oxide layer;
removing a first portion of said first conductive layer disposed in said memory cell array portion, and adjacent to said peripheral circuit portion, to thereby expose a portion of said first dielectric layer disposed in said memory cell array portion;
forming a second dielectric layer on remaining, second portions of said first conductive layer and on said exposed portion of said first dielectric layer disposed in said memory cell array portion;
removing a first portion of said second dielectric layer disposed in said peripheral circuit portion and an adjoining marginal edge portion of said memory cell array portion, and an underlying second portion of said first conductive layer disposed in said peripheral circuit portion, to thereby expose portions of said first dielectric layer disposed in said peripheral circuit portion, and said field oxide regions;
removing said exposed portions of said first dielectric layer disposed in said peripheral circuit portion, to thereby expose underlying portions of said major surface of said substrate;
forming a third dielectric layer on said exposed portions of said major surface of said substrate;
forming a second conductive layer on said exposed first portions of said field oxide layer, said third dielectric layer, and a remaining, second portion of said second dielectric layer disposed in said memory cell array portion; and,

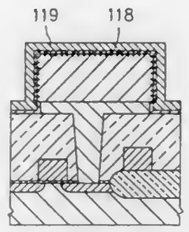
removing selected portions of said second conductive layer disposed in said memory cell array portion, and underlying portions of said second portion of said second dielectric layer and said second portion of said first conductive layer disposed in said memory cell array portion, to thereby form a stacked gate structure in said memory cell array portion, wherein a remaining portion of said second conductive layer serves as a control gate, and said underlying portion of said second portion of said first conductive layer disposed in said memory cell array portion serves as a floating gate.

5,663,085

METHOD FOR FABRICATING CAPACITIVE ELEMENT OF SEMICONDUCTOR MEMORY DEVICE

Takaho Tanigawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 24, 1996, Ser. No. 637,036
Claims priority, application Japan, Apr. 27, 1995, 7-103748
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—255 **3 Claims**



1. A method for fabricating a capacitive element of a semiconductor memory device, the method comprising the steps of:

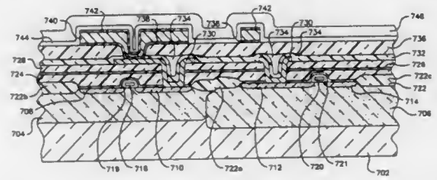
forming a field insulation film in a device isolating surface region of a p-type silicon substrate;
forming a gate insulation film in a device building surface region of the p-type silicon substrate;
forming a gate electrode as part of a wordline on the gate insulation film;
forming a pair of n-type diffusion regions as source and drain regions in the device building surface region of the p-type silicon substrate so that the n-type diffusion regions self-align to the field insulation film and the gate electrode;
forming an interlayer insulation film over an entire surface;
forming a node-contact hole reaching a corresponding one of the n-type diffusion regions through the interlayer insulation film;
providing a first low pressure chemical-vapor deposition using a monosilane (SiH_4) gas for forming a non-doped polycrystalline silicon film covering the interlayer insulation film, filling the node-contact hole;
introducing an n-type dopant for converting the non-doped polycrystalline silicon film into a first n-type polycrystalline silicon film;
providing a second low pressure chemical-vapor deposition using a disilane (Si_2H_6) gas and a phosphine (PH_3) gas for forming an n-type doped amorphous silicon film covering the first n-type polycrystalline silicon film;
patterning the n-type doped amorphous silicon film and the first n-type polycrystalline silicon film;
removing natural oxidation surface scales from the n-type doped amorphous silicon film and the first n-type polycrystalline silicon film;
providing a heat treatment under a vacuum pressure for crystallizing the n-type doped amorphous silicon film from a surface thereof, converting the same into a second n-type polycrystalline silicon film with a rugged surface; and
forming a capacitive insulation film over the second n-type polycrystalline silicon film to constitute a cell plate electrode.

5,663,086

METHOD OF FORMING A SEMICONDUCTOR DEVICE HAVING CMOS STRUCTURES ON A SEMICONDUCTOR SUBSTRATE

Michael D. Rostoker, San Jose, and Nicholas F. Pasch, Pacifica, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 278,573, Jul. 21, 1994, Pat. No. 5,514,616, which is a continuation of Ser. No. 33,213, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 750,196, Aug. 26, 1991, Pat. No. 5,217,566. This application Dec. 12, 1995, Ser. No. 571,345
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—210 **61 Claims**



1. A method of forming a semiconductor device on a semiconductor substrate, comprising the steps of:

forming a silicon nitride layer on a surface of a semiconductor substrate;
patterning the silicon nitride layer to have an opening over a first well region of the substrate and to have a nitride segment over a second well region of the substrate;
implanting a first dopant of a first polarity into the substrate through the opening in the silicon nitride layer into the first well region, the nitride segment effectively shielding implantation of the first dopant into the second well region;
growing a thick first silicon dioxide layer in the opening in the silicon nitride layer over the first well region, the nitride segment inhibiting growth of silicon dioxide over the second well region;
removing the silicon nitride layer;
implanting a second dopant of a second polarity opposite to the first polarity into the substrate, the first silicon dioxide layer effectively shielding implantation of the second dopant into the first well region;
removing the first silicon dioxide layer;
forming gate elements over channel regions in each of the first and second well regions respectively;
forming source and drain regions in the substrate in each of the first and second well regions on opposite sides of the gate elements respectively;
forming a second silicon dioxide layer which exhibits substantial thickening in an area on the surface of the substrate between the first and second well regions and in areas at the peripheries of the first and second well regions, and which is relatively thinner in remaining areas on the surface of the substrate, a top surface of the second silicon dioxide layer exhibiting an irregular topology;
forming a third silicon dioxide layer over the second silicon dioxide layer, a top surface of the third silicon dioxide layer exhibiting an irregular topology;
forming a fourth silicon dioxide layer over the third silicon dioxide layer;
forming first vias through the fourth silicon dioxide layer, through the third silicon dioxide layer, and through the second silicon dioxide layer;
forming metal plugs in the first vias to contact at least portions of the source/drain regions;
forming a fifth silicon dioxide layer over the fourth silicon dioxide layer and over the metal plugs, a top surface of the fifth silicon dioxide layer exhibiting troughs and irregularities;
applying a sixth silicon dioxide layer over the fifth silicon dioxide layer to smooth the troughs and irregularities in the top surface of the fifth silicon dioxide layer;

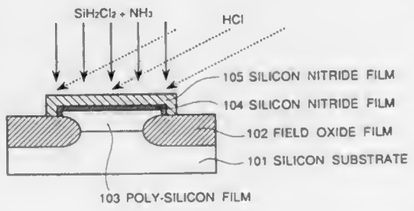
forming a seventh silicon dioxide layer over the sixth silicon dioxide layer and portions of the fifth silicon dioxide layer which may be exposed through the sixth silicon dioxide layer;
forming second vias through the seventh silicon dioxide layer, through the fifth layer of silicon dioxide, and through any via-aligned portions of the sixth silicon dioxide layer;
applying a barrier metal layer over the seventh silicon dioxide layer, the barrier metal layer filling the second vias;
applying a metal filler over the barrier metal layer;
applying a metal cap over the metal filler; and
applying one or more passivation layers over the metal cap and over the seventh silicon dioxide layer.

5,663,087

METHOD FOR FORMING SILICON NITRIDE FILM HAVING LOW LEAKAGE CURRENT AND HIGH BREAK DOWN VOLTAGE

Ayumi Yokozawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 21, 1994, Ser. No. 310,279
Claims priority, application Japan, Sep. 21, 1993, 5-234861
Int. Cl.[6] H01L *21/318*
U.S. Cl. 438—762 **1 Claim**



1. A method for forming a silicon nitride film to a predetermined thickness on a silicon substrate and a poly-silicon layer, comprising the steps of:
forming a first silicon nitride film having a thickness less than the predetermined thickness by a rapid thermal nitridation process; and
forming a second silicon nitride film on the first silicon nitride film by LPCVD using starting material gases including ammonia (NH_3) and one of monosilane (SiH_4) and dichlorosilane (SiH_2Cl_2), where hydrogen chloride gas is introduced to a growing surface of the second silicon nitride film by a means different from a means supplying starting material gases, the second silicon nitride film being of a thickness such that a total thickness of the first and second silicon nitride films is equal to the predetermined thickness.

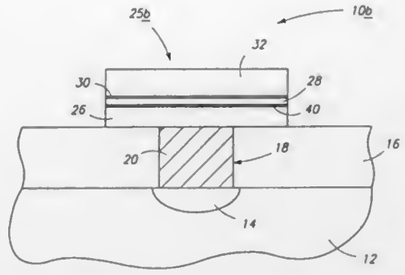
5,663,088

METHOD OF FORMING A TA_2O_5 DIELECTRIC LAYER WITH AMORPHOUS DIFFUSION BARRIER LAYER AND METHOD OF FORMING A CAPACITOR HAVING A TA_2O_5 DIELECTRIC LAYER AND AMORPHOUS DIFFUSION BARRIER LAYER

Gurtej S. Sandhu, and Pierre C. Fazan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 19, 1995, Ser. No. 444,853
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—396 **14 Claims**

1. A method of forming a capacitor comprising the following steps:
forming a first electrically conductive capacitor plate over a substrate;
forming a capacitor dielectric layer of Ta_2O_5 over the first electrically conductive capacitor plate; and



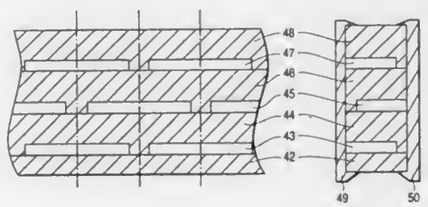
forming a diffusion barrier layer over the Ta_2O_5 dielectric layer, the diffusion barrier layer comprising TiC_x, wherein "x" is greater than 0.

5,663,089

METHOD FOR PRODUCING A LAMINATED THIN FILM CAPACITOR

Atsushi Tomozawa, Osaka; Eiji Fujii, Yawata; Hideo Torii, Higashiosaka; Masumi Hattori, Hirakata; Satoru Fujii, Takatsuki, and Ryoichi Takayama, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 215,816, Mar. 22, 1994, Pat. No. 5,459,635. This application Jun. 5, 1995, Ser. No. 465,350
Claims priority, application Japan, Mar. 25, 1993, 5-066316; Oct. 8, 1993, 5-252683
Int. Cl.[6] H01L *21/70*
U.S. Cl. 427—576 **12 Claims**



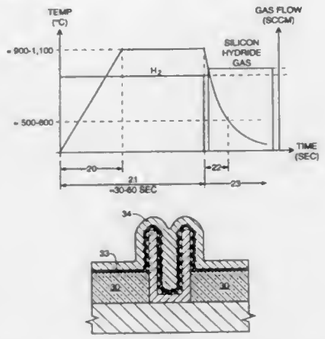
1. A method for producing a laminated thin film capacitor comprising steps of:
(a) forming a patterned metal electrode layer on a substrate by a method selected from the group consisting of a vacuum deposition method and a sputtering method,
(b) forming a dielectric layer oriented in the (100) plane by a plasma CVD method using a vapor of a metal compound and a reaction gas,
(c) forming a patterned metal electrode layer in the same way as in the step (a) on the dielectric layer formed in the step (b),
(d) repeating the formation of the dielectric layer of the step (b) and the formation of the patterned metal electrode layer of the step (c) at least once in total,
(e) cutting the laminate so that every other metal electrode layers are exposed on each of the cut walls, and
(f) forming external electrodes on both cut walls.

5,663,090

METHOD TO THERMALLY FORM HEMISPHERICAL GRAIN (HSG) SILICON TO ENHANCE CAPACITANCE FOR APPLICATION IN HIGH DENSITY DRAMS

Charles H. Dennison, Meridian, and Randhir P. S. Thakur, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jun. 29, 1995, Ser. No. 496,722
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—398 **54 Claims**



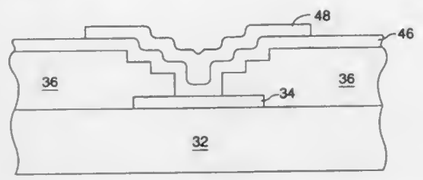
1. A thermal process for forming hemispherical grained silicon on a silicon material comprising the sequential steps of:
heating said silicon material to a steady state temperature;
exposing said silicon material to a hydrogen containing ambient; and
decreasing the temperature of said silicon material while exposing said silicon material to a silicon hydride gas.

5,663,091

METHOD FOR FABRICATING AN ELECTRICALLY PROGRAMMABLE ANTIFUSE

Yeouchung Yen, San Jose; Shih-Oh Chen, Fremont, and Hung-Kwei Hu, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 292,801, Aug. 10, 1994, Pat. No. 5,550,404, which is a continuation of Ser. No. 65,530, May 20, 1993, abandoned. This application May 9, 1996, Ser. No. 644,335
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **2 Claims**



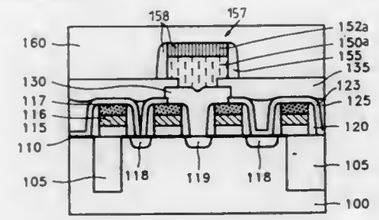
1. A method for fabricating an antifuse comprising the steps of:
forming a lower antifuse electrode;
forming an interlayer dielectric layer over the surface of said lower antifuse electrode;
forming a masking layer, including an aperture therein having a first area, over the interlayer dielectric layer;
performing a first vertical etching step on the interlayer dielectric layer to a first selected depth;
enlarging the aperture in the masking layer until it has a second area;
performing a final vertical etching step on the interlayer dielectric layer to expose the upper surface of the lower electrode.

5,663,092

METHODS OF FABRICATING A TRANSISTOR CELL WITH A HIGH ASPECT RATIO BURIED CONTACT

Kyu-pil Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 14, 1996, Ser. No. 664,976
Claims priority, application Rep. of Korea, Sep. 19, 1995, 95-30686
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—253 **20 Claims**



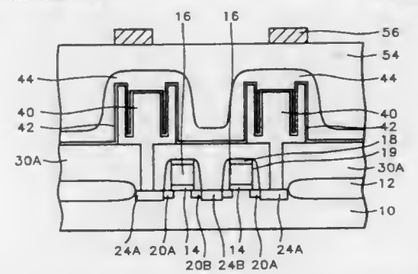
1. A method of fabricating a transistor having a self-aligned buried contact site, the method comprising the steps of:
forming a cell transistor on a substrate, the cell transistor including a capped gate line formed on the substrate, spaced apart source/drain regions formed in the substrate disposed on opposite sides of the capped gate line, a capped channel line overlying and separated from the gate line by an intervening dielectric region and contacting a first of the source/drain regions through the intervening dielectric region, and a second dielectric region covering the capped channel line, the capped gate line including a gate line and a gate line cap covering top surface and side wall portions of the gate line, the capped channel line including a channel line and a channel line cap covering top surface and side wall portions of the channel line; and
etching the cell transistor with an etchant which etches the intervening dielectric region and the second dielectric region at a first rate and the gate line and channel line caps at a second rate, the first rate being greater than the second rate, for an etching time sufficient to expose a second of the source/drain regions while leaving the gate line and the channel line covered.

5,663,093

METHOD FOR FORMING A CYLINDRICAL CAPACITOR HAVING A CENTRAL SPINE

Horng-Huei Tseng, and Chih-Yuan Lu, both of Hsinchu, Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

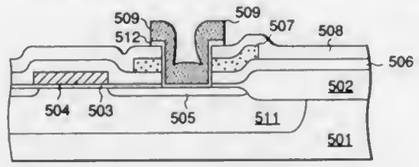
Filed Jun. 17, 1996, Ser. No. 665,328
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—396 **18 Claims**



1. A method of forming a stacked capacitor on a substrate having source regions, drain regions and gate electrode structures comprising:
a) forming an insulating layer over said substrate surface;

b) forming a contact opening exposing said source region;
c) forming a first conductive layer over said insulating layer and filling said contact opening to form an electrical contact with said source region;
d) forming a first dielectric layer over said conductive layer;
e) patterning said first dielectric layer and first conductive layer to form a central spine over said contact opening and to form a dielectric cap over central spine, and leaving portions of said first conductive layer covering said insulation layer, said central spine, said dielectric cap having sidewalls;
f) forming dielectric spacers on said sidewalls of said central spine and said dielectric cap, said dielectric spacers having sidewalls;
g) anisotropically etching said remaining portions of said first conductive layer using said dielectric spacers and said dielectric cap as a mask exposing said insulating layer;
h) forming conductive spacers on said sidewalls of said dielectric spacers;
i) selectively etching completely said dielectric cap and said dielectric spacers thereby forming a crown shaped storage node having a central spine;
sequentially forming a capacitor dielectric layer and a top electrode over said crown shaped storage node and said insulating layer thereby forming a crown shaped capacitor.

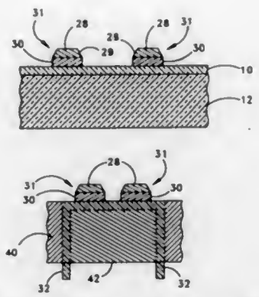
5,663,094
PROCESS FOR PRODUCING SEMICONDUCTOR DEVICE WITH WIRE FOR THREE CONDUCTIVE LAYERS
Masaru Sakamoto, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 8, 1994, Ser. No. 351,957
Claims priority, application Japan, Dec. 10, 1993, 5-310188; Dec. 6, 1994, 6-301847
Int. Cl.[6] H01L *21/443;23/552;31/0224*
U.S. Cl. 438—609 **5 Claims**



1. A process for producing a semiconductor device comprising a conductive layer and a transparent electrode which are superposed via an insulating layer, the conductive layer and the transparent electrode being electrically connected, the process comprising the steps of:
(a) simultaneously removing part of the transparent electrode and part of the insulating layer to expose the conductive layer; and
(b) depositing a conductive member at the part of the transparent electrode and the part of the insulating layer removed in said step (a), thereby electrically connecting the conductive layer and the transparent electrode.

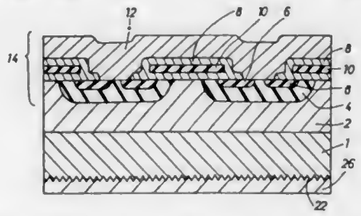
5,663,095
METHOD OF MAKING A MICRO-DIMENSIONAL COUPLING CONDUCTOR
LeRoy H. Hackett, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 24, 1995, Ser. No. 448,903
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—611 **19 Claims**

1. A method for producing a micro-dimensional coupling conductor, comprising the steps of:



fabricating a smooth material layer on a semiconductor substrate,
depositing a first metal layer on said smooth material layer,
depositing one or more layers of at least one type of electrically conductive material on a portion of said first metal layer through openings in a predefined mask, and
removing the portions of said metal layer that are not covered by said electrically conductive material layers, so that an electrically conductive material island is disposed on said smooth material layer, and
dissolving said smooth material layer so that said electrically conductive material island separates from said substrate.

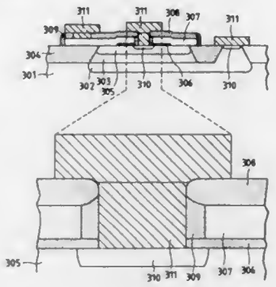
5,663,096
METHOD OF MANUFACTURING A VERTICAL SEMICONDUCTOR DEVICE WITH GROUND SURFACE PROVIDING A REDUCED ON RESISTANCE
Yoshifumi Okabe, Nagoya; Masami Yamaoka, Anjo, and Akira Kuroyanagi, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Division of Ser. No. 409,900, Mar. 22, 1995, which is a continuation of Ser. No. 953,766, Sep. 30, 1992, abandoned, which is a division of Ser. No. 652,920, Feb. 8, 1991, Pat. No. 5,242,862. This application Jun. 6, 1995, Ser. No. 473,775
Claims priority, application Japan, Feb. 14, 1990, 2-33367
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—268 **8 Claims**



1. A method of manufacturing a semiconductor device comprising steps of:
preparing an N-type semiconductor wafer to have a thickness and an N-type substrate including arsenic as an impurity;
growing an N-type epitaxial layer including phosphorus as an impurity on said N-type substrate;
forming a semiconductor element in said N-type epitaxial layer, said semiconductor element being capable of flowing an electric current in a direction of said thickness of said N-type semiconductor wafer;
forming a first electrode on a first surface of said N-type semiconductor wafer; then
grinding a second surface of said N-type semiconductor wafer to remove a by-product layer formed on said second surface of said N-type semiconductor wafer during said step of forming said semiconductor element and to roughen said second surface of said N-type semiconductor wafer, whereby an exposed surface of said N-type substrate is roughened; and then

forming a second electrode including at least one material selected from a group consisting of titanium (Ti), vanadium (V), chromium (Cr) and nickel (Ni) on said ground second surface of said N-type semiconductor wafer so that said second electrode ohmically-contacts said ground second surface of said N-type substrate.

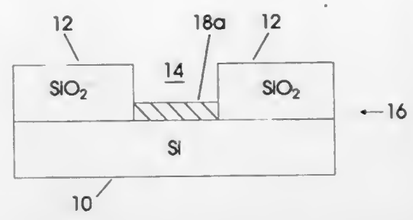
5,663,097
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING AN INSULATING SIDE WALL
Masaru Sakamoto, Atsugi, and Kei Fujita, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 901,032, Jun. 19, 1992, abandoned. This application Sep. 28, 1994, Ser. No. 313,947
Claims priority, application Japan, Jun. 21, 1991, 3-150451
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—372 **3 Claims**



1. A method of producing a semiconductor device including a bipolar transistor, comprising the steps of:
(a) forming a semiconductor layer of a first conductivity type for formulation into a base region on a substrate;
(b) providing an insulating film of a width W1 on the semiconductor layer;
(c) providing a conductive layer, for formulating into a base electrode, so that the conductive layer covers the insulating film on the semiconductor layer and contacts the semiconductor layer;
(d) providing a nitride layer on the conductive layer;
(e) removing partially the conductive layer and the nitride layer, for forming an opening having a width W2, which is smaller than the width W1 of the insulating film;
(f) introducing a dopant into the opening for forming a semiconductor layer of a second conductivity type, for formulation into a emitter, within the semiconductor layer;
(g) after said step (f), performing an oxidization for forming an oxide at a side wall and at a bottom wall of the opening;
(h) etching for removing the oxide and the insulating film at the bottom of the opening, with the oxide remaining at the side wall; and
(i) burying a conductor within the opening for forming an emitter electrode for contact to the semiconductor layer.

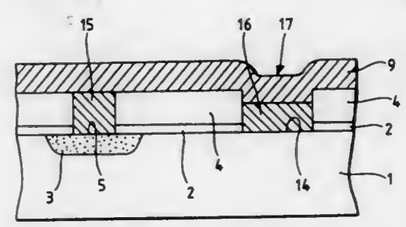
5,663,098
METHOD FOR DEPOSITION OF A CONDUCTOR IN INTEGRATED CIRCUITS
J. Randall Creighton; Frank Dominguez; A. Wayne Johnson, and Thomas R. Omstead, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.
Continuation of Ser. No. 958,385, Oct. 8, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 258,911
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—675 **6 Claims**

1. A method for the chemical vapor deposition of a conductor onto at least one region of a substrate, comprising



a. defining said region by deposition of an apertured mask layer, said apertured mask layer comprising a material such that the initial deposition rate of said conductor on the apertured mask layer is slower than the initial deposition rate on said substrate;
b. depositing said conductor onto the composite structure comprising the substrate and apertured mask layer;
c. interrupting the deposition rate of said conductor onto said composite structure and restoring the difference in rate of deposition of the conductor on the substrate over the rate of deposition of conductor on the apertured mask layer;
d. selectively removing the conductor from the apertured mask layer with a halogen etchant and inert gas mixture which contains from 0.25 to 100% by volume fluorine, and restoring the difference in rate of deposition of the conductor on the substrate over the rate of deposition of conductor on the apertured mask layer; and
e. repeating steps (b–d) to deposit said conductor on said regions of substrate.

5,663,099
METHOD FOR PRODUCING SEMICONDUCTOR DEVICE HAVING ALIGNMENT MARK
Takahiko Okabe, Isehara; Genzo Monma, Tokyo, and Hiroshi Yuzurihara, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 183,254, Jan. 19, 1994, Pat. No. 5,482,893, which is a continuation of Ser. No. 722,107, Jun. 27, 1991, abandoned. This application Sep. 29, 1995, Ser. No. 536,791
Claims priority, application Japan, Jun. 29, 1990, 2-169948; Jun. 29, 1990, 2-169949
Int. Cl.[6] H01L *21/441*
U.S. Cl. 438—642 **8 Claims**



1. A method of producing an alignment mark which method comprises the steps of:
providing a semiconductor substrate having at its surface an insulating layer with a contact hole and a further aperture formed therein;
depositing a conductive material selectively to fill the contact hole and at least partially to fill the further aperture; and
depositing wiring material on said insulating layer, on said conductive material filling the contact hole, and on conductive material at least partially filling the further aperture, so that an alignment mark is produced over the at least partially filled further aperture,

wherein said further aperture exposes an area of the substrate larger than the area of the substrate exposed by said contact hole, and

said depositing of conductive material step is performed by selective chemical vapor deposition using an alkylaluminium hydride and partially fills the further aperture.

5,663,100

METHOD FOR FORMING CONTACT HOLES IN SEMICONDUCTOR DEVICE

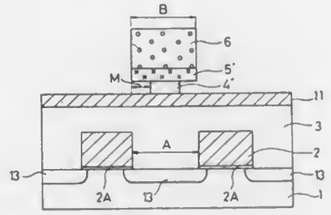
Chan Kwang Park; Yo Hwan Koh, and Seong Min Hwang, all of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Sep. 25, 1995, Ser. No. 533,543

Claims priority, application Rep. of Korea, Sep. 26, 1994, 94-24221

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—586 **16 Claims**



1. A method for forming contact holes in a semiconductor device, comprising the steps of:

forming a plurality of uniformly spaced conductors on a semiconductor substrate while insulating the conductors from the semiconductor substrate;

depositing a first insulating film over the resulting structure obtained after the formation of the conductors, planarizing the first insulating film, and then depositing a second insulating film and a third insulating film over the first insulating film;

forming a first contact mask on a portion of the third insulating film corresponding to a region where a contact hole is to be formed;

anisotropically etching portions of the third and second insulating films not covered with the first contact mask, thereby forming patterns of the third and second insulating films, and then isotropically etching the pattern of the second insulating film in a selective manner, thereby forming a narrowed pattern of the second insulating film;

removing the first contact mask, and then forming a ring-shaped pad at side walls of the third- and second-insulating film patterns;

forming a fourth insulating film over the resulting structure obtained after the formation of the pad, and then forming a second contact mask on the fourth insulating film except for a portion thereof corresponding to the contact hole region; and

etching the portion of the fourth insulating film not covered with the second contact mask, removing the third- and second-insulating film patterns, and then anisotropically etching the first insulating film disposed beneath the second-insulating film pattern under a condition that the ring-Shaped pad is used as an etch barrier, thereby forming a contact hole with a critical dimension.

5,663,101

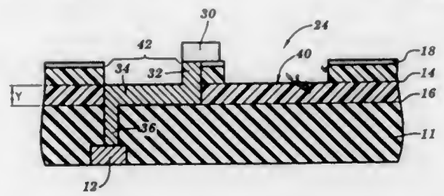
SEMICONDUCTOR STRUCTURE HAVING MULTIPLE LEVELS OF SELF-ALIGNED INTERCONNECTION METALLIZATION, AND METHODS FOR ITS PREPARATION

John Edward Cronin, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 524,558, Sep. 7, 1995, Pat. No. 5,539,255. This application Feb. 7, 1996, Ser. No. 597,747

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—637 **15 Claims**



1. An improved method for preparing a semiconductor structure which includes at least one stud-up and at least one interconnection line connected to the stud-up, wherein the stud-up and the interconnection line are self-aligned, and are formed from a single layer of metal; said method comprising the following steps:

a) providing an insulator region on a semiconductor substrate;

b) patterning and etching the insulator region with a mask to define at least one opening having a desired depth;

c) depositing metal to overfill the opening, thereby forming a metallized surface over the insulator region and forming the interconnection line;

d) planarizing the metallized surface over the insulator region back to the mask deposited in step b); and

e) patterning and then forming a stud-up of desired dimensions within the metal-filled opening, the lower end of said stud-up being connected to the interconnection line, and the upper end of said stud-up terminating at or near the upper surface of the insulator region.

5,663,102

METHOD FOR FORMING MULTI-LAYERED METAL WIRING SEMICONDUCTOR ELEMENT USING CMP OR ETCH BACK

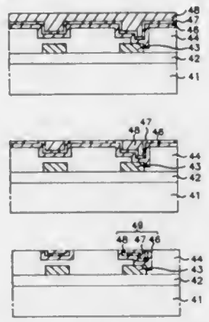
Nae Hak Park, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation of Ser. No. 437,865, May 9, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 688,676

Claims priority, application Rep. of Korea, May 10, 1994, 10217/1994

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—626 **18 Claims**



1. A method for forming a multi-layered metal wiring for a semiconductor element, the method comprising the steps of:

forming a first insulating layer on a surface of a semiconductor substrate;

forming a lower metal wiring pattern on the first insulating layer;

forming a second insulating layer on the first insulating layer and the lower metal wiring pattern;

forming contact portions in the second insulating layer;

successively depositing first and second upper metals over the contact portions and the second insulating layer;

removing portions of the second upper metal by subjecting said second upper metal to an etch back process until the first upper metal is exposed; and

removing portions of the first upper metal by subjecting said first upper metal to a chemical mechanical polishing process until the second insulating layer is exposed, thereby to form an upper metal wiring pattern comprised of the first and second upper metals.

5,663,103

METHOD OF MANUFACTURING AN INSULATED-GATE FIELD-EFFECT TRANSISTOR IN A SEMICONDUCTOR DEVICE IN WHICH SOURCE/DRAIN ELECTRODES ARE DEFINED BY FORMATION OF SILICIDE ON A GATE ELECTRODE AND A FIELD-EFFECT TRANSISTOR

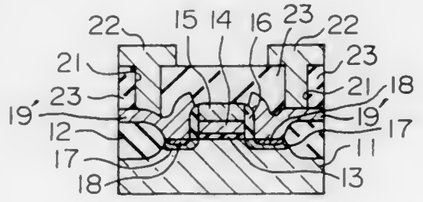
Shoichi Iwasa, and Takeshi Naganuma, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 496,064, Jun. 28, 1995, Pat. No. 5,569,947. This application Aug. 2, 1996, Ser. No. 691,611

Claims priority, application Japan, Jun. 28, 1994, 6-168998

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 438—301 **4 Claims**



1. A method of manufacturing an insulated-gate field-effect transistor in a semiconductor device, comprising the steps of:

preparing a semiconductor substrate;

forming an insulating film on said semiconductor substrate;

forming a refractory metal film over said semiconductor substrate, said insulating film being sandwiched between said refractory metal film and said semiconductor substrate;

patterning said refractory metal film and said insulating film to provide a gate electrode comprising said refractory metal film insulated from said semiconductor substrate by the patterned insulating film;

doping said semiconductor substrate with an impurity, using as a mask said gate electrode and said patterned insulating film, thereby forming doped regions in a surface portion of said semiconductor substrate adjacent said insulated gate electrode;

forming a poly-silicon film on said surface portion of said semiconductor substrate and on an upper surface of said patterned refractory metal film;

heating the resulting structure to convert at least that portion of said poly-silicon film which lies on said patterned refractory metal film to a silicide film portion; and

removing said silicide film portion.

5,663,104

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE FOR POWER SUPPLY USE

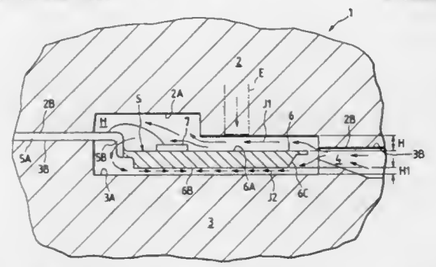
Jun Fukuyama, Fukuoka, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed May 23, 1995, Ser. No. 447,439

Claims priority, application Japan, Jun. 3, 1994, 6-122587

Int. Cl.[6] H01L *21/60*

U.S. Cl. 438—123 **8 Claims**



1. A method of manufacturing a semiconductor device for power supply use comprising the steps of:

forming a void having opposed faces in a pair of mating metallic mold members;

assembling a semiconductor element onto a first face of an island of a lead frame;

arranging the island in the void with a second face of the island on the opposite side thereof from the first face being spaced from a first face of the void;

providing a clearance of 0.3 to 2.0 mm between the second face of the island and the first face of the void in the metallic mold and providing a larger clearance between the first face of the island and a second face of the void in the metallic mold member opposed to the first face of the island;

providing a satin finish in which the maximum surface roughness H_{max} is in a range from 3 to 10 μm on the first face of the void opposed to the second face of the island; and

injecting a thermosetting resin into the void.

5,663,105

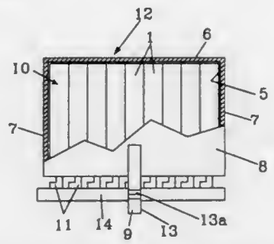
SEMICONDUCTOR DEVICE PACKAGE SIDE-BY-SIDE STACKING AND MOUNTING SYSTEM

Goh Jing Sua, and Chan Min Yu, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 485,227, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 236,768, May 2, 1994, Pat. No. 5,619,067. This application Jan. 16, 1996, Ser. No. 586,366

Int. Cl.[6] H01L *21/60*

U.S. Cl. 438—109 **15 Claims**



1. A method for stacking and mounting a plurality of packaged semiconductor devices on a circuit board, said method comprising:

stacking a plurality of encapsulated vertical surface mount semiconductor device packages side by side within an open bottom cavity of a casing; said devices packages being stacked vertically into a horizontal array, with front side faces of said

packages brought into superposed relationships with rear side faces of adjacent packages, and with bottom edges aligned so that contact leads extending out from respective ones of said bottom edges protrude in a common plane out from said casing open bottom; and

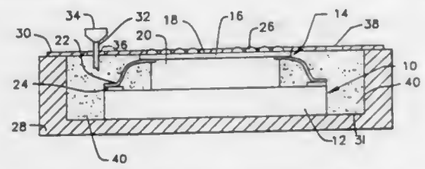
securing said casing to a circuit board to press said contact leads into solderless electrical connection with corresponding contact pads on said board.

5,663,106

METHOD OF ENCAPSULATING DIE AND CHIP CARRIER

Konstantine Karavakis, Coram, N.Y.; Thomas H. Distefano, Monte Sereno, Calif.; John W. Smith, Jr., Austin, Tex., and Craig Mitchell, San Jose, Calif., assignors to Tessera, Inc., San Jose, Calif.

Filed May 19, 1994, Ser. No. 246,113
Int. Cl.[6] H01L *21/56;21/60*
U.S. Cl. 29—841 **47 Claims**



1. A method of encapsulating a semiconductor chip assembly having a top layer with an array of exposed terminals thereon, the terminals being electrically connected to the chip, said method comprising the steps of:

placing an encapsulant barrier adjacent the semiconductor chip assembly, said encapsulant barrier at least partially defining an encapsulation area;

providing a protective barrier in contact with said top layer for protecting the terminals on the top layer from an encapsulation material; and

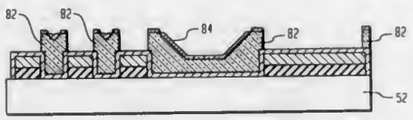
introducing an encapsulation material into at least a portion of the encapsulation area so that the encapsulation material flows to fill the encapsulation area and then cures to a substantially solid condition, the protective barrier preventing the encapsulation material from contacting the terminals on the top layer.

5,663,107

GLOBAL PLANARIZATION USING SELF ALIGNED POLISHING OR SPACER TECHNIQUE AND ISOTROPIC ETCH PROCESS

Matthias L. Peschke, Poughkeepsie, and Reinhard J. Stengl, Wappinger Falls, both of N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 22, 1994, Ser. No. 362,399
Int. Cl.[6] H01L *21/82*
U.S. Cl. 438—692 **18 Claims**



1. A method for globally planarizing an integrated circuit device wafer having a plurality of structures disposed on a surface thereof, said structures forming up and down features on said surface, said method comprising the steps of:

depositing a fill layer over said surface of said wafer to cover said structures;

depositing an etch mask layer over said fill layer;

forming openings in said etch mask layer to expose areas of said fill layer to be etched;

fabricating spacers at the boundary of said openings to reduce the width of said openings;

etching said exposed areas of said fill layer to provide a second surface having up features that are substantially small relative to said up features defined on said surface of said wafer; and

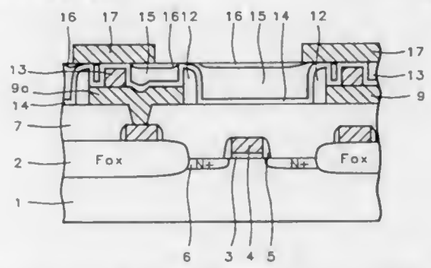
removing said up features of said second surface to provide a planarized wafer surface.

5,663,108

OPTIMIZED METAL PILLAR VIA PROCESS

Yung-Fa Lin, Hsin-chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-chu, Taiwan

Filed Jun. 13, 1996, Ser. No. 663,572
Int. Cl.[6] H01L *21/469*
U.S. Cl. 438—624 **25 Claims**



1. A method of fabricating a MOSFET device, on a semiconductor substrate, using a metal pillar via structure for electrical contact between multilevel interconnect metallizations, comprising the steps of:

providing an element of said MOSFET device;

deposition of a first insulator layer on said semiconductor substrate, including deposition on said element of said MOSFET device;

opening a contact hole in said first insulator layer, to said element of said MOSFET device;

deposition of a first metallization layer on said first insulator layer, and on exposed top surface of said element, of said MOSFET device, in said contact hole;

deposition of a second metallization layer on said first metallization layer;

patterning of said second metallization layer and underlying, said first metallization layer, to create a composite, metal interconnect structure, providing contact to underlying, said element of said MOSFET device;

deposition of a second insulator layer on said composite, metal interconnect structure, and on said first insulator layer, not covered by said composite, metal interconnect structure;

anisotropic etching of said second insulator layer, to create an insulator sidewall spacer, on sides of said composite, metal interconnect structure;

patterning of said second metallization layer, of said composite, metal interconnect structure, to create a metal pillar via structure, while leaving said first metallization layer, of said composite, metal interconnect structure, unetched, creating an underlying first level interconnect structure;

deposition of a first plasma insulator layer on said metal pillar via structures, on said first level interconnect structure, on said insulator sidewall spacers, and on said first insulator layer, not covered by said first level interconnect structure, or said insulator sidewall spacer;

application of a spin on glass layer on said first plasma insulator layer, filling spaces between said metal pillar via structures, and filling spaces between said first level interconnect structures;

baking of said spin on glass layer;

curing of said spin on glass layer;

deposition of a second plasma insulator layer, on said spin on glass layer;

chemical mechanical polishing to expose top surface of said metal pillar via structure by removal of said second plasma insulator layer, of said spin on glass layer, and of said first plasma insulator layer, from top surface of said metal pillar via structure;

deposition of a third metallization layer on exposed top surface of said metal pillar via structure, and on surfaces of said second plasma insulator layer, of said spin on glass layer, and of said first plasma insulator layer, in spaces between said metal pillar via structures, and in spaces between said first level interconnect structures; and

patterning of said third metallization layer to create second level interconnect structure, contacting underlying metal pillar via structure.

5,663,109

LOW TEMPERATURE GLASS PASTE WITH HIGH METAL TO GLASS RATIO

Raymond L. Dietz, Georgetown, and David M. Peck, Salem, both of Mass., assignors to Quantum Materials, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 265,919, Jun. 27, 1994, Pat. No. 5,543,366, which is a continuation-in-part of Ser. No. 962,924, Oct. 19, 1992, Pat. No. 5,334,558. This application May 29, 1996, Ser. No. 654,852
Int. Cl.[6] C03C *3/12*
U.S. Cl. 501—41 **18 Claims**

1. An essentially resin free paste consisting essentially of by weight:

from about 60% to about 90% of conductive metallic particles selected from the group consisting of Ag, Au, Al, Cu, Ni, Pd, Zn, Sn and Pt;

from about 2% to about 24% of a glass composition which consists essentially of, by weight on an oxide basis

about 40–65% Ag_2O

about 15–35% V_2O_5

about 0–20% TeO_2 and

about 0–30% of at least one of a group consisting of PbO_2 and Pb_3O_4,

wherein said conductive metallic particles and said glass composition have a ratio by weight of no more than about 32:1;

about 8–15% of an organic solvent; and

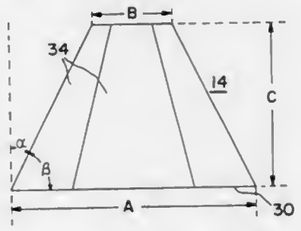
a resin percentage of less than 0.1% of said paste.

5,663,110

SOLUBLE SILICATE GLASS FORMS AND METHOD OF MANUFACTURING

William R. Cowper, West Chester, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Filed Sep. 30, 1992, Ser. No. 954,627
Int. Cl.[6] C03C *3/76;3/076*
U.S. Cl. 501—55 **4 Claims**



1. A soluble silicate glass structure resistant to mechanical breakage formed in a substantially truncated hexagonal pyramid shape having a hexagonal bottom surface, a hexagonal top surface having a smaller surface area than said bottom surface and six sides, said sides having a slope from said bottom surface to said top surface, and said bottom surface having a distance between opposite corners in the range of 1 1/16" to 1½".

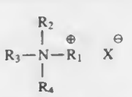
5,663,111

ORGANOCLAY COMPOSITIONS

James F. Gadberry, Danbury, Conn.; Michael Hoey, Woodbridge, N.J., and Clois E. Powell, Seguin, Tex., assignors to Southern Clay Products, Inc., Gonzales, Tex., and Akzo Nobel Inc., Dobbs Ferry, N.Y.

Filed Sep. 7, 1995, Ser. No. 524,898
Int. Cl.[6] C09C *1/42*
U.S. Cl. 501—146 **16 Claims**

1. An organoclay composition comprising the reaction product of a smectite-type clay having an ion exchange capacity of at least 50 meq. wt. per 100 g. clay (active basis), and an alkoxylated quaternary ammonium compound having the following formula:



(I)

wherein R_1 and R_2 are alike or different, and are selected from the group consisting of C_1–C_8 alkyl, benzyl or 2-hydroxyethyl groups; R_3 is a C_1–C_8 alkyl, benzyl or 2-hydroxyethyl group, or an alkoxylated chain containing 0–10 moles ethylene oxide and 3–15 moles of an alkylene oxide residue selected from the group consisting of propylene oxide, butylene oxide and mixtures thereof; and R_4 is an alkoxylated chain containing 0–10 moles ethylene oxide and 3–15 moles of an alkylene oxide residue selected from the group consisting of propylene oxide, butylene oxide and mixtures thereof; and X is the salt anion.

5,663,112

CEROUS CHLORIDE-CHROMIC OXIDE CATALYST FOR PRODUCING CHLORINE, METHODS FOR PRODUCING THE SAME AND A METHOD FOR PRODUCING CHLORINE

Byoung Sung Ahn; Dong Ju Moon; Kun You Park, and Moon Jo Chung, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

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Claims priority, application Rep. of Korea, Dec. 1, 1993, 1993-26072
Int. Cl.[6] B01J *23/00*
U.S. Cl. 502—304 **7 Claims**

1. A catalyst for oxidizing hydrogen chloride to chlorine consisting of cerous chloride ($CeCl_3$) and chromic oxide (Cr_2O_3) wherein the amount of cerous chloride is 0.1 to 5 wt % based on the weight of the chromic oxide.

5,663,113

AMMOXIDATION CATALYST COMPOSITION

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Int. Cl.[6] B01J *23/00*
U.S. Cl. 502—314 **15 Claims**

1. An ammoxidation catalyst composition for use in producing acrylonitrile from propylene, or methacrylonitrile from isobutene or tert-butanol, by ammoxidation of said propylene or of said isobutene or tert-butanol, comprising an oxide catalyst composition represented by the formula (1):

$$Mo_{12}(Bi_{1-a}A_a)_bFe_cCo_dX_eY_fO_g \quad (I)$$

wherein:
A is at least one rare earth element,
X is at least one element selected from the group consisting of nickel, magnesium, zinc and manganese,
Y is at least one element selected from the group consisting of potassium, rubidium and cesium,
a is the atomic ratio of A to the sum of bismuth and A,
b is the atomic ratio of the sum of bismuth and A, relative to twelve atoms of molybdenum, and
c, d, e, f and g are, respectively, the atomic ratios of iron, cobalt, X, Y and oxygen, relative to twelve atoms of molybdenum,
wherein
a is a number of from 0.6 to 0.8,
b is a number of from 0.5 to 2,
c is a number of from 0.1 to 3,
d is a number of from more than 0 to 10,
e is a number of from 0 to 8,
f is a number of from 0.01 to 2, and
g is a number determined by the valence requirements of the other elements present.

5,663,114

CATALYST FOR PRODUCTION OF PYROMELLITIC ANHYDRIDE AND METHOD FOR PRODUCTION OF PYROMELLITIC ANHYDRIDE

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Filed Oct. 21, 1994, Ser. No. 327,234
Claims priority, application Japan, Oct. 22, 1993, 5-264757
Int. Cl.[6] B01J *23/50;23/22*
U.S. Cl. 502—347 **9 Claims**

1. A catalyst for the production of pyromellitic anhydride by the vapour phase oxidation of a tetraalkylbenzene with a molecular oxygen containing gas which comprises vanadium and silver in an atomic ratio of silver to vanadium in the range of 0.001 to 0.2, at least one member of the group consisting of molybdendum and tungsten wherein the atomic ratio of said group member to vanadium is in the range of 0.01 to 2 and at least one oxide selected from the group consisting of titanium oxide, and zirconium oxide, wherein the amount of said oxide in terms of surface area of said oxide per mole based on the total amount of said other components is in the range of 1×10^3 m^2/mol and $1\times10^5 m^2$/mol.

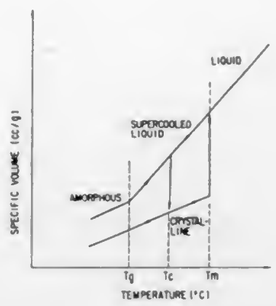
5,663,115

THERMAL RECORDING MEDIUM AND RECORDING METHOD

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Filed Feb. 28, 1995, Ser. No. 395,930
Claims priority, application Japan, Mar. 1, 1994, 6-031046; Oct. 31, 1994, 6-266394; Nov. 22, 1994, 6-287602
Int. Cl.[6] B41M *5/34*
U.S. Cl. 503—201 **27 Claims**

1. A thermal recording medium in which information recording and erasing are performed on a basis of a crystalline-to-amorphous transition, comprising:



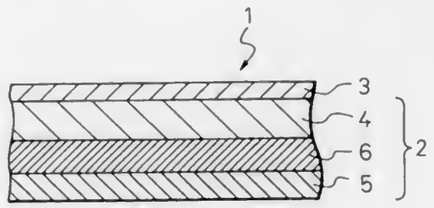
a color former; and
a developer consisting of a compound having asteroid skeleton.

5,663,116

THERMAL TRANSFER DYE IMAGE-RECEIVING SHEET

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Filed Feb. 13, 1996, Ser. No. 600,426
Claims priority, application Japan, Feb. 15, 1995, 7-026860; Mar. 13, 1995, 7-052544
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **18 Claims**



1. A thermal transfer dye image-receiving sheet comprising:
a substrate sheet consisting of an oriented thermoplastic film comprising, as principal components, a polyolefin resin and inorganic particles, and
a dye-receiving resin layer formed on a surface of the substrate sheet and comprising a resin capable of receiving a thermally transferable dye for forming dye images,
the substrate sheet exhibiting thermal shrinkages of 1.50% or less in the longitudinal direction and 0.50% or less in the transverse direction of the substrate sheet when heated from a temperature of 20° C. to a temperature of 120° C., and having tensile moduli of elasticity of 50.0 MPa or less in the longitudinal direction and 100.0 MPa or less in the transverse direction of the substrate sheet, determined at a temperature of 120° C.

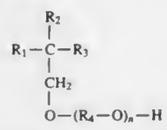
5,663,117

ALKOXYLATED PRIMARY ALCOHOL SURFACTANTS PROVIDING ENHANCED EFFICACY AND/OR RAINFASTNESS TO GLYPHOSATE FORMULATIONS

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Continuation-in-part of Ser. No. 491,466, Jun. 16, 1995, abandoned, which is a continuation-in-part of Ser. No. 341,501, Nov. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 169,805, Dec. 17, 1993, abandoned. This application Jun. 17, 1996, Ser. No. 664,476
Int. Cl.[6] A01N *25/24;25/30;57/04*
U.S. Cl. 504—206 **26 Claims**

1. A storage-stable, liquid or water soluble dry concentrate agriculturally acceptable water soluble composition comprising:
(a) glyphosate or one or more of its salts or mixtures thereof;
(b) one or more alcohol surfactants having the following chemical structure



wherein R_1 and R_2 are independently straight or branched chain C_1 to about C_{28} alkyl, aryl or alkylaryl groups and the total number of carbon atoms in R_1 and R_2 is about 7 to about 30, R_3 is hydrogen, R_4 groups are independently C_1 to C_4 alkylene groups and n is an average number from about 3 to about 30; and
(c) one or more other surfactants.

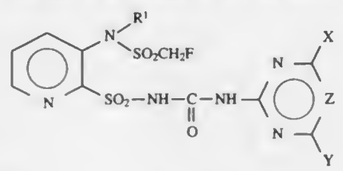
5,663,118

FLUOROMETHYLSULFONYL-SUBSTITUTED PYRIDYLSULFONYLUREAS AS HERBICIDES, PROCESS FOR THEIR PREPARATION, AND THEIR USE

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Continuation-in-part of Ser. No. 859,513, Jun. 8, 1992. This application Apr. 7, 1994, Ser. No. 224,324
Claims priority, application Germany, Apr. 9, 1993, 43 11 787.2
Int. Cl.[6] C07D *401/12;* **A01N** *43/54*
U.S. Cl. 504—215 **8 Claims**

1. A compound of the formula (II) or a salt thereof,



(II)

in which
R^1 is hydrogen, methyl or ethyl,
Z is CH and one of the radicals X and Y is halogen, $(C_1–C_2)$alkyl, $(C_1–C_2)$alkoxy, $OCHF_2$ or CF_3 and the other one of the radicals X and Y is $(C_1–C_2)$alkyl, $(C_1–C_2)$alkoxy or $OCHF_2$.

5,663,119

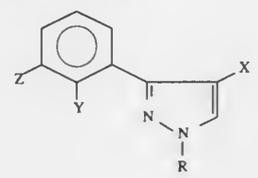
PHENYLPYRAZOLE FUNGICIDES

Alain Chene, Lyons; Raymond Peignier, Caluire; Jean-Pierre A. Vors, Lyons; Jacques Mortier, Lyons; Richard Cantegril, Lyons, and Denis Croisat, Lyons, all of France, assignors to Rhone-Poulenc Agrochimie, Lyon Cedex, France

Division of Ser. No. 959,131, Oct. 9, 1992. This application Jun. 7, 1995, Ser. No. 470,591
Claims priority, application France, Oct. 9, 1991, 91 12647
Int. Cl.[6] A01N *43/56*
U.S. Cl. 504—280 **16 Claims**

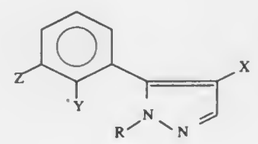
1. A compound of the formula

I



or

Ia



wherein:
X is:
a hydrogen or halogen atom,
a nitro, cyano or thiocyanato group,
a $C_1–C_4$ alkyl, $C_2–C_4$ alkenyl, $C_2–C_4$ alkynyl, $C_1–C_4$ alkoxy or $C_1–C_4$ alkylthio group, each of said groups being optionally halogenated,
phenyl or phenoxy, each of which is optionally substituted by $C_1–C_3$ alkyl, $C_1–C_3$ haloalkyl or $C_1–C_3$ alkoxy,
an amino group, optionally bearing one or two substituents selected from the group consisting of $C_1–C_4$ alkyl and phenyl,
a $(C_1–C_4$ alkyl)carbonyl, carbamoyl, carboxyl or benzoyl group,
a $C_1–C_4$ alkylsulphinyl or $C_1–C_4$ alkylsulphonyl group;
each of Y and Z, which are identical or different, is:
a hydrogen atom, provided that Y and Z cannot both be hydrogen,
a halogen atom,
a hydroxyl, nitro, nitroso, cyano or thiocyanato group,
an amino group, optionally bearing one or two substituents selected from the group consisting of $C_1–C_4$ alkyl and phenyl,
$C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, $C_1–C_4$ alkylthio, $C_1–C_4$ hydroxyalkyl, $C_2–C_4$ alkenyl, $C_2–C_4$ alkynyl, $C_1–C_4$ alkylsulphinyl or $C_1–C_4$ alkylsulphonyl group, each of said groups being optionally halogenated,
phenyl, phenyloxy, phenylthio or benzyl, each of which is optionally substituted on the nucleus by $C_1–C_3$ alkyl, $C_1–C_3$ haloalkyl or $C_1–C_3$ alkoxy,
a formyl, acetyl, $(C_1–C_4$ alkyl)thiocarbonyl, $(C_1–C_4$ alkoxy)thiocarbonyl, mono- or di$(C_1–C_4$ alkyl)aminocarbonyl, mono- or di$(C_1–C_4$ alkyl)aminothiocarbonyl, carboxyl, carboxylate or carbamoyl group, the alkyl portion of said groups being optionally substituted by at least one halogen atom,
or benzoyl, optionally substituted on the nucleus by $C_1–C_3$ alkyl, $C_1–C_3$ haloalkyl or $C_1–C_3$ alkoxy;
R is:
a) a hydrogen atom, a nitro, amino, hydroxyl, cyano, $C_1–C_6$ alkyl or $C_1–C_6$ haloalkyl group;
b) a group $S(O)_m—R_1$, wherein:
m is an integer equal to zero or two, and
R_1 is:
either, when m is equal to zero:
a $C_1–C_6$ haloalkyl group,
a phenyl or 3-pyridyl group, each of which is optionally

substituted by at least one halogen atom or one nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or C_1–C_4 haloalkoxy group;

or, when m is equal to two:

a C_1–C_6 alkyl or C_1–C_6 alkoxy group, each of which is optionally substituted by one or more halogen atoms or C_1–C_3 alkoxy groups;

a C_3–C_6 cycloalkyl group;

a C_3–C_6 alkenyl, C_3–C_6 alkynyl or C_3–C_6 alkenoxy group;

a phenyl group, optionally substituted by 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy and C_1–C_4 haloalkoxy;

c) a group CH_2—NR_2R_3, wherein:

R_2 is:

C_1–C_6 alkyl, optionally bearing a substituent selected from the group consisting of cyano, C_1–C_6 alkoxy, C_3–C_7 cycloalkyl, (C_1–C_6 alkyl)carbonyl, (C_1–C_6 alkoxy)carbonyl, mono(C_1–C_6 alkyl)aminocarbonyl, di(C_1–C_6 alkyl)aminocarbonyl, C_1–C_6 alkylsulphinyl, C_1–C_6 alkylsulphonyl and di(C_1–C_6 alkyl)amino;

C_2–C_6 alkenyl or C_2–C_6 alkynyl;

C_3–C_7 cycloalkyl;

phenyl or benzyl, each of which optionally bears a substituent selected from the group consisting of halogen, cyano, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl having 1 to 9 halogen atoms, C_1–C_6 haloalkoxy having 1 to 9 halogen atoms, (C_1–C_6 alkyl)carbonyl and (C_1–C_6 alkoxy)carbonyl;

R_3 is:

a group Het, Het-(C_1–C_6 alkyl), Het-(C_3–C_6 alkenyl) or Het-(C_3–C_6 alkynyl), each of which optionally bears a substituent selected from the group consisting of halogen, cyano, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl having 1 to 9 halogen atoms, C_1–C_6 haloalkoxy having 1 to 9 halogen atoms, (C_1–C_6 alkyl)carbonyl and (C_1–C_6 alkoxy)carbonyl, wherein Het is a heterocyclic radical having 5 to 7 atoms, of which 1 to 3 are heteroatoms selected from the group consisting of nitrogen, oxygen and sulphur, optionally bearing a substituent selected from the group consisting of halogen, cyano, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 haloalkyl having 1 to 9 halogen atoms, C_1–C_6 haloalkoxy having 1 to 9 halogen atoms, (C_1–C_6 alkyl)carbonyl and (C_1–C_6 alkoxy)carbonyl;

di(C_1–C_6 alkyl)amino(C_1–C_6 alkyl), C_3–C_7 cycloalkyl, (C_3–C_7 cycloalkyl)(C_1–C_4 alkyl) or phenethyl, optionally bearing a substituent selected from the group consisting of halogen, cyano, C_1–C_4 alkyl and C_1–C_4 alkoxy;

R_2 and R_3 can additionally form, with the nitrogen atom to which they are joined, a nitrogen-containing ring having 6 atoms, 4 of which are carbon atoms, optionally substituted, and the fifth of which is a carbon atom or a heteroatom selected from the group consisting of oxygen, sulphur and nitrogen which can be optionally substituted by C_1–C_6 alkyl, the nitrogen-containing ring itself optionally bearing one or two substituents selected from the group consisting of cyano, (C_1–C_6 alkyl)carbonyl, (C_1–C_6 alkoxy)carbonyl, mono(C_1–C_6 alkyl)aminocarbonyl, di(C_1–C_6 alkyl)aminocarbonyl, C_1–C_6 alkylsulphinyl, C_1–C_6 alkylsulphonyl, phenylsulphinyl and phenylsulphonyl;

d) a group $(CH_2)_m$—R_4, wherein:

m is equal to 1 or 2,

R_4 is cyano, nitro, (C_1–C_4 alkyl)carbonyl, phenylcarbonyl, (C_1–C_4 alkoxy)carbonyl, mono(C_1–C_4 alkyl)aminocarbonyl, di(C_1–C_4 alkyl)aminocarbonyl, P(O) (C_1–C_4 alkoxy)$_2$, P(O) (benzyloxy)$_2$, P(O) (phenoxy)$_2$, tri(C_1–C_4 alkyl)silyl or phenyl, wherein the alkyl portions of said groups are optionally halogenated and the phenyl nucleus of the aromatic radicals optionally bears 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy and (C_1–C_4 alkoxy)carbonyl;

e) a group $CH(R_5)$—X—R_6, wherein:

R_5 is hydrogen or C_1–C_4 alkyl,

X is an oxygen atom or a group $S(O)_n$, wherein:

n is an integer equal to zero or two,

R_6 is:

C_1–C_4 alkyl, optionally bearing a substituent selected from the group consisting of halogen, cyano, C_1–C_4 alkoxy, phenoxy, benzyloxy and tri(C_1–C_4 alkyl)silyl, the phenyl nuclei being optionally substituted by 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl and C_1–C_4 haloalkoxy;

C_3–C_6 alkenyl or C_3–C_6 alkynyl;

phenyl or benzyl, each of which optionally bears 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl and C_1–C_4 haloalkoxy;

f) a group CHR_7R_8, wherein:

R_7 is a hydrogen atom or a C_1–C_4 haloalkyl or C_1–C_4 alkoxy group,

R_8 is a halogen atom or a hydroxyl, C_1–C_6 alkoxy or O—C(O)R_9 group wherein:

R_9 is hydrogen, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_2–C_4 alkenyl, tetrahydrofuryl, tetrahydropyranyl or (C_1–C_6 alkoxy)carbonyl;

g) a group C(X)—R_{10}, wherein:

X is an oxygen or sulphur atom,

R_{10} is:

a hydrogen or halogen atom,

a C_1–C_6 alkyl group, optionally bearing a substituent selected from the group consisting of halogen, cyano, nitro, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl, mono(C_1–C_4 alkyl)aminocarbonyl, di(C_1–C_4 alkyl)aminocarbonyl and C_3–C_6 cycloalkyl;

a C_3–C_6 alkenyl or C_3–C_6 alkynyl group, optionally substituted by a phenyl which optionally bears 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl and C_1–C_4 haloalkoxy;

a phenyl, benzyl, 2-pyridyl, 3-pyridyl or 4-pyridyl group, the nuclei of each of which optionally bears 1 to 5 substituents selected from the group consisting of halogen, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, (C_1–C_4 alkyl)carbonyl and (C_1–C_4 alkoxy)carbonyl;

a group $CH(R_{11})$—X—R_{12}, wherein:

R_{11} is a hydrogen atom or C_1–C_4 alkyl group,

X is an oxygen atom or the group $S(O)_p$, wherein p is equal to zero or 2;

R_{12} is C_1–C_4 alkyl group, optionally substituted by a halogen atom or C_1–C_4 alkoxy group; a C_3–C_6 alkenyl or C_3–C_6 alkynyl group; a phenyl or benzyl group, optionally bearing 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl and C_1–C_4 haloalkoxy;

a group $CH(R_{11})$—$NR_{13}R_{14}$, wherein:

R_{11} is defined as above and

each of R_{13} and R_{14}, which are identical or different, is:

C_1–C_4 alkyl, optionally substituted by a cyano, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl, di(C_1–C_4 alkyl)aminocarbonyl, halogen or C_1–C_4 alkoxy;

a phenyl or benzyl group, each of which can optionally bear 1 to 5 substituents selected from the group consisting of halogen, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy and (C_1–C_4 alkoxy)carbonyl;

a group CHR_{11}—R_{15}, wherein:

R_{11} is defined as above and

R_{15} is a heterocyclic group $NC_4R_{16}R_{17}T$, wherein each of R_{16} and R_{17}, which are identical or different, is a hydrogen atom or a C_1–C_3 alkyl or (C_1–C_3 alkoxy)carbonyl group, and T is an oxygen or sulphur atom, or a carbonyl or N-R_{18} group, wherein R_{18} is a hydrogen atom or C_1–C_4 alkyl, formyl, (C_1–C_4 alkylcarbonyl or (C_1–C_4 alkoxy)carbonyl group;

h) a group —C(O)—X—R_{19}, wherein:

X is an oxygen or sulphur atom,

R_{19} is:

a C_1–C_6 alkyl group, optionally bearing a substituent selected from the group consisting of a halogen atom and a cyano group;

a C_3–C_6 cycloalkyl group, optionally substituted by C_1–C_3 alkyl;

a tri(C_1–C_4 alkyl)silyl or phenylsulphonyl, optionally substituted by at least one halogen atom or C_1–C_4 alkyl;

a (C_1–C_4 alkoxy)carbonyl or di(C_1–C_4 alkyl)aminocarbonyl;

a C_2–C_6 alkenyl or C_2–C_6 alkynyl group, each of which can optionally be substituted by phenyl, which can optionally bear 1 to 5 substituents selected from the group consisting of a halogen atom, a nitro group and a C_1–C_4 alkyl radical;

a phenyl, benzyl, 2-pyridyl, 3-pyridyl or 4-pyridyl group, the nuclei of each of which can optionally bear 1 to 5 substituents selected from the group consisting of halogen, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulphinyl and C_1–C_4 alkylsulphonyl;

a phenylalkyl group or a heterocyclylalkyl group, wherein the alkyl portion has 1 to 4 carbon atoms and the heterocyclyl portion is 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-furyl, 3-furyl, 2-thienyl or 3-thienyl, the heterocyclyl nuclei optionally bearing 1 to 5 substituents selected from the group consisting of halogen, nitro, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulphinyl and C_1–C_4 alkylsulphonyl;

i) a group C(X)—$NR_{20}R_{21}$, in which:

X is an oxygen or sulphur atom,

each of R_{20} and R_{21} is:

a hydrogen atom or a C_1–C_4 alkyl group, optionally bearing a substituent selected from the group consisting of halogen, cyano, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl and di(C_1–C_4 alkyl)aminocarbonyl;

a C_3–C_6 cycloalkyl group, optionally substituted by C_1–C_3 alkyl;

a C_3–C_6 alkenyl or C_3–C_6 alkynyl group;

a phenyl or benzyl group, the nuclei of each of which optionally bear 1 to 5 substituents selected from the group consisting of halogen, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, (C_1–C_4 alkyl)carbonyl, (C_1–C_4 alkoxy)carbonyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulphinyl and C_1–C_4 alkylsulphonyl radical;

R_{20} and R_{21} can additionally form, with the nitrogen atom to which they are joined, a ring having 6 atoms, 4 of which are optionally substituted carbon atoms and the fifth of which is a carbon atom or a heteroatom selected from the group consisting of oxygen, sulphur and nitrogen;

j) a group $SiR_{22}R_{23}R_{24}$, wherein each of R_{22}, R_{23} and R_{24}, which are identical or different, is C_1–C_4 alkyl, phenyl or benzyl;

k) a group P(X)$R_{25}R_{26}$, wherein:

X is an oxygen or sulphur atom,

each of R_{25} and R_{26}, which are identical or different, is C_1–C_4 alkyl, C_1–C_4 alkoxy, phenyl, phenoxy, benzyl or benzoxy;

with the proviso that when X is a hydrogen atom and R is a hydrogen atom, then Y is not a hydroxyl group or an alkoxy group; and

with the further proviso that when X is a hydrogen atom, R is a methyl group and Y is a hydroxyl group, then Z is not a hydrogen atom or a methyl group.

5,663,120

METHOD OF PREPARING OXIDE HIGH-TEMPERATURE SUPERCONDUCTOR

Takeshi Hikata, and Kenichi Sato, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 757,103, Sep. 10, 1991, Pat. No. 5,378,684. This application Sep. 29, 1994, Ser. No. 316,262
Claims priority, application Japan, Sep. 10, 1990, 2-240384
Int. Cl.[6] H01L *39/24*
U.S. Cl. 505—430 **3 Claims**

1. A method of preparing an oxide high-temperature superconductor in a metal sheath comprising the steps of:

(a) maintaining a metal sheath containing a ceramic material capable of being superconductive at a constant intermediate temperature during heat treatment; and

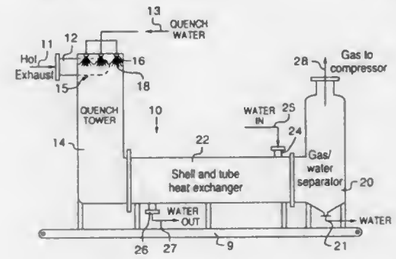
(b) removing gas formed during said heat treatment from said metal sheath while maintaining said sheath at said constant intermediate temperature during heat treatment wherein under said constant intermediate temperature the metal sheath does not expand during said step of removing gas.

5,663,121

METHOD AND APPARATUS FOR PROVIDING A STREAM OF INERT GASES IN UNDERBALANCED DRILLING OF A WELL BORE

Eugene I. Moody, 510-5th Street, S.W., Suite 1800, Calgary, Alberta, Canada, T2P 3S2

Continuation-in-part of Ser. No. 173,358, Dec. 23, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 362,761
Int. Cl.[6] C09K *7/00*
U.S. Cl. 507—102 **14 Claims**



1. A method for providing a pressurized stream of substantially inert gases as a primary component of drilling fluids used in underbalanced drilling of a well bore, comprising the steps of:

a) treating a hot stream of exhaust gases from an internal combustion engine to

i) cool said exhaust gases;

ii) reduce acid content of said exhaust gases; and

iii) increase wettability of carbon particles in said exhaust gases;

such treatment of said exhaust gases comprising collecting hot exhaust gases from said internal combustion engine to form said hot stream of exhaust gases, directing said hot stream of exhaust gases to said treatment step wherein said hot stream is cooled by spraying an aqueous solution into said exhaust gases wherein acid content and wettability are treated by providing in said aqueous solution a basic agent to reduce acid content and a surfactant to increase wettability of carbon particles so as to be absorbed by said aqueous spray,

b) separating by condensing said aqueous solution from said cooled stream to remove in said aqueous solution said wetted carbon particles and neutralized acid content,

c) compressing said treated stream to a pressure suitable for underbalanced drilling; and

d) directing said compressed stream of gases down a drill string to provide drilling fluids during said underbalanced drilling of said well bore.

5,663,122

MINERAL ADDITIVES FOR SETTING AND/OR CONTROLLING THE RHEOLOGICAL PROPERTIES AND GEL STRUCTURE OF AQUEOUS LIQUID PHASES AND THE USE OF SUCH ADDITIVES

Heinz Mueller, Monheim; Wolfgang Breuer, Korschenbroich; Claus-Peter Herold, Mettmann; Peter Kuhm, Hilden, and Stephan von Tapavicza, Erkrath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/01902, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/02566, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 19, 1993, Ser. No. 374,556

Claims priority, application Germany, Jul. 27, 1992, 42 24 537.0

Int. Cl.[6] C09K 7/02;7/04;7/06; B01J 13/00

U.S. Cl. 507—110 18 Claims

1. Water-based flowable and pumpable working fluids comprising

(A) viscosity builders selected from the group consisting of swellable clay minerals and layer silicates; and

(B) rheology controllers comprising mixed metal hydroxide compounds of divalent and trivalent metals with a three dimensional space lattice structure of the garnet type, in which the OH moieties may be partly replaced by mono- and/or poly-basic acid moieties, said rheology controllers conforming to the structural formula I:

$$M''_aM'''_b(OH)_{2a+3b-n\,m}A^n_m \quad (I)$$

wherein M'' represents one or more divalent cations selected from the group consisting of Ca, Mg, Zn, Cu, Ba, Sr, Fe, Mn and Co; M''' represents one or more trivalent cations selected from the group consisting of Al, Fe, Cr and Ga; A represents an anionic moiety with a valency of n, a represents a number from 2 to 4; b represents a number from 1 to 3; each of m and n is a number; the ratio of a to b is in the range from 1:1 to 3:1 and the product n·m is a number from 0 to about 6.

2. Flowable and pumpable working fluids as claimed in claim 1, which are water-based drilling fluids of the o/w emulsion type containing oils as the disperse phase.

3. Flowable and pumpable working fluids as claimed in claim 2, wherein the ratio by weight of rheology controllers to the total of swellable clay and swellable layer silicates is from 0.1:1 to 1:1.

5,663,123

POLYMERIC EARTH SUPPORT FLUID COMPOSITIONS AND METHOD FOR THEIR USE

K. Gifford Goodhue, Jr., Spring, and Max M. Holmes, Dallas, both of Tex., assignors to KB Technologies Ltd., Spring, Tex.

Continuation-in-part of Ser. No. 20,345, Feb. 19, 1993, Pat. No. 5,407,909, which is a continuation-in-part of Ser. No. 914,441, Jul. 15, 1992, abandoned. This application Feb. 1, 1995, Ser. No. 382,121

Int. Cl.[6] E21B 33/14;33/138; C09K 7/04

U.S. Cl. 507—225 61 Claims

1. An earth stabilization fluid for use in excavating earth cavities, comprising an aqueous continuous phase, said aqueous phase containing a combination of one or more polymers, said combination of polymers containing anionic functional groups and cationic functional groups, said earth stabilization fluid being characterized by a Marsh Funnel viscosity greater than 35 seconds per quart and being effective to form a functional network at the interface of an excavation cavity and said earth stabilization fluid.

5,663,124

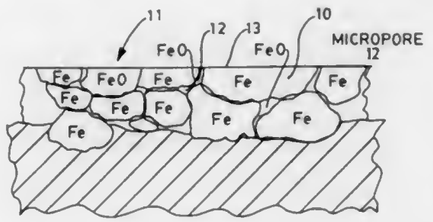
LOW ALLOY STEEL POWDER FOR PLASMA DEPOSITION HAVING SOLID LUBRICANT PROPERTIES

V. Durga Nageswar Rao, Bloomfield Township; Robert Alan Rose, Grosse Pointe Park; David Alan Yeager, Plymouth, and Carlo Alberto Fucinari, Farmington Hills, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 9, 1994, Ser. No. 352,666

Int. Cl.[6] B22F 1/00; C10M 103/04

U.S. Cl. 508—150 7 Claims



1. An iron based powder composition for thermal spraying, comprising H_2O atomized Fe based particles having at least 90% of the Fe metal combined with oxygen in the lowest atomic oxygen form for an oxide of such metal.

5,663,125

LUBRICATING OIL FOR TWO-CYCLE ENGINES

Mitsuaki Ishimaru; Mineo Kagaya, and Noboru Ishida, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

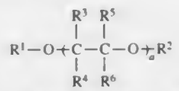
Division of Ser. No. 307,622, Sep. 20, 1994, abandoned. This application Jul. 22, 1996, Ser. No. 685,017

Claims priority, application Japan, Jan. 20, 1993, 5-007908

Int. Cl.[6] C10M 139/00;141/12

U.S. Cl. 508—194 2 Claims

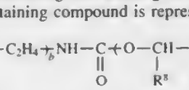
1. A lubricating oil composition for two-cycle engines which comprises (A) as a base oil a polyoxyalkylene glycol derivative represented by formula (1):



(1)

wherein R^1 and R^2 are hydrogen atoms, alkyl groups having 1 to 22 carbon atoms, alkenyl groups having 3 to 22 carbon atoms, cycloalkyl groups or alkylcycloalkyl groups having 5 to 20 carbon atoms, or aryl, alkylaryl or arylalkyl groups having 6 to 20 carbon atoms; R^3, R^4, R^5 and R^6 are hydrogen atoms, methyl groups or ethyl groups, and the total number of carbons of R^3, R^4, R^5 and R^6 is 1 or 2; and a is an integer of 1 to 200; and

(B) a boronated nitrogen-containing compound wherein said nitrogen containing compound is represented by formula (2):



(2)

wherein R^7 is an alkyl group having 1 to 22 carbon atoms, an alkenyl group having 3 to 22 carbon atoms, a cycloalkyl or alkylcycloalkyl group having 5 to 15 carbon atoms, or an aryl, alkylaryl or arylalkyl group having 6 to 18 carbon atoms; R^8 and R^9 are hydrogen atoms or alkyl groups having 2 to 6 carbon atoms, and the total number of carbon atoms of R^8 and R^9 is from 2 to 8; b is an integer of 1 to 8; and c is an integer of 5 to 40, said compound being present in the amount of 0.5 to 30 wt % to the total weight of the composition.

5,663,126

POLAR GRAFTED POLYOLEFINS, METHODS FOR THEIR MANUFACTURE, AND LUBRICATING OIL COMPOSITIONS CONTAINING THEM

Frederick J. Boden, Somerset; Richard P. Sauer, North Plainfield; Irwin L. Goldblatt, Edison, and Michael E. McHenry, Washington, all of N.J., assignors to Castrol Limited, Wiltshire, England

Continuation-in-part of Ser. No. 327,508, Oct. 21, 1994, Pat. No. 5,523,008. This application Oct. 10, 1995, Ser. No. 541,832

Int. Cl.[6] C10M 149/10; C08F 279/02

U.S. Cl. 508—221 39 Claims

1. The graft copolymer reaction product made by grafting a nitrogenous, ethylenically unsaturated, aliphatic or aromatic monomer having from 2 to about 50 carbon atoms on a polyolefin copolymer in the presence of a solvent having less than about 15% by weight of reactive aromatic constituents, said graft copolymer having an ADT value of at least about 8.

5,663,127

PERFLUOROPOLYETHER LUBRICATING COMPOSITIONS

Richard M. Flynn, Mahtomedi, and John G. Owens, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1994, Ser. No. 283,389

Int. Cl.[6] C10M 105/54

U.S. Cl. 508—250 20 Claims

1. A lubricating composition comprising:

(a) about 0.1–10 weight percent of a perfluoropolyether lubricant containing perfluoropolyether molecules having at least one hydrogen-containing end group per molecule; and

(b) about 99.9–90 weight percent of a liquid, perfluorinated, nonaromatic cyclic organic solvent or mixture of solvents;

wherein said lubricating composition has a turbidity of less than about 30% haze.

5,663,128

LIQUID ANTIOXIDANTS AS STABILISERS

Samuel Evans; Paul Dubs, both of Marly, and Hugo Camenzind, Bern, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Sep. 19, 1994, Ser. No. 308,339

Claims priority, application Switzerland, Sep. 20, 1993, 2844/93

Int. Cl.[6] C10M 107/46

U.S. Cl. 508—331 13 Claims

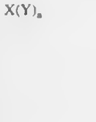
1. A product obtainable by reacting components a), b), c) and d) in a molar ratio of a), b), c) and d) which is 0.1:1:0.1:0.1 to 15:1:30:10, wherein

component a) is a compound of formula I or a mixture of compounds of formula I,

component b) is a compound of formula II or a mixture of compounds of formula II,

component c) is a compound of formula III or a mixture of compounds of formula III, and

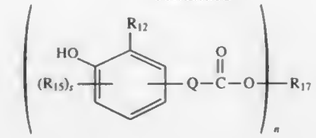
component d) is a compound of formula IV



(I)

(II)

-continued



(III)

D

(IV)

in which, in the compound of the formula I,

the radicals Y are OH,

a is the number 1, 2, 3, 4 or 6, where,

when Y is OH and a is 1,

X is C_1–C_{45}alkyl, C_3–C_{18}alkenyl or $—CH_2CH_2T_1(CH_2CH_2O)_bR_4$,

T_1 is oxygen or sulfur,

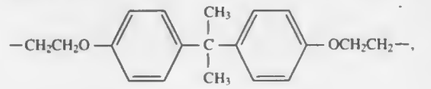
R_4 is C_1–C_{20}alkyl,

b is an integer ranging from 0 to 10 and

R_5 is hydrogen, C_1–C_{18}alkyl or phenyl, or,

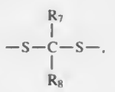
when Y is OH and a is 2,

X is $—CH_2CH_2T_2(CH_2CH_2O)_bCH_2CH_2—$, in which b is as defined above, $—C_cH_{2c}—$, $—CH_2—CH=CH—CH_2—$, or



in which

T_2 is oxygen, sulfur or



c is an integer ranging from 2 to 10,

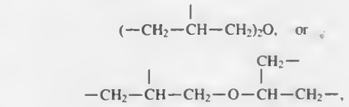
R_7 and R_8 independently of one another are hydrogen, C_1–C_{18}alkyl or phenyl, or R_7 and R_8 together with the C atom to which they are bonded form a C_5–C_{12}cycloalkyl ring, or

when a is 3,

X is C_3–C_{10}alkanetriyl, or

when Y is OH and a is 4,

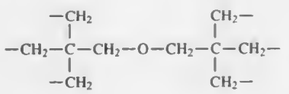
X is C_4–C_{10}alkanetetrayl,



or

when Y is OH and a is 6,

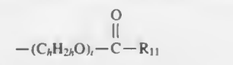
X is



or C_6–C_{10}alkanehexayl;

in the compound of the formula II,

the radicals Z are hydrogen or a group of the formula

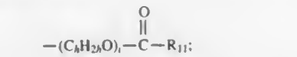


and k is an integer ranging from 0 to 6, in which

h is 2 or 3,

i is an integer ranging from 0 to 12 and

R_{11} is C_8–C_{30}alkenyl, with the proviso that the compound of the formula II has a group



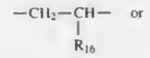
in the compound of the formula III,

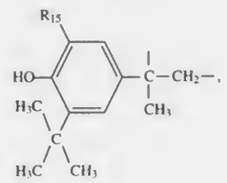
R_{12} is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, phenyl or C_7–C_9phenylalkyl,

R_{15} is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, phenyl or C_7–C_9phenylalkyl,

s is 0, 1 or 2,

Q is $—C_mH_{2m}—$,





in which R_{15} is as defined above,

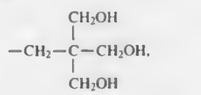
m is an integer ranging from 0 to 3,

R_{16} is C_1–C_8alkyl and

n is an integer ranging from 1 to 6, where,

when n is 1,

R_{17} is hydrogen, C_1–C_{45}alkyl, C_5–C_{12}cycloalkyl, C_2–C_{18}alkenyl, a monovalent radical of a hexose, a monovalent radical of a hexitol,

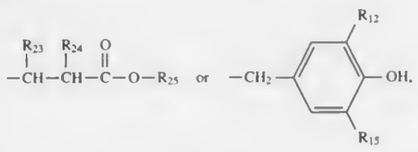


or furthermore R_{17} is $—CH_2CH_2—T_3—R_{19}$ or



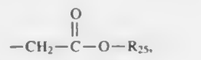
in which T_3 is oxygen or sulfur,

R_{19} is



in which R_{12} and R_{15} are as defined above, or

R_{19} is furthermore hydrogen, C_1–C_{24}alkyl, phenyl, C_5–C_{12}cycloalkyl or



in which p is an integer ranging from 2 to 4,

q is an integer ranging from 2 to 20,

R_{22} is C_1–C_{18}alkyl, phenyl or phenyl which is substituted by 1 to 3 radicals A_1, in which the radicals

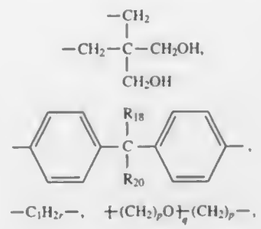
A_1 independently of one another are C_1–C_{12}alkyl, halogen, hydroxyl, methoxy or ethoxy, or R_{22} is furthermore C_5–C_8cycloalkyl,

R_{23} and R_{24} independently of one another are hydrogen or methyl, with the proviso that R_{23} and R_{24} are not simultaneously methyl;

R_{25} is hydrogen or C_1–C_{24}alkyl, or

when n is 2,

R_{17} is a divalent radical of a hexose, a divalent radical of a hexitol,

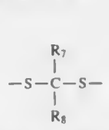


in which p and q are as defined above, $—CH_2CH_2—T_4—CH_2CH_2—$, $—CH_2—CH═CH—CH_2—$, or $—CH_2—C≡C—CH_2—$, in which

R_{18} and R_{20} independently of one another are hydrogen or C_1–C_{12}alkyl or together are the radical $—CH_2CH_2CH_2CH_2CH_2—$,

r is an integer ranging from 2 to 10,

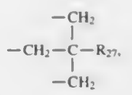
T_4 is sulfur or



in which R_7 and R_8 are as defined above, or,

when n is 3,

R_{17} is a trivalent radical of a hexose, a trivalent radical of a hexitol or



in which R_{27} is hydrogen or $—CH_2OH$, C_1–C_4alkyl, or

when n is 4,

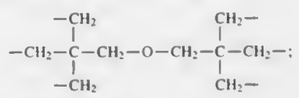
R_{17} is a tetravalent radical of a hexose, a tetravalent radical of a hexitol, or C_4–C_{10}alkanetetrayl, or,

when n is 5,

R_{17} is a pentavalent radical of a hexose or a pentavalent radical of a hexitol, or,

when n is 6,

R_{17} is a hexavalent radical of a hexitol or



in the compound of the formula IV,

D is sulfur.

11. A composition comprising

a) lubricant, hydraulic fluid or metal-working fluid selected form the group consisting of the mineral oils, the synthetic oils or a mixture of these; and

b) at least one product according to claim 1.

5,663,129

GEL-FREE ETHYLENE INTERPOLYMER DISPERSANT ADDITIVES USEFUL IN OLEAGINOUS COMPOSITIONS

Jacob Emert, Brooklyn, N.Y.; Robert Dean Lundberg, Flemington, and David John Lohse, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 352,967, Dec. 9, 1994, Pat. No. 5,567,344, Continuation of Ser. No. 992,516, Dec. 17, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,193

Int. Cl.[6] C10M *145/00*

U.S. Cl. 508—506 **17 Claims**

1. A functionalized and grafted polymer composition prepared by

(1) first functionalizing an oil soluble unsaturated α-olefin polymer to obtain an intermediate product comprising functionalized α-olefin polymer, said α-olefin polymer having a number average molecular weight of from about 700 to about 10,000 and a polydispersity of from about 1 to about 5 prior to functionalizing, said α-olefin polymer being selectively functionalized with carboxylic acid producing moieties at sites of olefinic unsaturation such that at least about 75% of the functionalized polymer chains thereof are monofunctionalized; and

(2) then free radically grafting the intermediate product such that carboxylic acid producing moieties are randomly attached along the polymer chains of the functionalized α-olefin polymer;

wherein said acid producing moieties introduced by functionalizing and by free radically grafting have 1 to 2 carboxylic acid producing groups per moiety such that the functionalized and grafted α-olefin polymer contains an average of from about 0.5 to about 5 acid producing moieties per polymer chain.

5,663,130

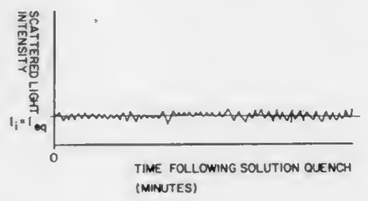
POLYMERS DERIVED FROM ETHYLENE AND 1-BUTENE FOR USE IN THE PREPARATION OF LUBRICANT DISPERSANT ADDITIVES

Jacob Emert, Brooklyn, N.Y.; Albert Rossi, Warren, N.J.; Salvatore Rea, Franklin Square, N.Y.; Jeffrey William Frederick, Morris Plains, and Mahn Won Kim, Califon, both of N.J., assignors to Exxon Chemical Patents Inc, Linden, N.J.

Division of Ser. No. 445,574, May 22, 1995, Pat. No. 5,498,809, which is a continuation of Ser. No. 992,192, Dec. 17, 1992, abandoned. This application Mar. 11, 1996, Ser. No. 610,782

Int. Cl.[6] C10M *145/02*

U.S. Cl. 508—506 **4 Claims**



1. Ethylene-1-butene copolymer functionalized with at least one member selected from the group consisting of C_3 to C_{10} mono-unsaturated monocarboxylic acid producing moieties and c_4 to c_{10} mono-unsaturated dicarboxylic acid producing moieties, wherein the copolymer before functionalization comprises from 1 to about 50 weight percent ethylene derived units and from about 99 to about 50 weight percent 1-butene derived units, based on total copolymer weight before substitution, and has a number average molecular weight between about 1,500 and 7,500, ethylvinylidene groups terminating at least about 30 percent of all copolymer chains, and an S_f value of about zero.

5,663,131

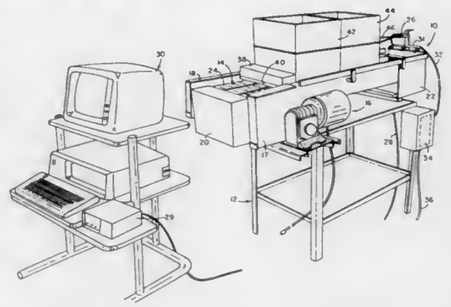
CONVEYOR LUBRICANTS WHICH ARE COMPATIBLE WITH PET CONTAINERS

Elsie Winicov, Kansas City, Mo.; Chris Foret, Shawnee Mission, Kans.; Cynthia Palmer, Kansas City, Mo.; Michael W. Griffith, Kansas City, Kans., and Thomas C. Hemling, Lake Winnebago, Mo., assignors to West Agro, Inc., Kansas City, Mo.

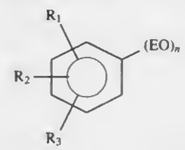
Filed Apr. 12, 1996, Ser. No. 631,058

Int. Cl.[6] C10M *173/02;129/16*

U.S. Cl. 508—580 **39 Claims**



1. A method of lubricating handling equipment for thermoplastic articles subject to stress cracking comprising the step of applying to said equipment an aqueous use lubricant essentially free of oil and including a nonaqueous fraction dispersed in water, said nonaqueous fraction comprising a nonionic surfactant fraction constituting at least about 50% by weight of said nonaqueous fraction and consisting essentially of a substituted phenol ethoxylate surfactant having a molecular weight of at least about 1000 and having at least about 12 ethylene moieties therein, said substituted phenol ethoxylate having the formula



wherein R_1 is selected from the group consisting of straight or branched chain C_8–C_{18} alkyl groups and substituted or unsubstituted C_1–C_{18} alkylaryl groups, R_2 and R_3 are individually selected from the group consisting of hydrogen, straight or branched chain C_8–C_{18} alkyl groups and substituted or unsubstituted C_1–C_{18} alkylaryl groups, and n is from about 12–100.

5,663,132

NON-CAUSTIC COMPOSITION COMPRISING PEROXYGEN COMPOUND AND METASILICATE AND CLEANING METHODS FOR USING SAME

Charles Bullick Talley, Highlands Ranch, Colo., assignor to Charvid Limited Liability Company, Highlands Ranch, Colo.

Filed Mar. 1, 1995, Ser. No. 396,971

Int. Cl.[6] C11D *7/18;3/08;3/395;7/14*

U.S. Cl. 510—218 **56 Claims**

1. A cleaning composition comprising:

(a) a peroxygen compound;

(b) no less than about 10% by weight of a silicate selected from the group consisting of an anhydrous metasilicate, an anhydrous sesquisilicate, and mixtures thereof; and

(c) no less than about 3% by weight of a chelate selected from the group consisting of a carboxylic acid and salts thereof, a phosphonic acid and salts thereof, and mixtures thereof.

5,663,133

PROCESS FOR MAKING AUTOMATIC DISHWASHING COMPOSITION CONTAINING DIACYL PEROXIDE

Alan S. Goldstein, Blue Ash, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 6, 1995, Ser. No. 554,065
Int. Cl.[6] C11D *3/39;3/395*
U.S. Cl. 510—224 15 Claims

1. A method for making a granular or powder automatic dishwashing detergent composition comprising:

a) forming a water-insoluble diacyl peroxide premix comprising, by weight of the composition, from about 0.01% to about 20% of a water-insoluble diacyl peroxide particle and from about 0.01% to about 25% of a dispersing agent, said dispersing agent being in a liquid form and selected from the group consisting of nonionic surfactants, polyacrylates, polypropylene glycol, polyethylene glycol and mixtures thereof, said diacyl peroxide particle comprises from about 1% to about 80% water-insoluble diacyl peroxide selected from the group consisting of dibenzoyl peroxide, benzoyl glutaryl peroxide and di-(2-methylbenzoyl) peroxide and from about 0.01% to about 95% stabilizing additive selected from the group consisting of inorganic salts, transition metal chelants, antioxidants and mixtures thereof; and

b) adding the premix of step (a) with other conventional automatic dishwashing detergent ingredients to form said automatic dishwashing detergent composition wherein said composition has a wash solution pH from about 8 to about 13.

5,663,134

COMPOSITION FOR REDUCING MALODOR IMPRESSION ON INANIMATE SURFACES

Toan Trinh, Maineville; Jerome Paul Cappel, Cincinnati; Philip Anthony Geis, West Chester; Judith Ann Hollingshead, Batavia; Mark Lee McCarty, Loveland, and Susan Schmaedecke Zwerdling, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 289,991, Aug. 12, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,350
Int. Cl.[6] C11D *3/50*
U.S. Cl. 510—406 3 Claims

1. An article of manufacture, which comprises:

A. an aqueous composition for reducing malodor impression, comprising:

i. from about 0.01% to about 0.5%, by weight of the composition, of perfume;

ii. from about 0.1% to about 5%, by weight of the composition, of methylated beta-cyclodextrin wherein the weight ratio of perfume to cyclodextrin is from about 4:100 to about 50:100;

iii. from about 0.1% to about 10%, by weight of the composition, of solubilized, water-soluble zinc salt;

iv. from about 0.05% to about 1%, by weight of the composition, of low-foaming surfactant; and

v. water; and

B. a trigger spray dispenser wherein the container is transparent polyethyleneterephthalate; and

wherein said composition is essentially free of any material that would soil or stain fabric wherein said composition contains less than about 1%, by weight of the composition, of low molecular weight monohydric alcohols and has a pH of from about 4 to about 5.

5,663,135

TERPENE-BASED CLEANING COMPOSITION

Thomas F. D'Muhala, Raleigh, and Thomas C. Zietlow, Apex, both of N.C., assignors to Corpex Technologies, Inc., Morrisville, N.C.

Filed May 10, 1996, Ser. No. 644,325
Int. Cl.[6] C11D *3/28;3/44;7/44*
U.S. Cl. 510—433 4 Claims

1. A composition suitable for removing organic contaminants consisting essentially of:

20 to 50 percent by weight of a non-alcohol terpene component, wherein said non- alcohol terpene component is selected from the group consisting of d-limonene, alpha-pinene, beta-pinene, l-methyl-4-isopropylene-1-cyclohexane, and mixtures thereof;

20 to 40 percent by weight of an alkyl pyrrolidone; and

31 to 40 percent by weight of a surfactant.

5,663,136

PROCESS FOR MAKING COMPACT DETERGENT COMPOSITIONS

Paul Van Dijk, Putte; Jose Luis Vega, Strombeek-Bever, both of Belgium, and Haydn Guy William Dickenson, Newcastle Upon Tyne, United Kingdom, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/05300, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO93/25378, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 2, 1993, Ser. No. 356,190
Claims priority, application European Pat. Off., Jun. 15, 1992, 92870089
Int. Cl.[6] C11D *11/00*
U.S. Cl. 510—444 11 Claims

1. A continuous process for making detergent granules having a bulk density greater than about 650 g/l, which process comprises the steps of:

(a) mixing a surfactant paste comprising at least 10% by weight of a neutralized anionic surfactant and a powder which is water soluble and is selected from the group consisting of alkali metal salts of phosphates, polyphosphates, phosphonates, polyhhosphonates, carbonates, silicates, borate, polyhdroxysulfonates and mixtures thereof, using a mixer at a first speed for a period of from 2 seconds to 30 seconds, wherein the first speed is from 600 to 2000 RPM and is sufficient to substantially eliminate localized build-up, balling or caking of the powder,

(b) agglomerating the resulting mixture using a mixer of a second speed of from 60 go 150 RPM for a period of less than one minute; and

(c) subjecting the detergent granules to at least one of drying and cooling;

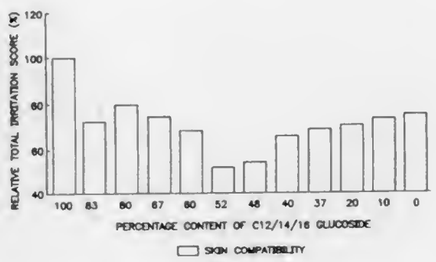
wherein the second speed is sufficient to provide the final detergent granules with a porosity of not less than 15%.

5,663,137

ULTRAMILD SURFACTANT MIXTURES II

Brigitte Giesen; Wolfgang Pittermann, both of Duesseldorf; Karl Schmid, Mettmann, and Walter Sterzel, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01842, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO94/29416, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 7, 1994, Ser. No. 564,162
Claims priority, application Germany, Jun. 16, 1993, 43 19 700.0
Int. Cl.[6] C11D *3/22*
U.S. Cl. 510—470 4 Claims



1. An ultramild surfactant mixture consisting of:

a) from about 48 about 52% by weight of at least one alkyl oligoglucoside corresponding to formula (I):

$$R^1—O—(G)_p \quad (I)$$

in which R^1 is an alkyl radical containing 8 to 10 carbon atoms, G is a glucose unit and p is a number of 1.3 to 1.8; and

b) from about 48 to about 52% by weight of at least one alkyl oligoglucoside corresponding to formula (II):

$$R^2—O—(G)_p \quad (II)$$

in which R^2 is an alkyl radical containing 12 to 16 carbon atoms, G is a glucose unit and p is a number of 1.3 to 1.8.

5,663,138

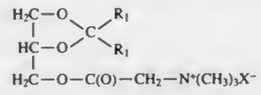
FABRIC CONDITIONING MOLECULES DERIVED FROM GLYCEROL AND BETAINE

Leonora Marie Ilardi, Englewood, N.J., and Stephen Alan Madison, New City, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 379,054, Jan. 27, 1995, Pat. No. 5,527,477, which is a continuation-in-part of Ser. No. 260,642, Jun. 16, 1994, Pat. No. 5,429,755. This application Feb. 5, 1996, Ser. No. 596,838
Int. Cl.[6] D06M *13/46*
U.S. Cl. 510—515 8 Claims

5. A composition for conditioning fabrics comprising:

a. I to 99 wt. % of a fabric conditioning compound of formula



(I)

wherein R_1 is a C_{15-22} branched or straight chain alkyl or alkenyl or hydroxyalkyl; and X^- is a water soluble anion; and

b. 99% to 1% water.

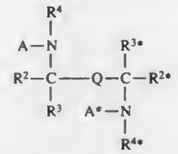
5,663,139

INHIBITORS OF RETROVIRAL PROTEASES

Bernd Stowasser, Gross-Umstadt, Germany; Jian-Qi Li, Shanghai, China; Anuschirwan Peyman, and Karl-Heinz Budt, both of Kelkheim/Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP93/01594, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO94/00461, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 22, 1993, Ser. No. 360,662
Claims priority, application Germany, Jun. 24, 1992, 42 20 566.2
Int. Cl.[6] A61K *38/07;38/08;* C07K *5/10*
U.S. Cl. 514—7 10 Claims

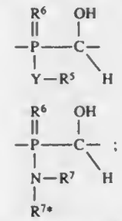
1. A compound of the formula I



(I)

in which

Q is a radical of the formula IIa or IIb

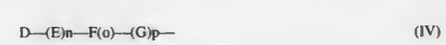


(IIa)

(IIb)

Y is oxygen or sulfur, and

A is a radical of the formula IV and A* is a radical of the formula IV*,



(IV)

(IV*)

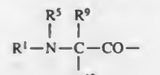
where

E, E*, F, F*, G and G*, independently of each other, are a natural or unnatural amino acid, azaamino acid or imino acid;

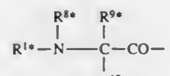
n, n*, o, o*, p and p*, independently of each other, are 0 or 1;

D is R^1 or a radical of the formulae V, VI or VII, and

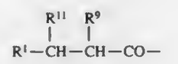
D* is R^{1*} or a radical of the formulae V*, VI* or VII*,



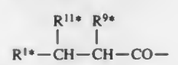
(V)



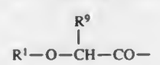
(V*)



(VI)



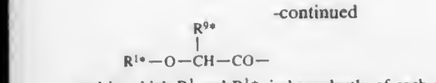
(VI*)



(VII)

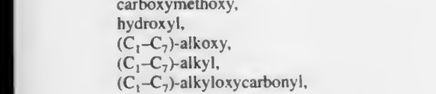
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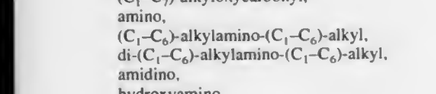


(VII*)

and in which R^1 and R^{1*}, independently of each other,
a1) are
hydrogen,
carboxyl,
$(C_1–C_{18})$-alkyl, which is optionally unsaturated once or twice and which is optionally substituted by up to 3 identical or different radicals from the group
mercapto,
hydroxyl,
$(C_1–C_7)$-alkoxy,
carbamoyl,
$(C_1–C_8)$-alkanoyloxy,
carboxyl,
$(C_1–C_7)$-alkoxycarbonyl,
F, Cl, Br, I,
amino,
amidino, which can be optionally substituted by one, two or three $(C_1–C_8)$-alkyl radicals,
guanidino, which can be optionally substituted by one or two benzyloxycarbonyl radicals or by one, two, three or four $(C_1–C_8)$-alkyl radicals,
$(C_1–C_7)$-alkylamino,
di-$(C_1–C_7)$-alkylamino,
$(C_1–C_6)$-alkoxycarbonylamino,
$(C_7–C_{15})$-aralkoxycarbonyl,
$(C_7–C_{15})$-aralkoxycarbonylamino,
phenyl-$(C_1–C_4)$-alkoxy,
9-fluorenylmethoxycarbonylamino,
$(C_1–C_6)$-alkylsulfonyl,
$(C_1–C_6)$-alkylsulfinyl,
$(C_1–C_6)$-alkylthio,
hydroxyamino,
hydroxyimino,
sulfamoyl,
sulfo,
carboxamido,
formyl,
hydrazono,
imino,
phenyl,
a radical $CONR^{12}R^{13}$ or $CONR^{12*}R^{13*}$,
by up to six hydroxyl, or
by up to five $(C_1–C_8)$-alkanoyloxy;
monocyclic, bicyclic or tricyclic $(C_3–C_{18})$-cycloalkyl,
$(C_3–C_{18})$-cycloalkyl-$(C_1–C_6)$-alkyl
where the cycloalkyl moiety is in each case optionally substituted by one or two identical or different radicals from the group
F, Cl, Br, I,
carboxyl,
carbamoyl,
carboxymethoxy,
hydroxyl,
$(C_1–C_7)$-alkoxy,
$(C_1–C_7)$-alkyl,
$(C_1–C_7)$-alkyloxycarbonyl,
amino,
$(C_1–C_6)$-alkylamino-$(C_1–C_6)$-alkyl,
di-$(C_1–C_6)$-alkylamino-$(C_1–C_6)$-alkyl,
amidino,
hydroxyamino,
hydroxyimino,
hydrazono,
imino,
guanidino,
$(C_1–C_6)$-alkoxysulfonyl,
$(C_1–C_6)$-alkoxysulfinyl,
$(C_1–C_6)$-alkoxycarbonylamino,
$(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkoxycarbonylamino,
$(C_1–C_7)$-alkylamino,
di-$(C_1–C_7)$-alkylamino, and
trifluoromethyl;
$(C_6–C_{14})$-aryloxy-$(C_1–C_6)$-alkyl,
$(C_6–C_{14})$-aryl,
$(C_6–C_{14})$-aryl-$(C_1–C_6)$-alkyl, or
$(C_6–C_{14})$-aryl-$(C_3–C_8)$-cycloalkyl, in which the aryl moiety is in each case optionally substituted by one, two or three identical or different radicals from the group
F, Cl, Br, I,
hydroxyl,
mono-, di- or trihydroxy-$(C_1–C_4)$-alkyl,
trifluoromethyl,
formyl,
carboxamido,
mono- or di-$(C_1–C_4)$-alkylaminocarbonyl,
nitro,
$(C_1–C_7)$-alkoxy,
$(C_1–C_7)$-alkyl,
$(C_1–C_7)$-alkoxycarbonyl,
amino,
$(C_1–C_7)$-alkylamino,
di-$(C_1–C_7)$-alkylamino,
carboxyl,
carboxymethoxy,
amino-$(C_1–C_7)$-alkyl,
$(C_1–C_7)$-alkylamino-$(C_1–C_7)$-alkyl,
di-$(C_1–C_7)$-alkylamino-$(C_1–C_7)$-alkyl,
$(C_1–C_7)$-alkoxycarbonylmethoxy,
carbamoyl,
sulfamoyl,
$(C_1–C_7)$-alkoxysulfonyl,
$(C_1–C_8)$-alkylsulfonyl,
sulfo-$(C_1–C_8)$-alkyl,
guanidino-$(C_1–C_8)$-alkyl and
$(C_1–C_6)$-alkoxycarbonylamino;
Het,
Het-$(C_1–C_6)$-alkyl,
Het-$(C_3–C_8)$-cycloalkyl,
Het-$(C_3–C_8)$-cycloalkyl-$(C_1–C_4)$-alkyl,
Het-$(C_3–C_8)$-cycloalkoxy-$(C_1–C_4)$-alkyl,
Het-thio-$(C_1–C_6)$-alkyl,
Het-thio-$(C_3–C_8)$-cycloalkyl,
Het-thio-$(C_3–C_8)$-cycloalkyl-$(C_1–C_4)$-alkyl,
where Het is in each case the radical of a 5- to 7-membered monocyclic or 8- to 10-membered bicyclic ring system which can be benzofuzed, aromatic, partially hydrogenated or completely hydrogenated, which can contain, as heteroelements, one, two, three or four different radicals from the group N, O, S, NO, SO, and SO_2, which can be substituted by 1 to 6 hydroxyl and which is optionally monosubstituted, disubstituted or trisubstituted as defined for $(C_6–C_{14})$-aryl under a1) and/or by oxo,
or are a radical $NR^{12}R^{13}$ or $NR^{12*}R^{13*}$, respectively, or,
a2)
are a radical of the formula VIII or VIII*, respectively,



(VIII)



(VIII*)

in which R1a and R1a* are defined as are R^1 and R^{1*}, respectively, under a1) and W or W* is —CO—, —CS—, O—CO—, $—SO_2—$, —SO—, —S—, $—NHSO_2—$, —NHCO—, —CH(OH)—, —N(OH)— or —CO—V—, where V is a peptide having from 1 to 10 amino acids;
or in which R^1 and R^{1*}, independently of each other, form, together with R^{11} or R^{11*}, respectively, and the atoms carrying the latter, monocyclic or bicyclic, saturated or partially unsaturated, ring systems having 5–12 ring members which, in addition to carbon, can also contain 1 sulfur atom which can optionally be oxidized to the sulfoxide or sulfone;
a3)
are a glycosyl radical, preferably a glucofuranosyl or glucopyranosyl radical, which is derived from naturally occurring aldotetroses, aldopentoses, aldohexoses, ketopentoses, ketohexoses, deoxyaldoses, aminoaldoses and oligosaccharides and also their stereoisomers;
R^2 and R^{2*},
independently of each other, are defined as are R^1 and R^{1*}, respectively, under a1) or a2), or form, together with R^4 or R^{4*}, respectively, and the atoms carrying the latter, monocyclic or bicyclic, saturated or partially unsaturated, ring systems having from 5 to 12 ring members, or form, together with R^3 or R^{3*}, respectively, and the atoms carrying the latter, cyclic, saturated or partially unsaturated, ring systems having from 3 to 12 ring members;
R^3 and R^{3*}, independently of each other, are
hydrogen or
$(C_1–C_3)$-alkyl;
R^4 and R^{4*}, independently of each other, are
hydrogen or
$(C_1–C_8)$-alkyl;
R^5 is
hydrogen,
$(C_1–C_{20})$-alkyl,
$(C_2–C_{20})$-alkenyl or alkynyl,
$(C_7–C_{20})$-arylalkyl or $(C_6–C_{20})$-aryl,
$(C_3–C_8)$-cycloalkyl which can be optionally substituted by different radicals from the group hydroxyl, alkoxy, carboxyl, alkanoyloxy, alkoxycarbonyl, F, Cl, Br, I, amino, alkylamino or dialkylamino;
an equivalent of a pharmaceutically tolerated cation, or
is a phosphinate prodrug;
R^6 is oxygen or sulfur;
R^7 and R^{7*}, independently of each other, are
hydrogen,
$(C_1–C_{20})$-alkyl,
$(C_2–C_{20})$-alkenyl or alkynyl, $(C_6–C_{20})$-aryl,
$(C_7–C_{20})$-arylalkyl, which can be optionally substituted by different radicals from the group hydroxyl, alkoxy, carboxyl, alkanoyloxy, alkoxycarbonyl, F, Cl, Br, I, amino, alkylamino or dialkylamino,
or, together, can form a ring having 2–6 carbon atoms,
R^8 and R^{8*}, independently of each other, are
hydrogen or
$(C_1–C_8)$-alkyl, or,
together with R^9 or R^{9*}, respectively, and the atoms carrying the latter, form monocyclic or bicyclic, saturated or partially unsaturated, ring systems having 5–12 ring members;
R^9 and R^{9*}
are, independently of each other, defined as are R^1 and R^{1*}, respectively, under a1), are hydroxyl or $(C_1–C_8)$-alkanoyloxy, or form, together with R^{10} or R^{10*}, respectively, and the atoms carrying the latter, cyclic, saturated or partially unsaturated, ring systems having from 3 to 12 ring members; or
form, together with R^{11} or R^{11*}, respectively, and the atoms carrying the latter, a monocyclic or bicyclic, saturated or partially unsaturated, ring system having 5–12 ring members which, in addition to carbon, can also contain 1 sulfur atom which can optionally be oxidized to the sulfoxide or sulfone; or can contain 1 nitrogen atom, where the ring system can optionally be substituted by amino;
R^{10} and R^{10*}, independently of each other, are
hydrogen or
$(C_1–C_6)$-alkyl;
R^{11} and R^{11*}, independently of each other, are
hydrogen,
hydroxyl,
$(C_1–C_4)$-alkanoyloxy, or
$(C_1–C_8)$-alkyl;
R^{12}, R^{12*}, R^{13} and R^{13*}, independently of each other, are
hydrogen,
$(C_1–C_8)$-alkyl which can be substituted by
amino,
$(C_1–C_4)$-alkylamino,
di-$(C_1–C_4)$-alkylamino,
mercapto,
carboxyl,
hydroxyl or
$(C_1–C_4)$-alkoxy,
$(C_3–C_7)$-cycloalkyl,
$(C_1–C_4)$-alkoxycarbonyl,
$(C_6–C_{14})$-aryl, $(C_6–C_{14})$-aryl-$(C_1–C_4)$-alkoxycarbonyl which can be substituted in the aryl moiety as described for R^1 or R^{1*},
Het or
Het-$(C_1–C_4)$-alkyl, where Het is defined as described for R^1 or R^{1*},
or where R^{12} and R^{13} or R^{12*} and R^{13*}, respectively, form, together with the nitrogen atoms carrying them, monocyclic or bicyclic, saturated, partially unsaturated or aromatic ring systems which also contain, as further ring members in addition to carbon, 1 or 2 nitrogen atoms, 1 sulfur atom or 1 oxygen atom, and which can be substituted by $(C_1–C_4)$-alkyl,
where
in the above compounds of the formula I, one or more amide groups (—CONH—) of the main chain can be replaced by $—CH_2NR_{14}—$, $—CH_2S—$, $—CH_2O—$, $—OCH_2—$, $—CH_2CH_2—$, —CH=CH— (cis and trans), $—COCH_2—$, $—CH(OH)CH_2—$, $—CH_2SO—$, $—CH_2SO_2—$, —COO—, $—P(O)(OR_{15})CH_2—$ and $—P(O)(OR_{15})NH—$, or even by an amide group having reverse polarity (—NHCO—);
in which R^{14} and R^{15}, independently of each other, are
hydrogen or
$(C_1–C_4)$-alkyl;
and the physiologically tolerated salts thereof.

5,663,140

USE OF CYCLIC DEPSIPEPTIDES HAVING 12 RING ATOMS FOR COMBATING ENDOPARASITES, NEW CYCLIC DESPIPEPTIDES HAVING 12 RING ATOMS, AND PROCESSES FOR THEIR PREPARATION

Jürgen Scherkenbeck, Wermelskirchen; Peter Jeschke, Leverkusen; Andrew Plant, Odenthal; Achim Harder, Köln, and Norbert Mencke, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

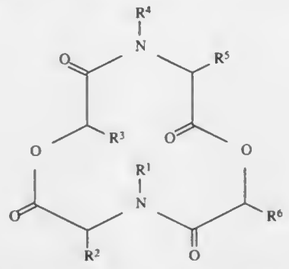
Filed Jan. 13, 1995, Ser. No. 372,543

Claims priority, application Germany, Jan. 19, 1994, 44 01 389.2

Int. Cl.[6] **A61K** *38/00;35/78;* **C07D** *273/08*

U.S. Cl. 514—11 **17 Claims**

1. A method for combating endoparasites in human or animals which comprises administering to said humans or animals an endoparasitically effective amount of a cyclic depsipeptide of the formula (I):



(I)

in which
R^1 and R^4 independently of one another represent hydrogen or represent straight-chain or branched alkyl, cycloalkyl, aralkyl, aryl, heteroaryl, or heteroarylalkyl, each of which is optionally substituted by one or more substituents;
R^2, R^3, R^5 and R^6 independently of one another represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, halogenoalkyl, hydroxyalkyl, alkanoyloxyalkyl, alkoxyalkyl, aryloxyalkyl, mercaptoalkyl, alkylthioalkyl, alkylsulphinylalkyl, alkylsulphonylalkyl, carboxyalkyl, alkoxycarbonylalkyl, arylalkoxycarbonylalkyl, carbamoylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, or

guanidinoalkyl which is optionally substituted by one or two benzyloxycarbonyl radicals or by one, two, three or four alkyl radicals, or alkoxycarbonylaminoalkyl, 9-fluorenylmethoxycarbonyl(Fmoc)aminoalkyl, alkenyl, cycloalkyl, cycloalkylalkyl, or represent aryl, arylalkyl, heteroaryl or heteroarylalkyl, each of which is optionally substituted by one or more substituents;

wherein, except as otherwise indicated, the substituents for R^{1-6} are identical or different and are selected from the group consisting of alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, halogenoalkyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, the halogen atoms being identical or different, hydroxyl, halogen, cyano, nitro, amino, monoalkyl- and dialkylamino having 1 to 4 carbon atoms per alkyl group, acyl radicals, alkylsulphinyl having 1 to 4 carbon atoms, halogenalkylsulphinyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, the halogen atoms being identical or different, SO_3H, alkylsulphonyl having 1 to 4 carbon atoms, halogenoalkylsulphonyl having 1 to 4 carbon atoms and 1 to 5 halogen atoms, arylsulphonyl having 6 or 10 aryl carbon atoms, aryl, aryloxy, heteroaryl, heteroaryloxy, each of which can have one of the aforementioned substituents, and the forminino radical (—CH=N—O-alkyl);

or an optical isomer thereof or a racemic mixture thereof.

5,663,141

HIRUDIN/POLYALKYLENE GLYCOL CONJUGATES AND HIRUDIN MUTEINS

Manfred Kurfuerst, Hassloch; Klaus Ruebsamen, Neustadt; Bernhard Schmied, Frankenthal; Wolfgang Koerwer, Gruenstadt; Juergen Schweden, Deidesheim, and Hans Wolfgang Hoeffken, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP90/01998, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/08229, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 22, 1990, Ser. No. 859,453

Claims priority, application Germany, Dec. 1, 1989, 39 39 800.5

Int. Cl.[6] A61K *38/58;* **C07K** *14/815;17/00*

U.S. Cl. 514—12 **15 Claims**

1. A hirudin mutein comprising an amino acid sequence represented by the following formula (SEQ. ID NO. 28):

Xaa—Xaa—Tyr—Thr—Asp—Cys—Thr—Glu—Ser—Gly—
10
Gln—Asn—Leu—Cys—Leu—Cys—Glu—Gly—Ser—Asn—
20
Val—Cys—Gly—Gln—Gly—Asn—Lys—Cys—Ile—Leu—
30
Gly—Ser—Lys—Gly—Glu—Arg—Asn—Gln—Cys—Val—
40
Thr—Gly—Glu—Gly—Thr—Pro—Arg—Pro—Gln—Ser—
50
His—Asn—Asp—Gly—Asp—Phe—Glu—Glu—Ile—Pro—
60
Glu—Glu—Tyr—Leu—Gln
65

wherein Xaa—Xaa at positions 1 and 2 in the amino acid sequence is Val—Val, Ile—Thr or Leu—Thr.

5. A conjugate of polyalkylene glycol or a polyalkylene glycol derivative with a hirudin mutein, said conjugate having the formula I

$$(Z—(CH_2)_n—(O—(CH_2)_n)_m—W)_p\ Hir \qquad I$$

wherein,

Z is one of the radicals —OH, —NH—CO—R, —O—R or —O—CO—R, where R is a C_1–C_4-alkyl group;

n is 2, 3 or 4;

m is from 50 to 500;

W is a direct covalent bond or a linker;

p is 1, 2 or 3; and

Hir is the hirudin mutein defined in claim 1.

10. A method for treating a host in need of thrombin-inhibiting activity, which comprises administering to said host an effective amount of the conjugate of claim 5.

5,663,142

PROTEIN S DELETION VARIANTS DEFICIENT IN C4BP BINDING ACTIVITY, BUT HAVING APC COFACTOR ACTIVITY, COMPOSITIONS AND THERAPEUTIC METHODS

Bonno Nammen Bouma, Hilversumsestraatweg 15, NL-3744 KB Baarn, and Rogier Maria Bertina, Leiden, both of Netherlands, assignors to Rijksuniversiteit Leiden, Leiden, and Bonno Nammen Bouma, Baarn, both of Netherlands

Filed Jun. 29, 1994, Ser. No. 267,387

Claims priority, application European Pat. Off., Jun. 30, 1993, 93201906

Int. Cl.[6] A61K *38/17;* **C07K** *14/47*

U.S. Cl. 514—12 **10 Claims**

1. Deletion mutant of human protein S, having cofactor activity to activated protein C and having at least 95% amino acid residue sequence identity with wild type mature human protein S having the amino acid sequence shown in SEQUENCE ID NO: 2 comprising a deletion of any length in the part of the amino acid sequence located from amino acid residue 243 to the C-terminal amino acid residue, said deletion comprising deletion of at least amino acid residues 408–434 and 600–625.

5,663,143

ENGINEERED HUMAN-DERIVED KUNITZ DOMAINS THAT INHIBIT HUMAN NEUTROPHIL ELASTASE

Arthur Charles Ley, Newton, Mass.; Robert Charles Ladner, Ijamsville, Md.; Sonia Kosow Guterman, Belmont, Mass.; Bruce Lindsay Roberts; William Markland, both of Milford, Mass., and Rachel Baribault Kent, Boxborough, Mass., assignors to Dyax Corp., Cambridge, Mass.

Continuation-in-part of Ser. No. 133,031, Oct. 13, 1993, abandoned, and Ser. No. 9,319, Jan. 26, 1993, Pat. No. 5,403,484, which is a division of Ser. No. 664,989, Mar. 1, 1991, Pat. No. 5,223,409, which is a continuation-in-part of Ser. No. 487,063, Mar. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 240,160, Sep. 2, 1988, abandoned. This application Dec. 16, 1994, Ser. No. 358,160

Int. Cl.[6] A61K *37/00;38/55*

U.S. Cl. 514—12 **9 Claims**

1. A protein that binds and inhibits human neutrophil elastase with a K_i less than about 10 picomolar comprising an amino acid sequence picked from the set of sequences EpiNE1, EpiNE2, EpiNE3, EpiNE4, EpiNE5, EpiNE6, EpiNE7, EpiNE8, EPI-HNE-2, EPI-HNE-3, EPI-HNE-4, BITI-E7, BITI-E7-141, BITI-E7-1222, MUT1619, MUTP1, AMINO1, AMINO2, MUTQE, MUTT26A, EpiNE7.6, EpiNE7.8, EpiNE7.9, EpiNE7.31, EpiNE 7.11, EpiNE7.7, EpiNE7.4, EpiNE7.14, EpiNE7.5, EpiNE7.10, EpiNE7.20, EpiNE7.1, EpiNE7.16, EpiNE7.19, EpiNE7.12, EpiNE7.17, EpiNE7.21, EpiNE7.22, EpiNE7.23, EpiNE7.24, EpiNE7.25, EpiNE7.26, EpiNE7.27, EpiNE7.28, EpiNE7.29, EpiNE7.30, EpiNE7.32, EpiNE7.33, EpiNE7.36, EpiNE7.37, EpiNE7.38, EpiNE7.39, and EpiNE7.40.

5,663,144

COMPOUNDS THAT BIND TO P185 AND METHODS OF USING THE SAME

Mark I. Greene, Penn Valley, and Xin Zhang, Philadelphia, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed May 3, 1995, Ser. No. 433,318

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—14 **10 Claims**

1. A peptide consisting of 10–15 amino acid residues and having the formula:

$$R_1—R_2—R_3—R_4—R_5—R_6—R_7$$

wherein:

R_1 is Phe-Glu, Tyr-Glu, Phe or Tyr;

R_2 is cysteine;

R_3 is 0 amino acids;

R_4 is 6 amino acids;

R_5 is 0 amino acids;

R_6 is cysteine;

R_4 is 6 amino acids;

R_7 is Phe, Tyr, SEQ ID NO:83 or SEQ ID NO:84;

and R_4 has the formula:

$$R_{41}—R_{42}—R_{43}—R_{44}—R_{45}—R_{46};$$

wherein:

either,

R_{41} is Glu or Asp;

R_{42} is Asn or Gln;

R_{43} is Trp;

R_{44} is Asp or Glu;

R_{45} is Trp; and,

R_{46} is Tyr or Phe;

or

R_{41} is Gly, Val, Ala, Ile or Leu;

R_{42} is Asp or Glu;

R_{43} is Gly, Val, Ala, Ile or Leu;

R_{44} is Phe or Tyr;

R_{45} is Tyr or Phe; and,

R_{46} is Ala, Ile, Leu, Gly or Val.

5,663,145

PRODUCTS FOR ADMINISTERING AN INITIAL HIGH DOSE OF CETRORELIX AND PRODUCING A COMBINATION PACKAGE FOR USE WHEN TREATING DISEASES

Jurgen Engel, Alzenau; Peter Hilgard, and Thomas Reissmann, both of Frankfurt, all of Germany, assignors to ASTA Medica Aktiengeselischaft, Dresden, Germany

Filed Dec. 8, 1994, Ser. No. 354,838

Claims priority, application Germany, Dec. 9, 1993, 43 42 091.5

Int. Cl.[6] A61K *38/09*

U.S. Cl. 514—15 **25 Claims**

7. A method of treating a hormone-dependent condition which comprises the steps of

(a) administering an initial dose of an LHRH antagonist to a person having a hormone-dependent condition, and

(b) then administering to that person a maintenance dose of an LHRH antagonist in an amount which is insufficient for treating the hormone-dependent conditions when administered alone.

5,663,146

POLYPEPTIDE ANALOGUES HAVING GROWTH HORMONE RELEASING ACTIVITY

Cyril Y. Bowers, and David Coy, both of New Orleans, La., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

Filed Aug. 22, 1991, Ser. No. 748,350

Int. Cl.[6] A61K *37/00*

U.S. Cl. 514—16 **35 Claims**

1. A peptide of the formula

A_1-A_2-Ala-Trp-DPhe-A_5, where

A_1 is Gly, DAla, βAla, Met, Pro, Sar, Ava, Aib, a N-lower alkyl aminocarboxylic acid, a N,N-bis-lower alkyl aminocarboxylic acid or a lower alkyl aminocarboxylic acid, wherein the lower alkyl group comprises 2 to about 6 straight-chain carbon atoms;

A_2 is DTrp, D^{β}Nal, D-4-Y-Phe-or 5-Y-D-Trp, wherein Y is Cl, Br, F or H;

A_5 is A_3-A_4-A_5, A_3-A_5, A_4-A_5 or A_5, wherein

(a) A_3 is Ala, Gly, DAla, Pro or desAla;

(b) A_4 is Ala, Gly, DAla, Pro, a linear lower alkyl aminocarboxylic acid, or desAla; and

(c) A_5 is Lys(ε-R_1, R_2)-Z, Orn (δ-R_1,R_2)-Z, $NH(CH_2)_xN(R_3,R_4)$, Lys-Z, Orn-Z or Arg-Z; wherein R_1 is a linear lower alkyl group or H atom; R_2 is a linear lower alkyl group or H atom; but R_1 and R_2 cannot both be H; R_3 is a linear lower alkyl group or H atom; R_4 is a linear lower alkyl group or H atom; Z is NH(linear lower alkyl group), N(linear lower alkyl group)$_2$, O-(linear lower alkyl group), NH_2 or OH, wherein the linear lower alkyl group is as defined as the lower alkyl group alkyl; x is 2 through 6;

and organic or inorganic addition salts of the above.

5,663,147

Patent Not Issued For This Number

5,663,148

ANAPHYLATOXIN RECEPTOR LIGANDS CONTAINING LIPOPHILIC RESIDUES

Yat Sun Or, and Jay R. Luly, both of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jul. 12, 1994, Ser. No. 274,060

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—17 **7 Claims**

1. A compound of the formula:

A-B-D-E-G-J-L-M-N(R^4) Arg-OH

or a pharmaceutically-acceptable salt thereof, wherein

A is R^1–R^2, hydrogen, C_1–C_8-alkyl, aryl-C_1–C_6-alkyl, amino-C_1–C_8-alkyl, guanidino-C_1–C_8-alkyl, amino-C_1–C_8-alkyl-C(O)— or guanidino-C_1–C_8-alkyl-C(O)—, with the proviso that when none of the optionally-present residues, B, D, E, G and J, is absent, A is hydrogen or methyl;

B is absent or —N(R^4)—C(R^5)(R^6)—R^3—;

D is absent or —N(R^4)—C(R^7)(R^8—R^3—;

E is absent or —N (R^4)—C(R^9)(R^{10})—R^3—, or R^{20}, or when either residue B or residue D is absent, R^{19};

G is absent or —N(R^4)—C(R^{11})(R^{12})—R^3—;

J is absent or —N(R^{21})—C(R^{13})(R^{14})—R^3—, or R^{20};

L is —N(R^4)—C(R^{15})(R^{16})—C(O)—; and

M is—N(R^4)—C(R^{17})(R^{18})—C(O)—,

where

R^1 is C_1–C_8-alkyl, aryl, aryl-C_1–C_8-alkyl, amino-C_1–C_8-alkyl, (heterocyclic)-C_1–C_6-alkyl or hydrogen, with the proviso that when R^2 is $>SO_2$, then R^1 may not be hydrogen;

R^2 is >C=O, $>CH_2$, —NH—C(O)— or $>SO_2$;

R^3 is >C=O, $>CH_2$, or —CH_2—C(O)—;

R^4 is hydrogen, C_1–C_8-alkyl or aryl—C_1–C_6-alkyl;

R^5, R^7, R^9, R^{11}, R^{13}, R^{15}, and R^{17} are independently hydrogen or C_1–C_8-alkyl;

R^6 is hydrogen, C_1–C_8-alkyl, aryl, aryl-C_1–C_6-alkyl or (heterocyclic)-C_1–C_6-alkyl;

R^8 is hydrogen, C_1–C_8-alkyl, amino-C_1–C_8-alkyl, or guanidino-C_1–C_8-alkyl;

R^{10} is selected from the group consisting of hydrogen, C_1–C_8-alkyl, aryl, aryl-C_1–C_6-alkyl, amino-C_1–C_8-alkyl, amino(cyclo-C_3–C_6-alkyl), amido-C_1–C_8-alkyl, hydroxy-C_1–C_8-alkyl, guanidino-C_1–C_8-alkyl and carboxy-C_1–C_8-alkyl;

R^{12} is selected from the group consisting of hydrogen, sulfhydryl-C_1–C_8-alkyl, (thio-C_1–C_8-alkoxy)-C_1–C_8-alkyl, C_1–C_8-alkyl, aryl, aryl-C_1–C_6-alkyl, (cyclo-C_3–C_8-alkyl)-C_1–C_8-alkyl and (heterocyclic)-C_1–C_6-alkyl;

R^{14} is selected from the group consisting of hydrogen, C_1–C_8-alkyl, amino-C_1–C_8-alkyl, aryl, aryl-C_1–C_8-alkyl, (cyclo-C_3–C_6-alkyl)-C_1–C_8-alkyl, (carboxamido)-C_1–C_8-alkyl and (heterocyclic)-C_1–C_6-alkyl;

R^{16} is hydrogen, C_1–C_8-alkyl, aryl, aryl-C_1–C_6-alkyl, (cyclo-C_3–C_6-alkyl)-C_1–C_8-alkyl or (heterocyclic)-C_1–C_6-alkyl;

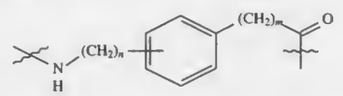
R^{18} is selected from the group consisting of

(a) $—(CH_2)_3$-(aryl),

(b) $—CH_2—W—CH_2$-(aryl), where W is selected from >O, >S, and >N—R, where R is hydrogen or C_1–C_8-alkyl, and

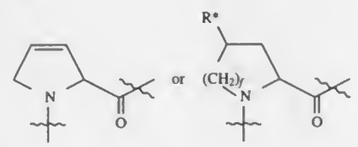
(c) $—CH_2—CH_2—W$-(aryl), where W is as defined above;

R^{19} is



where m and n are integers independently selected from 0, 1 and 2;

R^{20} is



where f is 1 or 2, R* is hydrogen, hydroxy, C_1–C_8-alkoxy or aryl-C_1–C_8-alkoxy; and

R^{21} is hydrogen or C_1–C_8-alkyl.

5,663,149

HUMAN CANCER INHIBITORY PENTAPEPTIDE HETEROCYCLIC AND HALOPHENYL AMIDES

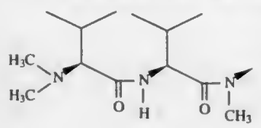
George R. Pettit, Paradise Valley; Jayaram K. Srirangam, Tempe, both of Ariz., and Darko Kantoci, Redlands, Calif., assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Filed Dec. 13, 1994, Ser. No. 354,551

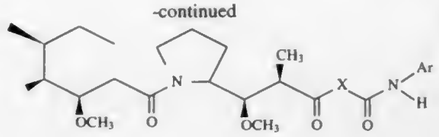
Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—17 **23 Claims**

1. A composition having the general structure set forth below:



-continued



wherein substituents X and Ar are as set forth below:

a) X=Met, Ar=4FPh;

b) X=Met, Ar=2ClPh;

c) X=Met, Ar=3ClPh;

e) X=Met, Ar=4ClPh;

g) X=Met, Ar=2,5diClPh;

i) X=Met, Ar=4ClPEA;

m) X=Met, Ar=BnThz;

n) X=Pro, Ar=BnThz;

o) X=Met, Ar=2Py;

p) X=Met, Ar=3Q;

q) X=Pro, Ar=3Q;

r) X=Val, Ar=3Q; and

s) X=Ile, Ar=3Q.

5,663,150

CYCLOPENTANE-β-AMINO ACID TRIPEPTIDES

Michael Matzke, Wuppertal; Hans-Christian Militzer, Bergisch Gladbach; Joachim Mittendorf, Wuppertal; Franz Kunisch, Odenthal; Axel Schmidt, Wuppertal; Wolfgang Schönfeld, Wuppertal, and Karl Ziegelbauer, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

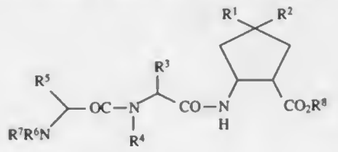
Filed Jul. 12, 1996, Ser. No. 679,038

Claims priority, application Germany, Jul. 19, 1995, 195 26 275.1

Int. Cl.[6] A61K *38/06;* **C07K** *5/00;5/08*

U.S. Cl. 514—18 **9 Claims**

1. A cyclopentane-β-amino acid tripepride of the formula (I):



(I)

in which

R^1 and R^2 represent hydrogen; or

R^1 and R^2 together form a radical of the formula $=CH_2$;

R^3 and R^5 are identical or different and represent hydrogen or straight-chain or branched alkyl having 1 to 6 carbon atoms;

R^4, R^6 and R^7 represent hydrogen; and

R^8 represents hydrogen or straight-chain or branched alkyl having 1 to 6 carbon atoms; in the form of the racemic mixture, a diastereomer or a salt thereof.

5,663,151

SULFATED α-GLYCOLIPID DERIVATIVES AS CELL ADHESION INHIBITORS

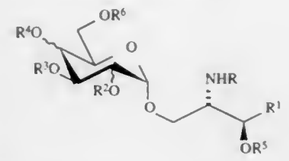
Alain Martel, Delson; Jacques Banville, St. Hubert, both of Canada, and Alejandro A. Aruffo, Edmonds, Wash., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation of Ser. No. 205,928, Mar. 4, 1994, abandoned. This application Jan. 27, 1995, Ser. No. 379,381

Int. Cl.[6] A61K *31/70;* **C07H** *15/00*

U.S. Cl. 514—25 **42 Claims**

1. A compound of the formula



wherein

R is an acyl residue of a fatty acid;

R^1 is $—(CH=CH)_m—(CH_2)_n—CH_3$;

R^2, R^3, R^4

and R^6 each independently is $—SO_3H$, hydrogen, unsubstituted or substituted alkanoyl, arylalkyl or arylcarbonyl wherein said substituent is selected from the group consisting of halogen, C_{1-4} alkyl, trifluoromethyl, hydroxy and C_{1-4} alkoxy provided that at least two of R^2, R^3, R^4 and R^6 are $—SO_3H$;

R^5 is hydrogen, unsubstituted or substituted alkanoyl, arylalkyl or arylcarbonyl wherein said substituent is selected from the group consisting of halogen, C_{1-4} alkyl, trifluoromethyl, hydroxy and C_{1-4} alkoxy;

m is an integer of 0 or 1;

n is an integer of from 5 to 14, inclusive; or

a non-toxic pharmaceutically acceptable salt, solvate or hydrate thereof.

37. A method for the treatment of diseases characterized by selectin-mediated cellular adhesion in a mammal in need of such treatment, which comprises administering to said mammal a therapeutically effective amount of a compound as defined in claim 1 or a pharmaceutical composition thereof.

5,663,152

POTENTIATORS FOR AMINOGLYCOSIDES

Fusakazu Hayano, Riverside, Conn., and Isao Kubo, Moraga, Calif., assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1995, Ser. No. 375,433

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—38 **7 Claims**

1. A method for inhibiting the growth of MRSA, *E. coli* or *P. aeruginosa* comprising:

contacting said microorganism with an aminoglycoside antibiotic selected from the group consisting of Gentamicin, Tobramycin and Amikacin, and a potentiator of antibacterial activity, wherein said potentiator is at least 200 μg/ml of anethole, at least 200 μg/ml of indole, or at least 100 μg/ml of 2-hexenal.

5,663,153

IMMUNE STIMULATION BY PHOSPHOROTHIOATE OLIGONUCLEOTIDE ANALOGS

Stephen L. Hutcherson, Richmond, Va., and Josephine M. Glover, Woking, United Kingdom, assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 217,988, Mar. 25, 1994. This application Jun. 6, 1995, Ser. No. 467,930

Int. Cl.[6] C12N *5/10;* **C07H** *21/00;* **A61K** *31/70;31/795*

U.S. Cl. 514—44 **19 Claims**

1. A method of stimulating a local immune response in selected cells or tissues, which comprises administering an effective amount of an oligonucleotide analog having at least one phosphorothioate bond to selected cells or tissues.

5,663,154

2',3'-DIDEOXY-3'-FLUORO-PURINE RIBONUCLEOSIDES

Charlene Louise Burns, Durham; George Walter Koszalka, and Thomas Anthony Krenitsky, both of Chapel Hill, all of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/GB93/00004, § 371 Date Jun. 30, 1994, § 102(e) Date Jun. 30, 1994, PCT Pub. No. WO93/14103, PCT Pub. Date Jul. 22, 1993

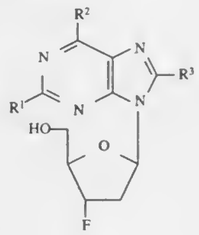
PCT Filed Jan. 5, 1993, Ser. No. 256,310

Claims priority, application United Kingdom, Jan. 6, 1992, 9200149; Sep. 25, 1992, 9220317

Int. Cl.[6] A61K *31/70;* **C07H** *19/173*

U.S. Cl. 514—45 **11 Claims**

1. A compound of formula (I)



(I)

wherein:

R^1 is amino;

R^2 represents

$—NR^4R^5$ wherein R^4 and R^5 together with the N atom to which they are attached form a 4-membered heterocyclic ring, which ring is bonded to the purine base via the nitrogen atom or

$—OR^8$ wherein R^8 represents C_{3-6} cycloalkyl C_{1-3} alkyl or C_{6-10} aryl C_{1-3} alkyl and R^3 is hydrogen;

R^3 is hydrogen, amino, halogen or C_{1-6} alkyl; or

a physiologically functional derivative thereof.

5. A pharmaceutical formulation comprising a compound according to claim 1, together with a pharmaceutically acceptable carrier therefore.

5,663,155

COMPOSITIONS FOR THE TREATMENT OF PARASITIC INFECTIONS

Ronald P. McCaffrey, Needham, Mass., and Hans L. R. Wigzell, Hagersten, Sweden, assignors to The University Hospital, Boston, Mass.

Filed Nov. 30, 1994, Ser. No. 351,068
Int. Cl.[6] A61K *31/70;* **C07H** *19/16*
U.S. Cl. 514—45 **50 Claims**

1. A method for the treatment of a patient infected with a trypanasonal parasite, comprising administering to said patient a therapeutically effective amount of a purine nucleoside and a deaminase inhibitor.

5,663,156

MIXTURE OF HIGHER PRIMARY ALIPHATIC ALCOHOLS, ITS OBTENTION FROM SUGAR CANE WAX AND ITS PHARMACEUTICAL USES

Abilio Laguna Granja; Juan Magraner Hernandez; Daisy Carbajal Quintana; Lourdes Arruzazabala Valmana; Rosa Mas Ferreiro, and Milagros Garcia Mesa, all of La Habana, Cuba, assignors to Laboratorios Dalmer SA, La Habana, Cuba, and Adanifer, S.A., Fribourg, Switzerland

PCT No. PCT/EP93/00007, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO94/07830, PCT Pub. Date Apr. 14, 1994
PCT Filed Feb. 25, 1993, Ser. No. 211,501
Claims priority, application Cuba, Sep. 29, 1992, 107/92
Int. Cl.[6] C07C *29/74;* **A61K** *31/045*
U.S. Cl. 514—164 **20 Claims**

1. A mixture of higher primary aliphatic alcohols from 24 to 34 carbon atoms comprising 1-tetracosanol, 1-hexacosanol, 1-heptacosanol, 1-octacosanol, 1-nonacosanol, 1-triacontanol, 1-dotriacontanol and 1-tetratriacontanol having by the following quantitative composition:

1-tetracosanol	0.5–1.0%
1-hexacosanol	5.5–8.5%
1-heptacosanol	2.0–3.5%
1-octacosanol	60.0–70.0%
1-nonacosanol	0.4–1.2%
1-triacontanol	10.0–15.0%
1-dotriacontanol	4.0–6.0%
1-tetratriacontanol	0.4–2.0%

characterized by a combination with acetyl salicylic acid in a quantitative ratio from 20:1 to 1:20.

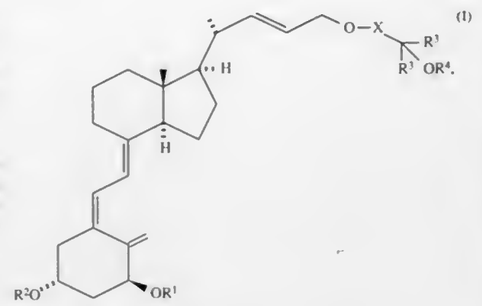
5,663,157

22-EN-25-OXA DERIVATIVES IN THE VITAMIN D SERIES, PROCESS FOR THEIR PRODUCTION, PHARMACEUTICAL PREPARATIONS CONTAINING THESE DERIVATIVES AS WELL AS THEIR USE AS PHARMACEUTICAL AGENTS

Andreas Steinmeyer; Gerald Kirsch; Günter Neef; Katica Schwarz; Rüth Thieroff-Ekerdt; Hêrbert Wiesinger, and Martin Haberey, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/EP93/01735, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/00429, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 30, 1993, Ser. No. 362,438
Claims priority, application Germany, Jun. 30, 1992, 42 21 961.2
Int. Cl.[6] C07C *401/00*
U.S. Cl. 514—167 **16 Claims**

1. A 22-en-24a-oxa derivative in the vitamin D series of formula I



(I)

wherein

R, R^2 and R^4, each independently of one another, is H, a C_{1-9} -alkanoyl group or an aroyl group,

R^3 is a hydrogen atom each or a linear or branched C_{1-4}-alkyl group, a trifluoromethyl group each or a saturated or unsaturated carbocyclic or heterocyclic 3-, 4-, 5- or 6-membered ring formed together with the tertiary carbon atom, and

X is an alkylene radical $—(CH_2)_n—$ with n=1, 2 or 3.

5,663,158

Patent Not Issued For This Number

5,663,159

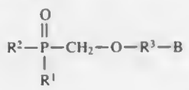
PRODRUGS OF PHOSPHONATES

John E. Starrett, Jr., Middletown; Muzammil M. Mansuri; John C. Martin, both of Cheshire; David R. Tortolani, Meriden, and Joanne J. Bronson, Madison, all of Conn., assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Czech Rep., and Rega Stichting v.z.w., Belgium

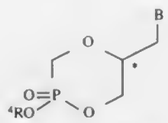
Continuation of Ser. No. 153,556, Nov. 16, 1993, abandoned, which is a continuation of Ser. No. 583,906, Sep. 14, 1990, abandoned. This application Oct. 11, 1994, Ser. No. 320,632
Int. Cl.[6] A61K *31/675;* **C07F** *9/6512;9/6584*
U.S. Cl. 514—181 **18 Claims**

1. Antivirally active compounds or intermediates therefor of the formula I or V

Formula I



Formula V



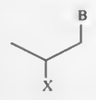
*Stereochemistry R, S or RS

wherein

B represents adenyl (A), guanyl (G), or 2,6-diaminopurinyl (DAP);

R^1 and R^2 are independently each OR^4

R^3 represents



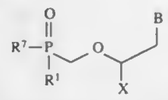
X represents hydrogen, methyl or hydroxymethyl;

R^4 represents a physiologically hydrolyzable group selected from the group consisting of $CH_2OC(O)R^5$ and $CH(R^5)OC(O)R^5$ (R, S, or RS stereochemistry); and

R^5 represents C_1–C_{20} alkyl, aryl or aryl-alkyl which may be substituted or unsubstituted by hydroxy or halogen.

2. Antivirally active compounds or intermediates therefor of Formula III

Formula III



wherein B represents adenyl (A), guanyl (G), or diaminopurinyl (DAP);

R^7 is OH;

X represents hydrogen, methyl or hydroxymethyl;

R^1 is OR^4;

R^4 represents a physiologically hydrolyzable group selected from the group consisting of $CH_2OC(O)R^5$ and $CH(R^5)OC(O)R^5$ (R, S, or RS stereochemistry); and

R^5 represents C_1–C_{20} alkyl, aryl or aryl-alkyl which may be substituted or unsubstituted by hydroxy or halogen.

18. A method for the treatment of HSV-2, HCMV or HIV in a mammal which comprises orally administering to the mammal an antiviral effective non-toxic dose of 9-(2-phosphonylmethoxy) ethyladenine di(pivaloyloxymethyl)ester for a treatment period of sufficient duration to mitigate said infection.

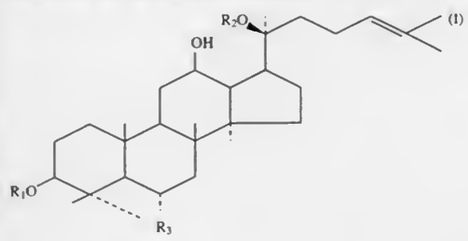
5,663,160

COSMETIC OR DERMATOLOGICAL COMPOSITION CONTAINING AT LEAST ONE SAPONIN OF THE GINSENOSIDE TYPE, AND ITS APPLICATIONS, ESPECIALLY FOR TREATING THE HAIR

Alain Meybeck; Frederic Bonte, both of Courbevoie, and Marc Dumas, Colombes, all of France, assignors to LVMH Recherche, Nanterre, France

PCT No. PCT/FR93/00899, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/06402, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 17, 1993, Ser. No. 387,824
Claims priority, application France, Sep. 17, 1992, 92 11104
Int. Cl.[6] A61K *31/56*
U.S. Cl. 514—182 **26 Claims**

1. A topical composition for cosmetic and dermatological application comprising, as active ingredient, of between 0.001 and 2% by weight, based upon the total weight of the composition, of a plant extract containing between about 2% by weight and 60% by weight of at least the saponin denominated G—Rb_1 of formula (I):



(I)

in which:

R_1=-Glc(2-1)Glc, R_2=-Glc(6-1)Glc and R_3=H

wherein Glc denotes a β-D-glucopyranosyl group.

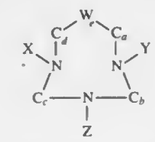
5,663,161

ANTI-VIRAL TRIAZA COMPOUNDS

Thomas W. Bell, East Setauket, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Feb. 17, 1995, Ser. No. 392,550
Int. Cl.[6] A61K *31/33*
U.S. Cl. 514—183 **12 Claims**

1. A method of inhibiting a virus which comprises contacting the virus, a virus-infectable cell or a virus-infected cell with a compound of formula I:



wherein

W is a bridge carbon which has a polar or non-polar side group;

X and Y independently are an aromatic group, an alkyl group, a sulfonyl group or a carbonyl group,

said aromatic group is selected from the group consisting of Ar, Ar sulfonyl, Ar carboxy and Ar alkyl, where Ar has from five to seven ring members and Ar is an aromatic cyclic or aromatic heterocyclic ring;

said alkyl groups having from one to ten carbons;

X and Y are not both an alkyl group;

Z is a group listed for X and Y, a fused aryl moiety having from seven to ten carbons or hydrogen;

a, d and e independently are a number from zero to 10 and when a, d and e are all zero, the compound of formula I is a non-cyclic triamine;

c and b independently are a number from one to ten; and the formula includes sufficient hydrogens for a stable molecule.

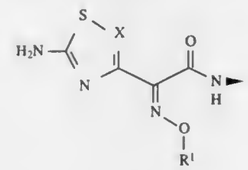
5,663,162

CEPHEM DERIVATIVES

Kunio Atsumi; Eijiro Umemura; Yuko Kano; Sohjiro Shiokawa; Toshiaki Kudo; Masaki Tsushima; Katsuyoshi Iwamatsu; Atsushi Tamura, and Seiji Shibahara, all of Kanagawa-ken, Japan, assignors to Meiji Seika Kabushiki Kaisha, Tokyo, Japan

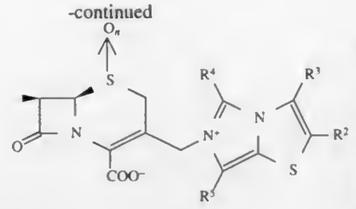
PCT No. PCT/JP94/01529, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO95/07912, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 16, 1994, Ser. No. 436,280
Claims priority, application Japan, Sep. 16, 1993, 5-230573; Aug. 12, 1994, 6-211908
Int. Cl.[6] C07D *501/46;* **A61K** *31/545*
U.S. Cl. 514—202 **21 Claims**

1. A cephem derivative represented by the formula (I):



(I)

-continued



wherein X represents CH or N,

R^1 represents a hydrogen atom; C_{1-4} alkyl in which one or more hydrogen atoms may be substituted by a group selected form a group consisting of halogen, hydroxyl, carboxyl, C_{1-4} alkoxycarbonyl, carbamoyl, N-C_{1-4} alkylcarbamoyl, cyano, amino and C_{1-4} alkylamino group; C_{2-4} alkenyl; C_{2-4} alkynyl; or C_{3-6} cycloalkyl,

R^2, R^3, R^4 and R^5, which may be the same or different, each independently represent hydrogen; C_{1-4} alkoxy; C_{1-4} alkylthio; cyano; carboxyl; C_{1-4} alkoxycarbonyl; carbamoyl; N-C_{1-4} alkylcarbamoyl; formyl; amino in which one or more hydrogen atoms may be substituted by a group selected from a group consisting of formyl, C_{1-4} alkylcarbonyl and C_{1-4} alkylsulfonyl; halogen; C_{1-4} alkyl in which one or more hydrogen atoms may be substituted by a group selected from a group consisting of hydroxyl, C_{1-4} alkoxy, mercapto, C_{1-4} alkylthio, cyano, halogen, carboxyl, C_{1-4} alkoxycarbonyl, carbamoyl, N-C_{1-4} alkylcarbamoyl, formyl, alkylcarbonyl, hydroxyimino, C_{1-4} alkoxyimino, amino, formylamino, C_{1-4} alkylcarbonylamino, C_{1-4} alkylcarbonylamino (which may be substituted by a halogen atom), carbamoyloxy, N-C_{1-4} alkylcarbamoyloxy, C_{1-4} alkylsulfonylamino, ureido, N-C_{1-4} alkylureido, C_{1-4} alkoxycarbonylamino and imino C_{1-4} alkylamino; C_{3-6} cycloalkyl; C_{2-4} alkenyl; or C_{2-4} alkynyl; or a saturated five-membered heterocyclic ring which contains one oxygen atom and one nitrogen atom and may be substituted by oxo (=O), or

any two of R^2, R^3, R^4 and R^5 may form C_{3-6} alkylene, where one or more methylene groups in this alkylene group may be substituted by —NH—, —O—, —S— or —CO—, and

n is 0 or 1; and

a pharmaceutically acceptable salt thereof.

5,663,163

CEPHEM COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Takao Takaya; Kazuo Sakane; Kenzi Miyai, and Kohji Kawabata, all of Kawanishi, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 459,631, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 135,583, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 993,615, Dec. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 683,473, Apr. 9, 1991, Pat. No. 5,210,080, which is a continuation of Ser. No. 238,136, Aug. 30, 1988, abandoned. This application Jan. 22, 1996, Ser. No. 591,261

Claims priority, application United Kingdom, Sep. 7, 1987, 8721016

Int. Cl.[6] **C07D** *501/46;* **A61K** *31/545*

U.S. Cl. 514—202 **3 Claims**

1. 7β-[2-(5-amino-1,2,4-thiadiazol-3-yl)-2-ethoxy- iminoacetamido] -3-[3-amino-2-(2-hydroxyethyl)-1-pyrazolio]methyl- 3-cephem-4-carboxylate (syn isomer) or its acid addition salt.

5,663,164

1-DETHIA-2-THIA-CEPHALOSPORANIC ACIDS

Jean-Georges Teutsch, Pantin; Alain Bonnet, Livery-Gargan; Jozsef Aszodi, Choisy-le-Roi; Germain Costerousse, Saint Maurice, and Solange Gouin d'Ambrieres, Paris, all of France, assignors to Roussel Uclaf, France

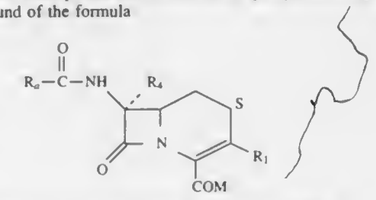
Continuation of Ser. No. 115,471, Nov. 5, 1993, abandoned, which is a continuation of Ser. No. 152,864, Feb. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 834,894, Feb. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 700,690, Feb. 12, 1985, abandoned. This application Apr. 27, 1995, Ser. No. 429,600

Claims priority, application France, Feb. 13, 1984, 84-02138; Aug. 9, 1985, 85-12217; Feb. 6, 1987, 87-01455

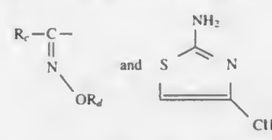
Int. Cl.[6] **C07D** *417/12;* **A61K** *31/54*

U.S. Cl. 514—210 **54 Claims**

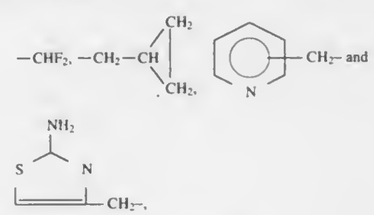
1. A compound selected from the group consisting of a compound of the formula



wherein R_a is selected from the group consisting of

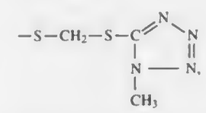


R_c is selected from the group consisting of 2-amino-4-thiazolyl, 2-amino- 5-chloro-thiazolyl, 5-amino-1,2,4-thiadiazolyl, 4-thiazolyl, 2-thienyl and 2-furyl. R_d is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms and phenyl, all optionally substituted with at least one member of the group consisting of halogen, —CN, carbamoyl, $—NO_2$, $—NH_2$, —OH, —SH, =O and carboxyl free, esterified or salified,



R_1 is selected from the group consisting

$—Z—R_2$, a)

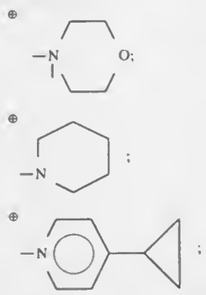


b)

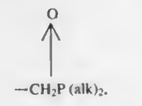
$—Z_a—R_3$, c)

R_2 is selected from the group consisting of alkyl, alkenyl and alkynyl all optionally substituted with at least one member of the group consisting of nitro, carboxy free, esterified or salified, amino, —OH, azido, sulfo free or salified, halogen, carbamoyl, methyltetrazolylcarbamoyl, aryl selected from the group consisting of phenyl, diphenyl, naphthyl, thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl,

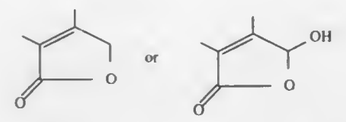
thiadiazolyl, pyrannyl, oxadiazolyl, tetrazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, thiazinyl, oxazinyl, trazinyl, thiadiazinyl, oxadiazinyl, tetrazinyl, imidazolinyl, benzimidazolyl, benzothiazolyl and benzoxazol, all optionally substituted with at least one member of the group consisting of acetyl, nitrophenyl, 1-methyl-pyrrolidinium, methylpyridinium, trimethyl ammonium, pyridinium, methylthio-pyridinium, trifluoromethylphenyl and cyano-phenyl and R_2 can be optionally interrupted with optionally oxidized —S— or —O— or —NH— or —Se—, Z is selected from the group consisting of optionally oxidized —S— or —O— or —Se— or —NH—, Za is selected from the group consisting of $-CH_2—$, —O—, —S—, —Se—, —NH—, $—CH_2S—$ and a simple bond, R_3 is selected from the group consisting of phenyl, diphenyl, naphthyl, heterocyclearyl selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadiazolyl, oxadiazolyl, tetrazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, thiazinyl, oxazinyl, triazinyl, thiadiazinyl, oxadiazinyl, tetrazinyl, imidazolinyl, benzimidazolyl, benzothiazolyl, and benzoxazol, a quaternary ammonium pyridinium, quinolinium, isoquinolinium, 2,3-cyclopenteno pyridinium, thienopyridinium, cyclohexylpyridinium and trimethylammonium and optionally substituted with at least one member of the group consisting of alkyl optionally substituted with at least one member of the group consisting of phenyl, thienyl, phenoxy, alkoxycarbonyl, halogen, hydroxy, carboxy free, esterified or salified, amino, alkylamino, and dialkylamino; alkenyl; alkyl; phenyl; tolyl; halogen; nitro; alkoxy of 1 to 4 carbon atoms; alkylthio; hydroxy; mercapto; carboxyl free, esterified or salified; carbamoyl;



pyridinium substituted with cyano, $—CF_3$ or acetyl; (2-chloro-2-propenyl)- 1,4,5,6-tetrahydro, 5,6-dioxo-1,2,4-triazin-3-yl and 1,2,5,6-tetrahydro-2-methy-5,6-dioxo-1,2,4-triazin-3-yl, d) alkyl, alkenyl or alkynyl of 2 to 4 carbon atoms optionally substituted with a member selected from the group consisting of phenyl, carboxy free, esterified or salified, cyano, amino, acyl, halogen and $—CF_3$ and optionally interrupted with optionally oxidized —S—, —O— or —NH—, e) halogen, nitrile, caboxy, free, esterified or salified, azide, thiocyanato, isothiocyanato and f) azidomethyl, amino, mono or dialkylaminomethyl, thiocyanatomethyl, isothiocyanatomethyl, carbamoyloxymethyl, semicarbazonomethine, arylhydrazonomethine optionally substituted with nitro, nitromethyl, di or trihalomethyl, $—CH_2—ONO_2$, $—CH^+{}_2P(alk_3)$,



alk is alkyl of 1 to 4 carbon atoms, R_4 is hydrogen, COM is CO_2A or A is hydrogen, an equivalent of alkali metal, alkaline earth metal, magnesium, ammonium or an organic amine or A is an ester or CO_2A is $CO^-{}_2$, or R_1 and CO_2A form with the carbon to which they are attached



or COM is carbamoyl and their non-toxic, pharmaceutically acceptable acid addition salts.

5,663,165

HYPOLIPIDAEMIC BENZOTHIAZEPINE COMPOUNDS

Lawrence Edward Brieaddy, Raleigh, N.C., assignor to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/GB93/00328, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/16055, PCT Pub. Date Aug. 19, 1993

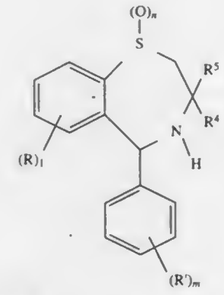
PCT Filed Feb. 16, 1993, Ser. No. 290,805

Claims priority, application United Kingdom, Feb. 17, 1992, 9203347

Int. Cl.[6] **A61K** *31/55;* **C07D** *281/10*

U.S. Cl. 514—211 **37 Claims**

1. A compound of formula (I)



(I)

wherein

l is an integer of from 0 to 4;

m is an integer of from 0 to 5;

n is an integer of from 0 to 2;

R and R' are atoms or groups independently selected from halogen, nitro, phenylalkoxy, C_{1-4} alkoxy, C_{1-6} alkyl and $—O(CH_2)_pSO_3R"$ wherein p is an integer of from 1 to 4 and R" is hydrogen or C_{1-6} alkyl, wherein said phenylalkoxy, alkoxy and alkyl groups are optionally substituted by one or more halogen atoms;

R^4 is a C_{1-6} straight alkyl group; and

R^5 is a C_{2-6} straight alkyl group;

or salts, solvates or physiologically functional derivatives thereof.

5,663,166

NONPEPTIDYL INTEGRIN INHIBITORS HAVING SPECIFICITY FOR THE GPIIbIIIa RECEPTOR

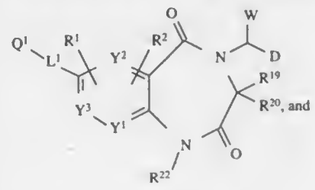
Brent Blackburn, San Francisco; Peter Barker, El Granada; Thomas Gadek, Oakland; Robert McDowell, San Francisco; Lawrence McGee, Pacifica; Todd Somers, Montara; Rob Webb, Moss Beach, and Kirk Robarge, San Franscisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

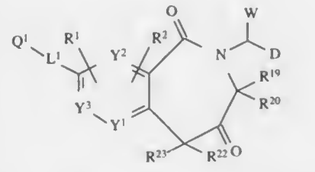
Division of Ser. No. 70,457, Jun. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 866,931, Apr. 10, 1992, Pat. No. 5,250,679, which is a continuation-in-part of Ser. No. 781,477, Oct. 18, 1991, abandoned. This application May 26, 1995, Ser. No. 452,056

Int. Cl.[6] A61K *31/55;* **C07D** *487/04*

U.S. Cl. 514—213 **7 Claims**

1. A compound selected from the group consisting of





where

R^1 and R^2 are each a group independently selected from hydrogen, halo (F, Cl, Br, I), cyano, carboxamido, carbamoyloxy, formyloxy, formyl, azido, nitro, ureido, thioureido, thiocyanato, hydroxy, mercapto, sulfonamido, and an optionally substituted radical selected from C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_3–C_{12} alkynyl, C_3–C_{12} cycloalkyl, phenyl napthyl, phenyl-C_1–C_8-alkyl, C_1–C_{12} alkyloxy, phenoxy, C_1–C_{12} alkanoylamino, N,N-di(C_1–C_{12})alkanoylamino, N-(C_1–C_{12})alkyl-N-(C_1-sulfonylamino, C_1–C_{12} alkylthiocarbonyl, C_1–C_{12} alkylthio, C_1–C_{12} alkylsulfinyl, C_1–C_{12} alkylsulfonyl, C_1–C_{12} alkylsulfonate, N-(C_1–C_{12})alkylsulfonamido, N,N-di-(C_1–C_{12}) sulfonamido, N-(C_1–C_{12})alkyl-N-thioformylamino, C_1–C_{12} thioacylamino, N-(C_1–C_{12})alkyl-N-(C_1–C_{12}) thioacylamino, C_1–C_{12} alkylsulfinamido, N-(C_1–C_{12})alkyl-N-(C_1–C_{12})alkylsulfinylamino, C_1–C_{12} carbalkoxy, C_1–C_{12} alkylcarbonyl, C_1–C_{12} alkanoyloxy, N-(C_1–C_{12})alkylcarboxamido, N,N-di-(C_1–C_{12})carboxamido, N-(C_1–C_{12}) alkylcarbamoyloxy, and N,N-di-(C_1–C_{12})carbamoyloxy, where the substituents are selected from halo (F, Cl, Br, I), cyano, azido, nitro, hydroxy, mercapto, sulfonamido, ureido, thioureido, carboxamido, carbamoyloxy, formyloxy, formyl, C_1–C_4alkyl, C_1–C_4alkoxy, phenyl, and phenoxy, optionally, R^1 and R^2 when bonded to adjacent carbon atoms may join to form an unsubstituted or substituted aryl ring, where the substituents are selected from halo (F, Cl, Br, I), cyano, azido, nitro, hydroxy, mercapto, sulfonamido, ureido, thioureido, carboxamido, carbamoyloxy, formyloxy, formyl, C_1–C_4alkyl, C_1–C_4alkoxy, phenyl, and phenoxy;

Y_1, Y_2, and Y_3 are independently selected from CH, CR^1, CR^2, and N;

Q^1 is selected from the group consisting of

(A) an amino group selected from

—NH_2,

—NR^3H,

—NR^3R^4, and

—$NR^3R^4R^5$,

where R^3, R^4, and R^5 are independently selected from

(i) cyano,

(ii) an optionally substituted radical selected from

(a) —NR^6R^7,

(b) —$C(=NR^8)$—NR^6R^7,

(c) —$N=CR^9$—NR^6R^7,

(d) —NR^{10}—$CR^9=NR^8$, and

(e) —NR^{10}—$C(=NR^8)$—NR^6R^7,

where each R^6, R^7, R^8, R^9, and R^{10} is independently selected from

hydrogen,

C_1–C_4 alkoxy,

C_1–C_4 alkyl, and

halo (F, Cl, Br, I)-C_1–C_4-alkyl,

(iii) optionally substituted C_1–C_{12} alkyl,

(iv) optionally substituted C_3–C_{12} cycloalkyl,

(v) optionally substituted phenyl,

(vi) optionally substituted C_1–C_6 alkyl-phenyl,

(vii) optionally substituted C_1–C_8 alkoxy,

(viii) optionally substituted phenol, and

(xi) optionally substituted C_1–C_8 alkoxycarbonyl,

where the substituents are one to three R^{11}, each R^{11} independently selected from

(a) optionally substituted phenoxy,

(b) optionally substituted phenylamino,

(c) optionally substituted benzoyl,

(d) optionally substituted C_1–C_8 alkoxy,

(e) optionally substituted C_1–C_8 alkoxyalkyl,

(f) optionally substituted C_1–C_8 aloxyalyloxy,

(g) optionally substituted C_1–C_8 alkoxycarbonyl,

(h) optionally substituted C_1–C_8 alkylcarbonyl,

(i) optionally substituted C_1–C_8 phenylalkylcarbonyl,

(j) optionally substituted C_1–C_8 alkylthiocarbonyl,

(k) optionally substituted C_6–C_{12} phenylalkylthiocarbonyl,

(l) optionally substituted C_2–C_8 alkoxythiocarbonyl,

(m) optionally substituted phenyl,

(n) optionally substituted C_1–C_4 alkanoylamino,

(o) optionally substituted C_1–C_6 alkoxycarbonyl-C_0–C_6alkylamino,

(p) optionally substituted C_1–C_8 alkylsulfonylamino,

(q) optionally substituted C_6–C_{10} phenylalkylsufonylamino,

(r) optionally substituted benzyl,

(s) optionally substituted C_6–C_{10} alkylphenyl,

(t) optionally substituted C_1–C_8 alkylthio,

(u) optionally substituted C_6–C_{10} phenylalkylthio,

(v) optionally substituted C_1–C_8 alkylsulfinyl,

(w) optionally substituted C_6–C_{10} phenylalkylsulfinyl,

(x) optionally substituted C_1–C_8 alkylsulfonyl,

(y) optionally substituted C_6–C_{10} phenylallcylsulfonylamino,

(z) optionally substituted C_1–C_8 alkylaminosulfonyl,

(aa) optionally substituted C_6–C_{10} aralkylsulfonylamino, and

(ac) optionally substituted C_2–C_8 alkenyl,

where the substituents are one to three R^{12}, each R^{12} independently selected from

nitro,

amino,

C_1–C_8 alkylamino,

di-(C_1–C_8) alkylamino,

amidino,

aminomethyleneimino,

imino,

imino-C_1–C_4 alkyl,

iminomethyleneamino,

guanidino,

phenylamino,

C_1–C_8 alkynoylamino,

C_1–C_4 alkylsulfonamino,

azido,

cyano,

hydroxy,

hydroxy-C_1–C_8-alkyl,

C_1–C_8-alkoxy,

phenyloxy,

C_1–C_8 alkanoyloxy,

C_1–C_8 alkanoyl,

benzoyl,

benzamido,

phenyl,

halo (F, Cl, Br, I),

halo-C_1–C_8-alkyl, and

C_1–C_8-alkyl,

(ad) aminosulfonyl,

(ae) oxo,

(af) thio,

(ag) thiocarbonyl,

(ah) hydroxy,

(ai) mercapto,

(aj) formyl,

(ak) formyloxy,

(al) carboxy,

(am) amino,

(an) ureido,

(ao) amidino,

(ap) guanidino,

(aq) aminomethyleneimino,

(ar) imino,

(as) glycyl,

(at) phthalimido,

(au) succinimido,

(av) morpholino,

(aw) C_3–C_7 cycloalkyl, and

(ax) halo (F, Cl, Br, I),

optionally R^3 and R^4 taken together may form optionally substituted

tetramethylene,

pentamethylene,

3-oxopentamethylene, and

3-azapentamethylene,

where the substituents are selected from one to three R^{12},

(B) an amidino group selected from

—$C(=NH)$—NH_2,

—$C(=NH)$—NHR^3,

—$C(=NR^4)$—NHR^3,

—$C(=NH)$—NR^3R^4, and

—$C(=NR^5)$—NR^3R^4,

where R^3, R^4, and R^5 are defined above,

(C) an aminoalkyleneimino group selected from

—$N=CH$—NH_2,

—$N=CH$—NHR^3,

—$N=CH$—NR^3R^4, and

—$N=CR^5$—NR^3R^4,

where R^3, R^4, and R^5 are defined above,

(D) an iminoalkyleneamino group selected from

—NH—$CH=NH$,

—NH—$CH=NR^3$,

—NH—$CR^4=NR^3$, and

—NR^5—$CR^4=NR^3$,

where R^3, R^4, and R^5 are defined above,

(E) a guanidino group selected from

—NH—$C(=NH)$—NH_2,

—NH—$C(=NH)$—NR^3H,

—NH—$C(=NH)$—NR^3R^4,

—NH—$C(=NH^5)$—NR^3R^4,

—NR^3—$(=NR^3)$—NR^3R^4,

—NR^3—$C(=NH)$—NR^3R^4,

—NR^3—$C(=NR^3)$—NH_2,

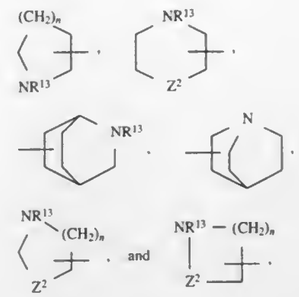
—NR^3—$C(=NH)$—NH_2,

—NR^3—$C(=NR^3)$—NHR^4, and

—NR^3—$C(=NH)$—NHR^4,

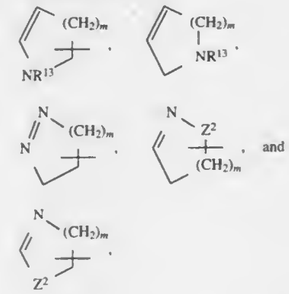
where R^3, R^4, and R^5 are defined above;

(F) an optionally substituted saturated heterocyclic group selected from



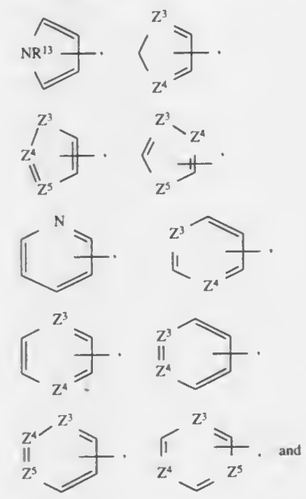
where (1) n is 0, 1, 2, or 3, (2) R^{13} is selected from R^6, —$CR^9=NR^8$, —$CR^9(=NR^8)$—NR^6R^7, —$C(=NR^8)$—NR_6R^7, —$N=CR^9$—NR^6R^7, —NR^{10}—$CR^9=NR^8$, and —NR^{10}—$(C=NR^8)$—NR^6R^7 where R^6–R^{10} are defined above, (3) Z^2 is O, S, or NR^{13}, and (4) the substituents are independently one to three R^{12};

(G) an optionally substituted unsaturated (nonaromatic) heterocyclyl selected from

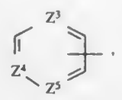


where (1) m is 1, 2, or 3, (2) Z^2 and R^{13} are defined above, and (3) the substituents are independently one to three R^{12};

(H) an optionally substituted unsaturated (aromatic) heterocyclyl selected from

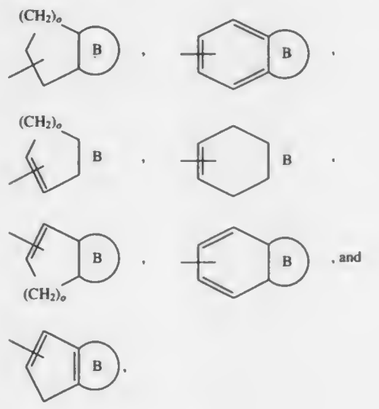


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where (1) Z^3, Z^4, and Z^5 are selected from O, S, N, and NH, provided that at least one Z^3, Z^4, or Z^5 is N or NH, (2) R^{13} is defined above, and the substituents are independently one to three R^{12},

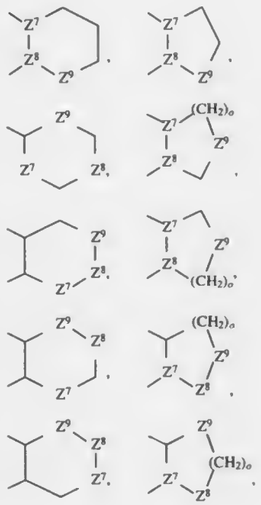
(I) an optionally substituted bicycloheterocyclic group selected from;



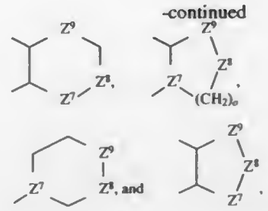
where the partial structure



represents



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where Z^7, Z^8, and Z^9 are independently selected from

$-CH_2-$, $-CH=$, $-\overset{|}{C}H-$, $-\overset{||}{C}-$,

$-O-$, $-S-$, $-N=$, $-\overset{|}{N}-$, and $-NR^{13}-$,

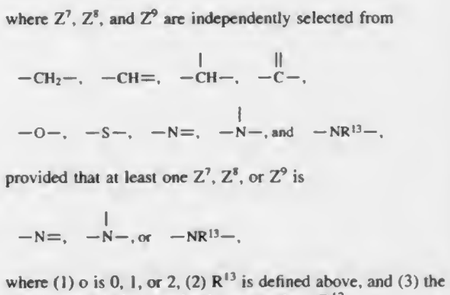
provided that at least one Z^7, Z^8, or Z^9 is

$-N=$, $-\overset{|}{N}-$, or $-NR^{13}-$,

where (1) o is 0, 1, or 2, (2) R^{13} is defined above, and (3) the substituents are independently one to three R^{12};

L^1 is an optionally substituted bivalent radical selected from the group consisting of

(A) C_3–C_7-alkylene,
(B) C_3–C_7-cycloalkylene,
(C) C_3–C_7-alkenylene,
(D) C_3–C_7-alkadienylene,
(E) C_3–C_7-alkynylene,
(F) C_4–C_7-alkadiynylene,
(G) C_4–C_7-alkenynylene,
(H) phenylene,
(I) C_6–C_{14}-aryl-C_2–C_4-alkynylene,
(J) C_1–C_3-alkyl-phenyl-C_2–C_4-alkynylene,
(K) phenyl-C_2–C_4-alkenylene,
(L) C_1–C_3-alkyl-phenylene,
(M) phenyl-C_6–C_{14}-aryl-C_2–C_4-alkenylene,
(N) phenyl-C_1–C_3-alkylene,
(O) C_6–C_{14}-aryl-C_1–C_3-alkyloxyene,
(P) C_1–C_2-alkyl-C_6–C_{14}-aryl-C_1–C_2-alkylene,
(Q) C_1–C_3-alkyloxy-C_6–C_{14}-arylene,
(R) C_2–C_6-alkyloxyene,
(S) C_1–C_5-alkyloxy-C_1–C_5-alkylene,
(T) phenyloxyene,
(U) phenoxy-C_1–C_5-alkylene,
(V) C_2–C_6-alkylthioene,
(W) C_1–C_3-alkylthio-C_1–C_5-alkylene,
(X) phenylthioene,
(Y) phenylthio-C_1–C_5-alkylene,
(Z) C_1–C_5-alkylsulfoxide-C_1–C_5-alkylene,
(AA) C_1–C_5-alkylsulfone-C_1–C_5-alkylene,

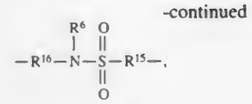


(AB)

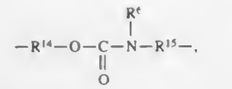
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(AD)

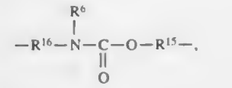
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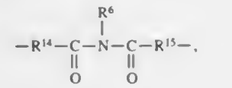
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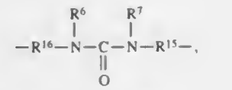
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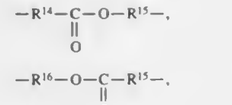
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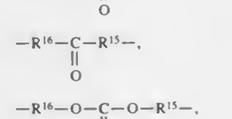
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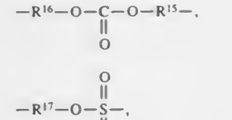
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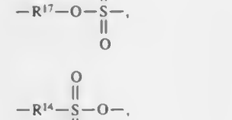
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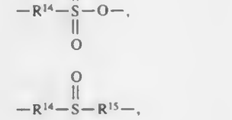
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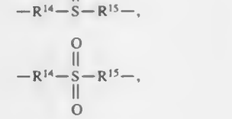
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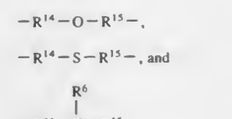
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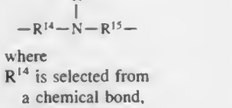
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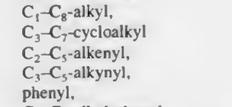
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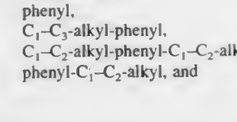
(AP)



(AQ)



(AR)



(AS)



(AT)

where

R^{14} is selected from
a chemical bond,
C_1–C_8-alkyl,
C_3–C_7-cycloalkyl
C_2–C_6-alkenyl,
C_3–C_5-alkynyl,
phenyl,
C_1–C_3-alkyl-phenyl,
C_1–C_2-alkyl-phenyl-C_1–C_2-alkyl,
phenyl-C_1–C_2-alkyl, and
phenoxy-C_1–C_2-alkyl,

R^{15} is selected from
a chemical bond,
C_1–C_4-alkyl,
C_2–C_4-alkenyl,
C_2–C_4-alkynyl,
phenyl, and
C_1–C_3-alkyl-phenyl,

R^{16} is selected from
a chemical bond,
C_1–C_5-alkyl,
C_3–C_7-cycloalkyl
C_3–C_5-alkenyl,
C_3–C_5-alkynyl,
C_6–C_{10}-aryl,
C_1–C_3-alkyl-phenyl, and
phenyl-C_1–C_2-alkyl,

R^{17} is selected from
C_3–C_4-alkenyl,
C_3–C_4-alkynyl,
phenyl, and
benzyl,
where the substituents are selected from one to three R^{12};

R^{23} is independently selected from the group consisting of
(i) hydrogen,
(ii) optionally substituted C_1–C_{12} alkyl,
(iii) optionally substituted C_3–C_{12} alkenyl,
(iv) optionally substituted C_3–C_{14} cycloalkyl,
(v) optionally substituted C_1–C_{12} alkyl-phenyl,
(vi) optionally substituted phenyl,
(vii) optionally substituted C_1–C_4 alkylphenyl, and
(viii) optionally substituted C_1–C_{12} alkoxy,

R^{19} and R^{20} axe independently selected from
(i) hydrogen,
(ii) halo(F, Cl, Br, I),
(iii) C_1–C_4 alkoxy,
(iv) C_1–C_4 alkyl,
(v) phenyl,
(vi) benzyl, and
(vii) halo(F, Cl, Br, I)-C_1–C_4-alkyl,

R^{22} is independently selected from the group consisting of
(i) hydrogen,
(ii) optionally substituted C_1–C_{12}-alkyl,
(iii) optionally substituted phenyl,
(iv) optionally substituted C_3–C_{14}-cycloalkyl,
(v) optionally substituted C_1–C_{12}-alkyl-phenyl, and
(vi) optionally substituted C_1–C_{12}-alkyl-C_3–C_{14}-cycloalkyl,
where the substituents are selected from
(a) halo (F, Cl, Br, I),
(b) nitro,
(c) hydroxy,
(d) carboxy,
(e) tetrazole,
(f) hydroxamate,
(g) sulfonamide,
(h) trifluoroimide,
(i) phosphonate,
(j) C_1–C_6-alkyl,
(k) phenyl,
(l) benzyl,
(m) C_3–C_{14}-cycloalkyl,
(n) COR^{24} where R^{24} is selected from the group
C_1–C_8 alkoxy,
C_3–C_{12} alkenoxy,
phenoxy,
C_1–C_6-alkyl-phenoxy,
di-C_1–C_8-alkylamino-C_1–C_8-alkoxy,
alkanoylamino-C_1–C_8-alkoxy selected from the group
acetylaminoethoxy,
nicotinoylaminoethoxy, and
succinamidoethoxy,
C_1–C_8-alkoxyloxy-C_1–C_8-alkoxy, and
C_6–C_{12} aryl-C_1–C_8-alkoxy where the aryl group is unsubstituted or substituted with one to three of the groups

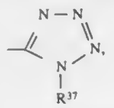
nitro,
halo (F, Cl, Br, I),
C_1–C_4-alkoxy,
amino,
hydroxy,
hydroxy-C_2–C_8-alkoxy, and
dihydroxy-C_3–C_8-alkoxy, and
(o) $CONR^{25}R^{26}$ where R^{25} and R^{26} are independently selected from
hydrogen,
C_1–C_{10}-alkyl,
C_3–C_{10}-alkenyl,
phenyl,
C_1–C_6-alkyl-phenyl,
optionally R^{25} and R^{26} taken together may form
trimethylene,
tetramethylene,
pentamethylene, and
3-oxopentamethylene, and

D is selected from the group consisting of
R^{22}, and
—(C═O)-Xaa, where Xaa is one to three D or L α-amino acid residues;

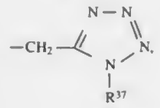
W is $—R^{27}$-w where
R^{27} is selected from
(a) a covalent bond,
(b) substituted or unsubstituted methylene, and
(c) substituted or unsubstituted ethylene,
where the substituents are selected from
(i) nitro,
(ii) halo(F, Cl, Br, I),
(iii) C_1–C_6 alkyl,
(iv) halo(F, Cl, Br, I)-C_1–C_6 alkyl, and
(v) substituted or unsubstituted phenyl
where the phenyl substituents are selected from
(1) C_1–C_6 alkyl,
(2) C_1–C_6 alkoxy,
(3) halo(F, Cl, Br, I), and
(4) CF_3;

w is selected from
(a) $—COR^{28}$,
(b) $—SO_3R^{31}$,
(c) $—NHSO_2R^{32}$,
(d) $—PO(OR^{31})_2$,
(e) $—SO_2NHR^{32}$,
(f) $—CONHOR^{31}$,
(g) $—C(OH)R^{33}PO(OR^{33})_2$,
(h) —CN
(k) $—SO_2NHCOR^{33}$,
(l) $—CH_2SO_2NHCOR^{32}$,
(m) $—CONHSO_2R^{33}$,
(n) $—CH_2CONHSO_2R^{33}$,
(o) $—NHCONHSO_2R^{33}$,
(p) $—NHSO_2NHCOR^{33}$,
(q) $—CONHNHSO_2CF_3$,
(r) $—CON(OH)R^{31}$,
(s) $—CONHCOCF_3$,
(t) $—CONHSO_2R^{28}$,
(u) $—CONHSO_2R^{29}$,
(v) $—CONHSO_2R^{30}$.

(w)

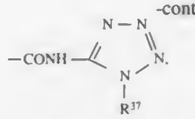


(x)

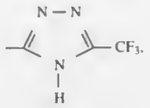


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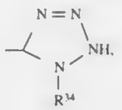
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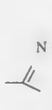
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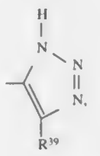
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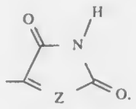
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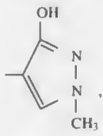
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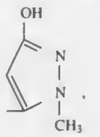
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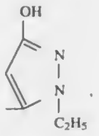
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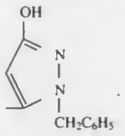
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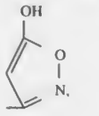
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(ah)

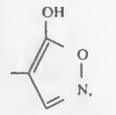


(ai)

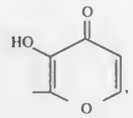


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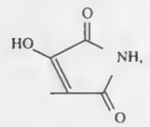
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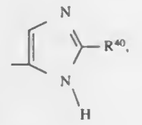
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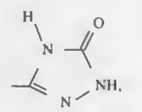
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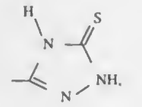
(am)



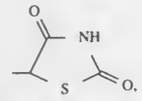
(an)



(ao)



(ap)



R^{28} is selected from the group consisting of
(a) hydroxy,
(b) C_1–C_8-alkoxy,
(c) C_3–C_{12}-alkenoxy,
(d) phenoxy,
(e) C_1–C_6-alkyl-phenoxy,
(f) di-C_1–C_8-alkylamino-C_1–C_8-alkoxy,
(g) alkanoylamino-C_1–C_8-alkoxy selected from the group
(i) acetylaminoethoxy,
(ii) nicotinoylaminoethoxy, and
(iii) succinamidoethoxy,
(h) C_1–C_8-alkoyloxy-C_1–C_8-alkoxy,
(i) phenyl-C_1–C_8-alkoxy, where any phenyl groups are unsubstituted or substituted with one to three of the groups
(i) nitro,
(ii) halo (F, Cl, Br, I),
(iii) C_1–C_4-alkoxy, and
(iv) amino,
(j) hydroxy-C_2–C_8-alkoxy,
(k) dihydroxy-C_3–C_8-alkoxy, and
(l) $NR^{29}R^{30}$;

R^{29} and R^{30} are independently selected from the group
(a) hydrogen,
(b) C_1–C_8-alkyl,
(c) C_3–C_8-alkenyl,
(d) phenyl,
(e) phenyl-C_1–C_8-alkyl
where any phenyl groups are unsubstituted or substituted with one to three of the groups
(i) nitro,
(ii) halo (F, Cl, Br, I),
(iii) C_1–C_4-alkoxy, and
(iv) amino;

R^{31} is selected from the group consisting of
(a) hydrogen,
(b) C_1–C_6 alkyl,
(c) halo(F, Cl, Br, I)-C_1–C_6 alkyl,
(d) phenyl,
(e) benzyl, and
(e) $—CH_2—O—COCH_3$;

R^{32} is selected from the group consisting of
(a) hydrogen,
(b) benzyl and
(c) $—CH(R^{35})—O—C(O)R^{35}$;

R^{33} is selected from the group consisting of
(a) phenyl,
(c) $(C_3$–$C_7)$-cycloalkyl,
(d) $(C_1$–$C_4)$-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of
(i) phenyl,
(iii) —OH,
(iv) —SH,
(v) $(C_1$–$C_4)$-alkyl
(vi) $(C_1$–$C_4)$-alkoxy,
(vii) $(C_1$–$C_4)$-alkylthio,
(viii) $—CF_3$,
(ix) halo (F, Cl, Br, I),
(x) $—NO_2$,
(xi) $—CO_2H$,
(xii) $CO_2—(C_1$–$C_4)$-alkyl,
(xiii) $—NH_2$,
(xiv) $—N_2$,
(xv) —NH,
(xvi) $—PO_3H$, and
(xvii) $PO(OH)(C_1$–$C_4)$-alkoxy, and
(e) $(C_1$–$C_4)$-penfluoroalkyl;

R^{34} is selected from the group consisting of
(a) —CN,
(b) $—NO_2$,
(c) $—COOR^{31}$,
(d) C_1–C_6-perfluoroalkyl, and
(e) CF_3;

R^{35} is independently selected from the group consisting of
(a) hydrogen,
(b) optionally substituted $(C_1$–$C_6)$-alkyl,
(c) optionally substituted $(C_2$–$C_6)$-alkenyl,
(d) optionally substituted $(C_2$–$C_6)$-alkynyl, and
(e) optionally substituted$(C_3$–$C_8)$-cycloalkyl, where the substituents are selected from the group
(i) OH,
(ii) $(C_1$–$C_4)$-alkoxy,
(iii) CO_2R^{33},
(iv) $OCOR^{33}$,
(v) $CONHR^{33}$,
(vi) $CON(R^{33})_2$,
(vii) $N(R^{33})C(O)R^{33}$,
(viii) NH_2,
(ix) $(C_1$–$C_4)$-alkylamino,
(x) diamino, and
(xi) phenyl,
(f) —C(O)-phenyl,
(g) $—NO_2$,
(h) halo(Cl, Br, I, F),
(i) —OH,
(j) $—OR^{36}$,
(k) $—(C_1$–$C_4)$-perfluoroalkyl,
(l) —SH,
(m) $—S(O)_{1-2}(C_1$–$C_4)$-alkyl,
(n) $—CO_2R^{33}$,
(o) $—SO_3H$,
(p) $—NR^{33}R^{36}$,
(q) $—NR^{33}C(O)R^{36}$,
(r) $—NR^{33}COOR^{32}$,
(s) $—SO_2NHR^{32}$,

(t) $—SO_2NR^{33}R^{33}$,
(u) $—NHSO_2R^{32}$,
(v) $—C(O)NHSO_2R^{32}$,
(w) phenyl,
(y) morpholin-4-yl,
(z) $CONH_2$, and
(aa) 1H-tetrazol-5-yl;

R^{36} is selected from the group
(a) hydrogen, and
(b) $(C_1–C_4)$-alkyl unsubstituted or substituted with
(i) NH_2,
(ii) NH,
(iii) N_2,
(iv) CO_2H,
(v) $CO_2(C_1–C_4)$-alkyl,
(vi) OH,
(vii) SO_3H, and
(viii) SO_2NH_2;

R^{37} is selected from the group consisting of
(a) hydrogen,
(b) $(C_1–C_6)$-alkyl,
(c) $(C_2–C_6)$-alkenyl,
(d) $(C_1–C_6)$-alkoxyalkyl,
(e) $—CH_2—O—COCH_3$, and
(f) $—CH_2$-phenyl, where the phenyl is unsubstituted or substituted with a substituent selected from
(i) $—NO_2$,
(ii) $—NH_2$,
(iii) —OH, and
(iv) $—OCH_3$;

R^{38}, R^{39}, and R^{40} are each independently selected from
(a) hydrogen,
(b) Cl,
(c) CN,
(d) NO_2,
(e) CF_3,
(f) C_2F_5,
(g) C_3F_7,
(h) CHF_2,
(i) CH_2F,
(j) CO_2CH_3,
(k) $CO_2C_2H_5$,
(l) SO_2CH_3,
(m) SO_2CF_3, and
(n) $SO_2C_6F_5$,

and pharmaceutically acceptable salts thereof.

5,663,167

ANTIPSYCHOTIC COMPOSITION AND METHOD OF TREATMENT

David Pickar; Robert E. Litman, both of Bethesda, Md., and William Z. Potter, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 987,728, Dec. 9, 1992, Pat. No. 5,492,907. This application Jun. 7, 1995, Ser. No. 479,039
Int. Cl.[6] A61K *31/54*
U.S. Cl. 514—225.8 **15 Claims**

1. A method for treating a serious psychotic mental illness comprising the step of administering to a patient in need of such treatment a therapeutically effective amount of a combination of (i) an α_2-adrenergic receptor antagonist and (ii) a D_2 dopamine receptor antagonist in a pharmaceutically acceptable carrier.

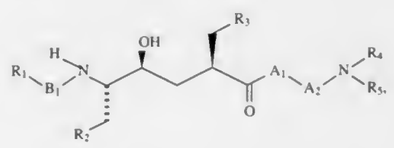
5,663,168

USE OF COMPOSITIONS FOR COMBATING TUMOUR DISEASES

Johannes Rösel, Richen; Urs Regenass, Ettingen, both of Switzerland; Marc Lang, Mulhouse, France; Guido Bold, Gipf-Oberfrick, Switzerland, and Frédéric Cumin, Hagental-Le-Bas, France, assignors to CIBA-Geigy Corporation, Tarrytown, N.Y.

Filed May 16, 1994, Ser. No. 242,915
Claims priority, application Switzerland, May 17, 1993, 1492/93
Int. Cl.[6] A61K *31/54;31/535;38/00*
U.S. Cl. 514—227.5 **11 Claims**

1. A method of treating a tumor of the pancreas, lungs, intestine, ovaries or breast in a warm-blooded animal in need thereof, comprising administering to said warm-blooded animal a tumour-treating effective amount of an inhibitor of HIV aspartate protease of formula I



(I)

wherein

R_1 is hydrogen; lower alkoxycarbonyl; heterocyclylcarbonyl; benzyloxycarbonyl which is unsubstituted or substituted by up to three radicals selected independently of one another from fluorine, halo-lower alkyl, lower alkanoyl, sulfo, lower alkylsulfonyl and cyano; heterocyclyloxycarbonyl wherein heterocyclyl is bonded via a carbon atom; one of the mentioned carbonyl radicals wherein the bonding carbonyl group has been replaced by a thiocarbonyl group; heterocyclylsulfonyl; lower alkylsulfonyl; or N-(heterocyclyl lower alkyl)-N-lower alkyl-aminocarbonyl;

B_1 is a bond or a bivalent residue of an a-amino acid bonded N-terminally to R_1 and C-terminally to the amino group at the carbon atom carrying $R_2—CH_2—$,

R_2 and R_3 are each independently of the other phenyl or cyclohexyl, those radicals being unsubstituted or being substituted by from one to three radicals selected independently of one another from hydroxy, lower alkoxy, halogen, halo-lower alkyl, sulfo, lower alkylsulfonyl, cyano and nitro,

A_1 is a bond between —C═O and A_2 or is a bivalent residue of an a-amino acid bonded N-terminally to the group —C═O and C-terminally to A_2,

A_2 is a bivalent residue of an a-amino acid bonded N-terminally to A_1 and C-terminally to the group NR_4R_5, or

A_1 and A_2 together form a bivalent residue of a dipeptide the central amide bond of which has been reduced and which is bonded N-terminally to the group —C═O and C-terminally to the group NR_4R_5, and

R_4 and R_5 together with the bonding nitrogen atom form unsubstituted or substituted thiomorpholino or morpholino,

or a salt of such a compound where salt-forming groups are present, or a hydroxy-protected derivative of such a compound or a salt thereof.

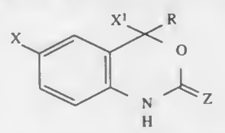
5,663,169

BENZOXAZINONES AS INHIBITORS OF HIV REVERSE TRANSCRIPTASE

Steven D. Young; Linda S. Payne, both of Lansdale; Susan F. Britcher, Norristown; Lekhanh O. Tran, West Chester, and William C. Lumma, Jr., Pennsburg, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 188,005, Jan. 28, 1994, which is a continuation-in-part of Ser. No. 54,805, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,607, Aug. 7, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,528
Int. Cl.[6] A61K *31/535*
U.S. Cl. 514—230.5 **4 Claims**

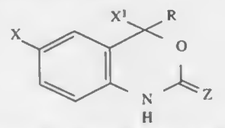
1. A method of inhibiting HIV reverse transcriptase comprising administering to a mammal a pharmaceutically acceptable carrier and an effective amount of a compound of Formula I:



I

or pharmaceutically acceptable salt thereof, wherein:
X is halo,
X^1 is trihalomethyl, or pentahaloethyl;
Z is O;
R is:
(a) C_{1-8} alkyl, unsubsdtuted or substituted with A, and A is halo, C_{3-6} cycloalkyl, CN, hydroxy, C_{1-4} alkoxy, C_{2-4} alkynyl-C_{1-4} alkoxy, aryloxy, C_{1-4} alkylcarbonyl, nitro, di(C_{1-2} alkyl)amino, C_{1-4} alkylamino- C_{1-2} alkyl, heterocycle, or arylthio;
(b) C_{2-4} alkenyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A;
(c) C_{2-5} alkynyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A; or
(d) C_{3-4} cycloalkyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A,

or a compound of Formula II:



II

or pharmaceutically acceptable salt thereof, wherein:
X is halo;
X^1 is trihalomethyl; pentahaloethyl; C_{2-5} alkyl;
C_{2-5} alkynyl;
C_{3-5} cycloalkyl; or aryl;
Z is O or S; and
R is:
(a) C_{1-8} alkyl, unsubstituted or substituted with A, and A is halo, C_{3-6} cycloalkyl, CN, hydroxy, C_{1-4} alkoxy, C_{2-4} alkynyl-C_{1-4} alkoxy, aryloxy, C_{1-4} alkylcarbonyl, nitro, di(C_{1-2} alkyl)amino, C_{1-4} alkylamino-C_{1-2} alkyl, heterocycle, or arylthio;
(b) C_{2-4} alkenyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A;
(c) C_{2-5} alkynyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A; or
(d) C_{3-4} cycloalkyl, unsubstituted or substituted with
(i) A, or
(ii) aryl, unsubstituted or substituted with A.

5,663,170

COMPOSITION FOR EYE DROPS

Kazumichi Ushio, Nishinomiya, and Yoshifumi Ikejiri, Ibaraki, both of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 743,811, Aug. 12, 1991, abandoned. This application Jul. 13, 1992, Ser. No. 912,580
Claims priority, application Japan, Aug. 13, 1990, 2-214827; Jul. 3, 1991, 3-162854
Int. Cl.[6] A61K *31/535*
U.S. Cl. 514—231.2 **4 Claims**

1. A composition for the prevention and treatment of diabetic complications in the form of eye drops comprising as a main effective component a therapeutically effective amount of 3,4-dihydro-2,8-diisopropyl-3-thioxo2H-1,4-benzoxazine-4-acetic acid or a pharmaceutically acceptable salt thereof and 0.005 to 5 w/v % of β-cyclodextrin.

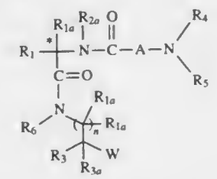
5,663,171

ACYCLIC COMPOUNDS PROMOTE RELEASE OF GROWTH HORMONE

Meng Hsin Chen, Westfield; Gregori J. Morriello, Belleville; Ravi Nargund, East Brunswick; Arthur A. Patchett, Westfield, and Lihu Yang, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 157,774, Nov. 24, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 398,247
Int. Cl.[6] C07D *413/14;413/12;209/20;403/12;* **A61K** *31/405;311/535;21/455*
U.S. Cl. 514—19 **9 Claims**

1. A compound of the formula:



wherein:
R_1 is selected from the group consisting of: indolyl, indolyl($C_1–C_6$ alkyl)-, and indolyl($C_0–C_5$ alkyl)-K-($C_1–C_5$ alkyl)-, where K is —O—, $—S(O)_m—$, $—N(R_2)C(O)—$, $—C(O)N(R_2)—$, —OC(O)—, —C(O)O—, $—CR_2═CR_2—$, or $—C≡C—$,
and where R_2 and alkyl may be further substituted by 1 to 9 halogen, $—S(O)_mR_{2a}$, 1 to 3 of $—OR_{2a}$ or $—C(O)OR_{2a}$, and indolyl may be further substituted by 1 to 3 of $C_1–C_6$ alkyl, 1 to 3 of halogen, 1 to 2 of $—OR_2$, methylenedioxy, $—N(R_2)(R_2)$, $—S(O)_mR_2$, 1 to 2 of $—CF_3$, $—OCF_3$, —C(O)H, nitro, $—N(R_2)C(O)(R_2)$, $—C(O)OR_2$, $—C(O)N(R_2)(R_2)$, —1H-tetrazol-5-yl, $—SO_2N(R_2)(R_2)$, $—N(R_2)SO_2$ phenyl, or $—N(R_2)SO_2R_2$;
R_{1a} is independently hydrogen, or $C_1–C_6$ alkyl;
R_2 is selected from the group consisting of: hydrogen, $C_1–C_6$ alkyl, and $C_3–C_7$ cycloalkyl, and where two $C_1–C_6$ alkyl groups are present on one atom, they may be optionally joined to form a $C_3–C_8$ cyclic ring, optionally including oxygen, sulfur, SO_2 or NR_{2a};
R_{2a} is hydrogen, or $C_1–C_6$ alkyl optionally substituted by hydroxyl;
R_3 is independently selected from the group consisting of: hydrogen, $—C_1–C_{10}$ alkyl, $—(CH_2)_r$phenyl, $—(CH_2)_r$naphthyl, $—(CH_2)_r$indanyl, $—(CH_2)_r$dibenzocycloheptanyl, $—(CH_2)_rC(O)OR_8$, $—(CH_2)_rC(O)N(R_2)(R_8)$, ($C_1–C_6$ alkyl)-K-($C_1–C_4$ alkyl)-, aryl($C_0–C_5$ alkyl)-K-($C_1–C_4$ alkyl)-, $—(CH_2)_r—C_3–C_7$ cycloalkyl, and $—(CH_2)_r$heteroaryl, where K is O or $S(O)_m$, and where heteroaryl is selected from: pyridyl, indolyl, imidazolyl, quinolinyl, benzothiopheneyl, benzofuranyl, dihy-

droindolyl, thiazolyl, benzimidazolyl, and azaindolyl, and where the phenyl, naphthyl, indanyl, dibenzocycloheptanyl, and heteroaryl may be substituted by: C_1–C_6 alkyl, 1 to 2 of halogen, 1 to 2 of —OR_9, —$NHSO_2CF_3$, —C(O)H, —$(CH_2)_rN(R_2)(R_9)$, —$(CH_2)_rC(O)OR_9$, —$(CH_2)_rN(R_2)C(O)R_9$, —$(CH_2)_rC(O)N(R_2)(R_9)$, —$(CH_2)_rN(R_6)C(O)N(R_2)(R_9)$, or —$(CH_2)_rA(R_9)$;

R_{3a} is hydrogen or C_1–C_6 alkyl;

R_4 and R_5 are independently selected from: hydrogen, C_1–C_6 alkyl, and substituted C_1–C_6 alkyl where the substituents are selected from: 1 to 5 halogen, 1 to 3 of hydroxy, 1 to 3 of C_1–C_{10} alkanoyloxy, 1 to 3 of C_1–C_6 alkoxy, phenyl, phenoxy, 2-furyl, C_1–C_6 alkoxycarbonyl, and $S(O)_m(C_1$–C_6 alkyl); or R_4 and R_5 can be taken together to form —$(CH_2)_dL_a(CH_2)_e$— where L_a is —$C(R_2)_2$—, —O—, —$S(O)_m$— or —$N(R_{2a})$—, and d and e are independently 1 to 3;

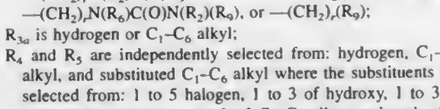
R_6 is hydrogen or C_1–C_4 alkyl;

R_7 and R_{7a} are independently hydrogen, C_1–C_6 alkyl, trifluoromethyl, phenyl, substituted C_1–C_6 alkyl where the substituents are selected from: imidazolyl, phenyl, indolyl, p-hydroxyphenyl, naphthyl, halophenyl, quinolinyl, dihalophenyl, C_1–C_2 alkoxyphenyl, di (C_1–C_2 alkoxy)phenyl, C_1–C_2 alkylphenyl, di (C_1–C_2 alkyl)phenyl, —OR_2, —$S(O)_mR_2$, —C(O)O(C_1–C_6 alkyl), C_3–C_7 cycloalkyl, —$N(R_2)(R_2)$, and —$C(O)N(R_2)(R_2)$; or R_7 and R_{7a} can independently be joined to one or both of R_4 and R_5 groups to form an alkylene bridge between the terminal nitrogen and the alkyl portion of the R_7 or R_{7a} groups, wherein the bridge contains 1 to 5 carbons atoms; or R_7 and R_{7a} can be joined to one another to form a C_3–C_7 cycloalkyl;

R_8 is selected from the group consisting of: hydrogen, C_1–C_6 alkyl, aryl, and aryl-C_1–C_2 alkyl, where the alkyl groups may be substituted by a substituent selected from the group consisting of: —OR_2, —C(O)OR_2, —C(O)O-benzyl, —$CON(R_2)(R_2)$, —$N(R_2)C(O)N(R_2)(R_2)$, and 1H-tetrazol-5-yl, and where aryl is selected from the group consisting of: phenyl, naphthyl, indolyl, quinolinyl, benzothiopheneyl, benzofuranyl, azaindolyl, benzimidazolyl, pyridyl, and thiazolyl, and where the aryl may be substituted by: 1 to 2 of —OR_2, 1 to 2 of halogen, 1 to 2 of C_1–C_3 alkyl, —C(O)OR_2, —$C(O)N(R_2)(R_2)$, or —1H-tetrazol-5-yl;

R_9 is hydrogen, C_1–C_6 alkyl, or $(CH_2)_v$aryl, wherein the alkyl and $(CH_2)_v$ groups may be optionally substituted by 1 to 2 of —$O(R_2)$, —$S(O)_mR_2$, —$N(R_2)(R_2)$, 1H-tetrazol-5-yl, —C(O)OR_2, —$C(O)N(R_2)(R_2)$, —$SO_2N(R_2)(R_2)$, or —$N(R_2)C(O)N(R_2)(R_2)$, and where aryl is selected from: phenyl, pyridyl, 1H-tetrazol-5-yl, triazolyl, imidazolyl, thiazolyl, oxadiazolyl, pyrazolyl, thiadiazolyl, imidazolone-1-yl, and benzimidazol-2-yl, triazolinone-yl, and where the aryl is optionally substituted with C_1–C_6 alkyl, C_3–C_6 cycloalkyl, amino, hydroxyl, or —C(O)$O(R_2)$;

A is:



where x and y are independently 0, 1, 2 or 3;

Z is —NR_2 or -O-;

W is selected from the group consisting of: hydrogen, —C(O)OR_8, —$C(O)N(R_2)(R_2)$, —$C(O)NH—SO_2(R_2)$, —$C(O)N(R_2)(R_8)$, —$CH_2N(R_2)C(O)N(R_2)(R_8)$, —$CH_2N(R_2)C(O)R_8$, —$CH_2N(R_2)C(O)(R_8)$, —$(CH_2)_rOR_2$, —CH(OH)$R_2$, —$CH_2SO_2R_2$, —$CH_2SO_2N(R_2)(R_2)$, 1H-tetrazol-5-yl, 5-amino-1,2,4-oxadiazol-3-yl, 5-methyl-1,2,4-oxadiazol-3-yl, 3-amino-1,2,4-oxadiazol-5-yl, and 3-methyl-1,2,4-oxadiazol-5-yl;

m is 0, 1, or 2;

n is 0 or 1;

r is 0, 1, 2, or 3;

v is 0, 1, or 2;

and pharmaceutically acceptable salts and individual diastereomers thereof.

5,663,172

PREVENTIVE AGENT FOR PLATELET AGGREGATION

Nobuo Mochizuki; Shuichi Souma; Takayoshi Sasaki; Yukihiro Kanaguchi, and Nobuhiro Umeda, all of Kanagawa, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01527, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO94/09784, PCT Pub. Date May 11, 1994

PCT Filed Oct. 22, 1993, Ser. No. 428,072

Claims priority, application Japan, Nov. 2, 1992, 4-317739; Dec. 10, 1992, 4-352151

Int. Cl.[6] A61K *31/50*

U.S. Cl. 514—247 **1 Claim**

1. A preventive agent for platelet aggregation comprising an effective amount of 4,5-dihydro-5-methyl-6-[4-[(2-propyl-3-oxo-1-cyclohexenyl) amino]phenyl]-3(2H)-pyridazinone and a pharmaceutically acceptable excipient or carrier.

5,663,173

N-[(1,4-DIAZABICYCLO[2.2.2] OCT-2-YL)METHYL] BENZAMIDE DERIVATIVES, THEIR PREPARATIONS AND THEIR APPLICATION IN THERAPEUTICS

Samir Jegham, Argenteuil; Jean Jacques Koenig, Maisons Laffitte; Alistair Lochead, Charenton Le Pont; Alain Nedelec, Colombes, and Yves Guminski, La Garrigue, all of France, assignors to Synthelabo, Le Plessis Robinson, France

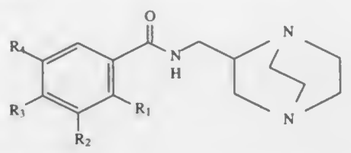
Filed Jun. 12, 1996, Ser. No. 662,199

Claims priority, application France, Jun. 13, 1995, 95 06951

Int. Cl.[6] C02D *487/08;* **A61K** *31/495*

U.S. Cl. 514—249 **12 Claims**

1. An optically active isomer or a racemate of a compound of formula (I)



(I)

in which either

R_1 represents a methoxy or cyclopropylmethoxy group and

R_2 represents a hydrogen, chlorine or bromine atom, or

R_1 and R_2 together form, and in this order, a group of formula —O—CH_2—O—, —O—$(CH_2)_2$—, —O—$(CH_2)_2$—O— or —O—$(CH_2)_3$—O—,

R_3 represents a hydrogen atom or an amino group, and

R_4 represents a hydrogen, chlorine or bromine atom,

in the form of a free base or of a pharmaceutically acceptable acid addition salt.

12. A method of treating a subject, wherein the subject is suffering from, or is susceptible to, a disorder in which 5-H_3, and/or 5-H_4 receptors are involved, comprising administering to said subject an effective amount of a compound of formula (I), as defined in claim 1, or a pharmaceutically acceptable acid addition salt thereof.

5,663,174

AROMATIC SULFONAMIDE DERIVATIVES, THEIR USE AS ENZYME INHIBITORS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Raymond Dumont, Gränichen, Switzerland, assignor to Pharno-Wedropharm GmbH, Germany

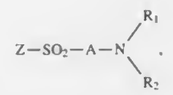
Continuation of Ser. No. 204,317, filed as PCT/EP91/01678 Sep. 5, 1991, abandoned. This application Jan. 17, 1997, Ser. No. 785,251

Claims priority, application WIPO, Sep. 5, 1991, PCTEP91/01678

Int. Cl.[6] A61K *31/495;31/18;* **C07D** *403/06;* **C07C** *311/14*

U.S. Cl. 514—252 **31 Claims**

1. Compounds of the general formula



1

wherein

Z is phenyl, naphthyl, (5)- or (8)-isoquinolyl, possibly substituted by halogen; except that Z is not phenyl when both A is L-proline and R_2 is phenyl;

A is selected from the group consisting of L-phenylalanine, L-alanine, L-proline, L-valine, L-tryptophane and L-tyrosine moieties, where the N atom of the α-amino group which defines A as an amino acid is bound to SO_2 and its carboxyl group to the N atom of formula I,

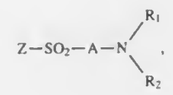
R_1 is hydrogen, and

R_2 is phenyl, biphenyl, a C_2 to C_6-alkylamine; except that R_2 is not phenyl when A is L-valine or L-alanine; or

R_1 and R_2 together form the piperazine ring, except that R_1 and R_2 together do not form the piperazine ring when A is L-phenylalanine or L-tyrosine,

or its pharmaceutically acceptable non-toxic acid addition salts with inorganic or organic acids.

29. Compounds of the general formula



1

wherein

Z is phenyl, naphthyl, (5)- or (8)-isoquinolyl, possibly substituted by halogen;

A is selected from the group consisting of L-phenylalanine, L-alanine, L-proline, L-valine, L-tryptophane and L-tyrosine moieties, where the N atom of the α-amino group which defines A as an amino acid is bound to SO_2 and its carboxyl group to the N atom of formula I,

R_1 is hydrogen, and

R_2 is biphenyl,

or its pharmaceutically acceptable non-toxic acid addition salts with inorganic or organic acids.

5,663,175

PRODRUGS OF HERPES TK INHIBITORS

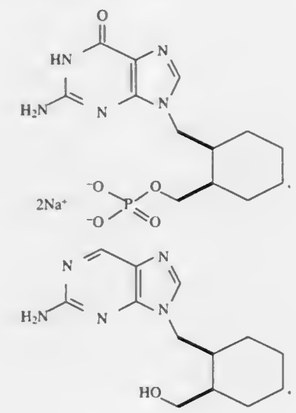
Richard L. Tolman, Warren, N.J.; John D. Karkas, New York, N.Y.; Derek Von Langen, Fanwood, and Malcolm MacCoss, Freehold, both of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Dec. 9, 1994, Ser. No. 353,475

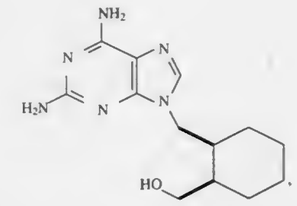
Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—262 **6 Claims**

1. A [1S,2R] compound, which is



or



or a pharmaceutically acceptable salt or hydrate thereof.

4. A method of preventing recurrent infection of herpes virus, comprising administering to a mammal an effective amount of a compound as in any one of claims 1 or 2.

5,663,176

MICROBICIDES

Adolf Hubele, Magden, Switzerland, and Ronald Zeun, Neuenburg, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 437,730, May 9, 1995, Pat. No. 5,538,979, which is a division of Ser. No. 300,499, Sep. 2, 1994, Pat. No. 5,447,935, which is a division of Ser. No. 166,780, Dec. 14, 1993, Pat. No. 5,373,013, which is a division of Ser. No. 16,365, Feb. 11, 1993, abandoned. This application May 2, 1996, Ser. No. 642,232

Claims priority, application Switzerland, Feb. 13, 1992, 427/92

Int. Cl.[6] A01N *43/54;43/64*

U.S. Cl. 514—275 **6 Claims**

1. A fungicidal, two-component composition containing a synergistically effective amount of a mixture of an ergosterol-biosynthesis inhibitor of the triazole series as component I and a 2-anilinopyrimidine derivative as component II, wherein the ratio of component I to component II is in the range of about 10:1 to 1:10, and wherein component I is propiconazole or a salt or metal

complex thereof; and component II is 4,6-dimethyl-N-phenyl-2-pyrimidinamine or a salt or metal complex thereof, together with an inert carrier.

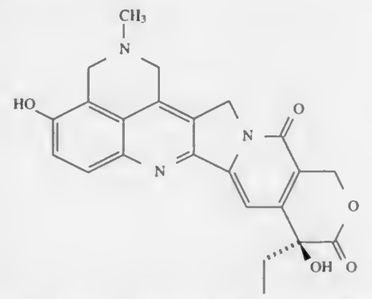
5,663,177

WATER SOLUBLE CAMPTOTHECIN ANALOGS

David A. Berges, Provo, Utah, and John J. Taggart, Elkins Park, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed May 31, 1995, Ser. No. 454,793
Int. Cl.[6] A61K *31/47*
U.S. Cl. 514—279 **2 Claims**

1. A compound of Formula I:



I

known as S-9-ethyl-2,3-dihydro-4,9-dihydroxy-2-methyl-1H,12H-benzo [ij]pyrano[3',4':6,7]indolizino[1,2-c][2,6]naphthyridine-10,13 (H,15H)-dione, and pharmaceutically acceptable salts thereof.

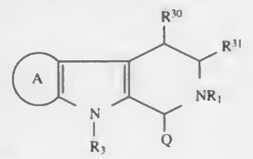
5,663,178

TETRAHYDRO-BETA CARBOLINES

James E. Audia, Indianapolis, Ind.; Stephen Richard Baker, Camberley, England; Jesus Ezquerra Carrera, Madrid, Spain; Carlos Lamas Peteira, Madrid, Spain, and Concepcion Pedregal Tercero, Madrid, Spain, assignors to Eli Lilly and Company, Indianapolis, Ind.

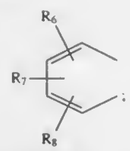
Filed Feb. 6, 1995, Ser. No. 380,565
Int. Cl.[6] C07D *471/04;* A61K *31/44*
U.S. Cl. 514—284 **8 Claims**

1. A compound of Formula I



I

wherein
A is



(IVa)

Q is $(CHR_2)R_4$;
R_1 and R_3 are, independently, hydrogen or C_1–C_3 alkyl;
R_2 is hydrogen or C_1–C_6 alkyl;
R_4 is C_5–C_8 cycloalkyl; C_5–C_8 cycloalkyl substituted with from one to four substituents independently selected from the group consisting of hydrogen, C_1–C_6 alkyl, NO_2, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, C_2–C_6 alkenyl, CO_2R_5, $(C_{1-C6}$ alkyl)$_m$ amino, —SR_5, and OR_5; C_5–C_8 cycloalkenyl; bicyclic; or C_5–C_8 cycloalkenyl or bicyclic substituted with from one to two substituents independently selected from the group consisting of hydrogen, C_1–C_6 alkyl, NO_2, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, C_2–C_6 alkenyl, COR_5, C_1–C_{10} alkanoyl, C_7–C_{16} arylalkyl, CO_2R_5, (C_1–C_6 alkyl)$_m$ amino, —SR_5, and OR_5;
R_6, R_7 and R_8 are, independently, hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, —SR_5, or OR_5;
R_5 is hydrogen or C_1–C_4 alkyl;
R^{30} and R^{31} join to form a 3 to 8 membered carbon ring; or
a pharmaceutically acceptable salt or solvate thereof.

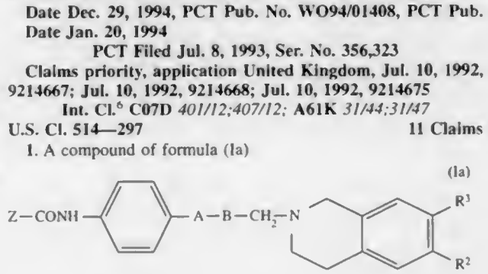
5,663,179

CERTAIN ISOQUINOLINE DERIVATIVES HAVING ANTI-TUMOR PROPERTIES

Bernard Andre Dumaitre; Nerina Dodic; Alain Claude-Marie Daugan, and Pascal Maurice Charles Pianetti, all of Les Ulis, France, assignors to Laboratoires Glaxo SA, Paris, France

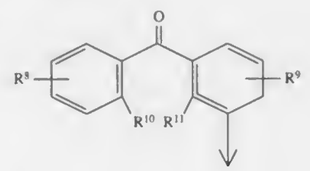
PCT No. PCT/EP93/01802, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO94/01408, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 8, 1993, Ser. No. 356,323
Claims priority, application United Kingdom, Jul. 10, 1992, 9214667; Jul. 10, 1992, 9214668; Jul. 10, 1992, 9214675
Int. Cl.[6] C07D *401/12;407/12;* A61K *31/44;31/47*
U.S. Cl. 514—297 **11 Claims**

1. A compound of formula (Ia)

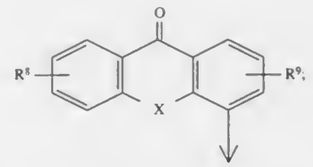


(Ia)

wherein Z represents



or



X represents an oxygen atom or NH;
A represents an oxygen or a sulphur atom, a bond or a group $(CH_2)_1NR^7$ where I represents zero or 1 and R^7 represents a hydrogen atom or a methyl group;
B represents a C_{1-4} alkylene chain optionally substituted by a hydroxyl group, except that the hydroxyl group and moiety A cannot be attached to the same carbon atom when A represents an oxygen or sulphur atom or a group $(CH_2)_1NR^7$, or when A represents a bond B may also represent a C_{2-4} alkenylene chain;
R^2 represents a hydrogen or a halogen atom, or a C_{1-4} alkyl, C_{1-4} alkoxy or C_{1-4} alkylthio group;
R^3 represents a hydrogen atom or a C_{1-4} alkoxy group;
R^8 represents a hydrogen or halogen atom or a C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} akylthio or nitro group;
R^9 represents a hydrogen or halogen atom or a C_{1-4} alkyl, C_{1-4} alkoxy or C_{1-4} alkylthio group;
R^{10} and R^{11} each represent a hydrogen atom or together form a bond or a linking atom selected from —O—, —S— and NH;
and physiologically acceptable salts and solvates thereof.

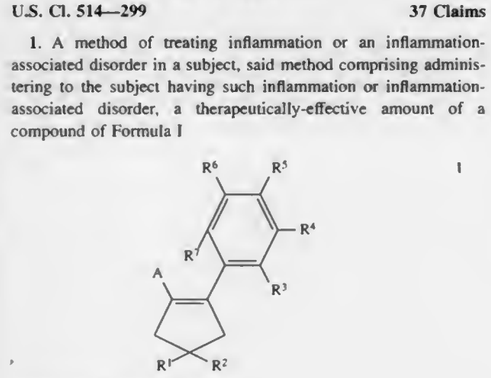
5,663,180

SUBSTITUTED CYCLOPENTENES FOR THE TREATMENT OF INFLAMMATION

David B. Reitz, and Jinglin Li, both of Chesterfield, Mo., assignors to G.D. Searle & Co., Skokie, Ill.

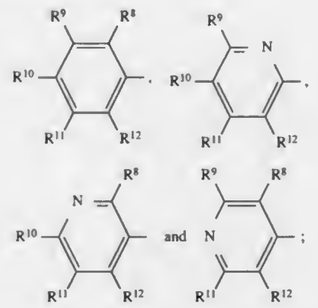
Continuation-in-part of Ser. No. 146,359, Oct. 29, 1983, Pat. No. 5,344,911. This application Jul. 15, 1994, Ser. No. 276,006
Int. Cl.[6] A01N *43/42*
U.S. Cl. 514—299 **37 Claims**

1. A method of treating inflammation or an inflammation-associated disorder in a subject, said method comprising administering to the subject having such inflammation or inflammation-associated disorder, a therapeutically-effective amount of a compound of Formula I



I

wherein A is selected from



wherein each of R^1 and R^2 is independently selected from alkyl, hydrido, hydroxyalkyl, halo, haloalkyl, alkoxycarbonyl and carboxyl; and
wherein each of R^3 through R^{12} is independently selected from hydrido, halo, alkyl, alkylthio, cyano, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkoxyalkyl, alkylsulfonyl, haloalkytsulfonyl and sulfamyl; or a pharmaceutically-acceptable salt thereof.

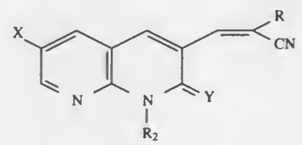
5,663,181

NAPHTHYRIDINE DERIVATIVES, THEIR METHODS OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT, USEFUL ESPECIALLY AS ANTIPROLIFERATIVE DRUGS

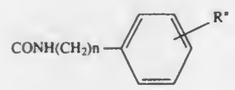
Nicole Bru-Magniez, Paris; Michèle Launay, Rueil Malmaison, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires UPSA, Agen, France

PCT No. PCT/FR94/00763, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/00513, PCT Pub. Date Jan. 5, 1995
Continuation-in-part of Ser. No. 97,239, Jul. 27, 1993, Pat. No. 5,364,860. This PCT application Jun. 24, 1994, Ser. No. 549,665
Claims priority, application France, Jun. 25, 1993, 93 07746
Int. Cl.[6] A61K *31/44;* C07D *471/02*
U.S. Cl. 514—300 **10 Claims**

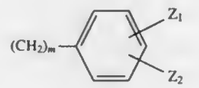
1. A naphthyridine compound of the formula:



wherein X is hydrogen or halogen;
Y is oxygen, sulfur or NH; and
R is hydrogen; COOR', wherein R' is hydrogen or a lower alkyl group having 1 to 6 carbon atoms; $CONH_2$;



wherein n is an integer from 0 to 5; and R" is hydrogen, halogen or a lower alkyl radical having 1 to 6 carbon atoms; nitro; pyridyl, halopyridyl, thiazolyl or thiazolyl substituted by a lower alkyl radical having 1 to 6 carbon atoms; and
R_2 is a lower alkyl group having 1 to 6 carbon atoms; a lower cycloalkyl group having 3 to 7 carbon atoms; or



wherein m is an integer from 0 to 5; and Z_1 and Z_2 are independently hydrogen, a lower alkyl group having 1 to 6 carbon atoms, halogen, trifluoromethyl, hydroxyl, a lower alkoxy group having 1 to 6 carbon atoms, a lower thioalkyl group having 1 to 6 carbon atoms, nitro, amino or cyano; or a pharmaceutically acceptable salt thereof.

5,663,182

ANTIPSYCHIOTIC METHOD

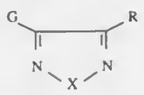
Franklin Porter Bymaster, 8545 N. 650 E, Brownsburg, Ind. 46112; Harlan E. Shannon, 4229 Rolling Springs Dr., Carmel, Ind. 46285; Per Sauerberg, Syrenvænget 27, 3520 Farum; Preben H. Olesen, Ørevadsvej 20, 2400 København NV, both of Denmark; John Stanley Ward, 241 E. Brunswick Ave., Marion, Ind. 46227, and Charles H. Mitch, 3210 Grove Pkwy., Columbus, Ind. 47203

Continuation of Ser. No. 292,116, Aug. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 109,285, Aug. 19, 1993, abandoned. This application Apr. 17, 1996, Ser. No. 633,685

Int. Cl.[6] A16K *31/44*

U.S. Cl. 514—305 **11 Claims**

1. A method of treating schizophrenia or a schizophreniform disease in a subject in need thereof comprising administering to said subject an effective amount of a compound of formula I



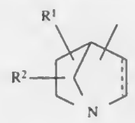
(I)

wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO_2, —R^4, —Y, —NHCO–R^4, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-10}-cycloalkenyl, C_{4-10}-cycloalkenyl, C_{4-10}-(cycloalkylalkyl), —Z^1—C_{3-10}-cycloalkyl, —Z^1-C_{4-10}-cycloalkenyl, —Z^1-C_{4-10}-(cycloalkylalkyl), —Z^1C_{4-10}-(cycloalkenylalkyl), —Z^1—C_{4-10}-(methylenecycloalkylalkyl), —NH—R^4, —NR^4R^5, —NH—OR^4, —CH=NOR^4, or an aromatic ring selected from the group consisting of phenyl, benzyloxycarbonyl, phenoxy, benzoyl, tetrahydronaphthyl, naphtyl, and indenyl, wherein each aromatic ring is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenoxy or phenyl; or R is —Z^1—R^6—Z^2—R^5, Z^1—R^6—Z^2—R^6—Z^3—R^5, —Z^1—CO—R^5, —Z^1—R^6—CO—R^5, —Z^1—R^6—CO_2—R^5, —Z^1—R^6—O_2C—R^5, —Z^1—R^6—CONH—R^5, —Z^1-R^6—NHCO-R^5, —Z^1—R^6—Y, —Z^1—R^6—Z^2—Y, wherein Z^1 and Z^2 independently are oxygen or sulphur, and R^4 and R^5 independently are straight or branched C_{2-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{1-6}-alkynyl, each of which is optionally substituted with one or more halogen(s), C_{1-6}-alkoxy, —CF_3, —CN, —COOH, —OH, —NH_2, C_{1-6}-alkyl ester, —SH, —NHR^4, —NR^4R^5, or a phenyl or phenoxy group, wherein the phenyl or phenoxy group is optionally substituted with halogen, —NO_2, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$, —$CSNH_2$, phenyl or phenoxy, and wherein R^6 and R^7 independently are straight or branched C_{1-10}-alkylene, straight or branched C_{2-10}-alkenylene, straight or branched C_{2-10}-alkynylene, each of which is optionally substituted with one or more halogen(s), —CF_3, —CN, —COOH, —OH, —NH_2,C_{1-6} -alkyl ester, —SH, —NHR^4, —NR^4R^5, phenyl or phenoxy, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl or benzyl, or a carbon atom of the heterocyclic group together with an oxygen atom form a carbonyl group; and

G is an azabicyclic ring of formula II



(II)

wherein

the thiadiazole or oxadiazole ring is attached to any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position of the azabicyclic ring and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, —NH_2, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; and . . . is a single or double bond; or a pharmaceutically acceptable salt thereof.

5,663,183

N-(3-AMINOPROPYL)-N-PHENYL-5,6,7,8-TETRAHYDRONAPHTHALENE-2-CARBOXAMIDE DERIVATIVES, THEIR PREPARATION AND THEIR THERAPEUTIC USE

Jonathan Frost, Wissous; Pascal George, St Arnoult en Yvelines; Patrick Pasau, Bagneux; Régine Bartsch; Corinne Rousselle, both of Fontenay aux Roses; Paul Howard Williams, Paris, and Jean Claude Muller, Morsang sur Orge, all of France, assignors to Synthelabo, Le Plessis Robinson, France

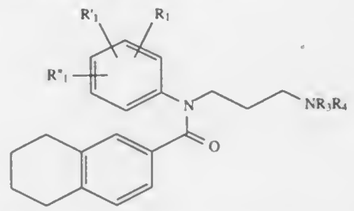
Continuation of Ser. No. 382,578, Feb. 2, 1995, Pat. No. 5,550,162. This application May 24, 1996, Ser. No. 653,233

Claims priority, application France, Feb. 3, 1994, 94.01198; Feb. 3, 1994, 94.01199; Feb. 3, 1994, 94.01200

Int. Cl.[6] A61K *31/47;* **C07D** *217/00*

U.S. Cl. 514—310 **3 Claims**

1. A compound, of the formula:



(I)

in which

R_1 represents a hydrogen, halogen, methyl, or a C_1–C_4 alkoxy,

R'_1 represents hydrogen or halogen;

R''_1 represents hydrogen or methoxy and

R_3 and R_4 together form, with the nitrogen atom to which they are attached, 1,2,3,4-tetrahydroisoquinol-2-yl,

6,7-dimethoxy-1,2,3,4-tetrahydroisoquinol-2-yl,

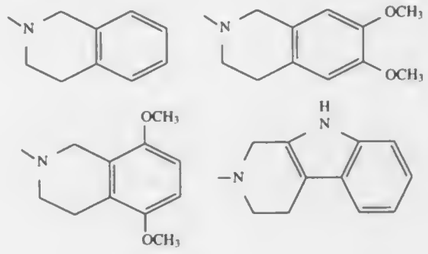
5,8-dimethoxy-1,2,3,4-tetrahydroisoquinol-2-yl,

1,2,3,4-tetrahydro-9H-pyrido[3,4-b]indol-2-yl,

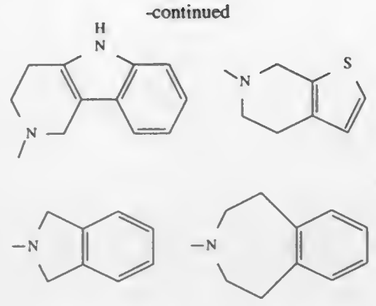
1,2,3,4-tetrahydro-9H-pyrido[4,3-b]indol-3-yl,

4,5,6,7-tetrahydrothieno[2,3-c]pyrid-6-yl,

2,3-dihydro-1H-isoindol-2-yl group, or 2,3,4,5 -tetrahydro-1H-3-benzazepin-3-yl, the respective formulae of which are as follows:



-continued



provided that, when R_1 is alkoxy and each of R'_1 and R''_1 is hydrogen, R_3 and R_4 do not form, with the nitrogen atom, an unsubstituted or substituted tetrahydroisoquinol-2-yl group

in the form of a pure optical isomer or a mixture thereof, and in the form of a base or an acid addition salt.

5,663,184

METHODS OF INHIBITING CNS PROBLEMS IN POST-MENOPAUSAL WOMEN

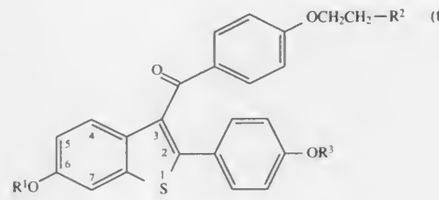
Henry U. Bryant, Indianapolis; Andrew L. Glasebrook, Zionsville; Timothy A. Grese, Indianapolis, and David L. Phillips, Clayton, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 171,388, Dec. 21, 1993. This application Apr. 28, 1995, Ser. No. 432,438

Int. Cl.[6] A61K *31/445;31/40;31/38*

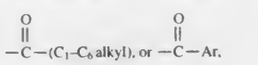
U.S. Cl. 514—324 **3 Claims**

1. A method of inhibiting one or more CNS disorders in a post-menopausal female selected from the group consisting of anxiety, depression mood swings, tension, irritability, motivational defects, memory loss and cognitive disorders comprising prophylactically administering to a female human in need of treatment an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, —CH_3,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,663,185

HETEROAROMATIC COMPOUNDS AND CROP PROTECTION AGENTS CONTAINING THEM

Bernd Mueller, Frankenthal; Hubert Sauter; Horst Wingert, both of Manheim; Hartmann Koenig, Limburgerhof; Franz Roehl, Schifferstadt; Eberhard Ammermann, Heppenheim, and Gisela Lorenz, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

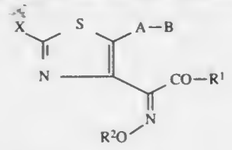
Division of Ser. No. 91,265, Jul. 15, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,371

Claims priority, application Germany, Jul. 16, 1992, 42 23 357.7

Int. Cl.[6] A01N *43/78;* **C07D** *277/04*

U.S. Cl. 514—365 **15 Claims**

1. A heteroaromatic compound of the formula I



(I)

wherein

R^1 is C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylamino or di-C_1–C_6-alkylamino;

R^2 is C_1–C_6-alkyl;

A is a direct bond;

unsubstituted or substituted alkylene, alkenylene or alkynylene;

—$(CHR^4)_n$—O—, —$(CHR^4)_n$—S—, —$(CHR^4)_n$—NH—, —$(CHR^4)_n$—NR^5—,

—$(CHR^4)_n$—S(=O)—, —$(CHR^4)_n$—S(=O)$_2$—, —$(CHR^4)_n$—O—S (=O)—,

—$(CHR^4)_n$—S(=O)—O—, —$(CHR^4)_n$—O—S(=O)$_2$—,

—$(CHR^4)_n$—S (=O)$_2$—O—,

—$(CHR^4)_n$—C(=O)—, —$(CHR^4)_n$—C(=O)—O—,

—$(CHR^4)_n$—O—C(=O)—,

—$(CHR^4)_n$—CR^5=NO—, —$(CHR^4)_n$—CR^5=N—N=CR^6—,

—$(CHR^4)_n$—O—N=CR^7—,

n is 0, 1, 2, 3 or 4, and the radicals R^4 may be different when n>1;

R^4, R^5 and R^6 independently of one another are each hydrogen or unsubstituted or substituted C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl or aryl;

R^7 is hydrogen, cyano;

unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl or hetaryl;

unsubstituted or substituted alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, cycloalkenyloxy, heterocyclyloxy, aryloxy or hetaryloxy;

or R^7 and B, together with the carbon atom to which they are bonded, form an unsubstituted or substituted, saturated or partially unsaturated alicyclic or heterocyclic system;

B is hydrogen, halogen, unsubstituted or substituted alkyl, alkenyl or alkynyl; cycloalkyl, cycloalkenyl, cycloalkynyl, heterocyclyl, aryl, hetaryl, —$(CHR^4)_p$-cycloalkyl, —$(CHR^4)_p$-cycloalkenyl, —$(CHR^4)_p$-cycloalkynyl, —$(CHR^4)_p$-heterocyclyl, —$(CHR^4)_p$-aryl, —$(CHR^4)_p$-hetaryl, —$(CHR^4)_p$—O-cycloalkyl, —$(CHR^4)_p$—O-cycloalkenyl, —$(CHR^4)_p$—O-cycloalkynyl, —$(CHR^4)_p$—O-heterocyclyl, —$(CHR^4)_p$—O-aryl, —$(CHR^4)_p$—O-hetaryl —$(CHR^4)_p$—S-cycloalkyl, —$(CHR^4)_p$—S-cycloalkenyl, —$(CHR^4)_p$—S-cycloalkyl, —$(CHR^4)_p$—S-heterocyclyl, —$(CHR^4)_p$—S-aryl, —$(CHR^4)_p$—S-hetaryl, —$(CHR^4)_p$—NH-cycloalkyl, —$(CHR^4)_p$—NH-cycloalkenyl, —$(CHR^4)_p$-cycloalkynyl, —$(CHR^4)_p$—NH-heterocyclyl, —$(CHR^4)_p$—NH-aryl, —$(CHR^4)_p$—NH-hetaryl, —$(CHR^4)_p$—NR^5-cycloalkyl, —$(CHR^4)_p$—NR^5-cycloalkenyl, —$(CHR^4)_p$—NR^5-cycloalkynyl, —$(CHR^4)_p$—NR^5-heterocyclyl, —$(CHR^4)_p$—NR^5-aryl, —$(CHR^4)_p$—NR^5-hetaryl, where the above-mentioned cyclic radicals may in turn carry substituents;

p is 0, 1, 2, 3, or 4, and the radicals R^4 may be different when p>1;

X is hydrogen, cyano, nitro, halogen, haloalkyl, haloalkoxy,

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unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl or hetaryl;
unsubstituted or substituted alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, cycloalkenyloxy, heterocyclyloxy, aryloxy or hetaryloxy;
unsubstituted or substituted alkylthio, alkenylthio, alkynylthio, cycloalkylthio, cycloalkenylthio, heterocyclylthio, arylthio or hetarylthio;
amino which may carry one or two of the following groups;
unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl and/or hetaryl;
unsubstituted or substituted alkylcarbonyl, alkenylcarbonyl, alkynylcarbonyl, cycloalkylcarbonyl, cycloalkenylcarbonyl, heterocyclylcarbonyl, arylcarbonyl and/or hetarylcarbonyl;
unsubstituted or substituted alkylcarbonyloxy, alkenylcarbonyloxy, alkynylcarbonyloxy, cycloalkylcarbonyloxy, cycloalkenylcarbonyloxy, heterocyclylcarbonyloxy, arlycarbonyloxy and/or hetarylcarbonyloxy;
unsubstituted or substituted alkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, cycloalkoxycarbonyl, cycloalkenyloxycarbonyl, heterocyclyoxycarbonyl, aryloxycarbonyl or hetaryloxycarbonyl;
unsubstituted or substituted alkylcarbonylamino, alkenylcarbonylamino, alkynylcarbonylamino, cycloalkylcarbonylamino, cycloalkenylcarbonylamino, heterocyclylcarbonylamino, arylcarbonylamino and/or hetarylcarbonylamino, where these radicals may additionally carry one or the following groups on the amino group; unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl and/or hetaryl;
aminocarbonyl which may carry one or two of the following groups on the amino group; unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl and/or hetaryl;
unsubstituted or substituted alkyl-S(=O)—, alkenyl-S(=O)—, alkynyl-S(=O)—, cycloalkyl-S(=O)—, cycloalkenyl-S(=O)—, heterocyclyl-S(=O)—, aryl-S(=O)— and/or hetaryl-S(=O)—;
unsubstituted or substituted alkyl-S(=O)—O—, alkenyl-S(=O)—O—, alkynyl-S(=O)—O—, cycloalkyl-S(=O)—O—, cycloalkenyl-S(=O)—O—, heterocyclyl-S(=O)—O—, aryl-S(=O)—O—, and/or hetaryl-S (=O)—O—;
unsubstituted or substituted alkyl-O—S(=O)—, alkenyl-O—S(=O)—, alkynyl-O—S(=O)—, cycloalkyl-O—S(=O)—, cycloalkenyl-O—S(=O)—, heterocyclyl-O—S(=O)—, aryl-O—S(=O)—, and/or hetaryl-O—S(=O)—;
unsubstituted or substituted alkyl-S(=O)$_2$—, alkenyl-S(=O)$_2$—, alkynyl-S(=O)$_2$—, cycloalkyl-S (=O)$_2$—, cycloalkenyl-S(=O)$_2$—, heterocyclyl-S(=O)$_2$—, aryl-S(=O)$_2$—, and/or hetaryl-S(=O)$_2$—;
unsubstituted or substituted alkyl-S(=O)$_2$—O—, alkenyl-S(=O)$_2$—O—, alkynyl-S(=O)$_2$—O—, cycloalkyl-S(=O)$_2$—O—, cycloalkenyl-S (=O)$_2$—O—, heterocyclyl-S (=O)$_2$—O—, aryl-S(=O) and/or hetaryl-S (=O)
unsubstituted or substituted alkyl-O—S(=O)$_2$—, alkenyl-O—S(=O)$_2$—, alkynyl-O—S (=O)$_2$', cycloalkyl-O—S (=O)$_2$—, cycloalkenyl-O—S(=O)$_2$—, heterocyclyl-O—S(=O)$_2$—, aryl-O—S(=O)$_2$—, and/or hetaryl-O—S (=O)$_2$—;
unsubstituted or substituted alkyl-ON=CR^8—, alkenyl-ON=CR^8—, alkynyl-ON=CR^8—, cycloalkyl-ON=CR^8—, cycloalkenyl-ON=CR^8—, heterocyclyl-ON=CR^8—, aryl-ON=CR^8—, and/or hetaryl-ON=CR^8—.
R^8 is hydrogen, cyano,
unsubstituted or substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, heterocyclyl, aryl or hetaryl;
unsubstituted or substituted alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, cycloalkenyloxy, heterocyclyloxy, aryloxy, or hetaryloxy.

5,663,186

TREATMENT OF ATHEROSCLEROSIS WITH ANGIOTENSIN II RECEPTOR BLOCKING IMIDAZOLES

Edward B. Nelson, Lower Gwynedd, and Charles S. Sweet, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 219,685, Mar. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,483
Int. Cl.^{6} A61K *31/41;31/35;31/40*
U.S. Cl. 514—381 **2 Claims**

1. A method of treating atherosclerosis and reducing cholesterol alone or in conjuction with the treatment of hypertension using an angiotensin II antagonist, losartan, and HMG-CoA reductase inhibitor, simvastatin and an angiotensin converting enzyme inhibitor, enalpril.

5,663,187

TREATMENT OF ATHEROSCLEROSIS WITH ANGIOTENSIN II RECEPTOR BLOCKING IMIDAZOLES

Edward B. Nelson, Lower Gwynedd, and Charles S. Sweet, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 219,685, Mar. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,484
Int. Cl.^{6} A61K *31/41;31/35;31/235*
U.S. Cl. 514—381 **2 Claims**

1. A method of treating atherosclerosis and reducing cholesterol alone or in conjunction with the treatment of hypertension using an angiotensin II antagonist of formula I, wherein the angiotensin II antagonist of formula I is selected from the group consisting of:
2-butyl-4-chloro-1-[(2'-tetrazol-5-yl)biphenyl-4-yl]methyl]-5-hydroxymethyl) imidazole; and 2-butyl-4-chloro -1-[(2'-tetrazol-5-yl)biphenyl-4-yl] methylimidazole-5-carboxylic acid; and an HMG-CoA reductase inhibitor of formula II, wherein the HMG-CoA reductase inhibitor of formula II is selected from the group consisting of: lovastatin, simvastatin and pravastatin, or their pharmaceutically acceptable salts.

5,663,188

SYNERGISTIC THERAPEUTIC COMPOSITIONS OF ANGIOTENSIN I CONVERTING ENZYME INHIBITORS AND ANGIOTENSIN II ANTAGONISTS AND METHODS

Anthony Andrea Fossa, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 938,126, Oct. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 522,360, May 11, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,505
Int. Cl.^{6} A61K *31/41;31/40;31/415*
U.S. Cl. 514—381 **32 Claims**

1. A first pharmaceutical composition for use with a second pharmaceutical composition for achieving a therapeutic effect comprising lowering blood pressure or treating congestive heart failure in a mammal in need thereof, which effect is greater than the sum of the therapeutic effects achieved by said first and second pharmaceutical composition separately and which second pharmaceutical composition comprises an amount of an angiotensin II antagonist, said first pharmaceutical composition comprising a synergistic effective amount of an angiotensin I converting enzyme inhibitor and a pharmaceutically acceptable diluent or carrier.

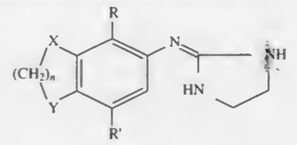
5,663,189

2-IMIDAZOLINYLAMINO HETEROCYCLIC COMPOUNDS USEFUL AS ALPHA-2 ADRENOCEPTOR AGONISTS

Peter Julian Maurer, Cincinnati; Jeffrey Joseph Ares, Fairfield; William Lee Seibel, Hamilton, all of Ohio, and Daniel P. Walker, Bloomington, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 86,482, Jul. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,708
Int. Cl.^{6} A61K *31/415;* **C07D** *405/12;409/12;233/50*
U.S. Cl. 514—397 **22 Claims**

1. A compound having the following structure:



wherein
(a) n is an integer from 1 to about 3;
(b) X and Y are each independently selected from O, S and CH_2, with at least one of X and Y being O or S;
(c) R is unsubstituted, straight or branched chain alkanyl or alkanoxy having from 1 to about 3 non-hydrogen atoms; and
(d) R' is selected from the group consisting of hydrogen, methyl, cyano, and halo.

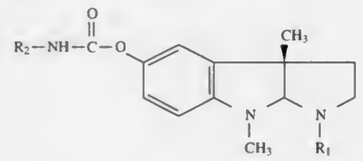
5,663,190

MEMORY ENHANCING AND ANALGESIC 1,2,3,3A,8,8A-HEXAHYDRO-3A,8(AND 1,3A,8)-DI (AND TRI)METHYLPYRROLO(2,3-B) INDOLES

Richard L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, all of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Continuation of Ser. No. 828,553, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 252,309, Oct. 3, 1988, abandoned, which is a division of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1986, abandoned. This application Oct. 16, 1992, Ser. No. 962,080
Int. Cl.^{6} A61K *31/405;* **C07D** *487/12*
U.S. Cl. 514—411 **6 Claims**

1. A compound of the formula



where
(a) R_1 is arylloweralkyl; and
(b) R_2 is alkyl; or the 3aR-cis isomer thereof or a mixture of the two isomers including the racemic mixture or a pharmaceutically acceptable acid addition salt thereof.

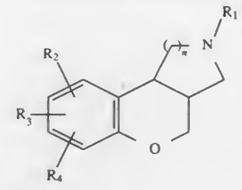
5,663,191

BENZOPYRAN COMPOUNDS AS 5HT$_{2C}$ RECEPTOR ANTAGONISTS

Gilbert Lavielle, La Celle Saint Cloud; Thierry Dubuffet, L'Hay Les Roses; Mark Millan, Paris, and Adrian Newman-Tancredi, Le Pecq, all of France, assignors to Adir Et Compagnie, Courbevoie, France

Filed Jul. 5, 1995, Ser. No. 498,217
Claims priority, application France, Jul. 6, 1994, 94.08328
Int. Cl.^{6} A61K *31/40;* **C07D** *491/052*
U.S. Cl. 514—411 **8 Claims**

1. A compound selected from those of formula (I):



(I)

in which:
n represents 1,
R_1 represents hydrogen, linear or branched (C_1–C_6) alkyl, benzyl, acetyl, benzoyl, allyl, pyridinecarbonyl, pyridinemethyl, pyridineaminocarbonyl, linear or branched (C_1–C_6) phthalimidoalkyl, linear or branched (C_1–C_4) (thiochroman-8-yloxy)alkyl, linear or branched (C_1–C_4) (benzodioxanyloxy-)alkyl, or linear or branched (C_1–C_6) acylaminoalkyl wherein acyl is benzoyl, naphthylcarbonyl, thienylcarbonyl, linear or branched (C_1–C_6) alkylcarbonyl, furylcarbonyl, pyrrolylcarbonyl, pyridinylcarbonyl, or (C_3–C_7) cycloalkylcarbonyl, each of these acyl groups being optionally substituted with one or more halogen, trihalomethyl, alkoxy or hydroxyl,
R_2, R_3 or R_4, which may be identical and different, represent hydrogen, halogen, linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, hydroxyl, acetyl, aminocarbonyl, aminomethyl, cyano, nitro, amino, phenyl which may or may not be substituted with one or more halogen, hydroxyl, linear or branched (C_1–C_6) alkoxy, linear or branched (C_1–C_6) alkyl, or trihalomethyl, or R_2, R_3, and R_4 represent furyl, pyridinyl, thienyl or pyrrolyl,
the optical isomers thereof and the addition salts thereof with a pharmaceutically-acceptable acid.

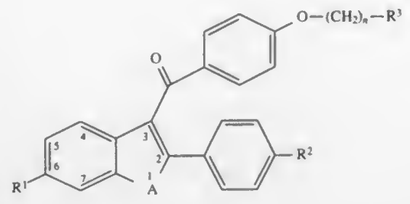
5,663,192

HETEROCYCLIC NEUROPEPTIDE Y RECEPTOR ANTAGONISTS

Robert F. Bruns, Jr., Carmel; Donald R. Gehlert, Indianapolis, both of Ind.; J. Jeffry Howbert, Bellevue, Wash., and William H. W. Lunn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 20, 1994, Ser. No. 326,413
Int. Cl.^{6} A61K *31/40;31/38;31/34*
U.S. Cl. 514—420 **23 Claims**

1. A method for the treatment of a physiological disorder associated with an excess of neuropeptide Y, which method comprises administering to a mammal in need of said treatment an effective amount of a compound of the formula



wherein:
A is —O—, —S(O)$_m$—, or —N(R^{11})—;
where R^{11} is hydrogen or C_1–C_6 alkyl, and
m is 0, 1, or 2;
R^1 is hydroxy, halo, hydrogen, C_3–C_8 cycloalkyl, C_2–C_7 alkanoyloxy, C_1–C_6 alkoxy, or phenyl, said phenyl being optionally substituted with one, two, or three moieties selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, chloro, fluoro, or trifluoromethyl;
R^2 is hydroxy, halo, hydrogen, C_3–C_8 cycloalkyl, C_2–C_7 alkanoyloxy, C_1–C_6 alkoxy, or phenyl, said phenyl being optionally substituted with one, two, or three moieties selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, chloro, fluoro, or trifluoromethyl;
n is 1–6;
R^3 is a group of the formula



wherein R^4 and R^5 are independently C_1–C_6 alkyl or combine to form, along with the nitrogen to which they are attached, a heterocyclic ring selected from the group consisting of hexamethyleneiminyl, piperazinyl, heptamethyleneiminyl, imidazolinyl, piperidinyl, 4-methylpiperidinyl, pyrrolidinyl, or morpholinyl;
with the proviso that when n is 2 and A is —S—, both R^1 and R^2 are not both selected from the group consisting of hydroxy, methoxy, and C_2–C_7 alkanoyloxy;
or a pharmaceutically acceptable salt thereof.

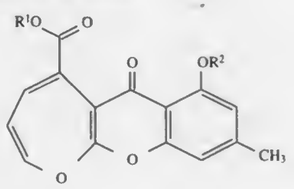
5,663,193

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

Carmen Cascales, Madrid, Spain; Russell B. Lingham, Watchung, N.J.; Fernando Pelaez, Madrid, Spain; Jon D. Polishook, Cranford, N.J.; Keith C. Silverman, Somerset, N.J.; Sheo B. Singh, Edison, N.J., and Deborah L. Zink, Manalapan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 17, 1996, Ser. No. 682,248
Int. Cl.^{6} A61K *31/535;* **C07D** *493/04*
U.S. Cl. 514—450 **11 Claims**

1. A compound of formula I:



wherein:
R^1 is H, or C_1–C_4 alkyl;
R^2 is H, C_1–C_4 alkyl, or —C(=O)R^3; and
R^3 is C_1–C_4 alkyl;
or the pharmaceutically acceptable salt, hydrate or prodrug thereof.

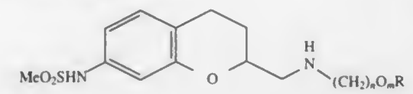
5,663,194

CHROMAN-2-YLMETHYLAMINO DERIVATIVES

Richard E. Mewshaw, 21 Boxwood Dr., South Brunswick, N.J.

Filed Jul. 19, 1996, Ser. No. 684,521
Int. Cl.^{6} A61K *31/35;* **C07D** *311/58*
U.S. Cl. 514—456 **11 Claims**

1. A compound of formula I:



in which
n is 1, 2 or 3;
m is 0 or 1; and
R is a substituted or unsubstituted phenyl group in which the substituents are, independently, one or two members selected from the group consisting of alkyl of 1 to 6 carbon atoms, hydroxy, halo and amino groups or R is alkyl of 1 to 6 carbon atoms or hydroxyalkyl of 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

5,663,195

METHOD OF PREVENTING BONE LOSS

Edward M. Scolnick, Wynnewood, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 325,759, Oct. 19, 1994, abandoned. This application May 8, 1996, Ser. No. 646,604
Int. Cl.^{6} A61K *31/34*
U.S. Cl. 514—461 **15 Claims**

1. A method of inhibiting bone resorption in a patient in need of such inhibition comprising administration of a non-toxic therapeutically effective amount of a selective cyclooxygenase-2 inhibitor wherein the inhibitor is a compound of Formula Ia



or pharmaceutically acceptable salts thereof wherein:
R^1 is selected from the group consisting of
(a) $S(O)_2CH_3$,
(b) $S(O)_2NH_2$,
(c) $S(O)_2NHC(O)CF_3$,
(d) $S(O)NHCH_3$,
(e) $S(O)NHNH_2$, and
(f) $S(O)NHNHC(O)CF_3$;
R^2 is selected from the group consisting of
(a) C_{1-6}alkyl,
(b) C_3, C_4, C_5, C_6, and C_7, cycloalkyl,
(c) mono-, di- or tri-substituted phenyl or naphthyl wherein the substituent is selected from the group consisting of selected from the group consisting of
(1) hydrogen,
(2) halo,
(3) C_{1-6}alkoxy,
(4) C_{1-6}alkylthio,
(5) CN,
(6) CF_3,
(7) C_{1-6}alkyl,
(8) N_3,
(9) —CO_2H,
(10) —CO_2—C_{1-4}alkyl,

(11) —C(R^3)(R^4)—OH,
(12) —C(R^3)(R^4)—O—C_{1-4}alkyl, and
(13) —C_{1-6}alkyl-CO_2—R^3;
(d) heteroaryl
(e) benzoheteroaryl
R^3, R^4, R^5 and R$^{5'}$ are each independently selected from the group consisting of
(a) hydrogen,
(b) C_{1-6}alkyl.

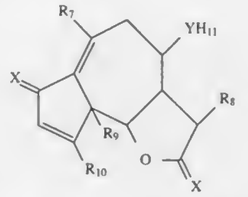
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METHODS FOR TREATING NEOPLASTIC DISORDERS

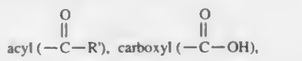
Nil Sari, Istanbul, Turkey; Hanzade Dogan, North Quincy, and John K. Snyder, Boston, both of Mass., assignors to Boston University, Boston, Mass.

Filed Sep. 3, 1993, Ser. No. 116,689
Int. Cl.^{6} A61K *31/34*
U.S. Cl. 514—468 **6 Claims**

1. A method for treating a neoplastic disorder in an animal comprising, administering an effective amount of an agent having the structure:

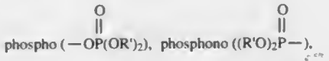


where X is O, S, or nitrogen as imines (=NR') or hydrazones (NR'NR'$_2$), where Y is either O or S, and wherein each or any of R_7, R_8, R_9, and R_{10} is:
(1) a substituent selected from group consisting of hydrogen (H—), halogen (for example, chloro, fluoro, or bromo), hydroxyl (—OH), alkoxyl (—OR'),



amino (—NR'$_2$), nitro (—NO_2), nitroso (—NO), azo (—N=N—), diazonium (—$N_2^{\oplus}$), azido (—N_3), hydrazino (—NR'—NR'$_2$), cyano (NC—), isocyano (CN—), cyanato (NCO—), isocyanato (OCN—), thioether (—SR'), thiol (—SH),

sulfone (—$S(O)_2$R'), sulfonic acid (HO_3S—), sulfonyl esters (R'O_3S—), sulfinic acid (HO_2S—), sulfinyl esters, (R'O_2S—), sulfenic acid (HOS—), sulfenyl ester (R'OS—),



or phosphine (—PR'$_2$), where R' is an alkyl, alkenyl or alkynyl of 1–5 carbons; or
(2) an unsaturated or saturated aliphatic, alicyclic or aromatic hydrocarbon radical having from 1–5 carbon atoms which can be substituted with one or more of the substituents of (1) above to an animal having a neoplastic disorder selected from the group consisting of lymphomas, adenocarcinomas, mastocytomas, myelomas, pulmonary tumors, sarcomas and macrophage tumors.

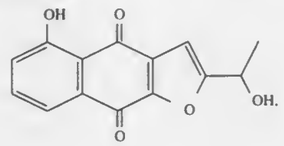
5,663,197

2-(1-HYDROXYETHYL)-5-HYDROXYNAPHTHO[2,3-B]FURAN-4,9-DIONE AND ANTITUMOR AGENTS COMPRISING THIS COMPOUND

Shinichi Ueda; Harukuni Tokuda, both of Kyoto; Keiichi Hirai, Kanazawa, and Heihachi Hatanaka, Nishinomiya, all of Japan, assignors to Taheebo Japan Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/01292, § 371 Date Mar. 9, 1995, § 102(e) Date Mar. 9, 1995, PCT Pub. No. WO94/06786, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 10, 1993, Ser. No. 397,182
Claims priority, application Japan, Sep. 18, 1992, 4-249340; Feb. 24, 1993, 5-35251
Int. Cl.^{6} A61R *31/34*
U.S. Cl. 514—468 **12 Claims**

1. A method for treating a malignant tumor sensitive to treatment with a compound in a mammal, which comprises administering to said mammal an effective amount of the compound, which is 2-(1-hydroxyethyl)-5-hydroxynaphtho[2,3-b]furan-4,9-dione of the following formula:



5,663,198

DRUG FORMULATIONS COMPRISING COATED, VERY SPARINGLY WATER-SOLUBLE DRUGS FOR INHALATIONAL PHARMACEUTICAL FORMS, AND PROCESS FOR THEIR PREPARATION

Bernhard Reul, Königstein, and Walter Petri, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jul. 13, 1994, Ser. No. 274,343
Claims priority, application Germany, Jul. 15, 1993, 43 23 636.7
Int. Cl.^{6} A61K *31/34*
U.S. Cl. 514—471 **14 Claims**

1. A drug formulation comprising a chlorine-free, partially fluorinated hydrocarbon formulated with micronized particles of a very sparingly water-soluble drug that are sufficiently coated with a natural, physiologically acceptable ampholytic phospholipid surfactant that is soluble in water to give a micellar/colloidal solution.

5,663,199

ANTI-VIRAL AROMATIC O-ALKYLATED OXIMES, ETHERS AND THIOETHERS

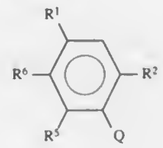
Walter Gerhard Brouwer, Geulph, Canada, assignor to Uniroyal Chemical Ltd./Ltee, Elmira, Canada

Filed Nov. 30, 1994, Ser. No. 346,819

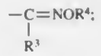
Int. Cl.[6] A61K *31/34;* **C07D** *307/40*

U.S. Cl. 514—471 **6 Claims**

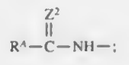
1. A compound of the formula



wherein Q is



R^1 is hydrogen or halogen;
R^2 is hydrogen or halogen;
R^3 is hydrogen or C_1–C_4 alkyl;
R^4 is C_3–C_6 alkenyl or C_3–C_6 alkynyl;
R^5 is hydrogen or halo; and
R^6 is



Z^2 is S; and
R^A is
a) unsubstituted or methyl substituted furanyl.

5,663,200

ANTIVIRAL ETHERS OF ASPARTATE PROTEASE SUBSTRATE ISOSTERES

Guido Bold, Glpf-Oberfrick; Hans-Georg Capraro, Rheinfelden; Alexander Fässler, Oberwil, all of Switzerland; Marc Lang, Mulhouse, France; Shripad Subray Bhagwat, Libertyville, Ill.; Satish Chandra Khanna, Bottmingen; Janis Karlis Lazdins, Basel, both of Switzerland, and Jürgen Mestan, Denzlingen, Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

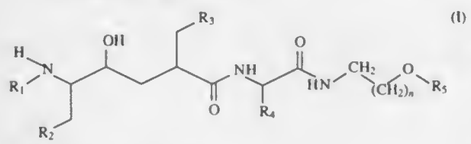
Filed Oct. 19, 1995, Ser. No. 545,170

Claims priority, application Switzerland, Oct. 19, 1994, 3140/94; Aug. 21, 1995, 2382/95

Int. Cl.[6] A61K *31/215;* **C07C** *271/20*

U.S. Cl. 514—487 **11 Claims**

1. A compound of the formula I



(I)

wherein
R_1 is lower alkoxycarbonyl,
R_2 is phenyl,
R_3 is phenyl that is substituted by one or more lower alkoxy moieties,
R_4 is lower alkyl,
R_5 is lower alkyl, and
n is 1 or 2,
or a salt thereof, provided at least one salt-forming group is present.

5,663,201

DESFERRIOXAMINE-B SALTS

Nicholas Lowther; Ian Francis Hassan, and Ian Timothy William Matthews, all of Horsham, England, assignors to CIBA-GEIGY Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 343,599, Nov. 30, 1994. This application Mar. 11, 1996, Ser. No. 613,562

Claims priority, application United Kingdom, Jun. 3, 1992, 9211779

Int. Cl.[6] A61K *31/215*

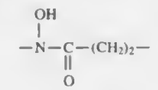
U.S. Cl. 514—507 **15 Claims**

1. A method of treating aluminium overload, Alzheimer's disease, malaria, reperfusion injury, cancer or an iron-overload disease which comprises administering enterally to a mammal in need of such treatment, a salt of the formula:



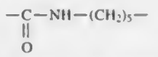
(I)

where X denotes a group of formula



(II)

Y denotes a group of formula



(III)

and R denotes the residue of an aliphatic or cycloaliphatic sulphonic acid having from 6 to 20 carbon atoms after removal of a $—SO_3H$ group therefrom.

5,663,202

TREATMENT FOR INTERNAL RADIATION DAMAGE

David F. Horrobin, and Catherine A. Scott, both of Guildford, England, assignors to Soctia Holdings PLC, Surrey, England

Division of Ser. No. 408,135, Mar. 21, 1995, Pat. No. 5,583,159, which is a continuation of Ser. No. 184,114, Jan. 29, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 690,545

Claims priority, application United Kingdom, Jan. 26, 1993, 9301446

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—560 **4 Claims**

1. A method of preventing damage to the gastrointestinal tract as a consequence of exposure to ionizing radiation associated with radiotherapy in patients in need thereof, comprising administering to said patient an effective amount of GLA or DGLA or both, optionally in conjunction with EPA or DHA or both.

5,663,203

AGENTS CONTAINING PROSTACYCLIN DERIVATIVES FOR TOPICAL APPLICATION

Roland Ekerdt; Georg Raptis, and Alfred Pauls, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 90,649, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 744,840, Aug. 13, 1991, abandoned, which is a continuation of Ser. No. 381,711, May 11, 1989, abandoned. This application Nov. 30, 1994, Ser. No. 350,171

Claims priority, application Germany, Sep. 11, 1986, 36 31 169.3

Int. Cl.[6] A61K *31/557*

U.S. Cl. 514—572 **2 Claims**

1. A topical pharmaceutical agent for treatment of senile skin conditions treatable by inducing locally restricted hyperemia, ulcerations caused by arterial occlusive diseases, and other skin disorders responsive to said agent, comprising, together with conventional auxiliary agents and excipients, 70–599 ng/cm^2 of the prostacyclin derivative iloprost.

2. A method of treating senile skin conditions involving decreased local blood circulation, ulcerations caused by arterial occlusive disease, and other skin disorders responsive to such treatment, comprising topically administering an agent of claim 1 to a patient in need of such treatment.

5,663,204

UREIDOACETAMIDE DERIVATIVES, THEIR PREPARATION AND THE MEDICAMENTS CONTAINING THEM

Marie-Christine Dubroeucq, Enghien les Bains, and Claude Guyon, Saint Maur des Fosses, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00847, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/06825, PCT Pub. Date Mar. 31, 1994

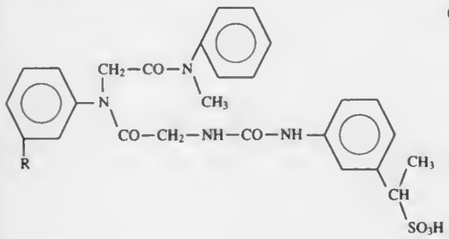
PCT Filed Sep. 6, 1993, Ser. No. 397,044

Claims priority, application France, Sep. 11, 1992, 92 10838

Int. Cl.[6] A61K *31/17;* **C07C** *309/02*

U.S. Cl. 514—596 **5 Claims**

1. Compounds of formula:



(I)

5,663,205

PHARMACEUTICAL COMPOSITION FOR USE IN GLAUCOMA TREATMENT

Takahiro Ogawa, Nishinomiya; Takaaki Deguchi, Kobe; Yoshifumi Ikejiri, Ibaraki, and Katsuhiro Inada, Osaka, all of Japan, assignors to Senju Pharmaceutical Co. Ltd., Osaka, Japan

PCT No. PCT/JP93/00654, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/24121, PCT Pub. Date Dec. 9, 1993

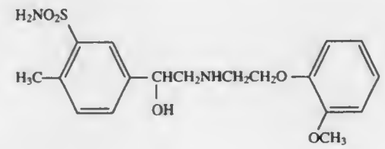
PCT Filed May 19, 1993, Ser. No. 338,592

Claims priority, application Japan, May 22, 1992, 4-130828

Int. Cl.[6] A61K *31/18*

U.S. Cl. 514—603 **12 Claims**

1. A method of treating glaucoma, comprising administering to a human subject in need thereof an effective amount in treating glaucoma of 5-[1-hydroxy-2-[2-(2-methoxyphenoxy)ethylamino]ethyl]-2-methylbenzenesulfonamide of the formula:



or its acid salt.

5,663,206

SYNERGISTIC ANTIMICROBIAL COMPOSITION OF N-DECYL-N-ISONONYL-N,N-DIMETHYL AMMONIUM CHLORIDE AND ALKYLGUANIDINE COMPOUNDS

Kevin I. Ajoku, Imperial, and Nancy J. Kapp, Glenshaw, both of Pa., assignors to Calgon Corporation, Del.

Filed May 2, 1996, Ser. No. 641,713

Int. Cl.[6] A01N *33/00;33/12;37/52*

U.S. Cl. 514—634 **10 Claims**

1. A synergistic antimicrobial combination comprising:
a) N-decyl-N-isononyl-N,N-dimethyl ammonium chloride; and
b) an alkylguanidine compound; wherein the weight ratio of a) to b), on an active basis, ranges between about 40:1 and 1:20 and wherein said alkylguanidine compound is dodecylguanidine hydrochloride.

5,663,207

GEM-DICHLOROCYCLOPROPANES AS ANTITUMOR AGENTS

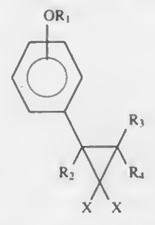
Robert A. Magarian; Joseph T. Pento, both of Norman, and May T. Griffin, Oklahoma City, all of Okla., assignors to Research Corporation Technologies, Tucson, Ariz.

Continuation of Ser. No. 20,922, Feb. 22, 1993, Pat. No. 5,397,802, which is a continuation-in-part of Ser. No. 812,246, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 432,564, Nov. 6, 1989, Pat. No. 5,098,903, which is a continuation-in-part of Ser. No. 98,945, Sep. 21, 1987, Pat. No. 4,879,315, which is a continuation-in-part of Ser. No. 363,429, Mar. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 166,255, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,040, Mar. 7, 1980, abandoned. This application Jan. 20, 1995, Ser. No. 376,961

Int. Cl.[6] A61K *31/045*

U.S. Cl. 514—721 27 Claims

1. A cyclopropane compound having the formula:



or any pharmaceutically acceptable salt thereof, in which

X is selected from a group consisting of hydrogen and halogen atoms;

R_1 is selected from a group consisting of a methyl and acetyl group;

R_2 is a hydrogen atom;

R_3 is selected from the group consisting of a phenyl and methoxyphenyl with the proviso that when R_1 is an acetyl group, R_3 is a phenyl group; and

R_4 is a hydrogen atom and with the proviso that when R_3, is a methoxyphenyl group and R_1 is a methyl group, the two methoxyphenyl groups in the compound are present in the cis configuratiton.

5,663,208

ANTIFUNGAL WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

Alain Martin, Ringoes, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 279,462, Jul. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 53,922, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 445,831

Int. Cl.[6] A61K *33/22;31/045;47/60;31/36*

U.S. Cl. 514—724 31 Claims

1. A therapeutic antifungal-wound healing composition which comprises a therapeutically effective amount of an antifungal agent and a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,663,209

COMPOUNDS FOR THE SUPPRESSION OF HIV TAT TRANSACTIVATION

Ru Chih C. Huang, and John N. Gnabre, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

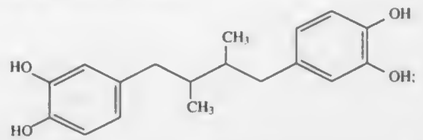
Division of Ser. No. 316,341, Sep. 30, 1994. This application Apr. 4, 1996, Ser. No. 627,588

Int. Cl.[6] A61K *31/05*

U.S. Cl. 514—731 11 Claims

1. A method for the suppression of Tat transactivation of a lentivirus in a cell comprising the steps of:

a) administering to the cell an effective amount of a compound of the following structure:



b) allowing the compound to suppress Tat transactivation of the lentivirus in the cell.

5,663,210

POLYETHYLENIC FOAMING COMPOSITIONS AND MOLDED FOAMS

Hiroyuki Sugimoto, Osaka; Toshio Igarashi, Kyoto; Yoshihiro Nakatsuji, Osaka; Masayuki Tatsumi, Tokyo; Kenzou Chikanari, Chiba, and Satoru Funakoshi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 19, 1994, Ser. No. 359,289

Claims priority, application Japan, Dec. 20, 1993, 5-319594; Sep. 27, 1994, 6-231181; Oct. 14, 1994, 6-249299

Int. Cl.[6] C08J *9/06*

U.S. Cl. 521—81 12 Claims

1. A polyethylenic foaming composition, comprising: (a) 100 parts by weight of an ethylenic copolymer having glycidyl groups consisting of 20 to 99.9% by weight of ethylene units, 0.1 to 30% by weight of a unit of a glycidyl ester of an unsaturated carboxylic acid or an unsaturated glycidyl ether, and 0 to 50% by weight of an ethylenically unsaturated ester unit other than a glycidyl ester, (b) 0.1 to 30 parts by weight of a carboxylic acid having 2 or more carboxyl groups and a molecular weight of 1500 or less, and (c) 0.1 to 20 parts by weight of a foaming agent of a thermal decomposition type.

5,663,211

ULTRAVIOLET CURING RESIN HAVING LOW PRIMARY IRRITATION INDEX FOR OPTICAL DISK

Hiraku Kominami, and Harumi Saotome, both of Tochigi, Japan, assignors to Sony Chemicals Corporation, Tokyo, Japan

Continuation of Ser. No. 355,691, Dec. 14, 1994, abandoned. This application May 13, 1996, Ser. No. 645,156

Claims priority, application Japan, Jun. 27, 1994, 6-144987

Int. Cl.[6] C08F *2/50;220/28*

U.S. Cl. 522—8 5 Claims

4. An ultraviolet curable resin coating composition for an optical disk, said coating composition comprising:

(a) 100 parts by weight of a mixture of tri-(meth) acrylate-functional or bi-(meth)acrylate-functional monomers, alone or in combination with mono-(meth)acrylate-functional monomers and containing from about 30 to about 60 parts by weight of said tri(meth)acrylate-functional monomers, said mixture having a primary irritation index of about 2 or less;

(b) from about 0.01 to about 1.0 parts by weight, based on 100 parts by weight of (a) of dialkylsiloxane di(meth)acrylate; and

(c) from about 0.2 to about 20 parts by weight, based on 100 parts by weight of (a) of a photopolymerization initiator.

5,663,212

LIGHT-SENSITIVE RESIN COMPOSITION

Yuichi Wakata; Morimasa Sato; Ken Iwakura, and Yuuichi Fukushige, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1994, Ser. No. 191,927

Claims priority, application Japan, Feb. 5, 1993, 5-018947; Sep. 3, 1993, 5-220151

Int. Cl.[6] C08K *5/00;* C08J *3/28;* G03C *1/73;* G03F *7/00*

U.S. Cl. 522—75 8 Claims

1. A light-sensitive resin composition containing:

(1) a photopolymerization initiator or a photopolymerization initiator system,

(2) an addition-polymerizable monomer having an ethylenically unsaturated double bond,

(3) a high molecular weight binder which is soluble in an alkaline aqueous solution and insoluble in water, and

(4) at least one of compounds having absorption in a wavelength region that has been shifted to a shorter wavelength region by converting at least one functional group of a UV absorber into another functional group which is convertible into the original functional group by being subjected to both of (A) treatment with an aqueous alkali solution and (B) heating,

wherein said compounds do not substantially absorb light in a 330–430 nm region after said converting at least one functional group of a UV absorber into another functional group, but after converting said another functional group back into the original functional group are capable of absorbing in that region but not in the visible region.

5,663,213

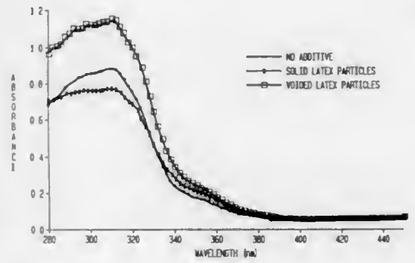
METHOD OF IMPROVING ULTRAVIOLET RADIATION ABSORPTION OF A COMPOSITION

Charles Elwood Jones, Yardley; Rafael Gonzalez Aviles, Harleysville; David Michael Fasano, Maple Glen, and Martin Vogel, Jenkintown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 203,178, Feb. 28, 1994, abandoned. This application Aug. 24, 1995, Ser. No. 518,698

Int. Cl.[6] A61K *7/42;7/49*

U.S. Cl. 523—105 7 Claims



1. A method for improving UV radiation absorption of a composition, comprising: adding to said composition from about 0.1 weight percent to about 50 weight percent of latex particles, based on total weight nonvolatiles, wherein the composition comprises at least one UV radiation absorbing agent, wherein the latex particles contain a void and have a particle size of from about 100 nm to about 380 nm, and wherein the latex particles are added to increase the UV radiation absorption of the composition.

5,663,214

PHOTOCURING DENTURE BASE LINING MATERIAL

Junichi Okada, Tokyo, Japan, assignor to GC Corporation, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,220

Claims priority, application Japan, Apr. 17, 1995, 7-114135

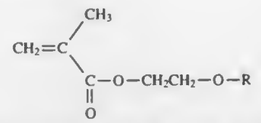
Int. Cl.[6] A61C *13/07;13/23*

U.S. Cl. 523—120 3 Claims

1. A photocuring denture base lining material comprising:

a powder component comprising a methacrylic acid ester polymer powder and/or a methacrylic acid ester polymer powder having from 0.01 to 5% by weight of a photocuring catalyst compounded therewith; and

a liquid component comprising (a) from 10 to 40% by weight of benzyl methacrylate, (b) from 20 to 40% by weight of at least one of compounds represented by the following structural formula (1):



(1)

wherein R represents an alkyl group, (c) from 20 to 70% by weight of at least one of methacrylic acid esters having two or three methacryloyl groups in one molecule, and (d) from 0.01 to 5% by weight of a photocuring catalyst.

5,663,215

COATING COMPOSITIONS

Brian D. Milligan, Newcastle upon Tyne, England, assignor to Courtaulds Coatings (Holdings) Limited, England

Continuation of Ser. No. 455,256, May 31, 1995, abandoned, which is a continuation of Ser. No. 244,930, Jul. 6, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,221

Claims priority, application United Kingdom, Dec. 20, 1991, 9127171

Int. Cl.[6] C09D *143/04*

U.S. Cl. 523—122 41 Claims

1. A process for inhibiting fouling of a substrate in a fouling environment, which comprises applying to the substrate, before exposure to the said environment, a composition which comprises:

(A) a polymer carrying pendant and/or terminal curable functional groups, at least a major proportion of the repeating units in the polymer of (A) being other than siloxane units, and

(B) a curable organohydrogen polysiloxane or polydiorganosiloxane, the curable functional groups in component (A) being capable of undergoing a curing reaction with component (B),

and curing the applied composition.

5,663,216

REINFORCED BIODEGRADABLE POLYMER

Ivan Tomka, Bourguillon, Switzerland, assignor to Bio-Tec Biologische Naturverpackungen GmbH, Germany

PCT No. PCT/EP94/02321, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO95/04106, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 14, 1994, Ser. No. 586,862

Claims priority, application Switzerland, Jul. 28, 1993, 02 281/93

Int. Cl.[6] C08L *3/02;1/02;1/26*

U.S. Cl. 523—128 13 Claims

1. A reinforced biologically degradable polymer, characterized by thermoplastic starch or a polymer mixture containing thermoplastic starch and at least one hydrophobic biologically degradable polymer, reinforced by natural fibers which are incorporated in the polymer and the polymer mixture furthermore contains a phase mediator for the molecular coupling of the starch phase with the hydrophobic polymer phase.

5,663,217

INK COMPOSITION

Jurgen M. Kruse, Tucson, Ariz., assignor to XAAR Limited, Cambridge, England

PCT No. PCT/GB92/00055, § 371 Date Jul. 9, 1993, § 102(e) Date Jul. 9, 1993, PCT Pub. No. WO92/12209, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 10, 1992, Ser. No. 87,690

Claims priority, application United Kingdom, Jan. 11, 1991, 9100614

Int. Cl.[6] C09D *11/10*

U.S. Cl. 523—161 22 Claims

1. An ink jet ink composition for use in an ink jet printer comprising a suspension in

(a) a non-aqueous solvent of (b) a disperse phase comprising:

(i) a water-insoluble dyestuff which is insoluble in said solvent at the ink jet printer operating temperature and below;

(ii) as dispersant for the dyestuff an amount of water-insoluble resin which is soluble in said solvent at the ink jet printer operating temperature; and,

(iii) a polymeric binder to hold the dyestuff on the surface of paper, said binder being different from said dispersant and selected from the group consisting of ethylene/vinyl acetate copolymers, amino resins, polyvinyl butyrals, nitrocellulose, and polyisobutylene;

wherein said dispersant is selected from resins other than ethylene/vinyl acetate copolymers, amino resins, polyvinyl butyrals, nitrocellulose, and polyisobutylene.

5,663,218

PROTECTION FROM SHOCKS, CAPABLE OF DEFORMING PROGRESSIVELY AND IN AN IRREVERSIBLE MANNER

Jacques Chappuis, Frontonas, France, assignor to Lafarge Materiaux de Specialites, Montrouge, France

Continuation of Ser. No. 295,847, Aug. 31, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 685,766

Claims priority, application France, Mar. 3, 1992, 92 02757

Int. Cl.[6] C08K *9/06;* C04B *14/38*

U.S. Cl. 523—212 12 Claims

1. Process for protecting articles from shock comprising partially or totally encasing such articles in one or a plurality of molded blocks of a composition having a load/deformation curve which, after a small elastic region, is followed by a region corresponding to a progressive and irreversible deformation, said composition comprising cellulosic fibers dispersed in a matrix of at least one non-hydrated hydraulic binder, wherein from 2.5 to 75 parts by weight of the cellulosic fibers are dispersed per 100 parts by weight of said binder, said composition, upon curing and drying, exhibiting a density between 0.15 and 0.60.

5,663,219

LIGHTWEIGHT SEALANT HAVING IMPROVED PEEL STRENGTH

Kanu R. Chokshi, Crystal Lake, and Keith B. Potts, Elgin, both of Ill., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 250,217, May 27, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,295

Int. Cl.[6] C08K *3/20;* C08L *63/00*

U.S. Cl. 523—404 8 Claims

1. A sealant composition having a specific gravity of from about 1 to about 1.3 and a peel strength of at least about 17 pounds per linear inch, said composition comprising a filler, a liquid polysulfide having the formula:

$$HSCH_2CH_2OCH_2OCH_2CH_2S[SCH_2CH_2OCH_2OCH_2CH_2S]_m[—SCH_2CH[SH]CH_2S—]_nSCH_2CH_2OCH_2O—CH_2SH$$

wherein m is from about 5 to about 50, n is from 0 to about 1 and n/m is from about 0.005 to about 0.02 when n is greater than 0 and an epoxy-terminated adduct of an epoxy resin and said polysulfide.

5,663,220

ACOUSTIC VIBRATIONAL MATERIAL FROM FIBER-REINFORCED POLYBUTADIENE-MODIFIED EPOXY RESIN

Kunihiko Tokura, Tokyo; Masaru Uryu, and Seiji Matsuura, both of Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 550,955, Jul. 11, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 902,772

Claims priority, application Japan, Jul. 13, 1989, 1-180853

Int. Cl.[6] C08K *7/14;7/02;* C08L *63/00*

U.S. Cl. 523—438 5 Claims

1. An acoustic vibrational material comprising a fiber reinforcement material and a elastomer modified epoxy resin, said elastomer modified epoxy resin comprising

an epoxy resin; and

a polybutadiene elastomer wherein the elastomer has principal chain terminals, the terminals having functional groups selected from the group consisting of hydroxyl, carboxyl, thiol, acid anhydride, primary amine, secondary amine and tertiary amine and containing not less than 90 mole percent of 1,2-linked units, the polybutadiene elastomer being incorporated into the molecular chains of the epoxy resin;

wherein the mole ratio of the polybutadiene elastomer to the epoxy resin is between 1:9 and 1:3.

5,663,221

METHOD FOR THE PRODUCTION OF MDF BOARDS BASED ON SUNFLOWER SEED HUSKS

Demetrio Carlos Barcas, Bs.Aires, Argentina, assignor to Nidera Sociedad Anonima, Buenos Aires, Argentina

Filed Feb. 26, 1996, Ser. No. 607,153

Int. Cl.[6] C08L *1/02;* B27N *3/04;3/12;* B27J *7/00*

U.S. Cl. 524—15 7 Claims

1. A method for making medium density boards from sunflower seed husks, which comprises:

(1) selecting sunflower seed husks according to predetermined sizes;

(2) impregnating said selected sunflower seed husks with steam;

(3) digesting said impregnated sunflower seed husks to de-fibrate the same;

(4) mixing said de-fibrated sunflower seed husks with a resin;

(5) drying said mixture; and

(6) pressing said dried mixture into a medium density fiber board.

5,663,222

PIPERIDYL ORGANOSILOXANES AND POLYMER SUBSTRATES LIGHT-STABILIZED THEREWITH

Michel Gay, Villeurbanne, and Sylvie Lavault, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

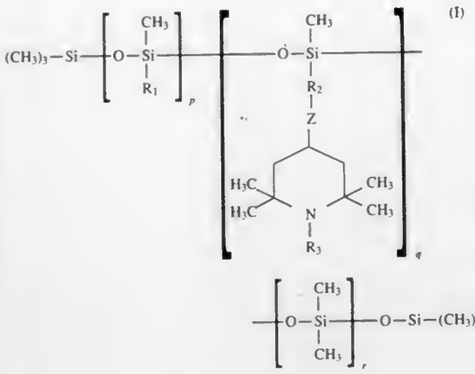
Division of Ser. No. 908,860, Jul. 1, 1992, which is a continuation of Ser. No. 475,279, Feb. 5, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,980

Claims priority, application France, Feb. 3, 1989, 89 01653

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—99 9 Claims

1. A composition of matter comprising a light/UV-degradable polymer and, as a stabilizer therefor, an effective light/UV-stabilizing amount of at least one compound having the formula (I)



(I)

wherein

p and r are numbers equal to or grater than 0;

q is a number greater than 0;

the sum p+r+q is greater than or equal to 5;

R_1 is

a linear or branched chain alkyl radical having more than 4 carbon atoms, $—(CH_2)_n—COO—R_4$,

wherein

n is a number ranging from 5 to 20 and

R_4 is an alkyl radical having from 1 to 12 carbon atoms, or $—(CH_2)_m—OR_5$

wherein

m is a number ranging from 3 to 10 and

R_5 is a hydrogen atom, an ethylene oxide chain, a propylene oxide chain, or an acyl radical having from 2 to 12 carbon atoms; R_2 is

a linear or branched chain alkylene radical having from 2 to 18 carbon atoms,

an alkylene-carbonyl radical, the linear or branched chain alkylene moiety of said alkylene-carbonyl radical having from 2 to 20 carbon atoms,

an alkylene-cyclohexylene radical, the linear or branched chain alkylene moiety of said alkylene-cyclohexylene radical having from 2 to 12 carbon atoms and the cyclohexylene moiety containing an —OH group, and optionally one or two alkyl radicals having from 1 to 4 carbon atoms,

$—R_6—O—R_7—$

wherein

R_6 and R_7, which may be identical or different, are each an alkylene radical having from 1 to 12 carbon atom,

$—R_6—O—R_7—$

wherein

R_6 and R_7 are as defined above and either or both are substituted by one or two OH groups,

$—R_6—COO—R_7—$

wherein

R_6 and R_7 are as defined above,

$—R_6—OCO—R_7—$

wherein

R_6 and R_7 are as defined above, or $—R_6—O—R_7—O—CO—R_8—$

wherein

R_6, R_7 and R_8, which may be identical or different, are each an alkylene radical having from 2 to 12 carbon atoms and R_7 is substituted by a hydroxyl group,

$R_3$is

a hydrogen atom or a linear or branched chain alkyl having from 1 to 12 carbon atoms; and

Z is

—O— or $—NR_9—$

wherein R_9 has the definition of R_3.

5,663,223

FLAVOR PROTECTANT CLOSURE LINER COMPOSITIONS

Fred N. Teumac, Conyngham; Mahmood R. Rassouli; Janine M. Rusnock, both of Hazelton, all of Pa., and Anthony Irwin, Baldwinsville, N.Y., assignors to Zapata Technologies, Inc., Hazelton, Pa.

Filed Aug. 11, 1994, Ser. No. 289,170

Int. Cl.[6] C08K *5/15*

U.S. Cl. 524—109 17 Claims

1. A liner composition for a potable-fluid-container closure element, the liner composition consisting essentially of a polymer; a first flavor protectant compound of an inorganic sulfite compound or a tocopherol compound, said first flavor protectant compound being present in an amount of from about 0.3 to about 5% by weight of the liner composition; and a second, different flavor protectant compound of an ascorbate compound, a hydrazide compound, an inorganic sulfite compound, or a tocopherol compound, said second flavor protectant compound being present in an amount of between about 0.1 and about 5% by weight of the liner composition; wherein the second flavor protectant compound is not an ascorbate compound when the first flavor protectant compound is an inorganic sulfite compound, and said amounts of said first and second compounds are present in a combination which is sufficient to prevent or inhibit the formation in the liner composition of off-flavor-causing substances.

5,663,224

PROCESS FOR PREPARING AN AQUEOUS DISPERSION

William David Emmons, Huntingdon Valley; Martin Vogel, Jenkintown; Edward C. Kostansek, Buckingham; Jack C. Thibeault; Peter R. Sperry, both of Doylestown, and Chao-Jen Chung, North Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 3, 1991, Ser. No. 801,989

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—188 6 Claims

1. A process for preparing a stable aqueous dispersion, the process comprising:

a) providing a suspension of polymeric particles in a first aqueous medium, the polymeric particles having a negative surface charge in the aqueous medium;

b) suspending inorganic material particles in a second aqueous medium wherein the inorganic material particles are clay,

c) adjusting the zeta potential of the inorganic material particles by addition of an aminosilane compound such that the difference between the zeta potential of the inorganic material particles and the polymeric particles is at least about 30 mv to provide the stable dispersion, the inorganic material particles having a negative surface charge, the surface charge of the polymeric particles being more negative than the surface charge of the inorganic material particles; and

d) mixing the first aqueous medium and the second aqueous medium.

5,663,225

RUBBER COMPOSITION AND BELT FOR A POWER TRANSMISSION

Kazutoshi Ishida, Suma-ku, Japan; Satoshi Murakami, Ottawa, Ill., and Yoshiaki Onaka, Suma-ku, Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Filed Jul. 8, 1996, Ser. No. 676,513

Int. Cl.[6] C08K *5/21*

U.S. Cl. 524—216 21 Claims

1. A rubber composition comprising:

chloroprene rubber;

1–20 weight parts of at least one metal oxide selected from the group consisting of zinc oxide and magnesium oxide per 100 weight parts of chloroprene rubber;

0.05–2.0 weight parts of ethylene thiourea per 100 weight parts of chloroprene rubber;
0.1–10.0 weight parts of bismaleimide per 100 weight parts of chloroprene rubber;
0.1–3.0 weight parts of at least one vulcanization accelerator selected from the group consisting of thiazole vulcanization accelerators, thiuram vulcanization accelerators, and sulfenamide vulcanization accelerators per 100 weight parts of chloroprene rubber.

5,663,226

RUBBER MIXTURES CONTAINING REINFORCING ADDITIVES, WHICH ADDITIVES INCLUDE SULPHUR AND SILICON

Thomas Scholl, Bergisch Gladbach; Hermann-Josef Weidenhaupt, Nörvenich, and Ulrich Eisele, Leverkusen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Feb. 21, 1995, Ser. No. 391,508

Claims priority, application Germany, Mar. 3, 1994, 44 06 947.2

Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—262 **4 Claims**

1. A rubber composition comprising vulcanizable rubber, at least one vulcanizing agent, a filler and 0.1 to 15% by weight, based on vulcanizable rubber of at least one reinforcing additive of the formula

$$R^1R^2R^3Si—X^1—(—S_x—Y—)_m—(—S_x—X^2—SiR^1R^2R^3)_n \quad (I),$$

wherein
R^1, R^2, and R^3 are identical or different and signify C_1–C_8 alkyl, C_1–C_8 alkoxy, phenyl or phenoxy, provided that at least one of the radicals R^1 to R^3 is an alkoxy or phenoxy group;
X^1 and X^2 are identical or different and represent divalent, linear or branched C_1–C_{12} alkyl or alkylene radicals;
Y represents a divalent, trivalent or tetravalent linear, branched or cyclic C_1–C_{18} alkyl, heteroalkyl, alkylene or heteroalkylene radical which is optionally substituted by C_6–C_{12} aryl, C_1–C_8 alkoxy or hydroxy groups, or represents a C_6–C_{12} aryl group or heteroaryl group;
m represents an integer from 2 to 20,
n represents a number from 1 to 6, and
x represents a number from 1 to 6.

5,663,227

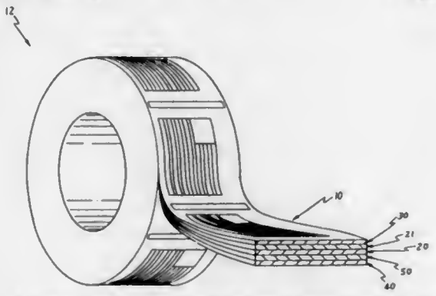
RELEASE AGENT FOR LINERLESS PRESSURE SENSITIVE POSTAGE STAMPS

Ronald B. Birkholz, White Bear Lake, and Mark E. Schwartz, Mahtomedi, both of Minn., assignors to United States Postal Service, Washington, D.C.

Filed Mar. 14, 1996, Ser. No. 615,443

Int. Cl.[6] C08K *3/26*

U.S. Cl. 524—262 **4 Claims**



1. A release agent for covering an upper, image-bearing surface of each of an aggregate of linerless, pressure sensitive postage stamps, said stamps being connected end-to-end and coiled into a roll, with pressure sensitive adhesive of one stamp removably adhering to said release agent stop a stamp in another layer of said roll, said release agent comprising:
(a) an organo polysiloxane polyurea block copolymer with average molecular weight of about 4780;
(b) calcium carbonate dispersed throughout said copolymer: and
(c) polyvinyl pyrrolidone dispersed throughout said copolymer, whereby said release agent may accept and retain a glycol-based postal cancellation ink.

5,663,228

PRESSURE-SENSITIVE ADHESIVES BASED ON PREFERENTIALLY TACKIFIED IMMISCIBLE ELASTOMERS

Yukihiko Sasaki, Claremont, and Jesse Ercillo, Covina, both of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 921,444, Jul. 27, 1992, Pat. No. 5,290,842, which is a continuation of Ser. No. 755,585, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 493,363, Mar. 14, 1990, abandoned. This application Feb. 28, 1994, Ser. No. 203,349

Int. Cl.[6] C09J *11/08*

U.S. Cl. 524—271 **45 Claims**

1. A pressure-sensitive adhesive comprising:
a) a mixture of elastomers comprised of:
i) a first elastomer providing a first polymerized diene component, said first elastomer exhibiting a first glass transition temperature;
ii) a second elastomer providing a second polymerized diene component, said second elastomer exhibiting a second glass transition temperature which is greater than the first glass transition temperature, said second polymerized diene component being immiscible in the first polymerized diene component, said first and second elastomers combined in a mixture wherein the dynamic mechanical spectrum of the mixture exhibits a first glass transition temperature and a first value of tangent delta which is attributed to the first polymerized diene component and a second glass transition temperature and a second value of tangent delta which is attributed to the second polymerized diene component, said second glass transition temperature being higher than the first glass transition temperature, said mixture of immiscible elastomers being combined with:
(b) a tackifying system comprising at least one tackifier which is preferentially soluble in the second elastomer, said tackifying system being present in an amount of 50% to about 80% by weight based on the total weight of the mixture of said immiscible elastomers and said tackifying system, and sufficient to cause the dynamic mechanical spectrum of the mixture of immiscible elastomers to exhibit an increase in the second glass transition temperature and an increase in the difference between the first and second glass transition temperatures and an increase in the value of tangent delta determined at the second glass transition temperature.

5,663,229

TERNARY POLYMER MIXTURE AND ITS USE

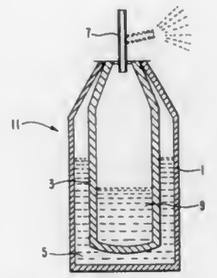
Ulrich Presenz, Trin, and Manfred Hewel, Rodels, both of Switzerland, assignors to EMS-Inventa AG, Zurich, Switzerland

Filed Mar. 24, 1994, Ser. No. 216,877

Claims priority, application Germany, Mar. 24, 1993, 43 09 535.6; Mar. 8, 1994, 44 07 712.2

Int. Cl.[6] C08K *5/04;5/09*

U.S. Cl. 524—399 **20 Claims**



1. A flexible polyamide-containing polymer composition, having a melt viscosity of from about 1,000 to about 1,400 Pa·s at 270° C. and under a load of 122.6 N, said composition prepared from a mixture consisting of:
(A) 50 to 75 parts by weight of polyamide 6, polyamide 6,6, polyamide 12 or mixtures of these polyamides;
(B) 15 to 30 parts by weight of a polyolefin having a density of from about 0.921 to about 0.96 g/cm^3 onto which an unsaturated carboxylic acid or an unsaturated carboxylic acid derivative has been grafted, the degree of grafting being between about 0.01 and about 1 weight percent with respect to the total weight of grafted and ungrafted polyolefin;
(C) 10 to 20 parts by weight of a grafted polyolefin elastomer comprising ethylene and propylene units; and,
(D) sufficient additives selected from the group including stabilizers, anti-friction agents and fillers, so that the sum of the parts by weight of components (A) to (D) of said mixture is 100,
said mixture being extruded at from about 150 to about 300 rpm to produce a flexible polyamide-containing polymer composition.

5,663,230

WATER STOP COMPOSITION AND METHODS OF PREPARING SAME

Robert J. Haman, New Carlisle, Ohio, assignor to Concrete Sealants, Inc., New Carlisle, Ohio

Filed Feb. 15, 1995, Ser. No. 388,714

Int. Cl.[6] C08J *5/10;* **C08K** *3/34;* **C08L** *53/02*

U.S. Cl. 524—447 **7 Claims**

1. Moisture swellable water stop composition comprising about 10–30 wt % elastomer, about 15–30 wt % filler, about 20–40 wt % process oil plasticizer, and about 25–35 wt % water swellable bentonite clay, said bentonite clay comprising a mixture of a high swelling capacity sodium bentonite clay and a lower swelling capacity calcium bentonite clay.

5,663,231

LATEX FOR HIGH PERFORMANCE MASKING TAPE

Pascale Francine Jeanne Muller, Vanves, and Fabienne Rouviere, Choisel, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 315,475, Sep. 30, 1994, Pat. No. 5,514,758. This application Dec. 26, 1995, Ser. No. 578,772

Int. Cl.[6] C08F *2/16*

U.S. Cl. 524—458 **20 Claims**

1. A latex which is particularly beneficial for utilization in manufacturing high performance masking tape made by the process which consists of the sequential steps of (1) terpolymerizing monomer mixture which consists of a vinyl aromatic monomer, an alkyl acrylate, and an alkyl propenoic acid monomer in an aqueous polymerization medium by free radical polymerization in a first polymerization step to produce a seed polymer latex; (2) neutralizing the seed polymer latex to a pH of about 6 to about 9 by the addition of an alkali to produce a neutralized seed polymer latex; (3) adding additional vinyl aromatic monomer and additional alkyl acrylate monomer to the neutralized seed polymer latex; and (4) allowing the additional vinyl aromatic monomer and the additional alkyl acrylate monomer to polymerize in a second polymerization step to a solids content of about 30% to about 50% to produce the latex which is particularly beneficial for utilization in manufacturing high performance masking tape; wherein about 30 percent to about 50 percent of the total amount of vinyl aromatic monomer polymerized is polymerized in the first polymerization step; wherein about 30 percent to about 50 percent of the total mount of alkyl acrylate polymerized is polymerized in the first polymerization step; wherein at least about 90 percent of the total amount of the alkyl propenoic acid monomer polymerized is polymerized in the first polymerization step; and wherein a total of from about 25 phm to about 39 phm of vinyl aromatic monomer, from about 60 phm to about 70 phm of alkyl acrylate monomer, and from about 1 phm to about 5 phm of alkyl propenoic acid monomer is polymerized in the first polymerization step and the second polymerization step.

5,663,232

PLASTIC MATERIAL FOR PACKAGING

Hanneli Seppänen, Helsinki; Marja Ora, Vantaa; Lars-Åke Mattsson, Porvoo; Markku Sainio, Porvoo, and Torvald Vestberg, Porvoo, all of Finland, assignors to Borealis Holding A/S, Provoo, Finland

PCT No. PCT/FI93/00159, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/21268, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 14, 1993, Ser. No. 318,765

Claims priority, application Finland, Apr. 16, 1992, 921714

Int. Cl.[6] C08L *33/00*

U.S. Cl. 524—523 **14 Claims**

1. A sealable and peelable non-adhesive polymer composition, comprising:
(A) 20–80 weight-% of a component consisting essentially of a polyolefin, and
(B) 80–20 weight-% of a component consisting essentially of a co- or terpolymer containing 5–30 weight-% of a hydroxyacrylate that is an ester of a glycol or polyglycol and an acrylic or methacrylic acid, and 0–40 weight-% of a vinyl compound, said polymer composition being a blend of components A and B wherein the individual melt indexes (i) of component (A) are in the range of from 1.8 to 7.0, and (ii) of component (B) are in the range of from 1.5 to 8.0 g/10 min (190° C.).

5,663,233

COATING AGENTS AND THE USE THEREOF IN PROCESSES FOR THE PRODUCTION OF MULTI-LAYER COATINGS

Klaus Bederke, Sprockhövel; Friedrich Herrmann; Hermann Kerber, both of Wuppertal; Thomas Kutzner, Sprockhövel, and Hans-Martin Schönrock, Wuppertal, all of Germany, assignors to Herberts Gesellschaft Mit Beschrankter Haftung, Wuppertal, Germany

Filed Jun. 19, 1995, Ser. No. 492,291

Claims priority, application Germany, Jun. 20, 1994, 44 21 525.8

Int. Cl.[6] C08L *67/02;67/04;61/28;33/02*

U.S. Cl. 525—173 **18 Claims**

1. A solvent based coating composition containing a binding agent, the binding agent comprising:

(a) 10 to 80 wt-% of at least one hydroxyfunctional polyester formed by reacting a mixture comprising:

(i) 10 to 40 mol-% of a 2,2-dialkylalkanediol with two primary OH groups;

(ii) 10 to 30 mol-% of a polyol with at least one secondary OH group;

(iii) 20 to 50 mol-% of an aliphatic or cycloaliphatic dicarboxylic acid with fewer than 16 C atoms or anhydrides thereof;

(iv) 5 to 30 mol-% of a compound selected from the group consisting of dimeric fatty acids, dimeric diols, epsilon-caprolactone, and mixtures thereof;

(v) 1 to 15 mol-% of a hydroxycarboxyiic acid with at least one hydroxyl group and at least one carboxyl group; and

(b) 10 to 80 wt-% of a (meth)acrylic copolymer containing a hydroxyl group; and

(c) 10 to 60 wt-% of a crosslinking agent;

wherein the sum of the wt-% of components (a)–(c) is 100% of the binding agent.

5,663,234

CATIONIC MULTIBLOCK THERMOPLASTIC ELASTOMERS

Joseph P. Kennedy, Akron, Ohio, and Bernd Zaschke, Dresden, Germany, assignors to The University of Akron, Akron, Ohio

Filed Jun. 15, 1995, Ser. No. 490,969

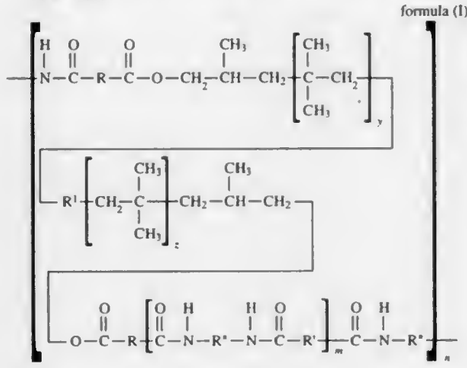
Int. Cl.[6] C08L *77/00*

U.S. Cl. 525—123 **13 Claims**

1. A multiblock thermoplastic elastomer comprising:

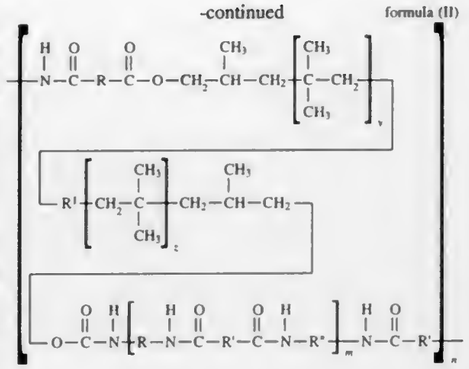
a polyisobutylene soft segment and a polyamide hard segment; wherein said polyisobutylene segment and said polyamide segment form a repeating unit diblock copolymer that repeats at least two times, and wherein said repeating unit diblock copolymer is selected from the group consisting of formulas (I) and (II)

formula (I)



-continued

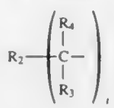
formula (II)



where

R, R' and R" are independently selected from the group consisting of C_{2-20} aliphatic, cycloaliphatic, aromatic, aralkyl, alkaryl moieties and halogenated derivatives thereof;

R^1 is an initiator moiety of formula



where

R_2 is selected from the group consisting of C_{1-24} alkyls, cycloaliphatic alkyls, aryls having from 1 to 4 phenyl rings, the rings being non-condensed or condensed, and halogenated derivatives thereof;

R_3 is selected from the group consisting of hydrogen, methyl or phenyl;

R_4 can independently be the same or different from R_3; and,

i is an integer that is at least 2;

m is a number from 1 to 50;

n is a number from 2 to 20;

y is a number from 9 to 100; and

z is a number from 9 to 100.

5,663,235

GOLF BALL

Hiroaki Tanaka, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed May 29, 1996, Ser. No. 654,582

Claims priority, application Japan, May 31, 1995, 7-158516

Int. Cl.[6] A63B *37/12;* **C08L** *33/02;23/08;25/08*

U.S. Cl. 525—201 **4 Claims**

1. A golf ball comprising a core and a cover for covering the core, wherein said cover has a stiffness modulus of 100 to 250 MPa and comprises a base resin and an additive, and said base resin mainly contains a mixture of the following resin (A) and resin (B) in a weight ratio of 60:40 to 90:10;

resin (A): an ionomer resin selected from the group consisting of an ionomer resin (i) obtained by neutralizing at least a portion of carboxyl groups in a copolymer of ethylene and an α,β-unsaturated carboxylic acid with a metal ion; a mixture of the ionomer resins (i); and a mixture of an ionomer resin (i) and an ionomer resin (ii) obtained by neutralizing at least a portion of carboxyl groups in a terpolymer of ethylene, an α,β-unsaturated carboxylic acid and an α,β-unsaturated carboxylate with a metal ion; and

resin (B): at least one styrene-unsaturated carboxylic acid copolymer selected from the group consisting of a styrene-unsaturated dibasic carboxylic acid copolymer having a Shore D hardness of 20 to 40 and a stiffness modulus of 10 to 50 MPa; a styrene-unsaturated dibasic carboxylic acid half ester copolymer having a Shore D hardness of 20 to 40 and a stiffness modulus of 10 to 50 MPa; a styrene-unsaturated dibasic carboxylic acid diester copolymer having a Shore D hardness of 20 to 40 and a stiffness modulus of 10 to 50 MPa; a styrene-acrylic acid copolymer having a Shore D hardness of 20 to 40 and a stiffness modulus of 10 to 50 MPa; and a styrene-methacrylic acid copolymer having a Shore D hardness of 20 to 40 and a stiffness modulus of 10 to 50 MPa.

5,663,236

ETHYLENE COPOLYMER COMPOSITION

Mamoru Takahashi; Selichi Ikeyama; Akira Todo, and Toshiyuki Tsutsui, all of Waki-Cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 154,465, Nov. 18, 1993, abandoned.

This application Mar. 1, 1995, Ser. No. 396,888

Claims priority, application Japan, Nov. 19, 1992, 4-310615; Nov. 19, 1992, 4-310617; Nov. 19, 1992, 4-310618; Nov. 19, 1992, 4-310619

Int. Cl.[6] C08L *23/08;23/16;23/18*

U.S. Cl. 525—240 **3 Claims**

1. An ethylene copolymer composition comprising:

(A1) an ethylene/α-olefin copolymer, which is obtained by copolymerizing ethylene with an α-olefin of 3 to 20 carbon atoms in the presence of a catalyst for olefin polymerization comprising (a) an organoaluminum oxy-compound and (b) at least two kinds of compounds of Group IV transition metal of the periodic table containing a ligand having a cyclopentadienyl skeleton, said at least two kinds of compounds comprising

at least one kind of a transition metal compound represented by the following formula (b-I):

$$ML^1_x \qquad \text{(b-I)}$$

wherein M is a transition metal atom selected from Group IVB of the periodic table, L^1 is a ligand coordinating to the transition metal atom M, at least two of L^1 are groups selected from a cyclopentadienyl group, a methylcyclopentadienyl group, an ethylcyclopentadienyl group and a substituted cyclopentadienyl group having at least one substituent group selected from a hydrocarbon group of 3 to 10 carbon atoms, L^1 other than the substituted cyclopentadienyl group is a hydrocarbon group of 1 to 12 carbon atoms, an alkoxy group, an aryloxy group, a trialkylsilyl group, a halogen atom or a hydrogen atom, and x is a valence of the transition metal atom M, and

at least one kind of a transition metal compound represented by the following formula (b-II):

$$ML^2_x \qquad \text{(b-II)}$$

wherein M is a transition metal atom selected from Group IVB of the periodic table, L^2 is a ligand coordinating to the transition metal atom, at least two of L^2 are substituted cyclopentadienyl groups having 2 to 5 substituent groups selected from a methyl group and an ethyl group, L^2 other than the substituted cyclopentadienyl group is a hydrocarbon group of 1 to 12 carbon atoms, an alkoxy group, an aryloxy group, a trialkylsilyl group, a halogen atom or a hydrogen atom, and x is a valence of the transition metal atom M; and wherein said copolymer (A1) has such properties that:

(i) the density is in the range of 0.850 to 0.980 g/cm^3,

(ii) the melt flow rate (MFR) at 190° C. under a load of 2.16 kg is in the range of 0.01 to 200 /g10 min,

(iii) the melt tension (MT (g)) at 190° C. and the melt flow rate (MFR) satisfy the relation

$$MT > 2.2 \times MFR^{-0.84},$$

and

(iv) the flow index (FI (1/sec)) defined by a shear rate which is given when a shear stress of molten copolymer at 190° C. reaches 2.4×10^6 dyne/cm^2 and the melt flow rate (MFR) satisfy the relation

$$FI < 150 \times MFR;$$

and

(B1) a high-pressure radical polymerization low-density polyethylene having the melt flow rate (MFR) of 0.01 to 100 /g10 min;

wherein a weight ratio ((A1):(B1)) between said ethylene/α-olefin copolymer (A1) and said high-pressure radical polymerization low-density polyethylene (B1) is in the range of 99:1 to 60:40.

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GRAFT COPOLYMERIZATION IN SUPERCRITICAL MEDIA

Sunggyu Lee, Akron, Ohio; Soonjong Kwak, Troy, and Fouad Azzam, Grand Island, both of N.Y., assignors to The University of Akron, Akron, Ohio

Filed Jun. 15, 1995, Ser. No. 490,954

Int. Cl.[6] C08F *2/00;255/00;259/04*

U.S. Cl. 525—285 **8 Claims**

1. A graft copolymerization process which comprises the steps of:

adding a preformed polymer derived from at least one ethylenically unsaturated monomer into a high pressure reactor;

adding a free radical polymerization initiator into the reactor to free radically initiate the polymer;

adding an ethylenically unsaturated monomer reactive with the initiated polymer into the reactor;

adding a sufficient amount of a supercritical solvent to dissolve at least a portion of the polymer and the monomer when supercritical conditions are achieved inside the reactor; and

heating and pressurizing the reactor to achieve supercritical conditions therein for a time sufficient to effect a graft polymerization of the monomer to the initiated polymer, whereby the monomer forms at least one side chain on the polymer.

5,663,238

COPOLYESTERS CONTAINING NAPHTHALENE AND THE PREPARATION THEREOF

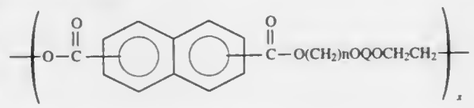
Chun-Shan Wang, and Yih-Min Sun, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jul. 11, 1995, Ser. No. 501,201

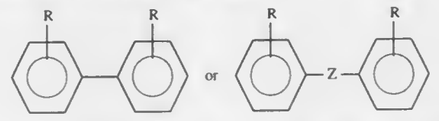
Int. Cl.[6] C08G *63/00*

U.S. Cl. 525—285 **2 Claims**

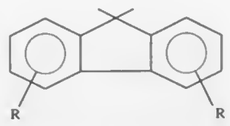
1. A process for preparing the copolyester, said copolyester being randomly composed of a first repeating unit having the following formula



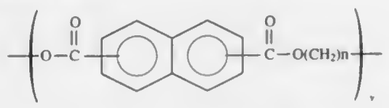
wherein n is an integer of 2–4, and Q is



wherein R is hydrogen, C_1–C_7 alkyl, C_4–C_7 cycloalkyl or phenyl, and Z is

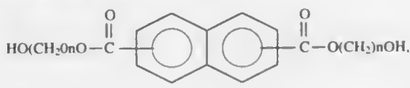


wherein R is defined as above; and a second repeating unit having the following formula:



wherein n is an integer of 2–4, wherein x and y are such that the molar ratio of the first repeating unit to the second repeating unit ranges from 95:5 to 5:95 comprises the following steps:

a) mixing a dihydroxyethoxy compound having the formula of $HOCH_2CH_2OQOCH_2CH_2OH$, a bis(hydroxyalkyl)naphthalate having the formula of



and a metallic catalyst,

b) heating the resulting mixture of step a) until said bis(hydroxyalkyl)naphthalate and said dihydroxyethoxy compound are melted; and

c) reacting said bis(hydroxyalkyl)naphthalate and said dihydroxyethoxy compound in the melted state and under a reduced pressure atmosphere to obtain said copolyester.

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STAR-BRANCHED BLOCK ELASTOMERIC COPOLYMERS

Thomas S. Coolbaugh; Wan-Li Liu; Frederick C. Loveless, all of Yardley, Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 443,743, May 18, 1995, abandoned, which is a division of Ser. No. 361,072, Dec. 21, 1994, Pat. No. 5,457,161, which is a division of Ser. No. 225,681, Apr. 11, 1994, Pat. No. 5,376,722, which is a division of Ser. No. 29,507, Mar. 11, 1993, Pat. No. 5,306,780, which is a division of Ser. No. 952,127, Sep. 28, 1992, Pat. No. 5,268,427, which is a division of Ser. No. 466,233, Jan. 16, 1990, Pat. No. 5,187,236. This application Apr. 16, 1996, Ser. No. 633,268

Int. Cl.[6] C08F *297/04*

U.S. Cl. 525—314 **22 Claims**

1. A solid star-branched block copolymer wherein each branch comprises at least two (2) alternating blocks bonded to each other, the free end of each branch being a block of at least one polymerized hydrocarbon conjugated diene (I) monomer containing at least five (5) carbon atoms, with at least one carbon atom of each pair of residual double-bonded carbon atoms of polymerized diene (I) units being additionally single-bonded to two carbon atoms, or a copolymer of at least one diene (I) and at least one aryl-substituted olefin, the blocks adjacent to said polymerized diene (I)-containing blocks constituting at least 50 wt. % of said copolymer and being a polymer of at least one hydrocarbon conjugated diene (B), which is different from diene (I) and contains at least four (4) carbon atoms, with each residual double-bonded carbon atom of polymerized diene (B) units being additionally bonded to a hydrogen atom.

5,663,240

POWDER COATING OF EPOXY-FUNCTIONAL ACRYLIC COPOLYMER AND POLYCARBOXYLIC ACID

Robert L. Simeone, Pittsburgh; Robert D. Lippert, Butler; James B. O'Dwyer, Valencia, and Charles M. Kania, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 375,323, Jan. 18, 1995, abandoned, which is a division of Ser. No. 143,722, Nov. 19, 1993, Pat. No. 5,407,707. This application Mar. 14, 1996, Ser. No. 615,745

Int. Cl.[6] C08L *33/14*

U.S. Cl. 525—327.3 **8 Claims**

1. A powder coating film-forming composition comprising a solid, particulate mixture of:

(a) 60 to 90 percent by weight based on weight of (a) and (b) of an epoxy functional acrylic copolymer consisting essentially of epoxy functional acrylic copolymer having a Tg of 95° F. to 181° F. (35° C. to 55° C.) and a number average molecular weight of 1000 to 2500 formed by polymerizing under free radical initiated polymerization conditions:

(i) 50 to 65 percent by weight based on weight of (i), (ii), and (iii) of a glycidyl acrylate or methacrylate,

(ii) 25 to 40 percent by weight based on weight of (i), (ii), and (iii) of isobornyl methacrylate; and

(iii) 5 to 15 percent by weight of copolymerizable ethylenically unsaturated monomers different from (i) or (ii);

said epoxy functional copolymer containing from 3.0 to 5.9 moles of glycidyl groups per kilogram of epoxy functional copolymer, whereby the Tg of this copolymer contributes to the stability of the powder coating composition;

(b) 10 to 40 percent by weight based on weight of (a) and (b) of a polycarboxylic acid crosslinking agent;

where the ratio of epoxy functionality to acid functionality is about 1:08 to 1, and where the powder coating composition has a melt viscosity less than 2000 centipoises.

5,663,241

REMOVABLE PRESSURE SENSITIVE ADHESIVE AND ARTICLE

Yorinobu Takamatsu; Kengo Imamura, both of Sagamihara, Japan, and Richard J. Goetz, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 13, 1994, Ser. No. 354,644

Int. Cl.[6] C09J *123/26*

U.S. Cl. 525—328.6 **33 Claims**

1. A removable pressure sensitive adhesive comprising:

(a) pressure sensitive adhesive microparticles that are the suspension polymerization product of:

(1) a mono-olefinically unsaturated monomer having an aldehyde group or a ketone group; and

(2) a base monomer;

(b) a polyhydrazide crosslinking agent for crosslinking the adhesive microparticles together; and

(c) multifunctional free- radically polymerizable crosslinking agent for internally crosslinking the microparticles.

5,663,242

END-ATTACHMENT OF OLIGONUCLEOTIDES TO POLYACRYLAMIDE SOLID SUPPORTS FOR CAPTURE AND DETECTION OF NUCLEIC ACIDS

Soumitra Shanker Ghosh, and Eoin D. Fahy, both of San Diego, Calif., assignors to Siska Diagnostics, Inc., La Jolla, Calif.

Continuation of Ser. No. 102,474, Aug. 5, 1993, Pat. No. 5,478,893, which is a continuation-in-part of Ser. No. 293,893, Jan. 5, 1989, Pat. No. 5,237,016. This application Mar. 31, 1995, Ser. No. 414,019

Int. Cl.[6] C08F *20/56;* **C12Q** *1/68;1/70;* **C12P** *19/34*

U.S. Cl. 525—329.4 **32 Claims**

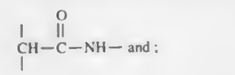
1. A method for the covalent attachment of oligonucleotides to a polyacrylamide solid support via a thioether linkage, said method comprising:

(1) derivatizing the oligonucleotides with a reactive carbon center reagent whereby reactive carbon center groups are attached to the 5' -ends of the oligonucleotides, wherein the reactive carbon center group is the α-carbon of a carbonyl compound in which the α-carbon is substituted with a leaving group that, in the presence of a strong nucleophile, breaks away from a carbon atom, or is the β-carbon in an α,β-unsaturated carbonyl compound selected from a ketone, ester, or amide;

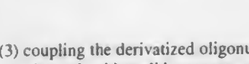
(2) derivatizing the polyacrylamide solid support with a thiol reagent whereby thiol groups are attached to the polyacrylamide solid support through the amide nitrogens on the polyacrylamide solid support, wherein:

the polyacrylamide solid support has a molecular weight exclusion limit of greater than about 2000 daltons; and

the polyacrylamide supports include repeating units with carboxamide side groups of the formula:



and :



(3) coupling the derivatized oligonucleotides and the derivatized polyacrylamide solid support, whereby at least 60% of the oligonucleotides are covalently attached to the polyacrylamide solid support via thioether linkage at the 5'-ends of the oligonucleotides.

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SUBSTITUTED AZO-DICARBONYLO DERIVATIVES

John Richard Blackborow, Edinburgh, and Philip Kenneth Gordon Hodgson, Surrey, both of United Kingdom, assignors to BP Chemicals Limited, London, United Kingdom

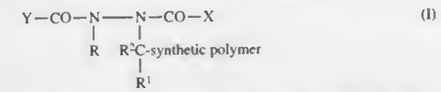
Filed Feb. 12, 1996, Ser. No. 600,035

Claims priority, application United Kingdom, Feb. 21, 1995, 9503380

Int. Cl.[6] C08F *8/30*

U.S. Cl. 505—333.7 **19 Claims**

1. A new compound of the general formula (I)



(I)

wherein X and Y each represent the same or different alkoxy, alkylamino, alkoxyalkyl amino, aminoalkyl amino, aminoalkoxy groups, or, taken together represent —O—, >N-alkyl, >N-aryl, >N-alkyl(aminoalkyl) amine, or, when X or Y is an >N-alkyl(aminoalkyl)aminoalkyl-N< group it is such that when this grouping replaces either X or Y in formula (I) through one of its >N-functions, the resultant product replaces Y or X respectively of a neighbouring compound of formula (I);

and wherein

when R is H, each of R^1 and R^2 also represent hydrogen atoms; and

when R is a divalent alkylene group of the structure $(R^3)(R^4)C<$ such that one of the valences of the divalent alkylene group when taken together with R^2 replaces R^2 and forms a cyclic structure with the carbon atom to which R^2 would have been appended and the other valence of the divalent alkylene group is bonded to the nearest nitrogen atom, and the substituents R^1, R^3 and R^4 represent H or alkyl groups; and

the synthetic polymer group (inclusive of the $C(R^1)(R^2)$ group) is derived from an oligomer or polymer of a C3–C4 olefin or a substituted derivative of said oligomer or polymer corresponding to structure (I) when R is H.

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FLEXIBLE AMINOPLAST-CURABLE FILM-FORMING COMPOSITIONS PROVIDING FILMS HAVING RESISTANCE TO ACID ETCHING

Steven V. Barancyk; Christopher A. Verardi, and William A. Humphrey, all of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

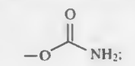
Division of Ser. No. 236,912, Apr. 29, 1994, abandoned. This application May 23, 1995, Ser. No. 447,392

Int. Cl.[6] C08L *61/28;75/04;75/08*

U.S. Cl. 525—456 **15 Claims**

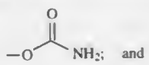
1. A method for applying a composite coating to a plastic substrate which is a flexible thermosetting or thermoplastic material which comprises applying to the substrate a colored film-forming composition to form a base coat and applying to said base coat a clear film-forming composition to form a transparent top coat over the base coat wherein the clear film-forming composition comprises a flexible, curable film-forming composition, comprising:

(i) 10 to 50 percent by weight based on the weight of resin solids of a polyether polymer containing a plurality of terminal or pendant carbamate groups of the structure:



incorporated into the polyether polymer, wherein said polyether polymer has on average at least two of said terminal or pendant carbamate groups per molecule;

(ii) 5 to 50 percent by weight based on weight of resin solids of a polymer selected from the group consisting of a polyester polymer, a polyurethane polymer, an acrylic polymer, and mixtures thereof wherein each polymer contains a plurality of terminal or pendant carbamate groups of the structure:



and

(iii) 20 to 50 percent based on weight of resin solids of an aminoplast crosslinking agent containing methylol and/or methylol ether groups, wherein the equivalent ratio of said pendant or terminal carbamate groups to methylol or methylol ether groups is from 0.5 to 2:1 and is sufficient to form a crosslinked film.

5,663,245

STAR POLYMERS HAVING A WELL-DEFINED SILOXANE CORE AND MULTIPLE POLYISOBUTYLENE ARMS AND A METHOD FOR THE SYNTHESIS THEREOF

Joseph P. Kennedy; Naoki Omura, both of Akron, and Alexander Lubnin, Fairlawn, all of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Mar. 22, 1996, Ser. No. 620,421
Int. Cl.[6] C08G 77/12
U.S. Cl. 525—479 16 Claims

1. A star polymer comprising:

a core component selected from the group consisting of siloxanes containing at least two Si—H groups; and

a plurality of arms attached to said core component and selected from the group consisting of olefin-terminated polyisobutylenes.

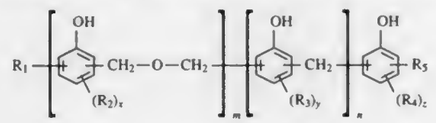
5,663,246

ACETAL DERIVATIVES OF RESOLE COMPOUNDS

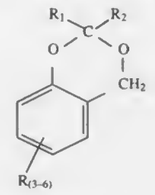
Esther Spaltenstein, and Ernest B. Troughton, Jr., both of Raleigh, N.C., assignors to Lord Corporation, Cary, N.C.

Filed Oct. 26, 1994, Ser. No. 329,634
Int. Cl.[6] C08F 283/00; C08G 8/28; C08L 61/06
U.S. Cl. 525—480 31 Claims

1. A cyclic acetal derivative of an ortho resole compound, wherein the ortho resole compound corresponds to the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are independently hydrogen, methylol, hydroxyl, alkyl, substituted alkyl, aryl, substituted aryl, aryl ether or halogen; x, y, and z are independently an integer ranging from 0 to 3; m and n are independently an integer ranging from 0 to 5; with the proviso that at least one of R_1, R_2, R_3, R_4 and R_5 is present as a methylol group which is ortho to a phenolic hydroxyl group, and wherein the cyclic acetal derivative contains at least one cyclically blocked phenolic unit corresponding to the formula:



wherein R_1 and R_2 are independently hydrogen, alkyl, substituted alkyl, aryl, or substituted aryl and R_3–R_6 are independently hydrogen, methylol, hydroxyl, alkyl, substituted alkyl, aryl, substituted aryl, aryl ether or halogen, and the cyclic acetal derivative is capable of being crosslinked or acting as a crosslinking agent when it is subjected to heat.

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HYPERBRANCHED MACROMOLECULE FROM EPOXIDE NUCLEUS AND HYDROXY-FUNCTIONAL CARBOXYLIC ACID CHAIN EXTENDERS

Kent Sörensen, Perstorp, and Bo Pettersson, Helsingborg, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Oct. 24, 1995, Ser. No. 547,447
Int. Cl.[6] C08G 59/14;59/16;63/66
U.S. Cl. 525—533 20 Claims

1. A hyperbranched macromolecule of the polyester type comprising a central nucleus and at least one generation of a branching chain extender, said macromolecule comprising

a) a monomeric or polymeric nucleus selected from the group consisting of

i) an epoxide compound having at least one reactive epoxide group and

ii) a reaction product of an epoxide compound, which reaction product has at least one reactive epoxide group;

b) at least one generation comprising a branching monomeric or polymeric chain extender having at least three reactive sites, of which reactive sites

i) at least one is a hydroxyl group or a hydroxyalkyl substituted hydroxyl group and at least one is a carboxyl group or

ii) at least one is a hydroxyl group or a hydroxyalkyl substituted hydroxyl group and at least one is a terminal epoxide group; and, optionally,

c) at least one generation comprising a spacing monomeric or polymeric chain extender having two reactive sites, one being a hydroxyl group or a hydroxyalkyl substituted hydroxyl group and one being a carboxyl group or terminal epoxide group; said macromolecule optionally terminated by at least one chain stopper, by epoxide or allyl functionalization, or by a combination of at least one chain stopper and epoxide or allyl functionalization.

5,663,248

PROCATALYST COMPONENT BASED ON A TRANSITION METAL COMPOUND ON A CARRIER OF MAGNESIUM CHLORIDE AND MANGANESE HALIDE

Thomas Garoff, Helsinki; Timo Leinonen, Tolkkinen, and Eero Iiskola, Porvoo, all of Finland, assignors to Borealis Holding A/S, Lyngby, Denmark

PCT No. PCT/FI92/00265, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO93/07181, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 1, 1992, Ser. No. 211,316
Claims priority, application Finland, Oct. 2, 1991, 914626
Int. Cl.[6] C08F 4/646
U.S. Cl. 526—114 30 Claims

1. An olefin polymerization catalyst comprising:

(I) a procatalyst component prepared by:

(a) contacting magnesium chloride with methanol and/or ethanol and melting the mixture in the presence of manganese (II) halide added in an amount of at least about 0.1% and at most about 50%, based on the total molar amount of magnesium chloride and manganese (II) halide, thus forming a molten mixture,

(b) atomizing the molten mixture and solidifying it by cooling to produce support material particles, and

(c) reacting the support material particles with titanium tetrachloride.

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CATALYST AND PROCESS FOR POLYMERIZATION OF OLEFINS

John A. Ewen, Houston, Tex., and Michael J. Elder, Raleigh, N.C., assignors to Fina Technology, Inc., Dallas, Tex.

Division of Ser. No. 867,572, Apr. 13, 1992, Pat. No. 5,387,568, which is a continuation-in-part of Ser. No. 791,803, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 419,046, Oct. 30, 1989, abandoned. This application Nov. 15, 1994, Ser. No. 339,842
Int. Cl.[6] C08F 4/643
U.S. Cl. 526—134 22 Claims

1. A process for polymerization of an olefin comprising:

a) producing a catalyst by the process comprising:

1) mixing an ionizing ionic compound with a neutral metallocene; and

2) allowing contact between the ionizing ionic compound and the neutral metallocene such that the metallocene is ionized by the ionizing ionic compound and an ion pair is formed in which the metallocene cation acts as a catalyst;

b) contacting the catalyst with an olefin under conditions to effect polymerization;

wherein the neutral metallocene is of the formula:

$$R''(CpR_4)(CpR'_4)MeQ_p$$

wherein (CpR_4) and (CpR'_4) are a cyclopentadienyl or a substituted cyclopentadienyl group, (CpR_4) and (CpR'_4) being the same or different, R and R' is hydrogen or a hydrocarbyl radical of 1–20 carbon atoms, R being the same or different, R' being the same or different, R" is a structural bridge between (CpR_4) and (CDR'_4) imparting stereorigidity to the metallocene, Me is a Group IIIB, IVB, VB or VIB metal, Q is a hydride, a halogen, an amide or a hydrocarbyl radical, each Q being the same or different, except only one Q can be hydride and p is the valence of Me minus 2;

wherein the ionizing ionic compound does not contain an active proton and contains a carbonium, oxonium or sulfonium cation; and

wherein the anion of the ionizing ionic compound is not coordinated or is only loosely coordinated to the metallocene cation and is chemically unreactive with the metallocene cation.

8. A catalyst for polymerization of olefins consisting of:

a) an ionizing ionic compound wherein the ionizing ionic compound does not contain an active proton and contains a carbonium, oxonium or sulfonium cation, and

b) a neutral metallocene wherein the neutral metallocene is of the formula:

$$R''(CpR_4)(CpR'_4)MeQ_p$$

wherein (CpR_4) and (CpR'_4) are a cyclopentadienyl or a substituted cyclopentadienyl group, (CpR_4) and (CpR'_4) being the same or different, R and R' is hydrogen or a hydrocarbyl radical from 1–20 carbon atoms, R being the same or different, R' being the same or different, R" is a structural bridge between (CpR_4) and (CpR'_4) imparting stereorigidity to the metallocene, n being 0 or 1, Me is a Group IIIB, IVB, VB or VIB metal, Q is a hydride, a halogen, an amide or a hydrocarbyl radical, each Q being the same or different, except only one Q can be hydride and p is the valence of Me minus 2;

wherein the ionizing ionic compound ionizes the neutral metallocene to form an ion pair of a metallocene cation which acts as a catalyst and an anion which is not coordinated or is only loosely coordinated to the metallocene cation and is chemically unreactive with the metallocene cation.

5,663,250

DEPROTECTION WITH MOLTEN SALT

Michael Wayne Potter, Sugar Land; William Charles Malven, and Cary Alan Veith, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 16, 1996, Ser. No. 648,947
Int. Cl.[6] C08F 4/46;8/00
U.S. Cl. 526—178 20 Claims

1. A process comprising:

polymerizing a monomer selected from the group consisting of conjugated alkadienes, monoalkenyl-substituted aromatic compounds and mixtures thereof with a protected functional initiator to give a polymer cement comprising alkali metal terminated polymer and solvent; and

contacting said polymer cement with a molten component capable of deprotecting said polymer.

16. A process comprising

Polymerizing, in a hydrocarbon solvent, a monomer selected from the group consisting of conjugated alkadienes, monoalkenyl-substituted aromatic compounds and mixtures thereof with a protected functional initiator having the formula R_3Si—O—R'Li where the R groups are alkyl or a pair of alkyl groups and hydrogen and R' is an alkylene group, to give a first polymer cement comprising lithium terminated polymer and solvent;

passing said first polymer cement to a hydrogenation zone and contacting said lithium terminated polymer with hydrogen in the presence of a metal-containing hydrogenation catalyst to produce a second polymer cement comprising hydrogenated lithium terminated polymer and hydrogenated catalyst residue;

contacting said second polymer cement with a molten component capable of deprotecting said hydrogenated polymer, reacting with said lithium and reacting with said hydrogenation catalyst residues.

5,663,251

METHOD FOR PRODUCING A FLUORINE-CONTAINING COPOLYMER

Kazuo Kato; Atsushi Funaki, and Teruo Takakura, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 6, 1996, Ser. No. 659,364
Claims priority, application Japan, Jun. 7, 1995, 7-140894
Int. Cl.[6] C08F 2/00
U.S. Cl. 526—206 10 Claims

1. A method for producing a fluorine-containing polymer, which comprises suspension-polymerizing at least one fluoroolefin, or at least one fluoroolefin and at least one monomer copolymerizable with the fluoroolefin, in a polymerization medium comprising at least one solvent selected from the group consisting of a perfluorocarbon, a hydrofluorocarbon and a hetero atom-containing perfluorocarbon, water and a fluorine-containing surfactant.

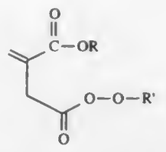
5,663,252

PROCESS FOR PREPARING A BRANCHED POLYMER FROM A VINYL AROMATIC MONOMER

William C. Pike; Duane B. Priddy, both of Midland, Mich., and Peter H. T. Vollenberg, Ghent, Belgium, assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 21, 1995, Ser. No. 560,235
Int. Cl.[6] C08F 4/34;2/38
U.S. Cl. 526—216 11 Claims

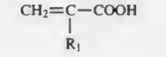
1. A free radical polymerization process for producing a branched polymer having a Mw of at least 75,000 from a vinyl aromatic monomer, comprising polymerizing a vinyl aromatic monomer in the presence of a peritaconate free radical initiator of the formula:



wherein R is H, alkyl, aryl, or aralkyl; and R' is alkyl or aryl.

5,663,253
POLICARBOXYLIC ACIDS
Matteo Zanotti Russo, and Ferruccio Berté, both of Bergamo, Italy, assignors to 3V Inc., Weehawken, N.J.
Filed Jun. 20, 1996, Ser. No. 667,091
Int. Cl.[6] C08F 2/00
U.S. Cl. 526—216 **18 Claims**

1. A process for the preparation of crosslinked homopolymers or copolymers of unsaturated carboxylic acids monomers of the formula



wherein
R_1 is hydrogen or methyl,
comprising polymerizing the monomers in a polymerization mixture with a solvent consisting of ethyl formate at a temperature ranging from 40° to 80° C., wherein the monomers constitutes up to 30% by weight of the polymerization mixture.

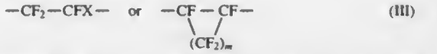
5,663,254
SYNTHESIS OF HIGH MANNOSE GLYCOPOLYMERS
Yuan-Chuan Lee, and Jian-Qiang Fan, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.
Filed May 22, 1995, Ser. No. 445,865
Int. Cl.[6] C12P 19/26
U.S. Cl. 526—238.2 **4 Claims**

1. A monomer or intermediate for neoglycoconjugate synthesis which is synthesized by means of Endo-β-N-acetylglucosaminidase from *Arthrobacter protophormiae* in a reaction mixture containing an organic solvent, said monomer or intermediate being selected from the group consisting of
R-GlcNAc-O-$(CH_2)_3$NECOCH=CH_2,
R-GlcNAc-O-CH_2CH=CH_2,
R-GlcNAc-O-$(CH_2)_3CH$=CH_2,
R-GlcNAc-S-CH_2CN,
R-GlcNAc-S-$CH_2CONHCH_2CH(OMe)_2$ and
R-GlcNAc-O-$(CH_2)_6NH_2$,
where R represents $Man_xGlcNAc$ and x is an integer between 3 and 12, inclusive.

5,663,255
AMORPHOUS TETRAFLUOROETHYLENE-HEXAFLUOROPROPYLENE COPOLYMERS
Colin Anolick, and Robert Clayton Wheland, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 384,068, Feb. 6, 1995, Pat. No. 5,478,905. This application Oct. 27, 1995, Ser. No. 549,407
Int. Cl.[6] C08F 14/18
U.S. Cl. 526—254 **12 Claims**

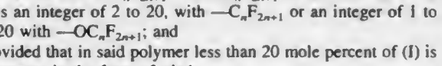
1. An amorphous polymer, consisting essentially of, repeat units of the formula:

(a) at least about 30 mole percent of



(I)

(b) at least about 1 mole percent



(II)

(c) 0 to about 10 mole percent

(III)

wherein X is $—C_nF_{2n+1}$ or $—OC_nF_{2n+1}$, m is 2, 3 or 4, and n is an integer of 2 to 20, with $—C_nF_{2n+1}$ or an integer of 1 to 20 with $—OC_nF_{2n+1}$; and
provided that in said polymer less than 20 mole percent of (I) is present in the form of triads.

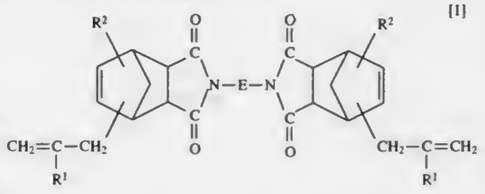
5,663,256
THERMOSETTING AQUEOUS-TYPE EMULSION OF NADIMIDES
Hideya Ariga, Aichi-ken; Norio Futaesaku, and Hiromitsu Baba, both of Ichihara, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
Filed Oct. 23, 1995, Ser. No. 546,713
Claims priority, application Japan, Oct. 26, 1994, 6-286026
Int. Cl.[6] C08F 222/40; C07D 209/76
U.S. Cl. 526—262 **21 Claims**

1. A thermosetting aqueous-type emulsion of nadimide consisting essentially of between about 20 and 60% by weight of an alkenyl-substituted nadimide, between about 0.1 and 20% by weight of at least one ingredient selected from the group consisting of protective colloids and surface-active agents and water forming the balance.

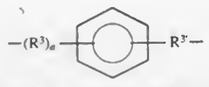
5,663,257
ALKENYL-SUBSTITUTED BISNADIMIDES, PROCESS FOR MANUFACTURING THE SAME, PROCESS FOR CURING THE SAME, AND ADHESIVES AND COATING MATERIALS UTILIZING THE SAME
Norio Futaesaku; Hideo Fukuda, both of Ichihara; Yoshiharu Itou, Sodegaura; Hiromitsu Baba, and Isao Maruyama, both of Ichihara, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
Division of Ser. No. 288,592, Aug. 10, 1994, Pat. No. 5,502,207. This application Dec. 4, 1995, Ser. No. 566,863
Claims priority, application Japan, Aug. 13, 1993, 5-222258; Apr. 18, 1994, 6-104821
Int. Cl.[6] C08F 22/40; 4/42
U.S. Cl. 526—262 **9 Claims**

1. A process for curing an alkenyl-substituted bisnadimide represented by the following formula (1):

[I]



wherein R^1 and R^2 individually represent a hydrogen atom or a methyl group, and E is an alkylene·phenylene group or an alkylene·phenylene·alkylene group represented by the following formula (2):



[2]

(wherein a is an integer of 0 or 1, and R^3 and $R^{3'}$ individually represent a C_4–C_4 alkylene group or a C_5–C_8 cycloalkylene group, which comprises heating said alkenyl-substituted bisnadimide at 80–400° C. for 0.001–30 hours in the absence or presence of a curing catalyst.

5,663,258
STRONGLY SWELLABLE, MODERATELY CROSSLINKED COPOLYMERS OF VINYLPYRROLIDONE AND VINYL ACETATE
Yuanzhen Zhong, Wayne, and Philip F. Wolf, Bridgewater, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.
Filed Feb. 20, 1996, Ser. No. 603,668
Int. Cl.[6] C08F 226/10;218/08
U.S. Cl. 526—264 **26 Claims**

1. Strongly swellable, moderately crosslinked poly(vinyl pyrrolidone/vinyl acetate) copolymer (XL-PVP/VA) in the form of fine, white powders characterized by (a) an aqueous gel volume of about 15 to 150 ml/g of polymer, (b) a Brookfield viscosity in 5% aqueous solution of at least about 10,000 cps, and (c) being prepared directly by precipitation polymerization of VP and VA monomers in the presence of a crosslinking agent in the amount of about 0.1 to about 2% by weight of VP and VA.

5,663,259
CURABLE COMPOSITIONS WHICH CONTAIN NETWORK POLYMERS
Duane S. Treybig, Lake Jackson, and Clinton J. Boriack, Jones Creek, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 31, 1995, Ser. No. 455,730
Int. Cl.[6] C08F 220/08;226/02;18/24
U.S. Cl. 526—271 **29 Claims**

1. A network polymer comprising:
(1) a plurality of polymer chains which are derived from one or more ethylenically-unsaturated monomers; and
(2) one or more linking groups, which: (a) contain anhydride, carbonate or uretidinedione moieties and (b) link two polymer chains,
wherein the network polymer: (A) contains less than 0.5 equivalents of pendant carboxylic acid per equivalent of anhydride moiety when the linking group contains anhydride moiety and (B) is soluble up to at least 20 weight percent in at least one aromatic or aprotic polar organic solvent and (C) has an average weight per equivalent of linking anhydride, carbonate or uretidinedione moieties of no more than about 5,000.

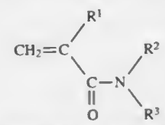
5,663,260
HYPERBRANCHED COPOLYMERS FROM AB MONOMERS AND C MONOMERS
Jean M.J. Frechet, Ithaca, N.Y., and Sadahito Aoshima, Chiba, Japan, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Nov. 8, 1994, Ser. No. 335,935
Int. Cl.[6] C08G 61/12
U.S. Cl. 526—292.9 **56 Claims**

47. A hyperbranched polymer produced from the copolymerization reaction of an AB monomer and a C monomer in which A and B are reactive groups that react independently of each other and in which the group A is a polymerizable group, the C monomer contains a group that can be polymerized by A* or B*, the group B is a precursor of an activated moiety B* capable of effecting the polymerization of A and C as a result of being activated, wherein activated B adds to any A or C polymerizable group, and said hyperbranched polymer has living character in that said polymer has active sites A*, B* and C* that can add to any A or C polymerizable groups.

49. The polymer of claim 47, wherein the AB monomer is selected from the group consisting of 1-(2-vinyloxyethyloxy)-1'-[2-(1-acetoxyethoxy)-ethyloxy]-4,4-isopropylidenediphenol; 1-vinyloxymethyl-4-(1-acetoxy)ethyloxymethylcyclohexane; 4-(2-vinyloxyethyl)-4'-[1-acetoxyethyloxy)ethyl]terephthalate; 2-(2-vinyloxyethyl)-2-[(1-acetoxyethyloxy)ethyl]diethyl malonate; 1-(2-vinyloxyethyl)-3-[(1-acetoxyethyloxy)ethyl]-5-(2-methacryloy loxyethyl)-1,3,5-benzene tricarboxylate; 1-[(4-ethenyl)-phenoxy methyl]-4-[4-(1-chloroethyl)phenoxymethyl]benzene; 4-(2-(1-chloroethyloxy))ethyloxystyrene; 4-(1-bromoethyl)styrene; 4-(1-chloroethyl)styrene, 3-chloromethylstyrene, 4-chloromethylstyrene, a mixture of 3-chloromethylstyrene and 4-chloromethylstyrene, 3-(1-bromoethyl)-styrene, and 3-(1-chloroethyl)styrene.

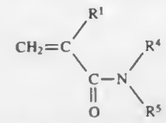
5,663,261
FILM-FORMING RESIN AND HAIR CARE COSMETIC CONTAINING THE SAME
Naomi Hori; Takashi Oda; Takako Taya, and Katsumi Mita, all of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Jan. 3, 1996, Ser. No. 582,391
Claims priority, application Japan, Feb. 21, 1995, 7-031992
Int. Cl.[6] C08F 226/02;236/02;236/22; A61K 7/06
U.S. Cl. 526—307.2 **5 Claims**

1. A film-forming resin which is a copolymer consisting essentially of:
(a) from 30 to 80% by weight of a (meth)acrylamide monomer represented by the following formula (1):



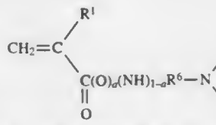
(1)

wherein R^1 represents a hydrogen atom or a methyl group; and R^2 and R^3 may be either the same or different and each represents a hydrogen atom or an alkyl group having 4 to 12 carbon atoms, provided that R^2 and R^3 do not represent hydrogen atoms at the same time;
(b) from 2 to 50% by weight of a (meth)acrylamide monomer represented by the following formula (2):



(2)

wherein R^1 is as defined above; and R^4 and R^5 may be either the same or different and each represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms;
(c) from 0.5 to 30% by weight of a (meth)acrylate monomer or a (meth)acrylamide monomer represented by the following formula (3):

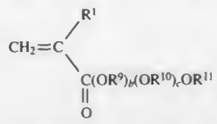


(3)

wherein R^1 is as defined above; R^6 represents an alkylene group having 2 or 3 carbon atoms; R^7 and R^8 may be either

the same or different and each represents a methyl group or an ethyl group; and a represents a number of 0 or 1; and

(d) from 0 to 40% by weight of a (meth)acrylate monomer represented by the following formula (4):



(4)

wherein R^1 is as defined above; R^9 and R^{10} may be either the same or different and each represents an alkylene group having 2 to 4 carbon atoms; R^{11} represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or a phenyl group; and b and c represent each a number of from 0 to 50, provided that b and c do not represent 0 at the same time.

5,663,262

COMPOUND CONTAINING AN OXAMIC ACID GROUP, A PROCESS FOR PRODUCING THE COMPOUND, AND A RESIN COMPOSITION CONTAINING THE COMPOUND

Shinsuke Shirakawa; Kazunori Kanda; Mitsuo Yamada, all of Osaka; Kei Aoki, Nara; Satoshi Urano, Kyoto, and Nobuaki Tomita, Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

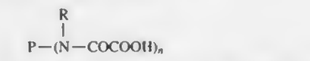
Filed Nov. 8, 1989, Ser. No. 433,097

Claims priority, application Japan, Nov. 11, 1988, 63-286308

Int. Cl.[6] C08F *26/00;126/00;226/00;* **C07C** *69/52*

U.S. Cl. 526—312 **15 Claims**

1. A compound containing an oxamic acid group denoted by the following general formula (II):



(II)

in which P is a residue of a high molecular weight compound having a molecular weight of 1,000 or more, R is a hydrogen atom, an alkyl group of from 1 to 5 carbon atoms, or a benzyl group, and n is a positive integral number, R may have a hydroxyl group as a substituent.

5,663,263

AQUEOUS THICKENER COMPOSITION AND PROCESS FOR MAKING SAME

Stephen A. Fischer, Yardley, and Chase J. Boudreaux, North Wales, both of Pa., assignors to GEO Specialty Chemicals, Inc., Cleveland, Ohio

Filed Jul. 8, 1996, Ser. No. 676,710

Int. Cl.[6] C08F *20/10*

U.S. Cl. 526—318.41 **27 Claims**

1. A water retention aid/thickener composition comprising:

(a) from about 40 to about 75% by weight of a C_1–C_8 alkyl acrylate;

(b) from about 60 to about 25% by weight of methacrylic acid; and

(c) from about 0.1 to about 5% by weight of an alkoxylated acrylate or methacrylate monomer containing at least three vinyl moieties, all weights being based on the weight of the composition.

5,663,264

TRANSPARENT RESIN AND PLASTIC LENS

Toshiyasu Kawai, Ichihara; Minoru Suzuki, Funabashi; Hiromasa Kawai, and Fumiaki Kanega, both of Ichihara, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

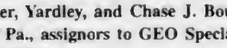
Filed Dec. 21, 1994, Ser. No. 360,350

Claims priority, application Japan, Dec. 27, 1993, 5-329446; Aug. 9, 1994, 6-187173

Int. Cl.[6] C08F *18/00*

U.S. Cl. 526—320 **10 Claims**

1. A transparent resin comprising, as constituent components of the resin molecules, a polymerizable monomer mixture obtained by compounding 1 to 80 parts by weight of an alkylene oxide group-containing monomer represented by the formula (I):



(I)

wherein R^1 is an acryloyl group or a methacryloyl group; R^2 is an alkylene group having 1 to 5 carbon atoms; R^3 is a hydrogen atom, an acryloyl group, a methacryloyl group or a monovalent hydrocarbon group other than mentioned above and having 1 to 40 carbon atoms; and n is an integer of 9 to 50; 1 to 95 parts by weight of a polyfunctional (meth)acrylate represented by the formula (II):



(II)

wherein R^4 and R^5 are independently an acryloyl group or a methacryloyl group; and R^6 and R^7 are independently a monovalent hydrocarbon group having 1 to 6 carbon atoms; and 0 to 90 parts by weight of other copolymerizable vinyl monomer so as to give a total amount of 100 parts by weight.

5,663,265

COPOLYMERS CONTAINING HYDROXYL AND CARBOXYL GROUPS BY REACTING GLYCIDYL ESTERS AND CARBOXYL MONOMERS

Ulrich Epple; Uwe Kubillus, and Holger Schmidt, all of Wiesbaden, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 19, 1995, Ser. No. 424,081

Claims priority, application Germany, May 2, 1994, 44 15 319.8

Int. Cl.[6] C08F *220/06;220/28*

U.S. Cl. 526—320 **22 Claims**

1. A low-viscosity copolymer containing hydroxyl and carboxyl groups which is obtained by reacting in the absence of solvents

A) from 3 to 50% by weight of one or more glycidyl esters of aliphatic saturated monocarboxylic acids having a tertiary or quaternary α carbon atom, and

B) from 97 to 50% by weight of at least two olefinically unsaturated copolymerizable monomers of which at least one contains at least one COOH group and at least one is sterically hindered, wherein the sterically hindered monomer comprises one or more esters of acrylic or methacrylic acid with one or more branched or cyclic monohydric aliphatic alcohols,

wherein the monohydric alcohol is selected from the group consisting of tert-butyl alcohol, tert-amyl alcohol, 2-methylbutanol 3-methylbutanol, neopentyl alcohol, 3-methyl- 2-butanol, 2-pentanol, 3-pentanol, 2,3-dimethyl-2-butanol, 3,3-dimethylbutanol, 3,3-dimethyl-2-butanol, 2-ethyl-2-butanol, 2-hexanol, 3 -hexanol, 2-methylpentanol, 2-methyl-2 -pentanol, 2-methyl-3-pentanol, 2-methylpentanol, 3-methyl-2-pentanol, 3 -methyl-3-pentanol, 4-methylpentanol, 4-methyl-2-pentanol, 2- (2' -hexyloxyethoxy) ethanol, 2,2-dimethyl-3-pentanol, 2,3-dimethyl-3-pentanol, 2,4-dimethyl-3-pentanol, 4,4-dimethyl- 3-pentanol, 3-ethyl-3-pentanol, 2-heptanol, 3-heptanol, 2-methyl- 2-hexanol, 2-methyl-3-hexanol, 5-methyl-2-hexanol, 2-ethylhexanol, 4-methyl-3-heptanol, 6-methyl-2-heptanol, 2-octanol, 3-octanol, 2-propylpentanol, 2,4,4-trimethylpentanol, 2,6-dimethyl-4-heptanol, 3-ethyl-2,2-dimethyl-3-pentanol, 2-nonanol, 3,5,5-trimethylpentanol, 3,5,5-trimethylhexanol, 2-decanol, 4-decanol, 3,7-dimethyloctanol, 3,7-dimethyl- 3-octanol, 2-dodecanol, 2-tetradecanol, 1-hexen-3-ol, phytol, 3-methyl-1-penten-3-ol, 4-methyl-3-pentenol, 2-methyl-3-butenol, 3-methyl-3-buten-2-ol, 3-methyl-2-butenol, 3-methyl-3-butenol, 1-penten-3-ol, 3-penten-2-ol, 4-penten-2-ol, 6-methyl-5-hepten- 2-ol, 1-octen-3-ol, nopol, oleyl alcohol, 4-tert-butylcyclohexanol, 3,3,5-trimethylcyclohexanol, isoborneol, 8-and 9-hydroxytricyclo (5.2.1.$0^{2,6}$)dec-3-ene (dihydrodicyclopentadienyl alcohol) . 8-hydroxytricyclo (5.2.1.$0^{2,6}$)decane, 8-hydroxymethyltricyclo (5.2.1.$0^{2,1}$) decane, and citronellol,

in the presence of free-radical polymerization initiators,

wherein the quantity of COOH groups in component B exceeds the quantity of epoxy groups in component A to such an extent that the resulting copolymer has an acid number of at least 15 mg of KOH/g, and wherein the viscosity of a 50% strength solution in butyl acetate at 23 ° C. does not exceed 2,000 mPa s.

5,663,266

WATERBORNE COATING COMPOSITIONS

James W. Taylor, and James R. Salisbury, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

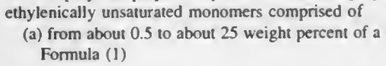
Filed Apr. 12, 1995, Ser. No. 420,542

Int. Cl.[6] C08F *220/10;220/34;220/36;* **C08L** *67/07*

U.S. Cl. 526—325 **33 Claims**

1. A polymer prepared by the free-radical polymerization of ethylenically unsaturated monomers comprised of

(a) from about 0.5 to about 25 weight percent of a compound of Formula (1)



(1)

wherein R_1 is hydrogen or halo; R_2 is hydrogen, halo, C_1–C_6 alkylthio, or C_1–C_6 alkyl; R_3 is C_1–C_6 alkyl; X_1 and X_3 are independently O, S, or a group of the formula —NR', wherein R' is hydrogen or C_1–C_6 alkyl; and X_2 is C_1–C_{12} straight or branched alkylene or C_3–C_{12} cycloalkylene;

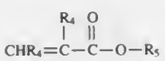
(b) from about 0.5 to about 25 weight percent of a compound of Formula (2),



(2)

wherein R_4 is hydrogen or C_1–C_6 alkyl, R_5 is C_1–C_6 alkyl, R_6 is hydrogen or C_1–C_6 alkyl, R_7 is hydrogen or C_1–C_6 alkyl, m is an integer of from 1 to 4, n is an integer of from 1 to 4, and n+m is greater than or equal to 2, and X_4 is O, S, or a group of the formula —NR', wherein R' is hydrogen or C_1–C_6 alkyl; and

(c) any remaining monomers selected from the group consisting of styrene; hydroxyethyl acrylate; hydroxyethyl methacrylate; isobornyl acrylate; isobornyl methacrylate; multifunctional acrylates or multifunctional methacrylates providing gel content of about 30% to 74%; and acrylic or crotonic compounds the of formula



wherein R_4 is independently hydrogen or methyl and R_5 is C_1–C_{12} alkyl; the total weight percent of (a), (b), and (c) being 100 percent.

5,663,267

RE-ENTERABLE ACRYLIC POLYMER GROUT MATERIAL

George W. Frost, Afton, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation of Ser. No. 499,754, Jul. 7, 1995, abandoned. This application Sep. 10, 1996, Ser. No. 707,026

Int. Cl.[6] C08F *220/10;224/00;232/08;216/14*

U.S. Cl. 526—328.5 **8 Claims**

1. A polymer grout composition comprising:

(a) about 70 to about 98 parts by weight of a C_8 to C_{18} alkyl ester of acrylic or methacrylic acid;

(b) 0 to about 25 parts by weight of an ester of acrylic or methacrylic acid having a T_g of greater than about 50° C.;

(c) about 2 to about 40 parts by weight of a crosslinking agent polymerizable with components (a) and (b); and

(d) a free-radical initiator for polymerizing components (a), (b) and (c);

wherein said composition is hand-breakable when tested in accordance with a Hand-breakability Test Method.

5,663,268

SYNDIOTACTIC PROPYLENE COPOLYMERS

Andreas Winter; Volker Dolle, both of Kelkheim; Jürgen Rohrmann; Walter Spaleck, both of Liederbach, and Martin Antberg, Hofheim am Taunus, all of Germany, assignors to Hoechst, Frankfurt, Germany

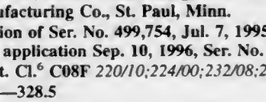
Division of Ser. No. 427,499, Apr. 24, 1995, which is a continuation of Ser. No. 203,514, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 996,868, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 630,263, Dec. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,131

Claims priority, application Germany, Dec. 21, 1989, 39 42 366.2

Int. Cl.[6] C08F *210/06*

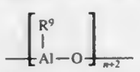
U.S. Cl. 526—348.1 **5 Claims**

1. A syndiotactic propylene copolymer comprising 99.9 to 50% by weight, relative to the entire polymer, of propylene units and 0.1 to 50% by weight, relative to the entire polymer, of units derived from ethylene or an olefin having at least 4 carbon atoms of the formula R^a—CH=CH—R^b, in which R^a and R^b are identical or different and are a hydrogen atom or an alkyl radical having 1 to 20 carbon atoms or R^a and R^b together with the carbon atoms linking them form a ring having 4 to 10 carbon atoms, prepared by a process comprising polymerization of 50 to 99.5% by weight, relative to the total amount of the monomers, of propylene and 0.5 to 50% by weight, relative to the total amount of the monomers, of at least one representative from the group comprising ethylene and olefins having at least 4 carbon atoms of the formula R^a—CH=CH—R^b, in which R^a and R^b have the above mentioned meaning, at a temperature of –40° C. to 150° C. and a pressure of 0.5 to 100 bar in solution, in suspension or in the gas phase, in the presence of a catalyst which comprises a metallocene as the transition metal component and an aluminoxane of the formula II



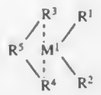
(II)

for the linear type and/or for the formula III



(III)

for the cyclic type, R^9 in formulae II and III being a C_1–C_6-alkyl group or phenyl or benzyl and n an integer from 2 to 50, which comprises carrying out the polymerization in the presence of a catalyst whose transition metal component is a compound of the formula I



(I)

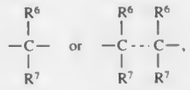
in which

M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R^1 and R^2 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40} -alkylaryl group or a C_8–C_{40}-arylalkenyl group,

R^3 and R^4 are different and are a mono- or polynuclear hydrocarbon radical which together with the central atom M^1 can form a sandwich structure,

R^5 is



in which

R^6 and R^7 are identical or different and R^6 is a C_6–C_{10}-aryl group and

R^7 is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-fluoroaryl group, a C_6–C_{10}-aryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10} -alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40} -arylalkenyl group or a C_7–C_{40}-alkylaryl group or R^6 and R^7 in each case together with the atoms linking them form a ring.

5,663,269

ORGANOSILOXANE FLUIDS PREPARED USING ORGANO-LITHIUM REAGENTS

Hsien-Kun Chu, Wethersfield; Robert P. Cross, Rocky Hill; Patrick J. Courtney, Newington, and David I. Crossan, Hebron, all of Conn., assignors to Loctite Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 218,452, Mar. 25, 1994, abandoned, which is a division of Ser. No. 14,143, Feb. 19, 1993, Pat. No. 5,300,608, which is a continuation-in-part of Ser. No. 861,143, Mar. 31, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,873

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—14 **29 Claims**

1. A reaction product prepared, in non-polar solution, from (i) an organopolysiloxane having at least both ends terminating with a silanol group; (ii) a silane containing at least three alkoxy groups; and (iii) a catalytically effective amount of an organo-lithium reagent;

said reaction product comprising a reactive organopolysiloxane having terminal ends including at least two alkoxy groups attached to a silicon atom and which reaction product has a viscosity stability in the absence of quenching which is greater than reactive organopolysiloxanes prepared from components (i) and (ii) above in methanol.

5,663,270

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING SUBSTITUTED POLYORGANOSILOXANES/POLYORGANOSILANES

Hervé Richard, Villepinte; Madeleine Leduc, Paris, and Alain LaGrange, Coupvray, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 10, 1995, Ser. No. 541,983

Claims priority, application France, Oct. 7, 1994, 94 12004

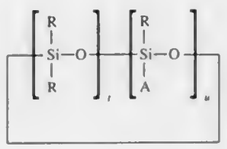
Int. Cl.[6] C08G *77/26*

U.S. Cl. 528—27 **23 Claims**

1. A compound having one of the formulae (1) to (3):



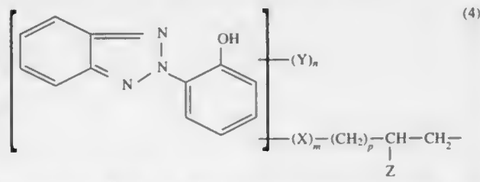
(1)



(2)

$$A-Si(R')_3 \qquad (3)$$

in which the radicals R, which are identical or different, are each C_1–C_{10} alkyl, phenyl or 3,3,3-trifluoropropyl radicals, at least 80% by number of the radicals R being methyl radicals; the radicals B, which may be identical or different, are each a radical R or a radical A as defined below; the radicals R', which may be identical or different, are each a C_1–C_8 alkyl radical or a phenyl radical; r is an integer ranging from 0 to 50, inclusive, and s is an integer ranging from 0 to 20, inclusive, with the proviso that, if s is zero, then at least one of the two radicals B is a radical A; u is an integer ranging from 1 to 6, inclusive, and t is in integer ranging from 0 to 10 inclusive, with the proviso that t+u is equal to or greater than 3; and the radical A is a univalent radical bonded directed to a silicon atom, and which has the following formula (4):



(4)

wherein the radicals Y, which may be identical or different, are each a C_1–C_8 alkyl radical, a halogen atom or a C_1–C_4 alkoxy radical, with the proviso that, in the latter event, two adjacent radicals Y on the same aromatic nucleus can together form an alkylidenedioxy radical in which the alkylidene group has from 1 to 2 carbons atoms; X is O or NH; Z is hydrogen or a C_1–C_4 alkyl radical; n is an integer ranging from 0 to 3, inclusive; m is 0 or 1, with the proviso that when m is zero, or when m is equal to 1 and X is NH, necessarily (i) n cannot be zero and (ii) at least one of the radicals Y is an alkoxy radical; and p is an integer ranging from 1 to 10, inclusive and wherein $(Y)_n$ and

$$(X)_m-(CH_2)_p-\underset{\displaystyle Z}{\underset{|}{CH}}-CH_2-.$$

if present, are attached to at least one of the two aromatic rings comprised in the benzotriazole of formula (4).

5,663,271

POLYSILANES AND METHOD FOR PRODUCING THE SAME

Yasuo Hatanaka, 1-9-2, Minamidai, Sagamihara-shi, Kanagawa-ken, Japan

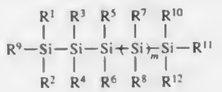
Continuation of Ser. No. 208,666, Mar. 11, 1994, abandoned. This application Nov. 9, 1995, Ser. No. 552,458

Claims priority, application Japan, Mar. 12, 1993, 5-052497; Feb. 22, 1994, 6-024429

Int. Cl.[6] C08G *77/04*

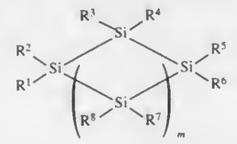
U.S. Cl. 528—37 **17 Claims**

1. A method for producing a polysilane compound of formula (I)



wherein

R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11} and R^{12} each, independently, represent hydrogen, alkyl, aryl, alkenyl, alkynyl, silyl, or amino group, and any of the pairs of R^1 and R^2, R^3 and R^4, R^5 and R^6, R^7 and R^8 or R^{10} and R^{11} can form a ring with the silicon atom to which the respective pair is bonded; and m is 0 or 1; which comprises reacting a small-ring polysilane of formula (III):



wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8 and m have the same definitions as given for formula (I), with an organolithium reagent of formula (IV):

$$R^9—Li \qquad (IV)$$

wherein R^9 represents alkyl, aryl, alkenyl, alkynyl or silyl group, in a solvent, and treating the product of said reaction with a silane of formula (v):

(V)

wherein R^{10}, R^{11} and R^{12} have the same definitions as given for formula (I), and X represents a leaving group, to thereby form the compound of formula (I).

5,663,272

ALLOPHANATE-MODIFIED DIPHENYLMETHANE DIISOCYANATES AND PROCESSES FOR THEIR PRODUCTION AND USE

William E. Slack, Moundsville, W. Va.; Edmund J. Madaj, Imperial, and David D. Steppan, Gibsonia, both of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1995, Ser. No. 577,580

Int. Cl.[6] C08G *18/71*

U.S. Cl. 528—69 **13 Claims**

1. A process for the production of a stable, liquid allophanate-modified diphenylmethane diisocyanate prepolymer comprising

(a) reacting

(1)an organic material having at least two hydroxyl groups and a molecular weight (number average) of from about 60 to 6,000 with

(2) a monoisocyanate in amounts such that the isocyanate to hydroxyl group equivalent ratio (NCO/OH) is from about 0.8 to about 1.2,

(b) reacting

(3) the reaction product of (a) with

(4) a mixture of isomers of diphenylmethane diisocyanate which is made up of

(i) from about 0 to about 60% by weight of the 2,4'-isomer,

(ii) less than 6.0% by weight of the 2,2'-isomer, and

(iii) from about 34 to about 100% by weight of the 4.4'-isomer in amounts such that a liquid allophanate-modified MDI having an isocyanate content of from about 12 to about 30% is formed, and

(c) reacting

(5) the reaction product of (b) with

(6) an isocyanate-reactive compound having from 1 to 4 isocyanate-reactive groups and a molecular weight (number average) of from about 90 to about 10,000 in amounts such that a stable, liquid allophanate-modified diphenylmethane diisocyanate prepolymer having an isocyanate group content of from about 5 to about 29% by weight is formed.

5,663,273

POLYURETHANES DERIVED FROM OLIGOPERFLUOROALKYL ALCOHOLS

Marlon Haniff, West Orange, N.J.; Robert Falk, New City, N.Y.; Ted Deisenroth, Carmel, N.Y., and Karl F. Mueller, New York, N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 270,083, Jul. 1, 1994, Pat. No. 5,491,261. This application May 31, 1995, Ser. No. 456,217

Int. Cl.[6] C08G *18/32;18/38;18/50;* **D06M** *13/398*

U.S. Cl. 528—70 **6 Claims**

1. A polyurethane which consists of or contains repeating units of the formulae Ie or IIe

(Ie)

and



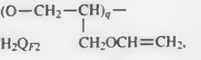
(IIe)

wherein

Y is a tetravalent organic linking group with from 2 to 20 carbon atoms,

Z is a divalent alkylene radical with 2 to 12 carbon atoms which is optionally interrupted by —O—, —S—, or 1,4-phenylene and substituted by 1 or 2 carboxyl groups,

Q_{F2} is $R_FCH=CH—$, wherein R_F is a monovalent, perfluorinated, alkyl or alkenyl, linear, branched, or cyclic organic radical having three to twenty fully fluorinated carbon atoms, which radical is optionally interrupted by divalent oxygen or sulfur atoms, with each R_F radical being identical or different from the other R_F radicals, L is O, S, or NR', in which R' is C_1–C_{20} hydrocarbyl, C_2–C_5 hydroxyalkyl, carboxymethyl or U—OH,



r and q are each, independently, 0 to 10, and

R_5 is the diradical residue of a diisocyanate of the formula $OCN—R_5—NCO$.

5,663,274

HEAT-CURABLE COMPOSITIONS BASED ON CYCLIC ISOCYANATE ADDITION PRODUCTS

Sze-Ming Lee; Philip E. Yeske; Duane B. Priddy, Jr.; Robert J. Kumpf, all of Pittsburgh, and Douglas A. Wicks, Mt. Lebanon, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Jun. 5, 1996, Ser. No. 658,787
Int. Cl.[6] C08G *18/72*
U.S. Cl. 528—73 20 Claims

1. A heat-curable, cyclic isocyanate addition product

i) which is the reaction product of

a) a polyisocyanate component having an average isocyanate functionality of two or more and a uretdione group content (calculated as $N_2C_2O_2$, MW 84) of 1 to 30%, based on the weight of the polyisocyanate component, with

b) a compound containing two or more isocyanate-reactive groups and

ii) in which at least 10% by weight of the reaction products are in the form of cyclic groups containing urea and/or urethane groups.

5,663,275

PREPARATION OF POLYETHER POLYMERS USING BISPHENOL HYDRATE AS INTERMEDIATE

John Christopher Schmidhauser, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1996, Ser. No. 676,014
Int. Cl.[6] C08G *73/10;8/02*
U.S. Cl. 528—125 16 Claims

1. A method for preparing an aromatic polyetherimide which comprises:

neutralizing a dihydroxyaromatic compound with an alkali metal hydroxide in an aqueous medium, removing water to form a hydrate of the bis-alkali metal salt of said dihydroxyaromatic compound, and isolating said hydrate in crystalline form;

converting said hydrate to the corresponding anhydrous alkali metal salt; and

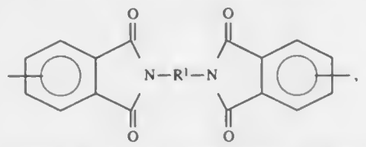
contacting, in a non-polar solvent and at a temperature in the range of about 125°–250° C., said anhydrous salt with at least one substituted aromatic compound of the formula

$$Z(A^1—X^1)_2, \qquad (I)$$

wherein:

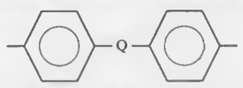
Z is an activating radical,

$A^1—Z—A^1—$ is a bisimide radical of the formula



(IV)

wherein R^1 is a C_{6-20} divalent aromatic hydrocarbon or halogenated hydrocarbon radical, a C_{2-20} alkylene or cycloalkylene radical, a C_{2-8} bis(alkylene-terminated) polydiorganosiloxane radical or a divalent radical of the formula



(V)

in which Q is $—C_2H_4—$, —O—, —CO—, $—SO_2—$, $—C(CF_3)_2—$ or a covalent bond; and

X^1 is fluoro, chloro, bromo or nitro,

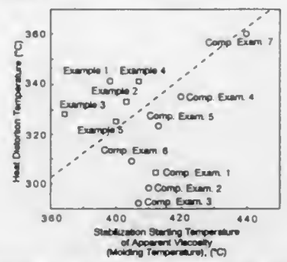
in the presence of a catalytically active amount of a phase transfer catalyst which is substantially stable at the temperatures employed.

5,663,276

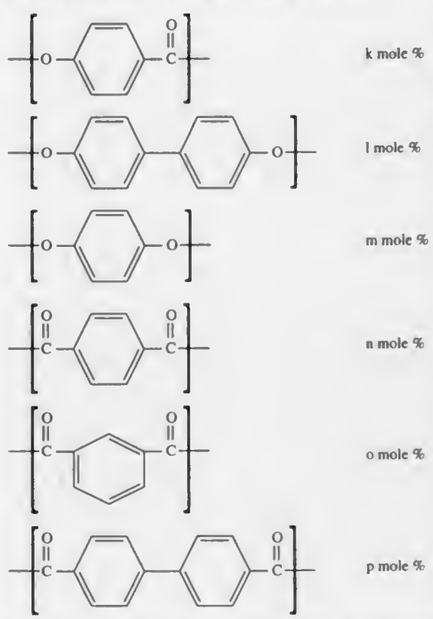
WHOLLY AROMATIC POLYESTER, COMPOSITION THEREOF, AND MOLDED ARTICLE MADE THEREFROM

Hiroyoshi Yoneta; Satoshi Murouchi, both of Yokohama, and Hideo Watanabe, Meguro-ku, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

PCT No. PCT/JP94/00965, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO94/29365, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 15, 1994, Ser. No. 387,755
Claims priority, application Japan, Jun. 15, 1993, 5-168654; Jun. 15, 1993, 5-168655; Jun. 15, 1993, 5-168656
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—194 11 Claims



1. An aromatic polyester possessing optical melt anisotropy consisting essentially of structural units, which are present in a mole % indicated by letters k, l, m, n, o and p, as follows:



k mole %

l mole %

m mole %

n mole %

o mole %

p mole %

said constituents being present such that they satisfy the following relationships:

$20 \leqq k \leqq 80$;

substantially equals n+o+p;

$0 \leqq o \leqq 10$;

$1 \leqq p \leqq 7$; and

$0 \leqq m \leqq (l+m)/2$

said aromatic polyester satisfying the following relationship:

$$Tv-Tm<+10° \text{ C.}$$

where Tm is the melting point, in °C, as measured by differential scanning calorimetry and Tv is the temperature, in °C., at which the apparent viscosity is abruptly reduced, as measured by capillary rheometry.

5,663,277

AROMATIC POLYCARBONATE RESIN GRANULE AND PROCESS FOR THE PRODUCTION THEREOF

Hideki Isshiki; Akiyoshi Manabe; Toshinori Kitachi; Yoshifumi Ikemura; Katsuhiro Kutsuna, and Tatsumi Horie, all of Matsuyama, Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan

PCT No. PCT/JP94/01539, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO95/08585, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 20, 1994, Ser. No. 436,230
Claims priority, application Japan, Sep. 21, 1993, 5-234852
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 21 Claims

1. A process for the production of an aromatic polycarbonate resin granule, which comprises:

(1) step (a) preparing a slurry or wet paste containing an aromatic polycarbonate resin, in which

(i) the amount of an organic solvent based on the total amount of the aromatic polycarbonate resin and the organic solvent is 10 to 65% by weight, and

(ii) the amount of water based on the aromatic polycarbonate resin is at least 5% by weight,

(2) step (b) finely pulverizing the slurry or wet paste to form fine powder of the aromatic polycarbonate resin, of which at least 90% has a particle diameter of 50 μm or less,

(3) step (c) applying pressure to the fine powder of the aromatic polycarbonate resin to form an aggregate in which

(i) the amount of the organic solvent based on the total amount of the aromatic polycarbonate resin and the organic solvent is 10 to 65% by weight, and

(ii) the amount of the water based on the aromatic polycarbonate resin is 5 to 120% by weight, and

(4) step (d) pulverizing or cutting and drying the aggregate of the fine powder of the aromatic polycarbonate resin to obtain aggregate granular particles of a size within the range of 0.2 to 5 mm in diameter composed of the fine powder particles of which at least 90% retain a particle size of 50 μm or less and in which the content of halogenated hydrocarbon organic solvent in the granule is 50 ppm or less in terms of halogen amount.

5,663,278

(CO)POLYCARBONATE AND PROCESS FOR PRODUCING THE SAME

Tatsuya Kanno; Yutaka Hukuda, and Yasuhiro Oshino, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 188,194, Jan. 28, 1994, Pat. No. 5,466,774. This application Jun. 1, 1995, Ser. No. 456,561
Claims priority, application Japan, Jan. 29, 1993, 5-13688; Mar. 1, 1993, 5-39606; Apr. 16, 1993, 5-89919
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 8 Claims

1. A process for producing a linear, high molecular weight (co)polycarbonate having a terminal hydroxyl group concentration of from 8 to 30% and a viscosity-average molecular weight range of from 10,000 to 100,000, by the melt-polycondensation of a dihydroxy compound with a carbonic diester, which consists of conducting said melt-polycondensation at a temperature of 100°–300° C. and a pressure of atmospheric to 0.1 Torr in the presence of a single compound transesterification catalyst selected from the group consisting of lithium borate, sodium borate, potassium borate and magnesium borate; and said carbonic diester compound is present in amount of 1.01 to 1.5 mol per mol of dihydroxy compound.

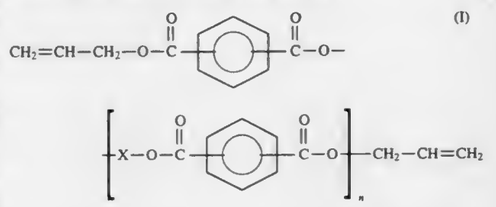
5,663,279

OPHTHALMIC LENSES

Hans Leonard Kuiper, Velp; Robert Winston van de Graaf, Arnhem, and Mieke Ruisch-Mocking, Hilversum, all of Netherlands, assignors to Akzo Nobel nv, Arnhem, Netherlands

PCT No. PCT/EP94/02595, § 371 Date Apr. 11, 1996, § 102(e) Date Apr. 11, 1996, PCT Pub. No. WO95/06266, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 5, 1994, Ser. No. 600,956
Claims priority, application Netherlands, Aug. 24, 1993, 93202480
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 10 Claims

1. An ophthalmic lens with a refractive index from 1.50 to 1.51, comprising the cured product of a composition comprising 60–99 wt % of at least one poly(allyl carbonate) of a polyhydroxy alcohol, said polyhydroxy alcohol having from 2 to 20 carbon atoms and from 2 to 6 hydroxy groups in the molecule, 0.01–10 wt % of at least one radical initiator, and 0–20 wt % of comonomers, wherein at least one diallyl phthalate type oligomer is present in the composition, in an amount of less than 10 wt %, said diallyl phthalate type oligomer being of the formula I



(I)

wherein X denotes a divalent hydrocarbon residue derived from a diol having 2–20 carbon atoms, optionally partly replaced by a residue derived from a polyol having 3 or more carbon atoms and 3–10 hydroxy groups, and n= 1–100, said oligomer having a degree of unsaturation of 20–100 in terms of iodine value measured according to the Wijs method.

5,663,280

CARBONATE POLYMER RESINS CONTAINING LOW VOLATILITY AROMATIC PHOSPHATE ESTER COMPOUNDS

Samuel A. Ogoe, Missouri City; Nancy J. Schrock, and Jimmie D. Spoon, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 547,090, Oct. 23, 1995. This application Apr. 23, 1996, Ser. No. 636,291
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 22 Claims

1. A carbonate polymer composition consisting essentially of (a) a carbonate polymer having a weight average molecular weight of from about 20,000 to about 40,000 and ignition resistance additives consisting essentially of (b) from greater than about 0.1 to less than about 1.0 weight percent (based on carbonate polymer composition weight) low volatility aromatic phosphate ester compound, and optionally from about 0.001 to about 0.1 weight percent (based on carbonate polymer composition weight) of (c) an alkali metal salt having a pH of at least about 7.

5,663,281
PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT POLYESTERS
Edward Gus Brugel, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 30, 1996, Ser. No. 688,477
Int. Cl.[6] C08G *63/02*
U.S. Cl. 528—272 **9 Claims**

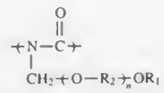
1. A process for preparing a high molecular weight polyester polymer having an intrinsic viscosity of at least 0.5 dL/gm which process comprises:
(A) forming a low molecular weight solid pre-polymer particle by reacting at least one alkylene glycol and at least one di- or tricarboxylic acid according to the steps of:
(i) esterifying the di- or tricarboxylic acid with the alkylene glycol at a temperature in the range of from 150° C. up to 280° C. in the presence of an esterification catalyst in which the molar ratio of alkylene glycol to carboxylic acid is from 1.2:1 to 10:1;
(ii) continuing the esterification reaction from step (i) by holding the reaction mass at a temperature in the range of from 180° C. up to about 280° C. until said low molecular weight pre-polymer is formed having a molecular composition which contains greater then 1% stoichiometric excess of alkylene glycol above the amount required to make a high molecular weight polymer and in which at least about 85% of the carboxylic acid groups present initially in the reaction have been converted to ester groups, and the pre-polymer has an intrinsic viscosity of from 0.1 to about 0.3 dL/gm;
(iii) isolating the pre-polymer as generally uniform solid particles; and
(B) polymerizing the solid particles in the solid state.

5,663,282
METHOD FOR PRODUCING POLYESTERS
Michael Leslie Todt, and John William Carbone, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 556,683, Nov. 13, 1995, abandoned. This application Aug. 19, 1996, Ser. No. 699,216
Int. Cl.[6] C08G *63/78;* **C08L** *67/00;* **C08K** *5/10*
U.S. Cl. 528—274 **8 Claims**

1. A process for making polyesters comprising the step of reacting:
(a) at least one macrocyclic polyester oligomer;
(b) a polymerization catalyst; and
(c) about 0.01–5.0% by weight, based on said oligomer, of a fibrous nucleating material.

5,663,283
POLYAMIDE, ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER EMPLOYING THE POLYAMIDE, AND ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT AND FACSIMILE MACHINE EMPLOYING THE MEMBER
Teigo Sakakibara, Yokohama; Kiyoshi Sakai, Hachioji; Takashi Koyama, and Noriko Ohtani, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 874,833, Apr. 28, 1992, Pat. No. 5,419,993. This application Mar. 20, 1995, Ser. No. 406,485
Int. Cl.[6] C08G *69/08;73/10*
U.S. Cl. 528—310 **1 Claim**

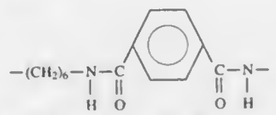
1. A polyamide having a structural unit represented by formula (I) below:



wherein R_1 is alkyl or alkyl substituted with halogen, aryl or alkoxy, R_2 is alkylene or alkylene substituted with halogen, aryl or alkoxy and n is an integer of one or more.

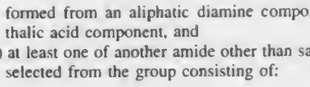
5,663,284
COPOLYMERIZED POLYAMIDE AND A PRODUCTION PROCESS/THEREOF
Kazuhiko Kominami; Tooru Nishimura; Kazuhiko Kobayashi, and Shoji Yamamoto, all of Aichi, Japan, assignors to Toray Industries, Inc., Japan
Filed Aug. 17, 1995, Ser. No. 516,049
Claims priority, application Japan, Aug. 17, 1994, 6-193330; Oct. 3, 1994, 6-239311
Int. Cl.[6] C08G *69/00*
U.S. Cl. 528—310 **22 Claims**

1. A copolymerized polyamide, comprising:
1) a terephthalamide having a structure (I) of the following formula:

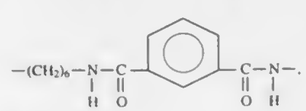


(I)

formed from an aliphatic diamine component and a terephthalic acid component, and
2) at least one of another amide other than said terephthalamide selected from the group consisting of:

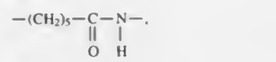


(II)



(III)

and



(IV)

and

wherein amide bonds X and Y connect said components, said amide bonds being in accordance with the following formulae (A) and (B):

$$0.9 \leqq (XY)\text{actual}/(XY)\text{calcd.} < 1.1 \quad (A)$$

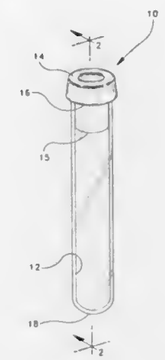
$$0.9 \leqq (XX)\text{actual}/(XX)\text{calcd.} < 1.1 \quad (B)$$

and wherein X is an amide bond formed between said aliphatic diamine component having 4 to 14 carbon atoms and said terephthalic acid component, and Y is any amide bond other than X in the polymer structure, (XY) is the frequency of occurrence at which an X amide bond and a Y amide bond occur adjacent to each other relative to all amide bonds present in the polymer structure, (XX) is the frequency of occurrence at which amide bonds X and X occur adjacent to each other relative to all amide bonds in the polymer structure, (XY) calcd. and (XX) calcd. are respectively the values of (XY) and (XX) calculated on the assumption that all of the X and Y amide bonds that are present in the polymer structure are distributed statistically at random, and (XY) actual and (XX) actual are respectively the values of (XY) and (XX) as actually measured from said copolymerized polyamide; and said copolymerized polyamide having a half-crystallization time which is in accordance with the following formula (C):

$$4.4-0.1(T_m-T) \leqq \log t_{1/2} < 5.5-0.1(T_m-T) \quad (C)$$

wherein $t_{1/2}$ is the half-crystallization time of the copolymerized polyamide in seconds, Tm is the melting point in °C. of the copolymerized polyamide, and T is the temperature in °C. at which the half-crystallization time is measured.

5,663,285
BLOOD COMPATIBLE, SHEAR SENSITIVE FORMULATIONS
Rhyta S. Rounds, Flemington, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 318,586, Oct. 5, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 699,141
Int. Cl.[6] C08G *69/38*
U.S. Cl. 528—320 **1 Claim**



1. A viscoelastic dispersion formulation comprising:
(a) from about 85% to about 97% by weight of a high density polyol;
(b) from about 0.2% to about 15% by weight of hollow microspheres;
(c) from about 0.3% of a polyol stabilizer;
(d) from about 3% to about 4% of a hydrophobic silica; and
(e) from about 0.015% of titanium dioxide.

5,663,286
NONWOVEN WEB COMPRISING WATER SOLUBLE POLYAMIDES AND ARTICLES CONSTRUCTED THEREFROM
Sharf U. Ahmed, Woodbury, and Greg J. Van Lith, Mounds View, both of Minn., assignors to H.B. Fuller Licensing and Financing, Inc., St. Paul, Minn.
Filed Nov. 9, 1995, Ser. No. 555,524
Int. Cl.[6] C08G *69/26;73/10*
U.S. Cl. 528—339 **20 Claims**

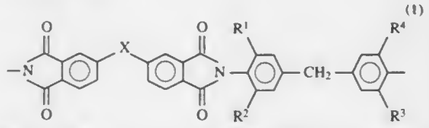
1. A nonwoven web comprising a water soluble polyether amide produced by reacting at least one polyalkylene glycol diamine with at least one dicarboxylic acid or ester thereof, said polyalkylene glycol diamine has the formula:

$$NH_2-(CH_2)_x-(OCH_2-CH_2)y-O-(CH_2)0_x-NH_2$$

wherein X ranges from 2 to 3 and Y ranges from 1 to 2; wherein said web is produced by spraying said water soluble polyether amide in molten form.

5,663,287
POLYIMIDE AND PROCESS FOR PRODUCING THE SAME
Osamu Oka; Takeshi Hashimoto; Takeshi Nishigaya, and Tatsuya Hariko, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1996, Ser. No. 609,322
Claims priority, application Japan, Mar. 3, 1995, 7-068866; Sep. 14, 1995, 7-261028
Int. Cl.[6] C08G *73/10*
U.S. Cl. 528—350 **15 Claims**

1. A polyimide comprising a repeating unit represented by the formula (1) and having a number average molecular weight of from 4,000 to 200,000



(1)

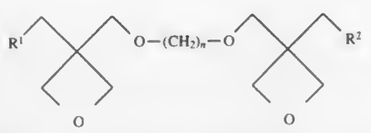
wherein X is $—SO_2—$ or $—C(=O)—OCH_2CH_2O—C(=O)—$, and R^1, R^2, R^3 and R^4 are independently an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms.

5,663,288
DEGRADABLE ADHESIVE FILM AND DEGRADABLE RESIN COMPOSITION
Hosei Shinoda; Masami Ohtaguro; Shigeru Iimuro; Akihiro Funae, and Shinobu Moriya, all of Aichi-Ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Division of Ser. No. 113,102, Aug. 30, 1993, Pat. No. 5,489,474. This application Nov. 6, 1995, Ser. No. 553,979
Claims priority, application Japan, Sep. 4, 1992, 4-237288; Sep. 28, 1992, 4-257999; Oct. 21, 1992, 4-282938; Mar. 23, 1993, 5-63601
Int. Cl.[6] C08G *63/08*
U.S. Cl. 528—354 **6 Claims**

1. A degradable resin composition comprising 100 parts by weight of a lactic acid base polymer and 0.05–5 parts by weight of one or more compounds selected from the group consisting of 2-hydroxy-4-n-octoxybenzophenone, 4-dodecycloxy-2-hydroxybenzotriazole, 2-(2'hydroxy-5'-methylphenyl)benzotriazole, 2-(2'hydroxy-3',5' -di-tert-butylphenyl)benzotriazole, and bis(2,2,6,6-tetramethyl-4-piperidyl)sebacate.

5,663,289
PREPARATION AND POLYMERIZATION OF INITIATORS CONTAINING MULTIPLE OXETANE RINGS: NEW ROUTES TO STAR POLYMERS
Thomas G. Archibald; Roland P. Carlson, both of Fair Oaks; Aslam A. Malik, Cameron Park, and Gerald E. Manser, El Dorado Hills, all of Calif., assignors to Aerojet-General Corporation, Sacramento, Calif.
Division of Ser. No. 989,401, Dec. 11, 1992, Pat. No. 5,362,848. This application Oct. 28, 1994, Ser. No. 330,480
Int. Cl.[6] C08G *65/04*
U.S. Cl. 528—414 **12 Claims**

1. A process for the preparation of a star polymer, said process comprising:
(a) forming an initiator compound by reacting a preinitiator precursor with a catalyst, said preinitiator precursor being an organic compound that forms an adduct with said catalyst, and said catalyst being a substance that causes cationic polymerization;
(b) combining said initiator compound with a multioxetane compound to form an initiating species; said multioxetane compound having the general formula



in which:

R^1 and R^2 are members independently selected from the group consisting of H, lower alkyl, lower alkoxy, Br, Cl, I, NF_2, ONO_2, NO_2, N_3, and $N(R^3)NO_2$, where R^3 is H or a lower alkyl; and

n is an integer having a value ranging from 1 to 8;

(c) contacting said initiating species with a monomer that undergoes cationic polymerization; and

(d) allowing polymerization to proceed by chain elongation until the supply of available monomer is substantially exhausted.

5,663,290

PROCESS FOR CRYSTALLIZATION OF POLY(ETHYLENENAPHTHALENEDICARBOXYLATE)

William Herbert Heise; Joseph Franklin Knight; Michael Alan Williams, and Earl Edmondson Howell, Jr., all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 21, 1995, Ser. No. 505,429

Int. Cl.[6] C08F *6/00*

U.S. Cl. 528—481 **20 Claims**

1. A process comprising the steps of:

forming poly(ethylenenaphthalenedicarboxylate) pellets;

blowing an inert gas which is at approximately room temperature over said pellets to maintain a moisture level of below about 4200 ppm in said pellets without any further drying step;

maintaining the moisture level in said pellets below about 4200 ppm; and

crystallizing said pellets by rapid heating to a crystallization temperature between about 190° C. and about 230° C., wherein said rapid heating does not include an additional drying step.

5,663,291

PROCESS FOR OBTAINING INSULIN HAVING CORRECTLY LINKED CYSTINE BRIDGES

Rainer Obermeier, Hattersheim; Martin Gerl, Kriftel; Jürgen Ludwig, Brachttal, and Walter Sabel, Bad Camberg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

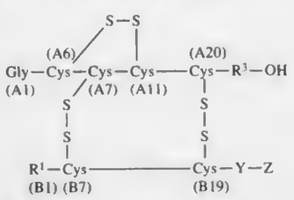
Filed Feb. 16, 1995, Ser. No. 389,487

Claims priority, application Germany, Feb. 18, 1994, 44 05 179.4

Int. Cl.[6] C07K *1/107;14/00;* **C12P** *27/06*

U.S. Cl. 530—303 **18 Claims**

1. A process for obtaining insulin of the formula I



(I)

which comprises

A) reacting a protein of the formula II (SEQ ID NO:1)

R^2-R^1-B2-B29-Y-X-Gly-A2-A20-R^3 (II)

with an amount of a mercaptan which yields 2 to 10 —SH radicals of the mercaptan per cysteine residue of the protein of the formula II, in the presence of at least one chaotropic auxiliary in an aqueous medium at a pH of 10 to 11 and a concentration of the protein of the formula II of 0.05 to 0.3 g per liter of aqueous medium and

B) reacting the resulting proinsulin having correctly linked cystine bridges with trypsin or a trypsin-like enzyme and optionally additionally with carboxypeptidase B or a mixture of the enzymes mentioned to give the insulin of the formula I having correctly linked cystine bridges,

C) treating the reaction product thus obtained with 3 to 50 g of a hydrophobic adsorber resin per liter of aqueous medium at a pH of 4 to 7,

D) isolating the adsorber resin containing adsorbed insulin of the formula I and

E) desorbing the insulin of the formula I from the adsorber resin;

in this case, in formulae I and II

X is

a) an amino acid residue from the group consisting of Lys and Arg or

b) a peptide having 2 to 35 amino acid residues, containing the amino acid residue Arg or Lys at the N-terminal and carboxyl end of the peptide,

Y is a genetically encodable amino acid residue,

Z is

a) an amino acid residue from the group consisting of Lys and Arg,

b) a peptide having 2 or 3 amino acid residues, containing the amino acid residue Arg or Lys at the carboxyl end of the peptide or

c) OH,

R^1 is a phenylalanine residue or a covalent bond,

R^2 is

a) a hydrogen atom,

b) an amino acid residue from the group consisting of Lys and Arg or

c) a peptide having 2 to 45 amino acid residues, containing the amino acid residue Arg or Lys at the carboxyl end of the peptide,

R^3 is a genetically encodable amino acid residue and

the residues A2–A20 correspond to the amino acid sequence of the A chain of human insulin, animal insulin or an insulin derivative and the residues B2–B29 correspond to the amino acid sequence of the B chain of human insulin, animal insulin or an insulin derivative.

5,663,292

CYCLIC CRF ANALOGS

Jean E. F. Rivier, La Jolla, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Dec. 12, 1994, Ser. No. 353,928

Int. Cl.[6] C07K *14/695;7/64*

U.S. Cl. 530—306 **16 Claims**

1. A CRF peptide antagonist having the formula, or a nontoxic salt thereof:

(cyclo 30–33)D—Phe—His—Leu—Leu—Arg—Glu—Val—

—Leu—Glu—Nle—Ala—Arg—Ala—Glu—Gln—Leu—

—Ala—Gln—R_{30}—Ala—His—R_{33}—Asn—Arg—Lys—

—Leu—Nle—Glu—Ile—Ile—NH_2

wherein R_{30} is Cys or Glu; R_{33} is Cys, Lys or Orn; provided that when R_{30} is Cys, R_{33} is Cys and when R_{30} is Glu, R_{33} is Lys or Orn, and provided further that the N-terminus may be extended by Asp-Leu-Thr, Leu-Thr or Thr.

5,663,293

ICAM-RELATED PROTEIN

W. Michael Gallatin, and Rosemay Vazeux, both of Seattle, Wash., assignors to ICOS Corporation, Bothell, Wash.

Continuation of Ser. No. 9,266, Jan. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 894,061, Jun. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 889,724, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,689, Jan. 27, 1992, abandoned. This application May 3, 1995, Ser. No. 433,010

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—324 **16 Claims**

16. A purified and isolated ICAM-R polypeptide fragment having less than all the amino acids ofICAM-R and comprising at least two ICAM-R immunoglobulin-like domains.

5,663,294

CALPAIN-INHIBITING PEPTIDE ANALOGS OF THE KININOGEN HEAVY CHAIN

Robert W. Colman, Moylan, Pa.; Harlan N. Bradford, Lindenwold, N.J., and Bradford A. Jameson, Philadelphia, Pa., assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Continuation of Ser. No. 109,854, Aug. 20, 1993, abandoned, which is a continuation of Ser. No. 719,051, Jun. 21, 1991, abandoned. This application Feb. 7, 1995, Ser. No. 385,391

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 530—326 **33 Claims**

1. A synthetic peptide consisting essentially of an amino acid sequence from about 5 to about 50 amino acids in length, which sequence has a greater than 50% sequence identity with a segment of the portion of the native amino acid sequence of the human kininogen heavy chain comprisinq amino acids 124–232 of the mature kininogen heavy chain, said peptide having an artificially introduced restricted conformation and the ability to inhibit the enzymatic activity of calpain, or a pharmaceutically acceptable salt of said peptide,

wherein said peptide, or the salt of said peptide, is optionally attached to an additional linker sequence from about 1 to 100 amino acids in length, which may be further linked to a detectable label, solid matrix, or carrier, and

wherein the restricted conformation may be determined from the equilibrium conformation model comprising the set of coordinates and connect statement of Appendix 1.

5,663,295

OPIOID PEPTIDES

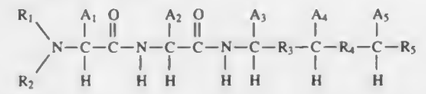
Jacques-Pierre Moreau, Upton; Sun Hyuk Kim, Needham, and John E. Taylor, Upton, all of Mass., assignors to Biomeasure Inc., Milford, Mass.

Continuation-in-part of Ser. No. 974,943, Nov. 12, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 352,391

Int. Cl.[6] A61K *38/00;* **C07K** *7/00;7/06*

U.S. Cl. 530—330 **4 Claims**

1. A peptide of the formula:



in which

A_1 is the identifying group of an amino acid selected from 3,4-dihydroxyphenylalanine, 3,4 -dimethoxyphenylalanine, azatyrosine, Tyr, and 2,6 -dimethyltyrosine;

A_2 is the identifying group of an amino acid selected from D-Ala and D-Arg;

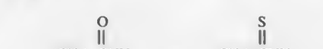
A_3 is H;

A_4 is H, cyclohexylmethyl, or the identifying group of an amino acid selected from 3,4-dihydroxyphenylalanine and 3,4-dimethoxyphenylalanine;

A_5 is the identifying group of a D- or L-amino acid selected from Leu, Nle, Lys, Met and Met(O), or is deleted together with R_4—CH attached thereto;

each R_1 and R_2 is —H, —$C(NH_2)$=NH, or C_{1-12} alkyl;

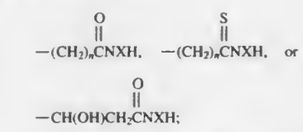
R_3 is



R_4 is



R_5 is —$(CH_2)_{n+1}$OH,



wherein m is 0–6, n is 0–6, and X is H, C_{1-12} alkyl, C_{6-12} aryl, C_{7-18} aralkyl, C_{7-18} alkaryl, C_{6-17} pyridylalkyl, or C_{6-17} alkylpyridyl; provided that when one of R_1 and R_2 is —$C(NH_2)$=NH, then the other must be H; or a pharmaceutically acceptable salt thereof.

5,663,296

HYDROXAMATE INHIBITORS OF ENDOTHELIN CONVERTING ENZYME

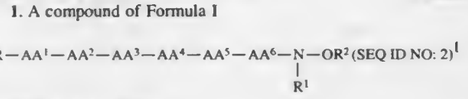
Annette Marian Doherty; Brian Edward Kornberg, and Sham Nikam, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 70,161, May 28, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,911

Int. Cl.[6] A61K *38/06*

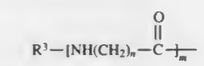
U.S. Cl. 530—331 **11 Claims**

1. A compound of Formula I



(SEQ ID NO: 2)

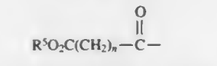
wherein R is hydrogen,



wherein R^3 is hydrogen, tert-butyloxycarbonyl, carbobenzyloxy, 9-fluorenylmethyloxycarbonyl, benzyl, acetyl, or phthaloyl,

n is an integer of one to ten,

m is zero or an integer of one or



wherein R^5 is hydrogen or alkyl, and

n is as defined above;

AA^1 and AA^2 are absent;

AA^3 is Asp.

Asn,

Glu,

Gln,

Asp (Ot—Bu),

Asp (OMe),

Glu (Ot—Bu), or
Glu (OMe), or
AA^3 is absent;
AA^4 and AA^5 are both independently
Leu,
Ile,
Nle,
Val,
Nva,
Ala,
Chx,
Gly,
Alg,
Cprl, or
Pgy;
AA^6 is Trp,
Trp(For),
Trp (Me),
His,
Phe,
Tyr,
Tyr(OMe),
Tyr(Ot—Bu),
1-Nal,
2-Nal,
Bta,
Bfa,
Pyr, or
HomoPhe;
R^1 and R^2 are hydrogen; or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical composition adapted for administration as an inhibitor of endothelin converting enzyme, as an antihypertensive agent, as an agent for treating congestive heart failure and myocardial infarction, as an agent for treating subarachnoid hemorrhage, as an agent for treating asthma, as an agent for treating acute renal failure, as an agent for treating pulmonary hypertension, as or as an agent for treating cerebral vasospasm comprising a therapeutically effective amount of a compound according to claim 1 in admixture with a pharmaceutically acceptable excipient, diluent, or carrier.

5,663,297

ANTITHROMBIC PEPTIDES

Leo Alig, Kaiseraugst; Albrecht Edenhofer, Riehen; Marcel Müller, Frenkendorf, all of Switzerland; Arnold Trzeciak, Schopfheim, Germany, and Thomas Weller, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 275,097, Jul. 14, 1994, abandoned, which is a continuation of Ser. No. 673,929, Mar. 25, 1991, abandoned, which is a division of Ser. No. 481,846, Feb. 20, 1990, abandoned. This application May 30, 1995, Ser. No. 454,453

Claims priority, application Switzerland, Feb. 23, 1989, 669/89; Nov. 29, 1989, 4265/89

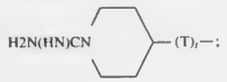
Int. Cl.[6] A61K *38/06*

U.S. Cl. 530—331 **21 Claims**

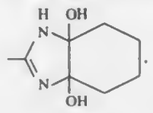
1. A compound of the formula

R—CONH—CH_2—CONH—CH(R').CH_2COOH

wherein
R is a group selected from the group consisting of R^b—NH—$(CH_2)_p$—CH(NH—R^a)—,
R^c—$NHCH_2$—C_6H_4—$(T)_t$—, L—C(NH)—$(NH)_n$—C_6H_4—(T)— and



R^a is selected from the group consisting of hydrogen, —COO—$(C_m$-alkyl), Z, —COC_6H_5, —$COC_6H_4N_3$, —SO_2-napthyl and —$COCH_2N(Y)$—CH_2CH_2NH—Y;
Y is selected from the group consisting of hydrogen, Boc and Z;
R^b is a group of the formula —$C(NH)(CH_2)_q$—CH_3, amidino or



with the proviso that R^b can be amidino only if R^a is one of —$COC_6H_4N_3$, SO_2-napthyl or —$COCH_2N(Y)$—CH_2CH_2NH—Y;
R^c is hydrogen or amidino;
n is 1 or 0;
t is 1 or 0;
L is amino or, when n is 1, L is amino or —$(CH_2)_q$—CH_3,
T is a group selected from the group consisting of the formula —$(O)_r$—CH_2—, —CH=CH—, —$CH_2CH(R^d)$— and —$C(O)CH_2$—, wherein a carbonyl group present in the group T can instead be present as a ketal;
R^d is hydrogen or —NH—R^a;
R' is hydrogen or —CO—R^a;
R^e is selected from the group consisting of amino, —NH—$(C_m$-alkyl), —$NH(CH_2)_m$—C_6H_5, —$NH(CH_2)_m$—C_6H_4-Hal, —NH—C_6H_4—COOH, —NH—C_6H_4—COO—C_m-alkyl, and an α-aminocarboxylic acid group attached via the amino group;
m is 1–4;
p is 1–6;
q is 0–3;
r is 1 or 0;
or a hydrate or solvate or a physiologically acceptable salt thereof.

5,663,298

UCK14 COMPOUNDS

Tamio Mizukami; Akira Asai, both of Machida, Japan; Yoshinori Yamashita, Princeton, N.J.; Ritsuko Katahira, Yokohama, Japan; Atsuhiro Hasegawa, Machida, Japan; Keiko Ochiai, Ebina, Japan, and Shiro Akinaga, Sunto-gun, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

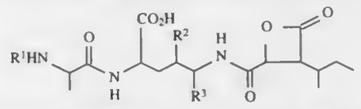
Filed Oct. 15, 1996, Ser. No. 730,348

Claims priority, application Japan, Oct. 16, 1995, 7-267233

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;* **C12N** *1/00;* **A01N** *43/02*

U.S. Cl. 530—332 **5 Claims**

1. A UCK14 compound which is represented by formula (I):



(I)

wherein R^1 is hydrogen or —$COOC(CH_3)_3$; and R^2 and R^3 are taken together to form —CH_2—, or each R^2 and R^3 independently is hydrogen,
or a pharmaceutically acceptable salt thereof.

5,663,299

HUMAN MONOCYTE ELASTASE INHIBITOR

Eileen Remold-O'Donnell, Brookline, Mass., assignor to Center for Blood Research, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 755,461, Sep. 6, 1991, Pat. No. 5,370,991, which is a continuation-in-part of Ser. No. 314,383, Feb. 23, 1989, abandoned. This application Sep. 30, 1994, Ser. No. 315,831

Int. Cl.[6] C07K *14/47;* **C12N** *9/66*

U.S. Cl. 530—350 **14 Claims**

1. An isolated peptide that inhibits the elastinolytic activity of a human elastase, comprising the peptide encoded by Sequence I.D. No. 12.

5,663,300

PROTOCADHERIN-42

Shintaro Suzuki, Torrance, Calif., assignor to Doheny Eye Institute, Los Angeles, Calif.

Division of Ser. No. 998,003, Dec. 29, 1992. This application May 30, 1995, Ser. No. 453,274

Int. Cl.[6] C07K *14/705*

U.S. Cl. 530—350 **3 Claims**

1. A purified and isolated full-length mammalian protocadherin-42 polypeptide.

5,663,301

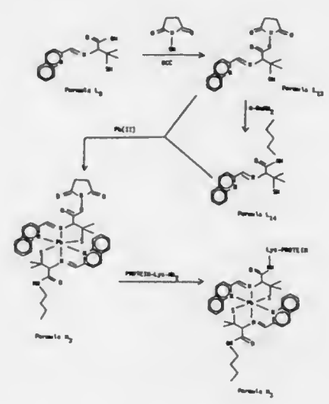
METAL ION-LIGAND COORDINATION COMPLEXES, ANTIBODIES DIRECTED THERETO, AND ASSAYS USING SUCH ANTIBODIES

David K. Johnson, Vernon Hills, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

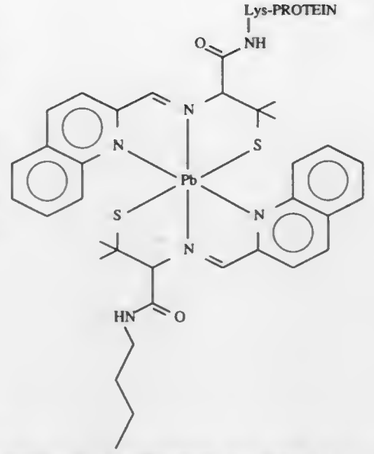
Division of Ser. No. 176,360, Dec. 30, 1993, Pat. No. 5,476,939. This application May 5, 1995, Ser. No. 435,604

Int. Cl.[6] C07F *7/24;* **C07K** *16/00;* **A61K** *35/14;38/16*

U.S. Cl. 530—363 **1 Claim**



1. A conjugate consisting of a metal ion-ligand coordination complex having two ligands which are bifunctional, said metal ion-ligand coordination complex is conjugated to an immunogenic molecule, wherein said immunogenic molecule is a protein. Said conjugate has the following formula:



wherein Lys- is a lysine amino acid residue; PROTEIN represents a member selected from the group consisting of bovine serum albumin (BSA), thyroglobulin, immunoglobulin (IgG) and keyhole limpet hemocyanin; Pb is lead.

5,663,302

Patent Not Issued For This Number

5,663,303

ANTIBODIES SPECIFIC FOR RETINOIC ACID RECEPTOR-γ

Cecille Rochette-Egly; Yves Lutz, both of Strasbourg; Michael Saunders, Ostwald; Isabelle Scheuer, Hagulnau; Marie-Pierre Gaub, Strasbourg, and Pierre Chambon, Blaesheim, all of France, assignors to Institut National de la Santé et de la Recherche Médicale; Centre National de la Recherche Scientifique; Université Louis Pasteur, Strasbourg I, all of Paris, France, and E.R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 4, 1991, Ser. No. 789,912

Int. Cl.[6] G01N *33/53;* **C07K** *16/28*

U.S. Cl. 530—388.2 **10 Claims**

1. An isolated mouse monoclonal antibody which binds selectively to human RAR-γ, wherein said antibody binds to the SP25 peptide, and said antibody binds to both native and denatured forms of said RAR-γ.

5,663,304

REFOLDING OF MISFOLDED INSULIN-LIKE GROWTH FACTOR-I

Stuart Builder, Belmont; Roger Hart, Burlingame; Philip Lester, San Lorenzo, and David Reifsnyder, San Mateo, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Filed Aug. 20, 1993, Ser. No. 110,664

Int. Cl.[6] C07K *14/475;* **C12N** *15/18*

U.S. Cl. 530—399 **12 Claims**

1. A process for reactivating misfolded IGF-I contained in host cells, which process comprises:
(a) isolating said IGF-I from the host cells;
(b) maintaining said IGF-I in an alkaline buffer comprising a chaotropic agent and a reducing agent in concentrations sufficient for solubilization; and
(c) incubating said solubilized IGF-I at a concentration of about 0.1 to 15 mg/mL in a folding buffer of pH 7–12 comprising

about 5–40% (v/v) of an alcoholic or polar aprotic solvent, about 0.2 to 3M of an alkaline earth, alkali metal, or ammonium salt, about 0.1 to 9M of a chaotropic agent, and about 0.01 to 15 μM of a copper or manganese salt, wherein an oxygen source is introduced, so that refolding of the IGF-1 occurs during the incubation.

5,663,305

SOMATOTROPIN ANALOGS

Sherwood Russ Lehrman; Henry A. Havel; Jody L. Tuls; Scott M. Plaisted, all of Kalamazoo, Mich., and David N. Brems, Indianapolis, Ind., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 82,802, Jun. 24, 1993, abandoned, which is a continuation of Ser. No. 778,202, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 377,926, Jul. 10, 1989, abandoned. This application Dec. 29, 1994, Ser. No. 365,996

Int. Cl.[6] **C07K** *14/61;* **A61K** *38/27;* **C12P** *21/06*

U.S. Cl. 530—399 **12 Claims**

1. A non-primate, mammalian somatotropin having substitutions in the amino acid residues corresponding to residues 106 to 127 of the amino acid sequence provided in FIG. 1B, which substitutions reduce the hydrophobicity or helical stability, and thereby the amount of aggregation, of said substituted non-primate, mammalian somatotropin as compared to said amino acid sequence provided in FIG. 1B, the substitution which is Gln-121.

5,663,306

METHOD OF CONJUGATING AN ACTIVATED ESTER TO AN AMINE-CONTAINING BIOLOGICAL MATERIAL

Lois Aldwin, San Mateo, and Danute E. Nitecki, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 637,904, Aug. 9, 1984, abandoned. This application Sep. 10, 1987, Ser. No. 95,396

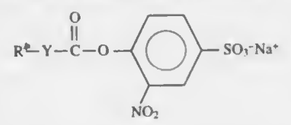
Int. Cl.[6] **C07K** *1/10;* **A61K** *39/44;* **G01N** *33/547*

U.S. Cl. 530—402 **11 Claims**

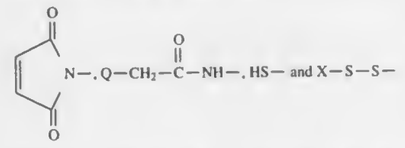
1. A method for conjugating an activated ester to an amine-containing biological material β, comprising:

dissolving the amine-containing biological material β in a buffered solution adjusted to a pH of about 5.5 to 10.0, thereby providing a first solution;

providing a second buffered solution having a pH of about 5.5 to 10.0, an activated ester of formula:



wherein Y is a divalent covalent spacer moiety and R is selected from the group consisting of:



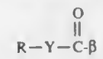
wherein Q is halogen and X is selected from the group consisting of



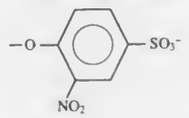
and

wherein R^1 and R^2 are independently selected from the group consisting of H, NO_2 and COOH; and

admixing the first and second solutions, whereupon reaction of the amine-containing biological material with the activated ester gives the coupled product



while releasing a dianion



and;

measuring the amount of released dianion spectroscopically at a wavelength from about 350 to about 500 nm to monitor and control conjugating of the activated ester to the amine-containing biological material.

5,663,307

HYDRAZONE CONTAINING LIGANDS AND METAL COMPLEXES THEREOF

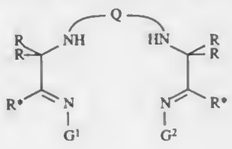
David P. Nowotnik, Flemington, and Palaniappa Nanjappan, Dayton, both of N.J., assignors to Bracco International B.V., Amsterdam

Division of Ser. No. 180,260, Jan. 12, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 471,554

Int. Cl.[6] **C07F** *13/00;5/00*

U.S. Cl. 534—10 **5 Claims**

1. A complex comprising a radioactive or nonradioactive metal complexed with a compound of the following formula I:



where

O is the group $—(C(RR))_{m1}—(Y^1)_n—(C(RR))_{m2}—(Y^2—(C(RR))_{m3})_{n1}—$, where Y^1 and Y^2 are each independently —NR—, —O—, —S—, —SO—, $—SO_2—$ or —Se—; n and n1 are each independently 0 or 1; and m1, m2 and m3 are each independently 0 or an integer from 1 to 4; provided that m1 and m2 are not both 0, that m1+m2+n+n1 is less than 6 and that a carbon atom bearing an R group is not directly bonded to more than one heteroatom; each R and R* group is independently:

(i) R^1;

(ii) alkoxy;

(iii) hydroxy;

(iv) halogen;

(v) haloalkyl;

(vi) $—OR^1$;

(vii) $—C(O)—OR^1$;

(viii) $—C(O)—N(R^1)_2$;

(ix) $—N(R^1)_2—$;

(x) $—N(R^1)—COR^1$;

(xi) -alkyl-$C(O)$-OR^1;

(xii) -alkyl-$C(O)$-$N(R^1)_2$;

(xiii) -alkyl-$N(R^1)$;

(xiv) -alkyl-$N(R^1)$-COR^1;

(xv) -aryl-$C(O)$-OR^1;

(xvi) -aryl-$C(O)$-$N(R^1)_2$;

(xvii) -aryl-$N(R^1)_2$;

(xviii) -aryl-$N(R^1)$-COR^1;

(xix) nitrile;

(xx) acyl;

(xxi) acyloxy;

(xxii) heterocyclo;

(xxiii) hydroxyalkyl;

(xxiv) alkoxyalkyl;

(xxv) hydroxyaryl;

(xxvi) arylalkyl;

(xxvii) $—SO_2—R^1$;

(xxviii) -alkyl-SO_2-R^1;

(xxix) $—(A)_p—R^a$, where A is a linking group which is bound to R^a via a carbon, oxygen, nitrogen or sulfur group, p is 0 or a positive integer, and R^a is a bioactive moiety or a reactive group which forms a covalent bond to a bioactive moiety; or

(xxx) two of the groups, taken together with one or more atoms to which they are bonded, form a saturated or unsaturated, spiro or fused, carbocyclic or heterocyclic ring which may be unsubstituted or substituted by one or more groups selected from the groups (i) to (xxix) above;

each R^1 is independently hydrogen, alkyl, alkenyl, alkynyl or aryl; G^1 and G^2 are each independently —OH or $—N(R^2)_2$, provided that at least one of G^1 and G^2 is $—N(R^2)_2$, where each R^2 is independently hydrogen, alkyl, aryl, acyl or $—(A)_p—R^a$;

each alkyl is substituted or unsubstituted and has 1 to 12 carbon atoms;

each alkoxy is substituted or unsubstituted and has 1 to 12 carbon atoms;

each alkenyl is substituted or unsubstituted and has 2 to 10 carbon atoms;

each alkynyl is substituted or unsubstituted and has 2 to 10 carbon atoms;

each cycloalkyl is substituted or unsubstituted and is a 1- to 3-ring system where each ring contains 3 to 7 carbon atoms;

each aryl is substituted or unsubstituted and is a homocyclic aromatic group which contains 1 or 2 rings where each ring contains 6 to 12 carbon atoms;

each heterocyclo is substituted or unsubstituted and is a saturated or unsaturated, aromatic or non-aromatic cyclic group containing at least one oxygen, nitrogen or sulfur atom; and

each bioactive moiety is a group selected from the list consisting of a group which can function as a metabolic substrate, catalyst or inhibitor; a group which can preferentially be taken up at a selected biological site; a group which contains reactive groups for coupling to a protein; or a group which can preferentially localize at a selected biological site.

5,663,308

ORGANOSILICON POLYMERS, AND DYES, EXHIBITING NONLINEAR OPTICAL RESPONSE

Wayne Michael Gibbons; Robert Paul Grasso; Michael Kevin O'Brien, all of New Castle County, Del.; Paul Joseph Shannon, Chester County, Pa., and Shao-Tang Sun, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 96,389, Jul. 26, 1993, Pat. No. 5,298,588, which is a division of Ser. No. 831,609, Feb. 5, 1992, Pat. No. 5,254,655. This application Feb. 7, 1994, Ser. No. 192,900

Int. Cl.[6] **C09B** *29/039;29/09;29/36;69/10;* **C08G** *77/08*

U.S. Cl. 534—573 **3 Claims**

1. An organic dye comprising:

(a) an electron donor group;

(b) an electron acceptor group;

(c) a delocalized Pi electron system linking said electron donor group and said electron acceptor group; and

(d) at least two pendant groups:

(i) each of said at least two pendant groups comprising at least one carbon—carbon double bond; and

(ii) said at least two pendant groups being attached to two different sites from said electron donor group, said electron acceptor group, and said delocalized Pi electron system; and

(iii) at least two carbon—carbon double bonds are hydrosilation reactive and said carbon—carbon double bonds are of differing hydrosilation activity.

5,663,309

DIAZO DYES HAVING A PHENYLENE GROUP AS THE MIDDLE COMPONENT AND A NAPHTHALENE GROUP AS THE TERMINAL DIAZO COMPONENT

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

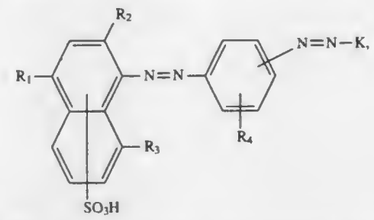
Filed Dec. 5, 1995, Ser. No. 567,610

Claims priority, application Switzerland, Dec. 12, 1994, 3758/94

Int. Cl.[6] **C09B** *31/08;31/072;31/14;31/143;31/15;* **D06P** *3/06*

U.S. Cl. 534—763 **13 Claims**

1. An azo dye of the formula



(1)

in which

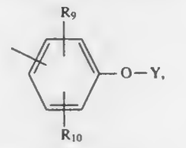
R_1 is hydrogen or substituted or unsubstituted phenylamino,

R_2 is hydrogen, amino or N-mono- or N,N-di-C_1–C_4alkylamino,

R_3 is hydrogen or hydroxyl,

R_4 is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido or halogen an

K is a radical of the formula

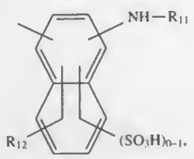


(3)

in which

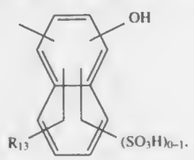
Y is hydrogen or C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl and

R_9 and R_{10} independently of one another are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo;
or a radical of the formula



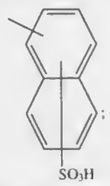
(4)

in which
R_H is hydrogen, C_1–C_4alkyl or phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo and
R_{12} is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or hydroxyl;
or a radical of the formula



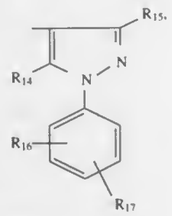
(5)

in which
R_{13} is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido or halogen;
or a radical of the formula



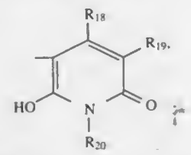
(6)

or a radical of the formula



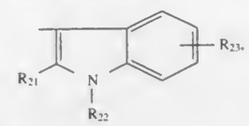
(7)

in which
R_{14} is amino or hydroxyl,
R_{15} is methyl or carboxyl and
R_{16} and R_{17} independently of one another are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo;
or a radical of the formula



(8)

in which
R_{18} is hydrogen or C_1–C_4alkyl,
R_{19} is cyano, carbamoyl or sulfomethyl and
R_{20} is hydrogen, C_1–C_4alkyl or phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo;
or a radical of the formula



(9)

in which
R_{21} is hydrogen, C_1–C_8alkyl or phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo,
R_{22} is hydrogen or C_1–C_8alkyl and
R_{23} is hydrogen, C_1–C_8alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo;
and the azo dye of the formula (1) comprises at least one and not more than two sulfo groups,
with the proviso that if K is a radical of the formula (3), the radical R_4 is hydrogen.

5,663,310

CELLULOSE ACETATE SOLUTION AND PROCESS FOR THE PREPARATION OF THE SAME

Kazuhiro Shimoda; Masahiko Murayama; Hidekazu Yamazaki, all of Kanagawa; Tohru Shibata, Hyogo; Shu Shimamoto, Hyogo; Hiroyuki Takemoto, Hyogo, and Naoto Habu, Hyogo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and Daicel Chemical Industries, Ltd., Osaka, both of Japan

Filed Jan. 19, 1996, Ser. No. 582,344
Claims priority, application Japan, Jan. 19, 1995, 7-006682; Feb. 23, 1995, 7-034974
Int. Cl.[6] C08B *3/06;3/22*
U.S. Cl. 536—69 **17 Claims**

1. A cellulose acetate solution which comprises cellulose acetate having an average acetic acid content in the range of 58.0 to 62.5% in a solvent, wherein the solvent is a mixture of acetone and an organic solvent which is selected from the group consisting of an ether having 3 to 12 carbon atoms, a ketone having 4 to 12 carbon atom, an ester having 3 to 12 carbon atoms and an alcohol having 1 to 6 carbon atoms.

5,663,311

POLYSACCHARIDE DERIVATIVE AND SEPARATION AGENT

Yoshio Okamoto, Aichi, Japan, assignor to Daicel Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 47,118, Apr. 13, 1993, Pat. No. 5,491,223, which is a continuation-in-part of Ser. No. 877,178, Jun. 25, 1992, abandoned. This application Oct. 27, 1995, Ser. No. 549,026
Claims priority, application Japan, Feb. 28, 1991, 3-34049
Int. Cl.[6] C08B *3/00;15/05;37/00*
U.S. Cl. 536—18.7 **1 Claim**

1. A polysaccharide derivative in which the substituents present at the 2- and/or 3-position are different from that present at the 6-position comprising a polysaccharide having some or all of the hydroxyl or amino groups contained therein substituted by two or more kinds of substituents, one of the substituents being a 3,5-dimethylphenylcarbamate group at the 2- and/or 3-position of the polysaccharide and another of the substituents being a member selected from the group consisting of 6-MecO, 6 -MeNHCO, 6-C_6H_5CO, 6-C_6H_5NHCO and 6-$Me_2C_6H_3CO$.

5,663,312

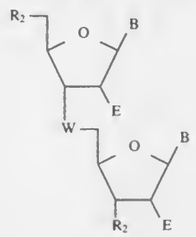
OLIGONUCLEOTIDE DIMERS WITH AMIDE LINKAGES REPLACING PHOSPHODIESTER LINKAGES

Prasad Venkata Chala Chaturvedula, Exton, Pa., assignor to Sanofi, France

Continuation of Ser. No. 40,826, Mar. 31, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 361,241
Int. Cl.[6] C07H *19/00;21/00;21/02;21/04*
U.S. Cl. 536—22.1 **2 Claims**

1. A compound having the structure of Formula II:

Formula II



wherein:
each R_2 is selected from the group consisting of H, OH, NR_3R_4, CHO, hydroxy-lower alkyl, carbalkoxy-lower alkyl, carboxy-lower alkyl, lower alkenyl, amino-lower alkyl, carbobenzoxyamino, carbobenzoxyamino-lower alkyl, lower alkyl, protected aldehyde and halogen;
each E is selected from the group consisting of H, OZ, SZ, and NHZ;
each Z is selected from the group consisting of H, lower alkyl, lower alkenyl, aryl, acyl, and O-, S-, and N-protecting groups;
each B is independently selected from the group consisting of adenine, cytosine, guanine, thymine, uracil or a modification thereof that does not substantially interfere with the affinity of an oligonucleoside or chimeric oligonucleotide analog for its antisense counterpart wherein the bases are selected from the group consisting of adenine, cytosine, guanine, thymine and uracil;
W is an internucleoside linkage selected from
-3'-$(CR_3R_4)_m$-$CONR_1$-$(CR_3R_4)_n$-5'- and
-3'-$(CR_3R_4)_m$-NR_1CO-$(CR_3R_4)_n$-5'-;
each R_1, R_3, and R_4 is selected from the group consisting of lower alkyl, aryl, aryl-lower alkyl, and lower alkenyl; and
m and n are independently 0 or 1, with the proviso that the sum of m+n is 0 or 1.

5,663,313

HUMAN MAP KINASE HOMOLOG

Phillip R. Hawkins, Mountain View; Janice Au-Young, Berkeley; Karl J. Guegler, Menlo Park, and Craig G. Wilde, Sunnyvale, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 28, 1996, Ser. No. 674,612
Int. Cl.[6] C07H *21/04;* **C12Q** *1/68;* **C12N** *5/10*
U.S. Cl. 536—23.1 **5 Claims**

1. A purified polynucleotide encoding a polypeptide with an amino acid sequence shown in SEQ ID NO:2.

5,663,314

HUMAN SIGNAL TRANSDUCTION MAPK KINASE

Rony Seger; Dalia Seger, both of Yavne, Israel; Natalie G. Ahn, Boulder, Colo., and Edwin G. Krebs, Seattle, Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 980,608, Nov. 20, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 423,399
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—23.2 **4 Claims**

3. An isolated polynucleotide which encodes the polypeptide shown in SEQ ID NO:33.

5,663,315

ISOLATED DNA ENCODING HUMAN GP2

George Scheele, Brookline, Mass., and Shin-Ichi Fukuoka, Kyoto, Japan, assignors to AlphaGene, Inc., Woburn, Mass.

Filed Dec. 6, 1994, Ser. No. 350,435
Int. Cl.[6] C07H *21/04;21/02;* **C12P** *21/06;* **C12N** *5/00*
U.S. Cl. 536—23.5 **13 Claims**

1. An isolated DNA encoding a polypeptide comprising the contiguous amino acid sequence of SEQ ID NO:2, said polypeptide being substantially shorter than rat GP2.

5,663,316

BBC6 GENE FOR REGULATION OF CELL DEATH

Yin Xudong, Mountain View, Calif., assignor to Clontech Laboratories, Inc., Palo Alto, Calif.

Filed Jun. 18, 1996, Ser. No. 665,617
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—23.5 **2 Claims**

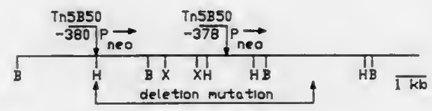
1. An isolated polynucleotide which encodes the amino acid sequence shown in SEQ ID NO. 2, or a biologically active allelic variation thereof.

5,663,317

MICROORGANISM HAVING ATTENUATED INVASIVENESS

Stanley Falkow, Portola Valley, Calif., and Catherine A. Lee, Newton, Mass., assignors to The Board of Trustees of the Leland Stanford Jr. Univ.

PCT No. PCT/US93/02265, § 371 Date Sep. 1, 1994, § 102(e) Date Sep. 1, 1994, PCT Pub. No. WO93/18165, PCT Pub. Date Sep. 16, 1993
Continuation-in-part of Ser. No. 844,470, Mar. 2, 1992, abandoned. This PCT application Mar. 1, 1993, Ser. No. 295,760
Int. Cl.[6] C12N *15/31*
U.S. Cl. 536—23.7 **4 Claims**



1. An isolated nucleic acid comprising the hyper-invasive locus of *Salmonella typhimurium* located on the 20 kb fragment shown in FIG. 1A.

5,663,318

ASSAY PREPARATION CONTAINING CAPTURE AND DETECTION POLYNUCLEOTIDES COVALENTLY BOUND TO SUBSTRATES WITH A HETEROBIFUNCTIONAL CROSSLINKING AGENT

Randall Kevin Pegg, 5085 First Coast Hwy., Amelia Island, Fla. 32034, and Mary Starnes Saunders, Rte. 3 Box 106-1, Monticello, Fla. 32344

Continuation-in-part of Ser. No. 78,753, Jun. 16, 1993, Pat. No. 5,436,147, and a continuation-in-part of Ser. No. 663,120, Mar. 1, 1991, Pat. No. 5,279,955. This application Jan. 31, 1995, Ser. No. 381,231

Int. Cl.[6] **C07H** *21/04;* **C12N** *11/06;* **G01N** *33/549;* **C12Q** *1/68*

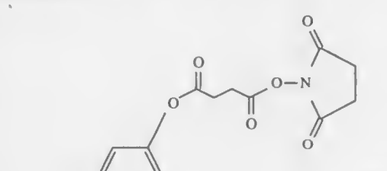
U.S. Cl. 536—24.3 **7 Claims**

1. An assay preparation containing a capture polynucleotide covalently bound to a first substrate and a detector polynucleotide covalently bound to a second substrate, said preparation produced by the method comprising the steps of:

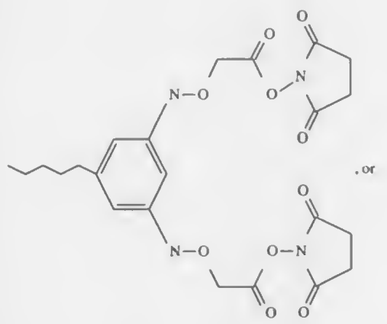
a) contacting the surface of a first substrate member with a heterobifunctional crosslinking agent to produce a first activated surface; and, contacting said first activated surface on said first substrate member with a capture polynucleotide member; wherein, said capture polynucleotide member reacts covalently with said first activated surface and becomes covalently bound thereto; and,

b) contacting the surface of a second substrate member with said heterobifunctional crosslinking agent to produce a second activated surface; and, contacting said second activated surface on said second substrate member with a detector polynucleotide member; wherein, said detector polynucleotide member reacts covalently with said second activated surface and becomes covalently bound thereto; said second substrate member further has a fluorescent, colorimetric, magnetic or radioactive detection means;

wherein said capture polynucleotide member and said detector polynucleotide member are individually hybridizable with said target polynucleotide to immobilize and detect said target polynucleotide; and, wherein said heterobifunctional crosslinking agent for producing said activated surfaces has the structure:

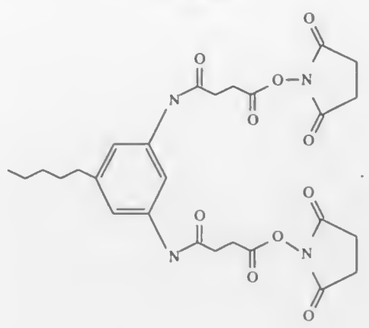


, or



, or

-continued



5,663,319

PROBE COMPOSITIONS FOR CHROMOSOME IDENTIFICATION AND METHODS

Michael L. Bittner, Naperville; Larry E. Morrison, DuPage County, and Mona S. Legator, Chicago, all of Ill., assignors to Vysis, Inc., Downers Grove, Ill.

Division of Ser. No. 222,167, Apr. 4, 1994, Pat. No. 5,491,224, which is a continuation of Ser. No. 762,913, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 585,876, Sep. 20, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,694

Int. Cl.[6] **C07H** *21/04*

U.S. Cl. 536—24.3 **10 Claims**

1. A multiple probe composition for the detection of a plurality of target chromosomes or a plurality of target regions of chromosomes comprising a plurality of direct label DNA probe compositions, wherein:

(a) each of the direct label DNA probe compositions is detectable by use of a different fluorescent label, each label being detectable in the presence of the other fluorescent label or labels, and

(b) each of the direct label DNA probe compositions comprises direct label DNA segments which:

(i) are complementary to different portions of a target chromosome or of a target region of a chromosome to be detected,

(ii) have multiple fluorescent labels covalently attached thereto, and

(iii) have 0.3 to 6 mole percent of total nucleotides in each direct label DNA segment fluorescently labeled.

5,663,320

PROCESSES FOR THE DIASTEREOSELECTIVE SEPARATION OF NUCLEOSIDE ANALOGUE SYNTHETIC INTERMEDIATES

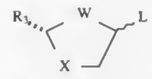
Tarek Mansour, Montreal; Haolun Jin, Pierrefonds; Allan H.L. Tsé , St-Laurent, and M. Arshad Siddiqui, St-Laurent, all of Canada, assignors to BioChem Pharma, Inc., Laval, Canada

Division of Ser. No. 142,387, Jun. 13, 1994, which is a continuation-in-part of Ser. No. 703,379, May 21, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 460,856

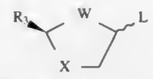
Int. Cl.[6] **C07H** *19/00;* **C07D** *333/32;333/34*

U.S. Cl. 536—27.11 **3 Claims**

1. A process for producing an intermediate of formula (IIa) or formula (IIb)



(IIa)



(IIb)

wherein W is S, S=O, SO_2, or O;

X is S, S=O, SO_2, or O;

R_3 is a substituted carbonyl or carbonyl derivative; and

L is a leaving group,

comprising the step of resolving a mixture of the two compounds using a chiral auxiliary.

5,663,321

OLIGONUCLEOTIDE PRODRUGS CONTAINING 5-FLUOROURACIL

William H. Gmeiner, and Patrick L. Iversen, both of Omaha, Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 164,089, Dec. 8, 1993, Pat. No. 5,457,187. This application Jun. 7, 1995, Ser. No. 474,810

Int. Cl.[6] **C07H** *21/04;19/073;* **C07K** *16/28*

U.S. Cl. 536—25.5 **9 Claims**

1. A homo-oligomeric nucleotide, comprised of at least two monomers of FdUMP covalently attached via 3' to 5' phosphodiester linkages between the 5' phosphate of the 3' terminal FdUMP molecule and the 3' hydroxyl of the next attached FdUMP molecule with the terminating linkage being between the 5'-phosphate of the penultimate nucleotide and the 3' -hydroxyl of the terminating FdU molecule.

5,663,322

DIADENOSINE TETRAPHOSPHATE TETRASODIUM SALT DODECAHYDRATE CRYSTALS AND PROCESS FOR PREPARATION

Tatsuo Katayama; Yoshihiro Nishikawa; Mayumi Hayashi; Hiroshi Nakajima, all of Kyoto; Masahiro Ozaki, and Daiichi Watanabe, both of Tokyo, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

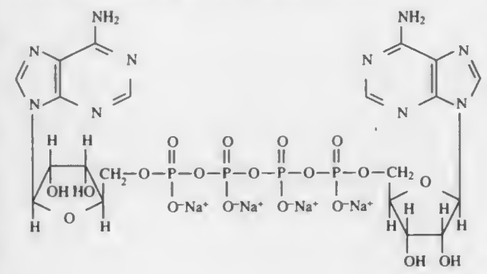
Filed Jan. 4, 1996, Ser. No. 582,735

Claims priority, application Japan, Jan. 11, 1995, 7-002951

Int. Cl.[6] **C07H** *19/20*

U.S. Cl. 536—26.22 **11 Claims**

1. Diadenosine tetraphosphate tetrasodium salt dodecahydrate crystals represented by the following structure:



.12 H_2O.

4. A process for preparing the diadenosine tetraphosphate tetrasodium salt dodecahydrate crystals according to claim 1, comprising the steps of:

preparing an amorphous anhydride diadenosine tetraphosphate tetrasodium salt;

purifying the amorphous anhydride diadenosine tetraphosphate tetrasodium salt;

adding a hydrophilic organic solvent to an aqueous solution of the purified amorphous anhydride diadenosine tetraphosphate tetrasodium salt; and

precipitating the diadenosine tetraphosphate tetrasodium salt dodecahydrate crystals therefrom.

5,663,323

SYNTHESIS OF 4-ALKOXY-5-FLUORO-2'-DEOXYURIDINE AND ITS INCORPORATION INTO OLIGONOCLEOTIDES

Lawrence C. Sowers, Duarte, Calif., assignor to City of Hope, Duarte, Calif.

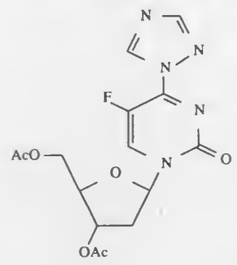
Division of Ser. No. 288,759, Aug. 11, 1994, Pat. No. 5,530,110, which is a continuation of Ser. No. 21,072, Feb. 23, 1993, abandoned. This application Mar. 12, 1996, Ser. No. 613,582

Int. Cl.[6] **C07H** *1/00;1/02*

U.S. Cl. 536—55.3 **4 Claims**

1. A method for synthesizing 5-fluoro, 2'-deoxycytidine which comprises:

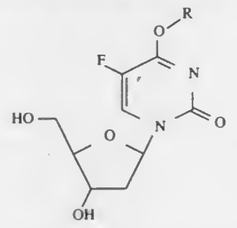
(a) reacting a triazole having the structural formula I



with an alkali metal alkoxide having the formula

X—O—R

in which X is an alkali metal and R is a straight or branched chain alkyl group having from one to eighteen carbon atoms to produce a compound having the formula II



and

(b) reacting said compound having the formula II with a nucleophile base to produce 5-fluoro-2'-deoxycytidine.

5,663,324

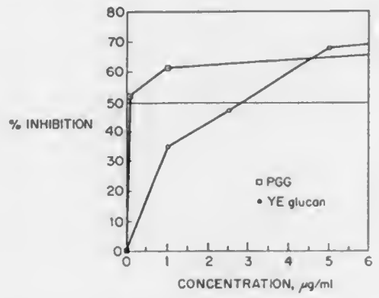
METHOD FOR PRODUCING UNDERIVATIZED, AQUEOUS SOLUBLE β(1-3) GLUCAN

Spiros James, Boston; D. Davidson Easson, Jr., Shrewsbury, and Gary R. Ostroff, Worcester, all of Mass., assignors to Alpha-Beta Technology, Inc., Worcester, Mass.

Continuation of Ser. No. 432,303, May 1, 1995, which is a continuation of Ser. No. 838,288, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 404,738, Sep. 8, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 464,527

Int. Cl.[6] C07H *1/00;1/06;* **C08B** *37/00;* **C12P** *19/04*

U.S. Cl. 536—124 **33 Claims**



1. A process for producing underivatized, aqueous soluble β(1-3) glucan having immunostimulating properties, comprising the steps of:

a. contacting a suspension of aqueous insoluble β(1 -3) glucan with an organic acid to solubilize said glucan thereby forming an acid-soluble and acid-insoluble glucan mixture;

b. contacting the acid-soluble portion or acid-insoluble portion of the glucan with an alkali solution to dissolve alkali-soluble glucan;

c. removing alkali-insoluble glucans from the solution of step (b);

d. neutralizing the solution containing the alkali-soluble glucan obtained from step (c); and

e. isolating an aqueous-soluble β(1-3) glucan by size fractionation to produce an underivatized, aqueous soluble β(1-3) glucan that is suitable for parenteral administration.

5,663,325

PROCESS FOR PREPARATION OF 9,11β-EPOXIDE STEROIDS

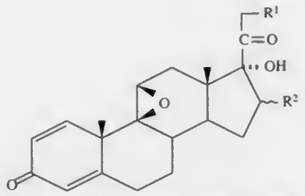
Xiaoyong Fu; T. K. Thiruvengadam, both of Edison, and Chou-Hong Tann, Berkeley Heights, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 20, 1995, Ser. No. 575,562

Int. Cl.[6] C07J *71/00;75/00*

U.S. Cl. 540—89 **18 Claims**

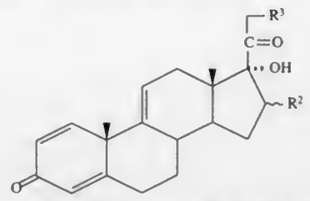
1. A process for producing an epoxy steroid of Formula 1.0:



(1.0)

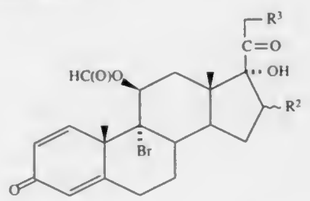
wherein R^1 is selected from H, —OH, or Cl; and R^2 is selected from hydrogen or lower alkyl; said process comprising:

(A) reacting a compound of Formula 2.0:

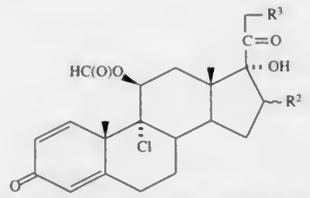


(2.0)

with a brominating agent selected from DBH or NBS, or a chlorinating agent selected from an N-chloroimide or N-chloroamide, said reaction being conducted in DMF containing a catalytic amount of 70% $HClO_4$, at a temperature of about 0° to about +40° C., thereby producing the bromoformate of Formula 3.0 from said brominating agent or the chloroformate of Formula 3.0 A from said chlorinating agent:



(3.0)



(3.0A)

wherein: R^2 is as defined above; and when R^1 is H then R^3 is H; and when R^1 is —OH then R^3 is a suitably protected —OH group; and when R^1 is C_1 then R^3 is Cl; and

(B) reacting, at a temperature of about −20° to about +10° C., the bromoformate of Formula 3.0 or the chloroformate of Formula 3.0 A with a strong base in an organic solvent mixture comprising: (a) THF or CH_2Cl_2 and (b) a C_1 to C_6 alkanol or acetonitrile; thereby producing the epoxy steroid of Formula 1.0.

5,663,326

MIXTURES OF ISOMERIC SUBSTITUTED PHTHALOCYANINES, AND PROCESS FOR THEIR PREPARATION

Heinz Wolleb, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

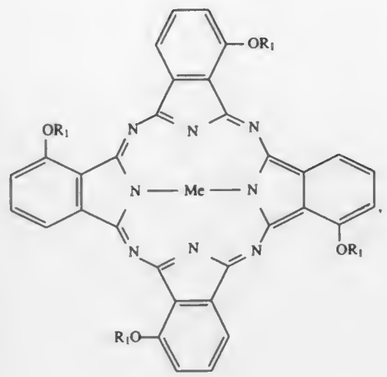
Filed Sep. 18, 1995, Ser. No. 529,822

Claims priority, application Switzerland, Sep. 23, 1994, 2906/94

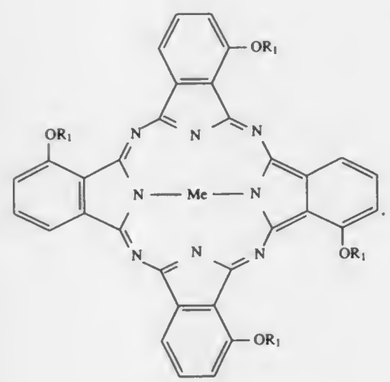
Int. Cl.[6] C09B *47/18;67/12*

U.S. Cl. 540—139 **12 Claims**

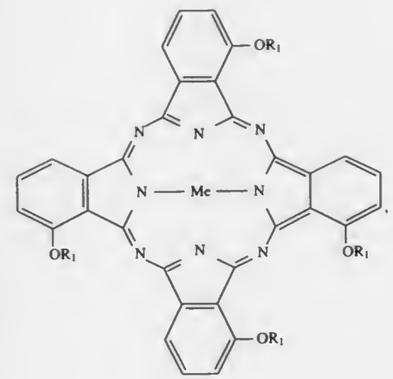
1. A mixture of isomeric α-alkoxy-substituted phthalocyanines of the formulae I–IV



(I)

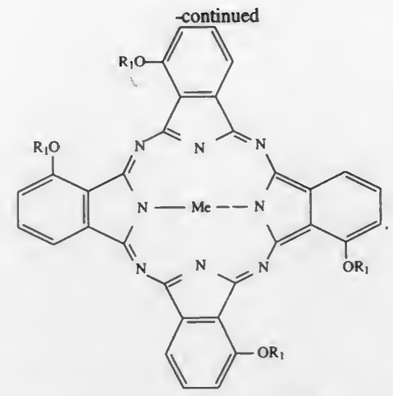


(II)



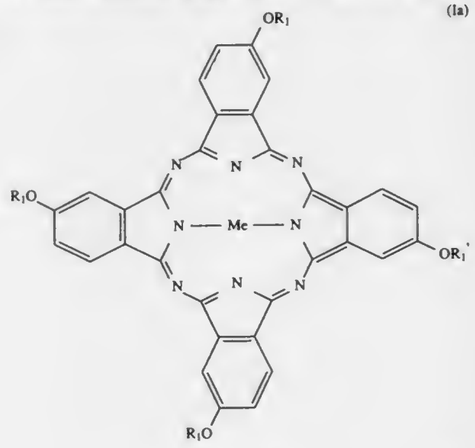
(III)

-continued

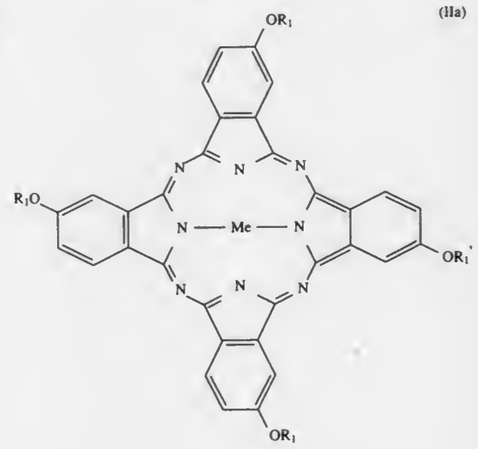


(IV)

or β-alkoxy-substituted phthalocyanines of the formulae Ia–IVa

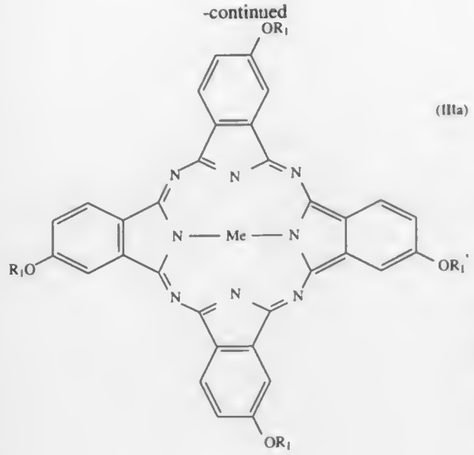


(Ia)

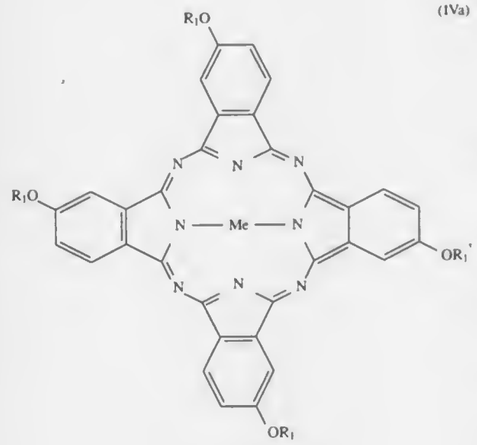


(IIa)

-continued



(IIIa)



(IVa)

where

Me is a divalent metal atom or a divalent oxo metal,

R_1 is a linear or branched C_1–C_{16}alkyl, C_3–C_{16}alkenyl or C_3–C_{16}alkynyl radical, which is unsubstituted or substituted by C_1–C_{12}alkoxy, —CN, NO_2, halogen, —OH, phenyl, cyanophenyl, nitrophenyl, halophenyl, hydroxyphenyl or (C_1–C_{12}alkoxy)phenyl,

wherein the isomers of the formula II or IIa and of the formula III or IIIa make up at least 90% of the total mixture, and the isomers of the formula I or Ia and of the formula IV or IVa make up at most 10% of the total mixture, with the ratio between the compounds of the formula II or IIa and the compounds of the formula III or IIIa being from 0.3 to 3.0:1.

5,663,327

HYDROXYGALLIUM PHTHALOCYANINE CRYSTAL, PROCESS FOR PRODUCING THE SAME, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING THE SAME

Fumiaki Tambo, Minami-ashigara, Japan; Katsumi Daimon, Mississauga, Canada; Yasuo Sakaguchi, and Kazuo Yamasaki, both of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,786

Claims priority, application Japan, Sep. 30, 1994, 6-259806

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—139 **4 Claims**

1. A process for producing a hydroxygallium phthalocyanine crystal, which comprises reacting a gallium compound with a compound for forming a phthalocyanine ring in a ratio of greater than 1:1 equivalent of the compound for forming the phthalocyanine ring to the gallium compound to prepare gallium phthalocyanine, subjecting the resulting gallium phthalocyanine to acid pasting to obtain a hydroxygallium phthalocyanine crystal having intense diffraction peaks at Bragg angles (2θ±0.2°) of 6.9°, 13.2° to 14.2°, 16.5° and 26.4° or of 7.0°, 13.4°, 16.6°, 26.0° and 26.7° in CuKα characteristic X-ray diffractometry, and transforming the resulting crystal by a solvent treatment into a hydroxygallium phthalocyanine crystal having intense diffraction peaks at Bragg angles (2θ±0.2°) of 7.5°, 9.9°, 12.5°, 16.3°, 18.6°, 25.1° and 28.3° in CuKα characteristics X-ray diffractometry.

5,663,328

HALOPORPHYRINS AND THEIR PREPARATION AND USE AS CATALYSTS

Paul E. Ellis, Jr., Downingtown, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Division of Ser. No. 303,106, Sep. 7, 1994, which is a continuation-in-part of Ser. No. 568,116, Aug. 16, 1990, which is a continuation-in-part of Ser. No. 425,089, Oct. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 66,666, Jun. 26, 1987, Pat. No. 4,900,871, which is a continuation-in-part of Ser. No. 246, Jan. 2, 1987, Pat. No. 4,895,682. This application Jun. 27, 1996, Ser. No. 672,202

Int. Cl.[6] C07D *487/22;* **C07C** *29/50;31/12*

U.S. Cl. 540—145 **6 Claims**

1. Method for making haloporphyrins which comprises reacting a metal complex of a porphyrin with chlorine, bromine or fluorine to obtain as product a complex of said metal with a haloporphyrin having 1 to 12 halogen atoms in meso and/or beta positions and having at least one halogen atom in a meso position.

5,663,329

PREPARATION OF ENANTIOMERICALLY PURE LACTAMS

Horst Ralf Staudenmaier, Birkenheide; Bernhard Hauer, Fussgönheim; Friedhelm Baikenhohl, Limburgerhof; Wolfgang Ladner, Fussgönheim; Ursula Schnell, Bad Lippspringe, and Uwe Pressler, Waldsee, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

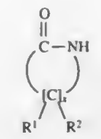
Continuation of Ser. No. 470,048, Jun. 6, 1995, abandoned. This application Apr. 30, 1996, Ser. No. 641,773

Claims priority, application Germany, Jun. 15, 1994, 44 20 751.4

Int. Cl.[6] C07D *205/08;201/02;211/88;207/26*

U.S. Cl. 540—200 **7 Claims**

1. A process for preparing enantiomerically pure lactams of the formula I



I

where

R^1 and R^2 are each, independently of one another, H, unsubstituted or substituted C_1–C_4-alkyl, unsubstituted or substituted C_2–C_4-alkenyl, unsubstituted or substituted aryl, and $(CH_2)_n$—COOH with n=0, 1, 2, 3, and X is 1, 2, 3, 4, 5, from a racemate of the formula I by allowing a bacterium which selectively converts one enantiomer from I to act on the racemic mixture of I, and isolating the unconverted enantiomer from the resulting mixture of products.

5,663,330

PROCESS FOR THE SELECTIVE SULFOXIDE REDUCTION OF 3-HYDROXY CEPHEM AND 3-METHYLENE CEPHAM COMPOUNDS

Maurizio Zenoni, Paullo; Mario Leone, Pioltello, and Giuseppe Alessandro Donadelli, Casalpusterlengo, all of Italy, assignors to ACS Dobfar S.p.A., Tribiano, Italy

Filed Dec. 22, 1995, Ser. No. 576,905

Claims priority, application Italy, Apr. 21, 1995, MI95A0825

Int. Cl.[6] C07D *499/04*

U.S. Cl. 540—215 **8 Claims**

1. A process for the selective sulfoxide reduction of 3-hydroxy cephem and respectively 3-methylene cepham compounds, characterized in that cephem compounds having a hydroxy group at the 3-position and an oxidized sulfur atom at the 1-position, and respectively cepham compounds having a methylene group at the 3-position and oxidized sulfur atom at the 1-position is treated with a chlorinating agent in the presence of a proton acceptor and an essentially dry solvent, which are both essentially inert to the chlorinating agent, at temperatures between –65° C. and +50° C., the stoichiometries of the chlorinating agent and of the proton acceptor being both in the range between 1 and 5 equivalents and the concentration of cephem and respectively cepham sulfoxide in the solvent being in the range between 5% and 20% w/v to give the corresponding cephem and respectively cepham sulfide.

5,663,331

CEPHALOSPORIN COMPOUNDS

Kee Won Kim; Jae Hoon Kang, both of Seoul, and Cheon Ho Park, Kyungki-do, all of Rep. of Korea, assignors to Il-Dong Pharm. Co., Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR93/00005, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995, PCT Pub. No. WO93/15084, PCT Pub. Date Aug. 5, 1993

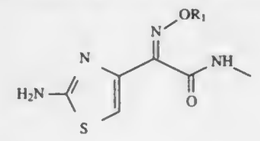
PCT Filed Jan. 16, 1993, Ser. No. 256,348

Claims priority, application Rep. of Korea, Jan. 23, 1992, 1992-941

Int. Cl.[6] P07D *501/36*

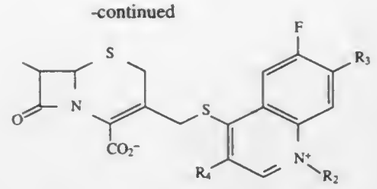
U.S. Cl. 540—227 **4 Claims**

1. A cephalosporin compound of formula (I)



(I)

-continued



wherein

R_1 is C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl or —$C(R^a)(R^b)CO_2H$, wherein R^a and R^b, same or different, are a hydrogen atom or a C_{1-4} alkyl group;

R_2 is a C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} cycloalkyl or carboxyalkyl;

R_3 is selected from unsubstituted piperazine, piperazine substituted with a C_{1-4} alkyl at the N— or 2-position thereof, unsubstituted imidazole and imidazole substituted with C_{1-4} alkyl;

R_4 is hydrogen or carboxylic acid; or a pharmaceutically acceptable salt thereof.

5,663,332

METHOD FOR THE PREPARATION OF 3-HYDROXY-5-[2-(DIMETHYLAMINO)ETHYL]-2,3-DIHYDRO-2-(4-METHOXY-PHENYL)-1,5-BENZOTHIAZEPINE-4(5H)-ONE

Martti Hytönen, Espoo, Finland, assignor to Orion Corporation Fermion, Espoo, Finland

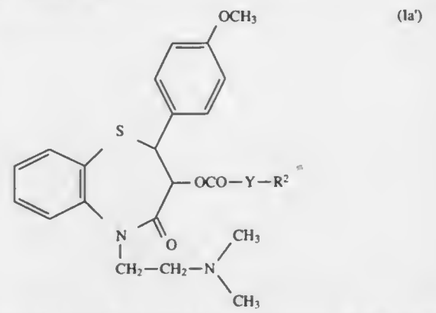
Filed Sep. 15, 1995, Ser. No. 528,839

Claims priority, application European Pat. Off., Sep. 16, 1994, 94114643

Int. Cl.[6] A61K *31/55;* **C07D** *281/10;417/02*

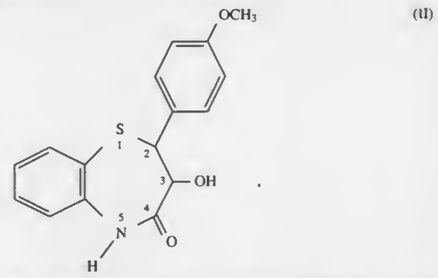
U.S. Cl. 540—491 **13 Claims**

1. A process for the preparation of a benzothiazepine derivative of the formula (Ia')



(Ia')

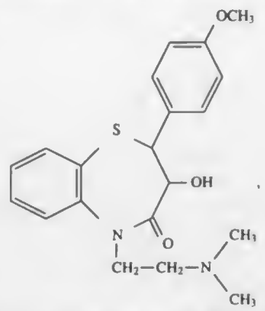
or a pharmaceutically acceptable salt thereof, by alkylating the benzothiazepine derivative of formula (II):



(II)

or a salt thereof, with a 2-(dimethylamino)ethyl halide, or a salt thereof, in the presence of potassium carbonate or potassium hydroxide wherein the alkylation is effected using a reaction mix-

ture comprising 2-butanone and water in amounts ranging from 0.4 to 0.9 mol per mol of 2-butanone, and subsequently acylating the resultant 3-hydroxy-5-[2-(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-1,5-benzothiazepine-4(5H)-one of the formula (I)



(I)

at the 3-position with an active reagent selected from the group consisting of carboxyhalide, carboxylic acid anhydride, activated ester derivative, and a compound of the formula

$$R^2—Y—COOH \quad (III)$$

or a salt thereof, wherein R^2 is selected from the group consisting of cycloalkyl, C_1–C_3 alkoxycarbonyl, COOH, C_1–C_5 alkanoyl, heterocyclyl, halogen atom, C_1–C_5 alkyl, C_1–C_5 alkoxy, aralkoxy, mono-, di- or trihaloalkyl, hydroxy, aryloxy, amino, acylamino, C_1–C_5 alkylthio, C_1–C_5 alkylsulfinyl, C_1–C_5 alkylsulfonyl, di-(C_1–C_5 alkyl)-aminosulfonyl, arylcarbonyl, C_1–C_5 alkoxycarbonyl, and phenyl which is unsubstituted or may be substituted at 1–3 positions and wherein Y is selected from the group consisting of a bond, C_1–C_5 alkylene, C_1–C_5 alkenylene, and C_1–C_5 alkyleneoxy, wherein the acylation reaction is conducted in situ directly after conducting the alkylation reaction and removal of the water and 2-butanone from the reaction mixture, without an intervening purification or crystallization step between removal of the water and 2-butanone from the reaction mixture and the acylation reaction step.

5,663,333

SUBSTITUTED 1,4-DIAZAPINE CAPROLACTAMS USEFUL FOR TREATMENT OF HIV DISEASE

Carl Nicholas Hodge, Wilmington; Christina Howard Fernandez, Bear; Prabhakar Kondaji Jadhav, Wilmington, all of Del., and Patrick Yuk-Sun Lam, Chadds Ford, Pa., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Continuation-in-part of Ser. No. 965,061, Oct. 22, 1992, abandoned. This application Mar. 30, 1993, Ser. No. 40,324

Int. Cl.[6] C07D *243/08;* **A61K** *31/55*

U.S. Cl. 540—492 **15 Claims**

1. A compound or a pharmaceutically acceptable salt thereof, of formula (Ia):

(Ia)

wherein:

X is N—R^7;

R4 and R^7 are independently selected from the following groups: hydrogen;

C_1–C_4 alkyl substituted with 0–3 R^{11};

C_3–C_4 alkenyl substituted with 0–3 R^{11};

C_3–C_4 alkynyl substituted with 0–3 R^{11};

R^{4a} is hydrogen;

R^5 is selected from H; halogen; —$N(R^{20})_2$; —SR^{20}; —OR^{20}; or C_1–C_3 alkyl substituted with 0–3 —$N(R^{20})_2$, —SR^{20}, or —OR^{20};

R^{5a} is selected from hydrogen or fluoro;

R^5 and R^{5a} can alternatively join to form =O, =S, or a ketal ring;

R^{20} and R^{21} are independently selected from:

hydrogen;

C_1–C_6 alkylcarbonyl;

C_1–C_6 alkoxycarbonyl;

benzoyl; or

any group that, when administered to a mammalian subject, cleaves to form a free hydroxyl, amine or sulfhydryl;

R^{11} is selected from one or more of the following:

keto; halogen; cyano; —$CH_2NR^{13}R^{14}$; —$NR^{13}R^{14}$; —CO_2R^{13}; —$OC(=O)R^{13}$; —OR^{13}; C_2–C_6 alkoxyalkyl; —$S(O)_mR^{13}$; C_2–C_4 alkenyl;

C_1–C_4 alkyl substituted with 0–2 R^{12},

a C_3–C_{14} carbocyclic residue substituted with 0–3 R^{12};

aryl(C_1–C_3 alkyl) substituted with 0–2 R^{12};

aryl substituted with 0–3 R^{12}; or

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{12}, provided that the total number of O and S atoms in the heterocyclic ring is not more than 1;

R^{12}, when a substituent on carbon, is selected from one or more of the following:

phenyl, benzyl, phenethyl, phenoxy, benzyloxy, halogen, hydroxy, nitro, cyano, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, C_1–C_4 alkoxy, —CO_2H, hydroxamic acid, hydrazide, oxime, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, —OR^{13}, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —$S(O)_mR^{13}$, —$SO_2NR^{13}R^{14}$, —$NHSO_2R^{14}$, —OCH_2CO_2H, 2-(1-morpholino)ethoxy; or

a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, provided that the total number of O and S atoms in the heterocyclic ring is not more than 1;

when R^{12} is attached to a saturated carbon atom, it may be carbonyl or thiocarbonyl;

or R^{12} may alternatively be a 3- or 4-carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6-membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or —$NR^{13}R^{14}$;

R^{12}, when a substituent on nitrogen, is selected from one or more of the following:

phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, —CO_2H, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl;

R^{13} is H, C_1–C_6 alkyl, or C_3–C_6 alkoxyalkyl; C_2–C_4 alkenyl, phenyl, or benzyl;

R^{14} is OH, H, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy, NH_2, C_2–C_4 alkenyl, phenyl or benzyl;

R^{13} and R^{14} can alternatively join to form —$(CH_2)_4$-, —$(CH_2)_5$-, —$CH_2CH_2N(R^{15})CH_2CH_2$-, or —$CH_2CH_2OCH_2CH_2$-;

R^{15} is H or CH_3;

m is 0, 1 or 2;

Z is O, S, N—CN, N—OH, N—OCH_3;

R^{22} is independently selected from the following:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{31};

C_3–C_8 alkenyl substituted with 0–3 R^{31};

C_3–C_8 alkynyl substituted with 0–3 R^{31};

C_3–C_6 cycloalkyl substituted with 0–3 R^{31};

R^{27} is selected from the following:

hydrogen;

C_1–C_8 alkyl substituted with 0–3 R^{31};

C_2–C_8 alkenyl substituted with 0–3 R^{31};

C_3–C_8 alkynyl substituted with 0–3 R^{31};

R^{28} is hydrogen;

R^{31} is selected from one or more of the following:

keto, halogen, cyano, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, —CO_2R^{13}, —$OC(=O)R^{13}$, —OR^{13}, C_2–C_6 alkoxyalkyl, —$S(O)_mR^{13}$, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_3–C_6 cycloalkyl, C_3–C_{10} cycloalkylmethyl, benzyl, phenethyl, phenoxy, benzyloxy, nitro, C_7–C_{10} arylalkyl, hydroxamic acid, hydrazide, oxime, boronic acid, sulfonamide, formyl, C_3–C_6 cycloalkoxy, C_1–C_4 alkyl substituted with —$NR^{13}R^{14}$, C_1–C_4 hydroxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_1–C_4 alkoxycarbonyl, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylcarbonylamino, —OCH_2CO_2H, 2-(1-morpholino)ethoxy, —$C(R^{14})$=$N(OR^{14})$; or;

a C_3–C_{14} saturated or partially unsaturated carbocyclic residue substituted with 0–5 R^{32};

aryl substituted with 0–5 R^{32}; or

a 5- to 10-membered heterocyclic ring system containing 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, said heterocyclic ring system being substituted with 0–2 R^{32}, provided that the total number of O and S atoms in the heterocyclic ring is not more than 1;

R^{32}, when a substituent on carbon, is selected from one or more of the following:

phenethyl, phenoxy, C_3–C_{10} cycloalkyl, C_3–C_6 cycloalkylmethyl, C_7–C_{10} arylalkyl, hydrazide, oxime, boronic acid, C_2–C_6 alkoxyalkyl, methylenedioxy, ethylenedioxy, C_1–C_4 alkylcarbonyloxy, —$NHSO_2R^{14}$, benzyloxy, halogen, 2-(1-morpholino)ethoxy, —CO_2R^{13}, hydroxamic acid, —$CONR^{13}NR^{13}R^{14}$, cyano, boronic acid, sulfonamide, —CHO, C_3–C_6 cycloalkoxy, —$NR^{13}R^{14}$, —$C(R^{14})$=$N(OR^{14})$, NO_2, —OR^{13}, —$NR^{40}R^{41}$, —SO_mR^{13}, —$SO_mNR^{13}R^{14}$, —$C(=O)NR^{13}R^{14}$, —$OC(=O)NR^{13}R^{14}$, —$C(=O)R^{11}$, —$OC(=O)R^{11}$, —OCO_2R^{13}, phenyl, —$C(=O)NR^{13}$—(C_1–C_4 alkyl)—$NR^{13}R^{14}$, —$C(=O)NR^{40}R^{41}$, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, C_2–C_4 haloalkenyl, C_1–C_4 haloalkynyl, or —$C(=O)NR^{13}C(R^{11})_2NR^{13}R^{14}$; —$C(=O)NR^{13}C(R^{11})_2NR^{14}$; —$C(=O)NR^{13}C(R^{11})_2NR^{13}CO_2R^{13}$; —$C(=O)NR^{13}$—($C_1$–$C_4$ alkyl)—$NR^{13}CO_2R^{13}$; or —$C(=O)C(R^{11})_2NR^{13}R^{14}$; —$C(=O)C(R^{11})_2NR^{13}NR^{14}$; —$C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$; —$C(=O)$—($C_1$–$C_4$ alkyl)—$NR^{13}R^{14}$; —$C(=O)$—C_1–C_4 alkyl)—$NR^{13}CO_2R^{13}$; or

C_1–C_4 alkoxy substituted with 0–3 groups selected from: R^{11}, C_3–C_6 cycloalkyl, —CO_2R^{13}, —$C(=O)NR^{13}R^{14}$, —$NR^{13}R^{14}$ or OH;

C_1–C_4 alkyl substituted with 0–3 groups selected from: R^{11}, =NR^{14}, =$NNR^{13}C(=O)NR^{13}R^{14}$ or —$NR^{13}R^{14}$;

C_2–C_4 alkenyl substituted with 0–3 R^{11};

C_2–C_4 alkynyl substituted with 0–3 R^{11};

a 5- or 6-membered heterocyclic ring containing from 1 to 4 heteroatoms independently selected from oxygen, nitrogen or sulfur, provided that the total number of O and S atoms in the heterocyclic ring is not more than 1;

when R^{32} is attached to a saturated carbon atom, it may be =O or =S;

R^{32} may alternatively be a 3- or 4-carbon chain attached to adjacent carbons on the ring to form a fused 5- or 6-membered ring, said 5- or 6-membered ring being optionally substituted on the aliphatic carbons with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or —$NR^{13}R^{14}$;

R^{32}, when a substituent on nitrogen, is selected from one or more of the following:

phenyl, benzyl, phenethyl, hydroxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, C_3–C_6 cycloalkylmethyl, —$CH_2NR^{13}R^{14}$, —$NR^{13}R^{14}$, C_2–C_6 alkoxyalkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxycarbonyl, —CO_2H, C_1–C_4 alkylcarbonyloxy, C_1–C_4 alkylcarbonyl, —$C(R^{14})$=$N(OR^{14})$;

R^{33} is selected from:

H;

C_1–C_3 alkyl substituted at the C_2 or C_3 carbon with halogen, —$N(R^{20})_2$, —SR^{20}, or —OR^{21}; or, when taken together with R^{33a}, form a =O group;

R^5 and the —OR^{21} group of R^{33} can alternatively join to form: —OS(=O)O—; —OC(=O)O—; —OCH_2O—; —OC(=S)O—; —$OC(CH_3)_2O$—; —$OC(OCH_3)(CH_2CH_2CH_3)O$—; or any group that, when administered to a mammalian subject, cleaves to form a free dihydroxyl;

R^{33a} is H or may be taken together with R^{33} form =O;

R^{40} is selected from: H, C_1–C_3 alkyl;

R^{41} is selected from:

—$C(=O)NR^{13}R^{14}$;

—$C(=O)NR^{13}NR^{14}$;

—$C(=O)C(R^{11})_2NR^{13}R^{14}$;

—$C(=O)C(R^{11})_2NR^{13}NR^{14}$;

—$C(=O)C(R^{11})_2NR^{13}CO_2R^{13}$;

—$C(=O)H$;

—$C(=O)R^{11}$;

—$C(=O)$—(C_1–C_4 alkyl)—$NR^{13}R^{14}$;

—$C(=O)$—(C_1–C_4 alkyl)—$NR^{13}CO_2R^{13}$;

1–3 amino acids linked together via amide bonds, and linked to the N atom via the carboxy terminus of the amino acid;

provided that:

when R^4 and R^{4a} are hydrogen and X is N—R^7, at least one of the following is not hydrogen: R^7, R^{22}, R^{27} or R^{28}.

5,663,334

PROCESS FOR PREPARING PYRIMIDYL IMIDAZOLES

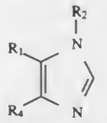
Peter William Sheldrake, Kent, England; Timothy Francis Gallagher, Harleysville, and Joseph Sisko, Lansdale, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 472,366, Jun. 7, 1995, Pat. No. 5,593,992, which is a continuation-in-part of Ser. No. 369,964, Jan. 9, 1995, which is a continuation-in-part of Ser. No. 92,733, Jul. 16, 1993, abandoned. This application Aug. 21, 1996, Ser. No. 702,250

Int. Cl.[6] C07D *403/04;403/14;413/14*

U.S. Cl. 544—122 **29 Claims**

1. A process for preparing a compound of Formula (I).



(I)

R_1 is a pyrimidinyl ring, which ring is optionally substituted with one or two substituents each of which is independently selected from C_{1-4} alkyl, halogen, hydroxyl, C_{1-4} alkoxy; C_{1-4} alkylthio, C_{1-4} alkylsulfinyl, CH_2OR_{12}, amino, mono and di- C_{1-6} alkyl substituted amino, $N(R_{10})C(O)R_a$ or an N-heterocyclyl ring which ring has from 5 to 7 members and optionally contains an additional heteroatom selected from oxygen, sulfur or NR_{15};

R_4 is phenyl, naphth-1-yl or naphth-2-yl, which is optionally substituted by one or two substituents, each of which is independently selected, and which, for a 4-phenyl, 4-naphth-1-yl, 5-naphth-2-yl or 6-naphth-2-yl substituent, is halogen, cyano, nitro, —$C(Z)NR_7R_{17}$, —$C(Z)OR_{16}$, —$(CR_{10}R_{20})_vCOR_{12}$, —SR5, —$SOR_5$, —$OR_{12}$, halo-substituted-$C_{1-4}$ alkyl, C_{1-4} alkyl, —$ZC(Z)R_{12}$, —$NR_{10}C(Z)R_{16}$, or —$(CR_{10}R_{20})_vNR_{10}R_{20}$ and which, for other positions of substitution, is halogen, cyano, —$C(Z)NR_{13}R_{14}$, —$C(Z)OR_3$, —$(CR_{10}R_{20})_m$-COR_3, —$S(O)mR_3$, —OR_3, —OR_{12}, halo substituted C_{1-4} alkyl, C_{1-4} alkyl, —$(CR_{10}R_{20})_m$-$NR_{10}C$ $(Z)R_3$, —$NR_{10}S(O)_m$-R_8, —$NR_{10}S(O)_m$-NR_7R_{17}, —$ZC(Z)R_3$, or —$(CR_{10}R_{20})_m$-$NR_{13}R_{14}$;

v is 0, or an integer having a value of 1 or 2;

m is 0, or the integer 1 or 2;

m' is an integer having a value of 1 or 2,

m" is 0, or an integer having a value of 1 to 5;

R_2 is C_{1-10} alkyl N_3, $—(CR_{10}R_{20})_nOR_9$, heterocyclyl, heterocyclylC_{1-10}alkyl, C_{1-10}alkyl, halo-substituted C_{1-10} alkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-7} cycloalkyl, C_{3-7}cycloalkylC_{1-10} alkyl, C_{5-7} cycloalkenyl, C_{5-7}cycloalkenylC_{1-10}alkyl, aryl, arylC_{1-10}alkyl, heteroaryl, heteroarylC_{1-10}alkyl, $(CR_{10}R_{20})_nOR11$, $(CR_{10}R_{20})_nS(O)_mR_{18}$, $(CR_{10}R_{20})_nNHS(O)_2R_{18}$, $(CR_{10}R_{20})_nNR_{13}R_{14}$, $(CR_{10}R_{20})_nNO_2$, $(CR_{10}R_{20})_nCN$, $(CR_{10}R_{20})_nSO_2R_{18}$, $(CR_{10}R_{20})_nS(O)_mNR_{13}R_{14}$, $(CR_{10}R_{20})_nC(Z)R_{11}$, $(CR_{10}R_{20})_nOC(Z)R_{11}$, $(CR_{10}R_{20})_nC(Z)OR_{11}$, $(CR_{10}R_{20})_nC(Z)NR_{13}R_{14}$, $(CR_{10}R_{20})_nC(Z)NR_{11}OR_9$, $(CR_{10}R_{20})_nNR_{10}C(Z)R_{11}$, $(CR_{10}R_{20})_nNR_{10}C(Z)NR_{13}R_{14}$, $(CR_{10}R_{20})_nN(OR_6)C(Z)NR_{13}R_{14}$, $(CR_{10}R_{20})_nN(OR_6)C(Z)R_{11}$, $(CR_{10}R_{20})_nC(=NOR_6)R_{11}$, $(CR_{10}R_{20})_nNR_{10}C(=NR_{19})NR_{13}R_{14}$, $(CR_{10}R_{20})_nOC(Z)NR_{13}R_{14}$, $(CR_{10}R_{20})_nNR_{10}C(Z)NR_{13}R_{14}$, $(CR_{10}R_{20})_nNR_{10}C(Z)OR_{10}$, 5-$(R_{18})$-1,2,4-oxadizaol-3-yl or 4-(R_{12})-5-$(R_{18}R_{19})$-4,5-dihydro-1,2,4-oxadiazol-3-yl; wherein the cycloalky, cycloalkyl, alkyl, aryl, arylalkyl, heteroaryl, heteroaryl alkyl, heterocyclic and heterocyclic alkyl groups may be optionally substituted;

n is an integer having a value of 1 to 10;

n' is 0, or an integer having a value of 1 to 10;

Z is oxygen or sulfur;

R_a is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, aryl, arylC_{1-4} alkyl, heteroaryl, heteroarylC_{1-4}alkyl, heterocyclyl, or heterocyclylC_{1-4} alkyl;

R_3 is heterocyclyl, heterocyclylC_{1-10} alkyl or R_8;

R_5 is hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl or NR_7R_{17}, excluding the moieties $—SR_5$ being $—SNR_7R_{17}$ and $—S(O)R_5$ being —SOH;

R_6 is hydrogen, a pharmaceutically acceptable cation, C_{1-10} alkyl, C_{3-7} cycloalkyl, aryl, arylC_{1-4} alkyl, heteroaryl, heteroaryl$_{1-10}$alkyl, heterocyclyl, aroyl, or C_{1-10} alkanoyl;

R_7 and R_{17} is each independently selected from hydrogen or C_{1-4} alkyl or R_7 and R_{17} together with the nitrogen to which they are attached form a heterocyclic ring of 5 to 7 members which ring optionally contains an additional heteroatom selected from oxygen, sulfur or NR_{15};

R_8 is C_{1-10} alkyl, halo-substituted C_{1-10} alkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-7} cycloalkyl, C_{5-7} cycloalkenyl, aryl, arylC_{1-10} alkyl, heteroaryl, heteroarylC_{1-10} alkyl, $(CR_{10}R_{20})_nOR_{11}$, $(CR_{10}R_{20})_nS(O)mR_{18}$, $(CR_{10}R_{20})_nNHS(O)2R_{18}$, $(CR_{10}R_{20})_nNR_{13}R_{14}$; wherein the aryl, arylalkyl, heteroaryl, heteroaryl alkyl may be optionally substituted;

R_9 is hydrogen, $—C(Z)R_{11}$, optionally substituted C_{1-10} alkyl, $S(O)_2R_{18}$, optionally substituted aryl or optionally substituted aryl-C_{1-4} alkyl;

R_{10} and R_{20} is each independently selected from hydrogen or C_{1-4} alkyl;

R_{11} is hydrogen, C_{1-10} alkyl, C_{3-7} cycloalkyl, heterocyclyl, heterocyclyl C_{1-10}alkyl, aryl, arylC_{1-10} alkyl, heteroaryl or heteroarylC_{1-10} alkyl;

R_{12} is hydrogen or R_{16};

R_{13} and R_{14} is each independently selected from hydrogen or optionally substituted C_{1-4} alkyl, optionally substituted aryl or optionally substituted aryl-C_{1-4} alkyl, or together with the nitrogen which they are attached form a heterocyclic ring of 5 to 7 members which ring optionally contains an additional heteroatom selected from oxygen, sulfur or NR_9;

R_{15} is R_{10} or C(Z)—C_{1-4} alkyl;

R_{16} is C_{1-4} alkyl, halo-substituted-C_{1-4} alkyl, or C_{3-7} cycloalkyl;

R_{18} is C_{1-10} alkyl, C_{3-7} cycloalkyl, heterocyclyl, aryl, aryl 1–10alkyl, heterocyclyl, heterocyclyl-C_{1-10}alkyl, heteroaryl or heteroarylalkyl;

R_{19} is hydrogen, cyano, C_{1-4} alkyl, C_{3-7} cycloalkyl or aryl;

or a pharmaceutically acceptable salt thereof.

which comprises reacting a compound of Formula (II):



(II)

with a compound of Formula (III):



(III)

wherein p is 0 or 2; and R_1, R_2 and R_4 are as defined above in Formula (I) or are a precursor of the groups R_1, R_2, and R_4 and Ar is an optionally substituted phenyl group, and thereafter if necessary converting or further reacting an R_1, R_2 and R_4 moiety to a yield a final compound of Formula (I) having a group R_1, R_2 and R_4 as defined therein.

5,663,335

IMMUNOSUPPRESSIVE COMPOUNDS AND METHODS

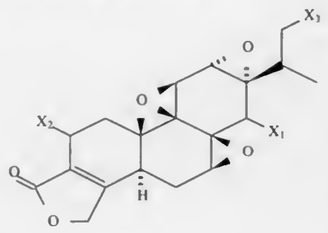
You Mao Qi, Los Altos, and John H. Musser, San Carlos, both of Calif., assignors to Pharmagenesis, Inc., Palo Alto, Calif.

Filed Mar. 1, 1996, Ser. No. 609,277

Int. Cl.[6] **C07D** *295/04*

U.S. Cl. 544—153 **19 Claims**

1. A compound having the structure:



wherein

X^1 is OH or OR^1, and X^2 and x^3 are independently OH, OR^1 or H, with the proviso that at least one of X^1, X^2 and X^3 is OR^1, and at least one of X^2 and X^3 is H; and

R^1 is —C(O)—Y—Z, wherein

Y is a branched or unbranched C_1–C_6 alkyl or alkenyl chain; and

Z is $COOR^2$, $NR^3R^{3'}$, or $^+NR^4R^{4'}R^{4''}$, where

R^2 is a cation;

R^3 and $R^{3'}$ are independently H or branched or unbranched C_1–C_6 alkyl, hydroxyalky, or alkoxyalkyl, or, R^3 and $R^{3'}$ taken together form a 5- to 7-member heterocyclic ring whose ring atoms are selected from the group consisting of carbon, nitrogen, oxygen, and sulfur, said ring including 2 to 6 carbon atoms and one or more nitrogen atoms; and

R^4, $R^{4'}$, and $R^{4''}$ are independently branched or unbranched C_1–C_6 alkyl, hydroxyalkyl, or alkoxyalkyl.

5,663,336

SUBSTITUTED DIAMINOPHTHALIMIDES AND ANALOGUES

Uwe Trinks, Münchenstein, and Peter Traxler, Schönenbuch, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

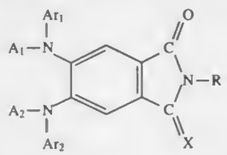
Continuation of Ser. No. 360,864, Dec. 21, 1994, Pat. No. 5,491,144, which is a continuation of Ser. No. 124,915, Sep. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 890,218, May 28, 1992, abandoned. This application Oct. 18, 1995, Ser. No. 544,525

Claims priority, application Switzerland, May 30, 1991, 1601/91

Int. Cl.[6] **C07D** *401/04;403/04;209/48;241/38*

U.S. Cl. 544—212 **3 Claims**

1. A process for the preparation of a compound of formula I,



(I)

wherein

A_1 and A_2 are each independently of the other hydrogen; lower alkyl; lower alkenyl; lower alkynyl; aryl; acyl which is selected from the group consisting of lower alkanoyl, halo-lower alkanoyl, aryl-lower alkanoyl, and arylcarbonyl; lower alkylsulfonyl; or arylsulfonyl;

or wherein

A_1 and A_2 together form unsubstituted or lower alkyl- or hydroxy-substituted lower alkylene;

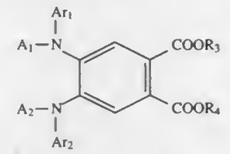
A_1 and A_2 are each independently of the other aryl; heteroaryl selected from the group consisting of imidazolyl, triazolyl, pyridyl, pyrimidinyl, and triazinyl, each of said heteroaryls being unsubstituted or substituted, the substituents being independently selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, halogen, cyano and trifluoromethyl, or unsubstituted or substituted C_3–C_8cycloalkyl;

the group —C(=X)— is —C(=O)—, —C(=S)—, $—CH_2—$ or $—C(=CR_1R_2)—$ wherein R_1 and R_2 are each independently of the other hydrogen or lower alkyl; and

R is hydrogen, lower alkyl, aryl-lower alkyl, amino, hydroxy or lower alkoxy; aryl, at each occurrence being phenyl or naphthyl, and each of said aryl being unsubstituted or substituted by one or more substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower alkylene (linked to two adjacent carbon atoms), C_3–C_8cycloalkyl, phenyl-lower alkyl, phenyl, lower alkyl substituted by one or more substituents independently selected from the group consisting of lower alkyl substituted by hydroxy, lower alkoxy, phenyl-lower alkoxy, lower alkanoyloxy, halogen, amino, lower alkylamino, di-(lower alkyl)amino, mercapto, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, carboxy, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl and cyano; hydroxy, lower alkoxy, halo-lower alkoxy, phenyl-lower alkoxy, phenoxy, lower alkenyloxy, halo-lower alkenyloxy, lower alkynyloxy, lower alkylenedioxy (linked to two adjacent carbon atoms), lower alkanoyloxy, phenyl-lower alkanoyloxy, phenylcarbonyloxy, mercapto, lower alkylthio, phenyl-lower alkylthio, phenylthio, lower alkylsulfinyl, phenyl-lower alkylsulfinyl phenylsulfinyl, lower alkylsulfonyl, phenylalkylsulfonyl, phenylsulfonyl, halogen, nitro, amino, lower alkylamino, C_3–C_8cycloalkylamino phenyl-lower alkylamino, phenylamino, di-(lower alkylamino), N-lower alkyl-N-phenylamino, N-lower alkyl-N-phenyl-lower alkylamino, lower alkyleneamino, lower alkyleneamino interrupted by —O—, —S— or —NR" (wherein R" is hydrogen, lower alkyl or lower alkanol); lower alkanoylamino, phenyl-lower alkanoylamino, phenylcarbonyl amino, lower alkanoyl, phenyl-lower alkanoyl, phenylcarbonyl, carboxy, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, N-hydroxycarbamoyl, N-phenylcarbonyl, cyano, sulfo, lower alkylsulfonyl, sulfamoyl, N-lower alkylsulfamoyl, N,N-di-lower alkylsulfamoyl and N-phenylsulfamoyl the phenyl groups in the substituents each being unsubstituted or substituted by one or more substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy, halogen and/or by trifluoromethyl;

which process comprises:

(a) reacting a compound of formula II



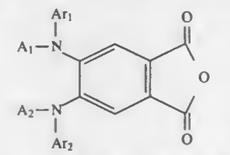
(II)

wherein Ar_1, Ar_2, A_1 and A_2 are as defined under formula I and R_3 and R_4 are each independently of the other hydrogen, aryl or lower alkyl, with a compound of formula III

$H_2N—R$ (III)

wherein R is as defined under formula I or with urea, when each if R_3 and R_4 is hydrogen, or

(b) reacting a compound of formula IV,



(IV)

wherein Ar and A are as defined under formula I, with a compound of formula III

$H_2N—R$ (III)

wherein R is as defined under formula I, or with formamide and an ensuing hydrolysis;

so as to produce a resulting compound of formula I, or a salt thereof.

5,663,337

PHARMACEUTICALLY ACTIVE BENZOQUINAZOLINE COMPOUNDS

William Pendergast, Durham, and Scott Howard Dickerson, Chapel Hill, both of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Division of Ser. No. 956,018, Jan. 13, 1993. This application May 25, 1995, Ser. No. 449,959

Claims priority, application United Kingdom, Jun. 19, 1990, 9013615

Int. Cl.[6] **C07D** *239/70;* **A61K** *31/505*

U.S. Cl. 544—249 **4 Claims**

1. The compound

(S)-2-(5-(((1,2-DIHYDRO-3-METHYL-1-OXOBENZO(F)QUINAZOLIN- 9-YL)METHYL)AMINO)-1-OXO-2-ISOINDOLINYL)GLUTARIC ACID.

5,663,338

PROCESS FOR PREPARING 2-AMINO-6-CHLOROPURINE

Reiner Ramert, Weiler bei Bingen, and Rainer Sobotta, Ingelheim am Rhein, both of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

Filed Apr. 15, 1996, Ser. No. 632,704

Int. Cl.[6] C07D *473/40*; C07B *39/00*

U.S. Cl. 544—277 **4 Claims**

1. A process for preparing 2-amino-6-chloropurine, comprising the steps of:

(a) reacting guanine with hexamethyldisilazane in the presence of ammonium sulphate;

(b) reacting the product from step (a) with an inorganic acid chloride;

(c) adding the product from step (b) to an aqueous alkaline solution;

(d) hydrolysing the reaction mixture produced in step (c); and

(e) isolating 2-amino-6-chloropurine from the hydrolysed reaction mixture produced in step (d).

5,663,339

PROCESS FOR PREPARING 5-SUBSTITUTED PYRROLO-[2,3-D] PYRIMIDINES

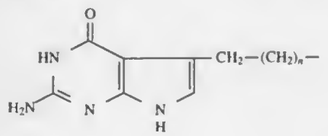
Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 66,831, May 24, 1993, Pat. No. 5,416,211, which is a continuation-in-part of Ser. No. 951,515, Sep. 25, 1992, abandoned. This application Dec. 22, 1994, Ser. No. 362,392

Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—280 **4 Claims**

1. A process for preparing 5-substituted pyrrolo[2,3-d]pyrimidines of formula I



(I)



wherein

R is NHC*H(COOR^1)CH$_2$CH$_2$COOR^1 or OR^1;

each R^1 is H or the same or different carboxy protecting group;

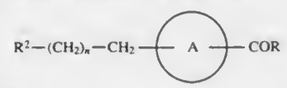
the configuration about the carbon atom designated * is L;

n is 0 or 1;

Ⓐ is an aryl group which may be substituted;

or a salt thereof, which comprises

a) reacting a halogenating agent with a compound of formula III



(III)

wherein

R, R^1, Ⓐ, n and * are as defined above; and

R^2 is formula IV



(IV);

b) reacting the reaction product from step a) with 2,4-diamino-6-hydroxypyrimidine at a temperature ranging from about 25° C. to about 100° C.; in a solvent selected from the group consisting of C$_1$–C$_4$ alcohol, acetonitrile, dimethylformamide, dimethylsulfoxide, dimethylacetamide, N-methylpyrrolidinone, water, and mixtures thereof; and

c) optionally salifying the reaction product from step b).

5,663,340

N-(2-AMINO-4,6-DICHLOROPYRIMIDINE-5-YL)FORMAMIDE, AND A PROCESS FOR ITS PREPARATION

Gerhard Stucky, and René Imwinkelried, both of Brig-Glis, Switzerland, assignors to Lonza AG, Basel, Switzerland

Division of Ser. No. 428,916, Apr. 25, 1995, Pat. No. 5,583,226. This application Aug. 8, 1996, Ser. No. 693,520

Claims priority, application Switzerland, Apr. 27, 1994, 01299/94

Int. Cl.[6] C07D *239/48*

U.S. Cl. 544—330 **1 Claim**

1. A substance having chemical designation N-(2-amino- 4,6-dichloropyrimidine-5-yl)formamide of the formula



I.

5,663,341

PROCESS FOR MAKING HIV PROTEASE INHIBITORS

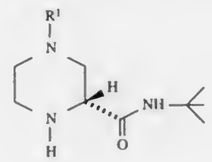
Kai Rossen, Westfield; David Askin, Warren; Paul Reider, Westfield; Richard J. Varsolona, Scotch Plains, and Ralph Volante, Cranbury, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 192,916, Feb. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,903

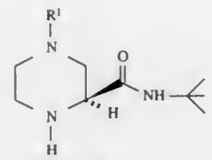
Int. Cl.[6] C07D *241/04;401/06*

U.S. Cl. 544—388 **17 Claims**

1. A process for racemization of optically pure or enriched piperazine-2-tert-butylcarboxamide substrate of formula IX or X, or a salt thereof,



IX

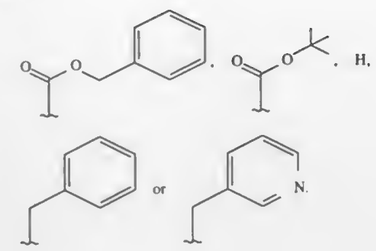


X

comprising reacting said substrate, or a salt thereof, with a racemizing agent selected from a strong base, an anhydrous metal salt or a carboxylic acid, in a solvent at a temperature range of between room temperature and 250° C.;

wherein

R^1 is



5,663,342

2-CHLORO AND 2-BROMO DERIVATIVES OF 1,5-IMINOSUGARS

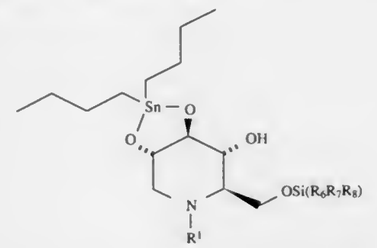
Thomas E. Barta, Evanston, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 399,022, Mar. 6, 1995, Pat. No. 5,595,981,. This application Jun. 14, 1996, Ser. No. 663,507

Int. Cl.[6] C07D *211/42*

U.S. Cl. 546—6 **2 Claims**

1. A compound of the formula



wherein R$_1$ is H or a C$_1$–C$_{12}$ branched or unbranched alkyl group, alkoxyalkyl, alkenyl, alkynyl, arylalkyl, substituted arylalkyl, arylalkenyl or substituted arylalkenyl; and R$_6$, R$_7$ and R$_8$ are independently C$_1$–C$_6$ branched or unbranched alkyl, or C$_6$–C$_{12}$ aryl or alkylaryl.

5,663,343

PROCESS FOR THE PREPARATION OF ENANTIOMERICALLY PURE IMIDAZOLYL COMPOUNDS

Paulus F. C. van der Meij, and Jan-Maarten Verbeek, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

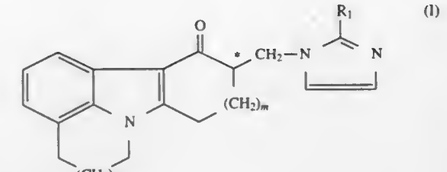
Filed Oct. 10, 1996, Ser. No. 728,794

Claims priority, application European Pat. Off., Oct. 13, 1995, 95202765

Int. Cl.[6] C07D *221/18;233/54*

U.S. Cl. 546—72 **11 Claims**

1. Method for the preparation of an enantiomerically pure imidazolyl compound of the general formula



(I)

wherein:

n is 0 or 1;

m is 1 or 2;

R$_1$ is hydrogen, methyl or ethyl; and

C* denotes a chiral centre;

as well as its pharmaceutically acceptable acid addition salt;

a) by adding a pyroglutamic acid in an optically active form to a solution of a racemic mixture of the above compound I, followed by separation of the crystallized acid addition salt of said mixture of enantiomers of compound I enriched in one enantiomer, from the mother liquor enriched in the other enantiomer,

b) when the crystallized acid addition salt is enriched in the undersired enantiomer, by then separating the mixture of enantiomers in the mother liquor from said acid, followed by addition of a racemic mixture of said acid to a solution of the obtained mixture of isomers of I, and by separation of the crystallized acid addition salt of said mixture, enriched in the desired enantiomer, from the mother liquor, and by

(c) optionally recrystallizing the product until the desired enantiomeric purity is obtained, and by then

(d) converting this acid-addition salt of the desired enantiomer to the desired enantiomerically pure imidazolyl compound of the general formula I or to its pharmaceutically acceptable acid addition salt.

5,663,344

METHOD FOR THE SYNTHESIS OF HUPERZINE A AND ANALOGS THEREOF AND COMPOUNDS USEFUL THEREIN

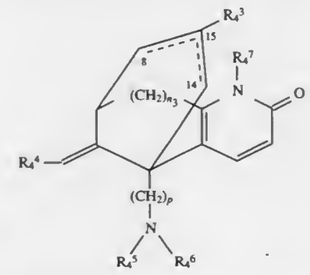
Alan Paul Kozikowski, Pittsburgh, Pa., and Yan Xia, Baltimore, Md., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation of Ser. No. 871,774, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 499,122, Mar. 23, 1990, Pat. No. 5,106,979, which is a division of Ser. No. 313,118, Feb. 21, 1989, Pat. No. 4,929,731. This application Jul. 22, 1994, Ser. No. 279,372

Int. Cl.[6] C07D *221/06;221/16;221/22*

U.S. Cl. 546—93 **3 Claims**

1. A method for the synthesis of a compound of general formula IV:



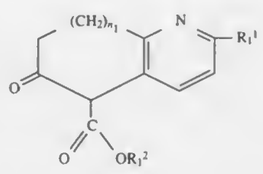
(IV)

wherein:

R$_4$^{3} is selected from the group consisting of H and C$_1$–C$_8$ linear or branched alkyl;

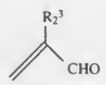
R$_4$^{4} is selected from the group consisting of H and C$_1$–C$_8$ linear or branched alkyl;

R_4^5 is selected from the group consisting of H and C_1–C_8 linear or branched alkyl;
R_4^6 is selected from the group consisting of H and C_1–C_8 linear or branched alkyl;
R_4^7 is selected from the group consisting of h and C_1–C_8 linear or branched alkyl;
n_3 is an integer from 0 to 4;
p is 0 or 1;
fheight---------- represents a single or double bond between carbon 14 and 15 or a single or double bond between carbon 8 and 15;
which method comprises:
contacting a fused ring pyridine having general formula II:



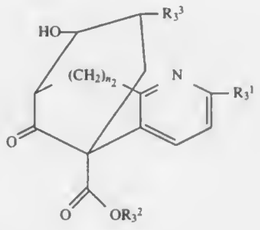
(II)

with an unsaturated carbon bridge having the general formula III:



(III)

in a suitable solvent comprising an amine base catalyst having a pKa of from about 11 to about 20 to form the bridged fused ring pyridine of general formula I:



(I)

wherein:
R_1^1 is selected from the group consisting of H and C_1–C_8 linear or branched alkoxy;
R_1^2 is selected from the group consisting of C_1–C_8 linear or branched alkyl;
R_2^3 is selected from the group consisting of H and C_1–C_8 linear or branched alkoxy;
R_3^1 is selected from the group consisting of H and C_1–C_8 linear or branched alkoxy;
R_3^2 is selected from the group consisting of C_1–C_8 linear or branched alkyl;
R_3^3 is selected from the group consisting of H and C_1–C_8 linear or branched alkyl;
n_1 is an integer from 0 to 4; and
n_2 is an integer from 0 to 4;
with the proviso:
R_1^2=R_3^2; R_1^1=R_3^1; R_2^3=R_3^3=R_4^3 and n_1=n_2; and
converting the compound of general formula I to the compound of general formula IV.

5,663,345

DERIVATIVES OF BENZOYLECGONINE, ECGONINE AND ECGONIDINE AND METHODS FOR PREPARING AND USING SAME

Lowell M. Somers, Indio, Calif., and James E. Wynn, Summerville, S.C., assignors to Entropin, Inc., Indio, Calif.

Division of Ser. No. 320,050, Oct. 7, 1994, Pat. No. 5,559,123, which is a division of Ser. No. 999,307, Dec. 31, 1992, Pat. No. 5,376,667. This application Jun. 5, 1995, Ser. No. 463,123

Int. Cl.[6] C07D *451/02;451/04*

U.S. Cl. 546—127 **9 Claims**

1. A method for preparing 2-hydroxypropyl benzoylecgonine, comprising the steps of:
(a) dissolving base cocaine in propylene glycol to form a solution;
(b) heating the solution at a temperature from about 25° C. to about 115° C. until substantially no additional product forms; and
(c) removing the propylene glycol to yield a crude product.

5,663,346

SUBSTITUTED AZAINDOLYLIDENE COMPOUNDS AND PROCESS FOR THEIR PREPARATION

Franco Buzzetti, Monza; Maria Gabriella Brasca, Cusago; Antonio Longo, Milan, and Dario Ballinari, San Donato Milanese, all of Italy, assignors to Pharmacia S.p.A., Milan, Italy

PCT No. PCT/EP95/02043, § 371 Date Feb. 9, 1996, § 102(e) Date Feb. 9, 1996, PCT Pub. No. WO96/00226, PCT Pub. Date Jan. 4, 1996

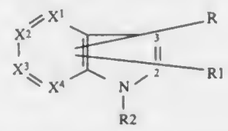
PCT Filed May 30, 1995, Ser. No. 592,297

Claims priority, application United Kingdom, Jun. 24, 1994, 9412719

Int. Cl.[6] C07D *471/02;403/02;405/02;* **A01N** *43/34*

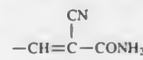
U.S. Cl. 546—113 **10 Claims**

1. A compound of formula (I)

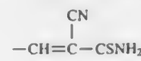


(I)

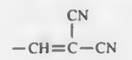
wherein one of the groups X^1, X^2, X^3 and X^4 is N and the others are CH; R is a group of formula (a), (b), (c) or (d)



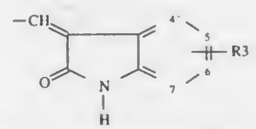
(a)



(b)

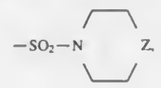


(c)

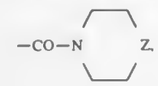


(d)

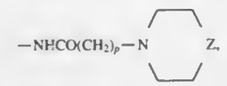
each of R^1 and R^3 independently is hydrogen, amino, carboxy, cyano, $—SO_3R^4$, $—SO_2NHR^5$,



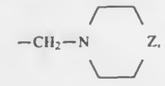
—COOR[6], —CONH(CH$_2$)$_o$Ph,
—CONHCH$_2$(CHOH)$_n$CH$_2$OH,



—N(CH$_2$CH$_2$OH)$_2$, —NHCH$_2$(CHOH)$_n$CH$_2$OH, NHCONH$_2$,
—NHC(NH$_2$)═NH, —NHCO (CHOH)$_n$CH$_2$OH,



—NHSO$_2$R^7, OCH$_2$(CHOH)$_n$CH$_2$OH,
—OOC(CHOH)$_n$CH$_2$OH, —OPO(OH)$_2$, —OCH$_2$SO$_2$NH$_2$,
—CH$_2$NH$_2$, —C(NH$_2$)═NH, —CH$_2$NHC(NH$_2$)═NH,



—CH$_2$OH, —CH$_2$OOC(CHOH)$_n$CH$_2$OH, —CH$_2$OPO(OH)$_2$, —PO(OH)$_2$;
R^2 is H, C_1-C_6 alkyl, C_2-C_6 alkanoyl, —CH$_2$OH, —CH$_2$CH$_2$CONH$_2$, —SO$_2$Me, —COCH$_2$SO$_2$NH$_2$;
R^4 is H, —CH$_2$(CHOH)$_n$CH$_2$OH, C_1-C_6 alkyl;
R^5 is H, C_1-C_6 alkyl, —CH$_2$(CHOH)$_n$CH$_2$OH, —(CH$_2$)$_m$NMe$_2$;
R^6 is C_1-C_6 alkyl unsubstituted or substituted by phenyl, —CH$_2$(CHOH)$_n$CH$_2$OH;
R^7 is Me, —C$_6$H$_4$Me;
Z is CH$_2$, O, NH, NCH$_2$CH$_2$OH;
n is 0 or 1;
m is 2 or 3;
o is 0, 1, 2 or 3;
p is 1, 2 or 3;
provided that when R is (a), (b), or (c) then R^1 is not H and when R is (d) then one of R^1 and R^3 is not H; and the pharmaceutically acceptable salts thereof.

5,663,347

DISUBSTITUTED ACETYLENES BEARING HETEROBICYCLIC GROUPS AND HETEROAROMATIC OR PHENYL GROUPS HAVING RETINOID LIKE ACTIVITY

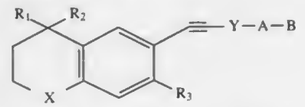
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 126,933, Sep. 24, 1993, which is a division of Ser. No. 836,635, Feb. 14, 1992, Pat. No. 5,264,578, which is a continuation-in-part of Ser. No. 326,191, Mar. 20, 1989, Pat. No. 5,089,509, which is a continuation-in-part of Ser. No. 246,037, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 28,279, Mar. 20, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 466,005

Int. Cl.[6] C07D *215/00;215/38;215/12*

U.S. Cl. 546—152 **7 Claims**

1. A compound of the formula



wherein R_1 and R_2, independently are n-alkyl groups having 2 to 8 carbons, or cyclo or branch-chained alkyl groups of 3 to 8 carbons;
R_3 is hydrogen or lower alkyl;
X is N—R_4 where R_4 is hydrogen or lower alkyl;
Y is phenyl;
A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3 to 6 carbons, cycloalkyl having 3 to 6 carbons, alkenyl having 2 to 6 carbons and 1 or 2 double bonds, alkynyl having 2 to 6 carbons and 1 or 2 triple bonds;
B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_5$, $CONR_6R_7$, —CH_2OH, CH_2OCOR_8, CHO $CH(OR_9)_2$, $CHOR_{11}$, $–COR_{11}$, $CR_{11}(OR_9)_2$, or $CR_{11}OR_{10}O$, where R_5 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_5 is phenyl or lower alkylphenyl, R_6 and R_7 independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_8 is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl, R_9 is lower alkyl, R_{10} is divalent alkyl radical of 2–5 carbons and R_{11} is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons.

5,663,348

OPTICALLY ACTIVE β-AMINOALKOXYBORANE COMPLEX

Hiroshi Kashihara; Mikio Suzuki, and Yoshio Obara, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

PCT No. PCT/JP94/00056, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO94/17079, PCT Pub. Date Aug. 4, 1994

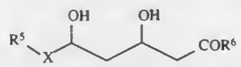
PCT Filed Jan. 17, 1994, Ser. No. 481,505

Claims priority, application Japan, Jan. 20, 1993, 5-007827; Mar. 25, 1993, 5-066825

Int. Cl.[6] C07D *215/14*

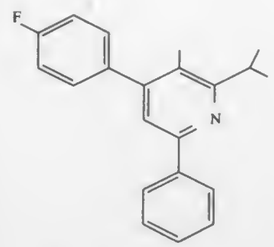
U.S. Cl. 546—173 **3 Claims**

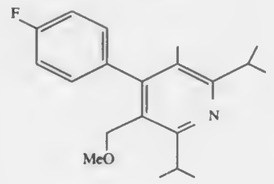
1. A process for producing a compound of the formula (VI):

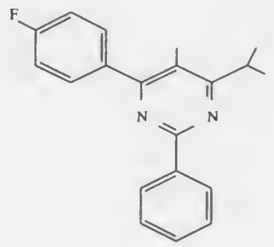


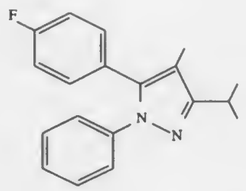
(VI)

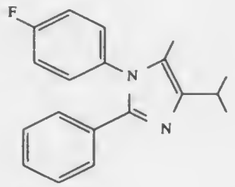
wherein when X is a bond, R^5 is CHO, $CH(OR^9)(OR^{10})$ (wherein each of R^9 and R^{10} which are independent of each other, is hydrogen or C_1–C_3 alkyl, or R^9 and R^{10} together form C_2–C_5 alkylene), CH_2OR^{11} (wherein R^{11} is hydrogen, C_1–C_3 alkyl, benzyl which may be substituted by methyl or methoxy, trityl, tetrahydropyranyl, methoxymethyl, trimethylsilyl, dimethyl-tert-butylsilyl or diphenyl-tert-butylsilyl), CH_2R^{12} (wherein R^{12} is fluoro, chloro, bromo or iodo), CN, CO_2R^{13} (wherein R^{13} is hydrogen, C_1–C_4 alkyl, or benzyl which may be substituted by methyl or methoxy), or $CONR^{14}R^{15}$ (wherein each of R^{14} and R^{15} which are independent of each other, is hydrogen, C_1–C_3 alkyl, benzyl, 1-methylbenzyl, or phenyl which may be substituted by methyl or methoxy), and when X is —CH_2—, —CH_2CH_2—, —CH═CH—, —(CH_3)C═CH, —CH═C(CH_3)— or —C≡C—, R^5 is hydrogen, trialkylsilyl, a carbon ring aliphatic group, a carbon ring aromatic group, a heterocyclic aromatic group selected from the group consisting of pyridyl, pyrimidinyl, pyrazolyl, imidazolyl, pyrrolyl, thienyl or furanyl, optionally substituted with from 1 to 3 members selected from methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, sec-butyl, tert-butyl, n-pentyl, n-hexyl, n-heptyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl, C_1–C_3 alkoxymethyl, and phenylcarbamoyl and/or 1 or 2 substituents selected from phenyl, 3-methylphenyl, 4-methylphenyl, 3,5-dimethylphenyl, 3 -ethylphenyl, 4-ethylphenyl, 3,5-diethylphenyl, 3-methyl-5 -ethylphenyl, 3-n-propylphenyl, 4-n-propylphenyl, 3,5-di-n-propylphenyl, 3-i-propylphenyl, 4-i-propylphenyl, 3,6-di-i-propylphenyl, 3-fluorophenyl, 4-fluorophenyl, 3,5-difluorophenyl, 3-chlorophenyl, 4-chlorophenyl, 3,5-dichlorophenyl, 3-fluoro-4 -chlorophenyl, 3-bromophenyl, 4-bromophenyl or 3,5-dibromophenyl,

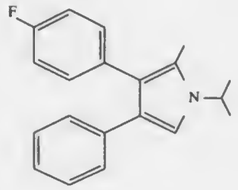




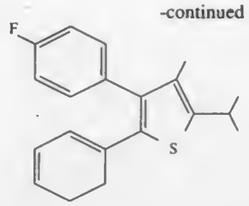


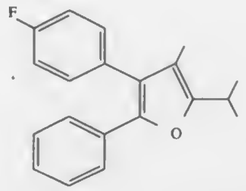




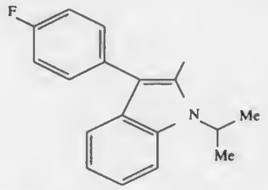


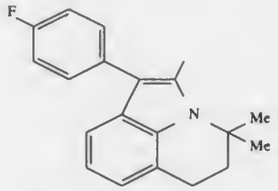
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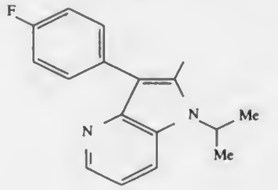




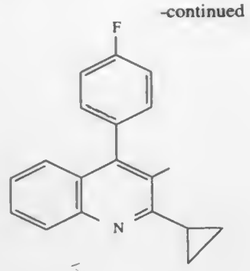
a condensed heterocyclic aromatic group selected from the group consisting of indolyl, quinolyl, pyrazolopyridyl, thienopyridyl, pyrrolopyridyl or isoquinolinonyl, optionally substituted with from 1 to 3 members selected from methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, sec-butyl, tert-butyl, n-pentyl, n-hexyl, n-heptyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl, C_1–C_3 alkoxymethyl, phenylcarbamoyl and/or 1 or 2 substituents selected from phenyl 3-methylphenyl, 4-methylphenyl, 3,5-dimethylphenyl, 3-ethylphenyl, 4-ethylphenyl, 3,5-diethylphenyl, 3-methyl-5-ethylphenyl, 3-n-propylphenyl, 4-n-propylphenyl, 3,5-di-n-propylphenyl, 3-i-propylphenyl, 4-i-propylphenyl, 3,5-di-i-propylphenyl, 3-fluorophenyl, 4 -fluorophenyl, 3,5-difluorophenyl, 3-chlorophenyl, 4-chlorophenyl, 3,5-dichlorophenyl, 3-fluoro-4-chlorophenyl, 3-bromophenyl, 4 -bromophenyl or 3,5-dibromophenyl,

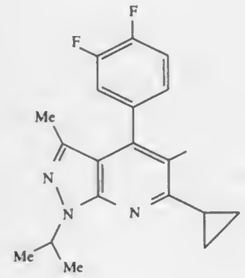


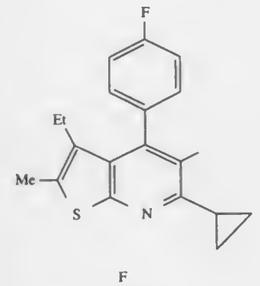


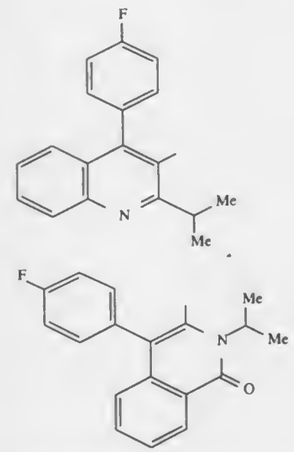


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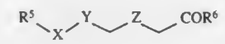






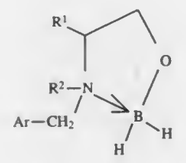


a chain unsaturated aliphatic group or a cyclic unsaturated aliphatic group, and R^6 is hydroxyl, C_1–C_{10} alkoxy, OM (wherein M is lithium, sodium, potassium, calcium, NHR'_3 (wherein R' is hydrogen, C_1–C_3 alkyl, C_3–C_7 cycloalkyl, C_2–C_5 alkenyl, phenyl or benzyl)) or C_0–C_7 amino, and * is an optically active center, provided that the two optically active centers take a syn conformation to each other, which comprises reducing a carbonyl compound of the formula (V):



(V)

wherein R^5, R^6 and x are as defined above, and each of Y and Z which are independent of each other, is —CO— or —CH(OH)—, provided that Y and Z are not simultaneously —CH(OH)—, with an optically active β-aminoalkoxyborane complex of the following formula (I)



(I)

wherein R^1 is methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, sec-butyl, tert-butyl, n-pentyl, n-hexyl, n-heptyl, n-octyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, benzyl, o-methylbenzyl, m-methylbenzyl, p-methylbenzyl, p-chlorobenzyl, 1-methylbenzyl, phenethyl, o-methylphenethyl, m-methylphenethyl, p-methylphenethyl, 3 -phenylpropyl, 3-(o-methylphenyl)propyl, 3-(m-methylphenyl)propyl, 3-(p-methylphenyl)propyl, 4-phenylbutyl, α-naphthylmethyl, or β-naphthylmethyl, R^2 is hydrogen, methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, sec-butyl, tert-butyl, n-pentyl, n-hexyl, n-octyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, benzyl, o-methylbenzyl, m-methylbenzyl, p-methylbenzyl, p-chlorobenzyl, 1-methylbenzyl, penenthyl, o-methylphenethyl, m-methylphenethyl, p-methylphenethyl, 3 -phenylpropyl, 3-(o-methylphenyl)propyl, 3-(m-methylphenyl)propyl, 3-(p-methylphenyl)propyl, 4-phenylbutyl, α-naphthylmethyl and β-naphthylmethyl, or R^1 and R^2 together form $(CH_2)_n$ wherein n is 3 or 4, and Ar is naphthyl, anthryl or phenanthryl, which may be substituted by from 1 to 3 substituents selected from the group consisting of halogen, nitro, methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, sec-butyl, tert-butyl, n-pentyl, n-hexyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, vinyl, 2-propenyl, 3-butenyl, 4-pentenyl, 5-hexenyl, ethynyl, 2 -propynyl, 3-butynyl, 4-pentynyl, 5-hexynyl, benzyl, o-methylbenzyl, m-methylbenzyl, p-methylbenzyl, p-chlorobenzyl, 1-methylbenzyl, phenethyl, o-methylphenethyl, m-methylphenethyl, p-methylphenethyl, 3-phenylpropyl, 3-(o-methylphenyl)propyl, 3-(m-methylphenyl)propyl, 3-(p-methylphenyl)propyl, 4-phenylbutyl, α-naphthylmethyl, β-naphthylmethyl, phenyl, o-tolyl, m-tolyl, p-tolyl, 2,3-dimethylphenyl, 2,4-dimethylphenyl, 2,5 -dimethylphenyl, 2,6-dimethylphenyl, 3,4-dimethylphenyl, 3,5-dimethylphenyl, 2,3,4-trimethylphenyl, 2,3,5-trimethylphenyl, 2,3,6-trimethylphenyl, 3,4,5-trimethylphenyl, 3,4,6-trimethylphenyl, 2,4,6-trimethylphenyl, α-naphthyl, β-naphthyl, methoxy, ethoxy, n-propoxy, i-propoxy, n-butoxy, i-butoxy, sec-butoxy, tert-butoxy, n-pentoxy, n-hexoxy and styrene polymer substituent.

5,663,349

PREPARATION OF SUBSTITUTED PIPERIDENES

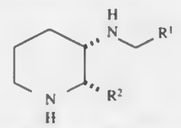
Terry J. Rosen, East Lyme; Dennis M. Godek, Glastonbury; Sally Gut, Madison, and Lewin Wint, Uncasville, all of Conn., assignors to Pfizer Inc, New York, N.Y.

Continuation of Ser. No. 800,667, Nov. 27, 1991, Pat. No. 5,364,943, which is a continuation-in-part of Ser. No. 531,265, May 31, 1990, abandoned. This application Jul. 12, 1994, Ser. No. 273,662

Int. Cl.[6] C07D *215/12;215/04;211/02;211/68*

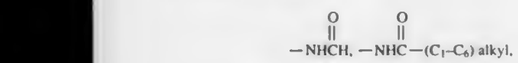
U.S. Cl. 546—174 **48 Claims**

1. A process for preparing a compound of the formula

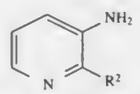


(I)

wherein R^1 is aryl selected from indanyl, phenyl and naphthyl; heteroaryl selected from thienyl, furyl, pyridyl and quinolyl; and cycloalkyl having 3–7 carbon atoms, wherein one of said carbon atoms may optionally be replaced by nitrogen oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents, and said (C_3–C_7) cycloalkyl may optionally be substituted with one or two substituents, said substituents being independently selected from halo, nitro, amino, cyano, phenyl, hydroxyl, (C_1–C_6) alkylamino, (C_1–C_6) dialkylamino,



(C_1–C_{10}) alkoxy optionally substituted with from one to three fluorine atoms and (C_1–C_{10}) alkyl optionally substituted with from one to three fluorine atoms, wherein the nitrogen atoms of said amino and (C_1–C_6) alkylamino groups may optionally be protected with an appropriate amino protecting group; and R^2 is thienyl, benzhydryl, naphthyl or phenyl substituted with from one to three substituents independently selected from chloro, bromo, fluoro, iodo, (C_1–C_{10}) alkoxy optionally substituted with from one to three fluorine atoms and (C_1–C_{10}) alkyl optionally substituted with from one to three fluorine atoms, comprising: (a) reacting a compound of the formula

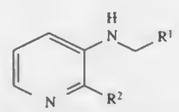


(IV)

wherein R^2 is defined as above, with either (i) a compound of the



wherein R^1 is defined as above and X is a leaving group selected from the group consisting of chloro, bromo, iodo, mesylate or tosylate, followed by treatment of the resulting amide with a reducing agent, (ii) a compound of the formula R^1CHO, wherein R^1 is defined as above, in the presence of a reducing agent, or (iii) a compound of the formula R^1CH_2X, wherein R^1 is defined as above and X is a leaving group, to produce a compound of the formula



(II)

wherein R^1 and R^2 are defined as above; and (b) reducing said compound of formula II.

5,663,350

PROCESS FOR THE PREPARATION OF INTERMEDIATES USEFUL FOR THE SYNTHESIS OF HISTAMINE RECEPTOR ANTAGONISTS

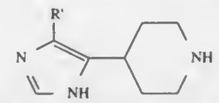
Graham J. Durant, and Amin M. Khan, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 862,658, Apr. 1, 1992, Pat. No. 5,380,858. This application Jun. 2, 1994, Ser. No. 252,810

Int. Cl.[6] C07D *401/04*

U.S. Cl. 546—185 **55 Claims**

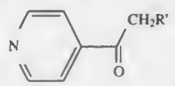
1. A process for the preparation of a compound of Formula (4):



(4)

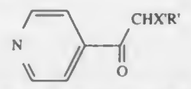
wherein R' is H or C_1–C_4 alkyl; which comprises:

(1) reacting a compound of the Formula (1)



(1)

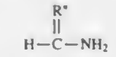
wherein R' is H or C_1–C_4 alkyl; with an activating reagent which is capable of removing a hydrogen atom from the α-methyl group of (1) and replacing that hydrogen with a halogen, hydroxy or amino function in a suitable solvent to produce an activated compound of the Formula (2a)



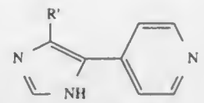
(2a)

where X' is halogen, hydroxy or amino and R' is H or C_1–C_4 alkyl; and

(2) reacting a compound of the Formula (2a) with a compound of the Formula



R" is NH or O at an elevated temperature to yield a compound of the Formula (3);



(3)

wherein R' is H or C_1–C_4 alkyl; and

(3) reacting a compound of Formula (3) with hydrogen in the presence of a noble metal catalyst at a suitable pressure in a suitable solvent to yield a compound of Formula (4).

5,663,351

PROCESS FOR THE CONTINUOUS PREPARATION OF 2,2,6,6-TETRAMETHYLPIPERIDINE

Detlef Kampmann, Gersthofen, and Georg Stuhlmüller, Gablingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 8, 1994, Ser. No. 352,558

Claims priority, application Germany, Dec. 11, 1993, 43 42 276.4

Int. Cl.[6] C07D *211/02*

U.S. Cl. 546—185 **18 Claims**

1. A process for the continuous preparation of 2,2,6,6-tetramethylpiperidine by reaction of triacetonamine with hydrazine and cleavage of the resulting hydrazone at a temperature of above 160° C., which comprises continuously transporting the hydrazone as an aqueous solution to the distillation bottoms which comprise a high-boiling solvent and an alkali at the base of a distillation column and distilling off as an azeotrope with water the resulting 2,2,6,6-tetramethylpiperidine and separating it from the water.

5,663,352

4-PHENYL-4-PHENYLPROPYL(ENYL)-PIPERIDINES AS TACHYKININ ANTAGONISTS

Angus Murray MacLeod, Bishops Stortford; Kevin John Merchant, Stevenage, and Graeme Irvine Stevenson, Saffon Walden, all of United Kingdom, assignors to Merck Sharp & Dohme Limited, Harlow, England

PCT No. PCT/GB94/01576, § 371 Date Jan. 19, 1996, § 102(e) Date Jan. 19, 1996, PCT Pub. No. WO95/04042, PCT Pub. Date Feb. 9, 1995

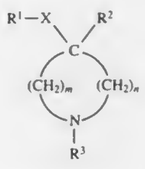
PCT Filed Jul. 21, 1994, Ser. No. 583,014

Claims priority, application United Kingdom, Jul. 30, 1993, 9315808

Int. Cl.[6] C07D *211/14;211/12;* **A61K** *31/445*

U.S. Cl. 546—240 **19 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein

X represents a propylene or propenylene chain optionally substituted by one or more of R^4, R^5, R^6 and R^7;

m is 2, 3 or 4;

n is 0, 1 or 2 when m is 2 or 3, and n is 0 or 1 when m is 4;

R^1 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a or —$CONR^aR^b$, where R^a and R^b each independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;

R^2 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —CO_2R^a or —$CONR^aR^b$, where R^a and R^b are as previously defined; heteroaryl selected from indazolyl, thienyl, furyl, pyridyl, thiazolyl, tetrazolyl and quinolyl; benzhydryl; or benzyl; wherein each heteroaryl and each phenyl moiety of benzyl and benzhydryl may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

R^3 represents H, COR^9, CO_2R^{10}, $COCONR^{10}R^{11}$, $COCO_2R^{10}$, SO_2R^{15}, $CONR^{10}SO_2R^{15}$, C_{1-6}alkyl optionally substituted by a group selected from (CO_2R^{10}, $CONR^{10}R^{11}$, hydroxy, cyano, COR^9, $NR^{10}R^{11}$, $C(NOH)NR^{10}R^{11}$, $CONHphenyl(C_{1-4}alkyl)$, $COCO_2R^{10}$, $COCONR^{10}R^{11}$, SO_2R^{15}, $CONR^{10}SO_2R^{15}$ and phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl), Y—R^8 or CO—Z—$(CH_2)_q$—R^{12};

R^4 and R^5 each independently represents H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, hydroxy or C_{1-6}alkoxy, or R^4 and R^5 together form a group =O;

R^6 and R^7 each independently represents H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, hydroxy or C_{1-6}alkoxy or R^6 and R^7 together form a group =O;

R^8 represents an optionally substituted aromatic heterocycle;

R^9 represents H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, or phenyl;

R^{10} and R^{11} each independently represent H, C_{1-6}alkyl, C_{3-6}cycloalkyl or C_{3-5}cycloalkylmethyl;

R^{12} represents $NR^{13}R^{14}$ or an optionally substituted aromatic or non-aromatic azacyclic or azabicyclic group;

R^{13} and R^{14} each independently represent H, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, phenyl optionally substituted by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl or phenylC_{1-4}alkyl optionally substituted in the phenyl ring by one or more of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl; R^{15} represents C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{3-5}cycloalkylmethyl, trifluoromethyl or phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl;

Y represents a hydrocarbon chain of 1, 2, 3 or 4 carbon atoms which may optionally be substituted by oxo;

Z represents CH_2, O, S or NR^{10}; and

q represents 0, 1, 2, 3, 4, 5 or 6.

5,663,353

PROCESS FOR PIPERIDINE DERIVATIVES

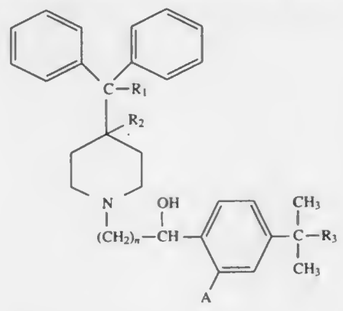
Chi-Hsin Richard King, Cincinnati, and Michele A. Kaminski, Reading, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 369,234, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 152,606, Nov. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1992, abandoned. This application May 2, 1995, Ser. No. 434,134

Int. Cl.[6] C07D *211/22*

U.S. Cl. 546—241 **3 Claims**

1. A process for preparing a compound of the formula

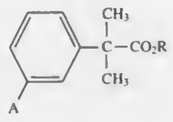


wherein

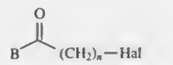
R_1 represents hydrogen or hydroxy;

R_2 represents hydrogen; or

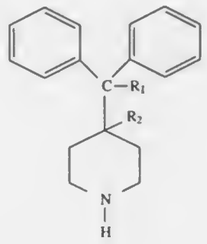
R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;
n is an integer of from 1 to 5;
R_3 is $—CH_2OH$;
A is hydrogen or hydroxy; and
pharmaceutically acceptable salts, hydrates and individual optical isomers thereof comprising the steps of:
(a) reacting a benzeneacetic acid compound of the formula



wherein A is as defined above and R is hydrogen or C_1–C_6 alkyl with a suitable reducing agent to give a phenethyl alcohol;
(b) reacting the phenethyl alcohol with a ω-halo compound of the formula



wherein B is halo or hydroxy, Hal represents Cl, Br or I and n is as defined above, in the presence of a suitable Lewis acid to produce a ω-halo hydroxyethylphenylketone;
(c) reacting the ω-halo hydroxyethylphenylketone with a suitable reducing agent to produce a ω-halo hydroxyethylphenylalcohol;
(d) reacting the ω-halo hydroxyethylphenylalcohol with a piperidine compound of the formula



wherein R_1 and R_2 are as defined above, in the presence of a suitable non-nucleophilic base to produce a piperidine hydroxyethylphenylalcohol; and
(e) optionally reacting the piperidine hydroxyethylphenylalcohol with an appropriate deprotecting reagent,
with the proviso that each of the hydroxy groups present in the compounds described in steps a–d are optionally protected or unprotected.

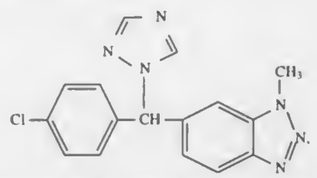
5,663,354

PROCESS FOR PREPARING ENANTIOMERICALLY PURE 6-[(4-CHLOROPHENYL) (1H-1,2,4-TRIAZOL-1-YL) METHYL]-1-METHYL-1H-BENZOTRIZOLE

Albert Louis Anna Willemsens, Beerse; Walter Louis Antoine Verstappen, Kontich; Alex Herman Copmans, Lille; Anna Maria Jozefa Vandendriessche, Oostmalle; Alfons Gaston Maria De Knaep, Turnhout, all of Belgium, and Marc Gaston Venet, Le Mesnil Esnard, France, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

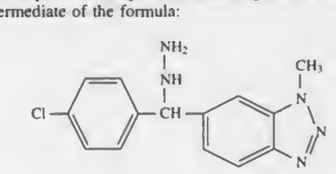
PCT No. PCT/EP93/03066, § 371 Date Apr. 18, 1995, § 102(e) Date Apr. 18, 1995, PCT Pub. No. WO94/11364, PCT Pub. Date May 26, 1994
PCT Filed Nov. 2, 1993, Ser. No. 424,295
Claims priority, application European Pat. Off., Nov. 10, 1992, 92203443
Int. Cl.[6] C07D *403/06*
U.S. Cl. 548—257 **4 Claims**

1. A process for preparing enantiomerically pure 6-[(4-chlorophenyl) (1H-1,2,4-triazol-1-yl)methyl]-1-methyl-1H-benzotriazole having the formula:



(I)

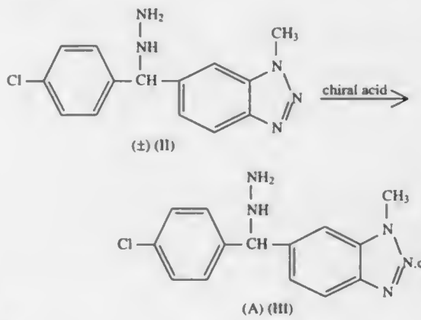
or a pharmaceutically acceptable acid addition salt form thereof, which comprises the steps of (a) resolving the racemic mixture of an intermediate of the formula:



(II)

(±)

by adding said racemic mixture of the intermediate of Formula (II) to a chiral acid, thereby forming a mixture of diastereomeric salts with one of the enantiomers of a chiral acid, (b) crystallizing said mixture, (c) thereafter collecting the desired diastereomeric salt of Formula (A)(III) either from the precipitate or from the mother liquor:



(±) (II)

(A) (III)

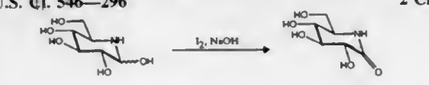
and (d) converting the salt of Formula (A)(III) into an enantiomerically pure form of the compound of Formula (I) by cyclization with methanimidamide, triazine, formamide or an acid addition salt thereof,
wherein the chiral acid is selected from the group consisting of (R)-(−)-α-hydroxybenzeneacetic acid; (+)-4-(2-chlorophenyl)-dihydro-2-hydroxy-5,5-dimethyl-4H-1,3,2-dioxaphosphorin-2-oxide; and (S)-(−)-α-[[(phenylamino)carbonyl]oxy]propanoic acid.

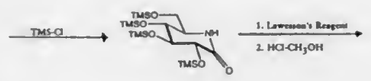
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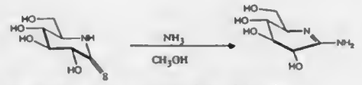
MONOSACCHARIDE ANALOG-BASED GLYCOSIDASE INHBITORS

Bruce Ganem, Ithaca, N.Y.; Michael K. Tong, Madison, N.J., and George Papandreou, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc.

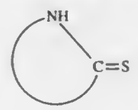
Division of Ser. No. 54,885, Apr. 29, 1993, Pat. No. 5,434,266, which is a division of Ser. No. 734,593, Jul. 23, 1991, Pat. No. 5,231,185, which is a continuation-in-part of Ser. No. 453,051, Dec. 13, 1989, abandoned, which is a continuation of Ser. No. 106,486, Oct. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 799,708, Nov. 19, 1985, abandoned. This application Jan. 19, 1995, Ser. No. 374,812
Int. Cl.[6] C07D *211/54;211/42;207/273*
U.S. Cl. 546—296 **2 Claims**







1. A thionolactam compound of the formula:



wherein the N and C of the —N—C— are part of a monosaccharide azaanalog ring selected from the group consisting of mannose,glucose,galactose,fructose,2-deoxy-2-amino-glucose,2-deoxy-2-amino-galactose,ribose,arabinose,2-deoxy-ribose and 2-deoxyarabinose,stereoisomers,deoxy and substituted derivatives thereof.

5,663,356

METHOD FOR PREPARATION OF ARYL SUBSTITUTED ALEFINIC SECONDARY AMINO COMPOUNDS

Graham Ruecroft, 17, Nuns Orchard, Histon Cambridgeshire CB4 4EW, and Martin Woods, 24, Chaucer Road, Royston Hertfordshire SG8 5AP, both of United Kingdom

Filed Apr. 23, 1996, Ser. No. 635,165
Int. Cl.[6] C07D *213/62*
U.S. Cl. 546—300 **8 Claims**

1. A method for providing an aryl substituted olefinic secondary amine compound, the method comprising the steps of:
a) subjecting a nicotinic compound having an aromatic functionality bonded to a cyclic functionality to conditions sufficient to open the cyclic functionality thereby providing a ring opened compound;
b) reacting the ring opened compound within an aprotic solvent and potassium tert-butoxide under conditions sufficient to produce an aryl substituted olefinic amine compound;
c) subjecting the aryl substituted olefinic amine compound so provided to contact with acid and conditions sufficient to provide an aryl substituted olefinic secondary amine within a reaction mixture;
d) adjusting the reaction mixture to a pH of about 8 to about 9, and then contacting that mixture with a water immiscible organic solvent, and then separating water immiscible phase from aqueous phase;
e) subjecting the aqueous phase to a pH above about 11, and then contacting that phase with a water immiscible organic solvent;
f) separating of water immiscible phase from aqueous phase, and collecting the water immiscible phase incorporating organic solvent and aryl substituted olefinic secondary amine compound; and
g) separating organic solvent from aryl substituted olefinic secondary amine compound.

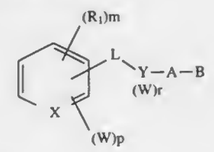
5,663,357

SUBSTITUTED HETEROARYLAMIDES HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Min Teng, Aliso Viejo; Tien T. Duong, Irvine, and Rosbantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Waco, Tex.

Filed Nov. 22, 1995, Ser. No. 561,999
Int. Cl.[6] C07D *213/02*
U.S. Cl. 546—323 **19 Claims**

1. A compound of the formula



wherein X is N;
R_1 is independently H or alkyl of 1 to 6 carbons;
m is an integer having the value of 0–5;
p is an integer having the value of 1 or 2;
r is an integer having the value 0–2;
L is —(C=Z)—NH—where Z is O or S;
Y is phenol optionally substituted with one or two R_1 groups;
W is a substituent selected independently from the group consisting of F, Br, Cl, I, C_{1-6}alkyl, fluoro substituted C_{1-6} alkyl, NO_2, N_3, OH, OCH_2OCH_3, OC_{1-10}alkyl, tetrazol, CN, SO_2C_{1-6}-alkyl, SO_2C_{1-6}-alkyl, SO_2C_{1-6}-fluoro substituted alkyl, SO—C_{1-6} alkyl, CO—C_{1-6}alkyl, $COOR_8$, phenyl, phenyl itself substituted with a W group other than with phenyl or substituted phenyl with the proviso that at least one W group that substitutes the pyridine ring is alkyl;
A is $(CH_2)_q$ where q is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds, and
B is COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

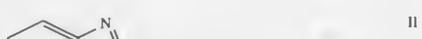
5,663,358

PROCESS FOR THE PREPARATION OF ORGANOSILICON DISULFIDE COMPOUNDS

Martin Paul Cohen, Fairlawn, and Lawson Gibson Wideman, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

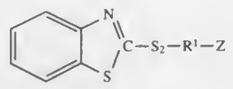
Filed Jan. 22, 1996, Ser. No. 589,283
Int. Cl.[6] C07D *277/80;* **C07F** *5/02;7/08*
U.S. Cl. 548—166 **14 Claims**

I. A process for the preparation of organosilicon disulfide compounds of the formula



I

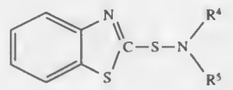
or



II

comprising reacting

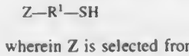
(a) a sulfenamide compound of the formula



III

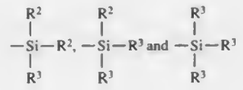
where R^4 is selected from the group consisting of hydrogen, acyclic aliphatic groups having from 1 to 10 carbon atoms and cyclic aliphatic groups having from 5 to 10 carbon atoms; and R^5 is selected from the group consisting of acyclic aliphatic groups having 1 to 10 carbon atoms and cyclic aliphatic groups having from 5 to 10 carbon atoms; with

(b) a mercaptosilane compound of the formula



IV

wherein Z is selected from the group consisting of



wherein R^2 may be the same or different and is independently selected from the group consisting of an alkyl group having 1 to 4 carbon atoms and phenyl; R^3 may be the same or different and is independently selected from the group consisting of alkoxy groups having 1 to 8 carbon atoms and cycloalkoxy groups with 5 to 8 carbon atoms; and R^1 is selected from the group consisting of a substituted or unsubstituted alkylene group having a total of 1 to 18 carbon atoms and a substituted or unsubstituted arylene group having a total of 6 to 12 carbon atoms.

5,663,359

Patent Not Issued For This Number

5,663,360

PROCESS FOR PREPARING [R-(R*,R*)]-5-(3-CHLOROPHENYL)-3-[2-(3,4-DIMETHOXYLPHENYL)-1-METHYL-ETHYL]-OXAZOLIDIN-2-ONE

Roberto Bortolaso, and Mariano Stivanello, both of Vicenza, Italy, assignors to F.I.S. Fabbrica Italiana Sintetici S.p.A., Vicenza, Italy

Filed Apr. 15, 1996, Ser. No. 632,076
Claims priority, application Italy, May 25, 1995, MI95A1073
Int. Cl.[6] C07D *263/20*
U.S. Cl. 548—229 **4 Claims**

I. A process for the synthesis of [R-(R*,R*)]-5-(3-chlorophenyl)-3-[2-(3,4-dimethoxyphenyl)- 1-methyl-ethyl]oxazolidin-2-One (1), which process is carried out according to Scheme IV and comprises the following reactions:

a) acetylation of (R)-3-chloromandelic acid (9) with the formation of (R)-O-acetyl-3-chloromandelic acid, which is then transformed into the corresponding acyl chloride, (R)-O-acetyl-3 -chloromandeloyl chloride (19);

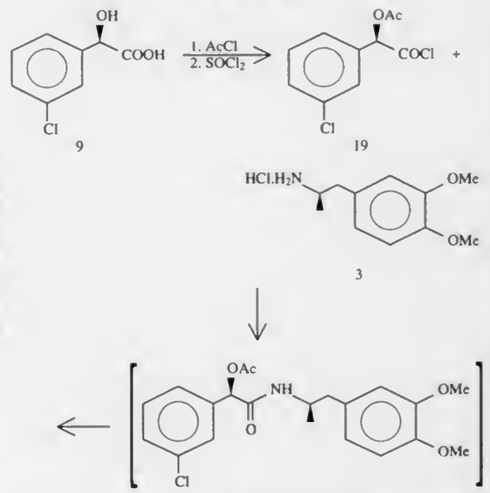
b) coupling of the chloride (19) with (R)-3,4-dimethoxy-amphetamine hydrochloride (3) to form the intermediate [R-(R*,R*)]-2-(3 -chloro-phenyl)-N-[2-(3,4-dimethoxyphenyl)-1-methyl-ethyl)-2-acetoxy-acetamide (20) (illustrated as (R,R)-acetoxyamide in Scheme IV);

c) deacetylation of the intermediate (20) to form [R-(R*,R*)]-2-(3-chloro-phenyl)-N-[2-(3,4-dimethoxyphenyl)-1-methyl-ethyl]-2-hydroxy-acetamide (21) (illustrated as (R,R)-hydroxyacetamide in Scheme IV);

d) reduction of the amide group of the intermediate (21) to form the corresponding phenethanolamine, [R-(R*,R*)]-1-(3-chlorophenyl)-2-[2-(3,4-dimethoxy-phenyl)-1-methyl-ethylamino]ethanol (5); and

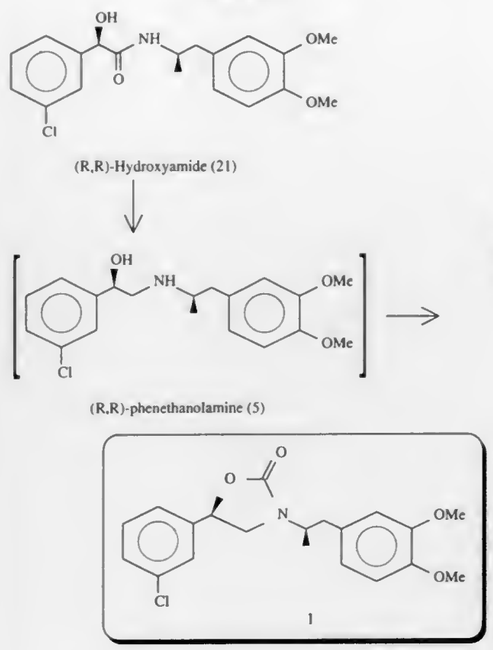
e) formation of (R,R)-oxazolidinone (1) by reacting said phenethanolamine (5) (β-aminoalcohol) with a suitable reactant; and wherein Scheme IV is as follows:

SCHEME IV

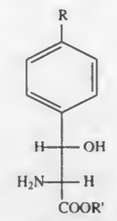


-continued

SCHEME IV

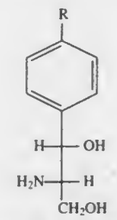


a) contacting a compound of formula II:



II

wherein R is as described above, and R' is H, C_1 to C_6 alkyl, C_3 to C_7 cycloalkyl, benzyl, substituted benzyl, or aryl;
with a reducing agent, in a suitable reaction vessel, to obtain a compound of formula III:



III

wherein R is as described above, and b.) then in the same reaction vessel reacting a compound of formula III, with a compound of the formula IV:

IV

to obtain a compound of the formula I.

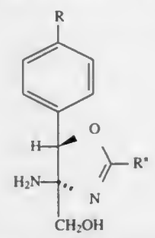
5,663,361

PROCESS FOR PREPARING INTERMEDIATES TO FLORFENICOL

James C. Towson, Clinton, and Dhiru B. Vashi, Princeton Junction, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Aug. 19, 1996, Ser. No. 699,271
Int. Cl.[6] C07D *263/28*
U.S. Cl. 548—233 **4 Claims**

1. A process for preparing a compound of formula (I):



I

wherein R is H, NO_2, CH_3S, CH_3SO_2, or C_4 to C_6 alkyl; and R" is aryl, halo aryl, benzyl, substituted benzyl, C_1 to C_6 alkyl, C_3 to C_7 cycloalkyl, and haloalkyl, and the configuration of the oxazoline ring is 4R trans:
which comprises

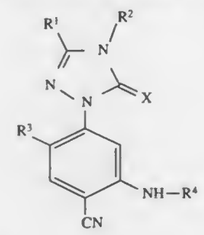
5,663,362

SUBSTITUTED TRIAZOLINONES

Wilhelm Haas, Pulheim; Karl-Heinz Linker, Leverkusen; Otto Schallner, Monheim; Kurt Findeisen, Leverkusen; Hans-Joachim Santel, Leverkusen, and Markus Dollinger, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 189,017, Jan. 28, 1994, Pat. No. 5,464,810.
This application Jun. 6, 1995, Ser. No. 469,250
Claims priority, application Germany, Feb. 5, 1993, 43 03 376.8
Int. Cl.[6] C07D *249/12*
U.S. Cl. 548—263.2 **5 Claims**

1. A substituted triazolinone of the formula



wherein

R^1 represents hydrogen, fluorine, chlorine, bromine, iodine, cyano, hydroxyl or one of the radicals —R^6, —O—R^6, —O—NR^6R^7, —S—R^6, —S (O)—R^6 or —SO_2—R^6,

R^2 represents hydrogen, hydroxyl, amino, cyano or one of the radicals —R^6, —O—R^6 or —N=CR^6R^7,

R^3 represents hydrogen, fluorine, chlorine, bromine, iodine, a straight chain or branched alkyl having from 1 to 8 carbon

atoms or a straight chain or branched halogenoalkyl having from 1 to 8 carbon atoms and from 1 to 17 halogen atoms which may be identical or different,

R^4 represents hydrogen, one of the radicals $—R^6$, $—O—R^6$ or $—SO_2—R^6$, one equivalent of an alkali metal or alkaline earth metal cation, or an ammonium cation which is optionally singly or multiply substituted by alkyl(s) having from 1 to 16 carbon atoms and which are identical or different, and

X represents oxygen or sulphur, where

R^6 represents straight chain or branched alkyl having from 1 to 14 carbon atoms and which is optionally singly or multiply substituted wherein the substituents are selected from the group consisting of halogen, cyano, carboxyl, carbamoyl, alkoxy, alkoxyalkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxycarbonyl, N-alkylaminocarbonyl, N,N-dialkylaminocarbonyl, trialkylsilyl and alkylsulphonylaminocarbonyl wherein said alkyl moieties are straight chain or branched and each have from 1 to 8 carbon atoms; or

R^6 represents alkenyl or alkinyl each having from 2 to 8 carbon atoms and which are optionally singly or multiply substituted by halogen which may be identical or different; or

R^6 represents cycloalkyl having from 3 to 7 carbon atoms.and which is optionally singly or multiply substituted by halogen which is identical or different or straight chain or branched alkyl having from 1 to 4 carbon atoms; or

R^6 also represents arylalkyl or aryl each having from 6 to 10 carbon atoms in the aryl part and optionally from 1 to 4 carbon atoms in the straight chain or branched alkyl part and which are optionally singly or multiply substituted in the aryl part by substituents which are identical or different and the substituents are halogen, cyano, nitro, amino, N-acetylamino, or alkyl, alkoxy, alkylthio, alkylsulphinyl or alkylsulphonyl which are straight chain or branched and each have from 1 to 6 carbon atoms, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, halogenoalkylsulphinyl or halogenoalkylsulphonyl which are straight chain or branched and each have 1 to 6 carbon atoms and from 1 to 13 halogen atoms which may be identical or different, alkoxycarbonyl or alkoximinoalkyl which are straight chain or branched and each have from 1 to 6 carbon atoms in the individual alkyl parts and optionally substituted phenyl wherein the substituents are identical or different and are selected from the group consisting of halogen, straight chain or branched alkyl, straight chain or branched halogenoalkyl and halogenoalkoxy wherein said alkyl moieties have 1 to 6 carbon atoms;

R^7 represents hydrogen or straight chain or branched alkyl having from 1 to 8 carbon atoms and which is optionally singly or multiply substituted wherein the substituents are halogen, cyano, carboxyl, carbamoyl, or alkoxy, alkoxyalkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxycarbonyl, N-alkylaminocarbonyl, N,N-dialkylaminocarbonyl, trialkylsilyl or alkylsulphonylaminocarbonyl which are straight chain or branched and each have from 1 to 8 carbon atoms in the individual alkyl moieties; or

R^7 represents alkenyl or alkinyl each having from 2 to 8 carbon atoms and which are optionally singly or multiply substituted by halogen which may be identical or different; or

R^7 represents cycloalkyl having from 3 to 7 carbon atoms and which is optionally singly or multiply substituted by halogen or straight chain or branched alkyl having from 1 to 4 carbon atoms; or

R^7 represents arylalkyl or aryl each having from 6 to 10 carbon atoms in the aryl part and optionally from 1 to 4 carbon atoms in the straight chain or branched alkyl part and which are optionally singly or multiply substituted in the aryl part wherein the substituents are halogen, cyano, nitro, or alkyl, alkoxy, alkylthio, alkylsulphinyl or alkylsulphonyl which are straight chain or branched and each have from 1 to 6 carbon atoms, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, halogenoalkylsulphinyl or halogenoalkylsulphonyl which are each straight chain orbranched and each have from 1 to 6 carbon atoms and from 1 to 13 halogen atoms which are identical or different, alkoxycarbonyl or alkoximinoalkyl which are straight chain or branched and each have from 1 to 6 carbon atoms in the individual alkyl parts and optionally substituted phenyl wherein the substituents are identical or different and are halogen, straight chain or branched alkyl or alkoxy, having straight chain or branched halogenoalkyl or halogenoalkoxy wherein said alkyl moieties have 1 to 6 carbon atoms.

5,663,363

2-THIOXO-IMIDAZOLIDIN-4-ONE DERIVATIVES

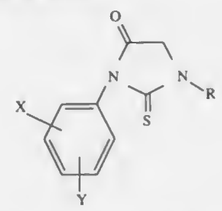
Hassan M. Elokdah, Yardley, Pa.; Sie-Yearl Chai, Lawrenceville, N.J.; Theodore S. Sulkowski, Wayne, and Donald P. Strike, St. Davids, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 21, 1996, Ser. No. 754,449

Int. Cl.[6] C07D *233/42;233/32*

U.S. Cl. 548—320.5 **5 Claims**

1. A compound of formula I



I

in which

R is alkynyl of 2 to 6 carbon atoms; and

X and Y are, independently, alkyl of 1 to 6 carbon atoms, halo, perfluoralkyl of 1 to 6 carbon atoms, perfluoralkoxy of 1 to 6 carbon atoms, or, taken together, X and Y are ortho substituted trimethylene or tetramethylene.

5,663,364

HEME BINDING COMPOUNDS AND USE THEREOF

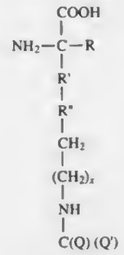
Owen W. Griffith, Milwaukee, and Krishnaswamy Narayanan, Wauwatosa, both of Wis., assignors to The Medical College of Wisconsin Research Foundation, Inc., Milwaukee, Wis.

Continuation of Ser. No. 354,257, Dec. 12, 1994, Pat. No. 5,464,858, which is a continuation of Ser. No. 87,371, Jul. 7, 1993, Pat. No. 5,424,447. This application Oct. 31, 1995, Ser. No. 550,645

Int. Cl.[6] C07D *233/64;207/335*

U.S. Cl. 548—335.5 **2 Claims**

1. Physiologically active arginine or citrulline antagonist compounds including N^{δ}-substituted ornithine or N^{ϵ}-substituted lysine moieties or monoalkyl carbon-substituted N^{δ}-substituted ornithine or N^{ϵ}-substituted lysine moieties, having the formula



wherein R is $(CH_2)_xCH_3$ or H, R' is CH_2 or C(H) $(CH_2)_yCH_3$, and R" is CH_2 or C(H) $(CH_2)_yCH_3$, with y ranging from 0 to 5, and x is 0 or 1 and wherein none or only one of R, R' and R" provides an alkyl substituent on ornithine or lysine moiety, and wherein Q is a nitrogen containing heme binding moiety and Q' is $—NH_2$ when there is a double bond between the omega carbon and Q and Q' is =NH when there is a single bond between the omega carbon and Q, and physiologically acceptable acid addition salts thereof.

5,663,365

PROCESS FOR THE PREPARATION OF PYRAZOLONES

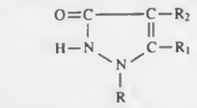
Yasuo Yamamoto; Naoki Shirakawa; Shinichi Takano, and Yoshio Kawai, all of Niigata, Japan, assignors to Japan Hydrazine Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1996, Ser. No. 739,695

Int. Cl.[6] C07D *231/20;231/22*

U.S. Cl. 548—366.1 **7 Claims**

1. A process for the preparation of pyrazolone derivatives represented by the general formula (4).



(4)

wherein R is a hydrogen atom, an alkyl group, an allyl group, an aryl group or an aralkyl group, and R_1 and R_2 are, respectively, a hydrogen atom, an alkyl group or a phenyl group which may have a substituent, comprising reacting 2,3-dihalocarboxylic acid derivatives represented by the following general formula (1),

$$CHR_1X—CR_2X—CO—Z \quad (1)$$

wherein R_1 and R_2 have the meanings as described above, X is a halogen atom, and Z is a group $—OR_3$ (R_3 is a lower alkyl group) or a group $—NR_4R_5$ (R_4 and R_5 are, respectively, a hydrogen atom or an alkyl group), or 2-haloacrylic acid derivatives of the following general formula (2),

$$CHR_1=CX—CO—Z \quad (2)$$

wherein R_1, X and Z have the meanings as described above, with hydrazine derivatives represented by the following general formula (3),

$$R—HNNH_2 \quad (3)$$

wherein R has the meaning as described above.

5,663,366

PROCESS FOR THE SYNTHESIS OF 4,5-DIAMINOPYRAZOLE DERIVATIVES USEFUL FOR DYEING HAIR

Hans Neunhoeffer, Mühltal; Stefan Gerstung, Reinheim; Thomas Clausen, and Wolfgang R. Balzer, both of Alsbach, all of Germany, assignors to Wella Aktiengeselischat, Darmstadt, Germany

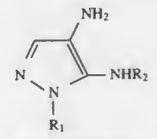
Division of Ser. No. 244,553, May 27, 1994. This application May 20, 1996, Ser. No. 650,819

Claims priority, application Germany, Oct. 16, 1992, 42 34 885.4

Int. Cl.[6] C07D *231/38*

U.S. Cl. 548—371.4 **2 Claims**

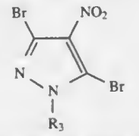
1. A process for making 4,5-diaminopyrazole derivative compounds of the formula (I)



(I)

wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl radicals having one to six carbon atoms and hydroxyalkyl radicals having two to four carbon atoms, provided that R_2 may not be tertiary butyl, said process comprising the steps of:

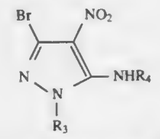
a) converting 3,5-dibromo-4-nitropyrazole with a member selected from the group consisting of benzyl halide, benzyl sulfate, an alkyl halide radical having one to six carbon atoms, an alkyl sulfate radical having one to six carbon atoms, a hydroxyalkyl halide radical having two to four carbon atoms and a hydroxyalkyl sulfate radical having two to four carbon atoms to form a compound of formula (II):



(II)

wherein R_3 is selected from the group consisting of alkyl radicals having one to six carbon atoms, hydroxyalkyl radicals having two to four carbon atoms and benzyl radicals;

b) reacting said compound of said formula (II) formed in step a) with a member selected from the group consisting of benzyl amine, alkyl amines having one to six carbon atoms and hydroxyalkyl amines having two to four carbon atoms to form a compound of the formula (III):



(III)

wherein R_3 and R_4 are independently selected from the group consisting of alkyl radicals having one to six carbon atoms, hydroxyalkyl radicals having two to four carbon atoms and benzyl radicals; and

c) catalytically hydrogenating the compound of formula (III) formed in step b) to obtain a compound of the formula (I).

5,663,367

2,4-PENTADIENOIC ACID DERIVATIVES HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

Vidyasagar Vuligonda, Irvine, and Roshantha A. Chandraratna, Mission Viejo, both of Calif., assignors to Allergan, Waco, Tex.

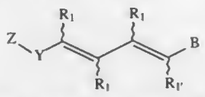
Division of Ser. No. 466,000, Jun. 6, 1995. This application May 31, 1996, Ser. No. 656,137

Int. Cl.[6] C07D *333/12;333/22;307/40;307/56*

U.S. Cl. 549—4 **10 Claims**

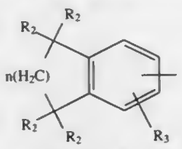
1. A compound of Formula 1

Formula 1



wherein Z is a radical shown in Formula 2,

Formula 2

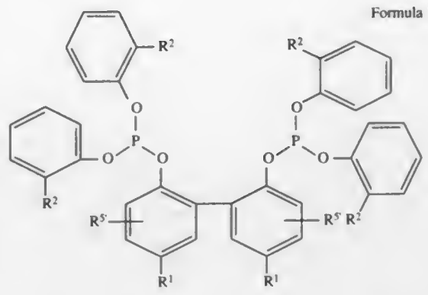


Y is selected from thienyl and furyl, said groups being optionally with one or two R_4 groups, the divalent Y radical being substituted by the Z and $—(CR_1=CR_1—CR_1=CR_1)—$ groups on adjacent carbons;

n is 1 or 2;

R_1 and R_2 independently are H, lower alkyl or fluoroalkyl;
R_3 is hydrogen, lower alkyl, Cl or Br;
R4 is lower alkyl, fluoroalkyl or halogen, and
B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_3OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, $—COR_7$, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group, containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, a cycloalkyl group of 5 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons.

Formula I



5,663,368

SYNTHESIS OF ACID ADDITION SALTS OF HYDROXYLAMINES

Joseph R. Flisak, Lansdale, and Stephen Torey Ross, Berwyn, both of Pa., assignors to Smithkline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US94/08117, § 371 Date Apr. 11, 1996, § 102(e) Date Apr. 11, 1996, PCT Pub. No. WO95/02574, PCT Pub. Date Jan. 26, 1995

Continuation-in-part of Ser. No. 91,494, Jul. 14, 1993, abandoned. This PCT application Jul. 14, 1994, Ser. No. 581,562

Int. Cl.[6] C07D *333/66;307/82;311/58;209/88*

U.S. Cl. 549—57 **22 Claims**

1. A process for resolving a mixture of enantiomeric hydroxylamines of formula (I)

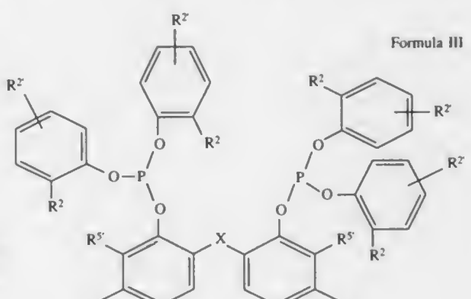
[R*NHOZ] (I)

in which [R*NHOZ] is a mixture of enantiomeric hydroxylamines wherein
R* is an organic radical which contains a chiral carbon to which the
hydroxylamine group is attached; and
Z is hydrogen or a hydroxyl protecting group;
which process comprises
a) treating a mixture of enantiomers of the formula R*NHOZ with a homochiral organic acid [HA*] to form a mixture of diasteriomeric acid addition salts of the formula

$[R^*NH_2OZ]^+[A^*]^-$ (II); and

b) separating the desired diasteriomeric acid addition salt.

Formula II



Formula III

5,663,369

HYDROCYANATION PROCESS AND MULTIDENTATE PHOSPHITE AND NICKEL CATALYST COMPOSITION THEREFOR

Kristina Ann Kreutzer, Wilmington, Del., and Wilson Tam, Boothwyn, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

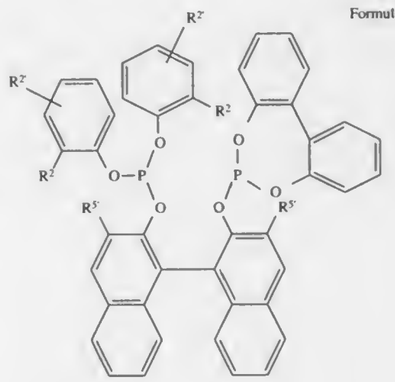
Division of Ser. No. 505,137, Jul. 21, 1995, Pat. No. 5,512,696, which is a continuation-in-part of Ser. No. 320,025, Oct. 7, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,672

Int. Cl.[6] C07F *15/04*

U.S. Cl. 549—212 **4 Claims**

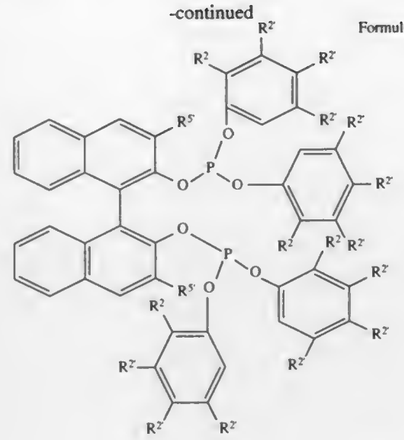
1. A catalyst composition consisting essentially of a zero-valent nickel, and at least one multidentate phosphite ligand selected from the group represented by the following Formulas I, II, III, IV, V, VI and VII:

Formula IV

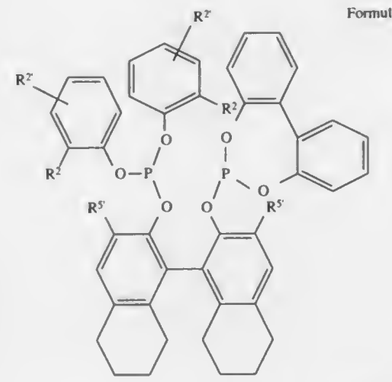


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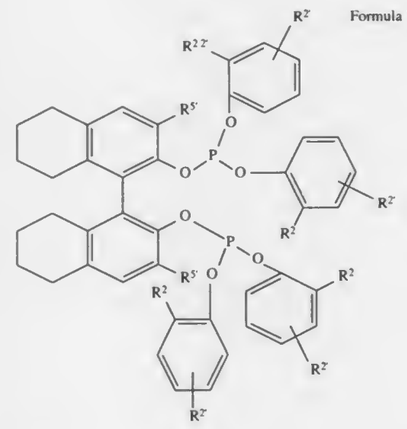
Formula V



Formula VI



Formula VII



wherein
each R^1 is independently, H, halogen, a C_1 to C_6 alkyl, or OR^3 wherein R^3 is a C_1 to C_6 alkyl;
each R^2 is independently a secondary or tertiary hydrocarbyl of 3 to 6 carbon atoms;
each $R^{2'}$ is independently H, halogen, OR^3 wherein R^3 is a C_1 to C_6 alkyl or a primary, secondary or tertiary hydrocarbyl of 1 to 6 carbon atoms; for Formulas II, III, IV, VI and VII, $R^{2'}$ is at either the meta or para position to the oxygen;
each $R^{5'}$ is independently H or a primary or secondary hydrocarbyl of 1 to 3 carbon atoms in either the ortho or meta position to the oxygen or $CO_2R^{3'}$ wherein $R^{3'}$ is a C_1 to C_4 alkyl; and
each X is independently O or $CH(R^{4'})$, wherein $R^{4'}$ is H, a substituted phenyl, or a C1 to C6 alkyl;
with the proviso that the terms "secondary" and "tertiary" herein refer to the carbon atom bonded to an aromatic ring; and with the further proviso that in Formulas I, II, and V at least one R^2 cannot be a tertiary hydrocarbyl.

5,663,370

CHEMICAL INTERMEDIATES USEFUL IN AGRICULTURE

Martin Charles Bowden, Rastrick, and Stephen Martin Brown, Upper Cumberworth, both of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB95/00500, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO95/25729, PCT Pub. Date Sep. 28, 1995

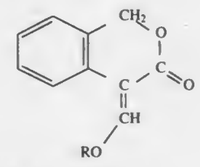
PCT Filed Mar. 8, 1995, Ser. No. 687,547

Claims priority, application United Kingdom, Mar. 21, 1994, 9405492

Int. Cl.[6] C07D *311/76;* **C07C** *69/76*

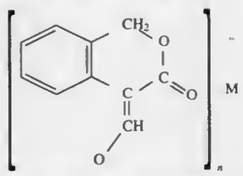
U.S. Cl. 549—290 **10 Claims**

1. A compound of formula (I) or (Ia):



(I)

wherein R is hydrogen or methyl; or



(Ia)

wherein M is an alkali metal or alkaline earth metal cation and n is 1 or 2.

5,663,371

PROCESS FOR PREPARING POLYCYCLIC DYES

Stephen John Bentley, Lancashire; Ronald Wynford Kenyon, and David John Milner, both of Manchester, all of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/02296, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/12577, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 8, 1993, Ser. No. 446,631

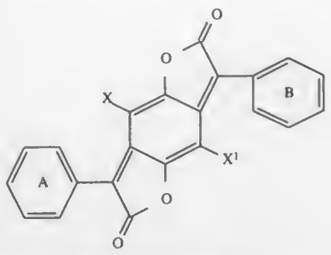
Claims priority, application United Kingdom, Nov. 25, 1992, 9224648

Int. Cl.[6] C07D *307/77*

U.S. Cl. 549—299 **1 Claim**

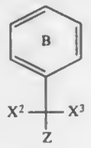
1. A process for the preparation of a polycyclic dye of the Formula (1):

Formula (I)



by reacting a compound of Formula (2):
with a compound of Formula (3):

Formula (3)

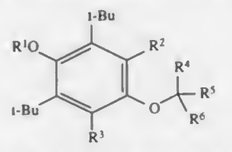


wherein:
Ring A is unsubstituted or is substituted by from 1 to 5 groups;
Ring B is unsubstituted or is substituted by from 1 to 5 groups;
X and X^1 each independently is —H, halogen, cyano, alkyl or aryl;
X^2 and X^3 each independently is halogen; and
Z is —CN, $—CO_2R$ or $—CONR^1R^2$,
in which
R is optionally substituted alkyl, optionally substituted aryl or optionally substituted aralkyl, and R^1 and R^2 each independently is —H, alkyl, aryl or aralkyl,
said process being performed at a temperature in the range of from 100° C. to 150° C.

5,663,373
4-ALKOXY-2, 6-DI-T-BUTYLPHENOL DERIVATIVES
Kunio Tamura; Yoshiaki Kato; Mitsutaka Yoshida; Osamu Cynshi, and Yasuhiro Ohba, all of Shizuoka, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 416,862, Apr. 17, 1995, Pat. No. 5,574,178.
This application Aug. 21, 1996, Ser. No. 700,834
Claims priority, application Japan, Oct. 16, 1992, 4-321101
Int. Cl.[6] C07D *307/94*
U.S. Cl. 549—345 **6 Claims**

1. A compound represented by the formula (I):

(I)

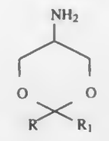


where R^1 is a hydrogen atom or an acyl group; R^3 is a hydrogen atom or a lower alkyl group; R^2 and R^4, taken together, form dihydrobenzofuran ring; R^5 and R^6, taken together, form a cycloalkyl group or a heterocyclic group in which at least one methylene on the ring of a cycloalkyl group is substituted by an oxygen atom, a sulfur atom or an alkyl-substituted nitrogen atom.

5,663,372
PROCESS FOR THE PREPARATION OF 5-AMINO-1,3-DIOXANES
Antonio Nardi, Paderno Dugnano, and Marco Villa, Milan, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy
PCT No. PCT/EP95/01246, § 371 Date Oct. 10, 1996, § 102(e) Date Oct. 10, 1996, PCT Pub. No. WO95/28395, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 5, 1995, Ser. No. 722,174
Claims priority, application Italy, Apr. 14, 1994, MI94A0699
Int. Cl.[6] C07D *319/06;319/08;* **C07C** *213/02;213/08*
U.S. Cl. 549—333 **8 Claims**

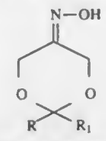
1. A process for the preparation of a 5-amino-1,3-dioxane of formula

(I)



wherein
R and R_1, the same or different, represent a hydrogen atom, a straight or branched C_1–C_4 alkyl, an optionally substituted phenyl or, together with the carbon atom to which they are bonded, form a C_5–C_6 cycloaliphatic ring, comprising the reduction of an oxime of formula

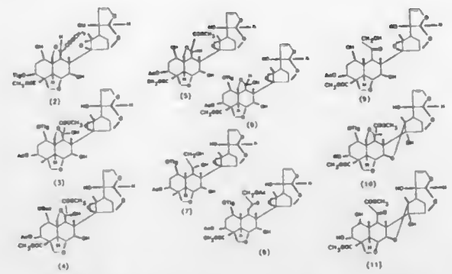
(II)



wherein R and R_1 have the above reported meanings, by catalytic hydrogenation in a suitable solvent.

5,663,374
TRITERPENE DERIVATIVES OF AZADIRACHTIN HAVING INSECT ANTIFEEDANT AND GROWTH INHIBITORY ACTIVITY AND A PROCESS FOR EXTRACTING SUCH COMPOUNDS FROM THE NEEM PLANT
Bhimsen Annacharya Nagasampagi; Supada Rambhau Rojatkar; Mandakini Moreshwar Kulkarni; Vimal Shantaram Joshi; Vidya Sudhir Bhat; Mukund Gangadhar Sane, and Nagaraj Ramanuj Ayyangar, all of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India
Division of Ser. No. 319,298, Oct. 6, 1994, Pat. No. 5,602,261, which is a division of Ser. No. 977,618, Nov. 17, 1992, Pat. No. 5,395,951. This application Jan. 11, 1996, Ser. No. 585,239
Int. Cl.[6] A01N *43/16;31/02;* **C07C** *57/02*
U.S. Cl. 549—381 **15 Claims**

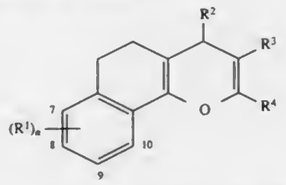
1. A process for isolation of new triterpene derivatives of azadirachtin having the formulae 2–11 shown in FIGS. 2–4 which comprises:
(a) grinding neem plant to form a powder,
(b) extracting the powder with a binary immiscible solvent consisting of a polar and a non-polar solvent in a ratio of 1:2 to obtain an extract;
(c) filtering the extract to obtain a filtrate having two layers, one layer containing lipids and the second layer comprising new



triterpene derivatives of azadirachtin, known derivatives of azadirachting, azadirachtin and water soluble constituents;
(d) separating the layers;
(e) concentrating the layer comprising the new triterpene derivatives of azadirachtin, known derivatives of azadirchtin, azadirachtin and water soluble constituents;
(f) treating the concentrate of step (e) with a polar solvent;
(g) filtering the solution of step (f) to produce a filtrate containing a mixture of the new triterpene derivatives of azadirachtin, known derivatives of azadirachtin, and azadirachtin; and
(h) separating the new triterpene derivatives of azadirachtin of the formulae 2–11 chromatographically.

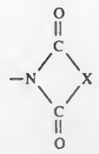
5,663,375
PHARMACEUTICAL COMPOUNDS
Michael Brunavs, Frimley; Colin Peter Dell, Dorking; Peter Thaddeus Gallagher, Camberley; William Martin Owton, Lightwater, and Colin William Smith, Brackneli, all of England, assignors to Eli Lilly and Company, Indianapolis, Ind., and Lilly Industries Limited, Basingstoke, England
Division of Ser. No. 14,016, Feb. 5, 1993, Pat. No. 5,378,699.
This application Aug. 22, 1994, Ser. No. 293,786
Claims priority, application United Kingdom, Feb. 19, 1992, 9203497
Int. Cl.[6] C07D *311/92;215/00;409/00;333/62*
U.S. Cl. 549—385 **8 Claims**

1. A compound of the formula:



in which n is 0, 1 or 2 and R^1 is attached at any of the positions 7, 8, 9 or 10, and each R^1 is selected from the consisting of halo, carboxy, trifluoromethyl, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, hydroxy-C_{1-4} alkyl, hydroxy-C_{1-4} alkoxy, nitro, trifluoromethoxy, $—COOR^5$ where R^5 is an ester-forming group, $—COR^6$, $—CONR^6R^7$ and $—NR^6R^7$ where R^6 and R^7 are each hydrogen or C_{1-4} alkyl;
R^2 is phenyl, naphthyl or heteroaryl selected from the group consisting of thienyl, pyridyl, benzothienyl, quinolinyl, benzofuranyl or benzimidazolyl, said phenyl, naphthyl and heteroaryl groups being optionally substituted, or R^2 is furanyl optionally substituted with C_{1-4} alkyl;
R^3 is nitrile, carboxy, $—COOR^6$ where R^6 is an ester-forming group, or $—CONR^9R^{10}$ where R^9 and R^{10} are each hydrogen or C_{1-4} alkyl; and
R^4 is selected from the group consisting of $—NR^{11}R^{12}$, $—NR^{11}COR^{12}$, $—N(COR^{11})_2$, $—N=CHOCH_2R^{11}$ where R^{11} and R^{12} are each hydrogen or C_{1-4} alkyl optionally substituted with carboxy, $—N=CH—NR^{13}R^{14}$ where R^{13} is hydrogen or C_{1-4} alkyl and R^{14} is C_{1-4} alkyl, optionally substituted phenyl

or

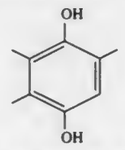


where X is C_{2-4} alkylene, or $—NHSO_2R^{15}$ where R^{15} is C_{1-4} alkyl, trifluoromethyl or optionally substituted phenyl; provided that
(i) when n is 0, R^3 is nitrile and R^4 is $—NH_2$, R^2 is not phenyl or phenyl substituted with 4-nitro, 2- or 4-chloro, 2,4-dichloro-4-nitrile, 4 -methylthio, 2-bromo, 2- or 4-methyl or 2- or 4 -methoxy;
(ii) when n is 0, R^3 is $—COOR^8$, R^8 is methyl or ethyl and R^4 is $—NH_2$, R^2 is not phenyl; and
(iii) when n is 0, R^3 is $—CONH_2$ and R^4 is $—NH_2$, R^2 is not phenyl or 4-methoxyphenyl;
and salts thereof.

5,663,376
PROCESS FOR THE PREPARATION OF α-TOCOPHEROL
Noriyasu Hirose, Tokyo; Hiroshi Inoue, Gifu Prefecture; Toshio Matsunami, Gifu Prefecture; Takashi Yoshimura, Gifu Prefecture; Kouzou Morita, Aichi Prefecture; Yuh Horikawa; Noriyoshi Iwata, both of Gifu Prefecture; Norio Minami; Kenji Hayashi, both of Ibaraki Prefecture, and Chiaki Seki, Aichi Prefecture, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan
Filed Jun. 2, 1995, Ser. No. 460,667
Claims priority, application Japan, Jui. 27, 1994, 6-175167; Nov. 16, 1994, 6-282309
Int. Cl.[6] C07D *311/72*
U.S. Cl. 549—411 **2 Claims**

1. A process for the preparation of α-tocopherol by a condensation reaction between trimethylhydroquinone represented by the following formula (I):

(I)



and a phytol derivative represented by the following formula (II):

(II)



wherein L means a hydroxy group, a halogen atom an acetoxy, methanesulfonyloxy, ethanesulfonyloxy, benzenesulfonyloxy or toluenesulfonyloxy group, or isophytol represented by the following formula (III):

(III)



which comprises conducting the condensation reaction in the presence of a carbonate ester (IV) as a solvent and $ZnCl_2$ plus concentrated HCl as a catalyst.

5,663,377

C-GLYCOSIDE ANALOGUES OF N-(4-HYDROXYPHENYL) RETINAMIDE-O-GLUCURONIDE

Robert W. Curley, Jr., and Michael J. Panigot, both of Columbus, Ohio, assignors to The Ohio State Research Foundation, Columbus, Ohio

Division of Ser. No. 321,207, Oct. 7, 1994, Pat. No. 5,574,177, and a continuation of Ser. No. 974,730, Nov. 13, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,232

Int. Cl.[6] C07D *309/14*

U.S. Cl. 549—417 **14 Claims**

1. A method for preparing a compound comprising the steps of:

a. providing a glycoside wherein all the hydroxy groups are protected;

b. arylating the protected glycoside;

c. nitrating the product of step b;

d. reducing the product of step c to its corresponding amine;

e. retinoylating the product of step d; and

f. deprotecting the product of step e, to provide a C-glycoside analogue of N-(4-hydroxyphenyl)retinamide-O-glucuronide;

wherein if the glycoside is glucuronic acid, then the product of step c is first oxidized, then protected, before the reduction to the amine.

5,663,378

Patent Not Issued For This Number

5,663,379

SUBSTITUTED PHENYL ETHERS

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

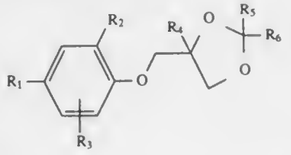
Filed Dec. 29, 1994, Ser. No. 366,128

Claims priority, application Switzerland, Dec. 30, 1993, 3905/93

Int. Cl.[6] C07D *317/00;307/77;* **A61K** *31/335*

U.S. Cl. 549—453 **7 Claims**

1. A compound of the formula



in which

R_1 is substituted or unsubstituted C_1–C_8alkyl, substituted or unsubstituted C_3–C_8cycloalkyl, substituted or unsubstituted C_2–C_8alkenyl, substituted or unsubstituted C_2–C_8alkynyl, substituted or unsubstituted C_1–C_8alkoxy, substituted or unsubstituted C_3–C_8cycloalkoxy, substituted or unsubstituted C_2–C_8alkenyloxy, substituted or unsubstituted C_2–C_8alkynyloxy or substituted or unsubstituted C_1–C_8alkylthio;

R_2 is chlorine or bromine;

R_3 is H, halogen or methyl;

R_4 is H or methyl;

R_5 is H, C_1–C_8alkyl, C_3–C_6cycloalkyl, C_2–C_5alkenyl, or C_2–C_5alkynyl; and

R_6 is H, C_1–C_6alkyl.

5,663,380

CYSTEINE PROTEASE INHIBITORS CONTAINING HETEROCYCLIC LEAVING GROUPS

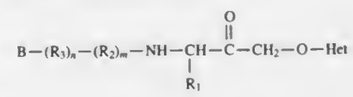
Mary P. Zimmerman, Pleasonton, and Robert E. Smith, Livermore, both of Calif., assignors to Prototek, Inc., Dublin, Calif.

Division of Ser. No. 164,031, Dec. 8, 1993, Pat. No. 5,486,623. This application Jan. 22, 1996, Ser. No. 599,459

Int. Cl.[6] C07D *315/00;307/02;* **A61K** *31/34*

U.S. Cl. 549—477 **11 Claims**

1. Cathepsin inhibitors of the formula:



wherein

B is H or an amino acid blocking group for an N-terminal amino acid nitrogen;

R_1 is the amino acid side chain of the P_1 amino acid residue;

R_2 is the amino acid residue of the P_2 amino acid;

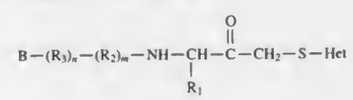
R_3 is the amino acid residue of the P_3 amino acid;

n is 0 or 1;

m is 0 or 1; and

Het is a furan.

11. Cathepsin inhibitors of the formula:



wherein

B is H or an amino acid blocking group for an N-terminal amino acid nitrogen;

R_1 is the amino acid side chain of the P_1 amino acid residue;

R_2 is the amino acid residue of the P_2 amino acid;

R_3 is the amino acid residue of the P_2 amino acid;

n is 0 or 1;

m is 0 or 1; and

Het is a furan.

5,663,381

PROCESS FOR PREPARING FORM 1 RANITIDINE HYDROCHLORIDE

Helmut Schickaneder, Eckental, and Aggelos Nikolopoulos, Bayreuth, both of Germany, assignors to Hexal Pharmaceuticals, Inc., Mobile, Ala.

Filed Apr. 21, 1995, Ser. No. 426,930

Int. Cl.[6] C07D *307/52*

U.S. Cl. 549—492 **30 Claims**

1. A process for preparing pure Form 1 ranitidine hydrochloride, which comprises: dissolving ranitidine in a solvent comprising methylene chloride; mixing the solution thus obtained with hydrochloric acid to form a reaction mixture; and crystallizing Form 1 ranitidine hydrochloride from the reaction mixture.

5,663,382

PROCESS FOR PREPARING 3-METHYLTETRAHYDROFURAN

Masaki Takemoto; Yoshikazu Shima, and Takafumi Abe, all of Nilgata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 11, 1996, Ser. No. 729,384

Claims priority, application Japan, Nov. 7, 1995, 7-288245

Int. Cl.[6] C07D *307/08*

U.S. Cl. 549—508 **5 Claims**

1. A process for preparing 3-methyltetrahydrofuran which comprises a step 1 of reacting a methacrylic acid ester with carbon monoxide and a lower aliphatic alcohol to synthesize a methylsuccinic acid diester, and a step 2 of hydrogenating and dehydrating/cyclizing the methylsuccinic acid diester which is the product of the step 1.

5,663,383

PROCESS FOR THE PREPARATION OF 3-HYDROXYOXETANES

Wolfgang Stutz, Münchwilen; Rudolf Waditschatka, Gipf-Oberfrick; Klas Winter, Massongex, all of Switzerland; Matthias von Frieling, Freiburg, Germany; Remy Gressly, Le Bouveret, Switzerland; Beat Jau, Aesch, Switzerland, and Sebastien Bürki, Monthey, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

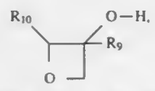
Filed Jun. 28, 1996, Ser. No. 671,905

Claims priority, application Switzerland, Jun. 29, 1995, 1913/95

Int. Cl.[6] C07D *305/08*

U.S. Cl. 549—510 **29 Claims**

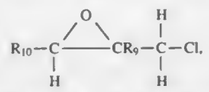
1. A process for the preparation of 3-hydroxyoxetanes of formula I



(I)

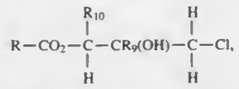
wherein R_9 and R_{10} are each independently of the other hydrogen or C_1–C_4alkyl, by

(1) reaction of a carboxylic acid R—CO_2H, wherein R is branched alkyl, with an epichlorohydrin of formula II



(II)

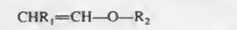
wherein R_9 and R_{10} are as defined hereinbefore, to form an ester of formula III



(III)

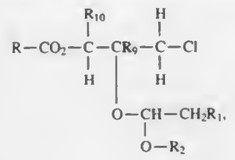
wherein R, R_9 and R_{10} are as defined hereinbefore,

(2) reaction of that ester with an ether of formula IV



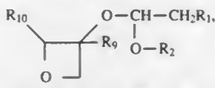
(IV),

wherein R_1 is hydrogen or methyl, R_2 is C_1–C_6alkyl, or R_1 and R_2 together form a radical of formula —$(CH_2)_3$—, in the presence of a catalyst, to form an ester of formula V



(V)

(3) hydrolysis and cyclisation of that ester in the presence of a base to form a compound of formula VI



(VI)

wherein R_1, R_2, R_9 and R_{10} are as defined hereinbefore,

(4) acetal cleavage in the presence of an acid to form the corresponding 3-hydroxyoxetane and

(5) isolation of that 3-hydroxyoxetane.

5,663,384

ASYMETRIC EPOXIDATION USING A TITANIUM-CONTAINING ZEOLITE AND A CHIRAL HYDROPEROXIDE

Wilfred Po-sum Shum; Robert J. Saxton, both of West Chester, and John G. Zajacek, Devon, all of Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Mar. 6, 1996, Ser. No. 611,732

Int. Cl.[6] C07D *301/19*

U.S. Cl. 549—529 **17 Claims**

1. A method for producing an optically active epoxide which comprises reacting a prochiral ethylenically unsaturated substrate characterized by the absence of hydroxyl groups with an optically active hydroperoxide in the presence of a titanium-containing zeolite.

5,663,385

ETHYLENE OXIDE CATALYST AND PROCESS

Richard Alan Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 333,007, Nov. 1, 1994, Pat. No. 5,545,603. This application May 9, 1996, Ser. No. 645,011

Int. Cl.[6] C07D *301/10;303/04*

U.S. Cl. 549—536 **2 Claims**

1. In a process for the production of ethylene oxide wherein ethylene is contacted in the vapor phase with an oxygen-containing gas at ethylene oxide forming conditions at a temperature in the range of from about 180° C. to about 330° C. in the presence of a silver metal-containing catalyst, the improvement which comprises using a catalyst comprising a catalytically effective amount of silver, a promoting amount of alkali metal, a promoting amount of rhenium and a rhenium co-promoter selected from phosphorus, boron and mixtures thereof supported on a suitable support having a surface area in the range of from about 0.05m^2/g to about 10 m^2/g.

5,663,386

METHOD FOR MARKING MINERAL OILS WITH AMTHRAQUINONES

Friedrich-Wilhelm Raulfs, Ludwigshafen, and Christos Vamvakaris, Kallstadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00673, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/21752, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 7, 1994, Ser. No. 513,871

Claims priority, application Germany, Mar. 18, 1993, 43 08 643.9

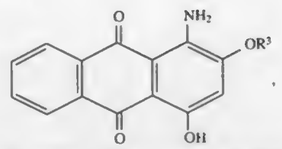
Int. Cl.[6] C09B *1/16*

U.S. Cl. 552—241 **5 Claims**

1. A method of using an anthraquinone to mark a mineral oil, comprising the steps of:

adding to a mineral oil an anthraquinone in an amount insufficient to produce a color reaction of the following general

formula Ia



(Ia)

wherein R^3 is C_1–C_{18}-alkyl which is unsubstituted or substituted by hydroxyl, cyano or phenyl and may be interrupted by from 1 to 3 ether oxygen atoms or from 1 to 3 N-(C_1–C_4-alkyl)-imino groups or is phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, hydroxyl, C_1–C_4-alkoxy, (C_1–C_4-mono- or dialkyl carbamoyl)-C_1–C_4-alkoxy or C_1–C_8-mono- or dialkylsulfamoyl, where the alkyl groups may be interrupted by from 1 to 3 ether oxygen atoms; and

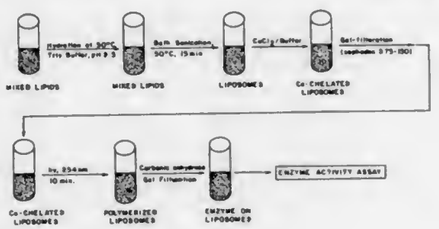
subsequently detecting the presence of said anthraquinone by admixing a strong alkaline medium in order to effect a strong color reaction with said anthraquinone.

5,663,387

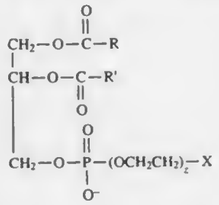
LIPOSOMES CONTAINING POLYMERIZED LIPIDS FOR NON-COVALENT IMMOBILIZATION OF PROTEINS AND ENZYMES

Alok Singh, Spring Field, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 220,124, Mar. 30, 1994, Pat. No. 5,466,467. This application Aug. 8, 1995, Ser. No. 512,355
Int. Cl.[6] C07F *9/02;9/10*
U.S. Cl. 554—80 **12 Claims**



1. A phospholipid having the formula:



(a) wherein R and R' are organic groups;

(b) wherein at least one of R and R' is selected from the group consisting of an unsaturated alkyl group, an unsaturated acid or an unsaturated ester;

(c) wherein X is a group having a terminal iminodiacetic acid moiety; and

(d) wherein z is an integer from 1–20 including 1 and 20.

5,663,388

PROCESS FOR CONVERTING ALDEHYDES TO ACIDS

Jose M. Vargas, and Magdiel Agosto, both of Baton Rouge, La., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Jun. 30, 1994, Ser. No. 269,420
Int. Cl.[6] C07C *51/16*
U.S. Cl. 554—132 **6 Claims**



1. A process for forming acids from aldehydes which comprises reacting said aldehyde with water in the presence of a supported bimetallic catalyst at a temperature in the range between about 171° C. to 188° C. and in the absence of hydrogen, thereby converting said aldehyde to said acid.

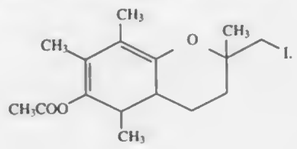
5,663,389

3,4-DIHYDRO-2-IODOMETHYL-2,5,7,8-TETRAMETHYL-2H-1-BENZOPYRANS

Goffredo Rosini, Bologna; Claudia Baldazzi, Emilia, and Silvano Piani, Bologna, all of Italy, assignors to Alfa Wassermann S.p.A., Alanno, Italy

Filed Mar. 6, 1996, Ser. No. 611,796
Claims priority, application Italy, Apr. 14, 1995, BO95A0167
Int. Cl.[6] C07D *311/58*
U.S. Cl. 549—410 **1 Claim**

1. The compound 6-acetoxy-3,4-dihydro-2-iodomethyl-2,5,7,8.-tetramethyl- 2H-1-benzopyran of formula



5,663,390

METHOD OF PRODUCING ORGANO INDIUM CHLORIDES

Dean M. Giolando, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Aug. 29, 1996, Ser. No. 705,913
Int. Cl.[6] C07F *5/00*
U.S. Cl. 556—1 **27 Claims**

1. A method of producing an organo indium chloride comprising contacting an organo chloride with an indium metal melt containing an activator to produce an organo indium chloride.

14. A method of producing an organo indium chloride comprising:

(a) forming an indium metal melt with an activator, and

(b) contacting an organo chloride with said indium metal melt to form an organo indium chloride.

21. A method of producing an organo indium chloride, comprising:

(a) providing an indium metal and an activator in a reaction vessel,

(b) heating said indium metal and said activator to a temperature above the melting point of said indium metal to form an indium metal melt, and

(c) contacting an organo chloride with said indium metal melt to form an organo indium chloride.

5,663,391

MANUFACTURING PROCESS FOR PRODUCING A β COPPER DIKETONE COMPLEX

Hideaki Machida, and Hiroshi Kokubun, both of Hachioji, Japan, assignors to Tri-Chemical Laboratory, Inc., Yamanashi Pref., Japan

Filed Mar. 6, 1996, Ser. No. 611,654
Claims priority, application Japan, Mar. 7, 1995, 7-046821
Int. Cl.[6] C07F *1/08;19/00*
U.S. Cl. 556—12 **7 Claims**

I. A process for producing a β copper diketone complex which consist of the steps: (a) mixing and reacting Cu_2O, 1,1,1,5,5,5-Hexafluoro-2, 4-pentanedione and an additional cuprous L, an electronic donator; and (b) dehydrating the crude material of step (a).

5,663,392

PREPARATION OF $VSB_AATI_BO_X$ AMMOXIDATION CATALYSTS

Stéfania Albonetti, Imola, Italy; Gilbert Blanchard, Le Plessis Belleville; Paolo Burattin, Paris, both of France; Fabrizio Cavani, Modena, and Ferruccio Trifiro, Bologna, both of Italy, assignors to R.P. Fiber & Resin Intermediates, Courbevoie Cedex, France

Filed Jan. 24, 1996, Ser. No. 590,577
Claims priority, application France, Jan. 24, 1995, 95 00999
Int. Cl.[6] C07F *9/90*
U.S. Cl. 556—28 **14 Claims**

I. A process for the preparation of a mixed oxide containing vanadium, antimony and titanium values and having the empirical formula (I):

$$VSb_aTi_bO_x \quad (I)$$

in which a is an integer or fractional number equal to or greater than 0.1, b is an integer or fractional number equal to or greater than 0.1, and x is an integer or fractional number determined by the oxidation states of the other elements, comprising (a) dissolving soluble compounds of vanadium, of antimony and of titanium in at least one saturated alcohol, (b) contacting the alcoholic solution thus obtained with water and precipitating the mixed oxide therefrom, and (c) separating the mixed oxide thus precipitated.

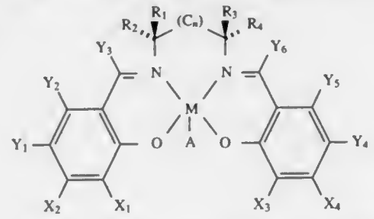
5,663,393

CHIRAL CATALYSTS AND EPOXIDATION REACTIONS

Eric N. Jacobsen, Mohamet, Ill.; Wei Zhang, Maple Glen, Pa., and Li Deng, Urbana, Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 938,245, Oct. 15, 1992, which is a continuation-in-part of Ser. No. 809,446, Dec. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 749,460, Aug. 26, 1991, abandoned, and a continuation-in-part of Ser. No. 673,208, Mar. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 496,992, Mar. 21, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 465,963
Int. Cl.[6] C07F *13/00;9/00;7/00;15/00*
U.S. Cl. 556—45 **81 Claims**

1. A chiral catalyst having the following general formula:



where M is a transition metal ion in the +3 oxidation state;

where A is an anion;

where n is either 0, 1, or 2;

where at least one of X1 or X2 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, and alkyl groups bearing hetero atoms;

where at least one of X3 or X4 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, and alkyl groups bearing hetero atoms;

where Y1, Y2, Y3, Y4, Y5, and Y6 are independently selected from the group consisting of hydrogen, halides, alkyls, aryls, NO_2, and alkyl groups bearing hetero atoms;

where at least one of R1, R2, R3 and R4 is selected from a first group consisting of hydrogen, CH_3, and primary alkyls;

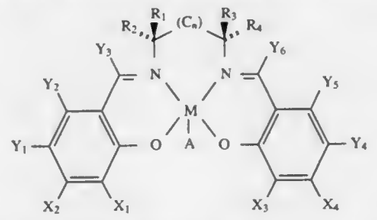
where, if R1 is selected from said first group, then R2 and R3 are selected from a second group consisting of aryls, secondary alkyls, tertiary alkyls, and alkyls bearing hetero atoms;

where, if R2 is selected from said first group, then R1 and R4 are selected from said second group;

where, if R3 is selected from said first group, then R1 and R4 are selected from said second group; and

where, if R4 is selected from said first group, then R2 and R3 are selected from said second group.

11. A chiral catalyst having the following general formula:



where M is a transition metal ion in the +3 oxidation state;

where A is an anion;

where n is either 0, 1, or 2;

where at least one of X1 or X2 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, and alkyl groups bearing hetero atoms;

where at least one of X3 or X4 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, and alkyl groups bearing hetero atoms;

where at least one of Y1 or Y2 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, halides, NO_2, and alkyl groups bearing hetero atoms;

where at least one of Y4 or Y5 is selected from the group consisting of aryls, primary alkyls, secondary alkyls, tertiary alkyls, halides, NO_2, and alkyl groups bearing hetero atoms;

where Y3 and Y6 are independently selected from the group consisting of H and primary alkyl groups;

where either one or two of R1, R2, R3 and R4 is hydrogen;

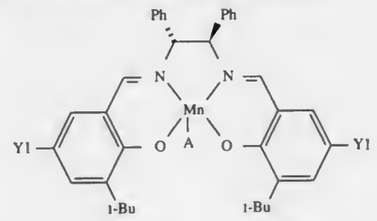
where, if R1 is hydrogen, then R3 is a primary alkyl;

where, if R2 is hydrogen, then R4 is a primary alkyl;

where, if R3 is hydrogen, then R1 is a primary alkyl; and

where, if R4 is hydrogen, then R2 is a primary alkyl.

81. A chiral catalyst having the following formula:



wherein Y is selected from the group consisting of O—CH_3, t-butyl and methyl; and

wherein A in an anion.

5,663,394
HIGH YIELD ALUMINOXANE SYNTHESIS PROCESS

John K. Roberg, and Edward A. Burt, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Jul. 15, 1996, Ser. No. 680,087
Int. Cl.[6] C07F 5/06
U.S. Cl. 556—179 **27 Claims**

1. In a process wherein hydrocarbylaluminum, water, and organic solvent are fed to a reactor to form hydrocarbylaluminoxane, the improvement which comprises (a) feeding such materials to the reactor under temperature conditions and in proportions that form a solution containing in the range of about 0.5 to about 15 wt % of aluminum as hydrocarbylaluminum and hydrocarbylaluminoxane, and wherein for each mole part of aluminum in the solution, there is in the solution in the range of about 0.1 to about 0.9 mole part of hydrocarbylaluminum; and (b) separating the solution into a first portion consisting essentially of about 0.5 to about 15 wt % of aluminum as hydrocarbylaluminum dissolved in organic solvent, and a second portion consisting essentially of about 3 to about 20 wt % of total aluminum as hydrocarbylaluminoxane and hydrocarbylaluminum, and wherein for each mole part of aluminum in solution in said second portion, there is in the range of no more than about 0.03 to about 0.3 mole part of hydrocarbylaluminum.

5,663,395
PROCESS FOR THE SELECTIVE SYNTHESIS OF SILYLALKYLDISULPHIDES

Thomas Göbel, and Jörg Münzenberg, both of Hanau, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 5, 1996, Ser. No. 743,842
Claims priority, application Germany, Nov. 7, 1995, 195 41 404.7
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—427 **13 Claims**

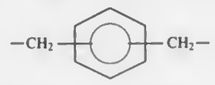
1. A process for the production of bis(silylalkyl)-disulphanes of the formula:

$$(R^1R^2R^3SiR^4)_2S_2 \quad (I),$$

in which,

R^1, R^2, R^3: are identical or different branched or unbranched alkyl and/or alkoxy groups having a chain length of 1 to 8 C atoms, hydrogen or monovalent aryl,

R^4: is a divalent alkylidene residue having a chain length of 1 to 8 C atoms,



comprising reacting a silylalkylpolysulphide or mixture of silylalkylpolysulphide of the formula:

$$(R^1R^2R^3SiR^4)_2S_n \quad (II),$$

in which R^1, R^2, R^3 and R^4 have the same meaning as in formula (I), and n is an integer from 3 to 20, with a nucleophilic compound of the formulae:

$$M^+CN^- \quad (III) \text{ or}$$

$$M^+_2SO_3^{2-} \quad (IV),$$

in which

M^+ is an alkali metal cation, a substituted or unsubstituted ammonium ion or half an alkaline earth metal ion or zinc ion, or of the formula

$$R^5R^6R^7P \quad (V),$$

in which R^5, R^6, R^7 have the same meaning as R^1, R^2, R^3 in the formula (I),

wherein the compounds of the formulae (III) to (V) are in an equimolar quantity relative to the sulphur atoms to be removed from the compound according to the formula (II).

5,663,396
PREPARATION OF SULFUR-CONTAINING ORGANOSILICON COMPOUNDS

Richard Thomas Musleve, Akron; Dane Kenton Parker, Massillon, and Robert Charles Hirst, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 31, 1996, Ser. No. 740,570
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—427 **17 Claims**

1. A process for the production of organosilicon compounds of the formula

$$Z—Alk—S_n—Alk—Z \quad (I)$$

in which Z is selected from the group consisting of



where R^1 is an alkyl group of 1 to 4 carbon atoms, cyclohexyl or phenyl;

R^2 is alkoxy of 1 to 8 carbon atoms, or cycloalkoxy of 5 to 8 carbon atoms;

Alk is a divalent hydrocarbon of 1 to 18 carbon atoms and n is an integer of 2 to 8; comprising

(A) reacting sodium hydroxide with sulfur in the presence of a saturated NaCl aqueous solution; to form a reaction mixture; and

(B) reacting said reaction mixture with a compound of the formula:

$$Z\text{-}Alk\text{-}X \quad (II)$$

where X is Cl or Br in the presence of a phase transfer catalyst.

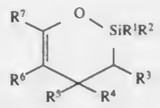
5,663,397
CYCLIC SILYL ENOL ETHERS AND METHOD OF PREPARING THE SAME

Hiroshi Yamashita, and Masato Tanaka, both of Tsukuba, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 13, 1996, Ser. No. 713,759
Claims priority, application Japan, Sep. 14, 1995, 7-236329; Mar. 8, 1996, 8-51125
Int. Cl.[6] C07F 7/08;7/18
U.S. Cl. 556—464 **17 Claims**

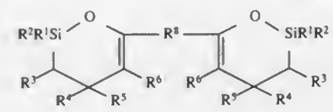
1. A method of preparing cyclic silyl enol ethers represented by formula (IV):

Formula (IV)



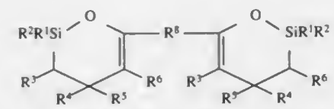
wherein R^1 and R^2 which are the same or different, each represent a monovalent group selected from an alkyl group, an aryl group, and an aralkyl group; R^3, R^4, R^5, and R^6, which are the same or different, each represent a monovalent group selected from a hydrogen atom, an alkyl group, and an aryl group; and R^7 represents an aryl group, an alkenyl group, an alkyl group, or a monovalent heterocyclic group, or by formula (V-a) or (V-b):

Formula (V-a), (V-b)



(V-a)

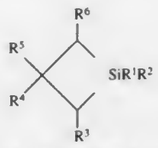
or



(V-b)

wherein R^1, R^2, R^3, R^4, R^5, and R^6 are as defined above, and R^8 represents an arylene group, an alkenylene group, an alkylene group, or a divalent heterocyclic group, comprising reacting a silacyclobutane represented by formula (I):

Formula (I)



(I)

wherein R^1, R^2, R^3, R^4, R^5, and R^6 have the same meanings as defined above in formula (IV), (V-a), or (V-b), with an acid halide represented by formula (II):

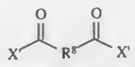
Formula (II)



(II)

wherein R^7 has the same meaning as defined above in formula (IV), and X represents a halogen atom, or by formula (III):

Formula (III)



(III)

wherein R^8 has the same meaning as defined above in formula (V-a) or (V-b), and X' represents a halogen atom, in the presence of a palladium catalyst and an organic base.

5,663,398
PROCESSES FOR PREPARING FUNCTIONALIZED ALKYLLITHIUM COMPOUNDS

James Anthony Schwindeman, Lincolnton; Eric John Granger, Charlotte, and Douglas Earl Sutton, Kings Mountain, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 12, 1996, Ser. No. 711,878
Int. Cl.[6] C07F 7/08;7/18
U.S. Cl. 556—466 **67 Claims**

1. A process for the preparation of functionalized alkyllithium compounds, comprising:

reacting in an inert solvent a protected functionalized alkyl halide with an alkali metal in the presence of a catalytic compound of the formula

$$(RR^1R^2M^a)_yA(R^3)_x$$

wherein R, R^1 and R^2 are each independently selected from the group consisting of hydrogen, halogen, alkyl or alkenyl groups containing one to thirteen carbon atoms; R^3 is independently selected from aryl groups containing 6 to 18 carbon atoms, four to six-membered heterocyclic carbon containing groups containing one to two heteroatoms selected from oxygen, nitrogen and sulfur; hydroxyalkyl, alkoxyalkyl, monoalkylaminoalkyl, dialkylaminoalkyl and dialkylphosphinoalkyl groups containing two to thirteen carbon atoms; M^a is an element selected from Group IVA of the Periodic Table of Elements; A is selected from oxygen, sulfur, nitrogen, and phosphorus; x+y equal the valence of A; and x and y may independently have a value from zero to three, to produce a functionalized alkylalkali metal compound.

5,663,399
METHOD FOR PRODUCING FLUORINE-CONTAINING SILICONE COMPOUND

Yutaka Furukawa; Mami Kotera; Seisaku Kumai; Kazuya Oharu, and Toshihiko Toma, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,923
Claims priority, application Japan, Oct. 28, 1994, 6-265334; Sep. 29, 1995, 7-254028; Sep. 29, 1995, 7-254032
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—479 **18 Claims**

1. A method for producing a fluorine-containing silicone compound, which comprises subjecting a compound of the following formula (I) and a hydrosilicone compound having at least one hydrogen atom bonded to a silicon atom to hydrosilylation to obtain a fluorine-containing silicone compound having a R^f—Q—$CR^1R^2CR^3HCR^4R^5$— group bonded to the silicon atom:

$$R^f—Q—CR^1R^2CR^3=CR^4R^5 \quad (I)$$

wherein R^f is a monovalent fluorine-containing organic group wherein a fluorine atom is bonded to the carbon atom adjacent to Q, Q is a single bond or a bivalent group containing no fluorine atom and no oxygen atom, and each of R^1 to R^5 which are independent of one another, is a hydrogen atom or a monovalent hydrocarbon group.

5,663,400
PROCESS FOR PREPARING ALKYLSILANES HAVING BULKY ALKYL RADICALS

Rudolf Reitmeier; Hermann Bräunling, both of Burghausen; Tassilo Lindner, Mehring, and Hartmut Menzel, Burghausen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Mar. 6, 1996, Ser. No. 611,737
Claims priority, application Germany, Mar. 9, 1995, 195 08 459.4
Int. Cl.[6] C07F 7/08;7/10
U.S. Cl. 556—479 **8 Claims**

1. A process for preparing di- and trialkylsilanes of the formula

$$R_aR^1R^2_bSiX_c \quad (I),$$

which comprises reacting mono- and dialkylsilanes of the formula

$$R^1R^2_bSiH_aX_c \quad (II),$$

with alkenes A having at least 4 carbon atoms, which alkenes are unsubstituted or substituted by fluorine, chlorine or bromine atoms or cyano groups, in the presence of a transition metal catalyst and a hydrocarbon activator, which hydrocarbon activator has at least one functional group selected from the group consisting of an aldehyde, keto or epoxy group and a halogen atom, wherein the hydrocarbon activator having at least one keto group is selected from the group consisting of, acetone, methylethylketone, diethylketone, methylisopropylketone, methylbutylketone, acetylacetone, ethylbutylketone, cyclopentanone and cyclohexanone, where, in the above formulae (I) and (II),

R is a branched or cyclic hydrocarbon radical having at least 4 carbon atoms, which radical is unsubstituted or substituted by fluorine, chlorine or bromine atoms or cyano groups,

R^1 is an alkyl radical having at least 2 carbon atoms, which radical is unsubstituted or substituted by fluorine, chlorine or bromine atoms or cyano groups,

R^2 is a hydrocarbon radical having at least 2 carbon atoms, which radical is unsubstituted or substituted by fluorine, chlorine or bromine atoms or cyano groups,

X is a fluorine, chlorine or bromine atom or an alkoxy radical having from 1 to 18 carbon atoms, which radical is unsubstituted or substituted by fluorine, chlorine or bromine atoms or cyano groups,

a is 1 or 2,

b is 0 or 1 and

c is 1 or 2

with the proviso that in the above formulae (I) and (II), the sum of a, b and c is 3.

5,663,401

PHOSPHORUS- AND SULFUR-CONTAINING ACRYLATES AND METHACRYLATES

Martine Cerf, Metz; Jean Luc Mieloszynski, Montigny les Metz, and Daniel Paquer, Vandoeuvre, all of France, assignors to Atochem, Paris La Defense, France

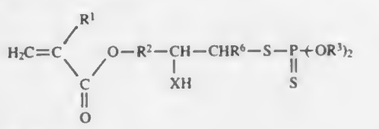
Division of Ser. No. 29,288, Mar. 8, 1993, Pat. No. 5,399,733, which is a continuation of Ser. No. 715,197, Jun. 14, 1991, abandoned. This application Jan. 6, 1995, Ser. No. 369,484

Claims priority, application France, Jun. 14, 1990, 90 07439

Int. Cl.[6] C07F *9/165*

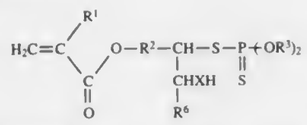
U.S. Cl. 558—105 **8 Claims**

1. A process for the preparation of an acrylic or methacrylic compound of the formula:



(I)

or of the formula:



(II)

in which formulae:

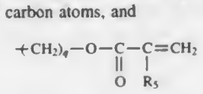
R^1 is chosen from a hydrogen atom and a methyl radical,

X is a hetero atom chosen form oxygen and sulphur,

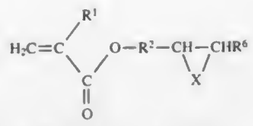
R^2 is chosen from straight-chain or branched alkylene groups, monocyclic or polycyclic cycloalkylene, alkylarylene or arylalkylene groups comprising from 1 to 12 carbon atoms,

R^6 is chosen from a hydrogen atom and alkyl and aryl radicals having from 1 to 12 carbon atoms, and

R^3 is chosen from alkyl and aryl radicals having from 1 to 20 carbon atoms, $-(CH_2)_pSR^4$ groups in which p is an integer ranging from 2 to 12 and R^4 is an alkyl radical having from 1 to 20 carbon atoms, or a monocyclic or polycyclic cycloalkyl group having 4 to 10 carbon atoms, each ring in said group having 4 to 6 carbon atoms, and



groups in which q is an integer ranging from 2 to 12 and R^5 is chosen from a hydrogen atom and a methyl radical, comprising reacting an acrylic or methacrylic epoxide or episulphide of formula:



(III)

in which R^1, R^2, R^6 and X have the same meanings as in formula (I), with a thiophosphorus compound of formula:

in which R^3 has the same meaning as in formula (I).

5,663,402

PROCESS FOR THE PREPARATION OF PHOSPHORODITHIOIC COMPOUNDS VIA THIONATION REACTION

Edward J. Griffith, Manchester, and Toan M. Ngo, Eureka, both of Mo., assignors to G.D. Searle & Company, Chicago, Ill.

Continuation-in-part of Ser. No. 219,227, Mar. 29, 1994, Pat. No. 5,464,601. This application Mar. 27, 1995, Ser. No. 409,011

Int. Cl.[6] C07F *9/17;9/205*

U.S. Cl. 558—121 **9 Claims**

1. A process for preparing a dialkyl phosphorodithioic acid comprising

(a) combining an alkyl alcohol with elemental sulfur and white phosphorus, wherein said sulfur and phosphorus are premixed at a temperature below the activation temperature of sulfur and phosphorus and are present in a ratio of two moles of phosphorus to five moles of sulfur;

(b) heating the mixture of (a) to a temperature to cause the sulfur and phosphorus to react; and

(c) recovering a dialkyl phosphorodithioic acid from the reaction mixture.

5,663,403

BISPHOSPHITE COMPOUND AND METHOD FOR PRODUCING ALDEHYDES

Keiichi Sato; Eitaro Takahashi; Yoshifumi Tanihara, and Yasuhiro Wada, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

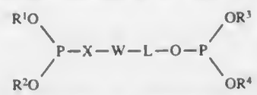
Filed Jan. 18, 1996, Ser. No. 588,390

Claims priority, application Japan, Jan. 24, 1995, 7-008924

Int. Cl.[6] C07F *9/06*

U.S. Cl. 558—156 **12 Claims**

1. A bisphosphite compound of the following formula (I):



(I)

wherein W is a substituted or unsubstituted arylene group, L is a substituted or unsubstituted alkylene or alkenylene group, X is an oxygen atom, and each of R^1 to R^4 which are the same or different, is a substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl or alicyclic group, or R^1 and R^2, and/or R^3 and R^4, bond to each other to form a ring.

5,663,404

SPHINGOSINE-1-PHOSPHATE ESSENTIALLY FREE OF L-THREO ISOMER

Yasuyuki Igarashi; Fuqiang Ruan; Yoshito Sadahira; Shigeyuki Kawa, and Sen-Itiroh Hakomori, all of Seattle, Wash., assignors to Oncomembrane, Seattle, Wash.

Division of Ser. No. 104,504, Aug. 9, 1993, Pat. No. 5,391,800, which is a division of Ser. No. 863,179, Apr. 3, 1992, Pat. No. 5,260,288. This application Jan. 12, 1995, Ser. No. 371,866

Int. Cl.[6] C07F *9/09*

U.S. Cl. 558—169 **10 Claims**

1. Sphingosine-1-phosphate essentially free of L-threo isomer.

5,663,405

PROCESS OF PRODUCING ETHER-TYPE THIO-PHOSPHOLIPIDS

Mitsuaki Ohtani, Nara, and Masahiro Fuji, Higashiosaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

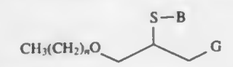
Filed Sep. 19, 1995, Ser. No. 530,763

Claims priority, application Japan, Sep. 20, 1994, 6-224679

Int. Cl.[6] C07F *9/02*

U.S. Cl. 558—166 **5 Claims**

1. A compound of the formula (XIV):

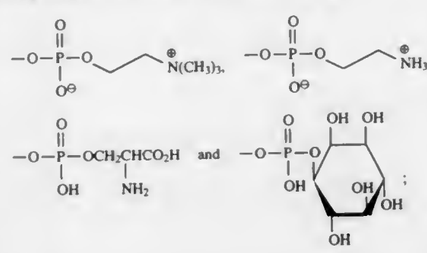


(XIV)

wherein:

n is an integer of 13 to 17;

G is a group selected from the group consisting of:



and

B is an S-protecting group selected from the group consisting of t-butoxycarbonyl, benzyloxycarbonyl, benzyl, 4-methoxybenzyl, 3,4-dimethoxybenzyl, 4-nitrobenzyl, diphenylmethyl, trityl and benzoyl.

5,663,406

FORMATION OF CARBONATE ESTERS AND ORTHOCARBONATES

Joseph Anthony King, Jr.; Robert Edgar Colborn; Deborah Ann Haitko, all of Schenectady, and Jimmy Lynn Webb, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 494,040, Jun. 26, 1995, abandoned. This application Nov. 25, 1996, Ser. No. 758,108

Int. Cl.[6] C07C *68/00;68/06*

U.S. Cl. 558—243 **20 Claims**

1. A method of producing carbonate ester comprising the step of preparing and reacting a mixture consisting essentially of

(a) a hydroxy compound of the formula

R—OH ,

wherein R is selected from the group consisting of substituted and unsubstituted aryl radicals;

(b) a sulfur compound selected from the group consisting of carbon disulfide and di-(O-phenyl) thiocarbonate;

(c) a promoter comprising at least one metal source that is capable of reacting with said hydroxy compound and said sulfur compound; and, optionally,

a ligand, water and a solvent.

5,663,407

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR, CARBONATE COMPOND FOR USE IN THE SAME, AND INTERMEDIATE COMPOUND FOR PRODUCING THE CARBONATE COMPOUND

Tomoyuki Shimada, Shizuoka-ken; Masaomi Sasaki, Susono, and Chiaki Tanaka, Shizuoka-ken, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

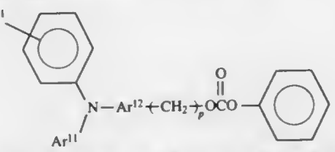
Division of Ser. No. 260,981, Jun. 15, 1994, Pat. No. 5,547,792. This application Apr. 17, 1995, Ser. No. 422,930

Claims priority, application Japan, Jun. 15, 1993, 5-168523; Jun. 17, 1993, 5-171155; Jun. 17, 1993, 5-171156; Aug. 9, 1993, 5-217031; Aug. 9, 1993, 5-217032; Oct. 25, 1993, 5-288701

Int. Cl.[6] C07C *69/96*

U.S. Cl. 558—270 **2 Claims**

1. A carbonate compound of formula (II):



(II)

wherein R^{11} is hydrogen, an alkyl group, an alkoxyl group, a phenyl group which may have a substituent, or a vinyl group which may have a substituent; Ar^{11} is a phenyl group which may have a substituent, or a condensed polycyclic group; Ar^{12} is a bivalent arylene group, a bivalent stilbene which may have a substituent, or a bivalent 1,2-diphenylethane which may have a substituent; and p is an integer of 0 to 2.

5,663,408

PROCESS FOR PREPARING DIARYL CARBONATES

Hans-Josef Buysch; Carsten Hesse, both of Krefeld, and Johann Rechner, Kempen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 29, 1996, Ser. No. 623,728

Claims priority, application Germany, Apr. 5, 1995, 195 12 616.5

Int. Cl.[6] C07C *68/00;69/96*

U.S. Cl. 558—274 **20 Claims**

1. A process for preparing a diaryl carbonate of the formula

RO—CO—OR

which comprises reacting an aromatic hydroxy compound of the formula

ROH.

where, in the formulae,

R is substituted or unsubstituted C_6–C_{12}-aryl,

with CO and O_2 at a temperature of from 30° to 200° C. and a pressure of from 1 to 150 bar in the presence of a quaternary salt, a base, a platinum metal catalyst and a cocatalyst, and in the additional presence of a heterogeneous promoter which is a compound of the formula

$A_xB_yC_z$

where

A and B are each, independently of one another, an element of group IIIA, IVA, VA, IIIB, IVB, VB, VIB or VIIB of the Periodic Table of the Elements (Mendeleev),

C represents an element of the 2nd period of the Periodic Table of the Elements (Mendeleev),
x is a number from 1 to 3,
y is a number from 0 to 3 and
z is a number from 1 to 12.

5,663,409

PROCESS FOR THE PREPARATION OF 3-(METHYLTHIO) PROPANAL AND 2-HYDROXY-4-(METHYLTHIO) BUTANENITRILE

Thomas F. Blackburn, Chesterfield, and Paul F. Pellegrin, St. Louis, both of Mo., assignors to Novus International, Inc., St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 476,356
Int. Cl.[6] C07C *253/30;253/00;319/18;323/22*
U.S. Cl. 558—351 **17 Claims**

10. A process for the manufacture of 2-hydroxy-4-(methylthio)butanenitrile comprising:

reacting methyl mercaptan with acrolein in a reaction zone in the presence of an olefin/mercaptan addition reaction catalyst comprising at least one organic base selected from the group consisting of imidazole, benzimidazole, 2 -fluoropyridine, 4 -dimethylaminopyridine, picoline and pyrazine, thereby producing an intermediate reaction product mixture comprising 3 -(methylthio)propanal and said catalyst; and

without prior separation of said catalyst from the 3 -(methylthio)propanal of said intermediate reaction product mixture, reacting said 3-(methylthio)propanal with hydrogen cyanide to produce 2-hydroxy-4-(methylthio)butanenitrile.

5,663,410

CIS-4-(2,2,3,3-TETRAFLUOROPROPOXY)-CINNAMONITRILE AND TRANS-4-(2,2,3,3-TETRAFLUOROPROPOXY)-CINNAMONITRILE AND A PROCESS FOR THEIR PREPARATION

Matthias Beller, Idstein, and Ralf Pfirmann, Griesheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt

Filed Nov. 6, 1995, Ser. No. 554,185
Claims priority, application Germany, Nov. 8, 1994, 44 39 836.0
Int. Cl.[6] C07C *255/07*
U.S. Cl. 558—401 **5 Claims**

1. A compound selected from the group consisting of cis-4-(2,2,3,3-tetrafluoropropoxy)cinnamonitrile which has a purity of at least 95% and trans-4-(2,2,3,3- tetrafluoropropoxy)cinnamonitrile which has a purity of at least 95%.

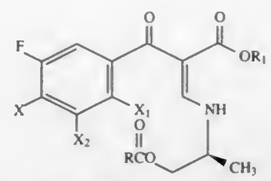
5,663,411

(+)2-BENZOYL-3-[(PROP-2(S)-YL)AMINO]ACRYLATE DERIVATIVES AND A METHOD FOR THE PREPARATION OF THE SAME

Youseung Kim; Soon Bang Kang, and Seonhee Park, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Oct. 11, 1994, Ser. No. 321,359
Claims priority, application Rep. of Korea, Mar. 22, 1994, 5761/1994
Int. Cl.[6] C07C *205/06;229/34*
U.S. Cl. 560—22 **4 Claims**

1. An optically active compound of (+)2-benzoyl-3-[(prop-2(S)-yl)amino]acrylate derivative having the formula I or the salts thereof:



(I)

wherein X is a halogen; X_1 and X_2 are independently selected from a halogen and a nitro; and R and R_1 each is an alkyl group containing 1 to 4 carbon atoms.

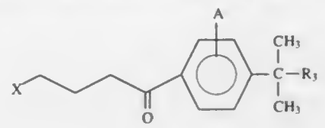
5,663,412

AROMATIC KETONES

Thomas E. D'Ambra, Wynantskill, N.Y., assignor to Albany Molecular Research, Inc., Albany, N.Y.

Continuation of Ser. No. 455,991, May 31, 1995, Pat. No. 5,581,011, which is a division of Ser. No. 382,649, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 83,102, Jun. 24, 1993. This application Aug. 8, 1996, Ser. No. 700,556
Int. Cl.[6] C07C *69/76;59/84;59/88;59/90*
U.S. Cl. 560—51 **19 Claims**

I. A substantially pure regioisomer having the formula:



wherein

X is a halogen;

R_3 is —COOH or —$COOR_4$;

R_4 is an alkyl with 1 to 6 carbon atoms;

A is the substituents of its ring, each of which may be different or the same, and are selected from the group consisting of hydrogen, halogens, alkyl, hydroxy, or alkoxy.

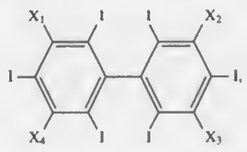
5,663,413

BIPHENYL IODINATED DERIVATIVES AND THEIR DIAGNOSTIC USE

Fulvio Uggeri; Pier Lucio Anelli; Marino Brocchetta, and Massimo Visigalli, all of Milan, Italy, assignors to Dibra S.p.A., Milan, Italy

Filed May 24, 1995, Ser. No. 448,750
Claims priority, application Italy, Dec. 1, 1994, MI94A2433
Int. Cl.[6] C07C *69/76;233/11;17/00*
U.S. Cl. 560—59 **6 Claims**

I. A compound of general formula (I)

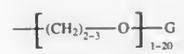


(I)

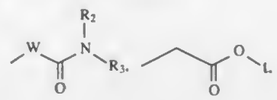
wherein:

X_1, X_2, X_3, X_4 independently are H or a —O—B group or a —Y—Z group, with the proviso that at least one of said X_{1-4} substituents is H or a —O—B group, and wherein

B is H or (C_1–C_6) hydroxyalkyl residue, with 1–5 —OH groups or a polyoxaalkyl group of formula



wherein
G is H, —CH_3 or —CH_2—CH_3, or
B is one of the groups of formula



wherein
W is a —$(CH_2)_{0-5}$—$CH(R_1)$— group,
R_1 is H or a CH_3 group,
R_2 and R_3, which can be the same or different, are H or a (C_1–C_6) alkyl group or a (C_1–C_6) hydroxyalkyl residue with 1–5 —OH groups, or a (C_2–C_6) alkoxyalkyl residue, or they are a polyoxaalkyl group as previously defined, or R_2 and R_3, taken together, form a (C_3–C_6) chain, which can be substituted or not by —O—, —X—, —NH—, —$N(CH_3)$— groups, and
L is H or a (C_1–C_6) alkyl residue, or a (C_1–C_6) hydroxyalkyl residue, with 1–5 —OH groups;
Y is a —CO— group or a —N(D)— group, wherein
a) when Y is equal to —CO—, then Z is a —NR_2R_3 group wherein R_2 and R_3 are as previously defined and
b) when Y is equal to —N(D)—, then D is H or a (C_1–C_6) alkyl residue, or a (C_1–C_6) hydroxyalkyl residue, with 1–5 —OH groups, and Z is a —COR_4 group, wherein R_4 is a (C_1–C_6) hydroxyalkyl residue with 1–5 —OH groups,

with the proviso that all the X_{1-4} substituents are not simoultaneously H or —O—B;

and when said compound of formula (I) contains one or more phenol or free acid functions, these can be salified or not with physiologically acceptable organic bases selected from primary, secondary and tertiary amines, or basic amino acids or inorganic bases whose cations are sodium, potassium, magnesium, calcium, or mixtures thereof.

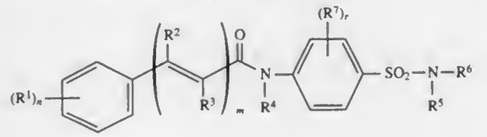
5,663,414

BENZENESULFONAMIDE DERIVATIVES

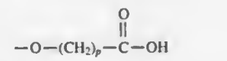
Hitoshi Oinuma; Takashi Hasegawa; Tadanobu Takamura; Kenichi Nomoto; Yoshiharu Daiku; Toshihiko Naito, all of Ibaraki, and Sachiyuki Hamano, Kanagawa, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 161,817, Dec. 6, 1993, Pat. No. 5,530,118, which is a division of Ser. No. 768,515, Sep. 26, 1991, Pat. No. 5,281,626. This application Dec. 29, 1995, Ser. No. 581,257
Claims priority, application Japan, Feb. 7, 1991, 2-27071
Int. Cl.[6] C07C *311/16*
U.S. Cl. 564—80 **11 Claims**

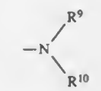
I. A pharmaceutical composition which comprises an effective phospholipase A_2 inhibiting amount of a benzenesulfonamide derivative represented by the general formula:



wherein R^1 stands for a hydrogen atom, a cyano, nitro hydroxy group, a halogen atom, a lower alkoxy group, an acyloxy group wherein said acyl moiety is a residue of an organic saturated or unsaturated aliphatic, carbocyclic or heteroaryl carboxylic acid wherein the hetero atom is oxygen, nitrogen or sulfur, —SO_2—R^8 wherein R^8 stands for a lower alkyl group, a heteroaryl wherein the hetero atom is a nitrogen, oxygen or sulfur atom, a glycyloxy group, or a group represented by the formula:



wherein p is an integer of 1 to 3;
n is an integer of 1 to 4;
R^2 stands for a hydrogen atom or a pyridyl group.;
R^3 stands for a hydrogen atom or a lower alkyl, cyano or pyridyl group;
R^4 stands for a hydrogen atom or a lower alkyl group;
R^5 and R^6 may be the same or different from each other and each stand for a hydrogen atom, a lower alkyl group, a group represented by the formula: —$(CH_2)_q$—A wherein q is an integer of 1 to 4,
and A stands for a hydroxyl group, a group represented by the formula:



wherein R^9 and R^{10} may be the same or different and each stand for a hydrogen atom or a lower alkyl group; or
R^5 and R^6 each stand for an unsubstituted cycloalkyl group, or a cycloalkyl substituted with a lower alkyl or halogen or condensed with an aromatic ring, a bicycloalkyl, or tricycloalkyl, said bicycloalkyl or tricycloalkyl being an aliphatic saturated hydrocarbon group made of two or three rings, respectively, with at least two carbon atoms being common to each ring;
a plurality of R^7 groups each independently stand for a hydrogen atom, a lower alkyl group, a lower alkoxy group or a halogen atom; and r is an integer of 1 to 2, provided that when r is 2, the two R^7 groups may form a cyclohexenyl or phenyl ring together with two adjacent carbon atoms constituting the benzene ring; and
m is an integer of 1 to 2; or a pharmacologically acceptable salt thereof; and a pharmaceutically acceptable carrier.

5,663,415

PROCESS FOR PREPARING ANTIHISTAMINE TANNATES

Vilas M. Chopdekar, Edison; James R. Schleck, Somerset; Vernon A. Brown, Maplewood, and Cheng Guo, Harrison, all of N.J., assignors to Jame Fine Chemicals, Inc., Bound Brook, N.J.

Filed Jun. 28, 1996, Ser. No. 671,604
Int. Cl.[6] C07C *69/88*
U.S. Cl. 560—68 **10 Claims**

I. A process for preparing an antihistamine tannate composition which comprises the steps of:

(a) contacting an antihistamine in the form of its free base with tannic acid in the presence of water at a maximum temperature which will not cause decomposition of the antihistamine tannate to an extent of greater than about 5 wt %, based on the weight of the antihistamine tannate;

(b) allowing the antihistamine to remain in contact with the tannic acid in the presence of water for a period of time in the range of about 5 minutes to 4 hours at said maximum temperature; and

(c) freeze-drying the antihistamine tannate resulting from step (b) at a temperature and at a reduced pressure and for such period of time that (i) at least about 90 wt. % of the water is removed from the antihistamine tannate and (ii) decomposition of the antihistamine tannate will be limited to a maximum of about 5 wt. %.

5,663,416

OXIDANT SENSITIVE AND INSENSITIVE AROMATIC ESTERS AS INHIBITORS OF HUMAN NEUTROPHIL ELASTASE

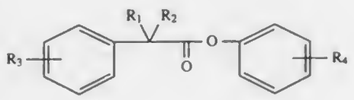
Gary P. Kirschenheuter; Lyle W. Spruce, both of Arvada, and John C. Cheronis, Lakewood, all of Colo., assignors to Cortech Inc.

Continuation of Ser. No. 841,608, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 692,322, May 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,967, May 22, 1990, Pat. No. 5,214,191. This application Apr. 5, 1995, Ser. No. 417,274

Int. Cl.[6] C07L *69/76*

U.S. Cl. 560—105 **23 Claims**

1. A compound of the formula:



(IV)

wherein:

R_1 and R_2 are different, and are selected from the group consisting of hydrogen, alkyl of 1–6 carbons, cycloalkyl of 3–6 carbons or together represent a methylene group $—(CH_2)_n—$ where n is a whole number of from 1 to 6;

R_3 represents one or more substituents up to five selected from the group consisting of:

hydrogen, halogen, haloalkyl of 1–12 carbons, alkyl of 1– 12 carbons, alkoxy of 1–12 carbons, alkenyl of 2–12 carbons, cycloalkyl of 3–12 carbons, mono- or dicyclic aryl,

$—ZR_5$ where Z is O, S, S(O) or SO_2 and R_5 is hydrogen, alkyl of 1–18 carbons, cycloalkyl of 3–12 carbons or phenyl;

$—NR_6R_7$ where R_6 and R_7 may be the same or different and may be hydrogen, alkyl of 1–12 carbons, cycloalkyl of 3–6 carbons, phenyl, alkoxy of 1–12 carbons, acyl of the formula $—C(O)R_8$ where R_8 is alkyl of 1–12 carbons, cycloalkyl of 3–12 carbons, phenyl, $CH_3OC(O)CH_2CH_2—$, $HOOCCH_2CH_2—$, $NaO_3SCH_2CH_2NHC(O)\ CH_2CH_2—$, or R_6 and R_7 together may represent $—C(O)CH_2CH_2(O)—$, $—C(O)—C_6H_4—C(O)—$ or $—(CH_2)_x—$ where x is 2, 3, 4, 5 or 6;

morpholino imidazole or piperazino joined to the phenyl ring through a nitrogen atom; or

R_3 represents the atoms necessary to complete between adjacent ring carbons a further 3, 4, 5, 7, or 8 membered carbocyclic ring; a 6 membered non-aromatic carbocyclic ring or a 5–6 membered heterocyclic ring including one or more O, S or N rings atoms; and

R_4 is from one to five substituents selected from halogen, nitro, $—C(O)CH_3$, $S(O)_pR_9$ where p is 0, 1 or 2 and R_9 is hydroxy, —ONa, or optionally substituted alkyl of 1–12 carbons or optionally substituted cycloalkyl, or

a nontoxic pharmaceutically acceptable salt of said compound, provided that R_3 and R_4 are not both hydrogen and provided further that when R_3 is phenoxy or represents the atoms necessary to complete between adjacent ring carbons a further carbocyclic ring, R_4 is nitro or $S(O)_pR_9$.

5,663,417

CARBOCYCLIC SULFONAMIDES

Nobuyuki Hamanaka, Osaka, and Tsumoru Miyamoto, Shiga, both of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

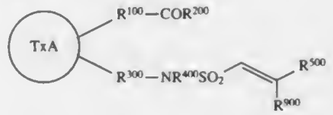
Filed Jan. 27, 1994, Ser. No. 187,008

Claims priority, application Japan, Jan. 29, 1993, 5-013021

Int. Cl.[6] A61K *31/215;31/18;* **C07C** *69/608*

U.S. Cl. 560—121 **23 Claims**

1. Carbocyclic sulfonamides of the formula:

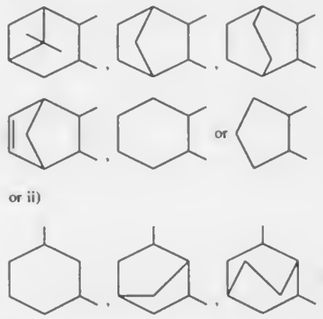


(Iy)

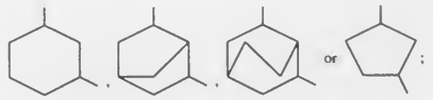
wherein



is i)



or ii)



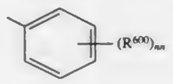
R^{100} is C4–7 alkylene or C4–7 alkenylene;

R^{200} is hydroxy, C1–20 alkoxy or $NR^{230}R^{240}$ in which R^{230} and R^{240} each, independently, is hydrogen, C1–4 alkyl or $NR^{230}R^{240}$ is amino acid residue;

R^{300} is a single bond or C1–4 alkylene;

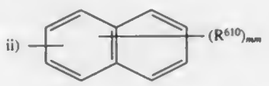
R^{400} is hydrogen or C1–4 alkyl;

R^{500} and R^{900} each, independently, is

i) 

in which R^{600} is hydrogen, C1–4 alkyl, C1–4 alkoxy, hydroxy, halogen, trifluoromethyl, nitro;

nn is 1, 2 or 3;

ii) 

in which R^{610} is hydrogen, C1–4 alkyl, C1–4 alkoxy, hydroxy, halogen, trifluoromethyl, nitro;

mm is 1, 2 or 3;

iii) 

in which R^{620} is hydrogen, C1–4 alkyl, C1–4 alkoxy, hydroxy, halogen, trifluoromethyl, nitro;

kk is 1, 2 or 3;

pp is 3, 4, 5, or 6;

iv) C1–7 alkyl or

v) hydrogen;

cyclodextrin clathrates thereof or non-toxic salts thereof.

5,663,418

PROCESSES FOR THE PREPARATION OF CYCLOPROPANECARBOXYLIC ACID AND DERIVATIVES THEREOF

Shaowo Llang, Kingsport, and Timothy W. Price, Church Hill, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 315,462, Sep. 30, 1994, Pat. No. 5,504,245. This application Nov. 27, 1995, Ser. No. 562,948

Int. Cl.[6] C07C *69/74*

U.S. Cl. 560—124 **6 Claims**

1. Process for the preparation of cyclopropanecarboxylic acid which comprises contacting cyclopropanecarboxaldehyde with molecular oxygen at a temperature of about 10° to 200° C. wherein in a second step the cyclopropanecarboxylic acid is reacted with a hydroxy compound having the structure R—OH in the presence of an acidic catalyst to produce a cyclopropanecarboxylate ester having the structure:



wherein R is (i) a linear or branched alkyl, alkenyl or alkynyl radical containing up to about 30 carbon atoms, (ii) a cycloalkyl or cycloalkenyl radical containing 3 to 7 carbon atoms, (iii) a carbocyclic aromatic or heterocyclic aromatic radical which may carry one or more substituents, or (iv) a 5- or 6-membered non-aromatic heterocyclic radical comprising one or more hetero atoms.

5,663,419

BIFUNCTIONAL ALKYL PHOSPHINE OXIDE AND PRODUCTION METHOD THEREOF

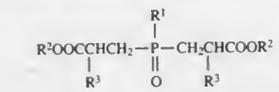
Masashi Sugiya; Tsutomu Watanabe, and Seiji Shimura, all of Tokyo, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,511

Int. Cl.[6] C07F *9/53*

U.S. Cl. 560—190 **11 Claims**

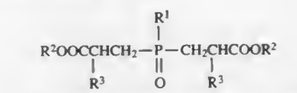
I. A bifunctional alkyl phosphine oxide represented by the following general formula (1):



(1)

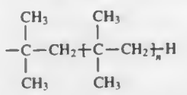
wherein R^1 is 1,1,3,3-tetramethylbutyl, R^2 represents a hydrogen atom, an alkyl group, or a hydroxyalkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom or a methyl group.

2. A method of producing a bifunctional alkyl phosphine oxide of the formula (1):



(1)

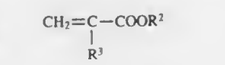
R^1 is an alkyl group represented by the following formula (2):



(2)

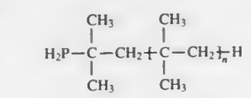
wherein n represents 0 or 1, R^2 represents a hydrogen atom, an alkyl group and a hydroxyalkyl group having 1 to 8 carbon atoms, and R^3 represents a hydrogen atom and a methyl group, which comprises:

reacting (meth)acrylic acid or an ester thereof of the formula (4):



(4)

wherein R^2 is hydrogen, alkyl or a hydroxyalkyl group of 1 to 8 carbon atoms, and R^3 is hydrogen or methyl with a monoalkyl phosphine of formula (3):



(3)

wherein n is 0 or 1 in the presence of an acid catalyst; and

oxidizing the compound produced in the first step to the bifunctional alkylphosphine oxide of formula (1) with an oxidizing agent.

5,663,420

DEPOLYMERISATION

Patrick William Vaughan, Bedw Arian, Glyn Garth, Menai Bridge, Anglesey, United Kingdom, LL595NP, and Donald James Highgate, The Wilderness, Holmbury Hill Road, Holmbury St. Mary, Dorking, Surrey, United Kingdom, RH5 6NS

Continuation of Ser. No. 162,481, Dec. 3, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,965

Claims priority, application United Kingdom, Dec. 4, 1992, 9225461

Int. Cl.[6] C07C *67/00*

U.S. Cl. 560—216 **9 Claims**

1. A depolymerisation process, comprising: heating a polymer in a fluidised bed, said bed comprising particles of an inert material at least 50 micrometers in diameter, at a temperature below the autoignition point of the corresponding monomer, such that the heat transfer coefficient is maintained at a value sufficient to ablate the polymer particles.

5,663,421

SEPARATION OF A DIESTER OF (METH)ACRYLIC ACID WITH A C_4–C_6-ALKANEDIOL

Toni Dockner, Meckenheim; Helmut Lermer, Ludwigshafen; Ulrich Rauh, Limburgerhof, and Gerhard Nestler, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 10, 1995, Ser. No. 541,703

Claims priority, application Germany, Oct. 11, 1994, 44 36 242.0

Int. Cl.[6] C07C *67/48*

U.S. Cl. 560—218 11 Claims

1. A process for separating a diester of (meth)acrylic acid with a C_4–C_6-alkanediol from a mixture which essentially consists of the C_4–C_6-alkanediol, the monoester of (meth)-acrylic acid with the C_4–C_6-alkanediol and the diester of (meth)acrylic acid with the C_4–C_6-alkanediol by extraction with an organic solvent in the presence of water, wherein the diester-containing mixture is added continuously in the middle section of an extraction column and in addition water and the organic solvent are passed continuously counter-current in the extraction column.

5,663,422

PROCESS FOR THE PRODUCTION OF 1,2-DIACETOXY ESTERS

Steven Thomas Perri, and Stephen Neal Falling, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Mar. 1, 1996, Ser. No. 609,698

Int. Cl.[6] C07C *69/28*

U.S. Cl. 560—240 15 Claims

1. A process for the preparation of a 1,2-diacetoxy ester comprising reacting an epoxide with acetic anhydride in the presence of a quaternary phosphonium acetate catalyst.

5,663,423

METHOD FOR HANDLING (2-ALKYL) (ACRYLOYL) ISOCYANATE, METHOD FOR STABILIZING (2-ALKYL) (ACRYLOYL) ISOCYANATE, METHOD FOR PRODUCING (2-ALKYL) (ACRYLOYL) ISOCYANATE, HETEROCYCLIC COMPOUND, AND METHOD FOR PRODUCING HETEROCYCLIC COMPOUND

Noriyuki Tsuboniwa, Osaka; Satoshi Urano, Kyoto; Otohiko Tsuge, Fukuoka, and Taizo Hatta, Kumamoto, all of Japan, assignors to Nippon Paint Co., Ltd, Osaka, Japan

Division of Ser. No. 400,588, Mar. 8, 1995, Pat. No. 5,532,360.

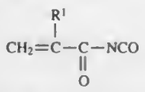
This application Mar. 5, 1996, Ser. No. 611,411

Claims priority, application Japan, Mar. 11, 1994, 6-67867

Int. Cl.[6] C07C *263/00*

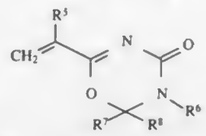
U.S. Cl. 560—340 3 Claims

1. A method for producing a (2-alkyl)acryloyl isocyanate represented by formula (1),



(1)

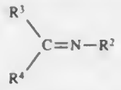
wherein R^1 represents a hydrogen atom or a lower alkyl group, which comprises dissolving a compound of formula (3)



(3)

wherein,

R^5 represents a hydrogen atom or a lower alkyl group, R^6 represents an alkyl group, a cycloalkyl group, an aralkyl group, an alkenyl group, or an alkynyl group, and R^7 and R^8 each represents a hydrogen atom or a group in which a carbon atom located in the α-position to carbon atoms constituting a heterocyclic ring does not have a hydrogen atom, provided that at least one of R^7 and R^8 is not a hydrogen atom in a polar solvent having a dielectric constant of 5 or more, wherein, upon contact with said solvent, the compound of formula (3) dissociates into the compound of formula (1) and a compound of formula (2),



(2)

wherein,

R^2 represents an alkyl group, a cycloalkyl group, an aralkyl group, an alkenyl group, or an alkynyl group, and R^3 and R^4 each represents a hydrogen atom or a group which does not cause tautomerism with C=N in the formula (2), provided that at least one of R^3 and R^4 is not a hydrogen atom.

5,663,424

FRACTIONATION AND PURIFICATION OF AROMATIC POLYAMINE MIXTURES AND THE USE THEREOF

Hartmut Knöfel, Odenthal, and Michael Brockelt, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 28, 1996, Ser. No. 623,239

Claims priority, application Germany, Apr. 7, 1995, 195 13 070.7

Int. Cl.[6] C07C *209/86*

U.S. Cl. 560—347 9 Claims

1. A process for the fractionation and purification of aromatic polyamine mixtures comprising:

a) mixing the polyamine starting mixture in a first extraction stage with a two-phase system comprising

(i) a hydrophobic solvent phase which consists essentially of hydrophobic solvent and optionally an aromatic auxiliary amine which is substantially insoluble in water and exhibits at normal pressure a boiling point which is at least 20° C. below the boiling point of the lowest-boiling component of the starting mixture and at least 20° C. above the boiling point of the solvent, and optionally polyamine, and

(ii) an aqueous phase consisting essentially of water, a strong acid and auxiliary amine present at least in part in the salt form, and optionally polyamines present at least in part in the salt form,

with said first extraction stage operating on the countercurrent principle, and wherein said polyamine starting mixture is introduced into said first extraction stage with said aqueous phase, with a first aqueous phase and a first organic phase exiting said first extraction stage,

b) distilling said first organic phase in a multi-stage distillation into

i) a first fraction consisting essentially of hydrophobic solvent and optionally auxiliary amine,

ii) a second fraction consisting essentially of auxiliary amine and optionally hydrophobic solvent, and

iii) a distillation residue consisting essentially of a first polyamine fraction,

c) extracting said first aqueous phase in a second extraction stage with a solvent phase consisting essentially of hydrophobic solvent and auxiliary amine, said second extraction stage operating on the countercurrent principle, with i) a second aqueous phase, said second aqueous phase being reduced in amine content and ii) a second organic phase exiting said second extraction stage,

d) separating at least a portion of said second organic phase in a distillation stage into

i) a first distillate consisting essentially of hydrophobic solvent and auxiliary amine, and

ii) a distillation residue consisting essentially of a second polyamine fraction,

e) recycling said second aqueous phase as at least a portion of said aqueous phase, and

f) combining said first distillate with at least a portion of said second fraction to form at least a portion of said solvent phase.

5,663,425

PRODUCTION OF ACID SOLUBLE HUMATES

William J. Detroit; Stuart E. Lebo, Jr., and Lori L. Bushar, all of Schofield, Wis., assignors to LignoTech USA, Inc., Rothschild, Wis.

Filed Jan. 26, 1996, Ser. No. 592,270

Int. Cl.[6] C07G *1/00*

U.S. Cl. 562—32 20 Claims

1. A method for producing sulfoalkylated humic acid concentrates, comprising the steps of:

(a) mixing a humic acid containing ore with an aldehyde and a sulfonating agent to form a slurry;

(b) adjusting the pH of said slurry to pH 9–12 to form a reaction mixture;

(c) reacting said pH adjusted reaction mixture under conditions of temperature and pressure and for sufficient time to produce a sulfoalkylated humic acid concentrate, said sulfoalkylated humic acid concentrate having a sulfonic sulfur content greater than about 5% and having a precipitation pH below pH 0.5; and

(d) separating the sulfoalkylated humic acid concentrate from the reaction mixture.

5,663,426

SULFONATED PHOSPHINES, PROCESSES FOR THEIR PREPARATION, AND USE THEREOF AS CONSTITUENTS OF CATALYST SYSTEMS

Guido Albanese, München; Rainer Manetsberger, Wielenbach, and Wolfgang A. Herrmann, Freising, all of Germany, assignors to Hoechst Aktiengeschaft, Germany

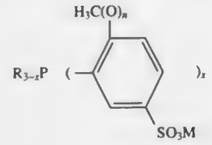
Filed Oct. 2, 1995, Ser. No. 538,190

Claims priority, application Germany, Sep. 30, 1994, 44 35 189.5

Int. Cl.[6] C07C *309/30;309/32;309/29*

U.S. Cl. 562—35 18 Claims

1. A sulfonated phosphine of the formula



wherein R is independently selected from the group consisting of cyclohexyl and alkyls having 1 to 4 carbon atoms, M is hydrogen, ammonium, alkyl substituted ammonium, aryl substituted ammonium, a monovalent metal, and a chemical equivalent of a polyvalent metal, x is 1 or 2 and n is 0 or 1.

6. A process for the preparation of the phosphine of claim wherein a compound selected from the group consisting of tris(o-tolyl)phosphine, tris(o-methoxyphenyl)phosphine, and derivatives thereof wherein 1 or 2 aryl radicals are replaced by cyclohexyl or alkyls having 1 to 4 carbon atoms, is reacted with an anhydrous system selected from the group consisting of sulfonic acid/orthoboric acid and oleum, thereby forming a sulfonation mixture, wherein sulfonation of said compound takes place.

5,663,427

CYSTEIC MONOSUCCINIC ACID AND ITS SALTS

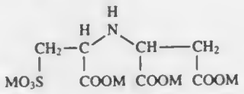
Eddie Nelson Gutierrez, Midland Park, and Shang-Ren Wu, Mahwah, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,669

Int. Cl.[6] C07C *303/32;309/04*

U.S. Cl. 562—105 4 Claims

1. A compound of the formula:



wherein M is selected from the group consisting of Na, K, Li, ammonium, substituted ammonium and mixtures thereof.

5,663,428

METHOD FOR PRODUCING AROMATIC CARBOXYLIC ACIDS

Hideo Oikawa, and Hiroshi Fukuhara, both of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 578,028

Claims priority, application Japan, Dec. 26, 1994, 6-322098

Int. Cl.[6] C07C *51/265*

U.S. Cl. 562—416 4 Claims

1. A method for producing aromatic carboxylic acids which comprises oxidizing a starting compound selected from the group consisting of alkyl substituted aromatic hydrocarbons and partially oxidized alkyl substituted aromatic hydrocarbons with a molecular oxygen containing gas in the presence of at least one additive selected from the group consisting of aliphatic hydrocarbons, alicyclic hydrocarbons, aliphatic alcohols of ten to thirty carbon atoms, alicyclic alcohols of ten to thirty carbon atoms, aldehydes of ten to thirty carbon atoms, carboxylic acids of ten to thirty carbon atoms and ketones of ten to thirty carbon atoms and in the presence of a catalyst comprising a heavy metal compound and a bromine compound in a reaction solvent.

5,663,429

PROCESS FOR THE PREPARATION OF ACETIC ACID

Kenichi Yamaseki, Mitaka; Yasuo Konishi, and Hiroshi Uchida, both of Yokohama, all of Japan, assignors to Tokyo Gas Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 901,140, Jun. 19, 1992. This application Sep. 27, 1995, Ser. No. 534,711

Claims priority, application Japan, Jun. 21, 1991, 3-175818; Jun. 12, 1992, 4-177809

Int. Cl.[6] C07C *51/12*

U.S. Cl. 562—519 **7 Claims**

1. A process for preparing acetic acid consisting of contacting methanol with carbon monoxide in the presence of a carbon-supported rhodium catalyst, methyl iodide promoter and water in the vapor phase at a reaction temperature of 180°–220° C., a reaction pressure of 5–10kg/cm^2·G and a weight of catalyst to feed gas flow ratio (W/F) of 5–10g·h/mole, the water being present in an amount of 3 to 50 mol % relative to the methanol.

5,663,430

PROCESS FOR PURIFYING A CARBOXYLIC ACID

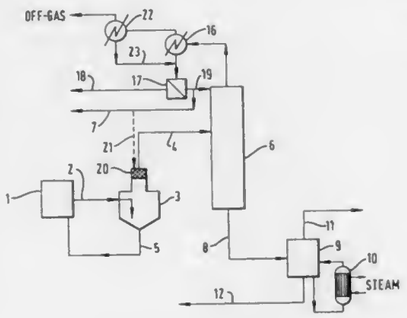
George Ernest Morris, Richmond; Stephen James Smith; John Glenn Sunley, both of Cottingham; Robert John Watt, Twickenham, and Bruce Leo Williams, Elloughton Brough, all of England, assignors to BP Chemicals Limited, London, England

Filed Jun. 2, 1995, Ser. No. 460,537

Claims priority, application United Kingdom, Feb. 21, 1995, 9503385

Int. Cl.[6] C07C *51/42;53/08;53/10*

U.S. Cl. 562—608 **11 Claims**



1. A process for purifying an iridium- and/or co-promoter-contaminated carboxylic acid fraction obtained by liquid phase carbonylation with carbon monoxide at elevated pressure, of a carbonylation reactant comprising an alkyl alcohol and/or a reactive derivative thereof in the presence of an iridium and/or rhodium catalyst, an alkyl halide promoter, water and an optional co-promoter selected from the group consisting of ruthenium, osmium and rhenium which process comprises:

(a) contacting said carboxylic acid fraction contaminated with volatile iridium and/or volatile co-promoter contaminants with an iodide in the absence of carbon monoxide or at a partial pressure of carbon monoxide less than that of the carbonylation reaction for sufficient time to convert the volatile iridium catalyst and/or volatile co-promoter contaminants to an involatile form, and

(b) separating the involatile iridium catalyst and/or involatile co-promoter from the carboxylic acid fraction.

5,663,431

1-BENZENESULFONYL-1,3-DIHYDRO-INDOL-2-ONE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Alain Di Malta, Saint Clément de Rivière; Loïc Foulon, Pinsaguel; Georges Garcia, Saint Gély du Fesc; Dino Nisato, Saint Georges d'Orques; Richard Roux, Vailhalques; Claudine Serradell-Legal, Escalquens; Gérard Valette, Lacroix-Sasgarde, and Jean Wagnon, Montpellier, all of France, assignors to Sanofi, Paris, France

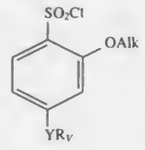
Division of Ser. No. 323,921, Oct. 17, 1994, which is a continuation-in-part of Ser. No. 129,310, Sep. 30, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,571

Claims priority, application France, Jan. 30, 1992, 92 01034; Jul. 30, 1993, 93 09404

Int. Cl.[6] C07C *303/08*

U.S. Cl. 562—828 **9 Claims**

1. A compound of the formula



(III)'

in which

Alk is a C_1–C_7-alkyl;

Y is S; and

R_V is a C_1–C_7-alkyl, a C_3–C_7-cycloalkyl, a C_2–C_7 -alkenyl, an ω-halogeno-C_1–C_7-alkyl, a polyhalogeno-C_1– C_7-alkyl, a benzyl, a C_1–C_7-acyl or an ω-carboxy-C_1–C_7 -alkyl esterified by a C_1–C_4-alkyl or a benzyl.

5,663,432

PROCESS FOR THE PREPARATION OF 5-AMINO-2,4,6-TRIIODOISOPHTHIALIC ACID DICHLORIDE BY CHLORINATION WITH THIONYL CHLORIDE IN THE PRESENCE OF A CATALYST

Marco Villa, Milan; Claudio Pozzoli, Monza; Laura Russo, Milan, and Graziano Castaldi, Briona, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed May 17, 1996, Ser. No. 649,490

Claims priority, application Italy, May 18, 1995, MI95A1004

Int. Cl.[6] C07C *63/00*

U.S. Cl. 562—855 **10 Claims**

1. A process for the preparation of 5-amino-2,4,6-triiodoisophthalic acid dichloride comprising chlorinating 5-amino-2,4,6-triiodoisophthalic acid with thionyl chloride in the presence of a suitable solvent and in the presence of a catalytic amount of tetraalkylammonium salt of the formula

$$R_1R_2R_3R_4NX \qquad (I)$$

wherein X is halogen, mesylate or tosylate; R_1, R_2, R_3 and R_4, the same or different, are C_1–C_{20} alkyl groups so that the total number of carbon atoms of the groups R_1, R_2, R_3 and R_4 is higher than 16.

5,663,433

PROCESS FOR THE PREPARATION N-ALKYL-N,O-DIACETYL HYDROXYLAMINE

Anna M. C. F. Castelijns, Beek, and Joannes M. C. A. Mulders, Geleen, both of Netherlands, assignors to DSM N.V., Heerleen, Netherlands

Filed Jun. 17, 1996, Ser. No. 668,074

Claims priority, application Belgium, Dec. 16, 1993, 9301399

Int. Cl.[6] C07C *231/00*

U.S. Cl. 562—874 **9 Claims**

1. Process for the preparation of an N-alkyl-N,O-diacetyl hydroxylamine from the corresponding nitroalkane, characterized in that the nitroalkane is subjected to a catalytic reduction in the presence of acetic anhydride.

5,663,434

PROCESS FOR PREPARING N-(3-AMINO-4-CHLOROPHENYL) ACYLAMIDES

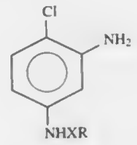
Robert Joseph Maleski, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 29, 1996, Ser. No. 593,726

Int. Cl.[6] C07C *231/02;303/38*

U.S. Cl. 564—92 **20 Claims**

1. A process for preparing N-(3-amino-4-chlorophenyl) acylamides of Formula I:



comprising reacting, in a solvent comprising at least one polar solvent selected from the group consisting of C_1–C_3 alkanols and mixtures thereof, in the presence of at least one acid acceptor, 1-chloro-2,4-diaminobenzene with at least one acyl chloride of formula I:

Cl—X—R

wherein X is —CO— or —SO_2—; R is selected from the group C_1–C_{25} alkyl; C_1–C_{25} alkyl substituted with one or more groups selected from C_1–C_{12} alkoxy, aryl, aryloxy and C_5–C_7 cycloalkyl; aryl; C_5–C_7 cycloalkyl.

5,663,435

REACTION PRODUCTS OF AMINOALKYLENECARBOXYLIC ACIDS AND MINERAL OIL MIDDLE DISTILLATES WHICH CONTAIN THEM

Gabriele Dralle-Voss, Darmstadt; Knut Oppenländer, Ludwigshafen; Klaus Barthold, Mannheim; Bernd Wenderoth, Birkenau, and Wolfgang Kasel, Nussloch, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/02122, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/03378, PCT Pub. Date Feb. 2, 1995

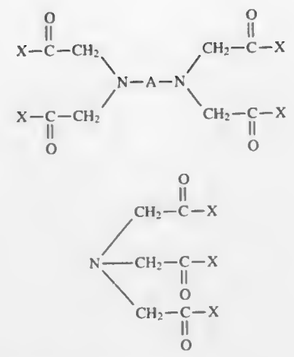
PCT Filed Jun. 29, 1994, Ser. No. 549,668

Claims priority, application Germany, Jul. 21, 1993, 43 24 394.0

Int. Cl.[6] C07C *233/05;229/22;* C10L *1/22*

U.S. Cl. 564—153 **4 Claims**

1. An aminoalkylenecarboxylic acids of the general formula I or II

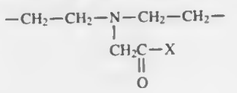


I

II

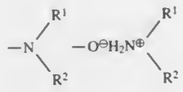
where

A is straight-chain or branched alkylene of 2 to 6 carbon atoms or a radical of the formula III

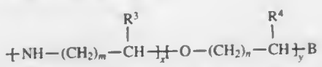


III

X is



or a radical of the formula IV



IV

where R^1 is hydrogen or a straight-chain aliphatic C_{10}–C_{30} radical,

R^2 is a straight-chain aliphatic C_{10}–C_{30} radical,

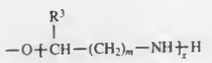
R^3 and R^4 are each hydrogen, methyl or ethyl,

m and n are each from 1 to 5,

x is from 0 to 3,

y is from 1 to 100 and

B is hydroxyl or C_1–C_{30}-alkoxy or is naphthyloxy or phenoxy which is unsubstituted or monosubstituted to tri-substituted by C_1–C_{18}-alkyl, or is C_1–C_{30}-alkylcarboxy or C_1–C_{30}-alkenylcarboxy, or is amino which is monosubstituted by a straight-chain aliphatic C_1–C_{30} radical, or is amino which is disubstituted by straight-chain aliphatic C_1–C_{30} radicals, or is C_1–C_{30}-alkylamido or alkenylamido or a group of the formula V



V

where the variables have the abovementioned meanings, with the proviso that X is

a) at least one



group and

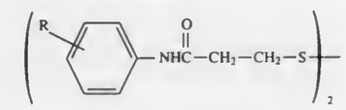
b) at least one group of the formula IV, both conditions being fulfilled.

5,663,436
ISOTHIAZOLONE DERIVATIVE AND MICROBICIDAL COMPOSITION COMPRISING THE SAME AS ACTIVE INGREDIENT

Akiko Kakimizu, Nishinomiya; Kenji Arai, Toyonaka; Norio Kimura, and Tomohiro Teramae, both of Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 312,962, Sep. 30, 1994, Pat. No. 5,552,423. This application May 1, 1996, Ser. No. 641,542
Claims priority, application Japan, Oct. 1, 1993, 5-246639
Int. Cl.[6] C07C *233/00*
U.S. Cl. 564—154 **1 Claim**

I. A disulfide of the formula:



wherein R is haloalkoxy.

5,663,437
2-(N-BENZOYLIMINO)-4, 4-DIAMINOBIPHENYL

Loon-Seng Tan, Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 2, 1996, Ser. No. 605,234
Int. Cl.[6] C07C *233/65;231/02*
U.S. Cl. 564—184 **2 Claims**

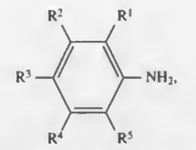
1. 4,4'-Diaminobiphenyl-2-benzamide.

5,663,438
PREPARATION OF CYCLIC AMINES

Ulrich Köhler, Mannheim; Frank-Friedrich Pape, Kleinniedesheim; Matthias Irgang, Heidelberg; Joachim Wulff-Döring, Frankenthal; Michael Hesse, Schifferstadt, and Peter Polanek, Weinheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

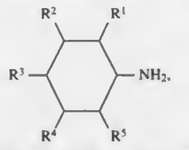
Filed Aug. 17, 1995, Ser. No. 516,147
Claims priority, application Germany, Aug. 16, 1994, 44 29 014.4
Int. Cl.[6] C07C *209/68*
U.S. Cl. 564—305 **8 Claims**

I. A process for the preparation of aromatic amines of the formula I



(I)

where R^1, R^2, R^3, R^4 and R^5 are each hydrogen, C_1–C_{12}-alkyl or C_3–C_{12}-cycloalkyl, from aliphatic amines of the formula II



(II)

where R^1, R^2, R^3, R^4 and R^5 have the abovementioned meanings, at from 150° to 300° C. and from 0.01 to 50 bar in the presence of a heterogeneous catalyst, wherein the heterogeneous catalyst consists of from 30 to 100% by weight of

a) palladium on oxides of the rare earth elements or on oxides of metals of Group IVb or
b) platinum/palladium mixtures on alumina or oxides of the rare earth element or oxides of metals of Group IVb

and from 0 to 70% by weight of alkali metal or alkaline earth metal oxide.

5,663,439
PROCESS FOR THE PREPARATION OF TOLUIDINES

Stefan Penninger, Pulheim, and Peter Heitkämper, Dormagen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

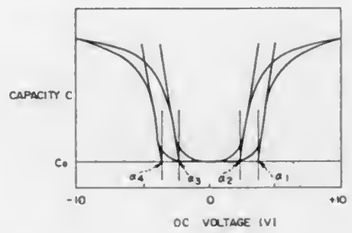
Filed Aug. 15, 1996, Ser. No. 689,861
Claims priority, application Germany, Aug. 24, 1995, 19531149.3
Int. Cl.[6] C07C *209/68*
U.S. Cl. 564—305 **4 Claims**

1. A process for the preparation of toluidines comprising
1) reacting
a) 2,3-diaminotoluene, 3,4-diaminotoluene or mixtures thereof,
with
b) hydrogen
in the presence of
c) a catalyst comprising at least one iron oxide,
wherein said reaction is carried out under elevated pressure, and at temperatures in the range of about 260° to 350° C.

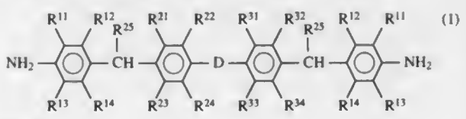
5,663,440
DIAMINO COMPOUNDS AND METHODS FOR PREPARING THEM

Toshiya Sawai; Seiji Oikawa; Masaaki Yazawa; Shizuo Murata; Masaharu Hayakawa; Etsuo Nakagawa, and Shinichi Sawada, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Oct. 2, 1995, Ser. No. 537,479
Claims priority, application Japan, Oct. 20, 1994, 6-281256; May 25, 1995, 7-150889
Int. Cl.[6] C07C *211/00;* **C09K** *19/56*
U.S. Cl. 564—384 **18 Claims**



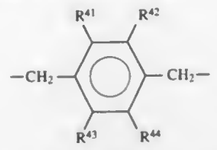
1. Diamino compounds represented by formula (1):



(I)

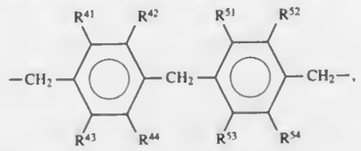
wherein,

(a) when R^{25} being a hydrogen atom and D being



all of R^{11}, R^{12}, R^{13} and R^{14} denote a hydrogen atom, and R^{21}, R^{22}, R^{23}, R^{24}, R^{31}, R^{32}, R^{33}, R^{34}, R^{41}, R^{42}, R^{43} and R^{44} denote independently each other a hydrogen atom or an alkyl group with 1 to 8 carbon atoms,

(b) when R^{25} being a hydrogen atom and D being



all of R^{11}, R^{12}, R^{13} and R^{14} denote a hydrogen atom, and R^{21} and R^{32}, R^{22} and R^{31}, R^{23} and R^{34}, as well as R^{24} and R^{33} are respectively the same atoms or groups and denote independently each other hydrogen atoms or straight-chain or branched alkyl groups with 1 to 8 carbon atoms, and R^{41}, R^{42}, R^{43}, R^{44}, R^{51}, R^{52}, R^{53} and R^{54} denote independently each other a hydrogen atom or an alkyl group with 1 to 8 carbon atoms,

(c) when R^{25} being a hydrogen atom and D being a divalent straight-chain or branched hydrocarbon alkyl group with 2 to 30 carbon atoms, R^{11}, R^{12}, R^{13} and R^{14} denote independently a hydrogen atom or a straight-chain or branched alkyl group with 1 to 8 carbon atoms, and R^{21} and R^{32}, and R^{22} *and* R^{31}, R^{23} and R^{34} as well as R^{24} and R^{33} are respectively the same atoms or groups and denote independently each other hydrogen atoms or straight-chain or branched alkyl groups with 1 to 8 carbon atoms,

(d) when R^{25} being a straight-chain or branched alkyl group with 1 to 12 carbon atoms, D denotes a direct bond, an aliphatic group with 1 to 30 carbon atoms, an aromatic group with 6 to 30 carbon atoms, or a hydrocarbon group with 7 to 30 carbon atoms having both an aliphatic group and an aromatic group, R^{11}, R^{12}, R^{13} and R^{14} denote independently a hydrogen atom or a straight-chain or branched alkyl group with 1 to 8 carbon atoms, and R^{21} and R^{32}, R^{22} and R^{31}, R^{23} and R^{34} as well as R^{24} and R^{33} are respectively the same atoms or groups and denote independently each other hydrogen atoms or straight-chain or branched alkyl groups with 1 to 8 carbon atoms with the proviso that when D is $—C(CH_3)_2—$ R^{25} is not $—CH_3$.

5,663,441
PRODUCTION OF MONO-N-ALKYL-DINITROALKYLANILINES AND N-ALKYL-DINITROANILINE DERIVATIVES

Stefan Kwiatkowski; Krzysztof Pupek; Brenda L. Lawrence, and Lowell J. Lawrence, all of Richmond, Ky., assignors to SRM Chemical, Ltd. Co., League City, Tex.

Continuation-in-part of Ser. No. 496,774, Jun. 29, 1995. This application Mar. 22, 1996, Ser. No. 621,286
Int. Cl.[6] C07C *209/18;303/40*
U.S. Cl. 564—399 **14 Claims**

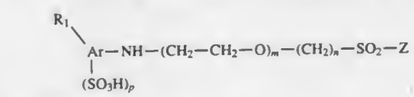
1. A process for producing N-sec-butyl-4-tert-butyl- 2,6-dinitroaniline, comprising:
reacting 4-tert-butylphenol with a methylating agent to produce a first reaction intermediate;
reacting said first reaction intermediate with a nitrating agent in acetic anhydride to produce a second reaction intermediate;
reacting said second reaction intermediate with sec-butylamine to produce N-sec-butyl-4-tert-butyl- 2,6-dinitroaniline; and
reacting an acetic acid by-product produced during the process with ketene to produce acetic anhydride for use in subsequent processing.

5,663,442
PROCESS FOR THE PREPARATION OF SULPHONES

Wolfgang Harms; Udo-Winfried Hendricks; Karl-Josef Herd, all of Odenthal, and Klaus Kunde, Neunkirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 31, 1995, Ser. No. 456,224
Int. Cl.[6] C07C *213/02;309/29;305/02*
U.S. Cl. 564—404 **3 Claims**

1. Process for the preparation of a compound of the formula

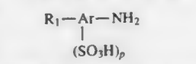


(1)

wherein
Ar= a phenyl or naphthyl radical,
R_1= H, C_1–C_4-alkyl, Cl, Br, C_1–C_4-alkoxy or COOH, acylamino, or SO_2-alkylene-OH,
m=0 or 1,
n=2, 3 or 4,
p=0–2,
Z= CH_2CH_2—OH
wherein a sulphone of the formula

$$X—(CH_2—CH_2—O)_m—(CH_2)_n—SO_2—CH_2—CH_2OH \quad (2)$$

wherein
X= Cl, Br, OCO—$(CH_2)_{0-3}CH_3$ or O—CO—C_6H_5, is reacted with an aniline of the formula



(4)

wherein R_1 and p have the abovementioned meanings.

5,663,443
RUTHENIUM CATALYSTS, THEIR PREPARATION AND A PROCESS FOR PREPARING CYCLOALIPHATIC POLYAMINES USING THESE CATALYSTS

Wolfgang Kiel, Odenthal; Eberhard Zirngiebl, Köln, and Joerg-Dietrich Jentsch, Mülheim an der Ruhr, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 3, 1995, Ser. No. 384,303
Claims priority, application Germany, Feb. 10, 1994, 44 04 220.5
Int. Cl.[6] C07C *209/72*
U.S. Cl. 564—451 **8 Claims**

1. A ruthenium catalyst which consists essentially of ruthenium and either
i) a carbonate, hydroxide and/or hydrated oxide of cerium and maganese; or
ii) maganese alone and/or a dehydration product thereof wherein the catalyst is in a pulverulent form and wherein the essential catalytic components are converted together into an insoluble compound by treatment with an alkaline compound and wherein said catalyst is optionally applied to a support.

5,663,444

PREPARATION OF A PURE DIALKYLAMINOETHANOL STABLE AGAINST DISCOLORATION

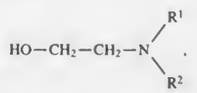
Johann-Peter Melder, Mannheim; Günther Ruider, Wachenheim; Tom Witzel, Ludwigshafen; Karl-Heinz Ross, Grünstadt, and Günter Boettger, Bad Dürkheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 30, 1995, Ser. No. 497,072

Int. Cl.[6] C07C *209/02*

U.S. Cl. 564—477 15 Claims

1. A process for the preparation of a color-stable dialkylaminoethanol of the formula



I

in which R^1 and R^2 independently are C–C_{20}-alkyl, which comprises:

reacting ethylene oxide with a dialkylamine of the formula



II

in which R^1 and R^2 are as defined above,

in the presence of from 2.5 to 50% by weight of water, based on the reaction mixture, at a temperature of from 95° to 170° C., and separating off the water and high-boiling constituents by distillation under a reduced pressure and at a temperature of from 40° to 90° C. at the column bottom.

5,663,445

PROCESS FOR THE PREPARATION OF ALCOHOLS OR AMINES

Gerhardt Horn, Oberhausen, and Carl Dieter Frohning, Wesel, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 390,375, Feb. 16, 1995, Pat. No. 5,550,297, which is a continuation of Ser. No. 22,685, Mar. 1, 1993, abandoned. This application May 30, 1995, Ser. No. 453,919

Claims priority, application Germany, Mar. 4, 1992, 42 06 750.2

Int. Cl.[6] C07C *209/14*

U.S. Cl. 564—490 14 Claims

1. A process for the hydrogenation of a nitrile to form a corresponding amine, said process comprising a reaction of said nitrile with hydrogen at elevated pressure and elevated temperature, in the presence of a catalyst which contains CuO,

said catalyst, in its unreduced state, comprising, per 100 parts of said CuO, 40 to 130 parts by weight of ZnO, 2 to 50 parts by weight of Al^2O^3, and having a BET total area of 80 to 175 m^2/g, 75% to 95% of said total area constituting pores having radii $r_p \leqq 15$ nm.

5,663,446

CATALYST FOR THE SIMULTANEOUS SELECTIVE HYDROGENATION OF DIOLEFINS AND NITRILES AND METHOD OF MAKING SAME

Magdalena Ramirez de Agudelo, Las Teques; Julia Guerra, San Antonio de Los Altos; Trino Romero, Caracas, and Mariela Medina, Baruta, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 354,969, Dec. 13, 1994, Pat. No. 5,523,271. This application Jan. 16, 1996, Ser. No. 585,950

Int. Cl.[6] C07C *209/00;17/20*

U.S. Cl. 564—490 6 Claims

1. A process for the simultaneous and selective hydrogenation of diolefins and nitriles from a hydrocarbon feedstock comprising:

(a) providing a hydrocarbon feedstock having a diolefin content of ≧0.1 wt % and a nitrile content of ≧2 ppm(w);

(b) providing a catalyst comprising

1) a support material selected from the group consisting of an inorganic oxide-zeolite composite, carbon and zeolite; and

2) a catalytically active metal phase selected from the group consisting of partially induced Group IB metals and completely reduced Group VIII metals, said active metal being present in an amount of about ≧0.03 wt %;

(c) mixing the hydrocarbon feedstock in the presence of the catalyst with hydrogen wherein the ratio of hydrogen to the diolefins and nitriles in the feedstock is less than three times the stoichiometric amount required to selectively hydrogenate the diolefins and nitriles; and

(d) treating the feedstock and hydrogen mixture in the presence of the catalyst at a temperature of about between 50° to 250° C. at a pressure of about between 150 to 650 psi.

5,663,447

PROCESS FOR THE PREPARATION OF 2,2 DIALKYL-ARYLIDENE-CYCLOALKANONES

Nikolaus Müller, Monheim, and Thomas Essert, Overath, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

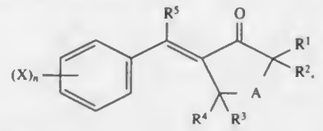
Filed Jun. 20, 1996, Ser. No. 667,894

Claims priority, application Germany, Jun. 28, 1995, 19523449.9

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—316 14 Claims

1. A process for the preparation of a 2,2-dialkyl-arylidene-cycloalkanone of the formula



(I)

in which

A represents —(CH_2)—$_x$ where x=1, 2 or 3, and which is unsubstituted or substituted with one or more identical or different substituents from the group consisting of C_1–C_4-alkyl and C_3–C_7-cycloalkyl, it being possible for C_1–C_4-alkyl in turn to be unsubstituted or substituted by halogen or C_1–C_4-alkoxy and for C_3– C_7-cycloalkyl in turn to be unsubstituted or substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

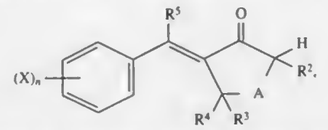
R^1 and R^2 represent identical or different, C_1–C_4-alkyl or C_3–C_7-cycloalkyl radicals, which are unsubstituted or C_1–C_4-alkyl is substituted by halogen, C_4–C_4-alkoxy, halogeno-C_1–C_4-alkoxy, C_2–C_4-alkenyl, C_2–C_4-alkinyl, halogeno-C_2–C_4-alkenyl or halogeno-C_2–C_4-alkinyl, or C_3–C_7-cycloalkyl is substituted by halogen, C_1–C_4-alkoxy or C_1–C_4-alkyl,

R^3, R^4 and R^5 are identical or different and represent hydrogen, C_1–C_4-alkyl or C_3–C_7-cycloalkyl, where C_1–C_4-alkyl and C_3–C_7-cycloalkyl can be unsubstituted or C_1–C_4-alkyl is substituted by halogen or C_1–C_4-alkoxy or C_3–C_7-cycloalkyl is substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

X represents halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-halogenoalkyl, C_1–C_4-alkoxy or C_1–C_4-halogeno-alkoxy, and, when two or more radicals X are present, they may be identical or different, and

n represents zero or an integer from 1 to 5,

in which a 2-alkyl-arylidene-cycloalkanone of the formula



(II)

in which the symbols used have the meaning given for formula (I), is reacted with an alkyl halide in the presence of a metal hydroxide and a tertiary alcohol.

5,663,448

AROMATIC ACETYLCHOLINESTERASE INHIBITORS

Jean-Noël Collard, Illkirch Graffenstaden; Jean-Marie Hornsperger, Griesheim-près-Molsheim, and Daniel Schirlin, Lampertheim, all of France, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

PCT No. PCT/US94/04957, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/29255, PCT Pub. Date Dec. 22, 1994

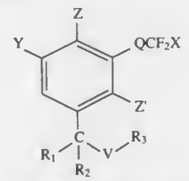
PCT Filed May 5, 1994, Ser. No. 557,120

Claims priority, application European Pat. Off., Jun. 4, 1993, 93401431

Int. Cl.[6] C07C *49/283;49/213;* A61K *31/10*

U.S. Cl. 568—335 13 Claims

1. A method of treating degenerative dementias by administering to a patient in need of such therapy an effective amount of a compound of Formula I



I

stereoisomers or pharmaceutically acceptable salts thereof, wherein

each of Z and Z' are independently H or F;

Q is

CH(OH), or



X is H, Br, Cl, F or CF_3;

Y is H, Br, Cl, F, OH, OR_5, $OC(O)R_4$ N_3, CN, NO_2, SO_3H, CO_2R_4, NH_2, $NR_9R'_9$, $C(R_6)(R_7)(V'R_8)$ or $C(O)R_7$, provided that when both Z and Z' are F, then Y is H or F;

V and V' are each independently CH_2 or O;

R_1 is H or CH_3;

R_2, R_9 and R'_9 are each independently (C_{1-6})alkyl;

R_3, R_6, R_7 and R_8 are each independently H or (C_{1-6})alkyl, (C_{3-6})cycloalkyl;

or R_2 and V—R_3 taken together with the carbon atom to which they are attached form a 3–6 membered ring;

R_4 is H, (C_{1-10})alkyl, (C_{0-4})alkylene aryl or (C_{3-8})cycloalkyl; and

R_5 is (C_{1-10})alkyl, benzyl, phenethyl or (C_{3-6})cycloalkyl.

5,663,449

INTERMEDIATE COMPOUNDS IN THE SYNTHESIS OF HETEROARYLPIPERIDINES, PYRROLIDINES AND PIPERAZINES

Joseph T. Strupczewski, Flemington, N.J., assignor to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,059

Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* C07D *401/04;403/04;417/04;221/04;275/04;239/04;419/04;* C07C *49/84*

U.S. Cl. 568—337 1 Claim

1. 1-[4-(3-Chloropropoxy)-3-methoxyphenyl]-2-hydroxyethanone.

5,663,450

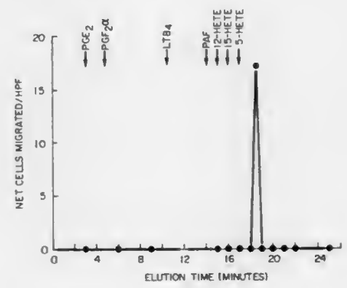
MACROPHAGE LIPID CHEMOATTRACTANT

George F. Schreiner, Los Altos, and Louis G. Lange, III, Portola Valley, both of Calif., assignors to CV Therapeutics, Palo Alto, Calif.

Continuation-in-part of Ser. No. 107,958, Aug. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,974

Int. Cl.[6] C07C *49/17;49/175*

U.S. Cl. 568—415 5 Claims



1. An essentially pure lipid chemoattractant released from stressed mammalian tissue characterized as being borohydride reducible, reversibly acetylateable, acid labile, alkaline stable, neutral lipid which is stable in boiling water, which recruits monocytes and macrophage but not neutrophils to the stressed tissue.

5,663,451
PROCESS FOR PREPARING ALDEHYDES

Wolfgang A. Herrmann, Freising; Martina Elison, München; Jakob Fischer, Kirchdorf, and Christian Köcher, München, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 29, 1995, Ser. No. 581,399

Claims priority, application Germany, Dec. 29, 1994, 44 47 067.3

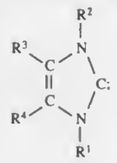
Int. Cl.[6] C07C *45/50*

U.S. Cl. 568—451 **18 Claims**

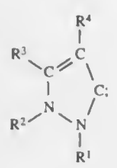
1. A process for preparing aldehydes by reaction of a compound selected from the group consisting of monoolefins, polyolefins, cycloolefins, or derivatives thereof with carbon monoxide and hydrogen at temperatures of from 20° to 180° C. and pressures of from 0.1 to 30 MPa in the presence of complexes of cobalt or of rhodium as a catalyst, wherein said complexes are of the formula

$$[L_aM_bX_c]^n(A)_n, \quad (I)$$

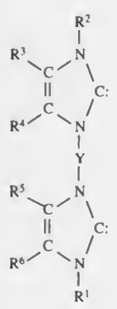
wherein M is cobalt or rhodium as a central atom, X's are individually monodentate or multidentate, charged or uncharged ligands bound to said central atom and L's are individually ligands bound to said central atom and are selected from the group consisting of monocarbenes and dicarbenes of the formulas



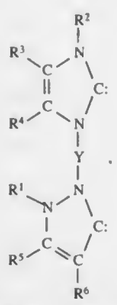
(II)



(III)



(IV)



(V)

wherein R^1, R^2, R^3, R^4, R^5, and R^6 are individually selected from the group consisting of straight or branched chain, sulfonated or unsulfonated alkyls having 1 to 7 carbon atoms; sulfonated or unsulfonated aliphatic monocyclics and polycyclics having 5 to 18 carbon atoms; sulfonated or unsulfonated alkenyls having 2 to 5 carbon atoms; sulfonated or unsulfonated aryls having 6 to 14 carbon atoms; and sulfonated or unsulfonated aralkyls having 7 to 19 carbon atoms; R^1 and R^2 are also selected from the group consisting of $-(CH_2)_mPR_2$, wherein m=1, 2, 3, or 4 and R=benzyl, phenyl, substituted phenyl, naphthyl; $-(CH_2)_mNR'_2$ (wherein R'=alkyl, vinyl, allyl, benzyl, and aryl); and $-(CH_2)_mOR''$ (wherein R"=alkyl); R^3, R^4, R^5, and R^6 can also be hydrogen; R^3 together with R^4, and R^5 together with R^6, may individually form fused and sulfonated or unsulfonated radicals having 3 to 7 carbon atoms, R^1, R^2, R^4, or R^6 together with X may form a ring, Y is selected from the group consisting of saturated or unsaturated, straight or branched chain alkylidenes having 1 to 4 carbon atoms, dialkylsilylenes, and tetraalkyldisilylenes; A is a singly charged anion or the chemical equivalent of a multiply charged anion, b is an integer from 1 to 3, a is an integer from 1 to 4 times b, and c=0 or an integer from 1 to 4 times b, and n' =0 or an integer from 1 to 6.

5,663,452
PROCESS FOR THE PREPARATION OF 2-ETHYL-1,3-HEXANE DIOL

Kari Kulmala, Porvoo, Finland; Kjell Ankner, Mölnlycke, Sweden; Lea Rintala, Porvoo, Finland; Leila Lahtinen, Helsinki, Finland, and Kalevi Heinola, Järvenpää, Finland, assignors to Neste OY, Espoo, Finland

PCT No. PCT/FI94/00387, § 371 Date May 3, 1996, § 102(e) Date May 3, 1996, PCT Pub. No. WO95/07254, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 2, 1994, Ser. No. 596,177

Claims priority, application Finland, Sep. 7, 1993, 933896

Int. Cl.[6] C07C *47/02*

U.S. Cl. 568—461 **13 Claims**

1. A process for the preparation of 2-ethyl-1,3-hexane diol from n-butyraldehyde by aldol condensation in the presence of an alkali metal hydroxide or alkali earth metal hydroxide catalyst and by hydrogenation of the obtained intermediate product, wherein a neutral phase-transfer catalyst comprising a polyalkylene glycol is additionally used in the aldol condensation step in an amount of 0.5–10% by weight.

5,663,453
DIOXOLANE DERIVATIVES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geiby Corporation, Tarrytown, N.Y.

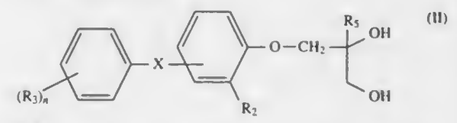
Continuation of Ser. No. 23,986, Feb. 26, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,910

Claims priority, application Switzerland, Mar. 2, 1992, 643/92

Int. Cl.[6] C07C *43/29;43/263*

U.S. Cl. 568—637 **4 Claims**

1. A compound of the formula



(II)

in which:

n is 0, 1 or 2, and, if n is 2, the two radicals R_3 are identical or different;

R_2 is methyl, fluorine, chlorine or bromine;

R_3 is C_1–C_3alkyl, halo-C_1–C_3alkyl, C_1–C_3alkoxy, halo-C_1–C_3alkoxy, fluorine, chlorine or bromine;

R_5 is hydrogen or C_1–C_3alkyl and

X is O.

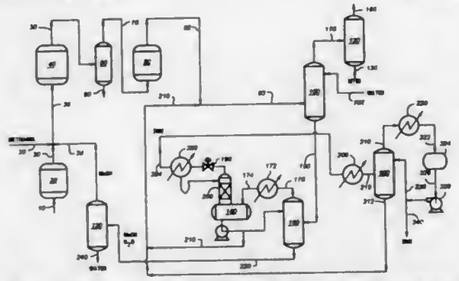
5,663,454
METHOD FOR THE MANUFACTURE AND PURIFICATION OF METHYL TERTIARY BUTYL ETHER AND DIMETHYL ETHER

Kyle Lee Preston, Port Arthur, Tex., assignor to Huntsman Specialty Chemicals Corporation, Salt Lake City, Utah

Filed Aug. 8, 1995, Ser. No. 512,723

Int. Cl.[6] C07C *41/06*

U.S. Cl. 568—697 **3 Claims**



1. In a method wherein methanol and isobutylene are reacted in the presence of a solid resin etherification catalyst to form a methyl tertiary butyl ether product stream containing contaminating quantities of dimethyl ether, methanol and isobutylene, the improvement for obtaining high purity dimethyl ether which comprises the steps of:

a) separating the methyl tertiary butyl ether product stream into a first lower boiling fraction comprising isobutylene and methyl tertiary butyl ether and a first higher boiling fraction comprising residual methyl tertiary butyl ether, methanol, dimethyl ether and water,

b) charging the first higher boiling fraction to a first distillation column and separating it therein into a second lower boiling distillation fraction comprising methyl tertiary butyl ether, methanol, isobutylene, dimethyl ether, and water and a second higher boiling heavier distillation fraction comprising methanol and water,

c) recovering dimethyl ether and isobutylene from the second lower boiling distillation fraction, and

d) charging the recovered dimethyl ether and isobutylene to a second distillation column and separating it therein into a third lower boiling distillation fraction consisting essentially of dimethyl ether and a third higher boiling distillation fraction comprising dimethyl ether and isobutylene.

5,663,455
PROCESS FOR CONDUCTING ETHERIFICATION REACTIONS USING AS CATALYSTS STRONG-ACID, CATION-EXCHANGE RESINS PREPARED UNDER HIGH TEMPERATURE CONDITIONS

William I. Harris, Midland, Mich., and Rex R. Stevens, Grand Junction, Colo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 12, 1995, Ser. No. 542,154

Int. Cl.[6] C07C *43/04*

U.S. Cl. 568—697 **8 Claims**

1. In a method for conducting an etherification reaction employing as the catalyst a strong-acid, cation-exchange resin, wherein said resin is prepared by a process in which a monomer mixture comprising one or more monovinyl aromatic monomers and a divinylbenzene crosslinker in an amount of at least about 20 weight percent are polymerized in the presence of from about 25 to about 50 weight percent of an organic diluent, based on the total weight of monomers and diluent, in an aqueous suspension the reactor contents of which attain a temperature above about 120° C. during the polymerization producing a macroporous copolymer which is subsequently sulfonated to produce the strong-acid, cation-exchange resin, the improvement in preparing the copolymer which comprises: decreasing the concentration of divinylbenzene crosslinker at least about 2 weight percent to a range of from about 14 to about 18 weight percent of the monomer mixture.

5,663,456
METHOD FOR OBTAINING LARGE CRYSTALS WITH HIGH PURITY BY DESTRUCTING PART OF FINES IN SLURRY IN A CRYSTALLIZER

Minhua Zhang; Zongzhang Liu; Shenbo Yu; Chuanzhao Li, and Shenghua Qian, all of Tianjin, China, assignors to China Petro-Chemical Corporation, Beijing, and Tianjin University, Tianjin, both of China

PCT No. PCT/CN94/00013, § 371 Date Dec. 26, 1995, § 102(e) Date Dec. 26, 1995, PCT Pub. No. WO94/19083, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 16, 1994, Ser. No. 501,137

Claims priority, application China, Feb. 17, 1993, 93101419.0

Int. Cl.[6] C07C *37/84*

U.S. Cl. 568—724 **15 Claims**

1. A method for obtaining large crystals by destructing fines in a slurry in a crystallizer, the method comprising:

A. installing first and second filters in the crystallizer;

B. filtering a part of the slurry in the crystallizer through the first filter using a circulating pump, and feeding a slurry containing fines, all of which are of a size smaller than the fines cut size to at least one fines destructor in which they are dissolved, and then returning the solution in which the fines have been destructed to the crystallizer through the second filter for further crystallization;

C. after a switching interval, filtering a part of the slurry in the crystallizer through the second filter using the circulating pump, and feeding a slurry containing fines, substantially all of which are of a size smaller than the fines cut size to at least one fines destructor in which they are dissolved, and then returning the solution in which the fines have been destructed to the crystallizer through the first filter for further crystallization, thereby washing the first filter; and

D. after a switching interval, repeating the procedure B and thereby washing the second filter, and continuing to alternately repeat the procedures B and C to carry out the process of destructing fines continuously.

5,663,457
METHODS FOR PREPARING ALKYLATED HYDROXYAROMATICS

Christopher Jay Kolp, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 16, 1996, Ser. No. 603,949

Int. Cl.[6] C07C *37/14*

U.S. Cl. 568—790 **6 Claims**

1. A method of preparing a polybutenyl substituted hydroxyaromatic compound, said method comprising:

A. forming a mixture of cyclohexane and a conventional polyisobutylene (PIB), a hydroxyaromatic compound and a macroreticular resin catalyst in acid form;

B. reacting said mixture at temperatures up to about 70° C. and for times up to about 24 hours wherein by said reacting at least about a 50% yield of said polybutenyl substituted hydroxyaromatic compound results; and

wherein said resin is selected for meeting said yield parameters within said time and temperature parameters.

5,663,458
PROCESS FOR PRODUCING α-PHENYLETHYL ALCOHOL

Shinya Ito, Sodegaura, and Takuo Hibi, Ichihara, both of Japan, assignors to Sumitomo Chemical Company, Limited., Osaka, Japan

Filed Nov. 29, 1995, Ser. No. 564,637
Claims priority, application Japan, Dec. 2, 1994, 6-299395; Feb. 16, 1995, 7-028297; Sep. 14, 1995, 7-236878
Int. Cl.[6] C07C *29/14*
U.S. Cl. 568—814 **21 Claims**

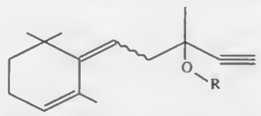
1. A process for producing α-phenylethyl alcohol by hydrogenation of acetophenone, which uses a copper-based catalyst containing at least one alkali metal compound.

5,663,459
INTERMEDIATES FOR THE PREPARATION OF VITAMIN A AND CAROTENOIDS AND PROCESS FOR THEIR PREPARATION

Hugues Bienayme, Lyons, and Pierre Meilland, Chaponost, both of France, assignors to Rhone-Poulenc Nutrition Animale, Antony, France

Division of Ser. No. 320,185, Oct. 7, 1994, Pat. No. 5,567,852.
This application Jun. 7, 1995, Ser. No. 473,226
Claims priority, application France, Oct. 7, 1993, 93 11944
Int. Cl.[6] C07C *33/14*
U.S. Cl. 568—826 **2 Claims**

1. A compound corresponding to the formula (III):



(III)

in which R represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an alkenyl group having 2 to 10 carbon atoms, an alkylcarbonyl, alkenylcarbonyl, alkoxyalkyl or alkoxyalkenyl group in which the alkyl groups have 1 to 10 carbon atoms and the alkenyl groups have 2 to 10 carbon atoms, each of said groups being linear or branched and each being substituted or unsubstituted.

5,663,460
LIQUID L-N-MENTHOL COMPOSITION AND PROCESS FOR PREPARING THE SAME

Takeshi Yamamoto, and Hideaki Ohta, both of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 506,983
Claims priority, application Japan, Jul. 29, 1994, 6-196279; Jun. 26, 1995, 7-180566
Int. Cl.[6] C07C *35/12*
U.S. Cl. 568—829 **6 Claims**

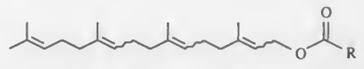
1. A liquid l-n-menthol composition containing 30 to 80% by weight of (−)-n-isopulegol.

5,663,461
PROCESS FOR PRODUCING GERANYLGERANIOL

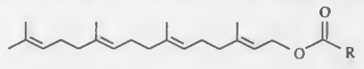
Toshiki Mori, Kurashiki-machi; Junko Sato, Niigata-ken; Takashi Fukumoto, Kyowa-machi; Kozo Nakao, Yokohama, and Yoshin Tamai, Shibata, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 6, 1995, Ser. No. 554,405
Claims priority, application Japan, Aug. 11, 1994, 6-298857
Int. Cl.[6] C07C *29/09*
U.S. Cl. 568—886 **10 Claims**

1. A process for producing 3,7,11, 15-tetramethylhexadeca-2E,6E,10E,14-tetraenol comprising the steps of dissolving at least one ester derivative wherein one or more carbon-carbon double bonds in the molecule are in cis form represented by the general formula (1):



wherein R represents an aromatic group which can be substituted with at least one substituent, or a higher aliphatic group having from 7 to 25 carbon atoms, and wavy lines, respectively, represent a state where each carbon-carbon double bond can be present in cis or trans form, and an ester derivative of the general formula (2):



wherein R is as defined above, in an organic solvent, and gradually cooling the resultant solution to permit crystals to precipitate so as to selectively crystallize said esters in order to selectively obtain the ester derivative of the formula (2), and hydrolyzing the thus obtained ester derivative at a temperature in the range of 0° C. to 150° C.

5,663,462
PROCESS FOR THE PRODUCTION OF DINITROTOLUENE AND ISOMERIC MIXTURES OF DINITROTOLUENE

Uwe Klingler, Dormagen; Thomas Schieb, Rösrath, and Gerhard Wiechers, Leverkusen, all of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany

Filed Jun. 4, 1996, Ser. No. 657,513
Claims priority, application Germany, Jun. 14, 1995, 195 21 614.8
Int. Cl.[6] C07C *205/06*
U.S. Cl. 568—934 **8 Claims**

1. A continuous process for the production of dinitrotoluene or an isomeric mixture of dinitrotoluene comprising:

a) nitrating mononitrotoluene or an isomeric mixture of mononitrotoluene having a meta-MNT content less than or equal to 4.5% by weight with a nitrating acid made up of:
   (1) from about 80 to about 100% by weight of inorganic constituents which include:
      (a) from about 60 to about 90% by weight sulfuric acid,
      (b) from about 1 to about 20% by weight nitric acid, and
      (c) at least 5% by weight water and
   (2) up to 20% by weight organic constituents which include:
      (a) from about 70 to about 100% by weight isomers of nitrotoluene and
      (b) up to 30% by weight nitration by-products under adiabatic conditions and in amounts such that the molar ratio of nitric acid to mononitrotoluene is from about 0.7:1 to about 1.4:1,

b) separating acid and dinitrotoluene-containing phases formed during a),

c) removing at least 5% by weight water from the acid phase separated in b),

d) adding nitric acid having a concentration of from about 50 to about 100% to the acid phase from c) in an amount sufficient to bring the nitric acid content within the requirements of a),

e) returning the acid phase from d) to the nitrating acid used in step a), and

f) recovering the dinitrotoluene isomer mixture from the dinitrotoluene-containing phase separated in b).

5,663,463
DIFLUOROETHYLENE COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING THEM

Seiji Shinya; Osamu Yokokouji; Takashi Miyajima; Hidemasa Koh, all of Yokohama, and Katsutoshi Machida, Samukawa-machi, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, and Seimi Chemical Co., Ltd., Chigasaki, both of Japan

Division of Ser. No. 29,602, Mar. 11, 1993, Pat. No. 5,516,949.
This application Jan. 26, 1996, Ser. No. 592,662
Claims priority, application Japan, Mar. 13, 1992, 4-89982
Int. Cl.[6] C07C *19/08*; C09K *19/30;19/34*
U.S. Cl. 570—128 **6 Claims**

1. A compound having a liquid crystal property selected from difluoroethylene derivatives of the following formula (1):

$$R^1—(A^1)_m—Y^1—A^2—CF=CF—A^3—Y^2—(A^4)_n—R^2 \quad (1)$$

wherein

A^3 is a trans-1,4-cyclohexylene group, and each of A^1, A^2 and A^4, which are independent from one another, is a trans-1,4-cyclohexylene group or a 1,4-phenylene group, wherein each of such cyclic groups is unsubstituted or substituted by one or more halogen atoms or cyano groups, one or more =CH— groups constituting rings of such cyclic groups may be substituted by nitrogen atoms, and one or more $—CH_2—$ groups constituting rings of such cyclic groups may be substituted by oxygen atoms or sulfur atoms;

each of Y^1 and Y^2, which are independent from each other, is —COO—, —OCO—, —C≡C—, $—CH_2CH_2—$, —CH=CH—, $—OCH_2—$, or $—CH_2O—$;

each of m and n, which are independent from each other, is 0 or 1; and

each of R^1 and R^2, which are independent from each other, is a C_{1-10} alkyl group, a halogen atom or a cyano group, provided that in the case of the alkyl group, an oxygen atom, a carbonyloxy group or an oxycarbonyl group may be interposed in a carbon-carbon bond of the alkyl group or in a carbon-carbon bond between the alkyl group and the adjacent cyclic group, some of carbon-carbon bonds in the alkyl group may be triple bonds or double bonds, one $—CH_2—$ group in the alkyl group may be substituted by a carbonyl group, and some or all of hydrogen atoms in the alkyl group may be substituted by fluorine atoms.

5,663,464
METHOD FOR PRODUCING1,1,1,3,3-PENTAFLUOROPROPANE

Hidekazu Okamoto, and Keiichi Ohnishi, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 632,383
Claims priority, application Japan, Apr. 14, 1995, 7-089676; Mar. 15, 1996, 8-059649
Int. Cl.[6] C07C *19/08*
U.S. Cl. 570—175 **19 Claims**

1. A method for producing 1,1,1,3,3-pentafluoropropane, which comprises reducing at least one chlorofluorohydrocarbon selected from the group consisting of $CF_3CClXClF_2$ wherein X is a H atom of a Cl atom, and $CF_3CCl=CF_2$, with hydrogen in the presence of a reduction catalyst comprising, as a first component, at least one metal selected from the group consisting of Ru, Rh, Pd and Pt, and, as a second component, at least one metal selected from the group consisting of Ni, Co, La, Re, W, Ta, Nb, Ti, Zr, Mo, Cu, Ag and Au.

wherein said reduction catalyst is supported on a carrier.

5,663,465
BY-PRODUCT RECYCLING IN OXYCHLORINATION PROCESS

Ian Michael Clegg, Middlewich, and Ray Hardman, Chester, both of United Kingdom, assignors to EVC Technology AG, Zug, Switzerland

PCT No. PCT/GB94/01945, § 371 Date Aug. 15, 1995, § 102(e) Date Aug. 15, 1995, PCT Pub. No. WO95/07252, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 7, 1994, Ser. No. 433,385
Claims priority, application United Kingdom, Sep. 7, 1993, 9318505
Int. Cl.[6] C07C *17/10*
U.S. Cl. 570—224 **5 Claims**

1. A method for the catalytic oxychlorination of ethane to VCM comprising the steps of:

(a) combining ethane and a chlorine source in an oxychlorination reactor with a suitable catalyst to promote the oxychlorination of the ethane, and collecting the resultant VCM and byproducts;

(b) recycling unconverted feeds and saturated byproducts to the oxychlorination reactor to participate in the reaction therein;

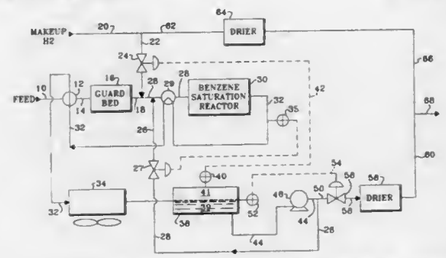
(c) treating unsaturated chlorinated hydrocarbon byproducts in a hydrogenation step to convert them to their saturated chlorinated hydrocarbon counterparts and passing said saturated chlorinated hydrocarbon counterparts to the oxychlorination reactor to participate in the reaction therein; and

(d) treating ethylene byproduct in a chlorination step to convert it to dichloroethane and passing said dichloroethane to the oxychlorination reactor to participate in the reaction therein.

5,663,466
MIXED PHASE BENZENE SATURATION WITH CONTROLLED HYDROGEN ADDITION

Lynn H. Rice, Palatine, and Donald H. Bell, Mt. Prospect, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 138,720, Oct. 18, 1993, abandoned, which is a continuation of Ser. No. 985,661, Dec. 4, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 351,963
Int. Cl.[6] C07C *5/10;5/22*
U.S. Cl. 585—253 **21 Claims**



1. A process for the saturation of benzene, said process comprising:

passing a feedstream comprising at least one of C_5 and C_6 paraffinic hydrocarbons and at least 10 mol % benzene to a guard bed for the removal of sulfur and recovering a guard bed effluent from said guard bed;

admixing a hydrogen containing stream in an amount regulated by a flow controller with the guard bed effluent to produce a combined feed;

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contacting said combined feed in a benzene saturation zone with a benzene saturation catalyst comprising a platinum metal in an amount of 0.1 to 1 wt % on an alumina support having a surface area of from 160 to 200 m^2/g, at benzene saturation conditions including mixed phase conditions to produce a saturation effluent stream and heat said saturation effluent stream to a temperature in a range of from 480° F. to 600° F.;

withdrawing said saturation effluent stream from said benzene saturation zone at a temperature of from 480° F. to 600° F., said benzene saturation effluent containing not more than 2 mol % benzene and having a hydrogen/hydrocarbon ratio of less than 0.02; and,

varying the amount of said hydrogen stream admixed with the effluent of said guard bed in response to the mount of hydrogen in said saturation effluent stream.

5,663,467

SYNTHESIS OF CYCLOPROPYLACETYLENE

Andrew S. Thompson, Mountainside; Edward G. Corley, Old Bridge, and Martha Huntington, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 23, 1995, Ser. No. 376,611

Int. Cl.[6] C07C *1/207*

U.S. Cl. 585—359 **10 Claims**

1. A process of preparing cyclopropylacetylene, comprising the steps of

(a) mixing at least about 1.0 equivalents of strong base chosen from the group consisting of n-butyl lithium, sodium amide, sodium diethyl amide, sodium hydride, potassium hydride, sodium bis(trimethylsilyl)amide, potassium bis(trimethylsilyl)amide, lithium diisopropylamide, sec-butyl lithium, tert-butyl lithium, and lithium tetramethyl piperidide in aprotic solvent with one equivalent of 5-halo-1-pentyne in aprotic solvent at a temperature of between about −20° and about 150° C.;

(b) allowing the temperature of the reaction mixture to rise to a range of between about 0° and about 150° C. and maintaining the temperature within the range for at least about 15 minutes, or until the cyclization is substantially complete; and

(c) quenching the reaction with any proton source.

5,663,468

Patent Not Issued For This Number

5,663,469

PRODUCTION OF VINYLIDENE OLEFINS

Douglas H. Krzystowczyk, and Kaung-Far Lin, both of Baton Rouge, La., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 5, 1996, Ser. No. 596,812

Int. Cl.[6] C07C *2/26*

U.S. Cl. 585—503 **36 Claims**

1. A process for producing vinylidene olefin using a trialkylaluminum compound as the sole catalyst component charged to the reactor, which process comprises forming and heating a mixture of vinyl olefin and at least one trialkylaluminum compound as the catalyst in a ratio in the range of 0.001 to 0.5 mol of trialkylaluminum per mol of the initial vinyl olefin at a temperature in the range of about 100° to about 200° C. for a period of time sufficient to convert from about 10 to about 99% by weight of the initial vinyl olefin to a different product with at least 80 wt % vinylidene dimer selectivity, said process being further characterized in that (i) said mixture is in direct contact with a nickel-containing metal alloy surface for at least one hour at a temperature above about 50° C., and (ii) at least one acetylenic hydrocarbon is added to said mixture prior to said contact in an amount at least sufficient to inhibit double bond isomerization in said reaction mixture but insufficient to inhibit formation of said vinylidene dimer.

5,663,470

"HETEROGENEOUS LEWIS ACID-TYPE CATALYSTS"

Frank Joung-Yei Chen, Edison, N.J.; Herve Cheradame, Paris, France; Jon Edmond Stanat, Westfield, N.J., and Gerard Rissoan, Saint-Martin D'Heres, France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 64,688, May 20, 1993, abandoned. This application Jun. 20, 1995, Ser. No. 493,222

Int. Cl.[6] C07C *2/08;2/14*

U.S. Cl. 585—520 **15 Claims**

1. A process for the cationic polymerization of olefin monomer which comprises:

(a) contacting polymerizable olefin, in the presence of a polar or non-polar solvent reaction medium, with a solid state, insoluble, salt catalyst system comprising:

(i) solid state heterogeneous catalyst component comprising at least one salt selected from the group consisting of the salts of a strong acid and a Group III A, Group IV A, Group V A or Group VI A transition metal selected from the group consisting of yttrium, lanthanum, zirconium, hafnium, niobium, tantalum, molybdenum and tungsten, wherein said catalyst component is insoluble in the reaction medium; and

(ii) cocatalyst component effective for promoting the carbocationic catalytic activity of said catalyst component; and

(b) maintaining contact between said polymerizable olefin monomer, said catalyst component and said cocatalyst component at a temperature and for a period of time sufficient to effect polymerization of said olefin monomer.

5,663,471

PROCEDURE FOR SYNTHESIS OF CRYSTALLINE MICROPOROUS SILICO-ALUMINO-PHOSPHATES

Steinar Kvisle, Porsgrunn; Rune Wendelbo, Oslo, and Hanne Øren, Billingstad, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO92/00193, § 371 Date Aug. 25, 1994, § 102(e) Date Aug. 25, 1994, PCT Pub. No. WO93/13013, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 9, 1992, Ser. No. 256,069

Claims priority, application Norway, Dec. 23, 1991, 915080

Int. Cl.[6] C07C *1/00;* **C01B** *37/08;39/00*

U.S. Cl. 585—639 **9 Claims**

1. A process for producing a crystalline microporous silico-alumino-phosphate, namely SAPO-34 with controlled Si content from a mixture of reactive sources of SiO_2, Al_2O_3 and P_2O_5 and an organic template material, which comprises combining at least a portion of the Al source and the P source in the absence of the Si source, mixing the resulting mixture with any remaining Al source, the Si source and the organic template material to obtain a gel, and heating the gel to obtain crystallization, wherein the Al and Si sources in the reaction mixture are mixed in the same mole ratios as in the crystalline microporous produced SAPO-34 which is, the P source is added in stoichiometric excess and hydrochloric acid is mixed with and added at the same time as the P source, in a quantity such that the ratio of silica to hydrochloric acid in the gel is kept between 0.3 and 3.

5. A crystalline microporous silico-alumino-phosphate, namely SAPO-34, with improved stability to deactivation by coking, which is produced from a mixture of reactive sources of SiO_2, Al_2O_3 and P_2O_5 and an organic template material, by a process consisting essentially of combining at least a portion of the Al source and the P source in the absence of the Si source, mixing the resulting mixture with any remaining Al source, the Si source and the organic template material to obtain a gel, and heating the gel to obtain crystallization, wherein the Al and Si sources in the reaction mixture are mixed in the same mole ratios as in the crystalline microporous SAPO-34 which is produced, the P source is added in stoichiometric excess and hydrochloric acid is mixed with and added at the same time as the P source, in a quantity such that the ratio of silica to hydrochloric acid in the gel is kept between 0.3 and 3.

9. In a process for producing olefins from methanol, which comprises contacting the methanol with a catalyst, the improvement wherein the catalyst is the crystalline microporous silico-alumino-phosphate, namely SA PO-34, as recited in claim 5.

5,663,472

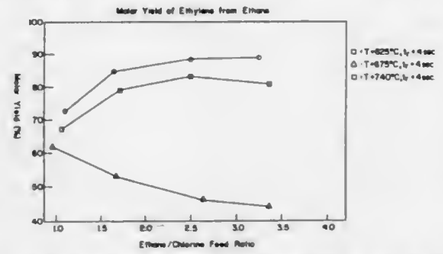
PRODUCTION OF ALKENES

Sidney W. Benson, Los Angeles, and Maja A. Weissman, Santa Clarita, both of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation of Ser. No. 190,708, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 41,533, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 621,719, Dec. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 488,451, Feb. 23, 1990, abandoned, which is a continuation of Ser. No. 133,206, Dec. 15, 1987, abandoned, which is a continuation of Ser. No. 757,585, Jul. 22, 1985, abandoned. This application Feb. 7, 1995, Ser. No. 385,068

Int. Cl.[6] C07C *5/327;17/00*

U.S. Cl. 585—641 **31 Claims**



1. A process for preparing ethylene or a mixture of ethylene and vinyl chloride by the reaction of ethane and chlorine which comprises:

(a) providing a stream of ethane feed gas and a stream of chlorine feed gas;

(b) thoroughly mixing said ethane and chlorine feed gases in a mixing zone at a molar ratio of ethane to chlorine of at least about 0.9;

(c) controlling the temperatures of said ethane feed gas and said chlorine feed gas so that substantially no chemical reaction takes place during and immediately after said mixing and so that the temperature of such mixture of gases immediately after mixing is less than about 215° C.;

(d) passing said mixture into an inert reaction zone;

(e) heating said mixture in said inert reaction zone to initiate chemical reaction between said ethane and said chlorine in the essential absence of a catalyst for this reaction;

(f) continuing the providing of heat to said reacting mixture as required so that the reacted mixture will have a temperature between about 600° C. and 800° C.;

whereby the yield of ethylene is at least about 62.1% and combined molar yield of ethylene and vinyl chloride is at least about 80% of the ethane consumed.

5,663,473

HYDROCARBON CONVERSION PROCESS

David C. Griffiths, Esher; Keith W. Palmer, Weybridge, and Ian A B Reid, Southfields, all of England, assignors to BP Chemicals Limited, London, England

Filed Jun. 7, 1995, Ser. No. 481,623

Claims priority, application United Kingdom, Oct. 28, 1994, 94 21734

Int. Cl.[6] C07C *4/02*

U.S. Cl. 585—652 **17 Claims**

1. A process for the conversion of a liquid paraffin-containing hydrocarbon which comprises the steps of:

(a) partially combusting a mixture of a liquid paraffin-containing hydrocarbon and a molecular oxygen-containing gas in a reaction chamber with a catalyst capable of supporting combustion beyond the normal fuel rich limit of flammability, the mixture having a stoichiometric ratio of hydrocarbon to oxygen of greater than the stoichiometric ratio required for complete combustion to carbon dioxide and water, to produce a product stream and a carbon deposit in the reaction chamber; and

(b) periodically replacing the liquid hydrocarbon and molecular oxygen-containing gas mixture in step (a) with a fuel-rich carbon containing gas stream for a period of time sufficient to effect substantial removal of the carbon deposit from the reaction chamber.

5,663,474

ALKYLATION PROCESS USING HYDROGEN FLUORIDE-CONTAINING ALKYLATION CATALYSTS

Hang Thanh Pham, Amherst, N.Y.; Robert Pratt, Randolph, N.J.; Charles Lewis Redmon, Orchard Park, N.Y.; John James Thompson, Kenmore, N.Y.; Michael Van Der Puy, Amherst, N.Y.; Rajiv Ratna Singh, Getzville, N.J.; William James Hague, Montville, N.J.; Harold John Kieta, Buffalo, N.Y.; Matthew Hermes Luly, Lancaster, N.Y., and Jeffrey Warren McKown, East Aurora, N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Filed Mar. 7, 1996, Ser. No. 612,041

Int. Cl.[6] C07C *2/58;2/64*

U.S. Cl. 585—721 **21 Claims**

1. An alkylation process comprising the steps of:

(A) contacting a feedstock and a hydrogen fluoride-containing alkylation catalyst, the catalyst comprising an effective amount of a carrier selected from the group consisting of a polymer and an acid salt that is ammonium sulfate, ammonium methanesulfonate, or ammonium trifluoroacetate and a catalytic amount of hydrogen fluoride, under conditions suitable to form a reaction mixture comprising a hydrocarbon phase, the hydrocarbon phase comprising an alkylate product, and a catalyst phase:

(B) separating the hydrocarbon phase and the catalyst phase; and

(C) processing the hydrocarbon phase to recover the alkylate product.

5,663,475

REACTOR FOR OXIDATION OF PETROCHEMICALS USING OZONE AND HYDROGEN PEROXIDE

Galoust M. Elgai, Sacramento, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 26, 1994, Ser. No. 297,345

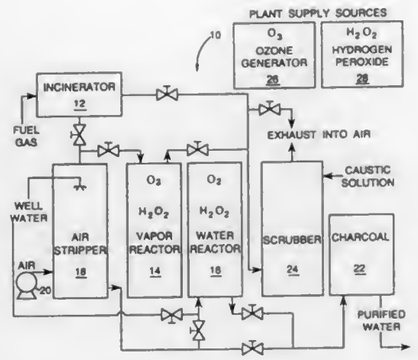
Int. Cl.[6] A62B *9/00;* **B01D** *37/00;43/00*

U.S. Cl. 588—205 **4 Claims**

1. A process for separating halogenated petrochemical contaminants from water comprising,

a) passing said water through an air stripper as a water spray against an oncoming air flow to separate contaminants as vapors from said water, said air flow carrying off said vapors,

b) passing said water from said air stripper to a water reactor and applying oxidizing agent thereto to oxidize at least some of



the remaining contaminants in said water which agent is selected from the group consisting of ozone, hydrogen peroxide and a combination thereof and

c) discharging the so-purified water.

5,663,476

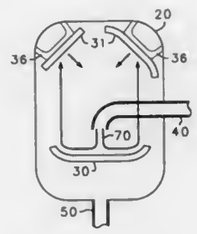
APPARATUS AND METHOD FOR DECOMPOSITION OF CHEMICAL COMPOUNDS BY INCREASING RESIDENCE TIME OF A CHEMICAL COMPOUND IN A REACTION CHAMBER

Jerry D. Cripe, Tempe; Gerard T. Reed, Mesa, and James C. Koontz, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,609

Int. Cl.[6] B01D *53/34*

U.S. Cl. 588—228 **17 Claims**



1. An apparatus for decomposition of a chemical compound, comprising:

a reaction chamber comprised of a wall and having a first end and a second end and having an inlet for receiving a chemical compound and an outlet;

a first member positioned in the reaction chamber;

providing a second member positioned in the reaction chamber at the first end of the chamber;

an energy source; and

a conduit physically coupled to the inlet of the reaction chamber for directing the flow of a chemical compound towards the first member and wherein the first member is configured to direct the chemical compound to the first end of the reaction chamber so that the chemical compound is directed towards the second member after being introduced to the first member.

5,663,477

HYDROCARBON DISPOSAL METHOD

Travis W. Honeycutt, Gainesville, Ga., assignor to Isolyser Company, Inc., Norcross, Ga.

Filed Dec. 3, 1991, Ser. No. 802,083

Int. Cl.[6] A62D *3/00;* **B09B** *3/00*

U.S. Cl. 588—205 **8 Claims**

1. A method for the disposal of a hydrocarbon comprising adding the hydrocarbon to an aqueous solution, said aqueous solution comprising a hydrophilic monomer having at least two reactive sites, a cross-linking agent and an emulsifier, intimately mixing said hydrocarbon and aqueous solution to polymerize said hydrophilic monomer with said cross-linking agent to form an oil-in-water emulsion which is then solidified through the addition of a reduction/oxidation catalyst, said solidified emulsion then being disposed of by landfill disposal or by incineration.

5,663,478

RECOVERY OF ALUMINUM AND/OR FLUORIDE VALUES FROM USED ALUMINUM CHLOROFLUORIDES

William Henry Gumprecht, Wilmington, Del., and William Joel Huebner, Elkton, Md., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 279,383, Jul. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 114,643, Sep. 3, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 600,121

Int. Cl.[6] C01F *7/48*

U.S. Cl. 588—248 **10 Claims**

1. A process for treating used aluminum chlorofluoride catalyst comprising

mixing the used aluminum chlorofluoride catalyst with water or an aqueous acid to form an aqueous solution,

adjusting the pH of the aqueous solution to precipitate and alkali metal aluminum fluoride or an ammonium aluminum fluoride from the aqueous solution, and

separating the precipitated alkali metal aluminum fluoride or ammonium aluminum fluoride from the aqueous solution.

5,663,479

PROCESS FOR THE CHEMICAL DECOMPOSITION OF HALOGENATED ORGANIC COMPOUNDS

Wander Tumiatti, Collega, Italy, assignor to Sea Marconi Technologies di Wander Tumiatti S.A.S., Turin, Italy

PCT No. PCT/EP93/03609, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/14504, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 20, 1993, Ser. No. 454,262

Claims priority, application Italy, Dec. 24, 1992, MI92A2961

Int. Cl.[6] B01D *27/02*

U.S. Cl. 588—206 **4 Claims**

1. A process for the decomposition of a halogenated compound which comprises subjecting a fluid or solid matrix contaminated with said halogenated compound to a reagent consisting of (a) at least one non-alkali metal selected from aluminum, calcium, iron, magnesium, manganese, nickel, palladium, silicon, tin, titanium and zinc; (b) an alkali or alkaline earth metal hydroxide or an alkali or alkaline earth metal C_1–C_6 alcoholate; and (c) a polyalkylene glycol or a random copolymer of ethylene and propylene oxides; and stirring at a temperature from ambient to 200° C.

5,663,480

SYNTHESIS OF AROMATIC CARBONATES BY TRANSESTERIFICATION USING A CATALYST COMPRISING A MICROPOROUS MATERIAL AND A GROUP IV METAL

Hideaki Tsuneki, Tokyo; Masaru Kirishiki; Kenichi Watanabe, both of Osaka, and Yoshiyuki Onda, Tokyo, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Division of Ser. No. 397,117, Dec. 16, 1994, Pat. No. 5,565,605. This application Jul. 11, 1996, Ser. No. 680,223

Claims priority, application Japan, Dec. 20, 1993, 5-319872; Sep. 21, 1994, 6-226172

Int. Cl.[6] C07C *68/06*

U.S. Cl. 558—270 **9 Claims**

1. A process for producing an aryl carbonate, which comprises a step of carrying out transesterification between:

a carbonate shown by the following general formula (I):

$$(R^1O)CO(OR^2) \quad (I)$$

where: R^1 denotes an alkyl group, a cycloalkyl group, an arylalkyl group, or an aryl group which may have a substituent; and R^2 denotes an alkyl group, a cycloalkyl group, or an arylalkyl group; and

an aromatic hydroxy compound shown by the following general formula (II):

$$R^3OH \quad (II)$$

where: R^3 denotes an aryl group which may have a substituent; in a liquid phase in the presence of a heterogeneous catalyst which comprises a microporous material containing a metal element belonging to group IV;

whereby there is obtained an aryl carbonate shown by the following general formula (III):

$$(R^1O)CO(OR^3) \quad (III)$$

where: R^1 denotes an alkyl group, a cycloalkyl group, an arylalkyl group, or an aryl group which may have a substituent; and R^3 denotes an aryl group which may have a substituent.

4. A process for producing a diaryl carbonate, which comprises a step of carrying out a disproportionation reaction by transesterification of an alkyl aryl carbonate shown by the following general formula (VI):

$$(R^2O)CO(OR^3) \quad (VI)$$

where: R^2 denotes an alkyl group, a cycloalkyl group, or an arylalkyl group; and R^3 denotes an aryl group which may have a substituent; in a liquid phase in the presence of a heterogeneous catalyst which comprises a microporous material containing a metal element belonging to group IV;

whereby there is obtained a diaryl carbonate shown by the following general formula (VII):

$$(R^3O)CO(OR^3) \quad (VII)$$

where: R^3 denotes an aryl group which may have a substituent.

7. A process for producing an aryl carbonate, which comprises a step of carrying out transesterification between:

an aryl carboxylate shown by the following general formula (VIII):

$$R^5COOR^6 \quad (VIII)$$

where: R^5 denotes an alkyl group, a cycloalkyl group, or an arylalkyl group; and R^6 denotes an aryl group which may have a substituent; and

a carbonate shown by the following general formula (I):

$$(R^1O)CO(OR^2) \quad (I)$$

where: R^1 denotes an alkyl group, a cycloalkyl group, an arylalkyl group, or an aryl group which may have a substituent; and R^2 denotes an alkyl group, a cycloalkyl group, or an arylalkyl group; in a liquid phase in the presence of a heterogeneous catalyst which comprises a microporous material containing a metal element belonging to group IV;

whereby there is obtained an aryl carbonate shown by the following general formula (IX):

$$(R^7O)CO(OR^8) \quad (IX)$$

where: R^7 denotes an alkyl group, a cycloalkyl group, an arylalkyl group, or an aryl group which may have a substituent; and R^8 denotes an aryl group which may have a substituent.

5,663,481

ANIMAL MODEL OF THE HUMAN IMMUNE SYSTEM

Steven Gallinger; Nobumichi Hozumi; John C. Roder, all of Toronto; Jasbir S. Sandhu, Oakville, all of Canada, and Baruch Shpitz, Kefar Sava, Israel, assignors to Mount Sinai Hospital Corporation, Toronto, Canada

Filed Aug. 6, 1993, Ser. No. 102,905

Int. Cl.[6] C12N *15/00;* **A01N** *63/00*

U.S. Cl. 800—2 **13 Claims**

1. A chimeric SCID mouse having at least 70% reconstitution of functional human lymphocytes in the spleen; having reconstitution of human macrophages in the spleen; and having at least 5% reconstitution of functional human NK cells in the spleen; exhibiting a human primary and secondary humoral response and a cellular immune response to a preselected antigen introduced into the chimeric mammal; and exhibiting severe xenogenic human graft versus host disease.

5,663,482

TRANSGENIC MICE EXPRESSING A MUTATED HUMAN COLLAGEN GENE

Darwin J. Prockop; Leena Ala-Kokko; Jaspal S. Khillan; Philipp Vandenberg, all of Philadelphia, Pa.; Sirpa Kontusaari, Oulu, Finland; Heikki Helminen, Philadelphia, Pa.; Anne Olsen, Moraga, Calif., and Boris Sokolov, Philadelphia, Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 713,945, Jun. 12, 1991, abandoned. This application Mar. 16, 1994, Ser. No. 210,063

Int. Cl.[6] C12N *5/00;15/00;* **A61K** *49/00*

U.S. Cl. 800—2 **7 Claims**

1. A transgenic mouse whose somatic and germ cells contain at least one endogenous, normal gene for type I procollagen, and a COL1A1 mini-gene construct, wherein said mini-gene construct comprises a DNA sequence encoding the first 5 exons and the last six exons of the human proα1(I) gene operatively linked to a promoter, wherein expression of said COL1A1 mini-gene construct results in the formation of abnormalities in the skeleton of the mouse associated with osteogenesis imperfecta.

5,663,483

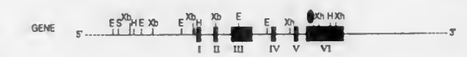
TRANSGENIC MICE EXPRESSING HUMAN CHOLESTEROL 7α HYDROXYLASE

John Young Ling Chiang, Stow, Ohio, assignor to Northeastern Ohio Universities College of Medicine, Rootstown, Ohio

Continuation of Ser. No. 135,488, Oct. 13, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361,458

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 800—2 **10 Claims**



8. A transgenic mouse which expresses human cholesterol 7α-hydroxylase (CYP7), wherein said human CYP7 is expressed in liver tissue in an amount higher than that of normal murine CYP7 expression in an unmodified, non-transgenic mouse.

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5,663,484
BASMATI RICE LINES AND GRAINS
Eugenio S. Sarreal, Pearland; John A. Mann, Friendswood; James Edward Stroike, League City, and Robin D. Andrews, Seabrook, all of Tex., assignors to RiceTec, Inc., Alvin, Tex.
Filed Jul. 8, 1994, Ser. No. 272,353
Int. Cl.[6] A01H *5/00;5/10;1/04*
U.S. Cl. 800—200 20 Claims

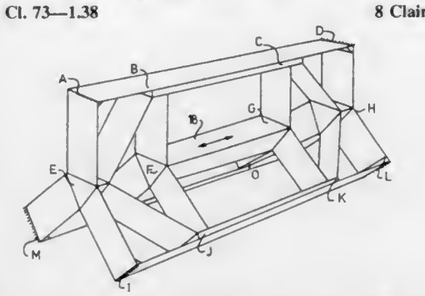
1. A rice plant, which plant when cultivated in North, Central or South America, or Caribbean Islands
a) has a mature height of about 80 cm to about 140 cm;
b) is substantially photoperiod insensitive; and
c) produces rice grains having
i) an average starch index of about 27 to about 35,
ii) an average 2-acetyl-1-pyrroline content of about 150 ppb to about 2,000 ppb,
iii) an average length of about 6.2 mm to about 8.0 mm, an average width of about 1.6 mm to about 1.9 mm, and an average length to width ratio of about 3.5 to about 4.5,
iv) an average of about 41% to about 67% whole grains, and
v) an average lengthwise increase of about 75% to about 150% when cooked.

5,663,485
SOYBEAN DESIGNATED A89-259098
Walter R. Fehr, and Earl G. Hammond, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Division of Ser. No. 376,466, Jan. 20, 1995, Pat. No. 5,602,311, which is a continuation of Ser. No. 180,114, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 839,328, Feb. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 461,341, Jan. 5, 1990, abandoned. This application Jul. 30, 1996, Ser. No. 681,980
Int. Cl.[6] A01H *5/00;5/10*
U.S. Cl. 800—200 3 Claims

1. A soybean seed designated A89-259098 having ATCC Accession No. 97391 and its descendants wherein the vegetable oil endogenously formed therein contains palmitic acid in a concentration of approximately 8.0 percent by weight, stearic acid in a concentration of approximately 30.3 percent by weight, oleic acid in a concentration of approximately 21.5 percent by weight, linoleic acid in a concentration of approximately 34.6 percent by weight, and linolenic acid in a concentration of approximately 5.6 percent by weight as determined by gas chromatography.

3. A soybean plant produced by the seed of claim 1.

5,663,486
MECHANICAL LINEAR GUIDE
Bernardus Carolus Braam, Delft; Jan Hopman, Lelystad, and Marinus Pieter Koster, Eindhoven, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, Delft, Netherlands
PCT No. PCT/NL93/00265, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/13976, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 14, 1993, Ser. No. 454,358
Claims priority, application Netherlands, Dec. 16, 1992, 9202177
Int. Cl.[6] G01N *37/00*
U.S. Cl. 73—1.38 8 Claims



1. In a mechanical linear guide for making a body (**18**) move along a movement axis (x), comprising n sets of a predetermined number of suspension means arranged between n sets of a predetermined number of points, defining n planes, n being either 2 or 3,
said n planes having one coinciding axis of intersection defining said movement axis (x), said n planes meeting each other at an angle of $2\pi/n$ radians,
each set of said n sets of points comprising one fixed first point (A, I; A, I, M), one movable second point (B, J; B, J, N) and one third point (F),
said one third point (F) being situated on said coinciding axis of intersection (x) and being common to said each set of points,
each set of said sets of suspension means comprising one first suspension means (AB, IJ; AB, IJ, MN) and one second suspension means (BF, JF; BF, JF, NF)
said first suspension means (AB, IJ; AB, IJ, MN) being connected at a first end to said fixed first point (A, I; A, I, M) and being movably connected at a second end to said second suspension means (BF, JF; BF, JF, NF) at a predetermined angle, at said movable second point (B, J; B, J, N),
said second suspension means (BF, JF; BF, JF, NF) being movably connected to said body (**18**) at said third point (F);
the improvement wherein
each said set of points comprises one fourth point (E) situated on said coinciding axis of intersection (x) and being common to each said set of points, and
said each set of suspension means further comprises one third suspension means (AE, IE; AE, IE, ME) and one fourth suspension means (EB, EJ; EB, EJ, EN),
within said each set of suspension means, said third suspension means (AE, IE; AE, IE, ME) being connected at a first end to said first fixed point (A, I; A, I, M) and movably connected at a second end to a first end of said fourth suspension means (EB, EJ; EB, EJ, EN) at said fourth point (E),
said fourth suspension means (EB, EJ; EB, EJ, EN) being movably connected at a second end to both said first (AB, IJ; AB, IJ, MN) and said second (BF, JF; BF, JF, NF) suspension means at said second point (B),
each of said third suspension means (AE, IE; AE, IE, ME) of said each set of suspension means and each of said fourth suspension means (EB, EJ; EB, EJ, EN) of said each set of suspension means being movably interconnected at said common fourth point (E), and
within said each set of suspension means said first suspension means (AB, IJ; AB, IJ, MN), said third suspension means (AE, IJ; AE, IE, ME) and said fourth suspension means (EB, EJ; EB, EJ, EN) being arranged in a triangle.

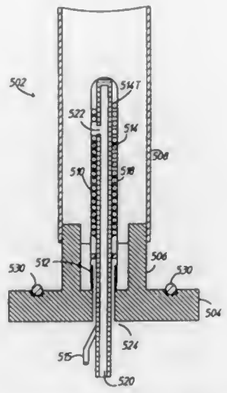
5,663,487
CAPILLARY TUBE DETERMINING THE LEAKAGE RATE FOR A TEST LEAK
Rudi Widt, Cologne, Germany, assignor to Leybold Aktiengesellschaft
PCT No. PCT/EP95/00166, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO95/21373, PCT Pub. Date Aug. 10, 1995
PCT Filed Jan. 18, 1995, Ser. No. 682,747
Claims priority, application Germany, Feb. 2, 1994, 9401661 U; Feb. 2, 1994, 9401662 U
Int. Cl.[6] G01M *3/00*
U.S. Cl. 73—1.26 5 Claims



1. Apparatus for use in calibrating and checking leak detectors that is not prone to breakage that includes,
a capillary tube having a known inside diameter and length;
a holder joined to one end of the capillary tube having a nozzle means for introducing a test sample into said tube,
said holder further including connector means for removable coupling the holder to a testing means for producing a vacuum tight seal between the holder and said testing means.

5,663,488
THERMAL ISOLATION SYSTEM IN AN ANALYTICAL INSTRUMENT
Tak Kui Wang, Havertown, Pa.; James W. Baker, Elkton, Md., and Terry A. Berger, Newark, Del., assignors to Hewlett-Packard Co., Palo Alto, Calif.
Filed May 31, 1995, Ser. No. 456,210
Int. Cl.[6] G01N *7/00*
U.S. Cl. 73—23.25 18 Claims

12. An analytical instrument, comprising:
a component system having an active device and a thermal device for altering the temperature of the active device;
a thermal isolation system for receiving the component system and providing temperature control of a thermal zone, said active device being located in the thermal zone, including:
a. a housing defining a closed cavity and a cavity volume, said closed cavity being subject to pressurization and thereby having a cavity pressure, said housing including means for locating the component system and the housing in a spaced relationship wherein at least a portion of said component system is enclosed within and detached from said housing,
b. a gas supply system responsive to a control signal for providing a first flow of hydrogen gas,
c. a pumping assembly having a palladium pumping element located with respect to said closed cavity and operable in response to the provision of first flow for establishing a selectable cavity pressure in the cavity volume and thereby establishing a selected amount of thermal isolation of the thermal zone; and



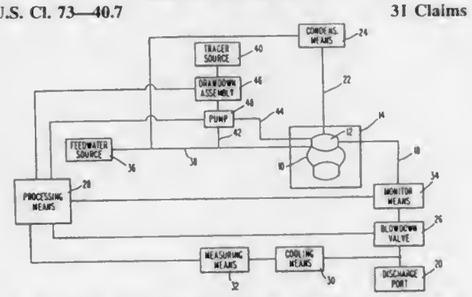
d. a controller operatively connected to the pumping assembly for providing said pressure control signal; wherein said controller includes means for determining a selected cavity pressure and means for providing said pressure control signal in response to said determination so as to control the cavity pressure in the closed cavity, whereby the extent of gas phase heat conduction between said portion of the component system and the housing is selectably controlled.

5,663,489

METHODS AND APPARATUS FOR MONITORING WATER PROCESS EQUIPMENT

Eric A. Thungstrom, Wyndmoor, and Paul R. Burgmayer, Wayne, both of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 338,905, Nov. 14, 1994, Pat. No. 5,565,619. This application Sep. 14, 1995, Ser. No. 528,461
Int. Cl.[6] G01M *3/32*
U.S. Cl. 73—40.7 **31 Claims**



1. A method for monitoring a boiler in which a temperature control liquid in a containment means is supplemented with feedwater and is removed as blowdown, sootblower steam and main steam, said method comprising the steps of:

monitoring a rate associated with said blowdown removal;

deriving a rate for adding a tracer to said temperature control liquid based on said monitored blowdown removal rate; adding said tracer to said temperature control liquid at said tracer addition rate;

deriving an expected concentration of said tracer in said blowdown based on said rate of tracer addition to said temperature control liquid;

comparing said measured tracer concentration with said expected tracer concentration to detect variance there between indicative of leakage in said boiler;

initiating an investigation of the cycling components of said boiler in response to said variance; and

monitoring a rate associated with said feedwater supplementation;

monitoring a rate associated with said blowdown, sootblower steam and main steam removal;

comparing said rate of supplementation with said rate of removal to detect a difference therebetween indicative of leakage in said boiler;

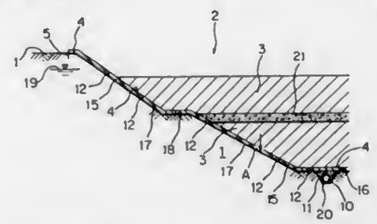
initiating an investigation of the non-cycling components of said boiler in response to said difference.

5,663,490

BREAKAGE DETECTION SYSTEM FOR WATER-BARRIER SHEET IN WASTE DISPOSAL FACILITY

Toru Kozen, Yonago, Japan, assignor to Daito Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 631,303
Claims priority, application Japan, Apr. 14, 1995, 7-089091
Int. Cl.[6] G01M *3/04;3/38*
U.S. Cl. 73—49.2 **6 Claims**



1. A system for detecting the position of a break in a water-barrier sheet placed in a waste disposal facility for isolating wastes dumped over the water-barrier sheet from the ground of the waste disposal facility, the wastes containing biodegradable organic substances and generating heat during biodegradation which elevates the temperature of water in the waste disposal facility, said system comprising:

(a) an optical fiber having first and second ends, the optical fiber being received in a perforated tubular sheath and laid in a predetermined pattern between the ground of the waste disposal facility and the water-barrier sheet together with the perforated sheath, the optical fiber having optical characteristics which change in response to a change in temperature caused when the optical fiber is flooded with water from the waste disposal facility flowing from a leak in the water-barrier sheet at a temperature elevated under the effect of heat generated during biodegradation of the organic substances contained in the waste; and

(b) a temperature measuring instrument connected to the first and second ends of said optical fiber for detecting the position of the leak in the water-barrier sheet by detecting a change in the optical characteristics of said optical fiber.

5,663,491

METHOD FOR STEAM QUALITY MEASUREMENT

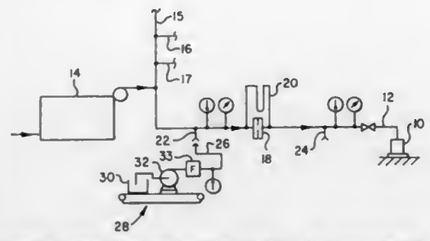
Gary L. Beer, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 25, 1992, Ser. No. 951,640
Int. Cl.[6] G01N *25/60*
U.S. Cl. 73—61.41 **5 Claims**

1. A method for determining the quality of steam flowing in a section of a steam flow line, said section of flow line having a single orifice interposed therein, said method comprising the steps of:

measuring the temperature of fluid in said section of flow line upstream of said single orifice;

measuring the pressure differential across said single orifice due to steam flow through said single orifice;



injecting water into said section of flow line upstream of said single orifice;

measuring the rate of injection of said water;

measuring the temperature of said water in said section of flow line before injection of said water into said section of flow line;

measuring the pressure differential across said single orifice during injection of said water into said section of flow line; and

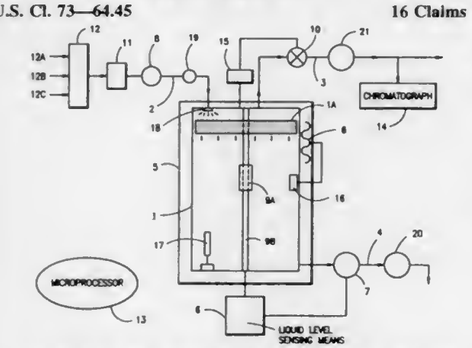
determining the quality of said steam flowing in said section of flow line from said measurements of the pressure differentials across said single orifice prior to injecting water into said section of flow line and during injection of water into said section of flow line and the amount of steam which is condensed to raise the temperature of said water prior to injection of water into said section of flow line to the temperature of fluid flow in said section of flow line during water injection into said section of flow line, and wherein said amount of steam condensed is determined from the steam temperature in said section of flow line prior to injection of water into said section of flow line, the temperature of said injected water, the heat capacity of said water, the latent heat of vaporization of steam at the pressure in said section of flow line upstream of said single orifice prior to injection of water into said section of flow line and said flow rate of water injected into said section of flow line.

5,663,492

SYSTEM FOR CONTINUOUS ANALYSIS AND MODIFICATION OF CHARACTERISTICS OF A LIQUID HYDROCARBON STREAM

Rama Rao Alapati, 200 Oakcrest Dr., Apartment #275, Lafayette, La. 70503; Bryan H. Sonnier, 111 Marla Dr., and Houman M. Shammal, 411 Robinhood Cir., both of Lafayette, La. 70508

Filed Jun. 5, 1996, Ser. No. 658,640
Int. Cl.[6] G01N *7/00*
U.S. Cl. 73—64.45 **16 Claims**



1. An apparatus for continuous measurement of the vapor pressure of a stream of liquid hydrocarbons, comprising:

a chamber having a lower portion substantially filled with hydrocarbons in liquid state and an upper portion substantially filled with vapors of said hydrocarbons, means for sensing the temperature of the hydrocarbons therein, means for sensing the level of liquid hydrocarbons therein, means for sensing the pressure of hydrocarbons therein, and, a heating element responsive to said temperature sensing means in thermal communication with the hydrocarbons in said chamber;

hydrocarbons influent line connected to a portion of said chamber which is above the level of liquid hydrocarbons therein;

hydrocarbons effluent line connected to a portion of said chamber which is below the level of liquid hydrocarbons therein;

hydrocarbons effluent pump responsive to said level sensing means for maintaining a constant level of liquid hydrocarbons in said chamber;

a vapor effluent line connected to a portion of said chamber which is above the level of liquid hydrocarbons therein; and,

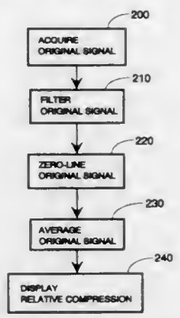
pressure control means in communication with a portion of the chamber which is above the level of liquid hydrocarbons in said chamber, said pressure control means responsive to the pressure of hydrocarbons in said chamber for maintaining said separation chamber at a selected pressure in a range below and above atmospheric pressure.

5,663,493

APPARATUS AND METHOD FOR MEASURING RELATIVE COMPRESSION

Johannes C. M. Gerbert, Enschede, and Johannes H. M. van der Kuil, Haaksbergen, both of Netherlands, assignors to Fluke Corporation, Everett, Wash.

Filed May 17, 1996, Ser. No. 649,343
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **15 Claims**



1. In a measurement instrument adapted for measuring relative compression in an internal combustion engine, a method for obtaining improved measurement accuracy comprising:

(a) sampling a battery voltage to obtain digital measurement values during a cranking phase of said internal combustion engine over a plurality of engine cycles;

(b) storing said digital measurement values as a time record to obtain a compression signal containing a set of compression peaks for each of said engine cycles;

(c) filtering said time record to remove noise;

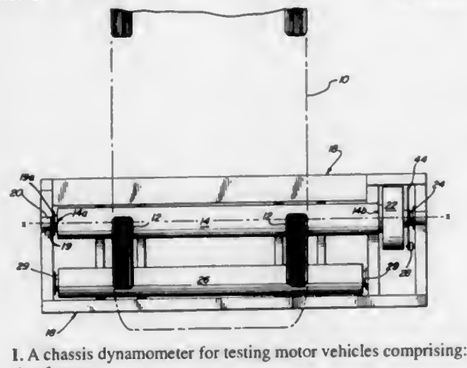
(d) performing a zero-line operation on each of said compression peaks;

(e) averaging each of said compression peaks with corresponding compression peaks between said plurality of engine cycles to obtain a set of averaged compression peaks;

(f) calculating said relative compression from the amplitude of said averaged compression peaks; and

(g) visually displaying said averaged compression peaks as a trace graph.

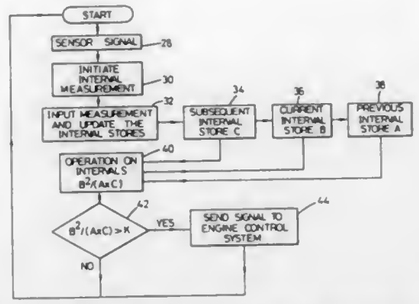
5,663,494
CHASSIS DYNAMOMETER
William Clayton, Jr., San Marino, and Dmitry Shchedrin, Arcadia, both of Calif., assignors to Clayton Industries, El Monte, Calif.
Continuation-in-part of Ser. No. 424,259, Apr. 24, 1995, which is a continuation-in-part of Ser. No. 114,220, Aug. 30, 1993, Pat. No. 5,445,013. This application Jun. 7, 1995, Ser. No. 473,670
Int. Cl.[6] G01L *3/22*
U.S. Cl. 73—117 20 Claims



1. A chassis dynamometer for testing motor vehicles comprising:
a) a frame;
b) a power absorbing and inertia simulating unit comprising a shaft having two ends, an electrically and magnetically conducting rotor mounted on the shaft for rotation therewith and a stator carrying at least one field coil positioned adjacent the rotor for inducing eddy currents in the rotor during rotation of the shaft, the stator surrounding the shaft and connected to the frame to remain stationary relative to the shaft and rotor;
c) a roll having first and second ends for engaging a driven wheel of the vehicle, the first end of the roll being secured to the one end of the power absorber shaft to form an integrated unit comprising the roll and absorber; and
d) first and second spaced bearings for rotatably supporting the roll and the power absorber rotor as an integral unit on the frame, the roll and rotor being supported relative to the frame only by the first and second bearings.

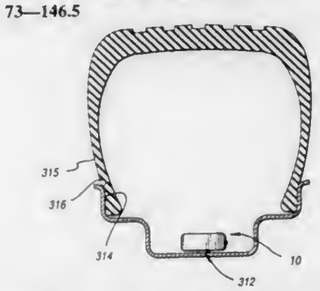
5,663,495
DETECTING A MARKER IN AN ENGINE POSITION SENSING SYSTEM
Murray Allen, Ryton-on-Dunsmore, and Andrew John Burnard, Coventry, both of United Kingdom, assignors to Rover Group, Birmingham, England
Continuation of Ser. No. 380,646, Jan. 30, 1995. This application Jun. 26, 1996, Ser. No. 669,853
Claims priority, application United Kingdom, Feb. 1, 1994, 9401835
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 17 Claims

1. A method of detecting a marker in an engine position sensing system, the system comprising a rotatable member having thereon equally spaced marks arranged circumferentially and at least one marker thereon defined by a change in spacing between the marks, sensor means being arranged adjacent the rotatable member for sensing the marks and for providing sensor signals in response to movement of the marks relative to the sensor means and processing means for receiving and processing the sensor signal, the method comprising the steps of:
(a) receiving said sensor signals by the processing means;
(b) measuring time intervals between successive sensor signals;
(c) designating the time interval between a first sensor signal and a second sensor signal as value A, designating the time interval between the second sensor signal and a third sensor signal as value B and designating the time interval between the third sensor signal and a fourth sensor signal as value C;



(d) using the designated values A, B and C to calculate a result of the measured time intervals according to a formula $B^2/(A\times C)$; and
(e) comparing said result with a reference value K such that the presence of a marker is determined when $B^2/(A\times C)>K$.

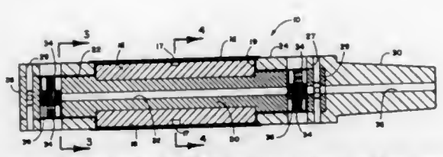
5,663,496
TIRE MONITORING VIA AN ELECTROMAGNETIC PATH INCLUDING THE GROUND PLAN OF A VEHICLE
Michael Handfield, and Helene Laliberte, both of Rochester, Mich., assignors to The McLaughlin Group, Irvine, Calif.
Division of Ser. No. 101,379, Aug. 3, 1993, Pat. No. 5,473,938. This application Jun. 6, 1995, Ser. No. 466,219
Int. Cl.[6] B60C *23/02*
U.S. Cl. 73—146.5 23 Claims



1. A method for monitoring a parameter of a tire for a vehicle having a plurality of conductive components which form an electromagnetic path with first and second ends, the method comprising the steps of:
generating a signal indicative of a parameter of the tire using a sensor disposed within the tire;
transmitting the generated signal along the electromagnetic path by introducing the generated signal to the electromagnetic path first end wherein the electromagnetic path includes a ground plane of the vehicle;
receiving a path signal at the electromagnetic path second end, the path signal being responsive to the generated signal; and
monitoring the tire parameter by monitoring the path signal.

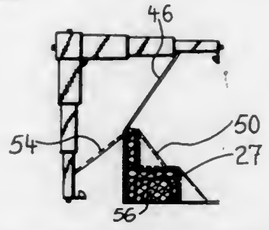
5,663,497
SIX COMPONENT WIND TUNNEL BALANCE
Philip J. Mole, 4138 Catalina Pl., San Diego, Calif. 92107
Filed Jul. 22, 1996, Ser. No. 684,816
Int. Cl.[6] G01M *9/02;9/06*
U.S. Cl. 73—147 11 Claims

1. An improved strain gage balance of the type adapted to be secured in a cavity with the body of a model disposed in a test tunnel flow field for measuring component forces and moments applied thereto, said balance adapted for mounting on a sting in said tunnel, said balance comprising:



a sleeve having means at a first end for mounting on a test tunnel sting;
a core member within said sleeve, spaced from said sleeve and including means extending through openings in said sleeve for fastening to a test model;
core end members at each end of said core member secured to said sleeve;
a plurality of webs between said core member and said core end members; and
a plurality of strain gages on said webs for indicating strain on said webs resulting from forces and moments on said model.

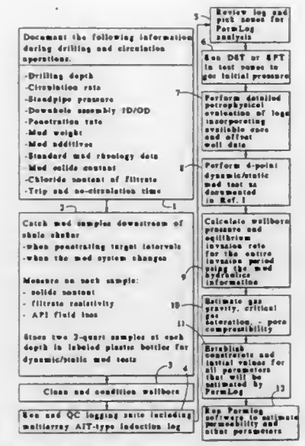
5,663,498
VOLUME MEASUREMENT APPARATUS AND METHOD
Thomas W. Storm, 1602 Augusta Way, Casselberry, Fla. 32707
Filed Jan. 19, 1996, Ser. No. 582,347
Int. Cl.[6] G01B *11/28*
U.S. Cl. 73—149 13 Claims



1. A volume measurement apparatus comprising a vertical leg attached to a horizontal leg, a first sensor disposed at an extreme of said vertical leg opposite said horizontal leg, a second sensor disposed at an extreme of said horizontal leg opposite said vertical leg, a third sensor disposed at an intersection of said vertical leg and said horizontal leg, and a volume measurement means electrically connected to the sensors, said sensors being mapping type sensors which both emit a signal and detect a signal return reflected from an object being scanned, said signal return defining a contour of the object being scanned, whereby a shape of the object being scanned is defined in said return.

5,663,499
METHOD FOR ESTIMATING PERMEABILITY FROM MULTI-ARRAY INDUCTION LOGS
Mark E. Semmelbeck, 600 Ivy Cove, College Station, Tex. 77845, and John T. Dewan, 2216 Fulham Ct., Houston, Tex. 77063
Filed Oct. 20, 1995, Ser. No. 546,209
Int. Cl.[6] F21B *49/00;* G01V *1/00*
U.S. Cl. 73—152.06 9 Claims

1. A method of estimating the permeability of a zone of interest of a formation from drilling parameters, drilling fluid parameters, mud cake parameters and log data including multi-array induction log data taken with borehole drilling apparatus and sensor logging equipment in a borehole where re-circulated mud samples are retrieved downstream of a shale shaker,
the method comprising the following steps performed for each zone of interest:
a. running an array-type induction log with at least five resistivity measurements and an appropriate porosity log and recording the time at which logs were run;
b. calculating porosity, water saturation, clay content, clay conductivity, formation water resistivity, formation water saturation and cementation exponents from the log data;



c. measuring dynamic properties of the mud cake including reference permeability, pressure exponent, mud cake porosity, equilibrium filtration rate and erosion factor;
d. simultaneously solving
the filtration equations of Dewan and Chenevert or similar or improved equations,
the two-phase immiscible fluid displacement equations for porous media, and
the dispersion equations for filtrate and formation water salinity distribution
from the time the zone of interest was penetrated until the time the array induction and porosity logs were run;
e. estimating the radial distribution of water saturation and salinity around the bore hole at the time of logging;
f. calculating the radial resistivity distribution around the bore hole at the time of logging;
g. comparing the measured array induction log resistivity values measured in step a with the resistivity distribution values calculated in step f;
h. determining the model parameters that minimize the differences between the resistivity values calculated in step e and the resistivity values measured in step a, the model parameters being selected from the group consisting of permeability, irreducible water saturation, residual gas saturation, capillary entrance pressure and capillary pressure correlation parameter;
i. repeating steps c through g until the calculated radial resistivity values calculated in step e substantially agree with the measured resistivity values measured in step a; and
j. recording the formation permeability from step h.

5,663,500
SILVER-BASED CONTACT MATERIAL FOR SWITCHGEAR USED IN POWER ENGINEERING
Franz Hauner, Röttenbach; Manfred Müller, Amberg, and Günter Tiefel, Fürth, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany
PCT No. PCT/DE94/01488, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO95/17758, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 14, 1994, Ser. No. 669,463
Claims priority, application Germany, Dec. 20, 1993, 43 43 550.5
Int. Cl.[6] C22C *5/06*
U.S. Cl. 75—232 8 Claims

1. A silver-based contact material for switchgear used in power engineering, comprising: silver; iron oxide and zirconium oxide (ZrO_2) as active components; and an oxide of an element of the sixth subgroup of the Periodic Table or a mixed oxide of iron and an element of the sixth subgroup of the Periodic Table.

5,663,501

METHOD AND APPARATUS FOR DETERMINING SEISMIC VULNERABILITY OF A STRUCTURE

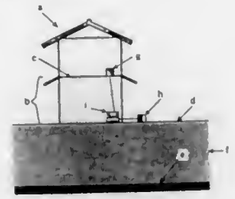
Yutaka Nakamura, Sagamihara; Fumiaki Uehan, Kokubunji, and Masayuki Nishinaga, Iruma, all of Japan, assignors to Railway Technical Research Institute and Co., Ltd., and System and Data Research, both of Japan

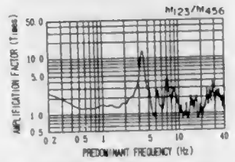
Filed Jun. 20, 1996, Ser. No. 667,000

Claims priority, application Japan, Jul. 27, 1995, 7-190947; May 27, 1996, 8-131704

Int. Cl.[6] G01M 7/02

U.S. Cl. 73—579 14 Claims





1. A method for determining the seismic vulnerability of a structure, said method comprising the steps of:

(a) placing a vibration sensor on each of the top surface of a layer of the structure and the ground surface near the structure so as to record vibrations;

(b) estimating a transfer function of vibration of the top surface of the layer of the structure based on a spectral ratio between the vibration recorded on the top surface of the layer of the structure and the vibration recorded on the ground surface near the structure, thereby obtaining a predominant frequency and amplification factor of vibration of the top surface of the layer of the structure;

(c) obtaining a seismic vulnerability index of the layer of the structure resulting from a deformation of the layer based on the obtained predominant frequency and amplification factor of vibration of the top surface of the layer of the structure and on the height of the layer of the structure; and

(d) multiplying this seismic vulnerability index by an assumed seismic acceleration, thereby obtaining a maximum shear strain of the layer of the structure upon being subjected to an earthquake.

5,663,502

METHOD AND APPARATUS FOR MEASURING THICKNESS OF LAYER USING ACOUSTIC WAVES

Yoshiaki Nagashima; Kenichi Fujiwara, both of Hitachi; Masao Sato, Kitaibaraki; Fuminobu Takahashi, Hitachinaka; Masahiro Koike, Hitachi; Hajime Umehara, Hitachinaka, and Yoshihiro Michiguchi, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Nuclear Engineering Co., Ltd., Hitachi, both of Japan

Filed Oct. 18, 1995, Ser. No. 544,932

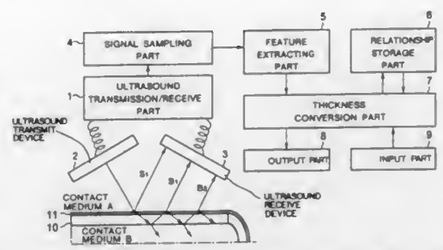
Claims priority, application Japan, Oct. 18, 1994, 6-251784

Int. Cl.[6] G01N 29/08;29/10

U.S. Cl. 73—599 8 Claims

1. A method for measuring a thickness of a layer on a front surface of a test object using acoustic waves, the method comprising the steps of:

transmitting respective acoustic waves to a plurality of reference objects having respective front surfaces with respective layers thereon, the layers of the reference objects being of a same



type as the layer of the test object and having respective known mutually different thicknesses;

receiving respective acoustic waves from the reference objects, the acoustic waves received from the reference objects having been produced by the acoustic waves transmitted to the reference objects and being one of

(1) reflected acoustic waves which have passed through the reference objects and have been reflected from respective back surfaces of the reference objects at least once, and

(2) transmitted acoustic waves which have passed through the reference objects at least once;

determining respective frequency spectrums of the acoustic waves received from the reference objects;

determining respective centers-of-frequency of the frequency spectrums of the acoustic waves received from the reference objects;

determining a thickness function defining a relationship between the centers-of-frequency of the frequency spectrums of the acoustic waves received from the reference objects and the thicknesses of the layers of the reference objects;

transmitting an acoustic wave to the test object;

receiving an acoustic wave from the test object, the acoustic wave received from the test object having been produced by the acoustic wave transmitted to the test object and being one of

(1) a reflected acoustic wave which has passed through the test object and has been reflected from a back surface of the test object at least once, and

(2) a transmitted acoustic wave which has passed through the test object at least once;

determining a frequency spectrum of the acoustic wave received from the test object;

determining a center-of-frequency of the frequency spectrum of the acoustic wave received from the test object; and

determining the thickness of the layer of the test object from the thickness function based on the center-of-frequency of the frequency spectrum of the acoustic wave received from the test object.

5,663,503

INVASIVE AND NON-INVASIVE ULTRASONIC SENSOR WITH CONTINUOUS AND DEMAND SELF-TEST

Naim Dam, Muttontown, and Michael J. Marro, Plainview, both of N.Y., assignors to Cosense, Inc., Hallppauge, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,929

Int. Cl.[6] G01N 29/02

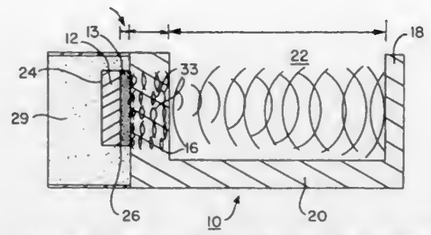
U.S. Cl. 73—649 16 Claims

1. An ultrasonic sensor comprising:

a support structure having a wall;

an element for transmitting and receiving ultrasonic energy bonded by an adhesive to one face of said wall, the other face of said wall having an interface with a fluid medium;

a transmitter for periodically supplying energy to said element to be transmitted through said wall to said interface, a portion of the energy periodically supplied to said element being transmitted through said adhesive to said wall and reflected back



through said adhesive to said element when said element is properly bonded by said adhesive to said one face of said wall; and

a receiver coupled to said element to detect reception of energy reflected back to said element through said adhesive during at least a part of the time when said element is not transmitting energy.

5,663,504

SENSOR SYSTEM

Werner Kluft, Ellerstrasse 43, 52078 Aachen, Germany

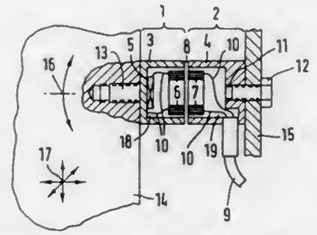
PCT No. PCT/EP94/03092, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO95/08099, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 15, 1994, Ser. No. 615,323

Claims priority, application Germany, Sep. 16, 1993, 43 31 523.2; Sep. 17, 1993, 43 31 534.8

Int. Cl.[6] G01N 29/24

U.S. Cl. 73—660 12 Claims



1. A sensor system consisting of at least two vibration or structure-borne noise sensor devices (1), a plurality of movable machine elements (14, 36), one of said noise sensor devices (1) mounted on one of said movable machine elements (14, 36) and another of said noise sensor devices (1) mounted on another of said movable machine elements (14, 36), a receiver device (2) with a pair of transformer coils (6, 7), the system contactlessly transmitting the vibration energy of an electrodynamic or piezoelectric measuring element (5) via a primary coil (6) arranged in said sensor device (1) to a secondary coil (7) of said pair of transformer coils (6, 7), said secondary coil (7) being arranged in said receiver device (2) spaced from said sensor device (1) by an air gap (8), said receiver device further transmitting the measured and transformed vibration or structure-borne noise measuring signal, such that

said measuring element (5) is connected directly with said primary coil (6) without any other components and said measuring element (5) is mounted on the movable machine element (14, 36),

said receiver device (2) is disposed on a stationary machine element (15), and

one of said sensor devices transforming a measured signal to said receiver device (2) every time the movable machine element (14) is positioned with its sensor device (1) such that said primary (6) and said secondary coil (7) are opposite each other at least during the monitoring process, while maintaining said air gap (8).

5,663,505

PRESSURE SENSOR HAVING A PIEZOELECTRIC VIBRATOR WITH CONCENCENTRIC CIRCULAR ELECTRODES

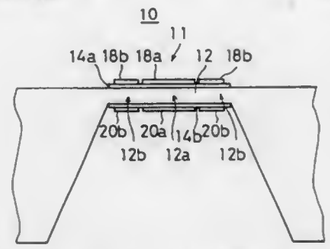
Takeshi Nakamura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 292,836, Aug. 19, 1994, abandoned. This application May 8, 1996, Ser. No. 647,014

Claims priority, application Japan, Aug. 23, 1993, 5-230921

Int. Cl.[6] G01L 9/08;7/08

U.S. Cl. 73—702 11 Claims



6. A pressure sensor comprising a vibrator for detecting pressure, wherein said vibrator comprises:

a vibrating body having first and second principal planes;

a first circular piezoelectric body located on said first principal plane of said vibrating body;

a second circular piezoelectric body located on said second principal plane of said vibrating body;

a first circular electrode located on said first piezoelectric body and a second hollow circular electrode located on said first piezoelectric body so as to surround said first circular electrode;

a third circular electrode located on said second piezoelectric body and a fourth hollow circular electrode located on said second piezoelectric body so as to surround said third circular electrode; and

a detector for detecting a variation of a resonance characteristic of said vibrating body.

5,663,506

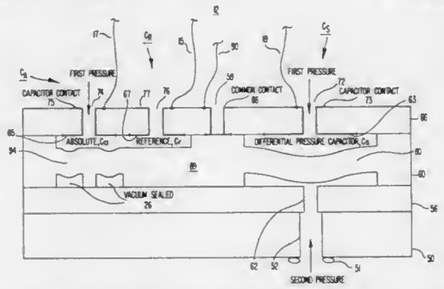
CAPACITIVE TEMPERATURE AND PRESSURE TRANSDUCER

James O. Moore, Worcester; Raymond H. Kohler, Souderton, and Philip R. Klauder, Ambler, all of Pa., assignors to Moore Products Co., Spring House, Pa.

Filed Aug. 21, 1995, Ser. No. 517,529

Int. Cl.[6] G01L 19/04;9/12

U.S. Cl. 73—708 18 Claims



1. Apparatus for measuring and comparing pressures, comprising:

(a) means for detecting a temperature variation and for providing a temperature sensor signal representative of the temperature variation;

(b) means for sensing an absolute pressure and for providing an absolute sensor signal representative of the absolute pressure;

(c) means for sensing a differential pressure and for providing a differential sensor signal representative of the differential pressure;

(d) means for selecting one of said temperature detecting means, absolute pressure sensing means or differential pressure sensing means for reading the respective sensor signal of the selected means;

(e) means responsive to the selecting means for comparing the temperature sensor signal to the differential sensor signal and for generating a first comparative signal representative of the ratio between the temperature sensor signal and the differential sensor signal; and

(f) means responsive to the selecting means for comparing the temperature sensor signal to the absolute sensor signal and for generating a second comparative signal representative of the ratio between the temperature reference signal and the absolute sensor signal.

5,663,507

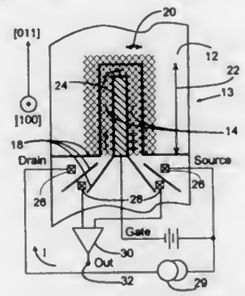
SEMICONDUCTOR PIEZOELECTRIC STRAIN MEASURING TRANSDUCER

Robert M. Westervelt, Lexington, and Rex G. Beck, Cambridge, both of Mass., assignors to President and Fellows at Harvard College, Cambridge, Mass.

Filed Mar. 18, 1996, Ser. No. 616,886

Int. Cl.[6] G01L *9/06*

U.S. Cl. 73—727 **14 Claims**



1. A strain measuring transducer comprising, in combination:

a beam or cantilever arm comprising a semiconductor material and having a fixed base section and a displacement section capable of being displaced by a physical force applied thereto, with the base section being a region of maximum strain of the beam or cantilever arm;

the base section being a crystal lattice heterostructure comprising in series an upper surface layer, a first aluminum gallium arsenide layer, an intermediate gallium arsenide layer, a second aluminum gallium arsenide layer and lower surface layer;

means defining a gate and means defining a semiconducting channel at the base section and beneath the surface of the crystal lattice heterostructure with the semiconducting channel comprising a portion of the intermediate gallium arsenide layer,

a doping layer separate from the semiconducting channel;

first circuit means for applying an electrical potential to opposing ends of the channel to cause an electrical current to flow through the channel,

means for applying a variable physical force to the displacement section of the beam or cantilever arm to subject the channel to a variable strain and to generate a piezoelectric effect,

sensing means connected to opposing ends of the channel to measure changes in electrical conductance of the channel caused by said variable strain, and

measuring and readout means connected to the sensing means to relate the changes in electrical conductance to the variable physical force.

5,663,508

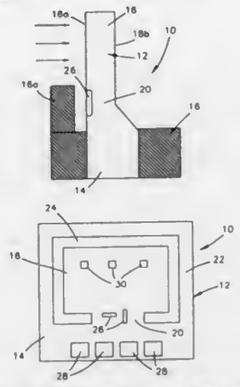
SILICON FLOW SENSOR

Douglas Ray Sparks, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 7, 1995, Ser. No. 512,250

Int. Cl.[6] G01F *1/28*

U.S. Cl. 73—861.71 **19 Claims**



19. A bidirectional piezoresistive silicon flow sensor including a single silicon chip within a sensor package, the chip comprising:

a base region having a thickness in a direction of fluid flow;

a vane cantilevered from the base region and adapted to deflect when impinged by fluid flow, the vane having a thickness in the direction of fluid flow, the thickness of the vane being less than the thickness of the base region, the vane having a width transverse to the direction of fluid flow;

a beam region intermediate the vane and the base region, the beam having a width transverse to the direction of fluid flow, the width of the beam being less than the width of the vane;

a piezoresistor disposed on the beam region for sensing strain occurring in the beam region as a result of the vane being deflected relative to the base region in the direction of fluid flow; and

a frame disposed along a peripheral edge of the vane so as to form a gap therebetween, the gap being adapted to affect the sensitivity of the vane, the frame securing the chip to the sensor package.

5,663,509

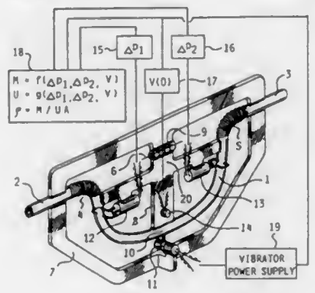
INERTIA FORCE FLOWMETER

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 299,362, Sep. 1, 1994. This application Sep. 5, 1995, Ser. No. 523,811

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.357 **20 Claims**



1. An apparatus for measuring flow rate of fluid media moving through at least one conduit under a transverse reciprocating motion, comprising in combination:

a) at least one conduit providing a flow passage;

b) means for generating a transeverse reciprocating motion of the conduit in directions substantially perpendicular to a reference plane defined by the center line of the conduit in a mode wherein amplitude of the transverse reciprocating motion of the conduit has a minimum value at two opposite extremities respectively connected to an inlet leg and an outlet leg and has a maximum value at a center section of the conduit;

c) a first differential pressure transducer means for detecting a fluid pressure gradient in directions parallel to directions of the transverse reciprocating motion of the conduit at a first section of the conduit located on one side of the center section of the conduit, and generating a first alternating electrical signal representing the fluid pressure gradient existing at the first sedition of the conduits

d) a second differential pressure transducer means for detecting a fluid pressure gradient in directions parallel to directions of the transverse reciprocating motion of the conduit at a second section of the conduit located on the other side of the center section of the conduit opposite to said one side, and generating a second alternating electrical signal representing the fluid pressure gradient existing at the second section of the conduit; and

e) means for determining an electrical variable related to a phase difference between the first and second alternating electrical signals as a measure of mass flow rate of fluid media moving through the conduit.

5,663,510

METHOD AND DEVICE FOR COMPENSATING TENSION FORCES ACROSS THE WIDTH OF A MOVING WEB

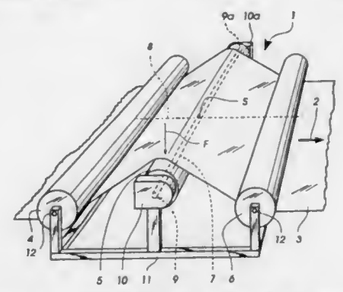
Heinrich Niemann, Enger, and Johannes Wulf, Gütersloh, both of Germany, assignors to Erhardt + Leimer GmbH, Augsburg, Germany

Filed Jan. 16, 1996, Ser. No. 585,458

Claims priority, application Germany, Jan. 20, 1995, 195 01 644.0

Int. Cl.[6] G01L *5/00*

U.S. Cl. 73—862.55 **13 Claims**



1. Method for compensating and equalizing the tension forces across the width of a pulled moving web comprising:

providing a tension compensation roll for reversing the web;

pivoting said tension compensation roll around a pivotal axis disposed approximately perpendicular to said tension compensation roll;

said pivoting of the tension compensation roll taking place by detecting and controlling a torque exerted on the tension compensation roll by the web;

wherein said detecting of the torque of the web exerted on the tension compensation roll comprises measuring the bearing forces at both sides of the tension compensation roll; and

computing the difference between these bearing forces.

5,663,511

METHOD AND DEVICE FOR TAKING SAMPLES OF LIQUIDS WITH DIFFERENT VISCOSITIES FROM A DRUM OR OTHER CONTAINER

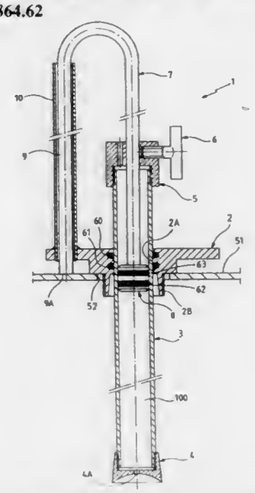
Jean-Paul Geiller, Guerting, France, assignor to Houilleres Du Bassin De Lorraine, France

Filed Aug. 8, 1995, Ser. No. 512,573

Claims priority, application France, Aug. 10, 1994, 94 09898

Int. Cl.[6] G01N *1/14*

U.S. Cl. 73—864.62 **20 Claims**



1. A device for sampling fluid from a drum, said drum having a substantially horizontal wall with an orifice therein, said device comprising:

a columnar member having a bore therethrough, said columnar member having a lower end and an opposite upper end;

a closure member located at said lower end of said columnar member, said closure member having one way valve means for enabling said fluid to be aspirated into said columnar member and preventing said fluid from escaping from said columnar member as a result of the weight of said fluid;

a piston movably mounted within said columnar member between said opposite upper and said lower ends, said piston entering said columnar member through said opposite upper end, said piston having a rod portion and a disk portion mounted for slidable movement within said columnar member, said disk portion connected to an end of said rod portion, said disk portion having means for sealing located between said disk portion and said columnar member, said disk portion remaining fully inside said columnar member;

means for positioning said piston surrounding said columnar member, said means for positioning said piston comprising a support member resting on said substantially horizontal wall of said drum over said orifice, said support member having a passage in which said columnar member slides; and

second means for sealing located between said columnar member and said support member, said second means for sealing further comprising means for scraping such that relative movement between said support member and said columnar member occurs as said means for scraping scraps the exterior surface of said columnar member.

5,663,512

HARDFACING COMPOSITION FOR EARTH-BORING BITS

Kevin W. Schader, Spring; Ronald L. Jones, Cleveland; James L. Overstreet, Webster; Danny E. Scott, Montgomery; Mou-Chih Lu, and Alan J. Massey, both of Houston, all of Tex., assignors to Baker Hughes Inc., Houston, Tex.

Filed Nov. 21, 1994, Ser. No. 343,005
Int. Cl.[6] C22C *29/00*
U.S. Cl. 75—239 18 Claims

1. An improved, wear-resistant hardfacing composition comprising the following materials in pre-application ratios:

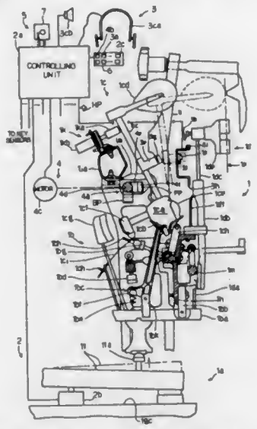
at least 60% by weight of the composition being granules including a quantity of sintered carbide pellets and a quantity of cast carbide pellets, the cast and sintered carbides being selected from one of the group of carbides consisting of chromium, molybdenum, niobium, tantalum, titanium, tungsten, and vanadium carbides and alloys and mixtures thereof; the balance of the hardfacing composition being matrix metal.

5,663,513

KEYBOARD MUSICAL INSTRUMENT PERFORMABLE WITHOUT NOISE IN SILENT MODE

Nobuo Sugiyama, and Haruki Uehara, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Apr. 10, 1996, Ser. No. 631,799
Claims priority, application Japan, Apr. 14, 1995, 7-089858
Int. Cl.[6] G10F *1/02*; G10H *1/053;1/46*
U.S. Cl. 84—21 9 Claims



1. A keyboard musical instrument comprising:

an acoustic keyboard musical instrument including

a keyboard having a plurality of keys respectively assigned notes of a scale and selectively moved by a player,

a plurality of vibrative string means for generating acoustic sounds having said notes, respectively,

a plurality of hammer assemblies each driven for a free rotation so as to strike one of said plurality of vibrative string means, and

a plurality of key action mechanisms respectively connected between said plurality of keys and said plurality of hammer assemblies so as to respectively rotate said plurality of hammer assemblies, each of said plurality of key action mechanisms causing one of said plurality of hammer assemblies to escape therefrom before an initiation of said free rotation;

a hammer stopper provided for said plurality of hammer assemblies, and changed between a free position and a blocking position, said hammer stopper in said free position allowing said plurality of hammer assemblies to strike said plurality of vibrative string means, said hammer stopper in said blocking position causing each of said plurality of hammer assemblies to rebound thereon between said initiation of said free rotation and a strike against one of said plurality of vibrative string means;

a plurality of actuators respectively provided for said plurality of keys, and respectively responsive to instructions for moving said plurality of keys instead of said player at respective key velocities, each of said key velocities being varied by changing a magnitude of one of said instructions;

a source of music data codes each containing a piece of impact data information indicative of the loudness of one of said acoustic sounds; and

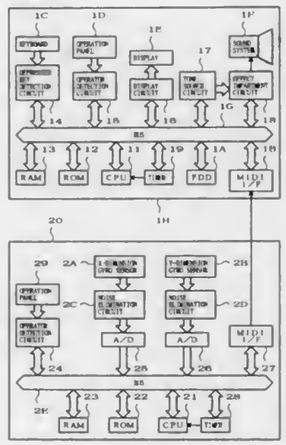
an instruction generating means supplied with said music data codes from said source for regulating the magnitudes of said instructions, said magnitudes of said instructions being changed in a first range when said hammer stopper is in said free position, said magnitude of said instructions being changed in a second range different from said first range so as to restrict said key velocity when said hammer stopper is in said blocking position.

5,663,514

APPARATUS AND METHOD FOR CONTROLLING PERFORMANCE DYNAMICS AND TEMPO IN RESPONSE TO PLAYER'S GESTURE

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Apr. 30, 1996, Ser. No. 643,121
Claims priority, application Japan, May 2, 1995, 7-132915; Jun. 12, 1995, 7-169174
Int. Cl.[6] G10H *1/057;1/40*
U.S. Cl. 84—600 24 Claims



1. A performance dynamics controlling apparatus comprising:

movement detection means for detecting a movement type and movement amount of a human operator's gesture on the basis of the gesture;

compensation means for compensating the movement amount in accordance with the movement type detected by said movement detection means; and

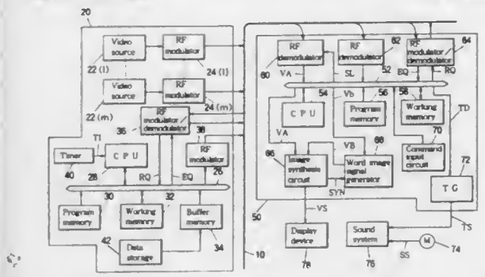
control means for, on the basis of the movement amount compensated by said compensation means, controlling a predetermined factor to control dynamics of a performance.

5,663,515

ONLINE SYSTEM FOR DIRECT DRIVING OF REMOTE KARAOKE TERMINAL BY HOST STATION

Hirokazu Kato, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Apr. 25, 1995, Ser. No. 428,341
Claims priority, application Japan, May 2, 1994, 6-115918
Int. Cl.[6] G09B *15/04*; G10H *7/00*
U.S. Cl. 84—609 10 Claims



7. A method of directly supplying and remotely driving a tone generator contained in a karaoke terminal to perform a karaoke song by a karaoke station which has a database storing a plurality of performance data files corresponding to a plurality of karaoke songs, and which is communicably connected to the karaoke terminal, the method comprising the steps of:

transmitting a request command which designates a desired karaoke song from the karaoke terminal to the karaoke station;

selecting from the database a performance data file corresponding to the desired karaoke song designated by the request command;

transmitting back a sequence data of musical tones contained in the selected performance data file from the karaoke station to the karaoke terminal in time-sequential manner regulated by a predetermined tempo of the designated karaoke song; and

directly supplying and remotely driving the tone generator without buffering at the karaoke terminal by the sequence data transmitted thereto to generate the musical tones to thereby perform the designated karaoke song.

5,663,516

KARAOKE APPARATUS HAVING PHYSICAL MODEL SOUND SOURCE DRIVEN BY SONG DATA

Takahiro Kawashima, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 6, 1996, Ser. No. 659,262
Claims priority, application Japan, Jun. 13, 1995, 7-146478
Int. Cl.[6] G09B *5/00*; G10H *1/36*
U.S. Cl. 84—610 7 Claims

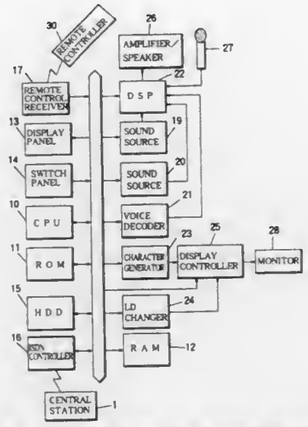
7. A karaoke apparatus responsive to a request for producing a karaoke accompaniment according to performance data, comprising:

a sound source of a physical model type that is controlled according to shape data which characterizes an acoustic vibration of a model musical instrument for electrically simulating the acoustic vibration to synthesize a tone waveform as if created by the model musical instrument, and that is driven according to the performance data for sequentially processing the tone waveform to produce the karaoke accompaniment;

a memory that rewriteably stores a file of a plurality of the shape data;

a downloader that downloads new ones of the shape data into the memory so as to update the file; and

a distributor that retrieves a desired one of the shape data from the updated file in matching with the performance data and



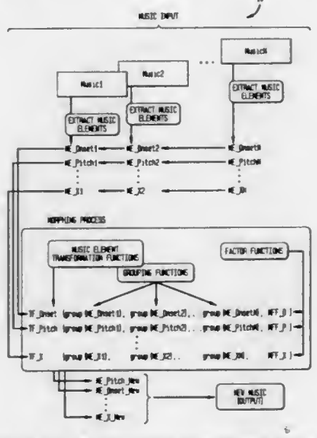
that feeds the retrieved one of the shape data to the sound source to thereby control the same.

5,663,517

INTERACTIVE SYSTEM FOR COMPOSITIONAL MORPHING OF MUSIC IN REAL-TIME

Daniel Vincent Oppenheim, Croton on Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 1, 1995, Ser. No. 522,636
Int. Cl.[6] A63H *5/00*; G10H *1/26;5/00*
U.S. Cl. 84—649 24 Claims



1. A method for effecting musical morphing in real time, the method comprising the steps of:

1) selecting a first sequence of musical events;

2) identifying a family of first musical elements encompassed by said first musical sequence;

3) selecting a second sequence of musical events;

4) identifying a family of second musical elements encompassed by said second musical sequence;

for each new event that is to be generated

5) creating at least one paired set comprising one musical element from each of the first and second sequences;

6) associating each paired set to a parameter type in the new event;

and for each element of the paired sets

7) assigning a grouping function for selecting values from the musical elements;

8) assigning a morphing factor for determining a relative weight of resemblance to each of said musical sequences;

and

9) assigning a transformation function for mapping the selected values in accordance with a morphing factor for that set, thereby generating a value comprising one parameter of the new event.

5,663,518

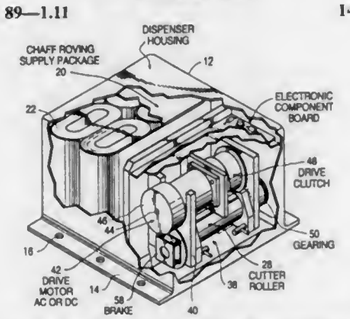
METHOD AND DEVICE FOR THE IN-FLIGHT CUTTING AND DISPENSING OF CHAFF DIPOLES FROM AN AERIAL VEHICLE

Marcel Widmer, Coral Springs, Fla., assignor to Advanced Technology Materials, Inc., Danbury, Conn.

Filed Jun. 6, 1994, Ser. No. 254,712

Int. Cl.[6] B64D *1/00*

U.S. Cl. 89—1.11 **14 Claims**



1. A device for the in-flight cutting and dispensing of chaff dipoles into an airstream along the flight path of an aerial vehicle, which comprises:

(a) a housing member enclosing the following elements (b)–(h);

(b) a chaff roving storage compartment;

(c) a drive motor having a rotatable drive shaft;

(d) a flywheel affixed to the shaft enabling the shaft to maintain a substantially constant rotational speed when a dispense mode of the device is initiated;

(e) a rotatable cutter roller connectable to the drive shaft;

(f) a rotatable platen roller opposing the cutter roller;

(g) a gear assembly for connecting the drive shaft to at least one of the rollers for rotating the at least one roller;

(h) a clutch assembly for coupling and de-coupling the drive shaft to the gear assembly in response to a signal provided thereto;

(i) control means for outputting a signal to the clutch assembly so as to activate the operation of the assembly and control the rotation of the at least one roller;

(j) a braking mechanism for reducing the rotational speed of the at least one roller in response to a signal provided thereto;

(k) guide means on an upstream side of the rollers for guiding chaff from the chaff roving compartment into the nip of rollers so that rotation of the at least one roller causes the chaff roving to pass between the rollers and be cut into dipoles of a preselected length;

(l) an exit opening in a bottom side of the housing permitting cut dipoles to exit the device and pass into the airstream; and

(m) a moveable bottom cover member attached to the bottom side of the housing for closing the opening when the device is not in use and for permitting the cut dipoles to exit the device into the airstream when cut dipoles are to be dispensed.

5,663,519

BREECH FOR A GUN WHICH IS ABLE TO OPERATE WITH TWO DIFFERENT BREECH BLOCKS

Ernst Johann Heinrich Müller, Pretoria, South Africa, assignor to Denel (Proprietary) Limited, South Africa, and Octrooibureau Kisch N.V., NL-Curacao

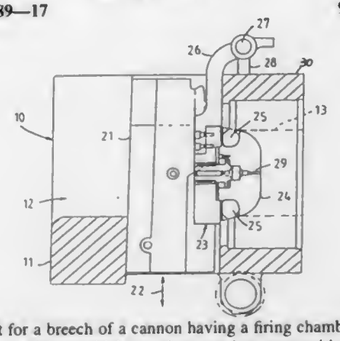
PCT No. PCT/NL94/00276, § 371 Date May 6, 1996, § 102(e) Date May 6, 1996, PCT Pub. No. WO95/13513, PCT Pub. Date May 18, 1995

PCT Filed Nov. 7, 1994, Ser. No. 635,970

Claims priority, application South Africa, Nov. 8, 1993, 93/8306

Int. Cl.[6] F41A *3/00*

U.S. Cl. 89—17 **9 Claims**



1. A kit for a breech of a cannon having a firing chamber with a bored rear end into which cased or caseless ammunition can be loaded, the kit comprising

(1) a first sliding block, for use with cased ammunition having a rear end which is located at the rear end of the firing chamber, wherein when the first sliding block is located in the breech of the cannon, the first sliding block is movable from an operative position, wherein the first sliding block supports and cooperates with the rear end of the cased ammunition to seal the rear end of the firing chamber, to an inoperative position, wherein the rear end of the firing chamber is unsealed,

(2) a second sliding block, wherein the first sliding block and the second sliding block are interchangeable in the breech of the cannon, and

(3) a sealing member, movably connectable to the cannon,

wherein the second sliding block and the sealing member are for use with caseless ammunition, wherein when the second sliding block is located in the breech of the cannon, the second sliding block is movable from an operative position, wherein the second sliding block engages the sealing member to trap the sealing member in sealing engagement with the rear end of the firing chamber to seal the rear end of the firing chamber, to an inoperative position wherein trapping the sealing member in sealing engagement is avoided.

5,663,520

VEHICLE MINE PROTECTION STRUCTURE

Michael D. Ladika, Loveland; Dennis Jerome Malone, Indian Springs, both of Ohio, and David John Stevens, San Antonio, Tex., assignors to O'Gara-Hess & Eisenhardt Armoring Co., Fairfield, Ohio

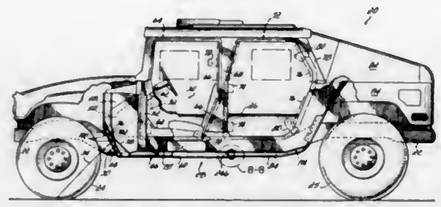
Filed Jun. 4, 1996, Ser. No. 658,239

Int. Cl.[6] F41A *27/00*

U.S. Cl. 89—36.08 **37 Claims**

1. An apparatus for protecting a passenger compartment of a vehicle from a force of a blast, the passenger compartment having a forward portion in which the lower legs and feet of an occupant are positioned during use, the forward portion being located forward of a first pillar located adjacent a forward edge of a door, the apparatus comprising:

a protective plate structure shaped to cover areas of the forward portion of the passenger compartment, said protective plate structure being connected to the vehicle structure;



a pair of reinforcing plates, each of the reinforcing plates being located adjacent one of two opposing side walls of the forward portion of the passenger compartment and connected directly to said protective plate structure; and

said protective plate structure including a shield to reinforce said plate structure at a location between an anticipated source of the blast and the lower legs and feet of the occupant, said shield absorbing a portion of the forces of the blast and transferring other forces of the blast through said protective plate structure and said reinforcing plates and around the forward portion of the passenger compartment to other structural members of the vehicle.

5,663,521

METHOD AND APPARATUS FOR CONTROLLING AN EQUILIBRATING SYSTEM SUBJECT TO VARYING TEMPERATURES AND LAYING ANGLES

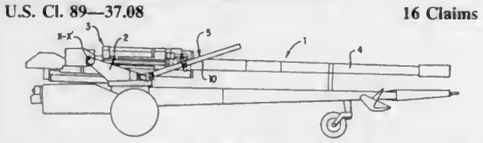
Fabienne Mandereau, and Arnault Beauvais, both of Bourges, France, assignors to Giat Industries, Versailles, France

Filed Aug. 28, 1995, Ser. No. 520,092

Claims priority, application France, Sep. 19, 1994, 94 11121

Int. Cl.[6] F41A *27/30;27/26*

U.S. Cl. 89—37.08 **16 Claims**



1. A control mechanism for an equilibrating system of a piece of artillery, the equilibrating system connecting a top carriage of the piece of artillery and a pivoting mass pivotably mounted on the top carriage, the equilibrating system further including a gas chamber including a variable volume of gas and a first piston that cooperate to create a gas pressure to provide an opposing force that can counteract a resulting force exerted by the pivoting mass during angular displacement of the pivoting mass with respect to the top carriage, the control mechanism comprising:

first device capable of modifying the gas pressure in the gas chamber to compensate for changes in temperatures in which the equilibrating system operates; and

second device capable of modifying an adjustment speed in the volume of the gas in the gas chamber during angular displacement of the pivoting mass.

5,663,522

M60 SEMI-AUTOMATIC CONVERSION

Robert Arnold Kuehl, 5820 Forest Grove Dr., Davenport, Iowa 52807

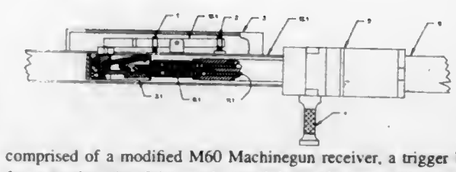
Filed Aug. 20, 1993, Ser. No. 110,188

The portion of the term of this patent subsequent to Aug. 20, 2012, has been disclaimed.

Int. Cl.[6] F41A *19/32*

U.S. Cl. 89—128 **2 Claims**

1. Parts used to convert a M60 machinegun open bolt firearm to, or to manufacture a M60 semi-automatic to a closed bolt firearm comprised of a modified M60 Machinegun receiver, a trigger bar for actuating the firing and containing adjustments to control trigger action, a sear block containing a pivoted interrupter and a pivoted primary sear, said sear block being pivotally connected to the bolt, and a striker that is compatible with the pivoted sear and interrupter.



5,663,523

METHOD OF PROPELLING A PROJECTILE WITH AMMONIUM AZIDE

Laurence O. Williams, Colchester, Vt., assignor to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 262,452, Jun. 20, 1994, Pat. No. 5,565,646, which is a division of Ser. No. 911,537, Jul. 2, 1992, Pat. No. 5,487,798, which is a continuation of Ser. No. 492,954, Mar. 13, 1990, abandoned. This application Jun. 25, 1996, Ser. No. 669,920

Int. Cl.[6] F42B *4/00*

U.S. Cl. 102—335 **4 Claims**



1. A method of propelling a projectile, comprising rapidly decomposing a charge of a propellant in a confined volume having an outlet opening, wherein a projectile is positioned within said volume between said charge and said opening, said propellant comprising ammonium azide, and a second material which comprises at least one of a metal, metal hydride, or silicon, where the ratio of ammonium azide to the second material is selected such that, upon reaction, the propellant forms a solid nitride and a gas phase coning substantial amounts of hydrogen.

5,663,524

GAS GENERATING MIXTURE CONTAINING COPPER DIAMMINE DINITRATE

Klaus Martin Bucerius, Karlsruhe; Norbert Eisenreich, Pfinztal; Helmut Schmid, Karlsruhe, and Walter Engel, Wöschbach, all of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung E.V., Munich, Germany

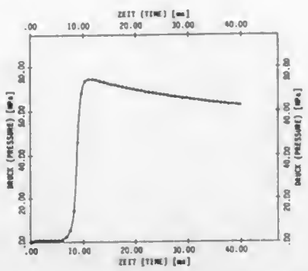
Filed Nov. 24, 1995, Ser. No. 562,602

Claims priority, application Germany, Nov. 26, 1994, 44 42 169.9

Int. Cl.[6] C06B *31/00*

U.S. Cl. 149—45 **8 Claims**

1. Gas generating mixture comprising a high nitrogen and low carbon fuel selected from the group consisting of nitroguanidine



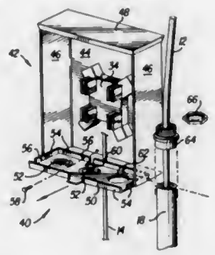
(NIGU), triaminoguanidine nitrate (TAGN), diguanidinium-5,5'-azotetrazolate (GZT) and 3-nitro-1,2,3,-triazol-5-one (NTO), catalyst, oxidizer and optionally coolant, wherein the oxidizer is copper diammine dinitrate $Cu(NH_3)_2(NO_3)_2$ and the catalyst comprises at least one of V_2O_5/MoO_3 mixed oxides and oxide mixtures.

5,663,525

ELECTRICAL METER BOX FOR SERVICE LATERAL AND METHOD OF USING SAME

James R. Newman, 418 Banner Ave., Winston-Salem, N.C. 27127

Filed Mar. 20, 1995, Ser. No. 406,530
Int. Cl.[6] H02G *3/08;3/18*
U.S. Cl. 174—50 **8 Claims**



1. A method of connecting an underground electrical service lateral carried by an upstanding conduit to a meter box enclosure to be mounted exteriorly of a building in a position misaligned with respect to the position of the conduit carrying the service lateral, comprising the steps of:

providing a removable bottom panel separate from said meter box enclosure and having at least one knock-out therein;

mounting said meter box enclosure exteriorly of said building in said position misaligned with respect to the position of the conduit;

cutting off an upstanding end of the conduit at a level substantially flush with the bottom of the meter box enclosure;

mounting a coupling to the cut-off end of the upstanding conduit;

removing the knock-out from the bottom panel to create an aperture therein;

positioning the aperture over the coupling;

securing the coupling to the bottom panel;

flexing the upstanding conduit so as to position the bottom panel in place in the bottom of the meter box enclosure; and

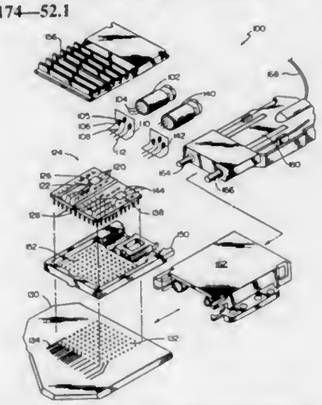
fastening the bottom panel substantially horizontally to the bottom of meter box enclosure.

5,663,526

OPTICAL MODULE WITH TOLERANT WAVE SOLDERED JOINTS

Duane Foster Card, Whitney Point, N.Y.; Eberhard Siegfried Dittman, Leger Granby, Canada, and Mukund Kantilal Saralya, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 545,163, Sep. 21, 1995, which is a division of Ser. No. 163,202, Dec. 6, 1993, which is a division of Ser. No. 976,632, Nov. 16, 1992, Pat. No. 5,295,214. This application Jun. 6, 1995, Ser. No. 469,933
Int. Cl.[6] H05K *5/00;* **G02B** *6/42*
U.S. Cl. 174—52.1 **19 Claims**



1. An electrical interconnect structure comprising:

a dielectric layer;

a conductive layer fixed to a major surface of the dielectric layer, and including:

a conductive path; and

a solder-wettable, conductive land positioned proximate to a passage through the interconnect structure and electrically connected to the conductive path, for soldered connection to an electrically-conductive, solder-wettable lead inserted through the passage; and

conductive soldering bridge means between the land and the center of the passage and sufficiently deformable for inserting a lead, substantially smaller in diameter than the passage, at various radial positions within the passage, for establishing a desired joint configuration during soldering to connect the land to the lead regardless of the radial position of the lead in the passage.

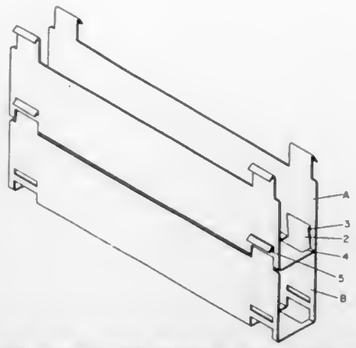
5,663,527

STACKABLE CONDUITS WITH HOOK AND HOLE CLIP MEANS

Lau Kai Hui, Selangor, Malaysia, assignor to Artwright Technology SDN BHD, Kuala Lumpur, Malaysia

Filed Oct. 18, 1995, Ser. No. 544,573
Claims priority, application Malaysia, Oct. 18, 1994, UI 9402781
Int. Cl.[6] H02G *3/04*
U.S. Cl. 174—68.3 **4 Claims**

1. An electrical conduit unit including an elongate conduit body having side walls interconnected by a base, each of said side walls having at least two male clips and at least two female throughhole arrangements, each of said male clips aligned with a respective one of said female throughhole arrangements so that each of said male clips of one said conduit unit can engage a respective one of said female throughhole arrangements of another said conduit unit for



hanging said one said conduit unit to said another said conduit unit to thereby locate said one and another said conduit units in vertically adjacent, substantially parallel positions, wherein said each of said male clips includes a tab extending from a respective one of said sidewalls of the elongate conduit body, said tab having a peripheral end portion thereof, and wherein each of said female throughhole arrangements includes a first opening located in a respective one of said sidewalls of the elongate conduit body and a second opening in a portion of the base and said respective one of said sidewalls, the tab sliding through the second opening and the peripheral end portion being locatable in said first opening when said one and another said conduit units are in adjacent, substantially parallel positions.

5,663,528

OXIDE SUPERCONDUCTIVE WIRE AND PROCESS FOR MANUFACTURING THE SAME

Yoshiaki Tanaka, Tsukubashi; Tomoyuki Yanagiya, Fujisawa; Fumiaki Matsumoto, Kashiwa; Masao Fukutomi, Abiko; Toshihisa Asano, Tsukuba; Kazunori Komori, Tsukuba, and Hiroshi Maeda, Tsukuba, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, and National Research Institute for Metals, Ibaraki, both of Japan

Filed Dec. 21, 1993, Ser. No. 170,959
Claims priority, application Japan, Dec. 22, 1992, 4-356760
Int. Cl.[6] B32B *9/00*
U.S. Cl. 174—125.1 **3 Claims**

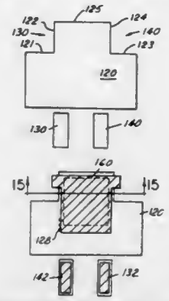
1. A clad oxide superconductive wire or tape comprising an oxide superconductive material and a base, wherein said base is a silver-copper alloy containing copper in amounts of from 0.05 to 90 atomic % and one or more elements selected from the group consisting of Zr, Hf, Al, V, Nb and Ta in amounts of from 0.01–3 atomic % in total.

5,663,529

ANTI-SKEW MOUNTING PADS AND PROCESSING METHOD FOR ELECTRONIC SURFACE MOUNT COMPONENTS

Richard Keith McMillan, II, Dearborn, and Vivek Amir Jairazbhoy, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 14, 1995, Ser. No. 528,369
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—252 **23 Claims**



1. A footprint for mounting a surface mount component of the type having a heatsink of known area and a defined periphery including a first registration edge, the footprint comprising:

a substrate pad formed on a substrate and positioned for registrated engagement with the heatsink of the electronic component, said substrate pad having an area substantially larger than the area of the heatsink, with said substrate pad including a first notch defining therein a first registration edge for being juxtaposed with the first registration edge on the heatsink when the electronic component is in proper alignment on said substrate pad,

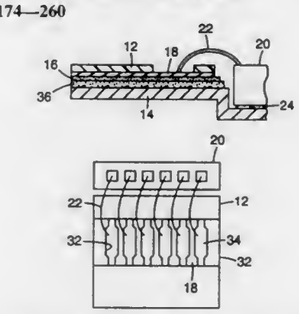
whereby the surface tension forces produced by the melting of a conductive paste interposed between the heatsink and said substrate pad act upon said first registration edges to maintain proper alignment of the component with said substrate pad.

5,663,530

WIRE BOND TAPE BALL GRID ARRAY PACKAGE

Randolph D. Schueller; Anthony R. Plepys, and Howard E. Evans, all of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 1, 1995, Ser. No. 509,779
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—260 **6 Claims**



1. An improved package for an electronic device including a polymeric base sheet, electrically conductive traces formed on at least one side of the base sheet, a series of spaces between portions of a number of the conductive traces, at least one opening in the polymeric base sheet which exposes at least one bond pad for connection to the electronic device, a stiffener and an adhesive for bonding the base sheet to the stiffener, the improvement comprising bonding the base sheet to the stiffener with conductive traces

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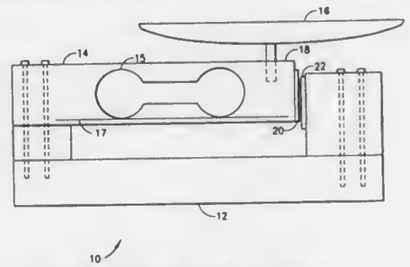
adjacent the stiffener by means of a bonding adhesive having a sufficiently low complex viscosity at bonding temperature to substantially completely fill the spaces between the conductive traces and a sufficiently high complex viscosity at bonding temperature to prevent the adhesive from flowing over the bond pad.

5,663,531

ELECTRONIC WEIGHING APPARATUS UTILIZING SURFACE ACOUSTIC WAVES

Vyacheslav D. Kats, Brooklyn, N.Y., assignor to Circuits and Systems, East Rockaway, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,365
Int. Cl.[6] G01G *3/14*
U.S. Cl. 177—210 FP **19 Claims**



1. An electronic weighing apparatus, comprising:

a) a displaceable elastic member means for receiving a load and being displaced by the load such that the displacement of said elastic member means is related to the weight of the load;

b) a first piezoelectric transducer having a first substrate and one of a first surface acoustic wave (SAW) transmitter and a first SAW receiver, said first piezoelectric transducer being coupled to said elastic member such that said displacement of said elastic member causes a corresponding displacement of said first piezoelectric transducer;

c) a second piezoelectric transducer having a second substrate and the other of said first SAW transmitter and said first SAW receiver, said second piezoelectric transducer being mounted in close proximity to said first piezoelectric transducer;

d) a first amplifier having an input and an output, said input of said first amplifier being coupled to said first SAW receiver and said output of said first amplifier being coupled to said first SAW transmitter such that said first piezoelectric transducer, said first amplifier, and said second piezoelectric transducer form a first oscillator having a first output frequency; and

e) processor means coupled to said output of said first amplifier, wherein

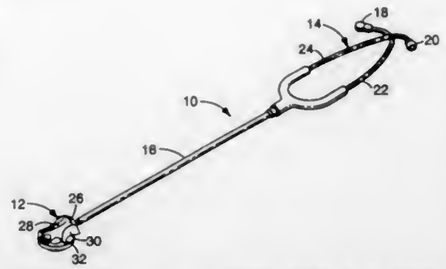
displacement of said elastic member means causes a displacement of said first piezoelectric transducer relative to said second piezoelectric transducer and thereby changes said first output frequency, and said first output frequency is used by said processor means to determine an indication of the weight of the load.

5,663,532

ERGONOMETRIC STETHOSCOPE CHESTPIECE

Alan P. Dieken, Oakdale; Edward J. Moe, St. Paul, both of Minn.; Joy A. Packard; Thomas J. Packard, both of Somerset, Wis.; Thomas W. Reeder, Asheville, N.C., and Thomas A. Turgeon, Fridley, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 27, 1995, Ser. No. 563,187
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—131 **15 Claims**



1. An ergonometric chestpiece for a stethoscope adapted to receive auscultatory sounds from a body and adapted to be coupled to an earpiece for a user, said chestpiece adapted to be grasped by a thumb and at least one finger of said user, comprising:

said chestpiece having a bottom surface which is generally planar adapted to be placed near said body for receiving said auscultatory sounds;

said chestpiece having an upper portion opposite said bottom surface;

said upper portion having a raised center portion defining left and right indented gripping surfaces forming recesses defined by said left and right indented gripping surfaces and by a surface opposite said bottom surface, said left and right indented gripping surfaces adapted to receive said thumb and said at least one finger of said user, respectively;

said raised center portion forming a physical stop for said thumb and said at least one finger from contacting said body when said thumb and said at least one finger grasp said raised center of said upper portion;

said indented gripping surfaces being defined by left and right walls, each having a concave surface arcuate about an axis generally normal to said bottom surface;

said indented gripping surfaces further having an indented impression arcuate about an axis generally parallel to said bottom surface; and

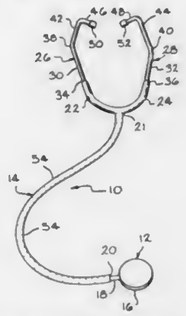
said indented gripping surfaces each further having a protruding edge on a top surface of said raised center portion.

5,663,533

STETHOSCOPE RULER DEVICE

Richard D. Judge, 540 Rock Creek, Ann Arbor, Mich. 48104

Filed Jun. 26, 1995, Ser. No. 494,811
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—141 **5 Claims**



1. A stethoscope ruler device comprising:

a stethoscope having an endpiece which can be pressed against a patient, ear pieces and tube means extending between said endpiece and said ear pieces for conveying sound from said endpiece to said ear pieces, said tube means including an elongated tubular element; and

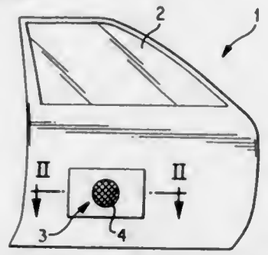
means creating visible marks on said elongated tubular element enabling use of said element as a ruler.

5,663,534

MOTOR VEHICLE LOUDSPEAKER INSTALLATION HOUSING

Tilo von Hagen, Riederich, and Oliver Kraus, Herrenberg, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Nov. 6, 1995, Ser. No. 554,165
Claims priority, application Germany, Nov. 4, 1994, 44 39 461.6
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—141 **4 Claims**



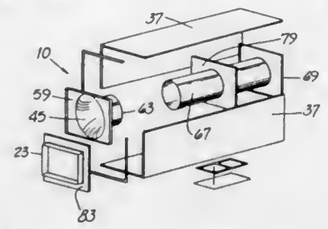
1. A housing in which a motor vehicle loudspeaker is installed, comprising a motor vehicle bodyshell part having a wall provided with an indentation, a half shell configured to hold the loudspeaker and arranged opposite the indentation, and a surrounding sealing strip mounted between the wall and the half shell to define a resonance space.

5,663,535

SOUND ATTENUATOR FOR HVAC SYSTEMS

Michael S. MacDonald, Madison, and Thinakorn Assarattanakul, Verona, both of Wis., assignors to Venturedyne, Ltd., Milwaukee, Wis.

Filed Aug. 28, 1995, Ser. No. 520,214
Int. Cl.[6] E04F *17/04*
U.S. Cl. 181—224 **22 Claims**



1. In an apparatus for attenuating sound in a HVAC system and having (a) an inlet mouth, (b) an air flow passage downstream of the inlet mouth, (c) an apparatus length, and a long axis extending along the length, the improvement wherein:

the apparatus includes an inlet end;

the inlet mouth is in downstream air flow relationship to the inlet end and defines a surface of revolution formed by rotating a segment of an ellipse about the long axis and at a fixed distance therefrom;

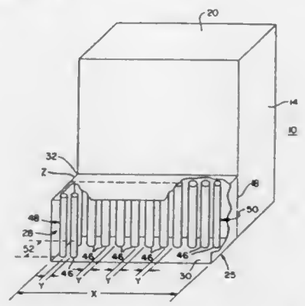
the inlet mouth has an entry portion and an exit opening and converges in a downstream air flow direction from the entry portion to the exit opening.

5,663,536

SOUND ATTENUATION ASSEMBLY FOR AIR-COOLING APPARATUS

Vladimir Kaplan, Silver Spring, Md., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Oct. 10, 1995, Ser. No. 541,853
Int. Cl.[6] E04F *17/04*
U.S. Cl. 181—224 **9 Claims**



1. A sound attenuation assembly for a forced-draft, liquid-to-air cooling apparatus having a forced draft apparatus with air moving devices, an air flow duct with an air inlet port, means for transferring heat and an apparatus exhaust port downstream of said heat transfer means, an air flow stream moving in an air flow direction communicates from said air inlet port through said apparatus to said exhaust port, said sound attenuation assembly comprising:

a housing having a wall,

said wall having an inner surface, an outer surface and defining a chamber, an air-entry aperture and an air-exit aperture,

said chamber having a longitudinal direction, said air flow stream communicates through said chamber in the chamber longitudinal direction,

said housing couplable to said cooling apparatus, one of said air inlet port and air exhaust port communicating said air flow in said air flow direction through said air-entry aperture, said air-exit aperture and said chamber to one of said air flow duct air inlet port and the atmosphere;

a plurality of elongate, substantially cylindrical members, each said member of a material having an outer surface and a member longitudinal axis,

at least a first row of said elongate members and a second row of said elongate members, which first and second rows are adjacent rows and separated by an interval distance,

said elongate members in each said first and second rows substantially aligned and having a separation gap between adjacent members in said respective first and second rows;

said air flow moving in said air flow direction communicates through said chamber and around said first and second rows of elongate members, said first and second rows of said elongate members mounted in said chamber and having each said member longitudinal axis about parallel to each other and transverse to said air flow direction through said chamber,

one of said first and second rows of elongate members in proximity to said air-entry aperture, and the other of said first and second rows in proximity to said air-exit aperture,

said rows of elongated members arranged to provide said separation gap between adjacent members of one of said first and second rows aligned with the elongate members of the other of said first and second rows to block a line of sight through said chamber from a sound source to a sound receiver,

a coupling plenum for positioning between one of said air-exit aperture and said air inlet port, and, said air exhaust port and said air-entry aperture,

said elongate members having a plurality of diameters between a smallest diameter and a largest diameter, said coupling plenum extending a plenum distance between said one of said air-entry and air-exit apertures of said assembly housing and said exhaust and inlet, respectively, port of said apparatus.

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arrangement of said elongate members providing a multiple barrier effect of frontal impact of each said member outer surface on a sound front travelling from a source of sound in a direction through said sound attenuation assembly to a receiver of said sound, said barrier effect combines with sound absorption by said member material;

said sound attenuation assembly mountable at any of said cooling apparatus air inlet port and said cooling apparatus air exhaust port to receive and discharge air in said air flow direction and operable to reduce sound at a decibel level associated with air flowing into and discharging from a liquid-to-air cooling apparatus.

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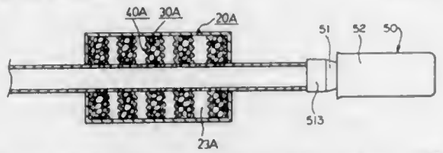
ASSEMBLY OF AN EXHAUST PIPE UNIT AND A MUFFLING DEVICE

Tse-Hao Ko, 3F, No. 18, Lane 5, Lung-Chuan St., Ta-An Dist., Taipei City, and Wen-Pin Yeh, No. 31, Yung-Fu St., Yung-Fu Li, Chang-Hua City, both of Taiwan

Filed May 16, 1995, Ser. No. 442,192

Int. Cl.[6] F01N *7/08*

U.S. Cl. 181—228 **9 Claims**



1. In an assembly comprising an exhaust pipe unit and a muffler device, said exhaust pipe unit having at least one gas expanding section, said muffler device defining a gas expanding space in communication with said gas expanding section of said exhaust pipe unit, wherein the improvement comprises:

a filtering material within said gas expanding space of said muffler device so as to filter exhaust gas which flows through said gas expanding space;

a tail end portion of said exhaust pipe unit; and

a tailpipe unit including:

an inner pipe including a sleeve portion having an open front end sleeved on said tail end portion of said exhaust pipe unit and a rear end, a porous large-diameter pipe section having a front end coupled with said rear end of said sleeve portion and a rear end, a porous small-diameter pipe section being of a diameter smaller than that of said large-diameter pipe section and having a front end coupled with said rear end of said large-diameter pipe section and an open rear end, a porous front positioning ring sleeved fixedly on said large-diameter pipe section and having a plurality of openings formed therethrough, and a porous rear positioning ring sleeved fixedly on the rear end of said small-diameter pipe section and having a plurality of opening formed therethrough, said front positioning ring having an outer diameter the same as that of said rear positioning ring; and

an outer pipe including a circular tubular middle portion having an inner diameter slightly smaller than the outer diameter of said front and rear positioning rings, an outwardly diverging front end portion facilitating insertion of said front and rear positioning rings into said outer pipe in assembly of said inner and outer pipes, and outwardly converging rear end portion having a minimum inner diameter smaller than the outer diameter of said rear positioning plate so as to prevent removal of said inner pipe from said outer pipe through a rear end of said outer pipe, a plurality of air inlets formed through a wall of said outer pipe near said front end portion of said outer pipe, and a plurality of mixed-gas outlets formed through a wall of said outer pipe near said rear end portion of said outer pipe, air being capable of entering into a space between said outer and inner pipes through said openings of said front positioning ring of said inner pipe and said air inlets of said outer pipe, exhaust gas being capable of expanding into the space between said inner and outer pipes through said openings of said large-diameter pipe section and said small diameter pipe section of said inner pipe, mixture of said exhaust gas and air being capable of flowing out of the space between said inner and outer pipes through openings of said rear positioning ring and said mixed-gas outlets of said outer pipe, remaining exhaust gas in said small-diameter pipe section of said inner pipe being capable of flowing therefrom through the rear end of said inner pipe.

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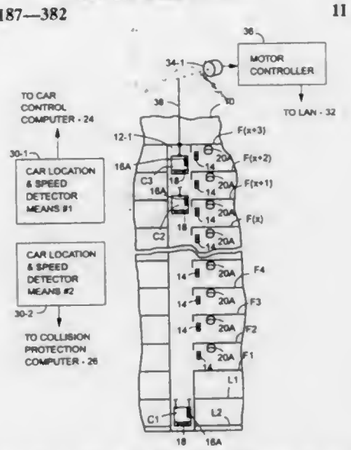
ELEVATOR CONTROL SYSTEM

Masami Sakita, 1259 El Camino Real # 121, Menlo Park, Calif. 94025

Continuation-in-part of Ser. No. 154,034, Nov. 18, 1993, Pat. No. 5,419,414. This application Mar. 31, 1995, Ser. No. 414,226

Int. Cl.[6] B66B *1/18;9/00*

U.S. Cl. 187—382 **11 Claims**



1. An elevator system for a multistory structure having a plurality of floors comprising,

a plurality of vertical elevator shafts each of which shafts defines a vertical pathway extending past a plurality of floors of the structure,

at least one elevator car in each of said elevator shafts, each said elevator car being movable along a vertical axis for servicing a plurality of serviced floors including lower and upper terminal floors,and a plurality of intermediate floors,

floor call detector means at floors of said structure for registering up and down service requests for an elevator car,

car call means at each elevator car for registering destination requests to floors of said structure,

car position sensing means for sensing the position of elevator cars in the elevator shafts,

floor demand measuring means for providing an estimate of passenger demand for travel in at least one direction of travel at floors of said structure,

load measuring means for providing a measure of the number of passengers in each of said elevator cars,

signal processing means including digital computer means associated with said floor call means, car call means, car position sensing means, floor demand measuring means and load measuring means for use in production of control signals for controlling said elevator cars, said signal processing means including;

means responsive to service requests from said floor call detector means, position from said car position sensing means, passenger demand from said floor demand measuring means, and measure of the number of passengers from said load measuring means for obtaining a measure of estimated passenger demand for travel in said one direction that is incapable of being met by elevator cars currently in service,

means for establishing a passenger loading threshold limit for travel in the one direction from one of said terminal floors, and

means for issuing a car dispatch signal for dispatch of

an elevator car from said one terminal floor when the measure of estimated passenger demand for travel in said one direction that is incapable of being met by elevator cars currently in service at least equals said passenger loading threshold limit for travel in said one direction.

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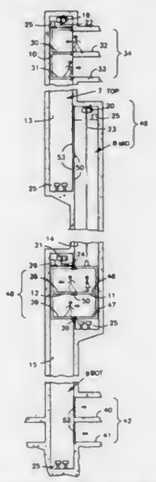
PASSENGER TRANSFER, DOUBLE DECK, MULTI-ELEVATOR SHUTTLE SYSTEM

Bruce A. Powell, Canton; Richard C. McCarthy, Simsbury; Joseph Bittar, Avon; Frederick H. Barker, Bristol; Samuel C. Wan, Simsbury; Paul Bennett, Waterbury; Anthony Cooney, Unionville, and John K. Salmon, deceased, late of South Windsor, all of Conn., by Lucy Mary Salmon, executrix, assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 29, 1995, Ser. No. 564,697

Int. Cl.[6] B66B *1/18;1/00;9/00*

U.S. Cl. 187—385 **11 Claims**



1. An elevator shuttle system for moving passengers between landings at two levels of a building, comprising:

a plurality of overlapping elevator hoistways, each hoistway except for the highest hoistway in said system having its high end aligned with the high end of another, corresponding one of said hoistways at a transfer landing, and each hoistway except for the lowest hoistway in said system having its low end aligned with the high end of another, corresponding one of said hoistways, the high end of said highest hoistway being aligned with a landing at a top level of said system high in said building and the low end of said lowest elevator being aligned with a landing at a bottom level of said system low in said building;

a plurality of double deck elevator cars, each vertically moveable in a related one of said hoistways, each deck comprising a passenger compartment, each compartment comprising a permanent part of said car, one above the other, each of said cars having doors operable at each deck facing the corresponding hoistway, the cars of said highest hoistway and of said lowest hoistway having doors facing the corresponding one of said landings, each hoistway separated from a corresponding hoistway by a pair of sills aligned with said decks; and

signal processing means for setting the direction of and initiating each run of said cars so that at the end of each run, each car is either aligned with one of said landings or aligned with the car of the corresponding hoistway, and for opening all of the doors of all of the cars at the end of each run so that passengers can walk from the upper deck of one car to the upper deck of another car and from the lower deck of said other car to the lower deck of said one car, or alternatively, from the upper deck of said one car to the upper deck of one of said landings and from the lower deck of said one landing to the lower deck of said one car.

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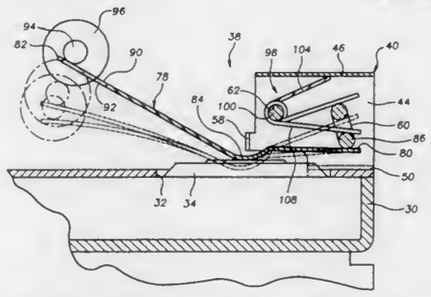
DOUBLE PIVOT POINT OVERTRAVEL SWITCH ACTUATOR

Carl A. Inpyn, Kinnelon, N.J., assignor to Control Products, Inc., East Hanover, N.J.

Filed Oct. 6, 1995, Ser. No. 540,225

Int. Cl.[6] H01H *3/00;5/18*

U.S. Cl. 200—17 R **20 Claims**



1. An overtravel switch actuator for actuating a switch exposed through a switch housing, comprising:

a housing positioned in a vicinity of said exposed switch;

an actuating lever including a first end mounted with said housing, a second opposite end and an intermediate bent portion between said first and second ends, said intermediate bent portion being positioned to actuate said exposed switch; and

spring means, mounted between said housing and said first end and applying a force to said first end, for:

retaining said first end in a substantially fixed position relative to said housing when an external force is initially applied to said second opposite end of said actuating lever such that said actuating lever pivots about said first end and said intermediate bent portion actuates said exposed switch, and

permitting movement of said first end relative to said housing after actuation of said exposed switch by said intermediate bent portion and upon continued application of said external force to said second opposite end of said actuating lever such that said actuating lever pivots about said intermediate bent portion.

5,663,541

MANUAL SWITCH FOR DIRECT CURRENT REVERSIBLE ELECTRIC WINCH MOTORS

George M. Mc Gregor, II, P.O. Box 820, De Ridder, La. 70634

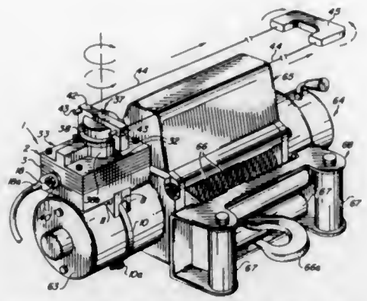
Filed Mar. 18, 1996, Ser. No. 617,193

Int. Cl.[6] H01H *3/00*

U.S. Cl. 200—17 R **20 Claims**

1. A manual winch switch for attachment to a battery and manually operating a reversible, direct current motor, said manual

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winch switch comprising a switch housing; a pair of top contacts fixedly mounted in said switch housing in spaced relationship with respect to each other and a contact slot provided in each of said top contacts; a middle contact fixedly mounted in said switch housing in spaced relationship with respect to said top contacts, said middle contact substantially aligned, respectfully, with said contact slot in said top contacts; a bottom contact fixedly mounted in said switch housing in spaced relationship with respect to said top contacts and said middle contact, said bottom contact substantially aligned, respectively, with said contact slot in said top contacts; wiring means electrically connecting said top contacts, and said middle contact to said motor and said bottom contact electrically connected to the battery; insulation means disposed in said switch housing between said switch housing and said top contacts, said middle contact, and said bottom contact for insulating said top contacts, said middle contact and said bottom contact from each other and from said switch housing; a pair of contact bars movably disposed in said switch housing, said contact bars each having one end disposed, respectively, in said contact slot provided in said top contacts and the opposite ends of said contact bars disposed, respectively, between said middle contact and said bottom contact; bias means disposed between said contact bars and said insulation means for normally biasing said contact bars against said top contacts and said middle contact; and engaging means engaging at least one of said contact bars, for selectively forcing said contact bars against a selected one of said top contacts, said middle contact and said bottom contact against the bias of said bias means and operating the reversible, direct current motor in a selected direction of rotation responsive to manipulation of said engaging means.

5,663,542

CONTACT DEVICE FOR RAIN SENSOR OF A VEHICLE

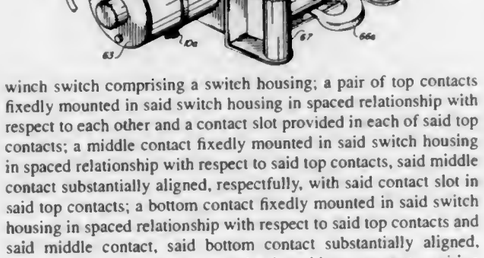
Rainer Kohr, Oberbillig, and Dieter Busch, Rosbach, both of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

Filed Jul. 5, 1995, Ser. No. 498,239

Claims priority, application Germany, Jul. 7, 1994, 44 23 888.6

Int. Cl.[6] H01H *29/00;* **G01R** *27/14*

U.S. Cl. 200—61.05 **14 Claims**



1. A device for the electric contacting of a sensor present on the outer side of the window of a motor vehicle, the sensor having a first electric conductive track which is connected by the device to an electric connecting contact within the vehicle, the device comprising:

a second conductive track, and a flexible support which is arranged on the vehicle window gripping around an edge region of the window;

wherein the second conductive track is disposed on the support; and

the second conductive track is conductively connected with the first conductive track in the region outside the vehicle and with the connecting contact in the region within the vehicle.

5,663,543

METHOD FOR PRODUCING A POLYFLUOROPROPIONYL HALIDE

Shinsuke Morikawa; Hidekazu Okamoto; Keiichi Ohnishi; Toru Shimoyama; Naoko Wada; Yoshio Sato, and Hideyuki Kurata, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

PCT No. PCT/JP94/01434, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO95/06629, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 31, 1994, Ser. No. 424,391

Claims priority, application Japan, Sep. 1, 1993, 5-217212

Int. Cl.[6] C07B *39/00*

U.S. Cl. 204—157.6 **4 Claims**

1. A method for producing a polyfluoropropionyl halide of the formula RCF_2COX, wherein R is a CF_3 group or a $CClF_2$ group, and X is a Cl atom or a F atom, which comprises oxidizing in a gas phase at least one dichloropentafluoropropane selected from the group consisting of 3,3-dichloro-1,1,2,2-pentafluoropropane and 1,3-dichloro-1,1,2,2-pentafluoropropane by oxygen under irradiation with light having a wavelength longer than 280 nm and wherein chlorine is present during the reaction, wherein the irradiation with light having a wavelength longer than 280 nm is carried out by emitting light from a light source covered with an outer cylinder while a solution that absorbs light of wavelength 280 nm or shorter is circulated in the outer cylinder to cool said light source, and wherein a fluorine resin protecting layer is formed on the outer cylinder.

5,663,544

SWITCHING DEVICE HAVING A VACUUM CIRCUIT-BREAKER SHUNT CONNECTED WITH A GAS-BLAST CIRCUIT BREAKER

Lutz Niemeyer, Birr, Switzerland, assignor to ABB Research Ltd., Zurich, Switzerland

PCT No. PCT/CH95/00010, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO95/22831, PCT Pub. Date Aug. 24, 1995

PCT Filed Jan. 16, 1995, Ser. No. 532,654

Claims priority, application Germany, Feb. 18, 1994, 44 05 206.5

Int. Cl.[6] H01H *33/14;33/66*

U.S. Cl. 218—3 **14 Claims**

1. A device for switching electrical current, comprising:

a compressed gas-blast circuit-breaker;

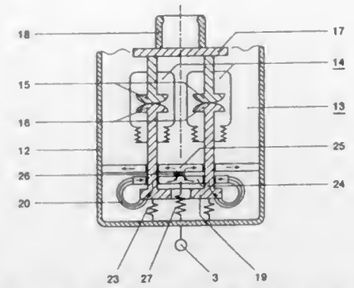
at least one vacuum circuit-breaker (**14**);

two current connections, the two current connections including a first current connection and a second current connection;

the compressed gas-blast circuit-breaker including a first erosion contact and the at least one vacuum circuit-breaker including a stationary electrode, the first erosion contact being electrically conductively connected to the stationary electrode;

the compressed gas-blast circuit breaker including a second erosion contact, the second erosion contact being electrically conductively connected to the first current connection;

the vacuum circuit breaker including a movable electrode, the movable electrode being electrically conductively connected



to the second current connection, the first and second current connections, the first and second erosion contacts, the stationary electrode, and the movable electrode at least partially defining an extinction current path;

a drive, the drive separating the first and second erosion contacts from one another along an axis;

the compressed gas circuit-breaker including two rated current contacts, the two rated current contacts including a first rated current contact and a second rated current contact, the first and second rated current contacts being electrically conductively connected to the first and second current connections, respectively, and at least partially defining a rated current path arranged in parallel between the first and second current connections with the extinction current path, the drive separating the first and second rated current contacts prior to separating the first and second erosion contacts such that a current is commutated into the extinction current path after the first and second rated current contacts are separated; and

means for providing a contact pressure force on the stationary electrode and the movable electrode, the contact pressure force being sufficient to prevent the second drive from separating the stationary electrode and the movable electrode at a current below a limit value of the commutated current,

wherein the movable electrode is movable in an axial direction and electrodynamic forces act on the stationary electrode and the movable electrode to cause the movable electrode to separate from the stationary electrode when the limit value of the commutated current is reached.

5,663,545

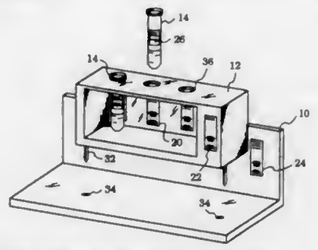
LABWARE IDENTIFICATION SYSTEM

Samuel A. Marquiss, Santa Clara, Calif., assignor to LJL Biosystems Inc., Sunnyvale, Calif.

Filed Aug. 23, 1995, Ser. No. 518,484

Int. Cl.[6] G06F *17/00;* **B01L** *9/00*

U.S. Cl. 235—375 **16 Claims**



1. A labware identification system comprising:

a) a sample container, said sample container having a sample identification label thereon;

b) a labware having a reception slot for keeping said sample container, said labware further having a sample condition label positioned near said reception slot such that when said sample container is present in said reception slot said sample condition label is covered up by said sample container and said sample identification label is exposed, and when said sample container is absent from said reception slot, said sample condition label is exposed, said labware further having thereon a labware identification label;

c) a labware holder having a locating means for positioning said labware on said labware holder, said labware holder further having a labware condition label thereon such that when said labware is positioned in said labware holder, said labware condition label is covered and said labware identification label is exposed, and when said labware is absent from said labware holder, said labware condition label is exposed; and

d) an optical reader for reading label information from said sample identification label, said sample condition label, said labware identification label, and said labware condition label; and

e) a data processor for processing said label information read by said optical reader.

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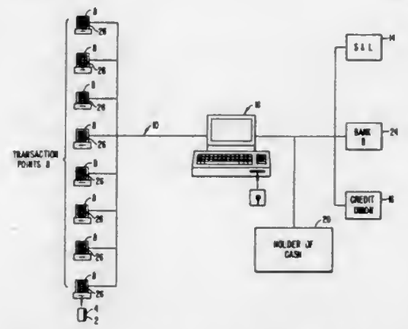
METHOD FOR HOLDING AND DISPENSING CASH UPON DEMAND AT A REMOTE LOCATION

Robert P. Cucinotta, Los Gatos, and Karim Maskatiya, Atherton, both of Calif., assignors to USA Processing Inc., Sunnyvale, Calif.

Filed Aug. 18, 1995, Ser. No. 516,714

Int. Cl.[6] G06F *17/60*

U.S. Cl. 235—379 **7 Claims**



1. A method of holding an amount of cash which can increase and decrease over time for an unidentified person, securing the cash, and supplying a sum of cash upon demand to the person at a remote transaction point without identifying the person and without establishing an account which can be identified as belonging to any person comprising the steps of: receiving the amount of cash and holding it without identifying from whom the amount of cash was received and without identifying a person who may obtain the amount of cash; keeping a record of the amount of cash being held; issuing to the person a card free of information identifying the person and carrying a code identifying the amount of cash; communicating to the person a PIN number for use with the card; forming a communication link between a holder of the amount of cash and a multiplicity of at least one of ATMs and credit card reading terminals at least one of which is a machine located at the transaction point; inserting the card in the machine, machine-reading the code, and sending the read code via the communication link to the holder; transmitting the PIN number and a requested sum of cash to be supplied at the remote transaction point via the machine and the communication link to the holder; comparing the amount of cash with the requested sum of cash; forwarding an authorization signal to the machine if the sum of cash is less than the amount of cash and forwarding a refusal signal to the machine if the sum of cash exceeds the amount of cash; supplying the person at the transaction point with the sum of cash upon receipt of the authorization signal; and adjusting the record to reflect in the record a reduction in the amount of cash being held when the sum of cash is supplied to the person and an increase in the amount of

cash being held when cash is added to the amount of cash being held; whereby the amount of cash is received from and the sum of cash is dispensed to the carrier of the card without identifying the person and the card can be repeatedly used by periodically replenishing the amount of cash being held.

5,663,547

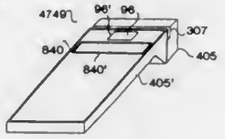
METHOD OF FUND-RAISING WITH A KEYLESS CONTRIBUTION AND GIFT COMMITMENT MANAGEMENT DEVICE

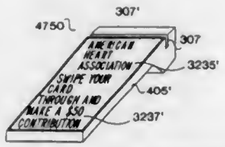
Witold A. Ziarno, 4519 S. St. Louis Ave., Chicago, Ill. 60632

Continuation-in-part of Ser. No. 318,914, Oct. 5, 1994. This application Jul. 24, 1995, Ser. No. 505,610

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **22 Claims**





13. A portable contribution or gift management device for the making of gift or contribution commitments, said device transferable manually from one contributor or gift giver to another contributor or gift giver, comprising:

a self-powered, keyless contributions or gifts management device, said device having means for immediate entry of data identifying consecutive contributors or gift givers having card record mediums therewith, means for capturing the immediate entry of said data identifying consecutive contributors or gift givers, and means for giving said contributions by processing said data identifying said consecutive contributors or gift givers making the monetary contribution commitments or monetary gift commitments, said means for giving said contributions by processing said data identifying said consecutive contributors or gift givers making the monetary contribution commitments or monetary gift commitments disposed on said self-powered, keyless contributions or gifts management device or optionally disposed on a remotely located device receiving said data identifying said consecutive contributors or gift givers from said self-powered, keyless contributions or gifts management device.

5,663,548

VEHICLE-CARRIED UNIT FOR AUTOMATIC TOLL-PAYING SYSTEMS AND AUTOMATIC TOLL-RECEIVING APPARATUS

Hironao Hayashi, Gifu-ken, and Ken Goto, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

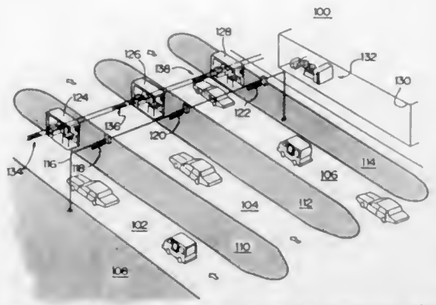
Filed Aug. 3, 1995, Ser. No. 510,678

Claims priority, application Japan, Aug. 5, 1994, 6-184946

Int. Cl.[6] G07B *15/02*

U.S. Cl. 235—384 **28 Claims**

1. An automatic toll-paying system carried on a vehicle for automatically paying a toll charge through communication with an on-road unit installed on a road, said automatic toll-paying system comprising:



reading and accumulating means for reading respective balance information from each of a plurality of physically separate recording media and accumulating said respective balance information into a total balance; and

transmitting means for transmitting said total balance accumulated in said reading and accumulating means to said on-road unit to automatically pay said toll charge.

5,663,549

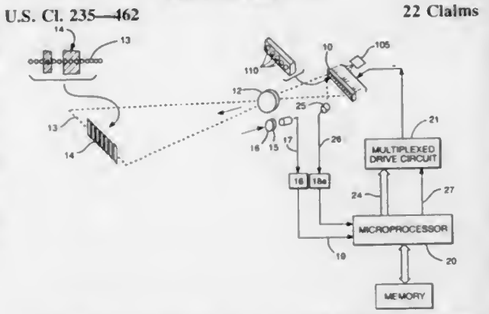
SYSTEM FOR READING A SYMBOL BY ACTIVITATING A LIQUID CRYSTAL DEVICE TO CONTROL A SCANNING PATH

Joseph Katz, Stony Brook; Boris Metlitsky, Mt. Sinar, both of N.Y., and Emanuel Marom, Tel Aviv, Israel, assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of Ser. No. 98,991, Jul. 29, 1993, Pat. No. 5,545,886, which is a division of Ser. No. 864,367, Apr. 6, 1992, Pat. No. 5,258,605, which is a continuation of Ser. No. 493,134, Mar. 13, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,467

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **22 Claims**



1. A method of reading a bar code symbol comprising the steps of:

generating a scanning light beam;

detecting said light beam;

changing the light beam in accordance with said detected light beam;

directing said light beam upon a field where said bar code symbol may be present;

varying a light path of said scanning beam by changing an electrical signal applied to a liquid crystal device in said path to thereby create a scan line to traverse said field as the electrical signal changes;

detecting light reflected by said field; and

decoding said detected reflected light while ignoring segments of the reflected light corresponding to areas indicated as defective based on the detected scanning light beam.

5,663,550

MULTIPLE-DIRECTIONAL LASER SCANNERS

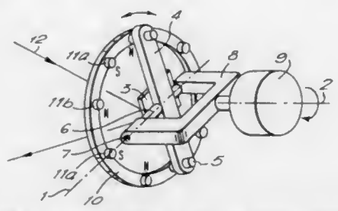
Ke-Ou Peng, KV Delft., Netherlands, assignor to Opticon Sensors Europe B.V., Hoofddorp, Netherlands

Filed Feb. 9, 1995, Ser. No. 386,360

Claims priority, application United Kingdom, Feb. 9, 1994, 9402506; Aug. 16, 1994, 9416575

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467 **12 Claims**



1. A scanning device for use in a bar code reader comprising:

a single rotary drive motor for provision of a rotational drive,

a drive shaft arranged to be driven by said rotary drive motor so as to rotate about an axis of rotation,

a rotary carrier for provision of a rotary motion by being mounted axially for rotation about said drive shaft axis of rotation and connected to be driven by said drive shaft,

mirror means carried by said carrier and pivoted for angular movement about a scan axis intersecting said drive shaft axis of rotation substantially at right angles thereto so as to provide a line scan of a bar code

and force applying means which is arranged to apply a turning couple to said mirror means to cause said mirror means to turn about said scan axis to provide said line scan while orientation of the line scan is caused to change due to rotation of the rotary carrier about said drive shaft axis of rotation.

5,663,551

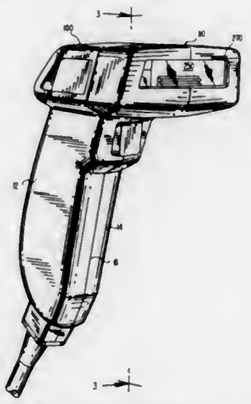
BOOT WITH REPLACEABLE OPTICAL ELEMENT FOR A BAR CODE SCANNER

L. Michael Hone, Pittsford, and Vincent T. LaManna, Webster, both of N.Y., assignors to PSC Inc., Webster, N.Y.

Continuation of Ser. No. 302,093, Sep. 7, 1994, Pat. No. 5,512,740, which is a continuation of Ser. No. 59,799, May 10, 1993, abandoned. This application Dec. 28, 1995, Ser. No. 580,241

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **8 Claims**



1. A boot adapted for removably securing to a bar code scanner having a housing with a nose section, which has an opening and a plurality of ribs formed on an outer surface thereof the boot comprising:

a face portion having an opening;

a continuous side skirt made of elastic material extending from a periphery of the face portion, wherein the side skirt is dimensioned to snugly fit over the nose section, the side skirt having indentations complementary to the ribs, which indentations receive the ribs and secure the boot to the nose section; and

an optical element dimensioned to seat in the nose-section opening,

wherein the face portion opening is smaller than the optical element and the optical element is adapted to be sandwiched between the face portion and a periphery of the nose section opening when the boot is attached to the nose section.

5,663,552

PORTABLE INFORMATION TERMINAL APPARATUS HAVING IMAGE PROCESSING FUNCTION

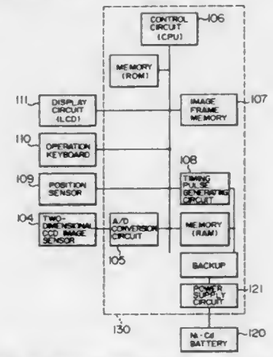
Shigeo Komizo, Machida, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 301,626, Sep. 7, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 623,811

Claims priority, application Japan, Oct. 19, 1993, 5-260806

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **9 Claims**



1. A portable information terminal apparatus having an image processing function, comprising:

an optical system for forming an optical image of a surface of a subject;

a two-dimensional photoelectric conversion element for performing photoelectric conversion of the formed optical image into a two-dimensional image signal;

a signal conversion means for converting said two-dimensional image signal of said photoelectric conversion element into a digital image signal;

a memory means for temporarily storing said digital image signal;

a subject position detection means including a position sensor for transmitting an ultrasonic wave signal to the subject and for receiving a reflected signal reflected therefrom, said position sensor continuously measuring a distance between the subject and said optical system, the subject position detection means having stored therein a predetermined value corresponding to an image-formation distance of said optical system, said subject position detection means generating a detection signal when the distance measured by said position sensor corresponds to said predetermined value;

an image inputting means including an image signal fetching means for receiving said detection signal, said image signal fetching means supplying instantaneously said digital image signal to said memory means upon receipt of said detection signal, said digital image signal being held in said memory means when said subject position detection means detects that the subject to be picked up as an image is located at a distance from said optical system corresponding to said predetermined value; and

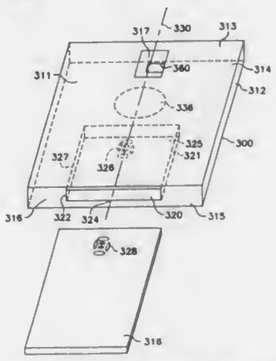
output means for reading out the digital image signal stored in said memory means, said output means editing the read-out digital image signal together with other information in a predetermined format, and outputting the result of said editing.

5,663,553

MASS STORAGE DEVICE ADAPTER FOR SMART CARDS

David Aucsmith, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1995, Ser. No. 534,570
Int. Cl.[6] G06K *19/06*
U.S. Cl. 235—492 **19 Claims**



1. A device for transferring data between a data processing machine and a smart card, said data processing machine having a disk drive for receiving a removable disk storage unit and for exchanging data with said removable disk storage unit, said device comprising:

a housing insertable into said disk drive, said housing having a recess for receiving a smart card and for supporting said smart card when said housing is inserted into said disk drive; and

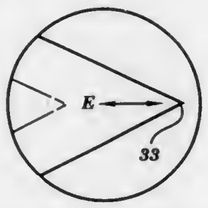
means, disposed within said housing, for transferring data between said disk drive of said data processing machine and said smart card.

5,663,554

WEAK LENS FOCUS ADJUSTING MECHANISM BASED UPON THICKNESS OF SCANNED MATERIAL AND IMAGESETTER USING SAME

Kelley A. Henry, Woburn, Mass., assignor to Agfa Division, Bayer Corporation, Wilmington, Mass.

Filed Jan. 17, 1995, Ser. No. 373,712
Int. Cl.[6] H01J *1/20*
U.S. Cl. 250—201.2 **23 Claims**



1. A scanning apparatus for reading or writing an image or other data on a material to be scanned with a scanning beam, comprising:

a beam source for producing a beam;

support for supporting said material to be scanned;

first optical device for focusing the beam on the material, said first optical device including at least one optical element and having a fixed optical distance relative to said beam source and to said support;

second optical device for fine focusing the beam on the material, said second optical device including at least one optical element and having a long focal length relative to the focal length of said first optical device; and

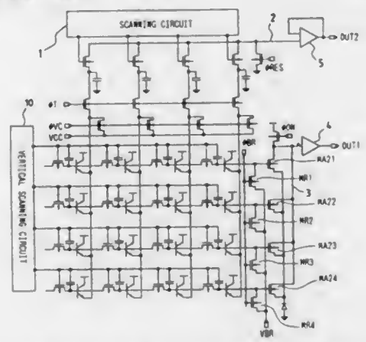
controller for receiving a signal representing a thickness of the material and for automatically adjusting a position of said second optical device relative to the beam source and to said support to change the focus of the beam relative to the support in accordance with the received signal.

5,663,555

PHOTO-ELECTRIC CONVERTER WITH PARALLEL CONNECTION ELEMENTS AND DUAL SIGNAL READ OUT MEANS

Mamoru Miyawaki, Isehara, and Isamu Ueno, Hadano, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 261,163, Jun. 17, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 674,461
Claims priority, application Japan, Jun. 18, 1993, 5-147708
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 **14 Claims**



1. An image information processing apparatus comprising:

parallel connection means for connecting a plurality of photo-electric conversion elements in parallel;

signal read out means for reading out a signal formed by integrating signals of the plurality of photo-electric conversion elements which are connected in parallel;

individual signal read means for independently reading out a signal of each of the plurality of photo-electric conversion elements;

mode selecting means for selecting a light measurement mode, an image processing mode, and a reset mode; and

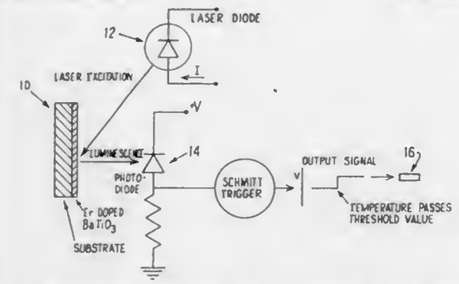
control means for measuring brightness of an object based on an output of said signal read out means when said mode selecting means selects said light measuring mode, for processing an output of said individual signal read means when said mode selecting means selects said image processing mode and for resetting said plurality of photo-electric conversion elements by connecting said parallel connection means to a predetermined reset voltage.

5,663,556

OPTOELECTRONIC FERROELECTRIC SENSOR AND SIGNAL GENERATING DEVICE

Bruce W. Wessels, Wilmette, and Bruce A. Block, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 398,419, Mar. 2, 1995. This application Jun. 7, 1995, Ser. No. 480,282
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214.1 **12 Claims**



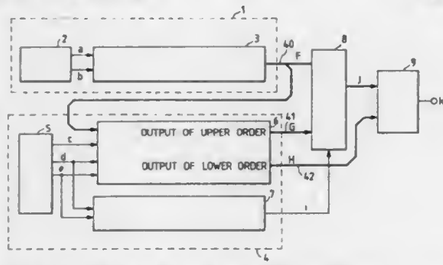
1. Optoelectronic temperature sensor, comprising a doped ferroelectric oxide sensor element that exhibits a detectable change in luminescence intensity with temperature as a result of a phase transition of the doped ferroelectric oxide when the sensor element is heated or cooled through a particular temperature range and means for measuring the change in luminescence intensity.

5,663,557

MULTIPLE ROTATING ABSOLUTE ENCODER CAPABLE OF ACCURATELY LATCHING ABSOLUTE ADDRESS DATA WITH DATA ON NUMBER OF ROTATIONS

Tohru Morita, Yokohama; Kou Ohno, Zama; Motokatsu Imai, and Yuuji Yamazaki, both of Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,651
Claims priority, application Japan, Jul. 18, 1994, 6-187767
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.18 **7 Claims**



7. A multiple rotating absolute encoder comprising:

an encoding plate with an optical pattern and a magnetic pattern formed thereon;

a first detection unit for reading said optical pattern and outputting first information regarding said encoding plate;

a second detection unit for reading said magnetic pattern and outputting second information regarding said encoding plate;

a generation unit for generating third information based on said first information and said second information; and

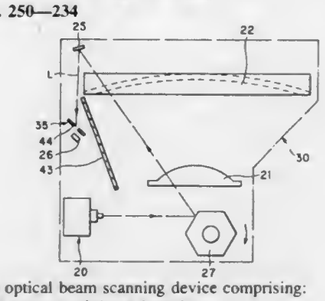
a data calculation unit for calculating rotation information of said encoding plate based on said first information and either said second information or said third information.

5,663,558

OPTICAL BEAM SCANNING UNIT WITH SLIT FOR PRODUCING HORIZONTAL SYNCHRONIZING SIGNAL

Toshio Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Jul. 5, 1995, Ser. No. 498,774
Claims priority, application Japan, Jul. 7, 1994, 6-156279; Jul. 7, 1994, 6-156280
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—234 **19 Claims**



1. An optical beam scanning device comprising:

a light source emitting a laser beam;

a deflection unit deflecting the laser beam to irradiate an image forming surface in horizontal scans;

a mirror reflecting the laser beam at a start of each horizontal scan;

a slit body having a light-obstructing wall for defining a slit oriented so the laser beam passes therethrough after being reflected off the mirror, the light-obstructing wall being slanted with regards to an optical axis of the laser beam reflected from the mirror; and

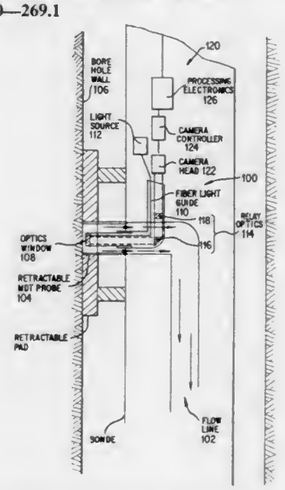
a sensor disposed so that the laser beam falls incident thereon after passing through the slit, the sensor producing a horizontal scan start timing signal upon receiving the laser beam.

5,663,559

MICROSCOPY IMAGING OF EARTH FORMATIONS

François M. Auzerais, Ridgefield, and Robert L. Schroeder, Newtown, both of Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Jun. 7, 1995, Ser. No. 483,137
Int. Cl.[6] G01V *8/00*
U.S. Cl. 250—269.1 **46 Claims**



9. An apparatus for characterizing properties of an earth formation comprising,

a means for obtaining through formation fluids drawn from an isolated region a first signal comprising a two-dimensional representation of a portion of a formation, wave energy having been reflected off the portion of the formation to produce the first signal; and

a means for characterizing a formation property based on the first signal.

5,663,560

METHOD AND APPARATUS FOR MASS ANALYSIS OF SOLUTION SAMPLE

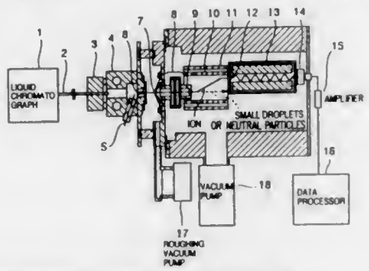
Minoru Sakairi, Kawagoe; Tadao Mimura, Hitachinaka; Yasuaki Takada; Takayuki Nabeshima, both of Kokubunji, and Hideaki Koizumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 302,555, Sep. 8, 1994, Pat. No. 5,481,107. This application Nov. 8, 1995, Ser. No. 555,192

Claims priority, application Japan, Sep. 20, 1993, 5-232833; Oct. 27, 1995, 7-280159

Int. Cl.[6] H01J *49/06*

U.S. Cl. 250—281 **69 Claims**



1. An apparatus for mass analysis comprising:

a sample supply unit for supplying a sample in solution;

at least one of a nebulizer and vaporizer for nebulizing and/or vaporizing the sample solution;

an ion generator for ionizing a predetermined matter in the nebulized or vaporized sample solution to thereby form a particle stream constituted by electrically charged particles and neutral particles;

a differential pumping portion including an aperture for leading said particle stream to a vacuum analysis portion, and an electric source for applying a voltage to said aperture;

a focusing lens for focusing said electrically charged particles contained in said particle stream;

a limit plate for passing a required particle stream of a particle stream dispersed from said focusing lens;

a deflector for deflecting said required particle stream passed through said limit plate;

a mass spectrometer for measuring physical quantities of said electrically charged particles deflected by said deflector.

5,663,561

METHOD FOR THE IONIZATION OF HEAVY MOLECULES AT ATMOSPHERIC PRESSURE

Jochen Franzen, Bremen, and Claus Köster, Lilienthal, both of Germany, assignors to Bruker-Franzen Analytik GmbH, Bremen, Germany

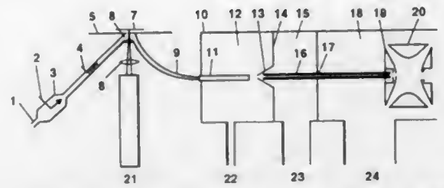
Filed Mar. 28, 1996, Ser. No. 623,607

Claims priority, application Germany, Mar. 28, 1995, 195 11 336.5

Int. Cl.[6] H01J *49/10*

U.S. Cl. 250—288 **12 Claims**

1. Method for the ionization of heavy analyte molecules deposited on a solid support in a gas at atmospheric pressure, comprising the steps of



(a) depositing the analyte molecules together with decomposable matrix material on the solid support,

(b) decomposing the matrix material by laser photons, thereby blasting the analyte molecules into the surrounding gas, and

(c) ionizing the analyte molecules within the gas by the known method of atmospheric pressure ionization.

5,663,562

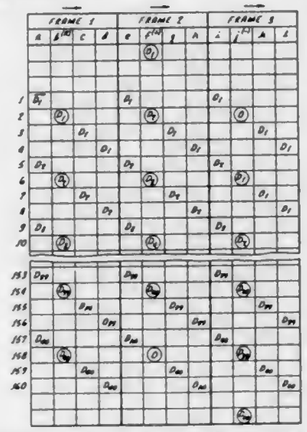
THERMAL IMAGING DEVICE

Russell Jones, Manhattan Beach; Tim Gallagher, Torrance, and Stephen P. Shaffer, West Hills, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Sep. 6, 1995, Ser. No. 524,199

Int. Cl.[6] H04N *5/33*

U.S. Cl. 250—332 **20 Claims**



1. A thermal imaging device including a detector array responsive to thermal infrared radiation, said detector array having a linearly-arrayed plurality of spaced-apart detector elements defining cooperatively a length dimension for said detector array, each of said plurality of detector elements providing a corresponding individual electrical signal indicative of the thermal infrared radiation incident thereon, and individual detector elements in said plurality of detector elements varying from one another, said thermal imaging device responsively providing a visible-light image replicating a viewed scene, said thermal imaging device comprising: a scanning device scanning said viewed scene across said plurality of detector elements in a direction generally perpendicular to said length dimension, said scanning device including a first portion scanning the whole of said viewed scene across said plurality of detector elements, said scanning device including a second portion scanning said viewed scene across said plurality of detector elements with transposition of said viewed scene in a first direction along said length dimension relative to said plurality of detector elements such that a portion of said viewed scene scanned by said first portion of said scanning device across a certain detector element of said plurality of detector elements is scanned across a detector element next-adjacent in said first direction to said certain element, and said scanning device including a third portion scanning said viewed scene across said plurality of detector elements with transposition of said viewed scene in an opposite

second direction along said length dimension such that a portion of said viewed scene scanned by said first portion of said scanning device across a certain detector element is scanned across a third detector element next-adjacent to said certain detector element in said opposite second direction along said length dimension.

5,663,563

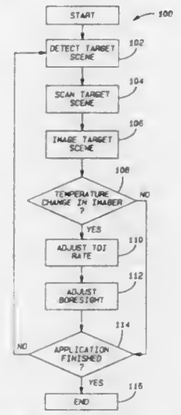
ELECTRONIC EFFECTIVE FOCAL LENGTH COMPENSATOR

Stephen J. Herbst, Redondo Beach, and Weston Furukawa, Los Angeles, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 20, 1996, Ser. No. 603,663

Int. Cl.[6] G01J *5/00;* **H04N** *5/33*

U.S. Cl. 250—332 **18 Claims**



1. An imaging system, comprising:

optics for detecting a scene;

a detector assembly being responsive to energy from said detected scene;

an imager for imaging said energy from said detected scene onto said detector assembly, said imager including an imager lens;

first clock means associated with said detector assembly for sampling detector assembly signals output at a first clock means sampling rate in response to said energy from said detected scene to induce a time delay in said detector assembly signals; and

a processor for controlling said first clock means to maximize detected scene image quality through said first clock means sampling rate to electronically compensated for focal length variation of said imager lens; and

an imager lens temperature sensor for sensing temperature changes at said imager lens and outputting a temperature signal to said processor that enables said processor to adjust said first clock means sample rate in response to temperature changes at said imager lens.

5,663,564

PHOTOVOLTAIC DETECTOR WITH INTEGRATED DARK CURRENT OFFSET CORRECTION

William A. Radford, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

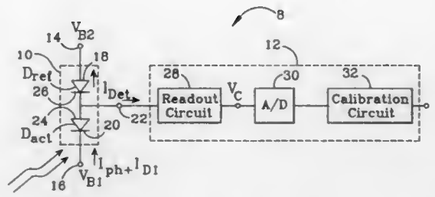
Filed Mar. 20, 1996, Ser. No. 618,699

Int. Cl.[6] G01J *5/30*

U.S. Cl. 250—338.4 **14 Claims**

1. An integrated semiconductor photovoltaic detector, comprising:

a substrate that is transparent to incident photons over a range of wavelengths;



a reverse biased active photovoltaic detector on said substrate, said active detector generating an active dark current and responding to photons incident on said substrate by generating a photocurrent;

a readout terminal for reading out a detector current, in which said photocurrent and active dark current form signal and offset portions of said detector current, respectively; and

a reverse biased reference photovoltaic detector on and in series with said active detector, said reference detector generating a reference dark current in opposition to said active dark current to reduce the offset portion of said detector current.

5,663,565

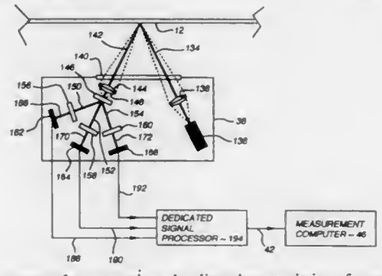
SYSTEM AND METHOD FOR THE ON-LINE MEASUREMENT OF KEY GLUE-LINE CHARACTERISTICS ON CORRUGATED BOARD

Bruce F. Taylor, Worthington, Ohio, assignor to Qualitek Limited, Worthington, Ohio

Filed May 23, 1995, Ser. No. 447,701

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—339.11 **26 Claims**



1. A system for measuring glue line characteristics of corrugated board, said system comprising:

means for detecting the intensity of a characteristic of said corrugated board and producing an output signal indicative of said intensity;

means for isolating glue line components of said output signal from all other components of said output signal, said glue line components representing intensity of said characteristic at a glue line, said isolated output glue line components being components of said output signal that oscillate at a known fluting frequency of said corrugated board.

5,663,566

NEGATIVITY BIAS REDUCTION

Piotr J. Maniawski, Mayfield Hts., and Stephen D. Miller, Chagrin Falls, both of Ohio, assignors to Picker International, Inc., Cleveland, Ohio

Filed Apr. 16, 1996, Ser. No. 633,206

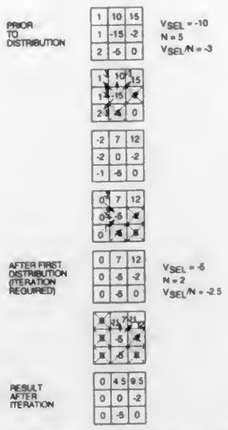
Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—369 **26 Claims**

17. A method of generating an image comprising the steps of:

detecting radiation indicative of an object being imaged;

generating a data set indicative of the detected radiation;



selecting a cell within the data set having a value which satisfies a first criterion;

distributing at least a portion of the value of the selected cell among cells in a region determined in relation to the selected cell, said cells each having a value which satisfies a second criterion; and

generating an image of the object.

5,663,567

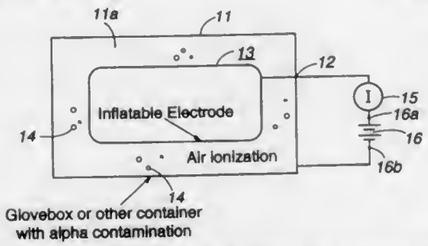
APPARATUS FOR DETECTING ALPIIA RADIATION IN DIFFICULT ACCESS AREAS

Peter Steadman, Santa Fe, and Duncan W. MacArthur, Los Alamos, both of N. Mex., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 31, 1996, Ser. No. 657,744

Int. Cl.[6] G01T *1/18*

U.S. Cl. 250—382 **8 Claims**



1. An electrostatic alpha radiation detector for measuring alpha radiation emitted from inside an enclosure comprising:

an electrically conductive expandable electrode for insertion into said enclosure, after insertion said electrically conductive expandable electrode being insulated from said enclosure and defining a decay cavity between said electrically conductive expandable electrode and said enclosure so that air ions generated in said decay cavity are electrostatically captured by said electrically conductive expandable electrode and said enclosure when an electric potential is applied between said electrically conductive expandable electrode and said enclosure;

indicator means attached to said electrically conductive expandable electrode for indicating an electrical current produced by generation of said air ions generated in said decay cavity by collisions between air molecules and said alpha particles emitted from said enclosure; and

a voltage source connected between said indicator means and said enclosure for creating an electric field between said electrically conductive expandable electrode and said enclosure.

5,663,568

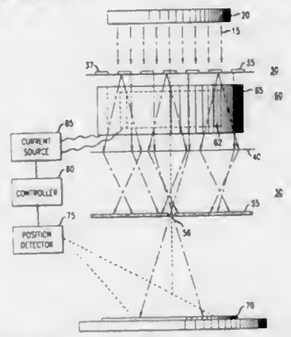
APPARATUS FOR CONTROLLING A CHARGED PARTICLE BEAM AND A LITHOGRAPHIC PROCESS IN WHICH THE APPARATUS IS USED

Warren Kazmir Waskiewicz, Clinton, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 20, 1995, Ser. No. 546,078

Int. Cl.[6] H01J *37/304*

U.S. Cl. 250—492.2 **16 Claims**



1. A charged particle beam lithography process for semiconductor device fabrication comprising the steps of:

shaping a charged particle beam by passing the charged particle beam through an aperture;

projecting the charged particle beam through a coil assembly comprising at least two coils and onto a substrate having at least one alignment mark;

detecting a position of the substrate and thereby determining a rotation angle of the substrate position relative to a desired substrate position;

determining an amount of current to be provided to each coil in the coil assembly to rotate the charged particle beam a desired amount and to introduce a desired lens effect in the charged particle beam;

providing that amount of current to each coil, thereby introducing the desired rotation and the desired lens effect into the charged particle beam; and projecting the charged particle beam onto the substrate.

5,663,569

DEFECT INSPECTION METHOD AND APPARATUS, AND DEFECT DISPLAY METHOD

Fuminori Hayano, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,551

Claims priority, application Japan, Oct. 14, 1993, 5-256602; Oct. 21, 1993, 5-263366

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.45 **16 Claims**

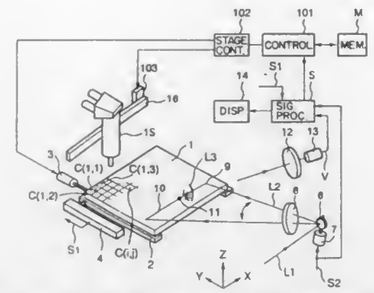
1. A defect display method comprising the steps of:

irradiating inspection light onto a surface to be inspected of an object to be inspected;

generating signals by photoelectrically converting scattered light from defects on the surface to be inspected; and

assigning, based on magnitude of the generated signals, a defect signal to each of a plurality of imaginary cells obtained by dividing the surface to be inspected at predetermined pitches in a first direction and a second direction perpendicular to the first direction, and displaying, based on the assigned defect signals, an inspection result,

wherein when defect signals are assigned to a plurality of neighboring cells due to a defect that occupies said neighboring cells, only a maximum defect signal of the defect signals assigned to said neighboring cells is displayed as the inspection result for said neighboring cells, thereby indicating the presence of the defect only in the cell having said maximum defect signal.



5,663,570

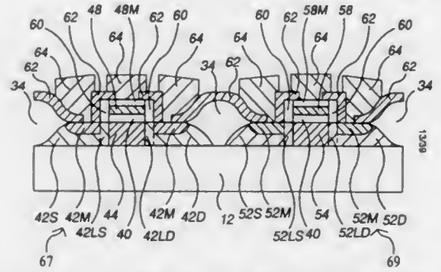
HIGH-FREQUENCY WIRELESS COMMUNICATION SYSTEM ON A SINGLE ULTRATHIN SILICON ON SAPPHIRE CHIP

Ronald E. Reedy, and Mark L. Burgener, both of San Diego, Calif., assignors to Peregrine Semiconductor Corporation, San Diego, Calif.

Division of Ser. No. 218,561, Mar. 25, 1994, Pat. No. 5,572,040, which is a continuation-in-part of Ser. No. 90,400, Jul. 12, 1993, Pat. No. 5,416,043. This application May 19, 1995, Ser. No. 444,992

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—9 **14 Claims**



1. A single chip radio frequency integrated circuit comprising:

an insulating substrate;

a layer of silicon formed on said insulating substrate wherein said layer of silicon is less than approximately 1000Å thick and is substantially free of electrically active states achieved by controlling the temperature of said layer of silicon to temperatures of less than or equal to approximately 950° C. during any processing of said layer of silicon which exposes said layer of silicon to a non-oxidizing ambient environment;

a MOS transistor fabricated in said layer of silicon, said MOS transistor having a gain-bandwidth product of at least 10 GHz; and

a passive component fabricated on said layer of silicon formed on said insulating substrate and connected to said MOS transistor to form an rf circuit, wherein said passive component is selected from the group including a resistor, capacitor and inductor.

5,663,571

QUANTUM MEMORY

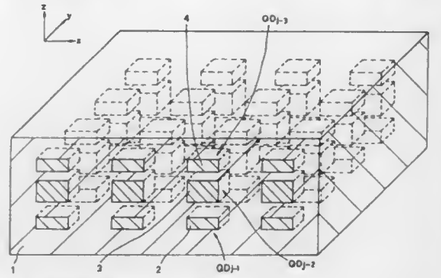
Ryuichi Ugajin, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 424,024

Claims priority, application Japan, Apr. 21, 1994, 6-106132

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—17 **26 Claims**



1. A quantum memory, comprising:

a plurality of memory cells;

each of said memory cells comprising a first quantum box, a second quantum box and a third quantum box which are stacked in sequence; and

said first quantum box and said second quantum box being coupled by a coupling strength different from a coupling strength between said second quantum box and said third quantum box, and further satisfying the relationship:

$E_0^{(j-1)}<E_0^{(j-2)}$

$E_0^{(j-3)}<E_0^{(j-2)}$

$(E_1^{(j-1)}-E_0^{(j-1)})>(E_1^{(j-2)}-E_0^{(j-2)})$

$(E_1^{(j-3)}-E_0^{(j-3)})>(E_1^{(j-2)}-E_0^{(j-2)})$

$(E_0^{(j-1)}-H_0^{(j-1)})\neq(E_0^{(j-2)}-H_0^{(j-2)})$

$(E_0^{(j-3)}-H_0^{(j-3)})\neq(E_0^{(j-2)}-H_0^{(j-2)})$

where $E_0^{(j-1)}$, $E_0^{(j-2)}$ and $E_0^{(j-3)}$ are ground-state energy levels of electrons in said first quantum box, said second quantum box and said third quantum box, respectively; $E_1^{(j-1)}$, $E_1^{(j-2)}$ and $E_1^{(j-3)}$ are first excited-state energy levels of electrons of said first quantum box, said second quantum box and said third quantum box, respectively; and $H_0^{(j-1)}$, $H_0^{(j-2)}$ and $H_0^{(j-3)}$ are ground-state energy levels of holes in said first quantum box, said second quantum box and said third quantum box, respectively.

5,663,572

OPTICAL FUNCTIONAL SEMICONDUCTOR ELEMENT

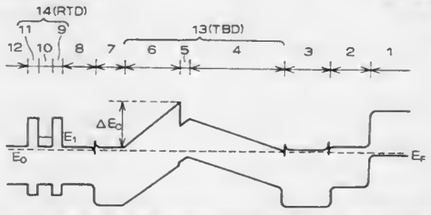
Haruhisa Sakata, Ohmiya; Katsuyuki Utaka, Tokyo, and Yuichi Matsushima, Tokorozawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1995, Ser. No. 406,501

Claims priority, application Japan, Mar. 25, 1994, 6-077870

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—25 **4 Claims**



1. An optical functional semiconductor element comprising: a semiconductor multilayered structure, a resonant-tunneling diode and electrodes for applying a voltage across the element;

said semiconductor multilayered structure comprising a first semiconductor layer of a first conductivity type, a first i-type

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semiconductor layer, a first semiconductor layer of a second conductivity type, a second i-type semiconductor light absorbing layer and a second semiconductor layer of the first conductivity type stacked in sequential order;

said resonant-tunneling diode being positioned in a region other than the second i-type semiconductor light absorbing layer and comprising a first tunneling barrier layer, a quantum well layer and a second tunneling barrier layer;

one of said electrodes being positioned on a top surface of said semiconductor multilayered structure or said resonant-tunneling diode to cover only a part of said top surface so that control light incident to the optical functional semiconductor element can be applied through a remainder of said top surface not covered with said one of said electrodes.

5,663,573

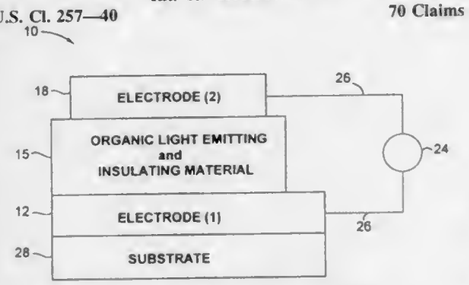
BIPOLAR ELECTROLUMINESCENT DEVICE

Arthur J. Epstein, Bexley; Yunzhang Wang, and Darren Douglas Gebler, both of Columbus, all of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Mar. 17, 1995, Ser. No. 406,512

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—40 **70 Claims**



1. A bipolar electroluminescent device comprising:

a. a light emitter operating in both a forward and a reverse current direction and comprising an electroluminescent organic light emitting means in contact with an insulating means;

b. a first electrode means in contact with said light emitter and for electrically connecting said first electrode to a potential difference; and

c. a second electrode means in contact with said light emitter and in spaced relation with said first electrode and for electrically connecting said second electrode to said potential difference.

5,663,574

POWER SEMICONDUCTOR COMPONENT WITH MONOLITHICALLY INTEGRATED SENSOR ARRANGEMENT AS WELL AS MANUFACTURE AND EMPLOYMENT THEREOF

Christofer Hierold, and Herbert Schwarzbauer, both of Munich, Germany, assignors to Siemens Aktiengesellchaft, Munich, Germany

Filed Sep. 29, 1995, Ser. No. 536,607

Claims priority, application Germany, Sep. 29, 1994, 44 34 894.0

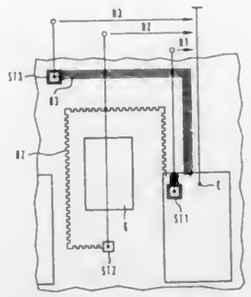
Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—48 **9 Claims**

1. A power semiconductor component, comprising:

a load transistor formed as a cell in a semiconductor body;

at least first and second further transistors and at least first and second resistors, the first and second transistors, load transistor, and first and second resistors being monolithically integrated on the semiconductor body, the first further transistor being formed as a cell in the semiconductor body;



the first resistor being a precision resistor having a resistive track lying in a lateral region between the load transistor cell and first further transistor cell on a non-conductive layer on a surface of the semiconductor body between the two cells;

a first series circuit of the first further transistor and the first resistor, said first series circuit together with the load transistor forming a first current mirror, a first test voltage being present across said first resistor; and

a second series circuit of said second further transistor and said second resistor, said second series circuit together with said load transistor forming a second current mirror, a second test voltage being present across said second resistor.

5,663,575

LIQUID CRYSTAL DISPLAY DEVICE PROVIDING A HIGH APERTURE RATIO

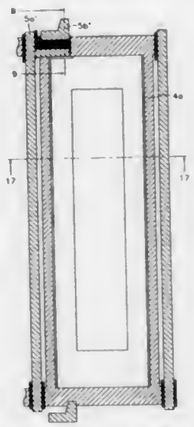
Nobuyuki Yamamura, Suwon, and In-sik Jang, Songtan-si, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 21, 1995, Ser. No. 493,000

Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14187; Jul. 9, 1994, 94-16553

Int. Cl.[6] H01L *29/04;31/036*

U.S. Cl. 257—59 **12 Claims**



1. A liquid crystal display device having a high aperture ratio, comprising:

a glass substrate;

a signal line formed on said glass substrate;

a gate line formed on said glass substrate, said gate line being a rectangular band shaped layer having a rectangular section removed, being adjacent to said signal line, and being made of a transparent conductive material;

a first opaque metal layer formed on edges of two parallel sides of said gate line;

a gate electrode formed on one end of said first opaque metal layer;

an insulating layer formed to cover said first opaque metal layer and said gate line;

a pixel electrode formed inside said first opaque metal layer and overlapping said insulating layer, wherein edge parts of said pixel electrode, said gate line, and said insulating layer form a storage capacitor therebetween; and

a thin film transistor having a source electrode connected to said signal line, and having a drain electrode connected to said pixel electrode and said gate electrode.

5,663,576

PHOTOELECTIC CONVERSION ELEMENT WITH ISLANDS

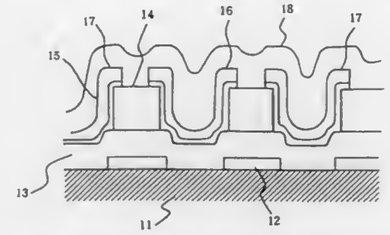
Kousaku Shimizu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 1, 1995, Ser. No. 523,008

Claims priority, application Japan, Sep. 1, 1994, 6-208581

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—59 **8 Claims**



1. A photoelectric conversion element characterized in that an insulation film and a photoelectric conversion film converted to islands are successively stacked on a light shield film formed on a transparent insulating substrate, electrodes connecting together said photoelectric conversion film islands are formed at a prescribed interval and in a prescribed width so that each of said electrodes covers an upper surface of a different end portion of said photoelectric conversion film, and a low-resistance film is provided between said photoelectric conversion film and said electrodes.

5,663,577

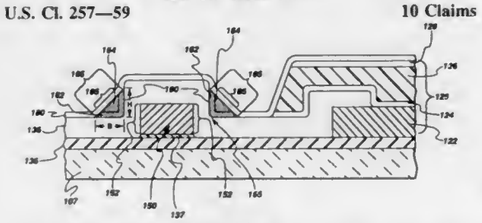
SOLID STATE IMAGER ARRAY WITH ADDRESS LINE SPACER STRUCTURE

Robert Forrest Kwasnick, Niskayuna, and Jianqiang Liu, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1996, Ser. No. 609,436

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—59 **10 Claims**



1. A solid state imager comprising:

a plurality of photosensor pixels arranged in rows and columns in a pixel array, each of said photosensor pixels having a photosensor comprising a photosensitive semiconductive material and an associated switching device coupled to said photosensor;

a plurality of data address lines disposed in columns in said array, said data address lines being electrically coupled to respective photosensor switching devices disposed along respective columns;

an upper barrier layer disposed over said pixel array; and

a plurality of data address line spacers disposed between said data address line sidewall segments and said barrier layer along at least a portion of said data address lines disposed in said imager, said address line spacers being disposed so as to provide an inclined foundation for said barrier layer in the region of said data address line sidewalls, said data address line spacers comprising residual photosensor semiconductive material.

5,663,578

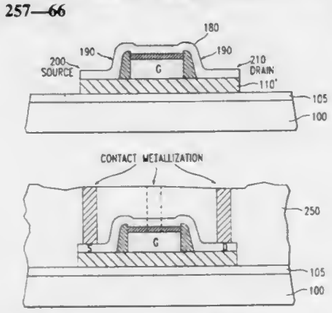
THIN FILM TRANSISTOR WITH SELF-ALIGNED BOTTOM GATE

Louis Lu-Chen Hsu, Fishkill; Mary Joseph Saccamango, Poughquag, and Joseph Francis Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 559,809, Nov. 17, 1995, Pat. No. 5,573,964. This application Aug. 2, 1996, Ser. No. 690,882

Int. Cl.[6] H01L *29/786*

U.S. Cl. 257—66 **11 Claims**



1. A thin film transistor comprising:

a dopant source layer on top of a substrate;

a doped gate electrode overlying and in contact with said dopant source layer;

a gate insulator overlying and in contact with said gate electrode;

an insulating sidewall spacers with at least two sides and a bottom, with the bottom in contact with the dopant source layer, and one side adjacent and in contact with at least the sidewalls of the gate electrode and gate insulator; and,

a polysilicon body layer, having a doped source, a doped drain, a channel and an off-set regions wherein the source and drain regions are overlying and in contact with the dopant source layer, the channel region is overlying and in contact with said gate insulator, said off-set regions in contact with said sidewall spacer.

5,663,579

METHOD OF GROWING SINGLE SEMICONDUCTOR CRYSTAL AND SEMICONDUCTOR DEVICE WITH SINGLE SEMICONDUCTOR CRYSTAL

Takashi Noguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

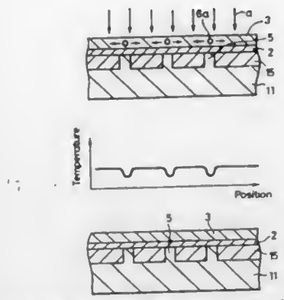
Filed Dec. 1, 1993, Ser. No. 159,565

Claims priority, application Japan, Dec. 3, 1992, 4-324384

Int. Cl.[6] H01L *27/108;29/04;29/76;21/26*

U.S. Cl. 257—75 **9 Claims**

1. A method of growing a single semiconductor crystal, comprising the steps of:



forming a semiconductor film comprising regions of low thermal conductivity and patterned high thermal conductive regions on a substrate;

applying a pulsed laser radiation to said semiconductor film to melt the semiconductor film; and

cooling the melted semiconductor film to develop localized low-temperature regions in said regions of different thermal conductivity thereby to produce a single crystal in said semiconductor film.

5,663,580

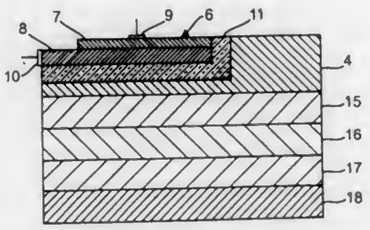
OPTICALLY TRIGGERED SEMICONDUCTOR DEVICE

Christopher Harris, Sollentuna, and Mietek Bakowski, Skultuna, both of Sweden, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Mar. 15, 1996, Ser. No. 616,296

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—77 **16 Claims**



1. A semiconductor device comprising a semiconductor layer of SiC having an active area through which the device is adapted to be triggered by light incident thereon and means for generating and emitting light with an energy exceeding the bandgap, being the energy difference between the conduction band and the valence band, of the SiC-layer of said active area, wherein said means is directly integrated in the device being located so as to cover substantial portions of said active area and being made of a Group 3B-nitride having a larger bandgap than that of the SiC of said SiC-layer.

5,663,581

IMPLANTED LED ARRAY AND METHOD OF FABRICATION

Paige Holm, Phoenix, and Benjamin W. Gable, Chandler, both of Ariz., assignors to Motorola, Schaumburg, Ill.

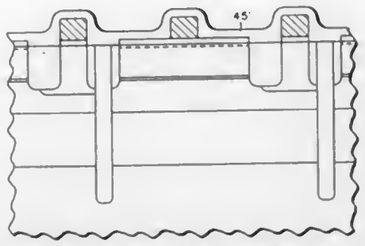
Division of Ser. No. 240,055, May 9, 1994, Pat. No. 5,453,386. This application Aug. 10, 1995, Ser. No. 513,259

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—93 **15 Claims**

1. An implanted light emitting diode array comprising:

a substrate of non-conductive material with a major surface;



a conductive layer of material on the major surface of the substrate, a first carrier confinement layer on the conductive layer, an active layer on the first carrier confinement layer, and a second carrier confinement layer on the active layer;

row areas and column areas with a matrix of diode light emitting areas positioned in rows and columns therebetween defined on the second carrier confinement layer;

a first impurity residing in a plurality of positions in the exposed row areas forming a plurality of vertical conductors through the second carrier confinement layer, the active layer and at least partially through the first carrier confinement layer, the first impurity providing row surface contacts to each diode in the matrix;

a second impurity residing in the exposed row and column areas and extending through the second carrier confinement layer and at least through the active layer to form an isolating resistive volume around each diode light emitting area, the isolating resistive volume around each diode being further positioned to separate the vertical conductors from the active layer and the first carrier confinement layer; and

a third impurity residing in the exposed row areas and extending through the second carrier confinement layer, the active layer, the first carrier confinement layer and at least into the substrate to form an isolating resistive volume between each row of diode light emitting areas.

5,663,582

HIGH FREQUENCY STATIC INDUCTION TRANSISTOR HAVING HIGH OUTPUT

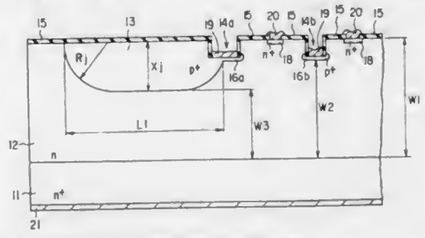
Junichi Nishizawa; Kaoru Motoya, and Akira Ito, all of Miyagi, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, Japan

Filed May 21, 1996, Ser. No. 651,851

Claims priority, application Japan, May 22, 1995, 7-145178; May 22, 1995, 7-145179

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—136 **14 Claims**



1. A static induction transistor comprising:

a drain region having a first conductivity type;

a channel region, provided over said drain region, having said first conductivity type;

a plurality of grooves each being formed in said channel region;

a plurality of source regions having said first conductivity type, each being provided in said channel region so as to be disposed among said plurality of grooves;

a plurality of gate regions having a second conductivity type, each being provided on a bottom of said grooves, wherein said plurality of gate regions and said plurality of source regions being arranged in parallel to one another; and

a guard ring region, having said second conductivity type, provided in said channel region, said guard ring region being arranged to surround said plurality of gate regions so that outer-most gate regions in said plurality of gate regions overlap one side of said guard ring region, respectively and each of said plurality of gate regions is coupled to said guard ring region at both edges thereof.

5,663,583

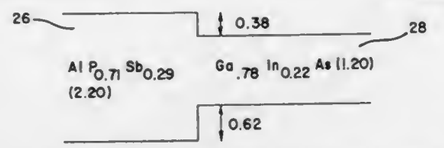
LOW-NOISE AND POWER ALGAPSB/GAINAS HEMTS AND PSEUDOMORPOHIC HEMTS ON GAAS SUBSTRATE

Mehran Matloublan, Encino; Takyiu Liu, and Chanh Nguyen, both of Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 466,157

Int. Cl.[6] H01L *31/0328;21/20*

U.S. Cl. 257—192 **32 Claims**



1. A method of making an epitaxial structure for a field-effect transistor, the steps comprising:

providing a channel layer over a semiconductive support, said channel layer comprising a first narrow-gap semiconductor material; and

providing a barrier layer over the channel layer, said barrier layer comprising a first wide-gap semiconductor material comprising $Al_{1-y}Ga_yP_{0.71+z}Sb_{0.29-z}$, wherein y has a value between about 0 to about 0.3 and z has a value between about −0.21 and about 0.29.

5,663,584

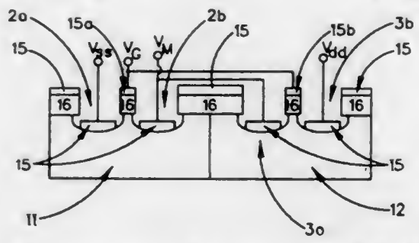
SCHOTTKY BARRIER MOSFET SYSTEMS AND FABRICATION THEREOF

James D. Welch, 10328 Pinehurst Ave., Omaha, Nebr. 68124

Continuation-in-part of Ser. No. 250,906, May 31, 1994, abandoned. This application Dec. 29, 1994, Ser. No. 368,149

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—288 **62 Claims**



1. A non-inverting single Metal Oxide Semiconductor (MOS) device with operating characteristics similar to multiple device Complimentary Metal Oxide Semiconductor (CMOS) systems in which an applied gate voltage controls a voltage present at an essentially electrically isolated terminal thereof; comprising a semiconductor channel region and two rectifying Schottky barrier to channel region junctions in a surface region of a single doping type semiconductor, selected from the group consisting of N-type, P-type, Intrinsic, N-type and Intrinsic, P-type and Intrinsic, N-type on insulator, and P-type on insulator, said rectifying Schottky barrier to channel region junctions being separated by said semiconductor channel region, wherein a gate to which semiconductor channel region doping type modulating voltage can be applied is associated with said semiconductor channel region, said gate being offset from said semiconductor channel region by an insulating material, such that application of a sufficient negative voltage to the gate will attract holes into said semiconductor channel region, and such that application of a sufficient positive voltage to the gate will attract electrons into said semiconductor channel region, the purpose of applying such gate voltage being to modulate the effective doping type of said semiconductor channel region, such that when a constant polarity voltage is applied between said rectifying Schottky barrier to channel region junctions one thereof forward conducts to the channel region while the other thereof simultaneously does not, which Schottky barrier to channel region junction forward conducts at a specific time being determined by semiconductor doping type in said semiconductor channel region, said semiconductor doping type being determined by applied gate voltage polarity, which essentially electrically isolated terminal electrically contacts, via a junction thereto, said channel region and during use monitors a constant polarity voltage applied to one of the rectifying Schottky barrier to channel region junctions, which constant polarity voltage appears at said essentially electrically isolated terminal essentially through the forward conducting Schottky barrier to channel region junction, which constant polarity voltage monitored by said essentially electrically isolated terminal increases when the voltage applied to said gate is increased; the basis of operation being that said Schottky barrier junctions are formed between said semiconductor channel region and a material which provides a rectifying junction to said semiconductor channel region when it is doped either N or P-type.

5,663,585

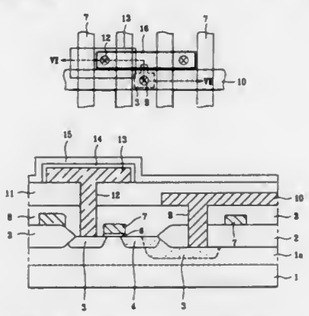
DRAM HAVING A BURIED REGION CONTACTED THROUGH A FIELD REGION

Chang Jae Lee, Chungcheongbuk-do, and Oh Seok Han, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Sep. 6, 1995, Ser. No. 524,286

Int. Cl.[6] H01L *29/78;23/50*

U.S. Cl. 257—296 **11 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

first and second impurity regions formed in said semiconductor substrate and spaced apart to define a channel region therebetween;

a gate electrode formed over the channel region;

a field region formed on opposite sides of the first and second impurity regions;

a buried region formed beneath the field region and in electrical contact with said first impurity region;

a bit line coupled to said buried region through a first contact hole in said field region; and

a capacitor formed over the gate electrode and coupled to said second impurity region through a second contact hole in said field region.

5,663,586

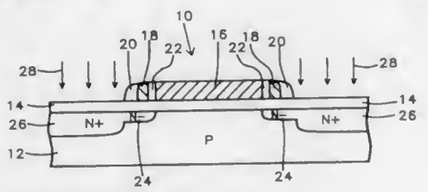
FET DEVICE WITH DOUBLE SPACER

Jengping Lin, Taiwan, China, assignor to United Microelectronics Corporation, Hsin-chu, Taiwan

Division of Ser. No. 334,955, Nov. 7, 1994, Pat. No. 5,498,555. This application Apr. 25, 1996, Ser. No. 592,154

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—336 **7 Claims**



1. A FET device comprising:

a substrate having a first type dopant;

a gate insulating layer on the substrate;

a polycrystalline silicon gate electrode on said gate insulating layer having vertical sidewalls;

shallow impurity regions of a second opposite type dopant in said substrate that terminate adjacent the outside edges of said vertical sidewalls of said gate electrode;

a layer of SiO_2 on the vertical sidewalls of said gate electrode;

first spacers of polycrystalline silicon over said layer of SiO_2 on the gate electrode sidewalls;

the top portion of the layer of SiO_2 on the gate electrode sidewalls being sufficiently conductive to keep the gate electrode and the first spacers of polycrystalline silicon at the same potential;

second spacers of silicon oxide over said first spacers of polycrystalline silicon on the gate electrode sidewalls, the shallow impurity regions having a substantially constant first dopant concentration beneath the first spacers of polycrystalline silicon and the second spacers of silicon oxide; and

source and drain regions of a second opposite type dopant in said substrate that terminate adjacent the edges of said second spacers, said source and drain regions extending deeper into said substrate than said shallow impurity regions and having a higher dopant concentration than the first dopant concentration.

5,663,587

FIELD EFFECT TRANSISTOR OF HIGH BREAKDOWN VOLTAGE TYPE HAVING STABLE ELECTRICAL CHARACTERISTICS

Yukio Miyazaki, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 593,591, Oct. 5, 1990, abandoned, which is a continuation of Ser. No. 200,778, Jun. 1, 1988, abandoned. This application Dec. 4, 1991, Ser. No. 800,739

Claims priority, application Japan, Jun. 1, 1987, 62-138540; Jun. 1, 1987, 62-138541

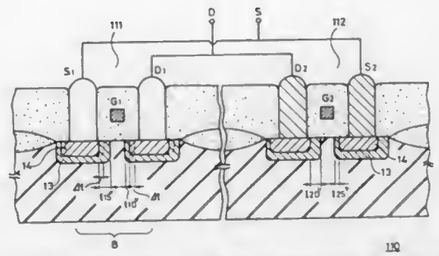
Int. Cl.[6] H01L *29/94;31/113*

U.S. Cl. 257—337 **3 Claims**

1. An FET comprising:

a semiconductor substrate of a first conductivity type having a major surface and a predetermined impurity concentration,

a plurality of first impurity regions of a second conductivity type formed spaced from each other at predetermined intervals in the major surface of said semiconductor substrate and each having a first impurity concentration,



regions in the major surface of said semiconductor substrate and between the first impurity regions of the second conductivity type defining channel regions, the length of said channel regions being uniform and in alignment with said conductive layers,

conductive layers formed over the channel regions through an insulating film and connected to each other,

second impurity regions of the second conductivity type formed in the major surface of said semiconductor substrate and completely within said first impurity regions of the second conductivity type each having a second impurity concentration higher than said first impurity concentration,

means for decreasing the parasitic resistance of the FET comprising:

a first terminal connecting together alternate second impurity regions of the second conductivity type, and

a second terminal connecting together the remaining second impurity regions of the second conductivity type, wherein

said first impurity regions of the second conductivity type comprise an odd number of first impurity regions of the second conductivity type arranged in a line manner,

said second impurity regions of the second conductivity type are formed, shifted in direction of the line, and

said first terminal connects an odd number of the second impurity regions of the second conductivity type, wherein

pairs of first impurity regions of the second conductivity type are arranged in parallel such that said conductive layers are arranged in a line manner, and

said second impurity regions of the second conductivity type are formed, shifted in a direction intersecting with said line direction.

5,663,588

SEMICONDUCTOR DEVICE HAVING AN SOI STRUCTURE OF MESA ISOLATION TYPE AND MANUFACTURING METHOD THEREFOR

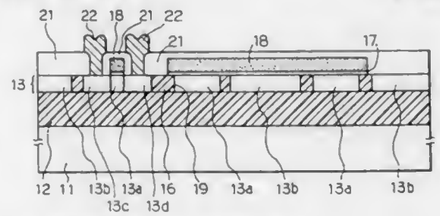
Megumi Suzuki, Toyota; Kazuhiro Tsuruta, Toyoake, and Akiyoshi Asai, Aichi-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 11, 1995, Ser. No. 501,187

Claims priority, application Japan, Jul. 12, 1994, 6-160190

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—350 **16 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

an insulating layer formed on a surface of said semiconductor substrate;

a monocrystalline semiconductor layer disposed on said insulating layer;

a semiconductor element formed in said monocrystalline semiconductor layer;

a dummy monocrystalline semiconductor layer in which no devices are formed disposed on said insulating layer so as to be separated from said monocrystalline semiconductor layer by a trench for isolation formed therebetween, said dummy monocrystalline semiconductor layer having a thickness no greater than a thickness such that complete depletion of the layer can be achieved at a specified electric potential; and

a wiring line provided on both said monocrystalline semiconductor layer and said dummy monocrystalline semiconductor layer, said wiring line for supplying said specified electric potential to said semiconductor element.

5,663,589

CURRENT REGULATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND FABRICATION METHOD OF THE SAME

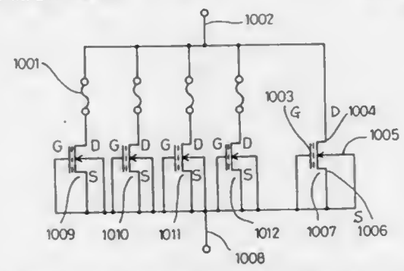
Yutaka Saitoh; Jun Osanai; Yoshikazu Kojima, and Kazutoshi Ishii, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Sep. 28, 1994, Ser. No. 314,140

Claims priority, application Japan, Sep. 29, 1993, 5-243221

Int. Cl.[6] H01L *29/76;21/04*

U.S. Cl. 257—401 **43 Claims**



1. A semiconductor integrated device comprising: a semiconductor substrate; and at least one current regulating diode comprising a plurality of depletion mode MOS transistor formed in the semiconductor substrate, each MOS transistor including a gate, a source region, a drain region and a substrate region, the gate, the source region and the substrate region of each MOS transistor being electrically coupled, and wherein the drain regions of at least two of the MOS transistors are electrically coupled to form an anode of the current regulating diode and the source regions of at least two of the MOS transistors are electrically coupled to form a cathode of the current regulating diode.

5,663,590

PRODUCT OF PROCESS FOR FORMATION OF VIAS (OR CONTACT OPENINGS) AND FUSES IN THE SAME INSULATION LAYER WITH MINIMAL ADDITIONAL STEPS

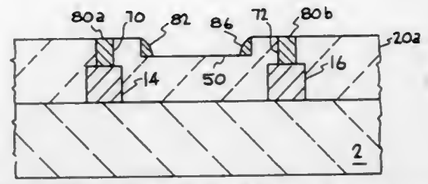
Ashok K. Kapoor, Palo Alto, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 462,897, Jun. 5, 1995, abandoned, which is a division of Ser. No. 348,603, Dec. 2, 1994, Pat. No. 5,472,901. This application Jul. 31, 1996, Ser. No. 690,024

Int. Cl.[6] H01L *29/41;23/62*

U.S. Cl. 257—529 **7 Claims**

1. An integrated circuit structure comprising one or more metal-filled vias or contact openings and one or more metal fuses formed in the same insulation layer formed over other portions of said integrated circuit structure which comprises:



a) an integrated circuit structure having raised portions thereon comprising raised lines and/or raised gate electrodes;

b) a single layer of insulation formed over said integrated circuit structure;

c) one or more rectangular recesses formed in an upper surface of said single insulation layer over one or more regions of said integrated circuit structure where none of said raised portions of said integrated circuit structure are located, whereby metal subsequently deposited in said one or more recesses to form said one or more metal fuses will not contact said one or more raised portions of said integrated circuit structure;

d) one or more vias or contact openings extending through said same single insulation layer to at least one of said raised portions of said integrated circuit structure beneath said single insulation layer;

e) a single metal layer deposited over said insulation layer and into said one or more recesses and into said one or more vias or contact openings to fill up said recesses and said vias or contact openings, said metal layer planarized, after being deposited, to remove said metal from said upper surface of said single insulation layer, leaving metal from said metal layer in said one or more vias or contact openings and also leaving metal from said same metal layer as one or more metal stringers on sidewalls of said one or more recesses; and

f) one or more metal lines formed on said insulation layer in electrical contact with at least one end of one or more of said metal stringers;

whereby said metal stringers in contact with said one or more metal lines will function as a fuse between said one or more lines and other portions of said integrated circuit structure in electrical contact with an opposite end of said metal stringers in contact with said one or more metal lines, and said fuse formed in said recess will not contact said raised portions of said integrated circuit structure.

5,663,591

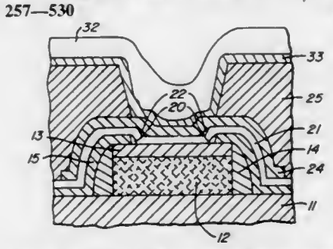
ANTIFUSE WITH DOUBLE VIA, SPACER-DEFINED CONTACT

Ali Iranmanesh, Sunnyvale, Calif., assignor to Crosspoint Solutions, Inc., Santa Clara, Calif.

Filed Feb. 14, 1995, Ser. No. 388,673

Int. Cl.[6] H01L *29/04;29/00*

U.S. Cl. 257—530 **38 Claims**



1. An antifuse structure in an integrated circuit comprising

a first metal interconnection layer on a first insulating layer;

a relatively thin, second insulating layer over said first metal interconnection layer and said first insulating layer, said second insulating layer having a first aperture therethrough where the antifuse structure is to be located, said first aperture forming sides of said second insulating layer;

a first spacer region in said first aperture on said sides of said second insulating layer;

a programming layer on said second insulating layer and on said first spacer region contacting said first metal interconnection layer, said programming layer conformally following said first spacer region into said first aperture, and forming sides of said programming layer, said first spacer region comprising a material used for said programming layer;

a second spacer region on said sides of said programming layer;

a barrier metal layer on said programming layer and on said second spacer region contacting said programming layer;

a relatively thick, third insulating layer on said barrier metal layer, said third insulating layer having a second aperture therethrough exposing a portion of said barrier metal layer; and

a second metal interconnection layer on said third insulating layer contacting said portion of said barrier metal layer;

whereby said first and second spacer regions force programming away from said sides of said second insulating layer permitting a relatively consistent programming voltage for the antifuse structure and a relatively uniform conducting link between said first and second metal interconnection layers.

5,663,592

SEMICONDUCTOR DEVICE HAVING DIFFRACTION GRATING

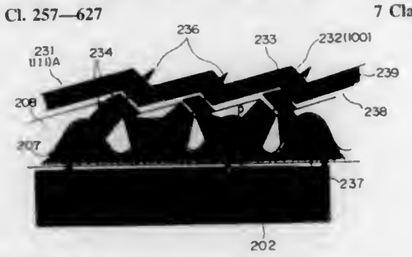
Selichi Miyazawa, Zama; Mitsuru Ohtsuka, and Natsuhiko Mizutani, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 103,208, Aug. 9, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,487

Claims priority, application Japan, Aug. 10, 1992, 4-212690; Dec. 25, 1992, 4-346308; Jul. 27, 1993, 5-204700

Int. Cl.[6] H01L *29/04;* **H01S** *3/19*

U.S. Cl. 257—627 **7 Claims**



1. A semiconductor device comprising:

a semiconductor having one of sphalerite and diamond crystal structures, said semiconductor constituting a substrate;

a grating formed on a portion of the semiconductor constituting the substrate which is inclined at 0.5° to 15° with respect to a first plane indicated by Miller indices, a surface of said grating having continuously changing Miller indices;

a first semiconductor layer which is formed on said grating, said first semiconductor layer doped with an amphoteric impurity, said first semiconductor layer having a sawtooth-shaped first periodic structure comprising a terrace portion comprising said first plane and a step portion comprising a second plane indicated by other Miller indices; and

a second semiconductor layer which is formed on said first semiconductor layer, and has a second periodic structure having a phase shifted from a phase of said first periodic structure, wherein said first semiconductor layer has a first region ranging from said second plane or a plane in the vicinity of said second plane indicated by Miller indices in said grating surface to said step portion and which has one of n-type and p-type conductive regions, and said first semiconductor layer has a second region of the other of said n-type and p-type conductive regions.

5,663,593

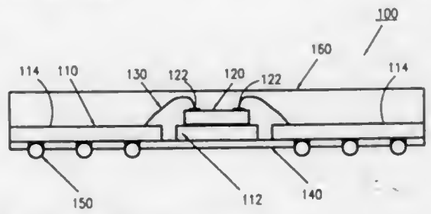
BALL GRID ARRAY PACKAGE WITH LEAD FRAME

Shahram Mostafazadeh, Santa Clara, and Joseph O. Smith, Morgan Hill, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 17, 1995, Ser. No. 543,978

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **8 Claims**



1. An electrical device comprising:

a flat lead frame including:

a centrally-located die attach pad,

a plurality of elongated leads which are electrically isolated from the die attach pad and extend in a radial direction away from the die attach pad, and

a tie bar attached to the die attach pad and extending in a radial direction away from the die attach pad, the tie bar being positioned between two of the plurality of leads,

wherein the die attach pad, the plurality of elongated leads and the tie bar are located in a common plane, and

wherein the lead frame has opposing first and second surfaces;

an integrated circuit chip mounted on the die attach pad on the first surface of the lead frame, the integrated circuit chip including a plurality of die bond pads;

a non-conductive coating formed on the second surface of the lead frame, the non-conductive coating defining a plurality of openings exposing selected portions the plurality of leads; and

a plurality of conductors, each of the plurality of conductors being electrically connected through one of the openings in the non-conductive coating to one of the plurality of leads;

wherein each of the die bond pads is electrically connected with a selected one of the plurality of leads; and

wherein the non-conductive coating is a solder mask.

5,663,594

BALL GRID ARRAY TYPE OF SEMICONDUCTOR DEVICE

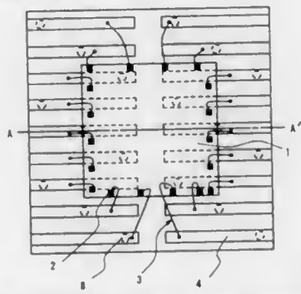
Naoto Kimura, Kumamoto, Japan, assignor to NEC Corporation, Japan

Filed Nov. 15, 1995, Ser. No. 558,804

Claims priority, application Japan, Nov. 22, 1994, 6-287717

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **10 Claims**



1. A ball grid type of semiconductor device comprising:

a plurality of electrically conductive leads;

a semiconductor chip having a plurality of electrode pads, each of which pads is connected to a corresponding one of said plurality of leads by a respective electrically conductive wire, said semiconductor chip being mounted on said plurality of leads such that said semiconductor chip is electrically isolated from said plurality of leads by an insulating adhesive tape which is interposed between said semiconductor chip and said plurality of leads;

a package member for packaging said plurality of leads and said semiconductor chip together with said wires, said package member having a plurality of holes, at least one hole of said plurality of holes being provided for a corresponding one of said plurality of leads, said holes extending to said corresponding leads and being arranged in rows extending along respective longitudinal directions of said leads, each of said rows having an identical number of equally spaced apart hole positions with the holes in one row being staggered relative to the holes in an adjacent row; and

a solder ball conductively provided for each of said holes.

5,663,595

DIAMOND HEAT SINK COMPRISING SYNTHETIC DIAMOND FILM

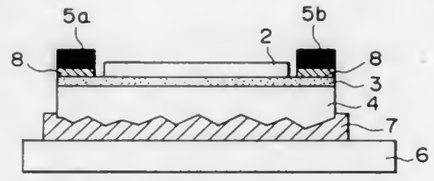
Hiromu Shiomi; Hideaki Nakahata; Yoshiki Nishibayashi, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jul. 31, 1995, Ser. No. 509,569

Claims priority, application Japan, Aug. 3, 1994, 6-182380

Int. Cl.[6] H01L *23/34;31/0312*

U.S. Cl. 257—712 **12 Claims**



1. A diamond heat sink comprising:

a support layer consisting of substantially undoped diamond;

a heat sensitive layer consisting of doped diamond, disposed on the surface of said support layer;

an insulation layer consisting of substantially undoped diamond, disposed on a predetermined region in the surface of said heat sensitive layer; and

electrodes disposed on said heat sensitive layer, wherein an exothermal element is placed on the surface of said insulation layer,

and wherein said heat sensitive layer and said electrodes form a thermistor, the electrical resistivity of said thermistor being capable of varying corresponding to heat generated from the exothermal element and transferred through said insulation layer to said thermistor.

5,663,596

INTEGRATED CIRCUIT SPRING CONTACTS

Michael J. Little, Woodland Hills, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

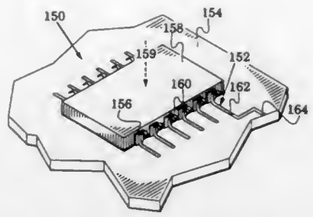
Division of Ser. No. 577,680, Dec. 21, 1995. This application Jul. 29, 1996, Ser. No. 681,758

Int. Cl.[6] H01L *23/48;39/02*

U.S. Cl. 257—727 **8 Claims**

1. A semiconductor chip assembly, comprising:

a semiconductor chip having a surface; and



at least one spring contact formed from a metallic member which has a base portion and a spring portion that has a curved configuration;

said metallic member having a length and metallic layers throughout said length that include a conduction layer adjoining and positioned between an adhesion layer and an inert layer with said layers having a combined thickness of approximately 1.3 microns;

wherein:

said conduction layer is formed of a metal selected from a group of copper, aluminum and silver;

said adhesion layer is formed of a metal selected from a group of chromium and titanium;

said inert layer is formed of gold; and

said base portion joined to said surface with said adhesion layer adjoining said surface and said spring portion curving away from said surface;

said spring portion assuming said curved configuration to reduce stress between said conduction layer, said adhesion layer and said inert layer.

5,663,597

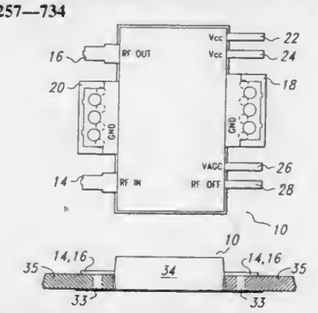
RF DEVICE PACKAGE FOR HIGH FREQUENCY APPLICATIONS

Stephen R. Nelson; Buford H. Carter, both of Richardson; Dennis D. Davis, Garland; Tammy J. Lahutsky, Plano; John Barnett, Mesquite, and Glen R. Haas, Jr., Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 967,483, Oct. 26, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 344,798

Int. Cl.[6] H01L *23/495;23/48;23/52*

U.S. Cl. 257—734 **20 Claims**



1. A package for a device comprising:

a. a leadframe comprising leads for effecting circuit connections to said device wherein at least one of said leads is an RF lead having a low pass filter characteristic;

b. a metal ground piece separate from but connected to said leadframe on a frontside of said metal ground piece and exposed on a backside of said metal ground piece after encapsulation;

c. one or more RF port lead pairs each comprising a coupled lead pair formed from said leads; and

d. one or more ground lead pair each comprising a coupled lead pair formed from said leads.

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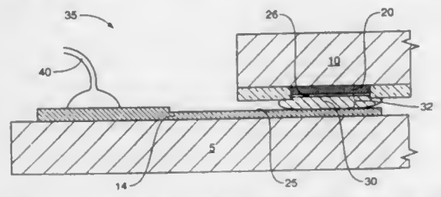
ELECTRICAL CIRCUIT BONDING INTERCONNECT COMPONENT AND FLIP CHIP INTERCONNECT BOND

Rickie C. Lake, Eagle, and Mark E. Tuttle, Boise, both of Id., assignors to Micron Communications, Inc., Boise, Id.

Division of Ser. No. 166,747, Dec. 13, 1993, Pat. No. 5,480,834. This application Oct. 23, 1995, Ser. No. 553,762

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—737 **14 Claims**



1. An electronic circuit bonding interconnect component comprising:
a semiconductor die comprising integrated circuitry fabricated therewithin;
a conductive bonding area on the surface of the die and in electrical connection with the die integrated circuitry, the conductive bonding area comprising an outermost metal surface fabricated of an ambient oxidizable metal; and
an electrically conductive epoxy bump bonded to the conductive bonding area, the conductive epoxy bump being at least partially cured, the interconnect being void of any appreciable ambient oxidizable metal intermediate the bonded conductive epoxy bump and bond pad outermost metal surface, the conductive epoxy bump comprising an oxide reducing agent capable of reducing oxides of the oxidizable metal.

5,663,599

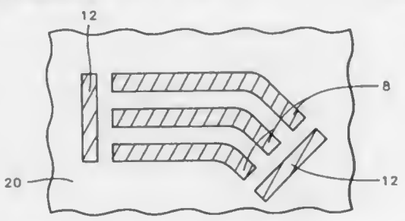
METAL LAYOUT PATTERN FOR IMPROVED PASSIVATION LAYER COVERAGE

Water Lur, Taipei, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 280,221, Jul. 25, 1994, Pat. No. 5,494,853. This application Feb. 27, 1996, Ser. No. 607,732

Int. Cl.[6] H101L *23/48*

U.S. Cl. 257—750 **12 Claims**



1. An integrated circuit device comprising:
an insulating layer overlying semiconductor device structures in and on a semiconductor substrate;
metal lines overlying said insulating layer, said metal lines having a turn, said metal lines extending in parallel in a first direction on one side of said turn and extending in parallel in a second direction on another side of said turn, wherein said metal lines have a fixed spacing throughout the length of said metal lines including around said turn; and
a passivation layer overlying said metal lines.

5,663,600

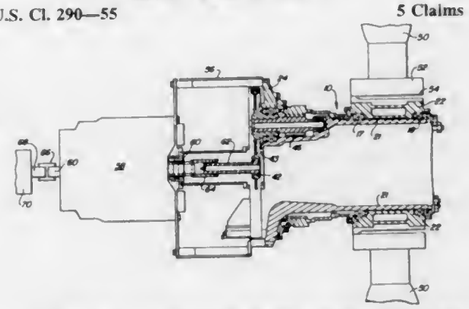
VARIABLE SPEED WIND TURBINE WITH RADIALLY ORIENTED GEAR DRIVE

Kwang Henry Baek; Joseph Phillip Franz, and John Peter Nadzam, all of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Mar. 3, 1995, Ser. No. 397,820

Int. Cl.[6] F03D *11/00;1/00*

U.S. Cl. 290—55 **5 Claims**



1. A variable speed wind turbine having a radially-oriented gear drive comprising:
an inner hollow cylindrical member and an outer hollow cylindrical member, said inner member nested generally concentrically within said outer member and having two ends;
an annular flange attached to one end of the inner member and adapted to support said inner member in a stationary position;
a pair of spaced-apart, annular bearing assemblies circumscribing said inner member and supporting said outer member for rotation about said inner member;
an alternating current electric power generator coupled to said one end of said inner member and having a rotor shaft portion extending from one side of said generator into a position proximal said one end of said inner member;
a sun pinion gear coupled to said rotor shaft portion at an end thereof proximal said one end of said inner member;
a plurality of planet gears positioned in engagement with said sun pinion gear, each of said planet gears being mounted on a corresponding gear shaft with each gear shaft being supported for rotation on corresponding bearing means;
a pinion gear attached to each said gear shaft for rotation therewith;
a ring gear formed on an inner surface of said outer member and adapted to engage said pinion gear whereby rotation of said outer member is effective to rotatably drive said pinion gear to concurrently drive each associated planet gear to drive said sun pinion gear in a manner that effects rotation of said rotor shaft portion; and
a plurality of propeller blades coupled to and extending radially outward of said outer member for effecting rotation of said outer member in response to wind impinging on said blades.

5,663,601

CORE WINDING SET FOR A MOTOR

Shinichi Wakabayashi; Susumu Kobayashi, both of Komagane; Mithugi Ookubo, and Ethuji Yamashita, both of Nagano, all of Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., and Nagano Drilube Co., Ltd., both of Japan

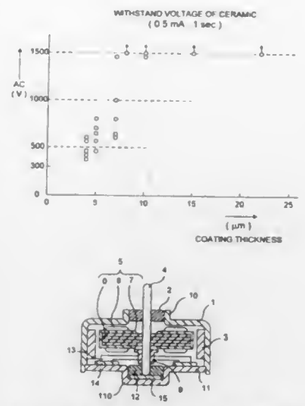
Filed Apr. 15, 1993, Ser. No. 48,367

Claims priority, application Japan, Apr. 20, 1992, 4-126910

Int. Cl.[6] H02K *15/12;3/30*

U.S. Cl. 310—45 **18 Claims**

1. A core winding set for a motor comprising a core having a plurality of salient poles, an insulation layer formed on a surface of said core, and a winding wound around each of said salient poles on which the insulation layer is formed, said insulation layer being



formed by applying a liquid insulating agent, and wherein the liquid insulating agent is composed of a ceramic coating material.

5,663,602

SPINDLE MOTOR

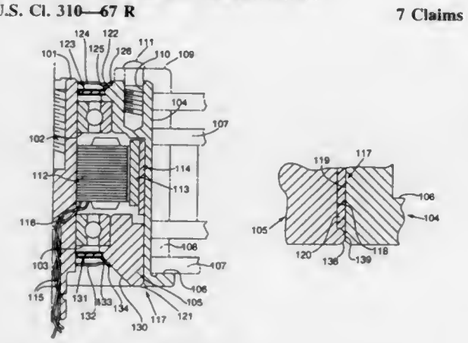
Hideo Shimizu, Takeno-gun, and Jun Inoue, Naka-gun, both of Japan, assignors to Nidec Corporation, Kyoto, Japan

Division of Ser. No. 89,039, Jul. 9, 1993, Pat. No. 5,459,361. This application Mar. 13, 1995, Ser. No. 404,199

Claims priority, application Japan, Jul. 14, 1992, 4-209608; Aug. 31, 1992, 4-257267

Int. Cl.[6] H02K *7/14;7/08*

U.S. Cl. 310—67 R **7 Claims**



1. A spindle motor comprising:
a stationary shaft;
a stator fixedly mounted on said shaft;
a pair of bearings mounted on said shaft respectively at upper and lower sides of said stator;
a hub rotatably mounted on said shaft by said pair of bearings;
a rotor magnet fixedly mounted on the inner wall of said hub to face said stator;
a bushing adhesively bonded to an inner wall of said hub, said hub being directly attached to one of the pair of bearings and to the other of the pair of bearings via the bushing, said hub and said bushing having confronting surfaces terminating at open ends substantially at the same position in the direction of axis of the motor, said confronting surfaces of said hub and said bushing being concentric with said shaft; and
a sealing member disposed on the axially outer end of the confronting surfaces of said hub and said bushing, said sealing member including an annular rib disposed integrally on the axially outer end of said confronting surface of said bushing so that said annular rib of said bushing comes into contact with said confronting surface of said hub to thereby prevent said bonding adhesive from leaking out.

5,663,603

ROTARY ELEMENT DRIVING DEVICE

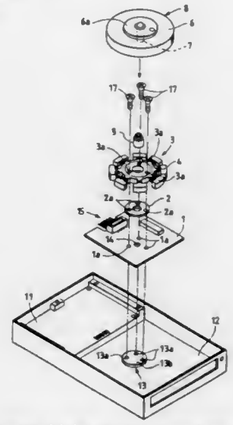
Hiroshi Sakashita, and Eiji Arasaki, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Dec. 8, 1995, Ser. No. 569,882

Claims priority, application Japan, Dec. 8, 1994, 6-304588; Aug. 2, 1995, 7-197220

Int. Cl.[6] H02K *5/00*

U.S. Cl. 310—91 **15 Claims**



1. A rotary element driving device comprising:
a spindle motor including:
a motor driving circuit board for driving said motor;
a stator core of said motor which is fixedly mounted on said circuit board;
a coil wound on the salient poles of said stator core;
a rotor including a drive magnet confronted with said stator core, a rotary element placing section, and a shaft;
a bearing which rotatably supports said shaft; and
a device stand on which said spindle motor is fixedly mounted,
wherein said device stand has a motor mounting section which is embossed to have a motor mounting reference flat surface, fastening members are inserted into mounting holes which are formed in said stator core and said motor mounting section in such a manner that said mounting holes are aligned with one another, and with said fastening members, said stator core is fixedly mounted on said motor mounting section, and said motor driving circuit board is held between said stator core and said motor mounting section in such a manner that said motor driving circuit board is in close contact with said motor mounting reference flat surface, whereby said spindle motor is fixedly mounted on said device stand.

5,663,604

BRUSHLESS MOTOR

Shuji Takahashi, Yonago, Japan, assignor to Nidec Corporation, Kyoto, Japan

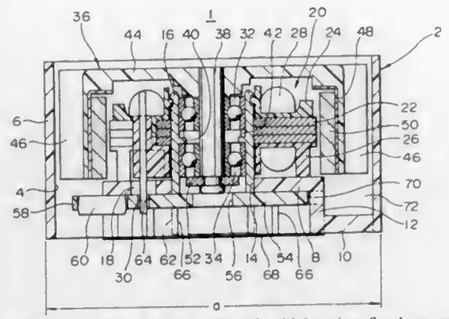
Filed Dec. 27, 1995, Ser. No. 579,663

Claims priority, application Japan, Dec. 28, 1994, 6-339730; Mar. 31, 1995, 7-099738

Int. Cl.[6] H02K *5/00;29/00*

U.S. Cl. 310—91 **23 Claims**

1. A brushless motor for use in a fan comprising:
a housing having a downwardly open cylindrical wall to form a cylindrical inner space and a plurality of arms which extend radially inwardly from a lower end portion of said cylindrical wall;
a supporting plate connected with said cylindrical wall through said plurality of arms, said supporting plate being retracted in an axial direction from the bottom level of said housing:



a bearing tower located inside of said housing fixed on said supporting plate so as to project upwardly therefrom in the axial direction:

a stator fixed on the outer circumferential portion of said bearing tower:

a rotor having a shaft rotatably supported by a bearing within said bearing tower:

a rotor magnet attached to said rotor and opposing said stator; and

a circuit base including a drive circuit for controlling current supplied to said stator, said circuit base being mounted on the lower surface of said supporting plate opposite said bearing tower.

5,663,605

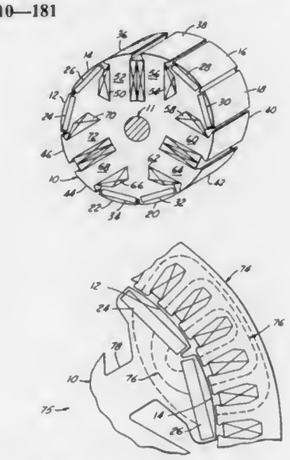
ROTATING ELECTRICAL MACHINE WITH ELECTROMAGNETIC AND PERMANENT MAGNET EXCITATION

Paul Michael Evans, Ypsilanti, and Roy David Schultz, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1995, Ser. No. 433,187

Int. Cl.[6] H02K *21/00;21/04*

U.S. Cl. 310—181 **10 Claims**



5. An electrical machine comprising:

a generally-annular stator; and

a rotor rotatably mounted within said stator and defining an axis of rotation, said rotor having an axially-extending periphery, said rotor comprising a plurality of wound-field poles disposed about at least one portion of said periphery and a plurality of permanent magnet poles all disposed about at least one circumferentially-different portion of said periphery, said wound-field poles in general axial alignment with said permanent magnet poles;

wherein said wound-field poles are disposed in circumferentially-consecutive pairs.

5,663,606

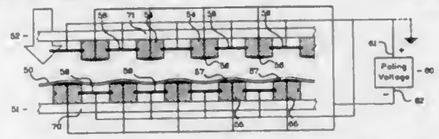
APPARATUS FOR POLING A PIEZOELECTRIC ACTUATOR

Henry Richard Beurrier, 817 Old Chester Rd., Far Hills, N.J. 07931

Filed Sep. 15, 1995, Ser. No. 529,275

Int. Cl.[6] H01L *41/22*

U.S. Cl. 310—357 **13 Claims**



1. Apparatus for forming a sequence of oppositely poled regions in a piezoelectric film having first and second surfaces, said apparatus including means for abutting against said first and second surfaces first and second like patterns of electrodes offset with respect to one another, said electrodes having a positive voltage impressed therein, said apparatus also including means spaced apart from said first and second surfaces and having a negative voltage impressed therein for generating a poling field at each position opposite a position abutted by an electrode of said first and second pattern.

5,663,607

DISCHARGE LAMP LEAD SUPPORT

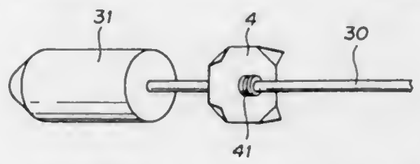
Takehiro Kira, and Takanori Serizawa, both of Himeji, Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,476

Claims priority, application Japan, Jun. 29, 1994, 6-168696

Int. Cl.[6] H01J *1/96*

U.S. Cl. 313—284 **4 Claims**



1. A discharge lamp with an emission part having a roughly spherical external shape and tube arms connected to opposite sides of the emission part, hermetically sealing parts being provided on an end of each tube and and an electrical lead extending through each hermetically sealing part from the outside, parallel to a longitudinal axis of the tube arm, and an electrode on an inner tip of each lead within the emission part to form a pair of opposed, spaced apart electrodes; wherein a plate-shaped holding part is positioned in each said tube and in proximity to the emission part, said holding part being made of a metal with a high melting point; wherein each holding part is arranged approximately perpendicularly to a respective lead which extends therethrough, the holding part comprising a means for holding the respective lead in a manner properly positioning a respective one of the electrodes.

5,663,608

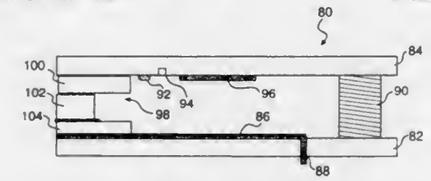
FIELD EMISSION DISPLAY DEVICES, AND FIELD EMISSSION ELECTRON BEAM SOURCE AND ISOLATION STRUCTURE COMPONENTS THEREFOR

Gary W. Jones, Poughkeepsie, and Steven M. Zimmerman, Pleasant Valley, both of N.Y., assignors to FED Corporation, Hopewell Junction, N.Y.

Division of Ser. No. 301,473, Sep. 7, 1994, Pat. No. 5,534,743, which is a continuation-in-part of Ser. No. 290,238, Aug. 15, 1994, which is a continuation-in-part of Ser. No. 29,880, Mar. 11, 1993, abandoned. This application Apr. 17, 1996, Ser. No. 633,545

Int. Cl.[6] H01J *1/02*

U.S. Cl. 313—309 **9 Claims**



1. A field emitter display panel, comprising an anode plate member and a field emitter array plate member, wherein the anode plate member and the field emitter array plate member are in spaced apart relationship to one another, and a spacer structure between the anode plate member and the field emitter array plate member, wherein the spacer structure comprises a multilayer differentially etched dielectric stack.

5,663,609

ELECTRON GUN ASSEMBLY HAVING A QUADRUPLE LENS FOR A COLOR CATHODE RAY TUBE

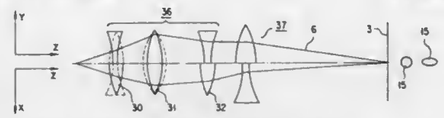
Eiji Kamohara, and Junichi Kimiya, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 45,058, Apr. 9, 1993, abandoned. This application Sep. 19, 1995, Ser. No. 530,731

Claims priority, application Japan, Apr. 10, 1992, 4-089170

Int. Cl.[6] H01J *29/58*

U.S. Cl. 313—412 **8 Claims**



1. A color cathode ray tube apparatus comprising:

beam generating means for generating three electron beams;

emitting means for emitting light rays, said emitting means having a center region and a peripheral region; and

deflecting means for deflecting the three electron beams generated by said generating means in a horizontal and a vertical direction, said emitting means being scanned by the deflected electron beams, said deflecting means producing an astigmatism lens only when the electron beams are deflected to the peripheral region of the emitting means, the astigmatism lens having a distortion power for distorting the electron beams, the distorting power being changed depending on the deflection of the electron beams,

said beam generating means including:

three cathodes, of an in-line arrangement, for respectively emitting a center electron beam and side electron beams, and

an electron lens system for correcting the distortion power of the astigmatism lens by converging the center electron beam and side electron beams on said emitting means and for focusing each of the electron beams, said electron lens system including:

individual electron lenses having a first lens power in a horizontal plane defined by said horizontal direction and a tube axis, and a second lens power different from the first lens power in a vertical plane defined by said vertical direction and the tube axis, magnitudes of the first and second lens powers being changed in accordance with the deflection of the electron beams, the first lens power having a divergent lens power when electron beams are directed to the center region of the emitting means and a convergent lens power when electron beams are directed to the peripheral region of the emitting means, the second lens power having a convergent lens power when the electron beams are directed to the center region of the emitting means and a divergent lens power when the electron beams are directed to the peripheral region of the emitting means,

main electron lenses provided for the respective electron beams, each main electron lens having a main electron lens power for focusing an incident one of the three electron beams on said emitting means, and

a common electron lens for correcting the distortion power of the astigmatism lens, the common electron lens having a third lens power in the horizontal plane and a fourth lens power different from the third lens power in the vertical plane, the three electron beams being focused on said emitting means in the horizontal plane by the first lens power, the third lens power and said main electron lens power, the three electron beams being focused on said emitting means in the vertical plane by the second lens power, the fourth lens power and said main electron lens power.

5,663,610

CATHODE RAY TUBE THAT MINIMIZES MISLANDING OF ELECTRON BEAMS DUE TO THERMAL EXPANSION AND VIBRATION

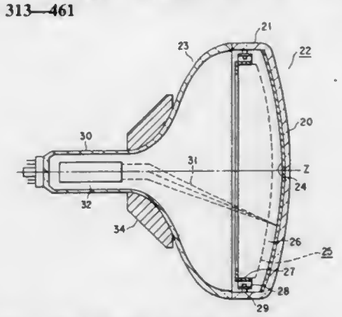
Masatsugu Inoue, Kumagaya; Satoshi Tsunokawa, Fukaya; Takashi Murai, Fukaya, and Norio Shimizu, Fukaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1995, Ser. No. 469,924

Claims priority, application Japan, Aug. 9, 1994, 6-187273

Int. Cl.[6] H01J *29/86;31/00*

U.S. Cl. 313—461 **2 Claims**



1. A color cathode ray tube apparatus comprising:

means for generating electron beams;

a fluorescent screen, on which electron beams are landed;

a shadow mask opposing said fluorescent screen and having a curved surface with a large number of apertures defined therein such that said electron beams are selectively landed on said fluorescent screen after passing through said apertures; and

a panel having inner and outer curved surfaces, said fluorescent screen being disposed on said inner surface, said panel having a substantially rectangular effective portion having a short axis Sv, a long axis Sh; and a diagonal axis Sd,

wherein said panel has a shape that satisfies the following relationship:

$$Dp/Sd<0.05,$$

V<H<Dp,

and

2V<Dp<2H,

where Dp=an amount of drop in a tube axial direction at an end of an effective diameter of said diagonal axis of said panel against a center of said outer surface of said effective portion, H= an amount of drop in said tube axial direction at an end of effective diameter of said long axis, and V=an amount of drop in said tube axial direction at said end of an effective diameter of said short axis,

wherein a thickness of said effective portion of said panel differs so as to satisfy the following relationship:

(Ah/Sh)<(Av/Sv)

where Ah=a distance in a long axial direction of a first thickness region on said long axis and Av=a distance in a short axial direction of a second thickness region on said short axis, wherein, in said first and said second thickness regions, said panel has a thickness larger than an average thickness Ta of said effective portion; and

wherein a maximum thickness T max of said effective portion in a vicinity of said end of said diagonal axis of said panel satisfies the following relationship

(T max−Ta)>(Ta−T min)

or,

|T max−Tal>|T min−Tal,

where T min=a minimum thickness of said panel.

5,663,611

PLASMA DISPLAY PANEL WITH FIELD EMITTERS

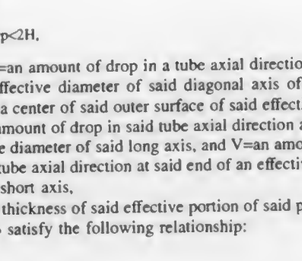
Peter Seats, Williamsburg, Va., and Neil Anthony Fox, Cheltenham, England, assignors to Smiths Industries Public Limited Company, London, England

Filed Jan. 16, 1996, Ser. No. 585,443

Claims priority, application United Kingdom, Feb. 8, 1995, 9502435

Int. Cl.[6] H01J *17/49*

U.S. Cl. 313—584 **17 Claims**



1. A radiation-emitting display comprising: a sealed assembly; an ionizable gas in said assembly; a fluorescent layer on a part of said assembly that converts radiation emitted in the assembly to visible radiation; at least one first electrode arranged as an anode; and at least one second electrode arranged as a cathode, wherein said cathode has a field-emitting source that generates electrons, and wherein the pressure of said gas within the assembly is such as to enable said electrons to ionize said gas and produce radiation that causes fluorescence of said layer, and to prevent cathodoluminescence of said layer.

5,663,612

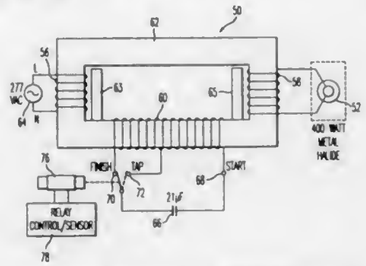
APPARATUS FOR DIMMING DISCHARGE LAMP HAVING ELECTROMAGNETIC REGULATOR WITH SELECTIVELY TAPPED CAPACITANCE WINDING

Joe A. Nuckolls, Etowah, N.C., assignor to Hubbell Incorporated, Orange, Conn.

Filed Apr. 30, 1996, Ser. No. 637,966

Int. Cl.[6] H05B *37/00*

U.S. Cl. 315—240 **7 Claims**



1. A step-dimming apparatus for a discharge lamp comprising the combination of:

a discharge lamp;

an electromagnetic regulator having a primary winding, a secondary winding, a tertiary winding and a magnetic core for linking said windings, said lamp being connected to said secondary winding, said tertiary winding having a first end, a second end, and a first tap between said first end and said second end thereof;

an alternating current power source connected to said primary winding;

a capacitor having a first terminal connected to said first end of said tertiary winding and a second terminal connected to said second end of said tertiary winding; and

a switching device for disconnecting said second terminal of said capacitor from said second end of said tertiary winding and connecting said second terminal of said capacitor to said first tap when activated to reduce power available to said discharge lamp.

5,663,613

LIGHTING CIRCUIT FOR DISCHARGE LAMP

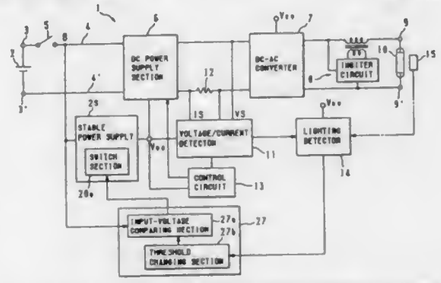
Masayasu Yamashita, and Atsushi Toda, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed May 13, 1996, Ser. No. 648,518

Claims priority, application Japan, May 12, 1995, 7-137426

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—308 **20 Claims**



1. A lighting circuit for a discharge lamp having a DC power supply section to be supplied with a voltage from a DC power supply and supplies an output voltage, based on the output voltage of said DC power supply section, to said discharge lamp, said lighting circuit comprising:

(1) lighting detection means for detecting if said discharge lamp is lighted;

(2) input-voltage monitor means for detecting an input voltage to said DC power supply section and checking if said input voltage lies within an allowable range, said input-voltage monitor means having input-voltage comparing means for detecting said input voltage to said DC power supply section and comparing said input voltage with a first threshold value or a second threshold value, and threshold changing means for changing said first or second threshold value; and

(3) power-supply allowing/inhibiting means for allowing or inhibiting power supply to said discharge lamp in accordance with a signal from said input-voltage monitor means,

whereby when said input voltage to said DC power supply section is less than said first threshold value at a time said input-voltage monitor means receives a signal indicative of a light-OFF state of said discharge lamp from said lighting detection means, said input-voltage monitor means sends a signal to said power-supply allowing/inhibiting means to cut off power supply to said discharge lamp and when said input voltage to said DC power supply section exceeds said second threshold value, said input-voltage monitor means sends a signal to said power-supply allowing/inhibiting means to supply power to said discharge lamp, and

whereby when said signal from said lighting detection means indicates said light-OFF state of said discharge lamp, said threshold changing means sets said first threshold value in said input-voltage monitor means smaller than said first threshold value in a light-ON state of said discharge lamp and/or sets said second threshold value in said input-voltage monitor means smaller than said second threshold value in said light-ON state of said discharge lamp.

5,663,614

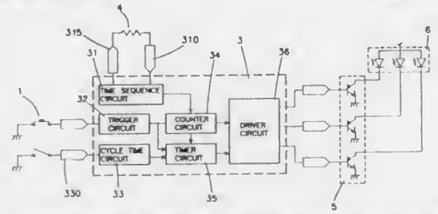
LIGHTING CIRCUIT MODULE FOR A SHOE

Ming-Bi Weng, and Ming-Ta Chang, both of 8F-6, No. 100, Sec. 2, Hoping E. Rd., Taipei, Taiwan

Filed Feb. 13, 1996, Ser. No. 601,162

Int. Cl.[6] A43B *7/04;* **F21V** *33/00*

U.S. Cl. 315—360 **16 Claims**



1. A lighting circuit module disposed within a shoe comprising:

a switch,

a control unit,

an oscillatory resistor,

a plurality of amplification elements, and

a plurality of bulbs, said bulbs having inputs connected to said plurality of amplification elements;

said control unit including

a time sequence circuit having input terminals connected to said oscillatory resistor,

a counter circuit having an input connected to an output of said time sequence circuit,

a trigger circuit having an input connected to said switch and an output connected to the input of said counter circuit and an input of a timer circuit,

a cycle time circuit having an output connected to the input of said timer circuit,

a driver circuit, said driver circuit being connected to inputs of said amplification elements, and

a timer circuit having an input connected to the output of trigger circuit and an output of said counter circuit, and said timer circuit having an output connected to an input of said driver circuit;

said cycle time circuit having a cycle time selection terminal as an input;

said time sequence circuit being controlled by said oscillatory resistor to provide an oscillatory time pulse signal to said counter circuit;

said counter circuit counting said time pulse signal;

said trigger circuit being driven to provide a trigger signal to said counter circuit and said timer circuit when said switch is switched on causing said timer circuit to be turned from a stand-by mode to a run mode enabling said driver circuit to drive said bulbs through said amplification elements, and then to turn from said run mode to a stop mode subject to the nature of the signal from said counter circuit thereby causing said bulbs to be returned to said stand-by mode a predetermined length of time after flashing; and

said switch running idle when said control unit is at said run or stop mode.

5,663,615

RECIPROCAL DEFLECTION TYPE CRT DISPLAYING APPARATUS

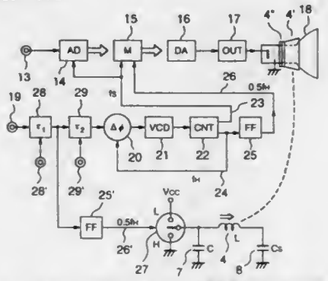
Masanori Ogino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,960

Claims priority, application Japan, Oct. 20, 1994, 6-254994

Int. Cl.[6] H01Q *3/22;3/24;3/26*

U.S. Cl. 315—371 **3 Claims**



1. A reciprocative deflection type CRT display apparatus comprising

a picture signal processing circuit;

a horizontal deflection circuit including reciprocative horizontal deflection means;

said reciprocative horizontal deflection means including horizontal deflecting direction switching means, a horizontal deflecting coil and an S distortion correcting capacitor connected in series with one another;

said picture signal processing circuit including line scanning direction alternating means;

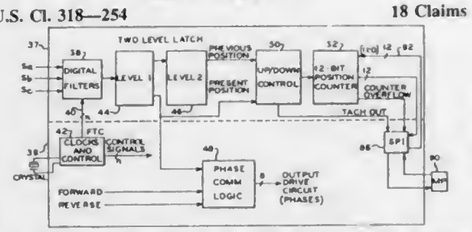
a vertical deflection circuit including stepwise vertical deflection means; and

means for correcting zigzagged vertical line interference taking place due to linearity distortion of said horizontal deflection circuit, said correcting means including an auxiliary horizontal deflecting coil and horizontal deflection speed modulating means which supplies a current of a parabolic waveform to said auxiliary horizontal deflecting coil and which is so arranged such that the polarity of said parabolic waveform current is alternately inverted upon every horizontal scanning period.

5,663,616
NOISE TOLERANT BRUSHLESS MOTOR POSITION MONITORING APPARATUS AND METHOD

David Wayne Stringfellow, Kokomo, Ind., and Abhijeet V. Chavan, Ann Arbor, Mich., assignors to Delco Electronics Corporation

Filed Aug. 17, 1995, Ser. No. 516,247
Int. Cl.[6] H02K 23/00
U.S. Cl. 318—254 18 Claims



1. In combination with a multi-phase brushless motor having a plurality of motor position sensors attached thereto which generate motor position outputs, a method of monitoring motor position, comprising the steps of:

(a) programmably selecting and generating a pre-defined filter time delay constant;

(b) receiving and digitally filtering the motor position outputs with a digital filter which utilizes said filter time delay constant generated in step (a) to initiate a filter time delay upon detecting a rising edge on the motor position outputs, whereby noise transients having a shorter duration than said filter time delay constant are filtered out, and motor rotational movement signals having a longer duration than said filter time delay constant are allowed to pass through the digital filter resulting in filtered motor position outputs;

(c) receiving said filtered motor position outputs generated in step (b) into a digital latch and generating first and second latch outputs, wherein said first latch output indicates a present motor position and said second latch output indicates a motor position immediately previous to said present motor position;

(d) receiving said first and second latch outputs generated in step (c) into a directional controller which determines motor rotation direction and generates a directional output indicating the motor rotation direction; and

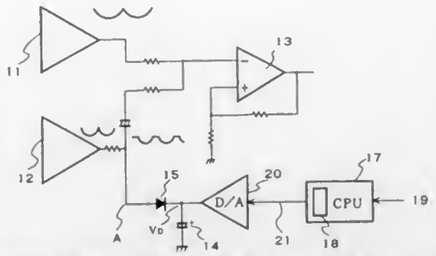
(e) monitoring the information generated in steps (b), (c) and (d) and counting with a counting device successive motor rotational movements to generate a total count, said total count being incremented and decremented according to said directional output.

5,663,617
PARABOLIC-WAVE SHAPING CIRCUIT FOR FOCUS-CORRECTION

Masaki Kobayashi, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,387
Claims priority, application Japan, Mar. 7, 1995, 7-047183
Int. Cl.[6] G09G 1/04; H01J 29/58
U.S. Cl. 315—382 1 Claim

1. A parabolic-wave shaping circuit for focus-correction for clipping and shaping a horizontal parabolic-wave of parabolic-waves for focus-correction of a CRT display device; the circuit having a clipping-level automatically adjusting means which has a D/A converter for generating a DC voltage to determine a clipping level at which said horizontal parabolic-wave is clipped, and a CPU for receiving a datum signal denoting a horizontal scanning

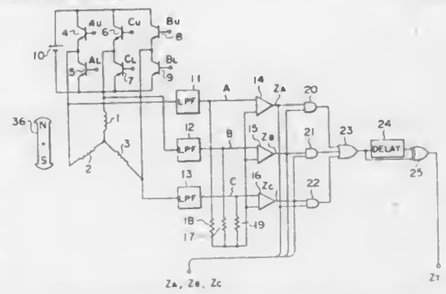


frequency or a horizontal scanning period from another equipment to be connected to said CRT display device and determining said clipping level corresponding to said datum signal to output the clipping level to said D/A converter.

5,663,618
DRIVING APPARATUS FOR A COMMUTATORLESS DC MOTOR

Tsuneo Adachi, and Yoriyuki Takekawa, both of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 412,413
Claims priority, application Japan, Mar. 30, 1994, 6-085668; Apr. 4, 1994, 6-090641
Int. Cl.[6] H02P 5/28
U.S. Cl. 318—254 19 Claims



1. A driving apparatus for a commutatorless DC motor, having drive windings of a three-phase Y connection and switching means for commutating a driving current of said drive windings, and giving commutation control signals for on-off controlling said switching means based on induced voltages which are generated at each phase of said drive windings, comprising:

signal generating means, responsive to said induced voltages, for generating pulse-shaped induced voltage signals based on a comparison of said induced voltages and a neutral point potential of said drive windings;

commutation period counting means for counting a current commutation period, said commutation period counting means starting a counting of a next commutation period, when a counting of the current commutation period is finished;

actual zero-cross time detecting means, responsive to said signal generating means and said commutation period counting means, for detecting an actual zero-cross time which represents an actual time width from a start of the current commutation period till a generation of a rising or falling edge of said induced voltage signals;

reference zero-cross time setting means, responsive to said signal generating means, for setting a reference zero-cross time which represents a desirable time width from the start of the current commutation period until a rising or falling edge of said induced voltage signals which should be generated;

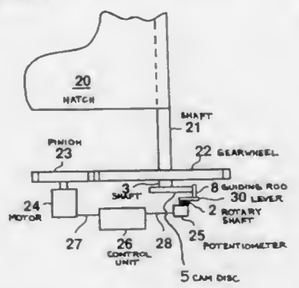
commutation period deciding means, responsive to said actual zero-cross time detecting means and said reference zero-cross time setting means, for deciding the next commutation period based on a difference of said reference zero-cross time and said actual zero-cross time, said commutation period deciding means calculating an integrated value of said next commutation period, and deciding said next commutation period by a proportional computation based on said difference and the integrated value of said next commutation period; and

commutation control signal supplying means, responsive to said signal generating means and said commutation period counting means, for deciding new commutation control signals corresponding to a state of said induced voltage signals, and outputting said new commutation control signals to said switching means when the counting of the current commutation period is finished.

5,663,619
SENSOR INTENDED TO DETECT THE ROTATIONAL POSITION OF A ROTATABLE DEVICE

Kaj Andersson, Mellerud, Sweden, assignor to Saab Automobile Aktiebolag, Sweden

Filed May 18, 1995, Ser. No. 443,689
Claims priority, application Sweden, May 26, 1994, 9401855
Int. Cl.[6] B60J 7/04; F02D 11/10
U.S. Cl. 318—254 18 Claims



1. A sensor for detecting the rotational positions of a rotatable device, the sensor comprising:

a position detector having a rotary shaft and the rotary shaft having rotary positions which represent the rotational positions of the rotatable device;

a cam mechanism connecting the rotary shaft of the detector with the rotatable device, the cam mechanism including:

a cam disc having a cam surface, the cam disc being connected to the rotatable device, and

a guiding device connected to the rotary shaft of the detector;

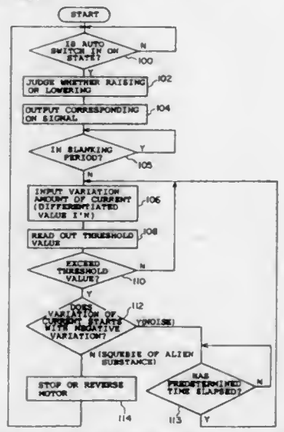
the guiding device cooperating with the cam disc such that movement of the cam disc causes the guiding device to move according to the shape of the cam surface;

the rotational positions of the rotatable device setting the rotary positions of the rotary shaft of the detector such that a first amount of rotation of the cam disc imparts a second amount of rotation to the rotary shaft of the detector, while a third amount of rotation of the cam disc, which third amount of rotation is equal to the first amount of rotation of the cam disc imparts a fourth amount of rotation of the rotary shaft of the detector which is different than the second amount of rotation.

5,663,620
APPARATUS FOR CONTROLLING DRIVING OF POWER WINDOW SYSTEM

Hiromitsu Mizuno; Shuichi Kawase, and Yukio Iwasaki, all of Aichi-ken, Japan, assignors to Tokai-Rika-Denki Seishkusho Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 508,424, Jul. 31, 1995, abandoned, which is a continuation of Ser. No. 101,058, Aug. 4, 1993, abandoned. This application Feb. 28, 1996, Ser. No. 608,037
Claims priority, application Japan, Aug. 7, 1992, 4-211175
Int. Cl.[6] H02P 3/06
U.S. Cl. 318—283 16 Claims



1. An apparatus for controlling driving of a power window system in which a door glass of a vehicle is raised and lowered by driving power of a motor, comprising:

current variation obtaining means for obtaining a variation amount per unit time of a current flowing through said motor when said door glass is raised by said motor;

means for judging, after a predetermined blanking period, whether said variation amount of said current exceeds a predetermined value and whether said variation amount of said current is starts with a negative variation when variation of said current staffs; and

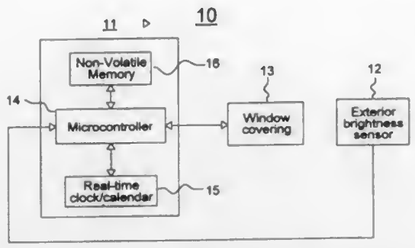
drive control means for stopping or reversing said motor when said judging means judges that said variation amount of said current starts with a positive variation and for continuously driving the motor to raise the door glass so as to close the door glass when said judging means judges that the variation amount of said current is negative after a predetermined time has elapsed.

5,663,621
AUTONOMOUS, LOW-COST, AUTOMATIC WINDOW COVERING SYSTEM FOR DAYLIGHTING APPLICATIONS

Pradeep P. Popat, 1515 S. Jefferson Davis Hwy., Apt. 1321, Arlington, Va. 22202

Filed Jan. 24, 1996, Ser. No. 590,766
Int. Cl.[6] G05B 5/00
U.S. Cl. 318—480 15 Claims

1. A method of control of a window covering to regulate illumination admitted through a window, said window covering having an adjustable setting, said window having a certain geographic location, a certain orientation, and an outside surface receiving an incident illumination, said incident illumination produced by a sun, said sun having a relative angular position with respect to said window, said relative angular position varying with time of day and day of year, said relative angular position further dependent on said certain geographic location and said certain



orientation of said window, said relative angular position uniquely defined by a pair of angular variables, said method including the steps of:

a) providing storage means for storing and recalling digital information;

b) providing time-registering means for registering a current time of day and a current day of year;

c) predicting a first expected value of at least one angular variable of said pair of angular variables, said first expected value associated with a first arbitrary time of day on a first arbitrary day of year, said predicting step performed prior to said first arbitrary time of day on said first arbitrary day of year;

d) defining a first digital value as a first predetermined function of a first plurality of quantities, said first plurality of quantities including said first expected value of said one angular variable, said defining step performed prior to said first arbitrary time of day on said first arbitrary day of year;

e) storing said first digital value in said storage means, said storing step performed prior to said first arbitrary time of day on said first arbitrary day of year;

f) recalling said first digital value from said storage means;

g) establishing a desired setting of said window covering as a second predetermined function of a second plurality of quantities, said second plurality of quantities including:

i) said first digital value,

ii) said current time of day and said current day of year, and

iii) said first arbitrary time of day and said first arbitrary day of year; and

h) adjusting said window covering to said desired setting.

5,663,622

POSITIONING CONTROL SYSTEM

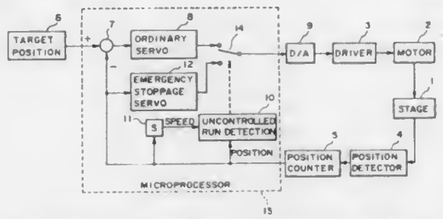
Hiroyuki Sekiguchi, Utsunomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,071

Claims priority, application Japan, Sep. 5, 1994, 6-234478

Int. Cl.[6] H01L *21/68;* **G05B** *9/02*

U.S. Cl. 318—563 **5 Claims**



1. A positioning control system for positioning a movement member with respect to a predetermined position on the basis of feedback control of driving means for the movement member, said system comprising:

extraordinary movement detecting means for detecting extraordinary movement of the movement member; and

emergency stoppage servo means for applying a signal for stopping said driving means in response to output of a detection signal from said extraordinary movement detecting means,

wherein said extraordinary movement detecting means discriminates occurrence of uncontrolled running of the movement member when the movement member exceeds a tolerable maximum speed which is predetermined with respect to a current position of the movement member.

5,663,623

SERVO APPARATUS AND METHOD FOR HIGH SPEED REPRODUCTION IN DIGITAL VIDEO CASSETTE RECORDERS

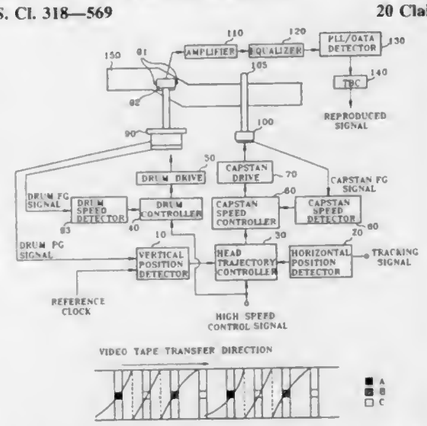
Gan-soo Seoung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Apr. 26, 1996, Ser. No. 639,932

Claims priority, application Rep. of Korea, Apr. 27, 1995, 95-10193

Int. Cl.[6] G05B *19/18*

U.S. Cl. 318—569 **20 Claims**



1. A servo apparatus for high speed reproduction in a digital video tape player, said servo apparatus comprising:

a plurality of head affixed to a drum;

a head drum motor for rotating said drum and outputting a signal related to the rotational speed of the drum;

a capstan motor for transferring video tape and outputting a signal indicating the transfer speed of said video tape:

vertical position detection means for detecting a vertical position of the head with respect to the video tape, at a direction perpendicular to a lengthwise direction of the video tape, by using the output signal of said head drum motor and a system clock;

horizontal position detection means for detecting a horizontal position of the head with respect to the video tape, at a direction parallel to the lengthwise direction of the video tape, by using signals read from said video tape by said head;

head trajectory control means for generating a speed varying signal so that the head travels at positions on which the video data for high speed reproduction is recorded, by using the vertical position data generated by said vertical position detection means and the horizontal position data generated by said horizontal position detection means and prestored head trajectory information for high speed reproduction; and

capstan servo means for controlling the rotational speed of said capstan motor, in response to the speed varying signal of said head trajectory control means and the output signal of said capstan motor.

5,663,624

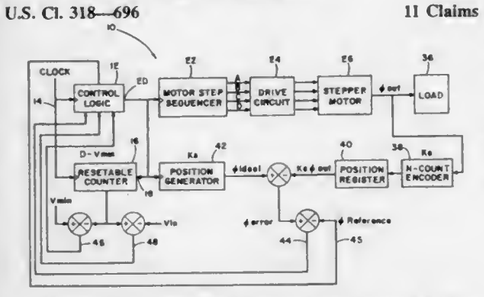
CLOSED-LOOP METHOD AND APPARATUS FOR CONTROLLING ACCELERATION AND VELOCITY OF A STEPPER MOTOR

Robert P. Callaway, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1992, Ser. No. 846,302

Int. Cl.[6] H02P *8/00*

U.S. Cl. 318—696 **11 Claims**



1. A method for controlling a stepper motor having a driven rotor comprising the steps of:

initiating motor commutation with a first step;

repeatedly sampling rotor position;

comparing each sampled position with a desired rotor position;

calculating an error value for each of the compared positions;

commutating the motor each time the error value bears a predetermined relationship to a reference value; and

adjusting the reference value responsive to rotor velocity.

5,663,625

SWITCH-TYPE RELUCTANCE MOTOR AND METHOD TO COMPENSATE FOR COUNTER ELECTROMOTIVE FORCE

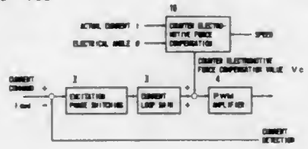
Takashi Sato, Yamanashi, and Kentaro Fujibayashi, Musashino, both of Japan, assignors to Fanuc Ltd., Minamitsuru-gun, Japan

Filed Jun. 12, 1995, Ser. No. 489,985

Claims priority, application Japan, Jun. 14, 1994, 6-154315

Int. Cl.[6] H02P *8/00*

U.S. Cl. 318—701 **20 Claims**



1. A method of compensating for counter electromotive force for a switch-type reluctance motor to be driven based upon a voltage command, said method comprising the steps of:

determining a rotation rate of the motor and at least one of an actual current value and an electrical angle;

determining a counter electromotive force compensation value based upon the rotation rate and at least one of the actual current value and the electrical angle; and

adding the counter electromotive force compensation value to the voltage command to generate a new voltage command to drive the motor, thereby compensating for the counter electromotive force.

5,663,626

APPLIED-VOLTAGE FUZZY CONTROL PROCESS FOR INDUCTION MOTORS AND DEVICE FOR PERFORMING IT

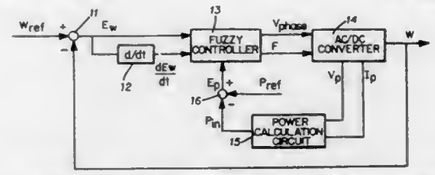
Giuseppe D'Angelo, Misterbianco; Rinaldo Poluzzi, Milan, and Matteo Lo Presti, Misterbianco, all of Italy, assignors to SGS-Thomson Microelectronics S.r., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

Filed Jun. 30, 1995, Ser. No. 496,895

Claims priority, application European Pat. Off., Jul. 1, 1994, 94830327

Int. Cl.[6] G05B *13/02*

U.S. Cl. 318—799 **24 Claims**



1. An applied voltage fuzzy control process for an electric motor comprising the steps of:

measuring a speed error by comparing a present speed of the electric motor with a reference speed;

generating a derivative of the speed error;

measuring a power error by comparing a power supplied to the electric motor with a reference power; and

applying a fuzzy control to the speed error, to the derivative of the speed error and to the power error, to generate values of a drive voltage and a power supply pulse that are suitable to drive the electric motor.

5,663,627

CONTROL APPARATUS FOR CONTROLLING MOTOR OF AIR CONDITIONER

Yoshio Ogawa, Tokyo, Japan, assignor to Fujitsu General Limited, Japan

Filed Apr. 10, 1995, Ser. No. 419,737

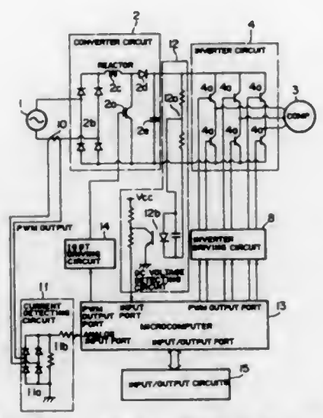
Claims priority, application Japan, Jul. 26, 1994, 6-193663

Int. Cl.[6] H02P *5/34*

U.S. Cl. 318—803 **6 Claims**

1. A control apparatus for controlling an air conditioner, comprising: a converter for converting an input AC supply power into a DC power, the converter having switching means for improving an input power factor of the air conditioner; an inverter for converting the DC power into an AC power and supplying the AC power to a compressor; a microcomputer for controlling the converter and the inverter; current detecting means for detecting an input current level of the AC supply power; voltage detecting means for detecting a voltage level of the DC power output of the converter; and DC voltage comparing means for comparing the detected DC voltage and a predetermined DC voltage; wherein the microcomputer includes current command calculation selecting

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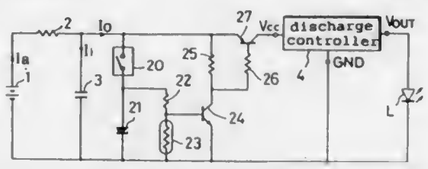
means for obtaining a current command in accordance with a comparison result of the DC voltage comparing means, and switching control means for comparing the current command and the detected input current, obtaining an ON percentage of a PWM signal to control the switching means, and outputting the PWM signal to the switching means.

5,663,628

BATTERY SYSTEM WITH LEVELLED DISCHARGE

Takashi Fujii, Katano, Japan, assignor to Ueda Co., Ltd., Osaka, Japan

Filed Jul. 20, 1995, Ser. No. 504,313
Claims priority, application Japan, Sep. 8, 1994, 6-242071
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—1 **20 Claims**



7. An intermittent motion apparatus for supplying electric energy from a primary battery or a secondary battery to a load to drive said load intermittently, said apparatus comprising:

a battery consisting of said primary battery or said secondary battery;

light emitting means such as a light emitting diode acting as said load;

an electric double layer capacitor for storing electric energy from said battery;

a limiting resistor for limiting the electric energy supplied from said battery to said electric double layer capacitor; and

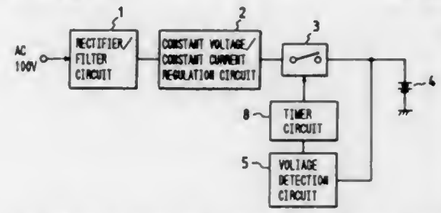
discharge control means for causing said electric double layer capacitor to discharge the electric energy to said light emitting means to drive said light emitting means intermittently in predetermined cycles while charging said electric double layer capacitor, such that a discharging time for discharging the electric energy from said electric double layer capacitor to said light emitting means is shorter than a charging time for charging said electric double layer capacitor with electric energy and that a discharge current is greater than a charge current.

5,663,629

BATTERY CHARGER WHICH DETECTS THE BATTERY CHARGING STATUS

Makoto Hinohara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,454
Claims priority, application Japan, Sep. 16, 1994, 6-221725
Int. Cl.[6] H01M *10/44;* **H02T** *7/00*
U.S. Cl. 320—31 **14 Claims**



1. A charger for supplying a charging current from a constant voltage/constant current regulation circuit to a secondary battery to charge the battery to a predetermined potential, comprising:

voltage detection means for detecting whether the charged voltage of the secondary battery is at the predetermined potential or not;

derive means for deriving a charge completion time required to render the secondary battery to a full charge state in accordance with the output of said voltage detection means and charge characteristic information of the secondary battery; and

control means for controlling a supply time of the charging current supplied from said constant voltage/constant current regulation circuit based on the charge completion time derived by said derive means.

8. A method for supplying a charging current from a constant voltage/constant current regulation circuit to a secondary battery to charge the battery to a predetermined potential, comprising the steps of:

detecting whether the charged voltage of the secondary battery is at the predetermined potential or not;

deriving a charge completion time required to render the secondary battery to a full charge state in accordance with the output of said detecting step and charge characteristic information of the secondary battery; and

controlling a supply time of the charging current supplied from the constant voltage/constant current regulation circuit based on the charge completion time derived by said deriving step.

5,663,630

TRANSPONDER CHARGING APPARATUS

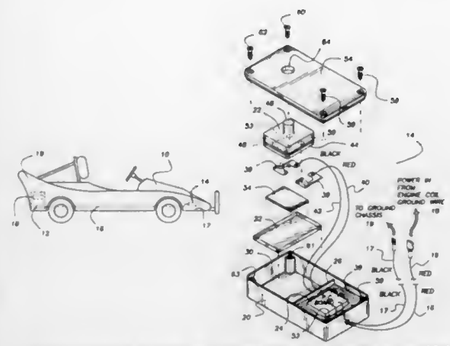
Stanley Koziatek, Corning, N.Y., assignor to K-G Motors, Inc., Horseheads, N.Y.

Filed Jan. 26, 1996, Ser. No. 591,998
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—49 **22 Claims**

18. Means for charging an on-board transponder unit of a racing go-cart during normal operation thereof, said go-cart having an engine with a coil attached thereto which provides sufficient A-C power to operate said go-cart, said charging means comprising:

a) voltage rectifying and regulating means having an input adapted to receive AC power at a first voltage and current level and an output providing DC power at a second voltage and current level suitable for charging said transponder;

b) first means electrically connecting said voltage rectifying and regulating means input to a source of AC power on said go-cart, said first means comprising first and second wires each having first and second opposing ends and each being connected at said first end to said voltage rectifying and regulating means, and respectively connected at said second end to said coil grounding wire and to ground potential;



c) second means electrically connecting said voltage rectifying and regulating means output to said transponder; and

d) said transponder including a body portion having a pair of externally exposed charging contacts, and said second means comprising third and fourth wires each having first and second opposite ends and each being connected at said first end to said voltage rectifying and regulating means and respectively connected at said second end to said pair of charging contacts.

20. A method of charging an on-board transponder of an engine powered racing go-cart without removal of said transponder from said go-cart, said method comprising:

a) providing voltage rectifying and regulating means having an input adapted to receive AC power at a first voltage and current level and an output providing DC power at a voltage and current level suitable for charging said transponder;

b) electrically connecting said input to a source of AC power on said go-cart at said first voltage and current level; and

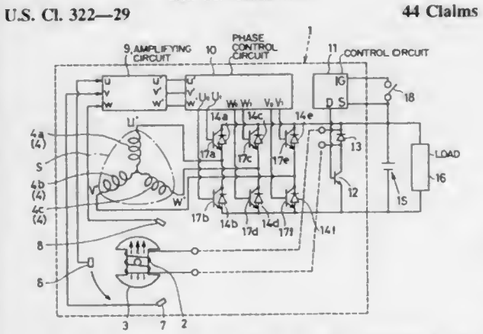
c) connecting said output to charging contacts of said transponder.

5,663,631

GENERATOR WITH CIRCUITRY FOR CONTROLLING POWER GENERATION BASED ON ROTATIONAL SPEED

Hiroaki Kajiura, Nagoya, and Akira Mase, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 6, 1995, Ser. No. 499,003
Claims priority, application Japan, Jul. 19, 1994, 6-167236; Nov. 30, 1994, 6-296116
Int. Cl.[6] H02P *9/44*
U.S. Cl. 322—29 **44 Claims**



1. An AC generator for supplying electric power to a load comprising:

a magnetic field member having a field coil for generating magnetic flux responsive to an electric field current supplied to said field coil;

an armature member having an armature coil including multi-phase windings for generating an induced phase voltage in each of said phase-windings and providing a line voltage between each pair of said multi-phase windings responsive to said armature member being rotated relative to said magnetic field member;

a bridge-type full-wave rectifying circuit connected to said multi-phase windings for supplying an output-DC-voltage to said load;

a switching circuit also connected to said multi-phase windings and outputting a control-AC-voltage, which is provided to said armature coil; and

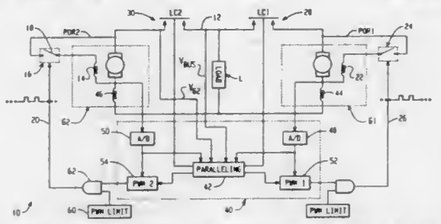
a driving circuit connected to said switching circuit, said driving circuit causing said control-AC-voltage output by said switching circuit to lag a first prescribed electric angle behind a corresponding one of said induced-phase voltages and a current flowing through said corresponding one of said phase-windings to lead said corresponding one of said line-voltages by a second prescribed electric angle.

5,663,632

FIELD CURRENT CONTROL FOR GENERATOR DURING BUILD-UP

Ronald W. Roseman, Walton Hills, and Kevin E. Rice, Stow, both of Ohio, assignors to Lucas Aerospace Power Equipment Corp., Aurora, Ohio

Filed Jul. 17, 1995, Ser. No. 503,383
Int. Cl.[6] H02P *9/10*
U.S. Cl. 322—59 **17 Claims**



1. Method for controlling connection of a generator to an energized bus independent of the use of a direct generator speed sense function, comprising the steps of:

a. detecting a voltage differential between the generator voltage and the bus voltage;

b. connecting the generator to the bus when the detected voltage differential reduces to a selected threshold; and

c. limiting generator field current during generator build-up prior to connecting the generator to the bus to delay the voltage differential reducing to said threshold so that the generator attains a desired speed before being connected to the bus.

5,663,633

TOUCH CONTROL FAN AND METHOD

Jerry Kahn, Wellesley, and Neville R. Glenn, Milford, both of Mass., assignors to Holmes Products Corp., Milford, Mass.

Continuation-in-part of Ser. No. 275,538, Jul. 15, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 574,816
Int. Cl.[6] G05F *1/00*
U.S. Cl. 323—218 **15 Claims**

1. A control circuit for an inductive load, comprising:

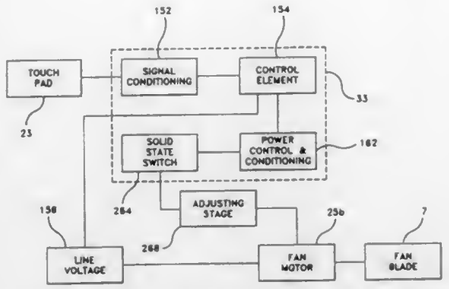
means for receiving an input from a sensor;

means for filtering spurious signals in said input;

means for conditioning, responsive to said means for filtering, an output power signal;

said means for conditioning said output power signal including means for adjusting a phase and impedance of said output power signal to match said inductive load;

means for controlling said means for conditioning said output power signal; and



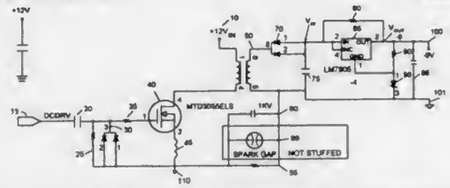
means for switching, responsive to said means for controlling, said output power signal for transferring said output power signal to said inductive load.

5,663,634

STARTUP NETWORK FOR A FLYBACK CONVERTER WITH LINEAR REGULATION

Marwan Ahmad Fawal, Santa Clara; Cameron Lyle Spitzer, San Jose, and Ryan Edgar Hirth, Cupertino, all of Calif., assignors to 3COM Corporation, Santa Clara, Calif.

Filed Apr. 30, 1996, Ser. No. 641,400
Int. Cl.[6] G05F *1/40*
U.S. Cl. 323—273 **7 Claims**



1. A circuit for providing a constant regulated voltage supply from a variable voltage source comprising:

a voltage regulator having an input pin, and output pin, and a ground pin; and

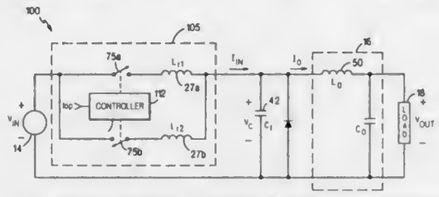
a bypass resistor connecting said input pin to said output pin, said bypass resistor having a value selected to be negligible compared to the impedance of said voltage regulator during steady-state operation.

5,663,635

REVERSE ENERGY TRANSFER IN ZERO-CURRENT SWITCHING POWER CONVERSION

Patrizio Vinciarelli, Boston, and Jay Prager, Tyngsboro, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Filed May 24, 1995, Ser. No. 449,698
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—282 **42 Claims**



1. A zero-current switching converter for converting power from an input source for delivery to a load, comprising

a switch which opens and closes at times of essentially zero current to enable energy transfer back and forth between said input source and said converter, and

a controller connected to control said switch to initiate, during a first portion of each of a succession of converter operating cycles, forward energy transfer from said input source, and

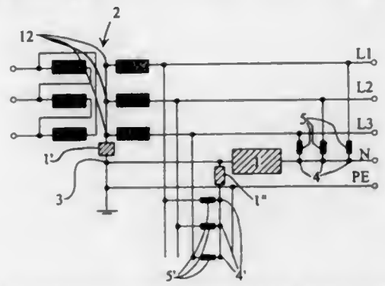
in at least some of said converter operating cycles, also to initiate reverse energy transfer to said input source at times not contiguous with said first portion.

5,663,636

METHOD FOR REDUCING WAVEFORM DISTORTION IN AN ELECTRICAL UTILITY SYSTEM AND CIRCUIT FOR AN ELECTRICAL UTILITY SYSTEM

Agne Fällidin, Sundsvall, Sweden, and Esko Kiiskinen, Vaasa, Finland, assignors to ABB Stromberg Kojeet Oy, Vaasa, Finland

Continuation-in-part of Ser. No. 432,940, May 1, 1995. This application May 26, 1995, Ser. No. 453,057
Claims priority, application Finland, May 26, 1994, 942447
Int. Cl.[6] H01F *30/12*
U.S. Cl. 323—361 **12 Claims**



1. An interference suppression method for an electrical system, comprising the steps of providing a main transformer with a star point, phase leg conductors connected to the transformer and a neutral conductor which at its one end is connected to earth potential and the star point of the transformer and at its other end to loads, in which electrical system electric energy is transferred at a frequency f, and providing a bandstop filter tuned at a center frequency 3*f connected between the star point of the transformer and the connection points of the loads.

5,663,637

ROTARY SIGNAL COUPLING FOR CHEMICAL MECHANICAL POLISHING ENDPOINT DETECTION WITH A WESTECH TOOL

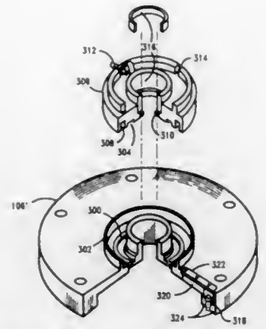
Leping Li, Poughkeepsie; Steven George Barbee, Dover Plains, both of N.Y.; Gary Richard Doyle, Jonesville, Vt.; Arnold Halperin, Cortlandt Manor; Kevin L. Holland, Newburgh, both of N.Y.; Francis Walter Kazak, Essex Junction, Vt.; Robert B. Lipori, Stamford, Conn.; Anne Elizabeth McGuire, Colchester; Rock Nadeau, Essex Junction, both of Vt., and William Joseph Surovic, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1996, Ser. No. 620,720
Int. Cl.[6] G01R *27/00*
U.S. Cl. 324—71.5 **22 Claims**

1. An apparatus for rotary signal coupling in-situ monitoring of a chemical-mechanical polishing process by a polisher, comprising:

a sensor fixed to a rotatable wafer carrier for creating a signal responsive to the chemical mechanical polishing process;

a bottom half of a rotary transformer coupled to the sensor for receiving the signal, the bottom half fixed to a rotating portion of the polisher;



a top half of the rotary transformer coupled to the bottom half of the rotary transformer, the top half fixed to a stationary portion of the polisher; and

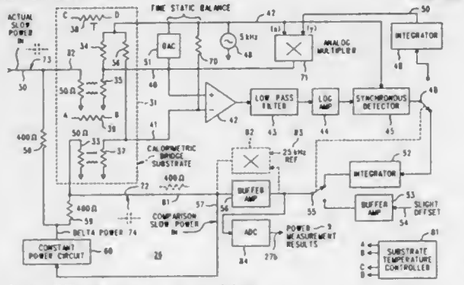
signal transfer means coupled to the top half for transferring the signal to a monitoring means.

5,663,638

CALORIMETRIC RF POWER METER WITH DYNAMIC ZEROING AND CONSTANT TEMPERATURE AND POWER DISSIPATION IN THE CALORIMETRIC BRIDGE

Melvin D. Humpherys, Spokane, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 29, 1996, Ser. No. 681,564
Int. Cl.[6] G01R *21/02;19/03*
U.S. Cl. 324—95 **6 Claims**



1. An RF power meter comprising:

a calorimetric bridge including an incident power port coupled to receive an RF work signal whose power level is to be measured, a comparison port coupled to receive a balancing signal, a bias input coupled to receive a bias signal, and first and second difference outputs at which appear respective first and second difference signals derived from the bias signal and whose amplitudes differ in proportion to the difference in power level between the work signal and the balancing signal;

a servo circuit coupled to the first and second difference signals and producing therefrom the balancing signal, the servo circuit adjusting the power level of the balancing signal to minimize the amplitude difference between the first and second difference signals;

a compensation circuit having an input coupled to the balancing signal and having a compensation output;

first and second isolation networks each coupled at one end to the compensation output and respectively at their other ends to the incident power port and the comparison port; and

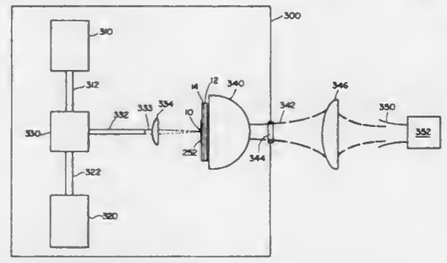
the compensation circuit applying equal amounts of additional power to the incident power port and to the comparison port, the compensation circuit adjusting these additional powers such that the sum of these additional powers, the power of the work signal and the power of balancing signal, is a constant.

5,663,639

APPARATUS AND METHOD FOR OPTICAL HETERODYNE CONVERSION

Elliott R. Brown, Billerica, Mass., and Frank W. Smith, Liverpool, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 18, 1994, Ser. No. 183,057
Int. Cl.[6] G01R *19/00;* **H01J** *40/14;* **H04B** *10/06*
U.S. Cl. 324—96 **34 Claims**



1. A photomixer comprising:

a substrate;

a first layer of at least one III–V compound, the bottom of the first layer facing the substrate and the first layer including molecules of the at least one compound bonded to form a uniform crystal lattice and additional atoms of a column V element in addition to those required to form the uniform crystal lattice, the additional atoms being disposed within the uniform crystal lattice to form defects in the uniform crystal lattice; and

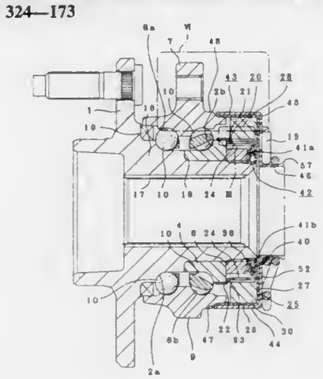
a second electrically conductive layer formed over the first layer comprising a region of electrically conductive interdigitated electrodes with openings in the conductive layer exposing said first layer, whereby an electrical signal of a third frequency is coupled from the first layer to the electrically conductive layer as the first layer receives optical radiation of a first and second frequency, the third frequency being the difference between the first and second frequencies of the optical radiation.

5,663,640

ROLLING BEARING UNIT WITH ROTATIONAL SPEED SENSOR AND REMOVABLE HOLDER FOR A SENSOR WIRING HARNESS

Junshi Sakamoto, Fujisawa, Japan, assignor to NSK, Ltd., Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 554,171
Claims priority, application Japan, Nov. 4, 1994, 6-271026
Int. Cl.[6] G01P *3/42;3/488;* **F16C** *32/00;* **B60T** *8/72*
U.S. Cl. 324—173 **1 Claim**



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1. A rolling bearing unit with rotational speed sensor comprising a stationary outer ring member having an outer ring raceway on an inner peripheral face thereof and an open end portion, a rotatable inner ring assembly having an inner ring raceway on an outer peripheral face thereof, a plurality of rolling elements provided between the outer ring raceway and the inner ring raceway, a cover fixed to the open end portion of the outer ring member, a sensor supported inside the cover, a rotatable tone wheel supported on the inner ring assembly, a harness for taking out an output signal from the sensor, a connector connected to the harness, and a holder releasably engaged with the cover, the holder comprising a support cylinder portion externally engagable with the cover and having an end rim, a connecting portion bent radially inwards from the end rim of the support cylinder portion and having an inner peripheral rim and an opening, a wrapping tube portion formed on the inner peripheral rim of the connecting portion to protrude in an axially opposite direction to the support cylinder portion, an engagement portion formed on the connecting portion on the same side as the wrapping tube portion, so as to be engaged with the connector, so that the connector and harness can freely pass through the opening in the connecting portion.

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ROTATIONAL SPEED DETECTION UNIT

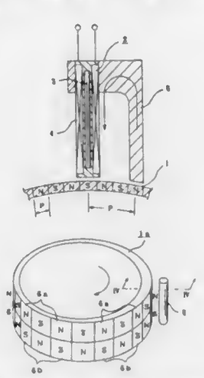
Kouichi Morita, Fujisawa, Japan, assignor to NSK, Ltd., Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 557,777

Claims priority, application Japan, Nov. 11, 1994, 6-277990

Int. Cl.[6] G01B *7/14;* **G01P** *3/488*

U.S. Cl. 324—174 **13 Claims**



1. A rotational speed detection unit comprising a rotatable tone wheel having first and second magnetic poles with opposite polarities, a stationary sensor and a ferromagnetic pole piece combined with the sensor, satisfying the following conditions:

a. that the tone wheel comprises a multipolar magnet with said first and second magnetic poles alternately disposed circumferentially therearound,

b. that the sensor is selected from a Wiegand wire sensor and an amorphous magnetostriction wire sensor,

c. that the sensor has a first end arranged magnetically connected to the tone wheel and a second end,

d. that the ferromagnetic pole piece has a first end arranged magnetically connected to the second end of the sensor, and a second end arranged magnetically connected to the tone wheel, and

e. that as the tone wheel rotates the first and second magnetic poles of the tone wheel pass adjacent to the first end of the sensor and the second end of the pole piece in a mutually opposite polarity relationship.

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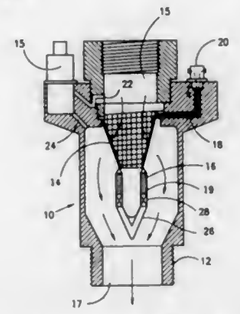
RESONANT INDUCTIVE DEBRIS DETECTOR

William E. Rumberger, Newtown Square, and Charles R. Gross, Norwood, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 764,303, Sep. 24, 1991, abandoned, and a continuation of Ser. No. 21,272, Feb. 22, 1993, Pat. No. 5,528,138. This application Feb. 26, 1996, Ser. No. 607,107

Int. Cl.[6] G01N *27/74;* **G01R** *33/12;* **G08B** *17/10*

U.S. Cl. 324—204 **24 Claims**



1. An apparatus for identifying, sensing the presence of and measuring the incremental changes in the amount of debris in a fluid system said apparatus comprising:

a bridge circuit for measuring said debris, said bridge circuit comprising four legs;

a housing having an internal fluid cavity and inlet and outlet openings for conducting fluid through the housing cavity;

a first sensing element formed as an inductive coil and assembled in said housing cavity;

first tuning means connected to said first sensing element in said fluid cavity for tuning said first sensing element to a preselected resonant frequency, said first sensing element and said first tuning means comprising a first sensor;

a second sensing element formed as an inductive coil and assembled in said housing cavity;

second tuning means connected to said second sensing element in said fluid cavity for tuning said second sensing element to a preselected resonant frequency, said second sensing element and said second tuning means comprising a second sensor;

switching means external to said fluids housing for selectively connecting one of said sensors as one leg of said bridge circuit;

first, second and third bridge elements, at least two of said elements being assembled external to said fluid housing, each of said bridge elements forming a separate leg of said bridge; and

variable frequency power supply means for selectively exciting said bridge circuit at the resonant frequency of the sensor connected to the bridge by said switching means, the frequency of excitation of said bridge is characteristic of one type of said debris.

5,663,643

POSITION DETECTING APPARATUS USING OFFSET CALCULATED FROM SUM OF THREE-PHASE SIGNALS

Yasuhiko Matuyama, Nagasaki, Japan, assignor to Sony Magnescale Inc., Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,171

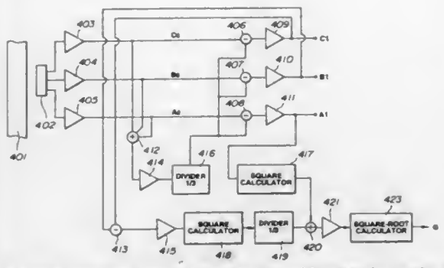
Claims priority, application Japan, Sep. 30, 1994, 6-237571

Int. Cl.[6] G01B *7/14;* **G01D** *5/245;18/00;3/02*

U.S. Cl. 324—207.12 **7 Claims**

1. A position detecting apparatus comprising:

a measuring scale;



a sensor detecting a signal recorded on said measuring scale and outputting three-phase signals indicative of the scale recorded signal;

means for calculating an offset value by calculating the sum of the three-phase signals and by calculating one-third of the sum of the three-phase signals; and

means for correcting each of the three-phase signals by eliminating an output of said offset value calculating means from each of the three-phase signals.

5,663,644

MAGNETORESISTIVE SENSOR HAVING A BIAS FIELD APPLIED AT APPROXIMATELY 56°

Hiroshi Shimamura, Katano, and Satoru Mitani, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

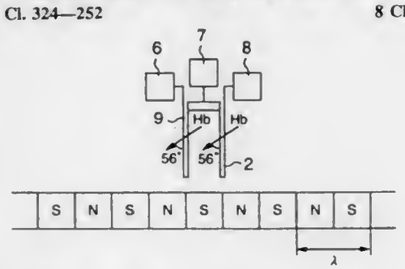
PCT No. PCT/JP95/01674, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO96/06329, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 23, 1995, Ser. No. 632,403

Claims priority, application Japan, Aug. 23, 1994, 6-198292

Int. Cl.[6] G01R *33/02;* **G01B** *5/30;* **G01D** *5/245*

U.S. Cl. 324—252 **8 Claims**



1. A magnetic signal detection apparatus comprising:

an anisotropic resistive element arranged to face in a face-to-face fashion or perpendicularly to a magnetic signal recording surface on a substrate and made of a ferromagnetic metal thin film; and

a magnetic field application apparatus for applying a biasing magnetic field of a predetermined angle to said resistive element;

wherein the direction of application of the biasing magnetic field by said magnetic field application device is set to meet the following formula to the direction of current flowing through said resistive element:

$$\alpha=\pm(\sin^{-1}((Ku+Ks)/H\times M)+\phi)$$

where ϕ is 45° or 135°, α is angle between current and biasing magnetic field, Ku is anisotropy energy, Ks is Contour anisotropy energy, H is biasing magnetic field, and M is saturation magnetization.

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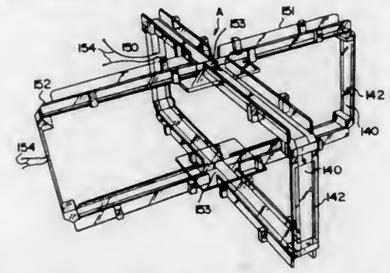
SPATIALLY ORTHOGONAL RECTANGULAR COIL PAIR SUITABLE FOR VERTICAL MAGNETIC FIELD MRI SYSTEM

Leon Kaufman, San Francisco; Joseph W. Carlson, Kensington; Barry McCarten, Palo Alto; Stephen Krasnor, Berkeley; William K. M. Lu, San Francisco; Mitsuaki Arakawa, Hillsborough, and Kevin A. Derby, San Bruno, all of Calif., assignors to Toshiba America MRI Inc., Tustin, Calif.

Continuation-in-part of Ser. No. 285,008, Aug. 2, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 520,748

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **18 Claims**



1. A system for magnetically imaging a body in an imaging volume, comprising:

housings respectively above and below the imaging volume, including:

a static field magnet having respective poles in the respective housings; and

a gradient field coil;

a RF transmission coil strip forming two U-shaped loops, each U-shaped loop being concave outwardly from the imaging volume and having two sides at locations generally defined by the respective housings and two half-loops each in different planes;

four posts arranged as two respective sets of two adjacent posts, each half-loop having three sides, each of the half-loops having two sides generally defined by the respective housings, the remaining sides of the two half-loops that form one of the U-shaped loops are defined by corresponding ones of two adjacent posts, and the remaining sides of the other two half-loops that form the other of the U-shaped loops are defined by corresponding ones of the remaining two adjacent posts; and

a computer for controlling the magnetic flux of the gradient field coil, and the RF transmission coil strip.

5,663,646

HEAD ANTENNA FOR NUCLEAR MAGNETIC RESONANCE EXAMINATIONS

Rainer Kuth, Herzogenaurach; Michael Knauth, Neuisenburg; Rainer Wirtz, Edingen; Reiner Henkelmann, Erlangen; Rudolf Moder, Neumarkt, and Wilhelm Duerr, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 27, 1996, Ser. No. 624,913

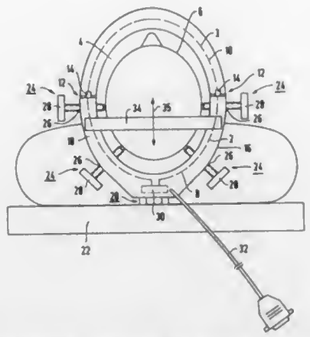
Claims priority, application Germany, Mar. 30, 1995, 195 11 796.4

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **21 Claims**

1. A head antenna for conducting a nuclear resonance examination of the head of a patient, the patient being disposed on a patient support, during a surgical procedure in a region of the head, said head antenna comprising:

a frame antenna defining an examination chamber adapted for accepting said head;



said frame antenna comprising an antenna conductor divided into first and second curved sub-conductors each having two free ends, each sub-conductor having an electrical contact at each end for detachably electrically connecting said first and second sub-conductors together;

a holder for said first sub-conductor disposed outside of said examination chamber comprised of electrically non-conductive, non-ferromagnetic material;

first fastening means for attaching said holder to said patient support;

second fastening means adapted for fixing the head of said patient relative to said holder; and

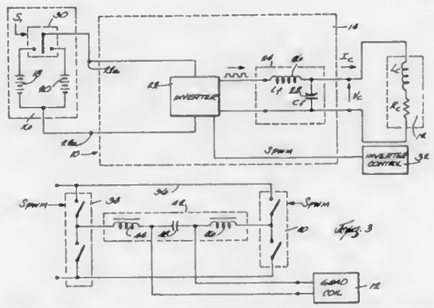
said frame antenna, said holder, said first fastening means and said second fastening means together forming assembly means for simultaneously rigidly holding the head of the patient during a surgical procedure requiring opening of the skull, allowing access to an opened skull region, and allowing a magnetic resonance head imaged to be obtained during surgical procedure with said assembly means being substantially invisible in said image.

5,663,647

SWITCHING GRADIENT AMPLIFIER WITH ADJUSTABLE DC BUS VOLTAGE

William Frederick Wirth, Johnson Creek, Wis., and John N. Park, Rexford, N.Y., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 29, 1995, Ser. No. 581,282
Int. Cl.[6] G01R *33/38*
U.S. Cl. 324—322 **8 Claims**



1. In an MR system having a gradient coil, gradient amplifier apparatus for driving said coil during first and second time periods comprising:

an adjustable voltage bus providing at least first and second voltage levels;

an inverter disposed to receive an input voltage for providing a PWM wave voltage having an amplitude determined by the amplitude of said received input voltage;

switch means for applying said first and second voltage levels as input voltages to said inverter during said first and second time periods, respectively; and

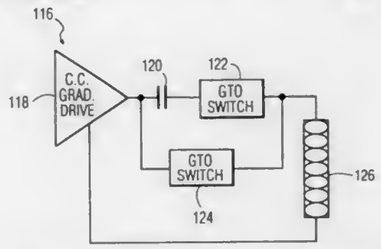
means for filtering said PWM wave voltage to provide a DC voltage for driving said gradient coil, said DC coil driving voltage comprising first and second driving voltages during said first and second time periods, respectively, said inverter and said filtering means collectively comprising an amplifier means.

5,663,648

GRADIENT COILS HAVING INCREASED PERFORMANCE AND DECREASED POWER CONSUMPTION FOR USE IN MR SYSTEMS

Barry L. W. Chapman, Orangeburg, N.Y., and Paul Glover, Gilford Surrey, England, assignors to British Technology Group USA, Inc., Gulph Mills, Pa.

Filed Jul. 23, 1996, Ser. No. 686,210
Claims priority, application France, Mar. 17, 1995, 95 03376
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—322 **22 Claims**



1. A magnetic resonance system of the type including a main coil, a gradient coil and a resonant power supply having a capacitor, said gradient coil having a minimum inductance value for a given size gradient coil and said resonant power supply providing a current to said gradient coil at a given resonant frequency determined in part by said minimum inductance value of said gradient coil and capacitance of said capacitor, the improvement therewith comprising:

said gradient coil having an inductance which is greater than twice said minimum inductance value thereby enabling said capacitance of said capacitor to be reduced for said given resonant frequency.

5,663,649

SOIL PENETROMETER

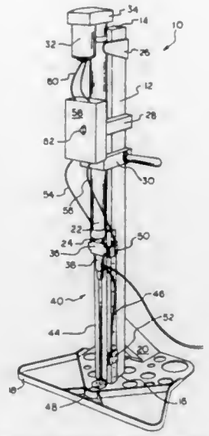
Clarke Topp; Bruce Compton, both of Nepean, and Keith Wires, Ashton, all of Canada, assignors to Her Majesty The Queen in right of Canada, as represented by Agriculture and Agri-Food Canada, Ottawa, Canada

Filed Jun. 2, 1995, Ser. No. 460,777
Int. Cl.[6] G01N *22/00*
U.S. Cl. 324—643 **10 Claims**

1. A portable soil penetrometer, comprising:

frame means for supporting said penetrometer;

a penetrometer probe having substrate penetrating means for penetrating a substrate, said penetrometer including means for



applying an electromagnetic field in said substrate for detecting moisture therein;

selectively controllable drive means for driving said penetrometer into said substrate under a constant force;

detecting means for detecting force applied to said probe; and

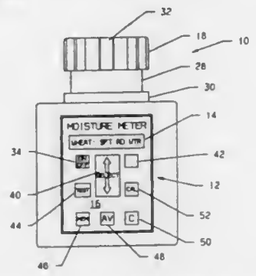
means for receiving data obtained by said probe.

5,663,650

PORTABLE GRAIN MOISTURE METER

Mike McMahon, Salem, Ohio, assignor to Farmex, Inc., Aurora, Ohio

Division of Ser. No. 220,885, Mar. 31, 1994, Pat. No. 5,493,229. This application Aug. 1, 1995, Ser. No. 510,000
Int. Cl.[6] G01N *27/12*
U.S. Cl. 324—670 **18 Claims**



1. A temperature compensation assembly for a grain moisture meter comprising:

a test cell for holding grain to be tested therein;

grain moisture measuring means for determining the moisture content of grain in said test cell;

first temperature measuring means for measuring the temperature of the grain;

second temperature measuring means for measuring the temperature of said test cell; and

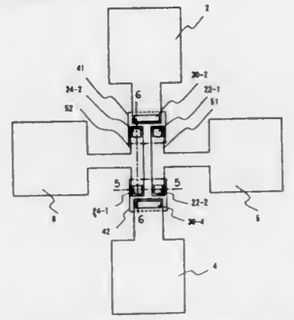
computer means for calculating a temperature compensation factor for compensating said moisture measuring means based on the differential of the temperature sensed by said first and second temperature measuring means.

5,663,651

METHOD OF SEPARATELY DETERMINING PLUG RESISTOR AND INTERFACIAL RESISTOR AND TEST PATTERN FOR THE SAME

Hiromitsu Hada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 11, 1995, Ser. No. 541,160
Claims priority, application Japan, Oct. 19, 1994, 6-279835
Int. Cl.[6] G01R *27/08*
U.S. Cl. 324—713 **5 Claims**



1. A method of determining a contact resistance composed of a plug resistance and an interfacial resistance, comprising the steps of:

(a) providing on a semiconductor chip a test pattern which comprises a contact hole section, and first to fourth electrode pad patterns connected to said contact hole section, wherein said contact hole section comprises:

first and second semiconductor region patterns apart from each other,

first and second metal patterns provided above said first and second semiconductor region patterns via an insulating film apart from each other to have a same resistance such that each of said first and second metal patterns overlaps said first and second semiconductor region patterns,

first and second contact holes each having a plug structure of a same diameter, filled with a conductive material, and respectively provided to connect between said first semiconductor region pattern and said first and second metal patterns, said first and second contact holes having first and second depths, respectively,

third and fourth contact holes each having the plug structure of the same diameter, filled with the conductive material, and respectively provided to connect between said second semiconductor region pattern and said first and second metal patterns, said third and fourth contact holes having said second and first depths, respectively, and

fifth and sixth contact holes provided to connect between said first and second semiconductor region patterns and said first and second electrode pad patterns, respectively, wherein said third and fourth electrode pad patterns are connected to said first and second metal patterns, respectively;

(b) applying a predetermined voltage between the electrode pad patterns of one of a pair of first and second electrode pad patterns and a pair of third and fourth electrode pad patterns and measuring a first current flowing between the electrode pad patterns of the one pair in an open state between the electrode pad patterns of the other pair;

(c) applying the predetermined voltage between the electrode pad patterns of the one pair and measuring a second current flowing between the electrode pad patterns of the one pair and a third current flowing between the electrode pad patterns of the other pair in a short state between the electrode pad patterns of the other pair;

(d) determining a first plug resistance of the first or fourth contact hole and a second plug resistance of the second or third contact hole from the voltage and the first to third currents.

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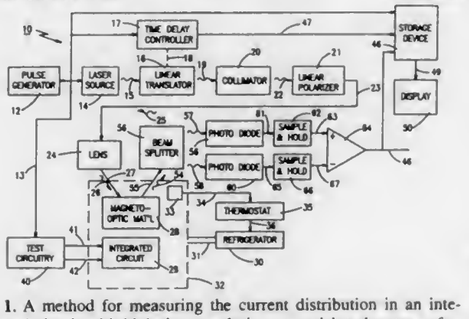
METHOD FOR MEASURING CURRENT DISTRIBUTION IN AN INTEGRATED CIRCUIT BY DETECTING MAGNETO-OPTIC POLARIZATION ROTATION IN AN ADJACENT MAGNETO-OPTIC FILM

Mark Russel Freeman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 968,719, Oct. 30, 1992, Pat. No. 5,451,863. This application Jun. 7, 1995, Ser. No. 481,667

Int. Cl.[6] G01R *19/00;31/00*

U.S. Cl. 324—753 **8 Claims**



1. A method for measuring the current distribution in an integrated circuit with high time resolution comprising the steps of:

applying electrical signals to an integrated circuit of interest to produce currents in said integrated circuit,

positioning a magneto-optic film in sufficient proximity to a surface of said integrated circuit to bring said magneto-optic film into a magnetic field formed by at least one of said currents produced in said integrated circuit so as to provide detectable magneto-optic polarization rotation to light interacting with said magneto-optic film,

directing laser beam pulses onto said magneto-optic film in synchronism with said electrical signals, and

measuring magneto-optic polarization rotation induced by said magneto-optic film.

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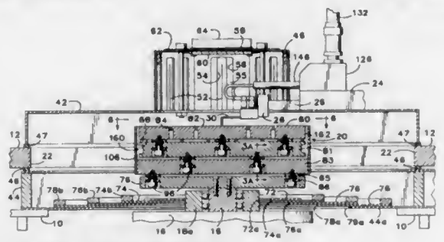
WAFER PROBE STATION FOR LOW-CURRENT MEASUREMENTS

Randy J. Schwindt, Portland, Oreg.; Warren K. Harwood; Paul A. Tervo, both of Vancouver, Wash.; Kenneth R. Smith, and Richard H. Warner, both of Portland, Oreg., assignors to Cascade Microtech, Inc., Beaverton, Oreg.

Continuation of Ser. No. 100,494, Aug. 2, 1993, Pat. No. 5,457,398, which is a continuation-in-part of Ser. No. 896,853, Jun. 11, 1992, Pat. No. 5,345,170, and a continuation-in-part of Ser. No. 417,982, Apr. 6, 1995, Pat. No. 5,532,609, which is a division of Ser. No. 245,581, May 18, 1994, Pat. No. 5,434,512, which is a division of Ser. No. 896,853, Jun. 11, 1992, Pat. No. 5,345,170. This application Jul. 27, 1995, Ser. No. 508,325

Int. Cl.[6] G01R *31/02;1/073*

U.S. Cl. 324—754 **15 Claims**



1. A probe station comprising:

(a) a chuck assembly for holding a test device;

(b) a holder for holding an electrical probe;

(c) a positioning mechanism for selectively moving at least one of said chuck assembly and said holder toward or away from the other to enable said probe to contact said device;

(d) said chuck assembly including at least upper and lower chuck assembly elements electrically insulated from each other and positioned one above the other at different distances from said holder so that a lower surface area on said upper chuck assembly element directly opposes an upper surface area on said lower chuck assembly element;

(e) an electrical connector assembly for electrical connection to a test instrument, said connector assembly having at least two conductive connector elements electrically insulated from one another, each of said connector elements being electrically connected to a different respective one of said upper and lower chuck assembly elements; and

(f) said upper chuck assembly element being mounted so as to define one or more air gaps, between said lower surface area and said upper surface area, having a total air gap area coextensive with at least major portions of both of the entire said lower surface area and the entire said upper surface area.

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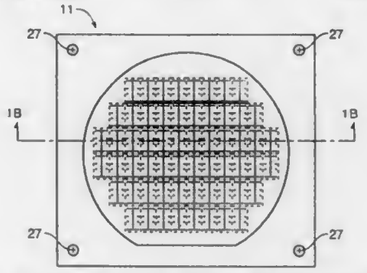
UNIVERSAL WAFER CARRIER FOR WAFER LEVEL DIE BURN-IN

Alan G. Wood; Tim J. Corbett, both of Boise, and Warren M. Farnworth, Nampa, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 981,956, Nov. 24, 1992, Pat. No. 5,539,324, which is a continuation-in-part of Ser. No. 575,470, Aug. 29, 1990, abandoned. This application May 6, 1996, Ser. No. 643,516

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—758 **33 Claims**



1. An apparatus for testing an array of semiconductor dice located on a wafer, said wafer having, in turn, a first side having said array located thereon and a second side, comprising:

a first support member configured to receive said array of semiconductor dice located on a wafer in a predetermined orientation, said first support member including:

a biasing assembly located thereon, said biasing assembly configured to bias said array of semiconductor dice located on a wafer in a first direction when the biasing assembly engages said second side of said wafer;

a second support member configured to receive said array of semiconductor dice located on said first side of said wafer therein and to selectively engage said first support member to retain said array of semiconductor dice located on a wafer therebetween; and

a substrate including:

electrical traces sized and oriented to establish electrical contact with said array of semiconductor dice located on said first side of said wafer, said substrate retained proximate said array of semiconductor dice located on said first side of said wafer by said first support member engaging a portion of said second support member and biased against said array of semiconductor dice located on said first side of said wafer by said biasing assembly located on said first support member engaging said second side of said wafer.

5,663,655

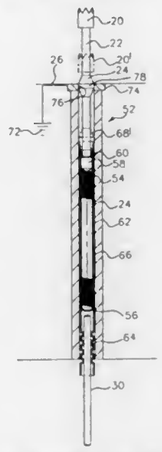
ESD PROTECTION FOR UNIVERSAL GRID TYPE TEST FIXTURES

Charles J. Johnston, Walnut; Mark A. Swart, Upland, and Patrick R. Gocha, Anaheim Hills, all of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Filed Sep. 22, 1995, Ser. No. 532,400

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—761 **6 Claims**



1. A test fixture for providing ESD protection to electronic switching circuitry in a universal grid type test fixture having test probes arranged for electrical contact with a printed circuit board under test, and in which test signals are sent between the circuit board and a high speed electronic test analyzer through intervening switching circuits, test fixture including:

a movable probe plate,

a test probe mounted on the probe plate, the test probe including a movable plunger for making electrical contact with a printed circuit board during a test cycle, the plunger being movable between a first position and a second position,

a ground plane on the probe plate connected to electrical ground, the probe plunger having a ground plane contact that contacts the ground plane in said first position of the plunger and which moves out of the contact with the ground plane when the plunger moves to the second position,

means for moving the probe plate to a pre-test position in which the plunger is in the first position and in electrical contact with the circuit board so that electrostatic charges on the board are dissipated to electrical ground through the ground plane via contact between the ground plane contact of the plunger and the ground plane, and

means for moving the probe plate to a test position in which the plunger is compressed under a test force that moves the plunger to the second position out of contact with the ground plane to electrically isolate the plunger for conducting a test of circuits on the board after electrostatic charges have been dissipated through the ground plane.

5,663,656

SYSTEM AND METHOD FOR EXECUTING ON BOARD DIAGNOSTICS AND MAINTAINING AN EVENT HISTORY ON A CIRCUIT BOARD

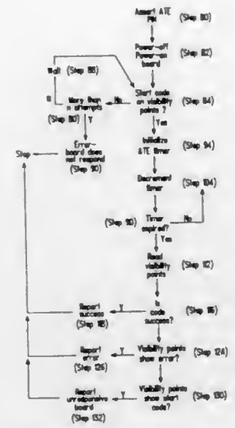
Robert Wilson, Hopkinton, and Harold F. Pritoni, Jr., Medfield, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Division of Ser. No. 261,817, Jun. 17, 1994, Pat. No. 5,537,052. This application Mar. 13, 1996, Ser. No. 614,620

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—763 **5 Claims**

1. A method of maintaining an event history of a circuit board comprising the steps of:



placing said circuit board on a test fixture;

testing said circuit board on said test fixture; detecting a first event as a result of said testing of said circuit board;

placing said circuit board in a system;

testing said system;

detecting a second event as a result of said testing of said system; and

storing an indication of said first and second events in a non-volatile memory on said circuit board.

5,663,657

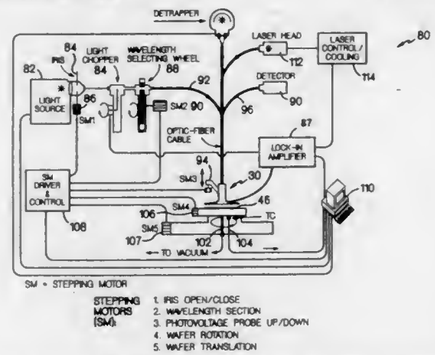
DETERMINING LONG MINORITY CARRIER DIFFUSION LENGTHS

Jacek Lagowski; Lubek Jastrzebski, both of Tampa, Fla.; Andrzej Kontkiewicz, Warszawa, Poland, and Piotr Edelman, Tampa, Fla., assignors to University of Sonth Florida, and Semiconductor Diagostics, Inc., both of Tampa, Fla.

Filed Sep. 26, 1994, Ser. No. 312,119

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—766 **30 Claims**



14. A device for measuring photovoltage and reflectivity of the surface of a semiconductor, comprising

a probe for directing radiation along a path for illuminating an area of said semiconductor with radiation to excite charge carriers and create a surface photovoltage, said probe including a transparent substrate and a transparent electrode in the path of said radiation and disposed over said transparent substrate through which said radiation passes, said transparent electrode being spaced from the edge of said substrate by a

distance that exceeds the carrier diffusion length in said semiconductor for detecting the photovoltage from the excited area of said semiconductor, said probe including a fiber optic bundle including a first series of fibers having one and arranged to be coupled with the transparent substrate in proximity with said semiconductor surface to direct said radiation onto said surface through the transparent electrode to induce said photovoltage, and said fiber optic bundle including a second series of fibers having one end arranged to be coupled with the transparent substrate in proximity to said surface through the transparent electrode to receive radiation reflected from said surface, said second series of fibers having a second end to direct said reflected radiation onto a detector.

5,663,658

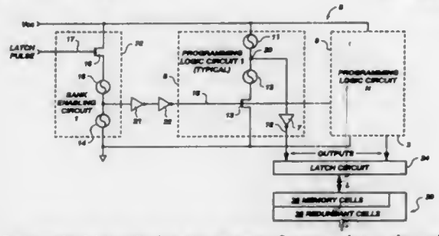
LOW CURRENT REDUNDANCY FUSE ASSEMBLY

Timothy B. Cowles, and Steven G. Renfro, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 452,203, May 26, 1995, Pat. No. 5,508,638, which is a continuation of Ser. No. 201,432, Feb. 24, 1994, Pat. No. 5,424,672. This application Apr. 12, 1996, Ser. No. 631,449

Int. Cl.[6] H03K *19/003;19/173*

U.S. Cl. 326—10 **41 Claims**



7. A method for reducing the amount of current drawn through a blowable fuse associated with a programming logic circuit, the method comprising:

adding a second fuse in series with said blowable fuse;

setting said programming logic circuit by blowing one of said fuses; and

using a signal at a junction of said fuses as an indication of the status of said fuses.

5,663,659

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE COMPRISING CMOS TRANSISTORS AND DIFFERENTIATOR

Yasuo Kaminaga; Yoji Nishio; Akihiro Tamba, all of Hitachi; Yutaka Kobayashi, Katsuta, and Masataka Minami, Hachiohji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 992,448, Dec. 17, 1992. This application Jun. 7, 1995, Ser. No. 488,441

Claims priority, application Japan, Dec. 19, 1991, 3-336924; Jan. 30, 1992, 4-15011; Mar. 18, 1992, 4-62602; Mar. 19, 1992, 4-63591; Mar. 19, 1992, 4-64251

Int. Cl.[6] H03K *19/01*

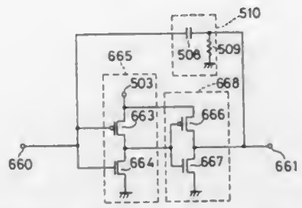
U.S. Cl. 326—17 **13 Claims**

1. A semiconductor integrated circuit device, comprising:

a first CMOS logic gate having an input terminal and an output terminal;

a second CMOS logic gate having an input terminal connected to the input terminal of said first CMOS logic gate for performing the same logic operation as that of said first CMOS logic gate and having an output terminal; and

a differentiator circuit having an input terminal connected to the output terminal of said second CMOS logic gate and an output terminal connected to the output terminal of said first CMOS logic gate.



5,663,660

DEVICE FOR MATCHING A LINE INTERFACE OF A STATION LINKED TO A MULTIPLEXED-INFORMATION TRANSMISSION NETWORK

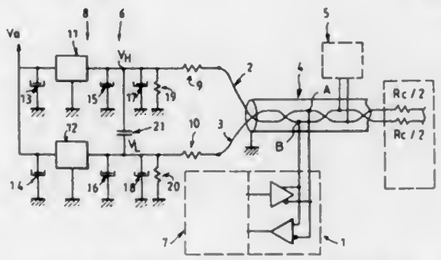
Alexandre Fromion, Antony, France, assignor to Automobiles Peugeot, Paris, and Automobiles Citroen, Neuilly sur Seine, both of France

Filed Nov. 9, 1995, Ser. No. 556,096

Claims priority, application France, Nov. 9, 1994, 94 13480

Int. Cl.[6] H03K *17/16;19/003*

U.S. Cl. 326—30 **3 Claims**



1. Device for matching a line interface of a station linked to a multiplexed-information transmission network, including a transmission cable, fitted with a pair of conductors, wherein each conductor of the cable is linked at each of its ends to a terminal of a resistor whose value is substantially equal to half the value of the characteristic impedance of the cable and the other terminal of the resistor is linked to a voltage source.

5,663,661

MODULAR BUS WITH SINGLE OR DOUBLE PARALLEL TERMINATION

John B. Dillon, Palo Alto; Srinivas Nimmagadda, Santa Clara, and Alfredo Moncayo, Redwood City, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 416,326, Apr. 4, 1995, Pat. No. 5,578,948. This application Jul. 12, 1996, Ser. No. 680,589

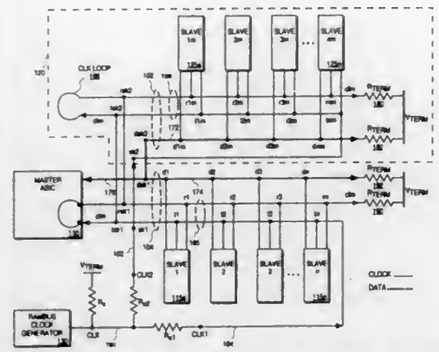
Int. Cl.[6] H03K *17/16;19/003*

U.S. Cl. 326—30 **32 Claims**

1. A bus for communicating signals with a removable module, the bus comprising:

a singly terminated motherboard net for communicating signals between a master and one or more motherboard devices;

a socket for communicating the signals between the motherboard net and a singly terminated module net of the removable module, the module net communicating the signals between the master and one or more module devices, wherein



the motherboard and module nets are coupled to form a doubly terminated net when the module is present.

5,663,662

LIBRARY GROUP AND SEMICONDUCTOR INTEGRATED CIRCUIT STRUCTURED THEREOF

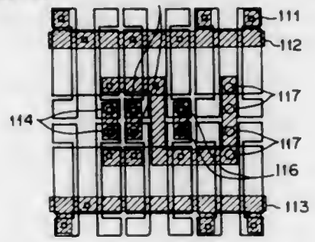
Susumu Kurosawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 18, 1995, Ser. No. 574,378

Claims priority, application Japan, Dec. 27, 1994, 6-324893

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **23 Claims**



1. A library group structured of basic cells and having logic gates which have the same logic function, the same size, and the same input/output terminal positions and which have different load driving capability.

5,663,663

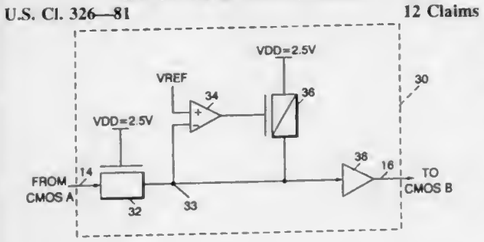
MIXED VOLTAGE INTERFACE CONVERTER

Tai Cao; Satyajit Dutta; Thai Quoc Nguyen; Thanh Doan Trinh, and Lloyd Andre Walls, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 387,517, Feb. 13, 1995, Pat. No. 5,541,534. This application Apr. 26, 1996, Ser. No. 638,028

Int. Cl.[6] H03K *19/0185;19/0948*

U.S. Cl. 326—81 **12 Claims**



7. A circuit receiving digital input signals for altering a range of voltage levels of said digital input signals, comprising:

an input device for receiving an input signal and outputting a signal;

a pullup device operably coupled via a comparator to said input device for outputting a pullup signal;

wherein, when said input signal is above a first voltage level, said pullup device switches to a low impedance state and outputs said pullup signal through said pullup device as a high level output signal ; and

wherein, when said input signal is below a second voltage level, said input device switches to a low impedance state and outputs said input signal through said input device as a low level output signal.

5,663,664

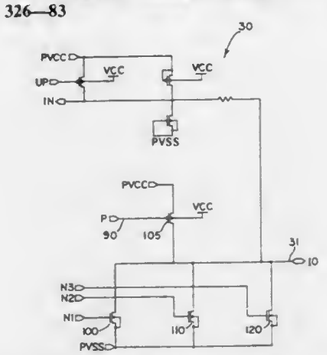
PROGRAMMABLE DRIVE STRENGTH OUTPUT BUFFER WITH SLEW RATE CONTROL

Paul G. Schnizlein, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 356,753, Dec. 15, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 675,310

Int. Cl.[6] H03K *17/30;19/02*

U.S. Cl. 326—83 **12 Claims**



1. A programmable current drive output buffer, comprising:

a first output data signal, input to a plurality of output drive current transistor circuits, wherein at least one of said output drive current transistor circuits includes a programmable current drive strength select bit input, wherein said bit is used to enable or disable said output drive transistor circuit to which it is input;

wherein an output of each of said plurality of output drive transistor circuits are connected to a common output buffer output node;

further comprising a second output data signal which is input to a pullup output drive current transistor, wherein an output of said pullup transistor is connected to said common output buffer output node, and

wherein each of said plurality of output drive current transistor circuits includes a pulldown output drive current transistor circuit.

5,663,665

MEANS FOR CONTROL LIMITS FOR DELAY LOCKED LOOP

Yun-Che Wang, Los Altos, and Gaurang Shah, Sunnyvale, both of Calif., assignors to Cypress Semiconductor Corp., San Jose, Calif.

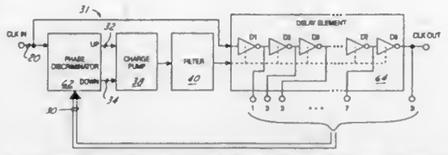
Filed Nov. 29, 1995, Ser. No. 564,597

Int. Cl.[6] H03K *5/159*

U.S. Cl. 327—3 **9 Claims**

1. A delay lock loop circuit, comprising:

a charge pump having: (i) an input and (ii) an output,



a low pass filler having: (i) an input coupled to said output of said charge pump and (ii) an output,

a delay element having: (i) an input coupled to said low pass filter and (ii) an output for presenting an output clock, said delay element further including a plurality of delay taps intermediate said input and output of said delay element, and

a phase discriminator including (i) an input for receiving an input clock, (ii) an override logic circuit having (a) a first input connected to said output of said delay element and (b) a second input coupled to at least one of said plurality of delay taps, and (iii) an output coupled to said input of said charge pump.

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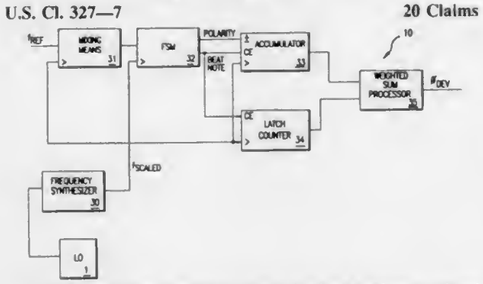
DIGITAL PHASE DETECTOR

David C. Chu, Woodside, and Jeremy S. Sommer, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 21, 1996, Ser. No. 604,230

Int. Cl.[6] G01R *25/00*

U.S. Cl. 327—7 **20 Claims**



1. A digital phase detection system having a reference signal having a nominal reference frequency and a local signal having a nominal frequency comprising:

a frequency synthesizer being operative to receive the local signal and to produce a scaled signal having a scaled frequency;

mixing means receiving the reference and scaled signals for generating a mixed signal that reflects a beat frequency and corresponds to mixing the scaled and the nominal reference frequencies;

a finite state machine, connected to the mixing means and the frequency synthesizer, being operative to interpret the mixed signal and to generate action commands;

a counter with latch, connecting to the finite state machine, the mixing means, and the frequency synthesizer, being operative to latch a value of counts corresponding to the scaled signal;

an accumulator having an accumulator value, connected to the finite state machine, receiving the scaled signal, being operative to respond to the action commands;

a weighted sum processor, connected to the accumulator and the latch, combining the latch and accumulator values to determine the phase difference between the reference signal and the local signal scaled by the ratio of the nominal reference frequency and the nominal frequency of the local oscillator signal.

5,663,667

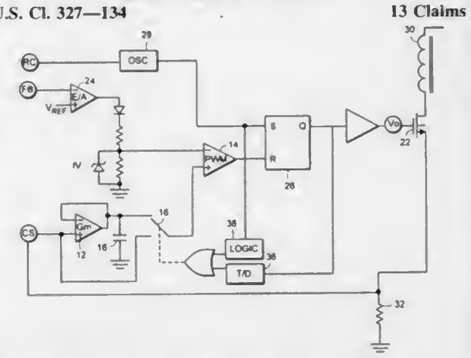
SWITCHED LEADING EDGE REPLACEMENT FOR CURRENT SENSE SIGNAL

Gregory A. Blum, West Warwick, R.I., and Gedaly Levin, Acton, Mass., assignors to Cherry Semiconductor Corporation, East Greenwich, R.I.

Continuation of Ser. No. 300,399, Sep. 2, 1994. This application Aug. 19, 1996, Ser. No. 697,038

Int. Cl.[6] H03K *17/687;3/01*

U.S. Cl. 327—134 **13 Claims**



1. A method of current sensing comprising:

controlling switched power device with a switching regulator controller;

producing a current sense signal proportional to the current in the switched power device;

providing a rising signal having a controlled slew rate rising from an initial voltage substantially equal to the voltage of the current sense signal when the switched power device is off;

switching the rising signal into connection with the switching regulator controller when the switched power device is switched on;

indicating a delay from when the switched power device is switched on; and

switching off the rising signal to the switching regulator controller after the delay and providing instead the current sense signal to the switching regulator controller.

5,663,668

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

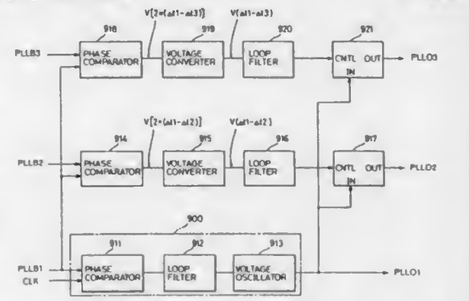
Isamu Hayashi, and Harufusa Kondoh, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 268,159, Jun. 29, 1994. This application Sep. 29, 1995, Ser. No. 539,152

Claims priority, application Japan, Jun. 30, 1993, 5-161869

Int. Cl.[6] H03L *7/06*

U.S. Cl. 327—156 **2 Claims**



1. A semiconductor integrated circuit device operating in response to an externally input external clock signal, comprising:

internal clock signal generation means responsive to said external clock signal for generating a plurality of internal clock signals of different phases;

a plurality of internal circuit blocks each operating in response to a corresponding one of the plurality of internal clock signals of different phases generated by said internal clock signal generation means;

a plurality of first signal transmission paths provided between said internal clock signal generation means and said plurality of internal circuit blocks, respectively,

said plurality of first signal transmission paths each transmitting a respective one of the plurality of internal clock signals of different phases to a corresponding one of said plurality of internal circuit blocks from said internal clock signal generation means; and

a plurality of second signal transmission paths each transmitting the respective one of the plurality of internal clock signals of different phases transmitted to said corresponding one of said plurality of internal circuit blocks to said internal clock signal generation means as a feedback signal,

said clock signal generation means including

phase locked loop means receiving said external clock signal and a first feedback signal among the plurality of feedback signals transmitted to said internal clock signal generation means from said plurality of internal circuit blocks for synchronizing the phase of a first internal clock signal, to be generated as one of the plurality of internal clock signals of different phases, with the phase of said external clock signal,

phase comparison means receiving said first feedback signal and at least a second feedback signal among the plurality of feedback signals transmitted to said internal clock signal generation means from said plurality of internal circuit blocks for comparing the phases thereof to produce a phase difference, and

delay means receiving and delaying, based on the phase difference produced by said phase comparison means, said first internal clock signal for generating a second internal clock signal as another one of the plurality of internal clock signals of different phases.

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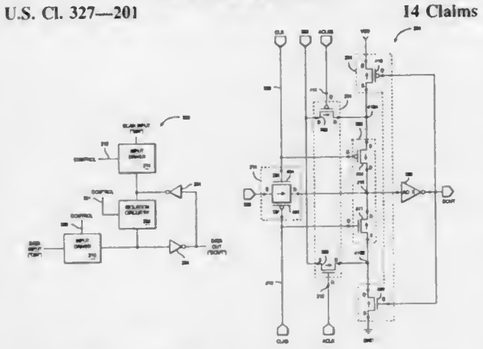
CIRCUITRY AND METHOD FOR LATCHING INFORMATION

Neil Ray Vanderschaaf, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 355,884, Dec. 14, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,252

Int. Cl.[6] H03K *19/096*

U.S. Cl. 327—201 **14 Claims**



1. Circuitry, comprising:

transferring circuitry for transferring:

first information from a first node to a second node in response to a first signal only if said first signal has a first logic state; and

second information from a third node to a fourth node in response to a second signal only if said second signal has a predetermined logic state; and

latching circuitry for latching said transferred second information by coupling said second node to said fourth node in response to said first signal only if said first signal has a second logic state different than said first logic state, wherein said first signal has said second logic state in response to said second signal having said predetermined logic state, so that said transferred second information is latched while said second signal has said predetermined logic state.

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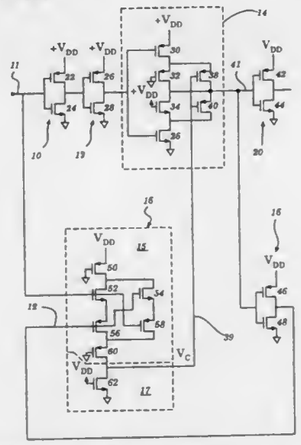
CONTROLLABLE VARIABLE DELAY INVERTER FOR A PROCESS TOLERANT DELAY CIRCUIT

Joseph Andrew Iadanza, Hinesburg, Vt., and Makoto Ueda, Kyoto, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 402,280, Mar. 10, 1995, Pat. No. 5,548,237. This application May 8, 1996, Ser. No. 646,899

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—281 **6 Claims**



1. A variable delay inverter comprising:

input and output nodes;

first and second supply nodes;

a P-FET having its source coupled to said first supply node, its gate coupled to said input node, and its drain coupled to a first internal node;

a first FET having its source/drain coupled to said first internal node, its gate coupled to said second/first supply node so that it is always biased on, and its drain/source coupled to said output node;

a first shunting FET in parallel with said first FET having its source/drain coupled to said source/drain of said first FET, its drain/source coupled to said drain/source of said first FET, and its gate coupled to a control input for receiving a control signal;

an N-FET having its source coupled to said second supply node, its gate coupled to said input node, and its drain coupled to a second internal node;

a second FET having its source/drain coupled to said second internal node; its gate coupled to said first/second supply node so that it is always biased on, and its drain/source coupled to said output node;

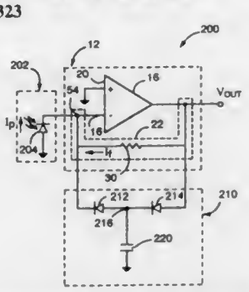
a second shunting FET in parallel with said second FET having its source/drain coupled to said source/drain of said second FET, its drain/source coupled to said drain/source of said second FET, and its gate coupled to said control input for receiving said control signal.

5,663,671

ELECTRONIC CIRCUIT INCLUDING OPERATIONAL AMPLIFIER AND CLAMPING CIRCUIT

Helmar R. Steglich, Marblehead, Mass., assignor to Ametek Aerospace Products, Inc., Wilmington, Mass.

Filed Feb. 1, 1996, Ser. No. 595,564
Int. Cl.[6] H03K 5/08
U.S. Cl. 327—323 9 Claims



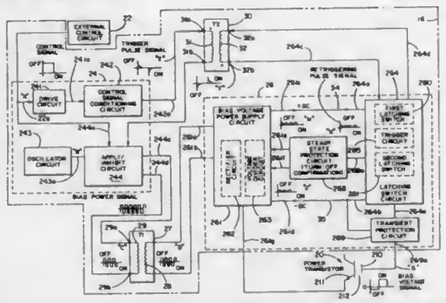
1. A circuit comprising, an operational amplifier having a non-inverting input coupled to ground potential, an inverting input for receiving an input signal, and an output; a resistor coupled between the inverting input and the output; a first diode whose cathode is coupled to the inverting input; a second diode whose cathode is coupled to an anode of the first diode, said second diode also having an anode coupled to the output; and a capacitor coupled between the anode of the first diode and said ground potential.

5,663,672

TRANSISTOR GATE DRIVE CIRCUIT PROVIDING DIELECTRIC ISOLATION AND PROTECTION

Paul E. Nuechterlein, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 17, 1995, Ser. No. 560,418
Int. Cl.[6] H03K 17/04
U.S. Cl. 327—374 16 Claims



1. A gate drive circuit for a power transistor providing improved dielectric isolation and protection against inadvertent turn ON of the power transistor, said gate drive circuit comprising:

first circuit means for providing a bias power signal and a trigger pulse signal in response to a control signal received by the first circuit means from an external control circuit connected to said first circuit means;

second circuit means connected across a gate electrode and an emitter electrode of the power transistor for providing a bias voltage signal impressed across a gate-emitter junction within the power transistor to cause said power transistor to switch between an ON state and an OFF state in response to said trigger pulse signal and bias power signal provided by said first circuit means;

a first coupling transformer connected between said first and second circuit means for coupling said bias power signal produced by said first circuit means to said second circuit means through magnetic induction; and

a second coupling transformer connected between said first and second circuit means for coupling said trigger pulse signal produced by said first circuit means to said second circuit means through magnetic induction;

said first and second coupling transformers thereby providing separate pathways for coupling said bias power and trigger pulse signals between said first and second circuit means in a manner providing dielectric isolation between said first and second circuit means along each of said separate pathways;

wherein said second circuit means includes a steady-state protection circuit, said steady-state protection circuit developing a continuous periodic retriggering pulse signal whenever the bias power signal is induced across the first coupling transformer,

said retriggering pulse signal causing the gate drive circuit to continually reset to a condition wherein a reverse-bias signal is impressed across the gate-emitter junction of the power transistor, thereby continually resetting the power transistor to the OFF state,

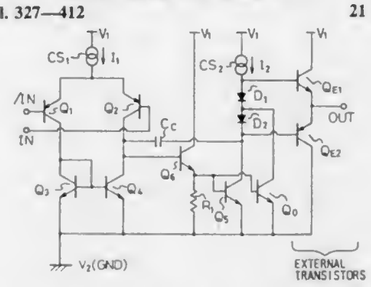
said retriggering pulse signal having pulses recurring at a periodic rate sufficiently high such that, should the gate drive circuit be inadvertently triggered by spurious signals or electrical noise signals, thereby causing the power transistor to turn ON when the control signal is commanding the gate drive circuit to hold the power transistor in the OFF state, the retriggering pulse signal will cause the gate drive circuit to reset to a condition wherein the reverse-bias voltage is impressed across the gate-emitter junction of the power transistor, thereby causing the power transistor to turn OFF before the power transistor or circuitry in which the power transistor is being utilized are damaged.

5,663,673

OUTPUT CIRCUIT HAVING AT LEAST ONE EXTERNAL TRANSISTOR

Hirokazu Tanaka; Tatsuo Kumano; Tetsuji Funaki, and Takahiro Watal, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1995, Ser. No. 413,947
Claims priority, application Japan, Jun. 30, 1994, 6-149361; Feb. 28, 1995, 7-040406
Int. Cl.[6] H03F 3/26; H03K 17/16
U.S. Cl. 327—412 21 Claims



1. An output circuit having first and second transistors connected to first and second power source means and a plurality of diode means connected to a control terminal of said first transistor and a control terminal of said second transistor, wherein said output circuit comprises:

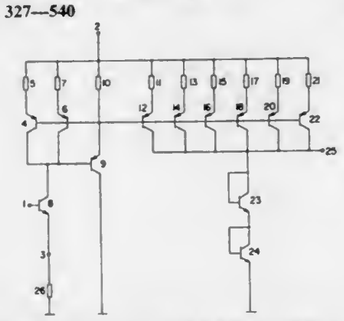
a third transistor having a first terminal connected to said second power source means and a second terminal connected to a predetermined position among said diode means, a predetermined voltage being applied from said diode means to the control terminal of said first transistor when said third transistor is saturated, to bring a level of an output of said output circuit close to a level of said second power source means, wherein said diode means comprises first and second diodes connected in series, and the second terminal of said third transistor is connected to a node between said first and second diodes.

5,663,674

CIRCUT CONFIGURATION FOR GENERATING A REFERENCE CURRENT

Stefan Beyer, Mering; Bruno Scheckel, Ebersberg; Werner Veit, Unterhaching, and Jean Wilwert, München, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 11, 1995, Ser. No. 551,267
Claims priority, application Germany, May 11, 1994, 44 16 711.3
Int. Cl.[6] G05F 3/02
U.S. Cl. 327—540 3 Claims



1. An integrated circuit configuration for generating a reference current by bipolar technology, comprising:

an input terminal receiving a reference voltage and an external connection terminal;

a first transistor of one conductivity type having a control terminal being connected to said input terminal, an emitter connected to said external connection terminal, and a load path;

an external resistor being connected between said load path of said transistor via said external connection terminal and a reference potential;

a current mirror configuration having an input side connected between said load path of said transistor and a supply voltage source and having an output for picking up a reference current; and

said current mirror including:

n transistors of an other conductivity type having load paths being connected to said load path of said first transistor and having control terminals;

a second transistor of the other conductivity type having a control terminal connected to said load paths of said n transistors and having a load path;

first resistors each being connected between said load path of a respective one of said n transistors and the supply voltage terminal;

m transistors of the other conductivity type having load paths being connected to one another and to said output terminal and having control terminals;

second resistors each being connected between said load path of a respective one of said m transistors and the supply voltage terminal;

a third resistor; and

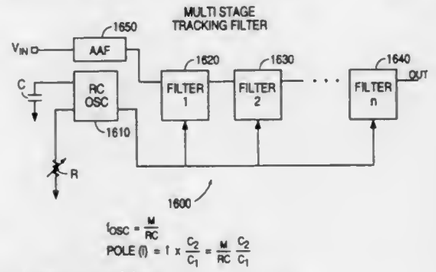
said control terminals of said n and m transistors being connected to one another, being connected through said third resistor to the supply voltage terminal and being connected through said load path of said second transistor to the reference potential.

5,663,675

MULTIPLE STAGE TRACKING FILTER USING A SELF-CALIBRATING RC OSCILLATOR CIRCUIT

Timothy G. O'Shaughnessy, Black Forest, Colo., assignor to American Microsystems, Inc., Pocatello, Id.

Filed Jun. 7, 1995, Ser. No. 479,298
Int. Cl.[6] H03K 5/00; H04B 1/00
U.S. Cl. 327—553 6 Claims



1. A filter comprising:

a self-calibrating RC oscillator including:

a resistor;

a capacitor coupled to the resistor to form an RC network, the RC network setting an oscillator frequency;

a core oscillator for generating a controlled frequency timing signal at a controlled frequency;

a comparator coupled to the RC network and coupled to a reference voltage for comparing the controlled frequency to the oscillator frequency; and

means responsive to the comparator for adjusting the frequency of the core oscillator; and

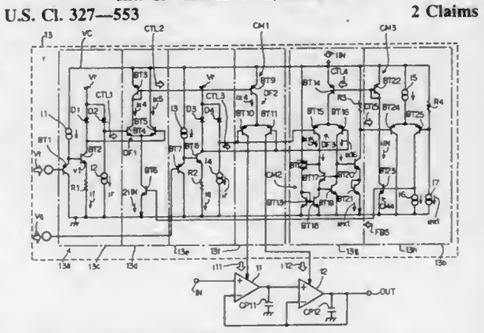
a first switched capacitor filter element having an input terminal for receiving an input signal, an output terminal generating a filtered output signal, the first switched capacitor filter element, and a timing terminal coupled to the self-calibrating RC oscillator, the switched capacitor filter element including a switch controlled by the controlled frequency timing signal from the self-calibrating RC oscillator, the timing signal oscillating at the oscillator frequency.

5,663,676

ACTIVE FILTER INDEPENDENTLY CONTROLLING CUT-OFF FREQUENCY AND QUALITY FACTOR

Hiroko Itoh, Yamagata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 603,259
Claims priority, application Japan, Feb. 21, 1995, 7-032485
Int. Cl.[6] H03H 11/12; H03K 5/00
U.S. Cl. 327—553 2 Claims



1. An active filter comprising:

a filter circuit including a first operational amplifier responsive to an input signal under the control of a first controlling current, a second operational amplifier connected to said first operational amplifier for generating an output signal under the

control of a second controlling current, and means for realizing a predetermined filtering characteristic connected to said first and second operational amplifiers; and

a current controlling circuit connected to said filter circuit and being responsive to a frequency control signal representative of a target cut-off frequency and a quality factor control signal representative of a target quality factor,

wherein said current controlling circuit independently controls a cut-off frequency of said output signal and a quality factor of said output signal

said current controlling circuit comprising:

a first input circuit supplied with said frequency control signal and generating a first control signal representative of a difference between said frequency control signal and a first signal;

a first multiplier supplied with said first control signal and a feedback signal and multiplying said first control signal by said feedback signal for generating a second control signal;

a second input circuit supplied with said quality factor control signals and generating a third control signal representative of a difference between said quality factor control signal and said first signal;

a second multiplier supplied with said second and third control signals and multiplying said second control signal by said third control signal for generating said first and second controlling currents;

a third multiplier supplied with said third control signal and a fourth control signal and multiplying said third control signal and said fourth control signal for generating a fifth control signal; and

a feedback circuit for calculating a square root of said fifth control signal and for generating said feedback signal and said fourth control signal.

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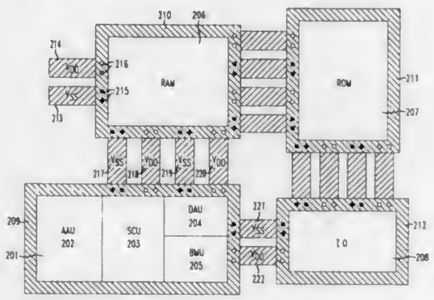
INTEGRATED CIRCUIT MULTI-LEVEL INTERCONNECTION TECHNIQUE

Ronald Lamar Freyman, Bethlehem; Ted R. Martin, Allentown, and Steven Paul Pekarich, Slatington, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 30, 1995, Ser. No. 413,527

Int. Cl.[6] H01L *25/00*

U.S. Cl. 327—565 **9 Claims**



1. An integrated circuit having a first block of functional circuitry separated by a wiring channel from a second block of functional circuitry, and with said integrated circuit having a lower conductor level, an intermediate conductor level, and an upper conductor level,

characterized in that said first block and said second block of functional circuitry are each bounded on at least one side by a first power supply conductor formed in said lower conductor level and also by a second power supply conductor formed in said upper conductor level,

and further characterized in that conductors formed in said intermediate conductor level connect the power supply conductors bounding said first block to the power supply conductors bounding said second block,

wherein said wiring channel comprises first signal conductors formed in said lower conductor level and second signal conductors formed in said upper conductor level, wherein at least some of said first signal conductors directly overlie at least some of said second signal conductors in said wiring channel.

5,663,678

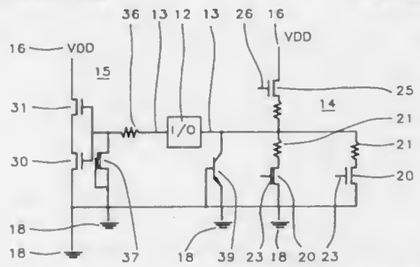
ESD PROTECTION DEVICE

Ming-Chien Chang, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-chu, Taiwan

Filed Feb. 2, 1996, Ser. No. 595,701

Int. Cl.[6] H02H *3/20;9/04*

U.S. Cl. 327—566 **10 Claims**



1. A semiconductor circuit device formed on a substrate (**41**), a pad (**12**) and I/O circuits (**14**, **15**) formed on the device and connected to the pad and protected against an ESD voltage at the pad, wherein a protected output circuit (**14**) comprises,

a first diffusion (**42**) underlying the pad for connecting the pad to components of the protected output circuit and a second diffusion (**45**) for connection to circuit ground,

a plurality of pull down FETs (**20**) connected to turn on and off in response to a binary signal applied to their gates (**49**), pull down FETs having lightly doped source and drain diffusions (**45**, **47** and **44**, **48**),

a plurality of resistors (**21**), each resistor connecting the drain terminal (**44**) of an associated pull down FET to the pad, whereby the FETs pull down the pad when the FETs turn on, the resistors being formed as lightly doped regions,

and a parasitic bipolar transistor (**39**) having an emitter formed by said source diffusion (**45**) of the pull down fets, the first diffusion under the pad as its collector, and a intervening region of the substrate as its base.

5,663,679

THIN FILM TRANSISTOR REDUNDANCY STRUCTURE

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 313,627, Sep. 27, 1994, Pat. No. 5,552,743. This application Jun. 17, 1996, Ser. No. 664,829

Int. Cl.[6] G11C *17/16*

U.S. Cl. 327—567 **29 Claims**

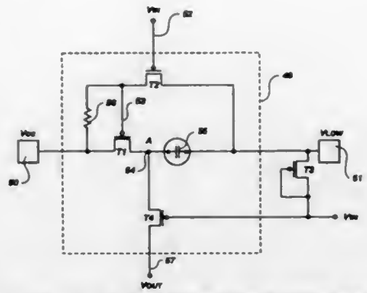
1. A semiconductor device, comprising:

designator circuitry that selectively provides a designation signal having a particular condition;

microcircuit components;

a state device that changes from a first state to a second state when subjected to a programming voltage differential; and

control circuitry that subjects the state device to the programming voltage differential when the designator circuitry provides the designation signal having the particular condition to the control circuitry, the control circuitry isolating the microcircuit components from voltages associated with the programming voltage differential that are incompatible with the



microcircuit components, and the control circuitry providing a signal to the microcircuit components that is indicative of the state of the state device.

5,663,680

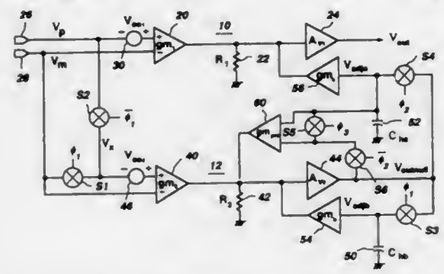
CHOPPER STABILIZED AMPLIFIER HAVING AN ADDITIONAL DIFFERENTIAL AMPLIFIER STAGE FOR IMPROVED NOISE REDUCTION

Arnold E. Nordeng, 4311 S. 4th Ave., Everett, Wash. 98203

Filed Apr. 4, 1996, Ser. No. 627,531

Int. Cl.[6] H03F *1/14*

U.S. Cl. 330—9 **1 Claim**



1. A low-noise chopper-stabilized amplifier, comprising:

an input signal path;

a main amplifier including a first input differential amplifier coupled to said input signal path and a signal output stage, said signal output stage having a first offset voltage compensation circuit connected thereto;

a nulling amplifier including a second differential amplifier and a null voltage output stage, said null voltage output stage having a second offset voltage compensation circuit connected thereto,

wherein said nulling amplifier alternates between first state in which the inputs of said second differential ampilfier are connected together and the output of said null voltage output stage is applied to said second offset voltage compensation circuit and a second state in which the inputs of said second differential amplifier are coupled to said input signal path and the output of said null voltage output stage is applied to said first offset voltage compensation circuit; and

a precharge differential amplifier having a first input coupled to said first offset voltage compensation circuit and a second input coupled to the output of said null voltage output stage, and further having an output couled to the input of said null voltage output stage, said precharge amplifier being activated between said first and second states to precharge the output of said null voltage output stage to a voltage stored in said first offset voltage compensation circuit.

5,663,681

APPARATUS AND METHOD FOR STABILIZING AN AMPLIFIER

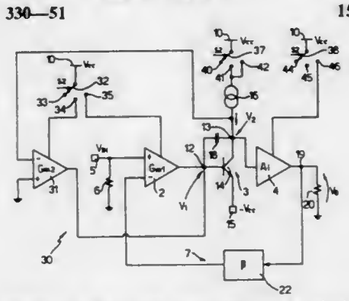
Edoardo Botti, Vigevano, and Giorgio Chiozzi, Cinisello Balsamo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Apr. 14, 1995, Ser. No. 423,565

Claims priority, application European Pat. Off., Apr. 15, 1994, 94830179

Int. Cl.[6] H03F *1/26*

U.S. Cl. 330—51 **15 Claims**



14. A method for initializing an amplifier, the method comprising:

disabling an input stage and an output stage of said amplifier;

enabling an intermediate stage of said amplifier, said intermediate stage having an input node coupled to said input stage and having an output node coupled to said output stage;

comparing a voltage at said output node with a reference voltage;

charging a capacitor that is coupled between said input and output nodes until said voltage at said output node is substantially equal to said reference voltage; and

enabling said input and output stages when said voltage at said output node is substantially equal to said reference voltage.

5,663,682

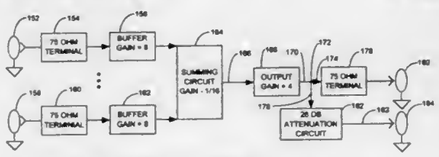
WIDE BANDWIDTH COMBINER-AMPLIFIER

Reuben W. Meline, Crystal, and Jeffrey O. Brown, St. Paul, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Oct. 23, 1995, Ser. No. 553,760

Int. Cl.[6] H03F *3/68*

U.S. Cl. 330—124 R **18 Claims**



1. A combiner-amplifier, comprising:

(a) first feedback amplifier means for amplifying a first received signal by a predetermined gain value;

(b) second feedback amplifier means for amplifying a second received signal by the predetermined gain value; and

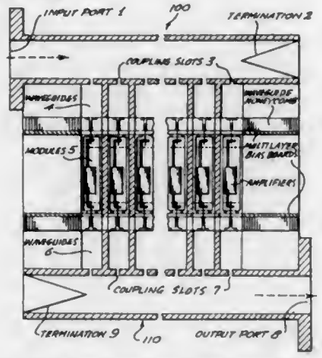
(c) combiner means, operatively coupled to the first and the second feedback amplifier means, for combining the amplified first received signal with the second received signal by utilizing a feedback amplifier-based summing circuit to generate a combined signal which is attenuated by the predetermined gain value such that the combined signal has approximately a unity gain over the first and the second received signals within a bandwidth of at least 45 megahertz.

5,663,683

MIST COOLED DISTRIBUTED AMPLIFIER UTILIZING A CONNECTORLESS MODULE

Jay H. McCandless, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 326,105, Oct. 19, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 574,008
Int. Cl.[6] H03F 3/68
U.S. Cl. 330—286 2 Claims



1. A microwave power amplifier comprising in combination: a plurality of phased array honeycomb amplifier cells; said plurality of phased array honeycomb amplifier cells having a plurality of integral coolant channels forming a closed loop cooling system; a distributed waveguide manifold for coupling radio frequency signals to said plurality of phased array honeycomb amplifier cells; and,

a distributed waveguide manifold coupled to said plurality of phased array honeycomb amplifier cells for combining amplified radio frequency signals from said plurality of phased array honeycomb amplifier cells; and

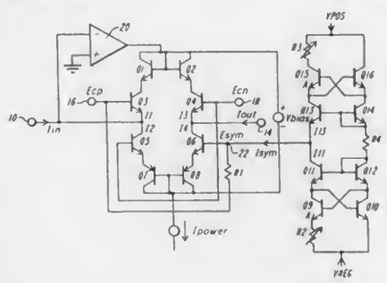
wherein said plurality of phased array honeycomb amplifier cells are mechanically DC connected to a DC power distribution board utilizing compressive mechanical means comprising an elastomeric connector, and where the RF signal is capacitively coupled in and out of the amplifier cells so that all RF and DC connections are made simultaneously with the mechanical assembly of the two distributed manifolds.

5,663,684

WAFER-STAGE ADJUSTMENT FOR COMPENSATING FOR MISMATCHES IN TEMPERATURE DEPENDENT IC COMPONENTS

Gary K. Hebert, Shrewsbury, Mass., assignor to THAT Corporation, Marlborough, Mass.

Continuation-in-part of Ser. No. 336,429, Nov. 9, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 539,987
Int. Cl.[6] H03F 1/30
U.S. Cl. 330—289 24 Claims



1. An integrated circuit comprising:

at least two components, each of which operate interdependently as a function of temperature and at least one physical parameter associated with each of said components when implemented in integrated form;

compensation means, disposed in said integrated circuit, for generating and applying an adjustable bipolar compensation current to at least one of said components so that the level and polarity of said compensation current can be adjusted during the manufacture of the integrated circuit such that said two components interdependently operate predictably, consistently and substantially independently of temperature variations and differences between the physical parameter of said two components,

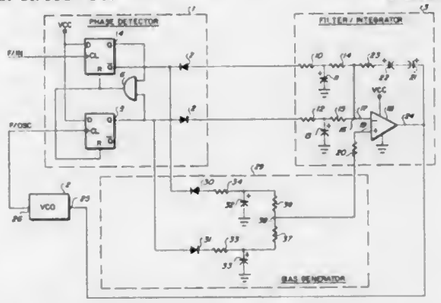
wherein said compensation means comprises a positive current source and a negative current source, each source includes at least one output transistor having a collector, and wherein the output transistor of the positive current source is complementary to the output transistor of the negative current source, and (a) current generated through the collector of one of said output transistors is of a positive polarity and is proportional to absolute temperature, (b) current generated through the collector of the other of said output transistors is of a negative polarity and is proportional to absolute temperature, and (c) the positive polarity current is greater than the negative polarity current when the compensation current is of a positive polarity and the positive polarity current is less than the negative polarity current when the compensation current is of a negative polarity.

5,663,685

DUAL FLIP-FLOP DETECTOR TYPE PHASE LOCKED LOOP INCORPORATING DYNAMIC PHASE OFFSET CORRECTION

Donald R. Kesner, Phoenix, Ariz., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Filed Mar. 29, 1996, Ser. No. 625,670
Int. Cl.[6] H03L 7/093
U.S. Cl. 331—1 A 8 Claims



1. In a phase locked loop including:

A) a phase detector circuit comprising:

1) first and second flip-flops capable of assuming first and second alternative binary states, each of said first and second flip-flops having a clock input, a reset input and at least one output issuing an output signal at one of logic "1" and logic "0" voltage levels depending upon a present state of said flip-flop, each of said first and second flip-flops:

a) being connected to switch to said first state by a transition of a clock signal applied to said clock input thereof; and

b) having a reset input which is responsive to a transition of a clear signal to switch said flip-flop to said second state; and

2) a clear signal generator responsive to the condition in which both said first and second flip-flops are simultaneously in said first state to issue said clear signal;

B) a reference frequency signal applied to said clock input of said first flip-flop;

C) a filter/integrator/amplifier circuit comprising:

1) a first capacitor having first and second terminals;

2) a first diode coupled between said first terminal of said first capacitor and said output of said first flip-flop, said first diode being polarized to pass current only when said first flip-flop is in a predetermined one of said first and second states;

3) a second capacitor having first and second terminals;

4) a second diode coupled between said first terminal of said second capacitor and said output of said second flip-flop, said second diode being polarized to pass current only when said second flip-flop is in the alternative state to the state of said first flip-flop which allows said first diode to pass current;

5) said second terminal of each of said first and second capacitors being connected to the same voltage reference level;

6) a control amplifier having first and second inputs and an output, the voltage appearing at said output being dependent upon the difference between the voltages applied to said first and second inputs;

7) a first summing resistor connected between said first terminal of said first capacitor and said first input of said control amplifier;

8) a second summing resistor connected between said first terminal of said second capacitor and said first input of said control amplifier; and

9) control amplifier biasing means for supplying a reference bias voltage to said second input of said control amplifier; and

D) a voltage controlled oscillator having a control input and an output, said control input being connected to said output of said control amplifier such that the frequency of oscillation of said voltage controlled oscillator is dependent on the voltage appearing at the output of said control amplifier, said output of said voltage controlled oscillator being coupled to said clock input of said second flip-flop;

the improvement in which said phase locked loop further includes a phase offset correction circuit adapted to:

E) sample said logic "1" and logic "0" voltage levels;

F) algebraically average said sampled logic "1" and logic "0" voltage levels to develop a midpoint voltage; and

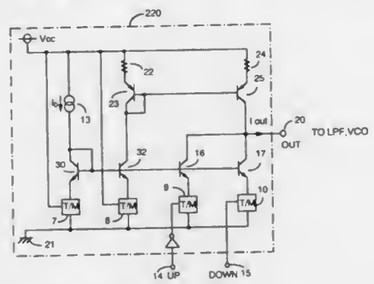
G) couple said midpoint voltage to said second input of said control amplifier as said reference bias voltage.

5,663,686

CHARGE PUMP CIRCUIT AND PHASE LOCKED LOOP CIRCUIT USING THE CHARGE PUMP CIRCUIT

Masashige Tada, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1996, Ser. No. 589,244
Claims priority, application Japan, Aug. 22, 1995, 7-213528
Int. Cl.[6] H03L 7/085
U.S. Cl. 331—8 12 Claims



1. A charge pump circuit comprising:

a first circuit including a first transistor for supplying a first constant current to an output terminal;

a second circuit including a second transistor for supplying a second constant current to the output terminal;

a third circuit including a third transistor for supplying a third constant current to the output terminal;

a fourth circuit including a fourth transistor connected to said first circuit by current mirror connection for supplying constant current to said first circuit, and further comprising a fifth transistor for supplying constant current to the fourth transistor; and

a fifth circuit comprising a sixth transistor connected to a first constant current source in series for supplying constant current to the fifth transistor in the fourth circuit, to the second transistor in the second circuit and to the third transistor in the third circuit, each of the second, third and fifth transistors being connected by current mirror connection; and

first and second T/M circuits;

wherein respective first ends of the first to third transistors are connected to said output terminal, and (1) a second end of the first transistor is connected to a power source through a first resistor, (2) a second end of the second transistor is grounded through the first T/M circuit, (3) a second end of the third transistor is grounded through the second T/M circuit, and

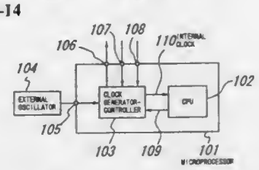
an inverted up-signal is applied to said second T/M circuit, a down-signal is applied to said first T/M circuit in order to supply current to or draw current from said output terminal.

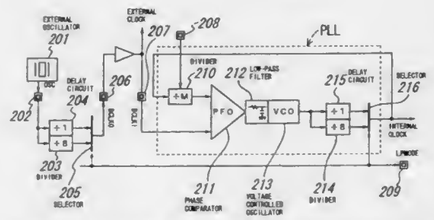
5,663,687

LSI WITH BUILT-IN CLOCK GENERATOR-CONTROLLER FOR OPERATION WITH LOW POWER DISSIPATION

Shinichi Kozu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 25, 1995, Ser. No. 532,962
Claims priority, application Japan, Sep. 26, 1994, 6-229307
Int. Cl.[6] G06F 1/04; 1/32
U.S. Cl. 331—14 4 Claims





1. A large scale integrated circuit with a built-in clock generator-controller, comprising:

a central processing unit for outputting an operation condition signal indicative of whether a current operation condition thereof is a low power dissipation operation or a normal operation; and

a clock generator-controller for receiving the operation condition signal, an output of an external oscillator, an external system clock signal, and a dividing signal which designates a ratio between the external system clock signal and an internal clock signal, and for producing an internal clock signal in response to the operation condition indicated by the operation condition signal and supplying the internal clock signal to said central processing unit;

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said clock generator-controller including a first input terminal for receiving an oscillation signal generated by the external oscillator, a first divider for dividing the oscillation signal to produce an oscillation signal of a low frequency, first delay means for delaying the oscillation signal received from the outside by a delay time equal to that of the oscillation signal divided by said first divider, first switching means for selectively outputting one of the low frequency oscillation signals divided by said first divider and the oscillation signal delayed by said first delay means in response to the operation condition signal from said central processing unit, an output terminal for supplying the output of said first switching means as a basic signal for the external system clock signal, a second input terminal for receiving the external system clock signal, a third input terminal for receiving the dividing signal, a second divider for dividing the internal clock signal in response to the dividing signal, a phase comparator for comparing phases of the clock signal divided by said second divider and the external system clock signal with each other, a low-pass filter for converting a result of the comparison of said phase comparator into an analog voltage, a voltage controlled oscillator for outputting an oscillation signal having an oscillation frequency which is varied in response to the output signal of said low-pass filter, a third divider for dividing the oscillation signal produced by said voltage controlled oscillator to produce an oscillation signal of a low frequency, second delay means for delaying the oscillation signal produced by said voltage controlled oscillator by a delay time equal to that of the oscillation signal divided by said third divider, and second switching means for selectively outputting, as the internal clock signal, one of the low frequency oscillation signals divided by the said third divider and the oscillation signal delayed by said second delay means in response to the operation condition signal from said central processing unit;

the internal clock signal outputted from said second switching means being fed back as an input clock signal to said second divider so that a phase locked loop circuit is formed by said second divider, said phase comparator, said low-pass filter, said voltage controlled oscillator, said third divider, said second delay means and said second switching means.

5,663,688

METHOD OF ENHANCING THE NOISE IMMUNITY OF A PHASE-LOCKED LOOP, AND DEVICE IMPLEMENTING THIS METHOD

Christian Delmas, Saint Egreve; Francis Dell'Ova, St. Hilaire du Touvet, and Frédéric Paillardet, Grenoble, all of France, assignors to Thomson Multimedia S.A., Courbevoie, France

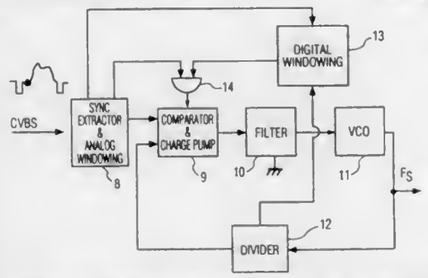
PCT No. PCT/FR94/00659, § 371 Date Apr. 2, 1996, § 102(e) Date Apr. 2, 1996, PCT Pub. No. WO94/29964, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 553,376

Claims priority, application France, Jun. 8, 1993, 93 06836

Int. Cl.[6] H03L *7/08*

U.S. Cl. 331—14 **16 Claims**



1. Method of enhancing the noise immunity of a phase-locked loop, the said phase-locked loop comprising a comparator (9) and means (14) for inhibiting the action of the comparator on the said phase-locked loop, the said method being characterized in that the said inhibition is lifted in the course of a main time window resulting from the intersection of a first time window derived from the input signal of the phase-locked loop and of a second time window derived from the loop return signal.

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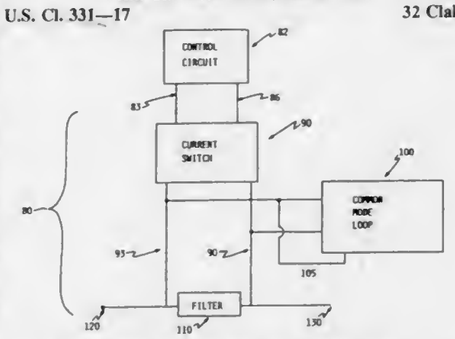
METHOD AND APPARATUS FOR PROVIDING A HIGH SPEED CHARGE PUMP WITH LOW STATIC ERROR

Steven J. Baumgartner; Rick A. Philpott, both of Rochester, and David W. Siljenberg, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1996, Ser. No. 673,725

Int. Cl.[6] H03L *7/089;* **H03G** *3/20*

U.S. Cl. 331—17 **32 Claims**



1. A charge pump with low static error, comprising:

a current switch for receiving a control signal from a control circuit and for generating a charge signal in response to the control signal;

a loop filter, coupled to the current switch, for receiving the charge signal at a first and second node, the charge signal adjusting a voltage at the first and at the second node in response to the control signal from the control circuit; and

a common-mode loop, coupled to the current switch, for sensing the charge signal from the current switch and for providing a voltage level adjustment signal to the first node of the loop filter in response thereto.

5,663,690

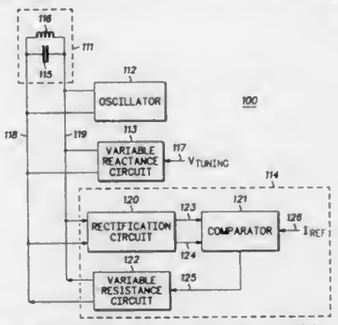
CONSTANT HIGH Q VOLTAGE CONTROLLED OSCILLATOR

Michael McGinn, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1996, Ser. No. 611,392

Int. Cl.[6] H03B *5/08;* **H03L** *5/00*

U.S. Cl. 331—109 **26 Claims**



24. A frequency tunable oscillator circuit, comprising:

a reactive load coupled to an output of the frequency tunable oscillator circuit for developing an output signal;

a variable reactance circuit coupled to the output of the frequency tunable oscillator circuit for varying a tuning frequency of the output signal; and

an active damping circuit coupled to the output of the frequency tunable oscillator circuit to maintain the output signal at a constant Q when the tuning frequency changes.

5,663,691

ESTIMATOR FOR ESTIMATING AN OPERATING DEFECT IN A QUADRATURE MODULATOR, AND A MODULATION STAGE USING THE ESTIMATOR

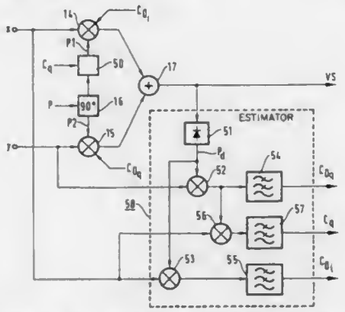
Francis Kowalik, Villers Sous St Leu, and Marc Isard, St Germain En Laye, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Jan. 11, 1996, Ser. No. 585,433

Claims priority, application France, Jan. 11, 1995, 95 00261

Int. Cl.[6] H04L *27/20*

U.S. Cl. 332—103 **7 Claims**



1. An estimator for estimating an operating defect in a quadrature modulator including two mixers to which respective carrier signals are applied, and to which respective modulating signals are also applied, the output signals from said mixers being applied to a summing circuit so as to constitute a modulated signal, wherein said estimator comprises:

detection means for detecting the instantaneous power of said modulated signal;

multiplication means for multiplying the detected instantaneous power by at least one signal derived from at least one of said modulating signals; and

integration means for integrating the result of said multiplication;

said integration means supplying a signal indicative of said operating defect of said modulator.

5,663,692

ELECTRICALLY ACTIVATED RF SWITCH ACCESSORY USED WITH A PORTABLE RADIO

Charles B. Swope, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 6, 1995, Ser. No. 554,430

Int. Cl.[6] H01P *1/10*

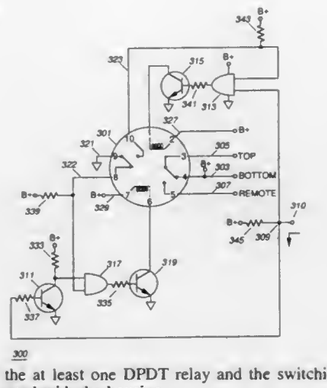
U.S. Cl. 333—101 **10 Claims**

3. An accessory used with a two-way portable radio for switching RF energy from an input port to either a primary port or a remote port comprising:

a housing;

at least one double-pole double-throw (DPDT) relay for switching RF energy from the primary port to the remote port;

a switching circuit for sensing an operating state of the at least one relay and controlling switching operation of the at least one relay in response to a control input provided to the accessory; and



wherein the at least one DPDT relay and the switching circuit are located with the housing.

5,663,693

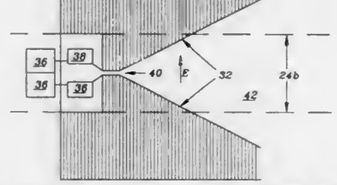
DIELECTRIC WAVEGUIDE POWER COMBINER

Glenn R. Doughty, Plano, Tex.; John A. Higgins, Los Angeles, Calif.; Richard L. Kaiser, Dallas, and Sam K. Buchmeyer, Garland, both of Tex., assignors to Rockwell International, Seal Beach, Calif.

Filed Aug. 31, 1995, Ser. No. 521,694

Int. Cl.[6] H01P *5/12*

U.S. Cl. 333—125 **7 Claims**



1. A waveguide power combiner having an input and an output comprising:

a plurality of waveguides for receiving the input, said plurality of waveguides extending in a vertical and a horizontal direction;

dielectric substrates disposed within said plurality of waveguides in the vertical direction, said dielectric substrates each having a variable thickness ranging from a maximum thickness to a minimum thickness for transmitting power to said waveguides, said dielectric substrates each include a plurality of tapered-slotted antennas, such that at least one antenna is associated with each waveguide; and

means for combining said plurality of waveguides into a reduced number of waveguides, such that said reduced number of waveguides provide the combiner output.

5,663,694

TRIGGERED-PLASMA MICROWAVE SWITCH AND METHOD

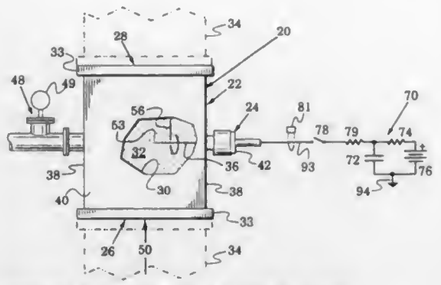
Dan M. Goebel, Tarzana; Joseph Santoru, Agoura Hills; Robert L. Poeschel, Thousand Oaks, and John W. Gerstenberg, Lake Elsinore, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 8, 1996, Ser. No. 612,988

Int. Cl.[6] H01P *1/185;1/14;1/28*

U.S. Cl. 333—157 **36 Claims**

1. A method for selectively directing a microwave signal along first and second signal paths, comprising the steps of:



providing an ionizable gas of a selected species;

adjusting the pressure of said gas so that the incidence of a microwave signal will generate from seed electrons in said gas a plasma having a reflecting electron density N, that is sufficient to reflect said microwave signal from said plasma;

causing said microwave signal to be incident upon said gas; and

selectively applying an electric potential to an electrode which protrudes into said gas to direct said microwave signal along a first signal path away from said plasma or omitting said applying of an electric potential to direct said microwave signal along a second signal path through said gas.

5,663,695

SURFACE ACOUSTIC WAVE FILTER DEVICE AND TRANSDUCER THEREFOR

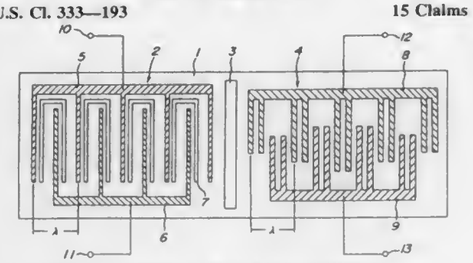
Mitsuhiro Tanaka, Chita-Gun; Susumu Nomoto, Nagoya; Masahiko Suglyama, Nagoya, and Kenji Suzuki, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Oct. 31, 1995, Ser. No. 558,607

Claims priority, application Japan, Oct. 31, 1994, 6-267220

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—193 **15 Claims**



1. A surface acoustic wave filter device comprising:

a piezoelectric substrate;

an input side transducer formed on said substrate, for exciting a surface acoustic wave; and

an output side transducer formed on said substrate, for receiving and converting the surface acoustic wave excited by said input side transducer;

one of said transducers comprising a unidirectional transducer and the other of said transducers comprising a bidirectional transducer, wherein:

said unidirectional transducer comprises (i) a positive electrode comprising a plurality of electrode fingers that are periodically arranged at a pitch λ that is a propagation wavelength of a fundamental surface acoustic wave, (ii) a negative electrode comprising a plurality of electrode fingers that are periodically arranged at said pitch λ and each situated with respect to an adjacent pair of said electrode fingers of the positive electrode at a center distance λ/2, and (iii) a floating electrode comprising a plurality of electrode fingers each situated between an adjacent one of said electrode fingers of said positive electrode and an adjacent one of said electrode fingers of said negative electrode, and offset from an intermediate position between said adjacent electrode fingers of said positive and negative electrodes, in a direction opposite to a propagation direction of said surface acoustic wave in the case of the input side transducer, and in the propagation direction of said surface acoustic wave in the case of the output side transducer, (iv) each of said electrode fingers of the positive and negative electrodes and of said floating electrode of the unidirectional transducer having a width λ/12 as measured in said propagation direction of said surface acoustic wave, and (v) each electrode finger of said floating electrode of the unidirectional transducer being offset from said intermediate position by a distance λ/12; and

said bidirectional transducer comprises (i) a positive electrode comprising a plurality of sets of two electrode fingers that are spaced from each other by a center-to-center distance λ/4, each electrode finger of said sets of the positive electrode having a width λ/8 as measured in said propagation direction of said surface acoustic wave, and said sets of electrode fingers of the positive electrode being periodically arranged at a pitch λ, and (ii) a negative electrode comprising a plurality of sets of two electrode fingers that are spaced from each other by a center-to-center distance λ/4, each electrode finger of said sets of the negative electrode having a width λ/8 as measured in said propagation direction of said surface acoustic wave, and each set of electrode fingers of the negative electrode being arranged between adjacent sets of electrode fingers of the positive electrode.

5,663,696

SAW FILTER WITH WAVE REFLECTIONS AND PHASE DIFFERENCES

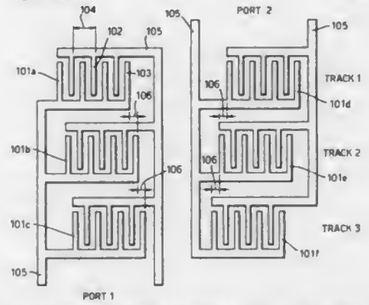
David P. Morgan, Northampton, England, assignor to Advanced Saw Products SA, Bevaix, Switzerland

Filed Apr. 24, 1995, Ser. No. 426,854

Claims priority, application United Kingdom, Apr. 25, 1994, 9408188

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—194 **14 Claims**



1. A SAW filter comprising a group of N tracks, where N is an odd integer greater than 2, including an input interdigitated transducer (IDT) spaced apart from an output IDT, wherein respective tracks are adapted to have different effective electro-acoustic lengths such that surface acoustic waves launched into respective tracks from input IDT undergo at least one reflection at the corresponding output IDT and at least one reflection from said input IDT prior to forming a substantially coherent signal at the output IDT, wherein the effective electro-acoustic lengths of respective tracks have phase differences relative to a reference track corresponding to 2πrm/N where r corresponds to a sequential integer number of each track relative to the reference track that is greater than 0, not a multiple of N and not an integer multiple of 2π, and m is a number of transits of a wave prior to forming the signal.

5,663,697

SURFACE ACCOUSTIC WAVE FILTER

Yasumi Kobayashi; Kuniyuki Matsui; Yasuhiro Hirao; Kousuke Takeuchi; Hiroshi Kayaki; Yusuke Takahashi; Toshiharu Tanaka; Isao Kiyose, all of Osaka-fu, and Kenichi Shibata, Wakayama-ken, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

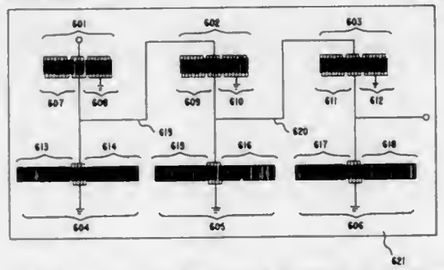
Division of Ser. No. 301,100, Sep. 6, 1994, Pat. No. 5,543,757.

This application Apr. 22, 1996, Ser. No. 635,678

Claims priority, application Japan, Sep. 6, 1993, 5-220955; Sep. 9, 1993, 5-224655; Oct. 6, 1993, 5-250332

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—195 **2 Claims**



1. A surface acoustic wave filter being constructed by connecting in series one or two or more filter functional units each comprising a first surface acoustic wave resonator having input and output terminals connected in series with a signal line and a second surface acoustic wave resonator having input and output terminals one of which is connected to said signal line and the other of which is grounded, and wherein

said first surface acoustic wave resonator is constituted by one interdigital transducer and a pair of strip type comb-shaped reflectors with the interdigital transducer interposed therebetween, one of the strip type comb-shaped reflectors being connected to the ground and the other comb-shaped reflector being opened, and said second surface acoustic wave resonator is constituted by one interdigital transducer and a pair of electrically short strip type grating reflectors with the interdigital transducer interposed therebetween.

5,663,698

MAGNETOSTATIC WAVE DEVICE HAVING SLANTED END PORTIONS

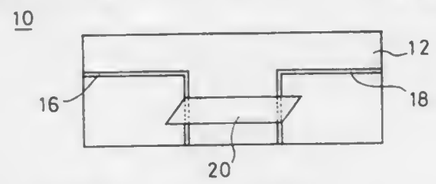
Takekazu Okada; Satoru Shinmura; Fumio Kanaya, and Shinichiro Ichiguchi, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Dec. 8, 1994, Ser. No. 352,260

Claims priority, application Japan, Dec. 14, 1993, 5-343126

Int. Cl.[6] H01P *1/215*

U.S. Cl. 333—202 **10 Claims**



1. A magnetostatic wave device comprising:

a ferrimagnetic base material having a length and a width and having slant portions at both ends of the length direction of said ferrimagnetic base material, each of said slant portions having two spaced ends;

two transducers at a distance from each other being formed on said ferrimagnetic base material so as to extend in the width direction of said ferrimagnetic base material, each of said transducers having an outside edge extending in a width direction of said ferrimagnetic base material;

each started portion having one of said ends positioned on said outside edge of each of said transducers, the other of said ends of each of said slant portions being positioned at a distance from said outside edges of each of said transducers.

5,663,699

STARTER MAGNET SWITCH

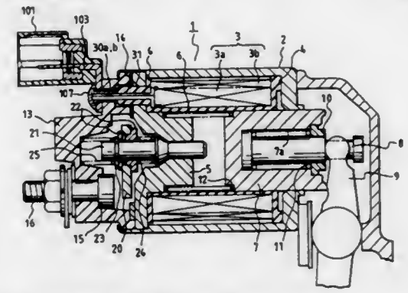
Shigeru Shiroyama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 527,983

Claims priority, application Japan, Oct. 28, 1994, 6-288829

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—126 **15 Claims**



1. A starter magnet switch comprising:

a starter magnet switch main body;

a connecting terminal for supplying starter magnet switch operating current;

a connecting terminal housing in which the connecting terminal is insert-molded, the connecting terminal housing being attachable to a vehicle-side connector; and

a watertight seal member being fitted with an inner wall of the connecting terminal housing so as to prevent infiltration of water from the vehicle-side connector,

wherein the connecting terminal is electrically connected to the starter magnet switch, and the connecting terminal mechanically supports said connecting terminal housing on said starter magnet switch main body.

5,663,700

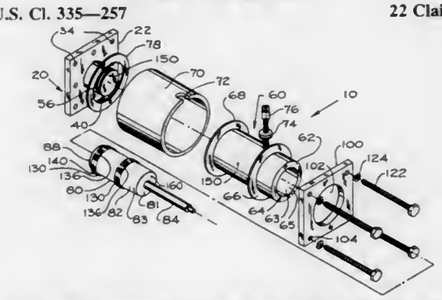
SOUND DAMPENING SOLENOID

Glen C. Spence, New Berlin, and Dennis A. Maller, Racine, both of Wis., assignors to Trombetta Corporation, Milwaukee, Wis.

Filed Aug. 25, 1995, Ser. No. 519,674

Int. Cl.[6] H01F *3/00*

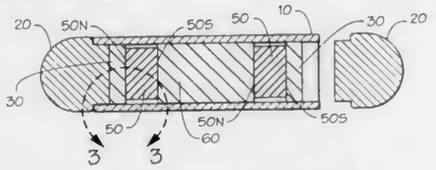
U.S. Cl. 335—257 **22 Claims**



1. A sound dampening solenoid including a bottom plate assembly, a plunger assembly, and a tube having a first end, the sound dampening solenoid comprising:

the bottom plate assembly coupled to the tube first end;
a pneumatic seal located substantially between the tube first end and the bottom plate assembly;
the plunger assembly substantially pneumatically sealed within the tube; and
the tube defining a substantially sealed pneumatic cavity formed by the bottom plate assembly and the plunger assembly.

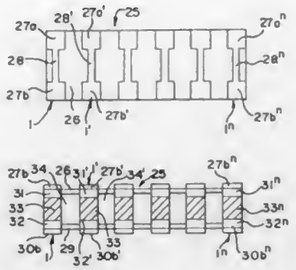
5,663,701
STOMACH DEBRIS COLLECTING MAGNET
Kamaljit S. Kaura, 30 Coronado Pointe, Laguna Niguel, Calif. 92677
Filed Aug. 15, 1996, Ser. No. 698,036
Int. Cl.[6] H01F *7/02;* **A61M** *37/00*
U.S. Cl. 335—306 **3 Claims**



1. A magnetic device for attracting magnetically attractive objects in the stomach comprising:
a hollow, cylindrical case made of a rigid, corrosion resistant, non-magnetic material, and having open ends;
a rod-shaped, iron bearing center piece positioned centrally in the case, the center piece having an outside wall in contact with an inside wall of the case;
a pair of disc shaped permanent magnetic members, each of the magnetic members providing an annular side surface and two opposing end surfaces, one said end surface providing a north magnetic pole of said magnetic member, the other said end surface providing a south magnetic pole of said magnetic member;
the magnetic members positioned within the case so that one side surface of the center piece touches the south magnetic pole of one said magnetic member, and the other side surface of the center piece touches the north magnetic pole of the other said magnetic member;
a pair of disc-shaped, iron bearing end pieces, each one of the end pieces being positioned in contact with one said magnetic member;
a pair of caps made of a rigid, corrosion resistant, non-magnetic material, the caps being tightly fitted to the open ends of the case and integrally attached thereto such that gastric juices in the stomach cannot cause corrosion of the caps or the case and cannot enter the case;
the device assembled such that movement of the center piece, magnetic members and the end pieces, within the case is not possible.

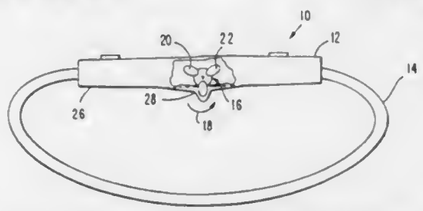
5,663,702
PTC ELECTRICAL DEVICE HAVING FUSE LINK IN SERIES AND METALLIZED CERAMIC ELECTRODES
Philip C. Shaw, Jr., Elk Grove Village, and Paul Charles Stein, Schaumburg, both of Ill., assignors to Littelfuse, Inc., Des. Plaines, Ill.
Filed Jun. 7, 1995, Ser. No. 476,094
Int. Cl.[6] H01H *85/02;* **H01C** *7/13*
U.S. Cl. 337—183 **22 Claims**

1. An electrical fuse assembly including a plurality of electrical circuit protection devices which can be used to protect a number of electrical circuits, the fuse assembly comprising:
a first and second substrate, each substrate having an inner surface and an outer surface;



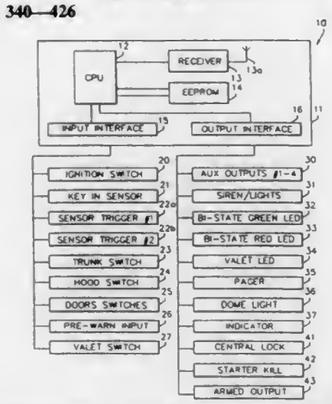
a plurality of conductive terminal pads deposited on the outer surfaces of the first and second substrates;
a plurality of fuse links deposited on the outer surface of the first substrate;
a plurality of first conductive layers deposited on the inner surface of the first substrate;
a plurality of second conductive layers deposited on the inner surface of the second substrate;
a plurality of PTC elements interposed between the first and second substrates, each PTC element in electrical contact with a single first conductive layer and a single second conductive layer, each PTC element also electrically connected in series with a single fuse link; and,
the PTC elements electrically insulated from one another by a plurality of dividing substrates.

5,663,703
SILENT WRIST PAGER WITH TACTILE ALARM
Ted Louis Pearlman, Montclair, and Andrew Todd Zidel, Mountainside, both of N.J., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.
Filed Jul. 12, 1995, Ser. No. 501,366
Int. Cl.[6] H04B *3/36*
U.S. Cl. 340—407.1 **12 Claims**



1. An alarm system for a device worn against a skin surface of a user, comprising:
a case body having a front surface and a back surface;
a motor arranged inside said case body;
cam means arranged to be rotated by said motor and mounted in said body so that a rotating portion of said cam means extends beyond the back surface of said case body;
a flexible membrane attached to said case body and covering a portion of said back surface whereat said cam means extends;
a strap for attaching said case body to a user so that said flexible membrane is in contact with a skin surface of the user; and
alarm mode control means for controlling a ratio of rotation periods and rest periods of said motor, wherein said alarm mode control means comprises a message alarm processor for controlling said motor in accordance with mode information included in a wireless transmitted signal received by the device.

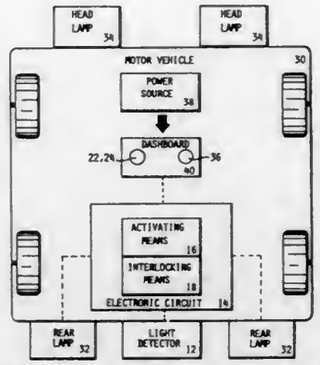
5,663,704
VEHICLE SECURITY SYSTEM HAVING ENHANCED DOOR LOCKING FEATURES
Geoffrey C. Allen, Symrna, Ga.; Kenneth E. Flick, 5236 Presley Pl., Douglasville, Ga. 30135, and David T. Herson, Houghton Estates, South Africa, assignors to Kenneth E. Flick, Douglasville, Ga.
Filed Apr. 14, 1995, Ser. No. 422,516
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **34 Claims**



1. A vehicle security system for a vehicle including vehicle door locks movable between a locked position and an unlocked position, said vehicle security system comprising:
at least one vehicle security sensor for sensing a breach of vehicle security;
alarm indicating means for indicating an alarm at the vehicle;
a remote transmitter including panic signal generating means for transmitting a remote panic signal responsive to activation by a user and disarm signal generating means for transmitting a disarm signal responsive to activation by a user; and
a controller operatively connected to said at least one vehicle security sensor and said alarm indicating means, said controller when in an armed mode being capable of generating the alarm responsive to triggering of said at least one vehicle security sensor, said controller further comprising remote panic lock control means for both moving at least one vehicle door lock to the unlocked position and generating the alarm both responsive to receipt of the remote panic signal and when said controller is in the armed mode, said remote panic lock control means further comprising means for switching the controller to a disarmed mode responsive to receipt of the disarm signal and while the controller is generating an alarm.

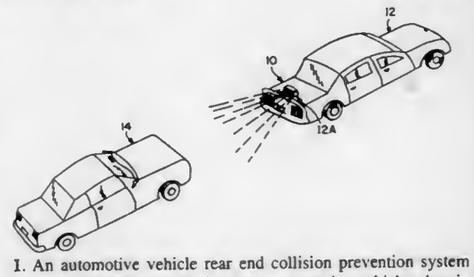
5,663,705
VEHICLE SAFETY DEVICE
Gerhard W. Pretorius, P.O. Box 12138 Leraatsfontein, Witbank 1038, and Izak Johannes Daniel Van Der Westhuizen, Malan Street, Schoemansville, Hartsbeespoort 0216, both of South Africa
Filed Sep. 14, 1995, Ser. No. 528,259
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—435 **14 Claims**

1. A safety device for a vehicle comprising:
a) at least one warning lamp mountable on the vehicle,
b) a detector located rearwardly on the vehicle for detecting the presence of a rearwardly approaching vehicle,
c) activating means for activating the warning lamp for a predetermined period of time when the presence of the rearwardly approaching vehicle is detected by the detector,
d) interlocking means for preventing reactivation of the warning lamp when light is continuously present at the light detector for a period exceeding the predetermined period of the warning lamp, and



e) a power source which is supplied to the detector and to the activating means when the headlamps of the vehicle are turned on.

5,663,706
TRANSITION ALERT SYSTEMS FOR AUTOMOTIVE VEHICLES
Joseph A. Francis, 580 E. 21st St., Apt.2-C, Brooklyn, N.Y. 11226
Filed Jul. 21, 1995, Ser. No. 505,677
Int. Cl.[6] B60Q *1/50*
U.S. Cl. 340—464 **17 Claims**



1. An automotive vehicle rear end collision prevention system that prevents a rear end collision to an automotive vehicle wherein the automotive vehicle has a rear with a high point, an accelerator pedal with a position, a parking brake with a position, a transmission with a gear selection, passenger compartment, a battery, and a brake pedal with a position, said system comprising:
a) brake switching means being responsive to the position of the brake pedal of the automotive vehicle; said brake switching means being closed when the brake pedal of the automotive vehicle is released and required to be closed for said automotive vehicle rear end collision prevention system to operate, so that the brake pedal of the automotive vehicle must be released for said automotive vehicle rear end collision prevention system to operate;
b) accelerator switching means connected in series to said brake switching means and being responsive to the position of the accelerator pedal of the automotive vehicle; said accelerator switching means being located on the accelerator pedal of the automotive vehicle; said accelerator switching means being closed when the accelerator pedal of the automotive vehicle is released and required to be closed for said automotive vehicle rear end collision prevention system to operate, so that the accelerator pedal of the automotive vehicle must be released for said automotive vehicle rear end collision prevention system to operate;
c) parking brake switching means connected in series to said brake switching means and said accelerator switching means and being responsive to the position of the parking brake of

the automotive vehicle; said parking brake switching means being closed when the parking brake of the automotive vehicle is released and required to be closed for said automotive vehicle rear end collision prevention system to operate, so that the parking brake of the automotive vehicle must be released for said automotive vehicle rear end collision prevention system to operate;

d) transmission switching means connected in series to said brake switching means, said parking brake switching means, and said accelerator switching means and being responsive to the gear selection of the transmission of the automotive vehicle; said transmission switching means being closed when the transmission of the automotive vehicle is out of park and in any other gear and required to be closed for said automotive vehicle rear end collision prevention system to operate, so that the transmission of the automotive vehicle must be out of park for said automotive vehicle rear end collision prevention system to operate; and

e) a light disposed at the high point of the rear of the automotive vehicle external to the passenger compartment of the automotive vehicle; said light being connected in series to said brake switching means, said accelerator switching means, said parking brake switching means, and said transmission switching means and being illuminated when said brake switching means, said accelerator switching means, said parking brake switching means, and said transmission switching means are closed, so that when the brake pedal of the automotive vehicle, the parking brake of the automotive vehicle, and the accelerator pedal of the automotive vehicle are released and the transmission of the automotive vehicle is out of park and in any other gear, said brake switching means, said parking brake switching means, said transmission switching means, and said accelerator switching means close illuminating said light and warning a trailing automotive vehicle that the automotive vehicle is changing operation.

5,663,707

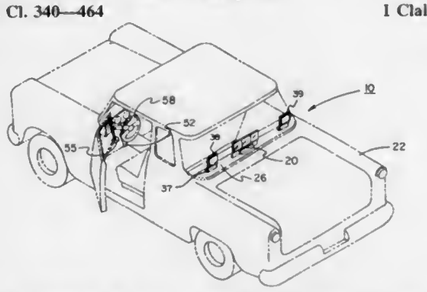
SIGNALLING LIGHT VISIBLE THROUGH A REAR VIEW WINDOW OF A VEHICLE

Gary M. Bartilucci, 6 Candy La., Hopewell Junction, N.Y. 12533

Continuation-in-part of Ser. No. 420,115, Apr. 11, 1995. This application Jul. 2, 1996, Ser. No. 675,242

Int. Cl.[6] B60Q *1/50*

U.S. Cl. 340—464 **1 Claim**



1. A signalling light visible through a rear window of a vehicle for signaling a driver's intent in a rearward direction based upon actuation of vehicle controls such as an accelerator pedal, a brake pedal, a lever of the vehicle's transmission system, and a turn signal lever comprising, in combination:

a primary electrically energizable signaling light unit having a rectangular planar clear flexible plastic casing with three rectangular recesses formed therein, the casing measuring about 12 inches long by about 4 inches wide by about ⅛ inches thick, a layer of adhesive disposed upon an outwardly positioned surface of the casing for allowing the securement thereof to a center of a rear window of a vehicle, a rectangular cut out formed thereon for allowing the unit to fit snugly about an upper extent of a central braking light of a vehicle, a pair of rigid L-shaped brackets integral with and extended downwards from the casing and further including a circular through hole formed on a lower extent thereof for receiving a fastener thereby allowing the securement thereof to a recipient surface, a first array of green light-emitting diodes arranged in a rectangular matrix within one of the recesses, a second array of red light-emitting diodes arranged in a rectangular matrix and secured within another of the recesses, and a third array of yellow light-emitting diodes arranged in a rectangular matrix and secured within the remaining recess and with each of the arrays covered with a translucent plastic sheet for defocusing light emitted therefrom to essentially project a collimated beam;

a pair of secondary electrically energizable signaling light units each having a rectangular planar clear flexible plastic casing with a rectangular recess formed therein, a layer of adhesive disposed upon an outwardly positioned surface of the casing for allowing the securement thereof to opposite ends of the rear window of the vehicle, a L-shaped rigid bracket integral with and extended downwards from the casing and further including a circular through hole formed on a lower extent thereof for receiving a fastener thereby allowing the securement thereof to a recipient surface, a fourth array of red light-emitting diodes arranged in a rectangular matrix and secured within the recess of one of the secondary units wherein the fourth array is positioned at a left extent of the rear window, a fifth array of red light-emitting diodes arranged in a rectangular matrix and secured within the recess of the other secondary unit wherein the fifth array is positioned at a right extent of the rear window;

a multi-conductor sheathed electrical power cable having five proximal terminal ends a distal plug end and with each terminal end extended through a grommet on the casing and further separately coupled to one of the arrays for providing electrical energy to the corresponding light-emitting diodes;

first pressure sensitive switch coupled to an accelerator pedal of the vehicle for transmitting an acceleration indication signal when the vehicle's accelerator pedal is depressed;

second pressure sensitive switch coupled to a brake pedal of the vehicle for transmitting a braking indication signal when the vehicle's brake pedal is depressed;

third switch coupled to a lever of a transmission system of the vehicle for transmitting an enabling signal when a transmission of the vehicle is placed in a mode of operation for traveling forwards, wherein the enabling signal is received from a detection unit of the transmission system;

fourth switch coupled to a turn signal lever for transmitting a left turn indication signal upon the lowering of the turn signal lever and a right turn indication signal upon the raising of the turn signal lever; and

electrically energizable logic circuitry situated within a rigid box shaped container with an open top and a lid removably secured thereto, the logic circuitry coupled to the plug end of the power cable and to the first, the second, the third switch, and the fourth switch and further couplable to a power supply of the vehicle for enabling the signaling light system based upon receipt of the enabling signal, energizing only the first array based upon receipt of the acceleration indication signal and the enabling signal, energizing only the second array, the fourth array, and the fifth array based upon receipt of the braking indication signal and the enabling signal, energizing the fourth array intermittently upon receipt of the left turn indication signal in combination with the braking indication signal and the enabling signal, and energizing the fifth array intermittently upon receipt of the right turn indication signal in combination with the braking indication signal and the enabling signal, the logic circuitry comprising a NOR gate for energizing only the third array upon receipt of only the enabling signal;

whereby the secondary electrically energizable signaling light units utilize a following driver's conventional attention to the rear window and associated central brake light to indicate that a lead driver is both braking and preparing for a turn.

5,663,708

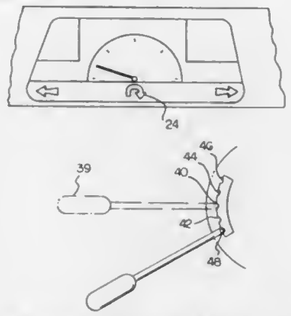
U-TURN SIGNAL APPARATUS

Dennis M. Strawn, 11 Gray Stone Way, Laguna Niguel, Calif. 92677

Filed Apr. 1, 1996, Ser. No. 625,246

Int. Cl.[6] B60Q *1/34*

U.S. Cl. 340—465 **1 Claim**



1. A new and improved U-turn signal apparatus comprising, in combination:

a vehicle with a front end and a rear end having two green lights including a front left light situated on the front end at a left extent thereof and a rear left light situated on the rear end at a left extent thereof, the front left light situated within a conventional turn signal indicator housing with a clear frosted translucent cover and positioned adjacent to a conventional turn signal light located therein, the rear left light situated within a conventional reverse indicator housing with a clear frosted translucent cover and further positioned adjacent to a conventional reverse light located therein;

control circuitry situated within the vehicle and electrically connected to the front left light, rear left light, and a plurality of conventional turn signals lights including a front left turn signal, a rear left turn signal, a front right turn signal, and a rear right turn signal, the control circuitry adapted to intermittently actuate a first combination of lights including the front left turn signal and the rear left turn signal upon the activation thereof in a first mode operation and a second combination of turn signals including the front right turn signal and the rear right turn signal upon the activation thereof in a second mode of operation, the control circuitry further adapted to actuate the front left light and the rear left light intermittently upon the actuation thereof in a third mode of operation and further preclude the activation of the conventional turn signals, front left light, and rear left light in a fourth mode of operation;

an interior U-turn indicator icon centrally situated on a control panel of the vehicle and adapted to intermittently actuate upon the activation of the control circuitry in a third mode of operation; and

a throw control switch with an associated lever positioned within the vehicle adjacent to a steering column thereof and further electrically connected to the control circuitry, the control switch adapted to actuate the control circuitry in a first mode of operation when in a first orientation thereof for signalling a left turn to other drivers, actuate the control circuitry in a second mode of operation when in a second orientation thereof for signalling a right turn to other drivers, actuate the control circuitry in a third mode of operation when in a third orientation thereof for signalling a U-turn to other drivers, and actuate the control circuitry in a fourth mode of operation when in a final orientation thereof for disabling all of the lights, whereby the lever of the switch has five orientations consisting of vertically aligned notches with a center notch corresponding to the final orientation of the control switch, a lower notch situated adjacent to the center notch associated with the first orientation of the control switch for signalling a left turn to other drivers, an upper notch also situated adjacent to the center notch associated with the second orientation of the control switch for signalling a right turn to other drivers, an uppermost notch situated adjacent to the upper notch associated with the third orientation of the control switch for signalling a U-turn to other drivers, and a lowermost notch situated adjacent to the lower notch also associated with the third orientation of the control switch for signalling a U-turn to other drivers, wherein the control switch and associated lever are further adapted to accommodate other standard vehicular functions including the switching of headlights of the vehicle from a normal intensity to a bright intensity and visa-versa.

5,663,709

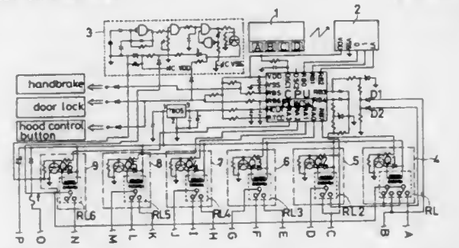
AUXILIARY CONTROL CIRCUIT FOR VEHICLE LIGHTS WITH A THEFT PREVENTION FUNCTION

Ing-Bin Juang, No. 6, Lane 12, Chung Kuang Road, Tso Ying District, Kaohsiung, Taiwan

Filed May 1, 1996, Ser. No. 640,683

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 340—468 **6 Claims**



1. An auxiliary control circuit for vehicle lights with a theft prevention function, comprising:

a transmitter adapted to be carried by a user for transmitting any one of a plurality of coded signals;

a receiver disposed within a vehicle for receiving said coded signals from said transmitter and providing a digital output signal responsive thereto;

a central processing unit having a first input coupled to said receiver for input of said digital output signal thereto, said central processing unit having a second input coupled to a brake switch of the vehicle for monitoring operation thereof and a third input coupled to a pair of signal lights of the vehicle for monitoring operation of the vehicle's turn signal switch, said central processing unit having a plurality of outputs; and,

a plurality of actuating circuits respectively coupled to said plurality of outputs of said central processing unit, a first of said plurality of actuating circuits including a first relay having a pair of common contacts coupled to a power source of the vehicle and a pair of normally open contacts respectively coupled to the pair of vehicle signal lights and a first transistor drivingly coupled to said first relay and having an input coupled to a first of said plurality of outputs of said central processing unit, a second of said plurality of actuating circuits including a second relay having (1) a common contact coupled to a brake light of the vehicle, (2) a normally closed contact coupled to the brake switch of the vehicle, and (3) a normally open contact coupled to both of a pair of normally closed contacts of said first relay, said second actuating circuit including a second transistor drivingly coupled to said second relay and having an input coupled to the brake switch of the vehicle, said central processing unit including:

(a) means for activating a brake warning function responsive to a first predetermined coded signal from said transmitter,

said brake warning means providing an intermittent drive signal to said first output of said central processing unit to alternatingly flash the vehicle's brake light and pair of signal lights, said brake warning means inhibiting said intermittent drive signal responsive to an input signal at said third input of said central processing unit indicating operation of the vehicle's turn signal switch, said brake warning means inhibiting said intermittent drive signal responsive to a second predetermined coded signal from said transmitter; and,

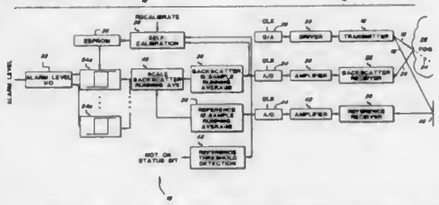
(b) means for actuating a hazard warning function responsive to a third predetermined coded signal from said transmitter, said hazard warning means providing an intermittent drive signal to said first output of said central processing unit to flash the pair of signal lights of the vehicle, said brake warning means inhibiting said intermittent drive signal responsive to an input signal at said third input of said central processing unit indicating operation of the vehicle's turn signal switch, said hazard warning means inhibiting said intermittent drive signal responsive to said second predetermined coded signal from said transmitter.

5,663,710

BACKSCATTER-TYPE VISIBILITY DETECTION

Harold A. Fasig; Charles E. Mallon; Raymond Denson; James R. Fasig, all of San Diego; Peter G. Coakley, Cardiff; Steven W. Lutjens, San Diego; Terry M. Flanagan, Los Angeles, and Edward J. Vasel, San Diego, all of Calif., assignors to Jaycor, San Diego, Calif.

Filed Jul. 18, 1995, Ser. No. 503,994
Int. Cl.[6] G01W *1/00*
U.S. Cl. 340—601 **23 Claims**



1. A system for detecting an airborne visibility impeding agent comprising:

an infrared emitter positioned for emitting infrared radiation;

an infrared backscatter detector positioned to receive a first portion of the infrared radiation having been backscattered by the airborne visibility impeding agent, the infrared backscatter generating a backscatter signal in response to a detected amount of the first portion of infrared radiation;

an infrared reference detector positioned to receive a second portion of the infrared radiation not having been backscattered by the airborne visibility impeding agent, the infrared reference detector generating a reference signal in response to a detected amount of the second portion of infrared radiation; and

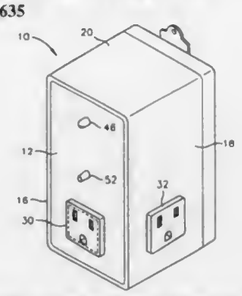
a visibility determination circuit coupled to the infrared emitter, the infrared backscatter detector and the infrared reference detector, for averaging the reference signal and the backscatter signal over time, for scaling the backscatter signal having been averaged using the reference signal having been averaged, for determining a determined amount of the infrared radiation backscattered by the airborne visibility impeding agent as a function of the backscatter signal having been averaged and scaled, for determining whether the determined amount exceeds a prescribed threshold, and for commencing generating of an alarm signal in event the determined amount is determined to exceed the prescribed threshold.

5,663,711

POWER FAILURE ALARM

John B. Sanders, Carlsbad, and Rejean Laverdiere, San Diego, both of Calif., assignors to Aliter Industries, Carlsbad, Calif.

Filed Jun. 7, 1995, Ser. No. 474,442
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—635 **16 Claims**



1. A combination electrical connector and power failure signal device, comprising:

a generally box-like housing having a front, a back and a chamber;

a male electrical plug on said back;

a female electrical socket on said front;

an electrical circuit in said housing including conductors connecting said male plug to said female socket;

a monitoring and alarm circuit in said housing responsive to power in said electrical circuit maintaining a stand by condition, said monitoring and alarm circuit including means for sensing a failure of power in said electrical circuit and initiating a continuous audible first alarm and means responsive to a predetermined time in said first alarm to terminate said first alarm and initiate an intermittent audible second alarm and

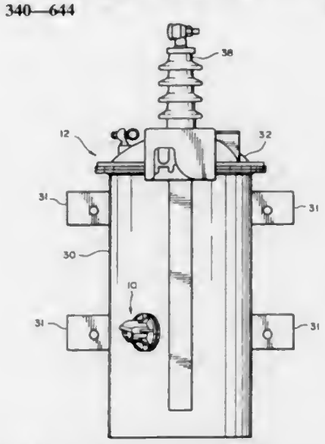
a battery for powering said monitoring and alarm circuit during failure of power in said electrical circuit.

5,663,712

ELECTRICAL CONTACT POSITION INDICATOR ASSEMBLY

Eugene L. Kamp, Fulton, Mo., assignor to Hubbell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 366,576, Dec. 30, 1994, abandoned. This application Jan. 5, 1995, Ser. No. 369,536
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—644 **20 Claims**



1. A contact indicator assembly, comprising:

a housing adapted to be mounted to an electrical device;

a three-dimensional indicator movably mounted to said housing between a first position and a second position, said indicator including a first three-dimensional area with first indicia thereon being visible in said first position and concealed in said second position; and a second three-dimensional area with second indicia thereon being visible in said second position and concealed in said first position, said first and second areas being arranged when in said first and second positions, respectively, to be visible substantially from in front, from below and from both sides of said indicator; and

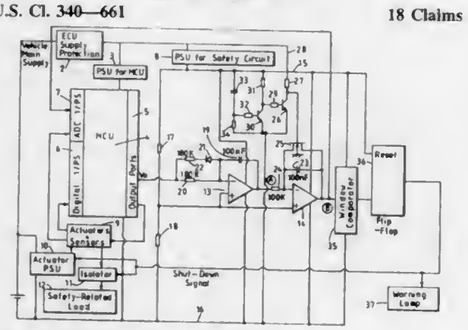
an operating mechanism, adapted to be operatively coupled to the electrical device, for moving said indicator between said first and second positions in response to changes in flow of electrical energy through the electrical device, said operating mechanism including an operating arm comprising a rod coupled to said indicator at one end and movably coupled at its other end within the electrical device for longitudinal movement in response to closing and opening of electrical contacts of the electrical device, said rod being flexible and resilient to absorb shocks.

5,663,713

CONTROL SYSTEM

John Michael Ironside, Birmingham; Andrew James Stephen Williams, Solihull; Brian Graham Nicholson, Redditch; Russel Wilson-Jones, Stratford-upon-Avon, and Clive Roger Sainsbury, Birmingham, all of England, assignors to Lucas Industries Public Limited Company, United Kingdom

Filed Sep. 8, 1995, Ser. No. 526,046
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—661 **18 Claims**



1. A control system comprising:

a controller having an input, a first output forming a system control output, and a second output;

an unstable circuit having an input connected to said second output and an output connected to said input of said controller, said unstable circuit providing an output voltage which is equal to a substantially constant equilibrium output voltage when an input voltage is equal to a predetermined constant steady state input voltage and which changes so that three parameters

(1) a difference between said output voltage and said equilibrium output voltage

(2) a first time differential of said parameter (1)

(3) a second time differential of said parameter (1)

never simultaneously asymptotically approach zero after said input voltage is momentarily changed from and returned to said steady state input voltage; and

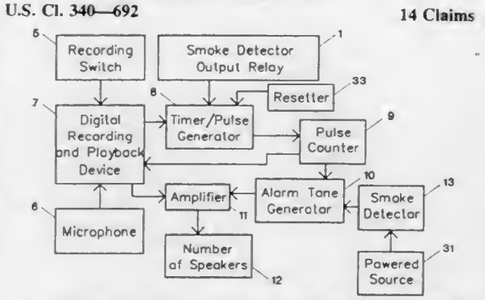
a detector connected to said output of said unstable circuit for signalling an error when said output voltage of said unstable circuit is outside an acceptable range, wherein said controller, during correct operation thereof, supplies at said second output a signal which causes said unstable circuit to produce said output voltage within said acceptable range.

5,663,714

WARNING SYSTEM FOR GIVING VERBAL INSTRUCTION DURING FIRE AND METHOD OF OPERATING THE WARNING SYSTEM

Eddie Lee Fray, 124 Majors Rd., Pensacola, Fla. 32503

Filed May 1, 1995, Ser. No. 432,516
Int. Cl.[6] G08B *25/08*
U.S. Cl. 340—692 **14 Claims**



1. A warning system capable of providing verbal instructions in cases of emergency situations, comprising fire or smoke hazards, said warning system having an alarm system for guiding individuals caught in emergency situations away from hazards, said alarm system comprising:

a. a smoke detector connected to a first point of a powered source and to a second point of said powered source;

b. a printed circuit connected to the smoke detector;

c. a smoke detector output relay connected to the printed circuit from a side which is easily exposable to smoke upon commencement of and during emergency situations;

d. a recording switch connected to the printed circuit at a point that is easily reachable by an individual for changing verbal instructions of the alarm system used for emergency situations;

e. a microphone connected to the printed circuit;

f. a digital recording and a play back device located close to the recording switch and to the microphone;

g. a timer/pulse generator located adjacent to the digital recording and the play back device;

h. a pulse counter located proximate to the timer/pulse generator in order to minimize time delay between sending of pulses by the timer/pulse generator and receipt of pulses by the pulse counter;

i. an alarm tone generator for generating alarm tones and being located proximate to the pulse counter;

j. an amplifier located adjacent to the timer/pulse generator axial to the digital recording and the play back device such that controlled output of the digital recording and the play back device and of the alarm tone generator is sent to the amplifier; and

k. a number of speakers which are capable of emitting clear, high-pitched loud acoustical signals and verbal messages, said number of speakers located adjacent to the amplifier such that the output of the amplifier is sent to the number of speakers;

wherein sound waves produced by the number of speakers are intended to be louder than high ambient sound levels that surround individuals in emergency situations.

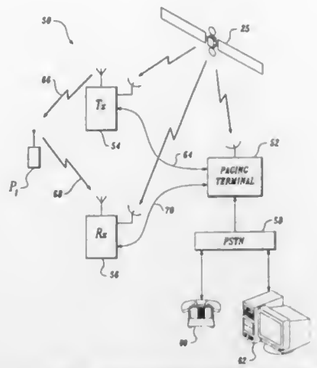
5,663,715

SYNCHRONIZED PAGING SYSTEM

Andrei Godoroia, Vancouver, Canada, assignor to Glenayre Electronics, Inc., Charlotte, N.C.

Division of Ser. No. 311,736, Sep. 22, 1994, abandoned. This application Jul. 19, 1996, Ser. No. 687,788
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.2 **5 Claims**

1. A circuit for decoding a paging signal received on a reverse channel from a remotely located paging unit which was transmitted



in response to a paging message transmitted on a forward channel from a paging transmitter, comprising:

a register for storing a synchronize code;

a correlator circuit that samples the paging signal received on the reverse channel and analyzes the sample to determine if the received paging signal matches the synchronize code;

a timing circuit for providing an indication of the current time;

means for storing an indication of the time at which a beginning of the paging signal was received; and

means for updating the register with a new synchronize code based on the time since the paging signal was received and the current time.

5,663,716

METHOD OF AVOIDING SIGNAL INTERFERENCE AMONG A PLURALITY OF REMOTE CONTROL SIGNALS

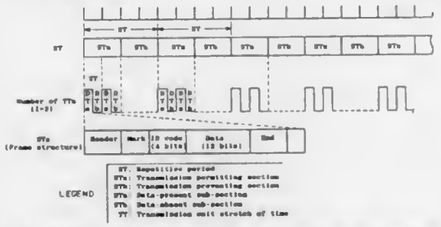
Kenichi Miwa, and Ryo Okamura, both of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan

Filed Feb. 8, 1995, Ser. No. 385,427

Claims priority, application Japan, Apr. 8, 1994, 6-070546

Int. Cl.[6] G08C *17/02*

U.S. Cl. 340—825.04 **4 Claims**



1. A method of transmitting and receiving signals between a plurality of remote controls and a single receiver comprising the steps of:

repeatedly sending a transmission signal for a period ST;

composing each period of a transmission permitting data frame STa and a transmission preventing data frame STb, wherein the transmission permitting data frame STa having a time period which is equal to or shorter than a time period for the transmission preventing data frame STb (STa≦STb);

composing each transmission permitting data frame STa of a transmission unit of time TT times 2^{i-1}, where "i" is a positive integer which is different for each remote control or channel; and

composing each transmission unit of time TT of a data-present sub-section DTa and data-absent sub-section DTb, and wherein the data-present sub-section DTa having a time period which is equal to or shorter than a time period for the data-absent sub-section DTb (DTa≦DTb).

5,663,717

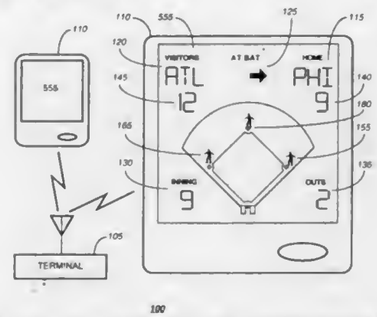
METHOD AND APPARATUS FOR PRIORITIZING MESSAGE TRANSMISSIONS AND ALERTS IN A RADIO COMMUNICATION SYSTEM

Michael Joseph DeLuca, Boca Raton, Fla., assignor to Motnrola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 283,370, Aug. 1, 1994, abandoned. This application May 6, 1996, Ser. No. 642,202

Int. Cl.[6] H04Q *7/18*

U.S. Cl. 340—825.36 **9 Claims**



6. A data communication receiver for prioritizing alerts, the data communication receiver comprising:

first status information about an event and for later receiving a second message about the same event, the second message including second status information different from the first status information;

a priority alert element coupled to the receiver for setting, without user intervention, an alert priority in response to the first status information, wherein the alert priority is indicative of different stages, including a critical stage, of the event that is the subject of the first and second messages;

a comparator coupled to the receiver for comparing the first and second status information to determine a status change in the event that has occurred between the sending of the first message and the sending of the second message, wherein the priority alert element sets, without user intervention, a status change priority that is associated with the status change and that is unrelated to the alert priority; and

an alert mechanism coupled to the receiver and the priority alert element for automatically alerting, without user intervention, a user of the status change regardless of the status change priority when the alert priority indicates that the event is at the critical stage, and for selectively alerting a user responsive to the status change priority and the alert priority when the event is not at the critical stage.

5,663,718

DEVICE FOR THE AUTOMATIC TESTING OF JOINTS IN ELECTRICAL HIGH VOLTAGE LINES

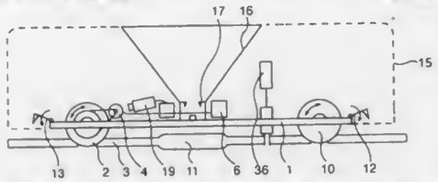
Bo Torbjorn Segerstrom, Malmkoping, and Stig Erik Arne Eriksson, Vallentona, both of Sweden, assignors to Vattenfall AB, Stockholm, Sweden

Filed Feb. 10, 1995, Ser. No. 386,493

Claims priority, application Sweden, Aug. 12, 1992, 9202359

Int. Cl.[6] G08C *19/22*; **H04Q** *9/00*

U.S. Cl. 340—870.07 **16 Claims**



1. A device for automatic testing joints for electrical high voltage lines, comprising:

a support frame for lowering into the vicinity of electrical high voltage lines;

at least one driving wheel, coupled to said support frame, said driving wheel for resting on one of said high voltage electrical lines;

a driving device, coupled to said driving wheel for driving said driving wheel to move said support frame along said electrical high voltage lines;

a first remotely controlled device for controlling said driving device to position said support frame in the vicinity of a joint in one of said high voltage power lines;

remotely controlled means for automatic measurement of physical data at a joint, comprising:

at least one measurement device for measuring a parameter of said joint to produce measurement data, and

means for transferring the measurement data to a remotely located receiver;

shielding means for shielding said remotely controlled means for automatic measurement to a uniform potential; and

guide rail means, coupled to said support frame, for steering the measuring device during placement and guiding along one of said electrical high voltage lines.

5,663,719

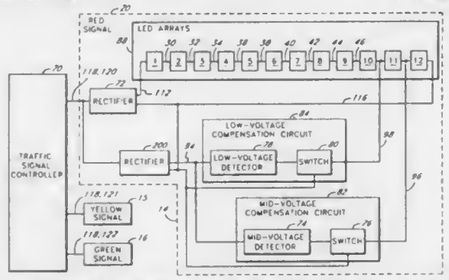
LED TRAFFIC SIGNAL LIGHT WITH AUTOMATIC LOW-LINE VOLTAGE COMPENSATING CIRCUIT

Raymond E. Deese, Corona, and David D. Lewis, Yorba Linda, both of Calif., assignors to Electro-Tech's, Anaheim, Calif.

Continuation of Ser. No. 55,512, Apr. 29, 1993, Pat. No. 5,457,450. This application Sep. 22, 1995, Ser. No. 532,138

Int. Cl.[6] G08G *1/07*

U.S. Cl. 340—912 **8 Claims**



1. A LED traffic signal light having both a mechanical external size and shape configuration and at least two electrical operational modes so that existing traffic lights retrofitted with said LED lights have reduced light diminution in comparison with conventional LED traffic signal lights during periods in which the line voltage drops from a normal input supply voltage to below a threshold value, said LED traffic signal light comprising:

a plurality of LEDs retained in a mechanical configuration that is compatible with the housing of the conventional traffic signal light to be retrofitted;

said LEDs being connected in a first electrical configuration so that when said LEDs are energized by said normal input supply voltage, each of said LEDs has a voltage applied across its terminals above a minimum necessary to produce a predetermined light output for said traffic signal light;

a detector device for determining whenever the input line voltage falls below said threshold voltage;

a switching device connected to said detector device and to said LEDs, said detector device automatically reconfiguring said LEDs into a second electrical configuration so that a sufficient number of LEDs receive sufficient voltage such that the drop in total light intensity for said traffic signal light during periods in which the input supply voltage drops below said threshold value is less than if the LEDs were not reconfigured; and

said switching means automatically returning said configuration of LEDs to said first electrical configuration when the supply voltage rises above said threshold value.

5,663,720

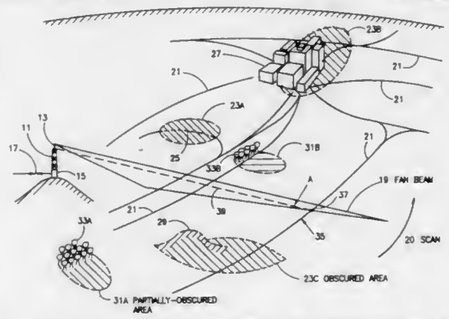
METHOD AND SYSTEM FOR REGIONAL TRAFFIC MONITORING

Isaac Weissman, 35 Buena Vista Dr., Hastings-on-Hudson, N.Y. 10706

Filed Jun. 2, 1995, Ser. No. 458,254

Int. Cl.[6] G08G *1/065*

U.S. Cl. 340—934 **30 Claims**



1. A method for monitoring civilian vehicular land traffic at a plurality of selectable roadway sections, said method comprising:

a. directing and transmitting beams of electromagnetic energy from at least one fixed elevated site towards selected roadway sections; for each said roadway section using a selected carrier frequency and a selected modulation;

b. receiving at said at least one fixed elevated site signals of electromagnetic energy comprising vehicle echoes and other object echoes; and

c. processing said signals to separate said vehicle echoes from said other object echoes and to produce measurements of range and Doppler velocity of vehicles in said selected roadway sections.

5,663,721

METHOD AND APPARATUS USING CODE VALUES AND LENGTH FIELDS FOR COMPRESSING COMPUTER DATA

Markku J. Rossi, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 20, 1995, Ser. No. 407,195

Int. Cl.[6] H03M *7/42*

U.S. Cl. 341—51 **13 Claims**

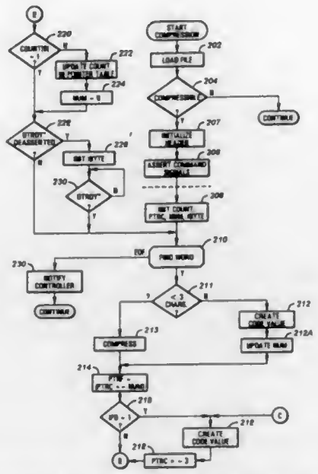
1. A data compression method compressing an input stream of data having a beginning and an end for transmission over a communications network from a first device to a second device, both the first and second devices being connected to the communications network, the first device including a buffer memory having a plurality of entries, wherein the first device and second device each includes a memory device for storing a table containing a list of words and a list of corresponding code values, each code value being represented as a first number of bits, said the first number of bits being variable and dependent upon the probability of the word occurring, the first number of bits being less for higher probability words, the method comprising the steps of:

(a)reading a next word from the input stream of data;

(b) determining if said read word contains more than a predetermined number of characters;

(c) performing steps (d)–(f) only if said read word contains more than said predetermined number of characters;

(d) accessing the memory device to search the table to determine if said read word matches one of the words in the table;



(e) representing said read word as the code value corresponding to the matched word in the table if a match occurs;

(f) storing the code value in the next entry of the buffer memory for transmission over the communications network to the second device if a match occurs;

(g) determining if the end of the input stream of data has been reached; and

(h) repeating steps (a)–(h) if the end of the input stream of data has not been reached.

5,663,722

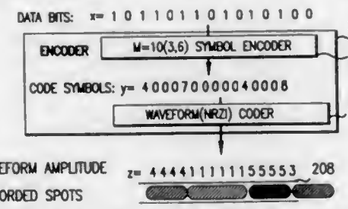
M=10 (3,6) RUNLENGTH LIMITED CODE FOR MULTI-LEVEL DATA

Steven W. McLaughlin, Rochester, N.Y., assignor to Optex Corporation, Rockville, Md.

Filed May 12, 1995, Ser. No. 440,196

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—59 **12 Claims**



1. A method for encoding a series of binary input data bits x into an M=10 run-length limited (3,6) code having a rate R=1, to produce a series of code symbols y, the method comprising the steps of receiving at a fourteen-state encoder an input data bit x_i to be encoded into the M=10 run-length limited (3,6) code, and generating in said encoder a code symbol y_i based on said input data bit x_i according to the following mapping table:

CURRENT STATE	INPUT	OUTPUT	NEXT STATE
0	0	0	1
0	1	0	2
1	0	0	4
1	1	0	9
2	0	0	3
2	1	0	10
3	0	0	9
3	1	0	4

-continued

CURRENT STATE	INPUT	OUTPUT	NEXT STATE
4	0	0	5
4	1	0	6
5	0	2	0
5	1	4	0
6	0	3	0
6	1	5	0
7	0	6	0
7	1	8	0
8	0	7	0
8	1	9	0
9	0	0	7
9	1	0	8
10	0	0	13
10	1	0	11
11	0	0	12
11	1	1	0
12	0	0	4
12	1	0	9
13	0	0	9
13	1	0	4

wherein said code symbol y_i is generated based on the input data bit x_i and the current state of said fourteen-state encoder when said data bit x_i is received.

5,663,723

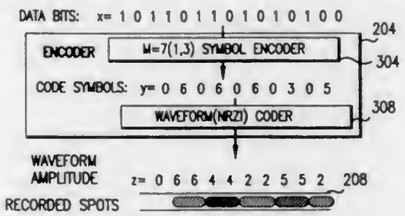
M=7 (1,3) RUNLENGTH LIMITED CODE FOR MULTI-LEVEL DATA

Steven W. McLaughlin, Rochester, N.Y., assignor to Optex Corporation, Rockville, Md.

Filed May 12, 1995, Ser. No. 440,232

Int. Cl.[6] H03M *5/02*

U.S. Cl. 341—59 **12 Claims**



1. A method for encoding a series of binary input data bits x into an M=7 run-length limited (1,3) code having a rate R=3/2, to produce a series of code symbols y, the method comprising the steps of receiving at a three-state encoder an input data bit set x_i, . . . x_{i+2} to be encoded into the M=7 run-length limited (1,3) code, and generating in said encoder a code symbol set y_i, y_{i+1} based on said input data bit set x_i, . . . x_{i+2} according to the following mapping table:

INPUT	OUTPUT	NEXT STATE
STATE 0		
000	01	0
001	02	0
010	03	0
011	04	0
100	05	0
101	06	0
110	00	1
111	00	2
STATE 1		
000	01	0
001	02	0

-continued

INPUT	OUTPUT	NEXT STATE
010	03	0
011	04	0
100	05	0
101	06	0
110	20	1
111	20	2
STATE 2		
000	30	1
001	30	2
010	40	1
011	40	2
100	50	1
101	50	2
110	60	1
111	60	2

wherein said code symbol set y_i, y_{i+1} is generated based on the input data bit set x_i, . . . x_{i+2} and the current state of said three-state encoder when said data bit set x_i, . . . x_{i+2} is received.

5,663,724

16B/20B ENCODER

Judy Lynn Westby, Bloomington, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Mar. 28, 1996, Ser. No. 623,400

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—59 **15 Claims**

1. In a binary data encoding apparatus for producing a DC balanced run length limited rate 16B/20B code from an unconstrained input data stream that includes consecutive 16-bit data blocks, in which the encoding apparatus includes a pair of parallel 8B/10B encoders each having a 5B/6B and a 3B/4B encoder portion responsive to respective 5-bit and 3-bit sub-blocks to produce respective 6-bit and 4-bit output sub-blocks, each encoder portion being responsive to the disparity of its current output sub-block and a running disparity associated with another sub-block to selectively complement the bits of its sub-block to reduce running disparity, the improvement comprising disparity processing means for combinationally passing the running disparity of each 6-bit output sub-block to the 3B/4B encoder of the associated 8B/10B encoder and the running disparity of the 4-bit output sub-block associated with a first of the 8B/10B encoders to the 5B/6B encoder of a second of the 8B/10B encoders, thereby selectively complementing the 4-bit output sub-blocks and the 6-bit output sub-block associated with the second 8B/10B encoder for a current data block, the disparity processing means additionally holding and processing the running disparity of the 4-bit output sub-block associated with the second 8B/10B encoder to the 5B/6B encoder of the first 8B/10B encoder, thereby selectively complementing the 6-bit output sub-block associated with the first 8B/10B encoder for the next data block.

5,663,725

VLC DECODER WITH SIGN BIT MASKING

Yi-Feng Jang, Keelung, Taiwan, assignor to Industrial Technology Research Institute, Chutung Hsinchu, Taiwan

Filed Nov. 8, 1995, Ser. No. 555,367

Int. Cl.[6] H03M *7/40*

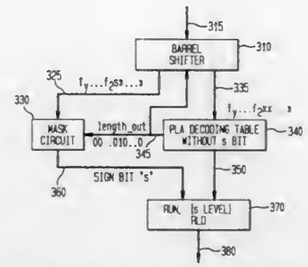
U.S. Cl. 341—67 **10 Claims**

1. A parallel variable length decoder for decoding original signed variable length code words comprising:

a barrel shifter which receives said original signed variable length code words and outputs a fixed length sequence of bits, comprising each bit of a signed variable length code word including a sign bit of said original signed variable length code word,

a memory unit which receives said signed variable length code word and decodes only said bits of said signed variable length code word, other than said sign bit, into at least an unsigned level and a total length of said original signed variable length code word including said signed bit, and

a mask circuit which receives said signed variable length code word from said barrel shifter and said total length from said memory unit and outputs a sign bit of unsigned level.



5,663,726

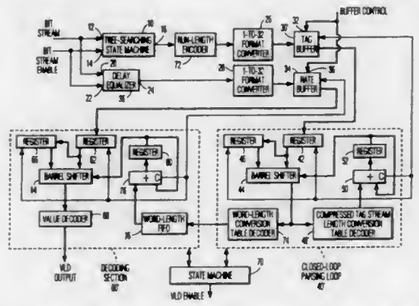
HIGH SPEED VARIABLE-LENGTH DECODER ARRANGEMENT WITH REDUCED MEMORY REQUIREMENTS FOR TAG STREAM BUFFERING

Michael Bakhmutsky, Spring Valley, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1995, Ser. No. 565,771

Int. Cl.[6] H03M *7/40;7/46*

U.S. Cl. 341—67 **5 Claims**



1. A variable-length decoder arrangement for decoding an input bit stream of variable-length codewords comprising:

a tree-searching state machine having a data input for receiving the input bit stream and an enable input for receiving an enable signal, said tree-searching state machine executing a decoding protocol and tagging the end of every codeword;

a delay equalizer having a data input for receiving the input bit stream and an enable input for receiving the enable signal, said delay equalizer compensating for a delay of the tree-searching state machine;

a run-length encoder coupled to an output of said tree searching state machine;

a first format converter having an input coupled to an output of said run-length encoder, and a second format converter having an input coupled to an output of said delay equalizer, said first and second format converters each bussing an applied data stream to a predetermined width for accommodating the longest codeword in a selected protocol;

a rate buffer having an input coupled to an output of the second format converter;

a tag buffer having an input coupled to an output of the first format converter, said tag buffer having a memory size smaller than that of said rate buffer; and

a variable-length decoder having first input means coupled to an output of the tag buffer, and second input means coupled to an output of the rate buffer, the variable-length decoder comprising:

a closed-loop parsing loop having an input coupled to the first input means of the variable-length decoder, said closed-loop parsing loop comprising:

first register means having input means coupled to the input of said closed-loop parsing loop;

a first barrel shifter having data input means coupled to output means of said first register means, and a shift-control input;

a compressed tag stream length conversion table decoder having an input coupled to an output of said first barrel shifter for receiving an input for said compressed tag stream length conversion table decoder;

a first adder having a first input coupled to an output of said compressed tag stream length conversion table decoder;

second register means having an input coupled to an output of said first adder, said second register having an output coupled to a second input of said first adder, and to the shift-control input of said first barrel shifter; and

a word-length conversion table decoder having an input also coupled to the output of said first barrel shifter, and an output coupled to an output of said closed-loop parsing loop;

a decoding section having a first input coupled to the second input means of said variable-length decoder, and a second input coupled to the output of said closed-loop parsing loop, said decoding section comprising:

third register means having input means coupled to said first input of said decoding section;

a second barrel shifter having data input means coupled to an output of said register means, and a shift-control input;

a value decoder having an input coupled to an output of said second barrel shifter, said value decoder interpreting a bit stream at the output of the second barrel shifter and converting the bit stream into actual data values, said value decoder having an output coupled to an output of the decoding section which constitutes an output of the variable-length decoder arrangement;

a serial memory having an input coupled to the second input of said decoding section;

a second adder having a first input coupled to an output of said serial memory; and

fourth register means having an input coupled to an output of said second adder, and an output coupled both to a second input of said second adder, and to the shift-control input of said second barrel shifter; and

a state machine coupled to the decoding section and the closed-loop parsing loop for executing the decoding protocol based on the bit stream contents, the state machine controlling the value decoder by selecting appropriate decoding value tables for the value decoder and interrupting the data requests from the tag buffer and the rate buffer when a picture represented by the input bit stream is decoded.

5,663,727

FREQUENCY RESPONSE ANALYZER AND SHAPING APPARATUS AND DIGITAL HEARING ENHANCEMENT APPARATUS AND METHOD UTILIZING THE SAME

Peter R. Vokac, Tucson, Ariz., assignor to Hearing Innovations Incorporated, Tucson, Ariz.

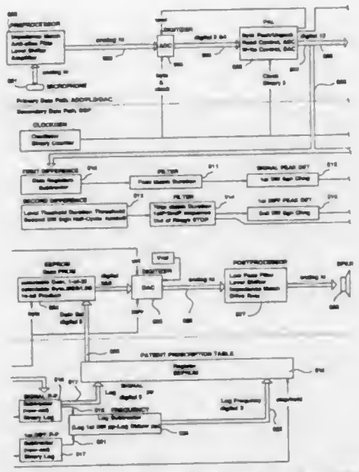
Filed Jun. 23, 1995, Ser. No. 494,295

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—132 **15 Claims**

1. A method of determining the instantaneous primary frequency at selected sampling points of a time varying analog signal comprising the steps of:

converting said analog signal to a digital signal by means of an analog to digital converter;



at said selected sampling points deriving the first difference of said digital signal through digital signal processing techniques;

at said selected sampling points deriving the second difference of said digital signal through digital signal processing techniques;

determining the peak-to-peak values of said digital signal by detecting the zero crossing points of said first difference;

determining the peak-to-peak values of said first difference by detecting the zero crossing points of said second difference;

dividing the peak-to-peak values of said first difference by the peak-to-peak values of said digital signal which are adjacent in time to the peak-to-peak values of said first difference to obtain in each case a ratio of the peak-to-peak value of said first difference and the peak-to-peak value of said digital signal at selected instantaneous points in time; and

determining from said ratio the instantaneous primary frequency of said time varying analog signal at each of said selected instantaneous points in time.

5,663,728

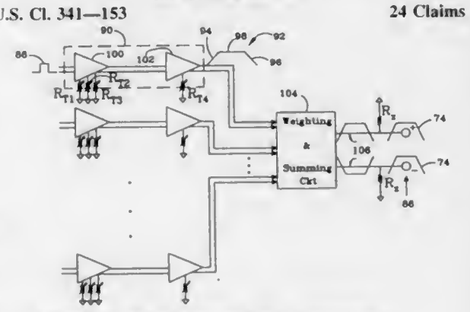
DIGITAL-TO-ANALOG CONVERTED (DAC) AND METHOD THAT SET WAVEFORM RISE AND FALL TIMES TO PRODUCE AN ANALOG WAVEFORM THAT APPROXIMATES A PIECEWISE LINEAR WAVEFORM TO REDUCE SPECTRAL DISTORTION

Kenneth A. Essenwanger, Walnut, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 18, 1995, Ser. No. 443,995

Int. Cl.[6] H03M *1/80*

U.S. Cl. 341—153 **24 Claims**



1. A digital-to-analog converter (DAC), comprising:

a plurality of waveform shaping circuits that produce drive signals that switch during rise and fall times along rising and falling edges, respectively, between low and high plateaus in response to a sequence of n-bit codewords in which each bit controls a digital signal that is applied to one of the waveform shaping circuits for a known clock period;

a plurality of limiting switches having transfer functions that limit the drive signals' low and high plateau values to low and high limiting values, respectively, while approximately maintaining the shape of the rising and falling edges;

a weighting circuit that weights the drive signals in accordance with their respective bits' positions in the codewords to produce weighted drive signals; and

a summation circuit that sums the weighted drive signals to construct an analog waveform having output plateau values and rising and falling output edges,

said waveform shaping circuits setting said rise and fall times so that the rising and falling output edges settle in rise and fall settling times T_{rs} and T_{fs}, respectively, measured from successive clock edges of said digital signal to within a first error bound of a linear output ramp whose slope is a function of the difference between successive codewords, and said limiting switches setting the low and high limiting values so that the output plateau values settle in a settling time T_{ps} measured from the end of said rise and fall times to within a second error bound of ideal values represented by the codewords so that the analog waveform more closely approximates a piecewise linear waveform, which has non-zero rise and fall times, than it does a zero-order-hold (ZOH) waveform to reduce spectral distortion in the analog waveform.

5,663,729

CONTROL APPARATUS AND CONTROL METHOD OF AD CONVERTER

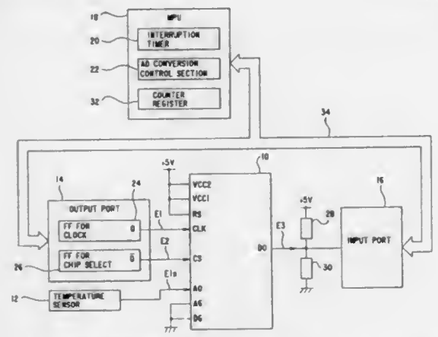
Yoshimi Wada, and Akira Takuma, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 6, 1995, Ser. No. 471,532

Claims priority, application Japan, Sep. 26, 1994, 6-229246

Int. Cl.[6] H03M *1/12*

U.S. Cl. 341—155 **21 Claims**



1. A control apparatus which comprises:

a serial output type AD converter which, in a state in which a chip select signal is valid, converts an entered analog signal into a bit in a digital signal of a prescribed number of bits, each time a clock signal is received in compliance with a prescribed bit sequence, and outputs one bit converted for each run of conversion as a bit data, said serial output type AD converter connected directly to a conductor providing said analog signal without utilizing a sample-and-hold circuit, each bit of the digital signal generated in response to the clock signal and the analog signal provided by said conductor at the time of receiving the clock signal;

a clock generating circuit which generates a clock signal to be supplied to said AD converter;

a chip select generating circuit which generates a clock signal to be supplied to said AD converter;

a register which stores bit data output from said AD converter;

an interruption timer which generates an interruption signal at prescribed intervals over a control period of said AD converter; and

a control section which sets said clock generating circuit alternately in an L-level output condition and an H-level output condition each time an interruption signal is received from said interruption timer to generate a clock signal, generates a chip select signal from said chip select generating circuit in synchronization with an output of a first clock signal; and incorporates bit data output from said AD converter in synchronization with generation of said clock signal bit by bit to store in said register.

5,663,730

RADAR SYSTEM FOR TRANSMITTING AND RECEIVING RADAR SIGNALS VIA A COMMON AERIAL

Per-Arne Isaksen, Stokkedalslia 109, N-5062 Bønes, Norway

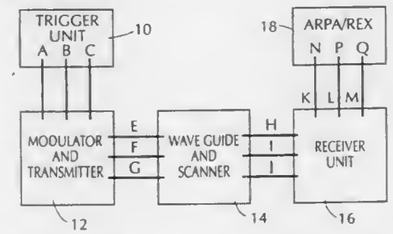
PCT No. PCT/NO93/00184, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/14083, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 7, 1993, Ser. No. 446,815

Claims priority, application Norway, Dec. 7, 1992, 924707

Int. Cl.[6] G01S *13/93*

U.S. Cl. 342—41 **12 Claims**



1. A radar system for transmitting and receiving radar signals, said system comprising:

a transmitter unit having at least two transmitters;

a receiver unit having at least two receiver, each receiver being syntonized to a respective transmitter;

a common trigger unit for triggering off said transmitters and receivers,

a common aerial unit for transmitting radar signal from said transmitting unit and for receiving and directing reflected video signals to said receiver unit; and

a signal processing unit connected to said receiver unit to process video signals received from said receiver unit in a pulse-to-pulse correlation with said receivers in said receiver unit,

characterized in

that each transmitter and corresponding receiver form a self-contained radar set independent of the other transmitters and receivers;

that each transmitter is prepared to trigger off in series during a sequence period with the period between each transmitted pulse being equal; and

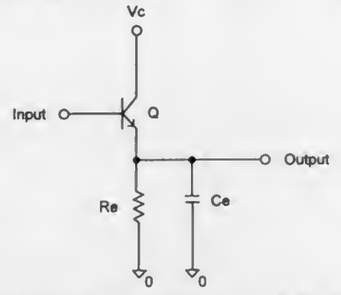
that each said receiver is matched to a respective transmitter to present frequencies/characteristics of video signals in approximately the entire sequence period.

5,663,731

METHOD AND APPARATUS FOR TIME INVARIANT PULSE DETECTION

James T. Theodoras, II, and Thomas G. Xydis, both of Ann Arbor, Mich., assignors to IMRA America, Inc., Ann Arbor, Mich.

Filed Aug. 25, 1995, Ser. No. 519,175
Int. Cl.[6] G01S *13/93;7/292*
U.S. Cl. 342—70 21 Claims



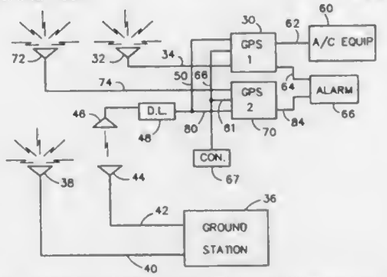
1. An apparatus for detecting pulse energy in the presence of noise, comprising:
means for receiving said pulse energy;
means for determining a change in polarity of slope of said received pulse energy;
means for producing a reference signal having a width related to a width of said received pulse energy; and
means for combining said change in polarity of slope and said reference signal to produce an output corresponding to said pulse energy.

5,663,732

INTEGRITY MONITORING METHOD AND APPARATUS FOR GPS AND DGPS RECEIVERS

Rodney L. Stangeland, Plymouth, Minn., and Wayland K. Adams, Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 25, 1995, Ser. No. 450,047
Int. Cl.[6] G01S *5/02;* G01C *21/00;* G06F *7/70*
U.S. Cl. 342—357 6 Claims



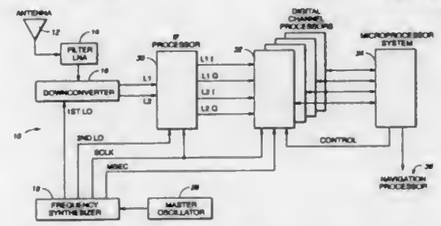
1. In combination with an aircraft being controlled to move along a desired trajectory:
a first GPS system operable to receive signals from a plurality of satellites and to produce a first signal indicative of the aircraft position and a second signal indicative of a departure of the aircraft from a desired trajectory which is greater than a predetermined amount;
a second GPS system operable to receive signals from the plurality of satellites and to produce a first signal indicative of the aircraft position and a second signal indicative of the departure of the aircraft from a desired trajectory which is greater than the predetermined amount;
means transmitting only one of the first signals to the aircraft to provide position information thereto;
an alarm; and
means transmitting the second signal of both the first and second GPS systems to the alarm so that an alarm will occur whenever the aircraft departs from the desired trajectory by more than the predetermined amount.

5,663,733

DIGITAL BANDWIDTH COMPRESSION FOR OPTIMUM TRACKING IN SATELLITE POSITIONING SYSTEM RECEIVER

Gary R. Lennen, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Aug. 28, 1995, Ser. No. 520,332
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 80 Claims



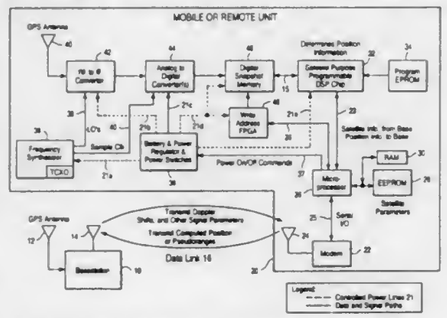
1. A system for optimum correlation processing of L1 and L2 signals received from a SPS satellite by a SPS RECEIVER, said system comprising:
a RECEIVING MEANS for receiving a known C/A code modulated on L1 carrier frequency, for receiving an unknown Y code modulated on L1 carrier frequency signal, and for receiving an unknown Y code modulated on L2 carrier frequency signal from at least one satellite; wherein said received L1, and L2 signals contain propagation noise; and wherein said Y code comprises a known P code and an unknown W code; and
at least one DIGITAL CHANNEL PROCESSING MEANS for:
(1) locally generating replica of said C/A code modulated on L1 carrier frequency signal;
(2) locally generating replica of said P code modulated on L1 carrier frequency signal, wherein said locally generated replica of L1 signal does not contain propagation noise;
(3) locally generating replica of said P code modulated on L2 carrier frequency signal, wherein said locally generated replica of L2 signal does not contain propagation noise;
(4) extracting of an estimate of said Y code from said L1 signal, and from said L2 signal, wherein said estimate signals contain propagation noise;
(5) correlating a locally generated replica of C/A code with the received L1 code for obtaining an estimate of L1 group delay (L1 pseudo-range) and L1 carrier phase;
(6) removing said P code from said locally extracted estimate of said L1 Y code to obtain a locally extracted estimate of said L1 W code;
(7) removing said P code from said locally extracted estimate of said L2 Y code to obtain a locally extracted estimate of said L2 W code;
(8) integrating estimate of said L1 W-code across the period of T_0, wherein said period T_0 is equal to the inverse zero-frequency $1/F_0$ of the W-code energy spectrum, and wherein said zero-frequency F_0 is the first frequency at which said W-code energy spectrum is equal to zero, and wherein said L1 W-code is synchronized to the signal C/A code EPOCH 1;
(9) integrating estimate of said L2 W-code estimate across the period of T_0, wherein said L2 W-code is synchronized to the signal C/A code EPOCH 2; and
(10) multiplying said integrated estimates of L1 W-code with said integrated early, late, and punctual estimates of L2 W-code and integrating the result over a time period greater than a msec to ensure that the resulting correlated signal has a sufficient power for closing the L2 -code and L2-carrier tracking loops.

5,663,734

GPS RECEIVER AND METHOD FOR PROCESSING GPS SIGNALS

Norman F. Krasner, San Carlos, Calif., assignor to Precision Tracking, Inc., San Jose, Calif.

Filed Mar. 8, 1996, Ser. No. 612,669
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 60 Claims



1. A GPS receiver apparatus, comprising:
an antenna for receiving GPS signals at an RF frequency from in view satellites;
a downconverter coupled to said antenna, said downconverter reducing the RF frequency of said received GPS signals to an intermediate frequency (IF);
a digitizer coupled to said downconverter and receiving said IF GPS signals, said digitizer sampling said IF GPS signals at a predetermined rate to produce sampled IF GPS signals;
a memory coupled to said digitizer, said memory storing the sampled IF GPS signals; and
a digital signal processor (DSP) coupled to said memory, said DSP performing fast convolution, wherein said digital signal processor processes said sampled IF GPS signals by performing a plurality of fast convolutions on a corresponding plurality of blocks of said sampled IF GPS signals to provide a plurality of corresponding results of each fast convolution and summing a plurality of mathematical representations of said plurality of corresponding results to obtain a first position information.

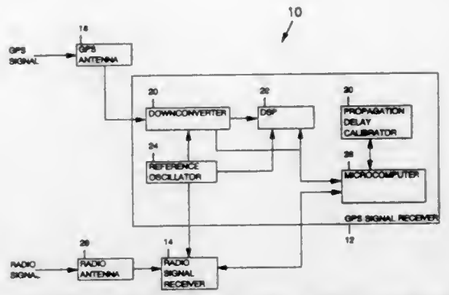
5,663,735

GPS RECEIVER USING A RADIO SIGNAL FOR IMPROVING TIME TO FIRST FIX

Ralph F. Eshenbach, Woodside, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed May 20, 1996, Ser. No. 650,482
Int. Cl.[6] H04B *7/185;* G01S *5/02*
U.S. Cl. 342—357 17 Claims

1. A global positioning system (GPS) receiver apparatus, comprising:
a radio signal receiver for receiving a radio signal having a standard time, decoding said standard time from said radio signal, and providing information for said standard time in a radio receiver output signal; and
a GPS signal receiver for receiving a GPS signal having data bits and coupled to the radio signal receiver for using said standard time information for resolving a GPS-based time for a time of arrival of one of said data bits.

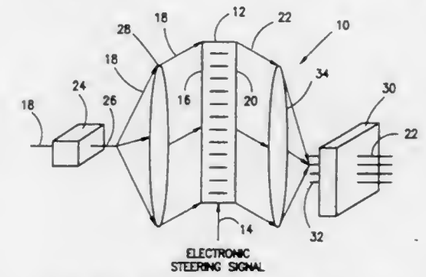


5,663,736

MULTI-ELEMENT TRUE TIME DELAY SHIFTER FOR MICROWAVE BEAMSTEERING AND BEAMFORMING

Lance L. Webb, Hermosa Beach, and John H. Hong, Moorpark, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 19, 1994, Ser. No. 359,268
Int. Cl.[6] H01Q *3/22*
U.S. Cl. 342—375 9 Claims

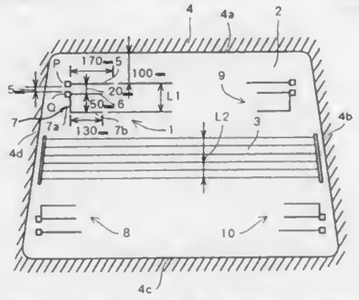


1. A multi-throw electronic switch for a fiber optical cable network, comprising:
a) a bulk media optical deflector comprising a Bragg cell angularly controllable by selectable electronic steering signals, said bulk media optical deflector having a first side for receiving an input optical signal, said input signal being collimated to a degree necessary for Bragg deflection and for being re-imagable, and a second side for transmitting at least one collimated electronically selectable output optical signal;
b) first positioning means for precision positioning of a primary optical fiber positioned near said first side of said bulk media optical deflector;
c) collimating means positioned between said first positioning means and said first side of said bulk media optical deflector for receiving said input optical signal, collimating said input optical signal and directing said input optical signal to said first side of said bulk media optical deflector;,
d) second positioning means for precision positioning of a column of a plurality of secondary optical fibers positioned near said second side of said bulk media optical deflector;
e) imaging means positioned between said second side of said bulk media optical deflector and said second positioning means for receiving said at least one output optical signal from said bulk media optical deflector, imaging said output signal and directing said output optical signal to said secondary optical fibers; and,
f) means for providing said selectable electronic steering signals, wherein selecting a desired electronic steering signal provides selection of a desired set of said second optical fibers.

5,663,737
WINDOW GLASS ANTENNA FOR AUTOMOBILE TELEPHONE

Hitoshi Kakizawa, Chiba, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Continuation of Ser. No. 283,772, Aug. 1, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 621,771
Claims priority, application Japan, Jul. 30, 1993, 5-189970
Int. Cl.[6] H01Q *1/32*
U.S. Cl. 343—713 **10 Claims**



1. A window glass antenna for an automobile telephone, comprising:

a window glass panel being enclosed by a metallic window frame having upper and lower horizontal members, said metallic window frame for being received in an automobile body;

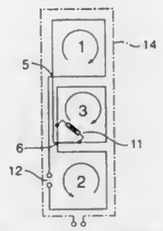
a plurality of defroster wires mounted on said window glass panel;

a hot antenna portion and a ground antenna portion mounted on said window glass panel, said ground antenna portion including at least one ground antenna wire between said defroster wires and said hot antenna portion, said hot antenna portion being located nearer one of said upper and lower horizontal members of said metallic window frame, said hot antenna portion being located between said one of said upper and lower horizontal members and said ground portion, said hot antenna portion including means for electromagnetically coupling with said one of said upper and lower horizontal members, said coupling means including at least one hot antenna wire mounted substantially horizontally on said window frame.

5,663,738
ANTENNA DEVICE

Philipp Mueller, Greifensee, Switzerland, assignor to Actron Entwicklungs AG, Rotkreuz, Switzerland

Continuation of Ser. No. 274,191, Jul. 12, 1994, abandoned. This application May 2, 1996, Ser. No. 643,097
Claims priority, application Switzerland, Jul. 13, 1993, 2094/93
Int. Cl.[6] H01Q *11/12*
U.S. Cl. 343—742 **13 Claims**



1. An antenna device, for detection of product anti-theft resonant tags, having first, second, and third, in-line loop positions, the antenna device comprising:

first and second terminals located in one of the first and third in-line loop positions,

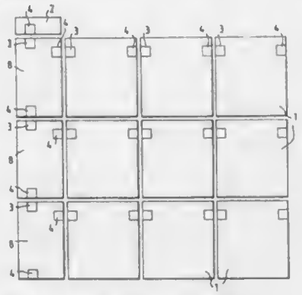
an antenna wire arranged as a first outer loop disposed in the first loop position, a second outer loop disposed in the third loop position, and a central loop disposed in the second loop position, the first outer loop, central loop, and second outer loop lying in a common plane and each including current entry and current exit loop portions, the current entry loop portion of one of the first outer loop and second outer loop connected to the first terminal, the antenna wire further including a first wire segment extended to connect the current exit loop portion of one of another of the first and second outer loops and the central loop to the second terminal and additional wire segments interconnecting remaining current entry and current exit loop portions of the first and second outer loops and the central loop, such as to provide current flow through the first and second outer loops in relatively opposite directions; and

an impedance connected between the current entry and current exit loop portions of the central loop, the impedance including a parallel connection of a capacitor and a resistor.

5,663,739
METHOD AND ARRANGEMENT FOR ESTABLISHING NETWORKS OF ELECTRO-OPTICAL DISPLAY-FIELD MODULES

Martin Pommerenke, and Hartmuth Siefker, both of Berlin, Germany, assignors to M A N Systemelektronik GmbH, Karlsfeld, Germany

Continuation of Ser. No. 159,373, Nov. 30, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 364,805
Claims priority, application Germany, Dec. 28, 1992, 42 44 584.1
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—1 **18 Claims**



1. A display field arrangement, comprising:

a plurality of display-field modules arranged in rows and columns, and each displaying a picture, each of said display-field modules including optical transmission and reception means for optically transmitting and receiving display data sequentially along each row via adjacent display modules in said each row in a direction from a first end of said each row to a second end of each row;

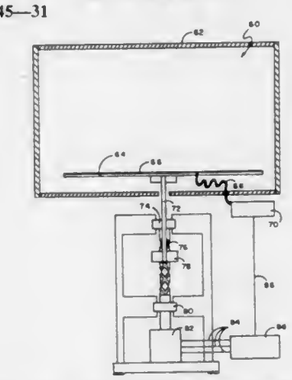
a plurality of row feeding devices, each of said plurality of row feeding devices being positioned in a feeding column at said first end of each one of said rows, said each of said row feeding devices including optical transmission and reception means for optically transmitting and receiving display data sequentially along said feeding column of row feeding devices via adjacent row feeding devices in said column in a direction from a first end of said column to a second end of said column, said each of said row feeding devices including another optical transmission means for optically transmitting display data to said optical reception means of a first display-field module of a respective row of said display-field modules;

initial feed means for providing display data, said initial feed means including optical transmission means for optically transmitting display data to said optical reception means of a first row feeding device of said feeding column of said row feeding devices.

5,663,740
DISPLAY DEVICE PRODUCING A THREE-DIMENSIONAL REAL IMAGE

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Continuation-in-part of Ser. No. 184,973, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 866,988, Apr. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 786,564, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 454,389, Dec. 21, 1989, Pat. No. 5,072,215, which is a continuation-in-part of Ser. No. 182,920, Apr. 18, 1988, Pat. No. 4,896,150. This application Apr. 4, 1995, Ser. No. 416,175
Int. Cl.[6] G09G *3/20*
U.S. Cl. 345—31 **9 Claims**



1. A display device for producing a three-dimensional image, comprising:

a viewing chamber having a front and a back defined respectively by point X and point Y, said viewing chamber having a depth defined as the distance between point X and point Y;

a movable screen disposed within said chamber, said screen having a front surface and a back surface, said front surface of said screen facing said front of said viewing chamber, said screen movable back and forth in a cycle to levels between point X and point Y and between point Y and point X from a first static phase at point X through an acceleration phase to a constant velocity phase to a deceleration phase and to a second static phase at point Y with said cycle repeating from point Y to point X;

means to form a plurality of images by the emission of light on said front surface of said movable screen, each at a different point between point X and point Y along said chamber depth; and

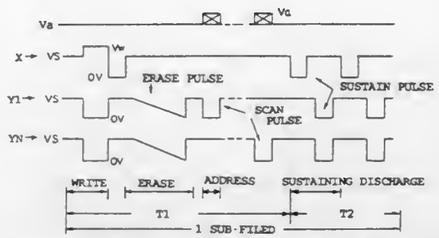
means to rapidly move said screen reciprocally back and forth within said chamber wherein said plurality of images are viewable from the front of said screen where a three-dimensional image is visible.

5,663,741
CONTROLLER OF PLASMA DISPLAY PANEL AND METHOD OF CONTROLLING THE SAME

Yoshikazu Kanazawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 186,850, Jan. 27, 1944, abandoned. This application Mar. 18, 1996, Ser. No. 618,270
Claims priority, application Japan, Apr. 30, 1993, 5-104087
Int. Cl.[6] G09G *3/28*
U.S. Cl. 345—66 **13 Claims**

1. A method of controlling a plasma display which has a plurality of display cells defined by a plurality of electrode pairs disposed between a first panel and a second panel facing each other, and having a gas enclosed between the first and second panels, each of said plurality of display cells having first and second electrodes, wherein the gas causes a discharge by applying a voltage across corresponding ones of the first and the second electrodes, said method comprising the steps of:



applying an erase signal to one of said plurality of display cells to control an amount of wall charges accumulated in the one display cell, wherein a voltage of said erase signal is varied with time;

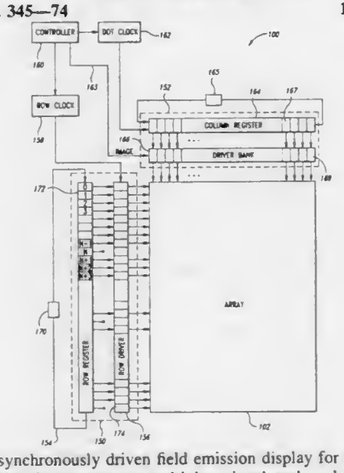
effecting an addressing discharge to select the one display cell by superimposing an address voltage over the wall charges, after applying the erase signal to the one of said plurality of display cells; and

conducting a sustain discharge for display by causing a discharge on the selected one display cell, after effecting the addressing discharge to select the one display cell.

5,663,742
COMPRESSED FIELD EMISSION DISPLAY

Glen E. Hush, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Aug. 21, 1995, Ser. No. 517,244
Int. Cl.[6] H04N *5/66*
U.S. Cl. 345—74 **15 Claims**



1. A synchronously driven field emission display for displaying information in response to a driving signal and a clock signal, comprising:

an array of emitter sets arranged in rows and columns, each emitter set including at least one emitter, each emitter set being activated by synchronous column and row signals;

a column driver circuit having a drying input connected to receive the driving signal, the column driver circuit further including a plurality of column outputs for providing column signals in response to the driving signal, each column output being coupled to one of the columns of emitter sets;

a row circuit having a plurality of row drivers, each coupled to a respective one of the rows of pixels, each row circuit being activatable by a row select signal; and

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a row selector circuit, the row selector circuit having a clock input for receiving the dock signal, the row selector circuit having a plurality of active row outputs and a plurality of open row outputs for producing the row select signals, each active row output being coupled to activate a respective one of the row drivers, each open row output being electrically isolated from the row drivers, the row selector circuit being configured to selectively activate each successive active or open row output in sequence in response to the clock signal, the open row outputs being spaced apart among the active row outputs.

5,663,743

DYNAMIC SCATTERING MATRIX LIQUID CRYSTAL DISPLAY HAVING VOLTAGE BOOSTER IN DRIVING VOLTAGE SUPPLY CIRCUIT

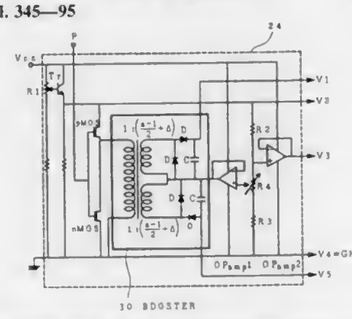
Tatsuhisa Fujii, Cyubu Mobara; Tomohide Ohira, Yokohama, and Hiroshi Kunihara, Hayano Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 422,219

Claims priority, application Japan, Apr. 20, 1994, 6-081311

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—95 **8 Claims**



1. A dynamic scattering matrix liquid crystal display comprising:

a plurality of data line electrodes;

a plurality of scanning line electrodes disposed so as to cross the data line electrodes and to be spaced apart from the data line electrodes;

a liquid crystal layer disposed between the data line electrodes and the scanning line electrodes;

data line drivers for selectively supplying one of a first level and a second level of a first voltage signal to each of the data line electrodes according to contents of a display image, the first level being produced from a first predetermined voltage without boosting the first predetermined voltage and the second level being produced from a second predetermined voltage without boosting the second predetermined voltage;

scanning line drivers for selectively supplying one of a highest level, an intermediate level, and a lowest level of a second voltage signal to each of the scanning line electrodes, the scanning line drivers selectively supplying one of the highest level and the lowest level of the second voltage signal according to a control signal for inverting a polarity of a voltage applied to the liquid crystal layer to each of the scanning line electrodes as a select level signal during predetermined time intervals, and supplying the intermediate level of the second voltage signal to each of the scanning line electrodes as a non-select level signal during time intervals other than the predetermined time intervals; and

a voltage supply circuit for supplying the first voltage signal to the data line drivers and the second voltage signal to the scanning line drivers, the voltage supply circuit including a voltage booster for boosting the first level of the first voltage signal to produce the highest level of the second voltage signal, and for boosting the second level of the first voltage signal to produce the lowest level of the second voltage signal.

5,663,744

DRIVING METHOD FOR A LIQUID CRYSTAL DISPLAY

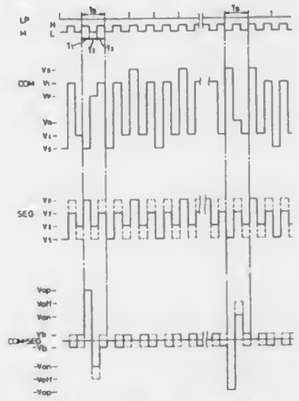
Takeshi Seike, Kitakatsuragi-gun, and Masahiro Ise, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1996, Ser. No. 612,408

Claims priority, application Japan, Mar. 22, 1995, 7-063187

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—95 **12 Claims**



1. A driving method, which is used in a display that is provided with a plurality of signal electrode lines and a plurality of scanning electrode lines that are disposed so as to intersect one another, and a display element and a non-linear element that are connected in series with each other between each signal electrode line and each scanning electrode line at each intersecting portion, comprising the steps of: sequentially selecting the scanning electrode line during each selection period, as well as applying a voltage, which turns on or off the display element connected to the selected scanning electrode line, between the scanning electrode line and signal electrode line so as to drive the display element, the selection period being divided into the first through third periods, said steps, during the selection period, further comprising the steps of:

(a) during the first period, charging a first voltage having not less than a predetermined value to the display element through the non-linear element;

(b) during the second period, applying a second voltage that has a level that does not cancel the first voltage upon on-time, as well as applying a second voltage that has a level that cancels the first voltage upon off-time; and

(c) during the third period, applying a third voltage that forms a non-selection level with the opposite polarity to the first voltage upon on-time, as well as applying a third voltage that forms a non-selection level with the same polarity as the first voltage upon off-time.

5,663,745

DISPLAY DRIVING DEVICE

Ryo Ishikawa, Ogose-machi, and Kazuhiro Kawasugi, Oome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

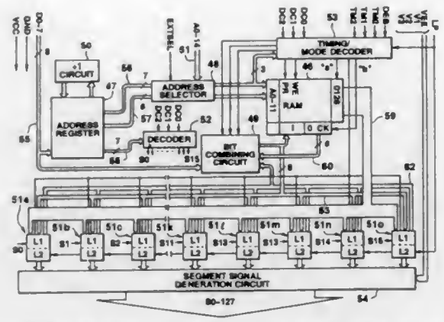
Division of Ser. No. 238,254, May 4, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,271

Claims priority, application Japan, May 13, 1993, 5-111829; May 13, 1993, 5-111830

Int. Cl.[6] G09G *3/18*

U.S. Cl. 345—98 **8 Claims**

1. An electronic device having a liquid crystal display, comprising:



a display dot matrix type liquid crystal display panel having a display area divided into a plurality of areas;

a common driver for driving a common electrode of the liquid crystal display panel;

a plurality of segment drivers for the respective divided display areas and having a display memory for storing display data displayed on the divided display areas, for driving segment electrodes of said liquid crystal display panel;

a control device for controlling the operation of said electronic device; and

a connection bus for connecting said control device to said segment drivers;

wherein said control device includes transmission means for transmitting address data for said display memory of said segment driver and display data stored in said display memory to said connection bus; and each of said segment drivers includes determination means for determining whether the segment driver itself is selected or not based on address data transmitted via said connection bus, and write-in means for writing transmitted display data into a corresponding address location when it is determined that the segment driver itself is selected.

5,663,746

INTERACTIVE INFORMATION KIOSK ASSEMBLY

Alan Pellenberg; Thomas A. Lamar, III, both of Atlanta; David L. Wikle, Smyrna; W. Glenn Nix, Duluth, and Stephen Jaworski, Jr., Smyrna, all of Ga., assignors to Miller/Zell, Inc., Atlanta, Ga.

Filed Jan. 20, 1995, Ser. No. 376,156

Int. Cl.[6] G09G *5/00*

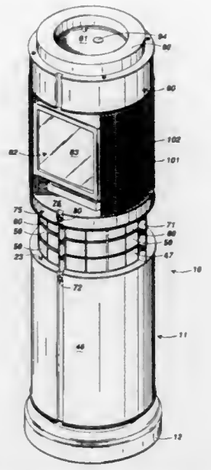
U.S. Cl. 345—113 **7 Claims**

1. An information kiosk for enabling selection and matching of colors and materials for the exterior paints, upholstery and trim of automobiles, comprising:

a base;

a series of turntable assemblies mounted in stacked series on and supported by said base and rotatable about a vertical axis extending through said base, including a first turntable assembly having a series of swatches of colors indicative of colors for the exterior paint of an automobile, a second turntable assembly mounted adjacent said first turntable assembly and having a series of swatches indicative of the colors and materials available for the upholstery of an automobile, and a third turntable assembly mounted adjacent said first and said second turntable assemblies and having a series of swatches indicative of colors and materials available for the trim of an automobile;

a video display monitor mounted above said turntable assemblies and connected to a processing unit for generating a video image of an automobile having a desired exterior paint color and a desired color and material style upholstery and trim; and



a video screen support platform removably mountable to said base, said support platform being positioned above said turntable assemblies for supporting said video display monitor thereon;

whereby said turntable assemblies can be rotated with respect to one another about said base to align swatches of exterior paint, upholstery, and trim for an automobile in desired combinations to provide a quick visual indication of the appearance and matching of differing exterior paint colors with various materials and colors for upholstery and trim of an automobile.

5,663,747

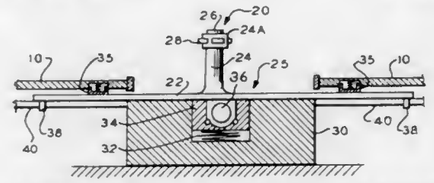
POINTING DEVICE

Victor Shulman, Brooklyn, N.Y., assignor to Norandor Systems, Inc., Bridgewater, N.J.

Continuation-in-part of Ser. No. 551,924, Oct. 23, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 671,164

Int. Cl.[6] G06F *3/033*

U.S. Cl. 345—161 **26 Claims**



1. A pointing device for mounting at least partially at an opening in a keyboard to affect a display screen of a computer by rendering an effect through its programming, comprising:

a panel mounted at said opening;

a sensor means mounted adjacent said panel for producing a motion signal in response to relative motion between said panel and said sensor means, said sensor means and said panel being mounted with freedom to separate and allow relative movement therebetween in two dimensions without actuation of said sensor means, so that said pointing device can be repositioned without affecting said display screen;

a knob having an indicating button and being mounted at said opening with freedom to move in said two dimensions and cause relative motion between said panel and said sensor means, said knob projecting in a transverse direction relative to said panel; and

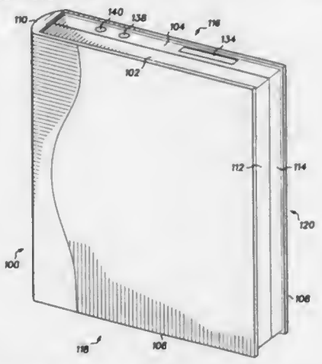
control means coupled to said indicating button and said sensor means for providing an encoded signal signifying said motion signal and actuation of said indicating button.

5,663,748

ELECTRONIC BOOK HAVING HIGHLIGHTING FEATURE

James R. Huffman, Austin, Tex.; Ronald D. Cruickshank, Durham, N.C.; Shrirang Nikanth Jambhekar, Schaumburg, Ill.; Jeffrey Van Myers, Driftwood, and Russell L. Collins, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1995, Ser. No. 572,469
Int. Cl.[6] G09G *1/00*
U.S. Cl. 345—173 20 Claims



1. An electronic book comprising:

a book-shaped housing having a first housing member pivotably connected to a second housing member to open and close in a book-like manner, the first housing member having a book-like front cover member, the second housing member having a book-like back cover member, the book-shaped housing defining a top edge, a bottom edge, and a foredge which are recessed with respect to the book-like front cover member and the book-like back cover member;

an interface which receives a removable machine-readable storage medium containing machine-readable data representative of text from a book;

a processor housed by the book-shaped housing and in communication with the interface to read the machine-readable data from the removable machine-readable storage medium; and

a touchscreen integrated in the book-shaped housing to be accessible when the book-shaped housing is opened in the book-like manner, the touchscreen in communication with the processor to display a page of the text represented by the machine-readable data, the touchscreen operative to receive a user-initiated event in which a portion of the text is selected to be highlighted and to display the portion of the text in a highlighted form;

wherein the processor stores an indicator of the portion of the text in the removable machine-readable storage medium, and wherein after the indicator is stored, the touchscreen displays a second page of the text other than the page containing the portion and subsequently redisplays the page of the text containing the portion indicated by the indicator, the portion being redisplayed in the highlighted form;

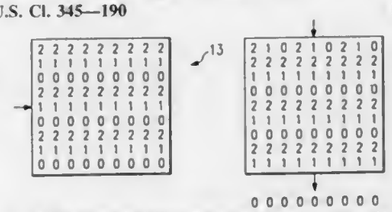
wherein the indicator of the portion of the text to be highlighted is stored in the removable machine-readable storage medium to remain with the text when the removable machine-readable storage medium is removed from the electronic book.

5,663,749

SINGLE-BUFFER DATA FORMATTER FOR SPATIAL LIGHT MODULATOR

Jeffrey S. Farris, Plano, and Stephen G. Kalthoff, Frisco, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1995, Ser. No. 407,569
Int. Cl.[6] G09G *1/02*
U.S. Cl. 345—190 11 Claims



1. A data formatter for a spatial light modulator having individually addressable pixels for generating images based on pixel data, comprising:

a square array of memory cells, each memory cell for storing a bit of pixel data, wherein said square array has a size corresponding to a data size of n pixels each having an n-bit value;

a vertical input line and a horizontal input line connected to an input of each memory cell;

a multiplexer at said input of each memory cell for determining whether said bit shall be written to said memory cell from said vertical input line or from said horizontal input line;

a vertical output line and a horizontal output line connected to an output of each memory cell; and

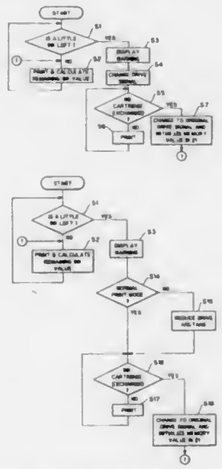
a multiplexer at said output of each memory cell for determining whether said bit shall be read from said memory cell to said vertical output line or to said horizontal output line.

5,663,750

INK EJECTION DEVICE WITH INK SAVING MODE USED WHEN REMAINING INK AMOUNT IS SMALL

Mikio Sakuma, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 4, 1995, Ser. No. 416,934
Claims priority, application Japan, Apr. 5, 1994, 6-067406; Apr. 5, 1994, 6-067407; Apr. 5, 1994, 6-067408; Apr. 5, 1994, 6-067409
Int. Cl.[6] B41J *2/195;29/38*
U.S. Cl. 347—7 25 Claims



1. An ink ejection device comprising:

a head formed with orifices from which ink droplets are ejected to print a dot image on a printing sheet;

driving means for driving said head;

an ink reservoir holding ink, said ink reservoir being in fluid communication with said head for supplying the ink to said head;

remaining ink detection means for detecting ink remaining in said ink reservoir; and

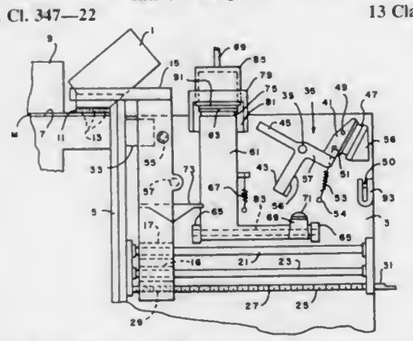
control means for controlling said driving means so that the dot image is printed on the printing sheet using less ink than is used during normal printing when said remaining ink detection means detects that less than a predetermined amount of ink remains in said ink reservoir.

5,663,751

AUTOMATIC SERVICE STATION FOR THE PRINTHEAD OF AN INKJET PRINTER AND METHOD FOR CLEANING THE PRINTHEAD

Russell W. Holbrook, Southbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 22, 1994, Ser. No. 362,286
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—22 13 Claims



1. A service station for use in an inkjet printer having a printhead with nozzles, the service station comprising:

a carriage moveably mounted to the inkjet printer, the printhead being mounted on the carriage to be moveable therewith;

means for moving the carriage between a printhead printing position and a printhead parked position;

a cap;

a cap cover connected to the inkjet printer;

means for moving the cap to cover the nozzles when the carriage is moved to the printhead parked position and for moving the cap into the cap cover to be covered and capped thereby when the carriage is moved to the printhead printing position so that the cap is not contaminated with debris when covered by the cover.

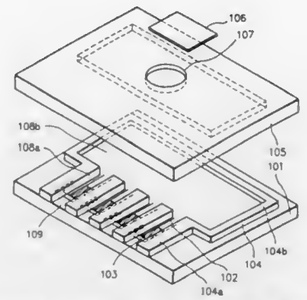
5,663,752

INK JET HEAD FREE OF DEBONDING BETWEEN A SUBSTRATE AND INK FLOW PATH WALLS FORMED ON SAID SUBSTRATE

Isao Imamura; Akihiko Shimomura, both of Yokohama, and Shoji Shiba, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 348,255
Claims priority, application Japan, Nov. 26, 1993, 5-296220; Nov. 25, 1994, 6-291312
Int. Cl.[6] B41J *2/135*
U.S. Cl. 347—65 34 Claims

1. An ink jet head including a plurality of discharging outlets serving to discharge ink; a substrate for an ink jet head, said substrate including a plurality of energy generating elements capable of generating energy for discharging ink from said plurality of discharging outlets and wiring electrically connected to said



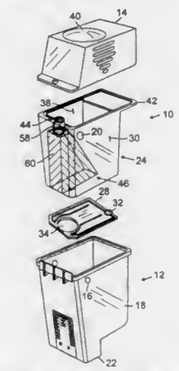
energy generating elements; and a plurality of ink pathways each having an ink flow path wall forming one of the ink pathways by joining to said substrate, characterized in that said ink flow path wall-forming material comprises a resin composition which is in the liquid state at 25° C., said resin composition comprising (i) a hardening epoxy resin having a viscosity of 10 to 100,000 cps at 25° C. as a main component of the resin composition and (ii) an epoxy resin with a diepoxide structure having a siloxane bond.

5,663,753

RECORDING CARTRIDGE WITH REPLACEABLE LIQUID-CONTAINING RESERVOIR

James D. Story, Houston, Tex.; Bruno L. Richet, Redwood City, and Christopher B. Fruhauf, Stanford, both of Calif., assignors to JetFill, Inc., Houston, Tex.

Filed Nov. 14, 1994, Ser. No. 339,469
Int. Cl.[6] B41J *2/175*
U.S. Cl. 347—86 41 Claims



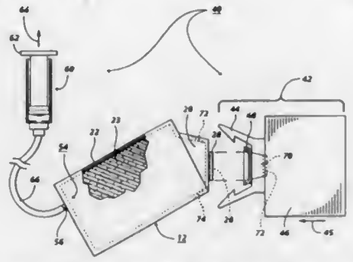
1. A refill insert couplable to an ink jet printhead, said refill insert comprising:

a housing having a defined volume therein for receiving a predetermined quantity of ink and having an ink egress port and an air ingress port separated a distance from said ink egress port;

a subhousing located within said housing and spanning said distance and having an interior volume defined by at least two walls projecting into said defined volume of said housing, said interior volume encompassed by said defined volume of said housing about said at least two walls and in fluid communication with said defined volume of said housing and said air ingress port; and

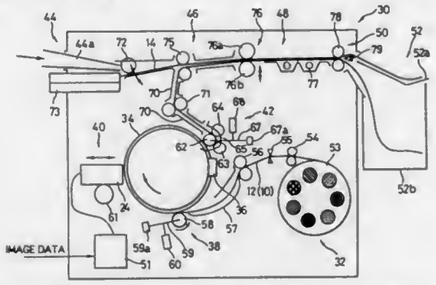
an ink entraining material disposed in said subhousing allowing said ink to flow from within said housing to said ink egress port, said ink entraining material having capillaries that retain and allow the flow of ink therethrough, air entering said subhousing by way of said air ingress port to thereby equalize a pressure of said housing with an ambient atmospheric pressure external to said housing.

5,663,754
METHOD AND APPARATUS FOR REFILLING INK JET CARTRIDGES
Robert V. Lorenze, Jr., Webster, and Renato P. Apollonio, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 5, 1995, Ser. No. 523,582
Int. Cl.[6] B41J *2/175*
U.S. Cl. 347—87 **10 Claims**



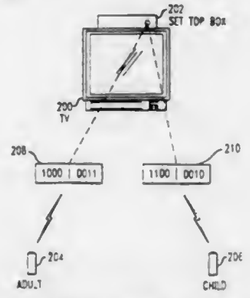
1. An ink refill system for an ink jet printer comprising:
a printhead having a plurality of nozzles formed in a nozzle face of the printhead for ejecting ink therefrom,
an ink supply reservoir,
means for supplying ink from said reservoir to said printhead, a refill source of ink available for refilling said ink supply reservoir after an initial ink supply is reduced or depleted,
means for fluidly connecting said refill ink source to said nozzles in said nozzle face and
means for causing ink from said refill ink source to flow through said nozzles into said ink supply reservoir.

5,663,755
COLOR IMAGE FORMING APPARATUS
Koji Wada, Kanagawa, and Yoshiharu Sasaki, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 14, 1995, Ser. No. 404,652
Claims priority, application Japan, Mar. 25, 1994, 6-056017
Int. Cl.[6] B41J *2/325*
U.S. Cl. 347—176 **6 Claims**



1. A color image forming apparatus that forms an image by imagewise application of thermal energy from a colorant sheet having a peelable, thin colorant film so that said thin colorant film associated with the imagewise applied thermal energy is peeled and transferred onto an image-receiving material adhering to said colorant sheet comprising:
a rotating member for rotationally scanning and transporting said image-receiving material and said colorant sheet that are in contact with the outer circumference of said rotating member;
holding means for holding at least said image-receiving material on said rotating member;
laminating means for pressing said colorant sheet so that it adheres to the image-receiving material held on said rotating member;
recording means for supplying the image-receiving material and the colorant sheet on said rotating member with thermal energy in a direction generally perpendicular to the direction in which said rotating member rotationally scans; and
peel/transfer means by which said thin colorant film that has been imagewise supplied with thermal energy from said recording means to have the bonding force lowered is peeled from said colorant sheet and transferred onto said image-receiving material so as to form a monochromatic image thereon.

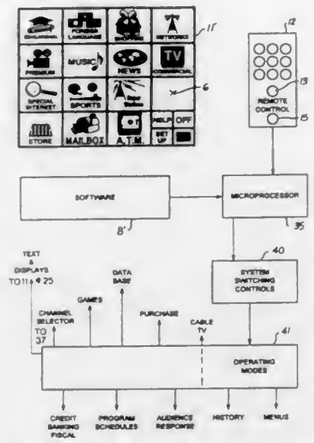
5,663,756
RESTRICTED ACCESS REMOTE CONTROL UNIT
Donald Edgar Blahut, Holmdel, N.J.; Guy Ashley Story, New York, N.Y., and Edward Stanley Szurkowski, Maplewood, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 247,798, May 23, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 567,836
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—5.5 **6 Claims**



1. A remote control unit comprising:
(a) an entry pad comprising a plurality of entry keys;
(b) a controller responsive to the entry pad;
(c) a memory device for storing:
(i) a bit representation corresponding to a set of access capabilities of the remote control unit, the set of access capabilities being one of at least two different sets of access capabilities under which a particular remote controlled device can operate; and
(ii) a plurality of bit streams, each bit stream of the plurality of bit streams corresponding to a sequence of at least one entry key from the plurality of keys;
(d) means, responsive to the controller, for transmitting the bit representation corresponding to the one set of access capabilities of the remote control unit.

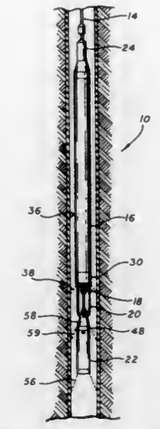
5,663,757
SOFTWARE CONTROLLED MULTI-MODE INTERACTIVE TV SYSTEMS
Fernando Morales, 1941 Roland Clarke Pl., Reston, Va. 22091
Continuation-in-part of Ser. No. 379,921, Jul. 14, 1989, Pat. No. 5,036,389, and a continuation-in-part of Ser. No. 390,073, Aug. 7, 1989, Pat. No. 5,101,267. This application Mar. 25, 1991, Ser. No. 674,169
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—13 **10 Claims**

1. A local subscriber's data processing station for a wireless television program communication network coupling together a set of interactive subscriber television receiver stations, comprising in combination,
an operation control system in said data processing station for controlling video signals, system operating modes and interactive communications available to the subscriber,
a television receiver with a video display screen, program control means and television program channel selection means,



a plurality of sources of video text and television program channels available from said network for individual presentation on said display screen in response to operator control by way of said operation control system,
a programmable computer interconnected with said television receiver and said operation control system,
radio wave transmission and reception means for sending and receiving video and interactive control signal information wirelessly to and from the subscriber television receiver stations in said network including messages with subscriber identification, video text and control signals for said television receiver,
said operation control system providing local station organization and operation in different operating modes permitting various degrees of interactive participation by a local subscriber, including network communication interconnection between the subscriber television receiver stations, television program viewing options, fiscal transactions and audience response modes,
subscriber manual control means for interactive participation and operation of said operation control system over an authorized range of optional features,
monitoring means for generating video displays of instructions and interactive menus on said video screen related to said operating modes,
self contained software programs operable with said operation control system at the subscriber's data processing station for identifying program and operating mode options individually authorized to the subscriber for controlling the local station options by means of said software programs,
replaceable software means located at the subscriber station for storing at least one replaceable software control program defining authorized operating conditions for that station, and operating means for programming said computer with said software control program to establish optional operating mode conditions authorized to said subscriber at the local data processing station as defined by the software control program.

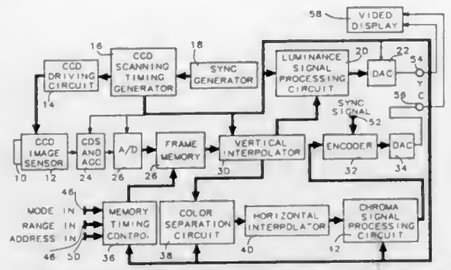
5,663,758
INSTRUMENT PROBE HAVING A BACK-LIGHTED CAMERA
Gregory Linville, Oxnard, Calif., assignor to DHV International, Inc., Ventura, Calif.
Filed Apr. 5, 1993, Ser. No. 42,737
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—85 **23 Claims**



1. An instrument probe for insertion in an elongated passageway having a side wall, for viewing the contents of the passageway, the instrument probe connected to a surface station by means of a cable, the instrument probe comprising:
an instrument body having a size smaller than the elongated passageway for insertion into the passageway, and having a longitudinal axis, a proximal end, and a distal end, the proximal end of the instrument body being connected to the cable;
an unenclosed light source mounted to the exterior of the instrument body at the distal end thereof such that the light source provides a field of illumination in a direction distal to the instrument body and radially expanding with respect to the longitudinal axis such that light emitted by the light source directly illuminates the wall of the passageway and is reflected by said wall and such that said field of illumination does not contain the instrument body;
at least one suspension member mounted to the distal end of the instrument body;
a camera mounted to the suspension member such that the camera is disposed within the field of illumination of the light source, the camera further being mounted such that the camera's field of view is pointing in the same direction as the field of illumination of the light source and is directed to radially expand in respect to the longitudinal axis; and
wherein the suspension member has a length which is selected such that the camera and the light source are separated from each other by an amount dependant upon the diameter of the passageway so that only light from the light source that is reflected by the passageway wall reaches the camera's field of view.

5,663,759
FEATURE PROCESSOR FOR A DIGITAL CAMERA
Chun-Hsien Horng, Hsinchu; Pei-Hui Tung, Taoyuan; Chen-Pang Kung, Tainan, and Guang-Nan Tzeng, Taichung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Jun. 10, 1996, Ser. No. 661,255
Int. Cl.[6] H04N *9/07*
U.S. Cl. 348—222 **22 Claims**

1. A feature processor, comprising:
a line frequency;
a line period wherein said line period is the inverse of said line frequency;
a charge coupled device image sensor having an input and an image signal output;
a charge coupled device driving circuit having an input and an output wherein said output of said charge coupled device driving circuit is connected to said input of said charge coupled device image sensor;
a charge coupled device scanning timing generator having an input a first output and a second output wherein said second



output of said charge coupled device scanning timing generator is connected to said input of said charge coupled device driving circuit;

a correlated double sampling and automatic gain control circuit having a control input, a signal input, and an output wherein said signal input of said correlated double sampling and automatic gain control circuit is connected to said image signal output of said charge coupled device image sensor and said control input of said correlated double sampling and automatic gain control circuit is connected to said first output of said charge coupled device scanning timing generator;

a first analog to digital converter having a signal input, a control input, and an output wherein said signal input of said analog to digital converter is connected to said output of said correlated double sampling and automatic gain control circuit, said control input of said first analog to digital converter is connected to said first output of said charge coupled device scanning timing generator, and said output of said first analog to digital converter comprises a row of pixels during said each said line period;

a memory timing control having a number of function inputs, a control input, and an output wherein said control input is connected to said first output of said charge coupled device scanning timing generator;

a frame memory having a signal input, a control input and an output wherein said signal input of said frame memory is connected to said output of said first analog to digital converter and said control input of said frame memory is connected to said output of said memory timing control;

a vertical interpolator having a signal input, a control input, a first output, and a second output wherein said signal input of said vertical interpolator is connected to said output of said frame memory and said control input of said vertical interpolator is connected to said first output of said charge coupled device scanning timing generator;

a luminance signal processing circuit having a signal input, a control input, and an output wherein said signal input of said luminance signal processing circuit is connected to said first output of said vertical interpolator and said control input of said luminance signal processing circuit is connected to said first output of said charge coupled device scanning timing generator;

a color separation circuit having a signal input, a control input, and an output wherein said signal input of said color separation circuit is connected to said second output of said vertical interpolator and said control input of said color separation circuit is connected to said first output of said charge coupled device scanning timing generator;

a horizontal interpolator having an input and an output wherein said input of said horizontal interpolator is connected to said output of said color separation circuit;

a chroma signal processing circuit having a signal input, a control input, and an output wherein said signal input of said chroma signal processing circuit is connected to said output of said horizontal interpolator and said control input of said chroma signal processing circuit is connected to said first output of said charge coupled device scanning timing generator;

an encoder circuit having a signal input, a control input, and an output wherein said signal input of said encoder circuit is connected to said output of said chroma signal processing circuit and said control input of said encoder circuit receives a synchronizing signal;

a first digital to analog converter having a signal input, a control input, and an output wherein said signal input of said first digital to analog converter is connected to said output of said luminance signal processing circuit and said control input of said first digital to analog converter is connected to said first output of said charge coupled device scanning timing generator;

a second digital to analog converter having a signal input, a control input, and an output wherein said signal input of said second digital to analog converter is connected to said output of said encoder circuit and said control input of said second digital to analog converter is connected to said first output of said charge coupled device scanning timing generator; and

a video display having a first signal input and a second signal input wherein said first signal input of said video display is said output of said first digital to analog converter and said second signal input of said video display is said output of said second digital to analog converter.

5,663,760

IMAGE PICKUP DEVICE SHIELDING APPARATUS FOR ELECTRONIC STILL CAMERA

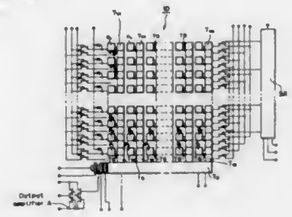
Yasunobu Kayanuma, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

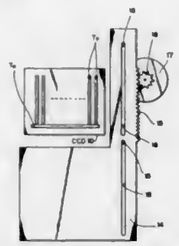
Filed May 9, 1995, Ser. No. 437,672

Claims priority, application Japan, May 26, 1994, 6-112570

Int. Cl.[6] H04N *5/217*

U.S. Cl. 348—241 **9 Claims**





1. An image pickup device shielding apparatus for an electronic still camera in which an optical image formed by a lens system is incident to a solid state image pickup device, the solid state image pickup device is operated by an electronic shutter, and a generated electrical charge is transferred in the solid state image pickup device by a domino read method, said shielding apparatus comprising:

a shield plate disposed in a vicinity of a front face of the solid state image pickup device for entering into an optical path from a horizontal charge transfer passage side of the solid state image pickup device, said shield plate entering the optical path during transfer of said generated electrical charge; and

a drive mechanism for driving said shield plate into the optical path after an electronic shutter operation.

5,663,761

SOLID-STATE IMAGE PICK-UP APPARATUS WITH TWO CHANNELS

Hiroshi Fukui, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

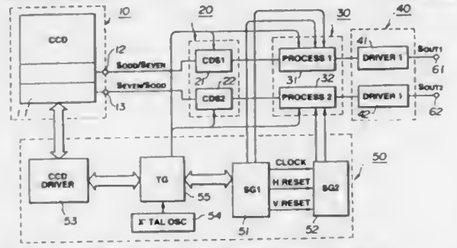
PCT No. PCT/JP94/01439, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/07001, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 31, 1994, Ser. No. 416,859

Claims priority, application Japan, Sep. 2, 1993, 5-218575

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—323 **19 Claims**



1. A solid-state image pick-up apparatus comprising:

a two line simultaneous read-out type solid-state image sensor including a plurality of pixels arranged in a matrix formed of fields of odd and even lines, and two signal output terminals for outputting image pick-up information as image pick-up signals obtained by the plurality of pixels, and for reading out the image pick-up information of all the pixels every field so as to alternately output odd and even lines of said image pick-up information to each of said signal output terminals, said odd and even lines producing image pick-up signals which are opposite in phase;

first process executing means for forming a standard television signal in conformity with a standard system from an image pick-up signal outputted through one of the signal output terminals of the solid-state image sensor; and

second process executing means for forming another standard television signal in conformity with the standard system from an image pick-up signal outputted through the other of the signal output terminals of the solid-state image sensor, so that each of the image pick-up signals represent different fields and are outputted as two channels of standard television signals of the image.

5,663,762

ELECTRONIC VIEWER AUTOMATICALLY ADJUSTING MAGNIFICATION OF A FILM IMAGE IN ACCORDANCE WITH POSITION OF THE FILM IMAGE

Tomoyuki Nishiyama, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1995, Ser. No. 545,312

Claims priority, application Japan, Oct. 24, 1994, 6-258065

Int. Cl.[6] H04N *5/225;5/253*

U.S. Cl. 348—373 **13 Claims**

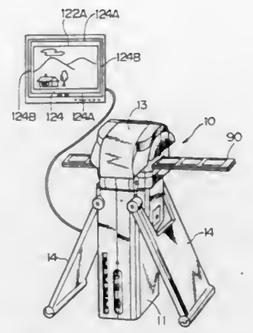
1. An electronic viewer picking up a film image on a film housed in a film carrier so as to display the film image on a screen of a display unit being connected therewith, the viewer comprising:

a main body;

illuminating means for illuminating the film image on the film;

a lens mount including an optical system therein, the film being positioned between the lens mount and the illuminating means, the lens mount capable of moving within the main body;

a solid state imaging device secured to the lens mount in such a manner to be positioned below the optical system, the solid state imaging device accepting an optical image from the optical system and generating an image signal indicating the optical image;



an image processing circuit provided within the main body, the image processing circuit receiving the image signal from the solid state imaging device and converting the signal into a video signal, the video signal being transmitted to the display unit;

a holder for holding the film carrier, the holder provided on a top of the main body in such a manner to be positioned above the optical system, the holder capable of being rotated around an optical axis of the optical system, the film carrier capable of being inserted into and retracted from the holder; and

a zoom mechanism for automatically moving the lens mount together with the solid state imaging device along the optical axis of the optical system in association with a rotation of the holder in order to change a distance between the film held by the holder and a light acceptance surface of the solid state imaging device.

5,663,763

PICTURE SIGNAL ENCODING METHOD AND APPARATUS AND PICTURE SIGNAL DECODING METHOD AND APPARATUS

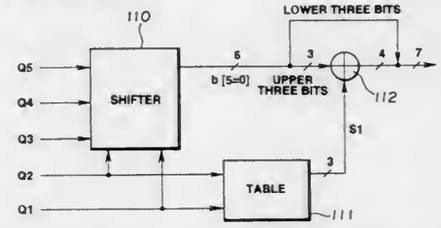
Yoichi Yagasaki; Tohru Wada, and Katsumi Tahara, all of Kanagawa, Japan, assignors to Sony Corp., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 137,257

Claims priority, application Japan, Oct. 29, 1992, 4-291697; Jan. 25, 1993, 5-010177; Mar. 25, 1993, 5-066550

Int. Cl.[6] H04N *7/24*

U.S. Cl. 348—405 **13 Claims**



1. An encoding method for picture signals in which input picture signals are quantized and subsequently encoded, comprising setting a digital signal value representing a quantization information used for expressing an index of powers of 2 as a first quantization information among a set of quantization information, setting a digital signal value corresponding to a coefficient multiplied by the powers of 2 as representing a second quantization information among the set of quantization information, and quantizing the picture signals based on non-linear quantization characteristic signals (QUANT) obtained by using k as said first quantization information, k being a positive integer, and by using (i/2+j) as said second quantization information, j being a positive integer and i being 0 or 1, wherein said non-linear quantization characteristic signals (QUANT) are represented by an equation:

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$$QUANT=(i/2+j)\times 2^{k}+2^{(k+2)}-4$$

and used as a width of quantization to produce quantized picture signals.

5,663,764

HIERARCHICAL ENCODING AND DECODING APPARATUS FOR A DIGITAL IMAGE SIGNAL

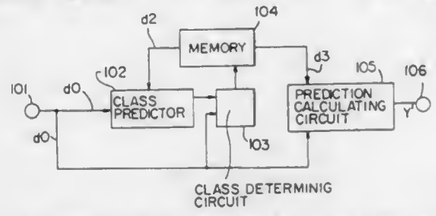
Tetsujiro Kondo; Yasuhiro Fujimori, both of Kanagawa, and Takeharu Nishikata, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 313,811, Sep. 28, 1994. This application Jul. 19, 1995, Ser. No. 504,040

Claims priority, application Japan, Sep. 30, 1993, 5-268050; Jul. 5, 1994, 6-175971; Jul. 19, 1994, 6-188896

Int. Cl.[6] H04N *7/46*

U.S. Cl. 348—414 **62 Claims**



1. A hierarchical encoding apparatus for encoding a first digital image signal representing pixels and having a first resolution, comprising:

means for forming a second digital image signal from the first digital image signal, the second digital image signal having a second resolution lower than the first resolution;

predicting means for producing predicted values of the first digital image signal from the second digital image signal;

means for subtracting a predicted value of the first digital image signal from the pixel value of the first digital image signal to produce a differential value; and

means for transmitting the second digital image signal and a differential signal representing the differential values;

wherein the predicting means comprises:

class categorizing means for determining a class corresponding to a selected pixel of the second digital image signal; the class categorizing means being operative to produce a plurality of predicted pixel values of the selected pixel, each of the predicted pixel values corresponding to a respective one of a plurality of predetermined classes; the class categorizing means being further operative to select a class corresponding to the selected pixel from the plurality of predetermined classes based on a respective one of the plurality of predicted pixel values which is closest to a value of the selected pixel; and

predicted value generating means for generating a predicted value of the first digital image signal based on the selected class.

5,663,765

APPARATUS AND METHOD FOR PROCESSING IMAGE SIGNALS

Shusaku Matsuse, Ohtsu, and Katsuhiko Ohsaki, Shiga-ken, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

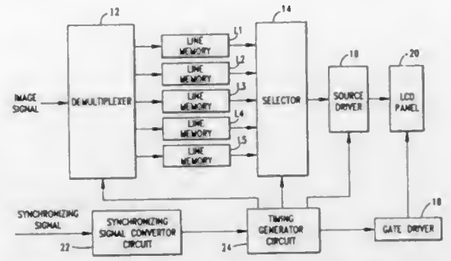
Filed Oct. 13, 1995, Ser. No. 543,185

Claims priority, application Japan, Oct. 13, 1994, 6-247796

Int. Cl.[6] H04N *7/01;11/20*

U.S. Cl. 348—448 **3 Claims**

1. An image signal processing apparatus for converting an interlaced image signal having a first number of image lines into a non-interlaced image signal having a second number of image



lines, the interlaced image signal representing two successive interlaced fields for each image frame, each said field having one half of the first number of image lines, the second number of image lines being smaller than the first number of image lines, the difference between the first and second number of image lines being a third number of image lines that are removed uniformly from the interlaced image signal in order to form the non-interlaced image signal by dividing the interlaced image signal into successive sets of consecutive image lines, removing one image line from each said set of image lines, and retaining a predetermined fourth number of image lines in each said set of image lines, comprising:

a multiplicity of line storage memories equal in number to said predetermined fourth number;

means for temporarily storing the retained predetermined fourth number of image lines from successive ones of said sets in the multiplicity of line storage memories; and

means for reading said line storage memories each twice and in succession for each said set of image lines,

thereby generating a non-interlaced image signal representing two successive image frames each having the second number of image lines from each frame of the interlaced image signal having the first number of image lines.

5,663,766

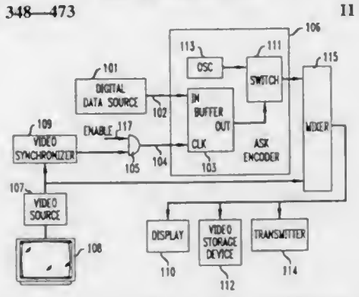
DIGITAL DATA ENCODING IN VIDEO SIGNALS USING DATA MODULATED CARRIER SIGNALS AT NON-PEAKS IN VIDEO SPECTRA

Theodore Sizer, II, Little Silver, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 332,226, Oct. 31, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 599,500

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—473 **11 Claims**



1. A system for communicating digital information in a video signal, said video signal having a spectrum associated therewith, comprising:

an encoder arranged to add a carrier signal modulated by digital information to said video signal, said modulated carrier signal at other than a frequency corresponding to a peak in the video spectrum, and

a receiver arranged to optically sense said video signal and to recover said encoded digital information in said video signal.

5,663,767

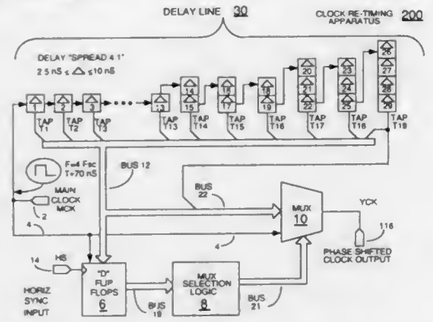
CLOCK RE-TIMING APPARATUS WITH CASCADED DELAY STAGES

Mark Francis Rumreich, and John William Gyurek, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Oct. 25, 1995, Ser. No. 547,830

Int. Cl.[6] H03L *7/00*

U.S. Cl. 348—537 **13 Claims**



1. Integrated clock re-timing apparatus, comprising:

a delay line comprising a cascade connection of a plurality of delay elements formed in an integrated circuit and responsive to a clock input signal for providing a plurality of delayed clock signals at respective taps;

a selection circuit, responsive to a synchronizing signal supplied thereto, for coupling a selected one of the taps to an output for providing a delayed clock output signal that is edge-aligned with the synchronizing signal; and wherein

the number of delay elements between some taps varies;

each delay element in said delay line is of a given nominal delay;

said delay elements are arranged in said delay line to form a distribution of delay elements wherein there are fewer taps than delay elements;

said distribution of delay elements among said taps is selected to minimize the number of taps required to provide a given minimum delay resolution and a given minimum total delay for said delay line; and wherein

said minimum total delay is at least one period of said input clock signal.

5,663,768

MULTI-TELEVISION BROADCASTING SIGNAL RECEIVING APPARATUS AND CONTROL METHOD THEREOF

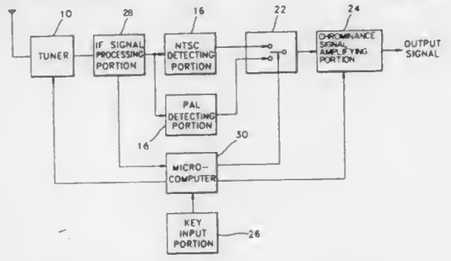
Jae-mo Yang, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 6, 1995, Ser. No. 471,164

Claims priority, application Rep. of Korea, Jun. 9, 1994, 94-12940

Int. Cl.[6] H04N *5/46*

U.S. Cl. 348—557 **19 Claims**



1. A multi-television broadcasting signal receiving apparatus for processing a tuned signal as an intermediate frequency (IF) signal and determining a broadcasting system of said IF signal based on said IF signal, said apparatus comprising:

a plurality of detecting means for detecting said IF signal by said broadcasting system;

control means for determining said broadcasting system of said IF signal by evaluating at least one of a chrominance subcarrier and a vertical sync signal contained in said IF signal, for outputting a discrimination control signal based on said at least one of said chrominance subcarrier and said vertical sync signal, and for outputting a chrominance control signal, wherein said discrimination control signal corresponds to said broadcasting system and wherein said chrominance control signal comprises first data if said broadcasting system is a first broadcasting system and comprises second data if said broadcasting system is a second broadcasting system;

selecting means for selecting a corresponding detecting means based on said discriminating control signal and for inputting a corresponding broadcasting signal from said corresponding detecting means, wherein said corresponding detecting means is one of said plurality of detecting means; and

chrominance signal adjusting means for varying a gain of a chrominance signal of said corresponding broadcasting signal selected by said selecting means, wherein said chrominance signal adjusting means varies said gain of said chrominance signal according to said chrominance control signal.

5,663,769

IMAGE QUALITY CORRECTION CIRCUIT BASED ON COLOR DENSITY

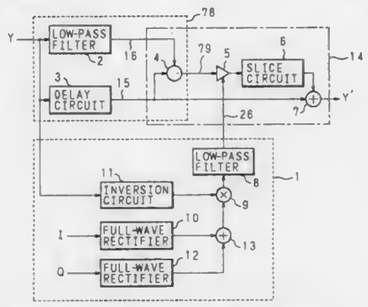
Masaaki Hanai, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 226,510, Apr. 12, 1994. This application May 20, 1996, Ser. No. 650,952

Claims priority, application Japan, Apr. 19, 1993, 5-91427; Dec. 24, 1993, 5-327770; Apr. 11, 1994, 6-72319

Int. Cl.[6] H04N *5/21;5/52*

U.S. Cl. 348—630 **3 Claims**



1. An image quality correction circuit comprising:

color density detecting means for detecting color density from a luminance signal and a chrominance signal; said color density detecting means including rectifiers for full-wave rectifying two kinds of chrominance signals, an adder for summing the two rectified chrominance signals, and a multiplier for multiplying an output signal of said adder by an inverted version of the luminance signal, wherein the color density is detected from the output of said multiplier;

high-frequency component filtering means for filtering out a high-frequency component of the luminance signal;

a variable gain amplifier for amplifying the filtered luminance signal by performing control in such a manner that the gain of the variable gain amplifier is increased when the detected color density is high and is reduced when the detected color density is low;

a slice circuit for slicing a positive portion of the outputted amplitude of said variable gain amplifier at a prescribed value to output a negative portion thereof as an image quality correction signal; and

means for combining the image quality correction signal outputted from said slice circuit with the luminance signal and thereby outputting a corrected luminance signal.

5,663,770

WHITE BALANCE CIRCUIT IN WHICH LOW LIGHT ADJUSTMENT IS NOT INFLUENCED BY HIGH LIGHT ADJUSTMENT

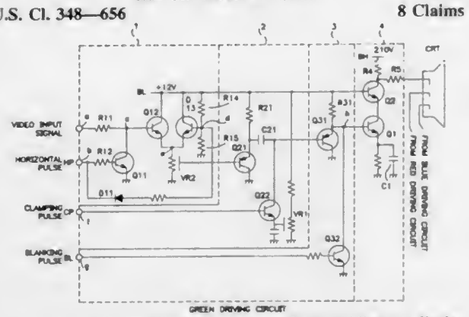
Shigemitsu Yamade, Hachiman, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 81,601, Jun. 23, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,270

Claims priority, application Japan, Jul. 6, 1992, 4-178028

Int. Cl.[6] H04N *9/72;9/73*

U.S. Cl. 348—656 **8 Claims**



1. A color picture display apparatus for providing to display means an output video signal with adjusted white balance, said color picture display apparatus comprising:

assignment means for assigning a first potential to an input video signal during a blanking period of said input signal, said first potential substantially equal to a first light level, wherein said first light level is used for adjusting said white balance and wherein said assignment means generates an assignment output signal;

gain control means for controlling the amplitude of said assignment output signal to generate a gain control output signal;

clamping means for clamping said gain control output signal at a second potential, to generate a clamping output signal;

blanking means for blanking said clamping output signal to generate said output video signal; and

means for providing said output video signal to said display means.

5,663,771

ADAPTIVE VIDEO COMB FILTER WITH LEGALIZED OUTPUT SIGNALS

Dean L. Raby, San Diego, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 13, 1996, Ser. No. 664,032

Int. Cl.[6] H04N *9/78*

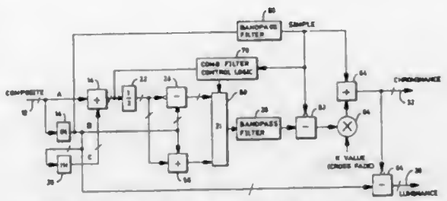
U.S. Cl. 348—663 **22 Claims**

1. A method of decoding a composite video input signal into chroma and luma information, comprising the steps of:

applying the composite video input signal to at least a first and a second filter;

determining if a chroma output signal from one of the at least two filters has both phase and a magnitude within particular limits;

if both the phase and magnitude are within the particular limits, selecting the output signal from the one of said at least two filters; and



otherwise, selecting a chroma output signal from the other of said at least two filters.

5,663,772

GRAY-LEVEL IMAGE PROCESSING WITH WEIGHTING FACTORS TO REDUCE FLICKER

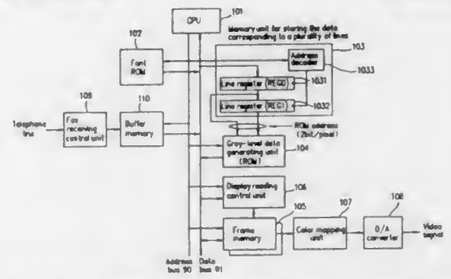
Hirotoshi Uehara; Shoichi Gotoh, and Norio Aoki, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 27, 1995, Ser. No. 410,877

Claims priority, application Japan, Mar. 29, 1994, 6-058647

Int. Cl.[6] H04N *5/14*

U.S. Cl. 348—671 **20 Claims**



1. A gray-level image display method for displaying an image represented by binary pixel data in multiple levels, comprising the steps of:

generating a gray-level pixel data by conducting an operation with respect to respective pixels of the binary pixel data by providing predetermined weighting factors for a data of a first pixel and for a data of a second pixel adjacent to the first pixel; and

displaying an image represented by the gray-level pixel data,

wherein the step of displaying the image represented by the gray-level pixel data comprises the steps of:

writing the gray-level pixel data into a frame memory;

mapping the gray-level pixel data read from the frame memory to a predetermined set of colors consisting of a foreground color, a background color and at least one intermediate color; and

displaying the gray-level pixel data on a display of an interlaced scanning system based on the mapped set of colors.

5,663,773

DEMODULATOR FOR A COMPLEX-VALUE VESTIGIAL SIDEBAND SIGNAL

Heinz Goeckler, Backnang, Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Germany

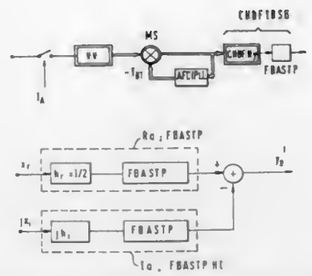
Filed Nov. 20, 1995, Ser. No. 561,123

Claims priority, application Germany, Dec. 16, 1994, 44 44 870.8

Int. Cl.[6] H04N *5/455*

U.S. Cl. 348—726 **21 Claims**

1. A demodulator for a complex-value vestigial sideband signal consisting of



a digital Nyquist slope filter (CHBFN$_y$) having a transmission function with complex coefficients h(k), k being an integer, said digital Nyquist slope filter including a first subfilter (Ra) and a second subfilter (Ia), said first subfilter (Ra) having a transmission function with an odd number of coefficients h(k) for which h(k)=h(−k) and said second subfilter (Ia) having a Hilbert transformation function with an odd number of coefficients h(k) for which h(−k)=−h(k), so that each of said coefficients h(k) of the Nyquist slope filter are either purely real or purely imaginary for each value of said k and said subfilters (Ra, Ia) having outputs connected to each other an adder stage in an additive or subtractive manner so as to produce at least one passband and one stopband, and

a digital filter device (FBASTP) having a transmission function with real coefficients for suppressing at least one subcarrier in the vestigial sideband signal, wherein the transmission functions of the subfilters (Ra, Ia) for a real part and an imaginary part are combined with respect to the digital filter device (FBASTP) and Nyquist slope filter (CHBFNy), and said digital filter device (FBASTP) is integrated with said Nyquist slope filter (CHBFNy) or connected downstream of said Nyquist slope filter (CHBFNy).

5,663,774

THREE TUBE BEAM PROJECTION SYSTEM AND METHOD

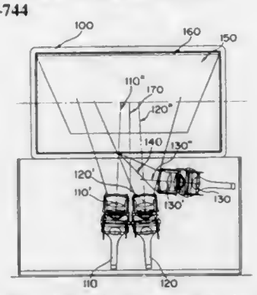
Jong Soo Baik, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 13, 1994, Ser. No. 357,170

Claims priority, application Rep. of Korea, Dec. 13, 1993, 27534/1993

Int. Cl.[6] H04N *5/74;9/31*

U.S. Cl. 348—744 **18 Claims**



1. A projection system having a support part in a bottom section of the system and a screen part in a top section of the system, the system comprising:

first and second beam projection tubes arranged in-line in a center of an interior of the support part, wherein said first beam projection tube is beside said second beam projection tube;

a third beam projection tube placed beside said first and second beam projection tubes, said third beam projection tube being arranged substantially coplanar with the first and second beam projection tubes and being inclined relative to the first and second beam projection tubes at predetermined inclination angles; and

partially reflecting means, placed on an optical axis of said third beam projection tube in front of the third beam projection tube, for transmitting beams projected by the first and second beam projection tubes and reflecting a beam projected by the third beam projection tube.

5,663,775

VIDEO PROJECTOR WITH LUMINANCE AND CHROMINANCE OPTICAL MODULATION LCD'S

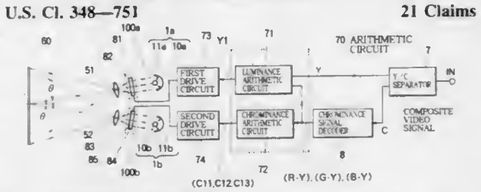
Hiroshi Kawamura, Nagaokakyo; Hisao Koizumi, Tokyo, and Yoshisuke Ohtsuru, Kurume, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,568

Claims priority, application Japan, Apr. 27, 1994, 6-089354

Int. Cl.[6] H04N *5/74;9/31*

U.S. Cl. 348—751 **21 Claims**



1. A projector comprising:

a first light source for emitting a first light beam which is substantially collimated and substantially white;

a second light source for emitting a second light beam which is substantially collimated and substantially white;

an arithmetic circuit receiving a luminance signal and a chrominance signal of an input signal and producing a modified luminance signal and a modified chrominance signal;

luminance optical modulation means for modulating the first light beam in accordance with the modified luminance signal;

chrominance optical modulation means for modulating the second light beam in accordance with the modified chrominance signal;

first projecting means for projecting the first light beam having been modulated by the luminance optical modulation means onto a projection screen to form a projected luminance image on the screen; and

second projecting means for projecting the second light beam having been modulated by the chrominance optical modulation means onto the projection screen to form a projected chrominance image on the screen;

said projected luminance image and said projected chrominance image being superimposed with each other on the screen to form a full color image.

5,663,776

DISPLAY DEVICE WITH CELLS ARRANGED AT DISTANCE FROM EACH OTHER VIA ANGULARLY SHAPED SUPPORTS HAVING SPACER LEGS

Heinz Behrends, Bad Herrenalb, Germany, assignor to Valeo Borg Instruments Verwaltung GmbH, Remchingen, Germany

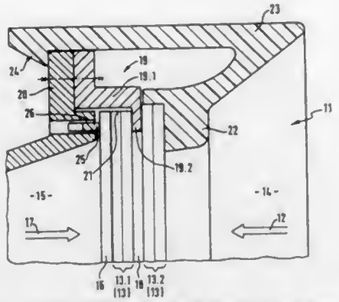
Filed Sep. 15, 1995, Ser. No. 528,689

Claims priority, application Germany, Sep. 20, 1994, 44 33 310.2

Int. Cl.[6] G02F *1/1333;1/1347;* **H05K** *5/00;7/00*

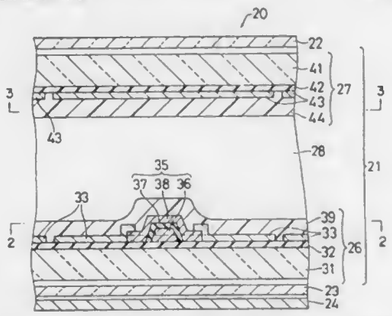
U.S. Cl. 349—58 **7 Claims**

1. Display device having a housing for a light box, a visible side frame and liquid-crystal cells which are arranged one in front of the other and spaced from each other by a narrow gap, each of the cells having a respective border, comprising angularly shaped supports having thin spacer legs, said spacer legs being in the gap between the cells and engaged at the borders of the cells, said angularly shaped supports having other legs outside of the gap and transverse to the border of one of the cells said thin spacer legs and



said other legs being attached to the housing of the display device between the light box and the visible frame.

5,663,777
REFLECTION TYPE LIQUID CRYSTAL DISPLAY DEVICE
Kaori Aoyama, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 27, 1995, Ser. No. 579,374
Claims priority, application Japan, Dec. 28, 1994, 6-328738
Int. Cl.[6] G02F *1/1333;1/1335*
U.S. Cl. 349—96 **4 Claims**



1. A reflection type liquid crystal display device comprising a liquid crystal panel holding a twisted nematic type liquid crystal layer sandwiched between a pair of light transmitting substrate members, the liquid crystal panel being interposed between a pair of polarizing plates, and a reflector for reflecting the light entering from the side of one polarizing plate, the reflector being disposed on the side of the other polarizing plate, the side not facing the liquid crystal panel;

wherein one of the pair of substrate members comprises:

a light transmitting substrate,

plural light transmitting pixel electrodes arrayed in a matrix form on the surface of the light transmitting substrate at the liquid crystal layer side,

plural data signal wirings arrayed parallel to each other, to which data signals to be supplied to the plural pixel electrodes are given,

plural switching elements for individually supplying the data signals given to the data signal wirings to the pixel electrodes and cutting off the supply of the data signals, and an orientation layer closest to the liquid crystal layer;

wherein the other of the pair of substrate members comprises:

a light transmitting substrate,

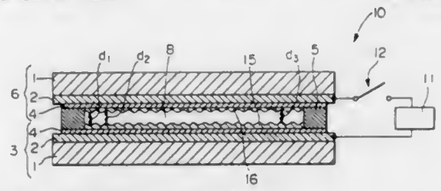
light transmitting counter electrodes provided in a region confronting at least the plural pixel electrodes of the surface of the light transmitting substrate at the liquid crystal layer side,

plural light transmitting scanning signal wirings arrayed in the direction orthogonal to the plural data signal wirings, to which scanning signals to be supplied to the counter electrodes are given, and

an orientation layer closest to the liquid crystal layer; and

wherein the degree of polarization of the first polarizing plate at the light incidence and exit side of one of the pair of polarizing plates is selected higher than the degree of polarization of the second polarizing plate of the reflector side.

5,663,778
LIQUID CRYSTAL DEVICES AND METHOD FOR MAKING THE SAME
Tadashi Konno, and Guo Ping Chen, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Sep. 26, 1995, Ser. No. 533,897
Claims priority, application Japan, Oct. 19, 1994, 6-253995
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 349—122 **6 Claims**



1. A liquid crystal display comprising:

first substrate having first surface;

a second substrate having second surface, the second substrate attached to the first substrate such that a space is formed between the first and second surfaces;

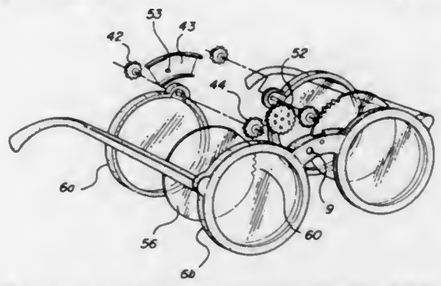
a first embossed layer formed on the first surface of the first substrate, the first embossed layer having an irregular pattern including curved surfaces which faces the second layer across the space;

a liquid crystal substance filled in the space between the second surface and the first embossed layer;

wherein a refractive index of the first embossed layer is substantially equal to a refractive index of the liquid crystal substance, and

wherein an average dielectric constant of the first embossed layer is substantially equal to a dielectric constant of the liquid crystal substance.

5,663,779
VARIABLE TRANSMISSION LIGHT POLARIZING LENS ASSEMBLY
Naoki Karasawa, Ann Arbor, Mich., assignor to Ozmix, Inc., Ann Arbor, Mich.
Continuation-in-part of Ser. No. 208,130, Mar. 9, 1994, abandoned. This application Jan. 5, 1995, Ser. No. 369,044
Int. Cl.[6] G02C *7/12*
U.S. Cl. 351—49 **16 Claims**



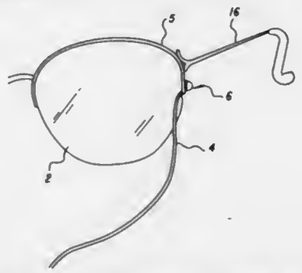
9. In a light polarizing lens assembly including a first frame having a continuous wall section with at least a first lens element

disposed therein, said first lens element rotatable with respect to said frame, and means for rotating said first lens element relative to said frame, the improvement comprising:

said first frame including at least one externally opening groove; and

a second frame including at least a second lens element disposed therein, said second frame including at least one protrusion securely axially mateably received within said groove to detachably axially superimpose said first and second frames.

5,663,780
SPECTACLES WITH DECORATIVE LENS ATTACHING DEVICE
Masaru Murai, and Isao Hyoi, both of Fukui, Japan, assignors to Mural Co., Ltd., Fukui, Japan
PCT No. PCT/JP93/00372, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994
PCT Filed Mar. 26, 1993, Ser. No. 182,002
Claims priority, application Japan, May 25, 1992, 4-41868
Int. Cl.[6] G02C *11/02;1/04*
U.S. Cl. 351—52 **7 Claims**

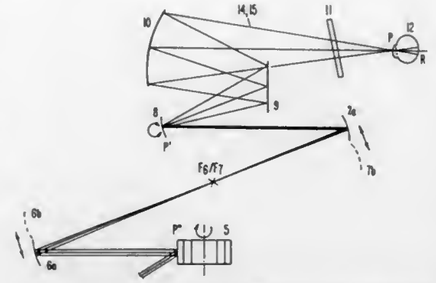


1. Spectacles comprising a pair of lenses, a spectacle frame body having rigid rim portions containing opposed interior and exterior surfaces, each of the lenses being disposed along one portion thereof against a cooperating portion of the rim portions, a flexible lens holding member extending under tension around another portion of each of the lenses for securing each of the lenses to the frame body portions, hole means formed in the spectacle frame body for passing an associated flexible lens holding member, at least one end of the associated flexible lens holding member defining a terminal fastening portion thereof, and a decorative member containing a concealed interior passage receiving the terminal fastening portion of the lens holding member for securing the decorative member in an exposed position to the exterior surface of the frame body.

5,663,781
APPARATUS FOR THE EXAMINATION OF OBJECTS AND THE DETERMINATION OF TOPOGRAPHY
Karl-Heinz Wilms, Emmering; Ulrich Klingbeil, and Andreas Plesch, both of München, all of Germany, assignors to G. Rodenstock Instrumente GmbH, Ottobrunn-Riemerling, Germany
Continuation of Ser. No. 873,980, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 473,935, Feb. 28, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 111,969
Claims priority, application Germany, Jun. 29, 1988, 38 21 974.3; Oct. 8, 1988, 38 34 314.2; Oct. 8, 1988, 38 34 293.6
Int. Cl.[6] A61B *3/14;3/10*
U.S. Cl. 351—206 **24 Claims**

1. An apparatus for examining an object comprising:

an illumination light source for generating an illumination light beam of a predetermined wavelength for being focused by beam-imaging optical elements along an illumination light beam path on a portion of the object to be examined;



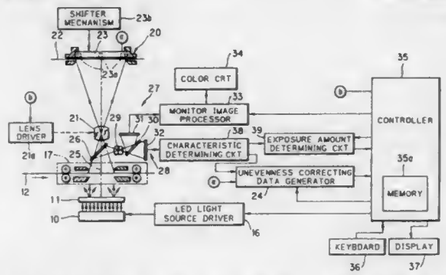
scanning means including beam-deflecting optical elements for generating a scanning movement of the illumination light beam over the object to be examined;

sensing means for receiving a light reflected beam of the illumination beam reflected from the object to be examined along a reflected light beam path including a sensing beam path; and

evaluation and synchronization means for producing an image of the object to be examined from a time-sequential output signal from the sensing means;

wherein the illumination light source, the beam-imaging optical elements, the scanning means, the sensing means and the evaluation and synchronization means enable at least two images of the object to be simultaneously taken with off-set pupils of at least one of the illumination light beam path and the reflected light beam path and a shifted optical axis of at least one of the illumination light beam and the reflected light beam, the evaluation and synchronization means enabling coupling of the images taken with varying positions of the pupils and optical axis for determining the topography of the object.

5,663,782
PHOTOGRAPHIC PRINTER AND FILM SCANNER HAVING AN LED LIGHT SOURCE
Hirofumi Saita; Kenji Suzuki; Shuji Tahara; Takaaki Terashita, and Hiroshi Sunagawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 26, 1995, Ser. No. 427,840
Claims priority, application Japan, Jul. 8, 1994, 6-157632
Int. Cl.[6] G03B *27/00;27/72*
U.S. Cl. 355—37 **32 Claims**



1. A photographic printer for printing a frame recorded on photographic film to photosensitive material through a printing lens, comprising:

an exposure station in which said frame of said photographic film is set;

a light source, disposed in opposition to said printing lens with reference to said photographic film set in said exposure station, and constituted by diode elements disposed in a matrix for emitting light of red, green and blue colors, said light source illuminating said frame from behind, said photosensitive material exposed by said light transmitted through said frame;

a diode driver, connected to respective said diode elements, for driving said diode elements by application of a drive signal thereto;

a controller, connected to said diode driver, for controlling said diode elements via said diode driver, said controller determining said drive signal applied to respective said diode elements by said diode driver; and

a correcting data generator, connected to said controller, for predetermining information which associates illuminating brightness of said diode elements with said drive signal for driving said diode elements at said illuminating brightness, individually between said diode elements,

said controller correcting said drive signal in accordance with said associating information to illuminate at a target light amount.

5,663,783

STAGE-DRIVE CONTROLLING DEVICE, PROJECTION EXPOSURE APPARATUS INCLUDING THE SAME, AND METHOD OF CONTROLLING THE DRIVING OF A STAGE

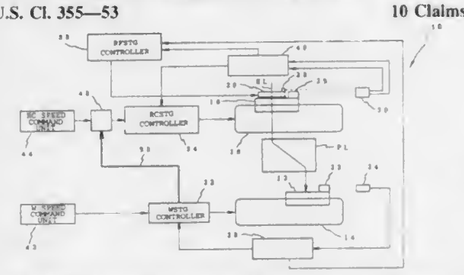
Toshio Ueda, Ohsato-gun, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 620,531

Claims priority, application Japan, Jul. 11, 1995, 7-198182

Int. Cl.[6] H01L *21/30;* **G03B** *27/42*

U.S. Cl. 355—53 **10 Claims**



1. A stage-drive controlling device for synchronously scanning a first stage and a second stage in a predetermined scanning direction, comprising:

a first speed control system, which has a speed feedback circuit, for controlling of the first stage;

a second speed control system, which has a speed feedback circuit, for controlling of the second stage in synchronism with the speed control of the first stage; and

a deviation feedback system whereby a value in which a deviation between a targeted speed value and a speed feedback value of one of the first speed control system and the second speed control system is multiplied by a speed ratio between said first stage and said second stage and is fed back as a speed correction value, to another one of the first speed control system and the second speed control system.

5,663,784

SLIT-SCANNING TYPE LIGHT EXPOSURE APPARATUS

Akikazu Tanimoto, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 256,000, Jun. 8, 1994, abandoned.

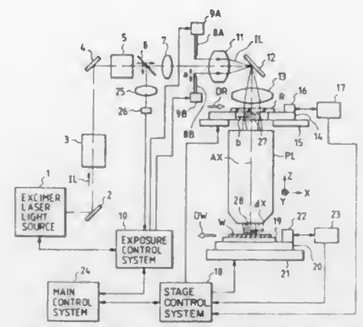
This application Mar. 23, 1995, Ser. No. 409,935

Claims priority, application Japan, Jun. 10, 1993, 5-138489

Int. Cl.[6] G03B *27/74*

U.S. Cl. 355—68 **15 Claims**

4. A light exposure apparatus for transcribing a pattern formed on a mask to be illuminated by illuminating light onto a substrate, comprising:



a driving system for synchronously scanning a mask stage for holding said mask and a substrate stage for holding said substrate;

a blind for limiting a shape of an illuminating area on said mask to a predetermined shape;

a calculating system for accumulating exposure light energy individually, per each of divided areas obtained by dividing an exposing area on said substrate into a plurality of areas with respect to a direction of said scanning; and

a control system for controlling said blind based on the accumulated exposure light energy.

5,663,785

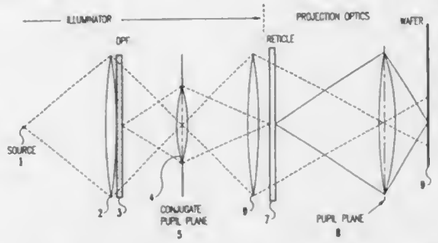
DIFFRACTION PUPIL FILLER MODIFIED ILLUMINATOR FOR ANNULAR PUPIL FILLS

Joseph Pennell Kirk, Dutchess County, N.Y., and Ronald Michael Martino, Fairfield County, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1995, Ser. No. 448,691

Int. Cl.[6] G03B *27/72;27/68;27/52*

U.S. Cl. 355—71 **5 Claims**



1. A method of uniformly exposing a wafer comprising the steps of:

providing an illuminator having a reticle to be imaged on the wafer;

providing a diffraction pupil filler within and perpendicular to an optical axis of said illuminator, said diffraction pupil filler having a predetermined diffraction pattern;

rotating the diffraction pupil filler such that

$\theta/360 \times rpm << \text{Exposure time}$,

where θ is the angle formed between two neighboring diffracted orders and rpm is the velocity of the pupil filler in revolutions per millisecond, thereby annularly illuminating a conjugate pupil plane above said photomask and evenly illuminating said reticle; and

projecting an image of said evenly illuminated reticle onto the wafer.

5,663,786

FILM CHARGING APPARATUS FOR PHOTOGRAPHIC PRINTER

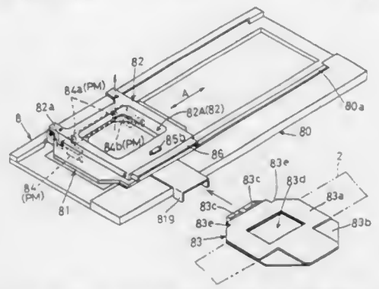
Takahisa Miyamori, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayam-ken, Japan

Filed Sep. 11, 1995, Ser. No. 526,487

Claims priority, application Japan, Sep. 13, 1994, 6-219030

Int. Cl.[6] G03B *27/00;27/62*

U.S. Cl. 355—72 **10 Claims**



1. A film charging apparatus for a photographic printer, which comprises:

a film mount for supporting a film or a holder of the film from below;

a fixing cover manually openable and closable relative to the film mount and operable, in a full-closed state thereof, to fix the film or the holder supported on the film mount by pressing the film or holder from above;

positioning means switchable between a position-fixing state for fixedly positioning the film relative to the mount and a position-releasing state for releasing the film relative to the mount;

wherein the positioning means is set at the position-fixing state when the fixing cover is under a predetermined opened condition; and the positioning means is switched over to the position-releasing state when the fixing cover has reached an intermediate state before a full closed state in the course of movement thereof to the full closed state.

5,663,787

ELECTROPHOTOGRAPHIC COLOR IMAGE FORMING APPARATUS WITH IMAGE EXPOSURE MEANS INSIDE OF PHOTORECEPTOR DRUM

Satoshi Haneda; Masakazu Fukuchi, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 397,918, Mar. 3, 1995, abandoned.

This application Jun. 12, 1996, Ser. No. 662,817

Claims priority, application Japan, Mar. 11, 1994, 6-041297; Jun. 24, 1994, 6-143360; Aug. 24, 1994, 6-199727; Sep. 2, 1994, 6-209743; Sep. 12, 1994, 6-217429

Int. Cl.[6] G03G *15/00;21/18*

U.S. Cl. 355—111 **31 Claims**

1. An apparatus for forming a toner image, comprising:

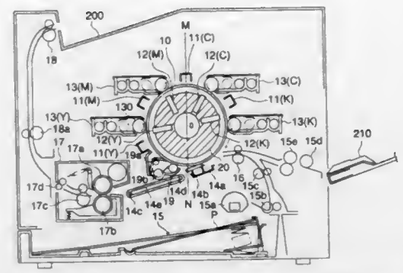
a photoreceptor drum provided with a disk which closes one end thereof so that the photoreceptor drum has a closed drum end and an open drum end;

charger means for charging an outer surface of the photoreceptor drum;

image exposure means for exposing the photoreceptor drum from an inside of the photoreceptor drum so as to form a latent image thereon;

developing means for developing the latent image so as to form a toner image on an outer surface of the photoreceptor drum;

an image exposure means supporting member on which the image exposure means are mounted, the image exposure means supporting member being inserted together with the image exposure means through the open drum end into the inside of the photoreceptor drum, the image exposure means supporting member having a first end and a second end corresponding in position in an inserted condition to the closed end and the open end, respectively;



a shaft, one end of which is attached to the first end of the image exposure means supporting member and an opposite end of which is engageable with a center of the disk of the photoreceptor drum so that the closed drum end of the photoreceptor drum is rotatable around the shaft;

a photoreceptor drum supporting member engageable with the open drum end of the photoreceptor drum so that the open drum end of the photoreceptor drum is rotatable around the photoreceptor drum supporting member, the photoreceptor drum supporting member being provided in a vicinity of the second end of the image exposure means supporting member so that when the photoreceptor drum is shifted from the first end to the second end of the image exposure means supporting member, the image exposure means supporting means is inserted through the open drum end into the inside of the photoreceptor drum, the closed drum end of the photoreceptor drum is engaged with the opposite end of the shaft and the open drum end of the photoreceptor drum is engaged with the photoreceptor drum supporting member.

5,663,788

EFFICIENTLY REMOVABLE DEVELOPING TONER IN AN ELECTROSTATIC IMAGE FORMING APPARATUS

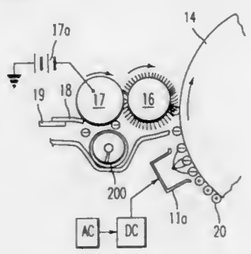
Atsushi Sanpe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,018

Claims priority, application Japan, Apr. 2, 1992, 4-080919

Int. Cl.[6] G03G *21/00;15/01;15/14*

U.S. Cl. 399—353 **6 Claims**



1. In an electrostatic image forming apparatus in which a photosensitive body having a photoconductive characteristic is charged uniformly, a portion on a surface of said photosensitive body is exposed to light in order to form an electrostatic latent image, the electrostatic latent image is developed by a dry-type developer employing a toner charged with a polarity, and the developed image is transferred onto a transfer paper, said electrostatic image forming apparatus comprising:

a precleaning charger applied with a discharging voltage created by superposing an AC voltage on a DC voltage of a predetermined polarity and positioned so as to recharge almost all of the toner remaining on the surface of said photosensitive body with the predetermined polarity, after transferring the developed image onto the transfer paper;

removing means for removing said remaining toner recharged by said precleaning charger from the surface of said photosensitive body; and

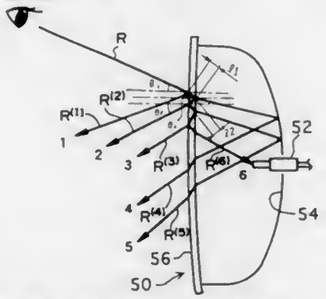
electric potential gradient generating means for generating an electric potential gradient through said removing means for transferring the recharged toner to said removing means from said photosensitive body without inverse charging of the toner, wherein a relative dielectric constant of said toner is within a range of 2.5–3, and wherein an electrical potential difference between said electrical potential gradient generating means and the surface of said photosensitive body is within a range of about 200 V–300 V.

5,663,789

RAY TRACING METHOD

Atsushi Takagi, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 15, 1996, Ser. No. 616,455
Claims priority, application Japan, Mar. 16, 1995, 7-057506
Int. Cl.[6] G01J *1/42*
U.S. Cl. 356—121 **20 Claims**



1. A ray tracing method comprising the steps of:

emitting a ray from a viewpoint, which is set at a predetermined position, toward a lamp;

ray tracing a ray which has been stochastically selected as a ray which reaches a light source of the lamp; and

analyzing at least one of illuminance at a predetermined position on a surface illuminated by the lamp, luminance at a predetermined position on a surface of the lamp, and a color state of the lamp.

5,663,790

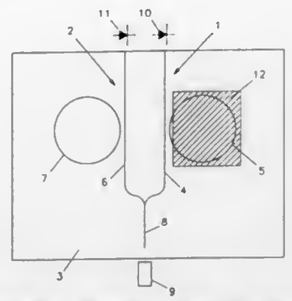
METHOD AND APPARATUS FOR DETERMINATION OF REFRACTIVE INDEX

Björn Ekström, Upsala, and Magnus Öberg, Hägersten, both of Sweden, assignors to Pharmacia Biosensor AB, Upsala, Sweden

PCT No. PCT/SE94/00312, § 371 Date Oct. 6, 1995, § 102(e) Date Oct. 6, 1995, PCT Pub. No. WO94/24542, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 8, 1994, Ser. No. 532,546
Claims priority, application Sweden, Apr. 8, 1993, 9301192
Int. Cl.[6] G01N *21/41*
U.S. Cl. 356—128 **71 Claims**

1. A method for determining the refractive index of a gaseous, liquid or solid sample, comprising:

i) providing a measuring waveguide resonator, which comprises an open waveguide and a closed waveguide, said waveguides



being adjacent to each other so as to allow their coupling, and a means for positioning a sample proximal to said closed waveguide so that the presence of said sample can change the effective refractive index of said closed waveguide;

ii) coupling light from a light source into one end of the open waveguide; and

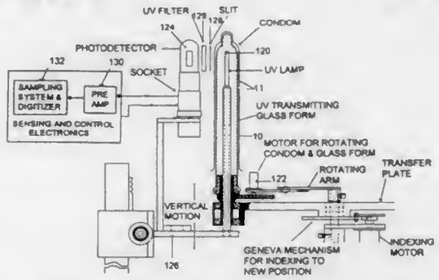
iii) measuring the change in the resonance wavelength of said closed waveguide caused by the presence of said sample to determine the refractive index of said gaseous, liquid or solid sample.

5,663,791

APPARATUS AND METHOD FOR TESTING ELASTIC ARTICLES

Stephen R. Smith, Lawrenceville, and John L. Lowrance, Princeton, both of N.J., assignors to Princeton Scientific Instruments, Inc., Monmouth Junction, N.J.

Filed Mar. 1, 1996, Ser. No. 609,293
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **36 Claims**



1. Apparatus for testing an elastic product comprising:

means for distending the elastic product and causing it to assume a shape having continuously closed sides and a closed top end and an open bottom end, with the elastic product having an inner surface and outer surface;

a source of light and means responsive to said source of light for projecting a line of light along one of said inner and outer surfaces of the elastic product, said light source having particular wavelength at which the material of the elastic product is relatively opaque;

means for scanning the line of light across the entire portion of the surface of the elastic product to be tested; and

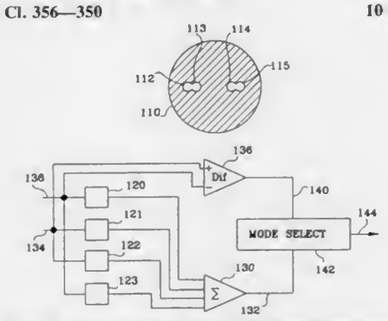
photo sensing means, responsive to said particular wavelength, positioned relative to the line of light and the elastic product for sensing any light from the line of light passing through the elastic product and ascertaining the amount of light passing through the elastic product.

5,663,792

TRANSVERSE MODE SELECTED OPERATION FOR A RING LASER

Joseph E. Killpatrick, 2901 32nd Ave. Northeast, Minneapolis, Minn. 55418; Theodore W. Broberg, 1508 23rd Ave. Northwest, New Brighton, Minn. 55112; Timothy J. Callaghan, 3062 Shorewood La., Roseville, Minn. 55113; Leroy O. Thielman, 4275 Hodgson Rd., and Rodney H. Thorland, 5723 Pond Dr., both of Shoreview, Minn. 55126

Filed Feb. 9, 1996, Ser. No. 598,773
Int. Cl.[6] G01C *19/66*
U.S. Cl. 356—350 **10 Claims**



1. In a ring laser gyro having a pair of counter propagating laser beams in a laser cavity and at least one detector having a surface to receive at least one of the counter propagating beams, said gyro being capable of sustaining at least one secondary transverse mode in addition to the fundamental transverse mode and wherein the fundamental transverse mode produces a light spot and wherein the secondary transverse mode produces at least a pair of light spots at the detector surface, the improvement comprising:

an opaque mask external to the laser cavity having plurality of translucent apertures and positioned to preferentially permit at least the pair of light spots to be transmitted therethrough to allow for selection of one of the modes; and

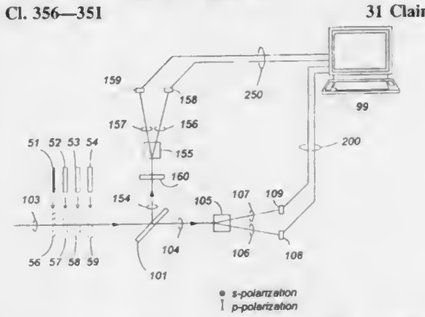
path length control means connected to receive the output of the at least one detector and to control the path length of the gyro to sustain a transverse mode.

5,663,793

HOMODYNE INTERFEROMETRIC RECEIVER AND CALIBRATION METHOD HAVING IMPROVED ACCURACY AND FUNCTIONALITY

Peter de Groot, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Sep. 5, 1995, Ser. No. 523,559
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—351 **31 Claims**



1. A method capable of measuring the phase difference between two orthogonally polarized components of a polarized test beam and the intensities of these components, said method comprising the steps of:

dividing said polarized test beam into first and second spatially separated beams, said test beam having p and s components such that p represents a polarization direction and s represents an orthogonal polarization direction, said p and s components being unequally divided into said first and second spatially separated beams;

retarding the phase of one of the unequally divided polarization components with respect to the other unequally divided polarization component in said spatially separated beams;

producing a first pair of spatially separated output beams with mutually orthogonal linear polarizations from said phase retarded first spatially separated beam, said first pair of output beams comprising substantially equal amounts of the s and p polarization components of said phase retarded first spatially separated beam;

converting said first pair of output beams into a first set of electrical signals proportional to the conversion output beam intensity and providing said first set of electrical signals to a data processor for analysis thereof;

producing a second pair of spatially separated output beams with mutually orthogonal linear polarizations from said second spatially separated beam, said second pair of output beams comprising substantially equal amounts of the s and p polarization components of said second spatially separated beam;

converting said second pair of output beams into a second set of electrical signals proportional to the corresponding output beam intensity and providing said second set of electrical signals to said data processor for analysis thereof along with said first set of electrical signals; and

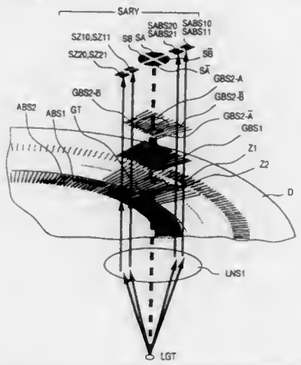
determining at least the phase difference between unequally divided s and p polarization components of said test beam from said analysis of said electrical signals; whereby imperfect components may be employed for retarding the phase of one of the unequally divided polarization components and for dividing said polarized test beam into said unequally divided polarization components.

5,663,794

DISPLACEMENT INFORMATION DETECTION APPARATUS, SCALE USED IN THE APPARATUS, AND DRIVE APPARATUS USING THE APPARATUS

Kou Ishizuka, Ohmiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1996, Ser. No. 601,694
Claims priority, application Japan, Feb. 15, 1995, 7-026747
Int. Cl.[6] G61B *9/02*
U.S. Cl. 356—356 **24 Claims**



1. An apparatus for detecting displacement information, comprising:

a scale to be arranged on a side of an object of which relative displacement information is to be detected, said scale including a periodic signal generation diffraction grating formed at a

predetermined pitch, and a predetermined data recording portion formed independently of the periodic signal generation diffraction grating and for detecting displacement information;

a first detection system for irradiating a light beam onto the periodic signal generation diffraction grating to generate diffracted light, said first detection system forming a periodic signal corresponding to a displacement relative to said scale by detecting interference light of the diffracted light generated by the periodic signal generation diffraction grating; and

a second detection system for optically detecting the predetermined data recording portion,

wherein the predetermined data recording portion also has a diffraction grating.

5,663,795

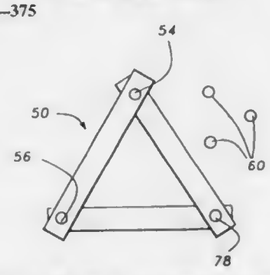
METHOD OF CALIBRATING LASER POSITIONS RELATIVE TO WORKPIECES

Kurt Rueb, Kitchener, Canada, assignor to Virtek Vision Corp., Ontario, Canada

Filed Sep. 7, 1995, Ser. No. 522,985

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **14 Claims**



1. A method of calibrating a laser projector relative to a workpiece comprising the steps of

(1) placing a workpiece in a location such that a laser beam is positioned to be directed from a laser projector onto said workpiece;

(2) providing a plurality of sensors, with at least two of said plurality of sensors being spaced by a known distance;

(3) placing said sensors at unknown positions about or near a surface of said workpiece;

(4) projecting a laser beam from a laser projector at said sensors;

(5) identifying the location of said sensors relative to said laser projector; and

(6) calibrating the location of said laser projector relative to said sensors on said workpiece by utilizing the known distance between said sensors.

5,663,796

OPTICAL SENSOR AND OPTICAL APPARATUS USING THE SAME

Motonori Kanaya, and Kazuyoshi Yamasaki, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Mar. 11, 1996, Ser. No. 612,789

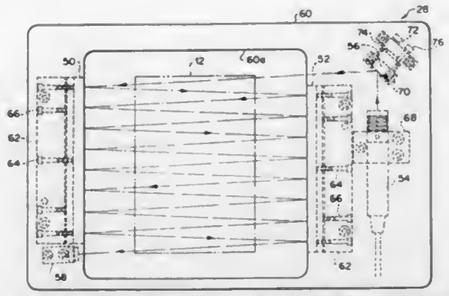
Claims priority, application Japan, May 23, 1995, 7-148308

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **7 Claims**

1. An optical sensor comprising:

mirror group comprising a plurality of mirrors which are disposed so as to inwardly face each other such that reflecting surfaces thereof have normals contained within an identical plane;



a light beam input means for making a light beam enter said mirror group with a predetermined incident angle with respect to one of the mirror;

a light beam detection means which receives the light beam which is reflected a plurality of times within said mirror group and thereby detects intensity thereof; and

means for supporting and moving a test object which supports said test object while allowing said test object to move in a predetermined direction wherein an optical sensor is disposed such that, within a range where said test object is movable, said plane of the optical sensor is substantially perpendicular to the direction in which the test object is moved.

5,663,797

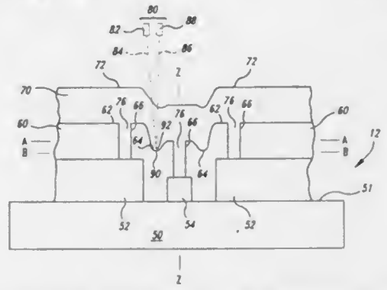
METHOD AND APPARATUS FOR DETECTING THE ENDPOINT IN CHEMICAL-MECHANICAL POLISHING OF SEMICONDUCTOR WAFERS

Gurtej Singh Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 16, 1996, Ser. No. 650,087

Int. Cl.[6] G01B *11/06*

U.S. Cl. 438—16 **23 Claims**



1. A method for detecting an endpoint in chemical-mechanical polishing of a semiconductor wafer having a lower layer of material with a first reflectivity and an upper layer with a second reflectivity positioned over the lower layer, wherein the upper layer is polished with a chemical-mechanical polishing process to form a polished surface on the wafer, the method comprising the steps of:

selecting an endpoint site on the wafer defined by a boundary between the upper and lower layers at a selected location on a topography of a circuit of the wafer;

impinging the beam of light against the polished surface of the wafer, the beam of light being reflected to a light sensor;

sensing an actual intensity of the reflected beam of light; and

comparing the actual intensity of the reflected light beam with an expected intensity.

5,663,798

FAR-FIELD CHARACTERIZATION OF SUB-WAVELENGTH SIZED APERTURES

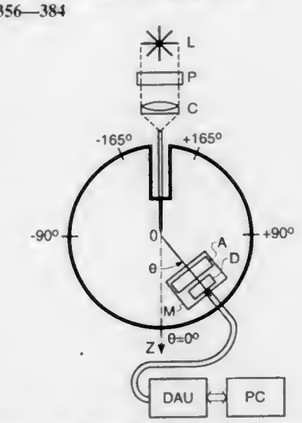
Khaled Karrai, Munich, Germany, assignor to Dr. Khaled Karrai und Dr. Miles Haines Gesellschaft burgerlichen Rechts, Munich, Germany

Filed Apr. 1, 1996, Ser. No. 625,870

Claims priority, application European Pat. Off., May 8, 1995, 95106900; Jun. 6, 1995, 95108673

Int. Cl.[6] G01B *11/08*

U.S. Cl. 356—384 **18 Claims**



1. A method for application to a tip piece suitable for use in near-field optical microscopy, the tip piece having a proximal end and a distal end, there being an optically transmissive aperture of a diameter ($d=d_i$) to be characterized situated at said proximal end and wherein input light is couplable into said distal end for emission from said proximal end as output light distributed in far field over an angular intensity distribution function ($I\{\theta\}$), said method comprising the steps of:

coupling in input probe light of a preselected wavelength (λ) into said distal end;

obtaining a first datum ($I\{\theta_1\}$) from a first far-field intensity measurement of said output light emitted at a first preselected angle (θ_1) from the aperture;

obtaining at least a second datum ($I\{\theta_2\}$) from at least a second far-field intensity measurement of said output light emitted at at least a second preselected angle (θ_2) from the aperture, said second preselected angle being different from said first preselected angle;

deducing dimensional information relating to said diameter (d_i) from said first and said at least second data by applying them to a predetermined function relating the far-field angular intensity distribution function ($I\{\theta\}$) to diameter (d_i), said function covering values of diameter (d_i) less than said preselected wavelength (λ).

5,663,799

OPTICAL DIFFRACTION METHOD AND APPARATUS FOR INTEGRATED CIRCUIT LEAD INSPECTION

Alastair D. McAulay, Allentown, and Junqing Wang, Bethlehem, both of Pa., assignors to Competitive Technologies of PA, Inc., Bethlehem, Pa.

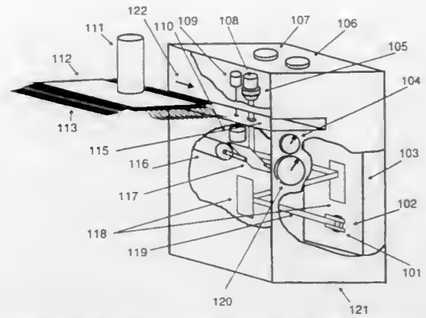
Filed Jan. 24, 1996, Ser. No. 590,495

Int. Cl.[6] G01B *11/00*; G01N *21/00*

U.S. Cl. 356—398 **20 Claims**

1. A method for detecting damage of leads arranged in a generally parallel periodic pattern, comprising the steps of:

(a) directing a coherent light beam at a plurality of adjacent leads;



(b) detecting an image at a distance from the leads at which said light beam would form a diffraction image having substantially uniform intensity when said leads form a substantially uniform pattern;

(c) moving said pattern of leads and said light beam with respect to each other; and

(d) detecting damage of leads from variation in intensity of the detected image.

5,663,800

PAGE PRINTER HAVING NO MEMORY FOR STORING IMAGE DATA FOR ENTIRE PAGE

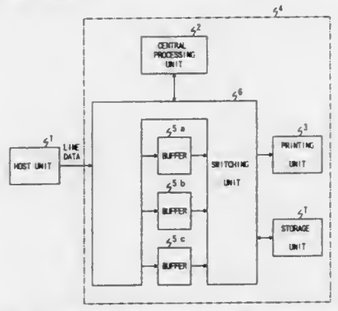
Shigeru Ainai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1995, Ser. No. 520,677

Claims priority, application Japan, Sep. 7, 1994, 6-214056

Int. Cl.[6] H04N *1/21*

U.S. Cl. 358—296 **3 Claims**



1. A page printer having a printing unit for printing an image on a printing sheet based on bit-mapped data supplied from an external unit line by line, said page printer comprising:

a first buffer for storing bit-mapped data;

a second buffer for storing bit-mapped data;

a third buffer for storing bit-mapped data;

control means for cyclically switching between a first selecting mode, a second selecting mode and a third selecting mode, wherein the first selecting mode uses said first buffer, said second buffer and said third buffer to correspond to an input buffer, an output buffer and a working buffer, respectively, the second selecting mode uses said first buffer, said second buffer and said third buffer to correspond to the working buffer, the input buffer and the output buffer, respectively, and the third selecting mode uses said first buffer, said second buffer and said third buffer to correspond to the output buffer, the working buffer and the input buffer, respectively, the input buffer being a buffer to store bit-mapped data supplied from

said external unit, the output buffer being a buffer to supply bit-mapped data to said printing unit, the working buffer being a buffer to process bit-mapped data; and

processing means for processing the bit-mapped data stored in one of said first, second and third buffers, used as the working buffer.

5,663,801

CONTROL CIRCUIT FOR CONTROLLING STYLUS OVERSHOOT IN AN ENGRAVING MACHINE USED FOR ENGRAVING GRAVURE CYLINDERS AND METHOD FOR SAME

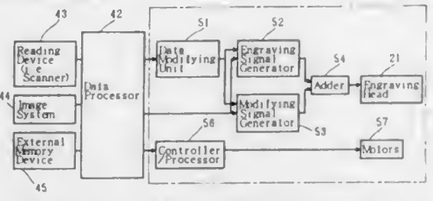
Kohji Hada, and Tadashi Syudou, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Sep. 22, 1994, Ser. No. 310,850

Claims priority, application Japan, Sep. 22, 1993, 5-236092

Int. Cl.[6] B41C *1/04*

U.S. Cl. 358—299 **11 Claims**



1. An electronic circuit for controlling an engraving head on a gravure engraving machine, comprising:

a data processor for producing an image signal;

an engraving signal generating unit coupled to said data processor for generating an engraving signal in accordance with said image signal;

a modifying signal generating unit coupled to said data processor, said modifying signal generating unit having a wave generating unit for generating a wave signal which produces a single inverse wave to counteract overshoot caused when the engraving signal is applied to said engraving head; and

an adder unit coupled to said generating units for combining said engraving signal and said single inverse wave and transmitting the combination to an engraving head.

5,663,802

METHOD AND APPARATUS FOR ENGRAVING USING MULTIPLE ENGRAVING HEADS

Tony D. Beckett, Dayton; Larry D. Holden, Bellbrook, and David R. Seltz, Vandalia, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 415,638, Apr. 3, 1995, which is a continuation-in-part of Ser. No. 242,012, May 12, 1994, Pat. No. 5,492,057, which is a continuation-in-part of Ser. No. 125,938, Sep. 23, 1993, Pat. No. 5,440,398, which is a continuation-in-part of Ser. No. 22,127, Feb. 25, 1993, Pat. No. 5,424,845. This application Apr. 26, 1995, Ser. No. 429,344

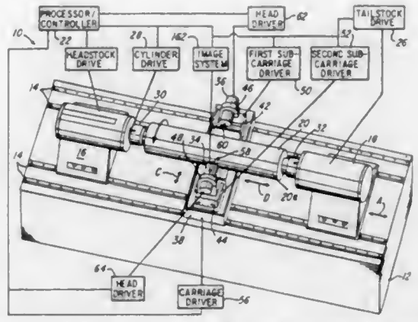
Int. Cl.[6] B41C *1/02*

U.S. Cl. 358—299 **69 Claims**

1. An engraving system for engraving a workpiece, comprising:

a plurality of engraving devices; and

a controller coupled to said plurality of engraving devices for independently energizing each of said plurality of engraving devices to independently drive said plurality of engraving devices to engrave an intermeshing pattern on the workpiece.



5,663,803

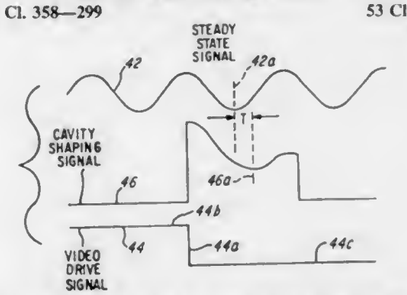
ENGRAVING METHOD AND APPARATUS FOR ENGRAVING AREAS USING A SHAPING SIGNAL

Tony D. Beckett, Dayton; David R. Seitz, Vandalia, and Eric J. Serenius, Springboro, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 125,938, Sep. 23, 1993, Pat. No. 5,440,398, which is a continuation-in-part of Ser. No. 38,679, Mar. 26, 1993, Pat. No. 5,438,422, which is a continuation-in-part of Ser. No. 22,127, Feb. 25, 1993, Pat. No. 5,424,845. This application May 4, 1995, Ser. No. 434,592

Int. Cl.[6] B41C *1/04*; **H04N** *1/387*

U.S. Cl. 358—299 **53 Claims**



1. A method for engraving an image having at least one line on a cylinder in an engraver, comprising the steps of:

combining a video signal with a steady state signal to provide at least one combined signal corresponding to a plurality of engraved areas which make up at least a portion of said image;

overwriting a portion of said at least one combined signal with a shaping signal in order to alter a dimension of at least one of said plurality of engraved areas.

5,663,804

IMAGE PROCESSOR HAVING RECORDING PAPER CUTTING CONTROL

Naoto Kataoka, Kyoto, and Takashi Nakano, Shiga, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

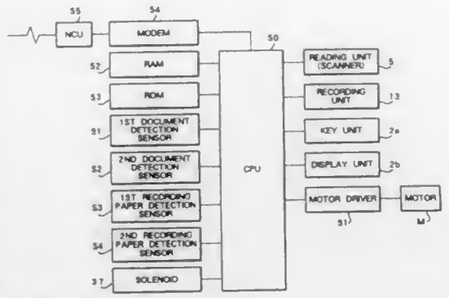
Filed Nov. 30, 1995, Ser. No. 565,158

Claims priority, application Japan, Dec. 20, 1994, 6-315395

Int. Cl.[6] H04N *1/31;1/23;1/32*; **G03G** *21/00*; **B41J** *11/66*

U.S. Cl. 358—304 **4 Claims**

1. An image processor capable of transmitting and receiving a document, copying a document and cutting a recording paper by a cutter, comprising:



one drive means;

exchange means for exchanging a transmission direction of rotation of the drive means;

lock means for locking the exchange means in a predetermined position; and

first control means for controlling a rotation direction of the drive means and an operation of the lock means, wherein each of the document transmitting operation, the document receiving operation, the document copying operation and the recording paper cutting operation is conducted by the one drive means, the exchange means, the lock means and the first control means.

5,663,805

FACSIMILE DEVICE HAVING A MEMORY ALLOCATION SYSTEM AND METHOD FOR ALLOCATING MEMORY IN A FACSIMILE DEVICE

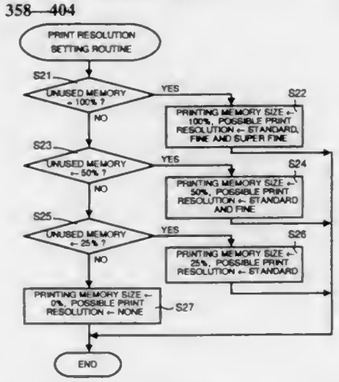
Kazunobu Asai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 12, 1995, Ser. No. 420,558

Claims priority, application Japan, Apr. 28, 1994, 6-113579

Int. Cl.[6] H04N *1/21*

U.S. Cl. 358—404 **11 Claims**



1. A facsimile apparatus, comprising:

image memory means including both a printing memory portion for storing only print image data for printing and a communication memory portion for storing both print image data and transmission image data to be transmitted and/or received;

printing means for printing a print image in accordance with the print image data read out of said image memory means;

memory area setting means for allocating said image memory means between the printing memory portion and the

printing means for printing a print image in accordance with the print image data read out of said image memory means;

memory area setting means for allocating said image memory means between the printing memory portion and the communication memory portion, said communication memory portion being determined as an area of said image memory means except for said printing memory portion; and

print resolution setting means for setting a print resolution of the print image based upon a size of said printing memory portion and said communication memory portion except for an area being used for storing said transmission image data,

wherein said image memory means has sufficient capacity to store at least one page of the print image data at the print resolution of the print image data and the print image is generated in accordance with the print resolution set by the print resolution setting means.

5,663,806

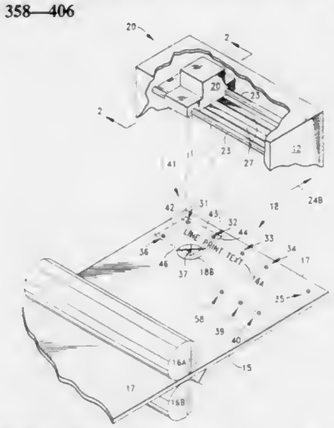
NON-DESTRUCTIVE TARGET MARKING FOR IMAGE STITCHING

Gary Grise, Colchester, and Jerzy M. Zalesinski, Essex Junction, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,542

Int. Cl.[6] H04N *1/04;1/047;1/10;1/053*

U.S. Cl. 358—406 **10 Claims**



1. A document scanner comprising:

a platen for supporting a document to be scanned:

a scanning head supported a fixed distance above said support;

said scanning head having a fixed field of view; means for projecting a plurality of alignment marks onto said platen and within said field of view; and

means for traversing said head across said platen in a first direction and in a plurality of fixed steps to cause said field of view to traverse said platen.

6. A document scanner comprising:

a platen for supporting a document to be scanned:

means for projecting a plurality of alignment marks onto a document supported on said platen;

a scanning head supported a fixed distance above said platen on traversing means;

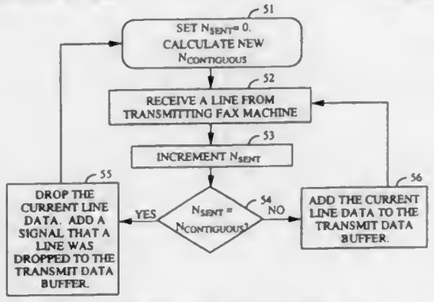
said scanning head having a fixed field of view large enough to include two of said alignment marks; and

means for transporting said head across said platen and hence across said document supported thereon to cause said field of view to incrementally traverse said document in a plurality of fixed steps.

5,663,807
METHOD OF REDUCING FACSIMILE DATA TRANSMISSION BOTTLENECKS IN LOW DATA RATE NETWORKS BY DROPPING DATA LINES

David S. Propach; Matthew S. Grob; Paul E. Jacobs, all of San Diego, and Gadi Karmi, Del Mar, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Division of Ser. No. 484,808, Jun. 7, 1995, Pat. No. 5,566,000.
This application Jun. 21, 1996, Ser. No. 668,135
Int. Cl.[6] H04N *1/41*
U.S. Cl. 358—426 18 Claims



1. A method for minimizing a data bottleneck in a Low Data Rate Network (LDRN), said method comprising:

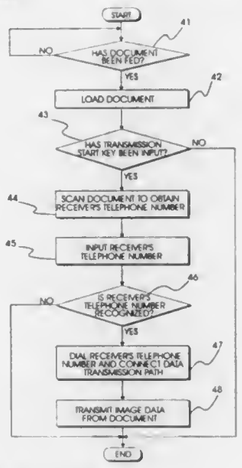
transmitting a data stream from a facsimile (FAX) machine to said LDRN, said data stream including a plurality of data lines; and

processing, in said LDRN, said transmitted data stream, including dropping every N^{th} line of said plurality of data lines where N>2.

5,663,808
DEVICE AND METHOD FOR AUTOMATICALLY TRANSMITTING DOCUMENTS IN A FACSIMILE SYSTEM

Joo-Seung Park, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 15, 1995, Ser. No. 555,990
Claims priority, application Rep. of Korea, Dec. 27, 1994, 37373/1994
Int. Cl.[6] H04N *1/32;1/00;1/04;* G06K *9/00*
U.S. Cl. 358—440 12 Claims



1. A facsimile device, comprising:

document detecting means for detecting entry of a document bearing image data into said facsimile device, said image data comprising a telephone number of a receiving party;

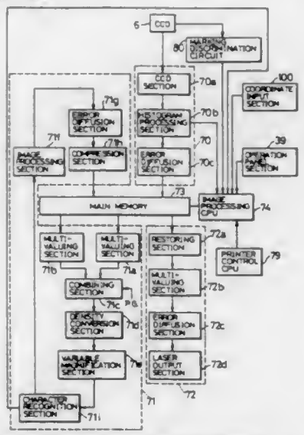
scanning means for scanning said document and reading said telephone number from an image bearing surface of said document in direct response to a user input initiating a facsimile transmission operation accommodating transmission of said image data as a telecommunication signal, said user input being provided after said document has been conveyed into said facsimile system; and

means for recognizing said telephone number read from said image bearing surface of said document, and upon recognition of said telephone number, automatically dialing said telephone number to form a data transmission path with said receiving party.

5,663,809
IMAGE PROCESSING APPARATUS

Masao Miyaza, Osaka, and Kenji Matsumoto, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Division of Ser. No. 228,400, Apr. 15, 1994, Pat. No. 5,424,853.
This application May 16, 1995, Ser. No. 442,169
Claims priority, application Japan, Apr. 19, 1993, 5-91567; May 25, 1993, 5-122750
Int. Cl.[6] H04N *1/387;1/393;* G06T *3/40*
U.S. Cl. 358—450 5 Claims



1. An image processing apparatus comprising:

image input means for reading a document image;

interval specifying means for specifying an arbitrary interval in the document image read by said image input means;

dimension calculating means for calculating a dimension of the interval;

dimension input means for inputting a prescribed dimension of the interval specified by said interval specifying means;

first ratio calculating means for calculating a first ratio of the calculated dimension of the interval to the prescribed dimension;

magnification input means for inputting an arbitrary magnification to the document image;

conversion means for converting a size of the document image in accordance with the magnification;

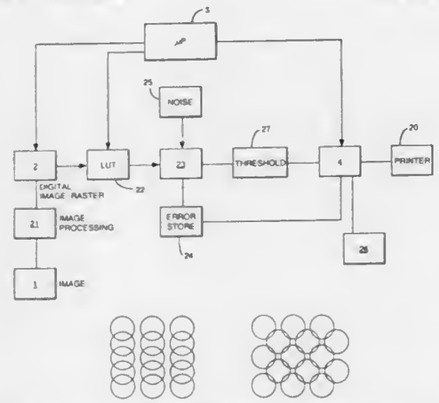
second ratio calculating means for calculating a second ratio of the calculated dimension of the interval in the document image, whose size has been converted by said conversion means, to the prescribed dimension in accordance with the first ratio and the magnification; and

combining means for combining data of the second ratio with the image data of the document image.

5,663,810
METHOD AND APPARATUS FOR PRODUCING A DIGITAL HALF-TONE REPRESENTATION OF AN IMAGE

Richard A. Kirk, Herts, United Kingdom, assignor to Crosfield Electronics Limited, Herts, United Kingdom

Filed Mar. 22, 1995, Ser. No. 408,299
Claims priority, application United Kingdom, Mar. 23, 1994, 9405723
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 16 Claims



1. In a method of producing a half-tone representation of an original image, the representation comprising an array of output cell values respectively representing the colour content of pixels of the original image, the improvement comprising generating a plurality of electrical signals indicating cell values for successive output cells, for which cell values have not previously been determined, by:

(a) generating electrical signals indicating an output cell value of each respective pixel of the half-tone representation with reference to an input cell value related to the colour content of a corresponding pixel in the original image;

(b) where the output cell value satisfies a predetermined condition, generating color content signals indicating an effective colour content of a neighbourhood of previously determined output cell values by addressing a look-up table containing a single value for each neighbourhood;

(c) generating difference signals indicating a difference between the effective colour content and the corresponding input cell value;

(d) adding a further signal having a random value to the difference signals calculated in said step (c) for propagation with the difference signals; and

(e) repeating step (a) using the difference signals.

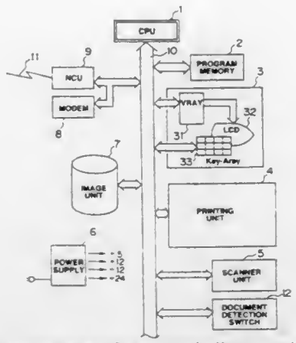
5,663,811
FACSIMILE DEVICE HAVING AUTOMATIC DETECTION OF REGULAR AND MANUAL SCANNING MODES

Nobukazu Shimizu, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, and Kabushiki Kaisha Tec, Shizuoka, both of Japan

Continuation of Ser. No. 376,093, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 121,249, Sep. 15, 1993, abandoned. This application Apr. 17, 1996, Ser. No. 635,212
Claims priority, application Japan, Sep. 16, 1992, 4-246898
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—473 11 Claims

1. A facsimile device comprising:

hand scanner means including a scanner unit for reading an image on a document by scanning the document manually, the hand scanner means being detachably mounted on a body of the facsimile device;



automatic scanner means for automatically conveying the document inserted in a document insertion section of the facsimile device to read an image on a document;

a single reading mode selection switch provided on an operation panel the facsimile device;

document detection means for detecting whether the document is set in the document insertion section;

display means for displaying information provided on the body of the facsimile device;

reading mode selecting means for selecting a regular scanner mode in which the automatic scanner means reads the image on the document and for causing the display means to display first operation procedures indicating operation procedures of the facsimile device in the regular scanner mode when the mode selection switch is depressed in a state where the document detection means has detected that a document is set in the document insertion section, and for selecting a hand scanner mode in which the hand scanner means reads the image on the document and causing the display means to display second operation procedures indicating operation procedures of the facsimile device in the hand scanner mode when the mode selection switch is depressed in a state where the document detection means has detected that a document is not set in the document insertion section; and

reading control means for causing the automatic scanner means to read the image on the document in accordance with the first operation procedures when the regular scanner mode is selected by the reading mode selection switch, and for causing the hand scanner means to perform reading operations of the image on the document in accordance with the second operation procedures when the hand scanner mode is selected by the reading mode selection switch and after the hand scanner means is dismounted from the body of the facsimile device.

5,663,812
REFLECTION-TYPE SCANNER

Ampere Pan, Taipei Hsien, Taiwan, assignor to Primax Electroncis, Ltd., Taipei Hsien, Taiwan

Filed Apr. 5, 1995, Ser. No. 417,190
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—474 25 Claims

1. A scanner for scanning an object comprising:

a housing device adapted to be mounted inside a host computer case of a computer;

an image pick-up device mounted inside said housing device for scanning said object to produce an electric signal;

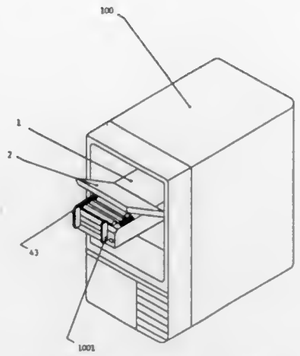
a control circuit for processing said electric signal;

a feed-in device constructed inside said housing device for moving said object through said image pick-up device to scan said object;

a driving device mounted inside said housing device for driving said feed-in device; and

a software program stored inside said control circuit for controlling said driving device;

wherein said driving device drives said feed-in device, under the control of said software program when scanning said object,



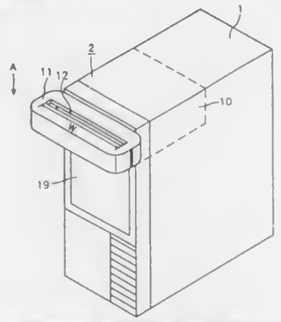
to move said object into said scanner and then reversely move said object out of said scanner to scan said object.

5,663,813

IMAGE SCANNING DEVICE MOUNTED TO COMPUTER CASE

Ampere Pan, Taipei HSien, Taiwan, assignor to Primax Electronics, Ltd., Taipei, Taiwan

Filed May 29, 1996, Ser. No. 654,684
Int. Cl.[6] H04N *1/04;* **H05K** *5/00*
U.S. Cl. 358—474 **13 Claims**



1. An image scanning device mounted to a computer case, comprising:
- a scanner housing having a first portion located inside said computer case and a second portion protruding through a surface of said computer case;
- a scanning passage essentially located in said second portion of said scanner housing for transmitting therethrough an object to be scanned; and
- an image sensing and processing device installed in said scanner housing for sensing an image of said object during the transmission of said object through said scanning passage and processing said sensed image.

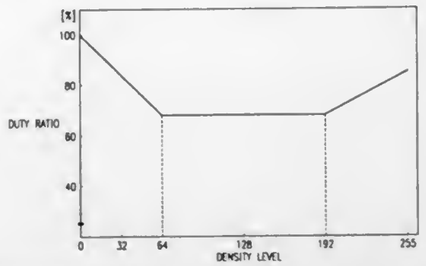
5,663,814

DIGITAL IMAGE FORMING APPARATUS FOR FORMING A STABLE IMAGE

Yoshinobu Hada, Aichi-ken; Kazuyuki Fukui, Toyohashi, and Takanobu Yamada, Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 29, 1994, Ser. No. 365,798
Claims priority, application Japan, Dec. 29, 1993, 5-351058
Int. Cl.[6] H04N *1/21*
U.S. Cl. 358—475 **11 Claims**

1. A digital image forming apparatus comprising:
a photoconductor;



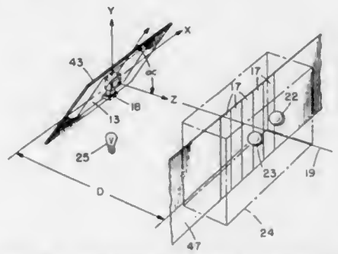
an exposure means for exposing a surface of said photoconductor with a beam in raster scan so as to form an electrostatic latent image thereon based on image data representing image density;
a light-emission control means for inhibiting said exposure means to expose said photoconductor every predetermined period so that a light-emitting period and a non-light-emitting period are provided alternately; and
a ratio changing means for changing a ratio of the light-emitting period against a sum of the light-emitting period and the non-light-emitting period according to the image density if the image density of the image data is lower than a first predetermined level;
wherein said ratio changing means decreases the ratio as the image density increases if the image density of the image data is lower than the first predetermined level.

5,663,815

HEADS-UP AND HEADS-DOWN DISPLAYS EMPLOYING HOLOGRAPHIC STEREOGRAMS

William J. Molteni, Waltham, Mass., and William J. Volchok, Barcelona, Spain, assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 195,322, Feb. 14, 1994, Pat. No. 5,473,447. This application Jun. 7, 1995, Ser. No. 480,192
Int. Cl.[6] G03H *1/28;1/30;* **G02B** *5/32*
U.S. Cl. 359—13 **19 Claims**



1. A method for preparing and using a holographic stereogram having a perceived image contained therein viewable along a user's line of sight when said holographic stereogram is orientated on a plane nonorthogonal to said line of sight, the method comprising the steps of:
(a) preparing a set of two-dimensional perspective views of an object;
(b) transforming said set of two-dimensional perspective views to form a set of transformed views said transformation performed such that
(i) a user's eves define vertical and horizontal axes:
(ii) the tilt of the holographic stereogram is defined by angles α and γ, where α is measured from the user's line of sight

in the plane containing the line of sight and the vertical axis, γ is measured from the user's line of sight in the plane containing the line of sight and the horizontal axis, and α and γ both equal to 90° corresponds to an untilted stereogram;
(iii) the set of perspective views is defined by a set of β angles, where β equal to zero corresponds to the straight ahead view of the object, positive β's correspond to movements to the left relative to the object, and negative β's correspond to movements to the right relative to the object;
(iv) each two-dimensional perspective view comprises a set of intensity values in (x',y') coordinates;
(v) each transformed view comprises a set of intensity values in (x",y") coordinates; and
(vi) the intensity values in (x",y") coordinates are transformed into intensity values in (x",y") coordinates in step (b) in accordance with the following equations:

$$x''=(x'\cdot\cos(\beta)\cdot\sin(\alpha)+y'\cdot\cos(\alpha)\cdot\cos(\gamma-\beta))/(\sin(\alpha)\cdot\sin(\gamma-\beta))$$

$$y''=y'$$

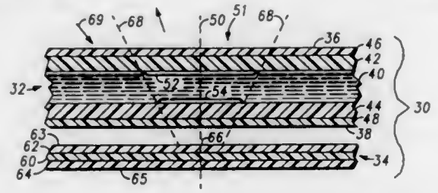
where at least one of α and γ is different from 90°; and
(c) preparing the holographic stereogram from the set of transformed views such that the perceived image is substantially orthogonal to the line of sight and is translated relative to the center of the holographic stereogram in a direction of the line of sight.

5,663,816

LIQUID CRYSTAL DISPLAY DEVICE COMPRISING REFLECTIVE HOLOGRAPHIC

Alan G. Chen, Schaumburg; Kevin W. Jelley, LaGrange Park, and George T. Vallaith, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 143,600, Nov. 1, 1993, abandoned. This application Jan. 30, 1996, Ser. No. 594,361
Int. Cl.[6] G03H *1/26;* **G02B** *5/32*
U.S. Cl. 359—15 **13 Claims**



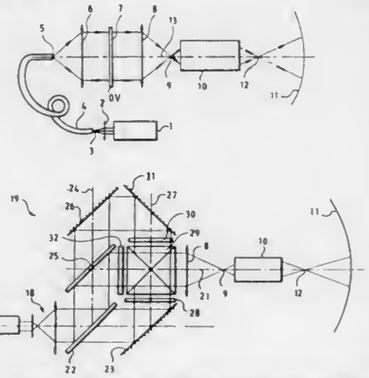
1. A liquid crystal display device illuminatable by noncollimated diffuse ambient light that includes first light rays illuminating the liquid crystal display device in a first direction and second light rays illuminating the liquid crystal display device in a second direction distinct from the first direction, said liquid crystal display device comprising
a liquid crystal panel for forming a display when viewed directly by a viewer, said liquid crystal panel having a front side for viewing the display and a back side opposite the front side, said liquid crystal panel comprising at least one region having a transparent state wherein light illuminating the front side traverses through the liquid crystal panel to the back side, and
a reflective holographic optical element optically coupled to the panel back side for receiving light traversing said liquid crystal panel and for redirecting the first and second light rays in a reflection pattern toward the liquid crystal.

5,663,817

PROJECTOR OF NARROW FIELD MOVING IMAGES

Pascal Frapin, Cergy, and Michel Lacroix, Bois D'Arcy, both of France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR93/01276, § 371 Date Aug. 4, 1994, § 102(e) Date Aug. 4, 1994, PCT Pub. No. WO94/15237, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 21, 1993, Ser. No. 256,861
Claims priority, application France, Dec. 22, 1992, 92 15470
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—5 **6 Claims**



1. A device for projecting narrow optical field moving images, said device comprising:
a laser generator for generating a laser point light source;
a collimating optic means having a first focal point coinciding with said point light source;
a spatial modulator for spatially modulating a light beam output from said collimating optic wherein said spatial modulation occurs over an entire cross section of said light beam and wherein said spatial modulator is controlled by a video generator voltage;
a convergent-beam forming optic receiving an output of said spatial modulator and providing a converging beam having a second focal point;
an afocal zoom lens having an entrance face with a first diameter wherein said entrance face of said zoom lens is positioned spaced downstream from said second focal point so that a diameter of a beam leaving said second focal point is substantially equal to said diameter of said entrance face; and
a projection screen receiving an output from said zoom lens to provide a projection of said moving images.

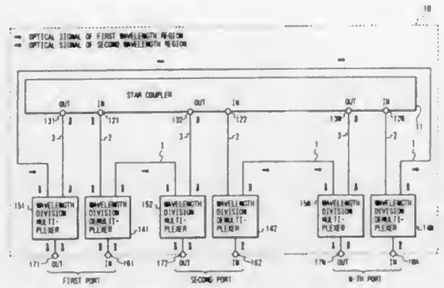
5,663,818

OPTICAL CONCENTRATOR AND OPTICAL COMMUNICATION NETWORK USING THE SAME

Noboru Yamamoto, Yamato; Toru Nakata, Yokohama, and Kazuhiko Hojyo, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 136,698
Claims priority, application Japan, Oct. 15, 1992, 4-302963; May 25, 1993, 5-122637; Jul. 8, 1993, 5-169200; Jul. 16, 1993, 5-176773; Oct. 8, 1993, 5-253054; Oct. 8, 1993, 5-253055; Oct. 8, 1993, 5-277764
Int. Cl.[6] H04B *10/20;* **H04J** *14/00;14/02*
U.S. Cl. 359—118 **83 Claims**

1. An optical concentrator which is utilized in an optical communication network comprising an optical concentrator and a plurality of nodes respectively connected to said optical concentrator comprising:
N where N is an integer of not less than two) ports for inputting and outputting first and second optical signals having different wavelength regions, said N ports including a plurality of ports each of which is connected to a node;



an optical coupler connected to each of said N ports, said optical coupler transmitting the second optical signal input from one of said N ports to at least one of the remaining ports;

transmitting means for connecting said N ports in a loop form and transmitting the first optical signal input from each of said N ports; and

demultiplexing means, arranged at each of said N ports, for demultiplexing the first and second optical signals input from each of said N ports, and guiding the first optical signal to said transmitting means and the second optical signal to said optical coupler.

5,663,819

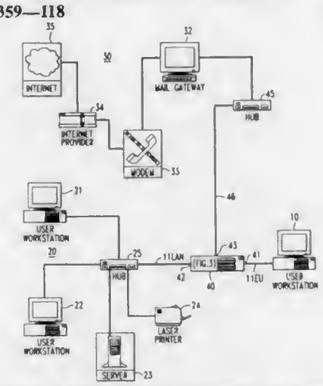
OPTO-COUPLER BASED SECURE COMPUTER COMMUNICATIONS INTERFACE

Stephen P. Lewis, Joppatowne, Md., assignor to Emanon, Inc., Vero Beach, Fla.

Filed May 21, 1995, Ser. No. 531,785

Int. Cl.[6] H04B *10/20;* **H04J** *14/00*

U.S. Cl. 359—118 **15 Claims**



1. A connectivity interface for controllably providing a communication path between an end user's workstation and an external data communication network, comprising a first port arranged to be coupled to said end user's workstation and a second port arranged to be coupled to said external data network, and an opto-coupler unit coupled between said first port and said second port and being controllably operative, for a first operational mode, to provide an optical communication link between said first and second ports and, for a second operational mode, to interrupt said optical communication link between said first and second ports, and wherein said opto-coupler unit includes a power coupling port, which is coupled in circuit with a power source for said opto-coupler unit when said connectivity interface is placed in a first operational condition associated with said first mode, but is decoupled from said power source when said connectivity interface is placed in a second operational condition associated with said second mode.

5,663,820

OPTICAL NETWORK USING MULTIPLEXED PAYLOAD AND OAM SIGNALS

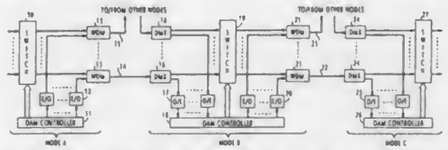
Tatsuya Shiragaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,676

Claims priority, application Japan, Dec. 28, 1994, 6-341126

Int. Cl.[6] H04J *14/02;14/08*

U.S. Cl. 359—128 **12 Claims**



1. An optical network having first and second nodes interconnected by an optical transmission line, wherein said first node comprises:

a first operations, administration and maintenance (OAM) controller for producing an electrical OAM signal;

a first optical switch having a plurality of input ports and a plurality of output ports for establishing optical paths therebetween according to said electrical OAM signal;

an electro-optical converter for converting said electrical OAM signal to an optical OAM signal; and

an optical multiplexer for multiplexing said optical OAM signal with an optical payload signal associated with one of said optical paths established in the first optical switch to produce an optical multiplex signal and transmitting the optical multiplex signal to said second node via said optical transmission line, wherein said second node comprises:

an optical demultiplexer for demultiplexing said optical multiplex signal into an optical payload signal and an optical OAM signal;

an opto-electrical converter for converting the demultiplexed optical OAM signal to an electrical OAM signal;

a second OAM controller for updating said electrical OAM signal; and

a second optical switch having a plurality of input ports and a plurality of output ports for establishing optical paths therebetween according to said updated OAM signal, the optical payload signal demultiplexed by said optical demultiplexer being associated with one of said optical paths established in the second optical switch.

5,663,821

OPTICAL SEMICONDUCTOR DEVICE MODULE

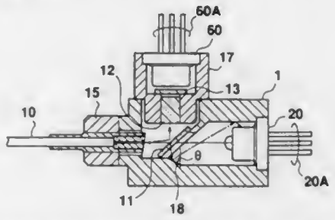
Hiroshi Suda; Takeshi Nakamura; Hirofumi Nemoto, and Akinobu Suzuki, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 561,783

Claims priority, application Japan, Dec. 2, 1994, 6-299702

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—152 **21 Claims**



1. An optical semiconductor device module comprising:

(a) a module casing having a first end and a second end opposing the first end;

(b) a light emitting element at the first end of the module casing;

(c) an optical fiber for transmitting beams from the light emitting element to an external line and being at the second end of the module casing;

(d) an optical filter disposed between the light emitting element and the optical fiber for passing output beams from the light emitting element and reflecting input beams from the optical fiber;

(e) a light receiving element for receiving the input beams which arrive from the external line via the optical fiber and have a wavelength different from a wavelength of the output beams emitted by the light emitting element, the light receiving element being disposed in the module casing on an optical axis of reflected input beams that are reflected by the optical filter at a distance from where the optical axis of the reflected input beams intersects an optical axis of the output beams;

(f) a light absorbing-reflecting section for absorbing a first portion of reflected output beams that do not pass via the optical filter and reflecting a second portion of the reflected output beams, which are not absorbed by the light absorbing-reflecting section in a direction different from the optical axis of the reflected input beams, the light absorbing-reflecting section being formed in the module casing at a position which is on the optical axis of the reflected input beams and confronts the light receiving element;

a first lens disposed between the light emitting element and the optical filter; and

a second lens disposed between the optical filter and the light receiving element;

wherein the light absorbing-reflecting section includes a light reflecting surface on an inner wall of the module casing and a plated layer on the light reflecting surface, the plated layer being capable of absorbing beams.

5,663,822

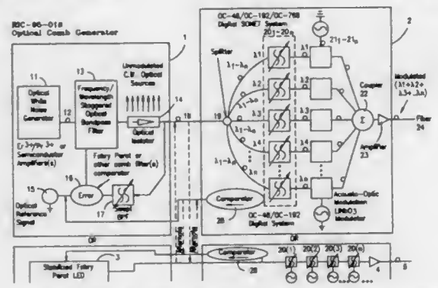
OPTICAL COMB GENERATOR USING OPTICAL WHITE NOISE SOURCE

John A. Fee, Plano, Tex., assignor to MCI Corporation, Washington, D.C.

Filed Jun. 14, 1995, Ser. No. 490,392

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—161 **10 Claims**



1. A transmitter for multi-wavelength modulated optical communication, comprising:

a) an optical white noise generator having an optical amplifier stimulated by a laser for providing an output of a broad spectrum of wavelengths;

b) a wavelength staggered optical bandpass filter, coupled to said optical white noise generator and responsive to said output, for generating a series of equally spaced optical information carriers in the form of a comb of optical wavelengths;

c) a digital modulator means for receiving said comb of optical wavelengths, and synchronously modulating said comb of optical wavelengths; and

d) an optical fiber coupled to said digital modulator means for transmitting said synchronously modulated comb of optical wavelengths.

5,663,823

OPTICAL TRANSMISSION SYSTEM, OPTICAL TRANSMISSION MODULE, AND AN OPTICAL MODULATOR

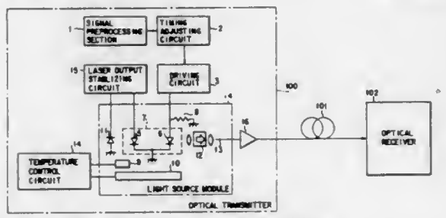
Nobuo Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 10, 1996, Ser. No. 644,817

Claims priority, application Japan, May 16, 1995, 7-117456

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—181 **19 Claims**



1. An optical transmission system comprising:

an optical transmitter for transmitting an optical signal, comprising:

an optical modulator for modulating an intensity of the optical signal in accordance with a binary digital NRZ (nonreturn-to-zero) electric signal and outputting a transmission optical signal; and

means for supplying the electric signal and thereby driving said optical modulator, said means including means for adjusting a waveform of the electric signal supplied to said optical modulator so that a timing with which the optical signal outputted from said optical modulator transits from a high level to a low level is later than a timing with which the optical signal transits from the low level to the high level;

an optical fiber with wavelength dispersion for propagating the signal light transmitted from said optical transmitter; and

an optical receiver for receiving the optical signal propagated along said optical fiber and reconstituting an electric signal from the optical signal.

5,663,824

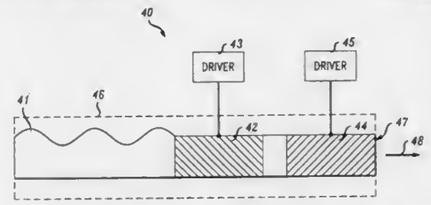
OPTICAL MODULATORS AS MONOLITHICALLY INTEGRATED OPTICAL ISOLATORS

Thomas L. Koch, Holmdel, N.J.; Fumio Koyama, Sagamihara, Japan, and Kang-Yih Liou, Holmdel, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 2, 1993, Ser. No. 146,653

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—184 **33 Claims**



1. A monolithically integrated signal source and isolator apparatus for providing a stable, low frequency chirp source device for high-speed fiber-optic data transmission, comprising:

a laser light source utilized as the signal source;

a first modulator driven to be synchronous with a transmitted data stream from the signal source;

a second modulator driven to be synchronous with the transmitted data stream, wherein the second modulator is sequentially arranged and spaced a distance apart from the first modulator

to provide a phase delay between them, and wherein the modulators generate a timed sequence of open gates which permit transmission of a data signal in a forward direction and attenuate a reverse direction signal; and

a semiconductor substrate, with the laser light source and the first and second modulators monolithically integrated on the semiconductor substrate.

5,663,825

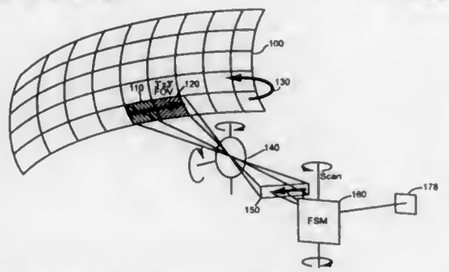
STABILIZED STEP/STARE SCANNING DEVICE

Max Amon, Maitland, and Burnham Stokes, Altamonte Springs, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 7, 1995, Ser. No. 478,391

Int. Cl.[6] G02B *26/08;26/10;* **G01D** *5/30*

U.S. Cl. 359—201 **16 Claims**



1. A scanning imaging system comprising:

a scanning mechanism imparting a relative scanning movement between an imaging medium and object space;

said imaging medium receiving an image from said scanning mechanism and generating a reproducible representation of said image;

a descan mechanism for holding a line of sight in said object space for a predetermined period while said scanning mechanism continues its scanning movement: and

imaging optics, wherein said imaging optics includes an afocal imaging system, said descan mechanism being in collimated light space within said afocal imaging system.

5,663,826

TRANSMISSION TYPE LIQUID CRYSTAL MASK MARKER

Yukihiro Tsuda, Isehara; Taku Yamazaki, Hiratsuka; Akira Mori, Chigasaki, and Yukinori Matsumura, Isehara, all of Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP94/01574, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/09067, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 26, 1994, Ser. No. 619,546

Claims priority, application Japan, Sep. 30, 1993, 5-269966; Nov. 19, 1993, 5-312876

Int. Cl.[6] G02B *26/08*

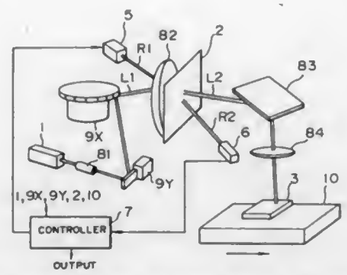
U.S. Cl. 359—202 **20 Claims**

1. A transmission liquid crystal mask marker comprising:

a laser oscillator for providing a laser beam;

a transmission liquid crystal mask adapted for successively rewriting and displaying various static marking images and for appropriately displaying a static test image in response to an applied voltage, wherein said transmission liquid crystal mask has common terminals and segment terminals; and

a controller connected to said transmission liquid crystal mask for applying said voltage to said transmission liquid crystal mask for displaying the various static marking images so that the various static marking images are printed on a surface of a workpiece by applying the laser beam, which has been transmitted from said laser oscillator through said transmission liquid crystal mask onto the surface of said workpiece;



a light emitter connected to said controller and adapted to apply light to the static test image; and

a light receiver connected to said controller and adapted to receive the light transmitted from the light emitter through the static test image,

wherein said controller is adapted for previously storing an optimum light transmittance;

wherein, during a rewriting time for rewriting at least one of the various static marking images, said controller causes the displaying of a static test image and then causes all common terminals and segment terminals of said transmission liquid crystal mask to attain an equipotential state, in that order at least once,

wherein, after the displaying of a static test image and the attainment of an equipotential state at least once, said controller causes the displaying of a static marking image and then causes all common terminals and segment terminals of said transmission liquid crystal mask to attain an equipotential state, in that order at least once, up to a termination of the rewriting time;

wherein the intensity of received light is inputted by said light receiver to said controller during the displaying of the static test image;

wherein said controller computes the actual light transmittance of said transmission liquid crystal mask from the intensity of the received light and the intensity of the emitted light emitted by said light emitter; and

wherein said controller regulates said voltage so that the actual light transmittance equals the stored optimum light transmittance.

5,663,827

POLYGONAL MIRROR OF SYNTHETIC RESIN AND PRODUCING METHOD THEREOF

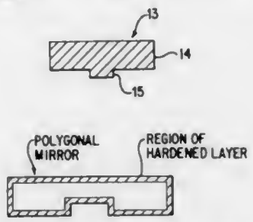
Hiroshi Ono, and Makoto Kunigoh, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,016

Claims priority, application Japan, May 31, 1994, 6-117937

Int. Cl.[6] G02B *26/08;7/182*

U.S. Cl. 359—216 **4 Claims**



1. A method of producing a polygonal mirror of synthetic resin having a plurality of reflection surfaces on side surfaces of a polygonal pillar and a continuous fitting portion selected from the group consisting of concave and convex fitting portions, said method comprising injecting a melted resin from a gate toward a cavity made in a desired shape and compression molding said melted resin.

5,663,828

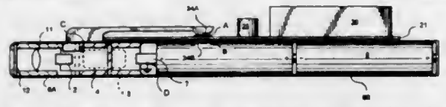
ACCESSORY DEVICE FOR MODULATING THE LASER OUTPUT OF A PEN-CLIP ACTUATABLE LASER POINTER

Carl H. Knowles, Morestown, and Robert Blake, Woodbury Heights, both of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation of Ser. No. 276,127, Jul. 15, 1994, Pat. No. 5,473,464. This application Nov. 30, 1995, Ser. No. 564,991

Int. Cl.[6] B43K *24/10*

U.S. Cl. 359—237 **32 Claims**



1. An accessory device for modulating the intensity of the visible laser beam produced as output from a laser pointer including:

a pen-like housing having a conductive housing portion and containing

a pen-like housing having a conductive housing portion and containing

a laser diode for producing a laser beam along an optical axis extending from one end of said pen-like housing,

a drive circuit for energizing said laser diode,

a battery power source for providing electrical power to said drive circuit, and

a pen-clip fixedly attached to the exterior of said pen-like housing and having a conductive tip portion disposed adjacent said conductive housing and being depressible so that said conductive tip portion contacts said conductive housing portion, said laser diode, said drive circuit, said battery power source, said conductive tip portion and said conductive housing portion being connected together in a series configuration so that when said conductive tip portion contacts said conductive housing portion, said drive circuit energizes said laser diode and said laser diode produces said visible laser beam along said optical axis,

said accessory device comprising:

a support structure for slidable insertion between said conductive tip portion and said conductive housing portion of said laser pointer;

first and second conductive elements operably connected to said support structure;

input signal receiving means for receiving an electrical input signal having a predetermined signal characteristic which may vary over time;

an electronic circuit operably connected to said first and second conductive elements, and said input signal receiving means;

electrical power supply means for supplying electrical power to said electronic circuit;

said electronic circuit being responsive to the predetermined signal characteristic of said electrical input signal and providing a variable load between said first and second conductive elements such that, when said support structure is inserted between said conductive tip portion and said conductive housing portion of said pen-like housing, said first and second conductive elements establish electrical contact with said conductive tip portion and said conductive housing portion, and when the electrical input signal is received by said input signal receiving means, the impedance of said variable load modifies the flow of electrical current through said laser diode so as to modulate the intensity of said laser beam in response to variations in the predetermined signal characteristic of said electrical input signal.

5,663,829

ELECTROCHROMIC PANE

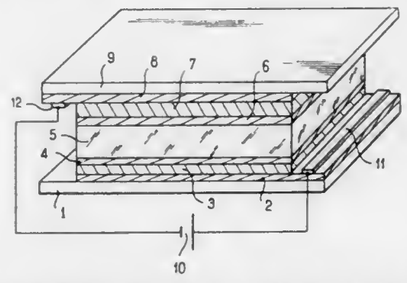
Christine Lefrou, Ivry sur Seine, France; Francis Defendini, Andenne, Belgium; Florence Garot, Neuilly Plaisance, and Odile Marrot, Issy les Moulineaux, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jun. 13, 1994, Ser. No. 259,683

Claims priority, application France, Jun. 11, 1993, 93 07096

Int. Cl.[6] G02F *1/153*

U.S. Cl. 359—275 **15 Claims**



1. An electrochromic system comprising a transparent electrically conducting film (**2**), a film (**3**) of a cathodic electrochromic material, which is capable of reversibly inserting M^+ cations of the type H^+ or Li^+, a lithium or proton conducting, polymeric electrolyte film (**5**), counter-electrode film (**7**) made of an anodic electrochromic material, and a second electrically conducting film (**8**), said structure having a barrier film (**6**) interposed between electrolyte (**5**) and the counter-electrode (**7**), said barrier film permitting the diffusion of the M^+ cations and which is a substance selected from the group consisting of Nb_2O_5, CeF_3, Sb_2O_3, HUP, Cr_2O_3, ZrO_2, Li_3N, $LiTaO_3$, $LiAlF_4$, Li_3PO_4, $LiBO_2$ and $LiNbO_3$.

5,663,830

THIN FILM ACTUATED MIRROR ARRAY FOR USE IN AN OPTICAL PROJECTION SYSTEM AND METHOD FOR THE MANUFACTURE THEREOF

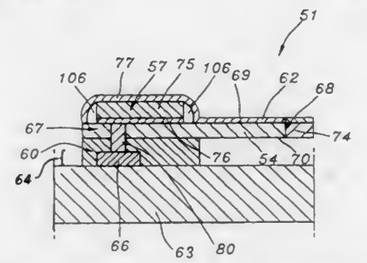
Jeong-Beom Ji, and Yong-Ki Min, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 7, 1995, Ser. No. 400,065

Claims priority, application Rep. of Korea, Mar. 9, 1994, 94-4519; Jun. 22, 1994, 94-14155

Int. Cl.[6] G02B *26/00*

U.S. Cl. 359—295 **18 Claims**



1. An array of M×N thin film actuated mirrors, wherein M and N are integers, for use in an optical projection system, said array comprising:

an active matrix including a substrate, an array of M×N transistors and an array of M×N pairs of connecting terminals, wherein the connecting terminals in each pair are electrically connected to each of the transistors;

an array of M×N elastic members, each of the elastic members being provided with a distal and a proximal ends, and a top

and a bottom surfaces, the proximal end including a first tab and a second tab portions, the first tab and second tab portions being separated by a retraction therebetween, the distal end including a protrusion, wherein the protrusion from each of the elastic members extends into the retraction of a successive elastic member in the array;

an array of M×N pairs of actuating structures, each pair of the actuating structures being located on the first and second tab portions on each of the elastic members, respectively, each of the actuating structures including a bias electrode, a motion-inducing thin film layer and a signal electrode with the bias and the signal electrodes being placed on top and bottom of the motion-inducing thin film layer, respectively, the bias electrode being made of an electrically conducting, light reflecting material, the signal electrode in each of the actuating structures in each pair being electrically connected to a same transistor in the active matrix, wherein an electrical signal applied across the motion-inducing thin film layer between the bias and the signal electrodes in each of the actuating structures causes a deformation of the motion-inducing thin film layer, and hence said each of the actuating structures;

an array of M×N pairs of supporting members, each pair of the supporting members being used for holding each of the elastic members in place, wherein the first and second tab portions in each of the elastic members are secured to each of the supporting members in each pair, respectively;

an array of M×N mirrors for reflecting light beams, each of the mirrors being formed on the top surface of the elastic member, each of the mirrors being made of the same material as the bias electrode, such that when the pair of actuating structures deform in response to the electrical signal, the first and second tab portions on the elastic member with the actuating structures attached thereto tilt while the remainder of the elastic member, and, hence, the mirror formed on top thereof, stays planar, thereby allowing all of the mirror to reflect the light beams.

5,663,831

THREE-DIMENSIONAL DISPLAY

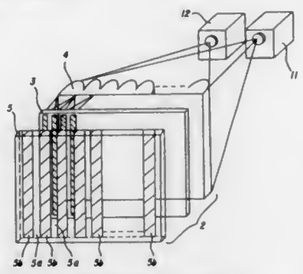
Ken Mashitani, Nara-ken; Goro Hamagishi, Osaka-fu; Daisuke Takemori, Osaka-fu; Hideyuki Kanayama, Osaka-fu, and Kazuhiro Arai, Osaka-fu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 22, 1995, Ser. No. 392,156

Claims priority, application Japan, Feb. 23, 1994, 6-025116; May 19, 1994, 6-105800

Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—463 **11 Claims**



1. A three-dimensional display comprising:

an image projector dedicated to a right eye image;

an image projector dedicated to a left eye image;

a diffusing plate arranged on a surface on which images respectively projected by the image projectors are formed;

a parallax barrier having slits in the shape of vertical stripes which is arranged on the side of a viewer with respect to said diffusing plate; and

a lenticular lens plate arranged on the side of said image projector with respect to said diffusing plate.

5,663,832

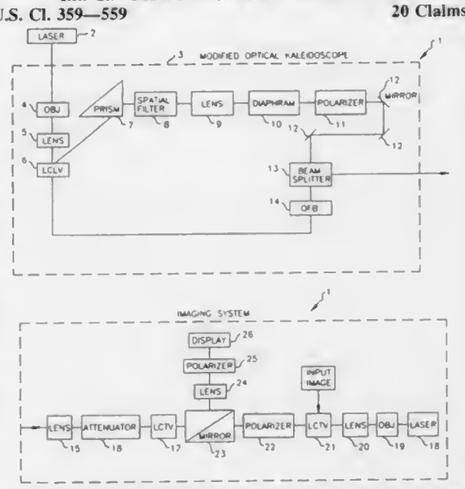
DEVICE FOR AND METHOD OF REAL-TIME SIMULATION OF ATMOSPHERIC EFFECTS ON AN IMAGE

Walter B. Miller, 1814 Koree Ct.; Jennifer C. Ricklin, and Mikhail A. Vorontsov, both of 1892 Buchanan Ave., all of Las Cruces, N. Mex. 88001

Filed Mar. 3, 1995, Ser. No. 401,483

Int. Cl.[6] G02B *27/46; G02F 1/29;1/01;1/1335*

U.S. Cl. 359—559 **20 Claims**



1. A device for simulating the effects of turbulent atmospheric conditions on an image, comprising:

a) a first laser;

b) a first microscope-objective disposed in the path of light emanating from said first laser;

c) a first lens disposed in the path of light emanating from said first microscope-objective for expanding the light emanating from said first laser to a width of around twenty millimeters;

d) a first LCLV disposed in the path of expanded light emanating from said first lens, where said first LCLV is tilted so that light reflecting from said first LCLV is separated from the light emanating from said first lens;

e) a prism disposed in the path of the reflected light from said first LCLV;

f) a spatial filter disposed in the path of light emanating from said prism;

g) a second lens disposed in the path of light emanating from said spatial filter, where said second lens has the same focal length as said first lens, where said second lens has a common focal plane with said first lens;

h) a diaphragm disposed in the path of light emanating from said second lens so that an image formed on said first LCLV is formed on the plane of said diaphragm;

i) a first polarizer disposed in the path of light emanating from said diaphragm;

j) a plurality of mirrors disposed in the path of light emanating from said first polarizer, where said plurality of mirrors is arranged so that an optical path of around two meters in length is formed;

k) a beam splitter disposed in the path of light emanating from said plurality of mirrors, for directing light which simulates turbulent atmospheric conditions without disturbing the path of the light;

l) an optical fiber bundle disposed in the path of the undisturbed light emanating from said beam splitter, having a first end of said optical fiber bundle rotated with respect to a second end of said optical fiber bundle, where said second end of said optical fiber bundle is connected to said first LCLV;

m) a third lens disposed in the path of directed light emanating from said beam splitter;

n) an attenuator disposed in the path of light emanating from said third lens;

o) a second LCLV disposed in the path of said attenuator, for projecting light that simulates atmospheric turbulence onto said second LCLV;

p) a second laser;

q) a second microscope-objective disposed in the path of light emanating from said second laser;

r) a fourth lens disposed in the path of light emanating from said second microscope-objective, for expanding the light emanating from said second laser to a width of around twenty millimeters;

s) an LCTV disposed in the path of light emanating from said fourth lens, having an input for accepting the image;

t) a second polarizer disposed in the path of light emanating from said LCTV;

u) a second mirror disposed in the path of light emanating from said second polarizer so that the light emanating from said second polarizer representing the image is passed through said second mirror onto said second LCLV so that light reflecting from said second LCLV represents the image modulated by simulated atmospheric turbulence and so that the light representing the image modulated by simulated atmospheric turbulence is redirected without disturbing the paths of light;

v) a fifth lens disposed in the path of the directed light of said second mirror;

w) a third polarizer disposed in the path of said fifth lens; and

x) an optical display device disposed in the path of said third polarizer for displaying the image as modulated by turbulent atmospheric conditions.

5,663,833

IMAGE DISPLAY APPARATUS

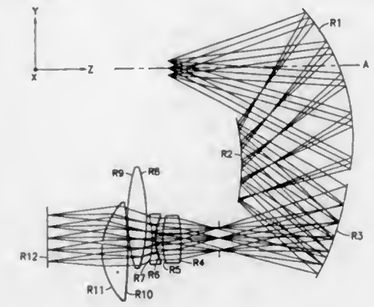
Norihiro Nanba, Kawasaki; Tsunefumi Tanaka, Yokohama; Hideki Morishima, Kawasaki, and Takeshi Akiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,537

Claims priority, application Japan, Dec. 27, 1993, 5-330728

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—631 **11 Claims**



1. An image display apparatus comprising:

image display means for emitting a light beam to display an image; and

an observation optical system for guiding the light beam from said image display means to the pupil of an observer, said observation optical system having at least a concave-reflective surface, a convex-reflective surface and a relay optical system in order from a pupil side of said observer along an optical axis of the light beam directed from said image display means to said pupil, said concave-reflective surface being located near said pupil, wherein said relay optical system forms an aerial image of said display image near said convex-reflective surface, and an image of pupil of said relay optical system is formed at a position of the pupil of said observer, said relay optical system has a concave-reflective surface, and the pupil of said relay optical system is located on the side of said image display means with respect to said concave-reflective surface of said relay optical system along said optical axis.

5,663,834

EYEPIECE ZOOM LENS SYSTEM

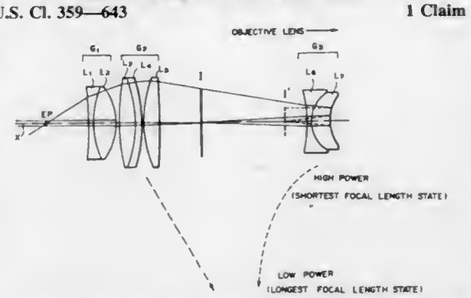
Noboru Koizumi, Omiya, Japan, assignor to Fuji Photo Optical Co. Ltd., Omiya, Japan

Filed Jun. 21, 1996, Ser. No. 668,185

Claims priority, application Japan, Sep. 12, 1995, 7-260756

Int. Cl.[6] G02B *25/00;15/14;23/00;21/00*

U.S. Cl. 359—643 **1 Claim**



1. An eyepiece zoom lens system comprising, successively from an eye point side, a first lens group G_1 having a positive refractive power, a second lens group G_2 having a positive refractive power, and a third lens group G_3 having a negative refractive power, said first lens group G_1 being stationary, whereas said second lens group G_2 and said third lens group G_3 being movable groups which, when changing power, respectively move in directions opposite to each other on an optical axis while holding therebetween an object image which is formed between these two lens groups,

wherein said first lens group G_1 comprises a laminated lens in which a biconcave lens and a biconvex lens which are successively disposed from the eye point side and bonded together; said second lens group G_2 comprises, successively from the eye point side, a laminated lens in which a biconvex lens and a negative meniscus lens whose concave surface faces the eye point are bonded together and a positive single lens; and said third lens group G_3 comprises one or two lenses including a negative lens and

wherein, assuming that shortest focal length of the whole lens system is f_m, focal length of said first lens group G_1 is f_1, focal length of said second lens group G_2 is f_2, focal length of said third lens group G_3 is f_3, principal point distance between said first lens group G_1 and said second lens group G_2 is S_{12}, principal point distance between said second lens group G_2 and said third lens group G_3 is S_{23}, and abbe numbers of the negative lenses in said first lens group G_1, second lens group G_2, and third lens group G_3 are respectively ν_1, ν_2, and ν_3, the following conditional expressions (1) to (8):

$$5<f_1/f_m<7 \quad (1)$$

$$3.5<f_2/f_m<4.5 \quad (2)$$

$$-3.7<f_3/f_m<-3 \quad (3)$$

$$0.1<S_{12}/f_m<1.0 \quad (4)$$

$$6.0<S_{23}/f_m<8.0 \quad (5)$$

$$\nu_1<35 \quad (6)$$

$$\nu_2<35 \quad (7)$$

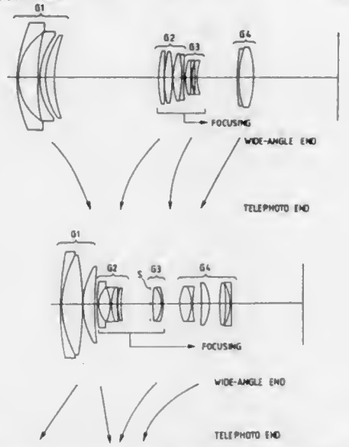
$$\nu_3>50 \quad (8)$$

are satisfied.

5,663,835
INNER FOCUS ZOOM LENS

Atsushi Shibayama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,650
Claims priority, application Japan, Jul. 29, 1994, 6-177896; Jul. 29, 1994, 6-177897; Feb. 1, 1995, 7-014869
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—684 **16 Claims**



1. An inner focus zoom lens comprising, sequentially from an object side:
a first lens unit exhibiting a negative refracting power;
a second lens unit exhibiting a positive refracting power;
a third lens unit exhibiting a negative refracting power; and
a fourth lens unit exhibiting a positive refracting power,
wherein, when effecting zooming from a wide-angle end to a telephoto end, said fourth lens unit is moved toward said object side, an air spacing between said first lens unit and said second lens unit is reduced, an air spacing between said second lens unit and said third lens unit is extended, and an air spacing between said third lens unit and said fourth lens unit is reduced,
focusing from a long distance object to a short distance object is performed by integrally moving said second lens unit and said third lens unit toward an image side, and
said inner focus zoom lens satisfies the following condition:

$$0.1<X4 / f4=0.47$$

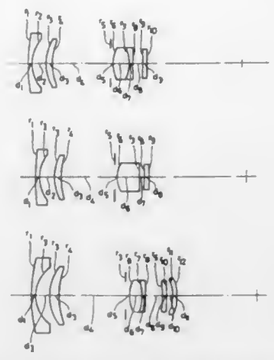
where X4 is the moving quantity of said fourth lens unit with respect to the image plane when effecting zooming from the wide-angle end to the telephoto end, and f4 is the focal length of said fourth lens unit.

5,663,836
COMPACT ZOOM LENS SYSTEM COMPRISING TWO LENS UNITS

Yasuji Ogata, Tokyo-to, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Continuation of Ser. No. 104,595, Aug. 10, 1993, abandoned. This application Jan. 15, 1996, Ser. No. 583,670
Int. Cl.[6] G02B *15/14;3/02*
U.S. Cl. 359—691 **10 Claims**

1. A zoom lens system consisting of, in order from an object side:
a front lens unit having a negative refractive power; and
a rear lens unit having a positive refractive power, said rear lens unit comprising:
a positive lens component disposed at a most object side location of said rear lens unit, and



a negative lens component disposed at a most image side location of said rear lens unit;
said rear lens unit consisting of no more than four lens components;
at least one surface in said rear lens unit being an aspherical surface;
said zoom lens system being capable of changes of magnification thereof by varying only an airspace reserved between said front lens unit and said rear lens unit; and
said zoom lens system satisfying the following conditions (2) and (3):

$$(2)\ 0.88 \leqq f_2/f_W < 1.4$$

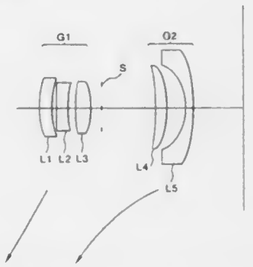
$$(3)\ 75 < \upsilon_{RP}$$

wherein said reference symbol f_2 represents a focal length of said rear lens unit, said reference symbol f_W designates a focal length of said zoom lens system as a whole at a wide position thereof, and said reference symbol υ_{RP} denotes a total sum of Abbe's numbers of all lens elements included in said positive lens component disposed in said rear lens unit.

5,663,837
LENS SYSTEM

Motoyuki Ohtake, Ohmiya, and Koichi Ohshita, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 415,990
Int. Cl.[6] G02B *15/14;9/00*
U.S. Cl. 359—692 **14 Claims**

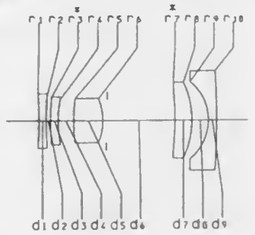


5. A lens system having, in order from an object side, a first lens unit having a positive refractive power, and a second lens unit having a negative refractive power, wherein a refractive power of the lens system is changed by changing an air gap between said first lens unit and said second lens unit;
wherein said first lens unit consists of, in order from the object side, a first lens component having a negative refractive power, a second lens component having a negative refractive power, and a third lens component having a positive refractive power, said third lens component being a single spherical lens; and
wherein said second lens unit comprises, in order from the object side, a fourth lens component having a positive refractive power and a fifth lens component having a negative refractive power.

5,663,838
ZOOM LENS SYSTEM

Sachio Hasushita, and Takayuki Ito, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,935
Claims priority, application Japan, Sep. 7, 1994, 6-213462
Int. Cl.[6] G02B *15/14;13/18*
U.S. Cl. 359—692 **13 Claims**



1. A zoom lens system having two lens groups including five lenses, comprising:
a positive first lens group and a negative second lens group, arranged in this order from an object side so that a distance between said first lens group and said second lens group is changed during a zooming operation;
said first lens group comprising a first negative sub-lens group and a first positive sub-lens group;
said first negative sub-lens group comprising a negative first lens and a negative second lens, a distance between said negative first lens and said negative second lens remaining constant during a zooming operation, said first positive sub-lens group comprising a positive third lens; and,
said negative second lens group comprising a positive fourth lens and a negative fifth lens, in this order from the object side;
wherein said zoom lens system satisfies the relationships:

$$SF1=(r_{1-1}+r_{1-2})/(r_{1-1}-r_{1-2}) \leqq 0$$

$$SF2=(r_{2-1}+r_{2-2})/(r_{2-1}r_{2-2})>0$$

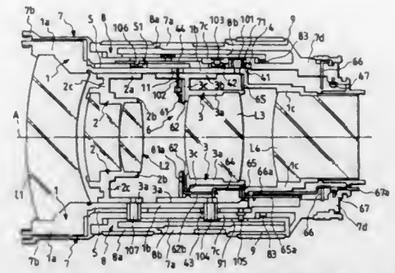
wherein SF1 represents a shaping factor of said negative first lens; SF2 represents a shaping factor of said negative second lens; and r_{i-j} represents a radius of curvature of a j-th surface of an i-th lens.

5,663,839
ZOOM LENS BARREL HAVING A ROTATABLE DIAPHRAGM MECHANISM AND A MECHANISM FOR CORRECTING AN APERTURE DIAMETER DURING ZOOMING

Hideo Kanno, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,077
Claims priority, application Japan, Feb. 24, 1995, 7-036778
Int. Cl.[6] G02B *15/14;1/18;9/00*
U.S. Cl. 359—700 **4 Claims**

1. A zoom lens barrel comprising:
a first lens unit;



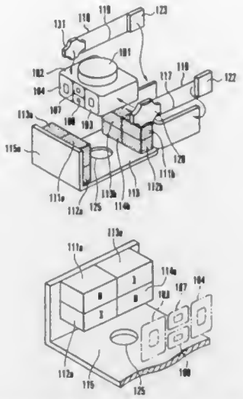
a second lens unit sharing an optical axis with said first lens unit;
a fixed barrel to contain said first lens unit and said second lens unit;
a first lens unit shifting frame held in said fixed barrel so as to be shiftable in a direction of said optical axis or in a direction around said optical axis for holding said first lens unit;
a second lens unit shifting frame held in said first lens unit shifting frame so as to be shiftable in a direction of said optical axis or in a direction around said optical axis for holding said second lens unit;
a zooming mechanism held by said fixed barrel so as to be rotatable around said optical axis for shifting said first lens unit shifting frame in said optical axis direction to perform zooming when said zooming mechanism is rotated around said optical axis;
a focusing mechanism held by said fixed barrel so as to be rotatable around said optical axis for rotating said second lens unit shifting frame around said optical axis and shifting said second lens unit shifting frame in said optical axis direction to perform focusing when said focusing mechanism is rotated around said optical axis;
a diaphragm mechanism held by said second lens unit shifting frame so as to be rotatable around said optical axis for adjusting an aperture diameter when said diaphragm is rotated; and
a diaphragm correcting mechanism including .
a first guide member provided in said fixed barrel so as to be inclined with respect to said optical axis;
a first guided member provided on said first lens unit shifting frame, said first guided member being guided by said first guide member to rotate said first lens unit shifting frame around said optical axis at the time of said zooming;
a diaphragm mechanism supporting plate held by said second lens unit shifting frame so as to be rotatable around said optical axis for rotating said diaphragm mechanism when said diaphragm mechanism supporting plate is rotated around said optical axis; and
an interlocking member provided so as to be interlocked with said first lens unit shifting frame for transmitting rotation of said first lens unit shifting frame to said diaphragm mechanism supporting plate.

5,663,840
OBJECTIVE LENS ACTUATOR FOR OPTICAL HEAD AND USED FOR HIGH SPEED ACCESS

Tsutomu Matsui, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 7, 1995, Ser. No. 473,306
Claims priority, application Japan, Jun. 14, 1994, 6-131516; Mar. 30, 1995, 7-073092
Int. Cl.[6] G11B *7/095*
U.S. Cl. 359—814 **5 Claims**

1. An objective lens actuator for an optical head, comprising:
an objective lens on which a beam reflected by an optical disk is incident;
an objective lens holder, having a substantially square frame shape, for holding said objective lens;



a plurality of square flat coils arranged on a pair of opposite side surfaces of said objective lens holder;

a plurality of magnetic circuits arranged to oppose said plurality of flat coils arranged on the pair of side surfaces of said objective lens holder, said plurality of magnetic circuits being arranged such that adjacent magnetic circuits have opposite polarities and at least two division lines for dividing said magnetic circuits from each other on a plane parallel to a side surface of said objective lens, said plurality of flat coils are symmetrically arranged in a vertical and horizontal direction on each said pair of opposite side surfaces of said objective lens holder, and said plurality of magnetic circuits are symmetrically arrayed in a vertical and horizontal direction as they oppose said plurality of flat coils; and

a plurality of wire springs for holding said objective lens holder with a degree of freedom in focusing and tracking directions.

5,663,841

OPTICAL PICKUP DEVICE HAVING A MAGNETIC CIRCUIT WHOSE POLES ARE CONFIGURED ALONG A COMMON PATH WITHIN ONE POLE WITHIN A FOCUS COIL

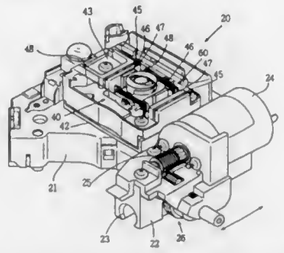
Taichi Akiba; Osamu Ueda; Masayuki Koyama, and Shigeyuki Sasanuma, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 502,086

Claims priority, application Japan, Aug. 31, 1994, 6-207231

Int. Cl.[6] G02B *7/04;* **G11B** *7/095*

U.S. Cl. 359—814 **15 Claims**



1. An optical pickup for an optical disc player, comprising:

a carriage provided so as to be moved in a radial direction of an optical disc;

a plurality of leaf springs, each of which is secured to the carriage to a base end thereof and extends in an extending direction traverse to the radial direction;

a holder provided with an objective, and secured to a front end of each leaf spring, thereby to be suspended on the carriage by the plurality of leaf springs;

a magnetic circuit disposed adjacent to the holder and including first and second pairs of magnetic poles which are arranged along a common path in a direction parallel to the leaf spring extending direction, surfaces of the magnetic poles in the first and second pairs of magnetic poles are parallel with each other;

a focus coil provided around a vertical axis of the holder and having a magnetic flux receiving portion, at least one of the magnetic poles in each of the first and second pairs of magnetic poles is disposed within said focus coil;

a tracking coil provided around a horizontal axis of the holder which is traverse to the extending direction of the leaf springs, said tracking coil having a magnetic flux receiving portion;

both of the magnetic flux receiving portions being disposed so as not to be overlapped with each other, and disposed in parallel with one of the surface of the first and second magnetic poles.

5,663,842

SURFACE WAVE MOTOR BUILT-IN LENS BARREL

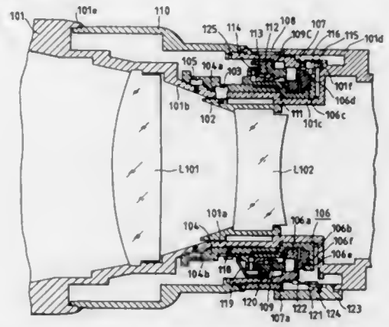
Tooru Takayama, Kumagaya, and Tsuneo Watanabe, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 30, 1996, Ser. No. 640,440

Claims priority, application Japan, Jul. 14, 1995, 7-178391

Int. Cl.[6] G02B *7/02;15/14*

U.S. Cl. 359—823 **2 Claims**



1. A surface wave motor built-in lens barrel having a manual focus adjusting mode and an autofocus adjusting mode, said lens barrel comprising:

a photographing optical system;

a fixed drum;

a surface wave motor so fitted to said fixed drum as to be rotatable about an optical axis and having a fixed member capable of generating surface waves and a moving member friction-contacting said fixed member, rotating about the optical axis by the surface waves and thereby capable of moving said photographing optical system; and

a manual operation member capable of moving said photographing optical system by an outside operation,

wherein said photographing optical system is, in the manual focus adjusting mode, moved when said moving member and said fixed member of said surface wave motor become integral and rotated interlocking with a manual operation of said manual operation member and is also, in the autofocus adjusting mode, moved when said fixed member of said surface wave motor is fixed to said fixed lens barrel while said moving member rotates, and

said fixed member of said surface wave motor has a distortion preventive member for preventing distortion from being transferred to the portion where the surface waves are produced,

the distortion being caused in a portion receiving a transfer of a force from said manual operation member.

5,663,843

OPTICAL SYSTEM DRIVING APPARATUS

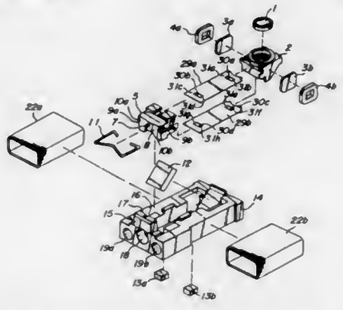
Hiroshi Ezawa, Sagamihara, and Tetsuo Ikegame, Hachioji, both of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 625,012

Claims priority, application Japan, Mar. 31, 1995, 7-075200

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—824 **9 Claims**



1. An optical system driving apparatus comprising:

a holder means for holding an optical system;

a supporting means for supporting resiliently said holder means movably in a first direction which is substantially perpendicular to a record medium and/or a second direction which is substantially perpendicular to said first direction;

a coil means secured to said holder means for driving said holder means in said first and/or second direction; and

a viscoelastic means for securing at least a part of said coil means to said holder means.

5,663,844

SIGNAL REPRODUCING APPARATUS HAVING WAVEFORM EQUALIZING FUNCTION

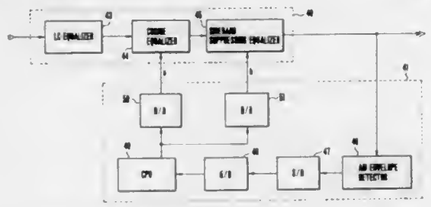
Makoto Gohda, Tokyo, and Shinichi Yamashita, Kanagawa-ken, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 791,990, Nov. 14, 1991, abandoned. This application Nov. 19, 1993, Ser. No. 156,408

Claims priority, application Japan, Nov. 19, 1990, 2-311273; Nov. 19, 1990, 2-311282; Mar. 22, 1991, 3-058965

Int. Cl.[6] G11B *5/035*

U.S. Cl. 360—65 **17 Claims**



1. A reproducing apparatus, comprising:

(a) input means for inputting a frequency-modulated (FM) signal passed through a magnetic recording and reproducing system; and

(b) equalizing means for equalizing the FM signal input by said input means,

said equalizing means having a cosine equalizing means which emphasizes a frequency component corresponding to an upper sideband but does not emphasize a frequency component corresponding to a lower sideband so as to compensate deterioration of the frequency component corresponding to an upper sideband relative to a carrier of the FM signal by the magnetic recording and reproducing system, and sideband equalizing means for emphasizing or suppressing simultaneously the frequencies corresponding to the upper and lower sidebands so as to compensate variation of ratio between the carrier of the FM signal and the frequency components corresponding to the upper and lower sidebands, said cosine equalizing means and said sideband equalizing means being arranged in series.

5,663,845

MAGNETIC RECORDING/REPRODUCING APPARATUS

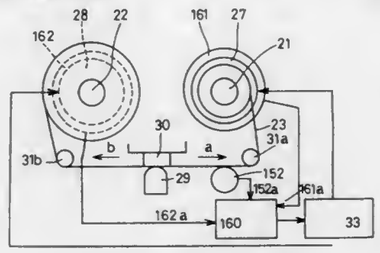
Tatsushi Yamamoto, Ikoma-gun; Shigeaki Kakiwaki; Tohru Okuda, both of Nara; Hideo Okada, Uda; Masaji Tsuji, Yamatokouriyama; Takamitsu Tadera, Tenri, and Akihito Yoshimoto, Yamatotakada, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 65,133, May 20, 1993, Pat. No. 5,491,594. This application May 18, 1995, Ser. No. 443,848

Claims priority, application Japan, May 21, 1992, 4-128603; May 21, 1992, 4-128604; May 21, 1992, 4-128605; May 21, 1992, 4-128606; Jun. 5, 1992, 4-145524; Jul. 27, 1992, 4-199723

Int. Cl.[6] G11B *15/46*

U.S. Cl. 360—73.11 **5 Claims**



1. A magnetic recording/reproducing apparatus for recording onto, and reproducing information from, a magnetic tape using a magnetic head, said magnetic recording/reproducing apparatus comprising:

tape-speed-detecting means for detecting a travel speed of said magnetic tape;

reel-driving means for driving a reel on which said magnetic tape is wound;

rotation-detecting means for detecting the rotational speed of said reel-driving means; and

control means controlling said reel-driving means so as to drive said magnetic tape at a constant speed,

said control means including:

a first control system for feeding back tape speed information, detected by said tape-speed-detecting means, thereby controlling a low frequency band, and

a second control system for feeding back rotation information concerning said reel-driving means, detected by said rotation-detecting means, thereby controlling a high frequency band; and wherein

travel of said magnetic tape is driven by driving power exerted by said tape-reel-driving means.

5,663,846

DRIVING APPARATUS FOR FLOATING-TYPE MAGNETIC HEAD

Dai Masuoka, Kanagawa, and Takeda Toru, Saitama, both of Japan, assignors to Sony Corporation, Japan

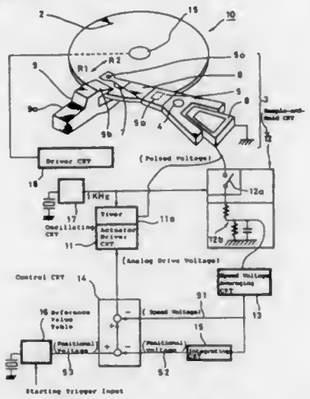
PCT No. PCT/JP94/01396, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO95/06314, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 24, 1994, Ser. No. 403,858

Claims priority, application Japan, Aug. 24, 1993, 5-230991; Jun. 17, 1994, 6-159352; Aug. 1, 1994, 6-199040

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **35 Claims**



1. A loading and unloading apparatus for a magnetic disk device having a rotatable information recording disk, an arm supporting a head slider with a suspension for movement along a surface of the disk, a voice-coil-type drive mechanism for driving the arm, and a mechanism for retracting said head slider into a retraction area out of a data zone of the disk, said loading and unloading apparatus comprising:

circuit means for energizing said voice-coil-type drive mechanism;

means for directly measuring a voltage value of a counterelectromotive force generated in a voice coil of the voice-coil-type drive mechanism;

means for calculating a speed of the arm from said voltage value of the counterelectromotive force;

means for adjusting a drive current based on the speed of the arm;

the arrangement being such that closed-loop control is carried out based on the speed of the arm when the head slider is loaded or unloaded;

wherein said circuit means comprises a pulse drive circuit, and said means for measuring comprises a sampling measuring circuit; and

wherein said pulse drive circuit has a drive frequency f represented by:

$$f<R/2L$$

where R is a resistance component of said voice-coil-type drive mechanism and L is an inductance component of said voice-coil-type drive mechanism.

5,663,847

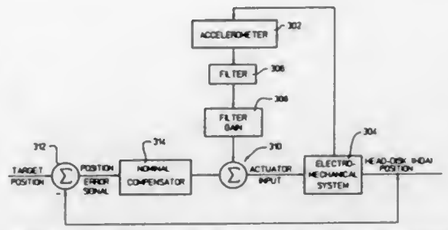
REJECTION OF DISTURBANCES ON A DISK DRIVE BY USE OF AN ACCELEROMETER

Daniel Y. Abramovitch, 3372 Kipling St., Palo Alto, Calif. 94306

Filed Mar. 27, 1995, Ser. No. 410,991

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.02 **10 Claims**



1. A disk recording/reproducing device, comprising:

a disk rotatably mounted on the device, the disk having a surface containing recording tracks;

a transducer coupled to the surface for producing an output of the position of the transducer with respect to a track;

a moveable actuator connected to the transducer for moving the transducer to different radial locations with respect to the track;

an actuator controller receiving and sampling at a first frequency the output of the transducer for controlling the moveable actuator to maintain the transducer position with respect to the recording track;

a sensor having an output responsive to the acceleration of the device; and

an acceleration controller receiving and sampling at a second frequency the output of the sensor for additionally controlling the moveable actuator to further maintain the transducer position with respect to the recording track when the device is being accelerated.

5,663,848

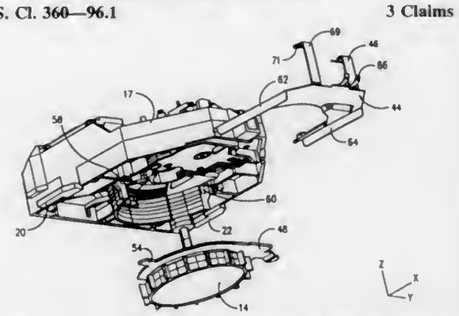
CLIP FOR ATTACHING TAPE DRIVE MOTOR TO CHASSIS

Mark W. Perona, San Diego, Calif., assignor to Iomega Corporation, Roy, Utah

Continuation-in-part of Ser. No. 531,635, Sep. 21, 1995. This application Oct. 13, 1995, Ser. No. 543,128

Int. Cl.[6] G11B *15/00;5/008*

U.S. Cl. 360—96.1 **3 Claims**



1. A magnetic tape drive for reading/writing data on magnetic tape in a cartridge of the type in which a driven roller in said cartridge moves tape past a read/write head in said drive, said drive comprising:

a motor having a drive shaft with means for moving said tape;

a chassis on which said motor is mounted;

a motor plate attached to said motor, said motor plate having ears;

retainer means on said chassis, said retainer means being holes in said chassis for securing said plate to said chassis; and

a spring clip having an interference fit with said chassis, said clip including tabs, said clip being secured on said chassis with said interference fit, said tabs being inserted over said ears to lock said motor plate into said holes.

5,663,849

TAPE PINCH ROLLER ACTUATION DEVICE

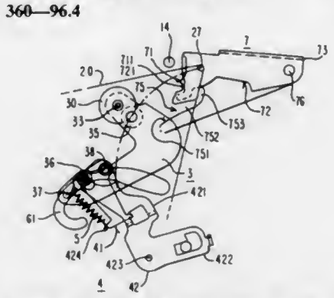
Fritz Weisser, and Erhard Lauble, both of St. Georgen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villengen-Schwenningen, Germany

Continuation of Ser. No. 46,964, Apr. 16, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 437,545

Claims priority, application Germany, Apr. 30, 1992, 42 14 270.9

Int. Cl.[6] G11B *5/008*

U.S. Cl. 360—96.4 **8 Claims**



1. An actuating device for a pinch roller in a tape recording/playing device having a capstan spindle driven by a drive mechanism supported on a chassis, said actuating device comprising:

a movable pinch lever supporting said pinch roller and engaging a guide path defined by said chassis;

at least one drive lever rotatably coupled to said pinch lever and mounted on said chassis to pivot about a fixed axis normal to said chassis for swiveling said pinch roller along said guide path between resting and working positions;

resilient means connected to said at least one drive lever for urging said pinch roller against said capstan spindle only in said working position;

first guide means for guiding said pivoting of said at least one drive lever;

a lift roller rotatably supported by said pinch lever and disposed in proximity to said pinch roller, said lift roller having a cylindrical region adjacent said pinch lever and a conical region having a diameter which increases in a direction away from said cylindrical region and said chassis; and,

second guide means for guiding said pinch roller into contact with said capstan spindle, by engaging said conical region of said lift roller to impart a motion to said pinch lever in said direction away from said chassis during said swiveling of said pinch roller into said working position and by engaging said cylindrical region of said lift roller when said pinch roller contacts said capstan spindle.

5,663,850

CARTRIDGE HANDLING APPARATUS

Yasuyuki Nakanishi; Koutarou Oka; Kei Shirahata; Shigehiro Itou, all of Hyogo, and Tatsunori Fujiwara, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 541,154

Claims priority, application Japan, Oct. 14, 1994, 6-249457

Int. Cl.[6] G11B *15/68;17/22*

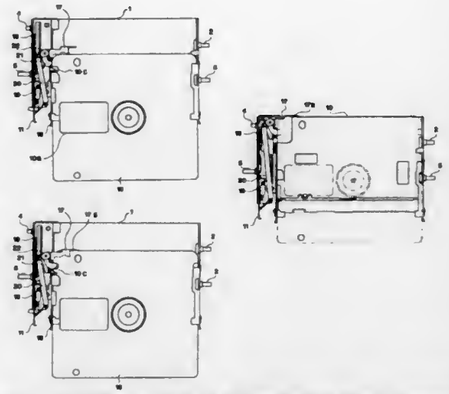
U.S. Cl. 360—98.06 **11 Claims**

1. A cartridge handling apparatus, comprising:

a plurality of holders, in each of which a cartridge is inserted and held;

a plurality of pins that are fixed to each of said plurality of holders;

a pair of guide plates having respective guide grooves along which said plurality of pins slide and are guided when a predetermined holder is fed whereby said predetermined holder is guided to a fixed position when the feeding of said predetermined holder is completed;



an ejection plate, for each of said plurality of holders, engaging an end portion of the cartridge and being slidable with respect to each corresponding holder;

a first spring, for each of said plurality of holders, having one end fixed to each of said holders and the other end fixed to said ejection plate for forcibly ejecting the cartridge and holding the cartridge at an ejected position;

a loading hook, for each of said plurality of holders, rotatably driven by said first spring via said ejection plate such that said loading hook is urged into a retaining bole of said cartridge when said cartridge is inserted into a corresponding one of said plurality of holders.

5,663,851

SPINDLE HUB ASSEMBLY FOR A HARD DISK DRIVE HAVING A DISK-CLAMP SPACER FOR ABSORBING VIBRATIONS AND EVENLY DISTRIBUTING THE CLAMPING FORCES

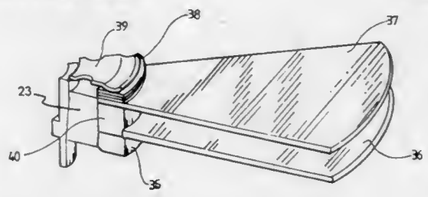
Woo-cheol Jeong, and Su-ik Hwang, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 12, 1996, Ser. No. 678,052

Claims priority, application Rep. of Korea, Jul. 13, 1995, 20647/1995

Int. Cl.[6] G11B *17/08*

U.S. Cl. 360—98.08 **15 Claims**



1. A disk drive spindle hub assembly, comprising:

a spindle hub having a top portion and an enlarged spindle base;

a stack of information storage disks journaled about said spindle hub in a spaced-apart, vertically aligned relation, said information storage disks being coupled to said spindle hub to rotate with said spindle hub;

spacer means positioned between adjacent ones of said information storage disks, for spacing said disks apart in the vertically aligned relation of said spindle hub;

a dummy disk having an annular axial face and a central circular opening concentrically disposed on said spindle hub, said annular axial face directly facing a surface of a top information storage disk, said dummy disk being formed by a lamination of a metal plate, a damping portion, and a polyester layer; and

a disk clamp for concentrically clamping the stack of information storage disks in axial alignment with said spindle hub in compression against said dummy disk.

5,663,852

DISK DRIVE DEVICE

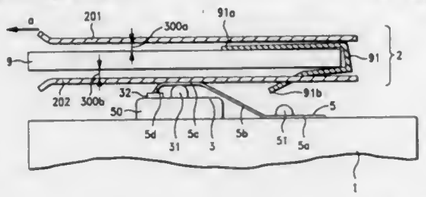
Kazuyoshi Fujimori, and Noboru Yamada, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 578,099

Claims priority, application Japan, Dec. 27, 1994, 6-326484

Int. Cl.[6] G11B *17/02;17/04*

U.S. Cl. 360—99.12 **10 Claims**



1. A disk drive for housing, in an insertable/extractable manner, a disk cartridge enclosing a recording medium and including a first surface defining a hub to position the medium and a movable shutter in slidable attachment therewith, the disk drive comprising:

a holder for releasably receiving the disk cartridge and positioning the received disk cartridge between separate insertion/extraction and recording positions, said holder comprising spaced apart, opposing first and second runners engaging side surfaces of the received disk cartridge;

a disk chassis in communication with said holder including a central rotary drive extending therefrom between said first and second holder runners for engaging the received disk cartridge hub when the received disk cartridge is at the recording position, said central rotary drive rotatable about a central axis; and

a stationary shutter guide in communication with said holder positioned between said first and second holder runners and proximate said central rotary drive of said chassis and comprising:

an angled member for releasably receiving the received disk cartridge shutter in slidable frictional engagement; and

a support member in communication with said angled member, said support member intersecting a plane crossing the central axis of said central rotary drive and normal to said first and second holder runners for releasably engaging a defective extending portion of the received disk cartridge shutter and preventing the defective extending portion from catching against said central rotary drive when the received disk is ejected from said holder.

5,663,853

HEAD SLIDER ASSEMBLY HAVING FIRST AND SECOND LEADING EDGE TAPERED PORTIONS FORMED ON LOWER AND UPPER SURFACES OF AN AIR INFLOW EDGE

Ki-Ook Park, Seoul, Rep. of Korea, assignor to SamSung Electronics Co, Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1995, Ser. No. 489,513

Claims priority, application Rep. of Korea, Jul. 7, 1994, 16322/1994

Int. Cl.[6] G11B *5/60;15/64;17/32;21/20*

U.S. Cl. 360—103 **19 Claims**

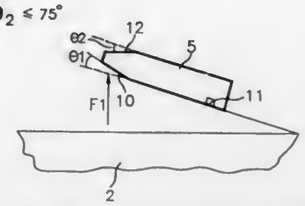
1. A disk recording system, comprising:

a recording medium having a recording surface;

a transducer and a head slider for supporting said transducer;

means for supporting said head slider with said traducer closely adjacent to the recording surface of said recording medium in

$\theta_1 < \theta_2 \leq 75°$



an orientation having a predetermined pitch angle and a predetermined spacing with respect to the recording surface of said recording medium, and for moving said head slider relative to the recording surface of said recording medium; and

said head slider having leading and trailing ends, an upper surface and a lower air bearing surface opposite of said upper surface and extending from the leading end to the trailing end of said head slider, a first tapered portion at said leading end integrally formed therein and tapered from said lower air bearing surface toward said leading end at a first predetermined angle greater than zero and not more than seventy-five degrees and oblique with respect to said lower air bearing surface of said head slider, and a second tapered portion at said leading end integrally formed therein and tapered from said upper surface toward said leading end at a second predetermined angle greater than zero and oblique with respect to said upper surface of said head slider for enabling said head slider to stably maintain in a low flying height with respect to the recording surface of said recording medium said second tapered portion at said leading end of said upper surface of said head slider being oblique from said upper surface at said second predetermined angle less than said first predetermined angle to counteract an aerodynamic fir force generated by rotation of said recording medium.

5,663,854

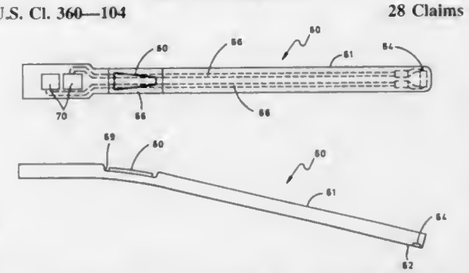
PREBENT CERAMIC SUSPENSION

Alfred Grill, White Plains, N.Y.; Michael Anthony Moser, San Jose, Calif.; Vishnubhai Vitthalbhai Patel, Yorktown Hts., N.Y.; Clinton Davis Snyder, Los Gatos, and Cella E. Yeack-Scranton, deceased, late of San Jose, both of Calif., by Robert A. Scranton, legal representative, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 474,616

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **28 Claims**



1. A prebent ceramic suspension for a magnetic disk drive comprising:

an elongated ceramic load beam which has first and second surfaces which are bounded by first and second ends and first and second sides, the beam having a longitudinal axis which extends between the first and second ends;

said load beam having first and second positions, the first position being a relaxed beam condition with its longitudinal

axis in a first configuration and the second position being a stressed beam condition with its longitudinal axis in a bent configuration;

a patch connected to said first surface of the load beam and being composed of a material which is stressed so as to impose its stress on the load beam via said first surface; and

the stress imposed on the load beam by the patch causing the load beam to assume its second position with its longitudinal axis in said bent configuration.

5,663,855

MAGNETIC LATCHING APPARATUS FOR AN ACTUATOR OF A HARD DISK DRIVE

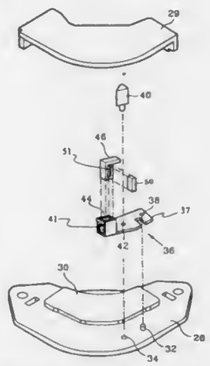
Sung-Wook Kim, and Yun-Chong Hwang, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd, Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 434,310, May 2, 1995, Pat. No. 5,583,724. This application May 17, 1996, Ser. No. 649,435

Claims priority, application Rep. of Korea, Oct. 17, 1994, 26495/1994

Int. Cl.[6] G11B *21/22*

U.S. Cl. 360—105 **21 Claims**



1. A magnetic latching apparatus of a hard disk drive having upper and lower yokes accommodating therebetween a voice coil motor located at a voice coil end of an actuator movably mounted to position a magnetic head attached to a head end of the actuator over designated positions of a hard disk, said magnetic latching apparatus comprising:

a latch assembly having a boxed end portion and a plate end portion, said boxed end portion being perforated by an upper opening and a side opening, and said plate end portion being perforated by a lug inserting hole and a supporting member passing hole, said lug inserting hole receiving a lug extending upward from said lower yoke, and said supporting member passing hole being aligned with a support member assembly hole formed in said lower yoke;

a damper having a magnet inserted therein, said damper being inserted through said upper opening of said boxed end portion of said latch assembly with a side portion of said damper being adjacent to said side opening of said boxed end portion of said latch assembly;

said side portion of said damper being perforated by a hole extending through to said magnet;

a support having a peg end for insertion through said supporting member passing hole and fit into said supporting member assembly hole formed for fixedly attaching said latch assembly to said lower yoke; and

a latching screw attached to a portion of said voice coil end of said actuator, said latching screw being attracted by a magnetic force of said magnet through said hole in said side portion of said damper, said latching screw contacting said damper and being latched by said magnet when said disk drive is in a power-off operating condition.

5,663,856

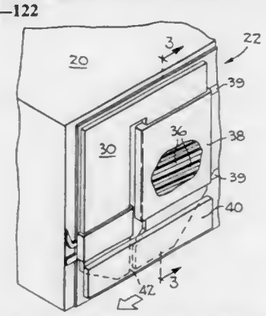
THIN FILM MAGNETIC HEAD WITH ENHANCED GAP AREA ENHANCED BY SURROUNDING MATERIALS OF HARD AND ELECTRICALLY CONDUCTIVE MATERIAL

Edward L. Packard, 908 Noreen Ct., San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 349,982, Dec. 6, 1994. This application Feb. 20, 1996, Ser. No. 604,049

Int. Cl.[6] G11B *5/187;5/147*

U.S. Cl. 360—122 **16 Claims**



1. For use in a thin film magnetic head assembly operating with write currents having high frequency components, a thin film magnetic core element providing a closed loop magnetic flux path and having a pair of opposed pole pieces defining a gap in the closed loop path; said gap being having a cross section of generally rectangular shape and having a front face designed to face the recording media, a back face spaced from and generally parallel to the front face, and a pair of side faces interconnecting the front and back faces; and a pair of thin film metallic layers of electrically conductive and magnetically non-conductive material located directly adjacent to the pole pieces at the side faces of gap area thereof with one of such layers being located on each side of the gap to enclose the same and reduce magnetic flux leakage sideways from the gap.

5,663,857

MAGNETIC HEAD

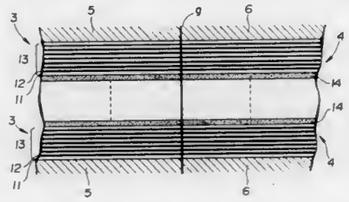
Tatsuo Kumura; Fusashige Tokutake; Akira Urai; Junichi Honda, and Hideaki Ojima, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 380,811, Jan. 30, 1995, abandoned. This application Aug. 8, 1996, Ser. No. 695,757

Claims priority, application Japan, Feb. 10, 1994, 6-016047

Int. Cl.[6] G11B *5/31*

U.S. Cl. 360—126 **10 Claims**



1. A magnetic head comprising a pair of magnetic core halves each, having a magnetic core film sandwiched between a pair of non-magnetic substrates, said magnetic core halves being abutted to each other with faces of the magnetic core films facing each

other with a magnetic gap being defined in an interface of abutment of said magnetic core films, wherein the improvement resides in that:

said magnetic core film is of a laminated magnetic film structure comprising a plurality of laminated film units laminated with insulating films in-between, each laminated magnetic film unit in mm comprising a plurality of magnetic films with non-magnetic films in-between, the magnetic films being magnetostatically connected to one another at film ends,

said magnetic films being of a thickness to provide magnetostatic coupling of said magnetic films, and said non-magnetic films being of a thickness to allow the magnetic films juxtaposed with opposite sides with said non-magnetic film to assume anti-parallel magnetizations,

each of the magnetic films having a film thickness of 0.1 to 1.0 μm,

each of the non-magnetic films having a film thickness of 0.1 to 20 nm, and

each of the insulating films being thicker than each of the magnetic films and the non-magnetic films,

the magnetic films being selected from the group consisting of (1) materials having a structural formula $(Fe_aRu_bGa_cSi_d)_xN_yO_zC_w$, where a, b, c, d, x, y, z and w represent the proportions of respective elements in atomic percent, and having the composition such that $68 \leqq a \leqq 90$, $0.1 \leqq b \leqq 10$, $0.1 \leqq c \leqq 15$, $10 \leqq d \leqq 25$, $80 \leqq x \leqq 100$, $0 \leqq y \leqq 20$, $0 \leqq z \leqq 20$, $0 \leqq w \leqq 20$, with $a+b+c+d+=100$ and $x+y+z+w=100$. (2) Fe-Al-Si alloys. (3) Fe-Si-Co alloys, (4) Fe-Ni alloys, (5) Fe-Al-Ge alloys, (6) Fe-Ga-Ge alloys, (7) Fe-Si-Ge alloys, (8) Fe-Si-Ga alloys, (9) Fe-Si-Ga-Ru alloys, (10) Fe-Co-Si-Al alloys and (11) amorphous magnetic materials mainly formed of cobalt CO and containing at least one element selected from the group consisting of Zr, Mo, Pd, Ta, Nb, Ti and Hf,

the non-magnetic films being selected from the group consisting of Pt, Au, Cu, Cr, oxide films and nitride films.

5,663,858

METHOD FOR FAULT CORRECTION IN A POWER CONVERTER CIRCUIT ARRANGEMENT

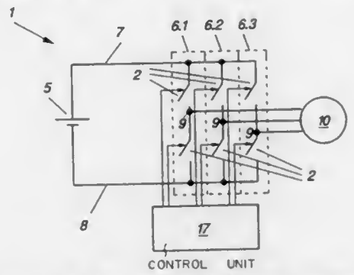
Peter Etter, Oberehrendingen, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Aug. 30, 1995, Ser. No. 520,589

Claims priority, application Germany, Oct. 1, 1994, 44 35 255.7

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—28 **12 Claims**



1. A method for fault correction in a power converter circuit arrangement, having switches consisting of a plurality of switch modules which can be switched on and off and which respectively comprise a plurality of switch chips connected in parallel via connecting wires, wherein the connecting wires of those switch chips which form a short circuit are selectively severable when a defect is detected in a module, wherein the power converter circuit arrangement comprises a multi-phase converter fed from a DC voltage source, provision being made per phase of two switches of which one each is connected between the positive terminal of the DC voltage source and a load terminal, and the other is connected between the load terminal and the negative terminal of the DC voltage source, wherein after the defect has been detected

a) all the switch modules of each phase are switched off in a first step;

b) in a second step, the switch module, connected to the positive terminal, of a first phase is switched on for a period tc, and if the switch module connected to the negative terminal was not defective, the switch module connected to the negative terminal is then switched on for the period tc after the switch module connected to the positive terminal has been switched off again; and

c) the second step for the remaining phase is repeated if the defective module was not included in the previous phase.

5,663,859

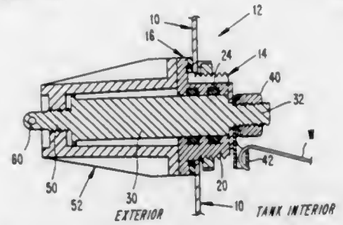
DISCONNECTOR SWITCH FOR DISCONNECTING A HIGH-VOLTAGE ARRESTER FROM GROUND

Todd Kim Knapp, Waukesha, Wis., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 16, 1996, Ser. No. 633,162

Int. Cl.[6] H02H *7/04*

U.S. Cl. 361—38 **18 Claims**



1. In an electrical device including a sealed tank, a lightning arrester disposed in oil within the tank, and a switch mounted in a wall of the tank for making an electrical connection between the arrester and the tank wall, the switch comprising:

a shaft slidably mounted in an opening formed in the wall such that an outer end of the shaft is accessible from outside of the tank to enable the shaft to be slid within the opening for moving an inner end of the shaft toward the wall to a switch-closed position and away from the wall to a switch-open position, and

an electrically conductive element mounted on the shaft adjacent the inner end thereof for being moved toward the wall and into electrically conductive relationship with the wall when the shaft is moved to the switch-closed position, and for being moved away from the wall and into electrically non-conductive relationship with the wall when the shaft is moved to the switch-open position, the electrically conductive element being electrically connected to the arrester.

5,663,860

HIGH VOLTAGE PROTECTION CIRCUITS

James W. Swonger, Palm Bay, Fla., assignor to Harris Corporation, Palm Bay, Fla.

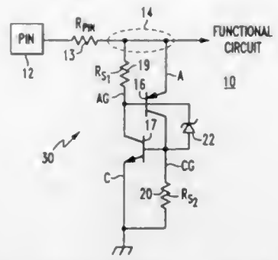
Filed Jun. 28, 1996, Ser. No. 673,396

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **21 Claims**

1. An integrated circuit having a functional circuit and a high voltage protection circuit disposed between an input/output pin and the functional circuit comprising:

a voltage reference terminal;



a first resistor connected in series with said pin and the functional circuit;

an SCR having an anode terminal, a cathode terminal, an anode-gate terminal, and cathode gate terminal, wherein said anode terminal is connected to said functional circuit, and said cathode terminal is connected to said voltage reference terminal; and

a first resistive means across said anode terminal and said anode-gate terminal.

5,663,861

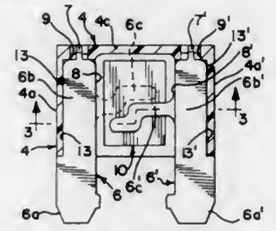
RESETTABLE AUTOMOTIVE CIRCUIT PROTECTION DEVICE

Nagi Reddi Kanamatha Reddy, Schaumburg; Robert Swensen, Mount Prospect, and Thomas F. Drabo, Westchester, all of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Jun. 7, 1995, Ser. No. 480,124

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—106 **15 Claims**



1. A circuit protection device to be connected into a circuit presenting a given load resistance, said circuit protection device including a pair of terminals to be electrically connected into said circuit, a pair of current-carrying extensions of said terminals, and an initially low resistance current-limiting means extending between said current-carrying extensions, the improvement wherein said current-limiting means comprises:

a pair of current-feeding arms having inner and outer end portions, said inner end portions thereof being electrically connected respectively to said current-carrying extensions of said terminals, said outer end portions of said current-feeding arms being cantilevered and flexible with respect to said inner end portions thereof; and

a current-limiting PTC element composed of a PTC material having conductive opposite faces sandwiched between said outer end portions of said current-feeding arms so that said PTC material carries current between said outer end portions of said current-feeding arms, said PTC material conducting a given range of currents at a given relatively low resistance value, and when current flow therethrough reaches a given trip level, said PTC material will expand to flex said current-feeding arms, permitting said PTC material to have a relatively high resistance value to limit current in said circuit.

5,663,862

ENCLOSURE FOR A CIRCUIT BREAKER

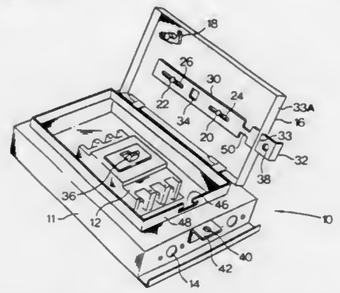
Otto Owen Hopping-Mills, Pretoria, South Africa, assignor to Reutech Commercial Electronics (Proprietary) Limited, Boksburg, South Africa

Filed Aug. 31, 1995, Ser. No. 521,999

Claims priority, application South Africa, Aug. 31, 1994, 94/6655

Int. Cl.[6] H01H *9/28*

U.S. Cl. 361—115 **7 Claims**



1. An enclosure for an electrical switch comprising:

a housing sized to support at least one switch and to permit electrical connections to be made thereto;

a housing cover moveable between an open position in which the switch is accessible and a closed position in which access to the electrical connections of the switch is prevented; and

an actuating member which comprises an actuating bar which is mounted slidably to the housing cover, the bar including a switch-engaging formation engaging an operating lever of the switch when the cover is in the closed position, the actuating bar being operable to move the switch operating lever between a first active position and a second inactive position, and having an interlocking formation thereon being slidable to engage a corresponding interlocking formation on the housing to prevent opening of the cover when the switch operating lever is in the first position and to allow opening of the cover when the operating lever is in the second position.

5,663,863

LINE ARRESTER

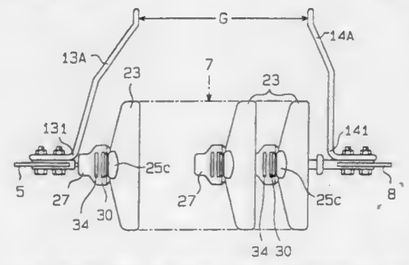
Takashi Ohashi, Kasugai; Tatsumi Ichioka, Kounan; Masamichi Ishihara, Aichi-ken, and Toshiyuki Takagi, Komaki, all of Japan, assignors to The Tokyo Electric Power Co., Inc., Tokyo, and NGK Insulators, Ltd., Nagoya, both of Japan

Continuation of Ser. No. 856,785, Mar. 24, 1992, abandoned. This application Oct. 31, 1995, Ser. No. 550,998

Claims priority, application Japan, Mar. 27, 1991, 3-063349; Mar. 30, 1991, 3-067483

Int. Cl.[6] H02H *1/00*

U.S. Cl. 361—118 **21 Claims**



1. A line arrester for connecting a power transmission line to a tower in an insulated state and discharging a lightning surge

current generated in the power transmission line by a lightning strike, the line arrester having a line side and an earth side and comprising:

a first insulator string provided between the earth side and the line side, said first insulator string comprising a plurality of suspended insulators linked in series;

a second insulator string provided between the earth side and the line side, said second insulator string being provided in parallel with respect to said first insulator string and comprising a plurality of line arresting insulators linked in series, each line arresting insulator having at least one resistor having a non-linear voltage-current characteristic and satisfying the equation:

$$1.3 \leqq (V_{max}/V_r)$$

where V_{max} is a discharge voltage that corresponds to a critical discharge current and V_r is a discharge voltage that corresponds to a rated discharge current, the rated discharge current being the amount of lightning surge current that results in an accumulated power line fault rate of at least 90%; and

a pair of arcing horns respectively provided on the earth side and the line side, each of said arcing horns having bent portions in intermediate portions thereof arranged proximate to opposite ends of said second insulator string, and wherein an aerial discharge gap is provided between the arcing horns and in parallel with a group of resistors in said second insulator string, the aerial discharge gap having a length determined to cause flashover between the arcing horns by a current that is equal to or greater than a critical discharge current, I_{max}, of each resistor to protect said group of resistors by preventing a lightning surge current of at least I_{max} from flowing therethrough.

5,663,864

SURGE ABSORBER

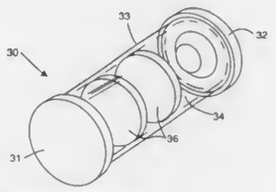
Yoshiyuki Tanaka; Masatoshi Abe, and Taka-aki Ito, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 421,610, Apr. 13, 1995, abandoned, which is a division of Ser. No. 38,019, Mar. 29, 1993, Pat. No. 5,444,596. This application Aug. 13, 1996, Ser. No. 693,675

Claims priority, application Japan, Mar. 31, 1992, 4-106058

Int. Cl.[6] H02H *9/06*

U.S. Cl. 361—120 **6 Claims**



1. A surge absorber comprising:

an insulating tube;

an inert gas in said insulating tube;

at least one discharge relay electrode in said insulating tube;

a withstand voltage of said surge absorber being independent of orientation of said surge absorber;

first and second terminal electrodes closing and sealing opposed ends of said insulating tube and retaining said at least one discharge relay electrode and said inert gas in said insulating tube;

said at least one discharge relay electrode being disk-shaped;

said at least one discharge relay electrode having an outer circumferential surface;

said outer circumferential surface of said at least one discharge relay electrode contacting an inner surface of said insulating tube; and

said at least one discharge relay electrode being effective to divide an inner space of said insulating tube into at least first and second chambers and to relay discharge between said first and second terminal electrodes.

5,663,865

CERAMIC ELECTROSTATIC CHUCK WITH BUILT-IN HEATER

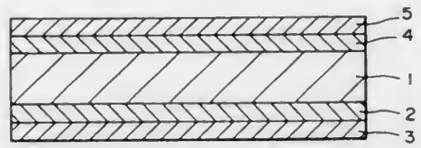
Nobuo Kawada; Ryoji Nakajima; Toshihiko Shindo, and Takaaki Nagao, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 603,155

Claims priority, application Japan, Feb. 20, 1995, 7-030483

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **6 Claims**



1. A ceramic-based electrostatic chuck with built-in heater which comprises, as an integral body:

(a) a base body of a sintered blend of boron nitride and aluminum nitride having opposite surfaces;

(b) a first electroconductive layer of pyrolytic graphite formed on one of the surfaces of the base body to serve as an electric resistance heater means;

(c) a first insulating layer of pyrolytic boron nitride formed on the first electroconductive layer;

(d) a second electroconductive layer of pyrolytic graphite formed on the surface of the base body opposite to the surface on which the first electroconductive layer is formed to serve as electrodes for electrostatic chucking means; and

(e) a second insulating layer of a pyrolytic composite nitride of boron and silicon of which the content of silicon is in the range from 1 to 10% by weight formed on the second electroconductive layer.

5,663,866

METER MODULE

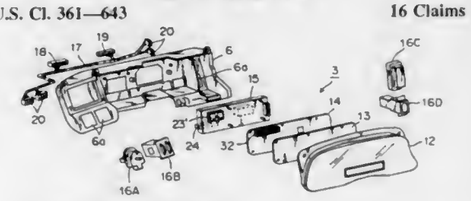
Hiroshi Ichikawa; Yoshiaki Nakayama; Keizo Nishitani; Chiaki Sugiyama; Minoru Kubota; Tatsuo Ikegaya; Masanori Muto; Masaki Oishi; Masahiro Muramatsu; Yasuo Hosoda, and Hiroshi Suzuki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,944

Claims priority, application Japan, Feb. 17, 1993, 5-028128; Aug. 5, 1993, 5-194911; Dec. 27, 1993, 5-333752

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—643 **16 Claims**



1. A meter module comprising:

an instrument panel implemented with meters/indicating lamps and a drive circuit board provided with drive circuits therefor;

a centralized control circuit board having a control circuit for vehicle-mounted electric equipment including said meters/indicating lamps;

an electric junction box distributing an electric supply and input/output signals for said vehicle-mounted electric equipment; and

means for connecting said instrument panel, said centralized control circuit board and said electric junction box.

5,663,867

PORTABLE ELECTRONIC APPARATUS HAVING A PLURALITY OF CARD STORAGE PORTIONS FOR REMOVABLY HOUSING A MEMORY CARD

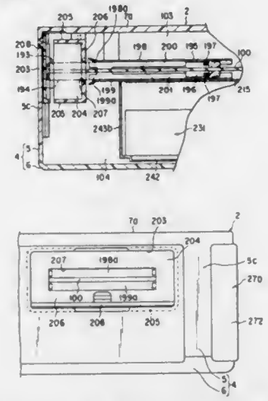
Masami Honda, and Kazuaki Kawabata, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 239,255, May 6, 1994, Pat. No. 5,590,024. This application Aug. 8, 1996, Ser. No. 689,362

Claims priority, application Japan, Jun. 21, 1993, 5-149544

Int. Cl.[6] G06F *1/16*; **H05K** *7/16*

U.S. Cl. 361—684 **5 Claims**



1. A portable electronic apparatus wherein plurality of card-like electronic components are loaded/unloaded therethrough comprising:

a case having a side wall in which a card insertion port is opened;

a circuit board housed in said case, said circuit board having upper and lower surfaces; and

first and second housings disposed on the upper and lower surfaces of said circuit board, said first and second housings forming first and second card storage portions in cooperation with the upper and lower surfaces of said circuit board, said first and second card storage portions being arranged at the same position so as to oppose each other across said circuit board and continuous with said card insertion port, said card-like electronic components being removably housed in said first and second card storage portions through said insertion port, said card-like electronic components being parallel to said circuit board when said card-like electronic components are housed in said first and second card storage portions.

5,663,868

STACKABLE ELECTRONIC EQUIPMENT ASSEMBLY WITH IMPROVED CIRCUIT BOARD COOLING ARRANGEMENT

Anthony Donald Stalley, Ascot, United Kingdom, assignor to Questech Limited, Wokingham, United Kingdom

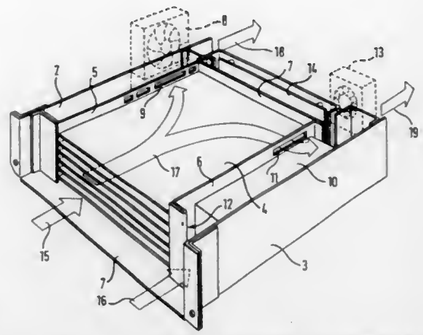
Filed Sep. 14, 1995, Ser. No. 528,166

Claims priority, application United Kingdom, Sep. 14, 1994, 9418534

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **6 Claims**

1. A stackable electronic equipment assembly comprising a housing, including first and second spaced walls lying in parallel planes and respectively supporting first and second opposed edges of each of a plurality of rectangular printed circuit boards, said boards stacked in spaced parallel planes at right angles to said walls, a mother board interconnecting third edges of each of said printed circuit boards and extending in a plane at right angles to said parallel planes, a third wall extending parallel to said first wall on a side thereof remote from said printed circuit boards to define a plenum chamber extending adjacent said first edges of said printed circuit boards, an air extraction fan located within said plenum chamber at an end thereof terminating adjacent the plane of said mother board and having an exhaust opening extending generally normal to said plane of the mother board, and ventilation apertures arranged in said first wall at locations between said circuit boards and adjacent said mother board, the arrangement being such that the said housing presents closed opposite sides extending parallel to said walls, for connection of said assembly into a rack or cubicle in stacked relation to other like assemblies, and that in use the said extraction fan draws ventilation air through spaces between fourth edges of said circuit boards, towards said mother board and thence through said apertures and into the plenum chamber, and then discharges the ventilation air through said exhaust opening.



5,663,869

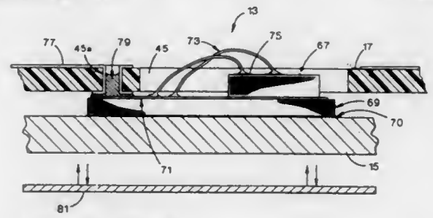
PACKAGING ELECTRICAL COMPONENTS

Patrizio Vinciarelli, Boston; Fred Finnemore, North Reading; John S. Balog, Mendon, and Brant T. Johnson, Concord, all of Mass., assignors to VLT Corporation, San Antonio, Tex.

Division of Ser. No. 143,173, Oct. 26, 1993, Pat. No. 5,526,234, which is a division of Ser. No. 914,347, Jul. 17, 1992, abandoned. This application Jan. 17, 1996, Ser. No. 588,015

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—707 **14 Claims**



1. A structure comprising

a thermally conductive baseplate,

a circuit board parallel and adjacent to said baseplate and having a metal-lined through-hole,

an electronic component including a power-dissipating electronic device, a power-dissipating surface, and pads for making electrical connection to said device,

said circuit board having an aperture,

said electronic component being mounted with said power-dissipating device sitting in said aperture of said board, said power-dissipating surface in contact with said baseplate, and said pads electrically connected to said circuit board, and

a soldered connection between at least one of said pads and said metal-lined through-hole.

5,663,870

PRINTED CIRCUIT BOARD FOR CONNECTORS

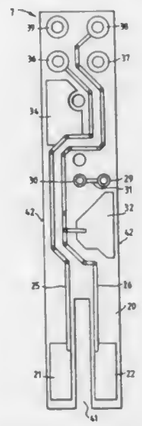
Walter Kerndlmaier, Riemerlink, Germany, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Jul. 14, 1995, Ser. No. 502,387

Claims priority, application Germany, Aug. 9, 1994, 94 12 794 U

Int. Cl.[6] H05K *1/00*

U.S. Cl. 361—763 8 Claims



1. Printed circuit boards for connectors in symmetrical communications and data systems engineering distribution systems, comprising:

a front face with an interconnecting circuit board track and a pair of substantially parallel circuit board tracks;

a back face with a pair of substantially parallel circuit board tracks, said back pair of substantially parallel circuit board tracks being substantially congruent with said front pair of substantially parallel circuit board tracks; and

through-hole plating means including two through-hole platings for connecting a track of said back pair of tracks to said interconnecting circuit board track on said front face.

5,663,871

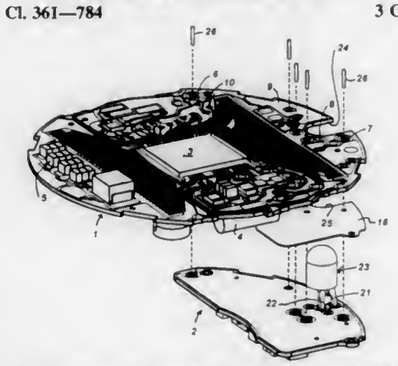
DUAL PCB SUBASSEMBLY FOR AN ELECTRONIC DEVICE HAVING AN ELECTRONIC COMPONENT

Ralzon J. Bayani, Cebu, Philippines, assignor to Timex Corporation, Middlebury, Conn.

Filed Jul. 11, 1995, Ser. No. 502,839

Int. Cl.[6] H05K *1/11;7/02;* H01R *23/68*

U.S. Cl. 361—784 3 Claims



1. A PCB subassembly for an electronic electro-optical device, comprising:

a first PCB having a plurality of first contact pads disposed on the front side thereof and a plurality of first circuit elements connected in circuit relationship with the first contact pads,

a second PCB having a plurality of second contact pads disposed on the front side thereof and a plurality of second circuit elements connected in circuit relationship with the second contact pads,

said first and second PCB's being disposed back to back and having said first and second contact pads being arranged so as to have overlapping projected areas,

a plurality of pairs of aligned holes defined by said first and second contact pads, said pairs of aligned holes being disposed within said projected areas,

a plurality of rigid jumper pins electrically connecting the circuit elements of said first and second PCB's and supporting the second PCB from the first PCB in back-to-back relationship,

each said jumper pin extending through a said pair of aligned holes so as to define projecting ends on the respective front sides of said first and second PCB's, and having solder beads connecting said projecting ends to the first and second contact pads so as to support the second PCB from the first PCB and to electrically connect the first and second circuit elements,

a cutout defined in the first PCB, and

an electro-optic sensor disposed on the second PCB and extending through the cutout in the first PCB.

5,663,872

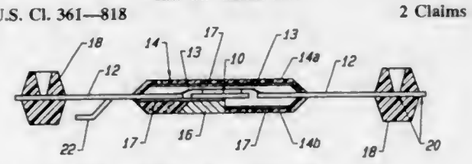
ENCAPSULATION OF ELECTRONIC COMPONENTS

Trevor Clifford Gainey, Aylesford, England, assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 331,251, Oct. 28, 1994, Pat. No. 5,537,342, which is a continuation of Ser. No. 856,905, May 14, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,177

Int. Cl.[6] H05K *9/00*

U.S. Cl. 361—818 2 Claims



1. A packaged electronic device comprising:

an upper housing element and a lower housing element composed of a uniform material, together the upper and lower housing elements forming a housing having a cavity;

a leadframe structure having leads extending from an exterior of the housing to within the housing;

wires connected to the leadframe at one end; and

an electronic device mounted within the cavity in the housing, the electronic device connected to the wires at another end within the cavity and supported solely by the wires connected to the leadframe;

wherein an internal surface of the housing is coated with a material which provides electromagnetic and radio frequency isolation of the electronic device.

5,663,873

BIAS POWER HAVING A GAPPED TRANSFORMER COMPONENT

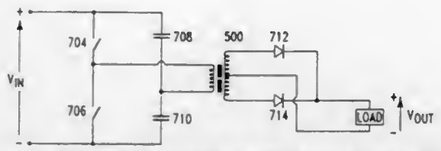
Pradeep Madhav Bhagwat, Baltimore, Md.; Chadd Dial Justo, Jersey City, N.J.; Harry J. Britton, South Toms River, N.J., and Hamid Kashani, Ocean, N.J., assignors to Electronic Measurements, Inc., Neptune, N.J.

Filed Feb. 26, 1996, Ser. No. 606,900

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—20 1 Claim

1. A half bridge power converter permitting stable asymmetrical operation, the power converter comprising:



a) a set of controllable switches arranged across an input voltage source, the set of controllable switches being coupled in series thereby defining a switching node therebetween;

b) a set of capacitors arranged across the input voltage source, the set of capacitors being coupled in series thereby defining a divided voltage node therebetween;

c) a gapped transformer having a primary winding and a secondary winding being inductively coupled with the primary winding, the primary winding having a first end coupled with the switching node and a second end coupled with the divided voltage node, and the secondary winding providing an output voltage to a load via a rectifier circuit: and

d) a capacitor coupled across the positive and negative terminals of the output voltage,

wherein the rectifier circuit includes a first diode having its anode coupled with a first end of the secondary winding and a second diode having its anode coupled with a second end of the secondary winding,

wherein the cathode of the first diode is coupled with the cathode of the second diode to form a positive terminal of an output voltage and wherein a negative terminal of the outout voltage is coupled to a center-tap of the secondary winding, and

wherein the capacitor has a capacitance which causes a resonant frequency of at least ten times a switching frequency of the set of switches.

5,663,874

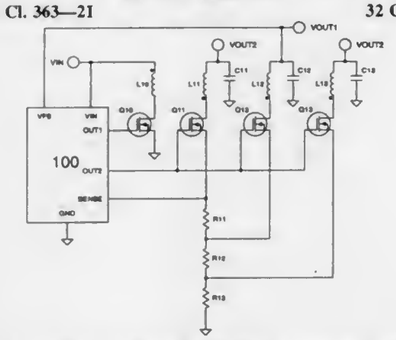
MULTIPLE OUTPUT FLYBACK DC-TO-DC CONVERTER WITH SYNCHRONOUS RECTIFICATION AND CONSTANT ON-TIME CURRENT MODE CONTROL

Urs Harald Mader; Daryl Jay Sugasawara, both of San Jose, and Joseph Brian Vanden Wymelenberg, Mountain View, all of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Sep. 19, 1995, Ser. No. 530,081

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 32 Claims



1. A DC-to-DC converter comprising a converter controller wherein the converter controller comprises:

a. a circuit for forming a difference signal wherein the difference signal is proportional to a difference between a first reference voltage and a voltage representative of a first converter output voltage;

b. a first comparator for forming a first control signal coupled to compare a voltage representative of the difference signal to a voltage representative of a first secondary current wherein the first secondary current passes through a first secondary winding and further wherein the first secondary winding is inductively coupled to a primary winding for forming the first converter output voltage by the first secondary current charging a first output capacitor and wherein the first secondary current is rectified by a first rectifying element;

c. a constant on-time, minimum off-time oscillator for controlling means for controlling a current through the primary winding wherein the constant on-time, minimum off-time oscillator is coupled to be controlled by the first control signal;

d. a circuit for forming a second converter output voltage comprising a second secondary winding inductively coupled to the primary winding wherein the second converter output voltage is formed by a second secondary current passing through the second secondary winding charging a second output capacitor and wherein the second secondary current is rectified by a second rectifying element; and

e. a synchronous rectifier controller comprising a second comparator for forming a second control signal coupled to compare the voltage representative of the first secondary current to a second reference voltage and a gate driver for forming a drive signal coupled to receive the second control signal wherein the drive signal is coupled to control the first rectifying element and the second rectifying element.

5,663,875

VOLTAGE CONVERTER FOR THE DISCHARGE LAMP OF A MOTOR VEHICLE HEADLIGHT, A POWER SUPPLY CIRCUIT, AND A HEADLIGHT INCLUDING THE CIRCUIT

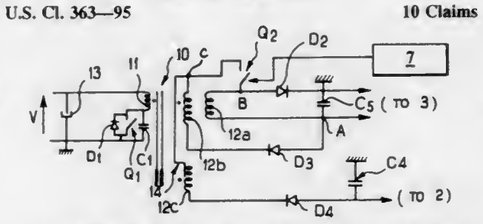
Bruno Cassese, Creteil; Patrick Wacheux, Villejuif; Gilles Paul, Fontenay-aux-Roses; Eric Herzberger, Gagny, and Jean-Marc Nicolai, Courbevoie, all of France, assignors to Valeo Electronique, Creteil, France

Filed Mar. 28, 1996, Ser. No. 623,402

Claims priority, application France, Mar. 29, 1995, 95 03719

Int. Cl.[6] H02M *7/44*

U.S. Cl. 363—95 10 Claims



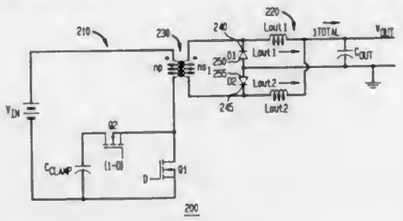
1. A voltage converter comprising a primary circuit fed with a DC voltage such as the battery voltage of a vehicle, and a secondary circuit which is coupled by mutual induction with the primary circuit and which delivers an output voltage for powering a vehicle headlight discharge lamp, wherein its secondary circuit has two branches connected in parallel which deliver between their common ends an output voltage for powering a discharge lamp of a motor vehicle headlight, each of said branches being coupled by mutual induction with the primary circuit, said secondary circuit having two diodes mounted so as to prevent either of the branches discharging into the other, the transformation ratio by mutual induction with the primary circuit for one of the two branches being greater than the transformation ratio for the other, the branch having the greater transformation ratio including a switch which is controlled by control electronics so as to be on so long as the lamp voltage is greater than a given threshold voltage and off when said voltage becomes less than said threshold.

5,663,876

CIRCUIT AND METHOD FOR ACHIEVING ZERO RIPPLE CURRENT IN THE OUTPUT OF A CONVERTER

Stephen F. Newton, Forney, and Allen Frank Rozman, Richardson, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 25, 1995, Ser. No. 533,222
Int. Cl.[6] H02M 7/06; 1/14
U.S. Cl. 363—126 20 Claims



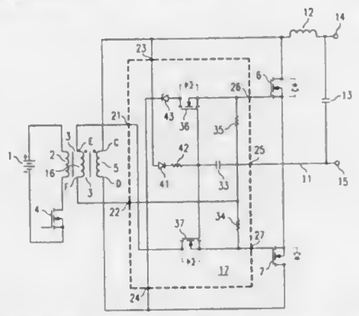
1. A power converter, comprising:
a transformer for receiving bipolar electrical input power from a power source, said power substantially free of dead time; and
a hybridge rectifier coupled to said transformer and including first and second output inductors of independently selectable, differing inductance, said hybridge rectifier receiving said input power from said transformer and rectifying said input power to produce an output power substantially free of ripple current at a predetermined duty cycle operating point of said converter, said first and second output inductors being of independently selectable, differing inductance thereby to allow said predetermined duty cycle operating point to be adjustable.

5,663,877

SYNCHRONOUS RECTIFIER THAT IS IMPERVIOUS TO REVERSE FEED

René Dittli, Duernten, and Philip Allington, Uster, both of Switzerland, assignors to Melcher, AG, Uster, Switzerland

PCT No. PCT/CH93/00224, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO95/02917, PCT Pub. Date Jan. 26, 1995
PCT Filed Sep. 14, 1993, Ser. No. 351,286
Int. Cl.[6] H02M 7/217
U.S. Cl. 363—127 3 Claims



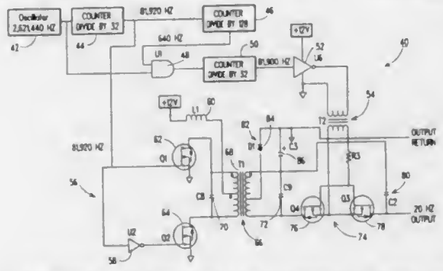
1. Synchronous rectifier, comprising a transformer with a primary winding which is supplied on an alternating basis with current from a direct-current source by means of a switch that is controlled by an oscillator, the transformer having a first secondary winding with first and second ends, further comprising a first MOSFET and a second MOSFET which are connected into the circuit on an alternating basis in time with the oscillator, the first MOSFET functioning as a rectifier diode and the second MOSFET functioning as a recovery diode, a drain electrode of the first MOSFET being joined with the first end of the first secondary winding and with a first output of the synchronous rectifier by means of a storage choke, a drain electrode of the second MOSFET supplying current to the second end of the first secondary winding, the source electrodes of first and second MOSFETs being joined by a line with a second output of the synchronous rectifier, and the first and second outputs being joined by means of a storage and smoothing capacitor, the synchronous rectifier further comprising:
the transformer having a second secondary winding with first and second ends, the first end of the second secondary winding having the same polarity the as first end of the first secondary winding;
a control device a first connection of the control device being connected with the first end of the second secondary winding, a second connection of the control device being connected with the second end of the second secondary winding, a third connection of the control device being connected with the first end of the first secondary winding, a fourth connection of the control device being connected with the second end of the first secondary winding, a fifth connection of the control device being connected to the line, a sixth connection of the control device being connected to a gate electrode of the first MOSFET, and a seventh connection of the control device being connected to a gate electrode of the second MOSFET,
the control device contains means for the determination of whether a voltage is being induced through the first and second secondary windings to determine whether the synchronous rectifier is working, and means for blocking the first and second MOSFETs upon determining that the synchronous rectifier is not working, whereupon the first and second MOSFETs will continue to carry out their diode function by means of first and second substrate diodes.

5,663,878

APPARATUS AND METHOD FOR GENERATING A LOW FREQUENCY AC SIGNAL

Jimmy Aubrey Walker, San Diego, Calif., assignor to Unitrode Corporation, Merrimack, N.H.

Filed Mar. 21, 1996, Ser. No. 619,998
Int. Cl.[6] H02M 5/22
U.S. Cl. 363—159 12 Claims



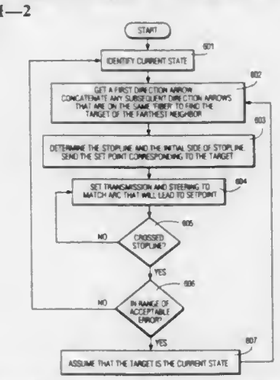
1. An apparatus for generating a low frequency AC signal, said apparatus comprising:
means for generating a first sinusoidal signal oscillating at a first frequency;
means for sampling said first sinusoidal signal at a second frequency; and
means for converting said sampled signal into a second sinusoidal signal oscillating at a third frequency, said third frequency being the difference between said first frequency and said second frequency.

5,663,879

METHOD AND APPARATUS FOR SMOOTH CONTROL OF A VEHICLE WITH AUTOMATIC RECOVERY FOR INTERFERENCE

Karen Irene Trovato, Putnam Valley, N.Y., and Leendert Dorst, Abcoude, Netherlands, assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 879,702, May 5, 1992, abandoned, which is a continuation of Ser. No. 646,516, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 290,130, Dec. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 123,502, Nov. 20, 1987, abandoned, and a continuation-in-part of Ser. No. 166,599, Mar. 9, 1988, Pat. No. 4,949,277. This application Oct. 26, 1992, Ser. No. 966,221
Int. Cl.[6] G06G 7/78; G06F 17/00
U.S. Cl. 701—2 15 Claims



1. A method of controlling a vehicle comprising the steps of
starting from a stored configuration space representation of an environment of the vehicle, which stored configuration space representation includes a plurality of stored direction arrows defining paths to a goal, which direction arrows are selected from a neighborhood of direction arrows in which some arrows of the neighborhood are of like-kind with each other and some arrows of the neighborhood are of different kind;
concatenating a plurality of like-kind direction arrows in the configuration space to specify a single motion, which is longer than individual motions specified by any of the concatenated like-kind direction arrows, to pose corresponding to a target setpoint; and
controlling the vehicle to reach the pose corresponding to the target setpoint, without separately specifying the individual motions.

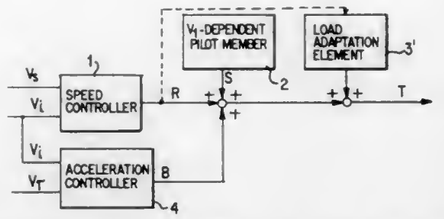
5,663,880

CRUISE CONTROL ROAD SPEED CONTROL DEVICE WITH MEANS FOR INFLUENCING FLUCTUATIONS IN CONTROL

Joerg Saur, Eislingen, and Thomas Linden, Stuttgart, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 5, 1995, Ser. No. 567,769
Claims priority, application Germany, Dec. 5, 1994, 44 43 219.4
Int. Cl.[6] B60K 31/00
U.S. Cl. 701—93 14 Claims

1. A cruise control road speed control device for a motor vehicle, comprising:
a speed controller having a speed controller output signal (R);
a load adaptation element located outside of, and coupled to, said speed controller, said load adaptation element influencing a cruise control output signal (T) in an initial time period of a speed control phase;
wherein at an activation time (t_0) of the speed control phase, said load adaptation element generates an initial engine load adaptation signal (L_0) such that said cruise control output signal (T) based on the initial load adaptation signal (L_0), takes over a driving force control signal (G) from a current position of an associated driving-force-determining positioning element at this point in time; and
wherein said initial engine load adaptation signal (L_0) up to an end of the initial period of time of the speed control phase, drops to zero based on a linkage to the speed controller output signal (R).

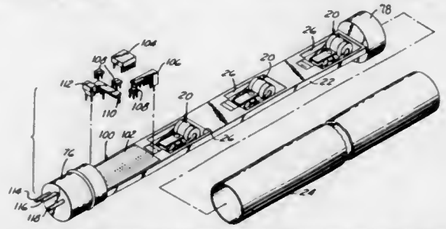


5,663,881

ELECTRONIC CALIBRATED FUEL RAIL

Charles R. Cook, Jr., Rochester Hills, Mich., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Aug. 6, 1991, Ser. No. 740,785
Int. Cl.[6] G06G 7/70; F02D 41/00
U.S. Cl. 701—104 5 Claims



1. A fuel rail assembly for an internal combustion engine, said fuel rail assembly comprising self-contained electronics including a microprocessor which receives input signals for said fuel rail assembly in serial data form and which acts upon said input signals to apply thereto correction factors previously programmed into said self-contained electronics to thereby create corrected signals that are applied to fuel injectors of said fuel rail assembly to cause said fuel injectors of said fuel rail assembly to be turned on and off by said corrected signals with greater accuracy than would be the case without the use of said correction factors, said fuel rail assembly having a pair of terminals via which said self-contained electronics receives electric DC power for itself and said fuel injectors, and a third terminal via which said input signals are received by said self-contained electronics, said self-contained electronics including injector drivers that drive said fuel injectors in accordance with said corrected signals from said microprocessor.

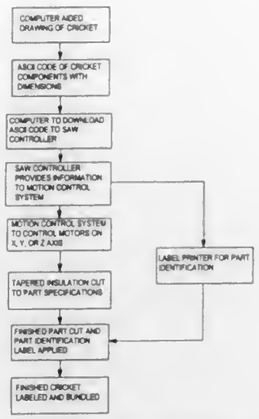
5,663,882

METHOD AND APPARATUS FOR FABRICATING ROOFING CRICKETS

Bruce F. Douglas, Kennebunk, Me., assignor to NRG Barriers, Inc., Portland, Me.

Filed Nov. 3, 1995, Ser. No. 552,410
Int. Cl.[6] G05B 19/4097
U.S. Cl. 364—468.03 14 Claims

1. A method of making a cricket, comprising the steps of:
a) generating respective data on a plurality of cricket component shapes, each cricket component shape having specified



dimensions and corresponding to a respective cricket component, said plurality of cricket component shapes forming a shape corresponding to said cricket;

b) providing a cricket sheet material having a tapered form of predetermined slope;

c) providing a cutting machine comprising a saw blade, said cutting machine being controllable to cut along a selected path in an X-Y cutting plane of one side of said cricket sheet material;

d) controlling an angular position of said saw blade about a Z axis perpendicular to the X-Y plane to cut said cricket sheet material along the selected path to produce a first cricket component based on a generated cricket component shape; and

e) continuing said controlled cutting of one of said cricket sheet material or another cricket sheet material according to step d) to produce said plurality of cricket components.

5,663,883

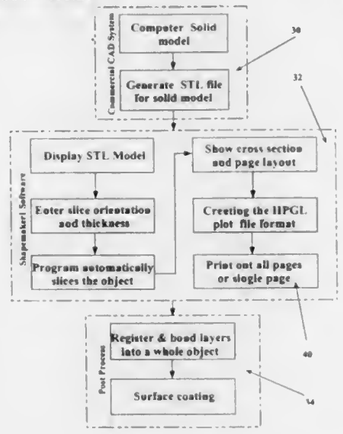
RAPID PROTOTYPING METHOD

Charles L. Thomas, and Zetian Wang, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Aug. 21, 1995, Ser. No. 517,092

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.26 **14 Claims**



1. In a rapid prototype system wherein an object is decomposed into a series of layers, and a physical model of that object is then constructed by creating a first such layer and thereafter sequentially creating additional such layers and bonding each such additional layer to a previous layer, the improvement which comprises:

electronically decomposing said object into thick layers selected such that said thick layers may be positioned across an area corresponding to a sheet of construction material;

electronically slicing said thick layers into cross sections the thickness of said sheet of construction material;

plotting physical slices corresponding to said cross sections;

forming said physical slices from said construction material;

stacking said physical slices to construct said layers; and

stacking said layers to recompose a physical model of said object.

5,663,884

MULTIPROCESSING APPARATUS

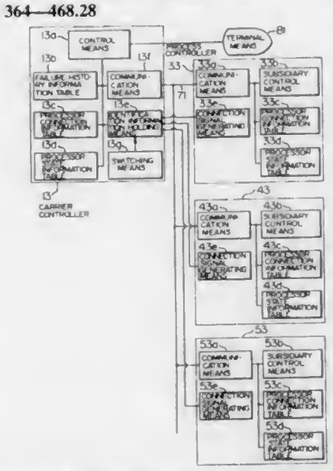
Kouji Nishihata, Tokuyama; Naoyuki Tamura, Kudamatsu; Shigekazu Kato, Kudamatsu; Atsushi Itou, Kudamatsu, and Tsunehiko Tsubone, Hikari, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 941,905, Sep. 8, 1992, Pat. No. 5,448,470. This application Jun. 5, 1995, Ser. No. 461,523

Claims priority, application Japan, Sep. 5, 1991, 3-252892

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—468.28 **6 Claims**



1. A method of controlling a wafer vacuum processing apparatus, said method comprising the steps of recognizing at least the following states:

(a) a state in which a plurality of process processors are connected to a static carrier processor, and

(b) a normal state of said plural processors; and

after the recognition, the following steps are executed:

(c) fetching a wafer from a cassette,

(d) transporting said wafer fetched from said cassette to the process chamber of a voluntary one of said process processors through said static carrier processor,

(e) processing said wafer in said process chamber,

(f) transporting said processed Wafer to said static carrier processor from said process chamber,

(g) transporting the processed wafer from the carrier processor to said cassette or another cassette, and

(h) receiving said processed wafer in said cassette or said another cassette.

5,663,885

PROCEDURE AND DEVICE FOR PROCESSING CUTTING MATERIAL

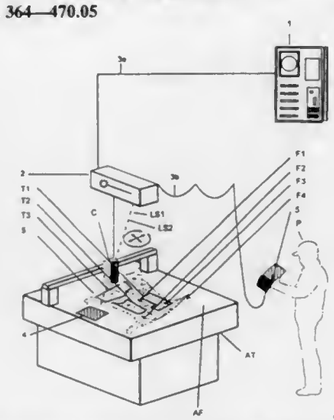
Anton Stahl, Am Point 62, D 83075 Bad Feilnbach Au (Bavaria), Germany

Filed Apr. 24, 1995, Ser. No. 427,403

Claims priority, application Germany, Apr. 23, 1994, 44 14 212.9

Int. Cl.[6] G06F *19/00;17/00*

U.S. Cl. 364—470.05 **11 Claims**



1. Procedure for optimizing the processing of a cutting material (6), specifically for interlocking cutting patterns (T1, T2) before an automated cutting process by a cutting unit (C), by taking into account any defective spots (F1, F2) on the surface of said cutting material, said cutting patterns after having been set up in a computer system being stored as contours in a computer (1) from where the cutting patterns can be called and be positioned on said cutting material by means of a control unit (5) to a final position which is transmittable to said cutting unit (C), characterized by the following procedure steps:

i. selection of cutting patterns from the memory of said computer via said control unit by an operator positioned by said cutting material,

ii. direct projection of the contours of the selected cutting patterns by means of at least one laser on at least one optional spot and in any size on said cutting material,

iii. selection of specific contours from said selected cutting patterns and interlocking said contours on said cutting material by said operator and, when the selection and interlocking of said contours on said cutting material has been optimized, coordination of a cutting order for said cutting unit,

iv. triggering said cutting process by said control by the operator, all processing steps on said cutting material being carried out directly by said operator and said cutting material not being moved until said cutting process is finished.

5,663,886

MACHINE TOOL GRAPHICAL DISPLAY DEVICE FOR DISPLAYING MACHINE LOAD RELATIVE TO TOOL POSITION

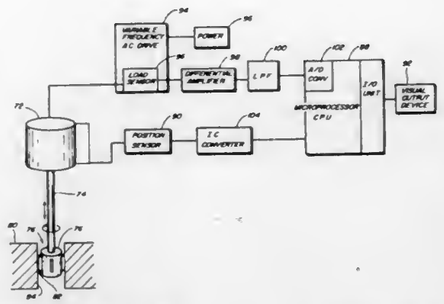
Keith W. Lueck, Fenton, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Jun. 2, 1995, Ser. No. 460,674

Int. Cl.[6] G06F *19/00;* **G06G** *7/64;7/66*

U.S. Cl. 364—474.22 **44 Claims**

1. A display device configured for a machine having a tool which removes material from a work surface having an axial length, where an axial position of the tool relative to the work surface varies, the machine including a load sensor for sensing a load on the machine as material is removed from the work surface and a position sensor for sensing the axial position of the tool, said display device comprising:



visual output device, and

a display driver connected to said visual output device so that said visual output device provides a continuous display of the load as a function of the axial position.

5,663,887

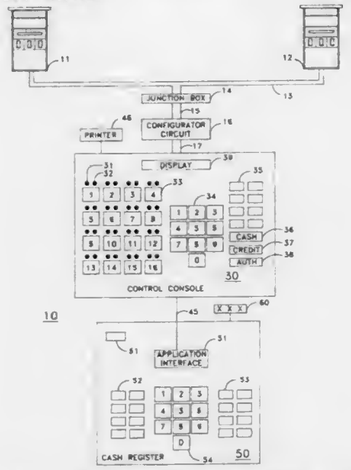
DISPENSER CONTROL CONSOLE INTERFACED TO A REGISTER

Walter E. Warn, Knightdale, and Fred K. Carr, Chapel Hill, both of N.C., assignors to Progressive International Electronics, Raleigh, N.C.

Filed Jan. 11, 1996, Ser. No. 583,895

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—479.02 **14 Claims**



1. A fuel dispenser-cash register control system for controlling the dispensing process in at least one fuel dispenser, for storing in memory information on the amount of fuel dispensed from said dispenser, and for transferring information on each dispensing transaction to a designated department in a cash register when the sale is paid out on the console, comprising:

(a) a control console means having a first programmable micro processor coupled with a first read-only-memory device and a first read-and-write-memory device, and a series of console input key switches, for;

(1) controlling said dispenser from said console input key switches causing said first microprocessor to retrieve dispenser control commands from said first read-only-memory device in a predetermined sequence and output said commands to said fuel dispenser causing said dispenser to dispense fuel;

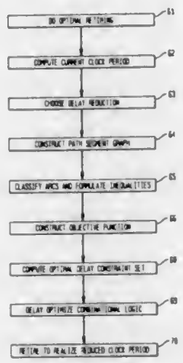
(2) receiving dispenser responses from said dispenser during the fueling process and storing said responses in said first read-and-write-memory device;
(3) generating and transferring to said cash register a character string containing information on the dispensing transaction when the transaction is paid out on said console means;
(b) an application interface means between said first microprocessor in said control console means and a second microprocessor coupled with a second read-only-memory device and a second read-and-write memory device in said cash register for,
(1) generating and sending by said first microprocessor in said control console a character string which mimics a keyboard entry in said cash register, and
(2) receiving and processing said character string by said second microprocessor in said cash register causing the sale to be posted in a department;
(c) a configuration means having electrical connection to said control console means and said fuel dispenser for
(1) configuring said dispenser control commands into a communication protocol readable by said fuel dispenser, and
(2) configuring said dispenser responses into a communication protocol readable by said control console means.

5,663,888

REDESIGN OF SEQUENTIAL CIRCUITS TO REDUCE CLOCK PERIOD

Srimat T. Chakradhar, No. Brunswick, N.J., assignor to NEC USA, Inc., Princeton, N.J.

Continuation of Ser. No. 38,472, Mar. 30, 1993, abandoned. This application Apr. 29, 1996, Ser. No. 641,083
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **6 Claims**



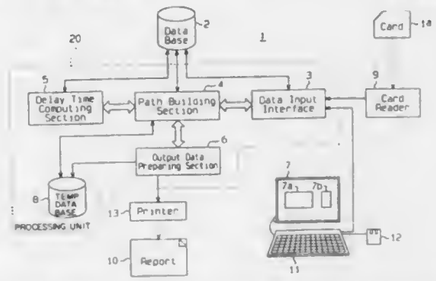
1. A method for redesigning a sequential circuit having one or more combinational circuits, wherein said combinational circuits include one or more logic gates and are separated by flip-flops, said redesign process utilizing a combination of resynthesis and retiming such that a clock period at which the circuit operates is minimized, said redesign method comprising the steps of:
constructing, during a logic-synthesis phase of circuit design, a path segment graph of the sequential circuit that includes arcs and nodes such that one of the nodes represents all the primary inputs and primary outputs and the others represent latches in the sequential circuit and the arcs represent combinational path segments separated by the flip-flops;
classifying arcs representative of the combinational path segments in the circuit whose delays are to be reduced as long arcs and arcs representative of combinational path segments in the circuit whose delays are not to be reduced as short arcs;
forming sets of path inequalities appropriate to long and short arcs and from said sets forming an objective function;
deriving an optimal set of delay constraints from said objective function;
resynthesizing the circuit to meet the optimal set of delay constraints by changing a type or quantity or interconnection of logic gates; and
retiming the resynthesized circuit to reduce the delay of the selected combinational path segments of the sequential circuit by repositioning one or more of the flip-flops contained within the circuit, such that the clock period needed for operating the sequential circuit is reduced.

5,663,889

APPARATUS FOR COMPUTING DELAY TIME OF INTEGRATED CIRCUIT

Makoto Wakita, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

Filed Dec. 7, 1994, Ser. No. 351,646
Claims priority, application Japan, Dec. 28, 1993, 5-336111
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **8 Claims**



1. An apparatus for computing delay times of integrated circuits, comprising:
a data base storing data on various cells to be used in designing integrated circuits;
input unit operable by a designer to redesign a circuit under design; and
a processing unit coupled to said data base and said input means, said processing unit including:
a data input interface, coupled to said input unit, controlling the transfer of input data from said input unit,
a signal path building section, coupled to said data input interface, receiving circuit design data input by the designer on a redesigned circuit, and reconstructing a new signal propagation path coupling a cell affected by the redesign of circuit by referring to the data input by the designer, and
a signal delay time computing section, coupled to said signal path building section, computing a signal delay time for the cells coupled along the new signal propagation path while reconstructing the new signal propagation path.

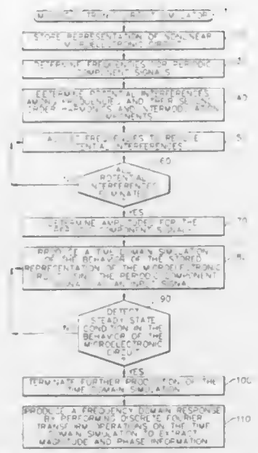
5,663,890

METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR DETERMINING A FREQUENCY DOMAIN RESPONSE OF A NONLINEAR MICROELECTRONIC CIRCUIT

Resve A. Saleh, San Jose, Calif.; Jeffrey G. Mueller, Dallas, and Brian A. A. Antao, Austin, both of Tex., assignors to The Board of Trustees University of Illinois, Urbana, Ill.

Filed Apr. 1, 1996, Ser. No. 625,143
Int. Cl.[6] G06F *9/06*
U.S. Cl. 364—490 **20 Claims**

1. A program storage readable by a computer tangibly embodying a program of instructions executable by the computer to perform method steps for simulating behavior of a nonlinear microelectronic circuit representation, said method steps comprising:
producing a time domain simulation of the behavior of the nonlinear microelectronic circuit representation over a time interval using as an input signal thereto a plurality of periodic signals which overlap in time during at least a portion of the time interval and have respective noninterfering frequencies that are preselected to eliminate second order interference components from the behavior of the nonlinear microelectronic circuit representation during the time interval so that the time interval can be traversed only once; and
producing a frequency domain simulation of the nonlinear microelectronic circuit representation from the time domain simulation.

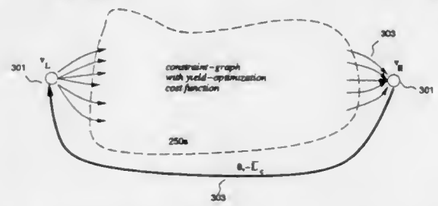


5,663,891

OPTIMIZATION OF MULTIPLE PERFORMANCE CRITERIA OF INTEGRATED CIRCUITS BY EXPANDING A CONSTRAINT GRAPH WITH SUBGRAPHS DERIVED FROM MULTIPLE PWL CONVEX COST FUNCTIONS

Cyrus Bamji, Fremont, and Enrico Malavasi, Santa Clara, both of Calif., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Apr. 3, 1996, Ser. No. 627,080
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **15 Claims**



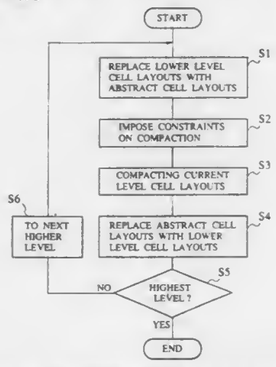
14. In a computer aided design apparatus for defining a system, the apparatus including a database storing a structural description of the system, the structural description including a plurality of objects, each object having a binary relationship with at least one other object, each binary relationship having a cost that is determined by a convex cost function, a computer implemented method for optimizing the total costs of all binary relationships, comprising:
approximating each convex cost function of the binary relationships with a piecewise linear cost function;
transforming each piecewise linear cost function into a plurality of linear cost functions; and,
solving the plurality of linear cost functions.

5,663,892

METHOD OF COMPACTING LAYOUTS OF SEMICONDUCTOR INTEGRATED CIRCUIT DESIGNED IN A HIERARCHY

Sachio Hayashi, Saitama-ken, and Tyusei Ogawa, Iwate-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1995, Ser. No. 412,503
Claims priority, application Japan, Mar. 29, 1994, 6-058469
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **4 Claims**



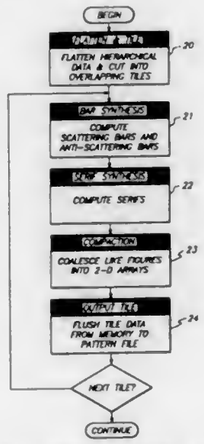
1. A method for performing compaction of a layout of a semiconductor integrated circuit designed in a hierarchy, said layout including cell layouts, each cell layout being designed in one of a plurality of hierarchical levels, said method being capable of performing compaction of said layout of the semiconductor integrated circuit by repeating a single level compaction process for compacting cell layouts in one of said hierarchical levels from a lowest level to a highest level of said hierarchical levels, said single level compaction process comprising:
a first replacement step of replacing lower level cell layouts having been compacted in said single level compaction process in a hierarchical level one level lower than that of a current level cell layout with abstract cell layouts, said abstract cell layouts having the same profile and the same positions of terminals to be connected to said current level cell layout as said lower level cell layouts have in advance of compaction;
a compaction constraint imposition step for imposing compaction constraints on a compactor, said compaction constraints including the following constraints
the relocations of the terminals of said current level cell layout after compaction from the original positions before compaction are possible within prescribed ranges,
the positions of the terminals and the dimensions of said abstract cell layouts are equal to those of said lower level cell layouts after compaction; and
interconnection between the terminals of said abstract cell layouts and said current level cell layout is maintained after compaction;
a compaction step of compacting said current level cell layout using said compactor under said compaction constraints; and
a second replacement step of replacing said abstract cell layouts with said lower level cell layouts having been compacted.

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5,663,893
METHOD FOR GENERATING PROXIMITY CORRECTION FEATURES FOR A LITHOGRAPHIC MASK PATTERN

Kurt E. Wampler, Sunnyvale, and Thomas L. Laidig, Richmond, both of Calif., assignors to MicroUnity Systems Engineering, Inc., Sunnyvale, Calif.

Filed May 3, 1995, Ser. No. 433,730
Int. Cl.[6] G03F *7/00;* **H01J** *37/302*
U.S. Cl. 364—491 **15 Claims**



1. In a lithographic pattern generation system where a mask pattern having a plurality of features is represented by pattern data wherein each of said plurality of features is enumerated in said pattern data, a method for synthesizing at least one type of correction feature for each of said plurality of features comprising the steps of:

dividing said pattern data into a plurality of data sets wherein each data set contains data corresponding to an overlapping section of said mask pattern;

processing said each data set through at least one correction feature synthesis phase wherein each synthesis phase corresponds to one of said at least one type of correction feature and wherein said each synthesis phase formats said each data set into a data representation that provides information needed to synthesize said synthesis phase's corresponding one type of correction feature, one of said plurality of data sets being processed through said at least one synthesis phase before a next data set of said plurality of data sets is processed through said at least one synthesis phase.

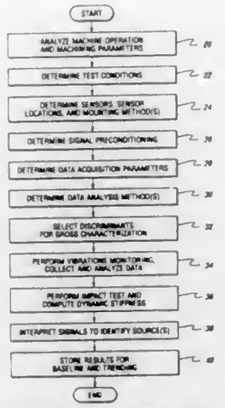
5,663,894
SYSTEM AND METHOD FOR MACHINING PROCESS CHARACTERIZATION USING MECHANICAL SIGNATURE ANALYSIS

Brij Bahadur Setb, Canton, and Youssef Ali Hamidieh, Bloomfield Hills, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Sep. 6, 1995, Ser. No. 524,699
Int. Cl.[6] G05D *19/00*
U.S. Cl. 364—508 **17 Claims**

1. A method for characterizing a machine tool system including a machine tool having a plurality of cooperating elements defining a machine tool structure, tooling connected to the machine tool structure for performing a machining operation on a workpiece, and fixturing connected to the machine tool structure for securing the workpiece during machining, the method comprising:

mounting at least one sensor on the machine tool for monitoring vibrations during operation of the machine for a plurality of operating conditions including machining of the workpiece



and generating a signal indicative thereof, wherein positioning of the at least one sensor is determined based on the machining operation;

storing a representation of the signal generated during operation of the machine for the plurality of operating conditions;

processing the stored representation of the signal in both time and frequency domains to select at least one discriminant characterizing the machine tool system during operation of the machine for the plurality of operating conditions; and

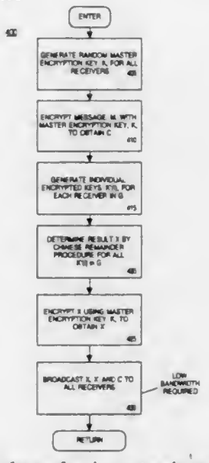
storing the at least one discriminant in a database for future comparison of the machine tool system.

5,663,895
Patent Not Issued For This Number

5,663,896
BROADCAST KEY DISTRIBUTION APPARATUS AND METHOD USING CHINESE REMAINDER

David W. Aucsmith, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 22, 1994, Ser. No. 310,845
Int. Cl.[6] G09C *1/00*
U.S. Cl. 395—187.01 **38 Claims**



1. An apparatus for performing network communication, said apparatus comprising:

a plurality of receiver units individually having a prime value and a private key;

transmitter processing logic selecting a subset of said plurality of receiver units and individually encrypting a master key, K, with each private key of said subset of receiver units;

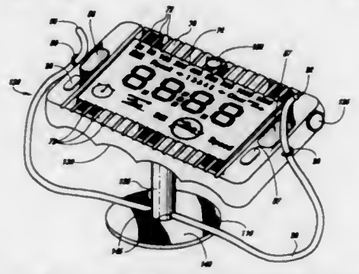
said transmitter processing logic further solving a set of relationships that contain values associated with said subset of receiver units wherein a single value, X, solves each relationship, said set of relationships including an individual prime value, an individual encrypted master key, and said single value X for each receiver unit of said subset; and

broadcast processing logic coupled to communicate with said transmitter processing logic for transmitting said single value, X, to each receiver unit of said plurality of receiver units.

5,663,897
METHOD AND APPARATUS FOR ANALYZING A SWIMMER'S SWIM STROKE

William P. Geiser, Dallas, Tex., assignor to Strokz Digital Sports, Inc., Dallas, Tex.

Filed Jun. 8, 1995, Ser. No. 479,956
Int. Cl.[6] A63B *31/10*
U.S. Cl. 364—550 **14 Claims**



1. A device for analyzing a swimmer's swim stroke comprising:

an enclosure forming a substantially rectangular shaped housing with a top, a bottom and at least two ends;

first and second fasteners attached to said ends of said enclosure;

a stem extending from said bottom of said enclosure and connecting said enclosure to a base member, said base member having a retainer about its perimeter that secures a flexible membrane;

a printed circuit board within said enclosure and having an on-board microprocessor preprogrammed to determine a plurality of swim performance factors, a metallic contact and a timer;

display fixed to said top of said enclosure;

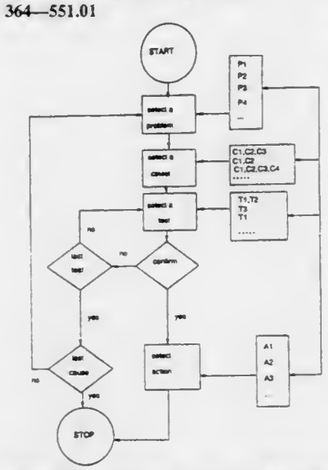
communications pathway coupling said microprocessor to said display;

a circuit lead within said stem and having a length that extends substantially from said flexible membrane to said printed circuit board and spatially arranged to move inside the stem when water force is exerted on said flexible membrane so as to touch said metallic contact and cause said microprocessor to perform a plurality of swim analysis calculations.

5,663,898
TOOLKIT AND METHOD FOR DIAGNOSING A PROBLEM OF BAD PERFORMANCE OF A LITHOGRAPHIC PRINTING PLATE OBTAINED ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Jan Claes, Mortsel; Paul Coppens, Turnhout, and Dave Van den Bergh, Hove, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Apr. 4, 1996, Ser. No. 627,286
Claims priority, application European Pat. Off., Apr. 7, 1995, 95200883
Int. Cl.[6] G03C *5/26*
U.S. Cl. 364—551.01 **6 Claims**



1. A method for diagnosing the cause of bad performance of a printing plate obtained according to the silver salt diffusion transfer process, said method involving the use of:

(i) a problem table containing a description of problems that may be observed with said printing plate;

(ii) a cause table relating one or more possible causes to one or more problems contained in said problem table;

(iii) a test table relating one or more tests to a cause so as to verify whether said cause causes said problem;

(iv) a toolkit comprising one or more means for carrying out tests contained in said test table;

(v) an action table relating a cause to one or more actions to be taken so as to cure said cause; and said method comprising the steps of:

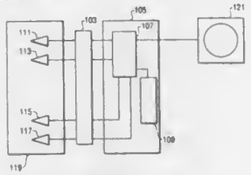
(a) looking up a problem from said problem table fitting best to a problem experienced with said printing plate;
(b) looking up a possible cause for said problem from said cause table;
(c) looking up one or more tests from said test table relating said cause to one or more tests to verify whether said cause, causes said problem;
(d) performing said one or more tests optionally using means contained in said toolkit for carrying out said one or more tests;
(e) deciding whether said test confirms said cause as a cause for said problem or not by comparing obtained test results with desired results for said test;
(f) if said test confirms said cause as a cause for said problem, looking up necessary actions from said action table to cure said cause;
(g) if said test does not confirm said cause as a cause for said problem, looking up a next possible cause from said cause table and repeating steps (c) to (e) until a test confirms a cause for said problem or until all possible causes for said problem have been verified.

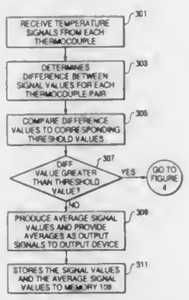
5,663,899

REDUNDANT THERMOCOUPLE

John G. Zvonar, and James Taylor, both of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Jun. 5, 1995, Ser. No. 462,958
Int. Cl.[6] G01K *7/14*
U.S. Cl. 364—557 **17 Claims**





1. An interface between an output device and at least one thermocouple pair, the interface comprising a microprocessor receiving input signals from the thermocouple pair and providing an output signal to the output device in response to the input signals,

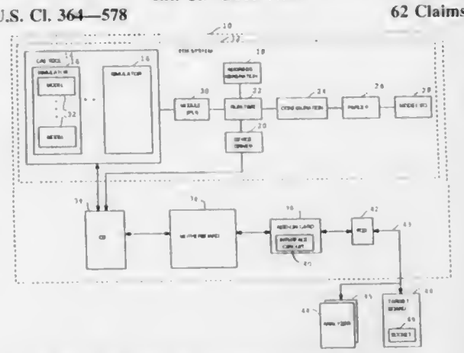
further comprising a memory storing a threshold value for the thermocouple pair, wherein the microprocessor receives a first input signal from a first thermocouple of the thermocouple pair, a second input signal from a second thermocouple of the thermocouple pair, and the threshold value from the memory, the microprocessor compares a difference between the first input signal and the second input signal to the threshold value, and the microprocessor transmits an average of the first input signal and the second input signal as the output signal to the output device if the difference between the first input signal and the second input signal is less than the threshold value.

5,663,900

ELECTRONIC SIMULATION AND EMULATION SYSTEM

Narpat Bhandari, Los Gatos, and Daniel R. Watkins, Saratoga, both of Calif., assignors to Vasona Systems, Inc., Los Gatos, Calif.

Continuation-in-part of Ser. No. 119,737, Sep. 10, 1993, abandoned. This application May 9, 1995, Ser. No. 437,957
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 **62 Claims**



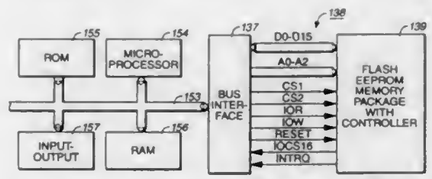
1. An electronic verification system comprising:
an external system;
a bus circuit having a first port coupled to said external system for transferring data between said bus circuit and said external system and a second port; and
a first simulation module coupled to said second port of said bus circuit for simulating and verifying a prototype definition of said external system.

5,663,901

COMPUTER MEMORY CARDS USING FLASH EEPROM INTEGRATED CIRCUIT CHIPS AND MEMORY-CONTROLLER SYSTEMS

Robert F. Wallace, Sunnyvale; Robert D. Norman, San Jose, and Eliyahou Harari, Los Gatos, all of Calif., assignors to Sandisk Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 736,732, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 684,034, Apr. 11, 1991, abandoned. This application Sep. 12, 1995, Ser. No. 527,254
Int. Cl.[6] G11C *16/06*; **G06F** *13/00*
U.S. Cl. 365—52 **21 Claims**



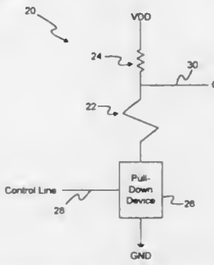
1. A computer non-volatile memory system adapted for use with a host computer system that includes a processor, random access volatile memory and input-output circuits operably connected together through a computer system bus, comprising:
an assembly including a first connector for receiving a memory card and a second connector for removably establishing an electrical connection with the computer system bus, said assembly including a memory controller connectable through the second connector to the computer system bus for (1) receiving address, data and command signals from said bus according to a disk drive protocol and (2) responsively providing data and status signals to said bus according to said disk drive protocol,
a plurality of said memory cards which individually include a third connector that mates with the first connector for providing a removable electrical connection therewith, said third connector having conductors connected to an integrated circuit array of floating gate memory cells organized in groups of cells that are individually addressable for simultaneous erasure, said memory cards being fully enclosed in a package having a width less than 5.5 centimeters, a length less than 9.0 centimeters, and a thickness less than 6.0 millimeters, with said third connector being positioned along one edge thereof,
said memory controller additionally being responsive to an address of one or more disk drive sectors on conductors of the second connector for accessing through said first and second connectors a corresponding one or more of said memory cell groups within one of the plurality of memory cards having its third connector mated with said first connector.

5,663,902

SYSTEM AND METHOD FOR DISABLING STATIC CURRENT PATHS IN FUSE LOGIC

Michael J. Bennett, Timnath, and Robert W. Proulx, Fort Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 18, 1996, Ser. No. 683,485
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—96 **20 Claims**



1. A programmable fuse circuit, comprising:
a first power supply and a second power supply with a voltage differential therebetween;
a load device connected to said first power supply and configured for dividing said voltage differential between said first and second power supplies in order to produce a logic output signal on an output line of said programmable fuse circuit;
a controllable switch connected to said second power supply, said controllable switch configured for selectively enabling and disabling a static current path through said programmable fuse circuit; and
a fuse device connected in series between said load device and said controllable switch, a state of said fuse device determining a logic level of said logic output signal of said programmable fuse circuit;
whereby said current path through said controllable switch can be selectively enabled and disabled so as to prevent static current flow in said programmable fuse circuit.

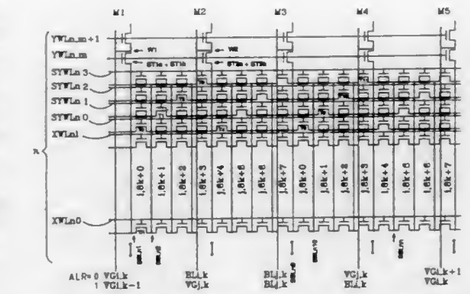
5,663,903

FLAT-CELL READ-ONLY MEMORY

Jeng-Jong Guo, Hsin-Chu, Taiwan, assignor to Utron Technology Inc., Hsin-Chu, Taiwan

Filed Jul. 28, 1995, Ser. No. 508,532
Int. Cl.[6] G11C *17/12*
U.S. Cl. 365—104 **4 Claims**

1. A semiconductor read-only memory comprising:
a plurality of sub-bit lines;



a plurality of groups of memory cells arranged in a matrix of MOSFETs with a common gate for each row connected to one of multiple word-lines,
in each one of said groups, said memory cells being electrically connected in parallel as a column between two adjacent said sub-bit lines;
main bit line for main bits, the number of which being less than one half of the number of said sub-bit lines with a ratio of 1:N, where N is a binary weighted integer larger than 1;
a group of selector pass transistor switches functioning as a decoder to select one of said sub-bit lines to be coupled to one of said main bit lines;
a first sub-decoder for i bit information, having first half i matrix MOSFETs and a second half i matrix MOSFETs; and
a second sub-decoder for j bit information having first half j matrix MOSFETs and a second half j matrix MOSFETs, wherein
said second half j matrix MOSFETs are arranged between said first half i matrix MOSFETs and said second half i matrix MOSFETs, and said first half j matrix MOSFETs are arranged between said second half j matrix MOSFETs and said second half i matrix MOSFETs, and
the source/drain of said first half i matrix MOSFETS and second j matrix MOSFETs is arranged in a first direction for main bit line signal to flow to a first virtual ground, and the source/drain of said first half j matrix MOSFETs and said second half i matrix MOSFETs is arrange for an adjacent main bit line signal to flow to a second virtual ground in a direction opposite to said first direction.

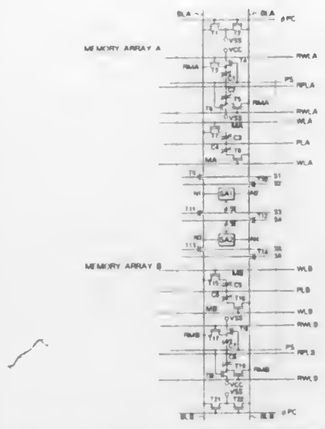
5,663,904

FERROELECTRIC MEMORY USING PAIR OF REFERENCE CELLS

Kenshiro Arase, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jun. 13, 1996, Ser. No. 661,782
Claims priority, applicatioo Japan, Jun. 20, 1995, 7-153554
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 **10 Claims**

1. A ferroelectric memory comprising:
a word line;
a read bit line;
a plate line;
a memory array including a matrix arrangement of memory cells with gate electrodes connected to the word line, one of source-drain electrodes connected to the read bit line, the other of source-drain electrodes connected to one of electrodes of a ferroelectric capacitor, and the other of electrodes of the ferroelectric capacitor connected to the plate line;
a first reference cell and a second reference cell corresponding to each of the read cells in a word line selected at the time of reading data, read out in comparison with each other, and storing data different in value from each other;



a first sense amplifier for comparing and amplifying a difference in potential between the read bit line and a first reference bit line to which the first reference cell is connected for each read bit line to which a read cell is connected; and

a second sense amplifier for comparing and amplifying a difference in potential between the read bit line and a second reference bit line to which the second reference cell is connected.

5,663,905

SEMICONDUCTOR MEMORY DEVICE COMPRISING TWO KINDS OF MEMORY CELLS OPERATING IN DIFFERENT ACCESS SPEEDS AND METHODS OF OPERATING AND MANUFACTURING THE SAME

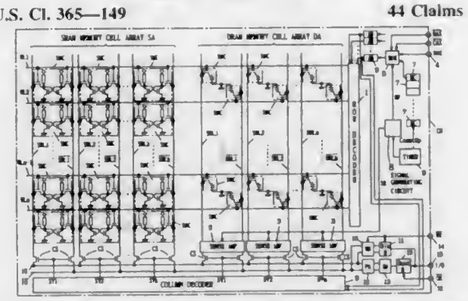
Ryuichi Matsuo; Tomohisa Wada; Kazutoshi Hirayama, and Shigeki Ohbayashi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 469,161

Claims priority, application Japan, Aug. 30, 1994, 6-205340; Oct. 31, 1994, 6-267752; Jan. 18, 1995, 7-006069

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 44 Claims



1. A semiconductor memory device having a plurality of word lines and capable of randomly accessing any of said plurality of word lines, comprising:

a first word line;

first and second bit line pairs arranged crossing said first word line;

a dynamic memory cell connected to said first word line and said first bit line pair; and

a static memory cell connected to said first word line and said second bit line pair.

5,663,906

SEMICONDUCTOR MEMORY DEVICE HAVING VOLATILE STORAGE UNIT AND NON-VOLATILE STORAGE UNIT

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Japan

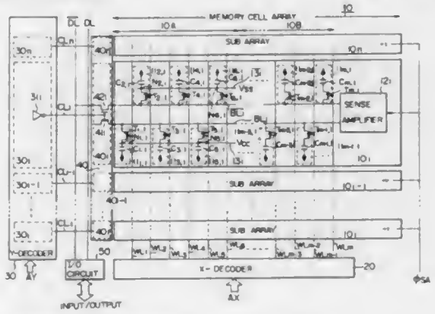
Division of Ser. No. 240,063, May 9, 1994, Pat. No. 5,526,302.

This application Jul. 28, 1995, Ser. No. 470,015

Claims priority, application Japan, May 13, 1993, 5-129814

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 19 Claims



1. A semiconductor memory device comprising:

a bit line group comprising a plurality of bit lines each selected based on a sequence of Y addresses;

a word line group comprising a plurality of word lines, selectively activated based on a sequence of X addresses;

a memory cell array having storage areas and comprising a plurality of memory cells each having a capacitor and a transistor, each transistor having a first electrode, a second electrode and a control electrode, the control electrode controlling a conducting state between the first and second electrodes, wherein the control electrodes of the memory cells are connected to the word lines, wherein the first electrodes of the memory cells are connected to the bit lines and wherein the second electrode of each memory cell is connected to the capacitor of the memory cell through a memory cell node of the memory cell; and

an electrical conductor having a predetermined potential level,

said storage areas being divided into a first storage area and a second storage area, the first storage area being defined based on a first memory cell group having predetermined memory cells of the plurality of memory cells, the second electrodes of the transistors of the predetermined memory cells being connected to the electrical conductor, and the second storage area being defined based on a second memory cell group including memory cells electrically disconnected from the electrical conductor, so that the second electrodes of the transistors of the predetermined memory cells are fixed at the predetermined potential level on the electrical conductor.

5,663,907

SWITCH DRIVER CIRCUIT FOR PROVIDING SMALL SECTOR SIZES FOR NEGATIVE GATE ERASE FLASH EEPROMS USING A STANDARD TWIN-WELL CMOS PROCESS

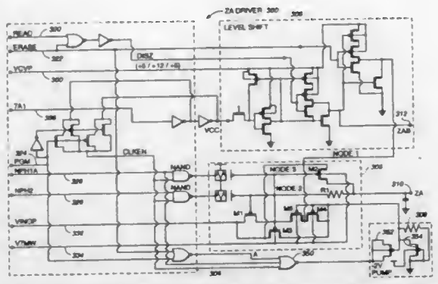
Jack E. Frayer, Boulder Creek; John D. Lattanzi, Palo Alto; Shouchang Tsao; Chan-Sui Pang, both of Sunnyvale, and Yueh Y. Ma, Los Altos Hills, all of Calif., assignors to Bright Microelectronics, Inc., Sunnyvale, Calif.

Filed Apr. 25, 1996, Ser. No. 639,296

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.18 9 Claims

1. A switch circuit which selectively provides a negative voltage, an intermediate voltage, or a positive voltage from a single central positive voltage supply and from a single central negative-voltage supply, comprising:



a first pump capacitor (C1) having a first terminal and a second terminal (Node 3), where the first terminal is connected to the output terminal of a first alternating signal source and where the second terminal is connected to a gate terminal of a first series pass PMOS transistor (M2);

where the first series pass transistor (M2) has a first terminal connected to a negative voltage supply terminal (V1NOP) and where the first series pass transistor (M2) has a second terminal connected to the switch circuit output terminal;

a second pump capacitor (C2) having a first terminal and a second terminal (Node 2), where the first terminal is connected to the output terminal of a second, oppositely-phased alternating signal source, where the second terminal of the second pump capacitor is connected to one terminal of a series resistor (R1), where a second terminal of the series resistor is connected to the switch output terminals and where the second terminal of the second pump capacitor is connected to a gate terminal of a second series pass PMOS transistor (M1);

where a first terminal of the second series pass transistor (M1) is connected to the negative voltage supply terminal (V1NOP) and where a second terminal of the second series pass transistor (M1) is connected to the second terminal of the first pump capacitor (C1) and the gate terminal of the first series pass PMOS transistor (M2);

wherein the combination of the first pump capacitor and the second pump capacitor acting in parallel makes nodes 2 and 3 drop approximately minus three volts from the negative voltage supply (V1NOP) and enable the first series pass transistor (M2) to pass voltage from the negative voltage supply (V1NOP) to the switch output terminal;

a positive voltage supply terminal (Node 1), where a first terminal of a third series pass PMOS transistor (M4) is connected to the positive voltage supply terminal and where a second terminal of the fourth series pass transistor is connected to the first terminal of the series resistor to provide a positive output voltage at the switch output terminal;

a logic decoder circuit receiving logic control signals and providing a clock enable circuit for gating the two clock signals having opposite phases to provide the first alternating signal and the second alternating signal to respective first and second pump capacitors (C1 and C2);

a level shifter circuit for shifting the voltage level of the positive voltage provided at the positive voltage supply terminal;

whereby a positive voltage, a negative voltage, and an intermediate voltage can be provided to the switch output terminal.

5,663,908

DATA INPUT/OUTPUT CIRCUIT FOR PERFORMING HIGH SPEED MEMORY DATA READ OPERATION

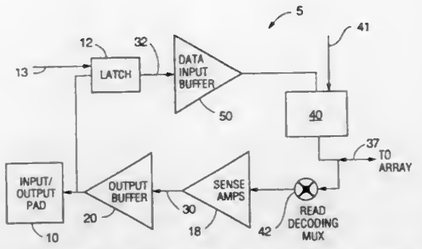
Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 6, 1995, Ser. No. 499,025

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.01 9 Claims

1. A data input and data output circuit for writing data to and reading data from a memory cell, comprising:



a contact pad for providing an electrical interface between the memory cell and an operating environment;

a data read path extending between the contact pad and the memory cell for reading data from a memory cell;

a data write path extending between the contact pad and the memory cell for writing data to the memory cell;

a data line electrically connected at a first end to the data read path and to the data write path, and electrically connected at a second end to the memory cell;

a data writing circuit for generating a programming voltage for writing data to the memory cell, wherein the data writing circuit is included in the data write path, and further, wherein the data writing circuit includes an element having a first capacitance value;

a decoupler electrically connected to the data write path, the decoupler including an element having a second capacitance value and being responsive to a control signal by electrically disconnecting the data writing circuit and the data line when not performing a data writing operation on the memory cell, thereby electrically disconnecting the element having the first capacitance value from the data line; and

a controller for generating the control signal for the decoupler.

5,663,909

METHOD OF ERASING A FLASH MEMORY DEVICE

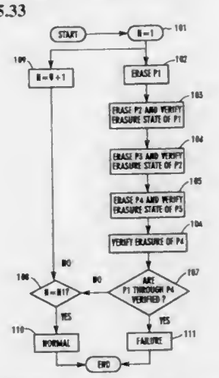
Hyun Soo Sim, Sungnam-Shi, Rep. of Korea, assignor to Hyundai Electronic Industries Co., Ltc., Kyungki-Do, Rep. of Korea

Filed Jul. 1, 1996, Ser. No. 673,056

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-18560

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—185.33 5 Claims



1. A method of erasing a chip having into a plurality of planes of a flash memory device, comprising the steps of:

erasing a first plane;

performing an erasure verification for said first plane and an erasure operation for a second plane at the same time;

performing an erasure verification for said second plane and an erasure operation for a third plane at the same time; and

performing an erasure verification for said third plane and an erasure operation for a fourth plane at the same time.

5,663,910

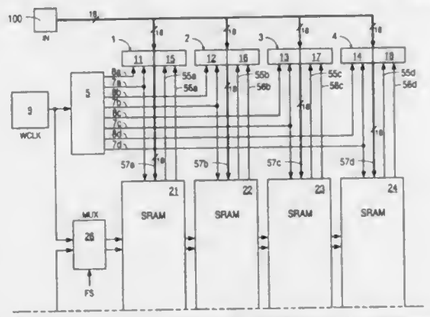
INTERLEAVING ARCHITECTURE AND METHOD FOR A HIGH DENSITY FIFO

Ray-Jane Ko, Saratoga; Fu Lam Au, Fremont, and Joseph P. Chiang, Cupertino, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 279,091, Jul. 22, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 581,703

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.05 **9 Claims**



1. A method for retransmitting data values from a synchronous first in, first out (FIFO) memory device having an input port coupled to provide data values to an input FIFO, a single port memory coupled to receive data values from said input FIFO, an output FIFO coupled to receive data values from said single port memory, and an output port coupled to receive data values from said output FIFO, said method comprising the steps of:

preventing data values from being written to said input FIFO for a first predetermined time period;

preventing data values from being read from said output port for said first predetermined time period;

resetting a read address counter associated with said single port memory to an address representative of an initial address position within said single port memory;

clearing said output FIFO; and then

sequentially reading data values from said single port memory to said output FIFO beginning at said initial address position of said single port memory; and

allowing data values to be read from said output port.

5,663,911

SEMICONDUCTOR DEVICE HAVING A BOOSTER CIRCUIT

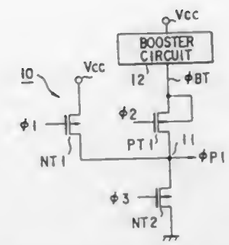
Tetsuya Kaneko, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 7, 1995, Ser. No. 568,533

Claims priority, application Japan, Dec. 9, 1994, 6-305983

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.11 **22 Claims**



1. A semiconductor device comprising:

a booster circuit for receiving an external power supply voltage and generating a boosted voltage which is higher than the external power supply voltage;

a first switching circuit having a current path with a first end connected to the external power supply voltage and a second end connected to an output node, said first switching circuit being turned on in response to a first signal to increase a voltage of said output node up to a voltage equivalent to the external power supply voltage;

a second switching circuit having a current path with a first end connected to said booster circuit and a second end connected to said output node, said second switching circuit being turned on in response to a second signal when said first switching circuit is turned off, to increase the voltage of the output node up to the boosted voltage; and

a third switching circuit having a current path with a first end connected to said output node and a second end which is grounded, said third switching circuit being mined on in response to a third signal to make the voltage of the output node equal to a ground potential.

5,663,912

SEMICONDUCTOR MEMORY DEVICE

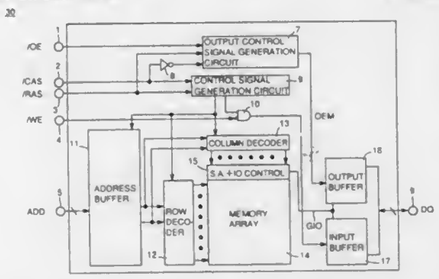
Tadaaki Yamauchi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 607,045

Claims priority, application Japan, Sep. 1, 1995, 7-225172

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—194 **6 Claims**



1. A semiconductor memory device for reading out data in response to a control clock signal and an address signal applied externally, comprising:

memory means including a plurality of addresses, data being stored at each of said addresses;

readout means for taking in said address signal in response to a change in said control clock signal from a first potential to a second potential, and reading out data at an address specified by the address signal from said memory means; and

output means for outputting readout data of said readout means to outside after a first time period has elapsed from a change in said control clock signal from the second potential to the first potential, and stopping output of said readout data to outside after a second time period has elapsed from a change in said control clock signal from the first potential to the second potential.

5,663,913

SEMICONDUCTOR MEMORY DEVICE HAVING HIGH SPEED PARALLEL TRANSMISSION LINE OPERATION AND A METHOD FOR FORMING PARALLEL TRANSMISSION LINES

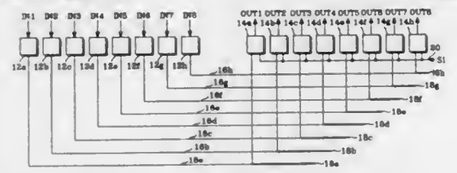
Ho-Cheol Lee, and Hyun-Soon Jang, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 26, 1996, Ser. No. 638,373

Claims priority, application Rep. of Korea, Apr. 27, 1995, 10170/1995

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—194 **8 Claims**



1. A semiconductor memory device, comprising:

a first circuit unit including a plurality of first internal circuits for generating internal control signals formed adjacent to a predetermined region within a chip of said semiconductor memory device;

a second circuit unit including a plurality of second internal circuits formed within said chip for performing a predetermined operation in response to an output of said first circuit unit;

a plurality of transmission lines formed within said chip respectively connected between said plurality of first internal circuits in said first circuit unit and said plurality of second internal circuits in said second circuit unit; and

a plurality of load transmission lines formed within said chip connected respectively to a predetermined portion of each of said plurality of transmission lines, said plurality of load transmission lines equalizing loads of said plurality of transmission lines so as to minimize skew therebetween.

5,663,914

MODE ADAPTIVE DATA OUTPUT BUFFER FOR SEMICONDUCTOR MEMORY DEVICE

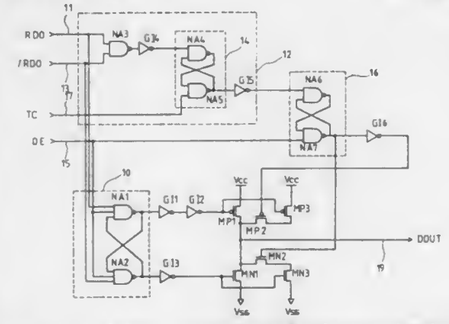
Jung Tae Kwon, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jun. 27, 1996, Ser. No. 673,211

Claims priority, application Rep. of Korea, Jun. 30, 1995, 95-18863

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—202 **8 Claims**



1. A mode adaptive data output buffer for a semiconductor memory device, said semiconductor memory device having a plurality of memory cells for storing data therein, comprising:

true and complementary data lines for inputting true and complementary data read from said memory cells, respectively;

a control line for inputting an output enable signal for controlling the output of the true and complementary data read said memory cells;

first and second pull-up drivers connected in parallel between a first-voltage source and an output line;

first and second pull-down drivers connected in parallel between a second voltage source and said output line;

first switching means for switching said second pull-up driver to said output line;

second switching means for switching said second pull-down driver to said output line; and

control means for detecting the input order of the true and complementary data read from said memory cells and the output enable signal, and controlling said first and second switching means in accordance with the detected result.

5,663,915

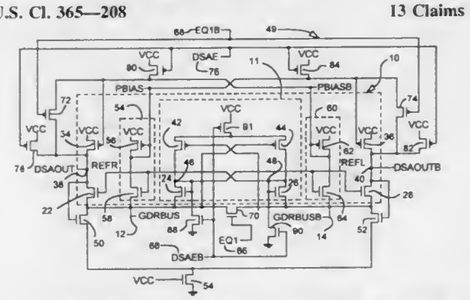
AMPLIFIER AND METHOD FOR SENSING HAVING A PRE-BIAS OR COUPLING STEP

Kenneth J. Mobley, Colorado Springs, Colo., assignor to United Memories, Inc., Colorado Springs, Colo., and Nippon Steel Semiconductor Corporation, Japan

Filed Jun. 7, 1995, Ser. No. 483,279

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—208 **13 Claims**



1. A method for sensing a state of a memory cell, said method comprising the steps of:

developing differential currents at inputs of an amplifier based upon impedances related to the state of said memory cell;

developing voltage transitions in said amplifier in accordance with said differential currents;

controlling voltages during said developing steps at said inputs by negative feedback; and

developing differential voltages at outputs based on said differential currents,

wherein the step of developing differential voltages includes developing a first set of differential voltages to pre-bias an amplifier to amplify said differential voltages at said outputs.

5,663,916

APPARATUS AND METHOD FOR MINIMIZING DRAM RECHARGE TIME

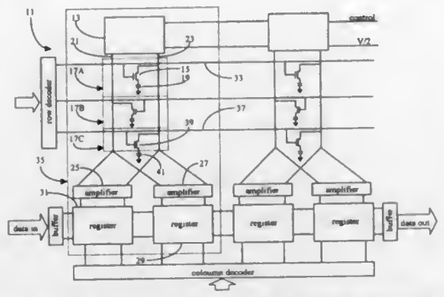
Dan Kikinis, Saratoga, Calif., assignor to Elonex I.P. Holdings, Ltd., London, United Kingdom

Filed May 21, 1996, Ser. No. 651,897

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **3 Claims**

1. A method for minimizing DRAM access time, comprising steps of:



(a) providing multiple bit registers for each bit column in a dynamic random access memory array; and

(b) interleaving read and refresh steps in refresh cycles such that consecutive read steps are made from distinct capacitance elements in each bit column, followed by an equal number of refresh steps, the number of consecutive read steps equal to the number of registers provided for each column.

5,663,917

SEMICONDUCTOR CIRCUIT HAVING MOS CIRCUIT FOR USE IN STRONG ELECTRIC FIELD

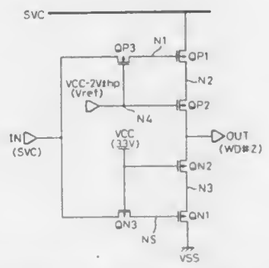
Tomoharu Oka; Hirobiko Mochizuki; Yasuhiro Fujii, and Makoto Yanagisawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 3, 1995, Ser. No. 510,862

Claims priority, application Japan, Nov. 15, 1994, 6-280593

Int. Cl.[6] G11C *8/00*; H03K *5/00*

U.S. Cl. 365—226 **26 Claims**



1. A semiconductor circuit employing a first power supply line for supplying a first voltage, a second power supply line for supplying a second voltage, and a third power supply line for supplying a third voltage outside a range determined by said first voltage and said second voltage, wherein said semiconductor circuit comprises:

a first transistor of a first conduction type;

a second transistor of a second conduction type opposite to said first conduction type;

a third transistor of said second conduction type, said first, second, and third transistors being connected in series between said second power supply line and said third power supply line;

a fourth transistor of said first conduction type, connected between an input terminal and a control electrode of said first transistor.

5,663,918

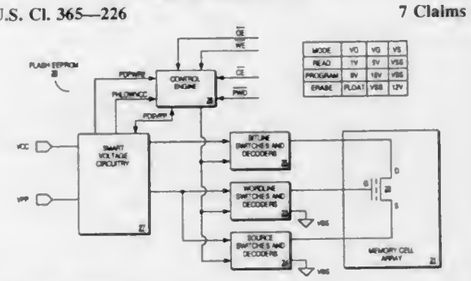
METHOD AND APPARATUS FOR DETECTING AND SELECTING VOLTAGE SUPPLIES FOR FLASH MEMORY

Jahanshir J. Javanifard, Sacramento, and Kimberley D. Meister, Folsom, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 326,702, Oct. 19, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 575,177

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—226 **7 Claims**



1. An integrated circuit comprising:

a first circuit;

a first conductor for coupling to a first external supply voltage;

a second conductor for coupling to a second external supply voltage;

a first internal supply operative to output a first internal supply voltage;

a second internal supply operative to output a second internal supply voltage;

a first switch coupled between the first conductor and the first circuit;

a second switch coupled between the second conductor and the first circuit;

a third switch coupled between the first internal supply and the first circuit;

a fourth switch coupled between the second internal supply and the first circuit; and

a control circuit coupled to the switches, the control circuit selectively switching on only one of the first and third switches in response to the voltage level of the first external supply voltage and selectively switching on only one of the second and fourth switches in response to the voltage level of the second external supply voltage.

5,663,919

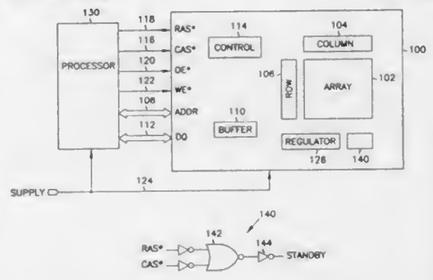
MEMORY DEVICE WITH REGULATED POWER SUPPLY CONTROL

Brian M. Shirley; Manny K. F. Ma, both of Boise, and Gordon Roberts, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 28, 1996, Ser. No. 608,444

Int. Cl.[6] G11C *5/14*

U.S. Cl. 365—226 **16 Claims**



1. A memory device comprising:

a voltage regulator having first and second operating states; and

a voltage regulator control coupled to the voltage regulator comprising,

a first input connected to a row address strobe input for receiving a row address strobe signal,

a second input connected to a column address strobe input for receiving a column address strobe signal, and

an output coupled to the voltage regulator, the output providing an output signal which activates the second operating state of the voltage regulator when either the row address strobe signal or the column address strobe signal is active.

5,663,920

SEMICONDUCTOR MEMORY WORD LINE DRIVER CIRCUIT

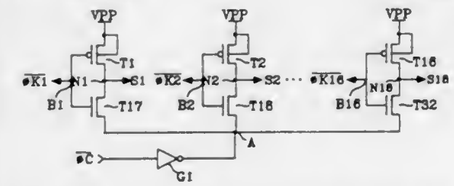
Seung-Keun Lee, No. 349-23, Myeonmok 4-dong, Jungrang-gu, Seoul, Rep. of Korea

Filed Jun. 10, 1996, Ser. No. 661,109

Claims priority, application Rep. of Korea, Jun. 9, 1995, 95-15213

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—226 **13 Claims**



1. A circuit for selectively driving a word line control signal in a semiconductor memory device having a power supply node VCC and having a pumping voltage source VPP to provide a pumping voltage greater than the power supply voltage VCC, the circuit comprising:

a series of input terminals for receiving a series of input signals;

a series of first transistors each arranged to provide a controlled current path between the pumping voltage source VPP and a respective output terminal to provide a corresponding word line control signal, each first transistor having a respective control electrode coupled to a corresponding one of the input terminals;

a series of second transistors, each second transistor arranged in series with a respective one of the first transistors so as to provide a controlled current path between the output terminal and a common node A, and each second transistor further having a respective control electrode coupled in common with the corresponding first transistor control electrode to the corresponding input terminal; and

a charge control signal input terminal for receiving a charge control logic signal, the charge control logic signal being coupled to the common node A for controlling the second transistors in common so as to drive all of the output terminals to a voltage intermediate ground and the pumping voltage in response to the charge control logic signal, thereby reducing a boosting current required to further pull up a selected one of the output terminals to the pumping voltage in response to the corresponding input signal.

5,663,921

INTERNAL TIMING METHOD AND CIRCUIT FOR PROGRAMMABLE MEMORIES

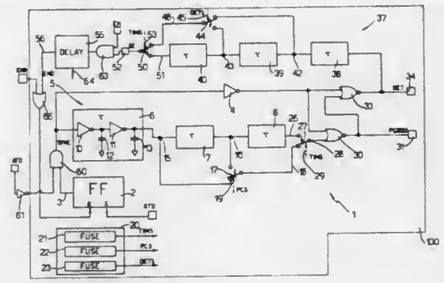
Luigi Pascucci, Sesto San Giovanni; Marco Olivo, Bergamo, and Carla Maris Golla, Sesto San Giovanni, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianze, Italy

Filed Feb. 21, 1995, Ser. No. 391,159

Claims priority, application European Pat. Off., Feb. 18, 1994, 94830070

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **21 Claims**



5. A circuit comprising:

programmable memory; and

enable generating means for generating enable signals for operating steps of said memory wherein said enable generating means comprise duration adjusting means for adjusting the duration of said enable signals to the speed characteristics of said memory and so generating enable signals of predetermined, adjustable duration, and,

wherein said enable generating means comprise enable means for enabling said enable signals; and said duration adjusting means comprise at least one propagation line connected to said enable means and comprising selectively enabled delay elements and delay enabling means connected to and for selectively enabling said delay elements.

5,663,922

METHOD FOR THE ANTICIPATED READING OF SERIAL ACCESS MEMORY, AND MEMORY PERTAINING THERETO

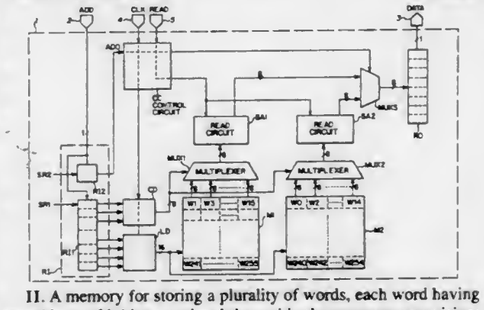
François Tailliet, Epinay sur Seine, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Nov. 3, 1995, Ser. No. 552,996

Claims priority, application France, Nov. 10, 1994, 94 13672

Int. Cl.[6] G11C *8/04*

U.S. Cl. 365—240 **23 Claims**



11. A memory for storing a plurality of words, each word having an address of k bits associated therewith, the memory comprising:

a first memory array for storing a first group of words of said plurality of words;

a second memory array for storing a second group of words of said plurality of words, wherein for each word in the first group of words there is a corresponding word in the second group of words having a same k minus q address bits associated therewith;

a first read circuit coupled to the first memory array, for reading a first word having a first address associated therewith from the first memory array; and

a second read circuit coupled to the second memory array for reading a second word from the second memory array substantially simultaneousl read by the first read circuit, the second word having the second address having the same k minus q address bits associated therewith as the first address.

5,663,923

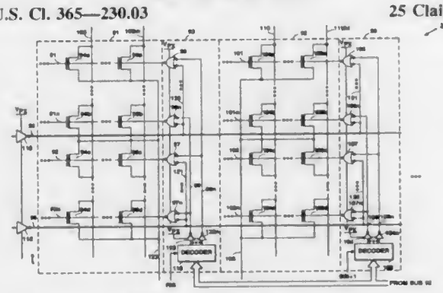
NONVOLATILE MEMORY BLOCKING ARCHITECTURE

Robert L. Baltar, Folsom; Mark E. Bauer, Cameron Park; Kevin W. Frary, Fair Oaks; Steven D. Pudar, Sunnyvale, and Sherif R. Sweha, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 28, 1995, Ser. No. 430,882

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **25 Claims**



1. A nonvolatile memory, comprising:

(A) a global line;

(B) a first block that comprises

(i) a plurality of first local lines;

(ii) a first local decoder coupled to the global line and the first local lines for selectively coupling the global line to one of the first local lines in accordance with an address when the first local decoder is enabled and for isolating the first local lines from the global line when the first local decoder is disabled;

(iii) a first plurality of nonvolatile memory cells coupled to the first local lines, wherein the first plurality of nonvolatile memory cells are erasable and programmable;

(C) a second block that comprises

(i) a plurality of second local lines;

(ii) a second plurality of nonvolatile memory cells coupled to the second local lines, wherein the second plurality of nonvolatile memory cells are erasable and programmable; and

(iii) a second local decoder coupled to the global line and the second local lines for selectively coupling the global line to one of the second local lines in accordance with the address when the second local decoder is enabled and for isolating the second local lines from the global line when the second local decoder is disabled such that interference between the first and second block is eliminated during memory operations without coupling a disturb inhibit potential to the second plurality of nonvolatile memory cells.

5,663,924

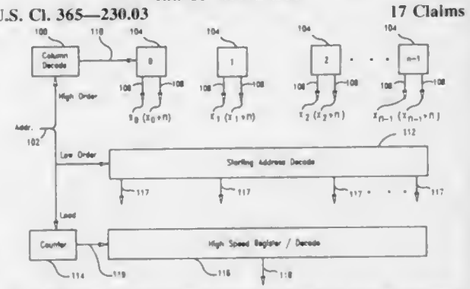
BOUNDARY INDEPENDENT BIT DECODE FOR A SDRAM

John Edward Barth, Jr., Williston, and Howard Leo Kalter, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,604

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **17 Claims**



1. A decoder for selecting a block of Random Access Memory (RAM), said decoder comprising:

a column decoder for decoding an array column address;

a plurality of bit selectors responsive to said decoded column address each said bit selector selecting a bit pair; and

a starting address decoder for selecting one bit from each selected said bit pair, each selected said one bit being one of a block of bits.

5,663,925

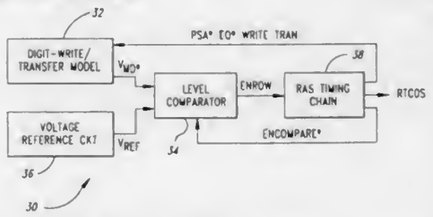
METHOD AND APPARATUS FOR TIMING CONTROL IN A MEMORY DEVICE

Huy Thanh Vo, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 18, 1995, Ser. No. 581,472

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—230.05 **13 Claims**



1. A memory device, comprising:

a memory cell for storing data, said memory cell having an access device and a storage device;

a word line connected to said memory cell, the access device being enabled when said word line is activated and disabled when said word line is deactivated;

a digit line connected to said memory cell and operable to transfer data to and from the storage device when the access device is enabled; and

a control circuit coupled to said word line and operable to deactivate said word line, said control circuit including:

a model circuit simulating the transfer of data on said digit line to and from the storage device and providing a model signal that indicates the state of the simulated transfer of data;

a reference voltage circuit providing a stable reference voltage; and

a comparator connected to the model circuit to receive the model signal, the comparator further connected to the reference voltage circuit to receive the reference voltage, the comparator producing an output signal functionally related to the relative values of the model signal and the reference voltage, said control circuit deactivating said word line when the model signal bears a predetermined relationship to the reference voltage.

5,663,926

SEMICONDUCTOR DEVICE HAVING AN INTERNAL VOLTAGE STEP-UP CONTROL CIRCUIT

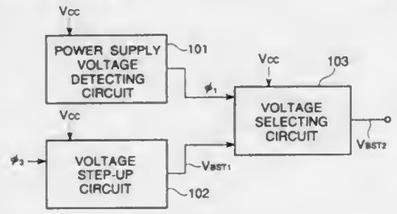
Eiji Haseo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1996, Ser. No. 594,239

Claims priority, application Japan, Jan. 30, 1995, 7-013156

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.06 **20 Claims**



13. A semiconductor device comprising:

a voltage step-up control circuit receiving a power supply voltage for supplying a stepped-up voltage to at least one portion of an internal circuit,

said voltage step-up control circuit being configured to supply said power supply voltage to said at least one portion of said internal circuit, in place of said stepped-up voltage, when said stepped-up voltage is higher than a predetermined reference level.

5,663,927

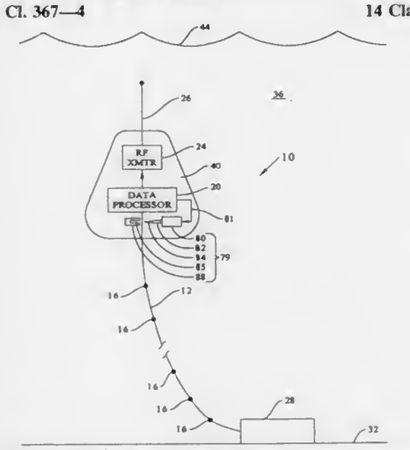
BUOYED SENSOR ARRAY COMMUNICATIONS SYSTEM

Jack R. Olson; J. Mark Stevenson, and Barbara J. Sotirin, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1996, Ser. No. 652,206

Int. Cl.[6] H04B *1/59;11/00*

U.S. Cl. 367—4 **14 Claims**



1. A buoyed sensor array communications system, comprising:

a signal transmission line;

multiple sensor systems electrically connected to said signal transmission line, wherein one of said sensor systems at a time generates a data signal in response to receiving an address signal;

a processor system electrically connected in parallel to said sensor systems for transmitting an address signal to enable any one of said sensor systems in a selectively accessed order, and for storing data encoded in each said data signal;

a radio frequency transmitting system for transmitting said stored data;

a negatively buoyant structure connected to said signal transmission line which sinks to the bottom of a body of water after being deployed;

a positively buoyant structure for supporting said processor system and said radio frequency transmitting system; and

a signal transmission line cutting system mounted in said positively buoyant structure for severing said signal transmission line upon receipt of a cutting system enablement signal generated by said processor system, whereupon said positively buoyant structure floats to the surface of said body of water.

5,663,928

METHOD FOR ANALYSING AND PROCESSING SEISMIC REFLECTION DATA FOR THE DETERMINATION OF A HIGH RESOLUTION SPATIAL VELOCITY FIELD FOR HYPERBOLICITY CORRECTION

Eric De Bazelaire, Lescar, and Jean-Pierre Dunand, Soumoulou, both of France, assignors to Elf Aquitaine Production, France

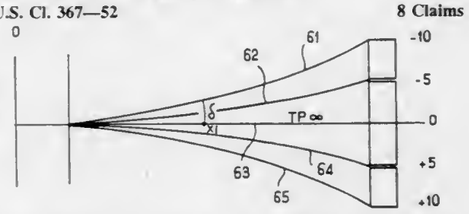
PCT No. PCT/FR95/01345, § 371 Date Jun. 18, 1996, § 102(e) Date Jun. 18, 1996, PCT Pub. No. WO94/12484, PCT Pub. Date Oct. 19, 1994

PCT Filed Oct. 13, 1995, Ser. No. 663,132

Claims priority, application France, Oct. 19, 1994, 94 12 484

Int. Cl.[6] G01V *1/36*

U.S. Cl. 367—52 **8 Claims**



1. A method of processing variable-offset seismic reflection traces to obtain a set of traces that can be used for the determination of at least one of a high resolution spatial velocity field and composite seismic traces, wherein the method comprises the steps of:

(a) obtaining normal moveout (NMO) corrected seismic traces of common midpoint gathers;

(b) subjecting the traces to a dynamic obliquity correction comprising the steps of:

(c) determining the maximum values of the positive and negative residues of the NMO corrected gathers relative to a time t_o corresponding to zero offset;

(d) determining an analysis range, the time-width of which is between the sum of the absolute values of the maximum values of the positive and negative residues and twice the absolute value of the maximum residual moveout;

(e) constructing a family of 2n+1 residual correction curves, taken from the group consisting of hyperbolas and parabolas, having their apexes centered at the time t_o;

(f) determining a time interval between the 2n+1 equidistant residual correction curves using the maximum offset and the analysis range;

(g) determining 2n+1 sets of static corrections for each of the offsets using the time interval relative to the time t_o and the 2n+1 residual correction curves;

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(h) applying the 2n+1 sets of static corrections to each trace of the gather in succession and in accordance with the appropriate offset; and

(i) stacking the statically corrected traces and obtaining a set of 2n+1 stacked traces representing a correction velocity field.

5,663,929

DRILLING SIGNAL TRANSMISSION METHOD AND SYSTEM

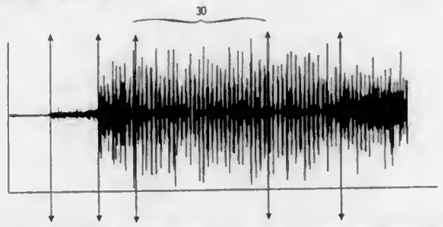
Didier Pavone, Eaubonne; Jacques Froment, Bussy Saint Georges, and Eddy Thesee, Creteil, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed May 24, 1995, Ser. No. 449,365

Claims priority, application France, May 24, 1994, 94 06247

Int. Cl.[6] G01V *1/40*

U.S. Cl. 367—82 **12 Claims**



1. A method for transmitting at least one signal associated with drilling conditions and/or the behavior of an element of a drill string including a drill bit driven into rotation, said signal being provided by at least one sensor located in said drill string, said method comprising:

temporally segmenting said signal by segmentation means;

decomposing each segment into Time-Scale or Time-Freqency wavelets by calculation means so as to obtain wavelet coefficients: and,

transmitting at least part of said coefficients.

5,663,930

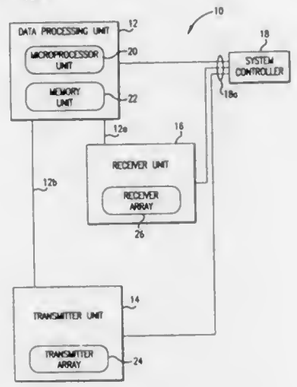
SIGNAL PROCESSING SYSTEM AND METHOD FOR USE IN MULTIBEAM SENSING SYSTEMS

William Jack Capell, Sr., Westwood; Christos Zabounidis, North Grafton, both of Mass., and Kushal Kanti Talukdar, North Providence, R.I., assignors to SeaBeam Instruments Inc., East Walpole, Mass.

Continuation of Ser. No. 167,365, Dec. 16, 1993, Pat. No. 5,483,500. This application Sep. 18, 1995, Ser. No. 529,542

Int. Cl.[6] G01S *3/80*

U.S. Cl. 367—119 **15 Claims**



1. A method of generating extrapolated-sensor data in a sensing system having an array of physical sensors, the array of sensors includes a sub-array of sensors, the method comprising the steps of:

measuring a receive signal for each physical sensor of the sub-array of sensors, wherein each receive signal of each sensor of the sub-array of sensors includes a complex data set, including a real processing unit and an imaginary processing unit; and

computing a complex data set, including a real data processing unit and an imaginary data processing unit, of a receive signal of at least one extrapolated-sensor by extrapolation of the complex data set of each receive signal of the physical sensors of the sub-array.

5,663,931

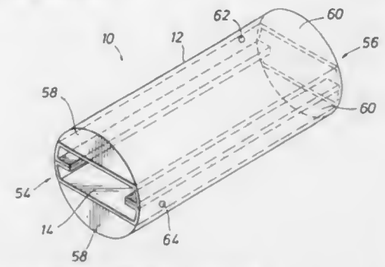
SEGMENTATION AND POLARIZATION IN A HYDROPHONE CRYSTAL

Louis W. Erath, Abbeville, La., assignor to Syntron, Inc., Houston, Tex.

Filed Oct. 19, 1995, Ser. No. 545,342

Int. Cl.[6] H04R *17/00*

U.S. Cl. 367—165 **11 Claims**



1. A hydrophone transducer comprising:

a. an electrically conductive support element, the support element defining a substantially rectangular cross section with opposed upper and lower walls and opposed side walls between the upper and lower walls;

b. a segmented piezoelectric crystal on the support element, the crystal defining a first surface in contact with the support element and a second surface opposite the support element, wherein a first segment of the crystal is polarized in a direction opposite to that of a second segment of the crystal;

c. a first output terminal of the transducer electrically coupled to the support element; and

d. a second output terminal of the transducer electrically coupled to the second surface.

5,663,932

RESCUE WATCH

Nan-Te Weng, Fl.2-2, No.25, Alley 5, Lane107, Sec.1, Fu-Hsing S. Rd., Taipei, Taiwan

Filed Jun. 13, 1996, Ser. No. 662,608

Int. Cl.[6] G04B *47/00;37/00;* **A41F** *9/00*

U.S. Cl. 368—10 **5 Claims**

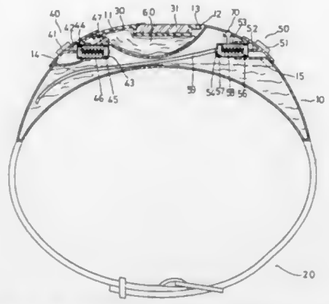
1. A rescue watch comprising:

a watch belt;

a container chamber in which high pressure air or gas or liquid is stored being connected to said watch belt;

said container chamber having a first receiving hole and a second receiving hole;

a central cavity disposed on top of said container chamber;



a deflated air bag housed in said central cavity;

a pivotal cover means disposed on top of said central cavity being locked by a latch means;

a watch being disposed on top of said pivotal cover means;

a first valve means engaged with said first receiving hole and in controllable communication with said container chamber and said air bag and being controlled by a first button;

said first button being connected to said latch means and said first valve means whereby the actuation of said fist button can make said pivotal cover opened and said air bag inflated by air or gas in said container chamber;

a second valve means engaged with said second receiving hole and in controllable communication with said container chamber and a nozzle means;

a second button connected to said second valve means;

said air or gas in said container chamber being led into said nozzle upon second button being actuated whereby gas can be discharged against an assaulter by pointing said nozzle at eyes or nose of said assaulter.

5,663,933

METER CIRCUIT

Frank-Thomas Eitrich, Reutlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

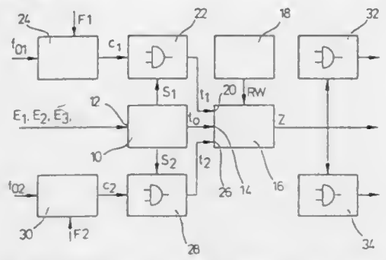
PCT No. PCT/DE94/01265, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO95/13456, PCT Pub. Date May 18, 1995

PCT Filed Oct. 28, 1994, Ser. No. 640,834

Claims priority, application Germany, Nov. 10, 1993, 43 38 343.2

Int. Cl.[6] G04F *8/00;* **G01R** *7/00;* **H03M** *1/30*

U.S. Cl. 368—119 **20 Claims**



1. An electronic meter circuit for a time comparison measurement between a plurality of event signals, the electronic meter circuit comprising:

a control unit having a control input for accepting the plurality of event signals, the plurality of event signals including a first, a second and a third event signal;

a first frequency divider circuit coupled to the control unit for providing a first clock frequency signal, the first frequency divider circuit having a first adjustable frequency division ratio;

a second frequency divider circuit coupled to the control unit for providing a second clock frequency signal, the second frequency divider circuit having a second adjustable frequency division ratio;

a reference meter coupled to the first and second frequency divider circuits and initiating a first time count in a forward direction using the first clock frequency signal when the first event signal is received by the control unit, the reference meter initiating a second time count in a reverse direction using the second clock frequency signal when the second event signal is received by the control unit, the second time count being continued until the third event signal is received by the control unit, the reference meter forming a comparison value for obtaining a ratio of the first time count between the first and the second event signals and the second time count between the second and third event signals when the third event signal is received by the control unit, the reference meter including a register, the register supplying the reference meter with a reset value when the first event signal is received by the control unit.

5,663,934

WATERTIGHT PUSH BUTTON DEVICE, PARTICULARLY FOR CONTROLLING A TIMEPIECE

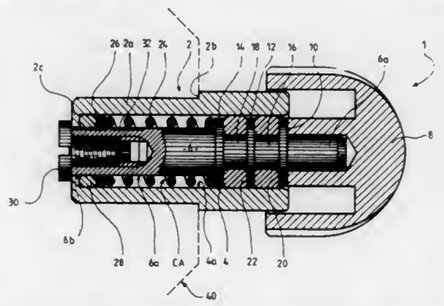
Sylvain Wenger, Commugny, and Joseph Eray, Glovelier, both of Switzerland, assignors to Werthanor S.A., Le Locle, Switzerland

Filed Aug. 31, 1995, Ser. No. 521,816

Claims priority, application Switzerland, Sep. 1, 1994, 02 674/94

Int. Cl.[6] G04B *29/00;37/00*

U.S. Cl. 368—290 **7 Claims**



1. A watertight push button device, particularly for controlling a timepiece, said device comprising:

a body inside which an oblong cavity is arranged,

a stem slidingly arranged in said cavity and connected to a push button head so as to move axially against the force of a return spring when a control push is applied to said push button head, and

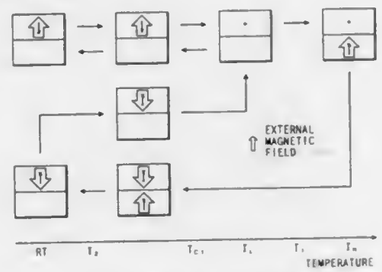
sealing means ensuring a watertight sealing of said cavity on the side of said push button head, wherein said cavity contains pneumatic means which cooperate with said cavity and said stem for defining an annular chamber the volume of which varies with the sliding movement of said stem under the effect of said control push so that the pressure of air contained in said annular chamber opposes a resistance to said movement, said pneumatic means comprising at least two annular gaskets, namely a mobile gasket which is fixedly engaged with the stem and which slides in radial contact against an internal wall of the cavity, and a gasket which is fixed in said cavity and in which said stem slides.

5,663,935

MAGNETO-OPTICAL RECORDING MEDIUM HAVING TWO MAGNETIC LAYERS OF EXCHANGE-COUPLED AT FERROMAGNETIC PHASE

Naoki Nishimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,270
Claims priority, application Japan, Feb. 8, 1995, 7-20035
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 7 Claims



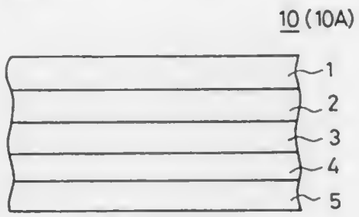
1. A magneto-optical recording medium comprising:
a first magnetic layer, comprised of a perpendicular magnetization film, for stably retaining magnetic information at room temperature; and
a second magnetic layer for reversibly changing between an antiferromagnetic phase and a ferromagnetic phase;
wherein said second magnetic layer is in the antiferromagnetic phase at room temperature and changes into the ferromagnetic phase at an elevated temperature, wherein a transition temperature T1 in a temperature-elevating process and a transition temperature T2 in a cooling process satisfy the relation of T1>T2, wherein said first magnetic layer and said second magnetic layer are exchange-coupled with each other when said second magnetic layer is in the ferromagnetic phase, and wherein the magnetization directions of said first magnetic layer and said second magnetic layer are antiparallel to each other when exchange-coupled.

5,663,936

MAGNETO-OPTIC RECORDING MEDIUM SUITED FOR MARK EDGE RECORDING SYSTEM AND HAVING MAGNETIC LAYER MADE OF COMPOSITION MODULATED MATERIAL

Tsutomu Tanaka; Haruhiko Izumi; Tomonori Ikeya, and Keiji Shono, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 222,946, Apr. 5, 1994, abandoned.
This application May 19, 1995, Ser. No. 444,541
Claims priority, application Japan, Sep. 2, 1993, 5-218708
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 11 Claims



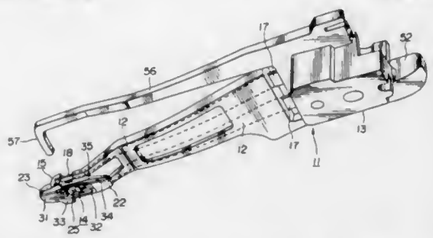
1. A magneto-optic recording medium, comprising:
a transparent substrate;
a first dielectric layer provided above said transparent substrate;
a magnetic layer provided above said first dielectric layer;
a second dielectric layer provided above said magnetic layer; and
a reflecting layer provided above said second dielectric layer.
said magnetic layer being made of a composition modulated material which is modulated in a direction in which a thickness thereof is taken so as to have at least a first composition on a light incident side of said magnetic layer, and a second composition on an opposite side from the light incident side, wherein said first and second compositions are different,
said second dielectric layer and said reflecting layer causing an enhancement effect which is defined as an overlap of a Kerr rotation angle of light at a surface on the light incident side of said magnetic layer and a Faraday rotation angle of light which is transmitted through said magnetic layer and reflected by said reflecting layer.

5,663,937

MAGNETIC HEAD SLIDER FOR SUPPORTING A RECESSED MAGNETIC HEAD AND HAVING A SIDE RECESS TO PREVENT INADVERTENT CONTACT WITH DISC SURFACE AT RIM

Tomoyuki Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 16, 1995, Ser. No. 558,726
Claims priority, application Japan, Nov. 20, 1994, 6-310022
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—83 19 Claims



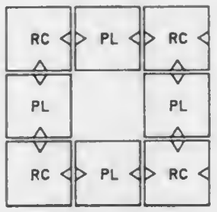
1. A magnetic head device for magneto-optical recording comprising:
a magnetic head element having a magnetic core and a bobbin carrying a coil;
a slide contact member carrying said magnetic head element and having a slide contact portion having sliding contact with a magneto-optical disc; and
a head support supported for rotational deflection about a first axis by a movable base movably supported radially of the magneto-optical disc and carrying said slide contact member for rotational deflection at a distal end of the head support about a second axis, wherein the first axis and the second axis are parallel to both a recording surface of the magneto-optical disc and a direction of radial travel of the slide contact member over the magneto-optical disc;
said slide contact member having said slide contact portion formed on one end thereof, a first slide contact clearance being formed on an outer periphery on a distal end of the magnetic head element facing the magneto-optical disc and a second slide contact clearance being formed on one lateral side thereof towards an outer periphery of said magneto-optical disc when the slide contact member is moved on said magneto-optical disc.

5,663,938

CHECKERBOAD DATA STORAGE LIBRARY

Chi-Hung Dang, and Chi-Thanh Dang, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 228,247, Apr. 15, 1994, abandoned.
This application Nov. 15, 1995, Ser. No. 559,257
Int. Cl.[6] G11B *15/68;17/22*
U.S. Cl. 369—36 58 Claims



1. A checkerboard data storage library comprising:
a plurality of stationary receptacle modules;
a plurality of picker modules;
the receptacle modules and the picker modules being arranged alternately side by side in a closed loop planar array so that each receptacle module is adjacent a pair of picker modules of said plurality of picker modules and each picker module is adjacent a pair of receptacle modules of said plurality of receptacle modules;
said closed loop planar array having four 90° angle corners;
each receptacle module having a plurality of open-ended receptacles arranged one above the other in only one vertical column, said only one vertical column having an axis which extends perpendicular to the planar array and intersects each receptacle in the vertical column;
each open-ended receptacle being capable of receiving and storing a recording medium from two discrete directions; and
each picker module having a picker which reciprocates vertically opposite open ends of the receptacles of said pair of receptacle modules for transporting a recording medium from one of the receptacles in a first one of the pair of receptacle modules to one of the receptacles in a second one of the pair of receptacle modules and for transporting another recording medium from one of the receptacles in said second one of the pair of receptacle modules to one of the receptacles in said first one of the pair of receptacle modules.

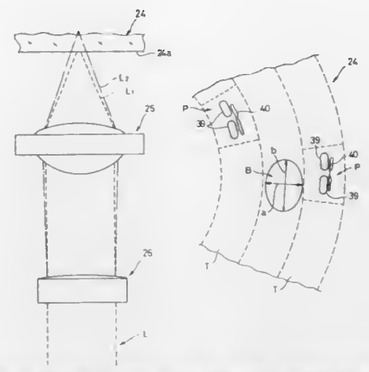
5,663,939

OPTICAL DATA RECORDING AND REPRODUCING APPARATUS INCLUDING NON-CIRCULAR BEAM SPOT

Toshiyuki Kase, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,263
Claims priority, application Japan, May 31, 1994, 6-118232
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.23 20 Claims

1. An optical data recording and reproducing apparatus comprising:
a rotatable optical disk having a signal recording surface upon which a beam spot is incident;
an objective lens which converges a beam for data reproduction onto said signal recording surface;
recording track sectors concentrically arranged on said signal recording surface of said optical disk and preformat portions provided between adjacent recording track sectors; and
means for shaping said beam spot formed on said track sectors into a non-circular shape which is elongated in the circumferential direction of said optical disk, said shaping means being distinct from said objective lens.

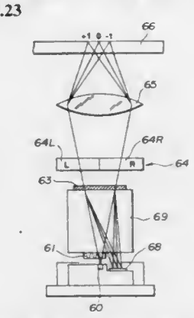


5,663,940

OPTICAL PICKUP APPARATUS INCLUDING HOLOGRAM ELEMENT

Hideyoshi Horimai, and Tsunehiro Maruo, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP94/01968, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO95/14299, PCT Pub. Date May 26, 1995
PCT Filed Nov. 21, 1994, Ser. No. 491,910
Claims priority, application Japan, Nov. 19, 1993, 5-290497
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.23 10 Claims



1. An optical pick-up device comprising:
a laser light source for emitting laser beams as an incident light;
diffraction means for separating the incident light into a 0-th order light, a +1-th order light and −1-th order light spaced by predetermined distances in a radial direction of an optical disc;
optical rotation means composed of a right optical rotation section for rotating plane of polarization of an incident light incident thereto by a predetermined angle in a clockwise direction, and a left optical rotation section for rotating plane of polarization of an incident light incident thereto by a predetermined angle in a counterclockwise direction, wherein the right optical rotation section and the left optical rotation section are divided by a boundary line passing through the optical axis of the incident light;
a lens member interposed between the optical rotation means and the optical disc and adapted to converge rays of the incident light which has been passed through the optical rotation means to irradiate those rays of incident light onto the optical disc, and to allow rays of a reflected light produced as the result of the fact that those rays of the incident light are irradiated onto the optical disc to be transmitted therethrough;

hologram means interposed between the diffraction means and the optical rotation means and adapted to emit the incident light without changing the optical path and to emit the reflected light in the state where the optical path is changed by a predetermined quantity; and

detecting means adapted to receive a reflected light which has been caused to undergo change of the optical path by the hologram means to detect at least a magneto-optical signal and a tracking error signal in dependency upon a light receiving result.

5,663,941

OPTICAL DISK RECORDING DEVICE WITH LASER POWER CONTROL CAPABLE OF RECORDING AT VARIOUS RECORDING SPEEDS

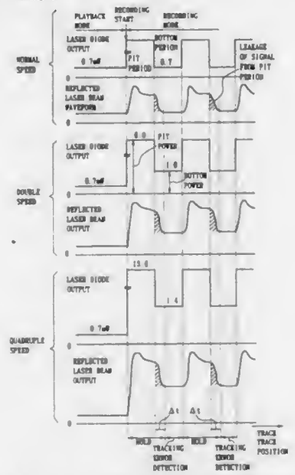
Shinji Aoshima, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 213,155, Mar. 15, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,373

Claims priority, application Japan, Mar. 19, 1993, 5-085222

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.34 **17 Claims**



1. An optical disk recording device for forming a pit on an optical disk by projecting a recording laser beam above a threshold value for recording of an amount corresponding to a pit length of the pit to be formed, the device comprising:

recording speed increase ratio setting means for setting a recording speed increase ratio;

rotation control means for rotating the optical disk at a recording speed increase ratio set by the recording speed increase ratio setting means; and

laser power control means for controlling laser power of the recording laser beam to increase above the threshold value for recording in a pit period and laser power of the recording laser beam to decrease below the threshold value for recording in a bottom period such that both the laser power in at least a part of the pit period and the laser power in at least a part of the bottom period will be increased as the set recording speed increase ratio is increased,

wherein the laser power control means produces the recording laser beam at different power levels for each recording speed increase ratio for both the pit period and the bottom period so that any given radial distance can be exposed to a plurality of different pit period power levels and a plurality of different bottom period power levels based upon an increase in the recording speed increase ratio, and wherein the pit period power level and the bottom period power level are changed by a same proportional amount based upon a change in the recording speed increase ratio.

5,663,942

JITTER MEASUREMENT APPARATUS DETECTING AMPLITUDE OF PHASE ERRORS BETWEEN INFORMATION SIGNAL AND SYNCHRONIZED CLOCK SIGNAL

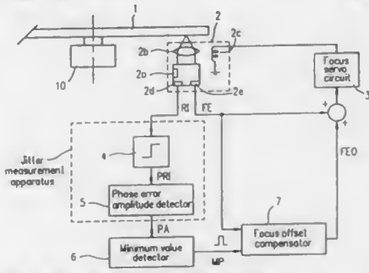
Hiromichi Ishibashi, Ibaraki; Motoyuki Kobayashi, Nara, and Mitsurou Moriya, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 27, 1995, Ser. No. 429,681

Claims priority, application Japan, May 2, 1994, 6-093164; Sep. 19, 1994, 6-223718

Int. Cl.[6] G11B *7/00;5/09*

U.S. Cl. 369—47 **16 Claims**



1. A jitter detecting apparatus comprising:

a digitizing means for generating a digital pulse signal from an information signal based on an appropriate threshold value; and

a phase error amplitude detection means for outputting a signal varying in accordance with an absolute value of a phase error between a leading edge or a trailing edge of the digital pulse signal and a reference signal generated being synchronized with the digital pulse signal,

wherein the phase error amplitude detection means comprises:

a phase detection means for detecting the phase error between the leading edge or the trailing edge of the digital pulse signal and the reference signal;

a phase lock means for feedback controlling a frequency or a phase of the reference signal so that an average value of the phase error becomes zero; and

a means for calculating the absolute value of the phase error.

5,663,943

VIBRATION DAMPING SUSPENSION MECHANISM FOR RECORDED DATA REPRODUCING APPARATUS

Tatsuya Yanagisawa; Nobuo Nohtomi; Nobutaka Sawada; Fumiya Yamada; Kiyohito Kajihara; Kiyoshi Morikawa; Atsushi Kurosawa; Tomomichi Kimura, and Toshiroh Yamashita, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 340,441, Nov. 14, 1994, Pat. No. 5,532,993, which is a continuation of Ser. No. 12,844, Feb. 4, 1993, abandoned. This application Feb. 16, 1996, Ser. No. 602,413

Claims priority, application Japan, Feb. 6, 1992, 4-12928 U; Feb. 6, 1992, 4-12929 U

Int. Cl.[6] G11B *33/08*

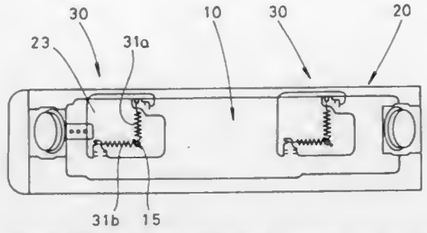
U.S. Cl. 369—75.1 **2 Claims**

1. A vibration damping support mechanism for supporting a main recorded data reproducing unit capable of operation while mounted in each of two directions turned 90 degrees from each other, the mechanism comprising:

two holding portions provided on inner surfaces of side panels of an outer casing which contains the main recorded data reproducing unit;

a holding projection provided on at least one of the side panels of said main recorded data reproducing unit; and

a pair of damper springs, each of said damper springs being tensioned between one of said holding portions and said



holding projection and extending in a different direction from the other of said damper springs so that only one of said pair of damper springs absorbs vibrations acting on said support mechanism in one of said two directions while only the other of said pair of damper springs absorbs vibrations acting on said support mechanism in the other of said two directions.

5,663,944

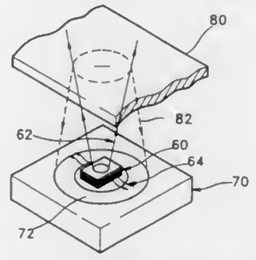
VERTICAL CAVITY LASER LIGHT BEAM MONITORED BY REFLECTION OF A HALF MIRROR, WITH APPLICATION IN OPTICAL PICK-UP

Jong-kuk Mun, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,339

Int. Cl.[6] G11B *7/00;* **H01S** *3/08*

U.S. Cl. 369—121 **4 Claims**



1. A device for monitoring the light output of a vertical cavity surface emitting laser (VCSEL) comprising a VCSEL having a light-emitting surface for emitting light vertically from said light-emitting surface, and means for monitoring light output of said VCSEL;

wherein said monitoring means comprises a half mirror positioned in front of said VCSEL, for reflecting a part of the light emitted from said VCSEL, and a monitoring optical detector positioned behind said VCSEL, for detecting light reflected from said half mirror.

5,663,945

DIGITAL PHASE LOCKED LOOP WITH A DIGITAL VOLTAGE CONTROLLED OSCILLATOR IN A RECORDING INFORMATION REPRODUCING APPARATUS

Hideki Hayashi, and Masaru Umezawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

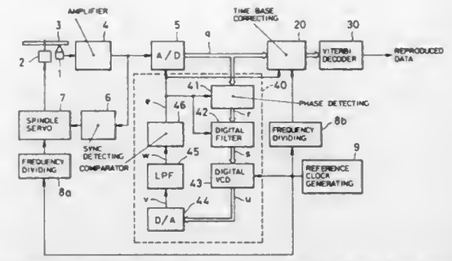
Filed Dec. 12, 1995, Ser. No. 571,241

Claims priority, application Japan, Dec. 13, 1994, 6-308954

Int. Cl.[6] H03L *7/08;* **G11B** *7/00*

U.S. Cl. 369—124 **6 Claims**

1. A digital PLL (Phase Locked Loop) circuit in a recording information reproducing apparatus having an A/D converter for



sampling a read signal read from a recording medium at a timing according to a reproduction clock signal, thereby sequentially obtaining the sampled value, and decoding means for obtaining reproduction data on the basis of said sampled value, comprising:

phase detecting means for obtaining a phase error data signal corresponding to a phase error occurring in said read signal on the basis of said sampled value;

a digital VCO (Voltage Controlled Oscillator) for generating an oscillation data signal sequence whose period changes in accordance with said phase error data signal;

a D/A converter for converting said oscillation data signal sequence into an analog signal, thereby obtaining an oscillation signal; and

clock signal forming means for obtaining a signal obtained by converting a signal waveform of said oscillation signal to a square wave as said reproduction clock signal.

5,663,946

OPTICAL DISC HAVING BUFFERING AREAS CAPABLE OF STORING A PATTERN FOR OBTAINING TRACKING ERROR SIGNALS AND RECORDING AND/OR REPRODUCING APPARATUS THEREFOR

Katsuhiko Ohtomo, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

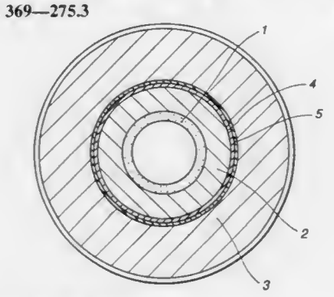
PCT No. PCT/JP95/01699, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO96/07179, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 25, 1995, Ser. No. 637,698

Claims priority, application Japan, Aug. 31, 1994, 6-207686

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.3 **14 Claims**



1. An optical disc including:

a first recording area where data using physical uneven portions are recorded in advance;

a second recording area where grooves are formed; and

a buffering area provided between the first recording area and the second recording area, wherein only a pattern for generating a tracking error signal is formed in the buffering area.

5,663,947
SWITCHING CONTROL SYSTEM FOR CONTROLLING PHYSICAL CONNECTION STRUCTURES IN A COMMUNICATIONS SYSTEM

Regina Wille-Fier, Deisenhofen, Germany, and John Wayne Cutler, Coventry, Great Britain, assignors to Siemens Aktiengesellschaft, Munich, Germany, and GPT Ltd., Coventry, Great Britain

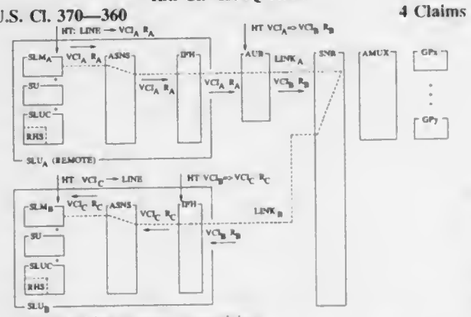
PCT No. PCT/EP93/02191, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/05120, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 17, 1993, Ser. No. 387,857

Claims priority, application Germany, Aug. 25, 1992, 921 14 475.4

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—360 **4 Claims**



1. A switching system, comprising:

a) at least one control processor for carrying out central control processes;

b) one, and only one, switching control system per control processor, said switching control system having means for receiving connection requests from at least one user system, the user system being used to control logic connection structures, and a connection request containing identifiers for connection end points affected by it, having means for processing said connection requests, which means for processing calculate a physical path through switching networks of the switching system based on a connection request, and having means for transmitting commands to resource systems for local control of resources which are affected by the calculated physical path;

c) at least one user system for controlling logic connection structures per control processor; and

d) local resource systems for controlling the resources of the switching system, which resource systems carry out commands of the switching control system.

5,663,948
COMMUNICATION DATA RECEIVER CAPABLE OF MINIMIZING THE DISCARDING OF RECEIVED DATA DURING AN OVERFLOW

Hideki Kohunaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 456,691

Claims priority, application Japan, Jun. 1, 1994, 6-140741

Int. Cl.[6] H04L *12/54*

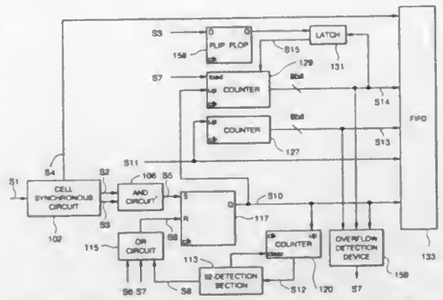
U.S. Cl. 370—229 **14 Claims**

14. A communication data receiver for storing communication cell data received from a communication layer into a buffer memory and transferring said communication cell data to another communication layer, said communication data receiver comprising:

a means for detecting an overflow of said buffer memory;

a means for prohibiting said communication cell data from being written into said buffer memory according to said overflow detection; and

a means for setting a write address lower than a write address of said communication cell data being written in said buffer memory as a writing start address for said communication cell data received next according to said overflow detection.



5,663,949
LINE PROTECTION SWITCHING SYSTEM IN DUPLEXED FIBER INTERFACE SHELF

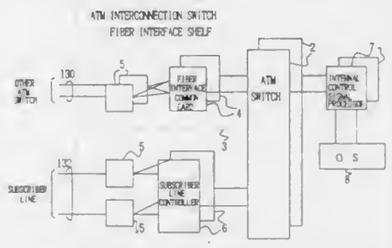
Ryoichi Ishibashi; Tomiko Ito, both of Kawasaki; Kouki Mie, Fukuoka, and Hiroya Kawasaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 10, 1995, Ser. No. 513,010

Claims priority, application Japan, Nov. 15, 1994, 6-280302; Mar. 16, 1995, 7-057426

Int. Cl.[6] H04J *1/16;* **H04L** *1/00;* **H04B** *3/38*

U.S. Cl. 370—220 **15 Claims**



1. A line switching system for switching transmission lines between working and protection groups for use in a duplexed fiber interface shelf, the line switching system comprising:

a pair of duplexed line switching controllers for sending a line switching control signal to switch the transmission lines; and

a pair of duplexed line interface devices operatively connected to the pair of duplexed line switching controllers, an active line interface device of the duplexed line interface devices for receiving the line switching control signal only from an active line switching controller of the duplexed line switching controllers and echoing the received control signal back to the duplexed line switching controllers.

5,663,950
METHODS AND SYSTEMS FOR FAULT ISOLATION AND BYPASS IN A DUAL RING COMMUNICATION SYSTEM

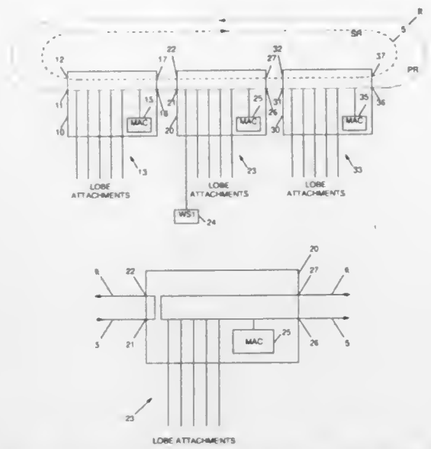
Nai Po Lee, Chapel Hill, and Jay Lee Smith, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1995, Ser. No. 429,455

Int. Cl.[6] H04J *1/16;3/14;* **H04L** *12/437*

U.S. Cl. 370—224 **26 Claims**

1. A method for reconfiguring a dual ring communication system to isolate and bypass failed components or connections in which the dual ring communication system has a primary ring (PR) for



carrying signals in a first direction and a secondary ring (SR) for carrying signals in a second direction opposite to said first direction wherein the PR and the SR are interconnected by a plurality of reconfiguration units, each of said reconfiguration units having a PR input, a PR output, a SR input and a SR output, a plurality of attachment ports suitable for receiving signals from data terminals or the like, at least one medium access controller (MAC) for receiving, generating and/or repeating signals on the PR and switching units for selectively wrapping the PR and SR, the reconfiguration method comprising the steps of:

detecting a failure on the PR;

generating a failure frame on the PR wherein the failure frame contains the address of the first MAC which detected the failure and generated the failure frame;

determining if the failure frame is received from the PR; and

connecting a first attachment port to the SR input while isolating the SR input from the SR output, isolating the PR input from the first attachment port and connecting the PR input to the SR output if the MAC generation the failure frame has not received the failure frame from the PR within a preselected time to thereby bypass the failure.

5,663,951
DELAYED TRANSMISSION OF DATA PACKETS OVER NETWORKS

Gunner Danneels; Gregory Gates, both of Beaverton, and Russell Downing, West Loss, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 341,402, Nov. 16, 1994, Pat. No. 5,524,110, which is a continuation-in-part of Ser. No. 340,172, Nov. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 157,694, Nov. 24, 1993, Pat. No. 5,506,954. This application Jun. 6, 1995, Ser. No. 471,203

Int. Cl.[6] H04L *12/18;12/26;* **H04J** *3/16*

U.S. Cl. 370—230 **26 Claims**

1. A computer-implemented process, comprising the steps of:

(a) generating a set of signals corresponding to a portion of a session at a local node;

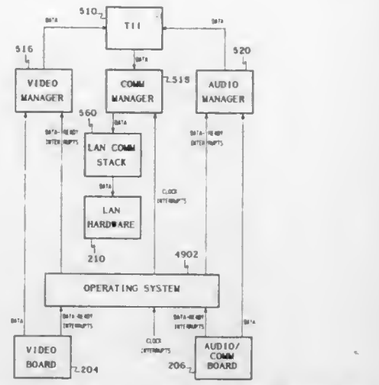
(b) dividing the set of signals into a plurality of data packets;

(c) transmitting a first subset of the data packets from the local node to a remote node; and

(d) transmitting a subsequent subset of the data packets from the local node to the remote node after a delay to avoid overloading the remote node with data packets, wherein:

the local node comprises a signal-generating subsystem and a communications subsystem;

the signal-generating subsystem generates the set of signals;



the communications subsystem divides the set of signals into the data packets and transmits the first and subsequent subsets of data packets to the remote node; and

the communications subsystem:

receives a first interrupt signal;

transmits the first subset of data packets during the first interrupt time corresponding to the first interrupt signal;

receives a subsequent interrupt signal; and

transmits the subsequent subset of data packets during the subsequent interrupt time corresponding to the subsequent interrupt signal.

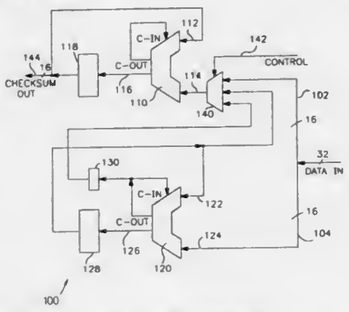
5,663,952
CHECKSUM GENERATION CIRCUIT AND METHOD

Denton E. Gentry, Jr., Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,484

Int. Cl.[6] G06F *11/10*

U.S. Cl. 370—252 **23 Claims**



1. A checksum generator circuit comprising:

a first adder having first and second adder inputs, a first sum output, and having a first carry-out coupled to feedback a first generated carry bit to a carry-in of the first adder, said first adder input being coupled to receive first input data, and said first sum output being coupled to feedback first partial sum data to said second adder input; and

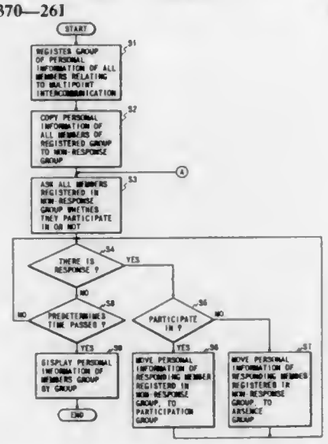
a second adder having third and fourth adder inputs, a second sum output, and having a second carry-out coupled to feedback a second generated carry bit to a carry-in of the second adder, said second sum output being coupled to feedback second partial sum data to said third adder input, and wherein said fourth adder input is coupled to said first adder to selectively receive second input data, said first partial sum data from said first sum output, and said first generated carry bit from said first carry-out.

5,663,953

MULTIPOINT INTERCOMMUNICATION WITH PRE-QUERYING OF MEMBERS AS TO PARTICIPATION

Yoshito Maekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,461
Claims priority, application Japan, Sep. 20, 1994, 6-224798
Int. Cl.[6] H04M *3/56*
U.S. Cl. 370—261 20 Claims



1. A communication station apparatus which can perform a multipoint intercommunication by connecting a plurality of points via a communication line, comprising:

a) inquiry means for sending, in advance, an inquiry as to participation in the multipoint intercommunication to stations of members relating to the multipoint intercommunication; and

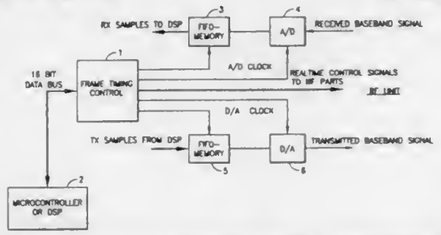
b) registration means for receiving inquiry results sent from the members who received the inquiry from said inquiry means, and registering a group of personal information of the members relating to the multipoint intercommunication in correspondence with the received results.

5,663,954

FRAME TIMING CONTROL OF TIME DIVISION MULTIPLE ACCESS

Jouko Hakkanen, Salo, and Arto Karppanen, Helsinki, both of Finland, assignors to Nokia Mobile Phones Ltd.

Filed Oct. 27, 1995, Ser. No. 549,650
Claims priority, application Finland, Oct. 31, 1994, 945109
Int. Cl.[6] H04Q *7/30;7/32*
U.S. Cl. 370—278 18 Claims



1. A method for TDMA frame timing control in a transmitter and receiver part of a mobile station, wherein different burst lengths can be transmitted and received in a TDMA frame, comprising the steps of:

dividing frame timing control between a microcontroller and a frame timing control unit that comprises a frame timing block, a receive branch burst building block, and a transmit branch burst building block;

using the microcontroller to define a TDMA frame length, a burst start value, and a burst stop value; and

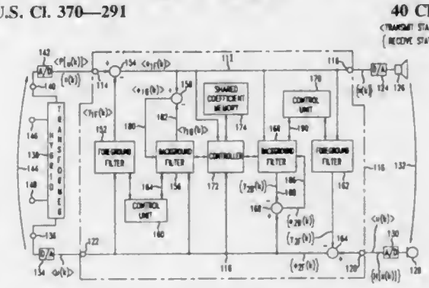
using the frame timing block to set the TDMA frame length in accordance with the defined TDMA frame length, the frame timing block transmitting timing information to the microcontroller for indicating a start of each frame and a start of each burst within the frame, wherein timing data information is transmitted within the frame timing control unit to the burst building block of the receive branch and the burst building block of the transmit branch.

5,663,955

ECHO CANCELLER SYSTEM WITH SHARED COEFFICIENT MEMORY

Vasu Iyengar, Allentown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 25, 1995, Ser. No. 519,500
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—291 40 Claims



1. An echo canceller system comprising:

a first echo canceller including a first foreground filter and a first background filter;

a second echo canceller including a second foreground filter and a second background filter;

a shared coefficient memory; and

a controller for switching the shared coefficient memory between the first and second background filters.

5,663,956

CDMA COMMUNICATIONS AND GEOLOCATION SYSTEM AND METHOD

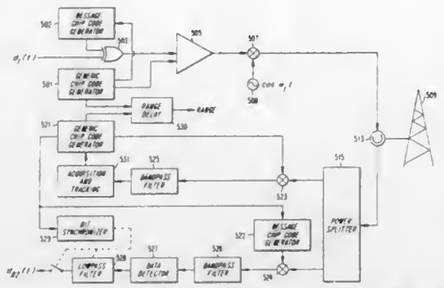
Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corp., Wilmington, Del.

Continuation of Ser. No. 311,773, Sep. 23, 1994, Pat. No. 5,506,864, which is a continuation of Ser. No. 178,016, Feb. 23, 1994, Pat. No. 5,365,544, which is a continuation of Ser. No. 6,851, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 622,235, Dec. 5, 1990, Pat. No. 5,351,269, and Ser. No. 626,109, Dec. 14, 1990, Pat. No. 5,228,056. This application Apr. 4, 1996, Ser. No. 628,012
Int. Cl.[6] H04B *7/216;* H04J *13/02*
U.S. Cl. 370—335 3 Claims

1. A spread-spectrum communications and geolocation system for communicating message data comprising:

first generic means for generating a generic-chip-code signal;

spreading means for spread-spectrum processing the message data, synchronized with the generic chip-code signal, as spread-spectrum-processed-message data;



combiner means for combining the generic-chip-code signal with the spread-spectrum-processed-message data, thereby generating a code-division-multiple-access (CDMA) signal;

transmitter means for transmitting, using radio waves traversing free space, the CDMA signal over a communications channel;

detection means, coupled to said communications channel, for detecting the generic-chip-code signal embedded in the CDMA signal, said detection means including,

receiving means for receiving the CDMA signal; and

despreading means, synchronized with the generic-chip-code signal, for despreading the spread-spectrum-processed-message data as a despread signal;

data detection means, synchronized with the generic-chip-code signal, for detecting message data in the despread signal; and

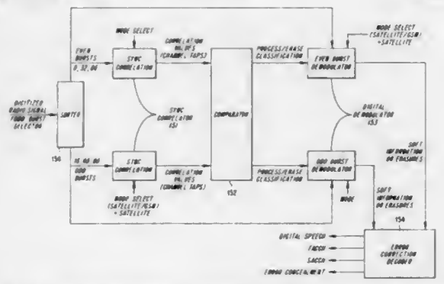
range means, responsive to the generic-chip-code signal, for determining a range delay between the transmitter means ad the receiving means.

5,663,957

DUAL MODE SATELLITE/CELLULAR TERMINAL

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Jul. 12, 1995, Ser. No. 501,575
Int. Cl.[6] H04B *7/212*
U.S. Cl. 370—347 24 Claims



19. A portable satellite communications terminal using time division multiple access, comprising:

TDMA burst receiving means for receiving and analyzing signal bursts received in a receive timeslot of a repetitive TDMA frame period and producing decoded information and a signal quality indication;

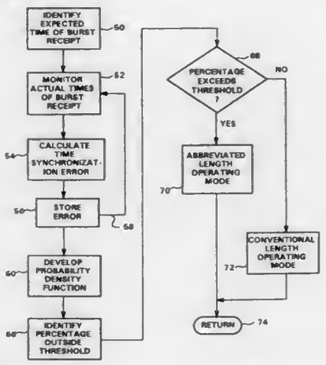
TDMA burst transmitting means for coding information and said signal quality indication to produce coded signal bursts for transmission and transmitting said coded bursts in an allocated transmit timeslot of even-numbered TDMA frames and conditionally transmitting coded bursts in an allocated timeslot of odd-numbered TDMA frames in dependence on said signal quality indication.

5,663,958

METHOD AND APPARATUS FOR DYNAMICALLY SELECTING THE LENGTH OF MOBILE STATION BURST COMMUNICATIONS ON THE REVERSE DIGITAL CONTROL CHANNEL

Torbjorn Ward, Montreal, Canada, assignor to Telefonaktiebolaget Lm Ericsson, Stockholm, Sweden

Filed Feb. 22, 1996, Ser. No. 603,860
Int. Cl.[6] H04B *7/212*
U.S. Cl. 370—347 24 Claims



1. In a digital cellular system wherein mobile stations transmit burst communications to a base station, a method for dynamically controlling a length of mobile station burst communications, comprising the steps of:

comparing a time of receipt for certain ones of a plurality of received mobile station burst communications to an expected time of receipt to identify a time synchronization error for each of the certain received burst communication;

processing the identified time synchronization errors to determine a percentage of the certain received burst communications having a time synchronization error in excess of an error threshold; and

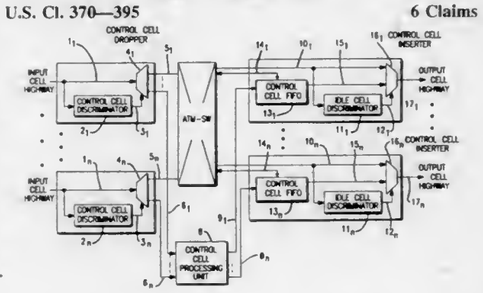
instructing the mobile stations to: use a first message length for the certain burst communications if the determined percentage does not exceed a threshold percentage; or to instead use a second message length, shorter than the first length, if the determined percentage does exceed the threshold percentage.

5,663,959

ATM CELL SWITCHING APPARATUS HAVING A CONTROL CELL BYPASS ROUTE

Tatsuo Nakagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,038
Claims priority, application Japan, Dec. 15, 1994, 6-311472
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—395 6 Claims



1. An ATM cell switching apparatus including an ATM switch for switching cells, a control cell processing unit for performing operations in accordance with information contained in a control cell, a plurality of input cell highways, and a plurality of output cell highways, each input cell highway of said plurality of input cell highways and each output cell highway of said plurality of output cell highways carrying mixed cells of user cells and control cells, said ATM cell switching apparatus comprising:

input cell management means for discriminating a type of cell coming through each said input cell highway, distributing user cells and control cells to said ATM switch and said control cell processing unit respectively; and

output cell management means for discriminating an idle cell output from said ATM switch, inserting a control cell output from said control cell processing unit into a position of said discriminated idle cell, and outputting cells to each said output cell highway.

5,663,960

CHAINING ARRANGEMENT BETWEEN INTERMEDIATE MODULES, PARTICULARLY OF REPEATER TYPE, OF AN INSTALLATION PROVIDED WITH TERMINALS COMMUNICATING VIA A PACKETS TRANSMISSION LINK, AND AN INSTALLATION THUS EQUIPPED

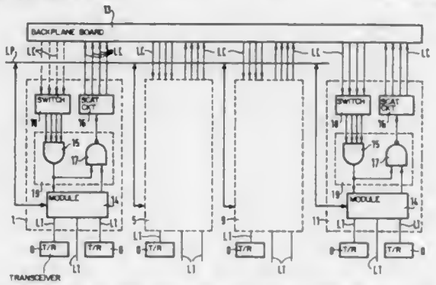
Marie-Pierre Le Guen, Brest; Raphaël Roux, Argenteuil; Philippe Kersale, and Pascal Le Page, both of Brest, all of France, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 22, 1995, Ser. No. 577,145

Claims priority, application France, Dec. 28, 1994, 94 15789

Int. Cl.[6] H04L *12/26;12/44;12/46*

U.S. Cl. 370—408 **6 Claims**



1. A chaining arrangement between intermediate modules, for a communications installation provided with transceiver terminals (0) communicating by means of a common, digital, packet transmission link (LP), via intermediate modules (14), each including an input (acki) and an output (acko) for an access monitoring signal transmitted at the common link enabling one module to block another module to whose input the output of the former is linked, via one of the control links (LC), of point-to-point type, of an auxiliary subnetwork linking the access monitoring signal inputs and outputs of the "n" modules of the installation, the chaining arrangement being characterised in that the modules each have their access monitoring signal input linked to the output of a first concentrator logical circuit (15), this circuit including "P" inputs each capable of being linked to the access monitoring signal output of a different module, "p" being an integer greater than two, and in that the modules each have their access monitoring signal output linked to a scattering circuit (16) making it possible to simultaneously drive the access monitoring signal inputs of "p" different modules.

5,663,961

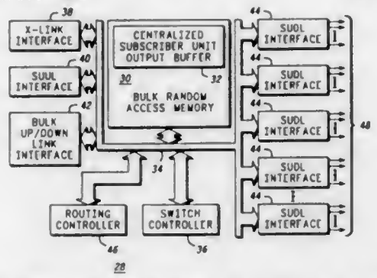
PACKET SWITCH WITH CENTRALIZED BUFFERING FOR MANY OUTPUT CHANNELS

Louis Albert McRoberts, deceased, late of Scottsdale, by Nancy A. McRoberts, executor; Kenneth Wayne Hines; Karl Eric Miller, both of Tempe, and Gary James Lang, Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 24, 1995, Ser. No. 393,787

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—412 **14 Claims**



1. A packet switching apparatus for switching a stream of received packets onward through a multiplicity of output channels comprising:

a central memory partially organized into a multiplicity of independent packet buffers;

a multiplicity of output channel drivers coupled to said central memory;

a routing controller, coupled to said central memory, for directing said received packets into said central memory and out from said central memory to said output channel drivers, said routing controller is configured so that said received packets are directed into said central memory consecutively and out from said central memory, interleaved together;

means for identifying each of said multiplicity of output channels;

means for determining whether each packet buffer for each of said multiplicity of identified output channels is empty; and

means for transferring only data from ones of said independent packet buffers which are not empty over a shared bus.

5,663,962

METHOD OF MULTIPLEXING STREAMS OF AUDIO-VISUAL SIGNALS CODED ACCORDING TO STANDARD MPEG1

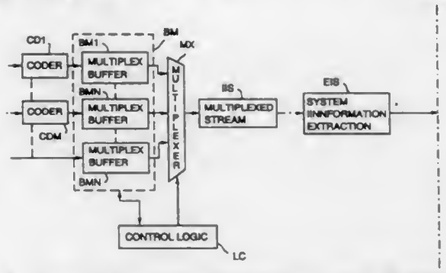
Giovanni Caire, Turin, and Glampaolo Michieletto, Robegano, both of Italy, assignors to Cselt- Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 15, 1995, Ser. No. 529,096

Claims priority, application Italy, Sep. 29, 1994, TO94A0758

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—535 **12 Claims**



1. A method of multiplexing N elementary streams of digitally coded data representing information associated to multimedia signal sequences, to build a multiplexed stream which is composed of

packets containing data from a single stream and is transmitted at a bit rate R to a remote demultiplexer (DM) capable of driving N decoders (DC1 . . . DCN), each decoder being allotted to one of the elementary streams and being connected downstream of a respective demultiplexing buffer (BD1 . . . BDN), into which data of a packet are sequentially written and from which blocks of coded data of size D'_h hereinafter referred to as access units are simultaneously extracted at decoding instants t'_h, comprising the following steps for each input stream S':

a) evaluating, at a current instant t_c, the amount of data $A'(t_c)$ already arrived at the demultiplexing buffer (BDi) and the amount of data $E'(t_c)$ already extracted from the demultiplexing buffer (BDi), where $E'(t_c)=\Sigma D'_h$, h being such that $t'_h<t_c$;

b) evaluating the amount of data $BF'(t_c)$ contained at said current instant t_c in the demultiplexing buffer (BDi) as the difference $BF'(t_c)=A'(t_c)-E'(t_c)$ between the data arrived and the data extracted up to instant t_c;

c) evaluating for each of a number K of next access units not yet decoded at said current instant t_c, a parameter X' defined after referred to as a "relax" linked to the buffer occupancy level and representative of the urgency the buffer (BDi) has to receive data to avoid occurrence of underflow conditions upon extraction of one of said access unit;

d) identifying stream S' having the minimum relax;

e) constructing a packet containing a predetermined number P of data bytes of said elementary stream S' having the minimum relax.

5,663,963

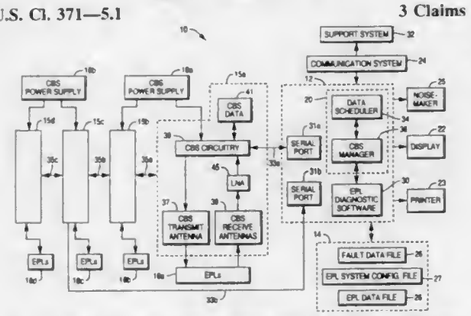
METHOD FOR DETECTING AND REPORTING FAILURES IN EPL SYSTEMS

John C. Goodwin, III, Suwanee, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 17, 1995, Ser. No. 503,144

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.1 **3 Claims**



1. A method for determining whether any of a plurality of cables serially connecting a plurality of communication base stations to a master communication base station within an electronic price label (EPL) system has failed comprising the steps of:

monitoring transmit and receive errors by each of the communication base stations during transmission of wireless messages to EPLs and reception of wireless messages from the EPLs;

saving first error rate information by each of the communication base stations;

transmitting a message to each of the communication base stations through the cables for requesting the first error rate information by a computer coupled to the master communication base station;

returning the first error rate information to the computer by the communication base stations through the cables;

determining a maximum error rate for each communication base station by the computer;

transmitting a subsequent message to each of the communication base stations through the cables for requesting second error rate information including second error rates by the computer;

returning the second error rate information to the computer by the communication base stations through the cables;

comparing the second error rate information for each communication base station with its predetermined maximum error rate; and

if any of the second error rates exceeds the corresponding maximum error rate for the communication base station, transmitting a fault message indicating that one of the cables coupled to the communication base station having an excessive error rate is faulty to an EPL system support organization.

5,663,964

METHOD FOR TESTING DIGITAL MEMORY DEVICES

Josef Kolbinger, Ergoldsbach, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

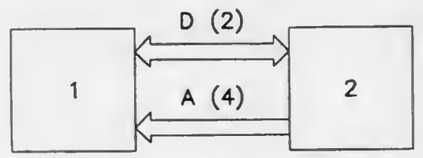
PCT No. PCT/DE95/00100, § 371 Date Oct. 10, 1996, § 102(e) Date Oct. 10, 1996, PCT Pub. No. WO95/20226, PCT Pub. Date Jul. 27, 1995

PCT Filed Jan. 18, 1995, Ser. No. 676,335

Claims priority, application Germany, Jan. 21, 1994, 44 02 122.4

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—21.2 **1 Claim**



1. A method for testing a digital memory device, the digital memory device including a first quantity of memory cells, each of the memory cells having a distinct address, the method comprising the steps of:

defining a second quantity of predetermined values as a function of the first quantity of memory cells;

assigning the predetermined values to each of the respective memory cells, the predetermined values being assigned so as to determine the distinct address of each of the respective memory cells from a numerical sequence of the distinct address of successive ones of the respective memory cells;

writing the predetermined values to each of the respective memory cells;

reading-out stored values from each of the respective memory cells;

comparing each of the stored values read out with each corresponding one of the predetermined values; and

generating an error message when one of the stored values read-out is different from the corresponding one of the predetermined values,

wherein each of the memory cells includes at least four address bits and the predetermined values are assigned to the memory cells as follows:

$$Z=ADR(0,1,\ldots S1)\ XOR\ ADR(S,\ldots N),$$

where:

Z=an assigned numerical value,

ADR=the address of one of the memory cells,

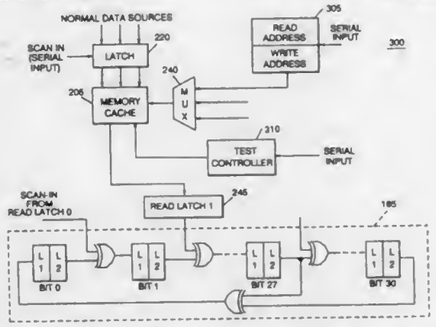
N=the number of address bits in each of the memory cells minus one,

S=a location number of a memory location, the location number having a value of 2.

5,663,965
APPARATUS AND METHOD FOR TESTING A MEMORY ARRAY

Edward Michael Seymour, Round Rock, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 6, 1995, Ser. No. 539,932
Int. Cl.[6] G01R *31/28;* **G11C** *7/00*
U.S. Cl. 371—22.31 **11 Claims**



1. An apparatus for testing a memory array comprising:

a test data latch for receiving a test data vector on a serial input of said test data input latch and writing said test data vector in to a first location in said memory array;

an address buffer for receiving a test address vector on a serial input of said address buffer and applying said test address vector to said memory array;

an output latch for reading said test data vetor from said first location in said memory array; and

control logic for 1) scanning said test data vector and said test address vector into said test data input latch and said address buffer, respectively, 2) generating a write signal operable to cause said test data vector to be written from said test data input latch into said first lacation in said memory array and 3) generating a read signal operable to cause said test data vector to be read from said first location in said memory array into said output latch.

10. A method of testing a memory array comprising the steps of:

serially shifting a test data vector into a test data input latch;

serially shifting a test address vector into an address buffer;

applying the test address vector in the address buffer to the address lines of the memory array;

writing the test data vector from the test data input latch into a first location in the memory array;

reading the test data vector from the first location in the memory array into an output latch;

serially shifting the test data vector from the output latch into a multiple input shift register; and

performing a polynomial division operation using the shifted test data vector as an input to generate thereby a signature remainder indicating whether the first location in the memory array contains a fault.

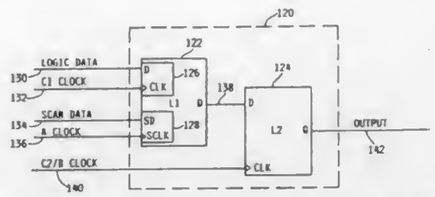
5,663,966
SYSTEM AND METHOD FOR MINIMIZING SIMULTANEOUS SWITCHING DURING SCAN-BASED TESTING

Leland Leslie Day; Steven Michael Douskey, and Paul Allen Ganfield, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1996, Ser. No. 686,105
Int. Cl.[6] H04B *17/00*
U.S. Cl. 371—22.36 **41 Claims**

1. A method for reducing simultaneous switching during scan-based testing of system logic, the method comprising the steps of:

(a) dividing the system logic into a plurality of logic clusters and scan clusters, each scan cluster comprising one or more scan chains; and



(b) concurrently performing scan-based test functions on designated ones of the logic clusters, comprising the steps of:

(i) generating scan control signals for each of the scan clusters;

(ii) offsetting triggering edges of each of the scan control signals from the active triggering edges of other ones of the scan control signals;

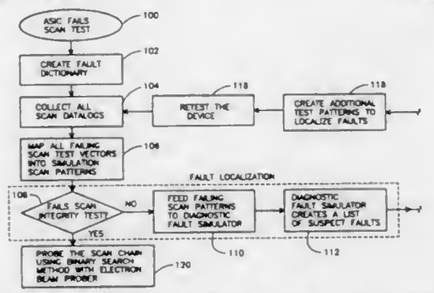
(iii) generating test control signals for each of the designated ones of the logic clusters; and

(iv) controlling release and capture functions in the designated ones of the logic clusters with a different one of the test control signals.

5,663,967
DEFECT ISOLATION USING SCAN-PATH TESTING AND ELECTRON BEAM PROBING IN MULTI-LEVEL HIGH DENSITY ASICS

Grant A. Lindberg, Santa Clara; Sharad Prasad, Peasanton; Kaushik De, San Jose, and Arun K. Gunda, Sunnyvale, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 19, 1995, Ser. No. 545,462
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—26 **4 Claims**



1. A method of isolating a defect in an integrated circuit device, comprising the steps of:

defining a fault dictionary of faults anticipated from specific scan patterns applied to a design simulation of an integrated circuit device using scan test vectors which are included in said fault dictionary said faults included predefined faults and failures from the design simulation of the integrated circuit device;

testing the integrated circuit device with said scan test vectors;

collecting outputs from the integrated circuit device, the outputs generated by said scan test vectors testing the integrated circuit device;

mapping said scan test vectors, which cause incorrect outputs from the integrated circuit device, with corresponding ones of said outputs from the integrated circuit device into simulation scan patterns;

performing, in response to said simulation scan patterns, a scan integrity test of sequential circuitry defining a scan chain in the integrated circuit device and, if the scan integrity test fails, probing the scan chain to isolate the fault;

if the scan integrity test passes, providing said simulation scan patterns to a diagnostic software program simulator;

creating, by said diagnostic software program simulator, a list of suspect faults in combinational logic of the integrated circuit device, based on said simulation scan patterns, to localize possible fault candidates in the integrated circuit device;

if the list of suspect faults is sufficiently small, probing a selected area of the combinational logic of the integrated circuit device to determine the location of the fault in the combinational logic;

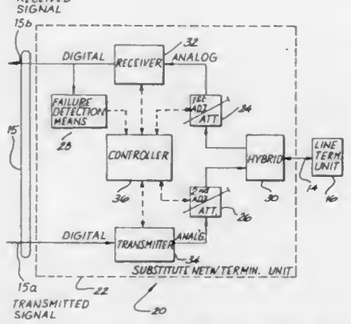
if the list of suspect faults is not sufficiently small, creating additional scan test vectors so as to further localize possible fault candidates in the integrated circuit device; and

retesting the integrated circuit device with said additional scan test vectors.

5,663,968
MARGIN TEST METHOD AND APPARATUS FOR INTERGRATED SERVICES DIGITAL NETWORKS

Hans Heuer, Carlingford, Australia, assignor to H. Heuer Instruments Pty Ltd., Carlingfore, Australia

PCT No. PCT/AU93/00321, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO94/00941, PCT Pub. Date Jun. 1, 1994
PCT Filed Jun. 30, 1993, Ser. No. 356,239
Claims priority, application Australia, Jun. 30, 1992, PL3271
Int. Cl.[6] H04L *12/26*
U.S. Cl. 371—28 **11 Claims**



1. A margin test apparatus for use in an integrated services digital network, the margin test apparatus comprising:

a network termination unit including means for coupling a two-wire line to a four-wire line, the two-line wire carrying a composite signal, and the four-wire line carrying a transmitted signal and a received signal;

a receiver for converting the received signal to a received data stream, the received signal having a level;

a transmitter for converting a transmitted data stream to the transmitted signal;

a failure detection means which monitors the received signal and is calibrated such that it detects a signal failure if the level of the received signal is less than a predetermined threshold level;

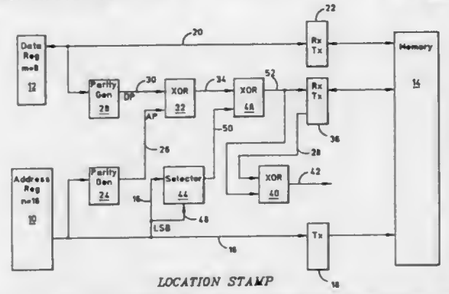
a first adjustable attenuator for adjustably attenuating the received signal; and

a second adjustable attenuator for adjustably attenuating the transmitted signal.

5,663,969
PARITY-BASED ERROR DETECTION IN A MEMORY CONTROLLER

Henry Horngren Tsou, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 953,417, Sep. 29, 1992, Pat. No. 5,537,425. This application Apr. 16, 1996, Ser. No. 633,095
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—51.1 **9 Claims**



1. A memory controller for storing data into and retrieving data from a storage device, said data including at least one parity bit, said memory controller comprising:

address register means coupled to said data storage device for holding at least one memory address, each said memory address having n storage bits where n is a positive integer;

address parity generating means coupled to said address register means for generating at least one address parity bit representative of a binary sum of all bits of a memory address from said address register means except a blanked bit excluded from generation of the at least one address parity bit, said blanked bit being received at a blanked bit input;

blanked bit selecting means coupled to the parity generating means for selecting the blanked bit from among one of said storage bits according to a predetermined criteria and providing the blanked bit to the blanked bit input, said predetermined criteria establishing a blanking pattern that varies according to memory address and repeats with a period of n along consecutive addresses; and

address parity checking means coupled to said data storage device and said address parity generating means for signaling even and odd bit errors occurring in said n storage bits by comparing said address parity bit with a corresponding parity bit from said storage device and indicating an address error condition when said address and corresponding parity bits differ.

5,663,970
CIRCUIT AND METHOD FOR TESTING FREQUENCIES

Jeong Hwan Bae, Kyeungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jun. 27, 1995, Ser. No. 496,120
Claims priority, application Rep. of Korea, Jun. 27, 1994, 1994-14884
Int. Cl.[6] G01R *23/00;* **H03D** *13/00*
U.S. Cl. 371—61 **20 Claims**

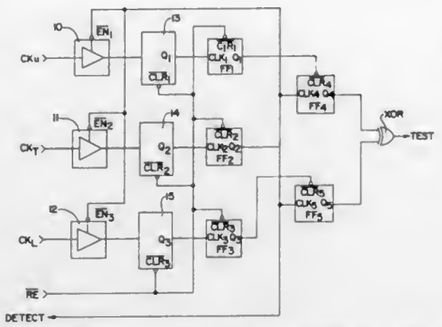
1. An apparatus for testing whether the frequency of a clock signal of alternating high and low pulses generated by a circuit is within a predetermined frequency range, comprising:

a clock generator generating an upper limit frequency clock signal of alternating high and low pulses and a lower limit frequency clock signal of alternating high and low pulses;

a first transmitting circuit selectively transmitting the upper limit frequency clock signal of the clock generator;

a second transmitting circuit selectively transmitting the clock signal of the circuit;

a third transmitting circuit selectively transmitting the lower limit frequency clock signal of the clock generator;



a first racing circuit coupled to the first transmitting circuit for dividing the upper limit frequency clock signal, wherein the first racing circuit generates an output signal in response to a predetermined number of pulses of the upper limit frequency clock signal;

a second racing circuit coupled to the second transmitting circuit for dividing the clock signal of the circuit, wherein the second racing circuit generates an output signal in response to a predetermined number of pulses of the clock signal of the circuit;

a third racing circuit coupled to the third transmitting circuit for dividing the lower limit frequency clock signal, wherein the third racing circuit generates an output signal in response to a predetermined number of pulses of the lower limit frequency clock signal; and

a decision circuit coupled to receive the output signals of the first, second and third racing circuits, wherein the decision circuit outputs a pass signal in response to receiving the output signal of the first racing circuit prior to receiving the output signal of the second racing circuit.

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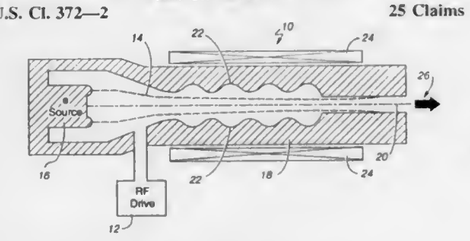
AXIAL INTERACTION FREE-ELECTRON LASER

Bruce E. Carlsten, Los Alamos, N. Mex., assignor to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Apr. 2, 1996, Ser. No. 626,661

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—2 **25 Claims**



1. A free electron laser comprising:

a waveguide defining an axial centerline and having a wall that is symmetric about said centerline and that has an average radius component and a ripple radius component having a variable radius with a ripple period along said axial centerline;

an electron beam source for outputting an electron beam into said waveguide that is parallel with and radially displaced from said axial centerline; and

a rf source for outputting a propagating electric field that coprogagates at a selected wavelength with said electron beam within said waveguide, wherein said rf source defines a null position with said variable radius of said waveguide to interact axially with said electron beam so that said electron beam gives up power to and amplifies microwave power from said rf source.

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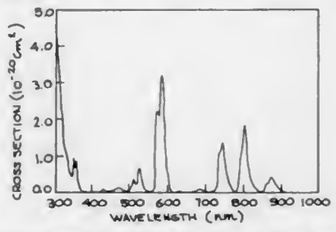
ULTRAFAST PULSED LASER UTILIZING BROAD BANDWIDTH LASER GLASS

Stephen A. Payne, Castro Valley, Calif., and Joseph S. Hayden, Clarks Summit, Pa., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 3, 1995, Ser. No. 416,551

Int. Cl.[6] H01S *3/098*

U.S. Cl. 372—18 **17 Claims**



1. In a laser system a Nd-doped phosphate glass gain medium having an emission bandwidth, $\Delta\lambda_{cm}$, greater than about 29 nm;

wherein the phosphate glass is a phospho-aluminate glass containing MgO;

modelocking means operatively associated with the gain medium to generate or amplify pulses of light having a duration less than about 100 psec.

5,663,973

TUNABLE NARROWBAND SOURCE OF A COHERENT RADIATION

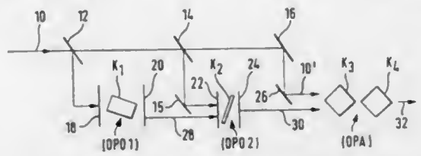
Uwe Stamm; Ingo Klaft; Vadim Berger, all of Gottingen; Stefan Borneis, Fulda, and Peter Lokai, Bovenden, all of Germany, assignors to Lambda Physik Gesellschaft zur Herstellung von Lasern mbH, Germany

Filed Jun. 10, 1996, Ser. No. 661,229

Claims priority, application Germany, May 14, 1996, 196 19 483.0

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **12 Claims**



1. A tunable narrowband source of a coherent radiation, comprising

a first optical parametric oscillator (OPO1) which includes at least one first optical parametric amplifier medium (K_1) in a resonator (**18**, **20**; **20**, **34**) or an optical parametric generator instead of the first optical parametric oscillator;

at least one second optical parametric oscillator (OPO2) which includes at least one second optical parametric amplifier medium (K_2) in a resonator (**22**, **24**) and into which the output radiation (**28**; **28***b*) of the first optical parametric oscillator (OPO1) is coupled;

at least one third optical parametric amplifier medium (OPA) into which the output radiation (**30**) of the second optical parametric oscillator (OPO2) is coupled; and means (**12**, **14**, **16**, **26**) for generating pump radiation (**10**, **10'**) and coupling it into the first and second optical parametric oscillators (OPO1, OPO2) and into the third optical parametric amplifier medium OPA), wherein

the output radiation (**28**; **28***b*) of the first optical parametric oscillator (OPO1) which is coupled into the second optical parametric oscillator (OPO2) has a bandwidth which is smaller than the spacing of the longitudinal modes of the second optical parametric oscillator (OPO2) and the output

radiation (**28**; **28***b*) of the first optical parametric oscillator (OPO1) is coupled into the second optical parametric oscillator (OPO2) in such a manner that only one longitudinal mode is excited in it which is coupled into the third optical parametric amplifier medium (K_3, K_4) and amplified therein.

5,663,974

SEMICONDUCTOR LASER

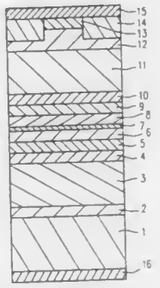
Ayumu Tsujimura, Mishima-gun; Kazuhiro Okawa, Hirakata; Satoshi Kamiyama, Sanda, and Tsuneo Mitsuyu, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 8, 1995, Ser. No. 555,284

Claims priority, application Japan, Nov. 11, 1994, 6-277555

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **10 Claims**



1. A semiconductor laser comprising:

a $Zn_{1-X}Cd_XSe$ active layer ($0<X\leqq 0.3$);

a pair of optical confinement structures for interposing the $Zn_{1-X}Cd_XSe$ active layer therebetween; and

a pair of cladding layers for interposing the optical confinement structures and the $Zn_{1-X}Cd_XSe$ active layer therebetween,

wherein at least one of the optical confinement structures includes a $Zn_{1-Y}Cd_YSe$ layer ($0\leqq Y<X\leqq 0.3$) and a $Zn_ZMg_{1-Z}S_USe_{1-U}$ layer ($0<Z\leqq 1$, $0<U<1$),

at least one of the cladding layers is made of $Zn_VMg_{1-V}S_WSe_{1-W}$ ($0<V\leqq Z$, $U\leqq W<1$), and

an energy band gap of the optical confinement structure monotonously increases as a distance from the $Zn_{1-X}Cd_XSe$ active layer increases.

5,663,975

MULTI-BEAM SEMICONDUCTOR LASER WITH SEPARATED CONTACTS CHARACTERIZED BY SEMICONDUCTOR MIXED CRYSTAL AND ACTIVE LAYER

Ichiro Yoshida; Tsukuru Katsuyama, and Junichi Hashimoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 29,411, Mar. 11, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,272

Claims priority, application Japan, Mar. 11, 1992, 4-052427; Jun. 3, 1992, 4-142949; Jun. 8, 1992, 4-147218; Jun. 8, 1992, 4-147219; Jun. 9, 1992, 4-149490; Jun. 9, 1992, 4-149493; Aug. 24, 1992, 4-224130

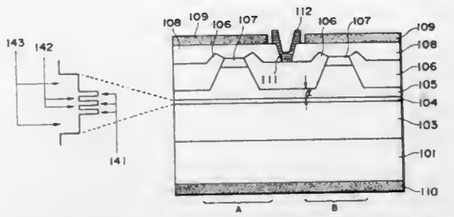
Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **22 Claims**

1. A multi-beam semiconductor laser comprising:

a first electrode;

a continuous active layer having a plurality of light emitting regions defined therein, said light emitting regions being independently driven with respect to each other;



a first cladding layer and a second cladding layer positioned such that the continuous active layer is disposed therebetween;

current block means being disposed such that said second cladding layer separates said current block means from said continuous active layer;

a contact layer disposed such that said current block means is positioned intermediate said contact layer and said second cladding layer;

dividing means provided for physically dividing the contact layer to define two areas, said current block means being positioned intermediate said dividing means and said continuous active layer;

an insulator provided in the dividing means, the insulator being in direct contact with both the current block means and the two areas of the contact layer; and

second electrodes respectively provided on the two areas of the contact layer,

wherein the active layer being formed of an undoped semiconductor mixed crystal,

wherein the first cladding layer being formed of a first conduction-type semiconductor mixed crystal, and

wherein the second cladding layer being formed of a second conduction-type semiconductor mixed crystal.

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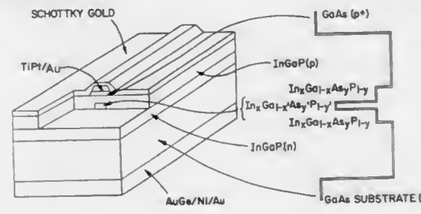
BURIED-RIDGE LASER DEVICE

Manijeh Razeghi, Wilmette, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Oct. 16, 1995, Ser. No. 543,779

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **9 Claims**



1. A buried-ridge structure consisting essentially of an Al-free heterostructure, said heterostructure comprising a lower cladding layer of an n^+ doped InGaP layer on an n^+ doped GaAs substrate;

an undoped active layer of $In_xGa_{1-x}As_yP_{1-y}$(X<1, Y<1) adjacent said lower cladding, an upper cladding layer of a p-doped InGaP layer adjacent said active layer; and

a cap layer of p^+ doped GaAs;

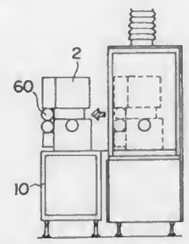
said active layer comprising a mesa surrounded on three sides by said upper cladding layer and on a fourth side by said lower cladding layer.

5,663,977

GAS LASER APPARATUS

Junichi Fujimoto, Kamakura, and Hakaru Mizoguchi, Hiratsuka, both of Japan, assignors to Komatsu Ltd., Japan

PCT No. PCT/JP94/01600, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/09460, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 28, 1994, Ser. No. 619,530
Claims priority, application Japan, Sep. 29, 1993, 5-052759
Int. Cl.[6] H01S 3/22
U.S. Cl. 372—55 7 Claims



1. A gas laser apparatus that performs laser oscillation by supplying laser gases to a laser chamber and exciting the laser gases, wherein:

a gas cabinet for housing gas containers for the laser gases in an erect state, is disposed adjacent to the laser oscillator, the gas cabinet being structured such that it can be pulled out from the side of the laser oscillator; and

a ,gas piping for connecting the gas containers inside the gas cabinet to the laser chamber unit of the laser oscillator, is made of flexible tubes.

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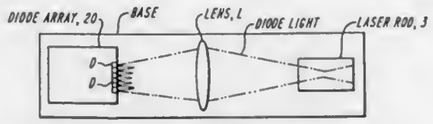
Patent Not Issued For This Number

5,663,979

FIBER STUB END-PUMPED LASER

Larry R. Marshall, Acton, Mass., assignor to Light Solutions Corporation, Mountain View, Calif.

Filed Nov. 22, 1995, Ser. No. 562,297
Int. Cl.[6] H01S 3/08
U.S. Cl. 372—103 27 Claims



1. An optically-pumped lasing system, comprising

a lasing medium

a source of pumping radiation with a plurality of laser diodes which emit diode light and couple said diode light into a plurality of optical fibers, the optical fibers being bundled together and terminating at an output aperture to provide a pump output beam composed of a bundle of separate divergent beamlets, and

a common housing supporting both said medium and said source of pumping radiation,

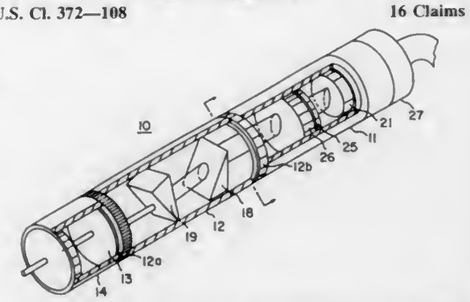
wherein said aperture is positioned adjacent to an end of the lasing medium so that the pumping light is directed through a free space gap of less than one millimeter into the lasing medium to illuminate a disrupted area of an end of the lasing medium and pump the laser medium with reduced thermal stress in the medium.

5,663,980

SEMICONDUCTOR LASER DEVICE HAVING CHANGEABLE WAVELENGTH, POLARIZATION MODE, AND BEAM SHAPE IMAGE

Yoshi Adachi, 16214 Watson Clr., Westminster, Calif. 92683

Filed May 22, 1995, Ser. No. 445,885
Int. Cl.[6] H01S 3/08
U.S. Cl. 372—108 16 Claims



1. A device for selecting laser characteristics of wavelength, beam shape, beam spot character size and shape, and polarization mode, which comprises:

means for selecting one from a group of semiconductor lasers that has a desired wavelength and polarization, and applying power thereto to radiate a laser beam having a known polarization and beam shape;

means for selecting one from a group of prismatic beam shapers, each one of said group having prism orientation for either expanding or shrinking a laser beam spot size, and each prism having antireflection coatings on the hypotenuse thereof for enhancing the TE or TM mode polarization orientation transmission therethrough, imparting a beam shape and polarization to the beam transmitted by said selected semiconductor laser device beam;

means for selecting one from a group of focusing and non-focusing optics configurations for radiating the collimated beam from the selected prismatic beam shaper to a plane for presentation of the beam shape cross section thereon; and

for selecting one from a group of focusing optics configurations for radiating a focused beam from the selected prismatic beam shaper to an objective plane for presentation of the focused spot thereon;

whereby large and small circular characters and wide and thin line characters in any polarization, collimation, and resolution are projected to an objective plane.

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RADIO COMMUNICATION APPARATUS

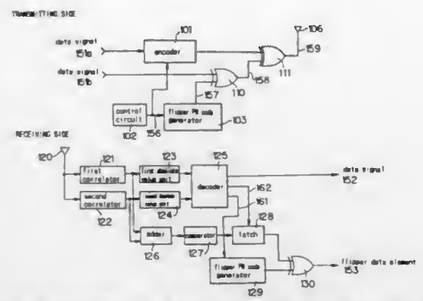
Yoshimi Takahashi, Tokyo, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Apr. 17, 1995, Ser. No. 423,661
Claims priority, application Japan, Jan. 23, 1995, 7-008490
Int. Cl.[6] H04K 1/00
U.S. Cl. 375—208 16 Claims

1. A radio communication apparatus having a transmitting device and a receiving device, wherein said transmitting device comprising:

a first modulator for modulating data signal to be transmitted according to amplitude, phase, frequency, code, pulse position, or a combination thereof;

a synchronizing scrambler having a controller for generating a signal synchronized to a modulation by said first modulator and a random series generator for generating a random series having a far longer cycle as compared to a symbol cycle of said data signal to be transmitted and outputting a scramble data signal with data for said data signal to be transmitted added thereto in synchronism to each one bit of said random series according to said modulation-synchronized signal;



a second modulator for adding an output from said synchronizing scrambler to an output from said first modulator; and

a transmitter for transmitting an output from said second modulator;

while said receiving device comprises:

a receiver;

a correlation detector for detecting data relating to correlation between said data signal to be transmitted and said scramble data signal from a signal received by said receiver;

a first demodulator for demodulating said data signal to be transmitted according to said correlational data signal for said data signal to be transmitted detected by said correlation detector;

a cycle data detector for outputting a symbol cycle data signal for said data signal to be transmitted and a cycle data signal for said scramble data signal according to said correlational data signal detected by said correlation detector between said data signal to be transmitted and said scramble data signal; and

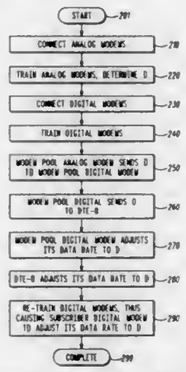
a second demodulator for demodulating said scramble data signal according to said correlational data signal for said scramble data signal detected by said correlational detector as well as said symbol cycle data signals for said data signal to be transmitted and said cycle data for said scramble data signal.

5,663,982

MODEM POOL DATA RATE ADJUSTING METHOD

Shannon Neil Hodge, Huntsville, and Robby Wayne Armstrong, Brownsboro, both of Ala., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 203,467, Feb. 28, 1994, abandoned.
This application Feb. 12, 1996, Ser. No. 600,117
Int. Cl.[6] H04B 1/38
U.S. Cl. 375—222 12 Claims



1. In an arrangement comprising a first subscriber terminal coupled to a subscriber analog modem, the subscriber analog modem coupled to a modem pool analog modem, the modem pool analog modem coupled to a modem pool digital modem, the modem pool digital modem coupled to a subscriber digital modem, the subscriber digital modem coupled to a second subscriber terminal, the subscriber analog modem, the modem pool analog modem, the modem pool digital modem and the subscriber digital modem operable for data transmission at a plurality of data rates, the plurality of data rates including a data rate D, the first subscriber terminal and the subscriber analog modem operating at the data rate D of the plurality of data rates, a method for adjusting the data rates of the modem pool analog modem, the modem pool digital modem, the subscriber digital modem, and the second subscriber terminal to data rate D, the method comprising the steps of:

(a) the subscriber analog modem training with the modem pool analog modem, the modem pool analog modem thereby adjusting its data rate to data rate D of the plurality of data rates;

(b) the subscriber digital modem training with the modem pool digital modem, the subscriber digital modem and the modem pool digital modem thereby adjusting their data rates to an initial digital modem data rate of the plurality of data rates;

(c) the modem pool analog modem encoding the data rate D to form an encoded data rate D and transmitting the encoded data rate D to the modem pool digital modem;

(d) the modem pool digital modem transmitting the encoded data rate D to the second subscriber terminal via the subscriber digital modem;

(e) the modem pool digital modem adjusting its data rate from the initial digital modem data rate to data rate D of the plurality of data rates;

(f) responsive to receiving D, the second subscriber terminal adjusting its data rate from the initial digital modem data rate to data rate D of the plurality of data rates; and,

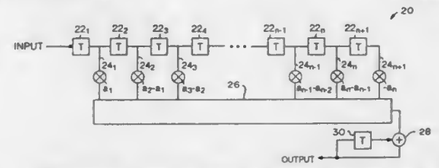
(g) the modem pool digital modem re-training with the subscriber digital modem, the subscriber digital modem thereby adjusting its data rate to data rate D of the plurality of data rates.

5,663,983

DIFFERENTIALLY MATCHED FILTER FOR A SPREAD SPECTRUM SYSTEM

Wen-Chang Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 7, 1995, Ser. No. 400,144
Int. Cl.[6] H04B 15/00; H04K 1/00; H04L 27/30
U.S. Cl. 375—207 6 Claims



1. A differentially matched filter for spread spectrum or code division multiple access communication systems comprising a delay line, a multiplication stage, a first adder, a second adder and an additional delay element, said delay line comprising at least n elements of delay with taps therebetween, said delay line being fed with an input sequence in the form of

$$X_1, X_2, \ldots, X_{n-1}, X_n,$$

said taps being connected to respective elements of said multiplication stage,

said multiplication stage being connected to said first adder to provide a sequence at the output thereof in the form of

$$-a_n X_1 + (a_n - a_{n-1}) X_2 + (a_{n-1} - a_{n-2}) X_3 + \ldots + (a_2 - a_1) X_n + a_1 X_{n+1},$$

where a_1–a_n is a predetermined code sequence,

said first adder being connected to a first input of said second adder, an output of said second adder being an output of said filter and being connected through said additional delay element to a second input of said second adder, to produce a filter output sequence of the form

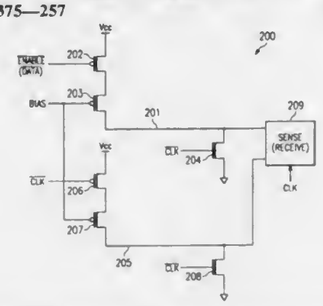
$$a_nX_2+a_{n-1}X_3+\ldots+a_3X_{n-1}+a_2X_n+a_1X_{n+1}.$$

5,663,984

HIGH PERFORMANCE BUS DRIVING/RECEIVING CIRCUITS, SYSTEMS AND METHODS

Michael E. Runas, McKinney, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed May 4, 1995, Ser. No. 434,656
Int. Cl.[6] H04L *27/00*
U.S. Cl. 375—257 **21 Claims**



1. Circuitry for transmitting information between a first endpoint and a second endpoint comprising:
a information line;
a dummy line;
information transmission circuitry disposed at said first endpoint for transmitting information on said information line, said transmission circuitry pulling said information line to a low voltage during transmission of information of a first logic state and charging said information line to a higher voltage during transmission of information of a second logic state;
charging circuitry disposed at said first endpoint for charging said dummy line to a reference voltage during transmission of information on said information line, said charging circuitry charging said dummy line at a rate different from a rate a which said transmission circuitry charges said information line during transmission of information of said second logic state; and
receiving circuitry disposed at said second endpoint for detecting a voltage difference between said information line and said dummy line and in response determining said logic states of transmitted information on said information line, said receiving circuitry detecting information of said first logic state when said voltage on said information line is less than said reference voltage on said dummy line and detecting information of said second logic state when said voltage on said information line is greater than said voltage on said dummy line.

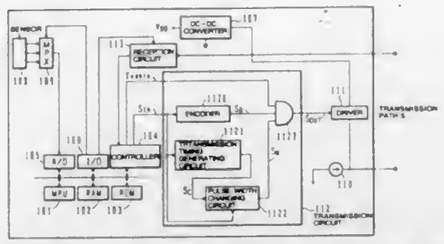
5,663,985

COMMUNICATION APPARATUS AND METHOD IN A FIELD BUS SYSTEM

Makoto Kogure, Hitachinaka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,201
Claims priority, application Japan, May 31, 1994, 6-118018
Int. Cl.[6] H04L *27/00*
U.S. Cl. 375—259 **30 Claims**

1. A communication apparatus in a field bus system for performing communication between an upper rank apparatus and at least



one terminal device which is connected to a transmission path having a transmission line and which is supplied with an operating current through said transmission path, by use of a communication signal superimposed onto said operating current and indicating a digital signal comprising:
an encoder receiving as an input a digital signal to be communicated and providing as an out put a signal divided into a plurality of bit times, each bit time indicating a "1" or "0" by means of a pulse of said operating current in a positive direction in one of a former or a later part of said bit period and a pulse of said operating current in a negative direction in the other of said former or a later part of said bit time, the order of said positive and negative directions indicating whether a "1" or "0" is represented;
a pulse width than in circuit, generating as an output a series of pulses, each pulse being at a high level in a positive direction and starting in a later period of one bit time and ending in the former period of the next adjacent bit time, the period when said pulse signal is at a higher level in each of said later and former periods being shorter than a half period of said bit time;
a logic circuit having as input the outputs of said encoder and said pulse width changing circuit, forming, at its output, a logical product between the output of said encoder and the output of said pulse width changing circuit; and
a driver having said output signal of said logic device and said operating current, as inputs and superimposing the output of said logic circuit on said operating current such that a communication signal in which a product obtained by multiplying the period during which said communication signal is at a high level by the value of said operating current while at said high level of said communication signal is approximately equal to a product obtained by multiplying the period during which said communication signal is at a low level by the value of said operating current while at said low level of said communication signal.

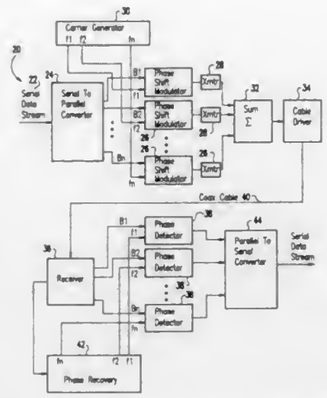
5,663,986

APPARATUS AND METHOD OF TRANSMITTING DATA OVER A COAXIAL CABLE IN A NOISY ENVIRONMENT

Foster L. Striffler, New London, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1996, Ser. No. 630,856
Int. Cl.[6] H04L *27/28;* **H04K** *1/10*
U.S. Cl. 375—260 **9 Claims**

6. An apparatus for transmitting data over a cable in a noisy environment having interfering frequencies, comprising:
means for converting a serial data bit stream into a parallel data bit stream comprising n-bits;
means for generating n-carrier frequencies, each corresponding to one of said n-bits of said parallel data bit stream and being selected such that they are located between the interfering frequencies;



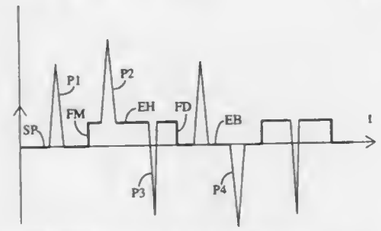
means for modulating each of said n-bits of said parallel data bit stream onto said corresponding one of said carrier frequencies to produce n-modulated data signals; and
means for combining said n-modulated data signals for transmission over the cable.

5,663,987

DIGITAL SIGNAL RECEIVER DEVICE COMPRISING FILTERING MEANS

Vincent Corcoles, St. Martin d'Heres, France, assignor to Merlin Gerin, France

Filed May 6, 1993, Ser. No. 57,785
Claims priority, application France, May 12, 1992, 92 05846
Int. Cl.[6] H04L *25/06;25/10*
U.S. Cl. 375—317 **6 Claims**



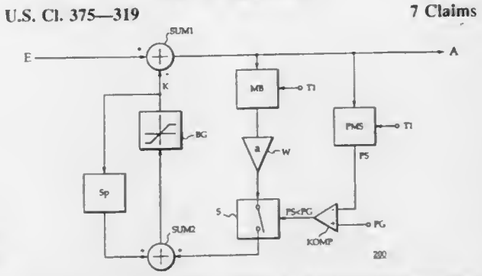
1. A digital signal receiver device comprising:
input means for supplying output signals representative of the logic state of the digital signals applied to the input of the receiver device; a processing circuit; and a digital filtering means, connected between the input means and the processing circuit, for filtering stray signals from the output signals supplied by the input means;
wherein the digital filtering means includes sampling means for sampling the output signals from the input means to generate a predetermined first number of successive samples within a first analysis period and a predetermined second number of successive samples within a second analysis period, and analyzing means for determining the number of the successive samples within the first analysis period that have a predefined logic state and the number of the successive samples within the second analysis period that have the predefined logic state; and
wherein the analyzing means supplies an output signal to the processing circuit that is indicative of whether the number of successive samples within the first and second analysis periods that have the predefined logic state respectively exceed first and second predetermined values.

5,663,988

METHOD AND CIRCUIT ARRANGEMENT FOR OFFSET CORRECTION IN A TDMA RADIO RECEIVER

Alf Neustadt, Stuttgart, Germany, assignor to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Filed Jan. 14, 1993, Ser. No. 4,435
Claims priority, application Germany, Jan. 18, 1992, 42 01 194.9
Int. Cl.[6] H04L *25/06*
U.S. Cl. 375—319 **7 Claims**



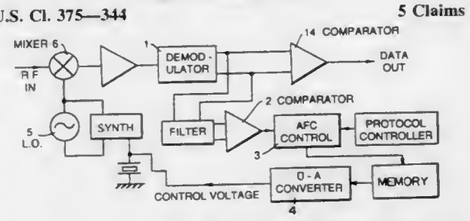
1. A method of correcting offset in a DC-coupled amplifier circuit by adding a correction value (K) to an input signal (E) having successive sections, said input signal having amplitude levels (PS) which change from section to section the method comprising the steps of:
selecting those sections of said input signal whose amplitude levels (PS) are below a variable limit value (PG);
determining said correction value (K) with the aid of an averaging operation carried out by an averaging stage (MB) of said amplifier circuit on said input signal, said averaging operation including averaging only said selected sections of said input signal whose amplitude levels are below said variable limit value; and
adding said correction value to said input signal;
whereby for an input signal with amplitude levels (PS) changing from section to section, only those sections are used to determine the correction value whose amplitude levels are below said variable limit value (PG).

5,663,989

CONTROL ARRANGEMENTS FOR DIGITAL RADIO RECEIVERS

Ian Godfrey Fobbester, Gloucestershire, United Kingdom, assignor to Plessey Semiconductors Limited, United Kingdom

Filed Oct. 18, 1994, Ser. No. 324,910
Claims priority, application United Kingdom, Oct. 28, 1993, 9322181; Jan. 17, 1994, 9400762
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—344 **5 Claims**



1. A receiver arrangement for a frequency modulated data transmission system in which each data transmission commences with a predetermined sequence of digital data values, comprising:
a demodulator having first and second outputs, and operative for generating demodulated signal levels at said first and second outputs;

a comparator for deriving digital data values from the demodulated signal levels at said first and second outputs of said demodulator;

means responsive to the demodulated signal levels at said first and second outputs during said predetermined sequence of the digital data values for deriving a D.C. offset value;

and means subsequently for retaining said D.C. offset value as a correction factor for the demodulated signal levels at said first and second outputs of said demodulator during a data transmission.

5,663,990

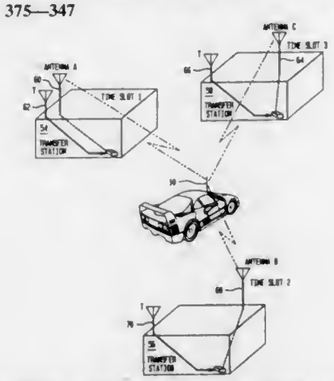
WIRELESS TELEPHONE DISTRIBUTION SYSTEM WITH TIME AND SPACE DIVERSITY TRANSMISSION

D. Ridgely Bolgiano, Gladwyne, Pa., and Gilbert E. LaVean, Reston, Va., assignors to Interdigital Technology Corporation, Wilmington, Del.

Division of Ser. No. 301,230, Sep. 6, 1994. This application Oct. 4, 1995, Ser. No. 538,863

Int. Cl.[6] H04B 7/10

U.S. Cl. 375—347 38 Claims



1. In a wireless communication system including a time division multiplex signal having first and second time slots, and a code division multiplex signal using PN spread spectrum modulation, a method for communicating a data packet containing digital data from a transmitter to a receiver to form a received data packet, said system including first and second antennas spaced apart from each other, said method comprising:

placing said data packet in said first time slot of said time division multiplex signal;

placing said data packet in said second time slot of said time division multiplex signal;

encoding said first time slot of said time division multiplex signal using said PN spread spectrum modulation to form a first spread spectrum modulated data packet;

encoding said second time slot of said time division multiplex signal using said PN spread spectrum modulation to form a second spread spectrum modulated data packet;

transmitting said first spread spectrum modulated data packet from said first antenna to form a first transmitted data packet;

transmitting said second spread spectrum modulated data packet from said second antenna to form a second transmitted data packet after said first transmitted data packet;

receiving in sequence said first and second transmitted data packets at said receiver forming respective first and second received data packets; and

selecting at least one of said first and second received data packets to form said digital data at said receiver.

5,663,991

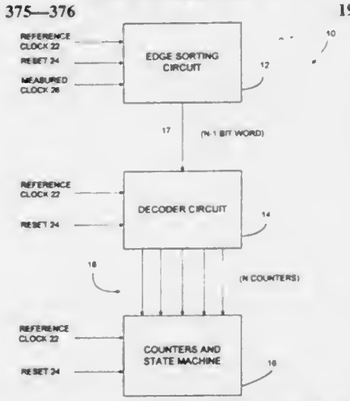
INTEGRATED CIRCUIT CHIP HAVING BUILT-IN SELF MEASUREMENT FOR PLL JITTER AND PHASE ERROR

Ram Kelkar, So. Burlington; Ilya Iosephovich Novof, Essex Junction, and Stephen Dale Wyatt, Jericho, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1996, Ser. No. 613,276

Int. Cl.[6] H03D 3/24

U.S. Cl. 375—376 19 Claims



1. An integrated circuit chip having a built-in circuit for measuring error of a Phase Lock Loop (PLL) output clock comprising:

a reference clock signal;

a sorting circuit that includes a plurality of calibratable delay elements for creating N−1 delayed reference clock signals and a plurality of latches for capturing the value of said PLL output clock during a plurality of transition edges of said N−1 delayed reference clock signals;

a calibration system that accurately calibrates said plurality of calibratable delay elements;

a decoder that reads in said value captured by said plurality of latches for each transition edge and subsequently increments one of N counters; and

a state machine that includes logic to examine said N counters and output a PLL clock error value.

5,663,992

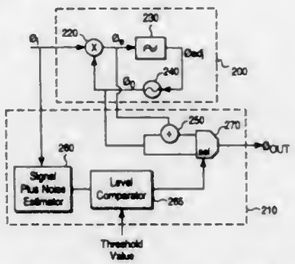
METHOD AND APPARATUS FOR CORRECTION OF GPS CARRIER PHASE MEASUREMENT

Dominic Gerard Farmer, Milpitas, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Mar. 14, 1996, Ser. No. 615,830

Int. Cl.[6] H03D 3/24

U.S. Cl. 375—376 15 Claims



1. An apparatus for selective correction of a phase measurement comprising:

a digital phase lock loop (DPLL) coupled to receive an input signal, said DPLL determining the phase error between the input signal and a DPLL output signal and adjusting the DPLL output signal in accordance with the phase error;

a signal plus noise measurement device coupled to receive the input signal, said signal and noise measurement device generating a signal plus noise level measure of the input signal;

a comparator to compare the signal and noise level measure to a threshold value indicative of a need to correct a phase of the DPLL output signal prior to output from the apparatus as an output signal, said comparator generating a control signal to indicate whether to correct the phase of the DPLL output signal if the signal and noise level measure is in excess of the threshold value;

an adder circuit coupled to receive the phase error and the DPLL output signal, said adder circuit adding the phase error to the phase of the DPLL output signal; and

a select subcircuit coupled to receive the DPLL output signal, the output of the adder circuit, and the control signal, said control signal indicating to output as the output of the apparatus the output of the adder circuit ff the noise measure is in excess of the threshold value, and the DPLL output signal if the noise measure is not in excess of the threshold value.

5,663,993

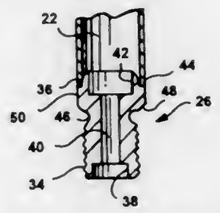
WATER ROD FLOW METERING WITHIN THE WATER ROD LOWER END PLUG

David W. Danielson, Aptos, Calif.; Robert B. Elkins, and Thomas G. Dunlap, both of Wilmington, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,345

Int. Cl.[6] G21C 3/32

U.S. Cl. 376—444 5 Claims



1. In a nuclear fuel rod assembly comprising a plurality of fuel rods and at least one water rod held together in a bundle, and wherein end plugs at the lower ends of said fuel rods and said at least one water rod engage a lower tie plate, the improvement wherein the end plug at the lower end of said at least one water rod is hollow and includes a multi-diameter flow metering bore for regulating coolant flow into the water rod, said flow metering bore having entry and exit portions having relatively larger diameters and an intermediate portion having a relatively smaller diameter and extending axially between said entry and exit portions, said intermediate portion having a greater axial length than each of said entry portion and said exit portion.

5,663,994

TWO CYCLE ASYNCHRONOUS FIFO QUEUE

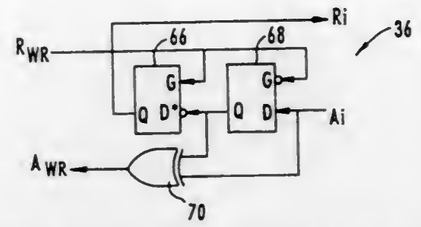
Tam-Anh Chu, Milpitas, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 359,298, Dec. 19, 1994, Pat. No. 5,550,780. This application Oct. 27, 1995, Ser. No. 549,134

Int. Cl.[6] H03K 21/00

U.S. Cl. 377—47 6 Claims

1. A four-to-two cycle converter for converting four-cycle request-write signals to a first-in/first-out (FIFO) register to two-cycle request signals and for converting two-cycle acknowledge signals from the FIFO register to four-cycle acknowledge-write signals, the converter comprising:



a first latch receiving a two cycle acknowledge signal;

a second latch coupled to the first latch and receiving a four cycle request-write signal and producing a two cycle request signal; and

a gate coupled to the first latch and receiving an output of the first latch and the two cycle acknowledge signal, the gate in response producing a four cycle acknowledge-write signal.

5,663,995

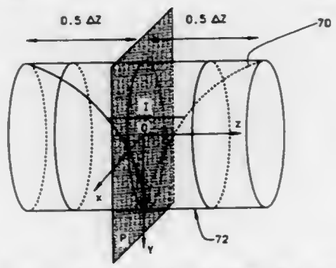
SYSTEMS AND METHODS FOR RECONSTRUCTING AN IMAGE IN A CT SYSTEM PERFORMING A CONE BEAM HELICAL SCAN

Hui Hu, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Jun. 6, 1996, Ser. No. 659,203

Int. Cl.[6] A61B 6/03

U.S. Cl. 378—15 14 Claims



13. A method for reconstructing an image at a point I from projection data collected by a computed tomography system performing a cone beam helical scan, said method comprising the steps of:

identifying a ray pair denoted as (β_1,γ_1) and (β_2,γ_2) where β is a view angle and γ is a detector angle, so that:

$$\beta_2=\beta_1+\pi+2\gamma_1,$$

and

$$\gamma_2=-\gamma_1,$$

weighting redundant rays with a weighting function, and

using the weighted projection data rays to generate the image data for point I.

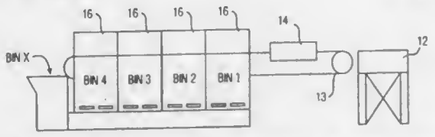
5,663,996

Patent Not Issued For This Number

5,663,997
GLASS COMPOSITION DETERMINATION METHOD AND APPARATUS

James E. Willis; Andrew L. Heilveil, both of Austin, Tex., and Robert Dejaiffe, Dunkirk, N.Y., assignors to Asoma Instruments, Inc., Austin, Tex., and Dunkirk International Glass and Ceramics Corporation, Dunklrk, N.Y.

Filed Jan. 27, 1995, Ser. No. 379,696
Int. Cl.[6] G01N *23/223*
U.S. Cl. 378—45 16 Claims



1. A method of identifying a composition of at least one glass piece of a substantially continuous series of glass pieces of unknown composition, comprising:

irradiating said glass piece of unknown composition with x-rays;

detecting an x-ray fluorescence spectrum emanating from said glass piece of unknown composition;

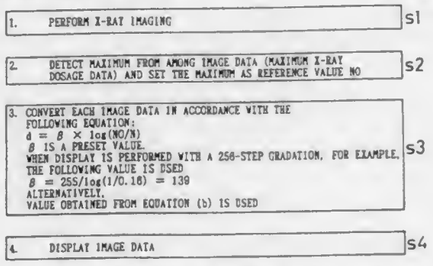
automatically comparing said detected spectrum with at least one of a plurality of stored predetermined x-ray fluorescence spectra, each stored spectra corresponding to glass of known composition; and

identifying a composition of said glass piece of unknown composition as a function of said comparison.

5,663,998
X-RAY IMAGING APPARATUS AND AUTOMATIC DENSITY CORRECTION METHOD

Masakazu Suzuki; Yoshio Uejima, and Takeshi Hayashi, all of Kyoto, Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, Japan

Filed May 28, 1996, Ser. No. 654,037
Claims priority, application Japan, Aug. 29, 1995, 7-220699
Int. Cl.[6] G01N *23/04*
U.S. Cl. 378—62 6 Claims



2. A method of performing an automatic density correction in an X-ray imaging apparatus which utilizes an X-ray imaging means detecting an image of X-rays having passed through a subject and outputting an image signal proportional to the dosage of incoming X-rays, said method comprising the steps of:

AD-converting an image signal outputted from the X-ray imaging means into an image signal with digitized data and storing the image signal with digitized data into an image memory;

extracting reference value N0 at which the X-ray dosage is high and the signal level is maximum, from the images stored in the image memory; and

logarithmically converting image signal N stored in the image memory in accordance with the following equation:

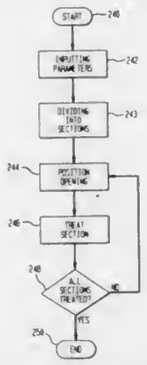
$$d=\beta \cdot \log(N0/N)$$

wherein d is an image signal after correction, and β is a constant.

5,663,999
OPTIMIZATION OF AN INTENSITY MODULATED FIELD

Ramon Alfredo Carvalho Siochi, Fairfield, Calif., assignor to Systems Medical Systems, Inc., Iselin, N.J.

Filed Jun. 28, 1996, Ser. No. 670,855
Int. Cl.[6] A61N *5/10*
U.S. Cl. 378—65 19 Claims



1. A method for controlling radiation output delivered to an object from a radiation source, comprising the following steps:

defining a field on the object for irradiation;

dividing the field into multiple sections, each of the multiple sections having defined parameters; and

treating each of the sections individually with radiation, the treating comprising the steps of:

defining an opening between the radiation source and the object, the opening being placed over one of the sections, the opening capable of delimiting the radiation beam to the defined parameters of the one of the sections; and

generating a radiation beam having a substantially lossless beam path from a radiation source to the object, the radiation beam irradiating the one of the sections;

wherein the treating is repeated until each of the sections has been irradiated.

5,664,000
X-RAY EXAMINATION APPARATUS COMPRISING AN EXPOSURE CONTROL CIRCUIT

Johannes T.M. Van Woezik, and Paulus H.F.M. Van Twist, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

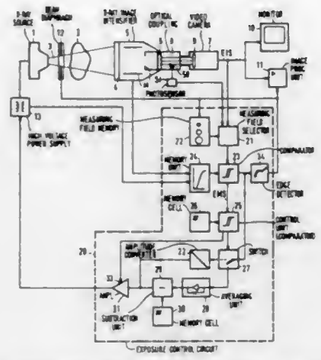
Filed Dec. 22, 1995, Ser. No. 575,796
Claims priority, application European Pat. Off., Dec. 23, 1994, 94203754
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.7 20 Claims

1. An X-ray examination apparatus, comprising:

an X-ray source for emitting an X-ray beam in order to form an X-ray image of an object,

an X-ray detector for detecting the X-ray image and converting it into an electronic image signal, and

an exposure control circuit for forming a control signal from the electronic image signal in order to adjust the X-ray source, wherein the exposure control circuit is arranged to determine

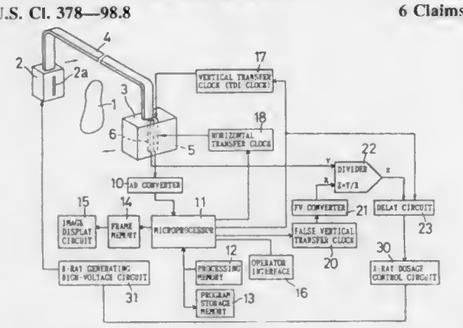


a non-overexposed area of the X-ray image in which substantially all brightness values are lower than an upper limit value and to derive the control signal from the non-overexposed area while the X-ray source is emitting the X-ray beam.

5,664,001
MEDICAL X-RAY IMAGING APPARATUS

Akifumi Tachibana; Keisuke Mori; Masakazu Suzuki; Kazunari Matoba, all of Kyoto; Hitoshi Asai, Hamamatsu; Toshitaka Takeguchi, Ogasa-gun, and Kazuhisa Miyaguchi, Hamamatsu, all of Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, and Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, both of Japan

Filed Mar. 22, 1996, Ser. No. 621,015
Claims priority, application Japan, Mar. 24, 1995, 7-066601
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—98.8 6 Claims



1. A medical X-ray imaging apparatus comprising:

an X-ray generator for emitting X-rays toward a subject;

an X-ray imaging device for detecting an image of X-rays having passed through the subject;

a swivel member for rotating the X-ray generator and the X-ray imaging device that are opposed to each other around the subject; and

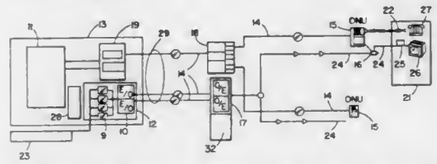
display means for displaying an image signal from the X-ray imaging device,

wherein the X-ray imaging device includes a CCD sensor having a plurality of light-receiving pixels arranged in two dimensions and the frequency of a charge transfer clock is changed depending on the rotation speed of the swivel member to perform imaging of a predetermined tomographic plane, and the X-ray imaging device further includes a dosage sensor for detecting an X-ray dosage having passed the subject, and the dosage sensor is provided adjacent to the CCD sensor forward in the rotation direction of the CCD sensor to perform feedback-control of the X-ray dosage emitted by the X-ray generator.

5,664,002
METHOD AND APPARATUS FOR PROVIDING POWER TO A COAXIAL CABLE NETWORK

Russell A. Skinner, Sr., Larkspur, Colo., assignor to U S West, Inc., Englewood, Colo.

Continuation of Ser. No. 191,303, Feb. 3, 1994, Pat. No. 5,467,384, which is a continuation-in-part of Ser. No. 68,827, May 28, 1993, Pat. No. 5,355,401. This application Nov. 13, 1995, Ser. No. 556,537
Int. Cl.[6] H04M *9/00;11/04;1/00*
U.S. Cl. 379—56.2 8 Claims



1. A video and telephony network including a plurality of telephones operatively connected thereto at one or more subscriber premises comprising:

a fiberoptic transmission system;

a coaxial cable transmission system electromagnetically connected to said fiberoptic transmission system;

a telephone switching system electromagnetically connected to said fiberoptic transmission system;

a video provisioning system electromagnetically connected to said fiberoptic transmission system;

a video receiver electromagnetically connected to said coaxial cable transmission system;

an optical network unit electromagnetically connected to said coaxial cable transmission system and located external to said subscriber premises; and

a power supply electromagnetically connected to said coaxial cable transmission system;

whereby power from said power supply is transmitted through said coaxial cable transmission system to said optical network unit to provide an electromagnetic form of signaling and supervision for a telephone service application for said telephones.

5,664,003
PERSONAL MOBILE COMMUNICATION SYSTEM WITH TWO POINTS OF ENTRY

Mark Jeffrey Foladare, Kendall Park; Shelley B. Goldman, East Brunswick; David Phillip Silverman, Somerville, and Roy Philip Weber, Bridgewater, all of N.J., assignors to AT & T, Middletown, N.J.

Filed Jan. 23, 1996, Ser. No. 590,237
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 455—459 9 Claims

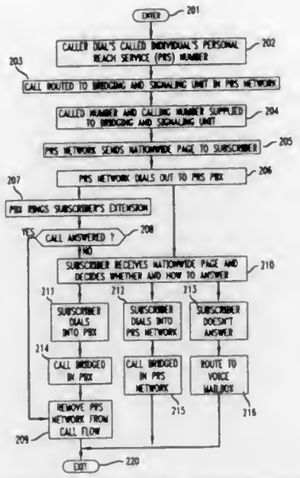
1. A method for use in completing a telephone call from a calling party that is placed to a personal telephone number of a called party, the method comprising:

receiving said calling party's call at a meet-me bridge that bridges two calls together;

determining the home PBX of the called party from the personal telephone number called by the caller;

paging the called party to alert the called party that a telephone call is waiting;

establishing a connection between the meet-me bridge and the home PBX of the called party while maintaining the calling party's call at the meet-me bridge;



if the called party is responsive to the page from a location local to the called party's home PBX, receiving a telephone call from the called party at the called party's home PBX and then connecting the calling party's call to the home PBX; and

bridging together at the called party's home PBX the telephone call from the calling party and the called party's telephone call responsive to the page.

5,664,004

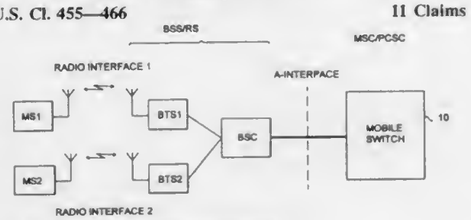
SUPPORT OF MULTIPLICITY OF RADIO INTERFACES OVER AN INTERFACE BETWEEN A BASE STATION SYSTEM AND A MOBILE SWITCH

Elina Durchman, Mukilteo, Wash.; Juho Laatu, Alaskyla, and Sanna Mäenpää , Espoo, both of Finland, assignors to Nokia Telecommunications OY, Espoo, Finland

Filed Jan. 13, 1995, Ser. No. 373,942

Int. Cl.[6] H04Q *7/20;7/22;7/30*

U.S. Cl. 455—466 **11 Claims**



1. A mobile radio system, comprising

mobile stations,

a mobile switch,

a base station system supporting multiple radio interfaces for communication between said base station system and said mobile stations,

a dedicated signalling protocol associated with each of said multiple radio interfaces,

a single signalling interface between said mobile switch and said base station system, said single signalling protocol supporting each of said dedicated signalling protocols,

a discrimination parameter used separating signalling messages belonging to different signalling protocols from each other, said discrimination parameter being associated with each signalling message transferred through said single signalling interface for indicating the signalling the signalling protocol said message belongs to.

5,664,005

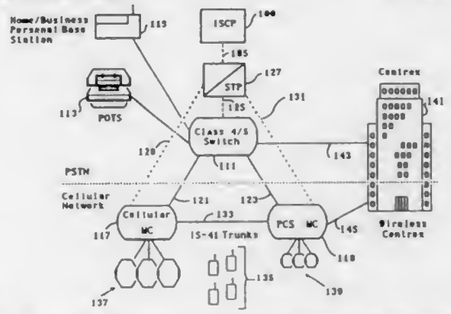
PERSONAL COMMUNICATIONS SERVICE USING WIRELINE/WIRELESS INTEGRATION

Mark J. Emery, Herndon, Va.; Brenda N. Tucker, Mitchellville, and Laurie D. Schwartz, Garrett Park, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Division of Ser. No. 229,891, Apr. 19, 1994, Pat. No. 5,469,496, which is a division of Ser. No. 845,924, Mar. 5, 1992, Pat. No. 5,353,331. This application Jun. 5, 1995, Ser. No. 461,908

Int. Cl.[6] ~~H04Q~~ *7/22;7/24;7/30*

U.S. Cl. 455—422 **21 Claims**



21. A method of registering a mobile communication unit with a data base of an integrated wired and wireless communication network comprising,

communication lines,

a central office switching system connected to the communication lines for selectively providing switched communication connections between the communication lines,

a mobility controller controlling a plurality of cell sites, connected to the central office switching system, for selectively providing wireless communications between said central office switching system and wireless mobile communication units, and

a network controller, separate from the central office switching system and the mobility controller, said network controller storing call processing data associated with subscribers who are associated with one of the communication lines connected to the central office switching system and storing call processing data associated with subscribers who each are associated with one of the mobile communication units; said method of registering comprising the steps of:

registering said mobile communication units with a wireless mobility controller; and

in response to registration, sending a message to the network controller identifying the wireless mobility controller and the mobile communication unit which have just registered.

5,664,006

METHOD FOR ACCOUNTING FOR USER TERMINAL CONNECTION TO A SATELLITE COMMUNICATIONS SYSTEM

Paul A. Monte, San Jose; Robert A. Wiedeman, Los Altos, and Michael J. Sites, Fremont, all of Calif., assignors to Globalstar L.P., San Jose, Calif.

Filed Jun. 7, 1995, Ser. No. 474,443

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 455—405 **29 Claims**

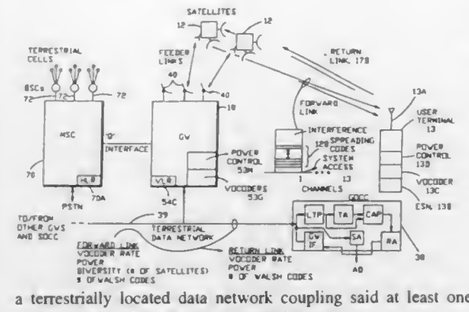
20. A satellite communication system, comprising:

a constellation of earth orbiting satellites;

at least one terrestrially located user terminal;

at least one terrestrially located gateway, said gateway including means for establishing a bidirectional spread spectrum, power controlled wireless communication connection between a terrestrial communications system and said at least one user terminal through at least one of said satellites;

at least one terrestrially located control center;



a terrestrially located data network coupling said at least one gateway to said at least one control center;

wherein, said at least one gateway includes means for periodically recording data during a wireless bidirectional communication connection with a user terminal, said data being expressive at least of an identity of the user terminal and an amount of satellite communication system resources that are consumed in order to provide the wireless bidirectional communication connection, and wherein said gateway includes means for outputting said recorded data to said data network for reception by said control center; and

said control center includes means for processing the system usage data to derive a historical record of the system usage, for employing the historical record to predict a future system usage, and for allocating satellite system resources to said at least one gateway in accordance with the predicted future system usage.

5,664,007

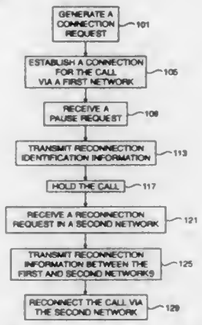
METHOD AND APPARATUS FOR PROVIDING CONTINUATION OF A COMMUNICATION CALL ACROSS MULTIPLE NETWORKS

Behrokh Samadi, 22 Longview Dr., Holmdel, N.J. 07733, and Kazem A. Sohraby, 116 University Dr., Lincroft, N.J. 07738

Filed Mar. 6, 1995, Ser. No. 398,728

Int. Cl.[6] H04Q *7/22;7/24;7/38*

U.S. Cl. 455—442 **42 Claims**



1. A method of providing continuation of a communication call across multiple networks comprising the steps of:

establishing a call between a plurality of end-points via a first network;

receiving a pause request signal generated by a user of one of the plurality of end-points;

transmitting reconnection identification information;

holding the call on the first network;

receiving in a second network a reconnection request signal generated by the user; and

reconnecting said call to the user via the second network.

5,664,008

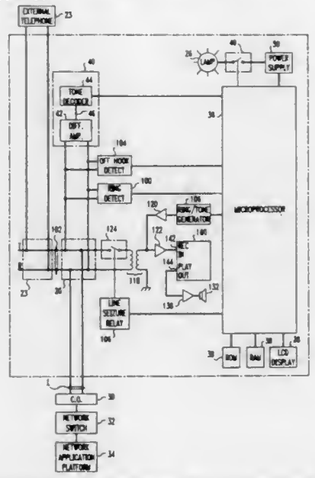
MESSAGE WAITING ADJUNCT DEVICE

Burt Joseph Bossi, Indianapolis; William Alan Hewitt. Greenfield, and Stephen Dale Hoskins, Indianapolis, all of Ind., assignors to AT&T, Middletown, N.J.

Filed Dec. 11, 1995, Ser. No. 570,145

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—67 **12 Claims**



1. A telephone call management device connectable to a telephone network termination node in a subscriber premise, comprising:

a housing;

a message waiting indicator light disposed on a surface of said housing;

a ring detector circuit responsive to a ringing signal at the termination node;

an on/off hook detection circuit for determining whether the subscriber has answered an incoming call;

a tone generating circuit, responsive to detection of a ringing signal by said ring detector circuit and to said on/off hook detection circuit, for establishing an interface with a network-based message storage and delivery service when an incoming call is not answered; and

an alerting circuit responsive to status signals received from the network-based message storage and delivery service, for at least one of energizing and de-energizing an indicator in accordance with a message waiting status of the subscriber.

5,664,009

VOICE MAIL NOTIFICATION SYSTEM

Robert L. Hurst, Roseville, Calif., and Steven A. Fernald, Bingham Farms, Mich., assignors to Allnet Communication Services, Inc., Bingham Farms, Mich.

Continuation of Ser. No. 425,590, Apr. 20, 1995, abandoned, which is a continuation of Ser. No. 851,056, Mar. 13, 1992, Pat. No. 5,434,907. This application Oct. 23, 1995, Ser. No. 553,784

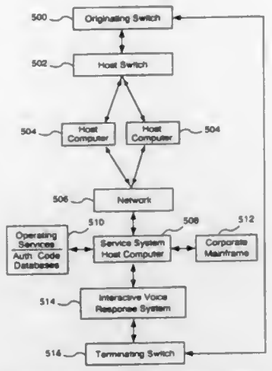
Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—88 **2 Claims**

1. A method of automatically assigning a voice mail box to a telecommunications service subscriber upon access to a telecommunication system host computer connecting with an interactive voice response system and a processing means, the method comprising the steps of:

utilizing the processing means to determine whether a voice mail box has been assigned to the subscriber;

upon determining that a voice mail box has not been assigned to the subscriber, prompting the subscriber to input a signal to



direct the interactive voice response system to assign the voice mail box to the subscriber;

inputting the signal from the subscriber;

upon verifying the signal, utilizing the processing means to assign the voice mail box to the subscriber; and

transmitting a mail box number from the interactive voice response system to the telecommunication system host computer, the mail box number representing the voice mail box assigned to the subscriber.

5,664,010

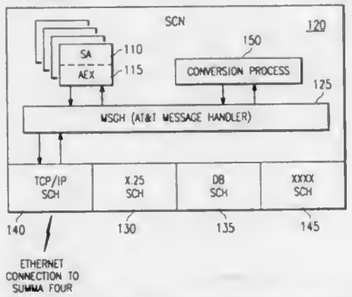
SYSTEM AND METHOD FOR PROVIDING AN IMPROVED TELECOMMUNICATIONS SERVICE NODE

Thomas G. Walker, Bound Brook, N.J.; Darren Goos, Carrollton; Raymond E. Bernritter, Dallas, both of Tex.; Robert S. Lee, Rockaway, N.J.; Mark I. Finkelstein, Conyngham, Pa., and Ross Ginsberg, Livingston, N.J., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Jan. 4, 1995, Ser. No. 368,525

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—207 **13 Claims**



1. A method for increasing service node call capacity, wherein said service node handles incoming and outgoing communications, comprising the steps of:

a) receiving an incoming call into a peripheral resource connected to and external to a service node containing at least one service application and a service circuit handler for communicating with said peripheral resource;

b) creating an instance of said service application on said service node associated with said incoming call;

c) formatting, by said service application, an action request for said peripheral resource to place a corresponding outgoing call;

d) placing, by said peripheral resource external host, said outgoing call;

e) hairpinning, by said peripheral resource, said incoming and outgoing calls together;

f) parking said hairpinned calls in said peripheral resource's switch fabric until one of said hairpinned calls reports an on-hook condition;

g) notifying, by said peripheral resource, said service application of successful connection of said incoming and outgoing calls; and

h) tearing down by said service node of said instance of the incoming call, thereby releasing the associated memory supporting said instance, and the connection between the service node and the peripheral resource, without disturbing said hairpinned calls.

5,664,011

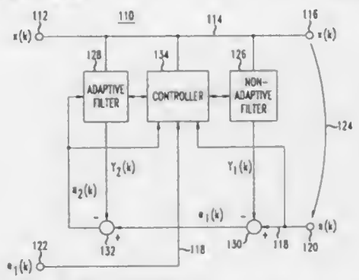
ECHO CANCELLER WITH ADAPTIVE AND NON-ADAPTIVE FILTERS

Ronald Eldon Crochiere, Berkeley Heights, N.J., and Vasu Iyengar, Allentown, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 25, 1995, Ser. No. 519,267

Int. Cl.[6] H04M *9/08;* **H04B** *3/23*

U.S. Cl. 379—410 **27 Claims**



1. An echo canceller comprising:

a receive path and a send path each having an input port and an output port;

a non-adaptive filter with first filter coefficients and an input port coupled to the receive path;

an adaptive filter with second filter coefficients and an input port coupled to the receive path;

a first subtracter with an addend input port coupled to the input port, a subtrahend input port coupled to an output port of the non-adaptive filter, and an output port coupled to the send output port;

a second subtracter with an addend input port coupled to the send output port, a subtrahend input port coupled to an output port of the adaptive filter, and an output port coupled to a feedback input port of the adaptive filter; and

a controller coupled to the output ports of the first and second subtracters, and coupled to the filters, for accumulating the second filter coefficients on the first filter coefficients and for resetting the second filter coefficients in response to signal levels at the output ports of the first and second subtracters.

5,664,012

HANDS FREE DEVICE FOR A PORTABLE PHONE

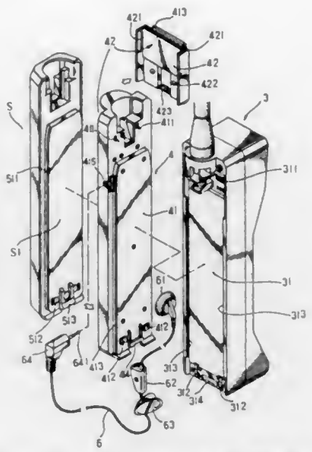
Stephen Chen, Changhua, Taiwan, assignor to E. Lead Electronics Co., Ltd., Changhua, Taiwan

Filed Nov. 6, 1995, Ser. No. 553,896

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—420 **5 Claims**

1. A portable hold-free device for a hand phone, comprising an interface board and an external wire set connected thereto, a hold-free circuit set being contained in the interface board, the external wire set including an earphone and a microphone, said interface board being substantially entirely sandwiched between a battery and a hand phone, and said interface board having a front mating face mating to a back mating face of the hand phone and a back mating face mating to a front mating face of the battery.



5,664,013

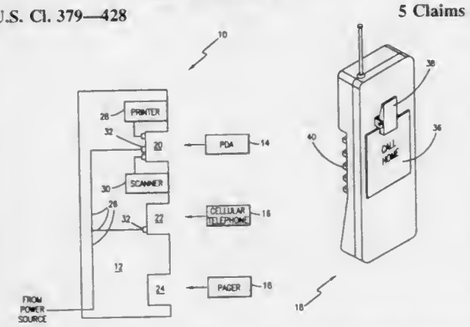
EMBEDDED NOTEPAD SYSTEM FOR A CELLULAR TELEPHONE

Markku J. Rossi, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 7, 1995, Ser. No. 486,866

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—428 **5 Claims**



1. An embedded notepad system for a cellular telephone system comprising:

a cellular telephone, said cellular telephone having a means for holding a piece of paper;

a printer for printing information on said piece of paper, said information comprises information extracted from a personal digital assistant, wherein said printer is connected directly to said personal digital assistant; and support means for detachably supporting said cellular telephone and said personal digital assistant.

5,664,014

TWO-WAY COMMUNICATIONS EARSET

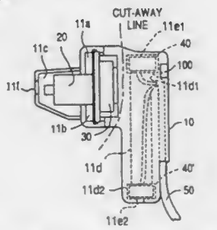
Noboru Yamaguchi, Yokohama, and Masao Konomi, Tokyo, both of Japan, assignors to Pan Communications, Inc., Tokyo, Japan

Division of Ser. No. 413,928, Mar. 30, 1995, Pat. No. 5,448,637, which is a continuation of Ser. No. 45,057, Apr. 9, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,505

Claims priority, application Japan, Oct. 20, 1992, 4-306453; Mar. 17, 1993, 5-082783

Int. Cl.[6] H04M *1/00;* **H04R** *25/00*

U.S. Cl. 379—430 **8 Claims**



1. A one piece two-way simultaneous voice transmitting and receiving device wearable at an ear, comprising:

receiver means for emitting sound to the ear canal of a user; and

transmitter means, coupled to the receiver means, comprising:

a first microphone for sound pickup adapted to be located outside the ear canal at a first position relative to the mouth of the user, the first microphone being one of the unidirectional, bidirectional, or omnidirectional and outputting a first signal; and

a second microphone for sound pickup spaced a distance away from the first microphone and adapted to be located outside the ear canal at a second position relative to the mouth of the user, the second position is farther from the mouth of the user than the first position, the second microphone being unidirectional if the first microphone is unidirectional, or bidirectional if the first microphone is bidirectional, or omnidirectional if the first microphone is omnidirectional, and outputting a second signal; and

means for subtracting the second signal from the first signal when in phase, or for adding the first and second signals when out of phase.

5,664,015

SHOWER SPEAKER TELEPHONE

Joseph E. Ford, Cary; Donald N. Jursich, Chicago, both of Ill., and Raymond Chan, Vancouver, Canada, assignors to Jing Mei Industrial Holdings, Inc., Cook Islands

Continuation-in-part of Ser. No. 490,786, Jun. 15, 1995, Pat. No. 5,625,688, and a continuation-in-part of Ser. No. 40,337, Jun. 15, 1995, Pat. No. Des. 369,357, and a continuation-in-part of Ser. No. 40,339, Jun. 15, 1995, Pat. No. Des. 372,474. This application Oct. 18, 1995, Ser. No. 544,770

Int. Cl.[6] H04M *1/00*

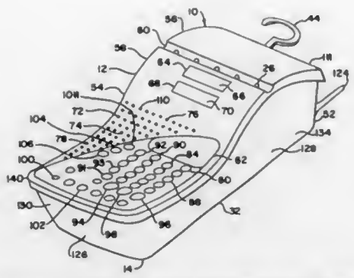
U.S. Cl. 379—433 **12 Claims**

1. A telephone system, comprising:

a shower speaker telephone for use in a shower, said telephone comprising

a water-impervious housing with a front section and a back section;

said front section including a speakerphone comprising an amplified speaker for receiving telephone signals and for amplifying an incoming caller's voice to a sufficient audible level to be heard by an user in the shower at a distance spaced from the speaker, and an amplified microphone for detecting and receiving the user's voice in the shower at a distance spaced from the microphone and from transmitting telephone signals;



said housing comprising an impact-resistant electrically insulating material capable of withstanding water pressure from the shower;

said housing defining a hollow interior compartment for housing receiving circuitry connected to said microphone and transmitting circuitry connected to said speaker;

said housing comprising a shower-impervious assembly providing a water-impervious barrier for preventing water from entering into said compartment and shorting said receiving and transmitting circuitry; and

said shower-impervious assembly including a shampoo-resistant rib and a soap-resistant seal.

5,664,016

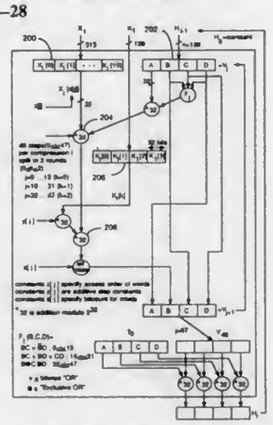
METHOD OF BUILDING FAST MACS FROM HASH FUNCTIONS

Bart K. B. Preneel, Heverlee, Belgium, and Paul C. Van Oorschot, Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 17, 1995, Ser. No. 544,150

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—28 **25 Claims**



1. In an iterated hash function operation in data encryption and authentication, a method of performing a compression function $H_i=f(H_{i-1}, X_i)$ to an input data block X_i having a plurality of data segments $X_i[j]$, each data segment being of a predetermined bitlength of p, p being a positive integer and H_i being an updated chaining variable of H_{i-1}, the invention being characterized in that the compression function comprises multiple iterated internal steps, and each internal step comprises:

(i) a preparing step of introducing working variables to a data segment;

(ii) a keying step of introducing a subkey K_1 or a portion thereof to a predetermined constant y to generate a key dependent constant; and .

(iii) a processing step of treating the prepared data segment with the key dependent constant.

5,664,017

INTERNATIONALLY REGULATED SYSTEM FOR ONE TO ONE CRYPTOGRAPHIC COMMUNICATIONS WITH NATIONAL SOVEREIGNTY WITHOUT KEY ESCROW

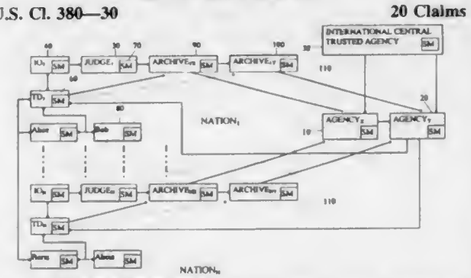
Carmi David Gressel, Kvutzat Urim, and Itai Dror, Beersheva, both of Israel, assignors to Fortress U & T Ltd., Beersheva, Israel

Filed May 8, 1995, Ser. No. 437,223

Claims priority, application Israel, Apr. 13, 1995, 113375

Int. Cl.[6] H04L *9/30;9/00*

U.S. Cl. 380—30 **20 Claims**



20. Apparatus for controlling an encryption system including a first plurality of subscriber entities each having an ID, a public key and a private key, the apparatus comprising:

a second plurality of regulator entities each having an ID, a public key and a private key; and

at least one decrypting agency entity having at least one agency public key respectively which is provided to each of the first plurality of subscriber entities and to each of the second plurality of regulator entities,

wherein each subscriber entity and each regulator entity includes a private key encrypter employing at least one agency public key to encrypt the entity's private key; and

wherein said apparatus also comprises a certificate generator which, for each individual subscriber entity and for each individual regulator entity, generates a certificate attesting, for all other entities, to the individual entity's status, ID, public key and encrypted private key.

5,664,018

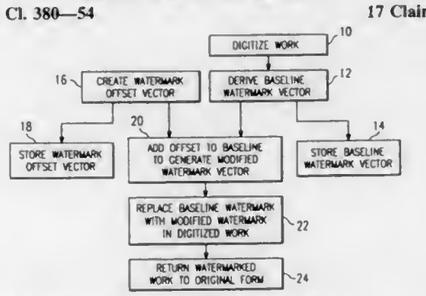
WATERMARKING PROCESS RESILIENT TO COLLUSION ATTACKS

Frank Thomson Leighton, 15 Charlesden Park, Newtonville, Mass. 02160

Filed Mar. 12, 1996, Ser. No. 615,534

Int. Cl.[6] G09C *5/00;* **H04L** *9/00*

U.S. Cl. 380—54 **17 Claims**



1. A watermarking method, comprising the steps of:

(a) generating a digital string from the work to form a baseline watermark;

(b) generating a set of watermarks each having a predetermined relationship to the baseline watermark; and

(c) inserting a respective one of the set of watermarks into a respective copy of the work to create a watermarked copy uniquely identified by the respective one of the set of watermarks; and

(d) repeating step (c) at least m times to create a set of m watermarked copied, each having a different one of the set of watermarks therein, such that if a subset of said m watermarked copies are averaged to produce an illicit copy of the work, at least one of the set of watermarks is detectable in the illicit copy.

5,664,019

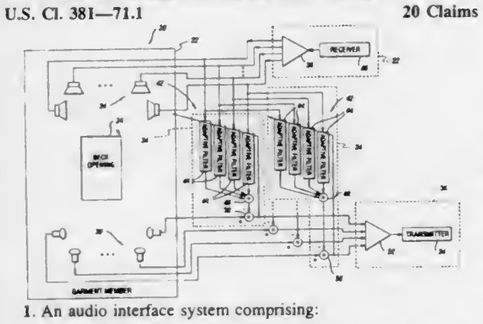
SYSTEMS FOR FEEDBACK CANCELLATION IN AN AUDIO INTERFACE GARMENT

Weijia Wang, Sunnyvale, and James H. Boyden, Los Altos Hills, both of Calif., assignors to Interval Research Corporation, Palo Alto, Calif.

Filed Feb. 8, 1995, Ser. No. 385,760

Int. Cl.[6] G10K *11/16;* **H04B** *15/00;* **H04R** *27/00*

U.S. Cl. 381—71.1 **20 Claims**



1. An audio interface system comprising:

a garment member;

a plurality of audio output devices attached to the garment member, the plurality of audio output devices emitting first sound waves based upon a plurality of input signals applied thereto;

a plurality of audio input devices in audio proximity to the plurality of audio output devices, each of the plurality of audio input devices generating a corresponding output signal representative of second sound waves received thereby;

a plurality of adaptive processors, each of the adaptive processors coupled to a corresponding one of the plurality of audio input devices, wherein each of the adaptive processors forms a corresponding processed signal based upon the output signal from the corresponding one of the audio input devices and based upon at least one of the input signals;

wherein the influence of the first sound waves is attenuated in each corresponding processed signal.

5,664,020

COMPACT FULL-RANGE LOUDSPEAKER SYSTEM

Barry S. Goldfarb, Deland, Fla., and Robert L. Clark, Durham, N.C., assignors to BSG Laboratories, Deland, Fla.

Continuation-in-part of Ser. No. 181,808, Jan. 18, 1994, Pat. No. 5,450,495. This application Mar. 31, 1995, Ser. No. 414,418

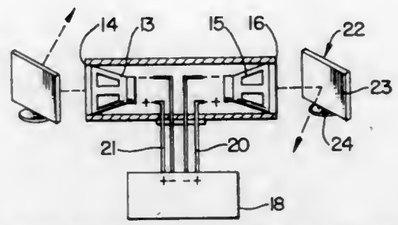
Int. Cl.[6] H04R *1/02;* **A47B** *81/06*

U.S. Cl. 381—89 **17 Claims**

1. A compact, full range loudspeaker system comprising:

a compact elongated enclosure having a hollow interior joining two opposing open ends and, characterized by a resonant frequency;

two audio loudspeakers, each having an audio bandwidth of response extending from 500 Hz to at least 10 kHz and a diameter of less than 4.25 inches, one of said two audio



speakers being mounted in each of said open ends, aligned axially and facing outwardly, said elongated enclosure length being greater than or equal to twice the radius of each of said two audio loudspeakers;

signal cables connected to said two audio speakers for delivering driving signals to each of said two audio loudspeakers; and

dampening means forming at least part of the elongated enclosure, wherein said dampening means limits the structural acoustic response around the resonant frequency of the enclosure.

5,664,021

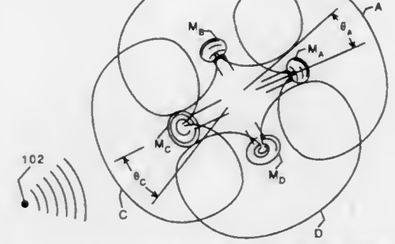
MICROPHONE SYSTEM FOR TELECONFERENCING SYSTEM

Peter Lee Chu, Lexington, and William F. Barton, Littleton, both of Mass., assignors to PictureTel Corporation, Andover, Mass.

Filed Oct. 5, 1993, Ser. No. 132,032

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—92 **19 Claims**



1. A microphone system for use in a conference environment where an acoustic source emits energy from diverse and varying locations within the environment, comprising:

at least two directional microphones held in a fixed arrangement about a center point, the respective response of each said microphone being directed radially away from said center point in a different direction, each said microphone able to receive an acoustic signal and produce an electrical signal in response, said microphones comprising two dipole microphones oriented at 90° from each other;

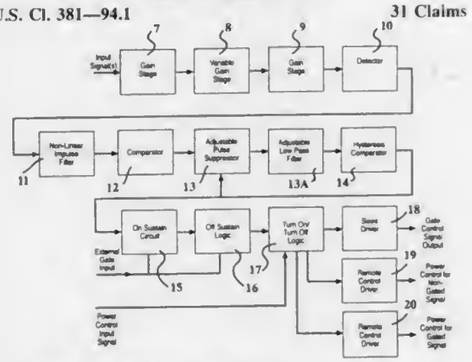
mixing circuitry to combine said electrical signals in varying proportions to form a composite signal, said composite signal including contributions from at least two of said microphones; and

control circuitry configured to analyze said electrical signals to determine an angular orientation of the acoustic signal relative to said central point, and to substantially continuously adjust said proportions in response to said determined orientation and provide said adjusted proportions to said mixing circuitry,

the values of said proportions selected so that said composite signal simulates a signal that would be generated by a virtual

directional microphone pivoted about said central point to direct its maximum response at the acoustic signal as the acoustic signal moves about the environment.

5,664,022
NOISE GATE CONTROL CIRCUITRY FOR ELECTRONIC SYSTEMS
David Fiorl, Jr., P.O. Box 266, Yardley, Pa. 19067
Filed Jan. 6, 1994, Ser. No. 178,099
Int. Cl.[6] G01R *31/02*
U.S. Cl. 381—94.1 **31 Claims**



1. A switching apparatus comprising:
attenuating means for controlling a second apparatus;
means, responsive to a control signal, for setting a condition of the attenuating means to provide an input signal or power to the second apparatus; and
means for generating the control signal to interrupt the input signal or power to the second apparatus including:
means for responding to a level of a signal that is subjected to said attenuating means, with the signal level exceeding a threshold for generating the control signal; and
means for applying the control signal to coordinate the application and release of the action of said attenuating means as the condition of the attenuating means in accordance with an externally applied input signal that provides for the remote control of power on and power off of the second apparatus providing the signal that is subjected to the attenuating means.

5,664,023
LOW TCR WIRE IN HIGH POWER AUDIO COILS
Douglas J. Button, Champaign, Ill., assignor to JBL Incorporated, Northridge, Calif.
Filed Nov. 14, 1994, Ser. No. 338,434
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—194 **9 Claims**

1. An electro-magnetic winding, in a voice coil of a loudspeaker, comprising a metallic wire material selected to have a temperature coefficient of resistance less than 0.0035 per degree C, and to have a product of resistivity in ohm centimeters times density in kilograms/cubic inch less than 0.3E-06, wherein said wire material is selected in a manner to maximize a theoretical maximum sound pressure level SPL_{MAX} in accordance with the following equation:

$$SPL_{MAX}=112+10\text{Log}[K_1/k_1(M_{mc}+k_2k_3k_4)^2]$$

wherein SPL_{MAX} is the theoretical maximum sound pressure level at infinitely high temperature, dB/1 m,
k_1 is temperature coefficient of resistance of the wire material, per degree C (20° to 100° C.),
k_3 is resistivity of the wire material, Ohm-centimeters,
k_4 is density of the wire material, kilograms/cubic inch, and

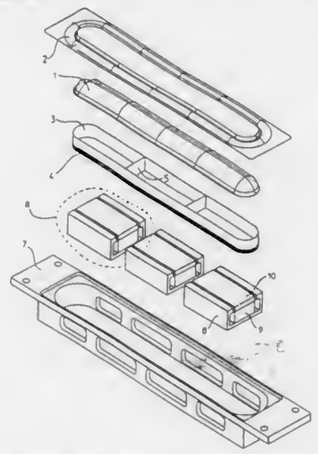
$$SPL = 112 + 10\,\text{Log}\left[\frac{k_1 Tr\,Sd^2\,Rme\,Cb\,Cd}{Pr\,(1+k_1 Tr)(Mmc+(\pi k_2 k_3 k_4 Cb^2 Cd^2 Rme))^2}\right]$$
$$FX^2\,Po$$

Glossary of Symbols

Cd Mean diameter of the voice coil, inches
Cb Height or axial length of the coil, inches
Py Packing factor of the coil windings (.95 for edge wound .7 for round wire)
Fc Cooling factor: how well the design does at taking heat from the surface of the coil (about 2.0 to 3 slotted gap winders, around 3.0 for typical designs); includes Pi; when divided by square inches yields C^2/W
FX Flux lines passing through the surface of the coil, Maxwells
k_1 Thermal Coefficient of resistivity (TCR, .0093 for Cu and Al), 1/C°
k_2 modifier for mixed units (=7.84E12)
k_3 Resistivity of voice coil wire (2.9×10^{-6} for Al, 1.74×10^{-6} for Cu)
k_4 Density of wire material, Kg/Cu inch (.0442 for Al, .345 for Cu)
k_5 Pu/2 e c
Po Density of air (1.31Egles m)
c The speed of sound (343m/s)
Mmc The part of the moving mass that does not include the coil
Re DC resistance of voice coil, Ohms
Rme Motor strength defined as B^2L^2/Re
B Flux density over the surface of the voice coil, Tesla
L The length of the wire in the coil, meters
Sd The projected area of the diaphragm, Sq meters
SPL Sound pressure level, dB
Tr The temperature rise of the voice coil above room temperature, Celcius

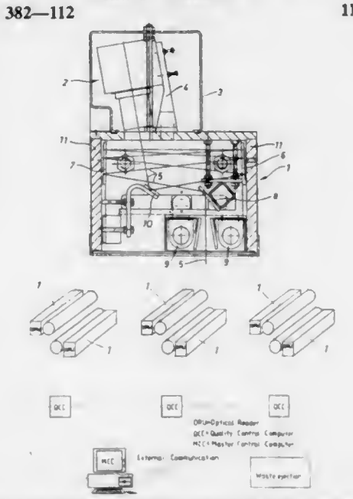
K_1, M_{mc} and K_2 are predetermined loudspeaker structural factors.

5,664,024
LOUDSPEAKER
Akihiro Furuta, Takatsuki; Kazue Satoh, Neyagawa; Hiroyuki Takewa, Kaizuka; Mikio Iwasa, Katano; Shinya Mizone, Tsu, and Kunlaki Sakal, Matsusaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 24, 1995, Ser. No. 426,707
Claims priority, application Japan, Apr. 25, 1994, 6-110340; Jan. 30, 1995, 7-012601; Mar. 22, 1995, 7-062719
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—199 **19 Claims**



1. A loudspeaker comprising:
a frame;
a diaphragm, a planar shape thereof being non-axisymmetric having a larger diameter and a smaller diameter when the diaphragm is viewed from a vibration direction thereof;
a band-shaped edge portion provided around an outer periphery of the diaphragm, the outer periphery of the edge portion being connected to the frame and an inner periphery of the edge portion being connected to the diaphragm;
a cylindrical voice coil bobbin in a non-axisymmetric shape having a larger diameter and a smaller diameter which includes a pair of opposed faces parallel to each other in a larger diameter direction, one end portion of the voice coil bobbin being connected to the diaphragm;
a voice coil wound around the voice coil bobbin;
a plurality of voice coil bobbin reinforcing members in a plate shape which are bridged between the pair of opposed faces parallel to each other of the voice coil bobbin; and
a plurality of magnetic circuits having a gap for applying magnetic fluxes to at least a part of the voice coil.

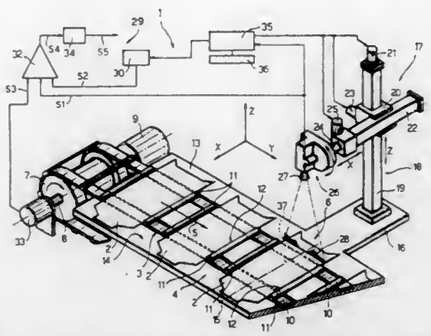
5,664,025
APPARATUS FOR THE QUALITY CONTROL OF A PRINT PRODUCED BY A PRINTING MACHINE
Juhani Kaivosoja, Helsinki, Finland, assignor to Insinööritoimisto Data Oy, Finland
Filed Apr. 10, 1995, Ser. No. 411,811
Claims priority, application Finland, Oct. 16, 1992, 924686
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—112 **11 Claims**



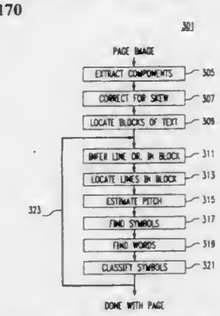
1. An apparatus for the quality control of a print produced by a printing machine, said apparatus comprising a CCD line camera having a length which substantially covers the width of a printing surface to be controlled, characterized in that said CCD line camera has photosensitive elements which produce a line which is many times shorter than the effective controlling length of the girder and is mounted directly on said measuring girder without an essential spacing between said girder and said camera, and that a path of light traveling from a printing surface to camera, on opposite side walls of said girder, is provided with mirrors, located opposite to each other and having an angular variation whereby the light of said path reflects several times between said mirrors, and that a third mirror deflects the light coming from a printing surface to one of said two opposite mirrors.

5,664,026
PRODUCT OPTICAL CONTROL METHOD
Armando Neri; Giancarlo Fusari, and Gaetano De Pietra, all of Bologna, Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy
Filed Apr. 10, 1995, Ser. No. 418,654
Claims priority, application Italy, Apr. 12, 1994, BO94A0153
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—143 **10 Claims**

1. A method of optically controlling products of a given type; the method comprising feeding products of said given type by a conveyor means in an orderly succession along a given path in a given traveling direction and through a detecting station; controlling the conveyor means by an encoder means to obtain a synchronizing signal; surface scanning each product along a selected scan line on each product; producing a detection signal, consisting of a signal curve, as a function of different graphic characteristics detected along the scan line; providing a reference signal consisting of a reference curve related to the product being controlled; comparing the detection signal with the reference signal under the control of the synchronizing signal for emitting an error signal; and supplying the error signal to a threshold circuit for emitting a YES-NO signal for selectively stopping said conveyor means when the error signal exceeds a threshold value by a predetermined amount and wherein said products are foldable blanks which are placed flat on said conveyor means and on each of which blanks said scan line is placed to extend in the traveling direction of the convevor means.



5,664,027
METHODS AND APPARATUS FOR INFERRING ORIENTATION OF LINES OF TEXT
David Jack Ittner, Manalapan, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 49,924, Apr. 20, 1993, abandoned.
This application Jan. 3, 1995, Ser. No. 368,259
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—170 **26 Claims**



1. A method practiced in image analysis apparatus including at least processing means and memory means of automatically determining the orientation of a line of entities in an image representation representing an image, the image representation being stored in the memory means and the method comprising the steps performed in the processing means of:
making a graph representation in the memory means which represents a graph in which the entities are connected with edges, said graph representation further specifying an area of each of the entities; modifying the graph representation to represent a minimum spanning tree of the graph the; and
determining, based on the area of the entities and each of a plurality of edges in the minimum spanning tree, a dominant

orientation of the edges of the minimum spanning tree and determining the orientation of the line from the dominant orientation.

5,664,028

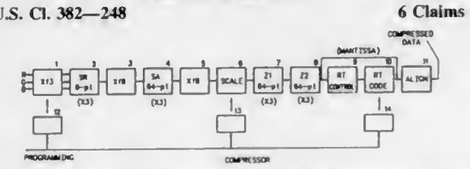
APPARATUS AND METHOD FOR COMPRESSING STILL IMAGES

Stephen M. Blonstein, San Jose; James D. Allen, Santa Clara, and Martin P. Bolick, Palo Alto, all of Calif., assignors to Ricoh Corporation, Menlo Park, Calif., and Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 332,603, Oct. 31, 1994, abandoned, which is a continuation of Ser. No. 977,763, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 743,517, Aug. 9, 1991, Pat. No. 5,319,724, which is a continuation-in-part of Ser. No. 511,245, Apr. 19, 1990, Pat. No. 5,129,015. This application Oct. 31, 1995, Ser. No. 551,132

Int. Cl.[6] **G06K** *9/46*

U.S. Cl. 382—248 **6 Claims**



1. An image compressor for transforming a first pixel component vector of spatially-located pixel component values for an image to form a first transformed pixel component vector for said image, comprising:

a data processor where additions, subtractions and shifts are computationally less expensive than multiplications and divisions, for producing a multiplication of said first pixel component vector with a nondiagonal matrix to produce an intermediate product vector, a product of a first diagonal matrix of post-multipliers and said nondiagonal matrix producing a Generalized Chen Transform such that a multiply of said nondiagonal matrix with said first pixel component vector is implementable as a sequence of additions, subtractions and shifts, and is therefore computationally inexpensive in said data processor;

means for multiplying said intermediate product vector and a third diagonal matrix, point-multiply operations defining a second diagonal matrix, multiplication of said first and second diagonal matrices producing said third diagonal matrix, to provide said first transformed pixel component vector for said image.

5,664,029

METHOD OF DISREGARDING CHANGES IN DATA IN A LOCATION OF A DATA STRUCTURE BASED UPON CHANGES IN DATA IN NEARBY LOCATIONS

Sean M. Callahan, Cupertino, and Bruce A. Leak, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

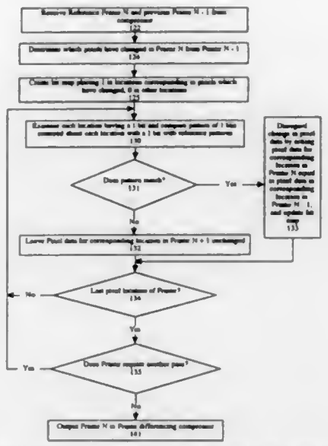
Filed May 13, 1992, Ser. No. 882,266

Int. Cl.[6] **G06K** *9/40*

U.S. Cl. 382—260 **23 Claims**

1. A method of filtering a signal comprising a sequence of frames used in conjunction with a frame differencing technique, said frames having a plurality of corresponding data locations, each of said data locations having data associated therewith, wherein said signal comprises an image signal and said data comprises pixel data, said method comprising the steps of:

comparing said data associated with a first location in a first frame with said data associated with said first location in a second frame;



determining whether a change in said data associated with said first location has occurred between said first frame and said second frame;

determining whether a change in said data between said first frame and said second frame in a predetermined group of locations proximate said first location has occurred, if a change in said data associated with said first location has occurred, to form a pattern of locations wherein said data has changed;

comparing said pattern with at least one predetermined reference pattern; and,

disregarding said change between said first and said second frames in said data associated with said first location if said pattern matches one of said at least one predetermined reference pattern by copying said pixel data from said first location in said first frame to said first location in said second frame.

5,664,030

METHOD AND APPARATUS FOR RECORDING/REPRODUCING MESH PATTERN DATA

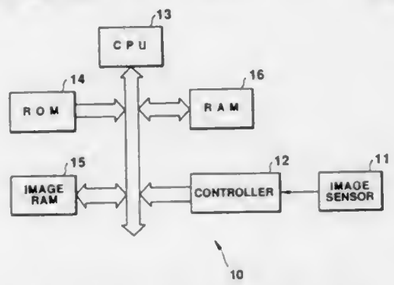
Nobuo Iizuka, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 869,012, Apr. 14, 1992, Pat. No. 5,454,054, which is a division of Ser. No. 530,630, May 30, 1990, Pat. No. 5,153,928. This application May 26, 1995, Ser. No. 451,544

Claims priority, application Japan, Jun. 9, 1989, 1-145255; Jun. 9, 1989, 1-145256; Jun. 9, 1989, 1-145257

Int. Cl.[6] **G06K** *9/20*

U.S. Cl. 382—321 **2 Claims**



1. A data reproduction method comprising the steps of:

reading an encoded image as image data from a recording medium on which image elements including a mesh pattern

having a rectangular shape as a whole and including dark and light image elements which are arranged at two-dimensional distributed positions, whose arrangement is determined based on a changed two-dimensional matrix obtained by changing an original two-dimensional matrix constituting target data in accordance with predetermined pseudo random numbers, respective randomized target data b_n being obtained by executing an exclusive OR operation for target data b_n with pseudo random numbers rnd(n);

detecting image elements from the read image data, and obtaining the elements of the randomized data to form the changed two-dimensional matrix; and

changing the elements on the formed two-dimensional matrix according to the predetermined pseudo random numbers to form the original two-dimensional matrix, thereby reproducing the target data, said target data b_n being obtained by executing an exclusive OR operation for the randomized target data b_n with the same pseudo random numbers rnd(n).

5,664,031

IMAGE PROCESSING APPARATUS WITH FUNCTION OF EXTRACTING VISUAL INFORMATION FROM REGION PRINTED IN DROPOUT COLOR ON SHEET

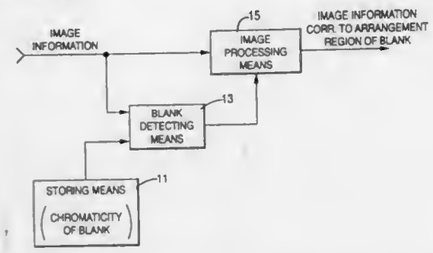
Yukako Murai, and Tamio Amagai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 136,463, Oct. 15, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 545,373

Claims priority, application Japan, Nov. 15, 1992, 4-277343

Int. Cl.[6] **G06K** *9/20*

U.S. Cl. 382—317 **6 Claims**



1. An image processing apparatus which extracts visual information filled in a blank printed in a dropout color on a sheet, substantially the entire blank being printed in the dropout color, the image processing apparatus comprising

storing means for storing a color measured in advance with respect to the blank;

blank detecting means for scanning the sheet to obtain image information from the sheet, for judging coincidence or non-coincidence of the color stored in the storing means with the color of respective picture elements forming the image information and, based on results of the judging, for detecting an arrangement region of the blank on the sheet; and

image processing means for extracting image information corresponding to the arrangement region of the blank detected by the blank detecting means, from the image information obtained by scanning the sheet, and for performing dropout processing with respect to the extracted image information to thereby extract the visual information, the image processing means including

means for filter processing to remove dropout color components in a region common to the visual information and the blank.

5,664,032

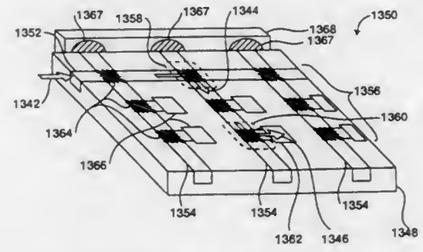
DISPLAY PANEL WITH ELECTRICALLY-CONTROLLED WAVEGUIDE-ROUTING

William K. Bischel, Menlo Park; Michael J. Brinkman, Redwood City; David A. G. Deacon, Los Altos; Edward J. DeWath, Cupertino; Mark J. Dyer, San Jose, and Simon J. Field, Menlo Park, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Division of Ser. No. 303,899, Sep. 9, 1994, Pat. No. 5,544,268. This application Mar. 12, 1996, Ser. No. 614,235

Int. Cl.[6] **G02F** *1/295;* **G02B** *6/12*

U.S. Cl. 385—4 **7 Claims**



1. A three-dimensional display device comprising:

a solid material having a first surface region and a second surface region aligned with a common viewing axis, said solid material for conveying optical energy;

each one of said first surface region and said second surface region comprising separate arrays formed of:

at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid material;

at least one pixel waveguide segment traversing said solid material along a plane of said solid material;

a plurality of output waveguide segments traversing said solid material along said plane, said output waveguide segments abutting said pixel waveguide segment at a plurality of intersections;

a plurality of electrically-controlled optical redirectors, each optical redirector being disposed transverse of one of said intersections, said optical redirectors being capable of reflecting optical energy from said pixel waveguide segment into said output waveguide segments; and

an optical reflector means disposed at each pixel location on said plane in line with selected output waveguide segments for projecting optical energy out of said plane;

wherein each one of said separate arrays is limited to redirect optical energy with a distinct optical polarization.

5,664,033

REMOTE FIBER TEST SYSTEM USING A NON-BLOCKING N×N MECHANICAL FIBER OPTICAL SWITCH

Friedrich Scheu, Hawthorn Woods, Ill.; Duwayne R. Anderson, Redmond, Oreg.; William K. Bucher, Portland, Oreg.; Steve U. Reinhold, Redmond, Oreg.; Lorimer L. Twigg, Sisters, Oreg., and Mark D. Marineau, Redmond, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

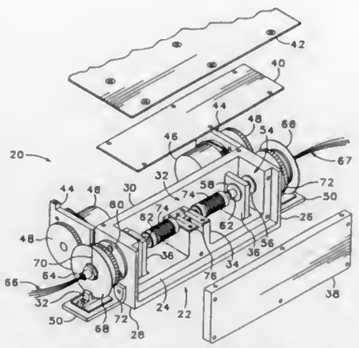
Continuation-in-part of Ser. No. 484,222, Jun. 6, 1995, Pat. No. 5,559,909, which is a continuation-in-part of Ser. No. 393,582, Feb. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,298, Apr. 5, 1994, Pat. No. 5,438,638. This application Jul. 31, 1995, Ser. No. 509,262

Int. Cl.[6] **G02B** *6/26*

U.S. Cl. 385—16 **43 Claims**

1. A remote fiber test system having at least a first measurement test instrument for testing optical fibers comprising:

a non-blocking N×N optical switch having N input ports and N output ports for selectively coupling any input port to any



output port with one of the input ports coupled to the measurement test instrument and the output ports coupled to optical fibers, the non-blocking N×N optical switch including a plurality of N input and N output mechanical optical switches with each input mechanical optical switch having an input optical transmission path representing one of the input ports of the non-blocking optical switch and N output optical transmission paths and each output mechanical optical switch having N input optical transmission paths and an output optical transmission path representing one of the output ports of the non-blocking switch with each of the mechanical optical switches having first and second independent and offset rotational axes about which the respective optical transmission paths rotate with the optical transmission paths being held in respective first and second mounting members axially aligned with the respective first and second independent and offset rotational axes with the respective optical transmission paths being positioned off of the respective rotational axes of the mounting members;

the input mechanical optical switch having:

the input optical transmission path rotating about the first independent and offset rotational axis for positioning the input optical transmission path on a first closed curve and the N output optical transmission paths rotating about a second independent and offset rotational axis for positioning the output optical transmission paths on closed curves, the input optical transmission path and the output optical transmission paths being in opposing relationship forming an optical interface, with the closed curve of the input optical transmission path being laterally offset from the closed curves of the output optical transmission paths for establishing intersecting points on the offset closed curves with each optical transmission path of the output optical transmission paths being coupled to one of the N input optical transmission paths of each output mechanical optical switches;

and the output mechanical optical switches having:

the N input optical transmission paths rotating about the first independent and offset rotational axis for positioning the input optical transmission paths on first closed curves with each optical transmission path of the input optical transmission paths being coupled to one of the N output optical transmission paths of each input mechanical optical switches and the output optical transmission path rotating about the second independent and offset rotational axis for positioning the output optical transmission path on a closed curve, the input optical transmission paths and the output optical transmission path being in opposing relationship forming an optical interface, with the closed curves of the input optical transmission paths being laterally offset from the closed curve of the output optical transmission path for establishing intersecting points on the offset closed curves;

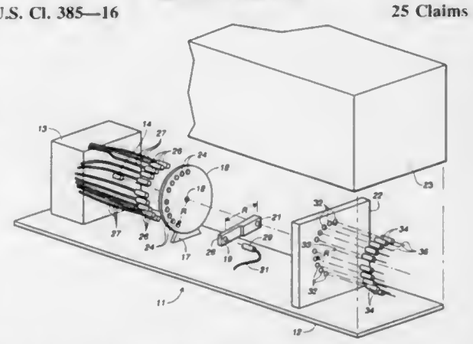
the input and output mechanical optical switches each having means for storing angular coordinates representative of the intersecting points on the offset closed curves of their input and output optical transmission paths and each having means for axially aligning their input and output optical transmission paths at one of the intersecting points on the offset closed curves using drive motors coupled to their respective mounting members and responsive to the angular coordinates for selectively rotating their input and output optical transmission paths relative to each other about their respective independent and offset rotational axes.

5,664,034

LIGHTWAVE COMMUNICATION MONITORING SWITCH

Joel Leslie Mock, Norcross, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 21, 1996, Ser. No. 653,373
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—16 **25 Claims**



1. An optical switching device comprising:

a base member;

a first optical fiber having a first light emitting and receiving termination on an end thereof mounted in fixed position relative to said base;

a light device fixedly mounted relative to said base and spaced from said first termination and substantially aligned therewith to establish a fixed light path between said first termination and said light device; and

means for interrupting the light path comprising a second optical fiber having a second light emitting and receiving termination on an end thereof and means for moving said second termination into alignment with said first termination between said first termination and said light device.

5,664,035

BIDIRECTIONAL OPTICALLY POWERED SIGNAL TRANSMISSION APPARATUS

Nobuhiko Tsuji, Kanagawa; Naoki Kaiho, Tokyo, and Yasukazu Sano, Kanagawa, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 10, 1995, Ser. No. 419,141
Claims priority, application Japan, Apr. 8, 1994, 6-070353
Int. Cl.[6] G02B *6/293*
U.S. Cl. 385—24 **13 Claims**

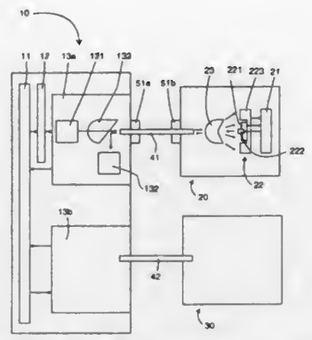
8. A bidirectional optically powered signal transmission apparatus, comprising:

first and second optical transmission stations;

first means, in said first optical transmission station, for sending a first light beam on an optical transmission path to said second optical transmission station;

said first light beam having a first predetermined wavelength and including an AC signal component superimposed on a DC power component;

said first means including first light source means for radiating said first light beam of said first predetermined wavelength and driving means for regulating said AC signal component;



second means, in said first optical transmission station, for receiving a second light beam sent from said second optical transmission station;

said second light beam having a second predetermined wavelength, said first and second predetermined wavelengths being different;

third means, in said second optical transmission station, for sending said second light beam to said first optical transmission station over said optical transmission path;

fourth means, in said second optical transmission station, for receiving said first light beam sent from said first optical transmission station;

means, in said second optical transmission station, for converting said DC power component of said first light beam to electric power for powering said second optical transmission station;

said third means including a second light source means for radiating said second light beam of said second predetermined wavelength; and

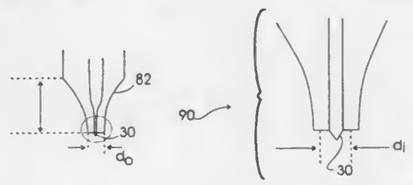
said first light beam and said second light beam being transmittable simultaneously in opposite directions on said optical transmission path.

5,664,036

HIGH RESOLUTION FIBER OPTIC PROBE FOR NEAR FIELD OPTICAL MICROSCOPY AND METHOD OF MAKING SAME

Mohammed N. Islam, Ann Arbor, Mich., assignor to AccuPhotonics, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 322,210, Oct. 13, 1994, Pat. No. 5,485,536. This application Oct. 12, 1995, Ser. No. 542,437
Int. Cl.[6] G02B *6/26;21/00;* **G01N** *23/00*
U.S. Cl. 385—31 **37 Claims**



1. A high efficiency, high resolution optical probe comprising:

a fiber optic cable having an inner core and an outer cladding, said cable having a distal end which defines an optical probe;

said optical probe having a reduced diameter intermediate region and a tapered tip that defines a light transmissive aperture at its tapered extremity;

said intermediate region comprising a portion of said inner core and said outer cladding, the inner core and outer cladding of said intermediate region being tapered to define a reduced diameter locus;

said tapered tip comprising a portion of said inner core commencing at said reduced diameter locus and protruding longitudinally outwardly to extend beyond said outer cladding;

said intermediate region and said tapered tip having different rates of taper, the rate of the taper of said inner core at said reduced diameter locus and the rate of the taper of the inner core of said tip being different from one another and discontinuous at said reduced diameter locus;

said rate of taper of said inner core at said reduced diameter locus being such that light propagating in said intermediate region propagates in a guided wave mode; and

said rate of taper of said inner core at said tip being such that light propagating in said tapered tip propagates in an evanescent mode for fewer than five optical wavelengths.

19. A method of manufacturing an optical probe comprising the steps of:

providing a fiber optic cable having an inner core and an outer cladding;

taffy-pulling said cable to form a reduced diameter portion terminating in a distal end;

removing the distal endmost portion of said outer cladding, leaving said reduced diameter inner core protruding longitudinally beyond the outer cladding;

forming the protruding inner core into a tapered tip terminating in a light transmissive aperture;

wherein said reduced diameter portion is of a dimension such that light propagating in said reduced diameter portion propagates in a guided wave mode; and

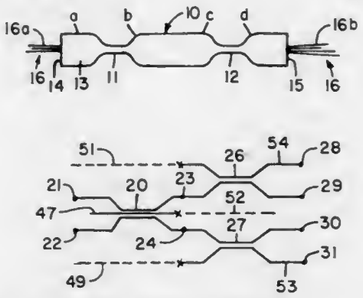
wherein said tapered tip is formed at a taper angle such that light propagating in said tapered tip propagates in an evanescent mode for fewer than five optical wavelengths.

5,664,037

MULTI-NECKDOWN FIBER OPTIC COUPLER

David L. Weidman, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Nov. 30, 1995, Ser. No. 565,542
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—46 **17 Claims**



1. A fiber optic coupling device comprising

a plurality of N fibers extending in a parallel array, wherein $N \geq 3$,

at least two coupling regions along the length of said array where the cross-sectional area of said fibers is smaller than the cross-sectional area of said fibers at the first and second ends of said array,

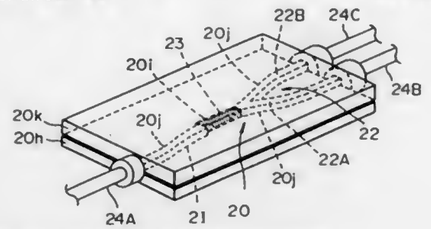
wherein said N fibers and said coupling regions are formed such that light which had been propagating in one of said fibers into a first of said coupling regions, and has separated in said first of said coupling regions so that it propagates in at least two of said fibers from said first of said coupling regions into a second of said coupling regions, does not interfere into the second of said coupling regions.

5,664,038

OPTICAL WAVEGUIDE STRUCTURE AS WELL AS OPTICAL WAVE BRANCHING UNIT, OPTICAL WAVE COMBINING UNIT, OPTICAL SELECTOR AND OPTICAL WAVE COMBINING AND BRANCHING UNIT

Hiroki Okushima, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 5, 1996, Ser. No. 628,524
Claims priority, application Japan, Jun. 27, 1995, 7-161280
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—50 **24 Claims**



8. An optical waveguide structure, comprising:

first optical waveguide;

a second optical waveguide including a pair of optical waveguides; and

an intermediate optical waveguide for connecting said first optical waveguide and said second optical waveguide to each other, said intermediate optical waveguide being capable of propagating light of a high order mode therein,

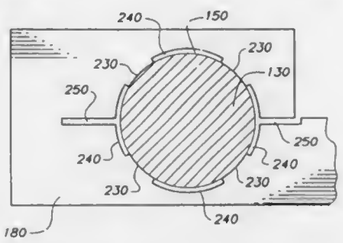
wherein said intermediate optical waveguide is set so that a wavelength of one of two lights inputted to said intermediate optical waveguide from said first optical waveguide and having different wavelengths which has a shorter one of the wavelengths is equal to N times a cycle in which the one light propagates meandering in said intermediate optical waveguide, N being an arbitrary integer, and the wavelength of the other light is equal to N+½ times the period in which the other light propagates meandering in said intermediate optical waveguide.

5,664,039

HIGH DENSITY FIBER FERRULES AND CONNECTORS

Soren Grinderslev, Hummelstown; William Warren Drabenstadt, Camp Hill, and Randy Marshall Manning, New Cumberland, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 439,065, May 9, 1995, abandoned, which is a division of Ser. No. 257,410, Jun. 8, 1994. This application May 13, 1996, Ser. No. 647,253
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—65 **3 Claims**



1. A fiber optic array ferrule comprising:

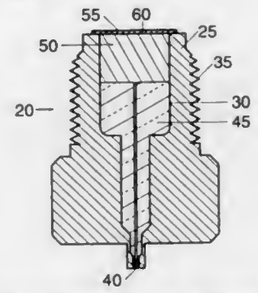
plurality of fiber receiving grooves, the ferrule having substantially semiannular surfaces disposed opposite each other which together comprise a guide pin hole, the ferrule further having a single lateral cutout adjacent a web that positions and separates the semiannular surfaces whereby the guidepin hole exhibits resilience for receiving and clamping a guide pin therein.

5,664,040

FIBER OPTIC ASSEMBLY AND METHOD OF MAKING SAME

Daniel P. Kramer, Centerville, Ohio, and Thomas M. Beckman, Barkhamstead, Conn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Aug. 29, 1995, Ser. No. 520,635
Int. Cl.[6] G02B *6/16*
U.S. Cl. 385—78 **18 Claims**



1. A fiber optic apparatus formed situ comprising:

(a) a fiber having two ends, a length, and a given index of refraction; and

(b) a sealing medium having a given index of refraction which is less than said given index of refraction of said fiber, and said sealing medium further having the characteristics of softening and flowing upon application of heat and subsequently hardening upon cooling;

wherein the apparatus is produced by a method comprising the steps of:

(i) positioning said sealing medium about said fiber so that at least a portion of said sealing medium is circumjacent with respect to at least part of said length of said fiber;

(ii) heating said sealing medium sufficiently to cause it to soften and flow about said fiber; and

(iii) cooling said sealing medium so that it hardens surrounding at least a part of said length of said fiber,

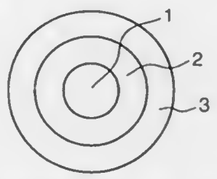
wherein said fiber then functions as a core of a fiber optic and said sealing medium then functions as cladding for said fiber optic.

5,664,041

COATING SYSTEM FOR GLASS ADHESION RETENTION

David M. Szum, Marengo, Ill., assignor to DSM Desotech, Inc., Elgin, Ill.

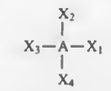
Continuation-in-part of Ser. No. 163,164, Dec. 7, 1993, abandoned. This application Aug. 30, 1994, Ser. No. 298,136
Int. Cl.[6] G02B *6/22*
U.S. Cl. 385—128 **13 Claims**



13. A coated optical glass fiber coated with an inner primary coating formulated from a composition comprising:

at least one component selected from the group consisting of curable polymers, oligomers and monomers; and

an adhesion promoter that is a tetrasubstituted compound having the formula:



wherein A is Si, Ti or Zr, and where X_1, X_2, X_3 and X_4 are hydrolyzable groups that can be hydrolyzed from the tetrasubstituted compound in the presence of water; and

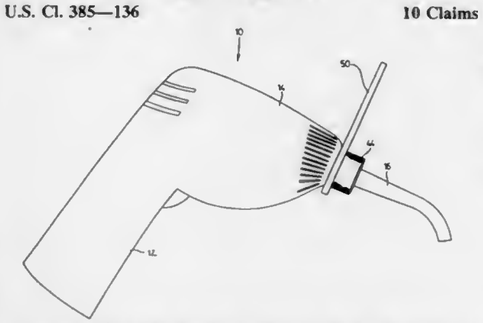
an outer primary coating adjacent to said inner primary coating, said outer primary coating being formulated from a coating composition comprising a radiation-curable monomer or oligomer having an ethylenically unsaturated functional group and an acid functional group.

5,664,042

UNIVERSAL CHUCK

John Kennedy, 6 Serena La., R.R. #3, Guelph, Ontario, Canada

Filed May 2, 1995, Ser. No. 433,850
Int. Cl.[6] G02B *6/14*
U.S. Cl. 385—136 **10 Claims**



1. A set of 2 or more universal chucks for use with a set of 2 or more medical devices having a light emitting device and a fibre optic light guide,

each member of said set of medical devices having a different internal configuration for releasably retaining a fibre optic light guide,

each member of said set of universal chucks having an outside configuration corresponding to the said internal configuration of a respective one of said set of medical devices,

so that said member of said set of universal chuck may be releasably retained within said respective medical device;

all of said set of universal chucks having a common internal configuration adapted to releasably retain a fibre optic light guide so that a common fibre optic light guide may be used in any member of said set of medical devices equipped with a member of said set of universal chucks.

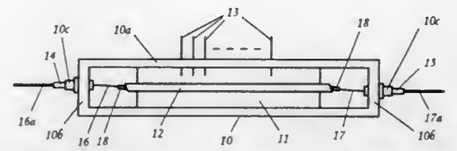
5,664,043

HERMETIC OPTICAL FIBRE FEED-THROUGH

Alan Donaldson, and Steven John Freer, both of Paignton, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 19, 1996, Ser. No. 684,128
Claims priority, application United Kingdom, Jul. 21, 1995, 9515004
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—138 **10 Claims**

1. A package having at least one wall through which an optical fibre hermetic feed-through extends, which feed-through includes a metallic cylindrical plug with a substantially axial small bore in one end thereof, which small bore is dimensioned to be a concentricity providing sliding fit around a portion of metal used bare optical fibre, and which small bore opens out internally into an enlarged substantially co-axial bore that is dimensioned to be a concentricity providing sliding fit around a cylindrical ferrule provided with an axial bore dimensioned to a concentricity providing sliding fit around the metallised bare fibre, wherein the fibre is secured to the ferrule with adhesive within its bore, wherein solder, at the point of emergence of the fibre from the small bore end of the plug, provides an hermetic seal between the metallised bare fibre and the plug, and wherein the plug is hermetically sealed within an aperture extending through said at least one wall of the enclosure.

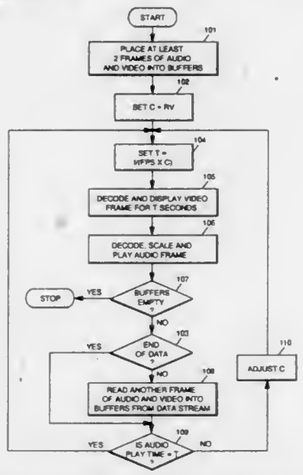


5,664,044

SYNCHRONIZED, VARIABLE-SPEED PLAYBACK OF DIGITALLY RECORDED AUDIO AND VIDEO

Malcolm S. Ware, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 233,902, Apr. 28, 1994, Pat. No. 5,583,652. This application Mar. 27, 1996, Ser. No. 624,008
Int. Cl.[6] H04N *5/91;5/76*
U.S. Cl. 386—75 **17 Claims**



1. A method of maintaining synchronization of a stream of digital audio data with a stream of digital video data originally recorded at a specified rate in frames per second, FPS, the digital video data being played back on a variable-speed audio/video display system using a user-selected scaling factor, RV, which is set to a proportional value of a recorded rate, the method comprising the steps of:

placing at least 2 frames of digital audio in an audio buffer and at least 2 frames of digital video in a video buffer;

setting an audio time domain harmonic scaling factor, C, equal to the user-selected scaling factor, RV;

calculating an amount of time in seconds, T, required to play back an audio frame with the selected audio time domain harmonic scaling factor C;

decoding and displaying, if the video buffer is not empty, a frame of video from the video buffer for T seconds;

decoding, scaling and playing, if the audio buffer is not empty, an audio frame from the audio buffer using the audio time domain harmonic scaling factor C so that playback of the audio frame requires an audio playback time period equal to T seconds;

reading, after T seconds, and if the end of the stream of digital audio data or the stream of digital video data has not been reached, another frame from the stream of digital audio into the audio buffer and another frame from the stream of digital video into the video buffer;

determining whether the audio playback time period of the audio frame played during the preceding time period T was exactly equal to T seconds;

adjusting the value C if the audio playback time period was not exactly equal to T seconds; and

recalculating the time T if the audio time domain harmonic scaling factor C has changed since the beginning of the preceding time period T.

5,664,045

VIDEO SIGNAL PROCESSOR FOR COMPENSATING SKEW AND ELIMINATING NOISE

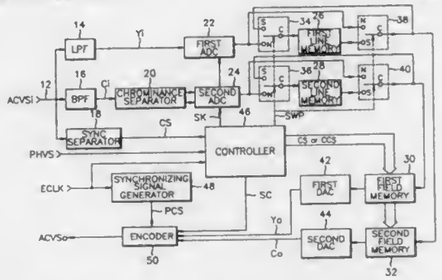
Hyun-Jeong Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,196

Claims priority, application Rep. of Korea, Apr. 27, 1995, 10178/1995

Int. Cl.[6] H04N *5/911;5/91;5/21*

U.S. Cl. 386—114 **6 Claims**



1. A video signal processor for compensating for skew and eliminating noise, said video signal processor comprising:

synchronizing signal generating means for generating a pseudo horizontal signal responsive to a received clock signal;

controlling means initialized in a first logic state of a horizontal synchronizing signal, for counting a period associated with a second logic state of said horizontal synchronizing signal with respect to said clock signal to thereby generate a compensated horizontal synchronizing signal if the counted value exceeds a predetermined count value and to thereby output a compensation control signal having a duration of one horizontal period;

line memory and field memory means for storing and for delaying received video data in line and field units, respectively, for output;

video data compensating means operatively connected to said line and said field memory means for supplying the output of said line memory means to said field memory means and for recirculating the output of said line memory means in response to said compensation control signal; and

output video signal generating means receiving said video data output from said field memory means for generating and supplying an analog video signal in synchronization with said generated pseudo horizontal synchronizing signal.

5,664,046

AUTOCONFIGURABLE VIDEO SYSTEM

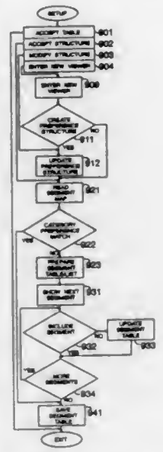
Max Abecassis, 19020 NE. 20 Ave., Miami, Fla. 33179

Division of Ser. No. 2,998, Jan. 11, 1993, Pat. No. 5,434,678.

This application Apr. 10, 1995, Ser. No. 418,652

Int. Cl.[6] H04N *5/781;5/91;7/10*

U.S. Cl. 386—125 **16 Claims**



1. A video system comprising:

first memory means for transporting a viewer's video content preferences;

reading means for reading from said first memory means said viewer's video content preferences;

second memory means for storing a video and a segment map defining a plurality of video segments of said video;

processing means for automatically selecting video segments from said plurality of video segments responsive to an application of said viewer's video content preferences to said segment map;

retrieving means for retrieving said segment map and the selected video segments from said second memory means; and

transmitting means for transmitting the retrieved video segments as a continuous video.

5,664,047

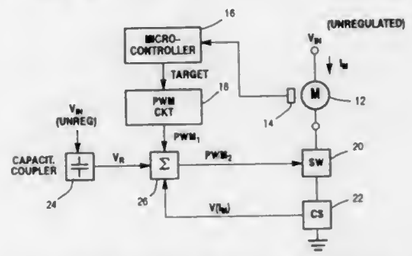
SYSTEM FOR CONTROLLING THE SPEED OF A MOTOR DRIVEN BY AN UNREGULATED VOLTAGE

Kirk D. Hanson, San Diego, Calif., assignor to Iomega Corporation, Roy, Utah

Filed Aug. 28, 1995, Ser. No. 520,366

Int. Cl.[6] H02P *5/17*

U.S. Cl. 388—811 **8 Claims**



1. A system for controlling the speed of a motor driven by an unregulated voltage supply, said voltage supply providing a motor current (I_M) and supply voltage (V_{IN}) having a substantially constant DC component and a ripple component, comprising:

(a) means for obtaining a ripple signal (V_R) representative of said ripple component of the supply voltage;

(b) means for modulating the motor current (I_M) in response to at least said ripple signal to maintain the speed of the motor at a prescribed target speed; and

(c) a controller providing a first modulating signal (PWM_1) for modulating said motor current to maintain said target speed, wherein said means for modulating the motor current adjusts PWM_1 to obtain a second modulating signal (PWM_2) for use in modulating said motor current, and wherein said first and second modulating signals PWM_1. PWM_2 are pulse width modulated digital signals.

5,664,048

SPEED CONTROL CIRCUIT FOR A DC MOTOR

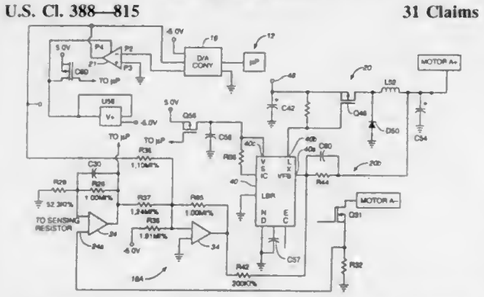
Bill H. Niemi, and Stephen J. Kreinick, both of San Diego, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 613,424, Nov. 14, 1990, abandoned.

This application Oct. 29, 1993, Ser. No. 146,627

Int. Cl.[6] H02P *5/168*

U.S. Cl. 388—815 **31 Claims**



1. A motor speed control circuit for controlling the speed of a DC motor energized with a voltage, said circuit comprising:

voltage-reference means (**16** and **21**) for generating an adjustable reference voltage:

first current feedback means (**R32**, **R28**, **C30**, **R26** and items **24**, **34**) for applying a compensating voltage to the DC motor that compensates for variations in loading applied to the motor;

a switching transistor (**Q46**);

switching regulator control means (**20**, **40**) for controlling on/off pulses used to turn the switching transistor on and off, to regulate the motor drive voltage;

operational amplifier summing means (**34**) for summing the adjustable reference voltage, the current feedback and an offset term which is a signal input to the circuit; and

motor voltage feedback means **R44**, **C60**, for applying a voltage feedback signal generated by the motor to the switching regulator control means, the switching regulator control means being further operative wherein the sum of the first feedback signal generated by the current feedback means and a second feedback signal provided by an adjustable reference voltage is compared to an internal fixed reference voltage within the switching regulator (**40**) and to generate a train of output pulses from the switching transistor to a smoothing circuit (**D50**, **L52**, **C54**) whenever said sum is less than the internal fixed reference voltage, said smoothing circuit for smoothing the pulsed output from the switching transistor to provide a drive voltage to the DC motor, said pulsed output of said switching regulator resulting in minimum power loss and therefore maximum power efficiency in the circuit.

5,664,049

HONEYCOMB HEATER

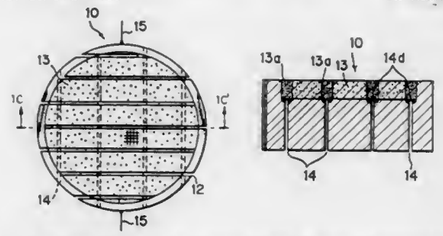
Tomoharu Kondo, Toki; Masato Ogawa, Komaki, and Keiji Noda, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 167,462, Dec. 15, 1993, Pat. No. 5,533,167. This application Dec. 22, 1995, Ser. No. 576,912

Claims priority, application Japan, Dec. 15, 1992, 4-334315; Nov. 30, 1993, 5-299464

Int. Cl.[6] F01N *3/28;3/20;* **H05B** *3/00*

U.S. Cl. 392—485 **12 Claims**



1. A heating element for heating fluid flowing therethrough, comprising:

a honeycomb structure having a periphery a front face for receiving a fluid flow, a back face through which the fluid flow exits, and a plurality of passages defined by partition walls extending along an axial direction of the honeycomb structure, said honeycomb structure being electrically conductive;

means for applying electric current to said honeycomb structure to heat the fluid flow which passes through said passages from said front face to said back face;

means for heating a front region of the honeycomb structure, including said front face, more quickly than a back region of the honeycomb structure, consisting of at least one gap for obstructing electric current flow through the honeycomb structure, said at least one gap extending through the partition walls only from said back face toward said front face such that said at least one gap terminates before reaching said front face; and

at least one slit extending substantially through an entirety of the honeycomb structure between said front and back faces and through said partition walls, the front region being free from said at least one gap and the back region containing said at least one gap.

5,664,050

PROCESS FOR EVALUATING SPEECH QUALITY IN SPEECH SYNTHESIS

Bertil Lyberg, Vagnhärad, Sweden, assignor to Telia AB, Farsta, Sweden

Continuation of Ser. No. 250,685, May 27, 1994, abandoned.

This application Mar. 21, 1996, Ser. No. 622,039

Claims priority, application Sweden, Jun. 2, 1993, 9301886

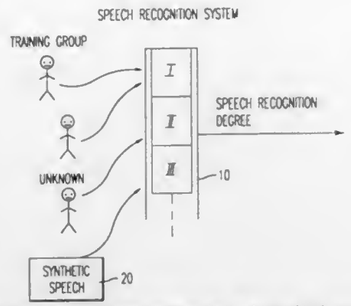
Int. Cl.[6] G10L *5/06*

U.S. Cl. 704—251 **4 Claims**

1. A process for evaluating speech quality in synthetic speech generated from a speech synthesizer in a speech recognition system programmed using speech from a training group, comprising the steps of:

receiving synthetic speech from at least one speech synthesizer;

receiving natural speech from a plurality of human sources;



determining a level of recognition for each received speech from the at least one speech synthesizer and plurality of human sources; and

evaluating the synthetic speech from the at least one speech synthesizer by allocating a level of recognition and a rank of the synthetic speech from the at least one speech synthesizer in comparison to the natural speech from the plurality of human sources.

5,664,051

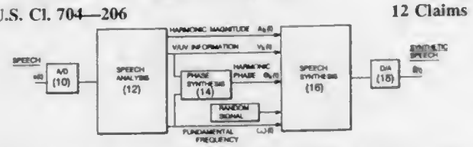
METHOD AND APPARATUS FOR PHASE SYNTHESIS FOR SPEECH PROCESSING

John C. Hardwick, Cambridge, and Jae S. Lim, Winchester, both of Mass., assignors to Digital Voice Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 814, Jan. 5, 1993, abandoned, which is a continuation of Ser. No. 587,250, Sep. 24, 1990, abandoned. This application Jun. 23, 1994, Ser. No. 265,492

Int. Cl.[6] G10L *3/02*

U.S. Cl. 704—206 **12 Claims**



1. A speech decoder apparatus for synthesizing a speech signal from a digitized speech bit stream of the type produced by processing speech with a speech encoder, said apparatus comprising

an analyzer for processing said digitized speech bit stream to generate an angular frequency and magnitude for each of a plurality of sinusoidal voiced frequency components representing the speech processed by the speech encoder, said analyzer generating said angular frequencies and magnitudes over a sequence of times;

a random signal generator for generating a time sequence of random phase components;

a phase synthesizer for generating a time sequence of synthesized phases for at least some of said sinusoidal voiced frequency components, said synthesized phases being generated from said angular frequencies and random phase components;

a first synthesizer for synthesizing the voiced frequency components of speech from said time sequences of angular frequencies, magnitudes, and synthesized phases; and

a second synthesizer for synthesizing unvoiced frequency components representing the speech processed by the speech encoder, using a technique different from the technique used for synthesizing the voiced frequency components;

wherein the speech signal is synthesized by combining synthesized voiced and unvoiced frequency components coexisting at the same time instants.

5,664,052

METHOD AND DEVICE FOR DISCRIMINATING VOICED AND UNVOICED SOUNDS

Masayuki Nishiguchi, Kanagawa, and Jun Matsumoto, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 48,034

Claims priority, application Japan, Apr. 15, 1992, 4-121460; Jan. 6, 1993, 5-000828

Int. Cl.[6] G10L *9/00*

U.S. Cl. 704—214 **14 Claims**



1. A method for discriminating a digital speech sound comprising dividing digital speech signals into blocks each consisting of a predetermined number of samples, and making a decision for each of said blocks as to whether or not the speech sound is voiced, said method further comprising the steps of

dividing signals of said block into plural sub-blocks,

analyzing said sub-blocks for finding statistical characteristics of each of said sub-blocks,

calculating a bias of said statistical characteristics of said signals in the time domain for enabling a block voiced/unvoiced decision, and

deciding whether said signal blocks are voiced based on said bias of said statistical characteristics in the time domain.

5,664,053

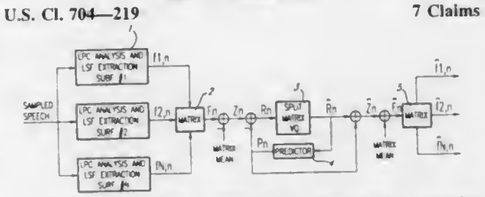
PREDICTIVE SPLIT-MATRIX QUANTIZATION OF SPECTRAL PARAMETERS FOR EFFICIENT CODING OF SPEECH

Claude Laflamme, Sherbrooke; Redman Salaml, Ascot, and Jean-Pierre Adoul, Sherbrooke, all of Canada, assignors to Universite De Sherbrooke, Sherbrooke, Canada

Filed Apr. 3, 1995, Ser. No. 416,019

Int. Cl.[6] G10L *9/14*

U.S. Cl. 704—219 **7 Claims**



1. A method for jointly quantizing N linear-predictive-coding spectral models per frame of a sampled sound signal, in which N>1, in view of enhancing a spectral-accuracy/coding-rate tradeoff in a technique for digitally encoding said sound signal, said method comprising the following combination of steps:

(a) forming a matrix, F, comprising N rows defining N vectors representative of said N linear-predictive-coding spectral models, respectively;

(b) removing from the matrix F a time-varying prediction matrix, P, based on at least one previous frame, to obtain a residual matrix, R; and

(c) vector quantizing said residual matrix R.

5,664,054

SPIKE CODE-EXCITED LINEAR PREDICTION

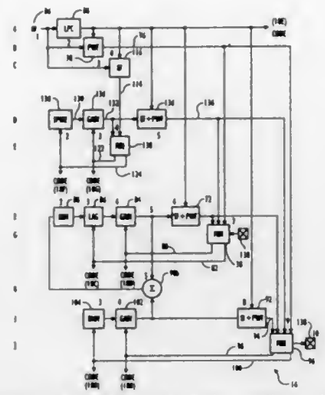
Huan-Yu Su, San Clemente, Calif., assignor to Rockwell International Corporation, Newport Beach, Calif.

Filed Sep. 29, 1995, Ser. No. 536,329

Int. Cl.[6] G10L *9/04*

U.S. Cl. 704—219 **4 Claims**

1. A method for transmitting speech over a narrow bandwidth channel, the method comprising the steps of:



(a) converting speech from an analog auditory signal to an analog electronic signal;

(b) digitizing the electronic signal into digitized speech with an analog-to-digital converter;

(c) breaking the digitized speech into a plurality of frames;

(d) selecting a next frame and applying it to:

(1) a linear prediction coder to produce a plurality of tap weights and coding the tap weights to produce a tap weight code;

(2) a perceptual weighting filter set to the tap weights and constructed to produce, as an output, a digitized signal as it would be perceived by a human being; and

(3) an analysis filter set to the tap weights and constructed to produce an LPC residual signal;

(e) receiving the output of the analysis filter at a first input of a spike minimizer, the spike minimizer producing:

(1) at a first output, a spike gain code which is applied to a spike gain element; and

(2) at a second output, a spike signal code which is applied to a spike codebook; the spike gain element and the spike codebook being connected to jointly produce a scaled spike, the scaled spike being applied to a second input of the spike minimizer; and

the spike minimizer generating a spike gain code and a spike signal code which minimize an error between the scaled spike and the analysis filter output;

(f) receiving the scaled spike at a spike synthesis filter and perceptual weighting filter set to the tap weights, the spike synthesis filter and perceptual weighting filter producing an output;

(g) receiving the output of the spike synthesis filter and perceptual weighting filter at a first input of a pitch minimizer, the pitch minimizer producing:

(1) at a first output, a pitch gain code which is applied to a pitch gain element; and

(2) at a second output, a pitch lag code which is applied to a pitch lag element; the pitch gain element and the pitch lag being connected to jointly produce a scaled pitch signal from:

(A) the pitch gain code;

(B) the pitch lag code; and

(C) a previous output of a memory; the scaled pitch signal being applied to a pitch synthesis filter and perceptual weighting filter set to the tap weights, and the pitch synthesis filter and perceptual weighting filter producing an output which is applied to a second input of the pitch minimizer;

(h) generating, in the pitch minimizer, a pitch gain code and a pitch lag code which minimizes an error between:

(1) the perceptual weighting filter output;

(2) the spike synthesis filter and perceptual weighting filter output; and

(3) the pitch synthesis filter and perceptual weighting filter output;

(i) receiving the output of the pitch synthesis filter and perceptual weighting filter at a first input of an innovation minimizer, the innovation minimizer producing:

(1) at a first output, an innovation gain code which is applied to an innovation gain element; and

(2) at a second output, an innovation signal code which is applied to an innovation codebook; the innovation gain element and the innovation codebook being connected to jointly produce a scaled innovation signal, the scaled innovation signal being applied to an innovation synthesis filter and perceptual weighting filter producing an output which is applied to a second input of the innovation minimizer;

(j) summing the scaled innovation signal with the scaled pitch signal in a summer to produce a scaled overall signal;

(k) storing the scaled overall signal in the memory;

(l) generating, in the innovation minimizer, an innovation gain code and an innovation signal code which minimize an error between:

(1) the perceptual weighting filter output;

(2) the spike synthesis filter and perceptual weighting filter output;

(3) the pitch synthesis filter and perceptual weighting filter output; and

(4) the innovation synthesis filter and perceptual weighting filter output;

(m) generating, in the innovation minimizer, a control signal indicating whether or not a spike signal is to be used at a receiving end;

(n) applying the control signal to the pitch minimizer to cause it to use the spike synthesis filter and perceptual weighting filter output, but only if the control signal indicates that the spike signal is to be used at the receiving end;

(o) transmitting the tap weight code, the pitch gain code, the pitch lag code, and the control signal on the narrow bandwidth channel;

(p) if the control signal indicates that the spike signal is to be used, then transmitting the spike gain code and the spike signal code on the narrow bandwidth channel;

(q) if the control signal indicates that the spike signal is not to be used, then transmitting the innovation gain code and the innovation signal code on the narrow bandwidth channel; and

(r) repeating steps (d) through (q) until the speech stops.

5,664,055

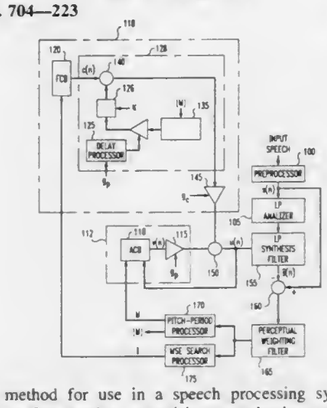
CS-ACELP SPEECH COMPRESSION SYSTEM WITH ADAPTIVE PITCH PREDICTION FILTER GAIN BASED ON A MEASURE OF PERIODICITY

Peter Kroon, Green Grook, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 482,715

Int. Cl.[6] G10L *9/14*

U.S. Cl. 704—223 **19 Claims**



1. A method for use in a speech processing system which includes a first portion comprising an adaptive codebook and

corresponding adaptive codebook amplifier and a second portion comprising a fixed codebook coupled to a pitch filter, the pitch filter comprising a delay memory coupled to a pitch filter amplifier, the method comprising:

determining the pitch filter gain based on a measure of periodicity of a speech signal; and

amplifying samples of a signal in said pitch filter based on said determined pitch filter gain.

5,664,056

DIGITAL ENCODER WITH DYNAMIC QUANTIZATION BIT ALLOCATION

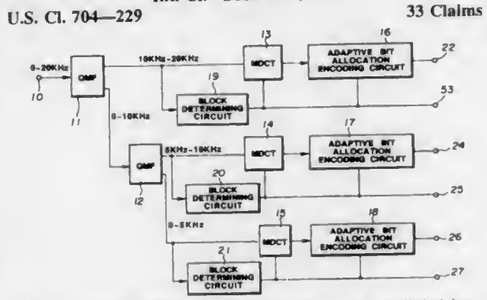
Kenzo Akagiri, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 924,298, Aug. 3, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,872

Claims priority, application Japan, Aug. 2, 1991, 3-216216; Aug. 2, 1991, 3-216217; Aug. 27, 1991, 3-271774

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 704—229 **33 Claims**



1. A digital encoding apparatus for compressing a digital input signal to provide a compressed output signal, the apparatus comprising:

frequency dividing means for receiving the digital input signal and for dividing the digital input signal into a plurality of frequency ranges;

time dividing means for dividing in time at least one of the frequency ranges of the digital input signal into a plurality of blocks;

orthogonal transform means for orthogonally transforming each block to provide a plurality of spectral coefficients;

means for grouping by frequency the plurality of spectral coefficients from the orthogonal transform means into critical bands, each critical band having a band energy and a band frequency;

bit allocation pattern selecting means for selecting a predetermined bit allocation pattern from a plurality of predetermined bit allocation patterns;

first bit allocating means for allocating a total number of fixed bits among the critical bands to allocate to each critical band a number of fixed bits for quantizing each spectral coefficient in the critical band, the number of fixed bits allocated to each critical band being determined according to the selected predetermined bit allocation pattern;

second bit allocating means for allocating a total of number of variable bits among the critical bands to allocate to each critical band a number of variable bits for quantizing each spectral coefficient in the critical band, the number of variable bits allocated to each critical band being determined according to the band energy of the critical band; and

means for quantizing each spectral coefficient in each band using a number of bits equal to a sum of the number of fixed bits allocated for quantizing each spectral coefficient in the critical band and the number of variable bits allocated for quantizing each spectral coefficient in the critical band, the spectral coefficients in at least one of the critical bands being quantized using a number of fixed bits greater than zero and a number of variable bits greater than zero.

5,664,057

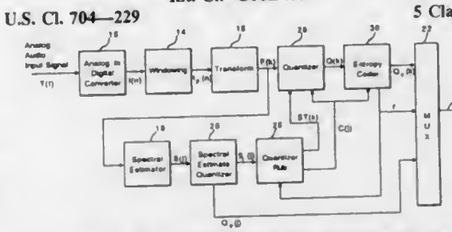
FIXED BIT RATE SPEECH ENCODER/DECODER

Antony Henry Crossman, Swampscott, and Brant Martin Helf, Melrose, both of Mass., assignors to PictureTel Corporation, Andover, Mass.

Continuation of Ser. No. 88,309, Jul. 7, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 416,525

Int. Cl.[6] G10L *7/04*

U.S. Cl. 704—229 **5 Claims**



1. A method of transmitting a digital signal which includes frames of frequency coefficients arranged in bands that each include multiple frequency coefficients, the method comprising for each frame the steps of:

generating a spectral estimate of energy in each band based on the plurality of frequency coefficients included in the band,

generating a step size for each frequency coefficient based on the spectral estimate for the band in which the frequency coefficient is included, the step size for a first frequency coefficient in a first band having relatively higher energy being larger than the step size for a second frequency coefficient in a second band having relatively lower energy,

generating a class value for each of said bands that corresponds to energy in said band relative to average energy in other bands in the frame,

quantizing said frequency coefficients based on a relationship between a value of the frequency coefficient being quantized, a class value generated for the band that includes the frequency coefficient being quantized, and a step size generated for the frequency coefficient being quantized to produce quantized frequency coefficients,

encoding said quantized frequency coefficients based on said class values to produce encoded quantized frequency coefficients, wherein the encoded quantized frequency coefficients are represented by a number of bits that is related to the class values,

determining whether the number of bits that represent the encoded quantized frequency coefficients differs from a threshold value,

iteratively modifying the class values and repeating said steps of generating a step size, quantizing said frequency coefficients, and encoding said quantized frequency coefficients when the number of bits that represent the encoded quantized frequency coefficients differs from the threshold value, and

transmitting said encoded quantized frequency coefficients.

5,664,058

METHOD OF TRAINING A SPEAKER-DEPENDENT SPEECH RECOGNIZER WITH AUTOMATED SUPERVISION OF TRAINING SUFFICIENCY

George Vysotsky, Riverdale, N.Y., assignor to NYNEX Science & Technology, White Plains, N.Y.

Filed May 12, 1993, Ser. No. 60,954

Int. Cl.[6] G10L *5/06*

U.S. Cl. 704—243 **10 Claims**

6. A process for training a speaker dependent speech recognizer comprising the steps of:

(1) prompting a user to speak a new voice message that the user currently desires the recognizer to be trained to recognize for the ith time, $i \geq 2$,

(2) converting said new voice message spoken for the ith time into a new token,

(3) comparing the new token to templates of voice messages that the recognizer has been previously trained to recognize and one or more previously formed templates of the new voice message to obtain a recognition score of the token with respect to all of said templates,

(4) storing the new token as a template,

(5) applying a first test which is passed if the best of said recognition scores is greater than a first threshold

(6) determining if the best recognition score was obtained with a template of a voice message the recognizer has been previously trained to recognize or with a previously formed template of the new voice message,

(7) if the best recognition score was obtained with a previously formed template of the new voice message,

(a) applying a second test which is passed if the difference between the best recognition score made with a template of a voice message the recognizer was previously trained to recognize and best recognition score made with a previously formed template of said new voice message exceeds a second threshold,

(b) performing a third test which is passed if the best recognition score falls below a third threshold,

(c) if said second and third tests are passed and if the template which produced the best recognition score passed the first test at the time it was the token, then said new token and said template with said best recognition score are stored as first and second templates of the new voice message, which new voice message can now be recognized by said recognizer

(d) if said second test is not passed and said third test is passed, or if said second and third tests are passed but said template with the best recognition score has not passed the first test at the time it was a token, prompting the user with a message that the new voice message is too similar to a voice message that the recognizer has been previously trained to recognize.

5,664,059

SELF-LEARNING SPEAKER ADAPTATION BASED ON SPECTRAL VARIATION SOURCE DECOMPOSITION

Yunxin Zhao, Santa Barbara, Calif., assignor to Panasonic Technologies, Inc., Princeton, N.J.

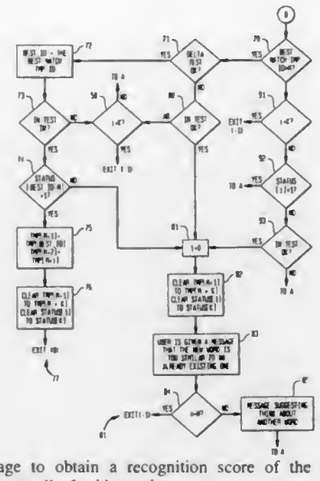
Continuation of Ser. No. 277,325, Jul. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 55,075, Apr. 29, 1993, abandoned. This application Sep. 16, 1996, Ser. No. 710,361

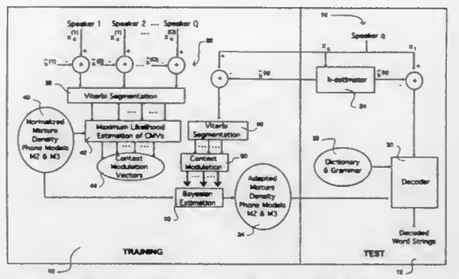
Int. Cl.[6] G10L *5/06;7/08*

U.S. Cl. 701—254 **11 Claims**

1. A self-learning speaker adaptation method for automatic speech recognition comprising:

providing training speech from a plurality of training speakers;





transforming the training speech into a spectral domain such that each training speech utterance is represented by a sequence of training speech spectra;

building a set of Gaussian density phone models from the spectra of all training speech;

estimating a spectral bias indicative of speaker acoustic characteristics for each speech utterance using the said set of Gaussian density phone models;

normalizing the training speech spectra based on speaker acoustic characteristics using the said spectral bias;

building a plurality of Gaussian mixture density phone models having model parameters including covariance matrices and means vectors and mixture weights using the normalized training speech spectra for use in recognizing speech;

transforming a first utterance of speech into a spectral domain;

estimating a spectral bias indicative of speaker acoustic characteristics for the first utterance of speech using the said set of Gaussian density phone models;

normalizing the first utterance of speech spectra using the said spectral bias;

recognizing the normalized first utterance of speech spectra to produce a recognized word string;

segmenting the first utterance of speech spectra using said recognized word string to produce segmented adaptation data;

modifying the model parameters based on said segmented adaptation data to produce a set of adapted Gaussian mixture density phone models; and

repeating and transforming, estimating, normalizing, recognizing, segmenting and modifying steps for subsequent utterances, using for each subsequent utterance the adapted Gaussian mixture density phone models produced from the previous utterance, whereby the Gaussian mixture density phone models are automatically adapted to that speaker in self-learning fashion.

5,664,060

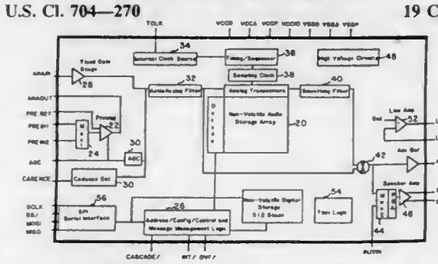
MESSAGE MANAGEMENT METHODS AND APPARATUS

Boyce W. Jarrett, Austin, Tex.; Bindiganavale S. Nataraj, San Jose, and Sakhawat M. Khan, Santa Clara, both of Calif., assignors to Information Storage Devices, San Jose, Calif.

Filed Jan. 25, 1994, Ser. No. 186,793

Int. Cl.[6] G10L *3/00;* **H04M** *1/64*

U.S. Cl. 704—270 **19 Claims**



1. An integrated circuit storage device for storing and selective playback of messages comprising:

a storage array having a plurality of storage cells;

input circuitry for sequentially providing input information to the storage cells for storage therein during a record operation;
output circuitry for sequentially providing as an output during a playback operation, information stored in the storage cells;
a plurality of registers, each register being associated with a respective series of storage cells of the storage array and capable of storing a message identifier;
communication circuitry for receiving control signals from another source;
stack pointer and control circuitry responsive to the communication circuitry for sequentially locating each successive register storing the specific message identifier specified by the communication circuitry and causing the output circuitry to seamlessly provide as the output, information stored in the respective series of storage cells associated with each successive register storing the specific message identifier during a playback operation.

5,664,061

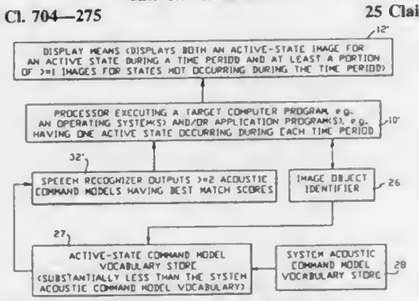
INTERACTIVE COMPUTER SYSTEM RECOGNIZING SPOKEN COMMANDS

Joseph Charles Andreshak, Mahopac; Gregg H. Daggett, Yorktown Heights, both of N.Y.; John Karat, Greenwich, Conn.; John Lucassen, New York, N.Y.; Stephen Eric Levy, Valhalla, N.Y., and Robert Lawrence Mack, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 50,950, Apr. 21, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,735

Int. Cl.[6] G10L *9/06*

U.S. Cl. 704—275 **25 Claims**



1. An interactive computer system comprising:

a processor executing a target computer program having a series of active program states occurring over a succession of time periods, said target computer program generating active state image data signals representing an active state image for an active state of the target computer program occurring during each time period, each active state image containing one or more objects;

means for displaying at least a first active-state image for a first active state occurring during a first time period;

means for identifying an object displayed in the first active-state image, and for generating from an identified object displayed in the first active-state image a list of one or more first active-state commands identifying a first active-state function which can be performed in the first active state of the target computer program;

means for storing a system vocabulary of acoustic command models, each acoustic command model representing one or more series of acoustic feature values representing an utterance of one or more words associated with the acoustic command model;

means for identifying a first active-state vocabulary of acoustic command models for the first active state, the first active-state vocabulary comprising the acoustic command models from the system vocabulary representing the first active-state commands, wherein the first active-state vocabulary changes dynamically as a function of both the identity of the target computer program and the active state image data signals which identify an active state of the target computer program; and

a speech recognizer for measuring a value of at least one feature of an utterance during each of a first sequence of time intervals within the first time period to produce a first series of feature signals, said speech recognizer comparing the first series of feature signals to each of the acoustic command models in the first active-state vocabulary to generate a match score for the utterance and each acoustic command model, and said speech recognizer outputting a command signal corresponding to the acoustic command model from the first active-state vocabulary having a best match score.

5,664,062

HIGH PERFORMANCE MAX-MIN CIRCUIT FOR A FUZZY INFERENCE ENGINE

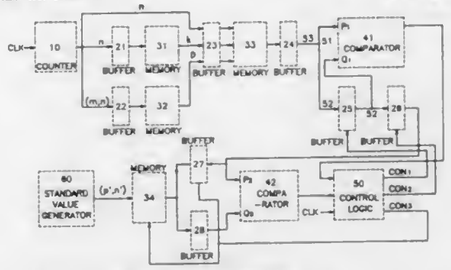
Young-joon Kim, Suwon, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Oct. 25, 1993, Ser. No. 140,462

Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26738

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—3 **4 Claims**



1. A Fuzzy controller circuit comprising:

counter means for generating an address signal;

first memory means for providing a first memory output signal in response to said address signal;

second memory means for providing a second memory output signal in response to said address signal and said first memory output signal; and

means for outputting one or more minimum-value signals, each minimum-value signal representing a signal having the lowest value of one or more second memory output signals received from said second memory means during a given time period, and for outputting a maximum-value signal representing a signal having the highest value of said one or more minimum-value signals;

said means for outputting further comprising:

a first buffer for storing the second memory output signal in response to a first comparison signal, the first buffer having a first buffer output signal;

a first comparator for generating the first comparison signal when the second memory output signal is smaller than the first buffer output signal;

a second buffer for storing the first buffer output signal in accordance with a clock signal, the second buffer having a second buffer output signal;

an address generator for generating a second address signal;

auxiliary memory means, having an address input for inputting the second address signal and for storing the second buffer output signal in accordance with a second comparison signal, the auxiliary memory means having an auxiliary memory output signal; and

a second comparator for generating the second comparison signal when an auxiliary memory output signal is smaller than the second buffer output signal.

5,664,063

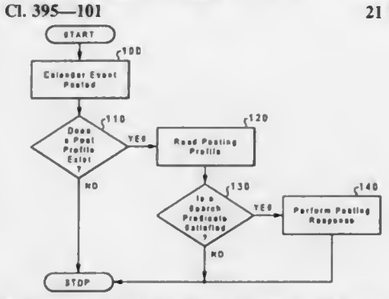
AUTOMATIC USER NOTIFICATION OF CERTAIN MEETING ATTRIBUTES OF A POSTED CALENDAR EVENT

William J. Johnson, Flower Mound, and Owen Wayne Weber, Coppell, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1994, Ser. No. 347,626

Int. Cl.[6] G06F *1/14;15/02*

U.S. Cl. 395—101 **21 Claims**



1. A method in a data processing system for automatic user notification of certain attributes of a posted calendar event, the data processing system having a database of scheduled calendar events, the method comprising the steps of:

establishing a posting profile containing a plurality of search predicates for calendar event notices, wherein a search predicate includes an attribute of a calendar event notice;

associating a separate posting response with at least one search predicate;

when a calendar event is posted to the database, searching a corresponding calendar event notice for each of the search predicates contained in the posting profile; and

automatically performing the posting response associated with at least one search predicate found in the calendar event notice.

5,664,064

OBJECT FORM DIVISION METHOD AND SYSTEM

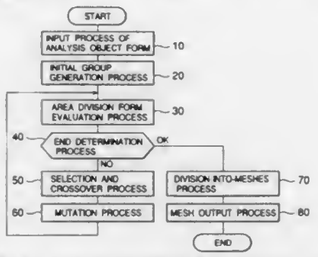
Takashi Nakao, Hitachi; Akira Maeda, Hitachinaka; Masayuki Noguchi; Taiichi Kadouno, both of Hitachi; Atsushi Suzuki, Hitachinaka, and Eiji Suzuki, Hitachi, all of Japan, assignors to Hitachi Engineering Co., Ltd., Hitachi, Japan

Filed Jan. 27, 1995, Ser. No. 379,959

Claims priority, application Japan, Jan. 27, 1994, 6-007765

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—13 **5 Claims**



1. A method, in an object division form system, of generating object division forms into which an inputted form of an object is divided using a genetic algorithm, said method comprising steps, performed by said object division form system, of:

providing, as a data structure of a gene, an area form of the inputted form of the object, a division rule number assigned to the gene, and information indicative of at least one other gene generated by further dividing the area form concerning the gene;

providing, as a data structure of a chromosome, a tree structure of genes having area forms into which the inputted form of the object is sequentially divided;

providing an evaluation rule in which, at least, an evaluation value increases as an internal angle at each node constituting the area form approaches 90°;

if the two object division forms selected in accordance with the evaluation values of the object division forms contain area forms that can be exchanged in a state in which the object form can be retained, performing a crossover process of exchanging the area forms so as to generate two new object division forms;

performing a mutation process of dividing at least one divisible area form constituting a part of the object division form in accordance with any one of prepare division rule for dividing area forms; and

performing an end determination process of determining whether the evaluation value for one object division form satisfies a predetermined end determination criterion so as to terminate processing operations, wherein, if the inputted form of the object is a two-dimensional form or a three-dimensional shell form, a plurality of quadrangle elements are generated based thereon, and wherein, if the inputted form is a three-dimensional solid form, a plurality of hexahedron elements are generated based thereon.

5,664,065

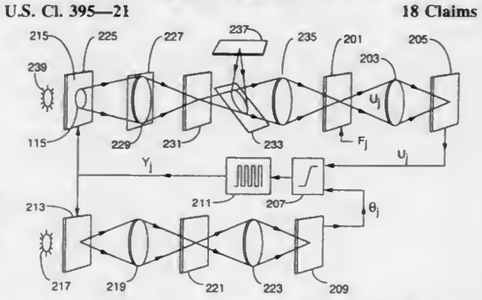
PULSE-COUPLED AUTOMATIC OBJECT RECOGNITION SYSTEM DEDICATORY CLAUSE

John L. Johnson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1996, Ser. No. 668,029

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—21 **18 Claims**



15. An electro-optical pulse-coupled neural network (PCNN) having a plurality of pixels, said PCNN comprising: a first spatial light modulator (SLM) for receiving and modulating input light passing therethrough; a first detector array for detecting light incident thereon and producing electronic video signals in response to the light; a first re-imaging lens positioned linearly between said first SLM and said first detector array for receiving the modulated light from said first SLM and focussing the light to be incident on said first detector array; a second detector array; a threshold discriminator coupled between said first detector array and said second detector array to produce a causal signal in response to the inputs from said first and second detector arrays; a pulse former coupled to said discriminator to generate at least one output pulse in response to said causal signal; a threshold means coupled to receive said output pulse and produce therefrom a threshold signal, said threshold means comprising a first phospher-coated glass plate; a second SLM coupled to receive said output pulse from said pulse former; a first illuminator positioned to illuminate said second SLM; a second re-imaging lens located to focus the image of said output pulse from said second SLM onto said first phospher-coated glass plate, said first plate exhibiting phospber decay in response to the focussed image of said output pulse; and a third re-imaging lens positioned to focus the decaying image onto said second detector array, said second detector array producing the threshold signal in response to said decaying image, said threshold means further transmitting said threshold signal to said discrimina-

tor; and a means for summing the output pulses of several of the pixels to produce a linking input suitable for inputting to said first SLM.

5,664,066

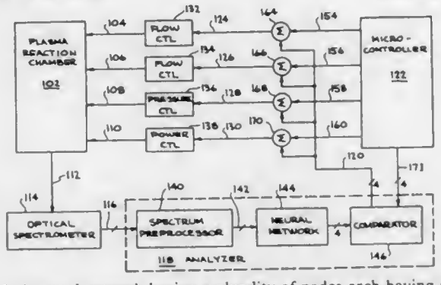
INTELLIGENT SYSTEM FOR AUTOMATIC FEATURE DETECTION AND SELECTION OR IDENTIFICATION

Chuen-Tsai Sun, Pao-Shan Shiang, Taiwan; Jyh-Shing Jang, Framingham, Mass., and Chi-Yung Fu, San Francisco, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 973,865, Nov. 9, 1992. This application Sep. 9, 1994, Ser. No. 304,660

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **44 Claims**



1. A neural network having a plurality of nodes each having an output carrying a respective output value y, said nodes being grouped into a plurality of layers including an input layer and an n'th layer different from said input layer, each k'th layer having N_k nodes, and each j'th node in each k'th layer except said input layer producing its output value $y_{k,j}$ according to the node function

$$y_{k,j} = f_k\left(\sum_{i=1}^{N_{k-1}} w_{k,i,j} y_{k-1,i}\right),$$

where i indexes the nodes of layer k-1 and all the $w_{k,i,j}$ are connection weights,

wherein for all nodes j in said n'th layer,

$$w_{n,i,j} = w_{i,j}(i, p_{n,j,1}, \ldots p_{n,j,P_{n,j}}),$$

each of said $P_{n,j}$ being an integer greater than zero and less than the number of nodes N_{n-1} in layer n-1, $N_{n-1}>1$,

said network further comprising teaching means for setting values for at least one of $p_{n,j,1}, \ldots p_{n,j,P_{n,j}}$ for each node j in said n'th layer.

5,664,067

METHOD AND APPARATUS FOR TRAINING A NEURAL NETWORK

Michael C. Moed, Norwalk, and Chih-Ping Lee, Danbury, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Continuation of Ser. No. 901,123, Jun. 19, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,519

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **22 Claims**

1. A method for training a neural network, comprising the steps of:

(a) organizing one or more sets of training inputs based on quality of the training inputs such that the neural network is trained with higher quality training inputs of each set before being trained with lower quality training inputs of the set, wherein each set of training inputs corresponds to one output; and



(b) sequentially training the neural network using said organized sets of training inputs.

5,664,068

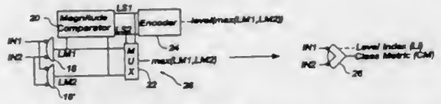
METHOD AND APPARATUS FOR PATTERN CLASSIFICATION USING DISTRIBUTED ADAPTIVE FUZZY WINDOWS

Yee-Wei Huang, and Willard W. Olson, both of Manhattan, Kans., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 699,321, May 13, 1991, Pat. No. 5,390,261. This application Dec. 2, 1994, Ser. No. 348,727

Int. Cl.[6] G06E *1/00;3/00;15/18*

U.S. Cl. 395—24 **12 Claims**



1. An artificial neuron comprising:

a first synapsette having a first synapsette input and a first synapsette output, the first synapsette receiving a first input value via said first synapsette input, and providing, via said first synapsette output, a first synapsette output value related to said first input value according to a first predetermined fuzzy window transfer function;

a second synapsette having a second synapsette input and a second synapsette output, the second synapsette receiving a second input value via said second synapsette input, and providing, via said second synapsette output, a second synapsette output value related to said second input value according to a second predetermined fuzzy window transfer function;

a first neurode having first and second neurode inputs connected to the first and second synapsette outputs, respectively, and a first neurode output, the first neurode receiving said first and second synapsette output values via said first and second neurode inputs, and providing, via said first neurode output, a first neurode output value corresponding to the sum of the first and second synapsette output values;

a third synapsette having a third synapsette input and a third synapsette output, the third synapsette receiving said first input value via said third synapsette input, and providing, via said third synapsette output, a third synapsette output value related to said first input value according to a third predetermined fuzzy window transfer function;

a fourth synapsette having a fourth synapsette input and a fourth synapsette output, the fourth synapsette receiving said second input value via said fourth synapsette input, and providing, via said fourth synapsette output, a fourth synapsette output value related to said second input value according to a fourth predetermined fuzzy window transfer function:

a second neurode having third and fourth neurode inputs connected to the third and fourth synapsette outputs, respectively, and a second neurode output, the second neurode receiving said third and fourth synapsette output values via said third and fourth neurode inputs, and providing, via said second neurode output, a second neurode output value corresponding to the sum of the third and fourth synapsette output values; and

a neuron having first and second neuron inputs connected to said first and second neurode outputs, respectively, and a first neuron output, the neuron receiving said first and second neurode output values via said first and second neuron inputs, and providing, via said first neuron output, a first neuron output value corresponding to the greater of said first and second neurode output valves.

5,664,069

DATA PROCESSING SYSTEM

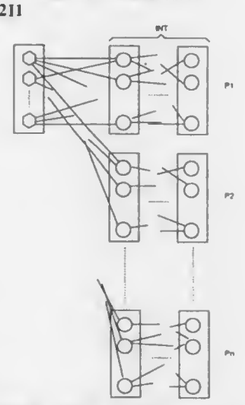
Sunao Takatori; Ryohei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Division of Ser. No. 549,748, Jul. 9, 1990, Pat. No. 5,463,717. This application May 23, 1995, Ser. No. 447,775

Claims priority, application Japan, Jul. 10, 1989, 1-178377; Aug. 10, 1989, 1-207220

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—211 **8 Claims**



1. A neural network system comprising:

an image scanning device generating lightness measurements of pixel areas of an image;

a plurality of neural cells, each cell comprising a plurality of neural layers connected in series, each layer comprising a plurality of neural processing elements, each neural processing element generating an output when a weighted sum of inputs exceeds a threshold;

wherein a first neural layer of each neural cell receives, as inputs having a given degree of abstraction, lightness measurements from a finite region within an image;

wherein processing of an input in the neural layers changes the degree of abstraction of the input; and

wherein the minimum number of neural layers is equal to the difference between the degree of abstraction of an output and the degree of abstraction of the input.

5,664,070

OUTPUTTING METHOD AND APPARATUS

Satoshi Egawa, Kawasaki, and Kozo Matsumoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 175,185, Dec. 29, 1993, abandoned, which is a continuation of Ser. No. 905,223, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 676,442, Mar. 28, 1991, abandoned. This application Aug. 1, 1996, Ser. No. 690,944

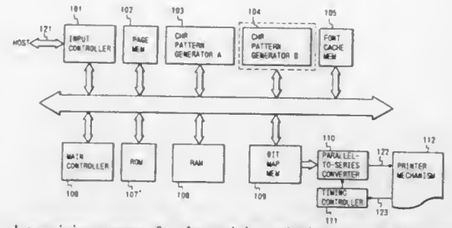
Claims priority, application Japan, Mar. 30, 1990, 2-81395

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—102 **45 Claims**

1. An output control apparatus comprising:

reading means for reading resolution information stored together with character patterns in a character pattern memory means;



determining means for determining whether a resolution indicated by the resolution information read by said reading means is a first resolution or a second resolution; and

converting means (1) for converting character patterns corresponding to input text data into bit map data using the character patterns stored in the character pattern memory means, if said determining means determines that the resolution is the first resolution, and (2) for changing the size of the character patterns stored in the character pattern memory means to adapt to the first resolution, for smoothing the size-changed character patterns, and for converting character patterns corresponding to input text data into bit map data using the size-changed and smoothed character patterns if said determining means determines that the resolution is the second resolution.

5,664,071

GRAPHICS PLOTTING APPARATUS AND METHOD

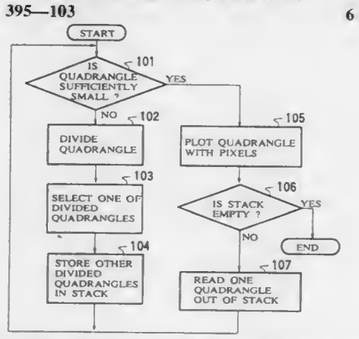
Ichiro Nagashima, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 15, 1994, Ser. No. 356,736

Claims priority, application Japan, Dec. 21, 1993, 5-322853

Int. Cl.[6] G06K *15/00;* **G06F** *15/00*

U.S. Cl. 395—103 **6 Claims**



3. A graphics plotting apparatus for writing a three-dimensional polygon defined by vertexes to an image memory to plot the polygon, comprising:

(a) storing means having registers for storing data of the vertexes of the polygon;

(b) stack means for storing data of the vertexes of polygons;

(c) decision means for determining whether or not the polygon stored in the storage means is smaller than a predetermined size;

(d) plotting means for writing pixels corresponding to the polygon to the image memory if said decision means determines that the polygon is smaller than the predetermined size; and

(e) division means for dividing the polygon into small polygons if said decision means determines that the polygon is not smaller than the predetermined size, writing data of the vertexes of one of the small polygons to the registers of said storage means, and writing data of the vertexes of the other small polygons to said stack means,

wherein the three-dimensional polygon is also defined by a luminance of each vertex thereof, and said division means

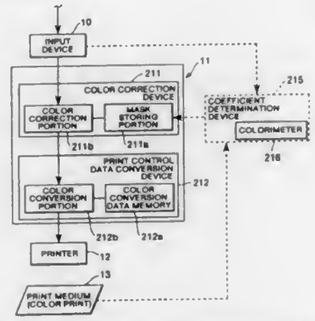
determines the luminance of each vertex of each small polygon by averaging the luminance of vertexes at both ends of each edge of the polygon to be divided into the small polygons.

5,664,072

COLOR CONVERSION DEVICE

Masashi Ueda, and Ryohei Komiya, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 22, 1994, Ser. No. 293,511
Claims priority, application Japan, Aug. 23, 1993, 5-230952; Mar. 24, 1994, 6-053374
Int. Cl.[6] G06K *15/00;* **G03F** *3/08*
U.S. Cl. 395—109 **25 Claims**



1. A color data conversion device for converting a set of input color data into a set of print control data for controlling a printing device, the color data conversion device comprising:

input means for inputting a set of input color data representing a desired color defined in a uniform color space;

color conversion means for converting the set of input color data into a set of print control data, while correcting distortion in the uniform color space, so as to produce the set of print control data capable of controlling the printing device to print out the same color as the desired color; and

output means for outputting the set of print control data to a printing device so as to control the printing device by the print control data to print out the same color as the desired color;

wherein said color conversion means includes:

storing means for storing information on a distortion degree by which the uniform color space is distorted; and

converting means for converting the set of input color data in a manner determined dependently on the distortion degree of the uniform color space.

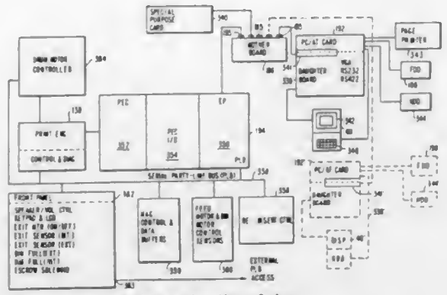
5,664,073

CONTROL SYSTEM FOR TRANSPORTATION TICKET PRINTER HAVING PLURALITY OF DUAL PROCESS PERSONAL COMPUTER BOARDS FOR PERFORMING GENERAL COMPUTING TASKS AND SENDING DATA TO PRINTER CONTROL MODULE

Steven M. Faes, New Market; Alfred L. Fulton; Martin J. Hnetynka, both of Huntsville; Laird Campbell, Laceys Spring; David Preston, Huntsville; Michael Missios, Huntsville, and Scott D. Sampson, Huntsville, all of Ala., assignors to SCI Systems Inc., Huntsville, Ala.

Division of Ser. No. 235,497, Apr. 29, 1994, Pat. No. 5,599,117, which is a division of Ser. No. 934,361, Aug. 25, 1992, Pat. No. 5,309,176. This application Jun. 6, 1995, Ser. No. 470,919
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—112 **3 Claims**

1. In or for a ticket printer for printing transportation tickets, a control system comprising:



a motherboard having a plurality of slots;

control means for said printer, said control means being mounted on a board plugged into one of said slots; and

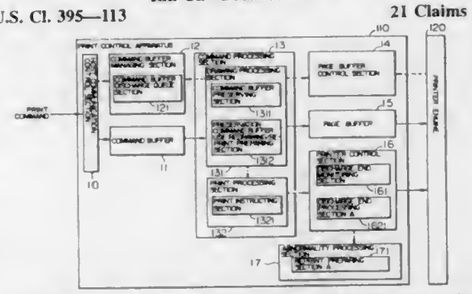
a plurality of dual process personal computers, each being mounted on a board and plugged into a respective one of said slots, and each of said plurality of dual process personal computers being connected to send data to said control means and also being adapted to perform general computing tasks.

5,664,074

PRINT CONTROL APPARATUS WITH ERROR RECOVERY FUNCTION AND ITS PRINT CONTROL METHOD

Seiji Kageyama; Tadahiko Asou, both of Yokohama, and Chikahiko Nagata, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Microsoftware Systems, Inc., Yokohama, both of Japan

Continuation-in-part of Ser. No. 605,280, Oct. 30, 1990. This application Aug. 28, 1992, Ser. No. 936,659
Claims priority, application Japan, Aug. 30, 1991, 3-219606
Int. CL[6] G06K *15/00*
U.S. Cl. 395—113 **21 Claims**



1. A print control apparatus for receiving a print command train from a host computer and for performing a print control to a printer engine, in which said print command train has at least drawing commands which are arranged in accordance with the order of print pages and indicate drawing information such as characters, figures, images, or the like, and attribute parameter setting commands which are arranged at arbitrary positions and indicate a format or the like to draw said drawing information regarding the drawing commands after said arbitrary positions as image data, comprising:

a communication control section to receive said print command train;

a command buffer to store the received print command train;

a drawing processing section for sequentially reading out the print command train from the command buffer and executing a drawing process of drawing dot image data in accordance with the print command train in a normal state and for again sequentially reading out the print command train after a page which is not yet discharged at a time point of the occurrence of an abnormality and executing the drawing process in accordance with the print command train in a state in which the abnormality occurs;

a page buffer to store the dot image data drawn by said drawing processing section;

a print processing section to instruct a printer control section to print with respect to the dot image data stored in said page buffer;

a printer control section for reading out the dot image data from the page buffer and executing the print control to the printer engine in accordance with an instruction from said print processing section;

an abnormality processing section for monitoring an abnormality of the printer engine and for activating a reprinting process of the drawing processing section in the case where an abnormality which needs a reprint has occurred; and

an attribute parameter table to store at least current attribute parameters set in accordance with the print command train read out by the drawing processing section until all of the pages regarding said attribute parameters are discharged;

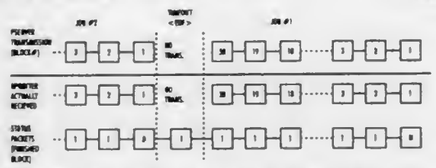
wherein said drawing processing section executes the drawing process by the attribute parameters of the page whose drawing process is again performed which have been stored in said attribute parameter table when the abnormality which needs the reprint occurs.

5,664,075

PRINT JOB IDENTIFICATION AND SYNCHRONIZATION BETWEEN NETWARE PSERVER AND ATLAS RPRINTER PROTOCOL GATEWAY

Jun S. Park, Torrance, Calif., and Jack W. Tung, Hsin-chu, Taiwan, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 17, 1995, Ser. No. 543,888
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—114 **1 Claim**



1. A method for controlling a printer to separate a single stream of data comprising packets having n bytes of data generated by a means for generating page description language and coupled through a circuit that does not transmit job separation data into separate jobs to be printed, comprising the steps of:

creating two separate jobs from one stream of data, each job comprising 1 or more data packets having a plurality n of data bytes per packet, and a last packet having a remainder of from 1 to n data bytes, the stream of packets being defined at any moment as one or more previous packets, a current packet and a next packet.

as each current packet is received by said printer, using said printer to generate a status signal to be transmitted to said means for generating to indicate that a previous data packet has been received,

using the means for generating to stop sending data packets after said last packet of said first job is sent,

using said printer to generate a timeout after a predetermined amount of time has elapsed since the receipt of said current packet, and to generate a status signal to be transmitted to said means for generating to indicate that said current data packet has been received, and

using the printer to finish the current job after printing the current data packet, and to start a new job with the next packet

a) if the previous packet was a data packet having n bytes, the current packet has between 1 and n bytes and there is a timeout, or

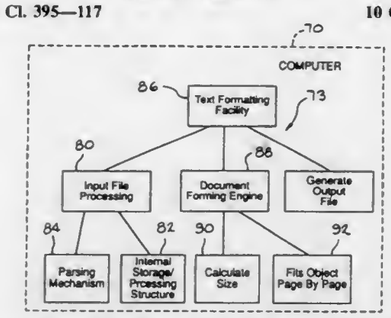
b) if the current packet is a first packet and there was no timeout after the previous packet.

5,664,076

APPARATUS AND METHOD FOR MAKING A SCANNABLE FORM ON A BLANK SHEET

Karen Ann Pluta, Hamburg, and Jacob Matthew Smith, Silver Creek, both of N.Y., assignors to Karen A. Pluta, Hamburg, N.Y.

Filed Dec. 27, 1994, Ser. No. 364,216
Int. Cl.[6] G06K *7/10*
U.S. Cl. 395—117 **10 Claims**



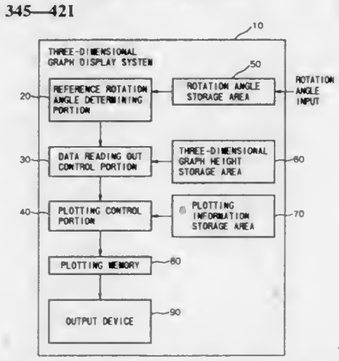
1. A method for forming a scannable form from a data file comprising operating a computer thereby (a) signaling a printer to print on a blank sheet of paper a series of timing marks along with data derived from the data file including a plurality of indicators of spaces to be optionally marked for scanning, and (b) aligning each of the indicators with one of the timing marks and with a scan head position for scanning of marked indicator spaces, wherein the step of aligning comprises providing horizontal and vertical grid lines to be aligned with the timing marks and scan head positions respectively with the vertical grid lines positioned relative to the position of the timing marks and positioning the indicators at the positions respectively of intersection of grid lines.

5,664,077

THREE-DIMENSIONAL GRAPH DISPLAYING SYSTEM

Katsunori Kubo, Hiroshima, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 301,000
Claims priority, application Japan, Sep. 6, 1993, 5-220761
Int. Cl.[6] G06T *15/00*
U.S. Cl. 345—421 **11 Claims**



1. A three-dimensional graph display system for displaying a two-dimensional graph data in a three-dimensional graph appearance, comprising:

graph image height storage means for storing only height data of each individual graph image forming the three-dimensional graph in a two dimensional array;

reference rotation angle selecting means for determining one of angular ranges derived by dividing 360° into a given number of equal angular width ranges, in which a rotation angle designates a viewpoint of the three-dimensional graph and selecting one of reference rotation angles set for a respective angular range, corresponding to the determined angular range;

data reading out control means for selecting one of a plurality of reading out orders established with respect to respective reference rotation angles for reading out said height data of the individual graph image at back side at earlier timing than that of the individual graph image at front side, corresponding to said selected reference rotation angle as the order for reading out said graph image height data from said graph image height storage means;

plotting control means for reading out said graph image height data according to the selected reading out order and generating plotting data of the three-dimensional graph by arranging the read out graph image height data in a plotting pattern in a plotting memory in a predetermined plotting order; and

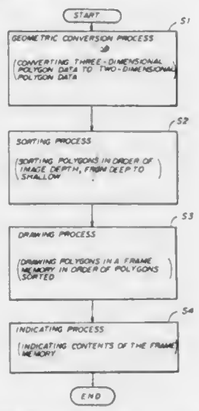
output means for reading out the plotting data from said plotting memory and outputting the three dimensional graph after completion of plotting of all graph image height data read out from said graph height storage means in said plotting memory.

5,664,078

SORTING APPARATUS AND METHOD FOR SORTING DATA IN SEQUENCE OF REFERENCE LEVELS INDICATED BY THE DATA

Hitoshi Yamamoto, Amagasaki, and Shigeru Miyake, Kobe, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 879,033, May 6, 1992, Pat. No. 5,575,482. This application Oct. 5, 1995, Ser. No. 539,534
Claims priority, application Japan, May 10, 1991, 3-135981
Int. Cl.[6] G06T *17/00*
U.S. Cl. 345—421 **8 Claims**



1. A sorting apparatus comprising:

a data memory for storing a plurality of data, each of said data having reference data indicating a predetermined reference level;

a sorting memory for writing therein data based on said plurality of data;

control means for sorting said plurality of data in sequence of said predetermined reference levels of said plurality of data;

said control means writing data to said sorting memory so that addresses of said plurality of data are obtained in the sequence of said predetermined reference levels of said plurality of data by tracing data written in said sorting memory by repeatedly reading data in said sorting memory by means in which each data has information about a respective address of a next data to be read,

wherein the plurality of data comprises data for representing a three-dimensional image having depth-dimensional values, length dimensional values, and width dimensional values, and the predetermined reference level comprising a depth-dimensional value corresponding to a predefined pixel for each of said plurality of data, such that successive depth-dimensional values corresponding to each predefined pixel for each of said plurality of data are ordered in sequence of said depth-dimensional value; and

wherein the sorting of the plurality of data in sequence of depth-dimensional values is independent of the length and width dimensional values of said plurality of data.

5,664,079

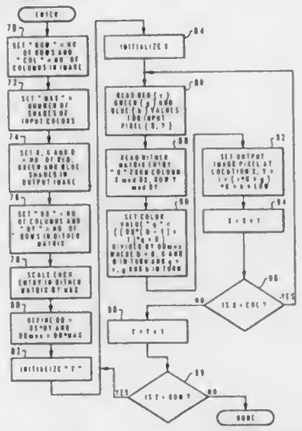
Patent Not Issued For This Number

5,664,080

SYSTEM AND METHOD FOR GENERATING A UNIVERSAL PALETTE AND MAPPING AN ORIGINAL COLOR SPACE TO THE UNIVERSAL PALETTE

Bruce David Lucas, Yorktown Heights, N.Y.; Arturo Aureliano Rodriguez, Belmont, Calif.; Mark Andrew Pietras, Boynton Beach, Fla., and Andres Jesus Saenz, Belmont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1992, Ser. No. 963,973
Int. Cl.[6] H04N *9/00*
U.S. Cl. 345—431 **11 Claims**



1. A method of compressing an original image captured using a three color component space, the method comprising the steps executed by a digital computer of:

reserving a portion of a universal palette space for a presentation layer of a computer operating system;

quantizing the three component color space into a universal palette having three color components over an unreserved portion of the universal palette space;

dividing the original image into a plurality of nonoverlapping blocks each comprising an m×n array of pixels;

providing a dither matrix having entries corresponding to the m×n array;

for each pixel, reading the entry in the dither matrix corresponding to the location of the pixel; and

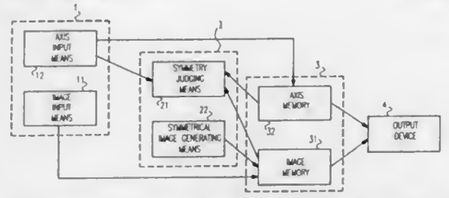
calculating an index for the pixel into the universal palette based upon the color component values for the pixel and the entry read from the dither matrix.

5,664,081

METHOD FOR FORMING A SYMMETRICAL IMAGE

Shigeru Saito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,239
Claims priority, application Japan, Oct. 31, 1994, 6-290682; Nov. 18, 1994, 6-285187
Int. Cl.[6] G06T *3/00*
U.S. Cl. 345—433 **24 Claims**



1. A computer-implemented method of generating a symmetrical image from an object image having a plurality of control points, said method for use with a computer system including input and output devices, said method comprising steps of:

(a) receiving from said input device image data representing an entire object image including information indicative of positions of said control points;

(b) determining an axis of symmetry of said object image;

(c) pairing a first control point with a second control point having a symmetrical relationship with said first control point; and

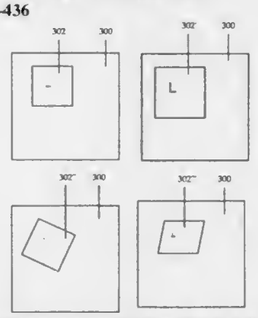
(d) modifying said image data so that said first and second control points have symmetrical positions about said axis of symmetry.

5,664,082

METHOD AND APPARATUS FOR ARBITRARY TRANSFORMATION OF IMAGES

Kok S. Chen, Sunnyvale, and Marilyn Chen, Atherton, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 6, 1995, Ser. No. 471,211
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—436 **19 Claims**



1. A method for transforming a scan line in a first image into a second image, wherein the scan line in the first image is comprised of at least one pixel, said method comprising the steps of:

receiving transformation data, wherein the transformation data defines the type of transformation to be performed on the scan line in first image;

determining an initial pixel location in the scan line in the first image;

determining at least one initial destination vector using the transformation data and the initial pixel location;

determining a pixel location in the second image using the at least one initial destination vector;

determining a first value, wherein the first value remains constant throughout the transformation of the scan line in the first image;

determining a second value, wherein the second value remains constant throughout the transformation of the scan line in the first image;

for each remaining pixel in the scan line in the first image, determining at least one destination vector for each remaining pixel using the first and second values and the at least one initial destination vector; and

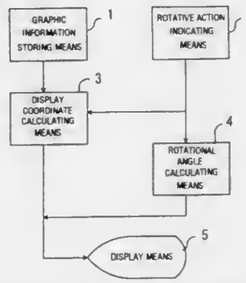
for each remaining pixel in the scan line in the first image, determining a pixel location in the second image by using the at least one destination vector determined for each remaining pixel.

5,664,083

GRAPHIC DISPLAY APPARATUS

Munetaka Takeuchi; Takefumi Namiki; Kouzo Nagano; Ikuo Fukuda, all of Kawasaki, and Hiromi Hayashi, Aomori, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 6, 1995, Ser. No. 524,183
Claims priority, application Japan, Dec. 6, 1994, 6-302267
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—437 **3 Claims**



1. A graphic display apparatus for displaying a three-dimensional object which can be rotated about a fixed point as an origin, comprising:

graphic information storing means for storing graphic information of a three-dimensional object to be displayed;

rotative action indicating means for indicating rotative actions to rotate the three-dimensional object being displayed about three axes of a Cartesian coordinate system;

display coordinate calculating means for calculating coordinates of the three-dimensional object after said three-dimensional object is rotated by the indicated rotative actions;

rotational angle calculating means for calculating rotational angles of said three-dimensional object rotated by the rotative actions, as rotational angles from an initial state of the three-dimensional object prior to the rotative actions, in a predetermined sequence of at most one rotative action about each of said three axes; and

display means for displaying the three-dimensional object at the coordinates that have been calculated by said display coordinate calculating means, and the rotational angles from the initial state which have been calculated by said rotational angle calculating means.

5,664,084

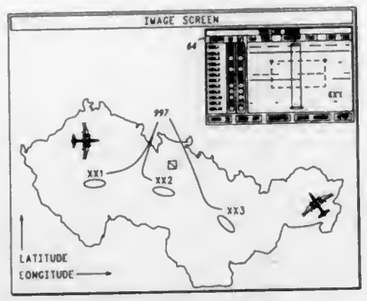
METHOD AND APPARATUS FOR VISUALLY CORRELATING TEMPORAL RELATIONSHIPS

Robert Neal Smith, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1995, Ser. No. 443,531
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—440 **25 Claims**

1. A method for visually correlating temporal relationships between a plurality of discontinuous sensor data sets, said method comprising the steps of:

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obtaining sensor data from a plurality of sensors throughout a display duration, said sensor data being characterized by periods for which valid sensor data are unavailable, said sensor data further describing multi-dimensions of a particular temporal relationship;

defining a plurality of approximately equal length strip regions of a display window so that each of said plurality of approximately equal length strip regions corresponds to one of said plurality of sensors and so that a length of each of said plurality of approximately equal length strip regions corresponds to said display duration; and

for each of said plurality of approximately equal length strip regions, drawing a sensor time line therein, said sensor time line comprising one or more collinear line segments separated by gaps, said gaps being dimensioned to correspond to said periods for which said valid sensor data are unavailable.

5,664,085

METHOD OF AN APPARATUS FOR GENERATING TANGENTIAL CIRCLE

Masao Morito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

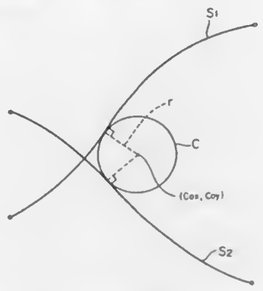
PCT No. PCT/JP94/00415, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO95/01608, PCT Pub. Date Jan. 12, 1995

PCT Filed Mar. 15, 1994, Ser. No. 381,860

Claims priority, application Japan, Jun. 29, 1993, 5-158746

Int. Cl.[6] G06T *11/20*

U.S. Cl. 345—441 **18 Claims**



1. A method for generating a circle tangential to first and second figure elements displayed on a screen of a CAD device, comprising the steps of:

(a) indicating the first figure element, identifying a first indicated position thereon, extracting an identifier of the first figure element and coordinates of the first indicated position, indicating the second figure element, identifying a second indicated position thereon, and extracting an identifier of the second figure element and coordinates of the second indicated position;

(b) setting coordinates of a point on a line segment whose ends are located at the first and second indicated positions as a preset value representing center coordinates of the circle;

(c) convergent calculating a first improved value of the center coordinates of the circle based on the preset value, the first and second figure elements, and on condition that the circle is tangential to the first and second figure elements;

(d) detecting a difference between the first improved value and the preset value; and

(e) substituting the first improved value for the preset value and convergent calculating a second improved value representing the center coordinates of the circle based on the difference of said detecting in step (d).

5,664,086

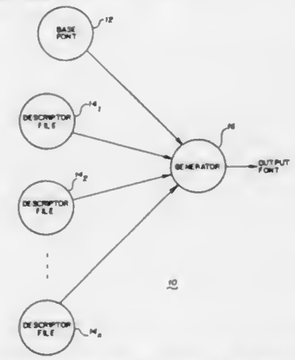
METHOD AND APPARATUS FOR GENERATING DIGITAL TYPE FONT, AND RESULTING FONTS USING GENERIC FONT AND DESCRIPTOR FILE

Ernest A. Brock, Fair Oaks, and Lawrence G. Applegate, Sacramento, both of Calif., assignors to Adobe Systems Incorporated, San Jose, Calif.

Filed Apr. 16, 1993, Ser. No. 48,766

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—468 **9 Claims**



1. A computer-implemented method for generating computer programs for producing character-like images in a selected digital type font, comprising the steps of:

operating a computer to retrieve from a computer-readable memory a generic base font file containing instructions and data for a program for reproducing textual character images according to a generic base font;

operating said computer to retrieve from a computer-readable memory a font descriptor file for the selected font, said file containing specifications for operating upon the generic base font to produce said output font; and

for each character in the generic base font, generating a character program for a corresponding character in the selected font by performing operations upon the instructions and data of the generic base font file in accordance with the specifications contained in the font descriptor file, wherein at least one of said specifications may specify a transformation operation to be performed upon a portion of a character in the generic base font and which is not to be performed on another portion of said character, and wherein each said character program contains instructions and data for producing characters of the selected font end at least a portion of the instructions and data for the selected font character programs correspond to instructions and data from the corresponding, generic base font character programs transformed in accordance with said specifications, such that at least a portion of a character in the selected font has a different shape than the shape of a corresponding portion of the corresponding character in the generic base font and the character in the selected font is therefore recognizable as being a character in a typeface different from a typeface of the generic base font.

5,664,087

METHOD AND APPARATUS FOR DEFINING PROCEDURES TO BE EXECUTED SYNCHRONOUSLY WITH AN IMAGE REPRODUCED FROM A RECORDING MEDIUM

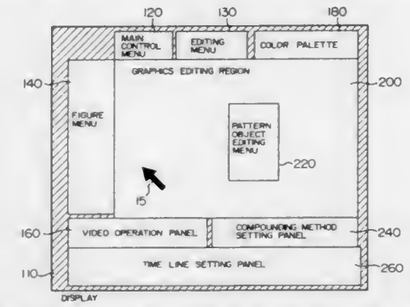
Masayuki Tani, Katsuta; Kimiya Yamaashi, Hitachi; Koichiro Tanikoshi, Hitachi; Shinya Tanifuji, Hitachi, and Masayasu Futakawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 834,779

Claims priority, application Japan, Feb. 13, 1991, 3-019744

Int. Cl.[6] G06T *13/00*

U.S. Cl. 345—473 **26 Claims**



10. A graphics editing system for editing plurality of frames included in video information using graphical figures to be overlaid on a display of said video information, said graphics editing system comprising:

frame selecting means for selecting one of said plurality of frames of said video information;

display means for displaying a frame selected by said frame selecting means;

editing means for editing said frame displayed by said display means using graphical figures to be overlaid on said frame displayed by said display means; and

storing means for storing said graphical figures to be overlaid on said frame edited by said editing means in association with identification information of said frame displayed by said display means and on which said graphical figures are to be overlaid.

5,664,088

METHOD FOR DEADLOCK RECOVERY USING CONSISTENT GLOBAL CHECKPOINTS

Alexander Borisovitch Romanovsky, St. Petersburg, Russian Federation, and Yi-Min Wang, Berkeley Heights, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

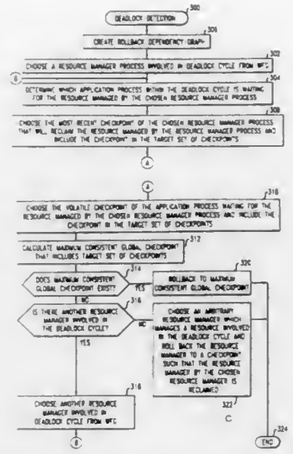
Continuation-in-part of Ser. No. 526,737, Sep. 12, 1995. This application Nov. 30, 1995, Ser. No. 565,038

Int. Cl.[6] G06F *11/16*

U.S. Cl. 395—182.11 **15 Claims**

1. A method for operation of a shared resource computer system, said computer system executing at least two processes performing inter-process communication and periodic local checkpoints, said inter-process communication and periodic local checkpoints defining a checkpoint and communication pattern, the method comprising the steps of:

monitoring said computer system to determine if it has entered a deadlock state;



upon determination that said computer system has entered a deadlock state:

analyzing said checkpoint and communication pattern to determine inter-process rollback dependency;

choosing a resource to reclaim based on said inter-process rollback dependency; and

reclaiming said chosen resource.

5,664,089

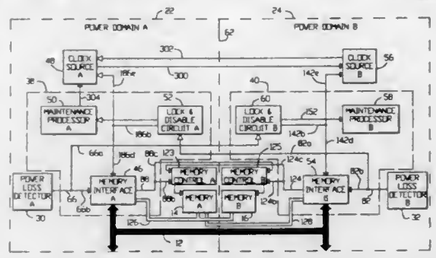
MULTIPLE POWER DOMAIN POWER LOSS DETECTION AND INTERFACE DISABLE

Larry L. Byers, Apple Valley; David J. Tanglin, Anoka; Paul A. LaBerge, Coon Rapids, and Gregory B. Wiedenman, Woodbury, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 233,862, Apr. 26, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,793

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.12 **13 Claims**



1. A power loss detection and recovery circuit for detecting voltage degradation or voltage loss of one or more voltage sources supplying specified circuitry, and for disabling circuit activity within an associated portion of the specified circuitry when the voltage source supplying that associated portion degrades or fails, the power loss detection and recovery circuit comprising:

a plurality of independent power domains, each supplying the associated portion of the specified circuitry, each of the associated portions of the specified circuitry adapted to store data signals, each said independent power domain for providing an electrically isolated voltage to the associated portion of the specified circuitry;

data processing means for reading and writing stored data signals;

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a plurality of power loss detection means, a different one of said plurality of power loss detection means in an associated one of said plurality of power domains, each for detecting whether said voltage from its respective one of said plurality of power domains has dropped below an acceptable threshold level and for providing low power signals in response to said voltage dropping below said acceptable threshold level;

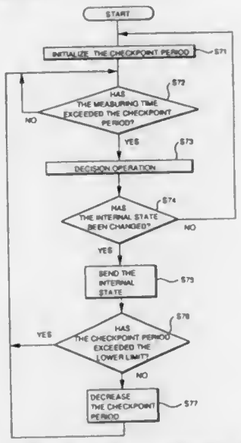
a plurality of power loss recovery means, a different one of said plurality of power loss recovery means in an associated one of said plurality of power domains, each coupled to a respectively associated one of said plurality of power loss detection means from a different one of said plurality of power domains, for disabling further reading and writing of said stored data signals by said data processing means to and from the associated portion of the specified circuitry residing in said different one of said plurality of power domains in response to said one of said low power signals from said different one of said plurality of power domains.

5,664,090

PROCESSOR SYSTEM AND METHOD FOR MAINTAINING INTERNAL STATE CONSISTENCY BETWEEN ACTIVE AND STAND-BY MODULES

Toshibumi Seki, and Yasukuni Okataku, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 356,065, Dec. 14, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 670,718
Claims priority, application Japan, Dec. 15, 1993, 5-313903
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.13 **32 Claims**



1. A stand-by system for a process including a process module replicated to at least two process modules, wherein one of the process modules is a privileged process module having an execution privilege, the execution privilege being transferred to another one of the process modules upon occurrence of a process fault in the privileged module, the stand-by system comprising:

a checkpoint period memory for storing a checkpoint period representing a time interval value between consecutive checkpoints of a succession of checkpoints;

checking means for checking whether an internal state of the privileged process module has been changed during each said checkpoint period and for providing a checking result;

checkpoint period changing means for changing the time interval value of the checkpoint period stored in said checkpoint period memory based on the checking result; and

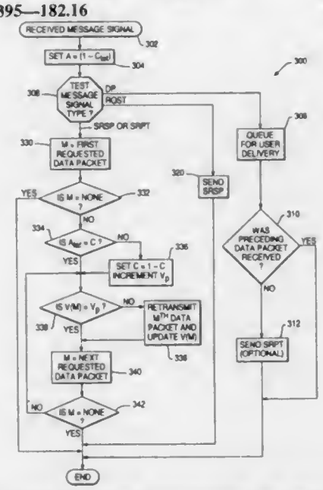
consistency maintaining means for maintaining consistency of the internal states of the privileged process module and the another one of process modules based on the checking result.

5,664,091

METHOD AND SYSTEM FOR A VOIDING UNNECESSARY RETRANSMISSIONS USING A SELECTIVE REJECTION DATA LINK PROTOCOL

Henry D. Keen, St. Paul, Minn., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 31, 1995, Ser. No. 524,021
Int. Cl.[6] C06F *11/00*
U.S. Cl. 395—182.16 **43 Claims**



1. A system for selectively retransmitting data packets detected as incorrect during a transmission of a data file from a transmitter to a receiver, said data file comprising a plurality of sequentially numbered data packets, the retransmission system comprising:

the transmitter comprising a processor connected to a memory, wherein said transmitter transmits and receives message signals, said transmitted message signals including data packets and requests for status (RQST), said received message signals including responses to the RQSTs,

wherein said transmitter originally transmits said data packets sequentially, and wherein said transmitter issues the RQSTS at a predetermined rate;

the receiver comprising a processor connected to a memory, wherein said receiver transmits and receives message signals, said received message signals including the data packets and the RQSTs, said transmitted message signals including the responses to the RQSTs, said responses including requests for retransmission of data packets detected as incorrect, said receiver processor being operable to detect incorrect data packets and determine the sequence number of said detected incorrect data packets,

wherein said transmitter processor and said receiver processor store in the transmitter memory and receiver memory, respectively, data indicating progress of cycles of round trips of message signal retransmission between the transmitter and the receiver, and

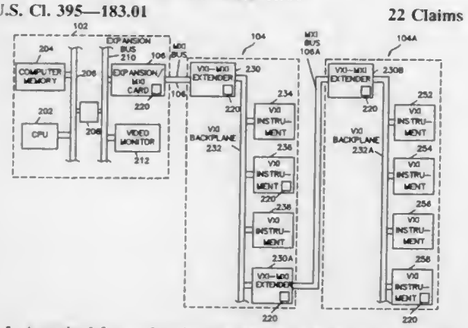
wherein each said RQST and response message signals includes a data field, each said data field including data representative of the progress of the cycles such that unnecessary retransmission of a data packet requested for retransmission in a response message signal is avoided while said requested data packet is in transit to said receiver.

5,664,092

SYSTEM AND METHOD FOR PERFORMING LOCKED TEST AND SET OPERATIONS IN AN INSTRUMENTATION SYSTEM

Nigel Waites, El Paso, Colo., assignor to National Instruments Corporation, Austin, Tex.

Filed Sep. 20, 1995, Ser. No. 531,291
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.01 **22 Claims**



1. A method for performing test and set operations in a system comprising one or more first buses which do not include locked test and set capabilities, one or more second buses coupled to said one or more first buses which support locked test and set capabilities, a test and set device coupled between the one or more first buses and the one or more second buses, a CPU coupled to one of said one or more first buses, and a memory coupled to one of said one or more second buses, wherein the memory stores one or more bits, the method comprising:

the CPU writing a value to said test and set device indicating a test and set operation is desired;

the CPU generating a read operation of the one or more bits in the memory, wherein said generating the read operation includes generating a read cycle on the one or more first buses;

the test and set device performing a locked test and set operation to the one or more bits in the memory after said generating a read operation, wherein said performing a locked test and set operation comprises:

the test and set device receiving data from the one or more bits in the memory in response to the read operation; and

the test and set device writing a predetermined set value to the one or more bits in the memory; and

the test and set device returning said received data to the CPU to complete said read operation generated by the CPU;

wherein said read cycle is pending on said one or more first buses after said generating a read operation and prior to said returning said received data;

wherein said one or more first buses cannot be used while said read cycle is pending.

5,664,093

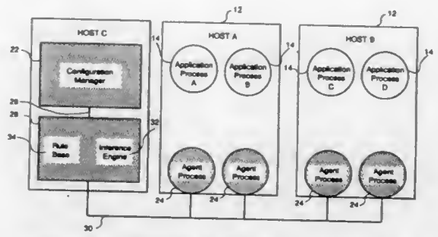
SYSTEM AND METHOD FOR MANAGING FAULTS IN A DISTRIBUTED SYSTEM

Bruce Gordon Barnett, Troy; John Joseph Bloomer, Schenectady; Hsuan Chang, Clifton Park; Andrew Walter Crapo, Scotia; Michael James Hartman, Clifton Park, and Barbara Jean Vivier, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 364,567, Dec. 27, 1994, abandoned. This application Jul. 25, 1996, Ser. No. 686,443
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.07 **6 Claims**

1. A fault management system for use in a distributed system, comprising:

a configuration manager maintaining configuration information of components used in the distributed system, the configuration information comprising an object-oriented model describing relationships between the components, wherein the object-oriented model maintains a list of the components as objects and an understanding of how the objects are related;



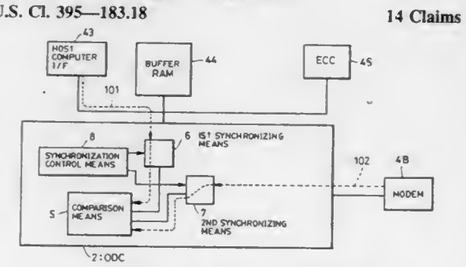
a plurality of measurement agents obtaining performance information from the components in the distributed system; and a diagnostic system coupled to the configuration manager and each of the plurality of measurement agents for identifying faults occurring in the distributed system and providing solutions for correcting the faults, the diagnostic system comprising a knowledge base having a plurality of rules for the components and an inference engine for applying the rules to the performance information, the diagnostic system receiving the configuration information from the configuration manager and the performance information from the plurality of measurement agents and using the configuration and performance information to identify faults and provide solutions for the faults, the diagnostic system identifying faults by querying the configuration manager for the object-oriented model of the components and using the model along with the plurality of rules in the knowledge base to identify the causes responsible for the fault and to provide a solutions for correcting the faults, the diagnostic system initiating the identification of faults at any location in the object-oriented model.

5,664,094

METHOD AND APPARATUS FOR READ-WRITE-VERIFICATION OF DATA STORED ON AN OPTICAL DISC AND STORED IN A BUFFER OF AN OPTICAL DISK DRIVE

Shigeyuki Taniwa, and Ichiro Iida, both of c/o Canon Kabushiki Kaisha 3-30-2, Shimomaruko, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 677,101, Mar. 29, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 45,308
Claims priority, application Japan, Apr. 3, 1990, 2-88939; Apr. 24, 1990, 2-107934
Int. Cl.[6] G06F *11/277*
U.S. Cl. 395—183.18 **14 Claims**



1. An information verifying apparatus, comprising:

input means for inputting one unit of information to be recorded on a storage medium;

a buffer memory for storing the one unit of information input by said input means;

recording means for recording the one unit of information stored in said buffer memory on the storage medium;

reading means for reading out information which has been recorded on the storage medium for verification;

output control means for inputting information read-out by said reading means, outputting said read-out information, and for controlling a timing of output of the read-out information;

comparison means for comparing information outputted from said buffer memory, which is recorded on said storage medium, with the information output from said output control means;

control means for determining whether one unit of information is correctly recorded on the storage medium on the basis of the result of the comparison by said comparison means, wherein said output control means outputs the read-out information synchronously with a transfer of information from said buffer memory to said comparison means; and

checking means for checking an abnormal condition of said buffer memory by recording predetermined data on said buffer memory, by reading out the data, and by comparing said predetermined data with the read-out data.

5,664,095

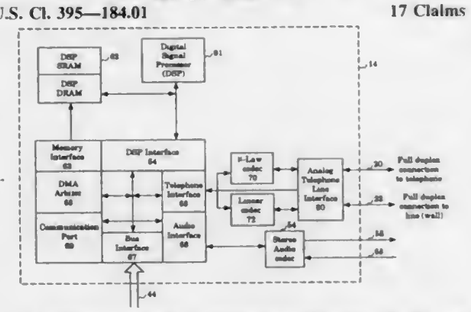
DYNAMIC SCALING OF CPU CYCLE CONSUMPTION IN A COMPUTER SYSTEM

Daniel R. Cox; Jeremy Gaylord, both of Portland, and David W. Doerner, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 163,921, Dec. 8, 1993. This application Dec. 28, 1994, Ser. No. 365,360

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—184.01 **17 Claims**



1. A method for scaling consumption of processor cycles by an input/output (I/O) subsystem that includes at least an audio driver and a modem driver, said modem driver transferring data over a telephone line at a first baud rate, said audio driver and said modem driver being associated with different I/O devices in said I/O subsystem, said method comprising the steps of:

determining a real-time error measure for the audio driver; and

reducing consumption of processor cycles used by the modem driver by switching to a second baud rate at which data is transferred over the telephone line, the second baud rate being less than the first baud rate, said switching step being performed if the real-time error measure for said audio driver exceeds a predetermined threshold.

5,664,096

DISK ARRAY CONTROLLER CAPABLE OF PREVENTING DATA DISTORTION CAUSED BY AN INTERRUPTION OF DATA WRITE OPERATION

Hiroshi Ichinomiya, Kawasaki; Takao Satoh, and Akira Yamamoto, both of Sagamihara, all of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System Ltd., both of Tokyo, Japan

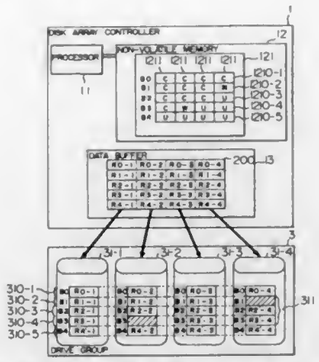
Division of Ser. No. 5,994, Jan. 19, 1993. This application May 16, 1995, Ser. No. 442,480

Claims priority, application Japan, Jan. 21, 1992, 4-008211

Int. Cl.[6] G06F *11/00;11/30*

U.S. Cl. 395—185.01 **11 Claims**

1. In a disk array controller connected to both a host computer for issuing an input/output request and a plurality of disk drives



operating in parallel, said disk array controller responsive to an output request from said host computer for dividing data supplied from said host computer and writing in parallel said divided data in said plurality of disk drives, and responsive to an input request from said host Computer for collecting data read in parallel from said plurality of disk drives into a set of data and transferring said set of data to said host computer, the improvement comprising:

a non-volatile memory allocated with at least one write control area for storing a write status of each block within a data write area for each said disk drive to which data is to be written, said write status including a first status representing a write completed status of each said disk drive, a second status representing a writing status of each said disk drive, and a third status representing a no write indication status of each said disk drive;

a processor responsive to an output request from said host computer for storing in said non-volatile memory said write status; and

when an output request data range contains a block to which said at least one write control area is not allocated, said processor stores the write status of said not-allocated block in said write control area having, as said write status of all blocks, said first status.

5,664,097

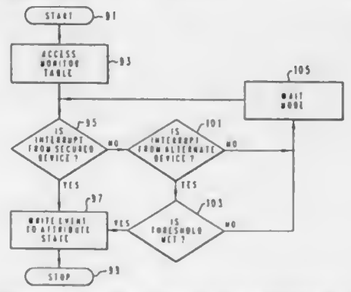
SYSTEM FOR DELAYING THE ACTIVATION OF INACTIVITY SECURITY MECHANISMS BY ALLOWING AN ALTERNATE INPUT OF A MULTIMEDIA DATA PROCESSING SYSTEM

William J. Johnson, Flower Mound; Michael D. Smith, Euless, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1991, Ser. No. 814,337

Int. Cl.[6] H04K *1/00*

U.S. Cl. 395—186 **2 Claims**



1. A method of delaying the activation of a means for securing a user interface on a data processing system, said user interface comprising first input means for providing a first input into said data processing system and second input means for providing a second input into said data processing system, said means for securing said user interface securing said user interface if said first input has not occurred after the occurrence of an event, said second input from said second input means comprises a user data input and a non-user data input, comprising the steps of:

a) determining if said first input has occurred before the occurrence of said event;

b) if said first input has not occurred before the occurrence of said event, then determining if said second input has occurred before the occurrence of said event;

c) determining if said second input is said user data input; and

d) providing an emulating input to said means for securing said user interface if said second input has occurred before the occurrence of said event and only if said second input is said user data input, wherein said emulating input emulates said first input and delays said means for securing said user interface from securing said user interface.

5,664,098

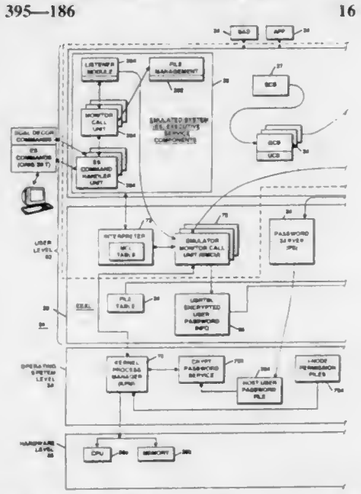
DUAL DECOR CAPABILITY FOR A HOST SYSTEM WHICH RUNS EMULATED APPLICATION PROGRAMS TO ENABLE DIRECT ACCESS TO HOST FACILITIES FOR EXECUTING EMULATED SYSTEM OPERATIONS

Richard S. Bianchi, Billerica; Thomas S. Hirsch, Bedford, both of Mass., and Ron B. Perry, Wilton, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Continuation-in-part of Ser. No. 128,456, Sep. 28, 1993. This application Sep. 23, 1994, Ser. No. 311,655

Int. Cl.[6] G06F *11/00;* **H04L** *9/00*

U.S. Cl. 395—186 **16 Claims**



1. A host system having a memory organized into shared and host memory areas and a hardware platform including a plurality of input/output devices operatively connected for executing host system instructions and for emulating the execution of emulated system instructions by an emulator running as an application process on said host system, said emulator including a number of emulated system executive service components operating in said shared memory area comprising a listener module and a command handler unit operatively coupled together and an interpreter, an emulator monitor call unit (EMCU) and server facilities operating in said host memory area, said host system further including operating system facilities for providing a number of services for host programs, said operating system facilities being coupled to said plurality of input/output devices and to said EMCU, said host system further including validation means for allowing only trusted emulated system users to access host system facilities through a predetermined set of dual decor commands, said validation means comprising:

user identity validation means included in said listener module, said user validation means in response to each emulated system user initiated login procedure verifying that the user has been given access to host facilities by generating a special monitor call for causing said EMCU to invoke predetermined ones of said host services for validating that the user is an authorized host system user and for causing the generation of a unique user description entry for each validated user to perform subsequent user level validations of said each emulated system user identity;

a user table (USTBL) mechanism located in said host memory area, said USTBL mechanism having a number of locations for storing said unique user description entry generated by said EMCU; and,

said server facilities including first server handler means including user security validation means, said user security validation means in response to each input/output request generated by said command handler means in response to an emulated system user requesting access to said host facilities through one of said predetermined set of dual decor commands, performing a validation operation on said emulated system user by accessing said user table mechanism entry associated with said user requesting access to ascertain that said dual decor command was issued by a trusted user and would not compromise host system security and said first server handler means enabling execution of dual decor commands only when said validation operation confirms that the dual decor command was issued by a trusted user.

5,664,099

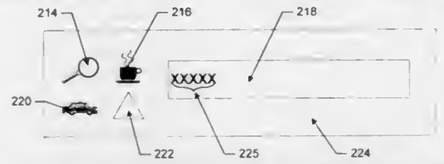
METHOD AND APPARATUS FOR ESTABLISHING A PROTECTED CHANNEL BETWEEN A USER AND A COMPUTER SYSTEM

Raymond E. Ozzie, Manchester by the Sea; Eric M. Patey, Rockport; Charles W. Kaufman, Northboro, all of Mass., and Steven R. Beckhardt, Nashua, N.H., assignors to Lotus Development Corporation, Cambridge, Mass.

Filed Dec. 28, 1995, Ser. No. 579,744

Int. Cl.[6] H04L *9/32*

U.S. Cl. 395—186 **21 Claims**



1. Apparatus for establishing a protected channel between a user and a computer system in response to a user request, the computer system having a memory, a display device and an input device, the apparatus comprising:

means responsive to the user request for generating an entry screen display which requests information to be entered by the user on the input device;

means for storing information unique to the user in the memory in a manner in which the unique information cannot be obtained by persons other than the user; and

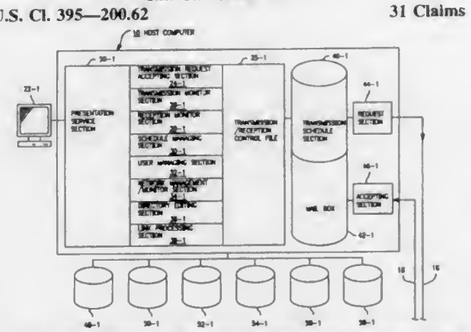
means responsive to the information stored in the memory for generating an identifying graphic display which is distinct for the user along with the entry screen display.

5,664,100

DATA TRANSMISSION PROCESSING METHOD AND APPARATUS

Iwao Miura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 11, 1994, Ser. No. 320,250
Claims priority, application Japan, Jan. 14, 1994, 6-002291
Int. Cl.[6] G06F *15/163*
U.S. Cl. 395—200.62 **31 Claims**



12. A data transmission processing apparatus for transmitting and receiving, via a transmission path, file data between a transmitting computer and a receiving computer, the transmitting computer having a different operating system, code system, file allocation unit, and file storage destination sides than the receiving computer, wherein the transmitting computer and receiving computer each comprise:

a client check section that, when file data is to be transmitted to another computer, forms transmission designation information including a self transmission file name, a transmission partner name and a reception file name of the transmission partner side, check information indicative of a data attribute, a capacity, and a format of said transmission file, each of the transmission designation information and the check information are transmitted to the receiving computer allowing the receiving computer to judge whether the data can be received prior to actual transmission;

a server check section for judging whether the transmission file can be received based on the transmission designation information when said transmission designation information and said check information are received from another computer, and when the previous allocation of the file name designated by said transmission designation information is not performed, for newly allocating reception file of the designated file name in accordance with the data attribute, capacity, and format of the check information to enable the data to be received, and for transmitting the result to the transmitting computer;

a client section for transmitting said file data when a response indicating that the reception can be performed is received from the receiving computer after said client check section has transmitted the check information and the transmission control information; and

a server section for receiving the file data from the transmitting computer to which said server check section sent a response indicating that the reception can be performed.

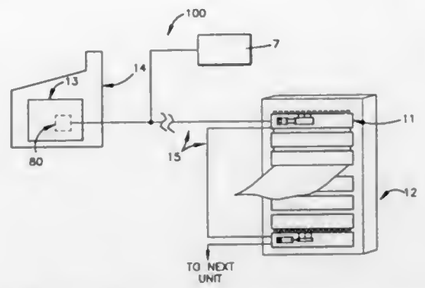
5,664,101

INTELLIGENT INDUSTRIAL LOCAL AREA NETWORK MODULE FOR USE IN A DISTRIBUTED CONTROL SYSTEM

Gabriel P. Picache, Somersworth, N.H., assignor to Heidelberg Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 22, 1993, Ser. No. 171,532
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—200.8 **24 Claims**

16. A distributed printing press color control system for controlling a number of ink key actuators, said system comprising:



a host controller;

at least one printing unit including a plurality of ink fountain assemblies and a number of embedded controllers equal to the number of ink fountain assemblies;

a communications network which daisy chains from ink fountain assembly to ink fountain assembly and from printing unit to printing unit to interlink the embedded controllers and the host controller;

input/output means interconnected with the embedded controllers and the ink key actuators to enable the embedded controllers to monitor and control the ink key actuators;

an industrial local area network module associated with each embedded controller for enabling the embedded controller to communicate with the host controller and other embedded controllers for controlling ink key actuators associated with the particular embedded controller, said local area network modules managing all network communications for their respective interlinked embedded controller coupled to said communications network;

the industrial local area network module comprising:

(1) transceiver means for supporting all communication between the module and the communications network in a first data format;

(2) parallel interface means for supporting all communication between the module and the respective embedded controller in a second data format;

(3) microcontroller means for (i) controlling the orderly flow of messages between the module and the communications network through the transceiver means, and (ii) controlling the orderly flow of messages between the module and the embedded controller through the parallel interface means; and

(4) memory means for storing program instructions to be retrieved by the microcontroller means and then executed by the microcontroller means to control the orderly flow of messages between the module and the communications network through the transceiver means and to control orderly flow of messages between the module and the embedded controller through the parallel interface means.

5,664,102

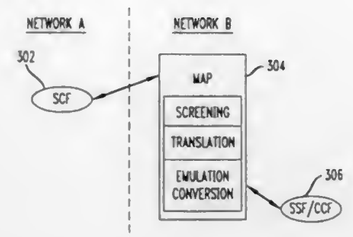
INTELLIGENT NETWORK INTERNETWORKING ACCESS ARRANGEMENT

Igor Faynberg, East Brunswick, N.J., assignor to AT&T, Middletown, N.J.

Filed Feb. 7, 1995, Ser. No. 385,013
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.76 **24 Claims**

12. Apparatus for interconnecting first and second networks so that intelligent network services can be provided to a caller connected to said first network using call processing logic residing in said second network, said apparatus comprising

at least one switch in said first network adapted to receive a call from said caller;



at least one network element in said second network arranged to store said call processing logic,

a mediation access processor (MAP) located in said first network,

means for connecting said MAP to said switch in said first network and to said network element in said second network,

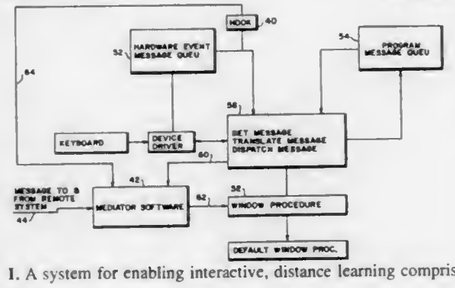
wherein said MAP is arranged to provide emulation.

5,664,103

SYSTEM FOR USING AN INDEPENDENT MEDIATOR FOR MONITORING CONTROL DATA AND TRANSFERRING SELECTED CONTROL DATA TO A REMOTE COMPUTER FOR CONCURRENT PROCESSING

Jan Stein, Wantagh, and Constance Carlson, Clinton Corners, both of N.Y., assignors to NYNEX Science & Technology, White Plains, N.Y.

Filed Apr. 14, 1993, Ser. No. 47,235
Int. Cl.[6] G06F *3/14;15/163*
U.S. Cl. 395—200.35 **8 Claims**



1. A system for enabling interactive, distance learning comprising:

at least first and second computers located remotely from each other, each said computer having an operating system and a currently active common application program;

first control means associated with said first computer for transmitting certain control data to said active common application program on said first computer;

a transmission line connecting said first and second computers;

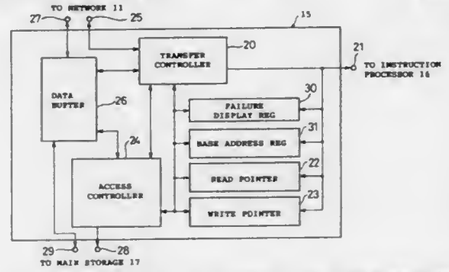
mediator software means, independent of said active common application program, resident in said first computer, coupled to said first control means in common with said active common application program, for controlling said second computer, said mediator software means monitoring said certain control data transmitted to said active common application program on said first computer, and in response to a detection of selected control data, causing operating system control messages which correspond to said selected control data to be transmitted over said transmission line to said second computer to enable said selected control data to be reproduced at said second computer for use by said common application program.

5,664,104

TRANSFER PROCESSOR INCLUDING A PLURALITY OF FAILURE DISPLAY UNITS WHEREIN A TRANSFER PROCESS IS PROHIBITED IF FAILURE IS INDICATED IN A FAILURE DISPLAY UNIT

Naoki Shinjo; Shigeru Nagasawa; Masayuki Ikeda; Haruhiko Ueno; Teruo Utsumi; Kazushige Kobayakawa; Masami Dewa; Kenichi Ishizaka, and Tadao Amada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 15, 1993, Ser. No. 166,929
Claims priority, application Japan, Dec. 18, 1992, 4-339096; Dec. 18, 1992, 4-339097
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.54 **2 Claims**



1. A data processing unit exchanging data with another data processing unit via a network, said data processing unit comprising:

main storage means for storing programs and the data;

instructions processor means, coupled to said main storage means, for issuing transfer requests by executing the programs stored in said main storage means; and

transfer processor means, coupled to said main storage means and to said instruction processor means, for enqueuing the transfer requests from said instruction processor means into a plurality of transfer request queues stored in the main storage means, and for carrying out a transfer process between said main storage means and the network based on each transfer request which is obtained from one of the transfer request queues,

said transfer processor means comprising a plurality of failure display means coupled to said instruction processor means and provided respectively in correspondence with the plurality of transfer request queues for indicating a failure when the failure occurs during the transfer process of each transfer request which is obtained from one of the transfer request queues corresponding to the failure display means,

said instruction processor means referring to and erasing a content of said failure display means, and

said transfer processor means prohibiting the transfer process of the transfer requests enqueued in one of the transfer request queues if the failure is indicated in said failure display means corresponding to the one of the transfer request queues, wherein the failure is one of a program exception and hardware damage.

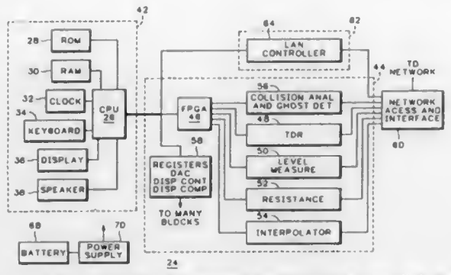
5,664,105

METHOD AND APPARATUS FOR NETWORK ANALYSIS

Mark D. Keisling, Monument; William R. Marbaker, Colorado Springs; Christopher A. Clabaugh, Woodland Park, and Gordon A. Jensen, Colorado Springs, all of Colo., assignors to Fluke Corporation, Everett, Wash.

Filed Oct. 4, 1994, Ser. No. 317,739
Int. Cl.[6] G06F *11/28;11/30*
U.S. Cl. 395—200.54 **15 Claims**

1. A network analyzer for performing analysis of an active network, wherein the network comprises multiple stations interconnected by a data link, comprising:



means for connecting the network analyzer to the data link as a station node;

a receiver for receiving data traffic from the data link; and

an analysis means for analyzing the received data traffic and for characterizing the received data traffic to provide information regarding network events, said analysis means comprising characterization means for characterizing the received data traffic into categories for reporting, wherein said characterization means categorizes the received data traffic as ghosts, local collisions, remote collisions or other category types, wherein said analysis means performs noise analysis for detecting and measuring the network response to noise and includes:

carrier detection means for determining the beginning of carrier on the data link,

counter means for counting the amount of data passing on the data link after said carrier detection means senses the beginning of carrier, and

start preamble detector means for detecting the presence or absence of a valid start preamble in the data passing on the data link, wherein said analyzer characterizes noise data on the network when said start preamble detector detects the absence of a valid start preamble in the noise data.

5,664,106

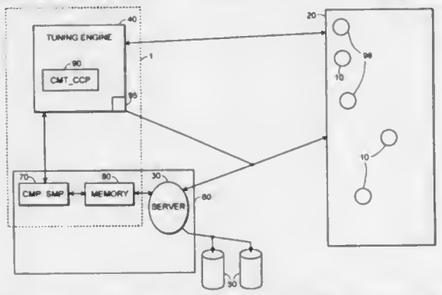
PHASE-SPACE SURFACE REPRESENTATION OF SERVER COMPUTER PERFORMANCE IN A COMPUTER NETWORK

Frank Samuel Caccavale, Holliston, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 72,613, Jun. 4, 1993. This application Feb. 9, 1995, Ser. No. 385,606

Int. Cl.[6] G06F *11/32*

U.S. Cl. 395—200.54 **17 Claims**



1. A method of operating a distributed computer system having client computers connected to a server computer, comprising the steps of:

tabulating the average arrival rates of primitive requests emanating from the client computers and directed to the server computer during sampling intervals of operation of the computer system, the primitive requests being of different types and their average arrival rates being tabulated by request type, the set of primitive requests emanating from the client computers during each sampling interval collectively constituting a workload for that interval, and the set of tabulated arrival rates for the different primitive request types during each sampling interval being arranged to make up a workload vector for that interval;

mapping the workload vectors to scalar workload values in a manner substantially guaranteeing that similar workloads map to similar workload values and that dissimilar workloads map to dissimilar workload values;

monitoring the average utilization by each workload of a resource in the server computer;

monitoring the average response time of the server computer to the requests in each workload;

forming for each workload a corresponding 3-dimensional phase-space vector (mapped scalar workload value, monitored average resource utilization, monitored average response time); and

plotting the formed 3-dimensional phase-space vectors in a corresponding 3-dimensional phase space.

5,664,107

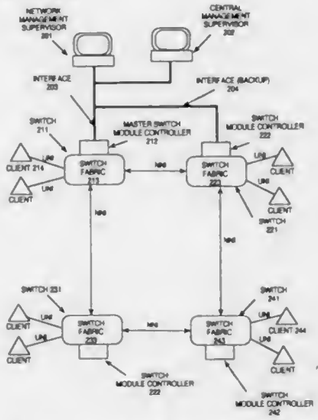
METHOD FOR PROVIDING FOR AUTOMATIC TOPOLOGY DISCOVERY IN AN ATM NETWORK OR THE LIKE

Dilip Chatwani; Rajan Subramanian, both of Newark; Winnis Chiang, Los Altos Hills; Jonathan Davar, San Jose; Ayal Opher, Mountain View, and Shiva Sawant, Santa Clara, all of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Division of Ser. No. 86,431, Jun. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 959,732, Oct. 13, 1992. This application Jun. 7, 1995, Ser. No. 473,133

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.54 **6 Claims**



1. A method for providing verification of bi-directional links in a network, said method comprising the steps of:

a) a first switch originating a first topology identification message for receipt by a topology manager, said first topology identification message providing said topology manager with first information comprising:

i) first switch identifying information identifying said first switch;

ii) first port identifying information identifying a port on said first switch on which said first topology identification message was transmitted;

iii) second switch identifying information identifying a second switch coupled with said first switch over a first link, said second switch receiving said first topology identification message from said first switch over said first link; and

iv) second port identifying information identifying a port on said second switch on which said second switch received said first topology identification message;

b) said second switch receiving said first topology identification message and forwarding said first topology identification message to said topology manager;

c) said second switch originating a second topology identification message for receipt by said topology manager, said second topology identification message providing said topology manager with second information comprising:

i) third switch identifying information identifying said second switch;

ii) third port identifying information identifying a port on said second switch on which said second topology identification message was transmitted;

iii) fourth switch identifying information identifying a neighbor switch coupled with said second switch over a second link which receives said second topology identification message from said second switch over said second link; and

iv) fourth port identifying information identifying a port on said neighbor switch on which said neighbor switch received said second topology identification message;

d) said neighbor switch receiving said second topology identification message and forwarding said second topology identification message to said topology manager,

e) said topology manager receiving said first topology identification message and said second topology identification message and determining, based on first information and said second information, whether said first link and said second link comprise a bi-directional link between said first switch and said second switch.

5,664,108

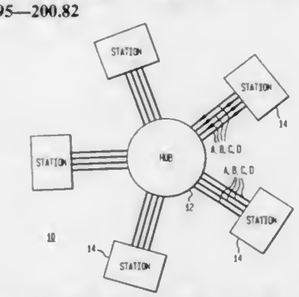
HIGH BIT RATE CSMA/CD USING MULTIPLE PAIRS

Robert Heaton, Laguna Niguel; Nariman Yousefi; Khosrow Sadeghi, both of Irvine, and David Fischer, Santa Ana, all of Calif., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Continuation of Ser. No. 126,176, Sep. 23, 1993, Pat. No. 5,544,323. This application Apr. 26, 1996, Ser. No. 638,304

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.82 **25 Claims**



23. A circuit located at a first network device for interfacing said first network device to a second network device comprising:

first, second, and third receivers,

first, second, and third transmitters,

said first transmitter being connected to a first unidirectional transmission path between said second network device and said first network device for transmitting ternary symbols from the first network device to the second network device,

said first receiver being connected to a second unidirectional transmission path between said second network device and said first network device for receiving at said first network device ternary symbols transmitted from said second network device,

said second receiver and said second transmitter being connected to a first bidirectional transmission path between said second network device and said first network device for receiving ternary symbols transmitted from said second network device and transmitting ternary symbols to said second network device,

said third receiver and said third transmitter being connected to a second bidirectional transmission path between said second network device and said first network device for receiving ternary symbols transmitted from said second network device and transmitting ternary symbols to said second network device,

said circuit including encoding circuitry for generating said ternary symbols transmitted via said first unidirectional transmission path and first and second bidirectional transmission paths in accordance with an eight-binary-bits-to-six-ternary-symbols code,

said circuit including decoding circuitry for decoding said ternary symbols received via said second unidirectional transmission path and said first and second bidirectional transmission paths in accordance with an eight-binary-bits-to-six-tertiary-symbols code.

5,664,109

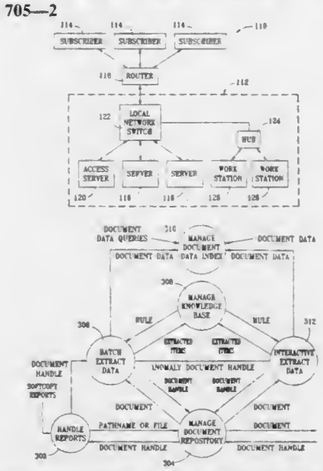
METHOD FOR EXTRACTING PRE-DEFINED DATA ITEMS FROM MEDICAL SERVICE RECORDS GENERATED BY HEALTH CARE PROVIDERS

Gary Duane Johnson, Lewisville, and Kelly Scott Campbell, Richardson, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 483,469

Int. Cl.[6] G06F *17/30;13/36*

U.S. Cl. 705—2 **11 Claims**



1. A method of extracting a pre-defined data item from unstructured medical service records stored in a central data processing system and generated by a plurality of service providers, comprising the steps of:

storing the unstructured medical service records in a database of the central data processing system for a plurality of individuals having previously sought or received services from at least one of a plurality of service providers, each unstructured medical service record contains a plurality of spatially-organized groupings of unfielded and free form text;

identifying each spatially-organized grouping as one of a plurality of structural element designations using a rules-based application predicated at least in part on the structural element designations and a document type associated with a particular service provider; and

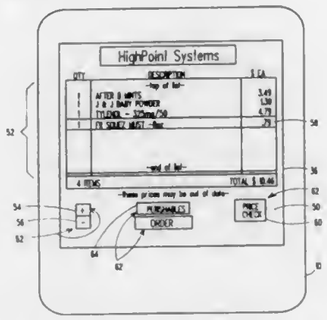
extracting the pre-defined data item from one of the plurality of spatially-organized groupings by executing the rules-based application.

5,664,110

REMOTE ORDERING SYSTEM

Jonathan B. Green, Belmont, and William R. Pope, Cambridge, both of Mass., assignors to Highpoint Systems, Inc., Belmont, Mass.

Filed Dec. 8, 1994, Ser. No. 351,795
Int. Cl.[6] G06F *7/06;17/30*
U.S. Cl. 705—26 **75 Claims**



I. A remote ordering terminal for providing at least one list of at least one item or group of items to a remotely located order processing system associated with one or more merchants on each of a plurality of occasions, each item or group of items having an item code associated therewith, said remote ordering terminal comprising:

user and/or merchant identifier means;

at least one data entry device for providing said terminal with said item associated item codes and with data from said user and/or merchant identifier means;

a database unit providing a user-specific database including user-discernable item data associated with item codes for user-selected items or groups of items;

memory to provide storage for said user-specific database, said memory in communication with said at least one data entry device for storing said at least one list;

communication means for associating said memory and said order processing system upon user command for remotely accessing said order processing system over a multi-user network, for transmitting said at least one list to said order processing system using said data from said user and/or merchant identifier means, and for receiving new and/or replacement user-discernable item data from said order processing system during association of said memory and said order processing system, said new and/or replacement user-discernable item data corresponding only to said at least one item or group of items of said at least one list;

a message display portion in communication with said memory and said user-specific database for displaying order pertinent information including said user-discernable item data from said memory; and

at least one command entry device responsive to user selection of items from said order pertinent information for assembling said at least one list and for enabling said user command, resulting in said transmitting of said at least one list to said order processing system,

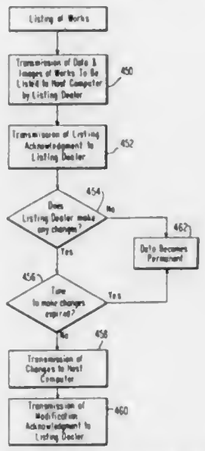
wherein said at least one list is comprised of an order to be processed by said order processing system, or a provisional order list transmitted to said order processing system, transmission of either resulting in on-demand receipt of said new and/or replacement user-discernable item data within said user-specific database for said at least one item or group of items.

5,664,111

COMPUTERIZED, MULTIMEDIA, NETWORK, REAL TIME, INTERACTIVE MARKETING AND TRANSACTIONAL SYSTEM

Kenneth Nahan; Sherri Nahan, both of Stamford, Conn.; John D. Graham, New York, N.Y.; Ahmet K. Corapcioglu, Louisville, Colo.; Robert H. Miller, Blairstown, N.J.; Alexander Lipman, New York, N.Y., and Andrei Osipou, Moscow, Russian Federation, assignors to Honicorp, Inc., New York, N.Y.

Filed Feb. 16, 1994, Ser. No. 197,863
Int. Cl.[6] G06F *19/00*
U.S. Cl. 705—27 **34 Claims**



I. A method for electronically executing transactions, comprising the steps of:

providing a for main computer with data and image storage and retrieval equipment adapted for use by a plurality of dealers;

providing a plurality of for intelligent terminals each having data storage and retrieval equipment, at least one display screen and at least one input device, wherein each of said intelligent terminals is for use at one dealer location, and wherein said intelligent terminals communicate with said main computer;

storing a plurality of electronic images of a work of art which is listed for sale by at least one of the dealers on the storage and retrieval equipment associated with said main computer;

inputting data pertaining to characteristics about each said stored image and associating said input data with each corresponding stored image;

inputting, by any of the dealers seeking a purchase through the purchasing dealer's intelligent terminal, search criteria for selecting at least one of said stored electronic images for review;

communicating said search criteria to said main computer;

searching said corresponding input data to select stored electronic images meeting said input search criteria;

communicating the selected stored electronic images and corresponding input data to the purchasing dealer's intelligent terminal;

displaying at least a portion of said selected stored electronic images on a display screen connected to the purchasing dealer's intelligent terminal;

inputting through the intelligent terminal a reservation for a work of art corresponding to at least one of the selected stored electronic images to prevent the completion of a sale transaction involving the work of art;

displaying an indication of the reservation status of the work of art in conjunction with a display of the stored electronic image for the work of art at any of said intelligent terminals;

inputting a purchase order to the intelligent terminal of the purchasing dealer for the work of art corresponding to the selected stored electronic image for which there is an indication of reservation to transact a purchase of said work of art;

completing the purchase of the work of art by generating and communicating instructions through the main computer between the intelligent terminal of the dealer that listed the work of art and the intelligent terminal of the purchasing dealer; and

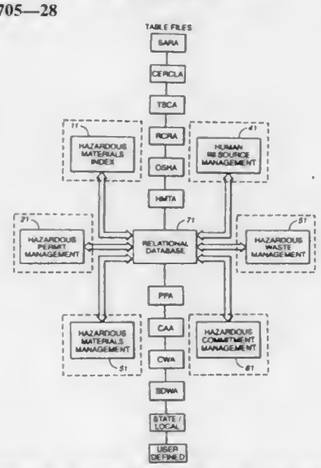
displaying an indication of the sale of the work of art in conjunction with the display of the stored electronic image for the work of art at any of said intelligent terminals.

5,664,112

INTEGRATED HAZARDOUS SUBSTANCES MANAGEMENT UNIT

Douglas H. Sturgeon, San Mateo; Emery J. Gordon, Half Moon Bay; Matthew D. Connors, Half Moon Bay, and Anthony T. Sziklai, Half Moon Bay, all of Calif., assignors to Alternative Systems, Inc., Half Moon Bay, Calif.

Filed Mar. 2, 1992, Ser. No. 844,225
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—28 **74 Claims**



I. Apparatus for monitoring handling of hazardous substances at a facility to promote compliance with applicable laws governing such substances, the apparatus comprising:

Hazardous Materials Index data means for constructing and recording a Chemical Profile for pure chemicals and mixtures thereof containing information on physical and chemical properties, health and safety hazards, handling procedures, and emergency response procedures, for a hazardous substance used or produced at the facility for which a Material Safety Data Sheet is required, and for maintaining a chemical location table containing an inventory of hazardous substances, including amounts and concentrations thereof, that are present at a given time at each of a selected group of locations at a facility;

Hazardous Materials Management data means for receiving and recording information on arrival of a hazardous substance at, and departure of a hazardous substance from, the facility, for determining whether a Material Safety Data Sheet exists for such substance and, if this Sheet is not yet available, for creating a commitment by the facility to acquire or prepare a Material Safety Data Sheet for such hazardous substance if such substance is received or produced at the facility, for tracking the movement and use of a hazardous substance at the facility, for maintaining and storing for at least one chemical process that occurs at the facility a process definition, including what mixtures, process by-products, waste by-products, chemical emissions and waste discharges are generated or consumed at each stage of such process, and for determining the amount of a hazardous substance stored at the facility at a given time;

Hazardous Permit Management data means for monitoring and recording applications, approvals, renewals and expirations of regulatory agency permits allowing the facility to store, use, emit or discharge specified hazardous substances, for monitoring and recording facility chemical emissions and waste discharges and the results of detection and testing of specified hazardous substance emissions and discharges, for monitoring and recording variations between actual emissions and discharges and permitted emissions and discharges, and for monitoring and recording the results of source reduction measures, if any, implemented at the facility;

Human Resource Management data means for monitoring and recording exposure of each worker at the facility to specified hazardous substances, for determining when, if at all, a worker has received a maximum permissible exposure to any of these specified hazardous substances at the facility, for monitoring and recording reported work-related illnesses and injuries for one or more employees at the facility, and for monitoring and recording work-related training received and to be received by each worker at the facility;

Hazardous Waste Management data means for monitoring and recording selected waste management information concerning the facility, including production, accumulation, treatment and disposal of hazardous waste, for constructing and recording a Waste Profile containing information on physical and chemical properties, health and safety hazards, handling procedures, and emergency response procedures, for a hazardous substance produced at the facility, for monitoring and recording the changes, if any, in hazardous waste produced, based upon process modification, input material substitution, reformulation of an end product produced at the facility or modifications in inventory management implemented at the facility, for monitoring the length of time a hazardous waste has accumulated in a given waste container at the facility, for monitoring and recording the size, location, use, movement, treatment and disposal of a hazardous waste container at the facility, for creating a commitment and recording completion of that commitment, to dispose of hazardous waste accumulated in a waste container when the time this waste has been accumulated in that container reaches a selected time interval, and for generating hazardous waste labels and Uniform Hazardous Waste Manifests to be used with a container containing hazardous waste that is to be disposed of away from the facility;

Hazardous Commitments Management data means for monitoring and recording hazardous substance compliance requirements, and the time requirements, if any, for such compliance, applicable to the facility, for advising the facility of safety inspections, examinations of safety equipment and equipment decontaminations to be performed periodically, and for monitoring creation of periodic hazardous substance reports for the facility; and

a database means, connected to each of these six data means, for integrating these six data means, for identifying data that are common to at least one designated pair of data means, and for creating, storing and updating these common data so that such data can be accessed and used by each member of a pair of data means to perform tasks assigned to that data means to facilitate exchange of information between at least one of the following pairs of data means:

Hazardous Materials Index data means and Hazardous Materials Management data means;

Hazardous Materials Index data means and Hazardous Permit Management data means;

Hazardous Materials Index data means and Human Resource Management data means;

Hazardous Materials Index data means and Hazardous Waste Management data means;

Hazardous Materials Index data means and Hazardous Commitment Management data means;

Hazardous Materials Management data means and Hazardous Permit Management data means;

Hazardous Materials Management data means and Human Resource Management data means;

Hazardous Materials Management data means and Hazardous Waste Management data means;

Hazardous Materials Management data means and Hazardous Commitment Management data means;

Hazardous Permit Management data means and Hazardous Waste Management data means;

Hazardous Permit Management data means and Hazardous Commitment Management data means;

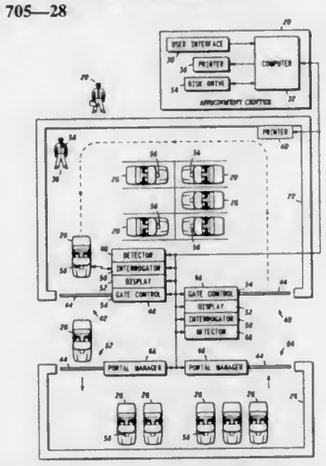
Human Resource Management data means and Hazardous Waste Management data means;
Human Resource Management data means and Hazardous Commitment Management data means; and
Hazardous Waste Management data means and Hazardous Commitment Management data means.

5,664,113

WORKING ASSET MANAGEMENT SYSTEM AND METHOD

William Robert Worger, Gilbert; Roman Casimir Lopatynski, Scottsdale; Steven Peter Allen, Mesa, and Gerald Vincent Piosenka, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 10, 1993, Ser. No. 166,326
Int. Cl.[6] G06F *7/00*
U.S. Cl. 705—28 **44 Claims**



1. A method of operating an identification tag including a processor and a memory coupled to said processor, to control an inventory of monitored working assets, said method comprising steps of:
coupling a monitoring system for one of said working assets to said tag;
obtaining use information from said monitoring system, said use information describing a quantity of use experienced by said one working asset;
receiving an interrogation signal;
storing, by said processor, data in said memory in response to instructions contained in said interrogation signal; and
transmitting, in response to said interrogation signal, said use information.

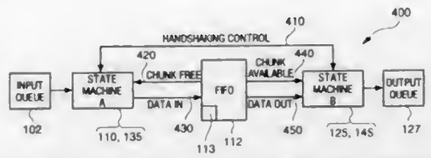
5,664,114

ASYNCHRONOUS FIFO QUEUING SYSTEM OPERATING WITH MINIMAL QUEUE STATUS

Alan S. Krech, Jr., and Noel D. Scott, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 16, 1995, Ser. No. 442,543
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—200.64 **17 Claims**

1. A queuing system in an electronic device, said queuing system having a FIFO queue controlled by a FIFO queue controller, a first device writing to said FIFO queue, and a second device reading from said FIFO queue, said queuing system comprising:
a status generator to produce FIFO queue status that is indicative of a present queue capacity of said FIFO queue by way of said FIFO queue controller,



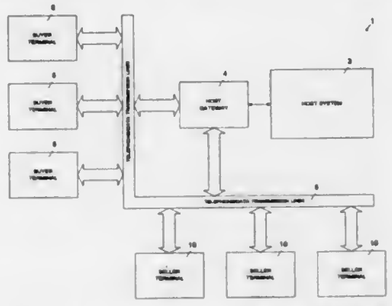
a data write controller portion of said FIFO queue controller to write data to said FIFO queue multiple times in data chunk increments in response to one request for said FIFO queue status if space for at least one data chunk is available in said FIFO queue, wherein said data chunk is a plurality of data items;
a data read controller portion of said FIFO queue controller to read said data from said FIFO queue in at least data item increments asynchronously from said data write controller and in a manner that prevents said data write controller from overflowing said FIFO queue.

5,664,115

INTERACTIVE COMPUTER SYSTEM TO MATCH BUYERS AND SELLERS OF REAL ESTATE, BUSINESSES AND OTHER PROPERTY USING THE INTERNET

Richard Fraser, 10 Glen Avon Dr., Riverside, Conn. 06878

Filed Jun. 7, 1995, Ser. No. 477,641
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—37 **8 Claims**



1. A system for selectively displaying property listings to potential buyers and for obtaining buyer profile information associated with said potential buyers which is provided to sellers of property described in said property listings, comprising:
a host system;
a plurality of remote data terminals;
data transmission means providing a signal path for data exchange between said host system and said plurality of data terminals;
data storage means within said host system, said data storage means maintaining a plurality of data records of different types, including: property records, buyer records, and seller records;
processing means within said host system including a central processing unit and associated memory means; and
communications means associated with said host system, said communications means being controlled by said processing means to provide and receive data transmissions between said host system and said remote terminals;
wherein said processing means selectively retrieves said property records in accordance with sorting criteria provided by one of said plurality of remote terminals, and provides information contained in said property records to said remote terminals;
wherein upon request by a user of one of said plurality of remote terminals, said processing means obtains buyer profile information corresponding to the user, the buyer profile information including buyer qualification information;

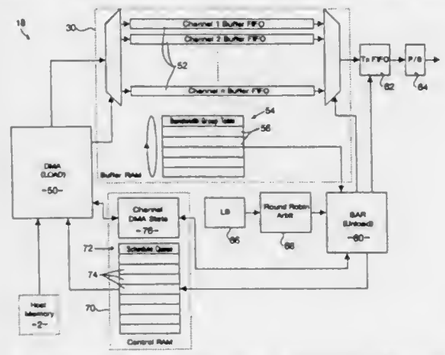
wherein the processing means compares said buyer qualification information with a threshold values stored within a retrieved property record, and, when the buyer qualification information exceeds the threshold value determined by the information stored within the property record said processing means creates a buyer record based on said buyer profile information that indicates which of said property records were requested by the user who provides said buyer profile information, said host system selectively providing said buyer record to each seller of the property listed in said property records using information stored in said seller records;
wherein said seller records includes seller identification information and seller account status information, the seller account status information determining whether said second data records are accessible to a seller.

5,664,116

BUFFERING OF DATA FOR TRANSMISSION IN A COMPUTER COMMUNICATION SYSTEM INTERFACE

Andre J. Gaytan, Union City, and Rasoul M. Oskouy, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,383
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.64 **26 Claims**



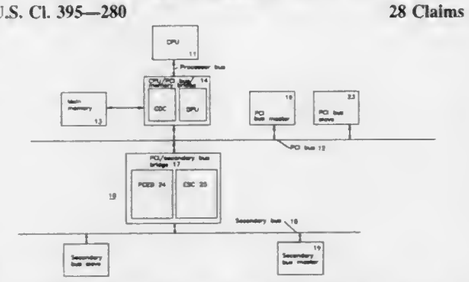
16. A data transmission interface for transmitting data from a host computer having a host memory to an asynchronous transfer mode (ATM) telecommunications network by way of an ATM connection, the ATM connection comprising a plurality of communication channels to a plurality of respective telecommunications endpoints in the ATM network, the data transmission interface comprising:
a transmission buffer memory comprising a plurality of FIFO buffers corresponding to said plurality of communication channels;
a load engine comprising a direct memory access (DMA) circuit coupled to said host computer by way of a bus interface and coupled to said transmission buffer memory, the DMA circuit being adapted to retrieve a data packet from said host memory in accordance with a channel designation in a load schedule, and store the retrieved packet data in the FIFO buffer corresponding to said channel designation;
an unload engine comprising a segmentation circuit coupled to said transmission buffer memory, for retrieving ATM cell payload data from a said FIFO buffer designated in an unload table, adding ATM cell header data to said payload data so as to form an ATM cell, and outputting said ATM cell; and
a transmission FIFO pipeline buffer coupled to receive said ATM cell from said unload engine, and coupled to said ATM network by way of a network interface to pass the ATM cell to the ATM network.

5,664,117

APPARATUS AND METHOD FOR PREFETCHING DATA TO LOAD BUFFERS IN A BRIDGE BETWEEN TWO BUSES IN A COMPUTER

Nilesh Shah; Jasmin Ajanovic, and Dahmane Dahmani, all of Folsom, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 201,816, Feb. 24, 1994, abandoned. This application Jan. 20, 1996, Ser. No. 603,688
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **28 Claims**



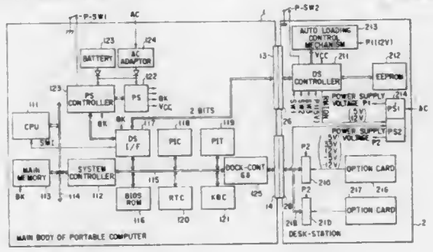
1. A bridge circuit for transferring data from a first bus to a second bus in a computer system comprising:
an address input to receive addresses of data increments to be transferred;
a first data buffer to temporarily store data increments;
a fetch circuit coupled to the address input and the first data buffer to fetch from the first bus and latch in the first data buffer at least a first data increment in response to a first address received on the address input; and
a sequence detection circuit coupled to the address input to detect sequential addresses, the sequence detection circuit causing the fetch circuit to prefetch a first plurality of data increments in response to detecting sequential addresses on the address input.

5,664,118

COMPUTER SYSTEM HAVING DETACHABLE EXPANSION UNIT

Nobutaka Nishigaki; Ryoji Ninomiya, and Makoto Sakai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Mar. 24, 1995, Ser. No. 410,516
Claims priority, application Japan, Mar. 28, 1994, 6-056491; Apr. 25, 1994, 6-086270; May 9, 1994, 6-095147; May 31, 1994, 6-119382
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—283 **20 Claims**



1. A computer system comprising:
a computer main body; and
an expansion unit removably attachable to said computer main body,
wherein said computer main body comprises
first and second connectors,
a system bus,
a communication bus connected to said first connector,

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a power supply for generating operating voltages including a back up voltage when said computer main body is in power ON state and for generating the back up voltage when said computer main body is in power OFF state,

a first controller connected to said communication bus and said power supply, for controlling said power supply, said first controller being driven based on the back up voltage,

a gate array, provided between said system bus and said second connector, for switching between electrical connection and disconnection between said system bus and said second connector, and said gate array being set to electrically disconnect said second connector from said system bus in advance of removing said computer main body from said expansion unit, and

a processing portion connected to said system bus, for controlling said gate array,

wherein said expansion unit comprises

a third connector connectable to said first connector and connected to said first connector when said computer main body is set at a mounting position of said expansion unit,

a fourth connector connectable to said second connector and arranged to be free to move between a first position where said fourth connector is disconnected from said second connector and a second position where said fourth connector is connected to said second connector when said computer main body is set at the mounting position,

at least one expansion device connected to said fourth connector for expanding functions of said computer main body,

a loading mechanism for moving said fourth connector between the first position and the second position, and

an expansion unit controller for outputting a dock request signal for connection between said second connector and said fourth connector to said computer through said third connector when said computer is set at the mounting position, controlling said loading mechanism to move said fourth connector from the first position to the second position in response to a dock start signal, and outputting a dock completion signal after completion of movement of said fourth connector to said second position,

said first controller receiving the dock request signal output by said expansion unit controller through said first connector and said communication bus, outputting the dock start signal in response to the dock request signal when said computer main body is in a power OFF state, and outputting a first interrupt signal to said processing portion through said system bus when said computer main body is in a power ON state,

said processing portion outputting a dock permission signal to said first controller in response to the first interrupt signal from said controller,

said first controller outputting the dock start signal to said expansion unit controller in response to the dock permission signal from said processing portion,

said first controller receiving the dock completion signal output by said expansion unit controller through said first connector and said communication bus, and outputting a second interrupt signal to said processing portion, and

said processing portion, in response to the second interrupt signal, controlling said gate array to electrically connect said second connector and said system bus.

5,664,119

LOCAL PROACTIVE HOT SWAP REQUEST/ ACKNOWLEDGE SYSTEM

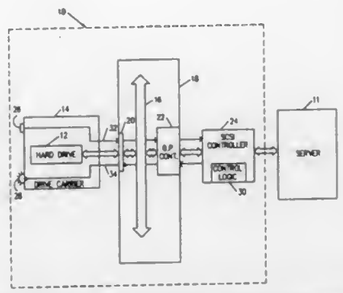
Kenneth L. Jeffries, Leander; Craig S. Jones, and Victor K. Pecone, both of Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 271,617, Jul. 7, 1994, Pat. No. 5,579,491. This application Aug. 16, 1996, Ser. No. 699,016

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—283 **34 Claims**

1. Apparatus for implementing a local proactive hot swap request/acknowledge scheme in a computer system comprising a computer bus and a plurality of electrical devices each including a carrier, each device being physically and electrically connectable to said bus, the apparatus comprising:



each of said carriers of said electrical devices including a user-actuatable means supported thereon for generating a request for a hot swap procedure in connection with said electrical devices comprising a hot installation or a hot removal of said electrical devices;

processor means electrically connected to each of said user-actuatable means, for processing said hot swap request to determine whether said requested hot swap procedure may be performed without detrimentally affecting ongoing operations of said bus and said system, and for generating signals indicative of results of said processing;

each of said carriers of said electrical devices including an indicating means supported thereon and electrically connected to said processor means, for indicating said processing results to a user, said indicating means being responsive to receipt of said generated signals from said processor means; and

means connected to said processor means for performing said requested hot swap procedure when said processor means determines that said requested hot swap procedure may be performed.

5,664,120

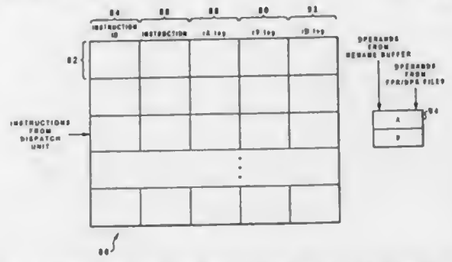
METHOD FOR EXECUTING INSTRUCTIONS AND EXECUTION UNIT INSTRUCTION RESERVATION TABLE WITHIN AN IN-ORDER COMPLETION PROCESSOR

Muhammad Afsar, and Soummya Mallick, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1995, Ser. No. 519,557

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—393 **12 Claims**



1. A method for executing instructions within a processor, said processor having associated therewith a plurality of rename buffers which temporarily store results of instructions, a plurality of registers, and an execution unit, said execution unit having a reservation data structure, wherein said reservation data structure includes a plurality of entries which store instructions to be executed by said execution unit, and a single operand buffer, which stores one or more operands of a single instruction, wherein said processor completes instructions according to a program order, said method comprising:

receiving an instruction at said execution unit;

storing said instruction within said reservation data structure within said execution unit, said instruction being stored in association with information specifying a source of an operand of said instruction, wherein sources of operands of instructions include said plurality of rename buffers and said plurality of registers;

determining if said instruction is a next instruction to be executed by said execution unit;

in response to said determination, loading said operand of said instruction from said specified source into said single operand entry; and

executing said instruction within said execution unit utilizing said operand within said single operand entry, wherein a portion of said reservation data structure allocated to operand storage is reduced.

5,664,121

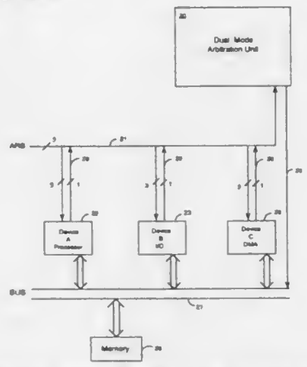
DUAL MODE ARBITRATION APPARATUS AND METHOD FOR REDUCING LATENCY BY ALLOWING THE POSSIBILITY OF SIMULTANEOUS REQUEST AND ACCESS FOR A SHARED BUS

Frederick M. Cerauskis, Mountain View, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 7, 1995, Ser. No. 551,862

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—293 **15 Claims**



1. A method of reducing latency of bus arbitration comprising the steps of:

switching between a fast and a slow arbitration state responsive to a number of devices requesting access to a bus during a predetermined time period;

wherein fast arbitration includes: requesting access to the bus while simultaneously driving a packet on the bus, determining if multiple devices drove the bus during a time period, and invalidating any packets driven during the time period if multiple devices drove the bus during the time period.

5,664,122

METHOD AND APPARATUS FOR SEQUENCING BUFFERS FOR FAST TRANSFER OF DATA BETWEEN BUSES

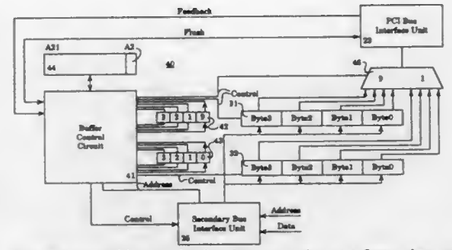
Jeffrey L. Rabe, Gold River, and Sathyamurthi Sadhasivan, El Dorado Hills, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 447,190, May 22, 1995, abandoned, which is a continuation of Ser. No. 152,303, Nov. 12, 1993, abandoned. This application Mar. 20, 1996, Ser. No. 619,092

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—308 **6 Claims**

1. A computer system comprising:



first and second buses, the first bus operating at a faster data rate relative to the second bus;

a central processing unit (CPU);

a main memory;

a primary bridge circuit for transferring data between the CPU, the main memory, and the first bus;

a secondary bridge circuit for transferring data between the first and second buses, the secondary bridge circuit including a first interface unit having an interface buffer coupled to the first bus; a second interface unit coupled to the second bus; and a data buffer circuit coupled to the first and second interface units, the data buffer circuit comprising:

first and second buffers each having a plurality of data byte storage locations storing data from a plurality of components on the second bus;

an address register storing a data address provided by the second interface unit and a single bit which changes independently of the data address, the single bit indicating that a data byte is to be written to the first buffer or to the second buffer, the single bit changing to an opposite value each time a next data address is stored in the address register, the next data address sometimes being sequential with respect the data address and sometimes not being sequential with respect to the data address;

a register storing a pair of bits for indicating a data byte storage location of the first or second buffer to which the data byte is to be written;

first and second registers each having a plurality of valid bits, each valid bit corresponding to a data byte storage location of the first and second buffers, respectively;

means for controlling the transfer of data from the secondary bus to the first or second buffer according to the data address provided by the second interface unit, and for flushing the first or second buffers when one of the data byte storage locations of the first or second buffer is filled, the data address changes, and the interface buffer is empty, or alternatively, when a valid bit corresponds to one of the data byte storage locations of the first or second buffer, the valid data byte is not stored in the interface buffer, and the data address changes by more than the single bit.

5,664,123

DIGITAL COMMUNICATION I/O PORT

Young W. Lee, Orange; Sungwon Moh, Wilton, and Arno Muller, Westport, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 6, 1994, Ser. No. 301,086

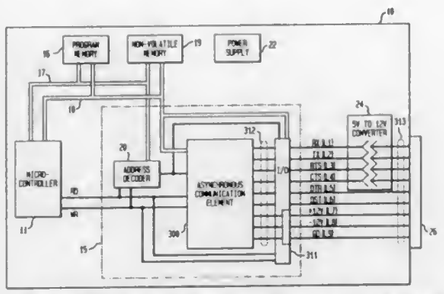
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **2 Claims**

1. An improved micro control system having a programmable microcontroller in bus communication with memory units, an operating power supply for providing operating power to said microcontroller, a communication module for receiving and transmitting data messages for conforming said data messages to a predetermined serial communication protocol and decoding said received data messages, wherein the improvement comprises:

a connector;

input-output means in communication with said communication module via a data bus for responding to selected control



signals generated by said microcontroller and placing said input-output means in a first mode of operation to provide communication between said communication module and said connector and in a second mode to provide communication between said data bus and said connector;

said microcontroller being programmed to generate a first control signal or a second control signal, said input-output means being responsive to said first control signal to place said input-output means in said first mode of operation and said second control signal to place said input-output means in said second mode of operation;

said data bus having at least N data lines and;

said input-output means having M output data lines, where M-N is equal to or greater than 3;

wherein at least a first one of said output data lines is in communication with said operating power supply to provide a first operating electrical potential, at least a second one of said output data lines is in communication with said operating power supply to provide a second operating electrical potential different from said first operating electrical potential, and at least a third one of said output data lines in communication with said operating power supply to provide a neutral electrical potential.

5,664,124

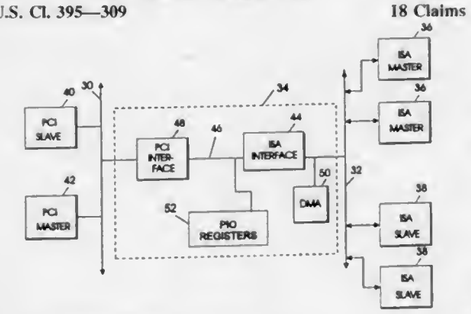
BRIDGE BETWEEN TWO BUSES OF A COMPUTER SYSTEM THAT LATCHES SIGNALS FROM THE BUS FOR USE ON THE BRIDGE AND RESPONDS ACCORDING TO THE BUS PROTOCOLS

Sagi Katz, Haifa, Israel; William Alan Wall; Amy Kulik, both of Austin, Tex., and Daniel R. Cronin, III, Lake Worth, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 351,186

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **18 Claims**



1. A computer system comprising:

a first bus;

a second bus carrying control signals and having a specified bus protocol;

at least one master coupled to the second bus;

a bridge coupled between the first and second buses for interfacing the first and second buses, the bridge including:

a third bus carrying latched control signals received from the second bus;

at least one slave coupled to the third bus and receiving latched control signals from the third bus;

a latch coupled between the second and third buses and latching control signals sent from the second bus to the third bus, and latching control signals sent from the third bus to the second bus;

a logic device coupled between the second and third buses, the logic device sending, in response to receiving predetermined unlatched master control signals from the master coupled to the second bus, predetermined unlatched slave control signals to the master on the second bus, wherein the predetermined unlatched master control signals are for a predetermined type of data transfer between the master coupled to the second bus and the slave coupled to the third bus.

5,664,125

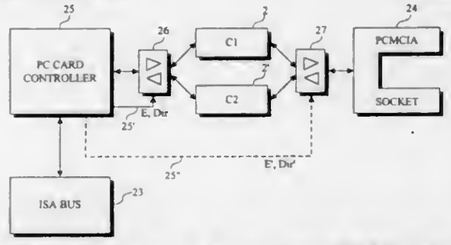
PCMCIA INTERFACE SYSTEM WITH ADJACENTLY ALIGNED CABLE TO PREVENT CROSSTALK

Siegfried Vater, Erfurt, Germany, assignor to SCM Microsystems (U.S.) Inc., Los Gatos, Calif.

Filed Dec. 8, 1995, Ser. No. 567,889

Int. Cl.[6] G06F *3/00;13/00*

U.S. Cl. 395—309 **17 Claims**



1. An interface system for at least a single PCMCIA socket, comprising:

a first cable connected between a PCMCIA socket and a bus, including a first plurality of control pin lines and a first plurality of data pin lines; and

a second cable connected between a PCMCIA socket and a bus, including a second plurality of control pin lines and a second plurality of data pin lines, said first and second cables connected parallel to each other and said first plurality of control pin lines being aligned adjacently to said second plurality of control pin lines.

5,664,126

HUMAN INTERFACE SYSTEM FOR COMMUNICATING NETWORKED USERS

Hideki Hirakawa, Yokohama; Etsuo Ito, Kumagaya; Toshio Okamoto, Tokyo; Kazuo Sumita, Yokohama, and Shuichi Tsujimoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

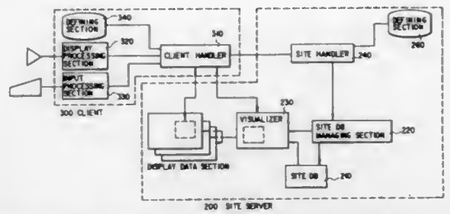
Continuation of Ser. No. 95,981, Jul. 23, 1993, abandoned. This application Sep. 12, 1996, Ser. No. 713,959

Claims priority, application Japan, Jul. 24, 1992, 4-197943; Jul. 24, 1992, 4-198329; Jul. 24, 1992, 4-198330; Aug. 31, 1992, 4-253439; Sep. 11, 1992, 4-243694

Int. Cl.[6] G06F *15/163;3/00*

U.S. Cl. 345—329 **14 Claims**

1. In a human interface system constructed by connecting a plurality of computers via a network, at least one of said plurality of computers comprising:



a plurality of virtual sites, each virtual site including at least one object including people and instruments, each virtual site performing at least one of retaining and managing a plurality of pieces of data and a plurality of programs corresponding to characteristics of each object of said at least one object of said plurality of virtual sites;

access managing means for managing access rights of plural users to control access to each of the plurality of virtual sites, said access managing means including first and second communication channels, wherein said first communication channel is a communication channel between two of said plural users, and wherein said second communication channel is a communication channel between one of said plural users and said at least one object of one of said plurality of virtual sites, each of said first and second communication channels established by accessing said plurality of virtual sites via said plurality of pieces of data and said plurality of programs; and

connecting means for connecting said at least two communication channels to each other,

wherein said at least one of said plurality of computers includes a link information of sites existing on at least another one of said plurality of computers and is capable of establishing communication channels between each of said plurality of virtual sites of said at least one of said plurality of computers and said at least another one of said plurality of computers.

5,664,127

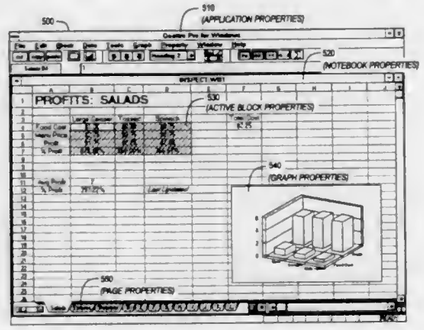
SYSTEM AND METHODS FOR IMPROVED SPREADSHEET INTERFACE WITH USER-FAMILIAR OBJECTS

Charles Anderson, Santa Cruz; Robert W. Warfield, Aptos; Istvan Cseri, Scotts Valley; Murray K. Low, Santa Cruz; Weikuo Liaw, Scotts Valley, and Alan M. Bush, Palo Alto, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Division of Ser. No. 78,877, Jun. 16, 1993, Pat. No. 5,502,805, which is a division of Ser. No. 866,658, Apr. 8, 1992, Pat. No. 5,416,895. This application Feb. 28, 1996, Ser. No. 608,448

Int. Cl.[6] G06F *17/30*

U.S. Cl. 345—333 **33 Claims**



1. In a computer system, a method for providing a user access to values of properties of objects appearing on screen, the method comprising:

(a) displaying a plurality of objects on screen, at least some of the objects having properties whose values can be set by the user;

(b) requesting properties of a particular object of interest, by positioning a screen cursor at or near the particular object and requesting inspection of the properties of the particular object;

(c) in response to the request for properties of the particular object, displaying a property dialog for the particular object, said property dialog including

(i) a list of properties corresponding to a plurality of properties for the particular object, and

(ii) at least one property pane corresponding to at least one property for the particular object, each property pane including one or more

screen controls for getting and setting values for the corresponding property of the particular object;

(d) receiving user input for selecting one of said properties from the list; and

(e) in response to said user input, displaying the property pane that corresponds to the selected property while continuing to display the list of properties.

5,664,128

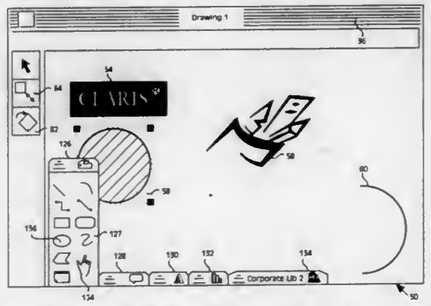
OBJECT STORAGE APPARATUS FOR USE WITH DATA SETS IN COMPUTER APPLICATIONS

German Wolfgang Bauer, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 23, 1995, Ser. No. 393,549

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—334 **18 Claims**



1. An apparatus for storing objects for use with a data set in an application window on a digital computer, comprising:

a drawer uniquely associated with said data set in said application window, said drawer capable of being displayed within said application window, comprising,

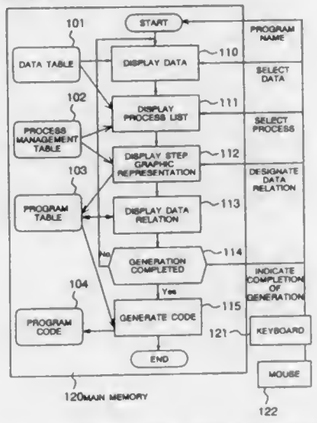
a visible drawer handle having a first height and a first width, said visible drawer handle being configured for display in said application window, and

a drawer storage area coupled to said visable drawer handle, wherein at least a portion of said drawer storage area is displayed with said application window when opened via said visible drawer handle by a user, said drawer storage area being visually coupled to said drawer handle when opened, and wherein said drawer storage area is capable of storing a plurality of objects, at least one of said plurality of objects being visually represented by a symbolic representation displayed within said drawer storage area when opened.

5,664,129
VISUAL PROGRAMMING METHOD

Seiji Futatsugi; Masahiro Tachibana, both of Kawasaki; Takayuki Nakano, Yokohama, and Shoichi Kubo, Tokyo, all of Japan, assignors to Hitachi, Ltd., and Hitachi ULSI Engineering Corporation, both of Tokyo, Japan

Filed Aug. 2, 1995, Ser. No. 510,476
Claims priority, application Japan, Aug. 10, 1994, 6-188087
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—339 7 Claims



1. A visual programming method using a processing apparatus having a display device and an input device connected thereto and including a memory, comprising the steps of:

a) selecting by using said input device one of data from a list of data to be used for programming, displayed in a first display area of said display device;

b) selecting by said input device, one of processes from a list of processes applicable to the data type of the selected data, displayed in a second display area of said display device;

c) displaying a step graphic representation graphically representing input/output data including a name of the selected data, a name of the selected process and an argument and a return value for the selected process, in a third display area of said display device;

d) repeating said steps a) to c) in response to indication from said input device;

e) selecting the input/output data of the step graphic representations displayed in the third display area of said display device based on the indication from said input device, displaying a display for associating the corresponding input/output data in the third display area, and updating the names of the corresponding input/output data to identical names; and

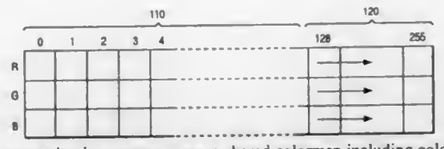
f) generating a program code corresponding to the step graphic representation generated on the third display area of said display device by said steps a) to e).

5,664,130
WINDOWING DISPLAY SYSTEM

Edward Griffiths, Southampton, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 77,907, Jun. 15, 1993, abandoned.
This application Oct. 17, 1995, Ser. No. 544,358
Claims priority, application European Pat. Off., Jun. 19, 1992, 92305669
Int. Cl.[6] G06F *3/14*
U.S. Cl. 345—340 20 Claims

1. A method of generating an image having a plurality of windows on an output display device comprising the steps of:



generating in a memory area a shared colormap including colors used by all of said plurality of windows; said shared colormap including a more-used part and a lesser-used part;

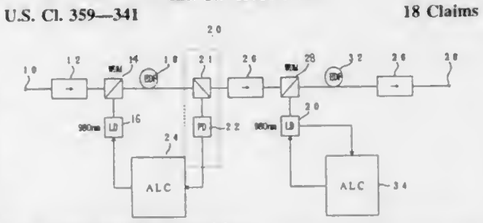
overwriting in said memory area a selected portion of said shared colormap when a first window of said plurality of windows is activated; said selected portion being in said lesser-used part; and

utilizing the overwritten colormap from said area of said memory to display the first window and at least a portion of all others of said plurality of windows on the output display device.

5,664,131
LIGHT AMPLIFIER

Hideaki Sugiya, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 20, 1995, Ser. No. 530,875
Claims priority, application Japan, Mar. 17, 1995, 7-059564
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—341 18 Claims



1. A light amplifier comprising:

a first light amplifying part which has a first number of elements or ions performing a light amplifying operation and which is excited by a first exciting light which is excessive with respect to said first number of elements or ions, said first light amplifying part amplifying a signal light applied hereto;

a second light amplifying part which has a second number of elements or ions performing a light amplifying operation and which is excited by a second exciting light having a constant intensity, said second number being larger than said first number, said second light amplifying part amplifying an amplified signal light output from said first light amplifying part; and

a first control part which performs a control operation so that an intensity of the amplified signal light output from said first light amplifying part is constant.

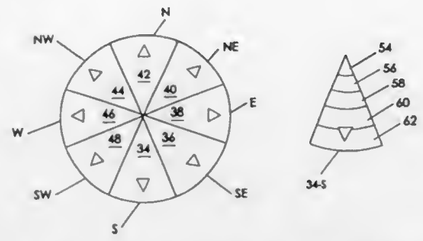
5,664,132
DIRECTIONAL ACTUATOR FOR ELECTRONIC MEDIA NAVIGATION

Derek K. W. Smith, Richmond Hill, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1995, Ser. No. 437,446
Claims priority, application Canada, May 20, 1994, 2124028
Int. Cl.[6] G06F *15/00*; G09G *5/34*;*5/08*
U.S. Cl. 345—352 5 Claims

1. A data processing system, for varying the display of a multiple page electronic media which displays a portion of a single page, comprising:

a computer display having multiple viewing areas, each such viewing area for displaying a portion of a single page of a multiple page electronic media, one of said viewing areas having focus; and

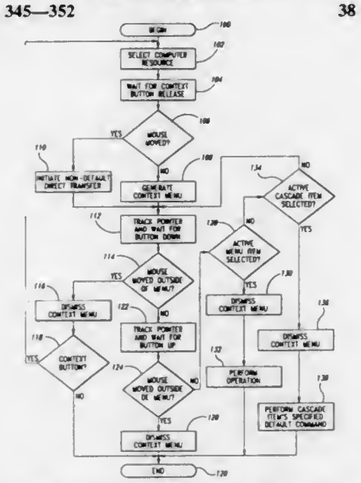


a navigational device displayed on the computer display, user input to said navigational device providing input to the viewing area having focus, as a result of that viewing area having focus, said navigational device including a circle surrounded by a ring, said circle being divided into a first plurality of at least eight proximate fields, each field of said first plurality of proximate fields being associated with one of at least eight evenly distributed compass points, user selection of each field of said first plurality of proximate fields causing scrolling, in a direction of the associated compass point, of the electronic media displayed in the viewing area having focus, and said ring being divided into a second plurality of at least two proximate fields, user selection of one field of said second plurality of proximate fields causing display of the next page of the electronic media in the viewing area having focus and user selection of another field of said second plurality of proximate fields causing display of the previous page of the electronic media in the viewing area having focus.

5,664,133
CONTEXT SENSITIVE MENU SYSTEM/MENU BEHAVIOR

Mark A. Malamud, Seattle; John E. Elsbree, Everett; Laura J. Butler, Bellevue, and David A. Barnes, Jr., Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 166,339, Dec. 13, 1993, abandoned.
This application Apr. 30, 1996, Ser. No. 648,807
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—352 38 Claims



1. In a computer system having a central processing unit (CPU), a graphical user interface including a display and a user interface selection device communicatively coupled to the CPU, a method for providing, and selecting from, a menu for a selected computer resource, said method comprising the steps of:

generating a set of menu selections for the selected computer resource in response to receiving, by the CPU, a context menu generation signal from the user interface selection device, the generating step comprising the steps of:

retrieving a menu selection relating to a class of objects to which the selected computer resource belongs; and

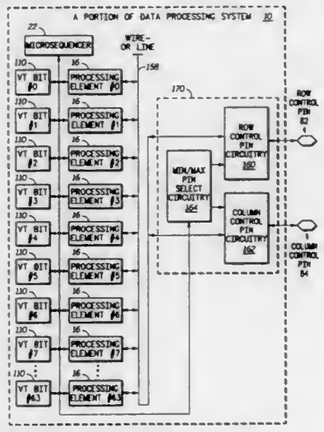
retrieving a menu selection associated with a container in which the selected computer resource resides; and

displaying upon the display the set of menu selections in a menu positioned in the proximity of a graphical representation of the selected computer resource.

5,664,134
DATA PROCESSOR FOR PERFORMING A COMPARISON INSTRUCTION USING SELECTIVE ENABLEMENT AND WIRED BOOLEAN LOGIC

Michael G. Gallup; L. Rodney Goke, and Robert W. Seaton, Jr., all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 40,779, Mar. 31, 1993. This application Feb. 23, 1995, Ser. No. 393,602
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—595 57 Claims



1. A data processor, comprising:

storage means for storing a comparison instruction which specifies a number of bits to be compared;

an instruction decode circuit for decoding the comparison instruction to provide a plurality of control signals, the instruction decode circuit coupled to the storage means for receiving the comparison instruction;

instruction execution means for controlling execution of the comparison instruction in response to the plurality of control signals, the instruction execution means coupled to the instruction decode circuit for receiving the plurality of control signals;

a plurality of enabled processing elements wherein each one of the plurality of enabled processing elements stores a data value, each one of the enabled plurality of processing elements being coupled to the instruction execution means, the instruction execution means selecting each of the plurality of enabled processing elements to output a first portion of the data value stored therein during execution of the comparison instruction; and

a comparison conductor connected to each one of the plurality of enabled processing elements for receiving the first portion of the data value stored therein, the comparison conductor performing a comparison operation in response to execution of the comparison instruction, the comparison conductor being in a first logic state when the first portion of the data value provided by at least one of the plurality of enabled processing elements is in the first logic state, the comparison conductor being in a second logic state when the first portion of the data value provided by each of the plurality of enabled processing elements is in the second logic state.

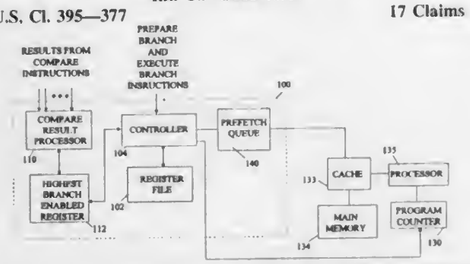
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5,664,135

APPARATUS AND METHOD FOR REDUCING DELAYS DUE TO BRANCHES

Michael S. Schlansker, Los Altos, and Vinod Kathail, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1994, Ser. No. 313,980
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—377 **17 Claims**



1. A data processing system for executing a program comprising an instruction sequence including a plurality of instructions in an ordered sequence, said ordered sequence having a beginning and said ordered sequence including a plurality of branch instructions, each said branch instruction causing said data processing system to execute an instruction specified by a target address if a specified condition is satisfied, said data processing system including a branch processor comprising:

means for storing information specifying a plurality of said branch instructions, said information including a target address corresponding to each said branch instruction and the location of said branch instruction in said ordered sequence relative to said beginning of said ordered sequence;

means for receiving a prepare to branch instruction, said prepare to branch instruction including information specifying a target address and a location corresponding to one of said branch instructions and for causing said information to be stored in said storing means;

compare result means for receiving information indicating that said condition related to one of said branch instructions has been satisfied;

means for receiving an execute branch command, said execute branch command identifying one of said branch instructions having information stored in said storing means; and

control means, responsive to receiving said execute branch command, for causing said data processing system to execute said instruction specified by said target address corresponding to said identified branch instruction if said condition related to said identified branch instruction was satisfied and no said condition related to a branch instruction located closer to the beginning of said ordered sequence than said identified branch instruction was satisfied.

5,664,136

HIGH PERFORMANCE SUPERSCALAR MICROPROCESSOR INCLUDING A DUAL-PATHWAY CIRCUIT FOR CONVERTING CISC INSTRUCTIONS TO RISC OPERATIONS

David B. Witt, and William M. Johnson, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 501,243, Jul. 10, 1995, which is a continuation of Ser. No. 146,382, Oct. 29, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,700
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—384 **27 Claims**

1. A superscalar microprocessor employing dynamic branch prediction for speculatively executing a predicted-taken instruction stream comprising:

an instruction supply of complex instruction set computer (CISC) instructions that map into reduced instruction set computer (RISC) operations (ROPs), the CISC instructions including integer CISC instructions that map into integer ROPs, floating point CISC instructions that map into floating point ROPs and branch CISC instructions that map into branch ROPS, the branch CISC instructions being supplied with associated branch prediction information;

a decoder, coupled to the instruction supply, including a logic circuit for decoding CISC instructions and mapping the CISC instructions into ROPs and issuing ROPs;

an integer functional unit, coupled to the decoder, for receiving the issued integer ROPs and generating speculative results therefrom;

a floating point functional unit, coupled to the decoder, for receiving the issued floating point ROPs and producing speculative results therefrom;

a common reorder buffer, coupled to the decoder, for use by both the integer functional unit and the floating point functional unit for storing speculative results in common storage elements, the common reorder buffer renaming registers, issuing multiple instructions in a single cycle, retiring multiple instructions in a single cycle, and retiring speculative results which become non-speculative results by virtue of being in a correctly predicted branch, the common reorder buffer not retiring speculative results in mispredicted branches; and

a common register file, coupled to the decoder and to the common reorder buffer, for storing non-speculative results which are retired from the common reorder buffer.

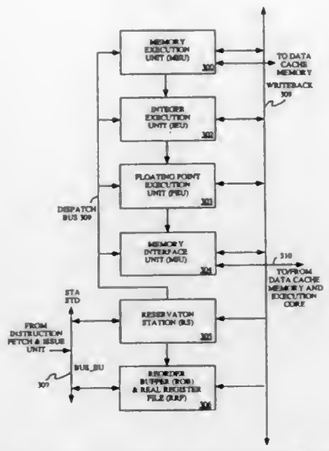
5,664,137

METHOD AND APPARATUS FOR EXECUTING AND DISPATCHING STORE OPERATIONS IN A COMPUTER SYSTEM

Jeffrey M. Abramson, Aloha; Haitham Akkary; Atig A. Bajwa, both of Portland; Michael A. Fetterman; Andrew F. Glew, both of Hillsboro; Glenn J. Hinton, Portland; Joel Huang, Portland; Kris G. Konigsfeld, Portland; Paul D. Madland, Beaverton, and Prem Pahlajrai, Cornelius, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 204,743, Mar. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 177,250, Jan. 4, 1994, abandoned. This application Sep. 7, 1995, Ser. No. 525,499
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—392 **49 Claims**

13. A method for performing a store operation with a processor in a computer system, wherein the processor includes a first data structure and an ordering mechanism for keeping track of all operations being performed by the processor and a second data structure for keeping track of store operations in the processor, said method comprising the steps of:



calculating an address for said store operation with a first execution unit;

obtaining data to be stored as a result of said store operation with a second execution unit, wherein the step of obtaining data is performed independently of calculating the address;

buffering said address and data in said second data structure so as to combine said address and said data into a single operation;

retiring said store operation to processor state independently of dispatch of said store operation to memory and in response to at least one signal from said ordering mechanism, wherein said store operation is committed to processor state; and

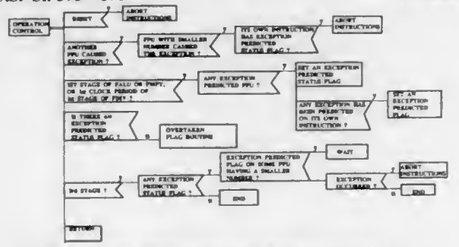
dispatching said store operation to said memory in a memory pipeline decoupled from the first and second execution units, such that dispatch of said store operation occurs at any time after retirement of said store operation has begun and when resources in the processor and the computer system needed to perform dispatching are available.

5,664,138

APPARATUS FOR HANDLING OUT-OF-ORDER EXCEPTIONS IN PIPE-LINED PARALLEL PROCESSING THAT PREVENTS EXECUTION OF ALL INSTRUCTIONS BEHIND EXCEPTION PREDICTED INSTRUCTION AND ABORTS IF EXCEPTION ACTUALLY OCCURS

Takeshi Yoshida, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1992, Ser. No. 863,180
Claims priority, application Japan, Apr. 5, 1991, 3-073341; Nov. 14, 1991, 3-299100
Int. Cl.[6] G06F *9/302;9/38*
U.S. Cl. 395—395 **8 Claims**



1. A parallel processing control apparatus comprising:

a plurality of processing blocks each providing an equal function and incorporating pipeline operation units;

a status register for storing processing status of each of said processing blocks;

instruction feeding means for simultaneously allocating one instruction from a set of instructions with a predetermined order of execution to each of said processing blocks, respectively, according to a predetermined sequence of said processing blocks;

exception prediction means for checking, in a first pipeline stage of an instruction, if said instruction may possibly cause an exception that at least one instruction overtakes an instruction which is ahead of said at least one instruction according to said predetermined order of execution;

flagging means for setting a flag for a corresponding one of said processing blocks to indicate a possibility of said exception;

flag holding means for holding the flag; and

write decision means for writing the status of processing block when the processing block completes an instruction;

wherein said write decision means continuously processes, if an instruction causes an exception, instructions that have been simultaneously allocated by said instruction feeding means with the instruction that caused the exception and are, according to said predetermined order of execution, positioned ahead of said instruction that caused the exception, aborts those instructions which are, according to said predetermined order of execution behind said instruction that caused the exception, and writes the status of the instruction that caused the exception in said status register, and

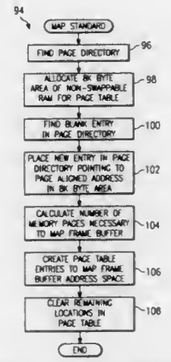
wherein execution of all instructions which are, according to said predetermined order of execution of the instructions, positioned behind an instruction which is predicted to possibly cause an exception is prevented from being completed until execution of said instruction which is predicted to possibly cause an exception is completed.

5,664,139

METHOD AND A COMPUTER SYSTEM FOR ALLOCATING AND MAPPING FRAME BUFFERS INTO EXPANDED MEMORY

Randolph W. Spurlock, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed May 16, 1994, Ser. No. 243,364
Int. Cl.[6] G06F *9/26;9/32;12/00;12/02*
U.S. Cl. 711—202 **56 Claims**



1. A method of allocating memory address space in a computer system to a frame buffer comprising the steps of:

determining a desired memory space for the frame buffer responsive to the physical memory and the address limitations of the computer system;

detecting the presence of a page directory that defines the upper limit of the computer system's memory address space to be below the desired address space for locating the frame buffer, said detecting step further comprising the steps:

searching a global descriptor table to find a non-zero entry;

comparing a segment size associated with the non-zero entry to a pre-determined segment size; and

comparing one or more bits of each memory location in said segment with respect to pre-determined values;

modifying the page directory to point to one or more of page tables; and

creating page tables to map the memory address space to the desired address space.

5,664,140

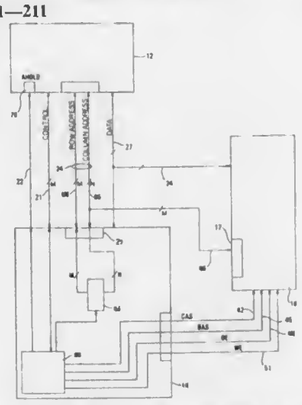
PROCESSOR TO MEMORY INTERFACE LOGIC FOR USE IN A COMPUTER SYSTEM USING A MULTIPLEXED MEMORY ADDRESS

Dean A. Klein, Lake City, Minn., assignor to Micron Electronics, Inc., Nampa, Id.

Filed May 19, 1995, Ser. No. 444,750

Int. Cl.[6] G06F *12/02*

U.S. Cl. 711—211 **22 Claims**



14. Interface logic for interfacing a processor to a memory unit, wherein the interface logic is connected to the processor by an address bus, and wherein the memory unit is connected to a row portion of the address bus by an interface bus, the interface logic comprising:

(a) a storage device, wherein the storage device stores a column address placed on the address bus by the processor;

(b) a state machine that is configured to cause the processor to relinquish control of the address bus after the row address is presented to the memory unit by the processor; and

(c) driving logic, wherein the driving logic is configured so that it drives the column address over the row portion of the address bus and then over the interface bus to the memory unit after the processor has relinquished control of the address bus.

5,664,141

DISK DRIVE SYSTEM USING RECEIVED ADDRESS FOR SELECTING DISK PROCESSING FORMAT

Mikio Yamamuro, Zushi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

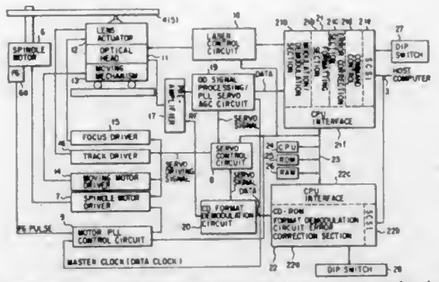
Filed Oct. 30, 1995, Ser. No. 550,473

Claims priority, application Japan, Oct. 31, 1994, 6-267768

Int. Cl.[6] G06F *13/00*

U.S. Cl. 711—111 **14 Claims**

14. A disk drive system in which a disk drive for treating a read-only disk and a readable/writable disk is connected via a bus to a host computer for controlling the disk drive and commands and data are transmitted between the host computer and the disk drive via the bus, wherein the disk drive comprises:



receiving means for receiving from the host computer the data representing the disk to be used;

first process means for performing a reading process for the read-only disk;

second process means for performing one of a writing process and a reading process for the readable/writable disk; and

execution means for enabling the first process means to perform the reading process for the read-only disk when the data representing the disk to be used, which data is received by the receiving means, represents the read-only disk, and enabling the second process means to perform one of the writing process and the reading process for the readable/writable disk when the data representing the disk to be used, which data is received by the receiving means, represents the readable/writable disk.

5,664,142

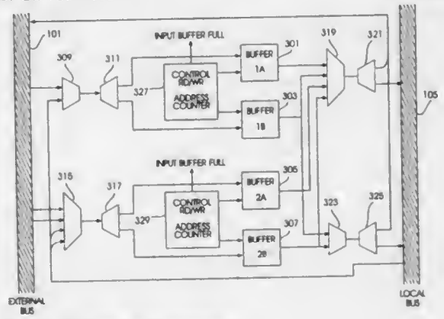
CHAINED DMA DEVICES FOR CROSSING COMMON BUSES

Gerald Donald Boldt, Longmont, Colo.; Stephen Dale Hanna, Tucson, Ariz., and Robert Eric Vogelsberg, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1990, Ser. No. 591,355

Int. Cl.[6] G06F *13/36*

U.S. Cl. 711—112 **6 Claims**



4. The combination comprising:

memory means for storing data;

common bus means for operatively coupling said memory means to a memory utilization means;

first and second external bus means, each for coupling together data device means;

first and second memory accessing means coupled between said common bus means and said first and second external bus means, respectively, for transferring data between said data device means coupled to the first and second external bus means and said memory means, each of said memory accessing means including

buffer means for storing data from a bus,

addressing means for supplying address signals signifying to an addressed memory access means that data is available for transfer,

transfer request means for supplying a signal to said addressed memory access means signal signifying that data is to be transferred, and

means responsive to the buffer means of said addressed memory access means being filled to deactivate the signal from transfer request means; and

means responsive to said signals for controlling transfer of data between said first and second memory accessing means,

whereby data is transferred between data device means on the first and second external buses over said common bus means.

5,664,143

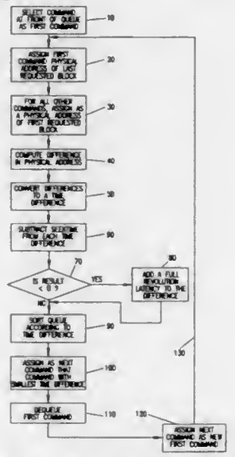
METHOD AND APPARATUS FOR SORTING DISK ACCESS COMMANDS IN A ROTATIONAL POSITION QUEUE ACCORDING TO TIME DIFFERENCES BETWEEN THE COMMANDS

Aaron K. Olbrich, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1994, Ser. No. 344,068

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—112 **17 Claims**



7. A disk controller connected to the positional head assembly for controlling the position of the head to read and write data to a storage disk, the disk controller comprising:

a rotational position queue for accepting a plurality of commands, each command comprising a first and last block of data having an address;

means for selecting a command in the queue as a first command;

first assignment means for assigning the first command a first physical address, the first physical address being the address of the last requested block of the first command;

second assignment means for assigning the unselected commands second physical addresses, the second physical addresses being the address of the first requested block of the unselected commands;

means for calculating for each unselected command an associated time difference, the time difference being the time required to move from the first physical address to the second physical address;

a sorter for arranging the time differences in order of magnitude to identify a next command, the next command having the smallest time difference; and

means for assigning the next command as the first command after the first command is dequeued.

5,664,144

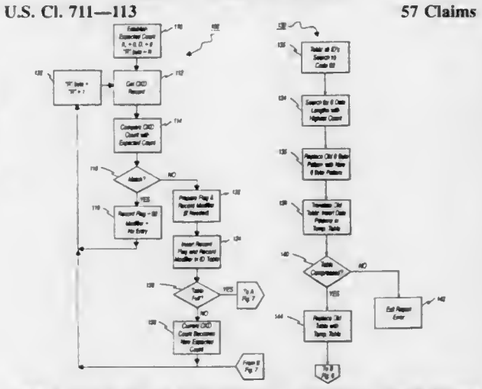
SYSTEM AND METHOD FOR FBA FORMATTED DISK MAPPING AND VARIABLE-LENGTH CKD FORMATTED DATA RECORD RETRIEVAL

Moshe Yanai; Natan Vishlitzky, both of Brookline; Bruno Alterescu, Newton, and Daniel Castel, Framingham, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Division of Ser. No. 52,039, Apr. 23, 1993, Pat. No. 5,544,347, which is a continuation-in-part of Ser. No. 586,796, Sep. 24, 1990, Pat. No. 5,206,939, and Ser. No. 587,247, Sep. 24, 1990, Pat. No. 5,269,011, and Ser. No. 587,253, Sep. 24, 1990, Pat. No. 5,335,352. This application Jun. 18, 1996, Ser. No. 665,607

Int. Cl.[6] G06F *12/08;12/04*

U.S. Cl. 711—113 **57 Claims**



19. Apparatus for transforming and mapping variable-length CKD formatted data records onto fixed block disk drives, and for retrieving a requested data record stored on a fixed block disk drive, comprising:

means for receiving a plurality of variable-length CKD formatted data records, each of said variable-length CKD formatted data records including at least a record identification portion and a data portion;

means, responsive to said means for receiving, for transforming the plurality of variable-length CKD formatted data records to a fixed block format, and for storing the plurality of fixed block format data records on one or more fixed block disk drives;

means, responsive to said means for transforming and storing, for generating a plurality of record locator indices, each of said plurality of record locator indices associated with one of said plurality of data records, for uniquely identifying the location of each of said plurality of data records stored on said one or more fixed block disk drives, and also including means for transforming and encoding said plurality of record locator indices and record identification portions to produce encoded information reduced in length in comparison to the length of said record identification portions and record locator indices;

semiconductor memory, for storing said encoded information in a record locator table;

means for requesting access to said requested data record, and for providing a record identification portion corresponding to said requested data record;

mean, responsive to said means for requesting access to said requested data record, for searching said record locator table stored in said semiconductor memory, for decoding from said encoded information an associated one of said record locator indices corresponding to said requested data record; and

record retrieval means, responsive to said means for searching, for retrieving from said one or more fixed block disk drives,

said requested data record as directed by said associated one of said record locator indices corresponding to said requested data record.

5,664,145

APPARATUS AND METHOD FOR TRANSFERRING DATA IN A DATA STORAGE SUBSYSTEMS WHEREIN A MULTI-SECTOR DATA TRANSFER ORDER IS EXECUTED WHILE A SUBSEQUENT ORDER IS ISSUED

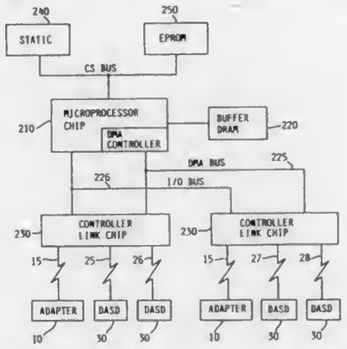
Norman Apperley, Eastleigh, United Kingdom, and Patrick Allen Buckland, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/GB91/00255, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/15053, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 19, 1991, Ser. No. 937,841

Int. Cl.[6] G06F *12/08*

U.S. Cl. 711—117 **2 Claims**



1. A method of transferring data between a host data processing system, a device controller having a controller data buffer and a direct access storage device having a device data buffer, the controller data buffer being larger than the device data buffer, said method comprising the steps of:

the controller issuing a multi-sector READ order to the direct access storage device initiating data transfer in response to a first READ command received from the host data processing system, said multi-sector READ order specifying the data to be read and transferred and initiates transfer of read data from the direct access storage device to the controller data buffer and the controller transferring the read data from the controller data buffer to memory in the host data processing system;

the controller issuing a multi-sector EXTEND order to the direct access storage device when there is space available in the controller data buffer and specifying additional data while the data specified in the multi-sector READ order is being transferred between the direct access storage device and the controller data buffer, and;

the direct access storage device acting on the multi-sector EXTEND order to transfer the additional data specified in the multi-sector EXTEND order to the controller data buffer as read ahead data immediately after completion of the execution of the multi-sector READ order;

the controller receiving a second READ command from the host data processing system;

the controller determining whether said read ahead data held in the controller data buffer corresponds to the data specified in the second READ command; and

the controller sending the data specified in the second READ command to the host data processing system without issuing a further multi-sector READ order to the direct access storage device when the data in the controller data buffer corresponds to the data specified in the second READ command; and

the controller, when said read ahead data held in the controller data buffer does not correspond to the data specified in said second READ command, issuing a STOP and SEEK order to the direct access storage device to cause the direct access storage device to immediately cease reading the data specified in the multi-sector EXTEND order and to begin seeking to the location of the data specified in the STOP and SEEK order.

5,664,146

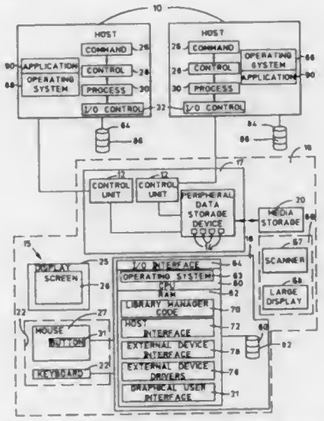
GRAPHICAL USER COMMUNICATIONS INTERFACE FOR AN OPERATOR IN A MANUAL DATA STORAGE LIBRARY

Mark Robert Bolin, Springfield, Oreg.; James Arthur Fisher, and Robert Samuel Goncharsky, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 235,079, Apr. 29, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 606,632

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 711—115 **42 Claims**



1. In a manually operated data storage library requiring at least one operator, said library having a plurality of data storage bins, each data storage bin capable of storing one data storage medium therein, each data storage medium including at least one data volume, said library further having one or more peripheral data storage devices (PDSDs), each PDSD capable of having a data volume mounted therein, and said library also having a data path from said PDSDs to a host processing control means for controlling said PDSDs, a combination for managing said library comprising:

a library manager controller including program memory and a data path to said host processing control means, and further including host interface logic means for communicating with said host processing control means;

a display device having a screen and being connected to said library manager controller for alerting said operator of a task to transfer a data volume from a data storage bin to a PDSD and from a PDSD to a data storage bin;

graphical user interface means in said library manager controller for constructing graphical user interaction fields on said screen, said fields including an action list window visually presenting library tasks for performance by a human operator, each said library task being selected from a group of tasks comprising exchanging one of said data storage media between a respective data storage bin and a selected PDSD:

operator input means for allowing an operator to interact with said user interaction fields;

a library management database, coupled to said library manager controller, containing storage data indicative of respective locations of said data storage media in said manually operated data storage library; and

library manager program means in said library manager controller program memory for managing bidirectional communication between said host processing control means and an operator through said host interface logic means and said graphical user interface means in order to carry out the operator task of transferring a data volume from a data storage bin to a PDSD and from a PDSD to a data storage bin.

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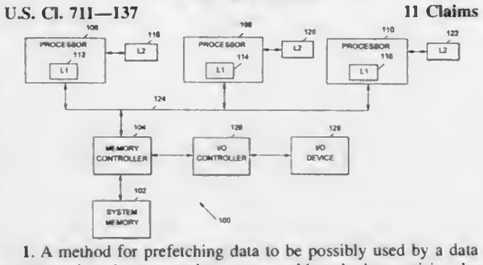
SYSTEM AND METHOD THAT PROGRESSIVELY PREFETCHES ADDITIONAL LINES TO A DISTRIBUTED STREAM BUFFER AS THE SEQUENTIALITY OF THE MEMORY ACCESSING IS DEMONSTRATED

Michael John Mayfield, Austin, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 24, 1995, Ser. No. 519,031

Int. Cl.[6] G06F *12/08*

U.S. Cl. 711—137 **11 Claims**



1. A method for prefetching data to be possibly used by a data processor in a data processing system, said method comprising the steps of:

(a) receiving a request from said processor for a line of data;

(b) allocating a stream in response to said request, wherein a head of said stream resides in a primary cache coupled to said processor, and wherein subsequent lines of said stream reside in a stream buffer, wherein some of said lines of said stream do not reside in said primary cache;

(c) receiving subsequent requests from said processor for lines of data represented by elements within said stream; and

(d) controlling a depth of prefetching of not-yet-requested lines of data as a function of said subsequent requests from said processor for lines of data represented by elements within said stream.

5,664,148

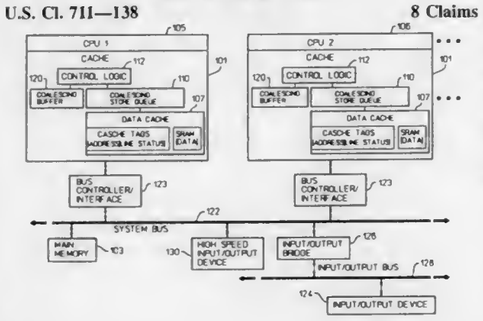
CACHE ARRANGEMENT INCLUDING COALESCING BUFFER QUEUE FOR NON-CACHEABLE DATA

Dean Mulla, and Sorin Iacobovici, both of San Jose, Calif., assignors to Institute for the Development of Emerging Architectures L.L.C., Cupertino, Calif.

Filed Aug. 17, 1995, Ser. No. 515,551

Int. Cl.[6] G06F *12/08*

U.S. Cl. 711—138 **8 Claims**



5,664,149

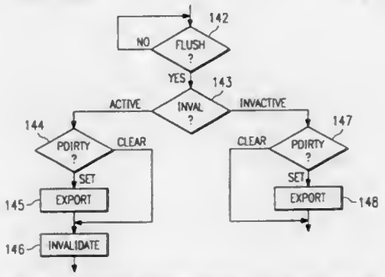
COHERENCY FOR WRITE-BACK CACHE IN A SYSTEM DESIGNED FOR WRITE-THROUGH CACHE USING AN EXPORT/INVALIDATE PROTOCOL

Marvin Wayne Martinez, Jr.; Mark W. Bluhm; Jeffrey S. Byrne, all of Plano; David A. Courtright, Richardson; Douglas Ewing Duschatko, Plano; Raul A. Garibay, Jr., Richardson, and Margaret R. Herubin, Coppell, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation-in-part of Ser. No. 976,366, Nov. 13, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,489

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—141 **6 Claims**



1. In an x86 computer system designed to use an x86 microprocessor with an internal cache that supports both write-through and write-back modes, where the computer system does not implement a write-back coherency protocol to support operating the internal cache in write-back mode and ensure coherency with main memory during bus master operations, a write-back coherency system to support use of an x86 microprocessor in which the internal cache is operable in write-back mode, comprising:

(a) an export signal and an invalidate signal, selectively issued by the computer system in response to detecting a DMA operation; and

(b) cache control logic in the microprocessor responsive to the export and invalidate signals to (i) if the export signal is active and the invalidate signal is inactive, export all dirty data from the internal cache, and (ii) if the export signal is

active and the invalidate signal is active, export all dirty data from the internal cache and then invalidate the internal cache.

5,664,150

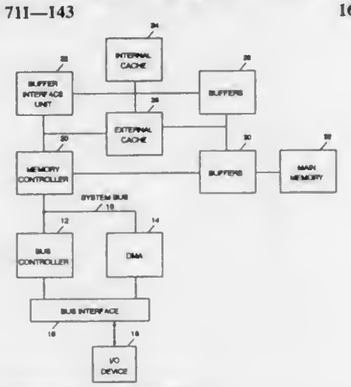
COMPUTER SYSTEM WITH A DEVICE FOR SELECTIVELY BLOCKING WRITEBACKS OF DATA FROM A WRITEBACK CACHE TO MEMORY

Gerald George Isaac, Sunnyvale, Calif.; John K. Langgood, Boca Raton, Fla.; Wan Lin Leung, Raleigh, N.C.; Kimberly Kibbe Sendlein, Boca Raton, Fla.; John Joseph Szarek, Cary, N.C., and Edward Yee, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1995, Ser. No. 408,168

Int. Cl.[6] G06F *13/28*

U.S. Cl. 711—143 **16 Claims**



1. A computer system comprising:

a memory;

at least one cache having cache lines, each cache line having a cache line size, the cache performing writebacks of cached data to the memory;

a data input device coupled to the cache and the memory for transferring data to at least one of the cache and the memory, and having a transfer size less than the cache line size;

at least one buffer coupled to the data input device for buffering data to be transferred between the data input device and the memory; and

a memory controller coupled between the buffer and the cache and the memory for blocking a writeback of the cached data from the cache to the memory when the buffer is full with data that is to be transferred to the memory from the data input device.

5,664,151

SYSTEM AND METHOD OF IMPLEMENTING READ RESOURCES TO MAINTAIN CACHE COHERENCY IN A MULTIPROCESSOR ENVIRONMENT PERMITTING SPLIT TRANSACTIONS

Michael B. Galles, Los Altos, and Martin M. Deneroff, Palo Alto, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

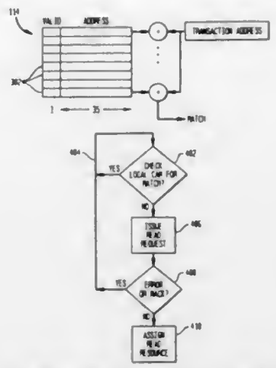
Continuation of Ser. No. 128,080, Sep. 29, 1993, Pat. No. 5,504,874. This application Dec. 27, 1995, Ser. No. 578,997

Int. Cl.[6] G06F *13/00;15/16*

U.S. Cl. 711—145 **22 Claims**

1. A read resource system for maintaining cache coherency in a multiprocessor environment permitting splitting of a read transaction into a read request and a read response, the read resource system having a plurality of nodes coupled by a main system bus, the read resource system comprising:

a plurality of read resources; and



a plurality of read resource controllers coupled to the main system bus, each of said plurality of read resource controllers being uniquely associated with a respective one of the plurality of nodes, each read resource controller comprising:

means for storing said plurality of read resources in a plurality of storage elements,

means for receiving a read request for data from one of the plurality of nodes uniquely associated with said read resource controller,

means for comparing said read request with contents of said plurality of storage elements to determine whether a previous read request is concurrently seeking said data,

means for broadcasting onto the main system bus said read request if said data is not concurrently sought by said previous read request,

means for allocating one of said plurality of read resources to prevent the broadcast of a successive read request that seeks said data concurrently with a broadcasted read request, and

means for storing an allocated read resource in one of said plurality of read resources.

5,664,152

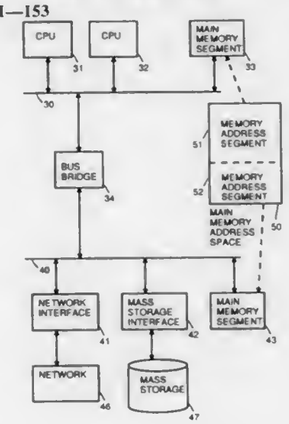
MULTIPLE SEGMENTING OF MAIN MEMORY TO STREAMLINE DATA PATHS IN A COMPUTING SYSTEM

Ali Ezzet, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 6, 1995, Ser. No. 480,429

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 711—153 **19 Claims**



1. A computing system comprising:

a host bus, the host bus transferring both addresses and data;

a processor, coupled to the host bus;

an input/output bus, the input/output bus transferring both address and data;

a bus bridge coupled between the input/output bus and the host bus, the bus bridge being used for transferring information between the host bus and the input/output bus; and,

a main memory for the computing system comprising,

a first main memory segment coupled to the host bus, and

a second main memory segment coupled to the input/output bus, wherein the first main memory segment and the second main memory segment are configured to appear to the processor as a single logical memory image.

5,664,153

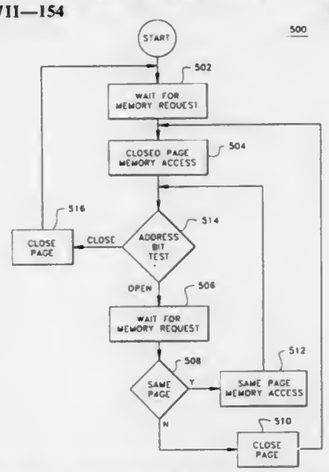
PAGE OPEN/CLOSE SCHEME BASED ON HIGH ORDER ADDRESS BIT AND LIKELIHOOD OF PAGE ACCESS

Robert Farrell, Hillsborough, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 51,039, Apr. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 710,507, Jun. 4, 1991, Pat. No. 5,355,467. This application Aug. 30, 1995, Ser. No. 521,007

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—154 **16 Claims**



1. A method for performing more efficient accesses to a plurality of pages of memory, the method comprising the steps of:

(a) determining a first access of a first page of said plurality of pages of memory;

(b) providing a page control signal for indicating whether a second access is likely to occur in said first page after said first access;

(c) accessing and opening the first page of said plurality of pages of memory;

(d) when said second access is not pending, determining whether said second access is likely to occur in said first page in accordance with said page control signal; and

(e) closing said first page if said second access is not likely to occur in said first page, and leaving said first page open if said second access is not pending and if said second access is likely to occur in said first page.

5,664,154

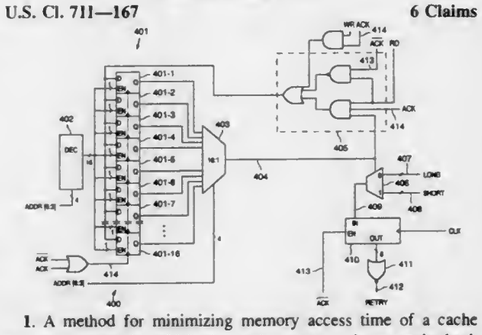
M/A FOR OPTIMIZING RETRY TIME UPON CACHE-MISS BY SELECTING A DELAY TIME ACCORDING TO WHETHER THE ADDRESSED LOCATION'S DIRTY BIT INDICATES A WRITE-BACK

Stephen C. Purcell, Mountain View, and Paul W. Campbell, Oakland, both of Calif., assignors to Chromatic Research, Inc., Mountain View, Calif.

Filed Oct. 2, 1995, Ser. No. 537,495

Int. Cl.[6] G06F *13/16*

U.S. Cl. 711—167 **6 Claims**



1. A method for minimizing memory access time of a cache memory system in which the cache memory has a write-back policy, said method comprising the steps of:

providing a flip-flop for each cache line of said cache memory system, each flip-flop holding a dirty bit indicating whether a corresponding cache line includes data subject to write-back;

updating, upon completion of a memory access, that dirty bit which corresponds to an addressed location of said memory access, said updating step (i) setting said dirty bit, if said memory access is a write access; (ii) resetting said dirty bit, if said memory access is a read access in which a cache miss occurred, and (iii) leaving said dirty bit unchanged otherwise;

when a cache miss occurs during a subsequent memory access of said addressed location, selecting a delay time according to said dirty bit between a first delay time and a second delay time, said first delay time being a delay time minimized without consideration of a write-back duration for said cache memory system, said second delay time being a delay time minimized with consideration of a write-back duration for said cache memory system;

loading said delay time into a retry timer; and

asserting a control signal to indicate a minimum retry interval when said retry timer expires after said selected delay time.

5,664,155

DYNAMICALLY ASSIGNING A DUMP SPACE IN A SHARED DATA FACILITY TO RECEIVE DUMPING INFORMATION TO BE CAPTURED

David Arlen Elko, Poughkeepsie; Jeffrey Alan Frey, New Paltz; Jeffrey Mark Nick, Fishkill; Kenneth Glenn Rothwell, Red Hook, and Michael Dustin Swanson, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

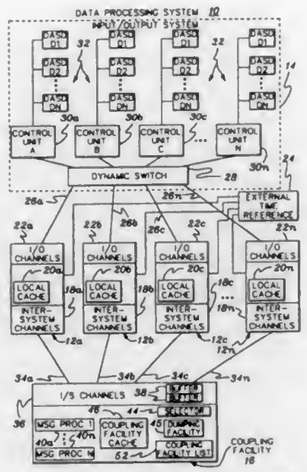
Continuation of Ser. No. 73,909, Jun. 8, 1993. This application Jun. 7, 1995, Ser. No. 471,895

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—170 **4 Claims**

1. A method for providing a storage dump in a shared data facility coupled to at least one central processing complex, said shared data facility having processing and storage capabilities, said method comprising:

dynamically assigning a dump space within said shared data facility for receiving dumping information to be captured,



said dynamically assigning comprising automatically modifying, by said shared data facility, a total amount of said dump space based upon one or more predefined conditions, wherein non-dumping functions of said shared data facility remain operational during said automatically modifying; and

storing said dumping information in said dynamically assigned dump space, said dumping information for use in at least one of system recovery, problem determination and system monitoring.

5,664,156

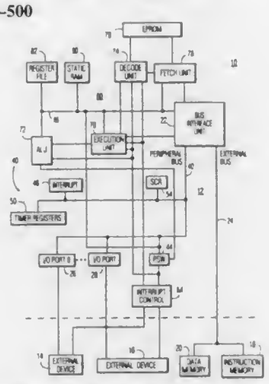
MICROCONTROLLER WITH A RECONFIGURABLE PROGRAM STATUS WORD

Johannes Wang, Redwood City, and Ata R. Khan, Saratoga, both of Calif., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Sep. 16, 1994, Ser. No. 308,058

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—500 **7 Claims**



1. A microcontroller program status word apparatus for a microcontroller capable of executing first type instructions in a first mode of operation corresponding to a first generation of microcontrollers and capable of executing second type instructions in a second mode of operation corresponding to a second generation of microcontrollers, comprising:

a program status word register for holding status bits of a first format program status word corresponding to the first mode of operation and for holding also any additional status bits of a second format program status word that are not present in the first format program status word, the second format program status word corresponding to the second mode of operation; and

a selection and transfer circuit connected to said register for selectively transferring status bits of the first format program status word to and/or from said register when the microcontroller is in the first mode of operation and for selectively transferring status bits of the second format program status word to and/or from said register when the microcontroller is in the second mode of operation.

5,664,157

NONCONTACT IC CARD INTERFACE UNIT AND COMMUNICATION SYSTEM USING THE INTERFACE UNIT

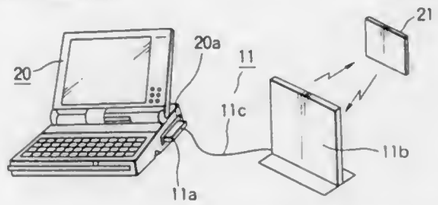
Kenichi Takahira, and Koichi Hayamizu, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,959

Claims priority, application Japan, Apr. 8, 1994, 6-070913

Int. Cl.[6] G06K *19/06*

U.S. Cl. 395—500 **16 Claims**



7. A communication system for communicating between a host computer and a noncontact IC card comprising:

a noncontact IC card having a memory;

a host computer for providing an output signal for accessing said memory in said noncontact IC card; and

a noncontact IC card interface unit for receiving the output signal from said host computer for enabling data communication between said host computer and said noncontact IC card, said noncontact IC card interface unit including:

a connector for connecting an interface unit to an host computer;

first control means electrically connected to said connector for controlling a bidirectional signal relative to said host computer;

second control means electrically connected to said first control means and receiving the output signal from said host computer through said first control means for controlling data communication with said noncontact IC card according to the output signal;

electromagnetic-wave signal communicating means electrically connected to said second control means for transmitting and receiving a bidirectional electromagnetic-wave signal relative to said noncontact IC card;

a bus to which said first control means and said second control means are connected; and

a memory electrically connected to and accessible through said bus by said first control means and said second control means.

5,664,158

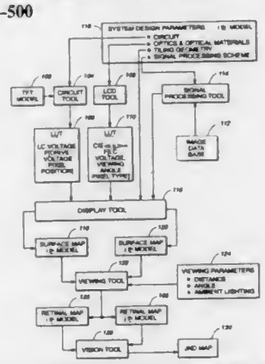
VIDEO DISPLAY ENGINEERING AND OPTIMIZATION SYSTEM

James Larimer, Montara, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 25, 1995, Ser. No. 414,652

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—500 **4 Claims**



1. A computer-implemented CAD system for engineering and optimization of a LCD display, comprising:

a device model of the electrical characteristics of a transistor device which forms the pixels of an LCD device in an LCD display matrix;

a circuit model of the electrical circuitry of the LCD display matrix, said circuit model providing values to a look-up-table (LUT) data structure which relates drive voltage as a function of pixel location in said display matrix and wherein the LUT data structure converts a drive signal at a pixel location, which is determined by the image signal and drive electronics, to an actual voltage at the pixel;

a light model of the LCD device, which models light passing through an aperture in an LCD device in the LCD display matrix, wherein the light model provides said LUT data structure whose entries are CIE Tri-Stimulus Values, indexed as a function of pixel type, voltage applied to the pixel, and the direction of light propagation through the LCD display matrix;

a tiling model of the pixel shapes and tiling geometry of an LCD display matrix, said tiling model including a user-defined model of pixel shape and tiling geometry;

a signal processor providing an output image to be displayed on the LCD display matrix, said signal processor providing a sampled image data structure, which includes a digital image sampled at the pixel density of the display matrix, where each element of the digital image corresponds to the drive voltage that is used to drive the corresponding pixel in the display;

a display tool which constructs a surface map of the surface of the LCD display matrix with an image written thereupon from output information obtained from the device model, the circuit model, the light model, the tiling model and the signal processor, said display tool generating a surface map which is a digital data structure where each pixel location contains a triple of the CIE Tri-Stimulus values that would be obtained by a photometer with a small aperture measuring the display matrix from a fixed direction;

a viewing model of the imaging and sampling processes of the human eye, said viewing model receiving the surface map of the surface of the LCD display matrix, said viewing model of the imaging and sampling processes of the human eye including means for specifying the viewing geometry and an optical modulation transfer function for the human eye, which is used to filter the surface map of the display tool, which is then down-sampled by a factor which corresponds to the sampling rate of the photo-receptor matrix on the retina and other imaging surface of the eye;

a vision model of human visual response which receives the retinally sampled image of the surface map of the surface of the LCD display matrix and which provides an output image modified by the human visual response of the vision model and;

a comparator which compares a first output image from the vision model to a second output image from the vision model, said comparator providing a just-noticeable-difference (JND) map of a local visibility index for each point in a first reference image from the vision model and a second image from the vision model.

5,664,159

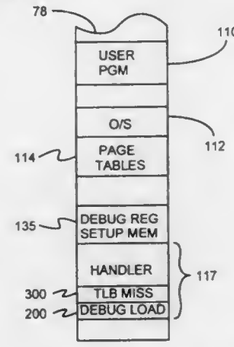
METHOD FOR EMULATING MULTIPLE DEBUG BREAKPOINTS BY PAGE PARTITIONING USING A SINGLE BREAKPOINT REGISTER

David E. Richter, Milpitas, and James S. Blomgren, San Jose, both of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 207,857, Mar. 8, 1994, Pat. No. 5,440,710. This application May 8, 1995, Ser. No. 436,136

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—500 **18 Claims**



1. A method for emulating a processor having a plurality of breakpoint register, using a processor with a single breakpoint register for storing just one breakpoint address and a translation-lookaside buffer (TLB) having a plurality of page entries, the breakpoints being addresses which halt execution of a user program when accessed, the method comprising the steps of:

freely loading page entries into the TLB when no more than one breakpoint in the plurality of breakpoints is enabled;

when two or more breakpoints in the plurality of breakpoints are enabled:

signaling a page fault when a faulting page does not have a translation in the TLB;

determining if a breakpoint in the plurality of breakpoints falls within the faulting page when the page fault is signaled, the breakpoint falling within the faulting page hereinafter referred to as a first breakpoint;

loading a page entry into the TLB for the faulting page;

loading the first breakpoint into the breakpoint register on the processor when the faulting page contains the first breakpoint;

invalidating any page entries in the TLB other than the faulting page entry for pages containing a breakpoint in the plurality of breakpoints other than the first breakpoint; and

halting execution of the user program when the user program accesses an address matching the breakpoint address in the breakpoint register on the processor,

wherein only one breakpoint in the plurality of breakpoints has a page translation entry in the TLB, the only one breakpoint being loaded into the breakpoint register on the processor when the faulting page's entry is loaded into the TLB.

5,664,160

COMPUTER PROGRAM PRODUCT FOR SIMULATING A CONTIGUOUS ADDRESSABLE DATA SPACE

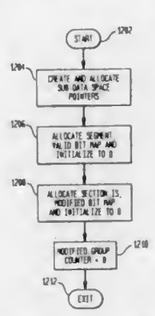
Jean Gilles Fecteau, Toronto; Eugene Kligerman, and Lubor Kollar, both of North York, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 443,371, May 17, 1995, which is a division of Ser. No. 443,397, May 17, 1995, which is a continuation of Ser. No. 975,245, Nov. 12, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,095

Claims priority, application Canada, Dec. 11, 1991, 2055295

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—500 2 Claims



1. A computer program product for use with a database management system, comprising:

a computer usable medium having computer readable program code means embodied in said medium for simulating a database in a contiguous data space in computer memory, wherein the database comprises one or more data objects of variable size and is stored in one or more database storage disks, said computer program product having:

first computer readable program code means for enabling a processor to create the contiguous data space by allocating and initializing a data space to sub-data space mapping table having a plurality of table entries, wherein each table entry includes a sub-data space identifier, wherein the contiguous data space is a concatenation of a plurality of sub-data spaces, each sub-data space being assigned a sub-data space identifier, wherein the contiguous data space and said sub-data spaces are addressable by the database management system with said sub-data identifiers;

second computer readable program code means for enabling said processor to allocate and initialize a starting page number identifier to record a starting page number in the contiguous data space for each data object in the database, wherein said starting page number indicates a page number at which a data object is placed in the contiguous data space;

third computer readable program code means for enabling said processor to allocate and initialize a next available page identifier to record a page number indicating a beginning of an empty page in the contiguous data space;

fourth computer readable program code means for enabling said processor to determine whether a data object has been added to the contiguous data space, when said data object is referenced;

fifth computer readable program code means for enabling said processor to set said starting page number identifier for said data object equal to said next available page identifier if said fourth computer readable program code means determines that said data object has not been added to the contiguous data space; and

sixth computer readable program code means for enabling said processor to increment said next available page identifier by the size of said data object, wherein said size indicates a number of pages allocated to said data object.

5,664,161

ADDRESS-TRANSLATABLE GRAPHIIC PROCESSOR, DATA PROCESSOR AND DRAWING METHOD WITIH EMPLOYMENT OF TIIE SAME

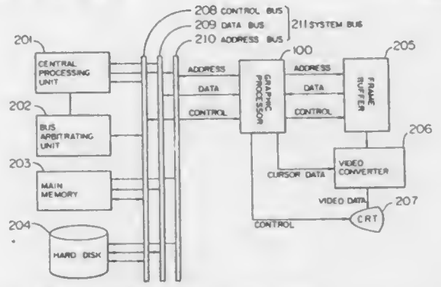
Tadashi Fukushima; Shigeru Matsuo, both of Hitachi; Shoji Yoshida, Zama, and Tooru Komagawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 301,016, Sep. 6, 1994, Pat. No. 5,507,026, which is a continuation of Ser. No. 596,366, Oct. 12, 1990, Pat. No. 5,369,744. This application Jun. 7, 1995, Ser. No. 472,741

Claims priority, application Japan, Oct. 16, 1989, 1-266142; Oct. 16, 1989, 1-266143

Int. Cl.[6] G06F *15/00;* G06T *1/00*

U.S. Cl. 345—501 4 Claims



1. A data processing apparatus comprising:

a main memory for storing data;

a secondary storage unit for temporarily saving data stored in said main memory;

a central processing unit for accessing data using a virtual address, processing the accessed data and outputting an image processing command;

a graphic processor for processing bit map data in said main memory and for outputting to said central processing unit a request signal for reading bit map data to be processed from said secondary storage unit and for supplying said bit map data read from said secondary storage unit to said main memory,

wherein said graphic processor includes means for using an updatable address translation table for translating a virtual address into a physical address; and

a system bus for exchanging data between said main memory, said central processing unit and said graphic processor.

5,664,162

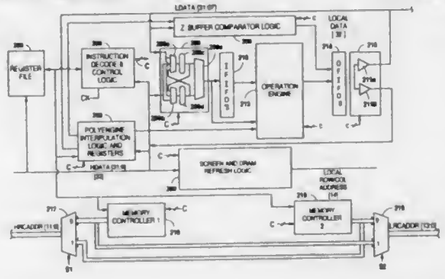
GRAPHICS ACCELERATOR WITH DUAL MEMORY CONTROLLERS

Thomas Anthony Dye, Austin, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 247,657, May 23, 1994. This application Nov. 3, 1994, Ser. No. 333,628

Int. Cl.[6] G06F *13/16;15/16;12/06*

U.S. Cl. 345—521 51 Claims



51. A computer system, comprising:

a host bus having address and data portions;

a host central processing unit coupled to said host bus;

a private memory coupled to said host bus for storing graphics instructions and associated data;

a local graphics bus having address and data portions;

a frame buffer coupled to said local graphics bus; and

a graphics processor coupled to said host and local graphics bus, comprising:

a first memory controller for providing address signals onto said address portion of said first bus;

a second memory controller for providing address signals onto said address portion of said second bus;

data means coupled to said data portions of said first and second buses; and

control logic coupled to said first and second memory controllers and said data means.

5,664,163

IMAGE GENERATING METHOD AND APPARATUS

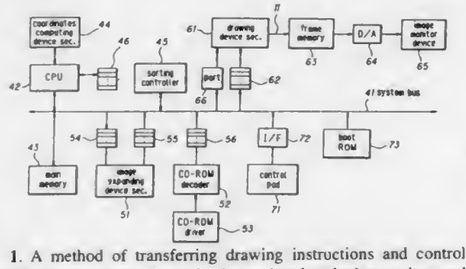
Teiji Yutaka, Kanagawa; Masakazu Suzuoki, Tokyo; Makoto Furuhashi, and Masayoshi Tanaka, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,126

Claims priority, application Japan, Apr. 7, 1994, 6-093739

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—522 9 Claims



1. A method of transferring drawing instructions and control instructions generated by a CPU to a drawing device section, and generating an image in the drawing device section by sequentially performing drawing operations in accordance with the drawing instructions and the control instructions, comprising the steps of:

constructing the drawing instructions and the control instructions having a common data structure that includes a header portion and an instruction data portion, the header portion having a command identification code for identifying respective drawing and control instructions; and

forming a drawing instruction sequence in which the drawing instructions and the control instructions are arranged in an order of drawing and control procedures, and transferring the drawing instruction sequence to the drawing device section.

5,664,164

SYNCHRONIZATION OF ONE OR MORE DATA STREAMS

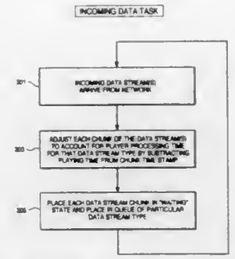
Guy Gregory Riddle, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 24, 1995, Ser. No. 394,089

Int. Cl.[6] G06F *1/14*

U.S. Cl. 395—551 14 Claims

1. In a computer system having a central processing unit; an input unit for receiving a data stream associated with a data type, said data stream including a set of data segments, each data segment having a time stamp; and, an output unit, a data stream synchronization method comprising:



a) handling housekeeping chores of incoming data of said data stream to said input unit, said housekeeping chores handling step including the steps of:

1) determining a processing time associated with a data player used to process said data type;

2) reducing said time stamp for each data segment in said set of data segments by said processing time; and,

3) placing each data segment in a queue;

b) handling status of said data stream and adjusting a clock for said data stream with said central processing unit; and,

c) utilizing said data stream with said output unit.

5,664,165

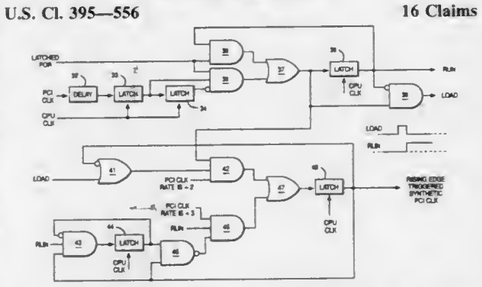
GENERATION OF A SYNTHETIC CLOCK SIGNAL IN SYNCHRONISM WITH A HIGH FREQUENCY CLOCK SIGNAL AND CORRESPONDING TO A LOW FREQUENCY CLOCK SIGNAL

Sean Eugene Curry, Pflugerville, and Barry Joe Wolford, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1995, Ser. No. 424,837

Int. Cl.[6] G06F *1/08*

U.S. Cl. 395—556 16 Claims



1. In a data processing system having multiple clock signals, where first and second clock signals may differ in frequency, apparatus for generating a synthetic clock signal, comprising:

means for determining a relative frequency between the second clock signal and the first clocking signal using the first clock signal;

means for selecting a frequency ratio for the synthetic clock signal based upon the relative frequency determined; and

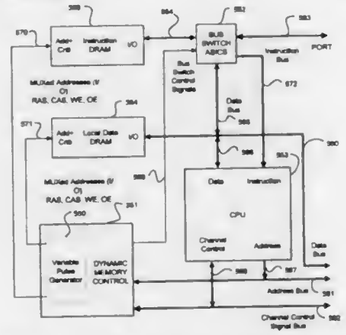
means for generating the synthetic clock signal, at the frequency of the second clock signal and in synchronism with the first clock signal, by relating the frequency ratio to the first clock signal.

5,664,166

SYSTEM FOR GENERATING A VARIABLE SIGNAL IN RESPONSE TO A TOGGLE SIGNAL SELECTIVELY DELAYED USING A CLOCK EDGE AND TIME DELAY MEASURED FROM THE CLOCK EDGE

Mark S. Isfeld, San Jose, Calif., assignor to 3ComCorporation, Santa Clara, Calif.

Filed May 10, 1995, Ser. No. 438,882
Int. Cl.[6] G06F *1/04;1/12*
U.S. Cl. 395—556 **22 Claims**



1. A signal generating digital circuit, the circuit receiving a clock signal having clock edges including a first clock edge which is one of a rising edge and a falling edge and a second clock edge, which is one of a rising edge and a falling edge following the first clock edge without intervening clock edges, the clock signal having a clock period, comprising:

a signal modifier for generating a resulting signal at a first signal state in response to and synchronized with the first clock edge, the resulting signal transitioning from the first signal state to a second signal state in response to a toggle signal; and

a delay means, responsive to the clock signal and a time delay, for generating the toggle signal, the resulting signal at the first signal state having a duration that is other than a multiple of a half of the clock period and has a transition to the second signal state between two clock edges of the clock sigal entering the delay means, wherein the duration of the resulting signal at the first signal state that is responsive to and synchronized with the first clock edge is greater than the time measured between the first clock edge and the second clock edge; and the delay means generates the toggle signal in response to and synchronized with the second clock edge and the time delay is measured from the second clock edge.

5,664,167

MICROPROGRAMMED TIMER PROCESSOR HAVING A VARIABLE LOOP RESOLUTION ARCHITECTURE

James Kyle Pickett, Austin, Tex., and David Wayne Stringfellow, Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 27, 1995, Ser. No. 411,370
Int. Cl.[6] G06F *1/14;9/44*
U.S. Cl. 395—557 **9 Claims**

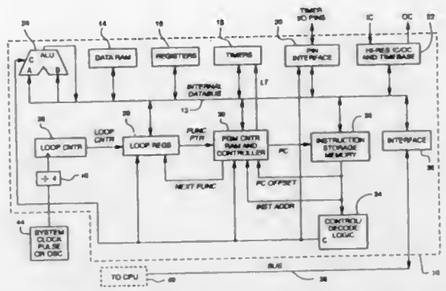
1. An apparatus operable for executing program instructions to perform a plurality of routines with different timing resolutions, said apparatus comprising:

means for providing a timing signal;

instruction memory for storing programmed instructions;

a processor for executing the programmed instructions, each of the instructions being executable in an instruction execution time as a function of the timing signal;

programmable memory for storing a plurality of program counter entries, each of said program counter entries being dedicated to a corresponding routine;



a plurality of program loops defining groupings of routines, each of said program loops including a selected number of said program counter entries;

time multiplexing means including function pointers for sequentially selecting one entry from each of the program loops as a function of the timing signal, each of said function pointers selecting program counter entries from the plurality of program loops; and

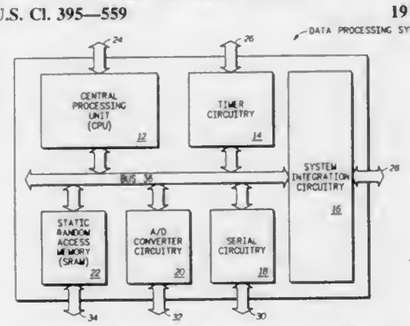
programming means for selecting the number of entries dedicated to each program loop so that different routines may have different timing resolutions.

5,664,168

METHOD AND APPARATUS IN A DATA PROCESSING SYSTEM FOR SELECTIVELY INSERTING BUS CYCLE IDLE TIME

Oded Yishay; Ann E. Harwood, and Chinh H. Le, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 158,575, Nov. 29, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 600,144
Int. Cl.[6] G06F *13/10;13/376*
U.S. Cl. 395—559 **19 Claims**



1. A method for avoiding bus contention during bus cycles in a data processing system, the method comprising the steps of:

initiating a bus cycle in response to receiving a plurality of address signals;

providing a first control value corresponding to a first chip select signal;

determining if the plurality of address signals are within a first address range corresponding to the first chip select signal;

if the plurality of address signals are within the first address range corresponding to the first chip select signal, and the first control value has a first value, completing the bus cycle and then inserting a first bus cycle idle time; and

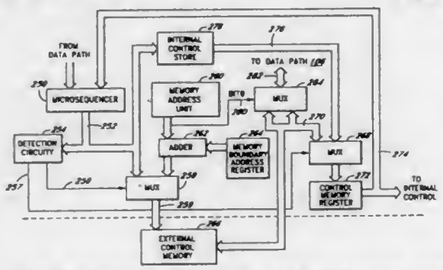
if the plurality of address signals are within the first address range corresponding to the first chip select signal, and the first control value has a second value, completing the bus cycle and then inserting a second bus cycle idle time wherein the first bus cycle idle time is different than the second bus cycle idle time.

5,664,169

MICROPROGRAMMABLE PROCESSOR CAPABLE OF ACCESSING UNUSED PORTIONS OF CONTROL STORE AS FAST DATA MEMORY

Bjorn M. Dahlberg, Irvine, Calif., assignor to Hilevel Technology, Inc., Tustin, Calif.

Continuation of Ser. No. 118,419, Sep. 8, 1993, Pat. No. 5,537,627. This application Jul. 15, 1996, Ser. No. 680,445
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—598 **8 Claims**



1. A microprogrammable processor capable of accessing unused portions of an external, single-port control store as fast data memory, said microprogrammable processor comprising:

an internal control store which stores microinstructions that control operation of the microprogrammable processor, said internal control store having substantially less storage capacity than said external control store; and

a microsequencer operable to control program flow and to access microinstructions from either said internal control store or the external control store, said microsequencer further operable to access said internal control store to obtain microinstructions at the same time as the microprogrammable processor accesses said external control store as fast data memory to obtain data.

5,664,170

FLEXIBLE DISTRIBUTED NETWORK DATABASE CONTAINING CONFIGURATION INFORMATION FOR A NETWORK DIVIDED INTO DOMAINS

Bradley Taylor, Palo Alto, Calif., assignor to NeXt Computer, Inc., Redwood City, Calif.

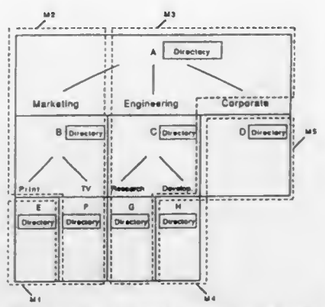
Continuation of Ser. No. 255,556, Jun. 8, 1994, Pat. No. 5,459,863, which is a contiouation of Ser. No. 953,077, Sep. 29, 1992, abandoned, which is a division of Ser. No. 520,091, May 7, 1990, abandoned. This application Oct. 16, 1995, Ser. No. 543,322
Int. Cl.[6] G06F *17/30;15/16*
U.S. Cl. 395—200.5 **21 Claims**

1. A computer-implemented method for storing configuration information for a network of computers comprising performing on at least one computer of the network the steps of:

creating a domain hierarchy representing a logical organization of the network and consisting of a plurality of domains, each domain associated with one or more computers on the network, each domain in the hierarchy including a name and a server computer address for each domain logically located either directly above or directly below the domain;

creating within each of the domains a database of configuration information for storing information associated with the domain and information associated with resources and services of the computers associated with domain; and,

storing each database on storage media of at least one of the computers associated with its domain.

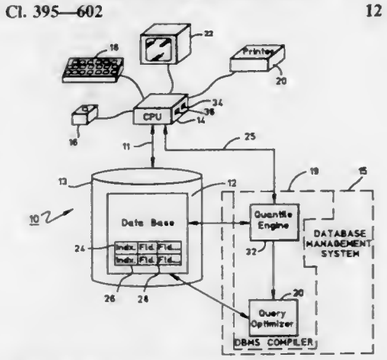


5,664,171

SYSTEM AND METHOD FOR QUERY OPTIMIZATION USING QUANTILE VALUES OF A LARGE UNORDERED DATA SET

Rakesh Agrawal, and Arun Narasimha Swami, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1994, Ser. No. 227,428
Int. Cl.[6] G06F *17/30;15/00*
U.S. Cl. 395—602 **12 Claims**



1. A data storage system, comprising:

a computer;

one or more input devices electrically connected to the computer for generating a user request for data satisfying a predetermined condition;

a database accessible by the computer for holding a set of data records; and

a database management system executable by the computer, the database management system including a compiler, the compiler including:

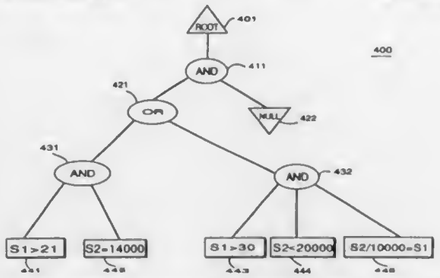
a query optimizer for generating a query plan in response to quantiles of the set of data records;

comparator means in the query optimizer for sequentially comparing the data records in the set of data records to a test value of the condition in a single pass over the set of data records;

means for selectively inserting a data record in a test set having a cardinality less than the cardinality of the set of data records based upon the comparison and the condition; and

means for accessing the test set to generate a quantile value in response to a data record in the test set, the quantile value representative of a number of data records in the database satisfying the condition.

5,664,172
RANGE-BASED QUERY OPTIMIZER
Gennady Antoshenkov, Amherst, N.H., assignor to Oracle Corporation, Redwood Shores, Calif.
Filed Jul. 19, 1994, Ser. No. 277,550
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—604 **10 Claims**



I. In a computer, a method for selecting data from a plurality of records each record associated with a key having a key value, the keys arranged according to an ascending order of the key values, comprising:

determining, using a query, a logical condition of a key value of a key of a record of the plurality of records, the logical condition being ether TRUE or FALSE, the query including a plurality of ranges and logical operators relating the ranges, each range specifying a bounded set of key values;

identifying, using the query, an interval of key values, the logical condition of each key value in the interval of key values being identical to the logical condition of the key value of the key of the record, the interval of key values including a limit value which is greater than or equal to the key value of the key of the record; and

if the logical condition of the key value of the key of the record is TRUE, selecting a set of records, the key values associated with the corresponding keys of the set of records being included in the interval of key values, otherwise,

if the logical condition is FALSE, repeating the determining and identifying steps for a next record, the next record associated with a next key having an associated key value arranged in the ascending order of the key values after the key value of the key of the record;

reducing the plurality of ranges to a set of disjoint ranges; and

making each of the logical operators either an AND or an OR logical operators to reduce the query to a canonical form;

expressing the canonical form of the query as a Boolean tree, the nodes and levels of the Boolean tree including a root node at a top level, interior nodes at intermediate levels, and leaf nodes at a bottom level;

representing the logical condition of the value of the key of the record by the root node,

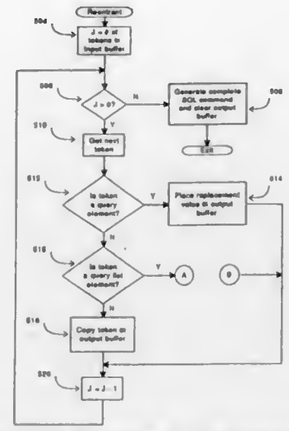
representing the AND and OR logical operators relating the disjoint ranges by the interior nodes; and

representing each disjoint range by one of the leaf nodes.

5,664,173
METHOD AND APPARATUS FOR GENERATING DATABASE QUERIES FROM A META-QUERY PATTERN
Ronald Wayne Fast, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Filed Nov. 27, 1995, Ser. No. 562,916
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—604 **9 Claims**

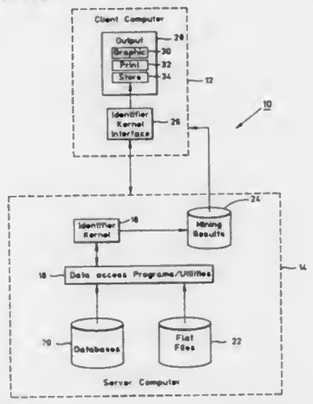
I. Computer interpretable grammatical rules for generating a plurality of queries in a grammar for testing a database engine driver, said grammatical rules comprising:

static elements for generating constant portions of said plurality of queries, wherein said static elements are copied to a buffer associated with a computer to generate said plurality of queries from said grammatical rules; and



variable elements selected from at least one of a group consisting of: a query element and a query list element, for generating database engine driver specific portions of said plurality of queries, wherein said variable elements are replaced in said buffer by values specific to a particular database engine driver to generate said plurality of queries from said, grammatical rules.

5,664,174
SYSTEM AND METHOD FOR DISCOVERING SIMILAR TIME SEQUENCES IN DATABASES
Rakesh Agrawal, San Jose, Calif.; King-Ip Lin, College Park, Md.; Harpreet Singh Sawhney, Plainsboro, N.J., and Kyuseok Shim, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 9, 1995, Ser. No. 437,746
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—606 **33 Claims**



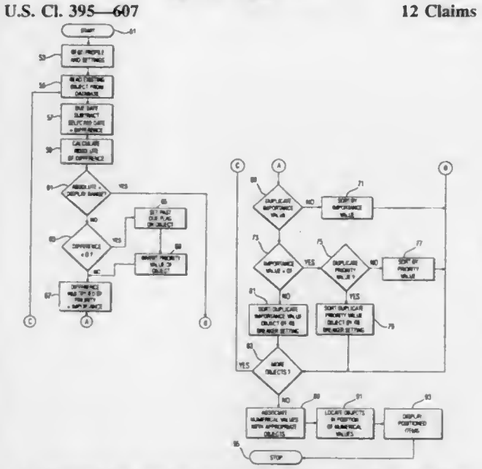
19. A database mining system for discovering, for a first time sequence stored therein, a second time sequence that is similar to the first, comprising:

a match determiner for generating first and second sets of subsequence windows respectively representing the first and second sequences, at least one window being characterized by a respective normalized value, the match determiner matching a test window in the first set of subsequence windows with a test window in the second set of subsequence windows when the difference between the values of the test windows is less than or equal to a predetermined difference, the match determiner designating as a pair of matched windows the test

window from the first set of subsequence windows and the test window from the second set of subsequence windows; and

a window stitcher for joining at least two pair of matched windows to establish a first subsequence and for joining at least two pair of matched windows to establish a second subsequence when (1) the two windows in the first subsequence do not overlap in time and are separated by a time gap and the two windows in the second subsequence do not overlap in time and are separated by a time gap, and the gaps are each less than a predetermined value, or (2) when the two windows in the first subsequence overlap each other the same amount as two corresponding windows in the second subsequence overlap each other.

5,664,175
METHOD AND SYSTEM FOR REPRIORITIZING CALENDAR ITEMS ON A DATA PROCESSING SYSTEM
Brion K. Jackson, Flower Mound; Paul L. Miller, Irving; William E. Warren, III, Richland Hills, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 13, 1993, Ser. No. 106,467
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—607 **12 Claims**



I. A method for reprioritizing calendar objects on a data processing system for a selected date, comprising the steps of:

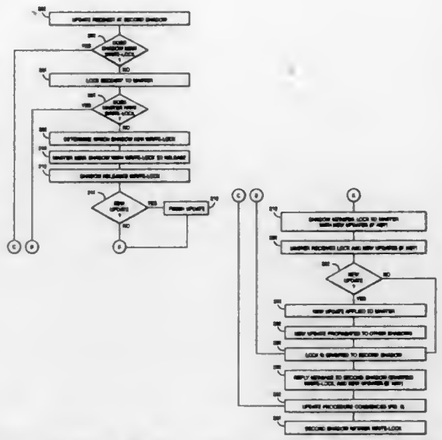
a) obtaining said objects from a database on said data processing system, each of said objects having a due date and a priority value;

b) for each object, determining a difference between said respective due date and said selected date and weighting said respective priority value by said difference to determine an importance of said object; and

c) prioritizing said objects according to the importance of each object.

5,664,176
MOVING WRITE LOCK FOR REPLICATED OBJECTS
Hari Haranath Madduri, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 961,757, Oct. 16, 1992, Pat. No. 5,418,966.
This application Jan. 31, 1995, Ser. No. 381,623
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—608 **11 Claims**

I. A computer storage device for storing a set of instructions for executing a method in a computer system, the method for updating a plurality of replicas of a common data object each in a separate



memory partition of the computer system, the method when executed comprising the steps of:

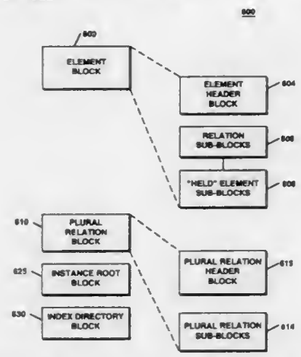
requesting a write lock from a first replica which currently holds the write lock;

moving the write lock to a second replica; performing an update to the second replica;

propagating the update to the plurality of replicas; and,

refreshing a display of the system to reflect the update in at least one of the replicas.

5,664,177
DATA PROCESSING SYSTEM HAVING A DATA STRUCTURE WITH A SINGLE, SIMPLE PRIMITIVE
Edward S. Lowry, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 13, 1988, Ser. No. 181,105
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—611 **29 Claims**



I. A memory for storing data for access by an application program being executed on a data processing system, comprising:

a data structure stored in said memory, said data structure including information resident in a database used by said application program and including:

a plurality of attribute data objects stored in said memory, each of said attribute data objects containing different information from said database;

a single holder attribute data object for each of said attribute data objects, each of said holder attribute data objects being one of said plurality of attribute data objects, a being-held relationship existing between each attribute data object and its holder attribute data object, and each of said attribute data objects having a being-held relationship with only a single

other attribute data object, thereby establishing a hierarchy of said plurality of attribute data objects;

a referent attribute data object for at least one of said attribute data objects, said referent attribute data object being nonhierarchically related to a holder attribute data object for the same at least one of said attribute data objects and also being one of said plurality of attribute data objects, attribute data objects for which there exist only holder attribute data objects being called element data objects, and attribute data objects for which there also exist referent attribute data objects being called relation data objects; and

an apex data object stored in said memory and having no being-held relationship with any of said attribute data objects, however, at least one of said attribute data objects having a being-held relationship with said apex data object.

5,664,178

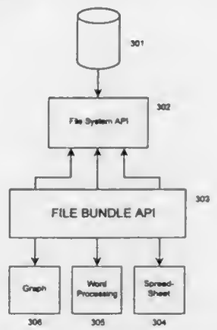
METHOD AND SYSTEM FOR ORGANIZING INTERNAL STRUCTURE OF A FILE

Steven J. Sinofsky, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 909,245, Jul. 6, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,084

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—611 **35 Claims**



1. A method in a computer system having a processor, the method for storing data within a compound document having data stored in a plurality of processor, the computer system having a file system for organizing data into files of the file system that executes on the processor, the method comprising the steps of:

creating a file of the file system;

storing a directory structure within the created file, the directory structure for pointing to sub-files contained within the created file; for each computer program

creating a sub-file within the created file by allocating a location for the sub-file and by storing a name of the sub-file and the allocated location in the directory structure; and

storing data in the native format of the computer program in the created sub-file at the allocated location wherein the data in the native format is accessible by the computer program.

5,664,179

MODIFIED SKIP LIST DATABASE STRUCTURE AND METHOD FOR ACCESS

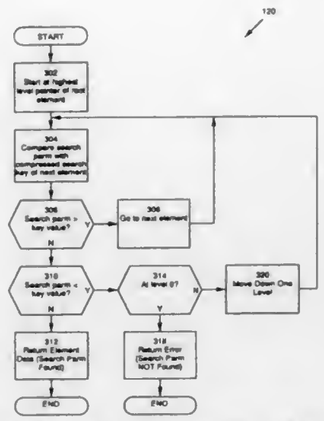
Roger Tucker, Colorado Springs, Colo., assignor to MCI Corporation, Washington, D.C.

Filed Jun. 27, 1995, Ser. No. 495,070

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—611 **16 Claims**

1. In a database management system including a processor, a disk file, a memory, an I/O adapter and an operator interface, the data structure comprising a root node and a plurality of nodes, each



node having at least one pointer which either indicates a subsequent node or indicates that there is no subsequent node, a method of inserting a new node into the data structure, comprising the steps of:

A) locating a position for a new node;

B) storing an indicator of each node which will be previous to the new node and storing an indicator of a number of matching characters of a key value of each such node;

C) storing an indicator of a number of matching characters of a key value of each node which will be subsequent to the new node;

D) selecting a level of the new node;

E) creating the new node;

F) updating the pointers of the previous nodes to indicate the new node;

G) updating the compression of the search keys of the subsequent nodes;

H) comparing the level of the new node with a maximum level in use; and

I) updating a root node to the level of the new node, if the level of the new node is greater than the maximum level in use.

5,664,180

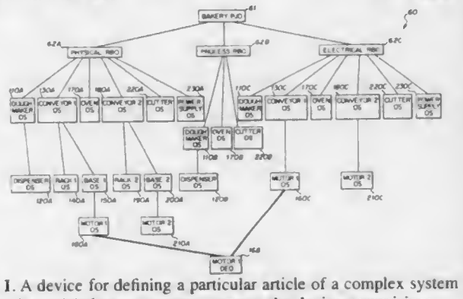
DESIGN TOOL FOR COMPLEX OBJECTS WHICH LINKS OBJECT STRUCTURES OF A DESIGN OBJECT IN MULTIPLE DESIGN DOMAINS

David E. Halpert, Brownsville, Vt.; Mario Ambrosi, Meriden, N.H.; Paul Ames; Vladimir Pisek, both of Lebanon, N.H.; Mark Roth, Whitefish Bay, and James Sheldon, Mequon, both of Wis., assignors to Framework Technologies Corporation, Lebanon, N.H.

Filed Mar. 20, 1995, Ser. No. 408,611

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **41 Claims**



1. A device for defining a particular article of a complex system that is modeled on a computer system, the device comprising:

a computer-readable medium encoded with

a design element object that identifies a particular article of the complex system;

a first object data structure that represents the particular article of the complex system in a first domain of the complex system,

a second object data structure that represents the particular article of the complex system in a second domain of the complex system, and

a first link between the design element object and the first object data structure, and a second link between the design element object and the second object data structure.

5,664,181

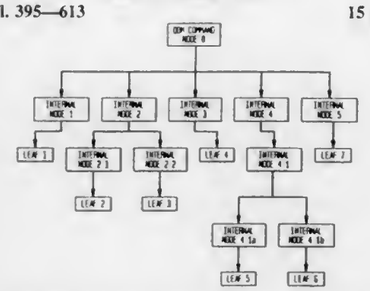
COMPUTER PROGRAM PRODUCT AND PROGRAM STORAGE DEVICE FOR A DATA TRANSMISSION DICTIONARY FOR ENCODING, STORING, AND RETRIEVING HIERARCHICAL DATA PROCESSING INFORMATION FOR A COMPUTER SYSTEM

T. Dora Velissaropoulos, Toronto, and Peter K. Shum, Richmond Hill, both of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 853,062, Mar. 17, 1992. This application Jun. 7, 1995, Ser. No. 478,533

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **15 Claims**



1. A computer program product for use in a computer system, said computer program product comprising a computer usable medium having embodied therein a data transmission dictionary, stored in a memory of a computer system for encoding, storing, or retrieving hierarchically related data transmission information comprising:

a plurality of computer searchable definition trees,

each said tree representing a compacted request command, a compacted reply command, or a compacted object command,

each said tree having a root node identifying a specific request command, reply command, or object command,

each said tree having one or more internal or terminal descent nodes, each of said internal or terminal descent nodes representing components of the definition of one of said trees,

wherein each of said trees is a linear, depth-first representation of said root node and the one or more internal or terminal descent nodes associated therewith, wherein each said tree is used to generate a specific request command, a specific reply command, or a specific object command therefrom, the generated command representing a data stream of information.

5,664,182

PERSISTENT STORAGE OF REPORT OBJECTS

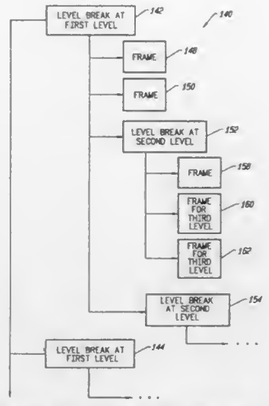
Nicolas C. Nierenberg, Hillsborough; Paul A. Rogers, Newark; David B. Edwards, Half Moon Bay; John R. Dafoe, Benicia, and William A. Osberg, San Mateo, all of Calif., assignors to Actuate Software Corporation, San Mateo, Calif.

Filed Sep. 18, 1995, Ser. No. 528,995

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **36 Claims**

1. A method for creating a report object that contains information for displaying and searching a report, the method comprising the following steps:



(a) identifying data to be put into the report object;

(b) providing a report design specifying how the data identified in step (a) is (i) logically arranged into a hierarchy having section breaks between members of a first group of report entities, and (ii) visually arranged in frames on a display medium;

(c) generating instances of object classes from a report object class library and the report design, which instances and classes define a visual organization and content of the report;

(d) persistently storing the instances of the object classes in a form that preserves the hierarchy provided in step (b), wherein the report object includes the instances stored.

5,664,183

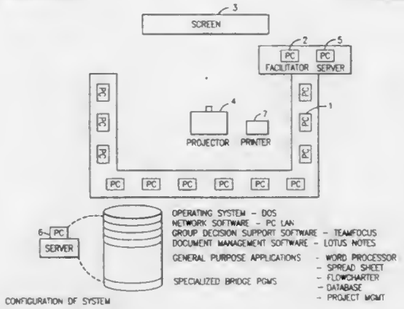
APPLICATION OF GROUPWARE TO ISO 9000 REGISTRATION VIA FACILITATED WORK SESSIONS

Philip James Cirulli, Endicott; Philip David Heinlein, Binghamton; Byron David James, Johnson City, and Deborah Marsh Telfer, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 229,967, Apr. 19, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,857

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **15 Claims**



1. A process comprising:

inputting comments and ideas for fulfilling ISO 9000 standards using a plurality of input devices, into a computer system as text data in the computer system in an information gathering stage of a team meeting;

editing the text data on one or more of the input devices into a format suitable for a bridge tool to retrieve and convert the text data and saving the edited data into computer memory data base for ISO 9000 information;

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executing a bridge tool in the computer system for retrieving and converting the stored text data into computer data output with a structure useable by a formatting tool;

executing the formatting tool for automatically reformatting the computer data output of the bridge tool; and

the computer system automatically providing at an end of the team meeting, the reformatted computer date for fulfilling ISO 9000 standards in the form of one or more manuals.

5,664,184

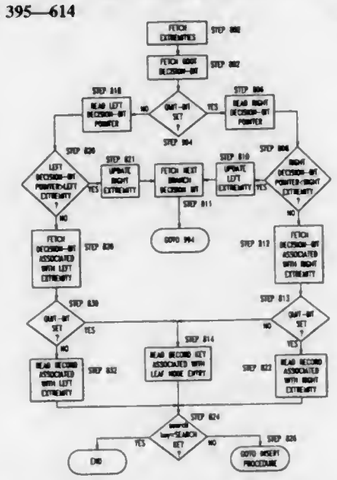
METHOD AND APPARATUS FOR IMPLEMENTING Q-TREES

David E. Ferguson, and Eduardo C. Ross, both of Fawnskin, Calif., assignors to Amalgamated Software of North America, Inc., San Antonio, Tex.

Division of Ser. No. 65,657, May 21, 1993, Pat. No. 5,497,485. This application Nov. 29, 1995, Ser. No. 564,642

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—614 **6 Claims**



3. A storage device readable by a programmable control device when coupled to the storage device, the storage device containing a control program tangibly stored thereon, such that the control device is operated by the control program, when the storage device is read by the control device, to search for a particular search key within a database of data records, each data record having at least a unique search key and a unique location, wherein the data records are indexed by means of a Q-tree structure having at least one leaf node, each leaf node having a plurality of entries assigned to the leaf node, at least some of the entries having at least an associated record location reference, and a distinction-bit which, in at least one of the entries, is a decision-bit that locates a quit-bit in a search key, the search being performed by the combination of the control program and the control device to perform the programmed functions of:

(a) defining a search range within a selected leaf node;

(b) locating a root decision-bit of the selected leaf node;

(c) reading the decision-bit;

(d) reading a quit-bit of the search key being sought and testing whether the quit-bit is a first predetermined value;

(e) defining a next search comprising those entries associated with search keys having values not less than the search key associated with the entry containing the last read root decision-bit if the quit-bit is equal to the first predetermined value; and

(f) defining a next search comprising those entries associated with search keys having values not greater than the search key associated with the entry containing the last read decision-bit if the quit-bit is not equal to the first predetermined value.

5,664,185

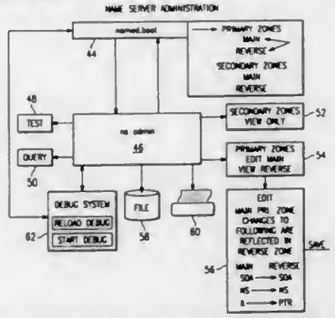
NAMESERVER ADMINISTRATION SYSTEM AND METHOD

Kent B. Landfield, Papillion, and Roger L. Ferrel, Omaha, both of Nebr., assignors to Sterling Commerce, Inc., Dallas, Tex.

Filed May 22, 1995, Ser. No. 446,330

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—615 **3 Claims**



1. A data communications management system operating on a host computer system connected to a private network and operable to be connected to a public network, the system comprising:

a nameserver administration system providing a graphical user interface and operable to manage a local nameserver database comprising nameserver information which is accessible through queries issued from sites connected to the host computer system through the public network, the nameserver database further comprising local database information and may comprise a local cache of resolved nameserver operations, the graphical user interface associated with the nameserver administration system including a reload command which, when invoked, reinitializes the nameserver database and clears the local cache of resolved nameserver operations;

a nameserver test system providing a graphical user interface coupled to the nameserver database, the test system operable to execute tools invoked through the test system graphical user interface testing the configuration and operation of the nameserver database; and

a nameserver query system providing a nameserver query graphical interface, the nameserver query system operable to issue queries through the public network to other nameserver host systems and to receive and display results of the queries through the nameserver query graphical user interface.

5,664,186

COMPUTER FILE MANAGEMENT AND BACKUP SYSTEM

Robert Bradley Bennett, Endwell; Robert Michael Nugent, Nichols, and James Michael Showalter, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 886,206, May 21, 1992, abandoned. This application May 8, 1995, Ser. No. 436,783

Int. Cl.[6] G06F *17/30*

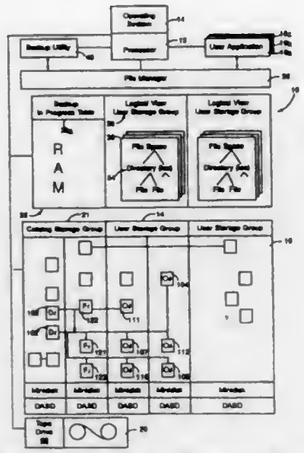
U.S. Cl. 395—620 **24 Claims**

1. A method for managing files listed in a directory, said method comprising the following steps performed in whole or part by a digital computer:

receiving a backup request with scope of said directory, and in response, locking said directory, then setting an indicator for said directory and then unlocking said directory;

receiving a request to change a specified file, and in response, determining that said specified file is listed in said directory and said indicator is set for said directory, making a copy of said specified file, making said change either to said specified file or said copy thereof; and

after the unlocking step, copying to a backup repository said directory and files including said specified file or said copy thereof which has not been changed but excluding said specified file or said copy thereof which has been changed, and then resetting said indicator.



5,664,187

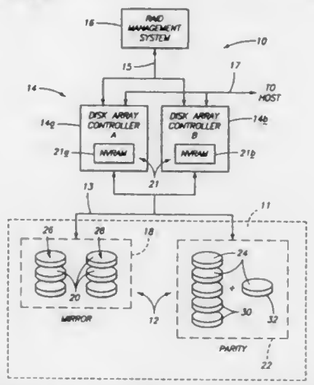
METHOD AND SYSTEM FOR SELECTING DATA FOR MIGRATION IN A HIERARCHIC DATA STORAGE SYSTEM USING FREQUENCY DISTRIBUTION TABLES

Theresa A. Burkes, Meridian, and Douglas L. Voigt, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 26, 1994, Ser. No. 329,349

Int. Cl.[6] G06F *17/30;13/00;11/00*

U.S. Cl. 395—621 **24 Claims**



9. A method for selecting data for migration in a hierarchic data storage system; the data storage system comprising multiple storage disks that define a physical storage space, the physical storage space being mapped into a RAID-level virtual storage space which presents the physical storage space as at least two RAID areas that store data according to different RAID levels, the RAID-level virtual storage space being mapped into an application-level virtual storage space which presents the physical storage space as a population of multiple virtual blocks; the method comprising the following steps:

creating a bounded first frequency distribution table that characterizes data stored in a first RAID area under a first RAID level according to a predetermined distribution criteria, the first frequency distribution table having a selected number of intervals, individual intervals having various counts of the number of virtual blocks that satisfy the distribution criteria for the associated interval;

creating a bounded second frequency distribution table that characterizes data stored in a second RAID area under a second RAID level according to a predetermined distribution criteria, the second frequency distribution table having a selected number of intervals, individual intervals having various counts of the numbers of virtual blocks that satisfy the distribution criteria for the associated interval;

defining a plurality of segments of the first population, individual segments including one or more intervals of the first frequency distribution table;

choosing at least one segment from the plurality of segments;

searching the virtual blocks in the application-level virtual storage space to locate one or more virtual blocks that satisfy the distribution criteria for the one or more intervals included within the chosen segment, the located virtual blocks representing data stored in the first RAID area under the first RAID level; and

migrating the located virtual blocks from the first RAID area to the second RAID area.

5,664,188

Patent Not Issued For This Number

5,664,189

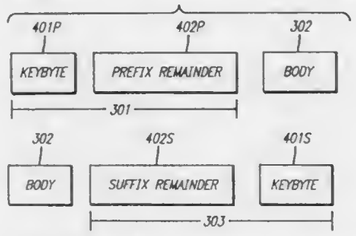
METHOD AND APPARATUS FOR PROVIDING OBJECT-ORIENTED FILE STRUCTURING SYSTEM ON A COMPUTER

Jonathan J. Wilcox, Woodside; Thomas A. Henderson, Palo Alto, and Jon A. Wilcox, Menlo Park, all of Calif., assignors to Menai Corporation, Menlo Park, Calif.

Continuation of Ser. No. 158,591, Nov. 24, 1993, Pat. No. 5,568,639. This application Oct. 21, 1996, Ser. No. 731,844

Int. Cl.[6] G06F *7/00;9/00*

U.S. Cl. 395—621 **20 Claims**



1. An article of manufacture comprising:

a computer usable medium having computer readable program code means embodied thereon for causing a computer to represent a file on a computer system, the computer readable program code means in said article of manufacture comprising:

computer readable program code configured to cause said computer to create said file as comprising a plurality of objects;

computer readable program code configured to cause said computer to establish a logical order of said objects of said file;

computer readable program code configured to cause said computer to store said objects of said file in a physical order on a storage means;

said file further comprising a head and a tail, such that in said head physical location of said objects is consistent with the relative logical order of said objects, and

said tail comprising objects representing modifications to said file.

5,664,190

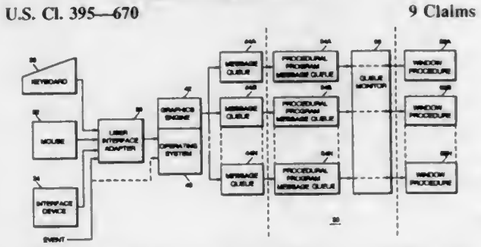
SYSTEM AND METHOD FOR ENABLING AN EVENT DRIVEN INTERFACE TO A PROCEDURAL PROGRAM

Marc Leslie Cohen, Boca Raton, Fla.; Scott Michael Consolatti; Carol Ann Jones, both of Raleigh, N.C., and Dennis Donald King, Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 21, 1994, Ser. No. 184,729

Int. Cl.[6] G06F *9/40;9/44*

U.S. Cl. 395—670 **9 Claims**



1. In a computing environment including a processor, a user interface, and memory, a system for enabling procedural programs written in a fourth generation procedural language to respond reactively to messages, comprising:

means for receiving input from the user interface;

an operating system for receiving the input from said receiving means;

a plurality of message queues for receiving messages from the operating system, one message queue corresponding to each procedural program accessible through the user interface; and

procedural program interface means for determining whether a message is present in one of said message queues and providing the message to the corresponding procedural program following receipt of a call from the corresponding procedural program.

5,664,191

METHOD AND SYSTEM FOR IMPROVING THE LOCALITY OF MEMORY REFERENCES DURING EXECUTION OF A COMPUTER PROGRAM

Robert I. Davidson; Nathan Myhrvold, both of Bellevue; Keith Randel Vogel, Duvall; Gideon Andreas Yuval, Mercer Island; Richard Shupak, and Norman Eugene Apperson, both of Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 30, 1994, Ser. No. 268,277

Int. Cl.[6] G06F *9/44*

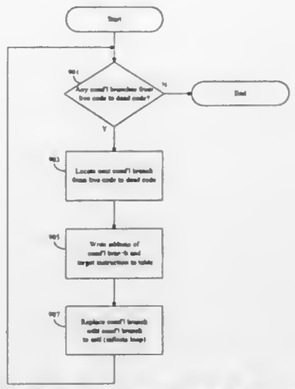
U.S. Cl. 395—670 **13 Claims**

1. In a computer system, a method of identifying a plurality of basic blocks within a computer program comprising the steps of:

identifying a plurality of jump tables within the computer program, each jump table having one or more entries, each entry representing a starting address of a basic block, the entries being ordered from a lowest to a highest entry;

repeating the following sequence of steps until either all entries in the plurality of jump tables have been selected or it is determined that all of the basic blocks of the computer program have been identified;

selecting the lowest entry that has not already been selected from among the plurality of jump tables; and



identifying basic blocks which begin at the address of the selected entry.

5,664,192

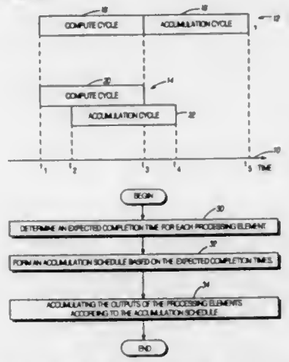
METHOD AND SYSTEM FOR ACCUMULATING VALUES IN A COMPUTING DEVICE

Scott Edward Lloyd, Hoffman Estates, and Shay-Ping Thomas Wang, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 14, 1994, Ser. No. 355,738

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—672 **19 Claims**



9. In a multi-processor computer which includes a plurality of processing elements, a method for accumulating a plurality of outputs from the plurality of processing elements, the method comprising the following steps:

(a) assigning a task to each of the plurality of processing elements, wherein the task produces at least one of the plurality of outputs, each of the plurality of outputs being based on a polynomial term having a form

$$w_{i-1}x_1^{g}1ix_2^{g}2i \ldots x_n^{g}ni.$$

where $x_1 \ldots x_n$ represent a plurality of processing element inputs, w_{i-1} represents a coefficient, $g_{1i} \ldots g_{ni}$ represent a plurality of exponents, and i and n represent integers;

(b) for each of the processing elements, defining the task as a sequence of events over time, the sequence of events having a final event which produces the at least one of the plurality of outputs;

(c) for each of the processing elements, defining an expected completion time based on the final event;

(d) providing a processing element tag corresponding to one of the plurality of processing elements;

(e) creating an accumulation flag by associating the processing element tag with the expected completion time of the one of the plurality of processing elements;

(f) repeating steps (d)–(e) for each of the plurality of processing elements, whereby creating a plurality of accumulation flags;

(g) arranging by expected completion time the plurality of accumulation flags to form an accumulation schedule, wherein a first accumulation flag having an earlier expected completion lime than a second accumulation flag precedes the second accumulation flag in the accumulation schedule; and

(h) accessing the accumulation schedule to determine whether one of the plurality of outputs is accumulable, if so, accumulating the one of the plurality of outputs.

5,664,193

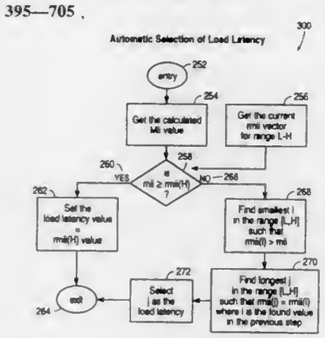
METHOD AND APPARATUS FOR AUTOMATIC SELECTION OF THE LOAD LATENCY TO BE USED IN MODULO SCHEDULING IN AN OPTIMIZING COMPILER

Partha P. Tirumalai, Fremont, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 17, 1995, Ser. No. 560,086

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—705 **8 Claims**



1. A computer controlled method for determining a load latency value associated with a program instruction loop, for use in an optimizing compiler in scheduling the executable instructions of a target program directed at a target computer architecture having one or more cache memories with different load latencies, said method comprising the steps of:

a. determining a minimum iteration interval value for the program instruction loop;

b. providing a range of load latency values which represent a smallest latency value and a largest latency value that is representative of the target computer architecture, said range comprising consecutive integer values from a value representing the smallest latency to a value representing the largest latency of the target computer architecture;

c. determining an rmii vector of values the elements of which correspond to each load latency in the range of load latency values;

d. determining whether the program instruction loop is limited by data dependencies and if not then setting the load latency value equal to the largest latency of the target computer architecture; and

e. if the program instruction loop is limited by data dependencies, setting the load latency value such that the rmii at this load latency approximately equal to the minimum iteration interval value.

5,664,194

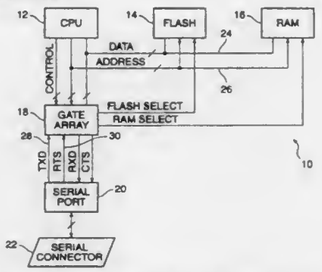
METHOD FOR AUTONOMOUSLY TRANSFERRING CODE TO A COMPUTER WITHOUT ACCESSING LOCAL MEMORY BY THE CENTRAL PROCESSING UNIT

David L. Paulsen, Mountain View, Calif., assignor to Metricom, Inc., Los Gatos, Calif.

Filed Dec. 4, 1995, Ser. No. 566,877

Int. Cl.[6] G06F *9/06;9/445*

U.S. Cl. 395—712 **9 Claims**



1. A method for downloading a boot sequence to a computing device having an input element, a gate array, and a CPU, said method in said gate array comprising the steps of:

upon reset looking for instruction requests from the CPU;

accepting at a receiving register digital data from said input element;

checking said register each cycle to determine if said register contains an instruction;

returning a filler instruction to the CPU until said register contains a desired instruction; and thereupon

transferring content of said register to the CPU as said desired instruction.

5,664,195

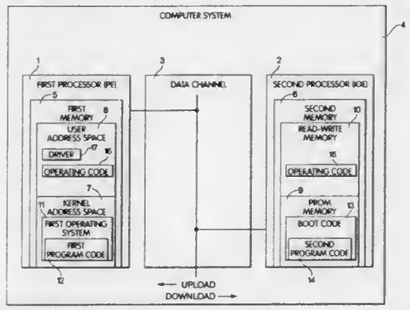
METHOD AND APPARATUS FOR DYNAMIC INSTALLATION OF A DRIVER ON A COMPUTER SYSTEM

Sanjoy Chatterji, Waltham, Mass., assignor to Sequoia Systems, Inc., Marlborough, Mass.

Continuation of Ser. No. 44,347, Apr. 7, 1993, abandoned. This application Feb. 20, 1996, Ser. No. 603,380

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—712 **22 Claims**



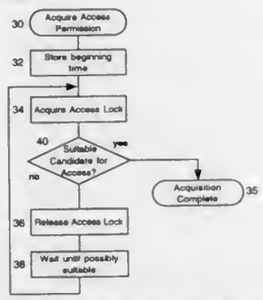
1. A method for dynamically installing a driver on a computer system, the computer system having a first processor, and a second processor, the method comprising the steps of:

(a) the first processor sending a quiesce command to the second processor, while the second processor operates in a first operating state according to a first operating code;

(b) the second processor, in response to the quiesce command, exiting the first operating state, entering a quiesced state, and sending a notify message to the first processor indicating that the second processor is in the quiesced state;

(c) the first processor, in response to the notify message, queuing a first request sent to the second processor from an external source, and sending the second processor an execute command while the second processor is in the quiesced state;
(d) the second processor, in response to the execute command, exiting the quiesced state, entering a second operating state to operate according to a second operating code having the driver, and sending an acknowledgment message to the first processor indicating that the second processor is in the second operating state;
(e) the first processor, in response to the acknowledgment message, issuing the queued first request to the second processor; and
(f) the second processor executing the issued first request while operating in the second operating state according to the second operating code.

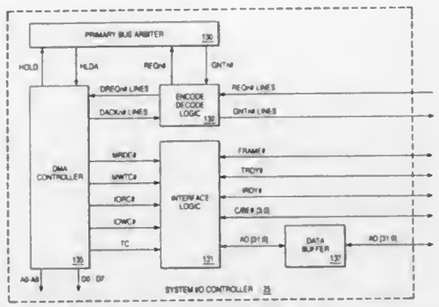
5,664,196
MEDIA ACCESS SCHEDULER METHOD AND APPARATUS
Mark Bennett Hecker, Northboro, Mass., assignor to EMC Corporation, Hopkinton, Mass.
Filed Dec. 7, 1995, Ser. No. 568,857
Int. Cl.[6] G06F *13/36;13/14*
U.S. Cl. 395—726 **20 Claims**



1. An apparatus for scheduling automated access by concurrent users to shared objects, where such shared objects are characterized by costly setup or repositioning time, comprising:
means for locking access to said shared object to one user at a time;
means for indicating the status of said shared object;
means for analyzing suitability of a user as a candidate for access to said shared object by waiting a predetermined interval before repositioning said shared object;
means for tracking a user's use of said shared object; and
means for releasing access to said shared object, so that a user may determine whether it is the best candidate to access said shared object at a given time without causing excessive repositioning or setup of said shared object.

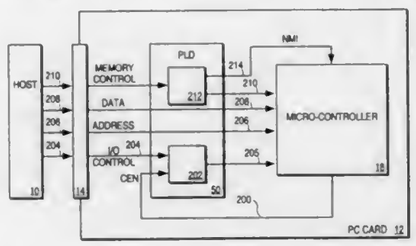
5,664,197
METHOD AND APPARATUS FOR HANDLING BUS MASTER CHANNEL AND DIRECT MEMORY ACCESS (DMA) CHANNEL ACCESS REQUESTS AT AN I/O CONTROLLER
James P. Kardach, Saratoga; Sung-Soo Cho, Sunnyvale; Jim S. Cheng, Cupertino; Debra T. Cohen, Sunnyvale; John W. Horigan, Mountain View; Nader Raygani, San Jose; Seyed Yahay Sotoudeh, Santa Clara; David I. Poisner, Folsom, and Nell W. Songer, Santa Clara, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Apr. 21, 1995, Ser. No. 426,825
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—728 **21 Claims**

1. A computer system comprising:
a bus;



a system I/O controller coupled to the bus;
a direct memory access (DMA) controller coupled to the system I/O controller;
a plurality n of bus agents coupled to the bus; and
a plurality n of request signal lines and a plurality n of grant signal lines for transmitting requests and grants respectively between the bus agents and the system I/O controller, each request signal line and each grant signal line being coupled between an associated bus agent and the system I/O controller,
wherein the system I/O controller comprises:
encode/decode logic coupled to the request signal lines; and
a bus arbiter coupled to the encode/decode logic,
wherein the encode/decode logic passes bus requests to the bus arbiter and passes DMA requests to the DMA controller, and
wherein the DMA controller issues a grant of a DMA request, by a requesting bus agent, to the encode/decode logic, and the encode/decode logic passes the grant of the DMA request to the requesting bus agent using the grant signal line coupled to the requesting bus agent.

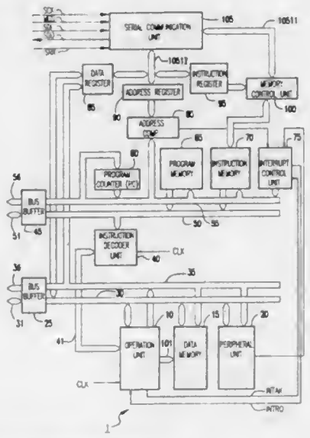
5,664,198
HIGH SPEED ACCESS TO PC CARD MEMORY USING INTERRUPTS
Chengwu Chen; Michael E. Pierce, and James L. Foote, III, all of Sacramento, Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Oct. 26, 1994, Ser. No. 329,230
Int. Cl.[6] G06F *13/14;13/00*
U.S. Cl. 395—733 **8 Claims**



1. In a method of accessing memory located on a Personal Computer Memory Card International Association (PCMCIA) card within a host computer, said PCMCIA card comprising a PCMCIA bus, attribute memory, common memory and I/O space and operating under the control of a microcontroller on said PCMCIA card to perform at least one I/O function, wherein said microcontroller contains registers, and wherein said PCMCIA card has a configured and unconfigured state, and wherein said host includes a bus having address, data and control lines connected through an interface to said PCMCIA card bus, and wherein logic circuitry is provided on said PCMCIA card for monitoring said PCMCIA card bus, decoding said PCMCIA card bus signals and generating

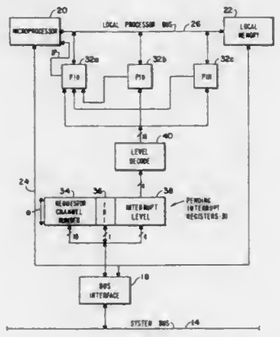
non-maskable interrupts as a result thereof, which interrupts are supplied to said microcontroller, said method comprising the following steps:
decoding said PCMCIA card bus signals to determine when said host has made a request for access to attribute memory;
generating a non-maskable interrupt when said attribute memory access is detected;
running an interrupt routine located in said memory wherein said interrupt routine comprises the following steps:
disconnecting said I/O function of said PCMCIA card from said host; saving said registers of said microcontroller; performing said access to attribute memory requested by said host; providing the results of said attribute memory access to said host; testing to determine if said PCMCIA card has been configured;
if said test indicates that said PCMCIA card is configured, reconnect said I/O function of said PCMCIA card to said host; and
return control of said microcontroller to the location in code from which it was taken upon the occurrence of said interrupt.

5,664,199
MICROCOMPUTER FREE FROM CONTROL OF CENTRAL PROCESSING UNIT (CPU) FOR RECEIVING AND WRITING INSTRUCTIONS INTO MEMORY INDEPENDENT OF AND DURING EXECUTION OF CPU
Kazuyoshi Kuwahara, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 61,089, May 12, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,918
Claims priority, application Japan, May 12, 1992, 4-118654; Sep. 3, 1992, 4-235765
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—734 **13 Claims**



1. A microcomputer comprising:
a program memory for storing first instructions for a program;
a central processing unit for executing said first instructions stored in said program memory;
an instruction memory provided independently of said program memory;
a communication unit for receiving a plurality of second instructions from an external source and for writing said second instructions into said instruction memory independently of and during execution of said first instructions by said central processing unit; and
means for causing said central processing unit to suspend the execution of said first instructions and to then execute said second instructions written into said instruction memory,
said central processing unit transferring data indicative of internal conditions thereof to said communication unit by executing said second instructions and thereafter resuming the execution of said first instructions,
said communication unit transferring said data to said external source independently of execution of any one of said first and second instructions,
wherein said communication unit includes a data register, said central processing unit accessing said data register by executing said second instructions to transfer and store said data to said data register, and
wherein said communication unit further includes a transfer unit responding to a command from said external source to transfer said data stored in said data register to said external source independently of the execution of said first and second instructions by said central processing unit.

5,664,200
APPARATUS AND METHOD FOR PROVIDING MORE EFFECTIVE REITERATIONS OF INTERRUPT REQUESTS IN A MULTIPROCESSOR SYSTEM
George J. Barlow, Tewksbury, Mass., and James W. Keeley, Hollis, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.
Continuation-in-part of Ser. No. 781,524, Oct. 22, 1991, Pat. No. 5,404,535. This application Mar. 31, 1995, Ser. No. 414,983
Int. Cl.[6] G06F *13/24;13/18*
U.S. Cl. 395—741 **15 Claims**



1. A multiprocessor system comprising a plurality of processors connected in common to a system bus for transferring interrupt requests and interrupt completed commands between different ones of said processors during bus cycles of operation, each interrupt request including a first processor identification code designating an interrupting processor, a second processor identification code designating which processor was attempted to be interrupted by one of the plurality of processors and a level number specifying the priority of the interrupt request, each interrupt completed command including the second processor identification code, a code indicating completion of processing an interrupt request by one of the plurality of processors and a level number specifying the level to which said second processor switched, each processor including an interrupt mechanism having response means connected to said system bus for generating acknowledge and not acknowledge responses respectively signaling acceptance and refusal of each interrupt request, a number of said plurality of processors including interrupt retry apparatus, the interrupt retry apparatus comprising:
a refused interrupt register means coupled to said system bus, said refused interrupt register means responsive to a not acknowledge response received from a processor attempted to be interrupted in response to an interrupt request issued by an interrupting processor for storing the second processor identification code and level number contained in the interrupt request; and,

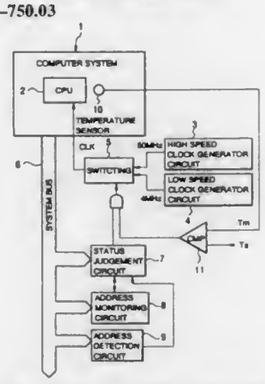
a level monitor unit connected to said system bus for detecting each occurrence of an interrupt completed command on the system bus, the level monitor unit being operatively connected to the refused interrupt register means and including comparison circuits for comparing the second processor identification code and level number in the interrupt completed command to the second processor identification code and level number stored in the refused interrupt register means; the level monitor unit generating an interrupt retry output signal to the interrupting processor only when the second processor identification code in the interrupt completed command identically matches the second processor identification code stored in the refused interrupt register means and the level number in the interrupt completed command has a predetermined value relative to the level number stored in the refused interrupt register means, the interrupting processor in response to the interrupt retry output signal reapplying the previously refused interrupt request to the system bus for acceptance by the processor previously attempted to be interrupted.

5,664,201

DRIVE CONTROL SYSTEM FOR MICROPROCESSOR ACCORDING TO OPERATIONAL STATE AND AMBIENT TEMPERATURE CONDITION THEREOF

Osamu Ikedea, Tokyo, Japan, assignor to Dia Semicon Systems Incorporated, Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 46,072
Claims priority, application Japan, Apr. 16, 1992, 4-096780
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—750.03 **3 Claims**



1. A power saving control system for a computer system including a CPU, comprising:

first means for selectively operating said CPU in a first mode with relatively high performance and high power consumption and a second mode with relatively low performance and low power consumption;

second means for monitoring addresses accessed by said CPU over a given period in order to detect a predetermined operational state of said CPU, in which only specific address group is repeatedly accessed, while said given period being varied periodically, said second means being operable in a learning mode in a given learning period which forms a former part of said given period, for recording addresses accessed by said CPU and a comparison mode in a given comparison period, for comparing a currently accessed address with the addresses recorded during immediately preceding learning mode operation;

third means associated with said first means for normally operating said first means in said first mode and responsive to said second means detecting said predetermined operational state, for operating said first means in said second mode as long as said predetermined operational state is maintained; and

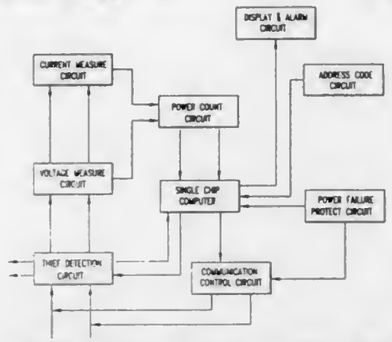
fourth means for monitoring a temperature condition of said microprocessor for overriding said third means for lowering the power consumption of said microprocessor irrespective of the operational state of said microprocessor when the temperature condition of the microprocessor higher than a predetermined criterion temperature is detected, said second means updating said given learning period at the end of said comparison mode operation and deriving said given comparison period in relation to the updated learning period.

5,664,202

INTELLIGENT POWER CONSUMPTION MONITORING AND CONTROL SYSTEM

Ding Chen, and Zhe Chen, both of No. 6, 14-122, N. Huanghe St., Huang Gu District, Shenyang, Llaoning Province 110031, China

Filed Apr. 20, 1995, Ser. No. 426,012
Int. Cl.[6] G06F *1/26;* **G08C** *19/00*
U.S. Cl. 395—750.08 **2 Claims**



1. An intelligent power consumption monitoring and control system comprising a central controller, a power consumption data transfer mechanism and power consumption meters, wherein

said central controller consists of a computer with management software, and a communication controller connected by cables to said computer;

said power consumption data transfer mechanism includes said communication controller and data transfer media;

each of said power consumption meters being connected to said data transfer media, each of said power consumption meters includes case, a data display, and a meter PCB board, wherein said meter PCB board includes a single chip microcomputer, program storage, data memory, a transmitter and receiver, an A/D and D/A module, a theft control and power line balance detection module having an oscillating circuit connecting to a power supply line, and a power supply module.

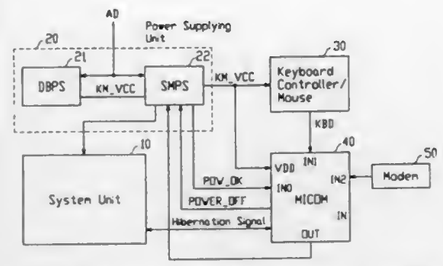
5,664,203

PERIPHERAL DEVICE INPUT-INITIATED RESUME SYSTEM FOR COMBINED HIBERNATION SYSTEM AND BACK-UP POWER SUPPLY FOR COMPUTER

Jeong-Woo Hong, Seoul; Hee-Duck Park; Shung-hyun Cho, both of Suwon, and Noh-Byung Park, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 576,343
Claims priority, application Rep. of Korea, Dec. 22, 1994, 94-35953
Int. Cl.[6] G06F *1/26;1/32*
U.S. Cl. 395—750.05 **7 Claims**

1. A combined hibernation and back-up power supply system for a computer having a plurality of DC power-using devices, including a CPU and RAM of said computer, in a main board, and a keyboard controller, said system comprising:



a power management system, which generates a hibernation signal when an event is not generated from a peripheral device of said computer or said keyboard controller for a predetermined time, generates a WAKE-UP signal when an input is initiated by said peripheral device or by said keyboard controller, and generates a power cut-off signal when an external power is cut off;

a data backup power unit, which is capable of supplying a DC voltage when said external power is cut off or when said event is not generated from said peripheral device of said computer for said predetermined time;

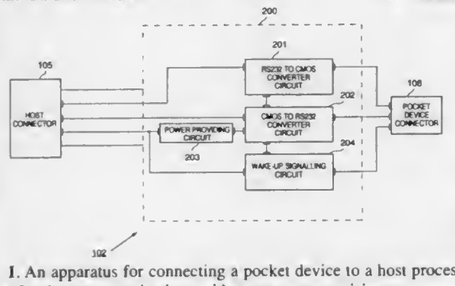
a power supplying unit coupled to said power management system and said data backup power unit, said power supply unit including a switching mode power supply that converts said external power to said DC voltage and supplies said DC voltage to each of said devices on said main board and said keyboard controller, and which if said power cut-off signal is generated by said power management system, cuts off said external power, outputs a power supplying condition signal indicating that power is cut-off to said main board and instead supplies said DC voltage from said data backup power unit only to said keyboard controller, and which if said WAKE-UP signal is generated by said power management system, cuts off power supplying of said data backup power unit and resumes power supply to said main board in accordance with said converted external power.

5,664,204

APPARATUS AND METHOD FOR SUPPLYING POWER AND WAKE-UP SIGNAL USING HOST PORT'S SIGNAL LINES OF OPPOSITE POLARITIES

Lichen Wang, 150 Tennyson Ave., Palo Alto, Calif. 94301, assignor to Lichen Wang

Continuation of Ser. No. 34,018, Mar. 22, 1993, abandoned. This application Apr. 30, 1996, Ser. No. 640,310
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750.01 **19 Claims**



1. An apparatus for connecting a pocket device to a host processor for data communication, said apparatus comprising:

a host connector that connects to a host port of said host processor, said host port comprising a first signal line, carrying a signal at a substantially constant first voltage, and a second signal line, carrying a signal at a substantially constant second voltage opposite in polarity to said first voltage;

a level conversion circuit electrically connected to said host connector, said level conversion circuit drawing power at said substantially constant first voltage and at said substantially constant second voltage from said first and second signal lines at all times during operation; and

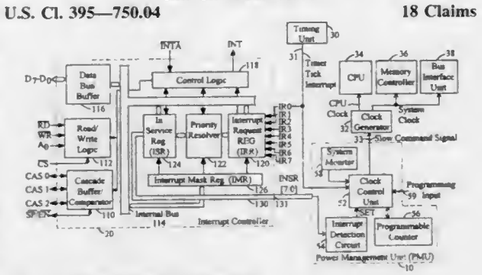
a pocket device connector that connects to a port of said pocket device, said pocket device connector being electrically connected to said level conversion circuit.

5,664,205

POWER MANAGEMENT CONTROL TECHNIQUE FOR TIMER TICK ACTIVITY WITHIN AN INTERRUPT DRIVEN COMPUTER SYSTEM

Rita M. O'Brien, and Michael T. Wisor, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 156,888, Nov. 23, 1993, abandoned. This application Aug. 20, 1996, Ser. No. 700,129
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—750.04 **18 Claims**



1. A computer system comprising:

a timing unit configured to assert a timer tick interrupt signal;

an interrupt controller including at least one interrupt request line for receiving said timer tick interrupt signal, wherein said interrupt controller includes a control circuit configured to generate a microprocessor interrupt signal in response to the assertion of said timer tick interrupt signal, and wherein said interrupt controller further includes an in-service register for storing data indicative of whether said timer tick interrupt signal is currently being serviced by a microprocessor; and

a power management unit coupled to an output line of said in-service register, wherein said power management unit includes a clock control unit configured to control a clock signal such that said clock signal is driven at a first frequency when said in-service register is set and wherein said clock signal is driven at a second frequency during a power conservation mode, and wherein said power management unit further includes a programmable timer coupled to said clock control unit, wherein said programmable timer controls a time period between a time at which said in-service register has cleared and a time at which said clock control unit causes said clock signal to be driven at said second frequency and wherein said in-service register is cleared in response to an end-of-interrupt command executed by said microprocessor.

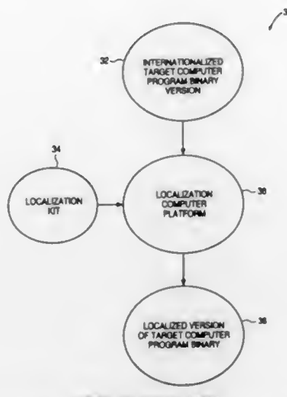
5,664,206

METHOD AND APPARATUS FOR AUTOMATING THE LOCALIZATION OF A COMPUTER PROGRAM

Jaime Murow, Cupertino; Gary D. Hethcoat, Santa Clara; Richard J. Kwan, Fremont, and Hideki Hiura, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 181,712, Jan. 14, 1994. This application Mar. 17, 1995, Ser. No. 407,152
Int. Cl.[6] G06F *17/20*
U.S. Cl. 704—8 **35 Claims**

1. A system for localizing a target computer program, said system comprising:



GENERAL LOCALIZATION PROCESS

a computer system having a central processing unit ("CPU"), a memory and an input and an output device;

an executable binary version of a target computer program loaded in said memory of said computer system: and

a localization kit loaded in said memory of said computer system, said localization kit comprising an integrated set of tools, said localization kit for use by a user of said computer system to localize a portion of said target computer program into a language different from said target computer program's language, said portion of said target computer program comprising at least two of the following: error messages, button labels, menu items, text in icons, locale specific data for formatting time, currency or sort order; said localization kit also for use by said user to bind a binary version of said localized portion with said executable binary version of said target computer program to produce a localized version of said executable binary version of said target computer program.

5,664,207

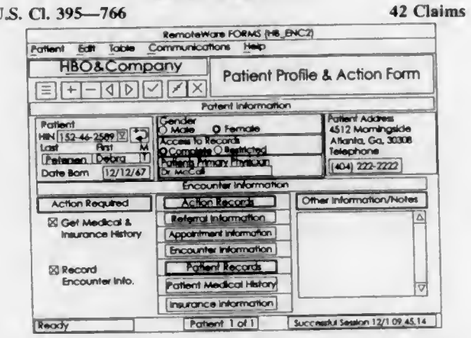
SYSTEMS AND METHODS FOR AUTOMATICALLY SHARING INFORMATION AMONG REMOTE/MOBILE NODES

Dennis M. Crumpler; Robert B. Estes, both of Atlanta, and Kirby Bryan Jackson, Jr., Decatur, all of Ga., assignors to XcelleNet, Inc., Atlanta, Ga.

Filed Dec. 16, 1994, Ser. No. 358,106

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—766 **42 Claims**



1. A method for automatically sharing information among a plurality of remote/mobile data processing nodes which are temporarily and intermittently linked to a data processing server for communication therebetween, said automatic information sharing method comprising the steps of:

placing an information form for entering information from a user at a remote/mobile data processing node, on said server;

identifying said form as being sharable;

assigning a form distribution list to said form to identify users corresponding to first remote/mobile nodes;

establishing a remote/mobile communications link to at least one node of said first remote/mobile nodes;

automatically transferring said form to said at least one node of said first remote/mobile nodes, in response to establishment of the remote/mobile communications link to said at least one node of said first remote/mobile nodes;

disconnecting said remote/mobile communications link from said at least one node of said first remote/mobile nodes;

accepting user entry of information into said form at a second remote mobile node selected from said first remote/mobile nodes to thereby create an instance of said form at said second remote/mobile node;

assigning an instance distribution list to said instance of said form to identify users corresponding to third remote/mobile nodes selected from said first remote/mobile nodes;

establishing a remote/mobile communications link between said second node and said server;

automatically transferring said instance of said form to said server, in response to establishment of the remote/mobile link between said second node and said server;

disconnecting said remote/mobile communications link between said second node and said server;

establishing a remote/mobile communications link between said server and at least one node of said third remote/mobile nodes;

automatically transferring said instance from said server to said at least one node of said third remote/mobile nodes, in response to establishment of the remote/mobile link between said server and said at least one node of said third remote/mobile nodes; and

disconnecting said remote/mobile communications links between said server and said at least one node of said third remote/mobile nodes.

5,664,208

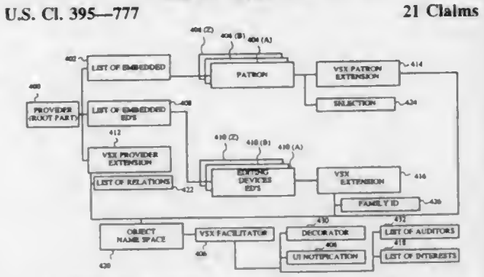
METHODS AND APPARATUSES FOR SEAMLESS COMPOUND DOCUMENT PROCESSING

John Franklin Pavley, Cupertino; John Benton Turner, II, and Gary Stephen Hanson, both of Mountain View, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 16, 1995, Ser. No. 441,946

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—777 **21 Claims**



1. A compound document in a computer, comprising:

a first object editor embedded in said compound document for rendering first data in a first data content area of said compound document;

a second object editor embedded in said compound document for rendering second data in a second data content area of said compound document, said first data content area and said second data content area being mutually exclusive;

a plurality of editing controllers embedded in said compound document for selectively editing attributes of a selection of one of said first and second data, said editing controllers being displayed in a UI container that does not substantially change in appearance when said first or said second object editor is a focus of user operation; and

a data switching system for communicating attribute data between said editing controllers and said first and second object editors, said attribute data representing said attributes of said selection, wherein said data switching system determines which one of said plurality of editing controllers receives said attribute data based on interest registered by each of said plurality of editing controllers with said data switching system.

5,664,209

DOCUMENT PROCESSING APPARATUS FOR PROCESSING INFORMATION HAVING DIFFERENT DATA FORMATS

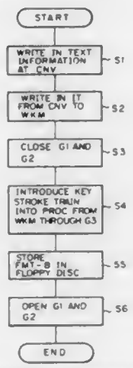
Hiroyuki Ueda, Yokohama, and Yasuaki Yamada, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 965,566, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 644,748, Jan. 23, 1991, abandoned, which is a continuation of Ser. No. 157,145, Feb. 11, 1988, abandoned, which is a continuation of Ser. No. 704,600, Feb. 25, 1985, abandoned. This application Apr. 21, 1995, Ser. No. 427,716

Claims priority, application Japan, Feb. 29, 1984, 59-35949

Int. Cl.[6] G06F *17/21*

U.S. Cl. 395—785 **6 Claims**



1. A method of converting document data in a second format in which character data corresponding to character key stroke data and control data corresponding to command key stroke data and prescribing the arrangement of the character data are incorporated in an order independent of the order of entering the character key stroke data and the command key stroke data, to document data in a first format in which space data are inserted to shift and position of the character data in accordance with the arrangement prescribed by the command data which is not included in the document data in the first format, in a document processing apparatus which inputs key stroke data by a keyboard, processes the key stroke data including character key stroke data and command key stroke data representing command data prescribing the arrangement of character data to prepare document data in the first format by a processor and stores the prepared document data in the first format in a first memory of the apparatus, said method comprising the steps of:

reading out the document data in the second format from a second memory;

interpreting control data in the readout document data and determining a range of character data in the readout document data to be arranged in accordance with the control data;

converting the character data in the determined range to character key stroke data corresponding to the character data and converting the control data to command key stroke data corresponding to the control data;

setting the command key stroke data and the character key stroke data in the order that said command and character key stroke data would have been entered by the keyboard;

providing the key stroke data obtained by said converting step to the processor for processing the key stroke data to prepare document data in the first format while prohibiting the keyboard from inputting key stroke data to the processor; and

storing the prepared document data in the first format in the first memory.

5,664,210

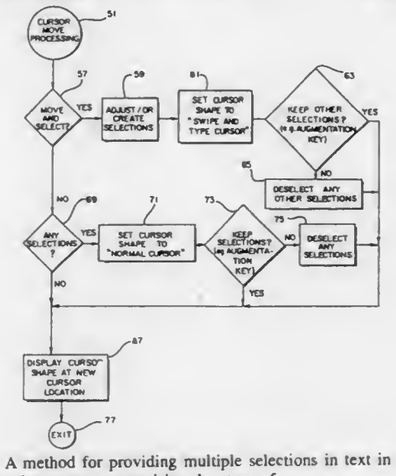
METHOD AND SYSTEM OF PROVIDING MULTIPLE SELECTIONS IN TEXT ON A COMPUTER DISPLAY

Stephen S. Fleming, Dallas, and Robert J. Torres, Colleyville, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1991, Ser. No. 746,680

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—793 **13 Claims**



1. A method for providing multiple selections in text in a data processing system, comprising the steps of:

a) displaying text and a first cursor on an interface means for interfacing with an operator, said first cursor indicating where a text input into said data processing system is to be inserted on said interface means;

b) detecting a selection input from said operator, said selection input selecting a portion of text on said interface means;

c) displaying said selected portion of text with emphasis on said interface means;

d) changing said first cursor to a second cursor and displaying said second cursor on said interface means at said selected emphasized portion of text, said second cursor being displayed in addition to said emphasized portion of text.

5,664,211

NULL CONVENTION THRESHOLD GATE

Gerald Sobelman, Minnetonka, and Karl Fant, Minneapolis, both of Minn., assignors to Theseus Research, Inc., St. Paul, Minn.

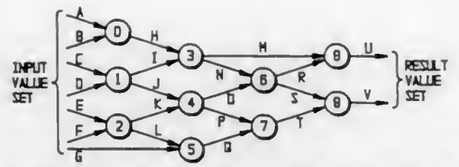
Continuation-in-part of Ser. No. 220,636, Mar. 31, 1994, which is a continuation of Ser. No. 74,288, Jun. 8, 1993, Pat. No. 5,305,463. This application Oct. 5, 1994, Ser. No. 318,510

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—141 **32 Claims**

1. An N-of-M NULL convention threshold gate comprising:

a plurality M of input signal lines, each line having an asserted state and a NULL state;



an output signal line having an asserted state and a NULL state;

a hysteresis circuit switching the output signal line from the NULL state to the asserted state when a threshold number N of input signal lines change from the NULL state to the asserted state, N being less than M, and holding the output signal line in an asserted state until all input signal lines return to NULL.

5,664,212

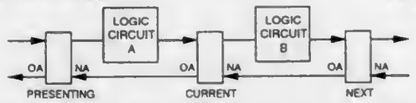
NULL CONVENTION LOGIC SYSTEM

Karl M. Fant, and Scott A. Brandt, both of Minneapolis, Minn., assignors to Theseus Research, Inc., St. Paul, Minn.

Continuation of Ser. No. 74,288, Jun. 8, 1993, Pat. No. 5,305,463, which is a continuation of Ser. No. 702,016, May 11, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 220,636

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—141 **36 Claims**



1. A null convention threshold element in a null convention circuit, signals in the null convention circuit characterized by having a discrete number of allowed values including at least a null value and a non-null value, the threshold element, comprising:

an output interface presenting a null convention output signal,

a feedback-input interface receiving the null convention output signal, and

a plurality of data-input interfaces, each receiving an input null convention signal;

wherein the threshold element switches the output signal according to a set of transform rules specifying that:

1) the output signal switches from a null value to non-null value when the number of non-null signals presented to the data-inputs exceeds a threshold value,

2) the output signal switches from a non-null value to a null value when all signals presented to the data-inputs are null signals, and

3) there is at least one condition for which the number of non-null signals presented to the data-inputs is less than the threshold value and the output signal retains a non-null value.

5,664,213

INPUT/OUTPUT (I/O) HOLDOFF MECHANISM FOR USE IN A SYSTEM WHERE I/O DEVICE INPUTS ARE FED THROUGH A LATENCY INTRODUCING BUS

James C. Steele, Chandler; Gary D. Hicok, Mesa; David R. Evoy, Tempe; Gary A. Walker, Phoenix; Joseph A. Thomsen, Gilbert, and Lonnie C. Goff, Tempe, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 187,960, Jan. 28, 1994, Pat. No. 5,475,854. This application Jul. 20, 1995, Ser. No. 504,936

Int. Cl.[6] G06F *13/00*

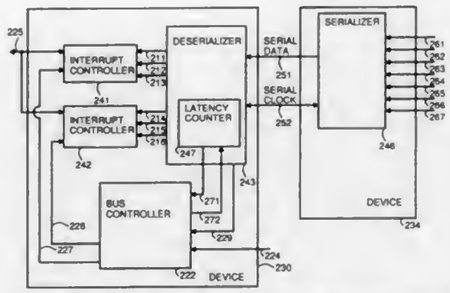
U.S. Cl. 395—837 **21 Claims**

11. A system comprising:

a serial bus;

an I/O device, coupled to the serial bus, including,

at least one request pin, and



indicating means for responding to a voltage transition occurring on a request pin of the I/O device by forwarding in a first packet over the serial bus an indicator, the indicator indicating a current value for a voltage on the request pin of the I/O device on which the voltage transition occurred; and

a controller device, coupled to the serial bus, including,

a deserializer, the deserializer receiving the first packet and outputting a signal which indicates a current voltage value on the request pin on which the voltage transition occurred, the deserializer including a means for indicating when the deserializer is busy and when the deserializer is idle,

a counter which, when started, issues a finished signal when the counter has counted a sufficient amount of clock cycles to allow any voltage transition occurring on any request pin of the I/O device to result in a signal being generated by the deserializer, and

a bus controller, coupled to the deserializer and to the counter, the bus controller responding to a request from a host system for the current value on the first request pin of the I/O device, by forwarding to the host system a current value for a voltage on the indicated request pin as indicated by the deserializer when the deserializer is not busy, wherein when the deserializer is busy, the bus controller responds to the request from the host system for the current value on the first request pin of the I/O device, by starting the counter, and upon the counter issuing the finished signal or upon the deserializer becoming idle, whichever first occurs, forwarding to the host system the current value for the voltage on the indicated request pin as indicated by the deserializer.

5,664,214

PARALLEL PROCESSING COMPUTER CONTAINING A MULTIPLE INSTRUCTION STREAM PROCESSING ARCHITECTURE

Herbert Hudson Taylor, Pennington; Joseph Edward Peters, Jr., East Brunswick, and Danny Chin, Princeton Jct., all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Continuation of Ser. No. 228,467, Apr. 15, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 605,459

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800.2 **20 Claims**

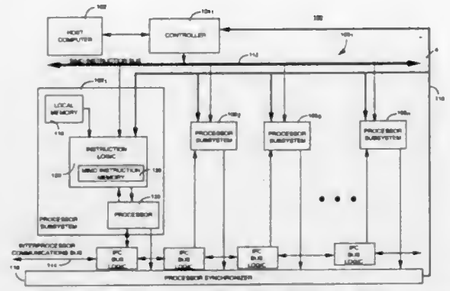
1. In a parallel processing computer having a plurality of processor subsystems interconnected by an instruction bus for carrying a composite instruction stream containing first type instructions and second type instructions, where each processor subsystem contains apparatus comprising:

means, connected to said bus, for extracting said second type instructions from said composite instruction stream;

a second type instruction memory for storing said second type instructions as the second type instructions are extracted from said composite instruction stream;

a local memory for storing second type instructions; and

a local memory multiplexor, connected to said local memory and said extracting means, for selecting whether said second



type instructions from said bus are stored in said second type instruction memory or said second type instructions from said local memory are stored in said second type instruction memory.

5,664,215

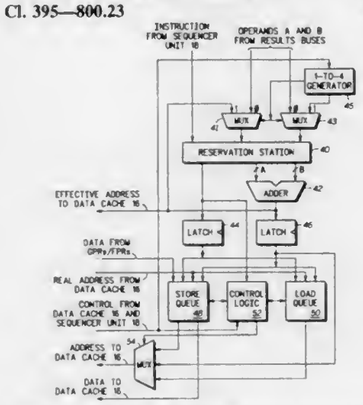
DATA PROCESSOR WITH AN EXECUTION UNIT FOR PERFORMING LOAD INSTRUCTIONS AND METHOD OF OPERATION

David P. Burgess; Marvin Denman; Milton M. Hood, Jr., all of Austin; Mark A. Kearney, Dallas, all of Tex.; Lavanya Kling, Palo Alto, Calif.; Graham R. Murphy, and Seungyoon Peter Song, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill., and IBM, Armonk, N.Y.

Continuation of Ser. No. 255,271, Jun. 3, 1994, abandoned. This application Mar. 27, 1996, Ser. No. 622,159

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800.23 **20 Claims**



1. A data processor with an execution unit for performing load instructions, the data processor comprising:

a plurality of architectural registers;

a rename buffer coupled to the plurality of architectural registers, the rename buffer comprising a plurality of entries, each one of the plurality of entries buffering a differing one of a plurality of results of a differing one of a plurality of instructions, the rename buffer updating the contents of the plurality of architectural registers according to a predetermined order;

a load unit coupled to the rename buffer, for each load instruction-tag pair dispatched to it, the load unit requesting data indexed by an address from a memory system and buffering the data in one of the plurality of entries of the rename buffer indexed by a tag, the load instruction-tag pair comprising the tag identifying one of the plurality of entries of the rename buffer; and

a sequencer unit coupled to the load unit, the sequencer unit receiving a load multiple instruction, the load multiple instruction requesting N*W bytes, where N and W are integers, where N is greater than one, and where each one of the plurality of architectural registers is W bytes in size, the sequencer unit dispatching a differing one of the N load instruction tag-pairs to the load unit as one of the plurality of entries is made available for use by the completion of a non-complex instructions.

5,664,216

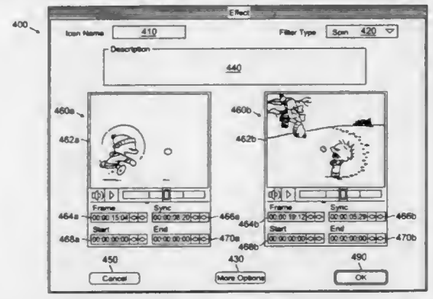
ICONIC AUDIOVISUAL DATA EDITING ENVIRONMENT

Trevor Blumenau, 2537 Regent St., Suite 204, Berkeley, Calif. 94704

Continuation of Ser. No. 215,897, Mar. 22, 1994, abandoned. This application May 28, 1996, Ser. No. 653,830

Int. Cl.[6] G06F *9/44*

U.S. Cl. 345—302 **56 Claims**



1. An iconic audiovisual data editing system operable in conjunction with a general purpose computer, comprising:

a visual display providing a working area capable of receiving icons and symbols thereon;

a first icon generated by said system and capable of being placed on said working area and symbolizing an audiovisual data transformation process performable by said system, said first icon having a first input portion representing a first process input and an output portion representing a process output, said first process input capable of receiving a first electrical input signal representing a first audiovisual datum, said process transforming said first input signal to produce an electrical output signal at said process output representing a transformation of said first audiovisual datum, said first icon further having synchronization data associated therewith to allow said process input to be synchronized independent of an operation of said process; and

a first audiovisual data flow symbol generated by said system and capable of being placed on said working area, symbolizing a communication of audiovisual data between icons and thereby representing a communication of an electrical signal between audiovisual data transformation processes performable by said system, said first icon and said first symbol freely movable on said working area to symbolize a flow of said first audiovisual datum as a function of a relative location of said first icon and said first symbol on said working area.

5,664,217

METHOD OF AVOIDING PHYSICAL I/O VIA CACHING WITH PRIORITIZED LRU MANAGEMENT

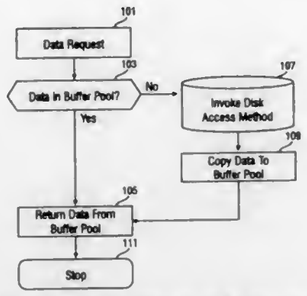
William Russell Cunningham, and Michael Laurie Perry, both of Austin, Tex., assignors to BMC Software, Inc., Houston, Tex.

Filed Aug. 3, 1993, Ser. No. 102,084

Int. Cl.[6] H01J *3/00*

U.S. Cl. 395—821 **9 Claims**

4. A method of processing a read request in an MVS computer system having a data storage system and a media manager vector table,



said media manager vector table having an entry, referred to as a read/write table entry, containing an address of a series of instructions for performing a read/write service, referred to as a read/write routine,

said read request being generated by a calling process requesting that control be passed to the read/write routine to copy data from a specified data set on a storage medium to a buffer, referred to as a calling process buffer,

said method being executed by a process in the computer system, referred to as a manager process, and comprising:

(a) providing, in the read/write table entry, an address comprising the address of a processing routine of the manager process in place of the address of the read/write routine,

(b) providing, in a storage device in the computer system:

(1) a data structure containing information about one or more data sets being managed by the manager process, referred to as a data set table, and

(2) a directory containing one or more entries respectively corresponding to data blocks in the data sets being managed by the manager process, and

(3) a cache containing copies of the data blocks having entries in the directory;

(c) receiving the read request in response to the calling process's request that control be passed to the read/write routine;

(d) testing whether some or all of the following conditions are true:

(1) the calling process is being managed by the manager process,

(2) the specified data set is listed in the data set table, and

(3) the specified data set is being actively cached by the manager process;

(e) if all of the conditions recited in paragraph (d) are true, then:

(1) removing, from the directory of data blocks, one or more entries respectively corresponding to one or more data blocks responsive to the read request, referred to as the requested data blocks;

(2) attempting to copy the requested data blocks from the cache to the calling process buffer;

(3) replacing the data entries for the requested data blocks in the directory of data blocks;

(4) if (A) the manager process is in a simulate mode, or (B) the attempt to copy the requested data blocks from the cache to the calling process buffer was not successful, then (x) passing control to the read/write routine to copy the requested data blocks from the storage medium to the calling process buffer, (y) when the read/write routine reports that the copying is complete, copying the requested data blocks to the cache, and (z) notifying the calling process that the processing of the read request is complete;

(5) if (A) the manager process is not in a simulate mode and (B) the attempt to copy the requested data blocks from the cache to the calling process was successful, then (x) dispatching a service request block to branch to a termination routine of the calling process and (y) returning control to the calling process.

5,664,218

INTEGRATED MULTIMEDIA INPUT/OUTPUT PROCESSOR

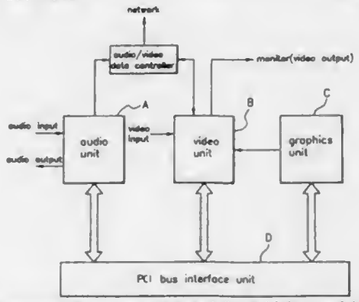
Hyun-Ki Kim; Ok-Keun Shin; Ha-Jae Chung, and Jin Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Dec. 5, 1994, Ser. No. 353,262

Claims priority, application Rep. of Korea, Dec. 24, 1993, 93-29631

Int. Cl.[6] H04N *7/15;* **G06F** *17/00;3/14*

U.S. Cl. 395—821 **14 Claims**



1. An integrated multimedia board for a high speed local bus comprises:

a video unit which receives analog video data of a still image or a motion image and which includes means for compressing/decompressing said analog video data in real time and outputting the compressed/decompressed result to a monitor;

an audio unit which includes means for recording and reproducing audio data that represents a sound and for providing an audio output signal, compressing/decompressing the audio data, and synthesizing a sound source, wherein said audio unit comprises:

a first audio compression/decompression processor which converts analog data to digital data and vice versa, and which mixes said analog data with a compression/decompression algorithm;

a second audio compression/decompression processor which provides a compression/decompression algorithm of the audio digital data;

a processor connector which provides a serial port for communication of data of said first audio compression/decompression processor;

an audio synthesizer synthesizing the sound source;

a mixer and an amplifier for mixing and amplifying the audio output signal; and

an audio video data controller for controlling and managing the audio and video data;

a graphics unit for outputting the image and performing graphics processing; and

a host interface unit transmitting and receiving multimedia data to and from said video unit, audio unit and graphics unit at a high speed.

5,664,219

METHOD AND SYSTEM FOR CONTROLLING SERVICABILITY OF ADAPTERS CONNECTED BY AN I/O CHANNEL INTERFACE TO A COMPUTER SYSTEM

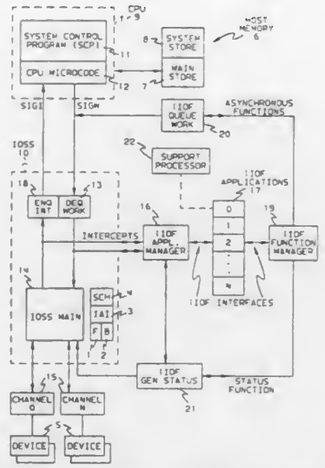
Steven Gardner Glassen, Wallkill; Marten Jan Halma, Poughquag, and John Scott Trotter, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,421

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—825 **13 Claims**

1. A method of remotely providing service control functions for any number of I/O adapters to be serviced by remote service



hardware (SPE), I/O adapters connected by one or more I/O channels to an I/O subsystem (IOSS) of a computer system, wherein the method eliminates a need for additional service hardware for supporting the adapters by enabling service control functions for any I/O adapter to be controlled by the remote service hardware, the method comprising the steps of:

structuring for an internal I/O facility (iIOF) of an IOSS at least one microcoded service support SS subchannel control block (SS subchannel) of the IOSS for each I/O adapter, each I/O subchannel containing at least one interception control field (B) for controlling initiation of execution of a microcoded iIOF application (IA) in response to an associated interrupt signal provided by an associated I/O adapter, and at least one application entry pointer field (IAI) for identifying and locating an execution entry point in a microcoded iIOF application, and setting field B to an active state for diverting I/O adapter operations using the SS subchannel,

sensing the active state of field B by an IOSS process when an I/O adapter interrupt signal is provided for status information to cause the SS subchannel to be taken for processing by the IOSS,

locating a microcoded iIOF application (IA) process of the iIOF at the execution entry point addressed by an address derived from the IAI field, and

starting execution of the IA at the execution entry point to execute a control operation that transfers control signals from the IOSS to the SPE to communicate status information of the I/O adapter by generating and storing status information from an SS subchannel based on an SS condition resulting from an SPE command or an I/O adapter operation.

5,664,220

INFORMATION TRANSMISSION/RECEPTION SYSTEM FOR TRANSMITTING INFORMATION TO REQUESTERS, WHERE IT IS RECORDED, IN RESPONSE TO A PLURALITY OF REQUESTS

Shigeyuki Itoh, Kawasaki, and Iwao Aizawa, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 297,492

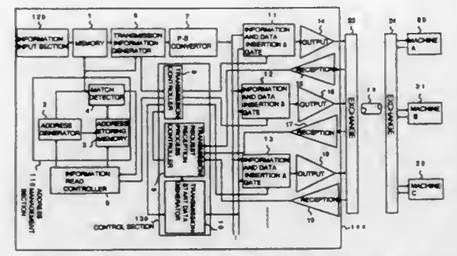
Claims priority, application Japan, Aug. 31, 1993, 5-215914

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—826 **16 Claims**

1. An information transmission/reception system including an information transmission apparatus for transmitting information, and a plurality of information reception apparatuses for receiving said information, each of said information transmission apparatuses comprising:

a record media for recording the information;



a read means for reading the information recorded on said record media;

an address management means for specifying addresses of the information to be read by said read means;

a plurality of reception means for receiving requests for transmission of the information recorded on said record media;

a generation means for generating transmission information by adding address information corresponding to the address specified by said address management means to the information read from said record media by said read means;

a plurality of transmission means for sequentially transmitting the transmission information to which the address information is added by said generation means; and,

a control means for controlling transmission of the information from said plurality of transmission means in accordance with reception of transmission requests at each of said plurality of reception means;

each of said plurality of information reception apparatuses comprising:

a transmission means for transmitting a request for transmitting the information recorded on said record media to said information transmission apparatus;

a reception means for receiving said transmission means of said information transmission apparatus;

a record media for recording said transmission information received at said reception means of said information reception apparatus; and,

registering means for registering said transmission information received at said reception means of said information reception apparatus on said record media of the reception apparatuses based on the address information added to said transmission information;

wherein said address management means comprises:

an address generation means for sequentially generating the addresses in such a manner that the address generating means sequentially generates from a top address to an end address of the information and then returns to the top address for again generating the addresses sequentially until an instruction for terminating the specification of the addresses is issued;

a register which, while the information is being transmitted to a first one of said information reception apparatuses through the first transmission means of said plurality of transmission means, upon receipt of a request to transmit the same information from a second one of said information reception apparatuses, holds a transmission start address of the information transmitted to the second information reception apparatus; and,

a comparison means for comparing each address of the information read by said read means with the address held in said register for detecting a match therebetween;

wherein while the information is being transmitted to the first information reception apparatus through the first transmission means, upon receipt of a request to transmit the same information from the second information reception apparatus, said control means of said information transmission apparatus controls the second transmission means so as to transmit the information to the second information reception apparatus starting at a current point at which the information is being transmitted to the first information reception apparatus through the first transmission means, and when said compari-

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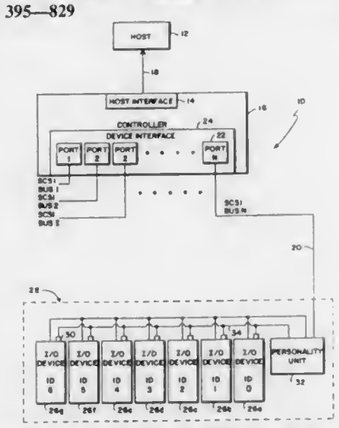
son means detects a match between the addresses, said control means instructs said address generation means to terminate the generation of the address, for terminating the transmission of the information to the second information reception apparatus.

5,664,221

SYSTEM FOR RECONFIGURING ADDRESSES OF SCSI DEVICES VIA A DEVICE ADDRESS BUS INDEPENDENT OF THE SCSI BUS

Mark F. Amberg, Littleton; William K. Miller; Frank M. Nemeth, both of Colorado Springs, and Dwayne H. Swanson, Westminster, all of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 14, 1995, Ser. No. 557,473
Int. Cl.[6] G06F *13/10;9/00*
U.S. Cl. 395—829 **3 Claims**



1. A system for reconfiguring device addresses comprising:
a small computer interface (SCSI) bus;
devices interconnected on the SCSI bus, the devices each having a SCSI bus address by which the device is identified and set with default bus address information representing the SCSI bus address;
a device address bus independent of the SCSI bus, the device address bus including address lines, each of the address lines being coupled to the default bus address information in at least one of the devices; and
a bus address selector coupled to the device address bus and responsive to user input, the bus address selector selecting at least one address line in response to user input to change the default bus address information associated with each device connected to the selected address line.

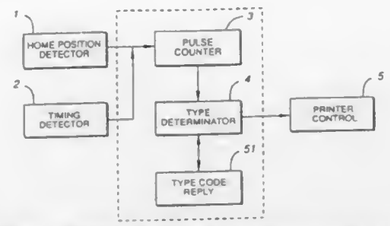
5,664,222

SYSTEM FOR AUTOMATICALLY DETERMINING PRINTER TYPE USING DURATION OF TIMING SIGNALS OF PRINTER HEAD TRAVELING BETWEEN FIRST AND SECOND REFERENCE POSITIONS

Tadashi Inakoshi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 788,020, Nov. 9, 1991, abandoned. This application Nov. 4, 1994, Ser. No. 334,637
Claims priority, application Japan, Nov. 8, 1990, 2-303525; Sep. 27, 1991, 3-249165
Int. Cl.[6] H01J *3/00*
U.S. Cl. 395—836 **22 Claims**

1. A printer, comprising:
means for printing, said printing means including at least one print head;



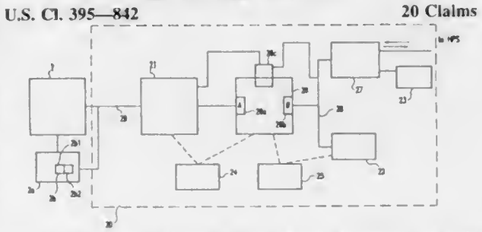
means for causing the print head to move between first and second reference points;
means for detecting in a non-contacting manner whether the print head has traveled from the first reference point to the second reference point by providing a first timing signal upon detection that the print head is at the first reference point, and providing a second timing signal upon detection that the print head is at the second reference point;
means, responsive to said detecting means, for measuring the duration of the movement of said print head between the first and second reference points in accordance with the first and second timing signals; and
means for determining the model type of said printer on the measured duration.

5,664,223

SYSTEM FOR INDEPENDENTLY TRANSFERRING DATA USING TWO INDEPENDENTLY CONTROLLED DMA ENGINES COUPLED BETWEEN A FIFO BUFFER AND TWO SEPARATE BUSES RESPECTIVELY

Carl A. Bender; Gerard M. Salem, both of Highland; Richard A. Swetz, Mount Kisco; Singpui Zee, Kingston, all of N.Y., and Ben J. Nathanson, Teaneck, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1994, Ser. No. 223,144
Int. Cl.[6] G06F *3/00;13/28*
U.S. Cl. 395—842 **20 Claims**



1. An adaptor for transferring data between a channel of a main processor and a duplex channel, said adaptor comprising:
a first bus coupled to said main processor channel;
a bidirectional first-in-first-out (FIFO) buffer coupled between said first bus and said duplex channel, said FIFO buffer having a first port connected to said first bus and a second port connected to said duplex channel;
a microprocessor, coupled to said second port of said FIFO buffer and to said duplex channel, for packetizing and depacketizing messages from and to the main processor and for implementing communications protocol;
a second bus connected to said microprocessor;
a dynamic random access memory (DRAM) operatively coupled to said second bus;
a first direct memory access (DMA) engine coupled between said first bus and said FIFO buffer for transferring data between said main processor and said FIFO buffer, wherein said first DMA engine operates independently of said microprocessor;

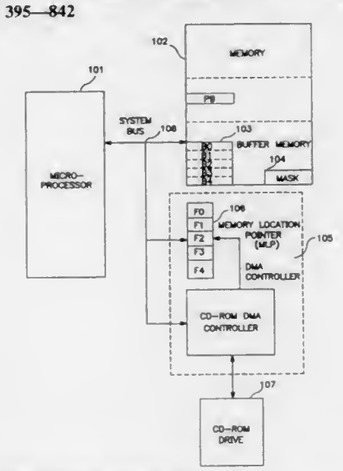
a second direct memory access (DMA) engine coupled between said FIFO buffer and said second bus for transferring data between said FIFO buffer and said DRAM; and
a memory switch management unit (MSMU), operatively coupled between the microprocessor and said duplex channel, for interfacing said second bus to said duplex channel,
wherein messages are communicated between said microprocessor and said duplex channel in accordance with said communication protocol, and
wherein DMA transfers of data for said messages are made by said first DMA engine independently of DMA transfers made by said second DMA engine, said first DMA engine and said second DMA engine being independently controlled.

5,664,224

APPARATUS FOR SELECTIVELY LOADING DATA BLOCKS FROM CD-ROM DISKS TO BUFFER SEGMENTS USING DMA OPERATIONS

Hedley Davis, Freemont, Calif., assignor to Escom AG, Heppenheim, Germany

Continuation of Ser. No. 96,339, Jul. 23, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 573,649
Int. Cl.[6] G06F *13/28*
U.S. Cl. 395—842 **8 Claims**



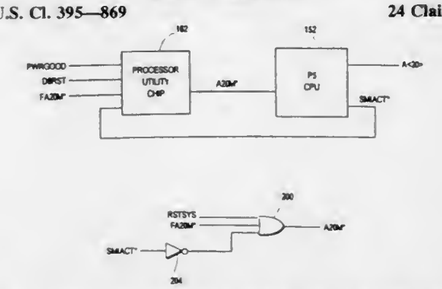
5. A data processing system comprising:
(a) a central process unit for receiving requests for data from a CD-ROM device,
(b) a buffer memory having a plurality of segments for storing data in a main memory,
(c) a memory location pointer having a plurality of bits, wherein each of the plurality of bits corresponds to a respectively different one of said plurality of segments,
(d) said central processing unit including means for writing binary data values into said memory location pointer, wherein said binary data values indicate availability of each of said plurality of segments for data transfer, and
(e) a DMA controller unit which includes:
means for managing a direct memory access by directly reading blocks of data from the CD-ROM device and for transferring the blocks of data into selected ones of said plurality of segments responsive to the corresponding bits of the memory location pointer, and
means for changing the binary values corresponding to the segments into which the blocks of data were stored to indicate that the segments are currently not available for data transfer.

5,664,225

CIRCUIT FOR DISABLING AN ADDRESS MASKING CONTROL SIGNAL WHEN A MICROPROCESSOR IS IN A SYSTEM MANAGEMENT MODE

Basem Abu Ayash, Houston, and Gary W. Thome, Tomball, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 34,300, Mar. 22, 1993, Pat. No. 5,509,139. This application Oct. 27, 1995, Ser. No. 524,799
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—869 **24 Claims**



1. A system management mode address correction system for a computer having a microprocessor, the microprocessor having n address outputs and a register having n bits for providing values to the n address outputs, the n address outputs having a rollover effect as the values are incremented, the microprocessor further having an address mask for masking at least one of the n address outputs when a mask signal is received so that as the values are incremented the values at the n address outputs simulate the rollover effect of a register having less than n bits and wherein the microprocessor can operate in a system management mode which utilizes all n bits of the n address outputs, the system management mode address correction system comprising:
a masking control signal generator operable to selectively provide the mask signal to the microprocessor;
a detector coupled to the microprocessor, said detector providing a system management mode indication while the microprocessor is operating in system management mode; and
a gating device receiving the mask signal and responsive to the detector, said gating device operable to block the mask signal to the address mask if the system management mode indication is provided and pass the mask signal to the address mask if the system management mode indication is not provided.

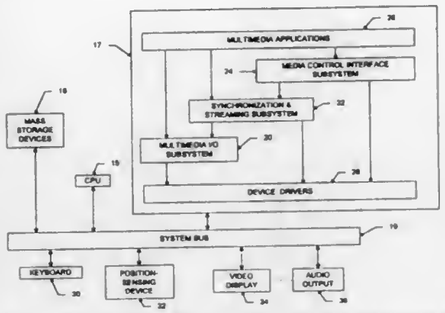
5,664,226

SYSTEM FOR MERGING PLURALITY OF ATOMIC DATA ELEMENTS INTO SINGLE SYNCHRONIZED FILE BY ASSIGNING OUPUT RATE TO EACH CHANNEL IN RESPONSE TO PRESENTATION TIME DURATION

Brian Matthew Czako, Royal Palm Beach; William Wallis Lawton, Boca Raton; Susan Ann O'Loughlin, Tamarac, and Werner Leland Sharp, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1994, Ser. No. 302,162
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—872 **16 Claims**

1. Apparatus for dynamically interleaving multiple streams of multimedia data into a single, integrated data file, said apparatus comprising:
a plurality of sources of visual or audio data collectively representative of a presentation having a temporal flow pattern, the data from each of said plurality of sources originating as an ordered series of atomic data elements, each representative of a visual or audio presentation time segment, wherein atomic data elements from each diverse source of visual or audio data comprise different amounts of data;



at least one memory buffer associated with each data source for accumulating presentation data in a manner that preserves the temporal flow pattern;

handler means for obtaining data from each data source and storing the data in said at least one memory buffer associated with each data source and for extracting data from said at least one buffer as a separate data stream when a specified number of buffers for that data source have been filled, said specified number relating to an amount of data within each atomic data element from that data source;

synchronization means for temporally aligning the data streams, said synchronization means comprising:

multi-channel input means for accepting a data stream for each data source from said handler means;

means for determining, for each data stream, a presentation time duration associated with each atomic data element;

variable-rate, multi-channel output means for transmitting each accepted data stream at a streaming rate; and

control means for assigning an output rate to each output channel in response to a determined presentation time duration such that the streaming rates correspond to equivalent output rates of presentation time segments; and

means for merging the synchronized data into a single integrated data file.

5,664,227

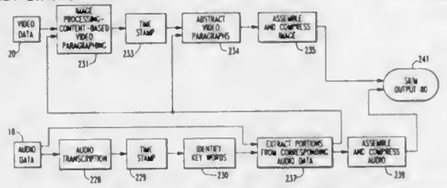
SYSTEM AND METHOD FOR SKIMMING DIGITAL AUDIO/VIDEO DATA

Michael L. Mauldin, Penn Hills; Michael A. Smith, Pittsburgh; Scott M. Stevens, Pittsburgh; Howard D. Wactlar, Pittsburgh; Michael G. Christel, Wexford, and D. Raj Reddy, Pittsburgh, all of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Oct. 14, 1994, Ser. No. 324,079

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—778 **18 Claims**



1. A method for skimming digital audio and video data wherein the video data is partitioned into video segments and the audio data has been transcribed, said method comprising:

selecting at least one representative frame from each of the video segments;

combining said representative frames to form an assembled video sequence;

identifying keywords contained in the transcribed audio data;

extracting those portions of the audio data identified as keywords;

assembling an audio track from said extracted audio data; and

outputting said assembled video sequence in conjunction with said assembled audio track.

5,664,228

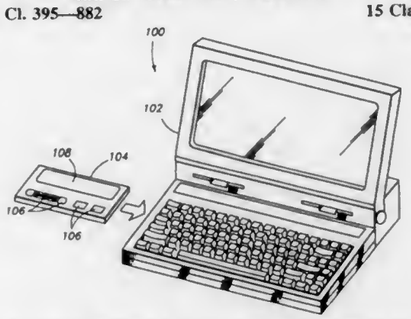
PORTABLE INFORMATION DEVICE AND SYSTEM AND METHOD FOR DOWNLOADING EXECUTABLE INSTRUCTIONS FROM A COMPUTER TO THE PORTABLE INFORMATION DEVICE

Amit Mital, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Aug. 9, 1995, Ser. No. 512,823

Int. Cl.[6] G06K *19/07;* **G06F** *13/00*

U.S. Cl. 395—882 **15 Claims**



1. A portable information device configured to receive executable instructions from a computer via a PCMCIA port, the portable information device comprising:

a protective encasing having a form factor compatible with the PCMCIA port, the encasing being insertable into and removable from the PCMCIA port;

I/O connectors positioned at one end of the encasing to interface with corresponding connectors provided in the PCMCIA port of the computer;

an input mechanism accessible from an exterior of the protective encasing to permit a user to enter information when the encasing is removed from the PCMCIA port, the input mechanism being within the form factor of the protective encasing;

a memory provided within the protective encasing;

a processor operatively coupled to the memory and to the I/O connectors, the processor receiving executable instructions and/or data from the computer via the PCMCIA port when the encasing is inserted into the PCMCIA port, the processor loading the executable instructions and/or data into the memory; and

the processor also being coupled to receive the information entered by the user on the input mechanism when the encasing is removed from the PCMCIA port, the processor operating on the information according to the executable instructions stored in the memory.

5,664,229

ACCESSORY FOR CONVERSION WITH HOUSING WITH FIRST CONNECTION INCLUDES HOST CABLE AND HOST CONNECTOR AND SECOND CONNECTION INCLUDING A PLUG-IN MODULAR CONNECTOR

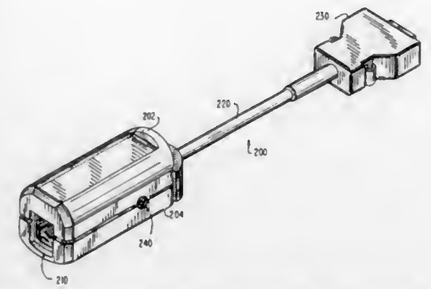
Vikram Bhargava, Coram; Daniela Stratienco, Patchogue, and Timothy Kehoe, Smithtown, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed May 18, 1995, Ser. No. 443,849

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—885 **5 Claims**

1. An accessory for interconnecting a scanning head for electro-optically reading coded symbols and for transmitting decoded signals along a head cable connected to the head, and a host device



having a data processor with a predetermined data exchange format for receiving the decoded signals, comprising:

a housing located externally of the scanning head and the host device;

first connection means on the housing for detachable connection to the host device wherein said first connection means includes a host cable having one end fixedly connected to said housing, and a host connector at an opposite end of the host cable;

second connection means including a plug-in modular connector on the housing and accessible at an exterior surface of said housing for detachable connection to the head cable;

conversion means within the housing connected to both connection means in a condition of use, and operative for converting the decoded signals from the scanning head into digital data signals having a format compatible with the predetermined data exchange format of the host device; and

said housing and both connection means being mechanically interconnected as a portable, unitary assembly separate from the scanning head and the host device when not is said condition of use.

5,664,230

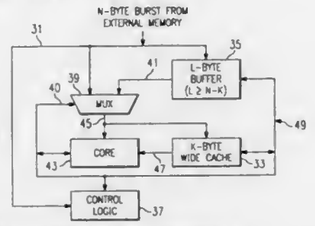
DATA PROCESSING WITH ADAPTABLE EXTERNAL BURST MEMORY ACCESS

Thomas A. Leyrer, Freising, Germany, and Steven D. Sabin, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1995, Ser. No. 451,645

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—886 **7 Claims**



5. A data processing device, comprising:

a data processing core;

a cache connected to said core and having a cache width;

a bus for receiving a burst of information which originates externally of said data processing device and which has a width that exceeds said cache width by a width difference;

said cache coupled to said bus to take therefrom and store a first portion of the burst which is equal in width to said cache width;

a storage circuit coupled to said bus to receive and store a second portion of said burst corresponding to said width difference;

a signal path extending from an output of said storage circuit to said core; and

said storage circuit including a valid bit which, when active while said burst is in progress on said bus, indicates that part of said second portion of said burst is accessible at said output of said storage circuit for transfer to said core via said signal path while said burst is still in progress.

5,664,231

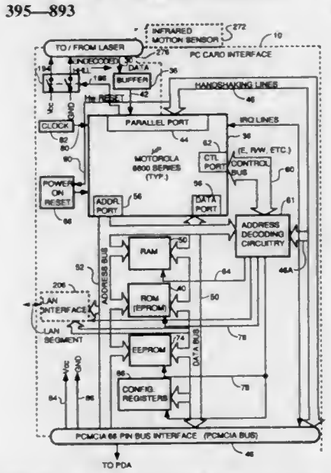
PCMCIA INTERFACE CARD FOR COUPLING INPUT DEVICES SUCH AS BARCODE SCANNING ENGINES TO PERSONAL DIGITAL ASSISTANTS AND PALMTOP COMPUTERS

Joel Robert Postman, Santa Clara; David Peter Bergen, Mountain View, and Ronald Craig Fish, Morgan Hill, all of Calif., assignors to TPS Electronics, Palo Alto, Calif.

Filed Apr. 29, 1994, Ser. No. 236,630

Int. Cl.[6] G06K *7/10;3/00;3/05*

U.S. Cl. 395—893 **46 Claims**



1. An interface on a PCMCIA defined PC Card between an input device that can scan a barcode and a host device with a PCMCIA slot such as a personal digital assistant, palmtop computer or other computing device, comprising:

an input port on said PC Card for coupling to an input device that can scan barcodes having light and dark spaces;

memory means for storing data;

means for sampling logic signals from said input device, said logic signals appearing at said input port and for storing in said memory means an "image" of said barcode recording at least the relative spacing between the transitions between said dark and light spaces in a barcode scanned by said input device;

means for accessing said image data in said memory means and decoding therefrom alphanumeric characters encoded in said barcode;

means for temporarily storing in said memory means said decoded alphanumeric characters along with pointer data and length data indicating, respectively, the location in said memory means of said alphanumeric characters and the number of addresses in said memory means that must be read to retrieve all said alphanumeric characters;

means for cutting off power to said barcode scanning mechanism in said input device after a successful decoding operation;

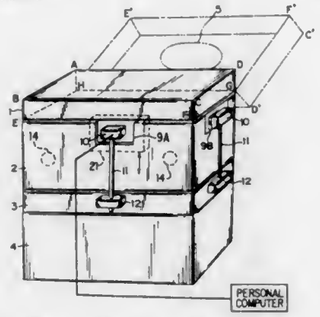
means for notifying said host device of the existence in said memory means of said alphanumeric characters and passing to said host device said pointer and length information, and for providing access to said alphanumeric characters to said host device when requested by said host device.

5,664,232

MINI-STUDIO EQUIPMENT

Teruki Goto, Saitama, Japan, assignor to Kabushiki Kaisha S & T Studio, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,462
Claims priority, application Japan, Sep. 21, 1994, 6-226254; Sep. 8, 1995, 7-231155
Int. Cl.[6] G03B *15/06;27/52*
U.S. Cl. 396—1 13 Claims



1. Mini-studio equipment comprising:
an upper box, a middle box, and a lower box;
said upper box having an upper light source with an adjustable output which is attached to an upper wall of said upper box, and a light diffusion plate which forms a bottom wall of said upper box so as to diffuse light emitted by said upper light source;
said middle box having an upper opening which is covered by said light diffusion plate of said upper box, a photography stage which forms a bottom wall of said middle box so as to diffuse light from the lower side thereof and which has a curved portion and a backdrop portion covering a side wall of said middle box, and a camera installing window provided at a central portion of another side wall which is opposed to the side wall covered by said backdrop portion;
said lower box having an upper opening which is covered by said photography stage of said middle box, and a lower light source with an adjustable output which is attached to a bottom wall of said lower box; and
a digital camera is disposed at said camera installing window, and a personal computer receiving digital output from said digital camera.

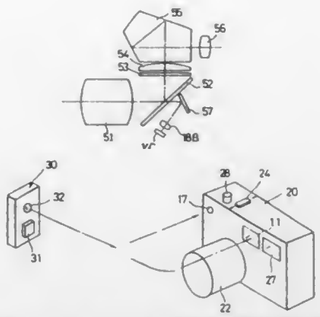
5,664,233

REMOTE CONTROL APPARATUS OF CAMERA

Shinya Suzuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 700,250, May 15, 1991, abandoned.
This application Apr. 15, 1993, Ser. No. 46,900
Claims priority, application Japan, May 16, 1990, 2-126108; Feb. 27, 1991, 3-16652; Mar. 6, 1991, 3-19709
Int. Cl.[6] G03B *13/02*
U.S. Cl. 396—59 46 Claims

1. A camera comprising:
a view finder;
an electromagnetic shutter;
a half mirror provided in an optical path of said view finder to partly transmit a remote release signal light and to partly reflect the remote release signal light;
at least one light receiving element provided on a transmission side of said half mirror; and



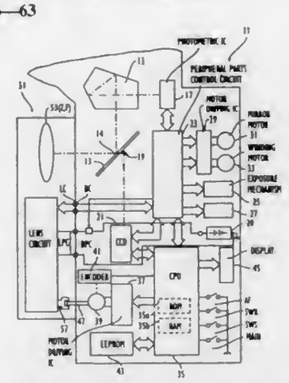
releasing means for releasing said electromagnetic shutter of the camera in response to said light receiving element receiving the remote release signal light.

5,664,234

CAMERA SYSTEM HAVING POWER ZOOM LENS

Masahiro Kawasaki; Hiroyuki Takahashi, and Yoshinari Tanimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 886,702, May 21, 1992, abandoned.
This application May 31, 1994, Ser. No. 251,653
Claims priority, application Japan, May 21, 1991, 3-218146; Nov. 29, 1991, 3-342123
Int. Cl.[6] G03B *7/00*
U.S. Cl. 396—63 18 Claims



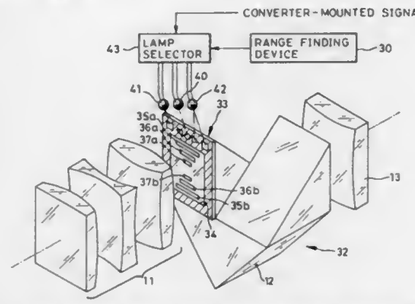
1. A camera system having a camera body and a detachable lens, said detachable lens detachably attached to said camera body,
said detachable lens comprising;
first means for exchanging information and commands between said lens and said camera body;
first manually operable means for initiating an operation of said lens;
means for detecting a state of said first manually operable means; and
means for controlling a transmission of lens information representing an operational state of said first initiating means to said camera body through said first exchanging means, and for controlling a predetermined operation of said lens in accordance with information received from said camera body through said first exchanging means, wherein said predetermined operation is performed upon receipt of said information from said camera body;
said camera body comprising:
second means for initiating an operation of said camera body;
second means for exchanging information and commands between said lens and said camera body, said second exchanging means being selectively connected to said first exchanging means; and
means for controlling a predetermined operation of said camera system in accordance with camera information representing an operational state of said second initiating means and lens information received from said lens through said second exchanging means,
wherein said controlling means of said camera body transmits, to said lens controlling means, a command that places said lens in a stand-by mode in response to an operational state of said second initiating means,
said lens controlling means receiving said command that places said lens in said stand-by mode from a normal operation mode of said lens only when a predetermined state of said first manually operable means is detected by said state detecting means,
said stand-by mode functioning to suspend all operations of said lens controlling means, other than an operation to detect a command transmitted by said camera body,
said stand-by mode of said lens being released to return said lens to said normal operation mode in response to a periodic issuance of a release command from said camera body.

5,664,235

PORTRAIT PHOTOGRAPHY CAMERA AND METHOD

Hiroshi Ohmura; Masaharu Kanai, and Mahito Shimizu, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 15, 1993, Ser. No. 92,740
Claims priority, application Japan, Jun. 15, 1992, 4-155463
Int. Cl.[6] G03B *13/04;17/20*
U.S. Cl. 396—71 3 Claims



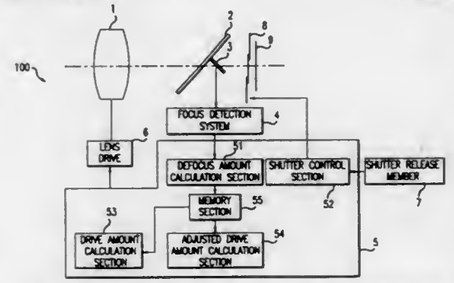
1. A method of photographing a photographic subject on a photographic film by use of a camera having a taking lens assembly, means for selectively imparting to said taking lens assembly a first focal length or a second focal length, a viewfinder for observing said subject, first indicia within a field frame of said viewfinder and adapted to frame said subject by referring to said first indicia, second indicia within said field frame of said viewfinder and adapted to frame said subject by referring to said second indicia, said first and second indicia being disposed one outside the other within said field frame such that said subject has two distinctively different sizes in said field frame as viewed by a user of the camera, depending on whether said subject is framed with reference to said first indicia or with reference to said second indicia, and a rangefinder for measuring the distance from said camera to said subject to generate a distance signal; the method comprising displaying in said viewfinder an instruction to said user, responsive to said distance signal, to frame said subject by referring to one of said first and second indicia such that said subject as framed will be photographed so as to create an image having an appropriate predetermined size range on said film, framing the subject in accordance with said instruction, and exposing said film with the subject thus framed, the height of the field frame being greater than the width of the field frame, and said indicia being an oval, the height of the oval being greater than the width of the oval, the oval having a height and width less than the height and width of said field frame.

5,664,236

FOCUS ADJUSTMENT DEVICE AND METHOD

Ken Utagawa, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,154
Claims priority, application Japan, Aug. 24, 1994, 6-199331
Int. Cl.[6] G03B *3/00;13/00*
U.S. Cl. 396—96 22 Claims



1. A focus adjustment device for focusing a photographic lens in a camera, comprising:
focus detecting means for repeatedly detecting a defocus amount;
means for storing a plurality of defocus amounts detected by said focus detecting means;
drive amount calculation means for calculating a drive amount based on the defocus amount detected by said focus detecting means;
adjusted drive amount calculation means for calculating an adjusted drive amount by statistically processing the plurality of defocus amounts stored by said storing means; and
two-stage control means for controlling driving of the photographic lens, comprising:
1) a pre-shutter release stage where driving of the photographic lens is based on the drive amount calculated by said drive amount calculation means prior to a shutter release operation, said control means not driving the photographic lens until a magnitude of the defocus amount exceeds a predetermined value after an in-focus state has been determined based on the detected defocus amount prior to the shutter release operation; and
2) a post-shutter release stage for controlling driving the photographic lens based on the adjusted drive amount calculated by said adjusted drive amount calculation means when the shutter release operation occurs.

5,664,237

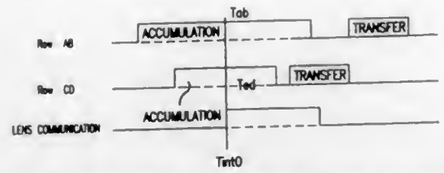
AUTOMATIC FOCUS ADJUSTMENT DEVICE AND METHOD

Toshimi Watanabe, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,610
Claims priority, application Japan, Sep. 7, 1994, 6-214115
Int. Cl.[6] G03B *3/00;13/18;13/32*
U.S. Cl. 396—96 28 Claims

1. An automatic focus adjustment device, comprising:
a photoelectric conversion device having a plurality of areas that receive light signals from a photographic optical system and convert said light signals into electrical signals by accumulating electric charge over accumulation time intervals;

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a focus state detection device connected to said photoelectric conversion device that receives and detects a focus adjustment state in accordance with said electrical signals; and

a photoelectric conversion timing control device that controls said photoelectric conversion device to match a first midpoint time of a first accumulation time interval to substantially coincide with one of a starting time, a second midpoint time and an ending time of a second accumulation time interval.

5,664,238

FOCAL CONTROLLER OF CAMERA

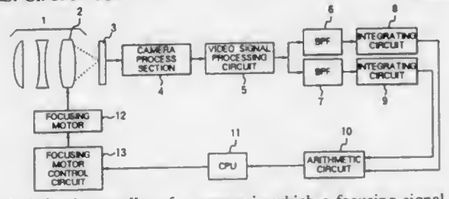
Kiyoharu Nishiyama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 548,154

Claims priority, application Japan, Nov. 28, 1994, 6-293086; Dec. 7, 1994, 6-303832

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—101 **5 Claims**



1. A focal controller of a camera in which a focusing signal is obtained from a change in brightness component among a video signal obtained by image pickup and a focusing operation is controlled on the basis of this focusing signal;

the focal controller comprising:

means for detecting an increase and a decrease in ratio of brightness components in two arbitrary different frequency bands;

means for detecting an increase and a decrease in brightness component in one of the frequency bands; and

means for changing the driving speed of a focusing motor for moving a focusing lens on the basis of judged results of an unfocusing position and a position near a focusing position obtained by detected results of both the detecting means.

5,664,239

AUTOMATIC FOCUSING APPARATUS

Masahiro Nakata, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 185,239, Jan. 24, 1994, Pat. No. 5,448,329, which is a continuation of Ser. No. 884,077, May 15, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,889

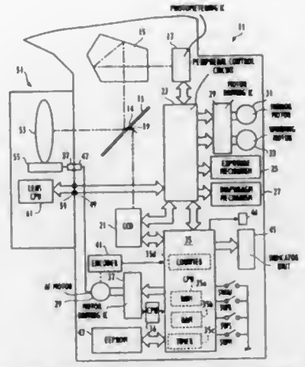
Claims priority, application Japan, May 15, 1991, 3-206605; May 15, 1991, 3-206606; May 15, 1991, 3-206607; May 15, 1991, 3-206608; May 15, 1991, 3-206609

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—104 **10 Claims**

1. A focus detecting apparatus that includes an optical system having a group of focusing lenses, and means for measuring a defocus amount for an image of a specific object formed by said focusing lens group, comprising:

means for determining a contrast of said image of said specific object; and



means for selecting a defocus amount such that, when said contrast determining means determines that said contrast of said specific object image is not low, said measured defocus amount is selected, and when said contrast determining means determines that said contrast of said specific object defocus amount is low, said defocus amount measuring means operates to re-measure said defocus amount, so that said re-measured defocus amount is compared with a previously obtained defocus amount to select a smaller defocus amount.

5,664,240

APPARATUS AND METHOD FOR DELAYING THE RETRACTION OF AN EXTENDIBLE LENS INTO A CAMERA BODY WHEN THE CAMERA IS SWITCHED OFF

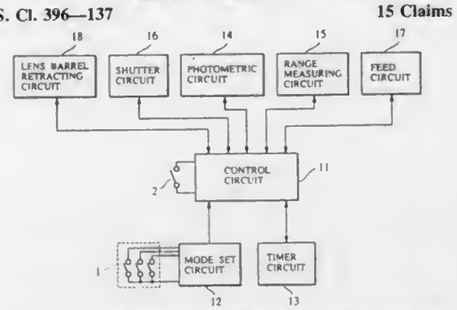
Hiroshi Arita, Kawasaki, and Toshiharu Ueda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 278,323, Jul. 21, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,124

Claims priority, application Japan, Jul. 27, 1993, 5-203722

Int. Cl.[6] G03B *13/00*

U.S. Cl. 396—137 **15 Claims**



1. Apparatus for delaying an optical unit using a driver comprising:

a control circuit for (i) determining that a mode setting switch has been turned to a first mode setting for setting a first mode, (ii) waiting for a first predetermined time after it has been determined that the mode setting switch has been turned to the first mode setting, (iii) determining that the mode setting switch has been turned from the first mode setting, and (iv) causing the driver to move the optical unit after the first predetermined time if it has not been determined that the mode setting switch has been turned from the first mode setting, said control circuit starting a second mode different than the first mode after the mode setting has been turned to a second mode setting for setting the second mode before the first predetermined time.

5,664,241

CONTROL DEVICE FOR PREVENTING RED-EYE EFFECT ON CAMERA

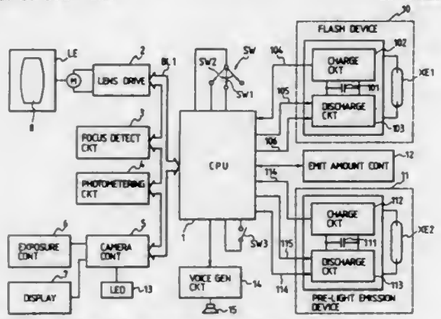
Hachiro Kanai, Kawasaki; Toru Fukuhara, Isehara; Toshio Sosa, Narashino; Norikazu Yokonuma, Tokyo, and Masaharu Hara, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 483,979, Jun. 7, 1995, abandoned, which is a division of Ser. No. 71,613, Jun. 4, 1993, which is a continuation of Ser. No. 974,512, Nov. 12, 1992, abandoned, which is a division of Ser. No. 930,466, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 785,210, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 632,648, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,996, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 323,386, Mar. 14, 1989, abandoned. This application Sep. 5, 1996, Ser. No. 708,882

Claims priority, application Japan, Mar. 16, 1988, 63-64032

Int. Cl.[6] G03B *15/03;17/18*

U.S. Cl. 396—158 **13 Claims**



1. An illumination apparatus comprising:

a flash device which emits illumination light to illuminate an object;

an emitting device which emits pre-illumination light;

a control device, electrically connected to said flash device and said sitting device, which operates said emitting device to emit the pre-illumination light prior to operating said flash device to emit said illumination light; and

an informing device separate from said emitting device, electrically connected to said control device, which informs that the pre-illumination light of said emitting device has been or will be emitted and that the illumination light of said flash device will be emitted, prior to at least the operation of said flash device, separately from informing of a charge completion condition.

5,664,242

AUTOMATIC EXPOSURE DEVICE AND PHTOMETRY DEVICE IN A CAMERA

Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

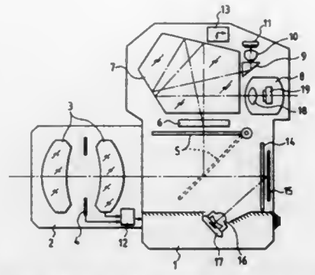
Continuation of Ser. No. 274,370, Jul. 13, 1994, abandoned, which is a continuation of Ser. No. 91,821, Jul. 13, 1993, abandoned. This application Aug. 26, 1996, Ser. No. 702,856

Claims priority, application Japan, Jul. 22, 1992, 4-195499

Int. Cl.[6] G03B *7/08*

U.S. Cl. 396—234 **33 Claims**

1. In an automatic exposure device in a camera in which an object field is divided into a plurality of areas forming a plurality of rows and photometered by the use of a divisional photometry element and optimum exposure is calculated from a result of the photometry, the improvement wherein said divisional photometry



element includes a photoelectric converting portion for photoelectrically converting incident light in each row of said areas and putting out a plurality of outputs, and a reading portion for reading out the plurality of outputs of said photoelectric converting portion, and wherein when a number of successive outputs of a row of said areas in a readout direction which exceed a predetermined value is greater than a predetermined number, the outputs of that row are completely omitted in calculation of the optimum exposure.

5,664,243

CAMERA

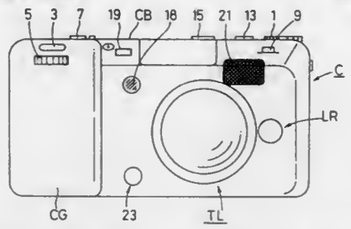
Takashi Okada; Shigeto Ohmori; Hideki Nagata; Tsutomu Honda; Kiyoshi Seigenji, all of Sakai; Toshihiro Hamamura, Osaka; Tougo Teramoto, Wakayama; Takashi Kato, Sakai, and Hiroaki Kubo, Settsu, all of Japan, assignors to Minolta Co., Ltd., Japan

Filed Jun. 6, 1996, Ser. No. 659,690

Claims priority, application Japan, Jun. 8, 1995, 7-142049; Jun. 14, 1995, 7-147398; Jun. 14, 1995, 7-147399; Jun. 19, 1995, 7-151875; Jun. 19, 1995, 7-151876; Jul. 4, 1995, 7-168607; Jul. 27, 1995, 7-191841; Jul. 28, 1995, 7-192711; Jul. 28, 1995, 7-192780; Jul. 28, 1995, 7-193356; Jul. 31, 1995, 7-194378; Jul. 31, 1995, 7-194885; Jul. 31, 1995, 7-194889; Aug. 10, 1995, 7-204713

Int. Cl.[6] G03B *7/00;13/02;* **H04N** *5/232*

U.S. Cl. 396—246 **22 Claims**



1. A camera for performing a first image formation and a second image formation by splitting a light beam incident through a taking optical system including a first aperture diaphragm, said first image formation being performed with a silver salt medium, said second image formation being performed electronically with an image pickup device, comprising:

an image forming optical system disposed in a light path of one of said split light beams for directing the light beam toward the image pickup device;

a second aperture diaphragm disposed in a light path within said image forming optical system; and

a controller for controlling said first and second aperture diaphragms correlatively.

5,664,244

VIEWFINDER DEVICE

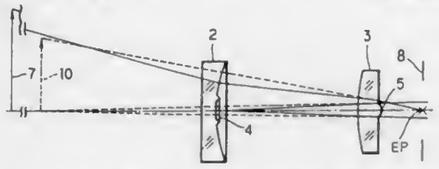
Takeyuki Yamamura, Fujisawa; Takashi Mizuguchi, Kodaira; Nobushige Kobayashi, Hachioji, and Kazumi Koike, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and TOA Rikagaku Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 363,348, Dec. 23, 1994, abandoned. This application Sep. 6, 1995, Ser. No. 524,365

Claims priority, application Japan, Sep. 6, 1994, 6-212674; Jan. 13, 1995, 7-004369; Mar. 10, 1995, 7-051280

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—296 24 Claims



1. A viewfinder device, having an objective lens element disposed on a viewfinder light path and an eye-piece lens element disposed behind said objective lens element, for rendering an image of an object observable at an eye point, said viewfinder device comprising:

at least one indicia portion, disposed in front of said eye-piece lens element, for indicating information related to a taking field; and

at least one micro lens having positive power, disposed behind said indicia portion, for rendering an image of said indicia portion observable in enlargement, said micro lens meeting

$$0.5 \leqq 2e \cdot \tan\theta \leqq 2.5$$

where e is a distance from said micro lens to said eye point, and θ is a half of an angle defined by a convex surface of said micro lens as viewed from said eye point.

5,664,245

CAMERA SYSTEM HAVING A CAMERA BODY WITH A POWER SUPPLY AND AN ACCESSORY ATTACHABLE TO THE CAMERA BODY

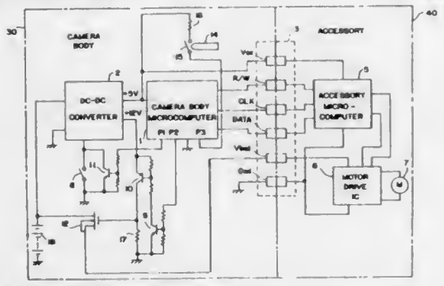
Katsumasa Kurihara, Urawa, and Toshiaki Hozumi, Setagaya-ku, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,157

Claims priority, application Japan, Sep. 7, 1994, 6-213723

Int. Cl.[6] G03B *7/26*

U.S. Cl. 396—303 16 Claims



1. A camera system comprising:

a camera body having a power supply, a detection unit, body contacts and a power supply control unit; and

an accessory attachable to said camera body and having accessory contacts electrically connectable to said body contacts of camera body when said accessory is completely installed on said camera body;

wherein said detection unit has a first state when said accessory is in a process of being installed on said camera body and a second state when said accessory is spaced apart from said camera body and when said accessory is completely installed on said camera body, and said power supply control unit selectively enables transmission of power from the power supply to the body contacts based upon the first and second states of detection of said detection unit.

5,664,246

CAMERA COMPRISING FILM INFORMATION READOUT AND/OR READING MECHANISM

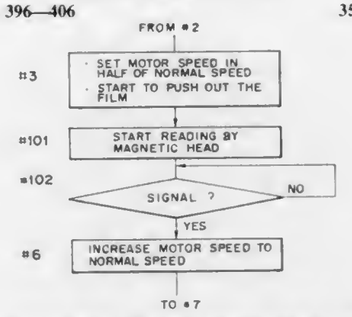
Masaaki Ishihara, Yokohama; Akira Egawa, Kawasaki, and Chikara Aoshima, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 300,354, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 851,531, Mar. 13, 1992, abandoned. This application Jun. 14, 1996, Ser. No. 664,186

Claims priority, application Japan, Mar. 14, 1991, 3-073740; Apr. 15, 1991, 3-108259; Jul. 29, 1991, 3-210394

Int. Cl.[6] G03B *1/18;17/24*

U.S. Cl. 396—406 35 Claims



1. A camera having a recording medium take-up unit and a processing unit for writing information in and/or reading information from a recording portion provided on a recording medium having a tip end portion, said camera comprising:

feeding means for feeding the recording medium to the take-up unit at a set feed speed; and

a control circuit for, when the recording medium is fed, setting the feed speed to a first speed at least until the tip end portion of the recording medium passes the processing unit and for setting the feed speed to a second speed thereafter prior to the tip end portion reaching the take-up unit, the first speed being lower than the second speed.

5,664,247

SHUTTER BRAKE MECHANISM

Masanori Hasuda, and Takashi Matubara, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,018

Claims priority, application Japan, Jun. 15, 1995, 7-174240

Int. Cl.[6] G03B *9/40*

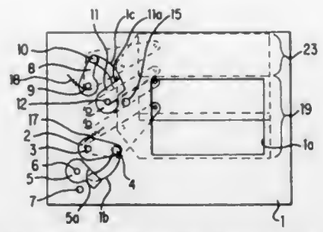
U.S. Cl. 396—456 11 Claims

1. A shutter brake mechanism for use in a camera, the shutter brake mechanism comprising:

at least one shutter blade;

at least one driving mechanism for moving the at least one shutter blade;

at least one driving pin that contacts the at least one driving mechanism; and



at least one brake lever that provides a brake force to the at least one driving mechanism by contacting the at least one driving pin;

wherein a hardness of the at least one brake lever is greater than a hardness of the at least one driving pin.

5,664,248

PHOTOGRAPHIC CAMERA

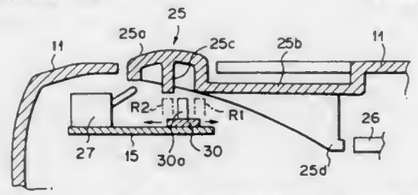
Yoji Naka; Toshio Yoshida, and Takashi Kamoda, all of Saitama-ken, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-Ken, and Fuji Photo Film Co., Ltd., Kanagawa, both of Japan

Filed Aug. 6, 1996, Ser. No. 689,265

Claims priority, application Japan, Aug. 8, 1995, 7-201980; Aug. 8, 1995, 7-201981; Sep. 6, 1995, 7-229196; Sep. 7, 1995, 7-230348

Int. Cl.[6] G03B *17/26;17/30;17/38;1/12*

U.S. Cl. 396—503 6 Claims



1. A photographic camera in which is loaded a film cartridge having a roll film entirely rolled to its leading end around a spool in a cartridge body and a light-shielding shutter member for opening and closing a film exit slit formed in the cartridge body, characterized by having

a shutter release inhibiting means which inhibits release of the shutter of the camera during rewinding the film and after completion of rewinding the film so long as the light-shielding shutter member of the film cartridge is open.

5,664,249

CAMERA OR APPARATUS ADAPTED TO USE FILM CARTRIDGE OR DEVICE APPLICABLE TO SUCH CAMERA OR APPARATUS

Ryoji Okuno, and Makoto Miyawaki, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,730

Claims priority, application Japan, Dec. 30, 1993, 5-350365

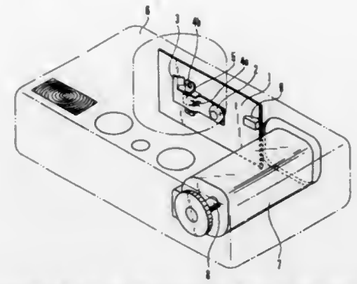
Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—538 52 Claims

1. A camera adapted to use a film cartridge comprising:

a) a first device which supports the film cartridge placed in the cartridge chamber, said first device being arranged on a slidable cover of a cartridge chamber; and

a second device which prevents said first device from hindering a sliding action of said cover because of the film cartridge placed in the cartridge chamber.



5,664,250

LID FOR A FILM CARTRIDGE CHAMBER

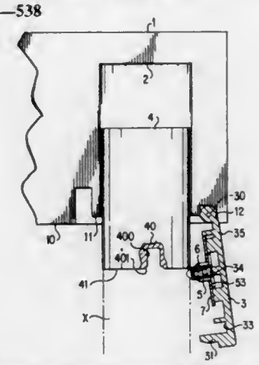
Tsutomu Wakabayashi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 10, 1995, Ser. No. 513,555

Claims priority, application Japan, Oct. 31, 1994, 6-267150

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—538 20 Claims



1. A film cartridge chamber having a lid that can open and close, the lid comprising:

a movable component movably attached to the lid and able to advance into or retract from a loading/extraction path of the film cartridge chamber when the lid is opened to a loading/extraction position at which a film cartridge can be loaded/extracted from the film cartridge chamber; and

a forcing component urging the movable component into the loading/extraction path when the lid is opened to the loading/extraction position, wherein when the lid is opened as far as possible, the movable component remains advanced into the loading/extraction path by the forcing component until exertion of an opposing force that is greater than the forcing component.

5,664,251

METHOD OF MAKING AN APERTURE PLATE FOR A MULTIBEAM PATTERN DRAWING APPARATUS

Satoru Tachihara; Koichi Maruyama; Tetsuya Nakamura; Takashi Okuyama; Tamihiro Miyoshi, and Shinichi Suzuki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1996, Ser. No. 648,705

Claims priority, application Japan, May 17, 1995, 7-142746

Int. Cl.[6] G03B *41/00;* B41J *2/447*

U.S. Cl. 396—548 8 Claims

1. A method for forming an aperture plate for use in a pattern drawing device in which dot images of light transmitted through

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apertures in the aperture plate are formed on an image surface in a forward direction through an imaging optical system, said method comprising:

arranging a master chart at a first position corresponding to a position of the image surface, said master chart having a pattern of master dot markings that correspond to ideal dot image locations;

illuminating said master chart to form guide images of said master dot markings in a reverse direction through said imaging optical system, at a second position corresponding to a position of the aperture plate;

recording said guide images of said master dot markings; and

forming corrected apertures in the aperture plate at locations of said guide images of said master dot markings, said corrected apertures forming dot images at said ideal dot image locations when light is transmitted through said corrected apertures from said second position through said imaging optical system in said forward direction to said first position.

5,664,252

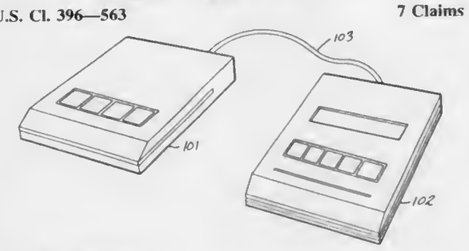
APPARATUS FOR USE IN OPTIMIZING PHOTOGRAPHIC FILM DEVELOPER APPARATUS

Bernard J. Berg, Kentwood, and Patrick S. Rood, Walker, both of Mich., assignors to X-Rite, Incorporated, Grandville, Mich.

Division of Ser. No. 268,211, Jun. 29, 1994. This application Jun. 7, 1995, Ser. No. 479,429

Int. Cl.[6] G03B *41/00;13/00*

U.S. Cl. 396—563 **7 Claims**



1. In combination:

sensitometer apparatus comprising an illumination device, the sensitometer apparatus providing a level of exposure for each of a plurality of areas on a photographic film exposed in the sensitometer apparatus;

a memory storing data defining a relative exposure value for each of the plurality of areas exposed by the sensitometer, each relative exposure value representing a deviation of the level of exposure provided by the sensitometer for a selected area from a predefined standard level of exposure for the selected area;

densitometer apparatus comprising optical measuring apparatus providing electrical signals representative of optical density of each measured area of exposed film and a programmable processor connected to the memory and responsive to the electrical signals to compute measured density values for the areas of exposed film;

the processor programmed to read the data defining the relative exposure values from the memory and to compute a correlated density value for each of the areas of exposed film by combining the data read from the memory with the measured density values.

5,664,253

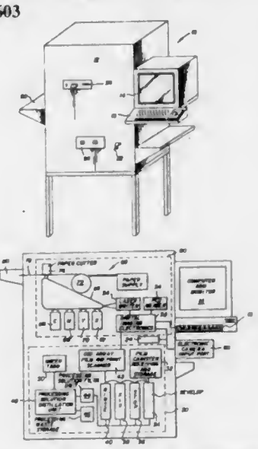
STAND ALONE PHOTOFINISHING APPARATUS

Mark Marshall Meyers, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1996, Ser. No. 628,071

Int. Cl.[6] G03D *17/00;* **G03G** *21/00*

U.S. Cl. 396—603 **31 Claims**



1. A stand alone customer operated photofinishing apparatus comprising:

a film receiving device for holding a film cartridge containing an undeveloped filmstrip therein from a customer, said filmstrip having at least one image;

a customer order data entry station for entering an order selection;

a payment means for accepting payment from the customer;

developing section for developing said filmstrip, said developing section for developing comprising at least one processing tank containing a processing solution for processing of said filmstrip;

a scanner for digitally scanning the developed filmstrip so as to obtain a digital record of the at least one image developed on said filmstrip;

a print section for dry printing the at least one image on said developed filmstrip using the digital record so as to produce at least one print; and

a storage and/or delivery section for returning the at least one print and said developed filmstrip to the customer.

5,664,254

SUBSTRATE PROCESSING APPARATUS AND SUBSTRATE PROCESSING METHOD

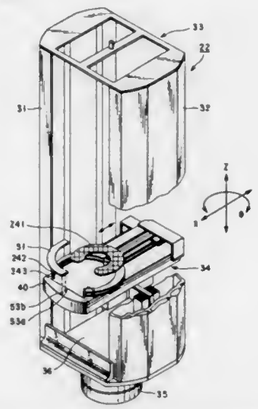
Jun Ohkura; Naruaki Iida, both of Kumamoto; Hiroyuki Kudou, Kumamoto-ken; Masanori Tateyama, Kumamoto, and Yasuhiro Sakamoto, Kumamoto-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,937

Claims priority, application Japan, Feb. 2, 1995, 7-039254; Feb. 9, 1995, 7-046413

Int. Cl.[6] G03D *5/00;3/08*

U.S. Cl. 396—612 **16 Claims**



1. A substrate processing apparatus for performing a plurality of processes to a substrate comprising:

a common path, extending in a Y-axis direction, in which one substrate or a plurality of substrates are conveyed;

a plurality of process units stacked on both sides of said common path to constitute multi-stage structures;

a main handler moved in said common path in the Y-axis direction and rotated about a Z axis at an angle θ to load/unload the substrate into/from said process units;

an arm section arranged to move in said main handler in the Z-axis direction;

a plurality of holding arms arranged in said arm section to constitute a multi-stage structure so as to respectively hold the substrates, each holding arm being advanced and retreated on an X-Y plane from said arm section, and wherein one holding arm of said plurality of holding arms is located at a position higher than that of another holding arm of said plurality of holding arms, said one holding arm having a portion which is brought into direct contact with a substrate, said portion being made of a material of a friction coefficient higher than that of a material of a non-contact portion;

detection means, arranged in said arm section, for detecting a holding state of the substrate held in each of said plurality of holding arms; and

control means for controlling an operation of said main handler, an operation of said arm section, and operations of said plurality of holding arms on the basis of a detection result from said detection means;

wherein said control means advances or retreats each holding arm while operating at least one of said main handler and said arm section, and causes said detection means to detect the holding state of the substrate held by each holding arm before said holding arm reaches a corresponding one of said process units.

5,664,255

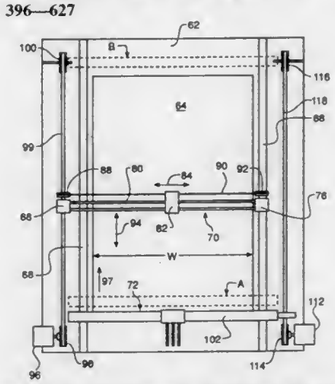
PHOTOGRAPHIC PRINTING AND PROCESSING APPARATUS

Xin Wen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1996, Ser. No. 654,945

Int. Cl.[6] G03D *5/04;* **G03B** *27/52*

U.S. Cl. 396—627 **15 Claims**



1. A method for exposing and developing the photographic material at a single workstation, comprising the steps of:

a) exposing a photographic material at a single workstation using a digital exposure means; and

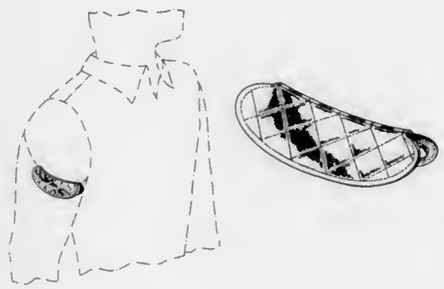
b) developing said photographic material used to apply at least one processing solution at said workstation without transporting of the photographic material between exposing and developing of said photographic material.

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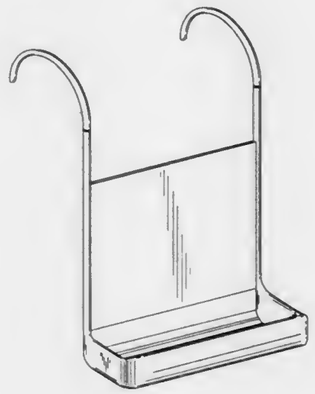
382,985
SHOULDER STRAP FOR RETAINING POCKETBOOK STRAPS
Charlotte Richmond, 321 Main St., Hampden, Mass. 01036
Filed Aug. 6, 1996, Ser. No. 58,030
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—624



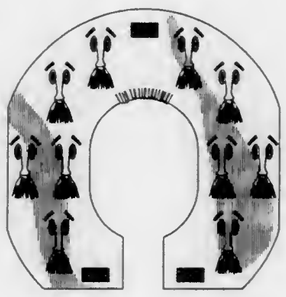
382,986
GARMENT SHIELD
Ibolya Kovacs, and Anthony E. Smith, both of 1990 N. Alma School Rd., #122, Chandler, Ariz. 85012
Filed May 6, 1996, Ser. No. 54,032
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—860



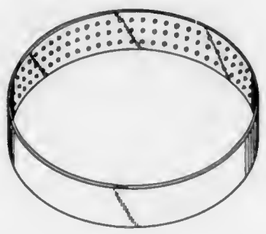
382,987
BIB
Lanell O. Johnson, Jr., 34025 SW. Ladd Hill Rd., Wilsonville, Oreg. 97070
Filed May 22, 1995, Ser. No. 39,128
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—861



382,988
SUNSHADE VISOR
Sandra D. Palmer, 1810 S. Colgate, Perryton, Tex. 79070
Filed Apr. 17, 1992, Ser. No. 869,716
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—876



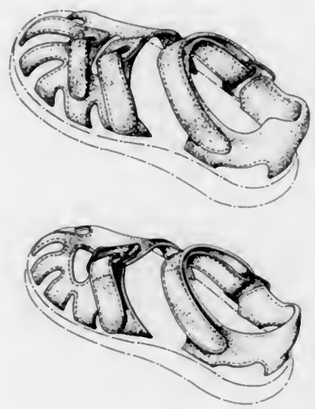
382,989
HEADBAND WITH GRIPPING MEANS
Anita J. Simpson, 9821 Centerwood, Apt. 1904, Dallas, Tex. 75243
Filed Aug. 9, 1995, Ser. No. 42,733
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—894



382,990
DECORATIVE PATTERN FOR A CHILD'S SHOE
Jane Pallera, Brooklyn, N.Y., assignor to The Keds Corporation, Lexington, Mass.
Filed Jun. 3, 1996, Ser. No. 55,261
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—897



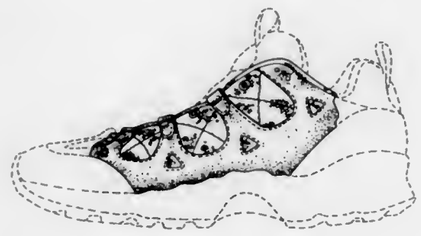
382,991
SANDAL UPPER
Lee N. Bishop, 721 NE. 38th St., Boca Raton, Fla. 33431
Continuation-in-part of Ser. No. 20,008, Mar. 16, 1994, Pat. No. Des. 363,159. This application Jun. 30, 1994, Ser. No. 25,357
The portion of the term of this patent subsequent to Oct. 17, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—916



382,992
SHOE UPPER WITH REFLECTIVE STRIPS
Chang Hsin Chiu, Huntington Beach, Calif., assignor to New Era International Co. Ltd., Huntington Beach, Calif.
Filed Aug. 11, 1995, Ser. No. 42,473
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—970



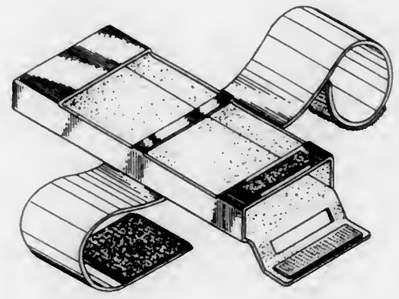
382,993
SIDE ELEMENT OF A SHOE UPPER
Damon Clegg, Portland, and Peter M. Fogg, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Jun. 6, 1996, Ser. No. 55,531
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



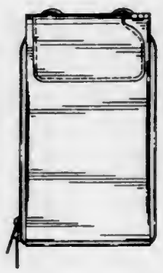
382,994
SOCK
Frederick Kluttz, and Lisa A. Kluttz, both of 3217 Cedar Ave. S., Minneapolis, Minn. 55407
Division of Ser. No. 11,337, Feb. 4, 1994, Pat. No. Des. 364,500. This application Aug. 23, 1995, Ser. No. 43,025
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—980



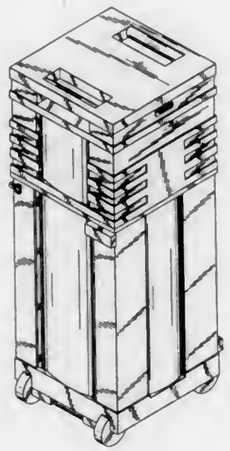
382,995
ARM BAND CARRIER
Armand Hale, 1925 N. 23rd St., Philadelphia, Pa. 19121-2024
Filed Jun. 27, 1995, Ser. No. 40,780
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—215



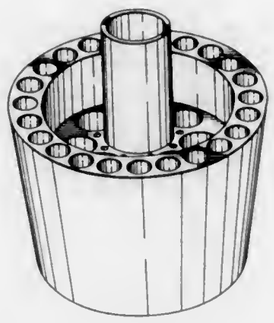
382,996
CELLULAR TELEPHONE CASE
David Kopel, Agoura Hills, Calif., assignor to Koltov, Inc., Westlake Village, Calif.
Filed Apr. 3, 1995, Ser. No. 37,063
Term of patent 14 years
U.S. Cl. D3—218



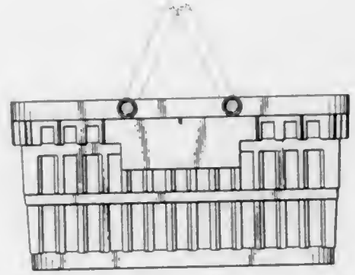
382,997
COMBINED CARRYING CASE AND STEP STOOL
Arthur G. Carr, Washington, D.C., and Christopher A. Durgin, Springfield, Va., assignors to Nomadic Structures, Inc., Springfield, Va.
Filed Feb. 18, 1994, Ser. No. 18,968
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—274



382,998
TOOL HOLDING BUCKET
Francesco P. Conigliaro, 1115 Brighton Dr., Carol Stream, Ill. 60188
Filed May 22, 1995, Ser. No. 39,148
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—313



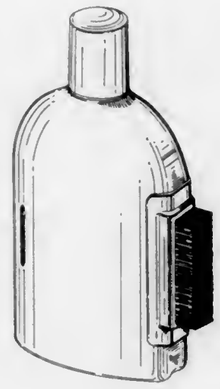
382,999
SHOPPING BASKET
Houston Rehrig, 4606 Foxhall Crescent, Washington, D.C. 20007
Filed Oct. 12, 1995, Ser. No. 45,205
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—314



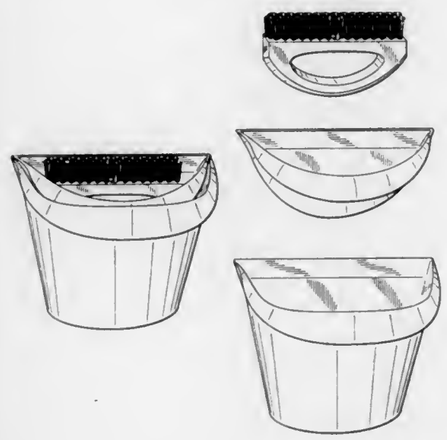
383,000
CLASP FOR PURSES AND HANDBAGS
Paola Fendi, Rome, Italy, assignor to Fendi Paola & S.lle S.a.s., Rome, Italy
Filed Feb. 8, 1995, Ser. No. 34,613
Claims priority, application Hague Agreement, Aug. 11, 1994, DM/030.395
The portion of the term of this patent subsequent to Jan. 7, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—324



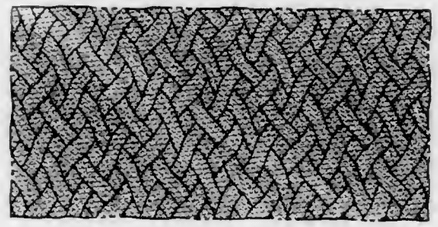
383,001
BOTTLE AND BRUSH COMBINATION
Ronald F. Bell, Uniontown; Richard A. Holmes, Stow; Thomas Kearnes, Richfield, and Detlev F. Smith, Akron, all of Ohio, assignors to Gojo Industries, Inc., Cuyahoga Falls, Ohio
Filed May 18, 1995, Ser. No. 38,988
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D4—116



383,002
COMBINED BRUSH, DUSTPAN, AND WASTE CAN
Jack C. Rigney, 916 Prescott Blvd., Deltona, Fla. 32738
Filed Jun. 15, 1995, Ser. No. 40,327
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D4—116



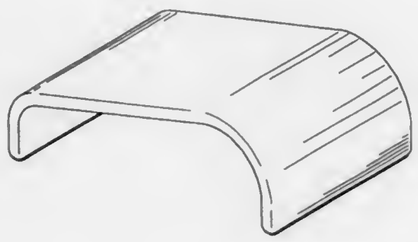
383,003
ABSORBENT PAPER TOWEL
Richard R. Hepford, Folcroft, Pa., assignor to Kimberly-Clark Tissue Company, Neenah, Wis.
Filed Jun. 7, 1995, Ser. No. 39,933
Term of patent 14 years
LOC (6) Cl. 05 - *05*
U.S. Cl. D5—53



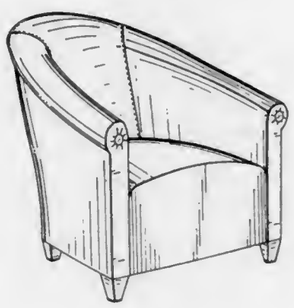
383,004
FOLDABLE HANGER
Charles H. Atkins, 246 Oak Grove Rd., Winston-Salem, N.C. 27107
Filed Aug. 16, 1995, Ser. No. 42,748
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—323



383,005
SPRING HANGER REPLACEMENT PAD
W. Michael Betts, 123 Requa, Piedmont, Calif. 94611
Filed Jul. 18, 1995, Ser. No. 41,625
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—328



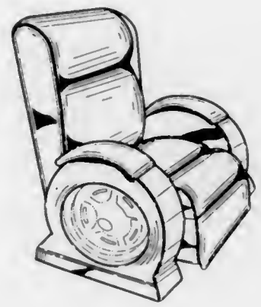
383,006
CHAIR
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Jun. 1, 1993, Ser. No. 9,003
The portion of the term of this patent subsequent to Dec. 5, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



383,007
CHAIR
Peter Opsvik, Josefinesgt 40, N-0258 Oslo, Norway
Filed Jul. 13, 1995, Ser. No. 41,417
Claims priority, application Norway, Jan. 16, 1995, 95.0025
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—348



383,008
SPORTS RECLINER CHAIR
Jeffry L. Blaesing, 122 Knollwood Dr., Hurt, Va. 24563
Filed Jul. 19, 1996, Ser. No. 57,232
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—358



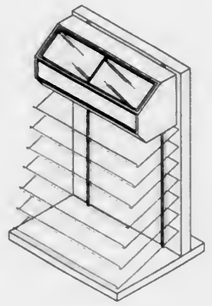
383,009
CHAIR
Giancarlo Piretti, Bologna, Italy, assignor to Pro-Cord S.r.l., Italy
Filed Jun. 9, 1995, Ser. No. 40,065
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—372



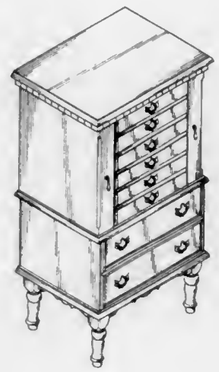
383,010
SOFA
Pascal Mourgue, Paris, France, assignor to Cinna of Briord, Serrieres de Briord, France
Filed Jul. 9, 1996, Ser. No. 56,784
Claims priority, application WIPO, Jan. 11, 1996, DM/035-179
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



383,011
HANGING CONTROLLED-TEMPERATURE ENVIRONMENT CABINET AND SUPPORT
Richard A. Klein, III, P.O. Box 1768, North Conway, N.H. 03860
Filed Jul. 20, 1995, Ser. No. 41,647
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—437

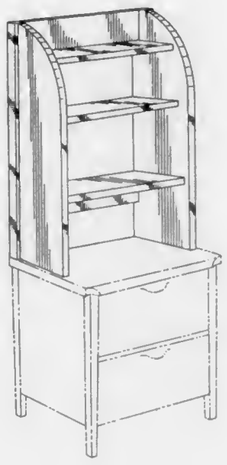


383,012
JEWELRY ARMOIRE
James Glenn Mohundro, No. 20 Ta-Lung Road, 11F-4, Tai-chung, Taiwan
Filed Apr. 10, 1996, Ser. No. 52,844
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—439

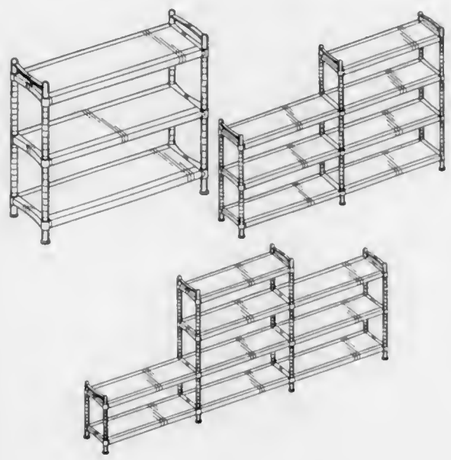


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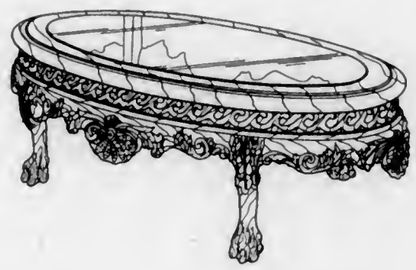
383,013
HUTCH
Thomas Newhouse, Grand Rapids, and Donald Shepherd, Spring Lake, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Feb. 25, 1994, Ser. No. 19,220
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—479



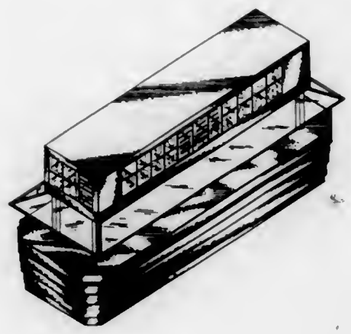
383,014
SHELF STAND
Sami Sagol, Ramat HaSharon, Israel, assignor to Keter Plastic, Ltd., Herzelia, Israel
Filed Mar. 28, 1995, Ser. No. 36,821
Claims priority, application Israel, Sep. 29, 1994, 23336
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—479



383,015
TABLE
Daniel David Wistehuff, III, Guilford County, N.C., assignor to Hooker Furniture Corporation, Martinsville, Va.
Filed Jul. 22, 1996, Ser. No. 57,306
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



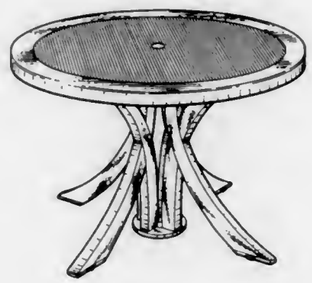
383,016
OVERHEAD SALAD BAR REFRIGERATOR UNIT
James C. McKee, One Towamencin Corporate Center, 1555 Bustard Rd., P.O. Box 1555, Kulpsville, Pa. 19443
Filed Jul. 25, 1994, Ser. No. 26,336
Term of patent 14 years
LOC (6) Cl. 06 - *05*
U.S. Cl. D6—481



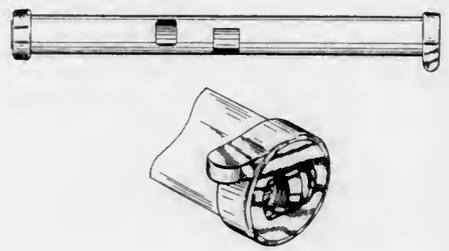
383,017
TABLE
Ray G. Kelly; Sharon A. Turnbough, both of St. Louis County, Mo., and Diane Taraskavage, San Diego County, Calif., assignors to Angeles Group, Inc., Pacific, Mo.
Filed Apr. 11, 1994, Ser. No. 21,141
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—482



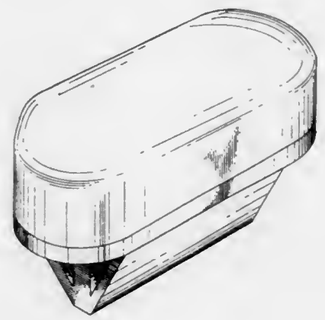
383,018
TABLE
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Dec. 8, 1994, Ser. No. 32,160
Claims priority, application WIPO, Jun. 9, 1994, DMA/002538
The portion of the term of this patent subsequent to Jun. 11, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—488



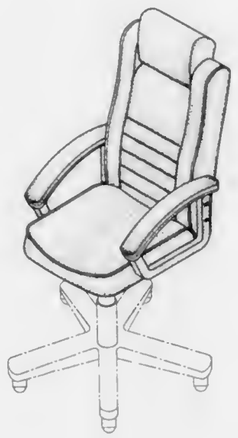
383,019
CHAIR ACTUATOR
David N. Hodge, The Sea Ranch, Calif.; Michael L. Deimen; David C. Jenkins, both of Grand Rapids, Mich.; Michael L. Mercier, Grandville, Mich.; Donald K. Sandberg, Ada, and David S. Teppo, East Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 18,224, Feb. 1, 1994, Pat. No. Des. 367,980, and a continuation-in-part of Ser. No. 24,007, Jun. 6, 1994, Pat. No. Des. 372,611, which is a continuation-in-part of Ser. No. 15,411, Nov. 16, 1993, Pat. No. Des. 360,316. This application Jan. 17, 1995, Ser. No. 33,607
Term of patent 14 years
LOC (6) Cl. 06 - *99*
U.S. Cl. D6—491



383,020
PROTECTIVE BUTTON INSERT FOR CHILD'S CAR SEAT
Mary Ann Craig, 950 Waterford, Casper, Wyo. 82609-3232
Filed Jan. 30, 1995, Ser. No. 34,177
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



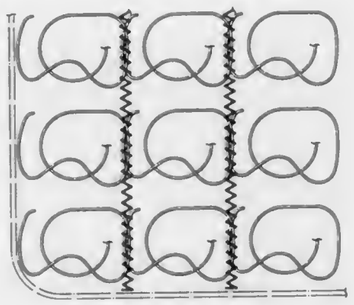
383,021
CHAIR BODY
Chieh-Tsung Lu, No. 1 Lane 292, Sec. 2 Ya-Tan Road, Tan-Tze Hsiang, Taichung Hsien, Taiwan
Filed Jun. 14, 1996, Ser. No. 55,850
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—500



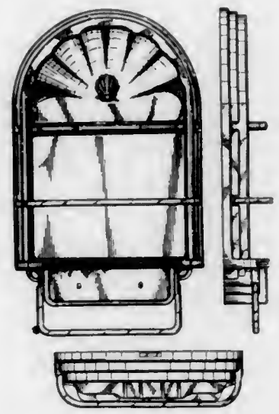
383,022
FURNITURE SPRING ASSEMBLY
James R. Barber, Anderson, Ind., assignor to Barber Manufacturing Company, Inc., Anderson, Ind.
Filed Jun. 27, 1994, Ser. No. 25,029
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—504



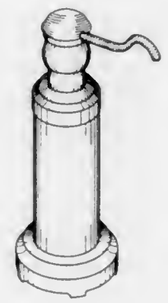
383,023
TOP PORTION OF A SPRING CORE
Thomas J. Wells, Carthage, Mo., assignor to L&P Property Management Company, Chicago, Ill.
Filed Mar. 15, 1996, Ser. No. 51,700
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—504



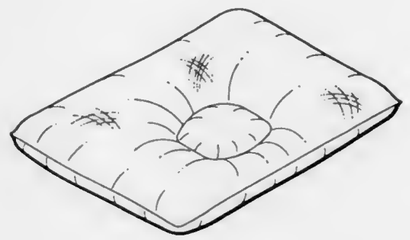
383,024
SHOWER SHELF AND TOWEL BAR UNIT
Benjamin E. Gilmore, 638 Sixth St., Hermosa Beach, Calif. 90254
Continuation-in-part of Ser. No. 29,410, Oct. 5, 1994, Pat. No. Des. 370,056, and a continuation-in-part of Ser. No. 27,227, Aug. 16, 1994, Pat. No. Des. 373,497. This application Jan. 11, 1996, Ser. No. 48,702
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—525



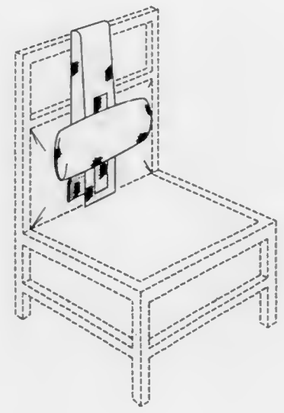
383,025
LIQUID SOAP DISPENSER
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Jun. 27, 1996, Ser. No. 56,355
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—542



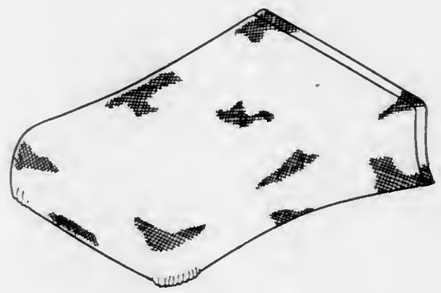
383,026
CERVICAL PILLOW
Angela M. Torbik, Long Beach, Calif., assignor to Anabolic Laboratories, Inc., Irvine, Calif.
Filed Mar. 9, 1995, Ser. No. 35,910
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



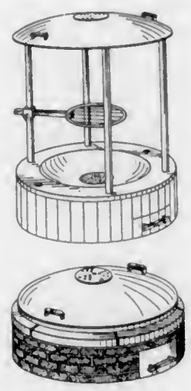
383,027
BACK SUPPORT
Edwin H. Riedell, 5131 Cribari Pl., San Jose, Calif. 95135
Filed Oct. 19, 1995, Ser. No. 45,433
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



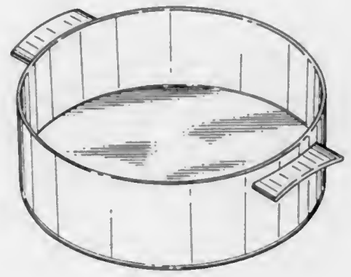
383,028
FITTED TOP BED SHEET
Berdine Pierce, 58735 Steven, New Haven, Mich. 48048
Filed Mar. 21, 1995, Ser. No. 36,475
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—602



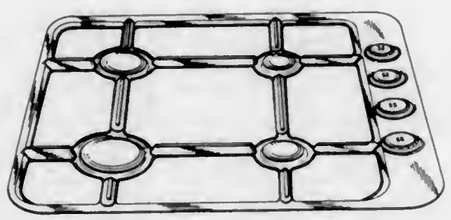
383,029
MULTIPURPOSE OUTDOOR FIRE PIT
Daniel V. Streicheck, Jr., and Deborah A. Healy, both of Woodstock, Ill., assignors to Unlimited Concepts, Inc., Woodstock, Ill.
Filed Jun. 6, 1995, Ser. No. 41,502
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—332



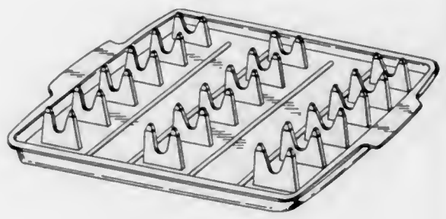
383,031
STEAMER BASE
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries, Inc., Orlando, Fla.
Filed Oct. 23, 1995, Ser. No. 45,528
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



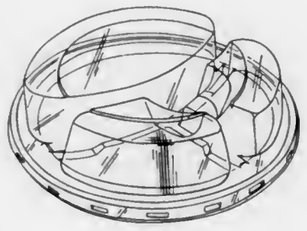
383,030
COOKTOP
Lou Beeren, Groningen, Netherlands, assignor to Whirlpool Europe B.V., Veldhoven, Netherlands
Filed Jan. 13, 1995, Ser. No. 33,456
Claims priority, application Italy, Jul. 15, 1994, MI9400362
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—346



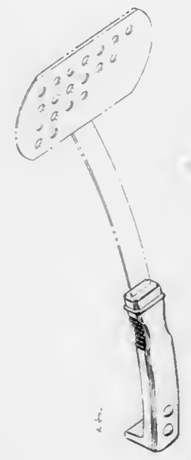
383,032
MICROWAVE LINK COOKER
Fred Hollinger, Kings Park, N.Y., assignor to E. Mishan & Sons, Inc., New York, N.Y.
Filed Mar. 28, 1996, Ser. No. 52,370
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—359



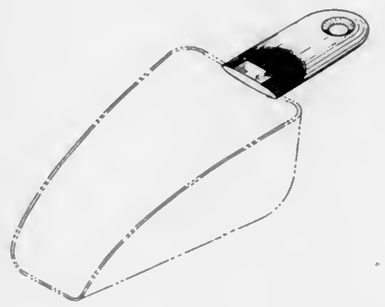
383,033
COMPARTMENTAL COVER FOR A CONTAINER
F. Joseph Pfirrmann, Jr., Covington, Ky.; Jeffery L. Kalebain, Cincinnati, Ohio, and Thomas A. Messina, Edgewood, Ky., assignors to Boston Chicken, Inc., Golden, Colo.
Filed May 15, 1996, Ser. No. 54,583
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—392.1



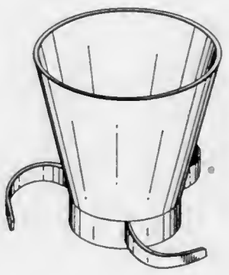
383,035
HANDLE FOR COOKING UTENSILS
Richard E. Belmont, Winston-Salem, N.C., assignor to W.C. Bradley Company, Columbus, Ga.
Filed Aug. 10, 1995, Ser. No. 42,415
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—395



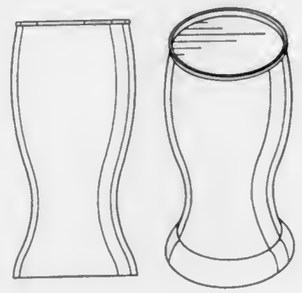
383,034
HANDLE FOR KITCHEN UTENSIL
Bruce Ancona, and Louis Henry, both of New York, N.Y., assignors to B. Via International Housewares, Inc., Englewood Cliffs, N.J.
Filed Jan. 11, 1996, Ser. No. 48,671
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—393



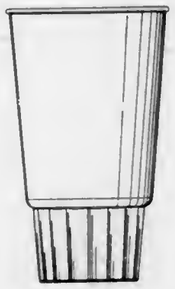
383,036
FILTER CAKE HOLDER
Bernard Cohen, Berkeley Lake, and Lee Kirby Jameson, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 16, 1995, Ser. No. 46,497
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—400



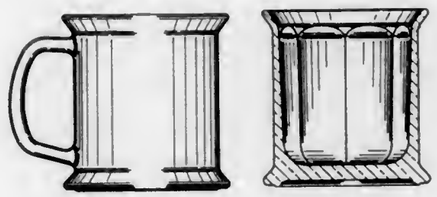
383,037
BEVERAGE CONTAINER
Frédériqué Asberg, Amsterdam, Netherlands, assignor to Heineken Technical Services, B.V., Netherlands
Filed Jun. 7, 1995, Ser. No. 39,900
Claims priority, application WIPO, Dec. 7, 1994, DMA002720
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—511



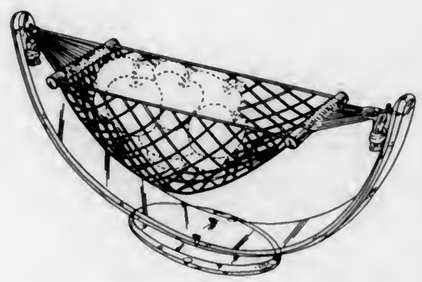
383,038
CONTAINER TO FIT A VEHICLE CUP RECEPTACLE
George A. Willbrandt, Fairfax, Va., assignor to Berry Sterling Corporation, Evansville, Ind.
Continuation-in-part of Ser. No. 17,562, Jan. 14, 1994, Pat. No. Des. 362,368, and a continuation-in-part of Ser. No. 181,551, Jan. 14, 1994, Pat. No. 5,427,269, and a continuation-in-part of Ser. No. 186,419, Jan. 28, 1994, Pat. No. 5,433,337. This application Mar. 29, 1995, Ser. No. 36,845
The portion of the term of this patent subsequent to Sep. 19, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—531



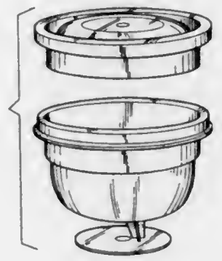
383,039
FLARED MUG
Douglas E. Densmore, Shreveport, La., assignor to Libbey Glass Inc., Toledo, Ohio
Filed Mar. 17, 1995, Ser. No. 36,362
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—536



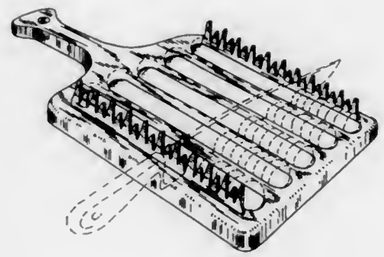
383,040
FRUIT/VEGETABLE NETTING DISPLAY HAMMOCK
Christopher J. McArdle, Alta Loma, Calif., assignor to Prodyne Enterprises Inc., Montclair, Calif.
Filed Feb. 21, 1995, Ser. No. 35,128
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—602



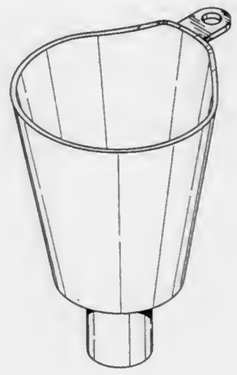
383,041
FOOD CONTAINER
Gary Shane McGill, Rochester, United Kingdom, assignor to McGill Technology Limited, England
Filed Mar. 6, 1995, Ser. No. 36,693
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—629



383,042
CUTTING BOARD
Alma Lach, 5750 S. Kenwood Ave., Chicago, Ill. 60637
Filed Jul. 3, 1995, Ser. No. 41,043
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—698



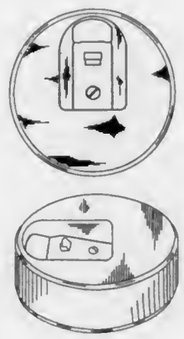
383,043
BOTTLE-TO-BOTTLE TRANSFER FUNNEL
Virgil Harris, P.O. Box 124, Point Marion, Pa. 15474
Filed Jun. 17, 1996, Ser. No. 55,925
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—700



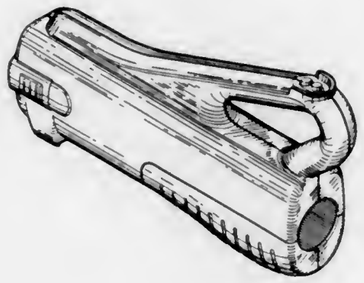
383,044
GAS CYLINDER LOCK SCREW WRENCH FOR M1 GARAND RIFLE
Joseph R. A. Soucy, 90 W. Hollis St., Nashua, N.H. 03060-3150
Filed Jun. 23, 1995, Ser. No. 40,702
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—21



383,045
HOCKEY PUCK BOTTLE OPENER
Anthony D. Turso, 22 Depot St., Franklin, Mass. 02038, assignor to Anthony D. Turso, Foxboro, Mass.
Filed Feb. 28, 1995, Ser. No. 35,468
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D8—38



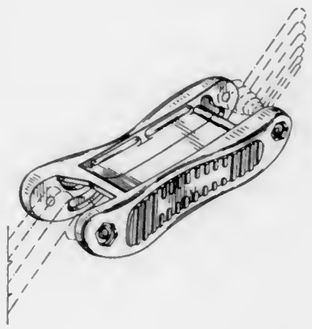
383,046
PORTABLE CRIMPER
W. Keith Moffatt, Freeport, Ill., and Paul Hurley, Holland, Mich., assignors to Greenlee Textron Inc., Rockford, Ill.
Filed Jul. 12, 1995, Ser. No. 43,440
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—69



383,047
SET OF HANDLES FOR A CRIMPING TOOL
Craig Steven Scherer, Wilmette, and Michael C. Thuma, Des Plaines, both of Ill., assignors to Pandult Corp., Tinley Park, Ill.
Filed Jan. 18, 1995, Ser. No. 33,665
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—107



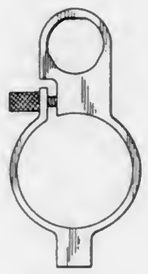
383,048
FOLDING TOOL HANDLE
Joseph A. Sorensen, Lincoln, and Anthony B. Fuller, DeWitt, both of Nebr., assignors to American Tool Companies, Inc., Kenosha, Wis.
Filed Mar. 1, 1995, Ser. No. 35,544
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—107



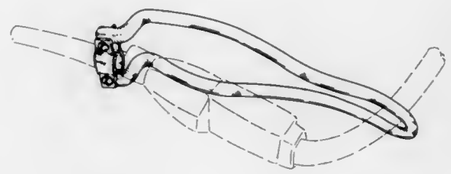
383,049
TOOL HANDLE GRIP
Gabriel E. Concari; Joseph C. Petersen, Jr., and Scott M. Niesen, all of Madison, Wis., assignors to Fiskars Inc., Madison, Wis.
Filed Jun. 30, 1995, Ser. No. 40,976
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—107



383,050
MOUNTING BRACKET
Gary Lynn Palmer, Vinton, Va., assignor to ITT Corporation, New York, N.Y.
Filed Apr. 6, 1995, Ser. No. 37,216
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



383,051
EXTENSION CORD RETAINER
Steward W. Oien, R.R. 1 Box 143, Rothsay, Minn. 56579
Filed May 19, 1995, Ser. No. 39,088
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—356

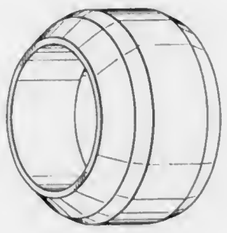


383,052
STORAGE HOOK
Steven J. Sheftel, Marstons Mills, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Mar. 25, 1996, Ser. No. 52,127
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—367

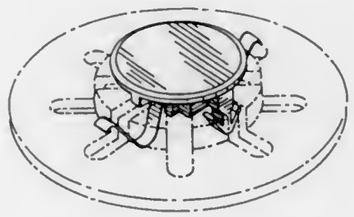


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383,053
TAPERED SOCKET WELDED COUPLING
Robert S. Schrader, Dallas; James L. Snyder, Houston; James Phillip Ellenberger, Spring; James W. Magee, Houston; Peter J. Badley, Houston; Joe A. Escobedo, Houston; Daniel T. Gutierrez, Houston, and Williams E. Goussen, Houston, all of Tex., assignors to WFI International, Inc., Houston, Tex.
Filed Feb. 9, 1994, Ser. No. 18,520
The portion of the term of this patent subsequent to Sep. 9, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



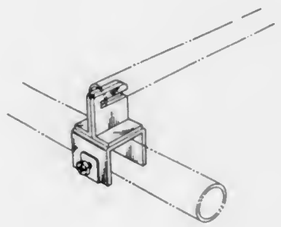
383,055
COMPACT DISC HOLDER RELEASE PUSH BUTTON
Joseph H. Dautzenberg, Landgraaf, Netherlands, assignor to Holdi Design B.V., Netherlands
Filed Jan. 12, 1994, Ser. No. 17,396
Claims priority, application Netherlands, Dec. 7, 1993, 68890-00
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



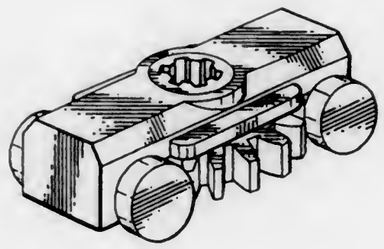
383,054
GAME STAKE
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Dec. 18, 1995, Ser. No. 47,984
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—388



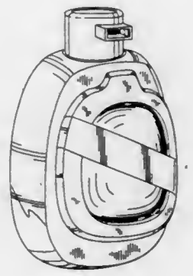
383,056
PARTITION HOLDER FOR RACK
Takeyasu Murakami, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Apr. 12, 1994, Ser. No. 21,309
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—396



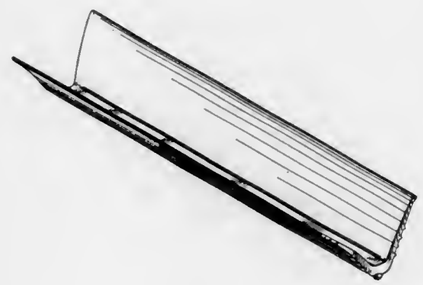
383,057
CARRIER
John Robert Davies, and Sean James Davies, both of Vaughan, Canada, assignors to 420820 Ontario Limited, Vaughan, Canada
Filed Nov. 8, 1995, Ser. No. 46,153
Term of patent 14 years
LOC (6) Cl. 08 - *09*
U.S. Cl. D8—400



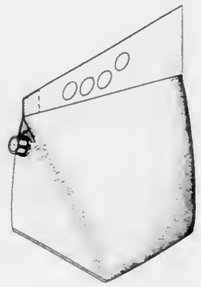
383,059
DISPENSER
Michael D. Kelly, 7227 Edmund St., Philadelphia, Pa. 19135
Filed Aug. 2, 1993, Ser. No. 11,260
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—300



383,058
STABILIZING DEVICE FOR USE WITH SLIPCOVERS
Paula Riley, New York, and Kenneth V. Stevens, Brooklyn, both of N.Y., assignors to Prescient Partners, L.P., New York, N.Y.
Continuation-in-part of Ser. No. 39,100, May 17, 1995, Pat. No. Des. 377,899, and Ser. No. 270,057, Jul. 1, 1994, Pat. No. 5,547,249. This application May 1, 1996, Ser. No. 53,911
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D8—499

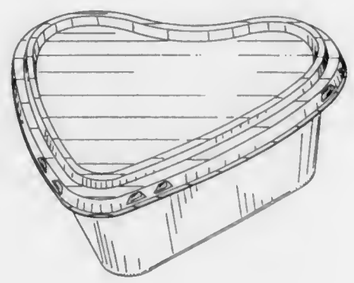


383,060
FLEXIBLE PACKAGE
Reiner Pfuhl, Dieburg, and Steffen Marx, Lautertal, both of Germany, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Filed Aug. 18, 1995, Ser. No. 42,871
Claims priority, application Germany, Feb. 19, 1995, M 95 01 381.4
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D9—305

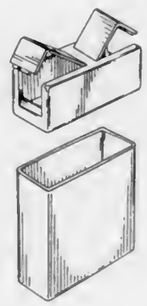


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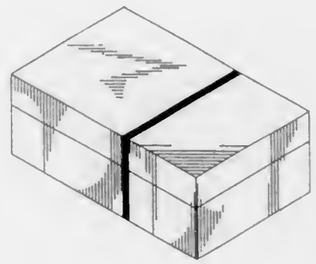
383,061
CONTAINER
Finn Kolby-Larsen, Hojbjerg, Denmark, assignor to MD Foods amba, Viby J, Denmark
Filed Jul. 17, 1995, Ser. No. 41,479
Claims priority, application Denmark, Jan. 17, 1995, MA 0031 1995
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—315



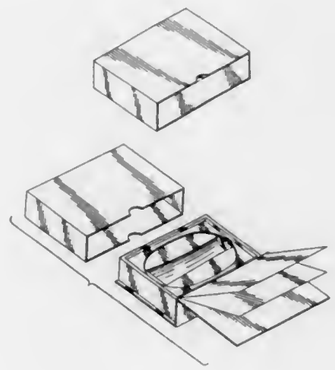
383,062
CAP AND PACKAGE FOR PACKAGE OF CHEWING GUM
Lisa A. Gilels, 1114 W. Lynwood, Phoenix, Ariz. 85007, and Terry J. Adams, 132 S. Central, Suite 6, Phoenix, Ariz. 85004
Filed Jun. 12, 1995, Ser. No. 40,159
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—421



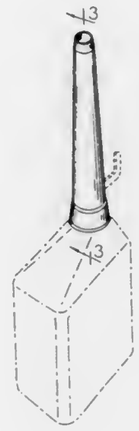
383,063
CONTAINER WITH COVER
Gerald L. Koenig, 7234 Ogelsby Ave., Los Angeles, Calif. 90045-1355
Filed Feb. 10, 1993, Ser. No. 4,642
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—432



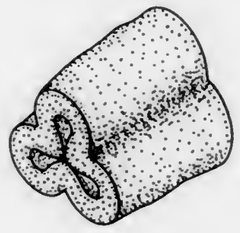
383,064
CONTAINER FOR A TUBE
Yugo Tsukikawa, 1867 Charoen Nakom Road Sol 55, Klongsam, Bangkok THX
Filed Jul. 27, 1995, Ser. No. 42,715
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—432



383,065
OIL CONTAINER SPOUT
David A. Eastling, 20625 Woodhaven Pl., Deephaven, Minn. 55331
Filed Mar. 5, 1996, Ser. No. 51,303
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—447



383,066
LOOSE FILL PACKING MATERIAL
Lee V. Dudley, and Roderick R. Allre, both of Fremont, Calif., assignors to Free-Flow Packaging Corporation, Redwood City, Calif.
Filed May 22, 1995, Ser. No. 39,404
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—456



383,067
HAND GRIP BOTTLE
Brian D. Gower, Canton; James G. Kulp, Dexter; Dean M. Lang, Brighton; William Schroeck, Belleville, and Howard E. Taylor, Farmington Hills, all of Mich., assignors to Plastipak Packaging, Inc., Plymouth, Mich.
Filed May 5, 1995, Ser. No. 38,412
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



383,068
PERFUME CONTAINER
Pierre Dinand, Levallois Perret, France, assignor to Pacific Corporation, Rep. of Korea
Filed Feb. 9, 1994, Ser. No. 18,528
Claims priority, application Rep. of Korea, Aug. 25, 1993, 1993-17298
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—522



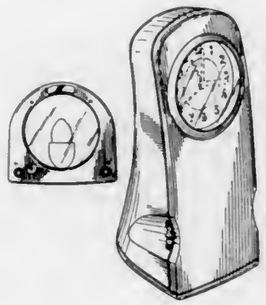
383,069
BOTTLE
William Valls, Harwinton; Paul Metaxatos, Canton, and Peter Bertolini, Shelton, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed May 5, 1995, Ser. No. 38,447
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



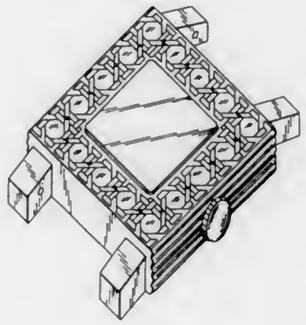
383,070
COMBINED BOTTLE AND CAP
Bradley Pete Workman, and Kenneth H. Nilssen, both of New York, N.Y., assignors to Bath & Body Works, Inc., Columbus, Ohio
Filed Aug. 9, 1996, Ser. No. 58,209
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



383,071
COMBINED CLOCK AND FLASHLIGHT
Hitoshi Suzuki, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed May 4, 1995, Ser. No. 38,376
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—5



383,072
SQUARE WATCH CASE
Agnes Visage, Croissy, France, assignor to Christian Dior, Paris, France
Filed Sep. 16, 1994, Ser. No. 28,483
Claims priority, application France, Mar. 16, 1994, 941536
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



383,073
DECORATIVE RECLOSABLE CONTAINER
WRISTWATCH
Joseph A. Miller, 2A-39 Jeanette St., Danbury, Conn. 06811
Continuation-in-part of Ser. No. 46,309, Nov. 13, 1995, abandoned. This application Sep. 6, 1996, Ser. No. 59,267
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—31



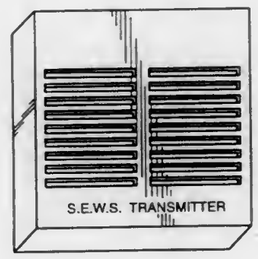
383,074
WATCH
Yukiko Hayashi, Chiba, Japan, assignor to Seiko Instruments Inc., Japan
Filed Nov. 13, 1995, Ser. No. 46,363
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



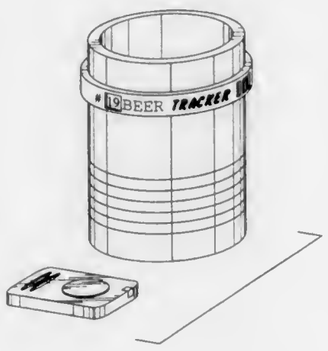
383,075
SURVEYING APPARATUS UTILIZING A LASER BEAM
Shigeyuki Sawaguchi, Minami-ashigara; Takenori Ryouke; Takumi Hirakawa, both of Isehara; Jiang Yin, Kawasaki; Hiroyuki Nakabe, Sagamihara; Shunji Yamagata, Kawasaki, and Yukiko Chiba, Odawara, all of Japan, assignors to Sokkia Co., Ltd., Tokyo, Japan
Filed Oct. 4, 1995, Ser. No. 44,974
Claims priority, application Japan, Jun. 26, 1995, 7-17971
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—66



383,076
EMERGENCY VEHICLE PROXIMITY ALARM SYSTEM
Rodney J. Cripe, 125 Orpha Dr., Middlebury, Ind. 46540
Filed Jul. 24, 1995, Ser. No. 41,769
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—70



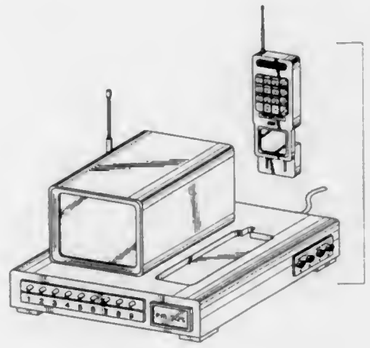
383,077
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING BEVERAGES
Alvin Peyton, and Billy McElhaney, Jr., both of P.O. Box 152, Bridgeport, Tex. 76426
Filed Sep. 11, 1995, Ser. No. 43,691
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



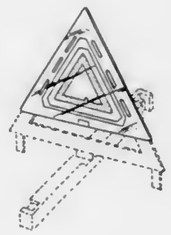
383,078
PASSIVE INFRA-RED SENSOR
Bilha Carmi, Netanya, Israel, assignor to Visonic Ltd., Tel Aviv, Israel
Continuation of Ser. No. 31,086, Nov. 17, 1994, abandoned, which is a division of Ser. No. 10,057, Jun. 28, 1993, Pat. No. Des. 356,748. This application Jun. 6, 1995, Ser. No. 39,853
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106



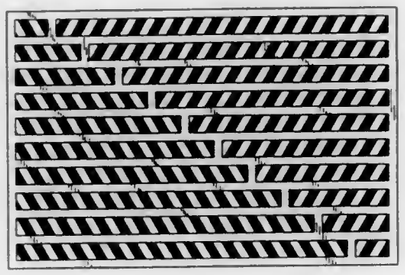
383,079
REMOTE SECURITY MONITOR SYSTEM
Mohammed M. Baydoun, and Sawsan H. Baydoun, both of 4130 Lapham St., Dearborn, Mich. 48126
Filed Apr. 12, 1996, Ser. No. 52,998
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106



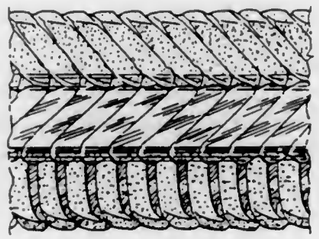
383,080
CAUTION SIGNAL
Matthew M. Derrick, South Bend, Ind., assignor to SEG Corporation, Mishawaka, Ind.
Filed Oct. 26, 1995, Ser. No. 45,692
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—109



383,081
SET OF REFLECTIVE SAFETY MARKERS
David C. Ffrench, 60 32 71st St., Maspeth, N.Y. 11378
Filed Feb. 10, 1995, Ser. No. 34,717
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—111



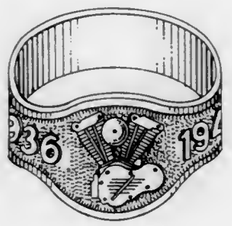
383,082
CHAIN
Elio Bonarini, and Domenico Fornaini, both of Arezzo, Italy, assignors to Uno A Erre Italia S.p.A., Arezzo, Italy
Filed Jul. 7, 1995, Ser. No. 41,174
Claims priority, application Italy, Jan. 11, 1995, FI/95/0/000002
The portion of the term of this patent subsequent to Sep. 3, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—13



383,083
WATCH BRACELET
Pierre Ludvig, St. Nom-la-Breteche, France, assignor to Titan International Marketing Ltd., London, United Kingdom
Filed Oct. 25, 1995, Ser. No. 45,616
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—21



383,084
FINGER RING
Bill Elkins, and Shiloh Elkins, both of 5064 ½ Lankershim Blvd., North Hollywood, Calif. 91601
Filed Sep. 5, 1995, Ser. No. 43,504
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—30

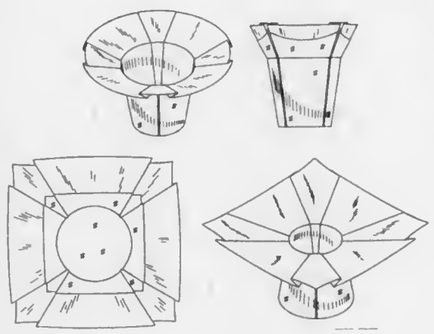


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383,085
DECORATIVE JEWEL CLUSTER
Jessica Nyqvist, Boston, Mass., assignor to The Keds Corporation, Cambridge, Mass.
Filed Mar. 9, 1995, Ser. No. 35,954
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—86



383,086
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of the Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc., trustee
Continuation-in-part of Ser. No. 809,637, Dec. 16, 1991, Pat. No. Des. 363,451, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 5, 1993, Ser. No. 3,287
The portion of the term of this patent subsequent to Oct. 24, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



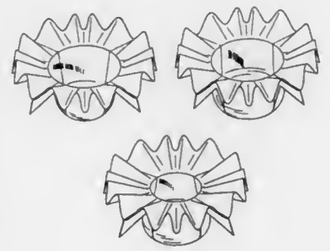
383,087
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust Internationa. Inc. trustee
Continuation-in-part of Ser. No. 809,636, Dec. 16, 1991, Pat. No. Des. 365,042, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 5, 1993, Ser. No. 3,318
The portion of the term of this patent subsequent to Nov. 28, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



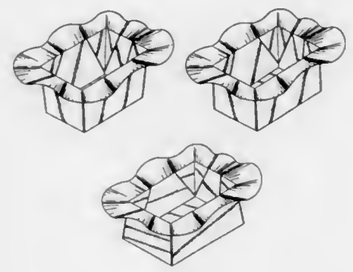
383,088
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of the Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 809,639, Dec. 16, 1991, Pat. No. Des. 365,539, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jul. 10, 1995, Ser. No. 41,220
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



383,089
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 693, Oct. 20, 1992, Pat. No. Des. 366,629, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 45,385
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



383,090
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 4,961, Jan. 12, 1993, Pat. No. Des. 371,322, which is a continuation-in-part of Ser. No. 808,558, Dec. 16, 1991, Pat. No. Des. 362,408, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application May 7, 1996, Ser. No. 54,130
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



383,091
MOTOR VEHICLE BODY
Bruno Sacco, Sindelfingen, and Peter Pfeiffer, Boeblingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Jan. 13, 1995, Ser. No. 33,464
Claims priority, application Germany, Jul. 13, 1994, M9405301.4
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91



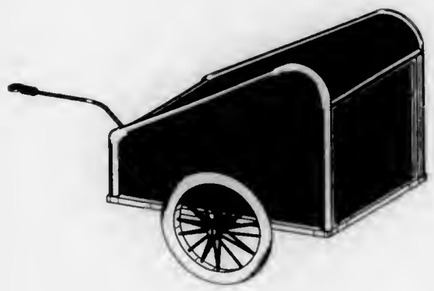
383,092
TRAILER
Derick Garzancich, Johannesburg; Peter Bennetto, and Garth Desmond Bolton, both of Sandton, all of South Africa, assignors to Notice Investments (PTY) Limited, Johannesburg, South Africa
Filed Apr. 12, 1995, Ser. No. 37,431
Claims priority, application South Africa, Oct. 12, 1994, 94/0757
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—95



383,093
TRAILER
Derick Garzancich, Johannesburg; Peter Bennetto, and Garth Desmond Bolton, both of Sandton, all of South Africa, assignors to Notice Investments (PTY) Limited, Johannesburg, South Africa
Filed Jul. 10, 1995, Ser. No. 41,253
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—102



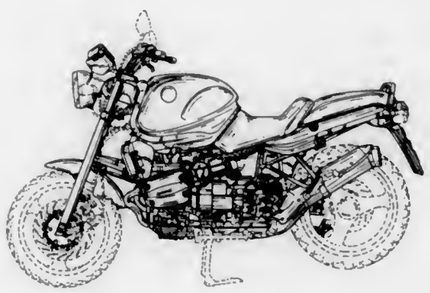
383,094
BICYCLE CART
Cory J. Mast, 501 W. Superior, Osceola, Ind. 46561
Filed Mar. 22, 1996, Ser. No. 52,072
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—102



383,095
FOUR WHEELED VEHICLE
Shiro Miyamoto, and Toshio Kurihara, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,407
Claims priority, application Japan, Oct. 6, 1995, 7-30009
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—107



383,096
MOTORCYCLE BODY
Karl-Heinz Abe, Woerthsee, and Klaus Volker Gevert, Munich, both of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany
Filed May 5, 1994, Ser. No. 22,454
Claims priority, application Germany, Nov. 5, 1993, M 93 08 755.1
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—110

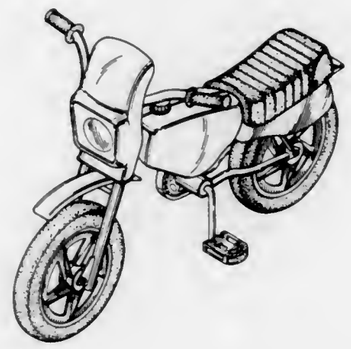


383,097
Patent Not Issued For This Number

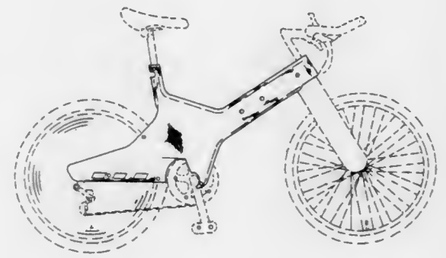
383,098
RECUMBENT BICYCLE
Russell D. Richman, 22706 Archibald Blair, Katy, Tex. 77449
Filed Jul. 5, 1994, Ser. No. 25,549
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



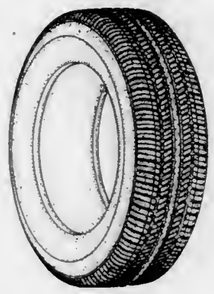
383,099
BICYCLE FOR CHILDREN
Chun-Hsiung Huang, Yung Kang, Taiwan, assignor to Day Luen Industry Co., Ltd., Yung Kang, Taiwan
Filed Jun. 20, 1995, Ser. No. 40,484
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



383,100
BICYCLE FRAME
Hslao-Yun Lee, 2F, 903, Shiang Sin South Rd., Taichung, Taiwan
Filed Jan. 26, 1996, Ser. No. 49,520
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



383,101
AUTOMOBILE TIRE
Koichiro Aikawa; Kazuhito Kimura, both of Hiratsuka, and Izumi Kuramochi, Tokyo, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1995, Ser. No. 37,477
Claims priority, application Japan, Oct. 20, 1994, 6-31619
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147

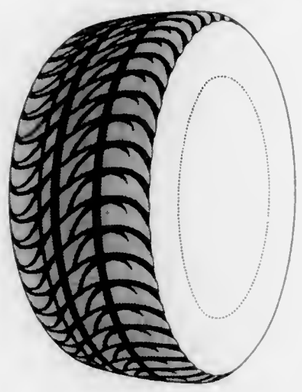


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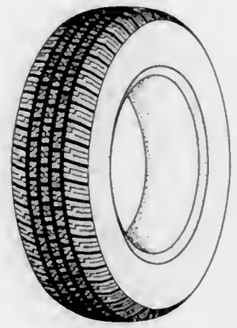
383,102
TIRE TREAD
Ronald Thomas Harris, Greenspring, W. Va.; Robert Bruce Rollings, Akron; Daniel Edward Schuster, North Royalton, both of Ohio; Daniel Scheuren, Bastogne, Belgium, and Richard Winfield Harden, Jr., Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 27, 1995, Ser. No. 45,712
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



383,103
TIRE TREAD
Billy Joe Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 20, 1995, Ser. No. 48,112
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



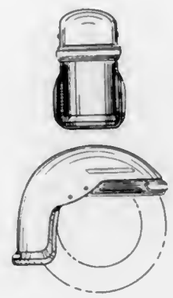
383,104
PNEUMATIC TIRE FOR VEHICLES
Dong-Ju Park, and Bock-Su Park, both of Kwangju, Rep. of Korea, assignors to Kumho & Co., Seoul, Rep. of Korea
Filed Mar. 25, 1996, Ser. No. 52,135
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



383,105
AIR CHUTE DEFLECTOR FOR A TEMPERATURE-CONTROLLED CONTAINER
Lyle W. Brys, 1174 Weld Co. Rd. 45, Hudson, Colo. 80642
Filed Aug. 10, 1995, Ser. No. 42,468
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—181



383,106
MOTORCYCLE FRONT FENDER
Robert Elliott Rice, 8148 Freda St., Detroit, Mich. 48204
Filed Oct. 23, 1995, Ser. No. 45,520
Term of patent 14 years
U.S. Cl. D12—186



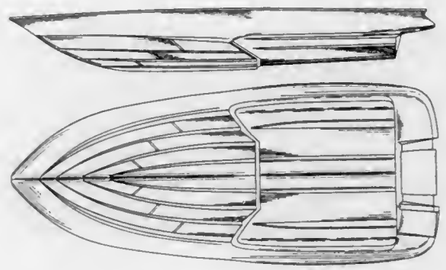
383,107

Patent Not Issued For This Number

383,108
MOISTURE SENSING WINDSHIELD WIPER ACTUATOR
James C. Bash, R.D. #4, Box 160J, Ligonier, Pa. 15658
Filed Apr. 7, 1995, Ser. No. 37,250
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—220



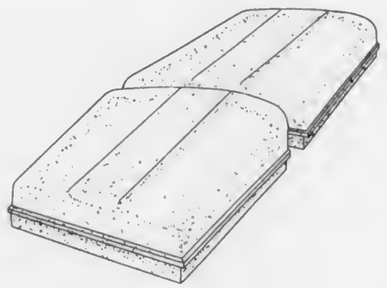
383,109
BOAT HULL
David T. Livingston, 4445-54th SW., Seattle, Wash. 98116
Filed May 3, 1996, Ser. No. 54,001
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—314



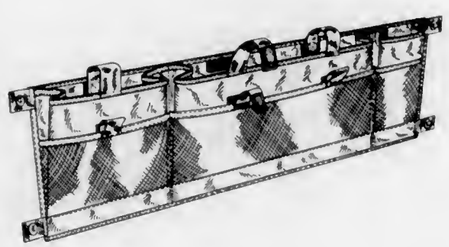
383,110
CAB EXTENSION
Lee Floyd Haney, Jr., Newcastle, Okla., assignor to Dakota Conversions, Inc., Oklahoma City, Okla.
Filed Apr. 30, 1996, Ser. No. 53,818
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—401



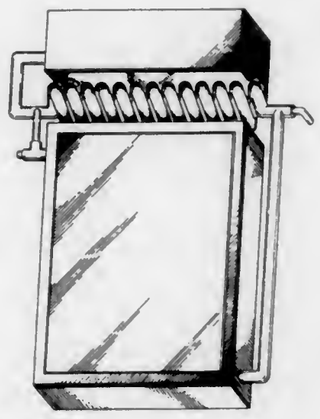
383,111
CANOE LUGGAGE RACK
Gary Cretcher, 7669 Harrisburg Hollow Rd., Bath, N.Y. 14810
Filed Aug. 21, 1995, Ser. No. 42,900
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—410



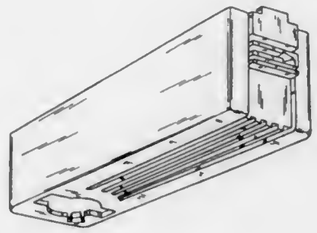
383,112
EASY ACCESS FRONT OF TRUNK ORGANIZER
Kimberly Ann Patterson, Malibu, Calif., assignor to Auto-Shade, L.L.C., Moorpark, Calif.
Filed Jun. 10, 1996, Ser. No. 55,666
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—422



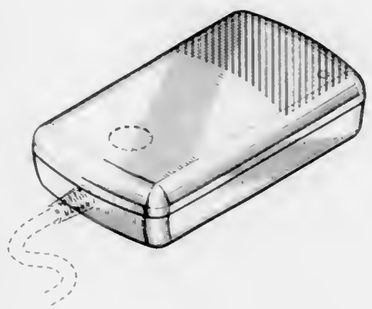
383,113
SOLAR HEATED LIQUIDS PASTEURIZATION SYSTEM
John David Grandinetti, 2169 Kauhana St., Honolulu, Hi. 96816
Filed Feb. 1, 1995, Ser. No. 34,330
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—102



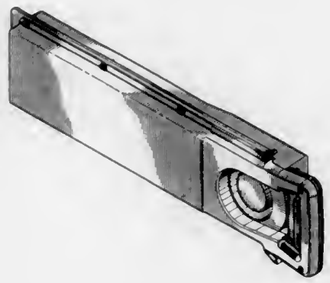
383,114
TRACK LIGHTING TRANSFORMER
Donald Wandler, Racine, Wis.; Julito A. Bustamante, Waukegan, Ill.; Kent Solberg, and Cory Ternberg, both of Racine, Wis., assignors to Ruud Lighting, Inc., Racine, Wis.
Filed Sep. 19, 1995, Ser. No. 44,172
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



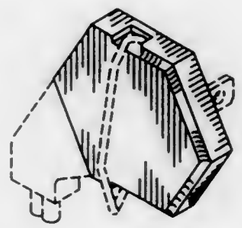
383,115
POWER ADAPTER
Albert L. Nagele, Wilmette; Leonid Soren, Lincolnwood; Steven W. Kaminski, Round Lake Beach, and Stephen J. Gaynes, Wonder Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 26, 1995, Ser. No. 44,578
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



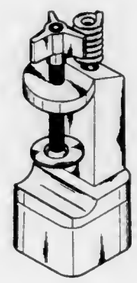
383,116
HOUSING FOR POWER AMPLIFIER WITH INTEGRAL FAN
Jeffrey Gerard Hoss, Roselle; Jeffrey Alan Walter, Huntley, and Jeffrey Apgar, West Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 9, 1995, Ser. No. 46,257
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—123



383,117
HEXAGONAL PLUG
Michael Phillips, Mississauga, Canada, assignor to Paige Innovations, Inc., Ontario, Canada
Filed Jun. 12, 1995, Ser. No. 40,163
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—138

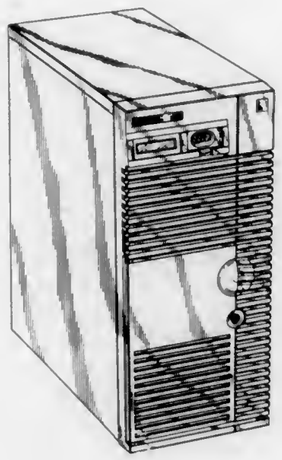


383,118
COMBINED SUPPORT AND ELECTRICAL RECEPTACLE
Chih-Ching Chen, No. 5, Sublane 2, Lane 24, Hua Yin Street, Taipei, Taiwan
Filed Apr. 26, 1996, Ser. No. 53,644
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139



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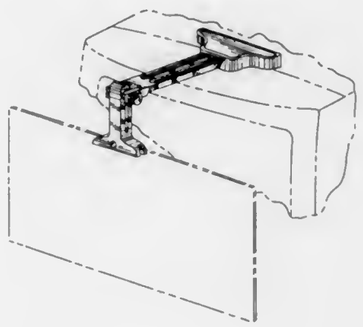
383,119
MINI COMPUTER
Badir M. Mousa, Auburn, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 2, 1996, Ser. No. 53,963
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



383,120
PORTABLE COMPUTER
Tadahiro Yamaguchi, Fuchu; Atsuhiko Urushihara, Kokubunji; Noriyoshi Ogura, Sayama; Taisuke Kashima, Urawa, and Kazuyuki Fukushima, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 29, 1996, Ser. No. 57,563
Claims priority, application Japan, Jan. 29, 1996, 8-1606
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



383,121
HOLDER FOR A SCREEN ENHANCEMENT SYSTEM
Charles F. Sebastian, 397 Downing Rd., Riverside, Ill. 60546-1734
Filed Jul. 31, 1995, Ser. No. 42,071
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



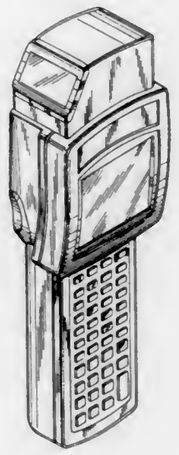
383,122
DISPLAY DEVICE FOR USE ON KEYBOARDS
Howard Parks, 1868 Rosemary Rd., Highland Park, Ill. 60035
Filed Dec. 1, 1995, Ser. No. 47,345
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



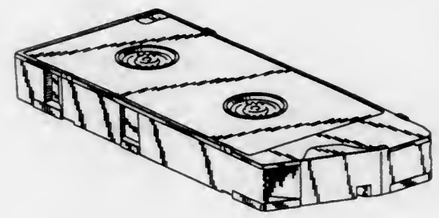
383,123
ICON OF A TWO-WAY RADIO FOR A COMPUTER DISPLAY SCREEN
Paul A. Arnone, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 29, 1993, Ser. No. 10,199
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.5



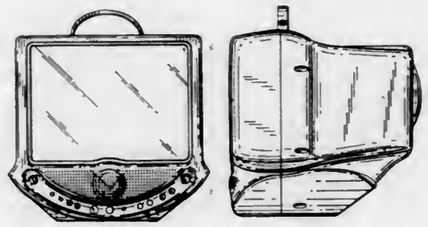
383,124
COMBINED OPTICAL SCANNER AND PORTABLE TERMINAL
Michael Lanzaro, Lake Grove; Philip W. Swift, Port Jefferson, and John A. Carricato, Ridge, all of N.Y., assignors to Symboi Technologies, Inc., Holtsville, N.Y.
Filed Jul. 10, 1995, Ser. No. 41,258
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—116



383,125
HOUSING FOR A DUAL REEL TAPE CARTRIDGE
Daniel C. Egan, Oakdale, Minn.; Randy S. Bay, Wahpeton, N. Dak.; James J. Evanoff, Roseville, Minn.; Leif O. Erickson, River Falls, Wis.; Armando J. Argumedo, Tucson, Ariz.; Steven L. Felde, Tucson, Ariz.; Scott M. Rockwell, Tucson, Ariz., and Kenneth R. Shelley, Tucson, Ariz., assignors to Imation Corp., St. Paul, Minn.
Filed Mar. 27, 1995, Ser. No. 36,765
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121

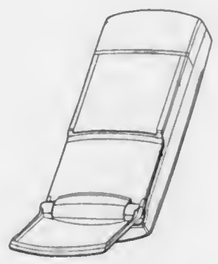


383,126
TELEVISION UNIT
Philippe Starck, Issy-les-Moulineaux, France, assignor to Thomson Consumer Electronics, Courbevole, France
Filed Dec. 19, 1994, Ser. No. 32,427
Claims priority, application France, Jun. 30, 1994, 94 3844
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—134

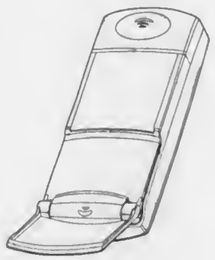


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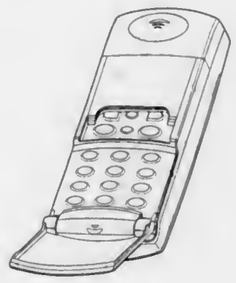
383,127
PORTABLE TELEPHONE HANDSET
Joseph James Giordano, Jr., Belle Mead; James R. Graham, Bedminster; Joel Thomas Holl, Holmdel; William Vincent Jackwicz, Spring Lake Heights; Pratod V. Kasbekar, Manalapan; Harish Shankar Mangrulkar, Colonia; Michael L. Moroze, New Egypt, all of N.J.; Michael John Nuttall, Portola Valley, Calif.; Joseph J. Rizzo, Cliffwood Beach, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, N.J.; Susan L. Tuttle, East Windsor, N.J.; William E. Venth, Union Beach, N.J.; Karl Edward Werner, Norristown, Pa., and Romano M. Zambon, Sea Bright, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,902
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



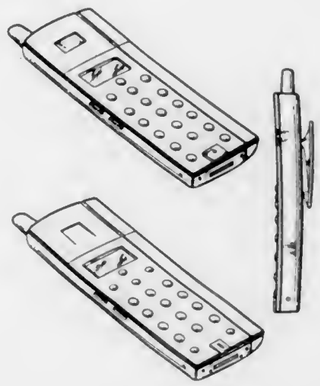
383,128
PORTABLE TELEPHONE HANDSET
Joseph James Giordano, Jr., Belle Mead; James R. Graham, Bedminster; Joel Thomas Holl, Holmdel; William Vincent Jackwicz, Spring Lake Heights; Pratod V. Kasbekar, Manalapan; Harish Shankar Mangrulkar, Colonia; Michael L. Moroze, New Egypt, all of N.J.; Michael John Nuttall, Portola Valley, Calif.; Joseph J. Rizzo, Cliffwood Beach, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, N.J.; Susan L. Tuttle, East Windsor, N.J.; William E. Venth, Union Beach, N.J.; Karl Edward Werner, Norristown, Pa., and Romano M. Zambon, Sea Bright, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,903
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



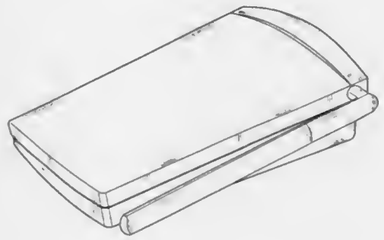
383,129
PORTABLE TELEPHONE HANDSET
Joseph James Giordano, Jr., Belle Mead; James R. Graham, Bedminster; Joel Thomas Holl, Holmdel; William Vincent Jackwicz, Spring Lake Heights; Pratod V. Kasbekar, Manalapan; Harish Shankar Mangrulkar, Colonia; Michael L. Moroze, New Egypt, all of N.J.; Michael John Nuttall, Portola Valley, Calif.; Joseph J. Rizzo, Cliffwood Beach, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, N.J.; Susan L. Tuttle, East Windsor, N.J.; William E. Venth, Union Beach, N.J.; Karl Edward Werner, Norristown, Pa., and Romano M. Zambon, Sea Bright, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,960
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



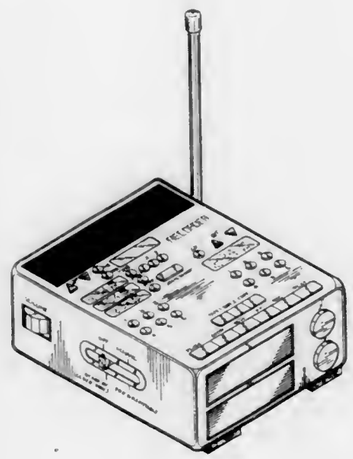
383,130
TELEPHONE
Thomas Waldner, Malmo, Sweden, assignor to Ericsson Business Mobile Networks B.V., Amsterdam, Netherlands
Continuation of Ser. No. 35,551, Feb. 28, 1995, abandoned.
This application Sep. 14, 1995, Ser. No. 44,773
Claims priority, application Hague Agreement, Aug. 30, 1994, DM 030537
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



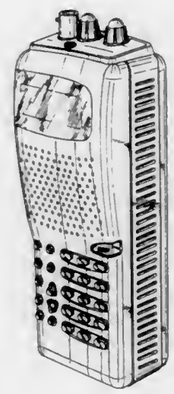
383,131
TELEPHONE MODULE
Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley; Christopher A. Robinette, Woodside, all of Calif., and John Henry Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,899
The portion of the term of this patent subsequent to Sep. 9, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



383,132
PROGRAMMABLE AUDIO CASSETTE RECORDER
Brent A. Lollis, 850 S. Longmore, No. 182, Mesa, Ariz. 85202
Filed May 10, 1995, Ser. No. 38,647
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—164



383,133
PROGRAMMABLE SCANNER
Kazuyoshi Imazeki, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan
Filed Nov. 29, 1995, Ser. No. 47,232
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—198



383,134
REMOTE CONTROL DEVICE
Douglas Mark Patton, Irvine, Calif., assignor to International Business Machine Corporation, Armonk, N.Y.
Filed Mar. 16, 1995, Ser. No. 36,280
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



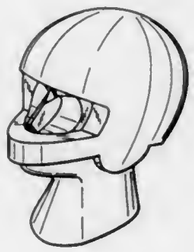
383,135
REMOTE CONTROL
Bruce S. Arthur, 6118 White Rose, Dallas, Tex. 75248
Filed Jul. 28, 1995, Ser. No. 41,996
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



383,136
PAIR OF DECORATIVE EARPIECES FOR HEADPHONES
Richard Leifer, 11 Beaumont Dr., Melville, N.Y. 11747
Filed Oct. 6, 1995, Ser. No. 45,059
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—223



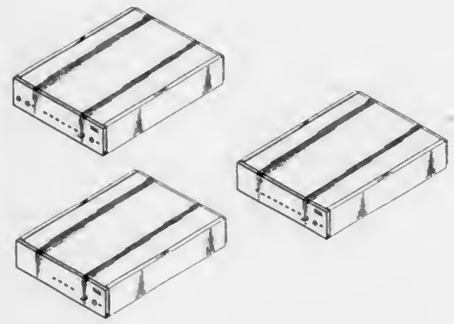
383,137
AUTOMOBILE ANTENNA ORNAMENT
Eddie Gamble, Jr., San Mateo, and Brian Bueza, San Francisco, both of Calif., assignors to Four Star Sports, San Mateo, Calif.
Filed May 8, 1996, Ser. No. 54,178
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—230



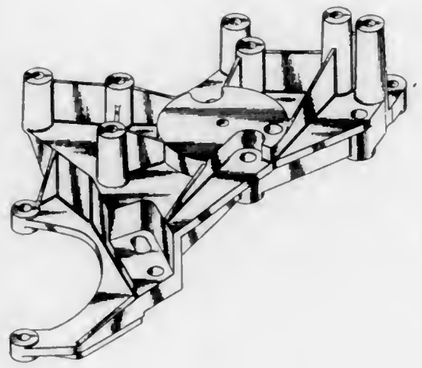
383,138
ANTENNA ELEMENT
Jiro Harada, Tokyo, Japan, assignor to Harada Industry Co., Ltd., Tokyo, Japan
Filed Sep. 19, 1995, Ser. No. 44,733
Claims priority, application Japan, Mar. 20, 1995, 7-7250
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—234



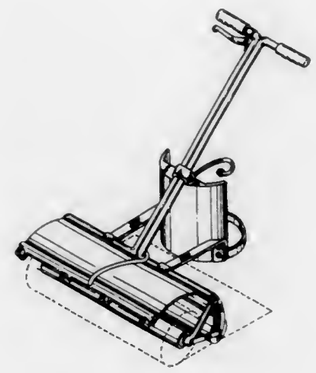
383,139
EXTERNAL MODEM ENCLOSURE FOR A DATA PROCESSING SYSTEM
David Wayne Hill, Cary, N.C., and Tim Kerry Murphy, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 6, 1995, Ser. No. 46,045
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—242



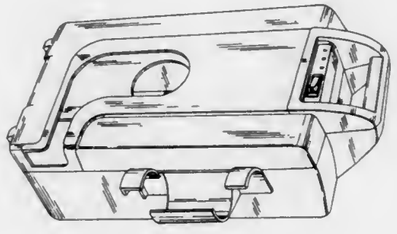
383,140
SUPPORT BRACKET FOR VEHICLE SUPERCHARGERS
James K. Middlebrook, 5351 Bonsai Ave., Moorpark, Calif. 93021
Filed Feb. 1, 1995, Ser. No. 34,310
Term of patent 14 years
LOC (6) Cl. 15 - *01*
U.S. Cl. D15—5



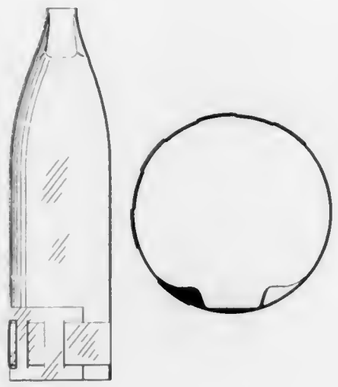
383,141
ROOFING MATERIAL APPLICATOR
Tom Martini, 28030 Hiller, Mt. Clemens, Mich. 48045
Filed Jul. 12, 1995, Ser. No. 41,358
Term of patent 14 years
LOC (6) Cl. 15 - *04*
U.S. Cl. D15—13



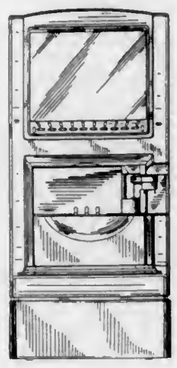
383,142
DRIVE AND CONTROL UNIT FOR A HYDRAULIC TOOL
Sven-Eric Juhlin, Stockholm; Håkan Bergkvist, and Hans Himbert, both of Bromma, all of Sweden, assignors to Pressmaster Tool AB, Alvdalen, Sweden
Filed Aug. 9, 1995, Ser. No. 42,407
Claims priority, application Sweden, Feb. 23, 1995, 95-0382
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—9



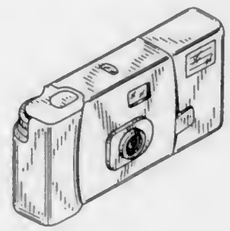
383,143
GUIDE FOR DISTRIBUTING COMMINUTED MATERIAL
Wilson Porter, 119 Sunnyside Dr., Centralia, Wash. 98531
Filed Jan. 2, 1996, Ser. No. 48,812
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—28



383,144
FRAME TRACER AND CENTERING DEVICE IN PARTICULAR FOR OPHTHALMIC LENSES
François Elie, Paris, France, assignor to Essilor International (Compagnie Generale d'Optique), Charenton, France
Filed Sep. 25, 1995, Ser. No. 44,476
Claims priority, application France, Mar. 23, 1995, 951 739
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—130



383,145
CAMERA
Makoto Isozaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 6, 1996, Ser. No. 54,054
Claims priority, application Japan, Nov. 6, 1995, 7-33441
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—208



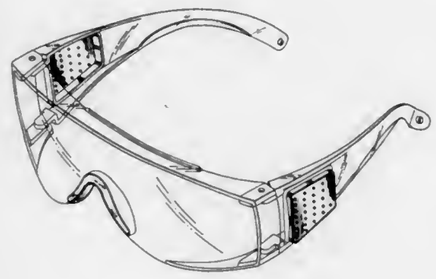
383,146
CAMERA
Nobuo Hashimoto, Kawasaki; Shoko Ryuen, Ichikawa; Ken Moro, Yokosuka, and Hideki Ito, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 49,962
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



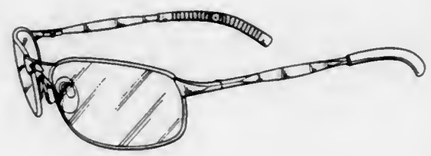
383,147
CAMERA
Ken Moro, Yokosuka; Hideki Ito; Nobuo Hashimoto, both of Kawasaki, and Shoko Ryuen, Ichikawa, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 49,963
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



383,148
GLASSES
Min-Young Wang Lee, No. 473, Jong-Shan S. Rd., Yung-Kang City, Tainan Hslen, Taiwan
Filed Aug. 15, 1995, Ser. No. 42,639
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—314



383,149
SUNGLASSES
Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy
Filed Oct. 23, 1995, Ser. No. 45,548
Claims priority, application Italy, Apr. 28, 1995, TV950000021
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



383,150
EYEWEAR FRONT
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 20, 1995, Ser. No. 46,653
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



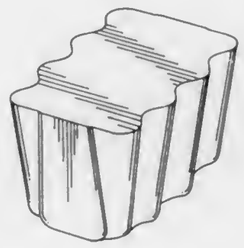
383,151
ELECTRONIC CALCULATOR
Mark A. Bedoi, 3423 Yankton Ave., Claremont, Calif. 91711
Continuation-in-part of Ser. No. 12,817, Sep. 10, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 33,176
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—2



383,152
TYPE FONT
James J. Jacobi, Jr., Ft. Montgomery, N.Y., assignor to North River Consulting, Inc., Ponte Vedra Beach, Fla.
Filed Jun. 14, 1995, Ser. No. 40,275
Term of patent 14 years
LOC (6) Cl. 18 - *03*
U.S. Cl. D18—24

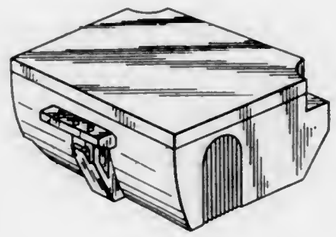


383,153
SOLID INK STICK FOR A COLOR PRINTER
Brent R. Jones, Tualatin, and Clark W. Crawford, Wilsonville, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Continuation-in-part of Ser. No. 22,542, May 6, 1994, abandoned. This application Jan. 20, 1995, Ser. No. 33,835
The portion of the term of this patent subsequent to Aug. 27, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56

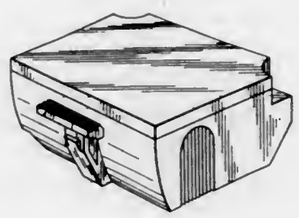


383,154
SOLID INK STICK FOR A COLOR PRINTER
Brent R. Jones, Tualatin; Clark W. Crawford, Wilsonville, and John A. Wright, Molalla, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Continuation-in-part of Ser. No. 33,831, Jan. 20, 1995, Pat. No. Des. 371,802. This application May 11, 1995, Ser. No. 39,796
The portion of the term of this patent subsequent to Jul. 30, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *99*
U.S. Cl. D18—56

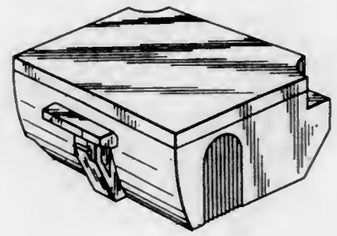
383,155
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,268
Claims priority, application Japan, Feb. 6, 1995, 7-2783
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



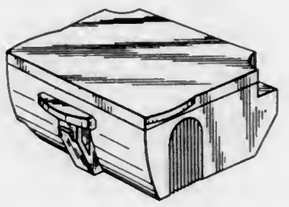
383,156
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,270
Claims priority, application Japan, Feb. 6, 1995, 7-2782
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



383,157
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,274
Claims priority, application Japan, Feb. 6, 1995, 7-2767
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56

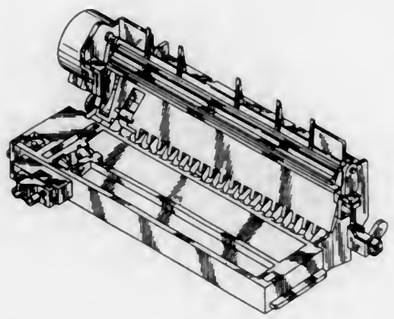


383,158
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,281
Claims priority, application Japan, Feb. 6, 1995, 7-2788
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56

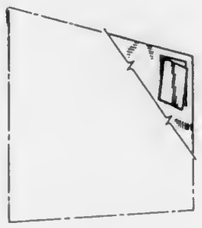


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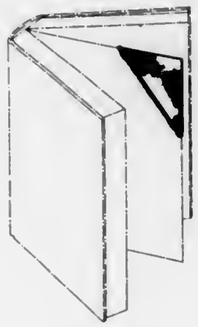
383,159
DUPLEX SHEET HANDLER FOR A PRINTER
Shoji Yoshikado, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed May 2, 1996, Ser. No. 53,970
Claims priority, application Japan, Nov. 15, 1995, 7-34239
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



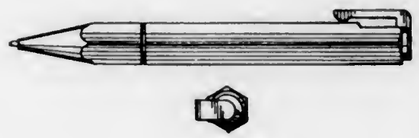
383,160
COMBINED FRONT ENVELOPE CORNER WITH INTEGRAL STAMP
Walter L. Hiersteiner, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mich.
Filed Jul. 31, 1995, Ser. No. 42,070
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D19—12



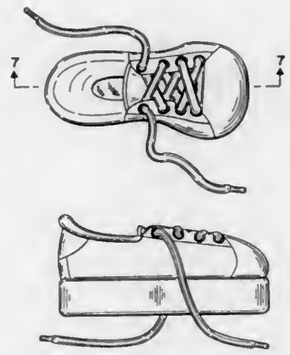
383,161
CORNER BOOKMARK
Betty R. Shelton, 406 Wilmuth, Monroe, La. 71201
Filed Mar. 24, 1995, Ser. No. 36,783
Term of patent 14 years
LOC (6) Cl. 19 - *99*
U.S. Cl. D19—34



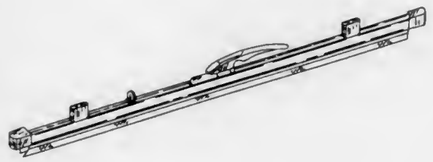
383,162
WRITING IMPLEMENT, PARTICULARLY A BALL POINT WRITER
Gerhard Wörther, Schwalbenweg 5, Baden-Baden, Germany, 76532
Continuation-in-part of Ser. No. 42,465, Aug. 10, 1995. This application Nov. 8, 1995, Ser. No. 46,160
Claims priority, application Germany, Oct. 2, 1995, M9501159.9
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—49



383,163
KNOT TYING TRAINING DEVICE
Kenny W. Davidson, 4125 Munford Giltedge Rd., Brighton, Tenn. 38011
Filed Apr. 8, 1996, Ser. No. 52,896
Term of patent 14 years
LOC (6) Cl. 19 - *07*
U.S. Cl. D19—62



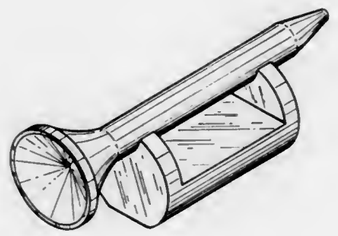
383,164
HANGER FOR PLANS
Kai-Hui Lau, No. 32 LCP8/27, Cheras Perdana, Perdana Park, 43200 Kajang Selangor, Malaysia
Filed Jul. 5, 1995, Ser. No. 41,157
Claims priority, application United Kingdom, Jan. 6, 1995, 2044310
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



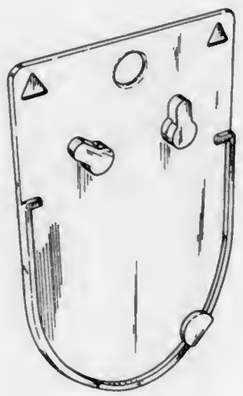
383,165
PENCIL SHARPENER
Bruno Gstalder, Poisy, France, assignor to Manufacture d'Articles de Precision et de Dessin M.A.P.E.D., Pringy, France
Filed Feb. 8, 1996, Ser. No. 50,069
Claims priority, application European Pat. Off., Sep. 25, 1995, DM/034205
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—73



383,166
BUSINESS CARD HOLDER
Edmund Anthony Nowak, Jr., 7742 Elmgrove Dr., Elmwood Park, Ill. 60635
Filed Oct. 25, 1995, Ser. No. 45,612
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—86



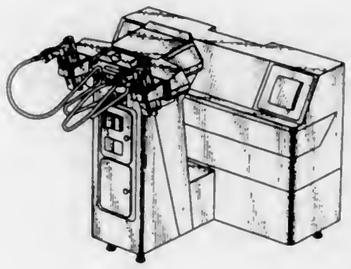
383,167
TAG
Arthur Richard Carlson, 23 Leura Grove, East Hawthorn, Victoria, Australia
Filed Jul. 17, 1995, Ser. No. 41,527
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—22



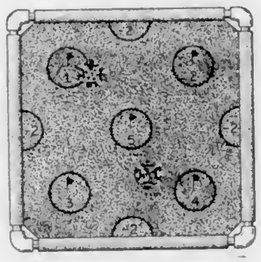
383,168
ERASABLE VIDEO CASSETTE LABEL
Gerald Takeo Adams, 1722 Mitchell Ave., #107, Tustin, Calif. 92680
Filed Apr. 5, 1996, Ser. No. 52,768
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—27



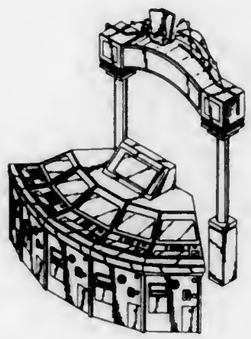
383,169
SIMULATION GAME MACHINE
Yasunobu Shinzato, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Jun. 11, 1996, Ser. No. 55,696
Claims priority, application Japan, Dec. 14, 1995, 7-37714
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



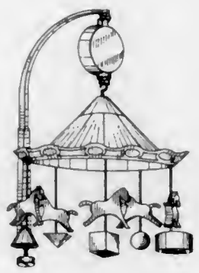
383,170
TOP SURFACE OF A GAME BOARD
Hardy F. Darden, 826-95th Ave., North, Naples, Fla. 33963
Filed Oct. 20, 1995, Ser. No. 45,466
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—18



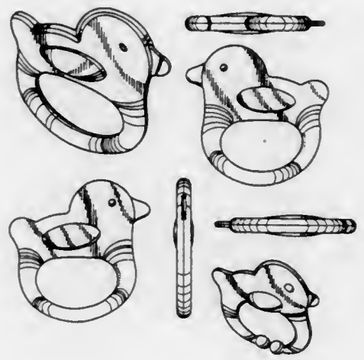
383,171
VIDEO BLACKJACK TABLE WITH PROGRESSIVE FEATURE
Cory J. Hanscom, New Hope, Minn., assignor to Innovative Gaming Corporation of America, Plymouth, Minn.
Filed Sep. 22, 1994, Ser. No. 28,794
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—37



383,172
MOBILE FOR THE EARLY LEARNING OF BABIES
Jean-Paul Allegre, Saint-Etienne, France, assignor to Allegre Puericulture Hygiene S.A., France
Filed Nov. 2, 1995, Ser. No. 45,903
Claims priority, application France, May 2, 1995, 952.668
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—63



383,173
BIRD HAND HELD TOY
Wong Chung Lun, Hong Kong, Hong Kong, assignor to Fu Hong Industries, Inc., Mongkok Kin, Hong Kong
Filed Aug. 14, 1995, Ser. No. 42,599
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—65



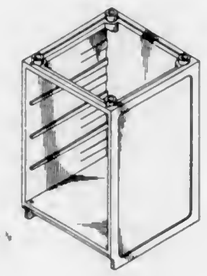
383,174
GREAT BLUE TURACO JIGSAW PUZZLE SCULPTURE
Ofer Nissim, Pound Ridge, N.Y., and Suzanne Simpson, Greenwich, Conn., assignors to Knox Security Engineering Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 50,550, Dec. 19, 1995. This application May 9, 1996, Ser. No. 54,282
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



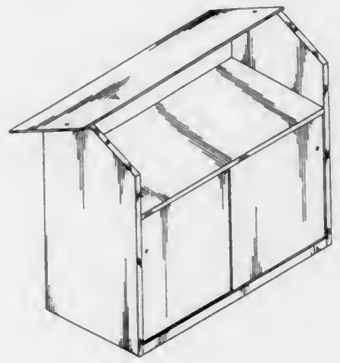
383,175
PARAKEET JIGSAW PUZZLE SCULPTURE
Ofer Nissim, Pound Ridge, N.Y., and Suzanne Simpson, Greenwich, Conn., assignors to Knox Security Engineering Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 50,549, Dec. 19, 1995. This application May 9, 1996, Ser. No. 54,284
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



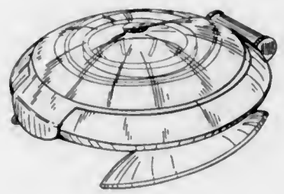
383,176
TOY BUILDING ELEMENT
Kenn Rasmussen, Frederiksberg; Niels Øhrwald, Helsingør, and Jan Egholm Jørgensen, Søborg, all of Denmark, assignors to Interlego AG, Baar, Switzerland
Filed Sep. 17, 1996, Ser. No. 59,843
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



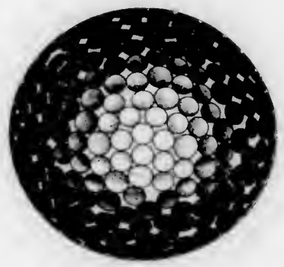
383,177
PLAY HOUSE
Diane Daveuny Darneille, 7104 Loch Lomond Dr., Bethesda, Md. 20817-4760
Filed Feb. 16, 1995, Ser. No. 34,937
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—114



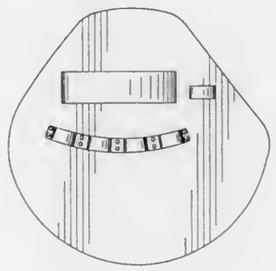
383,178
ELECTRIC HEATING DEVICE FOR PLASTICS
Dany Breuil, Lavans les Saint Claude, France, assignor to Smoby, Lavans les Saint Claude, France
Filed Jul. 28, 1994, Ser. No. 26,451
Claims priority, application Hague Agreement, Feb. 11, 1994, DM/028 668
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—122



383,179
GOLF BALL DIMPLE PATTERN
Joseph F. Stiefel, Ludlow, Mass., assignor to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,877
The portion of the term of this patent subsequent to Jul. 29, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—205



383,180
GAME PADDLE
Ray M. Briggs, 12301 Studebaker Rd. #154, Norwalk, Calif. 90650
Continuation-in-part of Ser. No. 611,150, Nov. 9, 1990, abandoned. This application Aug. 8, 1994, Ser. No. 26,860
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—213



383,181
GOLF CLUB HEAD
Geoffrey W. Gorman, Richmond, Va., assignor to Dunlop Maxfli Sports Corporation, Greenville, S.C.
Continuation-in-part of Ser. No. 349,670, Dec. 5, 1994, Pat. No. 5,441,263. This application Aug. 14, 1995, Ser. No. 42,664
The portion of the term of this patent subsequent to Nov. 12, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



383,182
SLEEVE COVER FOR BASEBALL BAT
Gary D. Estell, 603 - 74th St. SW., Everett, Wash. 98203
Filed Mar. 8, 1996, Ser. No. 52,500
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



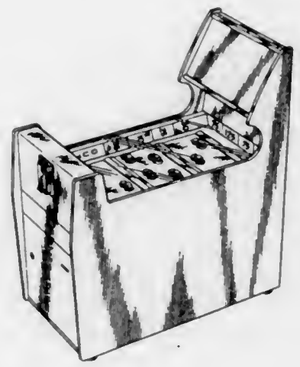
383,183
SURF SLED
Hadi Darejeh, 985 Triunfo Cyn. Rd., Thousand Oaks, Calif. 91361, and Joel R. McManus, 1751 WillowBrook Ln, Simi Valley, Calif. 93065
Filed Jul. 28, 1995, Ser. No. 41,976
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—228



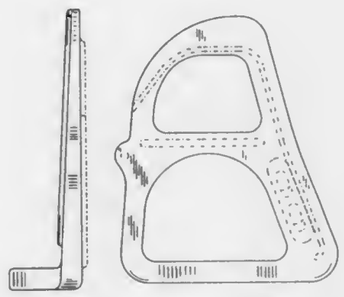
383,184
TOW HARNESS FOR INFLATABLE TUBE
Walter W. Hare, Bellevue, Wash., assignor to Pacific Market, Inc., Seattle, Wash.
Filed Mar. 13, 1996, Ser. No. 51,549
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D21—237



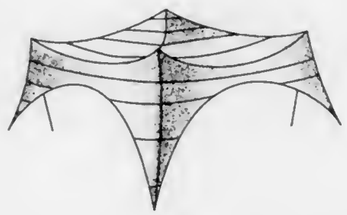
383,185
AMUSEMENT GAME MACHINE
Takashi Yamaguchi, Zama, and Takashi Hamano, Kawasaki, both of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan
Filed Jun. 29, 1995, Ser. No. 40,876
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



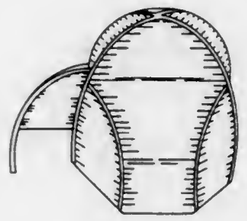
383,186
SUPPORT ARCH FOR A SLIDE
Maarten van Huystee, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Division of Ser. No. 27,414, Aug. 18, 1994, Pat. No. Des. 367,309. This application Dec. 13, 1995, Ser. No. 47,849
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



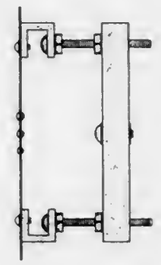
383,187
TENT
Todd Dalland, 110 Reade St., New York, N.Y. 10013
Filed Aug. 11, 1995, Ser. No. 42,533
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



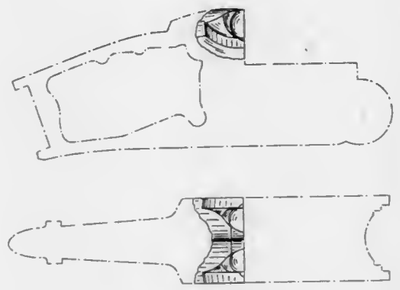
383,188
TENT
Shane Eric Bohart, 74 Vaquero Dr., Boulder, Colo. 80303
Filed Feb. 1, 1996, Ser. No. 49,866
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



383,189
BOW SIGHT
Paul Francis Ignelzi, 14-44 150 St., Whitestone, N.Y. 11357
Filed May 5, 1995, Ser. No. 38,475
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—107



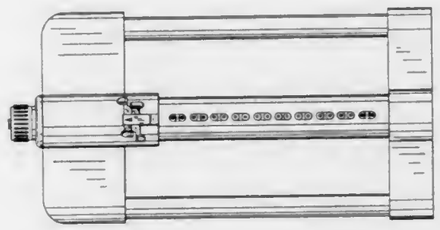
383,190
RECEIVER FOR SHOT GUN
Marc Lesenfants, Evieux 49, 4130 Esneux, and Joseph Mardaga, Rue de Rabosée 181, 4020 Wandre, both of Belgium
Filed Apr. 19, 1995, Ser. No. 37,723
Claims priority, application Hague Agreement, Oct. 21, 1994, DMA/002.677
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—108



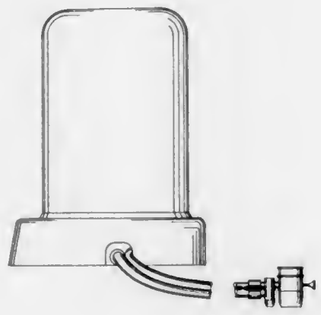
383,191
CRANK HANDLE FOR A FISHING REEL
Randy Lee Atherton; Kent Lee Zwayer, both of Tulsa, Okla., and Richard J. Robbins, Derby, Kans., assignors to Zebco Division of Brunswick Corporation, Tulsa, Okla.
Filed Jul. 12, 1995, Ser. No. 41,341
The portion of the term of this patent subsequent to Sep. 24, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—141



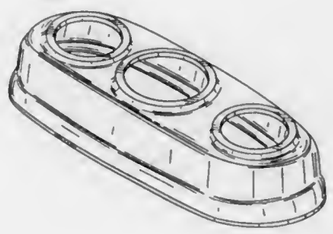
383,193
WAVE SPRINKLER
Lawrence P. Heren, East Peoria, Ill.; Thomas R. Kruer, Edgewood, Ky., and Ronald G. Hayes, Milford, Ohio, assignors to L. R. Nelson Corporation, Peoria, Ill.
Continuation-in-part of Ser. No. 25,535, Jun. 1, 1994, abandoned, and a continuation-in-part of Ser. No. 25,533, Jun. 1, 1994, abandoned, and a continuation-in-part of Ser. No. 25,534, Jun. 1, 1994, abandoned. This application May 26, 1995, Ser. No. 39,777
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—216



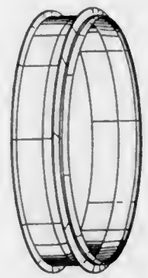
383,192
WATER FILTER
Marilyn M. Johnson, Wauwatosa, Wis., assignor to Regal Ware, Inc., Kewaskum, Wis.
Filed Jul. 6, 1995, Ser. No. 41,100
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—209



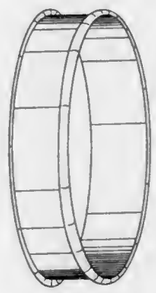
383,194
FAUCET BASE
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Jun. 16, 1995, Ser. No. 40,364
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—249



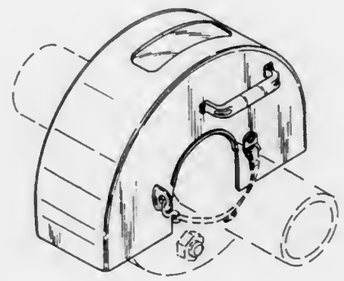
383,195
CIRCULAR SLEEVE COUPLING
Carl-Gustaf Sondén, Ängelholm, and Kenneth Lennartsson, Torekov, both of Sweden, assignors to Lindab AB, Bastad, Sweden
Filed Apr. 9, 1993, Ser. No. 6,947
Claims priority, application Denmark, Mar. 1, 1993, 0226 93
The portion of the term of this patent subsequent to Jul. 4, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D23—262



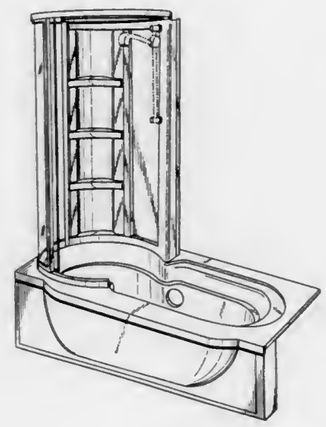
383,196
CIRCULAR SLEEVE COUPLING
Carl-Gustaf Sondén, Ängelholm, and Kenneth Lennartsson, Torekov, both of Sweden, assignors to Lindab AB, Bastad, Sweden
Filed Apr. 9, 1993, Ser. No. 6,939
Claims priority, application Denmark, Mar. 1, 1993, 0223.93
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D23—262



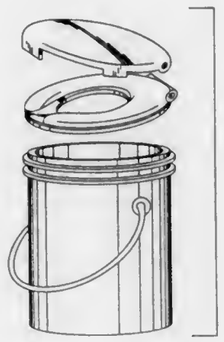
383,197
SAFETY SHIELD FOR A JOINT FORMED IN A PIPING SYSTEM
William E. Brown, 817 N. 48th St., Pensacola, Fla. 32506
Filed Nov. 6, 1995, Ser. No. 46,065
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—266



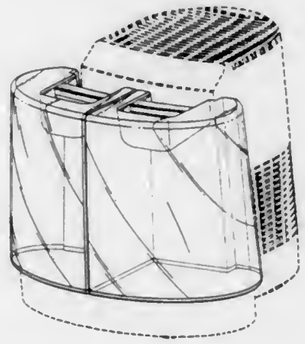
383,198
COMBINED WHIRLPOOL BATHTUB AND SHOWER STALL
Roy Aldo Jacuzzi, Orinda, and Ralph D'Innocente, Benicia, both of Calif., assignors to Jacuzzi, Inc., Walnut Creek, Calif.
Filed Aug. 4, 1994, Ser. No. 26,700
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—275



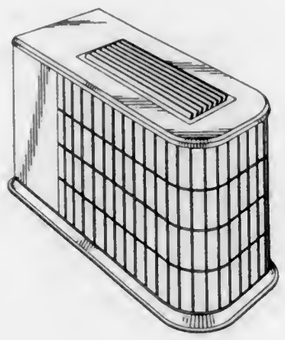
383,199
PORTABLE CHEMICAL TOILET
Sam A. Nodo, 1311 Kelford NW., Massillon, Ohio 44647
Filed Nov. 10, 1994, Ser. No. 30,859
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—299



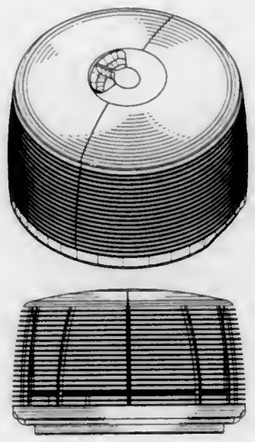
383,201
DUAL HUMIDIFIER TANK UNIT
Rodney Jane', Westboro, Mass.; Jui-Shang Wang, Taipei, Taiwan; Stanley Gresens, Homewood; Gregory Holderfield, Palatine, both of Ill., and John Longan, Shrewsbury, Mass., assignors to Duracraft Corp., Southborough, Mass.
Filed Oct. 30, 1995, Ser. No. 45,813
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—358



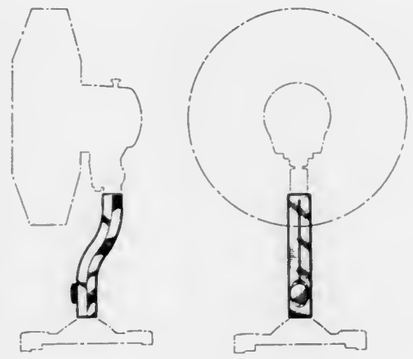
383,200
AIR CONDITIONER CONDENSING UNIT
Stephen S. Hancock, Flint, Tex., assignor to Lennox Industries Inc., Dallas, Tex.
Filed Apr. 23, 1996, Ser. No. 53,456
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—351



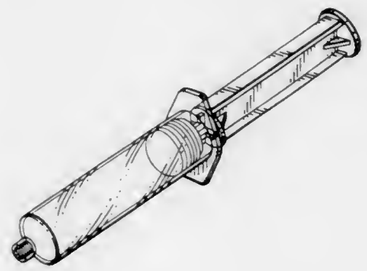
383,202
PORTABLE ROOM AIR PURIFIER
Steven John Meister, Atlanta, Ga.; Mark Joseph Moneypenny, Enfield, Conn., and Devin Lee Moore, Decatur, Ga., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 24, 1992, Ser. No. 2,979
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—364



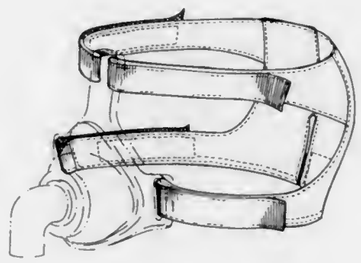
383,203
ELECTRICAL FAN SUPPORT
Steve Shao, 6 Surro Dr., Framingham, Mass. 01701
Filed Mar. 6, 1995, Ser. No. 35,758
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



383,205
COMBINED SYRINGE AND PLUNGER
Shrikant N. Pagay, Guilderland, N.Y.; Robert J. Bachorik II, Phoenixville, Pa., and Richard T. Liebert, Milton, N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.
Filed May 6, 1994, Ser. No. 22,521
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



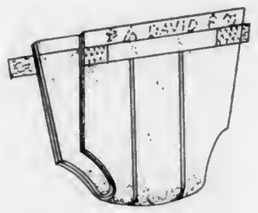
383,204
ATTACHMENT HARNESS FOR A BREATHING MASK
Christiane Lomas, 26/30 Dutruc Str., Randwick, N.S.W., Australia, 2031
Filed Jun. 29, 1995, Ser. No. 40,848
Claims priority, application Australia, Jan. 5, 1995, 37/95
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D24—110



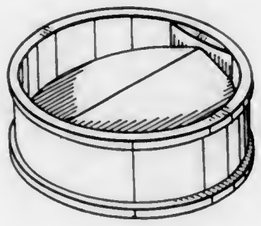
383,206
MEDICAL FLUID DRIP CONTAINER
Cary Dikeman, Leawood, Kans., assignor to Nutricare Medical Products, Inc., Lenexa, Kans.
Filed Oct. 22, 1990, Ser. No. 601,332
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—117



383,207
DIAPER
Lucille R. Cassell, P.O. Box 284, Charleston, Mo. 63834
Filed Apr. 3, 1995, Ser. No. 37,083
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—126



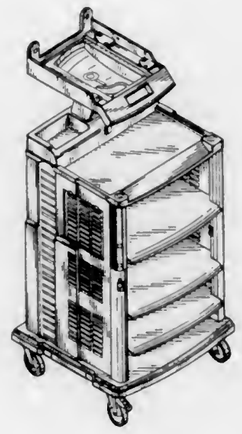
383,208
HEART VALVE
Thomas H. Reif, Vero Beach, Fla., assignor to TRI Technologies Inc., Belo Horizonte, Brazil
Filed Mar. 24, 1995, Ser. No. 36,687
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—155



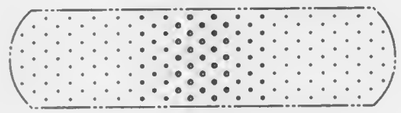
383,209
DENTAL TEMPLATE
Luis F. Duran, 12610 Bayou Dr., Herndon, Va. 22015
Filed Nov. 14, 1994, Ser. No. 31,206
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—181



383,210
ENDOSCOPY WORKSTATION
John David Miles Child, Brighouse; Nigel Charles Smith, Woodford Green, and John Norris Mitchell, Goffs Oak, all of United Kingdom, assignors to KeyMed (Medical & Industrial Equipment) Ltd., United Kingdom
Filed Jul. 31, 1995, Ser. No. 42,030
Claims priority, application United Kingdom, Feb. 1, 1995, 2044874
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—185



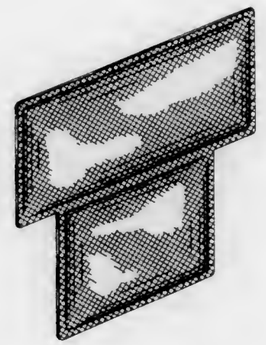
383,211
PERFORATION PATTERN FOR A BANDAGE BACKING
Wayne K. Dunshee, Maplewood, and Donald G. Peterson, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 17, 1995, Ser. No. 35,060
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—189



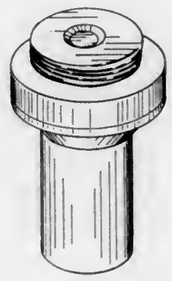
383,212
STIMULATOR FOR GENERATING BRAIN WAVE INDUCING SIGNAL
Kenji Okabe, Osaka, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan
Filed Dec. 12, 1994, Ser. No. 32,254
Claims priority, application Japan, Jun. 13, 1994, 6-17314
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—200



383,213
CRYOTHERAPEUTIC DEVICE
William L. Ingram, 4637 E. Clinton St., Phoenix, Ariz. 85028
Filed Aug. 21, 1995, Ser. No. 42,952
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—206

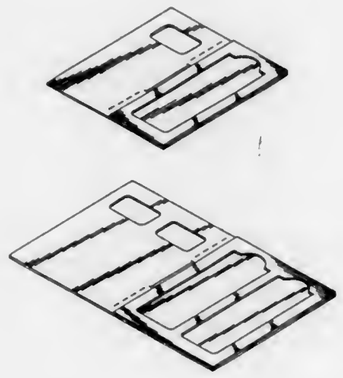


383,214
COMBINED CAP AND VIAL
V. Jack Brennan, 2850 Lombardy Rd., San Marino, Calif. 91108
Filed Aug. 18, 1993, Ser. No. 11,958
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—224

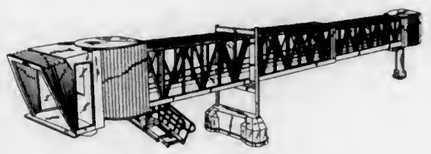


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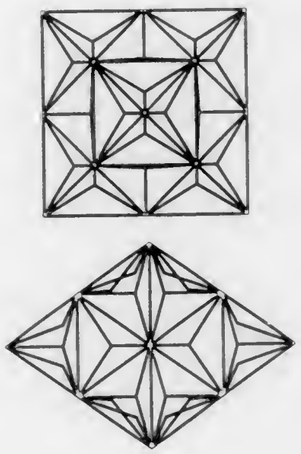
383,215
WINDOWED HOLDER FOR MEDICAL SPECIMEN SLIDES
Abner Levy, 325 N. Oakhurst Dr., P4, Beverly Hills, Calif. 90210
Filed Jan. 19, 1995, Ser. No. 33,766
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—225



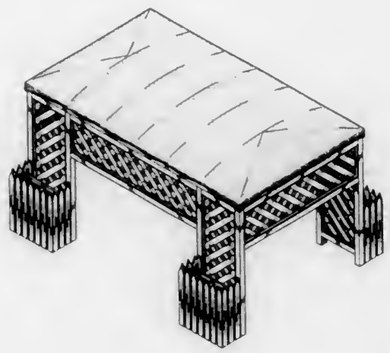
383,216
AIRCRAFT PASSENGER BOARDING BRIDGE
Nils-Eric Anderberg, Trelleborg, Sweden, assignor to FMT International Trade AB, Trelleborg, Sweden
Filed Apr. 24, 1995, Ser. No. 37,915
Claims priority, application Sweden, Oct. 24, 1994, 94-2129
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—1



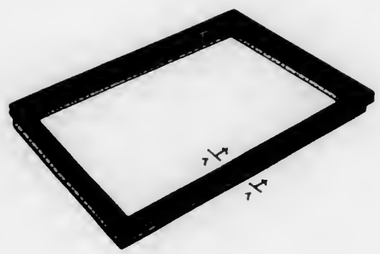
383,217
SOUND CAGE
Thomas C. Hunt, 995 S. 825 W., Lapel, Ind. 46051
Filed Apr. 12, 1995, Ser. No. 37,425
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—16



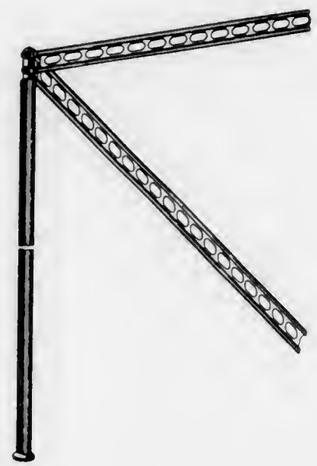
383,218
PORTABLE CAR ENCLOSURE
Quinton A. Jefferson, 2025 Iroquois St., Knoxville, Tenn. 37915
Filed Jul. 18, 1995, Ser. No. 41,556
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—56



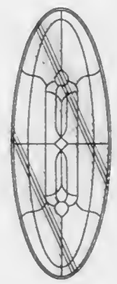
383,219
WINDOW FRAME UNIT FOR GARAGE DOORS
James Danny Roberts, 7 Dawn Rd., Benson, N.C. 27504
Filed Apr. 7, 1995, Ser. No. 37,236
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—60



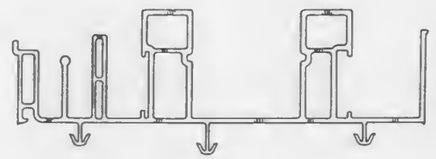
383,220
CEILING SUPPORT FOR EXHIBITION CONSTRUCTION SYSTEM
Christian Harbeke, and Ruedi August Müller, both of Zürich, Switzerland, assignors to Expotechnik Heinz Soschinski GmbH, Taunusstein, Germany
Division of Ser. No. 13,558, Sep. 27, 1993, Pat. No. Des. 374,291. This application May 30, 1995, Ser. No. 40,299
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—61



383,221
DOORLITE
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to Mascotech, Inc., Taylor, Mich.
Filed Sep. 14, 1995, Ser. No. 43,891
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—103

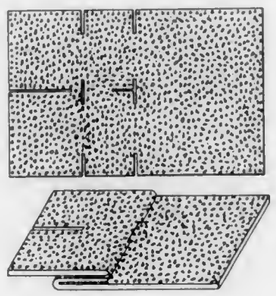


383,222
PATIO DOOR HEADER EXTRUSION
Raymond Dallaire, and Dominique Dallaire, both of Levis, Canada, assignors to Dallaire Industries Ltd., Quebec, Canada
Filed Mar. 21, 1996, Ser. No. 52,037
Claims priority, application Canada, Sep. 22, 1995, 1995-2146
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



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383,223
FOLDABLE HIP AND RIDGE ROOFING SHINGLE
Frederick W. Sieling, Bound Brook; William R. Carroll, Sussex, and Alfredo A. Bondoc, Somerset, all of N.J., assignors to Building Materials Corporation of America, Wayne, N.J.
Continuation-in-part of Ser. No. 17,364, Jan. 12, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 41,835
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—142



383,224
FLUORESCENT LAMP
Masashi Sangen, Hyogo, and Takeshi Matsumura, Osaka, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed Aug. 28, 1996, Ser. No. 58,935
Claims priority, application Japan, Apr. 25, 1996, 8-12648
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—3



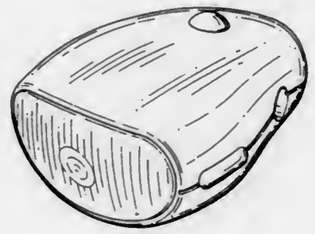
383,225
BASE FOR AN OIL LAMP
Linda M. Wolfard, Santa Rosa; Jean Tuck McGregor, West Covina, and Steven Dyer, Petaluma, all of Calif., assignors to Wolfard Glassblowing Company, Santa Rosa, Calif.
Filed Jul. 8, 1994, Ser. No. 25,687
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—23



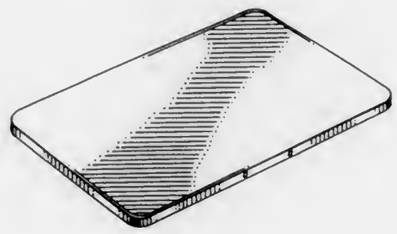
383,226
ILLUMINATED ANGLED WIRE FRAME ICICLE DISPLAY
Renee Odierna, Mansfield, Ohio, assignor to J. Kinderman & Sons, Inc., Philadelphia, Pa.
Filed Jun. 25, 1996, Ser. No. 56,216
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—25



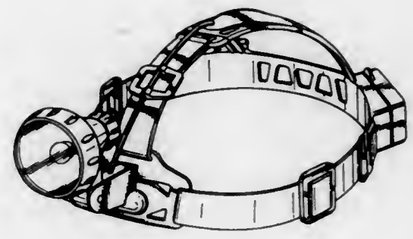
383,227
HEADLAMP
Toshiyuki Nagano, Takarazuka, Japan, assignor to Cateye Co., Ltd., Osaka, Japan
Filed Jul. 16, 1996, Ser. No. 57,067
Claims priority, application Japan, Jun. 21, 1996, 8-18435
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—28



383,228
REPLICA CARD LIGHT
Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812
Filed Aug. 7, 1995, Ser. No. 42,321
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37



383,229
CAP LIGHT
Nakajima Kiichiro, Hong Kong, Hong Kong, assignor to Germain Electronic Ltd., Hong Kong
Filed Jul. 17, 1996, Ser. No. 57,159
Claims priority, application United Kingdom, Apr. 15, 1996, 2055532
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—39

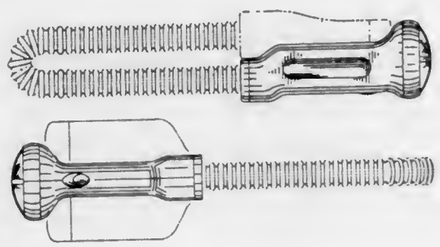


383,230
RECHARGEABLE LANTERN
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 1, 1995, Ser. No. 47,326
Claims priority, application United Kingdom, Aug. 1, 1995, 2049176
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—42

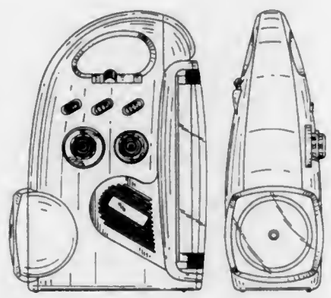


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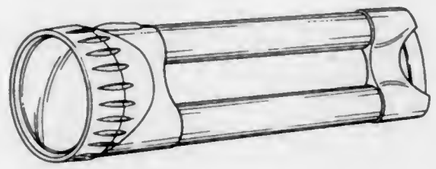
383,231
HEAD FOR A FLEXIBLE FLASHLIGHT
David W. Kaiser, North Haven, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,617
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



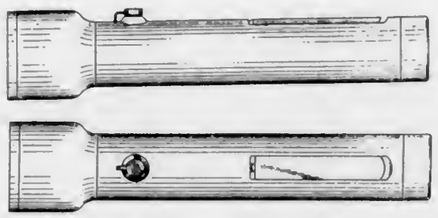
383,232
MULTI-FUNCTION LANTERN
Rongquan Huang, Shantou, China, assignor to Shantou Shanhe Electric Equipment Industrial Co., Guangdong Province, China
Filed May 3, 1995, Ser. No. 38,335
Claims priority, application China, Apr. 6, 1995, 95 3 03678.2
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—44



383,233
PORTABLE TORCH
Emil Abry, Hosle, Norway, assignor to Norsk Energi Design AS, Oslo, Norway
Filed Jul. 25, 1995, Ser. No. 41,867
Claims priority, application Norway, Jan. 26, 1995, 950060
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—46



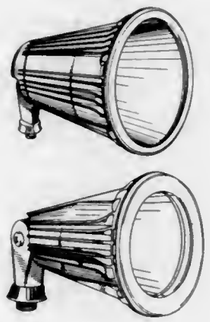
383,234
FRONT, REAR, TOP AND BOTTOM OF A SAFETY LIGHT
Fred L. Smith, 7141 Majorca Ct., El Paso, Tex. 79912
Filed Dec. 8, 1994, Ser. No. 31,888
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—49



383,235
OUTDOOR LAMP FOR NIGHTTIME GRILL COOKING
Paul K. Murch, Sr., 2215 NW. 30th Pl., Pompano Beach, Fla. 33069
Filed Feb. 26, 1996, Ser. No. 50,801
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—60



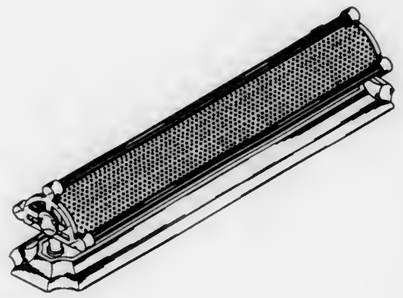
383,236
LANDSCAPE LIGHTING FIXTURE HOUSING
Mark J. Krogman, Southlake, Tex., assignor to Greenlee Lighting, Carrollton, Tex.
Filed Jun. 28, 1995, Ser. No. 40,836
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



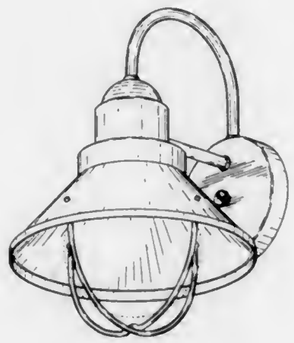
383,237
OUTDOOR LIGHTING FIXTURE
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Division of Ser. No. 40,495, Jun. 20, 1995. This application Aug. 1, 1996, Ser. No. 57,830
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—68



383,238
VANITY LIGHT
Tusng-Wen Chen, No. 28-13 Ting-Hu Rd., Kuei-Shan Hsiang, Taoyuan County, Taiwan
Filed Jun. 4, 1996, Ser. No. 55,352
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



383,239
OUTDOOR LIGHTING FIXTURE
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Division of Ser. No. 40,495, Jun. 20, 1995. This application Aug. 1, 1996, Ser. No. 57,829
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



383,240
CHANDELIER
Pedro M. Solis, Whittier, Calif., assignor to Jimway, Inc., Bell, Calif.
Filed Jun. 16, 1995, Ser. No. 40,391
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—91



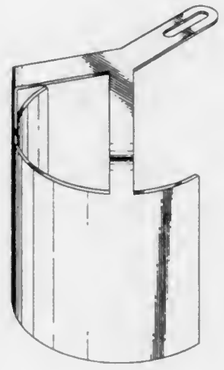
383,241
LAMP
Robert S. Germany, 4155 S. Braeswood #32, Houston, Tex. 77025
Division of Ser. No. 22,641, May 10, 1994, Pat. No. Des. 363,832, which is a division of Ser. No. 736,813, Jul. 29, 1991, Pat. No. Des. 347,531. This application Jul. 28, 1995, Ser. No. 41,995
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—94



383,242
TABLE LAMP
Michael S. Reese, P.O. Box 163241, Austin, Tex. 78715
Filed Jun. 21, 1996, Ser. No. 56,075
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



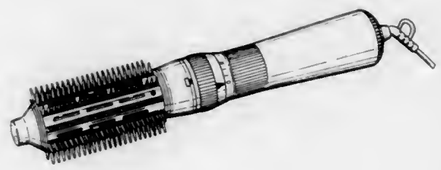
383,243
CAMPING LANTERN REFLECTOR
Martin R. Fry, and Crystal M. Fry, both of 3330 S. 126th Ave., Omaha, Nebr. 68144
Filed Jul. 12, 1995, Ser. No. 41,357
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



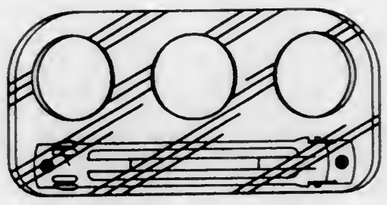
383,244
COSMETIC APPLICATOR
Jennifer Paulson Lee, 96 Holland Ave. Second Floor, North White Plains, N.Y. 10603
Filed Jul. 1, 1996, Ser. No. 56,536
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—7



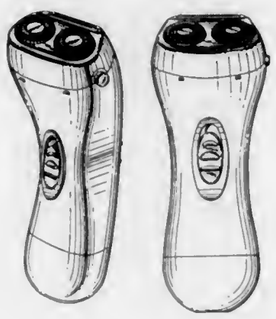
383,245
HAIR STYLER
Cornelia Seifert, Bad Soden, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Dec. 22, 1995, Ser. No. 48,265
Claims priority, application WIPO, Jul. 7, 1995, DM/033476
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—35



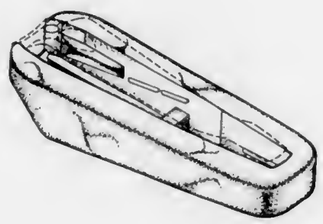
383,246
HAIR CLIP FOR HOLDING A SCARF OR A RIBBON IN A DECORATIVE MANNER
Jacqueline Simpson Nicholson, 1491 Wood Thrush Way, Marietta, Ga. 30062
Division of Ser. No. 30,600, Nov. 3, 1994, Pat. No. Des. 375,579. This application Oct. 12, 1995, Ser. No. 45,194
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—42



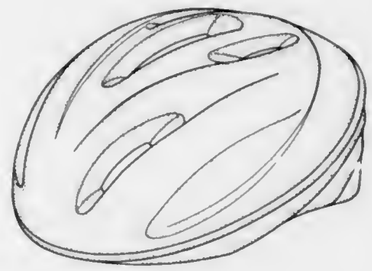
383,247
LADIES' ROTARY SHAVER
Kristopher W. Schulz, Stratford, Conn., assignor to Remington Corporation, L.L.C., Bridgeport, Conn.
Filed Jul. 3, 1996, Ser. No. 56,625
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—50



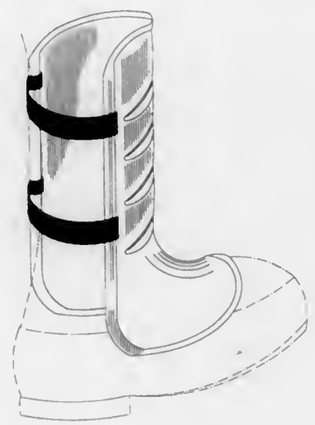
383,248
NAIL CLIPPER RETAINER
Shawn W. Vetter, 1000 No. 17th, No. 209, Bozeman, Mont. 59715
Continuation-in-part of Ser. No. 34,994, Feb. 21, 1995. This application Jun. 24, 1996, Ser. No. 56,138
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—60



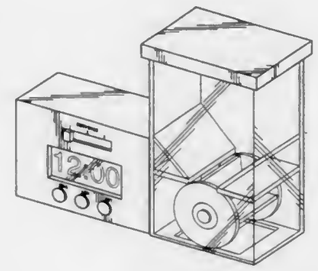
383,249
HELMET
Chang-Hsien Ho, Taipei, Taiwan, assignor to Glory Metro Tech, Ltd., Reno, Nev.
Filed Jun. 10, 1996, Ser. No. 55,638
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D29—102



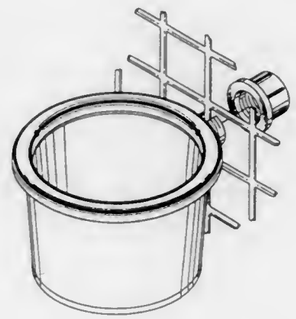
383,250
COMBINED LEG AND ANKLE GUARD
Angelo P. Amico, 221 SE. 29th Ter., Cape Coral, Fla. 33904
Continuation-in-part of Ser. No. 3,949, Jan. 22, 1993. This application May 8, 1995, Ser. No. 38,631
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—120



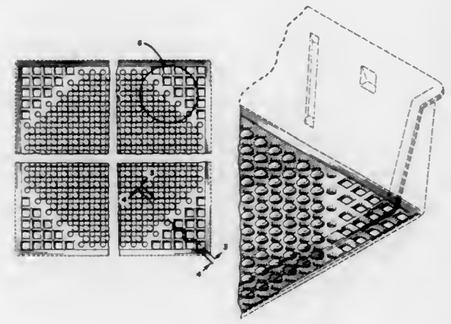
383,251
DIGITAL AUTOMATIC FISH FEEDER
Dan Zimmerman, 1102 Branding Iron Cir., Colorado Springs, Colo. 80915
Filed Jul. 24, 1995, Ser. No. 41,757
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—106



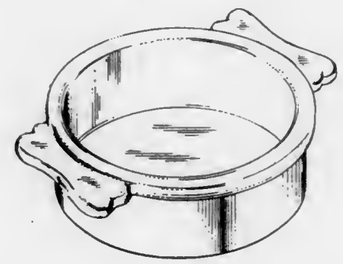
383,252
ANIMAL FEEDING BOWL
Woodrow W. Pearce, 1601 Puebla Dr., Glendale, Calif. 91207
Filed Jul. 3, 1996, Ser. No. 56,629
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—119



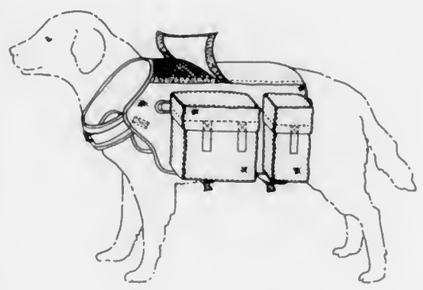
383,253
FLOOR OF AN ANIMAL CAGE
Michael D. Semenuk, Baltimore, Md., assignor to Lenderking Metal Products, Baltimore, Md.
Filed Jan. 10, 1995, Ser. No. 33,313
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—120



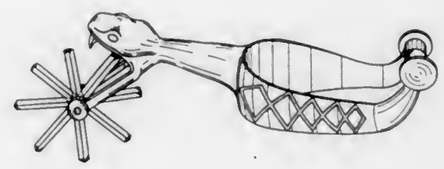
383,254
DOG FEEDING BOWL
Ilene Laural Feldman, and Jenny Dagmar Whittle Jones, both of 11547 Hesby St., Valley Village, Calif. 91601
Filed Jul. 15, 1996, Ser. No. 57,020
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—129



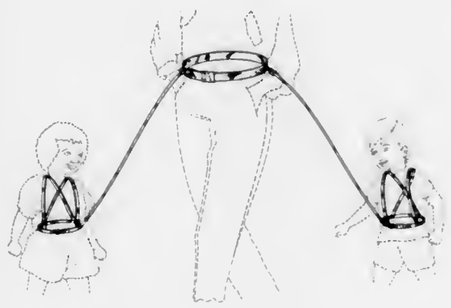
383,255
BACK PACK FOR CANINES
Sylvan B. Caditz, Issaquah, Wash., assignor to S. Caditz Associates, Inc., Issaquah, Wash.
Filed Apr. 26, 1995, Ser. No. 38,029
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—145



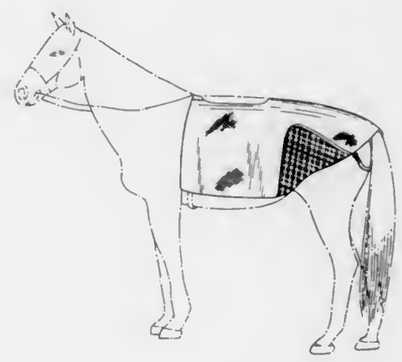
383,257
SPUR
Tim C. Clark, 605 Harrison, Caldwell, Id. 83605
Filed Mar. 7, 1996, Ser. No. 51,366
Term of patent 14 years
LOC (6) Cl. 30 - *05*
U.S. Cl. D30—157



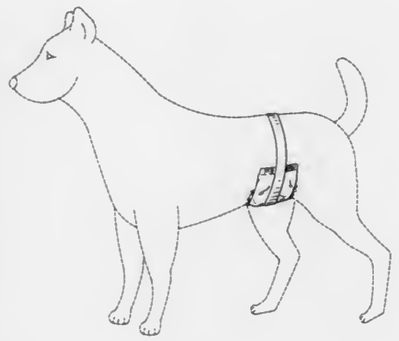
383,256
SAFETY HARNESS FOR CHILDREN
Wilma J. Hampton, 1013 Second Ave., San Manuel, Ariz. 85631
Filed May 19, 1995, Ser. No. 39,036
Term of patent 14 years
LOC (6) Cl. 30 - *09*
U.S. Cl. D30—153



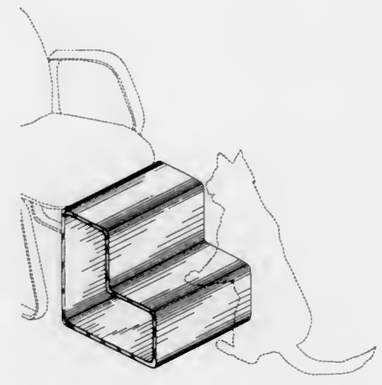
383,258
HORSE BLANKET
Linda Curtis, 7278 Paddock Way, Warrenton, Va. 22186
Filed Apr. 2, 1996, Ser. No. 52,663
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—145



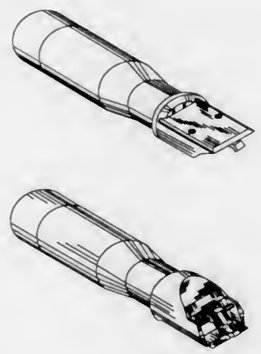
383,259
DIAPER FOR MALE DOGS
Kathryn J. Post, 289 Pine Grove Rd., Middletown, N.Y. 10940
Filed Jul. 26, 1996, Ser. No. 57,538
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—145



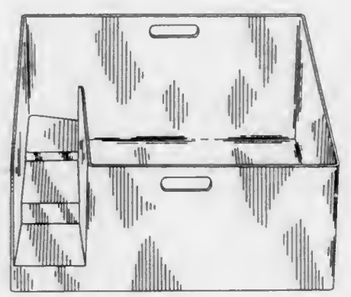
383,261
STEP DEVICE FOR PETS
Lowell R. Karsten; Deborah K. Karsten, both of 9531 30th St., Stanley, Iowa 50671, and Steven D. Goldenbogen, 733 Broughton St., Apt. #2, Pittsburgh, Pa. 15213
Filed Oct. 27, 1995, Ser. No. 46,713
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—160



383,260
ANIMAL GROOMING CASING
Kim Laube, 2221 Statham Blvd., Oxnard, Calif. 93033
Continuation-in-part of Ser. No. 881,896, May 12, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 31,006
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—158



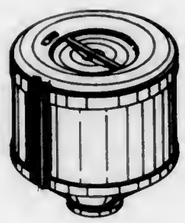
383,262
CAT LITTER BOX
Dale D. Benwell, 3237 Gregory Ct., Merced, Calif. 95340
Filed Jul. 3, 1996, Ser. No. 56,632
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—161



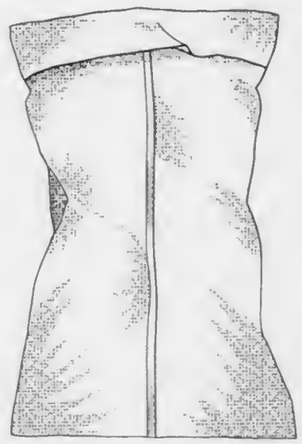
383,263
TUBE CLEANER
Graham Hubert Smith, 9/15 Randall Court, Collaroy, NSW, 2097, Australia
Filed Apr. 7, 1995, Ser. No. 37,443
Claims priority, application Australia, Oct. 7, 1994, 3356/94
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—25



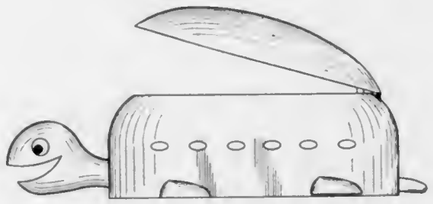
383,264
CAPSULE FOR SOLID DETERGENT
Eric Balz, Eagan, Minn., assignor to Ecolab Inc., St. Paul, Minn.
Division of Ser. No. 30,468, Oct. 31, 1994. This application Aug. 13, 1996, Ser. No. 58,612
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—30



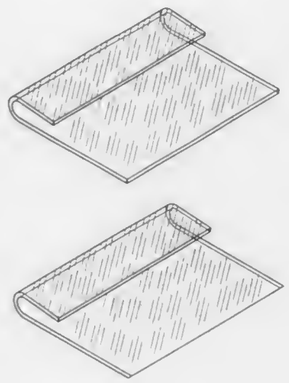
383,265
LAUNDRY BAG
Lisa Gable, 719 St. James Pl. #419, East Windsor, N.J. 08520
Filed May 3, 1995, Ser. No. 38,304
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—36



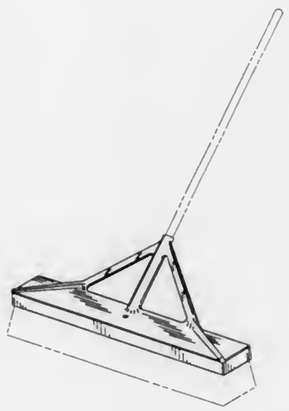
383,266
COMBINATION TURTLE LAUNDRY HAMPER AND TOY CHEST
Debra A. Emanoff, 17505 Brook Blvd., Bothell, Wash. 98012-6440
Filed Apr. 15, 1996, Ser. No. 53,155
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D32—37



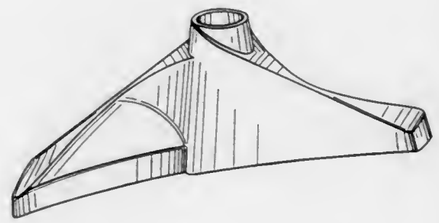
383,267
AUTOMOBILE WINDOW ICE SCRAPER
Paula Jean Emmerth, 125 Franklin St., Waukegan, Ill. 60085, assignor to Paula Jean Emmerth, Zion, Ill.
Filed Mar. 11, 1993, Ser. No. 5,798
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—46



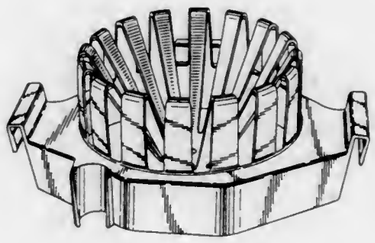
383,268
BROOM
Edward Uranga, and Ruben Uranga, Jr., both of 4342 Glenmuir Ave., Los Angeles, Calif. 90065
Continuation-in-part of Ser. No. 26,916, Aug. 9, 1994, Pat. No. Des. 375,632. This application May 16, 1995, Ser. No. 38,920
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D32—50



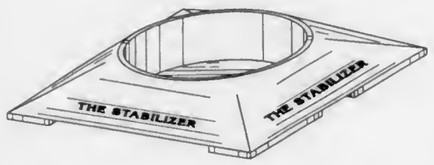
383,269
BROOM SHROUD
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Sep. 22, 1995, Ser. No. 44,328
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D32—50



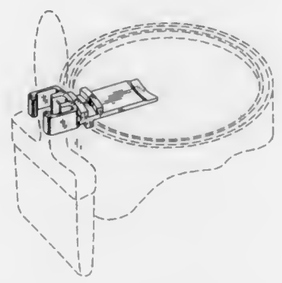
383,270
MOP WRINGER
Georg Weihrauch, Wald-Michelbach, Germany, assignor to Coronet-Werke GmbH, Wald-Michelbach, Germany
Filed Nov. 17, 1995, Ser. No. 46,516
Claims priority, application WIPO, May 22, 1995, DM/033059
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—54



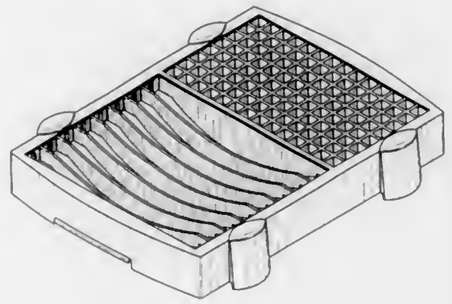
383,271
BUCKET STABILIZER
Bryce Eshelman, 159 E. Tallmadge Ave., Akron, Ohio 44310
Filed Dec. 8, 1995, Ser. No. 47,617
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—54



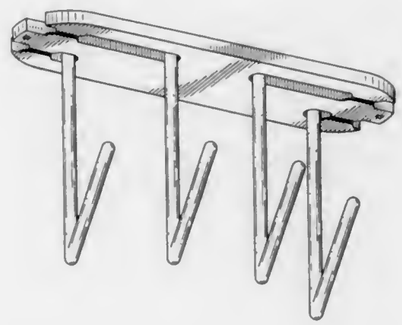
383,272
PAINT BRUSH HOLDER
Kelly McDonald, 16220 Sesager Rd., Portland, Oreg. 97236
Filed Apr. 17, 1996, Ser. No. 53,227
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—54



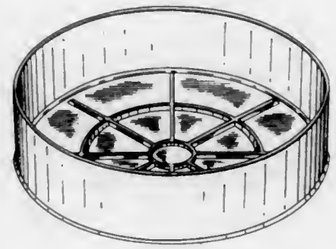
383,273
DISH DRAINER
James Hampshire, Solon, Ohio, assignor to InterDesign, Inc., Solon, Ohio
Filed Feb. 9, 1996, Ser. No. 50,146
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—55



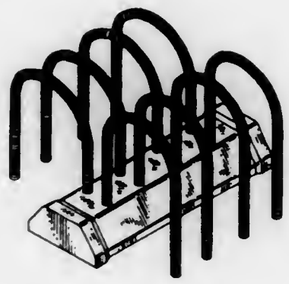
383,274
COLLAPSIBLE, UNDER CABINET-MOUNTED DRYING RACK FOR SANDWICH BAGS
Erin Lee Wilson, 42 Gaviota Ave., Long Beach, Calif. 90802
Filed Oct. 27, 1995, Ser. No. 45,719
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—58



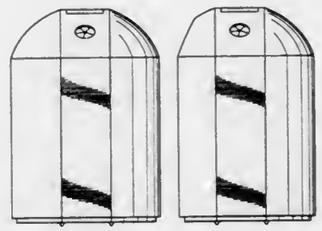
383,275
PUSH PLATE FOR FIVE-GALLON PAIL
Pierre Hébert, St-Léonard d'Aston, Canada, assignor to Les Produits ABC Inc., St.-Léonard d'Aston, Canada
Filed Apr. 1, 1996, Ser. No. 52,611
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—54



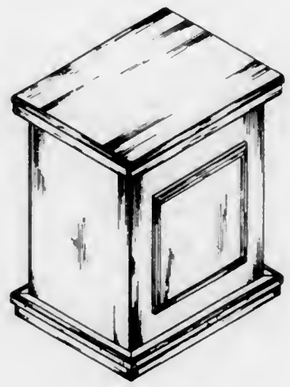
383,276
APPAREL DRYER
David W. Janney, 701 Creekside Ct., Roseville, Calif. 95678
Filed May 20, 1996, Ser. No. 54,691
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—58



383,277
WASTE CONTAINER
Klaus-Tilmann Peters, Baerlo 1, D-41334 Nettetal, Germany
Filed Mar. 20, 1996, Ser. No. 51,964
Claims priority, application Germany, Sep. 23, 1995, M 95 07 515.1
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1

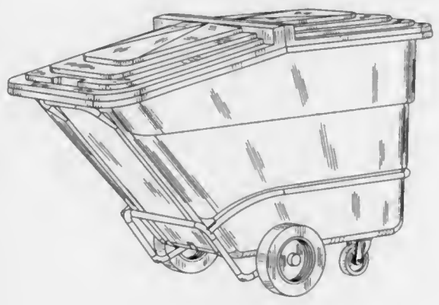


383,278
TRASH CONTAINER
Roy A. Jennings, Rte. 1, Box 119A, Rush Springs, Okla. 73082
Filed Nov. 4, 1994, Ser. No. 30,654
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1

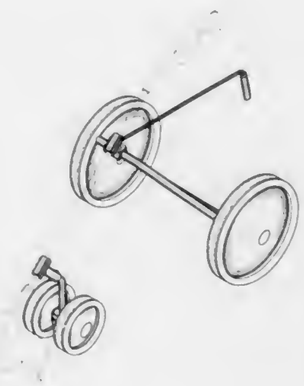


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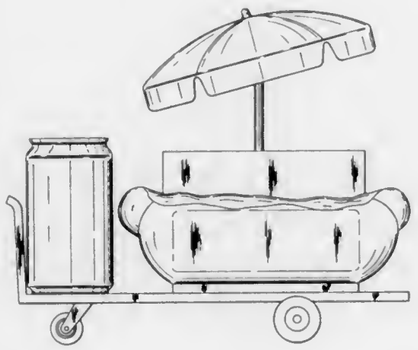
383,279
TILT TRUCK
Anthony J. Brescia, Huntersville; Todd E. Wright, and Smith E. Trent, III, both of Statesville, all of N.C., assignors to Toter, Incorporated, Statesville, N.C.
Filed Sep. 29, 1995, Ser. No. 44,686
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—5



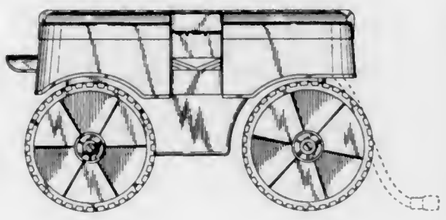
383,281
WEED CADDY
Paul E. Furry, 37228 Rutledge Dr., Zephyrhills, Fla. 33541
Filed Feb. 6, 1996, Ser. No. 49,974
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—15



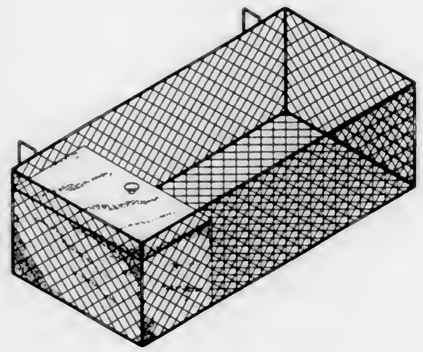
383,280
VENDING CART
Alan A. Genovese, 1302 Clarkson Clayton Center, Suite 209, Ellisville, Mo. 63011
Filed Apr. 25, 1996, Ser. No. 53,592
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—13



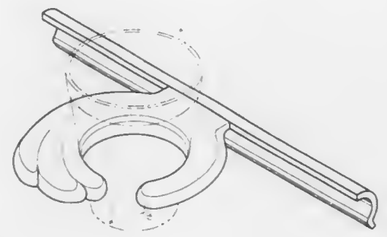
383,282
WHEELED CARRIER
Mark Proffitt, Greenville, Tenn., assignor to Dejay Corporation, Palm Beach Gardens, Fla.
Filed Jan. 17, 1996, Ser. No. 49,049
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—19



383,283
BASKET TO ATTACH TO SIDE OF SHOPPING CART
Hesterly G. Hankins, III, 9461 Charleville Blvd. #253, Beverly Hill, Calif. 90212
Continuation of Ser. No. 36,111, Mar. 13, 1995, abandoned.
This application Feb. 9, 1996, Ser. No. 50,155
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—27



383,284
CUP HOLDER FOR A SHOPPING CART
Theresa M. Lines, 707 Worcester St., Wellesley, Mass. 02181
Filed May 3, 1996, Ser. No. 53,999
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—27



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Barns, Susan M.; McMillian, Ray A.; Lane, David J.; Collins, Mark L.; Awell, James E.; and Rashtchian, Ayoub, 5,663,049, Cl. 435-6.000.
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Ogata, Etsuro; Kurokawa, Kiyoshi; Uchida, Shunya; and Kishida, Akiko, 5,662,604, Cl. 604-28.000.
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Astarita, Denis C. Endoscopic instrument lock. 5,662,613, Cl. 604-165.000.
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Stamm, Uwe; Klaft, Ingo; Berger, Vadim; Borneis, Stefan; and Lokai, Peter, 5,663,973, Cl. 372-20.000.

Bergerson, Lee D.; Stonich, Ivan L.; and Coultas, Terrence J., to TRW Vehicle Safety Systems Inc. Electrical conductor for air bag inflator. 5,662,353, Cl. 280-737.000.

Berges, David A.; and Taggart, John J., to SmithKline Beecham Corporation. Water soluble camptothecin analogs. 5,663,177, Cl. 514-279.000.

Bernritter, Raymond E.: *See—*
Walker, Thomas G.; Goos, Darren; Bernritter, Raymond E.; Lee, Robert S.; Finkelstein, Mark I.; and Ginsberg, Ross, 5,664,010, Cl. 379-207.000.

Berrigan, Kevin M.: *See—*
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Berry, George W., Jr. License plate hanger. 5,662,302, Cl. 248-317.000.

Berté, Ferruccio: *See—*
Russo, Matteo Zanotti; and Berté, Ferruccio, 5,663,253, Cl. 526-216.000.

Bertek, Inc.: *See—*
Wick, John; Weimann, Ludwig J.; and Pollock, Wayne C., 5,662,926, Cl. 424-448.000.

Bertina, Rogier Maria: *See—*
Bouma, Bonno Nammen; and Bertina, Rogier Maria, 5,663,142, Cl. 514-12.000.

Bertoldi, Massimo; Coraluppi, Enzo; Canuti, Anna Marie; and Orengo, Ferdinando, to Imation Corp. Silver halide photographic elements containing 2-equivalent 5-pyrazolone magenta couplers. 5,663,040, Cl. 430-555.000.

Bertrand, Jacques C.: *See—*
Ciccarelli, Roger N.; Pickering, Thomas R.; and Bertrand, Jacques C., 5,663,025, Cl. 430-106.000.

Bessette, Roger F.; Simmons, L. Kimball; Proulx, Gary S.; and Blow, Todd S., to Flex A Seal, Inc. Fully split cartridge mechanical seal assembly. 5,662,340, Cl. 277-9.500.

Bessho, Yoshihiro: *See—*
Miura, Kazuhiro; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; Nakamura, Yoshifumi; and Miyoshi, Akihiko, 5,662,755, Cl. 156-89.000.

BetzDearborn Inc.: *See—*
Ouyang, Jiangbo, 5,662,967, Cl. 427-409.000.
Thungstrom, Eric A.; and Burgmayer, Paul R., 5,663,489, Cl. 73-40.700.

Beu, Roger H., to B & R Erectors, Inc. Automatic end closure system for bleachers. 5,661,928, Cl. 52-9.000.

Beurrier, Henry Richard. Apparatus for poling a piezoelectric actuator. 5,663,606, Cl. 310-357.000.

Beyer, Stefan; Scheckel, Bruno; Veit, Werner; and Wilwert, Jean, to Siemens Aktiengesellschaft. Circut configuration for generating a reference current. 5,663,674, Cl. 327-540.000.

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Bhagwat, Shripad Subray: *See—*
Bold, Guido; Capraro, Hans-Georg; Fässler, Alexander; Lang, Marc; Bhagwat, Shripad Subray; Khanna, Satish Chandra; Lazdins, Janis Karlis; and Mestan, Jürgen, 5,663,200, Cl. 514-487.000.

Bhandari, Narpat; and Watkins, Daniel R., to Vasona Systems, Inc. Electronic simulation and emulation system. 5,663,900, Cl. 364-578.000.

Bhargava, Vikram; Stratienco, Daniela; and Kehoe, Timothy, to Symbol Technologies, Inc. Accessory for conversion with housing with first connection includes host cable and host connector and second connection including a plug-in modular connector. 5,664,229, Cl. 395-885.000.

Bhat, Vidya Sudhir: *See—*
Nagasampagi, Bhimsen Annacharya; Rojatkar, Supada Rambhau; Kulkarni, Mandakini Moreshwar; Joshi, Vimal Shantaram; Bhat, Vidya Sudhir; Sane, Mukund Gangadhar; and Ayyangar, Nagaraj Ramanuj, 5,663,374, Cl. 549-381.000.

Bhatia, Suresh K.: *See—*
Ahl, Patrick L.; Bhatia, Suresh K.; Minchey, Sharma R.; and Janoff, Andrew S., 5,662,930, Cl. 424-450.000.

Bhatnagar, Satpal; Küchenthal, Gunther; and Wieland, Dietmar, to Dürr GmbH. Drier for a painting plant. 5,661,912, Cl. 34-270.000.

BHS Corrugated Maschinen- und Anlagenbau GmbH: *See—*
Titz, Felix; and Frischholz, Gerald, 5,662,765, Cl. 156-470.000.

Bianchi, Richard S.; Hirsch, Thomas S.; and Perry, Ron B., to Bull HN Information Systems Inc. Dual decor capability for a host system which runs emulated application programs to enable direct access to host facilities for executing emulated system operations. 5,664,098, Cl. 395-186.000.

Bickford, Dennis F., to United States of America, Energy. Vitrification of organics-containing wastes. 5,662,579, Cl. 588-256.000.

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Klein, Hansjörg, 5,662,018, Cl. 83-343.000.

Bienayme, Hugues; and Meilland, Pierre, to Rhone-Poulenc Nutrition Animale. Intermediates for the preparation of vitamin A and carotenoids and process for their preparation. 5,663,459, Cl. 568-826.000.

Bieringer, Hermann: *See—*
Kehne, Heinz; Willms, Lothar; Bauer, Klaus; and Bieringer, Hermann, 5,663,118, Cl. 504-215.000.

Billot, Pierre: *See—*
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Bio-Plas, Inc.: *See—*
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Bio-Tec Biologische Naturverpackungen GmbH: *See—*
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BioChem Pharma, Inc.: *See—*
Mansour, Tarek; Jin, Haolun; Tsé , Allan H.L.; and Siddiqui, M. Arshad, 5,663,320, Cl. 536-27.110.

Biomeasure Inc.: *See—*
Moreau, Jacques-Pierre; Kim, Sun Hyuk; and Taylor, John E., 5,663,295, Cl. 530-330.000.

BioSeparations, Inc.: *See—*
Sammons, David W.; Twitty, Garland E.; Utermohlen, Joseph G.; and Sharnez, Rizwan, 5,662,813, Cl. 210-806.000.

Birchmeier, Werner, to Johnson Service Company. Actuating drive having a spring return feature. 5,662,542, Cl. 475-154.000.

Birkholz, Ronald B.; and Schwartz, Mark E., to United States Postal Service. Release agent for linerless pressure sensitive postage stamps. 5,663,227, Cl. 524-262.000.

Biscardi, Karen: *See—*
Becker, Robert S.; Biscardi, Karen; Ferguson, Laura; and Erdile, Lorne, 5,662,909, Cl. 424-201.100.

Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., to Deacon Research. Display panel with electrically-controlled waveguide-routing. 5,664,032, Cl. 385-4.000.

Bischoff, Michael; Bonse, Dirk; and Sell, Michael, to Solvay Umweltchemie GmbH. Catalytic fluidized bed process for treating aqueous liquids. 5,662,809, Cl. 210-757.000.

Bishop, Gregory D.; Paul, Michel A.; Sambi, Narinderjit; and Rhad, Edward, to Ethicon Endo-Surgery, Inc. Surgical instrument and method. 5,662,662, Cl. 606-143.000.

Bishop, Matt. Hammer for demolishing sidewalks and the like. 5,662,385, Cl. 299-37.300.

Bishop, Todd N., to Bishop, Todd N. Rotating tool star shaped holding member interfitted to insert mounting disk. 5,662,436, Cl. 407-35.000.

Bittar, Joseph: *See—*
Powell, Bruce A.; McCarthy, Richard C.; Bittar, Joseph; Barker, Frederick H.; Wan, Samuel C.; Bennett, Paul; Cooney, Anthony; Salmon, John K., deceased, 5,663,539, Cl. 187-385.000.

Bittman, Barry B., to Mindscope Incorporated. Biofeedback methods and controls. 5,662,117, Cl. 128-732.000.

Bittner, Michael L.; Morrison, Larry E.; and Legator, Mona S., to Vysis, Inc. Probe compositions for chromosome identification and methods. 5,663,319, Cl. 536-24.300.

Bivens, Donald Bernard; Fernandez, Richard Edward; Shiflett, Mark Brandon; and Chisolm-Carter, Tuneen, to Du Pont de Nemours, E. I., and Company. Use of 1,1,1,3,3,3-Hexafluoropropane in centrifugal compressors. 5,662,825, Cl. 252-67.000.

Black & Decker Inc.: *See—*
Bunyea, Roderick F.; Judge, Alfred H.; Karasa, Alvydas P.; Miller, Philip T.; Smith, Allen P.; and Wheeler, Thomas J., 5,663,011, Cl. 429-97.000.
Wilson, Michael, 5,662,428, Cl. 403-374.000.

Black, Art; and Riggs, Tom, to Compressor Engineering Corporation. Precombustion chamber for internal combustion engine and method of manufacture thereof. 5,662,082, Cl. 123-254.000.

Black, Bruce Christian: *See—*
Miller, Lois K.; Black, Bruce Christian; Dierks, Peter Michael; and Fleming, Nancy C., 5,662,897, Cl. 424-93.200.

Black, William H., Jr., to Tee-Lok Corporation. Punch tool and method for manufacturing truss plates. 5,661,993, Cl. 72-325.000.

Blackborow, John Richard; and Hodgson, Philip Kenneth Gordon, to BP Chemicals Limited. Substituted azo-dicarbonylo derivatives. 5,663,243, Cl. 505-333.700.

Blackburn, Brent; Barker, Peter; Gadek, Thomas; McDowell, Robert; McGee, Lawrence; Somers, Todd; Webb, Rob; and Robarge, Kirk, to Genentech, Inc. Nonpeptidyl integrin inhibitors having specificity for the $GPIb_bIII_a$ receptor. 5,663,166, Cl. 514-213.000.

Blackburn, Thomas F.; and Pellegrin, Paul F., to Novus International, Inc. Process for the preparation of 3-(methylthio) propanal and 2-hydroxy-4-(methylthio) butanenitrile. 5,663,409, Cl. 558-351.000.

Blahut, Donald Edgar; Story, Guy Ashley; and Szurkowski, Edward Stanley, to Lucent Technologies Inc. Restricted access remote control unit. 5,663,756, Cl. 348-5.500.

Blake, Joseph W., III. Valve and valve cartridge for trocar. 5,662,615, Cl. 604-167.000.

Blake, Robert: *See—*
Knowles, Carl H.; and Blake, Robert, 5,663,828, Cl. 359-237.000.

Blanc, Philippe, to Materiel Pour l'Arboriculture Fruitiere. Automatic packing device for the filling of containers with superimposed layers of products. 5,661,949, Cl. 53-237.000.

Blanchard, Gilbert: *See—*
Albonetti, Stéfania; Blanchard, Gilbert; Burattin, Paolo; Cavani, Fabrizio; and Trifiro, Ferruccio, 5,663,392, Cl. 556-28.000.

Blanchard, Richard A., to Calogic Corporation. Method of making increased density MOS-gated semiconductor devices. 5,663,079, Cl. 438-138.000.

Blanche, Stephen A., to ETCO Incorporated. Bridged electrical plug. 5,662,484, Cl. 439-106.000.

Blaney, Carol Ann; Kiick-Fischer, Kristi Lynn; and Kaylor, Rosann Marie, to Kimberly-Clark Worldwide, Inc. Process and article for disinfecting water. 5,662,808, Cl. 210-749.000.

Blatchford, Bevin Henry Shenton, to Degesch GmbH. Fumigation chamber. 5,662,865, Cl. 422-29.000.

Blesing, Edward David. Rolling cultivator. 5,662,173, Cl. 172-526.000.

Block, Bruce A.: *See—*
Wessels, Bruce W.; and Block, Bruce A., 5,663,556, Cl. 250-214.100.

Blomgren, James S.: *See—*
Richter, David E.; and Blomgren, James S., 5,664,159, Cl. 395-500.000.

Blonsky, Peter M.; and Tuttle, Mark E., to Micron Communications, Inc. Thin profile battery with improved separator and gasket construction. 5,663,014, Cl. 429-175.000.

Blonstein, Stephen M.; Allen, James D.; and Boliek, Martin P., to Ricoh Corporation; and Ricoh Company, Ltd. Apparatus and method for compressing still images. 5,664,028, Cl. 382-248.000.

Bloom & Kreten: *See—*
Abidin, Michael R.; and Lehmbeck, Steven P., 5,662,221, Cl. 206-354.000.
Abidin, Michael R.; and Lehmbeck, Steven P., 5,662,669, Cl. 606-167.000.

Bloomer, John Joseph: *See—*
Barnett, Bruce Gordon; Bloomer, John Joseph; Chang, Hsuan; Crapo, Andrew Walter; Hartman, Michael James; and Vivier, Barbara Jean, 5,664,093, Cl. 395-183.070.

Bloomer, Ronald D. Belt or webbing buckle having plural independently operable securement and release mechanisms. 5,661,877, Cl. 24-170.000.

Blow, Todd S.: *See—*
Bessette, Roger F.; Simmons, L. Kimball; Proulx, Gary S.; and Blow, Todd S., 5,662,340, Cl. 277-9.500.

Bluhm, Mark W.: *See—*
Martinez, Marvin Wayne, Jr.; Bluhm, Mark W.; Byrne, Jeffrey S.; Courtright, David A.; Duschatko, Douglas Ewing; Garibay, Raul A., Jr.; and Herubin, Margaret R., 5,664,149, Cl. 711-141.000.

Blum, Gregory A.; and Levin, Gedaly, to Cherry Semiconductor Corporation. Switched leading edge replacement for current sense signal. 5,663,667, Cl. 327-134.000.

Blumenau, Trevor. Iconic audiovisual data editing environment. 5,664,216, Cl. 345-302.000.

BMC Software, Inc.: *See—*
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Board of Trustees University of Illinois, The: *See—*
Saleh, Resve A.; Mueller, Jeffrey G.; and Antao, Brian A. A., 5,663,890, Cl. 364-490.000.

Bobst SA: *See—*
Kemen, Jean-Pierre, 5,662,323, Cl. 271-218.000.

Boden, Frederick J.; Sauer, Richard P.; Goldblatt, Irwin L.; and McHenry, Michael E., to Castrol Limited. Polar grafted polyolefins, methods for their manufacture, and lubricating oil compositions containing them. 5,663,126, Cl. 508-221.000.

Boehringer Ingelheim International GmbH: *See—*
Weston, Terence Edward; and Dunne, Stephen Terence, 5,662,271, Cl. 239-321.000.

Boehringer Ingelheim KG: *See—*
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Boehringer Mannheim GmbH: *See—*
Huber, Erasmus; Klein, Christian; Josel, Hans-Peter; and Zink, Bruno, 5,662,911, Cl. 424-278.100.
Winter, Gerhard; Pichler, Bernhard; Woog, Heinrich; and Heller, Werner, 5,662,918, Cl. 424-423.000.

Boeing Company, The: *See—*
McCandless, Jay H., 5,663,683, Cl. 330-286.000.
Rumberger, William E.; and Gross, Charles R., 5,663,642, Cl. 324-204.000.
Sanders, Daniel G., 5,661,992, Cl. 72-60.000.

Boettger, Günter: *See—*
Melder, Johann-Peter; Ruider, Günther; Witzel, Tom; Ross, Karl-Heinz; and Boettger, Günter, 5,663,444, Cl. 564-477.000.

Bogue, Beuford Arlie; and Myers, Garry L., to Fulsz Technologies Ltd. Method and apparatus for forming compression dosage units within the product package. 5,662,849, Cl. 264-112.000.

Boily, Sabin: *See—*
Schulz, Robert; Van Neste, André; Boily, Sabin; and Jin, Shize, 5,662,834, Cl. 252-513.000.

Bold, Guido; Capraro, Hans-Georg; Fässler, Alexander; Lang, Marc; Bhagwat, Shripad Subray; Khanna, Satish Chandra; Lazdins, Janis Karlis; and Mestan, Jürgen, to Ciba-Geigy Corporation. Antiviral ethers of aspartate protease substrate isosteres. 5,663,200, Cl. 514-487.000.

Bold, Guido: *See—*
Rösel, Johannes; Regenass, Urs; Lang, Marc; Bold, Guido; and Cumin, Frédéric, 5,663,168, Cl. 514-227.500.

Boldt, Gerald Donald; Hanna, Stephen Dale; and Vogelsberg, Robert Eric, to International Business Machines Corporation. Chained DMA devices for crossing common buses. 5,664,142, Cl. 711-112.000.

Bolgiano, D. Ridgely; and LaVean, Gilbert E., to Interdigital Technology Corporation. Wireless telephone distribution system with time and space diversity transmission. 5,663,990, Cl. 375-347.000.

Bolich, Raymond Edward, Jr.; and Midha, Sanjeev, to Procter & Gamble Company, The. Personal care compositions containing hydrophobic linear copolymer and hydrophobic, volatile, branched hydrocarbon solvent. 5,662,892, Cl. 424-70.100.

Boliek, Martin P.: *See—*
Blonstein, Stephen M.; Allen, James D.; and Boliek, Martin P., 5,664,028, Cl. 382-248.000.

Bolin, Mark Robert; Fisher, James Arthur; and Goncharsky, Robert Samuel, to International Business Machines Corporation. Graphical user communications interface for an operator in a manual data storage library. 5,664,146, Cl. 711-115.000.

Bondeson, Benjamin J.; Frates, Paul S.; and Jackson, John E., to Nordson Corporation. Melting apparatus with material release sensing system. 5,662,243, Cl. 222-1.000.

Bonnet, Alain: *See—*
Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; Costerousse, Germain; and d'Ambrieres, Solange Gouin, 5,663,164, Cl. 514-210.000.

Bonomo, Louis James. Fishing swivel weed guard resonating system. 5,661,922, Cl. 43-42.310.

Bonse, Dirk: *See—*
Bischoff, Michael; Bonse, Dirk; and Sell, Michael, 5,662,809, Cl. 210-757.000.

Bonte, Frederic: *See—*
Meybeck, Alain; Bonte, Frederic; and Dumas, Marc, 5,663,160, Cl. 514-182.000.

Bonutti, Peter M. Tissue press method of use. 5,662,710, Cl. 623-11.000.

Booth, William M.; and Barra, Jean-Aubert, to Medtronic, Inc. Cardioplegia catheter with elongated cuff. 5,662,607, Cl. 604-96.000.

Borealis Holding A/S: *See—*
Garoff, Thomas; Leinonen, Timo; and Iiskola, Eero, 5,663,248, Cl. 526-114.000.
Seppänen, Hanneli; Ora, Marja; Mattsson, Lars-Åke; Sainio, Markku; and Vestberg, Torvald, 5,663,232, Cl. 524-523.000.

Boriack, Clinton J.: *See—*
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Borland International, Inc.: *See—*
Anderson, Charles; Warfield, Robert W.; Cseri, Istvan; Low, Murray K.; Liaw, Weikuo; and Bush, Alan M., 5,664,127, Cl. 345-333.000.

Borneis, Stefan: *See—*
Stamm, Uwe; Klaft, Ingo; Berger, Vadim; Borneis, Stefan; and Lokai, Peter, 5,663,973, Cl. 372-20.000.

Borostyan, David M.: *See—*
Borostyan, Stephen; and Borostyan, David M., 5,662,321, Cl. 271-10.030.

Borostyan, Stephen; and Borostyan, David M., to Borostyan, Stephen; and Borostyan, David M. Automatic document feeder with skew control. 5,662,321, Cl. 271-10.030.

Bortolaso, Roberto; and Stivanello, Mariano, to F.I.S. Fabbrica Italiana Sintetici S.p.A. Process for preparing {R-(R*,R*)}-5-(3-chlorophenyl)-3-[2-(3,4-dimethoxylphenyl)-1-methyl-ethyl]-oxazolidin-2-one. 5,663,360, Cl. 548-229.000.

Bosma, Marinus A. Trigger mechanism for impacting device. 5,662,177, Cl. 173-202.000.

Boss, Anders: *See—*
Jorneus, Lars; Boss, Anders; and Hanssen, Halvar, 5,662,474, Cl. 433-172.000.

Bossi, Burt Joseph; Hewitt, William Alan; and Hoskins, Stephen Dale, to AT&T. Message waiting adjunct device. 5,664,008, Cl. 379-67.000.

Boston Scientific Corporation: *See—*
Andersen, Erik; and Strecker, Ernst Peter, 5,662,713, Cl. 623-12.000.

Boston University: *See—*
Sari, Nil; Dogan, Hanzade; and Snyder, John K., 5,663,196, Cl. 514-468.000.

Boswell, George A. Apparatus for improving intake charge vaporization and induction for an internal combustion engine. 5,662,077, Cl. 123-184.210.

Botti, Edoardo; and Chiozzi, Giorgio, to SGS-Thomson Microelectronics S.r.l. Apparatus and method for stabilizing an amplifier. 5,663,681, Cl. 330-51.000.

Bottomley, William E.: *See—*
Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Nairne, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., 5,663,042, Cl. 430-619.000.

Boudjema, Pascal, to Medicamat S.A. Instrument for cutting calibrated hair grafts. 5,662,661, Cl. 606-132.000.

Boudreaux, Chase J.: *See—*
Fischer, Stephen A.; and Boudreaux, Chase J., 5,663,263, Cl. 526-318.410.

Bouma, Bonno Nammen; and Bertina, Rogier Maria, to Rijksuniversiteit Leiden; and Bouma, Bonno Nammen. Protein S deletion variants deficient in C4BP binding activity, but having APC cofactor activity, compositions and therapeutic methods. 5,663,142, Cl. 514-12.000.

Bourbon, Pierre; Lagny, Pierre; and Billot, Pierre. Method for treating diseases caused by bacterial microorganisms with a composition containing fluorine F– and lithium Li+ . 5,662,941, Cl. 424-673.000.

Bousquet, Gerald G. Transcutaneous access device. 5,662,616, Cl. 604-175.000.

Bowden, Martin Charles; and Brown, Stephen Martin, to Zeneca Limited. Chemical intermediates useful in agriculture. 5,663,370, Cl. 549-290.000.

Bowen, James H.: *See*—
Smith, Walker; and Bowen, James H., 5,661,960, Cl. 56-12.700.

Bowers, Cyril Y.; and Coy, David, to Tulane Educational Fund, Administrators of the. Polypeptide analogues having growth hormone releasing activity. 5,663,146, Cl. 514-16.000.

Boyden, James H.: *See*—
Wang, Weijia; and Boyden, James H., 5,664,019, Cl. 381-71.100.

Boyer, Ernest W.; and Charles, Robert L., to Genencor International, Inc. Compositions for the prevention and treatment of viral-induced tumors. 5,662,902, Cl. 424-115.000.

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BP Chemicals Limited: *See*—
Blackborow, John Richard; and Hodgson, Philip Kenneth Gordon, 5,663,243, Cl. 505-333.700.
Griffiths, David C.; Palmer, Keith W.; and Reid, Ian A B, 5,663,473, Cl. 585-652.000.
Morris, George Ernest; Smith, Stephen James; Sunley, John Glenn; Watt, Robert John; and Williams, Bruce Leo, 5,663,430, Cl. 562-608.000.

BPSI Holdings, Inc.: *See*—
Kelley, Julie A.; and Grillo, Susan M., 5,662,732, Cl. 106-271.000.

Braam, Bernardus Carolus; Hopman, Jan; and Koster, Marinus Pieter, to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno. Mechanical linear guide. 5,663,486, Cl. 73-1.380.

Bracco International B.V.: *See*—
Nowotnik, David P.; and Nanjappan, Palaniappa, 5,663,307, Cl. 534-10.000.

Bradfield, Joseph Henry: *See*—
Masseth, John Edward; and Bradfield, Joseph Henry, 5,662,514, Cl. 451-5.000.

Bradford, Harlan N.: *See*—
Colman, Robert W.; Bradford, Harlan N.; and Jameson, Bradford A., 5,663,294, Cl. 530-326.000.

Bradshaw, Anthony J.; Thornton, Richard T.; and Snyder, Wayne W., to NeoCardia, LLC. Combined angioplasty and intravascular radiotherapy method and apparatus. 5,662,580, Cl. 600-3.000.

Brady, Thomas L. Vertical leg stretching apparatus. 5,662,592, Cl. 601-34.000.

Brandiser, Herbert; and Link, Christoph, to Voith Sulzer Papiermaschinen GmbH. Deflection controlled roll. 5,662,571, Cl. 492-7.000.

Brandt, Scott A.: *See*—
Fant, Karl M.; and Brandt, Scott A., 5,664,212, Cl. 395-141.000.

Brasca, Maria Gabriella: *See*—
Buzzetti, Franco; Brasca, Maria Gabriella; Longo, Antonio; and Ballinari, Dario, 5,663,346, Cl. 546-113.000.

Bratcher, Michael P.: *See*—
Polowinczak, Allen D.; Prete, James J.; Bratcher, Michael P.; and Murphy, Mark V., 5,661,927, Cl. 49-447.000.

Braud, Yves; and Hertault, Jean-Paul, to Societe des Terres Refractaires du Boulonnais. Device for guiding molten steel in a tundish. 5,662,862, Cl. 266-229.000.

Braun, Richard L., to Ciba-Geigy Corporation. Method for the prevention or removal of crystalline scopolamine in a non-aqueous matrix of a transdermal system. 5,662,928, Cl. 424-449.000.

Bräunling, Hermann: *See*—
Reitmeier, Rudolf; Bräunling, Hermann; Lindner, Tassilo; and Menzel, Hartmut, 5,663,400, Cl. 556-479.000.

Brazell, Kenneth M.: *See*—
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Breg, Inc.: *See*—
Mason, Bradley R.; and Mason, Jeffrey T., 5,662,695, Cl. 607-96.000.

Brems, David N.: *See*—
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Brennen, Kenneth R.; and Pohndorf, Peter J., to Medtronic Inc. Steerable stylet and manipulative handle assembly. 5,662,119, Cl. 128-772.000.

Brent America, Inc.: *See*—
Affinito, John C., 5,662,746, Cl. 148-247.000.

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Colvard, John C., to Power Curbers, Inc. Self-propelled slip-form paving apparatus. 5,662,431, Cl. 404-105.000.
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Cummings, Kevin D.; Johnson, William A.; and Laird, Daniel L., to Motorola. Pattern writing method during X-ray mask fabrication. 5,663,018, Cl. 430-5.000.

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Cynshi, Osamu: *See—*
Tamura, Kunio; Kato, Yoshiaki; Yoshida, Mitsutaka; Cynshi, Osamu; and Ohba, Yasuhiro, 5,663,373, Cl. 549-345.000.

Cypress Semiconductor Corp.: *See—*
Wang, Yun-Che; and Shah, Gaurang, 5,663,665, Cl. 327-3.000.

Cyprian, Rudolph S.: *See—*
Glass, Neel W.; Ford, Garrett Nolan; and Cyprian, Rudolph S., 5,661,958, Cl. 54-82.000.

Cyrix Corporation: *See—*
Martinez, Marvin Wayne, Jr.; Bluhm, Mark W.; Byrne, Jeffrey S.; Courtright, David A.; Duschatko, Douglas Ewing; Garibay, Raul A., Jr.; and Herubin, Margaret R., 5,664,149, Cl. 711-141.000.

Cyrus, Judi: *See—*
Cole, Clinton; Morgan, Carlton B.; Cyrus, Judi; and Powers, Daniel, 5,662,690, Cl. 607-5.000.

Cytel Corporation: *See—*
Kubo, Ralph T.; Grey, Howard M.; Sette, Alessandro; and Celis, Esteban, 5,662,907, Cl. 424-185.100.

Czako, Brian Matthew; Lawton, William Wallis; O'Loughlin, Susan Ann; and Sharp, Werner Leland, to International Business Machines Corporation. System for merging plurality of atomic data elements into single synchronized file by assigning ouput rate to each channel in response to presentation time duration. 5,664,226, Cl. 395-872.000.

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Ryu, Soo-Hyun, 5,662,357, Cl. 280-840.000.

Daewoo Electronics Co, Ltd.: *See—*
Byon, Sung-Kwang, 5,662,355, Cl. 280-743.100.
Kim, Gie-Cheol, 5,662,287, Cl. 242-334.300.

Daewoo Electronics Co., Ltd.: *See—*
Choi, Nam-Chul, 5,662,394, Cl. 312-116.000.
Chong, Chan-Ho, 5,661,990, Cl. 68-23.600.
Ji, Jeong-Beom; and Min, Yong-Ki, 5,663,830, Cl. 359-295.000.

Dafoe, John R.: *See—*
Nierenberg, Nicolas C.; Rogers, Paul A.; Edwards, David B.; Dafoe, John R.; and Osberg, William A., 5,664,182, Cl. 395-613.000.

Daggett, Gregg H.: *See—*
Andreshak, Joseph Charles; Daggett, Gregg H.; Karat, John; Lucassen, John; Levy, Stephen Eric; and Mack, Robert Lawrence, 5,664,061, Cl. 704-275.000.

Dahl, Roger W.: *See—*
Kroll, Mark W.; Dahl, Roger W.; Sundquist, Stephen K.; and Nelson, Randall S., 5,662,696, Cl. 607-116.000.

Dahlberg, Bjorn M., to Hilevel Technology, Inc. Microprogrammable processor capable of accessing unused portions of control store as fast data memory. 5,664,169, Cl. 395-598.000.

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Kingston, Tim; and Dahlén, Tord, 5,662,192, Cl. 188-1.11W.

Dahmani, Dahmane: *See—*
Shah, Nilesh; Ajanovic, Jasmin; and Dahmani, Dahmane, 5,664,117, Cl. 395-280.000.

Dai Nippon Printing Co., Ltd.: *See—*
Obata, Hitoshi; and Narita, Masashi, 5,662,989, Cl. 428-212.000.

Daicel Abosisangyo Co.: *See—*
Higuchi, Akihiko, 5,662,881, Cl. 423-636.000.

Daicel Chemical Industries, Ltd.: *See—*
Kanno, Tatsuya; Hukuda, Yutaka; and Oshino, Yasuhiro, 5,663,278, Cl. 528-196.000.
Okamoto, Yoshio, 5,663,311, Cl. 536-18.700.
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, 5,663,310, Cl. 536-69.000.

Daijogo, Akira: *See—*
Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, 5,662,400, Cl. 353-31.000.

Daikin Industries, Ltd.: *See—*
Kawasaki, Kenji; Inoue, Takayoshi; and Maki, Yasuo, 5,661,894, Cl. 29-596.000.
Shimada, Kazuhiko; Nakata, Yutaka; and Idemori, Kenjiro, 5,662,972, Cl. 428-35.700.

Daiku, Yoshiharu: *See—*
Oinuma, Hitoshi; Hasegawa, Takashi; Takamura, Tadanobu; Nomoto, Kenichi; Daiku, Yoshiharu; Naito, Toshihiko; and Hamano, Sachiyuki, 5,663,414, Cl. 564-80.000.

Daimler-Benz Aerospace AG: *See—*
Müller, Wolfgang; and Munding, German, 5,661,970, Cl. 60-223.000.
Sepp, Gunther; and Protz, Rudolf, 5,662,291, Cl. 244-3.130.

Daimler-Benz AG: *See—*
Riemer, Bernd; and Klaiber, Thomas, 5,662,184, Cl. 180-65.100.

Daimon, Katsumi: *See—*
Tambo, Fumiaki; Daimon, Katsumi; Sakaguchi, Yasuo; and Yamasaki, Kazuo, 5,663,327, Cl. 540-139.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Hada, Kohji; and Syudou, Tadashi, 5,663,801, Cl. 358-299.000.
Daito Kogyo Co., Ltd.: *See—*
Kozen, Toru, 5,663,490, Cl. 73-49.200.
Daiwa Seiko, Inc.: *See—*
Hashimoto, Hiroshi, 5,662,285, Cl. 242-241.000.
Hirano, Kazuo, 5,662,286, Cl. 242-247.000.
Dale, Gregory A.: *See—*
Siegel, Norman L.; Schwartz, Lewis I.; Kralovic, Raymond C.; Switka, Joseph J.; Saunders, Craig M.; Stanca, Nick E.; Dale, Gregory A.; and Plantz, Jeffrey S., 5,662,866, Cl. 422-29.000.
Dalebout, William T.: *See—*
Watterson, Scott R.; Dalebout, William T.; and Armstrong, Timothy O., 5,662,557, Cl. 482-54.000.
Daly, Richard H. Extendable stirrup. 5,661,957, Cl. 54-47.000.
Dam, Naim; and Marro, Michael J., to Cosense, Inc. Invasive and non-invasive ultrasonic sensor with continuous and demand self-test. 5,663,503, Cl. 73-649.000.
D'Ambra, Thomas E., to Albany Molecular Research, Inc. Aromatic ketones. 5,663,412, Cl. 560-51.000.
d'Ambrieres, Solange Gouin: *See—*
Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; Costerousse, Germain; and d'Ambrieres, Solange Gouin, 5,663,164, Cl. 514-210.000.
D'Amelia, Ronald P.: *See—*
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr., 5,662,953, Cl. 426-2.000.
Dana Corporation: *See—*
Masseth, John Edward; and Bradfield, Joseph Henry, 5,662,514, Cl. 451-5.000.
Schlosser, Kraig J.; and Kaufman, Ted J., 5,662,544, Cl. 475-230.000.
Dang, Chi-Hung; and Dang, Chi-Thanh, to International Business Machines Corporation. Checkerboad data storage library. 5,663,938, Cl. 369-36.000.
Dang, Chi-Thanh: *See—*
Dang, Chi-Hung; and Dang, Chi-Thanh, 5,663,938, Cl. 369-36.000.
D'Angelo, Giuseppe; Poluzzi, Rinaldo; and Presti, Matteo Lo, to SGS-Thomson Microelectronics S.r.; and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. Applied-voltage fuzzy control process for induction motors and device for performing it. 5,663,626, Cl. 318-799.000.
Daniel, Douglas, to Compak Filter Services (Franchising) Inc. Compacting apparatus. 5,662,036, Cl. 100-209.000.
Daniels, Alan L. Puppy training diaper. 5,662,640, Cl. 604-392.000.
Danielson, David W.; Elkins, Robert B.; and Dunlap, Thomas G., to General Electric Company. Water rod flow metering within the water rod lower end plug. 5,663,993, Cl. 376-444.000.
Danneels, Gunner; Gates, Gregory; and Downing, Russell, to Intel Corporation. Delayed transmission of data packets over networks. 5,663,951, Cl. 370-230.000.
Datta, Rathin; Randhava, Sarabjit S.; and Tsai, Shih-Perng, to University of Chicago. Process for the production of hydrogen peroxide. 5,662,878, Cl. 423-588.000.
Dauenhauer Manufacturing, Inc.: *See—*
Hulls, John, 5,662,267, Cl. 239-8.000.
Daugan, Alain Claude-Marie: *See—*
Dumaitre, Bernard Andre; Dodic, Nerina; Daugan, Alain Claude-Marie; and Pianetti, Pascal Maurice Charles, 5,663,179, Cl. 514-297.000.
Davar, Jonathan: *See—*
Chatwani, Dilip; Subramanian, Rajan; Chiang, Winnis; Davar, Jonathan; Opher, Ayal; and Sawant, Shiva, 5,664,107, Cl. 395-200.540.
David, Claire, to Rhone-Poulenc Chimie. Preparation of ammonium rare earth double oxalates and rare earth oxides produced therefrom. 5,662,874, Cl. 423-263.000.
David Sarnoff Research Center, Inc.: *See—*
Taylor, Herbert Hudson; Peters, Joseph Edward, Jr.; and Chin, Danny, 5,664,214, Cl. 395-800.200.
Davidson, Robert L.; Myhrvold, Nathan; Vogel, Keith Randel; Yuval, Gideon Andreas; Shupak, Richard; and Apperson, Norman Eugene, to Microsoft Corporation. Method and system for improving the locality of memory references during execution of a computer program. 5,664,191, Cl. 395-670.000.
Davis, Dennis D.: *See—*
Nelson, Stephen R.; Carter, Buford H.; Davis, Dennis D.; Lahutsky, Tammy J.; Barnett, John; and Haas, Glen R., Jr., 5,663,597, Cl. 257-734.000.
Davis, Hedley, to Escom AG. Apparatus for selectively loading data blocks from CD-ROM disks to buffer segments using DMA operations. 5,664,224, Cl. 395-842.000.
Davis, Kenneth. Pole top extension. 5,661,946, Cl. 52-736.100.
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Beebe, Kenneth W.; Davis, L. Berkly; and Iasillo, Robert J., 5,661,969, Cl. 60-39.281.
Dawson, Robert; and Featherby, Clive, to Four-D Enterprises, Inc. Lighter apparatus. 5,662,719, Cl. 44-506.000.
Day, Leland Leslie; Douskey, Steven Michael; and Ganfield, Paul Allen, to International Business Machines Corporation. System and method for minimizing simultaneous switching during scan-based testing. 5,663,966, Cl. 371-22.360.
De, Kaushik: *See—*
Lindberg, Grant A.; Prasad, Sharad; De, Kaushik; and Gunda, Arun K., 5,663,967, Cl. 371-26.000.
Deacon, David A. G.: *See—*
Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,664,032, Cl. 385-4.000.
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Bischel, William K.; Brinkman, Michael J.; Deacon, David A. G.; DeWath, Edward J.; Dyer, Mark J.; and Field, Simon J., 5,664,032, Cl. 385-4.000.
de Agudelo, Magdalena Ramirez; Guerra, Julia; Romero, Trino; and Medina, Mariela, to Intevep, S.A. Catalyst for the simultaneous selective hydrogenation of diolefins and nitriles and method of making same. 5,663,446, Cl. 564-490.000.
Deak, Anton F.; Glaser, Dieter; Marchmont, Caroline; and Ngo-Beelmann, Ung-Lap, to Asea Brown Boveri AG. High temperature probe. 5,662,418, Cl. 374-144.000.
Debaes, Bernard: *See—*
Jourquin, Lucien; Debaes, Bernard; and Du Prez, Eddie, 5,662,996, Cl. 428-318.800.
De Bazelaire, Eric; and Dunand, Jean-Pierre, to Elf Aquitaine Production. Method for analysing and processing seismic reflection data for the determination of a high resolution spatial velocity field for hyperbolicity correction. 5,663,928, Cl. 367-52.000.
Dehbas, Elie. Apparatus for locating a breast mass. 5,662,674, Cl. 606-192.000.
DeBoer, Ed. Self-contained refrigeration device for fruit. 5,661,979, Cl. 62-3.600.
Decker, Donald F.: *See—*
Stubbs, John A.; and Decker, Donald F., 5,662,067, Cl. 119-173.000.
Deese, Raymond E.; and Lewis, David D., to Electro-Tech's. LED traffic signal light with automatic low-line voltage compensating circuit. 5,663,719, Cl. 340-912.000.
Defendini, Francis: *See—*
Lefrou, Christine; Defendini, Francis; Garot, Florence; and Marrot, Odile, 5,663,829, Cl. 359-275.000.
Defense Research Technologies, Inc.: *See—*
Drzewiecki, Tadeusz M.; Niemczuk, John B.; Fuller, Christopher R.; Thomas, Russell H.; and Burdisso, Ricardo A., 5,662,136, Cl. 137-14.000.
Degesch GmbH: *See—*
Blatchford, Bevin Henry Shenton, 5,662,865, Cl. 422-29.000.
de Groot, Peter, to Zygo Corporation. Homodyne interferometric receiver and calibration method having improved accuracy and functionality. 5,663,793, Cl. 356-351.000.
Deguchi, Masahiro; Kitagawa, Masatoshi; and Hirao, Takashi, to Matsushita Electric Industrial Co., Ltd. Method of depositing crystalline carbon-based thin films. 5,662,965, Cl. 427-249.000.
Deguchi, Takaaki: *See—*
Ogawa, Takahiro; Deguchi, Takaaki; Ikejiri, Yoshifumi; and Inada, Katsuhiro, 5,663,205, Cl. 514-603.000.
Deguchi, Yoshitaka; and Takahashi, Nobutaka, to Nissan Motor Co., Ltd. Engine idling speed control apparatus. 5,662,084, Cl. 123-339.110.
Degussa Aktiengesellschaft: *See—*
Göbel, Thomas; and Münzenberg, Jörg, 5,663,395, Cl. 556-427.000.
de Haan, Pieter; and Deurloo, Marcus Johannes Maria, to Akzo Nobel, N.V. Sugar-coated pharmaceutical dosage unit. 5,662,936, Cl. 424-479.000.
Deisenroth, Ted: *See—*
Haniff, Marlon; Falk, Robert; Deisenroth, Ted; and Mueller, Karl F., 5,663,273, Cl. 528-70.000.
Dejaiffe, Robert: *See—*
Willis, James E.; Heilveil, Andrew L.; and Dejaiffe, Robert, 5,663,997, Cl. 378-45.000.
DeJonghe, Leslie A. Lockable ground anchor for sports equipment. 5,661,933, Cl. 52-166.000.
De Knaep, Alfons Gaston Maria: *See—*
Willemsens, Albert Louis Anna; Verstappen, Walter Louis Antoine; Copmans, Alex Herman; Vandendriessche, Anna Maria Jozefa; De Knaep, Alfons Gaston Maria; and Venet, Marc Gaston, 5,663,354, Cl. 548-257.000.
de la Torre, Ralph; and Gregory, Kenton W., to General Hospital Corporation, The. Apparatus and method for vasodilation. 5,662,590, Cl. 601-2.000.
Delaware Capital Formation, Inc.: *See—*
Jennrich, Carleton E.; and Marohl, Rudolph O., 5,662,581, Cl. 600-21.000.
Delco Electronics Corporation: *See—*
Pickett, James Kyle; and Stringfellow, David Wayne, 5,664,167, Cl. 395-557.000.
Sparks, Douglas Ray, 5,663,508, Cl. 73-861.710.
Stringfellow, David Wayne; and Chavan, Abhijeet V., 5,663,616, Cl. 318-254.000.
Delessert, André: *See—*
Gerlier, André; Polidoro, Roberto; Garcia, Guillermo; and Delessert, André, 5,662,201, Cl. 194-206.000.
Dell, Colin Peter: *See—*
Brunavs, Michael; Dell, Colin Peter; Gallagher, Peter Thaddeus; Owton, William Martin; and Smith, Colin William, 5,663,375, Cl. 549-385.000.
Dell USA, L.P.: *See—*
Jeffries, Kenneth L.; Jones, Craig S.; and Pecone, Victor K., 5,664,119, Cl. 395-283.000.

Dell'Ova, Francis: *See—*
Delmas, Christian; Dell'Ova, Francis; and Paillardet, Frederic, 5,663,688, Cl. 331-14.000.
Delmas, Christian; Dell'Ova, Francis; and Paillardet, Frederic, to Thomson Multimedia S.A. Method of enhancing the noise immunity of a phase-locked loop, and device implementing this method. 5,663,688, Cl. 331-14.000.
Delta Systems, Inc.: *See—*
Kattler, David R.; and Trimble, Peter J., Jr., 5,662,213, Cl. 200-302.300.
DeLuca, Michael Joseph, to Motorola, Inc. Method and apparatus for prioritizing message transmissions and alerts in a radio communication system. 5,663,717, Cl. 340-825.360.
DeMatteis, Robert B. T-shirt bag and rack combination. 5,662,225, Cl. 206-554.000.
Denel (Proprietary) Limited: *See—*
Müller, Ernst Johann Heinrich, 5,663,519, Cl. 89-17.000.
Deneroff, Martin M.: *See—*
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Deng, Li: *See—*
Jacobsen, Eric N.; Zhang, Wei; and Deng, Li, 5,663,393, Cl. 556-45.000.
DenHerder, Marvin J. Torque sight for hand-held bows. 5,662,093, Cl. 124-23.100.
Denman, Marvin: *See—*
Burgess, David P.; Denman, Marvin; Hood, Milton M., Jr.; Kearney, Mark A.; Kling, Lavanya; Murphy, Graham R.; and Song, Seungyoon Peter, 5,664,215, Cl. 395-800.230.
Denman, Paul M. Safety device for woodworking tools. 5,662,019, Cl. 83-425.000.
Dennis, William K.: *See—*
McLellan, Robert N.; Chiu, Anthony M.; Hundt, Paul J.; and Dennis, William K., 5,661,900, Cl. 29-827.000.
Dennison, Charles H.; and Thakur, Randhir P. S., to Micron Technology, Inc. Method to thermally form hemispherical grain (HSG) silicon to enhance capacitance for application in high density DRAMs. 5,663,090, Cl. 438-398.000.
Denson, Raymond: *See—*
Fasig, Harold A.; Mallon, Charles E.; Denson, Raymond; Fasig, James R.; Coakley, Peter G.; Lutjens, Steven W.; Flanagan, Terry M.; and Vasel, Edward J., 5,663,710, Cl. 340-601.000.
Dent, Paul W., to Ericsson Inc. Dual mode satellite/cellular terminal. 5,663,957, Cl. 370-347.000.
Dentsply GmbH: *See—*
Grutzner, Andreas, 5,662,472, Cl. 433-90.000.
Den Uyl, Hendrik; and Teijgeler, Johannes, to TPP Axxicon B.V. Injection mould with a pre-opening jack. 5,662,952, Cl. 425-556.000.
Denzinger, Walter; Hartmann, Heinrich; Kroener, Michael; and Nilz, Claudia, to BASF Aktiengesellschaft. Elimination of nitrile impurities from polymers. 5,662,781, Cl. 204-158.210.
De Pietra, Gaetano: *See—*
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Derby, Kevin A.: *See—*
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Dericks, Gerard H.: *See—*
Laboureau, Jacques Philippe; and Dericks, Gerard H., 5,662,655, Cl. 606-75.000.
De Ridder, Chris G.M.: *See—*
Huussen, Frank; Berenpas, Gerard; Hasper, Albert; and De Ridder, Chris G.M., 5,662,470, Cl. 432-241.000.
DeRosch, Mark A.: *See—*
Brodack, James W.; DeRosch, Mark A.; Deutsch, Edward A.; and Lyszlewski, Mary Marmion, 5,662,882, Cl. 424-1.110.
Desai, Ashvin H. Endoscopic surgical instrument. 5,662,680, Cl. 606-210.000.
Desfetes, Patrick: *See—*
Drocourt, Jean-Louis; Desfetes, Patrick; and Sanghera, Jaspal, 5,663,057, Cl. 435-40.500.
Detroit, William J.; Lebo, Stuart E., Jr.; and Bushar, Lori L., to LignoTech USA, Inc. Production of acid soluble humates. 5,663,425, Cl. 562-32.000.
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Brodack, James W.; DeRosch, Mark A.; Deutsch, Edward A.; and Dyszlewski, Mary Marmion, 5,662,882, Cl. 424-1.110.
Deutsche Thomson-Brandt GmbH: *See—*
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De Vaughn, Donald H., to Bio-Plas, Inc. Self-contained blood withdrawal apparatus and method. 5,662,127, Cl. 128-765.000.
Development of Emerging Architectures L.L.C., Institute for the: *See—*
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Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,664,104, Cl. 395-200.540.
Dewan, John T.: *See—*
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DeWath, Edward J.: *See—*
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DHV International, Inc.: *See—*
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Dia Semicon Systems Incorporated: *See—*
Ikedea, Osamu, 5,664,201, Cl. 395-750.030.
Diamond, Jeffrey H., to Jeffrey Mitchell Laboratories. Toothpaste for smokers for solubilizing and removing tobacco tars. 5,662,888, Cl. 424-49.000.
Diaz, Rodolfn E., to Northrop Grumman Corporation. Material with artificial dielectric constant. 5,662,982, Cl. 428-116.000.
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Uggeri, Fulvio; Anelli, Pier Lucio; Brocchetta, Marino; and Visigalli, Massimo, 5,663,413, Cl. 560-59.000.
Dickens, Robert R., to Libbey Glass Inc. Apparatus and method for forming a decorative pattern on glassware having an edge. 5,662,723, Cl. 65-104.000.
Dickenson, Haydn Guy William: *See—*
Van Dijk, Paul; Vega, Jose Luis; and Dickenson, Haydn Guy William, 5,663,136, Cl. 510-444.000.
Dickerson, Scott Howard: *See—*
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Dieken, Alan P.; Moe, Edward J.; Packard, Joy A.; Packard, Thomas J.; Reeder, Thomas W.; and Turgeon, Thomas A., to Minnesota Mining and Manufacturing Company. Ergonometric stethoscope chestpiece. 5,663,532, Cl. 181-131.000.
Dierks, Peter Michael: *See—*
Miller, Lois K.; Black, Bruce Christian; Dierks, Peter Michael; and Fleming, Nancy C., 5,662,897, Cl. 424-93.200.
Dietz, Erwin: *See—*
Urban, Manfred; and Dietz, Erwin, 5,662,739, Cl. 106-497.000.
Dietz, Raymond L.; and Peck, David M., to Quantum Materials, Inc. Low temperature glass paste with high metal to glass ratio. 5,663,109, Cl. 501-41.000.
Digital Equipment Corporation: *See—*
Amberg, Mark F.; Miller, William K.; Nemeth, Frank M.; and Swanson, Dwayne H., 5,664,221, Cl. 395-829.000.
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Digital Voice Systems, Inc.: *See—*
Hardwick, John C.; and Lim, Jae S., 5,664,051, Cl. 704-206.000.
Dillon, John B.; Nimmagadda, Srinivas; and Moncayo, Alfredo, to Rambus, Inc. Modular bus with single or double parallel termination. 5,663,661, Cl. 326-30.000.
Di Malta, Alain; Foulon, Loïc; Garcia, Georges; Nisato, Dino; Roux, Richard; Serradeil-Legal, Claudine; Valette, Gérard; and Wagnon, Jean, to Sanofi. 1-benzenesulfonyl-1,3-dihydro-indol-2-one derivatives, their preparation and pharmaceutical compositions in which they are present. 5,663,431, Cl. 562-828.000.
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Hostettler, Fritz; Rhum, David; Forman, Michael R.; Helmus, Michael N.; and Ding, Ni, 5,662,960, Cl. 427-2.300.
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Ruotoistenmäki, Jussi Matias; Ruotoistenmäki, Juhana; and Nyman, Jouko Artturi, 5,662,626, Cl. 604-306.000.
Director-General of Agency of Industrial Science and Technology: *See—*
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Disson, Jean-Pierre: *See—*
Bachelard, Roland; Disson, Jean-Pierre; and Morlhon, Bruno, 5,662,875, Cl. 423-344.000.
Distefano, Thomas H.: *See—*
Karavakis, Konstantine; Distefano, Thomas H.; Smith, John W., Jr.; and Mitchell, Craig, 5,663,106, Cl. 29-841.000.
Ditka, Michael P.; and Reinhard, Larry, to Illinois Tool Works Inc. Easy drive concrete fastener system. 5,661,938, Cl. 52-410.000.
Dittli, René; and Allington, Philip, to Melcher, AG. Synchronous rectifier that is impervious to reverse feed. 5,663,877, Cl. 363-127.000.
Dittman, Eberhard Siegfried: *See—*
Card, Duane Foster; Dittman, Eberhard Siegfried; and Saraiya, Mukund Kantilal, 5,663,526, Cl. 174-52.100.
Dixon, Gordon H.: *See—*
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Bishop, Gregory D.; Paul, Michel A.; Sambi, Narinderjit; and Rhad, Edward, 5,662,662, Cl. 606-143.000.
Knodel, Bryan D., 5,662,667, Cl. 606-151.000.
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Smith, Daniel; Willis, Bernard M.; Marschke, Kenneth P., Jr.; Littlewood, Barry; Schoen, Vulgens; Gucker, Carl; Nordmeyer, Michael; and Miklewicz, Thaddeus, 5,661,893, Cl. 29-558.000.

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Clegg, Ian Michael; and Hardman, Ray, 5,663,465, Cl. 570-224.000.

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Evensen, Kenneth. Method and apparatus for abrading with a profiled soft roller. 5,662,515, Cl. 451-59.000.

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F. Kurt Retsch GmbH & Co. KG: *See—*
Meyer, Hans-Jürgen, 5,662,282, Cl. 241-100.000.

F. Wieland Elektrische Industrie GmbH: *See—*
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Fard, Kambiz H., to Fila U.S.A., Inc. Product display apparatus. 5,662,301, Cl. 248-315.000.

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Finch, David P.: *See—*
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Findeisen, Kurt: *See—*
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Walker, Thomas G.; Goos, Darren; Bernritter, Raymond E.; Lee, Robert S.; Finkelstein, Mark I.; and Ginsberg, Ross, 5,664,010, Cl. 379-207.000.

Finley, John W.: *See—*
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Rucker, William E., 5,662,140, Cl. 137-541.000.

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Fischer, David: *See—*
Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, 5,664,108, Cl. 395-200.820.

Fischer, Jakob: *See—*
Herrmann, Wolfgang A.; Elison, Martina; Fischer, Jakob; and Köcher, Christian, 5,663,451, Cl. 568-451.000.

Fischer, Jerry F.; and Kaeser, Robert E., to LSI Lighting Systems, Inc. Canopy luminaire. 5,662,407, Cl. 362-147.000.

Fischer, Stephen A.; and Boudreaux, Chase J., to GEO Specialty Chemicals, Inc. Aqueous thickener composition and process for making same. 5,663,263, Cl. 526-318.410.

Fish, Ronald Craig: *See—*
Postman, Joel Robert; Bergen, David Peter; and Fish, Ronald Craig, 5,664,231, Cl. 395-893.000.

Fisher, James Arthur: *See—*
Bolin, Mark Robert; Fisher, James Arthur; and Goncharsky, Robert Samuel, 5,664,146, Cl. 711-115.000.

Fisher-Price, Inc.: *See—*
Tam, Chun-Wah; and Canna, John S., 5,662,380, Cl. 297-354.120.

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Fasig, Harold A.; Mallon, Charles E.; Denson, Raymond; Fasig, James R.; Coakley, Peter G.; Lutjens, Steven W.; Flanagan, Terry M.; and Vasel, Edward J., 5,663,710, Cl. 340-601.000.

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Hudgens, R. Douglas; and Matheson, Charles L., 5,662,799, Cl. 210-192.000.

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Bessette, Roger F.; Simmons, L. Kimball; Proulx, Gary S.; and Blow, Todd S., 5,662,340, Cl. 277-9.500.

Flick, Kenneth E.: *See—*
Allen, Geoffrey C.; Flick, Kenneth E.; and Herson, David T., 5,663,704, Cl. 340-426.000.

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Gerbert, Johannes C. M.; and van der Kuil, Johannes H. M., 5,663,493, Cl. 73-116.000.
Keisling, Mark D.; Marbaker, William R.; Clabaugh, Christopher A.; and Jensen, Gordon A., 5,664,105, Cl. 395-200.540.

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Sang, Jean Victor; Groves, Paul; Burrell, Robert Edward; and Flynn, Gerard, 5,662,824, Cl. 252-62.560.

Flynn, Richard M.; and Owens, John G., to Minnesota Mining and Manufacturing Company. Perfluoropolyether lubricating compositions. 5,663,127, Cl. 508-250.000.

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Schwindeman, James Anthony; Granger, Eric John; and Sutton, Douglas Earl, 5,663,398, Cl. 556-466.000.
Scott, Phillip Ray, 5,661,963, Cl. 56-328.100.
Thomas, William R.; Pfeffer, Henry A.; Guiliano, Basil A.; Sewall, Christopher J.; and Tomko, Stephen, 5,662,840, Cl. 264-12.000.

Fobbester, Ian Godfrey, to Plessey Semiconductors Limited. Control arrangements for digital radio receivers. 5,663,989, Cl. 375-344.000.

Focal, Inc.: *See—*
Pathak, Chandrashekhar P.; Sawhney, Amarpreet S.; Hubbell, Jeffrey A.; Herman, Stephen J.; Roth, Laurence A.; Campbell, Patrick K.; Berrigan, Kevin M.; Jarrett, Peter K.; and Coury, Arthur J., 5,662,712, Cl. 623-12.000.

Focke & Co. (GmbH & Co.): *See—*
Focke, Heinz; and Focke, Jürgen, 5,662,215, Cl. 206-273.000.

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Focke, Heinz; and Focke, Jürgen, 5,662,215, Cl. 206-273.000.

Fogal, Rich, to Micron Technology, Inc. Wire bonding capillary. 5,662,261, Cl. 228-4.500.

Fogerty, Bruce A. Orthodontic shield and method of making. 5,662,471, Cl. 433-22.000.

Foladare, Mark Jeffrey; Goldman, Shelley B.; Silverman, David Phillip; and Weber, Roy Philip, to AT & T. Personal mobile communication system with two points of entry. 5,664,003, Cl. 455-459.000.

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Chen, Chengwu; Pierce, Michael E.; and Foote, James L., III, 5,664,198, Cl. 395-733.000.

Ford, Garrett Nolan: *See—*
Glass, Neel W.; Ford, Garrett Nolan; and Cyprian, Rudolph S., 5,661,958, Cl. 54-82.000.

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Rao, V. Durga Nageswar; Rose, Robert Alan; Yeager, David Alan; and Fucinari, Carlo Alberto, 5,663,124, Cl. 508-150.000.
Seth, Brij Bahadur; and Hamidieh, Youssef Ali, 5,663,894, Cl. 364-508.000.

Ford, Joseph E.; Jursich, Donald N.; and Chan, Raymond, to Jing Mei Industrial Holdings, Inc. Shower speaker telephone. 5,664,015, Cl. 379-433.000.

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Evans, Paul Michael; and Schultz, Roy David, 5,663,605, Cl. 310-181.000.
McMillan, Richard Keith, II; and Jairazbhoy, Vivek Amir, 5,663,529, Cl. 174-252.000.

Foreman, David Michael: *See—*
Ferguson, Mark William James; Foreman, David Michael; and Shah, Mamta, 5,662,904, Cl. 424-130.100.

Foret, Chris: *See—*
Winicov, Elsie; Foret, Chris; Palmer, Cynthia; Griffith, Michael W.; and Hemling, Thomas C., 5,663,131, Cl. 508-580.000.

Form Rite: *See—*
Kargula, Christopher J., 5,662,359, Cl. 285-93.000.

Forman, Michael R.: *See—*
Hostettler, Fritz; Rhum, David; Forman, Michael R.; Helmus, Michael N.; and Ding, Ni, 5,662,960, Cl. 427-2.300.

Forrester, Joseph H. Barb arm extension. 5,662,313, Cl. 256-11.000.

Forsyth, John R., to New Venture Gear, Inc. Transmission for four-wheel drive vehicles. 5,662,543, Cl. 475-198.000.

Fort, Chris. Bifurcated keyboard arrangement. 5,662,422, Cl. 400-489.000.

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Gressel, Carmi David; and Dror, Itai, 5,664,017, Cl. 380-30.000.

Fossa, Anthony Andrea, to Pfizer Inc. Synergistic therapeutic compositions of angiotensin I converting enzyme inhibitors and angiotensin II antagonists and methods. 5,663,188, Cl. 514-381.000.

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Four-D Enterprises, Inc.: *See—*
Dawson, Robert; and Featherby, Clive, 5,662,719, Cl. 44-506.000.

Fox, James E. J.; and Sattelberg, Dennis H., to Harsco Corporation. Eductive pressure regulator. 5,662,100, Cl. 128-205.240.

Fox, Neil Anthony: *See—*
Seats, Peter; and Fox, Neil Anthony, 5,663,611, Cl. 313-584.000.

Fraga, Robert L. Apparatus for the preparation of fowl. 5,662,028, Cl. 99-419.000.

Framatome Connectors USA Inc.: *See—*
Yip, Maxwell K.; Hooper, Fredrick D.; Keating, James J.; and Petersen, Carl C., 5,662,485, Cl. 439-157.000.

Framework Technologies Corporation: *See—*
Halpert, David E.; Ambrosi, Mario; Ames, Paul; Plsek, Vladimir; Roth, Mark; and Sheldon, James, 5,664,180, Cl. 395-613.000.

Francis, Dale. Pressure washer with heat exchanger. 5,662,269, Cl. 239-70.000.

Francis, Joseph A. Transition alert systems for automotive vehicles. 5,663,706, Cl. 340-464.000.

Frank, Kurt: *See—*
Kleppner, Stephan; Frank, Kurt; and Schreckenberger, Dieter, 5,662,089, Cl. 123-510.000.

Franz, Joseph Phillip: *See—*
Baek, Kwang Henry; Franz, Joseph Phillip; and Nadzam, John Peter, 5,663,600, Cl. 290-55.000.

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Frapin, Pascal; and Lacroix, Michel, to Thomson-CSF. Projector of narrow field moving images. 5,663,817, Cl. 349-5.000.

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Baltar, Robert L.; Bauer, Mark E.; Frary, Kevin W.; Pudar, Steven D.; and Sweha, Sherif R., 5,663,923, Cl. 365-230.030.

Fraser, Richard. Interactive computer system to match buyers and sellers of real estate, businesses and other property using the internet. 5,664,115, Cl. 705-37.000.

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Bondeson, Benjamin J.; Frates, Paul S.; and Jackson, John E., 5,662,243, Cl. 222-1.000.

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Bucerius, Klaus Martin; Eisenreich, Norbert; Schmid, Helmut; and Engel, Walter, 5,663,524, Cl. 149-45.000.

Fray, Eddie Lee. Warning system for giving verbal instruction during fire and method of operating the warning system. 5,663,714, Cl. 340-692.000.

Frayer, Jack E.; Lattanzi, John D.; Tsao, Shouchang; Pang, Chan-Sui; and Ma, Yueh Y., to Bright Microelectronics, Inc. Switch driver circuit for providing small sector sizes for negative gate erase flash EEPROMS using a standard twin-well CMOS process. 5,663,907, Cl. 365-185.180.

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Frechet, Patrick: *See—*
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Frederick, Tim J.; Mitchell, Melvin G.; and Partin, Lee R., to Eastman Chemical Company. Process for preparation of cellulose acetate filters for use in paper making. 5,662,773, Cl. 162-4.000.

Freeman, Lewis Gene. Method of die casting machine lubrication with unitized lubricant. 5,662,156, Cl. 164-61.000.

Freeman, Mark Russel, to International Business Machines Corporation. Method for measuring current distribution in an integrated circuit by detecting magneto-optic polarization rotation in an adjacent magneto-optic film. 5,663,652, Cl. 324-753.000.

Freer, Steven John: *See—*
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French, Donald J.: *See—*
Doppler, Gregory E.; and French, Donald J., 5,661,937, Cl. 52-410.000.

French, Michael J.: *See—*
Ng, Paul T.; and French, Michael J., 5,662,081, Cl. 123-196.00S.

Frey, Jeffrey Alan: *See—*
Elko, David Arlen; Frey, Jeffrey Alan; Nick, Jeffrey Mark; Rothwell, Kenneth Glenn; and Swanson, Michael Dustin, 5,664,155, Cl. 711-170.000.

Frey, Teryl K.; Dominguez, Geraldina; and Wang, Chin-Yen, to Georgia State University Research Foundation, Inc. DNA encoding infectious Rubella virus. 5,663,065, Cl. 435-172.300.

Freyman, Ronald Lamar; Martin, Ted R.; and Pekarich, Steven Paul, to Lucent Technologies Inc. Integrated circuit multi-level interconnection technique. 5,663,677, Cl. 327-565.000.

Freyssinet, Georges L.: *See—*
Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; and Freyssinet, Georges L., 5,663,068, Cl. 435-220.000.

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Friese, Karl-Hermann; Weyl, Helmut; Wieland, Werner; and Wiedenmann, Hans-Martin, to Robert Bosch GmbH. Electrochemical sensor. 5,662,786, Cl. 204-429.000.

Friesen, Randall M.: *See—*
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Frischholz, Gerald: *See—*
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Frohning, Carl Dieter: *See—*
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Froment, Jacques: *See—*
Pavone, Didier; Froment, Jacques; and Thesee, Eddy, 5,663,929, Cl. 367-82.000.

Fromion, Alexandre, to Automobiles Peugeot; and Automobiles Citroen. Device for matching a line interface of a station linked to a multiplexed-information transmission network. 5,663,660, Cl. 326-30.000.

Frost, George W., to Minnesota Mining and Manufacturing Co. Re-enterable acrylic polymer grout material. 5,663,267, Cl. 526-328.500.

Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul Howard; and Muller, Jean Claude, to Synthelabo. N-(3-Aminopropyl)-N-phenyl-5,6,7,8-tetrahydronaphthalene-2-carboxamide derivatives, their preparation and their therapeutic use. 5,663,183, Cl. 514-310.000.

Fruhauf, Christopher B.: *See—*
Story, James D.; Richet, Bruno L.; and Fruhauf, Christopher B., 5,663,753, Cl. 347-86.000.
Fu, Chi-Yung: *See—*
Sun, Chuen-Tsai; Jang, Jyh-Shing; and Fu, Chi-Yung, 5,664,066, Cl. 395-23.000.
Fu, Ming Shi, to Taiwan Liton Electronic Co., Ltd. Process of making an LED reflector. 5,662,857, Cl. 264-328.180.
Fu, Xiaoyong; Thiruvengadam, T. K.; and Tann, Chou-Hong, to Schering Corporation. Process for preparation of 9,11β-epoxide steroids. 5,663,325, Cl. 540-89.000.
Fuchs, Roman: *See—*
Textor, Marcus; Fuchs, Roman; Gillich, Volkmar; and Simon, Erich, 5,663,001, Cl. 428-469.000.
Fucinari, Carlo Alberto: *See—*
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Fuhrman, Jeffrey E., to UTZ Quality Foods, Inc. Potato peeling system. 5,662,034, Cl. 99-633.000.
Fuji Electric Co., Ltd.: *See—*
Tsuji, Nobuhiko; Kaibo, Naoki; and Sano, Yasukazu, 5,664,035, Cl. 385-24.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
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Fuji Oil Company, Limited: *See—*
Miyazaki, Tatsumi; Kudo, Toru; Otani, Yasuo; and Hirotsuka, Motohiko, 5,663,058, Cl. 435-68.100.
Fuji Oozx Inc.: *See—*
Adegawa, Makoto, 5,662,078, Cl. 123-188.300.
Ohtsubo, Kizuku; Fukuoka, Satoshi; and Kanzaki, Tatsuo, 5,662,076, Cl. 123-90.510.
Fuji Photo Film Co., Ltd.: *See—*
Katagiri, Shingo; Ashikawa, Teruo; and Morita, Kiyoo, 5,662,854, Cl. 264-255.000.
Kayanuma, Yasunobu, 5,663,760, Cl. 348-241.000.
Naka, Yoji; Yoshida, Toshio; and Kamoda, Takashi, 5,664,248, Cl. 396-503.000.
Nishiyama, Tomoyuki, 5,663,762, Cl. 348-373.000.
Ohmura, Hiroshi; Kanai, Masaharu; and Shimizu, Mahito, 5,664,235, Cl. 396-71.000.
Saita, Hirofumi; Suzuki, Kenji; Tahara, Shuji; Terashita, Takaaki; and Sunagawa, Hiroshi, 5,663,782, Cl. 355-37.000.
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, 5,663,310, Cl. 536-69.000.
Wada, Koji; and Sasaki, Yoshiharu, 5,663,755, Cl. 347-176.000.
Wakata, Yuichi; Sato, Morimasa; Iwakura, Ken; and Fukushige, Yuuichi, 5,663,212, Cl. 522-75.000.
Yamamura, Takeyuki; Mizuguchi, Takashi; Kobayashi, Nobushige; and Koike, Kazumi, 5,664,244, Cl. 396-296.000.
Fuji Photo Optical Co., Ltd.: *See—*
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Kondo, Mituo; Abe, Kenji; Nakamura, Hisashi; and Nagai, Yasutaka, 5,662,116, Cl. 128-662.060.
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Fuji Xerox Co., Ltd.: *See—*
Hosoi, Kiyoshi; Matsuda, Tsukasa; Ichimura, Masanori; Ishihara, Yuka; and Sakai, Takashi, 5,663,021, Cl. 430-47.000.
Ono, Hiroshi; and Kunigoh, Makoto, 5,663,827, Cl. 359-216.000.
Sakurai, Kunio; Matsuda, Tsukasa; Inoue, Kyoko; Watanabe, Harumi; and Kato, Masaru, 5,662,995, Cl. 428-304.400.
Tambo, Fumiaki; Daimon, Katsumi; Sakaguchi, Yasuo; and Yamasaki, Kazuo, 5,663,327, Cl. 540-139.000.
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Fujii, Takashi, to Ueda Co., Ltd. Battery system with levelled discharge. 5,663,628, Cl. 320-1.000.
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Fujii, Tatsuhisa; Ohira, Tomohide; and Kunihara, Hiroshi, to Hitachi, Ltd. Dynamic scattering matrix liquid crystal display having voltage booster in driving voltage supply circuit. 5,663,743, Cl. 345-95.000.
Fujii, Yasuhiro: *See—*
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Fujimori, Kazuyoshi; and Yamada, Noboru, to Seiko Epson Corporation. Disk drive device. 5,663,852, Cl. 360-99.120.
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Fujimoto, Junichi; and Mizoguchi, Hakaru, to Komatsu Ltd. Gas laser apparatus. 5,663,977, Cl. 372-55.000.
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Fujioka, Yoshihisa: *See—*
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Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Fujita, Atsuko; Matsui, Shuichi; Onji, Yuichi; Ushioda, Makoto; and Goto, Yasuyuki, to Chisso Corporation. Diene derivative. 5,662,830, Cl. 252-299.630.
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Fujitani, Shin: *See—*
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Fujitsu General Limited: *See—*
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Ishibashi, Ryoichi; Ito, Tomiko; Mie, Kouki; and Kawasaki, Hiroya, 5,663,949, Cl. 370-220.000.
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Miura, Iwao, 5,664,100, Cl. 395-200.620.
Morito, Masao, 5,664,085, Cl. 345-441.000.
Murai, Yukako; and Amagai, Tamio, 5,664,031, Cl. 382-317.000.
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Okushima, Hiroki, 5,664,038, Cl. 385-50.000.
Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,664,104, Cl. 395-200.540.
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Tanaka, Hirokazu; Kumano, Tatsuo; Funaki, Tetsuji; and Watai, Takahiro, 5,663,673, Cl. 327-412.000.
Tanaka, Tsutomu; Izumi, Haruhiko; Ikeya, Tomonori; and Shono, Keiji, 5,663,936, Cl. 369-13.000.
Wada, Yoshimi; and Takuma, Akira, 5,663,729, Cl. 341-155.000.
Wakita, Makoto, 5,663,889, Cl. 364-490.000.
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Glamkowski, Edward J.: *See*—
Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, 5,663,190, Cl. 514-411.000.
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Glaser, Dieter: *See*—
Beelmann, Ung-Lap, 5,662,418, Cl. 374-144.000.
Glass, Neel W.; Ford, Garrett Nolan; and Cyprian, Rudolph S., to Easycare, Inc. Size-adjustable composition horseboot. 5,661,958, Cl. 54-82.000.
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Pendergast, William; and Dickerson, Scott Howard, 5,663,337, Cl. 544-249.000.
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Godoroia, Andrei, 5,663,715, Cl. 340-825.200.
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Abramson, Jeffrey M.; Akkary, Haitham; Bajwa, Atig A.; Fetterman, Michael A.; Glew, Andrew F.; Hinton, Glenn J.; Huang, Joel; Konigsfeld, Kris G.; Madland, Paul D.; and Pahlajrai, Prem. 5,664,137, Cl. 395-392.000.
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Glover, Josephine M.: *See*—
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Rosen, Terry J.; Godek, Dennis M.; Gut, Sally; and Wint, Lewin, 5,663,349, Cl. 546-174.000.
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Godoroia, Andrei, to Glenayre Electronics, Inc. Synchronized paging system. 5,663,715, Cl. 340-825.200.
Goebel, Dan M.; Santoru, Joseph; Poeschel, Robert L.; and Gerstenberg, John W., to Hughes Electronics. Triggered-plasma microwave switch and method. 5,663,694, Cl. 333-157.000.
Goeckler, Heinz, to ANT Nachrichtentechnik GmbH. Demodulator for a complex-value vestigial sideband signal. 5,663,773, Cl. 348-726.000.
Goetz, Richard J.: *See*—
Takamatsu, Yorinobu; Imamura, Kengo; and Goetz, Richard J., 5,663,241, Cl. 525-328.600.
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Goke, L. Rodney: *See*—
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Goldenberg, Michael. Hose clamp. 5,661,876, Cl. 24-19.000.
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Goldman, Robert J. Capacitive biofeedback sensor with resilient polyurethane dielectric for rehabilitation. 5,662,123, Cl. 128-782.000.
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Cohen, Martin Paul; and Wideman, Lawson Gibson, 5,663,358, Cl. 548-166.000.
Cornet, Francis; Lammlein, Robert Albert, Jr.; Marthoz, Roger; and Roedseth, John Kolbjorn, 5,662,759, Cl. 156-229.000.
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Gordon, Norman S.; Cooper, Robert P.; and Quick, Richard L., to Laurus Medical Corporation. Endoscopic suture system. 5,662,664, Cl. 606-144.000.

Gore, Susana M.; Mueller, Mark; Green, Nicholas; Gold, Jeffrey G.; and Soltesz, Peter P., to Cordis Corporation. Intravascular catheter. 5,662,622, Cl. 604-282.000.

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Goto, Teruki, to Kabushiki Kaisha S & T Studio. Mini-studio equipment. 5,664,232, Cl. 396-1.000.

Goto, Yasuyuki: *See—*
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Gotoh, Shoichi: *See—*
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Gould, James J.: *See—*
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GPT Ltd.: *See—*
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Grabovac, Bosko, to Consolidated Devices, Inc. Torque wrench structure. 5,662,012, Cl. 81-483.000.

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Graham, John D.: *See—*
Nahan, Kenneth; Nahan, Sherri; Graham, John D.; Corapcioglu, Ahmet K.; Miller, Robert H.; Lipman, Alexander; and Osipou, Andrei, 5,664,111, Cl. 705-27.000.

Grand Haven Stamped Products, Div. of JSJ Corporation: *See—*
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Granger, Eric John: *See—*
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Granger, Hugh A. Christmas tree watering funnel with indicating system. 5,661,926, Cl. 47-40.500.

Granja, Abilio Laguna; Hernandez, Juan Magraner; Quintana, Daisy Carbajal; Valmana, Lourdes Arruzazabala; Ferreiro, Rosa Mas; and Mesa, Milagros Garcia, to Laboratorios Dalmer SA; and Adanifer, S.A. Mixture of higher primary aliphatic alcohols, its obtention from sugar cane wax and its pharmaceutical uses. 5,663,156, Cl. 514-164.000.

Grant, Chris J., to Schmalbach-Lubeca AG. Container with integrally molded closure/tamper indicator. 5,662,245, Cl. 222-153.070.

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Crystal, Richard G., 5,662,734, Cl. 106-31.750.

Grasso, Robert Paul: *See—*
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Graushar, William T.; and Wade, Calvin Lee, to Quad/Tech, Inc. Method and apparatus for registering a cover with a book block. 5,662,448, Cl. 412-4.000.

Gravel, Loras F.: *See—*
Westhoff, Gerald F.; Gravel, Loras F.; and Westhoff, Cory P., 5,661,961, Cl. 56-16.40R.

Greelis, John Patrick: *See—*
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Green Cross Corporation, The: *See—*
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Green, John Lewis: *See—*
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Green, Jonathan B.; and Pope, William R., to Highpoint Systems, Inc. Remote ordering system. 5,664,110, Cl. 705-26.000.

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Greenbarg, William D.: *See—*
Miller, Albert J.; Miller, Eugene A.; and Greenbarg, William D., 5,661,891, Cl. 29-453.000.

Greene, Andrew T.; and Rowen, Andrew D. B. Helicopter engine filter system. 5,662,292, Cl. 244-53.00B.

Greene, Mark I.; and Zhang, Xin, to University of Pennsylvania, The Trustees of the. Compounds that bind to p185 and methods of using the same. 5,663,144, Cl. 514-14.000.

Greene, Ralph G.; and Palmer, David G., to Market Design & Development, Inc. Portable water purification apparatus. 5,662,779, Cl. 202-181.000.

Gregory, Kenton W.: *See—*
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Grenevitch, George; Sacksteder, Brenda Lee; and Schiedegger, Charles E. Eyebrow template. 5,662,129, Cl. 132-319.000.

Grese, Timothy A.: *See—*
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Greshes, Martin. Apparatus for making lenses. 5,662,951, Cl. 425-384.000.

Gressel, Carmi David; and Dror, Itai, to Fortress U & T Ltd. Internationally regulated system for one to one cryptographic communications with national sovereignty without key escrow. 5,664,017, Cl. 380-30.000.

Gressly, Remy: *See—*
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Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Nairne, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., to Minnesota Mining and Manufacturing Company. Developing agents for (photo) thermographic systems. 5,663,042, Cl. 430-619.000.

Griffin, May T.: *See—*
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Griffith, Edward J.; and Ngo, Toan M., to G.D. Searle & Company. Process for the preparation of phosphorodithioic compounds via thionation reaction. 5,663,402, Cl. 558-121.000.

Griffith, Michael W.: *See—*
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Griffith, Owen W.; and Narayanan, Krishnaswamy, to Medical College of Wisconsin Research Foundation, Inc., The. Heme binding compounds and use thereof. 5,663,364, Cl. 548-335.500.

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Griffiths, David C.; Palmer, Keith W.; and Reid, Ian A B, to BP Chemicals Limited. Hydrocarbon conversion process. 5,663,473, Cl. 585-652.000.

Griffiths, Edward, to International Business Machines Corporation. Windowing display system. 5,664,130, Cl. 345-340.000.

Grill, Alfred; Moser, Michael Anthony; Patel, Vishnubhai Vitthalbhai; Snyder, Clinton Davis; Yeack-Scranton, Celia E., deceased (by Robert A. Scranton, legal representative), to International Business Machines Corporation. Prebent ceramic suspension. 5,663,854, Cl. 360-104.000.

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Grindersley, Soren; Drabenstadt, William Warren; and Manning, Randy Marshall, to Whitaker Corporation, The. High density fiber ferrules and connectors. 5,664,039, Cl. 385-65.000.

Grise, Gary; and Zalesinski, Jerzy M., to International Business Machines Corp. Non-destructive target marking for image stitching. 5,663,806, Cl. 358-406.000.

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Groeger, Herbert Gunter, to Hoechst Celanese Corporation. Particulate filter structure. 5,662,728, Cl. 96-153.000.

Groendal, Dale M.: *See—*
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Gross, Jeffrey M., to Medtronic, Inc. Physiologic mitral valve bioprosthesis. 5,662,704, Cl. 623-2.000.

Grosse, Allison. All in one measure/funnel/pour/mix/shake container. 5,662,249, Cl. 222-461.000.

Groten, Barney; Cader, Tahir; and Tidball, Richard, to Energy International, Inc. Fluidized bed desiccant cooling system. 5,661,983, Cl. 62-271.000.

Grout, Kenneth M., to Tender Corporation. Electrical contact cleaner. 5,661,869, Cl. 15-209.100.

Groves, Paul: *See—*
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Gucker, Carl: *See—*
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Guido, Anthony L., Jr. Canvas hold-down system and method. 5,662,133, Cl. 135-119.000.

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Gulsby, Lanoma. Disposable diaper with flap for concealing tape tabs. 5,662,641, Cl. 604-385.100.

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Guo, Cheng: *See—*
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Guo, Jeng-Jong, to Utron Technology Inc. Flat-cell read-only memory. 5,663,903, Cl. 365-104.000.

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Guttman, Andras; and Cooke, Nelson H., to Beckman Instruments, Inc. Device for profiling oligosaccharides released from glycoproteins. 5,662,787, Cl. 204-455.000.

Guyon, Claude: *See—*
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Guzorek, Steven E., to Pettibone Corporation. Air intake assembly for a combustion fuel burner having an adjustable air intake port. 5,662,309, Cl. 251-212.000.

Guzowski, Samuel, to S&B Technical Products, Inc. Interlocked restraint for a plastic pipe joining system. 5,662,360, Cl. 285-110.000.

GWR Medical, L.L.P.: *See—*
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György, Laszlo. High acoustic output horn. 5,662,064, Cl. 116-142.0FP.

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H.G. Kalish Inc.: *See—*
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H-Square Corporation: *See—*
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Haan, Louis R. Easy lock safety spring cotter pin. 5,662,446, Cl. 411-514.000.

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Haas, Wilhelm; Linker, Karl-Heinz; Schallner, Otto; Findeisen, Kurt; Santel, Hans-Joachim; and Dollinger, Markus, to Bayer Aktiengesellschaft. Substituted triazolinones. 5,663,362, Cl. 548-263.200.

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Habermehl, G. Lyle, to Habermehl, G. Lyle. Power drill housing extension coupling. 5,662,011, Cl. 81-434.000.

Habibi, Masood. Adjustable hair curler and method of use. 5,662,128, Cl. 132-210.000.

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Ushida, Masayuki; Ogata, Masaru; Hachiya, Akihiro; Yamashita, Yukihiro; and Noda, Masayuki, 5,662,776, Cl. 162-156.000.

Hackedy, Johnny L.: *See—*
Allen, John E.; and Hackedy, Johnny L., 5,662,502, Cl. 439-814.000.

Hackett, LeRoy H., to Hughes Aircraft Company. Method of making a micro-dimensional coupling conductor. 5,663,095, Cl. 438-611.000.

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Haefner, Paul A.; and Stockburger, Mark A., to Cardiac Pacemakers, Inc. Slow gain control. 5,662,688, Cl. 607-5.000.

Hagel, Richard C., to Burns, Morris & Stewart Limited Partnership. Frame with integral environment resistant members. 5,661,943, Cl. 52-656.400.

Hagiwara, Kiyohito; Matsumoto, Yoshikane; Nakahara, Shingo; and Iwama, Masami, to Hitachi Koki Company, Ltd. Print speed controlled dot line printer depending on print density. 5,662,421, Cl. 400-124.130.

Hagiwara, Makoto; and Hofer, Manfred, to GKN Viscodrive GmbH; and Viscodrive Japan PK. Viscous coupling having a toothed hub used as carrier for the inner plates. 5,662,196, Cl. 192-58.410.

Hague, William James: *See—*
Pham, Hang Thanh; Pratt, Robert; Redmon, Charles Lewis; Thompson, John James; Van Der Puy, Michael; Singh, Rajiv Ratna; Hague, William James; Kieta, Harold John; Luly, Matthew Hermes; and McKown, Jeffrey Warren, 5,663,474, Cl. 585-721.000.

Haiber, Gerd. Fabric panel with inter-woven loops. 5,662,147, Cl. 139-384.00R.

Hain, Matthew E.: *See—*
Chesterfield, Michael P.; Koyfman, Ilya; and Hain, Matthew E., 5,662,682, Cl. 606-228.000.

Haitko, Deborah Ann: *See—*
King, Joseph Anthony, Jr.; Colborn, Robert Edgar; Haitko, Deborah Ann; and Webb, Jimmy Lynn, 5,663,406, Cl. 558-243.000.

Hakkanen, Jouko; and Karppanen, Arto, to Nokia Mobile Phones Ltd. Frame timing control of time division multiple access. 5,663,954, Cl. 370-278.000.

Hakomori, Sen-itiroh: *See—*
Igarashi, Yasuyuki; Ruan, Fuqiang; Sadahira, Yoshito; Kawa, Shigeyuki; and Hakomori, Sen-itiroh, 5,663,404, Cl. 558-169.000.

Hakotani, Yasuhiko: *See—*
Miura, Kazuhiro; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; Nakamura, Yoshifumi; and Miyoshi, Akihiko, 5,662,755, Cl. 156-89.000.

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Halliburton Company: *See—*
Ezell, Michael Dale; and Pitts, Glen E., 5,662,341, Cl. 277-27.000.

Halma, Marten Jan: *See—*
Glassen, Steven Gardner; Halma, Marten Jan; and Trotter, John Scott, 5,664,219, Cl. 395-825.000.

Halperin, Arnold: *See—*
Li, Leping; Barbee, Steven George; Doyle, Gary Richard; Halperin, Arnold; Holland, Kevin L.; Kazak, Francis Walter; Lipori, Robert B.; McGuire, Anne Elizabeth; Nadeau, Rock; and Surovic, William Joseph, 5,663,637, Cl. 324-71.500.

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Hamada, Shinji: *See—*

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Hamamatsu Photonics Kabushiki Kaisha: *See*—
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Hamamura, Toshihiro: *See*—
Okada, Takashi; Ohmori, Shigeto; Nagata, Hideki; Honda, Tsutomu; Seigenji, Kiyoshi; Hamamura, Toshihiro; Teramoto, Tougo; Kato, Takashi; and Kubo, Hiroaki, 5,664,243, Cl. 396-246.000.

Haman, Robert J., to Concrete Sealants, Inc. Water stop composition and methods of preparing same. 5,663,230, Cl. 524-447.000.

Hamanaka, Nobuyuki; and Miyamoto, Tsumoru, to Ono Pharmaceutical Co., Ltd. Carbocyclic sulfonamides. 5,663,417, Cl. 560-121.000.

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Oinuma, Hitoshi; Hasegawa, Takashi; Takamura, Tadanobu; Nomoto, Kenichi; Daiku, Yoshiharu; Naito, Toshihiko; and Hamano, Sachiyuki, 5,663,414, Cl. 564-80.000.

Hamedi, Hassan; Lynch, H. Wilfred; and Weeks, Vaughan B., to Myo Kinetic Systems, Inc. Method and apparatus for stimulating or monitoring the exercise of muscles adjacent a body cavity. 5,662,699, Cl. 607-138.000.

Hamer, Richard L.; Helsley, Grover C.; Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst Marion Roussel, Inc. Memory enhancing and analgesic 1,2,3,3a,8,8a-Hexahydro-3a,8(and 1,3a,8)-Di (and Tri)methylpyrrolo(2,3-b) indoles. 5,663,190, Cl. 514-411.000.

Hamidieh, Youssef Ali: *See*—
Seth, Brij Bahadur; and Hamidieh, Youssef Ali, 5,663,894, Cl. 364-508.000.

Hamilton, Peter W.; and McGuire, Kenneth S., to Procter & Gamble Company, The. Composite material releasably sealable to a target surface when pressed thereagainst and method of making. 5,662,758, Cl. 156-221.000.

Hammer, Klaus-Dieter; Siebrecht, Manfred; and Krams, Theo, to Hoechst Aktiengesellschaft. Cellulose-based food casing having improved ripening properties. 5,662,971, Cl. 428-34.800.

Hammer, Philip E.: *See*—
Ligon, James M.; Schupp, Thomas; Beck, James Joseph; Hill, Dwight Steven; Ryals, John Andrew; Gaffney, Thomas Deane; Lam, Stephen Ting; Hammer, Philip E.; and Uknes, Scott Joseph, 5,662,898, Cl. 424-93.200.

Hammond, Earl G.: *See*—
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Han, Oh Seok: *See*—
Lee, Chang Jae; and Han, Oh Seok, 5,663,585, Cl. 257-296.000.

Hanai, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Image quality correction circuit based on color density. 5,663,769, Cl. 348-630.000.

Hancock, Kim R.: *See*—
Reese, John L.; and Hancock, Kim R., 5,662,439, Cl. 409-61.000.

Hand, Joseph M., to Bemis Manufacturing Company. Apparatus for attaching fabric to a chair frame. 5,662,383, Cl. 297-440.110.

Handfield, Michael; and Laliberte, Helene, to McLaughlin Group, The. Tire monitoring via an electromagnetic path including the ground plan of a vehicle. 5,663,496, Cl. 73-146.500.

Haneda, Satoshi; Fukuchi, Masakazu; and Ikeda, Tadayoshi, to Konica Corporation. Electrophotographic color image forming apparatus with image exposure means inside of photoreceptor drum. 5,663,787, Cl. 355-111.000.

Hanemaayer, Jacobus N. Recreational vehicle having multiple use interior facilities and spaces. 5,662,373, Cl. 296-164.000.

Haniff, Marlon; Falk, Robert; Deisenroth, Ted; and Mueller, Karl F., to Ciba-Geigy Corporation. Polyurethanes derived from oligoperfluoroalkyl alcohols. 5,663,273, Cl. 528-70.000.

Haninger, Rudolf: *See*—
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Hanna, Stephen Dale: *See*—
Boldt, Gerald Donald; Hanna, Stephen Dale; and Vogelsberg, Robert Eric, 5,664,142, Cl. 711-112.000.

Hans Bernstein Spezialfabrik für Schaltkontakte GmbH & Co.: *See*—
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Hansen Inc.: *See*—
Wright, James F.; and McKisic, Aubra D., 5,662,046, Cl. 105-167.000.

Hanslik, Kenneth J., to Exxon Production Research Company. Apparatus and method for improved oilfield connections. 5,661,888, Cl. 29-407.020.

Hanson, Gary Stephen: *See*—
Pavley, John Franklin; Turner, John Benton, II; and Hanson, Gary Stephen, 5,664,208, Cl. 395-777.000.

Hanson, Kirk D., to Iomega Corporation. System for controlling the speed of a motor driven by an unregulated voltage. 5,664,047, Cl. 388-811.000.

Hanssen, Halvar: *See*—
Jorneus, Lars; Boss, Anders; and Hanssen, Halvar, 5,662,474, Cl. 433-172.000.

Hara, Masaharu: *See*—
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Hara, Mitsuo: *See*—
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Harada, Takeshi; and Kitta, Koichi, to Nisca Corporation. Stapler and sheet-binding system using the same. 5,662,318, Cl. 270-58.050.

Harari, Eliyahou: *See*—
Wallace, Robert F.; Norman, Robert D.; and Harari, Eliyahou, 5,663,901, Cl. 365-52.000.

Harbottle, William E.; and Joki, Mark A., to Timken Company, The. Locking nut. 5,662,445, Cl. 411-433.000.

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Scherkenbeck, Jürgen; Jeschke, Peter; Plant, Andrew; Harder, Achim; and Mencke, Norbert, 5,663,140, Cl. 514-11.000.

Hardman, Ray: *See*—
Clegg, Ian Michael; and Hardman, Ray, 5,663,465, Cl. 570-224.000.

Hardwick, John C.; and Lim, Jae S., to Digital Voice Systems, Inc. Method and apparatus for phase synthesis for speech processing. 5,664,051, Cl. 704-206.000.

Hariko, Tatsuya: *See*—
Oka, Osamu; Hashimoto, Takeshi; Nishigaya, Takeshi; and Hariko, Tatsuya, 5,663,287, Cl. 528-350.000.

Harms, Wolfgang; Hendricks, Udo-Winfried; Herd, Karl-Josef; and Kunde, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of sulphones. 5,663,442, Cl. 564-404.000.

Harnischfeger Corporation: *See*—
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Harris, Christopher; and Bakowski, Mietek, to ABB Research Ltd. Optically triggered semiconductor device. 5,663,580, Cl. 257-77.000.

Harris Corporation: *See*—
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Harris, William I.; and Stevens, Rex R., to Dow Chemical Company, The. Process for conducting etherification reactions using as catalysts strong-acid, cation-exchange resins prepared under high temperature conditions. 5,663,455, Cl. 568-697.000.

Harro Hofliger Verpackungsmaschinen GmbH: *See*—
Ivanov, Konstantin; Lotze, James; Pompei, Donald; Reiser, Manfred; Mucheyer, Jost; and Bauder, Erwin, 5,661,954, Cl. 53-430.000.

Harry, David R., Jr., to Kay Chemical Company. Oven pretreatment and cleaning film containing silicone. 5,662,998, Cl. 428-332.000.

Harsco Corporation: *See*—
Fox, James E. J.; and Sattelberg, Dennis H., 5,662,100, Cl. 128-205.240.

Hart, Roger: *See*—
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Hartman, Michael James: *See*—
Barnett, Bruce Gordon; Bloomer, John Joseph; Chang, Hsuan; Crapo, Andrew Walter; Hartman, Michael James; and Vivier, Barbara Jean, 5,664,093, Cl. 395-183.070.

Hartmann, Heinrich: *See*—
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Hartwig, Jürgen; and Reichmann, Christof, to G.M. PFAFF Aktiengesellschaft. Program-controlled sewing or emboidery machine and method of operating such machines. 5,662,055, Cl. 112-102.500.

Harwood, Ann E.: *See*—
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Harwood, Warren K.: *See*—
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Hasegawa, Atsuhiro: *See*—
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Hasegawa, Noboru; Kagabu, Mitsuo, deceased; and Kagabu, Setsu, heir, to Toyo Chemical Co., Ltd. Apparatus for producing corrugated tube. 5,662,764, Cl. 156-428.000.

Hasegawa, Takashi: *See*—
Oinuma, Hitoshi; Hasegawa, Takashi; Takamura, Tadanobu; Nomoto, Kenichi; Daiku, Yoshiharu; Naito, Toshihiko; and Hamano, Sachiyuki, 5,663,414, Cl. 564-80.000.

Haseo, Eiji, to NEC Corporation. Semiconductor device having an internal voltage step-up control circuit. 5,663,926, Cl. 365-230.060.

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Yamashita, Osamu; Saigo, Tsunekazu; Kohara, Seiichi; Kitayama, Hirokazu; and Hashikawa, Hiroshi, 5,662,943, Cl. 425-3.000.

Hashimoto, Hiroshi, to Daiwa Seiko, Inc. Spinning reel for fishing with a slider for longitudinally moving a spool. 5,662,285, Cl. 242-241.000.

Hashimoto, Junichi: *See*—
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Hashimoto, Shoei. Combined lighter and golfer's training device. 5,662,529, Cl. 473-203.000.

Hashimoto, Takeshi: *See*—
Oka, Osamu; Hashimoto, Takeshi; Nishigaya, Takeshi; and Hariko, Tatsuya, 5,663,287, Cl. 528-350.000.

Haslam, Gary M.; and Parker, Andrew J., to Regent Lighting Corporation. Motion activated light fixture with fixed sensor. 5,662,411, Cl. 362-276.000.

Hasper, Albert: *See*—

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Hassan, Ian Francis: *See*—
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Hasshi, Suehiro; Yamamoto, Toshifumi; Nakamura, Tadayoshi; Ashikawa, Noboru; Saruwatari, Tetsuro; and Nakamura, Masanobu, to Honda Giken Kogyo Kabushiki Kaisha; Yanagawa Seiki K.K.; and K. K. Tube Forming. Suspension arm, and process for producing the same. 5,662,349, Cl. 280-690.000.

Hasuda, Masanori; and Matubara, Takashi, to Nikon Corporation. Shutter brake mechanism. 5,664,247, Cl. 396-456.000.

Hasushita, Sachio; and Ito, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system. 5,663,838, Cl. 359-692.000.

Hatakeyama, Toshiya: *See*—
Shimada, Takashi; Okumura, Toshio; and Hatakeyama, Toshiya, 5,662,872, Cl. 423-236.000.

Hatanaka, Heihachi: *See*—
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Hatanaka, Yasuo. Polysilanes and method for producing the same. 5,663,271, Cl. 528-37.000.

Hatta, Taizo: *See*—
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Hattori, Jiro; Torigoe, Shinji; Shibahara, Norihito; and Sawajiri, Osamu, to Minnesota Mining Manufacturing Company. Affixation member for decorating or protecting structures and methods of making same. 5,662,853, Cl. 264-219.000.

Hattori, Masashi: *See*—
Moroto, Shuzo; Taniguchi, Takao; Miyagawa, Shoichi; Sakakibara, Shiro; Tsukamoto, Kazumasa; Inuzuka, Takeshi; and Hattori, Masashi, 5,662,547, Cl. 477-48.000.

Hattori, Masumi: *See*—
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Hauck, John Anderson: *See*—
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Hauenstein, Dale Earl; Gentle, Thomas Matthew; Kennan, Linda Denise; and Popa, Paul Joseph, to Dow Corning Corporation. Blended composition of 2-methylpropenyl-terminated polyisobutylene with polydimethylsiloxane. 5,662,832, Cl. 252-321.000.

Hauer, Bernhard: *See*—
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Hauner, Franz; Müller, Manfred; and Tiefel, Günter, to Siemens Aktiengesellschaft. Silver-based contact material for switchgear used in power engineering. 5,663,500, Cl. 75-232.000.

Hauquier, Guido; Vermeersch, Joan; Verschueren, Eric; Kokkelenberg, Dirk; and Cortens, Willem, to Agfa-Gevaert, N.V. Diazo based imaging element having improved resistance against physical damage. 5,663,031, Cl. 430-159.000.

Hauser, Werner: *See*—
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Havel, Henry A.: *See*—
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Hawker Energy Products, Inc.: *See*—
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Hawkins, Phillip R.; and Murry, Lynn E., to Incyte Pharmaceuticals, Inc. Human phospholipase inhibitor. 5,663,059, Cl. 435-69.200.

Hawkins, Phillip R.; Au-Young, Janice; Guegler, Karl J.; and Wilde, Craig G., to Incyte Pharmaceuticals, Inc. Human map kinase homolog. 5,663,313, Cl. 536-23.100.

Hawkins, Thomas J.: *See*—
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Hayakawa, Masaharu: *See*—
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Hayamizu, Koichi: *See*—
Takahira, Kenichi; and Hayamizu, Koichi, 5,664,157, Cl. 395-500.000.

Hayano, Fuminori, to Nikon Corporation. Defect inspection method and apparatus, and defect display method. 5,663,569, Cl. 250-559.450.

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Hayashi, Hideki; and Umezawa, Masaru, to Pioneer Electronic Corporation. Digital phase locked loop with a digital voltage controlled oscillator in a recording information reproducing apparatus. 5,663,945, Cl. 369-124.000.

Hayashi, Hiromi: *See*—
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Hayashi, Hironao; and Goto, Ken, to Toyota Jidosha Kabushiki Kaisha. Vehicle-carried unit for automatic toll-paying systems and automatic toll-receiving apparatus. 5,663,548, Cl. 235-384.000.

Hayashi, Hiroyuki; and Yamada, Shinichi, to Sumitomo Wiring Systems, Ltd. Waterproof seal for connector with frustoconical end surfaces. 5,662,336, Cl. 277-208.000.

Hayashi, Isamu; and Kondoh, Harufusa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit device. 5,663,668, Cl. 327-156.000.

Hayashi, Kenji: *See*—
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Hayashi, Mayumi: *See*—
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Hayashi, Noriaki: *See*—
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Payne, Stephen A.; and Hayden, Joseph S., 5,663,972, Cl. 372-18.000.

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Headley, Paul S.; Zakula, Mitchell P.; and Amherdt, Tom, to TRW Inc. Swaged annular support for air bag inflator closure and method. 5,662,352, Cl. 280-737.000.

Hearing Innovations Incorporated: *See*—
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Heaton, Robert; Yousefi, Nariman; Sadeghi, Khosrow; and Fischer, David, to Standard Microsystems Corporation. High bit rate CSMA/CD using multiple pairs. 5,664,108, Cl. 395-200.820.

Hebert, Gary K., to THAT Corporation. Wafer-stage adjustment for compensating for mismatches in temperature dependent IC components. 5,663,684, Cl. 330-289.000.

Hecker, Mark Bennett, to EMC Corporation. Media access scheduler method and apparatus. 5,664,196, Cl. 395-726.000.

Hedberg, Sven-Erik; Obel, Martin; and Hoegnelid, Kurt, to Pacesetter AB. Implantable heart defibrillator. 5,662,687, Cl. 607-5.000.

Heefner, Donald L.: *See*—
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Heiber, Werner: *See*—
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Heid, Oliver, to Siemens Aktiengesellschaft. Method for time- and location-resolved display of functional brain activities of a patient. 5,662,112, Cl. 128-653.200.

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Heidersberger, Börge: *See*—
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Heinlein, Philip David: *See*—
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Imamura, Isao; Shimomura, Akihiko; and Shiba, Shoji, to Canon Kabushiki Kaisha. Ink jet head free of debonding between a substrate and ink flow path walls formed on said substrate. 5,663,752, Cl. 347-65.000.
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Link, Helmut Friedrich, 5,662,014, Cl. 82-125.000.
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Inpyn, Carl A., to Control Products, Inc. Double pivot point overtravel switch actuator. 5,663,540, Cl. 200-17.00R.
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Abramson, Jeffrey M.; Akkary, Haitham; Bajwa, Atig A.; Fetterman, Michael A.; Glew, Andrew F.; Hinton, Glenn J.; Huang, Joel; Konigsfeld, Kris G.; Madland, Paul D.; and Pahlajrai, Prem, 5,664,137, Cl. 395-392.000.
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Schilling, Donald L., 5,663,956, Cl. 370-335.000.
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Bender, Carl A.; Salem, Gerard M.; Swetz, Richard A.; Zee, Singpui; and Nathanson, Ben J., 5,664,223, Cl. 395-842.000.
Bennett, Robert Bradley; Nugent, Robert Michael; and Showalter, James Michael, 5,664,186, Cl. 395-620.000.
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Cao, Tai; Dutta, Satyajit; Nguyen, Thai Quoc; Trinh, Thanh Doan; and Walls, Lloyd Andre, 5,663,663, Cl. 326-81.000.
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Cirulli, Philip James; Heinlein, Philip David; James, Byron David; and Telfer, Deborah Marsh, 5,664,183, Cl. 395-614.000.
Cohen, Marc Leslie; Consolatti, Scott Michael; Jones, Carol Ann; and King, Dennis Donald, 5,664,190, Cl. 395-670.000.
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Erpelding, A. David, 5,661,896, Cl. 29-603.010.
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Fleming, Stephen S.; and Torres, Robert J., 5,664,210, Cl. 395-793.000.
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Grill, Alfred; Moser, Michael Anthony; Patel, Vishnubhai Vitthalbhai; Snyder, Clinton Davis; Yeack-Scranton, Celia E., deceased. 5,663,854, Cl. 360-104.000.
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Hsu, Louis Lu-Chen; Saccamango, Mary Joseph; and Shepard, Joseph Francis, 5,663,578, Cl. 257-66.000.
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Isaac, Gerald George; Langgood, John K.; Leung, Wan Lin; Sendlein, Kimberly Kibbe; Szarek, John Joseph; and Yee, Edward, 5,664,150, Cl. 711-143.000.
Jackson, Brion K.; Miller, Paul L.; Warren, William E., III; and Williams, Marvin L., 5,664,175, Cl. 395-607.000.
Johnson, William J.; and Weber, Owen Wayne, 5,664,063, Cl. 395-101.000.
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Katz, Sagi; Wall, William Alan; Kulik, Amy; and Cronin, Daniel R., III, 5,664,124, Cl. 395-309.000.
Kelkar, Ram; Novof, Ilya Iosephovich; and Wyatt, Stephen Dale, 5,663,991, Cl. 375-376.000.
Kirk, Joseph Pennell; and Martino, Ronald Michael, 5,663,785, Cl. 355-71.000.
Lee, Nai Po; and Smith, Jay Lee, 5,663,950, Cl. 370-224.000.
Li, Leping; Barbee, Steven George; Doyle, Gary Richard; Halperin, Arnold; Holland, Kevin L.; Kazak, Francis Walter; Lipori, Robert B.; McGuire, Anne Elizabeth; Nadeau, Rock; and Surovic, William Joseph, 5,663,637, Cl. 324-71.500.
Lucas, Bruce David; Rodriguez, Arturo Aureliano; Pietras, Mark Andrew; and Saenz, Andres Jesus, 5,664,080, Cl. 345-431.000.
Madduri, Hari Haranath, 5,664,176, Cl. 395-608.000.
Matsuse, Shusaku; and Ohsaki, Katsuhiko, 5,663,765, Cl. 348-448.000.
Mayfield, Michael John, 5,664,147, Cl. 711-137.000.
Mizumoto, Shogo; and Tsukada, Yutaka, 5,662,987, Cl. 428-209.000.
Olbrich, Aaron K., 5,664,143, Cl. 711-112.000.
Oppenheim, Daniel Vincent, 5,663,517, Cl. 84-649.000.
Seymour, Edward Michael, 5,663,965, Cl. 371-22.310.
Smith, Derek K. W., 5,664,132, Cl. 345-352.000.
Tsou, Henry Horngren, 5,663,969, Cl. 371-51.100.
Vanderschaaf, Neil Ray, 5,663,669, Cl. 327-201.000.
Velissaropoulos, T. Dora; and Shum, Peter K., 5,664,181, Cl. 395-613.000.
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Teumac, Fred N.; Rassouli, Mahmood R.; Rusnock, Janine M.; and Irwin, Anthony, 5,663,223, Cl. 524-109.000.
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Ishihara, Masaaki; Egawa, Akira; and Aoshima, Chikara, to Canon Kabushiki Kaisha. Camera comprising film information readout and/or reading mechanism. 5,664,246, Cl. 396-406.000.
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Mirzoev, Timur B.; Galejev, Ahmet M.; Maksimov, Valeriy A.; Soskov, Sergey N.; Ishmuratov, Rustam R.; and Abaidullin, Alfered I., 5,662,463, Cl. 418-73.000.
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Honeycutt, Travis W., 5,663,477, Cl. 588-205.000.
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Isono, Yoshihiro; and Takahashi, Toshiyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Engine crankcase. 5,662,080, Cl. 123-195.00C.
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Ittner, David Jack, to Lucent Technologies Inc. Methods and apparatus for inferring orientation of lines of text. 5,664,027, Cl. 382-170.000.
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Jackson, Brion K.; Miller, Paul L.; Warren, William E., III; and Williams, Marvin L., to International Business Machines Corporation. Method and system for reprioritizing calendar items on a data processing system. 5,664,175, Cl. 395-607.000.
Jackson, John E.: *See*—
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Propach, David S.; Grob, Matthew S.; Jacobs, Paul E.; and Karmi, Gadi, 5,663,807, Cl. 358-426.000.
Jacobsen, Eric N.; Zhang, Wei; and Deng, Li, to Research Corporation Technologies, Inc. Chiral catalysts and epoxidation reactions. 5,663,393, Cl. 556-45.000.
Jacobsson, Kurt Arne Gunnar; Tholander, Lars; and Josefsson, Paer, to IRO AB. Thread feed system having an auxilliary conveyor device. 5,662,148, Cl. 139-450.000.
Jacquinot, Chuck Robert; and Jacquinot, John Phillip. Golf practice device. 5,662,527, Cl. 473-138.000.
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Jame Fine Chemicals, Inc.: *See*—
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Japan Aviation Electronics Industry, Limited: *See—*
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Jau, Beat: *See—*
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JBL Incorporated: *See—*
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Jeffrey Mitchell Laboratories: *See—*
Diamond, Jeffrey H., 5,662,888, Cl. 424-49.000.
Jeffries, Kenneth L.; Jones, Craig S.; and Pecone, Victor K., to Dell USA, L.P. Local proactive hot swap request/acknowledge system. 5,664,119, Cl. 395-283.000.
Jegham, Samir; Koenig, Jean Jacques; Lochead, Alistair; Nedelec, Alain; and Guminski, Yves, to Synthelabo. N-[(1,4-diazabicyclo[2.2.2] oct-2-yl)methyl] benzamide derivatives, their preparations and their application in therapeutics. 5,663,173, Cl. 514-249.000.
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Jensen, Kurt D., to International Paper Company. Paperboard container with indicia tabs. 5,662,265, Cl. 229-107.000.
Jensen, Terry O.; and Kong, Dan-Cheng, to Mobil Oil Corporation. Two-side coated label facestock. 5,662,985, Cl. 428-195.000.
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Jeon, Yong Byeong; and Lee, Hyeong Reol, to Samsung Electronics Co., Ltd. Washing machine having vertical water guiding channels on inner surface of washing basket. 5,661,989, Cl. 68-18.00F.
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Jing Mei Industrial Holdings, Inc.: *See—*
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Jinkerson, David L., to Alcon Laboratories, Inc. Polymerizable yellow dyes and their use in ophthalmic lenses. 5,662,707, Cl. 623-6.000.
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Peindl, Richard D.; McCarthy, Melissa Lee; and MacKenzie, Ellen Jane, 5,662,591, Cl. 601-24.000.
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Johnson, David C.; and Repperger, Daniel W., to United States of America, Air Force. Mobility assist for the paralyzed, amputeed and spastic person. 5,662,693, Cl. 607-49.000.
Johnson, David K., to Abbott Laboratories. Metal ion-ligand coordination complexes, antibodies directed thereto, and assays using such antibodies. 5,663,301, Cl. 530-363.000.
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Johnson, Gary Duane; and Campbell, Kelly Scott, to E-Systems, Inc. Method for extracting pre-defined data items from medical service records generated by health care providers. 5,664,109, Cl. 705-2.000.
Johnson, John L., to United States of America, Army. Pulse-coupled automatic object recognition system dedicatory clause. 5,664,065, Cl. 395-21.000.
Johnson, Larry Kenneth; and Lange, Stephen Joseph, to Procter & Gamble Company, The. Flangeless seam for use in disposable articles. 5,662,638, Cl. 604-386.000.
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Jolley, Kathy Marie. Christmas light wrapper and storage apparatus. 5,661,953, Cl. 53-430.000.
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Kakimizu, Akiko; Arai, Kenji; Kimura, Norio; and Teramae, Tomohiro, to Sumitomo Chemical Company, Limited. Isothiazolone derivative and microbicidal composition comprising the same as active ingredient. 5,663,436, Cl. 564-154.000.

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Kakizawa, Hitoshi, to Nippon Sheet Glass Co., Ltd. Window glass antenna for automobile telephone. 5,663,737, Cl. 343-713.000.

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Kamada, Shinya, to Mazda Motor Corporation. Gear shift control system for automatic transmission. 5,662,551, Cl. 477-152.000.

Kamimura, Rumiko; Nemoto, Hiroyuki; Nagura, Toshikazu; and Hayashi, Shigeo, to New OJI Paper Co., Ltd. Thermal transfer dye image-receiving sheet. 5,663,116, Cl. 503-227.000.

Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, to Hitachi, Ltd. Semiconductor integrated circuit device comprising CMOS transistors and differentiator. 5,663,659, Cl. 326-17.000.

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Kamiya, Masahiko; Imoto, Yuzo; and Oishi, Masayoshi, to Nippondenso Co., Ltd. Braking force control device and method thereof. 5,662,393, Cl. 303-194.000.

Kamiyama, Satoshi: *See*—
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Kammerl, August: *See*—
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Kamoda, Takashi: *See*—
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Kamohara, Eiji; and Kimiya, Junichi, to Kabushiki Kaisha Toshiba. Electron gun assembly having a quadruple lens for a color cathode ray tube. 5,663,609, Cl. 313-412.000.

Kamp, Eugene L., to Hubbell Incorporated. Electrical contact position indicator assembly. 5,663,712, Cl. 340-644.000.

Kampmann, Detlef; and Stuhlmüller, Georg, to Hoechst Aktiengesellschaft. Process for the continuous preparation of 2,2,6,6-tetramethylpiperidine. 5,663,351, Cl. 546-185.000.

Kampschulte, Uwe; Klein, Peter; and Neuert, Richard, to Hoechst Aktiengesellschaft. Mass-colored formed structures based on aromatic polyamides, mass-colored fiber, and premix for producing mass-colored formed structures. 5,662,852, Cl. 264-204.000.

Kanaguchi, Yukihiro: *See*—
Mochizuki, Nobuo; Souma, Shuichi; Sasaki, Takayoshi; Kanaguchi, Yukihiro; and Umeda, Nobuhiro, 5,663,172, Cl. 514-247.000.

Kanai, Hachiro; Fukuhara, Toru; Sosa, Toshio; Yokonuma, Norikazu; and Hara, Masaharu, to Nikon Corporation. Control device for preventing red-eye effect on camera. 5,664,241, Cl. 396-158.000.

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Kanamori, Hiryasu, to Yazaki Corporation. Fuse junction box. 5,662,496, Cl. 439-621.000.

Kanaya, Fumio: *See*—
Okada, Takekazu; Shinmura, Satoru; Kanaya, Fumio; and Ichiguchi, Shinichiro, 5,663,698, Cl. 333-202.000.

Kanaya, Motonori; and Yamasaki, Kazuyoshi, to Fuji Photo Optical Co., Ltd. Optical sensor and optical apparatus using the same. 5,663,796, Cl. 356-376.000.

Kanayama, Hideyuki: *See*—
Mashitani, Ken; Hamagishi, Goro; Takemori, Daisuke; Kanayama, Hideyuki; and Arai, Kazuhiro, 5,663,831, Cl. 359-463.000.

Kanazawa, Yoshikazu, to Fujitsu Limited. Controller of plasma display panel and method of controlling the same. 5,663,741, Cl. 345-66.000.

Kanda, Kazunori: *See*—
Shirakawa, Shinsuke; Kanda, Kazunori; Yamada, Mitsuo; Aoki, Kei; Urano, Satoshi; and Tomita, Nobuaki, 5,663,262, Cl. 526-312.000.

Kaneda, Hideyuki; and Nomoto, Yoshiaki, to Yazaki Corporation. Applicator for terminal crimping machine. 5,661,897, Cl. 29-753.000.

Kanega, Fumiaki: *See*—
Kawai, Toshiyasu; Suzuki, Minoru; Kawai, Hiromasa; and Kanega, Fumiaki, 5,663,264, Cl. 526-320.000.

Kaneko, Tetsuya, to Kabushiki Kaisha Toshiba. Semiconductor device having a booster circuit. 5,663,911, Cl. 365-189.110.

Kanemitsu, Norio: *See*—
Fujiwara, Tatsuo; and Kanemitsu, Norio, 5,662,320, Cl. 271-3.140.

Kang, Jae Hoon: *See*—
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Kang, Soon Bang: *See*—
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Kania, Charles M.: *See*—
Simeone, Robert L.; Lippert, Robert D.; O'Dwyer, James B.; and Kania, Charles M., 5,663,240, Cl. 525-327.300.

Kanno, Hideo, to Nikon Corporation. Zoom lens barrel having a rotatable diaphragm mechanism and a mechanism for correcting an aperture diameter during zooming. 5,663,839, Cl. 359-700.000.

Kanno, Tatsuya; Hukuda, Yutaka; and Oshino, Yasuhiro, to Daicel Chemical Industries, Ltd. (Co)polycarbonate and process for producing the same. 5,663,278, Cl. 528-196.000.

Kano, Yoshio W., to Eaton Corporation. Controlling flow of fuel gas to a burner. 5,662,465, Cl. 431-12.000.

Kano, Yuko: *See*—
Atsumi, Kunio; Umemura, Eijiro; Kano, Yuko; Shiokawa, Sohjiro; Kudo, Toshiaki; Tsushima, Masaki; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,663,162, Cl. 514-202.000.

Kantoci, Darko: *See*—
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Kao Corporation: *See*—
Hori, Naomi; Oda, Takashi; Taya, Takako; and Mita, Katsumi, 5,663,261, Cl. 526-307.200.

Kapgan, Michael; and Kosarchuk, Richard H., to Advanced Metal Components, Inc. Swage coupling including disposable shape memory alloy actuator. 5,662,362, Cl. 285-381.100.

Kaplan, Vladimir, to Amsted Industries Incorporated. Sound attenuation assembly for air-cooling apparatus. 5,663,536, Cl. 181-224.000.

Kaplina, Elli Nicoltevna: *See*—
Vainberg, Yuri Petrovich; Kaplina, Elli Nicoltevna; and Anosova, Ideya Grigorievna, 5,662,889, Cl. 424-49.000.

Kapoor, Ashok K., to LSI Logic Corporation. Product of process for formation of vias (or contact openings) and fuses in the same insulation layer with minimal additional steps. 5,663,590, Cl. 257-529.000.

Kapoor, Ashok K.: *See*—
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Kapp, Nancy J.: *See*—
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Kar-Rite International: *See*—
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Karasa, Alvydas P.: *See*—
Bunyea, Roderick F.; Judge, Alfred H.; Karasa, Alvydas P.; Miller, Philip T.; Smith, Allen P.; and Wheeler, Thomas J., 5,663,011, Cl. 429-97.000.

Karasawa, Naoki, to Ozmix, Inc. Variable transmission light polarizing lens assembly. 5,663,779, Cl. 351-49.000.

Karat, John: *See*—
Andreshak, Joseph Charles; Daggett, Gregg H.; Karat, John; Lucassen, John; Levy, Stephen Eric; and Mack, Robert Lawrence, 5,664,061, Cl. 704-275.000.

Karavakis, Konstantine; Distefano, Thomas H.; Smith, John W., Jr.; and Mitchell, Craig, to Tessera, Inc. Method of encapsulating die and chip carrier. 5,663,106, Cl. 29-841.000.

Kardach, James P.; Cho, Sung-Soo; Cheng, Jim S.; Cohen, Debra T.; Horigan, John W.; Raygani, Nader; Sotoudeh, Seyed Yahay; Poisner, David I.; and Songer, Neil W., to Intel Corporation. Method and apparatus for handling bus master channel and direct memory access (DMA) channel access requests at an I/O controller. 5,664,197, Cl. 395-728.000.

Karet, Ted Michael. Animal waste vacuum with disposable pickup tool & disposable container. 5,661,873, Cl. 15-344.000.

Kargina-Power, Olga: *See*—
MacDougall, Barry R.; Gattrell, Michael A.; and Kargina-Power, Olga, 5,662,789, Cl. 205-688.000.

Kargula, Christopher J., to Form Rite. Quick connect coupling with lock ring and indicator. 5,662,359, Cl. 285-93.000.

Karkas, John D.: *See*—
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Karlsson, Bo: *See*—
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Karmi, Gadi: *See*—
Propach, David S.; Grob, Matthew S.; Jacobs, Paul E.; and Karmi, Gadi, 5,663,807, Cl. 358-426.000.

Karppanen, Arto: *See*—
Hakkanen, Jouko; and Karppanen, Arto, 5,663,954, Cl. 370-278.000.

Karrai, Khaled, to Dr. Khaled Karrai und Dr. Miles Haines Gesellschaft burgerlichen Rechts. Far-field characterization of sub-wavelength sized apertures. 5,663,798, Cl. 356-384.000.

Karrer, Friedrich, to Ciba-Geigy Corporation. Substituted phenyl ethers. 5,663,379, Cl. 549-453.000.

Karrer, Friedrich, to Ciba-Geiby Corporation. Dioxolane derivatives. 5,663,453, Cl. 568-637.000.

Kase, Toshiyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical data recording and reproducing apparatus including non-circular beam spot. 5,663,939, Cl. 369-44.230.

Kasel, Wolfgang: *See*—
Dralle-Voss, Gabriele; Oppenländer, Knut; Barthold, Klaus; Wenderoth, Bernd; and Kasel, Wolfgang, 5,663,435, Cl. 564-153.000.

Kashani, Hamid: *See*—
Bhagwat, Pradeep Madhav; Justo, Chadd Dial; Britton, Harry J.; and Kashani, Hamid, 5,663,873, Cl. 363-20.000.

Kashihara, Hiroshi; Suzuki, Mikio; and Ohara, Yoshio, to Nissan Chemical Industries Ltd. Optically active β-aminoalkoxyborane complex. 5,663,348, Cl. 546-173.000.

Kashiwagi, Noboru: *See*—
Obata, Fumiya; and Kashiwagi, Noboru, 5,663,047, Cl. 435-6.000.

Kassner, William H. Vehicle low sun visor. 5,662,370, Cl. 296-97.600.

Kastner, Wolfgang; Köhler, Wolfgang; and Wittchow, Eberhard, to Siemens Aktiengesellschaft. Once-through steam generator with a vertical gas flue of essentially vertically disposed tubes. 5,662,070, Cl. 122-6.00A.

Kasuya, Takashige; Suematsu, Hiroyuki; Tomiyama, Koichi; Yusa, Hiroshi; Kobori, Takakuni; and Katada, Masaichiro, to Canon Kabushiki Kaisha. Magnetic toner, process cartridge and image forming method. 5,663,026, Cl. 430-106.000.

Katada, Masaichiro: *See*—
Kasuya, Takashige; Suematsu, Hiroyuki; Tomiyama, Koichi; Yusa, Hiroshi; Kobori, Takakuni; and Katada, Masaichiro, 5,663,026, Cl. 430-106.000.

Katagiri, Shingo; Ashikawa, Teruo; and Morita, Kiyoo, to Fuji Photo Film Co., Ltd. Method for manufacturing a magnetic tape cassette accommodating case. 5,662,854, Cl. 264-255.000.

Katahira, Ritsuko: *See*—
Mizukami, Tamio; Asai, Akira; Yamashita, Yoshinori; Katahira, Ritsuko; Hasegawa, Atsuhiro; Ochiai, Keiko; and Akinaga, Shiro, 5,663,298, Cl. 530-332.000.

Kataoka, Naoto; and Nakano, Takashi, to Murata Kikai Kabushiki Kaisha. Image processor having recording paper cutting control. 5,663,804, Cl. 358-304.000.

Katayama, Hiroyuki: *See*—
Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; Ohta, Kenji; and Murakami, Yoshiteru, 5,662,988, Cl. 428-212.000.

Katayama, Masato: *See*—
Fukui, Tetsuro; Katayama, Masato; Arahara, Kozo; Fukumoto, Hiroshi; Takasu, Yoshio; Kagami, Kenji; Mouri, Akihiro; Isaka, Kazuo; and Miura, Kyo, 5,663,032, Cl. 430-203.000.

Katayama, Tatsuo; Nishikawa, Yoshihiro; Hayashi, Mayumi; Nakajima, Hiroshi; Ozaki, Masahiro; and Watanabe, Daiichi, to Unitika Ltd. Diadenosine tetraphosphate tetrasodium salt dodecahydrate crystals and process for preparation. 5,663,322, Cl. 536-26.220.

Katchmar, Roman, to Northern Telecom Limited. Methods of making printed circuit boards and heat sink structures. 5,661,902, Cl. 29-840.000.

Kathail, Vinod: *See*—
Schlansker, Michael S.; and Kathail, Vinod, 5,664,135, Cl. 395-377.000.

Kato, Hirokazu, to Yamaha Corporation. Online system for direct driving of remote karaoke terminal by host station. 5,663,515, Cl. 84-609.000.

Kato, Hironori; and Nakao, Masanori, to Alps Electric Co. Ltd. Rotary connector. 5,662,486, Cl. 439-164.000.

Kato, Kazuo; Funaki, Atsushi; and Takakura, Teruo, to Asahi Glass Company Ltd. Method for producing a fluorine-containing copolymer. 5,663,251, Cl. 526-206.000.

Kato, Kiyoshi: *See*—
Iwata, Kouichi; Kato, Kiyoshi; and Nakamura, Takehide, 5,662,455, Cl. 415-55.100.

Kato, Masaru: *See*—
Sakurai, Kunio; Matsuda, Tsukasa; Inoue, Kyoko; Watanabe, Harumi; and Kato, Masaru, 5,662,995, Cl. 428-304.400.

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Honda, Masami; and Kawabata, Kazuaki, 5,663,867, Cl. 361-684.000.

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Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi; and Kawabata, Kohji, 5,663,163, Cl. 514-202.000.

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Matsumura, Akira; Ohata, Masashi; Kawakami, Atsushi; and Ishikawa, Katsukiyo, 5,663,019, Cl. 430-7.000.
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Yamada, Minoru; and Kawamura, Shingo, 5,663,000, Cl. 428-457.000.

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Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,662,754, Cl. 156-89.000.

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Ishibashi, Ryoichi; Ito, Tomiko; Mie, Kouki; and Kawasaki, Hiroya, 5,663,949, Cl. 370-220.000.

Kawasaki, Kenji; Inoue, Takayoshi; and Maki, Yasuo, to Daikin Industries, Ltd. Method for assembling an electric motor employing a casing body having low dimensional accuracy. 5,661,894, Cl. 29-596.000.

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Harry, David R., Jr., 5,662,998, Cl. 428-332.000.

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Blaney, Carol Ann; Kiick-Fischer, Kristi Lynn; and Kaylor, Rosann Marie, 5,662,808, Cl. 210-749.000.

Kazak, Francis Walter: *See*—
Li, Leping; Barbee, Steven George; Doyle, Gary Richard; Halperin, Arnold; Holland, Kevin L.; Kazak, Francis Walter; Lipori, Robert B.; McGuire, Anne Elizabeth; Nadeau, Rock; and Surovic, William Joseph, 5,663,637, Cl. 324-71.500.

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Goodhue, K. Gifford, Jr.; and Holmes, Max M., 5,663,123, Cl. 507-225.000.

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Burgess, David P.; Denman, Marvin; Hood, Milton M., Jr.; Kearney, Mark A.; Kling, Lavanya; Murphy, Graham R.; and Song, Seungyoon Peter, 5,664,215, Cl. 395-800.230.

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Yip, Maxwell K.; Hooper, Fredrick D.; Keating, James J.; and Petersen, Carl C., 5,662,485, Cl. 439-157.000.

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Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant Lawrence; and Shelburne, Charles E., 5,662,887, Cl. 424-49.000.

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Ogden, Douglas R.; Abeyta, Joseph A.; and Keefe, Gregg D., 5,662,101, Cl. 128-205.250.

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Barlow, George J.; and Keeley, James W., 5,664,200, Cl. 395-741.000.

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Kelly, Dean A. Cremation box and system. 5,661,879, Cl. 27-2.000.

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Nilsson, Rolf Olof; and Stendahl, Kjell-Erik, 5,662,826, Cl. 252-179.000.

Kemp, Richard Alan, to Shell Oil Company. Ethylene oxide catalyst and process. 5,663,385, Cl. 549-536.000.

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Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Naime, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., 5,663,042, Cl. 430-619.000.

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Kenyon, Ronald Wynford: *See*—
Bentley, Stephen John; Kenyon, Ronald Wynford; and Milner, David John, 5,663,371, Cl. 549-299.000.

Kephart, Herbert G.: *See*—
Nash, John E.; and Kephart, Herbert G., 5,662,681, Cl. 606-213.000.

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Angelo, James F., II; and Kephart, Wilbur L., 5,662,050, Cl. 110-246.000.

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Kerecz, Robert Charles Jan. Portable swimming pool makeup water treatment apparatus. 5,662,796, Cl. 210-169.000.

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Kersale, Philippe: *See*—
Le Guen, Marie-Pierre; Roux, Raphaël ; Kersale, Philippe; and Le Page, Pascal, 5,663,960, Cl. 370-408.000.

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Khachaturian, Jon E. Method and apparatus for the offshore installation of multi-ton prefabricated deck packages on partially submerged offshore jacket foundations. 5,662,434, Cl. 405-204.000.

Khan, Amin M.: *See*—
Durant, Graham J.; and Khan, Amin M., 5,663,350, Cl. 546-185.000.

Khan, Ata R.: *See*—
Wang, Johannes; and Khan, Ata R., 5,664,156, Cl. 395-500.000.

Khan, Sakhawat M.: *See*—
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Khanna, Satish Chandra: *See*—
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Khillan, Jaspal S.: *See*—
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Khouri, Roger K., 5,662,583, Cl. 600-38.000.

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Barr, Philip J.; Shapiro, John P.; and Kiefer, Michael C., 5,663,070, Cl. 435-325.000.

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Fälldin, Agne; and Kiiskinen, Esko, 5,663,636, Cl. 323-361.000.

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Kim, Young Koo. Artificial soil composition and a method of growing vegetation on a sloped surface. 5,662,724, Cl. 71-6.000.

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Lee, Chung Yup, 5,662,035, Cl. 100-112.000.

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Kakimizu, Akiko; Arai, Kenji; Kimura, Norio; and Teramae, Tomohiro, 5,663,436, Cl. 564-154.000.

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Voss, Theodore N.; and Kirk, Karl D., III, 5,662,679, Cl. 606-204.000.

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Kirsch, Gerald: *See*—
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Kuo, Pao-Hsiu. Light-emitting pedal for bicycles. 5,662,405, Cl. 362-72.000.
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Kurwa, Badrudin. Blade for intrastromal radial keratotomy. 5,662,668, Cl. 606-166.000.
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Kusama, Eiichi; Kawamura, Toru; Ueno, Yukikazu; Nishi, Hiroyuki; and Kato, Yoshihisa, to Toyota Jidosha Kabushiki Kaisha. Suspension arm. 5,662,348, Cl. 280-688.000.
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Kuth, Rainer; Knauth, Michael; Wirtz, Rainer; Henkelmann, Reiner; Moder, Rudolf; and Duerr, Wilhelm, to Siemens Aktiengesellschaft. Head antenna for nuclear magnetic resonance examinations. 5,663,646, Cl. 324-318.000.
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Kwasnick, Robert Forrest; and Liu, Jianqiang, to General Electric Company. Solid state imager array with address line spacer structure. 5,663,577, Cl. 257-59.000.
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Cornet, Francis; Lammlein, Robert Albert, Jr.; Marthoz, Roger; and Roedseth, John Kolbjorn, 5,662,759, Cl. 156-229.000.

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Martin, Sammy Lee. Torso strap for holding tubular bodies. 5,662,252, Cl. 224-250.000.

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Kirk, Joseph Pennell; and Martino, Ronald Michael, 5,663,785, Cl. 355-71.000.

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Masuda, Seiya; Padmanaban, Munirathna; Kudo, Takanori; Kinoshita, Yoshiaki; Suehiro, Natsumi; Nozaki, Yuko; Okazaki, Hiroshi; and Przybilla, Klaus Jürgen, to Hoechst Japan Limited. Radiation-sensitive mixture comprising a basic iodonium compound. 5,663,035, Cl. 430-270.100.

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Materiel Pour l'Arboriculture Fruitiere: *See—*
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Deguchi, Masahiro; Kitagawa, Masatoshi; and Hirao, Takashi, 5,662,965, Cl. 427-249.000.
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Komizo, Shigeo, 5,663,552, Cl. 235-472.000.
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Nomura, Koji; Nakanishi, Tutomu; Kotani, Tokumi; and Kuramasu, Keizaburo, 5,662,818, Cl. 216-41.000.
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Kozikowski, Alan Paul; and Xia, Yan, 5,663,344, Cl. 546-93.000.

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Ji, Jeong-Beom; and Min, Yong-Ki, 5,663,830, Cl. 359-295.000.
Minai, Masayoshi: *See—*
Tsubata, Yoshiaki; Ueda, Kayoko; Fujisawa, Koichi; Higashii, Takayuki; Minai, Masayoshi; Takano, Naoyuki; and Fujimoto, Yukari, 5,662,828, Cl. 252-299.610.
Minami, Masataka: *See—*
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,663,659, Cl. 326-17.000.
Minami, Norio: *See—*
Hirose, Noriyasu; Inoue, Hiroshi; Matsunami, Toshio; Yoshimura, Takashi; Morita, Kouzou; Horikawa, Yuh; Iwata, Noriyoshi; Minami, Norio; Hayashi, Kenji; and Seki, Chiaki, 5,663,376, Cl. 549-411.000.
Minchey, Sharma R.: *See—*
Ahl, Patrick L.; Bhatia, Suresh K.; Minchey, Sharma R.; and Janoff, Andrew S., 5,662,930, Cl. 424-450.000.
Mincorp Ltd.: *See—*
Taylor, Alan, 5,662,861, Cl. 266-170.000.
Mindscope Incorporated: *See—*
Bittman, Barry B., 5,662,117, Cl. 128-732.000.
Minemi, Masahiko: *See—*
Okamoto, Kenji; Horimura, Hiroyuki; and Minemi, Masahiko, 5,662,863, Cl. 419-44.000.
Miner, William D., II: *See—*
Altman, Peter A.; Miner, William D., II; and Bush, M. Elizabeth, 5,662,698, Cl. 607-123.000.
Minnesota Mining and Manufacturing Company: *See—*
Dieken, Alan P.; Moe, Edward J.; Packard, Joy A.; Packard, Thomas J.; Reeder, Thomas W.; and Turgeon, Thomas A., 5,663,532, Cl. 181-131.000.
Flynn, Richard M.; and Owens, John G., 5,663,127, Cl. 508-250.000.
Frost, George W., 5,663,267, Cl. 526-328.500.
Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Nairne, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., 5,663,042, Cl. 430-619.000.
Oxman, Joel David; and Fundingsland, Jon Wallace, 5,662,886, Cl. 424-49.000.
Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant Lawrence; and Shelburne, Charles E., 5,662,887, Cl. 424-49.000.
Schueller, Randolph D.; Plepys, Anthony R.; and Evans, Howard E., 5,663,530, Cl. 174-260.000.
Smith, Terrance P.; Rao, S. Prabhakara; and Macomber, David W., 5,663,024, Cl. 430-97.000.
Takamatsu, Yorinobu; Imamura, Kengo; and Goetz, Richard J., 5,663,241, Cl. 525-328.600.
Warner, David; and Baldock, Terence William, 5,663,033, Cl. 430-257.000.
Minnesota Mining Manufacturing Company: *See—*
Hattori, Jiro; Torigoe, Shinji; Shibahara, Norihito; and Sawajiri, Osamu, 5,662,853, Cl. 264-219.000.
Minolta Camera Kabushiki Kaisha: *See—*
Kohri, Toshitaro; Nakamura, Akihiro; and Nishihara, Yoshimasa, 5,663,027, Cl. 430-106.600.
Minolta Co., Ltd.: *See—*
Hada, Yoshinobu; Fukui, Kazuyuki; and Yamada, Takanobu, 5,663,814, Cl. 358-475.000.
Okada, Takashi; Ohmori, Shigeto; Nagata, Hideki; Honda, Tsutomu; Seigenji, Kiyoshi; Hamamura, Toshihiro; Teramoto, Tougo; Kato, Takashi; and Kubo, Hiroaki, 5,664,243, Cl. 396-246.000.
Minomoto, Yasushi: *See—*
Tada, Nobuhiko; Ogata, Kojiro; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Nagano, Yoshinari; Okumura, Shinya; and Minomoto, Yasushi, 5,662,822, Cl. 219-121.670.
Minter, John R.: *See—*
Bagchi, Pranab; Stewart, Robert C.; McIntire, Gregory L.; and Minter, John R., 5,662,883, Cl. 424-9.400.
Mira, Ali, to Silicon Graphics, Inc. Readily removable heat sink assembly. 5,662,163, Cl. 165-80.300.
Mirzoev, Timur B.; Galejev, Ahmet M.; Maksimov, Valeriy A.; Soskov, Sergey N.; Ishmuratov, Rustam R.; and Abaidullin, Alfered I., to Thomassen International B.V. Rotary screw compressor having a pressure bearing arrangement. 5,662,463, Cl. 418-73.000.
Misawa, Hironori: *See—*
Ohba, Akizo; Misawa, Hironori; and Nomura, Yukihiro, 5,662,507, Cl. 442-320.000.
Mishima, Taiji: *See—*

Ishikawa, Takehisa; Maruzoe, Tomio; and Nagata, Yoshiaki, 5,662,766, Cl. 156-580.200.
Misra, Mohan S.: *See—*
Maclean, Brian J.; Carpenter, Bernard F.; and Misra, Mohan S., 5,662,294, Cl. 244-219.000.
Missios, Michael: *See—*
Faes, Steven M.; Fulton, Alfred L.; Hnetynka, Martin J.; Campbell, Laird; Preston, David; Missios, Michael; and Sampson, Scott D., 5,664,073, Cl. 395-112.000.
Mita, Katsumi: *See—*
Hori, Naomi; Oda, Takashi; Taya, Takako; and Mita, Katsumi, 5,663,261, Cl. 526-307.200.
Mital, Amit, to Microsoft Corporation. Portable information device and system and method for downloading executable instructions from a computer to the portable information device. 5,664,228, Cl. 395-882.000.
Mitani, Satoru: *See—*
Shimamura, Hiroshi; and Mitani, Satoru, 5,663,644, Cl. 324-252.000.
Mitch, Charles H.: *See—*
Bymaster, Franklin Porter; Shannon, Harlan E.; Sauerberg, Per; Olesen, Preben H.; Ward, John Stanley; and Mitch, Charles H., 5,663,182, Cl. 514-305.000.
Mitchell, Craig: *See—*
Karavakis, Konstantine; Distefano, Thomas H.; Smith, John W., Jr.; and Mitchell, Craig, 5,663,106, Cl. 29-841.000.
Mitchell, Melvin G.: *See—*
Frederick, Tim J.; Mitchell, Melvin G.; and Partin, Lee R., 5,662,773, Cl. 162-4.000.
Mitek Surgical Products, Inc.: *See—*
Wenstrom, Richard F., Jr., 5,662,658, Cl. 606-104.000.
Mitra, Sumita B.: *See—*
Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant Lawrence; and Shelburne, Charles E., 5,662,887, Cl. 424-49.000.
Mitschelen, Rolf: *See—*
Rastetter, Ina; Schmid, Walter; Hauser, Werner; and Mitschelen, Rolf, 5,662,367, Cl. 296-65.100.
Mitsubishi Chemical Corporation: *See—*
Kobayashi, Tatsuhiko, 5,662,966, Cl. 427-385.500.
Sato, Keiichi; Takahashi, Eitaro; Tanihara, Yoshifumi; and Wada, Yasuhiro, 5,663,403, Cl. 558-156.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Hanai, Masaaki, 5,663,769, Cl. 348-630.000.
Hayashi, Isamu; and Kondoh, Harufusa, 5,663,668, Cl. 327-156.000.
Kawamura, Hiroshi; Koizumi, Hisao; and Ohtsuru, Yoshisuke, 5,663,775, Cl. 348-751.000.
Kobayashi, Masaki, 5,663,617, Cl. 315-382.000.
Matsuo, Ryuichi; Wada, Tomohisa; Hirayama, Kazutoshi; and Ohhayashi, Shigeki, 5,663,905, Cl. 365-149.000.
Miyazaki, Yukio, 5,663,587, Cl. 257-337.000.
Nakanishi, Yasuyuki; Oka, Koutarou; Shirahata, Kei; Itou, Shigehiro; and Fujiwara, Tatsunori, 5,663,850, Cl. 360-98.060.
Sawazaki, Nobuyuki; Koiwa, Mitsuru; and Murata, Shigemi, 5,662,091, Cl. 123-647.000.
Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, 5,662,400, Cl. 353-31.000.
Shiroyama, Shigeru, 5,663,699, Cl. 335-126.000.
Suda, Hiroshi; Nakamura, Takeshi; Nemoto, Hirofumi; and Suzuki, Akinobu, 5,663,821, Cl. 359-152.000.
Tada, Masashige, 5,663,686, Cl. 331-8.000.
Takahira, Kenichi; and Hayamizu, Koichi, 5,664,157, Cl. 395-500.000.
Tanaka, Sueyoshi; Sakakihara, Zyunzi; and Tsutsumi, Yasutsugu, 5,662,848, Cl. 264-102.000.
Yamaguchi, Tooru; Tsutahara, Kouichirou; and Suenaga, Takayuki, 5,662,838, Cl. 261-130.000.
Yamauchi, Tadaaki, 5,663,912, Cl. 365-194.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Takemoto, Masaki; Shima, Yoshikazu; and Abe, Takafumi, 5,663,382, Cl. 549-508.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Okazoe, Kiyoshi; Tatani, Atsushi; Shimizu, Taku; and Ukawa, Naohiko, 5,662,794, Cl. 210-151.000.
Mitsubishi Materials Corporation: *See—*
Tanaka, Yoshiyuki; Abe, Masatoshi; and Ito, Taka-aki, 5,663,864, Cl. 361-120.000.
Mitsuboshi Belting Ltd.: *See—*
Ishida, Kazutoshi; Murakami, Satoshi; and Onaka, Yoshiaki, 5,663,225, Cl. 524-216.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Obata, Fumiya; and Kashiwagi, Noboru, 5,663,047, Cl. 435-6.000.
Oikawa, Hideo; and Fukuhara, Hiroshi, 5,663,428, Cl. 562-416.000.
Takahashi, Mamoru; Ikeyama, Seiichi; Todo, Akira; and Tsutsui, Toshiyuki, 5,663,236, Cl. 525-240.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Shinoda, Hosei; Ohtaguro, Masami; Iimuro, Shigeru; Funae, Akihiro; and Moriya, Shinobu, 5,663,288, Cl. 528-354.000.
Mitsuya, Yoshihide, to Kotobuki & Co., Ltd. Stick-shaped material propelling container. 5,662,425, Cl. 401-68.000.
Mitsuyu, Tsuneo: *See—*
Tsujimura, Ayumu; Okawa, Kazuhiro; Kamiyama, Satoshi; and Mitsuyu, Tsuneo, 5,663,974, Cl. 372-45.000.
Mittendorf, Joachim: *See—*
Matzke, Michael; Militzer, Hans-Christian; Mittendorf, Joachim; Kunisch, Franz; Schmidt, Axel; Schönfeld, Wolfgang; and Ziegelbauer, Karl, 5,663,150, Cl. 514-18.000.
Miura, Iwao, to Fujitsu Limited. Data transmission processing method and apparatus. 5,664,100, Cl. 395-200.620.
Miura, Kazuhiro; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; Nakamura, Yoshifumi; and Miyoshi, Akihiko, to Matsushita Electric Industrial Co., Ltd. Method of making multi-layered ceramic substrates. 5,662,755, Cl. 156-89.000.
Miura, Kyo: *See—*
Fukui, Tetsuro; Katayama, Masato; Arahara, Kozo; Fukumoto, Hiroshi; Takasu, Yoshio; Kagami, Kenji; Mouri, Akihiro; Isaka, Kazuo; and Miura, Kyo, 5,663,032, Cl. 430-203.000.
Miwa, Kenichi; and Okamura, Ryo, to SMK Corporation. Method of avoiding signal interference among a plurality of remote control signals. 5,663,716, Cl. 340-825.040.
Miyagawa, Shoichi: *See—*
Moroto, Shuzo; Taniguchi, Takao; Miyagawa, Shoichi; Sakakibara, Shiro; Tsukamoto, Kazumasa; Inuzuka, Takeshi, and Hattori, Masashi, 5,662,547, Cl. 477-48.000
Miyaguchi, Kazuhisa: *See—*
Tachibana, Akifumi; Mori, Keisuke; Suzuki, Masakazu; Matoba, Kazunari; Asai, Hitoshi; Takeguchi, Toshitaka; and Miyaguchi, Kazuhisa, 5,664,001, Cl. 378-98.800.
Miyai, Kenzi: *See—*
Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi, and Kawabata, Kohji, 5,663,163, Cl. 514-202.000.
Miyajima, Takashi: *See—*
Shinya, Seiji; Yokokouji, Osamu; Miyajima, Takashi; Koh, Hidemasa; and Machida, Katsutoshi, 5,663,463, Cl. 570-128.000.
Miyake, Shigeru: *See—*
Yamamoto, Hitoshi; and Miyake, Shigeru, 5,664,078, Cl. 345-421.000.
Miyamori, Takahisa, to Noritsu Koki Co., Ltd. Film charging apparatus for photographic printer. 5,663,786, Cl. 355-72.000.
Miyamoto, Hirohisa: *See—*
Naito, Katsuyuki; Sugiuchi, Masami; Takayama, Satoshi; Miyamoto, Hirohisa; Nishizawa, Hideyuki; Fujioka, Sawako; Watanabe, Akiko; and Nomaki, Tatsuo, 5,663,115, Cl. 503-201.000.
Miyamoto, Tsumoru: *See—*
Hamanaka, Nobuyuki; and Miyamoto, Tsumoru, 5,663,417, Cl. 560-121.000.
Miyanagi, Naoki: *See—*
Tada, Nobuhiko; Ogata, Kojiro; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Nagano, Yoshinari; Okumura, Shinya; and Minomoto, Yasushi, 5,662,822, Cl. 219-121.670.
Miyanari, Takashige: *See—*
Sasaki, Takaharu; Fujimoto, Masayuki; Miyanari, Takashige; and Nishino, Hiroshi, 5,662,780, Cl. 203-81.000.
Miyawaki, Makoto: *See—*
Okuno, Ryoji; and Miyawaki, Makoto, 5,664,249, Cl. 396-538.000.
Miyawaki, Mamoru; and Ueno, Isamu, to Canon Kabushiki Kaisha. Photoelectric converter with parallel connection elements and dual signal read out means. 5,663,555, Cl. 250-208.100.
Miyaza, Masao; and Matsumoto, Kenji, to Sharp Kabushiki Kaisha. Image processing apparatus. 5,663,809, Cl. 358-450.000.
Miyazaki, Tatsumi; Kudo, Toru; Otani, Yasuo; and Hirotsuka, Motohiko, to Fuji Oil Company, Limited. Process for producing soybean protein material. 5,663,058, Cl. 435-68.100.
Miyazaki, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor of high breakdown voltage type having stable electrical characteristics. 5,663,587, Cl. 257-337.000.
Miyazawa, Seiichi; Ohtsuka, Mitsuru; and Mizutani, Natsuhiko, to Canon Kabushiki Kaisha. Semiconductor device having diffraction grating. 5,663,592, Cl. 257-627.000.
Miyoshi, Akihiko: *See—*
Miura, Kazuhiro; Bessho, Yoshihiro; Yuhaku, Satoru; Hakotani, Yasuhiko; Itagaki, Minehiro; Nakamura, Yoshifumi; and Miyoshi, Akihiko, 5,662,755, Cl. 156-89.000.
Miyoshi, Tamihiro: *See—*
Tachihara, Satoru; Maruyama, Koichi; Nakamura, Tetsuya; Okuyama, Takashi; Miyoshi, Tamihiro; and Suzuki, Shinichi, 5,664,251, Cl. 396-548.000.
Mizoguchi, Hakaru: *See—*
Fujimoto, Junichi; and Mizoguchi, Hakaru, 5,663,977, Cl. 372-55.000.
Mizoguchi, Toshiaki; Ueshima, Yoshiyuki; Moroboshi, Takashi; and Shio, Kiyomi, to Nippon Steel Corporation. Thin cast strip and thin steel sheet of common carbon steel containing large amounts of copper and tin and process for producing the same. 5,662,748, Cl. 148-332.000.
Mizone, Shinya: *See—*
Furuta, Akihiro; Satoh, Kazue; Takewa, Hiroyuki; Iwasa, Mikio; Mizone, Shinya; and Sakai, Kuniaki, 5,664,024, Cl. 381-199.000.
Mizuguchi, Takashi: *See—*
Yamamura, Takeyuki; Mizuguchi, Takashi; Kobayashi, Nobushige; and Koike, Kazumi, 5,664,244, Cl. 396-296.000.
Mizukami, Tamio; Asai, Akira; Yamashita, Yoshinori; Katahira, Ritsuko; Hasegawa, Atsuhiro; Ochiai, Keiko; and Akinaga, Shiro, to Kyowa Hakko Kogyo Co., Ltd. UCK14 compounds. 5,663,298, Cl. 530-332.000.
Mizumoto, Shogo; and Tsukada, Yutaka, to International Business Machines Corporation. Multilayer printed wiring board and method of making same. 5,662,987, Cl. 428-209.000.
Mizumura, Shoichi. Golf club. 5,662,532, Cl. 473-314.000.

Mizuno, Hiromitsu; Kawase, Shuichi; and Iwasaki, Yukio, to Tokai-Rika-Denki Seishkusho Kabushiki Kaisha. Apparatus for controlling driving of power window system. 5,663,620, Cl. 318-283.000.
Mizutani, Natsuhiko: *See—*
Miyazawa, Seiichi; Ohtsuka, Mitsuru; and Mizutani, Natsuhiko, 5,663,592, Cl. 257-627.000.
MKS Instruments, Inc.: *See—*
Caughran, James W., 5,662,143, Cl. 137-884.000.
Mobil Oil Corporation: *See—*
Coolbaugh, Thomas S.; Liu, Wan-Li; Loveless, Frederick C.; and Matthews, Demetreos N., 5,663,239, Cl. 525-314.000.
Jensen, Terry O.; and Kong, Dan-Cheng, 5,662,985, Cl. 428-195.000.
Mobley, Kenneth J., to United Memories, Inc.; and Nippon Steel Semiconductor Corporation. Amplifier and method for sensing having a pre-bias or coupling step. 5,663,915, Cl. 365-208.000.
Mochizuki, Hirohiko: *See—*
Oka, Tomoharu; Mochizuki, Hirohiko; Fujii, Yasuhiro; and Yanagisawa, Makoto, 5,663,917, Cl. 365-226.000.
Mochizuki, Nobuo; Souma, Shuichi; Sasaki, Takayoshi; Kanaguchi, Yukihiro; and Umeda, Nobuhiro, to Nippon Soda Co., Ltd. Preventive agent for platelet aggregation. 5,663,172, Cl. 514-247.000.
Mock, Joel Leslie, to Lucent Technologies Inc. Lightwave communication monitoring switch. 5,664,034, Cl. 385-16.000.
Moder, Rudolf: *See—*
Kuth, Rainer; Knauth, Michael; Wirtz, Rainer; Henkelmann, Reiner; Moder, Rudolf; and Duerr, Wilhelm, 5,663,646, Cl. 324-318.000.
Modesitt, D. Bruce. Downhole pneumatic pump with variable bouyant actuator. 5,662,460, Cl. 417-127.000.
Moe, Edward J.: *See—*
Dieken, Alan P.; Moe, Edward J.; Packard, Joy A.; Packard, Thomas J.; Reeder, Thomas W.; and Turgeon, Thomas A., 5,663,532, Cl. 181-131.000.
Moed, Michael C.; and Lee, Chih-Ping, to United Parcel Service of America, Inc. Method and apparatus for training a neural network. 5,664,067, Cl. 395-23.000.
Moeller, Hinrich; and Wachter, Rolf, to Henkel Kommanditgesellschaft auf Aktien. Sugar monoacid amides in cosmetic preparations. 5,662,912, Cl. 424-401.000.
Mogensen, Erling Kristen; Sørensen, Kent Weel; Jensen, Berno Holmgaard; and Ingvartsen, Peder Hans, to Container Centralen A/S. Container base with three perpendicular fixing elements in the corners. 5,662,343, Cl. 280-79.110.
Moh, Sungwon: *See—*
Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,664,123, Cl. 395-309.000.
Mole, Philip J. Six component wind tunnel balance. 5,663,497, Cl. 73-147.000.
Molteni, William J.; and Volchok, William J., to Polaroid Corporation. Heads-up and heads-down displays employing holographic stereograms. 5,663,815, Cl. 359-13.000.
Monaco, John A. Thatching attachment for a rotary power mower. 5,661,962, Cl. 56-16.900.
Moncayo, Alfredo: *See—*
Dillon, John B.; Nimmagadda, Srinivas; and Moncayo, Alfredo, 5,663,661, Cl. 326-30.000.
Monma, Genzo: *See—*
Okabe, Takahiko; Monma, Genzo; and Yuzurihara, Hiroshi, 5,663,099, Cl. 438-642.000.
Mönnings, Roland: *See—*
Wecke, Rolf; Mönnings, Roland; and Hoppmann, Ralph, 5,662,212, Cl. 200-43.040.
Monroe, Richard A.; Wood, Robert J.; Pasik, Gregory E.; and Huntley, Robert R., to Welch Allyn, Inc. Hand held diagnostic instrument with video imaging. 5,662,586, Cl. 600-110.000.
Monsanto Company: *See—*
Warner, James M., 5,663,117, Cl. 504-206.000.
Montanez, Sam L.: *See—*
Mendoza, Felipe D.; Armendariz, Alfredo; Brown, Devin L.; and Montanez, Sam L., 5,662,228, Cl. 211-169.000.
Monte, Paul A.; Wiedeman, Robert A.; and Sites, Michael J., to Globalstar L.P. Method for accounting for user terminal connection to a satellite communications system. 5,664,006, Cl. 455-405.000.
Montelongo, Ramiro: *See—*
Rubio, Manuel Jesus; and Montelongo, Ramiro, 5,662,949, Cl. 425-310.000.
Monzen, Takashi; and Watanabe, Masaharu, to Kitz Corporation. Method for the production of polyolefin hollow fiber filter bundles. 5,662,843, Cl. 264-41.000.
Moody, Eugene I. Method and apparatus for providing a stream of inert gases in underbalanced drilling of a well bore. 5,663,121, Cl. 507-102.000.
Moon, Dong Ju: *See—*
Ahn, Byoung Sung; Moon, Dong Ju; Park, Kun You; and Chung, Moon Jo, 5,663,112, Cl. 502-304.000.
Mooney, Justine A.: *See—*
Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Nairne, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., 5,663,042, Cl. 430-619.000.
Moore, James O.; Kohler, Raymond H.; and Klauder, Philip R., to Moore Products Co. Capacitive temperature and pressure transducer. 5,663,506, Cl. 73-708.000.
Moore, Malcolm A. S.: *See—*
Welte, Karl; Platzer, Erich; Gabrilove, Janice L.; Mertelsmann, Roland; and Moore, Malcolm A. S., 5,662,895, Cl. 424-85.100.
Moore Products Co.: *See—*
Moore, James O.; Kohler, Raymond H.; and Klauder, Philip R., 5,663,506, Cl. 73-708.000.
Morales, Fernando. Software controlled multi-mode interactive TV systems. 5,663,757, Cl. 348-13.000.
Morck, Douglas W.: *See—*
Olson, Merle E.; Ceri, Howard; and Morck, Douglas W., 5,662,910, Cl. 424-269.100.
Moreau, Jacques-Pierre; Kim, Sun Hyuk; and Taylor, John E., to Biomeasure Inc. Opioid peptides. 5,663,295, Cl. 530-330.000.
Moreau, Wayne Martin: *See—*
Conley, Willard Earl; Fahey, James Thomas; Moreau, Wayne Martin; Sooriyakumaran, Ratnam; and Welsh, Kevin Michael, 5,663,036, Cl. 430-271.100.
Morgan, Carlton B.: *See—*
Cole, Clinton; Morgan, Carlton B.; Cyrus, Judi; and Powers, Daniel, 5,662,690, Cl. 607-5.000.
Morgan, David P., to Advanced Saw Products SA. Saw filter with wave reflections and phase differences. 5,663,696, Cl. 333-194.000.
Mori, Akimasa, to Jatco Corporation. Start controller for automatic transmission. 5,662,548, Cl. 477-114.000.
Mori, Akira: *See—*
Tsuda, Yukihiro; Yamazaki, Taku; Mori, Akira; and Matsumura, Yukinori, 5,663,826, Cl. 359-202.000.
Mori, Keisuke: *See—*
Tachibana, Akifumi; Mori, Keisuke; Suzuki, Masakazu; Matoba, Kazunari; Asai, Hitoshi; Takeguchi, Toshitaka; and Miyaguchi, Kazuhisa, 5,664,001, Cl. 378-98.800.
Mori, Tomiya; and Kobayashi, Kazuyoshi, to Tohoku Ricoh Co., Ltd. Structures of a drum and a stencil for a stencil printer. 5,662,040, Cl. 101-128.210.
Mori, Toshiki; Sato, Junko; Fukumoto, Takashi; Nakao, Kozo; and Tamai, Yoshin, to Kuraray Co., Ltd. Process for producing geranylgeraniol. 5,663,461, Cl. 568-886.000.
Morikawa, Kiyoshi: *See—*
Yanagisawa, Tatsuya; Nohtomi, Nobuo; Sawada, Nobutaka; Yamada, Fumiya; Kajihara, Kiyohito; Morikawa, Kiyoshi; Kurosawa, Atsushi; Kimura, Tomomichi; and Yamashita, Toshiroh, 5,663,943, Cl. 369-75.100.
Morikawa, Shinsuke; Okamoto, Hidekazu; Ohnishi, Keiichi; Shimoyama, Toru; Wada, Naoko; Sato, Yoshio; and Kurata, Hideyuki, to AG Technology Co., Ltd. Method for producing a polyfluoropropionyl halide. 5,663,543, Cl. 204-157.600.
Morimoto, Hiroshi: *See—*
Yamaue, Satoshi; Adachi, Masahiro; Morimoto, Hiroshi; Yoshida, Masaru; and Kaise, Yasuyoshi, 5,663,020, Cl. 430-20.000.
Morin, Jean-Xavier, to GEC Alsthom Stein Industric. Method of treating solid residue resulting from combustion of a sulfur-containing fuel, and heat treatment apparatus for implementing the method. 5,662,051, Cl. 110-344.000.
Morishima, Hideki: *See—*
Nanba, Norihiro; Tanaka, Tsunefumi; Morishima, Hideki; and Akiyama, Takeshi, 5,663,833, Cl. 359-631.000.
Morita, Hirobumi; and Asakura, Toshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Inchworm type of actuator. 5,662,020, Cl. 91-44.000.
Morita, Kiyoo: *See—*
Katagiri, Shingo; Ashikawa, Teruo; and Morita, Kiyoo, 5,662,854, Cl. 264-255.000.
Morita, Kouichi, to NSK, Ltd. Rotational speed detection unit. 5,663,641, Cl. 324-174.000.
Morita, Kouzou: *See—*
Hirose, Noriyasu; Inoue, Hiroshi; Matsunami, Toshio; Yoshimura, Takashi; Morita, Kouzou; Horikawa, Yuh; Iwata, Noriyoshi; Minami, Norio; Hayashi, Kenji; and Seki, Chiaki, 5,663,376, Cl. 549-411.000.
Morita, Susumu: *See—*
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Morita, Tohru; Ohno, Kou; Imai, Motokatsu; and Yamazaki, Yuuji, to Nikon Corporation. Multiple rotating absolute encoder capable of accurately latching absolute address data with data on number of rotations. 5,663,557, Cl. 250-231.180.
Morito, Masao, to Fujitsu Limited. Method of an apparatus for generating tangential circle. 5,664,085, Cl. 345-441.000.
Moriya, Mitsurou: *See—*
Ishibashi, Hiromichi; Kobayashi, Motoyuki; and Moriya, Mitsurou, 5,663,942, Cl. 369-47.000.
Moriya, Shinobu: *See—*
Shinoda, Hosei; Ohtaguro, Masami; Iimuro, Shigeru; Funae, Akihiro; and Moriya, Shinobu, 5,663,288, Cl. 528-354.000.
Morlhon, Bruno: *See—*
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Moroboshi, Takashi: *See—*
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Moroto, Shuzo; Taniguchi, Takao; Miyagawa, Shoichi; Sakakibara, Shiro; Tsukamoto, Kazumasa; Inuzuka, Takeshi; and Hattori, Masashi, to Aisin AW Co., Ltd. Continuously variable transmission. 5,662,547, Cl. 477-48.000.

Morriello, Gregori J.: *See*—
Chen, Meng Hsin; Morriello, Gregori J.; Nargund, Ravi; Patchett, Arthur A.; and Yang, Lihu, 5,663,171, Cl. 514-19.000.

Morris, Edward Lee, Jr.: *See*—
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Morris, George Ernest; Smith, Stephen James; Sunley, John Glenn; Watt, Robert John; and Williams, Bruce Leo, to BP Chemicals Limited. Process for purifying a carboxylic acid. 5,663,430, Cl. 562-608.000.

Morrison, Larry E.: *See*—
Bittner, Michael L.; Morrison, Larry E.; and Legator, Mona S., 5,663,319, Cl. 536-24.300.

Mortier, Jacques: *See*—
Chene, Alain; Peignier, Raymond; Vors, Jean-Pierre A.; Mortier, Jacques; Cantegril, Richard; and Croisat, Denis, 5,663,119, Cl. 504-280.000.

Morton International, Inc.: *See*—
Chokshi, Kanu R.; and Potts, Keith B., 5,663,219, Cl. 523-404.000.

Moser, Michael Anthony: *See*—
Grill, Alfred; Moser, Michael Anthony; Patel, Vishnubhai Vitthalbhai; Snyder, Clinton Davis; Yeack-Scranton, Celia E., deceased, 5,663,854, Cl. 360-104.000.

Mostafazadeh, Shahram; and Smith, Joseph O., to National Semiconductor Corporation. Ball grid array package with lead frame. 5,663,593, Cl. 257-666.000.

Motkowski, David G.: *See*—
Joseph, William A. Jr.; Buttle, Donald R.; and Motkowski, David G., 5,662,955, Cl. 426-432.000.

Motorola: *See*—
Cummings, Kevin D.; Johnson, William A.; and Laird, Daniel L., 5,663,018, Cl. 430-5.000.
Holm, Paige; and Gable, Benjamin W., 5,663,581, Cl. 257-93.000.

Motorola, Inc.: *See*—
Burgess, David P.; Denman, Marvin; Hood, Milton M., Jr.; Kearney, Mark A.; Kling, Lavanya; Murphy, Graham R.; and Song, Seungyoon Peter, 5,664,215, Cl. 395-800.230.
Chen, Alan G.; Jelley, Kevin W.; and Vallaith, George T., 5,663,816, Cl. 359-15.000.
Cripe, Jerry D.; Reed, Gerard T.; and Koontz, James C., 5,663,476, Cl. 588-228.000.
DeLuca, Michael Joseph, 5,663,717, Cl. 340-825.360.
Gallup, Michael G.; Goke, L. Rodney; and Seaton, Robert W., Jr., 5,664,134, Cl. 395-595.000.
Hodge, Shannon Neil; and Armstrong, Robby Wayne, 5,663,982, Cl. 375-222.000.
Huang, Yee-Wei; and Olson, Willard W., 5,664,068, Cl. 395-24.000.
Huffman, James R.; Cruickshank, Ronald D.; Jambhekar, Shrirang Nikanth; Myers, Jeffrey Van; and Collins, Russell L., 5,663,748, Cl. 345-173.000.
Lloyd, Scott Edward; and Wang, Shay-Ping Thomas, 5,664,192, Cl. 395-672.000.
McGinn, Michael, 5,663,690, Cl. 331-109.000.
McRoberts, Louis Albert, deceased; Hines, Kenneth Wayne; Miller, Karl Eric; and Lang, Gary James, 5,663,961, Cl. 370-412.000.
Pratt, Steven Duane; Pennisi, Robert W.; and Urbish, Glenn F., 5,662,946, Cl. 425-190.000.
Slaby, Jiri, 5,662,234, Cl. 220-4.210.
Smith, Robert Neal, 5,664,084, Cl. 345-440.000.
Swope, Charles B., 5,663,692, Cl. 333-101.000.
Worger, William Robert; Lopatynski, Roman Casimir; Allen, Steven Peter; and Piosenka, Gerald Vincent, 5,664,113, Cl. 705-28.000.
Yishay, Oded; Harwood, Ann E.; and Le, Chinh H., 5,664,168, Cl. 395-559.000.

Motoya, Kaoru: *See*—
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Mott, Andrew W.: *See*—
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Motta, Giuseppe, to Saitec S.R.L. Process for preparing controlled release pharmaceutical forms and the forms thus obtained. 5,662,935, Cl. 424-465.000.

Mount Sinai Hospital Corporation: *See*—
Gallinger, Steven; Hozumi, Nobumichi; Roder, John C.; Sandhu, Jasbir S.; and Shpitz, Baruch, 5,663,481, Cl. 800-2.000.

Mouri, Akihiro: *See*—
Fukui, Tetsuro; Katayama, Masato; Arahara, Kozo; Fukumoto, Hiroshi; Takasu, Yoshio; Kagami, Kenji; Mouri, Akihiro; Isaka, Kazuo; and Miura, Kyo, 5,663,032, Cl. 430-203.000.

Moutsokapas, Janis: *See*—
Franzen, Hermann; and Moutsokapas, Janis, 5,662,059, Cl. 114-201.00R.

Mouw, Andrew, Sr.: *See*—
Tracy, Willard L.; and Mouw, Andrew, Sr., 5,661,863, Cl. 7-156.000.

Mowery, Jack Thomas: *See*—
Coulis, Mark Lawrence; and Mowery, Jack Thomas, 5,661,939, Cl. 52-519.000.

Mronga, Norbert: *See*—
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MSA Aircraft Interior Products, Inc.: *See*—
Sanz, Eduardo; Ellis, Don M.; and Martin, Donald J., 5,662,152, Cl. 160-84.020.

MST Automotive GmbH: *See*—
Bathon, Michael; Zang, Jürgen; and Weiss, Franz-Xaver, 5,662,350, Cl. 280-728.200.

Mucheyer, Jost: *See*—
Ivanov, Konstantin; Lotze, James; Pompei, Donald; Reiser, Manfred; Mucheyer, Jost; and Bauder, Erwin, 5,661,954, Cl. 53-430.000.

Mueller, Bernd; Sauter, Hubert; Wingert, Horst; Koenig, Hartmann; Roehl, Franz; Ammermann, Eberhard; and Lorenz, Gisela, to BASF Aktiengesellschaft. Heteroaromatic compounds and crop protection agents containing them. 5,663,185, Cl. 514-365.000.

Mueller, Heinz; Breuer, Wolfgang; Herold, Claus-Peter; Kuhm, Peter; and von Tapavicza, Stephan, to Henkel Kommanditgesellschaft auf Aktien. Mineral additives for setting and/or controlling the rheological properties and gel structure of aqueous liquid phases and the use of such additives. 5,663,122, Cl. 507-110.000.

Mueller, Jeffrey G.: *See*—
Saleh, Resve A.; Mueller, Jeffrey G.; and Antao, Brian A. A., 5,663,890, Cl. 364-490.000.

Mueller, Karl F.: *See*—
Haniff, Marlon; Falk, Robert; Deisenroth, Ted; and Mueller, Karl F., 5,663,273, Cl. 528-70.000.

Mueller, Mark: *See*—
Gore, Susana M.; Mueller, Mark; Green, Nicholas; Gold, Jeffrey G.; and Soltesz, Peter P., 5,662,622, Cl. 604-282.000.

Mueller, Philipp, to Actron Entwicklungs AG. Antenna device. 5,663,738, Cl. 343-742.000.

Mueller, Richard A.: *See*—
Barta, Thomas E.; and Mueller, Richard A., 5,663,342, Cl. 546-6.000.

Mukai, Kenji: *See*—
Akashi, Yukio; Tanabe, Yoshinori; Akashi, Izumi; and Mukai, Kenji, 5,662,403, Cl. 362-32.000.

Mukoyama, Kenji; and Hayashi, Noriaki, to Makita Corporation. Nailing machine. 5,662,257, Cl. 227-8.000.

Mulders, Joannes M. C. A.: *See*—
Castelijns, Anna M. C. F.; and Mulders, Joannes M. C. A., 5,663,433, Cl. 562-874.000.

Mulla, Dean; and Iacobovici, Sorin, to Development of Emerging Architectures L.L.C., Institute for the. Cache arrangement including coalescing huffer queue for non-cacheable data. 5,664,148, Cl. 711-138.000.

Muller, Arno: *See*—
Lee, Young W.; Moh, Sungwon; and Muller, Arno, 5,664,123, Cl. 395-309.000.

Müller, Ernst Johann Heinrich, to Denel (Proprietary) Limited; and Octrooibureau Kisch N.V. Breech for a gun which is able to operate with two different breech blocks. 5,663,519, Cl. 89-17.000.

Müller, Hartmuth: *See*—
Wiener, Dieter; and Müller, Hartmuth, 5,662,438, Cl. 409-26.000.

Muller, Jean Claude: *See*—
Frost, Jonathan; George, Pascal; Pasau, Patrick; Bartsch, Régine; Rousselle, Corinne; Williams, Paul Howard; and Muller, Jean Claude, 5,663,183, Cl. 514-310.000.

Müller, Manfred: *See*—
Hauner, Franz; Müller, Manfred; and Tiefel, Günter, 5,663,500, Cl. 75-232.000.

Müller, Marcel: *See*—
Alig, Leo; Edenhofer, Albrecht; Müller, Marcel; Trzeciak, Arnold; and Weller, Thomas, 5,663,297, Cl. 530-331.000.

Müller, Nikolaus; and Essert, Thomas, to Bayer Aktiengesellschaft. Process for the preparation of 2,2 dialkyl-arylidene-cycloalkanones. 5,663,447, Cl. 568-316.000.

Muller, Pascale Francine Jeanne; and Rouviere, Fabienne, to Goodyear Tire & Rubber Company, The. Latex for high performance masking tape. 5,663,231, Cl. 524-458.000.

Müller, Wolfgang; and Munding, German, to Daimler-Benz Aerospace AG. Thrust-generating device. 5,661,970, Cl. 60-223.000.

Mullins, Albert A., II: *See*—
Tubel, Paulo; Mullins, Albert A., II; Jones, Kevin; and Richardson, Frank D., 5,662,165, Cl. 166-250.010.

Mun, Jong-kuk, to Samsung Electronics Co., Ltd. Vertical cavity laser light beam monitored by reflection of a half mirror, with application in optical pick-up. 5,663,944, Cl. 369-121.000.

Munding, German: *See*—
Müller, Wolfgang; and Munding, German, 5,661,970, Cl. 60-223.000.

Munechika, Koji; Seki, Tomoyo; Kishi, Norihide; Matsuda, Hiroshi; and Ueda, Yasuo, to Green Cross Corporation, The. Process for preparing liposome composition. 5,662,931, Cl. 424-450.000.

Münzenberg, Jörg: *See*—
Göbel, Thomas; and Münzenberg, Jörg, 5,663,395, Cl. 556-427.000.

Murai Co., Ltd.: *See*—
Murai, Masaru; and Hyoi, Isao, 5,663,780, Cl. 351-52.000.

Murai, Masaru; and Hyoi, Isao, to Murai Co., Ltd. Spectacles with decorative lens attaching device. 5,663,780, Cl. 351-52.000.

Murai, Takashi: *See*—
Inoue, Masatsugu; Tsunokawa, Satoshi; Murai, Takashi; and Shimizu, Norio, 5,663,610, Cl. 313-461.000.

Murai, Yukako; and Amagai, Tamio, to Fujitsu Limited. Image processing apparatus with function of extracting visual information from region printed in dropout color on sheet. 5,664,031, Cl. 382-317.000.

Murakami, Satoshi: *See*—
Ishida, Kazutoshi; Murakami, Satoshi; and Onaka, Yoshiaki, 5,663,225, Cl. 524-216.000.

Murakami, Yoshiteru: *See*—
Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; Ohta, Kenji; and Murakami, Yoshiteru, 5,662,988, Cl. 428-212.000.

Muramatsu, Masahiro: *See*—
Ichikawa, Hiroshi; Nakayama, Yoshiaki; Nishitani, Keizo; Sugiyama, Chiaki; Kubota, Minoru; Ikegaya, Tatsuo; Muto, Masanori; Oishi, Masaki; Muramatsu, Masahiro; Hosoda, Yasuo; and Suzuki, Hiroshi, 5,663,866, Cl. 361-643.000.

Murata Kikai Kabushiki Kaisha: *See*—
Kataoka, Naoto; and Nakano, Takashi, 5,663,804, Cl. 358-304.000.

Murata Manufacturing Co., Ltd.: *See*—
Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,662,754, Cl. 156-89.000.
Nakamura, Takeshi, 5,663,505, Cl. 73-702.000.
Okada, Takekazu; Shinmura, Satoru; Kanaya, Fumio; and Ichiguchi, Shinichiro, 5,663,698, Cl. 333-202.000.

Murata, Shigemi: *See*—
Sawazaki, Nobuyuki; Koiwa, Mitsuru; and Murata, Shigemi, 5,662,091, Cl. 123-647.000.

Murata, Shizuo: *See*—
Sawai, Toshiya; Oikawa, Seiji; Yazawa, Masaaki; Murata, Shizuo; Hayakawa, Masaharu; Nakagawa, Etsuo; and Sawada, Shinichi, 5,663,440, Cl. 564-384.000.

Murayama, Masahiko: *See*—
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, 5,663,310, Cl. 536-69.000.

Murayama, Shigeki: *See*—
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Murouchi, Satoshi: *See*—
Yoneta, Hiroyoshi; Murouchi, Satoshi; and Watanabe, Hideo, 5,663,276, Cl. 528-194.000.

Murow, Jaime; Hethcoat, Gary D.; Kwan, Richard J.; and Hiura, Hideki, to Sun Microsystems, Inc. Method and apparatus for automating the localization of a computer program. 5,664,206, Cl. 704-8.000.

Murphy, Graham R.: *See*—
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Murphy, Mark V.: *See*—
Polowinczak, Allen D.; Prete, James J.; Bratcher, Michael P.; and Murphy, Mark V., 5,661,927, Cl. 49-447.000.

Murray, Kathy: *See*—
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Murry, Lynn E.: *See*—
Hawkins, Phillip R.; and Murry, Lynn E., 5,663,059, Cl. 435-69.200.

Musleve, Richard Thomas; Parker, Dane Kenton; and Hirst, Robert Charles, to Goodyear Tire & Rubber Company, The. Preparation of sulfur-containing organosilicon compounds. 5,663,396, Cl. 556-427.000.

Musser, John H.: *See*—
Qi, You Mao; and Musser, John H., 5,663,335, Cl. 544-153.000.

Muto, Masanori: *See*—
Ichikawa, Hiroshi; Nakayama, Yoshiaki; Nishitani, Keizo; Sugiyama, Chiaki; Kubota, Minoru; Ikegaya, Tatsuo; Muto, Masanori; Oishi, Masaki; Muramatsu, Masahiro; Hosoda, Yasuo; and Suzuki, Hiroshi, 5,663,866, Cl. 361-643.000.

Muzzi, Joe, Jr.: *See*—
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Muzzi, Vincent; and Muzzi, Joe, Jr., to Pa-Paw's, LLC. Game hoist. 5,662,451, Cl. 414-540.000.

Myers, Garry L.: *See*—
Bogue, Beuford Arlie; and Myers, Garry L., 5,662,849, Cl. 264-112.000.

Myers, Jeffrey Van: *See*—
Huffman, James R.; Cruickshank, Ronald D.; Jambhekar, Shrirang Nikanth; Myers, Jeffrey Van; and Collins, Russell L., 5,663,748, Cl. 345-173.000.

Myhrvold, Nathan: *See*—
Davidson, Robert I.; Myhrvold, Nathan; Vogel, Keith Randel; Yuval, Gideon Andreas; Shupak, Richard; and Apperson, Norman Eugene, 5,664,191, Cl. 395-670.000.

Myo Kinetic Systems, Inc.: *See*—
Hamedi, Hassan; Lynch, H. Wilfred; and Weeks, Vaughan B., 5,662,699, Cl. 607-138.000.

Nabeshima, Takayuki: *See*—
Sakairi, Minoru; Mimura, Tadao; Takada, Yasuaki; Nabeshima, Takayuki; and Koizumi, Hideaki, 5,663,560, Cl. 250-281.000.

Nabisco, Inc.: *See*—
Wheeler, Edward L.; D'Amelia, Ronald P.; Leveille, Gilbert A.; Otterburn, Michael S.; Klemann, Lawrence P.; Finley, John W.; Roden, Allan D.; Chrysam, Michael M.; Pelloso, Turiddu A.; and Given, Peter S., Jr., 5,662,953, Cl. 426-2.000.

Nadeau, Rock: *See*—
Li, Leping; Barbee, Steven George; Doyle, Gary Richard; Halperin, Arnold; Holland, Kevin L.; Kazak, Francis Walter; Lipori, Robert B.; McGuire, Anne Elizabeth; Nadeau, Rock; and Surovic, William Joseph, 5,663,637, Cl. 324-71.500.

Nadherny, Rudolph E.; and Beals, Stephen H., to Ireco, Inc. Cable bight wear guard assembly. 5,662,295, Cl. 248-58.000.

Nadzam, John Peter: *See*—
Back, Kwang Henry; Franz, Joseph Phillip; and Nadzam, John Peter, 5,663,600, Cl. 290-55.000.

Naeher, Ulrich: *See*—
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Nagai, Yasutaka: *See*—
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Nagal, Ann Karrey: *See*—
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Nagal, Karrey-Lynn: *See*—
Fein, Elaine; Caputo, John; Nagal, Ann Karrey; and Nagal, Karrey-Lynn, 5,662,921, Cl. 424-436.000.

Nagano Drilube Co., Ltd.: *See*—
Wakabayashi, Shinichi; Kobayashi, Susumu; Ookubo, Mithugi; and Yamashita, Ethuji, 5,663,601, Cl. 310-45.000.

Nagano, Kouzo: *See*—
Takeuchi, Munetaka; Namiki, Takefumi; Nagano, Kouzo; Fukuda, Ikuo; and Hayashi, Hiromi, 5,664,083, Cl. 345-437.000.

Nagano, Toshihiro, to Fuji Jukogyo Kabushiki Kaisha. Exhaust port timing control apparatus for two-cycle engine. 5,662,074, Cl. 123-65.0PE.

Nagano, Yoshinari: *See*—
Tada, Nobuhiko; Ogata, Kojiro; Miyanagi, Naoki; Shimomura, Yoshiaki; Sakurai, Shigeyuki; Nagano, Yoshinari; Okumura, Shinya; and Minomoto, Yasushi, 5,662,822, Cl. 219-121.670.

Naganuma, Takeshi: *See*—
Iwasa, Shoichi; and Naganuma, Takeshi, 5,663,103, Cl. 438-301.000.

Nagao, Takaaki: *See*—
Kawada, Nobuo; Nakajima, Ryoji; Shindo, Toshihiko; and Nagao, Takaaki, 5,663,865, Cl. 361-234.000.

Nagasampagi, Bhimsen Annacharya; Rojatkar, Supada Rambhau; Kulkarni, Mandakini Moreshwar; Joshi, Vimal Shantaram; Bhat, Vidya Sudhir; Sane, Mukund Gangadhar; and Ayyangar, Nagaraj Ramanuj, to Council of Scientific & Industrial Research. Triterpene derivatives of azadirachtin having insect antifeedant and growth inhibitory activity and a process for extracting such compounds from the neem plant. 5,663,374, Cl. 549-381.000.

Nagasawa, Shigeru: *See*—
Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, 5,664,104, Cl. 395-200.540.

Nagashima, Ichiro, to Kabushiki Kaisha Toshiba. Graphics plotting apparatus and method. 5,664,071, Cl. 395-103.000.

Nagashima, Yoshiaki; Fujiwara, Kenichi; Sato, Masao; Takahashi, Fuminobu; Koike, Masahiro; Umehara, Hajime; and Michiguchi, Yoshihiro, to Hitachi, Ltd.; and Hitachi Nuclear Engineering Co., Ltd. Method and apparatus for measuring thickness of layer using acoustic waves. 5,663,502, Cl. 73-599.000.

Nagata, Chikahiko: *See*—
Kageyama, Seiji; Asou, Tadahiko; and Nagata, Chikahiko, 5,664,074, Cl. 395-113.000.

Nagata, Hideki: *See*—
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Nagata, Yoshiaki: *See*—
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Nagel, Duane F.: *See*—
Roossien, Charles P.; Pugh, David C.; Groendal, Dale M.; Massey, James E.; Scheper, Robert M.; Nagel, Duane F.; Smith, Bruce M.; Smith, Douglas A.; and Scholten, Brian L., 5,662,381, Cl. 297-301.100.

Nagura, Toshikazu: *See*—
Kamimura, Rumiko; Nemoto, Hiroyuki; Nagura, Toshikazu; and Hayashi, Shigeo, 5,663,116, Cl. 503-227.000.

Nahan, Kenneth; Nahan, Sherri; Graham, John D.; Corapcioglu, Ahmet K.; Miller, Robert H.; Lipman, Alexander; and Osipou, Andrei, to Honicorp, Inc. Computerized, multimedia, network, real time, interactive marketing and transactional system. 5,664,111, Cl. 705-27.000.

Nahan, Sherri: *See*—
Nahan, Kenneth; Nahan, Sherri; Graham, John D.; Corapcioglu, Ahmet K.; Miller, Robert H.; Lipman, Alexander; and Osipou, Andrei, 5,664,111, Cl. 705-27.000.

Nairne, Robert J. D.: *See*—
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Naito, Katsuyuki; Sugiuchi, Masami; Takayama, Satoshi; Miyamoto, Hirohisa; Nishizawa, Hideyuki; Fujioka, Sawako; Watanabe, Akiko; and Nomaki, Tatsuo, to Kabushiki Kaisha Toshiba. Thermal recording medium and recording method. 5,663,115, Cl. 503-201.000.

Naito, Masanobu: *See*—
Shimizu, Makoto; Takeuchi, Yoshio; Asai, Minoru; Kondo, Takeichi; Aramaki, Hiroshi; and Naito, Masanobu, 5,662,049, Cl. 110-245.000.
Naito, Toshihiko: *See*—
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Najarian, Thomas. Compositions and methods for lowering cholesterol while maintaining antioxidant levels. 5,662,934, Cl. 424-464.000.
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Kimura, Naoto, 5,663,594, Cl. 257-666.000.
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Nifontov, Vladimir A.: *See*—
Warrington, Don C.; Nifontov, Vladimir A.; Erofeev, Lev V.; and Trifonov-Yakovlev, Dmitri A., 5,662,175, Cl. 173-132.000.
Nihon Kohden Corporation: *See*—
Fuse, Masayoshi; and Xie, Cheng-tai, 5,662,104, Cl. 128-633.000.
Nikam, Sham: *See*—
Doherty, Annette Marian; Kornberg, Brian Edward; and Nikam, Sham, 5,663,296, Cl. 530-331.000.
Nike, Inc.: *See*—
Valiant, Gordon A.; Vincent, Stephen Michael; and Auger, Perry W., 5,661,864, Cl. 12-133.00R.
Nikolopoulos, Aggelos: *See*—
Schickaneder, Helmut; and Nikolopoulos, Aggelos, 5,663,381, Cl. 549-492.000.
Nikon Corporation: *See*—
Hasuda, Masanori; and Matubara, Takashi, 5,664,247, Cl. 396-456.000.
Hayano, Fuminori, 5,663,569, Cl. 250-559.450.
Kanai, Hachiro; Fukuhara, Toru; Sosa, Toshio; Yokonuma, Norikazu; and Hara, Masaharu, 5,664,241, Cl. 396-158.000.
Kanno, Hideo, 5,663,839, Cl. 359-700.000.
Kurihara, Katsumasa; and Hozumi, Toshiaki, 5,664,245, Cl. 396-303.000.
Morita, Tohru; Ohno, Kou; Imai, Motokatsu; and Yamazaki, Yuuji, 5,663,557, Cl. 250-231.180.
Ohtake, Motoyuki; and Ohshita, Koichi, 5,663,837, Cl. 359-692.000.
Shibayama, Atsushi, 5,663,835, Cl. 359-684.000.
Takagi, Tadao, 5,664,242, Cl. 396-234.000.
Takayama, Tooru; and Watanabe, Tsuneo, 5,663,842, Cl. 359-823.000.
Tanimoto, Akikazu, 5,663,784, Cl. 355-68.000.
Ueda, Toshio, 5,663,783, Cl. 355-53.000.
Utagawa, Ken, 5,664,236, Cl. 396-96.000.
Wakabayashi, Tsutomu, 5,664,250, Cl. 396-538.000.
Watanabe, Toshimi, 5,664,237, Cl. 396-96.000.
Nilsson, Kenth: *See*—
Lidman, Johan; and Nilsson, Kenth, 5,662,694, Cl. 607-60.000.
Nilsson, Rolf Olof; and Stendahl, Kjell-Erik, to Kemira Kemi Aktiebolag. Process for the preparation of a coagulating chemical comprising dissolving a solid zeolite in a solution of trivalent metal salt. 5,662,826, Cl. 252-179.000.
Nilz, Claudia: *See*—
Denzinger, Walter; Hartmann, Heinrich; Kroener, Michael; and Nilz, Claudia, 5,662,781, Cl. 204-158.210.
Nimmagadda, Srinivas: *See*—
Dillon, John B.; Nimmagadda, Srinivas; and Moncayo, Alfredo, 5,663,661, Cl. 326-30.000.
Ninomiya, Ryoji: *See*—
Nishigaki, Nobutaka; Ninomiya, Ryoji; and Sakai, Makoto, 5,664,118, Cl. 395-283.000.
Nippon Chemical Industrial Co., Ltd.: *See*—
Sugiya, Masashi; Watanabe, Tsutomu; and Shimura, Seiji, 5,663,419, Cl. 560-190.000.
Nippon Mining & Metals Co., Ltd.: *See*—
Akagi, Susumu; Fujii, Takayoshi; Maeda, Masatoshi; and Suzuki, Yoshiaki, 5,662,730, Cl. 75-639.000.
Nippon Oil Co., Ltd.: *See*—
Ishimaru, Mitsuaki; Kagaya, Mineo; and Ishida, Noboru, 5,663,125, Cl. 508-194.000.
Nippon Paint Co., Ltd.: *See*—
Matsumura, Akira; Ohata, Masashi; Kawakami, Atsushi; and Ishikawa, Katsukiyo, 5,663,019, Cl. 430-7.000.
Shirakawa, Shinsuke; Kanda, Kazunori; Yamada, Mitsuo; Aoki, Kei; Urano, Satoshi; and Tomita, Nobuaki, 5,663,262, Cl. 526-312.000.
Tsuboniwa, Noriyuki; Urano, Satoshi; Tsuge, Otohiko; and Hatta, Taizo, 5,663,423, Cl. 560-340.000.
Nippon Petrochemicals Company, Limited: *See*—
Yoneta, Hiroyoshi; Murouchi, Satoshi; and Watanabe, Hideo, 5,663,276, Cl. 528-194.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Kakizawa, Hitoshi, 5,663,737, Cl. 343-713.000.
Nippon Shokubai Co., Ltd.: *See*—
Takahashi, Tsukasa; Kawabata, Tatsuya; Okuno, Masaaki; Emoto, Yasuhisa; Kiyooka, Yasushi; and Ueda, Kenji, 5,663,114, Cl. 502-347.000.
Tsuneki, Hideaki; Kirishiki, Masaru; Watanabe, Kenichi; and Onda, Yoshiyuki, 5,663,480, Cl. 558-270.000.
Nippon Soda Co., Ltd.: *See*—
Mochizuki, Nobuo; Souma, Shuichi; Sasaki, Takayoshi; Kanaguchi, Yukihiro; and Umeda, Nobuhiro, 5,663,172, Cl. 514-247.000.
Nippon Steel Corporation: *See*—
Iwasa, Shoichi; and Naganuma, Takeshi, 5,663,103, Cl. 438-301.000.
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,662,747, Cl. 148-320.000.
Mizoguchi, Toshiaki; Ueshima, Yoshiyuki; Moroboshi, Takashi; and Shio, Kiyomi, 5,662,748, Cl. 148-332.000.
Takayama, Isamu; Yamamoto, Satoshi; and Kizaki, Masanori, 5,662,745, Cl. 148-237.000.
Nippon Steel Semiconductor Corporation: *See*—
Mobley, Kenneth J., 5,663,915, Cl. 365-208.000.
Nippondenso Co., Ltd.: *See*—
Fukasawa, Osamu; and Hara, Mitsuo, 5,662,552, Cl. 477-169.000.
Fukuoka, Mikio; and Aki, Yoshifumi, 5,662,162, Cl. 165-41.000.
Kajiura, Hiroaki; and Mase, Akira, 5,663,631, Cl. 322-29.000.
Kamiya, Masahiko; Imoto, Yuzo; and Oishi, Masayoshi, 5,662,393, Cl. 303-194.000.
Okabe, Yoshifumi; Yamaoka, Masami; and Kuroyanagi, Akira, 5,663,096, Cl. 438-268.000.
Suzuki, Kazutaka; Yamanaka, Yasutoshi; and Inoue, Yoshimitsu, 5,662,072, Cl. 123-41.140.
Suzuki, Megumi; Tsuruta, Kazuhiro; and Asai, Akiyoshi, 5,663,588, Cl. 257-350.000.
Nisato, Dino: *See*—
Di Malta, Alain; Foulon, Loic; Garcia, Georges; Nisato, Dino; Roux, Richard; Serradeil-Legal, Claudine; Valette, Gérard; and Wagnon, Jean, 5,663,431, Cl. 562-828.000.
Nisca Corporation: *See*—
Harada, Takeshi; and Kitta, Koichi, 5,662,318, Cl. 270-58.050.
Nishi, Hiroyuki: *See*—
Kusama, Eiichi; Kawamura, Toru; Ueno, Yukikazu; Nishi, Hiroyuki; and Kato, Yosbihisa, 5,662,348, Cl. 280-688.000.
Nishibayashi, Yoshiki: *See*—
Shiomi, Hiromu; Nakahata, Hideaki; Nishibayashi, Yoshiki; and Shikata, Shin-ichi, 5,663,595, Cl. 257-712.000.
Nishida, Kenzo: *See*—
Kondo, Noboru; and Nishida, Kenzo, 5,662,549, Cl. 477-122.000.
Nishida, Seiki: *See*—
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,662,747, Cl. 148-320.000.
Nishigaki, Nobutaka; Ninomiya, Ryoji; and Sakai, Makoto, to Kabushiki Kaisha Toshiba. Computer system having detachable expansion unit. 5,664,118, Cl. 395-283.000.
Nishigaya, Takeshi: *See*—

Oka, Osamu; Hashimoto, Takeshi; Nishigaya, Takeshi; and Hariko, Tatsuya, 5,663,287, Cl. 528-350.000.
Nishiguchi, Masayuki; and Matsumoto, Jun, to Sony Corporation. Method and device for discriminating voiced and unvoiced sounds. 5,664,052, Cl. 704-214.000.
Nishihara, Yoshimasa: *See*—
Kohri, Toshitaro; Nakamura, Akihiro; and Nishihara, Yoshimasa, 5,663,027, Cl. 430-106.600.
Nishihata, Kouji, Tamura, Naoyuki; Kato, Shigekazu; Itou, Atsushi; and Tsubone, Tsunehiko, to Hitachi, Ltd. Multiprocessing apparatus. 5,663,884, Cl. 364-468.280.
Nishihata, Kouji: *See*—
Kato, Shigekazu; Nishihata, Kouji; Tsubone, Tsunehiko; and Itou, Atsushi, 5,661,913, Cl. 34-406.000.
Nishikata, Takeharu: *See*—
Kondo, Tetsujiro; Fujimori, Yasuhiro; and Nishikata, Takeharu, 5,663,764, Cl. 348-414.000.
Nishikawa, Yoshihiro: *See*—
Katayama, Tatsuo; Nishikawa, Yoshihiro; Hayashi, Mayumi; Nakajima, Hiroshi; Ozaki, Masahiro; and Watanabe, Daiichi, 5,663,322, Cl. 536-26.220.
Nishimura, Akira: *See*—
Homma, Kiyoshi; Nishimura, Akira; and Horibe, Ikuo, 5,662,146, Cl. 139-97.000.
Nishimura, Koichi; Yonesaki, Takahiro; Fujitani, Shin; Nakamura, Hiroshi; Nakamura, Yumiko; Yonezu, Ikuo; and Watanabe, Hiroshi, to Sanyo Electric Co., Ltd. Shaped body of hydrogen absorbing alloy and container packed with hydrogen absorbing alloy. 5,662,729, Cl. 75-252.000.
Nishimura, Naoki, to Canon Kabushiki Kaisha. Magneto-optical recording medium having two magnetic layers of exchange-coupled at ferromagnetic phase. 5,663,935, Cl. 369-13.000.
Nishimura, Tooru: *See*—
Kominami, Kazuhiko; Nishimura, Tooru; Kobayashi, Kazuhiko; and Yamamoto, Shoji, 5,663,284, Cl. 528-310.000.
Nishinaga, Masayuki: *See*—
Nakamura, Yutaka; Uehan, Fumiaki; and Nishinaga, Masayuki, 5,663,501, Cl. 73-579.000.
Nishino, Hiroshi: *See*—
Sasaki, Takaharu; Fujimoto, Masayuki; Miyanari, Takashige; and Nishino, Hiroshi, 5,662,780, Cl. 203-81.000.
Nishio, Tatsuo; and Iwata, Hirouaka, to Ricoh Elemex Corporation. Process and apparatus for controlling paper feed to a shredder. 5,662,280, Cl. 241-30.000.
Nishio, Yoji: *See*—
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,663,659, Cl. 326-17.000.
Nishishita, Kunihiko, to Zexel Corporation. Laminated heat exchanger. 5,662,164, Cl. 165-153.000.
Nishitani, Keizo: *See*—
Ichikawa, Hiroshi; Nakayama, Yoshiaki; Nishitani, Keizo; Sugiyama, Chiaki; Kubota, Minoru; Ikegaya, Tatsuo; Muto, Masanori; Oishi, Masaki; Muramatsu, Masahiro; Hosoda, Yasuo; and Suzuki, Hiroshi, 5,663,866, Cl. 361-643.000.
Nishiyama, Kiyoharu, to Ricoh Company, Ltd. Focal controller of camera. 5,664,238, Cl. 396-101.000.
Nishiyama, Tomoyuki, to Fuji Photo Film Co., Ltd. Electronic viewer automatically adjusting magnification of a film image in accordance with position of the film image. 5,663,762, Cl. 348-373.000.
Nishizawa, Hideyuki: *See*—
Naito, Katsuyuki; Sugiuchi, Masami; Takayama, Satoshi; Miyamoto, Hirohisa; Nishizawa, Hideyuki; Fujioka, Sawako; Watanabe, Akiko; and Nomaki, Tatsuo, 5,663,115, Cl. 503-201.000.
Nishizawa, Junichi; Motoya, Kaoru; and Ito, Akira, to Zaidan Hojin Handotai Kenkyu Shinkokai. High frequency static induction transistor having high output. 5,663,582, Cl. 257-136.000.
Nissan Chemical Industries Ltd.: *See*—
Kashihara, Hiroshi; Suzuki, Mikio; and Ohara, Yoshio, 5,663,348, Cl. 546-173.000.
Nissan Motor Co., Ltd.: *See*—
Deguchi, Yoshitaka; and Takahashi, Nobutaka, 5,662,084, Cl. 123-339.110.
Nitecki, Danute E.: *See*—
Aldwin, Lois; and Nitecki, Danute E., 5,663,306, Cl. 530-402.000.
Nitto Pharmaceutical Industries, Ltd.: *See*—
Kishida, Tsunataro, 5,662,900, Cl. 424-93.450.
Nivell System Aktiebolag: *See*—
Johansson, Lennart, 5,661,931, Cl. 52-126.700.
Nix, W. Glenn: *See*—
Pellenberg, Alan; Lamar, Thomas A., III; Wikle, David L.; Nix, W. Glenn; and Jaworski, Stephen, Jr., 5,663,746, Cl. 345-113.000.
No Mulligans, LLC: *See*—
Reich, Marshall P.; and Shesol, Barry F., 5,662,599, Cl. 602-79.000.
Nobel Biocare AB: *See*—
Ingber, Abraham; and Prestipino, Vincent Joseph, 5,662,476, Cl. 433-213.000.
Jorneus, Lars; Boss, Anders; and Hanssen, Halvar, 5,662,474, Cl. 433-172.000.
Noda, Keiji: *See*—
Kondo, Tomoharu; Ogawa, Masato; and Noda, Keiji, 5,664,049, Cl. 392-485.000.
Noda, Masayuki: *See*—
Ushida, Masayuki; Ogata, Masaru; Hachiya, Akihiro; Yamashita, Yukihiro; and Noda, Masayuki, 5,662,776, Cl. 162-156.000.
Noda, Sabrou, to Toshiba Kikai Kabushiki Kaisha. Constant molten metal surface level retaining furnace integrally provided with melting unit. 5,662,859, Cl. 266-94.000.
Noffsinger, James; Pugia, Michael J.; and Smith, Melvin D., to Bayer Corporation. Methodology for colorimetrically determining the concentration of white blood cells in a biological fluid. 5,663,044, Cl. 435-4.000.
Noguchi, Makoto, to Sakai, Mieko. Sealed ornament of dried and pressed flower. 5,662,970, Cl. 428-24.000.
Noguchi, Masayuki: *See*—
Nakao, Takashi; Maeda, Akira; Noguchi, Masayuki; Kadouno, Taiichi; Suzuki, Atsushi; and Suzuki, Eiji, 5,664,064, Cl. 395-13.000.
Noguchi, Takashi, to Sony Corporation. Method of growing single semiconductor crystal and semiconductor device with single semiconductor crystal. 5,663,579, Cl. 257-75.000.
Nogues, Nelson E. Container with time indicator. 5,662,224, Cl. 206-534.000.
Nohtomi, Nobuo: *See*—
Yanagisawa, Tatsuya; Nohtomi, Nobuo; Sawada, Nobutaka; Yamada, Fumiya; Kajihara, Kiyohito; Morikawa, Kiyoshi; Kurosawa, Atsushi; Kimura, Tomomichi; and Yamashita, Toshiroh, 5,663,943, Cl. 369-75.100.
Nokia Mobile Phones Ltd.: *See*—
Hakkanen, Jouko; and Karppanen, Arto, 5,663,954, Cl. 370-278.000.
Nokia Telecommunications OY: *See*—
Durchman, Elina; Laatu, Juho; and Mäenpää , Sanna, 5,664,004, Cl. 455-466.000.
Noll Manufacturing Co.: *See*—
Waltz, Arthur L., 5,662,522, Cl. 454-359.000.
Nomaki, Tatsuo: *See*—
Naito, Katsuyuki; Sugiuchi, Masami; Takayama, Satoshi; Miyamoto, Hirohisa; Nishizawa, Hideyuki; Fujioka, Sawako; Watanabe, Akiko; and Nomaki, Tatsuo, 5,663,115, Cl. 503-201.000.
Nomoto, Kenichi: *See*—
Oinuma, Hitoshi; Hasegawa, Takashi; Takamura, Tadanobu; Nomoto, Kenichi; Daiku, Yoshiharu; Naito, Toshihiko; and Hamano, Sachiyuki, 5,663,414, Cl. 564-80.000.
Nomoto, Susumu: *See*—
Tanaka, Mitsuhiro; Nomoto, Susumu; Sugiyama, Masahiko; and Suzuki, Kenji, 5,663,695, Cl. 333-193.000.
Nomoto, Yoshiaki: *See*—
Kaneda, Hideyuki; and Nomoto, Yoshiaki, 5,661,897, Cl. 29-753.000.
Nomura, Koji; Nakanishi, Tutomu; Kotani, Tokumi; and Kuramasu, Keizaburo, to Matsushita Electric Industrial Co., Ltd. Method of producing a pyroelectric infrared radiation detector. 5,662,818, Cl. 216-41.000.
Nomura, Yukihiro: *See*—
Ohba, Akizo; Misawa, Hironori; and Nomura, Yukihiro, 5,662,507, Cl. 442-320.000.
Norandor Systems, Inc.: *See*—
Shulman, Victor, 5,663,747, Cl. 345-161.000.
Nordeng, Arnold E. Chopper stabilized amplifier having an additional differential amplifier stage for improved noise reduction. 5,663,680, Cl. 330-9.000.
Nordgren, Gregory N.: *See*—
Plaia, Mark; Reger, Vincent A.; and Nordgren, Gregory N., 5,662,701, Cl. 623-1.000.
Nordmeyer, Michael: *See*—
Smith, Daniel; Willis, Bernard M.; Marschke, Kenneth P., Jr.; Littlewood, Barry; Schoen, Vulgens; Gucker, Carl; Nordmeyer, Michael; and Miklewicz, Thaddeus, 5,661,893, Cl. 29-558.000.
Nordson Corporation: *See*—
Bondeson, Benjamin J.; Frates, Paul S.; and Jackson, John E., 5,662,243, Cl. 222-1.000.
Noritsu Koki Co., Ltd.: *See*—
Kawaguti, Masuo, 5,662,322, Cl. 271-84.000.
Miyamori, Takahisa, 5,663,786, Cl. 355-72.000.
Norman, Robert D.: *See*—
Wallace, Robert F.; Norman, Robert D.; and Harari, Eliyahou, 5,663,901, Cl. 365-52.000.
Noro, Yutaka: *See*—
Okamura, Kenji; Murayama, Shigeki; Chishima, Masamitsu; and Noro, Yutaka, 5,662,487, Cl. 439-189.000.
Norris, Jeffrey W. Disposable plate with flexible handles. 5,662,240, Cl. 220-574.000.
Norsk Hydro a.s.: *See*—
Kvisle, Steinar; Wendelbo, Rune; and Øren, Hanne, 5,663,471, Cl. 585-639.000.
North American Philips Corporation: *See*—
Trovato, Karen Irene; and Dorst, Leendert, 5,663,879, Cl. 701-2.000.
Northeastern Ohio Universities College of Medicine: *See*—
Chiang, John Young Ling, 5,663,483, Cl. 800-2.000.
Northern Telecom Limited: *See*—
Donaldson, Alan; and Freer, Steven John, 5,664,043, Cl. 385-138.000.
Katchmar, Roman, 5,661,902, Cl. 29-840.000.
Preneel, Bart K. B.; and Van Oorschot, Paul C., 5,664,016, Cl. 380-28.000.
Northrop Grumman Corporation: *See*—
Diaz, Rodolfo E., 5,662,982, Cl. 428-116.000.
Schoch, Karl F., Jr.; Vasilow, Theodore R.; and Stough, Daryl V., 5,662,879, Cl. 423-594.000.
Northwestern University: *See*—

Razeghi, Manijeh, 5,663,976, Cl. 372-46.000.
Wessels, Bruce W.; and Block, Bruce A., 5,663,556, Cl. 250-214.100.
Nova Solutions, Inc.: *See—*
Lechman, John N., 5,662,395, Cl. 312-194.000.
Novak, Paul: *See—*
Toronto, Salvatore; and Novak, Paul, 5,662,346, Cl. 280-252.000.
Toronto, Salvatore; and Novak, Paul, 5,662,347, Cl. 280-252.000.
Novamed Medical Products Manufacturing, Inc.: *See—*
Hayes, Thomas G.; Kredovski, Kenneth C.; and Hume, Robert M., III, 5,662,708, Cl. 623-8.000.
NovaTor, L.L.C.: *See—*
Toronto, Salvatore; and Novak, Paul, 5,662,346, Cl. 280-252.000.
Toronto, Salvatore; and Novak, Paul, 5,662,347, Cl. 280-252.000.
Novavax, Inc.: *See—*
Wright, D. Craig, 5,662,957, Cl. 426-605.000.
Novof, Ilya Iosephovich: *See—*
Kelkar, Ram; Novof, Ilya Iosephovich; and Wyatt, Stephen Dale, 5,663,991, Cl. 375-376.000.
Novus International, Inc.: *See—*
Blackburn, Thomas F.; and Pellegrin, Paul F., 5,663,409, Cl. 558-351.000.
Nowak, James C.: *See—*
Heins, William F.; and Nowak, James C., 5,662,802, Cl. 210-634.000.
Nowotnik, David P.; and Nanjappan, Palaniappa, to Bracco International B.V. Hydrazone containing ligands and metal complexes thereof. 5,663,307, Cl. 534-10.000.
Nozaki, Yuko: *See—*
Masuda, Seiya; Padmanaban, Munirathna; Kudo, Takanori; Kinoshita, Yoshiaki; Suehiro, Natsumi; Nozaki, Yuko; Okazaki, Hiroshi; and Przybilla, Klaus Jürgen, 5,663,035, Cl. 430-270.100.
NRG Barriers, Inc.: *See—*
Douglas, Bruce F., 5,663,882, Cl. 364-468.030.
NSI Enterprises, Inc.: *See—*
Jennings, Mark E.; Yates, James P.; and Yates, Greg D., 5,662,414, Cl. 362-366.000.
NSK, Ltd.: *See—*
Morita, Kouichi, 5,663,641, Cl. 324-174.000.
Sakamoto, Junshi, 5,663,640, Cl. 324-173.000.
Takata, Hirotoshi; and Suzuki, Susumu, 5,662,546, Cl. 476-40.000.
NSM Aktiengesellschaft: *See—*
Menke, Wilhelm; and Heidersberger, Börge, 5,662,204, Cl. 194-215.000.
Nuccio, Michael: *See—*
Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; and Freyssinet, Georges L., 5,663,068, Cl. 435-220.000.
Nuchols, Richard Paul: *See—*
Knodel, Bryan Dale; Nuchols, Richard Paul; and Williamson, Warren Pyatt, IV, 5,662,258, Cl. 227-175.100.
Nuckolls, Joe A., to Hubbell Incorporated. Apparatus for dimming discharge lamp having electromagnetic regulator with selectively tapped capacitance winding. 5,663,612, Cl. 315-240.000.
Nuechterlein, Paul E., to Sundstrand Corporation. Transistor gate drive circuit providing dielectric isolation and protection. 5,663,672, Cl. 327-374.000.
Nugent, Robert Michael: *See—*
Bennett, Robert Bradley; Nugent, Robert Michael; and Showalter, James Michael, 5,664,186, Cl. 395-620.000.
Nycomed Imaging AS: *See—*
Sakariassen, Kjell Steinar, 5,662,107, Cl. 128-637.000.
Nyman, Bror; Mäkitalo, Valto; Lilja, Launo; Hultholm, Sti-Erik; and Saarenpää, Timo, to Outokumpu Engineering Contractors Oy. Method for extracting metals from large solution flows and apparatus for realizing the same. 5,662,871, Cl. 422-259.000.
Nyman, Jouko Artturi: *See—*
Ruotoistenmäki, Jussi Matias; Ruotoistenmäki, Juhana; and Nyman, Jouko Artturi, 5,662,626, Cl. 604-306.000.
NYNEX Science & Technology: *See—*
Stein, Jan; and Carlson, Constance, 5,664,103, Cl. 395-200.350.
Vysotsky, George, 5,664,058, Cl. 704-243.000.
O, Sungki; and Schoenborn, Philippe, to LSI Logic Corporation. Process for making improved MOS structure with hot carrier reduction. 5,663,083, Cl. 438-303.000.
Oba, Hiroshi: *See—*
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,662,747, Cl. 148-320.000.
Obata, Fumiya; and Kashiwagi, Noboru, to Mitsui Petrochemical Industries, Ltd.; and Kitasato Institute, The. HLA-DR antigen gene and its nucleotide sequence and its use. 5,663,047, Cl. 435-6.000.
Obata, Hitoshi; and Narita, Masashi, to Dai Nippon Printing Co., Ltd. Thermal transfer sheet. 5,662,989, Cl. 428-212.000.
Obel, Martin: *See—*
Hedberg, Sven-Erik; Obel, Martin; and Hoegnelid, Kurt, 5,662,687, Cl. 607-5.000.
Öberg, Magnus: *See—*
Ekström, Björn; and Öberg, Magnus, 5,663,790, Cl. 356-128.000.
Obermeier, Rainer; Gerl, Martin; Ludwig, Jürgen; and Sabel, Walter, to Hoechst Aktiengesellschaft. Process for obtaining insulin having correctly linked cystine bridges. 5,663,291, Cl. 530-303.000.
O'Brien, Michael Kevin: *See—*
Gibbons, Wayne Michael; Grasso, Robert Paul; O'Brien, Michael Kevin; Shannon, Paul Joseph; and Sun, Shao-Tang, 5,663,308, Cl. 534-573.000.
O'Brien, Rita M.; and Wisor, Michael T., to Advanced Micro Devices, Inc. Power management control technique for timer tick activity within an interrupt driven computer system. 5,664,205, Cl. 395-750.040.
OCG Microelectronic Materials, Inc.: *See—*
Mertesdorf, Carl-Lorenz; Nathal, Bertold; and Kirner, Hans-Jorg, 5,663,038, Cl. 430-326.000.
Ochiai, Ikuo: *See—*
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,662,747, Cl. 148-320.000.
Ochiai, Keiko: *See—*
Mizukami, Tamio; Asai, Akira; Yamashita, Yoshinori; Katahira, Ritsuko; Hasegawa, Atsuhiro; Ochiai, Keiko; and Akinaga, Shiro, 5,663,298, Cl. 530-332.000.
Octrooibureau Kisch N.V.: *See—*
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Pham, Hang Thanh; Pratt, Robert; Redmon, Charles Lewis; Thompson, John James; Van Der Puy, Michael; Singh, Rajiv Ratna; Hague, William James; Kieta, Harold John; Luly, Matthew Hermes; and McKown, Jeffrey Warren, to AlliedSignal Inc. Alkylation process using hydrogen fluoride-containing alkylation catalysts. 5,663,474, Cl. 585-721.000.
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Baldwin, John J.; and Horlbeck, Eric G., 5,663,046, Cl. 435-6.000.
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Pickar, David; Litman, Robert E.; and Potter, William Z., to United States of America, Health and Human Services. Antipsychotic composition and method of treatment. 5,663,167, Cl. 514-225.800.
Pickens, Stanley R.; Rice, Paul T.; and Ferguson, Richard H., to PPG Industries, Inc. Swimming pool chemical dispenser. 5,662,795, Cl. 210-169.000.
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Maniawski, Piotr J.; and Miller, Stephen D., 5,663,566, Cl. 250-369.000.
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Pifferi, Piergiorgio. Chemical solution for detecting counterfeit paper currency. 5,662,735, Cl. 106-31.200.
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Piosenka, Gerald Vincent: *See*—
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Pittermann, Wolfgang: *See—*
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Plant, Andrew: *See—*
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Plass, Ronald A.: *See—*
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Welte, Karl; Platzer, Erich; Gabrilove, Janice L.; Mertelsmann, Roland; and Moore, Malcolm A. S., 5,662,895, Cl. 424-85.100.

Plepys, Anthony R.: *See—*
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Plesch, Andreas: *See—*
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Plessey Semiconductors Limited: *See—*
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Raben, Nina; Nichols, Ralph; Plotz, Paul; and Leff, Richard, 5,663,066, Cl. 435-183.000.

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Polaroid Corporation: *See—*
Molteni, William J.; and Volchok, William J., 5,663,815, Cl. 359-13.000.

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Pollak, Alfred; and Goodbody, Anne, to Resolution Pharmaceuticals Inc. Peptide derived radionuclide chelators. 5,662,885, Cl. 424-1.690.

Pollock, Wayne C.: *See—*
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Pommerenke, Martin; and Siefker, Hartmuth, to M A N Systemelektronik GmbH. Method and arrangement for establishing networks of electro-optical display-field modules. 5,663,739, Cl. 345-1.000.

Pompei, Donald: *See—*
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Poon, Stephen S. C.: *See—*
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Popa, Paul Joseph: *See—*
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Popat, Ghanshyam H.; Mammen, Thomas; Robertson, David; and Saint, André M., to Avery Dennison Corporation. Laminated card assembly. 5,662,976, Cl. 428-40.100.

Popat, Pradeep P. Autonomous, low-cost, automatic window covering system for daylighting applications. 5,663,621, Cl. 318-480.000.

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Green, Jonathan B.; and Pope, William R., 5,664,110, Cl. 705-26.000.

Porter, William H. House floor system and shipping container therefor. 5,661,930, Cl. 52-64.000.

Porter, Wilson. Guide adapted to fit on an electro-mechanical device for planting seeds. 5,662,053, Cl. 111-200.000.

Portola Packaging, Inc.: *See—*
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Portwood, Owen: *See—*
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Posa, Victor: *See—*
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Postman, Joel Robert; Bergen, David Peter; and Fish, Ronald Craig, to TPS Electronics. PCMCIA interface card for coupling input devices such as barcode scanning engines to personal digital assistants and palmtop computers. 5,664,231, Cl. 395-893.000.

Potratz, Robert S.: *See—*
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Potter, Michael Wayne; Malven, William Charles; and Veith, Cary Alan, to Shell Oil Company. Deprotection with molten salt. 5,663,250, Cl. 526-178.000.

Potter, William Z.: *See—*
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Powell, Bruce A.; McCarthy, Richard C.; Bittar, Joseph; Barker, Frederick H.; Wan, Samuel C.; Bennett, Paul; Cooney, Anthony; Salmon, John K., deceased (by Lucy Mary Salmon, executrix), to Otis Elevator Company. Passenger transfer, double deck, multi-elevator shuttle system. 5,663,539, Cl. 187-385.000.

Powell, Clois E.: *See—*
Gadberry, James F.; Hoey, Michael; and Powell, Clois E., 5,663,111, Cl. 501-146.000.

Power Curbers, Inc.: *See—*
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Powers, Daniel: *See—*
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Pozzoli, Claudio: *See—*
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PPG Industries, Inc.: *See—*
Barancyk, Steven V.; Verardi, Christopher A.; and Humphrey, William A., 5,663,244, Cl. 525-456.000.
Pickens, Stanley R.; Rice, Paul T.; and Ferguson, Richard H., 5,662,795, Cl. 210-169.000.
Simeone, Robert L.; Lippert, Robert D.; O'Dwyer, James B.; and Kania, Charles M., 5,663,240, Cl. 525-327.300.

PQ Corporation: *See—*
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Prager, Jay: *See—*
Vinciarelli, Patrizio; and Prager, Jay, 5,663,635, Cl. 323-282.000.

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Prasad, Sharad: *See—*
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Pratt, Robert: *See—*
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Predmore, Daniel R.: *See—*
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Premier Lubrication Systems, Inc.: *See—*
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Presenz, Ulrich; and Hewel, Manfred, to EMS-Inventa AG. Ternary polymer mixture and its use. 5,663,229, Cl. 524-399.000.

President and Fellows at Harvard College: *See—*
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Presti, Matteo Lo: *See—*
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Prestipino, Vincent Joseph: *See—*
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Preston, David: *See—*
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Primax Electronics, Ltd.: *See—*
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Prockop, Darwin J.; Ala-Kokko, Leena; Khillan, Jaspal S.; Vandenberg, Philipp; Kontusaari, Sirpa; Helminen, Heikki; Olsen, Anne; and Sokolov, Boris, to Thomas Jefferson University. Transgenic mice expressing a mutated human collagen gene. 5,663,482, Cl. 800-2.000.

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Bolich, Raymond Edward, Jr.; and Midha, Sanjeev, 5,662,892, Cl. 424-70.100.
Doak, Nancy Beck; Johnson, Theresa Louise; Thompson, Hugh Ansley; and Olsen, Robb Eric, 5,662,633, Cl. 604-378.000.
Goldstein, Alan S., 5,663,133, Cl. 510-224.000.
Hamilton, Peter W.; and McGuire, Kenneth S., 5,662,758, Cl. 156-221.000.
Johnson, Larry Kenneth; and Lange, Stephen Joseph, 5,662,638, Cl. 604-386.000.
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Progressive International Electronics: *See—*
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Prompac Industries, Inc.: *See—*
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Propach, David S.; Grob, Matthew S.; Jacobs, Paul E.; and Karmi, Gadi, to Qualcomm Incorporated. Method of reducing facsimile data transmission bottlenecks in low data rate networks by dropping data lines. 5,663,807, Cl. 358-426.000.

Prototek, Inc.: *See—*
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Protz, Rudolf: *See—*
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Prough, J. Robert: *See—*
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Proulx, Robert W.: *See—*
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Pryor, Gerald Ray. Handgun holder. 5,661,919, Cl. 42-94.000.

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PSC Inc.: *See—*
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Pugh, David C.: *See—*
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Ramert, Reiner; and Sobotta, Rainer, to Boehringer Ingelheim KG. New process for preparing 2-amino-6-chloropurine. 5,663,338, Cl. 544-277.000.
Ranalli, Ronald J., to Clover Industries, Inc. Laser-based system and method for stripping coatings from substrates. 5,662,762, Cl. 156-344.000.
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Reeder, Ryan Anthony; and Marasligiller, Ares, to Hill-Rom, Inc. Bedside cabinet for storing appliances. 5,662,396, Cl. 312-209.000.
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Reger, Vincent A.: *See*—
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Reichlinger, Gary. Electromagnetic clutch and engine control. 5,662,553, Cl. 477-179.000.
Reichmann, Christof: *See*—
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Reitz, Donald D. Automatic cat litter device and method. 5,662,066, Cl. 119-163.000.
Rellinger, Michael; Gilbert, Richard R.; Green, Sara E.; and Jepsen, John, to Quartet Manufacturing Company. Portable easel having a hollow body. 5,662,303, Cl. 248-448.000.
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Ryan, Michael C. Fluid delivery control nozzle. 5,663,895, Cl. 364-510.000.
Ryndak, James D. Multitiered pillow construction. 5,661,862, Cl. 5-636.000.
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Saita, Hirofumi; Suzuki, Kenji; Tahara, Shuji; Terashita, Takaaki; and Sunagawa, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic printer and film scanner having an LED light source. 5,663,782, Cl. 355-37.000.
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Saito, Hisatoshi; Yano, Masamitsu; and Takane, Satoshi, to Kewpie Kabushiki Kaisha. Method and apparatus for continuously forming bags. 5,662,575, Cl. 493-190.000.
Saito, Shigeru, to NEC Corporation. Method for forming a symmetrical image. 5,664,081, Cl. 345-433.000.
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Sakamoto, Masaru, to Canon Kabushiki Kaisha. Process for producing semiconductor device with wire for three conductive layers. 5,663,094, Cl. 438-609.000.
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Nagasampagi, Bhimsen Annacharya; Rojatkar, Supada Rambhau; Kulkarni, Mandakini Moreshwar; Joshi, Vimal Shantaram; Bhat, Vidya Sudhir; Sane, Mukund Gangadhar; and Ayyangar, Nagaraj Ramanuj, 5,663,374, Cl. 549-381.000.
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Sauerberg, Per: *See*—
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Saxton, Robert J.: *See—*
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Say, Samuel L., to SSCOR, Inc. Aspiration apparatus. 5,662,627, Cl. 604-319.000.

Scarano, Robert V. Contaminant resistant straight line motion shower pipe assembly. 5,662,270, Cl. 239-264.000.

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Scarbrough, Kerri Denise: *See—*
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Schader, Kevin W.; Jones, Ronald L.; Overstreet, James L.; Scott, Danny E.; Lu, Mou-Chih; and Massey, Alan J., to Baker Hughes Inc. Hardfacing composition for earth-boring bits. 5,663,512, Cl. 75-239.000.

Schaefer, James A., to Midmark Corporation. Shoulder arthoscopy attachment. 5,661,859, Cl. 5-621.000.

Schaefer, Michael J., to Schaefsco, Inc. Neck exercise device. 5,662,554, Cl. 482-10.000.

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Schaldach, Kurt D., to Automation Enhancements Un Limited. Pallet couple and decouple clamping apparatus and method for pallet coupling and decoupling. 5,662,316, Cl. 269-25.000.

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Schaum, Frank; Becker, Willi; and Rautert, Jürgen, to Heidelberger Druckmaschinen Aktiengesellschaft. Control device for a numbering and imprinting unit of a rotary printing press. 5,662,038, Cl. 101-76.000.

Scheckel, Bruno: *See—*
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Scheele, George; and Fukuoka, Shin-Ichi, to AlphaGene, Inc. Isolated DNA encoding human GP2. 5,663,315, Cl. 536-23.500.

Schegerin, Robert. Optimal pneumatic pressure regulator with electronic compensation. 5,662,137, Cl. 137-487.500.

Scheiter, Thomas; Naeher, Ulrich; and Hierold, Christofer, to Siemens Aktiengesellschaft. Method for the selective removal of silicon dioxide. 5,662,772, Cl. 216-2.000.

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Scheper, Robert M.: *See—*
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Schepisi, Natale, to Vital Hair Tools, LLC. Hand held blow dryer having airflow control means. 5,661,910, Cl. 34-97.000.

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Ekerdt, Roland; Raptis, Georg; and Pauls, Alfred, 5,663,203, Cl. 514-572.000.
Steinmeyer, Andreas; Kirsch, Gerald; Neef, Günter; Schwarz, Katica; Thieroff-Ekerdt, Rüth; Wiesinger, Hêrbert; and Haberey, Martin, 5,663,157, Cl. 514-167.000.

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Towson, James C.; and Vashi, Dhiru B., 5,663,361, Cl. 548-233.000.

Scherkenbeck, Jürgen; Jeschke, Peter; Plant, Andrew; Harder, Achim; and Mencke, Norbert, to Bayer Aktiengesellschaft. Use of cyclic depsipeptides having 12 ring atoms for combating endoparasites, new cyclic despipeptides having 12 ring atoms, and processes for their preparation. 5,663,140, Cl. 514-11.000.

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Voss, Theodore N.; and Kirk, Karl D., III, 5,662,679, Cl. 606-204.000.
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Andrenacci, Alfredo; Romano, Michael A.; and Oliver, John H., 5,662,974, Cl. 428-36.900.
Shaw, Philip C., Jr.; and Stein, Paul Charles, to Littelfuse, Inc. PTC electrical device having fuse link in series and metallized ceramic electrodes. 5,663,702, Cl. 337-183.000.
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Clayton, William, Jr.; and Shchedrin, Dmitry, 5,663,494, Cl. 73-117.000.
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Liew, Ronnie Sze-Heng; Morris, Edward Lee, Jr.; and Sheehan, Philip William, 5,662,855, Cl. 264-258.000.
Shelburne, Charles E.: *See*—
Rozzi, Sharon M.; Mitra, Sumita B.; Kedrowski, Brant Lawrence; and Shelburne, Charles E., 5,662,887, Cl. 424-49.000.
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Halpert, David E.; Ambrosi, Mario; Ames, Paul; Plsek, Vladimir; Roth, Mark; and Sheldon, James, 5,664,180, Cl. 395-613.000.
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Kemp, Richard Alan, 5,663,385, Cl. 549-536.000.
Potter, Michael Wayne; Malven, William Charles; and Veith, Cary Alan, 5,663,250, Cl. 526-178.000.
Shen, Tien H., to Kaiser Aluminum & Chemical Corporation. Method of manufacturing aluminum articles having improved bake hardenability. 5,662,750, Cl. 148-690.000.
Shepard, Joseph Francis: *See*—
Hsu, Louis Lu-Chen; Saccamango, Mary Joseph; and Shepard, Joseph Francis, 5,663,578, Cl. 257-66.000.
Sherman, Michael M., to Oldham Saw Co., Inc. Cutter bit. 5,662,435, Cl. 407-31.000.
Shesol, Barry F.: *See*—
Reich, Marshall P.; and Shesol, Barry F., 5,662,599, Cl. 602-79.000.
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Imamura, Isao; Shimomura, Akihiko; and Shiba, Shoji, 5,663,752, Cl. 347-65.000.
Shibahara, Masanori; Ueda, Kunihiro; and Nakayama, Masatoshi, to TDK Corporation. Process for forming diamond-like thin film. 5,662,877, Cl. 423-446.000.
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Shibahara, Seiji: *See*—
Atsumi, Kunio; Umemura, Eijiro; Kano, Yuko; Shiokawa, Sohjiro; Kudo, Toshiaki; Tsushima, Masaki; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,663,162, Cl. 514-202.000.
Shiban, Samir S., to Innovative Engineering Solutions, Inc. Air and gas mixing apparatus with removable baffle plates. 5,662,722, Cl. 55-413.000.
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Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,663,697, Cl. 333-195.000.
Shibata, Tohru: *See*—
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, 5,663,310, Cl. 536-69.000.
Shibayama, Atsushi, to Nikon Corporation. Inner focus zoom lens. 5,663,835, Cl. 359-684.000.
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Bivens, Donald Bernard; Fernandez, Richard Edward; Shiflett, Mark Brandon; and Chisolm-Carter, Tuneen, 5,662,825, Cl. 252-67.000.
Shikama, Shinsuke; Kida, Hiroshi; and Daijogo, Akira, to Mitsubishi Denki Kabushiki Kaisha. Projection display system. 5,662,400, Cl. 353-31.000.
Shikata, Shin-ichi: *See*—
Shiomi, Hiromu; Nakahata, Hideaki; Nishibayashi, Yoshiki; and Shikata, Shin-ichi, 5,663,595, Cl. 257-712.000.
Shim, Kyuseok: *See*—
Agrawal, Rakesh; Lin, King-Ip; Sawhney, Harpreet Singh; and Shim, Kyuseok, 5,664,174, Cl. 395-606.000.
Shima, Yoshikazu: *See*—
Takemoto, Masaki; Shima, Yoshikazu; and Abe, Takafumi, 5,663,382, Cl. 549-508.000.
Shimada, Kazuhiko; Nakata, Yutaka; and Idemori, Kenjiro, to Daikin Industries, Ltd. Tubular laminate and process for producing the same. 5,662,972, Cl. 428-35.700.
Shimada, Takaaki: *See*—
Tanaka, Yoshikazu; Shimada, Takaaki; and Yoshimasa, Wataru, 5,662,639, Cl. 604-387.000.
Shimada, Takashi; Okumura, Toshio; and Hatakeyama, Toshiya, to Japan Pionics Co., Ltd. Process for cleaning harmful gas. 5,662,872, Cl. 423-236.000.
Shimada, Tomoyuki; Sasaki, Masaomi; and Tanaka, Chiaki, to Ricoh Company, Ltd. Electrophotographic photoconductor, carbonate compond for use in the same, and intermediate compound for producing the carbonate compound. 5,663,407, Cl. 558-270.000.
Shimakawa, Shinichi; Hamada, Shinji; Matsuda, Hiromu; Kakino, Manabu; and Ikoma, Munehisa, to Matsushita Electric Industrial Co., Ltd. Module battery of sealed alkaline storage battery. 5,663,008, Cl. 429-53.000.
Shimamoto, Shu: *See*—
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, 5,663,310, Cl. 536-69.000.
Shimamura, Hiroshi; and Mitani, Satoru, to Matsushita Electric Industrial Co., Ltd. Magnetoresistive sensor having a bias field applied at approximately 56°. 5,663,644, Cl. 324-252.000.
Shimamura, Kazunari: *See*—
Yasumaru, Shingo; Shimamura, Kazunari; and Takano, Nobuyuki, 5,662,523, Cl. 463-30.000.
Shimamura, Kunihiko; and Sato, Shunichi, to Velcro Industries B.V. Securing device. 5,662,305, Cl. 248-500.000.
Shimano, Inc.: *See*—
Tabe, Koshi, 5,662,197, Cl. 192-64.000.
Shimizu, Hideo; and Inoue, Jun, to Nidec Corporation. Spindle motor. 5,663,602, Cl. 310-67.00R.
Shimizu, Jeffrey A.; and Janssen, Peter Johannes Michiel, to Philips Electronics North America Corporation. Integrating lens array and image forming method for improved optical efficiency. 5,662,401, Cl. 353-38.000.
Shimizu, Kousaku, to NEC Corporation. Photoelectic conversion element with islands. 5,663,576, Cl. 257-59.000.
Shimizu, Mahito: *See*—
Ohmura, Hiroshi; Kanai, Masaharu; and Shimizu, Mahito, 5,664,235, Cl. 396-71.000.
Shimizu, Makoto; Takeuchi, Yoshio; Asai, Minoru; Kondo, Takeichi; Aramaki, Hiroshi; and Naito, Masanobu, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Combustion method and apparatus. 5,662,049, Cl. 110-245.000.
Shimizu, Nobukazu, to Kabushiki Kaisha Toshiba; and Kabushiki Kaisha Tec. Facsimile device having automatic detection of regular and manual scanning modes. 5,663,811, Cl. 358-473.000.
Shimizu, Norio: *See*—
Inoue, Masatsugu; Tsunokawa, Satoshi; Murai, Takashi; and Shimizu, Norio, 5,663,610, Cl. 313-461.000.
Shimizu, Taku: *See*—
Okazoe, Kiyoshi; Tatani, Atsushi; Shimizu, Taku; and Ukawa, Naohiko, 5,662,794, Cl. 210-151.000.
Shimoda, Kazuhiro; Murayama, Masahiko; Yamazaki, Hidekazu; Shibata, Tohru; Shimamoto, Shu; Takemoto, Hiroyuki; and Habu, Naoto, to Fuji Photo Film Co., Ltd.; and Daicel Chemical Industries, Ltd. Cellulose acetate solution and process for the preparation of the same. 5,663,310, Cl. 536-69.000.
Shimomura, Akihiko: *See*—
Imamura, Isao; Shimomura, Akihiko; and Shiba, Shoji, 5,663,752, Cl. 347-65.000.
Shimomura, Yoshiaki: *See*—
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Shimoyama, Toru: *See*—
Morikawa, Shinsuke; Okamoto, Hidekazu; Ohnishi, Keiichi; Shimoyama, Toru; Wada, Naoko; Sato, Yoshio; and Kurata, Hideyuki, 5,663,543, Cl. 204-157.600.
Shimura, Seiji: *See*—
Sugiya, Masashi; Watanabe, Tsutomu; and Shimura, Seiji, 5,663,419, Cl. 560-190.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Kawada, Nobuo; Nakajima, Ryoji; Shindo, Toshihiko; and Nagao, Takaaki, 5,663,865, Cl. 361-234.000.
Shin-Etsu Handotai Co., Ltd.: *See*—
Nakano, Masami; Uchiyama, Isao; Takamatsu, Hiroyuki; and Suzuki, Morie, 5,662,743, Cl. 134-3.000.
Shin-Kobe Electric Machinery Co.: *See*—
Ushida, Masayuki; Ogata, Masaru; Hachiya, Akihiro; Yamashita, Yukihiro; and Noda, Masayuki, 5,662,776, Cl. 162-156.000.
Shin, Ok-Keun: *See*—
Kim, Hyun-Ki; Shin, Ok-Keun; Chung, Ha-Jae; and Lee, Jin, 5,664,218, Cl. 395-821.000.
Shin, Seung-Kee, to SamSung Electronics Co., Ltd. PCMCIA connector having a protection cover. 5,662,482, Cl. 439-64.000.
Shindo, Toshihiko: *See*—
Kawada, Nobuo; Nakajima, Ryoji; Shindo, Toshihiko; and Nagao, Takaaki, 5,663,865, Cl. 361-234.000.
Shining Blick Enterprises Co., Ltd.: *See*—
Huang, Peter K. H., 5,662,409, Cl. 362-249.000.
Shinjo, Naoki; Nagasawa, Shigeru; Ikeda, Masayuki; Ueno, Haruhiko; Utsumi, Teruo; Kobayakawa, Kazushige; Dewa, Masami; Ishizaka, Kenichi; and Amada, Tadao, to Fujitsu Limited. Transfer processor including a plurality of failure display units wherein a transfer process is prohibited if failure is indicated in a failure display unit. 5,664,104, Cl. 395-200.540.
Shinmura, Satoru: *See*—
Okada, Takekazu; Shinmura, Satoru; Kanaya, Fumio; and Ichiguchi, Shinichiro, 5,663,698, Cl. 333-202.000.
Shinoda, Hosei; Ohtaguro, Masami; Iimuro, Shigeru; Funae, Akihiro; and Moriya, Shinobu, to Mitsui Toatsu Chemicals, Inc. Degradable adhesive film and degradable resin composition. 5,663,288, Cl. 528-354.000.
Shinwa Pharmaceutical Co., Ltd.: *See*—.
Kishida, Tsunataro, 5,662,900, Cl. 424-93.450.
Shinya, Seiji; Yokokouji, Osamu; Miyajima, Takashi; Koh, Hidemasa; and Machida, Katsutoshi, to Asahi Glass Company Ltd.; and Seimi Chemical Co., Ltd. Difluoroethylene compounds and liquid crystal compositions containing them. 5,663,463, Cl. 570-128.000.
Shio, Kiyomi: *See*—
Mizoguchi, Toshiaki; Ueshima, Yoshiyuki; Moroboshi, Takashi; and Shio, Kiyomi, 5,662,748, Cl. 148-332.000.
Shiokawa, Sohjiro: *See*—
Atsumi, Kunio; Umemura, Eijiro; Kano, Yuko; Shiokawa, Sohjiro; Kudo, Toshiaki; Tsushima, Masaki; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,663,162, Cl. 514-202.000.
Shiomi, Hiromu; Nakahata, Hideaki; Nishibayashi, Yoshiki; and Shikata, Shin-ichi, to Sumitomo Electric Industries, Ltd. Diamond heat sink comprising synthetic diamond film. 5,663,595, Cl. 257-712.000.
Shionogi & Co., Ltd.: *See*—
Ohtani, Mitsuaki; and Fuji, Masahiro, 5,663,405, Cl. 558-166.000.
Shiragaki, Tatsuya, to NEC Corporation. Optical network using multiplexed payload and OAM signals. 5,663,820, Cl. 359-128.000.
Shirahata, Kei: *See*—
Nakanishi, Yasuyuki; Oka, Koutarou; Shirahata, Kei; Itou, Shigehiro; and Fujiwara, Tatsunori, 5,663,850, Cl. 360-98.060.
Shirakawa, Naoki: *See*—
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Shirakawa, Shinsuke; Kanda, Kazunori; Yamada, Mitsuo; Aoki, Kei; Urano, Satoshi; and Tomita, Nobuaki, to Nippon Paint Co., Ltd. Compound containing an oxamic acid group, a process for producing the compound, and a resin composition containing the compound. 5,663,262, Cl. 526-312.000.

Shirley, Brian M.; Ma, Manny K. F.; and Roberts, Gordon, to Micron Technology, Inc. Memory device with regulated power supply control. 5,663,919, Cl. 365-226.000.

Shirley, Jay R.; and Owen, Harrold D., to Owen Oil Tools, Inc. Wave strip perforating system. 5,662,178, Cl. 175-4.530.

Shiroyama, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Starter magnet switch. 5,663,699, Cl. 335-126.000.

Shnell, James H. System for geothermal production of electricity. 5,661,977, Cl. 60-641.200.

Shoemaker, Dan: *See*—
Sorge, Joseph A.; and Shoemaker, Dan, 5,663,062, Cl. 435-91.100.

Shono, Keiji: *See*—
Tanaka, Tsutomu; Izumi, Haruhiko; Ikeya, Tomonori; and Shono, Keiji, 5,663,936, Cl. 369-13.000.

Shorey, Harry H.; and Gaston, Lyle K., to University of California, The Regents of the. Methods and compositions for repelling ants, wasps and termites with repellents. 5,662,914, Cl. 424-405.000.

Showa Denko K.K.: *See*—
Sasaki, Takaharu; Fujimoto, Masayuki; Miyanari, Takashige; and Nishino, Hiroshi, 5,662,780, Cl. 203-81.000.

Showalter, James Michael: *See*—
Bennett, Robert Bradley; Nugent, Robert Michael; and Showalter, James Michael, 5,664,186, Cl. 395-620.000.

Shpitz, Baruch: *See*—
Gallinger, Steven; Hozumi, Nobumichi; Roder, John C.; Sandhu, Jasbir S.; and Shpitz, Baruch, 5,663,481, Cl. 800-2.000.

Shuhei, Kageyama; Tadayoshi, Ebinuma; and Clem, Thomas, to A.T. Cross Company. Mechanical pencil. 5,662,424, Cl. 401-65.000.

Shulman, Victor, to Norandor Systems, Inc. Pointing device. 5,663,747, Cl. 345-161.000.

Shum, Peter K.: *See*—
Velissaropoulos, T. Dora; and Shum, Peter K., 5,664,181, Cl. 395-613.000.

Shum, Wilfred Po-sum; Saxton, Robert J.; and Zajacek, John G., to ARCO Chemical Technology, L.P. Asymetric epoxidation using a titanium-containing zeolite and a chiral hydroperoxide. 5,663,384, Cl. 549-529.000.

Shupak, Richard: *See*—
Davidson, Robert I.; Myhrvold, Nathan; Vogel, Keith Randel; Yuval, Gideon Andreas; Shupak, Richard; and Apperson, Norman Eugene, 5,664,191, Cl. 395-670.000.

Siadak, Anthony W.; and Rosok, Mae J., to Bristol-Myers Squibb Company. Monoclonal antibody compositions cross-reactive and cross-protective against *P. aeruginosa* serotypes. 5,662,905, Cl. 424-150.100.

Siddiqui, M. Arshad: *See*—
Mansour, Tarek; Jin, Haolun; Tsé , Allan H.L.; and Siddiqui, M. Arshad, 5,663,320, Cl. 536-27.110.

Sidey, Roger: *See*—
Bassett, Roger; Negus, Terence Ian; and Sidey, Roger, 5,662,015, Cl. 82-158.000.

Siebert, Lester: *See*—
Sprehe, Gregory S.; Siebert, Lester; and Towne, William, 5,662,576, Cl. 493-195.000.

Siebrecht, Manfred: *See*—
Hammer, Klaus-Dieter; Siebrecht, Manfred; and Krams, Theo, 5,662,971, Cl. 428-34.800.

Siedlecki, Charles S.: *See*—
Oppmann, Arthur L.; Oppmann, John F.; and Siedlecki, Charles S., 5,662,135, Cl. 137-1.000.

Siefker, Hartmuth: *See*—
Pommerenke, Martin; and Siefker, Hartmuth, 5,663,739, Cl. 345-1.000.

Siegel, Norman L.; Schwartz, Lewis I.; Kralovic, Raymond C.; Switka, Joseph J.; Saunders, Craig M.; Stanca, Nick E.; Dale, Gregory A.; and Plantz, Jeffrey S., to Steris Corporation. Two compartment cup for powdered sterilant reagent components. 5,662,866, Cl. 422-29.000.

Siegman, Craig S.: *See*—
Behan, Edgar G. V.; Finch, David P.; and Siegman, Craig S., 5,662,691, Cl. 607-32.000.

Siemens Aktiengesellchaft: *See*—
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Siemens Aktiengesellschaft: *See*—
Beyer, Stefan; Scheckel, Bruno; Veit, Werner; and Wilwert, Jean, 5,663,674, Cl. 327-540.000.
Gabriel, Christian, 5,661,968, Cl. 60-39.182.
Hauner, Franz; Müller, Manfred; and Tiefel, Günter, 5,663,500, Cl. 75-232.000.
Heid, Oliver, 5,662,112, Cl. 128-653.200.
Kastner, Wolfgang; Köhler, Wolfgang; and Wittchow, Eberhard, 5,662,070, Cl. 122-6.00A.
Kolbinger, Josef, 5,663,964, Cl. 371-21.200.
Kuth, Rainer; Knauth, Michael; Wirtz, Rainer; Henkelmann, Reiner; Moder, Rudolf; and Duerr, Wilhelm, 5,663,646, Cl. 324-318.000.
Peschke, Matthias L.; and Stengl, Reinhard J., 5,663,107, Cl. 438-692.000.
Scheiter, Thomas; Nacher, Ulrich; and Hierold, Christofer, 5,662,772, Cl. 216-2.000.
Stärker, Klaus; and Kammerl, August, 5,662,007, Cl. 74-606.00A.
Wille-Fier, Regina; and Cutler, John Wayne, 5,663,947, Cl. 370-360.000.

Siemens Automotive L.P.: *See*—
Cook, Charles R., Jr., 5,663,881, Cl. 701-104.000.

Siemens Automotive S.A.: *See*—
Aubourg, Alain Michel Jean; Le Quellec, Jean-Michel; and Raymond, Christophe, 5,662,085, Cl. 123-352.000.

Siemens Medical Systems, Inc: *See*—
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Silicon Graphics, Inc.: *See*—
Galles, Michael B.; and Deneroff, Martin M., 5,664,151, Cl. 711-145.000.
Mira, Ali, 5,662,163, Cl. 165-80.300.

Siljenberg, David W.: *See*—
Baumgartner, Steven J.; Philpott, Rick A.; and Siljenberg, David W., 5,663,689, Cl. 331-17.000.

Silverman, David Phillip: *See*—
Foladare, Mark Jeffrey; Goldman, Shelley B.; Silverman, David Phillip; and Weber, Roy Philip, 5,664,003, Cl. 455-459.000.

Silverman, Keith C.: *See*—
Cascales, Carmen; Lingham, Russell B.; Pelaez, Fernando; Polishook, Jon D.; Silverman, Keith C.; Singh, Sheo B.; and Zink, Deborah L., 5,663,193, Cl. 514-450.000.

Sim, Hyun Soo, to Hyundai Electronic Industries Co., Ltc. Method of erasing a flash memory device. 5,663,909, Cl. 365-185.330.

Simeone, Robert L.; Lippert, Robert D.; O'Dwyer, James B.; and Kania, Charles M., to PPG Industries, Inc. Powder coating of epoxy-functional acrylic copolymer and polycarboxylic acid. 5,663,240, Cl. 525-327.300.

Simmons, L. Kimball: *See*—
Bessette, Roger F.; Simmons, L. Kimball; Proulx, Gary S.; and Blow, Todd S., 5,662,340, Cl. 277-9.500.

Simon, Erich: *See*—
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Simpson, Sharon M.: *See*—
Grieve, Duncan McL. A.; Mooney, Justine A.; Bottomley, William E.; Stibbard, John H. A.; Mott, Andrew W.; Naime, Robert J. D.; Bays, David C.; Poon, Stephen S. C.; Kenney, Raymond J.; Eian, Gilbert L.; Ishida, Takuzo; Lynch, Doreen C.; Mader, Roger A.; Simpson, Sharon M.; and Vogel, Kim M., 5,663,042, Cl. 430-619.000.

Sinda, Edmund A.; Varney, Mark D.; and Lozo, Thomas G., to Astro-Valcour, Incorporated. Cushioned macerated paper dispatch package. 5,662,420, Cl. 383-205.000.

Singh, Alok, to United States of America, Navy. Liposomes containing polymerized lipids for non-covalent immobilization of proteins and enzymes. 5,663,387, Cl. 554-80.000.

Singh, Rajiv Ratna: *See*—
Pham, Hang Thanh; Pratt, Robert; Redmon, Charles Lewis; Thompson, John James; Van Der Puy, Michael; Singh, Rajiv Ratna; Hague, William James; Kieta, Harold John; Luly, Matthew Hermes; and McKown, Jeffrey Warren, 5,663,474, Cl. 585-721.000.

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Cascales, Carmen; Lingham, Russell B.; Pelaez, Fernando; Polishook, Jon D.; Silverman, Keith C.; Singh, Sheo B.; and Zink, Deborah L., 5,663,193, Cl. 514-450.000.

Sinofsky, Steven J., to Microsoft Corporation. Method and system for organizing internal structure of a file. 5,664,178, Cl. 395-611.000.

Sinskey, Anthony J.: *See*—
Peoples, Oliver P.; and Sinskey, Anthony J., 5,663,063, Cl. 435-135.000.

Siochi, Ramon Alfredo Carvalho, to Systems Medical Systems, Inc. Optimization of an intensity modulated field. 5,663,999, Cl. 378-65.000.

Sircom, Richard C. Automatic needle guard tip protection. 5,662,610, Cl. 604-110.000.

Siska Diagnostics, Inc.: *See*—
Ghosh, Soumitra Shanker; and Fahy, Eoin D., 5,663,242, Cl. 525-329.400.

Sisko, Joseph: *See*—
Sheldrake, Peter William; Gallagher, Timothy Francis; and Sisko, Joseph, 5,663,334, Cl. 544-122.000.

Sites, Michael J.: *See*—
Monte, Paul A.; Wiedeman, Robert A.; and Sites, Michael J., 5,664,006, Cl. 455-405.000.

Sizer, Theodore, II, to Lucent Technologies Inc. Digital data encoding in video signals using data modulated carrier signals at non-peaks in video spectra. 5,663,766, Cl. 348-473.000.

Sjoberg, Roy H., to Chrysler Corporation. Adjustable and removable trimline inserts for a molding tool. 5,662,948, Cl. 425-195.000.

Skinner, Russell A., Sr., to U S West, Inc. Method and apparatus for providing power to a coaxial cable network. 5,664,002, Cl. 379-56.200.

Skubick, Daniel Lewis. System for diagnosing musculoskeletal disorders. 5,662,118, Cl. 128-733.000.

Slaby, Jiri, to Motorola, Inc. Mounting for fluorescent lamp ballasts. 5,662,234, Cl. 220-4.210.

Slack, William E.; Madaj, Edmund J.; and Steppan, David D., to Bayer Corporation. Allophanate-modified diphenylmethane diisocyanates and processes for their production and use. 5,663,272, Cl. 528-69.000.

Slatkin, Andrew Brett: *See*—
Grundfest, Warren Scott; Burdick, Joel W., IV; and Slatkin, Andrew Brett, 5,662,587, Cl. 600-114.000.

Slemker, Tracy C., to Materials Engineering and Development, Inc. Modular interface connector for a prosthetic limb. 5,662,715, Cl. 623-36.000.

Slepian, Marvin J., to Endoluminal Therapeutics, Inc. Method and apparatus for treatment of focal disease in hollow tubular organs and other tissue lumens. 5,662,609, Cl. 604-101.000.

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Welte, Karl; Platzer, Erich; Gabrilove, Janice L.; Mertelsmann, Roland; and Moore, Malcolm A. S., 5,662,895, Cl. 424-85.100.

Slotten, John A. Pressure roller. 5,662,574, Cl. 492-56.000.

Smale, Randall D., to Dura Automotive Services. Manual shifter and ignition interlock. 5,662,001, Cl. 74-483.00R.

Smith, Allen P.: *See*—
Bunyea, Roderick F.; Judge, Alfred H.; Karasa, Alvydas P.; Miller, Philip T.; Smith, Allen P.; and Wheeler, Thomas J., 5,663,011, Cl. 429-97.000.

Smith & Nephew Dyonics Inc.: *See*—
Beiser, David G.; Woolfson, Steven B.; and Krause, Kenneth W., 5,662,611, Cl. 604-118.000.

Smith & Nephew plc: *See*—
Rhodes, Tanya, 5,662,924, Cl. 424-445.000.

Smith, Bruce M.: *See*—
Roossien, Charles P.; Pugh, David C.; Groendal, Dale M.; Massey, James E.; Scheper, Robert M.; Nagel, Duane F.; Smith, Bruce M.; Smith, Douglas A.; and Scholten, Brian L., 5,662,381, Cl. 297-301.100.

Smith, Colin William: *See*—
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Siochi, Ramon Alfredo Carvalho, 5,663,999, Cl. 378-65.000.
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Hada, Kohji; and Syudou, Tadashi, 5,663,801, Cl. 358-299.000.
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Chiang, Mei-Ling, 5,662,288, Cl. 242-596.800.

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Lee, Jian-Hsing, 5,663,082, Cl. 438-234.000.
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Katoh, Akira; Kitagawa, Hiroshi; and Takahashi, Jun, 5,661,972, Cl. 60-276.000.

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Takahashi, Tsukasa; Kawabata, Tatsuya; Okuno, Masaaki; Emoto, Yasuhisa; Kiyooka, Yasushi; and Ueda, Kenji, to Nippon Shokubai Co., Ltd. Catalyst for production of pyromellitic anhydride and method for production of pyromellitic anhydride. 5,663,114, Cl. 502-347.000.

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Takane, Satoshi: *See—*
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Takano, Naoyuki: *See—*
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Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, to Yozan, Inc.; and Sharp Corporation. Data processing system. 5,664,069, Cl. 395-211.000.

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Takayama, Isamu; Yamamoto, Satoshi; and Kizaki, Masanori, to Nippon Steel Corporation. Integral engine valves made from titanium alloy bars of specified microstructure. 5,662,745, Cl. 148-237.000.

Takayama, Ryoichi: *See—*
Tomozawa, Atsushi; Fujii, Eiji; Torii, Hideo; Hattori, Masumi; Fujii, Satoru; and Takayama, Ryoichi, 5,663,089, Cl. 427-576.000.

Takayama, Satoshi: *See—*
Naito, Katsuyuki; Sugiuchi, Masami; Takayama, Satoshi; Miyamoto, Hirohisa; Nishizawa, Hideyuki; Fujioka, Sawako; Watanabe, Akiko; and Nomaki, Tatsuo, 5,663,115, Cl. 503-201.000.

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Takeda, Keiso: *See—*
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Takemoto, Hiroyuki: *See—*
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Ueda, Yutaka; Yamashita, Hiroshi; and Takemura, Koji, 5,663,039, Cl. 430-465.000.

Takemura, Yasuhiko: *See—*
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Takenouchi, Akira: *See—*
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Takeuchi, Kousuke: *See—*
Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,663,697, Cl. 333-195.000.

Takeuchi, Munetaka; Namiki, Takefumi; Nagano, Kouzo; Fukuda, Ikuo; and Hayashi, Hiromi, to Fujitsu Limited. Graphic display apparatus. 5,664,083, Cl. 345-437.000.

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Furuta, Akihiro; Satoh, Kazue; Takewa, Hiroyuki; Iwasa, Mikio; Mizone, Shinya; and Sakai, Kuniaki, 5,664,024, Cl. 381-199.000.

Taki, Yukio; and Suzuki, Hiroyuki, to Okuma Corporation. Tool clamping mechanism. 5,662,442, Cl. 409-233.000.

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Talukdar, Kushal Kanti: *See—*
Capell, William Jack, Sr.; Zabounidis, Christos; and Talukdar, Kushal Kanti, 5,663,930, Cl. 367-119.000.

Tam, Chun-Wah; and Canna, John S., to Fisher-Price, Inc. Folding seat back for stroller. 5,662,380, Cl. 297-354.120.

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Tamaki, Yoshiyuki: *See—*
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Tamba, Akihiro: *See—*
Kaminaga, Yasuo; Nishio, Yoji; Tamba, Akihiro; Kobayashi, Yutaka; and Minami, Masataka, 5,663,659, Cl. 326-17.000.

Tambo, Fumiaki; Daimon, Katsumi; Sakaguchi, Yasuo; and Yamasaki, Kazuo, to Fuji Xerox Co., Ltd. Hydroxygallium phthalocyanine crystal, process for producing the same, and electrophotographic photoreceptor containing the same. 5,663,327, Cl. 540-139.000.

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Kobayashi, Yasumi; Matsui, Kuniyuki; Hirao, Yasuhiro; Takeuchi, Kousuke; Kayaki, Hiroshi; Takahashi, Yusuke; Tanaka, Toshiharu; Kiyose, Isao; and Shibata, Kenichi, 5,663,697, Cl. 333-195.000.

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Tanaka, Tsutomu; Izumi, Haruhiko; Ikeya, Tomonori; and Shono, Keiji, to Fujitsu Limited. Magneto-optic recording medium suited for mark edge recording system and having magnetic layer made of composition modulated material. 5,663,936, Cl. 369-13.000.

Tanaka, Yoshiaki; Yanagiya, Tomoyuki; Matsumoto, Fumiaki; Fukutomi, Masao; Asano, Toshihisa; Komori, Kazunori; and Maeda, Hiroshi, to Sumitomo Heavy Industries, Ltd.; and National Research Institute for Metals. Oxide superconductive wire and process for manufacturing the same. 5,663,528, Cl. 174-125.100.

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Tani, Masayuki; Yamaashi, Kimiya; Tanikoshi, Koichiro; Tanifuji, Shinya; and Futakawa, Masayasu, to Hitachi, Ltd. Method and apparatus for defining procedures to be executed synchronously with an image reproduced from a recording medium. 5,664,087, Cl. 345-473.000.

Tanifuji, Shinya: *See—*
Tani, Masayuki; Yamaashi, Kimiya; Tanikoshi, Koichiro; Tanifuji, Shinya; and Futakawa, Masayasu, 5,664,087, Cl. 345-473.000.

Tanigawa, Takaho, to NEC Corporation. Method for fabricating capacitive element of semiconductor memory device. 5,663,085, Cl. 438-255.000.

Taniguchi, Takao: *See—*
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Tanikoshi, Koichiro: *See—*
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Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,664,234, Cl. 396-63.000.

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Tann, Chou-Hong: *See—*
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Tasson, Paul L.: *See—*
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Tateyama, Masanori: *See—*
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, 5,664,254, Cl. 396-612.000.

Tatsumi, Masayuki: *See—*
Sugimoto, Hiroyuki; Igarashi, Toshio; Nakatsuji, Yoshihiro; Tatsumi, Masayuki; Chikanari, Kenzou; and Funakoshi, Satoru, 5,663,210, Cl. 521-81.000.

Taub, Elizabeth Ashley: *See—*
Benjamin, Joyce Marie; Taub, Elizabeth Ashley; and Sageser, David Mark, 5,662,636, Cl. 604-385.200.

Taubitz, Bernd; Mettner, Michael; and Nguyen-Schaefer, Thanh-Hung, to Robert Bosch GmbH. Fuel injection device. 5,662,277, Cl. 239-585.400.

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Hori, Naomi; Oda, Takashi; Taya, Takako; and Mita, Katsumi, 5,663,261, Cl. 526-307.200.

Taylor, Alan, to Mincorp Ltd. Liquid extraction. 5,662,861, Cl. 266-170.000.

Taylor, Bradley, to NeXt Computer, Inc. Flexible distributed network database containing configuration information for a network divided into domains. 5,664,170, Cl. 395-200.500.

Taylor, Bruce F., to Qualitek Limited. System and method for the on-line measurement of key glue-line characteristics on corrugated board. 5,663,565, Cl. 250-339.110.

Taylor, Herbert Hudson; Peters, Joseph Edward, Jr.; and Chin, Danny, to David Sarnoff Research Center, Inc. Parallel processing computer containing a multiple instruction stream processing architecture. 5,664,214, Cl. 395-800.200.

Taylor, James: *See—*
Zvonar, John G.; and Taylor, James, 5,663,899, Cl. 364-557.000.

Taylor, James W.; and Salisbury, James R., to Eastman Chemical Company. Waterborne coating compositions. 5,663,266, Cl. 526-325.000.

Taylor, Jeffery: *See—*
Cretors, Charles D.; and Taylor, Jeffery, 5,662,024, Cl. 99-323.700.

Taylor, John E.: *See—*
Moreau, Jacques-Pierre; Kim, Sun Hyuk; and Taylor, John E., 5,663,295, Cl. 530-330.000.

TDK Corporation: *See—*
Shibahara, Masanori; Ueda, Kunihiro; and Nakayama, Masatoshi, 5,662,877, Cl. 423-446.000.
Yamasawa, Kazuhito; Oido, Atsushi; Nakata, Akio; and Uchida, Nobuya, 5,662,740, Cl. 117-11.000.

Tee-Lok Corporation: *See—*
Black, William H., Jr., 5,661,993, Cl. 72-325.000.

Teijgeler, Johannes: *See—*
Den Uyl, Hendrik; and Teijgeler, Johannes, 5,662,952, Cl. 425-556.000.

Teijin Chemicals, Ltd.: *See—*
Isshiki, Hideki; Manabe, Akiyoshi; Kitachi, Toshinori; Ikemura, Yoshifumi; Kutsuna, Katsuhiro; and Horie, Tatsumi, 5,663,277, Cl. 528-196.000.

Teijin Seiki Boston, Inc.: *See—*
Aubin, Joseph J.; Yamada, Yoshichika; and Komori, Etsuro, 5,662,008, Cl. 74-640.000.

Tektronix, Inc.: *See—*
Scheu, Friedrich; Anderson, Duwayne R.; Bucher, William K.; Reinhold, Steve U.; Twigg, Lorimer L.; and Marineau, Mark D., 5,664,033, Cl. 385-16.000.

Telefonaktiebolaget Lm Ericsson: *See—*
Ward, Torbjorn, 5,663,958, Cl. 370-347.000.

Telfer, Deborah Marsh: *See—*
Cirulli, Philip James; Heinlein, Philip David; James, Byron David; and Telfer, Deborah Marsh, 5,664,183, Cl. 395-614.000.

Telia AB: *See—*
Lyberg, Bertil, 5,664,050, Cl. 704-251.000.

Tender Corporation: *See—*
Grout, Kenneth M., 5,661,869, Cl. 15-209.100.

Teng, Min; Duong, Tien T.; and Chandraratna, Roshantha A., to Allergan. Substituted heteroarylamides having retinoid-like biological activity. 5,663,357, Cl. 546-323.000.

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Specht, Paul, 5,661,944, Cl. 52-656.800.

Teramae, Tomohiro: *See—*
Kakimizu, Akiko; Arai, Kenji; Kimura, Norio; and Teramae, Tomohiro, 5,663,436, Cl. 564-154.000.

Teramoto, Tougo: *See—*
Okada, Takashi; Ohmori, Shigeto; Nagata, Hideki; Honda, Tsutomu; Seigenji, Kiyoshi; Hamamura, Toshihiro; Teramoto, Tougo; Kato, Takashi; and Kubo, Hiroaki, 5,664,243, Cl. 396-246.000.

Terashita, Takaaki: *See—*
Saita, Hirofumi; Suzuki, Kenji; Tahara, Shuji; Terashita, Takaaki; and Sunagawa, Hiroshi, 5,663,782, Cl. 355-37.000.

Tercero, Concepcion Pedregal: *See—*
Audia, James E.; Baker, Stephen Richard; Carrera, Jesus Ezquerra; Peteira, Carlos Lamas; and Tercero, Concepcion Pedregal, 5,663,178, Cl. 514-284.000.

Term-Lok, Inc.: *See—*
Allen, John E.; and Hackedy, Johnny L., 5,662,502, Cl. 439-814.000.

Tervo, Paul A.: *See—*
Schwindt, Randy J.; Harwood, Warren K.; Tervo, Paul A.; Smith, Kenneth R.; and Warner, Richard H., 5,663,653, Cl. 324-754.000.

Tessera, Inc.: *See—*
Karavakis, Konstantine; Distefano, Thomas H.; Smith, John W., Jr.; and Mitchell, Craig, 5,663,106, Cl. 29-841.000.

Teulon, Jean-Marie: *See—*
Bru-Magniez, Nicole; Launay, Michèle; and Teulon, Jean-Marie, 5,663,181, Cl. 514-300.000.

Teumac, Fred N.; Rassouli, Mahmood R.; Rusnock, Janine M.; and Irwin, Anthony, to Zapata Technologies, Inc. Flavor protectant closure liner compositions. 5,663,223, Cl. 524-109.000.

Teutsch, Jean-Georges; Bonnet, Alain; Aszodi, Jozsef; Costerousse, Germain; and d'Ambrieres, Solange Gouin, to Roussel Uclaf. 1-dethia-2-thiacephalosporanic acids. 5,663,164, Cl. 514-210.000.

Texas Instruments Incorporated: *See—*
Farris, Jeffrey S.; and Kalthoff, Stephen G., 5,663,749, Cl. 345-190.000.
Leyrer, Thomas A.; and Sabin, Steven D., 5,664,230, Cl. 395-886.000.
McLellan, Robert N.; Chiu, Anthony M.; Hundt, Paul J.; and Dennis, William K., 5,661,900, Cl. 29-827.000.
Nelson, Stephen R.; Carter, Buford H.; Davis, Dennis D.; Lahutsky, Tammy J.; Barnett, John; and Haas, Glen R., Jr., 5,663,597, Cl. 257-734.000.
Sua, Goh Jing; and Yu, Chan Min, 5,663,105, Cl. 438-109.000.

Textor, Marcus; Fuchs, Roman; Gillich, Volkmar; and Simon, Erich, to Alusuisse Technology & Management Ltd. Aluminum surfaces. 5,663,001, Cl. 428-469.000.

Thakur, Randhir P. S.: *See—*
Dennison, Charles H.; and Thakur, Randhir P. S., 5,663,090, Cl. 438-398.000.

Thaler, Herbert A.: *See—*
Hori, Koichiro; and Thaler, Herbert A., 5,662,584, Cl. 600-103.000.

THAT Corporation: *See—*
Hebert, Gary K., 5,663,684, Cl. 330-289.000.

Thayer, Bryan Keith; and Scarbrough, Kerri Denise. Informational media mailer with reply card. 5,662,222, Cl. 206-387.100.

Theodoras, James T., II; and Xydis, Thomas G., to IMRA America, Inc. Method and apparatus for time invariant pulse detection. 5,663,731, Cl. 342-70.000.

TheraTech, Inc.: *See—*
Ebert, Charles D.; Heiber, Werner; Good, William R.; and Venkateshwaran, Srinivasan, 5,662,925, Cl. 424-447.000.

Thesee, Eddy: *See—*
Pavone, Didier; Froment, Jacques; and Thesee, Eddy, 5,663,929, Cl. 367-82.000.

Theseus Research, Inc.: *See—*
Fant, Karl M.; and Brandt, Scott A., 5,664,212, Cl. 395-141.000.
Sobelman, Gerald; and Fant, Karl, 5,664,211, Cl. 395-141.000.

Thibeault, Jack C.: *See—*
Emmons, William David; Vogel, Martin; Kostansek, Edward C.; Thibeault, Jack C.; Sperry, Peter R.; and Chung, Chao-Jen, 5,663,224, Cl. 524-188.000.

Thielman, Leroy O.: *See—*
Killpatrick, Joseph E.; Broberg, Theodore W.; Callaghan, Timothy J.; Thielman, Leroy O.; and Thorland, Rodney H., 5,663,792, Cl. 356-350.000.

Thieriot, Didier: *See—*
Baufreton, Laurent; Barjolle, Henri; and Thieriot, Didier, 5,662,454, Cl. 414-798.200.

Thieroff-Ekerdt, Rüth: *See—*
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Thiruvengadam, T. K.: *See—*
Fu, Xiaoyong; Thiruvengadam, T. K.; and Tann, Chou-Hong, 5,663,325, Cl. 540-89.000.

Tholander, Lars: *See—*
Jacobsson, Kurt Arne Gunnar; Tholander, Lars; and Josefsson, Paer, 5,662,148, Cl. 139-450.000.

Thomas, Charles L.; and Wang, Zetian, to University of Utah Research Foundation. Rapid prototyping method. 5,663,883, Cl. 364-468.260.

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Prockop, Darwin J.; Ala-Kokko, Leena; Khillan, Jaspal S.; Vandenberg, Philipp; Kontusaari, Sirpa; Helminen, Heikki; Olsen, Anne; and Sokolov, Boris, 5,663,482, Cl. 800-2.000.

Thomas, John E., to Tippins Incorporated. Offset high-pressure water descaling system. 5,661,884, Cl. 29-81.080.

Thomas, Russell H.: *See—*
Drzewiecki, Tadeusz M.; Niemczuk, John B.; Fuller, Christopher R.; Thomas, Russell H.; and Burdisso, Ricardo A., 5,662,136, Cl. 137-14.000.

Thomas, Terry L.; Reddy, Avutu S.; Nuccio, Michael; and Freyssinet, Georges L., to Rhone Poulenc Agrochimie. Cyanobacterial Δ6-desaturase. 5,663,068, Cl. 435-220.000.

Thomas, William R.; Pfeffer, Henry A.; Guiliano, Basil A.; Sewall, Christopher J.; and Tomko, Stephen, to FMC Corporation. Process for making gel microbeads. 5,662,840, Cl. 264-12.000.

Thomassen International B.V.: *See—*
Mirzoev, Timur B.; Galejev, Ahmet M.; Maksimov, Valeriy A.; Soskov, Sergey N.; Ishmuratov, Rustam R.; and Abaidullin, Alfered I., 5,662,463, Cl. 418-73.000.

Thome, Gary W.: *See—*
Ayash, Basem Abu; and Thome, Gary W., 5,664,225, Cl. 395-869.000.

Thompson, Andrew S.; Corley, Edward G.; and Huntington, Martha, to Merck & Co., Inc. Synthesis of cyclopropylacetylene. 5,663,467, Cl. 585-359.000.

Thompson, David L.: *See—*
Elsberry, Dennis D.; Mehra, Rahul; Otten, Lynn M.; Rise, Mark T.; and Thompson, David L., 5,662,689, Cl. 607-5.000.

Thompson, Hugh Ansley: *See—*
Doak, Nancy Beck; Johnson, Theresa Louise; Thompson, Hugh Ansley; and Olsen, Robb Eric, 5,662,633, Cl. 604-378.000.

Thompson, John James: *See—*
Pham, Hang Thanh; Pratt, Robert; Redmon, Charles Lewis; Thompson, John James; Van Der Puy, Michael; Singh, Rajiv Ratna; Hague, William James; Kieta, Harold John; Luly, Matthew Hermes; and McKown, Jeffrey Warren, 5,663,474, Cl. 585-721.000.

Thompson, Ronald J., to Incont, Inc. Bone anchor, insertion tool and surgical kit employing same. 5,662,654, Cl. 606-72.000.

Thomsen, Joseph A.: *See—*
Steele, James C.; Hicok, Gary D.; Evoy, David R.; Walker, Gary A.; Thomsen, Joseph A.; and Goff, Lonnie C., 5,664,213, Cl. 395-837.000.

Thomson Consumer Electronics, Inc.: *See—*
Rumreich, Mark Francis; and Gyurek, John William, 5,663,767, Cl. 348-537.000.

Thomson-CSF: *See—*
Frapin, Pascal; and Lacroix, Michel, 5,663,817, Cl. 349-5.000.

Thomson Multimedia S.A.: *See—*
Delmas, Christian; Dell'Ova, Francis; and Paillardet, Frederic, 5,663,688, Cl. 331-14.000.

Thorland, Rodney H.: *See—*
Killpatrick, Joseph E.; Broberg, Theodore W.; Callaghan, Timothy J.; Thielman, Leroy O.; and Thorland, Rodney H., 5,663,792, Cl. 356-350.000.

Thornton, Richard T.: *See—*
Bradshaw, Anthony J.; Thornton, Richard T.; and Snyder, Wayne W., 5,662,580, Cl. 600-3.000.

Thungstrom, Eric A.; and Burgmayer, Paul R., to BetzDearborn Inc. Methods and apparatus for monitoring water process equipment. 5,663,489, Cl. 73-40.700.

Tianjin University: *See—*
Zhang, Minhua; Liu, Zongzhang; Yu, Shenbo; Li, Chuanzhao; and Qian, Shenghua, 5,663,456, Cl. 568-724.000.

Tidball, Richard: *See—*
Groten, Barney; Cader, Tahir; and Tidball, Richard, 5,661,983, Cl. 62-271.000.

Tiefel, Günter: *See—*
Hauner, Franz; Müller, Manfred; and Tiefel, Günter, 5,663,500, Cl. 75-232.000.

Tien, Jonathan, to SpaceLabs Medical, Inc. System and method for the extractment of physiological signals. 5,662,105, Cl. 128-633.000.

Till, Volker, to GEA Till GmbH & Co. Kegging facility control process and apparatus. 5,662,226, Cl. 209-2.000.

Tillman, Menahem; Topaz, Daphne; and Topaz, Avraham, to T. Top (1994) Ltd. Massaging appliance and cream dispenser unit therefor. 5,662,593, Cl. 601-159.000.

Timex Corporation: *See—*
Bayani, Ralzon J., 5,663,871, Cl. 361-784.000.

Timken Company, The: *See—*
Harbottle, William E.; and Joki, Mark A., 5,662,445, Cl. 411-433.000.

Tiorco, Inc.: *See—*
Smith, Julie E., 5,662,168, Cl. 166-295.000.

Tippins Incorporated: *See—*
Thomas, John E., 5,661,884, Cl. 29-81.080.

Tippmann, Eugene R. Method for steam cooking a meat product. 5,662,959, Cl. 426-641.000.

Tirumalai, Partha P., to Sun Microsystems, Inc. Method and apparatus for automatic selection of the load latency to be used in modulo scheduling in an optimizing compiler. 5,664,193, Cl. 395-705.000.

Tissot, Kevin G.: *See—*
Tobia, Ronald L.; Tissot, Kevin G.; Hendrickson, Carl H.; and Somerson, Steven K., 5,662,099, Cl. 128-205.150.

Tittle, James E.: *See—*
Chesher, Stephen P.; Tittle, James E.; and Patchel, Kenneth A., 5,662,595, Cl. 602-20.000.

Titz, Felix; and Frischholz, Gerald, to BHS Corrugated Maschinen- und Anlagenbau GmbH. Heating unit for a corrugated-board manufacturing plant. 5,662,765, Cl. 156-470.000.

TLC Suspension: *See—*
Lund, Mark A., 5,662,356, Cl. 280-772.000.

TOA Rikagaku Co., Ltd.: *See—*
Yamamura, Takeyuki; Mizuguchi, Takashi; Kobayashi, Nobushige; and Koike, Kazumi, 5,664,244, Cl. 396-296.000.

Tobey, James F., Jr.; McGee, J. Stanley; Cobb, Charles W.; and Cortner, William, to Loveland Industries, Inc.; George A. Jeffreys & Co.; and Creative Research Laboratories, Inc. Enzymatic grain conditioner and methods of using it. 5,662,901, Cl. 424-94.200.

Tobia, Ronald L.; Tissot, Kevin G.; Hendrickson, Carl H.; and Somerson, Steven K., to Ohmeda Inc. Detection of bellows collapsed condition in medical ventilator. 5,662,099, Cl. 128-205.150.

Tobin, Joshua M. Silicone occlusive dressing for penetrating thoracic trauma. 5,662,598, Cl. 602-41.000.

Toda, Atsushi: *See—*
Yamashita, Masayasu; and Toda, Atsushi, 5,663,613, Cl. 315-308.000.

Todo, Akira: *See—*
Takahashi, Mamoru; Ikeyama, Seiichi; Todo, Akira; and Tsutsui, Toshiyuki, 5,663,236, Cl. 525-240.000.

Todt, Michael Leslie; and Carbone, John William, to General Electric Company. Method for producing polyesters. 5,663,282, Cl. 528-274.000.

Toews, Robert J., to Commercial Welding Ltd. Folding apparatus for transporting particulate material. 5,662,210, Cl. 198-632.000.

Togashi, Kouji, to SMK Co., Ltd. Surface mount type coaxial connector connecting coaxial cable to substrate. 5,662,480, Cl. 439-63.000.

Tohoku Ricoh Co., Ltd.: *See—*
Mori, Tomiya; and Kobayashi, Kazuyoshi, 5,662,040, Cl. 101-128.210.

Tokai Kogyo Kabushiki Kaisha: *See—*
Yada, Yukihiko; and Ito, Tosikazu, 5,662,851, Cl. 264-167.000.

Tokai-Rika-Denki Seishkusho Kabushiki Kaisha: *See—*
Mizuno, Hiromitsu; Kawase, Shuichi; and Iwasaki, Yukio, 5,663,620, Cl. 318-283.000.

Tokuda, Harukuni: *See—*
Ueda, Shinichi; Tokuda, Harukuni; Hirai, Keiichi; and Hatanaka, Heihachi, 5,663,197, Cl. 514-468.000.

Tokura, Kunihiko; Uryu, Masaru; and Matsuura, Seiji, to Sony Corporation. Acoustic vibrational material from fiber-reinforced polybutadiene-modified epoxy resin. 5,663,220, Cl. 523-438.000.

Tokutake, Fusashige: *See—*
Kumura, Tatsuo; Tokutake, Fusashige; Urai, Akira; Honda, Junichi; and Ojima, Hideaki, 5,663,857, Cl. 360-126.000.

Tokyo Electric Power Co., Inc., The: *See—*
Ohashi, Takashi; Ichioka, Tatsumi; Ishihara, Masamichi; and Takagi, Toshiyuki, 5,663,863, Cl. 361-118.000.

Tokyo Electron Kabushiki Kaisha: *See—*
Okase, Wataru; Yagi, Yasushi; and Kawachi, Satoshi, 5,662,469, Cl. 432-6.000.

Tokyo Electron Limited: *See—*
Ohkura, Jun; Iida, Naruaki; Kudou, Hiroyuki; Tateyama, Masanori; and Sakamoto, Yasuhiro, 5,664,254, Cl. 396-612.000.

Tokyo Electron Tohoku Kabushiki Kaisha: *See—*
Okase, Wataru; Yagi, Yasushi; and Kawachi, Satoshi, 5,662,469, Cl. 432-6.000.

Tokyo Gas Company, Ltd.: *See—*
Yamaseki, Kenichi; Konishi, Yasuo; and Uchida, Hiroshi, 5,663,429, Cl. 562-519.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Tanitsu, Katsuya; Kawakami, Atsushi; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,662,961, Cl. 427-58.000.

Tokyo Rope Manufacturing Co. Ltd.: *See—*
Matsumaru, Kazuo, 5,661,966, Cl. 57-902.000.

Tolman, Richard L.; Karkas, John D.; Von Langen, Derek; and MacCoss, Malcolm, to Merck & Co. Inc. Prodrugs of herpes TK inhibitors. 5,663,175, Cl. 514-262.000.

Toma, Toshihiko: *See—*
Furukawa, Yutaka; Kotera, Mami; Kumai, Seisaku; Oharu, Kazuya; and Toma, Toshihiko, 5,663,399, Cl. 556-479.000.

Tomita, Nobuaki: *See—*
Shirakawa, Shinsuke; Kanda, Kazunori; Yamada, Mitsuo; Aoki, Kei; Urano, Satoshi; and Tomita, Nobuaki, 5,663,262, Cl. 526-312.000.

Tomita, Takashi, to Sony Corporation. Substrate for optical disc. 5,662,979, Cl. 428-64.100.

Tomiyama, Koichi: *See—*
Kasuya, Takashige; Suematsu, Hiroyuki; Tomiyama, Koichi; Yusa, Hiroshi; Kobori, Takakuni; and Katada, Masaichiro, 5,663,026, Cl. 430-106.000.

Tomka, Ivan, to Bio-Tec Biologische Naturverpackungen GmbH. Reinforced biodegradable polymer. 5,663,216, Cl. 523-128.000.

Tomko, Stephen: *See—*
Thomas, William R.; Pfeffer, Henry A.; Guiliano, Basil A.; Sewall, Christopher J.; and Tomko, Stephen, 5,662,840, Cl. 264-12.000.

Tomoegawa Paper Co., Ltd.: *See—*
Oka, Osamu; Hashimoto, Takeshi; Nishigaya, Takeshi; and Hariko, Tatsuya, 5,663,287, Cl. 528-350.000.

Tomono, Kunisaburo: *See—*
Marusawa, Hiroshi; Kawanami, Takashi; Kounoike, Takehiro; and Tomono, Kunisaburo, 5,662,754, Cl. 156-89.000.

Tomozawa, Atsushi; Fujii, Eiji; Torii, Hideo; Hattori, Masumi; Fujii, Satoru; and Takayama, Ryoichi, to Matsushita Electric Industrial Co., Ltd. Method for producing a laminated thin film capacitor. 5,663,089, Cl. 427-576.000.

Tomura, Shinji: *See—*
Horio, Masakazu; Suzuki, Kenzi; Tomura, Shinji; and Inukai, Keiichi, 5,662,726, Cl. 95-139.000.

Tonen Corporation: *See—*
Maki, Noboru; Yamaguchi, Kenjiro; Toyoshima, Ayumi; and Kohara, Michinori, 5,662,906, Cl. 424-184.100.

Tong, Michael K.: *See—*
Ganem, Bruce; Tong, Michael K.; and Papandreou, George, 5,663,355, Cl. 546-296.000.

Topaz, Avraham: *See—*
Tillman, Menahem; Topaz, Daphne; and Topaz, Avraham, 5,662,593, Cl. 601-159.000.

Topaz, Daphne: *See—*
Tillman, Menahem; Topaz, Daphne; and Topaz, Avraham, 5,662,593, Cl. 601-159.000.

Topp, Clarke; Compton, Bruce; and Wires, Keith, to Canada, Her Majesty the Queen in right of, as represented by Agriculture and Agri-Food Canada. Soil penetrometer. 5,663,649, Cl. 324-643.000.

Toray Industries, Inc.: *See*—
Homma, Kiyoshi; Nishimura, Akira; and Horibe, Ikuo, 5,662,146, Cl. 139-97.000.
Kominami, Kazuhiko; Nishimura, Tooru; Kobayashi, Kazuhiko; and Yamamoto, Shoji, 5,663,284, Cl. 528-310.000.
Torigoe, Shinji: *See*—
Hattori, Jiro; Torigoe, Shinji; Shibahara, Norihito; and Sawajiri, Osamu, 5,662,853, Cl. 264-219.000.
Torii, Hideo: *See*—
Tomozawa, Atsushi; Fujii, Eiji; Torii, Hideo; Hattori, Masumi; Fujii, Satoru; and Takayama, Ryoichi, 5,663,089, Cl. 427-576.000.
Tornier, Alain; and Kluger, Patrick, to Tornier S.A. External or internal fixator for repairing fractures or arthroplasties of the skeleton. 5,662,651, Cl. 606-60.000.
Tornier S.A.: *See*—
Tornier, Alain; and Kluger, Patrick, 5,662,651, Cl. 606-60.000.
Toro Company, The: *See*—
Zimmerman, James W.; Staylor, John L.; and McKenzie, Jeff R., 5,662,545, Cl. 475-344.000.
Toronto, Salvatore; and Novak, Paul, to NovaTor, L.L.C. Pedal mechanism for cycle and exercise equipment. 5,662,346, Cl. 280-252.000.
Toronto, Salvatore; and Novak, Paul, to NovaTor, L.L.C. Pedal mechanism for cycle and exercise equipment. 5,662,347, Cl. 280-252.000.
Torp, Hans; and Kristoffersen, Kjell, to Vingmed Sound A/S. Method for determining the velocity-time spectrum of blood flow. 5,662,115, Cl. 128-661.090.
Torre, Renato Della. Metal inking roll for use in flexographic printing. 5,662,573, Cl. 492-31.000.
Torres, Robert J.: *See*—
Fleming, Stephen S.; and Torres, Robert J., 5,664,210, Cl. 395-793.000.
Tortolani, David R.: *See*—
Starrett, John E., Jr.; Mansuri, Muzammil M.; Martin, John C.; Tortolani, David R.; and Bronson, Joanne J., 5,663,159, Cl. 514-181.000.
Toru, Takeda: *See*—
Masuoka, Dai; and Toru, Takeda, 5,663,846, Cl. 360-75.000.
Toshiba America MRI Inc.: *See*—
Kaufman, Leon; Carlson, Joseph W.; McCarten, Barry; Krasnor, Stephen; Lu, William K. M.; Arakawa, Mitsuaki; and Derby, Kevin A., 5,663,645, Cl. 324-318.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Iwamoto, Norihiro; and Takamura, Masayuki, 5,662,159, Cl. 164-457.000.
Noda, Sabrou, 5,662,859, Cl. 266-94.000.
Toshiba Machine Co., Ltd.: *See*—
Kusago, Toshihiko, 5,662,950, Cl. 425-367.000.
Tour, James M.; Scrivens, Walter A.; and Bedworth, Peter V., to University of South Carolina. Purification of fullerenes. 5,662,876, Cl. 423-445.00B.
Tovey, Peter James: *See*—
Cameron, Timothy Ian; Field, John Rodney; Glachan, Mark Stephen; and Tovey, Peter James, 5,662,805, Cl. 210-709.000.
Towne, William: *See*—
Sprehe, Gregory S.; Siebert, Lester; and Towne, William, 5,662,576, Cl. 493-195.000.
Towson, James C.; and Vashi, Dhiru B., to Schering Corporation. Process for preparing intermediates to florfenicol. 5,663,361, Cl. 548-233.000.
Toyo Chemical Co., Ltd.: *See*—
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Robinson, Gerald D., 5,663,075, Cl. 438-92.000.
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Olson, Jack R.; Stevenson, J. Mark; and Sotirin, Barbara J., 5,663,927, Cl. 367-4.000.
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United States Surgical Corporation: *See—*
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Shallman, Richard W., 5,662,663, Cl. 606-144.000.
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Katayama, Tatsuo; Nishikawa, Yoshihiro; Hayashi, Mayumi; Nakajima, Hiroshi; Ozaki, Masahiro; and Watanabe, Daiichi, 5,663,322, Cl. 536-26.220.
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Rochette-Egly, Cecille; Lutz, Yves; Saunders, Michael; Scheuer, Isabelle; Gaub, Marie-Pierre; and Chambon, Pierre, 5,663,303, Cl. 530-388.200.
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Carlsten, Bruce E., 5,663,971, Cl. 372-2.000.
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Payne, Stephen A.; and Hayden, Joseph S., 5,663,972, Cl. 372-18.000.
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Durant, Graham J.; and Khan, Amin M., 5,663,350, Cl. 546-185.000.
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Thomas, Charles L.; and Wang, Zetian, 5,663,883, Cl. 364-468.260.
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Burke, John M.; and Sargueil, Bruno, 5,663,064, Cl. 435-172.300.
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Tsuboniwa, Noriyuki; Urano, Satoshi; Tsuge, Otohiko; and Hatta, Taizo, 5,663,423, Cl. 560-340.000.
Urban, Manfred; and Dietz, Erwin, to Hoechst Aktiengesellschaft. Use of fatty acid taurides for the dispersion of polycyclic pigments. 5,662,739, Cl. 106-497.000.
Urbish, Glenn F.: *See—*
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USA Processing Inc.: *See—*
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Usa, Satoshi, to Yamaha Corporation. Apparatus and method for controlling performance dynamics and tempo in response to player's gesture. 5,663,514, Cl. 84-600.000.
Ushida, Masayuki; Ogata, Masaru; Hachiya, Akihiro; Yamashita, Yukihiro; and Noda, Masayuki, to Shin-Kobe Electric Machinery Co. Glass fiber non-woven fabric and a method of producing glass fiber non-woven fabric and a method of producing a laminate. 5,662,776, Cl. 162-156.000.
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Vainberg, Yuri Petrovich; Kaplina, Elli Nicoltevna; and Anosova, Ideya Grigorievna, to PharmecCompany. Oral Composition containing a DNA-sodium salt and methods of making and using the same. 5,662,889, Cl. 424-49.000.
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Laapotti, Jorma, 5,662,778, Cl. 162-360.200.
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Valyi, Emery I. Process for producing a container and closure assembly. 5,661,889, Cl. 29-416.000.
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Van Damme, Marc: *See—*
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van der Meij, Paulus F. C.; and Verbeek, Jan-Maarten, to Duphar International Research B.V. Process for the preparation of enantiomerically pure imidazolyl compounds. 5,663,343, Cl. 546-72.000.
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Vanderschaaf, Neil Ray, to International Business Machines Corporation. Circuitry and method for latching information. 5,663,669, Cl. 327-201.000.
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Van Dijk, Paul; Vega, Jose Luis; and Dickenson, Haydn Guy William, to Procter & Gamble Company, The. Process for making compact detergent compositions. 5,663,136, Cl. 510-444.000.
Vangipuram, Radesh: *See—*
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Van Woezik, Johannes T.M.; and Van Twist, Paulus H.F.M., to U.S. Philips Corporation. X-ray examination apparatus comprising an exposure control circuit. 5,664,000, Cl. 378-98.700.
Varco Shaffer, Inc.: *See—*
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Vasquez, Oscar. Bicycle side-suspension system. 5,662,559, Cl. 482-61.000.
Vataker, Synnøve, to Interlego AG. Constructional building set. 5,661,941, Cl. 52-604.000.
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Velissaropoulos, T. Dora; and Shum, Peter K., to International Business Machines Corporation. Computer program product and program storage device for a data transmission dictionary for encoding, storing, and retrieving hierarchical data processing information for a computer system. 5,664,181, Cl. 395-613.000.
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Vert, Michel; Coudane, Jean; Ustariz, Christine; and Schwach, Gregoire, to Centre National de la Recherche Scientifique (CNRS). Bioresorbable-polymer microspheres of hydroxy acid polymer free from surfactant, their preparation and their application as a drug. 5,662,938, Cl. 424-501.000.
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Veverka, Corey J. Aerodynamic crew shell fairing. 5,662,062, Cl. 114-361.000.
Victoria University of Manchester, The: *See—*
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Vinciarelli, Patrizio; and Prager, Jay, to VLT Corporation. Reverse energy transfer in zero-current switching power conversion. 5,663,635, Cl. 323-282.000.
Vinciarelli, Patrizio; Finnemore, Fred; Balog, John S.; and Johnson, Brant T., to VLT Corporation. Packaging electrical components. 5,663,869, Cl. 361-707.000.
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Virginia Tech Intellectual Properties, Inc.: *See—*
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Vivier, Barbara Jean: *See—*
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Ziarno, Witold A. Method of fund-raising with a keyless contribution and gift commitment management device. 5,663,547, Cl. 235-380.000.
Zidel, Andrew Todd: *See*—
Pearlman, Ted Louis; and Zidel, Andrew Todd, 5,663,703, Cl. 340-407.100.
Ziegelbauer, Karl: *See*—
Matzke, Michael; Militzer, Hans-Christian; Mittendorf, Joachim; Kunisch, Franz; Schmidt, Axel; Schönfeld, Wolfgang; and Ziegelbauer, Karl, 5,663,150, Cl. 514-18.000.
Zielke, Klaus: *See*—
Schäfer, Bernd; Zielke, Klaus; and Rehder, Günther, 5,662,652, Cl. 606-61.000.
Zietlow, Thomas C.: *See*—
D'Muhala, Thomas F.; and Zietlow, Thomas C., 5,663,135, Cl. 510-433.000.
Zimelman, Eric Mark. Shielded child seat and method. 5,662,379, Cl. 297-256.150.
Zimmerman, James W.; Staylor, John L.; and McKenzie, Jeff R., to Toro Company, The. Planetary gear drive assembly. 5,662,545, Cl. 475-344.000.
Zimmerman, Mary P.; and Smith, Robert E., to Prototek, Inc. Cysteine protease inhibitors containing heterocyclic leaving groups. 5,663,380, Cl. 549-477.000.
Zimmerman, Steven M.: *See*—
Jones, Gary W.; and Zimmerman, Steven M., 5,663,608, Cl. 313-309.000.
Zink, Bruno: *See*—
Huber, Erasmus; Klein, Christian; Josel, Hans-Peter; and Zink, Bruno, 5,662,911, Cl. 424-278.100.
Zink, Deborah L.: *See*—
Cascales, Carmen; Lingham, Russell B.; Pelaez, Fernando; Polishook, Jon D.; Silverman, Keith C.; Singh, Sheo B.; and Zink, Deborah L., 5,663,193, Cl. 514-450.000.
Zirngiebl, Eberhard: *See*—
Kiel, Wolfgang; Zirngiebl, Eberhard; and Jentsch, Joerg-Dietrich, 5,663,443, Cl. 564-451.000.
Zuber, Gary T. Tethered baseball batting practice apparatus. 5,662,537, Cl. 473-426.000.
Zucker, Ivan. Medical diagnostic device for applying controlled stress to joints. 5,662,121, Cl. 128-774.000.
Zurcher, John A.: *See*—
Puryear, John W.; Carpenter, Robert L.; Zurcher, John A.; and Kim, Hyunkyu, 5,662,283, Cl. 242-233.000.
Zurecki, Zbigniew; Kaiser, John Joseph; and Green, John Lewis. Process and apparatus for shrouding a turbulent gas jet. 5,662,266, Cl. 239-8.000.
Zuuring, Pieter Hendrik: *See*—
Middelman, Erik; and Zuuring, Pieter Hendrik, 5,662,761, Cl. 156-324.000.
Zvonar, John G.; and Taylor, James, to Advanced Micro Devices. Redundant thermocouple. 5,663,899, Cl. 364-557.000.
Zwerdling, Susan Schmaedecke: *See*—
Trinh, Toan; Cappel, Jerome Paul; Geis, Philip Anthony; Hollingshead, Judith Ann; McCarty, Mark Lee; and Zwerdling, Susan Schmaedecke, 5,663,134, Cl. 510-406.000.
Zygo Corporation: *See*—
de Groot, Peter, 5,663,793, Cl. 356-351.000.
24th and Dean, Inc.: *See*—
Wolens, John, 5,662,510, Cl. 446-397.000.
3COM Corporation: *See*—
Fawal, Marwan Ahmad; Spitzer, Cameron Lyle; and Hirth, Ryan Edgar, 5,663,634, Cl. 323-273.000.
3ComCorporation: *See*—
Isfeld, Mark S., 5,664,166, Cl. 395-556.000.
3V Inc.: *See*—
Russo, Matteo Zanotti; and Berté, Ferruccio, 5,663,253, Cl. 526-216.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2nd DAY OF SEPTEMBER, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abe, Tetsuya: *See*—
Nozaki, Katsuhiko; and Abe, Tetsuya, Re. 35,600, Cl. 396-84.000.
ALZA Corporation: *See*—
Eckenhoff, James B., deceased, Re. 35,601, Cl. 424-422.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nozaki, Katsuhiko; and Abe, Tetsuya, Re. 35,600, Cl. 396-84.000.
DocuSystems, Inc.: *See*—
Pease, Kevin J., Re. 35,599, Cl. 235-449.000.
Eckenhoff, Bonnie J., executrix: *See*—
Eckenhoff, James B., deceased, Re. 35,601, Cl. 424-422.000.
Eckenhoff, James B., deceased (by Bonnie J. Eckenhoff, executrix), to ALZA Corporation. Delivery device providing beneficial agent stability. Re. 35,601, Cl. 424-422.000.
Johnstonbaugh, Joseph: *See*—
Sadoff, Armin M.; Nelson, Richard C.; Smith, Gerald A.; Johnstonbaugh, Joseph; and Sadoff, Steven J., Re. 35,598, Cl. 73-379.010.
Nelson, Richard C.: *See*—
Sadoff, Armin M.; Nelson, Richard C.; Smith, Gerald A.; Johnstonbaugh, Joseph; and Sadoff, Steven J., Re. 35,598, Cl. 73-379.010.
Nozaki, Katsuhiko; and Abe, Tetsuya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom finder system. Re. 35,600, Cl. 396-84.000.
Pease, Kevin J., to DocuSystems, Inc. Method and apparatus for enhancing a randomly varying security characteristic. Re. 35,599, Cl. 235-449.000.
Sadoff, Armin M.; Nelson, Richard C.; Smith, Gerald A.; Johnstonbaugh, Joseph; and Sadoff, Steven J. Strength analyzer and method of using same. Re. 35,598, Cl. 73-379.010.
Sadoff, Steven J.: *See*—
Sadoff, Armin M.; Nelson, Richard C.; Smith, Gerald A.; Johnstonbaugh, Joseph; and Sadoff, Steven J., Re. 35,598, Cl. 73-379.010.
Smith, Gerald A.: *See*—
Sadoff, Armin M.; Nelson, Richard C.; Smith, Gerald A.; Johnstonbaugh, Joseph; and Sadoff, Steven J., Re. 35,598, Cl. 73-379.010.

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Abe, Karl-Heinz; and Gevert, Klaus Volker, to Bayerische Motoren Werke AG. Motorcycle body. 383,096, Cl. D12-110.000.
Abry, Emil, to Norsk Energi Design AS. Portable torch. 383,233, Cl. D26-46.000.
Adams, Gerald Takeo. Erasable video cassette label. 383,168, Cl. D20-27.000.
Adams Mfg. Corp.: *See*—
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Adams, Terry J.: *See*—
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Adams, William E., to Adams Mfg. Corp. Game stake. 383,054, Cl. D8-388.000.
Aikawa, Koichiro; Kimura, Kazuhito; and Kuramochi, Izumi, to Yokohama Rubber Co., Ltd., The. Automobile tire. 383,101, Cl. D12-147.000.
Alire, Roderick R.: *See*—
Dudley, Lee V.; and Alire, Roderick R., 383,066, Cl. D9-456.000.
Allegre, Jean-Paul, to Allegre Puericulture Hygiene S.A. Mobile for the early learning of babies. 383,172, Cl. D21-63.000.
Allegre Puericulture Hygiene S.A.: *See*—
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American Manufacturing Company, Inc.: *See*—
Sheftel, Steven J., 383,052, Cl. D8-367.000.
American Tool Companies, Inc.: *See*—
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Amico, Angelo P. Combined leg and ankle guard. 383,250, Cl. D29-120.000.
Anabolic Laboratories, Inc.: *See*—
Torbik, Angela M., 383,026, Cl. D6-601.000.
Ancona, Bruce; and Henry, Louis, to B. Via International Housewares, Inc. Handle for kitchen utensil. 383,034, Cl. D7-393.000.
Anderberg, Nils-Eric, to FMT International Trade AB. Aircraft passenger boarding bridge. 383,216, Cl. D25-1.000.
Angeles Group, Inc.: *See*—
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Apgar, Jeffrey: *See*—
Hoss, Jeffrey Gerard; Walter, Jeffrey Alan; and Apgar, Jeffrey, 383,116, Cl. D13-123.000.
Argumedo, Armando J.: *See*—
Egan, Daniel C.; Bay, Randy S.; Evanoff, James J.; Erickson, Leif O.; Argumedo, Armando J.; Felde, Steven L.; Rockwell, Scott M.; and Shelley, Kenneth R., 383,125, Cl. D14-121.000.
Arnone, Paul A., to Motorola, Inc. Icon of a two-way radio for a computer display screen. 383,123, Cl. D14-114.500.
Arthur, Bruce S. Remote control. 383,135, Cl. D14-218.000.
Asberg, Frédériqué, to Heineken Technical Services, B.V. Beverage container. 383,037, Cl. D7-511.000.
Atherton, Randy Lee; Zwayer, Kent Lee; and Robbins, Richard J., to Zebco Division of Brunswick Corporation. Crank handle for a fishing reel. 383,191, Cl. D22-141.000.
Atkins, Charles H. Foldable hanger. 383,004, Cl. D6-323.000.
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B. Via International Housewares, Inc.: *See*—
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Bachorik II, Robert J.: *See*—
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Badley, Peter J.: *See*—
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Balz, Eric, to Ecolab Inc. Capsule for solid detergent. 383,264, Cl. D32-30.000.
Barber, James R., to Barber Manufacturing Company, Inc. Furniture spring assembly. 383,022, Cl. D6-504.000.
Barber Manufacturing Company, Inc.: *See*—
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Bash, James C. Moisture sensing windshield wiper actuator. 383,108, Cl. D12-220.000.
Bath & Body Works, Inc.: *See*—
Workman, Bradley Pete; and Nilssen, Kenneth H., 383,070, Cl. D9-542.000.
Bausch & Lomb Incorporated: *See*—
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Bay, Randy S.: *See*—
Egan, Daniel C.; Bay, Randy S.; Evanoff, James J.; Erickson, Leif O.; Argumedo, Armando J.; Felde, Steven L.; Rockwell, Scott M.; and Shelley, Kenneth R., 383,125, Cl. D14-121.000.
Baydoun, Mohammed M.; and Baydoun, Sawsan H. Remote security monitor system. 383,079, Cl. D10-106.000.
Baydoun, Sawsan H.: *See*—
Baydoun, Mohammed M.; and Baydoun, Sawsan H., 383,079, Cl. D10-106.000.
Bayerische Motoren Werke AG: *See*—
Abe, Karl-Heinz; and Gevert, Klaus Volker, 383,096, Cl. D12-110.000.
Bedol, Mark A. Electronic calculator. 383,151, Cl. D18-2.000.
Beeren, Lou, to Whirlpool Europe B.V. Cooktop. 383,030, Cl. D7-346.000.
Bell, Ronald F.; Holmes, Richard A.; Kearnes, Thomas; and Smith, Detlev F., to Gojo Industries, Inc. Bottle and brush combination. 383,001, Cl. D4-116.000.
Belmont, Richard E., to W.C. Bradley Company. Handle for cooking utensils. 383,035, Cl. D7-395.000.
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Garzancich, Derick; Bennetto, Peter; and Bolton, Garth Desmond, 383,093, Cl. D12-102.000.
Benwell, Dale D. Cat litter box. 383,262, Cl. D30-161.000.
Bergkvist, Håkan: *See*—
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Betts, W. Michael. Spring hanger replacement pad. 383,005, Cl. D6-328.000.
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Bishop, Lee N. Sandal upper. 382,991, Cl. D2-916.000.
Black & Decker Inc.: *See*—
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Blaesing, Jeffry L. Sports recliner chair. 383,008, Cl. D6-358.000.

Bohart, Shane Eric. Tent. 383,188, Cl. D21-253.000.
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Bondoc, Alfredo A.: *See—*
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Brennan, V. Jack. Combined cap and vial. 383,214, Cl. D24-224.000.
Brescia, Anthony J.; Wright, Todd E.; and Trent, Smith E., III, to Toter, Incorporated. Tilt truck. 383,279, Cl. D34-5.000.
Breuil, Dany, to Smoby. Electric heating device for plastics. 383,178, Cl. D21-122.000.
Briggs, Ray M. Game paddle. 383,180, Cl. D21-213.000.
Brown, William E. Safety shield for a joint formed in a piping system. 383,197, Cl. D23-266.000.
Brys, Lyle W. Air chute deflector for a temperature-controlled container. 383,105, Cl. D12-181.000.
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Carlson, Arthur Richard. Tag. 383,167, Cl. D20-22.000.
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Clegg, Damon; and Fogg, Peter M., to Nike, Inc. Side element of a shoe upper. 382,993, Cl. D2-972.000.
Cohen, Bernard; and Jameson, Lee Kirby, to Kimberly-Clark Corporation. Filter cake holder. 383,036, Cl. D7-400.000.
Concari, Gabriel E.; Petersen, Joseph C., Jr.; and Niesen, Scott M., to Fiskars Inc. Tool handle grip. 383,049, Cl. D8-107.000.
Conigliaro, Francesco P. Tool holding bucket. 382,998, Cl. D3-313.000.
Conway, Simon M., to Bausch & Lomb Incorporated. Eyewear front. 383,150, Cl. D16-326.000.
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Jones, Brent R.; Crawford, Clark W.; and Wright, John A., 383,154, Cl. D18-56.000.
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Yamaguchi, Tadahiro; Urushihara, Atsuhiko; Ogura, Noriyoshi; Kashima, Taisuke; and Fukushima, Kazuyuki, to Hitachi, Ltd. Portable computer. 383,120, Cl. D14-106.000.

Yamaguchi, Takashi; and Hamano, Takashi, to Konami Co., Ltd. Amusement game machine. 383,185, Cl. D21-240.000.

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Tashiro, Naoki; Yamanaka, Akihiro; and Tsukuda, Keiichiro, 383,158, Cl. D18-56.000.

Yazaki Industrial Chemical Co., Ltd.: *See*—
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Yokohama Rubber Co., Ltd., The: *See*—
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Yoshikado, Shoji, to Fuji Xerox Co., Ltd. Duplex sheet handler for a printer. 383,159, Cl. D18-56.000.

Yuen, Se Kit, to John Manufacturing Limited. Rechargeable lantern. 383,230, Cl. D26-42.000.

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Zebco Division of Brunswick Corporation: *See*—
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Zimmerman, Dan. Digital automatic fish feeder. 383,251, Cl. D30-106.000.

Zwayer, Kent Lee: *See*—
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420820 Ontario Limited: *See*—
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LIST OF PLANT PATENTEES

Brookfield, Barbara Christine; and Brookfield, Paul Leighton Purchas, to Brookfield New Zealand Limited. Apple variety baigent. 10,016, Cl. Plt.-34.100.

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Brookfield, Barbara Christine; and Brookfield, Paul Leighton Purchas, 10,016, Cl. Plt.-34.100.

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Conard-Pyle Company, The: *See*—
Meilland, Alain A., 10,014, Cl. Plt.-9.000.
Meilland, Alain A., 10,015, Cl. Plt.-10.100.

John Bodger and Sons Company: *See*—
Lemon, David, 10,018, Cl. Plt.-87.120.
Lemon, David, 10,019, Cl. Plt.-87.120.
Lemon, David, 10,020, Cl. Plt.-87.120.
Lemon, David, 10,021, Cl. Plt.-87.120.

Lemon, David, to John Bodger and Sons Company. Variety of geranium plant named 'Gypsy Girl'. 10,018, Cl. Plt.-87.120.

Lemon, David, to John Bodger and Sons Company. Geranium plant named 'Sandra'. 10,019, Cl. Plt.-87.120.

Lemon, David, to John Bodger and Sons Company. Variety of geranium plant named 'Lucille'. 10,020, Cl. Plt.-87.120.

Lemon, David, to John Bodger and Sons Company. Geranium plant named 'Erin'. 10,021, Cl. Plt.-87.120.

Meilland, Alain A., to Conard-Pyle Company, The. Miniature rose plant named 'Meinipol'. 10,014, Cl. Plt.-9.000.

Meilland, Alain A., to Conard-Pyle Company, The. Miniature rose plant named 'Meishulo'. 10,015, Cl. Plt.-10.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM
STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE
2nd DAY OF SEPTEMBER, 1997

Banerjee, Amit; Patel, Ramesh N.; and Szarka, Laszlo J., to Bristol-Myers Squibb Company. Process for preparing an optically pure intermediate for a phosphonosulfonate soualene synthetase inhibitor. H1,679, Cl. 435-280.000.

Barker, James M.; Walker, Jerry L.; and Riggs, Robert S., to Halliburton Company. Hybrid capsule charge. H1,675, Cl. 166-297.000.

Bristol-Myers Squibb Company: *See*—
Banerjee, Amit; Patel, Ramesh N.; and Szarka, Laszlo J., H1,679, Cl. 435-280.000.

Halliburton Company: *See*—
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Hasegawa, Tokuhiro: *See*—
Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, H1,677, Cl. 358-468.000.

Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, to Oki America, Inc. Control module for controlling the operation of a multifunctional peripheral device. H1,677, Cl. 358-468.000.

Lo, Jim: *See*—
Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, H1,677, Cl. 358-468.000.

Marshall, Glen Richard, to Shell Oil Company. Site management system for containing hazardous spills and leaks. H1,676, Cl. 340-605.000.

Minnesota Mining and Manufacturing Company: *See*—
Ronning, Albert James, H1,678, Cl. 428-141.000.

Mor, Banky: *See*—
Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, H1,677, Cl. 358-468.000.

Oki America, Inc.: *See*—
Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, H1,677, Cl. 358-468.000.

Patel, Ramesh N.: *See*—
Banerjee, Amit; Patel, Ramesh N.; and Szarka, Laszlo J., H1,679, Cl. 435-280.000.

Prieto, Nelson Eduardo, to Shell Oil Company. Secondary alkyl sulfate-containing hard surface cleaning compositions. H1,680, Cl. 510-493.000.

Riggs, Robert S.: *See*—
Barker, James M.; Walker, Jerry L.; and Riggs, Robert S., H1,675, Cl. 166-297.000.

Ronning, Albert James, to Minnesota Mining and Manufacturing Company. Abrasive article including a polyvinyl carbamate coating, and methods for making and using the same. H1,678, Cl. 428-141.000.

Sato, Nobuyuki: *See*—
Hu, Darwin; Lo, Jim; Hasegawa, Tokuhiro; Mor, Banky; and Sato, Nobuyuki, H1,677, Cl. 358-468.000.

Shell Oil Company: *See*—
Marshall, Glen Richard, H1,676, Cl. 340-605.000.
Prieto, Nelson Eduardo, H1,680, Cl. 510-493.000.

Szarka, Laszlo J.: *See*—
Banerjee, Amit; Patel, Ramesh N.; and Szarka, Laszlo J., H1,679, Cl. 435-280.000.

Walker, Jerry L.: *See*—
Barker, James M.; Walker, Jerry L.; and Riggs, Robert S., H1,675, Cl. 166-297.000.

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CLASSIFICATION OF PATENTS

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NOTE—First number, class; second number, subclass; third number, patent number

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4.21 5,662,234
23.86 5,662,235
324 5,662,236
368 5,662,237
404 5,662,238
506 5,662,239
574 5,662,240
630 5,662,241
695 5,662,242

CLASS 222

1 5,662,243
79 5,662,244
153.07 5,662,245
5,662,246
5,662,247
235 5,662,248
461 5,662,249
594 5,662,823

CLASS 223

46 5,662,250

CLASS 224

200 5,662,251
250 5,662,252
311 5,662,253
405 5,662,254
451 5,662,255
523 5,662,256

CLASS 227

8 5,662,257
175.1 5,662,258
176.1 5,662,259
5,662,260

CLASS 228

4.5 5,662,261
56.3 5,662,262
102 5,662,263
170 5,662,264

CLASS 229

107 5,662,265

CLASS 235

375 5,663,545
379 5,663,546
380 5,663,547
384 5,663,548
449 Re.35,599
462 5,663,549
467 5,663,550
472 5,663,551
5,663,552
492 5,663,553

CLASS 239

8 5,662,266
5,662,267
33 5,662,268
5,662,269
5,662,270
5,662,271
5,662,272
526 5,662,273
533.2 5,662,274
533.6 5,662,275
571 5,662,276
585.4 5,662,277
700 5,662,278

CLASS 241

21 5,662,279
30 5,662,280
100 5,662,281
5,662,282
236 5,662,284

CLASS 242

233 5,662,283
241 5,662,285
247 5,662,286
334.3 5,662,287
445 5,662,289
596.8 5,662,288

CLASS 244

3.13 5,662,291
3.22 5,662,290
53.B 5,662,292
133 5,662,293
219 5,662,294

CLASS 248

58 5,662,295
96 5,662,296
188.1 5,662,298
213.2 5,662,299
279.1 5,662,300
315 5,662,301
317 5,662,302
448 5,662,303
499 5,662,304
500 5,662,305
514 5,662,306
640 5,662,307

CLASS 250

201.2 5,663,554
208.1 5,663,555
214.1 5,663,556
231.18 5,663,557
234 5,663,558
269.1 5,663,559
281 5,663,560
288 5,663,561
332 5,663,562
5,663,563
338.4 5,663,564
339.11 5,663,565
369 5,663,566
382 5,663,567
492.2 5,663,568
559.45 5,663,569

CLASS 251

204 5,662,308
212 5,662,309

CLASS 252

62.56 5,662,824
67 5,662,825
179 5,662,826
186.38 5,662,827
299.61 5,662,828
5,662,829
299.63 5,662,830
301.4 R 5,662,831
321 5,662,832
500 5,662,833
513 5,662,834

CLASS 254

218 5,662,310
273 5,662,311
390 5,662,312

CLASS 256

11 5,662,313

CLASS 257

9 5,663,570
17 5,663,571
25 5,663,572
40 5,663,573
48 5,663,574
59 5,663,575
5,663,576
5,663,577
66 5,663,578
75 5,663,579
77 5,663,580
93 5,663,581
136 5,663,582
192 5,663,583
288 5,663,584
296 5,663,585
301 5,662,768
336 5,663,586
337 5,663,587
350 5,663,588
401 5,663,589
529 5,663,590
530 5,663,591
627 5,663,592
666 5,663,593
5,663,594
712 5,663,595
727 5,663,596
734 5,663,597
737 5,663,598
750 5,663,599

CLASS 261

26 5,662,835
44.3 5,662,836
77 5,662,837
130 5,662,838

CLASS 264

1.38 5,662,839
12 5,662,840
40.1 5,662,841
40.5 5,662,842
41 5,662,843
49 5,662,844
69 5,662,846
101 5,662,847
102 5,662,848
112 5,662,849
162 5,662,850
167 5,662,851
204 5,662,852
219 5,662,853
255 5,662,854
258 5,662,855
297.2 5,662,856
328.18 5,662,857
474 5,662,858

CLASS 266

94 5,662,859
158 5,662,860
170 5,662,861
229 5,662,862

CLASS 267

271 5,662,314

CLASS 269

17 5,662,315
25 5,662,316
58 5,662,317
170 5,662,790

CLASS 270

58.05 5,662,318
58.21 5,662,319

CLASS 271

3.14 5,662,320
10.03 5,662,321
84 5,662,322
218 5,662,323
263 5,662,324

CLASS 273

138.1 5,662,325
239 5,662,326
242 5,662,327
248 5,662,328
261 5,662,329
274 5,662,330
288 5,662,331
308 5,662,332
371 5,662,333
374 5,662,334
417 5,662,536

CLASS 277

3 5,662,335
9.5 5,662,340
27 5,662,341
208 5,662,336
235 B 5,662,337

CLASS 280

7.14 5,662,338
30 5,662,339
33.997 5,662,342
79.11 5,662,343
87.051 5,662,344
250.1 5,662,345
252 5,662,346
5,662,347
688 5,662,348
690 5,662,349
728.2 5,662,350
728.3 5,662,351
737 5,662,352
5,662,353
743.1 5,662,354
5,662,355
772 5,662,356
840 5,662,357

CLASS 285

3 5,662,358
93 5,662,359
110 5,662,360
332 5,662,361
381.1 5,662,362

CLASS 290

55 5,663,600

CLASS 292

230 5,662,363
5,662,364
337 5,662,365

CLASS 294

19.2 5,662,366

CLASS 296

65.1 5,662,367
5,662,368
66 5,662,369
97.6 5,662,370
97.8 5,662,371
136 5,662,372
164 5,662,373
184 5,662,374
214 5,662,375

CLASS 297

216.2 5,662,376
238 5,662,377
5,662,382
256.15 5,662,378
5,662,379
301.1 5,662,381
334.12 5,662,380
440.11 5,662,383
452.41 5,662,384

CLASS 299

37.3 5,662,385
37.5 5,662,386
55 5,662,387

CLASS 303

3 5,662,388
7 5,662,389
10 5,662,390
22.4 5,662,391
119.2 5,662,392
194 5,662,393

CLASS 310

45 5,663,601
67 R 5,663,602
91 5,663,603
5,663,604
181 5,663,605
357 5,663,606

CLASS 312

116 5,662,394
194 5,662,395
209 5,662,396
223.1 5,662,397
238 5,662,398
258 5,662,399

CLASS 313

284 5,663,607
309 5,663,608
412 5,663,609
461 5,663,610
584 5,663,611

CLASS 315

240 5,663,612
308 5,663,613
360 5,663,614
371 5,663,615
382 5,663,617

CLASS 318

254 5,663,616
5,663,618
5,663,619
283 5,663,620
480 5,663,621
563 5,663,622
569 5,663,623
696 5,663,624
701 5,663,625
799 5,663,626
803 5,663,627

CLASS 320

1 5,663,628
31 5,663,629
49 5,663,630

CLASS 322

29 5,663,631
59 5,663,632

CLASS 323

218 5,663,633
273 5,663,634
282 5,663,635
361 5,663,636

CLASS 324

71.5 5,663,637
95 5,663,638
96 5,663,639
173 5,663,640
174 5,663,641
204 5,663,642

207.12 5,663,643
252 5,663,644
318 5,663,645
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322 5,663,647
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643 5,663,649
670 5,663,650
713 5,663,651
753 5,663,652
754 5,663,653
758 5,663,654
761 5,663,655
763 5,663,656
766 5,663,657

CLASS 326

10 5,663,658
17 5,663,659
30 5,663,660
5,663,661
41 5,663,662
81 5,663,663
83 5,663,664

CLASS 327

3 5,663,665
7 5,663,666
134 5,663,667
156 5,663,668
201 5,663,669
281 5,663,670
323 5,663,671
374 5,663,672
412 5,663,673
540 5,663,674
553 5,663,675
5,663,676
565 5,663,677
566 5,663,678
567 5,663,679

CLASS 330

9 5,663,680
51 5,663,681
124 R 5,663,682
286 5,663,683
289 5,663,684

CLASS 331

1 A 5,663,685
8 5,663,686
14 5,663,687
5,663,688
17 5,663,689
109 5,663,690

CLASS 332

103 5,663,691

CLASS 333

101 5,663,692
125 5,663,693
157 5,663,694
193 5,663,695
194 5,663,696
195 5,663,697
202 5,663,698

CLASS 335

126 5,663,699
257 5,663,700
306 5,663,701

CLASS 337

183 5,663,702

CLASS 340

407.1 5,663,703
426 5,663,704
435 5,663,705
464 5,663,706
5,663,707
465 5,663,708
468 5,663,709
601 5,663,710
635 5,663,711
644 5,663,712
661 5,663,713
692 5,663,714
825.04 5,663,716
825.2 5,663,715
825.36 5,663,717
870.07 5,663,718
912 5,663,719
934 5,663,720

CLASS 341

51 5,663,721
59 5,663,722
5,663,723
5,663,724
67 5,663,725
5,663,726
132 5,663,727
153 5,663,728
155 5,663,729

CLASS 342

41 5,663,730
70 5,663,731
357 5,663,732
5,663,733
5,663,734
5,663,735
375 5,663,736

CLASS 343

713 5,663,737
742 5,663,738

CLASS 345

1 5,663,739
31 5,663,740
66 5,663,741
74 5,663,742
95 5,663,743
5,663,744
98 5,663,745
113 5,663,746
161 5,663,747
173 5,663,748
190 5,663,749
302 5,664,216
329 5,664,126
333 5,664,127
334 5,664,128
339 5,664,129
340 5,664,130
352 5,664,132
5,664,133
421 5,664,077
5,664,078
431 5,664,080
433 5,664,081
436 5,664,082
437 5,664,083
440 5,664,084
441 5,664,085
468 5,664,086
473 5,664,087
501 5,664,161
521 5,664,162
522 5,664,163

CLASS 347

7 5,663,750
22 5,663,751
65 5,663,752
86 5,663,753
87 5,663,754
176 5,663,755

CLASS 348

5.5 5,663,756
13 5,663,757
85 5,663,758
222 5,663,759
241 5,663,760
323 5,663,761
373 5,663,762
405 5,663,763
414 5,663,764
448 5,663,765
473 5,663,766
537 5,663,767
557 5,663,768
630 5,663,769
656 5,663,770
663 5,663,771
671 5,663,772
726 5,663,773
744 5,663,774
751 5,663,775

CLASS 349

5 5,663,817
58 5,663,776
96 5,663,777
122 5,663,778

CLASS 351

49 5,663,779
52 5,663,780
206 5,663,781

CLASS 353

31 5,662,400
38 5,662,401
119 5,662,402

CLASS 355

37 5,663,782
53 5,663,783
68 5,663,784
71 5,663,785
72 5,663,786
111 5,663,787

CLASS 356

121 5,663,789
128 5,663,790
237 5,663,791
350 5,663,792
351 5,663,793
356 5,663,794
375 5,663,795
376 5,663,796
384 5,663,798
398 5,663,799

CLASS 358

296 5,663,800
299 5,663,801
5,663,802
5,663,803
304 5,663,804
404 5,663,805
406 5,663,806
426 5,663,807
440 5,663,808
450 5,663,809
456 5,663,810
473 5,663,811
474 5,663,812
5,663,813
475 5,663,814

CLASS 359

13 5,663,815
15 5,663,816
118 5,663,818
5,663,819
128 5,663,820
152 5,663,821
161 5,663,822
181 5,663,823
184 5,663,824
201 5,663,825
202 5,663,826
216 5,663,827
237 5,663,828
275 5,663,829
295 5,663,830
341 5,664,131
463 5,663,831
559 5,663,832
631 5,663,833
643 5,663,834
684 5,663,835
691 5,663,836
692 5,663,837
5,663,838
700 5,663,839
814 5,663,840
5,663,841
823 5,663,842
824 5,663,843

CLASS 360

65 5,663,844
73.11 5,663,845
75 5,663,846
77.02 5,663,847
96.1 5,663,848
96.4 5,663,849
98.06 5,663,850
98.08 5,663,851
99.12 5,663,852
103 5,663,853
104 5,663,854
105 5,663,855
122 5,663,856
126 5,663,857

CLASS 361

28 5,663,858
38 5,663,859
56 5,663,860
106 5,663,861
115 5,663,862
118 5,663,863
120 5,663,864
234 5,663,865
643 5,663,866
684 5,663,867
695 5,663,868
707 5,663,869
763 5,663,870
784 5,663,871
818 5,663,872

CLASS 362

32 5,662,403
5,662,404
72 5,662,405
101 5,662,406
147 5,662,407
226 5,662,408
249 5,662,409
268 5,662,410
276 5,662,411
351 5,662,412
365 5,662,413
366 5,662,414

CLASS 363

20 5,663,873
21 5,663,874
95 5,663,875
126 5,663,876
127 5,663,877
159 5,663,878

CLASS 364

468.03 5,663,882
468.26 5,663,883
468.28 5,663,884
470.05 5,663,885
474.22 5,663,886
479.02 5,663,887
489 5,663,888
490 5,663,889
5,663,890
5,663,891
491 5,663,892
5,663,893
508 5,663,894
510 5,663,895
550 5,663,897
551.01 5,663,898
557 5,663,899
578 5,663,900

CLASS 365

52 5,663,901
96 5,663,902
104 5,663,903
145 5,663,904
149 5,663,905
5,663,906
185.18 5,663,907
185.33 5,663,909
189.01 5,663,908
189.05 5,663,910
189.11 5,663,911
194 5,663,912
5,663,913
202 5,663,914
208 5,663,915
222 5,663,916
226 5,663,917
5,663,918
5,663,919
230.03 5,663,920
5,663,923
230.05 5,663,924
230.06 5,663,925
233 5,663,926
240 5,663,921
5,663,922

CLASS 366

139 5,662,415
209 5,662,416

CLASS 367

4 5,663,927
52 5,663,928
82 5,663,929
119 5,663,930
165 5,663,931

CLASS 368

10 5,663,932
119 5,663,933
290 5,663,934

CLASS 369

13 5,663,935
5,663,936
36 5,663,938
44.23 5,663,939
5,663,940
44.34 5,663,941
47 5,663,942
75.1 5,663,943
83 5,663,937
121 5,663,944
124 5,663,945
275.3 5,663,946

CLASS 370

220 5,663,949
224 5,663,950
229 5,663,948
230 5,663,951
252 5,663,952
261 5,663,953
278 5,663,954
291 5,663,955
335 5,663,956
347 5,663,957
5,663,958
360 5,663,947
395 5,663,959
408 5,663,960
412 5,663,961
535 5,663,962

CLASS 371

5.1 5,663,963
21.2 5,663,964
22.31 5,663,965
22.36 5,663,966
26 5,663,967
28 5,663,968
51.1 5,663,969
61 5,663,970

CLASS 372

2 5,663,971
18 5,663,972
20 5,663,973
45 5,663,974
46 5,663,975
5,663,976
55 5,663,977
103 5,663,979
108 5,663,980

CLASS 374

45 5,662,417
144 5,662,418
160 5,662,419

CLASS 375

207 5,663,983
208 5,663,981
222 5,663,982
257 5,663,984
259 5,663,985
260 5,663,986
317 5,663,987
319 5,663,988
344 5,663,989
347 5,663,990
376 5,663,991
5,663,992

CLASS 376

444 5,663,993

CLASS 377

47 5,663,994
15 5,663,995
45 5,663,997
62 5,663,998
65 5,663,999
98.7 5,664,000
98.8 5,664,001

CLASS 379

56.2 5,664,002
67 5,664,008
88 5,664,009
207 5,664,010
410 5,664,011
420 5,664,012
428 5,664,013
430 5,664,014
433 5,664,015

CLASS 380

28 5,664,016
30 5,664,017
54 5,664,018

CLASS 381

71.1 5,664,019
89 5,664,020
92 5,664,021
94.1 5,664,022
194 5,664,023
199 5,664,024

CLASS 382

112 5,664,025
143 5,664,026
170 5,664,027
248 5,664,028
260 5,664,029
317 5,664,030
321

CLASS 383

205 5,662,420

CLASS 385

4 5,664,032
16 5,664,033
5,664,034
24 5,664,035
31 5,664,036
46 5,664,037
50 5,664,038
65 5,664,039
78 5,664,040
128 5,664,041
136 5,664,042
138 5,664,043

CLASS 386

75 5,664,044
114 5,664,045
125 5,664,046

CLASS 388

811 5,664,047
815 5,664,048

CLASS 392

485 5,664,049

CLASS 395

3 5,664,062
13 5,664,064
21 5,664,065
23 5,664,066
5,664,067
24 5,664,068
101 5,664,063
102 5,664,070
103 5,664,071
109 5,664,072
112 5,664,073
113 5,664,074
114 5,664,075
117 5,664,076
141 5,664,211
5,664,212
182.11 5,664,088
182.12 5,664,089
182.13 5,664,090
182.16 5,664,091
183.01 5,664,092
183.07 5,664,093
183.18 5,664,094
184.01 5,664,095
185.01 5,664,096
186 5,664,097
5,664,098
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187.01 5,663,896
200.35 5,664,103
200.5 5,664,170
200.54 5,664,104
5,664,105
5,664,106
5,664,107
200.62 5,664,100
200.64 5,664,114
5,664,116
5,664,102
200.76 5,664,101
200.8 5,664,108
200.82 5,664,069
211 5,664,117
280 5,664,118
283 5,664,119
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293 5,664,122
308 5,664,123
309 5,664,124
5,664,125
377 5,664,135
384 5,664,136
392 5,664,137
393 5,664,120
395 5,664,138
500 5,664,156
5,664,157
551 5,664,158
556 5,664,159
5,664,160
5,664,164
5,664,165
5,664,166
557 5,664,167
559 5,664,168
595 5,664,134
598 5,664,169
602 5,664,171
604 5,664,172
5,664,173
606 5,664,174
607 5,664,175
608 5,664,176
611 5,664,177
5,664,178
5,664,179
613 5,664,180
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614 5,664,183
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670 5,664,190
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705 5,664,193
712 5,664,194
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728 5,664,197
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734 5,664,199
741 5,664,200
750.01 5,664,204
750.03 5,664,201
750.04 5,664,205
750.05 5,664,203
750.08 5,664,202
766 5,664,207
777 5,664,208
778 5,664,227
785 5,664,209
793 5,664,210
800.2 5,664,214
800.23 5,664,215
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825 5,664,219
826 5,664,220
829 5,664,221
836 5,664,222
837 5,664,213
842 5,664,223
5,664,224
869 5,664,225
872 5,664,226
882 5,664,228
885 5,664,229
886 5,664,230
893 5,664,231

CLASS 396

1 5,664,232
59 5,664,233
63 5,664,234
71 5,664,235
84 Re.35,600
96 5,664,236
5,664,237
101 5,664,238
104 5,664,239
137 5,664,240
158 5,664,241
234 5,664,242
246 5,664,243
296 5,664,244
303 5,664,245
406 5,664,246
456 5,664,247
503 5,664,248
538 5,664,249
5,664,250
548 5,664,251
563 5,664,252
603 5,664,253
612 5,664,254
627 5,664,255

CLASS 399

353 5,663,788

CLASS 400

124.13 5,662,421
489 5,662,422

CLASS 401

7 5,662,423
65 5,662,424
68 5,662,425

CLASS 403

348 5,662,426
362 5,662,427
374 5,662,428
377 5,662,429

CLASS 404

15 5,662,430
105 5,662,431

CLASS 405

184 5,662,432
186 5,662,433
204 5,662,434

CLASS 407

31 5,662,435
35 5,662,436

CLASS 409

26 5,662,438
61 5,662,439
182 5,662,440
185 5,662,441
233 5,662,442

CLASS 411

291 5,662,443
369 5,662,444
433 5,662,445
514 5,662,446

CLASS 412

1 5,662,447
4 5,662,448

CLASS 414

24.5 5,662,449
347 5,662,450
540 5,662,451
757 5,662,452
786 5,662,453
798.2 5,662,454

CLASS 415

55.1 5,662,455
90 5,662,456
135 5,662,457

CLASS 416

145 5,662,458

CLASS 417

61 5,662,459
127 5,662,460
418 5,662,461

CLASS 418

61.3 5,662,462
73 5,662,463

CLASS 419

44 5,662,863

CLASS 420

70 5,662,864

CLASS 422

29 5,662,865
5,662,866
5,662,867
56 5,662,868
144 5,662,869
171 5,662,870
245.1 5,662,871
259 5,662,872

CLASS 423

236 5,662,873
247 5,662,874
263 5,662,875
344 5,662,876
445 B 5,662,877
446 5,662,878
588 5,662,879
594 5,662,880
628 5,662,881
636

CLASS 424

1.11 5,662,882
1.69 5,662,885
9.4 5,662,883
49 5,662,886
5,662,887
5,662,888
5,662,889
59 5,662,890
61 5,662,891
70.1 5,662,892
70.11 5,662,893
73 5,662,894
85.1 5,662,895
93.2 5,662,896
5,662,897
5,662,898
93.45 5,662,900
93.7 5,662,899
94.2 5,662,901
115 5,662,902
5,662,903
130.1 5,662,904
150.1 5,662,905
184.1 5,662,906
185.1 5,662,907
200.1 5,662,908
201.1 5,662,909
269.1 5,662,910
278.1 5,662,911
401 5,662,912
405 5,662,913
5,662,914
408 5,662,915
5,662,916
422 Re.35,601
5,662,917
423 5,662,918
427 5,662,919
435 5,662,920
436 5,662,921
438 5,662,922
445 5,662,923
5,662,924
447 5,662,925
448 5,662,926
449 5,662,927
5,662,928
450 5,662,929
5,662,930
5,662,931
5,662,932
457 5,662,933
464 5,662,934
465 5,662,935
479 5,662,936
489 5,662,937
501 5,662,938
661 5,662,940
673 5,662,941

CLASS 425

2 5,662,942
3 5,662,943
84 5,662,944
136 5,662,945
190 5,662,946
192.5 5,662,947
195 5,662,948
310 5,662,949
367 5,662,950
384 5,662,951
556 5,662,952

CLASS 426

2 5,662,953
74 5,662,954
432 5,662,955
601 5,662,956
605 5,662,957
630 5,662,958
641 5,662,959

CLASS 427

2.3 5,662,960
58 5,662,961
126.2 5,662,962
212 5,662,963
232 5,662,964
249 5,662,965
385.5 5,662,966
409 5,662,967
421 5,662,968
576 5,663,089
591 5,662,969

CLASS 428

24 5,662,970
34.8 5,662,971
35.7 5,662,972
36.9 5,662,973
5,662,974
36.91 5,662,975
40.1 5,662,976
42.1 5,662,977
57 5,662,978
64.1 5,662,979
88 5,662,980
113 5,662,981
116 5,662,982
117 5,662,983
141 5,662,984
195 5,662,985
5,662,986
209 5,662,987
212 5,662,988
5,662,989
304.4 5,662,995
318.8 5,662,996
331 5,662,997
332 5,662,998
408 5,662,999
457 5,663,000
469 5,663,001
475.8 5,663,002
482 5,663,003
500 5,663,004
690 5,663,005
694 R 5,663,006

CLASS 429

53 5,663,007
5,663,008
65 5,663,009
86 5,663,010
97 5,663,011
121 5,663,012
164 5,663,013
175 5,663,014
181 5,663,015

CLASS 430

5 5,663,016
5,663,017
5,663,018
7 5,663,019
20 5,663,020
47 5,663,021
97 5,663,022
5,663,023
5,663,024
106 5,663,025
5,663,026
106.6 5,663,027
110 5,663,028
126 5,663,029
5,663,030
159 5,663,031
178.1 5,663,037
203 5,663,032
257 5,663,033
264 5,663,034
270.1 5,663,035
271.1 5,663,036
326 5,663,038
465 5,663,039
555 5,663,040
569 5,663,041
619 5,663,042

CLASS 431

8 5,662,464
12 5,662,465
153 5,662,466
175 5,662,467
302 5,662,468

CLASS 432

6 5,662,469
241 5,662,470

CLASS 433

22 5,662,471
90 5,662,472
172 5,662,473
5,662,474
5,662,475
213 5,662,476

CLASS 434

185 5,662,477
237 5,662,478
304 5,662,479

CLASS 435

2 5,663,043
4 5,663,044
5 5,663,045
6 5,663,046
5,663,047
5,663,048
5,663,049
7.23 5,663,050
5,663,051
7.91 5,663,053
7.93 5,663,054
18 5,663,055
29 5,663,056
40.5 5,663,057
68.1 5,663,058
69.2 5,663,059
69.6 5,663,060
5,663,061
91.1 5,663,062
135 5,663,063
172.3 5,663,064
5,663,065
183 5,663,066
199 5,663,067
220 5,663,068
235.1 5,663,069
325 5,663,070
5,663,071

CLASS 436

20 5,663,072
28 5,663,073
546 5,663,074

CLASS 437

60 5,663,091

CLASS 438

14 5,663,076
16 5,663,797
52 5,662,771
92 5,663,075
109 5,663,105
123 5,663,104
138 5,663,079
151 5,663,077
157 5,663,078
210 5,663,086
234 5,663,082
253 5,663,092
255 5,663,085
268 5,663,096
301 5,663,103
303 5,663,083
372 5,663,097
396 5,663,088
5,663,093
398 5,663,090
450 5,663,080
453 5,663,084
586 5,663,100
5,663,094
609 5,663,095
611 5,663,108
624 5,663,102
626 5,663,102
633 5,662,769
637 5,663,101
642 5,663,099
675 5,663,098
692 5,663,107
711 5,662,819
716 5,662,770
762 5,663,087

CLASS 439

63 5,662,480
5,662,481
64 5,662,482
101 5,662,483
106 5,662,484
157 5,662,485
164 5,662,486
189 5,662,487
314 5,662,488
322 5,662,489
336 5,662,490
342 5,662,491
404 5,662,492
409 5,662,493
589 5,662,494
610 5,662,495
621 5,662,496
627 5,662,497
709 5,662,499
732 5,662,500
752 5,662,501
814 5,662,502
851 5,662,503
857 5,662,504

CLASS 440

6 5,662,505

CLASS 441

40 5,662,506

CLASS 442

101 5,662,993
189 5,662,990
319 5,662,991
320 5,662,507
413 5,662,994

CLASS 446

128 5,662,508
220 5,662,509
397 5,662,510

CLASS 449

50 5,662,511

CLASS 450

1 5,662,512
28 5,662,513

CLASS 451

5 5,662,514
59 5,662,515
113 5,662,516
295 5,662,517
384 5,662,518
525 5,662,519

CLASS 453

3 5,662,520

CLASS 454

57 5,662,521
359 5,662,522

CLASS 455

405 5,664,006
422 5,664,005
442 5,664,007
459 5,664,003
466 5,664,004

CLASS 463

30 5,662,523
470 5,662,524

CLASS 472

128 5,662,525

CLASS 473

135 5,662,526
138 5,662,527
203 5,662,529
268 5,662,530
278 5,662,531
314 5,662,532
353 5,662,533
5,662,534
404 5,662,535
426 5,662,537

CLASS 474

11 5,662,538
101 5,662,539
111 5,662,540
149 5,662,541

CLASS 475

154 5,662,542
198 5,662,543
230 5,662,544
344 5,662,545

CLASS 476

40 5,662,546

CLASS 477

48 5,662,547
114 5,662,548
122 5,662,549
130 5,662,550
152 5,662,551
169 5,662,552
179 5,662,553

CLASS 482

10 5,662,554
23 5,662,555
38 5,662,556
54 5,662,557
55 5,662,558
61 5,662,559
69 5,662,560
82 5,662,561
91 5,662,562
126 5,662,563
129 5,662,564

CLASS 483

1 5,662,566
10 5,662,567
30 5,662,568
38 5,662,569

CLASS 492

7 5,662,570
5,662,571
20 5,662,572
31 5,662,573
56 5,662,574

CLASS 493

190 5,662,575
195 5,662,576
315 5,662,577
353 5,662,578

CLASS 501

41 5,663,109
55 5,663,110
146 5,663,111

CLASS 502

304 5,663,112
314 5,663,113
347 5,663,114

CLASS 503

201 5,663,115
227 5,663,116

CLASS 504

206 5,663,117
215 5,663,118
280 5,663,119

CLASS 505

330 5,663,081
333.7 5,663,243
430 5,663,120

CLASS 507

102 5,663,121
110 5,663,122
225 5,663,123

CLASS 508

150 5,663,124
194 5,663,125
221 5,663,126
250 5,663,127
331 5,663,128
506 5,663,129
5,663,130
580 5,663,131

CLASS 510

218 5,663,132
224 5,663,133
406 5,663,134
433 5,663,135
444 5,663,136
470 5,663,137
515 5,663,138

CLASS 514

7 5,663,139
11 5,663,140
12 5,663,141
5,663,142
5,663,143
14 5,663,144
15 5,663,145
16 5,663,146
17 5,663,148
5,663,149
18 5,663,150
19 5,663,171
25 5,663,151
38 5,663,152
44 5,663,153
45 5,663,154
5,663,155
5,663,156
164 5,663,157
167 5,663,159
181 5,663,160
182 5,663,161
183 5,663,162
202 5,663,163
5,663,164
210 5,663,165
211 5,663,166
213 5,663,167
225.8 5,663,168
227.5 5,663,169
230.5 5,663,170
231.2 5,663,172
247 5,663,173
249 5,663,174
252 5,663,175
262 5,663,176
275 5,663,177
279 5,663,178
284 5,663,179
297 5,663,180
299 5,663,181
300 5,663,182
305 5,663,183
310 5,663,184
324 5,663,185
365 5,663,186
381 5,663,187
5,663,188
397 5,663,189
411 5,663,190
5,663,191
420 5,663,192
450 5,663,193
456 5,663,194
461 5,663,195
468 5,663,196
5,663,197
471 5,663,198
5,663,199
487 5,663,200
507 5,663,201
560 5,663,202
572 5,663,203
596 5,663,204
603 5,663,205
634 5,663,206
721 5,663,207
724 5,663,208
731 5,663,209

CLASS 521

81 5,663,210

CLASS 522

8 5,663,211
75 5,663,212

CLASS 523

105 5,663,213
120 5,663,214
122 5,663,215
128 5,663,216
161 5,663,217
212 5,663,218
404 5,663,219
438 5,663,220

CLASS 524

15 5,663,221
5,663,222
109 5,663,223
188 5,663,224
216 5,663,225
262 5,663,226
5,663,227
271 5,663,228
399 5,663,229
447 5,663,230
458 5,663,231
523 5,663,232

CLASS 525

123 5,663,234
173 5,663,233
201 5,663,235
240 5,663,236
285 5,663,237
5,663,238
314 5,663,239
327.3 5,663,240
328.6 5,663,241
329.4 5,663,242
456 5,663,244
479 5,663,245
480 5,663,246
533 5,663,247

CLASS 526

114 5,663,248
134 5,663,249
178 5,663,250
206 5,663,251
216 5,663,252
5,663,253
238.2 5,663,254
254 5,663,255
262 5,663,256
5,663,257
264 5,663,258
271 5,663,259
292.9 5,663,260
307.2 5,663,261
312 5,663,262
318.41 5,663,263
320 5,663,264
5,663,265
325 5,663,266
328.5 5,663,267
348.1 5,663,268

CLASS 528

14 5,663,269
27 5,663,270
37 5,663,271
69 5,663,272
70 5,663,273
73 5,663,274
125 5,663,275
194 5,663,276
196 5,663,277
5,663,278
5,663,279
5,663,280
272 5,663,281
274 5,663,282
310 5,663,283
5,663,284
320 5,663,285
339 5,663,286
350 5,663,287
354 5,663,288
414 5,663,289
481 5,663,290

CLASS 530

303 5,663,291
306 5,663,292
324 5,663,293
326 5,663,294
330 5,663,295
331 5,663,296
5,663,297
332 5,663,298
350 5,663,299
5,663,300
363 5,663,301
388.2 5,663,303
399 5,663,304
5,663,305
402 5,663,306

CLASS 534

10 5,663,307
573 5,663,308
763 5,663,309

CLASS 536

18.7 5,663,311
22.1 5,663,312
23.1 5,663,313
23.2 5,663,314
23.5 5,663,315
5,663,316
23.7 5,663,317
24.3 5,663,318
5,663,319
25.5 5,663,321
26.22 5,663,322
27.11 5,663,320
55.3 5,663,323
69 5,663,310
124 5,663,324

CLASS 540

89 5,663,325
139 5,663,326
5,663,327
145 5,663,328
200 5,663,329
215 5,663,330
227 5,663,331
249 5,663,332
492 5,663,333

CLASS 544

122 5,663,334
153 5,663,335
212 5,663,336
249 5,663,337
277 5,663,338
280 5,663,339
330 5,663,340
388 5,663,341

CLASS 546

6 5,663,342
72 5,663,343
93 5,663,344
113 5,663,346
127 5,663,345
152 5,663,347
173 5,663,348
174 5,663,349
185 5,663,350
5,663,351
240 5,663,352
241 5,663,353
296 5,663,355
300 5,663,356
323 5,663,357

CLASS 548

166 5,663,358
229 5,663,360
233 5,663,361
257 5,663,354
263.2 5,663,362
320.5 5,663,363
335.5 5,663,364
366.1 5,663,365
371.4 5,663,366

CLASS 549

4 5,663,367
57 5,663,368
212 5,663,369
290 5,663,370
299 5,663,371
333 5,663,372
345 5,663,373
381 5,663,374
385 5,663,375
410 5,663,389
411 5,663,376
417 5,663,377
453 5,663,379
477 5,663,380
492 5,663,381
508 5,663,382
510 5,663,383
529 5,663,384
536 5,663,385

CLASS 552

241 5,663,386

CLASS 554

80 5,663,387
132 5,663,388

CLASS 556

1 5,663,390
12 5,663,391
28 5,663,392
45 5,663,393
179 5,663,394
427 5,663,395
5,663,396
464 5,663,397
466 5,663,398
479 5,663,399
5,663,400

CLASS 558

105 5,663,401
121 5,663,402
156 5,663,403
166 5,663,405
169 5,663,404
243 5,663,406
270 5,663,407
5,663,480
274 5,663,408
351 5,663,409
401 5,663,410

CLASS 560

22 5,663,411
51 5,663,412
59 5,663,413
68 5,663,415
105 5,663,416
121 5,663,417
124 5,663,418
190 5,663,419
216 5,663,420
218 5,663,421
240 5,663,422
340 5,663,423
347 5,663,424

CLASS 562

32 5,663,425
35 5,663,426
105 5,663,427
416 5,663,428
519 5,663,429
608 5,663,430
828 5,663,431
855 5,663,432
874 5,663,433

CLASS 564

80 5,663,414
92 5,663,434
153 5,663,435
154 5,663,436
184 5,663,437
305 5,663,438
5,663,439
384 5,663,440
399 5,663,441
404 5,663,442
451 5,663,443
477 5,663,444
490 5,663,445
5,663,446

CLASS 568

316 5,663,447
335 5,663,448
337 5,663,449
415 5,663,450
451 5,663,451
461 5,663,452
637 5,663,453
697 5,663,454
5,663,455
724 5,663,456
790 5,663,457
814 5,663,458
826 5,663,459
829 5,663,460
886 5,663,461
934 5,663,462

CLASS 570

128 5,663,463
175 5,663,464
224 5,663,465

CLASS 585

253 5,663,466
359 5,663,467
503 5,663,469
520 5,663,470
639 5,663,471
641 5,663,472
652 5,663,473
721 5,663,474

CLASS 588

205 5,663,475
5,663,477
206 5,663,479
228 5,663,476
248 5,663,478
256 5,662,579

CLASS 600

3 5,662,580
21 5,662,581
29 5,662,582
38 5,662,583
103 5,662,584
104 5,662,585
110 5,662,586
114 5,662,587
121 5,662,588

CLASS 601

2 5,662,590
24 5,662,591
34 5,662,592
159 5,662,593

CLASS 602

16 5,662,594
20 5,662,595
26 5,662,596
32 5,662,597
41 5,662,598
79 5,662,599

CLASS 604

8 5,662,600
15 5,662,601
22 5,662,603
28 5,662,604
54 5,662,605
95 5,662,606
96 5,662,607
5,662,608
101 5,662,609
110 5,662,610
118 5,662,611
155 5,662,612
165 5,662,613
167 5,662,614
5,662,615
175 5,662,616
192 5,662,617
272 5,662,619
280 5,662,620
281 5,662,621
282 5,662,622
283 5,662,623
291 5,662,624
305 5,662,625
306 5,662,626
319 5,662,627
342 5,662,628
5,662,629
349 5,662,630
352 5,662,631
378 5,662,633
5,662,634
385.1 5,662,641
385.2 5,662,636
5,662,637
386 5,662,638
387 5,662,639
392 5,662,640
403 5,662,642

CLASS 606

3 5,662,643
9 5,662,644
15 5,662,646
41 5,662,647
54 5,662,648
57 5,662,649
59 5,662,650
60 5,662,651
61 5,662,652
5,662,653
72 5,662,654
75 5,662,655
88 5,662,656
95 5,662,657
104 5,662,658
107 5,662,659
132 5,662,661
143 5,662,662
144 5,662,663
5,662,664
147 5,662,665
148 5,662,666
151 5,662,667
166 5,662,668
167 5,662,669
170 5,662,670
5,662,671
181 5,662,672
185 5,662,673
192 5,662,674
194 5,662,675
198 5,662,676
201 5,662,677
5,662,678
204 5,662,679
210 5,662,680
213 5,662,681
228 5,662,682
232 5,662,683
234 5,662,684
5,662,685
238 5,662,686

CLASS 607

5 5,662,687
5,662,688
5,662,689
6 5,662,690
5,662,691
32 5,662,692
37 5,662,693
49 5,662,694
60 5,662,695
96 5,662,696
116 5,662,697
122 5,662,698
123 5,662,699
138

CLASS 623

1 5,662,700
5,662,701
5,662,702
5,662,703
2 5,662,704
5,662,705
6 5,662,706
5,662,707
8 5,662,708
11 5,662,709
5,662,710
12 5,662,711
5,662,712
5,662,713
15 5,662,714
36 5,662,715

CLASS 701

2 5,663,879
93 5,663,880
104 5,663,881
254 5,664,059

CLASS 704

8 5,664,206
206 5,664,051
214 5,664,052
219 5,664,053
5,664,054
223 5,664,055
229 5,664,056
5,664,057
243 5,664,058
251 5,664,050
270 5,664,060
275 5,664,061

CLASS 705

2 5,664,109
26 5,664,110
27 5,664,111
28 5,664,112
5,664,113
37 5,664,115

CLASS 711

111 5,664,141
112 5,664,142
5,664,143
113 5,664,144
115 5,664,146
117 5,664,145
137 5,664,147
138 5,664,148
141 5,664,149
143 5,664,150
145 5,664,151
153 5,664,152
154 5,664,153
167 5,664,154
170 5,664,155
202 5,664,139
211 5,664,140

CLASS 800

2 5,663,481
5,663,482
5,663,483
200 5,663,484
5,663,485

CLASSIFICATION OF DESIGNS

D2—	624	382,985		395	383,035		86	383,085		230	383,137		253	383,187		68	383,237
	860	382,986		400	383,036		164	383,086		234	383,138			383,188		87	383,238
	861	382,987		511	383,037			383,087		242	383,139	D22—	107	383,189			383,239
	876	382,988		531	383,038			383,088	D15—	5	383,140		108	383,190		91	383,240
	894	382,989		536	383,039			383,089		9	383,142		141	383,191		94	383,241
	897	382,990		602	383,040			383,090		13	383,141	D23—	209	383,192		110	383,242
	916	382,991		629	383,041	D12—	91	383,091		28	383,143		216	383,193		118	383,243
	970	382,992		698	383,042		95	383,092	D16—	130	383,144		249	383,194	D28—	7	383,244
	972	382,993		700	383,043		102	383,093		208	383,145		262	383,195		35	383,245
	980	382,994	D8—	21	383,044			383,094		209	383,146			383,196		42	383,246
D3—	215	382,995		38	383,045		107	383,095			383,147		266	383,197		50	383,247
	218	382,996		69	383,046		110	383,096		314	383,148		275	383,198		60	383,248
	274	382,997		107	383,047		111	383,098		326	383,149		299	383,199	D29—	102	383,249
	313	382,998			383,048			383,099			383,150		351	383,200		120	383,250
	314	382,999			383,049			383,100	D18—	2	383,151		358	383,201	D30—	106	383,251
	324	383,000		354	383,050		147	383,101		24	383,152		364	383,202		119	383,252
D4—	116	383,001		356	383,051			383,102		56	383,153		411	383,203		120	383,253
		383,002		367	383,052			383,103			383,154	D24—	110	383,204		129	383,254
D5—	53	383,003		382	383,053			383,104			383,155		112	383,205		145	383,255
D6—	323	383,004		388	383,054		181	383,105			383,156		117	383,206			383,258
	328	383,005		395	383,055		186	383,106			383,157		126	383,207			383,259
	334	383,006		396	383,056		220	383,108			383,158		155	383,208		153	383,256
	348	383,007		400	383,057		314	383,109			383,159		181	383,209		157	383,257
	358	383,008		499	383,058		401	383,110	D19—	12	383,160		185	383,210		158	383,260
	372	383,009	D9—	300	383,059		410	383,111		34	383,161		189	383,211		160	383,261
	381	383,010		305	383,060		422	383,112		49	383,162		200	383,212		161	383,262
	437	383,011		315	383,061	D13—	102	383,113		62	383,163		206	383,213	D32—	25	383,263
	439	383,012		421	383,062		110	383,114		65	383,164		224	383,214		30	383,264
	479	383,013		432	383,063			383,115		73	383,165		225	383,215		36	383,265
		383,014			383,064		123	383,116		86	383,166	D25—	1	383,216		37	383,266
	480	383,015		447	383,065		138	383,117	D20—	22	383,167		16	383,217		46	383,267
	481	383,016		456	383,066		139	383,118		27	383,168		56	383,218		50	383,268
	482	383,017		520	383,067	D14—	100	383,119	D21—	13	383,169		60	383,219			383,269
	488	383,018		522	383,068		106	383,120		18	383,170		61	383,220		54	383,270
	491	383,019		542	383,069		114	383,121		37	383,171		103	383,221			383,271
		383,020			383,070			383,122		63	383,172		124	383,222			383,272
	500	383,021	D10—	5	383,071		114.5	383,123		65	383,173		142	383,223			383,275
	504	383,022		30	383,072		116	383,124		104	383,174	D26—	3	383,224		55	383,273
		383,023		31	383,073		121	383,125			383,175		23	383,225		58	383,274
	525	383,024		32	383,074		134	383,126		108	383,176		25	383,226			383,276
	542	383,025		66	383,075		138	383,127		114	383,177		28	383,227	D34—	1	383,277
	601	383,026		70	383,076			383,128		122	383,178		37	383,228			383,278
		383,027		104	383,077			383,129		205	383,179		39	383,229		5	383,279
	602	383,028		106	383,078			383,130		213	383,180		42	383,230		13	383,280
D7—	332	383,029			383,079		149	383,131		214	383,181		43	383,231		15	383,281
	346	383,030		109	383,080		164	383,132		221	383,182		44	383,232		19	383,282
	354	383,031		111	383,081		198	383,133		228	383,183		46	383,233		27	383,283
	359	383,032	D11—	13	383,082		218	383,134		237	383,184		49	383,234			383,284
	392.1	383,033		21	383,083			383,135		240	383,185		60	383,235			
	393	383,034		30	383,084		223	383,136			383,186		63	383,236			

CLASSIFICATION OF PLANTS

P.—	9	0,014	34.1	0,016	0,019	0,021	
	10.1	0,015	87.12	0,018	0,020		

STATUTORY INVENTION REGISTRATIONS

166—	297	H1675	340—	605	H1676	358—	468	H1677	428—	141	H1678	435—	280	H1679	510—	493	H1680

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
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Canal Zone	7	Minnesota	27	Tennessee	47
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Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
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Georgia	13	New Hampshire	33	Washington	53
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Indiana	18	North Dakota	38	U.S. Army	58
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,661,976	5,661,963	5,662,460	5,663,059	5,663,661	5,664,047
	5,661,996	5,661,977	5,662,473	5,663,062	5,663,665	5,664,048
	5,662,221	5,661,978	5,662,477	5,663,070	5,663,666	5,664,054
	5,662,601	5,661,979	5,662,536	5,663,075	5,663,694	5,664,059
	5,662,669	5,661,980	5,662,537	5,663,076	5,663,701	5,664,075
	5,662,721	5,661,987	5,662,545	5,663,078	5,663,708	5,664,082
	5,663,982	5,661,999	5,662,585	5,663,079	5,663,710	5,664,086
	5,664,065	5,662,000	5,662,587	5,663,083	5,663,711	5,664,107
	5,664,073	5,662,012	5,662,600	5,663,086	5,663,719	5,664,108
02 :	5,662,181	5,662,028	5,662,606	5,663,091	5,663,728	5,664,112
04 :	5,661,860	5,662,033	5,662,608	5,663,095	5,663,733	5,664,116
	5,661,920	5,662,048	5,662,613	5,663,166	5,663,734	5,664,117
	5,661,940	5,662,058	5,662,620	5,663,228	5,663,735	5,664,121
	5,661,962	5,662,065	5,662,623	5,663,242	5,663,736	5,664,122
	5,662,219	5,662,075	5,662,627	5,663,289	5,663,758	5,664,127
	5,662,241	5,662,097	5,662,647	5,663,292	5,663,771	5,664,128
	5,662,262	5,662,106	5,662,657	5,663,300	5,663,807	5,664,135
	5,662,298	5,662,127	5,662,659	5,663,304	5,663,847	5,664,143
	5,662,330	5,662,128	5,662,664	5,663,306	5,663,848	5,664,148
	5,662,352	5,662,139	5,662,665	5,663,313	5,663,856	5,664,150
	5,662,440	5,662,142	5,662,668	5,663,316	5,663,874	5,664,151
	5,662,753	5,662,143	5,662,673	5,663,317	5,663,878	5,664,152
	5,662,813	5,662,150	5,662,680	5,663,323	5,663,890	5,664,154
	5,662,982	5,662,153	5,662,685	5,663,335	5,663,891	5,664,156
	5,663,018	5,662,163	5,662,686	5,663,345	5,663,893	5,664,158
	5,663,149	5,662,225	5,662,692	5,663,347	5,663,900	5,664,159
	5,663,217	5,662,231	5,662,695	5,663,357	5,663,901	5,664,164
	5,663,476	5,662,233	5,662,697	5,663,367	5,663,907	5,664,166
	5,663,581	5,662,235	5,662,698	5,663,380	5,663,908	5,664,169
	5,663,685	5,662,267	5,662,704	5,663,450	5,663,910	5,664,170
	5,663,690	5,662,290	5,662,705	5,663,472	5,663,916	5,664,171
	5,663,727	5,662,292	5,662,706	5,663,475	5,663,918	5,664,174
	5,663,938	5,662,297	5,662,709	5,663,494	5,663,923	5,664,182
	5,663,961	5,662,299	5,662,731	5,663,497	5,663,927	5,664,184
	5,664,084	5,662,300	5,662,734	5,663,538	5,663,952	5,664,189
	5,664,113	5,662,325	5,662,737	5,663,545	5,663,967	5,664,193
	5,664,213	5,662,327	5,662,750	5,663,546	5,663,969	5,664,194
05 :	5,661,858	5,662,346	5,662,768	5,663,562	5,663,972	5,664,197
	5,662,050	5,662,347	5,662,769	5,663,563	5,663,980	5,664,198
06 :	Re.35,598	5,662,353	5,662,787	5,663,564	5,663,992	5,664,204
	Re.35,601	5,662,356	5,662,793	5,663,570	5,663,993	5,664,206
	5,661,855	5,662,362	5,662,896	5,663,583	5,663,994	5,664,208
	5,661,856	5,662,365	5,662,907	5,663,590	5,663,999	5,664,216
	5,661,882	5,662,384	5,662,908	5,663,591	5,664,006	5,664,224
	5,661,896	5,662,417	5,662,914	5,663,593	5,664,009	5,664,231
	5,661,918	5,662,430	5,662,976	5,663,596	5,664,019	08 : 5,661,861
	5,661,926	5,662,433	5,663,016	5,663,634	5,664,028	5,661,867
	5,661,929	5,662,452	5,663,017	5,663,645	5,664,029	5,661,873
	5,661,946	5,662,459	5,663,051	5,663,655	5,664,032	5,661,877

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5,662,066
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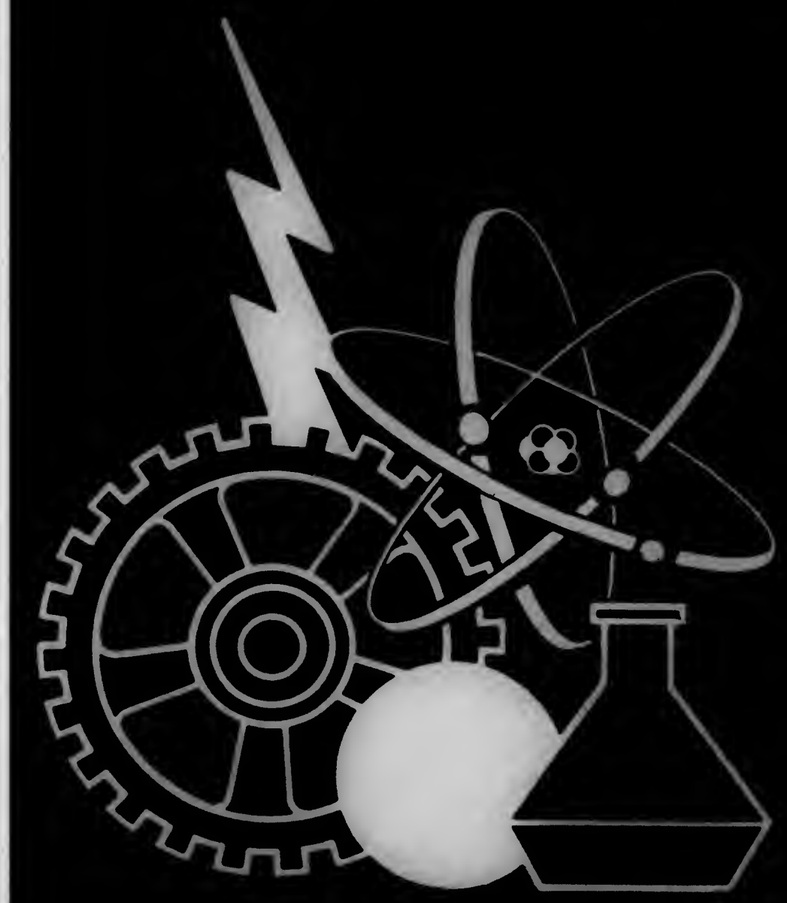
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General and Mechanical (5,664,256)			893
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Electrical (5,665,893)			1421
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1200 O.G. 98, on July 29, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was decreased, effective July 1, 1997, and was announced in the *Official Gazette* at 1200 O.G. 97, on July 29, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1310.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

July 7, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 6, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,343,561 through 5,345,607
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 4, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,953,231 through 4,955,086
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 2, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,608,715 through 4,610,033
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 2, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,741	07/057,944	08/30/88
(4,526,738)	(06/512,206)	(07/02/85)
Re. 33,825	07/396,270	02/18/92
(4,527,216)	(06/475,780)	(07/02/85)
4,525,879	06/560,408	07/02/85
4,525,888	06/530,832	07/02/85
4,525,899	06/507,999	07/02/85
4,525,900	06/431,603	07/02/85
4,525,903	06/439,316	07/02/85
4,525,905	06/398,380	07/02/85
4,525,922	06/544,263	07/02/85
4,525,930	06/348,547	07/02/85
4,525,932	06/559,749	07/02/85
4,525,936	06/551,341	07/02/85
4,525,941	06/572,536	07/02/85
4,525,943	06/530,641	07/02/85
4,525,946	06/262,529	07/02/85
4,525,964	06/498,587	07/02/85
4,525,967	06/294,329	07/02/85
4,525,975	06/447,433	07/02/85
4,525,976	06/481,858	07/02/85
4,525,982	06/445,564	07/02/85
4,525,995	06/481,719	07/02/85
4,526,007	06/495,959	07/02/85
4,526,013	06/434,857	07/02/85
4,526,015	06/661,013	07/02/85
4,526,020	06/615,968	07/02/85
4,526,024	06/396,609	07/02/85
4,526,025	06/524,299	07/02/85
4,526,028	06/493,696	07/02/85
4,526,031	06/456,675	07/02/85
4,526,037	06/503,978	07/02/85
4,526,042	06/466,143	07/02/85
4,526,049	06/346,446	07/02/85
4,526,052	06/452,902	07/02/85
4,526,072	06/524,529	07/02/85
4,526,079	06/537,631	07/02/85
4,526,089	06/347,792	07/02/85
4,526,093	06/602,518	07/02/85
4,526,103	06/364,897	07/02/85
4,526,106	06/540,179	07/02/85
4,526,114	06/469,779	07/02/85
4,526,121	06/412,936	07/02/85
4,526,129	06/313,785	07/02/85
4,526,132	06/554,242	07/02/85
4,526,143	06/526,841	07/02/85
4,526,146	06/544,186	07/02/85
4,526,152	06/570,052	07/02/85
4,526,162	06/637,690	07/02/85
4,526,173	06/472,053	07/02/85
4,526,180	06/404,611	07/02/85
4,526,181	06/545,612	07/02/85
4,526,182	06/369,026	07/02/85
4,526,184	06/582,248	07/02/85
4,526,202	06/491,271	07/02/85
4,526,206	06/576,594	07/02/85
4,526,208	06/528,612	07/02/85
4,526,211	06/526,068	07/02/85
4,526,217	06/604,419	07/02/85
4,526,221	06/573,146	07/02/85
4,526,222	06/491,999	07/02/85

Patent Number	Serial Number	Issue Date
4,526,223	06/597,834	07/02/85
4,526,233	06/572,437	07/02/85
4,526,235	06/424,382	07/02/85
4,526,238	06/571,470	07/02/85
4,526,243	06/323,758	07/02/85
4,526,247	06/458,887	07/02/85
4,526,252	06/621,456	07/02/85
4,526,257	06/561,751	07/02/85
4,526,260	06/406,059	07/02/85
4,526,263	06/504,887	07/02/85
4,526,266	06/407,046	07/02/85
4,526,267	06/440,750	07/02/85
4,526,269	06/505,839	07/02/85
4,526,270	06/477,220	07/02/85
4,526,275	06/617,024	07/02/85
4,526,278	06/503,893	07/02/85
4,526,290	06/543,668	07/02/85
4,526,293	06/462,514	07/02/85
4,526,295	06/527,644	07/02/85
4,526,299	06/421,453	07/02/85
4,526,304	06/495,282	07/02/85
4,526,314	06/431,921	07/02/85
4,526,317	06/625,883	07/02/85
4,526,320	06/491,213	07/02/85
4,526,321	06/531,522	07/02/85
4,526,324	06/586,115	07/02/85
4,526,325	06/429,630	07/02/85
4,526,327	06/516,944	07/02/85
4,526,332	06/621,851	07/02/85
4,526,347	06/386,137	07/02/85
4,526,351	06/595,724	07/02/85
4,526,354	06/579,303	07/02/85
4,526,364	06/476,446	07/02/85
4,526,365	06/476,721	07/02/85
4,526,373	06/523,881	07/02/85
4,526,383	06/579,730	07/02/85
4,526,396	06/500,190	07/02/85
4,526,397	06/431,230	07/02/85
4,526,400	06/489,106	07/02/85
4,526,410	06/444,898	07/02/85
4,526,422	06/452,923	07/02/85
4,526,426	06/390,038	07/02/85
4,526,433	06/541,919	07/02/85
4,526,435	06/411,385	07/02/85
4,526,437	06/476,227	07/02/85
4,526,450	06/532,994	07/02/85
4,526,457	06/527,232	07/02/85
4,526,463	06/403,681	07/02/85
4,526,468	06/509,597	07/02/85
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4,526,592	06/526,828	07/02/85
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4,526,636	06/614,526	07/02/85
4,526,657	06/437,703	07/02/85
4,526,659	06/655,557	07/02/85
4,526,661	06/499,261	07/02/85
4,526,672	06/592,626	07/02/85
4,526,673	06/563,096	07/02/85
4,526,674	06/636,546	07/02/85
4,526,680	06/615,395	07/02/85
4,526,686	06/533,899	07/02/85
4,526,689	06/636,084	07/02/85
4,526,691	06/448,491	07/02/85
4,526,694	06/561,200	07/02/85
4,526,702	06/411,295	07/02/85
4,526,705	06/451,587	07/02/85
4,526,706	06/288,587	07/02/85
4,526,707	06/562,727	07/02/85
4,526,710	06/446,036	07/02/85
4,526,722	06/486,150	07/02/85
4,526,724	06/537,840	07/02/85
4,526,737	06/458,013	07/02/85
4,526,751	06/559,898	07/02/85
4,526,755	06/351,238	07/02/85
4,526,766	06/560,962	07/02/85
4,526,768	06/551,079	07/02/85
4,526,778	06/600,233	07/02/85
4,526,779	06/351,670	07/02/85
4,526,792	06/438,708	07/02/85
4,526,793	06/482,430	07/02/85
4,526,795	06/578,755	07/02/85
4,526,799	06/588,631	07/02/85
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4,526,807	06/604,661	07/02/85
4,526,823	06/565,522	07/02/85
4,526,824	06/587,035	07/02/85
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4,526,879	06/520,746	07/02/85
4,526,880	06/631,689	07/02/85
4,526,883	06/622,471	07/02/85
4,526,885	06/574,244	07/02/85
4,526,890	06/251,794	07/02/85
4,526,891	06/474,106	07/02/85
4,526,894	06/506,503	07/02/85
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4,526,937	06/622,620	07/02/85
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4,526,941	06/535,459	07/02/85
4,526,944	06/240,103	07/02/85
4,526,951	06/492,945	07/02/85
4,526,956	06/448,386	07/02/85
4,526,957	06/469,324	07/02/85
4,526,969	06/454,108	07/02/85
4,526,972	06/624,894	07/02/85
4,526,973	06/386,566	07/02/85
4,526,975	06/511,854	07/02/85
4,526,990	06/503,979	07/02/85
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4,526,997	06/611,780	07/02/85
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4,527,016	06/526,258	07/02/85
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4,527,086	06/528,717	07/02/85
4,527,097	06/490,802	07/02/85
4,527,099	06/473,799	07/02/85
4,527,103	06/618,814	07/02/85
4,527,108	06/482,702	07/02/85
4,527,113	06/356,479	07/02/85
4,527,131	06/564,597	07/02/85
4,527,132	06/392,474	07/02/85
4,527,139	06/615,498	07/02/85
4,527,140	06/510,430	07/02/85
4,527,144	06/550,001	07/02/85
4,527,146	06/564,100	07/02/85
4,527,148	06/437,303	07/02/85
4,527,154	06/331,818	07/02/85
4,527,157	06/429,742	07/02/85
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4,527,168	06/521,137	07/02/85
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4,527,217	06/654,519	07/02/85
4,527,247	06/621,884	07/02/85
4,527,251	06/450,691	07/02/85
4,527,254	06/441,709	07/02/85
4,527,255	06/395,531	07/02/85
4,527,256	06/470,759	07/02/85
4,527,260	06/320,799	07/02/85
4,527,268	06/522,816	07/02/85
4,527,281	06/544,746	07/02/85
4,527,283	06/558,911	07/02/85
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5,224,148	07/875,617	06/29/93
5,224,156	07/555,251	06/29/93
5,224,165	07/564,005	06/29/93
5,224,175	07/519,223	06/29/93
5,224,176	07/907,239	06/29/93
5,224,187	07/875,885	06/29/93
5,224,188	07/977,738	06/29/93
5,224,196	07/896,253	06/29/93
5,224,201	07/703,209	06/29/93

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 371,802, Re. S.N. 29/071,354, May 28, 1997, Cl. D18/56, SOLID INK STICK FOR A COLOR PRINTER, Brent R. Jones, et. al., Owner of Record: *Tektronix, Inc., Wilsonville, Oreg.*, Attorney or Agent: Charles F. Moore, Ex. Gp.: 2904

D. 373, 139, Re. S.N. 29/071,356, May 28, 1997, Cl. D18/56, SOLID INK STICK FOR A COLOR PRINTER, Brent R. Jones, et. al., Owner of Record: *Tektronix, Inc., Wilsonville, Oreg.*, Attorney or Agent: Charles F. Moore, Ex. Gp.: 2904

5,412,964, Re. S.N. 08/852,751, May 7, 1997, Cl. 70/261, ANTI-THEFT DEVICE FOR A MOTOR VEHICLE, Shoony A. Yee, Owner of Record: *Inventor*, Attorney or Agent: Ignacio Marc Asperas, Ex. Gp.: 3508

5,425,121, Re. S.N. 08/856,311, May 14, 1997, Cl. 385/112, CABLE ASSEMBLY FOR USE WITH OPTO-ELECTRONIC EQUIPMENT ENCLOSURES, Terry L. Cooke, et. al., Owner of Record: *Siecor Corp., Hickory, North Carolina*, Attorney or Agent: Michael L. Goldman, Ex. Gp.: 2501

5,514,167, Re. S.N. 08/824,951, March 27, 1997, Cl. 607/72, HAND HOLDABLE HUMAN SKIN TREATMENT APPARATUS, Margaret M. Smith, et. al., Owner of Record: *MGB Technologies Corp., Sparks, Nev.*, Attorney or Agent: Jack C. Munro, Ex. Gp.: 3305

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,533,937, Reexam. No. 90/004,699, July 18, 1997, Cl. 474/080, BICYCLE DERAILLEUR, Sam H. Patterson, et. al., Owner of Record: *Sram Corp., Chicago, Ill.*, Attorney or Agent:

Ralph C. Francis, Oakland, Calif., Ex. Gp.: 3506, Requester: Shimano, Inc., Osaka, Japan, c/o James A. Deland, San Ramon, Calif.

5,565,109, Reexam. No. 90/004,700, July 22, 1997, Cl. 210/755, HYDANTOIN-ENHANCED HALOGEN EFFICACY IN PULP AND PAPER APPLICATIONS, Philip G. Sweeny, Owner of Record: *Lonza Inc., Fair Lawn, N.J.*, Attorney or Agent: Darby & Darby, New York, N.Y., Ex. Gp.: 1308, Requester: Woodard Emhardt Naughton Moriarty & McNett, Indianapolis, Ind.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the fil ng of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Off ce, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 16, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
111,952	71/094,677	08/15/1916
112,461	71/094,659	09/12/1916
112,540	71/095,231	09/12/1916
112,550	71/090,566	09/12/1916
112,555	71/095,239	09/12/1916
338,418	71/377,745	09/08/1936
338,443	71/377,301	09/08/1936
338,489	71/376,700	09/08/1936
338,490	71/342,168	09/08/1936
338,502	71/376,264	09/08/1936
338,504	71/376,263	09/08/1936
338,532	71/378,868	09/08/1936
338,549	71/370,455	09/08/1936
338,556	71/378,427	09/08/1936
338,606	71/375,119	09/08/1936
338,608	71/370,684	09/08/1936
338,609	71/370,679	09/08/1936
338,619	71/375,429	09/08/1936
623,233	71/682,001	03/13/1956
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625,613	71/669,673	04/17/1956
628,825	71/690,453	06/12/1956
632,673	71/700,112	08/14/1956
634,058	71/692,743	09/04/1956
634,241	71/638,558	09/11/1956
634,242	71/661,587	09/11/1956
634,246	71/691,599	09/11/1956
634,259	71/699,851	09/11/1956
634,281	71/698,459	09/11/1956
634,282	71/698,570	09/11/1956
634,283	71/689,740	09/11/1956
634,291	71/696,327	09/11/1956
634,292	71/698,043	09/11/1956
634,295	71/698,519	09/11/1956
634,297	72/000,517	09/11/1956
634,300	72/000,853	09/11/1956
634,345	71/687,993	09/11/1956
634,350	71/699,650	09/11/1956
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634,373	72/004,349	09/11/1956
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634,416	71/700,090	09/11/1956
634,421	71/681,361	09/11/1956
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634,441	71/697,110	09/11/1956
634,444	71/697,437	09/11/1956
634,448	71/698,254	09/11/1956
634,453	71/698,903	09/11/1956
634,454	71/699,100	09/11/1956
634,458	71/682,608	09/11/1956
634,460	71/652,387	09/11/1956
634,464	71/680,915	09/11/1956
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1,047,459	73/065,792	09/07/1976
1,047,460	73/066,423	09/07/1976
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1,047,467	73/077,755	09/07/1976
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1,047,472	73/078,059	09/07/1976
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1,047,518	73/076,759	09/07/1976
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1,047,596	73/079,916	09/07/1976
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1,047,602	73/038,731	09/07/1976
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1,047,604	73/078,571	09/07/1976
1,047,609	73/080,423	09/07/1976
1,047,610	73/080,815	09/07/1976
1,047,612	73/053,146	09/07/1976
1,047,613	73/062,069	09/07/1976
1,047,615	73/077,783	09/07/1976
1,047,616	73/079,114	09/07/1976
1,047,617	73/079,149	09/07/1976
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1,047,698	73/071,223	09/07/1976
1,047,703	73/049,168	09/07/1976
1,047,704	73/075,414	09/07/1976
1,047,706	73/076,334	09/07/1976
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1,047,807	73/077,582	09/07/1976
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1,047,829	73/078,662	09/07/1976
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1,047,832	73/079,207	09/07/1976
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1,047,853	73/076,976	09/07/1976
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1,047,856	73/079,475	09/07/1976
1,047,871	73/073,276	09/07/1976
1,047,877	73/076,002	09/07/1976
1,047,879	73/076,240	09/07/1976
1,047,880	73/076,510	09/07/1976
1,047,881	73/076,539	09/07/1976
1,047,885	73/077,662	09/07/1976
1,047,886	73/077,745	09/07/1976
1,047,887	73/078,163	09/07/1976
1,047,889	72/431,701	09/07/1976
1,047,891	72/449,823	09/07/1976
1,047,892	72/435,907	09/07/1976
1,047,893	72/440,225	09/07/1976
1,047,896	72/462,013	09/07/1976
1,047,901	73/015,680	09/07/1976
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1,047,913	73/050,557	09/07/1976
1,049,810	73/075,334	10/05/1976

Patents Available For License or Sale

4,795,171 — SELF PRESSURIZED SHAFT OR CLOSURE SEAL

Contact: L. James Ristas
Chilton, Alix & Van Kirk
750 Main St.
Hartford, Conn. 06103
(voice) : (860) 527-9211
(fax): (860) 527-5029

5,082,486 — PROCESS FOR PREPARING ORGANIC COMPOST FROM MUNICIPAL REFUSE

Contact: Mark E. Glogowski
Vermicycle Corp.
1498 Lake Rd.
Hamlin, N.Y. 14464
(voice) : (716) 964-2866
(fax) : (716) 426-4244

5,359,461 — PORTABLE COSMETIC MIRROR APPARATUS

Contact: Virginia Rice
Rt. 3, Box 42
Cedar Creek, Tex. 78612
(voice) : (512) 303-3364

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5,557,989 BAND SAW BLADE TENSIONING DEVICE

Contact: Carlotta Reddish
710 The Oaks
Clarkston, Ga. 30021
(voice) : (404) 297-5901

5,592,742 CUTTING EDGE ARRANGEMENT

Contact: Paul A. Schnose
Evenson McKeown Edwards & Lenahan
1200 G St., N.W., Suite 700
Washington, D.C. 20005-3814
(voice) : (202) 628-8800
(fax) : (202) 628-8844

Disclaimers

5,006,943—Dieter Elasasser, St. Georgen/Schwarzwald; Johann von der Heide, Schranberg, both of Fed. Rep. of Germany. DISK STORAGE DRIVE. Patent dated April 9, 1991. Disclaimer filed July 10, 1997, by the assignee, Papst-Mortoren GmbH & Co. KG.

The term of this patent subsequent to July 10, 1997, has been disclaimed.

5,346,669—Mark A. Sweval, Lafayette; W. Douglas Register, West Lafayette; Mark L. Robin, West Lafayette; Yuichi Iikubo, West Lafayette, all of Ind. OZONE FRIENDLY STERILANT MIXTURE. Patent dated Sept. 13, 1994. Disclaimer filed April 16, 1997, by the assignee, Great Lakes Chemical Corp.

Hereby enters this disclaimer to claims 1-8 of said patent.

5,594,606—Helmut Hans and Jurgen Oelsch, both of St. Georgen, Germany. DISK STORAGE DRIVE FOR MAINTAINING PRECISION DURING THERMAL VARIATIONS. Patent dated Jan. 14, 1997. Disclaimer filed April 24, 1997, by the assignee, Papst Licensing GmbH.

The term of this patent subsequent to April 24, 1997, has been disclaimed.

5,614,793—James A. Wilber, Indianapolis, Ind. DEFLECTION CIRCUIT RESPONSIVE TO DIFFERENTIAL SAWTOOTH SIGNALS. Patent dated March 25, 1997. Disclaimer filed June 6, 1997, by the assignee, Thomson Consumer Electronics, Inc.

Hereby enters this disclaimer to claims 1-8 of said patent.

5,625,014—Naoki Kataoka; Yosuke Numao; Takashi Seki; Yoshio Tajima; and Kazuo Matsuura, all of Yokohama, Japan. METHOD OF POLYMERIZATION OF OLEFINS. Patent dated April 29, 1997. Disclaimer filed July 29, 1997, by the assignee, Nippon Oil Co., Ltd.

The term of this patent shall not extend beyond the expiration date of Pat. No. 5,331,071.

Disclaimers and Dedications

D. 375,764—Fred Hollinger, Kings Park, N.Y. RANDOM NUMBER SELECTOR GAME. Patent dated Nov. 19, 1996. Disclaimer and Dedication filed Nov. 19, 1996, by the assignee, E & B Giftware, Inc.

Hereby disclaims and dedicates to the Public the entire term of said patent.

5,411,880—Ken Izumori, Kagawa; and Keiji Tsusaki, Okayama, both of Japan. D-KETOHEXOSE 3-EPIMERASE, AND ITS PREPARATION. Patent dated May 2, 1995. Disclaimer and Dedication filed April 21, 1997, by the assignee, Kabushiki Kaisha Hayashibara Seitbutsu Kagaku Kenkyujo.

Hereby disclaims and dedicates to the Public claims 1-3 of said patent.

Certificates of Correction
For the Week of September 9, 1997

D. 363,599	5,555,307	5,600,698	5,622,835
Re. 35,473	5,556,472	5,600,720	5,622,891
Re. 35,557	5,556,826	5,602,301	5,622,948
5,023,707	5,557,908	5,602,400	5,622,993
5,104,308	5,558,101	5,604,276	5,623,056
5,121,487	5,558,141	5,604,613	5,623,375
5,123,085	5,558,328	5,604,626	5,623,468
5,251,249	5,558,702	5,604,691	5,623,988
5,259,704	5,562,073	5,604,693	5,624,317
5,268,095	5,564,741	5,604,724	5,624,661
5,276,274	5,565,447	5,604,850	5,625,068
5,282,849	5,567,243	5,604,857	5,625,070
5,321,581	5,568,583	5,605,483	5,625,264
5,332,658	5,570,079	5,605,559	5,625,389
5,334,127	5,570,195	5,605,900	5,625,390
5,347,225	5,571,178	5,605,966	5,625,799
5,347,553	5,571,842	5,606,327	5,626,236
5,396,467	5,573,058	5,606,434	5,626,262
5,400,433	5,573,428	5,606,617	5,626,581
5,410,722	5,573,693	5,607,100	5,626,803
5,410,843	5,573,736	5,607,303	5,627,036
5,411,533	5,574,578	5,608,417	5,627,130
5,414,734	5,574,842	5,608,541	5,627,459
5,430,262	5,576,133	5,608,733	5,627,798
5,440,523	5,576,787	5,609,287	5,627,944
5,443,691	5,577,487	5,609,409	5,627,984
5,446,145	5,578,109	5,609,575	5,628,327
5,449,769	5,578,369	5,609,991	5,628,866
5,459,529	5,579,129	5,610,262	5,629,324
5,467,061	5,581,390	5,610,698	5,629,522
5,471,044	5,581,419	5,610,902	5,629,701
5,476,179	5,582,183	5,611,452	5,629,926
5,480,786	5,582,880	5,611,957	5,629,952
5,486,462	5,582,967	5,612,682	5,630,147
5,486,871	5,582,984	5,612,701	5,631,110
5,486,965	5,583,179	5,612,776	5,631,278
5,488,320	5,584,672	5,612,802	5,631,479
5,489,858	5,584,972	5,612,825	5,631,649
5,491,142	5,586,131	5,613,640	5,631,667
5,491,353	5,586,408	5,613,929	5,632,307
5,495,196	5,587,800	5,614,149	5,632,377
5,496,044	5,589,401	5,615,830	5,632,612
5,496,351	5,589,548	5,616,797	5,632,661
5,511,680	5,589,706	5,618,355	5,632,847
5,516,715	5,590,012	5,618,384	5,632,921
5,517,933	5,590,207	5,618,514	5,632,949
5,523,435	5,590,660	5,618,754	5,633,189
5,525,463	5,590,939	5,619,018	5,633,202
5,527,573	5,591,025	5,619,163	5,633,210
5,528,326	5,591,802	5,619,174	5,633,447
5,538,518	5,592,175	5,619,318	5,633,657
5,538,741	5,592,552	5,619,415	5,634,131
5,539,921	5,592,710	5,619,833	5,634,324
5,540,150	5,593,150	5,619,993	5,634,552
5,541,180	5,593,403	5,620,039	5,634,614
5,541,765	5,593,672	5,620,287	5,635,083
5,543,785	5,593,800	5,620,725	5,635,608
5,544,269	5,593,919	5,620,923	5,635,964
5,545,535	5,595,040	5,621,471	5,636,013
5,546,596	5,595,690	5,621,863	5,636,085
5,549,063	5,596,559	5,621,870	5,636,331
5,552,134	5,597,212	5,622,115	5,636,348
5,554,340	5,597,422	5,622,507	5,636,362
5,554,341	5,598,952	5,622,619	5,636,553
5,554,746	5,599,648	5,622,773	5,636,870

5,637,044	5,638,373	5,638,912	5,640,178	5,641,073	5,642,074	5,644,053	5,649,190
5,637,434	5,638,394	5,639,335	5,640,248	5,641,254	5,642,108	5,644,652	5,649,367
5,638,082	5,638,529	5,639,396	5,640,258	5,641,263	5,642,674	5,645,746	5,649,832
5,638,289	5,638,636	5,639,409	5,640,329	5,641,282	5,642,922	5,646,396	
5,638,315	5,638,645	5,639,440	5,640,421	5,641,917	5,643,581	5,646,953	
5,638,370	5,638,899	5,639,738	5,640,479	5,642,056	5,643,638	5,647,838	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

July 21-25, 1997

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-21	EX	74/584,732	Friends in the West	2(e)(1)	Refusal Affirmed		"AFRICAN CHILDREN'S CHOIR" [charitable fund raising services, featuring a choir]		No
7-21	EX	74/606,357	Center for Medical Surgical Hair Restoration, P.C.	2(e)(1)	Refusal Affirmed		"LASERGRAFT" [surgical hair transplant services]		No
7-21	EX	74/611,247	Rieke Corp.	whether the matter asserted for registration has become distinctive as a trademark, under Sec. 2(f)	Refusal Reversed (but application held 60 days for submission of new drawing and new description of mark)		configuration of a closure flange, which is crimped in place within an embossment of a metal drum [container closures installed in metal drums-namely, a crimped-in-place flange and drum and embossment combination]		No
7-22	OPP	94,915	NBC Fourth Realty Corp. v. T. J. Bailey, Inc.	2(d)	Opposition Dismissed	"T. J. MAXX" et al. [department store services, featuring apparel, etc.]	"T. J. BAILEY" [men's clothing retail store services]		No
7-22	EX	74/451,409	Brown & Williamson Tobacco Corp.	2(d)	Refusal Reversed		design consisting of two concentrically-displayed six-sided figures [cigarettes]	design consisting of two concentrically-displayed five-sided figures (with open corners) [cigarettes]	No
7-22	EX	74/570,031	Ameritec Corp.	2(d)	Refusal Reversed		"NIAGARA" [telecommunications call generators and simulators]	"NIAGARA" [electrical transformers]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-22	EX	74/496,567	Interstate Packaging Corp.	genericness; whether matter asserted for registration is registrable under Sec. 2(f)	Refusal Reversed		"JUMBO" [plastic or paper bags for merchandise packaging]		No
7-22	EX	74/492,091	Trolex Corp.	genericness; whether matter asserted for registration is registrable under Sec. 2(f)	Refusal Affirmed (but only on ground that matter asserted for registration lacks 2(f) distinctiveness)		"AUTOMATIC BALANCING SYSTEM" [electronic and electro-mechanical temperature controls for use in connection with heating, ventilating, and air-conditioning systems]		No
7-23	OPP	89,271	Homedics, Inc. v. Pollenex Corp.	2(d)	Opposition Sustained	"BODY BASICS" [health and fitness products, including massagers for home use]	"BODY BASICS" [hand held electrical massage apparatus]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
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Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
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Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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Reference Collections of U.S. Patents and Trademarks
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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI[3]) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
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	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
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Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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	New York Public Library (The Research Libraries)	(212) 592-7000
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Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
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South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/21/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	10/16/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/19/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/14/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	04/13/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/29/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/16/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/25/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/26/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/18/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/24/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/12/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/22/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/24/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/18/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/25/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	12/05/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of August 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	06/05/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/96	04/30/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/16/96	07/03/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/24/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/96	05/29/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	02/09/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/06/97	04/14/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/18/96	05/19/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/30/97	05/30/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
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Affidavits Under Sections 8 & 15 (All Classes)	06/19/97	—0—
Renewals (All Classes)	06/19/97	—0—
Section 12(c) Publications (All Classes)	06/15/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

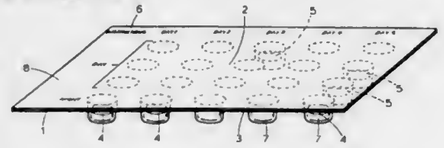
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REEXAMINATIONS

SEPTEMBER 9, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,295,567 (3315th)
MEDICAMENT CONTAINER
Eric T. Knudsen, Cobham, England, assignor to Beecham Grp. Ltd., Brentford, England
Reexamination Request No. 90/003,514, Aug. 2, 1994.
Reexamination Certificate for Patent 4,295,567, issued Oct. 20, 1981, Ser. No. 92,922, Nov. 9, 1979.
Claims priority, application United Kingdom, Nov. 10, 1978, 44099/78
Int. Cl.[6] **B65D** *83/04;85/58;* **G09F** *3/08*
U.S. Cl. 206—534



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **7–9** are cancelled.

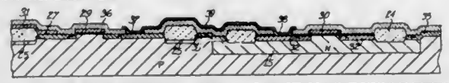
Claim **1** is determined to be patentable as amended.

Claims **2–6**, dependent on an amended claim, are determined to be patentable.

New claim **10** is added and determined to be patentable.

1. A *unitary* pharmaceutical dispensing container *prepackaged for a user*, which [contains] *is pre-filled and pre-sealed during manufacture of the container with* two *preselected* dosage units which are symptomatic treatments for respiratory tract disorders, the first of these dosage units being non-sedative, and the second of these dosage units being sedative, *said two dosage units being pharmaceutically formuloted for use with each other so that coordinated they comprise a single treatment regime for said respiratory tract disorders*, and an indicia for distinguishing between said first and second dosage units is provided on at least one of the container and said dosage units *and said container having administration instructions for the coordinated use of the dosage units according to the single treatment regime such that the non-sedative dosage units are for administration when sedation is not desired and the sedative dosage units are for administration when sedation is desired.*

B1 4,295,897 (3316th)
METHOD OF MAKING CMOS INTEGRATED CIRCUIT DEVICE
Graham S. Tubbs, Houston, and James E. Ponder, Cat Spring, both of Tex., assignors to Texas Instruments, Inc., Dallas, Tex.
Reexamination Request No. 90/004,250, May 28, 1996.
Reexamination Certificate for Patent 4,295,897, issued Oct. 20, 1981, Ser. No. 81,513, Oct. 3, 1979.
Int. Cl.[6] **H01L** *21/265*
U.S. Cl. 148—1.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are cancelled.

Claims **2** and **3** are determined to be patentable as amended.

3. A method of making complementary insulated gate field effect transistors in an integrated circuit comprising the steps of:

(a) introducing N-type impurity into a selected area of a face of a P-type semiconductor body to provide a tank region for forming a P-channel transistor, the step of introducing N-type impurity into said selected area including heating in an oxidizing atmosphere whereby *said N-type impurity is driven into said P-type semiconductor body and* said selected area is heavily oxidized to consume part of said surface area and produce a discontinuity in the surface to use for alignment,

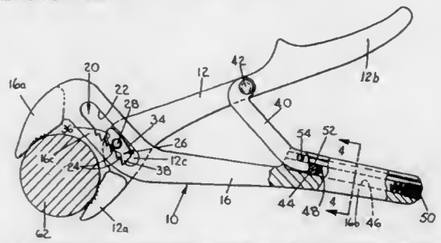
(b) selectively growing thick field oxide using an oxidation mask to provide a first enclosed surface area on said face spaced from said tank region and a second enclosed surface area on said face within said tank region,

(c) depositing a layer of conductive material on said face over a thin gate insulator and patterning the conductive material to provide a gate of an N-channel transistor in said first surface area and a gate of a P-channel tansistor in said second surface area,

(d) introducing P-type impurity into the second surface area to produce source and drain regions of the P-channel transistors while masking the first surface area,

(e) and introducing N-type impurity into the first surface area to produce source and drain regions of the N-channel transistor while masking said second surface area.

B1 4,651,598 (3317th)
SELF-ADJUSTING UTILITY PLIER
William A. Warheit, 121 Iroquois Dr., Butler, Pa. 16001
Reexamination Request No. 90/004,262, Jun. 4, 1996.
Reexamination Certificate for Patent 4,651,598, issued Mar. 24, 1987, Ser. No. 654,405, Sep. 26, 1984.
Int. Cl.[6] **B25B** *7/04*
U.S. Cl. 81—407



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

Claim **13** is cancelled.

Claims **11** and **14** are determined to be patentable as amended.

Claim **12**, dependent on an amended claim, is determined to be patentable.

New claims **15–20** are added and determined to be patentable.

11. Utility pliers capable of self-adjustment for gripping different size workpieces, comprising:

a pair of rigid, elongated handle members having opposed respective jaw ends and handle ends;

the handle members having intermediate means [slidably] *slideably* and pivotally interconnecting them whereby a manual

closing action of the handle members causes the jaw ends to move toward each other in a sliding action to grip a workpiece;

the intermediate means including releasable engagement means for engaging the members to each other and halting the sliding action while permitting the members to pivot relative to each other; [and]

means normally urging the releasable engagement means to release; *and*

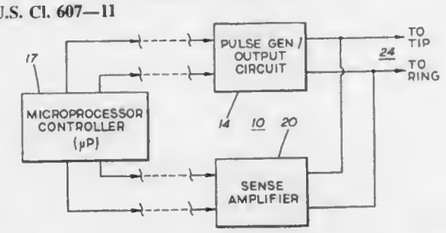
an arm pivotally interconnected to the handle members between the handle ends and the intermediate means and biased to urge the jaw ends to slide away from each other.

B1 4,913,145 (3318th)
CARDIAC PACEMAKER WITH SWITCHED CAPACITOR AMPLIFIERS

Lawrence J. Stotts, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Reexamination Request No. 90/004,260, Jun. 10, 1996.
Reexamination Certificate for Patent 4,913,145, issued Apr. 3, 1990, Ser. No. 194,174, May 16, 1988.
Int. Cl.[6] A61N *1/362*

U.S. Cl. 607—11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-9, 12-13** are confirmed.

Claim **10** is determined to be patentable as amended.

Claim **11, 23** dependent on an amended claim, is determined to be patentable.

New claims **14-23** are added and determined to be patentable.

1. In a cardiac pacemaker,

means for detecting a signal representative of cardiac activity,

means for amplyifying the detected signal,

means responsive to the detected signal for selectively varying the amplification gain thereof, the said gain varying means comprising a plurality of switched capacitors,

means further responsive to the detected signal for passing frequency components of said signal lying in a selectively variable pass band, and

means responsive to the filtered and gain adjusted signal for comparison of a magnitude thereof to predetermined target levels for determination of heart rate, said comparison means including

a pair of signal comparators, and

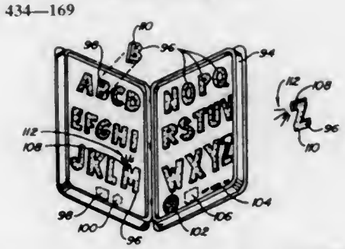
means for generating at least two target levels for each said comparators, for comparison of the magnitude of the detected signal.

B1 5,188,533 (3320th)
SPEECH SYNTHESIZING INDICIA FOR INTERACTIVE LEARNING

Michael C. Wood, Morage, Calif., assignor to Leapfrog Rbt, L.L.C., Berkeley, Calif.

Reexamination Request No. 90/004,006, Oct. 16, 1995.
Reexamination Certificate for Patent 5,188,533, issued Feb. 23, 1993, Ser. No. 754,989, Sep. 5, 1991.
Continuation-in-part of Ser. No. 531,824, Jun. 1, 1990, abandoned.
Int. Cl.[6] G09B *5/00*

U.S. Cl. 434—169



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **6, 7, 13** and **14** are cancelled.

Claims **1, 8, 9** and **12** are determined to be patentable as amended.

Claims **2–5, 10, 11, 15** and **16**, dependent on an amended claim, are determined to be patentable.

New claims **17–32** are added and determined to be patentable.

1. An article of manufacture comprising:

an indicia bearing unit having a three-dimensional configuration representing the language symbol of a phoneme, *the language symbol being in an ordered arrangement of language symbols*, the indicia bearing unit comprising:

(*i*) a touch-sensitive surface switch *associated with the language symbol*;

(*ii*) a voice synthesis chip electrically coupled to the touch sensitive surface switch, the chip activated by said switch and configured to produce a preselected electrical signal corresponding to the alphabetic letter *represented by the language symbol the signal being determined by the position of the language symbol*, represented by the indicia bearing unit, *in the ordered arrangement of language symbols*;

(*iii*) an amplifier electrically coupled to the chip and configured to receive the preselected electrical signal and generate a frequency signal; and

(*iv*) a speaker coupled to the amplifier and adapted to receive the frequency signal and convert the frequency signal into audible sounds *of the phoneme represented by the associated language symbol*.

B1 5,195,748 (3321st)
GOLF SWING TRAINING DEVICE

Robert C. Koch, and Alfred J. Koch, both of Strongsville, Ohio, assignors to Roberts Metals, Inc., Brunswick, Ohio

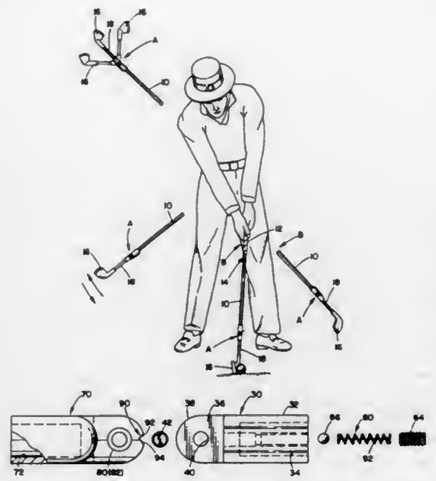
Reexamination Request No. 90/003,912, Jul. 24, 1995.
Reexamination Certificate for Patent 5,195,748, issued Mar. 23, 1993, Ser. No. 823,129, Jan. 21, 1992.
Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—232

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **11–27** is confirmed.

Claims **8** and **10** are cancelled.



Claims **1, 5** and **9** are determined to be patentable as amended.

Claims **2–4, 6** and **7**, dependent on an amended claim, are determined to be patentable.

New claims **28, 29, 30** and **31** are added and determined to be patentable.

1. A golf club used for training a golfer's swing, the club having a first end with a hand grip and a second end having a club head adapted for hitting a ball, a hinge *including first and second portions operably connected together by a pin member* interposed between the first and second ends permitting the second end to selectively break from longitudinal alignment along a first axis with the first end, means operatively associated with the hinge for selectively maintaining the first and second ends in longitudinal alignment including biasing means that requires a predetermined force to overcome it and break the alignment, and means for altering the biasing means, the improvement comprising:

an access to the altering means being accessible from a location adjacent and non-aligned with the first axis.

B1 5,437,880 (3322nd)
HEALTH DRINK COMPOSITION

Akihisa Takaichi, Naruto; Toshihiko Okamoto, Tokushima; Ichiro Otsuka, Naruto, and Ryuichi Hatai, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/004,303, Jul. 16, 1996.
Reexamination Certificate for Patent 5,437,880, issued Aug. 1, 1995, Ser. No. 150,043, Nov. 17, 1993.
PCT No. PCT/JP93/00342, § 371 Date Nov. 17, 1993, § 102(e) Date Nov. 17, 1993, PCT Pub. No. WO93/19642, PCT Pub. Date Oct. 14, 1993
Claims priority, application Japan, Mar. 27, 1992, 4-071267
Int. Cl.[6] A23L *1/302;1/308*

U.S. Cl. 426—73

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **3–8** is confirmed.

Claims **1, 2, 9** are cancelled.

New claims **10–21** and **22** are added and determined to be patentable.

3. The health drink composition of claim **2** wherein the hardly digestible saccharide is selected from the group consisiting of polydextrose, maltodextrin, soybean oligosaccharide, galactooligosaccharide, isomaltooligosaccharide, lactosucrose, and galactomannan and its decomposition product.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,602

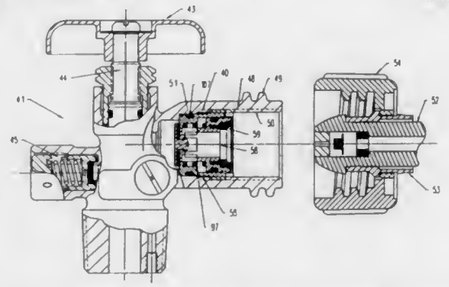
PRESSURE-LOADED CYLINDER VALVE INSERT

David M. Lechner, Lancaster, N.Y., assignor to Harsco Corporation, Wormleysburg, Pa.

Original No. 5,330,155, dated Jul. 19, 1994, Ser. No. 787,835, Nov. 5, 1991. Application for reissue Jun. 16, 1995, Ser. No. 491,412

Int. Cl.[6] **F16L** *37/28*

U.S. Cl. 251—149.6 **17 Claims**



1. A valve insert adapted to be [removably] mounted [as a unit] on one fluid conduit to selectively enable a flow of fluid therethrough when another fluid conduit is sufficiently engaged therewith and to prevent such fluid flow when such conduits are physically separated from one another, comprising:

a tubular body adapted to be sealingly mounted on said one fluid conduit *so as to form a subassembly therewith, said subassembly having an inwardly-facing surface*, said body having an opening through which fluid may flow, having an annular seat surrounding said opening and facing toward the normal direction of fluid flow, *and* having an abutment surface facing away from the normal direction of fluid flow[, and having an inwardly-facing surface];

a valve member mounted on said body for movement relative thereto, said valve member having a resilient seal mounted for movement toward and away form said seat to define a variable-area orifice through which fluid may flow, said member being movable relative to said body to any position between one position at which said orifice area is a maximum and another position at which said orifice area is zero, said member having an abutment surface arranged to face said body abutment surface and having an outwardly-facing surface arranged to slidably engage said [body] inwardly-facing surface, the joint between said inwardly- and outwardly-facing surfaces being sealed at all relative positions between said member and body;

biasing means acting between said body and *valve* member abutment surfaces for continuously urging said seal to move toward said seat;

a docking member mounted on said *valve* member and adapted to engage said other fluid conduit; and

coupling means for selectively holding said first and second conduits together with said other conduit engaged with said insert;

whereby when said conduits are separated, *a* pressure differential across said insert will act across a first area to urge said seal into tighter sealed engagement with said seat, and when said other conduit is engaged with said insert and displaces said seal off said seat, a pressure differential across said insert will act across a second area to urge said docking member into fluid-tight sealed engagement with said other conduit independent of the specific position of said member relative to said body.

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PLANT PATENTS

GRANTED SEPTEMBER 9, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,022

NECTARINE TREE "SPRING GLO"

Chris Floyd Zaiger, 929 Grimes Ave.; Gary Neil Zaiger, 1907 Elm Ave.; Leith Marie Gardner, 1207 Grimes Ave., and Grant Gene Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Mar. 11, 1996, Ser. No. 613,686
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct nectarine tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and a productive and regular bearer of medium size, early maturing, yellow flesh, clingstone fruit with good flavor and eating quality; the tree is further characterized by having a low chilling requirement of approximately 350 hours, producing fruit with an attractive red skin color and has firm flesh with good handling and shipping quality, in comparison to the fruit of the May Glo Nectarine (U.S. Plant Pat. No. 5,245), the fruit is approximately 7 days earlier in maturity.

10,023

CHRYSANTHEMUM PLANT NAMED 'CHANIMBA'

Jean Pierre Challet, Nuaille, France, assignor to Selection New Plant Sarl, Le Luc, France

Filed Sep. 12, 1996, Ser. No. 710,105
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named 'Chanimba', substantially as herein shown and described, which

(a) exhibits attractive large double incurved pompon blossoms that are bright yellow in coloration,
(b) exhibits a flower response period of approximately ten weeks,
(c) forms attractive dark green glossy foliage,
(d) achieves a very short to short plant height, and
(e) is particularly suited for pot mum production on a recurrent basis throughout the year.

10,024

GERANIUM PLANT NAMED 'JENNIFER'

David Lemon, Lompoc, Calif., assignor to John Bodger and Sons Company, South El Monte, Calif.

Filed Dec. 12, 1995, Ser. No. 571,202
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of Geranium plant, substantially as shown and described.

10,025

VARIETY OF GERANIUM PLANT NAMED 'BELLE'

Jennifer Mosier, Connellsville, Pa., assignor to Oglevee, Ltd., Connellsville, Pa.

Filed Dec. 28, 1995, Ser. No. 579,776
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of Ivy Geranium plant as described and shown herein and characterized by a better, more intense red color than Nanette, early flowering, has more petals on its florets, has more florets per umbel and is more rounded and controlled than either Nanette or Nicole.

10,026

KALANCHOE PLANT NAMED 'MOUNT LOA'

Ike Vlielander, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Mar. 18, 1996, Ser. No. 618,258
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.15 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Mount Loa, as illustrated and described.

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PATENTS

GRANTED September 9, 1997

ERRATA

For CLASS	See PATENT NO.
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128–680	5,662,093
128–143	5,662,095
198–463	5,662,203
241–236	5,662,284
211–105	5,662,297
257–301	5,662,768
257–301	5,662,768
438–633	5,662,769
438–716	5,662,770
438–052	5,662,771
216–002	5,662,772
438–711	5,662,819
505–330	5,663,081
435–234	5,663,082
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GENERAL AND MECHANICAL

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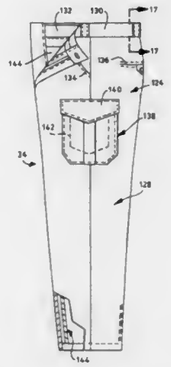
TROUSERS WITH A REMOVABLE LINER

Stephen Blauer, Lexington, Mass., and Mark Mordechal, Hampton, N.H., assignors to Blauer Manufacturing Company, Inc., Boston, Mass.

Continuation of Ser. No. 319,876, Oct. 7, 1994, Pat. No. 5,588,154. This application Jun. 19, 1996, Ser. No. 666,140

Int. Cl.[6] A41D *1/06;13/02*

U.S. Cl. 2—69 **11 Claims**



1. A trouser construction comprising:

(a) a shell including a riser, a pair of legs, opposed slant side pockets in said riser, and a waist band at the upper edge of said riser;

(b) a waist-enveloping stretchable flank sewn to said waist band;

(c) a skirt extending freely from the bottom edge of said flank; and

(d) a liner removably attached between said skirt and said waist band, said liner including an outer membrane stratum and an inner fabric stratum.

5,664,257

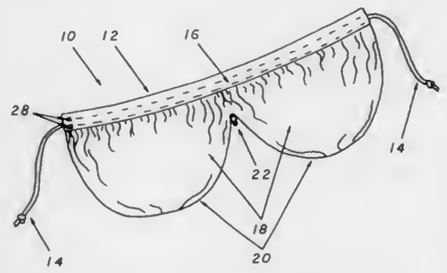
CONVERTIBLE BAG/HAT/HALTER TOP

Richard Hall, 8605 Lanier Dr., Silver Spring, Md. 20910

Filed Sep. 17, 1996, Ser. No. 715,171

Int. Cl.[6] A41D *15/00;15/04*

U.S. Cl. 2—69 **3 Claims**



1. A convertible hat/bag/halter top article comprising:

a first piece of material having a generally strip shape, the first piece of material having a first terminal end and a second terminal end, a top portion and a bottom portion, wherein the first terminal end and the second terminal end include means for coupling the first terminal end to the second terminal end;

a second piece of material having a generally linear first edge, wherein the first edge is attached to the top portion of the first piece of material, and a second edge wherein the second edge has two adjacent generally semicircular portions;

means for connecting the two semicircular portions of the second edge to each other, wherein the means for connecting two semicircular portions are attached to the semicircular portions;

a third piece of material having a first terminal end and a second terminal end, each terminal end adapted for connection to one of the semicircular portions; and

means for attaching the third piece of material to each of the semicircular portions.

5,664,258

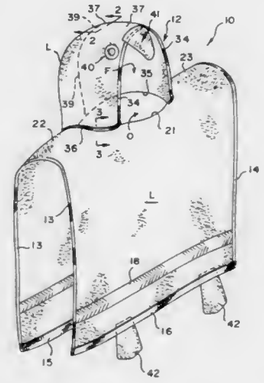
ANIMAL/FOWL CARICATURE-LIKE TOWEL PARKA

Robert Harris, Marlboro, N.J., assignor to Hampton Industries, Inc., Kinston, N.C.

Filed Aug. 12, 1996, Ser. No. 695,417

Int. Cl.[6] A41D *3/08*

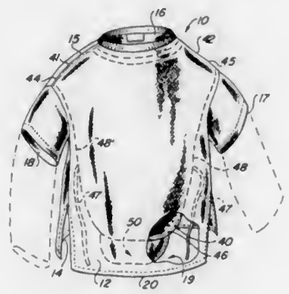
U.S. Cl. 2—84 **4 Claims**



1. An animal/fowl caricature towel parka comprising a body towel of pile material, said towel being of a generally polygonal configuration defined by opposite generally parallel side and end edges, selvage means along said edges for preventing raveling of said pile material, said towel being folded into substantially equal halves along a transverse fold portion with said end edges being in generally contiguous relationship to each other, said transverse fold portion being interrupted by a medial slit defining a neck opening, a hood of pile material corresponding to said towel pile material, said hood being defined by a single piece of pile material folded along a fold portion along a crown portion of the hood, an edge of said hood remote from said crown being sewn to said towel along said neck opening whereby a selvage edge of said single piece of pile material defines a face opening of said hood, and means attached to one of said towel and single piece for imparting an animal/fowl caricature appearance to said towel parka.

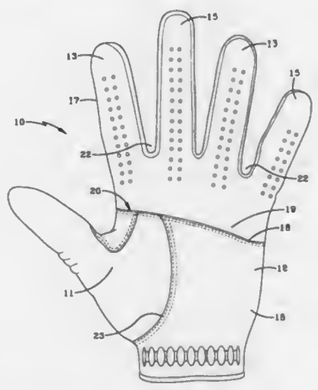
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5,664,259
SHIRT WITH ATTACHED HEAD GARMENT
Hilliard Budd, 4700 Lake Rd., Miami, Fla. 33137
Continuation-in-part of Ser. No. 349,731, Dec. 2, 1994. This application Dec. 18, 1995, Ser. No. 574,072
Int. Cl.[6] A41B *1/00*
U.S. Cl. 2—115 10 Claims



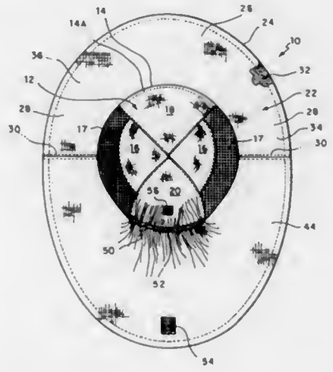
1. A shirt to be worn on the upper body of a wearer comprising:
a main front panel and a main rear panel each including a lower edge, said front and rear panels being attached to one another along corresponding peripheral edge portions to define a neck opening, opposite arm openings, and a bottom opening surrounded by said lower edges of said front and rear panels,
a third panel attached to the shirt and defining a bib, said bib normally extending downwardly between said front and rear panels and including an upper edge, side opposite edges and a free end zone including a lower edge,
a head garment integrally attached on the lower free end zone of said bib, and
wherein said bib is structured to be pulled over the back of the wearer's head so that said head garment can be selectively worn on the wearer's head.

5,664,260
GLOVE AND METHOD OF MAKING THE SAME
Charles W. Weiser, 1310 Providence Rd., NE., Massillon, Ohio 44646
Filed Oct. 15, 1996, Ser. No. 730,078
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 16 Claims



1. An improved glove for enhancing feel and gripping action of a user's hand on an item to be grasped comprising:
a substantially single layer pliable material that is continuously seamed comprising a palmar surface of a reduced area, a thumb area, an index finger area, a side area and a wrist area; and
a continuous seam extending across the palmar surface of a reduced palmar area to a position intermediate said thumb area and said index finger area and continuously therefrom along said side area to said wrist area.

5,664,261
PROTECTIVE HEADWEAR
Robbin J. Lacy, P.O. Box 1077, Ashland, Oreg. 97520
Filed Nov. 26, 1996, Ser. No. 757,076
Int. Cl.[6] A42B *1/06*
U.S. Cl. 2—172 13 Claims



1. Protective headwear comprising;
a crown having a lower periphery;
a brim affixed to said crown lower periphery and including a forward portion extending rearwardly to a pair of lateral portions each terminating in a distal edge, said brim extending from no less than one-half the circumference of said crown lower periphery;
a drape affixed to said brim lateral portion distal edges and having an upper edge attached to said crown periphery between said two brim distal edges, said drape provided with a lower area normally hanging below the back of a user's neck;
a releasable fastener element on said drape lower area; and
a mating releasable fastener element on said crown adjacent said drape upper edge; whereby
said brim and drape provide full circle shielding against sun effects while said drape may be selectively raised off a user's neck by engagement of said fastener element with said mating fastener element.

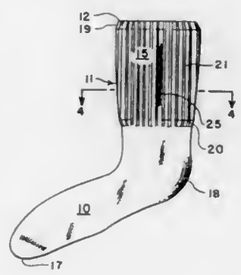
5,664,262
TRANSPORT HOOD FOR PROTECTING CONVEYING PERSONNEL
John Charles Cominsky, 259 N. Hwy. 161, Clover, S.C. 29710
Filed Feb. 16, 1996, Ser. No. 415,683
Int. Cl.[6] A41D *13/00*; A42B *1/04*
U.S. Cl. 2—202 5 Claims

1. A transport hood for protecting conveying personnel from blood and body fluids expelled by a detainee, said transport hood comprising:
a dome shaped top portion made of a fine mesh which is substantially transparent and extends around the entire periphery of the transport hood; and



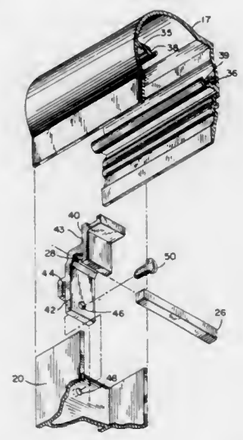
a bottom portion made of a breathable cloth which is impervious to blood and body fluids expelled by the detainee;
wherein said top portion is joined to said bottom portion by a first length of elastic which extends around the outer periphery of the transport hood for gathering a lowermost edge of said top portion just below the eyes of the detainee; and
wherein said top portion provides the detainee with substantially unrestricted vision and breathing and permits the conveying personnel to observe the head of the detainee from any angle.

5,664,263
SOCK WITH CONCEALED STORAGE COMPARTMENT
Irene Reynolds, 1804 Mountain Rd., Glen Allen, Va. 23060-2235
Filed Aug. 5, 1996, Ser. No. 692,373
Int. Cl.[6] A41B *11/00*
U.S. Cl. 2—239 14 Claims



1. A sock of knitted construction having a foot portion and tubular leg portion stretchable laterally and extending to an upper extremity of mid-calf height, said sock further characterized in having interior and exterior surfaces and a construction enabling it to lie in flat form when not in use, said flat form defining inside and outside sides of the sock, said tubular portion comprising:
a) an upper contractively tensioned encircling band adjacent said upper extremity,
b) a lower contractively tensioned encircling band located adjacent said foot portion,
c) a zone of vertical pleats extending between said upper and lower bands,
d) an elongated opening disposed between two adjacent pleats within said vertical zone,
e) a closure device associated with said elongated opening, and
f) an internal tubular sleeve of laterally expandable knitted construction disposed in association with said interior surface within said vertical zone and sewn to said leg portion by upper and lower circumferential lines of a running stitch, and by a vertical sewn line diametrically opposite said elongated opening, whereby
g) a pocket is created by the interaction of said sleeve with the interior surface of said leg portion.

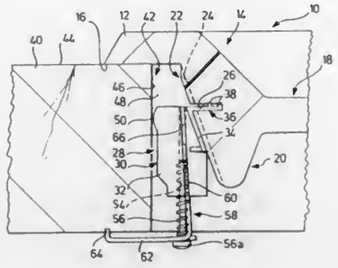
5,664,264
SHOWER ENCLOSURE ASSEMBLY SYSTEM
Steven J. Duero, Waubeka, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jun. 7, 1996, Ser. No. 659,846
Int. Cl.[6] A47K *3/22*
U.S. Cl. 4—614 8 Claims



1. A system for attaching two parts of a shower enclosure together, comprising:
a first shower enclosure structural member connected to a shower header and having an upper surface that is at least somewhat deformable;
a second shower enclosure structural member connected to a shower door jamb and positioned at least partially over said upper surface, said second member having a cavity; and
a locking bar positioned in the cavity over the upper surface and having a portion with a non-circular cross-section;
the first and second members and locking bar being configured and juxtaposed such that when the locking bar is in a first position in the cavity the second member may move transversely on the upper surface, and such that when the locking bar is in a second position the bar restrains transverse movement of the second member relative to the first.

5,664,265
METHOD AND APPARATUS FOR SECURING A BUILT-IN-SINK
Hans Götter, Sulzfeld; Thomas Ritter, Sinsheim; Horst Zimmerer, Kraichtal; Stefan Hautzinger, and Manfred Mück, both of Kürnbach, all of Germany, assignors to Blanco GmbH & Co. KG, Germany
Filed Nov. 7, 1995, Ser. No. 554,478
Claims priority, application Germany, Nov. 8, 1994, 44 39 906.5
Int. Cl.[6] E03C *1/33*
U.S. Cl. 4—634 13 Claims

1. A sink apparatus comprising:
(a) a sink for being built-in into an opening of a cover plate, said sink being made of a plastic composite material and having an upwardly facing topside, an underside, said underside providing circumferential sink surface portions for forming a circumferential space between the sink and a circumferential surface of said plate opening, a downwardly facing supporting surface disposed between said topside and said underside, said supporting surface extending circumferentially around the sink for being placed onto an upwardly facing load carrying surface of the cover plate, and a downwardly recessed sink portion for protruding into said plate opening,



(b) a plurality of securing devices for tightening said supporting surface against said load carrying surface, each of said securing devices comprising a main body with a threaded bore extending within said circumferential space transversely to said supporting surface, a clamping screw held in said threaded bore, and a clamping member capable of being tightened against and supported on said cover plate, said clamping member being carried by the clamping screw, said screw having an abutment portion supporting said clamping member for forcing the clamping member towards said supporting surface by turning said screw,

wherein at least one slot facing said circumferential space and extending at least approximately parallel to said supporting surface is formed in said circumferential sink surface portions, wherein said main body has a web-like projection extending substantially transversely to said threaded bore for being inserted into said slot, said projection having a maximum overall thickness greater than the width of the slot for achieving a press fit of said projection within said slot, and wherein, said main body forms at least one slide surface cooperating with said clamping member for preventing turning of the clamping member around said clamping screw while allowing displacement of the clamping member towards said supporting surface.

5,664,266

COMBINATION PATIENT TRANSPORTER CHAIR OR COMMODE

Glen Williams, Town of Mount Royal, and Arnold Zidulka, Montreal, both of Canada, assignors to McGill University, Montreal, Canada

Continuation-in-part of Ser. No. 344,658, Nov. 18, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 711,858

Claims priority, application United Kingdom, Nov. 18, 1993, 9323746

Int. Cl.[6] A61G *7/10*

U.S. Cl. 5—86.1 **8 Claims**

1. A combination patient transporter chair and commode for supporting a patient in a sitting position, comprising a base frame extending horizontally and having a front, rear and side portions, wheels mounted on the base frame, a vertically adjustable first post rigidly connected to the base frame, spaced from the front, rear and side portions and located closer to the front portion than the rear portion, the first post mounting a beam which extends generally laterally relative to the side portions of the base frame, a chair having a backrest and an interchangeable seat pad and toilet seat, the chair including a pair of parallel side frame members extending on either side of the backrest to be detachably engaged to the beam by means of swivel blocks and wherein the chair can be at least partially detached from the beam to allow a patient to move into a position relative to the beam; one of the seat pad and toilet seat extending horizontally at least as high as the beam; a footrest supported above the base frame and forward of the first post, and

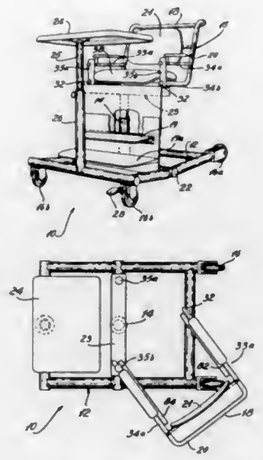


table means mounted to the base frame and spaced forward of the first post in the front portion of the base.

5,664,267

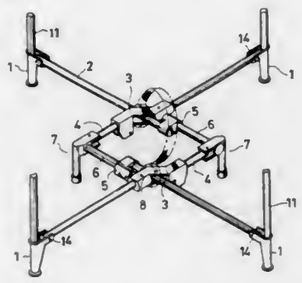
BASE OF A COLLAPSIBLE BABY PLAYING BED

Ying-Hsiung Cheng, Tainan Hsien, Taiwan, assignor to Top Fortune Ltd., San Diego, Calif.

Filed Oct. 2, 1996, Ser. No. 725,311

Int. Cl.[6] A47D *7/00*

U.S. Cl. 5—99.1 **1 Claim**



1. A base of a collapsible baby playing bed, in combination:

four corner supports, each corner support being connected with a corner rod of said bed and having a connecting end;

first and second connecting elements, each connecting element having a connecting portion, an opening and a through hole; two pivotal rods, each pivotal rod having a turned portion and an elongate hole, each turned portion being passed into and pivoted to a respective one of said openings of said connecting elements;

first and second holders, each holder having a hole and a U-shaped recessed part;

first and second mediate supports provided for supporting said base, each mediate support having a connecting opening and a connecting hole; each elongate hole of said pivotal rods being received within, and pivoted to, a respective said connecting opening;

first and second mediate rods, each mediate rod having a bored end pivoted to a respective said U-shaped recessed part of said holders and being connected to a respective said connecting hole of said mediate support;

a first support rod pivoted to said connecting end of said first corner support at a first end said first support rod being passed

through said through hole of said first connecting element and connected to said hole of said first holder at one end opposite said first end thereof;

a second support rod, said second support rod being substantially parallel to said first support rod and being pivoted to said connecting end of

said second corner support at a first end thereof, passed through, and pivoted to, said through hole of said second connecting element and connected to said hole of said second holder at one end opposite said first end thereof;

a third support rod pivoted to said connecting end of said third corner support at one end thereof, said third support rod being connected to said connecting portion of said first connecting element at one end opposite said first end thereof;

a forth support rod, said forth support rod being substantially parallel to said third support rod and being pivoted to said connecting end of said forth corner support at one end thereof and connected to said connecting portion of said second connecting element at one end opposite said first end thereof.

5,664,268

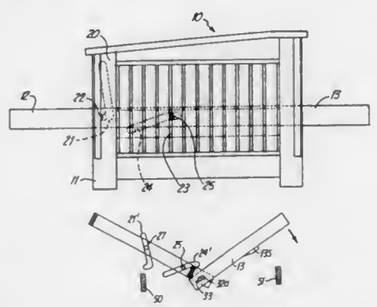
FUTON FRAME

Kathleen S. Stoler, and Chester L. Stoler, both of Roseville, Minn., assignors to Chester Stoler, and Kathleen Stoler, both of Roseville, Minn.

Filed Oct. 13, 1995, Ser. No. 542,731

Int. Cl.[6] A47C *17/17*

U.S. Cl. 5—37.1 **11 Claims**



1. A futon for converting from a couch position to a bed position and back again comprising:

a frame, said frame having guide slots therein;

a first pad support member, said first pad support member including projections for engaging said guide slots to permit displacement of said first pad support member with respect to said frame;

a first extension and a second extension secured to said first pad support member;

a cross member extending between said first extension and said second extension;

a second pad support member having a first end with an elongated opening therein having a first closed end and a second closed end and a second end with an elongated opening therein having a first closed end and a second closed end;

a first pivotal member pivotally connecting said first extension to said first end of said second pad support member with said first pivotal member slideable toward the first closed end in the elongated opening in said first end of said second pad support member;

a second pivotal member pivotally connecting said second extension to said second end of said second pad support member with said second pivotal member slideable toward the first closed end in the elongated opening in said second end of sad second pad support member, said first end of said second pad support member and said second end of said second pad support member spaced sufficiently far from said cross member when said pivotal members are in said first closed end of said elongated openings so that said first end of said second pad support member and said second end of said second pad support member can be rotated with respect to said cross member without engagement with said cross member and said first end of said second pad support member and said second end of said second pad support member spaced sufficiently close to said cross member when said pivotal members are in said second closed end of said elongated openings so that said second pad support member can engage with said cross member of said first pad support member to enable said second pad support member to be temporarily used as a lever arm to move said first pad support member to a couch position where the only mechanical connection between said first pad support member and said second pad support member occurs at said pivotal members.

5,664,269

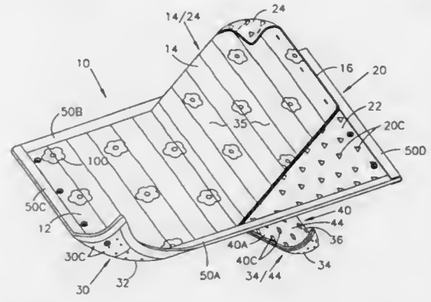
FOLDABLE BLANKET FOR REVEALING DIFFERENT PATTERNS

Donna Broder, 369 S. Doheny Dr. Ste. 169, Beverly Hills, Calif. 90211

Filed Nov. 7, 1996, Ser. No. 745,021

Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—486 **2 Claims**



1. Bedding comprising:

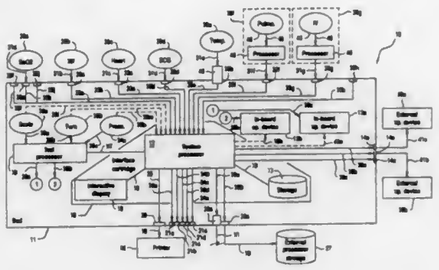
a first sheet having a first sheet top side surface and a first sheet bottom side surface, the first sheet top side surface presenting a first decorative indicia thereon, the first sheet including a first rectangular base portion and contiguous thereto, a first rectangular hinged portion, the base and hinged portions being of approximately equal size;

a second sheet having a second sheet top side surface and a second sheet bottom side surface, the second sheet top side surface presenting a second decorative indicia thereon, the second sheet including a second rectangular base portion and contiguous thereto, a second rectangular hinged portion, the second base and hinged portions being of approximately equal size;

the first and second hinged portions corresponding in size and shape, the bottom side, surfaces thereof being sewn together as an integral hinge element having a common distal free edge, the first and second sheets being joined along linear intersections between the base and the hinged portions of the sheets to establish a pair of opposing distal base portions free edges thereof;

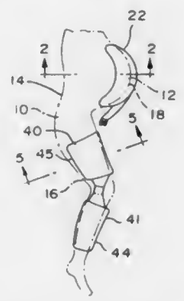
the hinge element providing, along the hinge element distal free edge, a means for attaching the hinge portion distal free edge to a means for receiving at either one of the base portions free edges, the hinge element fully covering the base portion upon which it is folded onto.

5,664,270
PATIENT INTERFACE SYSTEM
Glenn B. Bell, and Ronald B. Hicks, both of San Antonio, Tex., assignors to Kinetic Concepts, Inc., San Antonio, Tex.
Continuation of Ser. No. 277,253, Jul. 19, 1994, abandoned. This application May 3, 1996, Ser. No. 642,591
Int. Cl.[6] A61B *5/02;* A61G *7/00*
U.S. Cl. 5—600 9 Claims



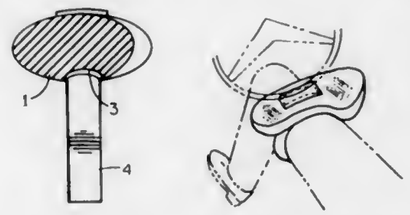
1. A patient interface system comprising:
a critical care bed for supporting a patient, said critical care bed comprising a universal port for operatively receiving any one of a plurality grouping of conventional transducer leads, each member of said plurality grouping being adapted to cooperate with a conventional transducer to provide a signal related to a sensed physiological characteristic of the patient;
a processor linked in communication with said universal port, said processor being adapted (a) to receive a signal from said port, (b) to process the received signal to distinguish an identifiable component of the received signal, (c) to correlate such identifiable component with an identifying profile, and (d) to process the received signal based on data related to the identifying profile.

5,664,271
SUPPORT PILLOW ASSEMBLY
Joseph M. Bellavance, 93A Neal St., Portland, Me. 04102
Filed May 24, 1995, Ser. No. 449,711
Int. Cl.[6] A47C *20/00*
U.S. Cl. 5—632 8 Claims



1. A support pillow assembly usable to aid in the support of a person reclining on his side, said support pillow assembly comprising:
an abdominal support having a generally crescent shape defined by a thin arcuate concave inner edge and a thick arcuate convex outer edge with two major faces, each said major face residing in substantially a single plane and each having substantially the same configuration and being convergent from said outer edge to said inner edge, said two major faces being generally symmetrical to each other about a midplane of said abdominal support extending between said inner edge and said outer edge and extending between the planes of said two major faces, said abdominal support being structured to be positioned between a user's abdomen and a support surface supporting the user while reclining on his side with said thin arcuate concave inner edge being receivable along its length underneath a user's abdomen;
a leg support positionable between a user's legs and extending between thigh and calf portions of a user's legs, said leg support being structured to support a user's legs in a spaced-apart configuration while a user is reclining on his side, said leg support being generally C-shaped in plan and being defined by a concave arcuate rear edge and a convex arcuate front edge, with two side faces extending between said rear edge and said front edge, and by an upper edge area locatable between a user's thighs and a lower edge area locatable between a user's calves, said side faces being gradually convergent toward said upper and lower edges; and
means releasably connecting said abdominal support and said leg support, said abdominal support and said leg support being usable in concert and separately, said abdominal support and said leg support being spaced apart from each other by said connecting means when said abdominal support and said leg support are used in concert.

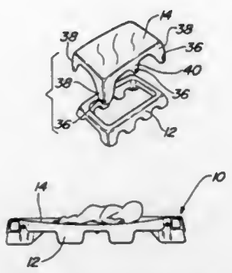
5,664,272
AUTO CONTROL PILLOW FOR CARS, VANS, TRUCKS AND TRACTORS
Herman Douglas, Sr., Box 174, Norristown, Pa. 19404
Filed Aug. 25, 1995, Ser. No. 519,256
Int. Cl.[6] B62D *1/06;* B60K *26/00*
U.S. Cl. 5—652 3 Claims



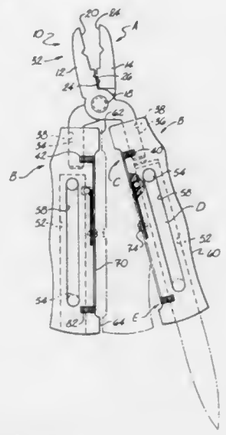
1. A combined motor vehicle control pillow and tiltable steering wheel cover unit for straight highway driving comprising:
a fabric covered foam piece;
a hook and loop fastener strip mounted on one surface of said fabric covered foam piece; said hook and loop fastener strip being arranged to engage a steering wheel cover, said cover of said steering wheel being of a suitable material to be gripped by said hook and loop fastener strip; and
a U-shaped plastic retainer secured to the opposite surface of said fabric covered foam piece, said U-shaped plastic retainer being adapted to fit on a thigh of a driver of a motor vehicle, whereby when said steering wheel is tilted toward the foam piece on the thigh of the driver a gripping contact is established between said hook and loop fastener strip and said steering wheel cover to maintain said steering wheel in a rotationless attitude.

5,664,273
MATTRESS ASSEMBLY
Kelly M. Obriot, 1735 Golfview Dr., Dearborn, Mich. 48124
Filed Apr. 22, 1996, Ser. No. 636,057
Int. Cl.[6] A47D *7/00*
U.S. Cl. 5—724 16 Claims

1. A mattress assembly, comprising:
frame member disposable on a desired surface including sidewalls defining an opening therebetween, said frame member having a top surface and a bottom surface, said bottom surface having at least one recessed portion for allowing air passage between said recessed portion; and
a mattress cover, made from a breathable/porous fabric material, suspended across said opening of said frame member and releasably secured to said frame member.

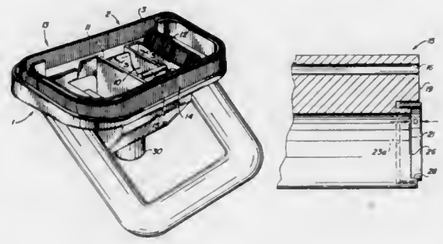


5,664,274
MULTI-PURPOSE TOOL
Michael Collins, 3075 Batesville Rd., Woodstock, Ga. 30188
Filed Feb. 28, 1995, Ser. No. 395,616
Int. Cl.[6] B25B *7/22*
U.S. Cl. 7—129 3 Claims



1. A hand tool comprising:
first and second elongated handle members each having a first end and a second end opposite said first end; said first end of each handle member defining a pincer implement receiver and said second end of said first handle member defining a handle implement passage, and said first handle member defining an implement compartment in communication with said handle implement passage;
a pincer implement having first and second outwardly extending free ends, each of said first and second free ends being connectable to a respective one of said pincer implement receivers of said handle members;
a first locking member associated with each of said pincer implement receivers for selectively locking each of said first and second free ends to a respective one of said pincer implement receivers such that said handle members are moveable for operating said pincer implement;
at least one sliding implement carried for sliding movement in said implement compartment; said sliding implement being moveable between an extended position, extending through said handle implement passage outwardly from said handle member, and a retracted position, wherein said sliding implement is substantially within said handle member;
a second locking member associated with said first handle member and configured for selectively locking said sliding implement to said first handle member in said retracted position through engagement with said first handle member; and
a latch spring associated with both said first and second locking members for biasing said first locking member towards a respective one of said pincer implement receivers, and for biasing said second locking member towards said sliding implement.

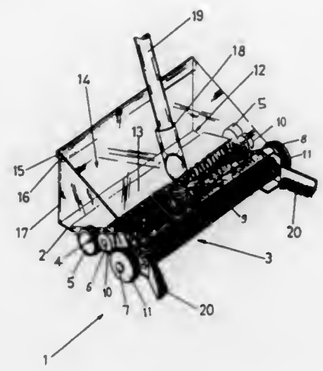
5,664,275
VIBRATORY OSCILLATOR SWIMMING POOL CLEANER EMPLOYING MEANS FOR FACILITATING SELF STARTING AND FOR AVOIDING CLOGGING
Pavel Sebor, 751 Cricklewood Ter., Heathrow, Fla. 32746
Continuation-in-part of Ser. No. 880,665, May 11, 1992, Pat. No. 5,371,910, Ser. No. 131,318, Oct. 4, 1993, Pat. No. 5,386,607, and Ser. No. 978,237, Nov. 18, 1992, Pat. No. 5,404,607, which is a continuation-in-part of Ser. No. 882,662, May 11, 1992, abandoned, Ser. No. 880,663, May 11, 1992, Pat. No. 5,259,258, Ser. No. 880,664, May 11, 1992, Pat. No. 5,303,444, Ser. No. 880,665, May 11, 1992, Pat. No. 5,371,910, Ser. No. 880,666, May 11, 1992, Pat. No. 5,274,868, Ser. No. 880,667, May 11, 1992, Pat. No. 5,285,547, Ser. No. 880,668, May 11, 1992, Pat. No. 5,259,082, and Ser. No. 880,669, May 11, 1992, Pat. No. 5,261,287, said Ser. No. 131,318is a continuation of Ser. No. 880,662, May 11, 1992. This application Sep. 16, 1994, Ser. No. 307,938
Int. Cl.[6] E04H *4/16*
U.S. Cl. 15—1.7 20 Claims



1. A submersible cleaner for swimming pools comprising:
a housing including a chamber therein having an opening defined by opposing walls through which opening water flows during operation of the cleaner;
an oscillator having opposing ends and pivotally mounted in the opening of the housing on a pivot axis extending between the opposing walls for continuous oscillatory movement to and fro within the opening responsive to the flow of water across the ends of the oscillator, the oscillator including a first side facing a first one of the walls with a gap therebetween;
sealing means slidably fitted with the first side of the oscillator and slidable outwardly in a direction generally parallel with the pivot axis into engagement with the first wall; and wherein
the sealing means is at least partially exposed to the flow of water through the chamber.

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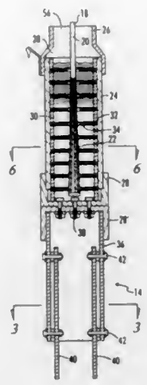
5,664,276
BRUSH-TYPE SWEEPER
Saturnino Nunez Arias, Carretera Caboalles, 332, 24191 Villabalter, Spain
Filed May 17, 1996, Ser. No. 649,818
Claims priority, application Spain, May 18, 1995, 9501324
Int. Cl.[6] A47L *11/32*
U.S. Cl. 15—42 **2 Claims**



1. A sweeper unit comprising:
a prism-like body including an open front, a base having a front section that is open, a handle, a removable cap above said base to support said handle extending upward from said cap, and parallel sidewalls extending upward from said base;
adjacent front and rear cylindrical brushes supported for rotation on respective first and second axes that extend parallel to said base and through said sidewalls, with said front brush being at said open front and said rear brush being at said front section;
front wheels rotatable on said first axis to rotate said front brush;
rear wheels at opposite ends of a third axis parallel to said first and second axes;
additional wheels rotatable on said second axis and drivingly connected to said rear brush;
said front wheels and said rear wheels being adapted to support said sweeper unit on a surface to be cleaned thereby while said additional wheels are clear of such surface;
said additional wheels being engaged with said rear wheels to be frictionally driven by said rear wheels in a direction opposite to which said front wheels are rotating whereby said front and rear brushes rotate in opposite directions to lift dirt particles between said brushes as said sweep unit moves forward.

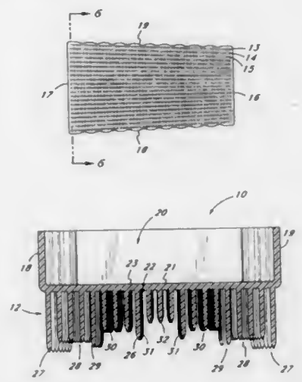
5,664,277
GOLF GRIP WASHING DEVICE
Roy L. Matlock, 4928 Franklin Rd., Nashville, Tenn. 37220
Filed May 30, 1996, Ser. No. 657,664
Int. Cl.[6] A46B *11/00*
U.S. Cl. 15—160 **11 Claims**

1. A golf grip washer including an elongated tube having an inner chamber with a central axis extending therethrough and a closed bottom and open top, a series of brush rings stacked axially within the chamber of said tube and spaced from each other by spacer means, said brush rings including flexible bristles projecting radially inwardly toward said central axis with the bristles terminating in tips with said tips forming a hole extending axially of the tube, said hole being of substantially constant diameter; the diameter of said hole being substantially equal to a maximum diameter of the grip of a golf club to be washed by the device, the top of said tube being partially closed by cap means, said cap means



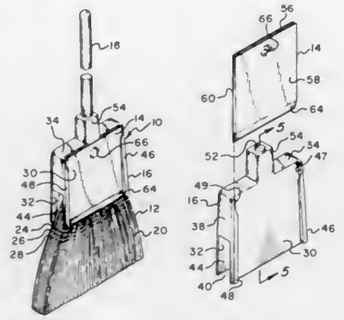
holding said brush rings and spacers within said tube and having a mouth of a diameter at least substantially twice the diameter of said hole.

5,664,278
VEGETABLE AND FRUIT BRUSH
Morris Reisman, 17801 Cardinal Cir., Villa Park, Calif. 92667
Filed Jul. 9, 1996, Ser. No. 677,140
Int. Cl.[6] A46B *1/00;9/02*
U.S. Cl. 15—160 **10 Claims**



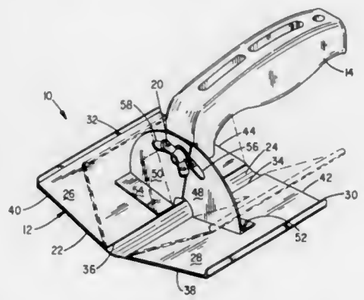
1. A brush for cleaning foodstuff, said brush comprising:
a handle portion having a right side, a left side, a central axis midway between said right and left sides, first and second ends comprising a front and a back, a floor having an upper surface and a lower surface;
a plurality of rows of bristles extending downwardly from said floor, said plurality of rows extending from said floor near said front of said handle portion and extending to a position from said floor near said back of said handle portion, said rows being almost parallel to said central axis, but converging so that the rows are closer together at one of said first and second ends than at the other of said ends, said handle portion and said plurality of rows of bristles being molded in a single piece.

5,664,279
COMBINED BROOM AND DUSTPAN
John Voshikian, Medford, N.J., assignor to Big Ideas, L.L.C., Medford, N.J.
Filed Feb. 28, 1996, Ser. No. 608,120
Int. Cl.[6] A47L *13/52*
U.S. Cl. 15—175 **14 Claims**



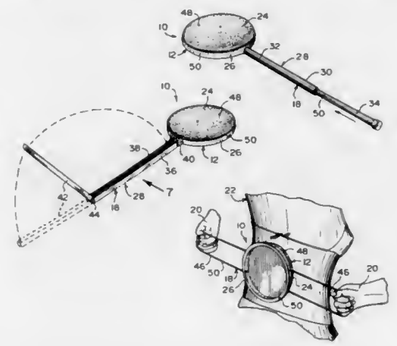
1. A broom and dustpan combination comprising:
a dustpan;
a broom having an elongated handle and a body of straw-like members secured to and extending downwardly from an end of said elongated handle;
a shroud member covering at least a portion of an upper part of said body of straw-like members, said shroud member having at least a front wall having two opposing side edges, said front wall having a top and a bottom, and
means positioned adjacent said side edges of said front wall of said shroud member and extending substantially the entire distance between said top and bottom of the same for retaining said dustpan to said front wall of said shroud member between said side edges thereof, said dustpan substantially covering said front wall of said shroud member.

5,664,280
ADJUSTABLE COVE TROWEL
Wayne Tonsager, P.O. Box 1242, Lakeville, Minn. 55044
Filed Jul. 22, 1996, Ser. No. 685,980
Int. Cl.[6] B05C *17/10;* **E01C** *19/12*
U.S. Cl. 15—235.7 **10 Claims**



7. An adjustable trowel for creating a coved corner between abutting construction panels, comprising:
a) a generally rigid sheet of material of a predetermined thickness over a majority of its surface but having a rectangular central zone of a predetermined width dimension, the rectangular central zone being of a constant lesser thickness dimension than the predetermined thickness;
(b) handle brackets affixed to the generally rigid sheet and extending perpendicuiarly to the sheet to span the central zone;
(c) a handle; and
(d) means for attaching the handle to the brackets to clamp the brackets with a predetermined arc imparted to the sheet in the central zone.

5,664,281
SUNTAN LOTION APPLICATOR
Diana L. Pelfrey, P.O. Box 1115, Kamuela, Hi. 96743
Filed Feb. 27, 1996, Ser. No. 607,835
Int. Cl.[6] A47K *7/02*
U.S. Cl. 15—244.2 **13 Claims**

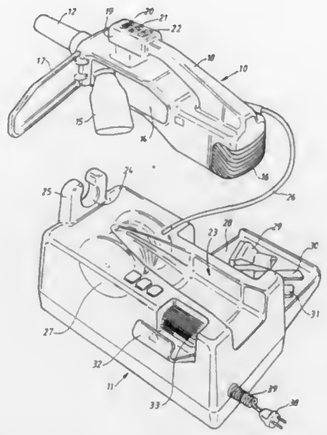


1. A suntan lotion applicator which comprises:
a) means for holding a specific amount of suntan lotion poured out from a suntan lotion bottle; and
b) means for grasping by the hands of a person extending from said suntan lotion holding means, so that said suntan lotion holding means can be maneuvered to reach hard to reach areas of the body of the person to apply the suntan lotion thereto, said gasping means being a foldable elongated handle extending from one side of said suntan lotion holding means and including:
i) a first member having a longitudinal slot therealong:
ii) a first hinge for attaching a first end of said first member to the side of said suntan lotion holding means:
iii) a second member: and
iv) a second hinge between a second end of said first member and an abutting end of said second member, so that said second member can swing up and fit into said longitudinal slot in said first member when not in use.

5,664,282
VACUUM CLEANER
Lennart Wilhelm Castwall, Täby; Magnus Carl Wilhelm Lindmark, Stockholm, and Lars Gunnar Moren, Huddinge, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
PCT No. PCT/SE94/00002, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO94/15519, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 3, 1994, Ser. No. 507,466
Claims priority, application Sweden, Jan. 8, 1993, 9300033
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—319 **9 Claims**

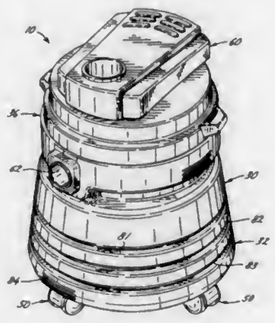
1. Vacuum cleaner including a suction fan driven by an electric motor, a suction nozzle connected to an intake side of the fan via a dust container, and a cord for supplying electric power to the motor, wherein the motor is electronically controlled and adapted to be driven at a speed such that the suction fan operates at a speed

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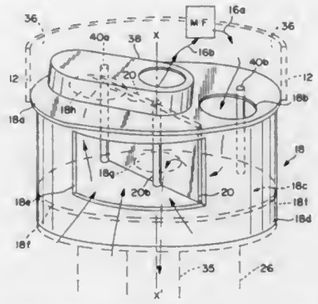
amounting to at least 50,000 rpm and the suction fan comprises a turbo fan wheel-type impeller, wherein an air intake duct for the suction fan is provided, said air intake duct having an hour-glass shape with a central throttle section and a pair of end sections, said end sections being relatively wider than said central throttle section, blades of the impeller closely fitting against the surrounding air intake duct in the area of the throttle section, forming a very narrow gap which, at the outlet side, passes into an annular curved duct diverting the exhaust air from a radial direction into an axial direction.

5,664,283
TIP RESISTANT CANISTER FOR UPRIGHT VACCUM CLEANERS
William J. Rakocy, Madison, Conn., and Thomas Angelini, Sebring, Ohio, assignors to GM1 Holdings, Inc.
Continuation of Ser. No. 164,154, Dec. 9, 1993, Pat. No. 5,440,780, which is a continuation-in-part of Ser. No. 11,448, Aug. 4, 1993, Pat. No. Des. 365,178. This application Jun. 7, 1995, Ser. No. 487,569
Int. Cl.[6] A47L *5/36*
U.S. Cl. 15—327.2 **3 Claims**



1. A tip-resistant vacuum cleaner comprising:
a canister including: (1) a floor having caster supports; (2) casters disposed in the caster supports; and (3) a wall connected to the floor and having an upper perimeter and a lower perimeter, the lower perimeter being larger than the upper perimeter and the caster supports being spaced inwardly from the lower perimeter such that the wall forms a skirt for resisting tipping; and,
a power head removably attached to the canister.

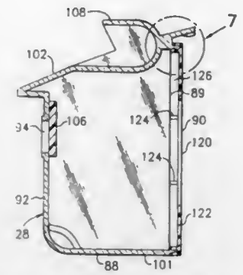
5,664,284
APPARATUS FOR OPENING CLOGGED AND SLOW DRAINS
Henry G. Brzoska, Stamford, Conn., assignor to Lemaks Industries, Inc., Stamford, Conn.
Filed Aug. 7, 1995, Ser. No. 512,122
Int. Cl.[6] A47L *5/14*
U.S. Cl. 15—330 **3 Claims**



1. An apparatus for opening drains comprising an elongate generally tubular housing having a central axis, a top end and a bottom end, a handle member for gripping and positioning the apparatus vertically with respect to a drain, a motor-fan unit aligned along the central axis, the motor-fan having an air inlet port defining a source of vacuum and an air pressure outlet port defining a source of pressure, an enclosed air pressure plenum chamber within the tubular housing for receiving pressurized air from the motor-fan outlet, a control manifold positioned in axial alignment within the tubular housing and adjacent the plenum, the control manifold having an outer wall, a top plate and a bottom plate together defining a manifold chamber, an opening in the outer wall for porting the manifold chamber to ambience, a valve member rotatably positioned in the manifold chamber for dividing the chamber into a pressure subchamber and a vacuum subchamber and for selectively porting each subchamber to ambience through the outer wall opening, a pressure port in the top plate for admitting pressurized air from the plenum to the pressure subchamber of the control manifold, a vacuum port in the top plate communicating with the motor-fan air inlet for creating under pressure in the vacuum subchamber of the control manifold, a two-way port in the bottom plate of the control manifold for selectively communicating with the pressure and vacuum subchambers of the control manifold for the purpose of applying pressure and vacuum pulses to a drain, a two-way duct for connecting the two-way port to a drain, and means for rotating the valve member to a pressure position wherein air flows through the ambience port into the vacuum subchamber, through the motor-fan into the air pressure plenum, into the pressure subchamber and through the two-way port to drain in the form of a pressure pulse, and to a vacuum position wherein a vacuum pulse is created in the drain as air is evacuated and flows from the drain through the two-way port into the vacuum subchamber, through the motor-fan into the air pressure plenum, into the pressure subchamber and through the ambience port.

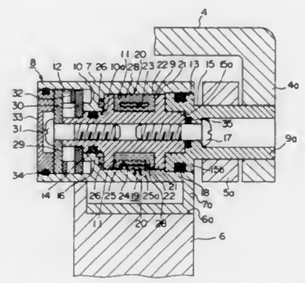
5,664,285
VACUUM CLEANER WITH COMBINED FILTER ELEMENT AND COLLECTION UNIT
M. Anthony Melito, East Haven; Anthony Brooks Rorke, Guilford, both of Conn., and Anthony J. Abbott, Easley, S.C., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 11, 1996, Ser. No. 584,650
Int. Cl.[6] A47L *9/10;9/20*
U.S. Cl. 15—352 **18 Claims**

1. In a vacuum cleaner having a housing, a motor located in the housing, an impeller connected to the motor, and a debris collection unit removably connected to the housing, the improvement comprising:



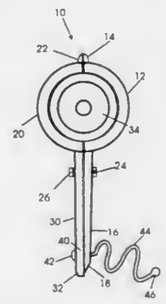
the collection unit having a frame, a cover and a filter element, the cover being removably connected to the frame to substantially close an open side of the frame, the cover having an exit aperture therethrough, and the filter element being permanently connected to an inside surface of the cover over the exit aperture;
the frame having a mounting flange surrounding the open side of the frame, the cover being mounted on the mounting flange;
the cover having a mounting flange receiving slot for receiving the mounting flange therein and frictionally connecting the cover to the frame; and
said mounting flange and said slot having a generally rectangular shape, with key means to allow connection of the cover to the frame in only one position.

5,664,286
HINGE MECHANISM FOR SUPPORTING THE SEAT OR THE SEAT LID OF A TOILET BOWL
Akira Sorimachi, Kanagawa, Japan, assignor to Katoh Electrical Machinery Co., Ltd., Kanagawa, Japan
Filed Aug. 15, 1995, Ser. No. 515,456
Claims priority, application Japan, Aug. 27, 1994, 6-011711
Int. Cl.[6] A47K *13/10*
U.S. Cl. 16—54 **5 Claims**



1. A hinge mechanism for supporting the seat of the seat lid of a toilet bowl, comprising:
a case mounted on the toilet bowl;
a hinge shaft having a longitudinal axis supported for rotation and axial sliding movement in the case and having one end fixedly connected to the base end of the seat or the seat lid of the toilet bowl;
a fluidic damping mechanism provided with valves and interposed between the case and the hinge shaft;
the valves comprising: at least two vanes projecting radially from the hinge shaft and received in a fluid chamber formed within the case, each vane provided with a radial groove radially extending from an end of the vane toward the longitudinal axis of the hinge shaft, each radial groove having at least two side walls; a plurality of slots, each slot formed through one of the at least two side walls of each radial groove; a plurality of recesses, one recess formed adacent an edge of each of the other of the side walls of the radial grooves; a plurality of valve elements, one valve element located in each groove for opening and closing each slot; and a partition wall in the case, the partition wall having a plurality of circular grooves in a side surface of the partition wall, the circular grooves in sliding contact with the ends of the vanes; and
a resilient means for axially biasing the hinge shaft in one direction.

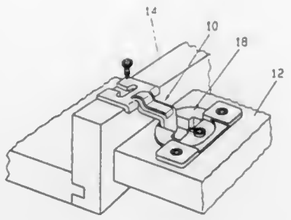
5,664,287
HANDLE ATTACHMENT FOR ROUND DOOR KNOBS
Karl Sendelbach, 2412 St Helena Dr. #1, Hayward, Calif. 94542
Filed Mar. 28, 1996, Ser. No. 621,717
Int. Cl.[6] E05B *1/00;7/00*
U.S. Cl. 16—114 R **4 Claims**



1. A two-piece handle attachment device for round door knobs, comprising:
a door knob clamp having a first semicircular clamp half and a second semicircular clamp half, each clamp half having two ends;
an elongated handle having a first handle half and a second handle half, one end of each handle half being affixed to one end of each clamp half, respectively;
adjusting means on said handle for affixing said clamp halves together to define a round opening for receiving a door knob, said means being adjustable to increase or decrease the size of said round opening;
means on said handle for affixing said handle halves together to define said elongated handle;
extension means attached adjacent to the other ends of said handle halves for providing an extension to said handle.

5,664,288
FURNITURE HINGE
Horst Lautenschläger, and Reinhard Lautenschläger, both of Reinheim, Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany
Filed Oct. 1, 1996, Ser. No. 725,340
Claims priority, application Germany, Jul. 18, 1996, 296 12 358.7
Int. Cl.[6] F05D *7/04*
U.S. Cl. 16—249 **11 Claims**

1. A furniture hinge for pivotally connecting a door leaf to the carcase of a cabinet, cupboard or wardrobe, comprising:
a door-related hinge member being coupled by a joint mechanism with a carcase related hinge member, the door-related hinge member being constructed as a hinge pot,
said hinge pot comprising a pot part, insertable within a recess in the door leaf opening to an inside surface thereof, and being dimensioned smaller than the recess in such a manner that, in



a unfastened state, the pot part is shiftable by a specified amount at least at fight angles to a border edge of the door leaf,

said pot part comprising a central, trough-like, recessed middle part, having a bottom and also an upper edge from which a plane covering flange protrudes, which covers the space between a middle part and a peripheral wall of the recess in the door leaf, and lies at least within a radial, outer edge region on the inside surface of the door leaf;

a fastening flange for placement over a region of the inside surface of the door leaf by fastening means, which are engageable with the material of the door leaf; and

wherein the pot part and the fastening flange each have plane-connecting sections such that fastening flange may be superimposed over and brought into contact with the pot part, and such that the pot part is shiftable in at least one direction relative to the fastening flange; and

wherein a threaded borehole is provided in one of the plane-connecting sections and an opening is provided in an associated region of the other plane-connecting section, which is dimensioned larger than the diameter of the threaded borehole in at least the shiftable direction; and

wherein the plane-connecting sections are joined by a fastening screw, the shaft of which is passed through the opening in the one plane connecting section into the threaded borehole of the other plane-connecting section, and which presses the plane-connecting sections together when tightened.

5,664,289

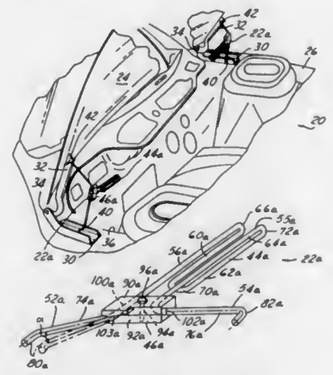
HINGE STRAP ASSEMBLY WITH CONVOLUTED TORQUE ROD

Tiete O. Wolda, Scarborough, and Randolph Dale Lewkoski, Penetanguishene, both of Canada, assignors to M & C Corporation, Warren, Mich.

Continuation of Ser. No. 503,605, Jul. 18, 1995, abandoned. This application Oct. 16, 1996, Ser. No. 733,467

Int. Cl.[6] E05F *1/12*

U.S. Cl. 16—298 **21 Claims**



1. A torque rod spring assembly comprising:

a torque rod having a first end portion, a second end portion and a convoluted portion extending therebetween, the convoluted portion including at least two generally parallel legs and a U-shaped bight portion connected therebetween, the first and second end portions extending generally perpendicular to the respective at least two legs of the convoluted portion; and

a slider block having at least two bores therein through which the at least two legs extend and being adjustably clampable along the at least two legs of the convoluted portion so that the spring rate of the torque rod spring assembly may be varied.

5,664,290

HINGE DEVICE FOR SWIVEL HOLDING OF A LEAF FLAP

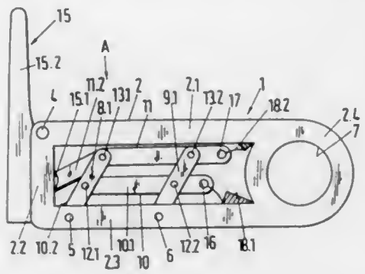
Kurt Scherrer, Münsingen, Switzerland, assignor to USM U. Schaerer Sohne AG, Munsingen, Switzerland

Filed Apr. 4, 1996, Ser. No. 625,815

Claims priority, application Switzerland, Apr. 4, 1995, 953/95

Int. Cl.[6] E05D *15/32*; **E05F** *1/08*

U.S. Cl. 16—370 **20 Claims**



1. A device for swivel-holding of a leaf flap, comprising

a generally planar-shaped frame having a pair of opposite front and back ends,

a straight four-bar mechanism including at least two turning arms, each of said at least two turning arms having a first end portion and a second, swiveling end portion, said first end portions being rotably connected to the frame at a first side thereof, and at least two angle arms, one of said at least two angle arms being articulated to each of said second, swiveling end portions, the other angle arm being articulated to each of said at least two turning arms, said at least two turning arms and said at least two angle arms forming a hinged parallelogram,

a swivel arm for swivel-holding of the flap, said swivel arm being connected with a front end of each of the angle arms to perform a rotation about an axis substantially perpendicular to the planar-shaped frame between an open position and a closed position,

an elastic means for damping or balancing the swivel motion of the leaf flap, the elastic means having two ends, and

an anchoring element disposed at the back end of the frame, wherein

the elastic means is connected by said two ends to the four-bar mechanism and guided around the anchoring element.

5,664,291

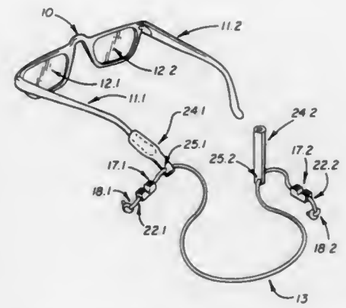
RETAINER AND HANGER FOR LENS CONTAINING DEVICES

Claude Stoller, 2816 Derby St., Berkeley, Calif. 94705

Continuation-in-part of Ser. No. 428,534, Apr. 25, 1995. This application Jul. 24, 1995, Ser. No. 506,024

Int. Cl.[6] G02C *3/00*; *11/00*

U.S. Cl. 24—3.3 **2 Claims**



1. An eyeglass hanger and retainer comprising a strand having opposite end portions that extend through openings in first and second elongated tubes, each elongated tube slidably mounted on an end of each temple of a pair of eyeglasses, each of said openings being of a diameter sufficiently greater than the diameter of the strand so that the strand slides through the openings readily without significant friction when the opposite ends of the strand are pulled laterally by the eyeglass wearer;

said strand being adjustable from a position around the back of the head of the wearer that allows snug retention of the eyeglasses firmly in front of the eyes of the wearer, to a pendent position around the neck of the wearer, the position of the eyeglasses when the strand is around the neck of the wearer being readily adjusted to an elevated position by laterally pulling the opposite end portions of said strand, and readily adjusted to a lower position by pulling downward on the eyeglasses.

5,664,292

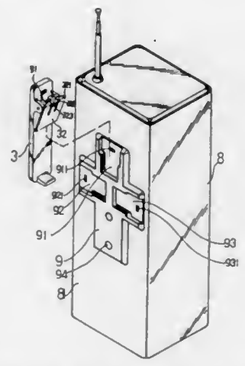
SEPARABLE CLIP ASSEMBLY

Tonny Chen, Changhua, Taiwan, assignor to E Lead Electronic Co., Ltd., Changhua, Taiwan

Filed Aug. 22, 1996, Ser. No. 697,349

Int. Cl.[6] A45F *5/02*

U.S. Cl. 24—3.11 **5 Claims**



1. A detachable belt clip for supporting a device on a belt comprising:

a) a clip member having a push plate pivotally attached thereto, the push plate having opposite side edges and a press button movable with respect to the push plate, and a projecting rib projecting from the press button;

b) a securing board having a seat formed therein configured to slidably receive the push plate, and a positioning hole in the securing board configured to receive the projecting rib so as to retain the clip member attached to the securing board, wherein moving the press button relative to the push plate disengages the projecting rib from the positioning hole enabling the clip member to be detached from the securing board; and,

c) attaching means extending between the securing board and the device to fixedly attach the securing board to the device.

5,664,293

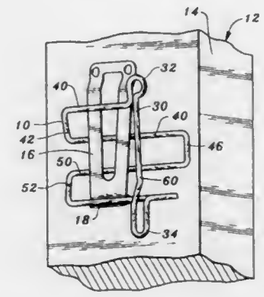
HOLDER APPARATUS FOR RELEASABLY SUPPORTING AN ELECTRICALLY OPERATED DEVICE

Robin L. Bartoo, 499 Embarcadero, Suite 2-16, Oakland, Calif. 94606

Filed Dec. 4, 1996, Ser. No. 759,531

Int. Cl.[6] A44B *11/00*; **A45F** *5/00*

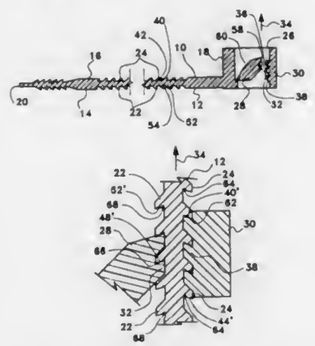
U.S. Cl. 24—3.12 **10 Claims**



1. Holder apparatus for releasably supporting an electrically operated device having a device body and a belt clip connected to said device body, said holder apparatus being of integral construction and comprising a bent wire, said bent wire including an elongated base wire segment having first and second ends for securement to a wall or other structure, a first wire segment integral with and projecting generally orthogonally from said elongated base wire segment in a first direction at the first end of said elongated base wire segment and forming a first bight, a second wire segment integral with said first wire segment extending from said first wire segment in a second direction substantially opposed to said first direction, extending over said elongated base wire segment and forming a second bight, said first and second bights being located on opposed sides of said elongated base wire segment, and a third wire segment integral with said second wire segment extending from said second wire segment in substantially said first direction and forming a third bight located on the same side of said elongated base wire segment as said first bight, said third wire segment being attached to said elongated base wire segment at the second end of said elongated base wire segment, the belt clip of an electrically operated device releasably supported by said holder apparatus being releasably clampingly engaged by said first, second and third wire segments.

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5,664,294
CABLE TIE HAVING ENHANCED LOCKING ENGAGEMENT BETWEEN TEETH ON ABUTMENT WALL AND RATCHET TEETH ON TONGUE
Soren Christian Sorensen, P.O. Box 256 North Side, and Jens Ole Sorensen, P.O. Box 221, North Side, both of Grand Cayman, Cayman Islands
Filed Dec. 29, 1995, Ser. No. 580,653
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB **4 Claims**



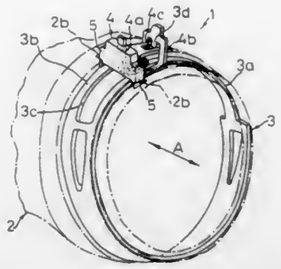
1. A tie comprising an elongated tongue with two-ends and two broad sides, a locking head at one end of the tongue, a tip at the other end of the tongue, a first set of ratchet teeth extending along one broad side of the tongue and a second set of ratchet teeth extending along the other broad side of the tongue, wherein the locking head has sides defining an opening for receiving the tip of the tongue, the sides including a movable pawl that is hinged at one side of said opening and an abutment surface that is across the opening from the pawl, wherein the pawl has at least one pawl tooth disposed for locking engagement with the set of first ratchet teeth when the tip of the tongue has been inserted through said opening with the first set of ratchet teeth facing the pawl, wherein the pawl, when the at least one pawl tooth is so engaged, is movable toward the abutment surface in response to a pulling force applied to the tongue in a direction opposite to the direction of said insertion in order to force the second set of ratchet teeth against the abutment surface;

wherein the abutment surface includes a plurality of teeth having a locking surface extending toward an apex of the tooth at an angle inclined toward said direction of insertion for looking engagement with the second set of ratchet teeth when the tongue has been inserted through the opening with the second set of ratchet teeth facing the abutment surface and the side of the tongue including the second set of ratchet teeth is forced against the abutment surface by movement of the pawl.

5,664,295
HOSE CLAMP
Masato Kume, Kariya, and Kiyoshi Oshima, Anjo, both of Japan, assignors to Toyoda Boshoku Corporation, Kariya, and Nippondenso Co., Ltd., Kariya, both of Japan
Filed Sep. 12, 1995, Ser. No. 527,332
Claims priority, application Japan, Sep. 13, 1994, 6-219002
Int. Cl.[6] B65D *63/02*
U.S. Cl. 24—20 R **15 Claims**

1. A hose clamp, comprising:

a clamping main body for clamping a hose member having a concavity which is formed by two opposite wall surfaces formed from an outer periphery of said hose member outward in a diametric direction and opposed in a peripheral direction, and an outer periphery surface of said hose member, the clamping main body formed by winding a strip-shaped steel in a circle shape more than once, adapted to be disposed

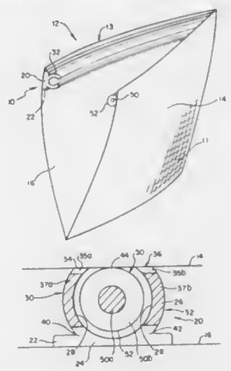


around a hose member about an axis of the hose member, being capable of exhibiting an urging force for reducing its diameter, and formed as a circled-strip having opposite free ends, the concavity for positioning formed by removing an outer periphery of said hose member which said clamping main body clamps;

a fixing member disposed independently of said clamping main body, engaged with the opposite free ends of said clamping main body so as to inhibit the diameter of said clamping main body from reducing, and including a projection;

the projection extending at least in one of axial directions of said hose member so as to project from said clamping main body diametric direction, and being disposed between said two opposite wall surfaces of said concavity so as to control a movement of said hose clamp to said hose member in a peripheral direction.

5,664,296
CLOSURE ARRANGEMENT HAVING A RECLOSABLE SEAL
Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.
Filed Jun. 26, 1996, Ser. No. 669,743
Int. Cl.[6] B65D *33/00*
U.S. Cl. 24—30.5 R **20 Claims**



1. A closure arrangement having a female profile and a male profile for use with a polymeric bag, the arrangement comprising:

a male profile defining a rounded outer surface and having a first film attachment portion; and

a female profile including:

a base having a second film attachment portion, and

a first locking member having opposed surfaces constructed and arranged to engage by friction and removably secure the male profile about the rounded outer surface of the male profile, the opposed surfaces of the first locking member comprising:

a first end proximate the base; and

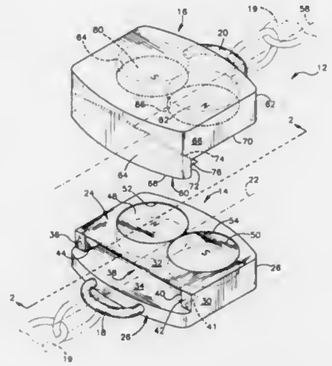
a second end distal from the base;

wherein the second end includes a break away portion.

5,664,297
BOLO TIE-TYPE DEVICE AND SECURING MEANS THEREFOR
Chant H. Mandukian, 6131 N. 51st Pl., Paradise Valley, Ariz. 85253
Filed Apr. 30, 1996, Ser. No. 640,243
Int. Cl.[6] A41D *25/14*; **A47G** *25/74*
U.S. Cl. 24—66.9 **17 Claims**

1. A bolo tie-type device comprising: a cord and a securing device, said securing device having a front surface and a back surface, said back surface having a first set and a second set of three posts, each projecting therefrom in spaced relationship to each other, each said set of three posts being arranged in a triangular plan formation to receive and secure a different portion of said cord therebetween.

5,664,298
JEWELRY CLASP
Lori J. Nessar-Ivanovic, 124 Leslie Ln., Havelock, N.C. 28532
Filed Apr. 30, 1996, Ser. No. 640,240
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—303 **6 Claims**



1. A clasp for a piece of jewelry comprising:

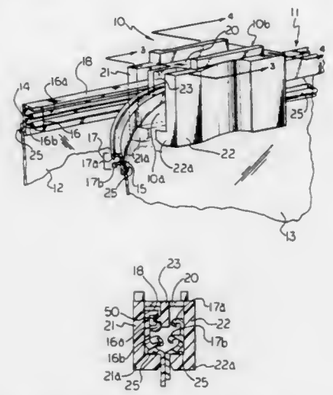
(a) a first part and a second part, each of said parts comprising a trailing end, a leading end, a connection on said leading end, and a center line intersecting said ends:

(b) said first part comprising a receiving surface between said first part leading and trailing ends and at least one rare earth magnet embedded in said receiving surface providing north and south poles on opposite sides of said first part center line;

(c) said second part comprising a matching surface between said second part leading and trailing ends conforming to said first part receiving surface when the first part and the second part are engaged and at least one rare earth magnet embedded in said matching surface providing south and north poles on opposite sides of said second part center line; wherein when said first and second parts are engaged, said magnets are aligned in an attracting relationship, said first and second part center lines are in the same plane, and said leading ends are oriented in opposite directions; and

(d) locking means between said first and second parts acting along said first and second parts center lines resisting separation of the parts.

5,664,299
RECLOSABLE FASTENER ASSEMBLY
Jose Porchia, Midland, and Brian C. Dais, Sanford, both of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.
Filed Sep. 10, 1996, Ser. No. 711,643
Int. Cl.[6] A44B *19/00*
U.S. Cl. 24—400 **22 Claims**



1. A reclosable fastener assembly comprising:

a) a first fastener strip having an inner surface and an outer surfaces;

b) a second fastener strip having an inner surface and an outer surface;

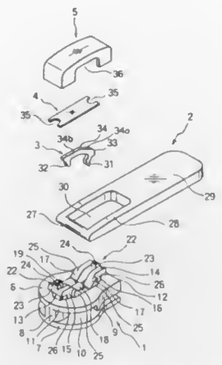
c) a first profile positioned along the length of the inner surface of the first fastener strip, the first profile having a plurality of closure elements, the plurality of closure elements including at least an uppermost element and a bottommost element;

d) a second profile positioned along the length of the inner surface of the second fastener strip, the second profile having a plurality of closure elements, the elements including at least an uppermost element and a bottommost element, the elements of the second profile being adapted to engage with the elements of the first profile, thereby interlocking the second profile with the first profile; and

e) a slider for moving between a closed position and an open position along the fastening strips in straddling relation, the slider having a top and side walls depending from opposite sides of the top for receiving the fastening strips therebetween, the side walls extending downward from the top to a point at or below the profiles, so that at least a portion of the profiles are held between the side walls, the side walls extending from a separating end of the slider to a pinching end, the side walls having a greater spacing at the separating end than at the pinching end, the side walls being spaced close enough at the pinching end to press the first and second profiles into an interlocked relationship as the slider is moved toward the closed position, the slider having a separating leg depending from the top between the first and second side walls at the separating end of the slider, the separating leg being inserted between at least the uppermost closure elements of the first and second profiles, but not between the bottommost closure elements.

5,664,300
AUTO-LOCK SLIDER FOR SLIDE FASTENER
Hiroshi Mizuno, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Aug. 27, 1996, Ser. No. 703,867
Claims priority, application Japan, Aug. 31, 1995, 7-223483
Int. Cl.[6] A44B *19/30*
U.S. Cl. 24—424 **21 Claims**

1. An auto-lock slider, for a slide fastener, comprising:



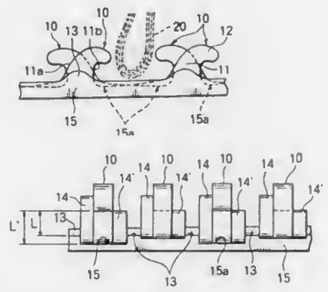
(a) a slider body composed of upper and lower wings joined at their front ends by a guide post, said upper wing having a locking pawl insertion hole;
(b) front and rear attachment lugs projecting from an upper surface of said upper wing and terminating in front and rear provisional spring-holding ends;
(c) a leaf spring supported at front and rear ends thereof by said front and rear attachment lugs and provisionally held down on said front and rear attachment lugs by said front and rear provisional spring-holding ends;
(d) a locking lever supported between said upper wing and said leaf spring and normally urged to a slider locking position by said leaf spring;
(e) a pull tab having a pintle supported between said upper wing and said locking lever for bringing said locking lever out of said slider locking position against the resiliency of said leaf spring; and
(f) a cover accommodating said front and rear attachment lugs, said leaf spring, part of said locking lever and part of said pull tab and having on an inside surface front and rear covering recesses in which said front and rear provisional spring-holding ends are covered.

5,664,301

MOLDED SURFACE FASTENER

Mitsuru Akeno, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 565,895
Claims priority, application Japan, Dec. 2, 1994, 6-299321; Oct. 6, 1995, 7-260468
Int. Cl.[6] A44B *18/00*
U.S. Cl. 24—452 **12 Claims**



1. A molded surface fastener comprising a substrate sheet and a multiplicity of side-by-side rows of engaging elements, for engaging loops, molded on and projecting from one surface of said substrate sheet,

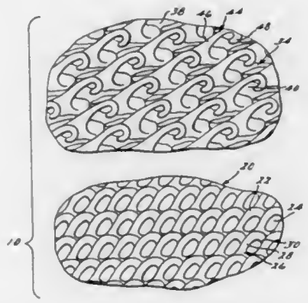
wherein said substrate sheet has in said one surface a corresponding number of dimples respectively associated with each of said engaging elements, and each of said engaging elements has a stem rising from a bottom surface of the associated dimple, and a loop engaging portion formed at a distal end of said stem such that the height of said engaging elements above said one surface is less than the designed height for said engaging elements.

5,664,302

METHOD FOR MANUFACTURING REFASTENABLE FASTENING SYSTEMS INCLUDING A FEMALE LOOP FASTENING COMPONENT AND THE PRODUCTS PRODUCED THEREFROM

Dennis A. Thomas, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 336,277, Nov. 8, 1994. This application Jun. 13, 1996, Ser. No. 663,470
Int. Cl.[6] A44B *18/00;* **B29C** *43/22*
U.S. Cl. 24—452 **13 Claims**



1. A female component for use in a fastening system including a mating male component having a plurality of extending hooks, said female component comprising:
a substrate comprising a sheet of flexible material; and
a multiplicity of free formed loop members deposited onto and joined to said substrate, each of said loop members including:
(a) a base comprising the plane of attachment of said member to said substrate such that said member is joined at said base to said substrate;
(b) a shank having a proximal end and a distal end, said proximal end being contiguous with said base, said shank projecting longitudinally outwardly from said base and said substrate, said distal end fusing with another loop member thereby providing an opening through which at least one of said hooks may project upon fastenably contacting the male and female components.

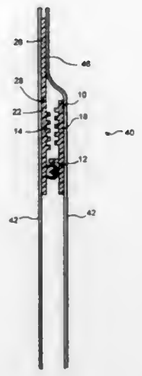
5,664,303

DIFFERENTIAL FLANGE HEADER PACKAGE

Joel L. Johnson, Buffalo Grove, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Nov. 6, 1995, Ser. No. 554,278
Int. Cl.[6] B65D *33/24*
U.S. Cl. 24—587 **8 Claims**

1. A zipper for a reclosable package comprising a male interlocking profile and a female interlocking profile, said profiles each having one side to be directed toward the interior of a package wherein only one of said profiles includes an extended flange separated and separable therefrom by perforations, said extended



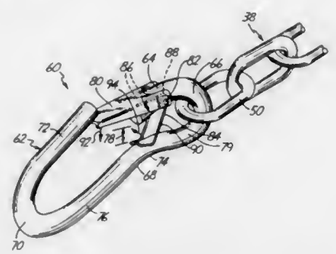
flange being directed away from the sides of the profiles to be directed toward the interior of the package for connection to both sides of the package.

5,664,304

S-HOOK WITH SAFETY LATCH

Curt Tambornino, 6200 Hwy. 12, Eau Claire, Wis. 54703

Filed Sep. 6, 1996, Ser. No. 711,438
Int. Cl.[6] A44B *13/02;* **B66C** *1/36*
U.S. Cl. 24—599.1 **8 Claims**



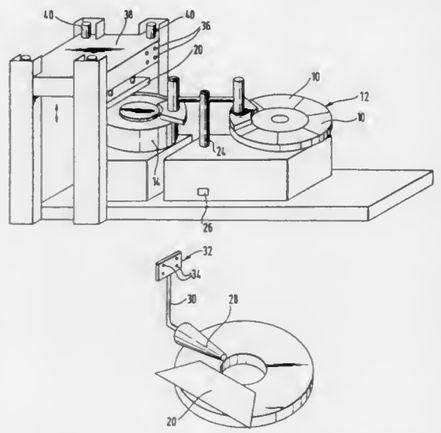
1. A safety latch hook for attachment to a link of a chain, comprising:
a hook link unitarily formed of material having a thickness which is generally uniform, the hook link comprising:
a latch end;
a chain turn extending from the latch end and turning from the latch end to provide a curved portion of the hook link for supporting a link of a chain;
a closed side extending frown the chain turn, the closed side including a bend opposite the latch end and defining a chain opening distance
between the bend and the latch end, wherein the chain opening distance is greater than the thickness of the material of the hook link;
a hook turn extending from the closed side and turning from the closed side to provide a curved portion of the hook link for attachment to an exterior member; and
a hook side extending from the hook turn generally toward the latch end;
a latch pivotally connected to the latch end of the hook link by a pivot pin, the latch having a closed position and an open position, the latch in the closed position extending from the latch end of the hook link to the hook side of the hook link, the latch in the open position extending from the latch end of the hook link toward the closed side of the hook link; and
a spring biasing the latch toward the closed position, wherein the spring extends from the latch end to a bias point at the bend in the closed side, such that the spring must be further biased against the latch in order to pass the link of the chain from the hook turn to the chain turn.

5,664,305

METHOD AND APPARATUS FOR FIBROUS ARTICLE ENGAGEMENT AND DISENGAGEMENT - INCLUDING TWO DIFFERENT NEEDLE TYPES

Peter Geoffrey Lawton, Halifax, and Norman Smith, Rugby, both of Great Britain, assignors to Aerospace Preforms Limited, Halifax, England

PCT No. PCT/GB93/00124, § 371 Date Sep. 23, 1994, § 102(e) Date Sep. 23, 1994, PCT Pub. No. WO93/15250, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 20, 1993, Ser. No. 256,756
Claims priority, application United Kingdom, Jan. 24, 1992, 9201605
Int. Cl.[6] D04H *18/00*
U.S. Cl. 28—113 **28 Claims**



1. A method of engaging and disengaging a fibrous article from a first type of needle with there being a second type of needle, a first support and a second support, the method comprising the steps of:
(a) causing relative movement between the first support with which the article is associated and the first type of needle such that the first type of needle is caused to extend into the article;
(b) causing relative movement between the first support and the first type of needle such that the first type of needle provides the support for the article by first engaging the fibers of the article; and
(c) engaging the article with the second support by causing relative movement between the second support for the article and the second type of needle such that the second type of needle is caused to extend through the fibrous article and take fibers out of the article and into the second support to engage those fibers with the second support.

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5,664,306

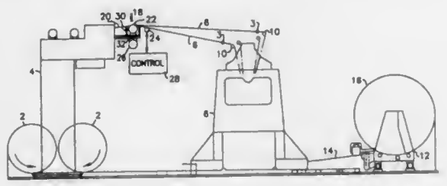
APPARATUS AND METHOD FOR PRODUCING COLORED KNITTED NET

Machluf Ilan Sa'don, Kibbutz Galed; Ishai Doron, and Ytzhak Govrin, both of Kibbutz Mishmar Haemek, all of Israel, assignors to Tama Plastic Industry, Kibbutz Mishmar Ha'emek, Israel

Continuation-in-part of Ser. No. 385,744, Feb. 8, 1995, abandoned, which is a continuation of Ser. No. 138,882, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 911,194, Jul. 9, 1992, abandoned. This application Jun. 4, 1996, Ser. No. 668,497

Int. Cl.[6] D03D *29/00;* **D04B** *5/00;* **D04C** *7/00;* **D04D** *7/00*

U.S. Cl. 28—149 **29 Claims**



1. An apparatus for producing colored knitted net, comprising:
a source providing a plurality of individual oriented ribbons at constant speed;
a coloring apparatus including a plurality of dye applicators for non-restrictive coloring selected ribbons of said plurality of individual oriented ribbons from said source; and
a knitting apparatus for knitting said plurality of individual oriented ribbons from said coloring apparatus into a net;
wherein said coloring apparatus further comprising means for varying the amount of color applied to said plurality of individual oriented ribbons.

5,664,307

DRAW PROCESS

Albert Stitz, Kurten; Hans Peter Berger, Wermelskirchen, and Ulrich Enders, Wuppertal, all of Germany, assignors to Barmag AG, Remscheid, Germany

PCT No. PCT/EP94/01315, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/25653, PCT Pub. Date Nov. 10, 1994

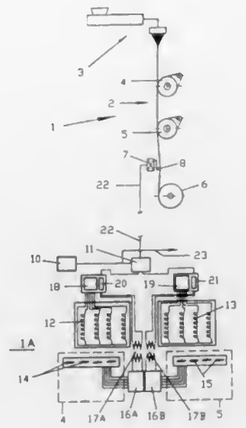
PCT Filed Apr. 26, 1994, Ser. No. 411,703

Claims priority, application Germany, Apr. 30, 1993, 43 14 226.5; Jul. 21, 1993, 43 24 448.3

Int. Cl.[6] D01D *5/12;5/16;* **G01L** *5/04;* **G05D** *23/00*

U.S. Cl. 28—241 **17 Claims**

1. A method of processing an advancing yarn comprising the steps of
advancing the yarn along a path of travel,
applying a drawing force to the advancing yarn in a draw zone located along the path of travel and so as to draw the advancing yarn,
monitoring the tension of the advancing yarn at a location along the path of travel downstream of the draw zone and producing a control signal which is representative of the monitored tension, and



modulating the temperature of the advancing yarn so that the temperature of the advancing yarn is controlled as a function of the control signal.

5,664,308

MACHINE TOOL HAVING A TOOL MOUNTED ECCENTRICALLY ON A ROTATABLE TURNTABLE

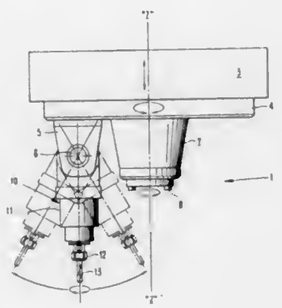
Heinz Deitert, Pixeler Strasse 36, 33442 Herzebrock, Germany

Filed Nov. 22, 1995, Ser. No. 562,026

Claims priority, application Germany, Nov. 25, 1994, 9418723 U

Int. Cl.[6] B23Q *1/25;* **B23C** *1/12*

U.S. Cl. 29—40 **9 Claims**



1. A machine tool comprising:
a machine table for receiving a workpiece;
a headstock disposed across from the table and including a side facing the table;
a turntable mounted on the side of the headstock and rotatable relative to the headstock about a first axis passing through the table;
a first spindle mounted on the turntable and including a chuck for carrying a motor-driven machining tool for rotation about a second axis disposed eccentrically relative to the first axis; and
a second spindle mounted to the turntable and including a chuck for carrying a machining tool for rotation about the first axis.

5,664,309

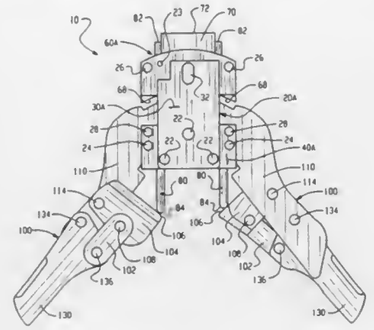
SPRING-LOCK RELEASE TOOL

Martin Albrecht, 1580 Newman Ave., Lakewood, Ohio 44107

Filed Feb. 1, 1996, Ser. No. 595,349

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—237 **17 Claims**



1. A tool adapted for uncoupling and separating a first tube from a second tube, the first and second tubes coupled together by a retaining means having a cage member and a spring member housed therein, said tool comprising:
locking means for fixing said tool to said second tube;
first engagement means, movable relative to said locking means, for operative engagement with said spring member to uncouple said first and second tubes;
second engagement means, movable relative to said locking means, for operative engagement with said cage member to separate said first tube from said second tube; and
means for moving said first engagement means into operative engagement with said spring member and moving said second engagement means into operative engagement with said cage member.

5,664,310

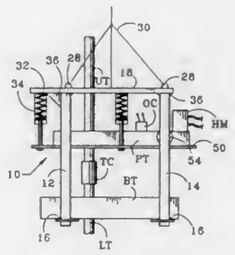
COMBINATION POWER AND BACKUP TONG SUPPORT AND METHOD

Dennis J. Penisson, Raceland, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Jun. 23, 1995, Ser. No. 494,160

Int. Cl.[6] B23Q *17/00*

U.S. Cl. 29—407.02 **22 Claims**



17. A method of supporting a power tong from a backup tong during makeup of a threaded connection between a lower oilfield tubular and an upper oilfield tubular, the method comprising:
fixedly securing a plurality of legs to the backup tong, each leg extending upward from the backup tong;
fixing a support plate to the plurality of legs at a position vertically above the power tong; and
supporting the power tong from the support plate while allowing vertical movement of the power tong relative to the backup tong during makeup of the threaded connection.

5,664,311

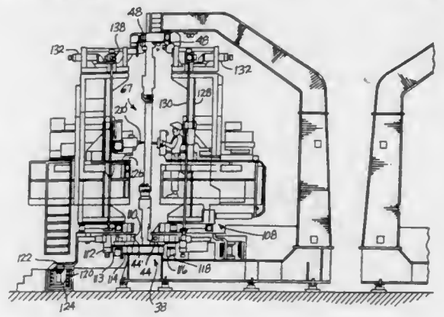
AUTOMATED SPAR ASSEMBY TOOL

David P. Banks, Lake Stevens; James E. Brodhead, Everett; James N. Buttrick, Jr., Seattle; Paul E. Ffield, Marysville; Darrell D. Jones, Lynnwood; James C. Murphy, Mukilteo; John F. Richards, Woodinville; Melvin R. Wiseman, Orting, all of Wash.; John W. Schooff, Janesville, Wis., and Steven C. Van Swearingen, Arbroath, Scotland, assignors to The Boeing Co., Seattle, Wash.

Continuation of Ser. No. 949,177, Sep. 21, 1992, abandoned. This application May 9, 1996, Ser. No. 647,209

Int. Cl.[6] B23P *11/00;23/00;* **B23Q** *39/02*

U.S. Cl. 29—407.04 **24 Claims**



12. A method of automatically fabricating large mechanical structures from a multiplicity of individual parts, comprising:
receiving and holding said parts in a desired orientation with respect to each other;
clamping said parts together in a workpiece clamp-up position in their relative position with respect to each other which said parts will occupy in said large mechanical structure;
supporting and guiding a pair of carriages along opposite sides of said workpiece clamp-up position;
independently driving said carriages longitudinally and vertically with respect to said workpiece clamp-up position;
supporting a tool tray on a shifting mechanism on at least one of said carriages for longitudinal movement on said at least one carriage relative to said workpiece clamp-up position; and
individually mounting a plurality of tools, including a drill, a hole diameter measurement probe, a bolt inserter, a cold working tool, and an electromagnetic riveter on slides on said tool tray for movement laterally toward and away from said workpiece clamp-up position and performing drilling and fastening operations on said parts to fasten said parts together to make said large mechanical structure.

5,664,312

METHOD OF DETACHING A DRIVER BIT FROM A SCREWDRIVER AND A STOP RING PROVIDED WITH A FUNCTION OF REMOVING THE DRIVER BIT APPROPRIATE FOR PRACTICING THE METHOD

Katsuhiko Sasaki; Toshiyuki Kani, and Yukihiko Yamada, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

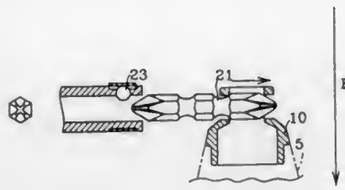
Filed May 22, 1996, Ser. No. 651,527

Claims priority, application Japan, May 24, 1995, 7-124988

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—426.1 **5 Claims**

1. A method of detaching a driver bit from a screwdriver having a removable adjustment sleeve, said adjustment sleeve being pro-



vided with a stop ring and a dusting opening provided in the stop ring, the dusting opening being at least partially defined by a bit engaging edge in a peripheral wall of the stop ring, the method comprising the steps of:

removing the adjustment sleeve from the screwdriver;

at least partially inserting a shaft of the driver bit into the dusting opening;

engaging the bit engaging edge of the peripheral wall with a peripheral groove portion provided in the shaft of the driver bit; and

extracting the driver bit from the screwdriver by an extraction motion while maintaining engagement between the bit engaging edge with the peripheral groove portion of the driver bit.

5,664,313

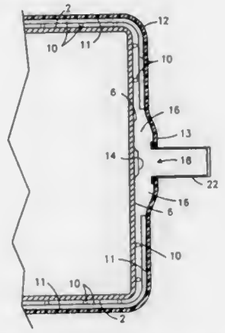
METHOD OF MAKING DOUBLE-WALL TANK FOR THE STORAGE OF LIQUIDS

David T. Palazzo, P.O. Box 290676, Tampa, Fla. 33687

Filed Oct. 23, 1995, Ser. No. 546,739

Int. Cl.[6] B23P *17/00*

U.S. Cl. 29—455.1 **18 Claims**



1. A method of manufacturing a double-wall tank for the storage of liquids comprising the steps of:

providing a rigid, single-wall inner tank having generally cylindrical side-wall portions and closed end portions generally transverse to said side-wall portions, said inner tank having an exterior surface and elongated spindle members being attached to and extending outwardly of each of said end portions of said inner tank generally coaxially with the central axis of said cylindrical inner tank;

applying over at least a substantial portion of said exterior surface of said inner tank a first spacing material providing for substantially free passage of liquids along a substantial portion of said exterior surface of said inner tank;

applying over said inner tank and said first spacing material an outer sheath of a material that is substantially rigid and liquid-tight with at least a portion of said outer sheath being adjacent to each of said spindle members, and said outer sheath being spaced from at least a portion of said exterior surface of said inner tank by said first spacing material;

removing from said storage tank at least a substantial portion of the length of one of said spindle members from one of said end portions of said inner tank;

urging an end portion of said outer sheath overlying said one end portion of said inner tank away from said one end portion of said inner tank to form a space between said end portion of said outer sheath overlying said one end portion of said inner tank and said one end portion of said inner tank, such that an aperture is created in said end portion of said outer sheath adjacent said one spindle member;

inserting a second spacing material through said aperture and into said space to maintain said end portion of said outer sheath overlying said one end portion of said inner tank spaced from said one end portion of said inner tank; and

applying over said aperture a second sheath of a material that is substantially liquid-tight.

5,664,314

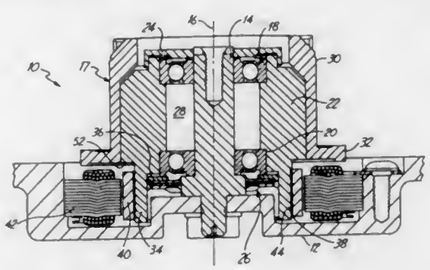
METHOD OF MAKING A SPINDLE MOTOR TO ALLOW MAGNETIC ALIGNMENT BETWEEN THE MAGNET AND THE STATOR IN THE MOTOR

Robert Michael Pelstring, Santa Cruz, and Gunter Karl Heine, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed May 8, 1995, Ser. No. 437,452

Int. Cl.[6] H02K *15/03;15/16*

U.S. Cl. 29—596 **25 Claims**



1. A method of making a spindle motor in a disc drive, comprising:

rotatably mounting a rotor assembly, to a base about an axis of rotation;

mounting a stator to the base;

mounting a magnet to the rotor assembly;

allowing one of the magnet and the stator to move in an axial direction relative to another of the magnet and the stator under influence of magnetic interaction between the magnet and the stator; and

rigidly fixing the magnet and the stator relative to one another to substantially preclude relative axial movement of the magnet and the stator after the one of the magnet and the stator has moved.

5,664,315

PROCESS FOR MANUFACTURING A MEASURING TUBE OF AN ELECTROMAGNETIC FLOW SENSOR

Roland Unterseh, Saint Louis, France, assignor to Endress + Hauser Flowtec AG, Reinach, Switzerland

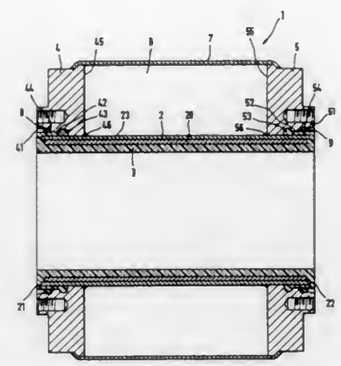
Filed Mar. 22, 1996, Ser. No. 621,833

Claims priority, application European Pat. Off., Sep. 22, 1995, 95114940

Int. Cl.[6] H01F *41/00*

U.S. Cl. 29—602.1 **5 Claims**

1. A process for manufacturing a measuring tube of an electromagnetic flow sensor, said measuring tube comprising an insulation of desired thickness on its inner surface and a metal tube having a respective metal flange at each of its ends, said process comprising the steps of:



slipping the respective metal flange at each end of the metal tube over the outside of the latter in such a way

that a front side of the metal flange projects beyond the respective end of the metal tube by an amount at least equal to the thickness of the insulation;

permanently and tightly joining a rear side of the respective metal flange to the outside of the metal tube;

prior to slipping the metal flanges over the metal tube, providing each of the metal flanges, from the respective front side, with a flute

which forms a first annular groove at its inner end;

introducing into the lumen of the metal tube a mandrel

whose diameter is determined by the desired thickness of the insulation, and

which has a filler inlet and two end flanges, one at each end,

which cover the flutes of the respective flanges at the front side;

filling in the insulation through the filler inlet in a liquid state, and

allowing the insulation to solidify and removing the mandrel.

5,664,316

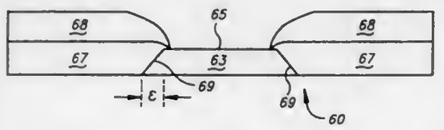
METHOD OF MANUFACTURING MAGNETORESISTIVE READ TRANSDUCER HAVING A CONTIGUOUS LONGITUDINAL BIAS LAYER

Mao-Min Chen; Robert Edward Fontana; Mohamad Towfik Krounbi; Kenneth Ting-Yuan Kung; James Hsi-Tang Lee; Jyh-Shilley Jerry Lo, all of San Jose; Ching Hwa Tsang, Sunnyvale, and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 375,045, Jan. 17, 1995, abandoned. This application May 10, 1995, Ser. No. 438,430

Int. Cl.[6] G11B *5/127*

U.S. Cl. 29—603.08 **14 Claims**



1. A method for manufacturing a magnetoresistive read transducer having end regions separated by a central active region comprising the steps of:

depositing a first layer of ferromagnetic material on a substrate;

forming a stencil which covers at least a portion of said first layer of ferromagnetic material which defines a central active region of said transducer;

etching away portions of said first layer of magnetoresistive material not covered by said stencil to form a magnetoresistive element extending over said central active region of said transducer;

depositing a second layer of ferromagnetic material over end regions of said transducer not covered by said stencil; and

depositing a layer of antiferromagnetic material over said end regions of said transducer not covered by said stencil, said layer of antiferromagnetic material overlaying and in contact with said second layer of ferromagnetic material, said layers of antiferromagnetic and ferromagnetic material forming an exchange-coupled bias layer extending over said end regions of said transducer, said exchange-coupled bias layer in each of said end regions forming an abutting junction with one end of said magnetoresistive element, said exchange-coupled bias layers producing a longitudinal magnetic bias field in said transducer.

5,664,317

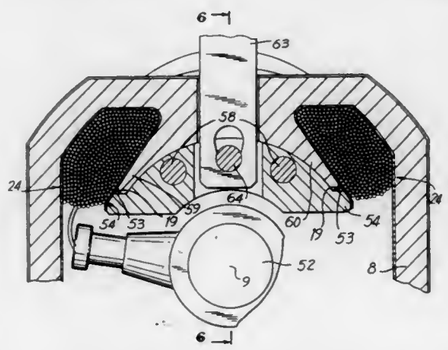
STATOR WINDING METHOD

Massimo Ponzio, and Massimo Lombardi, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Division of Ser. No. 179,775, Jan. 10, 1994, Pat. No. 5,528,822, which is a continuation of Ser. No. 869,578, Apr. 15, 1992, abandoned. This application Feb. 14, 1996, Ser. No. 601,552

Int. Cl.[6] H02K *15/095*

U.S. Cl. 29—596 **7 Claims**



1. A method of winding a coil of wire on a pole of a stator, said pole having a predetermined width transverse to the longitudinal axis of the stator and adjacent the radially innermost portion of said pole such that said pole can support only up to a predetermined number of turns of wire wound on said pole, said coil having substantially more than said predetermined number of turns of wire, said method comprising the steps of:

applying at least one member to said stator to temporarily effectively increase said width of said pole;

winding said coil on said pole while said width of said pole is effectively increased; and

removing said at least one member from said stator.

5,664,318
PROCESS AND ARRANGEMENT FOR DETERMINING REFERENCE POSITIONS FOR PLANAR HYBRID STEPPER MOTORS

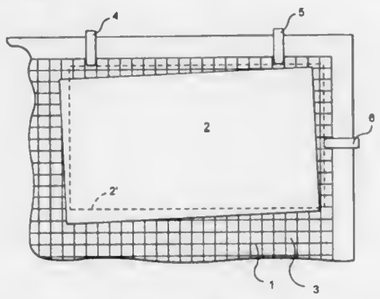
Carl-Friedrich Fuchs; Ronald Krippendorf; Juergen Loebel, all of Jena, and Nico Correns, Weimar, all of Germany, assignors to Carl Zeiss Jena GmbH, Jena, Germany

Filed Jan. 25, 1995, Ser. No. 377,651

Claims priority, application Germany, Jan. 27, 1994, 44 02 384.7

Int. Cl.[6] H02K *15/00*

U.S. Cl. 29—596 **7 Claims**



1. A process for determining reference positions for planar hybrid stepper motors having a stator which is provided with a structure of orthogonally extending grooves and a movable part which has coils and is supported on the stator in air bearings, comprising the steps of:

setting the movable part down on the stator and switching on an air supply for the air bearings;

bringing the movable part into an alignment position in a working connection with at least two defined, stationary mechanical stops;

turning off the air supply for the air bearings, thereby fixing the movable part in said alignment position; and

supplying the coils of the movable part with current in sequence and switching on the air supply to the air bearings so that the movable part is brought from the alignment position into a reference position which is aligned with respect to the stator structure.

5,664,319
MAGNETIC REINITIALIZATION OF THIN FILM MAGNETORESISTIVE REPRODUCING HEADS AT THE SUSPENSION LEVEL OF MEDIA DRIVE MANUFACTURING

Samir Elias Abboud, Hayward, Calif.; Nickolas Christopher Apuzzo, Rochester, Minn.; Jeffrey Bernard Brown, Rochester, Calif.; Earl Albert Cunningham, Rochester, Minn.; David Malcolm Hannon, Palo Alto, Calif.; Raymond Patrick Mallette, Shelburne, Vt.; Paul Sheldon Tyler; Steven Harry Voss, both of Rochester, Minn., and Albert John Wallash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

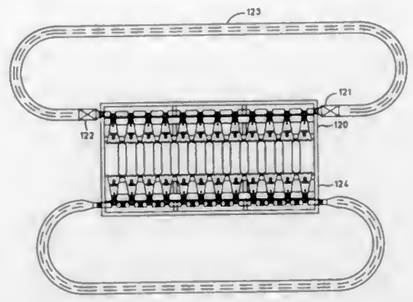
Continuation of Ser. No. 129,293, Sep. 29, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,505

Int. Cl.[6] G11B *5/127*

U.S. Cl. 29—603.08 **38 Claims**

1. A method for setting a magnetic state of a magnetoresistive device using a magnetizing apparatus including an air gap disposed between magnetic poles composed of a soft magnetic material and means for inducing a magnetic field in the air gap, the method including the steps of:

forming a plurality of thin-film magnetoresistive transducers on a single substrate, each magnetoresistive transducer including a hard biased magnetoresistive element having a magnetic state;



separating the thin-film magnetoresistive transducers by cutting the single substrate into a plurality of individual pieces;

mounting each individual piece on a flexure, producing a head slider assembly;

for at least one head slider assembly, setting the magnetic state of a hard biased magnetoresistive element in a magnetoresistive transducer mounted on the flexure by disposing the head slider assembly with respect to the magnetizing apparatus to place the hard biased magnetoresistive element in the air gap; and

inducing a magnetic field in the air gap.

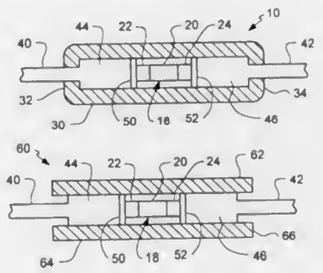
5,664,320
METHOD OF MAKING A CIRCUIT PROTECTOR

Leon Gurevich, Grover, Mo., assignor to Cooper Industries, Houston, Tex.

Division of Ser. No. 227,399, Apr. 13, 1994. This application Mar. 23, 1995, Ser. No. 408,843

Int. Cl.[6] H01H *69/02;* **H05K** *5/06*

U.S. Cl. 29—623 **12 Claims**



1. A method for making a circuit protector, comprising the steps of:

inserting a substrate carrying a fuse element and having electrical contacts at opposing end portions in a glass sleeve, the glass sleeve having open ends;

positioning one lead at each end portion of the substrate in contact with the electrical contacts;

placing the assembly in a pressure and temperature controllable chamber;

at least partially evacuating the chamber;

heating the chamber to heat the assembly to a temperature sufficient to soften the glass sleeve so that the ends of the glass sleeve adhere to the leads; and,

increasing the pressure to a pressure sufficient to cause the ends of the softened glass sleeve to form a hermetic seal around the leads.

5,664,321
PROCESS FOR THE PRODUCTION OF A LEAD ACCUMULATOR

Olaf Sielemann, Kefenrod; Harald Niepraschk, Budingen, and Peter Nemec-Losert, Hirzenhain, all of Germany, assignors to Compagnie Europeenne d'Accumulateurs, Cedex, France

Filed Mar. 27, 1996, Ser. No. 622,374

Claims priority, application Germany, Apr. 8, 1995, 195 13 343.9

Int. Cl.[6] H01M *10/12*

U.S. Cl. 29—623.1 **34 Claims**

1. A process for the production of a lead accumulator comprising installing electrode plates and separators in a battery box, introducing an electrolyte in the form of a thixotropic gel including sulphuric acid and gel-forming agent into an electrolyte space and, closing of the battery box, wherein after installing the electrode plates the entire amount of sulphuric acid required for a desired electrolyte concentration is introduced into an electrolyte space within the box to form the electrode plates and after formation, an aqueous silica sol with 15 to 60% by weight of solids component, with a specific surface area of solids of 100 to 500 m^2/g, is added in such an amount that a solids concentration of the electrolyte, with respect to the overall weight thereof, of 3 to 20% by weight is obtained, and then the content of the electrolyte space is homogenously mixed.

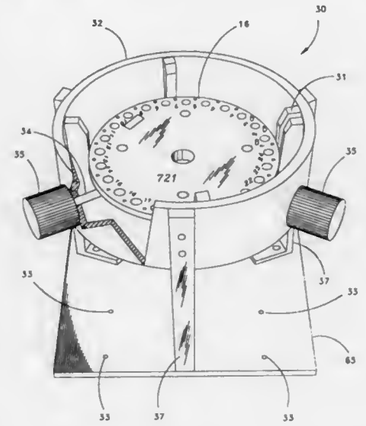
5,664,322
APPARATUS FOR PROCESSING PALLETIZED SMALL PARTS UTILIZING A ROBOT AND A VERTICAL PALLET MAGAZINE

Norman D. Best, 63 Glenflow Ct., Glendale, Calif. 91206

Division of Ser. No. 189,118, Jan. 26, 1994, Pat. No. 5,509,191. This application Mar. 22, 1996, Ser. No. 620,220

Int. Cl.[6] B23P *21/00;* **B23Q** *7/10*

U.S. Cl. 29—784 **8 Claims**



5. An apparatus, comprising:

a. a robot with a head movable in the X, Y and Z directions, and having an end effector gripper for gripping a rotatable pallet and holding the pallet above the robot head;

b. a vertical magazine for retaining at least one rotatable pallet, said vertical magazine elevated on a support bracket so that said robot head can be moved under said magazine;

c. said magazine further comprising an open-ended body, said at least one rotatable pallet being disposed within the open-ended body, and a plurality of pins circumferentially disposed around an open end of the body adjacent to a bottom opening of the body and projecting inwardly to prevent said at least one rotatable pallet from passing down through the open end of the body;

d. said magazine further comprising a plurality of vertical guide blocks disposed along the interior of said body for maintaining said at least one rotatable pallet in a vertically aligned orientation in said magazine; and

e. said magazine located within an operating envelope of said robot head.

5,664,323
APPARATUS FOR PRODUCING VEHICLES

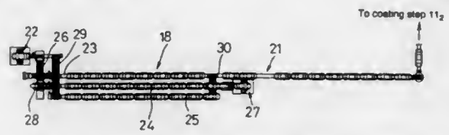
Yoshiki Ishida; Keiichi Samekawa; Kenichi Katayama; Yoshifumi Matsumoto; Hideo Ishida, and Koichi Kimura, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 393,373, Feb. 23, 1995, Pat. No. 5,575,053. This application Nov. 17, 1995, Ser. No. 560,371

Claims priority, application Japan, Feb. 25, 1994, 6-027783

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—822 **3 Claims**



1. An apparatus for producing vehicles, said apparatus being provided with first and second production lines for allowing the vehicles to successively pass through a welding step, a coating step and an assembling step in each of said production lines, comprising: a first vehicle transporting means conducting a portion of transporting of vehicles from the welding step to the coating step in one of said production lines; a second vehicle transporting means provided substantially parallel with said first vehicle transporting means and capable of transporting vehicles forwardly and reversely; a first delivering and receiving means between an upstream end of said first vehicle transporting means and one end of said second vehicle transporting means and capable of delivering and receiving vehicles to and from either one of said first and second transporting means; and a second delivering and receiving means between an opposite end of the second vehicle transporting means and an intermediate portion between the welding step and the coating step of the other of said production lines and capable of delivering and receiving vehicles to and from either one of said second vehicle transporting means and said intermediate portion of the other production line.

5,664,324
WIRE AND CABLE CUTTING AND STRIPPING USING ADJACENT BLADES

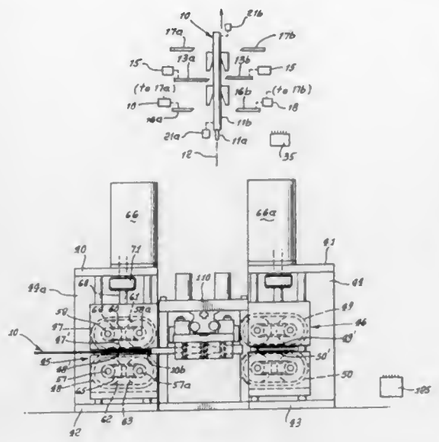
Jack L. Hoffa, Brea, and Greg Nazerian, Pasadena, both of Calif., assignors to Eubanks Engineering Company, Monrovia, Calif.

Continuation-in-part of Ser. No. 22,981, Feb. 25, 1993, Pat. No. 5,375,485, which is a continuation-in-part of Ser. No. 857,972, Mar. 26, 1992, Pat. No. 5,293,683, which is a continuation-in-part of Ser. No. 659,557, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673, and Ser. No. 148,568, Nov. 8, 1993, Pat. No. 5,469,763, which is a continuation-in-part of Ser. No. 22,981, Feb. 25, 1993, Pat. No. 5,375,485, which is a continuation-in-part of Ser. No. 857,972, Mar. 26, 1992, Pat. No. 5,293,683, which is a continuation-in-part of Ser. No. 659,557, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 611,057, Nov. 9, 1990, Pat. No. 5,146,673. This application Dec. 2, 1994, Ser. No. 353,352

Int. Cl.[6] H01R *43/00;* **B23P** *23/00*

U.S. Cl. 29—825 **20 Claims**

1. In apparatus for processing wire to cut the wire into sections and to expose section wire ends, the wire having an inner core and



sheathing about said core, the apparatus including means for displacing the wire endwise along an axis defined by the wire, the combination comprising:

a) multiple blade structures, including at least two of said structures that move adjacent one another as said two structures move relatively oppositely toward and away from said axis in directions generally normal to said axis,

b) each of said two structures comprising at least two sections having cutting edges on different of said sections,

c) said cutting edges configured such that, when the two said structures are moved relatively longitudinally in a primary mode, two of said cutting edges cut in opposite directions through the wire, said two cutting edges being first and second cutting edges, and when said two structures are moved relatively longitudinally in a second mode, the remaining two of said cutting edges cut in opposite directions into the wire sheathing to enable stripping of the sheathing off the wire, said remaining two cutting edges being third and fourth cutting edges, said first and third cutting edges being on one of said structures, and said second and fourth cutting edges being on the other of said structures,

d) and actuating means operatively connected to said blade structures for moving said blade structures adjacent one another as said two structures move relatively oppositely toward and away from said axis, as defined.

18. In the method of processing wire wherein the wire is moved endwise along a travel path, the steps that include

a) providing blade pair means including two blade structures each extending at opposite sides of the wire travel path, each of said structures provided to comprise at least two sections having first and second cutting edges on one said structure and third and fourth cutting edges on another said structure,

b) providing at least one drive means, and other means operatively connected between the drive means and the blade structures,

c) and operating said drive means to cause one blade structure to be relatively displaced in direction A toward said path as the other blade structure is relatively displaced in direction −A, to process the wire by cutting of the first and third edges into the wire, and subsequently to cause said one blade structure to be relatively displaced in direction −A, as said other blade structure is relatively displaced in direction A, to process the wire by cutting of the second and fourth edges into the wire.

5,664,325

FABRICATION PROCESS OF WIRING BOARD

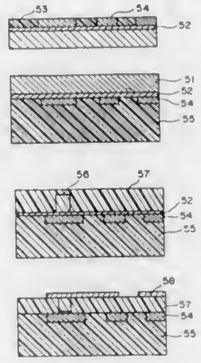
Naoki Fukutomi, Yuki; Hajime Nakayama, Tsukuba; Yoshiaki Tsubomatsu, Tsuchiura; Kouichi Kaitou, Niihari-gun; Yasunobu Yoshidomi, Shimodate, and Yoshihiro Takahashi, Tsukuba, all of Japan, assignors to Hitachi Chemical Co. Ltd., Japan

Continuation of Ser. No. 983,342, Nov. 30, 1992, Pat. No. 5,426,850. This application Mar. 27, 1995, Ser. No. 410,950

Claims priority, application Japan, Apr. 23, 1991, 4-104675; Nov. 29, 1991, 3-316253

Int. Cl.[6] H05K *3/06*

U.S. Cl. 29—848 **4 Claims**



1. A process for the fabrication of a wiring board, which comprises the following steps:

(a) forming, on one side of a continuous carrier metal foil made of a first metal which has sufficient flexibility to be rolled into a roll, a desired wiring pattern of a second metal whose etching conditions are different from those of the first metal, the resultant wiring-pattern-bearing metal foil having flexibility;

(b) superposing and pressing the carrier metal foil, which carries the desired wiring pattern formed thereon, on and against an insulating substrate with said wiring pattern facing said insulating substrate to embed the wiring pattern in said insulating substrate;

(c) etching off the carrier metal foil of the first metal at desired parts thereof; and

(d) cutting the carrier metal foil, which carries the desired wiring pattern formed thereon, between said steps (a) and (b).

5,664,326

METHOD OF MANUFACTURING METAL TERMINAL

Hideki Ohsumi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 408,291, Mar. 22, 1995. This application Feb. 21, 1996, Ser. No. 604,252

Claims priority, application Japan, Mar. 22, 1994, 6-050208

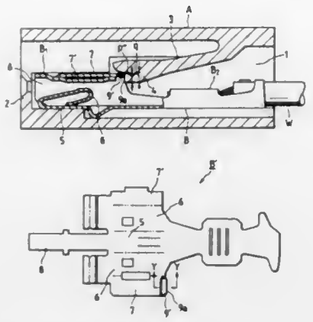
Int. Cl.[6] H01R *43/16*

U.S. Cl. 29—874 **4 Claims**

1. A method of manufacturing a metal terminal, comprising the steps of:

punching a metal plate to form a terminal blank;

rolling a predetermined portion of the terminal blank so as to reduce the thickness of said predetermined portion and thereby form a thin plate portion;



folding the thin plate portion to form a laminated plate portion; and

bending the terminal blank to form said terminal.

5,664,327

METHOD FOR PRODUCING A HOLLOW COMPOSITE MEMBERS

Helmut Swars, Bergisch Gladbach, Germany, assignor to Emitec Gesellschaft für Emissionstechnologie GmbH, Lohmar, Germany

Continuation of Ser. No. 419,079, Apr. 10, 1995, abandoned, which is a continuation of Ser. No. 789,366, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 431,645, Nov. 3, 1989, Pat. No. 5,064,726. This application May 30, 1996, Ser. No. 655,494

Claims priority, application Germany, Nov. 3, 1988, 38 37 293.2

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—888.08 **5 Claims**



1. A process for producing hollow composite members subjected, during operation, to dynamic bending and torsional loads and having an increased stiffness vis-a-vis bending and torsional loads, said process comprising the steps of:

providing an outer material layer formed of a material having a predetermined tensile strength and a predetermined yield point;

providing a tubular supporting member formed of a material having a tensile strength and a yield point lower than the predetermined tensile strength and the predetermined yield point of the outer layer within the outer layer;

providing a stable wall surrounding said outer material layer;

thereafter, simultaneously initially expanding the supporting member at opposite ends thereof into contact with corresponding opposite ends of said outer layer, thereby elastically expanding said opposite ends of said outer layer and producing a force-locking connection between the outer layer and the supporting member thereat; and

subsequently expanding the supporting member in a region thereof extending between the initially expanded opposite ends into press-fit engagement with the outer layer with the outer layer resting against said stable wall thereby axially shortening the supporting member and thus generating at the opposite ends of the supporting member, a tensile presstress in the outer layer in a circumferential direction thereof and a compressive presstress in the outer layer in a longitudinal direction thereof.

5,664,328

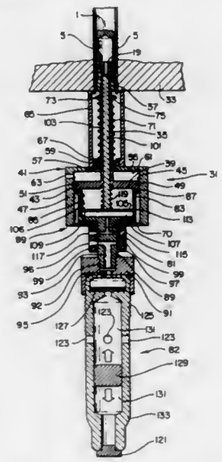
TOOL FOR REMOVING A METALLIC PLUG FROM A TUBE

David J. Fink, Greentree; James W. Everett, Hempfield Township, Westmoreland County; Annette M. Costlow, Trafford; James J. Roberts, Irwin, and Paul J. Boone, Bethel Park, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 203,631, Feb. 28, 1994, Pat. No. 5,465,483. This application Feb. 13, 1995, Ser. No. 387,656

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.031 **12 Claims**



1. A tool for removing a plug from a conduit, comprising impacts means for applying repetitive to the plug in a first direction about longitudinally aligned with a longitudinal axis of the plug and a static force means for applying a static force to the plug in about the first direction while applying the repetitive impacts.

5,664,329

METHOD FOR FABRICATING A ONE-PIECE METAL VEHICLE WHEEL

Harald P. Nickel, Cedar Falls, Iowa, assignor to Cosma International Inc., Concord, Canada

Filed Nov. 30, 1995, Ser. No. 564,939

Int. Cl.[6] B21K *1/32*

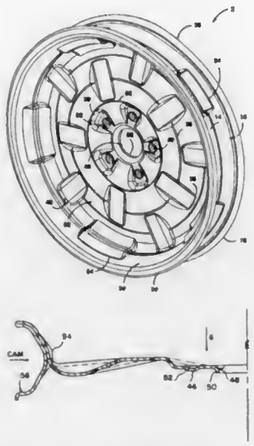
U.S. Cl. 29—894.324 **22 Claims**

1. A method of forming a metal, one piece vehicle wheel for supporting a tire thereon, said wheel having an axial centerline, a rim for mounting radially inward edges of the tire, and a hub for supporting the wheel on a vehicle, said method comprising:

(1) providing a sheet metal blank and shaping said blank in a first axial direction to construct a dish-shaped wall and to construct an outside wall and a first side wall of said rim for supporting one of the radially inward edges of the tire to be mounted, said outside wall including an axial portion generally parallel to said axial centerline, and a first contour portion extending from said axial portion of said outside wall to said first side wall;

(2) shaping a central portion of said dish-shaped wall in a second axial direction to construct said hub in a generally dome shape and to fold an annular radially outward portion of

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said dish-shaped wall inside said outside wall to construct an inside wall in surrounding relation to said hub, and piercing a valve hole in said first contour portion to receive a tire valve stem;

(3) flattening said hub and trimming an outer peripheral portion of said first side wall;

(4) shaping said inside wall radially outwardly so that an extent of said inside wall is parallel to and in contact with said axial portion of said outside wall to construct a double walled axial portion and shaping an outer peripheral edge of said side wall to construct a first side wall stiffening flange;

(5) shaping a portion of said double walled axial portion radially outwardly to construct a second contour portion of said rim;

(6) shaping a portion of said hub in the first axial direction to construct a first offset constructed and arranged to stiffen said hub and shaping a plurality of circumferentially spaced hub-stiffening embosses in said hub, said plurality of hub-stiffening embosses being radially arranged in surrounding relation to the centerline of the wheel;

(7) shaping said first offset in the second axial direction to construct a second offset constructed and arranged to further stiffen said hub and to construct a plurality of circumferentially spaced sockets radially arranged in surrounding relation to the centerline of the wheel and shaping a portion of said second contour to construct a second side wall for supporting the radially inward edge of the tire to be mounted;

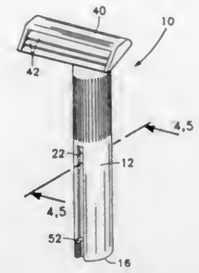
(8) piercing a center hole and a plurality of wheel mounting holes surrounding said center hole in said hub, each of said plurality of wheel mounting holes being formed in a corresponding one of said plurality of sockets; and

(9) shaping a plurality of circumferentially spaced rim-stiffening embosses in said rim and shaping said center hole and each of said plurality of wheel mounting holes to construct a center hole flange for said center hole and a wheel mounting hole flange for each of said plurality of wheel mounting holes.

5,664,330
DISPOSABLE RAZOR WITH DISPENSER
Robert A. DeMars, 5000 N. Parkway Calabasas - Suite 233, Calabasas, Calif. 91302
Filed Mar. 25, 1996, Ser. No. 618,034
Int. Cl.[6] B26B *21/44*
U.S. Cl. 30—41 **3 Claims**

1. A razor comprising:

an elongated body having a fore end and an aft end, said fore end being closed by a closing wall, said aft end being open defining an open aft end, said elongated body having an internal chamber, said internal chamber having a sidewall,

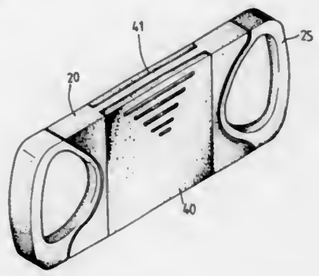


said internal chamber to contain an emollient lotion in the portion of said internal chamber located directly adjacent said fore end, a dispensing aperture formed in said elongated body directly adjacent said fore end, said dispensing aperture connecting with said internal chamber, said dispensing aperture adapted to dispense said emollient lotion into the ambient;

a shaving head mounted by mounting means to said elongated body at said fore end; and

a slider movably mounted in said internal chamber, said slider being elongated, said slider having a forward end and a rear end, said slider being movable between a retracted position and an extended position, said slider having a plunger at said forward end forming a close fit with said internal chamber, said plunger being constructed of a deflectable material, said deflectable material being biased outwardly against said sidewall, handle means connected to said slider at said rear end, manual movement of said slider by said handle from said retracted position to said extended position will cause said emollient lotion to be dispensed through said dispensing aperture, said handle riding within an elongated slot formed in said elongated body, said elongated slot terminating in an open end and a closed end, said open end located at said open aft end, said closed end located between said open aft end and said closing wall, said slider to be inserted into said internal chamber through said open aft end at time of assembly.

5,664,331
CIGAR CUTTER HAVING A SAFE GUARD
Chin-Tung Yu, No. 2, Lane 320, Te Feng Road Section 1, Ta Li City, Taichung Hsien, Taiwan
Filed Sep. 23, 1996, Ser. No. 718,760
Int. Cl.[6] B26B *29/00*
U.S. Cl. 30—113 **4 Claims**



1. A cigar cutter comprising:

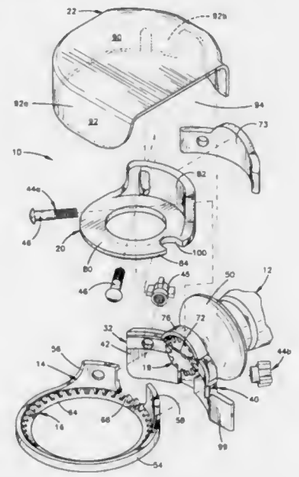
a housing including a middle portion having an opening formed therein for engaging with a cigar,

at least one cutter blade slidably engaged in said housing and movable across said opening for cutting the cigar, and

a safe guard including a pair of parallel panels for engaging onto said middle portion of said housing, said safe guard being adapted to be moved between an open position and an

enclosed position for shielding said cutter blade and for preventing said cutter blade from hurting a user.

5,664,332
HAND KNIFE WITH COVER
Jeffrey A. Whited, Amherst, and Robert L. Leimbach, Wakeman, both of Ohio, assignors to Bettcher Industries, Inc., Birmingham, Ohio
Filed Feb. 14, 1996, Ser. No. 601,093
Int. Cl.[6] A22C *17/04*; **B26B** *23/00*
U.S. Cl. 30—276 **7 Claims**



1. A hand held slicing knife comprising:

a handle assembly;

a ring-like blade housing carried by and projecting from said handle assembly, said housing disposed about a central axis and having first and second opposite axial sides;

a ring blade supported by said housing about said axis, said blade projecting from said first axial blade housing side;

a blade drive transmission for rotating said blade about said axis; and,

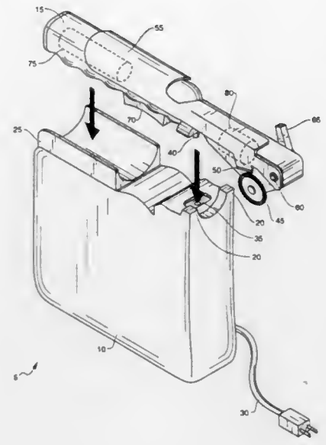
a cut material directing cover comprising a base wall spaced from said second axial blade housing side and a side wall projecting from said base wall in the general direction of extent of said axis, said side wall disposed radially outwardly of said blade housing and extending axially from said base wall at least to a location radially adjacent said second blade housing side.

5,664,333
HAND HELD AND BASE OPERATED CAN OPENER COMBINATION
Tonia C. Hardman, 2980 S. Courtney Dr., Salt Lake City, Utah 84120
Filed Jun. 17, 1996, Ser. No. 665,252
Int. Cl.[6] B67B *7/60*
U.S. Cl. 30—423 **8 Claims**

8. A hand held and base operated can opener combination that can be both operated in a base mounted counter top configuration and a portable hand held configuration comprising:

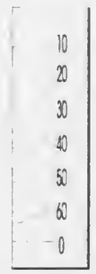
a base unit with an integral power supply and battery charger; and

a head unit containing rechargeable batteries, an electric motor, a can opening mechanism, a manual can opening means, and



associated electrical control circuitry, said head unit removably connected to said base unit.

5,664,334
INCLINATION ANGLE RULER
Eric Watts, 3729 Vista St., Long Beach, Calif. 90803
Filed Jul. 2, 1996, Ser. No. 678,396
Int. Cl.[6] G01B *5/00*; **B43L** *7/00*
U.S. Cl. 33—1 N **1 Claim**



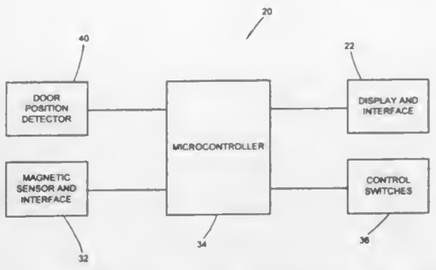
1. A measurement tool for use with a topographical map having contour intervals, said tool comprising:

a piece of material upon which definite lengths are defined by a set of marks including indicia indicative of an inclination angle, wherein the inclination of a slope may be determined by aligning the marks of the tool with the contour intervals of a topographical map.

5,664,335
VEHICLE COMPASS CIRCUIT
Michael J. Suman, Holland, and Steven L. Geerlings, Zeeland, both of Mich., assignors to Prince Corporation, Holland, Mich.
Filed Jun. 6, 1995, Ser. No. 467,624
Int. Cl.[6] G01C *17/38*
U.S. Cl. 33—356 **12 Claims**

1. A vehicle compass correction circuit for correcting for vehicle generated internal varying interfering magnetic fields comprising:

a compass circuit including a magnetic field sensor and display for displaying direction indicating information detected by said magnetic field sensor; and



a detector for providing signals representing the closure state of at least one vehicle closure member, said detector coupled to said compass circuit to provide such status information and wherein said compass circuit responds to said signals to display a vehicle heading unaffected by the opening of a vehicle closure member.

5,664,336

LINEAR MEASURING DEVICE AND A METHOD OF ADJUSTING SAID DEVICE

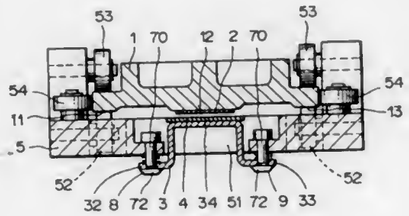
Adriano Zanier, Prilly, and Alex Bezinge, Yens, both of Switzerland, assignors to Tesa Brown & Sharpe SA, Renens, Switzerland

Filed Jan. 24, 1996, Ser. No. 590,909

Claims priority, application European Pat. Off., Jan. 30, 1995, 95810052

Int. Cl.[6] G01B *11/04*

U.S. Cl. 33—706 **8 Claims**



1. A linear measuring device comprising:

a supporting structure,

a scale fixed on said supporting structure,

a slide which can slide along said supporting structure,

a transducer facing said scale and permitting in cooperation therewith to determine at least one coordinate of a point associated with said slide in a system of coordinates associated with said supporting structure,

mounting means permitting to fix said transducer to said slide at at least three points, said mounting means including at at least one of said points a threaded piece engaged in an opening at least partially threaded and at least one spring,

so that an action at each of the said points on said screw permits change of the spacing between said transducer and said slide, said spring keeping this spacing as large as the engagement of said screw in said opening permits, in a way to be able to adjust the parallelism and the distance between said transducer and said scale.

5,664,337

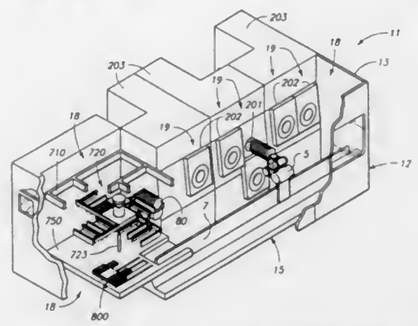
AUTOMATED SEMICONDUCTOR PROCESSING SYSTEMS

Jeffrey A. Davis, and Gary L. Curtis, both of Kalispell, Mont., assignors to Semitool, Inc., Kalispell, Mont.

Continuation-in-part of Ser. No. 622,349, Mar. 26, 1996. This application Jul. 15, 1996, Ser. No. 680,463

Int. Cl.[6] F26B *17/24*

U.S. Cl. 34—58 **32 Claims**



11. A semiconductor processor for processing semiconductor articles, comprising:

an enclosure for providing a substantially enclosed work space therewithin;

at least one carrousel mounted within the enclosure for holding semiconductor articles thereon;

at least one processing station; said at least one processing station having at least one access opening which opens to the work space to allow installation and removal of articles relative to said at least one processing station;

at least one conveyor for conveying said articles to and from said at least one processing station and said at least one carrousel;

wherein said at least one carrousel includes a plurality of article supports arranged thereon for holding the semiconductor articles in batches of multiple articles which are conveyed by said conveyor.

5,664,338

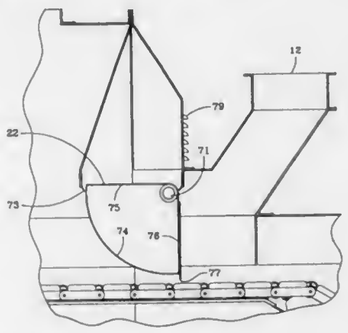
INLET AIR SEAL FOR USE WITH A COOLER/DRYER

Kelsey C. Thom, Jr., Cedar Falls, Iowa, assignor to California Pellet Mill Company, Nashua, N.H.

Filed Mar. 22, 1996, Ser. No. 620,771

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—62 **3 Claims**



1. A horizontal cooler/dryer comprising:

a continuous traveling conveyor;

a housing about the conveyor, the housing having a cooling gas inlet, a gas exhaust, a product inlet through material to be cooled may be deposited on the conveyor and a product outlet through which cooled material can be discharged;

an exhaust means for causing cooling gas to pass into the housing and through the material, the exhaust means maintaining a pressure in the housing below the pressure outside the housing; and

a pivotally mounted transversely extending quarter drum shaped seal means, located proximate the product inlet, for sealing air from outside the housing from entering the housing through the product inlet and for leveling material deposited onto the conveyor.

5,664,339

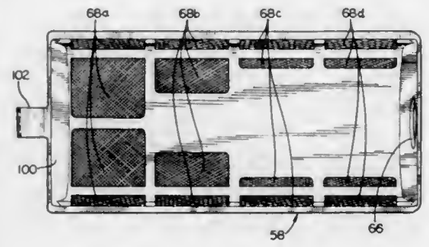
LINT BASKET FOR A LINT STORAGE SYSTEM

Edward T. Swanson; Patrick J. Clark, both of St. Joseph; James J. Visin, Benton Harbor; Robert E. Smith, and Johnny W. Zimmerle, both of St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 425,740, Apr. 20, 1995, Pat. No. 5,560,120. This application Aug. 21, 1996, Ser. No. 697,158

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—82 **14 Claims**



1. A lint basket for a lint storage system for a laundry dryer, the lint basket comprising:

an elongated main body having a first end and a second end and further having:

an inlet opening at the first end, and

an outlet opening which extends longitudinally along the main body and is configured to have increased size at successive linear points extending from the first end to the second end; and

a filter medium disposed across the outlet opening.

5,664,340

ULTRAVOILET, ANTIBACTERIAL, ANTIFUNGAL DRYERLIGHT

Clay A. Brown, P.O. Box 607, Calhoun, La. 71225

Filed Mar. 18, 1996, Ser. No. 619,943

Int. Cl.[6] F26B *3/34*

U.S. Cl. 34—275 **11 Claims**

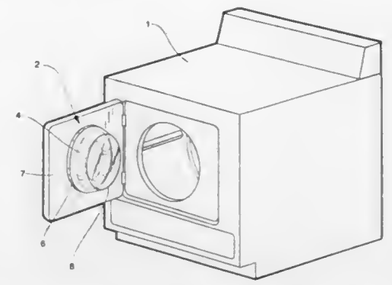
1. An apparatus for killing bacteria and fungus-causing germs on clothing, said apparatus comprising:

a clothes dryer, said clothes dryer of a conventional type having a door and a drying drum;

the door having a drum-facing surface;

ultraviolet light means comprising an U.V. light;

said ultraviolet light means positioned on said drum-facing surface of said door such that said U.V. light is within said dryer drum, said U.V. light for illuminating said dryer drum with germicidal ultraviolet radiation.



5,664,341

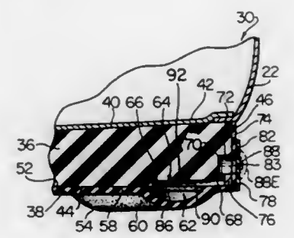
SOLE AND HEEL STRUCTURE WITH PREMOLDED BULGES AND EXPANSIBLE CAVITIES

Kari M. Schmidt, Woodside; Stuart E. Jenkins, Thousand Oaks, both of Calif., and Harry W. Edwards, Barrington, Ill., assignors to Energaire Corporation, Pebble Beach, Calif.

Filed Jan. 2, 1996, Ser. No. 581,947

Int. Cl.[6] A43B *13/18;13/20*

U.S. Cl. 36—28 **20 Claims**



1. A shoe sole and heel construction for use with a shoe upper, the construction comprising:

a structure having a foot facing surface, an exterior ground-contacting surface and an exterior non-ground contacting surface disposed between the ground-contacting surface and the foot facing surface to avoid contact with the ground in use, a flexible bulge formed in the structure and projecting from the exterior ground-contacting surface for contact with the ground in use and defining a first pocket,

a second resiliently expansible pocket formed at least in part by an elastic material disposed at the exterior non-ground contacting surface and formed in the structure and disposed away from the ground-contacting surface,

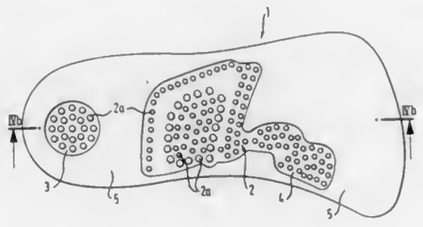
a passageway formed in the structure and communicating with each of the first and second pockets, and

fluid permanently confined in a space jointly defined by the pockets and the passageway, whereby when an external force is applied to the bulge, fluid is forced from the first pocket through the passageway to expand the second pocket and when the external force is removed, the expanded second pocket resiliently forces fluid back to the first pocket.

5,664,342
INSOLE WITH FLEXIBLE MASSAGING KNOBS

Meta Buchsenschuss, Kaiserslautern, Germany, assignor to Prodomo S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 332,653, Nov. 1, 1994, abandoned, which is a continuation of Ser. No. 25,513, Mar. 2, 1993, abandoned. This application Jun. 27, 1996, Ser. No. 671,084
Claims priority, application Germany, Mar. 4, 1992, 42 06 818.5
Int. Cl.[6] A61F *5/14;* A43B *13/38*
U.S. Cl. 36—43 10 Claims



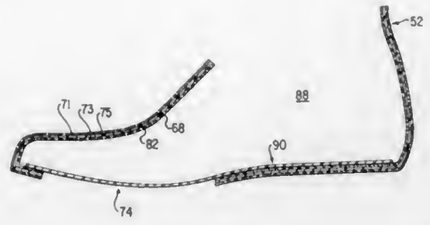
6. A slenderizing insole system, comprising:
a flexible slenderizing left insole including
a first rubber layer having a first surface and a second surface,
a first plurality of flexible knobs located on said first surface of said first rubber layer, wherein said first plurality of flexible knobs is disposed in a first plurality of reflex zones associated with digestive organ stimulation,
a second plurality of flexible knobs located on said first surface of said rubber layer, and
a first leather top layer disposed on said first surface of said first rubber layer, said first leather top layer having a first opening through which said first plurality of flexible knobs protrudes and a second opening through which said second plurality of flexible knobs protrudes; and
a flexible slenderizing right insole including
a second rubber layer having a first surface and a second surface,
a third plurality of flexible knobs disposed on said first surface of said second rubber layer, wherein said third plurality of flexible knobs is disposed in a second plurality of reflex zones associated with digestive organ stimulation,
a fourth plurality of flexible knobs located on said first surface of said second rubber layer, and
a second leather top layer disposed on said first surface of said second rubber layer, said second leather top layer having a third opening through which said third plurality of flexible knobs protrudes and a fourth opening through which said fourth plurality of flexible knobs protrudes.

5,664,343
SHOE HAVING A WATERPROOF LINER

Richard Byrne, Marlboro, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.

Filed May 19, 1995, Ser. No. 445,033
Int. Cl.[6] A43B *23/07;13/28;1/02*
U.S. Cl. 36—55 7 Claims

1. A shoe comprising:
an insole board having a wide outwardly extending lasting margin extending about a portion of its periphery;
a sole;
an upper having an instep region and a forepart and rearpart lasted to said insole board;
a counter with an outwardly extending flange covered by said rearpart of said upper;
stitching joining said lasting margin of said insole board to said flange; and
a liner disposed within said upper, said liner including:



(a) a main body section forming a complete enclosure for the heel and sides of the foot of a wearer, said main body section also forming a sole section which lies completely underneath the arch and heel areas of a wearer's foot,
(b) a toe section attached to said main body section and forming an enclosure for the top of the toes and forefoot of a wearer's foot, and
(c) an opening defined by said main body section and said toe section which lies underneath the toes and forefoot of a wearer's foot,
wherein said forepart of said upper is cement lasted with said toe section of said liner to said insole board.

5,664,344
SHOE FOR THE PRACTICE OF A GLIDING SPORT

Gilles Marmonier, Saint Etienne de Crossey, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Jun. 21, 1996, Ser. No. 667,814
Claims priority, application France, Jul. 13, 1995, 95 08775
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—118.2 10 Claims



1. Footwear for use in a gliding sport involving a board, said footwear consisting of: a flexible boot,
said boot having an upper section whereby the boot is capable of being enclosed about the calcaneus, malleoli and Achilles tendon regions of a wearer's leg and foot, a sole having a transverse recess in the median part thereof, and a block positioned under the sole for interacting with a binding,
a rigid stirrup piece passing under the sole in the median part thereof having a lower face located under the sole for receiving said block, and arms rising on either side of the upper section, said arms being inclined toward the rear of the boot to enclose the rear of the boot whereby the arms encircle the calcaneus region, and
a spoiler encircling the back of the boot that is mounted upon the stirrup piece by an articulation means whereby said articulation means is about level with the malleoli and means for limiting rearward inclination of said spoiler.

5,664,345
DEVICE FOR CONTROLLING FLECTION OF A SKI BOOT UPPER

Jean-Pierre Chemello, Annecy-Le-Vieux, France, assignor to Salomon S.A., Chavanod, France

Continuation of Ser. No. 66,422, May 25, 1993, abandoned. This application Jan. 9, 1995, Ser. No. 370,468
Claims priority, application France, May 25, 1992, 92 06523
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—118.8 13 Claims

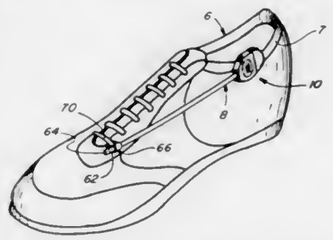


1. An alpine ski boot comprising a shell base surmounted by an upper at least partially articulated to said shell base, and a device independent of said shell base for back-to front control of active flection of said upper, said device being constituted by a guide rail having two ends attached to said shell base and extending substantially parallel to at least a portion of said lower front edge of said upper, and a cursor which can be adjusted in position transversely to a longitudinal axis of said boot so as to delimit a movable point of support at least partially between a lower front edge of said jointed upper and a stationary portion of said shell base, said cursor being constituted by a sliding element capable of translational movement on said guide rail, said cursor forming a frame enclosing said guide rail and having a section which corresponds substantially to an interior section of said frame formed inside said cursor.

5,664,346
PORTABLE FOOTWEAR ILLUMINATED

Dale E. Barker, 1318 State St., Alton, Ill. 62002

Continuation of Ser. No. 404,577, Mar. 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 237,790, May 4, 1994, Pat. No. 5,502,903. This application Nov. 25, 1996, Ser. No. 756,191
Int. Cl.[6] A43B *23/00;* F21L *15/08*
U.S. Cl. 36—137 16 Claims

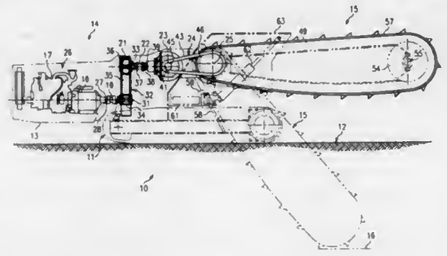


1. Illumination means on footwear removably attachable to the footwear wherein the footwear includes front, rear and opposed side portions, said illumination means comprising a power source, at least one light source operatively connected to said power source, at least one side-glow fiber optic conduit having opposed end portions, a body assembly including means for holding and retaining said power source and said light source, said side-glow fiber optic conduit being capable of emitting light conducted therethrough radially outwardly along substantially its entire surface area, at least one end portion of said side-glow fiber optic conduit being positioned and located adjacent to said light source, means for holding the one end portion of said side-glow fiber optic conduit adjacent said light source for directing light thereto, said side-glow fiber optic conduit being illuminated substantially along its entire surface area when said light source is illuminated, and means for removably attaching said body assembly to the footwear, said side-glow fiber optic conduit extending adjacent to at least a portion of one side portion of the footwear when said body assembly is attached thereto, an end to end length of said side glow fiber optic conduit being less than a front to rear length of the footwear.

5,664,347
POWERTRAIN FOR TRENCHING MACHINE

Harold L. Chapman, Sr., Leander; Harold L. Chapman, Jr., Florence, and Darvin L. Willhoite, Leander, all of Tex., assignors to Austin Trencher Incorporated, Leander, Tex.

Filed Sep. 5, 1995, Ser. No. 523,722
Int. Cl.[6] E02F *3/65*
U.S. Cl. 37—362 8 Claims



1. A trenching machine comprising:
a vehicle having a longitudinal axis;
an engine transmission assembly mounted on said vehicle and having a rotatably driven transmission output shaft which extends generally horizontally and generally parallel to said longitudinal axis;
a transfer box assembly mounted on said vehicle, said transfer box assembly comprising:
a transfer box housing;
a lower shaft rotatably mounted in said transfer box housing and generally axially aligned with said transmission output shaft, with an input end of said lower shaft being coupled to said transmission output shaft;
a lower sprocket mounted on said lower shaft;
an upper shaft rotatably mounted in said transfer box housing above said lower shaft, said upper shaft having an output end, said upper shaft being positioned vertically above said lower shaft, each of said lower shaft and said upper shaft being positioned generally horizontally and generally parallel to each other and to said longitudinal axis;
an upper sprocket mounted on said upper shaft and located generally vertically above said lower sprocket; and
a transfer roller chain engaged around said lower sprocket and said upper sprocket such that rotation of said lower shaft causes said upper shaft to rotate;
a differential gearbox mounted on said vehicle and having an input shaft and a transverse output shaft, said input shaft being generally axially aligned with and coupled to said output end of said upper shaft, said transverse output shaft extending generally horizontally and having an axis of rotation which is generally perpendicular to an axis of rotation of said input shaft;
a trenching chain drive shaft mounted on said vehicle;
a pair of roller chains engaging said trenching chain drive shaft and said transverse output shaft for rotating said trenching chain drive shaft;

a trenching chain assembly mounted on and driven by said trenching chain drive shaft; and

a discharge conveyor positioned on said vehicle directly below each of said differential gearbox and said pair of roller chains, for receiving debris from said trenching chain assembly and for conveying the thus received debris away from the trenching machine;

wherein a vertical spacing of said upper shaft with respect to said lower shaft provides a vertical position of each of said differential gearbox and said pair of roller chains directly above said discharge conveyor which is sufficient to provide adequate clearance for large rocks discharged onto said discharge conveyor by said trenching chain assembly; and

wherein the positioning of said upper shaft vertically above said lower shaft reduces a required length parallel to said longitudinal axis between said transmission output shaft and said trenching chain drive shaft.

5,664,348

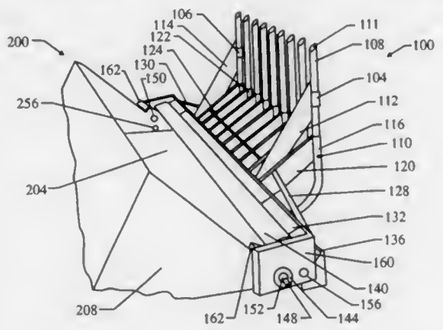
ROCK AND MATERIAL LOADING APPARATUS

Lawrence F. Omann, 39947 95th Ave., St. Joseph, Minn. 56374

Filed Aug. 23, 1996, Ser. No. 702,147

Int. Cl.[6] A01A *15/02;* **E02F** *3/28*

U.S. Cl. 37—405 **19 Claims**



1. A material loader attachment movably mounted to a loader bucket for loading material from a surface or within a conglomeration, comprising:

a support bar adjacent said loader bucket and movably attached thereto;

a leading edge distal to said loader bucket;

a material support between said leading edge and said support bar supporting said material during loading;

a pivot between said bucket and said material support about which said material support is raised and tilted by lowering said bucket, whereby lowering said bucket relative to said surface or said conglomeration raises said material support from supporting said material to unloading said material into said bucket.

5,664,349

REMOVABLE SOLE PLATE COVER FOR FABRIC PRESSING IRONS

Mark E. White, and Glen R. Kealy, both of 29 Kibo Rd., Regents Park, Sydney 2143, Australia

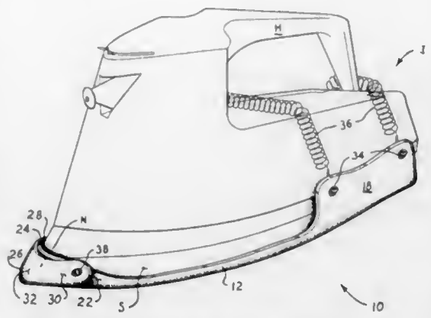
Filed Aug. 6, 1996, Ser. No. 693,002

Int. Cl.[6] D06F *75/38*

U.S. Cl. 38—97 **18 Claims**

1. A removable sole plate cover for a fabric pressing iron, comprising:

a thin, flexible, flat, planar sheet of polytetrafluoroethylene plastic material, devoid of protuberances;



said cover being formed in the general configuration of the sole plate of a conventional hand operated fabric pressing iron, and including forwardly and rearwardly disposed opposite first and second lateral flaps of material extending therefrom, with said rearwardly disposed flaps including at least one attachment eyelet formed therethrough and providing for the removable attachment of said cover to a fabric pressing iron;

said forwardly disposed first and second flaps each respectively having a first and a second extension ear extending forwardly therefrom, with each said first and said second extension ear being folded respectively to underlay and overlay said second and said first forwardly disposed flaps, and being respectively secured thereto by a fastener;

said cover including a myriad of steam vent holes therethrough with said holes being distributed in a generally V shaped pattern conforming to the conventional steam vent hole pattern in the sole plate of a steam iron, with at least some of said steam vent holes of said cover being disposed in registry with at least some of the steam vent holes of the iron sole plate when said cover is removably installed over the sole plate of the iron, and;

said cover being adapted to provide direct, continuous, unbroken contact with the sole plate of the iron and completely thereover when said cover is removably secured thereto, excepting said steam vent holes of said cover and any steam vent holes of the sole plate of the iron, whereby;

said cover is removably installed to the iron and provides even heating and steam distribution to articles being ironed, while precluding burning, scorching, and polishing of such articles.

5,664,350

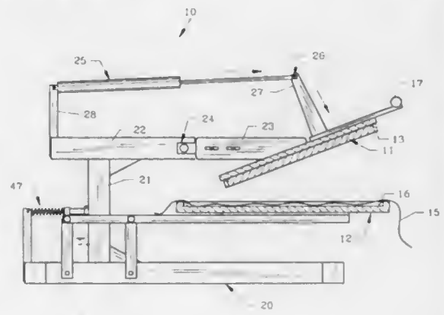
HOOP PRESS WITH PIVOTING PLATENS AND METHOD

E. Frank Moore, III, 8013 Walker Mill Rd., Randleman, N.C. 27317

Filed Sep. 4, 1996, Ser. No. 706,245

Int. Cl.[6] D06C *3/08*

U.S. Cl. 38—102.2 **15 Claims**



1. A hoop press comprising: a frame, an upper hoop platen, a lower hoop platen, said upper hoop platen pivotally joined to said frame, said lower hoop platen pivotally movable along said frame whereby said upper hoop platen is engageable with said lower hoop platen.

5,664,351

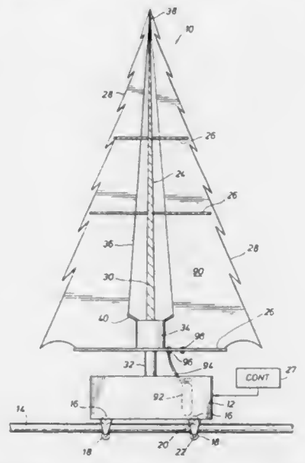
METHOD AND APPARATUS FOR ANIMATED DISPLAY

Jack M. Jonas, 12823 Texaco Rd., Houston, Tex. 77013

Filed Jun. 13, 1995, Ser. No. 489,790

Int. Cl.[6] G09F *19/08*

U.S. Cl. 40—415 **14 Claims**



1. A mechanical display for producing choreographed movement of an ornamental object, the display comprising:

a base having a set of rollers and a first motor coupled to at least one of the rollers;

a track forming a path over which the base may travel, wherein the rollers firmly engage the track so that activating the first motor causes the rollers to move the base along the path;

a support frame having an elongate central support pole rotatably mounted to the base and a second motor coupled to the pole so that activating the second motor causes rotation of the support pole;

an ornamental cover extending over the support frame; and

means for independently controlling the motors to choreograph the movements of the display.

5,664,352

METHOD AND APPARATUS FOR ILLUMINATING ARTWORK BY A NEON TUBE ARRANGEMENT OF SELECTED CONFIGURATION

Sue Beckman, 2331 S. Palmetto Ave., South Daytona, Fla. 32119

Continuation-in-part of Ser. No. 185,363, Jan. 24, 1994, abandoned. This application Feb. 22, 1995, Ser. No. 392,034

Int. Cl.[6] G09F *13/26*

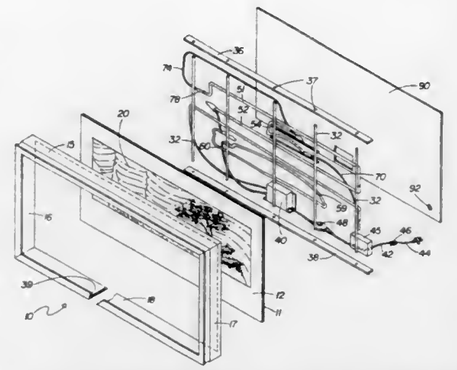
U.S. Cl. 40—545 **29 Claims**

12. A display arrangement for illuminating planar artwork comprising:

an item of artwork affixed to an essentially transparent mounting member,

a frame having width and height and being dimensioned to surround said item of artwork,

a plurality of support members mounted in said frame, disposed behind and relatively close to the item of artwork,



and a plurality precisely-configured light tubes supported in said frame in a close relationship to said artwork, with said light tubes arranged in a configuration consonant with the subject matter of said artwork,

said item of artwork having at least two different portions, with a first of said portions to be illuminated by a neon tube of a first color that is supported closely adjacent said first portion, and a second of said portions to be illuminated by a neon tube of a second color supported closely adjacent said second portion,

at least one of said neon tubes sloping with respect to said frame for at least a portion of the width of the item of artwork,

said light tubes thus being arranged in a predetermined pattern to illuminate and enhance such selected portions of the item of artwork, and

means for selectively applying electric power at an appropriate voltage to said light tubes, to cause the illumination thereof and the projection of light of selected color through said first and second portions of the item of artwork.

5,664,353

METHOD AND ARRANGEMENT FOR OPTICALLY REPRESENTING INFORMATION

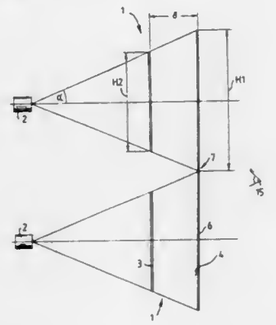
Bernd Brauer, and Michael Schlüter, both of Berlin, Germany, assignors to M A N Systemelektronik GmbH, Karlsfeld, Germany

Filed Nov. 17, 1993, Ser. No. 153,631

Claims priority, application Germany, Dec. 23, 1992, 42 44 448.9

Int. Cl.[6] G09F *13/00*

U.S. Cl. 40—560 **2 Claims**



1. An arrangement for optically representing information, the arrangement comprising:

a plurality of light sources producing a diverging light beam;

a plurality of controllable light valve means, each of said light valve means controlling passage of said diverging light beam from a separate one of said plurality of light sources through said each light valve means to form a respective image part;

a projection surface arranged on a side of said plurality of light valve means diametrically opposite said plurality of light sources, said projection surface being spaced from said plurality of light valve means by a chosen distance such that edges of said image parts formed by adjacent light valve means abut each other on said projection surface;

a mask extending from each of said plurality of light sources to said projection surface.

5,664,354

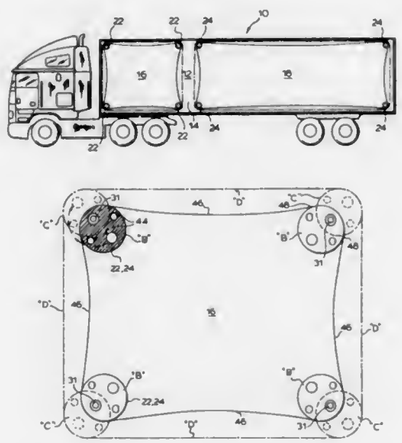
WALL AND VEHICLE GRAPHIC ASSEMBLIES

John R. Daviau, and Mark M. Pekkerman, both of Thornhill, Canada, assignors to Mobile Billboard Advertising Inc., Mississauga, Canada

Filed Dec. 6, 1995, Ser. No. 568,280

Int. Cl.[6] G09F *17/00*

U.S. Cl. 40—603 **7 Claims**



1. A graphic assembly in combination with an object having a substantially planar mounting surface, the graphic assembly comprising:

covering structure having graphics thereon covering at least a portion of said substantially planar surface of said object,

retaining structure coupled to said covering structure and constructed and arranged to retain the covering structure adjacent to said planar surface, and

tensioning structure operatively associated with the retaining structure and including cams coupled to said planar surface, said retaining structure comprising an endless cable disposed about a portion of a periphery of each said cam, said cams being pivotable between a first position wherein said cable and said covering structure are in a generally relaxed position and a second position wherein said cable and said covering structure are in a generally taut position.

5,664,355

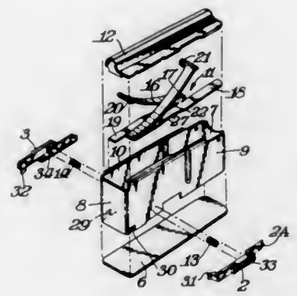
DETACHABLE AMMUNITION MAGAZINE

James W. Ronkainen, Elizabethtown, Ky., assignor to Remington Arms Company, Inc., Madison, N.C.

Filed Dec. 27, 1995, Ser. No. 579,100

Int. Cl.[6] F41A *3/00*

U.S. Cl. 42—18 **17 Claims**



1. In a firearm having a frame including a magazine well having front, rear, and side walls and having slots formed in the side walls, a detachable ammunition magazine comprising a base attached to front, rear, and two side walls and having latching means positioned on the side walls to engage the slots and secure the magazine within the well, the magazine walls and the base forming a substantially rectilinear chamber, the chamber being open topped and adapted to retain a plurality of cartridges in stacked relation, a follower positioned within the chamber above the magazine base for support of cartridges, a spring of unitary construction positioned between the magazine base and the follower to bias the follower upward, the spring comprising a central portion and four legs attached to the central portion and substantially parallel in the original configuration of the spring, including two diagonally opposite longer legs extending upward and towards each other to form an "X" when viewed in profile, the longer legs each having a terminal end which forms a substantially perpendicular shoe to support the bottom of the follower, and two diagonally opposite shorter legs in substantially the same plane as the central portion of the spring, positioned to press against the magazine base.

5,664,356

FIREARM SAFETY MECHANISM WITH IMPROVED TRIGGER PULL

Corey N. Pantuso, Freedom, and Donn L. Dunnigan, Thayne, both of Wyo., assignors to Freedom Arms, Inc., Freedom, Wyo.

Division of Ser. No. 496,629, Jun. 29, 1995. This application Oct. 8, 1996, Ser. No. 728,271

Int. Cl.[6] F41A *17/00*

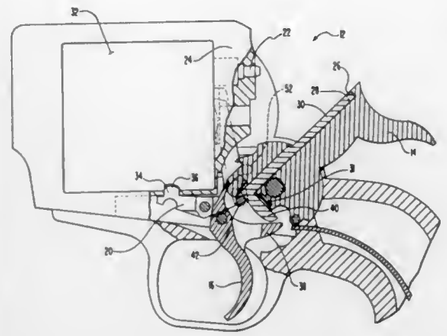
U.S. Cl. 42—65 **2 Claims**

1. A safety mechanism for use with a firearm having a hammer, a cartridge receiving chamber in front of the hammer, a firing pin interposed between a face of the hammer and the cartridge receiving chamber so as to strike and fire a cartridge in the chamber upon actuation by a trigger, the safety mechanism comprising:

a) an elongated recess formed within the face of the hammer;

b) an elongated transfer bar disposed within said recess and slidably movable therein between an extended position and a retracted position, the transfer bar being interposed between the hammer and the firing pin in the extended position, and the transfer bar being juxtaposed to the firing pin in the retracted position thereby exposing a portion of the recess capable of receiving the firing pin therein, thereby preventing contact with the hammer;

c) means independent of the trigger for positioning the transfer bar into the extended position and the retracted position; and



d) a trigger cam operated upon by the trigger, the trigger cam being capable of supporting the transfer bar to maintain the transfer bar in the extended position after the trigger has been actuated.

5,664,357

WEAPON BOLT ASSEMBLY HAVING PREMATURE IGNITION-PREVENTING MEANS

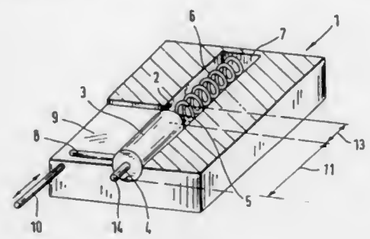
Dirk Kilfitt, Velbert; Heinz-Peter Hellmeister, Willich; Olaf Kersten, and Frank Junker, both of Aachen, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Mar. 29, 1996, Ser. No. 623,683

Claims priority, application Germany, Mar. 29, 1995, 195 11 578.3

Int. Cl.[6] F41A *19/00*

U.S. Cl. 42—69.01 **2 Claims**



1. A weapon bolt assembly comprising

(a) a bolt portion including a recess;

(b) a firing pin unit including

(1) a striker plunger axially slidably received in said recess and having an axially measured length; and

(2) a firing pin attached to said striker plunger; said firing pin unit having a first position in which said firing pin projects from said bolt portion and a second position in which said firing pin is situated in its entirety within said bolt portion;

(c) a firing spring disposed in said recess; said firing spring having a relaxed state and a stressed state; in said relaxed state of said firing spring and in said first position of said firing pin unit a clearance is defined between said firing pin unit and said firing spring; in said stressed state of said firing spring said firing spring exerts a force on said firing pin unit urging said firing pin unit into said first position thereof; said axially measured length of said firing pin unit being such that in said second position of said firing pin unit said firing spring remains in said relaxed state; and

(d) arming means for moving said firing pin unit against a force of said firing spring for placing said firing spring into said stressed state.

5,664,358

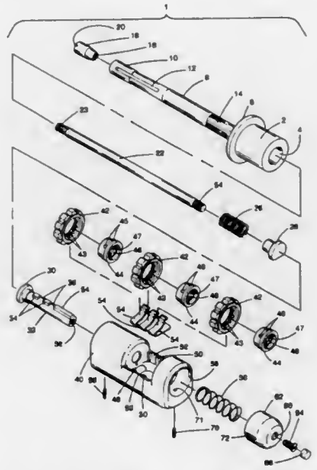
BARREL LOCK FOR A HAND GUN

Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.

Filed Mar. 11, 1996, Ser. No. 613,885

Int. Cl.[6] F41A *17/00*

U.S. Cl. 42—70.11 **8 Claims**



1. For a gun having a barrel and a bullet chamber communicating with the barrel for receiving a bullet to be fired through the barrel, a gun barrel lock to be removably inserted in the barrel and releasably retained at the bullet chamber to prevent the firing of the gun, said gun barrel lock comprising:

a barrel lock tube having proximal and distal ends and being sized to slide through the barrel of the gun;

a hollow chamber located at the distal end of said barrel lock tube to be received in and releasably retained at the bullet chamber when said barrel lock tube slides inwardly through the gun barrel so as to prevent a bullet from entering the bullet chamber, said hollow chamber manufactured from a flexible material having a spring like memory and adapted to expand from a relatively narrow size to a relatively wide size to fill the bullet chambers and thereby disable the gun;

a barrel lock rod surrounded by said barrel lock tube and having a proximal end, a distal end and expansion force generating means located at the distal end of said barrel lock rod, said barrel lock rod moving in a proximal direction relative to said barrel lock tube to locate said expansion force generating means within the hollow chamber of said barrel lock tube to cause said hollow chamber to expand to said relatively wide size in order to fill the bullet chamber and thereby prevent said barrel lock tube from sliding outwardly through the gun barrel, and said barrel lock rod moving in a distal direction relative to said barrel lock tube to remove said expansion force generating means from the hollow chamber of said barrel lock tube in order to allow said hollow chamber to contract to said relatively narrow size so that said barrel lock tube can slide outwardly through the gun barrel;

lock means having a moveable lock shaft that communicates with the proximal end of said barrel lock rod, said lock means being disposed in a locked condition to block the movement of said lock shaft whereby to prevent said barrel lock rod from moving in said distal direction relative to said barrel lock tube and said barrel lock tube from sliding outwardly through the gun barrel; and

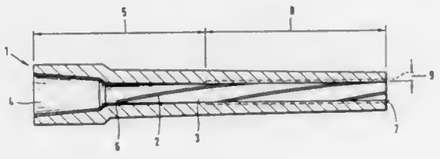
force transmitting means coupled to said barrel lock rod via the lock shaft of said lock means, said lock shaft being moved towards said barrel lock rod when said lock means is disposed in an unlocked condition and a distal pushing force is applied

to said force transmitting means to cause said barrel lock rod to move in said distal direction relative to said barrel lock tube and permit said barrel lock tube to slide outwardly through the gun barrel.

5,664,359
RIFLED WEAPON BARREL AND METHOD OF MAKING THE SAME

Udo Sabranski, Lachendorf; Henning Von Seidlitz, Neuss, and Ralf-Joachim Herrmann, Senzig, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Aug. 23, 1996, Ser. No. 702,033
Claims priority, application Germany, Aug. 23, 1995, 195 30 920.0; Dec. 1, 1995, 195 44 824.3
Int. Cl.[6] F41A *21/00*
U.S. Cl. 42—78 **5 Claims**

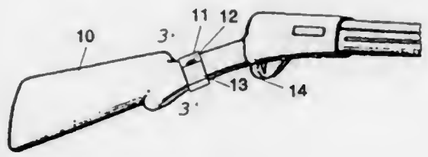


1. A weapon barrel comprising
(a) a muzzle;
(b) a breech;
(c) a chamber at said breech; and
(d) a rifling, formed of alternating lands and grooves, extending along an interior of said weapon barrel; said lands having a hardened surface to a depth of 0.3 to 0.5 mm; said hardened surface having a hardness of at least 650 on the Vickers scale and extending along a length portion of said barrel; said length portion including said muzzle.

5,664,360
GAME CALL HOLSTER

John Conway, P.O. Box 841, Dryden, N.Y. 13053

Filed Apr. 15, 1996, Ser. No. 631,136
Int. Cl.[6] F41A *15/00;29/00;31/00*
U.S. Cl. 42—90 **6 Claims**

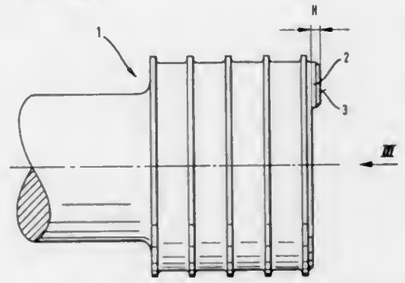


1. A holster for game calls comprising:
a) an elongated body having two ends and a length between, made of a flexible material, the length of the body being sufficient to wrap around the stock of a weapon;
b) a plurality of generally flat pockets, each formed integral with the body by fastening a generally rectangular piece of flexible material to the elongated body along three sides, forming a pocket having an open end and an enclosed portion, the enclosed portion being sufficiently large to hold a game call;
c) mating fastening means on each of the ends of the body, such that the ends of the body may be fastened together around the stock of the weapon.

5,664,361
EXPLOSIVE POWDER CHARGE OPERATING SETTING TOOL

Markus Frommelt, Schaan, Liechtenstein, and Norbert Heeb, Buchs, Switzerland, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 27, 1996, Ser. No. 704,339
Claims priority, application Germany, Sep. 1, 1995, 195 32 411.0
Int. Cl.[6] F41C *27/00*
U.S. Cl. 42—106 **7 Claims**



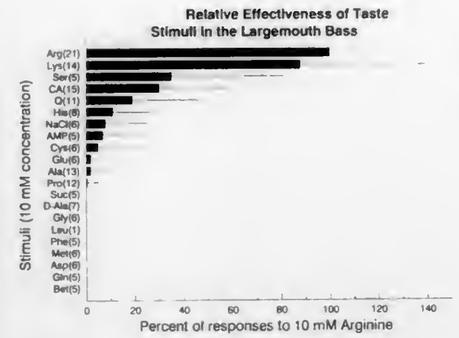
1. Explosive powder charge operated setting tool having a setting direction for driving fastening elements into a receiving material and comprising means forming an axially extending piston guide (**4**) having a leading end and a trailing end spaced apart in the setting direction, said means forming an axially extending guide bore (**11**) for an axially extending driving piston (**1**) displaceable therein in the setting direction from a trailing initial position to a leading driven position, said means forming a cartridge chamber (**6**) at a trailing end, an axially extending bore (**7**) in said means connecting said cartridge chamber (**6**) and said guide bore (**11**), said means having a base surface (**5**) at a trailing end of said guide bore (**11**) forming a contact surface for a trailing end surface of said driving piston, said base surface (**5**) extending perpendicularly of said axially extending guide bore (**11**), an axially extending housing part (**8**) laterally enclosing and spaced radially outwardly from said piston guide and forming an axially extending channel (**9**) in flow communication with said cartridge chamber (**7**), said piston guide (**4**) having an aperture (**10**) in a leading end region thereof connecting said channel (**9**) with said guide bore (**11**), a closeable passageway (**12**) in said housing part (**8**), valve means (**13**) connected to said channel (**9**) and displaceable between an open position and a closed position for forming a storage space in the closed position, and a spacer element (**2**) for spacing the trailing end surface of said driving piston (**1**) from said base surface (**5**), said spacer element (**2**) having a stop face (**3**) extending perpendicularly to the axial direction of said piston guide (**4**) and having a smaller area than said base surface (**5**), and said stop face (**3**) spaced laterally outwardly from and asymmetrically relative to said driving piston axis.

5,664,362
FISHING LURE WHICH RELEASES THE INVOLUNTARY BITING REFLEX OF LARGEMOUTH BASS AND OTHER FISHES WITHIN THE FAMILY CENTRACHIDAE

John T. Caprio; Kazuaki Ogawa, both of Baton Rouge, La., and Tine B. Valentincic, Ljubljana, Slovenia, assignors to The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 117,583, Sep. 3, 1993, abandoned. This application Jan. 5, 1995, Ser. No. 369,868
Int. Cl.[6] A01K *85/01*
U.S. Cl. 43—42.06 **19 Claims**

1. A fishing lure for largemouth bass and other fishes within the family Centrarchidae comprising:
a body member; and



an agent incorporated in said body member, said agent comprising an amino acid selected from the group consisting of L-lysine, L-arginine, and mixtures of L-lysine and L-arginine wherein said agent is present in sufficient amount to create a concentration of said agent of at least about 0.1 millimolar within the interior of the oropharyngeal cavity of said largemouth bass or other member of said family Centrarchidae and in sufficient amount to elicit the involuntary biting reflex of said largemouth bass or other member of said family Centrarchidae.

5,664,363
INSTANT RECHARGEABLE COATING FOR FISHING TACKLE AND METHOD

Alexander J. Keenan, 11001 Totem Rd., Anchorage, Ak. 99516

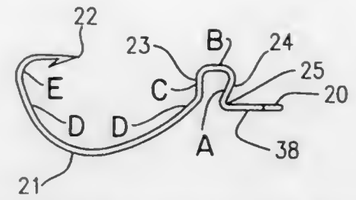
Continuation-in-part of Ser. No. 247,267, May 23, 1994, Pat. No. 5,505,939. This application Apr. 8, 1996, Ser. No. 629,190
Int. Cl.[6] A23K *1/18*
U.S. Cl. 43—42.06 **43 Claims**

1. A fishing tackle item having thereon an absorbent coating prepared by the method comprising:
a) applying a liquid finish coating to said fishing tackle item wherein said liquid finish coating is selected from the group consisting of enamels, epoxies, lacquers, urethanes, acrylics, polyesters, varnish, shellacs, and hydrocarbon and water based paints,
b) applying a polymer or copolymer to said liquid finish coating wherein said polymer or copolymer is selected from the group consisting of sodium carboxymethyl cellulose, poly (acrylic acid) salts, poly (ether)-based non-ionic xerogellants, carboxymethyl cellulose fibers, polyacrylate, polyacrylonitrile hydrollyzed polyacrylonitrile, poly (vinyl alcohol-sodium) acrylate and poly (isobutylene-co-disodium) maleate, said polymer or copolymer absorbing said liquid finish coating and a predetermined liquid fish attractant wherein said polymer or copolymer comprises particles that are applied to said liquid finish coating while said finish coating is in the liquid state and wherein said polymers and copolymers are all cross-linked above their respective gel point so that they do not dissolve in water; and
c) curing or drying said liquid finish coating in the absorbent polymer or copolymer particles preventing that part of the absorbent polymer or copolymer particles from absorbing any other liquid and bonding the absorbent polymer or copolymer particles to said fishing tackle item.

5,664,364
FISHHOOK

Thomas C. Clark, Rte. 1, Box 137, Hampton, Fla. 32044

Filed May 22, 1995, Ser. No. 443,853
Int. Cl.[6] A01K *91/04;83/00;83/06*
U.S. Cl. 43—43.16 **13 Claims**

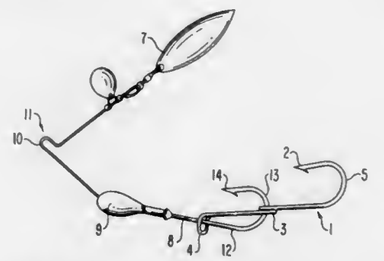


1. In a fishhook having an eye, a point generally directed at said eye, and a wire shank connecting said eye to said point, said wire shank further having an elongated curved portion, the improvement which consists essentially of an angular return bend in said shank, said shank including an upper section adjacent said eye having an axis extending longitudinally thereof, said angular bend including a first portion extending from said upper section and laterally outwardly from said axis at an included angle of about 60 degrees to 90 degrees, a second portion generally parallel to said axis, and a third portion extending laterally outwardly from said elongated curved portion and said axis, said second portion being attached between said first and third portions, said angular bend formed and arranged to locate and position said first and third portions embedded in a lure attached to said fishhook and said second portion on an outer surface of and unembedded in a lure attached to said fishhook, and said third portion of said return bend being connected between said elongated curved portion and said point.

5,664,365
TRAILER FISH HOOK

Danny Walden, 2194 Waverly Ferry Rd., Columbus, Miss. 39701

Filed Dec. 5, 1995, Ser. No. 567,234
Int. Cl.[6] A01K *83/06*
U.S. Cl. 43—44.82 **5 Claims**



1. A fish hook assembly comprising;
a primary fish hook having means for attachment to a fishing line, a barbed end, a curved portion connected to the barbed end, and a shank portion connecting the curved portion and the attachment means, and
a trailer fish hook having a barbed end portion, a substantially straight shaft portion with a central ring and with an open loop forming terminal resilient attachment means adapted to snap on the shank portion of the primary fish hook, and a curved portion connecting the trailer fish hook barbed end portion and the substantially straight shaft portion,
wherein the barbed end potion and the curved potion of the primary fish hook are threaded through the central ring of the

trailer fish hook so that the central ring encircles the primary fish hook curved portion, and the open loop terminal resilient attachment means is snapped on the shank portion of the primary fish hook and held thereon by the resilience of the open loop terminal resilient attachment means.

5,664,366

SHIPPING CONTAINER FOR SEA WORMS

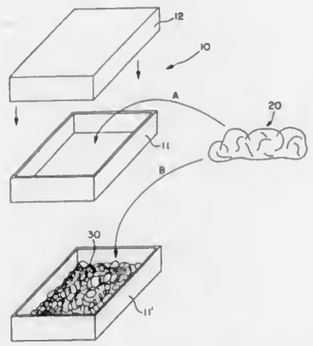
Michel Lopuszanski, 24, rue de la Lisiere-F-14123, Cormelle le Royal, and Daniel Lopuszanski, 9, avenue Don Camillo, 13620 Carry le Rouet, both of France

Filed Apr. 15, 1994, Ser. No. 228,074

Claims priority, application France, Apr. 21, 1993, 93 04916; Aug. 13, 1993, 93 10098

Int. Cl.[6] A01K *97/04*

U.S. Cl. 43—55 **3 Claims**



1. A process for preservation of sea worms, said process comprising the steps of:

providing a container in the form of an envelope (**10**),

providing a support (**20**) comprised of a base of vegetable cellulose fibers that degrade by fermentation,

moistening said cellulose fibers,

adding a complementary support (**30**) to said support (**20**), having microorganisms in said complementary support (**30**) for causing a degradation by fermentation of said support (**20**),

placing the worms on said complementary support (**30**) after it is placed in said envelope (**10**),

adding moisture in the absence of oxygen onto said support (**20**) to cause it to be degraded by fermentation prior to its being put into said envelope (**10**), and

adding a fermentation agent to said support (**20**) prior to its being put into said envelope (**10**), said fermentation agent comprising ammonium sulfate.

5,664,367

ARTISTIC FLOWER PLANTING CASE HANGABLE ON A BUILDING

Hsiu-Lin Huang, P.O. Box 90, Tainan, 704, Taiwan

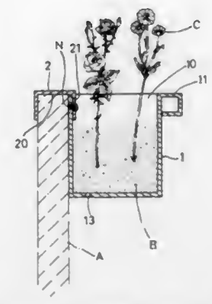
Filed Nov. 3, 1995, Ser. No. 553,049

Int. Cl.[6] A47G *7/00*

U.S. Cl. 47—40 **5 Claims**

1. A flower planting case hangable on a building wall and comprising:

a flower planting case having from and rear opposite longitudinal sides, two opposite lateral sides and a bottom side forming an interior, a plurality of spaced apart first threaded holes in an upper portion of the rear longitudinal side, and a plurality of drain holes in said bottom side;



an inverted "U" shaped hanging plate having an elongated channel configuration to fit on an upper surface of the building wall, the hanging plate having a plurality of spaced apart second threaded holes in a front longitudinal vertical portion of the inverted "U" shaped hanging plate, the locations of the second threaded holes corresponding to the locations of the first threaded holes of said flower planting case;

threaded fasteners extending into and engaging the first and second threaded holes to attach the flower planting case to the hanging plate; and,

a reinforcement on the front longitudinal side of the flower planting case to augment the strength of the front longitudinal side.

5,664,368

PROCESS FOR THE DEVELOPMENT OF NOVEL TYPE OF PLANTS WITH NITROGEN-FIXING CAPACITY ALSO IN THEIR LEAVES

Varga Szilárd Sándor, Budaörs, Hungary, assignor to Piacfejlesztesi Alapitvany, Hatvani, Hungary

PCT No. PCT/HU93/00020, § 371 Date Nov. 3, 1994, § 102(e) Date Nov. 3, 1994, PCT Pub. No. WO93/20685, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 9, 1993, Ser. No. 313,161

Claims priority, application Hungary, Apr. 10, 1992, 92 01218

Int. Cl.[6] A01H *3/00;4/00*

U.S. Cl. 47—58 **10 Claims**

1. A process for developing plants which are able to fix nitrogen in their leaves, which comprises inoculating plant protoplasts, cells, tissues, embryos or organs grown and/or treated under in vitro conditions with bacteria belonging to the family of Azotobacteraceae, then cocultivating the thus-obtained culture at a temperature of 15° to 35° C. and, propagating and/or regenerating the whole plant under in vitro conditions in a culture medium comprising nitrogen and main carbon source(s) utilizable only by the plant cells.

5,664,369

PLANT GROWING ROOM

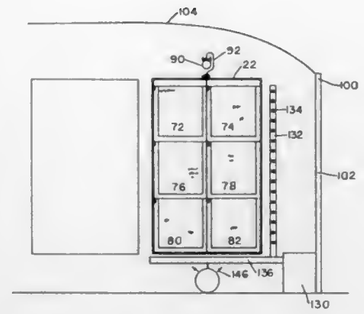
Malcolm Glen Kertz, P.O. Box 426, Bridge City, Tex. 77611

Division of Ser. No. 943,264, Sep. 10, 1992, Pat. No. 5,511,340, which is a continuation-in-part of Ser. No. 672,736, Mar. 21, 1991, Pat. No. 5,171,683, and Ser. No. 777,479, Oct. 17, 1991, abandoned, said Ser. No. 672,136 is a continuation of Ser. No. 207,405, Jun. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 21,408, Mar. 4, 1987, Pat. No. 4,908,315, said Ser. No. 777,479 is a continuation of Ser. No. 365,585, Jun. 13, 1989, which is a continuation-in-part of Ser. No. 207,405. This application Jun. 7, 1995, Ser. No. 474,872

Int. Cl.[6] A01G *31/02*

U.S. Cl. 47—65 **7 Claims**

1. An apparatus for supporting and growing plants within a greenhouse, comprising:



a track;

a frame member having a support for disposing said frame member on said track;

at least one growing sheet having pouches for supporting and growing plants and releasably supported on said frame member; and

a motor for providing a motive force for moving said frame member along said track.

5,664,370

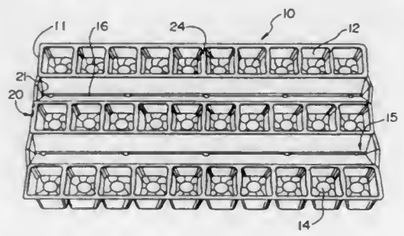
PLANT GROWING TRAY

Jean-Marie Boudreau, Shippagan, Canada, and Cor Baars, Batavia, Ill., assignors to Jiffy Products of America, Inc., Batavia, Ill.

Filed Mar. 8, 1996, Ser. No. 611,614

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—87 **4 Claims**



1. A plant growing tray comprising: a plurality of strips of tray compartments, integral means for connecting two adjacent strips of tray compartments, said connecting means being foldable and having a V-shaped groove portion with a folding line along its bottom, and

an integral end member provided respectively at each end of said foldable V-shaped groove portion, each end member also having a folding line in alignment with the folding line of the V-shaped groove portion, whereby in use said connecting means maintains said strips of tray compartments separated from one another.

5,664,371

INFANT GATE

Allen Jay Berliner, 704 W. Woodcrest Ave., Brea, Calif. 92621

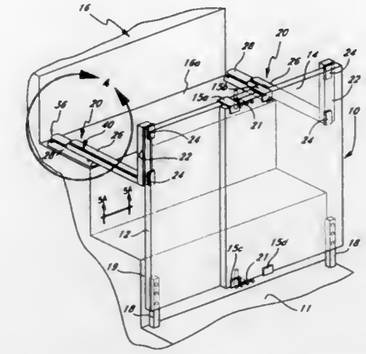
Filed Oct. 20, 1995, Ser. No. 546,392

Int. Cl.[6] E06B *7/00*

U.S. Cl. 49—55 **16 Claims**

1. An infant gate removably attached to a pair of rails mounted on a stair having a predetermined width, including

a gate member having opposed sides, said gate member being adjustable to substantially equal the width of the stair,



a first support member having one end connected to one side of the gate member and another end connected to one of said rails, and

a second support member having one end connected to the other side of the gate member and another end connected to the other of said rails,

each of said support members having a locking section which detachably interlocks with the rail to which it is connected to attach the gate member to the rails,

each of said first and second support members being moveable to different positions along the rails to which they are connected to enable the gate member to be selectively positioned horizontally relative to the stair to which said gate member is attached,

said rails including a series of aligned openings and the support members including at least one finger which is received in an opening in the rails during attachment of the rails and the support members.

5,664,372

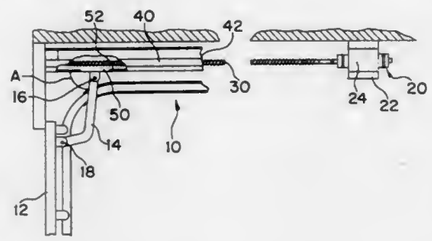
CLUTCHLESS SCREW DRIVE DOOR OPERATOR

Gregory Ernest Williams, Minerva; James Allen White, Louisville; Nicholas A. Dragomir, Alliance, and James William Stottsberry, Massillon, all of Ohio, assignors to GMI Holdings, Inc., Alliance, Ohio

Continuation of Ser. No. 409,425, Mar. 24, 1995, Pat. No. 5,568,704. This application Aug. 28, 1996, Ser. No. 704,274

Int. Cl.[6] E05F *11/34;11/40*

U.S. Cl. 49—362 **8 Claims**



1. A garage door operator comprising:

a motor having a stator and a rotor, said rotor having a shaft which transmits torque developed by said motor;

a threaded screw having an end portion;

a guide rail for at least partially containing said screw, said guide rail having an edge portion;

coupling means for coupling said screw to said rotor shaft and absorbing thrust transmitted along said screw toward said

motor when said coupling means couples said screw and said motor, said coupling means including a first coupling and a second coupling,

said first coupling including a coupling member for connecting each of said rotor shaft and said screw end portion for transmission of torque from said motor to said screw, and

said second coupling including thrust containment means supported by said screw and means disposed intermediate said thrust containment means and said guide rail edge portion.

5,664,373

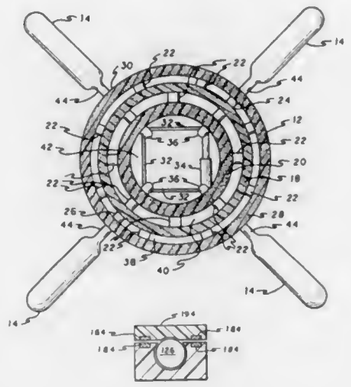
INFLATABLE MOLD FOR USE IN SPACE

Brian B. Downing, 823 Emperor Dr., Suisun, Calif. 94585

Continuation-in-part of Ser. No. 932,682, Aug. 20, 1992, Pat. No. 5,339,574. This application Aug. 22, 1994, Ser. No. 293,457

Int. Cl.[6] E04B *1/34*; **E04G** *11/04*; **B28B** *21/82*

U.S. Cl. 52—2.15 **8 Claims**



1. A method of producing a rigid structure from a flexible, inflatable, multi-walled mold having an innermost flexible wall and at least one outer flexible wall, thus defining a cavity between each adjacent wall, comprising the steps of:

attaching supports to each of said flexible walls for maintaining said flexible walls in a predetermined configuration when the mold is inflated, said supports being a plurality of flexible webs, rigid telescopic bars, and fasteners;

placing a magnetic member in one of said flexible walls, and a magnetically responsive member in another of said flexible walls for maintaining said one of said flexible walls and said another of said flexible walls in alignment by magnetic attraction and repulsion;

injecting pressurized gas into at least one outer cavity located externally of the innermost flexible wall to provide an expanded shape for the mold, thereby defining an innermost cavity surrounded by the innermost flexible wall;

injecting mold material into said innermost cavity;

deflating said at least one outer cavity after the mold material within the innermost cavity has hardened; and

injecting another mold material into said at least one outer cavity which was deflated during said deflating step.

5,664,374

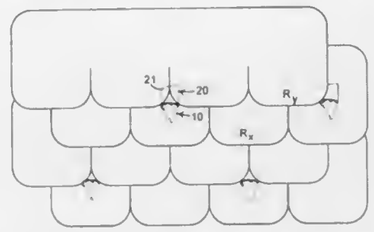
SNOW GUARD WITH REINFORCED SNOW-STOP AND GUSSETED BRACE

Vicki Parker Lee, 9718 Lakeshore Blvd., Bratenahl, Ohio 44108

Filed Apr. 25, 1996, Ser. No. 638,015

Int. Cl.[6] E04D *13/00*

U.S. Cl. 52—24 **17 Claims**



1. A snow guard comprising,

a longitudinal laminar strap having an up-roof end and a down-roof end, a snow-stop fixedly secured to the upper surface of said strap, and a unitary brace fixedly secured to said snow-stop and said strap, each structural component formed from foldable sheet metal;

said strap fixedly secured at its up-roof end to a roof member, said strap having its down-roof end terminating in a generally triangular shape having angulated edges symmetrically oppositely disposed about said strap's longitudinal axis;

said snow-stop comprising (i) a generally planar upstanding barrier having an arcuate profile, an up-roof surface and a down-roof surface, said barrier having a peripheral flange means projecting orthogonally from the periphery of said barrier for a distance sufficient to protect said down-roof surface against impingement by rain; and (ii) a barrier-base in overlying contact with said down-roof end's upper surface and fixedly secured thereto, said barrier-base projecting laterally up-roof, at a right angle with said barrier; and,

said unitary brace comprising a downwardly tapered main body comprising a gusset having a chosen outer surface area and lateral flanges, each lateral flange projecting from a side of said gusset, angularly relative to said longitudinal axis, in opposed directions, said lateral flanges lying in contact with said strap and tightly secured by said angulated edges which are folded over said lateral flanges, said main body having a large opening defined by a cross-section m a vertical plane of abutment where the up-roof portion of said gusset abuts said barrier as it rests on said laminar strap, said large opening having an arcuate periphery which so closely conforms to said barrier's down-roof surface as to leave no gap between said arcuate periphery and said barrier's down-roof surface;

whereby said barrier's periphery is reinforced by said peripheral flange means, enhancing rigidity and strength of said brace and snow-stop, and, entry of melting snow and falling rain in the meeting plane between said barrier's down-roof surface is prevented.

5,664,375

EXTERIOR BUILDING PRODUCT DEVICE

John Frederick Ward, Midhurst, Canada, assignor to Canplas Industries, Ltd., Barrie, Canada

Continuation of Ser. No. 228,617, Apr. 15, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,557

Int. Cl.[6] E04D *13/00*

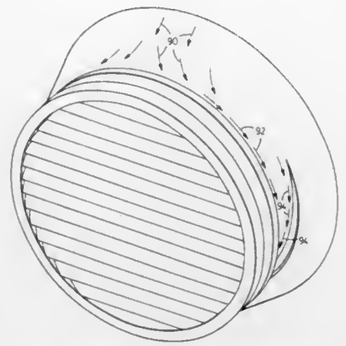
U.S. Cl. 52—97 **20 Claims**

1. A building product for an exterior portion of a building that is to be covered with cladding, said product comprising:

a trim ring; and

a main body attached to said trim ring, said main body having:

a front;



an upstanding perimeter wall having a substantially continuous outside surface with an outward slope;

a top, a bottom, and generally opposed side edges in plan view;

an outer face and an inner edge in side view;

an attachment flange extending from at least a portion of said perimeter wall along said inner edge for attaching said main body to a surface of said building, said attachment flange and said trim ring defining a cavity between said flange and said ring for the insertion of said cladding inserted; and

a water directing means comprising a surface feature which cooperates with said slope and is formed in said substantially continuous outside surface of said perimeter wall, said water directing means being sized and shaped to direct and guide water running down said substantially continuous outside surface of said upstanding perimeter wall of said main body along said substantially continuous outside surface towards the front of said main body, away from said surface of said building, and outside of any of said cladding located between the trim ring and the attachment flange.

5,664,376

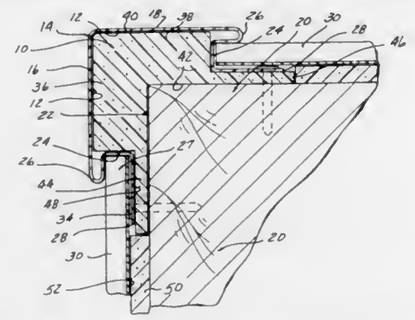
CORNER POST SUPPORT MEMBER

Richard C. Wilson, West Bloomfield, Mich., and Patrick M. Culpepper, Dover, Ohio, assignors to Abco, Inc., New Philadelphia, Ohio

Continuation of Ser. No. 355,471, Dec. 14, 1994, Pat. No. 5,542,222. This application Apr. 29, 1996, Ser. No. 639,698

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—287.1 **4 Claims**



1. A support member for a corner post made of thin sheet material and used to enclose the corner of an external wall of a building, the corner post being spaced from the external wall to define a longitudinally extending hollow space therebetween, said support member comprising:

a single member having first and second longitudinally extending portions, the first portion lying in a first plane angularly disposed with respect to the second portion lying in a second plane, wherein said first and second longitudinally extending portions have lengths corresponding to the length of the corner of the building and wherein said single member defines a cornered inner surface for contacting the building and a spaced apart cornered outer surface for contacting the corner post;

a first support member flange extending outwardly from said first portion a predetermined distance and extending continuously along the entire length of said first portion and from said inner surface radially outwardly; and

a second support member flange extending outwardly from said second portion a predetermined distance and extending continuously along the entire length of said second portion, wherein said first and second support member flanges extend from said inner surface radially outwardly.

5,664,377

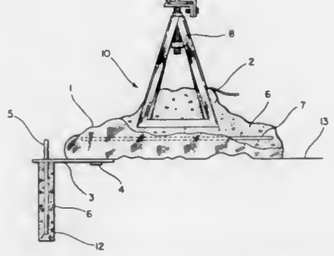
APPARATUS AND METHOD TO A GROUND SURFACE FOUNDATION

Arthur Angelo, 17720 St. Andrews Dr., Poway, Calif. 92064, and Kambozia S. Naraghi, 13455 Bavarian Dr., San Diego, Calif. 92129

Filed Jul. 14, 1994, Ser. No. 274,789

Int. Cl.[6] E02D *27/32*

U.S. Cl. 52—295 **8 Claims**



1. A ground surface cast-in-place foundation assembly adapted to vertically engage the bottom portion of an underside support beam to a dwelling, said assembly comprising:

a pier member having an upper and lower end,

fastening means for connecting said upper end to said bottom portion of said beam,

a flowable and settable foundation material into which said lower end is embedded, and

a geo-textile bag into which said foundation material is disposed, said bag comprising a porous fabric material and having securing means at its entrance wherein said entrance is situated at an intermediate position above said pier lower end, wherein said entrance is secured to said pier with a drawstring.

5,664,378

EXODERMIC DECK SYSTEM

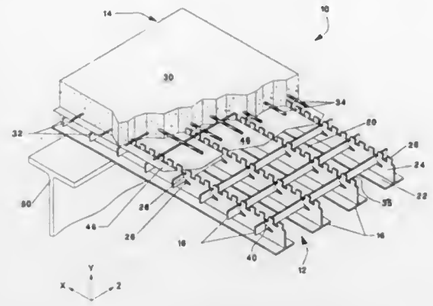
Robert A. Bettigole, 21 Robin Hill Rd., Scarsdale, N.Y. 10583, and Neal H. Bettigole, 89 Howard Dr., Old Tappan, N.J. 07675

Filed Dec. 7, 1995, Ser. No. 568,464

Int. Cl.[6] E04B *1/18*

U.S. Cl. 52—414 **14 Claims**

1. A structural floor comprising:



an open lattice grating base member formed solely by a plurality of main bearing bars and a plurality of distribution bars, and without any tertiary bars, said distribution bars and said main bearing bars forming an integral grid, said distribution bars and main bearing bars positioned and spaced to define interstices therebetween, said distribution bars intersecting and interlocked with said main bearing bars to distribute load transverse to said main bearing bars;

a top component fixed to said grating base member, said top component having a planar top surface and a planar bottom surface, said planar bottom surface being parallel and proximate to the top surfaces of said plurality of distribution bars so that said top component does not fill the interstices of said grating base member;

each of said main bearing bars having an upper shear portion, said upper shear portions of said plurality of main bearing bars being embedded within said top component;

said plurality of main bearing bars further including means for forming a mechanical lock between said integral grid formed by said main bearing bars and said distribution bars and said top component when said upper shear transfer portions are embedded in said top component thereby preventing vertical separation between said top component and said grating base member;

said upper shear transfer portions of said main bearing bars effecting shear transfer between said top component and said grating base member in a horizontal direction parallel to said embedded main bearing bars and in a horizontal direction perpendicular to said embedded main bearing bars;

said means for forming a mechanical lock comprising shear connectors capable of resisting shear forces in three axes, including a first horizontal axis transverse to said main bearing bars, a second horizontal axis parallel to said main bearing bars, and a third vertical axis perpendicular to said main bearing bars;

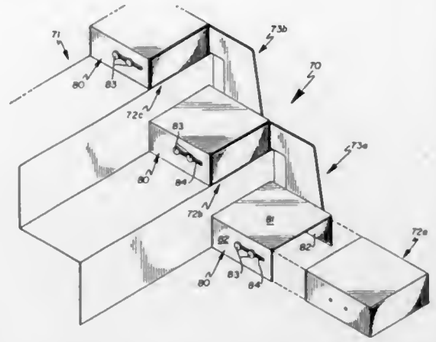
said shear connectors comprise a plurality of dove-tail projections and dove-tail openings; and

wherein said top component fills said dove-tail openings but does not penetrate said interstices between said main bearing bars and said distribution bars.

5,664,379
STAIRWAY STEP ASSEMBLY
William P. Kroll, Medina; Paul C. Probst, Plymouth, and Karl J. F. Kroll, Maple Grove, all of Minn., assignors to Protector Care, Inc., Plymouth, Minn.
Filed Dec. 28, 1995, Ser. No. 580,167
Int. Cl.[6] E04F *11/02*
U.S. Cl. 52—184 **4 Claims**

1. A step assembly for use on a stairs having a plurality of steps, comprising:

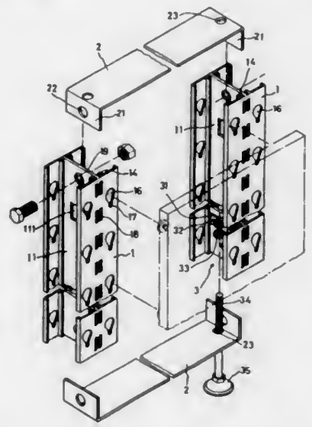
(a) a plurality of step members, said step members having a horizontal top surface and a pair of vertical side surfaces, said step members further having predetermined horizontal dimensions and a predetermined height, said step members farther



having at least one aperture on a first end of said side surfaces and at least one aperture on a second end of each said side surface, said assembly further comprising a U-channel shaped extension member with a horizontal top member and a pair of lateral, vertical side members, said extension member overlaying each said step member and having an adjustment slot in a one side member, said extension member being adjustably connected thereto by at least one fastener disposed in said adjustment slot and at least one step side member aperture; and

(b) a connector for connecting each said step member in a fixed position on a stairs step.

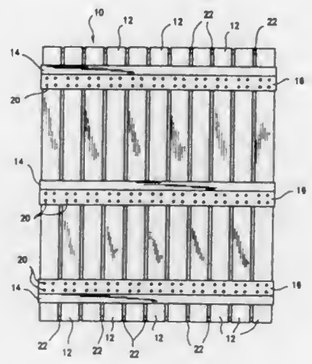
5,664,380
PARTITION FRAME STRUCTURE
Jen Shiung Hsueh, No. 2-1, Lane 59, Ming Shiang Street, Chung Ho City, Taipei Hsien, Taiwan
Filed Jul. 12, 1995, Ser. No. 501,399
Int. Cl.[6] E04B *2/78*
U.S. Cl. 52—126.4 **3 Claims**



1. A vertically arranged partition frame comprising two parallel side walls, a flat connecting wall perpendicularly connected between said side walls and having a longitudinal row of through holes for mounting a respective supporting rod, two longitudinal grooves defined between said flat connecting wall and two symmetrical pairs of longitudinal ribs on said side walls, longitudinal rows of key holes on said side wall for mounting partition panels, two longitudinal rows of recessed hanging holes on each side wall at an outer side for hanging things, and each side wall having two longitudinal stop flanges respectively raised from two opposite

sides at right angles in parallel to the respective longitudinal ribs, two elongated mounting plates respectively connected to two opposite ends of said partition frame, each mounting plate having an angled flange at its connection end for insertion into the respective longitudinal groove of said partition frame, each angled flange having a through hole connected to a respective through hole on said flat connecting wall by a screw bolt, and each mounting plate extending from said partition frame to a connection with an additional vertically arranged partition frame, and an elevation adjustment device comprising a mounting frame fixedly secured to said flat connecting wall at one end, a screw holder fixedly connected to said mounting frame and defining a screw hole, and an adjustment screw having a screw body threaded into the screw hole on said screw holder and having a head at one end of said screw body for supporting on the ground.

5,664,381
CONSTRUCTION NAILING METHOD AND STRUCTURES
Daniel L. Betts, Fredericksburg, Va., assignor to Deck America, Inc., Lorton, Va.
Filed Nov. 29, 1995, Ser. No. 538,125
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—263 **10 Claims**



1. A deck structure module comprising:

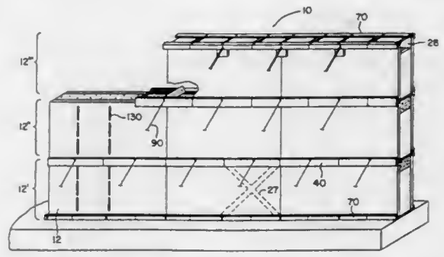
a plurality of deck surface boards having a first depth extending a first direction;

a select plurality of joist boards projecting below said deck surface boards and disposed perpendicular to said first direction;

a plurality of nailer boards having a second depth aligned perpendicular to said deck surface boards and both parallel and adjacent said joist boards, said nailer boards being secured to said joist boards and being attached to said deck surface boards by driving a plurality of nails having a length less than the second depth of the nailer boards combined with the first depth of the deck surface boards, through the nailer boards and into the deck surface boards; and

fastening means for securing the ends of adjacent deck surface boards said fastening means being corrugated nails driven into the ends of adjacent deck surface boards and bridging the space between said adjacent boards.

5,664,382
METHOD FOR MAKING BLOCK FORMS FOR RECEIVING CONCRETE
David W. Melnick, 3405 Alcott St., Denver, Colo. 80211-3341, and Robert T. Barnet, 809 E. Ridgecrest Rd., Fort Collins, Colo. 80524
Division of Ser. No. 119,492, Sep. 9, 1993, Pat. No. 5,488,806.
This application Feb. 5, 1996, Ser. No. 596,952
Int. Cl.[6] E04B *2/28*
U.S. Cl. 52—425 **8 Claims**



1. A method for making a block used in receiving concrete, comprising:

providing a first panel and a second panel with each of said first and second panels having a surface;

forming a plurality of core members apart from said first panel and said second panel;

applying adhesive to said surface of said first panel;

positioning a first side of each of said plurality of core members in engagement with said surface of said first panel after applying said adhesive to said surface of said first panel;

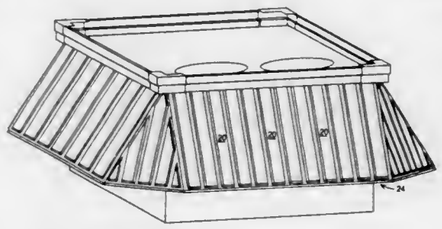
placing adhesive on said surface of said second panel; and

joining said surface of said second panel to a second side of each of said plurality of core members after said placing step.

5,664,383

Patent Not Issued For This Number

5,664,384
SCREENING DEVICE
James E. Cullinan, 2737 Welsford Rd., Columbus, Ohio 43221
Filed Apr. 26, 1996, Ser. No. 638,289
Int. Cl.[6] E04B *2/60*
U.S. Cl. 52—507 **9 Claims**



1. Apparatus comprising

a sheet having a pair of parallel opposite edges; and

means for holding the sheet at a predetermined location;

the holding means comprising a framework including

an upper rigid elongate substantially channel shaped member held in an upper lengthwise horizontal position with an upper channel opening facing substantially downward; and

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a lower rigid elongate substantially channel shaped member held in a lower lengthwise horizontal position with a lower channel opening being parallel to, and facing substantially upward toward the upper member;

a depth of the upper channel opening being enough greater than a depth of the lower channel opening and spacing between the two channel opening being such that an upper edge of the sheet can be inserted a substantial distance upward into the upper member and while so inserted a lower edge of the sheet can be placed adjacently above the lower channel opening and dropped therein leaving the upper edge of the sheet still sufficiently inside the upper channel opening as to confine the sheet within the two channel openings until said is intentionally moved away by a person pushing the sheet upward into the upper channel opening sufficiently for the lower edge to be pulled out of, and away from, the lower channel opening, and then pulling the sheet downward sufficiently for the upper edge to be pulled out of, and away from, the upper channel opening;

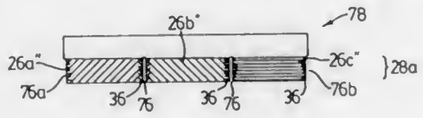
the sheet and the means for holding thus being so constructed and arranged that the sheet can be moved easily to and away from the location by a person without a need for equipment.

5,664,385

SHINGLE WITH SLOTS AND METHOD OF MAKING SAME

Henry Koschitzky, Downsview, Canada, assignor to IKO Industries Ltd., Toronto, Canada

Filed Apr. 27, 1995, Ser. No. 430,085
Int. Cl.[6] E04D *1/12*
U.S. Cl. 52—559 **5 Claims**



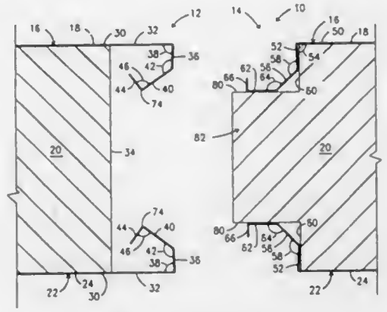
1. A roofing shingle having a lengthwise axis and comprising; a base sheet having an exposed portion which will be visible when said shingle is mounted on a roof and a headlap portion which will be substantially covered by another shingle, a series of closely adjacent patches of granules extending along the length of said shingle and located on said exposed portion, said patches of granules being of different color from each other and being separated by transition areas which extend substantially at right angles to said lengthwise axis, each transition area thereby being bordered by a patch on each side thereof, the patch on each side of a transition area being a neighboring patch, each transition area containing granules from each of its neighboring patches, each transition area having a first border area adjacent one of its neighboring patches and a second border area adjacent the other of its neighboring patches, said first border area containing a high concentration of granules from said one neighboring patch, and a low concentration of granules from said other neighboring patch, said second border area containing a high concentration of granules from said other neighboring patch and a low concentration of granules from said one neighboring patch, each transition area also containing an intermediate portion between said border areas where granules from both said neighboring patches are present in substantial concentrations, said shingle having narrow slots between substantially all of said patches of granules, said slots being located in said transition areas between adjacent patches of granules and extending substantially the entire height of said exposed portion, said slots extending within said intermediate portions of said transition areas but said transition areas being of greater width than said slots so that there is a portion of a transition area on each side of each slot, said slots thereby providing an accentuated visual demarcation between adjacent patches of granules.

5,664,386

POINT-TO-POINT INTERLOCKING PANELS

Michael J. Palmersten, P.O. Box 25251, Woodbury, Minn. 55125

Continuation of Ser. No. 333,193, Nov. 2, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,157
Int. Cl.[6] E04C *3/30*
U.S. Cl. 52—588.1 **8 Claims**



1. A panel, comprising:

a foam core having a top and a bottom surface and a first and a second core edge;

a first metallic skin for covering said top surface and a second metallic skin for covering said bottom surface;

said first metallic skin having a first end and a second end;

said first metallic skin first end having a first part that is unbent and which overlies a portion of said top surface;

said first metallic skin first end having an unbent second part coplanar with said first part, said unbent second part extending in cantilevered relation to said first edge of said panel;

said first metallic skin first end having a third part integral with said second part, said third part bent toward said first core edge slightly more than ninety degrees, thereby forming an included angle with said second part that is slightly less than ninety degrees;

said first metallic skin first end having a fourth part integral with said third part, said fourth part being bent toward said first core edge at a predetermined angle;

said first metallic skin first end having a fifth part integral with said fourth part and bent toward said top surface of said core and said first core edge at a predetermined angle of about ninety degrees relative to said fourth part;

said second metallic skin having a first end and a second end;

said second metallic skin first end having five parts that correspond to said five parts of said first metallic skin first end in mirror image relation thereto;

said first metallic skin second end having five parts that cooperate with the five parts of said first metallic skin first end to facilitate interlocking of contiguous panels when laid in edge to edge relation to one another;

said first metallic skin second end having a first unbent part that overlies a portion of said top surface of said foam core;

said first metallic skin second end having a second bent part integral with said first part that is bent slightly more than ninety degrees relative to said first part toward said center of said core, an included angle between said first and second parts being slightly less than ninety degrees;

said first metallic skin second end having a third part integral with said second part bent at an obtuse angle with respect to said second part so that it extends toward said center of said core and away from said second core edge;

said first metallic skin second end having a fourth part integral with said third part, said fourth part being bent at an obtuse angle with respect to said third part and being disposed generally parallel to said top and bottom surfaces of said core in a direction away from said second core edge;

said first metallic skin second end having a fifth part integral with said fourth part, said fifth part being bent about ninety degrees relative to said fourth part in a direction toward said top surface of said core;

said fifth part having a predetermined extent;

whereby said fourth part of said first metallic skin first end slides over said fifth part of said first metallic skin second end when contiguous panel edges are brought into interlocking relation to one another; and

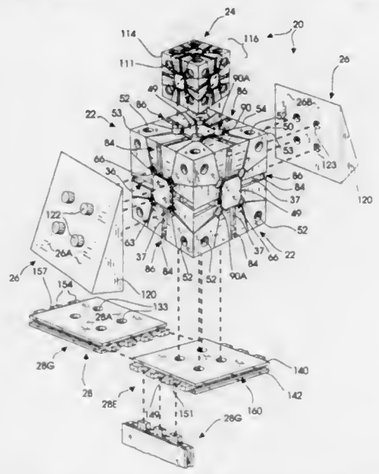
whereby the predetermined angular orientation of said fourth part of said first metallic skin first end and the predetermined height of said fifth part of said first metallic skin second end determine the amount of force required to place contiguous panels into interlocking relation to one another, such that said first metallic skin first end and said first metallic skin second end abut one another along a first point-like line of contact when contiguous panels are disposed in interlocking relation to one another, said point-like line of contact being where said first metallic skin first end second part abuts said first metallic skin second end second part.

5,664,387

MODULAR BLOCK CONSTRUCTION SYSTEM

Khaqan Bhatti, #3 Foxcroft La., Pine Bluff, Ark. 71603

Filed Jun. 24, 1996, Ser. No. 669,146
Int. Cl.[6] A63H *33/08*
U.S. Cl. 52—604 **20 Claims**



1. A block configured generally in the form of a parallelepiped and adapted to be coupled to one or more similar blocks, said block comprising:

a plurality of orthogonal panels, each panel comprising:

a center;

a plurality of follower slots radially defined about said center through said panel;

a plurality of connector orifices defined through said panels; and,

a plurality of peripheral edges, the edges in one panel coupled to abutting edges of an adjacent, orthogonal panel when the block is assembled;

a block interior defined by said panels;

a plurality of spider connectors captivated within said block interior, each spider connector comprising:

a central hub;

a plurality of integral, radially spaced apart, arms projecting away from said hub within said block interior towards said panel follower slots for moving the spider connectors;

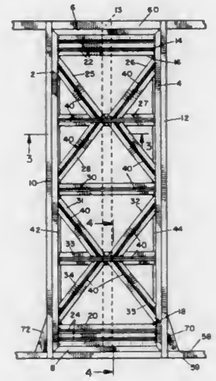
a plurality of radially spaced apart control projections aligned with and variably penetrating said connector orifices, said projections controlled by movement of said spiders whereby said panels can be transformed between male, female, and flattened configurations.

5,664,388

STRUCTURAL SHEAR RESISTING MEMBER AND METHOD EMPLOYED THEREIN

Larry Thomas Chapman, Potrero, and Kenneth R. Bass, deceased, late of El Cajon, both of Calif., by Donna R. Bass, executor, assignors to Donna Bass, El Cajon, Calif.

Continuation-in-part of Ser. No. 413,544, Mar. 30, 1995, which is a continuation-in-part of Ser. No. 190,643, Feb. 2, 1994, Pat. No. 5,499,480, which is a continuation-in-part of Ser. No. 82,989, Jun. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 40,494, Mar. 31, 1993, abandoned. This application Nov. 3, 1995, Ser. No. 556,894
Int. Cl.[6] E04B *1/08*
U.S. Cl. 52—653.1 **28 Claims**



1. A structural shear resisting member for installation in a wall frame wherein said wall frame includes a plurality of wall studs and a plurality of horizontal members, the shear resisting member comprising:

a frame formed from four lightweight metal beams, each beam of said four beams having a first triangular cross-section formed by folding a length of sheet metal lengthwise on four parallel lines to define a base, two sides and two flanges extending from said two sides, one flange corresponding to each side, said four beams comprising two first beams having a first beam length, and two second beams having a second beam length much less than said first beam length;

a plurality of gussets for connecting said first beams and said second beams to assemble said frame, each gusset being fastened to said flanges of said first beams and one of said second beams at a plurality of gusset attachment points, each gusset comprising a strip of sheet metal having a length for spanning a space between said first beams;

a plurality of strut members for spanning said space between said first beams at a plurality of different angles, each strut member of said plurality being fastened to said flanges of at least one of said first beams at a strut attachment point, each strut member including a strip of sheet metal having a plurality of lengthwise folds to define a second triangular cross-section;

a plurality of first fastening means for fastening said plurality of gussets and said plurality of strut members to said flanges of said first and second beams; and

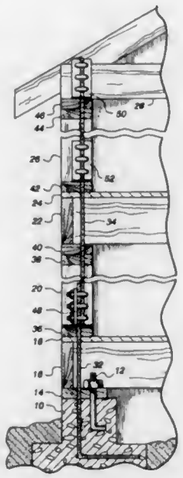
means for attaching said frame within said spacing between two wall studs of said plurality of wall studs and to an upper and a lower horizontal member of said plurality of horizontal members.

5,664,389

METHOD AND APPARATUS FOR BUILDING CONSTRUCTION

Merlin Ray Williams, 655 Garside Ct., San Leandro, Calif. 94579

Filed Jul. 22, 1996, Ser. No. 684,993
Int. Cl.[6] E04B *1/92;1/98;* **E04H** *9/02;9/14*
U.S. Cl. 52—677 **9 Claims**



8. A clamp securable to a building frame for clamping an end section of a first rebar to a second rebar, the clamp comprising:

a rectangular base plate having top and bottom surfaces, said base plate having therethrough a centrally positioned clearance hole for passage of said second rebar and a plurality of small holes positioned for nailing said base plate to a building frame;

a rectangular U-bolt plate having an end located on the top surface of said base plate and tangent to said clearance hole;

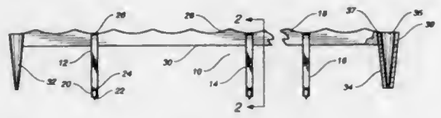
at least two U-bolts in holes in said U-bolt plate, said U-bolts aligned with said clearance hole and having arms threaded to secure at least two rebars and with an inside spacing between arms corresponding to the diameter of one rebar.

5,664,390

BOLSTER FOR USE IN CONSTRUCTION

Felix L. Sorkin, 4115B Greenbriar Dr., P.O. Box 1503, Stafford, Tex. 77477

Filed Nov. 27, 1995, Ser. No. 562,990
Int. Cl.[6] E04C *5/16*
U.S. Cl. 52—687 **13 Claims**



1. A bolster for use in construction comprising:

a plurality of leg members arranged in parallel spaced relationship, each of said plurality of leg members having a foot means extending outwardly therefrom for contacting an underlying surface, each of said plurality of leg members comprising:

a central body portion;

a first leg extending downwardly from one side of said central body portion; and

a second leg extending downwardly from an opposite side of said central body portion, said foot means formed on an end of said first and second legs opposite said central body portion, said second leg being in planar alignment with said first leg, said foot means comprising:

a first foot formed at the end of said first leg and extending horizontally outwardly therefrom, said first foot having a top surface and a bottom surface; and

a second foot formed at the end of said second leg and extending horizontally outwardly therefrom, said second foot having a top surface and a bottom surface, said top surface and said bottom surface of said first foot being in parallel relationship, said top surface of said first foot spaced from said bottom surface of said first foot by no more than one-quarter inch; and

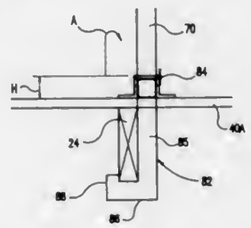
a beam integrally formed with said plurality of leg members, said beam extending transversely across said plurality of leg members.

5,664,391

ROOF ANCHOR AND HANGING SCAFFOLD SYSTEM

Paul F. Bartholomew, Raleigh, N.C., assignor to PFB Company, Raleigh, N.C.

Filed Apr. 1, 1996, Ser. No. 625,845
Int. Cl.[6] E04F *19/00;* **A62B** *35/00*
U.S. Cl. 52—714 **22 Claims**



1. In a roof having a truss structure composed of spaced apart joists running perpendicular to a roof edge and a sheet overlay on top of said joists defining small gaps between courses of sheets forming the overlay, a roof tie-off anchoring system, comprising:

a base support member contacting said overlay and having first and second ends;

a thin, flat joist securement assembly pivotally connected with a hinge means about a horizontal axis to said first end of said base support member, said thin, flat joist securement assembly lockingly engaging and disengaging a respective underlying joist through said small gaps,

said securement assembly comprising a thin, flat J-hook having a main body portion, a bottom portion and a upstanding tip portion,

said bottom portion in locking engagement with an underside of said joist and said main body portion and said upstanding tip portion in contact with respective sides of said joist, thereby providing three-sided engagement of the J-hook to the joist; and

a means for attaching a rope or cable extending from said second end of said base support member to provide a tie-off attachment point.

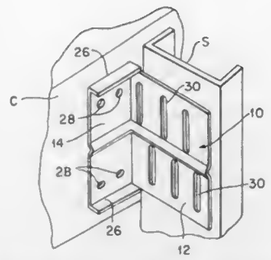
5,664,392

DEFLECTION CLIP

Brian A. Mucha, 3100 Chesley Ave., Baltimore, Md. 21234

Filed Apr. 8, 1996, Ser. No. 629,086
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—715 **16 Claims**

1. A deflection clip for connection between a non-load bearing member of a building and a further, load bearing structure of the building, said clip comprising:



an integral, single piece angle member comprising

first and second substantially planar plate portions located in orthogonal planes and joined together along a common lateral edge, each of said first and second portions including a further lateral edge opposed to said common lateral edge;

said member having upper and lower edges and including a substantially centrally located, raised stiffener portion disposed intermediate said upper and lower edges;

said first portion including at least two spaced, vertically extending slots for receiving fasteners used in affixing said first portion to the non-load bearing building member,

and said second portion including first and second spaced stiffener portions extending outwardly from the corresponding upper and lower edges of said member and including means for enabling the fastening of said second portion to said load bearing building member wherein said vertically extending slots are arranged in two vertically spaced groups each comprising at least two lateral spaced slots.

5,664,393

STRUCTURAL WOODEN JOIST

Robert Veilleux, 115, Route 108, Saint-Victor, Québec, Canada, G0M 2B0, and Mario Labrie, 335, avenue Duverger, Sainte-Marie Québec, Canada, G6E 3K7

Filed Aug. 1, 1996, Ser. No. 686,200
Int. Cl.[6] E04C *3/12*
U.S. Cl. 52—729.4 **9 Claims**



1. A structural wooden joist comprising:

a) an elongated lower chord;

b) an elongated upper chord in a spaced apart generally parallel opposed relation to said lower chord;

c) an openwork web structure joining said chords; said web structure including, between opposite ends thereof, a series of horizontally spaced trapezoidal laminated panels defining a series of triangular spacings therebetween; each said panel having opposite short and long sides adhesively joined to said lower and upper chords respectively; each said panel being formed of short obliquely extending boards adhesively secured edgewise to one another.

5,664,394

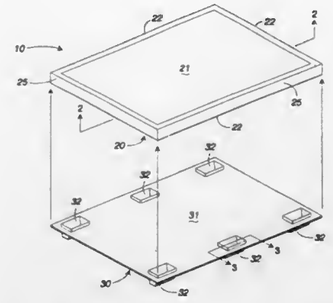
BASE FOR EQUIPMENT

Jeff S. Sweeney, Atlanta, Ga., assignor to DiversiTech Corporation, Conyers, Ga.

Filed Aug. 1, 1995, Ser. No. 509,769
Int. Cl.[6] B65D *19/18*
U.S. Cl. 52—782.1 **35 Claims**

1. A base for equipment, comprising:

a pad having a top surface, a peripheral edge, a plurality of side surfaces, and a core with a bottom side;



said top surface, said peripheral edge, and said plurality of side surfaces of said pad having a monolithic outer form;

said core having at least one recess in said bottom side; and

at least one insert foot;

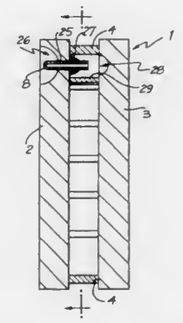
said at least one insert foot mating with said at least one core recess such that said at least one insert foot extends beyond said bottom side of said core.

5,664,395

THERMALLY INSULATING GLASS PANELS

Richard Edward Collins, Riverstone, and Jian Zheng Tang, Merrylands, both of Australia, assignors to The University of Sydney, Sydney, Australia

PCT No. PCT/AU93/00040, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO93/15296, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 29, 1993, Ser. No. 256,960
Claims priority, application Australia, Jan. 31, 1992, PL0720
Int. Cl.[6] E06B *3/66;* **C03C** *27/00*
U.S. Cl. 52—786.13 **22 Claims**

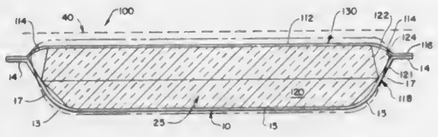


1. A thermally insulating glass panel comprising:

two spaced apart sheets of glass enclosing a low pressure space and interconnected by a peripheral joint of fused solder glass and an array of pillars;

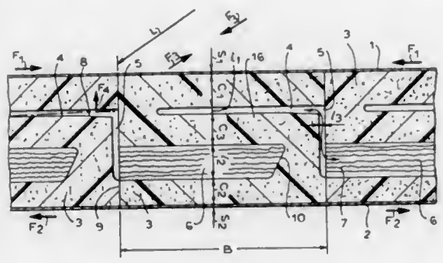
wherein at least some of the pillars are made entirely of metal, and pillar spacing, pillar radius and the number of pillars are chosen such that tensile stress present on outward facing surfaces of the glass sheets is smaller than about 4 MPa, conical stress fracture of the sheets of glass adjacent pillar locations is deterred, and heat flow for the entire pillar array is less than 0.3 $Wm^{-2}K^{-1}$.

5,664,396
VACUUM INSULATION PANEL
Bruce E. Lyman, Northfield, and Timothy A. Neeser, Savage, both of Minn., assignors to MVE, Inc., New Prague, Minn.
Filed Dec. 29, 1995, Ser. No. 581,182
Int. Cl.[6] E04C *2/34*
U.S. Cl. 52—788.1 5 Claims



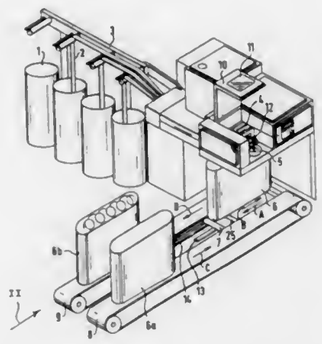
1. A vacuum insulating panel comprising:
a) a base having a planar bottom surface, a peripheral wall extending from the bottom surface, and a first peripheral flange extending from the wall substantially parallel to the bottom surface;
b) a cover having a generally planar fastening surface intended for attachment to a surface to be insulated, rounded corner portions extending from the periphery of the fastening surface, and a second peripheral the base and the from said rounded corner portions; the base and the cover being hermetically sealed at the first and second peripheral flanges;
c) said rounded corner portions having a radius of approximately 0.40 inches, prior to evacuation, to permit lateral movement of panel during evacuation to prevent deformation of said planar fastening surface;
thereby to ensure secure bonding of said fastening surface to the surface to be insulated.

5,664,397
SANDWICH PLATE FOR USE AS MOTOR-VEHICLE BODY PART
Rüdiger Holz, Wörthsee, Germany, assignor to Krauss-Maffei Verkehrstechnik GmbH, Munich, Germany
Filed Mar. 4, 1996, Ser. No. 606,489
Claims priority, application Germany, Mar. 18, 1995, 195 09 972.9
Int. Cl.[6] E04C *2/34*
U.S. Cl. 52—794.1 11 Claims



1. A sandwich plate comprising:
a pair of relatively dense, stiff, thin, and generally parallel longitudinally extending skins; and
a less dense core body having a pair of generally parallel faces bonded to the skins and formed with a plurality of pairs of longitudinally extending and longitudinally overlapping cavities and with respective transversely extending cavities each connected in a Z-shape between a respective two of the longitudinal cavities, the longitudinal and transverse cavities forming central longitudinally extending tongues each flanked by two of the longitudinal cavities and ending at a respective one of the transverse cavities.

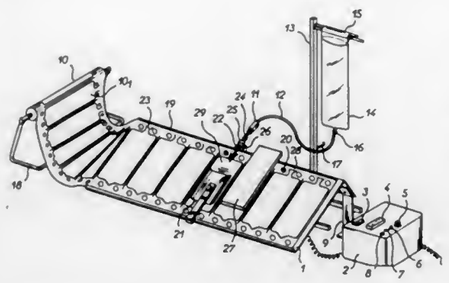
5,664,398
APPARATUS FOR CHARGING FLAT CANS WITH SLIVER AT A SLIVER PRODUCING FIBER PROCESSING MACHINE
Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany
Filed May 16, 1994, Ser. No. 243,489
Claims priority, application Germany, May 14, 1993, 43 16 159.6; Apr. 2, 1994, 44 11 549.0
Int. Cl.[6] B65B *63/04*
U.S. Cl. 53—118 11 Claims



1. A combination of a high-production rate sliver producing machine with a system for charging a coiler can of elongated horizontal cross section with sliver obtained from the sliver producing machine,
said sliver producing machine comprising a stationarily supported rotary coiler head having a diameter generally corresponding to the width of said coiler can for discharging sliver in coils;
said system comprising
(a) a coiler can having two opposite first sides and two opposite second sides oriented generally perpendicularly to said first sides; said coiler can having an elongated horizontal cross-sectional outline having a length corresponding to a distance between said second sides and a width corresponding to a distance between said first sides; said length being greater than said width;
(b) a sled disposed underneath said coiler head; said sled having an upper supporting surface for accommodating said coiler can in a standing position thereon, whereby said sled provides a vertical support for said coiler can; and
(c) sled-reciprocating means for imparting a sufficiently rapid back-and-forth motion to said sled parallel to the length of the coiler can to effect a deposition of sliver coils into the coiler can along a length thereof during discharge of sliver from said sliver producing fiber processing machine at a sliver discharge speed in an order of magnitude of 1,000 m/min.

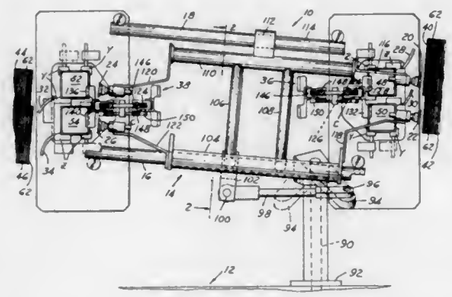
5,664,399
TILTABLE TABLE FOR PACKAGING LIQUIDS, PARTICULARLY ANIMAL SEMEN, IN FLEXIBLE ARTIFICIAL INSEMINATION POUCHES
Bertrand Cassou, L'Aigle, France, assignor to Societe IMV -Instruments de Medecine Veterinaire, L'Aigle, France
PCT No. PCT/FR95/00582, § 371 Date Feb. 21, 1996, § 102(e) Date Feb. 21, 1996, PCT Pub. No. WO95/30579, PCT Pub. Date Nov. 16, 1995
PCT Filed May 4, 1995, Ser. No. 591,480
Claims priority, application France, May 9, 1994, 94 05661
Int. Cl.[6] B65B *3/06;43/12;67/12;* A61D *19/02*
U.S. Cl. 53—284.7 13 Claims

1. A device for the packaging of liquids in flexible pouches designed for artificial insemination, the device comprising:



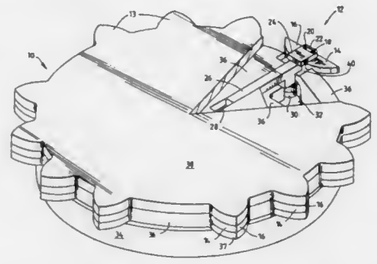
a table provided with means of support (**9**) at a tilt angle;
at least one positioning element (**20**) at least one of a filling and a welding station for positioning the pouches (10_1);
a needle guide (**25**) at the filling station for stabilizing a filling needle (**22**) so that it remains inserted between two lips of a film forming the pouches and aligned with a filling axis;
a volume calibration pallet (**21**); and
a mobile weighted welding pallet (**27**) connected to an electric unit (**2**) for welding the pouches (10_1).

5,664,400
CARTON BLANKS HANDLING MECHANISM
Timothy H. Drury, Howell, and Barry C. Owen, Southfield, both of Mich., assignors to Elopak Systems A.G., Glattbrugg, Switzerland
Continuation of Ser. No. 389,137, Feb. 15, 1995, abandoned.
This application May 9, 1996, Ser. No. 644,043
Int. Cl.[6] B65B *43/28;41/06*
U.S. Cl. 53—381.1 10 Claims



1. A carton blanks handling mechanism, comprising feeding and opening means for feeding tubular, flat, carton blanks from first and second oppositely disposed magazines and for opening the blanks, said feeding and opening means including a oscillatorily mounted carrier having at respective ends thereof first and second blanks-seizing devices for alignment with the respective magazines, driving means operatively connected to said carrier for oscillating the same, and fixedly secured rod means having said carrier slidably mounted thereon.

5,664,401
CARTON FOLDING MECHANISM FOR WRAPAROUND CARTONS
Pascal Portrait, Nuret-le-Ferron, and Jean-Christophe Bonnain, Chateauroux, both of France, assignors to The Mead Corporation, Dayton, Ohio
PCT No. PCT/US94/10787, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO95/08477, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 23, 1994, Ser. No. 446,764
Claims priority, application United Kingdom, Sep. 24, 1993, 9319970
Int. Cl.[6] B65B *21/24*
U.S. Cl. 53—48.6 10 Claims

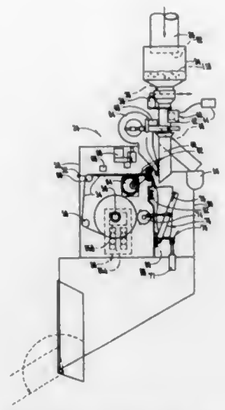


1. A device for use in a machine for packaging articles in a wraparound carrier which is formed from a blank having a pair of foldable flaps struck therefrom and defining an aperture therein, said machine being arranged to advance said blank and articles associated therewith along a predetermined path, said device being positioned along said path to fold said flaps inwardly of said blank, said device comprising:
a rotational disc defining an axis of rotation;
drive means for rotating said rotational disc about said axis in synchronization with movement of said blank and said articles;
a pair of blank-engaging fingers mounted on said rotational disc such that when said disc is rotated, said fingers are progressively moved into said aperture to fold said flaps and are subsequently retracted from said aperture, said fingers being pivotally connected to said disc for movement about respective first pins; and
actuating means for pivotally moving said fingers away from each other during progressive movement of said fingers and toward each other during retracting movement of said fingers, said actuating means comprising a radial member mounted on said disc for reciprocating movement along a radius of said disc, cooperating means for moving said radial member along said radius in response to rotation of said disc, and means for converting reciprocating movement of said radial member into pivotal movement of said fingers so that said fingers are simultaneously pivoted about said first pins in response to reciprocating movement of said radial member.

5,664,402
METHOD AND MEANS FOR HARVESTING AND PACKAGING SEEDS
Arlan W. Sandvik; Brian W. Carr, both of Nevada; Peter B. Moore, Ames; Donald F. Handorf, Ames; Kevin J. Alphs, Ames, and Mark D. Mathis, Roland, all of Iowa, assignors to Gary W. Clem, Inc., Nevada, Iowa
Filed Sep. 28, 1995, Ser. No. 535,745
Int. Cl.[6] B65B *43/38*
U.S. Cl. 53—384.1 25 Claims

1. A device for harvesting and packaging seeds, comprising,
a self-propelled combine having a seed harvesting mechanism capable of harvesting seeds growing on plants in a predetermined segment of a plurality of linear rows, and sequentially conveying said harvested seeds in separate sequential batches for said each predetermined segment of a linear row to an

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individual batch holding compartment for deposit into a packaging mechanism on said combine,

said packaging mechanism including a continuous bag roll separated into a plurality of bags having closed bottoms and openable tops,

powered rolls connected to a source of rotational power for sequentially moving said bag roll until one of said bags is moved to a seed filling station,

opening means on said packaging mechanism for opening the top of a bag located at said seed filling station for reception of seed,

a valve in said holding compartment for discharging an individual batch of seed only from said predetermined segment of a single linear row into a bag located at said seed filling station,

a bag closing means on said packaging mechanism for closing a bag located at said seed filling station after seed has been deposited therein, and

means on said bagging mechanism for separating a bag located at said seed filling station from said bag roll after such bag has received a deposit of seed.

5,664,403

METHOD FOR CRIMPING A SLEEVE ABOUT A FLORAL GROUPING

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee

Continuation of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, and a continuation-in-part of Ser. No. 165,215, Dec. 10, 1993, Pat. No. 5,373,943, said Ser. No. 95,331is a continuation-in-part of Ser. No. 963,882, Oct. 20, 1992, Pat. No. 5,408,803, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 165,215is a division of Ser. No. 40,330, Mar. 30, 1993, Pat. No. 5,311,991, which is a continuation of Ser. No. 906,089, Jun. 29, 1992, Pat. No. 5,205,108. This application Nov. 1, 1994, Ser. No. 333,105

Int. Cl.[6] B65B *9/10;11/02;11/48;25/02*

U.S. Cl. 53—397 **33 Claims**

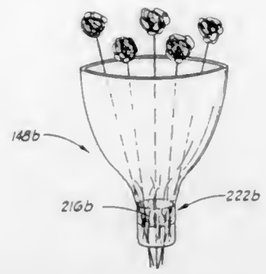
1. A method for wrapping a floral grouping comprising:

providing a floral grouping having an upper end and a stem portion;

providing a tubular sleeve comprising:

a first panel, the first panel having an inner surface, an outer surface, an upper end, a lower end, a left-hand side and a right-hand side,

a second panel, the second panel having an inner surface, an outer surface, an upper end, a lower end, a left-hand side and a right-hand side,



and wherein the first panel and the second panel are disposed flatwise upon each other, the inner surface of the first panel facing the inner surface of the second panel and further wherein the left-hand side of the first panel and the left-hand side of the second panel are sealed together and the right-hand side of the first panel and the right-hand side of the second panel are sealed together forming an interior space between the first panel and the second panel and into which a floral grouping is disposable, and

a crimp connecting adhesive means disposed upon a portion thereof;

placing the floral grouping into the interior space of the sleeve; and

positioning the sleeve about the floral grouping so that the crimp connecting adhesive means is adjacent the stem portion of the floral grouping and crimping the crimp connecting adhesive means to crimp the sleeve adjacent the stem portion for wrapping the sleeve about the stem portion of the floral grouping.

5,664,404

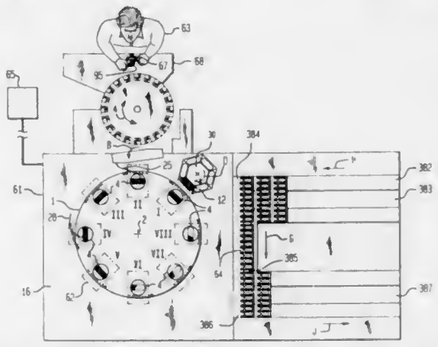
AUTOMATIC ZIPPER PACKAGE WINDING AND PACKAGING MACHINE

Konstantin Ivanov, Bound Brook; Donald Pompel, Montville; John Rega, Milltown, all of N.J.; Lorens Slokovic, Ft. Worth, Tex.; Haro Hofliger, Allmersbach im Tal-Heutensbach, Germany; Manfred Reiser, Winnenden-Hertmannsweiler, Germany; Erwin Bauder, Waiblingen, Germany; Edgar Wieland, Birkmannsweiler, Germany; Roland Eissele, and Manfred Hild, both of Schorndorf, Germany, assignors to Ethicon, Inc., and Harro Hofliger Verpackungsmaschinen GmbH, both of Somerville, N.J.

Filed Aug. 31, 1995, Ser. No. 521,831

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—430 **61 Claims**



50. A method of automatically packaging needles having attached sutures in a package tray to form suture packages, said package tray having a suture channel nominally closed by a plurality of resilient fingers, including the steps of advancing in indexed motion a plurality of package trays to a plurality of spaced workstations stationarily arranged along a path of the advancing package trays; said method comprising the steps of:

(a) mounting an empty package tray on a rotary support at a first said workstation;

(b) inserting a needle and attached suture into said tray at a second workstation such that said needle is fastened in said tray in a predetermined position and said attached suture includes a free end depending outwardly from said package tray;

(c) gathering said free end of said suture and imparting axial tension thereto;

(d) opening said nominally closed suture channel by simultaneously displacing all of said resilient fingers with respect to said package tray;

(e) rotating said package tray about an axis extending normal to a plane of said tray at a third workstation to wind said free end of said depending suture into said suture channel;

(f) applying a cover to said package tray at a fourth workstation to form said suture package containing said needle and attached wound suture, said cover forming a latching structure to fasten said cover to said tray;

(g) removing said suture package at a fifth workstation for sterilization and secondary packaging.

5,664,405

APPARATUS FOR PACKAGING COMPACT DISCS INTO RESPECTIVE CASES AND METHOD FOR PACKAGING COMPACT DISCS INTO RESPECTIVE CASES

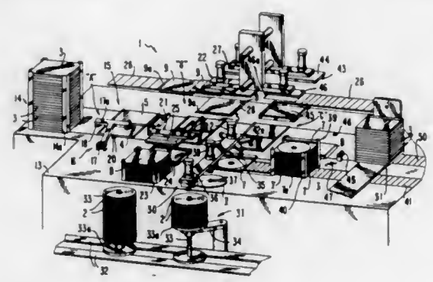
Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Filed Jan. 23, 1996, Ser. No. 589,868

Claims priority, application European Pat. Off., Jan. 26, 1995, 95830022

Int. Cl.[6] B65B *5/04;43/38;7/26*

U.S. Cl. 53—457 **29 Claims**



1. An apparatus for packaging compact discs into respective cases, the cases being of the type having a housing portion on which a lid portion is laterally hinged at a hinging side thereof, the lid portion being movable between a closed condition, wherein the lid portion lies upon the housing portion, and an open condition, wherein the lid portion extends in a coplanar relation with the housing portion, said apparatus comprising:

a bearing framework;

a case feeding unit for arranging the cases in succession on a first feed line provided on said bearing framework;

conveying means for sequentially moving the cases along said first feed line;

lid portion opening means disposed along said first feed line for moving the lid portion of each case moving along said first feed line from its said closed condition to its said open condition;

means for inserting a compact disc within each case provided along said first feed line when said case is in its open condition;

means for closing said lid portion of said case to move said lid portion from its said open condition to its said closed condition; and

wherein at least one of said lid portion opening and closing means comprises means for blowing air against the lid portion in order to move the lid portion between its open and closed conditions.

5,664,406

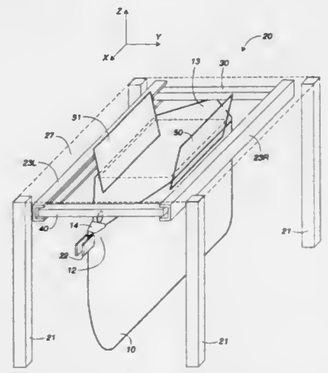
BAG ZIPPER ACTUATOR

Steven Lew Smith, Buford, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Mar. 4, 1996, Ser. No. 610,277

Int. Cl.[6] B65B *7/02;43/26;67/04;67/12*

U.S. Cl. 53—459 **15 Claims**



1. An apparatus for filling a bag with at least one package, said bag having a substantially elongate reclosable mouth having a first mouth end and a second mouth end, said apparatus itself comprising:

an apparatus frame;

means operably associated with said frame for holding said bag open to allow package loading through said bag mouth;

means operably associated with said frame for closing said bag mouth after at least one package is inside said bag; and

bag mouth traversing and closing means operably associated but movable relative to said frame for traversing said mouth of said bag from its first to its second end along a path substantially parallel to said elongate reclosable mouth while said bag is supported by said frame, such that said mouth of said bag is at least partially closed and such that said package is contained within said bag.

5,664,407

PACKAGING MACHINE

Clayton C. Cooper, III, 16 Bittersweet La., Clifton Park, N.Y. 12065; David R. Gordon, 1145 Myron St., Schenectady, N.Y. 12309, and William B. Drobish, 10 Hayes Pl., Amsterdam, N.Y. 12010

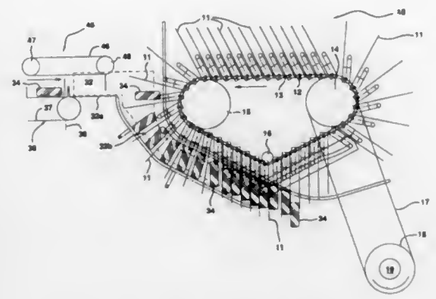
Filed May 14, 1993, Ser. No. 62,342

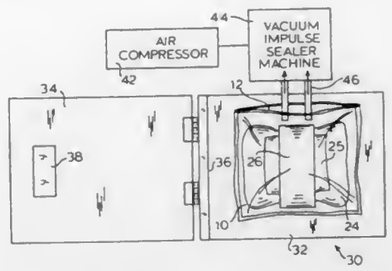
Int. Cl.[6] B65B *23/12;35/30*

U.S. Cl. 53—542 **10 Claims**

1. A machine for rapidly packaging articles having generally parallel flat sides and of generally uniform length, width and thickness comprising:

a) a plurality of vane-like members, means interconnecting each said vane-like member and means for moving said plurality of vane-like members in an endless curvi-linear path to move





successive ones of said members through a loading station and through an unloading and packing station;

b) each vane-like member defining a flat loading surface thereupon and means for loading an article thereupon during passage of each member through said loading station;

c) means for securing each said article upon said loading surface and for moving each said vane-like members and articles toward and through said unloading and packing station;

d) means for releasing each said article sequentially from said vane-like members as successive said members pass through said unloading and packing station;

e) said securing means also including means to effect movement of each said article from between adjacent vane-like members to discharge said article therefrom during movement of successive vane-like members through said unloading and packing station;

f) prior to loading each individual article upon the loading surface of a vane-like member, the means for loading includes means for rotating each said vane-like member relative to the next succeeding member to increase the relative distance between said members at their respective distal ends in order to facilitate the placement of an article upon said member;

g) each vane-like member defining parallel elongated slots extending from the distal end thereof generally adjacent to the proximate end thereof for a distance greater than the length of an article, said slots being spaced apart less than the width of an article, the means for loading each said article causing said article to lie upon said member to have said slots underlie said article widthwise and to extend beyond said article lengthwise; and

h) means for securing each said article including two parallel pairs of stationary elongated members mounted and located to pass through said slots, one pair thereof being located relatively closer to the proximate end of each said vane-like member and the other being located relatively closer to the distal end of said member.

5,664,408

APPARATUS FOR VACUUM PACKAGING A SOFT PRODUCT

Michael P. Chesterfield, and Jean M. Chesterfield, both of P.O. Box 4563, Emerald Isle, N.C. 28594

Filed Oct. 20, 1995, Ser. No. 546,468

Int. Cl.[6] B65B *7/06;31/06;51/10*

U.S. Cl. 53—512 **3 Claims**

1. An apparatus for vacuum-packing an uncompressed soft product of a given height in a barrier bag, comprising:

(a) a vacuum packaging and sealing machine having at least one vacuum inlet extending outwardly therefrom;

(b) an air compressor operatively connected to said vacuum packaging and sealing machine;

(c) a packing frame comprising a horizontally oriented base panel, a side wall extending vertically from the base panel to a height which is less than the height of the soft product prior to being vacuum packed, and a top panel hingedly attached to the side wall and closeable over the base panel;

(d) said packing frame residing adjacent said vacuum packaging and sealing machine such that when said uncompressed soft product in said barrier bag is placed on said base panel said side wall provides the sole side closure around said barrier bag and said at least one vacuum inlet is engageable with an open end of said barrier bag; and

(e) a flexible air flow panel adapted for being wrapped around said uncompressed product, and with said product inserted into the barrier bag in a manner enabling air within the barrier bag to flow through said air flow panel and to be conducted to said at least one vacuum inlet.

5,664,409

METHOD OF CONTROLLING THE TENSION OF AN ADVANCING YARN

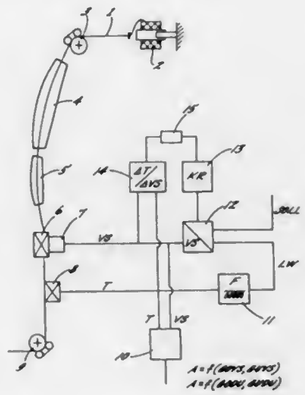
Hellmut Lorenz, Remscheid, Germany, assignor to Barmag AG, Remscheid, Germany

Filed Jun. 27, 1996, Ser. No. 670,554

Claims priority, application Germany, Jun. 30, 1995, 195 23 995.4

Int. Cl.[6] D01H *7/92;* **D02G** *1/06*

U.S. Cl. 57—264 **14 Claims**



1. A yarn false twist texturizing process comprising the steps of advancing a yarn through a false twist unit which acts to impart a frictional force to the yarn which includes a twisting component and a tension component,

monitoring the tension of the advancing yarn and generating a signal (T) representative of the monitored tension,

processing the generated tension signal through a time filter to produce a time averaged signal (LW),

comparing the time averaged signal (LW) with a set point signal (Soll) and producing an adjusting signal (VS) representing the difference therebetween,

correcting the adjusting signal as a function of a disturbance variable (Z) acting upon the false twist unit, and

controlling the operation of the false twist unit so that the frictional force imparted to the advancing yarn varies as a function of the value of the corrected adjusting signal.

5,664,410

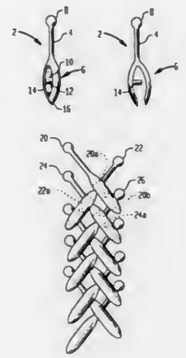
CHAIN LINK, CHAIN MADE THEREFROM AND METHOD OF CHAIN MANUFACTURE

Andrew Nydick, 22 Goodhart Dr., Livingston, N.J. 07039

Filed May 30, 1996, Ser. No. 656,883

Int. Cl.[6] F16G *13/00*

U.S. Cl. 59—80 **20 Claims**



1. A link for forming a chain using a plurality of similarly configured links, said link comprising:

a shaft portion having first and second opposing ends defining therebetween a longitudinal axis for said link;

an enlargement portion connected to said shaft portion at said first end, said enlargement portion having a width which is greater than a width of said shaft portion at said first end; and

a mandorla shaped portion having first and second apertures therein, said mandorla shaped portion being connected to said shaft portion at said second end, and the apertures being shaped so as to prevent an enlargement portion of another one of said similarly configured links from passing therethrough.

5,664,411

S CYCLE ELECTRIC POWER SYSTEM

Yulin Shao

Division of Ser. No. 420,405, Apr. 12, 1995, Pat. No. 5,572,861. This application Aug. 28, 1996, Ser. No. 704,123

Int. Cl.[6] F02C *3/28*

U.S. Cl. 60—39.02 **2 Claims**

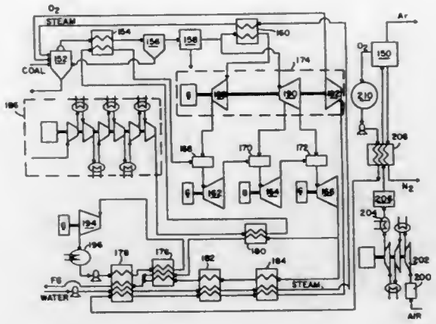
1. A method for generating power which comprises:

a) introducing steam, oxygen and coal into a reaction chamber;

b) forming a fuel gas in the reaction chamber;

c) flowing the fuel gas through a first heat exchanger;

d) heating air flowing through the first heat exchanger;



e) flowing a first portion of fuel gas through a second heat exchanger to a first compressor;

f) flowing a second portion of fuel gas to a first turbine to produce power;

g) flowing compressed fuel gas from the first compressor to a first combustor, flowing the air from the first heat exchanger to the first combustor;

h) flowing combustion gases from the first combustor to a first gas turbine to drive the turbine to produce power;

i) flowing the expanded fuel gas from the first turbine to a second combustor, and flowing the expanded gases from the first gas turbine to the second combustor;

j) flowing the combusted gases from the second combustor to a second gas turbine to produce power;

k) flowing water through a third heat exchanger to form steam, the steam flowing through the second heat exchanger and then to the reaction chamber;

l) flowing condensate comprising the exhaust from a steam turbine through said third heat exchanger to convert the water flowing therethrough to the steam, the steam turbine producing power;

m) flowing the air from a source through an air separation unit to produce the oxygen which formed oxygen flows through the third heat exchanger and into the second turbine the oxygen expanding through a second turbine, the expanded oxygen flowing into the reaction chamber.

5,664,412

VARIABLE GEOMETRY AIR-FUEL INJECTOR

Dennis L. Overton, Bristol, Great Britain, assignor to Rolls-Royce plc, London, United Kingdom

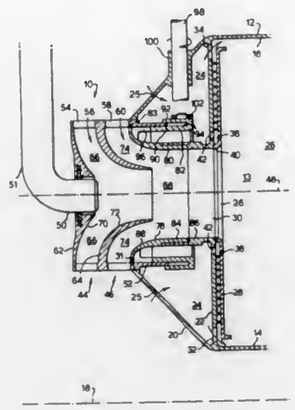
Filed Mar. 22, 1996, Ser. No. 621,209

Claims priority, application United Kingdom, Mar. 25, 1995, 9506116

Int. Cl.[6] F23R *3/26*

U.S. Cl. 60—39.23 **8 Claims**

1. A combustion chamber head assembly with a variable geometry fuel injector for a gas turbine engine, comprising a combustor head defining an enclosed combustor head volume separated on its downstream side from a combustion region by an endwall which is



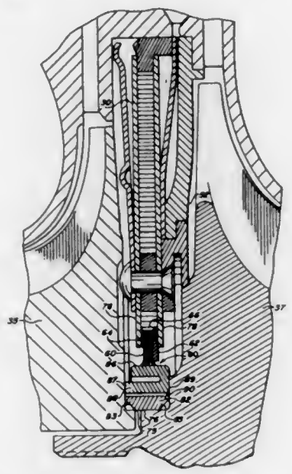
pierced by a multiplicity of apertures including at least one fuel-air mixture aperture and a plurality of air-only apertures, at least one fuel injector assembly defining a fuel-air mixing region opening through the fuel-air mixture aperture into the combustion region, the at least one fuel injector assembly comprising a plurality of concentric rings which define a first inner annular air passage and a second outer annular air passage, a fuel nozzle located axially with respect to the annular air passages and which, in operation, sprays fuel into the fuel-air mixing region, and an airflow controller including a movable diverter member for selectively closing the second outer annular air passage and selectively opening a third passage such that air is either admitted into the fuel-air mixing region or is redirected to the third passage leading to the plurality of air-only apertures.

5,664,413

DUAL PILOT RING FOR A GAS TURBINE ENGINE

Harry L. Kington, Scottsdale, and Walter L. Meacham, Phoenix, both of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 29, 1995, Ser. No. 412,641
Int. Cl.[6] F02C *7/28*
U.S. Cl. 60—39.32 **3 Claims**



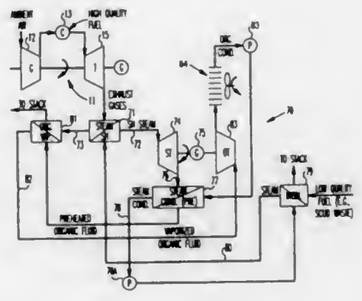
1. A gas turbine engine comprising:
an axially extending shaft journaled to a housing;
a compressor rotor and turbine rotor mounted to said shaft in back-to-back relation and axially spaced apart to define an annular groove therebetween, each of said rotors having a radially facing pilot surface which together define the radially inner end of said groove;
an annular seal extending from said housing into said groove;
a first annular ring mounted to said piloting surfaces; and
a second annular ring circumscribing said first annular ring and radially spaced apart to define a gap therebetween, said second ring having a first axial facing surface in contact with said compressor rotor, and a second axial facing surface in contact with said turbine rotor.

5,664,414

METHOD OF AND APPARATUS FOR GENERATING POWER

Lucien Y. Bronicki, Yavne; Benjamin Doron, Jerusalem, and Joseph Sinai, Ramat Gan, all of Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Filed Aug. 31, 1995, Ser. No. 521,812
Int. Cl.[6] F02C *6/18*
U.S. Cl. 60—39.182 **10 Claims**



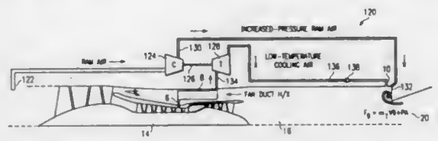
1. Apparatus for generating power comprising:
a) a gas turbine unit for generating power and producing exhaust gases;
b) a steam superheater responsive to said exhaust gases for producing superheating steam and cooled exhaust gases;
c) a steam turbine responsive to said superheated steam for generating power and expanded steam;
d) a steam condenser containing an organic fluid for condensing said steam into steam condensate and preheating said organic fluid;
e) a combustor for combusting relatively low grade fuel, said combustor receiving said steam condensate and producing steam that is supplied to said steam superheater;
f) an organic fluid vaporizer for receiving said cooled exhaust gases an producing vaporized organic fluid;
g) an organic vapor turbine responsive to said vaporized organic fluid for generating power and producing expanded organic fluid;
h) an organic fluid condenser for condensing said expanded organic fluid and producing organic fluid condensate;
i) means for returning said organic fluid condensate to said steam condenser for preheating said organic fluid condensate; and
j) means for returning organic fluid preheated in said steam condenser to said organic fluid vaporizer.

5,664,415

AFTER-BURNING TURBO-FAN ENGINE WITH A FIXED GEOMETRY EXHAUST NOZZLE HAVING A VARIABLE FLOW COEFFICIENT

Douglas A. Terrier, Fort Worth, Tex., assignor to Lockheed Fort Worth Company, Fort Worth, Tex.

Filed Jun. 1, 1994, Ser. No. 252,191
Int. Cl.[6] F02K *1/28*
U.S. Cl. 60—204 **18 Claims**



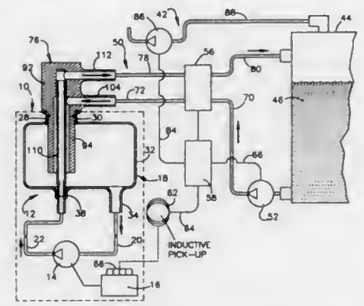
1. A turbo-fan engine after-burning system for controlling the flow of after-burned exhaust gas from a turbo-fan engine, comprising:
an after-burning chamber for receiving exhaust gas and injecting a controllable amount of fuel into said turbo-fan exhaust to cause after burning of said turbo-fan exhaust to produce after-burned exhaust;
a nozzle associated with said after-burning chamber for receiving said after-burned exhaust, said nozzle having a fixed geometry including a throat area;
a nozzle coefficient control comprising a compressed gas flow mechanism for controlling the approach of said after-burned exhaust through said nozzle to change the nozzle coefficient of said nozzle by virtue of the presence of said compressed gas by effectively varying said nozzle throat area without mechanical changes to said nozzle geometry and, thereby, control the volumetric flow rate of said after-burned exhaust through said nozzle to improve engine after-burn thrust efficiency.

5,664,416

FILLING A VEHICLE POWER STEERING SYSTEM

Henry C. Sangret, St. Clair Shores, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Feb. 28, 1996, Ser. No. 608,408
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—327 **9 Claims**



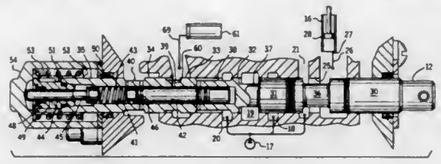
1. A method of filling a vehicle power steering system with fluid, said method comprising the steps of:
conducting power steering fluid to a reservoir on a vehicle; and
operating a power steering pump on the vehicle to induce a flow of power steering fluid from the reservoir to the power steering pump and to induce a flow of power steering fluid from the power steering pump through the reservoir to a location spaced from the vehicle while maintaining the flow of power steering fluid from the power steering pump separate from power steering fluid in the reservoir.

5,664,417

CONTROL VALVE FOR PRIME MOVER SPEED CONTROL IN HYDRAULIC SYSTEMS

Raud A. Wilke, Dousman; David A. Dornbach, and Leif Pedersen, both of Waukesha, all of Wis., assignors to HUSCO International, Inc., Waukesha, Wis.

Filed Mar. 20, 1996, Ser. No. 618,733
Int. Cl.[6] F15B *13/04*
U.S. Cl. 60—327 **15 Claims**



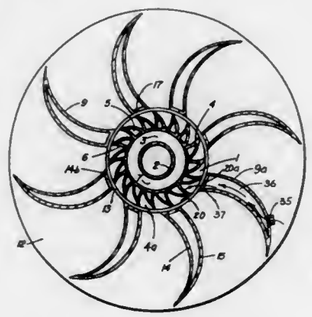
7. A hydraulic valve assembly (**10**) comprising:
a housing (**11**) forming a first flow path (**21**, **25**) for communicating hydraulic fluid from a hydraulic pump (**17**) to an operational hydraulic cylinder (**16**);
a spool (**12**) forming a spool bore (**41**) and an output signal port (**60**) from which a hydraulic pressure signal is transmitted to control the speed of a prime mover that drives the hydraulic pump (**17**), the spool (**12**) and the housing (**11**) forming a second flow path (**20**, **38**, **55**, **56**) in communication with said output signal port (**60**);
a reciprocating valve member (**42**) disposed in said spool bore (**41**), said reciprocating valve member (**42**) providing at least a portion (**47**) that is in fluid communication with said second flow path (**20**, **38**, **55**, **56**);
wherein said portion (**47**) of said reciprocating valve member (**42**) is responsive to the hydraulic pressure of said fluid received through said second flow path (**20**, **38**, **55**, **56**) and the position of the spool (**12**) to generate a signal from said output signal port (**60**) to control the speed of said prime mover.

5,664,418

WHIRL-WIND VERTICAL AXIS WIND AND WATER TURBINE

Victor Walters, P.O. Box 250, Sechelt, British Columbia, Canada, V0N 2A0

Continuation-in-part of Ser. No. 156,701, Nov. 24, 1993, Pat. No. 5,503,530. This application Apr. 1, 1996, Ser. No. 625,103
Int. Cl.[6] F03B *13/18;13/24;13/26;* **F03D** *3/04*
U.S. Cl. 60—398 **4 Claims**



1. A vertical axis turbine having a turbine rotor with a vertical axis and an outer circumferential rotor boundary and impellers with vertical wind-receiving impeller surfaces, said vertical impeller surfaces extending from the outer circumferential rotor boundary inwardly to form part of an impeller cavity which prevents air from entering centrally within the turbine, said turbine comprising:

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(1) a surrounding circumferential series of vertically deployed deflector vanes mounted between upper and lower end plates that support the turbine rotor,

(2) each of said vanes being tubular in shape, widening from an edge at its outer circumferential boundary proceeding towards the turbine axis to a vertical surface constituting a base located at the inner boundary of each vane, said base being positioned next to the outer circumferential path of the turbine,

whereby air arriving from all directions is concentrated and directed against the turbine impeller surfaces and is contained momentarily in the impeller cavity by said base surfaces in a substantially sealed state as the impellers pass by the base of each of said vanes and wherein one of said vanes comprises:

(a) a closed hollow interior;

(b) an air inlet; and

(c) an air outlet positioned at the base of said hollow vane to direct air towards said impeller surfaces,

whereby when a supply of pressurized air is introduced through the air inlet said air is directed through said air outlet against said impellers as the turbine rotates.

5,664,419

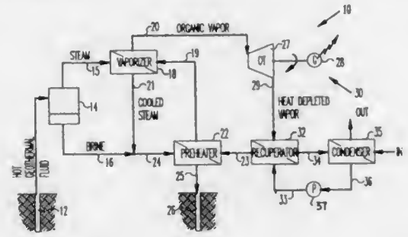
METHOD OF AND APPARATUS FOR PRODUCING POWER USING GEOTHERMAL FLUID

Uri Kaplan, Moshav Galia, Israel, assignor to Ormat Industries Ltd, Yavne, Israel

Continuation of Ser. No. 966,465, Oct. 26, 1992, abandoned. This application May 24, 1994, Ser. No. 248,550

Int. Cl.[6] F03G *4/00*

U.S. Cl. 60—641.2 **3 Claims**



1. Apparatus for producing power using geothermal fluid comprising:

a) a separator for separating said geothermal fluid into geothermal steam and geothermal brine;

b) a vaporizer containing an organic fluid and responsive to said geothermal steam for vaporizing said organic fluid at constant temperature and pressure thereby producing vaporized organic fluid and geothermal steam condensate;

c) an organic vapor turbine responsive to said vaporized organic fluid for expanding the same and producing electricity, and from which organic vapor exits;

d) a condenser responsive to said organic vapor exiting the turbine for condensing the same into organic fluid condensate;

e) means for supplying said organic fluid condensate to said vaporizer;

f) heating means for heating said organic fluid condensate, before it reaches said vaporizer, with heat contained in said organic vapor exiting the turbine and in said geothermal steam condensate, said heating means including a preheater for transferring heat from said geothermal brine and said geothermal steam condensate to said organic fluid condensate thereby heating the same to about said vaporization temperature, and a recuperator for receiving said organic fluid condensate from said condenser, and for receiving said organic vapor that exits from said turbine thereby transferring heat from the vapor that exits the turbine to said organic fluid condensate before said organic fluid condensate reaches said preheater; and

g) said heating means being constructed and arranged so that substantially only latent heat in said geothermal steam is transferred to the organic fluid in the vaporizer as heat of vaporization of the organic fluid, and substantially only sensible heat in said geothermal brine and said geothermal steam condensate is transferred to the organic fluid condensate in said preheater in a liquid-to-liquid heat transfer.

5,664,420

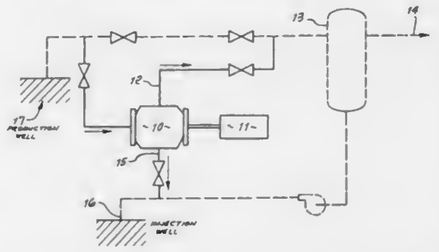
MULTISTAGE TWO-PHASE TURBINE

Lance G. Hays, La Crescenta, Calif., assignor to Biphase Energy Company, Placentia, Calif.

Continuation-in-part of Ser. No. 378,733, Jan. 26, 1995, Pat. No. 5,525,034, which is a continuation-in-part of Ser. No. 878,605, May 5, 1992, Pat. No. 5,385,446. This application Jun. 7, 1995, Ser. No. 472,657

Int. Cl.[6] F03G *7/00*

U.S. Cl. 60—641.2 **17 Claims**



1. In a multistage two-phase turbine having one or more stages to receive fluid, each stage having an inlet and-outlet, the combination comprising

a) nozzles at the inlet to each stage to accelerate said fluid that consists of a mixture of gas and liquid, to form two-phase jets,

b) a rotating separator structure to receive and separate the two-phase jets into gas streams and liquid streams in each stage,

c) the turbine having a rotating output shaft, and there being means to convert the kinetic energy of the liquid streams into shaft power,

d) means to remove the separated liquid from at least one stage and transfer it to nozzles at the next stage,

e) means to remove the separated liquid from the last stage and transfer it to primary outlet structure,

f) means to remove the separated gas from at least one stage and transfer it to a secondary outlet structure.

5,664,421

HEAT PUMP TYPE AIR CONDITIONER USING CIRCULATING FLUID BRANCHING PASSAGE

Junji Matsue, Kasagake-machi; Ryouichi Katouno, Ouramachi, and Masahisa Ohtake, Oizumi-machi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 4, 1996, Ser. No. 628,123

Claims priority, application Japan, Apr. 12, 1995, 7-086951; Apr. 12, 1995, 7-086953; Apr. 12, 1995, 7-086954

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **20 Claims**

1. A heat pump type air conditioner including:

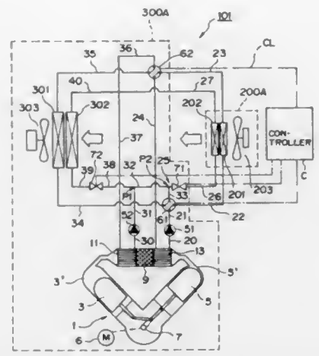
a heat gas engine having a cooler and a radiator;

a first outdoor heat exchanger provided in an outdoor unit;

a first indoor heat exchanger provided in an indoor unit;

at least one additional heat exchanger provided in at least one of said outdoor unit and said indoor unit;

a first fluid passage through which fluid cooled through heat-exchange operation of said cooler is guided to a selected one



of said first indoor heat exchanger and said first outdoor heat exchanger, and fluid heated through heat-exchange operation of said radiator is guided to the other of said first indoor heat exchanger and said first outdoor heat exchanger in room-cooling or room-heating operation;

a second fluid passage through which a part of the fluid heated by said radiator is guided to the at least one heat exchanger; and

fluid branching means for selectively allowing the part of the fluid heated by said radiator to flow into said second fluid passage.

5,664,422

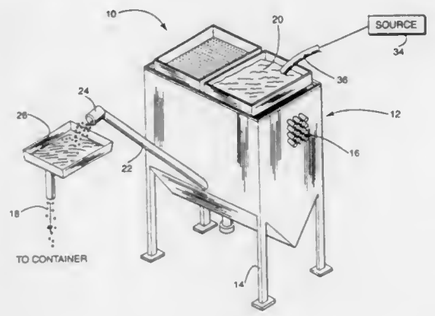
DROPPER ASSEMBLY FOR LIQUID FEED AND METHOD OF FEEDING LIQUID COMPOSITION TO A FREEZING CHAMBER

Curt D. Jones, 3 Meadow Links Dr., Paducala, Ky. 42001

Continuation of Ser. No. 412,727, Mar. 29, 1995, abandoned. This application Oct. 9, 1996, Ser. No. 731,058

Int. Cl.[6] F25D *17/02*

U.S. Cl. 62—64 **21 Claims**



1. A dropper assembly for feeding liquid composition to a freezing chamber, comprising:

a tray overlying a freezing chamber and disposed to receive liquid composition from a delivery source, said tray having a bottom wall with a plurality of orifices through which the received liquid composition is directed; and

a plurality of uniformly tapered feed elements associated with said tray and disposed for regulated discharge of said liquid composition from said tray and for feeding said liquid composition by gravity only to said freezing chamber in uniformly sized droplets, each of said plurality of feed elements being aligned in fluid communication with one of said plurality of orifices in said bottom wall of said tray,

whereby uniformly sized droplets of liquid composition are delivered by gravity to said underlying freezing chamber.

5,664,423

ATTACHMENT FOR VEHICLE AIR-CONDITIONING APPARATUS

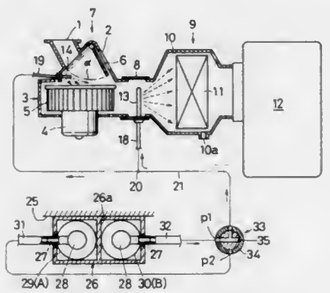
Yasumasa Akazawa, 2-8-14, Higashi-shinmachi, Matsubara, Osaka, Japan

Filed Jun. 7, 1996, Ser. No. 660,274

Claims priority, application Japan, Feb. 27, 1996, 8-002065 U

Int. Cl.[6] F24F *3/16*

U.S. Cl. 62—78 **11 Claims**



1. In a vehicle air conditioning system comprising an air intake means, a blower means disposed adjacent to said air intake means, and a heat exchanger means disposed adjacent to said blower means, the improvement comprising:

nozzle means disposed adjacent to said air intake means and upstream of said blower means and said heat exchanger means;

means for holding at least one liquid; and

means for selectively connecting said means for holding to said nozzle means so that said liquid is exposed as a spray to said heat exchanger means.

5,664,424

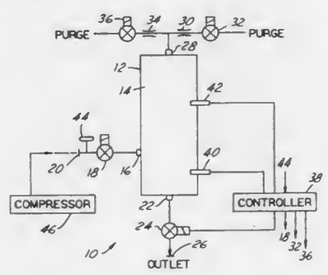
REFRIGERANT HANDLING SYSTEM AND METHOD WITH AIR PURGE AND MULTIPLE REFRIGERANT CAPABILITIES

Daniel L. Olds, Bryan, Ohio, assignor to SPX Corporation, Muskegon, Mich.

Filed Jul. 26, 1996, Ser. No. 686,712

Int. Cl.[6] F25B *43/04*

U.S. Cl. 62—85 **15 Claims**



1. A method of purging non-condensibles from refrigerant that comprises the steps of:

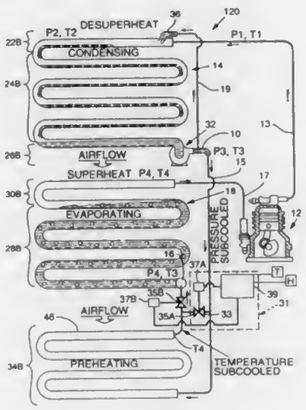
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(a) directing refrigerant in liquid phase into a closed chamber such that the refrigerant collects at a lower portion of said chamber and non-condensibles are trapped in an upper position of said chamber over the refrigerant,
(b) determining rate of increase in level of refrigerant in said chamber in said step (a), and
(c) purging non-condensibles from the upper portion of said chamber when said rate of increase is less than a preselected threshold.

5,664,425
PROCESS FOR DEHUMIDIFYING AIR IN AN AIR-CONDITIONED ENVIRONMENT WITH CLIMATE CONTROL SYSTEM

Robert E. Hyde, 18448 S.E. Pine St., Portland, Oreg. 97233-4859

Division of Ser. No. 276,705, Jul. 18, 1994, Pat. No. 5,509,272, which is a continuation-in-part of Ser. No. 136,112, Oct. 12, 1993, Pat. No. 5,329,782, which is a continuation-in-part of Ser. No. 948,300, Sep. 21, 1992, Pat. No. 5,291,744, which is a division of Ser. No. 666,251, Mar. 8, 1991, Pat. No. 5,150,580.
This application Feb. 6, 1996, Ser. No. 596,046
Int. Cl.[6] F25B *9/00;41/00*
U.S. Cl. 62—90 **10 Claims**

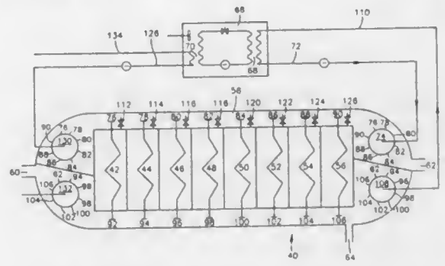


1. A method for improving operation of an air conditioning system for cooling and decreasing relative humidity of a flow of air which includes a compressor, a condenser, an expansion valve, and an evaporator connected in series by conduit for circulating refrigerant in a closed loop therethrough, the evaporator positioned to receive a flow of air, the method comprising:
transmitting liquid refrigerant through the expansion valve into the evaporator;
vaporizing at least a portion of the liquid refrigerant;
passing a flow of air over a surface of the thereby cooling the flow of air;
transmitting vaporized refrigerant from the outlet of the evaporator to the inlet of the compressor;
compressing the vaporized refrigerant to produce superheated compressed vapor refrigerant;
transmitting the superheated compressed vapor refrigerant from an outlet of the compressor to an inlet of the condenser at a first temperature and first pressure;
condensing the compressed vapor refrigerant from the condenser;
discharging liquid refrigerant from the condenser at a second temperature less than the first temperature;
boosting the first pressure of the liquid refrigerant discharged from the condenser by an incremental pressure to a second pressure;
transmitting a first portion of the liquid refrigerant the second to the condensor to provide desuperheating to the superheated compressed vapor refrigerant;
transmitting a second portion of the liquid refrigerant at said second pressure to an inlet of a reheater, the reheater positioned adjacent the evaporator to receive the cooled flow of air from the evaporator;
subcooling the liquid refrigerant in the reheater to a third temperature less than said second temperature and partially reheating the cooled flow of air received by the reheater from the evaporator thereby decreasing the relative humidity of the cooled flow of the air; and
controlling the flow of liquid refrigerant through the reheater so as to control the climate of the flow of air.

5,664,426
REGENERATIVE GAS DEHYDRATOR

Yingzhong Lu, Oak Ridge, Tenn., assignor to PAI, Oak Ridge, Tenn.

Filed Feb. 9, 1996, Ser. No. 599,292
Int. Cl.[6] F25D *17/06*
U.S. Cl. 62—93 **28 Claims**



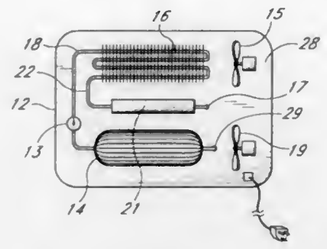
1. A gas dehydrator for removing moisture from a moisture laden gas which comprises:
an elongate conduit having an equivalent hydraulic diameter ranging from about 1/20 to about ½ inch (about 0.1 to about 1.3 centimeters), an entrance open end and an exit open end and a gas contact surface defining a flow path for the gas through the conduit from the entrance open end to the exit open end; and
means for cooling the gas contact surface to a temperature sufficient to freeze water molecules adjacent the gas contact surface so that ice is deposited on the gas contact surface along the flow path through the conduit.

5,664,427
RAPID SORPTION COOLING OR FREEZING APPLIANCE

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation-in-part of Ser. No. 149,453, Nov. 9, 1993, Pat. No. 5,396,775, and Ser. No. 104,427, Aug. 9, 1993, Pat. No. 5,441,716, which is a continuation-in-part of Ser. No. 931,036, Aug. 14, 1992, Pat. No. 5,328,671, and Ser. No. 975,973, Nov. 13, 1992, Pat. No. 5,298,231, which is a continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned, said Ser. No. 149,453is a division of Ser. No. 794,501, Nov. 19, 1991, Pat. No. 5,271,239, which is a continuation-in-part of Ser. No. 732,652, Jul. 19, 1991, Pat. No. 5,186,020, which is a continuation-in-part of Ser. No. 644,833, Jan. 23, 1991, abandoned. This application Oct. 25, 1994, Ser. No. 328,847
Int. Cl.[6] F25B *15/00;17/08;* **B01D** *53/02*
U.S. Cl. 62—112 **167 Claims**

1. An apparatus capable of providing rapid cooling and/or freezing comprising:



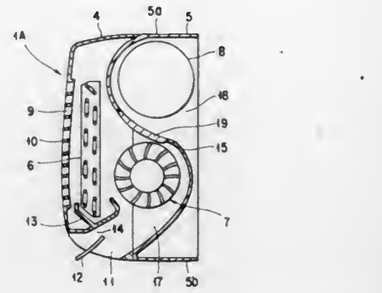
(a) a cabinet or container having a cooling chamber therein;
(b) one or more reactors each containing a complex compound formed by adsorbing a polar gas on a metal salt, and in which said polar gas is alternately adsorbed and desorbed on said complex compound, said metal salt comprising a halide, nitrate, nitrite, oxalate, perchlorate, sulfate or sulfite of an alkali metal, alkaline earth metal, transition metal, zinc, cadmium, tin or aluminum, or sodium borofluoride or a double metal chloride, or mixtures thereof, and wherein said complex compound in said one or more reactors is formed by restricting the volumetric expansion and controlling the density thereof during said adsorption of said polar gas on said metal salt, whereby said complex compound is capable of increased reaction rates in the number of moles of said polar gas adsorbed and/or desorbed per mole of said complex compound per hour at adsorption or desorption times of less than 60 minutes, respectively, as compared to a complex compound formed without restricting the volumetric expansion and controlling the density thereof, and wherein said complex compound in a desorbed condition is capable of adsorbing said polar gas at a rate sufficient to achieve rapid cooling or freezing in about 30 minutes or less, wherein said one or more reactors comprise one or more reaction chambers having a maximum mean mass diffusion path length of less than about 15 mm;
(c) condenser means for condensing said polar gas and evaporator means thermally exposed to said cooling chamber for providing cooling therein, and conduits and one or more valves cooperating therewith for directing said polar gas from said one or more reactors to said condenser means, and from said evaporator means to said one or more reactors; and
(d) heating means cooperating with said one or more reactors for heating said complex compound therein.

5,664,428
INDOOR UNIT FOR AN AIR-CONDITIONING APPARATUS

Akihiko Sugiyama; Katsushi Ishii, both of Fuji; Hidenori Ashikawa, Yokohama; Michika Uesugi; Haruo Ishikawa, both of Fuji; Hitoshi Wakatsuki, Numazu, and Kimithuka Ueda, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1995, Ser. No. 536,775
Claims priority, application Japan, Mar. 7, 1995, 7-047296; Mar. 31, 1995, 7-074880
Int. Cl.[6] F25D *23/12*
U.S. Cl. 62—259.1 **11 Claims**

11. An indoor unit for an air conditioner, comprising: a main body;
a heat exchanger mounted in said main body;
partition means for partitioning an inner space of said main body into an upper space and a lower space;
a fan chamber formed in said upper space within the main body and having an opening at the front of the main body;
a fan mounted in said fan chamber,
a compressor chamber formed in said lower space within the main body and having an opening at a back of the main body; and

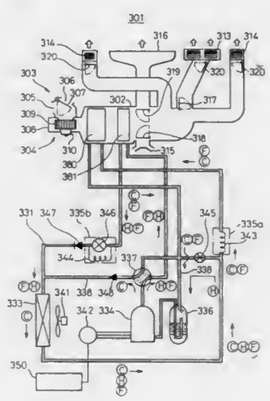


a compressor mounted in said compressor chamber,
wherein said partition means consists of a partition wall having reinforcing ribs mounted in a region facing both said fan chamber and compressor chamber and on a side of the compressor, said reinforcing ribs being constructed and arranged to function as air-regulating fins.

5,664,429
AIR-CONDITIONING DEVICE FOR ELECTRIC AUTOMOBILES

Akira Isaji, Nishio, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 271,464, Jul. 7, 1994, Pat. No. 5,544,493.
This application May 21, 1996, Ser. No. 650,972
Claims priority, application Japan, Jul. 7, 1993, 5-167709; Dec. 27, 1993, 5-351649
Int. Cl.[6] F25B *47/02*
U.S. Cl. 62—278 **4 Claims**



1. An air-conditioning device for electric automobiles powered by a power source of secondary batteries, comprising:
an internal heat exchanger installed in a blast duct that sends air into a passenger compartment;
an external heat exchanger for exchanging heat with external air;
a compressor provided in a coolant circulation circuit that includes said internal heat exchanger and said external heat exchanger, and compresses a coolant; and
an electric motor which is rotated by the power source of said secondary batteries to drive said compressor; wherein,
during a heating operation, the coolant supplied from said compressor is fed to an internal condenser, while during a cooling operation, the coolant which has been condensed by said external heat exchanger and decompressed by a decompression device, is supplied to said internal heat exchanger, so that

said internal heat exchanger works as a source of heat; said air-conditioning device for electric automobiles further comprising:

a frost judging means which judges the formation of frost on said external heat exchanger; and

a first defrosting means which is so constituted as to circulate the coolant in the order of said compressor, said internal condenser installed in the blast duct that sends the air into the passenger compartment, said external heat exchanger, said decompression device, and the internal heat exchanger, and

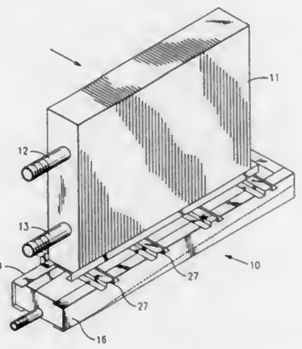
a second defrosting means which is so constituted as to circulate the coolant in the order of said compressor, said external heat exchanger, said decompression device and the internal heat exchanger.

5,664,430

REMOVABLE CONDENSATE PAN

Raul B. Karman, Key Biscayne, Fla., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 9, 1996, Ser. No. 762,646
Int. Cl.[6] F25D *21/14*
U.S. Cl. 62—285 **6 Claims**



1. In an air conditioning system of the type having an evaporator coil which is susceptible to the formation of condensate thereon, an improved condensate collecting apparatus comprising:

a pair of u-shaped channels disposed in parallel relationship with their open ends facing each other;

a plurality of coil support members extending transversely between and supported by said u-shaped channels, said support members providing vertical support for the coil mounted thereabove; and

a condensate pan removably disposed between said u-shaped channels for collecting condensate falling from the coil.

5,664,431

DRAIN PAN

Lendell Martin, Sr., 7037 Brittmore, Houston, Tex. 77041

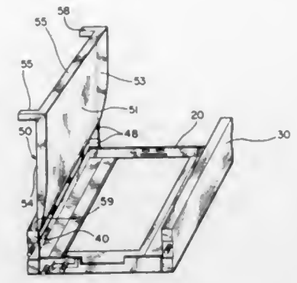
Filed Apr. 22, 1996, Ser. No. 635,602
Int. Cl.[6] F25D *21/14*
U.S. Cl. 62—286 **9 Claims**

1. A drain pan system for receiving water condensed on and flowing from an air conditioning coil, the pan comprising

a lateral pan,

a side pan for receiving water from the coil,

the side pan having a pan member with three raised sides and an open end and configured so that water is flowable out from the open end, the open end sealingly securable to and adjacent the lateral pan so that water flowable from the open end flows to the adjacent lateral pan,



the lateral pan comprising a bottom pan member surrounded by four interconnected sides, pairs of sides spaced apart from each other by the bottom pan member, and the lateral pan securable to a side of the central pan so that the side of the central pan is received within the lateral pan with a sealing friction fit,

the side pan having a lip extending from the open end, the lip receivable in the adjacent lateral pan to facilitate positioning of the side pan with respect to the adjacent lateral pan and securement of the side pan to the adjacent lateral pan, and

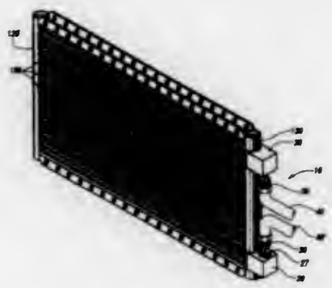
the side pan's open end sealingly connected to the adjacent lateral pan, the lateral pan having drain apparatus for draining water received from the side pan.

5,664,432

VEHICLE AIR CONDITIONING CONDENSER

Stephen W. O'Brien, Burleson, Tex., assignor to Tripac International, Inc., Ft. Worth, Tex.

Continuation-in-part of Ser. No. 371,398, Jan. 11, 1995, Pat. No. 5,509,276, which is a continuation of Ser. No. 36,395, Mar. 24, 1993, Pat. No. 5,456,089. This application Nov. 30, 1995, Ser. No. 565,175
Int. Cl.[6] F25D *23/00*
U.S. Cl. 62—298 **2 Claims**



1. A vehicle air conditioning condenser comprising:

a plurality of cooling tubes;

a first and second tubular members, each connected to one end of the plurality of cooling tubes, said first tubular member having a first opening; and

a connector block affixed to the first tubular member, said connector block including:

a half cylinder indentation having an internal radius of curvature substantially the same as the external radius of curvature of the first tubular member of the condenser, for receiving the first tubular member,

a first opening for receiving a connector fitting located on a refrigerant tube,

a second opening located adjacent to the first opening in the first tubular member, and

an internal passage way connecting the first opening and second opening, said passage way including:

a first internally threaded portion located proximal to the first opening, said threaded portion for receiving the connector fitting,

a second tubular portion for receiving a ridge on the refrigerant tube that passes through the connector fitting, said second portion located in the passage way between the first portion and the second opening in the connector block,

a third tubular portion for receiving and mating with a terminal end of the refrigerant tube, said third portion located in the passage way between the second portion and the second opening in the connector block, and

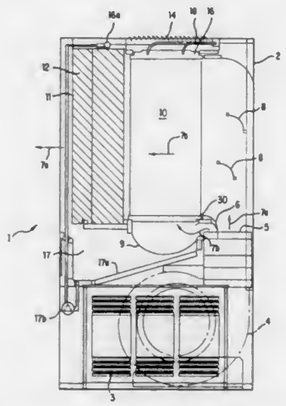
a substantially conical portion located between the second portion and the third portion for receiving a seal, the conical portion having a diameter on the end farthest from the first opening substantially equal to the diameter of the refrigerant tube, and wherein said conical portion, the refrigerant tube and the ridge of the refrigerant tube form a seal chamber to restrict a seal from sliding away from the ridge on the refrigerant tube when compressed in the seal chamber.

5,664,433

INDIRECT AND DIRECT EVAPORATIVE COOLING SYSTEM

Richard C. Bourne, Davis, Calif., and Joel R. Johnson, Peoria, Ariz., assignors to Davis Energy Group, Inc., Davis, Calif.

Filed Dec. 14, 1995, Ser. No. 570,008
Int. Cl.[6] F25D *5/00*
U.S. Cl. 62—314 **32 Claims**



1. An indirect and direct evaporative cooler comprising:

a direct evaporative cooling stage;

an indirect evaporative cooling stage positioned upstream with respect to the direct evaporative cooling stage, the indirect evaporative cooling stage having a substantially horizontally extending primary flow passage and a substantially vertically extending secondary flow passage; and

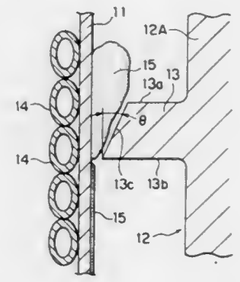
a blower positioned upstream with respect to the indirect evaporative cooling stage, wherein the blower discharges air in a vertical direction, a portion of the air being turned 90° to flow horizontally through the primary flow passage.

5,664,434

AUGER AND AUGER TYPE ICE MAKING MACHINE USING THE AUGER

Hiroyuki Sugie, Tokai, and Noboru Watanabe, Nagoya, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Sep. 1, 1995, Ser. No. 523,117
Claims priority, application Japan, Sep. 8, 1994, 6-214912; Dec. 19, 1994, 6-315268
Int. Cl.[6] F25C *1/14*
U.S. Cl. 62—354 **5 Claims**



1. An assembly of an auger accommodated in a vertically disposed cylindrical refrigerated casing in an auger type ice making machine for scraping an ice layer of thickness t formed around an inner periphery of said refrigerated casing and feeding the scraped ice upwardly, said auger comprising:

a columnar main body;

a spiral blade disposed around an outer periphery of said main body;

said spiral blade including an upper end surface extending radially outwardly from said main body, a lower end surface spaced axially from said upper end surface and extending radially outwardly from said main body, and a tapered portion extending inwardly and upwardly from an extreme radially outer end of said lower end surface to an extreme radially outer end of said upper end surface; and

said tapered portion having a configuration and disposition relative to said inner periphery of said refrigerated casing and to the thickness t of the ice layer formed thereon such that said tapered portion forms means for preventing the ice layer from being forced onto said upper end surface.

5,664,435

SEE-THROUGH REFRIGERATOR/FREEZER

Glenn Bassuk, 3009 Stinson Dr., Fort Wayne, Ind. 46816

Filed Oct. 30, 1995, Ser. No. 550,382
Int. Cl.[6] F25D *25/02*
U.S. Cl. 62—381 **14 Claims**

1. A see-through refrigerator/freezer which comprises:

a) a cabinet having:

i) a plurality of compartments for storing food items therein;

ii) an insulated bottom wall;

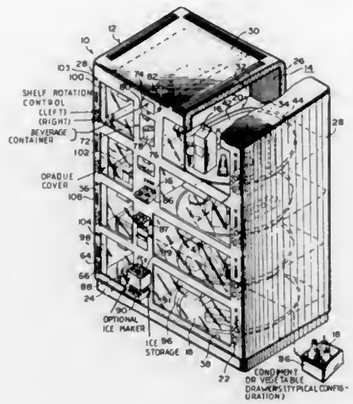
iii) an insulated back wall extending upwardly from said insulated bottom wall;

iv) a pair of insulated side walls, each extending upwardly from said insulated bottom wall;

v) an insulated top wall extending over said insulated back wall and said insulated side walls;

vi) an insulated interior vertical partition extending upwardly between said insulated bottom wall and said insulated top wall;

vii) a plurality of insulated interior horizontal partitions, each spaced apart and extending between said insulated side walls thereby forming each said compartment therein;



viii) an insulated front wall extending upwardly between said insulated bottom wall and said insulated top wall, said insulated front wall having a plurality of openings, each located at each of said compartments, so as to retain one of said transparent doors thereat; and

ix) a evaporator located in said insulated bottom wall and said insulated back wall to keep the food items at a proper temperature to prevent spoilage;

b) a plurality of transparent doors, each located in front of each said compartment, so that a person can look into each said compartment before opening said respective transparent door to retrieve the food items therefrom;

c) a plurality of rotatable shelves, each located within a compartment in said cabinet and each being a circular plate having an annular lip about its perimeter to prevent the food items thereon from falling off said circular plate; and

d) means for rotating each said rotatable shelf by the person, so that the person can better retrieve the desired food item therefrom, said rotating means including a centrally located ball bearing assembly to rotatably support said rotatable shelf on one said insulated interior horizontal partition within one said compartment.

5,664,436

COMPONENT CONFIGURATION FOR ENHANCING DISPENSER SERVICEABILITY

John Thomas Hawkins, Jr., Adkins, and Ernest Matthew Chavana, Jr., San Antonio, both of Tex., assignors to Lancer Corporation

Filed Apr. 29, 1996, Ser. No. 638,836

Int. Cl.[6] B67D *5/62;5/56;* **A47B** *96/00*

U.S. Cl. 62—390 **12 Claims**

1. A component configuration for enhancing the serviceability of a dispenser, said dispenser including a housing having a cooling chamber, said component configuration comprising:

a platform positionable on said housing;

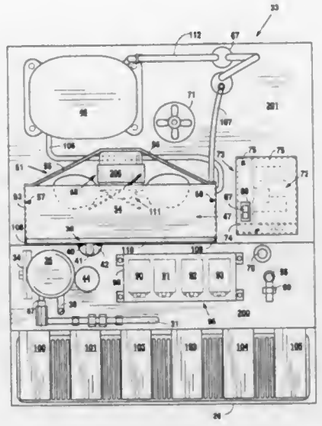
an electronic control; and

a housing for said electronic control mounted on said platform, said housing, comprising:

a frame for supporting said electronic control,

a jacket slidable over said frame wherein the removal of said jacket from said frame exposes said electronic control, and

a door for supporting first circuits of said electronic control, said door pivotally mounted to said frame wherein the pivoting of said door to an open position exposes second circuits of said electronic control.



5,664,437

COOL-AIR DUCT FOR REFRIGERATORS

Seak Haeng Park, and Yong Myoung Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

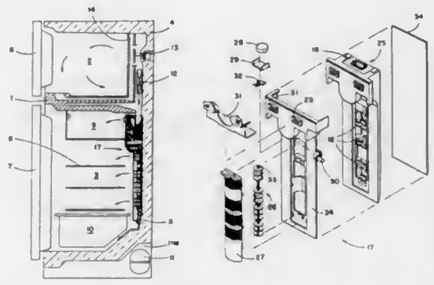
PCT No. PCT/KR95/00063, § 371 Date Nov. 11, 1995, § 102(e) Date Nov. 11, 1995, PCT Pub. No. WO95/33963, PCT Pub. Date Dec. 14, 1995

PCT Filed May 24, 1995, Ser. No. 553,443

Claims priority, application Rep. of Korea, Jun. 2, 1994, 1994-12402; Jul. 19, 1994, 1994-17426; Jul. 19, 1994, 1994-17427; Jul. 20, 1994, 1994-17513; Dec. 10, 1994, 1994-33558

Int. Cl.[6] F25D *17/04*

U.S. Cl. 62—407 **7 Claims**



1. A refrigerator comprising:

a freezing compartment;

a refrigerating compartment;

an evaporator for generating cool air;

a fan for circulating the cool air to the freezing and refrigerating compartments; and

a cool air duct disposed on a rear wall of the refrigerating compartment for guiding cool air to the refrigerating compartment, the cool air duct including

first and second generally vertical air passages spaced apart horizontally for conducting respective portions of the cool air downwardly,

a vertically spaced plurality of discharge openings disposed between the air passages and communicating with the refrigerating compartment, each discharge opening including first and second discharge portions situated horizontally adjacent one another, and

vertically spaced branch ducts connecting each air passage with respective discharge openings, such that the first discharge portion of each discharge opening is connected to the first passage by a first branch duct, and the second discharge portion of each discharge opening is connected to the second passage by a second branch duct, one of the first and second branch ducts intersecting its respective air passage at a level higher than a level at which the other branch duct intersects its respective air passage, the one branch duct intersecting its respective discharge portion at a level higher than a level at which the other branch duct intersects its respective discharge portion.

5,664,438

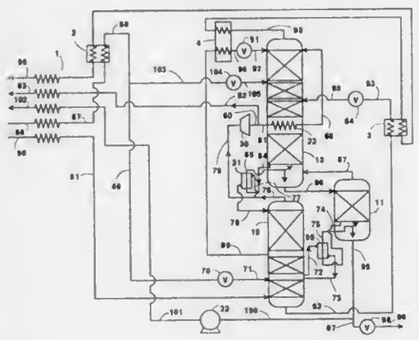
CRYOGENIC SIDE COLUMN RECTIFICATION SYSTEM FOR PRODUCING LOW PURITY OXYGEN AND HIGH PURITY NITROGEN

Dante Patrick Bonaquist, Grand Island, and Susan Marie Sattan, Amherst, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Aug. 13, 1996, Ser. No. 689,793

Int. Cl.[6] F25J *3/04*

U.S. Cl. 62—645 **10 Claims**



1. A method for producing low purity oxygen and high purity nitrogen comprising:

(A) passing feed air into a higher pressure column and separating the feed air within the higher pressure column by cryogenic rectification into nitrogen-rich vapor and oxygen-enriched liquid;

(B) recovering a portion of the nitrogen-rich vapor as product high purity nitrogen, and passing oxygen-enriched liquid into a lower pressure column;

(C) turboexpanding a portion of the nitrogen-rich vapor to produce turboexpanded nitrogen-rich vapor, condensing turboexpanded nitrogen-rich vapor by indirect heat exchange with fluid from above the bottom of the lower pressure column to produce nitrogen-rich liquid, and passing nitrogen-rich liquid into the lower pressure column;

(D) separating the fluids passed into the lower pressure column by cryogenic rectification into nitrogen-richer fluid and oxygen-richer fluid;

(E) passing oxygen-richer fluid into an auxiliary side column and producing low purity oxygen by cryogenic rectification within the auxiliary side column, wherein liquid from the auxiliary side column is vaporized by indirect heat exchange with vapor from within 1 to 10 equilibrium stages above the bottom of the higher pressure column; and

(F) recovering low purity oxygen product from the auxiliary side column.

5,664,439

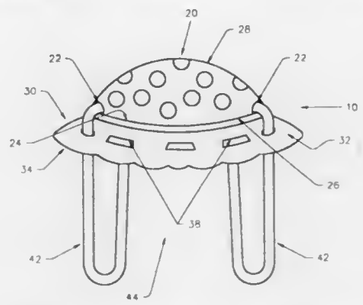
MULTIPURPOSE ORNAMENT AND METHOD OF USE

Karin Heidecker Dickerson, 7714 Willow Vine II 205 Blg 34, Dallas, Tex. 75230

Continuation-in-part of Ser. No. 418,543, Apr. 7, 1995, abandoned. This application Jul. 18, 1996, Ser. No. 677,545

Int. Cl.[6] A44L *13/00;* **A45D** *8/22*

U.S. Cl. 63—33 **10 Claims**



1. A multipurpose ornamental accessory adapted to securely hold hair or clothing of a user, comprising:

a) a center button,

b) a main body having top and bottom surfaces, said top surface having a centrally located concave receiving area, a plurality of apertures extending through the top and bottom surfaces, said apertures being oppositely positioned and located along the perimeter of said centrally located concave receiving area,

c) an attachment means fixedly attached to said button wherein said means, extends through said main body apertures further said means functioning to hold the button securely upon the main body while also securing the said main body in place upon the item desired to be secured and further said means securing the user's hair or clothing in place.

5,664,440

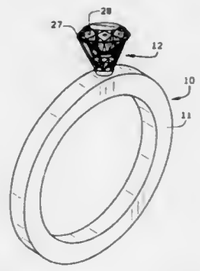
ENHANCED DIAMOND RING

Thomas Bruce Roemer, 1163 First Capitol Dr., St. Charles, Mo. 63301

Filed Jun. 5, 1996, Ser. No. 658,319

Int. Cl.[6] A44C *9/00*

U.S. Cl. 63—15 **11 Claims**



1. A composite ring comprising a circular band capable of encircling the finger of a wearer, a setting positioned on the outer surface of the band and projecting away from the finger of the user, a pair of gem stones secured in the setting, the stones being juxtaposed, the outer most stone being a diamond and the inner most stone being a colored stone, the culet of the diamond being closely adjacent, but spaced from the table of the innermost stone, the color generated by the innermost stone being visible when the diamond is viewed.

5,664,441

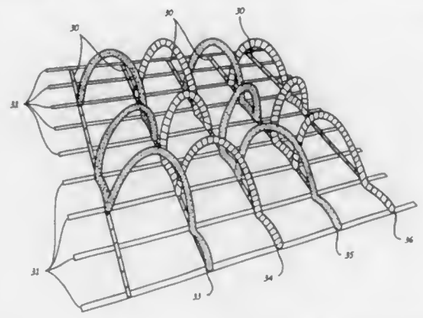
FABRIC TAPE WITH LOOPS FOR USE AS PART OF HOOK-AND-LOOP FASTENER ASSEMBLY

Piero Rusconi Clerici, Milan, Italy, assignor to Aplix, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 427,797, Apr. 26, 1995, Pat. No. 5,520,021, which is a continuation of Ser. No. 229,165, Apr. 18, 1994, abandoned. This application May 15, 1996, Ser. No. 648,427

Int. Cl.[6] D04B *23/08;23/10;* D03D *3/00*

U.S. Cl. 66—193 6 Claims



1. A nonelastic fabric tape having loops for complementary attachment to hooks carried on a member of a hook-and-loop fastener assembly, said fabric tape comprising:

(a) a narrow flat knitted backing having a front face and a rear face and formed of knitted warp and weft yarns forming a nonelastic backing; and

(b) a plurality of loop yarns attached by knitting stitches to said warp yarns at spaced-apart points to form upstanding loops on the front face of said backing, at least some of said loop yarns being canted in a first direction with reference to the front face of the backing and others of said loop yarns being canted in a second direction with reference to the front face of the backing opposite said first direction, said loop yarns being attached to said warp yarns according to the pattern wherein:

(1) each of said loop yarns being attached to a first warp yarn at an intersection of said first warp yarn with a first weft yarn;

(2) said each of said loop yarns being attached to said first warp yarn at an intersection between said first warp yarn and a second weft yarn adjacent said first weft yarn without forming an upstanding loop between said intersections;

(3) said each of said loop yarns being attached to a second warp yarn adjacent said first warp yarn at an intersection between said second warp yarn and a third weft yarn adjacent said second weft yarn, said loop yarn forming the upstanding loop between said second warp yarn and a third weft yarn adjacent said second weft yarn; and

(4) said first and second warp yarns are adjacent to each other.

5,664,442

ELASTIC SELECTOR WITH ASSOCIATED SUB-NEEDLE FOR NEEDLES IN A CIRCULAR KNITTING MACHINE

Jan Andó, Scandicci, Italy, assignor to Matec S.r.l., Scandicci, Italy

Filed Mar. 6, 1996, Ser. No. 611,509

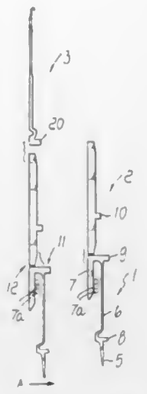
Claims priority, application Italy, Mar. 30, 1995, BO95A0142

Int. Cl.[6] D04B *9/00*

U.S. Cl. 66—220 18 Claims

1. An elastic selector in combination with a sub-needle for needles in a circular knitting machine, said elastic selector comprising:

a tapering extension for being selectively magnetically retained and being arranged at a downward end of the elastic selector;



an elongated elastic portion extending upwardly from said downward end;

a top connected to said elongated elastic portion and defining a profile engaged with a base of said sub-needle; and

a folded-back portion extending downwardly from said top, said elongated elastic portion being elastically deformable with respect to said folded-back portion such as to be movable towards and away from said folded-back portion.

5,664,443

MACHINE FOR PRETREATMENT, DYEING AND/OR AFTERTREATMENT

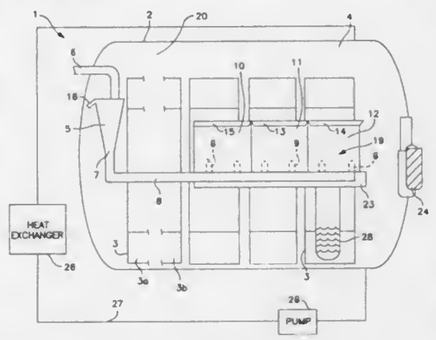
Willi Abbenhaus, Coesfeld, Germany, assignor to Thies GmbH & Co., Coesfeld, Germany

Filed Aug. 23, 1995, Ser. No. 518,462

Claims priority, application Germany, Nov. 11, 1994, 44 40 336.4

Int. Cl.[6] D06B *23/20*

U.S. Cl. 68—18 F 23 Claims



1. A machine for pretreatment, dyeing and/or aftertreatment of textile goods comprising

an autoclave for receiving said textile goods and a treatment liquor,

a circulating system having at least one transport pump and a filter system through which said treatment liquor flows,

said filter system having at least one overflow device fitted within said autoclave located in the stream of flow of said treatment liquor,

said overflow device having an overflow funnel with at least one overflow pipe attached to said funnel, and

said funnel having an adjustable aperture to adjust the volume of the treatment liquor volume to be filtered.

5,664,444

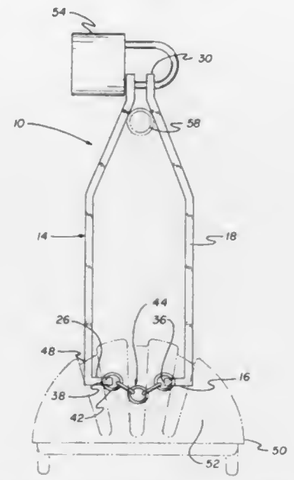
LOCKING DEVICE FOR A HELMET

Kerry R. Schaan, 7328-61 Avenue NW, Calgary Alberta, Canada, T3B 3W8

Filed Mar. 1, 1996, Ser. No. 609,474

Int. Cl.[6] E05B *73/00*

U.S. Cl. 70—14 1 Claim



1. A new and improved locking device for a helmet for securing the helmet to a bicycle comprising in combination:

a pair of L-shaped bar portions, each bar portion having a generally rigid first flat bar being bent to form an elongated second flat bar integral therewith, each first flat bar having a length of about 1.5 centimeters and a width of about 2.5 centimeters, each second flat bar being extended to having a first bend and a second bend opposite the first flat bar, the first bend of each second flat bar being angled inwardly about 60 degrees, the second bend of each second flat bar being angled outwardly about 60 degrees each second flat bar having a length of about 15 centimeters with a width equal to the width of the first flat bar;

each second flat bar extending from a top surface of the first flat bar and integral thereto, each second flat bar extending outwardly from the first flat bar in a plane perpendicular to the first flat bar, each second flat bar having a free end near the second bend, each free end of each second flat bar having a second opening therethrough, the second opening having a diameter of about 8 millimeters;

each first flat bar having a free end, the free end of each first flat bar having a first opening therethrough, each first opening having a diameter of about 15 millimeters, each first opening receiving therein a link of a short link chain, each short link being formed of metal for strength, each link is positioned within each first opening and is welded closed for retention within each first flat bar respective first opening, each link being permanently coupled within the first free end of each first flat bar the short link chain permanently coupling together each first flat bar of the pair of L-shaped bar portions; and

a helmet having a plurality of ventilation holes being disposed through a shell of the helmet, each free end of the second flat bar being positionable through one of the plurality of ventilation holes of a helmet, each second opening of each free end of each second flat bar being capable of receiving a pad lock when each second flat bar having been passed through one of the ventilation holes of the helmet, the short link chain giving the L-shaped bar portions some flexibility when the free ends of each are pulled together for coupling by the pad lock, whereby the helmet is capable of being secured to the bicycle frame when the pair of L-shaped bar portions being positioned through a respective hole of the helmet and lockingly secured around the bicycle frame.

5,664,445

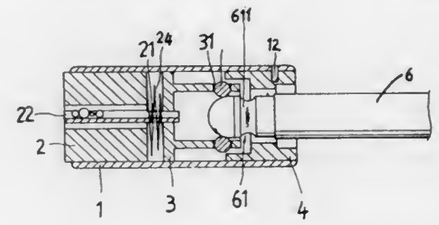
PRY-PROOF LOCK

Chin-Shu Chang, Changhua, Taiwan, assignor to Handyway Co., Ltd., Chang-hua, Taiwan

Filed Aug. 29, 1996, Ser. No. 705,048

Int. Cl.[6] E05B *67/36*

U.S. Cl. 70—34 4 Claims



1. A lock comprising:

a tubular sleeve having a number of through holes disposed thereon for receiving corresponding locking pins;

a lock body first housed in said tubular sleeve having a key hole disposed at one end and a protruded block at the other end with a spring engaged with said protruded block;

a rotary unit disposed next to said lock body having a hole at one end for receiving said protruded block of said lock body and a pair of oppositely disposed holes housing a pair of retaining balls;

a retaining unit disposed next to said rotary unit with said rotary unit partially engaged therewith having a front skirt on which a pair of oppositely disposed cuts are defined and a support plate having a through hole defined thereon;

a latch rod having a latch head disposed at one end on which a peripheral groove is defined for receiving said retaining balls upon being led into said lock via said through hole of said retaining unit and further into said rotary unit;

said retaining balls housed in said holes on said rotary unit being restrained by said front skirt of said retaining unit and only being freed to move up and down as said rotary unit is rotated to such a position that said cuts come into alignment with said retaining balls or as said rotary unit is pushed against a bias of said spring toward said lock body, causing said rotary unit as well as said retaining balls to disengage from the restraint of the front skirt of said retaining unit;

whereby said latch rod can be locked in place by said retaining balls and be unlocked as said rotary unit is rotated to make said retaining balls come into alignment with said cuts defined on said front skirt of said retaining unit.

5,664,446

COMBINATION LOCK WITH NONNUMERICAL INDICIA

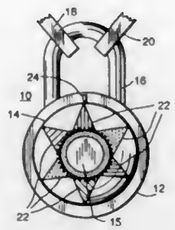
John H. Kusmiss, 11160 Langmuir Ave., Sunland, Calif. 91040-2150

Continuation-in-part of Ser. No. 157,919, Nov. 24, 1993, Pat. No. 5,522,243, which is a continuation-in-part of Ser. No. 913,817, Jul. 16, 1992, abandoned. This application Feb. 26, 1996, Ser. No. 605,523

Int. Cl.[6] E05B *17/00*

U.S. Cl. 70—330 4 Claims

1. A combination lock having no numerical indicia anywhere thereon, and said lock having a single rotatable inner portion inside an outer housing, including a plurality of nonnumerical combination indicia disposed in a plurality of locations on said lock, wherein the sequential positioning of said inner portion with



respect to said outer housing in accordance with a predetermined sequence of relative positions of said inner portion and said outer housing determined by said combination indicia serves to unlock said lock, wherein said inner portion includes a circular dial with a central knob on a face of said lock and said nonnumerical indicia comprise a plurality of differently colored adjacent segments extending radially outward from said central knob, said segments terminating in a plurality of points equidistantly spaced on an outer periphery of said circular dial.

5,664,447

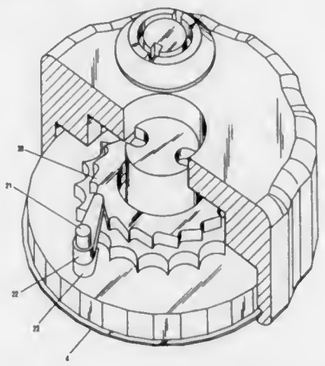
VALVE LOCKOUT

Rocky E. Neeley, 57 Parkside Rd., Rio Rancho, N. Mex. 87124

Filed Oct. 3, 1994, Ser. No. 317,127

Int. Cl.[6] F16K *35/10*

U.S. Cl. 70—175 **10 Claims**



1. A lockout device for a valve having a stem comprising:

a generally cylindrical handle body having a cylindrical opening at its lower end of a first diameter for receiving the valve stem;

a drive gear having a plurality of teeth, adapted to be mounted on the valve stem for rotation therewith;

bearing means adapted to be mounted within said cylindrical opening and concentrically and rotatably supporting said drive gear;

cylindrical locking means mounted within a cylindrical opening in the upper surface of said handle body and that is radially displaced from the axis of said body, including a key actuated center cylinder having a dog movable from a first position disengaged from the teeth of said drive gear to a second position engaging the teeth of said drive gear; and

a ratchet wheel and a spring biased pawl mounted within said opening at the lower end of the handle body to prevent rotation of said valve stem when said dog is in said first position;

whereby when said locking means dog is in said first position, the handle body is free to rotate relative to the drive gear and valve stem and in the second position is locked to said drive gear and valve stem so as to permit rotation of the handle body to effect like rotation of the drive gear, thereby opening and closing the valve.

5,664,448

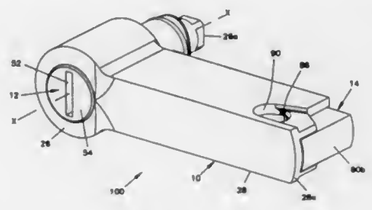
LOCKING DOOR HANDLE

David A. Swan, Shoreview, and Robert G. Lau, Anoka, both of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

Continuation of Ser. No. 189,729, Feb. 1, 1994, abandoned. This application May 20, 1996, Ser. No. 650,215

Int. Cl.[6] G05G *5/00;* **F16C** *3/00*

U.S. Cl. 70—224 **11 Claims**



1. A locking handle for an access door, said handle comprising:

a housing having an axial dimension;

a locking pin mounted within said housing and movable generally transverse to said axial dimension between a pin locked position and a pin unlocked position, said pin in said pin locked position having a locking end protruding beyond an exterior of said housing, said pin in said pin unlocked position having said locking end retracted toward said housing;

an operator engageable cam secured to said housing and movable between a first position and a second position, said cam operably connected to said locking pin for said cam to urge said locking pin to move between said pin locked position and said pin unlocked position as said cam is moved between said first position and said second position, said cam additionally including a recess;

a lock bar secured to said housing and movable between a bar locked position and a bar unlocked position, said lock bar releasably engageable with said cam, said lock bar including means for engaging said recess of said cam when said cam is in said first position for said lock bar to restrict movement of said cam from said first position when said bar is in said bar locked position;

first biasing means for biasing said cam to said first position; and

second biasing means for biasing said lock bar to said bar unlocked position.

5,664,449

MAGNETIC LOCKS

Bruce Samuel Sedley, Flat C, Fifth Floor, Block 30, Mei Foo Sun Chuen, Broadway Street, Kowloon, Hong Kong

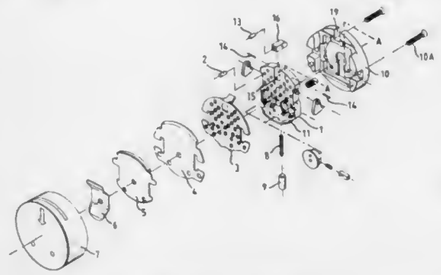
PCT No. PCT/GB93/00807, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO94/00659, PCT Pub. Date Jan. 6, 1994

PCT Filed Apr. 16, 1993, Ser. No. 356,189

Claims priority, application United Kingdom, Jun. 26, 1992, 9213652

Int. Cl.[6] E05B *47/00*

U.S. Cl. 70—276 **15 Claims**



1. A magnetic key operated lock comprising:

a slide member movable in a direction from a locked position to an unlocking position with a key having an encoded magnetic code inserted in said lock;

a plurality of magnet pins arranged to be slidable in a direction transverse to the direction of movement of said slide member from a first portion locking said slide member in said locked position, in which remote ends of said magnet pins extend beyond a surface of said slide member, to a second position unlocking said slide member on operation of said lock by said key;

a locking plate mounted adjacent said slide member having a plurality of apertures for receiving said remote ends of said magnet pins when said slide member is in said locked position, the position and polarity of said magnet pins forming a code for said lock; and

means for supporting at least one of said magnet pins in said slide member such that said remote end of said at least one of said magnet pins is prevented mechanically from moving transversely out of a respective aperture in said locking member when said lock is rapped.

5,664,450

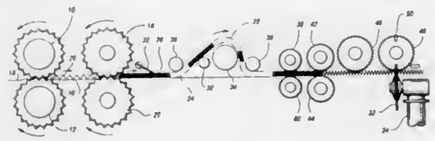
SELF-DISPERSING FACILITATING FLUID FORMING ROLL

Richard P. Stoynoff, Jr., Woodhaven, Mich., assignor to Livernois Research & Development Company, Dearborn, Mich.

Filed Sep. 9, 1996, Ser. No. 708,831

Int. Cl.[6] B21B *45/02;27/06;28/00;* **B21C** *37/02*

U.S. Cl. 72—44 **21 Claims**



1. A tool for forming deformable, resilient, serpentine products comprising:

a pair of rotatable forming rolls that define a forming area therebetween in a region of intermeshing contact;

a plurality of blades included in each of said forming rolls, each of said blades having a hollow inner region;

one or more of said blades having a plurality of teeth spaced about its periphery, one or more of said plurality of teeth having a peak, a valley, and a forming surface lying therebetween;

said valley having a groove formed therein, said groove being in communication with a passageway, the passageway serving to duct a fluid to the forming area which facilitates the forming of said serpentine product, said passageway extending from said valley to said hollow inner region.

5,664,451

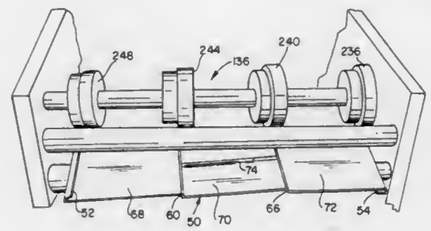
ROLL FORMING MACHINE FOR AN INDETERMINATE LENGTH METAL ROOF PANEL

Robert E. Schultz, Hatfield, Pa., assignor to Englert/Rollformer, Inc., Willow Grove, Pa.

Filed Aug. 2, 1995, Ser. No. 510,150

Int. Cl.[6] B21D *5/08*

U.S. Cl. 72—181 **7 Claims**



1. Apparatus for forming a metal roof panel of indeterminate length from a uniform width supply strip of sheet metal having a pair of parallel straight longitudinal edges, said apparatus providing a path for said sheet metal strip and comprising:

a stamping station effective to form linear impressions in the sheet metal strip, each of the linear impressions having its lateral extent limited such that on said sheet metal strip there is at least one longitudinal strip parallel to said longitudinal edges in which there are none of said linear impressions; and

a series of spaced forming stations located in the path of said sheet metal strip following said stamping station, each of said forming stations having upper and lower driven shaping rollers between which said sheet metal strip is passed so as to impart a desired shape to the sheet metal strip which is uniform along the length of the sheet metal strip after it exits the apparatus, said series of spaced forming stations being effective to bend said sheet metal strip in opposite directions at substantially right angles along at least one pair of straight lines parallel to said longitudinal edges so as to form at least one Z-shaped bend parallel to said longitudinal edges, each of said at least one pair of straight lines lying within a respective one of said at least one longitudinal strip, the spacing between any adjacent Z-shaped bends and between each of said longitudinal edges and the Z-shaped bend adjacent said each longitudinal edge being substantially equal so as to divide said sheet metal strip into at least two longitudinal rows.

5,664,452

METHOD OF ROLLING FINISHED SECTIONS FROM A PRELIMINARY SECTION IN A REVERSING ROLLING STAND ARRANGEMENT

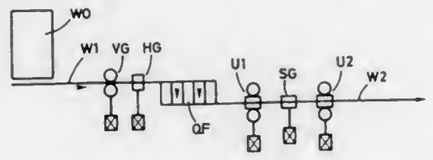
Georg Engel, Kaarst; Dietmar Kosak, Neuss, both of Germany; Lloyd Melvin Schmelzle, Oesoto, Tex., and Michael Cygler, Colonia, N.Y., assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Continuation-in-part of Ser. No. 330,703, Oct. 28, 1994. This application Jan. 27, 1995, Ser. No. 379,697

Claims priority, application Germany, Nov. 4, 1909, 43 37 555.3

Int. Cl.[6] B21B *41/06*

U.S. Cl. 72—229 6 Claims



2. A reversing rolling stand arrangement for rolling a finished section from a preliminary section produced in a continuous casting plant, the preliminary section having a web-like portion corresponding to a web of the finished section and flange-like increased thickness portions corresponding to flanges of the finished section, the rolling stand arrangement comprising a rolling unit with a free runout arranged in a first rolling line, the rolling unit comprising a vertical stand for acting on the flange-like increased thickness portions of the preliminary section in order to upset the web-like portion of the preliminary section, further comprising a compact rolling stand group arranged in a second rolling line, the compact rolling stand group comprising a first universal stand on an entry side, a second universal stand on an exit side, and an edging stand arranged between the first and second universal stands, the first rolling line and the second rolling line extending parallel to one another, further comprising a transverse conveying unit arranged following the rolling unit and immediately in front of the entry side of the compact rolling stand group for conveying the preliminary section from the first rolling line to the second rolling line.

5,664,453

HOLLOW EXTRUDER DIE FOR EXTRUDING A HOLLOW MEMBER OF A ZINC-CONTAINING ALUMINUM ALLOY

Mitsuo Abo; Yasuyuki Tanaka; Hidenori Kumazaki, all of Nagoya; Fumihiko Sato, Inazawa, and Hiroyuki Wakabayashi, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo-To, Japan

Continuation of Ser. No. 345,119, Nov. 28, 1994, abandoned. This application Oct. 2, 1996, Ser. No. 725,186

Claims priority, application Japan, Dec. 1, 1993, 5-301873; Dec. 1, 1993, 5-301874

Int. Cl.[6] B21C *25/02*

U.S. Cl. 72—269 12 Claims

1. A method of protecting an extruding die from cracks due to brittleness caused by zinc when extruding a hollow aluminum alloy section containing zinc, said extruding die having a die mandrel part in combination with a die cap part, said die mandrel part having a main body portion having a through hole passing therethrough with a mandrel, for forming the hollow extruding section, being supported in the through hole by at least one bridge portion that at least partially defines a root portion of said mandrel, and said die cap part having an extruding hole passing therethrough for forming a peripheral portion of the extruding section, said method comprising the steps of:

making a coating fast with and completely covering said at least one bridge portion and said root portion of the die mandrel part, said coating being resistant to said brittleness caused by zinc and preventing said zinc from contacting said root portion, thereby to resist cracking of said root portion;

making a coating fast with and completely covering an inner surface of said die cap part;

positioning the die cap part so that it covers the bridge portion and the root portion of the die mandrel part; and

extruding an aluminum alloy containing zinc through the mandrel part and the die cap part whereby stress is placed directly on the die cap part and indirectly on the bridge portion and the root portion of the die mandrel part thereby extending the life of the die.

5,664,454

DEVICE FOR MANUFACTURING SHAPED FORMS OF PACKAGING

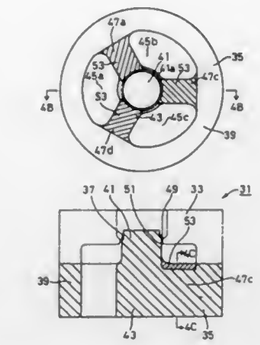
Patrik Zelter, Bülach; Heinz Oster, Feuerthalen, and Monique Roulin, Schaffhausen, all of Switzerland, assignors to Alusuisse Technology & Management Ltd., Switzerland

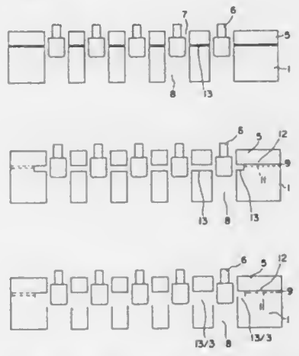
Filed Feb. 15, 1996, Ser. No. 602,088

Claims priority, application Switzerland, Mar. 21, 1995, 00798/95

Int. Cl.[6] B21D *22/00;22/21*

U.S. Cl. 72—348 20 Claims





1. Device for manufacturing cold-formed shaped forms of packaging out of a metal-plastic laminate having a metal layer of 8 to 150 microns thick, which comprises a device containing a die with a plurality of spaced die openings, and an edge region, a stamp movable into the die openings for deforming the laminate into said die openings, and a retainer tool as a clamping facility that holds the laminate securely between the die and the clamping facility, wherein the die and the retaining tool feature facing edge regions for clamping the laminate and inside the edge region of the die a shoulder region that surrounds the die openings, said shoulder region having a surface thereof and said die edge region having a surface thereof, and the surface of the shoulder region lies 0.01 to 10 mm lower than the surface of the edge region of the die, wherein the laminate is at least one of drawn and stretched in a sliding manner over the surface of the shoulder region.

5,664,455

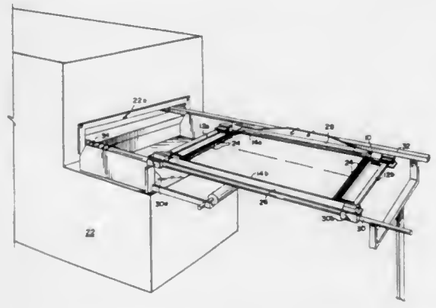
LABORATORY DEVICE TO ASSIST IN THE SIMULATION OF SYNTHETIC FIBER HEAT-SETTING CONDITIONS

Ann S. Johnson, Asheville; John A. Kilpatrick; Lewis W. Davis, Jr., both of Candler; David B. Ledford, Arden; Larry D. Henderson, Waynesville, and Phillip E. Wilson, Asheville, all of N.C., assignors to BASF Corporation, Mount Olive, N.J.

Filed Jun. 7, 1995, Ser. No. 476,585

Int. Cl.[6] G01N *3/60*

U.S. Cl. 73—160 17 Claims



1. A laboratory Suessen heat-setting simulator frame for simulating effects on synthetic fibers subjected to Suessen heat-setting conditions comprising:

(i) forward and rearward rigid cross-support bars; and

(ii) a laterally spaced-apart pair of flexible synthetic fiber cords which are resistant to Suessen heat-setting conditions extending in parallel to one another, said cords being connected to, and extending between, said forward and rearward cross-support bars for supporting successive wound turns of synthetic fibers to be subjected to simulated Suessen heat-setting conditions.

5,664,456

ULTRASONIC TRANSDUCER

Manfred Eckert, Todtnau, Germany, assignor to Endress+Hauser GmbH+Co., Maulburg, Germany

Filed Sep. 27, 1996, Ser. No. 720,081

Claims priority, application European Pat. Off., Sep. 28, 1995, 95115281

Int. Cl.[6] G01F *23/28*

U.S. Cl. 73—290 V 8 Claims

1. An ultrasonic transducer having

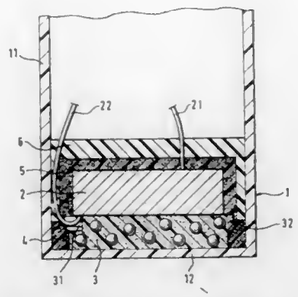
a single-piece can-shaped housing (1) sealed off by a diaphragm (12),

a sensor element (2), arranged in the housing (1), for transmitting and receiving ultrasound,

a matching layer (3) arranged between the diaphragm (12) and the sensor element (2),

a stress equalizing layer (5) which completely encloses the sensor element (2) except for a front side adjoining the matching layer (3) and is made of of an epoxy resin,

a clamping ring (4) coaxially enclosing the matching layer (3), and



a damping layer (6) that fills a cavity that remains in the housing (1) and is bounded by the clamping ring (4), the stress equalizing layer (5) and the housing (1).

5,664,457

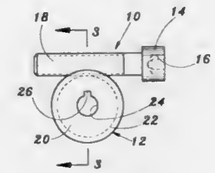
SCREW GEAR MEANS AND METHOD FOR SAME

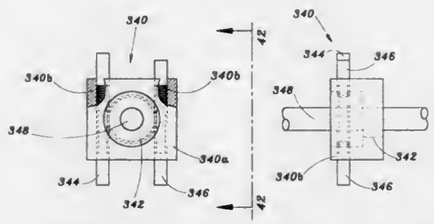
Amir G. Nejati, Lincolnwood, Ill., assignor to Amir Nejati, Lincolnwood, Ill.

Continuation of Ser. No. 895,987, Jun. 5, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 265,690

Int. Cl.[6] F16H *19/04;1/16*

U.S. Cl. 74—110 8 Claims





1. A screw gear for threaded engagement with a straight standard size machine screw having a plurality of consecutive, adjacent straight standard machine screw threads thereon of one of the following standard family of screw threads: American National Unified Threads (UN, UNC, NC, UNF, NF, UNEF, NEF, UNREF), Unified Screw Threads, American Standard Threads, American National Standard Metric Screw Threads (General Purpose, Mechanical Fastener, Fine Pitch), British Withworth Screw Threads, British Standard Fine Screw Threads, British Association Screw Threads, Straight Pipe Threads, British Standard Metric Threads, Lowenherz Threads, and SAE Threads, said standard thread machine screw having a non-threaded portion located adjacent its threaded portion, and means on said non-threaded portion for turning said screw, said standard thread machine screw extending only from its threaded portion to said non-threaded portion, said screw gear comprising a screw gear body with an axis of relative rotation perpendicular to said screw and having a peripheral portion, at least a plurality of semi-circular or less threads of said same one of said family of screw threads formed in an arcuate, curved path extending about said screw gear body on said peripheral portion of said screw gear, said plurality of semi-circular or less threads of said screw gear being threadedly engaged with said

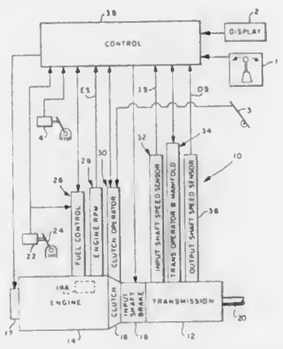
straight, standard machine screw threads of said screw, relative movement of one of said screw gear and said straight, standard machine screw threads on said screw causing through cooperative thread engagement relative movement of the other of said screw gear and said straight, standard machine screw threads on said screw, whereby relative rotation of said screw gear causes relative linear motion of said straight, standard machine screw threads on said screw or alternatively relative linear motion or rotation of said straight, standard machine screw threads on said screw causes relative rotation of said screw gear.

5,664,458

ROLLING START CONTROL SYSTEM/METHOD FOR SEMI-AUTOMATED MECHANICAL TRANSMISSIONS

Anthony Stasik, Coppull; Kwok Wah Chan, Chorley; Ian Richard Joseph Bates, Huddersfield, and John Ernest Stainton, Clayton-Le-Woods, all of England, assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 13, 1996, Ser. No. 600,583
Int. Cl.[6] F16H *61/00*
U.S. Cl. 74—336 R **24 Claims**



1. A method of controlling a semi-automatic mechanical change gear transmission system (**10**) comprising a fuel-throttle-controlled engine (**14**) having a known idle speed (ES_{IDLE}), a multi-speed change-gear mechanical transmission (**12**), a friction master clutch (**16**) interposed between the engine and transmission, a manually operated shift selection lever (**1**) movable in a first direction from a centered position to select upshifts and in a second direction from said centered position to select downshifts from the currently engaged gear ratio, a central processing unit (**38**) for receiving inputs indicative of transmission engaged ratio, of vehicle speed (OS) and of operation of said manual shift selection lever and for processing same according to predetermined logic rules to issue command output signals to non-manually controlled operators including a fuel throttle control operator (**26**) and a transmission operator (**34**), said method comprising:

determining currently engaged transmission ratio;

determining current vehicle speed; and

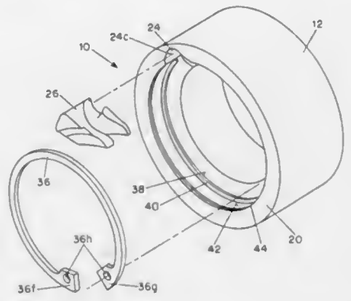
if said transmission is in neutral (GR=N) and said vehicle speed exceeds a minimum reference value (OS>REF), automatically selecting operation in a rolling start mode of operation wherein a single movement of said shift selection lever in the upshift direction is interpreted as an operator selection of a direct shift from neutral into an appropriate rolling start gear ratio (GR_{RS}), said appropriate rolling start ratio determined as a function of current vehicle speed.

5,664,459

ROLLING-MEMBER WORM-DRIVE

Martin Mühleck, Ebenhausen, and Horst Altrock, Hambach, both of Germany, assignors to Deutsche Star GmbH, Schweinfurt, Germany

Filed Sep. 19, 1995, Ser. No. 530,000
Claims priority, application Germany, Mar. 21, 1995, 295 04 812.3
Int. Cl.[6] F16H *25/22*
U.S. Cl. 74—424.8 R **34 Claims**



1. A rolling-member worm drive, comprising:

a spindle having an axis (A) and an outer peripheral surface,

a nut element having an inner peripheral surface surrounding said spindle,

at least one nut groove formed in an inner peripheral surface of said nut element and including two end regions and helically running about the axis (A), said nut groove, together with a helical race on said outer peripheral surface of said spindle, defining a helical rolling-member screw path running between the two end regions;

a rolling-member return path running between the two end regions and constituting, together with said rolling-member screw path, a closed rolling-member circulation path;

an endless row of rolling-members arranged in said rolling-member circulation path and lying in said nut groove and on said helical race;

a rolling-member diverting element arranged on said nut element in each of the two end regions for transfer of the rolling members between said helical rolling-member screw path and said rolling-member return path and between said rolling-member return path and said rolling-member screw path;

at least one of the rolling-member diverting elements being held on said nut element by means of a securing ring designed separately from said rolling-member diverting element; and

a contact surface provided on the securing ring and/or the rolling-member diverting element and inclined with respect to the axial direction (A) of the spindle as well as with respect to a plane orthogonal to said axial direction.

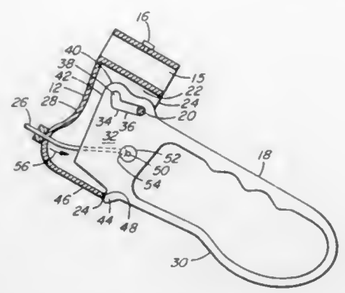
5,664,460

CABLE CONTROLLER

Clifford Bruce Hewson, West Vancouver, Canada, assignor to Foreign Developments Limited, Burnaby, Canada

Filed Nov. 13, 1995, Ser. No. 555,462
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502.2 **2 Claims**

1. A cable controller comprising means defining a cavity, a manipulating handle, said manipulating handle having a manipulating end and a control end, said control end being received within said cavity and said manipulating end projecting outwardly therefrom, said control end having a first side edge and a second side edge forming a pair of opposite side edges of said control end a slot through said control end and positioned adjacent to said first side edge of said handle, said slot having a long section having a first end adjacent said manipulating end of said handle and a



second end remote from said manipulating end of said handle and a short section, said short section extending at an angle from said second end of said long section of said slot toward said first side edge, a pivot pin extending through said slot to pivotably mount said manipulating handle in said cavity for pivotal movement about said pivot pin, an abutment means projecting from said second side edge of said control end of said handle, said abutment means projecting from said second edge in a direction away from said first edge and being located in a position relative to said cavity to contact a portion of a rim of said cavity when said handle is pivoted around said pivot pin in a first direction and away from said rim when said handle is pivoted around said pivot pin in a second direction opposite said first direction, said abutment means being positioned to cooperate with said portion of said rim to permit said handle to be pivoted about a point of contact of said abutment and said portion of said rim, said long section of said slot being shaped to permit movement of said pivot pin along said long section of said slot when said handle is pivoted about said point of contact to relatively move said pivot pin between said first and said second ends of said long section of said slot, cable means, means for connecting said cable means to said handle between said slot and said abutment in a position so that pivotal movement of said handle about said pivot pin or about said point of contact of said abutment with said rim portion changes an effective length of said cable means.

5,664,461

LENGTH-ADJUSTING DEVICE FOR CONTROL CABLE

Yoshiharu Kitamura, Aikawa-machi, Japan, assignor to NHK Spring Co., Ltd., Yokohama, and Uni Flex, Inc., Ina, both of Japan

Continuation of Ser. No. 145,251, Oct. 29, 1993, abandoned. This application Feb. 7, 1996, Ser. No. 597,860
Claims priority, application Japan, Oct. 31, 1992, 4-315997
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502.4 **2 Claims**

1. A length-adjusting device for a control cable comprising:

an adjusting pipe (**2**) to which an outer cable (**121**) is fixed, with an inner cable (**120**) passing therethrough, said adjusting pipe (**2**) having engaging teeth (**21**) formed rectangular to the axis and outside thereof;

a base member (**3**) having a pair of guide tubes (**32**, **33**) for supporting said adjusting pipe (**2**);

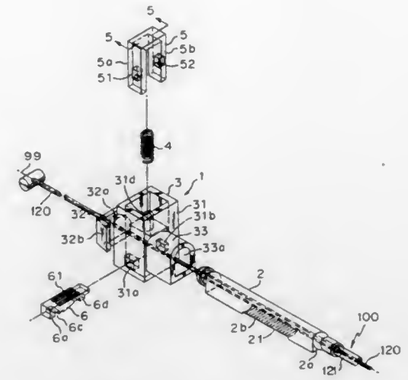
a square pipe portion (**31**), having opposed side walls, provided on said base member (**3**);

a pair of square openings (**31***a*, **31***b*) respectively provided on said opposed side walls of said square pipe portion (**31**) of said base member (**3**);

an adjusting piece (**5**), having leg portions (**5***a* and **5***b*), inserted in said square pipe portion (**31**) of said base member (**3**) in a direction perpendicular to the axis of said adjusting pipe (**2**), and said adjusting piece (**5**) being biased by a spring (**4**);

a pair of square holes (**51** and **52**) formed in said leg portions (**5***a* and **5***b*) of said adjusting piece (**5**);

a locking piece (**6**) penetrating through said pair of square openings (**31***a*, **31***b*) of said base member (**3**) and said pair of



square holes (**51**, **52**) of said adjusting piece (**5**); said locking piece (**6**) having locking teeth (**61**) engaging with engaging teeth (**21**) of said adjusting pipe (**2**), and

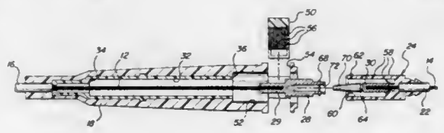
locking projections (**61**, **6***d*) and concavities (**6***c*, **6***e*) formed on said locking piece (**6**), said locking projections (**6***a*, **6***d*) engaged respectively to said square openings (**31***a*, **31***b*) of said base member (**3**), and said locking piece (**6**) being locked by inserting respectively outer walls of said square holes (**51**, **52**) into said concavities (**6***c*, **6***e*), and said locking piece (**6**) locking said adjusting pipe(**2**).

5,664,462

MID-LENGTH ADJUSTMENT AND METHOD OF ASSEMBLY

Michael Reasoner, Ortonville, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 561,405, Nov. 21, 1995, abandoned, which is a continuation-in-part of Ser. No. 521,125, Aug. 29, 1995, Pat. No. 5,577,415, and a continuation-in-part of Ser. No. 560,803, Nov. 21, 1995. This application Oct. 1, 1996, Ser. No. 723,063
Int. Cl.[6] F16C *1/14*
U.S. Cl. 74—502.4 **27 Claims**



1. A motion transmitting remote control assembly (**10**) comprising:

a first guide length having inner and outer ends;

a second guide length having inner and outer ends;

a first core element section (**12**) having inner and outer ends and movably supported in said first guide length;

a second core element section (**14**) having inner and outer ends and movably supported in said second guide length;

first (**28**) and second (**30**) members disposed on said inner ends of said core element sections (**12** and **14**) for connecting said first (**12**) and second (**14**) core element sections together;

said guide lengths including first (**18**) and second (**24**) fittings disposed at said inner ends of said guide lengths for connecting said first and second guide lengths together;

said first fitting (**18**) having a bore (**32**) with an open end (**36**) and said first member (**28**) being slidably supported in said bore (**32**);

said assembly characterized by a terminal means disposed at said outer end of said first core element section (**12**) for connection to a control member and for limiting sliding movement of said first core element section (**12**) into said first

guide length at a retracted stop position with said first member (28) being in overlapping relationship with said bore (32) at said open end (36) to prevent said first member (28) from completely exiting said bore (32) in said retracted stop position.

5,664,463

CAMSHAFT ASSEMBLY WITH SHAFT ELEMENTS POSITIONED ONE INSIDE THE OTHER AND METHOD OF PRODUCING SAME

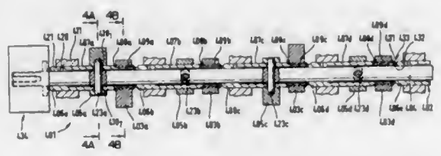
Peter Amborn, In den Gärten 2, D-53819 Neunkirchen-Seelscheid; Klaus Greulich, Mühlenstrasse 1, D-53547 Breitscheid-Hollig, and Helmut Riemscheid, Heiligenstock 53, 53797 Lohmar-Wahlscheid, all of Germany

Filed Mar. 3, 1994, Ser. No. 206,003

Claims priority, application Germany, Mar. 3, 1993, 43 06 620.8; Mar. 3, 1993, 43 06 621.6

Int. Cl.[6] F16H *53/00*

U.S. Cl. 74—567 9 Claims



1. A camshaft assembly for valve-controlled internal combustion engines, comprising:

two shaft elements, an inner shaft and an outer shaft, positioned one inside the other and supported one inside the other;

inner cams connected to said inner shaft;

outer cams connected to the outer shaft;

the inner cams forming slots which cover a sector of a circle and which are penetrated by axial finger portions of the outer shaft, first form-fitting means for connecting said inner cams to the inner shaft, second form-fitting means for connecting said outer cams to the outer shaft and at least the outer shaft including individual longitudinal portions which are connected to one another.

5,664,464

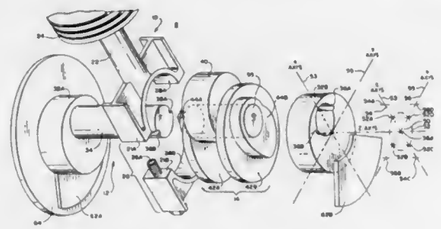
LOW STRESS ENGINE FOR CONVERTING MOTION BETWEEN RECIPROCATING AND ROTATIONAL MOTION

Douglas Timothy Carson, 3721 Spyglass La., Lincoln, Nebr. 68507

Filed Jan. 10, 1995, Ser. No. 370,729

Int. Cl.[6] F16C *3/20;* F02B *75/32*

U.S. Cl. 74—603 22 Claims



4. Apparatus comprising:

at least one reciprocating member confined to an axis of reciprocation;

at least one rotating member with a crankpin; and

at least one connector means connecting the reciprocating ember and the rotating member for converting at least one of rotating motion of the rotating member to reciprocating motion of the reciprocating member and reciprocating motion of the reciprocating member to rotating motion of the rotating member during each of a plurality of cycles of reciprocating motion of the reciprocating member from a first position to a second position and back to the first position;

said connector means having a magnitude of translational momentum component in a direction perpendicular to the axis of reciprocation;

said reciprocating member and said connector means having a magnitude of combined translational momentum component in a direction of reciprocation;

said magnitude of translational momentum in a direction perpendicular to the axis of reciprocation being substantially equal and 90 degrees out of phase with said magnitude of combined translational momentum in the direction of reciprocation.

5,664,465

AXLE DRIVING APPARATUS

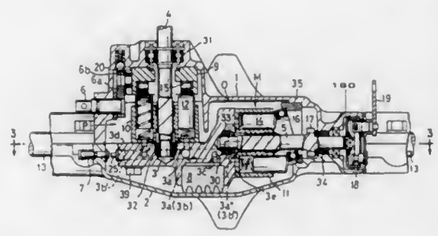
Hideaki Okada, Takarazuka, and Shusuke Nemoto, Yao, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Continuation of Ser. No. 193,577, Feb. 7, 1994, Pat. No. 5,473,964, which is a continuation of Ser. No. 100,352, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 518,720, May 4, 1990, abandoned, which is a continuation of Ser. No. 304,581, Feb. 1, 1989, Pat. No. 4,932,209. This application May 24, 1995, Ser. No. 447,541

Claims priority, application Japan, Feb. 3, 1988, 63-24193; Mar. 9, 1988, 63-55828; Mar. 18, 1988, 63-67005; Jun. 16, 1988, 63-79665

Int. Cl.[6] F16H *57/02;* F16D *39/00*

U.S. Cl. 74—606 R 10 Claims



1. A hydraulic transaxle, comprising:

a casing formed of a first casing section and a second casing section joined along a junction surface, said junction surface defining a plane;

an axle rotatably supported within said casing, said axle having a longitudinal axis parallel to said junction surface;

a hydrostatic transmission for driving said axle including a hydraulic pump and a hydraulic motor, said hydraulic motor including output means having a longitudinal axis;

a brake disposed on said output means;

transmitting means having a longitudinal axis disposed within said casing for transmitting power from said hydraulic motor;

a differential gear unit disposed within said casing and connecting said transmitting means and said axle; and

input means for transmitting power to said hydraulic pump.

5,664,466

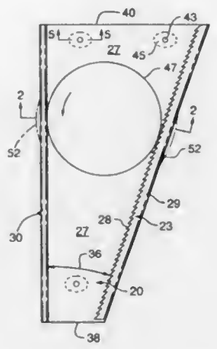
APPLIANCE FOR OPENING SCREW-TOP JARS

Jame Leslie Miller, R.R. 1, Elmwood, Ontario, Canada, N0G 1S0

Filed Jun. 30, 1995, Ser. No. 497,415

Int. Cl.[6] B67B *7/00*

U.S. Cl. 81—3.25 8 Claims



1. An appliance for simplifying the task of unscrewing a tightly-screwed-on cap from a jar, wherein:

the appliance comprises a body of sheet metal;

the body of sheet metal is bent over to form a left flange along a left edge, and is bent over to form a right flange along a right edge, the body of sheet metal forming a predominantly flat panel between the bent-over flanges;

the flanges are so arranged as to define therebetween a taper, which is suitable for receiving the screw-cap;

the flat panel between the flanges is free of perforations, being perforations of a size that, if present, would effect the stiffness, in bending, of the panel;

the right flange includes a riser, the riser being bent up from the plane of the panel, and includes a platform, the platform being bent inwards from the riser whereby (a thickness-edge of the metal) forming the right flange faces towards the left flange;

(the said thickness-edge of the right flange) is formed with teeth, which are effective, when in forceful contact with the screw-cap, to substantially prevent sliding or slipping of the screw-cap along the right flange;

the left flange is bent up from (a plane of the panel) and includes a folded portion so arranged as to increase the overall thickness of the left flange beyond the thickness of the sheet;

in respect of the folded portion, the metal of the left flange is folded to form a riser depending from the flat panel, the riser being so folded with respect to the flat panel that, after folding the riser extends away from the flat panel;

the metal of the left flange is folded to form a platform depending from the riser, the platform being so folded with respect to the riser that, after folding the platform extends inwards towards the right flange, and lies parallel to the flat panel;

the metal of the left flange is folded to form a hemmed portion depending from the platform, the hemmed portion being so folded with respect to the platform that, after folding, the hemmed portion extends inwards and back towards the flat panel, whereby, after folding, the hemmed portion lies inside the riser and doubled under with respect to the riser;

the left flange is arranged with a smooth surface, which is arranged for contact with the screw-cap, and along which, when in contact with the screw-cap, the screw cap can slide and slip;

the thickness of the sheet metal is sufficient that the appliance is stiff and strong enough to react and contain, between the flanges, a gripping force of sufficient magnitude to hold the cap against the forceful turning of the jar, being a turning force of the maximum magnitude that can be exerted by a person holding and turning the jar.

5,664,467

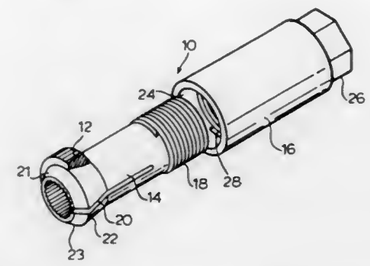
ADJUSTABLE SOCKET

Robert W. Breeze, 15 Fairwood Dr., Keswick, Canada, L4P 3S2

Filed Jan. 11, 1996, Ser. No. 585,140

Int. Cl.[6] B25B *13/30*

U.S. Cl. 81—114 1 Claim



1. An adjustable socket for removing a threaded fastener having a thread in a first sense, said socket comprising:

a cylindrical split collet socket having at least two spaced fingers at one end thereof and an external thread in a sense opposite said first sense at an opposite end thereof, said fingers having an external taper and an internal splined surface comprising axially extending V-shaped slots presenting a series of teeth, said internal splined surface being generally hex shaped, said fingers having side walls having areas of relative reduced thickness at corners of said hex shape to allow a degree of flexibility of said teeth, said split collet socket having, at said opposite end, a female drive opening for receiving a driver for applying a torque to said split collet socket,

a collet ring mounted about ends of the fingers, said collet ring having an internal taper complementary to and cooperating with said external taper, said tapers align to deflect the fingers radially inwardly as the collet ring is urged along the split collet socket towards said one end of said split collet socket, and

an outer barrel having an internal thread for threadably engaging said external thread of said split collet socket, said barrel receiving said split collet socket therewithin and having one end of the barrel frictionally engaging said collet ring, said barrel having at least two flat surfaces suitable for receiving a wrench for applying a torque thereto, said barrel having an opening in an opposite end thereof allowing access to said female drive of said split collect socket, whereby rotation of the barrel relative to said split collet socket in one sense urges said collet ring to close said fingers for gripping a head of said threaded fastener, continued relative rotation of the barrel in the one sense increases said grip urging said splines to indent an exterior surface of the threaded fastener, and applies a torque to the threaded fastener for removal thereof and counter rotation of the barrel relative to the split collet socket relaxes the collet ring allowing removal of the head of the threaded fastener.

5,664,468

SCREW TIGHTENING MACHINE

Keijiro Murayama, and Osamu Ebisawa, both of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,270

Claims priority, application Japan, Mar. 15, 1995, 7-083186

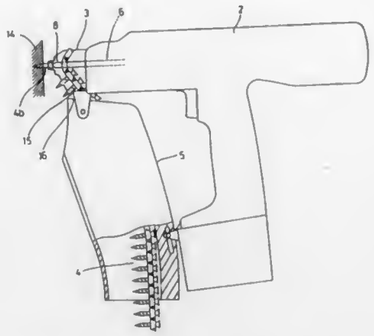
Int. Cl.[6] B25B *23/04*

U.S. Cl. 81—434 1 Claim

1. A screw tightening machine comprising:

a main body formed in an the upper part of a grip, said grip extending upward and downward;

a nose mounted on a forward part of said main body, said nose being capable of moving forward and backward with respect



to a direction in which a screw is tightened, the screw being driven out from said nose; and

a magazine for guiding and feeding a band in which evenly spaced screws are fitted to said nose along a side of said grip; wherein an upper end of said magazine is connected rotatably to said nose and a part of the lower end of said magazine is connected slidably upward and downward to said grip so that the upper end of said magazine moves with movement of said nose and the lower end of said magazine is slidable upward and downward along said grip.

5,664,469

WHEELSET ALIGNING TECHNIQUE FOR WHEELSET TRUING MACHINERY AND WHEELSET ALIGNING DEVICE

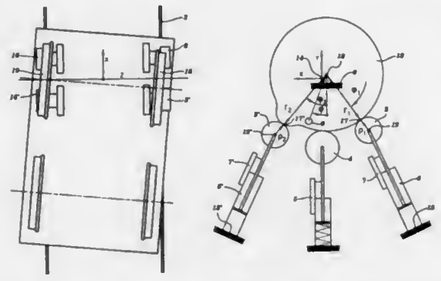
Hans J. Naumann, Albany, N.Y.; Reinhard Robotta, Erlau, Germany; Gunter Schröter, Chemnitz, Germany, and Volker Thomas, Elnsiedel, Germany, assignors to Niles-Simmons Industrieanlagen GmbH, Chemnitz, Germany

Filed Sep. 2, 1994, Ser. No. 300,046

Claims priority, application Germany, Sep. 12, 1993, 43 30 811.2

Int. Cl.[6] B23B *5/32*

U.S. Cl. 82—111 **16 Claims**



1. A process for aligning a wheelset using a wheelset truing machine comprising:

roughly aligning a wheelset (**1**) to be machined on a wheelset truing machine;

placing each wheel (**18, 19**) of the wheelset on at least one roller (**2, 2', 16, 16"**), said at least one roller being disposed to be swivelled in an x-y plane and moveable in a direction perpendicular to said x-y plane;

determining the distance of tread points (**17, 17"**) of each wheel (**18, 19**) on the at least one roller (**2, 2', 16, 16"**) relative to the center of revolution of each wheel (**10, 11**) by measurement of one or more periphery and concentricity error, and calculation; and

coinciding the center of revolution of each wheel (**10, 11**) with a corresponding setpoint of machine center (**14, 15**).

5,664,470

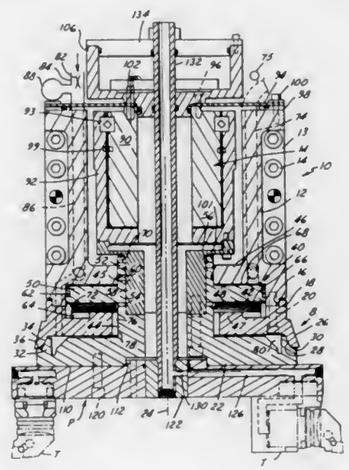
TOOL TURRET INDEXER

Donald W. Garnett, Grand Ledge, and John A. Watson, East Lansing, both of Mich., assignors to The Olofsson Corporation, Lansing, Mich.

Filed May 6, 1996, Ser. No. 642,919

Int. Cl.[6] B23B *3/16*

U.S. Cl. 82—121 **17 Claims**



1. A tool turret comprising

a machine frame,

a motor mounted on said machine frame,

said motor having a rotor rotatable about a central axis,

a brake,

said brake having a first brake member connected to said rotor for rotation therewith about said central axis,

said brake having a non-rotatable second brake member mounted on said machine frame in confronting relation to said first brake member,

said first brake member having an annular cone-shaped braking surface and an annular radial braking surface, both said braking surfaces being concentric with the axis of rotation of said rotor and said first brake member,

said second brake member having an annular cone-shaped braking surface and an annular radial braking surface confronting and concentric with the respective cone-shaped and radial braking surfaces of said first brake member,

means for relatively moving said brake members axially toward and away from one another to engage and disengage the confronting cone-shaped and radial braking surfaces of said brake members,

a tooling plate mounted on said first brake member, said tooling plate carrying a plurality of cutting tools in angularly spaced relation about said central axis, and

means for operating said motor when said brake members are disengaged to turn said rotor and hence said tooling plate to various angular positions depending on the spacing of said cutting tools.

5,664,471

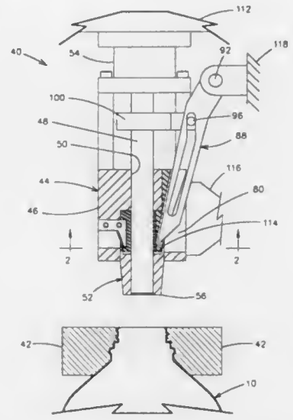
APPARATUS FOR TRIMMING THE NECK OF BLOW MOLDED PLASTIC BOTTLES AND METHOD

Dennis L. Dundas, Dover, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Oct. 20, 1995, Ser. No. 546,190

Int. Cl.[6] B26D *7/02;5/08*

U.S. Cl. 83—24 **25 Claims**



1. An apparatus for trimming a ring from a neck of a blow molded plastic bottle, the apparatus comprising: a body; a shaft bore extending into the body; an anvil bore at an end of the shaft bore; a punch shaft in the shaft bore, said punch shaft having an end adjacent the anvil bore, a reverse punch on the end of the punch shaft, the reverse punch dimensioned to have a close fit in the anvil bore; a blade on a side of the punch shaft, the blade having a ring edge in the anvil bore; a ring discharge passage in the body on an opposite side of the punch shaft across from the blade, said ring discharge passage extending from the anvil bore to an outer surface of the body; a ring hook on the opposite side of the punch shaft facing outwardly of the anvil bore, the hook having a first position in the anvil bore adjacent the discharge passage and a second position located outside the anvil bore.

5,664,472

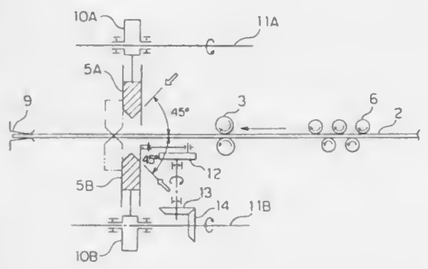
CUTTER APPARATUS FOR COIL CONDUCTOR

Mikio Iguchi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1995, Ser. No. 496,755

Int. Cl.[6] B26D *3/16;5/20*

U.S. Cl. 83—216 **10 Claims**



1. A cutter apparatus for a coil conductor, comprising:

a) means (**3**) for linearly infeeding a predetermined length of a coil conductor (**2**) to be cut, and for then halting said coil conductor;

b) cutting means (**10A, 10B, 11A, 11B**) having linearly reciprocating cutting edges (**5A, 5B**) which cut the coil conductor when said coil conductor has been halted; and

c) means for preventing the cutting edges from push-camming an end of the coil conductor while being severed in an upstream direction, said preventing means comprising means (**12, 13, 14**) acting in synchronism with an inward reciprocation movement of the cutting edges for advancing said cutting means, and attendantly said cutting edges, in a direction downstream of said infed coil conductor and parallel thereto when cutting said coil conductor by said cutting means.

5,664,473

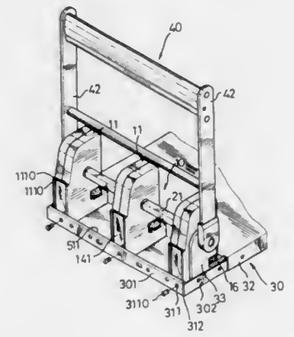
PUNCH

Jackson Huang, No. 162-1, Sanchiao Rd., Pingho Tsun, Tatsun Hsiang, Changhua Hsien, Taiwan

Filed Nov. 13, 1995, Ser. No. 556,373

Int. Cl.[6] B26D *5/10;* **B27F** *1/02*

U.S. Cl. 83—620 **4 Claims**



1. A punch comprising:

a base portion having a first end and a second end, said first end having a first wall extending upwardly and having at least two holes defined in said first wall;

at least two punching units disposed at said first end of said base portion, each one of said punching units further comprising:

a casing having a first end and a second end, said first end of said casing attached to said first wall of said base portion by bolts extending through said holes in said first wall, said first end of said casing having an opening, said second end of said casing having a box portion, a support portion, said box portion having an inner space defined by a closed top, an open bottom, an inner partition, and an inner side, said inner partition having a first opening for communication between said inner space of said box portion and said first end of said casing, said support portion disposed below and spaced apart from said open bottom of said box portion;

a block disposed in said space, said block having a longitudinal passage for receiving and retaining a punching rod, said punching rod extending from said open bottom;

at least one rack disposed in said block;

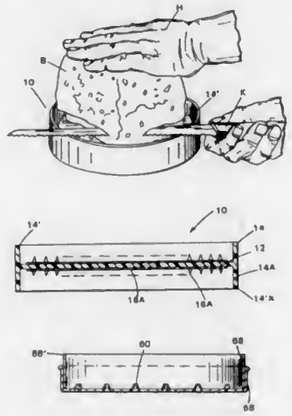
an actuating means disposed in said casing and having at least one toothed element engageable with said rack through a second opening in said partition;

a first lug extending upwardly from a first side of said base portion and a second lug extending upwardly from a second side of said base portion;

a shaft extending through each of said casings, each of said lugs, and said actuating means, said actuating means securely mounted to and rotatable by said shaft; and

a handle attached to said shaft for rotating said shaft to move said punching rod from a first position to a second position.

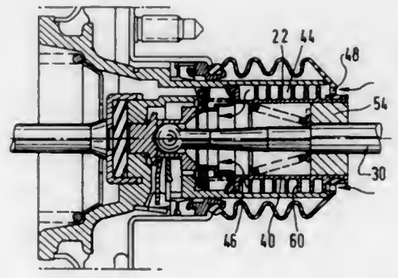
5,664,474
BREAD SLICING GUIDE
Neal Punt, 12194 104th Ave., Grand Haven, Mich. 49417
Filed Jul. 17, 1995, Ser. No. 503,449
Int. Cl.[6] B26B *29/06*; A47J *47/00*
U.S. Cl. 83—761 **2 Claims**



1. A bread slicing retainer and guide comprising:
a horizontal support surface and a vertical rim connected to and surrounding said horizontal support surface;
said support surface having a plurality of spaced, upwardly projecting, bread loaf penetrating protrusions to retain the end of a loaf of bread in a fixed position on said support surface when held down on said protrusions;
said vertical rim having a perimeter and extending upwardly with respect to said support surface a predetermined height, and having an upper edge forming a planar rim guide surface; and
a ring having a perimeter of a size to telescopically interfit with said rim, said ring being telescopically interfitted with said rim and having a height greater than said predetermined height of said rim and extending above said rim, and said ring having an upper edge forming a planar ring guide surface for guiding a knife to cut a slice of bread to a uniform first thickness which is substantially equal to said height of said ring;
whereby said rim guide surface acts as a guide for said knife when said ring is separated from said rim to cut a slice of bread to a uniform second thickness which is substantially equal to said predetermined height of said rim and less that said uniform first thickness.

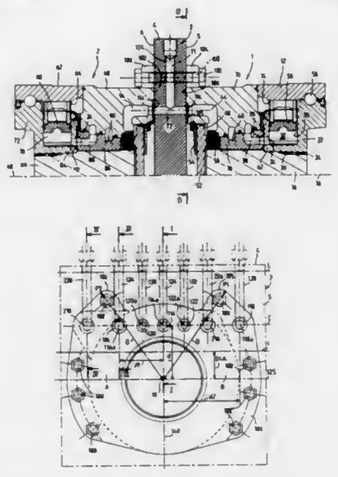
2. A bread slicing retainer and guide comprising:
a horizontal support and a vertical rim connected to and surrounding said horizontal support, said support having a first and a second support surface;
said first support surface having a plurality of spaced, upwardly projecting, bread loaf penetrating protrusions to retain the end of a loaf of bread in a fixed position on said first support surface when held down on said protrusions;
said vertical rim having a first rim portion extending upwardly with respect to said first support surface a predetermined height, said first rim portion having an upper edge forming a first planar guide surface for engagement by a knife for continuous contact therewith to cut a slice of bread to a uniform first thickness which is substantially equal to said predetermined height; and
said vertical rim having a second rim portion extending downwardly with respect to said second support surface a different amount than said predetermined height, said second rim portion having a lower edge forming a second planar guide surface for engagement by said knife, and said second support surface having a second set of projecting bread loaf penetrating protrusions such that by inverting said bread loaf retainer and holding the end of said loaf of bread on said second support surface, a uniform slice of different thickness than said uniform first thickness can be cut.

5,664,475
PNEUMATIC SERVO WITH SILENT OPERATION
Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois; Miguel Perez Revilla, Argenteuil, and Bernard Tripier, Chatou, all of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France
PCT No. PCT/FR94/01186, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO95/13947, PCT Pub. Date May 26, 1995
PCT Filed Oct. 13, 1994, Ser. No. 338,606
Claims priority, application France, Nov. 16, 1993, 93 13614
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—369.1 **6 Claims**



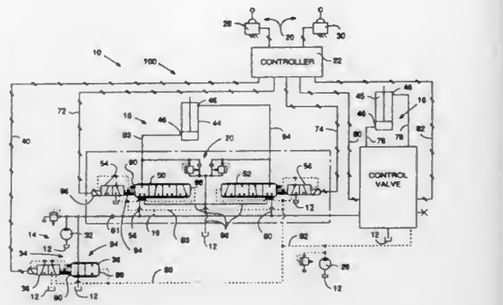
1. A pneumatic servo for assisting braking, said servo having a casing with an axis of symmetry which is divided in leaktight fashion by a movable wall structure into a front chamber and a rear chamber, said front chamber being permanently connected to a source of partial vacuum, said rear chamber being connected selectively to the front chamber and to air in the surrounding environment by a three-way valve actuated by a control rod, said control rod being subjected to the action of a return spring located in an annular space between the control rod and a tubular part of the movable wall structure which projects out of the casing, said three-way valve being located in a bore in said rear tubular part, characterized in that sleeve means are provided for dividing said annular space into a static volume and a concentric annular volume, said static volume being defined by an end plug which engages said sleeve means and said control rod, said return spring being located in said static volume, said annular volume being connected to said surrounding environment through a first opening and to said bore through a second opening in said sleeve, said three-way valve on being actuated allowing air from the surrounding environment to flow in said annular volume in a circular flow path from said first opening toward said second opening, said circular flow path attenuating an abrupt change in the direction of the air flow on being presented to said three-way valve.

5,664,476
PRESSURIZED FLUID MOTOR
Gilles Lemaire, Margny; Marc Perot, Eve, and Jean-Pierre Alegre, Thourotte, all of France, assignors to Poclain Hydraulics, France
Filed Mar. 28, 1996, Ser. No. 623,146
Claims priority, application France, Mar. 31, 1995, 95 03805
Int. Cl.[6] F01B *1/06*
U.S. Cl. 91—491 **10 Claims**



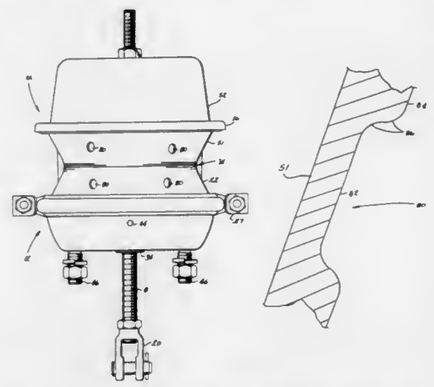
1. A pressurized fluid motor comprising:
a case constituting the stator of the motor and including connection ducts, which ducts comprise main fluid feed and exhaust ducts and at least one auxiliary duct, the case being provided with fixing means for fixing to a pressurized fluid feed member;
a cylinder block mounted to rotate about a first axis relative to a reaction member which is secured to the case relative to rotation about said axis, and including a plurality of cylinders disposed radially relative to the first axis and suitable for being fed with pressurized fluid; and
an internal fluid distributor secured to the case relative to rotation about the first axis and having distribution ducts suitable for putting the cylinders into communication with the main fluid feed and exhaust ducts;
wherein the case has a connection and fixing face that is plane and perpendicular to said first axis, into which face the connection ducts open out, each of said ducts having an end situated in the connection and fixing face and having a center, and wherein there exists a second axis perpendicular to and intersecting said first axis and situated in the plane of the connection and fixing face relative to which said centers are disposed in such a manner that the distance between each of them and said second axis lies in the range one-fourth to once the distance between the first axis and the point on the connection and fixing face that is furthest from said first axis, said ends of the connection ducts all being situated on the same side of the second axis.

5,664,477
CONTROL SYSTEM FOR A HYDRAULIC CIRCUIT
Douglas W. Koehler, Naperville, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed May 10, 1996, Ser. No. 644,141
Int. Cl.[6] F15B *13/08;20/00*
U.S. Cl. 91—529 **8 Claims**



1. A control system adapted for use in a hydraulic system including a reservoir, a source of pressurized fluid connected to the reservoir, a hydraulic circuit having an actuator with first and second fluid ports, first and second directional valve mechanisms each having at least three positions and being connected between the source of pressurized fluid and the respective ones of the first and second fluid ports of the actuator, and an input controller operative to output an electrical signal to an electrical controller that is proportional to a desired input, the control system comprising:
an electro-hydraulic fluid flow control mechanism associated with the source of pressurized fluid and operative to control the volume of fluid being delivered from the source of pressurized fluid to the actuator;
an electrically controlled displacement control mechanism connected to each of the directional valve mechanisms and operative to move the respective directional valve mechanisms in proportion to receipt of a signal from the electrical controller that is representative of the desired input; and
each of the directional valve mechanisms being spring biased to one of its extreme positions in the event of an electrical malfunction in the system.

5,664,478
SPRING BRAKE ACTUATOR WITH CORROSION FUSES
William C. Pierce, Muskegon, Mich., assignor to NAI Anchorlok, Inc., Muskegon, Mich.
Filed Oct. 8, 1996, Ser. No. 727,030
Int. Cl.[6] F01B *25/26*
U.S. Cl. 92—5 R **16 Claims**



1. In a brake actuator of the type having a housing with a wall formed of a material subject to corrosion, a pressure chamber within the housing, and a movable member within the housing movable in response to changes in normal pressure within the pressure chamber for actuation and release of a brake, the improvement comprising:

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at least one corrosion fuse on the housing adjacent to the pressure chamber, said corrosion fuse comprising a portion of the wall wherein the wall is thinner than the surrounding area, and the thinner wall portion has a clearly defined area of a dimension insufficient to compromise the ability of the wall to support the housing so that any corrosion occurring on a surface of the wall is likely to result in penetration of the wall at the thinner wall portion before penetration of the surrounding areas of the wall.

9. In a brake actuator for a vehicle comprising:

a service brake actuator and a spring brake actuator disposed in tandem and secured to each other by a metal adapter,

said adapter having a wall adjacent to a chamber adapted to receive pressurized fluid for moving an actuator rod in one of the service and spring actuators, the improvement comprising:

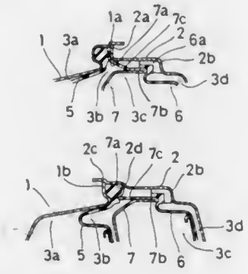
a corrosion fuse on the adapter defined by a portion of the wall wherein the wall is thinner than at the surrounding area, and the thinner wall portion has a clearly defined area of a dimension insufficient to compromise the ability of the wall to contain pressurized fluid within the chamber so that any corrosion occurring on a surface of the wall is likely to result in penetration of the wall at the thinner wall portion before penetration of the surrounding areas of the wall.

5,664,479

TANDEM VACUUM BOOSTER

Akihiko Miwa, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 26, 1995, Ser. No. 548,829
Claims priority, application Japan, Oct. 27, 1994, 6-264275
Int. Cl.[6] F01B *19/00*
U.S. Cl. 92—48 **7 Claims**



1. A tandem vacuum booster comprising:

a front shell including a shoulder portion;

a rear shell including a stepped portion and an outer circumferential portion that is in contact with the shoulder portion of the front shell to form a housing;

a front movable wall having an outer circumferential portion that is fluid-tightly fit between the front shell and the outer circumferential portion of the rear shell, the front movable wall separating a front interior portion of the housing into a front constant pressure chamber and a front variable pressure chamber;

a rear movable wall having an outer circumferential portion that is positioned at the stepped portion of the rear shell, the rear movable wall separating a rear interior portion of the housing into a rear constant pressure chamber and a rear variable pressure chamber; and

a fixed wall having an outer circumferential portion that is positioned between the front movable wall and the outer circumferential portion of the rear shell, the fixed wall including a bent portion positioned radially inwardly with respect to the outer circumferential portion of the fixed wall to press the outer circumferential portion of the rear movable wall to the stepped portion of the rear shell, the fixed wall further including a through hole positioned between the circumferential portion of the fixed wall and the bent portion of the fixed wall for providing communication between the front variable pressure chamber and the rear variable pressure chamber through an annular space defined between the bent portion and the rear shell.

5,664,480

CUSTOM COFFEE BREWING SYSTEM

Philip P. DiFilippo, 19 Ackland Street, Stoney Creek Ontario, Canada, L8J 1H5

Filed Jun. 28, 1996, Ser. No. 671,005
Int. Cl.[6] A23F *5/24*
U.S. Cl. 99—299 **3 Claims**



1. A Custom Coffee Brewing System comprising:

a coffee retaining cone formed to retain a standard coffee filter;

a plunger member slidably engaging the coffee retaining cone; and

the plunger member includes:

an elongated plunger rod;

a plunger handle secured to one end of the elongated plunger rod;

the elongated plunger rod including a closing notch near the plunger handle; and

the elongated plunger rod including an opening notch between the closing notch and the end of the elongated plunger rod opposite of the plunger handle.

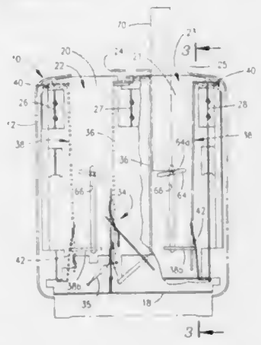
5,664,481

TOASTER WITH BAKERY PRODUCT SHIELD

Peter Huggler, Columbia, Mo., assignor to Toastmaster Inc., Columbia, Mo.

Filed Nov. 19, 1996, Ser. No. 752,053
Int. Cl.[6] A47J *37/08;* **H05B** *1/02;3/06*
U.S. Cl. 99—328 **6 Claims**

1. A toaster comprising:



a base frame;

an exterior housing secured to said base frame;

a toaster slot disposed through said housing and having a width sufficient to receive the thickness of a bakery product to be toasted;

a pair of vertically oriented, planar heating elements mounted to said base frame and being spaced apart by a distance at least as great as the width of said toaster slot;

a bakery product support disposed horizontally between said planar heating elements and positioned beneath said toaster slot, said support positioned and arranged for reciprocal vertical movement between an upper nontoasting position wherein a bakery product received on said support partially extends from said housing through said toaster slot and a lower toasting position wherein a bakery product received on said support is contained within said housing between said heating elements;

an elongate deflector shield recessively mounted within said housing for limited movement relative to said toaster slot, said deflector shield having a recessed, safety position within said housing to permit unobstructed access through said toaster slot when said product support is moved to said upper nontoasting position, and said deflector shield being movable from said recessed, safety position to substantially block a portion of said toaster slot represented by the difference between the width of the toaster slot and the thickness of the bakery product received on said support; and

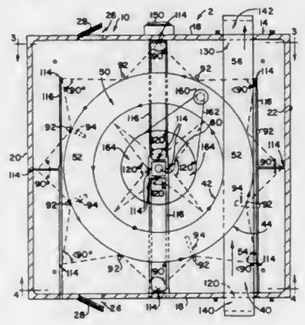
electrical switch means secured to said base frame and connected to said heating elements for selectively energizing said heating elements when said product support is lowered to said toasting position.

5,664,482

HYDROSTATICALLY-SEALED ATMOSPHERIC SPIRAL SPRAY COOKER

Donald L. Graham, Lexington, S.C., and Jerry L. Hope, St. Charles, Ill., assignors to Beltec International, Aurora, Ill.

Filed Sep. 13, 1996, Ser. No. 713,753
Int. Cl.[6] A47J *27/14;37/12;* **A21B** *5/08;* **A23L** *1/01*
U.S. Cl. 99—330 **30 Claims**



1. A low-temperature water-based atmospheric cooker for food products such as fish, meat and poultry, comprising:

a hydrostatically-sealed cooking chamber having an upper wall and a supporting side wall;

a conveyor belt within the cooking chamber having an innermost edge and an-outer most edge, the belt having a path rising circuitously within the cooking chamber wherein each tier of the conveyor belt generally passes over another tier of the conveyor belt to form a generally spiral central belt path within the chamber, an entry portion of the belt path receiving uncooked food product into the cooking chamber, an exit portion of the belt path for discharging cooked food product from the cooking chamber;

means for driving the conveyor belt in the generally spiral central belt path;

means for supporting the conveyor belt in the generally spiral central belt path

a reservoir of heated water for spraying onto the food products;

a plurality of outer water-spraying nozzles for spraying the heated water onto the food product and for creating a cooking atmosphere within the hydrostatically-sealed cooking chamber, the plurality of outer water-spraying nozzles generally surrounding the belt path from a direction facing inward towards the outer-most edge of the belt; and,

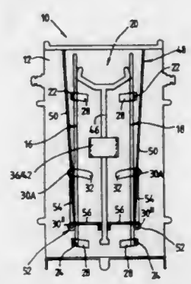
a plurality of inner water-spraying nozzles for spraying the heated water onto the food product and for creating a cooking atmosphere within the hydrostatically-sealed cooking chamber, the plurality of inner water-spraying nozzles generally surrounding the central belt path from a direction facing outward towards the inner-most edge of the belt.

5,664,483

ELECTRIC TOASTER

Kit Chuen Yip, Kowloon, Hong Kong, assignor to G.E.W. Corporation Limited, Kowloon, Hong Kong

Filed Jul. 16, 1996, Ser. No. 680,994
Int. Cl.[6] A47J *37/08*
U.S. Cl. 99—391 **11 Claims**



1. An electric toaster comprising a body having a compartment for accommodating a slice of bred, a vertically movable support for supporting a said slice of bread in the compartment, an operating member operable to move the support downwards, heating elements provided on opposite sides of the compartment for heating a said slice of bread, and a movable holder having opposite sides supported for movement towards each other upon operation of the operating member in order to hold therebetween a said slice of bread in a stationary position between the heating elements, each said holder side having upper and lower end portions which are guided to move along respective slots.

5,664,484

FRYING APPARATUS AND PROCESS

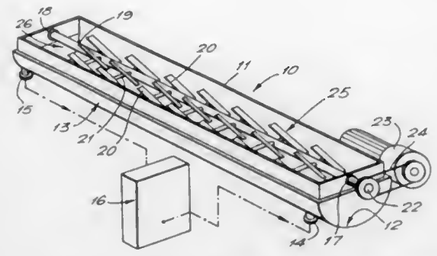
Slobodan Milohanic, Aengelholm, and Lars Moeller, Bjuv, both of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 6, 1995, Ser. No. 523,822
Claims priority, application Sweden, Sep. 22, 1994, 94114931
Int. Cl.[6] A47J *37/08*
U.S. Cl. 99—404 **27 Claims**

1. An apparatus for frying food pieces comprising:

a tray comprising a concave surface which extends longitudinally from a first tray end to a second tray end for containing food pieces for frying the pieces;

means for conveying food pieces in a direction from the first tray end to the second tray end and mixing the food pieces and for cleaning the tray surface comprising a unitary shaft and paddle member assembly which comprises a rotatable shaft and a plurality of paddle members affixed with the shaft, wherein the shaft extends longitudinally from the first tray end to the second tray end, wherein the paddle members are



spaced along a length of the shaft a distance apart one from another and from the shaft so that the paddle members form a helical arrangement in an area about and displaced from a circumference of the shaft and wherein the paddle members have a surface which is positioned at an angle with respect to an axial cross-section of the shaft and which extends for a distance away from the shaft to a paddle member edge so that in the presence of food pieces contained by the tray surface and upon rotation of the assembly about the longitudinal axis of the shaft, the paddle members contact and convey the food pieces in a direction from the first tray end to the second tray end and mix the food pieces and so that the edges scrape the tray surface for cleaning the tray surface;

means for heating the tray surface for frying food pieces contained by the tray surface; and

means for rotating the shaft for controlling an amount of time food pieces are contained by the tray surface for controlling a food piece frying time.

5,664,485

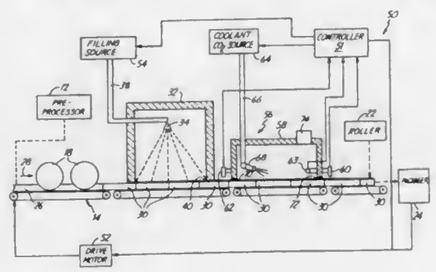
SYSTEM FOR PRODUCING A FILLED ROLLED DOUGH PRODUCT

Joseph C. McDilda, Brooklyn Park, and Kenneth Litke, Becker, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 448,888, May 24, 1995, abandoned. This application Jun. 24, 1996, Ser. No. 667,490

Int. Cl.[6] A23G *3/20;* **A21C** *9/04*

U.S. Cl. 99—450.2 **6 Claims**



1. A dough rolling preparation apparatus for preparing a dough product to be rolled, the apparatus comprising:

a dough travel path;

a conveyor moving a dough sheet along the dough travel path at a controlled speed;

filling applicator means, located proximate the dough travel path, for applying filling to the dough sheet at a controlled temperature and a controlled mass flow rate;

a cooling hood located downstream of the filling applicator means and defining a cooling portion of the dough travel path to cool filling on the dough sheet traveling along the dough travel path;

coolant delivery means, operably coupled to the hood, for delivering coolant to the hood; and;

controller means coupled to a controlled apparatus comprising at least one of the conveyor for controlling the speed of the conveyor, the filling applicator means for controlling at least one of the temperature and the mass flow rate, and the coolant delivery means for controlling the coolant delivery means, so that the viscosity of the filling is in a selected range that is suitable for rolling with the dough sheet into a rolled dough product as the dough sheet exits the cooling hood along the dough travel path.

5,664,486

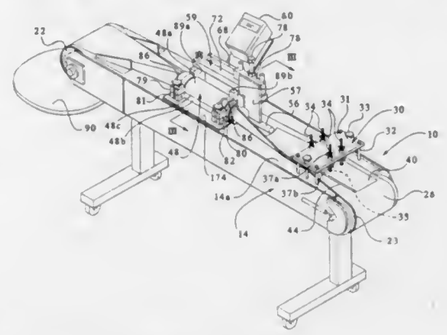
BAGEL FORMING APPARATUS

Harold Atwood, and Thomas Atwood, both of Dolton, Ill., assignors to AM Manufacturing Company, Inc., Dolton, Ill.

Filed Oct. 25, 1996, Ser. No. 740,243

Int. Cl.[6] A21C *3/00;5/00;11/00;* **A23P** *1/00*

U.S. Cl. 99—450.2 **16 Claims**



1. A dough forming machine comprising:

a stationary frame;

a continuous circulating belt having a top horizontal segment;

a forming tube positioned on said frame surrounding a portion of said top horizontal segment, said forming tube having open ends causing lateral edges of said belt to curl upwardly forming a substantially circular cross section of said belt as said belt translates longitudinally through said tube;

a mandrel mounted to extend axially through said tube;

said tube having a horizontal seam for separating said tube into two semi-cylindrical parts, said two semi-cylindrical parts removably fastened together.

5,664,487

SANITARY FILLING NOZZLE MOUNT

Yutaka Kaneko, Wheeling, Ill., assignor to Tetra Laval Holdings & Finance SA, Buffalo Grove, Ill.

Filed Sep. 19, 1996, Ser. No. 715,080

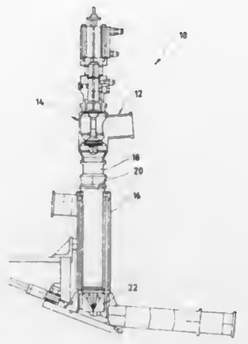
Int. Cl.[6] A23C *9/00;* **A01J** *25/00;* **A23G** *9/00;* **A47J** *31/40*

U.S. Cl. 99—452 **12 Claims**

1. A sanitary nozzle mount for use with a filling apparatus for flowing food product, the filling apparatus having a removable filling nozzle having a mounting portion and a nozzle portion, the nozzle portion having a generally circular cross-section and including an inwardly extending, circumferential mounting ring, the nozzle portion having a plurality of gore-like panels therein defined by a plurality of axial and angled, generally axial creases, the mount comprising:

an elongated, hollow, cylindrical outer filling tube, the outer filling tube having a length dimension, and including a mounting element extending outwardly therefrom;

an elongated, hollow, cylindrical inner filling tube, said inner filling tube having a length dimension greater than the length dimension of said outer filling tube, said inner filling tube



having a nozzle receiving end having a circumferential locking element extending outwardly therefrom adapted to engage said nozzle mounting ring, said inner filling tube being concentrically positioned relative to said outer filling tube for sliding engagement therewith, said inner filling tube having a guide element extending outwardly therefrom adapted to engage said outer filling tube, said guide element being configured to maintain concentricity between said inner and outer filling tubes; and

a removable spacer coupling adapted to fit between and engage said inner filling tube mounting element and said outer filling tube mounting element,

wherein when said coupling is positioned between said inner and outer filling tube mounting elements, and when said nozzle mounting ring is positioned intermediate said locking element and said guide element, said outer filling tube is positioned in overlapping engagement with said filling nozzle at about said mounting ring, to secure said nozzle between said inner and outer filling tubes.

5,664,488

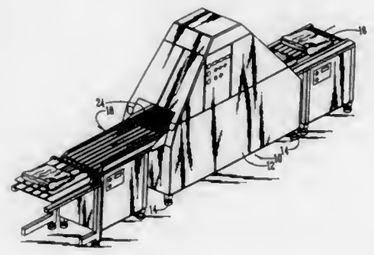
MEANS FOR CONTROLLING AND ADJUSTING THE AMOUNT OF FLUID INJECTED INTO A MEAT PRODUCT

David W. Smith, West Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Division of Ser. No. 656,147, May 30, 1996, which is a continuation-in-part of Ser. No. 503,455, Jul. 17, 1995. This application Oct. 2, 1996, Ser. No. 724,407

Int. Cl.[6] A22C *17/00;* **A23L** *1/31*

U.S. Cl. 99—487 **6 Claims**



1. A machine for injecting fluid into meat products, comprising,

a meat product support means on said machine,

a fluid manifold on said machine over said support means, and being connected to a source of fluid under pressure,

a plurality of injector needles on said fluid manifold means, and extending towards support means,

power means on said machine to reciprocally cycle said injector needles to penetrate a meat product on said support means to inject fluid therein, and to then withdraw said injector needles from the meat product,

and control means on said power means to adjust the time that said needles are penetrating the meat product with respect to the time that said needles are withdrawn from the meat product.

5,664,489

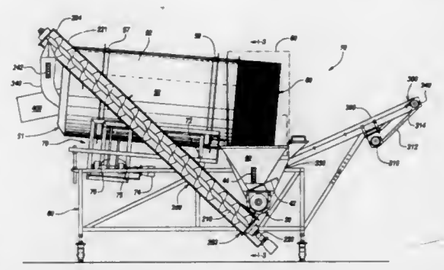
FOOD BREADING APPARATUS

Harold Herrick, IV, Highland Village, Tex., assignor to Dallas A.C. Horn & Co., Dallas, Tex.

Filed Nov. 19, 1996, Ser. No. 752,209

Int. Cl.[6] A23L *1/22;* **A47J** *44/00;* **B05B** *5/00;* **B05C** *19/00*

U.S. Cl. 99—494 **14 Claims**



1. A food breading apparatus for breading food components with a breading mixture comprising:

a breading apparatus frame;

a rotatable breading drum including:

an upper end;

a lower end;

an inlet opening located in the upper end,

an outlet opening located in the lower end,

a sidewall;

a longitudinal axis;

a plurality of openings in the sidewall located proximal to the lower end, said openings of predetermined size to allow surplus breading mixture and lumps of breading mixture to pass therethrough but retain the breaded food product in the breading drum;

means for rotating the breading drum; and

means for mounting said breading drum for rotation about its longitudinal axis, said axis inclined from horizontal whereby the upper end is above the lower end;

means for directing food components to be breaded to the inlet opening of the breading drum;

recirculating breading mixture means for providing the breading mixture to the inlet opening;

takeout conveyor means for directing breaded food components away from the outlet opening of the breading drum;

lump removal conveyor means for removing lumps of breading mixture, said means having a plurality of openings of predetermined size to allow passage of surplus breading mixture but retain the lumps of breading mixture for transport to a catch pan;

means supporting the lump removal means beneath the openings in the sidewall of the breading drum; and

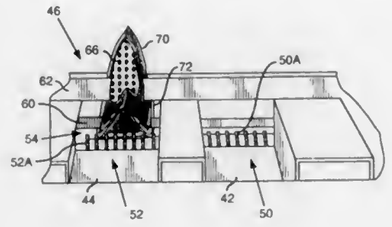
surge hopper means for collecting and transporting surplus breading mixture to said recirculation means, said means positioned below the lump removal conveyor means thereby collecting surplus breading mixture passing through the openings in the lump removal conveyor means.

5,664,490

MELON PEELER APPARATUS

Nicholas J. Tompkins; Tim T. Murphy, both of Arroyo Grande, and Andrew T. Furukawa, Santa Maria, all of Calif., assignors to Fresh King LLC, Santa Maria, Calif.

Filed Nov. 5, 1996, Ser. No. 743,226
Int. Cl.[6] A23N *1/02;4/20;7/08*
U.S. Cl. 99—541 7 Claims



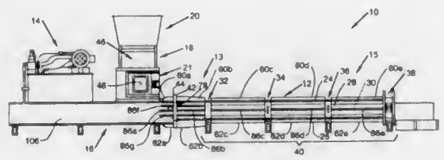
1. A melon peeler apparatus, comprising:
a frame;
a melon slice input section connected to the housing, the melon slice input section including a melon slice input channel arranged for receiving therein a melon slice that includes a rind and a seed pod;
a peeling assembly arranged across the input channel; and
a drive assembly mounted to the frame, the drive assembly including apparatus for propelling the melon slice toward the peeling assembly, the peeling assembly including cutting apparatus for simultaneously removing the rind and seed pod from the melon slice.

5,664,491

METHOD OF BALING AND COMPACTING MATERIAL HAVING A FORM MEMORY

Wayne Maki; Forrest Wildes, both of Baxley, Ga.; Fred Johnson, Ponte Vedra Beach, Fla., and Ken Roberts, Baxley, Ga., assignors to Harris Waste Management, Inc., Atlanta, Ga.

Continuation of Ser. No. 946,539, Sep. 16, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,232
Int. Cl.[6] B30B *9/30*
U.S. Cl. 100—41 5 Claims



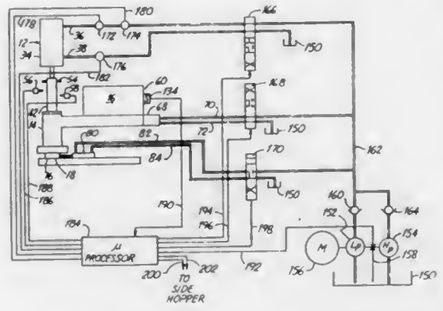
1. A method of baling low density material having a form memory, comprising:
feeding the material into a degasification and densification chamber having sides, an inlet and an outlet;
compressing the material to form a bale of compressed material; and
maintaining the material in a compressed state for a sufficient time to enable the form memory of the material to be broken and to allow the material to be degassed, wherein the material is polystyrene, and is compressed to a density in a range of 8 to 30 pounds per cubic foot.

5,664,492

APPARATUS FOR COMPACTING METAL SHAVINGS

Ervin J. Bendzick, R.R. No. 1, Box 307A, New Prague, Minn. 56071

Continuation-in-part of Ser. No. 373,027, Jan. 17, 1995, Pat. No. 5,542,348, which is a division of Ser. No. 74,946, Jun. 10, 1993, Pat. No. 5,391,069. This application Apr. 29, 1996, Ser. No. 639,474
Int. Cl.[6] B30B *9/02;11/02;15/22*
U.S. Cl. 100—45 20 Claims



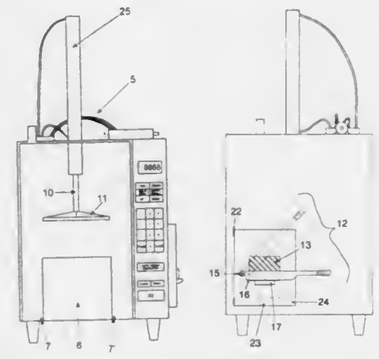
1. A compactor for compacting fluid-laden incompressible metal chips and shavings comprising, in combination:
a compaction chamber forming an enclosing wall, an opening to the chamber through which the metal chips and shavings are introduced, the chamber having a first end adjacent which metal pellets are formed from the metal chips and shavings;
a first piston dosing a second end of the chamber opposite the first end;
a barrier adjacent the first end of the chamber, the barrier being movable between a first position at which the barrier blocks the first end to prevent metal pellets in the chamber from being discharged through the first end and a second position at which the barrier permits metal pellets to be discharged, the barrier being so disposed and arranged with respect to the enclosing wall of the chamber to permit fluid to be expelled from the chamber between the barrier and the enclosing wall when the barrier is in its first position;
first drive means for moving the first piston between positions relative to a second end of the chamber, the first drive means being operated by hydraulic pressure, a hydraulic circuit connected to the first drive means, the hydraulic circuit including a hydraulic conduit connected to a hydraulic source selectively operable to supply high and low pressure fluid, the first drive means being responsive to the low pressure fluid to move the first piston between
a first position in which the first piston permits the metal chips and shavings to enter the chamber through the opening between the first piston and the first end; and
a second position in which the first piston blocks the opening and imparts a first compacting pressure on the metal chips and shavings in the chamber when the barrier is in its first position, the first compacting pressure being of such magnitude as to expel fluid from the metal chips and shavings and from the chamber and to form a loosely compacted pellet from the metal chips and shavings in the chamber, the loosely compacted pellet having substantial interstices therein; and
the first drive means being responsive to the high pressure fluid to operate the first piston to move between its second position and a third position in which the first piston imparts a second compacting pressure on the loosely compacted pellet in the chamber when the barrier is in its first position, the second compacting pressure being greater than the first compacting pressure and being of such magnitude as to expel fluid from the loosely compacted pellet and from the chamber to form a compact metal pellet from the loosely compacted pellet substantially devoid of fluid and interstices,
the first drive means being further responsive to the low pressure fluid to move the first piston to a fourth position when the barrier is in its second position to discharge the compact metal pellet from the chamber;
second drive means for operating the barrier between its first and second positions; and
feed means for feeding metal chips and shavings through the opening in the chamber when the first piston is in its first position.

5,664,493

WASTE, GLASS, AND PLASTIC COMPACTOR

Dong Ik Kim, P.O. Box 747, Pago Pago, American Samoa, 96799

Filed Oct. 14, 1994, Ser. No. 324,180
Int. Cl.[6] B30B *15/34;15/08*
U.S. Cl. 100—92 5 Claims



1. A compacting apparatus for waste, glass, and plastic comprising:
a rectangularly shaped body having a front, a back, a right side, a left side, a top, a bottom, an interior area, said front having a right side area, and said interior area having a base;
a pivoting door on said front of said body;
a control panel on said right side area of said front of said body
four legs attached to said bottom of said body; a compressing system attached to said top of said body;
a cutting device attached to said right side of said body;
two electric railings attached to said base of said interior area of said body;
a box with an open top designed to fit in between said railings.

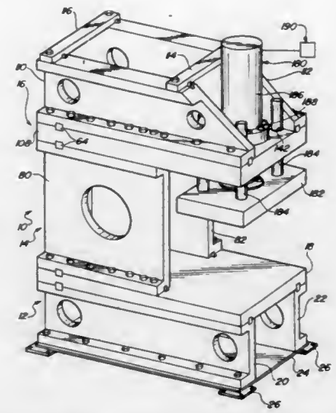
5,664,494

MODULAR PRESS INCLUDING NON-CAST OR STOCK PARTS REMOVABLY SECURED WITH ONE ANOTHER

James A. Hoeh, 33 N. Seventh St., Sebewaing, Mich. 48759

Filed Feb. 21, 1995, Ser. No. 391,435
Int. Cl.[6] B30B *15/04*
U.S. Cl. 100—214 19 Claims

1. A modular gap frame press comprising:
at least one first frame beam;
an elongated bed removably secured to said at least one first frame beam, said bed having a longitudinal axis;
upright support means removably secured to said bed and positioned on said bed to define an elongated opening, said elongated opening having a longitudinal axis parallel with said longitudinal axis of said bed, said opening enabling a work piece to be positioned in said opening and longitudinally movable with respect to said bed;



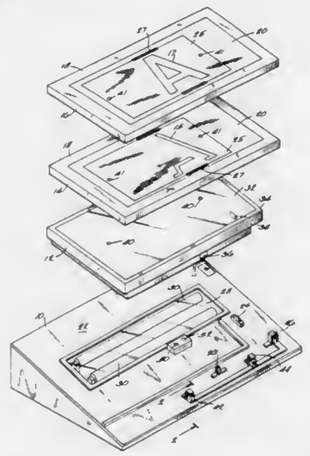
a platform removably secured to said upright support means and supported and positioned above said bed;
ram means for performing a pressing function, said ram means removably coupled with said platform;
at least one second frame beam removably secured with said platform for providing rigidity for said press, wherein said first and second frame beams, upright support means, bed, and platform are cut-to-size steel parts; and
control means for operating said ram means.

5,664,495

PRINT SCREEN ALIGNMENT SYSTEM

Robert B. Winter, 2354 Redtail Dr., Neenah, Wis. 54956

Continuation of Ser. No. 254,380, Jun. 6, 1994, Pat. No. 5,517,912. This application Apr. 11, 1996, Ser. No. 629,899
Int. Cl.[6] B41F *15/00*
U.S. Cl. 101—114 3 Claims



1. A system for registering printing screens supported on a rectangular frame, and used for printing in series on a substrate comprising, in combination,
a plurality of screens each having an emulsion coating thereon,
an overlay box comprising a back-lighted table, for successively supporting said screens in series, for exposure to light through a series of image-bearing sheets, said overlay box being provided with a light-transmitting surface provided with registration grid markings for accurate placement thereon of a

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series of image-bearing sheets, one of which corresponds to each successive screen, for exposure, each image bearing sheet having an image thereon in a selected color from a number of colors which together form a multi-colored composite image,

a first screen registration device associated with said overlay box for accurate alignment of a series of positive images on a series of emulsion-coated screens for exposure, including a planar screen supporting surface, a first pair of positioning projections extending normal to said planar surface and positioned to engage a first side of a screen frame and one positioning projection extending normal to said planar surface and being positioned to engage a second side of said screen frame, said first and second sides of said frame being orthogonal relative to each other and,

registry of each successive frame being confirmed by engagement of a single frame simultaneously with said pair of positioning projections and with said one positioning projection,

a second screen registration device for aligning said screens in correct alignment with each other for successive printing on a substrate using said screens in succession to form said multi-colored composite image on said substrate, said second screen registration device comprising a second set of outwardly projecting positioning projections, said second set of positioning projections including a second pair of positioning projections positioned to engage a first side of a screen frame and at least one positioning projection of said second set of positioning projections being positioned to engage a second side of said screen frame, said first and second sides of said frame being orthogonal relative to each other, and each of said second set of positioning projections extending normal to said substrate, simultaneous engagement of each of said second set of positioning projections by a screen frame placing each successive screen in correct alignment on said substrate.

5,664,496

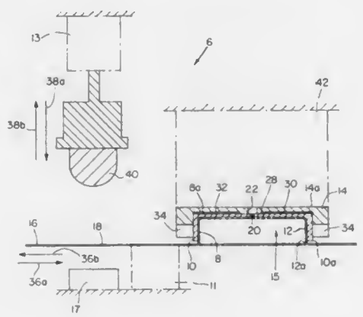
DOCTORING INK CUP

Robert B. Scheuhing, Rindge, and Edward H. Wilson, Jr., Marlborough, both of N.H., assignors to Markem Corporation, Keene, N.H.

Filed Dec. 15, 1994, Ser. No. 356,908

Int. Cl.[6] B41F *9/08*

U.S. Cl. 101—169 **18 Claims**



1. A doctoring ink cup comprising:

a flexible doctoring member of sheet metal, the doctoring member being cup shaped and having a rim forming a doctoring edge; and

a stiffening member assembled in engagement with the doctoring member for stiffening the doctoring member against lateral flexing.

5,664,497

LASER SYMBOLIZATION ON COPPER HEAT SLUGS

Edgar R. Zuniga, Sherman; Archie W. Sutton, Howe, and Ray H. Purdom, Sherman, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 198,693, Feb. 18, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,232

Int. Cl.[6] B41F *23/04*

U.S. Cl. 101—487 **7 Claims**



1. A method of placing symbolization on semiconductor devices, comprising the steps of:

coating an area to be symbolized with an oxide material;

exposing a portion of the oxide material in a desired pattern with a low power Laser beam in the range of 75 kilowatts; and

exposing the portion of the oxide material for a period sufficient to change a reflectivity of the portion of the oxide material without burning through the portion of the oxide material.

5,664,498

TRACK RENEWAL MACHIGINE

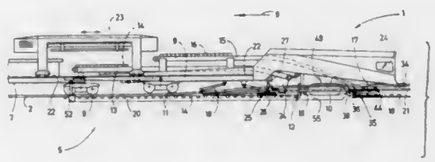
Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnhaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Sep. 18, 1996, Ser. No. 715,643

Claims priority, application Austria, Oct. 31, 1995, 1801/95

Int. Cl.[6] E01B *29/05*

U.S. Cl. 104—6 **9 Claims**



1. A machine for removing an old track and laying a new track on a ballast bed having a shoulder, each track being comprised of rails fastened to ties, which comprises

(a) an elongated machine frame extending in a longitudinal direction and supported on undercarriages for mobility in an operating direction,

(b) a device for receiving ties of the old track mounted on the machine frame,

(c) a device for planing the ballast bed mounted on the machine frame, the planing device comprising

(1) a planing shield extending transversely to the machine frame and

(2) two transversely spaced boundary shields extending in the longitudinal direction at respective sides of the planing shield, and

(d) a device for laying ties of the new track mounted on the machine frame and positioned between the boundary shields.

5,664,499

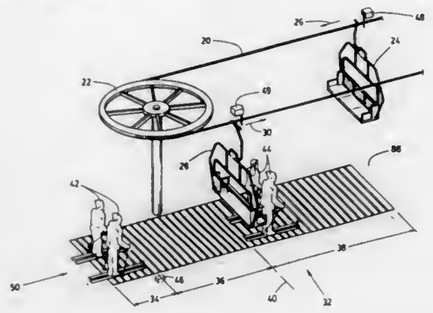
SKI LIFT LOADER AND UNLOADER

William Gault Kingsmill, 72 Howland Ave., Apartment 1, Toronto, Ontario, Canada, M5R 3B3

Filed Aug. 28, 1996, Ser. No. 705,892

Int. Cl.[6] B61B *1/00*

U.S. Cl. 104—28 **18 Claims**



1. An apparatus for loading a skier onto a ski lift which moves at a speed and in a direction to carry the skier up a ski hill, the apparatus comprising:

(a) a plurality of rollers positioned parallel to each other, in close proximity to each other and positioned perpendicular to the direction of movement of the ski lift;

(b) the plurality of rollers comprising a first roller further downhill and a last roller closer uphill;

(c) means for rotating the rollers in the direction of movement of the ski lift such that every roller from the first roller to the last roller rotates at a speed faster than the preceding roller, thereby the last roller rotates at the fastest speed;

whereby the skier can stand on the rollers near the first roller and be accelerated to a speed the same as or substantially the same as the speed of the ski lift to an embarking point so as to facilitate embarking on the ski lift by the skier.

5,664,500

SHIFTING DEVICE FOR HORIZONTAL SHIFTING OF HEAVY LOADS

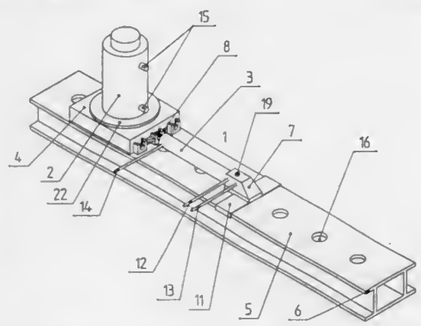
Dietmar Lindner, Eckersdorf, and Dieter Hesse, Erlangen, both of Germany, assignors to Lukas Hydraulik GmbH, Erlangen, Germany

Filed Aug. 31, 1995, Ser. No. 521,630

Claims priority, application Germany, Feb. 21, 1995, 295 02 801.7

Int. Cl.[6] B61K *5/00*

U.S. Cl. 104—273 **17 Claims**



1. A shifting device for horizontal shifting of heavy loads with at least one lifting cylinder to raise the load, a support, and a hydraulically actuated shifting mechanism, wherein the shifting mechanism has at least one horizontally arranged shifting cylinder which by means of a locking tie-rod is mechanically lockable to the support in different positions on the surface of the support, and which engages the lifting cylinder and effects a horizontal shifting of the lifting cylinder relative to the support, characterized in that in a tie-rod casing, the locking tie-rod can be brought vertically from a rest position to a locking position and vice versa, that the locking in the locking position is effective in both directions to the support, and that the shifting cylinder can be acted on by force in both directions.

5,664,501

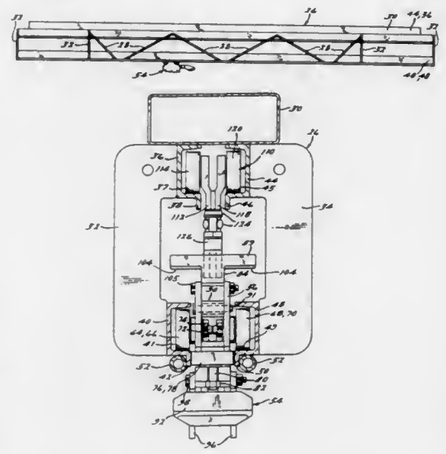
POWER AND FREE CONVEYING SYSTEM

Hugh Harris, Trinidad, Colo., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 418,214, Apr. 6, 1995, Pat. No. 5,606,915. This application Oct. 15, 1996, Ser. No. 731,628

Int. Cl.[6] B61B *10/00*

U.S. Cl. 104—172.4 **10 Claims**



1. A power and free conveying system comprising:

a track assembly including a power track and a free track vertically spaced from said power track;

a power trolley supported on said power track for movement therealong;

a free trolley supported on said free track for movement therealong;

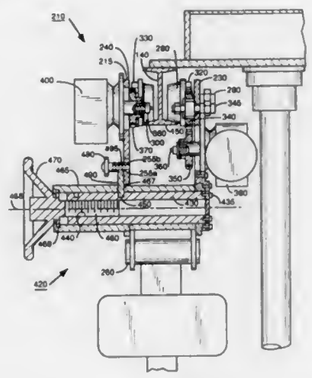
said track assembly including a C-shaped first side support member having an upper transverse end connected to said power track and a lower transverse end connected to said free track and a C-shaped second side support member opposite and spaced from said first side support member having an upper transverse end connected to said power track and a lower transverse end connected to said free track.

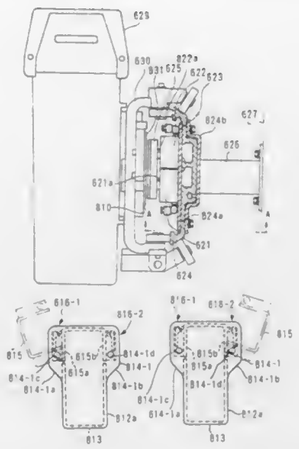
5,664,502

WHEEL ASSEMBLY CAPABLE OF MAINTAINING ENGAGEMENT WITH A RAIL HAVING AN UNEVEN PORTION THEREIN

John J. Wilhelm, New Kensington, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1994, Ser. No. 280,895
Int. Cl.[6] B61C *11/00*
U.S. Cl. 105—30 8 Claims





1. A wheel assembly capable of maintaining engagement with a circular rail having an inner curvature as the wheel assembly traverses an uneven portion in the rail, comprising:

(a) a frame having a fixed first portion and a movable second portion, said frame defining a pivot axis therethrough;

(b) a plurality of wheels rotatably connected to said frame for engaging the rail and traversing therealong; and

(c) adjustment means connected to said frame for adjusting said wheels, so that said wheels engage the rail, whereby said frame and said wheels traverse the rail as said wheels simultaneously rotate, whereby said frame and said wheels pivot about the pivot axis as at least one of said wheels traverse the uneven portion in the rail, and whereby said wheels maintain engagement with the rail as the at least one of said wheels traverses the uneven portion and as said frame pivots about the pivot axis, said adjustment means including a sleeve attached to the first portion of said frame, said sleeve having internal threads and a notch formed therein; and a rotatable lead screw rotatably connected to the second portion of said frame and disposed in said sleeve and threadably engaging the internal threads formed therein for controllably advancing the second portion of said frame toward the rail, so that said wheels contact the rail.

5,664,503

CONTAINER FOR LINEAR MOTOR DRIVEN TRANSPORT SYSTEM

Takasi Kawai, Toba, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 281,347, Jul. 27, 1994, Pat. No. 5,492,066.
This application Nov. 13, 1995, Ser. No. 559,757
Int. Cl.[6] B65D *43/00*
U.S. Cl. 105—377.05 4 Claims

1. A container for a linear motor driven transport system, which container carries and transports a cargo along a rail track by a linear motor system, comprising:

an open-top container box having a longitudinal dimension coinciding with an advancement direction along the rail track;

a container cover for covering the open top of said container box;

a first bracket on a front surface of said container box, having first and second rod support holes positioned to sandwich one end of said container cover therebetween;

a second bracket on a back surface of said container box having third and fourth support holes positioned such as to sandwich the other end of said container cover therebetween;

a first latch mechanism attached to one side of said container cover comprising first and second rods provided along a longitudinal dimension of said container cover, the ends of said first and second rods positioned to fit respectively into said first and third rod support holes, and a first rod release mechanism which withdraws said first and second rods from said first and third rod support holes respectively; and

a second latch mechanism attached to the other side of said container cover comprising third and fourth rods provided along a longitudinal dimension of said container cover, the ends of said third and fourth rods positioned to fit respectively into said second and fourth rod support holes, and a second rod release mechanism which withdraws said third and fourth rods from said second and fourth rod support holes respectively.

5,664,504

COMBUSTION APPARATUS HAVING INVERSE TEMPERATURE DISTRIBUTION BY FORCED CONVECTION

Shizuo Kobayashi, 18-10, Matunuma-cho, Tatebayashi-shi, Gunma, Japan

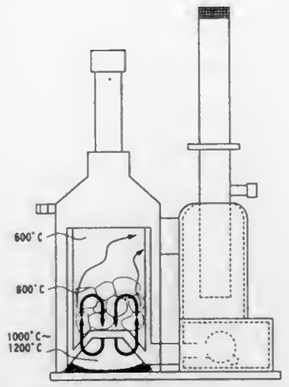
Filed Dec. 19, 1994, Ser. No. 358,924
Claims priority, application Japan, Oct. 27, 1994, 6-286179
Int. Cl.[6] F23G *5/00*
U.S. Cl. 110—251 29 Claims

11. An incinerator comprising:

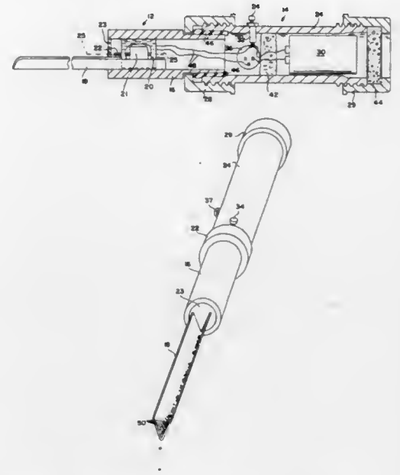
a combustion chamber having a top portion ann a bottom portion;

temperature inverting means for burning waste in a temperature distribution in which a temperature in the vicinity of said bottom portion is higher than that in the vicinity of said top portion by blowing a combustion air said combustion chamber; and

a conduit extending from the blower to the lower portion of a combustion chamber, said conduit including at least two openings facing downward to allow combustion air to flow into the bottom portion of the combustion chamber, the openings being located radially outward from a center of the



combustion chamber such that the combustion air flows radially inward towards a combustible object therein.

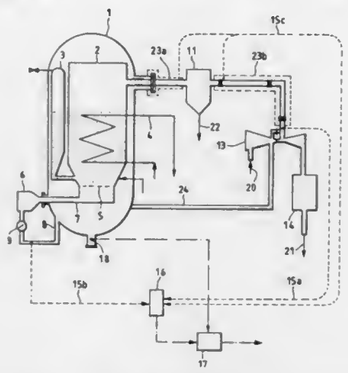


5,664,505

METHOD OF AND APPARATUS FOR ABNORMALITY DETECTION OF A FLUIDIZED BED BOILER

Tomohiko Miyamoto, Takahagi; Yasuo Yoshii, Naka-machi; Tooru Inada, Hitachi; Jinichi Tomuro; Nobuyuki Hokari, both of Hitachinaka, and Katsuya Oki, Hiroshima, all of Japan, assignors to Hitachi, Ltd., and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,425
Claims priority, application Japan, Mar. 18, 1994, 6-48247
Int. Cl.[6] F23D *1/00*
U.S. Cl. 110—347 12 Claims



12. A method of detecting an abnormality of a fluidized bed boiler contained within a pressure vessel, characterized in that temperature within a lower end portion of the pressure vessel is detected, and when the detection value exceeds a limit value, the fluidized bed boiler is judged to be abnormal.

5,664,506

HAND HELD SEED DISPENSER

Thomas M. Morin, 281 W. Mountain Rd., Adams, Mass. 01220

Filed Mar. 18, 1996, Ser. No. 617,104
Int. Cl.[6] A01C *1/00*
U.S. Cl. 111—95 13 Claims

1. A hand-held seeder comprising:

a) a handle having a thin-walled hollow portion;

b) a battery contained in the hollow handle;

c) a switch mounted in a wall of said hollow handle;

d) a motor-spatula assembly comprised of an elongated V-shaped spatula having two side portions and a trough therebetween and an electrical motor having a body fixedly mounted to a proximal end portion of said V-shaped spatula, a distal end of said spatula extending away from said handle, said motor connected via said switch to said battery, said motor including a rotor with a drive shaft and an axis of rotation, and said rotor being eccentric by having a rotational center of gravity not exactly coaxial with the axis of rotation of said rotor, so that when said motor is energized by said battery said rotor vibrates at a dominant vibration frequency that is directly proportional to the speed of said rotor; and

e) a joining means for joining said proximal end portion of said spatula to said handle.

5,664,507

SEED TUBE GUIDE

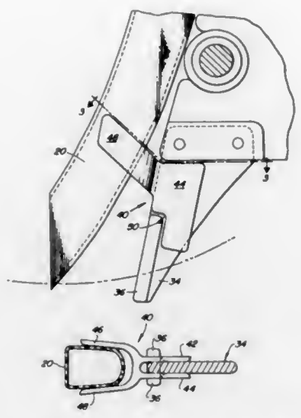
Norman Robert Bergland, Moline, and Alfred Dean Yoder, Geneseo, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jun. 3, 1996, Ser. No. 659,054
Int. Cl.[6] B65H *3/08*
U.S. Cl. 111—140 6 Claims

1. A seed tube guide for centering a seed tube in a seed planting furrow, the seed tube guide is mounted to a seed tube guard extending downwardly from a planter unit, the seed tube guide comprising:

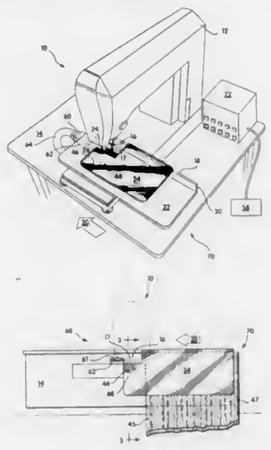
left and right mounting plates, each of the mounting plates having a notch for receiving a transversely extending ridge on the seed tube guard, the plates clamping the seed tube guard;

left and right guide members joined to the left and right mounting plates for gripping a seed tube therebetween, the left and



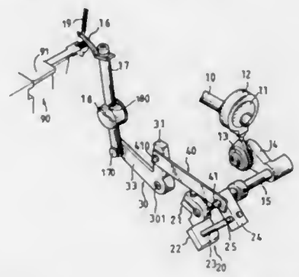
right guide members extend rearwardly from the left and right mounting plates.

5,664,508
METHOD AND APPARATUS FOR FORMING THE SIDE PANEL OF A MATTRESS SACK
Charles E. Mulcahey, Beverly, and Michael R. Porter, Topsfield, both of Mass., assignors to Porter Sewing Machines, Inc., Beverly, Mass.
Filed Mar. 21, 1996, Ser. No. 620,087
Int. Cl.[6] D05B *11/00;19/12*
U.S. Cl. 112—2.1 **9 Claims**



1. Apparatus for stitching together the ends of a side panel of a mattress sack or enclosure for a box spring, said apparatus comprising:
- a stitching machine having two sewing needles and apparatus for feeding the side panel to the two sewing needles in a feed direction, the two sewing needles being offset from one another in a direction perpendicular to the feed direction;
- a guide plate extending in a direction parallel to the feed direction for guiding movement of the two ends of the side panel to and past the two needles in the feed direction, the two ends sliding in abutting relationship with the guide plate during the sewing process;
- a first light source and associated first photocell generally aligned in the feed direction with a first needle encountered by the side panel as it moves to and through the needles in the feed direction; a controller for initiating a stitching operation in response to interruption of light from the first light source; and
- a second light source and associated second photocell disposed in the feed direction after the second needle encountered by the side panel as it moves to and through needles in the feed direction, receipt by the second photocell of light from the second light source after the second light source has been interrupted causing said controller to stop the stitching operation after a predetermined number of stitches.

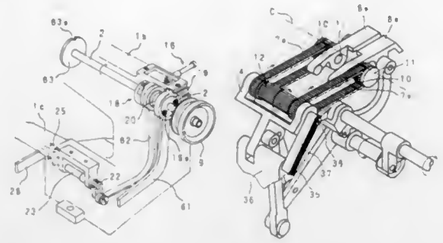
5,664,509
LOOPER DRIVING ASSEMBLY FOR A SEWING MACHINE
Hsien-Chang Tseng, 9F., No. 13-4, Sec. 1, Da Ching Street, Talchung, Taiwan
Filed Sep. 20, 1996, Ser. No. 716,898
Int. Cl.[6] D05B *57/34*
U.S. Cl. 112—200 **5 Claims**



1. A looper driving assembly for a sewing machine, said looper driving assembly comprising:
- a shaft for pivotally supporting in the sewing machine and for rotating in a reciprocating action,
- a support for rotatably securing to the sewing machine, said support including an orifice formed therein,
- a rod slidably engaging in said orifice of said support for moving up and down along said orifice, said rod including an upper portion having a looper secured thereon and including a lower portion,
- a follower secured to said shaft and rotated in concert with said shaft, said follower including a guiding member provided therein and including a pivot axle slidably received in said guiding member for being adjusted along said guiding member and for adjusting a distance between said pivot axle and said shaft, and
- means for coupling said pivot axle to said lower portion of said rod for moving said rod up and down when said pivot axle and said follower are rotated by said shaft,
- said pivot axle being moved along said guiding member for adjusting the distance between said pivot axle and said shaft and for adjusting a moving stroke of said rod and said looper.

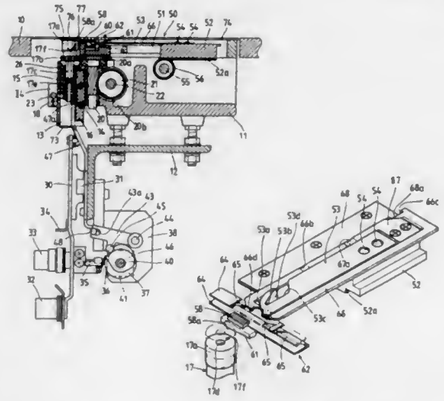
5,664,510
BLINDSTITCH MACHINE
Hideo Kitamura, Toyonaka, Japan, assignor to Yamato Mishin Seizo Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 988,201, Dec. 9, 1992. This application Feb. 24, 1994, Ser. No. 201,047
Claims priority, application Japan, Feb. 14, 1992, 4-5922 U
Int. Cl.[6] D05B *1/24*
U.S. Cl. 112—178 **1 Claim**

1. An auxiliary mechanism for a blind stitch type sewing machine having a reciprocating needle at a sewing position and a



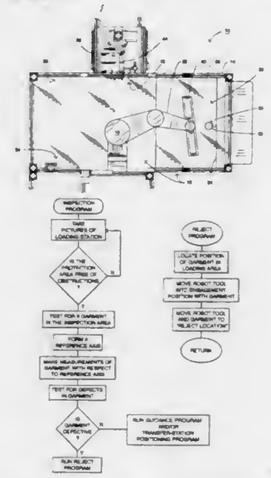
main body with a feed dog for moving the fabric to be sewn under the sewing machine needle at the sewing position, said feed dog spaced from the needle in the direction of movement of the fabric said mechanism comprising:
- a rotatable belt on which the lower face of the fabric rests for feeding the fabric by an amount to the machine sewing position, and
- means for adjusting the feeding amount of the fabric by said belt,
- an eccentric member fixed to a main shaft which determines the feeding amount of said feed dog of the main body by its rotating speed, said eccentric member having a plurality of holes at different peripheral positions on the outer surface thereof, the location of the position of said holes relative to said main shaft corresponding to respective feeding amounts by said feed dog;
- a feeding amount adjusting unit coupled to one of said holes of said eccentric member to be rotated eccentrically by said main shaft in accordance with the eccentricity of said one hole;
- a rod coupled to said feeding amount adjusting unit which swings in one direction by an amoun' proportional to the eccentric rotation of said feeding amount adjusting unit; and
- means for transmitting the one-way motion of said rod to said belt to drive it in a direction to feed the fabric to the machine sewing position.

5,664,511
THREAD CUTTER AND DRIVE UNIT FOR A CHAIN STITCH SEWING MACHINE
Ikuo Tajima; Satoru Suzuki, and Yoichi Mizuguchi, all of Kasugai, Japan, assignors to Tokai Industrial Sewing Machine Co., Ltd., Aichi, Japan
Filed Mar. 13, 1996, Ser. No. 614,668
Int. Cl.[6] D05B *65/00*
U.S. Cl. 112—292 **3 Claims**



1. A thread cutter for a chain stitch sewing machine which performs chain stitch sewing by cooperation of a needle driven up and down and each of a plurality of loopers arranged under a needle plate, comprising:
- a looper support for supporting said plurality of loopers, the looper support being slidably arranged under said needle plate;
- a looper selecting mechanism for sliding said looper support so that one of said plurality of loopers is positioned opposite and under said needle;
- a movable knife arranged so that it advance into or retracts from a gap between a top surface of the selected looper and an under surface of said needle plate;
- a knife driving mechanism for advancing and retracting said movable knife;
- a stationary knife arranged under said needle plate for cutting a sewing thread in cooperation with said movable knife when said movable knife is retracted;
- a thread holding plate for holding a cut end of said sewing thread on the side of said looper in a predetermined position by a further retracting operation of said movable knife after said sewing thread is cut; and
- a thread releasing member provided in said movable knife for releasing the thread holding force of said thread holding plate by a reciprocating operation of said movable knife at the time of sewing.

5,664,512
GARMENT PIECE POSITIONER AND SEAMER
Wayne G. Foster; John R. Everhart, both of Winston-Salem, and Ken J. Thompson, Lexington, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Jul. 21, 1995, Ser. No. 505,553
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.07 **39 Claims**



11. An apparatus for receiving a garment piece at a first workstation and moving said garment piece to a second workstation in combination with a sewing device, said apparatus comprising:
- (a) a garment, piece transfer system located adjacent to said first workstation for engaging said garment piece at said first workstation and for moving said garment piece to said second workstation, said transfer system including: (i) a support table located between said first workstation and said second workstation having a smooth, generally horizontal planar top surface for supporting said garment piece thereon; and (ii) a robot positioned adjacent said table and having an arm and presser foot attached thereto, said robot arm including means for selectively moving said presser foot between a non-engagement position and an engagement position with said planar surface whereby said presser foot engages said garment

piece on the surface of said support table, said robot arm including means for moving said presser foot between said first workstation and said second workstation when in said engagement position to slidably move said garment piece along the surface of said table from said first workstation to said second workstation; and

(b) a vision and control system located adjacent to said first workstation for determining the position of said garment piece at said first workstation and sending a control signal to said garment piece transfer system to engage said garment piece at said first workstation and move said garment piece to said second workstation;

said sewing device comprising:

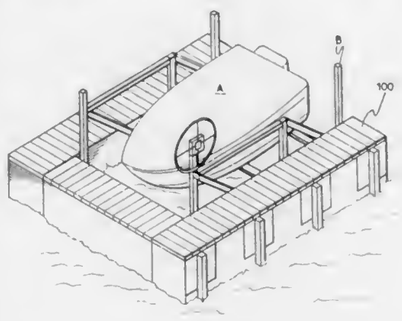
(c) a sewing machine located at said second workstation for performing a sewing operation on said garment piece; and p1 (d) wherein said vision and control system determines a parameter value for a selected parameter for said garment piece in said first workstation and compares said determined parameter value with a reference parameter value stored in said vision and control system, and wherein said garment is selectively placed in a reject class or a non-reject class based on said comparison of said determined and reference parameter values, and wherein said presser foot moves said garment piece to said second workstation for sewing in response to said garment piece being placed in said non-reject class.

5,664,513

FLOATING DRY DOCK

Larry R. Echelbarger, 17003 W. Shore Rd., Stanwood, Wash. 98292-7959

Filed Jul. 17, 1996, Ser. No. 682,420
Int. Cl.[6] B63C *1/02*
U.S. Cl. 114—45 16 Claims



1. A floating dry dock for supporting a boat lift and a boat, said dry dock comprising:

two side pontoons, each pontoon having two side boards, two end boards and two flotation units; and

at least two cradles connecting the side pontoons to each other, each cradle having four vertical members and a horizontal member;

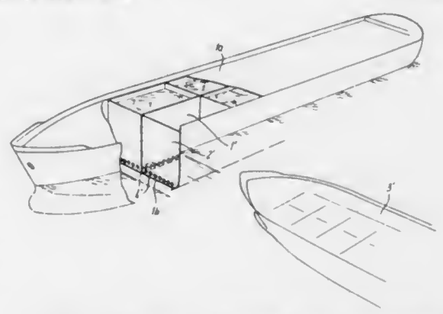
said horizontal member having a center cut and a center tube to allow adjustment of an overall width of said dry dock.

5,664,514

TANKER PROVIDED WITH SWASH TYPE BULKHEADS

Markus Van Der Laan, Jan Evertsenlaan 18, NL-2341 SV Oestgeest, Netherlands

PCT No. PCT/NL94/00128, § 371 Date Feb. 5, 1996, § 102(e) Date Feb. 5, 1996, PCT Pub. No. WO94/29165, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 2, 1994, Ser. No. 569,079
Claims priority, application European Pat. Off., Jun. 4, 1993, 93201603
Int. Cl.[6] B63B *25/03*
U.S. Cl. 114—74 R 2 Claims



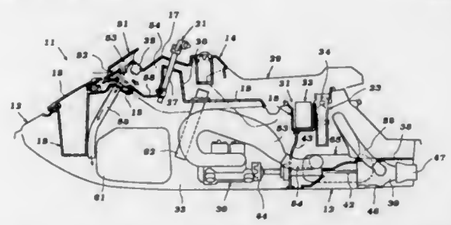
1. A tanker comprising a cargo tank, at least one hulk head subdividing said cargo tank into at least two compartments, said compartments being at least half full of a liquid cargo having a specific gravity less than water, said compartments being closed liquid tight from top to bottom except for at least one permanently open hole at the bottom of the compartments through which said compartments permanently communicate with each other, the level of said liquid in the compartments being spaced above the highest point of said at least one hole by a distance equal to at least half the height of the compartments.

5,664,515

VENTILATING ARRANGEMENT FOR WATERCRAFT

Toshiyuki Hattori, and Fumihiko Ehlhara, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 7, 1995, Ser. No. 554,846
Claims priority, application Japan, Nov. 9, 1994, 6-274811
Int. Cl.[6] B63J *2/00*
U.S. Cl. 114—211 31 Claims



1. A personal watercraft comprised of a hull having an underhull portion and a deck portion affixed together to define an engine compartment containing an internal combustion engine and at least one accessory therefor, a propulsion device driven by said engine for propelling said watercraft, a rider's area disposed to the rear of said hull and defined at least in major part by said deck portion, a forward part of said deck portion defining a ventilating air inlet, a longitudinally extending cavity formed by said deck portion at least in part above said engine compartment and receiving ventilating air from said ventilating air inlet, an upstanding wall separating said cavity into a forward portion communicating with said

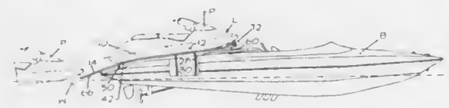
ventilating air inlet and a rearward portion, a ventilating inlet air conduit extending generally downwardly from said forward portion of said cavity from a point above the lower end thereof for delivering ventilating air to the engine compartment, a ventilating exhaust air conduit extending upwardly from a rear portion of said engine compartment to said rearward portion of said cavity, and means for communicating said rearward portion with the atmosphere.

5,664,516

PERSONAL WATERCRAFT CARRYING APPARATUS AND MTHOD FOR TRAILERABLE BOATS

Gray Breeden, 11005 Burnet Rd., Ste. 114-299, Austin, Tex. 78757

Filed Jun. 12, 1996, Ser. No. 662,063
Int. Cl.[6] B63B *35/40*
U.S. Cl. 114—259 12 Claims



1. A personal watercraft carrier for use with a trailerable boat which has an inboard mounted engine, the carrier comprising:

(a) two elongated support rails extending substantially parallel to each other and spaced apart sufficiently to contact opposite sides of the hull of a personal watercraft when the personal watercraft is aligned longitudinally with the support rails;

(b) two elongated loading rails, each loading rail connected to a different one of the support rails at an aft end of the respective support rail, the two loading rails extending substantially parallel to each other at an acute angle downwardly from the support rails, and also being spaced apart substantially the same distance as the two support rails;

(c) cross support means associated with both the support rails and the loading rails for fixing the support rails and loading rails in the spaced apart position;

(d) forward support means having a proximal end connected to the support rails and a distal end depending from the support rails in position to contact a surface on the trailerable boat when the carrier is in an operating position, and to support the weight of the carrier and a personal watercraft positioned on the support rails;

(e) forward connector means associated with the distal end of the forward support means for connecting the distal end of the forward support means to the trailerable boat;

(f) loading rail support means having a proximal end connected to the loading rails and a distal end depending from the loading rails in position to contact an aft surface of the trailerable boat when the carrier is in the operating position, the loading rails extending rearwardly beyond the stern of the boat and above the water line of the boat when the carrier is in the operating position;

(g) aft connector means associated with the distal end of the loading rail support means for connecting the loading rail support means to the trailerable boat; and

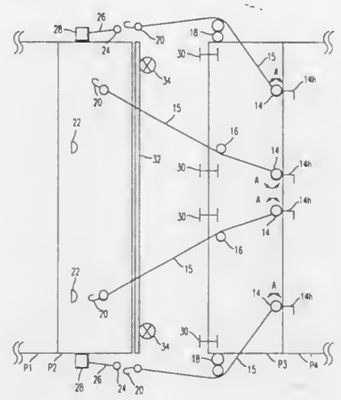
(h) slide means associated with the loading rails and the support rails for facilitating sliding contact between the hull of the personal watercraft and the loading rails and support rails, longitudinally along said rails.

5,664,517

PONTOON SYSTEM AND PONTOON CONNECTING SYSTEM AND PROCESS THEREFOR

Paul S. Brydel, Hilton Head Island, S.C.; William Johanek, St. Simons Island, and Dennis V. Emery, Brunswick, both of Ga., assignors to Jered Brown Brothers Inc., Brunswick, Ga.

Filed Feb. 16, 1996, Ser. No. 602,347
Int. Cl.[6] B63B *35/44*
U.S. Cl. 114—266 27 Claims



1. A pontoon system having a connector system for connecting pontoons comprising:

a first pontoon having at least one connector site;

a second pontoon having at least one connector site;

a plurality of winches, each of said plurality of winches disposed on one of said first pontoon and said second pontoon and having a cable which is connected to the other of said first pontoon and said second pontoon, and wherein said plurality of winches include at least a first winch and a second winch;

a first pulley assembly for the first winch, said first pulley assembly guiding the cable of the first winch so that the cable extends above top surfaces of each of said first and second pontoons;

a second pulley assembly for the second winch, said second pulley assembly guiding the cable of the second winch so that the cable of the second winch extends between the first and second pontoons at a location below the top surfaces of the first and second pontoons; and

a connector which connects the at least one connector site of the first pontoon to the at least one connector site of the second pontoon.

5,664,518

COMPOSITE STRUCTURES AND METHOD OF MAKING COMPOSITE STRUCTURES

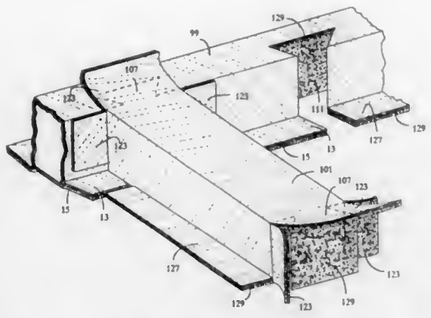
Scott M. Lewit, Malabar, and Neil Rohan, New Smyrna Beach, both of Fla., assignors to Compsys, Inc., West Melbourne, Fla.

Continuation-in-part of Ser. No. 345,899, Nov. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 181,321, Jan. 14, 1994, Pat. No. 5,429,066. This application Dec. 21, 1995, Ser. No. 577,800
Int. Cl.[6] B63B *5/24*
U.S. Cl. 114—357 12 Claims

1. A method of building a boat using a plurality of frictionally interlocking composite stringers as reinforcing members for a laminated plastic hull, comprising:

individually forming a plurality of interlocking composite stringers by the steps of:

(a) attaching a first reinforced fabric layer to a non-woven fabric layer on one side thereof,



(b) laying said attached fabric layers into a mold with the non-woven fabric layer facing the interior of said mold, said mold provided with at least one of a male and female interlocking mold structure,

(c) predetermining an amount of foam for said mold to fill interstices of the non-woven fabric layer without penetrating through said first reinforced fabric layer

(d) filling said mold with said amount of said foam,

(e) allowing said foam to expand and cure to attach itself to said non-woven fabric layer by filling interstices of said non-woven fabric layer to thereby result in said composite stringer, said composite stringer having at least one of a male and female interlocking member integrally formed therein;

positioning a plurality of said composite stringers within said laminated plastic hull; and

frictionally engaging at least one of said interlocking members of a first one of said composite stringers with an oppositely sexed interlocking member of a second one of said composite structures, whereby said first and second composite stringers are temporarily maintained in a stationary position relative to each other within said hull until said first and second composite structures may be permanently laminated into position therein.

5,664,519

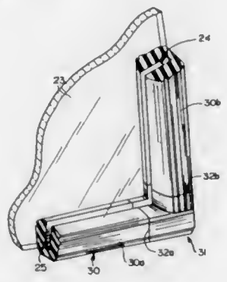
BOAT WINSDHIELD WITH ONE PIECE GASKET

Edward J. Erskine, Benson, N.Y., assignor to N.A. Taylor Co., Inc., Gloversville, N.Y.

Filed Feb. 20, 1996, Ser. No. 603,393

Int. Cl.[6] B63B *17/00*

U.S. Cl. 114—361 **20 Claims**



1. A boat windshield comprising:

a frame having at least first and second sides each of which defines an inwardly facing channel, and corners between said sides;

a flexible gasket material disposed in said channel of each of said sides of said frame;

a piece of substantially rigid or semi-rigid transparent boat windshield sheet material received by said flexible gasket material, with said frame surrounding said gasket material and windshield material, for sealing said windshield material so that water substantially will not pass between said frame and said sheet material;

said flexible gasket material comprises an integral single piece of material having continuous and integral transfer molded corner interfaces corresponding to and disposed within said channel of said frame, said gasket corners at said frame corners between said frame sides; and

means for connecting said frame to a boat, so that said frame, gasket, and windshield material define a boat windshield.

5,664,520

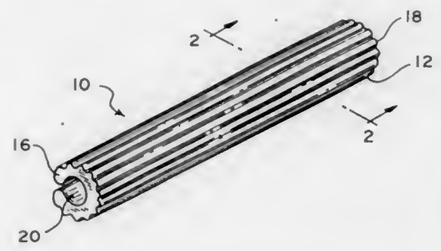
HOOD PROP ROD GRIPPING DEVICE

John S. Latimer, III, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 29, 1994, Ser. No. 368,266

Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—114 R **8 Claims**



1. A hood prop rod gripping device attachable to a hood prop rod of an automobile for isolating a user's hand from the heat of a hot prop rod, comprising:

a heat-insulating body adapted to be snapped on the hood prop rod, wherein the body is formed of a material which, after being subjected to 100° C. of dry heat for 70 hours, has a maximum Shore A durometer of about 95, a minimum tensile strength of about 9 MPa, and a minimum elongation of about 112 percent.

5,664,521

APPARATUS FOR AND METHOD OF MILKING AN ANIMAL

Sydney William Simpson, Oswestry, and Alan Clare, Warrington, both of United Kingdom, assignors to Tickleford Limited, Douglas, United Kingdom

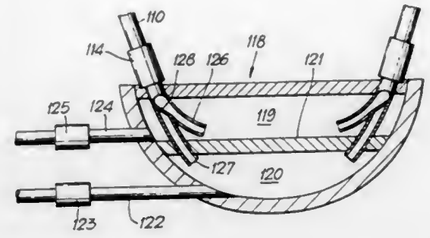
PCT No. PCT/GB92/01848, § 371 Date Jun. 6, 1994, § 102(e) Date Jun. 6, 1994, PCT Pub. No. WO94/08450, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 9, 1992, Ser. No. 244,708

Int. Cl.[6] A01J *5/007*

U.S. Cl. 119—14.02 **16 Claims**

16. A method of milking an animal wherein milk is drawn concurrently from a plurality of teats of the animal, a property of milk drawn from each teat is compared with a reference magnitude of said property, which reference magnitude is derived during milking from the magnitude of the said property of the milk drawn from the said plurality of teats, and, when said comparing step shows that the magnitude of said property of the milk from any one



of the teats differs by more than a predetermined amount from the reference magnitude, the milk from the said one teat or the milk from the other teat or teats is diverted from the common discharge path, whilst undiverted milk continues to flow along the said common discharge path.

5,664,522

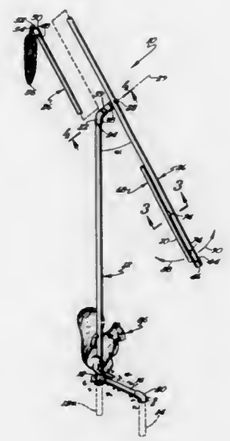
ANIMAL FEEDING APPARATUS

Cyril N. Keller, 1802 Connell Dr., Fergus Falls, Minn. 56537

Filed Mar. 28, 1995, Ser. No. 411,491

Int. Cl.[6] A01K *5/00;39/01*

U.S. Cl. 119—52.3 **16 Claims**



16. An animal feeding apparatus, comprising:

a mounting post having a first end and a second end, said second end being adapted for mounting on the ground to support said post in substantially upright position of use;

a mounting member extending from said post at an angle greater than 90° with respect to said substantially upright position of said mounting post and at an above ground elevation thereon when said post is in said position of use;

a pivot arm having a first end and a second end, said pivot arm rotatably mounted to said mounting member; and

means for supporting animal food secured to said first end of said pivot arm.

5,664,523

MATERIALS FOR THE TREATMENT OF PET EXCRETIONS

Kengo Ochi, Kawanoe; Noriyuki Kimura, Iyomishima; Yukio Zenitani, Kyoto; Masami Koike, Kyoto, and Yoji Fujiura, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jun. 7, 1995, Ser. No. 480,053

Claims priority, application Japan, Jun. 9, 1994, 6-152585

Int. Cl.[6] A01K *1/015*

U.S. Cl. 119—173 **14 Claims**

1. A material for treating excretions of pet animals, which comprises granules formed of a mixture of pulp (A), an inorganic substance (B) and guar gum (C), wherein the weight ratios of (A) to (B) to (C) are 15–55:15–55: 5–60.

5,664,524

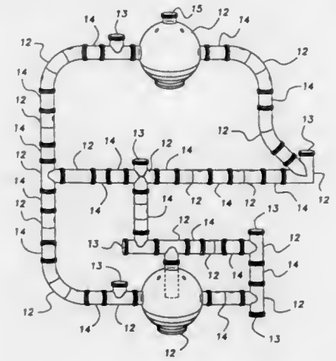
PET CONTAINMENT SYSTEM

Lawrence M. Piglia, and Amy D. Sileven, both of 609 N. 9th St., Apt. 2, Herrin, Ill. 62948

Filed Jul. 19, 1995, Ser. No. 504,134

Int. Cl.[6] A01K *1/00*

U.S. Cl. 119—452 **20 Claims**



1. A pet containment system of the type having interconnected module sectional units and tube sectional units forming an enclosed environment for a small animal, said pet containment system comprising:

a plurality of sectional units having at least one portal forming a female connector;

said female connector includes a rigid concentric ring having a mating surface and an interior surface, said rigid concentric ring forming an L-shaped slot therein;

said L-shaped slot having a first leg extending perpendicularly from said mating surface and a second leg extending perpendicularly from said first leg;

a connecting mechanism having a first and second male connector end, each said first and said second male connector end including a locking stud that is positionable in engaging connection with said L-shaped slot of said female connectors interconnecting said sectional units; and

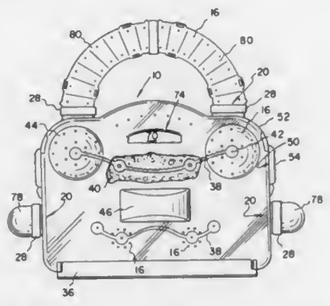
a cap having a closed end and a third male connector end, said third male connector end including a locking stud that is positionable in engaging connection with said L-shaped slot of said female connectors.

5,664,525

SMALL ANIMAL VISUAL BURROWING MODULE

Gerald Phillips, Wantagh; Eric Sauerman; Johnny Davila Gonzalez, both of Long Beach, and Marvin Goldman, North Hills, all of N.Y., assignors to Penn-Plax, Inc., Garden City, N.Y.

Filed Jun. 18, 1996, Ser. No. 665,794
Int. Cl.[6] A01K *1/03*
U.S. Cl. 119—452 14 Claims



1. A small animal visual burrowing module comprising:

a main burrowing enclosure body having an interior space defined by opposite walls spaced a short distance apart, said burrowing enclosure body being formed by two symmetrical body pieces;

ventilation openings of sufficient size and number to allow for air passage through the module;

a plurality of through openings in the walls of the enclosure body, for the passage of small animals therethrough, each opening having an outwardly protruding portion, said through openings being positioned along and split by a division plane defining said two symmetrical body pieces; and

connecting means connected to the protruding portion of each opening passage and attaching said two body pieces together and for the attachment of small animal living accessories;

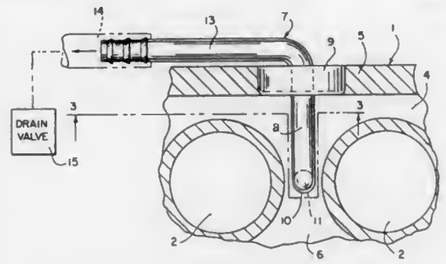
said connecting means comprising an annular ring.

5,664,526

APPARATUS FOR SEPARATING SOLID MATERIAL FROM COOLING WATER IN A MARINE ENGINE BLOCK

Andrew K. Logan, Stillwater, Okla.; Matthew W. Jaeger, Fond du Lac, Wis.; Terry D. Axton; William E. Hughes, both of Stillwater, Okla., and David J. Gruenwald; Butte des Monts, Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 31, 1995, Ser. No. 521,748
Int. Cl.[6] F01P *11/02*
U.S. Cl. 123—41.14 7 Claims



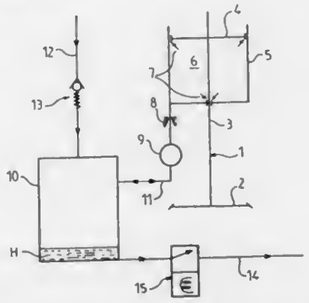
1. An apparatus for separating solid material from cooling water in the cooling system of an engine block of a marine engine, comprising a marine engine block having a plurality of cylinder bores and having a cooling passage surrounding said bores, said cooling passage containing cooling water, said block having a drain outlet communicating with a lower portion of said cooling passage, a tubular separator member including a first generally horizontal section disposed in said drain outlet, said first section having an inner end disposed in said cooling passage and having an outer end disposed on the exterior of said block, said tubular member also including a second section extending downwardly from the inner end of said first section and located between two adjacent cylinder bores, said second section having a closed lower end, port means disposed in the side of said second section above said closed lower end and providing communication between said cooling passage and the interior of said separator, and conduit means connecting the outer end of said first section with a temperature responsive drain valve.

5,664,527

PNEUMATIC VALVE RECOIL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jean-Pierre Boudy, Bièvres, France, assignor to Automobiles Peugeot, Paris, and Autmobiles Citroen, Neuilly-sur-Seine, both of France

Filed Jun. 28, 1995, Ser. No. 496,180
Claims priority, application France, Oct. 29, 1993, 93.12913
Int. Cl.[6] F01L *3/10*
U.S. Cl. 123—90.14 22 Claims



1. Pneumatic valve system for internal combustion engines comprising a piston which is connected to a valve stem, which slides in a cylinder, with the piston, the valve stem, and the cylinder forming a chamber containing a compressible fluid, characterized by the fact that said chamber is linked to an oil-evacuation and fluid-pressure-regulating system outside the engine cylinder head by means of a single calibration port, wherein the oil-evacuation and pressure-regulating system includes a container whose upper portion communicates both with the calibration port and a source pressurized gas, and the lower portion where oil accumulates communicates with an evacuation line equipped with at least one device controlling evacuation of the oil.

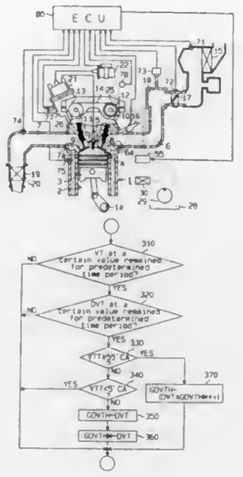
5,664,528

VALVE TIMING CONTROL APPARATUS WITH A RESTRICTING MEANS

Senji Kato, Aichi-ken; Atsushi Yasumura, Toyota; Nobuhisa Ohkawa, Toyota, and Tadahisa Naganawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 630,640, Apr. 11, 1996, Pat. No. 5,623,896.
This application Dec. 3, 1996, Ser. No. 758,703
Claims priority, application Japan, Apr. 13, 1995, 7-088441; Aug. 23, 1995, 7-214986
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.15 8 Claims

1. A valve timing control apparatus for an engine having an air intake passage for introducing air to a combustion chamber and an



air exhausting passage for exhausting gas from the combustion chamber, said intake passage and said exhausting passage having an intake valve and an exhaust valve, respectively, the valves being alternately opened and closed with a valve timing according to rotation of a cam shaft, which rotates in synchronism with rotation of a crank shaft of the engine, wherein the valves are simultaneously opened during a period of valve overlap, and wherein the rotational phase of the cam shaft is arranged to be selectively advanced or retarded with respect to the rotational phase of the crank shaft to converge the valve timing to a target value so as to vary the period of the valve overlap within a range between a maximum value and a minimum value based on a current running condition of the engine, said apparatus comprising:

adjusting means for continuously adjusting the valve timing of at least one of the intake valve and the exhaust valve, said adjusting means being driven by hydraulic pressure;

supplying means for supplying the hydraulic pressure to said adjusting means, said supplying means including tuning means for tuning the hydraulic pressure;

first detecting means for detecting the running condition of the engine;

computing means for computing the target value based on said running condition;

second detecting means for detecting the actual valve timing adjusted by the adjusting means;

control means for controlling the supplying means to operate the adjusting means so as to converge the detected valve timing to the target value and vary the period of the valve overlap based on the running condition of the engine, wherein said control means controls the supplying means to sustain the valve timing when it is approximately coincided with the target value;

determining means for determining an offset between the detected valve timing and the target value when the valve timing is sustained by said control means for a predetermined time period, said determining means including calculating means for calculating an offset value between the valve timing and the target value;

correction means for correcting said target value with a current specific value for cancelling the offset value, said correction means being arranged to compute the current specific value based on said offset value;

said computed target value being variable within a predetermined range between an upper limit and a lower limit;

restricting means for restricting said correction means to compute the current specific value, based on a predetermined value, when the computed target value is within said predetermined range; and

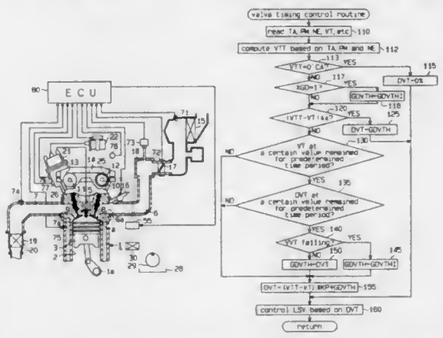
wherein said predetermined value is one of the current specific values computed by said correction means when said computed target value is out of said predetermined range.

5,664,529

VALVE TIMING CONTROL APPARATUS WITH AN INITIALIZING MEANS

Senji Kato, Aichi-ken; Atsushi Yasumura, Toyota; Nobuhisa Ohkawa, Toyota, and Tadahisa Naganawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 630,640, Apr. 11, 1996, Pat. No. 5,623,896.
This application Dec. 3, 1996, Ser. No. 758,704
Claims priority, application Japan, Apr. 13, 1995, 7-088441; Aug. 23, 1995, 7-214986
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.15 8 Claims



1. A valve timing control apparatus for an engine having an air intake passage for introducing air to a combustion chamber and an air exhausting passage for exhausting gas from the combustion chamber, said intake passage and said exhausting passage having an intake valve and an exhaust valve, respectively, the valves being alternately opened and closed with a valve timing according to rotation of a cam shaft, which rotates in synchronism with rotation of a crank shaft of the engine, and wherein the valves are simultaneously opened during a period of valve overlap, and wherein the rotational phase of the cam shaft is arranged to be selectively advanced or retarded with respect to the rotational phase of the crank shaft to converge the valve timing to a target value so as to vary the period of the valve overlap within a range between a maximum value and a minimum value based on a current running condition of the engine, said apparatus comprising:

adjusting means for continuously adjusting the valve timing of at least one of the intake valve and the exhaust valve, said adjusting means being driven by hydraulic pressure;

supplying means for supplying the hydraulic pressure to said adjusting means, said supplying means including tuning means for tuning the hydraulic pressure;

first detecting means for detecting the running condition of the engine;

computing means for computing the target value based on said running condition;

second detecting means for detecting the actual valve timing adjusted by the adjusting means;

control means for controlling the supplying means to operate the adjusting means so as to converge the detected valve timing to the target value and vary the period of the valve overlap based on the running condition of the engine, wherein said control means controls the supplying means to sustain the valve timing where it is approximately coincided with the target value;

first determining means for determining an offset between the detected valve timing and the target value when the valve timing is sustained by said control means for a predetermined

time period, said first determining means including calculating means for calculating an offset value between the valve timing and the target value;

correction means for correcting said target value with a current specific value for cancelling the offset value, said correction means being arranged to compute the current specific value based on said offset value;

second determining means for determining, based on the detected valve timing, a malfunction of the adjusting means or the supplying means such that the valve timing is kept constant;

third determining means for determining, based on the detected valve timing, reconditioning of the adjusting means or the supplying means after said malfunction; and

initializing means for initializing said current specific value when the recondition after the malfunction is determined, wherein the current specific value is changed to a predetermined value when initialized.

5,664,530

TAPPET FOR A VALVE DRIVE OF AN INTERNAL COMBUSTION ENGINE

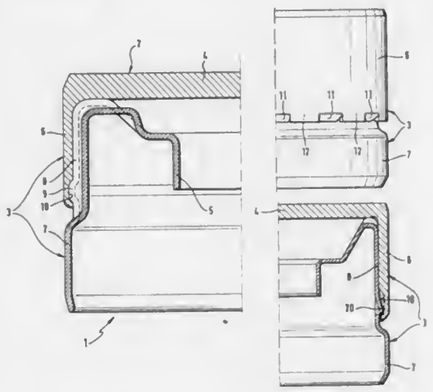
Reinhard Ammon, Nuremberg, and Wilfried Huber, Aurachtal, both of Germany, assignors to Ina Walzlager Schaeffler KG, Germany

Filed Aug. 13, 1996, Ser. No. 696,174

Claims priority, application Germany, Nov. 16, 1995, 195 42 697.5

Int. Cl.[6] F01L *1/16;1/24*

U.S. Cl. 123—90.51 **8 Claims**



1. A tappet (1) for a valve drive of an internal combustion engine, said tappet (1) is guided for axial displacement in a reception bore of a cylinder head by a skirt (3) and is closed by a bottom (4) at a cam-proximate end, the skirt (3), comprising a first hardened bush-like section (6) and a second unhardened bush-like section (7) of approximately equal diameter separated from each other in a region of a central transverse plane of the tappet, the first section (6) being connected to the bottom (4), while the second section (7) proceeds longitudinally from the first section (6), characterized in that the hardened first bush-like section (6) is connected to the unhardened second bush-like section (7) by interlocking.

5,664,531

DEVICE FOR ADJUSTING VALVE DURATION USING EXTERNAL AIR SUPPLY

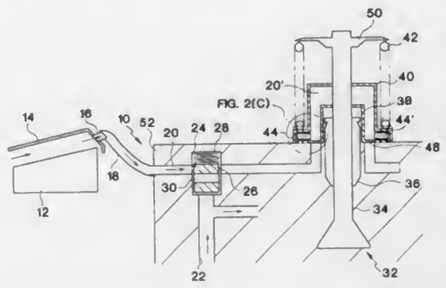
Kyu-Wan Kim, Kyung-Nam-Do, Rep. of Korea, assignor to Hyundai Motor Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 29, 1995, Ser. No. 520,672

Claims priority, application Rep. of Korea, Aug. 29, 1994, 94-21364

Int. Cl.[6] F01L *3/10;13/00*

U.S. Cl. 123—90.65 **4 Claims**



1. A device for adjusting engine valve duration using an external air supply, comprising:

an exhaust manifold;

a heat protector disposed over said exhaust manifold for forming a manifold space, said heat protector having a tubular port disposed at one side thereof; and

a cylinder head disposed in the vicinity of said exhaust manifold, said cylinder head including:

an air ventilating passage for ventilating heated air generated from the manifold space,

an operating chamber, operatively communicating with said air ventilating passage, and communicating with an oil circulating passage, said operating chamber containing a piston with a bore disposed perpendicular to an axial direction of piston displacement and a spring for biasing the piston,

an inner spring seat seated thereon,

an outer spring seat disposed over said inner spring seat for forming an air passage space communicating with the air ventilating passage and a pair of corner spaces for storing an annular wax insert,

a valve having a movable valve stem passing through said inner and outer valve spring seats and fixed to a retainer, and

a valve spring seated on an annular rim portion of said outer valve spring seat at the bottom thereof and attached to said retainer at the top thereof,

such that when engine oil has high pressure at a high vehicle engine speed the bore of said piston communicates with the air ventilating passage by upward movement of the piston, the heated air expands the wax insert and the wax insert compresses the valve spring, so as to adjust the valve duration and effectively improve output power of the vehicle engine.

5,664,532

UNIVERSAL FUEL PRIMING SYSTEM

Rex David August, 5086 Rd. O, Pandora, Ohio 45877

Filed Mar. 22, 1996, Ser. No. 621,831

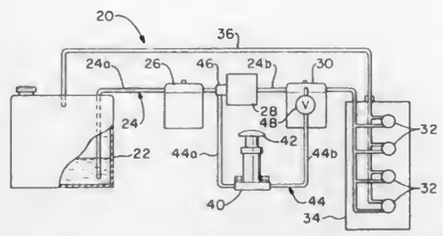
Int. Cl.[6] F02M *59/42*

U.S. Cl. 123—179.11 **5 Claims**

1. A fuel supply and priming system for a diesel engine, said system comprising:

(a) a fuel pump having an inlet and an outlet

(b) a manually operated primer pump, having an inlet, and outlet and a manual actuator for operating said pump; and



(c) fuel conduit means for supplying liquid fuel from a fuel tank to one or more injectors for injecting liquid fuel into said engine, said fuel conduit means providing at least one flow path from said fuel tank to said one or more injectors and including:

(1) a primary fuel line passing through said fuel pump and having an upstream portion extending from said fuel tank to the inlet of said fuel pump and a downstream portion extending from the outlet of said fuel pump to said one or more injectors, and

(2) means providing fluid communication from said primer pump to said fuel tank and to said one or more injectors, the last mentioned means including a connection from the outlet of said primer pump to the downstream portion of said primary fuel line, whereby all fuel passing through either said fuel pump or said primer pump flows in a single stream into said one or more injectors;

wherein said primer pump is connected via a bypass to a source of fuel upstream of said fuel pump and to said downstream portion of said primary fuel line, whereby fuel passing through said primer pump bypasses said fuel pump, said bypass including an upstream passageway extending from said source of fuel upstream of said fuel pump to said inlet of said primer pump, and a downstream passageway extending from the outlet of said primer pump to said downstream portion of said primary fuel line.

5,664,533

AIR INTAKE DEVICE FOR AN INTERNAL COMBUSTION ENGINE

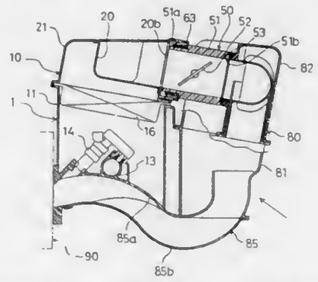
Toshiaki Nakayama, Nishikamo-gun; Shuya Mikami, Kariya; Yoshitaka Nishio, Nagoya; Akihide Yamaguchi, Kariya, and Masao Ino, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 579,606, Dec. 26, 1995, Pat. No. 5,575,247. This application Sep. 19, 1996, Ser. No. 715,820

Claims priority, application Japan, Feb. 1, 1995, 7-15242; Jun. 7, 1995, 7-140644

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.42 **11 Claims**



1. An air intake device for an internal combustion engine having a fuel supplying device comprising:

a case having an inlet, an outlet, a space connected between said inlet and said outlet, and a mount member, disposed below said outlet and adjacent to said engine, for mounting said fuel supplying device to supply fuel to said engine; and

a filter element disposed detachably in said case to partition said space into a dusty-side space which includes said mount member and is connected to said inlet and a clean-side space which is connected to said outlet.

5,664,534

FLYWHEEL SYSTEM FOR A ROTARY MACHINE

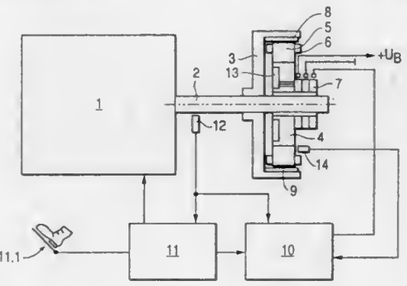
Günter Schmitz, Aachen, Germany, assignor to FEV Motorentechnik GmbH & Co., KG, Aachen, Germany

Filed May 20, 1996, Ser. No. 650,525

Claims priority, application Germany, May 20, 1995, 195 18 672.9

Int. Cl.[6] F02B *75/06*

U.S. Cl. 123—192.1 **13 Claims**



1. A flywheel system for a machine having a rotary shaft, comprising

(a) a rotary body adapted to be affixed to the shaft for rotating therewith as a unit;

(b) an additional rotary body forming a flywheel mass and being adapted to be mounted on the shaft for rotation relative thereto; one of the rotary bodies being a first rotary body and another of the rotary bodies being a second rotary body;

(c) control means; and

(d) electromagnetic means for torque-transmittingly coupling said first and second rotary bodies to one another in a contactless manner; said electromagnetic means including

(1) a plurality of pole bodies mounted circumferentially on said first rotary body in a uniform distribution; each pole body having a pole face oriented towards a surface of said second rotary body;

(2) a separate coil carried by each said pole body; and

(3) means for electrically connecting each said coil with said control means for actuating said electromagnetic means.

5,664,535

GAS COMBUSTION ENGINE, AND METHOD OF MANUFACTURING THE GAS COMBUSTION ENGINE

Alexander Antonius Marinus Peeters, Oosterhout, Netherlands, assignor to P. Van Tilburg-Bastianen Revisie B.V., Breda, Netherlands

PCT No. PCT/NL94/00199, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/06196, PCT Pub. Date Mar. 2, 1995

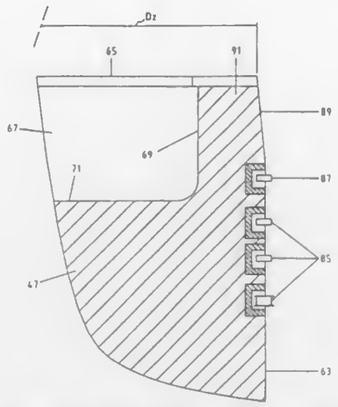
PCT Filed Aug. 23, 1994, Ser. No. 602,812

Claims priority, application Netherlands, Aug. 26, 1993, 9301482

Int. Cl.[6] F02F *3/00*

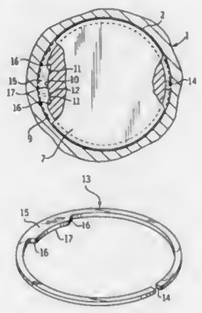
U.S. Cl. 123—193.4 **11 Claims**

1. Gas combustion engine comprising a gas exhaust system, an air intake system, an engine block comprising a number of cylinders and pistons, which pistons can be translated in the cylinders,



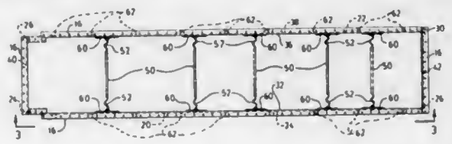
and a cylinder head which delimits a space in the cylinders at one extremity, whereby a volume of the space in a cylinder between the cylinder head and a piston can be varied between a minimal and a maximal value by means of a translatory motion of the piston, a ratio of the said minimal and maximal values defining a compression ratio, a combustion space being defined by the space in that state of the piston which corresponds to a minimal volume, said gas combustion engine being a converted diesel engine, the combustion space and the compression ratio being adapted to application of gas as a fuel, wherein the pistons have a cylindrical wall and a top surface, a hollow being located in the top surface, which hollow forms part of the combustion space and has an approximately circle-cylindrical form and a substantially flat bottom and the hollow has a diameter and a depth, whereby the ratio of the diameter to the depth lies between 30:9 and 30:13, said cylindrical wall of each piston being bevelled near said top surface, an external diameter of each of said pistons decreasing from a first value adjacent a piston ring closest to said top surface to a second value at said top surface, said piston ring being one of a number of piston rings in the cylindrical wall of each of said pistons.

5,664,536
SELF-LOCATING PISTON RING FOR A TWO-STROKE ENGINE
Bryan D. Bigsby, Fond du Lac, Wis., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Aug. 14, 1996, Ser. No. 702,403
Int. Cl.[6] F16J *9/16;15/32*
U.S. Cl. 123—193.4 **7 Claims**



1. In a two-stroke internal combustion engine, an engine block having a cylinder bore, a piston slidable in said bore and having a circumferential groove, said groove being bordered by a pair of side walls and a bottom wall, said piston also having a recess extending radially inward from the bottom wall of said groove, a split piston ring disposed in the groove and having an inner diameter surface and an outer diameter surface, and a tab extending radially inward from said inner diameter surface and received within said recess, engagement of said tab with said recess preventing rotation of said piston ring relative to said piston.

5,664,537
FLEXIBLE OIL PAN ASSEMBLY
Terry L. Beranek, Lafayette; Joseph R. Brinker, W. Lafayette, and Stephen Lawrence, Lafayette, all of Ind., assignors to Caterpillar Inc., Peoria, Ill.
Filed Sep. 9, 1996, Ser. No. 709,935
Int. Cl.[6] F02F *7/00*
U.S. Cl. 123—195 C **12 Claims**



1. A flexible oil pan assembly for attachment to a flexible engine block, comprising:

a first and a second spaced apart elongated flexible side walls each having first and second ends and first and second side surfaces;

a first and a second spaced apart end walls connected to the first and second ends, respectively, of the first and second side walls;

a bottom wall connected to the first and second side and end walls at a location adjacent to a lower end of the first and second side and end walls;

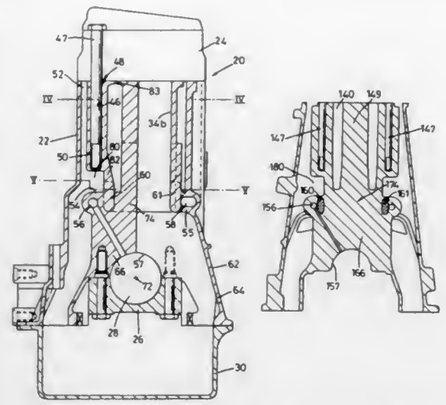
a flange connected to the first and second side and end walls at a location adjacent to an upper end of the first and second side and end walls;

a plurality of flexible baffles disposed between and connected to the first side surface of the first and second side walls at predetermined spaced apart locations along the side walls and extending between the bottom wall and the flange, said baffles enabling relative deflection of the first and second side walls at said spaced apart locations;

a plurality of stiffening ribs connected to the second surface of the first and second side walls and extending in directions between the bottom wall and flange and away from said second surface, said stiffening ribs being located along the side walls at predetermined spaced locations.

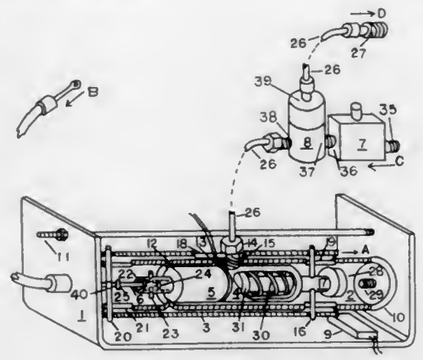
5,664,538
BLOCK STRUCTURE FOR AN INTERNAL COMBUSTION ENGINE
William Richard Hutchins, Kenilworth, England, assignor to Rover Group Limited, Birmingham, England
Filed Dec. 18, 1995, Ser. No. 575,726
Claims priority, application United Kingdom, Dec. 20, 1994, 9425718
Int. Cl.[6] F02B *75/18*
U.S. Cl. 123—195 R **11 Claims**

1. An internal combustion engine comprising a cylinder block, a cylinder head, and a plurality of fasteners tightenable to apply a load to the head to hold the head onto the block, wherein the block comprises a single structure having: walls defining a plurality of bores arranged in a line for receiving pistons, said walls being arranged to receive part of said load from the head; and a support structure comprising transverse support sections extending across the block between the bores, the support structure further comprises longitudinal support sections extending along the block one on either side of the line of bores substantially tangentially to the



bores which are joined to said walls so as to provide support for said bores, and the block includes joining regions where the longitudinal support sections are joined to the transverse support sections, and the fasteners include engaging means arranged to engage with the block such that a substantial part of the load received by the walls of the bores from the head is transmitted to the fasteners via the joining regions.

5,664,539
LINEAR ACTUATOR FAIL-SAFE REMOTE CONTROL
John Vieira, P.O. Box 146, Glade Park, Colo. 81523
Filed Feb. 26, 1996, Ser. No. 606,608
Int. Cl.[6] F02B *77/00;* **F02D** *7/00*
U.S. Cl. 123—198 DB **3 Claims**



1. For an internal combustion engine having a pressurized lube oil system, starter and fuel metering speed control, a remote controllable engine start/stop device providing automatic engine protection fault shutdown, adjustable rate gradual engine speed increase, an adjustable engine warm-up period varied by at least one of engine and ambient temperature, engine load on/off switching, engine idle cool-down prior to stop upon no-fault turn-off select, selectable idle/off standby and manual override, comprising, in combination:

a. an orientation and attachment means, connectable to an engine fuel metering speed control and operatively associated with a fluid actuator to orientation and attachment means coupling means to provide full-range operative movement upon the engine's fuel metering speed control by an electrical to mechanical motion transducer means and a fluid actuator means;

b. a fluid actuator to orientation and attachment means coupling means, operatively associated with said orientation and attachment means, said electrical to mechanical motion transducer means and said fluid actuator means, and arranged to enable said fluid actuator means override of said electrical to mechanical motion transducer means by said actuator to orientation and attachment means coupling means movement to achieve:

(1) reset of engine's fuel metering speed control to off position by said orientation and attachment means upon signal for engine cut off,

(2) movement of said orientation and attachment means and therefore the engine' s fuel metering speed control, by said electrical to mechanical motion transducer means, to the engine' s start/idle position during start/idle mode, and

(3) upon the engine's operation above idle speed, said electrical to mechanical motion transducer means inoperative upon said orientation and attachment means with full positioning control asserted by said fluid actuator means;

c. an electrical to mechanical motion transducer means, permitting remote operation and control by engine condition transducers, said electrical to mechanical motion transducer means having movable member means so arranged to act upon and impart motion to said orientation and attachment means, and thereby to the engine' s fuel metering speed control, by an electrical signal, between two positions, the first being engine off and the second being idle when the engine' s starter is operated and when idle mode is selected;

d. a fluid actuator means, having movable member means operatively associated with said fluid actuator to orientation and attachment means coupling means to provide a range of movement to said fluid actuator to orientation and attachment means coupling means, for actuating the engine' s fuel metering speed control from off to operating speed positions by travel of said orientation and attachment means, upon application over time of fluid pressure at said included port means of said fluid actuator means;

e. a stored energy means, including movable member means operatively associated therewith, and arranged to compel return of said orientation and attachment means, upon loss of operating fluid pressure at said fluid actuator means port, to an engine off position;

f. an electrically switched fluid paths means, providing remote operation and control by engine condition transducers, said electrically switched fluid paths means containing and controlling a choice of two fluid pressure path means, the first path means connecting an included in port to an included out port, said out port communicating with said fluid actuator means port as to provide throttle advance, the second path means connecting said included out port to an included drain port whenever throttle-down is signaled;

g. a fluid pressure switched fluid paths means, containing an adjustable orifice means, permitting an adjustable rate of restricted fluid flow in a forward flow direction, and full reverse flow in the opposite direction, said fluid pressure switched fluid paths means having as one path an inlet port means communicating with the engine' s pressurized lube oil system so as to allow pressurized fluid travel by way of said included adjustable restricted forward flow path means, through to an included outlet port means in communication with said in port means of said electrically switched fluid paths means, and as the other path said included outlet port means in communication with said in port means of said electrically switched fluid paths means, back to said included inlet port means by way of an included one-way fluid flow means arranged to allow full reverse flow of fluid from said included outlet port means to said included inlet port means whenever fluid pressure present at said included outlet port

means is greater than fluid pressure present at said included inlet port means, whereas greater pressure present at said included inlet port means causes said path to be blocked by operation of said included one-way fluid flow means, said included full reverse flow path permitting of movement of apparatus to adjust engine fuel metering speed control to off, upon any engine lube oil pressure loss, regardless of probable malfunction, and thereby decrease reliance on an engine oil pressure fault sensor;

h. a sensor means, operatively associated with said apparatus, to detect and produce a signal at a point of said apparatus travel corresponding to a preselected engine speed, to enable connection and disconnection of engine load; and

i. a retaining and mounting means, operatively connected to said apparatus such as to maintain spatial relationship of apparatus elements and concurrently provide means of fastening said apparatus to a surface.

5,664,540

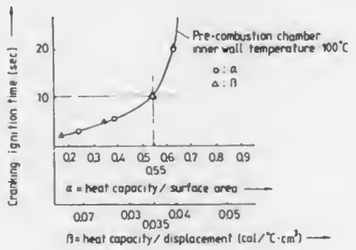
PRE-COMBUSTION CHAMBER-TYPE ENGINE

Hiroshi Matsuoka, Yamato; Keiji Kishishita; Takahiro Tsubonuma, both of Yokohama, and Takatoshi Sugano, Sagamihara, all of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,202

Int. Cl.[6] F02B *19/16*

U.S. Cl. 123—254 **24 Claims**



1. A pre-combustion chamber-type engine comprising:

a cylinder block having cylinder bores;

a cylinder head mounted to the cylinder block;

main combustion chambers in the cylinder bores;

pistons that reciprocate in the cylinder bores; cavities formed in any one of the cylinder head and a group of the pistons;

pre-combustion chamber structures installed in the cavities with heat insulation layers interposed therebetween;

pre-combustion chambers formed in the pre-combustion chamber structures;

communication holes formed in the pre-combustion chamber structures to communicate the pre-combustion chambers and the main combustion chambers; and

fuel injection nozzles to inject fuel into the pre-combustion chambers;

wherein the pre-combustion chamber structures are installed in the cavities in such a way as to be surrounded and heat-insulated by the heat insulation layers and the ratio of heat capacity of the pre-combustion chamber structures to the displacement of the cylinder bores is set to 0.035 cal/°C.·cm^3 or lower, and

wherein when the ratio of the heat capacity of the chamber structures to the displacement per cylinder is set to 0.035 cal/°C.·cm^3 or lower, the compression ratio as related to the per cylinder displacement is demarcated at the upper limit by an approximation equation:

$$y=0.03579^{x}-2.2$$

where $Z=1/(-0.01029x^{1/3}-1)$, y is the compression ratio and x is a non-dimensional number of displacement.

5,664,541

DIESEL ENGINE HAVING AUXILIARY COMBUSTION CHAMBER

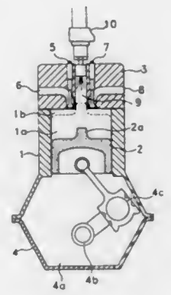
Chol-Ho Yoo, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

Filed Jul. 12, 1996, Ser. No. 679,501

Claims priority, application Rep. of Korea, Mar. 14, 1996, 96-4819

Int. Cl.[6] F02M *19/00*

U.S. Cl. 123—275 **1 Claim**



1. A diesel engine having an auxiliary combustion chamber comprising:

a cylinder block with a bore formed inside of it;

a cylinder head mounted to the upper part of the cylinder block;

a crank case, mounted to the lower part of the cylinder block and defining a crank chamber;

a crank shaft, provided in the crank chamber;

a piston, provided in the cylinder bore, that reciprocates in a up and down motion, and on which a protrusion part is formed at its center portion to a fixed height and slightly tapered shape for opening and closing a communicating hole formed in the auxiliary combustion chamber;

a connecting rod, which connects the piston and crank shaft;

a main combustion chamber, formed in the cylinder bore by the piston;

a intake port, which communicates with the main combustion chamber and formed on one side of the cylinder head;

a intake valve, provided between the intake port and main combustion chamber to open and close the connection between the two;

an exhaust port, connected to an exhaust manifold and formed on the other side of the cylinder head;

an exhaust valve, which is provided between the valve port and main combustion chamber to open and close this connection;

a cylindrical auxiliary combustion chamber, which communicates with the main combustion chamber and is vertically formed in the center part of the cylinder head; and

a fuel injection device, provided above the auxiliary combustion chamber of the cylinder head which injects fuel into the auxiliary combustion chamber.

5,664,542

ELECTRONIC THROTTLE SYSTEM

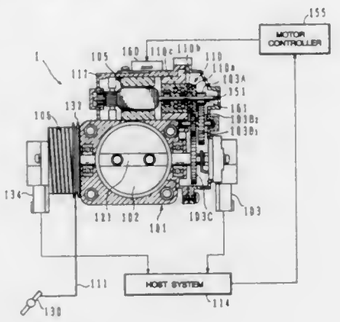
Hiroshi Kanazawa, Hitachi; Fumio Tajima, Ibaraki-ken; Yasuhiko Honda, Ibaraki-ken; Yasushi Sasaki, Ibaraki-ken; Teruhiko Minegishi; Yoshikatu Hashimoto, both of Katsuta; Tatsuya Yoshida, Ibaraki-ken, and Yuzo Kadomukai, Ishioka, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki-ken, both of Japan

Division of Ser. No. 429,166, Apr. 26, 1995, Pat. No. 5,517,966, which is a division of Ser. No. 86,210, Jul. 6, 1993, Pat. No. 5,431,141. This application Feb. 29, 1996, Ser. No. 608,742

Claims priority, application Japan, Jul. 16, 1992, 4-189749

Int. Cl.[6] F02D *41/00*

U.S. Cl. 123—361 **4 Claims**



1. An electronic throttle system, comprising:

an accelerator pedal sensor detecting a treading amount of said accelerator pedal;

an opening sensor detecting an opening of a throttle valve; and

an opening control means controlling the opening of said throttle valve by controlling a rotation of a motor for driving a valve shaft of said throttle valve through at least one gear in response to the treading amount of said accelerator pedal based on output signals from both said accelerator pedal sensor and said opening sensor;

wherein said accelerator pedal sensor and said opening sensor are attached to a throttle body device rotatably supporting said throttle valve, said opening sensor being arranged on a same side of said valve shaft as said at least one gear.

5,664,543

HAND LEVER DEVICE

Toshio Taomo, Nishitama-gun; Hisato Ohsawa, Hamura; Hirofumi Yamami, Akishima, and Fumihiko Alyama, Musashimurayama, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Jun. 20, 1996, Ser. No. 667,855

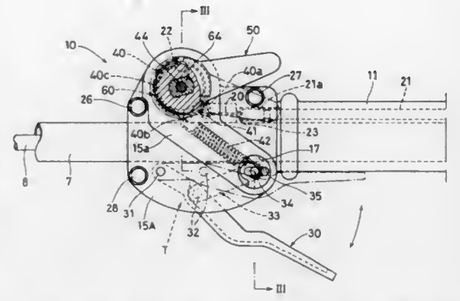
Claims priority, application Japan, Jun. 23, 1995, 7-158238

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—400 **6 Claims**

1. A hand lever device comprising a housing, a main lever and a sub-lever pivotally attached to said housing;

said sub-lever being attached to a wind-up tractive member, a cable interconnected between said wind-up tractive member and a driven member in such a manner that one end portion of said cable is wound upon said wind-up tractive member, and a brake member operated by said main lever for braking said wind-up tractive member to hold said sub-lever immobilized at any pivotally operated position.



5,664,544

APPARATUS AND METHOD FOR CONTROL OF AN INTERNAL COMBUSTION ENGINE

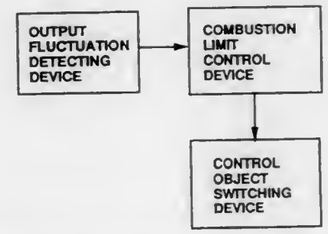
Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa-ken, Japan

Filed Feb. 23, 1996, Ser. No. 606,252

Claims priority, application Japan, Feb. 24, 1995, 7-037216

Int. Cl.[6] F02D *43/04*

U.S. Cl. 123—421 **14 Claims**



1. An apparatus for controlling an internal combustion engine, comprising:

output fluctuation detecting means for detecting output fluctuations of the engine;

combustion limit control means for feedback controlling an engine control object so that output fluctuations detected by said output fluctuation detecting means approach a permissible limit value; and

control object switching means for setting previously at least two of air-fuel ratio of an engine intake mixture, ignition timing and exhaust air recirculation quantity as control objects in accordance with engine operating conditions at the time.

5,664,545

FUEL INJECTION APPARATUS

Masaaki Kato, and Masahiro Okajima, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 30, 1995, Ser. No. 565,755

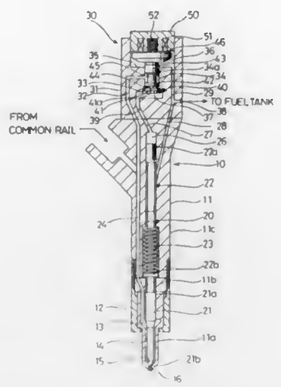
Claims priority, application Japan, Dec. 2, 1994, 6-299839

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—496 **11 Claims**

1. A fuel injection apparatus comprising:

a casing having a sliding hole in an axial direction thereof, a fuel passage for introducing fuel into said casing, an injection opening provided at one end of said sliding hole to inject fuel supplied from said fuel passage, and a control pressure cham-



ber provided at the other end of said sliding hole and for storing fuel supplied from said fuel passage;

a needle valve slidably disposed in said sliding hole, said needle valve having a valve body at one end, said valve body opening said injection opening by fuel supplied to said injection opening through said fuel passage, and a piston at the other end, fuel stored in said control pressure chamber applying pressure to said piston to urge said needle valve in the valve closing direction;

first urging means for urging said needle valve in the valve closing direction;

a valve device for interrupting communication between said fuel passage and said control pressure chamber to seal fuel in said control pressure chamber; and

a volume changing device for expanding volume of said control pressure chamber after fuel is seated in said control pressure chamber by said valve device.

5,664,546

FUEL SAVING DEVICE

Jose Luis De La Torre Barreiro, Rafael Calvo 30, Madrid, Spain, 28010

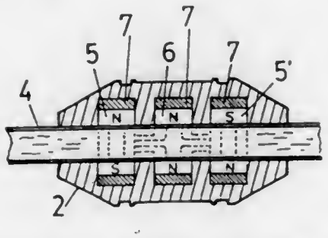
PCT No. PCT/ES94/00029, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/14855, PCT Pub. Date Jun. 1, 1995

PCT Filed Mar. 18, 1994, Ser. No. 500,940

Claims priority, application Spain, Nov. 22, 1993, 9303076 U

Int. Cl.[6] F02M *27/04;* **F23C** *11/00*

U.S. Cl. 123—538 **4 Claims**



1. A fuel economizer surrounding a fuel feed pipe, the fuel economizer comprising:

a casing made of non-magnetic material formed of two longitudinal halves;

a clamp securing each of said casing halves to said pipe;

at least one first magnet positioned within at least one of said casing halves generating a magnetic field perpendicular to the pipe;

at least one second magnet positioned within one of said casing halves adjacent to said first magnet, said second magnet generating an axial magnetic field with respect to the pipe; and

a plurality of low carbon iron pieces embedded within one of said casing halves directing magnetic flow created by said magnets towards the inside of the pipe and preventing magnetic flow from exiting the economizer.

5,664,547

FLAME GLOW PLUG FOR A DIESEL ENGINE

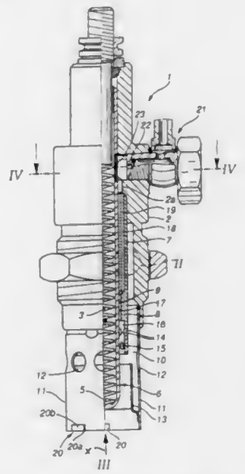
Roland Klak, Ostfildern; Martin Eller, Ludwigsburg, and Helmut Buck, Erdmannshausen, all of Germany, assignors to Mercedes Benz AG, Stuttgart, and BERU, Ruprecht GmbH & Co. KG, Ludwigshurg, both of Germany

Filed Feb. 5, 1996, Ser. No. 596,466

Claims priority, application Germany, Feb. 25, 1995, 195 06 711.8

Int. Cl.[6] F02N *17/047;* **F02M** *31/00;* **F02P** *19/04;* **F23Q** *7/00*

U.S. Cl. 123—549 **5 Claims**



1. A flame glow plug for a Diesel engine comprising:

a cylindrical glow plug body, an insert structure mounted on said glow plug body for supplying fuel thereto, a heating rod centrally disposed in said cylindrical glow plug body and being mounted thereto at one end and having an opposite free end, said heating rod including a heating coil and, adjacent its free end, a control coil, a full vaporizing tube surrounding said heating rod in spaced relationship therefrom so as to form an annular intermediate space therebetween receiving a vaporizing sieve, a flame tube connected to said plug body and having a free end extending axially beyond said heating rod so as to be disposed in the path of the intake air when said glow plug is installed in an engine for protecting the free end of said heating rod, said flame tube having flow passages formed therein and an inner tube extending from said free end of said flame tube backwards up to said flow passages and having a diameter larger than the diameter of said vaporizing tube, said vaporizing tube extending axially down to said flow passages and defining with said heating rod a mixing chamber, said vaporizer tube having, adjacent said mixing chamber, an inwardly projecting collar supporting said vaporizing sieve and defining a narrow annular gap around said heating rod and having, between said collar and its free end thereof, at least one circumferential row of openings providing for good air and fuel mixture and for scavenging cooling of said mixing chamber.

5,664,548

APPARATUS FOR DETECTING TROUBLE IN EXHAUST-GAS RECIRCULATION SYSTEM

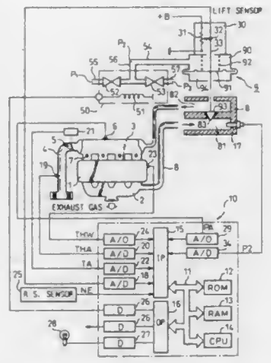
Takahide Izutani; Hidemi Onaka, and Koji Morita, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 4, 1996, Ser. No. 628,225

Claims priority, application Japan, Apr. 12, 1995, 7-086796

Int. Cl.[6] F02M *25/07*

U.S. Cl. 123—571 **14 Claims**



1. A trouble-detection apparatus for an EGR system comprising an EGR passage for communicating an exhaust passage of an internal combustion engine with an intake passage thereof and an EGR control valve for controlling a flow rate of exhaust-gas recirculating through the EGR passage, wherein

the apparatus comprises:

pulse-detection means provided in the EGR passage, for detecting pulses in the exhaust-gas flow;

pulse amplitude-detection means for detecting an amplitude of the pulses in the exhaust-gas flow detected by the pulse-detection means;

operation state-detection means for detecting the operation state in the internal combustion engine; and

clogging-detection means for detecting clogging in the EGR passage in accordance with the detected amplitude of the pulses in the exhaust-gas flow and the detected operation state of the internal combustion engine.

5,664,549

BREATHER SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

William Richard Hutchins, Kenilworth, England, assignor to Rover Group Limited, Birmingham, England

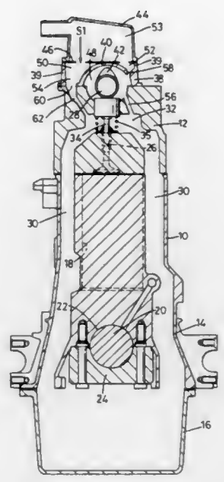
Filed Jan. 25, 1996, Ser. No. 591,311

Claims priority, application United Kingdom, Jan. 28, 1995, 9501713

Int. Cl.[6] F01M *13/04;* **F01L** *1/053*

U.S. Cl. 123—572 **9 Claims**

1. An internal combustion engine having a cylinder head assembly including a camshaft with a plurality of cams and camshaft bearings supporting the camshaft, the head assembly defining at least one breather passage extending therethrough and an oil separation region, the oil separation region having an outlet and also having an inlet connected to said at least one breather passage such that, in use, gas can flow from said at least one breather passage through the oil separation region where oil can separate out of the gas, wherein the head assembly further comprises a cover defining an outlet region, a gasket, and a guard member, the guard member having guard portions which separate the oil separation region from the cams, and the guard member further comprising camshaft bearing portions, and the gasket separates the outlet region from the separation region and has apertures therethrough which form the outlet and are offset from the inlet.



5,664,550

IGNITION SYSTEM OF INTERNAL COMBUSTION ENGINE

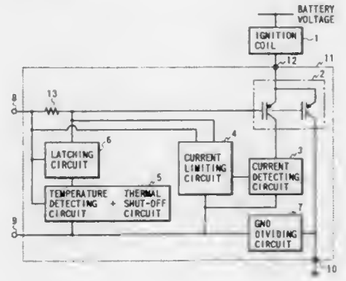
Takashi Ito, Hitachinaka; Katsuaki Fukatsu, Uridura-machi; Ryoichi Kobayashi, Tokai-mura, and Noboru Sugiura, Mito, all of Japan, assignors to Hitachi, Ltd., and Hitachi Car Engineering Co., Ltd.

Filed Aug. 2, 1996, Ser. No. 691,329

Claims priority, application Japan, Aug. 4, 1995, 7-199449

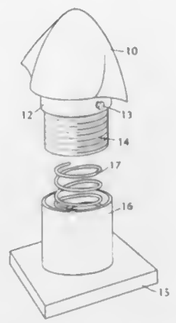
Int. Cl.[6] F02P *11/00*

U.S. Cl. 123—630 **8 Claims**



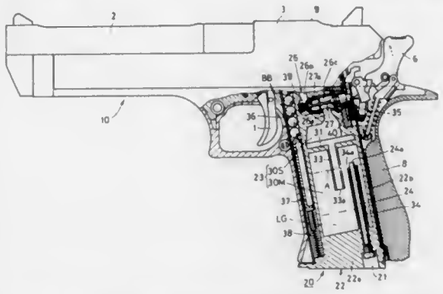
1. An ignition system of an internal combustion engine provided with a primary coil and an ignition circuit which controls the flow of a primary current according to an ignition control signal to produce a high voltage on the secondary side, said ignition circuit comprising one integrated chip having an insulated gate bipolar transistor for controlling the flow of the primary current, a current limiting circuit for limiting the current flowing to said transistor, and a thermal shut-off circuit for forcibly opening the primary current circuit in case of a malfunction.

5,664,551
TOY ROCKET AND LAUNCHER ASSEMBLY
Donald Spector, 380 Mountain Rd., Union City, N.J. 07080
Filed Sep. 20, 1996, Ser. No. 715,925
Int. Cl.[6] F41B *7/00*
U.S. Cl. 124—16 **5 Claims**



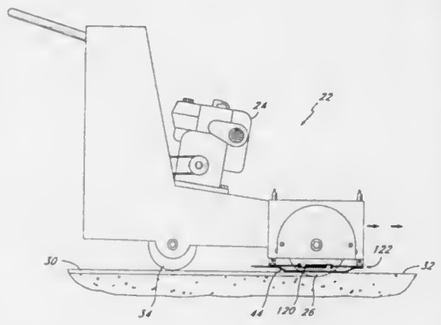
1. A two stage toy rocket and launcher assembly comprising:
A. a first stage shaped like a missile having a flat rear end on which is mounted a disc encircled by a coupling collar projecting from the rear end provided with release means;
B. a second stage formed by an externally-threaded sleeve whose upper end is telescoped into said collar and is normally locked thereto by said release means; and
C. a launcher formed by a platform on which is anchored an internally-threaded shell dimensioned to threadably receive said sleeve, and a helical compression spring nested in said shell and projecting thereabove whereby when a player holding said two-stage rocket screws the sleeve into said shell to subject the helical spring to compression between the disc and the platform, the spring then develops a latent force, and when the release means is actuated to decouple the collar of the first stage from the sleeve of the second stage, the released spring imposes a powerful thrust force against the disc to propel the first stage into space.

5,664,552
GAS PRESSURE ACCUMULATING AND SUPPLYING DEVICE FOR USE IN MODEL GUNS
Keiichi Kunimoto, Tokyo, Japan, assignor to Western Arms, Tokyo, Japan
Filed Mar. 28, 1996, Ser. No. 623,127
Claims priority, application Japan, Apr. 5, 1995, 7-080143
Int. Cl.[6] F41B *11/00*
U.S. Cl. 124—73 **6 Claims**



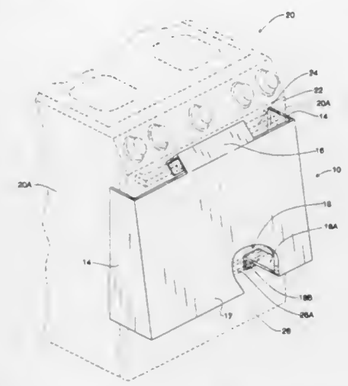
1. A gas pressure accumulating and supplying device for use in model guns, which comprises:
a pressure accumulating chamber provided in a case member,
a gas injecting opening provided on a bottom portion of the case member,
a gas introducing structure extending from the gas injecting opening into the pressure accumulating chamber,
a gas discharging passage for opening into the pressure accumulating chamber in a direction toward the bottom portion of the case member,
a control valve structure provided in the gas discharging passage for controlling supply of gas pressure from the pressure accumulating chamber,
a partition member provided in the pressure accumulating chamber for partitioning the pressure accumulating chamber into a main chamber structure from the gas injecting opening, and a subchamber positioned between the main chamber and the gas discharging passage, and
a gas passage forming portion extending from the partition member into the main chamber for forming a gas passage connecting with the subchamber and having an end portion reaching a position closer to the bottom portion of the case member than an end portion of the gas introducing structure.

5,664,553
SPRING LOADED SKID PLATE FOR A CONCRETE SAW
Edward R. Chiuminatta, 16405 Everett, Riverside, Calif. 92508, and Alan R. Chiuminatta, 1112 Olympic Dr., Corona, Calif. 91719
Filed May 26, 1995, Ser. No. 451,466
Int. Cl.[6] B28D *1/04*
U.S. Cl. 125—13.01 **63 Claims**



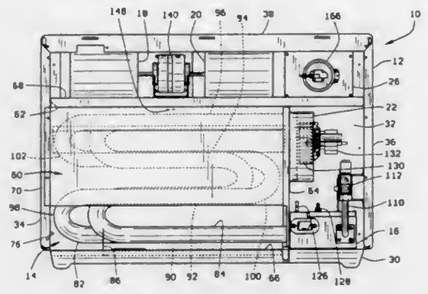
1. A skid plate assembly for use with a concrete saw having a rotating cutting blade with a leading cutting edge that cuts a groove in a concrete surface as the saw is moved over the surface, comprising:
a first and second mounting portion on the skid plate configured to be releasably fastened to the concrete saw so that the skid plate can be replaced periodically;
a support portion having a slot through which the cutting blade extends during cutting, the support portion depending from the first and second mounting portions such that during cutting the support portion supports the surface of the concrete adjacent at least the leading cutting edge of the blade to reduce raveling of the edges of a groove cut by the rotating blade as the skid plate moves across a portion of the surface of the concrete during cutting;
at least one spring interposed between the mounting portions to resiliently urge the support portion into a bent configuration while permitting the support portion to flex sufficiently to accommodate local variations in the flatness of the concrete surface while still maintaining the support of the concrete surface adjacent at least the location where the cutting blade exits from the concrete surface during cutting.

5,664,554
HEAT GUARD
Brett D. Martin, 525 Bethany Rd., Covington, Ga. 30209
Filed Jul. 15, 1996, Ser. No. 680,457
Int. Cl.[6] F24C *15/36*
U.S. Cl. 126—201 **1 Claim**



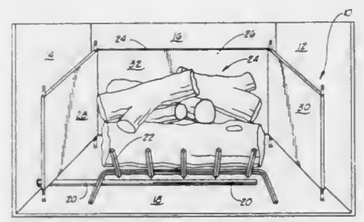
1. A protective guard for an oven, such an oven having oven sides and an oven door, such an oven door having a handle thereon and a drawer below, the guard comprising:
a. a main member having two opposing sides and a first end opposite a second end;
b. a side member depending from each of the sides;
c. a handle insert depending from the first end, the handle insert configured to fit over such a handle;
d. the side members configured to extend along such oven sides when the handle insert is fitted over such a handle; and
e. at least one hook member depending outwardly from the second end in the same direction as the side members depend from the sides, each hook member configured to engage such a drawer when the handle insert is fitted over such a handle.

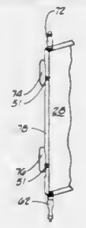
5,664,555
WALL HEATER WITH IMPROVED HEAT EXCHANGER
Lloyd R. Maschhoff, Belleville, Ill., and Thomas D. Vaughn, Ballwin, Mo., assignors to Empire Comfort Systems, Inc., Belleville, Ill.
Filed Sep. 1, 1995, Ser. No. 522,761
Int. Cl.[6] F24H *3/02*
U.S. Cl. 126—110 B **17 Claims**



1. A forced air, wall heater comprising a heat exchanger, said heat exchanger including a plurality of tubes with each of said tubes having a plurality of substantially parallel runs and at least one return section between adjacent runs, said return section being generally perpendicular to each of the plurality of runs, and a blower positioned for blowing air directly toward said return section to thereby maximize the mass flow rate of air over said return section.

5,664,556
FIREPLACE REFLECTOR
Thomas L. Byers, 5480 Stewart Dr., Mustang, Okla. 73064
Filed Mar. 20, 1996, Ser. No. 619,972
Int. Cl.[6] F24B *1/195*
U.S. Cl. 126—553 **3 Claims**

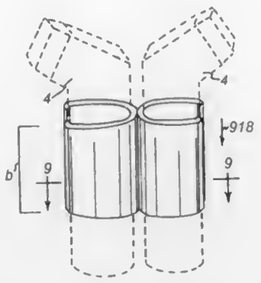




1. A heat reflector screen for use in a fireplace behind the fire, comprising:
a rectangular central panel of reflective metal having hanger slots on each side, each central panel side being folded at a ninety degree angle to provide panel stiffener approximately one-half inch wide;
first and second generally square side panels of reflective metal having hanger tabs on one side for insertion through said hanger slots to support hingedly said central panel, each side panel side being folded at a ninety degree angle to provide panel stiffener approximately one-half inch wide; and
first and second support legs disposed on each of said first and second side panels to provide a pre-determined vertical clearance for said reflector screen.

5,664,557
RELEASABLY ENGAGEABLE COUPLING FOR AN INHALER
Walter J. Makiej, Jr., Chelmsford, Mass., assignor to Respiratory Delivery Systems, Inc., Chelmsford, Mass.
Continuation-in-part of Ser. No. 209,199, Mar. 10, 1994, abandoned. This application Dec. 27, 1995, Ser. No. 579,382
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.23 **14 Claims**

1. In combination, an inhaler coupler and at least two completely functionally separate and independent metered dose inhalers engaged to said inhaler coupler wherein each of said at least two metered dose inhalers includes an elongated housing having a chamber in which is received a container of pressurized medication and a port through which said medication is discharged from said container in a metered dose to the patient and wherein said inhaler coupler includes a connector that is releasably engaged to one or more of said at least two inhaler housings, said combination



allowing separate and non-simultaneous administration of medication from any of said at least two independent metered dose inhalers.

5,664,558

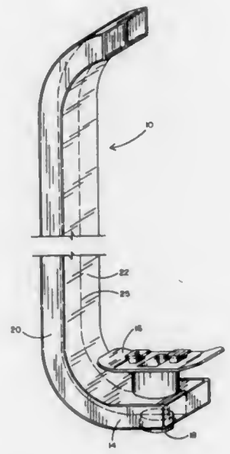
MULTI-TUBULAR DIVING SNORKEL

Barry K. Wagner, 10521 Hermanos Ct., San Diego, Calif. 92124

Filed Feb. 29, 1996, Ser. No. 608,895

Int. Cl.[6] B63C *11/16*

U.S. Cl. 128—201.11 **21 Claims**



1. A multi-tube diving snorkel comprising:

first and second elongated air tubes positioned side-by-side between an upper end of said snorkel and a lower end of said snorkel;

a first valve device positioned at the upper end of said snorkel for permitting air to flow only in a first direction through said first tube and only in a second direction, opposite said first direction, through said second tube;

a mouthpiece positioned adjacent said lower; and

a second valve device positioned at the lower end of said snorkel adjacent said mouthpiece for permitting air to flow only in said first direction through said first tube and only in said second direction through said second tube;

wherein said first valve device comprises a split butterfly valve having a first flap covering said first tube at said upper end and having a second flap covering said second tube at said upper end.

5,664,559

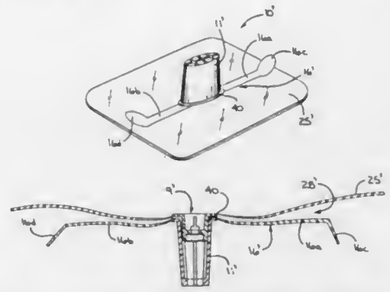
DOUBLE SHIELD MOUTH-TO-MOUTH RESUSCITATOR MASK WITH BARRIER FOR CONTAMINATED FINGERS

Gene R. Baldwin, 324 N. Gardiner Ave., Rockford, Ill. 61107

Continuation-in-part of Ser. No. 181,837, Jan. 18, 1994, abandoned. This application Oct. 31, 1994, Ser. No. 331,693

Int. Cl.[6] A61M *16/00*; A62B *7/00*

U.S. Cl. 128—203.11 **4 Claims**



1. A mouth-to-mouth manually manipulated resuscitation mask to reduce risk of contamination being transmitted via fluids from a victim's mouth to a rescuer's mouth during rescue breathing, said resuscitation mask including in combination:

(a) a barrier means for providing a sealing contact with a face of a victim in a region adjacent a victim's mouth, said barrier means is comprised of a sheet of flexible material, said sheet of flexible material having an opening therethrough;

(b) a one-way valve disposed in said opening and sealingly coupled to said sheet of flexible material, and

(c) means for a rescuer's fingers to manually hold said sheet of flexible material during repetitive steps of positioning and removing said one-way valve into and out of the mouth of the victim during rescue breathing,

said means for manually holding said sheet of flexible material being positioned between said sheet of flexible material and said victim's face thereby allowing said rescuer's fingers, which are contaminated by said fluids from said victim's mouth, to remain beneath said sheet of flexible material during handling of said mask thereby reducing the risk of said contamination coming into contact with said rescuer's mouth.

5,664,560

GAS MIXING APPARATUS FOR A VENTILATOR

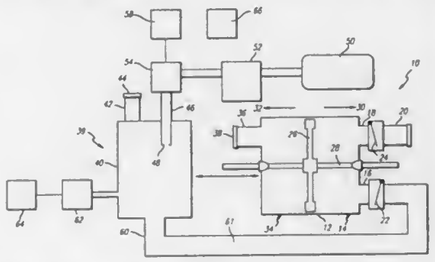
Edwin B. Merrick, Stow, Mass.; Glen N. Gee, Carlsbad, Calif.; John O'Mahony, and John O'Dea, both of Galway, Ireland, assignors to Puritan-Bennett Corporation, Overland Park, Kans.

Continuation of Ser. No. 385,951, Feb. 8, 1995, abandoned. This application Jul. 31, 1996, Ser. No. 688,868

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—203.25 **18 Claims**

1. Gas mixing apparatus for a ventilator system for providing



mixed respiratory gas to a patient airway, comprising:

a pump chamber having a first gas delivery portion and an opposing second portion, said first gas delivery portion of said pump chamber having an inlet for receiving mixed gas and an outlet for delivering mixed gas to the patient airway during an inspiratory portion of a breath cycle;

a gas displacement member disposed within said pump chamber and movable between an extended position in said first gas delivery portion of said pump chamber and a retracted position in said second portion of said pump chamber;

means for moving said gas displacement member between said extended and retracted positions;

gas mixing means for mixing a first selected gas with a second selected gas, said gas mixing means having an inlet open to a source for said second selected gas for admitting said second selected gas to the gas mixing means at ambient atmospheric pressure and a flow limiting inlet for admitting said first selected gas to said gas mixing means;

valve means for regulating the flow of said first selected gas to said gas mixing means; and

control means for controlling said valve means to admit said first selected gas to said gas mixing means during at least one interval of time during at least a portion of the breath cycle to obtain a predetermined proportion of said first selected gas in the mixed gas.

5,664,561

HIGH/LOW FLOW ANESTHETIC VAPORIZER

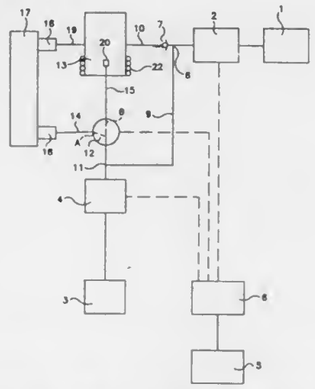
Clifford G. Kersey, Oregon, Wis., assignor to The BOC Group plc, Windlesham, England

Continuation-in-part of Ser. No. 137,209, Oct. 25, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 533,909

Claims priority, application United Kingdom, Apr. 26, 1991, 9109023

Int. Cl.[6] A61M *15/00*;*16/10*; F23D *11/00*;*14/00*

U.S. Cl. 128—203.26 **4 Claims**



1. An anaesthetic vaporizer for delivering a mixture of carrier gas and anaesthetic agent to a patients breathing circuit, said anaesthetic vaporizer comprising:

an inlet for receiving carrier gas from a source of carrier gas;

a first passageway within said vaporizer for receiving carrier gas from said inlet;

a gas regulator controlling the flow of carrier gas within said first passageway to a predetermined limited flow;

a reservoir within said vaporizer for containing a supply of liquid anaesthetic agent, said reservoir providing said anaesthetic agent into said first passageway to mix in said first passageway with the carrier gas flowing therein;

a second passageway receiving carrier gas from said inlet through said regulator;

a mixing chamber receiving and mixing carrier gas from said second passageway and the mixed carrier gas and anaesthetic agent from said first passageway;

a third passageway adapted to deliver the mixed carrier gas and anesthetic agent from said mixing chamber to a patients breathing circuit; and

a valve means in said first passageway selectively operable to divert carrier gas and anesthetic agent upstream of said mixing chamber, said valve means adapted to deliver the carrier gas and anesthetic agent directly to a patients breathing circuit.

5,664,562

BREATHING AID DEVICE

Guy Bourdon, Verrieres le Buisson, France, assignor to Pierre Medical S.A., France

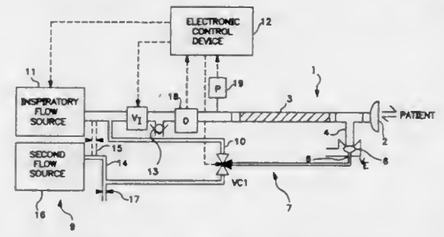
PCT No. PCT/FR93/00902, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/06499, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 17, 1993, Ser. No. 403,684

Claims priority, application France, Sep. 18, 1992, 92 11131

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **68 Claims**



1. Breathing aid device of the type with inspiration under substantially constant pressure, comprising a patient circuit (**1**) having an inspiratory branch (**11**) connected to a pressurized inspiratory flow source (**3**) and an expiratory branch (**4**) in which is installed an expiration valve (V_E) which is controlled so as to be closed during inspiration, the device also comprising electronic control (**12**) connected to at least one sensor (**18, 19**) detecting the respiratory activity of the patient and distribution means (V_I) which in inspiratory phase establish the communication between the inspiratory flow source (**11**) and the inspiratory branch (**3**) of the patient circuit, and in expiratory phase interrupt this communication at least partially, characterized in that the distribution means (V_I) are controlled by the driving means (**12**), which control the interruption of the said communication when the sensor detects that the patient is preparing an expiratory phase, and in that the driving means (**12**) also control, at least indirectly, the expiration valve (V_E) in order that it determines a predefined expiratory pressure substantially independent of the operating state of the inspiratory flow source (**11**).

5,664,563

PNEUMATIC SYSTEM

Gary Schroeder, North Londonderry, N.H.; James W. Biondi, North Haven, Conn., and Douglas M. Johnston, Winchester, Mass., assignors to Cardiopulmonary Corporation, Milford, Conn.

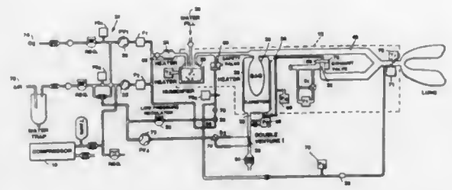
Filed Dec. 9, 1994, Ser. No. 352,658

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.25 **14 Claims**

1. A pneumatic system for a ventilator in fluid communication with a source of gas comprising:

a pneumatic circuit including a sealed canister, a valve, a double venturi having first and second jets and a proportional control valve for providing a selected volume of said gas to said valve, said valve directing said gas to one of said first jet and



said second jet of said double venturi, said double venturi being in fluid communication with said sealed canister; and

a patient breathing circuit including a first port for introducing said gas into said patient breathing circuit, a humidifier downstream from said source of gas for humidifying said gas, a flexible reservoir for containing a variable volume of said gas, said flexible reservoir located within said sealed canister downstream from said humidifier, and a second port downstream from said flexible reservoir,

wherein gas directed through said first jet entrains gas within said sealed canister away from said sealed canister to reduce the pressure on the exterior of said flexible reservoir, and gas directed through said second jet entrains gas toward said sealed canister to increase pressure on the exterior of said flexible reservoir.

5,664,564

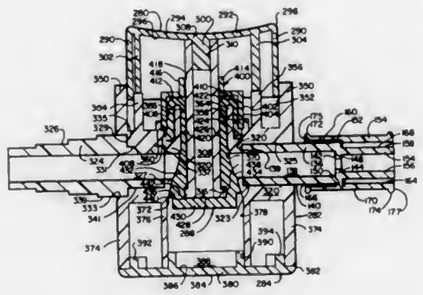
ASPIRATING/VENTILATING APPARATUS AND METHOD

Darrel Palmer, 1908 Bear Creek Dr., Draper, Utah 84020

Continuation of Ser. No. 413,791, Sep. 28, 1989, abandoned, which is a continuation of Ser. No. 179,800, Apr. 11, 1988, Pat. No. 4,872,579, which is a division of Ser. No. 49,376, May 14, 1987, Pat. No. 4,836,199, which is a division of Ser. No. 916,341, Oct. 7, 1986, Pat. No. 4,696,296, which is a division of Ser. No. 767,400, Aug. 20, 1985, Pat. No. 4,638,539, which is a division of Ser. No. 633,570, Jul. 23, 1984, Pat. No. 4,569,344. This application Jul. 13, 1994, Ser. No. 275,066

Int. Cl.[6] A62B *9/02*

U.S. Cl. 128—205.19 **13 Claims**



1. A non-contaminating normally closed valve assembly for use in selectively delivering aspirating vacuum pressure to a desired site, the valve assembly adapted to isolate said aspirating vacuum pressure from the atmosphere, said normally closed valve assembly comprising a valve body having a bore therethrough, a plunger, and a single piece sealing element disposed so as to be actuated by the plunger, the single piece sealing element comprising (a) self-biasing memory for urging the single element from a stressed open position to a closed position of lesser stress and (b) structure for sealing the single piece sealing element against the valve body in a normally closed position so that the bore is sealed but accommodating manual displacement of the single element by the plunger counter to the self-biasing of the memory into the open position.

5,664,565

REGULATOR FOR UNDERWATER BREATHING APPARATUS FOR DIVING IN COLD WATERS

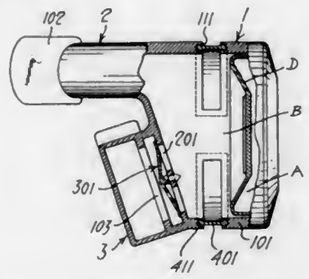
Nino Pietrelli, Sori, Italy, assignor to HTM Sport S.p.A., Italy

Filed Apr. 17, 1996, Ser. No. 633,493

Claims priority, application Italy, May 12, 1995, GE95A0054

Int. Cl.[6] A62B *7/04*

U.S. Cl. 128—205.24 **3 Claims**



1. A regulator for an ambient underwater breathing apparatus, said regulator comprising: a plastic body having walls forming an interior, a tube connected to said body, a mouthpiece provided on said tube, and an outlet port, a diaphragm dividing the interior of said body into a first chamber in communication with the ambient and a second chamber, wherein said body comprises at least one metallic insert integrated in the walls of said second chamber of said body so as to exchange heat with said ambient.

5,664,566

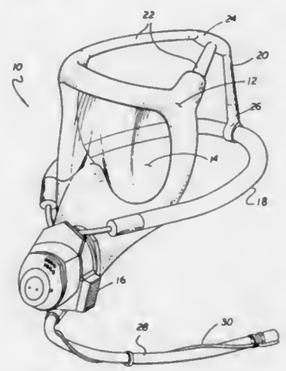
QUICK-DONNING FULL FACE OXYGEN MASK WITH INFLATABLE HARNESS AND SOFT FOLDABLE LENS

Thomas K. McDonald, Overland Park; Gary R. Hannah, Merriam; Randy G. Stratman, Prairie Village, and Gregory R. Jones, Lenexa, all of Kans., assignors to Puritan-Bennett Corporation, Lenexa, Kans.

Filed Sep. 30, 1994, Ser. No. 316,422

Int. Cl.[6] A62B *18/08*

U.S. Cl. 128—205.25 **20 Claims**



1. A quick-donning full face oxygen mask for use in oxygen depleted environments and environments contaminated by smoke or other pollutants comprising:

a flexible face seal, said flexible face seal including an interior, and a pliable, flexible periphery conformable to a wearer's face, said flexible face seal further including a plurality of mounting points for an inflatable harness attached to said flexible face seal, said flexible face seal further including means for attaching an oxygen supply regulator;

a flexible optical lens disposed in said flexible face seal, said flexible face seal having means for mounting said flexible optical lens in a region of the mask adapted to overlie the eyes of a wearer, said flexible optical lens surrounded by said face seal;

said flexible optical lens sealingly attached to said flexible face seal at its periphery to thereby bond and seal said flexible optical lens to said face seal;

said inflatable harness including at least one tube connected to said oxygen regulator and supplied oxygen by said oxygen regulator, said at least one tube extending around the rear of the head of a wearer and attached to said flexible face seal by said plurality of mounting points, said inflatable harness further including adjustable straps attached to said at least one tube and to said flexible face seal at positions which allow the adjustment of the inflatable harness for size and comfort by a wearer; and

a plurality of passages between said oxygen regulator and the interior of said flexible face seal to provide breathing gas to a wearer, a portion of said breathing gas being conducted to an interior surface of said flexible optical lens to prevent fogging, said flexible face seal and said flexible optical lens being of sufficient flexibility to allow said mask to be rolled for storage.

5,664,567

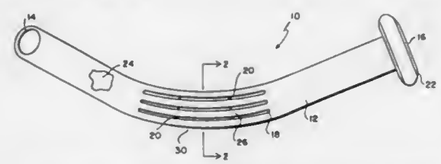
FENESTRATED NASOPHARYNGEAL AIRWAY FOR DRAINAGE

Gerald S. Linder, P.O. Box 1085, Pacific Palisades, Calif. 90272

Filed Jul. 16, 1996, Ser. No. 682,921

Int. Cl.[6] A61M *15/08;25/00;29/00;* **A62B** *7/00*

U.S. Cl. 128—207.18 **7 Claims**



1. A fenestrated nasopharyngeal airway for passive drainage of secreted fluids, comprising:

a tube, said tube comprising hypoallergenic material and defining a lumen, said tube having an open proximal end separated by a predetermined length from an open distal end, said tube adapted to extend from the nares tip of a patient and terminating adjacent an oropharynx of the patient when said tube is completely inserted into the nasal passage of the patient, at least one portion of said tube being generally adjacent fluid-secreting tissue of the patient; and

said tube defining a plurality of parallel slit fenestrations adjacent said tissue and allowing fluid secreted by said tissue to travel into said lumen, said fenestrations being present about approximately one half of the circumference of said tube and extending along a portion of said tube traversing a central portion of an adjacent nasal cavity, said parallel slits being one millimeter (1 mm) wide and being separated by at least one millimeter (1 mm), said parallel slits being parallel to a midline of the patient, said parallel slits being divided by separators maintaining said parallel slits in an open condition, said separators maintaining stiffness and wall integrity of the fenestrated nasopharyngeal airway; whereby

pressure normally arising due to fluids secreted by the tissue of the patient is relieved by fluid travel into said lumen, preventing fluid collection, headaches, and infection;

the shape of said parallel slit fenestrations preventing trauma to the nasal mucosa of the patient when the fenestrated nasopharyngeal airway is inserted into the patient's nasal passage; and

said hypoallergenic material preventing allergic reaction and anaphylaxis by said patient to the fenestrated nasopharyngeal airway.

5,664,568

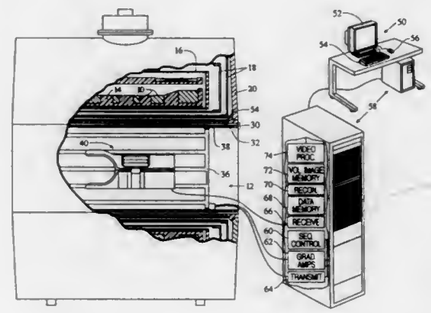
SPLIT-TOP, NECK AND HEAD VASCULAR ARRAY FOR MAGNETIC RESONANCE IMAGING

Ravi Srinivasan, Richmond Hts.; Robert G. Henderson, Wickliffe, and Robert A. Elek, Chardon, all of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 8, 1995, Ser. No. 512,722

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 **24 Claims**



1. In a magnetic resonance apparatus which includes a magnet for generating a temporally constant, uniform magnetic field through an examination region, a radio frequency coil which performs at least one of (1) transmitting radio frequency signals into the examination region to induce and manipulate resonance of dipoles disposed therein and (2) receiving radio frequency signals from resonating dipoles in the examination region, and a processor for processing the received magnetic resonance signals, the radio frequency coil including:

a first volume coil assembly;

a second volume coil assembly disposed contiguous to and only partially overlapping the first volume coil assembly in a common overlap region;

a first electronic circuit mounted adjacent to and connected with the second volume coil assembly;

a first coaxial cable extending from the first electronic circuit past and contiguous to the first volume coil assembly, to a region on an opposite side of the first volume coil assembly from the second volume coil assembly;

a first coil-to-coil decoupling circuit connected with the first coaxial cable for inhibiting the first and second volume coil assemblies from coupling to each other along the first coaxial cable when receiving the radio frequency signals from the resonating dipoles in the examination region.

5,664,569

BREAST POSITIONING DEVICE FOR USE DURING MAGNETIC RESONANCE IMAGING

Raymond V. Damadian, Woodbury, and Jan Votruba, Elmont, both of N.Y., assignors to Fonar Corporation, Melville, N.Y.

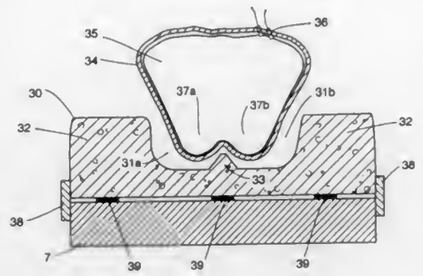
Division of Ser. No. 131,124, Oct. 4, 1993, Pat. No. 5,490,513, which is a continuation-in-part of Ser. No. 952,327, Sep. 28, 1992, Pat. No. 5,606,970. This application Jun. 1, 1995, Ser. No. 456,703

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.5 **10 Claims**

1. An apparatus employed during imaging of the breast region of a patient in a medical magnetic resonance imaging system comprising:

(a) a breast positioning device comprising a solid cushion having a surface containing a permanent cavity for receiving and positioning a patient's breasts;



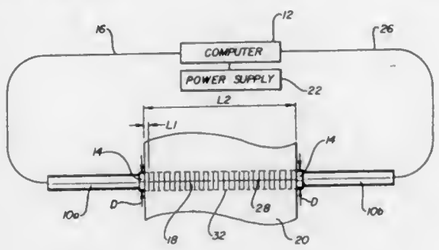
(b) an elongated conductor with a first portion disposed within said cavity, and with a second portion for extending around the torso region of said patient.

5,664,570

APPARATUS FOR APPLYING HIGH-INTENSITY ULTRASONIC WAVES TO A TARGET VOLUME WITHIN A HUMAN OR ANIMAL BODY

Richard P. Bishop, Burke, Va., assignor to SVC, Norfolk, Va.

Filed Feb. 20, 1996, Ser. No. 603,280
Int. Cl.[6] A61B *17/22*
U.S. Cl. 128—660.03 **19 Claims**



1. An apparatus for applying high intensity vibrational energy to a target volume disposed within a contiguous surrounding medium, comprising:

means for introducing vibrational energy into a work medium, said means comprising first and second actuator members;

said first and second actuator members being aligned with each other along a first longitudinal axis;

said first actuator member being operationally positionable adjacent said work medium;

said first actuator comprising a first planar surface perpendicular to said first longitudinal axis and means for oscillating said first planar surface parallel to said first longitudinal axis at a first frequency;

said second actuator member comprising a second planar surface perpendicular to said first longitudinal axis facing said first planar surface and being operationally positionable adjacent said work medium;

and said second actuator member comprising means for oscillating said second planar surface parallel to said first longitudinal axis at said first frequency;

and means for establishing a first standing pressure wave in said work medium between said first planar surface and said second planar surface;

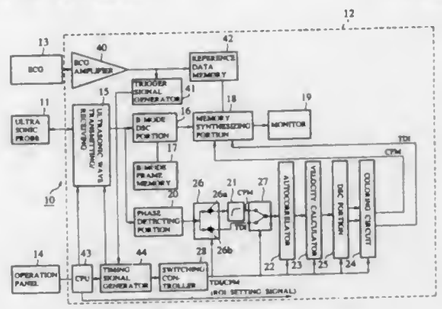
wherein said means for establishing said first standing pressure wave in said work medium between said first planar surface and said second planar surface comprises means for controlling a phase angle of oscillation of said first planar surface relative to a phase angle of oscillation of said second planar surface.

5,664,571

ULTRASONIC DIAGNOSTIC APPARATUS

Nobuo Yamazaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1996, Ser. No. 648,251
Claims priority, application Japan, May 15, 1995, 7-115816
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—660.05 **19 Claims**



1. An ultrasonic diagnostic apparatus comprising:

a transducer for transmitting an ultrasonic beam into a subject and receiving an ultrasonic echo reflected from inside said subject and converting said received ultrasonic echo into electric echo signals;

an ultrasonic beam controller providing the ultrasonic beam along a given direction that is also the direction along which the ultrasonic echo reflected from inside the subject is received, said ultrasonic beam being provided and said reflected echo being received within a predetermined time period prior to providing a new ultrasonic beam in a different direction;

a B-mode ultrasonic image processing portion producing B-mode ultrasonic image data from said electric echo signals converted by said transducer;

a Doppler signal phase detecting portion having an input receiving said electric echo signals supplied from said transducer and functioning to detect and provide Doppler signals as an output;

a Doppler signal analyzer responsive to said Doppler signals to determine both blood flow velocity data and tissue motion velocity data within said predetermined time period;

a display control portion receiving said blood velocity data and said tissue motion velocity data along with B-mode ultrasonic image data and providing first display data as a combination of B-mode ultrasonic data with blood flow velocity data and second display data as a combination of B-mode ultrasonic data with tissue motion velocity data; and

a display controlled by said display control portion to display said first display data and said second display data together.

5,664,572

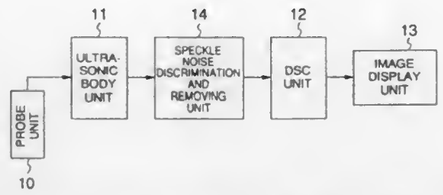
METHOD FOR DISCRIMINATING SPECKLE NOISES FROM SIGNALS IN ULTRASONIC TOMOGRAPHY APPARATUS AND ULTRASONIC TOMOGRAPHY APPARATUS INCLUDING SPECKLE NOISE REMOVING CIRCUIT

Shinji Kishimoto, Ibaraki-ken, Japan, assignor to Hitachi Medical Corp., Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 721,715
Claims priority, application Japan, Sep. 29, 1995, 7-275107
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.07 **9 Claims**

1. A discrimination method for speckle noises in an ultrasonic tomography apparatus, comprising the steps of:

scanning a predetermined area of an object to be examined by an ultrasonic wave and receiving an ultrasonic echo signal from the object;



producing a digital echo signal on the basis of said ultrasonic echo signal to store it in a memory unit;

reading out the echo signals of a plurality of fields obtained by a plurality of continuous scanning operations from said memory unit;

statistically processing the echo signals at the same pixel position of said plurality of fields to obtain a judgment value; and

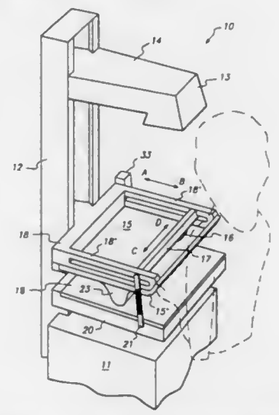
comparing said judgment value with a predetermined reference value to decide in accordance with the compared result whether the echo signals of the statistically processed pixel contain speckle noises or not.

5,664,573

METHOD AND APPARATUS FOR PERFORMING SONOMAMMOGRAPHY AND ENHANCED X-RAY IMAGING

Ascher Shmulewitz, Seattle, Wash., assignor to Neovision Corporation, Seattle, Wash.

Continuation of Ser. No. 277,894, Jul. 20, 1994, Pat. No. 5,479,927, which is a continuation-in-part of Ser. No. 145,958, Oct. 29, 1993, Pat. No. 5,474,072. This application Nov. 16, 1995, Ser. No. 559,077
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.09 **22 Claims**



1. In apparatus for obtaining radiological images of biological tissue by passing X-ray radiation through a biological tissue to form an image in a receptor, the apparatus comprising an X-ray source for emitting X-ray radiation, an upper compression surface and a lower compression surface adapted for immobilizing the biological tissue therebetween, and a receptor disposed beneath the lower compression surface, the X-ray source disposed above the upper compression surface so that X-ray radiation emitted from the source passes through the biological tissue and is received by the receptor, the improvement comprising:

a compression plate that is radiolucent and sonolucent, the compression plate having an upper surface and a lower surface, the lower surface forming the upper compression surface;

an ultrasonic transducer disposed above the compression plate;

a gel pad for acoustically coupling a portion of the biological tissue to the ultrasonic transducer;

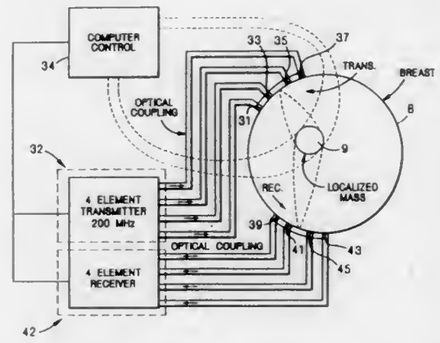
drive means for moving the ultrasonic transducer across the upper surface of the compression plate while the biological tissue remains immobilized between the upper and lower compression surfaces, so that the ultrasonic transducer generates a plurality of ultrasound images of the biological tissue that are in registration with the image formed in the receptor.

5,664,574

SYSTEM FOR TISSUE EXAMINATION USING DIRECTIONAL OPTICAL RADIATION

Britton Chance, Marathon, Fla., assignor to Non-Invasive Technology, Inc., Philadelphia, Pa.

Continuation of Ser. No. 900,197, Jun. 17, 1992, Pat. No. 5,353,799, which is a continuation-in-part of Ser. No. 644,090, Jan. 22, 1991, Pat. No. 5,187,672, and a continuation-in-part of Ser. No. 645,590, Jan. 24, 1991, abandoned. This application Oct. 7, 1994, Ser. No. 320,160
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—664 **65 Claims**



1. A spectroscopic system for examination of biological tissue comprising:

at least one light source, connected to at least one oscillator, and constructed and arranged to generate optical radiation of a visible or infrared wavelength that responds to a wavelength sensitive agent present in the tissue, said radiation being intensity modulated at a selected frequency of said oscillator to achieve a known radiation pattern,

multiple input ports for simultaneously receiving said optical radiation having said pattern and constructed to simultaneously introduce said optical radiation having said pattern as introduced radiation to the tissue at corresponding multiple locations,

a radiation pattern controller constructed to control the radiation intensity or phase of the patterns of said simultaneously introduced radiation from said multiple input ports to form resulting radiation that possesses, in at least one direction, a substantial gradient in photon density as a result of interaction of the patterns of said introduced radiation, said resulting radiation being scattered and absorbed in migration paths in the examined tissue,

a detection port placed at a selected location relative to the tissue to receive radiation that has been scattered and absorbed in migration paths in the tissue,

a detector, optically connected to said detection port, constructed and arranged to detect, over time, said resulting radiation that has migrated in the tissue to said detection port and produce signals based upon detected radiation, and

a processor, operatively connected to said detector and constructed and arranged to process said signals of said detected radiation in relation to said introduced radiation to determine

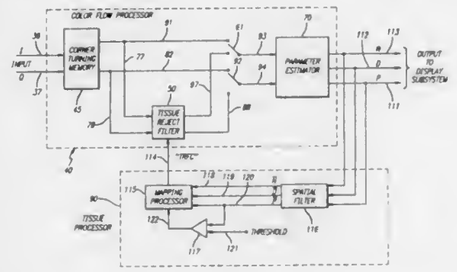
influence of the tissue including said wavelength sensitive agent upon said substantial gradient in photon density of said resulting radiation.

5,664,575

ULTRASONIC DOPPLER IMAGER HAVING AN ADAPTIVE TISSUE REJECTION FILTER WITH VARIABLE PARAMETERS

Zoran B. Banjanin, Renton; Jin Kim, Issaquah, and Steven R. Marquis, Fall City, all of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Dec. 29, 1994, Ser. No. 366,163
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **23 Claims**



1. An ultrasound flow imaging and/or measuring system of the type including a transmitter/receiver for transmitting ultrasonic pulses into an area to be scanned which has both flow and non-flow movement therein and developing beamline signals in response to receive processing of reflections of said transmitted ultrasonic pulses, and a flow processor for processing said beamline signals so as to develop therefrom flow signals representative of flow movement in said scanned area and having contamination in said flow signals arising from ultrasonic reflections from non-flow movement in said scanned area, said flow processor comprising:

a parameter estimator responsive to said beamline signals for processing said beamline signals to generate estimates representative of movement in said scanned area;

a non-flow processor coupled to said parameter estimator and responsive to said estimates for adaptively and dynamically generating a control signal representative of ultrasonic reflections from non-flow movement in said scanned area; and

a non-flow rejection filter coupled to receive at a signal throughput path said beamline signals and at a control input said control signal, said non-flow rejection filter comprising a controllably variable notch filter wherein the shape, bandwidth and center frequency of the notch are controlled in response to said control signal, thereby generating filtered beamline signals as they pass through said notch filter so that contaminations in said filtered beamline signal, arising from ultrasonic reflections from said non-flow movement in said scanned area are suppressed.

5,664,576

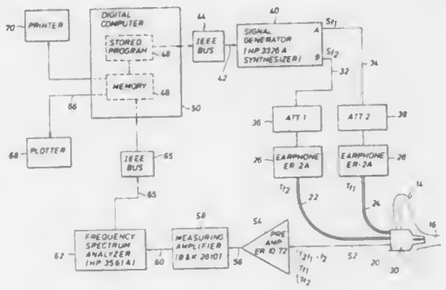
Patent Not Issued For This Number

5,664,577

METHOD AND APPARATUS FOR DISTORTION PRODUCT EMISSION TESTING OF HEARING

Brenda L. Lonshury-Martin, and Glen K. Martin, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 296,868, Aug. 26, 1994, Pat. No. 5,526,819, which is a continuation of Ser. No. 64,356, May 18, 1993, abandoned, which is a continuation of Ser. No. 471,106, Jan. 25, 1990, abandoned. This application Jun. 13, 1996, Ser. No. 662,881
Int. Cl.[6] G06G *7/60*
U.S. Cl. 128—746 **3 Claims**



1. Apparatus for distortion product emission audiogram testing of a human being comprising,

signal generating means for generating a first electrical signal of frequency f_1 and a second electrical signal of frequency f_2, the frequency f_2 being greater than the frequency f_1,

first and second earphones responsive respectively to said first and second electrical signals for producing a first tone of frequency f_1 and a second tone of frequency f_2,

an eartip adapted for insertion in the ear canal of the outer ear of said human being, said eartip having first and second audio tubes terminated therein which are connected respectively to said first and second earphones which transmit said first tone and said second tone to said ear,

said eartip including a microphone with a first output lead connected thereto,

signal analyzing means responsive to said first output lead connected to said microphone for generating a signal corresponding to a level of a tone generated in the ear of said human being at a frequency of $2f_1-f_2$,

digital computer means for controlling said signal generating means to produce a plurality of sets of signals of frequency f_1 and f_2 where the ratio of such frequencies f_2/f_1 is approximately the same for each set of signals, and responsive to said signal analyzing means for recording each level of said tone at frequency of $2f_1-f_2$ corresponding to each of said sets of frequencies f_1, f_2, and

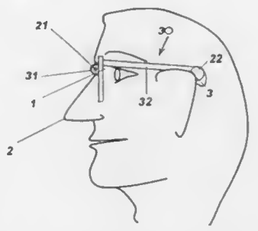
plotting means responsive to said digital computer means having stored therein tone levels at frequencies of $2f_1-f_2$ for plotting said levels of each of said tones at frequency of $2f_1-f_2$ as a function of frequency equal to the geometric mean of the frequencies f_1 and f_2.

5,664,578

METHOD AND INSTRUMENT FOR SENSING FATIGUE, SHOCK AND/OR ACUTE STRESS

János Boczán, Déval utca 22-26/b, H-1134 Budapest, Hungary

PCT No. PCT/HU93/00003, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/05206, PCT Pub. Date Mar. 17, 1994
PCT Filed Jan. 22, 1993, Ser. No. 397,275
Claims priority, application Hungary, Sep. 9, 1992, 1812/88
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—736 **16 Claims**



1. A method of monitoring fatigue of a person performing a tiring activity and of preventing effects of fatigue, comprising the following steps:

(a) while the person is at rest prior to performing the activity, taking a first temperature at a hottest spot and a second temperature at a coldest spot of the person's head;

(b) repeatedly taking said first and second temperatures during the activity;

(c) calculating a temperature difference between said first and second temperatures;

(d) monitoring a change of said temperature difference during the activity;

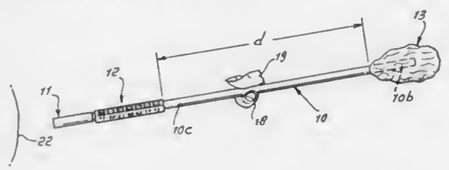
(e) generating a signal when said temperature difference exceeds a predetermined value.

5,664,579

PH MEASUREMENT OF BODY FLUID

James C. Caillouette, 685 Oak Knoll Cir., Pasadena, Calif. 91106

Continuation-in-part of Ser. No. 295,399, Aug. 25, 1994, Pat. No. 5,425,377. This application Jan. 23, 1995, Ser. No. 376,830
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—759 **25 Claims**



1. In the method of measuring pH of vaginal moisture, the steps that include:

a) providing a pH indication, and color comparison measurement means on a carrier stick,

b) manipulating the stick between its opposite ends to obtain pH indication of vaginal moisture at one end of the stick,

c) visually interpreting that indication to also obtain pH measurement of such moisture near that one end of the stick,

d) and disposing of the stick, whereby disposition of the pH indication, and measurement means is thereby obtained in one disposal step,

e) said a) step including providing said pH indication means in the form of a strip on said one end of the stick,

f) providing a smooth surfaced protective tip facing endwise at said one end of the stick, and

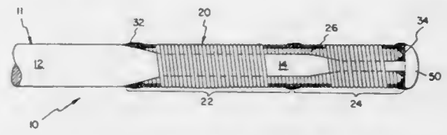
g) providing a protective plastic sleeve to extend about a portion of said strip proximate said tip.

5,664,580

GUIDEWIRE HAVING BIMETALLIC COIL

David S. Erickson, Stillwater, and Rudy Mazzocchi, Dellwood, both of Minn., assignors to Microvena Corporation, White Bear Lake, Minn.

Filed Jan. 31, 1995, Ser. No. 381,517
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **17 Claims**



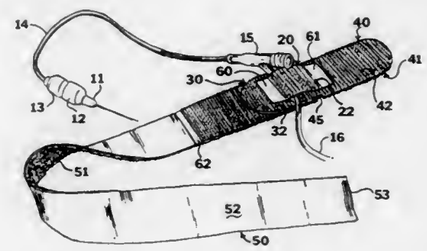
1. A guidewire comprising an elongate wire having a coil extending along at least a distal length thereof, the coil comprising a distal coil segment and a proximal coil segment, the distal coil segment being more radiopaque than the proximal segment, a distal end of the distal coil segment being attached to the wire adjacent a distal end thereof and a proximal end of the proximal coil segment being attached to the wire at a location spaced proximally of the distal coil segment, a proximal end of the distal coil segment being attached to a distal end of the proximal coil segment by a weldment, the wire received within the coil floating freely with respect to the coil between the distal end of the distal coil segment and the proximal end of the proximal coil segment.

5,664,581

INTRAVENOUS TUBING SECURE STRAP

John P. Ashley, 6809 Pine Dr., Chattanooga, Tenn. 37421

Filed Sep. 17, 1996, Ser. No. 717,531
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—876 **20 Claims**



1. An intravenous tubing secure strap having a tubing encircling portion and an arm encircling portion wherein said arm encircling portion comprises a strap section having an underside and an opposed overside, and a distal end and a proximal end; the overside of the distal end of said strap section having a hook fastener surface, and the underside of said strap section having a soft surface, at least a portion of which is loop fastener surface positioned to fasten with the overside hook fastener surface when the strap section encircles a patient's limb;

and wherein the tubing encircling portion comprises a bridge having a first end attached to the strap section overside hook fastener surface, and having a second end attached to an overside of a secure tab, said secure tab having an underside comprising a loop fastener surface whereby the secure tab loop fastener surface can be fastened to the strap section overside hook fastener surface to encircle a segment of intravenous tubing.

5,664,582

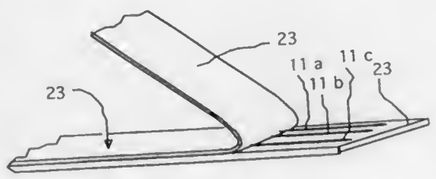
METHOD FOR DETECTING, DISTINGUISHING AND COUNTING OBJECTS

Dennis W. Szymaitis, 1172 Harvard Rd., Pittsburgh, Pa. 15205

Continuation-in-part of Ser. No. 176,769, Jan. 3, 1994, Pat. No. 5,456,718, which is a continuation-in-part of Ser. No. 977,336, Nov. 17, 1992, abandoned. This application Aug. 28, 1995, Ser. No. 519,771

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—898 **20 Claims**



1. A method for detecting at least one object comprising:

a) attaching to each of the at least one object a marker comprised of at least one elongated body of a selected nonmagnetostrictive, soft magnetic material, each said at least one elongated body being parallel to any other elongated body such that said marker will emit a spectrum of harmonics which includes detectable high order harmonics, and which will emit at least one known specific intensity of harmonic frequencies when exposed to an alternating electromagnetic field thereby causing a change in the alternating electromagnetic field which change can be correlated to the presence of only the selected nonmagnetostrictive, soft magnetic material;

b) exposing the at least one object to an alternating electromagnetic field thereby causing a change in the alternating electromagnetic field; and

c) detecting with a detector the change in the alternating electromagnetic field thereby indicating that the at least one object has been detected.

5,664,583

Patent Not Issued For This Number

5,664,584

DEVICE FOR LATERALLY TRANSFERRING AN ORDERLY SUCCESSION OF SMOKING ITEMS

Florenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy

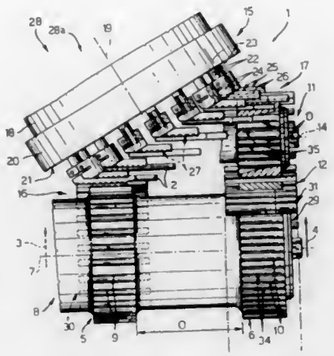
Filed Sep. 25, 1995, Ser. No. 533,085

Claims priority, application Italy, Oct. 13, 1994, BO94A0446

Int. Cl.[6] A24C *5/47*

U.S. Cl. 131—94 **16 Claims**

1. A transfer device for transversely transferring an orderly succession of elongated smoking items (2); the device (1) comprising conveying means (5, 6) for successively transversely feeding the items (2) along a first path and a second path (3, 4), said first path and said second path being parallel to each other and offset



transversely in relation to each other by a given distance (D); first and second seating means (9, 10) formed on the conveying means (5, 6) for receiving respective said items (2), said first and second seating means (9, 10) being equally spaced respectively along, and being arranged respectively transversely to, the first and second paths (3, 4); and transfer means (15) for transferring each item (2) from a first position (16) on the first path (3) to a second position (12) on the second path (4); said transfer means (15) comprising a carousel conveyor (20) rotating about its axis (19); a number of gripping heads (25) movable with and in relation to the carousel conveyor (20), so as to travel along an annular path (P) tangent to the conveying means (5, 6) at said first position (16); and an intermediate roller (11) tangent both to the conveying means (5, 6) at second position (12) and to the annular path (P).

5,664,585

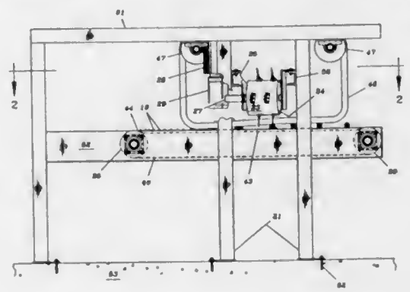
APPARATUS FOR CUTTING TIE ELEMENTS OF HANDS OF TOBACCO

Sam Levy, Richmond, and Robert E. Shaw, Midlothian, both of Va., assignors to MacTavish Machine Manufacturing Co., Richmond, Va.

Filed Sep. 10, 1996, Ser. No. 711,562

Int. Cl.[6] A24B *3/07*

U.S. Cl. 131—317 **9 Claims**



1. A cutting apparatus associated with a continuous transport belt of uniform width measured between parallel first and second edges and having an upper running surface which conveys sequential hands of tobacco leaves having a tying element at the butt extremity, said hands being aligned such that said butt extremities are adjacent said first edge of the belt, said apparatus comprising:

a) a cylindrical drum terminating in opposed extremities that are leading and trailing with respect to the direction of motion of said belt, said drum mounted upon a center axle that extends from said trailing extremity to a distal end.

b) a series of uniformly spaced identical blades radially emergent from said drum.

c) means for rotatively supporting said drum from the distal end of said axle in a manner such that:

1) said axle is parallel to said upper running surface,

2) said blades are disposed adjacent said first edge of said belt at an elevation sufficient to contact said tying elements, and

3) said axle is disposed at an inclination angle of between 5 and 10 degrees with respect to said first edge of said belt, said angle opening in the downstream direction of belt travel,

d) means for rotating said drum about said axle at a speed sufficient to achieve cutting of said tying elements, and

e) an anvil surface disposed below said belt in sliding contact therewith and in opposing juxtaposition with said drum.

5,664,586

TOBACCO SMOKE FILTERS AND FILTER RODS THEREFOR

Neil Murray Sinclair, Danbury, and Robert Kinsey Dart, Loughborough, both of United Kingdom, assignors to Rothmans International Services Limited, London, Great Britain

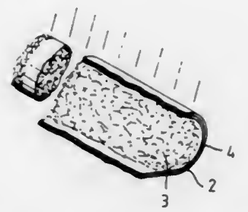
PCT No. PCT/GB94/00086, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/16581, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 17, 1994, Ser. No. 495,420

Claims priority, application United Kingdom, Jan. 19, 1993, 9300901

Int. Cl.[6] A24D *3/00*

U.S. Cl. 131—331 **9 Claims**



1. A tobacco smoke filter or filter rod therefor (hereinafter "filter") comprising a main body portion; expandable means for expanding the main body portion when the expandable means becomes moist, and wrap means for wrapping the main body portion, the expansion of the main body portion being such as to break open the wrap means.

5,664,587

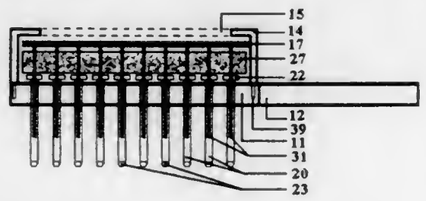
EXFOLIATION BRUSH

Sean T. Gebhart, 4 Chinaberry Pl., Hampton, Va. 23666

Filed Jul. 18, 1996, Ser. No. 684,305

Int. Cl.[6] A45D *24/42*

U.S. Cl. 132—119 **13 Claims**



1. An exfoliation brush comprising:

a foraminous brush body having an integral handle;

a plurality of elongated hollow bristles extending from said foraminous brush body;

each of said plurality of elongated hollow bristles having a first end formed of an open enlarged head portion and a second open end;

each said open enlarged head portion of each of said plurality of elongated hollow bristles being disposed against one surface of said foraminous brush body and said second open end of each said bristle extending through an opening within said foraminous brush body;

a compressible foam spacer having a first surface disposed against said foraminous brush body and in engagement with each said enlarged head portion of each said bristle;

a rigid plate disposed against a second surface of said foam spacer;

a plurality of elongated flexible tines extending from said rigid plate;

each of said plurality of elongated flexible tines having a first end secured to said rigid plate and a second end extending through said foam spacer;

each said second end of each of said plurality of flexible tines being disposed within one of said plurality of hollow bristles;

said foam spacer serving to normally maintain said second end of each of said plurality of flexible tines spaced from said second open end of said hollow bristles;

a retaining cap disposed on said brush body to maintain said rigid plate, and said foam spacer in position on said foraminous brush body;

means for securing said retaining cap to said brush body to provide a unitary structure for said rigid plate, said foam spacer and said foraminous brush body;

said retaining cap having an opening therein to permit manual pressure to be applied to said rigid plate, whereby

upon the application of manual pressure to said rigid plate, said foam spacer will be compressed and cause each of said plurality of flexible tines to extend through a respective elongated hollow bristle toward said second open end thereof to effect forcible removal of any follicle contaminants contained therein after brush use.

5,664,588

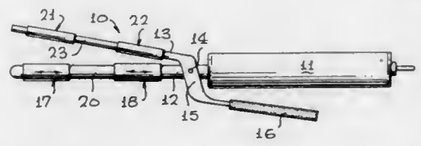
CURLING IRON HAVING SKIN PROTECTING SHIELD

Luticia L. Berry, 1031 W. 106th St., Los Angeles, Calif. 90044

Filed Apr. 29, 1996, Ser. No. 638,604

Int. Cl.[6] A45D *1/06*

U.S. Cl. 132—232 **7 Claims**



1. A curling iron comprising:

a curling iron having an elongated heating element projecting from a handle;

an elongated clamp member pivotally carried on said heating element adjacent to said handle;

a first pair of sleeves slidably carried on said heating element in spaced apart relationship to define an exposed surface area of said heating element for receiving a portion of hair intended to be curled;

a second pair of sleeves slidably carried on said clamp member in spaced apart relationship in a critical location directly opposite to said first pair of sleeves so as to engage therewith; and

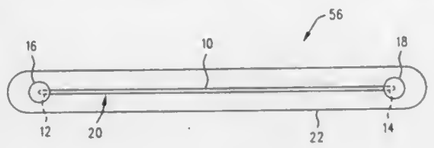
means carried on each sleeve of said first and said second pair of sleeves for yieldably retaining said sleeves in said critical location on said respective heating element and clamp member.

5,664,589

HAIR ACCESSORY DEVICE MADE OF VINYL PLASTISOL

Cassie Black, Moberly, Mo., assignor to Affect, Inc., Moberly, Mo.

Filed Aug. 7, 1995, Ser. No. 511,678
Int. Cl.[6] A45D *8/36*
U.S. Cl. 132—246 11 Claims



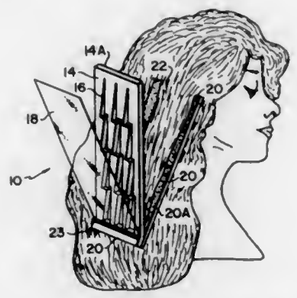
4. A hair accessory device, comprising:
a) a flexible member comprising:
i) a wire with two relatively sharp ends; and
ii) means for burying each of said two wire ends so as to give the flexible member two blunt ends; and
b) a quantity of vinyl plastisol encasing the flexible member.

5,664,590

HAIR FROSTING OR COLOR DEVICE AND METHOD

Rocky Platerotl, 3320 Chelsey St., Mohegan Lake, N.Y. 10547, and Franco Marino, 11 Academy St., Pleasantville, N.Y. 10570

Filed Sep. 11, 1995, Ser. No. 526,668
Int. Cl.[6] A45D *19/18*
U.S. Cl. 132—270 1 Claim



1. A device for use in the color treating of hair comprising: a lower rectangular layer of flexible material having an upper surface of hook fasteners to hold hair strands in place and to cooperate with top fasteners, an intermediate rectangular layer having a pattern therethrough and the lower surface thereof having loop fasteners thereon adapted to cooperate with said hook fasteners; an upper layer of rectangular clear flexible plastic sheet; said lower, intermediate, and upper layers secured together along one edge portion.

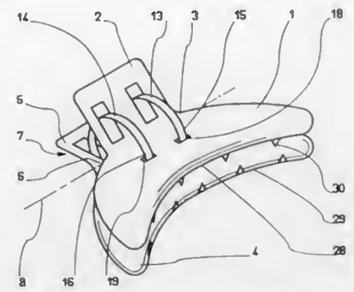
5,664,591

HAIR CLIP WITH ANNULAR SPRINGS

Christian Potut, Arbent, France, assignor to C.S.P. Diffusion, société anonyme, Arbent, France

Continuation of Ser. No. 394,260, Feb. 24, 1995, Pat. No. 5,494,060. This application Feb. 26, 1996, Ser. No. 607,172
Claims priority, application France, Feb. 28, 1994, 94 02408
Int. Cl.[6] A45D *8/20*
U.S. Cl. 132—277 14 Claims

1. Hair clip comprising:



a first jaw operable by a first opening lever to which it is attached in a first intermediate connecting area,
a second jaw operable by a second opening lever to which it is attached in a second intermediate connecting area,
hinge means connecting said first and second intermediate connection areas to enable pivoting of said first and second jaws relative to each other about a transverse hinge axis between an open position and a closed position,
spring means for urging said first and second jaws toward their closed position,
wherein said hinge means include perforated lugs respectively projecting beyond said first and second intermediate connecting areas and a coupling pin extending through the perforated lugs to connect together said two jaws,
wherein said spring means include two open annular springs disposed around said hinge axis and coaxial with each other, the annular springs having a width and having a common transverse axis parallel to said hinge axis, their respective ends bearing in corresponding housings on outside surfaces of said intermediate connecting areas of said jaws in front of said hinge axis and their intermediate parts extending through corresponding openings in said opening levers and surrounding the perforated lugs between said levers,
wherein the openings in said opening levers are elongated openings having a length which is generally perpendicular to the hinge axis and a width which is slightly wider than the width of the annular springs.

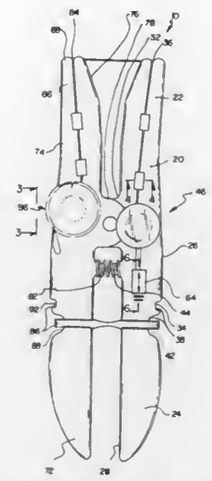
5,664,592

FLOSSING DEVICE

Todd F. Regnier, 1106 Vista Hts., Victoria, B.C., Canada, V8T2H4

Filed Apr. 15, 1996, Ser. No. 631,982
Int. Cl.[6] A61G *15/00*
U.S. Cl. 132—325 4 Claims

1. A flossing device having a floss loading orientation and a floss use orientation, the device comprising in combination:
a supply arm having a forward end, a rearward end and an intermediate extent therebetween, the supply arm further including an outer edge, an inner edge an upper surface and a lower surface, a semicircular extension formed on the inner edge of the supply arm at the intermediate extent, a spring support formed on the inner edge of the supply arm intermediate the semicircular extension and the rearward end, a floss channel formed within the upper surface of the supply arm and extending from adjacent the semicircular extension to the forward end, a number of floss guides formed along the floss channel, a circular recess formed within the upper surface of the supply arm adjacent the semicircular extension, the circular recess defining an interior area, a number of recess formed within the outer edge of the supply arm in between the intermediate extent and the rearward end, at least one of the recesses constituting a loading orientation recess and at least one of the recesses constituting a use orientation recess;
a floss supply assembly associated with the supply arm, the floss supply assembly comprising a shaft integrally formed within



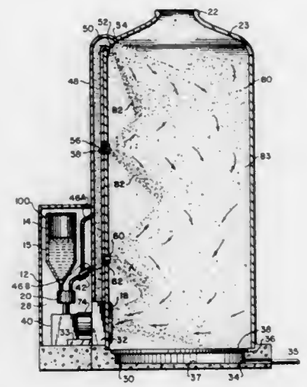
the interior area of the supply arm, a cylindrical geared shaft cover having an upper peripheral edge and a lower peripheral edge, a gear formed integrally with the shaft cover adjacent the lower peripheral edge, a plurality of locking notches formed within the upper peripheral edge, the shaft cover positioned over the shaft such that the lower peripheral edge fits into the circular recess of the supply arm, a supply spool having an upper circular plate, a lower circular plate and a cylindrical extent therebetween, the cylindrical extent having an interior area, a plurality of locking protrusions extending from the interior area of the cylindrical extent of the supply spool, the number and position of the protrusions corresponding to the number and position of the locking notches, the supply spool adapted to be fitted over the shaft cover such that the locking notches engage the locking protrusions, a supply of dental floss supplied upon the supply spool, a thumb slide slidable provided within the upper surface of the supply arm adjacent the shaft, the thumb slide having a forward gear engaging end, the thumb slide having a first orientation wherein the first end is engaged with the gear of the shaft cover and a second orientation wherein the first end is disengaged from the gear of the shaft cover;
a take-up arm having a forward end, a rearward end and an intermediate extent therebetween, the take-up arm further including an outer edge, an inner edge an upper surface and a lower surface, a semicircular extension formed on the inner edge of the take-up arm at the intermediate extent, a spring support formed on the inner edge of the take-up arm intermediate the semicircular extension and the rearward end, a floss channel formed within the upper surface of the take-up arm and extending from adjacent the semicircular extension to the forward end, a number of floss guides formed along the floss channel, a circular recess formed within the upper surface of the take-up arm adjacent the semicircular extension, the circular recess defining an interior area, a number of recess formed within the outer edge of the take-up arm in between the intermediate extent and the rearward end, at least one of the recesses constituting a loading orientation recess and at least one of the recesses constituting a use orientation recess;
a floss take-up assembly associated with the take up arm, the floss take-up assembly comprising a shaft integrally formed within the interior area of the take-up arm, a cylindrical geared shaft cover having an upper peripheral edge and a lower peripheral edge, a gear formed integrally with the shaft cover adjacent the lower peripheral edge, a plurality of locking notches formed within the upper peripheral edge, the shaft cover positioned over the shaft such that the lower peripheral edge fits into the circular recess of the take-up arm, a take-up spool having an upper circular plate, a lower circular plate and a cylindrical extent therebetween, the cylindrical extent having an interior area, a plurality of locking protrusions extending from the interior area of the cylindrical extent of the take-up spool, the number and position of the protrusions corresponding to the number and position of the locking notches, the take-up spool adapted to be fitted over the shaft cover such that the locking notches engage the locking protrusions;
the supply arm and take-up arm being pivotally interconnected by way of the semicircular extension of the supply arm and the semicircular extension of the take-up arm, a spring interconnecting the spring support of the supply arm and the spring support of the take-up arm, a band adapted to be positioned within one of the recesses of the supply arm and one of the recesses of the take-up arm, the device being in a loading orientation when the band is positioned within loading orientation recesses, and the device being in a use orientation when the band is positioned within use orientation recesses.

5,664,593

APPARATUS FOR APPLYING SUNTANNING LOTION MIST

Edward T. McClain, 416 Park Place Ave., Bradley Beach, N.J. 07720

Continuation-in-part of Ser. No. 161,803, Dec. 6, 1993, Pat. No. 5,460,192. This application Oct. 20, 1995, Ser. No. 546,552
Int. Cl.[6] A61H *33/06*
U.S. Cl. 132—333 1 Claim



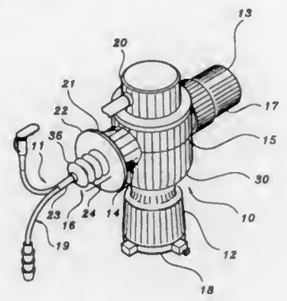
1. Apparatus for applying suntan lotion to a human body comprising a liquid tight enclosure, a base for said enclosure having a drain aperture therein, said enclosure having a side wall, a door in said side wall of said enclosure spring biased to the closed position, lotion mist ports disposed about the exterior of said enclosure and in flow communication with a lotion distribution tube, said distribution tube in flow communication with at least one atomizing nozzle, first pump means for pumping liquid lotion from a supply dispenser associated with said first pump means to said at least one atomizing nozzle and through said at least one atomizing nozzle forming mist droplets, and into said distribution tube, and thence to said mist port outlets into the interior of said chamber, recirculating pump means for evacuating misted droplets from said base of said enclosure and recirculating those droplets into said distribution tube by means of an impeller fan, and mixing with said mist droplets from said nozzle, any lotion condensing inside said impeller being stored in a used lotion recovery reservoir, a motor for driving said pump means and said impeller fan and whereby said motor driving said pump means and said impeller fan is operated by token operated control means on the outside of the said enclosure.

5,664,594

CLEANING DEVICE FOR VENTILATOR MANIFOLD AND METHOD OF USE THEREOF

Kok-Hiong Kee, St. Louis, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 29, 1994, Ser. No. 366,152
Int. Cl.[6] B08B *9/03*
U.S. Cl. 134—22.11 **11 Claims**



1. A cleaning device for cleaning an interior chamber of a manifold having at least one port therein, said cleaning device comprising:

a) a flexible boot attachable to the at least one port of the manifold for sealing said flexible boot to the at least one port;

b) a cleaning tube attachable to said flexible boot, whereby attachment of said flexible boot to both the at least one port and said cleaning tube positions said cleaning tube at least partially within the interior chamber of the manifold and allows for omni-directional adjustment of said cleaning tube within the manifold, wherein said cleaning tube is a dual lumen catheter having a first lumen and a second lumen, said first lumen including a distal end and proximal end wherein said proximal end of sad first lumen includes a connector for connection to an irrigation means, and said second lumen includes a distal end and proximal end wherein said proximal end of said second lumen includes a connector for connection to an aspiration means, whereby said first lumen and said second lumen can irrigate and aspirate said interior chamber simultaneously, said catheter being attached to said flexible boot.

5,664,595

SCREEN APPARATUS POSITIONABLE ATOP AN UMBRELLA FOR TRANSPORTABLE PERSONAL PROTECTION FROM FLYING INSECTS

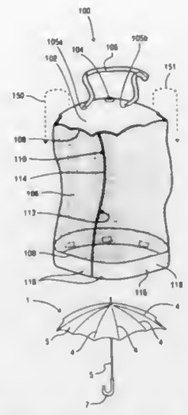
Eric John Vonderhorst, and Frieda M. Vonderhorst, both of 1023 Guatay Ave., Chula Vista, Calif. 91911

Filed Sep. 20, 1994, Ser. No. 309,171
Int. Cl.[6] A45B *11/00*
U.S. Cl. 135—16 **2 Claims**

1. A screen apparatus adapted to form an enclosure when positioned atop an open umbrella, the screen apparatus comprising:

a stiff plastic supportive covering having a circumference and defining a centrally located opening adapted to permit passage there-through of an uppermost end of an elongated supporting pole of the umbrella, wherein the supportive covering is substantially rigid for evenly distributing the weight of the screen apparatus over spokes of the open umbrella wherein the supportive covering is dome shaped to conform to a top of the open umbrella;

a rectangular piece of netting having an upper edge, a lower edge, a first side edge and a second side edge, a length sufficient to circumvent the circumference of the supportive covering and a width adapted to sufficiently span the distance between the supportive covering and the ground when the supportive covering is positioned atop the open umbrella, the



upper edge being fixedly attached about the circumference of the supportive covering, the first side edge along the width being joined to the second side edge along the width, thereby defining a cylinder about the circumference of the supportive covering;

a plurality of weights fixedly attached at predetermined locations about the lower edge; and

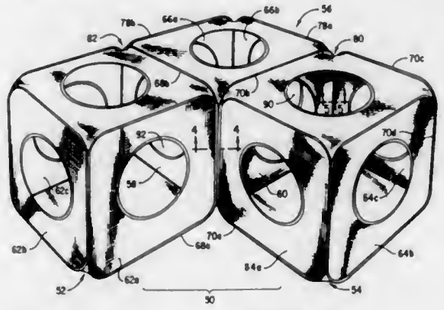
wherein the lower edge with the plurality of weights is rollable toward the supportive covering and releasably securable atop the supportive covering for storage and subsequent release for unrolling toward the ground to form the enclosure beneath the supportive covering for protection from flying insects.

5,664,596

COLLAPSIBLE PLAY STRUCTURES

Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722

Continuation of Ser. No. 281,369, Jul. 27, 1994, which is a continuation-in-part of Ser. No. 24,690, Mar. 1, 1993, Pat. No. 5,467,794, which is a continuation-in-part of Ser. No. 764,784, Sep. 24, 1991, Pat. No. 5,301,705. This application Apr. 3, 1996, Ser. No. 627,875
Int. Cl.[6] E04H *15/40*
U.S. Cl. 135—126 **17 Claims**



1. A collapsible play structure, comprising:

a plurality of collapsible play modules connected to each other, each play module supported on a surface and comprising:

at least three foldable frame members, each having a folded and an unfolded orientation;

a fabric material substantially covering each frame member to form a side panel for each frame member when the frame member is in the unfolded orientation, the fabric assuming the unfolded orientation of its associated frame member;

each side panel further comprising a vertical left side, a bottom side and a vertical right side, the bottom side having

opposing first and second ends, with the first end of the bottom side connected to the left side and the second end of the bottom side connected to the right side;

wherein the left side of each side panel is connected and hinged to the right side of an adjacent side panel, and the right side of each side panel is connected and hinged to the left side of another adjacent side panel; and

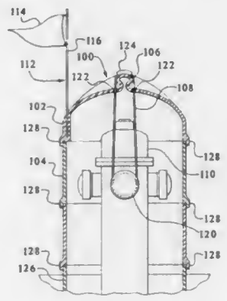
wherein the bottom side of each side panel rests on the surface to support the play module.

5,664,597

COVER FOR ENCLOSING A FIXED ARTICLE, SUCH AS A FIRE HYDRANT, AND A METHOD OF USING THE SAME

William A. Miskiewicz, 215 N. Harrison, St. Berrien Springs, Mich. 49103

Continuation-in-part of Ser. No. 189,804, Feb. 1, 1994. This application Apr. 20, 1994, Ser. No. 230,169
Int. Cl.[6] E03B *9/06;* **F16K** *27/12*
U.S. Cl. 137—15 **20 Claims**



19. A method for securing a cover over a fire hydrant on a horizontal surface to protect the fire hydrant and identify location of the fire hydrant, the method comprising the steps of:

providing a first shell made of a rigid breakable material, the first shell having a wall, an open end and a closed end defining an interior wherein the first shell extends from the horizontal surface such that the first shell encloses the fire hydrant;

providing a strap through apertures formed in the wall of the first shell and releasably secured at the apertures in the wall of the first shell and connectable to a portion of the fire hydrant;

covering the fire hydrant with the first shell by placing the open end over the hydrant such that the open end rests on the horizontal surface;

connecting the strap to the portion of the fire hydrant to secure the first shell to the portion of the fire hydrant;

providing a second shell substantially identical to the first shell; and

placing the second shell over the first shell in a nesting arrangement to increase the height over the fire hydrant.

5,664,598

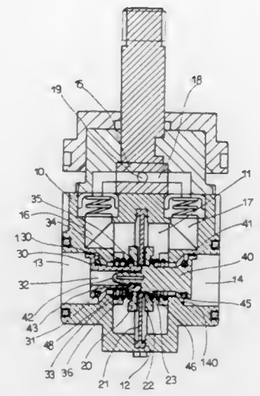
SAFETY VALVE

Ming-Don Shieh, No. 18, Tou Ren Lane, Tou Ren Li, Lu Gang Town, Chang Hua Hsien, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,060
Int. Cl.[6] G05D *11/03*
U.S. Cl. 137—100 **6 Claims**

1. A valve comprising:

a body including a chamber formed therein and including inlets communicating with said chamber, and including two rooms communicating with said inlets, and including an outlet com-



municating with said rooms for receiving water from said inlets, said inlets each including a valve seat provided therein,

a membrane secured in said chamber so as to separate said inlets from each other,

two plugs engaged in said inlets and secured to said membrane, said plugs being provided for engaging with said valve seats so as to block said inlets respectively,

two biasing means engaged on said plugs and biased between said membrane and said body for balancing said membrane and said plugs, and

a ring secured to said membrane, said ring including a bore for engaging with said plugs, said biasing means being biased between said membrane and said body for balancing said membrane and said plugs,

water from said inlets being combined in said outlet via said rooms, a first of said plugs being forced to engage with said valve seat of a first of said inlets by water from said first inlet when no water is supplied to a second of said inlets.

5,664,599

FLOW CONTROLLER FOR A PARTICLE SENSOR

D. John Hunt, Grants Pass, Oreg., assignor to Met One, Inc., Grants Pass, Oreg.

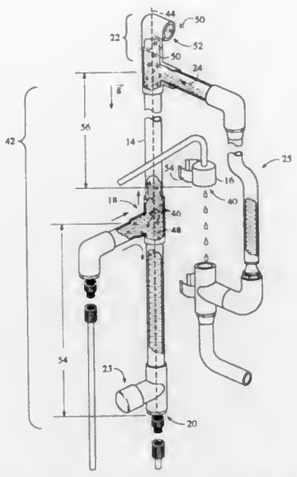
Filed Jun. 14, 1996, Ser. No. 664,123
Int. Cl.[6] F16K *24/00*
U.S. Cl. 137—171 **20 Claims**

1. A flow controller for a particle sensor adapted to detect particulates in a supply of liquid having gas bubbles associated therewith, said particle sensor having a fluid input and a fluid output, with said flow controller comprising:

a hollow body having an outlet, a vent portion and an inlet, with said outlet disposed between said vent portion and said sensor and in fluid communication with said fluid input thereof, said inlet being in fluid communication with said supply of liquid; and

a flow regulator in fluid communication with said fluid output of said sensor, thereby placing said hollow body in fluid communication with said flow regulator, said flow regulator having an orifice adapted to allow liquid to flow therethrough to form a stream of said liquid moving from said inlet to said outlet, with said inlet positioned upstream from said outlet, sufficiently distant therefrom, to allow a buoyant force associated with each of said gas bubbles, having a diameter within

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a specified range, to move away from said outlet, escaping from said stream by exiting through said vent portion.

5,664,600

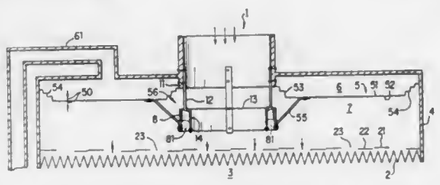
PROCESS-CHAMBER FLOW CONTROL SYSTEM

David W. Palmer, 200 Berkeley Rd., North Andover, Mass. 01845

Division of Ser. No. 126,151, Sep. 23, 1993, Pat. No. 5,456,208, and a continuation-in-part of Ser. No. 141,498, Oct. 22, 1993, Pat. No. 5,450,873, said Ser. No. 126,151is a division of Ser. No. 851,017, Mar. 13, 1992, Pat. No. 5,255,710, which is a continuation-in-part of Ser. No. 669,746, Mar. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,835, Sep. 11, 1989, Pat. No. 5,000,221, which is a continuation-in-part of Ser. No. 178,505, Apr. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 850,767, Mar. 13, 1992, Pat. No. 5,251,654, and a continuation-in-part of Ser. No. 852,084, Mar. 13, 1992, Pat. No. 5,255,709, and a continuation-in-part of Ser. No. 965,907, Oct. 23, 1992, Pat. No. 5,320,124, and a continuation-in-part of Ser. No. 965,909, Oct. 23, 1992, abandoned, and a continuation-in-part of Ser. No. 380,853, Jan. 27, 1995, Pat. No. 5,597,011. This application Mar. 22, 1995, Ser. No. 408,608

Int. Cl.[6] G05D *7/01*

U.S. Cl. 137—501 25 Claims



1. A system for controlling air flowing from an environment, where the air is substantially still, through parallel conduits, to an exhaust, wherein pressure from the exhaust is substantially less than pressure from the environment, comprising:

a first regulator for maintaining in a first plenum disposed in one conduit a pressure that is between the pressures of the environment and the exhaust and that is a constant amount less than the pressure of the environment, the first regulator including a first piston having a frontal face, the entire frontal face being directly exposed to the flow of air in the first plenum, the first piston further including a distal face exposed to the pressure of the environment the first piston being mounted so as to variably impede the flow of air through the first regulator and so that (i) the weight of the first piston tends to move the first piston in a direction so as to lessen the impedance of the first piston on the air flow, and (ii) the first plenum pressure that remains a constant amount less than pressure from the environment and independent of pressure from the exhaust; and

a second regulator for maintaining in the second plenum disposed in a second conduit a pressure that is between the pressures of the environment and the exhaust and that is a constant amount less than the pressure of the environment, the second regulator including a second piston having a frontal face, the entire frontal face being directly exposed to the flow of air in the second plenum, the second piston further including a distal face exposed to the pressure of the environment, the second piston being mounted so as to variably impede the flow of air through the second regulator, and so that (i) the weight of the second piston tends to move the second piston in a direction so as to lessen the impedance of the second piston on the air flow, and (ii) the second plenum pressure that remains a constant amount less than pressure from the environment and independent of pressure from the exhaust.

5,664,601

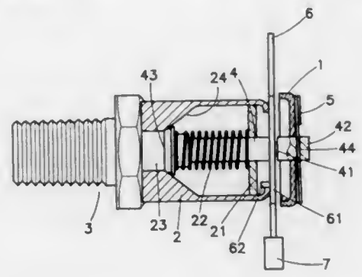
RELIEF VALVE WITH ABNORMAL PRESSURE INDICATOR MEANS

Lin-Shen Chen, 9F, No. 14, Hua San St., Jen Ai Ward, Chi Lung, Taiwan

Filed Jan. 14, 1997, Ser. No. 783,548

Int. Cl.[6] F16K *37/00*

U.S. Cl. 137—551 1 Claim



1. A relief valve comprising:

a casing having a rear coupling screw section adapted for fastening to an object, a rear center through hole defined within said rear coupling screw section and disposed in communication with the inside of the object, a tapered inside wall gradually reducing toward said rear center through hole, a front rim, and a front mount on the inside between said front rim and said tapered inside wall, said front mount having a through hole;

a valve rod moved in the through hole of said front mount, said valve rod having a front end disposed outside said casing, a rear end, a neck spaced between said front end and said rear end and disposed outside said front rim, and a shoulder at an inner end of said neck;

a valve flap fixedly connected to the rear end of said valve rod and adapted for closing the rear center through hole of said casing;

spring means mounted around said valve rod and stopped between said valve flap and said front mount, said spring means imparting a backward pressure to said valve flap, causing it to close the rent center through hole of said casing;

a cap mounted on the front end of said valve rod; and,

an indicator mounted around the neck of said valve rod and spaced between said cap and the front rim of said casing, said indicator having a display face, a weight at a bottom side thereof, an elongated guide slot in the middle coupled to the neck of said valve rod, and a retainer rod raised from a back side of said display face, said retainer rod being inserted into said casing and supported on the front rim of said casing to hold said indicator in a first position in which said display face is shaded by said cap, said retainer rod being disconnected from the front rim of said casing when said valve flap is forced outwards to open the rear center through hole of said casing by a pressure from said object and to force the shoulder of said valve neck forwardly against both side of said elongated guide slot of said indicator, thereby causing said indicator to be forced downwards by the weight of said weight to a second position in which said display face is moved out of the shade of said cap.

5,664,602

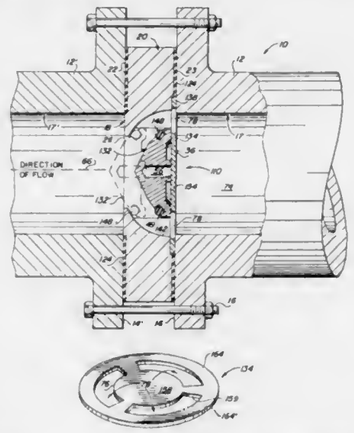
CHECK VALVE FOR METER RUN

Ronn G. Madrid, Durabla Pump Components, Inc., 2632 Faudree Rd., Odessa, Tex. 79765

Division of Ser. No. 247,204, May 20, 1994, Pat. No. 5,469,884. This application Nov. 15, 1995, Ser. No. 559,340

Int. Cl.[6] F16K *15/02*

U.S. Cl. 137—515.7 7 Claims



1. A fluid check valve for preventing back flow of fluid through a fluid conveying conduit, comprising:

said check valve having a main body; an annular passageway through which flow can occur through said main body; said annular passageway lays along a central longitudinal axis and includes a throat, a working chamber, and an outlet; mount means including opposed upstream and downstream faces by which said check valve can be mounted with respect to a fluid conduit to enable flow to occur therethrough;

said throat forms an entrance into the annular passageway at a location adjacent said upstream face, said throat is of a relatively small diameter that enlarges into said working chamber, and forms a lip at an upstream end thereof; said lip having opposed walls with an outer wall thereof coinciding with said upstream face and the opposed wall thereof enlarges into said working chamber; said working chamber terminates at a circumferentially extending locking groove having a diameter greater than the diameter of said working chamber;

a valve element having an upstream and a downstream face, an annular seal means on said upstream face of said valve element;

an annular seat formed within said working chamber adjacent the downstream side of said throat for receiving said seal means of said valve element in seated relationship therewith and thereby prevent backflow of fluid through said check valve;

the upstream face of said valve element includes a curved face having a circumferientially extending edge and an apex intersected by the central longitudinal axis of the main body passageway; said seal means being formed on a marginal edge portion of said curved face for sealingly engaging said seat;

a valve cage by which said valve element is captured within said working chamber for axial movement toward and away from said seat for engagement and retraction of said seal means with respect to said seat; said cage has a central body part affixed to a plurality of legs that radially extend therefrom and terminate in an outer rim; said outer rim is received within said locking groove, and thereby removably mounts said cage within said locking groove; biasing means for urging said valve element against said seat;

said biasing means is a spring, an annular spring receiving cavity located on the downstream face of said valve element and concentrically arranged respective to said axial passageway and said valve element; whereby pressure differential across said valve element urges said valve element against said cage central body part with said spring being compressed into said spring receiving cavity while fluid flow occurs through a space defined by the inside diameter of the throat and the periphery of the valve element;

whereby said valve element can move from an open position that abuts the cage central body part and into a closed position that abuts said seat.

5,664,603

MIXER VALVE HAVING A BALL VALVE ELEMENT AND UPPER SEALING GASKET

Alfons Knapp, Klockstr, Germany, assignor to Masco Corporation, Taylor, Mich.

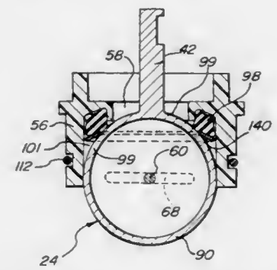
PCT No. PCT/US94/06569, § 371 Date Sep. 3, 1996, § 102(e) Date Sep. 3, 1996, PCT Pub. No. WO95/10725, PCT Pub. Date Apr. 20, 1995

PCT Filed Jun. 10, 1994, Ser. No. 295,897

Claims priority, application Italy, Oct. 8, 1993, 93A00732A

Int. Cl.[6] F16K *11/087*

U.S. Cl. 137—625.4 12 Claims



1. In a single control mixing faucet that includes an operationally fixed member and a ball valve element having at least one inlet, an outlet; and a control stem for attachment to a handle extending generally orthoganal to an equator of said ball valve element; said ball valve element being retained by said operationally fixed member with an opening therethrough; said control stem passing through said opening; and a sealing device; said sealing device characterized by:

a gasket arranged to establish a seal between said ball valve element and said operationally fixed member;

the gasket having a cross-section that forms at least three circumferentially spaced vertices such that the first and third vertex are approximately 90° from the second vertex from a central axis with said first vertex being located at an upper outer diameter position on said gasket and said second vertex located at an upper inner diameter position on said gasket;

said first and second vertices sealingly abut against said operationally fixed member;

said third vertex located generally at a lower inner diameter of said gasket and sealingly abuttable against an upper section of said ball valve element between said control stem and said equator;

the gasket having a lower surface area between the first and third vertices being exposed to internal water pressure inside the operationally fixed member.

5,664,604

POWER FEEDING SYSTEM FOR SOLENOID VALVE ASSEMBLY

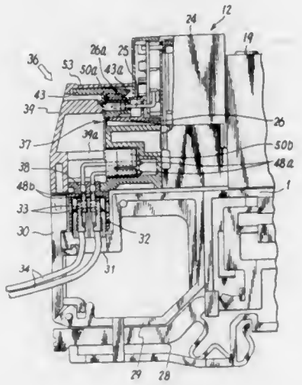
Hideharu Sato, and Makoto Ishikawa, both of Yawara-mura, Japan, assignors to SMC Corporation, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,369

Claims priority, application Japan, Dec. 21, 1993, 5-073127 U

Int. Cl.[6] F16K *31/04*

U.S. Cl. 137—884 **4 Claims**



1. A power feeding system for a solenoid valve assembly, which comprises manifold bases, each having a plurality of openings on a mounting surface for supplying and discharging pressure fluid to and from a solenoid valve, and solenoid valves, each having a plurality of ports, each port arranged to be connected to one of said openings on the mounting surface of one of said manifold bases, said openings and said ports communicating with each other when said solenoid valve is installed on the manifold base, wherein:

a solenoid terminal for supplying power to the solenoid is provided on one end surface of the solenoid valve so that a socket for power feeding can be directly connected thereto;

a wiring box having a power feeding terminal connected to a power source, said wiring box being removably mounted on one end surface of a manifold base;

a relay socket having a conductive fixture to be electrically connected with the solenoid terminal;

power feeding pins for electrically connecting the conductive fixture to the power feeding terminal of the wiring box when the solenoid valve is installed on the manifold base;

said conductive fixture has a plurality of squeezers;

each power feeding pin is formed in an inverted L-shape and comprises a horizontal sector for insertion in one of said plurality of squeezers of said conductive fixture, and a vertical sector for electrical connection to the power feeding terminal of the wiring box; and

the solenoid terminal protrudes from the solenoid and is inserted in other of said plurality of squeezers of the conductive fixture to connect electrically when the relay socket is mounted on the solenoid.

5,664,605

LINING MATERIALS CONTAINING CURABLE RESINS

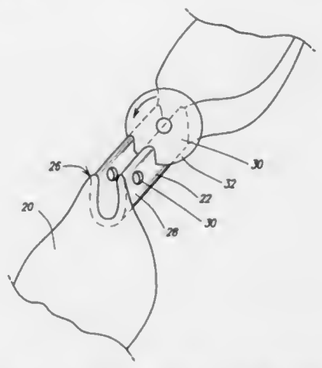
Brian Burnett Chandler, Steinermark, Austria, assignor to Sound Pipe, Ltd., Grand Turk, Turks/Caicos Islands

Filed Nov. 6, 1995, Ser. No. 553,864

Claims priority, application United Kingdom, Mar. 18, 1995, 9505489

Int. Cl.[6] F16L *55/165;* **B29C** *63/34*

U.S. Cl. 138—97 **10 Claims**



1. A method of preparing a length of tubular lining material including curable resin comprising the steps of

a) providing a supply of said tubular lining material having first and second ends;

b) measuring said length of the material from one of said ends to define a location between said first and second ends for cutting the material;

c) curing the resin in a section of the lining about said location only; and

d) cutting through the cured material at said location to sever the said length from the supply.

5,664,606

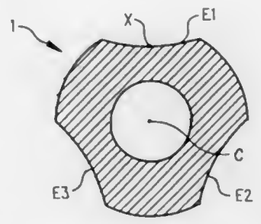
DRILL PIPE HAVING CONCAVE WRENCHING RECESSES

Llewellan Anderson, Renton, Wash., assignor to Atlas Copco Robbins Inc., Kent, Wash.

Filed Jun. 7, 1995, Ser. No. 477,305

Int. Cl.[6] F16L *9/00*

U.S. Cl. 138—109 **40 Claims**



1. A drill pipe having a generally circular lateral cross-section and a central axis, and comprising:

a first end;

a second end, a portion of said second end being generally triangular in lateral cross-section and having three faces; and

at least one concave wrench receiving recess in each of said three faces, each of said recesses having a surface with an axially extending center line thereon, said center line being located a predetermined distance from said central axis that is less than the distance from said central axis of the pipe to all other axial lines on said surface of said recess.

5,664,607

TEXTILE BRAIDS

Denis van Wassenhove, Crepy-en-Valois, France, assignor to Bentley-Harris S.A., Crepy-en-Valois, France

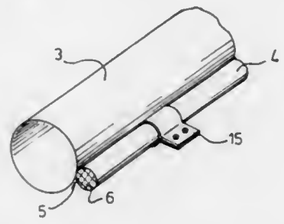
PCT No. PCT/IB95/00102, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/21451, PCT Pub. Date Aug. 10, 1995

PCT Filed Feb. 3, 1995, Ser. No. 669,340

Claims priority, application United Kingdom, Feb. 5, 1994, 9402231

Int. Cl.[6] F16L *11/02*

U.S. Cl. 138—107 **2 Claims**



1. A generally tubular, radially expandable textile braid divided into first and second axially extending tubular portions, said first tubular portion being adapted to receive a wiring harness, a first textile braided reinforcement element extending axially within said second axially extending tubular portion, said generally tubular braid being constructed to allow for radial expansion upon axial contraction, said radially expandable textile braid and said first textile braided reinforcement element having substantially the same braid angles so that on radial expansion of the first portion, both axially extending portions and the reinforcement element contract axially by substantially the same amount.

5,664,608

MULTI-LAYERED HOSE

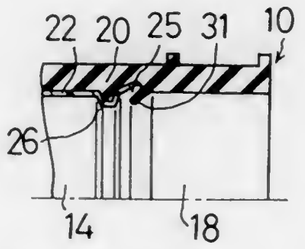
Minoru Kawasaki, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan

Continuation of Ser. No. 129,402, Sep. 30, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 546,950

Claims priority, application Japan, Sep. 30, 1992, 4-286689

Int. Cl.[6] F16L *11/12*

U.S. Cl. 138—139 **12 Claims**



1. A multi-layered hose comprising

a flexible rubber outer layer and a resin or metal inner layer located at an inner periphery surface of said outer layer,

an edge portion of said flexible rubber outer layer for receiving a mating member in abutting relationship with said inner layer and in close engagement with said edge portion of said flexible rubber outer layer,

said inner layer being located at said inner periphery surface of a main portion of said flexible rubber outer layer except at said edge portion so that when the mating member is inserted into said edge portion of said flexible rubber outer layer, said edge portion closely engages and seals with an outer periphery of the mating member to allow fluid passing through the mating member to pass directly to said inner layer while avoiding contact with said outer layer.

5,664,609

WEAVING REED AND GRIPPER GUIDE ELEMENT FOR A LOOM

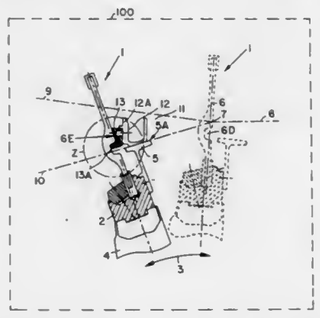
Wilhelm Herrlein, Neuravensburg, and Hubertus Ludwig, Lindau-Bodolz, both of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed May 10, 1996, Ser. No. 644,828

Claims priority, application Germany, May 12, 1995, 195 17 493.3

Int. Cl.[6] D03D *47/27*

U.S. Cl. 139—192 **20 Claims**



1. In a loom having a mechanically driven rapier weft thread insertion member for inserting a weft thread, an improved weaving reed comprising a first reed frame member, a second reed frame member, and a plurality of reed teeth that are arranged spaced apart and parallel to each other in a row and that are respectively connected between said first and second reed frame members, wherein said reed teeth respectively have profile recesses with at least one of said profile recesses provided in each one of said reed teeth between said first and second reed frame members, and wherein said recesses are adapted to guide the rapier weft thread insertion member across a weaving width of said reed.

5,664,610

RUPTURE VESSEL WITH AUXILIARY PROCESSING VESSEL

Dan A. Nickens, Windermere; Charles C. Mattern, Clermonte, both of Fla., and David R. Childers, Huntsville, Ala., assignors to Earth Resources Corporation, Ocoee, Fla.

Continuation-in-part of Ser. No. 70,709, May 28, 1993, Pat. No. 5,427,157. This application Aug. 12, 1994, Ser. No. 289,202

Int. Cl.[6] B65B *31/00*

U.S. Cl. 141—51 **37 Claims**

1. A cylinder rupture vessel system comprising:

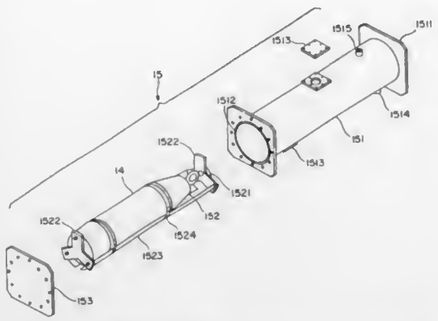
a sealable structure;

a cylinder rupture vessel having a sealable chamber, said cylinder rupture vessel locatable within the sealable structure;

a support disposed within said sealable chamber;

an auxiliary processing vessel locatable within said sealable chamber on said support, said auxiliary processing vessel

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adapted to enclose a container therein, said container having contents located therein;

means for sealing said sealable chamber; and

a mechanism operatively positioned within said sealable chamber for accessing said contents of said container, said mechanism comprising means for penetrating a portion of the container.

5,664,611

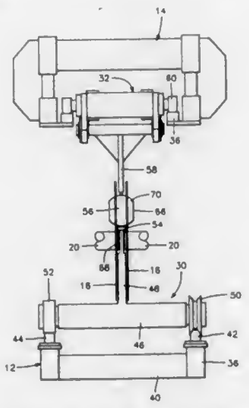
PRIMARY LOG BREAKOUT MACHINE

Merle McDowell, 3432 Hayneville Rd., Montgomery, Ala. 36108

Filed Jan. 29, 1996, Ser. No. 593,202

Int. Cl.[6] B27C *9/00;5/00*

U.S. Cl. 144—39 **11 Claims**



1. In a log breakout machine having an elongated rigid bottom frame, an elongated rigid top frame, end frames supporting the top and bottom frames generally in parallel rigid relation, a longitudinal bottom track structure on the bottom frame, a longitudinal top track structure on the top frame, a bottom carriage mounted on the bottom track structure, a top carriage mounted on the top track structure, a log support member on the bottom carriage engaging the bottom center of a log substantially throughout its length, log engaging members on the top carriage engaging the top center of the log and retaining it on the bottom log support member, a pair of opposed, aligned and spaced log treating structures on opposite sides of the path of movement of the log and engaging opposite sides of the log, said log support member and top engaging members being located in the space between the log treating structures to enable longitudinal movement of the log between the log treating structures, the improvement comprising the log supporting member engaging the bottom center of the log being a thin vertically extending member, a plurality of spaced, transversely extending bottom carriage members at a bottom portion of the log supporting member, said bottom carriage members forming part of the bottom carriage and a carriage supporting member at each end of each bottom carriage member, said bottom track structure including a pair of laterally spaced, parallel tracks engaging and supporting said carriage supporting members to enable longitudinal movement of the bottom carriage on the frame with the transverse spacing of the carriage supporting members and tracks providing lateral stability to the log supporting member engaging the bottom center of the log.

5,664,612

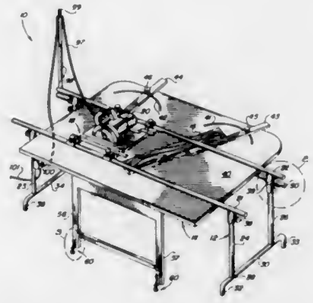
PORTABLE WOODWORKING ASSEMBLY

Asle Klemma, 424 Pleasant Dr., Roselle, Ill. 60193

Filed Dec. 7, 1995, Ser. No. 568,624

Int. Cl.[6] B25H *1/00*

U.S. Cl. 144—286.1 **19 Claims**



1. A portable woodworking assembly comprising: a frame sub-assembly having a first and a second longitudinal rail member disposed in spaced, parallel, coplanar relationship to each other, and support means operatively associated with said first and said second longitudinal rail members to support said first and second longitudinal rail members in stable position relative to the ground; a workboard sub-assembly operatively associated with said frame sub-assembly and including means for supporting a wooden workpiece thereon, said workboard sub-assembly further having a support bar attached to the underside thereof and said frame sub-assembly further having at least one U-shaped attachment member which operatively engages said support bar of said workboard sub-assembly; and a tool support structure adapted to support a portable power tool disposed thereon while simultaneously engaging each of said first and second longitudinal rail members of said frame sub-assembly, said tool support structure having a plurality of contact members which engage said first and second longitudinal rail members to thereby allow said tool support structure to be traversable along said longitudinal rail members and thus movable relative to a wooden workpiece stationarily disposed on said workboard sub-assembly to enable said stationary workpiece to be cut, shaped or formed in response to the action of said portable power tool, said tool support structure further having a plurality of extensions attached thereto and one or more clamp members detachably attached thereto, said plurality of extensions being engageable by said one or more clamp members to provide for the alternative of securely and immovably attaching said tool support structure to said longitudinal rail members so that a movable wooden workpiece can be moved to and thereby engage said portable power tool when it is stationarily disposed on said tool support structure.

5,664,613

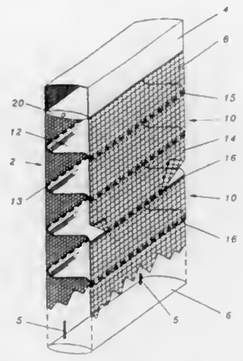
LIGHT CONTROL WINDOW COVERING

Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.

Filed Jun. 3, 1996, Ser. No. 657,521

Int. Cl.[6] E06B *9/06*

U.S. Cl. 160—84.05 **16 Claims**



1. A window covering comprising:

a. a sheet of light admitting material; and

b. a plurality of strips each strip comprised of

i. a light impeding portion having an outer edge attached to the sheet of light admitting material and an inner edge; and

ii. a light admitting portion having an inner edge attached to the inner edge of the light impeding portion and an outer edge attached to an adjacent one of the plurality of strips

such that the light impeding portions are bonded to the sheet along a series of spaced apart, generally parallel bond lines.

5,664,614

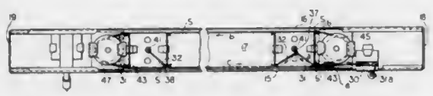
VENETIAN BLIND ASSEMBLY

Victor Debs, 65 Benedict Ave., Staten Island, N.Y. 10314

Filed Apr. 23, 1996, Ser. No. 636,310

Int. Cl.[6] E06B *9/30*

U.S. Cl. 160—168.1 **3 Claims**



1. A venetian blind assembly comprising a unitary major pull cord for raising and lowering a bottom rail, the major cord extending from a head of the assembly to expose a first end by which a user may operate the major cord, the major cord being connected at a second end thereof to a minor cord at a connection point, which minor cord is connected to a bottom rail of the assembly, whereby a raising or lowering of the major cord in turn pulls the minor cord to thereby lower or raise the bottom rail, the connection point of the major and minor cords being located such that when the major cord is pulled toward a fully exposed position, the connection point is located either external of the head but in close proximity thereto or is located within the head wherein the minor cord is slidingly and threadingly connected to the major cord adjacent the second end thereof to form a loop of the minor cord having two free strands, which free strands are fixed to the bottom rail, whereby the free strand are moveable inversely in relation to each other by way of a sliding of the minor cord loop with respect to the major cord at the connection point to thereby effect an automatic leveling of the bottom rail.

5,664,615

SUN-BLIND FOR CAR WINDOW

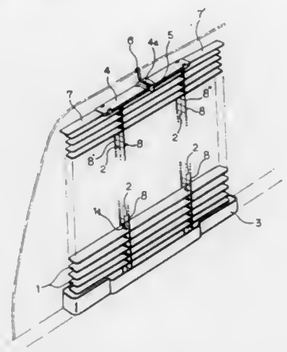
Seong-Gon Baik, 243-1, Shinwon-dong, Koyang, Kyungki-do, Korea, Rep. of Korea

Filed Mar. 28, 1996, Ser. No. 623,049

Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6025

Int. Cl.[6] B60J *1/20*

U.S. Cl. 160—370.21 **3 Claims**



1. A sun-blind for the windows of motor vehicles comprising:

a plurality of parallel horizontal laths;

a container box having an upper opening for receiving the laths, a lower surface of said container being removably secured to a lower frame of a window of a motor vehicle;

a supporting bar for covering the upper opening of the container box when the laths are received in the container box, said supporting bar having a pair of auxiliary plates for adjusting the length thereof, and having a hook provided at an intermediate location thereof for attaching the sun-blind to an upper edge of the window for holding said laths above said container box when use of the sun-blind is desired;

supporting nets for holding the laths spread at predetermined levels, respectively, when the sun-blind is attached to the upper edge of the window;

flexible elastic strings for drawing the supporting bar to the container box, ends of the flexible elastic strings being connected to the supporting bar and the container box, respectively; and

a control lever located at a center of the supporting bar, ends of one of the supporting nets being connected to the control lever so as to be wound in a first rotational direction and ends of other of the supporting nets being connected to the control lever so as to be unwound said first rotational direction, to thereby control a tilting of the laths by rotation thereof by winding in one of the nets while the other is wound out.

5,664,616

PROCESS FOR PRESSURE INFILTRATION CASTING AND FUSION BONDING OF A METAL MATRIX COMPOSITE COMPONENT IN A METALLIC ARTICLE

Gerald A. Gegel, Morton, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 29, 1996, Ser. No. 608,905

Int. Cl.[6] B22D *19/14*

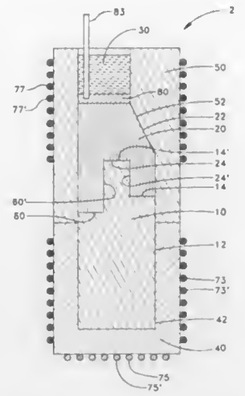
U.S. Cl. 164—97 **20 Claims**

1. A process for pressure infiltration casting of a metal matrix composite in a metallic article, comprising the steps of:

selecting a base metal for forming a metallic base component, said base metal having a melting temperature;

forming said metallic base component having a shape of preselected dimensions and an exterior surface of a preselected configuration, at least a portion of said exterior surface of said

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metallic base component being adapted for mating with a corresponding exterior surface of a preform;

selecting a material for forming said preform, said material being selected from one of ceramics, cermets, or mixtures thereof;

forming said preform having an exterior surface of a preselected configuration, at least a portion of said exterior surface of said preform being adapted for mating with said corresponding exterior surface of said metallic base, and said preform having interconnecting porosity;

selecting an infiltration metal for forming a molten infiltrant charge, said infiltration metal having a melting temperature at least equal to or greater than the melting temperature of said base metal;

providing a first mold having a first mold cavity including said metallic base component;

preheating said first mold and said metallic base component to a temperature in the range of about (x−200)°F. to about (x−50)°F., wherein x is said melting temperature of said base metal;

providing a second mold having a second mold cavity including said preform and said infiltration metal;

positioning said second mold adjacent said first mold and mating a portion of said exterior surface of said preform with a corresponding exterior surface of said metallic base and forming an interface;

heating said second mold, said preform and said infiltration metal to a temperature in the range of about (y−200)°F. to about (y+200)°F., wherein y is said melting temperature of said infiltration metal, and forming a preheated preform and said molten infiltrant charge;

evacuating said preform and isolating a vacuum in said preform;

pressurizing said molten infiltrant charge at a pressure sufficient for infiltrating said molten charge into said interconnecting porosity of said preform and forming an infiltrated preform;

contacting said molten infiltration charge with said preheated base metal at said interface;

melting at portion of said base metal at said interface, fusion-bonding said infiltration metal with said base metal at said interface, and forming a fusion bond interface; and

cooling said metallic base and causing directional solidification of said infiltration metal from said fusion bond interface to said exterior surface of said preform.

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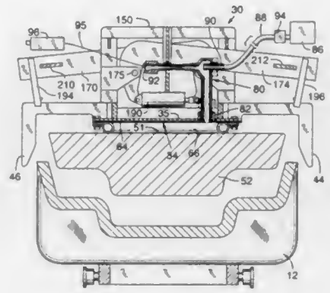
SOW LIFTER

Russell D. Patton, and Delbert A. Beckstrand, both of Goldendale, Wash., assignors to Columbia Aluminum Corporation, Goldendale, Wash.

Filed Mar. 24, 1995, Ser. No. 410,352

Int. Cl.[6] B22D *29/00*; B66C *1/02*

U.S. Cl. 164—269 **19 Claims**



15. A sow lifter for lifting sows from a mold comprising:

a vacuum hood having a lower working surface;

a

high temperature resistant compressible gasket detachably mounted to the vacuum hood in a position to establish a seal between the lower working surface and a sow which is to be lifted when the vacuum hood is moved to a sow lifting position, the gasket including a graphite coated material;

a

vacuum hood mover coupled to the vacuum hood and operable to move the hood to the sow lifting position and to a second position in which the sow is lifted from the mold;

whereby

drawing a vacuum between the working surface and the sow when the vacuum hood is in the sow lifting position releasably couples the sow to the vacuum hood for lifting the sow from the mold as the vacuum hood is moved to the second position by the vacuum hood mover;

the

sow lifter including a jet pump coupled to the vacuum hood which is operable to establish the vacuum in the vacuum hood;

a

sow gripper coupled to the vacuum hood and shiftable from a first position at least partially beneath a lifted sow to a second position in which the sow gripper is not positioned beneath the lifted sow, whereby when in the first position the sow gripper supports the sow, the sow gripper comprising plural sow gripping arms pivotally coupled to the vacuum hood and an actuator coupled to the arms and controlling the pivoting of the arms; and

the

actuator including a respective lever coupled to each arm, the actuator also including a fluid actuated cylinder coupled to the lever, the cylinder being extendable and retractable in response to fluid pressure and being operable to allow the arm to pivot to the sow gripping position under the influence of gravity.

19. A sow lifter according to claim **15** in combination with a sow train comprising a plurality of traveling molds, the molds being filled with molten metal at one first location and the sow lifter being operable to remove a solidified metal sow from a mold when the mold travels to a sow removal location.

5,664,618

INJECTION MOLDING APPARATUS

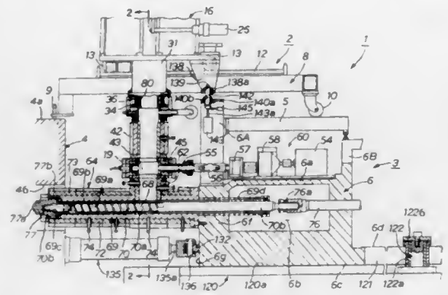
Masayoshi Kai; Kazuya Sakamoto; Atsushi Suzuki; Nobumasa Hamazoe; Hiroshi Mizutani, and Hiromitsu Suganuma, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Mar. 21, 1996, Ser. No. 620,027

Claims priority, application Japan, Mar. 22, 1995, 7-063185; Mar. 22, 1995, 7-063195; Mar. 24, 1995, 7-065441

Int. Cl.[6] B22D *17/10*; *17/30*

U.S. Cl. 164—312 **9 Claims**



1. An injection molding apparatus, for manufacturing a metal molded article, comprising:

an upper unit including an ingot entry for introducing into said apparatus an ingot to be molded and an ingot heating chamber for heating the ingot supplied via said entry to a predetermined temperature;

a lower unit disposed below said upper unit and including a crushing chamber for crushing the ingot heated by said heating chamber, and an injecting machine having an axially movable screw shaft for slurring and injecting the ingot crushed by said crushing chamber into a mold, said lower unit being mounted on a support base, said upper unit connected with said lower unit being supported on an upper unit support independently of said lower unit; and

a flexible connector unit interconnecting said upper and lower units so that the heated ingot is transferred from said heating chamber to said crushing chamber through said connector unit, said connector unit being flexible in a vertical direction between said upper unit and said lower unit mounted on the support base.

5,664,619

DEVICE IN CONTINUOUS CASTING IN A MOULD

Erland Andersson, Ängelholm; Jan-Erik Eriksson, Västerås; Magnus Hallefält, Ängelholm; Sten Kollberg, Västerås; Erik Svensson, Västerås, and Göte Tallbäck, Västerås, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

PCT No. PCT/SE94/00005, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO94/16844, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 4, 1994, Ser. No. 454,308

Claims priority, application Sweden, Jan. 19, 1993, 9300149

Int. Cl.[6] B22D *27/02*

U.S. Cl. 164—502 **6 Claims**

1. A device for the continuous casting of metal comprising:

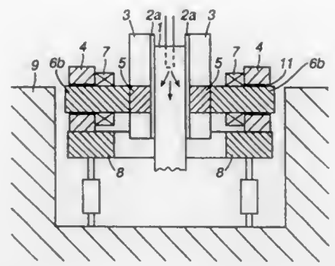
an attachment device,

a shaking table supported on said attachment device,

means forming a framework positioned on the shaking table,

first and second water box beams positioned in parallel within said framework means,

first and second copper plates respectively located on facing surfaces of said first and second water box beams, said first and second copper plates defining a downwardly open mould space therebetween and into which metal melt can be downwardly supplied,



first core portions of respective first and second magnets respectively mounted in said first and second water box beams,

second core portions of said respective first and second magnets positioned between respective first core portions and said framework means, each said second core portion slidingly extending through a respective opening in said framework means so as to slide in a direction substantially coinciding with a magnetic field direction generated thereby, and

first and second magnetic coils respectively positioned around said second core portions of said respective first and second magnets, said second core portions being able to slide away from said mould space when the mould space is opened by movement of said first and second water box beams away from one another, and able to slide towards said mould space and against said first core portions to close said mould space by movement of said first and second water box beams, and with the energization of said first and second magnetic coils said first core portions and said second core portions are pressed against each other, said first and second magnets also generating a static or periodic low-freqency magnet field influencing the metal melt flowing through said mould space.

5,664,620

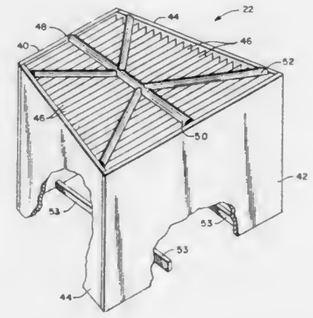
ROTARY REGENERATIVE HEAT EXCHANGER

Kent E. Ritter, Wellsville, N.Y., assignor to ABB Air Preheater Inc., Wellsville, N.Y.

Filed Jul. 18, 1996, Ser. No. 683,456

Int. Cl.[6] F23L *15/02*

U.S. Cl. 165—8 **5 Claims**



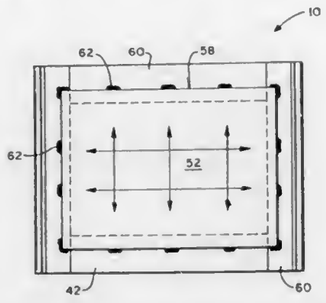
4. A heat exchange basket module for a vertical shaft rotary regenerative heat exchanger comprising a plurality of frame members defining a periphery of said basket modules including top and bottom surfaces thereof, a plurality of spaced heat exchange plates mounted in said basket module within said frame members wherein the improvement comprises an integral grating structure attached across said surface thereof and extending partially above said top surface thereby forming a support and sliding surface.

5,664,621

PRE-STRESSED MEMBRANE BASKET COVER ASSEMBLY

Mark E. Brophy, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Aug. 27, 1996, Ser. No. 703,512
Int. Cl.[6] F23L *15/02*
U.S. Cl. 165—8 9 Claims



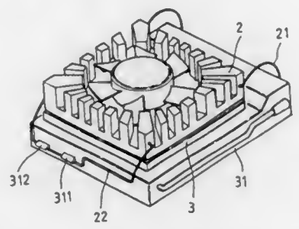
1. A basket cover assembly for use with a heat exchanger basket for a rotary regenerative air preheater, the basket including a frame having a plurality of open sides, said cover assembly comprising:
cover means mountable to the frame for covering one of the sides, said cover means comprising a metallic member having an inside surface;
a metallic membrane comprising at least one edge defining a perimeter, said membrane being mounted to said inside surface of said cover means along said perimeter; and
weld means for mounting said membrane to said cover means, wherein said weld means prevents movement of said perimeter relative to said cover means and whereby said weld means imposes a tensile stress on said membrane.

5,664,622

HEAT SINK WITH DEFORMABLE HANGERS FOR MOUNTING

Ming Der Chiou, 4F., No. 36, Yu Min Rd., Tu Cheng City, Taipei, Taiwan

Filed May 30, 1996, Ser. No. 655,436
Int. Cl.[6] H05K *7/20*
U.S. Cl. 165—80.2 1 Claim



1. In a heat sink for attachment to different sized CPU holders in a CPU comprising a heat sink, at least one CPU holder, and a CPU, the improvement comprising means for fixing said heat sink to one of a plurality of CPU holders, each of said CPU holders being of a different thickness;
wherein said means includes two flexible hangers fixed at opposite sides of said heat sink, said two hangers being attached to ribs on said CPU holder; and
wherein said flexible hangers consist of wires bent to a desired shape and then stretched and deformed to fit onto said ribs of said CPU holder, wherein two said flexible hangers are fixed at corner edges of said heat sink, and a remaining portion of each said two flexible hangers is stretched and deformed over said ribs on said CPU holder to be held thereby.

5,664,623

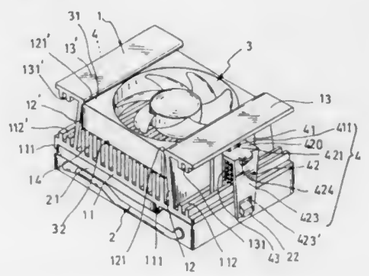
Patent Not Issued For This Number

5,664,624

SLOPED WALL TYPE HEAT RADIATING MEMBER FOR CHIP

Chin-Fu Tsai, 4th Floor, No. 9-2, Lane 264, Sec. 2, An-Kang Road, Hsin-Tien City, Taipei Hsien, Taiwan, and Kuo-Kun Chen, Taipei, Taiwan, assignors to Chin-Fu Tsai, Taipei Hsien, Taiwan

Filed Nov. 4, 1996, Ser. No. 743,347
Int. Cl.[6] H05K *7/20*
U.S. Cl. 165—80.3 5 Claims



1. A sloped wall type heat radiating member for a chip, which is tightly attached to upper side of the chip on a chip base, said heat radiating member comprising:

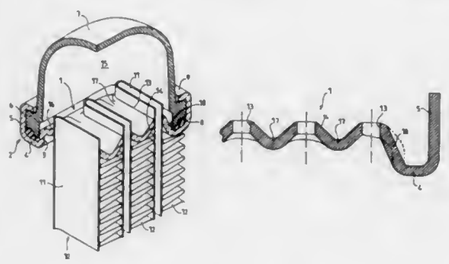
two sloped walls inclinedly and upwardly projecting from two opposite sides of a base board section of the heat radiating member respectively; and
two latching hook means respectively disposed on outer sides of the sloped walls, each latching hook means including a resilient slidable latching board formed with at least one through hole and a guide section abutting against an outer face of the adjacent sloped wall, whereby a heat radiating fan is inserted between the sloped walls such that when depressing the latching boards, the latching boards are moved downward along the sloped walls, making latching holes of the latching boards automatically unlatch lugs of the chip base.

5,664,625

HEADER PLATES FOR HEAT EXCHANGERS

Frederic Letrange, Nanterre, and Carlos Martins, Montfort l'Amaury, both of France, assignors to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Dec. 12, 1996, Ser. No. 764,457
Claims priority, application France, Dec. 13, 1995, 95 14785
Int. Cl.[6] F28F *9/02*
U.S. Cl. 165—173 8 Claims



1. A header plate for a heat exchanger comprising said header plate, a header cover sealingly secured on the header plate to define a header space between them, and a bundle of tubes extending through the header plate and open into the header space, the header cover having a peripheral edge portion, the header plate comprising: a central plate element defining a plane and extending substantially in the said plane; a peripheral region defining an annular channel receiving the said peripheral edge portion of the header cover; and a plurality of inclined annular collar portions, each defining a through aperture bounded by the collar portion, for the fitting of a respective said tube in each said aperture, the peripheral region extending from the said plane on one side of the said plane, and the collar portions extending from the said plane on the other side of the said plane, wherein the said channel has an inner side wall having a profile which, in some zones of the length of the channel, is joined directly to the profile of an adjacent said collar portion without passing through the direction of the said plane.

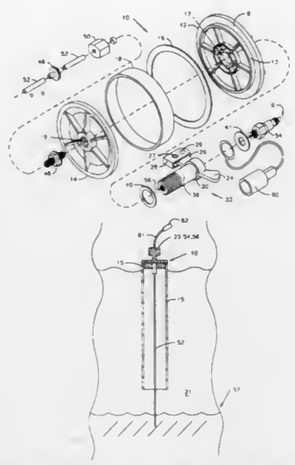
5,664,626

MECHANICAL PLUG DEVICE

William F. Watts, III, 6570 SW. 56th St., Davie, Fla. 33314

Filed Jun. 6, 1995, Ser. No. 466,901
Int. Cl.[6] E21B *33/03*
U.S. Cl. 166—75.13 16 Claims

1. A monitoring plug device adapted to be sealingly connected to the top end of a well casing, the plug device comprising:
a first plate having a first aperture defined therein and a flange adapted to fit over the top end of the well casing;
a second plate adapted to fit into the well casing, said second plate having a second aperture defined in;
an annular expandable sealing member sandwiched between said first and second plates so that when said first and second plates are forced toward one another, the sealing member expands into sealing contact with the interior of the well casing;
an elongated member having an axially extending sampling aperture defined therethrough, said elongated member adapted to be positioned within said first and second apertures so that said sampling aperture is in fluid communication with the interior of the well casing; and
a valve connected to a top end of said elongated member, said valve for selectively permitting fluid samples to be taken from the interior of the well casing by way of said sampling aperture without having to remove the plug device from the top end of the well casing thereby permitting sampling without exposing the well interior to the outside atmosphere.

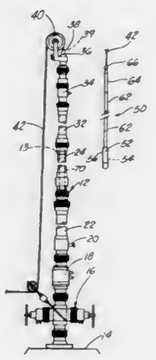


5,664,627

METHOD AND APPARATUS FOR PROTECTING A STEEL RISER FROM CHEMICAL CUTTERS

Harper Boyd, Lake Charles, La., assignor to Boyd's Bit Service, Inc., Lake Charles, La.

Filed Feb. 27, 1996, Ser. No. 607,804
Int. Cl.[6] E21B *29/02*
U.S. Cl. 166—298 14 Claims



14. An apparatus for protecting a steel riser from a chemical cutter comprising:
a) a steel riser positioned as a part of a wellhead assembly;
b) a sleeve constructed of sufficient aluminum metal so as to define material nonreactive to chemicals within the chemical cutter, the sleeve positioned within a bore formed in the riser;

c) a chemical cutter extending from a wireline in the sleeve positioned in the riser so that if the chemical cutter misfires, the chemicals from the cutter will make contact with the non-reactive sleeve and not make contact with the steel riser.

5,664,628

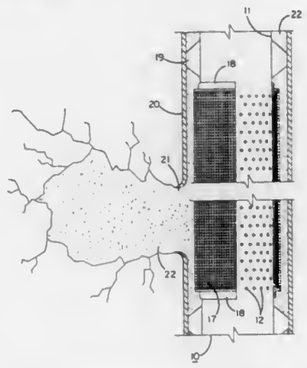
FILTER FOR SUBTERRANEAN WELLS

Paul C. Koehler; Stephen A. Gelbel; Michael B. Whitlock, all of Cortland; Reza Hashemi, Sea Cliff, and Christophe A. Malbrel, New York, all of N.Y., assignors to PALL Corporation, East Hills, N.Y.

Continuation-in-part of Ser. No. 223,149, Apr. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 65,908, May 25, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 351,658

Int. Cl.[6] E21B *43/08*

U.S. Cl. 166—369 **94 Claims**



1. A filter arrangement for use in a subterranean well comprising:

a filter disposed in a well and including a hollow inner support member having a peripheral wall permeable to a fluid to be filtered, and one or more layers of a supported porous medium disposed around the inner support member, the supported porous medium comprising a foraminate support and particulates sintered to the foraminate support; and

a fluid transporting member for transporting a fluid disposed in the well in fluid communication with the filter so that fluid can flow between an interior of the inner support member and the fluid transporting member.

5,664,629

DOWN-HOLE TOOLS

George Maitland, Laurencekirk, Great Britain, assignor to Petroleum Engineering Services Limited, Dyce, Great Britain

Filed May 18, 1995, Ser. No. 443,526

Claims priority, application United Kingdom, May 19, 1994, 9410012

Int. Cl.[6] E21B *34/10*

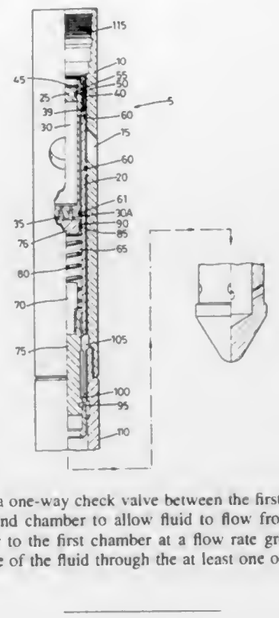
U.S. Cl. 166—373 **20 Claims**

10. A method of providing a time delay for a down-hole tool between the application of pressure and an action being carried out as a result of said application of pressure, comprising the steps of:

providing a first chamber having a fluid;

providing a second chamber communicable with said first chamber via at least one orifice;

controllably transporting said fluid from said first chamber through said at least one orifice to said second chamber in response to pressure applied to the down-hole tool; and



providing a one-way check valve between the first chamber and the second chamber to allow fluid to flow from the second chamber to the first chamber at a flow rate greater than the flow rate of the fluid through the at least one orifice.

5,664,630

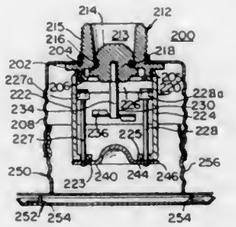
EXTENDED COVERAGE CEILING SPRINKLERS AND SYSTEMS

George G. Meyer, 402 Bodine Rd.; Stephen J. Meyer, Valley Hill, both of Malvern, Pa. 19355, and George S. Polan, 102 Alexander Dr., Perkiomenville, Pa. 18074

Continuation-in-part of Ser. No. 875,928, Apr. 29, 1992, Pat. No. 5,366,022, which is a continuation-in-part of Ser. No. 769,917, Sep. 30, 1991, abandoned. This application Apr. 14, 1994, Ser. No. 227,430

Int. Cl.[6] A12C *35/68*

U.S. Cl. 169—37 **18 Claims**



1. A ceiling sprinkler comprising:

a generally tubular body having an outlet orifice at one end, the tubular body having a K factor greater than 9, where K equals the flow of water in gallons per minute through the tubular body divided by the square root of the pressure of the water fed in to the tubular body in pounds per square inch;

a plug at least generally closing the outlet orifice;

a temperature responsive device releasably retaining the plug in the outlet orifice;

a deflecting structure having a major surface facing the outlet orifice; and

at least a first axially extending member at least retainably coupled with the deflecting structure and at least movably and retainably coupled with the tubular body so as to secure the deflecting structure with the tubular body for axial movement of the deflecting structure with respect to the outlet orifice from an initial position to a displaced distal position, the

displaced distal position being spaced farther away from the outlet orifice than the initial position is spaced from the outlet orifice;

wherein the deflecting structure includes a central protrusion extending axially towards the plug and an outer annular portion having an outer perimeter with a plurality of slots extending axially entirely through the deflecting structure and radially inwardly from the outer perimeter towards the central protrusion; and

wherein the protrusion has an outer diameter and the tubular body has an orifice diameter greater than the outer diameter of the protrusion.

5,664,631

APPARATUS FOR IMPULSE FIRE EXTINGUISHING

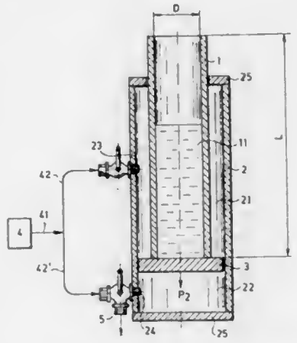
Istvan Szocs, Budapest, Hungary, assignor to Frans Steur, Sittensen, Germany

Filed Jun. 26, 1995, Ser. No. 495,753

Claims priority, application Hungary, Jun. 27, 1994, P9401927

Int. Cl.[6] A62C *13/68*

U.S. Cl. 169—70 **16 Claims**



1. Apparatus for impulse fire extinguishing comprising an ejection tube adapted to contain a supply of fire fighting powder or liquid, a container for storing a gaseous propellant, said container being coupled to said ejection tube and a quick action closing element between the container and the ejection tube, said ejection tube having an ejection end for ejecting the fire fighting powder or liquid from the ejection tube and an input end characterized in that the quick action closing element has a first and second position and is arranged in the container to move freely therein for separating the container into two parts: a propellant chamber and an equalizing chamber, wherein the ejection end of the ejection tube extends into the atmosphere and the input end thereof is arranged in the propellant chamber in a way that it is open in the first position of the quick action closing element and closed in the second position thereof.

5,664,632

QUICK HITCH GUIDANCE DEVICE

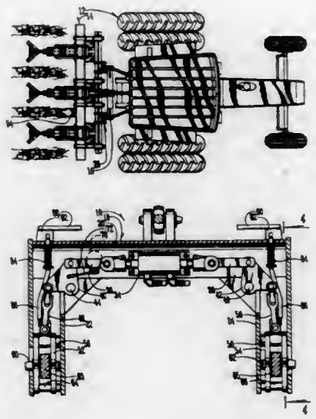
Michael E. Frasier, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Continuation of Ser. No. 304,257, Sep. 12, 1994, Pat. No. 5,511,623. This application Apr. 29, 1996, Ser. No. 639,692

Int. Cl.[6] A01B *63/00*

U.S. Cl. 172—6 **2 Claims**

1. A guidance device having a combination of linkage means for controllably increasing the distance between a frame and tractor, comprising:



an upper bell crank responsively connected to a horizontal connecting rod and supported for rotational movement with respect to the frame about an upper pivot point,

a lower bell crank supported for rotational movement with respect to the frame about a lower pivot point,

a vertical connecting rod coupled at one end to the upper bell crank and operatively connected at another end to the lower bell crank,

whereby linear movement of the horizontal connecting rod results in rotational movement of the lower bell crank for controllably moving the frame between a right steer position and a left steer position.

5,664,633

MACHINE FOR TREATING A BALLAST BED

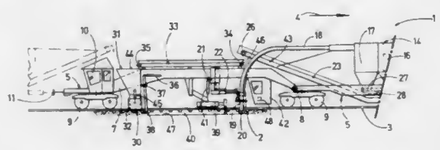
Josef Theurer, Vienna, and Herbert Wörgötter, Gallneukirchen, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jul. 19, 1996, Ser. No. 683,909

Claims priority, application Austria, Sep. 4, 1995, 1470/95

Int. Cl.[6] F01B *27/10*

U.S. Cl. 171—16 **7 Claims**



1. A machine for treating a ballast bed underneath a track, comprising

(a) a machine frame extending in a longitudinal direction and supported on the track by undercarriages for movement in an operating direction,

(b) a suction unit mounted on the machine frame, the suction unit comprising

(1) a vertically and laterally adjustable suction pipe having a suction opening for aspirating ballast from the ballast bed,

(c) a conveyor band means arranged on the machine frame to convey the aspirated ballast away from the suction unit,

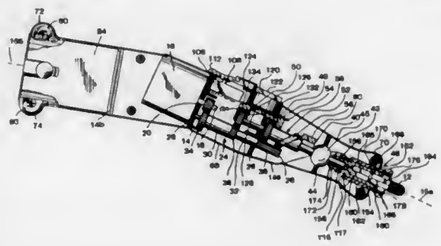
(d) a ballast discharge device mounted on the machine frame rearwardly of the suction pipe in the operating direction, the ballast discharge device comprising

(1) a hopper,

(e) a conveyor arrangement extending in the longitudinal direction on the machine frame, the conveyor arrangement having

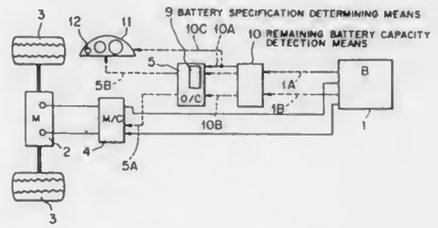
(1) an input end arranged to receive the aspirated ballast from the conveyor band means and
(2) an output end arranged to discharge the aspirated ballast into the hopper, and
(f) a track lifting unit mounted on the machine frame between the suction opening and the ballast discharge device.

5,664,634
POWER TOOL
Robert E. McCracken, Tucson, Ariz., assignor to Waxing Corporation of America, Inc., Elmhurst, Ill.
Filed Oct. 23, 1995, Ser. No. 547,033
Int. Cl.[6] E02D *7/02*
U.S. Cl. 173—48 **27 Claims**



1. A power tool having a working element capable of rotating or reciprocating, the power tool comprising:
a housing having a first longitudinal axis extending therein;
an output shaft mounted in the housing along the longitudinal axis operatively connected to the working element;
a motor in the housing for driving the output shaft;
a transmission system having cooperating portions thereof which are movable between (1) a first state wherein the cooperating portions are disengaged from each other allowing the output shaft to reciprocate, and (2) a second state wherein the cooperating portions are engaged with each other causing the output shaft to rotate;
a wobble driver mounted to the output shaft with the wobble driver having (1) a first mode wherein the wobble driver is in driving relation to the output shaft and is capable of driving the output shaft for reciprocation therewith along the first longitudinal axis, and (2) a second mode wherein the wobble driver is in non-driving relation to the output shaft; and
an actuator which cooperates with the wobble driver and one of the transmission system cooperating portions and is selectively movable between (1) a first position wherein the transmission system cooperating portions are in their first disengaged state and the wobble driver is in its first driving mode relative to the output shaft with the wobble driver driving the output shaft for reciprocation therewith along the first longitudinal axis to reciprocate the working element, and (2) a second position wherein the transmission system cooperating portions are in their second engaged state and the wobble driver is in its second non-driving mode relative to the output shaft with the output shaft rotating to rotate the working element.

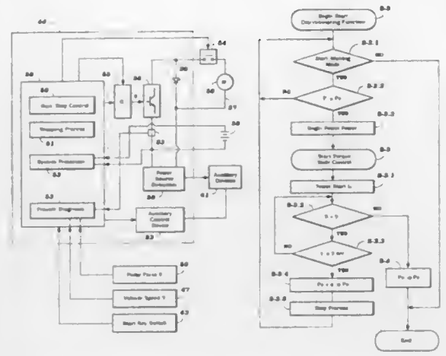
5,664,635
CONTROL SYSTEM FOR INHIBITING UNINTENDED USE OF HYBRID ELECTRIC VEHICLE
Hisamitsu Koga, Okazaki; Naotake Kumagai, Tokyo; Tomiji Ohwada; Nobuya Furukawa, both of Okazaki; Masaaki Kato, Kyoto, and Nobuyuki Kawamura, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1995, Ser. No. 443,757
Claims priority, application Japan, May 18, 1994, 6-103794
Int. Cl.[6] B60K *28/00*
U.S. Cl. 180—65.3 **4 Claims**



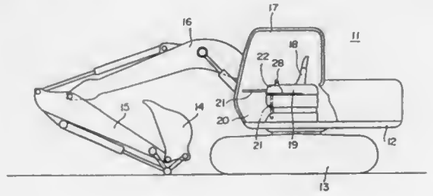
1. A hybrid electric vehicle, comprising:
a rechargeable battery unit;
an electric drive motor which drives wheels of said vehicle by an electric power from said rechargeable battery unit;
a generator which charges said rechargeable battery unit;
a combustion engine which drives said generator;
a controller which controls operations of said electric drive motor and said combustion engine;
a determining unit which determines whether said rechargeable battery unit has been removed or replaced with another battery unit which fails to meet a predetermined specification;
wherein said controller limits the output from said electric drive motor by inhibiting operation of at least one of said electric drive motor and said combustion engine when said determining unit determines that said rechargeable battery unit has been removed or said rechargeable battery unit has been replaced with said another battery unit.

5,664,636
VEHICLE WITH ELECTRIC MOTOR
Katsumi Ikuma; Sueji Nagai; Fumio Ito; Syoichiro Miyata, and Yasuo Suganuma, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Oct. 28, 1994, Ser. No. 331,129
Claims priority, application Japan, Oct. 29, 1993, 5-294140; Oct. 29, 1993, 5-294141; Oct. 14, 1994, 6-274346; Oct. 14, 1994, 6-274347
Int. Cl.[6] B62K *11/00;* **B62M** *23/02*
U.S. Cl. 180—206 **47 Claims**

1. An electric power assisted vehicle comprised of at least one propulsion device, a manual power device for driving said propulsion device, an electric motor for driving said propulsion device, a control for controlling the power applied by said electric motor for driving said propulsion device, a vehicle speed sensor for sensing the speed at which said vehicle is driven, a force sensor for sensing the force applied to said manual power device, said control establishing a predetermined force which must be sensed by said force sensor before electric power assist will be supplied by said electric motor, means for comparing the speed of said vehicle sensed by said speed sensor with a predetermined vehicle speed when said predetermined force is applied, and means for precluding the application of electric power assist unless said predetermined vehicle speed is exceeded.

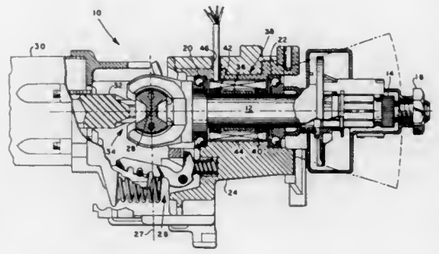


5,664,637
OPERATION BREAKING APPARATUS FOR CONSTRUCTION EQUIPMENT
Makoto Ohta; Eiji Akahane; Seiichi Hata, all of Tokyo; Kenzo Kuroda, and Shosuke Sato, both of Saitama, all of Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, and Kansei Corporation, Saitama, both of Japan
Filed Feb. 20, 1996, Ser. No. 603,763
Claims priority, application Japan, Jul. 12, 1995, 7-175735
Int. Cl.[6] B60K *28/00*
U.S. Cl. 180—286 **15 Claims**



1. An operation prohibiting apparatus for a piece of construction equipment in which an operating box is located adjacent an operator's seat within an operator cab and an operating lever of the operating box operates a cylinder of a working member, and a cutoff bar is situated in an entryway to the operator's seat such that it can be positioned in a first position in which it protrudes across the entryway and in a second, withdrawn position, the cutoff bar being linked with a locking mechanism of a hydraulic driving system, the locking mechanism being unlocked when the cutoff bar is positioned in the first, protruding position, the operation prohibiting apparatus comprising:
a first lever pivotally supported by a base plate;
a second lever pivotally support by the base plate;
a connecting section for transmitting a rotating force from the first lever to the second lever;
an operating knob attached to the first lever;
a cutoff bar member fitted onto the second lever;
a displacement enlarging mechanism arranged so that a distance between a supporting point of the first lever and the connecting section exceeds a distance between a supporting point of the second lever and the connecting section; and
a switch operatable to unlock the locking mechanism when the cutoff bar is positioned in the first, protruding position.

5,664,638
SENSING TILT-COLUMN STEERING SHAFT TORQUE
Santo A. Padula, Lake Orion, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 30, 1996, Ser. No. 641,456
Int. Cl.[6] B62D *5/04*
U.S. Cl. 180—443 **5 Claims**

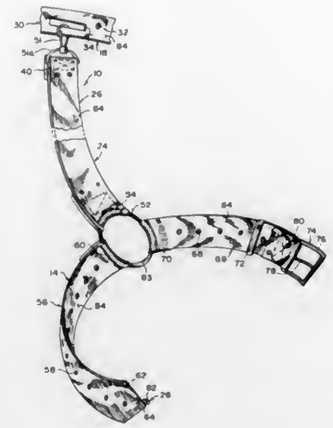


1. A tiltable steering column assembly for a vehicle comprising:
(a) lower support column means rigidly mounted on the vehicle structure;
(b) upper support column means tiltably mounted on the lower support column for user selected pivotal movement about a generally horizontal axis transverse to the vehicle;
(c) a lower steering shaft received through said lower support column;
(d) an upper steering shaft received through said upper support column means and journalled thereon for rotation in a pair of axially spaced bearings;
(e) swivel joint means interconnecting said upper and lower steering shaft and operative for transmitting torque therebetween;
(f) a magneto elastic active element fixedly attached to said upper shaft at a location axially intermediate said pair of bearings, said element operative to be torsionally strained by application of torque to said upper shaft; and
(g) electromagnetic means disposed on said upper column means adjacent said magnetic elastic element and operative to detect torsional strain of said element and provide an electrical signal indicative thereof.

5,664,639
SAFETY DEVICE FOR A CHILD
Barbara Worth, 96-10 57th Ave. #9G, Corona, N.Y. 11368
Filed Dec. 19, 1994, Ser. No. 359,271
Int. Cl.[6] A62B *35/00*
U.S. Cl. 182—3 **3 Claims**

1. A safety device for a child which comprises:
a) a first adjustable belt worn about a waist of the child;
b) a second adjustable belt worn about a waist of an adult person, said second adjustable belt including a flexible panel member having a plurality of laterally spaced apart eyelet holes and at least one slot with a first end having a tip portion, a keeper connected to said panel member near a second end thereof, and a buckle having a frame and a prong connected to said second end of said panel member, so that said tip portion can be inserted through said frame with said prong in engagement with one of said eyelet holes in said panel member;
c) means for connecting said first adjustable belt to said second adjustable belt, so that the adult person will always have the child at their side, while keeping their hands free, said connecting means including an elongated connector strap extend

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ing between said first adjustable belt and said second adjustable belt, said connector strap including a clip with a D-ring connected to a first end thereof, so that said clip can be removably connected to said at least one slot, said first adjustable belt including a retaining ring connected to a second end of said connector strap, a first flexible panel member having a plurality of laterally spaced apart eyelet holes and connected at a first end to said retaining ring with a second end having a tip portion, a second flexible panel member having a plurality of laterally spaced apart eyelet holes and connected at a first end to said retaining ring, a keeper connected to said second panel member, and a buckle having a frame and a prong connected to a second end of said second panel member, so that said tip portion of said first panel member can be inserted through said frame of said second panel with said prong in engagement with one of said eyelet holes in said first panel member; and

d) means for locking said first adjustable belt in place after said first adjustable belt is positioned on the waist of the child, so that the child can not easily open said first adjustable belt, said locking means including a hook member connected to said tip portion of said first panel member, so that said hook member can be inserted within one of said eyelet holes in said second panel member, after said tip portion of said first panel is inserted through said frame of said buckle of said second panel.

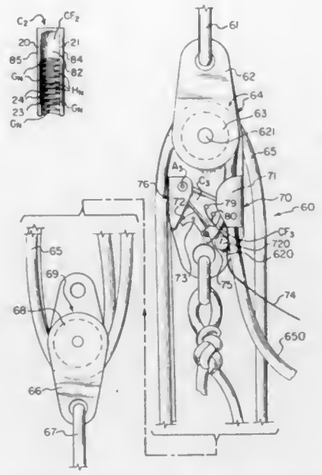
5,664,640
ASCENDING CAM
Daniel I. Smith, 2187 Hastings Ct., Santa Rosa, Calif. 95405
Filed Feb. 3, 1995, Ser. No. 383,195
Int. Cl.[6] A62B *1/14;* **B65H** *59/16*
U.S. Cl. 182—5 **12 Claims**

1. A rope cam comprising:

a cam body;

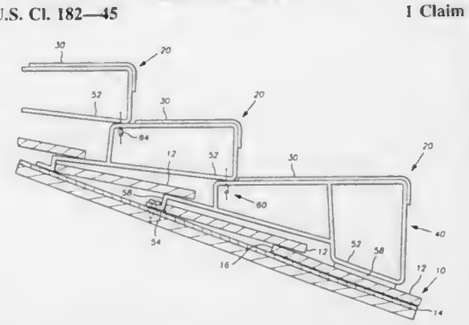
a cam face on the cam body; and

said cam face further comprising a concave working surface, a plurality of ridges in the working surface disposed perpendicular to a rope travel direction in the cam face, and a pair of crested curbs, one on each edge of the concave working



surface running lengthwise with the working surface, functioning to maintain the rope coplanar with the cam body.

5,664,641
ROOF MAINTENANCE STAIR STEP APPARATUS
Donald E. Ritze, 10952 Glen Robin La., Orange, Calif. 92669
Filed Mar. 6, 1996, Ser. No. 611,904
Int. Cl.[6] E04G *3/12*
U.S. Cl. 182—45 **1 Claim**

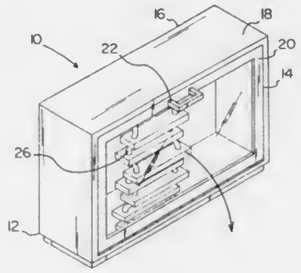


1. A combination portable step apparatus and a peaked roof, comprising:

a plurality of roof tiles laid on the peaked roof in overlapping rows;

a plurality of roof steps, each of the steps providing a horizontal platform, fixed to and supported by a frame extending downwardly therefrom, and terminating with a rest means angled for flush contact with the roof, and further providing mutual engagement means for connecting one of the steps with the next to form a staircase on one side of the peaked roof, the mutual engagement means on one of the steps comprising at least two horizontally oriented holes, the mutual engagement means on at least one other of the steps comprising at least two vertically oriented pins and at least two of the horizontally oriented holes, the holes on any of the steps receiving the pins of any one of the one other of the steps the rest means comprising a first rest portion positioned under the platform, and a second rest portion positioned lateral to the platform and at a higher elevation than the first rest portion, the first rest portion and the second rest portion being spaced apart so as to enable at least one of the roof tiles to be positionable therebetween so that a vertical leg portion of the second rest portion is in contact with an edge of one of the roof tiles thereby preventing the apparatus from moving downwardly on the roof, the roof steps being removably engagable to establish a stair step arrangement for walking up and down on the peaked roof.

5,664,642
FIRE EVACUATION KIT
Bernard Williams, 104 Schroder, Yonkers, N.Y. 10705
Filed Aug. 26, 1996, Ser. No. 701,649
Int. Cl.[6] E06C *9/14*
U.S. Cl. 182—70 **9 Claims**



1. A fire evacuation kit for aiding individuals in escaping unharmed from a fire within a residence comprising, in combination:

a housing having a generally rectangular configuration, the housing having an open upper end, a closed lower end and a peripheral wall extending therebetween, the housing including a lid hingedly secured to the open upper end thereof, the lid being of a clear plastic material, the lid having a handle disposed on an upper end thereof, the housing securable within a residence beneath a window thereof;

a ladder comprised of a pair of elongated ropes, a plurality of step bars extend between the ropes in a spaced relationship, upper ends of the ropes secured to an inner surface of the closed lower end of the housing;

a pair of cables each having looped upper and lower ends;

four spring-clips, two of the spring-clips coupling with the upper looped ends of the pair of cables and coupling with an upper end of the ladder, two of the spring-clips coupling with the looped lower ends of the pair of cables;

a fire extinguisher positionable within the housing;

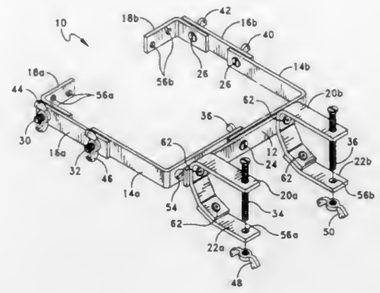
a flashlight positionable within the housing;

a respiration mask positionable within the housing;

a safety harness comprised of a pair of elongated torso straps joined together at lower ends thereof, a waist band secured to and extends around the pair of elongated torso straps, a pair of rings coupled with upper ends of the torso straps, the pair of rings coupling with the two spring-clips on the looped lower ends of the pair of cables.

5,664,643
MULTI-PURPOSE LADDER ADAPTER
Roy F. Taylor, Jr., 49 Namquid Dr., Warwick, R.I. 02888
Filed Nov. 4, 1996, Ser. No. 743,904
Int. Cl.[6] E06C *7/48*
U.S. Cl. 182—214 **10 Claims**

1. A multi-purpose adapter for a ladder, having first and second side rails connected by a rung, which can be leaned against a fixed support, comprising:



a support linkage member having a centrally located aperture and two opposed ends;

a first L-shaped base linkage member having a slot therein;

a second L-shaped base linkage member having an aperture therein;

bolt means fastening said first L-shaped base linkage, said second L-shaped base linkage and said support linkage member together via said slot, said aperture in said second L-shaped base linkage member, and said centrally located aperture in said support linkage member;

a first intermediate linkage member pivotally connected to said first L-shaped linkage member;

a second intermediate linkage member pivotally connected to said second L-shaped linkage member;

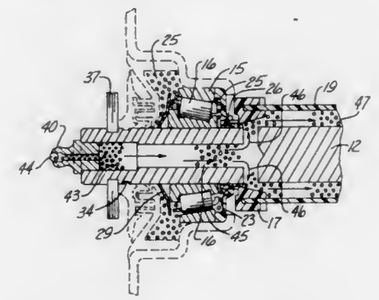
a first terminal linkage member pivotally connected to said first intermediate linkage member;

a second terminal linkage member pivotally connected to said second intermediate linkage member;

clamp means connected to said support linkage member for securing said support linkage member to said rung; and

whereby said linkage members are configured relative to one another to form an adaptable multi-purpose adapter which permits said ladder to be securely leaned against a fixed support of varying configurations and sizes.

5,664,644
ONE-POINT GREASE DISTRIBUTION SYSTEM FOR BELT CONVEYOR IDLERS
Allen V. Reicks, and Greg N. Flanagan, both of Pella, Iowa, assignors to Precision, Inc., Pella, Iowa
Filed May 24, 1996, Ser. No. 653,020
Int. Cl.[6] B65G *45/04*
U.S. Cl. 184—15.1 **12 Claims**



12. A belt conveyor idler mechanism comprising:

(a) an idler roller adapted to support a portion of a conveyor belt, the idler roller including a radially inwardly cylindrical portion on each end thereof;

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(b) a bearing disposed in each of said cylindrical portions, each of said bearings having an inner and an outer race rotatable with respect to each other and having moveable bearing members disposed between the inner and outer races for reducing friction when one of the inner and outer races rotates with respect to the other one;

(c) a shaft disposed through said inner races, said shaft having an axial bore in each end thereof, said axial bores each having a blind end and at least one flow port connecting the blind end of each axial bore with the outside periphery of the shaft;

(d) a grease tube disposed around the shaft to form a continuous grease supply passageway from one end of the shaft, through one of the axial bores, through one of the at least one flow ports, and through a space between the shaft and the grease tube to the other at least one flow port and axial bore whereby grease can freely flow through said continuous passageway;

(e) means for sealing each end of the grease tube to the shaft at a place between the respective flow port and the respective bearing;

(f) means for providing a grease reservoir disposed on each side of and through each bearing, each said grease reservoir being defined by:

(1) an annular back seal means for sealing between one of the respective radially inwardly cylindrical portions of the idler roller and one of said respective sealing means on one side of each bearing; and

(2) a front seal means for sealing from one end of the idler roller to the shaft on the other side of each bearing; and

(g) orifice means leading from the grease supply passageway to the grease reservoirs for permitting grease under pressure in the grease supply passageway to enter the grease reservoirs whereby grease flows from the grease supply passageway, through the orifice means, through the bearings, and the grease flow pushes contaminated grease out the front seal means as it fills the grease reservoirs with new grease.

5,664,645

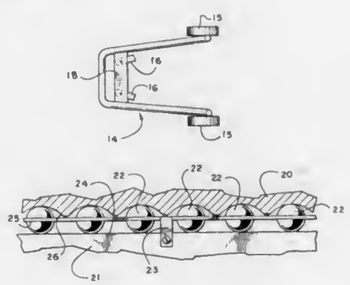
BRAKING MEANS FOR SHOPPING CART

Otto M. Rodriguez, 5708 Lost Grove Dr., Lilburn, Ga. 30247

Filed Aug. 22, 1996, Ser. No. 701,626

Int. Cl.[6] B60B *33/00;* **B62B** *5/04*

U.S. Cl. 188—1.12 **5 Claims**



1. Braking means for a shopping cart, wherein said cart comprises a support frame carrying a basket, a pair of wheels rotatably fixed to said frame, and a pair of casters fixed to said frame, said pair of casters comprising a first caster rotatable about a first vertical axis and a second caster rotatable about a second vertical axis, said braking means comprising means for urging said first caster and said second caster to rotate about said first and second vertical axes, for orienting said first caster and said second caster to be non-parallel to each other.

5,664,646

DISC BRAKE, ESPECIALLY FOR VEHICLES

Philippe Bejot, 74, Rue de Miromesnil, F-75008 Paris; Jean Claude Monteillet, 12, Rue Adolphe-Avron, F-93700 Drancy, both of France; Jose Manuel Vila Boluda, Avd. Lleron No. 14, Les Franqueses, Del Valles, E-08520 Barcelone, and J. Ruiz Busquets, Avd. Verge de Montserrat 114, 6°, 1, E-08820 El Prat de Llobregat, both of Spain

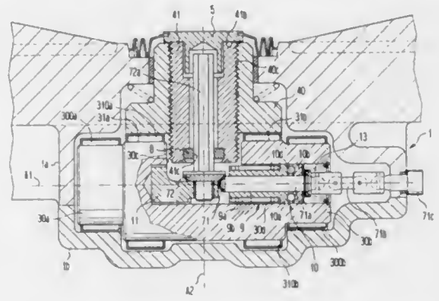
PCT No. PCT/DE94/00602, § 371 Date Feb. 29, 1996, § 102(e) Date Feb. 29, 1996, PCT Pub. No. WO94/28331, PCT Pub. Date Dec. 8, 1994

PCT Filed Jun. 2, 1993, Ser. No. 553,641

Claims priority, application France, Jun. 2, 1993, 93/06553

Int. Cl.[6] F16D *65/16;65/56*

U.S. Cl. 188—71.9 **10 Claims**



1. A disc brake, particularly for vehicles, having a stationary housing,

at least one friction or brake lining which, when the brake is actuated, is displaced with respect to the housing,

a lever device with a shaft including an eccentric rotatable about a first axis and with an actuating lever fastened to the shaft and extending essentially perpendicularly to the first axis such that, as a result of the rotation of the shaft about the first axis, the brake can be actuated,

an eccentric follower displaceable within the housing along a second axis which extends essentially perpendicularly to the first axis, the follower resting with a first end on the eccentric and with a second end acting with respect to the brake lining; and

adjusting means for increasing the distance separating the first axis from the second end of the follower as a function of the wear of the brake lining, wherein;

the eccentric has two bearing sections arranged on either side of the rotating lever;

the eccentric follower has, on its first end, a nut with a central threaded bore as well as two essentially semi-cylindrical lateral bearing shells receiving the corresponding bearing sections of the eccentric;

the eccentric follower has a screw whose first end engages the nut, while a second end of the screw forms the second end of the eccentric follower; and

the adjusting means generates a relative rotation of the screw and of the nut whereby the second end of the eccentric follower can be extended.

5,664,647

BRAKE DRUM LEVER FOR AN AUTOMOTIVE S-CAM DRUM BRAKE

Kjell Edvardsson, Lund, Sweden, assignor to Haldex AB, Sweden

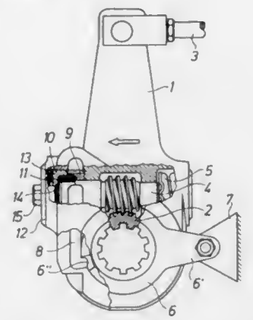
PCT No. PCT/SE94/01115, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/14870, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 23, 1994, Ser. No. 648,186

Claims priority, application Sweden, Nov. 26, 1993, 9303921

Int. Cl.[6] F16D *51/00*

U.S. Cl. 188—79.55 **4 Claims**



1. A brake lever for an automotive S-cam drum brake, having a toothed one-way clutch (**14**) for transmitting torque through a torque transmitting tooth flank in a slack decreasing direction between two coaxial members (**4**, **10**) rotatably arranged relative to each other, characterized in that each clutch tooth is asymmetrical, its torque transmitting flank forming a greater angle with a normal, which extends through the tooth apex and into the tooth, than an opposite tooth flank thereby to provide a greater flank length with longer life.

5,664,648

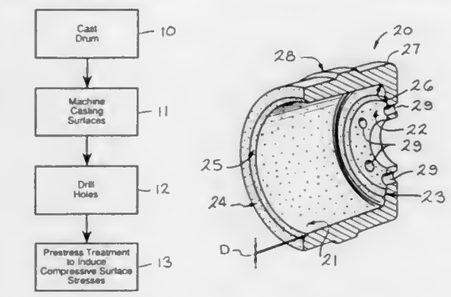
PRESTRESSED BRAKE DRUM OR ROTOR

Larry Bennett Hester, Dayton, Ohio, assignor to Dayton Walther Corporation, Dayton, Ohio

Division of Ser. No. 778,438, Oct. 16, 1991, Pat. No. 5,352,305. This application Oct. 4, 1994, Ser. No. 317,789

Int. Cl.[6] B21D *53/34;* **F16D** *65/10*

U.S. Cl. 188—218 R **16 Claims**



1. An improved brake component adapted to engage a brake pad comprising:

an annular rotatable brake component selected from the group consisting of a vehicle brake drum and a vehicle brake rotor, said rotatable brake component having a machined annular surface for frictional engagement with the brake pad, said machined annular surface having residual stresses formed therein as a result of a machining operation which provides said rotatable brake component with an initial fatigue life, wherein said machined annular surface is prestressed by inducing compressive stresses therein to reduce said residual stresses and increase the fatigue life of said rotatable brake component and said machined annular surface is roughened in the range of 200–500 microinches to burnish the brake pad upon engagement therewith.

5,664,649

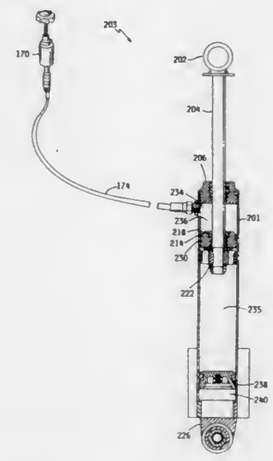
ADJUSTABLE SHOCK ABSORBER

Kevin D. Thompson, and Ole E. Tweet, both of Thief River Falls, Minn., assignors to Arctic Cat Inc., Thief River Falls, Minn.

Continuation-in-part of Ser. No. 535,777, Sep. 28, 1995, Pat. No. 5,533,586, which is a continuation of Ser. No. 189,885, Feb. 1, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 631,422

Int. Cl.[6] B60G *17/08*

U.S. Cl. 188—314 **4 Claims**



1. An adjustable shock absorbing mechanism comprising:

a) a tubular body having a base end and a distal end, said tubular body closed at said base end by a base end cap and closed at said distal end by a rod end cap, comprising

aa) said rod end cap including an aperture therethrough; and

bb) a porthole near the distal end of the tubular body for the transfer of hydraulic fluid out of and into the tubular body;

b) a first piston within said tubular body, said first piston defining an aperture for the passage of hydraulic fluid therethrough during shock absorbing movement of said first piston;

c) a first hydraulic fluid chamber defined by said tubular body, a movable sealing piston within the tubular body, and an internal floating piston;

d) a longitudinal rod passing through the aperture in said rod end cap and connected to said first piston;

e) said movable sealing piston defining an aperture with the longitudinal rod passing therethrough, and said movable sealing piston located between said first piston and said rod end cap;

f) a second hydraulic fluid chamber defined by said tubular body, said movable sealing piston, and said rod end cap;

g) a suspension adjustor connected to said porthole to allow controlled transfer of hydraulic fluid into and out of said second hydraulic fluid chamber to accomplish longitudinal displacement of the movable sealing piston;

h) an internal reservoir defined by said tubular body, said internal floating piston, and said base end cap, said internal reser-

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voir containing a compressible medium and changing in volume inversely to changes in volume of the second hydraulic fluid chamber; and

wherein when hydraulic fluid is transferred from said suspension adjustor through said porthole into said second hydraulic fluid chamber, said movable sealing piston is moved in a direction away from said rod end cap, thus moving said movable sealing piston and said first piston toward said base end cap, decreasing the volume of compressible medium in the internal reservoir and increasing the volume of the second hydraulic fluid chamber and shortening the length of said adjustable shock absorbing mechanism between said distal end and said base end; and

wherein when hydraulic fluid is allowed by said suspension adjustor to be transferred from said second hydraulic fluid chamber through the porthole into the suspension adjustor, said movable sealing piston is moved in a direction toward the rod end cap, thus moving said first piston and said movable sealing piston toward said rod end cap, increasing the volume of compressible medium in the internal reservoir and decreasing the volume of the second hydraulic fluid chamber and extending the length of said adjustable shock absorbing mechanism between said distal end and said base end.

5,664,650

UPPER MACPHERSON STRUT STEP BEARING FOR WHEEL SUSPENSIONS IN MOTOR VEHICLES

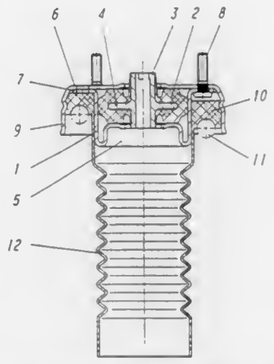
Helmut Kammel, Damme; Hubert Siemer, Dinklage, and Ernst-Günther Jördens, Damme, all of Germany, assignors to Lemförder Metallwaren AG, Lemförde, Germany

Filed Mar. 19, 1996, Ser. No. 618,340

Claims priority, application Germany, Mar. 30, 1995, 195 11 642.9

Int. Cl.[6] B60G *15/00*

U.S. Cl. 188—321.11 **13 Claims**



1. An upper MacPherson strut step bearing for wheel suspensions in a motor vehicle, comprising:

a metallic housing, said housing being pot-shaped;

a rubber buffer arranged in said housing;

a support piece defining a part to be connected to a shock absorber, said support piece including radially extending projections extending into said rubber buffer and connected rigidly to said rubber buffer;

an annular spring buffer for supporting a top end of a coil spring surrounding said shock absorber, said housing including a radially extending housing edge forming an abutment for said annular spring buffer;

a housing cover plate which is to be fastened to a part of the motor vehicle, said housing cover plate covering said rubber buffer on a top side of said rubber buffer;

a collar edge with axially extending collar edge walls defining a receiving space for radially guiding the shock absorber, said collar edge being located on an under side of said metallic housing, said metallic housing being formed of sheet metal in one piece with said collar edge, said collar edge being provided as an underside of said metallic housing, said metallic housing being wedged into said cover plate for fictionally positionally fixing said housing relative to said cover plate.

5,664,651

SHOCK ABSORBER SHAFT SEAL

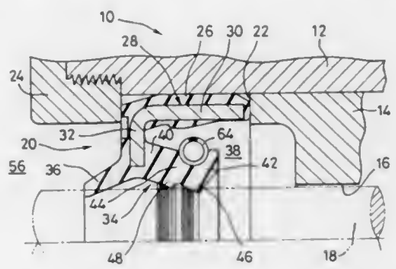
Takeshi Miura, and Hideko Munekata, both of Fukushima, Japan, assignors to NOK Corporation, Tokyo, Japan

Filed Dec. 11, 1995, Ser. No. 570,433

Claims priority, application Japan, Dec. 15, 1994, 6-332895

Int. Cl.[6] F16F *9/36*

U.S. Cl. 188—322.17 **9 Claims**



1. A fluid seal for use in a gas-filed hydraulic shock absorber having a shaft reciprocable relative to a housing in which a gas under pressure is charged, said fluid seal comprising:

a rigid annular casing for securing said fluid seal to said housing in a fluid-tight manner; and,

an annular elastomeric sealing member bonded at an axially outer end thereof to said casing, said sealing member being configured to include a free end extending axially inwardly of said casing;

said sealing member having first and second sealing lips for sealingly engaging said shaft, said first sealing lip being located at said free end and said second sealing lip being located between said first sealing lip and said casing;

each of said first and second sealing lips having a sealing edge defined in a free state thereof by a frustoconical oil-side surface and a frustoconical air-side sealing surface;

said first sealing lip having a series of spaced annular projections contiguous to and axially outwardly of said air-side sealing surface of said first sealing lip to form in use a series of oil retaining grooves therebetween;

said projections in a free state thereof projecting radially inwardly of the plane of said air-side sealing surface of said first sealing lip in such a manner that the bottom of said grooves is substantially coplanar with the plane of said air-side sealing surface of said first sealing lip;

the first projection in said series of projections immediately adjacent said air-side sealing surface being arranged so that, when engaged with said shaft, said first projection raises a part of said air-side sealing surface radially outwardly away from said shaft;

said second sealing lip having a series of spaced annular grooves contiguous to and axially outwardly of said air-side sealing surface of said second sealing lip;

said annular grooves in the free state thereof being configured to lie radially outwardly of the plane of said air-side sealing surface of said second sealing lip to ensure that said air-side sealing surface of said second sealing lip is brought into sealing engagement with said shaft throughout the entire extent of said air-side sealing surface of said second sealing lip whenever said second sealing lip is located around said shaft.

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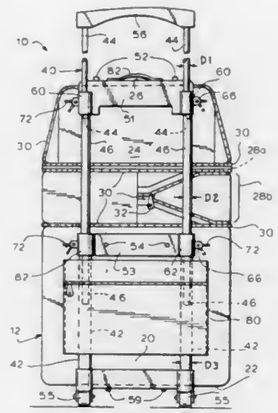
VETICALLY EXPANDABLE LUGGAGE WITH INTEGRAL WHEELED CARRIER

Edward Shamah, Brooklyn, N.Y., assignor to Romar International Corp., New York, N.Y.

Filed Sep. 26, 1996, Ser. No. 721,616

Int. Cl.[6] A45C *5/14;7/00;13/26;13/38*

U.S. Cl. 190—18 A **8 Claims**



1. Vertically expandable luggage including a vertically expandable wheeled carrier therefor, comprising:

(A) a vertically expandable luggage sidewall including at least three vertically stacked shells defining:

(i) a bottom shell with a closed bottom,

(ii) a top shell with an openable closed top, and

(iii) at least one vertically stacked intermediate shell with flexible sidewalls connecting said top shell and said bottom shell, said at least one intermediate shell being movable between a vertically collapsed orientation and a vertically expanded orientation; and

(B) a vertically expandable wheeled carrier including at least three vertically stacked supports defining:

(i) a bottom support of diameter D3;

(ii) a top support of diameter D1, and

(iii) a vertically stacked intermediate support of diameter D2 functionally connecting said top support and said bottom support, said intermediate support including means telescopically receiving said top support and means telescopically received in said bottom support

said top support including means telescopically extendable from or receivable within said intermediate support without movement therewith of said luggage sidewall, a top portion of said intermediate support being secured to said top shell for vertical movement therewith, and a top portion of said bottom support being secured to said bottom shell for vertical movement therewith.

5,664,653

ROTARY UNIT HAVING CLUTCH FUNCTION

Masahiro Kurita; Kenichi Ichikawa, and Masakazu Doumoto, all of Kuwana, Japan, assignors to NTN Corporation, Osaka, Japan

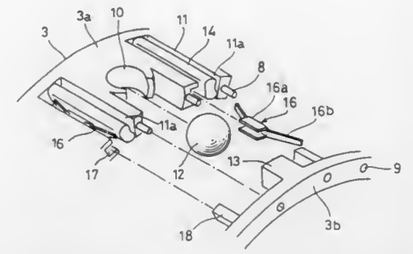
Filed Dec. 13, 1995, Ser. No. 571,488

Claims priority, application Japan, Dec. 14, 1994, 6-310659; Mar. 30, 1995, 7-073350; Jul. 27, 1995, 7-192053

Int. Cl.[6] F16D *15/00;41/06*

U.S. Cl. 192—45.1 **10 Claims**

1. An apparatus, comprising:



an inner member having an outer periphery having a first angular-contact raceway groove therein and a pair of first cylindrical surfaces on opposite sides of said first raceway groove;

an outer member disposed around said inner member and having an inner periphery having a second angular-contact raceway groove therein and a pair of second cylindrical surfaces on opposite sides of said second raceway groove;

a plurality of balls disposed between said first and second angular-contact raceway grooves such that each of said plurality of balls has four points of contact with said first and second angular-contact raceway grooves;

a plurality of sprags disposed between adjacent ones of said plurality of balls, each of said plurality of sprags having ends and a length such that said ends rest on said first and second pairs of cylindrical surfaces on opposite sides of said first and second angular-contact raceway grooves, wherein each of said plurality of sprags comprises inner and outer arcuate surfaces;

a retainer disposed between said inner member and said outer member, said retainer comprising pockets housing said plurality of balls, sprag housing recesses housing said plurality of sprags, and an end having openings into said sprag housing recesses; and

a spring ring mounted on the one end of said retainer, said spring ring comprising a plurality of spring pieces thereon corresponding in number to said plurality of sprags and extending into respective sprag housing recesses through said openings in said one end of said retainer for resiliently urging said plurality of sprags to engage said cylindrical surfaces of said inner member and said outer member with said inner and outer arcuate surfaces of said plurality of sprags, respectively, said spring pieces comprising integral portions of said spring ring.

5,664,654

SYNCHRONIZER WITH SELF-ENERGIZING

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

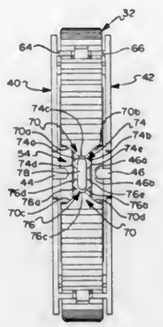
Continuation of Ser. No. 293,761, Aug. 15, 1994, Pat. No. 5,544,727, which is a continuation-in-part of Ser. No. 172,796, Dec. 27, 1993, abandoned. This application Apr. 9, 1996, Ser. No. 629,670

Int. Cl.[6] F16D *23/06*

U.S. Cl. 192—48.91 **11 Claims**

1. A clutch for frictionally synchronizing and positive connecting first and second drives disposed for relative rotation about a common axis; the clutch comprising:

first jaw means axially movable from a neutral position to an engaged position with second jaw means for positive connecting the drives in response to engaging movement of the first jaw means by an axially directed shift force (F_a), the first jaw means including a central opening having internal splines with axially extending flank surfaces slidably mating continuously with axially extending flank surfaces of external splines for preventing relative rotation between the internal and external splines, and the external splines affixed against rotation and axial movement relative to the first drive;



a first friction surface axially movable into engagement with a second friction surface in response to the engaging movement of the first jaw means for producing a synchronizing torque (T_o);

first and second angled blocker surfaces movable into engagement in response to the engaging movement of the first jaw means for preventing asynchronous engagement of the jaw means, for transmitting the shift force (F_o) to the first friction surface to effect an engagement force of the friction surfaces, and for producing a torque counter to the synchronizing torque for moving the first and second blocker surfaces out of engagement as synchronization is reached;

first and second self-energizing means operative when engaged to react the synchronizing torque for producing an additive axial force (F_a) in the direction of the shift force (F_o) for increasing the engagement force of the friction surfaces, the first and second self-energizing means including means for directing the additive axial force (F_a) to the first friction surface via the blocker surfaces; characterized by:

a first element defining a hub including an outer circumference defining the external splines;

a first baulkring including the first friction surface and a plurality of the second blocker surfaces, the baulkring being axially movable away from the hub toward the second friction surface;

the first jaw means central opening and internal splines affixed to a second element defined by a shift sleeve;

the first self-energizing means including a plurality of first self-energizing ramp surfaces affixed to a one of the elements;

a plurality of members mounted about a one of the elements for limited rotation relative to each of the elements and secured against radial movement relative to each of the elements, each member including a second angled self-energizing ramp surface operative in response to the synchronizing torque to engage a one of the first self-energizing ramp surfaces, whereby the additive axial force (F_a) is produced and directed to the first friction surface via the blocker surfaces.

5,664,655

SPLINE

Kyung-Ryong Oh, Changwon-Shi, Rep. of Korea, assignor to Samsung Heavy Industry Co., Ltd., Kyung Nam, Rep. of Korea

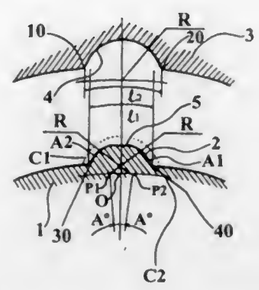
Filed Oct. 14, 1994, Ser. No. 323,360

Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6728

Int. Cl.[6] F16D *13/52*

U.S. Cl. 192—70.2 **7 Claims**

1. A spline including an internal spline and an external spline to be engaged with said internal spline, wherein the improvement comprises:



said internal spline is formed as a semi-circular groove having a predetermined radius, said semi-circular groove having a forward edge and a rearward edge with a predetermined distance therebetween;

said external spline is formed with a forward and a rearward convex edge, said forward and rearward convex edges having the same predetermined radius as that of said internal spline, with the center point of the forward convex edge and the rearward convex edge being located at different points; and

the distance between the forward and rearward convex edges of said external spline being shorter than the predetermined distance between the forward and rearward edges of said internal spline.

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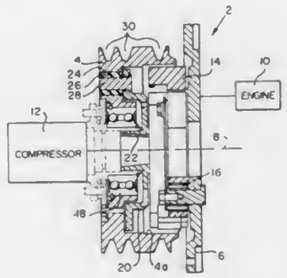
CENTRIFUGAL CLUTCH

Walter L. Dissett, Farmington Hills, Mich., assignor to Dyneer Corporation, Warren, Mich.

Filed Aug. 13, 1996, Ser. No. 696,067

Int. Cl.[6] F16D *43/24*

U.S. Cl. 192—105 CD **6 Claims**



1. A centrifugal clutch arranged between an engine and a compressor of a transport refrigeration system, comprising

(a) a rotor assembly connected with the engine and having a longitudinal axis, said rotor assembly being rotated about said axis by the engine;

(b) a housing coaxial with said rotor assembly;

(c) centrifugally actuated means for rotating said housing in response to rotation of said rotor assembly above a selected speed;

(d) an annular coupling adaptor coaxial with said rotor assembly and connected with a drive shaft of the compressor; and

(e) a plurality of radially arranged drive pins for connecting said coupling adaptor with said housing, said drive pins having axes parallel to said longitudinal axis, respectively, whereby rotation of said housing is transmitted to the compressor drive shaft via said coupling adaptor without a radial component.

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GRAVITY CONVEYOR ROLLER

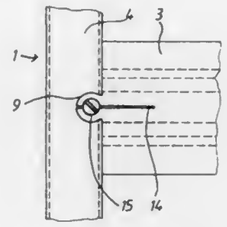
Helmut Neukam, Hausmannstätten, Austria, assignor to P.E.E.M. Förderanlagen Gesellschaft m.b.H., Graz, Austria

Filed Mar. 29, 1996, Ser. No. 625,745

Claims priority, application Austria, Apr. 26, 1995, GM 231/95

Int. Cl.[6] B65G *13/00*

U.S. Cl. 193—35 R **3 Claims**



1. A gravity-convyor roller with two longitudinal spars (**1**) extending mutually parallel, in which a plurality of rollers (**2**) are held rotatably and which are connected to one another via connecting parts, characterized in that the longitudinal spars (**1**) are formed by substantially C-shaped profiles whose straps (**5**) are located at the outside and whose upper legs (**4**) comprise recesses (**8**) which are open towards vertically downwardly facing bend-offs (**6**) extending parallel to the straps (**5**), said recesses (**8**) extend over a part of the height of the bend-offs (**6**) and having an inner width smaller in the zone of the bend-offs (**6**) than their largest inner width extending parallel to the strap (**5**), said connecting parts (**3**) are provided with noses (**9**) arranged on their face sides engaging in said recesses (**8**) arranged in transversal planes extending perpendicularly to the longitudinal spars (**1**), the cross sections of said noses (**9**) correspond to the recesses (**8**) in the zone of the legs (**4**), and the noses (**9**) having at least one slot (**14**) extending preferably transversally to the longitudinal spars (**1**) and having central bores (**10**) in which clamping screws (**15**) may be inserted to widen said slots (**14**).

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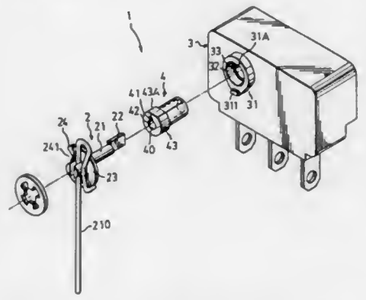
SWITCH ASSEMBLY FOR A COIN COLLECTOR

Jenny Luo, and Kuo Ming Chen, both of Taipei Hsien, Taiwan, assignors to Shin Jiuh Corp., Taipei Hsien, Taiwan

Filed May 3, 1996, Ser. No. 642,693

Int. Cl.[6] H01H *3/04*

U.S. Cl. 194—244 **2 Claims**



1. A switch assembly for a coin collector, comprising:

a switch housing adapted to be fixed in said coin collector and having a first contact and a second contact which are installed therein, said housing further having a wall through which an opening is formed;

a movable lever mounted movably in said housing and movable between an open position in which the lever contacts electrically said first contact, and a closed position in which the lever contacts electrically said second contact;

a spring biasing said lever to move to the closed position;

a mounting ring secured within said opening of said housing;

a sleeve extending through and press-fitted within said ring in such a manner that the sleeve cannot rotate in said ring and having an end wall with a central hole which is formed therethrough and which is provided with a circular section and a radial extension extending radially and outwardly from a periphery of said circular section;

a rotating unit including a rotating shaft which extends through said sleeve and which has an inner end portion located in said housing and an outer end portion located outside said housing so that said rotating shaft is journalled within said sleeve, a radially extending push plate formed integrally with the inner end portion of said shaft and located outside and adjacent to said sleeve in such a manner that said push plate is deflected from said radial extension of said central hole of said sleeve, and a push needle mounted securely on the outer end portion of said shaft and extending radially from said shaft, said push needle being adapted to be struck and rotated by a coin dropped from an upper end portion of the coin collector so that said push plate activates said lever to move away from said second contact to contact said first contact, assembly of said rotating shaft and said sleeve being removable forcibly from said ring so that said shaft can be rotated within said sleeve to register said push plate with said radial extension of said central hole of said sleeve, thereby permitting removal of said shaft from said sleeve by passing said push plate through said circular section and said radial extension of said central hole; and

a limiting device including a limiting plate secured to the outer end portion of said shaft, one of said limiting plate and said ring being formed with a circumferentially extending guideway while the other one of said limiting plate and said ring being provided with a stop element formed integrally therewith, said stop element being movable in said guideway so as to limit said shaft and said push plate to rotate within an angle within which said lever can rotate between the open position and the closed position and within which said push plate is deflected from the radial extension of said central hole of said sleeve so as to prevent separation of said shaft from said sleeve.

5,664,659

SUSPENSION TYPE CONVEYOR WITH A MATERIAL TRANSFER DEVICE

Franz Gaertner, Muehlweg 10, Unterelsbach, Germany, 97656

PCT No. PCT/EP93/01333, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/24398, PCT Pub. Date Dec. 9, 1993

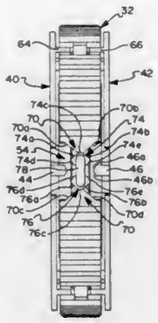
PCT Filed May 27, 1993, Ser. No. 343,495

Claims priority, application Germany, May 27, 1992, 92 07 217.8

Int. Cl.[6] B65G *47/36*

U.S. Cl. 198—360 **16 Claims**

1. Suspension type conveyor for transporting material which hangs on a hook in a suspended fashion, in particular garments which hang on coat hangers, with trolleys (**11–14**) that are suspended on a rail (**9, 10**), transport the material along said rail and are provided with carrying rods (**15**) on which the hooks (**20**) are suspended, with at least one descending discharging rod (**5**) which borders with an upper end laterally on a moving path of the trolley carrying rods (**15**) and by means of which the material slides off under the influence of gravity, and with a transfer device (**6**) for transferring the material transported by the trolleys (**11–14**), whereby said transfer device comprises a transfer finger (**30**) which is arranged at the upper end (**5a**) of the discharging rod (**5**), and is moveable against the carrying rod (**15**) of the respective trolley which is situated in a transfer position such that it engages under-



a first friction surface axially movable into engagement with a second friction surface in response to the engaging movement of the first jaw means for producing a synchronizing torque (T_o);

first and second angled blocker surfaces movable into engagement in response to the engaging movement of the first jaw means for preventing asynchronous engagement of the jaw means, for transmitting the shift force (F_o) to the first friction surface to effect an engagement force of the friction surfaces, and for producing a torque counter to the synchronizing torque for moving the first and second blocker surfaces out of engagement as synchronization is reached;

first and second self-energizing means operative when engaged to react the synchronizing torque for producing an additive axial force (F_a) in the direction of the shift force (F_o) for increasing the engagement force of the friction surfaces, the first and second self-energizing means including means for directing the additive axial force (F_a) to the first friction surface via the blocker surfaces; characterized by:

a first element defining a hub including an outer circumference defining the external splines;

a first baulkring including the first friction surface and a plurality of the second blocker surfaces, the baulkring being axially movable away from the hub toward the second friction surface;

the first jaw means central opening and internal splines affixed to a second element defined by a shift sleeve;

the first self-energizing means including a plurality of first self-energizing ramp surfaces affixed to a one of the elements;

a plurality of members mounted about a one of the elements for limited rotation relative to each of the elements and secured against radial movement relative to each of the elements, each member including a second angled self-energizing ramp surface operative in response to the synchronizing torque to engage a one of the first self-energizing ramp surfaces, whereby the additive axial force (F_a) is produced and directed to the first friction surface via the blocker surfaces.

5,664,655

SPLINE

Kyung-Ryong Oh, Changwon-Shi, Rep. of Korea, assignor to Samsung Heavy Industry Co., Ltd., Kyung Nam, Rep. of Korea

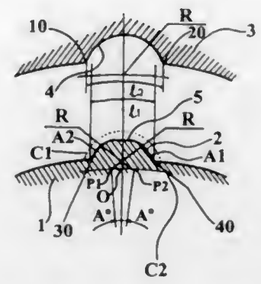
Filed Oct. 14, 1994, Ser. No. 323,360

Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6728

Int. Cl.[6] F16D *13/52*

U.S. Cl. 192—70.2 **7 Claims**

1. A spline including an internal spline and an external spline to be engaged with said internal spline, wherein the improvement comprises:



said internal spline is formed as a semi-circular groove having a predetermined radius, said semi-circular groove having a forward edge and a rearward edge with a predetermined distance therebetween;

said external spline is formed with a forward and a rearward convex edge, said forward and rearward convex edges having the same predetermined radius as that of said internal spline, with the center point of the forward convex edge and the rearward convex edge being located at different points; and

the distance between the forward and rearward convex edges of said external spline being shorter than the predetermined distance between the forward and rearward edges of said internal spline.

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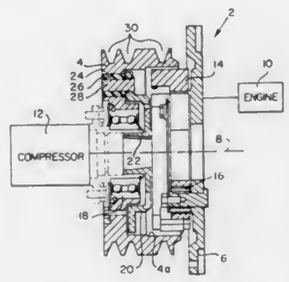
CENTRIFUGAL CLUTCH

Walter L. Dissett, Farmington Hills, Mich., assignor to Dyneer Corporation, Warren, Mich.

Filed Aug. 13, 1996, Ser. No. 696,067

Int. Cl.[6] F16D *43/24*

U.S. Cl. 192—105 CD **6 Claims**



1. A centrifugal clutch arranged between an engine and a compressor of a transport refrigeration system, comprising

(a) a rotor assembly connected with the engine and having a longitudinal axis, said rotor assembly being rotated about said axis by the engine;

(b) a housing coaxial with said rotor assembly;

(c) centrifugally actuated means for rotating said housing in response to rotation of said rotor assembly above a selected speed;

(d) an annular coupling adaptor coaxial with said rotor assembly and connected with a drive shaft of the compressor; and

(e) a plurality of radially arranged drive pins for connecting said coupling adaptor with said housing, said drive pins having axes parallel to said longitudinal axis, respectively, whereby rotation of said housing is transmitted to the compressor drive shaft via said coupling adaptor without a radial component.

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GRAVITY CONVEYOR ROLLER

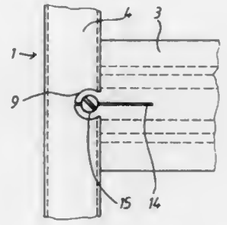
Helmut Neukam, Hausmannstätten, Austria, assignor to P.E.E.M. Förderanlagen Gesellschaft m.b.H., Graz, Austria

Filed Mar. 29, 1996, Ser. No. 625,745

Claims priority, application Austria, Apr. 26, 1995, GM 231/95

Int. Cl.[6] B65G *13/00*

U.S. Cl. 193—35 R **3 Claims**



1. A gravity-convyor roller with two longitudinal spars (**1**) extending mutually parallel, in which a plurality of rollers (**2**) are held rotatably and which are connected to one another via connecting parts, characterized in that the longitudinal spars (**1**) are formed by substantially C-shaped profiles whose straps (**5**) are located at the outside and whose upper legs (**4**) comprise recesses (**8**) which are open towards vertically downwardly facing bend-offs (**6**) extending parallel to the straps (**5**), said recesses (**8**) extend over a part of the height of the bend-offs (**6**) and having an inner width smaller in the zone of the bend-offs (**6**) than their largest inner width extending parallel to the strap (**5**), said connecting parts (**3**) are provided with noses (**9**) arranged on their face sides engaging in said recesses (**8**) arranged in transversal planes extending perpendicularly to the longitudinal spars (**1**), the cross sections of said noses (**9**) correspond to the recesses (**8**) in the zone of the legs (**4**), and the noses (**9**) having at least one slot (**14**) extending preferably transversally to the longitudinal spars (**1**) and having central bores (**10**) in which clamping screws (**15**) may be inserted to widen said slots (**14**).

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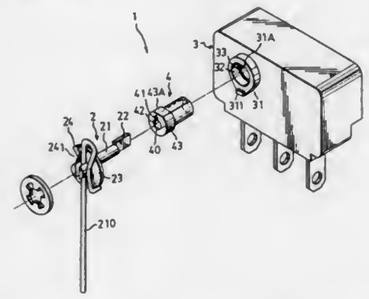
SWITCH ASSEMBLY FOR A COIN COLLECTOR

Jenny Luo, and Kuo Ming Chen, both of Taipei Hsien, Taiwan, assignors to Shin Jiuh Corp., Taipei Hsien, Taiwan

Filed May 3, 1996, Ser. No. 642,693

Int. Cl.[6] H01H *3/04*

U.S. Cl. 194—244 **2 Claims**



1. A switch assembly for a coin collector, comprising:

a switch housing adapted to be fixed in said coin collector and having a first contact and a second contact which are installed therein, said housing further having a wall through which an opening is formed;

a movable lever mounted movably in said housing and movable between an open position in which the lever contacts electrically said first contact, and a closed position in which the lever contacts electrically said second contact;

a spring biasing said lever to move to the closed position;

a mounting ring secured within said opening of said housing;

a sleeve extending through and press-fitted within said ring in such a manner that the sleeve cannot rotate in said ring and having an end wall with a central hole which is formed therethrough and which is provided with a circular section and a radial extension extending radially and outwardly from a periphery of said circular section;

a rotating unit including a rotating shaft which extends through said sleeve and which has an inner end portion located in said housing and an outer end portion located outside said housing so that said rotating shaft is journalled within said sleeve, a radially extending push plate formed integrally with the inner end portion of said shaft and located outside and adjacent to said sleeve in such a manner that said push plate is deflected from said radial extension of said central hole of said sleeve, and a push needle mounted securely on the outer end portion of said shaft and extending radially from said shaft, said push needle being adapted to be struck and rotated by a coin dropped from an upper end portion of the coin collector so that said push plate activates said lever to move away from said second contact to contact said first contact, assembly of said rotating shaft and said sleeve being removable forcibly from said ring so that said shaft can be rotated within said sleeve to register said push plate with said radial extension of said central hole of said sleeve, thereby permitting removal of said shaft from said sleeve by passing said push plate through said circular section and said radial extension of said central hole; and

a limiting device including a limiting plate secured to the outer end portion of said shaft, one of said limiting plate and said ring being formed with a circumferentially extending guideway while the other one of said limiting plate and said ring being provided with a stop element formed integrally therewith, said stop element being movable in said guideway so as to limit said shaft and said push plate to rotate within an angle within which said lever can rotate between the open position and the closed position and within which said push plate is deflected from the radial extension of said central hole of said sleeve so as to prevent separation of said shaft from said sleeve.

5,664,659

SUSPENSION TYPE CONVEYOR WITH A MATERIAL TRANSFER DEVICE

Franz Gaertner, Muehlweg 10, Untereisbach, Germany, 97656

PCT No. PCT/EP93/01333, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/24398, PCT Pub. Date Dec. 9, 1993

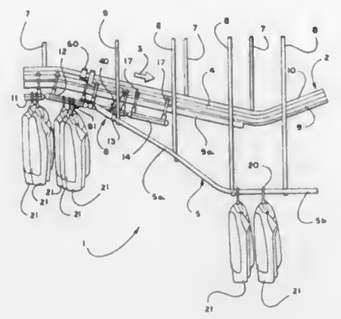
PCT Filed May 27, 1993, Ser. No. 343,495

Claims priority, application Germany, May 27, 1992, 92 07 217.8

Int. Cl.[6] B65G *47/36*

U.S. Cl. 198—360 **16 Claims**

1. Suspension type conveyor for transporting material which hangs on a hook in a suspended fashion, in particular garments which hang on coat hangers, with trolleys (**11–14**) that are suspended on a rail (**9**, **10**), transport the material along said rail and are provided with carrying rods (**15**) on which the hooks (**20**) are suspended, with at least one descending discharging rod (**5**) which borders with an upper end laterally on a moving path of the trolley carrying rods (**15**) and by means of which the material slides off under the influence of gravity, and with a transfer device (**6**) for transferring the material transported by the trolleys (**11–14**), whereby said transfer device comprises a transfer finger (**30**) which is arranged at the upper end (**5***a*) of the discharging rod (**5**), and is moveable against the carrying rod (**15**) of the respective trolley which is situated in a transfer position such that it engages under-



neath the hook (**20**) and is provided with an ascending ramp section (**35**) in such a way that the hooks (**20**) which move over said ascending ramp section (**35**) are released from the carrying rods (**15**), characterized by the fact that the finger (**30**) is arranged on a connecting part (**6***a*,**6***b*,**6***c*,**31**) of the discharging rod (**5**) which is rotatable around a longitudinal axis of the discharging rod, that said finger is curved in such a way that its finger tip (**32**) is rotatable between a material transfer position in which the finger tip is arranged such that it adjoins the trolley carrying rod (**15**) under an apex of the curvature and a material conveying position in which the finger tip is arranged in such a way that it is situated at a distance from the trolley carrying rod (**15**) above the curvature by rotating the connecting part (**6***a*,**6***b*,**6***c*,**31**), and that a retaining device (**60**) which engages coat hangers on the trolley carrying rod (**15**) is provided by means of which the garments are kept away from the transfer position on the trolley carrying rods (**15**) until the finger is pivoted into the material transfer position at the trolley carrying rod (**15**).

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SORTER CONVEYOR

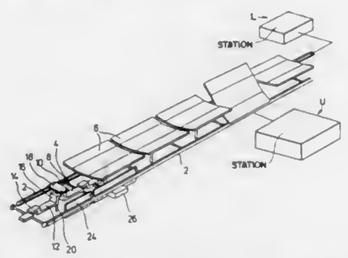
Ole Prydtz, Hjortshoej, and Ralph Kofoed, Hornslet, both of Denmark, assignors to Kosan Crisplant A/S, Aarhus, Denmark

Continuation of Ser. No. 155,232, Nov. 22, 1993, abandoned, which is a continuation of Ser. No. 994,292, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 752,664, Aug. 26, 1991, abandoned. This application Aug. 3, 1994, Ser. No. 285,422

Claims priority, application Denmark, Feb. 24, 1989, 0860/89

Int. Cl.[6] **B65G** *47/34*

U.S. Cl. 198—370.04 **13 Claims**



1. A sorter conveyor comprising a conveyor chassis, a row of supports supporting laterally tiltable carrier trays, movable along said conveyor chassis past a loading station to receive articles to be sorted and past a row of unloading or receiving stations at which the trays are selectively actuated so as to tilt and unload the articles, wherein said supports are fashioned as cart units having guiding members engaging with the conveyor chassis with a substantial mutual spacing, and wherein a plurality of discrete driving parts are provided on respective ones of said cart units said driving parts being elongated in an advancing direction of the cart units and a plurality of linear motors mounted in fixed positions relative to said conveyor chassis, said driving parts of said cart units being adapted for operative cooperation with said linear motors for moving said cart units with tiltable trays along said conveyor chassis, and wherein tray actuator arms are mounted on both sides of each cart unit for effecting tilting of the carrier trays to one side and the other, respectively, said tray actuator arms each having a track follower roller thereon by which said arms can be actuated against cam rails mounted on said chassis for tilting said trays.

5,664,661

CONVEYOR ASSEMBLY FOR REORIENTING ITEMS

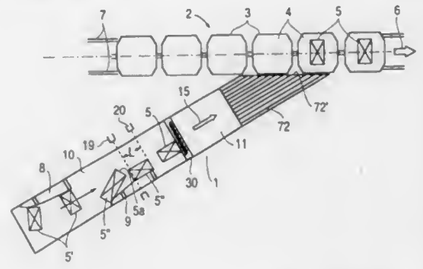
Willi Maier, Kloten, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Feb. 13, 1996, Ser. No. 600,458

Claims priority, application Switzerland, Feb. 17, 1995, 467/95

Int. Cl.[6] **B65G** *47/24*

U.S. Cl. 198—412 **11 Claims**



1. A conveyor assembly for reorienting items, comprising

(a) a conveyor unit having a carrier surface for advancing items thereon in a conveying direction; said conveyor unit having a discharge end;

(b) turning means disposed upstream of said discharge end as viewed in said conveying direction and at least partially underneath said conveyor unit for engaging an underface of the items and for turning the items into a predetermined orientation while being conveyed by said conveyor unit before the items reach said discharge end; said turning means including

(1) a roller having an item-engaging periphery;

(2) supporting means for supporting said roller for rotation in a rotary plane oriented substantially perpendicularly to said carrier surface and at an oblique angle to said conveying direction;

(3) driving means for rotating said roller, whereby an item engaged by said roller is turned into an orientation corresponding to said oblique angle; and

(4) lifting means for raising said roller into an operative position in which a part of said periphery projects above said carrier surface of said conveyor unit and for lowering said roller into an inoperative position in which said periphery is situated entirely below said carrier surface;

(c) sensor means for determining a length dimension of the items measured parallel to said conveying direction; and

(d) means for connecting said sensor means to said lifting means for moving said roller into said operative position upon sensing a predetermined minimum value for said length dimension.

5,664,662

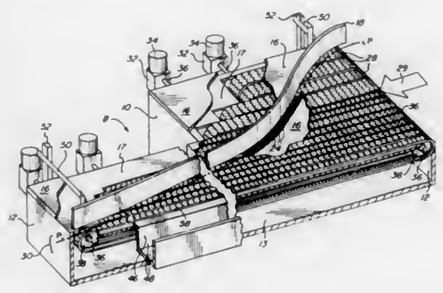
VACUUM COMBINER

Quentin Lynn Wilson, Big Island; Marty Nelson Witt, Bedford, and George Henry Dawson, III, Madison Heights, all of Va., assignors to Simplimatic Engineering Company, Lynchburg, Va.

Filed Sep. 28, 1995, Ser. No. 535,483

Int. Cl.[6] **B65G** *47/12*

U.S. Cl. 198—453 **19 Claims**



1. A conveyor for combining articles from a mass to a single file comprising:

a single file lane;

a vacuum chamber;

a wear surface forming at least a portion of one side of said vacuum chamber;

a plurality of conveying surfaces adjacent said single file lane, each said conveying surface supported by said wear surface and circulating at a speed increasing with proximity to said single file lane;

a guide mounted above and traversing said plurality of conveying surfaces for urging articles toward said single file lane; and

a plurality of holes in said wear surface in a path substantially parallel to said guide to aid in preventing articles from tipping upon striking said guide while permitting articles to freely move between ones of the plurality of conveying surfaces before reaching said guide.

a plurality of drive assemblies mounted on the frame each of which is connected to one of the plurality of floor slat groups; and

a plurality of wedges connected to the upper surfaces of at least some of the elongated floor slats each of which has a generally vertical transverse material pushing surface having a height and a width and wherein the generally vertical transverse pushing surface faces the discharge opening, the width of the generally vertical transverse pushing surface is not substantially larger than 80% of the width of the elongated floor slat to which the wedge is attached and an upwardly facing inclined surface having a length that is not substantially less than three times the height of the generally vertical transverse material pushing surface.

5,664,663

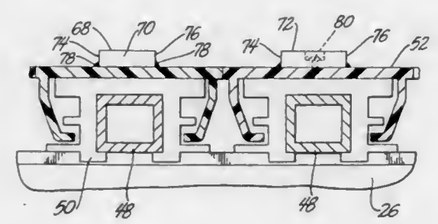
RECIPROCATING FLOOR CONVEYOR

Arthur L. Wilkens, 312 N. Walnut, Stockton, Kans. 67669

Filed Jun. 25, 1996, Ser. No. 672,368

Int. Cl.[6] **B65G** *25/00*

U.S. Cl. 198—750.2 **18 Claims**



1. A reciprocating floor conveyor mounted in a vehicle cargo container comprising a frame, a pair of side walls mounted on the frame, an end wall mounted on the frame and a discharge opening on an end of the frame opposite the end wall;

a plurality of elongated floor slats, each having an upper surface, mounted on the frame for sliding movement parallel to each other and divided in to a plurality of floor slat groups;

5,664,664

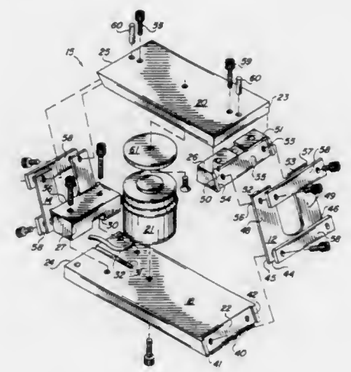
MAGNETIC VIBRATOR SUB-ASSEMBLY FOR VIBRATORY FEED DEVICES

Jefferson J. Gaines, Tucson, Ariz., assignor to U.S. Vibra, Inc., Tucson, Ariz.

Filed Dec. 28, 1994, Ser. No. 365,342

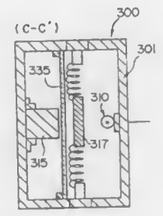
Int. Cl.[6] **B65G** *27/24*

U.S. Cl. 198—769 **9 Claims**



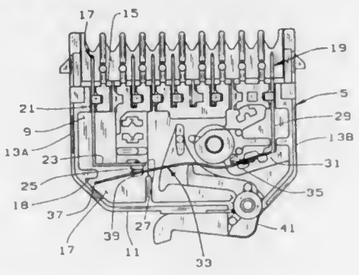
1. A vibratory feed device for linear delivery of small component parts comprising: a lower member having an upper surface, a vibratory electromagnetic coil assembly mounted upon said upper surface of said lower member; an upper member being disposed in spaced, generally parallel relationship above said lower member and said coil assembly, said upper member being adapted to receive and support a plurality of small component parts thereon; one or more flat spring means operatively interposed between and attached to said lower member and said upper member to support said upper member, each said flat spring means having a pair of opposing lateral edges, a lower end with a bottom edge, and one or more arms integrally connected to said lower end wherein each said arm has an upper end with a top edge such that each said arm is attached at said upper end thereof to said upper member and wherein said lower end of said flat spring means is attached to said lower member; and power means operatively associated with said vibratory electromagnetic coil assembly and selectively actuatable in coaction with said flat spring means to impart linear forward-only motion to said small component parts when disposed upon said upper member.

5,664,665
SHOCK SENSOR
Tatsuo Kobayashi; Kiyotaka Nakamura; Hisaharu Matsueda; Kayoko Makiki; Isamu Hamazaki, and Kazuya Watanabe, all of Tokyo, Japan, assignors to Oki Electric Industry Co. Ltd., Japan
Continuation of Ser. No. 193,098, Jun. 7, 1994. This application Mar. 19, 1996, Ser. No. 617,576
Claims priority, application Japan, Jun. 12, 1992, 4-179007; Jul. 21, 1992, 4-216496; Oct. 16, 1992, 4-304562
Int. Cl.[6] H01H *35/14*
U.S. Cl. 200—61.45 M **11 Claims**



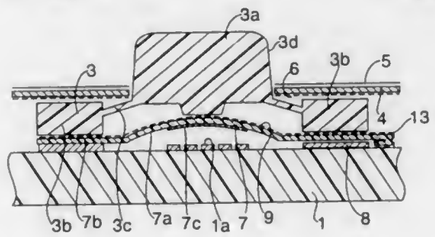
1. A shock sensor having:
a reed switch which is fixed inside a main casing and has a reed contact part which is switchable from a first state to a second state under the influence of magnetism;
a magnet which is fixed inside said main casing with a specified distance from said reed switch;
a shield member which has an area as large as sufficient to prevent magnetism from said magnet from affecting said reed contact part when said shield member is arranged at a regular position; and
a plurality of resilient members which are connected between an end of said shield member and the main casing which keep said shield member between said reed contact part and said magnet, and which keep said reed contact part in said first state in a normal state and which change said reed contact part over to said second state when a shock is applied to said shock sensor,
wherein said plurality of resilient members are springs.

5,664,666
ELECTRICAL SWITCH WHICH PREVENTS TACK WELDING
John J. Filla, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 9, 1993, Ser. No. 149,294
Int. Cl.[6] H01H *1/26*
U.S. Cl. 200—246 **25 Claims**



1. An electrical switch assembly comprising:
a body defining a chamber;
a first terminal received in said chamber and having a first contact at an end thereof;
a second terminal having a spring arm at an end thereof, said spring arm extending towards said first terminal and having a second contact at a point remote from said second terminal, said spring arm being movable between a first position wherein said second contact is spaced from said first contact and a second position wherein said second contact is in contact with said first contact; and
spring operated separating means for breaking a tack weld between said first and second contacts, said spring operated separating means primarily including an extension on said spring arm, the extension being integral with the spring arm.

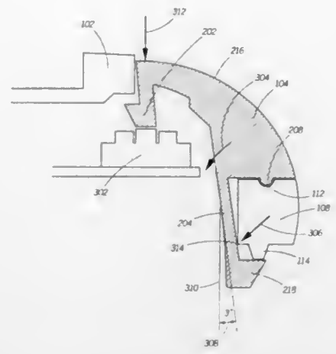
5,664,667
PUSHBUTTON SWITCH
Yoshio Kenmochi, Ichihara, Japan, assignor to Sunarrow Co., Ltd., Japan
Division of Ser. No. 567,223, Dec. 5, 1995. This application Jul. 17, 1996, Ser. No. 683,771
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—314 **2 Claims**



1. A pushbutton switch, comprising:
a printed-wiring board equipped with a light source;
a keypad which is arranged above the printed-wiring board, the keypad including a non-working portion having an upper surface, an underside, and a working portion wherein both the working and non-working portions are made of translucent silicone rubber, in which said upper surface of the non-working portion, except for the working portion of the key-pad, is covered with an opaque film, with an underside surface of said opaque film being covered by an insulating resin film which forms an electrically conductive light-reflecting layer, and in which the electrically conductive light-reflecting layer is grounded by being connected to an earth portion; and
a plastic dome sheet arranged between the printed-wiring board and the keypad, the plastic dome sheet having a dome portion which rises in a dome shape at a position corresponding to the working portion;
in which an electrically conductive light-reflecting layer is formed over the entire upper surface of the dome sheet, with the electrically conductive light-reflecting layer being grounded by being connected to an earth portion.

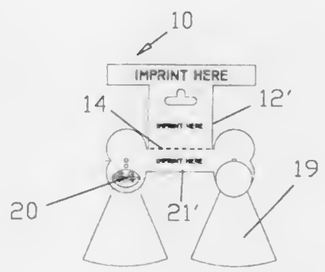
5,664,668
TACTILE BUTTON WITH SNAPPED ON PIVOT AND DEFLECTING MECHANISM
Abidin bin Mohanmed Yahya Zainal; Chong Heng Choy; Tuck Soon Loke, and Chee Thiam Tai, all of Singapore, Singapore, assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 306,054, Sep. 14, 1994, abandoned. This application Aug. 30, 1996, Ser. No. 707,040
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—332 **8 Claims**

1. A button assembly for activating a tact switch, the button assembly comprising:
a housing element having a shoulder slot integrally disposed with an upper ledge and a shoulder ledge having an underside flange integrally disposed thereat; and



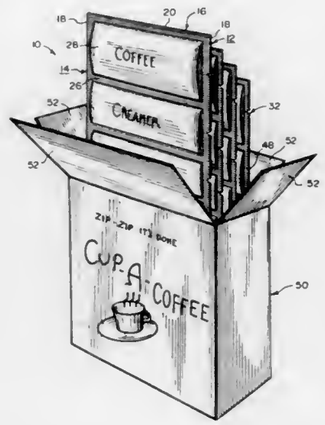
an arcuately shaped shoulder member, pivotally mounted within the shoulder slot, traversing substantially through a right angle from a first end to a second end distal therefrom, the arcuately shaped shoulder member includes an inner surface having:
an actuating stub disposed at the first end below the upper ledge for activating the tact switch; and
a second latch disposed at the second end for latching onto the underside flange and deflecting off the shoulder ledge.

5,664,669
JEWELRY HANGER AND ORGANIZER
Dorothy VanFleet, 50 Berkely St. E181, Satellite Beach, Fla. 32937
Continuation-in-part of Ser. No. 504,517, Jul. 20, 1995, abandoned. This application Mar. 8, 1996, Ser. No. 613,227
Int. Cl.[6] A45C *11/04*
U.S. Cl. 206—6.1 **15 Claims**



1. A pair of earrings and a compact jewelry organizer for mounting a pair of earrings and retaining a pair of post earrings for pierced ears, as well as clip earrings, together, in pairs, said jewelry organizer consisting of:
a flexible plastic sheet, said plastic sheet having two round end portions, said round end portions having their diameters adapted to accept and retain said earrings and
a straight central portion connecting said round end portions, said straight central portion having the width adapted to accept and retain said earrings, and,
each of said round end portions having at least one earring mounting hole formed therein,
each of said earring mounting holes being adapted to accept one of a pair of earrings, said mounting holes being spaced by the length of said straight central portion at a distance required by the size of the earrings to be mounted.

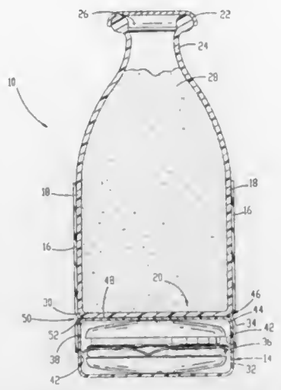
5,664,670
POWDERED DRINK MULTIPLE COMPARTMENT FLEXIBLE PACKET
Robert Cozzie, 20 N. Ocean Ave., Ronkonkoma, N.Y. 11779
Filed Mar. 18, 1996, Ser. No. 617,080
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—216 **1 Claim**



1. A combination of powdered drink multiple compartment flexible packets, each packet for producing a cup of coffee made from a plurality of components contained within said packet when mixed in a liquid, comprising:
a) a rear rectangular panel formed of a sheet of flexible material;
b) a front rectangular panel formed of a sheet of flexible material;
c) means for connecting side edges, top edges and bottom edges of said rear rectangular panel to said front rectangular panel; and
d) means for connecting intermediate spaced apart strip of said rectangular panel to said rear rectangular panel in which the strips are in parallel relationships to the top edges and the bottom edges thereof forming a plurality of compartments therein;
e) particulate ingredients in each of said compartments including a serving of coffee powder carried in the first compartment, a serving of creamer powder in a second compartment, a serving of sugar in a third compartment, a second serving of sugar in a fourth compartment, a serving of sugar substitute in a fifth compartment, and a second serving of sugar substitute in a sixth compartment;
f) a plurality of said packets assembled in, and in combination with, a box having a plurality of top flaps which can be opened, whereby said box holds a plurality of said packets which can be removed one at a time to be used to make a cup of coffee; and
g) means comprising a notch formed in the side edge and centrally located to one side of each compartment for tearing the compartment and releasing the ingredients from selected compartments of a packet to permit the production of a cup of coffee according to the tastes of the user.

5,664,671
COMBINATION CONTAINER
Greydon Wesley Nedblake, Jr., 9800 N. Revere Ave., Kansas City, Mo. 64154
Filed Apr. 25, 1996, Ser. No. 638,935
Int. Cl.[6] B65D *77/00*
U.S. Cl. 206—217 **5 Claims**

1. A unitary package comprising:



a first container adapted for holding a beverage and having a sidewall, an integral base transverse to said sidewall, and structure defining an openable outlet remote from said base for discharging and drinking of said beverage directly from the outlet;

a second container adapted to hold an edible solid and having separable upper and lower sections presenting a juncture therebetween, said upper section having a top wall and a depending sidewall, said lower section having a bottom wall and an upstanding sidewall, said upper and lower sections cooperatively defining an enclosed region for receiving said edible solid,

said first and second containers being oriented in a superposed relationship with the base of said first container adjacent the top wall of the upper section and defining a joint therebetween, said base and upper section top wall cooperatively defining a continuous, concave, circumferentially extending recess at said joint; and

coupling means detachably interconnecting said first and second containers and including a band of heat-shrunk material surrounding portions of the first and second containers, spanning said joint therebetween, and having a portion thereof extending into said recess,

said material band including an upper segment above said recess and snugly engaging said first container sidewall, a lower segment below said recess and snugly engaging said upper section sidewall and said lower section sidewall and spanning said juncture therebetween, and a line of weakness at said portion of the band extending into said recess,

said first and second containers being manually separable from one another by relative twisting motion between the first and second containers operable to separate said upper and lower material band segments at said line of weakness.

5,664,672

CLOSURE MECHANISM FOR A CONTAINER THAT HOLDS TENNIS BALLS

Gene Niksich, Alpharetta, Ga., assignor to Unique Sports Products, Inc., Alpharetta, Ga.

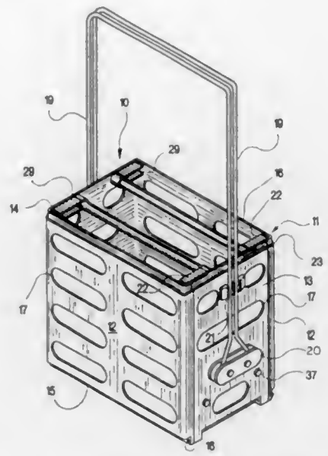
Filed Jun. 3, 1996, Ser. No. 656,905

Int. Cl.[6] B65D *85/00*

U.S. Cl. 206—315.9 **5 Claims**

1. A closure mechanism for a tennis ball storage container of rectangular box shape defined by paired side panels and opposed first and second end panels, said container further having a bottom extremity that admits balls and a top extremity which permits removal of balls, said closure mechanism comprising:

a) a first pair of left and right straight guide tracks disposed in linear alignment in said first end panel adjacent the top extremity thereof, each track terminating in a squeeze-activated holding pocket directed toward the interior of the container in facing relationship and separated by a distance slightly less than the diameter of a tennis ball,



b) a second pair of straight left and right guide tracks disposed in linear alignment in said second end panel adjacent the top extremity thereof and in coplanar relationship with said first pair of guide tracks, each guide track terminating in a squeeze-activated holding pocket directed toward the interior of the container in facing relationship and separated by a distance slightly less than the diameter of a tennis ball,

c) a left barrier rod of straight construction terminating in ends that are slidably retained by the left guide tracks of said first and second pairs of guide tracks and configured to snap-fit into the respective holding pockets of said guide tracks, and

d) a right barrier rod of straight construction terminating in ends that are slidably retained by the right guide tracks of said first and second pairs of guide tracks and configured to snap-fit into the respective holding pockets of said guide tracks, whereby

e) when said left and right barrier rods are manipulated to their position of closest approach, the rods become secured by engagement with said holding pockets, and in said closest approach position said rods are parallel and spaced apart by a distance which prevents inadvertent passage of a tennis ball, and

f) when said barrier rods are moved apart by sliding movement away from said holding pockets, their spacing is such as to permit easy removal of tennis balls from the container.

5,664,673

STORAGE BAND FOR A VIDEO MONITOR

Irvin Gene Perry, 521 Grand Ave., Colton, Calif. 92324

Filed Jul. 1, 1996, Ser. No. 675,249

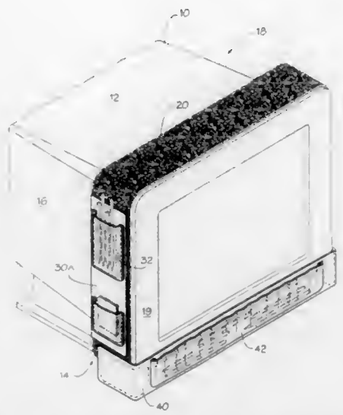
Int. Cl.[6] B65D *85/28*

U.S. Cl. 206—371 **4 Claims**

4. A combination video monitor and storage device therefore, the combination comprising:

a video monitor having a top, left side, right side and front outside surfaces;

a monitor belt providing, on opposing sides thereof, a first and a second monitor belt surfaces, the first of the monitor belt surfaces providing a generally loose knap, the knap covering the entire first surface of the monitor belt, the second of the surfaces providing, at one end of the monitor belt, a monitor belt surface attachment means adapted for engaging the knap of the first of the monitor belt surfaces, the second of the monitor belt surfaces laying in contact with the top, left side, right side and bottom outside surfaces of a video monitor, the monitor belt pulled tightly around the monitor and held thereon by engaging the monitor belt surface attachment means with the knap of the first of the monitor belt surfaces;



a pair of side plates, each of the side plates providing side plate pocket means on an outfacing surface of the side plate, and a side plate surface attachment means on an in-facing surface of the side plate, each one of the side plate surface attachment means engaged with the knap of the monitor belt to hold the side plate generally adjacent to one of the side surfaces of the monitor.

5,664,674

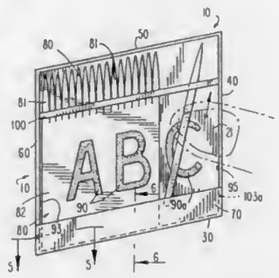
TOOTHPICK HOLDER AND DISPENSER

Edward H. Lynch, Jr., 121 91st St., Rockaway Park, N.Y. 11693

Filed Jun. 17, 1996, Ser. No. 664,684

Int. Cl.[6] B65D *85/24*

U.S. Cl. 206—382 **16 Claims**



1. A lightweight portable holder of connected detachable flat triangular toothpicks that have a smooth upper surface displaying a logo comprising:

a flat box-like rhombus shaped body defined by a flexible rear surface, four walls, a flat cover member covering a lower portion of toothpicks positioned inside the holder and a thin safety strap parallel to and spaced apart from said flat cover member at an upper portion of the holder,

the rear surface having ribs, between which toothpicks lodge to hold the toothpicks stationary on an inside of the rear surface in an area of the rear surface covered by the flat cover member, said flexible rear surface having a logo on its inside and having alignment markers adjacent opposite side walls projecting perpendicularly from said flexible rear surface for alignment of the logo on the toothpicks with the logo on the flexible rear surface, said flexible rear surface also having an upper slit along a portion of two adjoining walls and one of the adjoining walls having a rectangular notch whose width is smaller than that of any toothpick parallel to said upper slit along an upper wall for removal of detached toothpicks.

9. The combination of a lightweight portable holder together with connected detachable flat triangular toothpicks that is capable of displaying a logo comprising:

connected detachable flat shaped triangular toothpicks having spaces at one end of a smooth upper surface for easy detachment, said smooth upper surface displaying a logo aligned with an identical logo on the inside of a flexible rear surface of a holder, and having a lower surface with a lengthwise triangular shape that fits into grooves adjacent ribs in the holder,

a flat box-like rhombus shaped body defined by a flexible rear surface, four walls, a flat cover member covering a lower portion of toothpicks positioned inside the holder and a thin safety strap parallel to and spaced apart from said flat cover member at an upper portion of the holder,

the rear surface having ribs on its inside in an area of the rear surface covered by the flat cover member to hold the toothpicks stationary and having alignment markers adjacent opposite side walls projecting perpendicularly from said rear surface for alignment of detachable toothpicks, said flexible rear surface also having an upper slit along a portion of two adjoining walls and one of the adjoining walls having a rectangular notch whose width is smaller than that of any toothpick parallel to said upper slit along an upper wall for removal of detached toothpicks.

5,664,675

WRAPPING MATERIAL HAVING A COLD SEAL ADHESIVE FOR WRAPPING FLORAL GROUPINGS AND METHODS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee

Continuation-in-part of Ser. No. 385,604, Feb. 9, 1995, Pat. No. 5,560,181, Ser. No. 370,334, Jan. 9, 1995, Pat. No. 5,537,800, and Ser. No. 253,513, Jun. 3, 1994, said Ser. No. 385,604 is a continuation of Ser. No. 313,675, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 370,334 is a continuation of Ser. No. 253,648, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 253,513 is a continuation of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 470,516

Int. Cl.[6] B65D *85/52;* **A01G** *9/02;* **B65B** *11/56*

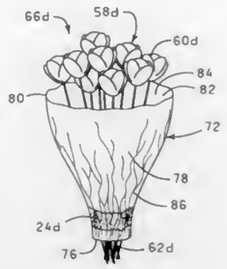
U.S. Cl. 206—423 **13 Claims**

1. A plant package, comprising:

a floral grouping comprising a bloom portion and a stem portion;

a sheet of material comprising a sleeve having a first end, a second end, and an outer peripheral surface, an opening intersecting at least the first end forming a retaining space, the sleeve further comprising a bonding material comprising a cold seal adhesive, said cold seal adhesive bonding only to itself, said cold seal adhesive being substantially nonreleasable,

wherein a floral grouping is inserted into the opening in the sleeve, said floral grouping being retained in the retaining space, said sleeve being crimped, causing overlapping of at least one portion of the sleeve having bonding material thereon with at least one other portion of the sleeve having bonding material thereon, the bonding material on each over-



lapped portion adjacent to and in bonding engagement with the bonding material on at least one other overlapped portion to form bonded portions, said bonded portions being formed only when one bonding material contacts and connects in a bonding engagement with at least one other bonding material said bonded portions forming a wrapper about the floral grouping, the floral grouping being substantially surrounded and encompassed by the wrapper,

wherein the bonded portions of the wrapper are substantially nonreleasable, and

wherein the wrapper is releasable from the floral grouping only by tearing the wrapper away from the floral grouping.

5. A method of wrapping a floral grouping, comprising:

providing a floral grouping having a bloom portion and a stem portion;

providing a sleeve having an a first end, a second end, and an outer peripheral surface, an opening intersecting at least the first end forming a retaining space, the sleeve further comprising a bonding material comprising a cold seal adhesive, said cold seal adhesive bonding only to itself, said cold seal adhesive being substantially nonreleasable;

disposing at least a portion of the floral grouping through the opening in the first end of the sleeve and into the retaining space;

crimping at least a portion of the sleeve about the floral grouping, thereby causing at least one portion of the sleeve having bonding material thereon to overlap at least one other portion of the sleeve having bonding material thereon, said crimping connecting the bonding material to form bonded portions by contacting and connecting the bonding material on one portion of the sleeve to the bonding material on at least one other portion of the sleeve, thereby creating a bonding engagement and bonded portions, said bonded portions being formed only when one bonding material contacts and connects in a bonding engagement with at least one other bonding material, said bonded portions forming a wrapper about the floral grouping, the floral grouping being substantially surrounded and encompassed by the wrapper; and

tearing the wrapper away from the floral grouping thereby releasing the floral grouping.

5,664,676

BOOK DISPLAY BOX

Michael Levins, 317 Greens Farms Rd., Westport, Conn. 06880

Filed Oct. 1, 1996, Ser. No. 725,339

Int. Cl.[6] A45F *5/12*

U.S. Cl. 206—424 **10 Claims**

1. A display book box comprising:

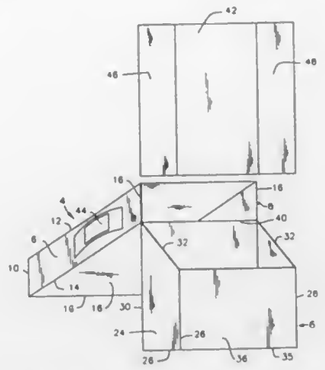
(a) an upper section comprising:

(i) a pair of opposing side walls each said side wall having a horizontally planar top end, a front end of length x, a back end of length y, wherein x>y, and a bottom end extending angularly downward from the bottom of the back end to the bottom of the front end;

(ii) a back wall coupled to the back ends of said side walls;

(iii) a front wall coupled to the front ends of said side walls; and

(iv) a top wall coupled to the top ends of the side walls, the back wall and the front wall;



(b) a lower section comprising:

(i) a pair of opposing side walls each said side wall having a horizontally planar bottom end, a front end of length p, a back end of length q, wherein q>p, and a top end extending angularly downward from the top of the back end to the top of the front end;

(ii) a back wall coupled to the back ends of said side walls;

(iii) a front wall coupled to the front ends of said side walls; and

(iv) a bottom wall coupled to the bottom ends of the side walls, the back wall and the front wall;

(c) an insert having a length l and a width w, the width w being sufficient to slidably fit within said bottom section, and said length l being greater than p and less than p+x; and

wherein said upper section and said lower section are hingeably connected along the bottom edge of the back wall of said upper section and the upper edge of the back wall of said lower section, and

whereby when the box is opened along said hinge a book can be supported and displayed by said bottom section and said insert.

5,664,677

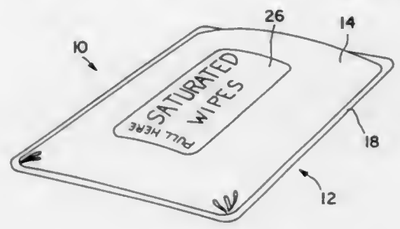
PRESATURATED WIPER ASSEMBLY

Kenneth J. O'Connor, Spartanburg, S.C., assignor to Contec, Inc. of Spartanburg, Spartanburg, S.C.

Continuation of Ser. No. 486,308, Jun. 7, 1995, abandoned. This application Nov. 26, 1996, Ser. No. 756,705

Int. Cl.[6] B65D *81/24*

U.S. Cl. 206—494 **20 Claims**



1. A presaturated wiper assembly for use in cleansing a controlled environment, said assembly comprising:

a generally flat container having a top portion and a bottom portion each comprising a polymeric sheet, said top portion disposed on an opposite side from said bottom portion of a plane substantially including a circumference of said container at which said top portion meets said bottom portion to define an interior cavity between said top portion and said bottom portion;

said top portion further defining a container opening for access to said interior cavity;

a panel having a pivot portion secured to said top portion and a foldable closure portion extending therefrom, said closure portion removably engaging said top portion to permit selective closure of said container opening;

a plurality of wiper cloths located in said interior cavity and forming a stack, said stack deforming said top portion and said bottom portion respectively away from said plane;

cleaning solution located in said interior cavity to substantially saturate said plurality of wiper cloths; and

one of said bottom portion and said top portion having a first rigidity greater than a second rigidity of the other of said top portion and said bottom portion, said first rigidity being sufficient to substantially prevent bending of said container during removal of said wiper cloths and closure of said container opening.

5,664,678

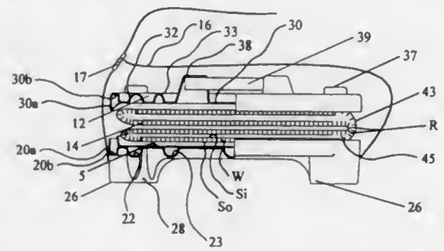
FOLDABLE RETURNABLE SHIPPING CONTAINER

Allan Budowski, 6816 Bilberry Dr., Gloucester Ontario, Canada, K1C 3R4, and Jeff Lambert, 338 Nagel Avenue, Cumberland, Ontario, Canada, K1E 1R6

Filed Jan. 11, 1996, Ser. No. 585,348

Int. Cl.[6] B65D *19/00*

U.S. Cl. 206—600 **13 Claims**



1. A returnable container having an assembled mode for containing products and a disassembled mode for return shipping, comprising:

a molded base having a container bottom plate surrounded by an upstanding flange;

a molded top closure having a container top plate surrounded by a depending flange;

a sleeve part comprising:

a plurality of sidewalls which, when the container is in the assembled mode, surround a space between the molded base and the molded top closure, said sidewalls having upper and lower margins for being received within said flanges, said plurality of sidewalls each being formed from plastic material having an outer sheet and an inner sheet held in spaced relation by a plurality of vertically oriented webs, and

hinge portions each connecting pairs of said plurality of sidewalls, each hinge portion comprising a substantially single layer flexible panel portion including substantial continuations of at least the outer sheets of the plurality of sidewalls adjacent to said hinge portion, said hinge portions for forming rounded corners of the container when the container is in the assembled mode and said hinge portions, when the container is in the disassembled mode, for forming bends at 180° from the flat condition between adjacent sections, of which one bend joins two of said plurality of sidewalls when folded with their outer surfaces juxtaposed, wherein said base and top closure flanges are arranged to provide a hollow space between said top and bottom plates when the container is in the disassembled mode, said hollow space for accommodating the sleeve part when folded and, wherein the sleeve is for folding substantially flat to occupy an area within the hollow space when the container is in the disassembled mode.

5,664,679

TRANSPORT CONTAINER FOR WAFER-SHAPED OBJECTS

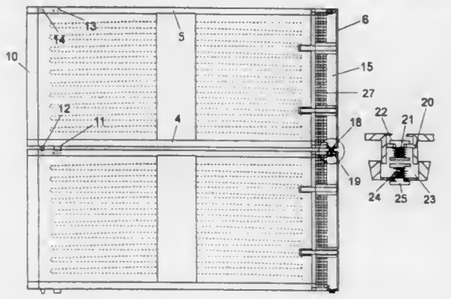
Heinz Schneider, and Peter Fabian, both of Jena, Germany, assignors to Jenoptik Aktiengesellschaft, Jena, Germany

Filed Jun. 13, 1996, Ser. No. 663,485

Claims priority, application Germany, Nov. 3, 1995, 195 40 963.9

Int. Cl.[6] B65D *85/30*

U.S. Cl. 206—711 **3 Claims**



1. In a transport container for wafer-shaped objects in which a container enclosure is made up of two lateral regions which are located opposite one another and have projections forming shelves for receiving objects, a base region, a cover region, and a rear wall region, wherein an opening for removing and charging which is located opposite the rear wall region can be closed by a container door and removal and charging are effected in a plane parallel to the surface of the objects, the improvement comprising:

at least parts of the rear wall region being constructed as a plenum chamber which has a closable air inlet and a closable air outlet in said base region and cover region;

a filter forming a connection from the cover region to the interior of the container; and

said air inlet being constructed to complement a connection of a gas reservoir and an air outlet of an additional transport container for coupling.

5,664,680

POCKETS FOR MICROCHIP CARRIERS

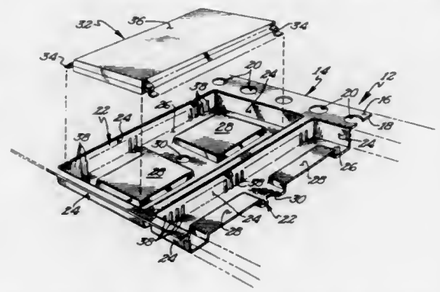
Robert N. Hamlin, Stillwater, Minn., assignor to CariTech Inc., Hudson, Wis.

Filed Apr. 9, 1996, Ser. No. 631,665

Int. Cl.[6] B65D *85/38*

U.S. Cl. 206—714 **19 Claims**

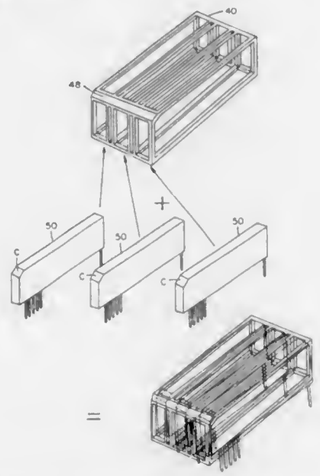
1. Carrier for electronic circuit components having a plurality of



leads extending outwardly from a body, with the leads terminating in free ends and being spaced from each other, comprising, in combination: a pocket for receiving the electronic circuit component and including a side wall and a bottom, with the side wall

having a shape corresponding to that of the free ends of the leads of the electronic circuit component received within the pocket; and means formed on the side wall for abutting with the free ends of the leads of the electronic circuit component within the pocket for preventing engagement of the leads with the side wall and for optically dispersing major portions of the reflection of the leads.

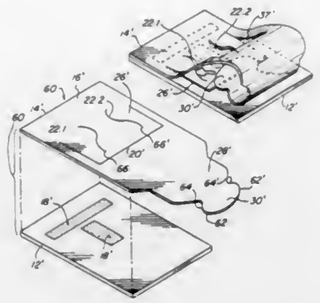
5,664,681
MULTIPLE DEVICE CARRIER
Nour Eddine Derouiche, Raleigh, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.
Filed Aug. 24, 1995, Ser. No. 518,939
Int. Cl.[6] B65D *85/30*
U.S. Cl. 206—722 **12 Claims**



1. An electronic package assembly comprising:
a plurality of top longitudinal strips extending in parallel across a top surface of the assembly between opposite top transverse ribs thereof,
a plurality of bottom longitudinal strips extending in parallel across a bottom surface of the assembly between opposite bottom transverse ribs thereof,
a plurality of side strips extending across side surfaces of the structure between said top and bottom longitudinal strips,
one of the top traverse ribs defining a holding strip inclined with respect to said top and side surfaces between said top longitudinal strips and said side strips, and
a plurality of electronic packages insertable from said bottom surface of the assembly into openings defined by distances between said bottom longitudinal strips, the electronic packages having leads projecting through said openings beyond said bottom longitudinal strips, and having oblique cuts positioned along said holding strip.

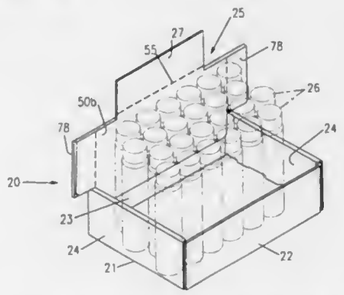
5,664,682
DISPLAY DEVICE
Mustafa Eren, Istanbul, Turkey, assignor to Timur Schindel, Turkey
Continuation-in-part of Ser. No. 568,250, Dec. 6, 1995, Pat. No. 5,560,492. This application Sep. 30, 1996, Ser. No. 724,496
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—756 **9 Claims**

1. A display device for removable articles comprising:
a generally flat strip of flexible and bendable sheet material having an upper portion containing a first cut sized and shaped to define a support flap hinged to the upper portion, said strip having a lower portion;



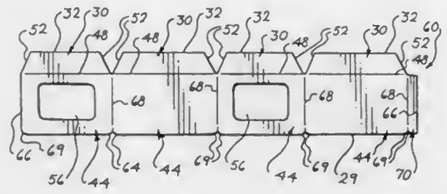
said support flap being provided with at least one second cut; said lower portion of said strip being shaped to form a lower tab shaped and sized to at least partially fit through the second cut and be retained by the support flap when the support flap is hinged away from said strip to leave a receptacle opening and the lower portion of the strip is bent around to at least partially overlap said hinged support flap to interengage with the second cut and transform the lower portion of the strip into a receptacle of said display device having said opening through which an article can be inserted.

5,664,683
PACKAGING SYSTEM
Harvey Brody, Costa Mesa, Calif., assignor to Norvey, Inc., Santa Ana, Calif.
Filed Mar. 13, 1996, Ser. No. 614,630
Int. Cl.[6] B65D *25/20*
U.S. Cl. 206—768 **2 Claims**



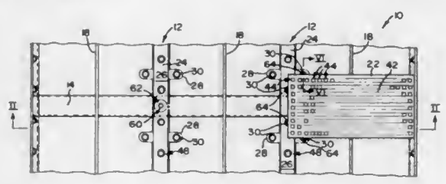
1. An improved carton for shipping and displaying articles of merchandise, of the type comprising a receptacle portion defined by a bottom, a front wall, a rear wall, and a pair of opposed side walls, wherein the improvement comprises:
a display panel, extending vertically from the rear wall, and comprising an inner display panel section and an outer display panel section joined together along a display panel fold line, whereby the inner display panel section and the outer display panel section are foldable together along the display panel fold line to form the display panel; and
an extension section joined to the display panel and having an extension section fold line adjacent and parallel to its juncture with the display panel, whereby the extension section is foldable along the extension section fold line between a first position in which it extends substantially vertically from the display panel, and a second position in which it extends substantially horizontally to overly the receptacle portion, and wherein the extension section is separable from the outer display panel section and is joined to the inner display panel section only along a side that is adjacent and substantially parallel to the extension section fold line.

5,664,684
SHRINK WRAPPED PACKAGE AND METHOD FOR ITS PRODUCTION
Daniel Don Evert, Vernon Hills, Ill., assignor to H.J. Heinz Company, Pittsburgh, Pa.
Division of Ser. No. 220,238, Mar. 30, 1994, Pat. No. 5,472,092. This application Aug. 30, 1995, Ser. No. 521,216
Int. Cl.[6] B65D *25/00*
U.S. Cl. 206—769 **5 Claims**



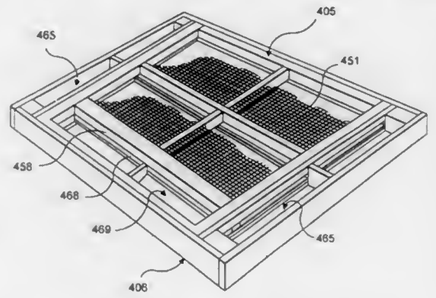
1. A blank for forming a sleeve for encircling a stack of articles to hold the articles in the stack and for reducing formation of wrinkles in the shrink-wrapping of the stacked articles, the blank comprising:
an elongated sheet of material having an upper end and a lower end and a pair of side ends:
a plurality of vertical score lines in said elongated sheet extending from said upper end to said lower end to define a plurality of panels separated by vertical score lines intermediate of the pair of side ends;
one and only one horizontal score line extending parallel to said lower end and spaced a predetermined distance from said lower end to define a pivotable portion adjacent the lower end of the sheet;
a plurality of slits extending from said lower end to said horizontal score line to divide said pivotable portion into a plurality of separate flaps, each pivotably connected to the lower end of a respective panel, said blank having pivotable flaps only at its lower end; and
the blank being formable into a rectangular sleeve upon joining together of the panels adjacent said opposite ends, the sleeve so formed having a plurality of panels with pivotable flaps on only one end thereof.

5,664,685
SCREENING ARRANGEMENT
Peter Helmut Franz Freissle, Johannesburg, South Africa, assignor to Manfred Franz Axel Freissle, Johannesburg, South Africa
Filed Jun. 1, 1995, Ser. No. 458,576
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—399 **8 Claims**



1. A screen support frame component, said screen support frame component comprising a base having a planar surface, and a plurality of spacer elements on the base and projecting from the planar surface, each spacer element having a securing formation which is removably inter-engageable with a complementary securing formation on a screening panel, the spacing between the securing formations on the spacer elements being complementary to the spacing between complementary securing formations on a screening panel such that when a screening panel is secured to the screen support frame component by inter-engagement of the securing formations on the spacer elements with complementary securing formations on a screening panel, the underside of the screening panel is spaced from the planar surface of the base, in which the base is an elongate plate having a plurality of lugs spaced along the length of the base and projecting laterally on at least one side of the base and forming an extension of the planar surface of the base.

5,664,686
SIFTER FRAME FOR POWDER PARTICLE SIFTER
Yasunobu Hosogoshi; Toshio Maruo; Yasuo Sakata; Katsumasa Morita; Takefumi Ibori; Harumi Kubota, all of Tokyo; Toshio Douzono, Hyogo; Kanemitsu Nakagawa, Hyogo; Kunio Sugihara, Hyogo; Yukio Yoshizawa, Hyogo; Yoshiaki Aridome, Hyogo, and Shoji Yamanaka, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan
Division of Ser. No. 335,578, Nov. 7, 1994. This application Jun. 12, 1996, Ser. No. 662,065
Claims priority, application Japan, Oct. 11, 1994, 6-245505; Oct. 28, 1994, 6-265792
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—405 **6 Claims**



1. A sifter frame for a powder particle sifter comprising:
a pair of frame elements including an inner frame and an outer frame, the inner frame being formed to a rectangular four-sided shape by outer block frame members each having the same height and having a sifter net stretched over the upper surface of the inner region surrounded by the outer block frame members;
the outer frame being formed to a rectangular four-sided shape by outer block frame members each having the same height and including each of fine powder dropping ports opened in an upward/downward direction along both inner sides of a pair of the confronting sides of the outer block frame members, a rough change powder dropping port opened in an upward/downward direction along the inner side of one of the other pair of the confronting sides, and a rectangular fine powder receiving plate horizontally disposed at a position of intermediate height in the region surrounded by the three ports and the other of the other pair of the confronting sides wherein the space on the receiving plate enables fine powder on the receiving plate to be dropped into the fine powder dropping ports but being partitioned from the rough powder dropping port by a partition wall;
the inner frame being disposed to be fitted with the space on the receiving plate of the inner frame; and

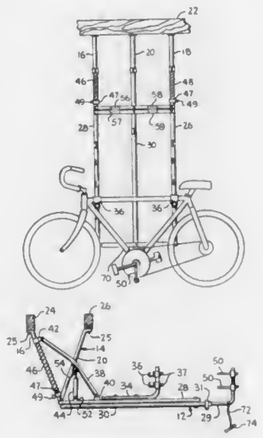
a closed annular downward seal surface being formed to the frame members of said inner frame which are in contact with the fitting portion of said outer frame on the same horizontal surface as well as a closed annular upward seal surface is formed to the frame members of the fitting portion of said outer frame which are in contact with said inner frame in confrontation with the closed annular downward seal surface of said inner frame to press said downward seal surface under pressure.

5,664,687

RETRACTABLE BICYCLE RACK AND METHOD OF USING SAME

Jeff Liatti, 13693 Berkley Ct., Fontana, Calif. 92336

Filed Oct. 24, 1994, Ser. No. 327,978
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—17 **15 Claims**



1. In a retractable bicycle rack having a frame with a fixed portion and a movable portion capable of holding at least one bicycle comprising:

a hinge having a first end attached to said movable portion of said frame and a second end attached to the fixed portion of said frame;

hinge arm means;

two compression springs being positioned around members of said fixed portion of said frame, said springs being compressed by spring retainers attached to said hinge arm means, said two compression springs being adjustable to change compression force;

attaching means to attach said fixed portion of said frame to two fixed members above said frame;

holding means to hold a bicycle on said movable portion of said frame; a linear damper to control the rate of movable frame movement from the vertical to horizontal position;

said movable portion of said frame being moved from a vertical position to receive at least one bicycle;

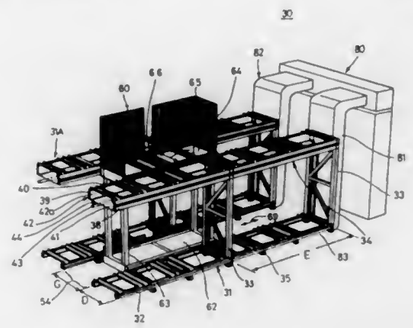
said movable portion of said frame being moved from a vertical position to a horizontal position by compression spring force.

5,664,688

VERTICAL INSTALLATION SYSTEM IN WHICH INFORMATION PROCESSING APPARATUSES ARE INSTALLED

Takeshi Kitanaka; Atsushi Masuda, and Yoshio Utsugi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 582,596, Jan. 3, 1996, abandoned, which is a continuation of Ser. No. 214,284, Mar. 17, 1994, abandoned. This application Oct. 11, 1996, Ser. No. 729,514
Claims priority, application Japan, Mar. 30, 1993, 5-072196
Int. Cl.[6] A47G *7/00*
U.S. Cl. 211—26 **8 Claims**



1. A vertical installation structure providing vertical installation for information processing apparatuses, said vertical installation structure comprising:

a plurality of placing stages, each of the plurality of placing stages providing installation for at least one of the information processing apparatuses, each of the plurality of placing stages extending in a first direction, at least one of said plurality of placing stages comprising crossbeams extending in a second direction perpendicular to the first direction, each of the crossbeams comprising a bottom plate and standing walls coupled to and vertical to the bottom plate, each of the crossbeams having at least one hole in the respective bottom plate in which is inserted a sleeve through which a passing bolt passes, said passing bolt able to secure at least one of the information processing apparatuses to one of the crossbeams;

supporting members, coupled to the plurality of placing stages, supporting said plurality of placing stages so that the plurality of placing stages are vertically arranged; and

fire detecting devices arranged along at least one of said plurality of placing stages.

5,664,689

SHELF ORGANIZER

John Raymond Mirlisena, Sr., 4615 Glenway Ave., Cincinnati, Ohio 45238

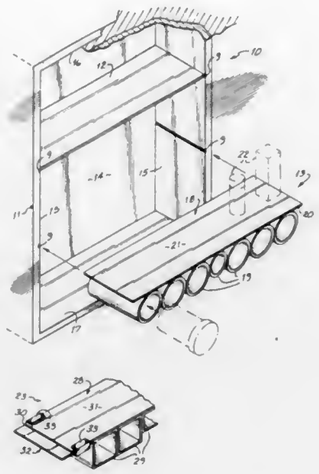
Filed May 2, 1995, Ser. No. 433,894
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—88.01 **6 Claims**

1. A cabinet comprising:

a housing having two generally planar side panels, a generally planar top panel secured to an upper extremity of each said side panel, and a generally planar bottom panel secured to a lower extremity of each said side panel;

at least one generally planar shelf supported in said housing, an upper surface of each said shelf being adapted to support items thereon;

at least one sleeve affixed to an underside of said at least one shelf such that an outer surface of said sleeve is affixed to said underside of said shelf, said sleeve being adapted for selected items to be inserted therein;



a connector affixing said at least one sleeve to said underside of said shelf; and

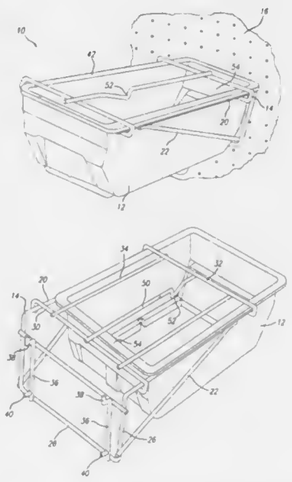
a shelf extension telescopingly mounted to said shelf to accommodate various sizes of the cabinet.

5,664,690

SLIDING DISPLAY DRAWER

James W. Friesen, 616 N. Hallock St., San Dimas, Calif. 91773

Filed Aug. 12, 1994, Ser. No. 289,690
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—88.01 **21 Claims**



1. A merchandise display device comprising: a vertical support;

a frame having

at least two connectors, said connectors attaching said frame to said support, and

at least two flange receiving areas; and

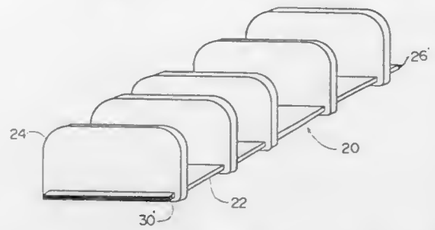
a receptacle having a flat flange, said flat flange being slidably received by said flange receiving areas.

5,664,691

MULTIPURPOSE MODULAR ORGANIZER

Jacqueline Boivin-Paradis, 2726, Rue Verrier, Sainte-Foy, Québec, Canada, G1V 1G6

Filed Aug. 4, 1995, Ser. No. 511,370
Claims priority, application Canada, Aug. 9, 1994, 2129800
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—184 **10 Claims**



1. A multipurpose modular storage unit for various articles of different shapes and configurations, comprising in combination:

a number of C-shaped dividers (**24**) comprising a web (**62**) and two wings (**64**), (**66**), said web having a central axis (**68**) passing centrally between said wings, said wings being provided with L-shaped hooks (**46**) protruding therefrom, each of said L-shaped hooks being oriented towards said central axis,

a support floor (**22**) having two first and second ends and two side edges each side edge having a heavy section, said C-shaped dividers being installed transversely of said support floor with said L-shaped hooks slidingly straddling said heavy section of said side edges,

said support floor comprises a length l, a first width w and a depth d, said length comprising a starting section starting at said first end, an end section ending at said second end, and a number of intermediary sections each intermediary sections comprising a trailing edge, a leading edge and said side edges, said leading edge of one intermediary section tightly inserted into said trailing edge of another intermediary section to reach profoundly a distance p into said corresponding trailing edge.

5,664,692

MOBILE CRANE HAVING A RELEASABLE COUPLING CONNECTING THE LOWER CARRIAGE WITH THE UPPER CARRIAGE

Herbert Sauter, Biberach, and Hans-Dieter Willim, Ulm/Unterweller, both of Germany, assignors to Liebherr-Werk Ehingen GmbH, Ehingen/Donau, Germany

Filed Mar. 20, 1996, Ser. No. 618,835
Claims priority, application Germany, Mar. 28, 1995, 295 05 262.7; May 23, 1995, 295 08 567.3
Int. Cl.[6] B66C *23/84*
U.S. Cl. 212—181 **12 Claims**

1. A mobile crane, comprising:

an upper carriage having external gear teeth;

a lower carriage releasably coupled to said upper carriage;

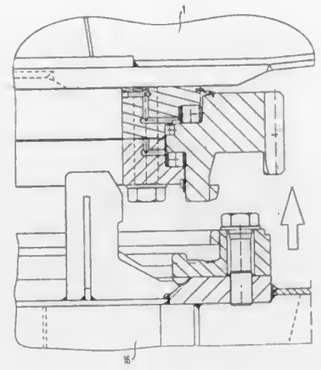
a drive pinion rotatably mounted to said upper carriage and having gear teeth meshing with said external gear teeth of said upper carriage;

a coupling having a holding ring connected to the lower carriage and an externally toothed ring rotatably mounted on said upper carriage which includes said external gear teeth;

said holding ring having radially inwardly extending ribs and said externally toothed ring having radially outwardly extending ribs, said ribs being equally spaced and having gaps therebetween and at least partially spanning a common annular space and being concentric to an axis of rotation of said upper carriage;

wherein said radially outwardly extending ribs of said external toothed ring are movable from an uncoupled position where said upper carriage and said lower carriage are uncoupled, a

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connected position where said upper and lower carriages are connected but not interlocked, and an interlocked position where said upper carriage and said lower carriage are coupled and interlocked by rotation of said externally toothed ring; and

wherein said drive pinion and said externally toothed ring on said upper carriage remain meshed when said external toothed ring is in said uncoupled position, said connected position and said interlocked position.

5,664,693

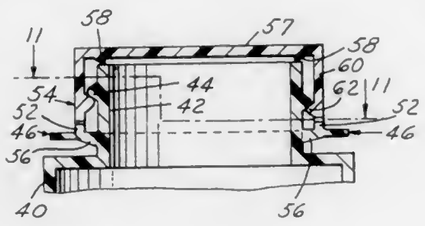
CHILD RESISTANT PACKAGE

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Continuation of Ser. No. 398,711, Mar. 6, 1995, abandoned, which is a division of Ser. No. 57,077, May 6, 1993, Pat. No. 5,394,999. This application May 28, 1996, Ser. No. 653,810

Int. Cl.[6] B65D *50/08*

U.S. Cl. 215—209 1 Claim



1. A child resistant packaging including

a plastic container having a finish having an external thread, and

a plastic closure having a base wall and a peripheral skirt having an internal thread thereon for engaging the thread on the container,

said container including two diametrically opposed integral flat tabs extending from the container,

said tabs in the unstressed condition lying in a radial plane intersecting the axis of the finish,

each tab having substantially uniform axial thickness throughout such that it is capable of flexing downwardly relative to said container defining a top surface and a lower surface,

each said flat tab including an enlarged circumferentially extending free end portion connected to the finish by a narrow portion, said enlarged circumferentially extending free end extends longer than said narrow portion in the circumferential direction, said tab including an axial projection which is rectangular in a circumferential direction on the top surface of each said enlarged free end tab,

a radial gusset extending downwardly from the lower surface of each said tab and extending to said finish of said container thereby modifying the flexibility of said tabby limiting the axial downward bending of said tab,

said closure having a base wall and a peripheral skirt,

said skirt having a free edge with two diametrically opposed symmetrical rectangular notches in said free edge,

the width of said axial projection on each said tab being greater than the width of said notch in a circumferential direction,

the width of the enlarged portion of each said tab being greater than the width of each said notch,

the axial height of said projections being less than the height of said notches,

said closure being positioned relative to the finish of the container such that as the closure is rotated to apply the closure to the container, the skirt of the closure engages the enlarged portions of said tabs and flexes said tabs downwardly until the notches are in overlying relation to said axial projections on said tabs such that the tabs flex upwardly into engagement with said notches and said enlarged portions of said tabs engage the skirt of the closure,

said tabs being manually deflectable downwardly to disengage said projections on said tabs from said notches on said skirt of the closure to permit manual rotation of the closure to unthread said closure from the container.

5,664,694

FOIL LINED SNAP-ON, SCREW-OFF CLOSURE AND CONTAINER NECK

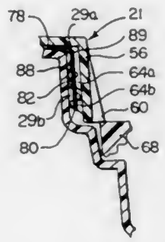
Steven H. Bletzer, Sunnyvale; Rawson L. Chenault, Newark; Daniel Luch, Morgan Hill, and Richard E. Repp, San Jose, all of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation of Ser. No. 274,911, Jul. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 951,653, Sep. 25, 1992, Pat. No. 5,415,306, which is a continuation-in-part of Ser. No. 830,133, Jan. 31, 1992, Pat. No. 5,267,661, which is a continuation-in-part of Ser. No. 772,945, Oct. 8, 1991, Pat. No. 5,213,224, which is a continuation-in-part of Ser. No. 565,638, Aug. 9, 1990, Pat. No. 5,190,178. This application Jun. 11, 1996, Ser. No. 664,101

The portion of the term of this patent subsequent to Sep. 25, 2012, has been disclaimed.

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—256 49 Claims



1. In combination, a container having a neck and a container closure, said neck being of the type having an upper opening, a terminal lip surrounding said opening, a neck stretch depending from said lip, said neck stretch having an exterior, and at least one first helical engagement means formed on said exterior of said neck stretch, said closure being of the type having a top, said top having an underside, an upper skirt depending from said top, said upper skirt having an interior, and at least one second helical engagement means formed on said interior of said upper skirt shaped to engage said first helical engagement means, the improvement in said combination comprising,

said neck having at least one vertically extending first recessed portion defined by at least one interruption in said first helical engagement means,

said closure having a vertically extending second recessed portion defined by at least one interruption in said second helical engagement means, said second recessed portion and said first recessed portion being substantially aligned to define a space between said interior of said upper skirt and said exterior of said neck stretch, and

a seal disc below said top of said closure covering said opening and substantially sealing with said lip, said seal disc having a tab extending therefrom for removal of said seal disc from said neck, said tab being positioned in said space defined by said first and second recessed portions when said closure is seated on said neck.

5,664,695

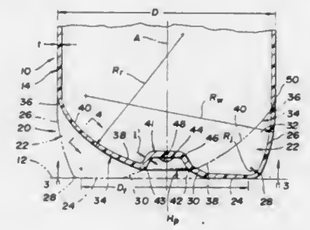
PLASTIC BLOW MOLDED FREESTANDING CONTAINER

William C. Young, Superior Township, Mich.; Richard C. Darr, Seville, Ohio, and Dale H. Behm, Arcadia, Calif., assignors to Plastipak Packaging, Inc., Plymouth, Mich.

Filed Jan. 6, 1995, Ser. No. 367,221

Int. Cl.[6] B65D *1/02;1/42;23/00*

U.S. Cl. 215—375 14 Claims



1. In a plastic blow molded container having a central axis A and including a cylindrical body portion that extends vertically about the central axis A with a diameter D, an upper end closure unitary with the upper extremity of the cylindrical body portion and including a dispensing spout, and a freestanding base structure unitary with the cylindrical body portion to close the lower extremity thereof, said freestanding base structure comprising:

a plurality of downwardly projecting hollow legs spaced circumferentially from each other with respect to the body portion; each leg having a lower flat foot coplanar with the feet of the other legs to cooperate therewith in supporting the container in an upright position; each leg also having an outer wall that extends from the outer extremity of the flat foot thereof to the cylindrical body portion; the flat foot and the outer wall of each leg having a curved junction; each leg also having a planar inner connecting portion that is inclined and extends upwardly and inwardly from the inner extremity of the flat foot thereof; and each leg also having a pair of side walls that cooperate with the flat foot, the outer wall and the inner planar connecting portion to close the leg;

a plurality of curved ribs spaced circumferentially from each other between the downwardly projecting legs and connecting the adjacent side walls of the legs; each rib having an outer upper end that has a circumferential width W_u and extends upwardly for connection to the cylindrical body portion of the container; each rib also having an inner lower end located between the inner connecting portions of the legs on opposite sides thereof and extending downwardly and inwardly toward the central axis A of the container; the inner lower end of each rib having a circumferential width W_l that is larger than the circumferential width W_u of the outer upper end of the rib; and each rib also having a curved intermediate portion that extends between the outer upper and inner lower ends thereof with an outwardly convex shape; and the curved intermediate portion of each rib having a circumferential width that tapers from the inner lower end thereof to the outer upper end thereof with an included angle in the range of about 1° to 8°; and

a generally round hub that is located along the central axis A with the legs and curved ribs extending radially therefrom; said hub having a diameter D_h in the range of about 0.15 to 0.25 of the diameter D of the cylindrical body portion; and the hub having connections to the upwardly extending planar inner connecting portions of the legs and the hub also having connections to the downwardly extending inner lower ends of the curved ribs.

5,664,696

INSTALLATION OF TANKS FOR STORING FUEL OR CHEMICAL PRODUCTS IN SERVICE STATIONS AND THE LIKE

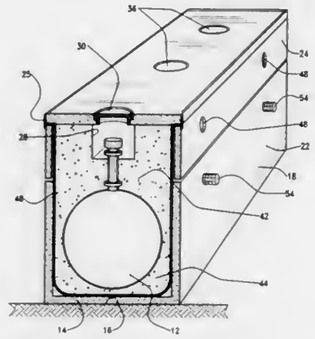
Jose Luis Martinez Canga, Diaz Velez 5110, (1405) Buenos Aires, Argentina

Filed Apr. 25, 1995, Ser. No. 429,275

Claims priority, application Argentina, May 6, 1994, 328.148

Int. Cl.[6] B65D *90/00*

U.S. Cl. 220—4.12 14 Claims



1. A battery of fluid reservoirs including at least one storage tank arranged inside a module comprising external means for structurally protecting the at least one storage tank and for chemically isolating the fluid contents thereof to protect the environment from eventual fluids leaking from one or more of said tanks; said external means comprising:

a plurality of containers aligned in said modules beside one another, each structurally designed to support the weight of a tank and to contain one of said tanks;

each container including a bottom wall and a lateral wall closing each said container below and around the sides thereof; said bottom wall and said lateral wall each having an inside surface substantially covered by a membrane of a material resistant to said fluid contents;

binder material filling a space between said tank and the bottom wall and the lateral wall of each said container up to a level which at least substantially covers said tank, wherein said tank is substantially spaced laterally and below said membrane by said binder material;

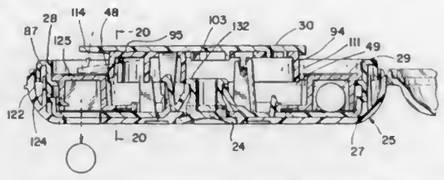
a lid sealing said tank and comprising a slab;

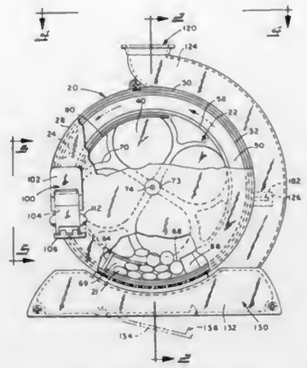
at least one orifice in said lid in fluid communication with a load inlet of the corresponding tank;

at least one opening in said lateral wall for passage of piping for discharging or dispensing said fluid, said opening connected by joining means to the tank; and

means for coupling means for lifting and lowering said container extending laterally from said lateral walls.

5,664,697
AUTOMATICALLY ADVANCING PILL REGIMEN DEVICE
Lawrence E. Lambelet, Jr., Flemington, N.J., and Thomas A. Frazier, Williamsport, Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.
Filed Oct. 31, 1995, Ser. No. 551,223
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—5 **24 Claims**



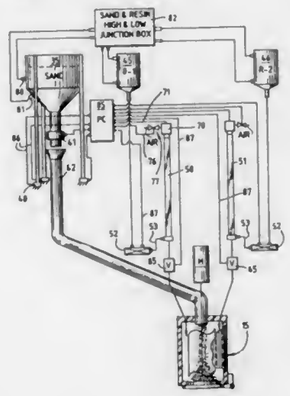


1. A self-actuating dispenser for a regimen of pills comprising:
(a) a base having a pill exit aperture;
(b) a pill container having pill cells for the containment of pills therein, the pill container movably attached to the base such that any pill cell can be aligned with the pill exit aperture, the pill cells having open bottoms for loading and unloading which are adjacent to the base when attached thereto; and
(c) means for cyclically indexing the pill container with respect to the base such that each pill cell in turn is brought into alignment with the pill exit aperture thereby dropping resident pills in a said pill cell from the dispenser; and
wherein the means for cyclically indexing comprises a set of vertical saw teeth attached to a circular wall of the pill container concentric with the pill cell array, the saw teeth and pill cells in one to one correspondence with respect to number and regularity, each tooth having an upward-facing ramp face with a pitch to horizontal corresponding to an angular throw equal to the pill cell spacing, and a plunger attached to the base such that the plunger pivots in a vertical plane while remaining torsionally rigid in a horizontal plane, the plunger having a sliding shoe with a downward-facing sliding face complementary to the ramp faces, the sliding shoe located sufficiently distant from the pivot axis for the application of leverage while extending to a position directly above the leading edge of one of the saw teeth such that a downward pivoting force applied to the plunger would bring the sliding face of the sliding shoe into contact with the ramp face of the proximate saw tooth thereby collapsing the inclines into a traversing slide resulting in a rotational thrust of the pill container, the plunger thereafter having means for recycling to the next saw tooth at the completion of the downward pivot stroke.

5,664,698
CONFECTION DISPENSER DEVICE
John Nottingham, Hunting Valley; John Spirk, Gates Mills; Paul Tamulewicz, Berea; Patrick Brown, Strongsville, and Douglas Gall, Westlake, all of Ohio, assignors to Nottingham-Spirk Design Associates, Inc., Cleveland, Ohio
Filed Oct. 19, 1995, Ser. No. 545,522
Int. Cl.[6] G07F *13/00*
U.S. Cl. 222—2 **17 Claims**

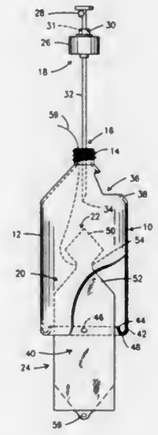
17. A method of dispensing a confection comprising the steps of:
a) providing a confection chamber adapted to hold a confection, said confection chamber having an outer peripheral edge;
b) providing a dispenser opening;
c) providing a confection carriage adapted to convey said confection from said confection chamber to said dispenser opening, said confection carriage including at least one confection well adapted to hold said confection in said confection carriage;
d) providing a confection barrier positioned substantially at said peripheral edge of said confection chamber adapted to prevent said confection from passing between said confection chamber and said confection carriage, said confection barrier at least partially encircling said confection chamber;
e) rotating said confection carriage about said peripheral edge of said confection chamber until said confection well in said confection barrier is at least substantially aligned with said confection slot to allow at least one of said confection in said confection chamber to pass into said confection well;
f) continuing said rotation of said confection carriage until said confection well is at least substantially aligned with said dispenser opening;
g) including the step of providing a confection slot in said confection barrier adapted to allow said confection to passing from said confection chamber to said confection carriage;
h) including the step of providing a drive mechanism and a drive actuator, said drive mechanism adapted to rotate said confection carriage about said confection chamber, said drive actuator adapted to activate said drive mechanism, including the step of depressing a switch on said drive actuator to selectively move said confection carriage about said confection chamber; and,
i) placing a coin in said drive actuator to move said confection carriage about said confection chamber.

5,664,699
CORE SAND PREPARATION APPARATUS
David O. Kennedy, Arlington Heights, and Anthony J. Beyer, Elgin, both of Ill., assignors to Simpson Technologies Corporation, Aurora, Ill.
Filed Apr. 4, 1995, Ser. No. 416,565
Int. Cl.[6] B67D *5/08;* **B05D** *3/00*
U.S. Cl. 222—56 **5 Claims**



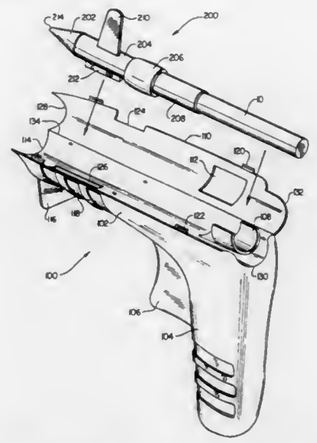
1. A binder system component metering apparatus for use in core sand mixing equipment comprising:
(a) an elongate hollow vessel of substantially greater length than width and having upper and lower end portions,
(b) means located in a lower end portion of the elongate vessel for introducing via hydrostatic pressure, liquid binder system components into the vessel so that as the vessel is filled the liquid presents an upper surface that rises vertically, and
(c) means located in the upper end portion of the elongate vessel to continuously sense the position of the liquid surface at infinite locations along the length of elongate vessel whereby the upper surface rises with minimum turbulence.

5,664,700
REFILLABLE LIQUID DISPENSER
John R. Battle, 11306 W. Pool Ct., Crystal River, Citrus County, Fla. 32629
Continuation of Ser. No. 562,797, Nov. 27, 1995, Pat. No. 5,553,748, which is a continuation of Ser. No. 266,017, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 982,449, Nov. 27, 1992, Pat. No. 5,328,055. This application Sep. 5, 1996, Ser. No. 697,965
Int. Cl.[6] B65D *37/00*
U.S. Cl. 222—105 **13 Claims**



1. A replaceable liquid container and outer substantially rigid hollow housing having an aperture formed in the side wall thereof to facilitate placement of said replaceable liquid container in said outer substantially rigid hollow housing, said outer substantially rigid hollow housing includes an upper neck having an opening formed therein and a cap to selectively seal the opening, said replaceable liquid container comprises a closed flexible enclosure including a reduced upper end having an upper mounting portion to secure said replaceable liquid container to the outer rigid hollow housing and an intermediate portion to be disposed within the upper neck between said upper mounting portion and a lower bladder to retain liquid therein, said upper mounting portion selectively movable from an extended position to an inverted position relative to said intermediate portion and said lower bladder and the upper neck such that when said lower bladder is positioned within the outer substantially rigid hollow housing and said intermediate portion disposed within the upper neck and said upper mounting portion is secured to the upper neck by moving said upper mounting portion from said extended position to said inverted position in surrounding relationship relative to the upper neck with said reduced upper end in said inverted position pressed between the cap and the upper neck.

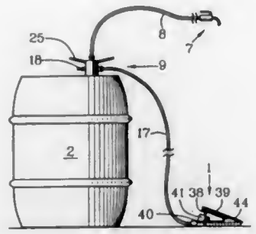
5,664,701
GLUE GUN SYSTEM WITH REMOVABLE CARTRIDGES
Len Massena, Dallas, Tex., assignor to Uniplast, Inc., Arlington, Tex.
Filed Jan. 25, 1995, Ser. No. 377,842
Int. Cl.[6] B67D *5/62*
U.S. Cl. 222—146.5 **12 Claims**



1. A glue gun system for dispensing glue from sticks, comprising:
a glue gun having a body with a mating region for accepting a removable cartridge;
said removable cartridge operable to be removably disposed within said mating region and suitable for accepting a glue stick, and having an insulated member disposed about at least a portion of said removable cartridge for a user to grasp when removing said removable cartridge from said mating region in said body of said glue gun while said removable cartridge is at operating temperatures;
said removable cartridge when mated with said body allowing melt flow glue to be dispensed at operating temperatures;
a heating device for heating at least a portion of the glue stick in a cartridge heat zone, said heating device being mounted to said removable cartridge;
a releasable interface for interfacing said removable cartridge with said body to allow said heating device to heat to said operating temperatures when said removable cartridge is mated with said body in said mating region, wherein said interface is interrupted by the action of removing said removable cartridge from a mating relationship with said body; and
the glue gun providing a glue-stick gripper and a glue-stick advancement means at a first end of said removable cartridge for moving the glue stick through said cartridge heat zone and dispensing melt flow glue from an opening disposed in a second end of said removable cartridge.

5,664,702
FOOT OPERATED BEER KEG PRESSURIZER
Christopher E. Beauchamp, 2327 River Park Clr., Suite 1411, Orlando, Fla. 32817
Filed Jun. 27, 1996, Ser. No. 672,117
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—179 **5 Claims**

1. A foot-operated beer-keg pressurizer comprising:
a floor-based foot pump that is sized, shaped and structured to pump air into a beer keg under pressure within a beer keg having a keg wall containing a closable keg aperture;
the closable keg aperture having a keg-faucet connector;
keg faucet that is sized, shaped and structured to be attached to the keg-faucet connector;



a beer inlet and a beer outlet in the keg faucet;
a faucet conveyance in fluid communication between the beer inlet and the beer outlet;
a beer inlet of a faucet attached to the keg-faucet connector being in fluid communication with an internal volume of the beer keg;
a pressure-tube inlet in fluid communication with the faucet conveyance in the keg faucet;
a one-way inlet-valved aperture and a one-way outlet-valved aperture in the floor-based foot pump;
a pressure tube in fluid communication between the one-way outlet-valved aperture in the floor-based foot pump and the pressure-tube inlet in the keg faucet;
a beer tap having an outlet valve and an outlet aperture;
and a beer tube in fluid communication between the beer outlet in the keg faucet and the beer tap wherein the floor-based foot pump is a cylindrical type of pump having a pump piston operable in a pump cylinder in a designedly upright position on a pump base;
a pump pedal is hinged to the pump base and inclined obliquely from a hinge axis to a position of operable contact with a movable portion of the cylindrical type of pump vertically above the pump cylinder and pump piston;
the pump pedal is sized, shaped and structured for being pressed downwardly for operation of the floor-based foot pump by a desired portion of a user's foot; and
a pump spring having contraction resistance is positioned with contraction resistance to downward travel of the pump pedal and with resistance to pressure-outlet travel of the pump piston in the pump cylinder.

5,664,703

PUMP DEVICE WITH COLLAPSIBLE PUMP CHAMBER HAVING SUPPLY CONTAINER VENTING SYSTEM AND INTEGRAL SHIPPING SEAL

John E. Reifenberger, Cincinnati; Robert J. Peterson, Loveland; Robert E. Stahley, Middletown, all of Ohio; J. Randall Stigall, Hebron, Ky.; Michael D. Webb, West Chester, Ohio; Geneva G. Otten, Loveland, Ohio, and William Joseph Schmitz, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 203,321, Feb. 28, 1994, abandoned. This application May 15, 1995, Ser. No. 441,173

Int. Cl.[6] B65D *37/00*

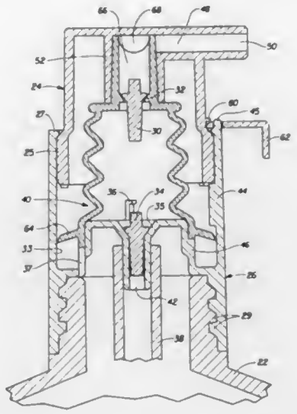
U.S. Cl. 222—207 **19 Claims**

4. A manually operated dispensing pump device for pumping a liquid from a supply container and discharging the liquid through a discharge orifice comprising:

(a) a housing for sealingly mounting the dispensing pump device onto the supply container, the housing including a portion of a liquid passage providing fluid communication from the supply container downstream to the discharge orifice;

(b) an inlet valve located within the liquid passage, the inlet valve being opened to permit liquid flow therethrough during periods of negative downstream pressure;

(c) an outlet valve located within the liquid passage, the outlet valve being open to permit liquid flow therethrough during periods of positive upstream pressure and being closed during periods of negative upstream pressure;



(d) a shipping seal including two functional elements which cooperate when in a opened position to permit liquid flow through the liquid passage and cooperate once the upper housing and the lower housing are rotated relative to each other to an open position to permit liquid flow through the liquid passage; and

(e) a collapsible pump chamber defining a portion of the liquid passage downstream of the inlet valve and upstream of the outlet valve, the collapsible pump chamber including one of the functional elements of the shipping seal as an integral component thereof such that the collapsible pump chamber and said one of the functional elements of the shipping seal is a single unitary part.

5,664,704

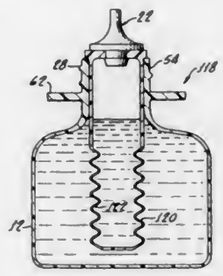
DROPWISE LIQUID DISPENSING SYSTEM PARTICULARLY SUITABLE FOR LIQUIDS HAVING LOW SURFACE TENSION

David L. Meadows, Mission Viejo; Katherine C. Kurjan, Huntington Beach, and Larry E. Branham, San Juan Capistrano, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 238,462, May 5, 1994, Pat. No. 5,497,910. This application Nov. 13, 1995, Ser. No. 534,288

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—209 **7 Claims**



1. A dropwise liquid dispensing system comprising:

a liquid formulation having a surface tension of less than a specific value;

tip means for dispensing of the liquid formulation in a dropwise fashion;

inner bottle means, in communication with said tip means, for both containing the liquid formulation and forcing the liquid formulation through the tip means upon compression of the inner bottle means;

means, defining a volume of said inner bottle means, for preventing the liquid formulation from flowing out of the inner bottle means through the tip means without compression of the inner bottle means;

means for facilitating compression of the inner bottle means comprising accordion-like folds in the inner bottle means; and

outer bottle means, disposed around said inner bottle means, for compressing the inner bottle means.

5,664,705

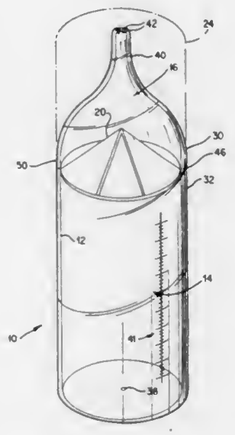
SEALED CONTAINER FOR LIQUIDS PARTICULARLY BEVERAGES

Daniel Stolper, 36 Ben Maimon, Jerusalem, Israel, 92261

Continuation of Ser. No. 844,117, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,279, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 560,546, Jul. 30, 1990, abandoned. This application Sep. 12, 1994, Ser. No. 304,640

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—212 **23 Claims**



20. A self-supporting container comprising a flexible wall defining an interior chamber that is closed at a bottom end, said bottom end supporting said container in an upright position,

(a) a conical inner seal having at least one frangible score line and a peripheral portion and, said conical inner seal being circumferentially sealed to said flexible wall along said peripheral portion within said interior chamber to partition said interior chamber into (1) a sealed storage portion defined by said conical seal, at least a portion of said flexible wall and said bottom end, and (2) a dispensing portion, said at least one frangible score line of said conical inner seal extending from said peripheral portion to at least a center of said inner conical seal, where upon separation of said score line forms valve members that open upon application of a partial vacuum pressure causing fluids stored in said storage portion to flow through said seal into said dispensing portion of said container, and

(b) means in said dispensing portion of said container comprising a nipple which is sucked by a user to create said partial vacuum pressure and provides external access to fluid contents within said sealed storage portion.

5,664,706

APPARATUS FOR DISPENSING LIQUID IN AEROSOL SPRAY FORM

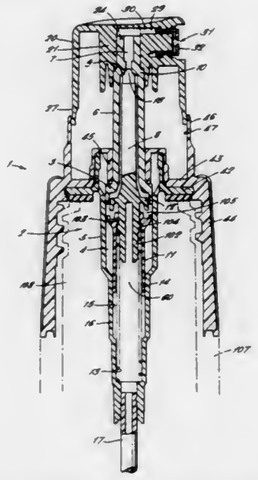
Miro Stan Cater, Newtown, Conn., assignor to Bespak Plc, Norfolk, United Kingdom

Filed Feb. 2, 1995, Ser. No. 383,479

Claims priority, application United Kingdom, Oct. 13, 1994, 9420678

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—321.2 **9 Claims**



1. Apparatus for dispensing liquid from a container comprising a piston slidable in a cylinder to vary the volume of a chamber defined therein, a tubular stem integral with the piston and extending outwardly of the chamber to define a liquid delivery duct, a valve member slidably received in the stem and co-operable therewith in a rest position to close the delivery duct, the valve member comprising a core extending within a separately formed cylindrical extension, said cylindrical extension defining an inner wall of the chamber and having an outer periphery in continuous sliding contact with and under radial compression from an internal surface of a tubular extension of the cylinder, the cylindrical extension defining a conduit communicating in use with the container, a spring extending through the conduit and only acting on a stop formation on an external surface of the core of the valve member to bias the valve member into the rest position, and connecting means providing lost motion between the valve member and the cylindrical extension whereby the valve member and the cylindrical extension are movable into and out of engagement to respectively close and open a liquid inlet port defined therebetween and communicating between the conduit and the chamber, wherein the connecting means comprises the stop formation on the core and a co-operating stop formation on an internal surface of the cylindrical extension and wherein the spring extends into an annular space between the core and the cylindrical extension.

5,664,707

BEAD INSTALLING TOOL AND METHOD OF USE

Paul Spector, 4600 Dietz Way, Suite 100, Fair Oaks, Calif. 95628

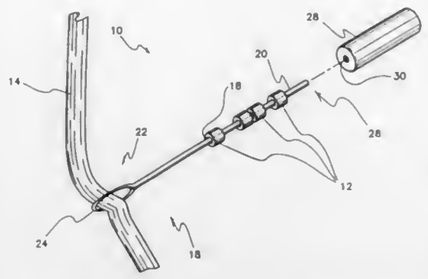
Filed Jul. 24, 1995, Ser. No. 506,072

Int. Cl.[6] A41H *43/00;* **B23P** *19/04*

U.S. Cl. 223—48 **5 Claims**

1. In combination a tool for storing perforated beads and installing perforated beads on a strand of fibers and perforated beads, said combination comprising:

a single rigid rod having proximal and distal ends, said rigid rod forming a collapsible resilient closed loop at said proximal



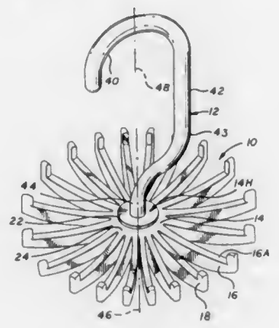
end with said loop being normally in an expanded state where said loop will prevent passage of a bead perforation and being forcible into a collapsed state where said loop will permit easy passage of the bead perforation, and

said distal end being free and sufficiently small to permit easy passage of the bead perforation; and

a reattachable cap for covering said distal end of said rigid rod and being sufficiently sized to prevent passage through the bead perforation, and

perforated beads placed over said distal end, stored on said rigid rod, and retained thereon by entrapment between said resilient closed loop in said expanded state and said reattachable cap.

5,664,708
TIE AND BELT HOLDER
Abraham Sacks, 4272 Sandburg Way, Irvine, Calif. 92612
Filed May 12, 1995, Ser. No. 440,313
Int. Cl.[6] A47G *25/74;25/28*
U.S. Cl. 223—85 **18 Claims**



18. A tie or belt holder, comprising:

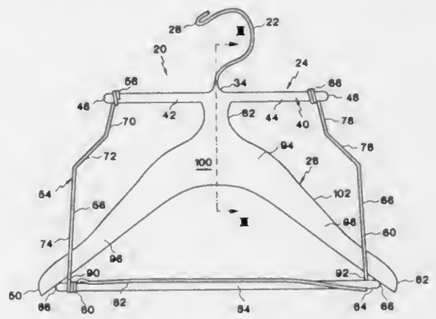
a ring member having a plurality of symmetric extending arms each having a raised end portion to prevent a tie or belt from sliding off the end of said extending arms, said arms each extending longitudinally in a concave profile and having a generally rectangular cross section with a flat top to provide for an increased degree of friction to restrain and to prevent the tie or belt from slipping off from a side of the arm, said arm being provided with slightly-rounded corners to prevent damage to a fabric forming the tie or belt; and

a hanging member having a hanging portion at one end thereof for cooperation with a closet rail;

said ring member including first means comprising a hub for connection with said hanging member; and

said hanging member including at the other end thereof second means for connection with said hub for joining said ring member with said hanging member and holding said hanging member joined with said ring member to permit relative rotation between said hanging member and said ring member while preventing axial movement between said hanging member and said ring member.

5,664,709
GARMENT SET HANGER WITH ADJUSTABLE SUPPORT BAR
David C. Graham, 4 LaJolla La., Annandale, N.J. 08801
Continuation-in-part of Ser. No. 618,142, Mar. 19, 1996. This application May 7, 1996, Ser. No. 646,134
Int. Cl.[6] A47G *25/18;25/14*
U.S. Cl. 223—89 **31 Claims**



1. A hanger, comprising:

an attachment member;

a main hanger body which includes an intermediate section and first and second shoulder support sections extending in opposite directions out from said intermediate section for supporting a first garment piece with shoulder portions, and said attachment member being joined with said intermediate section;

a garment piece holder for supporting a second garment piece, said garment piece holder being supported by said main hanger body, and said garment piece holder including a pivoting component which includes a lower second garment piece support member, said pivoting component being pivotable with respect to said main hanger body such that said garment piece holder is positionable between a first location wherein said pivoting component is adjacent said shoulder support sections and a second location wherein said pivoting component is further removed from said shoulder support sections, and said lower second garment piece support member is positioned with respect to said main hanger body so as to travel downward in going from said second location to said first location, and when said garment piece holder is in said first location, said support member is not positioned lower than six inches below a lower end of said shoulder support sections.

5,664,710
GARMENT HANGER
Peter Ar-Fu Lam, 20104 Wayne Ave., Torrance, Calif. 90503
Continuation-in-part of Ser. No. 201,539, Feb. 25, 1994, Pat. No. 5,511,701. This application Feb. 12, 1996, Ser. No. 600,402
Claims priority, application European Pat. Off., Feb. 20, 1995, 95301062
Int. Cl.[6] A47G *25/40;25/14*
U.S. Cl. 223—94 **23 Claims**

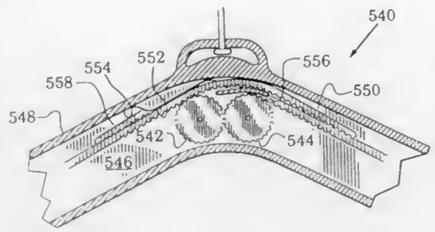
1. An adjustable garment hanger, comprising:

a suspension means;

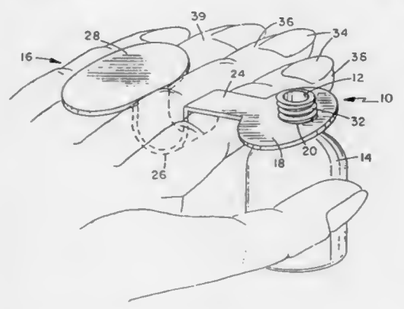
a medial portion having a transfer mechanism;

first and second elongate extension members each defining an axis extending in different directions and mounted relative to said medial portion in an orientation to define an obtuse angle therebetween, each of the extension members coupled to said transfer mechanism for reciprocal translation of the extension member to travel in different directions; and

each extension member having an inner end and an outer end, and wherein the movement paths of the inner ends of the extension members cross over each other's axis side by side at a location proximate to the medial portion to extend and form the obtuse angle.



5,664,711
BOTTLE HOLDING DEVICE
Edward T. Mellon, 2125 Merlin Pl., El Cajon, Calif. 92019
Filed Oct. 21, 1994, Ser. No. 327,190
Int. Cl.[6] A45D *19/00;* **A41D** *19/00*
U.S. Cl. 224—217 **6 Claims**



1. A bottle holding device, comprising:

a clamp for gripping a bottle, the clamp defining a bottle gripping axis;

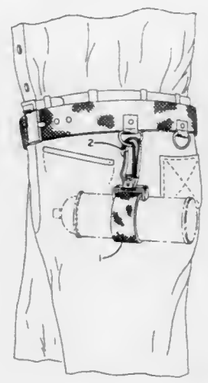
a finger gripping arm projecting to one side of the clamp in a direction transverse to the bottle gripping axis, the finger gripping arm being adapted to at least partially encircle at least one of the user's fingers so as to hold a bottle gripped by the clamp adjacent the user's fingers;

said clamp comprising a flat member having an opening for clamping engagement around the neck of a bottle;

the finger gripping arm being formed integrally with said flat member; and

the finger gripping arm comprising a first flat portion co-planar with said flat member, and a U-shaped portion extending outwardly from said flat portion to form a seat for one of the user's fingers with the first flat portion extending over the top of a finger adjacent the seated finger.

5,664,712
DEVICE AND METHOD FOR TRANSPORTING A CONTAINER OR HAND TOOL
Thomas J. Smrt, 9716 S. Grant Hwy., Marengo, Ill. 60152
Filed May 30, 1995, Ser. No. 453,478
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—250 **22 Claims**



22. A device for transporting a container having an outer surface on an article of clothing worn by a user comprising

a flexible, continuous, stretchable elastic strap and a fastening device attached to the strap, wherein the elastic strap when formed into a circle in a non-stretched condition has a diameter that is less than the diameter of the outer surface of the container to be transported, wherein the elastic strap, when encircled about the outer surface of the container, is in a stretched condition and retains the container therewithin,

wherein the continuous elastic strap comprises elastic material having two ends and a buckle through which the elastic material can be threaded which, when the elastic material has been threaded through and remains therein, prevents movement of the elastic material remaining therein with respect to the buckle, wherein the first end of the elastic material is attached to the buckle and a portion of the second is threaded through and remaining in the buckle so that a continuous, stretchable elastic strap is provided.

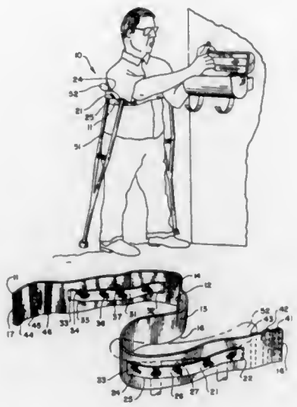
5,664,713
CRUTCH HOLDER
Karl F. Burgstahler, 1817 Lynwood Ct., Decatur, Ill. 62521
Filed Jun. 17, 1996, Ser. No. 664,473
Int. Cl.[6] A45F *3/14;* **A61H** *3/02*
U.S. Cl. 224—250 **1 Claim**

1. In combination with a crutch, the crutch having an upper portion with a width, a position of use for the crutch upper portion being at the underside of an arm-body joint of a person, the crutch and a crutch holder comprising:

a band, the band being elastic, the band having a first long edge and a second long edge, the band having means for removably attaching the band around the person's torso with the first long edge at the position of use for the crutch upper portion; and

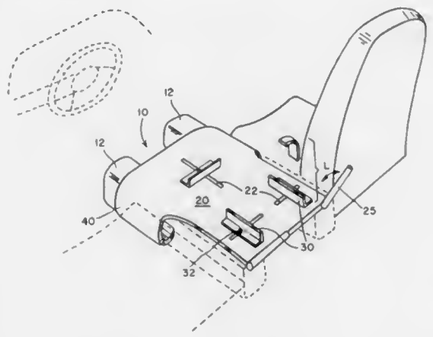
a strap, the strap being elastic and having an unstretched length less than the width of the upper portion of the crutch, the strap having a first fastening end and a second fastening end, the first fastening end being fixedly attached to the band between the band first long edge and the band second long edge, the second fastening end being fixedly fastened to the band between the band first long edge and the band second long

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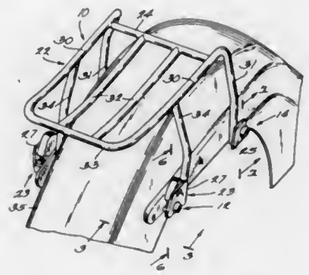
edge and spaced from the first fastening end a distance equal to the unstretched length, the crutch being positioned between the band and the strap with the upper portion of the crutch positioned above the strap and the rest Of the crutch positioned below the strap so that the crutch will not fall away from the position of use for the crutch upper portion.

5,664,714
VEHICULAR ENTERTAINMENT COMPONENT STAND
Jose Navarro, 105-12 Farragut Rd., Brooklyn, N.Y. 11236, and Daniel Aponte, 178 Massachusetts Ave., Bay Shore, N.Y. 11706
Filed Jan. 18, 1995, Ser. No. 374,113
Int. Cl.[6] B60R *11/02*
U.S. Cl. 224—275 **24 Claims**



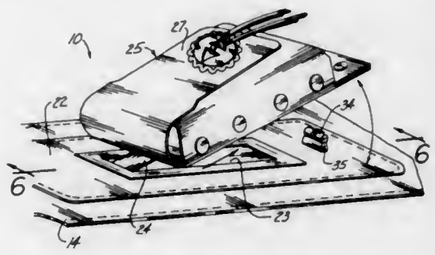
1. A vehicular entertainment stand comprising:
a support surface;
means for adjustably attaching an entertainment device to said support surface; and
means for releasably securing said support surface to two separate vehicular armrests.

5,664,715
DETACHABLE LUGGAGE CARRIER
Donald Michael Gogan, Brookfield; Stephen Lloyd Galbraith, and Geoffrey Thomas Williams, both of Mequon, all of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.
Filed Jul. 20, 1995, Ser. No. 504,919
Int. Cl.[6] B62J *7/00;9/00;11/00*
U.S. Cl. 224—413 **18 Claims**



1. A luggage carrier adapted to be removably installed on a motorcycle having a first mounting member and a second mounting member, said luggage carrier comprising:
a luggage support portion;
at least one pivot support connected to said luggage support portion and adapted to detachably pivotally engage the first mounting member;
at least one latching support connected to said luggage support portion and spaced from said pivot support and adapted to engage the second mounting member;
a latching member movably mounted on said latching support, and moveable between a latched position, where said latching support is secured to the second mounting member, and an unlatched position; and
a locking member mounted for movement relative to said latching member, and moveable between a locked position, where said latching member is secured in the latched position, and an unlocked position.

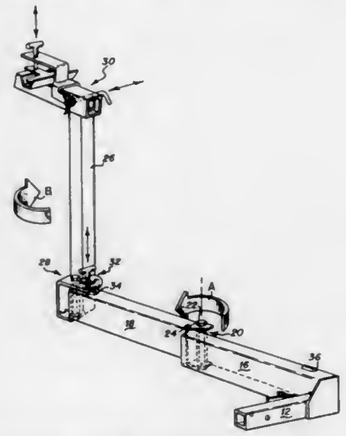
5,664,716
TANK PANEL WITH REMOVABLE POUCH FOR MOTORCYCLES
Glenn S. Nuckolls, 305 1st St. East, Altoona, Iowa 50009
Filed Feb. 22, 1996, Ser. No. 605,376
Int. Cl.[6] B62J *9/00*
U.S. Cl. 224—430 **11 Claims**



1. A motorcycle fuel tank panel apparatus comprising:
a base member comprising a substantially flexible planar member having oppositely facing bottom and top surfaces, said bottom surface adapted to cover and engage at least a portion of a top surface of a motorcycle fuel tank positioned between handlebars and a seat of a motorcycle;

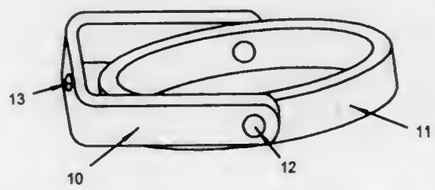
a slot disposed on said top surface between a forward end and a rearward end of said planar member, said planar member having a length defined between said forward and rearward ends which extends substantially along the longitudinal axis of the motorcycle;
a container having a first end portion and a second opposite end portion;
a substantially stiff projection attached to and extending from said first end portion of said container and receivable in to or out from said slot; and
attaching means disposed on said second opposite end portion for releasably attaching said second opposite end portion of said container to said planar member.

5,664,717
PIVOTING SPORTS EQUIPMENT CARRIER
Brian K. Joder, 120 Ore St., Folsom, Calif. 95630
Filed Aug. 21, 1996, Ser. No. 700,814
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—502 **39 Claims**



1. A pivoting equipment carrier adapted for use with a vehicle having a receiver hitch for receiving said pivoting equipment carrier, said pivoting equipment carrier being movable between a first closed position, wherein equipment carried by said pivoting equipment carrier is held at a desired spaced distance from a rear bumper of said vehicle, and a second clearance position, wherein said equipment carried by said equipment carrier is swung rearwardly and outwardly to one side of said vehicle in order to permit full and unobstructed access to a rear entry of said vehicle, said pivoting equipment carrier comprising:
a) a first fixed horizontal support member adapted to be aligned generally parallel with said rear bumper of said vehicle, said first fixed horizontal support member including an inboard end and an outboard end;
b) coupling means for removably coupling said inboard end of said first fixed horizontal support member to said receiver hitch of said vehicle;
c) a second movable horizontal support member disposed in coplanar relationship with said first fixed horizontal support arm and including an inboard end and an outboard end;
d) first hinge means for pivotally connecting said inboard end of said second movable horizontal support member to said outboard end of said first fixed horizontal support member, said first hinge means effective to pivot said second movable horizontal member in a horizontal plane about a generally vertical pivot axis through an arc of about 180 degrees between a first closed position, wherein said second movable horizontal support member is disposed generally parallel to and behind said first fixed horizontal support member, and a second extended position, wherein said second movable horizontal support member is in substantially colinear relation with said first fixed horizontal support member and said outboard end of said second movable horizontal support member extends a desired lateral clearance distance beyond a side jamb of said rear entry of said vehicle;
e) a generally vertically oriented support member including a lower end portion and an upper end portion;
f) an equipment carrier assembly disposed on said upper end portion of said generally vertically oriented support member;
g) second hinge means for pivotally connecting said lower end portion of said generally vertically oriented support member to said outboard end of said second movable horizontal support member, said second hinge means effective to pivot said generally vertically oriented support member and equipment carrier assembly about a generally vertical axis through an arc of about 90 degrees between a first transport position and a second clearance position; and
h) first locking means for releasably locking said generally vertically oriented support member in said second clearance position as said second movable horizontal support member is being moved between said first closed position and said second extended position.

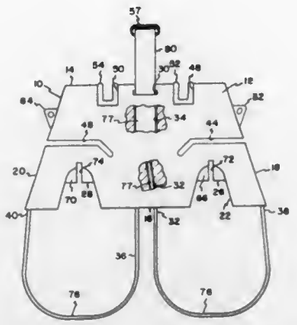
5,664,718
DRINK HOLDER
Michael P. Vine, 1450 Lawson, Houston, Tex. 77023
Filed Oct. 13, 1994, Ser. No. 322,206
Int. Cl.[6] B60N *3/10*
U.S. Cl. 224—545 **2 Claims**



1. An apparatus for supporting a beverage container, comprising:
a beverage container having a loop handle;
a one-piece support member contacting said beverage container and suspending said beverage container without a bottom support to said container by contact around a majority of its periphery at a point above said beverage container's center of gravity, said support member being adapted to receive said loop handle;
said loop handle attached to said beverage container above and below said contact with said support member; and
a mounting bracket pivotally connected to said one piece support member.

5,664,719
SKATE CARRIER WITH RETRACTABLE STRAP
David Wynn Bigham, Minnetonka, and George David Stickler, Shorewood, both of Minn., assignors to David W. Bigham, Minnetonka, Minn.
Filed Jan. 22, 1996, Ser. No. 589,413
Int. Cl.[6] A45F *4/00;5/00*
U.S. Cl. 224—577 **14 Claims**

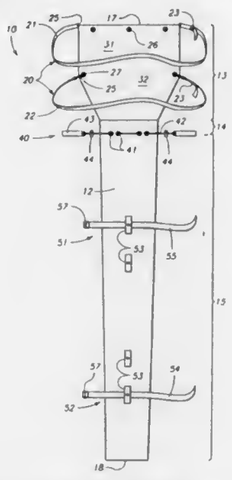
1. An apparatus for carrying in-line skates, the in-line skates having blades, the blades including at least two adjacent wheels, the apparatus comprising:
a base member having a front, back, and bottom, the base member defining first and second slots each open to the bottom and extending from the front to the back, the first and second slots each being sized to receive the blade of an in-line



skate so that the base member is substantially perpendicular to the in-line skate blades, the base member further defining first and second strap slots, the first and second strap slots each having a first end open proximal to the bottom and a second open proximal to the top; and

a strap, the strap having first and second end portions operably connected to the base member, the strap having a first boot portion extending across the first slot, a first internal portion extending through the first strap slot, a handle portion proximal to the top of the base member, a second internal portion extending through the second strap slot, and a second boot portion extending across the second slot.

5,664,720
FRUIT THINNING APPARATUS
Ronald E. Thompson, and Refugio Salazar, both of Rte. 2, Box 1036, Oroville, Wash. 98844
Filed Nov. 28, 1995, Ser. No. 563,367
Int. Cl.[6] A01D *46/24*
U.S. Cl. 224—625 **30 Claims**



1. A fruit thinning apparatus, comprising:

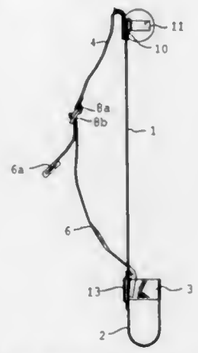
a chute, the chute having a mouth at an upper end of the chute and an outlet at a lower end of the chute;

a harness connected to the chute for supporting upper portions of the chute upon a person's torso;

at least one leg connector attached to the chute for holding lower portions of the chute to a leg of the person;

a cinch positioned between at least one leg connector and said mouth of the chute for controlling discharge of fruit from the outlet of the chute.

5,664,721
BACKPACK-STYLE FIREARM/BOW/FISHING ROD CARRIER
Gregory M. Homeyer, 12180 Oak Tree La., Willis, Tex. 77378
Filed Apr. 4, 1996, Ser. No. 627,124
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—651 **5 Claims**



1. An assembly for carrying a firearm, a bow, or one or two fishing rods, said assembly comprising:

(1) a flexible main strap with an upper end folded over and attached to itself to form an upper loop, and with a lower portion turned upward to approximate a J-shape terminating in a tag lower end;

(2) a circular strap perpendicularly disposed to said main strap and attached to said main strap near the lower end and also attached at a second point 180° removed to said tag lower end of said main strap;

(3) a flexible enclosing strap, an end of said enclosing strap having been inserted through said upper loop, and both ends of said enclosing strap then fastened to each other with releasable fastening means;

(4) a pair of upper shoulder straps, an end of each of said upper shoulder straps having been attached to a back flat side of said upper end of said main strap, and another end of each of said upper shoulder straps having a coupling means attached thereto;

(5) a pair of lower shoulder straps, an end of each of said lower shoulder straps having been attached in a spaced apart relationship to a back flat side of said circular strap, and another end of each of said lower shoulder straps having been respectively inserted into said coupling means on each said end of each of said upper shoulder straps.

5,664,722
FORWARD ACTING, FORWARD GRIP, STAPLE MACHINE
Joel Steven Marks, Los Angeles, Calif., assignor to Worktools, Inc., Chatsworth, Calif.
Continuation of Ser. No. 268,278, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 141,437, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 899,748, Jun. 17, 1992, abandoned. This application Nov. 29, 1995, Ser. No. 563,746
Int. Cl.[6] B25C *5/11*
U.S. Cl. 227—132 **13 Claims**

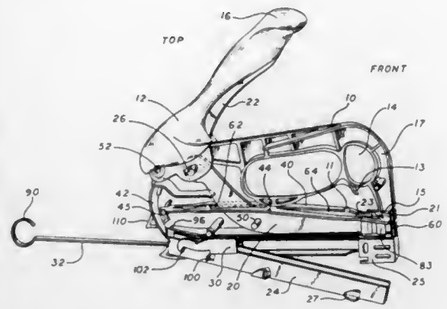
1. A fastening device comprising:

a housing having a front, back, top, bottom and first and second sides;

a first lever pivoted near the back of said housing;

a plunger located within said housing near the front thereof;

a second lever having first and second ends being linked at said first end to said first lever and releasably linked at said second end to said plunger, said second lever pivotally connected to said housing;



a torque transmitting flat spring pivoting against a fulcrum within said housing and linked at one end to said plunger, said spring decreasing in cross sectional area with increasing distance along the length of said spring away from said fulcrum;

one or more openings through said housing positioned to allow a single hand to grip said first lever and also to grip said housing by passing the fingers of the single hand through said openings.

5,664,723
BRAZING TECHNOLOGY
Suri A. Sastri, 10 Bicentennial Dr., Lexington, Mass. 02173
Filed Oct. 27, 1995, Ser. No. 549,464
Int. Cl.[6] B23K *31/00*
U.S. Cl. 228—124.1 **17 Claims**

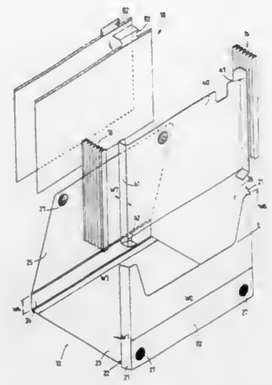
1. A method of braze joining a copper member to a substrate of metal or ceramic, comprising the steps of applying an adherent, non-reactive diffusion barrier coating to said substrate, interposing a brazing alloy between said copper member and said diffusion barrier coating, said brazing alloy in molten form being capable of wetting said diffusion barrier coating, first heating to a temperature and for a time sufficient to liquefy said brazing alloy and form a bond between said brazing alloy and said copper member and between said brazing alloy and said diffusion barrier coating, and further heating at a temperature from about 600° C. to about 950° C. for a time sufficient to allow said brazing alloy to form an extended solid solution with copper from said copper member and thereby convert said bond to a strong joint which is resistant to thermal stress.

5,664,724
COMPARTMENTIZED FILE FOLDER APPARATUS
I-Jong Ho, Taichung, Taiwan, assignor to Honn Hsin Enterprise Co., Ltd. (Taiwan corporation), Taichung, Taiwan
Filed Feb. 8, 1996, Ser. No. 597,410
Int. Cl.[6] B65D *30/20*
U.S. Cl. 229—67.4 **2 Claims**

1. A file folder comprising:

a plate including a front panel which has two side panels folded from two opposite sides of said front panel and arranged in perpendicular to said front panel, a bottom panel folded from said front panel and perpendicular to said front panel, a rear panel folded from said bottom panel and arranged in parallel to said front panel, a top panel folded from said rear panel and arranged in parallel to said bottom panel, a cover folded from said top panel for engaging with said front panel,

a board having two strips folded from two opposite sides thereof and said strips being arranged in perpendicular to said board for securing to said side panels so as to form a chamber between said board and said front panel and so as to form a room between said board and said rear panel,

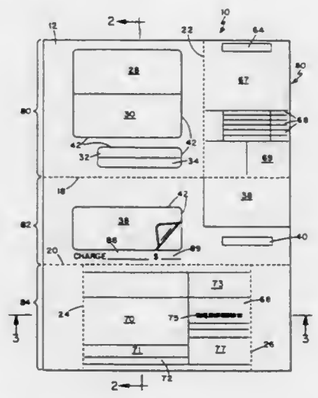


a pair of expandable members provided in said room and secured between said board and said rear panel so as to allow an upper portion of said room to be opened,

at least one partition disposed in said room and arranged in parallel to said rear panel, said partition including side portions secured to said expandable members so as to separate said room into at least two spaces, and

means for securing said cover to said front panel so as to enclose said chamber and said room.

5,664,725
MAILING FORM
Gerard F. Walz, Fallbrook, Calif., assignor to Walz Postal Solutions, Inc., Fallbrook, Calif.
Continuation-in-part of Ser. No. 227,513, Apr. 14, 1994, Pat. No. 5,501,393. This application Mar. 4, 1996, Ser. No. 610,497
Int. Cl.[6] B65D *27/06*
U.S. Cl. 229—92 **22 Claims**



1. A mailing form, comprising:

first and second superimposed sheets, each sheet having an inner face facing the other sheet and an outer face;

the first sheet having a plurality of detachable areas which are detachable from the remainder of the first sheet, each detachable area having an adhesive backing facing said second sheet;

the first and second sheets being permanently secured together over predetermined, adhered areas of said form;

the second sheet having predetermined, non-adhered areas on its inner face which are aligned with the detachable areas of the

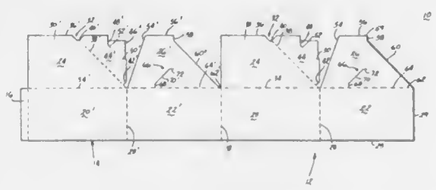
first sheet, the non-adhered areas being covered with a non-adhesive coating on the inner face facing said first sheet;

at least one portion of said form including one of said adhered areas being detachable from the remainder of the form to provide a predetermined mailing form part, each of the sheets having predetermined printed indicia on its outer face in said one adhered portion;

the inner face of the first sheet being coated with a layer of adhesive material for securing the first sheet to the second sheet, the adhesive layer in said detachable areas comprising said adhesive backing; and

the form having at least one tear line for detaching said one portion of the form from the remainder of the form, said portion including a pair of second tear lines extending perpendicular to said one tear line for detaching a part of said mailing form part from the remainder of said portion, and side strips on opposite sides of said portion outside said tear lines, the inner face of said second sheet being coated with non-adhesive material in said side strips.

5,664,726
COLLAPSIBLE BOX CONSTRUCTION
Tom S. Opper, Belmont, Mich., assignor to DeWitt Packaging Corp., Grand Rapids, Mich.
Filed Aug. 30, 1996, Ser. No. 705,740
Int. Cl.[6] B65D *5/36*
U.S. Cl. 229—117 **8 Claims**



1. A blank adapted to form a rectangular box with an interlocked base comprising:

four side panels hinged together in series, a panel at one end of the series having a side flap for mounting to a panel at an opposite end of the series, said side panels sharing a common edge;

four bottom panels, each bottom panel hinged to a corresponding side panel along the common edge, the four bottom panels comprising

two first bottom panels and two second bottom panels, the first and second bottom panels disposed in an alternating arrangement;

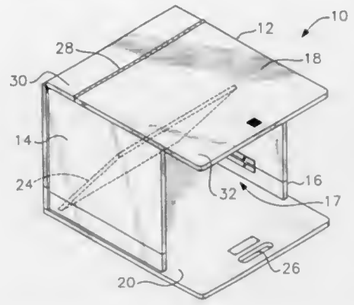
each of the first bottom panels having a bottom flap which includes a corner adjacent a second bottom panel and having a tab thereon;

a notch extending inwardly from an outer edge of each of the first bottom panels; and

each of the second bottom panels having an outer edge and slot adjacent to and extending away from the common edge adapted to lockingly receive the tab on an adjacent first bottom panel;

whereby when the side flap is mounted to the panel at the opposite end of the series and the tab on each first bottom panel is received within the slot on the adjacent second bottom panel, the blank forms a box which is selectively movable between a collapsed position wherein the bottom panels are folded inwardly between two series of side panels in a flat arrangement and an erected position wherein the outer edge of each second bottom panel is received in a notch to form an interlocked base.

5,664,727
PORTABLE CARTRIDGE BRASS COLLECTOR
John Ninian Beall, 27 Riverknoll Dr., Asheville, N.C. 28805
Filed Apr. 26, 1996, Ser. No. 638,699
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—1 R **10 Claims**



1. A free-standing cartridge brass collector comprising:

a container having at least two side walls, a rear wall, a top wall and an open end;

each side wall having a free edge opposite from said rear wall;

a first portion of said top wall contacting said side wall;

a second portion of said top wall not contacting said side wall;

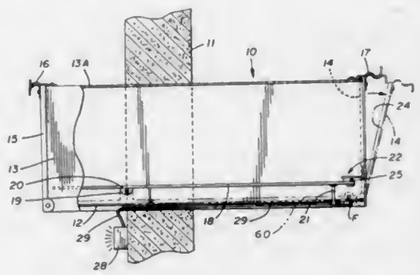
said second portion of said top wall forming an overhang at said open end and extending beyond said free edges of said side-walls;

the space below said overhang providing a firing zone for a weapon which ejects brass;

said top wall guiding the brass, which is ejected by the weapon, into said container;

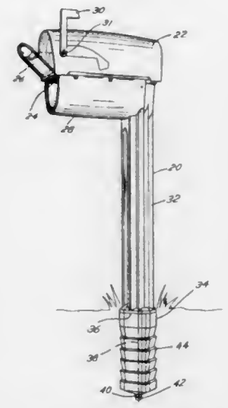
a baffle contacting said side walls for segregating various sizes of brass within said container.

5,664,728
MAIL BOX SIGNAL DEVICE
Lea Jones, 327 E. North Ave., East Palestine, Ohio 44413
Filed Jun. 10, 1996, Ser. No. 660,877
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—36 **7 Claims**



1. A security mail box for use on a dwelling comprises in combination; a mail box having an enclosure, including walls and a bottom, a pair of oppositely disposed doors on said enclosure, a switch platform pivotally positioned within said enclosure, a magnetic engagement and release means secured to one of said doors engageable on said switch platform when in closed position, an alarm activation switch in said enclosure engageable by said switch platform, alarm means interconnected to said switch, means for securing access to said mail box and means for resetting said alarm after activation.

5,664,729
MOLDED PLASTIC MAILBOX
Christopher G. Ladewig, Littleton, N.C., assignor to Flambeau Products Corp., Middlefield, Ohio
Filed Aug. 12, 1996, Ser. Nn. 695,944
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—39 **9 Claims**



1. A molded plastic mailbox comprising, in combination, an assembly of premolded plastic components including:

a post having a first, above ground support section and a second, integrally molded, below ground support section, said post further having a vertical axis and including at the second, below ground support section, a series of at least partially circumferential ribs spaced vertically one above the other along the vertical axis of the post, said ribs comprising means for engaging and retaining the post in the ground, said post terminating with an attachment lug at a top thereof;

a molded horizontal support platform having a post attachment end, said post attachment end including means for attachment of the platform to the attachment lug for retaining the platform horizontally supported and extending outwardly from the vertical axis of the post, said platform further including spaced parallel slots on opposite sides of the platform for receipt of the sides of a molded cover;

said molded cover for mounting on the platform, said cover having a curved shroud with first and second parallel sides, an open outside end and an open inside end; and

at least one hinged door attached to the cover shroud at least one of said open ends.

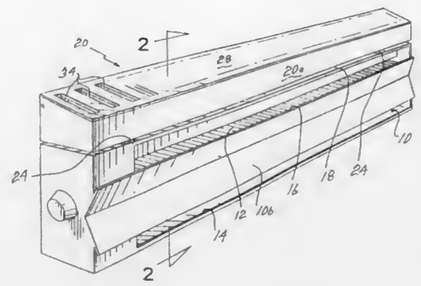
5,664,730
HUMIDIFIER DEVICE
Jean-P. Vallières, Lavaltrie, and Jean-Guy Vallières, Brossard, both of Canada, assignors to Technov International Inc., Mt-St-Hilaire, Canada
Filed Apr. 29, 1996, Ser. No. 639,464
Int. Cl.[6] F24F *3/14*
U.S. Cl. 237—78 R **14 Claims**

1. An air humidifying device comprising:

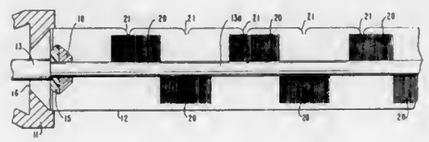
a) a radiator, having heat releasing means for generating heat, and a load bearing surface;

b) a thermally conductive casing comprising: a wall member releasably mounted to said load bearing surface of said radiator and correctly dimensioned to conformingly fit thereon; an inner chamber, for receiving and enclosing water, said inner chamber being positioned spacedly over said load bearing surface; water vapor outlet means, for escape of water vapor from said inner chamber upon the water being heated by said radiator; and adjustment means, for selectively adjusting the water vapor escape rate for a given temperature level;

wherein heat transfer occurs through said casing between said radiator and the water inside said inner chamber upon said radiator generating heat, the water consequently gradually increasing in temperature and evaporating into the ambiant air; wherein said adjustment means comprises adjustable spacer members located between said casing wall member and said radiator load bearing surface for selectively adjusting the distance of said casing relative to said radiator, whereby a water vapor flow rate escaping through said outlet means can be selected, said wall member thus being mounted to said load bearing surface through the instrumentality of said spacer members.



5,664,731
DECONTAMINATION VALVE FOR A JET PIPE IN A PAPER OR BOARD MACHINE
Markku Lemetyinen, Baton Rouge, La., and Markku Kyynaralnen, Paimio, Finland, assignors to Valmet Corporation, Helsinki, Finland
Continuation-in-part of Ser. No. 146,785, Nov. 2, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,325
Claims priority, application Finland, Apr. 11, 1992, U920661
Int. Cl.[6] B05B *15/02*
U.S. Cl. 239—113 **19 Claims**



17. In an arrangement in a paper or board machine including a jet pipe having a plurality of nozzle holes through which a pressurized flow of fluid is directed against a paper felt or paper roll during use of said jet pipe to clean the felt or roll, the jet pipe including a decontamination valve arranged at an end of the jet pipe, said decontamination valve having an open position when the jet pipe is cleaned to facilitate the removal of water used to clean the jet pipe and a closed position during operation of the jet pipe, the jet pipe including brushes arranged therein for cleaning inner faces of the jet pipe and nozzles in the jet pipe, the improvement comprising

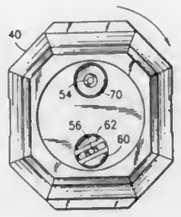
said decontamination valve comprising

a valve housing having inner walls defining an opening through which water is removed from said jet pipe,

a disc valve positionable in said opening to close said opening, and

means for closing said opening by moving said disc valve in a first direction into contact with said inner walls such that the direction of closure of said opening of said valve housing by said disc valve is substantially the same as a direction in which the pressurized flow of fluid applies a force against said disc valve.

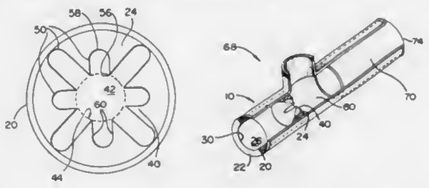
5,664,732
NOZZLE FOR PUMP DISPENSERS
Richard J. Smolen, Jr., Algonquin, Ill., and William Contaxis, III, Perrysburg, Ohio, assignors to Owens-Illinois Closure Inc., Toledo, Ohio
Filed Aug. 16, 1995, Ser. No. 515,881
Int. Cl.[6] B05B *1/28;1/34;9/043*
U.S. Cl. 239—121 **8 Claims**



1. A trigger-sprayer-type dispenser comprising:
a. a container
b. a manually operated pump having an inlet and an outlet, the pump being mounted on the container and connected to the container,
c. a discharge nozzle connected to the outlet of the pump, the nozzle comprising:
1) a tubular body having an axial bore and a planar radial end face, said planar radial end face having offset from the center thereof a forwardly facing swirl chamber cavity in liquid passage communication with said bore;
2) a cap disposed rotatably on the end of the tubular body for rotation about an axis perpendicular to said face and spaced from the cavity, the cap having
a. an end wall with a planar inside surface engaging the radial end face of the tubular member, the end wall having offset from the axis at least two orifices adapted when the end wall is rotated On the member about the axis to selectively register witch the center of the swirl chamber cavity to produce a spray discharge, at least one of the orifices having means to modify the spray discharge emanating from the orifice,
b. an annular skirt projecting rearward from the periphery of said inside surface and snugly surrounding the body;
3) mounting means carried by said body and said cap for achieving rotatable mounting of said cap on said tubular member.

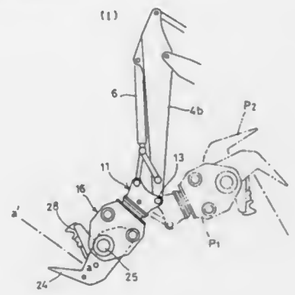
5,664,733
FLUID MIXING NOZZLE AND METHOD
W. Gerald Lott, 6827 Signat Dr., Houston, Tex. 77041
Filed Sep. 1, 1995, Ser. No. 522,515
Int. Cl.[6] B05B *7/06*
U.S. Cl. 239—429 **22 Claims**

1. An improved fluid mixing nozzle in which a first fluid flows



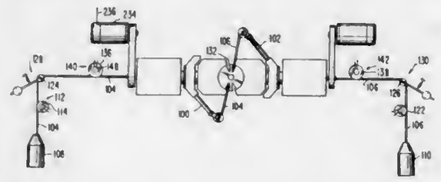
therefrom to mix with a second fluid external the nozzle, the nozzle comprising:
a nozzle body having a nozzle inlet end and a nozzle outlet end;
a cavity extending from said nozzle inlet end through said nozzle body to said nozzle outlet end;
said cavity defining a nozzle inlet orifice at said nozzle inlet end;
said cavity further defining a nozzle outlet orifice at said nozzle outlet end;
said nozzle outlet orifice cross sectional shape having a substantially circular central portion and at least three protrusions extending from a perimeter of said central portion;
each of said at least three protrusions having a radial dimension, measured in a radial direction of said portion, and a tangential dimension, measured in a direction perpendicular to said radial dimension;
each of said at least three protrusions having a protrusion junction end proximal said central portion and a protrusion apogee end distal said central portion;
said at least three protrusions equally spaced about the perimeter of said central portion;
each of said at least three protrusions being relatively smaller than said central portion;
said nozzle inlet orifice having a greater cross sectional area than said nozzle outlet orifice;
said cavity at least partially tapered and having a first fluid flowing therethrough;
said taper providing a smooth transition between said nozzle inlet orifice and said nozzle outlet orifice;
whereby the resultant flow pattern of said first fluid downstream of said nozzle outlet orifice includes a flow core and a vortex produced from each of said at least three protrusions; and
whereby turbulent mixing of said first fluid and a second fluid external said nozzle is enhanced.

5,664,734
CRUSHER APPARATUS
Hiroshi Terada, and Takehiko Kawano, both of Nabari, Japan, assignors to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan
Filed Feb. 23, 1996, Ser. No. 605,983
Claims priority, application Japan, Feb. 23, 1995, 7-035341
Int. Cl.[6] B02C *1/06*
U.S. Cl. 241—266 **9 Claims**



1. A crusher comprising:
a bracket capable of being pivotally mounted on a free end of an arm of a self propelled machine;
a frame, rotatably mounted on said bracket, including a pair of support plates;
a lock arm pivotally mounted between said pair of support plates of said frame and having a pair of arm plates, said lock arm carrying at a front end thereof a crushing jaw and being pivotable about a first axis between a first position and a second position;
a movable arm pivotally mounted between said arm plates of said lock arm so as to be pivotable about a second axis which is located nearer to said front end of said lock arm than said first axis about which said lock arm pivots;
a trunnion type drive cylinder mounted between said arm plates of said lock arm for pivoting said movable arm relative to said crushing jaw, said trunnion type drive cylinder having a pair of pivot members which are aligned with said first axis; and
a fixing means for fixing said lock arm to said frame at said first position and at said second position, wherein said lock arm can be pivoted from said first position, through a predetermined angle, to said second position.

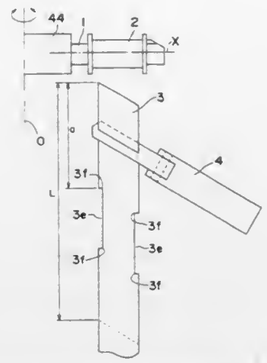
5,664,735
METHODS AND APPARATUS FOR TENSIONING WIRE IN A WINDING MACHINE
Federico Sbalchiero; Massimo Lombardi, and Mauro Tarchi, all of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.
Continuation of Ser. No. 311,637, Sep. 23, 1994, which is a continuation-in-part of Ser. No. 42,607, Apr. 2, 1993, Pat. No. 5,383,619. This application Sep. 12, 1996, Ser. No. 713,241
Int. Cl.[6] H02K *15/09*
U.S. Cl. 242—433.3 **11 Claims**



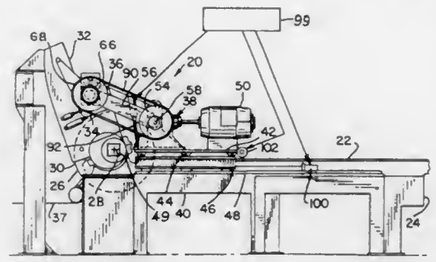
1. Apparatus for winding wire onto a wound electric motor component of a dynamo-electric machine, comprising:
a winder for winding said wire onto said electric motor component;
a pulley wheel for supplying wire to said winder at a variable tension;
an electric motor; and
a hysteresis clutch having a rotating stator coupled to said electric motor and a rotor coupled to said pulley wheel, wherein:
when it is desired to wind wire onto said electric motor component a first predetermined hysteresis clutch current is supplied to said hysteresis clutch and said hysteresis clutch transfers a retarding torque to said pulley wheel; and
when it is desired to lower said retarding torque a second predetermined hysteresis clutch current that is smaller than said first predetermined hysteresis clutch current is supplied to said hysteresis clutch and said electric motor rotates said rotating stator relative to said rotor by an angular amount that is sufficient to overcome the effects of cogging.

5,664,736
METHOD AND APPARATUS FOR FORMING LAMINATED COIL
Toshiichi Murakoshi, Neyagawa, and Hiroshi Kawazoe, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 15, 1995, Ser. No. 441,308
Int. Cl.[6] B65H *39/16;* **H01G** *7/00*
U.S. Cl. 242—444.2 **11 Claims**

1. A laminated coil forming method comprising:
feeding an insulation film toward a core;
winding an insulation film around the core to form an underlayer;
winding wires on the underlayer to form an inner coil;
winding a first portion of the insulation film around the inner coil on the core;
cutting a second portion of the insulation film, said cutting being performed during said step of feeding, so that the width of the second portion is less than the width of the first portion;
winding the second portion of the insulation film around the first portion of the insulation film; and
winding a third portion of the insulation film around the second insulation film, wherein the third portion forms an outer layer which has a width greater than the width of the second portion.



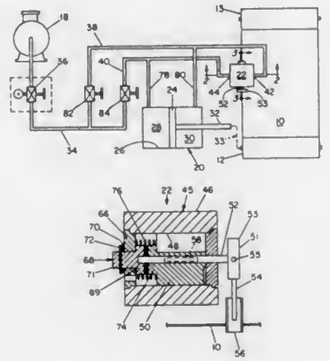
5,664,737
CENTERWIND ASSIST FOR A PAPER WINDER SYSTEM
Noel R. Johnson, Stoughton, and David A. Smith, Beloit, both of Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.
Filed Oct. 10, 1995, Ser. No. 541,447
Int. Cl.[6] B65H *18/10;18/16*
U.S. Cl. 242—541.1 **18 Claims**



1. A method for providing centerwind assist on a winder of the type having a drive roll with an axis, and support rails for receiving and supporting a spool on which a paper roll is wound, the rails being substantially horizontal and at a level which approximately coincides with the axis of the winder drum, the method comprising the steps of:
detecting the engagement of a winder spool with a first arm, the spool having an axis of rotation and at least one end;
engaging a centerwind assist drive with the end of the spool while the spool is mounted on the first arm;
moving the first arm until the spool comes in contact with the rails, and measuring the rotation angle of the moving first arm with respect to a reference position;
measuring the angular velocity of the spool while a paper web is being wound thereon;
determining the position and path of the spool axis and said at least one end of the spool from the time it is loaded into the first arm until a complete roll of paper is wound thereon by use of a controller employing the measured rotation angle, the measured angular velocity of the spool, a known position for the rails, and a known radius and angular velocity for the drive roll; and
controlling the position of the centerwind assist drive in response to the determined path and position of the spool axis

and spool end so that the centerwind assist is engaged continuously with the spool during the reel winding process.

5,664,738
PNEUMATIC WEB GUIDE
Robert L. Fife, P.O. Box 136084, Ft. Worth, Tex. 76136
Filed May 17, 1996, Ser. No. 649,226
Int. Cl.[6] B65H *26/00;* **B23Q** *15/00*
U.S. Cl. 242—563.1 **20 Claims**



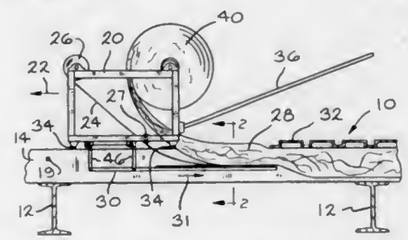
1. Apparatus for maintaining a traveling web of material in a predetermined path comprising:
actuator means for moving said web transversely, said actuator means having a pressure responsive moveable wall and a pair of chambers formed at opposite sides of said wall,
sensing means movable in response to a change in the transverse position of said web,
a source of fluid pressure,
a pair of conduits, each conduit continuously communicating said source of pressure with one of said chambers,
a rotatable controller communicating with said pair of conduits and being operative to prevent the exhaust of fluid pressure from said pair of conduits to the atmosphere when said web is in said predetermined path and being rotatable in response to movement of said sensing means to modulate the exhaust of fluid from and reduce the pressure in one of said chambers when said web moves from said predetermined path to cause a decrease in pressure in said one of said chambers below the pressure existing in the other of said chamber to cause movement of said moveable wall and corresponding movement of said web to return said web to said predetermined path.

5,664,739
ROTATABLE HANDLE FOR DISPOSAL SPOOL
Wesley F. Black, 2402 15th Ave. West; Robert J. Black, 2114 8th Ave. East, and Ronald L. Black, 2311 17th Ave. West, all of Williston, N. Dak. 58801
Filed Feb. 28, 1996, Ser. No. 608,260
Int. Cl.[6] B65H *75/40*
U.S. Cl. 242—588.2 **23 Claims**



1. A line reel for mounting a construction line spool that has a hollow cylindrical shape with a first end and a second end and an inside surface with an inside diameter, said line reel comprising:
a midsection with a midsection shoulder that is wider than the inside diameter of the spool, an elongated midsection shank extending axially from the midsection shoulder into the first end of the spool and having a transverse structural configuration that is large enough to engage the inside surface of the spool, and a rotatable handle extending axially from the midsection shoulder in a direction opposite the midsection shank; and
a cap with a cap shoulder that is wider than the inside diameter of the spool, an elongated cap shank extending axially from the cap shoulder into the second end of the spool and having a transverse structural configuration that is large enough to engage the inside surface of the spool.

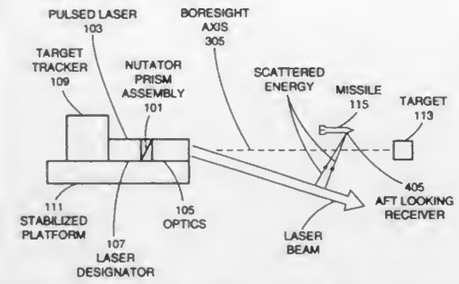
5,664,740
RAISABLE PLATFORM FOR APPARATUS FOR PAYING OUT AN INSULATION SUPPORT SHEET
Robert J. Alderman, San Antonio, and James E. Taylor, Seguin, both of Tex., assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.
Filed Sep. 29, 1995, Ser. No. 536,722
Int. Cl.[6] E04F *21/00*
U.S. Cl. 242—592 **20 Claims**



1. Apparatus for providing a roof structure of the type having a plurality of purlins spaced apart from one another in a parallel arrangement, the purlins having a generally vertical portion, the space between the vertical portions of adjacent purlins defining an insulation cavity which is generally rectangular in cross-sectional shape, comprising;
a. a carriage movable in a first direction along the length of the purlins for paying out a support sheet for support of insulation material as the carriage moves along the length of the purlins so that the support sheet depends from adjacent purlins; and
b. a platform attached to the carriage and extending in a second direction, which is in the opposite direction of the first direction, where the platform is mounted for vertical movement with respect to the carriage to avoid purlin support mechanisms encountered as the carriage moves along the length of the purlins.

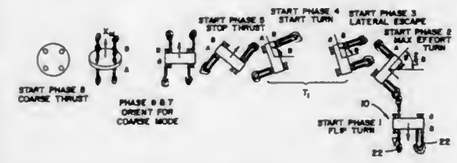
5,664,741
NUTATED BEAMRIDER GUIDANCE USING LASER DESIGNATORS
Jimmy R. Duke, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 19, 1996, Ser. No. 636,780
Int. Cl.[6] F41G *7/20*
U.S. Cl. 244—3.11 **5 Claims**

1. In a semi-active laser designator having a means for tracking a target, a laser for emitting light pulses and beam-forming optics for forming beams from the pulses and sending the beams in the general direction of the target; a system for providing laser beam-rider guidance to a missile in its flight toward the target, the missile having therein capabilities to generate correctional signals from missile positional information and change flight direction in



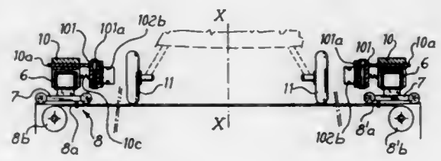
response to the correctional signals for a more accurate impact on the target, said system utilizing atmospheric particles and comprising:
A nutator comprising a first prism and a second prism, said prisms being adapted for counter-rotation; a first motor coupled for rotating said first prism at variable angles relative to said second prism to achieve variation in the beam offset angle and a second motor coupled in parallel to said first and second prisms to rotate said prisms simultaneously to produce the nutation in the beam, said nutator being positioned between the laser and the beam-forming optics of the designator such that the light pulses emitted by the laser pass through said nutator and are nutated thereby prior to reaching the optics, the emission of the light pulses being synchronized with pre-determined nutator angles; and a plurality of light receivers, said receivers being mounted on the missile for receiving the nutated light as the nutated light scatters from atmospheric particles and producing from the received nutated light missile positional information.

5,664,742
PLUME AVOIDANCE MANEUVERS
William J. Mason, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jul. 31, 1989, Ser. No. 387,741
Int. Cl.[6] F41F *7/00*
U.S. Cl. 244—3.22 **7 Claims**



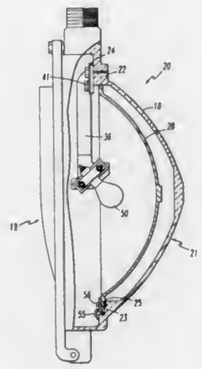
1. A method for minimizing perturbations on a released re-entry body released from an aerospace platform, which aerospace platform is moving in a generally ballistic path at a post-boost velocity, said aerospace platform bearing a plurality of releasable re-entry bodies mounted thereon, and said platform also having a fueled post-boost control system which includes a gas generator containing fuel and a plurality of nozzles for exhausting gases from the gas generator fuel to control the direction, orientation and velocity of said platform to achieve a desired pre-selected location for release of a releasable re-entry body, said perturbations on a released re-entry body being due to gases being exhausted from the nozzles of the post-boost control system of said aerospace platform during deployment of the platform to a desired pre-selected re-entry-body-release location for release of a releasable re-entry body, which method comprises:
(a) initiating a flip turn of said platform which is moving in a generally ballistic path at a post-boost velocity, said flip turn being in a first direction away from the direction required to reach said desired pre-selected re-entry-body-release location;
(b) stopping said flip turn after said platform has turned through a first predetermined angle;
(c) accelerating said platform in said first direction and at said predetermined angle to provide a lateral escape distance between the platform and the previously released re-entry body;
(d) turning said platform to establish a platform longitudinal axis orientation in the direction required to reach said desired pre-selected re-entry-body-release location;
(e) accelerating said platform to provide the required velocity to reach said desired pre-selected re-entry-body-release location;
(f) turning said platform to orient said platform in the proper orientation for release of said re-entry body.

5,664,743
DEVICE FOR GRIPPING, GUIDING AND TRANSPORTING WHEELED HELICOPTERS PARTICULARLY FOR SHIP'S DECKS
Aurelio Ortelli, Bologna, Italy, assignor to Riva Calzoni S.p.A, Bologna, Italy
Filed Dec. 22, 1994, Ser. No. 362,154
Claims priority, application Italy, Dec. 30, 1993, MI93A2765
Int. Cl.[6] B64C *25/50*
U.S. Cl. 244—50 **10 Claims**



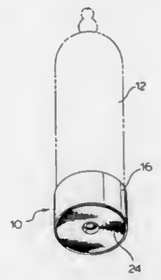
1. A device for displacing a helicopter on a ship or platform having a deck, comprising:
at least one longitudinal guide forming a path for a helicopter leading to a parking location;
means forming a transverse guide extending perpendicular to said longitudinal guide;
a pair of crossmembers extending generally parallel to said longitudinal guide and transverse to said transverse guide;
means for displacing said crossmembers independently along said transverse guide to approach said crossmembers to a helicopter disposed between said crossmember;
respective carriages mounted on the crossmembers;
means for independently displacing said carriages along said crossmembers to a gripping position in juxtaposition with opposite portions of the helicopter disposed between said crossmembers;
respective support plates on said carriages displaceable laterally of said carriages and transverse to said longitudinal guide and formed with free ends facing one another;
respective gripping means on free ends of the plates pivotal exclusively about respective axes extending perpendicular to the deck and in a plane parallel to the deck and engageable with the portions of the helicopter in said gripping position in any position of the helicopter portion relative to a longitudinal axis of the deck, thereby seizing said helicopter for further shifting;
flexible means on said carriages for biasing said support plates inwardly toward said opposite portions of the helicopter in said gripping position during displacing the helicopter laterally and rotatably upon lifting so that a longitudinal axis thereof is parallel to and aligned with said longitudinal guide; and
means displaceable along said longitudinal guide for receiving said helicopter from said gripping means when said helicopter has been shifted toward said longitudinal guide to displace said helicopter to said parking location.

5,664,744
RAILWAY HIGHWAY CROSSING SIGNAL
James P. Chew, Westmoreland County; Santo A. DeFrancesco, Allegheny County, both of Pa., and Richard S. Jones, Lexington County, S.C., assignors to Union Switch & Signal Inc., Pittsburgh, Pa.
Filed Jul. 11, 1995, Ser. No. 500,570
Int. Cl.[6] B61L *23/00*
U.S. Cl. 246—473.3 21 Claims



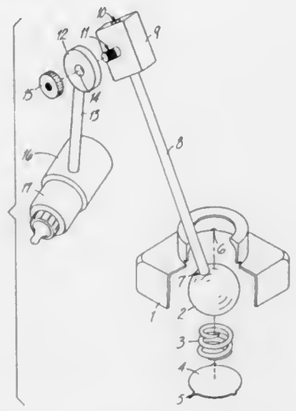
1. A railway signal, comprising:
a housing having first and second surfaces thereupon, wherein at least one portion of said second surface is machined so as to have a selected height;
a reflector mounted upon said first surface, wherein said signal has a focal point in which a light source provided at said focal point is directed outward of said signal as a beam; and
a lamp receptacle bracket having a first end and a second end, wherein said first end of said lamp receptacle bracket is mounted upon said at least one machined portion of said second surface, and wherein said second end of said lamp receptacle bracket has a lamp receptacle attached thereto and wherein said housing has a generally annular ledge thereon, and wherein said first surface of said housing is one generally annular surface of said ledge and said second surface of said housing is an opposite surface of said annular ledge.

5,664,745
MUSICAL BABY BOTTLE ADAPTER
Sharon Hadaway, 133 McCabe Crescent, Thornhill, Ontario, Canada, L4J 2S6
Filed May 15, 1996, Ser. No. 649,907
Int. Cl.[6] A47D *15/00*
U.S. Cl. 248—105 3 Claims



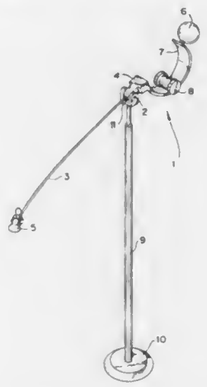
1. A baby bottle adapter for releasable attachment to a bottom of a baby bottle, the adapter being capable of playing a musical melody when activated, the adapter comprising,
a hollow top chamber of a size and shape to accept the bottom of a baby bottle, the top chamber being formed from an upper portion of a perimetric side wall and an internal divider located within the adapter,
a hollow bottom chamber located below the top chamber, the hollow bottom chamber being sealed against liquid infiltration and containing a means for playing a musical melody upon activation, the hollow bottom chamber being formed from a lower portion of the perimetric side wall, the internal divider of the adapter, and a base having an upper and lower surface attached to the lower portion of the perimetric side wall below the internal divider,
the base being provided with an opening through which an activating means having a contact surface for contact and activation of the means for playing the musical melody passes, the activating means being surrounded by an elastomeric sealing material which extends beyond the opening on both the upper and lower surfaces of the base surrounding the opening to seal the opening against infiltration of liquid into the bottom chamber.

5,664,746
BABY BOTTLE HOLDER
David S. Benzakarya, 3300 1-2 Penn Mar Ave., Elmonte, Calif. 91732
Filed May 17, 1994, Ser. No. 243,811
Int. Cl.[6] A47D *15/00*
U.S. Cl. 248—106 1 Claim



1. A baby bottle holder comprising:
a) a weighted base providing an opening forming a socket to receive a ball;
b) a ball adapted to be urged against the opening in the base;
c) spring mean biased against the ball;
d) washer mean providing extending outwardly tabs;
e) openings in the base receiving said tabs;
f) a first arm extending outward from the ball slidably engaging clamp means;
g) a second arm rotatably secured to said clamp means; and
h) an insulated container for a baby bottle, said container adapted to rotate about an axis normal to said first arm, and said arms cooperating to permit adjustment of the location of the baby bottle for feeding of a baby.

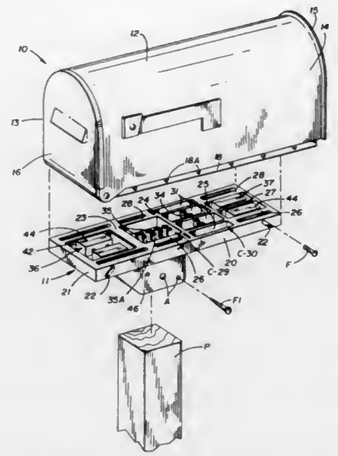
5,664,747
ADJUSTABLE SUPPORT DEVICE
Johannes Hermanus Eilering, Groningen, Netherlands, assignor to Paul Andre Bekker, Haren, Netherlands
PCT No. PCT/NL92/00200, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO93/10396, PCT Pub. Date May 27, 1993
PCT Filed Nov. 11, 1992, Ser. No. 232,153
Claims priority, application Netherlands, Nov. 14, 1991, 9101899
Int. Cl.[6] E16H *11/00*
U.S. Cl. 248—123.11 19 Claims



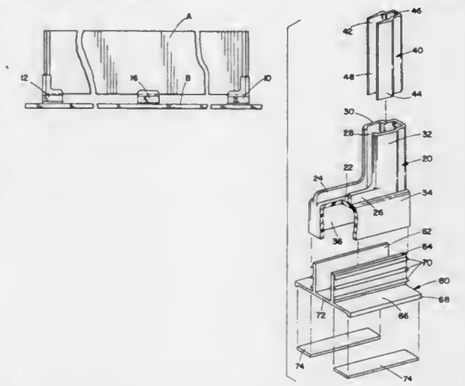
1. An adjustable support device for a body, the support device comprising:
a tilting point;
an adjustable arm supported at the tilting point, at least a portion of the arm being made of flexible material and adapted to be attached to the body at a first end and a length of the arm extending from the tilting point to the first end thereof being a fixed length, the arm being movable about the tilting point; and a counterweight attached to a second end of the arm, the first and second ends of the arm being on opposite sides of the tilting point, the counterweight including at least one holder in which at least one mass is movably mounted, the at least one holder being attached to the arm and being movable therewith, the at least one mass being movable along a length of the at least one holder to be movable relative to the adjustable arm and to the at least one holder such that a center of gravity of the support device with the body and the tilting point lie on a generally vertical line in any position of the arm, wherein the holder in longitudinal section has at least a partially oval shape, a head of the oval shape being oriented outwardly.

5,664,748
UNIVERSAL MAIL BOX MOUNTING BASE
Stephen Speece, Youngstown, and Charles Richard Nestor, Niles, both of Ohio, assignors to Steel City Corporation, Youngstown, Ohio
Filed Oct. 26, 1995, Ser. No. 548,644
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—219.2 8 Claims

1. A mounting bracket for mail boxes, said mounting bracket comprises oppositely disposed sidewalls, opposed end walls, a top surface and a bottom surface, a plurality of interconnected rib walls extending between said respective end walls and sidewalls, compartments formed between said rib walls, a plurality of spacing elements removably secured within said compartments, said spacing elements having interconnecting means to one another and said adjacent rib walls within their respective compartments, some of said spacing elements are-of a known length less than that of said remaining spacing elements, flanges extending inwardly from said rib walls in spaced relation to one another defining said bottom surface, lug means on said flanges, some of said spacing elements define blocks having sidewalls, apertured end walls and integral top, means depending from said rib wall's bottom surface for securing the bracket to post means.



5,664,749
ADJUSTABLE SIGN HOLDERS
Daniel J. Kump, Mentor; Gerald A. Conway, Pepper Pike, and Anthony J. Lammers, Gates Mills, all of Ohio, assignors to Fasteners For Retail, Inc., Cleveland, Ohio
Filed Oct. 5, 1995, Ser. No. 538,979
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—220.22 21 Claims



1. An apparatus for supporting a planar element on a fixture comprising:
a left side support member and a right side support member, each of said support members being separated from the other and being free standing, each of said left and right side support members including a support surface and an engagement surface oriented substantially normal to said support surface;
a substantially linear groove located along a length of said engagement surface of each of said left and right side support members; and,
a left side base and a right side base on which a respective one of said left side and right side support members is mounted,

wherein at least one of said left side support member and said right side support member includes a housing having a recess and wherein at least one of said left side base and said right side base comprises:

a projection extending into said recess of said support member housing,

a securing means extending outwardly from said projection for fastening said projection in said recess of said support member housing, and

a support wall on which said projection is mounted, said support wall having a larger circumference than a circumference of said one of said left side base and said right side base.

5,664,750

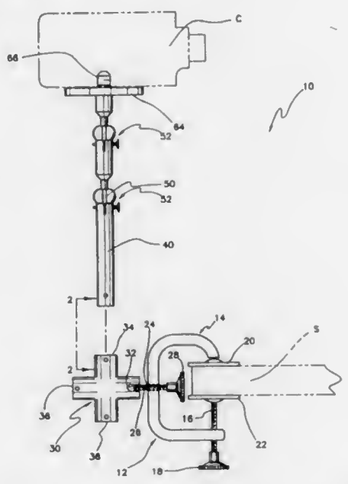
CAMERA MOUNT

Edward Cohen, 6021 Fountain Park La. #10, Woodland Hills, Calif. 91367

Filed Nov. 14, 1995, Ser. No. 557,830

Int. Cl.[6] F21L *15/08*

U.S. Cl. 248—231.71 **5 Claims**



1. A camera mount for adjustably fixing a camera in a predetermined position in relation to a fixed support surface, comprising:

a base clamp portion for attaching said camera mount to the fixed support surface, said base clamp portion including a fixed leg terminating in a first gripping surface and an adjustable leg terminating in a second gripping surface;

an intermediate adaptor portion including removable attachment apparatus removably attaching said intermediate adaptor portion to said base clamp portion, said intermediate adaptor portion comprising a plurality of socket members each including a mast receiving aperture;

a mast portion having a first end including adaptor portion attachment apparatus attaching said mast portion to any one said mast receiving aperture of said adaptor portion and a second distal end including camera support attachment apparatus attaching said mast portion to a camera support member, said mast portion including adjustment apparatus for fixing said mast portion such that said camera support member is fixedly held in a predetermined position relative to the fixed support surface.

5,664,751

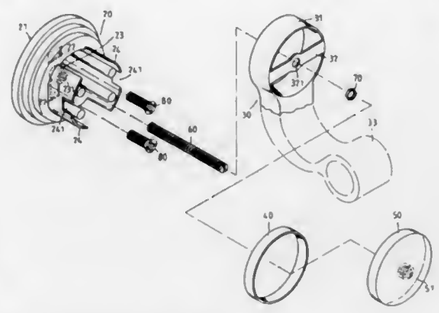
ARTICLE HOLDER

Chun-Min Lan, 58, Ma Yuan West St., Taichung, Taiwan

Filed Aug. 12, 1996, Ser. No. 695,730

Int. Cl.[6] A47G *29/00*

U.S. Cl. 248—251 **1 Claim**



1. An article holder comprises:

a base, a bracket, a collar, and a cover,

the base having a disk, a plurality of hollow posts disposed on the disk, and a fence disposed on the disk to surround the hollow posts,

a threaded socket disposed on a center of the base,

a threaded through hole formed in the threaded socket,

a plurality of slots formed on the base,

the bracket having an annular seat disposed on a first end of the bracket and a hollow mount disposed on a second end of the bracket,

a crossbar disposed on the annular seat,

a round hole formed on a center of the crossbar,

the annular seat disposed on the disk to surround the fence,

the collar disposed on the annular seat,

the cover disposed on the collar,

a threaded recess hole formed on the cover,

a plurality of studs fastening the disk on a wall via the corresponding slots,

a bolt passing through the round hole and the threaded through hole,

the threaded recess hole engaging with a distal end of the bolt.

5,664,752

DIRECTION ADJUSTABLE MOUNTING FITTINGS

Lars Matthiessen, and Ole Jacob Velergang, both of Aarhus C., Denmark, assignors to VM Acoustics ApS, Aarhus C., Denmark

Continuation of Ser. No. 230,828, Apr. 21, 1994, abandoned. This application May 2, 1996, Ser. No. 641,845

Claims priority, application Denmark, Apr. 21, 1993, 0454/93

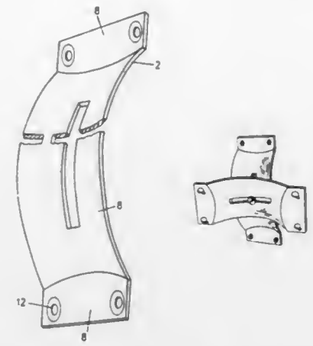
Int. Cl.[6] A47F *5/00*

U.S. Cl. 248—299.1 **10 Claims**

1. A fitting for directionally and adjustably mounting an object on a carrier surface comprising:

first and second rigid fitting parts, each rigid fitting part being shaped with a plate strip portion having a first side and a second side opposite to said first side, the plate strip portion being oblong so as to have a length dimension and a width dimension, the strip portion extending in a longitudinal direction so as to be convexly curved at the first side and correspondingly concavely curved at the second side, and extending in a width direction so as to be concavely curved at the first side and correspondingly convexly curved at the second side, said plate strip portion thus forming a geometrical saddle element;

the oblong plate strip portions having at both ends thereof a mounting portion for attachment of the first and second rigid fitting parts to the carrier surface and the object to be



mounted, respectively, with the oblong plate strip portions bulging outwardly therefrom; and

a clamp for clamping the two oblong plate strip portions together into orthogonal intercrossing positions thereof at selected respective subareas along the longitudinal direction thereof, such that in the subareas the intercrossing positions curving in the width direction of each of the oblong plate strip portions will substantially mate with the curving in longitudinal direction of another oblong plate strip portion to thereby produce a clamping by which a relative rotation and displacement of the oblong plate strip portions is prevented.

5,664,753

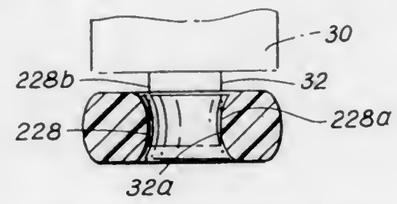
BOTTLE OR CONTAINER HOLDER FOR HOLDING THE BOTTLE OR CONTAINER IN AN INVERTED POSITION

Koji Takei, 629 N. Bundy Dr., Los Angeles, Calif. 90049

Filed Jul. 14, 1995, Ser. No. 502,055

Int. Cl.[6] A47K *1/08*

U.S. Cl. 248—311.3 **8 Claims**



1. A holder for supporting a bottle or container provided with a cap or closure in an inverted position by engaging the cap or closure so that the contents of the container when in said inverted position will flow towards the mouth of the container, comprising:

a member having a substantially cylindrically-shaped outer configuration;

a pair of oppositely disposed facing surfaces, at least one of said facing surfaces being perpendicular to a longitudinal axis of said cylindrically-shaped outer configuration, said one facing surface forming a uniformly closed base surface on which said holder is adapted to rest on a support;

a receptacle opening in said cylindrically-shaped member including a receiving part for receiving and engaging solely the cap or closure of the container for holding said cap or closure and supporting said container upright in the inverted position thereof;

another facing surface of said pair of oppositely disposed facing surfaces forming a surface substantially coextensive with an entry portion to said receptacle opening;

an inwardly directed portion in said receiving part extending inwardly from said surface substantially coextensive with said entry portion to said receptacle opening to decrease an entry diameter of said receiving part for engaging the cap or closure of the container;

at least one slit extending from said receiving part partially towards an outer surface portion between said pair of oppositely disposed facing surfaces of said member to permit the diametrical extent of said receptacle opening to be increased; and

said receiving part of said receptacle opening being a substantially U-shaped cylindrical opening with said closed surface forming a base for said substantially U-shaped cylindrical opening.

5,664,754

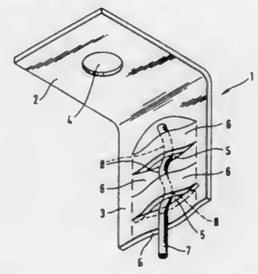
HANGING DEVICE

Gary Gaenslen, Tulsa, Okla., assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Continuation of Ser. No. 196,335, Feb. 10, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 626,386

Int. Cl.[6] A47F *5/08*

U.S. Cl. 248—317 **4 Claims**



1. A hanging device comprising an attachment member (**1**) and an elongated rectilinearly extending wire-like support member (**7**) having a first and a second end, said attachment member comprises an attachment part (**2**) having a surface to be attached to a support surface and a connecting part (**3**) extending from said attachment part and having a planar connecting surface separate from said surface of said attachment part (**2**) and extending in an elongated direction of said support member (**7**), said planar connecting surface of said connecting part having a pair of laterally spaced edges extending in the elongated direction and a first end and a second end extending transversely of and at opposite ends of said edges, said connecting part (**3**) having at least a pair of slots (**5**) extending therethrough transversely of the elongated direction of said support member and terminating inwardly of said edges, a section (**6**) of said connecting part (**3**) located between at least a pair of said slots (**5**) and having opposite ends spaced apart and said section extending transversely of the elongated direction and connected at each of said ends to said connecting surface, said section (**6**) being is displaced perpendicularly out of said planar connecting surface, said support member (**7**) is inserted in the elongated direction between and in contact with said connection surface and a surface of said displaceable section (**6**) facing towards said connecting surface so that said first end thereof extends rectilinearly towards said first end of said connecting surface and said second end thereof extends rectilinearly beyond the second end of said connecting surface and said support member including bends extending transversely of said displaceable section and being formed by said displaceable section (**6**) when said displaceable section (**6**) is displaced towards said connecting surface and said bends cooperating with said displaceable section (**6**) for providing a locked connection between said support member and said connecting part (**3**) with said support member (**7**) extending rectilinearly from the locked connection and generally parallel with said connecting surface.

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5,664,755

INTERLOCKING SEAT ADJUSTER WITH COMPENSATING LINK

Rudolf Gruber, Claremont, Canada, assignor to Multimatic Inc., Markham, Canada

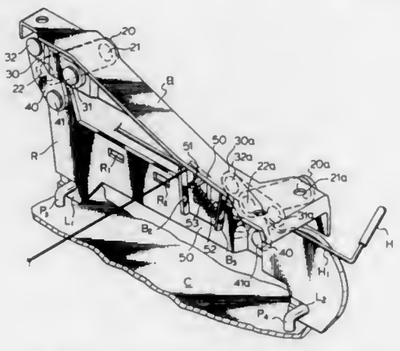
PCT No. PCT/CA93/00058, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO94/00313, PCT Pub. Date Jan. 6, 1994

Continuation-in-part of Ser. No. 906,329, Jun. 30, 1992, abandoned. This PCT application Feb. 12, 1993, Ser. No. 199,272

Claims priority, application Canada, Jun. 30, 1992, 2072809

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—424 **10 Claims**



1. A seat system comprising a vehicle frame and a seat bracket moveably affixed in relation to said frame, the seat system having means to move the seat bracket to and from a fore and aft position longitudinally in relation to said frame, wherein said means to move the seat bracket to and from a fore and aft position longitudinally further comprises a linkage system for providing the longitudinal movement of the seat bracket including at least two links for moving the seat bracket fore and aft and at least one compensating means for compensating for the substantially arcuate motion of the at least two links of the linkage system of the seat bracket, the cooperative motion of the at least one compensating means rendering the movement of the linkage system and the seat bracket as substantially linear within the range of movement of the seat bracket, the frame having first interlocking means to interlock with interlocking means of the seat bracket over the longitudinal motion of the seat bracket, the seat bracket having second interlocking means to interlock with interlocking means of the frame over the longitudinal motion of the seat bracket, wherein the first and second interlocking means normally permit said longitudinal motion but are arranged to interlock when the system is subjected to the loading experienced during an accident to provide a direct path to the vehicle frame for any forces exerted upon the seat system during an accident while reducing any forces exerted on the means to move the seat bracket to and from a fore and aft position in relation to the frame, during the accident.

5,664,756

ARTICLE STAND

Yuan-Chi Liao, No.2, Lane 304, Ching-Cheng Road, Taichung, Taiwan

Filed Sep. 26, 1996, Ser. No. 719,084

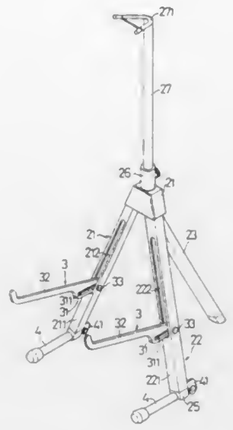
Int. Cl.[6] G10D *3/00*

U.S. Cl. 248—443 **7 Claims**

1. An article stand comprising:

a tripod having a top end disposed with a pivot section pivotally connected with top ends of a first, a second and a third legs which can be pivoted open for supporting an article or contracted and collected for reducing the volume of the article stand, front faces of the first and second legs being respectively formed with first slots with equal height, opposite to the front faces, the rear faces of the first and second legs being respectively formed with second slots with equal height, the second slots communicating with the first slots but the height of the second slots being less than that of the first slots, near the bottom ends of the first slots, the first and second legs being respectively formed with locating holes with a height between the top ends and bottom ends of the second slots;

two support levers each including an adjustment section and a support section which contain an angle therebetween, the adjustment section being formed with a slot, whereby the two adjustment sections of the two support levers are respectively inserted into the first slots of the first and second legs and passed through the second slots thereof, two locating members being respectively inserted into the locating holes of the first and second legs and the slots of the adjustment sections, the adjustment sections of the support levers contacting with the bottom ends of the first and second slots and being movable relative to the locating members via the slots so as to change the space between the support sections and the first and second legs, the support levers being foldable to be received in the first slots of the first and second legs.



5,664,757

STAND FOR RECEIVING MACHINES AND EQUIPMENT

Gerhard Simonis, Bremen, Germany, assignor to ABB Patent GmbH, Mannheim, Germany

Filed Sep. 29, 1994, Ser. No. 314,899

Claims priority, application Germany, Sep. 29, 1993, 43 33 048.7

Int. Cl.[6] F16M *1/00*

U.S. Cl. 248—672 **4 Claims**

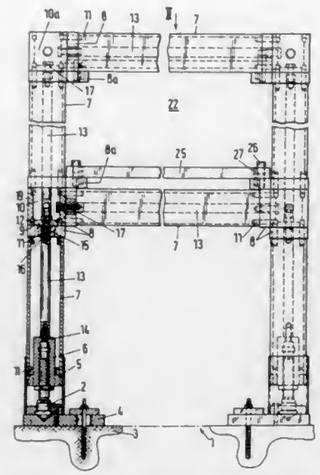
1. A stand for receiving machines and equipment, comprising:

horizontally and vertically extending beams being constructed as hollow profile sections;

cup-shaped junction nodes being disposed in a plurality of planes, each of said junction nodes having a given side facing a respective one of said beams and being form-lockingly connected with said respective beam;

said form locking connection including cylindrical pins being embedded into said junction nodes, each of said pins projecting from said given side of a respective one of said junction nodes by a predetermined amount and engaging in a corresponding recess formed in said respective beam;

connecting rods each passing through a respective one of said beams and having an end with an end surface and a thread, said end surfaces of said connecting rods each being spaced apart from a respective one of said junction nodes defining a gap therebetween; and



screw connections each being disposed between a respective one of said connecting rods and a respective one of said junction nodes.

5,664,758

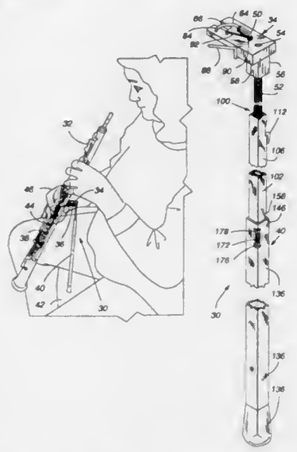
EXTENDABLE MONOPOD STRUT DEVICE FOR MUSICAL INSTRUMENT

Leland B. Smith, 8728 E. Hinsdale Ave., Englewood, Colo. 80112

Filed Jan. 25, 1995, Ser. No. 378,198

Int. Cl.[6] F16M *3/00*

U.S. Cl. 248—688 **31 Claims**



1. A strut device for supporting a reed woodwind musical instrument at a thumbrest of the instrument and from a seating facility upon which a musician is seated while playing the instrument and supporting the instrument by conventionally positioning the musician's thumb against a lower surface of the thumbrest, the strut device comprising:

an attachment component having a connection mechanism adapted to releasably attach the attachment component to the thumbrest of the reed woodwind musical instrument, said attachment component having a portion adapted to extend away from the thumbrest when releasably attached to avoid interfering with the placement and position of the musician's thumb on the lower surface of the thumbrest while playing the instrument; and

an elongated monopod component having an upper end connected to the attachment component and having a lower opposite end adapted to contact the seating facility upon which the musician is seated while playing the instrument.

5,664,759

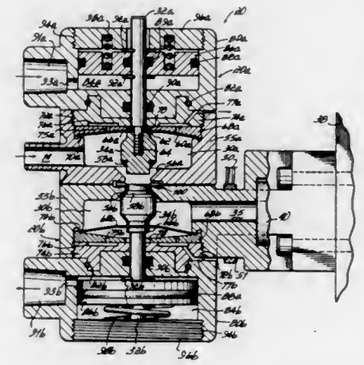
VALVED COUPLING FOR ULTRA HIGH PURITY GAS DISTRIBUTION SYSTEMS

Bryce Evans, Jackson; Helen E. Rebenne, Ann Arbor; Russell L. Rogers, Munith, all of Mich., and Joshua Collins, Mountain View, Calif., assignors to Aeroquip Corporation, Maumee, Ohio

Filed Feb. 21, 1996, Ser. No. 604,727

Int. Cl.[6] F16K *31/126*

U.S. Cl. 251—63.5 **10 Claims**



1. A valved coupler for ultra high purity gas distribution, comprising

a valve housing having an external surface, an internal surface defining a gas-carrying chamber, and first and second aperture-defining surfaces extending from said internal surface to said external surface and defining first and second apertures permitting gas flow between said gas-carrying chamber and an external environment to which the external surface of the housing is exposed,

a valve stem having proximal and distal ends slidably mounted within said housing for linear movement between a first position and a second position, along an axis extending through said first aperture, said valve stem having a sealing surface at said distal end,

a substantially planar flexible diaphragm having an outer periphery and an inner periphery, said inner periphery sealingly engaged to said valve stem, said outer periphery sealingly engaged to said internal surface of said housing, dividing said internal surface of said housing into two sections, said aperture-defining surfaces extending between said external surface and a common section of said internal surface of said housing,

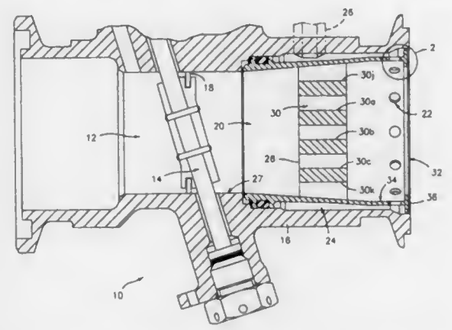
wherein at said first position, said sealing surface of said valve stem engages said first aperture-defining surface of said housing, and said distal end of said valve stem is substantially coplanar with said external surface of said housing in a region bordering said first aperture-defining surface, whereby when said first aperture is sealed by said valve stem only said first aperture-defining surface of said housing and said distal end of said valve stem are exposed to the external environment.

5,664,760

PRESSURE REGULATION VALVE WITH INTEGRATED DOWNSTREAM PRESSURE TAP

Donald E. Army, Jr., Springfield, Mass.; Brian G. Donnelly, Suffield, and John P. Nikkanen, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 6, 1995, Ser. No. 418,008
Int. Cl.[6] F16K *1/22;47/08*
U.S. Cl. 251—118 **7 Claims**



7. A baffle insert for segmenting turbulent flow within a valve body and returning the flow to a more laminar distribution, the insert comprising: a frusto-conical shell adapted in size and shape to fit within a discharge channel of the valve body; a flow baffle, within the shell, having a grid of throughbores, wherein a plurality of the throughbores are generally parallel to a central axis of the discharge channel and another plurality of the throughbores are canted to direct the flow through the cantel throughbores toward an inner wall of the shell, downstream of the flow baffle; a ring of pressure-tap holes in the insert, downstream of the flow baffle; and lip means for converting dynamic fluid pressure to static pressure at the pressure-tap holes, said lip means comprising an annular lip on an outlet end of the shell, adjacent the pressure-tap holes and downstream thereof, that acts as a dam to block the flow directed toward the inner wall of the shell by the canted throughbores in the flow baffle.

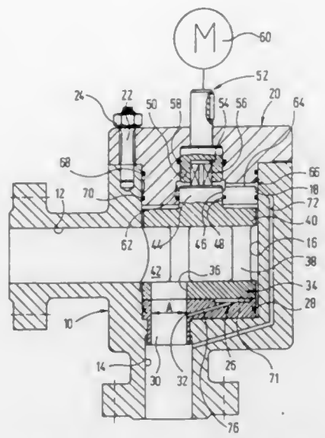
5,664,761

DISK VALVE

Manfred Weyand, and Hermann Kott, both of Monchen-Gladbach, Germany, assignors to Babcock-Sempell AG, Korschenbroich, Germany

Filed May 16, 1995, Ser. No. 441,974
Claims priority, application Germany, May 16, 1994, 44 170 094.7
Int. Cl.[6] F16K *3/10;39/04*
U.S. Cl. 251—283 **12 Claims**

1. Disk valve for fluid under pressure, comprising:
a) a housing with an inlet and an outlet;
b) a fixed first control disk mounted inside the housing and having a first fluid control port;
c) a second control disk which can be rotated about an axis, also mounted inside the housing and which rests on the first control disk and has a second fluid control port which is not concentric to the axis, the second control disk being continuously adjustable between an open position in which the second fluid control port is in alignment with the first fluid control port and a closed position in which the second fluid control port is not aligned with the first fluid control port;
d) a concentric pressure relief surface associated to the second control disk, which is in contact with an outlet pressure of the fluid, at least when the second control disk is in the closed position;



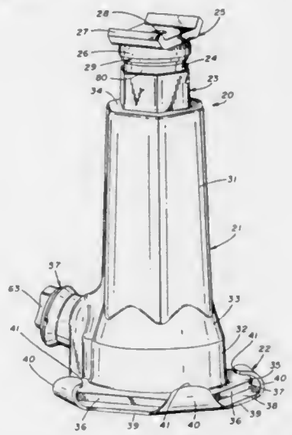
e) a recess provided in the surface of the first control disk to be facing the second control disk, so that the recess forms a pressure contact surface on an underside of the second control disk, the pressure contact surface being in contact with the outlet pressure of the fluid in its closed position, its open position, and intermediate positions, the choice of position and size of the recess being such that in the closed position of the second control disk, a tilting moment caused by fluid pressure acting on an underside of the second control disk by the first fluid control port in the fixed control disk is at least virtually cancelled out by a tilting moment acting in an opposite direction due to the presence of the recess.

5,664,762

AUTOMOTIVE SCREW JACK

Thomas D. Rothbauer, Laporte, Ind., assignor to Ausco Products, Inc., Benton Harbor, Mich.

Filed Sep. 11, 1996, Ser. No. 710,036
Int. Cl.[6] B66F *3/18*
U.S. Cl. 254—103 **28 Claims**



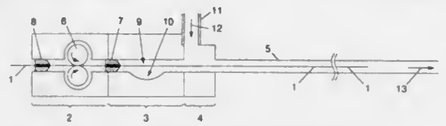
1. A jack comprising a stand, a first screw generally vertically positioned in and rotatable within said stand, said first screw having external threads, a second screw generally vertically positioned in said stand and having internal threads engaging said external threads of said first screw such that when said first screw is rotated, said second screw is moved vertically, said second screw also having external threads, a tube assembly positioned around said second screw, a nut carried at the axial bottom of said tube assembly having a hexagonal outer configuration and having internal threads engaging said external threads of said second screw, said tube assembly being moveable vertically when said first screw is rotated, and an outer sleeve having a hexagonal configuration and positioned around said nut.

5,664,763

APPARATUS FOR BLOWING CABLE AND METHOD THEREFOR

Hiroaki Sano; Satoshi Tanaka, and Kinji Taguchi, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 11, 1995, Ser. No. 540,830
Claims priority, application Japan, Oct. 14, 1994, 6-249273
Int. Cl.[6] B65H *59/00*
U.S. Cl. 254—134.4 **8 Claims**



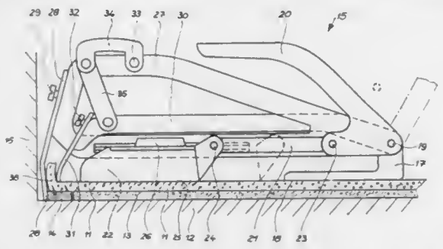
1. An apparatus for blowing a cable comprising:
feeding means for feeding a cable into a tube;
a meandering detection section provided adjacent to said feeding means, said meandering detection section having a straight passage for said cable passing therethrough, a recessed portion being arranged on a wall of said passage, and detecting means for detecting said cable meanderingly entering into said recessed portion;
air flow supplying means for supplying an air flow into said passage and said tube; and
prevention means for preventing the leak of the air flow from said apparatus.

5,664,764

DEVICE FOR STRETCHING CARPETS WITH A HOLD DOWN

Udo Ruppricht, Ahaus-Wessum, Germany, assignor to Wolff GmbH, Bietigheim/Bissingen, Germany

Filed Aug. 16, 1995, Ser. No. 515,739
Claims priority, application Germany, Nov. 2, 1994, 44 39 034.3
Int. Cl.[6] B25B *25/00;* **B65H** *77/00*
U.S. Cl. 254—209 **11 Claims**



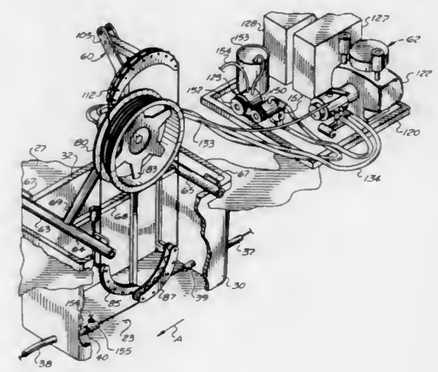
1. A device for stretching carpets to be laid on a plane floor having nail ledges mounted in a vicinity of walls, said device comprising a stretching head (**22**) having spikes for engaging a carpet and a lever (**20**) pivotally arranged on a base unit of said device and being linked to said stretching head for causing said stretching head to move relative to said base unit when said lever is rotated, said device further comprising a tensioning ledge (**28**) for engaging behind the nail ledge (**14**) which is pivotally mounted on the base unit (**17**) for allowing movement of said tensioning ledge in a vertical direction relative to said base unit for positioning said tensioning ledge behind said nail ledge and for removing said tensioning ledge from behind said nail ledge; wherein said device further includes a hold-down element which is pivotally mounted on the base unit for allowing movement of said hold-down element in a vertical direction for engaging carpet positioned at said nail ledge and pressing said carpet toward a top area of said nail ledge.

5,664,765

APPARATUS AND METHOD FOR PULLING CABLE

John W. Pickrell, Scottsdale, Ariz., assignor to JP Patent Holdings LLC, Scottsdale, Ariz.

Division of Ser. No. 238,327, May 5, 1994, Pat. No. 5,533,711, which is a continuation-in-part of Ser. No. 853,514, Mar. 18, 1992, Pat. No. 5,324,006, which is a division of Ser. No. 532,793, Jun. 4, 1990, Pat. No. 5,152,506. This application Apr. 18, 1996, Ser. No. 634,568
Int. Cl.[6] H02G *1/08;* **B66D** *1/00*
U.S. Cl. 254—271 **9 Claims**



1. In a relay device for pulling cable and for relaying said cable to a subsequent device,
said subsequent device capable of exerting a pulling tension upon said cable, for moving said cable at a first speed, and
said relay device including cable handling means driven by a drive means for exerting a pulling tension upon said cable for moving said cable at a second speed,
improvements therein for controlling said relay device in response to said subsequent device, said improvements comprising:
a) a first means response to said first speed and to said second speed; and
b) second means responsive to said first means for controllably varying said cable handling means to accelerate said cable from said second speed when said first speed is greater than said second speed, and to decelerate said cable from said second speed when said first speed is lesser than said second speed to maintain equilibrium with said first speed.

5,664,766

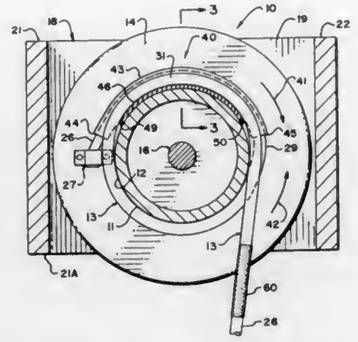
WINCH WITH REVERSE ROTATION PROTECTION

Morris Baziuk, Winnipeg, Canada, assignor to Unique Concepts Ltd., Winnipeg, Canada

Filed May 17, 1996, Ser. No. 649,516
Int. Cl.[6] B66D *5/32*
U.S. Cl. 254—375 **9 Claims**

1. A winch comprising:
a winch cable;

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a winch drum having a cylindrical surface for receiving turns of the winch cable wrapped therearound;

means mounting the winch drum for rotation about an axis longitudinal of the cylindrical surface;

the winch cable having a first end attached to the drum for rotation therewith and a second free end for attachment to an object to be wound in and being wrapped around the drum in a first direction such that rotation of the drum in the first direction pays out the winch cable and such that rotation of the drum in the second opposed direction winds in the cable;

and a member attached to the cable adjacent the first end for inhibiting winding of the cable onto the drum in the second direction in the event that the drum is rotated in the first direction angularly beyond a position in which all of the cable is paid out;

the member comprising:

a rigid arcuate portion having a curvature substantially following that of the periphery of the drum and extending over an arc of less than 180° so as to lie around a portion of the drum which portion is held onto the cable so that each end of the portion is attached to the cable;

and a plate portion having one edge attached to the rigid arcuate portion so as to extend outwardly to one side of the cable.

5,664,767

METHOD OF STACKING CONTINUOUSLY ARRIVING SHEETS

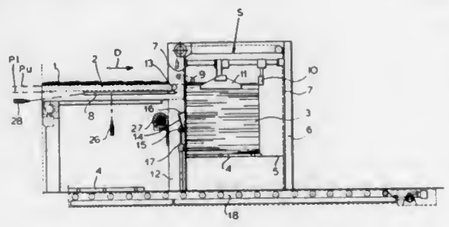
Peter Voss, Jüchen, Germany, assignor to Jagenberg Papiertechnik GmbH, Neuss, Germany

Division of Ser. No. 569,879, Dec. 8, 1995. This application Sep. 30, 1996, Ser. No. 724,067

Claims priority, application Germany, Dec. 22, 1994, 44 45 994.7

Int. Cl.[6] B65H *31/12*

U.S. Cl. 271—218 **1 Claim**



1. A method of operating an apparatus for stacking sheets and having:

conveyor means having a downstream end spaced upstream in a horizontal transport direction from a stacking station for delivering the sheets continuously one after the other at a predetermined upper level in the direction to the station;

a main platform vertically displaceable in the stacking station between an upper position below the upper level and a lower position;

an auxiliary platform below the upper level and formed by a plurality of transversely spaced and parallel rods horizontally displaceable in the direction between an extended position in the station above the main platform, a retracted position upstream of the main platform, and between an upper position just below the upper level and a lower position therebelow;

a plurality of vertically extending separator elements between the conveyor means downstream end and the stacking station and having bent-over upper ends projecting downstream between the rods in the transport direction and displaceable between

a separating position projecting into the station between the auxiliary platform and the upper level and engageable between trailing edges of the sheets in the station,

a withdrawn position out of the station between the station and the conveyor means downstream end,

an upper position with the upper ends just below the upper level, and

a lower position with the upper ends level with the upper position of the auxiliary platform, each element having a vertical length greater than the vertical distance between the auxiliary platform and the upper level,

the method comprising the steps, when a sufficiently tall stack is formed in the station, of sequentially

raising the elements into their upper positions and advancing the elements into their separating positions,

lowering the elements into their lower positions while maintaining them in their separating positions to form in the stack a gap level with the auxiliary platform,

advancing the auxiliary platform into its extended position while the elements are in their lower and separating positions, so as to support the stack above the gap and retracting the elements to their withdrawn positions,

lowering the main platform, removing the stack therefrom, and raising the main platform to its upper position, and

withdrawing the auxiliary platform to its retracted position to deposit the stack on it onto the main platform.

5,664,768

FENCING WIRE RETAINER AND A METHOD OF CONSTRUCTING WIRE FENCES

Arnold Lloyd Scabar, General Delivery, Round Hill, Alberta, Canada, T0B 3Z0

Filed Mar. 27, 1996, Ser. No. 622,419

Claims priority, application Canada, Aug. 1, 1995, 2155150

Int. Cl.[6] E04H *17/24*

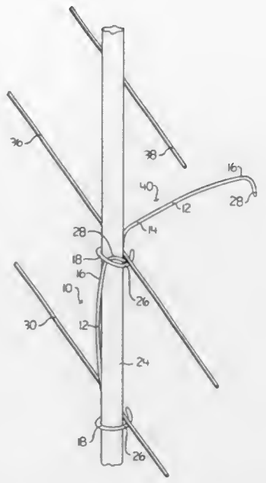
U.S. Cl. 256—54 **3 Claims**

1. A fencing wire retainer comprising:

a rigid wire having a substantially straight portion, a first end portion, and a second end portion;

the first end portion comprising an arcuate portion adapted for hooking around a fence post, a first groove formed between the arcuate portion and the straight portion, and a second groove formed between the arcuate portion and a free end of the first end portion, whereby the first and second grooves together form a wire receiving groove for receiving a fencing wire therein; and

the second end portion comprising a finger adapted for engaging the fence post to secure the fencing wire onto the fence post



and for allowing a longitudinal axis of the straight portion to be disposed substantially parallel to a longitudinal axis of the fence post.

5,664,769

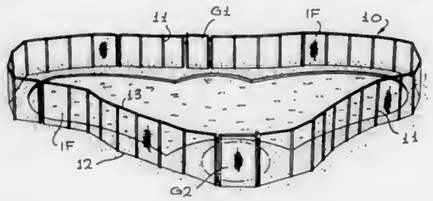
SWIMMING POOL AND SPA TENSIONED PROTECTIVE FENCE WITH AUTO LOCKABLE GATE AND METHOD OF INSTALLATION THEREOF

Steven E. Sadinsky, Van Nuys, and Chen L. Yu, Westlake Village, both of Calif., assignors to Stephen E. Sadinsky, Van Nuys, Calif.

Filed Nov. 13, 1996, Ser. No. 746,652

Int. Cl.[6] E04H *17/00;4/14*

U.S. Cl. 256—73 **19 Claims**



1. A lightweight fence and gate for swimming pools surrounded by a deck comprising a plurality of poles adapted to be inserted into the pool decking adjacent said pool;

a mesh screen tensioned between said poles having top and bottom bindings;

a gate in said fence including a frame having a pair of spaced upright support members, a first horizontal brace for spacing the upright support members and a length of mesh screen tensioned between said upright support members;

support means capable of withstanding lateral tension forces of said screen for supporting and latching said gate;

hinges secured to said support means on one side of said gate; and

a latch device secured to said gate and to said support means on the opposite side of said gate.

5,664,770

APPARATUS FOR DELIVERING PRINTED PRODUCTS TO A FURTHER-PROCESSING LOCATION

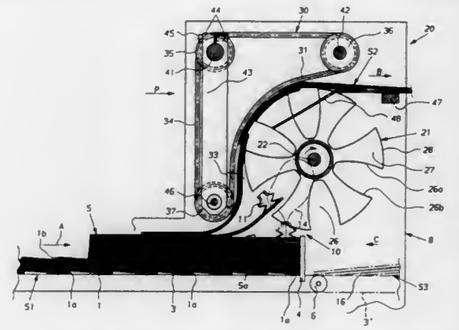
Alex Keller, Eschenbach, Switzerland, assignor to Ferag AG, Switzerland

Filed Jul. 25, 1996, Ser. No. 686,248

Claims priority, application Switzerland, Jul. 25, 1995, 02 183/95-9

Int. Cl.[6] B65H *5/22*

U.S. Cl. 271—3.11 **9 Claims**



9. An apparatus for delivering printed products to a further-processing location comprising:

a first conveying device for feeding printed products in a first imbricated formation to a stacking location, the stacking location having an intermediate stack of printed products that is charged from beneath, the first imbricated formation including printed products that rest on a following printed product;

a removal conveyor having a conveying region, a conveying member, and a pressing-on member, the conveying member and the pressing-on member together forming a guidance gap for the printed products, the conveying member having a conveying wheel, the conveying wheel having a circumferential surface and a plurality of cutouts for directing printed products into the guidance gap, the pressing-on member having a belt conveyor with a strand assigned to a part of the circumferential surface of the conveying wheel; and

a lifting member for lifting an uppermost printed product from the intermediate stack and for delivering the uppermost printed product into the conveying region of the removal conveyor and into the cutouts of the conveying wheel, the lifting member being driven synchronously with the conveying wheel.

5,664,771

SHEET FEED MECHANISM HAVING PLURAL INDEPENDENT FEED ROLLERS AND PLURAL SENSOR ARRANGEMENT

Hiroyuki Nagatani, Tokyo, and Isamu Nakabayashi, Kanagawa, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 2, 1996, Ser. No. 597,578

Claims priority, application Japan, Feb. 10, 1995, 7-023065

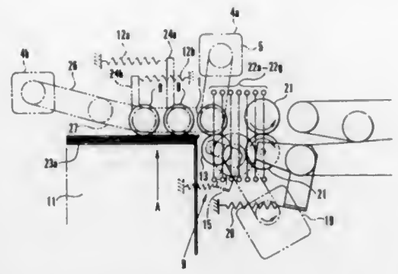
Int. Cl.[6] B65H *5/00;3/06*

U.S. Cl. 271—10.03 **8 Claims**

1. A sheet feed mechanism comprising:

a first feed roller mounted on a feed path of sheets including mail pieces and rotated by a first one-way clutch in only a feed direction, said first feed roller having a high-friction member on an outer circumference thereof;

a second feed roller arranged on an upstream side of said first feed roller in the feed direction to be pivotal about said first feed roller as a center and rotated by a second one-way clutch in only the feed direction, said second feed roller having a high-friction member on an outer circumference thereof and



pressing against a sheet stacked on a feed table in an upright state to feed out the sheet in the feed direction;

a first servo motor for driving said first and second feed rollers;

a reverse roller pressed against by said first feed roller through said feed path and driven to rotate in a counter feed direction, said reverse roller being rotatable both in the feed direction and the counter feed direction;

a torque limiter for constantly applying a predetermined driving torque to said reverse roller in the counter feed direction;

a pick-up roller arranged on a downstream side of said first feed roller in the feed direction and constantly rotated to feed the sheet to a downstream transport path;

a third feed roller arranged on said upstream side of said second feed roller in the feed direction and rotated by a one-way clutch in only the feed direction, said third feed roller having a high-friction member on an outer circumference thereof and pressing against the sheet stacked on said feed table in the upright state;

a second servo motor for driving said third feed roller independently; and

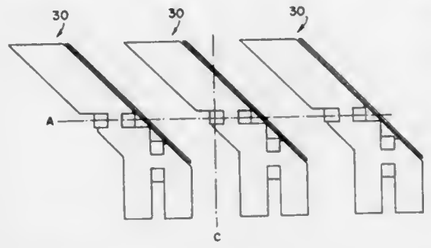
a plurality of photoelectric sensors sequentially arranged on said feed path between said first feed roller and said pick-up roller.

5,664,772

APPARATUS AND METHOD FOR RIGHT ANGLE TURN OVER OF SHEET MATERIAL

David R. Auerbach, West Redding, and William J. Wright, Killingworth, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 4, 1994, Ser. No. 334,654
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—225 **19 Claims**



1. Apparatus for receiving sheets fed in a first direction and guiding and controlling the sheets through a right angle turn, comprising:

input means for receiving first documents being conveyed seratim in a first direction along first deck level and transporting the first documents seriatim in said first direction;

output means adjacent said input means for transporting the first documents along a second deck level in a second direction that is orthogonal to said first direction;

a curved turn over chute angled at 45° between said input means and said output means wherein said input means transports the first documents through said turn over chute to said output means; and

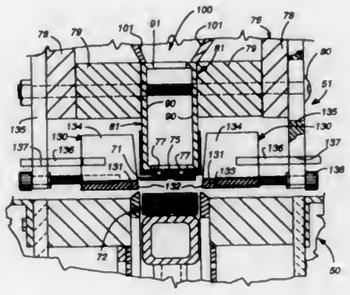
said output means including means for receiving second documents being conveyed seriatim along said second deck level in said second direction and transporting said second documents in said second direction, said output means having an input end on said second deck level separate from said turn over chute, said output means further including idler output rollers at said second deck level and an upper endless belt suspended above said second deck level, said upper endless belt having a lower reach moving in said second direction, and means for applying a normal force against said lower reach of said upper endless belt toward said idler output rollers.

5,664,773

STRIP CONVEYOR AND STACKER

Thomas E. Sevcik, Thornton; James H. Sealey, Westminster; Joseph E. Kovach, Thornton, and Wendell B. Colson, Boulder, all of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed Jun. 7, 1995, Ser. No. 482,629
Int. Cl.[6] B65H *5/02*
U.S. Cl. 271—276 **19 Claims**



1. A conveyor for conveying a cut elongated flexible strip while supporting said strip over its length and width comprising, in combination, a support frame, a moving foraminous conveyor belt mounted on said frame for receiving and supporting said strip over its length and width and conveying said strip to a discharge point, a vacuum source, a housing on said frame defining a suction chamber in communication with said vacuum source, and a track on said housing guiding said belt adjacent to suction chamber and means for capturing said belt within said track adjacent to said suction chamber said track and said means for capturing preventing displacement of said belt from said suction chamber and retain said belt in communication with said suction chamber whereby said strip is retained on said conveyor belt by suction.

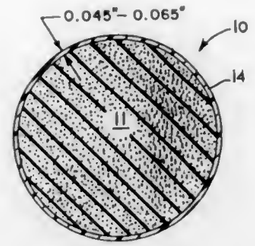
5,664,774

SYNTHETIC LEATHER COVERED GAME BALL

Alan D. Walker, Somers, Conn., and John Uaszek, Westfield, Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Dec. 15, 1995, Ser. No. 574,438
Int. Cl.[6] A63B *37/06;37/12*
U.S. Cl. 473—600 **20 Claims**

1. A game ball for use in diamond sports comprising a spherical core, and a stitched cover encasing the core, the ball having a



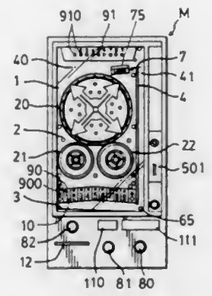
stitched cover to core weight ratio of less than 0.18, said ball complying with standardized regulations for said diamond sport.

5,664,775

BALL-SHOOTING GAME MACHINE

Aqee Kao, No. 11, Alley 1, Lane 210, Chi-Chin-I Rd., Keelung City, Taiwan

Filed Oct. 29, 1996, Ser. No. 741,146
Int. Cl.[6] A63F *7/00*
U.S. Cl. 273—121 B **10 Claims**



1. A ball-shooting game machine, comprising:

a vertical game board having a front side with a vertical partition member mounted thereon for dividing said game board into a game zone and a ball guide zone, said game board having upper and lower edges, said partition member having a distal upper end which is spaced from said upper edge of said game board;

a metal game ball disposed on said front side of said game board;

a magnetic ball shooter disposed behind said game board and including a magnet disposed adjacent to said ball guide zone, and a drive assembly for moving said magnet between a first position adjacent to a lowermost portion of said ball guide zone, and a second position adjacent to an uppermost portion of said ball guide zone, said magnet attracting magnetically with said game ball when said game ball is in said ball guide zone such that movement of said magnet from said first position to said second position will result in corresponding movement of said game ball from said lowermost portion to said uppermost portion of said ball guide zone; and

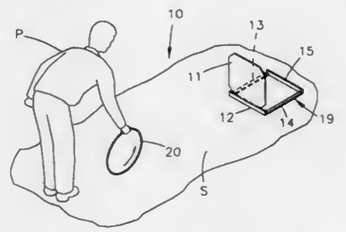
a pivotable guard plate disposed at said upper end of said partition member, said guard plate having a pivot end mounted pivotally on said game board and a free end which extends horizontally into said ball guide zone, said game ball abutting against said guard plate and causing said guard plate to pivot upwardly when said game ball moves along with said magnet toward said uppermost portion of said ball guide zone, said guard plate preventing said game ball from returning into said game ball zone to cause separation of said game ball from said magnet and to permit said game ball to slide along said guard plate and fall into said game zone when said magnet is moved by said drive assembly from said second position back to said first position.

5,664,776

ROLLING HOOP GAME

Raymond J. Mateer, 30900 Nye Ct., Livonia, Mich. 48154

Filed Nov. 12, 1996, Ser. No. 745,695
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—126 R **1 Claim**



1. A rolling hoop exercise game (**10**) comprising:

(a) a longitudinally extending playing surface (S);

(b) a target (**11**) disposed on the playing surface (S) in a vertical position and having a flat front bankboard surface;

(c) said game including a hoop (**20**), adapted to be gripped by a player (P) standing in a fixed position, at a predetermined distance from the target (**11**), and rolled linearly with back spin along the playing surface (S) toward the target (**11**) to hit the target (**11**) and rebound toward the player (P) to be caught by the player (P) without moving his feet and score a game point toward a predetermined number of points necessary to win the game; and,

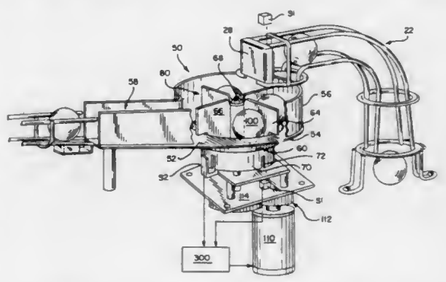
(d) said target (**11**) is hingedly mounted on a support frame (**19**) to permit the target (**11**) to be swung rearwardly and downwardly from the vertical position to a different position in accordance with the rearwardly directed impact force exerted on the target (**11**) by a rolling hoop (**20**) hitting the target (**11**).

5,664,777

ROTARY BALL STORAGE AND DISCHARGE DEVICE FOR A PINBALL GAME

Dennis P. Nordman, Chicago; Winston H. Schilling, Park Ridge, and Edward F. Hicks, Palatine, all of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Nov. 29, 1995, Ser. No. 564,492
Int. Cl.[6] A63F *7/30*
U.S. Cl. 273—127 R **17 Claims**



1. A play feature for a pinball game having an inclined playfield supporting a plurality of game balls thereon, said play feature comprising:

(a) a circular housing comprising:

(i) an idling surface for receiving and supporting game balls for movement in a circular path at an idling speed;

(ii) a discharge surface disposed above said idling surface for receiving and supporting game balls for movement out of said housing at a discharge speed greater than the idling speed;

(b) means for accelerating game balls from said idling speed to said discharge speed; and

(c) means for delivering game balls to said housing;

whereby balls delivered to said housing remain therein until accelerated to said discharge speed.

5,664,778

NETWORK SERVICE SYSTEM AND COMMUNICATION UNIT FOR GAME MACHINE AND GAME MACHINE CAPABLE OF USING SAID NETWORK SERVICE SYSTEM

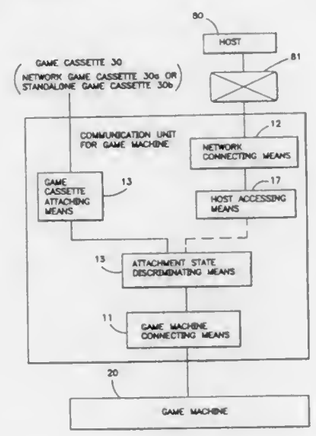
Misao Kikuchi; Kunimasa Imasono; Yasushi Kitagawa; Kenji Noma; Tadayuki Tahara, all of Kawasaki; Yoshinori Saito, Sendai; Hisayoshi Hayasaka, Sendai; Kiyotaka Yago, Sendai, and Kenji Kawasaki, Oyama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 355,032, Dec. 13, 1994. This application Dec. 18, 1995, Ser. No. 574,077

Claims priority, application Japan, Apr. 1, 1994, 6-65339; Jul. 25, 1994, 6-172964

Int. Cl.[6] A63F 9/00

U.S. Cl. 273—148 B **13 Claims**



1. A communication unit, for a game machine, connecting the game machine via a network to a host providing game services, said communication unit comprising:

game machine connecting means for connecting said communication unit with the game machine;

network connecting means for connecting said communication unit with the network;

attachment state discriminating means for discriminating whether a game cassette is attached to said game machine and for discriminating a game cassette type when the game cassette is attached; and

host accessing means for accessing he host via the network; said host accessing means being activated when a network game cassette utilizing the game services provided by the host is attached to said attachment state discriminating means.

5,664,779

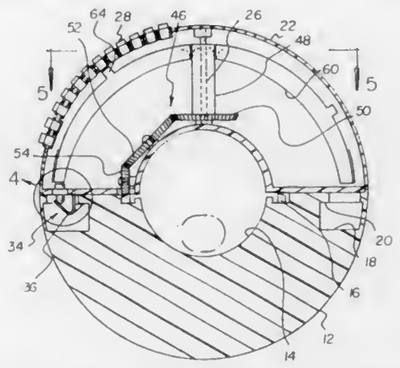
MATHEMATICAL PUZZLE WITH PRIZE RELEASE MEANS

John Soovajian, Jr., 73 Magnolia St., Bergenfield, N.J. 07621

Filed Aug. 30, 1996, Ser. No. 705,948

Int. Cl.[6] A63F 9/06

U.S. Cl. 273—153 R **4 Claims**



1. A new and improved mathematical puzzle with prize release means comprising, in combination:

a lower half sphere with a planar circular top face and a spherical bottom face, the lower half sphere having a spherical recess centrally formed on the top face thereof, an annular geared track formed about a periphery of the spherical recess on the top face of the lower half sphere, and an annular cut out formed on the top face of the lower half sphere adjacent to a periphery thereof with an outwardly extending horizontally oriented lip integrally formed on an entire inboard edge of the cut out;

an upper half sphere having a planar bottom face and a spherical top face with a closed interior space defined therebetween, the upper half sphere including a spherical recess centrally formed on the bottom face thereof with a diameter equal to that of the recess of the lower half sphere, a post fixedly coupled between an apex of the upper half sphere and an apex of the recess of the upper half sphere within the interior space thereof, a plurality of linearly aligned buttons residing radially within a plane including the apex of the upper half sphere and with the plane further situated perpendicular with respect to the bottom face of the upper half sphere with the buttons having a first unbiased orientation wherein the button substantially resides exterior of upper half sphere and a second biased orientation wherein the button protrudes within the interior space upon the depression thereof, and a window formed substantially within the above mentioned plane below the buttons for allowing a user to view within the interior space, wherein each button has indicia representative of a number imprinted thereon;

a locking mechanism for maintaining the bottom face of the upper half sphere and the top face of the lower half sphere connected, the locking mechanism including a locking tab with a vertical portion coupled to and depending from the bottom face of the upper half sphere adjacent a periphery thereof, a first angled portion integrally formed with a bottom end of the vertical portion and further extending both upwardly and radially outward therefrom, and a second angled portion integrally formed with the bottom end of the vertical portion and further extending both upwardly and radially inward therefrom whereby upon abutting the bottom face of the upper half sphere and the top face of the lower half sphere, the second angled portion is adapted to secure to the lip of the annular cut out of the lower half sphere thus locking the sphere halves together, the locking mechanism further including a release button positioned on the bottom face of the upper half sphere adjacent the periphery thereof with the button adapted to engage the first angled portion and further force it radially outward upon the depression thereof thereby disengaging the second angled portion and the lip of the lower half sphere; and

a rotatable equation assembly including a central rod rotatably coupled to the post of the upper half sphere with a horizontally oriented first gear fixed to a lower end of the central post and adapted to rotate coincidentally therewith, a second gear rotatably and tangentially coupled to the recess of the upper half sphere within the interior space thereof and adapted to rotate coincidentally with the first gear, a vertically oriented third gear rotatably coupled to the recess of the upper half sphere within the interior space thereof with the third gear adapted to rotate coincidentally with the first gear and the second gear and further adapted to engage the annular geared track of the lower half sphere when the bottom face of the upper half sphere and the top face of the lower half sphere are connected, whereby the central post is adapted to rotate upon the rotation of the lower half sphere with respect to the upper half sphere, the rotatable equation assembly further including a multiplicity of arcuate arms each having a first end hingably coupled to an upper end of the central rod and extending radially therefrom proximal to an inner surface of the upper half sphere, each arm including indicia printed thereon visible through the window representative of an equation and at least one protrusion formed on the arm adjacent at least one of the buttons with indicia representative of a correct answer to the equation, whereby upon the depression of a correct button, the corresponding arm depresses the locking button thereby disengaging the locking mechanism and allowing access to the spherical recesses thus releasing a prize and further another arm is situated adjacent the buttons upon the rotation of the lower half sphere with respect to the upper half sphere.

5,664,780

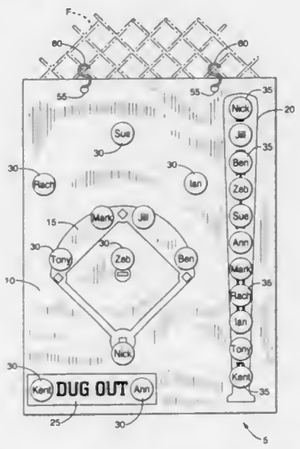
BASEBALL PLAYER FIELD POSITION AND BATTING ORDER TRACKING APPARATUS

Anthony Bricker, 9976 Justamere La., Elk Grove, Calif. 95624

Continuation of Ser. No. 381,190, Jan. 31, 1995, abandoned. This application Oct. 8, 1996, Ser. No. 727,132

Int. Cl.[6] A63B 71/06

U.S. Cl. 273—239 **3 Claims**



1. A baseball field position and batting lineup apparatus for use by players and coaches in tracking each player on a single team during a baseball game comprising:

a) a display board;

b) first pictorial means for displaying a current field position for each player on the single team, wherein said first pictorial displaying means comprises:

an image of a baseball field placed on said display board and

a first set of releasable tokens comprising one token for each player having a current field position and at least one token for a player not currently having a field position on the single team, whereby the placing of said token for each player having a current field position on said baseball field image indicates said current position for each player on the baseball field for the single team;

c) second pictorial means for displaying a current place for each player in a batting lineup, wherein said second pictorial lineup displaying means comprises:

a pictorially designated batting lineup region on said display board and

a second set of releasable tokens, one for each of the players on the single team, whereby the placing of said second set of tokens or a portion of said second set of tokens on said batting lineup region indicates said batting order on the single team; and

d) a dugout region on said display board for displaying each player on the single team not having a current position on the field, wherein said at least one token for a player not currently having a field position on the single team within said first set of tokens is placed in said dugout region.

5,664,781

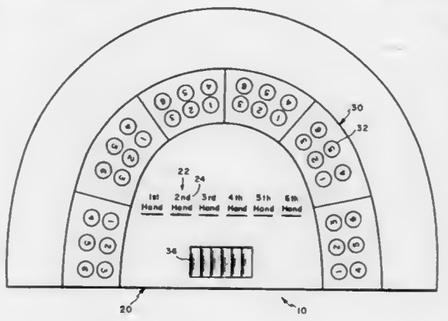
METHOD AND APPARATUS FOR PLAYING A POKER-TYPE CARD GAME

John Feola, Medford, Mass., assignor to New Vision Gaming and Development, Inc., Medford, Mass.

Filed Sep. 30, 1996, Ser. No. 720,560

Int. Cl.[6] A63F 1/00

U.S. Cl. 273—292 **10 Claims**



1. A method of playing a poker-type game with at least one standard deck of 52 playing cards, said method comprising the steps of:

(a) selecting a stud poker game;

(b) successively dealing rounds of said cards to build up a plurality of stud poker hands thereof;

(c) prior to and during said dealing, at least one player sporadically wagering on selected ones of said hands;

(d) at least one of said hands having a winning combination of said cards when said dealing is complete; and

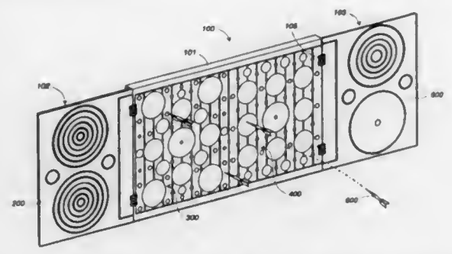
(e) any of said wagers identifying said at least one of said hands constituting a winning wager.

5,664,782

FOOTBALL DARTBOARD GAME

Christopher John Lacks, and Randy Sean Lacks, both of 1007 NE. 2nd Ave., Jacksonville, Ala. 35265

Filed Apr. 29, 1996, Ser. No. 638,715
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—317.5 **8 Claims**



1. An apparatus for playing a dart game simulating the game of football comprising:

a. a game board apparatus comprising a simulated football field having a run play target panel and a pass play target panel, and further comprising a kickoff/punt target panel and a fieldgoal/point-after-touchdown (PAT) target panel,

b. said game board and target panels possessing a means for receiving the interaction of projectile means,

c. at least one projectile means,

d. said run play target panel comprising a portion of said simulated football field and having a plurality of circular run-play targets including positive and negative targets as well as targets indicating "fumble" and "touchdown",

e. said pass play target panel comprising a portion of said simulated football field and having a plurality of circular pass-play targets including positive and negative yardage targets as well as targets indicating "interception", "quarterback sack" and "touchdown",

f. said kickoff/punt target panel comprising a pair of large circular targets and further comprising a pair of smaller circular targets indicating "on-side kick",

g. said fieldgoal/point-after-touchdown (PAT) target panel comprising a pair of large circular targets and further comprising a pair of smaller circular targets indicating "2 point conversion",

h. so that players or groups of players may accurately simulate the gameplay of the game of football under a set of gameboard rules whereby a football is advanced and scores obtained through an interactive sequence of alternate team participation in the projection of said projectile means onto said game board apparatus.

5,664,783

MAPLE-SEED SIMULATING AUTO-ROTATING TOY AND ASSOCIATED GAME

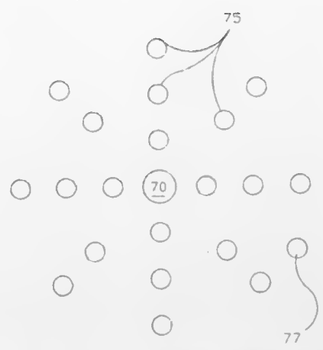
William D. Harned, 7537 Scenic View Dr., Knoxville, Tenn. 37938

Division of Ser. No. 353,057, Dec. 9, 1994, Pat. No. 5,505,650. This application Jun. 7, 1995, Ser. No. 477,756
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—348 **7 Claims**

1. A method of playing a game with an autorotating flying toy in which a player is awarded points, said game comprising the steps of:

randomly placing a plurality of scoring targets about a designated throwing area, each of said plurality of scoring targets having a designated point value printed upon a face thereof,

throwing said autorotating flying toy upward from said designated throwing area such that said autorotating flying toy will descend to the ground proximate said plurality of scoring targets; and



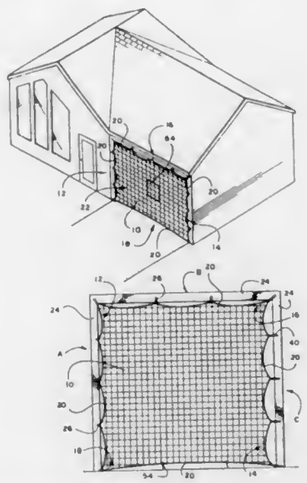
awarding the player said designated point value of one of said plurality of scoring targets in closest proximity to said autorotating flyer.

5,664,784

REBOUND NET SYSTEM FOR SPORTS BALLS

George R. Redlich, and Katie J. Redlich, both of Peachtree City, Ga., assignors to Goal Products, Inc., Peachtree City, Ga.

Filed Feb. 27, 1996, Ser. No. 607,716
Int. Cl.[6] A63B *63/00*
U.S. Cl. 273—396 **5 Claims**



1. In combination with a domestic garage having a garage door opening, a structure surrounding the same and a driveway immediate to the opening, the structure having an A side, a B side and a C side, a rebound net for use in connection with ball games such as soccer, baseball, tennis and the like, comprising:

a net having a reinforced periphery adapted to be removably secured to the structure around the garage door opening and to at least substantially close the opening, the net having a first side, a second side, a top side and a bottom side,

a first attaching means for removably attaching the periphery at the first and the top sides of the net to the A and the B sides of the structure, respectively, of the garage door opening,

a second attaching means for removably attaching the periphery at the second side of the net to the C side of the structure of the garage door opening, and

a third attaching means for removably attaching the periphery at the bottom side of the net to the driveway, the third attaching means having at least one ground anchor pin and a respective shock cord hook, the anchor pin being mounted to the driveway by a bonding material and the shock cord hook being removably attached to both the periphery of the net at the bottom side and the anchor pin.

5,664,785

AIRPLANE GAME

Hoang Van Nguyen, 89-25 Elmhurst Ave. - Apt. 203, Elmhurst, N.Y. 11373

Filed Jan. 11, 1995, Ser. No. 371,230
Int. Cl.[6] A63H *13/20*
U.S. Cl. 273—442 **6 Claims**



1. A flying game comprising:

a central upright member;

a flying device;

a tether means tethering the flying device to the upright member; said tether means comprising flexible strings coupling the flying device to the central upright member; said strings having a portion thereof passing through a rigid straight member coupled to the central upright member, said rigid member being of sufficient length to extend from the central member to the flying device when said device is taking off or landing, winding means to allow said strings to pay out beyond the rigid member and to be rolled in;

a game board on which the flying device lands and takes off from designated locations; and

control means for controlling the flying devices movement including speed, altitude, landing, and take off.

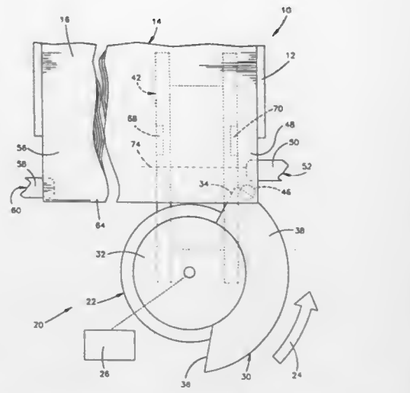
5,664,786

APPARATUS AND METHOD FOR USE IN HANDLING SHEET MATERIAL ARTICLES

Michael C. Buschhaus, Springboro, Ohio, and Richard B. Hawkes, Bethlehem, Pa., assignors to Heidelberg Finishing Systems, Inc., Dayton, Ohio

Filed Mar. 4, 1996, Ser. No. 606,483
Int. Cl.[6] B65H *5/00;3/64;3/32*
U.S. Cl. 271—10.09 **35 Claims**

1. An apparatus for use in handling sheet material articles, said apparatus comprising hopper means for supporting a stack of sheet material articles, separator means for sequentially separating edge portions of sheet material articles from adjacent sheet material articles in the stack of sheet material articles, and feed means for sequentially feeding sheet material articles in the stack of sheet material articles from said hopper means, said separator means including a rotatable separator disk which is movable between a side surface of one sheet material article in the stack of sheet material articles and a side surface of a next adjacent sheet of material article in the stack of sheet material articles while at least a portion of the side surface of the one sheet material article is disposed in engagement with at least a portion of the side surface of the next adjacent sheet material article, and variable speed drive means connected with said separator disk for rotating said separator disk in one direction through a plurality of revolutions relative to the stack of sheet material articles and for varying the speed of rotation of said separator disk between a high speed and a low



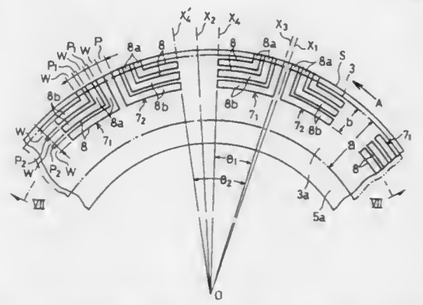
speed during each of the revolutions of the separator disk relative to the stack of sheet material articles.

5,664,787

NON-CONTACTING SHAFT SEALING DEVICE

Toshihiko Fuse, and Eiji Okumachi, both of Sanda, Japan, assignors to Nippon Pillar Packing Co., Ltd., Osaka, Japan

Division of Ser. No. 412,873, Mar. 29, 1995, Pat. No. 5,529,318. This application Feb. 23, 1996, Ser. No. 606,296
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—96.1 **4 Claims**



1. A non-contacting shaft sealing device so constructed that a sealing end face of the seal case side and a sealing end face of the rotary shaft side may rotate relatively in a non-contacting state with a fluid film of a high pressure side fluid to be sealed interposed therebetween, wherein;

an even number of dynamic pressure generating grooves are arranged close to each other in a peripheral direction on one sealing end face,

each dynamic pressure generating groove comprising a shallow L-shaped groove having a fluid lead-in part extending in the radial direction from a peripheral edge of a high pressure side of said one sealing end face and a dynamic pressure generating part extending in the peripheral direction from an end portion of said fluid lead-in part, each L-shaped groove having a uniform depth and a uniform width,

a dynamic pressure generating groove is symmetrical with respect to a first adjacent dynamic pressure generating groove on a first side thereof around a first sealing end face diametral line passing between the fluid lead-in parts of said given dynamic pressure generating groove and the first adjacent dynamic pressure generating groove,

said given dynamic pressure generating groove is symmetrical with respect to a second adjacent dynamic pressure generating groove on a second side thereof around a second sealing end

face diametral line passing between said given dynamic pressure generating groove and the second adjacent dynamic pressure generating groove,

a groove land ratio θ_1/θ_2 exists in the peripheral direction at each dynamic pressure generating groove, θ_1/θ_2 being 0.5 to 0.9 where the groove land ratio is the ratio of the angle of intersection θ_1 formed between a third sealing end face diametral line running along the fluid lead-in part of a dynamic pressure generating groove and a fourth sealing end face diametral line, on which the end portion of the dynamic pressure generating part of the same dynamic pressure generating groove is located, to the angle of intersection θ_2 formed between the fourth sealing end face diametral line of said second adjacent dynamic pressure generating and said third sealing end face diametral line, and,

a radial groove land ratio b/B of 0.4 to 0.6 is provided where b is the radial width of a region where said dynamic pressure generating groove exists in a sealing region of an annular region where both sealing end faces overlap by a sealing face width B which is the radial width of said sealing region.

5,664,788

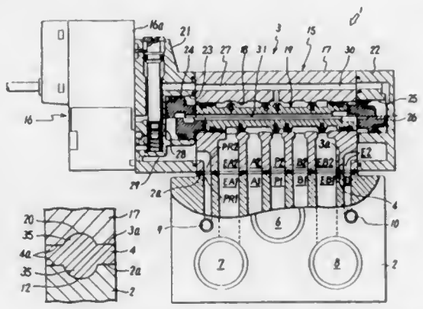
Patent Not Issued For This Number

5,664,789

SEAL CONSTRUCTION FOR USE IN VALVE ASSEMBLY

Bunya Hayashi, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 520,269
Claims priority, application Japan, Sep. 21, 1994, 6-252870
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—180 **2 Claims**



1. A seal construction for a change-over valve assembly including a manifold base containing a plural number of fluid supply and discharge passages and joined with a change-over valve casing via a substantially flat gasket having joining faces interposed between joining faces of said manifold base and said valve casing, each of said faces connecting ports in communication with said fluid supply and discharge passages in said manifold base, wherein said seal construction includes:

endlessly connected ridges formed at least on one side of said gasket in such a manner as to circumscribe said connecting ports on said joining face of said manifold base or said change-over valve casing, said ridges extending substantially centrally of flat sealing surfaces of said gasket; and

grooves formed on said opposing joining faces in a shape substantially complementary to said ridges to receive and grip said ridges. therein when said manifold base and change-over valve are joined together

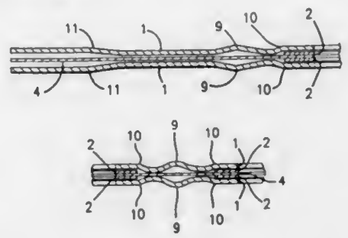
wherein said ridges have a width smaller than that of said grooves and a height larger than the depth of said grooves, and wherein each of said ridges has a width at a top thereof which is not greater than a width at a base thereof.

5,664,790

METAL GASKET ASSEMBLY WITH SHIMS

Akira Tanaka, and Masamichi Hoshi, both of Ohmiya, Japan, assignors to Nippon Leakless Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 311,024, Sep. 22, 1994, Pat. No. 5,568,932. This application Aug. 27, 1996, Ser. No. 703,661
Claims priority, application Japan, Jun. 30, 1994, 6-149275
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—180 **2 Claims**



1. A metal gasket assembly for a cylinder head comprising:

two metal substrates each having a predetermined shape with apertures including cylinder openings, bolt holes, coolant openings and lubricant openings, each said metal substrate being provided with half-beads in regions adjacent to the cylinder openings and full-beads in regions therearound, said full beads and said half-beads on one metal substrate extending away from said full-beads and said half-beads on the other said metal substrate;

a metal sub-plate having the same planar configuration with and being thinner than and disposed between said metal substrates; and

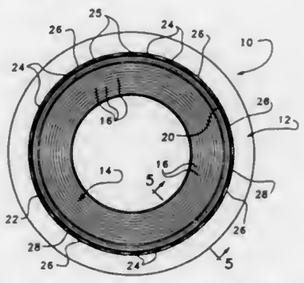
ring shaped shims attached to opposite sides of said metal sub-plate in regions corresponding to the half-beads of said metal substrate, said shims being disposed within said half-beads.

5,664,791

SPIRAL WOUND GASKET BRIDGED TO GUIDE RING

Richard S. Owen, Houston, Tex., assignor to Lamons Metal Gasket Co., Houston, Tex.

Filed May 21, 1996, Ser. No. 651,690
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—204 **17 Claims**



1. A spiral wound gasket for sealing of a fluid conductor, said gasket comprising:

an outer guide ring having a predetermined inner diameter;

a spiral winding having a predetermined outer diameter substantially less than said inner diameter of said outer guide ring forming a slot between said spiral winding and said guide ring; and

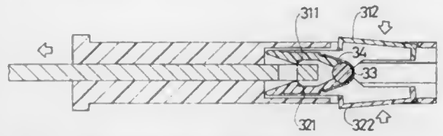
means for bridging said slot to connect said spiral winding and said guide ring, said means circumferentially spaced within said slot between said winding and said guide ring facilitating radial outward expansion of said spiral winding relative to said outer guide ring.

5,664,792

TOOL FIXING MECHANISM

Hans Tseng, P.O. Box 2103, Taichung, Taiwan

Filed Aug. 7, 1996, Ser. No. 689,251
Int. Cl.[6] B23G *3/18*; **B23B** *31/103*
U.S. Cl. 279—77 **3 Claims**



1. A tool fixing mechanism comprising:

(a) a hollow grip, said grip having an elliptic cross-section, a front end and a rear end, the front end being formed with a slot, while the rear end being formed with a cross-shaped socket, two windows being respectively formed on the top and bottom walls of the rear end of the grip in the short axis direction of said elliptic cross-section; and

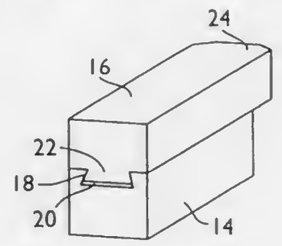
(b) a resilient clip body, said resilient clip body being located in the cross-shaped socket of the grip, consisting of an upper plate body, a lower plate body, a fixing shaft and a resilient member, the fixing shaft being connected at the middle portions of the upper and lower plate bodies and disposed at the pivot portion via the resilient member, the opposite inner sides of the front ends of the upper and lower plate bodies being respectively formed with two reverse hooks inclined toward the rear ends, the opposite outer sides of the rear ends of the upper and lower plate bodies being respectively formed with two lugs extending out of the windows of the grip.

5,664,793

QUICK-CHANGE CHUCK JAWS

Eddy Engibarov, c/o E.Z.E. Machine Company, 616 Onderdonk Ave., Ridgewood, N.Y. 11385

Filed Feb. 21, 1996, Ser. No. 604,404
Int. Cl.[6] B23B *31/16*
U.S. Cl. 279—124 **15 Claims**



1. A chuck jaw assembly, comprising:

a base;

a jaw removably mounted to said base; and

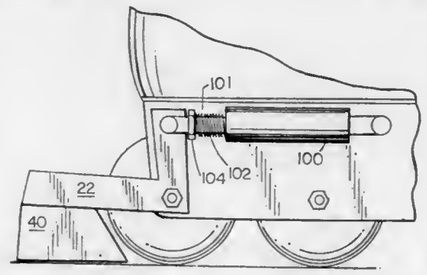
a double-tapered tongue and groove interconnection provided between said base and said jaw for mounting said jaw on said base, said interconnection comprising a tapered tongue having a pair of converging sidewalls, a complementary-tapered groove having an inner floor and a pair of groove sidewalls converging along opposite sides of said groove and receiving said tongue sidewalls therein with a transversely wedged interfit, at least one undercut extending longitudinally along said groove, and one of said sidewalls projecting into said undercut and wedged into said groove and forced toward said inner floor by abutment along said undercut, and wherein said tongue is spaced apart from said inner floor of said groove.

5,664,794

GROUND ENGAGING MOVABLE SKATE BRAKE

David N. Mitchell, Englewood, and Bob Bromley, Louisville, both of Colo., assignors to Out of Line Sports, Inc., Englewood, Colo.

Continuation of Ser. No. 295,473, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 62,407, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 830,609, Feb. 4, 1992, Pat. No. 5,211,409, which is a continuation-in-part of Ser. No. 934,166, Aug. 24, 1992, Pat. No. 5,253,882. This application Sep. 27, 1995, Ser. No. 535,326
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **24 Claims**



1. A skate brake system for a skate having a longitudinally-extending frame with a plurality of axles which support a plurality of wheels, the system comprising:

a support element pivotally connected to one of said axles and extending rearwardly with respect to the frame;

at least one brake pad operably connected to said support element, said brake pad having a braking surface adapted to interact with the ground; and

at least one rod member having a first end and a second end, said rod member connected to said support element at said second end such that when the first end of said rod member is pushed said braking surface of said brake pad is moved into ground engagement and when the rod member is pulled said braking surface of said brake is moved away from ground engagement.

5,664,795

STROLLER WITH DOUBLE SEATS

Mark Haung, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jul. 24, 1995, Ser. No. 508,949
Int. Cl.[6] B62B *7/00*
U.S. Cl. 280—47.38 **1 Claim**

1. A double-seat stroller comprising:

two front wheel frames,

two rear wheel frames,

a longitudinal U-shaped pushbar having two arms,

a generally U-shaped armrest bar disposed at the middle portion of the pushbar transversely,

a generally rectangular basket frame disposed transversely under the pushbar to support a basket.



a basket connected to the basket frame, a front seat connected to the U-shaped armrest bar and disposed over a front portion of the basket frame, a back seat connected to the front seat, the front seat and the back seat facing opposite directions, a back plate disposed at the middle portion of the basket frame upwardly and longitudinally, the back plate separating the front seat and the back seat,

two generally C-shaped holding bars disposed at two arms of the pushbar and above the armrest bar,

a back seat plate disposed beneath the back plate, the back seat plate movable to a position fastened with the back plate and to a position fastened with the basket frame,

a fastening band disposed at the middle of the back plate to fasten the back plate and the back seat plate together,

two fastening straps disposed at two sides of the back seat plate to fasten the back seat plate and the basket frame together,

a pedal disposed between the two rear wheel frames transversely and connected to the rear wheel frames by two links,

two links disposed at two sides of the pedal,

a safety strap disposed across two arms of the pushbar, and

the back seat plate placed on the basket frame.

5,664,796

VEHICLE EXTENDER

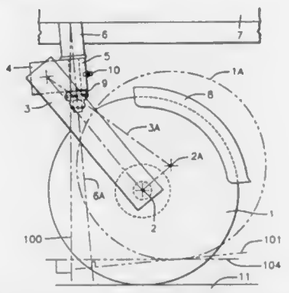
Pieter Herman Iluyzers, 40 Bokkermans Kloof Strt Bokkermanskloof, Houtbay, South Africa

Continuation of Ser. No. 389,451, Feb. 16, 1995, abandoned. This application Jun. 25, 1996, Ser. No. 671,810

Claims priority, application South Africa, Feb. 18, 1994, 94/1112; Oct. 6, 1994, 94/7810

Int. Cl.[6] B62D *63/06;* **B60S** *9/02*

U.S. Cl. 280—400 **8 Claims**



1. A vehicle extender provided with two horizontally spaced apart pivotal connectors for connection to a towing vehicle and adapted to restrict swingable movement of the vehicle extender relative to the towing vehicle, including structure defining a load space and a single caster attached to the vehicle extender, the caster swivelably attached to a rear portion of the vehicle extender so that a horizontal axis of rotation of a wheel of the caster does not extend forwardly of a centroid of the load space of the vehicle extender, the caster including:

a downwardly depending shaft attached to an underneath portion of the vehicle extender and;

a suspension device attached to the downwardly depending shaft, wherein:

an axis of the downwardly depending shaft is at a non-orthogonal angle with respect to said underneath portion of the vehicle extender so that the plane of swivelling of the caster is angularly offset with respect to said underneath portion of the vehicle extender, the axis of the downwardly depending shaft being in a vertical longitudinally directed plane and inclined forwardly.

5,664,797

CROSS-COUNTRY SKI BINDING AND COMPLEMENTARY CROSS-COUNTRY SKI BOOT

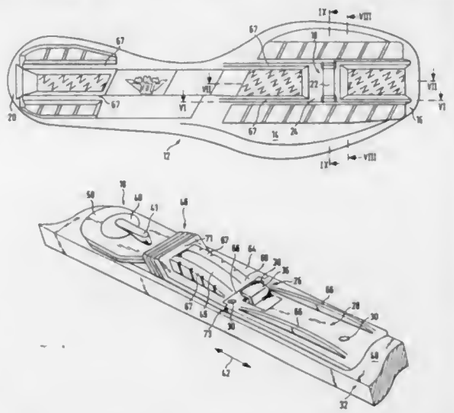
Bernt-Otto Haughlin, Fossumvn 2, N-3440 Royken, Norway

Continuation of Ser. No. 306,269, Sep. 14, 1994, abandoned. This application Aug. 26, 1996, Ser. No. 697,483

Claims priority, application Germany, Sep. 14, 1993, 43 31 197.0; Dec. 20, 1993, 43 43 485.1

Int. Cl.[6] A63C *9/00*

U.S. Cl. 280—615 **25 Claims**



1. A combination of a cross-country ski binding attached to a cross-country ski and a complementary cross-country ski boot having a front toe-end and secured to one another to form a joint connection therebetween, wherein the ski boot comprises:

a sole having an undersurface including a front part including a toe-end and a rearwardly located ball region substantially rearwardly of the toe-end of the sole and adapted to be located in alignment with a ball of a skiing foot within the ski boot, a single joint axle which is disposed in said ball region of the sole and thereby substantially spaced from said toe-end, said axle being located transversely to the long direction of the ski and substantially parallel to the undersurface;

a complementary engagement axle member secured to a cross-country ski and including a movable retaining hook to be positioned between a first position and a second position, an actuating unit secured to the ski and connected to said retainer hook, said actuating unit having a movable member to move said hook between said first and second position, said hook having a lateral opening extending substantially transverse to the ski for receiving the single joint axle, said first position of the hook located in engagement with the joint axle of the boot sole with the hook extending over the joint axle to form a pivot connection, and said second position of said retaining hook being separated from engagement with said joint axle; and

a fixed resilient support element secured to a top surface of said cross-country ski in forwardly spaced relation to said joint axle and at least substantially in part beneath said toe-end of the sole said support element engaging said sole beneath said toe-end and establishing an upward force acting as a substantially continuous resilient support beneath the toe-end of said sole and the boot between said joint axle and said toe-end.

5,664,798

AUTOMATIC FOLDING FRAME FOR BABY CARRIAGE

Yung-Ha Huang, Tainan, Taiwan, assignor to Lu Kuang Incorporation, Tainan, Taiwan

Filed Jul. 11, 1995, Ser. No. 501,146

Int. Cl.[6] B62B *7/06*

U.S. Cl. 280—642 **1 Claim**



1. An foldable frame for a baby carriage, including a pair of laterally spaced arms movable inwardly towards each other when the carriage is moved to a folded position, a flexible handrail, and a pair of two-way toggle joints for connecting opposite ends of the handrail to the pair of arms, each two-way toggle joint comprising:

a butt joint fixedly connected to a respective end of the handrail, the butt joint having a pair of spaced apart lips and a stop member extending between the lips along one side thereof; and

a joint stand having a pair of spaced apart lips, the lips of the butt joint being received between the lips of the joint stand and pivotally connected thereto by means of a pivot member for permitting horizontal pivotal movement of the handrail relative to the arms, a latch member pivotally mounted between the lips of the joint stand, a spring for biasing the latch member into engagement with the pivot member, a linking block having one end pivotally connected within an aperture extending through the joint stand and an opposite end fixed within a channel formed in a respective arm, and a groove formed within a forward end of the arm for receiving a portion of the latch member when the handrail in a fully extended position for preventing pivotal movement of the joint stand relative to the arm, the latch member being disengaged from the groove by the stop member when the handrail is pivoted horizontally to a folded position for permitting vertical pivotal movement of the joint stand and the folded handrail relative to the arm.

5,664,799

VEHICULAR DISPLAY MODULE

Michael J. Cavanaugh, 976 Blue Star Hwy., South Haven, Mich. 49090

Filed Mar. 1, 1995, Ser. No. 396,736

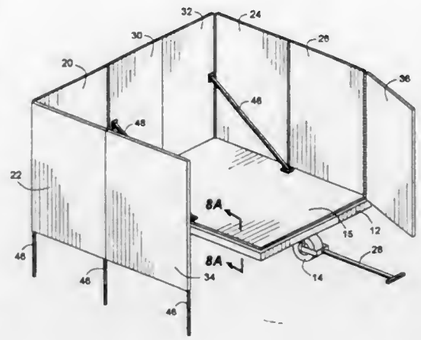
Int. Cl.[6] B62B *3/02*

U.S. Cl. 280—656 **18 Claims**

1. A vehicle for transporting and displaying merchandise, comprising:

a base;

a rear wall permanently attached to said base and ascending perpendicular from said base;



two side walls, each of said side walls having a first side panel and a second side panel adjacent one of said first side panels, each of said first side panels being pivotally attached to both said rear wall and its said adjacent second side panel, said side walls being detachable from said base;

a front wall having two front panels, each of said from panels being pivotally connected to one of said side walls, said front wall being detachable from said base.

5,664,800

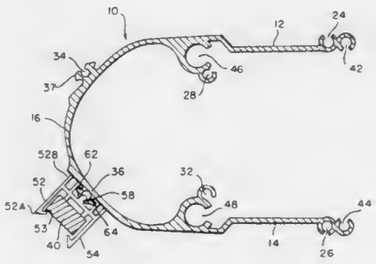
RETENTION SYSTEM FOR ATTACHMENT OF A CONNECTOR TO AN AIR BAG REACTION CANISTER

Andreas M. Lux, Korb, Germany; Michael J. Daines, Brigham, Utah; Rick L. Halford, Layton, Utah, and Bret N. Broadhead, North Ogden, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 5, 1995, Ser. No. 498,100

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **13 Claims**



1. A retention system securing an accessory to a reaction canister of an inflatable restraint assembly, the reaction canister having attachment means formed integrally therewith, comprising:

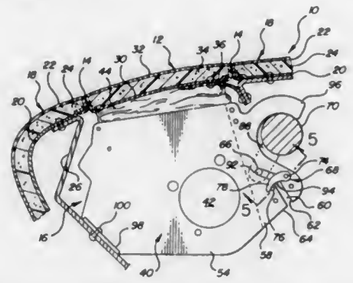
a retention clip having opposed ends, one of said ends of said clip being capable of receiving a coupling of the accessory; and

said attachment means mating with the other end of said retention clip, the reaction canister including a trough-shaped body extruded from a continuous length of material and the attachment means comprises at least one screw retaining groove formed integrally with the body during the extrusion thereof, wherein said at least one screw retaining groove includes a pair of notched arms extending from an exterior surface of said reaction canister body.

5,664,801
MOUNTING SYSTEM FOR AIRBAG REACTION CANISTER

John D. Gray, Union, N.H.; Jimmy C. Rogers, Berwick, Me., and Michael J. Larson, Macomb Township, Mich., assignors to Davidson Textron Inc., Dover, N.H.

Filed Mar. 13, 1996, Ser. No. 614,488
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 13 Claims



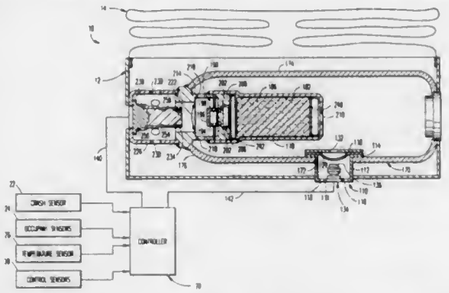
1. In a reaction canister of an automotive PSIR airbag system having walls defining a generally U-shaped body closed at opposite ends by a pair of opposing end plates and providing a deployment opening for the discharge of an air bag from the canister into the passenger compartment of a vehicle in which said canister is mounted, wherein the improvement comprises:

mounting slots provided in said end plates open to receive mounting pin portions of a cross-car beam structure of the vehicle slidably therein and associated latching devices carried by said end plates and movable from first open positions to permit the insertion of the mounting pins into said slots, to second closed positions in which said latching devices block and retain the mounting pins within said slots to thereby secure said canister to the cross-car beam of the vehicle.

5,664,802
ADJUSTABLE PERFORMANCE HYBRID INFLATOR

Bradley D. Harris, Farmington, Utah, and Ian Faye, Stuttgart, Germany, assignors to Morton International, Inc., Chicago, Ill., and Robert Bosch GmbH, Stuttgart-Feuerbach, Germany

Filed Feb. 15, 1996, Ser. No. 601,946
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—736 24 Claims

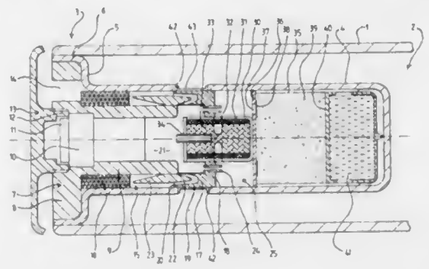


1. An improved hybrid inflator of the type having a pressure bottle containing compressed gas, combustible means for augmenting the stored gas and outlet means for delivering inflation gas from the inflator to a primary airbag cushion, the improvement comprising a vent opening defined as a second outlet from the pressure bottle for releasing stored compressed gas therefrom, a rupturable diaphragm positioned to seal the vent opening and prevent premature flow through the vent opening, and a means for rupturing the diaphragm to deliver stored gas from the vent opening in response to a control signal.

5,664,803
GAS GENERATOR, PARTICULARLY FOR AN AIR BAG

Torbjörn Skånberg, Hovås, and Lennart Karlsson, Alingsås, both of Sweden, assignors to Autoliv Development AB, Vårgårda, Sweden

PCT No. PCT/SE94/00456, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO94/26563, PCT Pub. Date Nov. 24, 1994
PCT Filed May 11, 1994, Ser. No. 549,683
Claims priority, application United Kingdom, May 12, 1993, 9309803
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 13 Claims



1. A gas generator comprising

(a) a bottle defining an inner bottle space containing compressed gas and an outlet passage through which the compressed gas may flow out of said bottle;

(b) a housing supported within said bottle; said housing having a side wall defining an inner housing space communicating with said outlet passage;

(c) a movable element disposed in said housing and being displaceable therein in a direction of motion along said side wall between an initial position and an advanced position;

(d) externally actuatable triggering means positioned in said housing for propelling said movable element from said initial position into said advanced position;

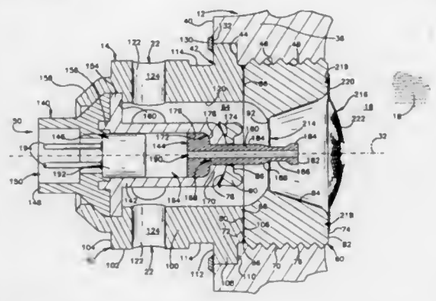
(e) an aperture provided in said side wall of said housing for establishing communication between said inner bottle space and said outlet passage through said inner housing space; and

(f) a sealing disc secured to said side wall and obturating said aperture for preventing communication between said inner bottle space and said outlet passage; said sealing disc having a surface flush with an inner face of said side wall of said housing; in said initial position of said movable element said sealing disc being pressed into engagement with said movable element by the pressure of the compressed gas in said inner bottle space; in said advanced position of said movable element said movable element being remote from said aperture and said sealing disc, whereby pressure of the compressed gas in said bottle space removes said sealing disc for allowing the compressed gas to flow out of the inner bottle space through said aperture, said inner housing space and said outlet passage; said direction of motion of said movable element being parallel to said surface of said sealing disc.

5,664,804
PRESSURE VESSEL WITH RUPTURABLE CLOSURE WALL

Paul T. Saccone, Rochester Hills, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Apr. 8, 1996, Ser. No. 629,372
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 11 Claims



1. Apparatus comprising:

a tank;

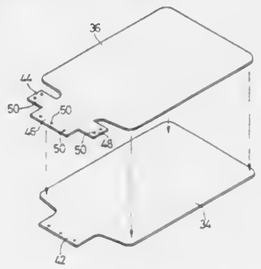
a closure structure with a breakaway part exposed to fluid pressure in said tank, said breakaway part being severable from said closure structure for movement outward from said tank under the influence of elevated fluid pressure; and

a probe which is movable forcefully against and through said closure structure so as to puncture a hole through said breakaway part, said probe comprising means for guiding said breakaway part to move outward from said tank telescopically over said probe under the influence of said elevated fluid pressure.

5,664,805
AIR BAG

Ryoichi Yoshida; Noriyuki Kosugi, both of Shiga; Eiji Yanagi, Kanagawa; Yoshihiko Tanaka, Shiga; Akira Kokeguchi, Shiga; Tadayuki Atoh, Shiga, and Yoshihiko Minami, Shiga, all of Japan, assignors to Takata Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 322,515, Oct. 14, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,610
Claims priority, application Japan, Nov. 5, 1993, 5-276811; Jun. 10, 1994, 6-128974
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.1 3 Claims



1. An air bag for an air bag device for a passenger seat, comprising:

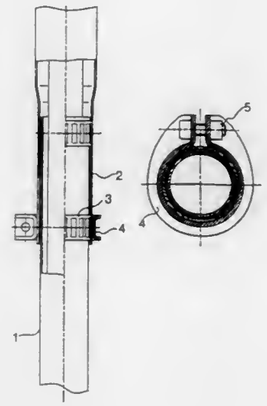
an upper panel and a lower panel superposed together and connected along outer peripheries thereof to form a main portion, said upper and lower panels extending in a longitudinal direction when the air bag is inflated and having a side portion at one longitudinal end extending laterally outwardly from the main portion along the longitudinal direction, said side portion including an upper part extending from the upper panel and having three flaps extending downwardly from the upper part, and said lower panel including one flap, and

an opening adapted to introduce gas from an inflator and located at a side opposite to the upper part, said opening being formed in said side portion and oriented downwardly therefrom substantially perpendicularly to the longitudinal direction of the upper and lower panels, said three flaps of the upper panel and said one flap of the lower panel being connected together to form the opening in a rectangular shape.

5,664,806
CRASH SYSTEM FOR THE STEERING COLUMN IN A MOTOR VEHICLE

Jens Vortmeyer, Preussisch-Oldendorf; Kay Uwe Grams, Cappeln, and Burkhard Schäfer, Ganderkesee, all of Germany, assignors to Lemförder Metallwaren AG, Lemförde, Germany

Filed May 16, 1996, Ser. No. 648,566
Claims priority, application Germany, May 17, 1995, 195 181301
Int. Cl.[6] B62D *1/18*
U.S. Cl. 280—777 10 Claims



1. A crash system for a steering column in a motor vehicle, comprising:

a first tube with a first tube end;

a second tube with a second tube end, said first tube end engaging said second tube end, with said second tube end being radially outwardly disposed relative to said first tube end;

insert means for connecting said first tube end and said second tube end to one another so that said first and second tubes are relatively movable at a predetermined axial load, said insert comprising a tolerance ring having a compressible cross-sectional profile; and

clamping means surrounding a portion of said second tube end, said clamping means for adjustably applying a radially acting clamping force onto said second tube which then applies said radial clamping force onto said tolerance ring.

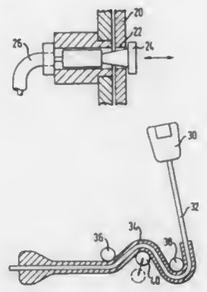
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5,664,807

FORCE LIMITATION IN A VEHICLE OCCUPANT RESTRAINING SYSTEM

Klaus Böhmler, Schwäbisch Gmünd, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Mar. 15, 1996, Ser. No. 616,088
Claims priority, application Germany, Mar. 29, 1995, 19 511 457.4
Int. Cl.[6] B60R *22/78;22/00*
U.S. Cl. 280—805 **27 Claims**



1. In a vehicle occupant restraint system comprising a safety belt and a force limiter inserted into a path of force flow between said belt and a vehicle bodywork, said force limiter having an adjustable characteristic of force versus path for setting a level of force limitation to a desired value, the method comprising the steps of

a) determination of a parameter representative of at least one of the vehicle occupant properties including weight and size, and

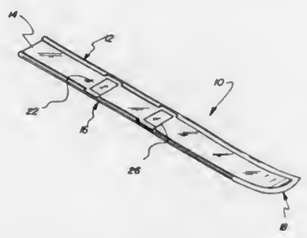
b) adjusting the level of force limitation as a function of said parameter.

5,664,808

SKI AND SNOWBOARD EDGE COVERING DEVICE

Brian F. Whidden, and Alexis Whidden, both of 5080 Guildwood Way, Mississauga, Ontario, Canada, L5R 2R6

Filed Jun. 12, 1996, Ser. No. 662,795
Int. Cl.[6] A63C *11/02*
U.S. Cl. 280—815 **2 Claims**



1. A ski edge covering device of comprising:

a first lateral edge cover frictionally engagable to a ski so as to cover a first longitudinal lateral edge thereof;

a second lateral edge cover frictionally engagable to the ski so as to cover a second longitudinal lateral edge thereof;

a tip edge cover extending between upper ends of the lateral edge covers which can be fictionally engaged to the ski so as to cover a tip edge thereof extending between the first and second longitudinal lateral edges of the ski;

each of the lateral edge covers is shaped so as to define a first binding clearance aperture directed laterally into an upper surface of the lateral edge cover for providing clearance of the lateral edge cover relative to a first binding of the ski, each of the lateral edge covers is further shaped so as to define a second binding clearing aperture directed laterally into the upper surface thereof which provides for clearance of a second binding of the ski; and

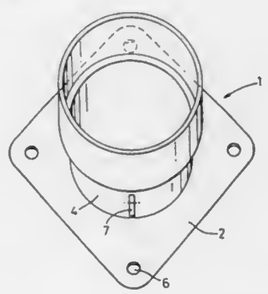
an elongated cylindrical channel member being formed within each of the edge covers, the elongated cylindrical channel member having a slot directed laterally thereinto permitting a lateral insertion of the respective edge portion of the ski into the cylindrical channel, the cylindrical channel members each includes an elongated upper arcuate portion and an elongated lower arcuate portion spaced from the elongated upper arcuate portion, with an elongated outer arcuate portion extending between the upper and lower arcuate portions so as to define the cylindrical channel member of the respective lateral edge cover, wherein the elongated upper arcuate portion can be positioned onto an upper surface of the ski, with the elongated lower arcuate portion being positionable onto a lower surface of the ski, whereby the elongated outer arcuate portion biases the upper arcuate portion towards the lower arcuate portion so as to create a frictional engagement between the upper and lower arcuate portions and the respective upper and lower surfaces of the ski which retains the respective edge cover relative to the ski, the binding clearance apertures are each directed into the upper arcuate portion of the elongated cylindrical channel member of the respective edge cover.

5,664,809

CONNECTORS

James I. Bates, 16 Rockery Lane, Penn, Wolverhampton, England, WV2 4PV

PCT No. PCT/GB93/02385, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO94/29629, PCT Pub. Date Dec. 22, 1994
PCT Filed Nov. 19, 1993, Ser. No. 564,350
Claims priority, application United Kingdom, Jun. 15, 1993, 9312259; Sep. 9, 1993, 9318728
Int. Cl.[6] F16L *25/02*
U.S. Cl. 285—48 **6 Claims**



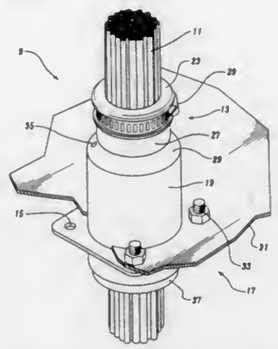
1. A connector comprising an electrically conductive body (**4**) and an effectively electrically non-conductive flange (**2**), the conductive body (**4**) having an aperture (**5**) capable of receiving a conduit and being secured in position by the flange (**2**) characterised in that, the conductive body (**4**) is provided with conductive lugs (**7**), one part of which is embedded within the material forming the conductive body (**4**) and the other part extends outwardly from the conductive body (**4**).

5,664,810

FIREPROOF ELECTRICAL WIRE HOUSING

Edward Zielinski, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 26, 1995, Ser. No. 533,952
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—152.1 **12 Claims**



1. A fire and hermetically sealed conduit housing for use with electrical wires and other types of conduits, said fire and hermetically sealed conduit housing comprising:

a housing formed of a fireproof material including a tubular body and a cover plate extending outwardly from the body;

a sleeve formed of a nonmetallic fireproof material snugly mounted in the body, said sleeve including a cavity, said sleeve also including a main body and a neck, the outer circumference of said neck being substantially less than the outer circumference of said main body, said neck being located at one end of said sleeve and said main body being located at the other end; with said cavity located between said and

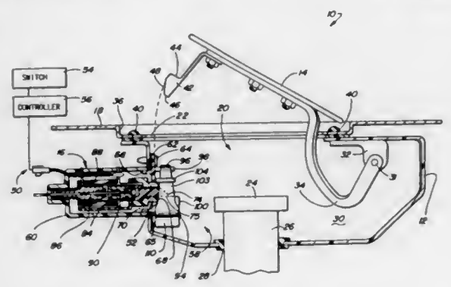
a sealant formed of a fireproof material located in said cavity.

5,664,811

FUEL FILLER DOOR ACTUATOR ASSEMBLY WITH INTEGRAL KICK-OUT SPRING

Charles R. Martus, Oxford, and Douglas S. Lanyk, Holly, both of Mich., assignors to Lectron Products, Inc., Rochester Hills, Mich.

Filed Apr. 12, 1995, Ser. No. 421,423
Int. Cl.[6] E05C *1/06*
U.S. Cl. 292—144 **24 Claims**



7. A door assembly comprising:

a first housing;

a door pivotably coupled to said first housing for movement between an open position and a closed position, said door having a striker bar with a distal end;

a latch assembly including a second housing coupled to said first housing, a latch member movable along a first axis from an engaged position wherein said latch member is lockingly engageable with said striker bar when said door is in said closed position to a disengaged position, one of said first housing and said second housing defining a first surface substantially perpendicular to said first axis; and

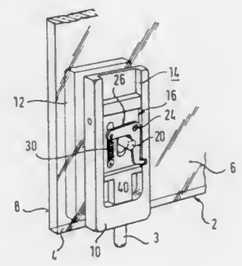
a spring mounted to said first surface for movement in a plane substantially parallel to said first surface from a non-deflected position to a deflected position in response to engagement with said distal end of said striker bar upon movement of the door from said open position to said closed position, and wherein movement of the latch member from said engaged position toward said disengaged position releases the striker bar from locked engagement therewith such that said spring forcibly urges said door to move from said closed position to said open position.

5,664,812

MECHANISM FOR LOCKING A DOOR OR DOOR LEAF TO THE FLOOR

Mario Marinoni, Magenta, Italy, assignor to Societa Italiana Progetti S.R.L., Italy

PCT No. PCT/EP94/02731, § 371 Date May 21, 1996, § 102(e) Date May 21, 1996, PCT Pub. No. WO95/05517, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 16, 1994, Ser. No. 596,327
Claims priority, application Germany, Aug. 17, 1993, 93 12 291.8 U
Int. Cl.[6] E05C *1/04*
U.S. Cl. 292—153 **7 Claims**



1. A locking mechanism, comprising:

a housing member having a cavity defined therein, a peripheral wall of said cavity having a latch recess defined therein;

a slide block received in said cavity of said housing and being slidable along a first axis;

a latch fixed to said slide block;

a mounting pin pivotally coupled to said slide block about a first pivot axis;

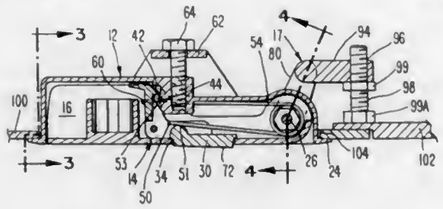
an operating handle engaging said mounting pin;

a bell crank lever pivotally coupled to said slide block about a second pivot axis substantially perpendicular to said first pivot axis, said bell crank having a first arm and a second arm, said first arm extending beyond said mounting pin, said second arm extending in a direction parallel with said first axis and having a hook laterally extending therefrom, said hook releasably engaging said latch recess; and

a spring biasing said first arm of said bell crank lever in a direction parallel with said first axis,

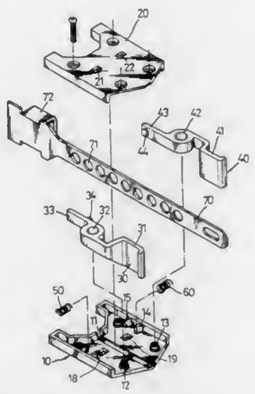
wherein said bell crank lever is arranged such than, when said mounting pin is pivoted during operation, said bell crank lever pivots and releases said hook from said latch recess, thereby permitting said slide block and said latch to move along said first axis and relative to said housing member.

5,664,813
LEVER LATCH
Gabriel Gromotka, Caledonia, N.Y., assignor to Southco, Inc., Concordville, Pa.
Continuation of Ser. No. 29,477, Mar. 11, 1993, Pat. No. 5,609,373, which is a division of Ser. No. 838,313, Feb. 20, 1992, Pat. No. 5,267,762. This application Mar. 18, 1996, Ser. No. 618,470
Int. Cl.[6] E05C *3/02*
U.S. Cl. 292—229 **30 Claims**



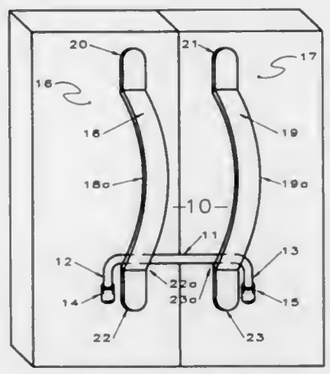
1. A lever latch for mounting in an aperture formed in a door panel for releasably retaining the door against a corresponding frame, the latch comprising:
a housing defining an inner surface and an outer surface separated by a housing wall;
pivot means mounted on and rotatable relative to the housing;
a handle attached proximate one end thereof to said pivot means and rotatable between an open and a closed position, wherein the handle at least at its attachment with said pivot means is separated from said outer surface of the housing by said housing wall;
fastening means attached to said pivot means, wherein the fastening means at least at its attachment with said pivot means is separated from said inner surface of the housing by said housing wall, whereby the fastening means is separated from said handle by said housing wall and said fastening means engages the frame for retaining the door when the handle is rotated to its closed position.

5,664,814
PORTABLE LOCK
Wuchin Lin, P.O. Box 82-144, Taipei, Taiwan
Filed Jun. 10, 1996, Ser. No. 661,120
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—288 **3 Claims**



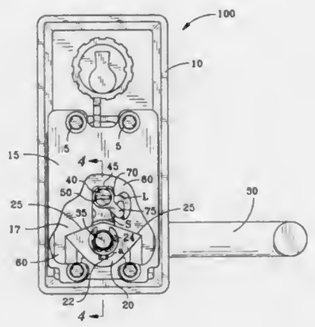
1. A portable lock comprising:
a body portion including a pair of covers, a pair of prongs, and two springs, said covers being symmetric with each other in structure, each of said covers being formed at an intermediate portion with a groove extending from one end to another end thereof, a plurality of tubular portions provided with internal threads, and two opposite chambers, said two springs being disposed within said two opposite chambers, said prongs being symmetric with each other in structure and each having a handle at an end thereof, a through hole at an intermediate portion thereof, and a tail portion at another end thereof, said tail portion being provided with a protuberance at an inner side thereof, said prongs being pivotally fitted within said body portion with said through hole rotatably receiving a respective tubular portion and said handle extending out of an end of said body portion and urged outwardly by said springs; and
an adjusting rod extending through said body portion and slidably fitted in said groove between said prongs, said adjusting rod being formed with a plurality of holes adapted to receive said protuberances of said prongs and a fixing member at an end thereof.

5,664,815
EARTHQUAKE SAFETY DEVICE FOR DUAL CABINET DOORS
Joe Kornder, 6725 Yates Ave., San Bernardino, Calif. 92404
Filed Jul. 23, 1996, Ser. No. 681,394
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—288 **2 Claims**



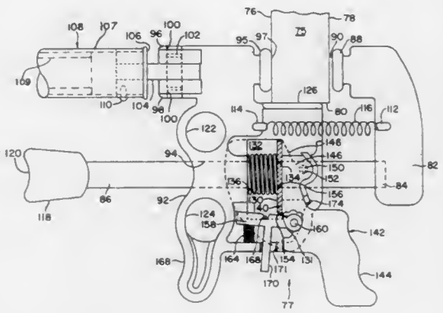
1. A safety device equipped cabinet comprising:
a first cabinet door, the first cabinet door having a first door handle, the first door handle including,
a first upper mounting surface attached to the first cabinet door at a first upper location,
a first lower mounting surface attached to the first cabinet door at a first lower location, the first lower location being below the first upper location, and
a first handle grip, attached to the first upper mounting surface and to the first lower mounting surface, the first handle grip being shaped so that a first space exists between the first handle grip and the first cabinet door;
a second cabinet door, the second cabinet door having a second door handle, the second door handle including,
a second upper mounting surface attached to the second cabinet door at a second upper location,
a second lower mounting surface attached to the second cabinet door at a second lower location, the second lower location being below the second upper location, and
a second handle grip, attached to the second upper mounting surface and to the second lower mounting surface, the second handle grip being shaped so that a second space exists between the second handle grip and the second cabinet door; and,
a removable safety device for engaging about the first and second handle grips within the first space and the second including,
an elongated arm having a first end and a second end,
a first leg attached to the first end of the elongated arm, the first leg extending straight out from the first end in a direction perpendicular to the elongated arm, a tip end of the first leg being encased by first resilient protective material, and
a second leg attached to the second end of the elongated arm, the second leg extending straight out from the second end in the direction perpendicular to the elongated arm, a tip end of the second leg being encased by second resilient protective material;
wherein when the removable safety device is in a secure position, the removable safety device straddles the first mounting surface and the second mounting surface so that
a first portion of the elongated arm within the first space between the first handle grip and the first cabinet door rests on the first lower mounting surface,
a second portion of the elongated arm within the second space between the second handle grip and the second cabinet door rests on the second lower mounting surface,
the first leg extends down alongside the first lower mounting surface so that the first resilient protective material rests against the first cabinet door, and
the second leg extends down alongside the second lower mounting surface so that the second resilient protective material rests against the second cabinet door.

5,664,816
LEVER HANDLE ASSEMBLY WITH FIELD ADJUSTABLE TAILPIECE AND LEVER HANDING
Daniel N. Nigro, Jr., and Theodore J. Fritsch, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.
Filed Sep. 5, 1995, Ser. No. 523,712
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 **12 Claims**



1. A door lever handle assembly having the capability for reversing handing during installation, comprising:
a housing having a face with a bore for receiving a rotatable lever shaft;
an input cam rotatably mounted in said housing, said input cam having a shaft, with means for transmitting rotary motion to a latch spindle, and a lever arm for rotatably driving said cam and shaft;
a slider surrounding the shaft and the lever arm of said input cam and having a branched slot for permitting said slider to move relative to said shaft while driving said lever arm; and
means for removably mounting a cam on said lever shaft to be driven thereby against a surface of said slider, said cam moving the slider, when the lever shaft is rotated, to drive the lever arm of said input cam and to thereby rotate the shaft of said input cam.

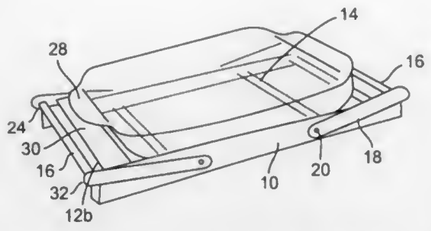
5,664,817
PORTABLE DOOR STOP
Chester N. Ballew, New Albany; Robert K. Eversole, Madison, and Thomas C. Gaunt, Indianapolis, all of Ind., assignors to E2 Enterprises Inc., Jeffersonville, Ind.
Continuation-in-part of Ser. No. 366,896, Dec. 30, 1994, Pat. No. 5,542,725. This application Oct. 24, 1995, Ser. No. 547,526
Int. Cl.[6] E05C *17/54*
U.S. Cl. 292—339 **11 Claims**



1. A portable door stop comprising:
first and second elements having opposed surfaces for abutting the opposite faces of a door,
means for variably linking said first and second elements to abut opposite faces of doors of different thicknesses and to maintain the abutting opposed surfaces of said first and second elements substantially parallel to one another, said variable linking means comprising an elongated member fixed to said first element and slideably extending through said second element such that the opposed surfaces on said first and second elements are guided for movement toward and away from one another,
means on said second element for releasable one-way advancing of said elongated member to bring said opposed surfaces closer to one another for clamping them on the opposite faces of a door, said releasable one-way advancing means comprising a driving plate pivotally mounted to said second element and having an opening through which said elongated member extends, said opening being sized relative to said elongated member such that relative movement is permitted when said driving plate is in a position substantially normal to the longitudinal axis of said elongated member and when said driving plate is in a position not normal to the longitudinal axis of said elongated member at least one surface of said driving plate opening binds on the elongated member,
means for displacing said driving plate from said normal position so that continued displacement of said driving plate displaces said elongated member relative to said second element in a direction to bring said opposed surfaces closer together,
means for releasably locking said driving plate in the not-normal position whereby said door stop is releaseably secureable to the door, and
a floor engaging leg mounted on one of said elements to prevent movement of said door.

5,664,818
DISH TRANSPORT APPARATUS WITH BOTH FIXED AND MOVABLE HANDLES
Charles Sherman Parks, P.O. Box 127, Greenwood, Del. 19950
Filed Aug. 12, 1996, Ser. No. 689,438
Int. Cl.[6] A47J *45/10*
U.S. Cl. 294—32 **10 Claims**

1. A carrier for transport of articles comprising:

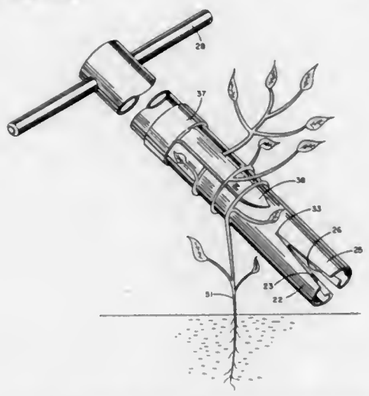


(a) a pair of upstanding base members each said base member having an inner and an outer face, and an end one and an end two, and a top edge and a bottom edge,

(b) a pair of cross members each said cross member having an inner and an outer face, said cross members being parallel to one another and connected to the top edge of end one and end two of said upstanding base members so that said base members define a plane and are spaced apart parallel to one another and perpendicular to said parallel cross members thus defining a generally square or rectangular interior space, each said cross member being grooved on the under surface thereof thus providing a finger grip and defining said outer face of said cross member as a fixed handle lifting means whereby said carrier can be lifted, held and moved with two hands,

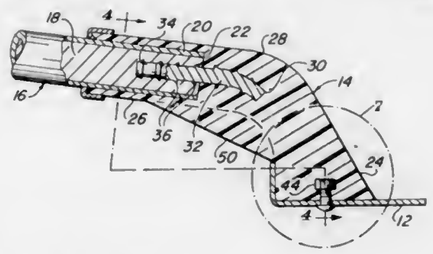
(c) a pair of front and rear movable handles each said movable handle having a gripping portion and a pair of arms in connection to said gripping portion each said arm in pivotal connection to said outer face of said base member so that said movable handle can be positioned upward in a carrying position and downward in a loading position, there being handle resting means whereby said movable handle gripping portions when in the lowered position are caused to rest in a place generally parallel to and generally in the same plane as said fixed handle lifting means so that finger access space is maintained above said movable handle gripping portions and below said movable handle gripping portions whereby the user's fingers can access the above lifting flanges of a dish sitting in said carrier and the under surface of said fixed handle lifting means below.

5,664,819
WEED PULLING DEVICE
Lucas Jones Conrad, 5240 Lukon La., Winston-Salem, N.C. 27104
Filed Sep. 19, 1996, Ser. No. 718,188
Int. Cl.[6] A01B *1/16*
U.S. Cl. 294—50.6 **19 Claims**



1. A weed extracting device capable of being brought into engagement with the stem of a weed and being manipulated by a user of the device to cause the stem of the weed to be wrapped around the device so that sufficient pulling force can be applied to the weed to extract it from the soil, said weed extracting device comprising a tubular body having a first end provided with weed-engaging means adjacent thereto and an opposing second end adapted for manipulation by the hands of the user, said first end of the tubular body being bifurcated to provide two opposing members having opposing first edges and second edges, said opposing first edges defining a first V-shaped opening designed to engage the stem of a weed and said opposing second edges defining a second V-shaped opening in confronting position to the first V-shaped opening, said opposing second edges having associated therewith rounded structural elements designed for non-cutting contact with the stem of a weed engaged by the first V-shaped opening.

5,664,820
SHOVEL WITH COMPOSITE SOCKET AND PROCESS FOR MANUFACTURING SAME
Joseph Allen Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210
Continuation of Ser. No. 372,437, Jan. 11, 1995, abandoned. This application Sep. 4, 1996, Ser. No. 706,997
Int. Cl.[6] A01B *1/22*; **B25G** *3/02*
U.S. Cl. 294—57 **7 Claims**



1. A shovel, comprising:

a substantially flat shovel blade;

a molded plastic composite handle adapter including a generally planar base at a first end thereof seated on an upper surface of a corresponding platform of the blade, a handle receiving socket at a second end thereof, and an angular intermediate portion;

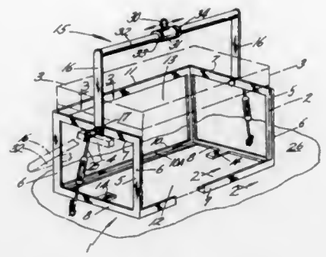
means for attaching the handle adapter base to the blade platform, the attaching means comprising fasteners extending through the blade platform into engagement with the handle adapter for mechanically fixing the handle adapter base to the blade, wherein the fasteners are threadably received within the handle adapter, and a nut within the handle adapter for threadably receiving a threaded shaft of a respective fastener;,

a composite tool handle having an end thereof positioned within the handle receiving socket; and

a connecting stud having a first end embedded in the intermediate portion of the handle adapter, and a second end embedded in the end of the tool handle within the handle receiving socket.

5,664,821
FRAMEWORK FACILITATING POSITIONING OF A TOOL CHEST
Kelly L. Crowson, 24566 Settler's La., Junction City, Oreg. 97448
Filed Mar. 11, 1996, Ser. No. 615,508
Int. Cl.[6] B66C *1/62*
U.S. Cl. 294—67.1 **5 Claims**

1. A framework for placement about a handle equipped tool chest to facilitate positioning of the tool chest on a surface, said framework comprising,

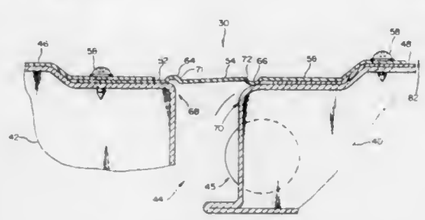


end members of rectangular configuration, longitudinal members joining said end members, said members defining an open area for the reception of the tool chest, said end members having fittings for the reception of turnbuckles for framework tie down to the surface,

a bail assembly including arms and a bar interconnecting the arms, a sleeve positionable along said bar and including an eye for reception of a lifting instrumentality, means limiting sleeve movement along said bar, and

pivot means attaching said arms to said end members.

5,664,822
TAILGATE GAP COVER
Gerald F. Rosenfield, 30424 NE. 190th, Duvall, Wash. 98019
Filed Jun. 7, 1995, Ser. No. 472,190
Int. Cl.[6] B62D *33/02*
U.S. Cl. 296—39.2 **14 Claims**



1. A tailgate gap cover for attachment to pickup trucks of the type having a truck box defined by a truck bed, two opposing side walls, a front wall, and a pivotable tailgate that pivots about a horizontal hinge pivot axis, from a vertical closed position to a horizontal open position, the tailgate gap cover being provided to prevent sand, soil, gravel and debris from passing through or becoming lodged in the tailgate gap formed between the truck bed of a pickup truck and its tailgate, wherein the tailgate gap cover includes a plurality of adjacently disposed interconnected panels, the arrangement of all the panels thereof comprising:

a truck bed panel disposed for removable attachment to the truck bed of a pickup truck, adjacent the tailgate gap;

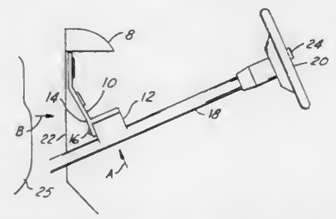
a tailgate panel disposed for removable attachment to the tailgate of a pickup truck, adjacent the tailgate gap;

a folding panel operatively disposed between the truck bedpanel and the tailgate panel, the folding panel being pivotally connected to the truck bed panel and the tailgate panel, wherein the interconnected panels substantially cover the tailgate gap when the tailgate gap cover is mounted to a pickup truck;

the folding panel further comprising a pair of spaced apart folding joints that extend parallel to the tailgate gap, each said folding joint being defined by a groove, wherein the grooves project in opposing directions when the tailgate is in the horizontal open position; and

wherein the folding panel pivots about said folding joints when the tailgate is pivoted, the folding panel being foldable from an unfolded configuration when the tailgate is in the horizontal open position, to a folded configuration when the tail gate is pivoted from the horizontal open position to the vertical closed position.

5,664,823
INSTRUMENT PANEL BRACE
Sudipta K. Misra; Mike J. Leigh, both of Farmington Hills, and Joseph B. Hurley, Dearborn, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Sep. 18, 1995, Ser. No. 529,817
Int. Cl.[6] B60K *20/08*
U.S. Cl. 296—70 **15 Claims**



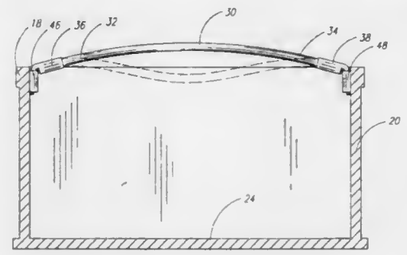
1. An instrument panel brace for a vehicle, with said vehicle having a cowl and an instrument panel beam both substantially extending the width of said vehicle, a steering column attached to said instrument panel beam, and an engine, with said instrument panel brace resisting steering column rotation and direct engine loading of said instrument panel beam during a collision of the vehicle, with said instrument panel brace comprising:

an upper portion for positioning said brace adjacent a portion of said cowl of said vehicle without being attached to said cowl;

a lower portion for attaching said brace to a portion of said instrument panel beam of said vehicle; and

a mid portion disposed between said upper and lower portions.

5,664,824
FLEXIBLE TARPAULIN SUPPORT DEVICE
Donald W. Stephens, 1814 E. 58th St., Tulsa, Okla. 74105, and Patricia A. Lemmons, 2834 Redbud, Katy, Tex. 77493
Continuation-in-part of Ser. No. 437,839, May 9, 1995, which is a continuation-in-part of Ser. No. 23,121, May 18, 1994, Pat. No. Des. 368,888. This application Aug. 13, 1996, Ser. No. 696,251
Int. Cl.[6] B60P *7/04*
U.S. Cl. 296—100 **9 Claims**



1. A tarpaulin support device for an open top of a trailer or vehicle, which device comprises:

a flexible and resilient pole having a first end and a second end, said pole being normally straight and bowed under tension to an arched position outwardly from said trailer or vehicle a selected vertical component wherein said pole will flex and

deflect under force from loading equipment and material being loaded into said open top in an opposite direction up to an amount equal to said selected vertical component;

a first bracket and a second, opposed bracket, each said bracket attached to said trailer and having a non-cylindrical opening therein; and

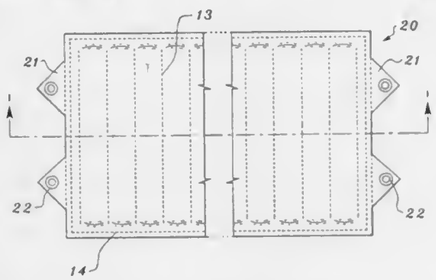
a first socket and a second socket, each socket having a receptacle to receive one said pole end, each socket terminating in a non-cylindrical post receivable in one said opening to retain said sockets and said pole and to prevent radial movement of said post, and to retain said pole in said arched position.

5,664,825

HAIL PROTECTIVE COVER

Robert F. Henke, 3413 Rockbrook, Plano, Tex. 75974, and Bryan R. Henke, 30 Tompion La., Saratoga Springs, N.Y. 12866

Filed Mar. 4, 1996, Ser. No. 610,335
Int. Cl.[6] B60J *11/00*
U.S. Cl. 296—136 **7 Claims**



1. A cover suitable for hail protection comprising:

(a) a plurality of rods of a resilient material, the rods having substantially circular cross-sections, the rods being disposed parallel and not more than 1.9 centimeters apart along their long dimensions, and,

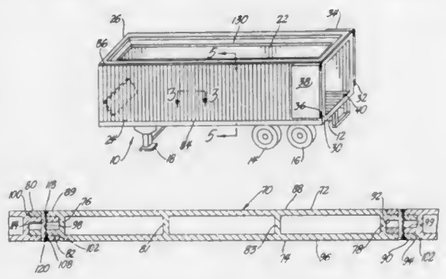
(b) means for holding the rods parallel and not more than 1.9 centimeters apart so that the cover may flex along the long dimensions of the rods.

5,664,826

LIGHT WEIGHT TRAILER WALLS WITH SMOOTH SURFACES

Arthur L. Wilkens, 312 N. Walnut, Stockton, Kans. 67669

Filed Apr. 12, 1996, Ser. No. 630,059
Int. Cl.[6] B60R *27/00*
U.S. Cl. 296—181 **10 Claims**



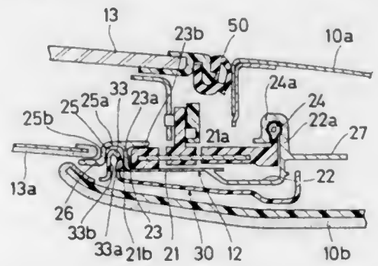
1. A wall for a trailer having an inside surface in a first vertical plane and an outside surface in a second vertical plane comprising a plurality of interconnected panels each of which is a hollow extruded member with an inside wall having an inside wall surface in said first plane, an outside wall having an outside wall surface in said second vertical plane, a first vertical end wall integral with a first edge of the inside wall and a first edge of the outside wall, a second vertical end wall integral with a second edge of the inside wall and a second edge of the outside wall, a first outside flange integral with the first end wall, a first inside flange integral with the first end wall, a second outside flange integral with the second end wall, a second inside flange integral with the second end wall, and wherein the first inside flange of a first panel is positioned between the second inside flange and the second outside flange of a second panel, the second outside flange of the second panel is positioned between the first inside flange and the first outside flange of the first panel, and a plurality of mechanical fasteners passing through the first outside flange of the first panel and the second inside flange of the second panel and holding a surface of the second inside flange in the first plane and holding a surface of the first outside flange in the second plane and wherein the first inside flange and second outside flange are spaced apart.

5,664,827

SUN-ROOF DEVICE

Keiji Mori; Kenji Hori; Katsuaki Kadoike, and Hiroyuki Yano, all of Aichi pref., Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 425,045, Apr. 19, 1995, abandoned. This application Sep. 19, 1996, Ser. No. 715,250
Claims priority, application Japan, Apr. 27, 1994, 6-090155
Int. Cl.[6] B60J *7/00*
U.S. Cl. 296—213 **21 Claims**



1. A sun-roof device for use in a vehicle having a roof that is provided with an opening portion defined by a pair of spaced side peripheries extending in a lengthwise direction of the vehicle and a front periphery extending in a direction transverse to the lengthwise direction of the vehicle comprising:

a movable panel for opening and closing the opening portion of the vehicle;

sliding means connected to the movable panel for moving the movable panel in the lengthwise direction of the vehicle;

a frame that includes means for securing the frame to the roof at a location below the roof, said frame including a lower portion, a pair of side frames for extending along the side peripheries of the opening portion and a front frame for extending along the front periphery of the opening portion, the front frame being connected to the pair of side frames, each side frame including a guide rail portion which guides and on which rests the sliding means, the lower portion including at least one hole for draining water from the lower portion, the guide rail portion of each side frame being located elevationally higher than the lower portion so that water in the guide rail portions flows onto the lower portion, each side frame including a supporting channel, and

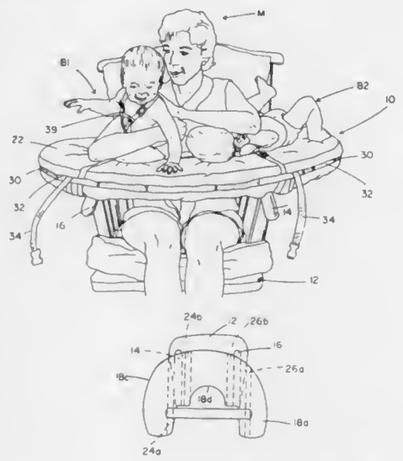
a draining member separate from the frame and having an insert portion that is positioned and supported in the supporting channel of each side frame, the draining groove member being positioned below the frame, said hole in the lower portion providing communication between the lower portion and the draining member so that water in the lower portion drains into the draining member by way of the hole.

5,664,828

SUPPORT DEVICE FOR USE IN SIMULTANEOUS NURSING OF TWIN INFANTS

Janet Y. Simon, 209 Clearwood Ct., St. Peters, Mo. 63376

Filed Sep. 12, 1995, Ser. No. 527,363
Int. Cl.[6] A47C *7/68*; A47D *13/00*
U.S. Cl. 297—153 **17 Claims**



1. A device for use by a care-giver, the device being adapted for support of two infants for simultaneous feeding thereof by the care-giver, the device comprising:

a rigid platform having an upper flat surface and a lower flat surface, the upper flat surface for providing a support surface for two infants to be fed simultaneously by the care-giver, and for support of the arms of the care-giver, and the lower flat surface contacting and resting upon arms of a chair in which the care-giver using the device is seated,

a cushion disposed on the rigid platform to thereby provide a more comfortable surface for supporting the infants during simultaneous feeding of the infants by the user of the device,

and a cover over the cushion, to thereby prevent direct contact of the infants with said cushion, straps connected to said device, the straps being of sufficient length to extend around the device with the cushion thereon and adapted to be loosely connected to the infants supported on the device, whereby the infants can be comfortably restrained upon the device and prevented from falling therefrom,

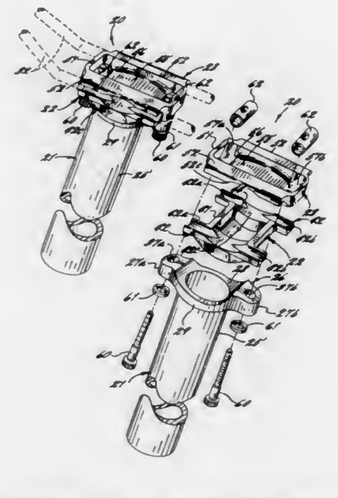
wherein said rigid platform is provided with an outer edge and an inner edge and extends continuously therebetween, the inner edge having a concave, generally arcuate form for extending at least partly around and in front of the care-giver in normal use position, and extending rearwardly beyond a back of the chair upon which the device rests during use, to provide an area for support of the elbows of the care-giver, and the inner edge curving laterally and then forwardly to intersect and extend continuously into the outer edge, a center of the outer edge being spaced outwardly from a center of the inner edge, providing a surface area therebetween for support of the infants to be fed.

5,664,829

LIGHTWEIGHT HIGH STRENGTH BICYCLE SEAT POST AND ASSOCIATED CLAMP INCLUDING SEAT ANGLE INDICATING INDICIA

Loronzo Harold Thomson, and Daniel Rudy Nietzold, both of Warner Robins, Ga., assignors to L.H. Thomson Company, INC., Macon, Ga.

Filed Aug. 16, 1995, Ser. No. 515,871
Int. Cl.[6] B62J *1/00*
U.S. Cl. 297—215.14 **40 Claims**



23. An apparatus for securing a bicycle seat to a bicycle frame, the bicycle seat comprising a pair of spaced apart longitudinally extending seat rails, said apparatus comprising:

a seat post having an upper surface defining a laterally extending recess;

a clamp rotatably positioned in the recess of said seat post and engaging the seat rails; and

indicia means for indicating a relative angular setting of said clamp and said seat post to thereby facilitate adjustment of the bicycle seat to a desired angle.

5,664,830

CHILD SAFETY SEAT ASSEMBLY

Birgit S. Garcia, P.O. Box 450, Pebble Beach, Calif. 93953, and Scott Ganaja, San Luis, Calif., assignors to Birgit S. Garcia, Pebble Beach, Calif.

Filed Nov. 19, 1996, Ser. No. 752,737
Int. Cl.[6] B60N *2/42*
U.S. Cl. 297—216.11 **3 Claims**

1. A child safety seat for use in an automotive vehicle, and comprising:

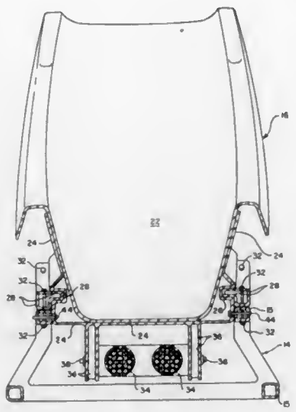
a base sub-assembly having a spaced-apart pair of rigidly attached side rail elements which each have a longitudinally arcuate configuration;

a seat sub-assembly supported by said base sub-assembly and having an occupant restraint means and a spaced-apart pair of rigidly attached side rail elements which each have a longitudinally arcuate configuration and is slidably engaged with a respective one of said base sub-assembly side rail elements; and

collapsible energy absorbing means connected to said base sub-assembly and to said seat sub-assembly;

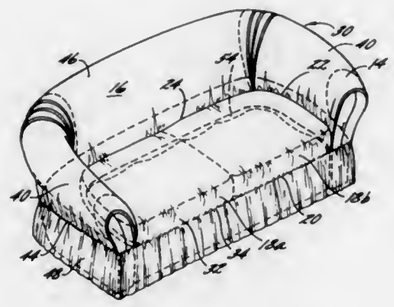
said base and seat sub-assembly longitudinally arcuate side rail configurations having the same axis of rotation, and said collaps

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ible energy absorbing means being collapsed when said seat sub-assembly is rotated in a given direction relative to said base sub-assembly.

5,664,831
SEMI-FITTED ONE-PIECE SLIPCOVER
Cecil A. White, New York, N.Y.; Susan Shaner, Easton, Pa.; Gretchen F. Dale, Westport, Conn., and Clarence J. Reiss, Jr., Walnut Port, Pa., assignors to Fieldcrest Cannon, Inc., Eden, N.C.
Filed Feb. 29, 1996, Ser. No. 608,813
Int. Cl.[6] A47C *27/00*
U.S. Cl. 297—225 **24 Claims**



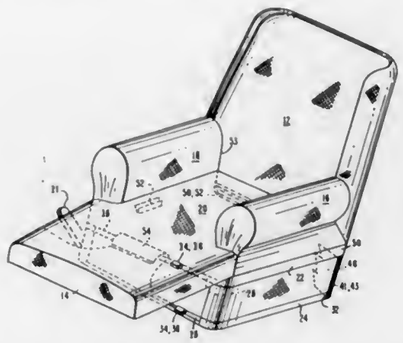
24. A one-piece slipcover for covering a sofa having a back, arms, base and seat cushion, said slipcover comprising a body of material defining a main body portion for covering at least the back and arms of the sofa and a seat cushion covering portion for covering the seat cushion of the sofa,

a first cinching element secured to and extending substantially across the width of the seat cushion covering portion to cinch the peripheral dimension thereof and bias the seat cushion covering portion substantially beneath a front portion of the seat cushion of the sofa,

a second cinching element secured to and extending circumferentially around a portion of the periphery of the seat cushion covering portion not secured to said first cinching element, and

a third cinching element secured to and extending circumferentially around the periphery of the main body portion, to enable the slipcover to be readily tightened about the sofa.

5,664,832
SEMI-FITTED SINGLE PIECE RECLINER COVER
Kenneth V. Stevens, Brooklyn, and Paula Riley, New York, both of N.Y., assignors to Prescient Partners, L.P., New York, N.Y.
Filed Jul. 1, 1996, Ser. No. 674,022
Int. Cl.[6] A47C *31/10*
U.S. Cl. 297—225 **14 Claims**



1. A recliner cover for a recliner having a seat with a cushion, a back, a pair of arms and a movable footrest having upper and lower surfaces, the cover comprising:

a cross shaped fabric cover member;

the cover member having a head portion for engagement over the recliner back, a foot portion for engagement over the recliner footrest, a pair of arm portions for engagement over the recliner arms and a seat portion for covering the seat and sized for being tucked around the cushion;

the pair of arm portions being connected to opposite sides of the seat portion, the head portion is connected to a top end of the seat portion and the foot portion is connected to a bottom end of the seat portion;

skirt means connected to outer ends of the arm portions which are spaced away from the seat portion, for fastening around and covering a bottom of the recliner;

the skirt means including a fabric tube under the foot portion and at the outer end of each of the arm portions and a band engaging through the fabric tubes to hold the arm portions against the arms of the recliner and to hold the foot portion under the footrest; and

the foot portion forming a sleeve including an inner part formed by superposed layers of said fabric cover for covering the lower surface of the footrest, said fabric tube of the foot portion being formed on one of said superposed layers and providing sleeve means for engaging the band for holding the inner part of the foot portion to the lower surface of the footrest.

5,664,833
CHILD'S CAR SEAT WITH IMPROVED ROTATABLE OVERHEAD SHIELD
MaryAnn Celestina-Krevh, Euclid; William T. Ward, Jr., Uniontown, and Michael P. Green, Youngstown, all of Ohio, assignors to Century Products Company, Macedonia, Ohio
Filed Jul. 31, 1996, Ser. No. 691,808
Int. Cl.[6] A47C *1/08*
U.S. Cl. 297—256.15 **8 Claims**

5. In combination:

an infant's car seat having a main body portion; and

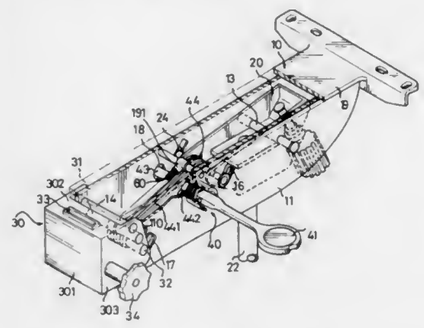
an adjustable overhead shield attached to said main body portion of said infant's car seat, said shield comprising:

first and second arm members each having a distal end attached to said main body portion of said car seat and an attachment end; and



a shield member having a longitudinal axis and first and second ends, each of said first and second ends being pivotally attached to the attachment end of a corresponding one of said first and second arm members, each end of said shield member including a detent member retractably mounted therein along a retraction direction substantially normal to said longitudinal axis, each attachment end of said first and second arm members having a detent socket provided with a plurality of angularly spaced detent channels, each of said detent channels being defined by a pair of spaced wall portions provided in said socket, said detent member being releasably engageable with said plurality of angularly spaced detent channels so that said shield member can be rotatably positioned to any one of a plurality of rotational positions and fixed therein.

5,664,834
ADJUSTING DEVICE OF A CHAIR
Hsiu-lan Hsu, No. 34, Alley 251, Fushang Lane, Hsitun Dist., Taichung, Taiwan
Filed Oct. 8, 1996, Ser. No. 727,051
Int. Cl.[6] A47C *3/00*
U.S. Cl. 297—300.1 **2 Claims**



1. An adjusting device of a chair, comprising:

a base frame having two side walls extending from a front end thereof, a top plate connected across said two side walls and an open rear end, a first slot defined in a middle portion of each of said side walls, and a second slot defined in a rear end of each of said side walls, a first hole defined in each of said side walls and located between said first slots and said second slots, each of said side walls having a fourth slot defined inclinedly therein which is located above said second slot corresponding thereto;

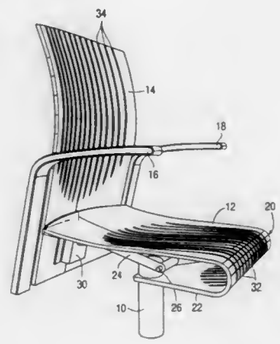
an inner frame having a front end thereof pivotally received between said two side walls by a first pin and a rear end of said inner frame fixedly connected to a second pin which is slidably received within said two first slots of said base frame;

a bracket having an end board, two lateral plates respectively extending from said end board and a top portion connected between said two lateral plates, said top portion having an oblong hole defined therein, said two side walls of said base frame slidably received between said two lateral plates by a third pin extending through said two side walls and said two lateral plates, a fourth pin extending through said two second slots and fixedly connected between said two lateral plates;

a fifth pin extending through said two fourth slots and fixedly connected between said two lateral plates, an urging element having one end thereof connected to said fifth pin and the other end of said urging element connected to an under side of said top plate of said base frame, and

a transmitting means connected between said second pin and said fourth pin, said transmitting means comprising a plurality of long plates, each of said long plates having a third slot defined therein with a quick release means extending therethrough which extends through said first holes, said quick release means comprising a rod extending through said third slots and an operating handle connected to said rod, said operating handle extending laterally from one of said side walls such that said long plates fixedly clamp said rod when said operating handle is pushed.

5,664,835
CHAIR
Simon Desanta, Borgholehausen, Germany, assignor to Peter Roeder, Frankfurt, Germany
PCT No. PCT/EP95/01126, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO95/26152, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 24, 1995, Ser. No. 549,733
Claims priority, application Germany, Mar. 25, 1994, 44 10 383.2
Int. Cl.[6] A47C *1/032*
U.S. Cl. 297—302.1 **10 Claims**



1. A chair comprising:

a resilient seat panel mounted on top of a support,

a back-rest located at a rear portion of the seat panel, the seat panel being made from thin, pliant panel material, the material being guided down around a front edge of the seat panel in a U-shape and being rigidly attached to the support, and

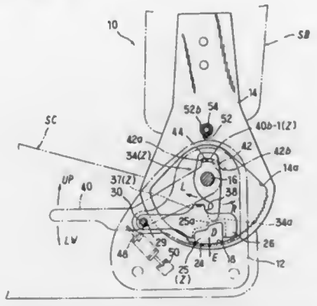
at least one guide bar having one end pivotably mounted at the support so that the guide bar can pivot about a fixed stationary axis located at the support, said guide bar being directed backwards from the support and having a second end rigidly attached with an underside of the seat panel in the rear portion thereof, said guide bar causing said seat panel to flex into a desired shape when a user sits on the chair.

5,664,836

RECLINING DEVICE FOR VEHICLE SEAT

Genjiro Takagi, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 624,090
Int. Cl.[6] B60N *2/20*
U.S. Cl. 297—367 **15 Claims**



1. A reclining device for a vehicle seat, which includes an upper arm to be fixed to a seat back of the seat and a lower base arm to be fixed to a seat cushion of the seat, said upper arm being rotatable via a shaft with respect to said lower base arm, said reclining device comprising:

an arcuate inwardly toothed portion which is formed in said upper arm, generally along a circle having a center at an axis of said shaft;

a lock gear means having one end portion supported rotatably upon a pin which is fixed to said lower base arm such as to be disposed apart from said shaft, and further having another end portion formed with an outwardly toothed portion, wherein said lock gear means is rotatable about said pin to bring said outwardly toothed portion to and out of a meshed engagement with a part of said arcuate inwardly toothed portion of said upper arm, to thereby lock and unlock said upper arm with respect to said lower base arm;

an operation lever having a base end portion rotatably connected to said shaft;

a biasing means for normally biasing said operation lever to a non-use position; and

an interlocking means arranged between said lock gear means and said operation lever, said interlocking means including:

a cam means rotatably provided on said shaft, said cam means having a cam end for contact with said lock gear means;

a guide means for guiding said lock gear means in a direction to disengage said outwardly toothed portion of the lock gear means from said arcuate inwardly toothed portion of said upper arm, said guide means comprising a first guide means projected from said lock gear means and a second guide means for engagement with said first guide means and said operation lever, wherein said second guide means is so interlocked with said operation lever that rotation of the operation lever permits said first guide means to cooperate with said second guide means in an engagement relation therewith so as to cause disengagement of said outwardly toothed portion from said arcuate inwardly toothed portion, and

a connecting means for connecting said cam means to said operation lever,

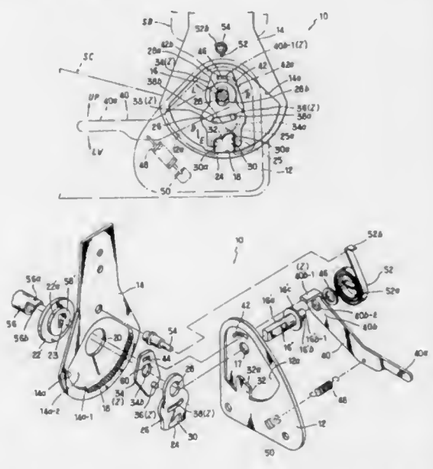
wherein said cam means is normally retained under a biasing force of said biasing means, causing said cam end to pressingly contact said lock gear means, thereby retaining said outwardly toothed portion of said lock gear means in a meshed engagement with a part of said arcuate inwardly toothed portion, and wherein, when said operation lever is rotated about said shaft from said non-use position, said cam means is rotated about said shaft in a direction to bring the cam end thereof out of contact with said lock gear means, while at the same time, said lock gear means is caused by said guide means to rotate about said pin to bring the outwardly toothed portion thereof out of the meshed engagement with said arcuate inwardly toothed portion.

5,664,837

RECLINING DEVICE FOR VEHICLE SEAT

Genjiro Takagi, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 624,244
Int. Cl.[6] B60N *2/20*
U.S. Cl. 297—367 **15 Claims**



1. A reclining device for a vehicle seat, which includes an upper arm to be fixed to a seat back of the seat and a lower base arm to be fixed to a seat cushion of the seat, said upper arm being rotatable via a shaft with respect to said lower base arm, said reclining device comprising:

an arcuate inwardly toothed portion which is formed in said upper arm, generally along a circle having a center at an axis of said shaft;

a projected guide portion formed in said lower base arm, said projected guide portion extending in a diametrical direction along a diameter of said circle along which said arcuate inwardly toothed portion is formed in the lower base arm;

a lock gear means which includes:

an outwardly toothed portion for meshed engagement with said arcuate inwardly toothed portion of said lower base arm;

a contact area projecting from a first side of said lock gear means;

a first slide means disposed in said diametrical direction, said first slide means comprising an elongated hole through which said shaft is slidably inserted; and

a second slide means disposed in said diametrical direction, said second slide means comprising a slide recession formed at a second side of said lock gear means opposite to said first side of the lock gear means where said contact area is formed;

said projected guide portion of said lower arm being slidably fitted in said slide recession of said second slide means;

wherein said lock gear means is movable via said first and second slide means in said diametrical direction, bringing said outwardly toothed portion to and out of a meshed engagement with a part of said arcuate inwardly toothed portion, to thereby lock and unlock said upper arm with respect to said lower base arm;

an operation lever having a base end portion rotatably connected to said shaft;

a biasing means for normally biasing said operation lever to a non-use position; and

an interlocking means arranged between said lock gear means and said operation lever, said interlocking means including:

a cam means rotatably provided on said shaft, said cam means having a cam end for contact with said contact area of said lock gear means;

an engagement guide means for engaging said cam means with said lock gear means and guiding said lock gear means in said diametrical direction; and

a connecting means for connecting said cam means to said operation lever,

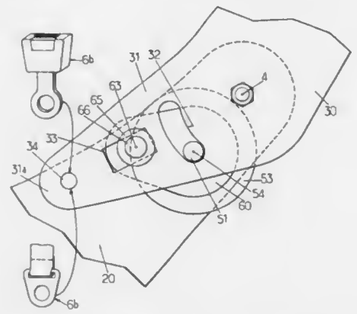
wherein when not in use, said operation lever is retained at said non-use position under a biasing force of said biasing means, which in turn biasingly causes said outwardly toothed portion of said lock gear means to be in a meshed engagement with a part of said arcuate inwardly toothed portion, via said-first and second slide mean, while also biasingly causing said cam end of said-cam means to pressingly contact said contact area of said lock gear means to thereby assist in retaining said outwardly toothed portion in the meshed engagement with said part of said arcuate inwardly toothed portion, and wherein rotation of said operation lever about said shaft from said non-use position causes said lock gear means to be displaced in said diametrical direction via said first and second slide means as well as via said engagement guide means, thereby bringing said outwardly toothed portion out of the meshed engagement with said inwardly toothed portion, while simultaneously causing said cam means to rotate about said shaft in a direction to bring said cam end thereof out of contact with said contact area of said lock gear means.

5,664,838

VEHICLE SEAT INCLUDING A PIVOTING BACKREST MOUNTED BY MEANS OF A DEVICE CAPABLE OF WITHSTANDING HIGH TORQUES

Francois Baloche, Flers, France, assignor to Bertrand Faure Equipements SA, France

Filed Mar. 26, 1996, Ser. No. 621,586
Claims priority, application France, Mar. 30, 1995, 95 03775
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—378.12 **11 Claims**



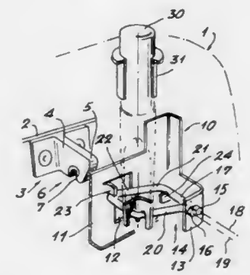
1. A vehicle seat including a seat cushion and a backrest each equipped with a rigid framework, the backrest being mounted so that it can pivot with respect to the seat cushion about a horizontal axis of pivoting, the pivoting of the backrest being controlled by an adjustment mechanism which includes a rotary input member, a support member fixed to one of the two frameworks, termed first framework, and a rotary output member driving the other of the two frameworks, termed second framework, this output member having an axis of rotation parallel to the axis of pivoting of the backrest, wherein the axis of rotation of the output member of the adjustment mechanism is offset with respect to the axis of pivoting of the backrest, the output member driving the second framework via a linkage member which is mounted so that it can slide at least radially with respect to an axis chosen from the axis of pivoting of the backrest and the axis of rotation of the output member, the linkage member furthermore being mounted so that it can pivot about an axis parallel to the axis of pivoting of the backrest, the pivoting of the linkage member taking place with respect to either the output member or the second framework, the axis of pivoting of the linkage member being separated from the axis of rotation of the output member by a first distance, and the axis of pivoting of the linkage member being separated from the axis of pivoting of the backrest by a second distance which is greater than the first distance.

5,664,839

LOCKING SYSTEM FOR A MOVABLE ELEMENT OF A SEAT OF AN AUTOMOTIVE VEHICLE

Philippe Pedronno, Marcoussis, and Bernard Denis, Gretz-Armainvilliers, both of France, assignors to Bertrand Faure Equipements S.A., Boulogne, France

Filed Jun. 14, 1995, Ser. No. 490,398
Claims priority, application France, Jun. 14, 1994, 94 07494
Int. Cl.[6] B60N *2/02*
U.S. Cl. 297—378.13 **8 Claims**



1. A locking system for movable vehicle seats comprising:

a hook member extending in a predetermined direction and rigidly fixed to a stationary surface;

a support element that is movable relative to the hook member;

a wall of the support element having a window formed therein for receiving the hook member when the support element and the hook member are moved together;

a shear resistant and elastically deformable wire ring mounted to the support element and having a sliding section thereof in sliding contact with the support element wall and traversing the window;

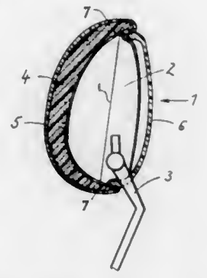
an engageable portion of the sliding ring section being latched by the hook member when a predetermined length of the hook member passes through the window;

the ring having two parallel free end portions adjacent one another and located in spaced relation to the sliding ring section;

the end potions of the ring having offset axes that are oriented perpendicular to the support element wall, the axes further being laterally offset with respect to the window;

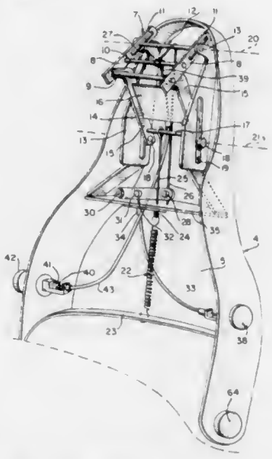
engagement between the hook member and the ring engageable portion causing the ring to pivot about the axes while undergoing elastic deformation thereby displacing the ring sliding section in a direction parallel to the wall while contact is maintained between the wall and the sliding section until the hook member fully latches the engageable portion of the sliding ring section.

5,664,840
HEADREST FOR MOTOR-VEHICLE SEAT
Wolfgang Stenzel, Einbeck, Germany, assignor to R. Schmidt GmbH, Lennestadt, Germany
Filed Nov. 22, 1996, Ser. No. 753,336
Claims priority, application Germany, Dec. 23, 1995, 295 20 526.1
Int. Cl.[6] A47C *7/36;* **B60N** *2/48*
U.S. Cl. 297—391 **3 Claims**



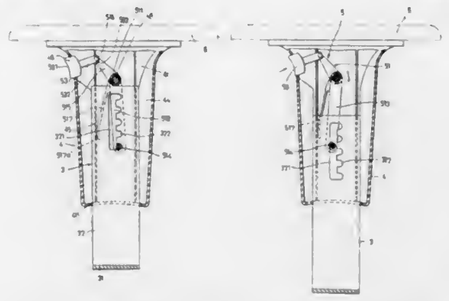
1. A motor-vehicle headrest comprising:
a hollow housing having a front face and a back face, the back face being formed with a peripheral backwardly open groove;
at least one mounting rod seated in the housing and adapted to be secured to a motor-vehicle seat back;
a body of soft cushion material on the front housing face, the back housing face being substantially free of cushioning;
a flexible cover sheet overlying the cushion body and having an outer edge engaged in the groove; and
a stiff rear cover having a forwardly directed rim tightly fitted in the groove and retaining the cover edge therein.

5,664,841
MOTOR-VEHICLE SEAT
Antonio Dal Monte, Rome, Italy, assignor to Lear Corporation Italia Spa, Turin, Italy
Filed Apr. 30, 1996, Ser. No. 641,034
Claims priority, application Italy, Jul. 19, 1995, TO95A0619
Int. Cl.[6] A47C *7/36;7/44;* **B60N** *2/48*
U.S. Cl. 297—408 **22 Claims**

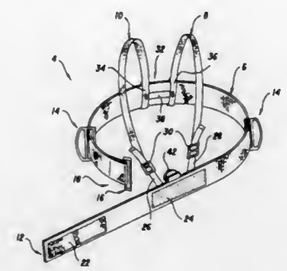


1. Motor-vehicle seat, comprising:
a backrest, having a supporting structure, and
a head-rest, including a supporting frame mounted onto the supporting structure of the backrest,
wherein said supporting frame of the head-rest is mounted onto the supporting structure so as to be both adjustable by a first movement along a substantially vertical direction and rotatable by a second movement around a transverse axis with respect to the supporting structure of the backrest, and
in that there are provided first and second separate flexible cable control means, respectively for controlling said first and second movements of the frame of the head-rest, in order to adjust the position of the latter,
wherein the frame of the head-rest is mounted so as to be rotatable around a first transverse axis on the supporting structure of the backrest, while being slidable in a substantially vertical direction,
in that there is provided an auxiliary arm having an upper end pivoted to the lower end of the frame of the head-rest and a lower end pivoted around a second transverse axis to the supporting structure of the backrest, said second transverse axis (**21**) being slidable along a substantially vertical direction, and
wherein said first control means comprises a first flexible cable having one end connected to the frame of the head-rest and arranged so as to pull said frame upwardly, causing said movement along a substantially vertical direction with respect to the supporting structure of the backrest, when said first cable is put under tension,
wherein said second control means comprises a second flexible cable interposed between said frame and said auxiliary arm so as to decrease the angle defined between said frame and said auxiliary arm when said second cable is put under tension, and
wherein a single return spring is interposed between the supporting structure of the backrest and said auxiliary arm, so as to bias said second transverse axis downwardly.

5,664,842
HEIGHT-ADJUSTABLE ARMREST UNIT FOR A CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yeh Enterprise Co., Ltd., Taiwan
Filed May 24, 1996, Ser. No. 653,150
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **4 Claims**



1. A height-adjustable armrest unit for a chair, comprising:
a support adapted to be mounted on a seat of the chair and including an upright plate portion with an upright guiding slot formed therethrough and a column of engaging notches communicated with said slot;
a generally upright sleeve mounted on said upright plate portion of said support;
a leverage body including an intermediate portion mounted pivotally on a first inner wall of said generally upright sleeve, an actuated upper end portion, and a lower end portion with a lock pin axially projecting therefrom to be slidably inserted into said guiding slot, said intermediate portion including a tubular hollow member axially extending therefrom for pivotally mounting on said first inner wall of said upright sleeve;
means for biasing said lock pin to engage a selected one of said notches, whereby, while said actuated upper end portion of said leverage body is being actuated against biasing action of said biasing means to disengage said lock pin from the selected one of said notches and to retract said lock pin into said guiding slot, said leverage body and said upright sleeve can be moved relative to said support by shifting said lock pin along said guiding slot to enable engagement of said lock pin with another one of said notches; and
an elongated guiding member having an upper hollow end to be fitted on said tubular hollow member, and a lower hollow end to be fitted on said lock pin so as to dispose said guiding member on an opposite side of said upright plate portion relative to said lower end portion of said leverage body, thereby assisting guided movement of said lock pin along said guiding slot.



5,664,843
VEHICLE SEAT BELT SHOULDER HARNESS ELEVATION DEVICE
Gary W. Gleason, 10080 Woodland Pine Cove E., Lakeland, Tenn. 38002
Filed Apr. 29, 1996, Ser. No. 638,601
Int. Cl.[6] B60R *22/00*
U.S. Cl. 297—471 **14 Claims**



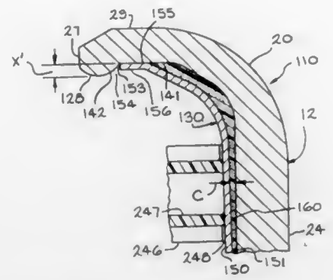
1. An apparatus for biasing a portion of a seat belt shoulder harness away from a portion of a human chest; said apparatus comprising:
(a) a body portion including a first end portion, a second end portion, and an intermediate portion; each one of said first end portion, said second end portion, and said intermediate portion having a topside and an underside: said body portion being deformable between:
i. a first position in which said topside and said underside of said intermediate portion are substantially non-coplanar with said topside and said underside of said first and second end portions, and
ii. a second position in which said topside and said underside of said intermediate portion are substantially coplanar with said topside and said underside of said end portions; said body portion further including biasing means for biasing said body portion in said first position; and
(b) securing means for securing said body portion to the seat belt shoulder harness.

5,664,844
HARNESS SAFETY SYSTEM
Ginette L. Greene, Virginia Beach, Va., assignor to Petite Peche Ltd., Virginia Beach, Va.
Filed Oct. 27, 1994, Ser. No. 329,934
Int. Cl.[6] A61H *3/00;* **B60R** *22/00*
U.S. Cl. 297—485 **20 Claims**

1. A harness safety system for safely securing a child or mentally or physically impaired adult comprising:
a chest strap having first and second ends for positioning around the chest of a child or mentally or physically impaired adult;
loop means secured to the first end of said chest strap;
fastening means secured to the second end of said chest strap such that when said chest strap is positioned around the chest of a child or mentally or physically impaired adult, said second end of said chest strap is placed through said loop means and folded back upon itself for securing by said fastening means thereby providing a snug fit of the chest strap about the chest of a child or mentally or physically impaired adult;
at least a pair of attachment rings through which said chest strap extends;
first and second front shoulder straps each having a first and second end whereby the first end of said shoulder straps is looped about said chest strap and stitched to itself thereby forming a looped connection capable of sliding along said chest strap;
a pair of rear shoulder straps secured to said chest strap and having a locking means secured to an end of said pair of rear shoulder straps opposite the end secured to said chest strap such that said second ends of said front shoulder straps loop through respective locking means of said pair of rear shoulder straps so as to form an adjustable shoulder strap assembly;
first and second side restraining assemblies having first and second ends such that a first end of said first side restraining assembly is connected to one of said pair of attachment rings and said first end of said second side restraining assembly is connected to the other of said pair of attachment rings, said second ends of said first and second side restraining assemblies having a securing means secured thereon for connection to a shopping cart, high chair, booster seat, stroller, wheelchair or similar seating device;
a shoulder strap connecting element having first and second ends such that said first end of said connecting element is secured to said looped connection of said first shoulder strap and the second end of said shoulder strap connecting element is secured to said looped connection of said second shoulder strap thereby forming a sliding yoke connection between said shoulder straps and said chest strap, wherein said shoulder strap connecting element is secured such that it can slide along an outer surface of said chest strap; and
a further shoulder strap connecting element having first and second ends such that said first end is secured to said first looped connection of said first shoulder strap and the second end of said further shoulder strap connecting element is secured to said second looped connection of said second shoulder strap such that said further connecting element can slide along an inner surface of said chest strap.

5,664,845
VEHICLE WHEEL COVER RETENTION SYSTEM AND METHOD FOR PRODUCING SAME
Michael V. Maloney, Belleville; Thomas E. Heck, Monroe; James A. Lumm, Whitmore Lake, all of Mich., and James H. Kemmerer, Sweet Springs, Mo., assignors to Hayes Wheels International, Inc, Romulus, Mich.
Continuation-in-part of Ser. No. 203,058, Feb. 28, 1994, Pat. No. 5,435,631. This application Feb. 23, 1995, Ser. No. 389,867
Int. Cl.[6] B60B *7/06*
U.S. Cl. 301—37.43 **16 Claims**

1. A vehicle wheel defining an axis and comprising:



a disc defining an outboard facing wheel surface and including an outboard tire bead seat retaining flange, said outboard bead seat retaining flange including an outer surface having a circumferential, radially inwardly facing groove formed therein, said groove defined by a generally axially extending first surface and a second surface angled relative to said first surface;

a wheel cover covering at least a portion of said outboard facing wheel surface, said wheel cover including an outer annular lip which extends into said groove and is positioned adjacent said first surface; and

said groove land said outer annular lip having a configuration Which enables said outer annular lip to spring outwardly into said groove when said wheel cover is pressed on said disc.

5,664,846

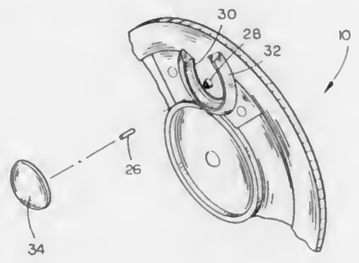
HUBCAP WITH SHIELDED VENT

Scott M. Kuck, Lincoln, Nebr., assignor to Dual Dynamics, Inc., Lincoln, Nebr.

Filed Aug. 22, 1996, Ser. No. 701,397

Int. Cl.[6] B60B *7/00*

U.S. Cl. 301—108.1 **7 Claims**



1. A hubcap for a wheel comprising:

a generally cup-shaped member adapted to be secured to a wheel to prevent contaminants from entering the wheel bearings of the wheel;

said cup-shaped member including a generally cylindrical side wall having inner and outer ends, and an end wall at the outer end thereof;

said end wall having inner and outer surfaces;

said end wall having a vent opening formed therein having inner and outer ends;

a vent plug positioned in said vent opening which permits the passage of air therethrough to vent the wheel bearings, but which prevents the passage of water and contaminants therethrough;

and a grease shield positioned at said inner surface of said end wall for preventing grease from coming into contact with said plug means;

a semi-circular support on said inner surface of said end wall which partially extends around said inner end of said vent opening and which protrudes inwardly from said inner surface of said end wall;

and a disc-shaped grease shield positioned on said semi-circular support for preventing grease from coming into contact with said plug means in said vent opening.

5,664,847

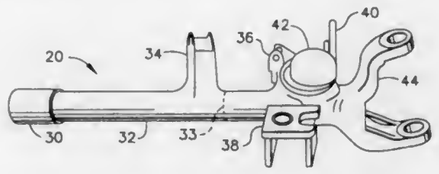
CAST TUBE-YOKE BRACKET ASSEMBLY

Dee Bear, Roanoke; Richard Cleveland, Garrett; Michael R. Fetcho; John T. Graft, both of Ft. Wayne; Thomas Redding, Huntington, and Timothy Ward, Columbia, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 288,589, Aug. 10, 1994, abandoned. This application Oct. 25, 1996, Ser. No. 738,005

Int. Cl.[6] B60B *35/08*

U.S. Cl. 301—137 **17 Claims**



1. A vehicle front drive axle assembly, comprising:

a front differential including a housing supporting left hand and right hand assemblies;

each of said left hand and right hand assemblies including an axle tube coupled to said housing, with at least a portion of said axle tube having an integral yoke member for supporting a steering knuckle;

each of said axle tubes having at least one integral bracket assembly having mounting portions extending radially from said axle tube for mounting of vehicle suspension means and for securing said axle assembly to said vehicle;

each of said axle tubes having varying cross-sections along their length, with said cross-sections being varied in a predetermined manner along the length of said axle tube to accommodate expected stress loads thereon; and

said axle tube varies from a circular cross-section to an elliptical cross-section, providing additional material at predetermined positions along the length of said axle tube to accommodate expected stress loads thereon.

5,664,848

APPARATUS FOR ABSORBING SHOCKS IN A VEHICLE BRAKING SYSTEM

Richard E. Muraski, 2710 Gateway Oaks Dr., Suite 225 South, Sacramento, Calif. 95833

Filed May 21, 1996, Ser. No. 651,898

Int. Cl.[6] B60T *17/04*

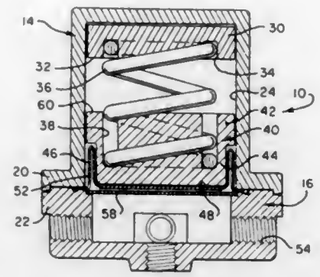
U.S. Cl. 303—87 **9 Claims**

1. Apparatus for reducing pressure peaks of a pneumatic medium within a vehicle braking system below a predetermined maximum, comprising:

a housing wall means including first and second cylindrical parts each having an internal cavity and an open circular end, said open circular ends being fitted together such that the internal cavities together form a chamber having first and second end walls, said housing wall means including openings;

a cap located within the chamber adjacent the first end wall;

a coil spring within the chamber having one end abutting against the cap and extending away therefrom toward the second end wall of the chamber;



a piston received within the chamber and having a first end portion contacting the spring other end and a second end portion extending away from the spring toward the chamber second end wall;

membrane means having peripheral edge margins continuously sealingly affixed to the housing wall means and a central portion of said membrane means being folded about the piston other end portion; and

a mesh plate having edge portions affixed to the housing means and including a central part located between the membrane means and that part of the chamber including the housing wall means openings, said membrane means peripheral edge margins and the mesh plate edge portions are clamped between the first and second cylindrical parts at the open circular ends.

5,664,849

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

Jochen Burgdorf, Offenbach; Dieter Dinkel, Eppstein/Ts, and Peter Volz, Darmstadt, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

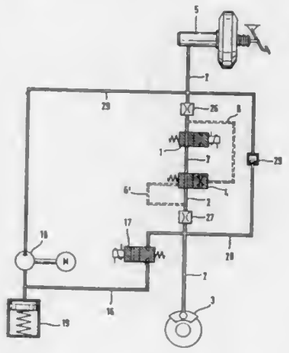
PCT No. PCT/EP94/03180, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO95/09099, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 23, 1994, Ser. No. 619,713

Claims priority, application Germany, Sep. 28, 1993, 43 32 819.9

Int. Cl.[6] B60T *8/40*

U.S. Cl. 303—116.1 **5 Claims**



1. A hydraulic brake system with slip control, of the type including a braking pressure generator which is hydraulically connected to at least one wheel brake by way of a main pressure line, a return line connected to the wheel brake and to a pressure-fluid collecting means, an auxiliary-pressure pump having an auxiliary-pressure line and being hydraulically connected to the braking pressure generator, and inlet and outlet valves inserted into the main pressure line and the return line and either closing or keeping open the pressure fluid passage in the main pressure line and in the return line, a controllable restrictor arranged in the main pressure line between the inlet valve and the wheel brake, permitting an unhindered hydraulic fluid flow in the main pressure line to the wheel brake in a first operating position and limiting the pressure fluid flow to the wheel brake in a second operating position, comprising:

a first invariable orifice arranged in the main pressure line upstream of the inlet valve and a second invariable orifice arranged downstream of the controllable restrictor.

5,664,850

ANTI-SKID CONTROL SYSTEM FOR AN ELECTRICALLY OPERATED VEHICLE

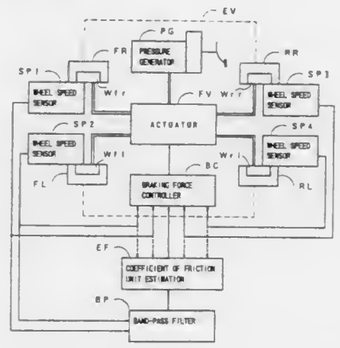
Tetsuya Kuno, Toyota; Toshiaki Hamada, Okazaki, and Tadashi Terazawa, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 11, 1996, Ser. No. 710,026

Claims priority, application Japan, Sep. 19, 1995, 7-240237

Int. Cl.[6] B60L *7/00*; **B60T** *8/64*

U.S. Cl. 303—150 **7 Claims**



1. An anti-skid control system for controlling a braking force applied to road wheels including driven wheels of an electrically operated vehicle, comprising:

wheel brake cylinders operatively connected to said road wheels respectively, for applying braking force thereto;

a hydraulic pressure generator for supplying a hydraulic braking pressure to each of said wheel brake cylinders;

actuating means disposed in each hydraulic circuit communicating said hydraulic pressure generator with each of said wheel brake cylinders for controlling the hydraulic braking pressure in each of said wheel brake cylinders;

wheel speed detection means for detecting wheel speeds of said road wheels, and providing output signals corresponding to the wheel speeds, respectively;

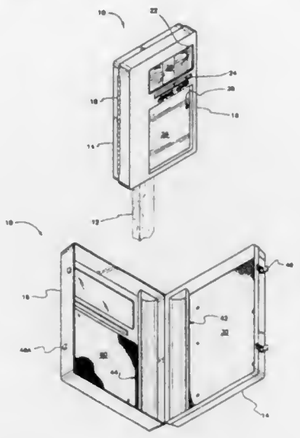
band-pass filter means for passing the wheel speeds of said driven wheels having an oscillation property within a predetermined band of frequencies, out of the wheel speeds detected by said wheel speed detection means,

coefficient of friction estimation means for estimating a coefficient of friction of a road on which said vehicle is running, wherein said coefficient of friction estimation means estimates that the coefficient of friction of said road is relatively low when the output of said band-pass filter means is in a predetermined range of frequencies; and

braking force control means for controlling said actuating means in accordance with at least the coefficient of friction estimated by said coefficient of friction estimation means, and in response to the wheel speeds detected by said wheel speed detection means, thereby to control the braking force applied to each of said road wheels.

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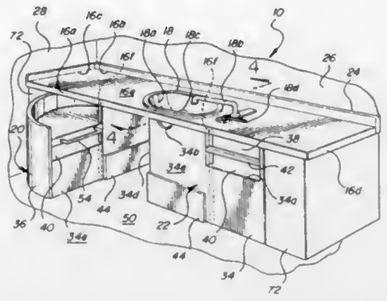
5,664,851
DOCUMENT DISPLAY CASE
Gary D. Dunn, 2368 Podocarpus Way, Clearwater, Fla. 34619
Filed Nov. 7, 1995, Ser. No. 554,807
Int. Cl.[6] A47F *3/00*
U.S. Cl. 312—102 **15 Claims**



1. A weather resistant document display case comprising:.
a base member having a rear wall, a top wall projecting forwardly from said rear wall, a right lateral wall and a left lateral wall projecting forwardly from said rear wall, and a bottom wall projecting forwardly from said rear wall;
a cover member pivotally attached to said base member, said cover member having a window for revealing contents of said display case, and being movable to a closed position and to an open position, said cover member and said base member being in overlapping relationship to one another when said cover member is in said closed position;
a hinge attached to said base member and to said cover member providing pivoting connection between said base member and said cover member;
a tack board mounted to said display case parallel to said rear wall, for supporting documents affixed to said tack board; and
a lock releasably securing said cover member in said closed position, said base member and said cover member having complementary internal surfaces dimensioned and configured to define a cylindrical recess, for receiving and surrounding a cylindrical object placed therein.

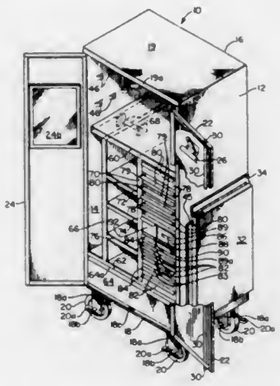
5,664,852
HANDICAPPED VANITY
Sarah S. Robinson, 16996 Marguerite, Beverly Hills, Mich. 48025
Filed Apr. 21, 1996, Ser. No. 629,961
Int. Cl.[6] A47B *77/06*
U.S. Cl. 312—228 **11 Claims**

1. A handicapped vanity comprising:
a counter having a front edge;
a sink positioned in the counter;
a cabinet having an impact portion and a storage portion and mounted for movement between a storage position in which the storage portion is positioned beneath the counter and the impact portion is positioned beneath the counter directly forwardly of the sink in a position blocking access to a space under the counter beneath the sink and an access position in which the storage portion extends forwardly from the front edge of the counter and the impact portion is positioned beneath the counter in a position allowing entry of a leading edge of a wheelchair into the space; and



means operative in response to impact of an approaching wheelchair or occupant with the impact portion to move the cabinet from said storage position to said access position whereby a leading edge of the wheelchair may enter the space and the storage portion of the cabinet extends forwardly from the front edge of the counter and alongside the wheelchair for access by the wheelchair occupant.

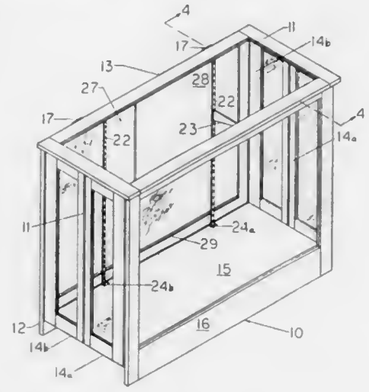
5,664,853
SPRAY PAINTER'S CABINET
Edward L. Nickolaus, Jr., 2233 Country Club Dr., Laplace, La. 70068-1820
Continuation-in-part of Ser. No. 384,025, Feb. 6, 1995, Pat. No. 5,533,799. This application Mar. 14, 1996, Ser. No. 616,154
Int. Cl.[6] A47B *46/00;49/00;97/00*
U.S. Cl. 312—249.12 **11 Claims**



1. A cabinet for storing spray painting supplies and equipment comprising a box-like body having
a. two rectangular vertical parallel sidewalls rigidly connected to a vertical rectangular backwall,
b. a rectangular horizontal bottom rigidly connected to said two rectangular vertical parallel sidewalls and said vertical rectangular backwall,
c. a rectangular horizontal top rigidly connected to said two rectangular vertical parallel sidewalls and said vertical rectangular backwall,
d. door means rotatably connected to one of said two rectangular sidewalls for enclosing the interior of said box-like body,
e. at least one upper shelf rigidly connected to an inside surface of each of said two sidewalls and/or to the inside surface of said backwall, said shelf being aligned parallel to said rectangular horizontal top,

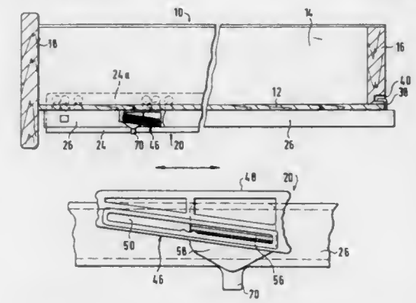
f. a plurality of holding means for holding paint spray guns connected to inside surfaces of said side walls between said shelf and said rectangular horizontal top for holding spray paint guns,
g. a plurality of slidable pull-out drawers located adjacent to one of said two sidewalls, and
h. at least one air-tight drawer connected to one of said sidewalls beneath said shelf for storing air sensitive respirators.

5,664,854
COLLAPSIBLE SHOWCASE FOR RETAIL/TRADE SHOW USE
Ronald C. Letch, 14 Atkinson St., Newburyport, Mass. 01950
Filed Mar. 22, 1996, Ser. No. 620,934
Int. Cl.[6] A47B *43/00*
U.S. Cl. 312—262 **6 Claims**



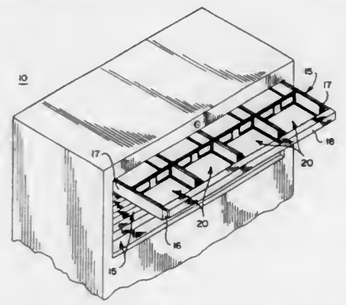
1. A collapsible showcase comprising:
(a) a rear panel, a top panel, two pairs of side panels, a floor panel, a front panel;
(b) said top panel connected by hinge means to said rear panel, allowing at least 270° rotation of said top panel with respect to said rear panel;
(c) said floor panel comprising a hinge means connecting said floor panel to said front panel, allowing at least 90° rotation of said floor panel with respect to said front panel;
(d) said pairs of side panels comprising a hinge means to connect said pairs of side panels to each other respectively and connecting said side panels to said rear panel and to said front panel allowing said side panels to fold inward so that said rear panel and said front panel move toward each other;
(e) said rear panel comprising a means to provide access to the interior of said collapsible showcase; and,
(f) said rear panel further comprising a device for supporting optional shelves inside said collapsible showcase.

5,664,855
FITTING FOR THE ADJUSTABLE-HEIGHT MOUNTING OF DRAWERS
Horst Lautenschläger, Reinheim; Horst Berger, Stuckenbrock-Schloss Holte, and Gerhard Lautenschläger, Brensbach-Wersau, all of Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany
Continuation of Ser. No. 377,465, Jan. 24, 1995, abandoned. This application Sep. 17, 1996, Ser. No. 714,860
Claims priority, application Germany, Apr. 26, 1994, 44 14 462.8
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—334.4 **15 Claims**



1. A fitting for the adjustable-height mounting of a drawer on a runner rail of a drawer slide supporting the drawer at a drawer bottom, said drawer having an opening direction, said fitting comprising:
a movable slider comprising an elongated body having an elongated bearing surface for contacting the bottom of the drawer, the elongated body having a longitudinal guide slot running at an incline with respect to the bearing surface, and
at least one guide means engageable with the guide slot, the at least one guide means being fixably connectable to the runner rail.

5,664,856
STACKABLE DIVIDED DRAWER PARTITION
Larry D. Pacetti, Kenosha, Wis., assignor to Snap-on Technologies, Inc., Lincolnshire, Ill.
Division of Ser. No. 195,157, Feb. 17, 1994, Pat. No. 5,607,215. This application May 30, 1996, Ser. No. 663,536
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—348.3 **12 Claims**



1. A divided drawer partition comprising: a tray including a rectangular base wall and opposed upstanding side walls each terminating at an upper edge, each of said side walls having at least one groove therein substantially dovetail-shaped in transverse cross section and extending downwardly from the upper edge of said side wall, said base wall having at least one aperture there-

through, and an elongated divider having tongues respectively disposed at opposite ends thereof and a resilient latch structure projecting therefrom along a bottom edge thereof, said tongues being shaped for mateable sliding engagement respectively in said grooves and said latch structure being shaped and dimensioned to be resiliently snap-fitted in said aperture, said divider being shaped and dimensioned so as to be receivable in said tray in a use position extending between said side walls with said tongues respectively received in said grooves and with said latch structure snap-fitted in said aperture for dividing said tray into two compartments respectively disposed on opposite sides of said divider.

5,664,857

METAL FITTING HOLDER FOR FRONT FACES OF DRAWERS

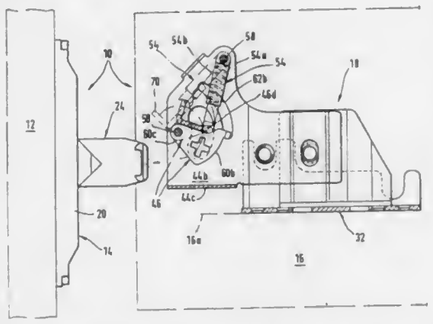
Horst Lautenschläger, Reinheim, and Gerhard Wilhelm Lautenschläger, Brensbach-Wersau, both of Germany, assignors to Mepla-Werke Lautenschläger GmbH & Co. KG, Germany

Filed Jul. 22, 1996, Ser. No. 681,287

Claims priority, application Germany, Aug. 29, 1995, 195 31 698.3

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—348.4 **9 Claims**



1. A metal fitting for holding a front face of a drawer to side walls of the drawer said front face having an outer surface and an inner surface, said fitting comprising;

a holding part, fastenable to inner surface of the drawer front face and having a bracket-like projection projecting substantially rectangularly from the inner surface, said bracket-like projection being insertable into a receiving part,

a receiving part, fastenable to a side wall of the drawer, for detachably receiving the bracket-like projection,

a locking element for locking said bracket-like projection after insertion into the receiving part, said locking element being movably attached to the receiving part and acted upon by a spring element under tension such that the locking element can be rotated about an axis between a first and second stable, end-position in a region facing the drawer front face, and extending transversely to an inserting direction of the extended projection,

wherein said locking element is provided with at least one locking edge on an end region, and, as a result of tension by the spring on the locking element, is rotated into the first end position in a specified mounting position of the front face, behind a holding edge formed in a free end region of the bracket-like projection, said holding edge pointing rearward toward the front face,

said locking element further comprising a limiting edge, adjoining an end of the locking edge, and protruding, in the first end position of the locking element, into the insertion path of the bracket-like projection, said limiting edge being configured to collide with the free end region of the bracket-like projection during the insertion of the bracket-like projection into the receiving part, said collision causing the locking element to rotate against the spring under tension in the direction of the second stable end position, and

wherein the locking edge of the locking element, while being rotated behind the holding edge of the bracket-like projection, has an increasingly greater distance from the axis of rotation of the locking element in the region of contact with the holding edge, and

wherein the locking edge further comprises an arched course having a radius, measured from the axis of rotation of the locking element to the locking edge, increases gradually from a first end, which at first grips behind the holding edge during the locking process, in the direction of the other end, and

wherein the bracket-like projection further comprises holding lugs on both sides at the free end, which protrude in opposite directions, and on said holding lugs are constructed holding edges for the locking element, and said locking element further comprises two panel-shaped locking element halves having a common outer boundary, said locking element halves being disposed parallel to and at a distance from each other, and, accordingly, two locking edges having the same course, the clear distance of which from one another is at least equal to the thickness of the bracket-shaped projection, but smaller than the distance measured over the opposite, free, boundary edges of the holding lugs.

5,664,858

METHOD AND APPARATUS FOR PRE-COMPENSATING AN ASYMMETRICAL PICTURE IN A PROJECTION SYSTEM FOR DISPLAYING A PICTURE

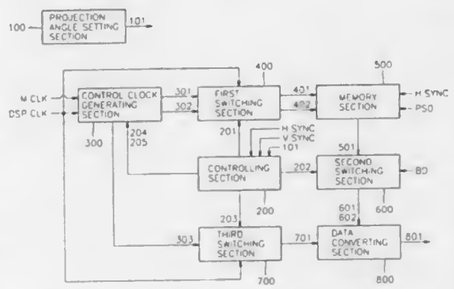
Seong-Jae Woo, Kyeongki-do, Rep. of Korea, assignor to Daewoo Electronics Co., Inc., Seoul, Rep. of Korea

Filed Jul. 24, 1996, Ser. No. 686,100

Claims priority, application Rep. of Korea, Jul. 25, 1995, 95-22008

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—69 **22 Claims**



1. An apparatus for pre-compensating an asymmetrical picture in a projection system for displaying a picture, said apparatus comprising:

means for setting an projection angle and providing a projection angle setting signal when a central axis of a projection lens installed in a projector for projecting a magnified picture on a screen is arranged at an upward or downward projection angle with respect to the screen;

controlling means for providing a control signal in order to control an operation of pre-compensating an asymmetry of the picture which is to be projected on the screen on the basis of the projection angle setting signal of said projection angle setting means;

control clock generating means for providing a record/read clock signal and a data conversion output signal in accordance with the control signal from said controlling means while receiving a main clock signal and a digital signal process clock signal, the write clock signal relating to a process for deleting pixels of the picture signal data;

first switching means for switching the record/read clock signal from said control clock generating means and for providing a switched write clock signal or a switched read clock signal in accordance with the control signal from said controlling means while receiving the digital signal process clock signal, the switched write clock signal relating to the process for deleting pixels of the picture signal data;

memory section for recording the picture signal data which has pixels deleted therefrom and is provided in response to a horizontal synchronizing signal, said memory section outputting the recorded picture signal data while receiving the switched write clock signal or the switched read clock signal from said first switching means;

second switching means for switching in accordance with the control signal from said controlling means between the picture signal data outputted from said memory section in response to the switched read clock signal from said first switching means, and blanking data filled in blanking areas set prior to and after the picture signal data having pixels deleted therefrom, and for providing a switched picture signal data or a switched blanking data;

third switching means for switching the data conversion output signal from said control clock generating means and providing a switched data conversion output signal in accordance with the control signal from said controlling means while receiving the digital signal process clock signal; and

data converting means for inputting the switched picture signal data or the switched blanking data from said second switching means in order to form the picture signal data having blanking data added thereto, and for converting the picture signal data having blanking data added thereto into an analog signal, after a first period, in response to the switched data conversion output signal from said third switching means, in order to provide a converted picture signal data.

5,664,859

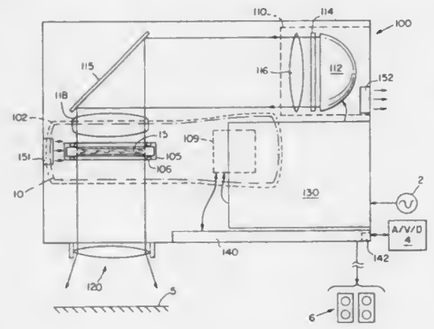
PROJECTION DISPLAY DOCKING SYSTEM

Jack P. Salerno, Waban; Ronald Gale, and Mark B. Spitzer, both of Sharon, all of Mass., assignors to Kopin Corporation, Taunton, Mass.

Filed Jan. 3, 1994, Ser. No. 176,921

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—119 **36 Claims**



1. A docking station for a liquid crystal display assembly comprising:

a housing for the docking station, the housing having an opening through which a liquid crystal display panel can be inserted;

a support element on the housing, the support element being capable of holding the display assembly relative to the housing;

an image storage device mounted within the housing for providing a selectable image from storage;

an electrical coupler between the housing and the display assembly for electrically connecting the image to the display panel for forming the selected image;

an arc lamp light source mounted within the housing that emits light directed through a liquid crystal display panel inserted through the opening;

a projection optical system mounted within the housing and which is optically coupled to the display panel when the display panel is inserted in the opening, the projection optical system projecting the selected image formed on the display panel onto an exterior viewing surface; and

a mirror positioned within the housing, the mirror reflecting light from the light source along a first optical path onto a second optical path extending through the projection optical system.

5,664,860

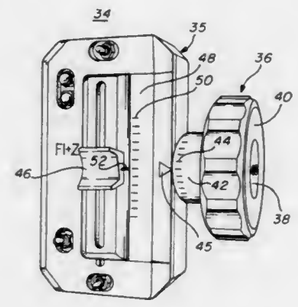
CONTROL KNOB DIAL ILLUMINATION

Philip N. Berardi, 3031 Avenida de los Arboles, Thousand Oaks, Calif. 91362

Division of Ser. No. 305,058, Sep. 13, 1994, Pat. No. 5,564,812. This application Aug. 21, 1996, Ser. No. 701,105

Int. Cl.[6] G01D *11/28*

U.S. Cl. 362—23 **5 Claims**



1. A device for enabling proper setting of a selector knob on a body with respect to a reference point in insufficient ambient light to see indicia on said body, said device comprising:

a slidable knob on said body slidably moving along a path in first and second opposite directions for obtaining a desired effect in said body;

a reference point on said slidable knob;

an elongated rectangular strip of light-emitting material having power leads and being attached to said body adjacent said slidable knob and parallel to the path of movement of said slidable knob;

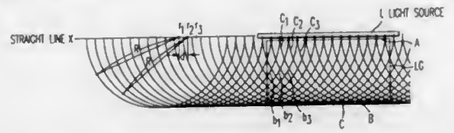
an elongated, at least semitransparent, rectangular strip of plastic material covering and attached to said elongated rectangular strip of light-emitting material, said rectangular strip of plastic material carrying said indicia thereon critical to the obtaining of the desired effect in said body and positioned such that slidable movement of said knob causes said reference point thereon to move in relation to said indicia carried by said rectangular strip of plastic material;

an electronic circuit and power supply including a battery carried by said body and connected to each other;

said electronic circuit having power leads coupled to said power leads of said strip of light-emitting material; and

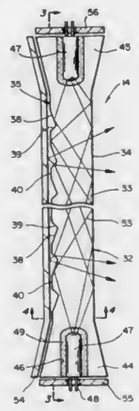
a switch on said body coupled to said electronic circuit and selectively energizing said strip of light-emitting material to back light said indicia carrying plastic material and enable visual observation of movement of said reference point of said slidable knob with respect to said rectangular strip of plastic material to obtain said desired effect in insufficient ambient light using said back light indicia.

5,664,861
LIGHT CONDUCTIVE PLATE AND PLANE ILLUMINATING APPARATUS USING THE SAME
Yasuhiro Asada, and Kiichi Emori, both of Tokyo, Japan, assignors to Colcoat Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1995, Ser. No. 386,667
Claims priority, application Japan, Feb. 10, 1994, 6-016595
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—31 13 Claims



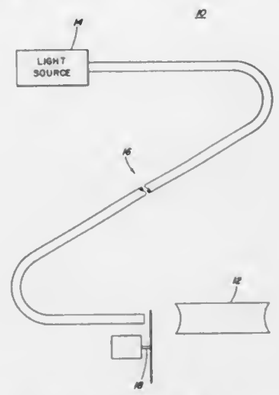
1. A light conductive plate in an illuminating apparatus having a light source arranged at a side portion of a transparent light conductive plate, comprising:
a light conductive plate part having an edge adjacent a light source of an illuminating apparatus;
a dimming pattern composed of a plurality of curves provided on one surface of said light conductive plate part, wherein portions of each of said curves of said dimming pattern located nearer said edge near a light source extend substantially perpendicular to said edge and portions of each of said curves of said dimming pattern located farther from the edge near a light source extend substantially parallel to said edge.

5,664,862
EDGE LIGHT FOR PANEL DISPLAY
William Franklin Redmond, Santa Rosa; Richard Edward Dunah, Sebastopol, and Yong Qiao, Santa Rosa, all of Calif., assignors to Precision Lamp, Inc., Cotati, Calif.
Continuation of Ser. No. 347,620, Nov. 29, 1994, abandoned.
This application Aug. 9, 1996, Ser. No. 694,833
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—31 26 Claims



1. An edge light for projecting light into a lighting panel through an end surface of said lighting panel, said edge light comprising:
a thin transparent optical guide member having an elongate portion and at least one end portion extending from said elongate portion, said elongate portion having a planar surface and a shaped surface parallel to said planar surface, said shaped surface being configured to selectively extract light striking said shaped surface from said guide member through one of said planar surface and said shaped surface and transmit light striking said shaped surface along said light guide to provide a substantially uniform distribution of light across said one of said planar surface and said shaped surface of said elongate portion, said end portion having flared surfaces inclined outwardly relative to said planar surface and said shaped surface and an opening formed therein,
a light source positioned in said opening of said end portion for projecting light into said elongate portion of said guide member,
said shaped surface including a plurality of transversely extending first and second facets formed therein, said first facets facing said end portion and said second facets facing away from said end portion, said shaped surface including a plurality of transversely extending grooves defined by adjacent ones of said first facets and said second facets and a plurality of planar portions extending between said grooves for reflecting light within said guide member along said elongate portion, said first facets being oriented at an angle relative to a plane substantially parallel to said shaped surface to transmit substantially all the light striking said first facets through said first facets and across said grooves toward the adjacent one of said second facets, said second facets being oriented at an angle relative to a plane substantially parallel to said shaped surface to reflect the transmitted light striking said second facet away from said shaped surface.

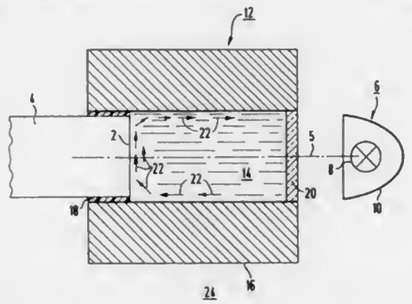
5,664,863
COMPACT UNIFORM BEAM SPREADER FOR A HIGH BRIGHTNESS CENTRALIZED LIGHTING SYSTEM
William J. Cassarly, Richmond Hts.; John M. Davenport, Lyndhurst; Richard L. Hansler, Pepper Pike, all of Ohio, and Timothy J. Mazles, Oak Forest, Ill., assignors to General Electric Company, Schenectady, N.Y., and Federal Signal Corporation, Oakbrook, Ill.
Filed Feb. 2, 1995, Ser. No. 382,717
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—32 14 Claims



1. A uniform compact beam spreading device for use with a centralized lighting system having a centralized light source and optical fibers for delivering light output to locations remote from the light source, said compact beam spreader device comprising:
an input surface disposed in a spatially separated manner relative to an output surface of at least one of the optical fibers, said input surface having a fixed width dimension associated therewith;
side wall portions having total internal reflection properties relative to light transmitted through said beam spreading device;
an output surface through which light is output in a predetermined beam pattern, said predetermined beam pattern being essentially continuous across an output range of greater than plus and minus 30 degrees from a center point and further having a predetermined height dimension associated therewith; and,

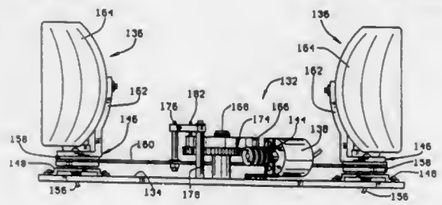
wherein at least one of said input surface and said output surface is configured in an curved manner so as to achieve such essentially continuous beam pattern over said output range.

5,664,864
FIBER OPTIC ILLUMINATION SYSTEM
Rainer Kuth, Herzogenaurach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 22, 1996, Ser. No. 635,523
Claims priority, application Germany, Apr. 24, 1995, 195 15 031.7
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—32 12 Claims



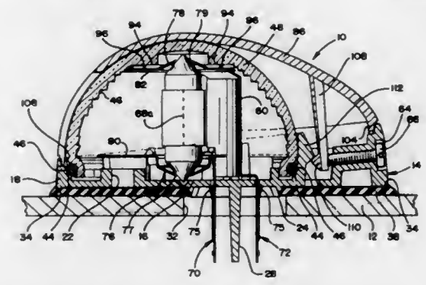
1. In a fiber optic illumination system having a light source optically coupled to one end of an optical fiber bundle, the improvement comprising:
a fluid container having an opening in which said end of said fiber bundle is disposed, said fluid container being otherwise completely closed and containing an optically transparent fluid;
a heat sink in thermal communication with an exterior of said fluid container; and
said fluid container having an optically transparent wall disposed in a path of optical and thermal emission from said light source, said optical radiant emission from said light source passing through said optically transparent wall and through said optically transparent fluid to said end of said fiber bundle and said radiant thermal emission being dissipated exclusively by convection via said heat sink.

5,664,865
SIGNAL LIGHT BELT AND PULLEY DRIVE MECHANISM
W. Kenneth Menke, Glendale, Mo., assignor to The Fire Products Company, Webster Groves, Mo.
Division of Ser. No. 379,902, Jan. 30, 1995, Pat. No. 5,537,298.
This application Mar. 28, 1996, Ser. No. 622,992
Int. Cl.[6] F21V 21/30
U.S. Cl. 362—35 20 Claims



1. An oscillating signal light apparatus producing signal light oscillations through an arc segment of movement of the signal light, the apparatus comprising:
a base;
at least one signal light assembly mounted on the base for rotation of the light assembly relative to the base;
a first pulley operatively connected to the light assembly;
a second pulley mounted on the base for rotation of the second pulley relative to the base;
a belt looped around at least the first and second pulleys for converting linear movement of the belt to rotating movement of the first and second pulleys;
a source of motive power including an output shaft rotated in a single direction of rotation; and,
means operatively connecting the belt to the source of motive power for producing linearly reciprocating movement of the belt in response to the single direction rotation of the output shaft.

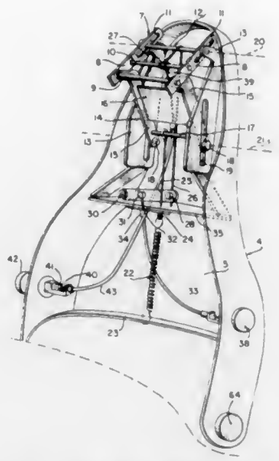
5,664,866
LIGHT ASSEMBLY
Bruce Reniger, Alto; Terry L. Lautzenheiser, Grand Haven, and Brent A. Reichard, Greenville, all of Mich., assignors to Attwood Corporation, Lowell, Mich.
Filed Apr. 10, 1995, Ser. No. 419,039
Int. Cl.[6] B63B 45/00
U.S. Cl. 362—61 34 Claims



1. A navigation light assembly for marine craft, comprising:
A base having a substantially flat bottom to facilitate mounting thereof to a deck of marine craft;
a lens member adapted to be secured to said base;
a cap adapted to generally cover, and together with said base, encapsulate and retain said lens;
at least one reflector which redirects light emitted from a light bulb to said lens member and through an open area in said cap; and
a bulb holder for retaining a light bulb within said light assembly, said bulb holder being comprised of two parts, each of which is an electrical conductor or an electrical terminal of light bulb retained by said bulb holder.

5,664,867
NIGHT LIGHT FOR TOILET SEAT
David A. Martin, West Babylon, and Robert Fisher, Lindenhurst, both of N.Y., assignors to Martin & Fisher, Inc., Ronkonkoma, N.Y.
Filed Jun. 7, 1995, Ser. No. 485,635
Int. Cl.[6] F21V 33/00; A47K 17/00
U.S. Cl. 362—101 16 Claims

1. A night light in combination with a toilet, the combination comprising:
a toilet having a bowl with a rim at an upper end thereof, said toilet having a hinged toilet seat movable from a horizontal position of use to a generally vertical position of rest,
a hollow light body, said hollow light body including a cover member spaced apart from and joinable to a base member, said hollow light body enclosing therein a power source



connected to a light source, said body further including a switch, said switch being movement responsive, so that when said toilet seat of said toilet is lifted vertically up, said switch closes a pair of contacts located adjacent to said power source, said switch providing electrical power to said power source for providing power to said power to light source,

said hollow light body having a generally flattened shape, said light body having a recess at a front light emitting end thereof, said recess including a pair of oppositely positioned walls extending inward from said front light emitting end of said hollow light body, said light source insertable within said recess of said front light emitting end, said light source having an outer end extending outward to a plane coincidental to and parallel to an outer edge of said front light emitting end, said light source directed downward toward the toilet bowl and illuminating the toilet bowl, said hollow light body extending parallel to a plane of an underside of said toilet seat, said recess providing a gap separating said light source from each of said oppositely positioned walls extending inward from said front light emitting end of said hollow light body,

said hollow light body being fastened to a front end of an underside of said toilet seat, wherein in a position of use, said light source of said light unit is directed downward and illuminates the toilet bowl from above.

5,664,868

HELMET RIGID FLASHLIGHT BRACKET

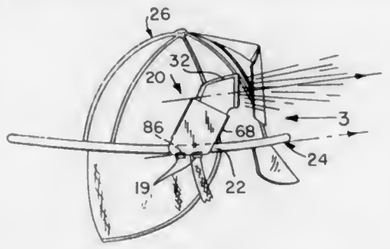
David Montalbano, 78 Commack Rd., North Babylon, N.Y. 11703, and Michael Goldman, 152 Periwinkle Rd., Levitown, N.Y. 11756

Filed May 28, 1996, Ser. No. 654,212

Int. Cl.[6] F21L *15/14*

U.S. Cl. 362—105 **21 Claims**

1. A helmet rigid flashlight bracket being replaceably and securingly attachable to a portion of a brim of a helmet being wearable by a user and replaceably and securingly receiving a flashlight of a variety of different flashlights each of which having a handle portion and a light emitting portion emitting a light beam pointing substantially at eye level in a forward direction of the user, comprising:



a) a face plate having a lower portion, wherein said face plate has a flat and thin and generally rectangular-shaped upper portion with flat interior surface that has a longitudinal center, a flat exterior surface that is substantially parallel to said flat interior surface of said flat, thin and generally rectangular-shaped upper portion of said face plate, a straight top edge with ends, an imaginary bottom line that has ends and is disposed below, and substantially parallel to, said straight top edge of said flat, thin and generally rectangular-shaped upper portion of said face plate, and a pair of opposing, substantially parallel, and straight long sides that extend from said ends of said straight top edge of said flat, thin and generally rectangular-shaped upper portion of said face plate to said ends of said imaginary bottom line of said flat, thin and generally rectangular-shaped upper portion of said face plate;

b) flashlight maintaining means being disposed on said face plate for replaceably and securingly maintaining the handle portion of the flashlight of the variety of different flashlights to said face plate;

c) a substantially C-shaped channel being disposed on said lower portion of said face plate in an orientation so as to be parallel to the light beam emitting from the light emitting portion of the flashlight of the variety of different flashlights; and

d) face plate clamping means associated with said substantially C-shaped channel for replaceably and securingly clamping said face plate to the portion of the brim of the helmet, so that the light beam emitting from the light emitting portion of the flashlight of the variety of different flashlights points substantially at eye level in the forward direction of the user.

5,664,869

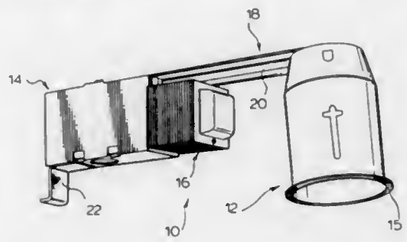
LOW VOLTAGE POTLAMP SYSTEM

Jacques Bitton, 27 Brookmill Drive, Thornhill, Ont., Canada, L4J 6K6

Filed Feb. 14, 1996, Ser. No. 601,548

Int. Cl.[6] F21S *1/02*

U.S. Cl. 362—147 **8 Claims**



1. A low voltage, high intensity miniature pot light and connector box combination, comprising; a miniature light pot upwardly inserted in close fitting relation within a restricted ceiling aperture that substantially precludes hand access therethrough; a hollow connector box of limited rectangular cross section for passage of the box upwardly through said restricted ceiling aperture; an elongated bridge portion connecting said box to said pot light in predetermined spaced-apart relation; said pot light-and connector box combination including a voltage reduction transformer mounted on one end of said box in substantially aligned relation with said connector box and located between said connector box and said pot light serving as a radiation barrier for the box, with output conductors extending from the transformer to said pot light; said box having at least one access door for accessing the interior of the box; and at least one aperture in said box receiving at least one wiring conduit in entered relation with the box.

5,664,870

VEHICULAR LAMPS

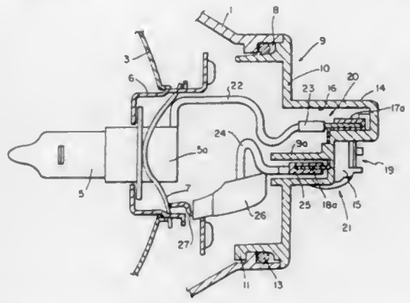
Kihachiro Uchida; Hironori Tsukamoto, and Kazuto Nitta, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1996, Ser. No. 665,873

Claims priority, application Japan, Jun. 28, 1995, 7-183247; Sep. 4, 1995, 7-248345

Int. Cl.[6] F21M *5/00*

U.S. Cl. 362—61 **28 Claims**



1. An electrical connection structure for a vehicular lamp, comprising:

a back cover coupled to a bulb insertion hole formed in a back surface of a lamp body; and

a relay connector disposed on said back cover, said relay connector comprising an internal electrical connection section electrically connecting with a lamp bulb and an external electrical connection section electrically connecting with an external power source, said internal electrical connection section and said external electrical connection section are formed integrally with each other by a conductive terminal member penetrating said back cover, wherein said relay connector comprises a box member disposed on an outer surface of a bottom of said back cover and a cylinder member having a small diameter continuously formed with said box member.

5,664,871

VISOR WITH RECESSED MOUNTING CAPS ON TRAILING EDGE

Scott P. Thompson, Des Moines, Iowa, assignor to DFM Corporation, Indianola, Iowa

Filed Oct. 30, 1996, Ser. No. 739,792

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 362—80.1 **15 Claims**



1. A windshield visor for mounting to the front portion of a vehicle cab comprising:

an integrally formed visor body having a top surface, a bottom surface, a leading edge, a trailing edge, and a plurality of recessed portions including a source of illumination in said top surface disposed toward said trailing edge; and

a plurality of caps, each of said caps being attached to said visor body so as to substantially cover one of said recessed portions.

5,664,872

COMBINED LAMP AND FAN ASSEMBLY

Robert Don Aldo Spearman, Crowborough; Alasdair Buchanan Howie, Brighton, and David Vincent, Hassocks, all of United Kingdom, assignors to Smiths Industries PLC, London, England

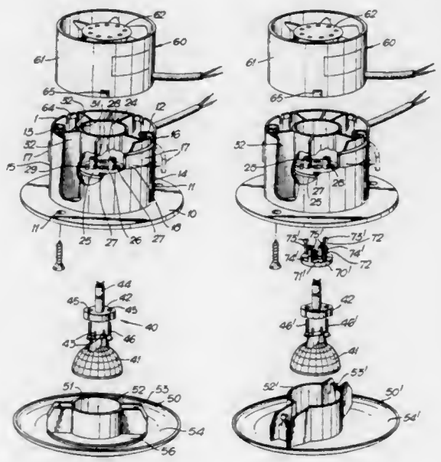
PCT No. PCT/GB94/02422, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/14884, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 4, 1994, Ser. No. 624,521

Claims priority, application United Kingdom, Nov. 23, 1993, 9324030

Int. Cl.[6] F21V *29/00*

U.S. Cl. 362—96 **9 Claims**



1. A combined lamp and fan assembly comprising: a first housing of substantially circular shape containing a lamp unit and having an air flow passage extending along the housing and opening at a lower end of the assembly, said first housing including a fixing by which the assembly can be mounted in a hole in a ceiling panel in a room so that light from the lamp unit illuminates the room, said assembly also including a fan unit having a second housing which is of substantially a same diameter as the first housing, the first and second housings having cooperating catches and notches whereby a lower end of the second housing can be releasably retained at an upper end of the first housing to form an extension thereof, the cooperating catches and notches providing a sole mounting for the second housing, and the second housing being open at an upper end such that air can be drawn from the room through the ceiling panel axially through the assembly.

5,664,873

SURFACE LIGHTING DEVICE AND A DISPLAY HAVING SUCH A LIGHTING DEVICE

Toshiyuki Kanda, Chigasaki; Hisao Tajima, Yokohama; Hiroshi Takabayashi, Kawasaki; Takashi Yamamoto, Yamato, and Hideo Mori, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

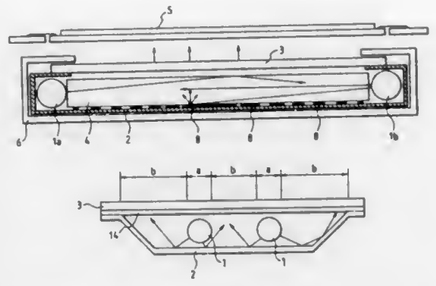
Division of Ser. No. 984,836, Dec. 3, 1992, Pat. No. 5,438,484. This application Jan. 17, 1995, Ser. No. 373,096

Claims priority, application Japan, Dec. 6, 1991, 3-348565; May 20, 1992, 4-151225

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 362—97 **12 Claims**

1. A surface lighting device provided with a light source and a reflection board to reflect rays of light emitted from the light source forward, wherein



the color of said reflection board is set against a standard color within a range of −2.0 to 0 at Δb* value in CIE1976L*a*b*, wherein

L* denotes psychometric lightness,

a* denotes psychometric perceived chromaticity in the red-green region,

b* denotes psychometric perceived chromaticity in the blue-yellow region of CIE1976, a uniform color space defined using a three-dimensional rectangular coordinate system adopted at the Commission Internationale de l'Eclainage, and

Δb* denotes a difference between b* of a reference color and b* of a measured color of said reflection board, wherein a value of Δb* of the measured color of the reflection board is not smaller by −2 than a reference color, and smaller by 0 than the reference color at an initial state, and when the reflection board is continuously illuminated for 10,000 hours, the Δb* value of the color of the reflection board is smaller than 2, and

the reference color is a color directly above the light source.

5,664,874

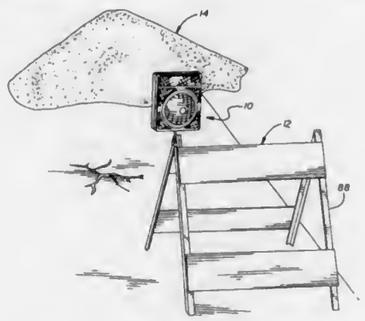
BARRICADE WARNING LIGHT

Allen G. Winterer, 126 Jeranios Ct., Thousand Oaks, Calif. 91362

Filed Dec. 29, 1995, Ser. No. 581,180

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—191 **46 Claims**



1. In combination in a barricade warning light,

first means defining a casing,

lens means disposed in the casing for transmitting light from the casing in a particular direction,

means disposed in the casing for directing light to the lens means for the transmission of light by the lens means from the casing in the particular direction,

a switch disposed in the casing and operative to control the transmission of light by the light-transmitting means to the lens means,

there being an opening in the casing for the passage of a key through the opening from a position external to the casing to operate the switch,

the lens means including a pair of lenses,

each of the lenses having a substantially conical shape and disposed in an abutting back-to-back relationship with the other one of the lenses and the light-directing means being disposed between the lenses for the direction of light to a central position on each of the lenses,

the opening in the casing constituting a first opening,

an electronic module disposed in the casing for holding the light-directing means,

coupling means disposed relative to the electronic module and the casing for holding the electronic module in the casing in a fixed relationship with the casing in a first operative relationship and for releasing the electronic module from the casing in a second operative relationship different from the first operative relationship,

switch means supported by the electronic module, the switch means having first and second operative relationships and operative in the first relationship to provide for a continuous illumination of the light-directing means and operative in the second relationship to provide for a periodic illumination of the light-directing means, and

means operatively coupled to the light-directing means for obtaining an operation of the light-directing means by the switch means in an individual one of the first and second operative relationships only during the occurrence of darkness in each 24-hour period,

the lens means including a pair of lenses,

each of the lenses in the pair defining a Fresnel lens on one surface to produce conical rays and defining a plurality of pillow lenses on the other surface to to produce rays divergent at a particular angle, and

light-reflective material disposed on the casing in the areas surrounding the lenses to reflect the light from headlights of approaching vehicles.

5,664,875

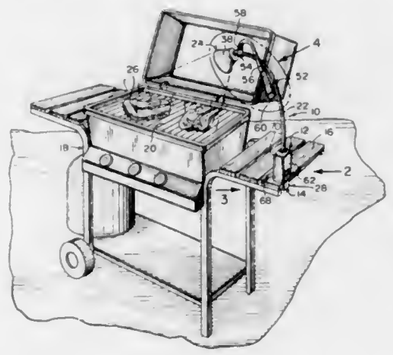
BARBECUE GRILL LIGHT

Barnard Hegedus, 15 Burns Ave., Melville, N.Y. 11747

Filed May 8, 1996, Ser. No. 646,955

Int. Cl.[6] F21V *21/08*; F21L *15/20*

U.S. Cl. 362—191 **14 Claims**



1. A barbecue grill light comprising:

a) a housing;

b) means for mounting said housing to a side platform board of a barbecue grill having a cooking grate, wherein said mounting means includes:

i) an L-shaped bracket having a vertical arm with a longitudinal slot therein and a horizontal arm with a non-slip inner surface; and

ii) a pair of wing head bolts, that are spaced apart and threaded into one side of said housing through said longitudinal slot, so that when said wing head bolts are tightened against said vertical arm after adjustment, said non-slip inner surface of said horizontal arm can clamp against an underside of the side platform board of the barbecue grill to hold said housing stationary thereto;

c) an elongate flexible gooseneck shaft, having a lower end connected to said housing; and

d) means for illuminating affixed to an upper end of said elongate flexible gooseneck shaft, so that said illuminating means can be directed at food cooking on the cooking grate of the barbecue grill at night, to allow a person using the barbecue grill to see the food cooking.

5,664,876

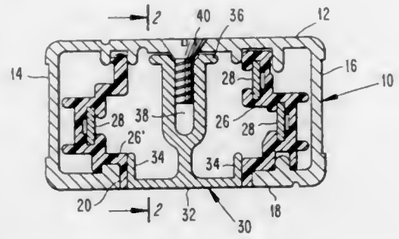
TAMPER RESISTANT COVER FOR TRACK LIGHTING

James Vafai, Barrington, and Sam Martorano, DesPlaines, both of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 11, 1996, Ser. No. 661,745

Int. Cl.[6] F21V *21/34*; F21S *1/02*

U.S. Cl. 362—249 **15 Claims**



8. A track lighting installation comprising:

a track including back, side, and front walls, the back wall connected to a support, the front wall including an elongated slot, a plurality of electrical conductors disposed within the track;

a cover structure extending along the slot and defining openings, the cover structure being removable from the track only with the track detached with respect to the support; and

lampholders mounted in respective ones of the openings, the lampholders including terminals contacting the electrical conductors.

5,664,877

DECORATIVE LAMP STRING ASSEMBLY

Jeng-Shyong Wu, Fl. 4, No. 5, Hsing Shyue Road, Hsin-Chu City, Taiwan

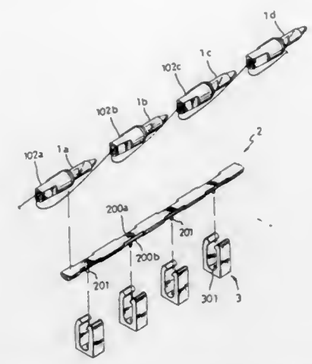
Filed Feb. 15, 1995, Ser. No. 389,021

Claims priority, application China, Apr. 1, 1994, 92 2 07502.1

Int. Cl.[6] F21P *1/02*

U.S. Cl. 362—252 **24 Claims**

1. A decorative lamp string assembly comprising a plurality of lamps each having a lamp socket, electrical wire, a long support with a cross section having a top flat surface and a bottom, a plurality of U-shaped clamping sockets each with two branches defining an open end at free ends of said branches and an inner space into which the support is fitted and said lamp sockets with lamps are clamped against the top flat surface of the support by the two branches of the clamping socket to form said decorative lamp string assembly.



5,664,878

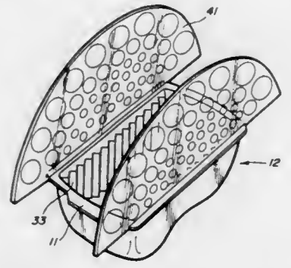
INTERNALLY ILLUMINATED SIGN

Gregory J. Subisak, Gahanna, Ohio, and Douglas Scott Hammond, Vicksburg, Miss., assignors to Holophane Corporation, Newark, Ohio

Division of Ser. No. 267,970, Jun. 29, 1994, Pat. No. 5,588,742, which is a division of Ser. No. 961,262, Oct. 15, 1992, Pat. No. 5,355,291, which is a continuation-in-part of Ser. No. 646,917, Jan. 28, 1991, Pat. No. 5,188,453. This application Sep. 25, 1996, Ser. No. 719,906

Int. Cl.[6] F21V *11/00*

U.S. Cl. 362—290 **2 Claims**



1. In a sign having at least two spatially separated faces adapted to be illuminated from light radiated into the interior of said sign between said spatially separated faces, said at least two spatially separated faces including at least one translucent face, the improvement comprising:

a luminaire mountable on the periphery of said sign having means for providing light in the region between said spatially separated faces, means for eliminating bright spots on said at least one translucent faces adjacent said luminaire, said elimination means comprising a perforated metal panel.

5,664,879

CANDLESTICK HAVING LIGHTENING DEVICE

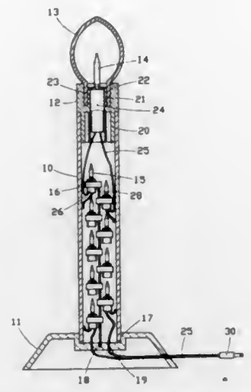
Chi-Shih Lai, No. 91, Lane 259, Szu Wei Rd., Panchiao, Taipei Hsien, Taiwan

Filed Dec. 27, 1996, Ser. No. 778,715

Int. Cl.[6] F21P *1/02*

U.S. Cl. 362—392 **3 Claims**

1. A candlestick with lightening device, comprising



a candlestick body having a hollow configuration and being made from transparent material;

a base being attached to the lower end of said candlestick, a fixing recess being disposed atop, the bottom of said fixing recess being provided with a retaining hole and a through hole, wherein the lower end of said candlestick body can be securely attached to said fixing recess of said base;

a connecting sleeve having a retaining portion at lower end, a hollowed fixing tube being disposed within said connecting sleeve, said connecting sleeve further including a inserting groove such that said retaining portion of said connecting sleeve can be engaged and received within the upper end of said candlestick body;

a shade having a hollow and flame-type configuration and being made from transparent material, said shade having an opening at lower end which extends an inserting portion to be engaged with said inserting groove of said connecting sleeve;

a primary bulb being disposed within said shade via a bulb socket, said primary bulb being electrically connected to a conducting wire, said bulb socket of said primary bulb being retained within said fixing tube of said connecting sleeve by an interference fit thereof;

a plurality of inner bulbs being disposed within said candlestick, each of said inner bulbs being disposed on an individual bulb socket and being electrically connected to said primary bulb in serial; and

a plurality of connecting sockets being disposed within said candlestick, each of said connecting sockets being provided with a fixing hole wherein said bulb socket of said inner bulb is retained within said fixing hole by interference fit thereof, said connecting socket being further provided with a projected pin at the bottom and a pin hole at top, consequently, two adjacent connecting socket can be engaged with each other by the connection between said projecting pin and pin hole while the lowest connecting socket can be engaged with said base by the engagement between said projecting pin and said retaining hole, a conducting wire being routed via said through hole and extended for external power supply.

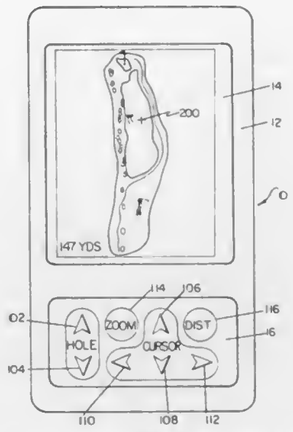
5,664,880

HANDHELD GOLF COURSE DISTANCE COMPUTER FOR AUTOMATICALLY COMPUTING DISTANCES TO SEQUENTIALLY SELECTED POINTS

Robert D. Johnson, Littleton, and Leopold G. Tomajko, Evergreen, both of Colo., assignors to AGTsports, Inc., Tampa, Fla.

Filed Jul. 14, 1994, Ser. No. 274,905
Int. Cl.[6] G06G *7/48*
U.S. Cl. 364—410 **9 Claims**

1. A self-contained handheld golf course distance computer for use by a player while playing a round of golf on a particular golf course, the computer comprising:



keyboard input means for enabling the player to enter one or more commands into the computer;

memory means for storing routines and subroutines of instructions to be performed by the computer in executing commands entered by the player and for storing alphanumeric and graphical information regarding each hole of said golf course;

computing means, coupled to said keyboard input means and memory means, for selectively executing the routines and subroutines of instructions to be performed in executing commands entered by the player; and

liquid crystal display means for displaying the stored alphanumeric and graphical information regarding a selected hole of said golf course, said display means including a displayed cursor for enabling the player to designate a particular position on a graphical display of a selected hole;

said computing means being responsive to entry of a hole command entered by the player for causing said display means to selectively display said alphanumeric and graphical information regarding the selected hole, said computing means being responsive to entry of one or more cursor commands from said keyboard input means, during display of said graphical information regarding the selected hole for positioning said displayed cursor at an initial cursor position corresponding to the player's present position on the selected hole, said computing means thereafter being responsive to entry of a distance command from said keyboard input means for computing a distance from said initial cursor position to a predetermined point on said selected hole and for causing said computed distance to be displayed on said display means, and said computing means thereafter being responsive to sequential repositioning of said displayed cursor at any number of new cursor positions for automatically computing and displaying, each time said cursor is repositioned it a new cursor position a distance from said initial cursor position to the new cursor position.

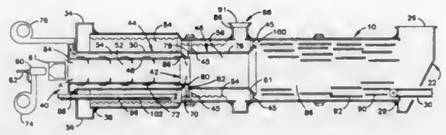
5,664,881

COUNTER-FLOW ASPHALT PLANT WITH MULTI-STAGE COMBUSTION ZONE OVERLAPPING THE MIXING ZONE

Michael Hawkins, Kansas City, Mo., and Robert E. Schreter, Roswell, Ga., assignors to Maxam Equipment, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 153,604, Nov. 16, 1993, Pat. No. 5,364,182. This application Nov. 14, 1994, Ser. No. 338,333
Int. Cl.[6] B28C *1/22;5/46*
U.S. Cl. 366—4 **13 Claims**

1. A method for continuously producing an asphaltic composition product from asphalt and aggregate within a drum mixer



including a rotatable cylinder having first and second ends with an internal passageway communicating therebetween, said passageway including a multi-stage combustion zone surrounded by a mixing zone, said multi-stage combustion zone including a primary combustion zone extending along a longitudinal axis of said multi-stage combustion zone and a staging air zone surrounding said primary combustion zone, said method comprising the steps of:

rotating said cylinder about a central longitudinal axis thereof;

introducing aggregate and liquid asphalt into said cylinder;

mixing said liquid asphalt and aggregate in said mixing zone;

delivering a hot gas stream into an inlet end of said primary combustion zone which flows through said heating/drying zone to heat and dry said aggregate;

delivering a supplemental air stream into an inlet end of said staging air zone;

isolating said mixing zone from said hot gas stream throughout said multi-stage combustion zone; and

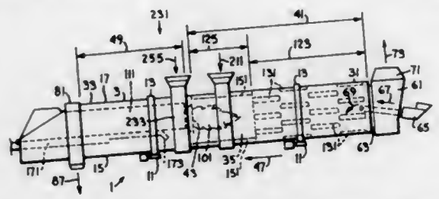
discharging said asphaltic composition from said mixing zone.

5,664,882

SYSTEM FOR CONCURRENTLY REMEDIATING CONTAMINATED SOIL AND PRODUCING HOT MIX ASPHALT

Andrew W. Green, Cedar Rapids, and Joseph E. Musil, Ely, both of Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Apr. 4, 1996, Ser. No. 627,368
Int. Cl.[6] B28C *5/46*
U.S. Cl. 366—25 **9 Claims**



1. A system for concurrently remediating contaminated soil and producing hot mix asphalt from various constituents including virgin aggregate, the system comprising:

a) a single inclined drum having an input end, a discharge end, and a cavity extending between said input end and said discharge end;

b) support means for rotatably supporting said drum, said support means including drive means for rotatably driving said drum about a substantially horizontal axis of said drum and further including stationary upstream and downstream portions for respectively and rotatably receiving said input end and said discharge end of said drum;

c) a burner assembly extending within said cavity from said downstream portion of said support means; said burner assembly including a burner head spaced generally intermediately between said input end and said discharge end wherein said burner head is oriented such that a flame and hot gas stream therefrom are directed upstream from said burner head toward said input end;

(d) a secondary air tube extending within said cavity from said downstream portion of said support means such that atmospheric air is provided to said burner head for supporting combustion thereat;

e) a heating zone spaced within said cavity upstream from said burner head wherein said heating zone includes:

1) a drying zone spaced adjacently to, and extending axially inwardly from, said input end wherein said drying zone has a plurality of veiling flights configured to operatively create a falling curtain of the virgin aggregate as the virgin aggregate is lifted and dropped by said veiling flights, and

2) a combustion zone extending from said drying zone to said burner head wherein said combustion zone has a plurality of low-profile flights configured to operatively maintain materials being processed therethrough near lower extremities thereof;

f) a mixing zone spaced within said cavity downstream from said burner head;

g) aggregate input means for introducing the virgin aggregate into said heating zone, wherein said aggregate input means introduces the virgin aggregate into said drying zone near said input end of said drum;

h) soil input means for introducing contaminated soil into said heating zone; and

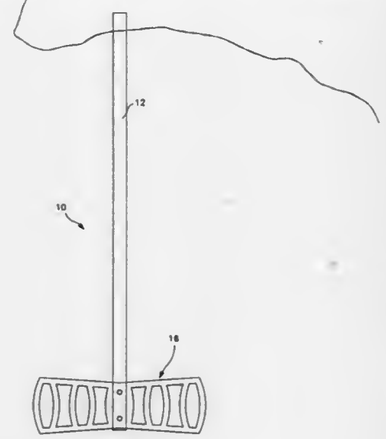
i) asphalt input means for introducing certain of the various constituents into said mixing zone for producing the hot mix asphalt.

5,664,883

MIXER WITH ALTERNATING SIZED FLOW PASSAGES

Philip H. Tomassini, Biglerville, Pa., assignor to Abbottstown Industries, Inc., Abbottstown, Pa.

Filed Sep. 4, 1996, Ser. No. 708,402
Int. Cl.[6] B01F *7/18*
U.S. Cl. 366—325.93 **6 Claims**



1. A mixer for mixing material, comprising:

a) an elongate shaft;

b) a blade joined to said shaft extending to either side of said shaft;

c) said blade having a center portion, a top beam extending to either side of said center portion at an upward angle, a bottom beam spaced from said top beam extending to either side of said center portion at a downward angle, a plurality of rungs to either side of said center portion extending between said top beam and said bottom beam, adjacent rungs of said plurality of rungs defining a plurality of mixing openings between said top beam and said bottom beam, said plurality of rungs being alternately inwardly and outwardly curved with respect to said center portion.

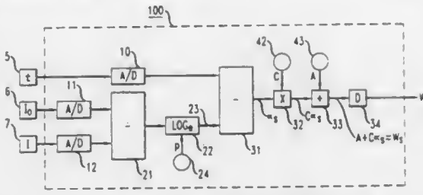
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5,664,884

APPARATUS FOR DETERMINING THE THERMAL RESISTIVITY OF ELECTRICALLY INSULATING CRYSTALLINE MATERIALS

John Edwin Graebner, Short Hills, and Sungho Jin, Millington, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 31, 1995, Ser. No. 509,267
Int. Cl.[6] G01N *25/20;25/18*
U.S. Cl. 374—43 **12 Claims**



1. Apparatus for determining the thermal resistivity W s of an electrically insulating crystalline polycrystalline sample of host material, the host material containing a concentration of an impurity or of a combination of impurities, comprising

(a) a first divider connected to receive both an input signal I_0 representative of optical radiation directed on the sample and an input signal I representative of the optical radiation emerging from the sample, whereby the first divider can produce a first divider output that is representative of the ratio of I_0/I;

(b) a logarithm converter connected to receive the first output and to multiply the first input by a factor β, whereby the logarithm converter can produce a logarithm converter output that is representative of the thickness t of the sample multiplied by the optical absorptivity α_s, of the sample;

(c) a second divider connected to receive the logarithm converter output and to receive an input signal representative of the thickness t of the sample, whereby the second divider can produce a second output that is a representative of the optical absorptivity α_s of the sample;

(d) a multiplier connected to receive both this second output and a constant output C from a first memory that stores the constant C, this value of C having been previously determined experimentally using at least a first body and a second body having the same host materials as that of the sample and the same impurity or combination of impurities as that of the sample for determining the value of the constant C, whereby the multiplier can produce a multiplier output that is a representative of $C\alpha_s$; and

(e) an adder connected to receive the multiplier output and a constant output A from a second memory that stores the constant A, this value of A having been previously determined experimentally using said at least first and second bodies, the adder producing an adder output that is representative of $A+C\alpha_s$, the adder output being representative of the thermal resistivity W_s of the sample, where the experimentally determined constants A and C are determined by measuring the thermal resistivities W_1, and W_2 and the optical absorptivities α_1 and α_2 of said at least first and second bodies, respectively, using any well known or prior art apparatus and technique.

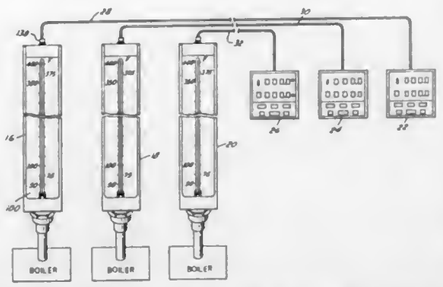
5,664,885

ELECTRONIC INDUSTRIAL THERMOMETER

Roy E. Buntin; Gerald D. Tribble, both of Troy, and Bruce J. Jarvie, Oak Park, all of Mich., assignors to H.O. Trerice Company, Oak Park, Mich.

Filed Oct. 30, 1995, Ser. No. 550,171
Int. Cl.[6] G01K *7/16;5/04;5/08;5/10;1/14*
U.S. Cl. 374—183 **16 Claims**

10. An electronic industrial thermometer comprising a casing having a rear wall with inner and outer surfaces, a pair of parallel side walls, said side walls having grooves provided therein, a transparent window forming the front wall of said casing and having the edges thereof received in said grooves, said transparent window being spaced from the inner surface of said rear wall, a plate with a graduated temperature scale thereon mounted within said casing adjacent the inner surface of said rear wall, an opening provided in said casing adjacent the bottom portion thereof, a hollow stem which is open at one end and closed at the other end being connected on the open end thereof to said casing, said stem having the interior thereof aligned with the interior of said casing through said opening, a closed glass tube filled with mercury mounted in said casing in front of said graduated scale to visually indicate to a viewer the temperature upon changes in the level of mercury within said tube, said tube having an unexposed portion extending through said opening into said stem where said tube portion is spaced from the interior wall of said stem, a resistance temperature detector secured to the exterior wall of said tube portion located within said stem, a plurality of wires connected to said resistance temperature detector and leading therefrom through said stem and along the backside of said plate adjacent the inner surface of said rear wall, and an electrical receptacle carried by said casing and anchoring the ends of said wires for sending an electrical signal indicating the temperature as shown on said scale to a remote site.

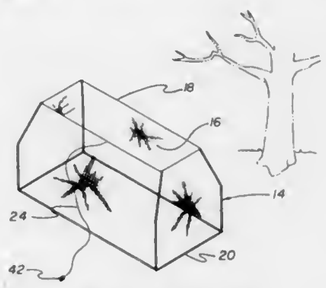


5,664,886

DEBRIS CAPTURING LAWN NET

Dan A. Hutchinson, 7435 Cardwell, Westland, Mich. 48185

Filed Apr. 8, 1996, Ser. No. 629,018
Int. Cl.[6] B65D *30/06;33/02;33/28*
U.S. Cl. 383—4 **9 Claims**



1. A debris capturing lawn net comprising:

a capturing means for positioning over a ground surface and for receiving leaves and debris thereon;

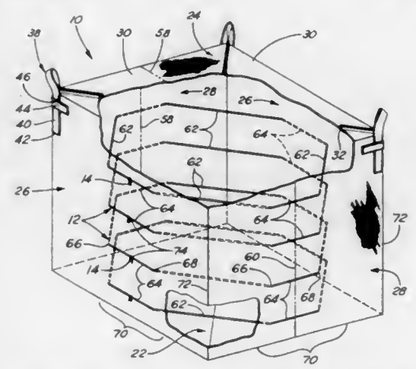
a closure means operatively coupled to the capturing means for effecting closing of the capturing means about leaves and debris when positioned thereon, the closure means comprises a base frame mounted to a portion of the mesh web of the capturing means; a plurality of arms pivotally mounted to and extending from the base frame towards the outer peripheral edge of the mesh web; a closure loop coupled to the outer peripheral edge of the mesh web and extending thereabout, wherein a tensioning of the closure loop will effect pivoting of the arms upwardly from the ground surface to cause the capturing means to close in about debris when positioned upon the mesh web.

5,664,887

BULK BAG WITH RESTRAINER

Lee LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Division of Ser. No. 252,186, Jun. 1, 1994, Pat. No. 5,421,804, which is a continuation-in-part of Ser. No. 969,741, Oct. 30, 1992, Pat. No. 5,328,268. This application Jan. 24, 1995, Ser. No. 377,318
Int. Cl.[6] B65D *33/02*
U.S. Cl. 383—119 **26 Claims**



1. A bulk bag comprising, a pair of end walls and at least two pair of sidewalls constructed and arranged so that when the bag is expanded and filled with material the sidewalls of each pair are in generally opposed relation and all the sidewalls extend between the end walls, all the sidewalls being of a flexible material, and at least two closed loops of cord associated with each pair of opposed sidewalls and being spaced apart between the end walls, each closed loop having first portions within the bag which when the bag is filled extend between its associated pair of opposed sidewalls and second portions operably connected with said associated opposed sidewalls so that when the bag is filled the loops of cord restrain and substantially retard the sidewalls from bowing and bulging outwardly from a generally planar configuration.

5,664,888

ZERO CLEARANCE BEARING

Jeffrey M. Sabin, Lewiston, N.Y., assignor to Leica Inc., Depew, N.Y.

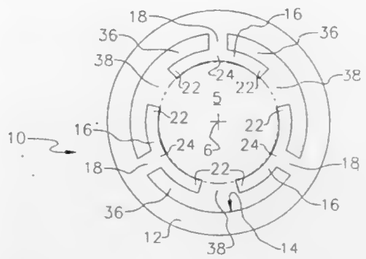
Continuation of Ser. No. 500,482, Jul. 10, 1995, abandoned. This application Dec. 26, 1996, Ser. No. 767,520
Int. Cl.[6] F16C *17/03*
U.S. Cl. 384—10 **7 Claims**

1. A bearing for supporting a load for axial and rotational motion relative to a cylindrical shaft having a central axis, said bearing comprising:

an outer shell having a cylindrical inner wall;

a plurality of circumferentially spaced bearing pads connected to said inner wall for engaging said shaft, each said bearing pad having a pair of elastically deformable lateral tip portions and a mid portion intermediate said tip portions;

said tip portions of each of said plurality of pads being arranged for interference fit with said shaft prior to mating of said shaft within said bearing, said tip portions of each of said plurality of pads flexing to receive said shaft in mating engagement and thereby exerting a static preload on said shaft; and



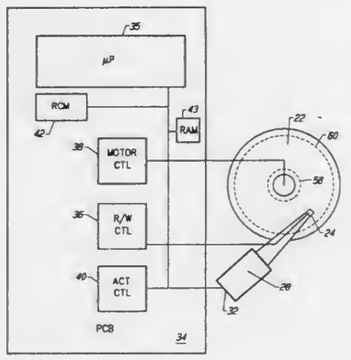
said mid portions of each of said plurality of pads being arranged for clearance fit with said shaft prior to mating of said shaft within said bearing.

5,664,889

FLUID DYNAMIC BEARING WITH LOW STIFFNESS CHANGE OVER TEMPERATURE

John Robert Gustafson, Los Gatos, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 3, 1996, Ser. No. 626,890
Int. Cl.[6] F16C *17/10*
U.S. Cl. 384—114 **19 Claims**



1. A fluid dynamic bearing comprising:

an inner element made of a first material with a first coefficient of thermal expansion;

an outer element made of a second material with a second coefficient of thermal expansion surrounding said inner element;

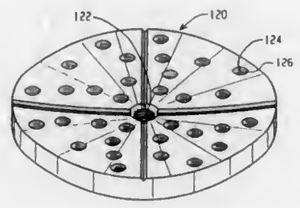
a layer of viscous fluid in contact with and separating said inner element from said outer element such that said outer element is capable of rotation relative to said inner element;

wherein said first coefficient of thermal expansion is greater than said second coefficient of thermal expansion, such that a thickness of said layer of viscous fluid decreases as temperature increases.

5,664,890
BEARING ARRANGEMENT HAVING A POLYIMIDE GRAPHITE-FIBER REINFORCED COMPOSITE EMBEDDED THEREIN

Bernard E. Nowak, Westlake, and Joseph P. Reardon, Fairview Park, both of Ohio, assignors to Hycomp, Inc., Cleveland, Ohio

Division of Ser. No. 336,986, Nov. 10, 1994, Pat. No. 5,549,394. This application Jul. 25, 1996, Ser. No. 687,193
Int. Cl.[6] F16C *33/22*
U.S. Cl. 384—282 **5 Claims**

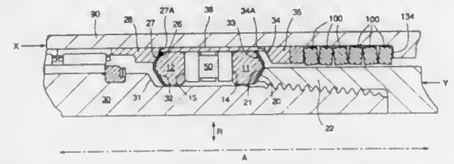


1. A bearing arrangement having at least one bearing surface, said bearing arrangement comprising:
a substrate in the form of a hold-down washer, wherein said substrate has an upper surface which engages with screw means, said upper surface having a plurality of recesses formed therein; and
members comprising a self-lubricating, polyimide graphite-fiber reinforced composite material, said members embedded in said plurality of recesses to provide a load bearing structural component of the bearing arrangement and a lubricating low friction film for the substrate.

5,664,891
DOWNHOLE BEARING ASSEMBLY WHICH ACCOMMODATES COMPRESSIVE AND TENSILE AXIAL

David Peter Kutinsky, Edmonton; Raymond Samuel Livingstone, Sherwood Park, and Raymond Dean Livingstone, Edmonton, all of Canada, assignors to Canadian Downhole Drill Systems, Inc., Canada

Filed Mar. 5, 1996, Ser. No. 611,094
Int. Cl.[6] F16C *17/04*
U.S. Cl. 384—420 **17 Claims**

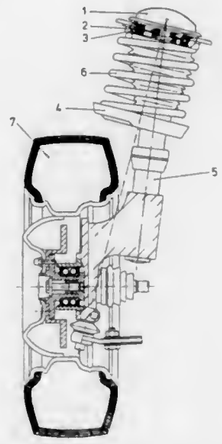


1. A bearing assembly for bearing tensile and compressive axial loads, including:
a first member having a central longitudinal axis and a surface defining a first shoulder and a second shoulder;
a second member, having a second central longitudinal axis coinciding with the central longitudinal axis, positioned relative to the first member with freedom to rotate about the central longitudinal axis relative to the first member and at least limited freedom to translate relative to the first member along the central longitudinal axis, the second member having a surface defining a third shoulder and a fourth shoulder; and
a thrust bearing subassembly in a chamber between the first member and the second member, said chamber being bounded by the first shoulder, the second shoulder, the third shoulder, and the fourth shoulder, wherein the thrust bearing subassembly has an overall axial length sufficiently short so that the second member is free to translate along the central longitudinal axis relative to the first member between a tensile load configuration in which the thrust bearing subassembly bears a tensile axial load and a compressive load configuration in which the thrust bearing subassembly bears a compressive axial load, wherein the thrust bearing subassembly includes:
a pair of side members; and
a thrust bearing between the side members, where each of the side members has a flat end face abutting the thrust bearing and an angled end surface opposite the flat end face, wherein each said angled end surface has a central portion and two outer portions which meet at an angle at the central portion.

5,664,892
SPRING LEG MOUNTING AND SPRING CUP RECEIVER

David Kellam, Stratford, Canada, assignor to FAG Automobiltechnik AG, Germany

Filed Apr. 22, 1996, Ser. No. 635,466
Claims priority, application Germany, Apr. 21, 1995, 295 06 796.9
Int. Cl.[6] F16C *19/12*; **B60G** *13/00*
U.S. Cl. 384—615 **12 Claims**

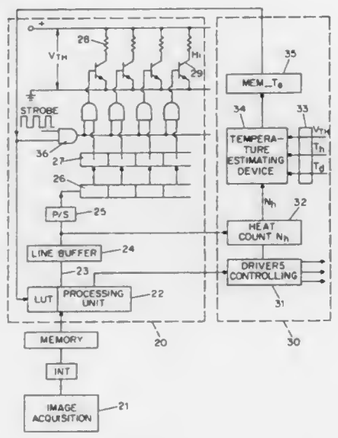


1. A spring leg mounting and spring cup receiver for the spring leg of a motor vehicle comprising:
an antifriction bearing which includes bearing rings and rotating bearing elements between the bearing rings;
a plastic cap surrounding the antifriction bearing and supporting the bearing rings and sealing off the bearing; the cap comprising a first part serving as a spring receiver and a second part; snap devices holding together the parts of the cap;
the cap including a spring receiver for receiving an end of the spring of the spring leg of the motor vehicle, and the spring receiver being so shaped and sized as to pass around the outside of the bearing, and the bearing is arranged concentrically within the region forming the spring receiver of the cap.

5,664,893
THERMAL PRINTER COMPRISING A REAL TIME TEMPERATURE ESTIMATION

Dirk Meeussen, Bornem, and Eric Kaerts, Melsele, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Feb. 10, 1995, Ser. No. 387,030
Claims priority, application European Pat. Off., Mar. 9, 1994, 94200586
Int. Cl.[6] B41J *2/365*
U.S. Cl. 400—120.14 **13 Claims**

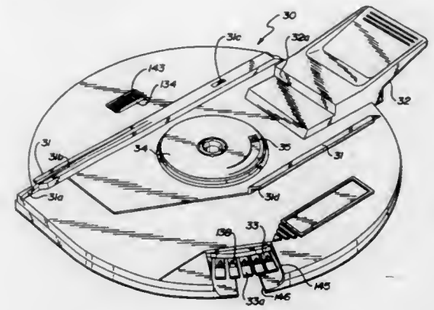


1. A thermal printing apparatus comprising:
(a) a printer comprising:
(i) a dye donor member having one or more dye frames and an acceptor member on a receiving sheet secured to a rotatable printing drum, where said acceptor receives dyes from said dye frames;
(ii) a thermal head having at least a plurality of heating elements, a heating element substrate and a heatsink mount;
(b) first controlling means for driving synchronized movements of said donor member and said acceptor member along respective paths relative to said thermal head such that as said thermal head is activated in accordance with image data, dye from said dye frame is transferred to said receiver to form an image thereon;
(c) second controlling means for supplying line by line an activating signal corresponding to said image data to activate said heating elements;
(d) means for counting a number (N_h) of activated heating elements within periodic observation intervals, said intervals not exceeding a time necessary to print a line on said acceptor member;
(e) means for measuring a temperature (T_d) of said drum and a temperature (T_h) of said heatsink within said periodic observation intervals;
(f) means for digitizing said measured temperature values (T_d and T_h) of said drum and of said heatsink within said periodic observation intervals;
(g) means for transferring said number (N_h) of activated heating elements and said digitized temperature values (T_d and T_h) within said periodic observation intervals;
(h) a device for estimating said temperature (T_e) of said heating elements based on said values of N_h, T_d and T_h, wherein said estimated temperature (T_e) of said heating elements comprises a minimum temperature ($T_{e,min}$) of said heating elements just before a printing line is started;
(i) memory means (MEM_T_e) for storing said estimate of the temperature (T_e) of said heating elements; and
(j) means for operating said printer to adjust the applied energy to said heating elements of said thermal head as a function of said estimated temperature (T_e) of said heating elements and of the required temperature of said heating elements.

5,664,894
DEBOSSMENT DIE HOLDER

Roger M. Gray, and Barry C. Kockler, both of Lewisville, Tex., assignors to Taurus Impressions, Inc., Mountain View, Calif.

Division of Ser. No. 78,792, Jun. 17, 1993, Pat. No. 5,441,589. This application May 31, 1995, Ser. No. 456,580
Int. Cl.[6] B41J *1/54*
U.S. Cl. 400—134 **14 Claims**

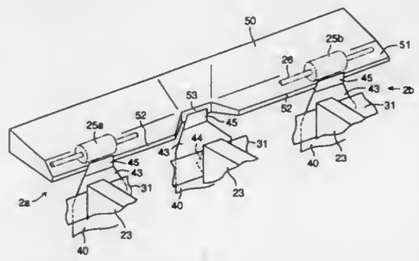


1. A debossment die holder and a debossment die, said die having a die indicia on a first side of the die and a pressure and heat contact surface on an opposite side of the die, said holder comprising a frame substantially surrounding a periphery of the die, the die being fixedly supported in said frame to form an integral frame and die assembly; at least one locking projection extending from one edge of said frame in a direction away from the die indicia; and a second locking projection extending from an opposite edge of said frame, the die and frame assembly being adapted to be manipulatable and insertible into a position in a debossment print engine including a forcer, said assembly being fixedly held in contact on a distal end of the forcer by said at least one locking projection, the die indicia and forcer being operable to have the die indicia forcedly contact a foil tape containing heat and pressure transferable material against a workpiece to deboss the transferable material in the format of the die indicia from the foil tape into a surface of the workpiece.

5,664,895
PRINTING APPARATUS AND A CONTROL METHOD THEREFOR

Naoki Asai; Hideki Kawakami, and Choji Morozumi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 415,966
Claims priority, application Japan, Apr. 4, 1994, 6-066203; Oct. 25, 1994, 6-260644
Int. Cl.[6] B41J *35/04*
U.S. Cl. 400—248.1 **22 Claims**



1. A printing apparatus comprising:
a platen;

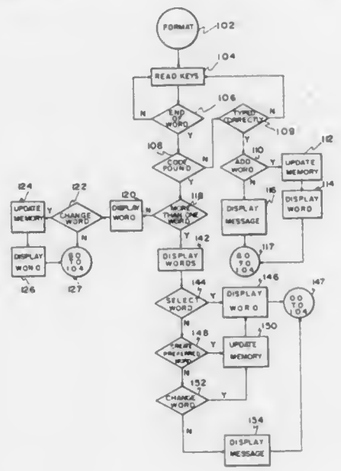
an impact print head, arranged opposite to said platen for a reciprocating movement along said platen;
a mask plate disposed between said platen and said print head;
a sheet passage for a recording sheet being defined between said platen and said mask plate;
a carrier member having an exposed marking medium portion extending substantially in parallel to said platen between said print head and said mask plate;
a guide member arranged in a fixed relation to and in a lengthwise direction of said platen, wherein said guide member has a first portion and a second portion; and
moving means for displacing said mask plate in a direction substantially perpendicular to said sheet passage between a first position when the print head is positioned opposite the first portion of said guide member and a second position when the print head is positioned opposite the second portion of said guide member.

5,664,896

SPEED TYPING APPARATUS AND METHOD

Marvin R. Blumberg, 7105 Broxburn Dr., Bethesda, Md. 20817

Filed Aug. 29, 1996, Ser. No. 705,093
Int. Cl.[6] B41J *5/00*
U.S. Cl. 400—485 **94 Claims**



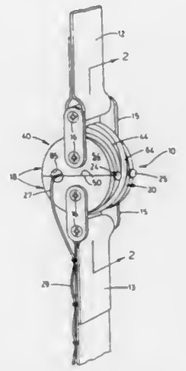
1. A method for enabling text formed from letters of an alphabet to be created on a display device using a word processing system including a computer having a memory storage, a display device and an input device including a plurality of operator-selectable input elements, said method comprising:
defining a set of plural input elements numbering less than the total number of letters of an alphabet;
assigning a plurality of letters of the alphabet to the input elements of said set such that each input element has one or more letters and at least one of the input elements has a plurality of letters;
assigning at least one input element code to each input element of said set such that not more than one input element code is assigned to at least one of said input elements having a plurality of letters;
storing in the memory storage a list of words formed from letters of the alphabet and word codes, each of the word codes formed from a series of one or more input element codes, each of said word codes associated with one or more or said words and at least one of said word codes associated with more than one word;
detecting a word by reading a series of input elements selected by the operator and retaining the series of input element codes associated with each selected input element;
creating a word code formed from the series of input element codes associated with each selected input element;
searching the memory storage and locating at least one word associated with each created word code; and
displaying at least one of said words located in the memory storage on the display device.

5,664,897

RELEASABLE CONNECTOR WITH SEVERABLE LINE

Elsa J. Hennings; Michael D. Herr, and William A. Martin, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1996, Ser. No. 716,666
Int. Cl.[6] F16B *1/00*
U.S. Cl. 403—2 **9 Claims**



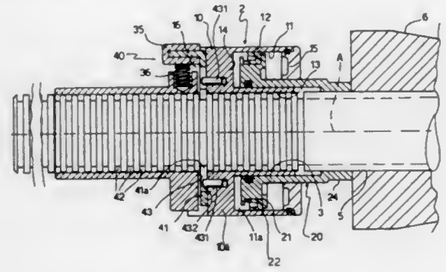
1. A releasable connector comprising:
a pair of blocks, each of the blocks having
a first surface conforming to the first surface of the other block so that the pair of blocks are engageable at the first surfaces,
means for connecting the block to an element to be connected by the connector when the element is tensioned in a direction away from the first surface, and
a second surface disposed oppositely from the first surface of the block;
a line wrapped about both of the second surfaces of the pair of blocks when the blocks are engaged at the first surfaces, tension in the line holding the pair of blocks in engagement when the element is tensioned in said direction;
a ridge extending from the second surface of each of the blocks, said ridge being disposed so as to retain the line on the second surface against movement of the line in a direction along the first surface of the block; and
a selectively actuatable line cutter having a body terminating in a cutting end, said body being disposed in one of the blocks and said cutting end extending from the second surface of the one block into cutting relation with said line where the line is wrapped about the second surface of the one block.

5,664,898

LOCKING RING FOR ROTARY SHAFTS

Gino Ferrari, and Franco Maioli, both of Correggio, Italy, assignors to Femas S.R.L., Reggio Emilia, Italy

Filed Nov. 17, 1995, Ser. No. 559,153
Claims priority, application Italy, Dec. 20, 1994, RE94A0105
Int. Cl.[6] F16B *21/02*
U.S. Cl. 403—37 **13 Claims**



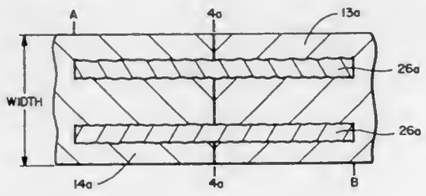
1. A locking ring, comprising
a body having an axis and a hole along said axis, said body receiving a shaft in said hole, said body including,
a cavity,
a first passageway communicating with said cavity, and
locking means for releasably locking said body to a portion of said shaft disposed in said hole; and
a piston member having a piston head and a piston rod connected to said piston head, said piston head disposed in said cavity and said piston rod projecting from said cavity in a direction parallel to said axis, said piston member moving relative to said body when pressure is supplied to said cavity via said first passageway.

5,664,899

FURNITURE JOINT

Robert H. Eustis, 862 Lathrop Dr., Stanford, Calif. 94305

Continuation of Ser. No. 286,408, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 90,246, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 733,451, Jul. 22, 1991, abandoned. This application Oct. 7, 1996, Ser. No. 726,794
Int. Cl.[6] F16B *12/04*
U.S. Cl. 403—268 **7 Claims**



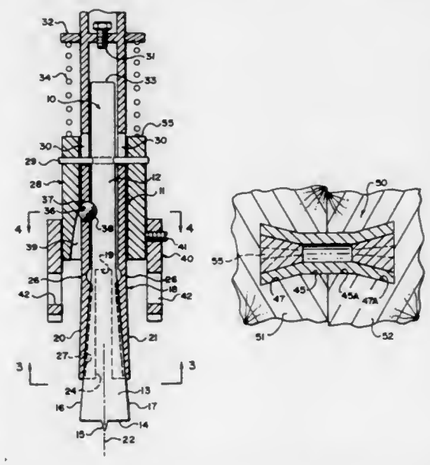
1. A high strength joint assembly comprising:
first and second wooden members having a length dimension, a thickness dimension, and a width dimension greater than said thickness dimension, said first wooden member having a first surface and said second wooden member having a second surface opposite said first surface, said wooden members each having at least two spaced, inwardly extending wells formed therein, said wells of one of said wooden members being substantially aligned with said wells of the other of said wooden members to define at least two spaced, elongated bores extending into said wooden members, said wells of at least one of said wooden members being substantially parallel to the longitudinal axis of said at least one of said wooden members,
a solid metallic rod positioned in each of said bores, said rods each having a first length positioned in said wells of one of said wooden members and a second length positioned in said wells of the other of said wooden members, at least one of said first length and said second length being at least substantially as long as said width dimension of said one of said wooden members,
a first adhesive substantially filling said bores, said first adhesive extending along said first length and said second length to bond the entire length of said rods to said wooden members to securely fasten said rods to said wooden members and prevent slippage of said rods relative to said wooden members and movement of each of said wooden members relative to the other wooden member, and
said rods, said wooden members proximate said rods, and said first adhesive forming a composite beam extending through said joint assembly, said composite beam securing said wooden members together and stiffening said wooden members to reduce tensile stresses in said wooden members when a bending moment is applied to said wooden members,
said composite beam having a neutral axis where the net axial force due to bending on a cross section of said composite beam transverse to the longitudinal axis of said composite beam is zero,
at least one of said rods being offset from said neutral axis in the direction of said width dimension to reduce tensile stresses in said wooden members when said bending moment is applied to said wooden members.

5,664,900

DOWEL JOINT SYSTEM FOR CONNECTING ELEMENTS OF A SOLID MATERIAL

Klaus E. Matthies, 197 Hanley Crescent, Regina Saskatchewan, Canada, S4R 5A9

Continuation-in-part of Ser. No. 235,945, May 2, 1994, abandoned, which is a continuation of Ser. No. 887,756, May 28, 1992, abandoned. This application Mar. 22, 1996, Ser. No. 624,654
Int. Cl.[6] F16B *13/06*
U.S. Cl. 403—297 **23 Claims**



1. A method of fastening a dowel to an element of a solid material comprising:
providing a first portion of the solid material having a surface thereof;

drilling a blind hole in the surface of the material, the blind hole having a second hole portion spaced from the surface which is of a diameter greater than that of a first hole portion thereof adjacent the surface;

inserting an end of the dowel into the blind hole through the surface, the end of the dowel having a diameter as it passes through the first hole portion substantially equal to that of the first hole portion;

causing a part of the end of the dowel to expand radially into the second hole portion;

wherein the first and second hole portions are drilled in the material in a single drilling action from the surface of the material by the steps of:

providing a drilling assembly having thereon a first drilling element and a second drilling element each for common rotation with the drilling assembly, the second drilling element being movable relative to the first drilling element in response to pressure applied longitudinally to the drilling assembly;

rotating the drilling assembly;

applying pressure longitudinally to the drilling assembly while locking the second drilling element against said movement relative to the first drilling element by a rigid locking member, such that the pressure and rotation applied to the drilling assembly causes the first drilling element to effect cutting of a cylindrical hole defining said first hole portion by engagement of the material with the first drilling element;

providing an actuating member on the drilling assembly, the rigid locking member in a locking position being held by the actuating member in engagement with a first surface fixed on the first drilling element and a second surface fixed on the second drilling element so as to hold the first and second drilling elements in common fixed position, the actuating member being moveable relative to the first and second surfaces; and

operating the actuating member after drilling the cylindrical hole to a predetermined depth to cause said movement of the actuating member relative to the first and second surfaces to release the locking member from said engagement with one of said first and second surfaces to allow said second drilling element to be moved by said longitudinal pressure to a position to cut from said cylindrical hole said second hole portion.

5,664,901

EXPANSION DOWEL

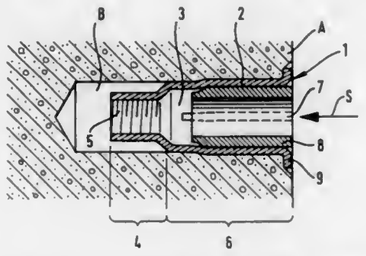
Franz-Paul Mayr, Hechenwang, Germany, assignor to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 3, 1996, Ser. No. 626,819

Claims priority, application Germany, Apr. 3, 1995, 195 12 415.4

Int. Cl.[6] F16B *2/04*

U.S. Cl. 403—297 **5 Claims**



1. An expansion dowel comprising an axially extending cylindrically shaped dowel member (**2**) having a leading end to be inserted first into a borehole, a trailing end and an axially-extending outside surface, a collar (**9**) formed on the trailing end of said dowel member (**2**) and projecting transversely of the axial direction and radially outwardly from said outside surface, said dowel member having an expansion region (**6**) extending axially from said trailing end toward and short of said leading end with an axially extending slot (**7**) therein, said expansion region having an inside diameter (d) said dowel member (**2**) having a central throughbore (**3**) between said leading and trailing ends for receiving an expanding element (**8**), said throughbore having an inside thread (**5**) in an axially extending leading end region, said expanding element comprises an axially extending sleeve (**8**) insertable into the expansion region (**6**) of said throughbore (**3**) through said trailing end of said dowel member (**2**), and said sleeve (**8**) having an outside diameter (e) greater than the inside diameter (d) of said expansion region, so that said expansion region is expanded when said sleeve is inserted thereon.

5,664,902

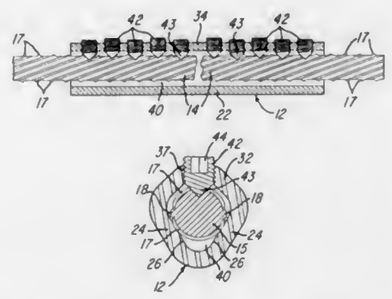
TUBULAR COUPLER FOR CONCRETE REINFORCING BARS

Steven E. Holdsworth, Centerville, Ohio, assignor to Barsplice Products, Inc., Dayton, Ohio

Continuation of Ser. No. 378,484, Jan. 26, 1995. This application Jun. 17, 1996, Ser. No. 668,419

Int. Cl.[6] B25G *3/34*

U.S. Cl. 403—362 **9 Claims**



1. In combination with a generally cylindrical concrete reinforcing bar having a longitudinal axis and outwardly projecting ribs, an improved coupler for positively gripping an end portion of said bar, said coupler comprising an elongated tubular body of a material softer than said reinforcing bar, said tubular body including a longitudinally extending wedge portion having longitudinally extending and generally opposing and converging inner wedging surfaces defining a wedging seat for said end portion of said bar, said tubular body receiving said end portion of said reinforcing bar with said wedging surfaces engaging said end portion and said ribs along a length substantially longer than the diameter of said bar and on one side of a plane extending through the longitudinal axis of said bar, a series of longitudinally spaced threaded holes within said body in generally opposing relation to said wedge portion, a corresponding series of screws threaded into said holes and having inner end portions penetrating and deforming said end portion of said bar, and said end portion of said bar wedged into said inner wedging surfaces with said ribs on said bar penetrating and deforming said wedging surfaces in response to the substantial force exerted by said screws to form a high strength positive connection between said body and said end portion of said bar.

5,664,903

SUPPORT CONNECTIONS

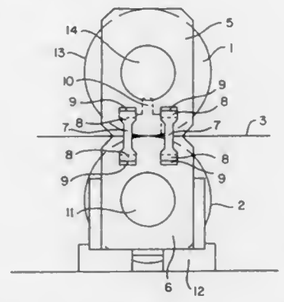
Andreas Meschenmoser, Horgenzell, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Oct. 6, 1995, Ser. No. 540,066

Claims priority, application Germany, Oct. 7, 1994, 44 35 897.0

Int. Cl.[6] F16B *7/04*

U.S. Cl. 403—387 **10 Claims**



1. Support connections for supporting at least two rolls in which at least one of the at least two rolls is mounted for rotation about a fixed carrier, the fixed carrier including an axis of rotation, and the at least two rolls are mounted to form a pressure plane comprising the axis of rotation, the at least one roll further including at least one support element displaceable relative to the fixed carrier, and the at least one roll being displaceable relative to the fixed carrier along the pressure plane, said support connections comprising:

a first support part receiving a first end of the fixed carrier;

a second support part receiving a first end of a carrier of an other of the at least two rolls;

each of the first and second support parts comprising recesses formed parallel to the axis of rotation,

an elongated connection part, with a pair of ends, extending parallel to the pressure plane and comprising a portion of increased size at each end, the portions of increased size being slidably received in the recesses;

the elongated connection part further comprising a middle portion being positioned between each portion of increased size, the middle portion comprising a plurality of parallel longitudinal sections arranged parallel to the pressure plane, and at least one elongated opening formed between the plurality of longitudinal sections, each of the at least one elongated openings being perpendicular to the pressure plane.

5,664,904

CLAMPS

Robin Hapgood, Bath, and David Bland Beckey, Langport, both of England, assignors to Jani-Jack Limited, Great Britain

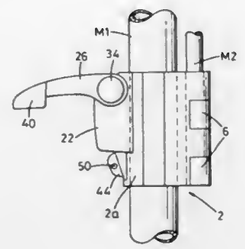
Filed Apr. 10, 1995, Ser. No. 419,276

Claims priority, application United Kingdom, Apr. 13, 1994, 9407259

Int. Cl.[6] F16B *2/18*

U.S. Cl. 403—389 **17 Claims**

1. A clamp for connecting together two mutually offset members, comprising: a body formed of a plurality of parts, a through-opening provided in said body by said body parts for slidably engaging a first of the two mutually offset members projecting therethrough, a clamping member spanning the body parts and having limited displacement thereon between respective end positions, one end position being a clamping position for the body parts and the other end position being a release position for the body parts, and there being retaining means for holding the clamping member in said clamping end position, the clamping member drawing together said parts of the body to reduce the size of said through-opening whereby to grip the first offset member when inserted therein, a series of aligned bores in said body parts providing a further opening for receiving the second offset member laterally offset from said through-opening for the first member, said further opening comprising at least a first of said bores in a first of said body parts interposed between successive bores of a second of said body parts when the second offset member is received therein, the body parts being relatively pivotable on said aligned bores by said clamping member between the release position in which the second offset member is slidable in said aligned bores and the clamping position in which the body parts grip both of the two offset members to secure them together.



5,664,905

FENCE

Peter John Thompson, Surrey, and Iain James McGregor, Derby, both of United Kingdom, assignors to Alcan Aluminium UK Limited, Buckinhgamshire, England

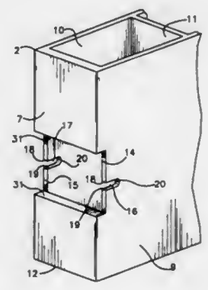
PCT No. PCT/GB93/01649, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/03678, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 4, 1993, Ser. No. 382,014

Claims priority, application United Kingdom, Aug. 10, 1992, 9216936; Mar. 15, 1993, 9305267

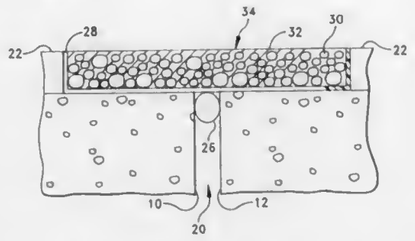
Int. Cl.[6] E01F *15/00*

U.S. Cl. 404—6 **28 Claims**



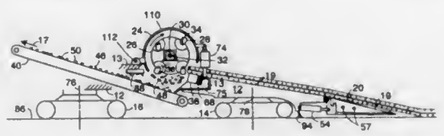
1. A crash barrier (**1**) comprising at least one post (**2**) having a lower end (**12**) secured to a base (**3**), a front face (**6**) to which at least one rail (**8**) is secured, a rear face (**7**) and two side faces (**9** and **10**), characterized in that the rear face has a length and is formed at a position intermediate said length with at least one horizontally extending notch (**13**, **16**, **17**) having an upper surface (**18**) and a lower surface (**19**) so that, when the lower end is restrained, an impact load transmitted to the front face causes the post to distort in a region including the notch so that the surfaces close towards one another prior to any fracture at or adjacent at least one of the front face of the post and its restrained lower end.

5,664,906
BRIDGE JOINT CONSTRUCTION
Richard J. Baker, 4508 Bromley La., Richmond, Va. 23221, and Bruce W. Adams, 5631 Teterling Ct., Chester, Va. 23831
Continuation of Ser. No. 283,515, Aug. 1, 1994. This application May 3, 1996, Ser. No. 642,505
Int. Cl.[6] E01C *11/02*
U.S. Cl. 404—67 7 Claims



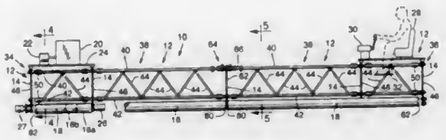
1. A bridge joint constructed within a channel at an expansion gap between adjacent structural members, said bridge joint comprising:
a plurality of aggregate chips, there being a plurality of interstices between said chips; and
an ambient temperature elastomer binder occupying said plurality of interstices between said chips, said binder at ambient temperature when applied to said chips.

5,664,907
APPARATUS AND METHOD FOR REMOVING AND PULVERIZING STEEL REINFORCED PAVEMENT
Thomas R. Betsinger, 1213 Meadow La., Onalaska, Wis. 54650
Filed Jun. 30, 1995, Ser. No. 497,286
Int. Cl.[6] E01C *23/12*
U.S. Cl. 404—90 13 Claims



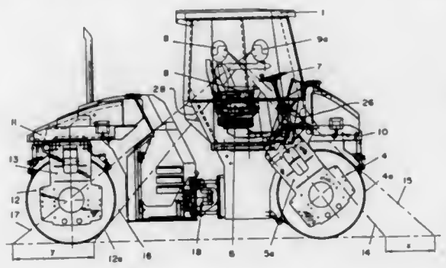
1. A pavement remover for removing pavement with reinforcing rod comprising:
a frame;
a first set of drive tracks coupled to said frame;
a main conveyor connected to said frame;
a wedge coupled to said frame and adapted to wedge under said pavement upon a forward movement of said pavement remover;
a rotor having a longitudinal centerline about which said rotor is rotatably coupled to said frame;
an anvil coupled to said frame and being repositionably spaced apart from said longitudinal centerline so that the location of said longitudinal centerline relative to said anvil is adjustable;
a ramp situated between said wedge and said rotor and adapted to convey said pavement with reinforcing rod toward said rotor upon said first set of drive tracks driving said pavement remover in a forward direction; and
a plurality of hammers 360 degrees rotatably mounted about themselves to said rotor at a location spaced apart from said longitudinal centerline such that said plurality of hammers are free to alternately swing away from and toward said longitudinal centerline, said plurality of hammers being adapted to strike and break up both said pavement and reinforcing rod overhanging said anvil such that both said pavement and reinforcing rod struck by said plurality of hammers is directed onto said main conveyor.

5,664,908
POWERED ROTARY SCREED
Tod Paladeni, 1316 NW. Westridge St., Vancouver, Wash. 98665
Continuation-in-part of Ser. No. 262,591, Jun. 20, 1994, Pat. No. 5,456,549. This application Sep. 29, 1995, Ser. No. 536,191
Int. Cl.[6] E01C *19/22*
U.S. Cl. 404—103 19 Claims



7. A rotary screed for screeding viscous material, comprising:
a. a frame having a plurality of plates including a medial plate and distal plates and a stringer extending from the medial plate to each distal plate;
b. a strike tube rotatably coupled to at least two plates proximate a leading edge of the frame;
c. a first drive tube rotatably coupled to at least two plates proximate a trailing edge of the frame;
d. a second drive tube rotatably coupled to at least two plates, wherein the second drive tube includes an adjustment that controls an amount of pressure of the strike tube on the concrete form when the screed is screeding the viscous material.

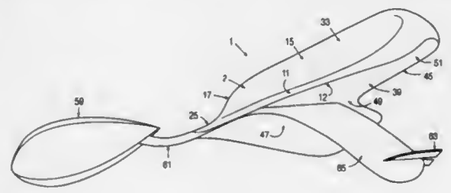
5,664,909
ROAD ROLLER
Jörgen Lindgren, Karlskrona; Sven-Erik Samuelsson, Nättraby, and Anders Thulin, Lyckeby, all of Sweden, assignors to Dynapac Heavy Equipment AB, Karlskrona, Sweden
Filed Nov. 7, 1995, Ser. No. 551,794
Claims priority, application Sweden, Nov. 9, 1994, 9403841
Int. Cl.[6] B60K *26/00;* E01C *19/26*
U.S. Cl. 404—122 8 Claims



1. A road roller for compacting road surfacing materials such as asphalt, the road roller comprising:
a chassis defining a longitudinal center axis;
a forward roller assembly and a rearward roller assembly both connected to said chassis;
said forward roller assembly including a forward yoke having two forward arms and a forward roller rotatably journalled in said forward arms;
said rearward roller assembly including a rearward yoke having two rearward arms and a rearward roller rotatably journalled in said rearward arms;
said forward roller having first and second forward lateral edges and said rearward roller having first and second rearward lateral edges;
said first forward lateral edge of said forward roller being at a first distance measured from said axis;

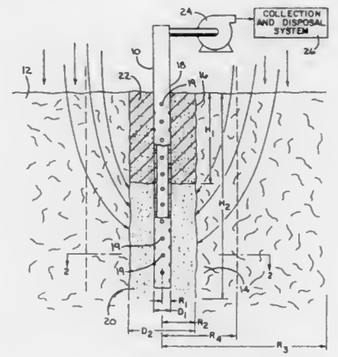
a cabin mounted on said chassis to accommodate an operator of said road roller;
said cabin having first and second side walls;
said cabin having a window formed therein close to said first side wall to permit viewing by the operator of said forward roller from within said cabin; and,
said cabin being mounted on said chassis to place said first side wall at a second distance from said axis greater than said first distance to define an outboard region inside said cabin between said first and second distances;
a seat assembly equipped with a seat for accommodating the operator within said cabin;
means for mounting said seat assembly in said cabin to allow a movement of said seat assembly within said cabin to permit said seat assembly to be moved into said outboard region thereby permitting the operator to have a clear unobstructed view through said window of said forward roller along said first lateral edge thereof.

5,664,910
BOAT ACTIVATED WAVE GENERATOR
Thomas J. Lochtefeld, La Jolla, and Charles E. Sauerbier, Arroyo Grande, both of Calif., assignors to Light Wave, Ltd., Reno, Nev.
Continuation-in-part of Ser. No. 393,071, Feb. 23, 1995, which is a continuation of Ser. No. 74,300, Jun. 9, 1993, Pat. No. 5,393,170, which is a continuation of Ser. No. 577,741, Sep. 4, 1990, Pat. No. 5,236,280, which is a continuation-in-part of Ser. No. 286,964, Dec. 19, 1988, Pat. No. 4,954,014, which is a continuation-in-part of Ser. No. 54,521, May 27, 1987, Pat. No. 4,792,260. This application Jun. 7, 1995, Ser. No. 475,092
Int. Cl.[6] E02B *3/00;* B63B *35/00*
U.S. Cl. 405—79 34 Claims



1. A wave and/or wake generating device for use with a power boat or the like, comprising:
a substantially laterally oriented body portion having a forward extending portion, and at least two substantially laterally extended sections, wherein each of the sections has a wave generator hull extending therefrom, wherein each of the wave generator hulls has a riding surface having substantially horizontal and vertical curvatures thereon;
wherein, as said device is pulled by said boat and/or moved substantially along the surface of the body of water, a sheet flow of water is lifted onto the riding surface, and wherein the forward movement of the device causes the sheet flow of water to move substantially forwardly, vertically and laterally, with respect to the surrounding body of water, creating simulated wave shapes thereon.

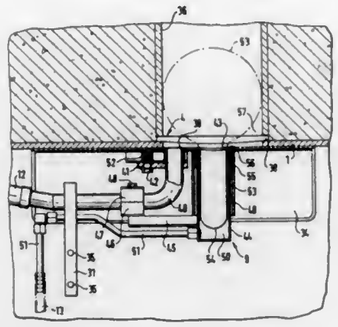
5,664,911
METHOD AND APPARATUS FOR IN SITU DECONTAMINATION OF A SITE CONTAMINATED WITH A VOLATILE MATERIAL
Jack E. Bridges, Park Ridge; Guggilam C. Sresty, Burbank, and Harsh Dev, Chicago, all of Ill., assignors to IIT Research Institute, Chicago, Ill.
Continuation of Ser. No. 343,614, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 208,805, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 792, Jan. 4, 1993, abandoned, which is a continuation of Ser. No. 695,802, May 3, 1991, abandoned. This application Jul. 23, 1996, Ser. No. 685,224
Int. Cl.[6] B09B *3/00;* A62D *3/00*
U.S. Cl. 405—128 20 Claims



1. A method of removing a contaminant from a contaminated region of the earth containing water, comprising:
contacting a portion of a treatment region with an electrically conductive matrix;
heating the treatment region of the contaminated region of the earth to a temperature below the normal boiling point of water by a substantially spatially uniform and continuous conduction frequency electric field applied to the electrically conductive matrix and extending through the treatment region, the electric field causing an alternating conduction frequency electric current to flow through the treatment region without arcing so that at least a portion of the contaminant becomes vapor at a temperature below the boiling point of water;
blocking a portion of a surface of the earth above the treatment region to prevent air from flowing nonuniformly into the treatment region; and
establishing a collection region from an auxiliary well at subatmospheric pressure within or below the treatment region for drawing in ambient air and moving it at a substantially constant speed into substantially all of the treatment region from the surface of the earth so as to transport the volatile contaminant to the auxiliary well at the collection region.

5,664,912
TOOL FOR A SEWER ROBOT
Robert Csillag, Litzibuechstrasse 14, CH-5610 Wohlen, Switzerland
Continuation of Ser. No. 291,890, Aug. 17, 1994, Pat. No. 5,527,133. This application Nov. 24, 1995, Ser. No. 564,382
Int. Cl.[6] F16L *55/16*
U.S. Cl. 405—154 4 Claims

1. A tool for a sewer robot for sealing-off the connection of a secondary sewer to a main sewer, comprising:
a sheathing plate with an outlet opening and a second opening alongside the outlet opening, an elastically deformable flat shaped membrane, and a chamber connectable to a source of pressure and optionally to a source of vacuum;



wherein said membrane is extendable out of said chamber in the manner of a balloon upon application of the pressure to said chamber, and retractable into said chamber upon application of the vacuum to said chamber;

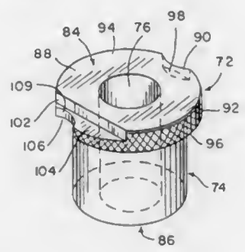
said outlet opening serves for dispensing a spackling composition to a defective area of said connection of said main sewer to said secondary sewer upon connection of a pressure line to said outlet opening; and

said second opening serves as an opening of said chamber and is connected in air-tight and pressure-tight fashion to said membrane, said second opening facing said secondary sewer upon a positioning of the robot for sealing off the connection of the secondary sewer to the main sewer.

5,664,913
DRILL BUSHING

Craig R. Scholz, West Allis, Wis., assignor to Economy Bushing Company, Milwaukee, Wis.

Filed Jul. 19, 1995, Ser. No. 504,146
Int. Cl.[6] B23B *49/02*
U.S. Cl. 408—72 B 10 Claims



1. A drill bushing, comprising:

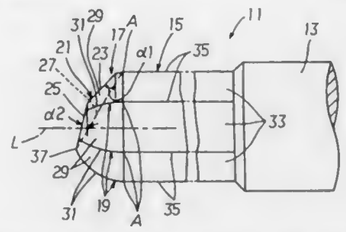
a generally cylindrical body extending along a longitudinal axis, the cylindrical body having first and second ends, and a central passage therebetween for guiding a tool; and

an enlarged head about the first end of the cylindrical body, and having first and second sides perpendicular to the longitudinal axis, and further including a first concave recess in the periphery of the head defined by an arcuate concave recess sidewall extending from the first side of the head toward the second side of the head to form a first shoulder, and a second linear recess on the periphery of the head, the second linear recess defined by a generally planar linear recess sidewall extending from the first side of the head toward the second side of the head to form a second shoulder, the second shoulder including a third concave recess extending therethrough, the third concave recess defined by an arcuate concave recess sidewall in the periphery of the head.

5,664,914
DRILL

Teppei Taniguchi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Mekuto, Hamamatsu, Japan

Filed Sep. 16, 1994, Ser. No. 307,237
Claims priority, application Japan, Apr. 27, 1994, 6-112323; Jul. 1, 1994, 6-173507
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—199 15 Claims



1. A drill comprising a holding section, a prismal section receivable by the holding section, and a top-truncated, right pyramidal section, which is integral with the prismal section:

the prismal section having side faces and side ridges defined by the adjoining two side faces,

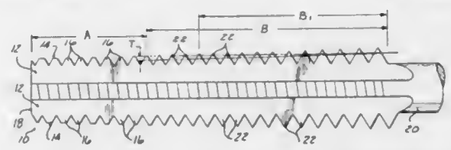
the top-truncated, pyramidal section having end faces which taper and converge on the axis of rotation of the drill, end ridges which are defined by the meeting of the adjoining two end faces, and a truncated surface extending across the axis of rotation and forming an angle of more than 1 to less than 90° with the cross-section of the prismal section, and

the end faces and end ridges of the pyramidal section extending from said side faces and side ridges of the prismal section, respectively.

5,664,915
TAP AND METHOD OF MAKING A TAP WITH SELECTED SIZE LIMITS

Terrence C. Hawke, 1385 Decker, Walled Lake, Mich. 48390

Filed Mar. 22, 1996, Ser. No. 620,919
Int. Cl.[6] B23G *5/06*
U.S. Cl. 408—222 8 Claims



1. A method of making a tap of a specific pitch diameter size limit in relation to a nominal tap size, comprising the steps of:

forming a tap having a series of thread turns of a progressively increasing pitch diameter form, with a maximum pitch diameter at a thread turn nearest a shank end of said tap, said pitch diameters of said thread turn series defining a predetermined range of size limits with respect to said nominal pitch diameter, said range including said selected pitch diameter;

grinding off as many turns as necessary to leave a thread form of a selected pitch diameter adjacent the shank end of said tap.

7. A thread cutting tap comprising:

an elongate body formed with a shank at a rear end, and a chamfered section at a front end;

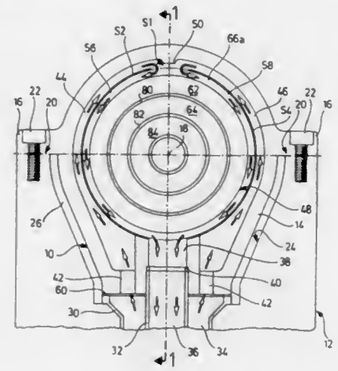
a series of full form cutting threads extending rearwardly from said chamfered section to said shank;

said full form thread series of progressively increasing pitch diameter from said chamfer section to said shank, said pitch diameters of a size limit range relating to a standard basic pitch diameter size.

5,664,916
COOLING SYSTEM FOR A MOTOR SPINDLE FOR A MACHINE TOOL

Helmut Friedrich Link, Aichwald, and Walter Grossmann, Baltmannsweiler, both of Germany, assignors to Index-Werke GmbH & Co. KG Hahn & Tessky, Esslingen, Germany

PCT No. PCT/EP94/00843, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO94/23485, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 17, 1994, Ser. No. 535,044
Claims priority, application Germany, Apr. 7, 1993, 43 11 431.8
Int. Cl.[6] B23B *19/00*
U.S. Cl. 409—135 22 Claims



1. A motor spindle unit with an integrated cooling system for use in a machine tool, the unit comprising:

a spindle housing;

a workpiece spindle mounted in said housing for rotation about a spindle axis;

an electric three-phase motor accommodated by the housing and having a rotor and a stator, the rotor surrounding the spindle axis concentric therewith and being rotation-wise fixedly connected to the workpiece spindle, and the stator surrounding the rotor concentric therewith;

the cooling system having a coolant inlet and a coolant outlet in flow communication with one another by at least one flow path for a coolant to be conducted in a predetermined flow direction along the flow path;

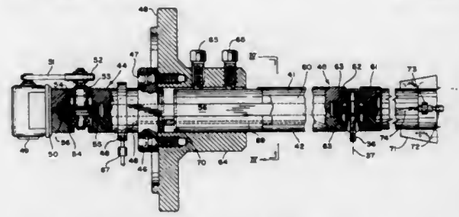
the flow path comprising a group of coolant channels with, in section through the motor perpendicularly to the spindle axis, (1) at least one inner coolant channel circumscribing the stator at least partially, and (2) at least one outer coolant channel circumscribing the stator at least partially and, with respect to the spindle axis, being located radially outside the inner coolant channel;

the group of coolant channels enclosing the stator at least to a major extent, and wherein a first end of the outer coolant channel is in flow communication with the coolant inlet, a second end of the outer coolant channel is in flow communication with a first end of the inner coolant channel, and a second end of the inner coolant channel is in flow communication with the coolant outlet so that within the outer and inner coolant channels the predetermined flow direction is oriented at least approximately in a circumferential direction with respect to the spindle axis.

5,664,917
CUTTER HEAD WITH INTERNAL DRIVE FOR MACHINING WORKPIECES

Raymond A. Judy, P.O. Box 335, Rouseville, Pa. 16344

Continuation-in-part of Ser. No. 14,615, Feb. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 802,312, Dec. 4, 1991, Pat. No. 5,184,927. This application Apr. 5, 1996, Ser. No. 628,790
Int. Cl.[6] B23C *3/28*
U.S. Cl. 409—143 24 Claims



1. In an apparatus to machine a workpiece wherein an elongated cutter bar is carried at one end by a support head and an outwardly projecting cantilever end portion of the cutter bar supports a cutter tool for rotary movement about an axis transverse to the extended length of a cutter bar, and wherein the cutter bar includes a drive system extending therealong for imparting rotary movement to said cutter tool for machining a workpiece supported and positioned by a workpiece carrier for imparting relative movement between the cutter tool and the workpiece, the improvement which comprises:

a spindle drivingly coupled to said drive system for imparting rotary movement to said cutter tool about said axis;

bearing means supported by said cutter bar at spaced apart locations to engage with correspondingly spaced bearing seats on said spindle for rotatably supporting said spindle to rotate about said axis, said drive system including drive means drivenly coupled to said spindle between the spaced apart locations of the bearing means for imparting rotary movement to the spindle by said drive means;

truncated tapered surfaces between said spindle and said cutter tool, said truncated tapered surfaces mating and being relatively movable into an interfering relation at a site which is outboard of said spaced apart bearing seats for imparting a gripping force on one of said tapered surfaces to grip said cutter tool while rotating about said axis whereby distortion of the interfering tapering surfaces is limited to an area outboard of said bearing seats;

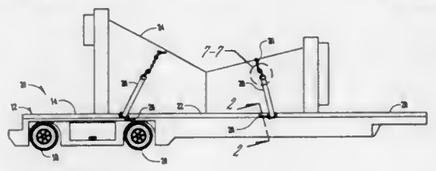
means for moving said truncated tapered surfaces relative to one another to establish driving contact with said cutter tool; and

a support seal ring for preventing deflection of said spindle by said truncated tapered surfaces.

5,664,918
CARGO TIE DOWN DEVICE

Merle J. Heider, 203 12th St. SW.; Dale J. Heider, 1108 8th Ave. SW.; Leon J. Heider, 1107 Third Ave. SW., and Craig J. Heider, 812 S. Taft St., all of Humboldt, Iowa 50548

Filed Jul. 28, 1995, Ser. No. 508,814
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—103 4 Claims

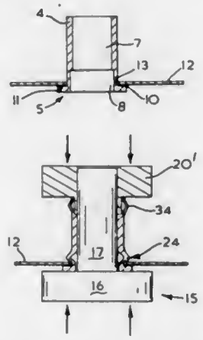


1. In combination:

a trailer;

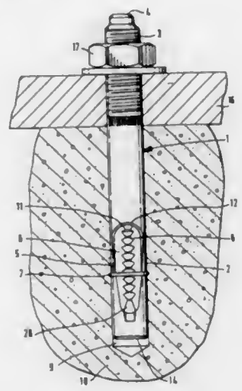
an elongated platform on said trailer having a longitudinal axis, an upper surface and opposite lateral edges;
a cargo resting on said upper surface of said platform;
a winch having a winch mounting bracket, a winch shaft support, and a winch shaft;
said winch shaft having a longitudinal shaft axis and being rotatably mounted to said winch shaft support for rotation about said longitudinal shaft axis;
said winch mounting bracket being operatively secured to said platform adjacent one of said lateral edges of said platform;
connecting means connecting said winch mounting brackel to said winch shaft support and permitting said winch shaft support to rotate relative to said winch mounting bracket about an axis approximately perpendicular to said longitudinal axis of said platform;
an elongated flexible member having a first end wound around said winch shaft and having a second end operatively retentively engaging said cargo to hold said cargo on said platform;
said winch shaft support comprising an elongated arcuate member;
said connecting means comprising a pin on said winch mounting bracket and an elongated slot in said arcuate member whereby said arcuate member is free to slide longitudinally on said pin to cause said rotation about said axis approximately perpendicular to said longitudinal axis of said platform.

5,664,919
NON-BLIND RIVET
Daniel Robin Smith, Castle Bromwich, United Kingdom, assignor to Emhart Inc., Newark, Del.
Filed Apr. 9, 1996, Ser. No. 629,722
Claims priority, application United Kingdom, Apr. 11, 1995, 9507372
Int. Cl.[6] A47G *9/00*
U.S. Cl. 411—34 **11 Claims**



1. A non-blind rivet, adapted to be set by compressive forces, comprising
a rivet body having a tubular wall around an axial bore which extends from a tail end portion to a head end portion of the rivet,
a head flange at the head end portion of the rivet extending outwardly from the body,
characterized in that the axial bore comprises:
three portions of different diameters;
a first cylindrical portion of the bore at a first diameter extending from the tail end portion;
a second cylindrical portion of the bore at a second diameter less than the first diameter extending from the head end portion;
an intermediate cylindrical portion of the bore extending between the first and second portions thereof at a diameter less than the second diameter;
a wall section formed in the tubular body adjacent the second portion of the bore and extending a prescribed axial distance; and
the wall section having an axial length and a thickness sufficient to allow the wall section to buckle laterally upon the application of opposing axially inward pressure to the head end portion and the tail end portion.

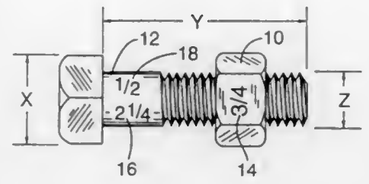
5,664,920
FIXING ELEMENT WITH EXPANDER MEMBER
Artur Fischer; Gerhard Porlein, both of Waldachtal, and Eberhard Maeder, Eutingen-Goettelfingen, all of Germany, assignors to Fischerwerke, Artur Fischer GmbH & Co. AG, Waldachtal, Germany
Filed Apr. 15, 1996, Ser. No. 631,997
Claims priority, application Germany, Apr. 15, 1995, 195 14159.8; May 26, 1995, 195 19350.4; Oct. 2, 1995, 195 36786.3
Int. Cl.[6] F16B *13/04*
U.S. Cl. 411—79 **14 Claims**



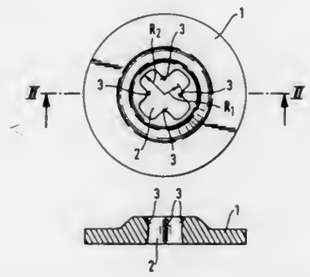
1. A fixing element, comprising a body having a rear end and a leading end, said body being provided with retaining means at said rear end and with at least one expansion zone starting from said leading end and extending in a longitudinal direction over a part of a length of said body, said expansion zone being formed by a longitudinal slot having a base sloping towards said leading end; and an expander member inserted in said longitudinal slot and displaceable in said longitudinal slot, said longitudinal slot being formed as a stamped slot and having a trapezoidal cross-section with two sliding surfaces arranged at an angle relative to one another and rising radially toward said leading end, said expander member having two bearing surfaces resting on said sliding surfaces and also having an external surface provided with teeth of roof-shaped construction which project at least with a part of a height of said teeth beyond said body.

5,664,921
FASTENER COMPONENT IDENTIFICATION
William O. Leslie, P.O. Box 88, Troutlake, Wash. 98650
Continuation-in-part of Ser. No. 856,669, Mar. 24, 1992, Pat. No. 5,375,955. This application Jul. 12, 1994, Ser. No. 273,956
Int. Cl.[6] F16B *37/00*
U.S. Cl. 411—427 **7 Claims**

1. A fastener component adapted to be installed, adjusted or removed by a tool, the component comprising:
a body that defines a threaded bore and that has a plurality of flat circumferential faces which provide tool-engaging surfaces; and
located on the body, at least one visible numeral which indicates the distance between opposed faces on the body, and thus, the size of a tool suitable for engaging the opposed faces so that a suitable tool can be selected without a user having to measure any dimension of the fastener component.

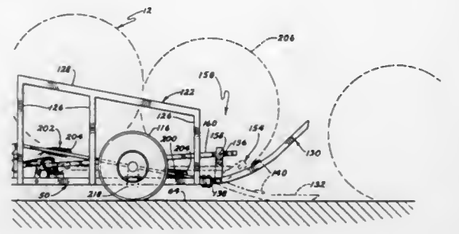


5,664,922
METAL GUIDE MEMBER WITH GUIDE ARRANGEMENT
Rupert Janssen, Meiningen, Austria, and Friedrich Groeschel, Buchs, Switzerland, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Sep. 23, 1994, Ser. No. 311,310
Claims priority, application Germany, Sep. 23, 1993, 43 32 355.3
Int. Cl.[6] B25C *1/16;* **F16B** *19/14*
U.S. Cl. 411—441 **6 Claims**



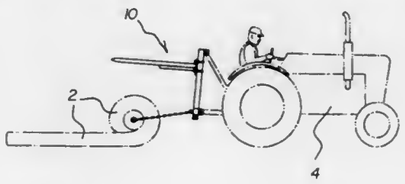
1. Metal guide member (**1**, **10**) for guiding a fastening member (**12**) to be driven into a hard receiving material (**14**) by an explosive powder charge driven setting tool, said guide member have a through opening (**2**, **15**) with a central axis and said opening having a guide arrangement (**3**) for guiding the fastening member (**12**) as it is driven into the receiving material, wherein the improvement comprises that said through opening having an axial length, said guide member includes at least three circumferentially spaced-apart plastically deformable guidance surfaces (**3**) with said guidance surfaces being convex and curved in the direction of the central axis and projecting inwardly toward and perpendicularly to the central axis, and said guidance surfaces (**3**) having an axial length substantially equal to the axial length of said through opening.

5,664,923
BALE ACCUMULATOR
Ray L. Olin, Box 35, New Salem, N. Dak. 58563
Filed Apr. 11, 1994, Ser. No. 225,887
Int. Cl.[6] A01D *90/00*
U.S. Cl. 414—24.5 **12 Claims**



11. In combination:
a round baler capable of producing round bales of crop stock, said baler having a discharge end with a rear gate movable between an upwardly raised, open position and a downwardly lowered, closed position; and
a round bale accumulator having first and second accumulator portions, each portion having front and rear ends, said bale accumulator being directly hitched to the discharge end of the baler;
said front end of said first accumulator portion disposed rearwardly adjacent said baler for directly receiving round bales of crop stock when said gate is in said open position;
said first accumulator portion having conveyor means for receiving and transporting round bales from said baler to said second accumulator portion;
said conveyor means disposed at a fixed angle relative to a horizontal plane, with said front end lower than said rear end and with said conveyor being inclined upwardly from the horizontal at an angle sufficiently shallow such that a round bale can clear said rear baler gate in its upwardly raised, open position as the bale is transported upwardly on the conveyor means towards the second accumulated portion; and
said second accumulator portion adjacent said rear end of said first accumulator portion for receiving bales one at a time therefrom.

5,664,924
ROUND BALE HANDLING SYSTEM
Terry D. Barker, Rte. 2 Box 294, Dunlap, Tenn. 37327
Filed Jun. 17, 1996, Ser. No. 664,559
Int. Cl.[6] A01D *90/00*
U.S. Cl. 414—24.6 **10 Claims**



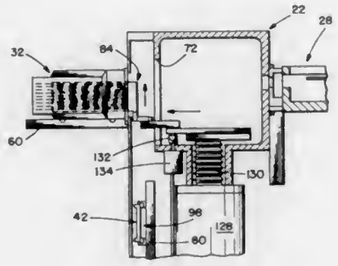
1. A round bale handling system comprising: a frame, a lifting shaft, two tow chains, and a roll shaft where the roll shaft is axially passed through a longitudinal center of a round bale and the two tow chains rotationally hold each end of the roll shaft tensionally to the frame which also fixedly supports the lifting shaft, and wherein the lifting shaft is comprised of a shaft point, a reinforcement gusset, a base flange, and a lift shaft attachment means where the shaft point defines a vertex of a distal end of the lifting shaft and the base flange is centrally joined in a perpendicular orientation to a proximal end of the lifting shaft and the reinforcement gusset is located in a vertical plane at a corner defined by the lifting shaft and the base flange and joins the lifting shaft and the base flange.

5,664,925

BATCHLOADER FOR LOAD LOCK

Richard S. Muka, Topsfield; Michael W. Pippins, Hamilton, both of Mass., and Mitchell A. Drew, Portsmouth, N.H., assignors to Brooks Automation, Inc., Chelmsford, Mass.

Continuation of Ser. No. 498,987, Jul. 6, 1995, abandoned.
This application Jan. 27, 1997, Ser. No. 789,510
Int. Cl.[6] B65G 49/07
U.S. Cl. 414—217 8 Claims



1. A system for batch loading semiconductor wafers to and from a carrier having an interior region used for supporting and transporting in a substantially particle free environment a plurality of the wafers in spaced generally stacked relationship, said system comprising:

a transport chamber for receiving wafers for transfer to a plurality of processing stations;

a load lock defining a chamber therein having a substantially particle free environment and including a load lock port opening into the load lock chamber, said load lock positioned intermediate the carrier and said transport chamber;

a load lock door on said load lock movable between a closed position sealingly overlying said load lock port and an open position spaced therefrom;

a load lock arm within the load lock chamber movable between an inactive position distant from the carrier and an active position proximate the carrier;

a multilevel end effector on said load lock arm including a plurality of spaced end effector sets, each said end effector set adapted to support a wafer thereon, each of said plurality of spaced end effector sets being aligned with an associated wafer supported in the carrier when said load lock arm is in the active position, said multilevel end effector being movable, when said load lock arm is in the active position and when said load lock door is in the open position, from a retracted position distant from the wafers to an advanced position extending into the interior region of the carrier for engaging and simultaneously retrieving the wafers as a grouping, then again to the retracted position for holding the grouping of wafers in the load lock chamber; and

a transport arm within said transport chamber for retrieving wafers one at a time from said multilevel end effector and delivering it to a specified one of the plurality of processing stations; and

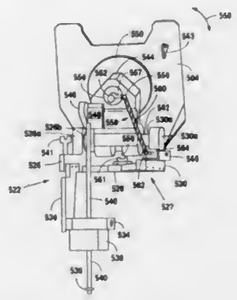
first selectively operable valve means between said transport chamber and said load lock for movement between an open position enabling movement therethrough of said transport arm and a wafer supported thereon and a closed position sealing said transport chamber from said load lock and preventing movement therethrough of said transport arm and a wafer supported thereon.

5,664,926

STAGE ASSEMBLY FOR A SUBSTRATE PROCESSING SYSTEM

Jay S. L. Sussman; Daniel A. Babbs, and Richard E. Shultz, all of Austin, Tex., assignors to Progressive System Technologies, Inc., Austin, Tex.

Filed Jul. 11, 1995, Ser. No. 500,595
Int. Cl.[6] B65G 65/00
U.S. Cl. 414—222 20 Claims



1. A stage assembly for a substrate processing system which processes at least one substrate inserted within a cassette, comprising:

a cassette support assembly for receiving and supporting a cassette; and

an actuation and support assembly for supporting and moving said cassette support assembly between a loading position for loading and unloading cassettes and a processing position to enable access of substrates within the cassette by a processing system, said actuation and support assembly comprising:

a frame assembly;

a rotating plate pivotally mounted to said frame assembly and mounted to said cassette support assembly for rotating said cassette support assembly relative to said frame assembly;

a motor bracket pivotally mounted to said frame assembly;

an actuator motor mounted to said motor bracket;

a connecting rod pivotally mounted to said rotating plate and interfacing said actuator motor, wherein said actuator motor applies thrust force to said connecting rod for tilting said cassette support assembly between said loading and processing positions;

a crank arm mounted to said rotating plate; and

a clamp mounted to said connecting rod and pivotally mounted to said crank arm.

5,664,927

SUBSTRATE PROCESSING METHOD AND APPARATUS

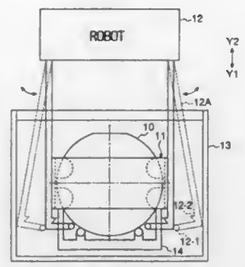
Mitsuo Takeuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 8, 1995, Ser. No. 385,450
Claims priority, application Japan, Feb. 10, 1994, 6-016737
Int. Cl.[6] H01L 21/304
U.S. Cl. 414—225 20 Claims

1. A substrate processing method comprising the steps of:

(a) accommodating a plurality of substrates within a carrier, said carrier having a bottom that is open and having a function of stopping inclination of the substrates;

(b) transporting the substrates and the carrier to a processing chamber by a transport means having a function of supporting weights of the substrates, said transport means being independent of said carrier; and



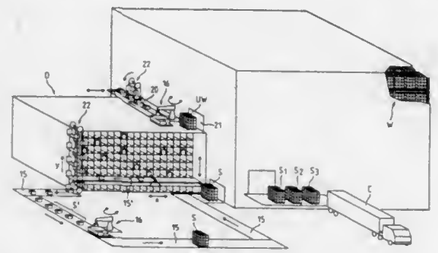
(c) carrying out a process on the substrates within the processing chamber.

5,664,928

COMMISSIONING PROCESS AND APPARATUS

Hans-Ulrich Stauber, Grüt, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Continuation of Ser. No. 248,432, May 23, 1994, abandoned.
This application Jul. 16, 1996, Ser. No. 682,081
Claims priority, application Switzerland, Jun. 4, 1993, 01684/93; Apr. 20, 1994, 01207/94
Int. Cl.[6] B65G 1/04
U.S. Cl. 414—269 7 Claims



1. A method for producing lines having predetermined compositions of selected items, the method comprising the steps of

supplying a dispenser with a plurality of buffers wherein each buffer has an inlet only on an inlet side of said dispenser, an outlet only on an outlet side of said dispenser and a storage capacity of a plurality of items between the inlet and outlet, and means for transporting items from the inlet to the outlet,

providing a plurality of supply units each comprising a plurality of items and auxiliary packaging and/or transport material containing or carrying the items,

delivering supply units to an individualization station at which items of each supply unit are individualized and separated from the auxiliary packaging and/or transport material,

feeding individualized items into the buffer inlets in a controlled manner,

transporting the items stepwise in a controlled manner from the buffer inlets to the buffer outlets in response to the individual removal of items from buffer outlets,

removing items in a controlled manner from the buffer outlets,

conveying auxiliary packaging and/or transport material from the individualization station to a line assembly station,

at the line assembly station, assembling the items removed from the buffer units into line units with auxiliary packaging and/or transport material conveyed from the individualization station,

transporting the line units away from the line assembly station, and

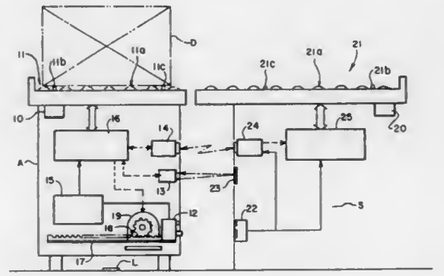
program controlling the inlet and outlet sides for keeping a variety of items available at the outlet side of the dispenser and a high throughput through the dispenser, by adapting an actual variety of items available at the outlet side to existing circumstances by filling at least part of the buffers with items of a type different from the types available at the outputs of the buffers whereby the different item types become part of a different actual variety after a plurality of removal cycles.

5,664,929

ARTICLE TRANSPORTATION SYSTEM

Kunio Esaki, Komaki, and Haruhiro Watanabe, Kasugai, both of Japan, assignors to Daifuku Co., Ltd., Japan

Continuation of Ser. No. 128,521, Sep. 29, 1993, abandoned.
This application Jun. 17, 1996, Ser. No. 664,789
Claims priority, application Japan, Oct. 1, 1992, 4-263409; Apr. 30, 1993, 5-103383; Apr. 30, 1993, 5-103384
Int. Cl.[6] B60T 7/16
U.S. Cl. 414—398 28 Claims



1. A transportation system for transporting an article, said transportation system comprising a transporter vehicle and a station, wherein said transporter vehicle includes

a frame having a plurality of wheels rotatably mounted thereon,

a vehicle battery,

a propelling motor connected to propel said wheels,

a vehicle translator apparatus mounted on said frame, said vehicle translator including a vehicle translator motor and a vehicle conveyor, said vehicle translator motor connected to drive the vehicle conveyor,

a power supplying means including a retractable arm having a power supplying connector connected to a leading end of said arm and means for projecting and retracting said arm, said power supplying connector connected to receive electrical power from said vehicle battery,

a vehicle controller connected to receive electrical power from said vehicle battery and which controls the supply of electrical power to the propelling motor, the vehicle translator motor and the means for projecting and retracting said arm, and

a vehicle communication apparatus connected to said vehicle controller, and wherein said station includes,

a power receiving unit engageable with said power supplying connector of said arm for receiving electric power therefrom,

a station translator apparatus including a station translator motor and a station conveyor, said station translator motor connected to drive the station conveyor,

a station controller connected to receive electric power from the power supplying connector and which controls the supply of electrical power to the station translator motor, and

a station communication apparatus connected to said station controller, wherein:

said station communication apparatus and said vehicle communication apparatus enable communication of information between said station controller and said vehicle controller, and

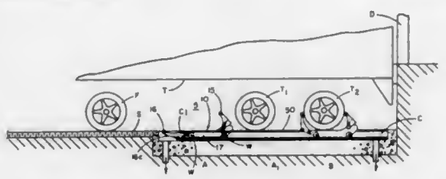
said station controller communicates to said vehicle controller in response to receiving electrical power from the power supplying connector.

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5,664,930
VEHICLE ACTIVATED WHEEL CHOCK POSITIONING DEVICE

Elwood B. Ellis, Indian River, Canada, assignor to Rite-Hite Corporation, Milwaukee, Wis.

Continuation of Ser. No. 206,842, Mar. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 472,492
Int. Cl.[6] B65G *67/00*
U.S. Cl. 414—401 **10 Claims**

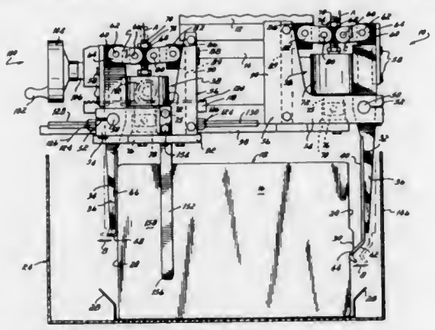


1. An automatic vehicle actuated wheel chocking device for at least one tire of a vehicle which is rotatable on a treadway between an initial position and a plurality of operating positions, the chocking device comprising an engaging mechanism for initially engaging a tire at the initial position and movable to operating positions with the tire as it rolls on the treadway, a chock operably attached to the engaging mechanism and positionable behind the tire when the mechanism is in any of the operating positions in response to engagement of the mechanism by the rolling tire, and a controllable lock capable of selectively locking the chock in a chock position behind the tire corresponding to any one of the operating positions.

5,664,931
EDGE LIFTING END EFFECTOR

Jerome M. Brugger, Melbourne, and Joseph Daniel Greenwell, Florence, both of Ky., assignors to R. A. Jones & Co., Inc., Covington, Ky.

Filed Aug. 2, 1995, Ser. No. 510,585
Int. Cl.[6] B65G *1/04*
U.S. Cl. 414—416 **28 Claims**

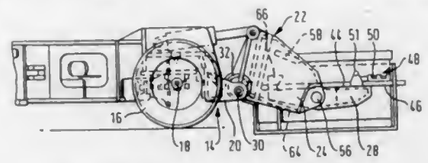


1. A combination comprising:
a stack of generally planar and vertically oriental blanks wherein a face of each said blank is juxtaposed to a face of an adjacent blank with opposing edges of said blanks being generally aligned and combining to form opposing sides of said stack; and
a lifting apparatus comprising:
a pair of movable arms;
an abutment member connected to each said arm, each said abutment member engaging one of the sides of the stack; and
a carriage to selectively move said arms and said abutment members connected thereto into and out of engagement with the sides of the stack and to lift said abutment members with the stack therebetween.

5,664,932
PIVOTED LIFTING DEVICE

David M. Clonch, Beckley, W. Va.; Freddy D. Boyd, Pounding Mill, and Michael J. Cook, Lebanon, both of Va., assignors to Long-Airdox Company, Oak Hill, W. Va.

Filed Sep. 20, 1994, Ser. No. 309,225
Int. Cl.[6] B66C *1/00*
U.S. Cl. 414—680 **20 Claims**

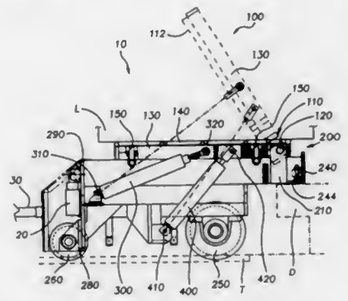


1. A pivoted lifting device comprising:
a frame, said frame including a pair of spaced apart support members having one end rotatable about a horizontal axis and another end;
a drive mechanism connected to said frame for selectively rotating said other ends about said horizontal axis between an upright position and a downwardly angled position below the upright position;
engagement members having an engagement surface, said engagement members having a mid-section pivotably connected to the other end of said support members and freely rotatable relative to said support members the engagement members having a first end and a second end, the second ends extend away from the frame, the engagement members having a rotating moment to encourage the engagement members to pivot in a predetermined direction to cause the second ends to move in a downward direction;
limiting means mounted to the device for limiting the extent the second ends of the engagement members move in the downward direction relative to said support members whereby substantially the entire engagement surface is in contact with an article to be lifted prior to the article being displaced from an at rest position.

5,664,933
METHOD AND APPARATUS FOR TRANSFERRING A LOAD

Philip G. Scherer, Ft. Lauderdale, and Werner K. Diehl, Parkland, both of Fla., assignors to Mima Incorporated, Glenview, Ill.

Filed Mar. 26, 1996, Ser. No. 621,906
Int. Cl.[6] B60G *9/02*; **B60P** *1/16*
U.S. Cl. 414—743 **18 Claims**

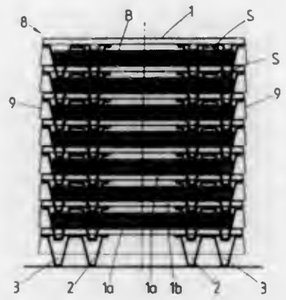


1. Apparatus for transferring a load, comprising:
a main frame;
a load supporting platform pivotally coupled at one end thereof to said main frame so as to be movable between a first lowered position at which said load supporting platform is supportable by a support surface of said main frame, and a second position at which said load supporting platform is disposed at a raised and inclined position with respect to said support surface of said main frame;
an actuating member, having a first end connected to said main frame at a first connection point of said main frame, and a second end connected to said load supporting platform at a first connection point of said load supporting platform, for raising said load supporting platform with respect to said main frame from said first lowered position to said second raised and inclined position; and
a damping member having a first end connected to said main frame at a second connection point of said main frame, and a second end connected to said load supporting platform at a second connection point of said load supporting platform such that when said load supporting platform is pivotally lowered from said second raised and inclined position and toward said first lowered position so as to be supported upon said support surface of said main frame, said damping member increasingly dampens the movement of said load supporting platform as said load supporting platform moves from said second raised and inclined position and toward said first lowered position at which said load supporting platform is supported upon said support surface of said main frame so as to reduce any impact attendant contact of said load supporting platform upon said support surface of said main frame, when said load supporting platform is moved from said second raised and inclined position to said first lowered position, and as may be transmitted to said load supported upon said load supporting platform.

5,664,934
STACKING BOARD FOR DEPOSITING A STACK OF SHEETS, AND AUTOMATIC HANDLING APPARATUS FOR STACKING BOARDS OF THIS TYPE

Johannes Georg Schaede, Wuerzburg, and Thilo Fritsche, Obernburg, both of Germany, assignors to De La Rue Giori S.A., Switzerland

Filed Nov. 17, 1995, Ser. No. 560,300
Claims priority, application Switzerland, Dec. 2, 1994, 3-658/94
Int. Cl.[6] B65G *1/18*
U.S. Cl. 414—799 **5 Claims**

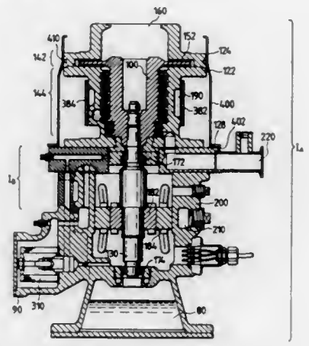


1. A stacking board for depositing a stack of sheets, wherein the stacking board is designed as a stackable pallet having a carrying panel and having at least two sets of lateral support elements on surfaces and on opposite lateral borders of the pallet, said at least first set of lateral support elements are two hollow feet with a predetermined engagement step for inserting the hollow feet of another pallet and said at least second set of lateral support elements are two hollow latching protuberances with a smaller engagement step than said predetermined engagement step, and wherein the hollow feet on said one side border of the pallet are located opposite the hollow latching protuberances on said opposite side border of the pallet and are designed such that, when pallets are stacked one upon another, depending on an orientation of said pallets, either a closely packed non sheet stacking storage stack of pallets can be produced, whereby the hollow feet of one pallet engage the hollow feet of the pallet located therebeneath on said one side border and the latching protuberances of one pallet engage the latching protuberances of the pallet therebeneath on said opposite side border, or a working stack of pallets can be produced that allows sheets to be stacked on each said pallet therebetween, whereby the hollow feet of one pallet engage the latching protuberances of a pallet therebeneath on both side borders of the pallets.

5,664,935
VACUUM PUMP

Akira Nishiuchi, Chiyoda-machi; Masahiro Mase, Nogi-machi; Noboru Matsumura, Chiyoda-machi; Katsuaki Kikuchi, Tsuchiura, and Takashi Nagaoka, Tsukuba, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 14, 1995, Ser. No. 528,413
Claims priority, application Japan, Sep. 19, 1994, 6-222969
Int. Cl.[6] F01D *1/36*
U.S. Cl. 415—90 **8 Claims**



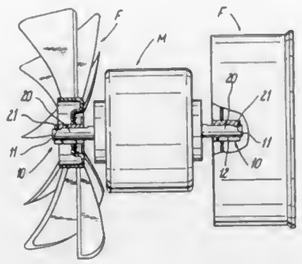
1. A dry turbo vacuum pump comprising:
a housing having an inlet and an exhaust duct;
a shaft rotatably supported in said housing;
a multistage peripheral flow impeller secured on said shaft and located in said housing; and
at least a first centrifugal impeller disposed at an inlet side of said peripheral flow impeller, whereby gas sucked from said inlet is discharged through said exhaust duct;
wherein said peripheral flow impeller is integrated with said at least a first centrifugal impeller to form a unitary pump rotor.

5,664,936
FAN MOUNTING ARRANGEMENT

Jorge Cunha; Gerson Hélio Fernando Fischer, and Ettore Santos Consiglio, all of Joinville, Brazil, assignors to Multibrás S/A/ Eletrodomésticos, São Paulo, Brazil

Filed Sep. 13, 1995, Ser. No. 527,565
Claims priority, application Brazil, Sep. 21, 1994, 7401491 U
Int. Cl.[6] F04D *29/36*
U.S. Cl. 416—204 R **8 Claims**

1. A hub and shaft coupling comprising:
a hub having a tubular extension provided with axial slots along a part of the length thereof dividing said extension into separated sectional arms of resilient material having an overall inner surface of a shape conforming to the outer surface of the shaft, the interior surface of one of said hub sectional arms having a projection of a shape complementary to said shaft depressed section, said sectional arms moving radially of the shaft axis and said projection of said one sectional arm fitting



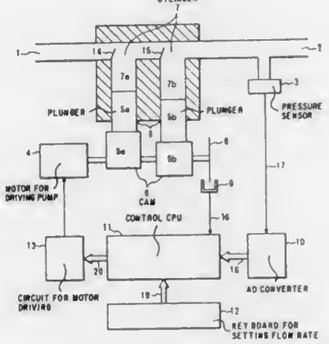
into said shaft depressed section as said inner surfaces of said hub sectional arms are moved over the outer surface of the shaft, the inner surface of each said sectional arms being in full permanent contact with an opposing portion of said shaft.

5,664,937

PRECISELY FLOW-CONTROLLING PUMP

Kenichiro Takahashi, Naka-machi; Hironori Kaji, Hitachi-naka, and Kaoru Hagiya, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1995, Ser. No. 382,741
Claims priority, application Japan, Mar. 2, 1994, 6-011460
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—22 **11 Claims**



9. A precisely flow-controlling pump for pumping liquid comprising:

a rotating motor that rotates a cam mechanism, wherein a fixed number of rotations of said cam mechanism is an operating cycle of the pump;

a pumping mechanism driven by said motor and said cam mechanism, wherein said pumping mechanism pumps the liquid from a source and outputs it to a delivery port;

a pressure sensor that measures the pressure of the liquid output from said delivery port;

a controller that controls the rotating speed of said motor and is connected to said pressure sensor, wherein said controller operates in a speed-priority mode during which the speed of the motor is held at a set rotating speed when the measured pressure is within a present range to determine a standard pressure, and a pressure-priority mode during which the speed of the motor is controlled so that the measured pressure equals said standard pressure;

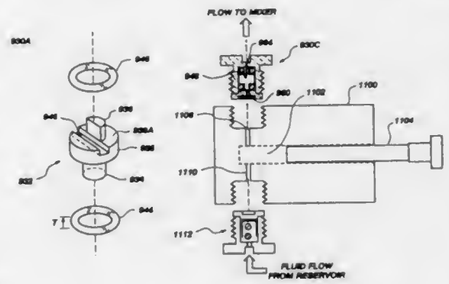
wherein during a single operating cycle of the pump, said controller alternates between said speed-priority mode and said pressure-priority mode.

5,664,938

MIXING APPARATUS FOR MICROFLOW GRADIENT PUMPING

Frank Jiann-Fu Yang, 13983 Pike Rd., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 114,497, Aug. 31, 1993, Pat. No. 5,630,706, which is a continuation of Ser. No. 847,654, Mar. 5, 1992, Pat. No. 5,253,981. This application Feb. 23, 1995, Ser. No. 393,449
Int. Cl.[6] F04B *39/10;* **F16K** *15/14*
U.S. Cl. 417—313 **24 Claims**



1. A fluid pump, comprising:

a housing defining a piston chamber;

a piston slidably disposed in said chamber;

motor means operably linked to said piston for driving said piston;

an inlet in said housing for receiving unpressurized fluid into said piston chamber;

an outlet in said housing for discharging fluid from said piston chamber under pressure; and

a check valve operably disposed in said inlet to prevent backflow of fluid, and comprising:

a valve housing defining a valve chamber,

a first orifice in said valve housing, configured to connect to receive fluid from an external reservoir,

a second orifice connected for fluid flow downstream through said inlet into said chamber,

poppet means disposed in said valve chamber and configured to permit said downstream fluid flow while preventing backflow, said poppet means comprising:

a poppet configured with a midsection having first and second sides, dimensioned to occlude said valve chamber, and configured to provide fluid flow from said first side to said second side; a first arm extending transversely from said midsection first side toward said first orifice, dimensioned to occlude said first orifice, and having a first arm length; and a second arm extending transversely from said midsection second side toward said second orifice, said second arm being configured and dimensioned to partially occlude said second orifice while being retained in said valve chamber, and having a second arm length;

a first seal annularly disposed about said first arm, formed of a resiliently compressible material, and having an uncompressed thickness which is slightly greater than said first arm length; and

a second seal annularly disposed about said second arm, formed of a resiliently compressible material, and having an uncompressed thickness which is slightly less than said second arm length; and

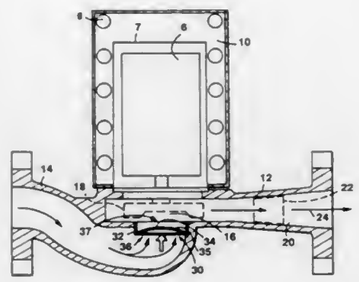
fluid filtering means disposed in said valve housing over said first orifice for filtering fluid entering said valve chamber.

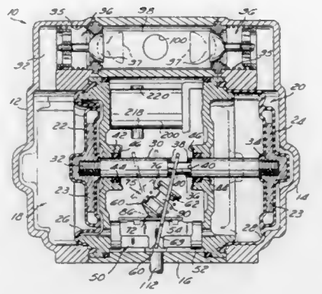
5,664,939

CIRCULATOR PUMP CHECK VALVE

Attilio G. Giordani, New Port Richey, Fla., and Richard A. Genga, Jr., East Greenwich, R.I., assignors to Taco, Inc., Cranston, R.I.

Filed Jul. 31, 1995, Ser. No. 508,393
Int. Cl.[6] F04B *39/06*
U.S. Cl. 417—369 **23 Claims**





1. A hydronic circulator for circulating fluid, the circulator comprising:

a wet-rotor circulator motor, the circulator motor comprising

a motor housing,

a stator disposed within the motor housing and sealed from the circulating fluid,

a rotor housing disposed within the motor housing within the stator, the rotor housing being unsealed from the circulating fluid so that the fluid enters the rotor housing,

a rotor disposed within the rotor housing and in contact with the fluid, and

an impeller affixed to one end of the rotor, the stator and rotor configured with respect to one another so that the rotor is caused to rotate when the stator is energized;

an impeller casing fastened to the motor housing, the impeller casing comprising

an inlet end for accepting the circulating fluid flowing into the impeller casing,

an impeller zone into which the impeller extends from the motor, the impeller zone having an eye portion through which fluid is drawn into the impeller zone from the inlet end of the impeller casing, and

an outlet end for discharging the circulating fluid flowing from the impeller casing; and

a check valve positioned at said eye portion so that fluid flowing from the inlet end passes through the check valve before reaching the impeller, said check valve impeding flow in a reverse direction from the impeller zone to the inlet end.

e) an over-center linkage for moving said slide valve between the first and second positions in response to movement of said first and second pistons and assuring positive movement of said slide valve when said first and second pistons move to prevent stalling of the pump, said over-center linkage comprising an insert member, a sleeve member into which a portion of said insert member is received, and a compression spring abutting said insert member and said sleeve member so as to urge said insert member and said sleeve member away from one another; and

f) wherein when said first piston is in the product intake position and said second piston is in the product exhaust position said slide valve is positioned so as to effect pressurization of said first cylinder and venting of said second cylinder so as to cause said first piston to move to the product exhaust position and the second piston to move to the product intake position and when said first piston is in the product exhaust position and said second position is in the product intake position said slide valve is positioned so as to effect pressurization of said second cylinder and venting of said first cylinder so as to cause said first piston to move to the product intake position and said second piston to move to the product exhaust position, such movement of the first and second pistons and the slide valve repeating so as to effect pumping of a product through the first and second cylinders.

5,664,940

GAS DRIVEN PUMP

Benjamin R. Du, Laguna Beach, Calif., assignor to Flojet Corporation, Irvine, Calif.

Filed Nov. 3, 1995, Ser. No. 552,852
Int. Cl.[6] F04B *43/06*
U.S. Cl. 417—393 **9 Claims**

1. A gas driven pump comprising:

a) a housing;

b) first and second cylinders disposed within said housing;

c) first and second interconnected pistons movable between product intake and product exhaust positions and disposed within said first and second cylinders, respectively;

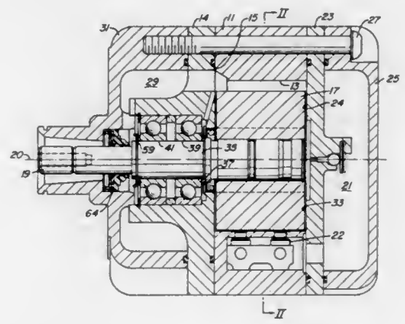
d) a slide valve movable between first and second positions for alternately pressurizing one of said first and second cylinders with a gas and venting the gas from the other of said first and second cylinders;

5,664,941

BEARINGS FOR A ROTARY VANE COMPRESSOR

David E. Bearint, Decatur, Ill., assignor to Zexel USA Corporation, Decatur, Ill.

Filed Dec. 22, 1995, Ser. No. 577,730
Int. Cl.[6] F04C *18/344;29/00*
U.S. Cl. 418—259 **13 Claims**



1. In a compressor having a compressor housing which contains a chamber, a rotor mounted on an axial shaft for rotation within the chamber to compress refrigerant, the improvement comprising:

a pair of thrust shoulders on the shaft, spaced axially apart from each other exterior of the rotor and facing in axially opposite directions, with each shoulder being axially movable with the shaft;

a bearing assembly comprising two axially-spaced ball bearings, each having an inner race that is in engagement with one of the shoulders, an outer race stationarily mounted via means within the housing, and a plurality of balls located between, the inner races having an axial clearance therebetween and being free of contact with each other so that thrust in one axial direction passes through the inner race, balls, and outer race of one of the ball bearings to the outer race of the other ball bearing and then to the housing, and thrust in the opposite axial direction passes through the inner race, balls, and outer race of the other of the ball bearings to the outer race of said one of the ball bearings and then to the housing; and

a spacer between the outer races for causing axial forces in both directions on the outer races to transmit directly to one another.

5,664,942

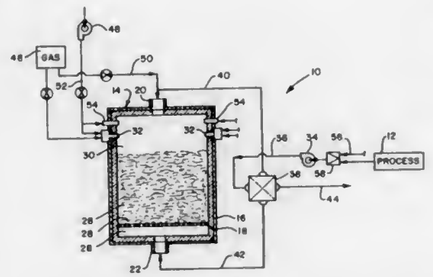
REGENERATIVE THERMAL OXIDIZER

Craig E. Bayer, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Oct. 25, 1994, Ser. No. 328,881

Int. Cl.[6] F23D *3/40*

U.S. Cl. 431—7 **2 Claims**



1. A method of operating a regenerative thermal oxidizer containing a bed of heat transfer material and an upper plenum above said heat transfer material to oxidize a contaminate in a gas stream comprising the steps of:

a. burning a gaseous fuel in said upper plenum together with excess air and flowing the products of combustion including the heated excess air down through said heat transfer material prior to the introduction of said gas stream containing said contaminate and thereby heating said heat transfer material adjacent said upper plenum to a temperature sufficient to oxidize a gaseous fuel;

b. extinguishing said burning gaseous fuel;

c. passing a mixture of gaseous fuel and excess air into said upper plenum and flowing said mixture down into said heated heat transfer material also prior to the introduction of said gas stream containing said contaminate and thereby oxidizing said mixture and transferring heat to said heat transfer material and preheating a central region of said bed of heat transfer material to a desired high temperature for oxidizing said contaminate;

d. discontinuing said mixture of gaseous fuel and excess air; and

e. passing said gas stream containing said contaminate through said bed of heat transfer material containing said preheated central region to oxidize said contaminate.

5,664,943

METHOD AND DEVICE FOR OPERATING A COMBINED BURNER FOR LIQUID AND GASEOUS FUELS

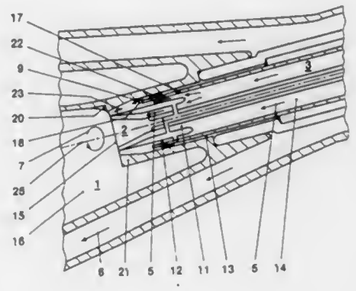
Franz Joos, Weilheim; Tino-Martin Marling, Uehlingen-Birkendorf, both of Germany, and Peter Senior, Stoney Stanton, Great Britain, assignors to ABB Research Ltd., Zurich, Switzerland

Filed May 25, 1995, Ser. No. 450,696

Claims priority, application Germany, Jul. 13, 1994, 44 24 599.8

Int. Cl.[6] F23C *5/00*

U.S. Cl. 431—8 **21 Claims**



1. A method of operating a double-cone burner having an inner burner space for selectable operation with a liquid and a gaseous fuel, the burner including means for introducing a liquid and a gaseous fuel and combustion air into inner burner space, the method comprising the steps of:

for operation with a liquid fuel,

directing a flow of liquid fuel to an airblast nozzle for introducing into the inner burner space;

directing, blast air fed from a plenum from outside a burner hood to the airblast nozzle coaxially and in inward and outward streams about an outlet for the fuel to atomize the liquid fuel, and

for operation with a gaseous fuel,

directing a main gaseous flow into the inner burner space, and

providing a pilot gas flow about said outward air blast stream and discharging said pilot gas into said outward air blast prior to discharging the pilot gas and outward air blast from said air blast nozzle into said inner burner space for controlling the inflow rate of the blast air into the inner burner space.

5,664,944

LOW PRESSURE DROP VANES FOR BURNERS AND NO_x PORTS

George B. Watson, Alliance, and Woodrow A. Fiveland, Jackson Township, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 349,758, Dec. 5, 1994, abandoned. This application Nov. 15, 1996, Ser. No. 749,883

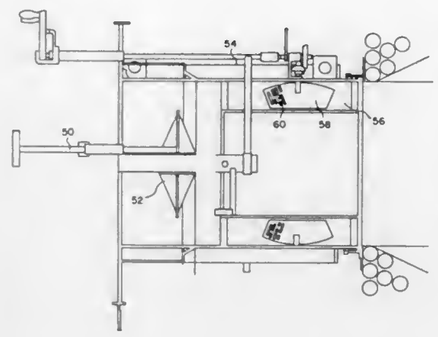
Int. Cl.[6] F23M *9/00*

U.S. Cl. 431—183 **17 Claims**

1. A vane assembly for a dual air zone NO_x port assembly, comprising:

means for defining an annular flow passage for gas moving in a flow direction;

at least one spin vane in the annular flow passage positionable at an angle to the flow direction, the spin vane being made of flat sheet material and having a leading portion which is perforated with a plurality of perforations, the perforations occupying approximately 1/3 of a length of the at least one spin vane in the flow direction; and



means for rotating the at least one spin vane between approximately 0° and approximately 90° to the flow direction.

5,664,945

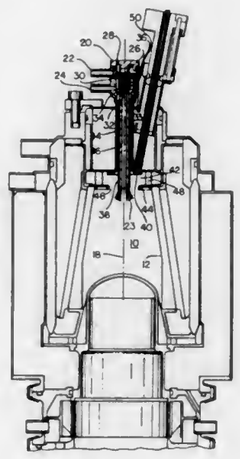
PRESSURIZED WICK BURNER

William B. Maynard, Voorheesville, and George Riecke, Ballston Spa, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Apr. 5, 1996, Ser. No. 628,471

Int. Cl.[6] F23D *3/02*

U.S. Cl. 431—302 **10 Claims**



1. A heater apparatus including;

a combustion chamber;

means forming a passageway with a hollow annular ceramic wick therein, said passageway including a first and a second end, said first end leading into said combustion chamber;

a fuel inlet and an air inlet in communication with said second end of said passageway, and passage means whereby at least a portion of the fuel is fed through said hollow ceramic wick to said combustion chamber and a portion of said air is fed about an exterior surface of said wick to said combustion chamber;

a wick stuffing means for holding said hollow ceramic wick in said passageway including an aperture through a central portion thereof providing communication between said air input and hollow portion of said hollow ceramic wick.

5,664,946

WEDGE

Raman Bedi, Birmingham, United Kingdom, assignor to The University of Birmingham, Birmingham, United Kingdom

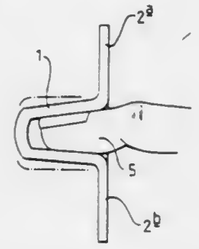
PCT No. PCT/GB94/00308, § 371 Date Oct. 12, 1995, § 102(e) Date Oct. 12, 1995, PCT Pub. No. WO94/18902, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 16, 1994, Ser. No. 507,375

Claims priority, application United Kingdom, Feb. 20, 1993, 9303435

Int. Cl.[6] A61C *5/00*

U.S. Cl. 433—140 **7 Claims**



1. A dental wedge for use as a prop between a patient's jaws during dental work comprising a hollow elongate portion having a longitudinal axis, a blunt proximal end and a distal end, said proximal end being closed, and said distal end being open said elongate portion tapering from a larger cross-sectional area at said distal end to a smaller cross-sectional area at said proximal end and defining a receptacle having a size so that a finger of an operator can be inserted into said hollow elongate portion through said open distal end to enable manipulation of the wedge in the mouth of a patient, and said dental wedge also comprising a pair of oppositely-directed flanges which project laterally of said hollow elongate portion and which are disposed adjacent said open distal end, said oppositely-directed flanges having opposed major surfaces substantially perpendicular to said axis, said flanges being arranged to abut against a face of the patient so as to assist in locating said hollow elongate portion between the teeth and preventing the wedge from been swallowed.

5,664,947

METHOD, APPARATUS, AND KIT FOR MARKING A SURFACE WITH COLORED BUBBLES

Charles W. Dietterich, Brodheadsville, Pa.; Kalvin K. Klundt, LaGrange, Ky.; Gordon R. Perry, New York, and Jude C. Tan, South Ozone Park, both of N.Y., assignors to Binney & Smith Inc., Easton, Pa.

Filed Feb. 10, 1995, Ser. No. 386,378

Int. Cl.[6] G09B *11/10;* **A63H** *33/28*

U.S. Cl. 434—84 **63 Claims**

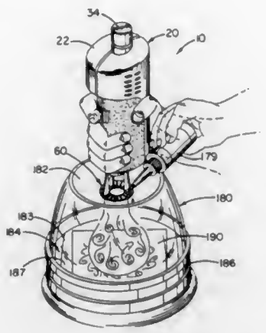
54. A method for creating a design on a surface comprising the steps of:

mixing at least one coloring material with a bubble making solution to form a coloring fluid;

applying the coloring fluid to a ring defining an opening such that the coloring fluid forms a coloring film substantially covering the opening;

placing the ring in the proximity of a surface;

forcing air through the opening to form at least a portion of the coloring film into at least one coloring bubble; and,



applying the at least one coloring bubble to the surface to transfer the at least one coloring material thereto.

5,664,948

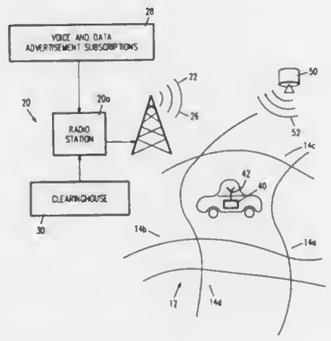
DELIVERY OF DATA INCLUDING PRELOADED ADVERTISING DATA

Dimitri Dimitriadis, Lake Oswego, and Michael C. Park, Portland, both of Oreg., assignors to Seiko Communications Holding N.V., Netherlands Antilles

Continuation-in-part of Ser. No. 282,893, Jul. 29, 1994, and a continuation-in-part of Ser. No. 283,276, Jul. 29, 1994. This application Oct. 11, 1994, Ser. No. 320,530

Int. Cl.[6] G09B *5/00*; **G01B** *7/14*; **G08G** *1/123*; **G01S** *3/02*

U.S. Cl. 434—307 R **5 Claims**



1. An advertising system comprising:

a radio signal transmission facility providing voice and data broadcast signals; and

a plurality of remote receiving devices collecting said voice and data signal broadcasts, each of said receiving devices storing selected portions of at least one of said voice and data broadcasts as a stored advertisement therein in association with an index value whereby subsequent transmission within at least one of said voice and data broadcasts references said index value and causes said remote receiving device to present the corresponding stored advertisement.

5,664,949

COUPLER FOR USE IN THE SENSOR HEAD OF A MEASURING DEVICE

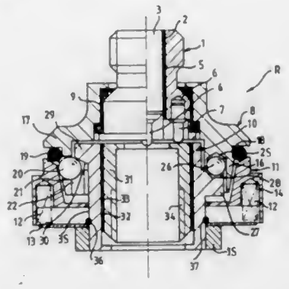
Hermann LeGuin, Ravensburger Str. 28, D-88279, Amtzell, Germany

Filed Jul. 12, 1995, Ser. No. 501,409

Claims priority, application Germany, Jul. 23, 1994, 44 26 171.3

Int. Cl.[6] H01R *39/00*

U.S. Cl. 439—22 **6 Claims**



1. A coupler for insertion in a sensor head of a measuring device, said coupler having an adapter element detachably held within a support member by position fixing means on a closure element, the improvement comprises said support member having an annular wall which defines an annular space, a connecting plug received in said annular space and having a first spring pin, said connecting plug having a wall defining a space, a pin received in said space and having a second spring pin, a first insulating material provided between said annular wall and said connecting plug and said wall and said pin, respectively.

5,664,950

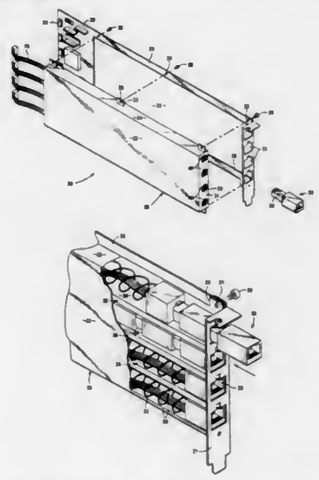
HARDWARE MECHANISM FOR COMPUTER SOFTWARE SECURITY

Richard J. Lawrence, 3353 Howard Common, Fremont, Calif. 94356

Filed Feb. 13, 1996, Ser. No. 600,337

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—76.1 **5 Claims**



1. A hardware adapter for connecting one or more authentication keys to a computer comprising:

circuit board means adapted for connection to a host;

housing means on the circuit board means for supporting at least one tensioning means having a female connector means at an end thereof and electrically connected to the circuit board means; and

at least one pair of key male and female connector means electrically connected and adapted to connect a conventional authentication key therebetween, the key male connector means further attaching to the female connector means at the tensioning means and the key female connector means enabling end-to-end connection of additional conventional authentication keys mounted between additional pairs of key male and female connector means.

5,664,951

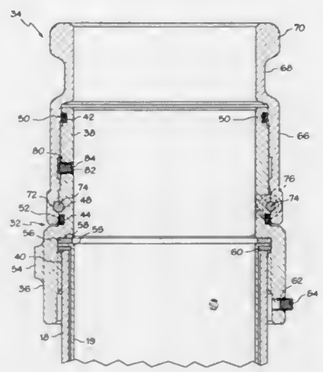
INLET CONDUIT ADAPTOR FOR UNDERGROUND STORAGE TANK

Robert P. Clary, West Chester; James E. Kesterman, Cincinnati, both of Ohio; Frank G. Lamping, Bellevue, Ky.; Paul R. Wilder, Hamilton, and David K. Larson, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Continuation of Ser. No. 321,636, Oct. 11, 1994, abandoned. This application Jun. 18, 1996, Ser. No. 665,582

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—92 **15 Claims**



1. A fuel adapter for engaging a riser pipe, comprising:

a first electrically conductive component having an external surface of revolution that is concentrically disposed about a first axis, said external surface having a first annular groove;

a second electrically conductive component that is rotationally movable with respect to the first component during use, said second component having an internal surface of revolution that is concentrically disposed about a second axis that is coincident with said first axis, said internal surface of revolution having a dimetral dimension that is slightly greater than the dimetral dimension of the external surface of revolution with the external surface being at least partially fitted within said internal surface, said internal surface having a second annular groove that is in axial alignment with the first annular groove; and

an electrically conductive flexible rod partially located in both the first and second annular grooves, said rod providing an electrical path between the first and second components for the discharge of static electric.

5,664,952

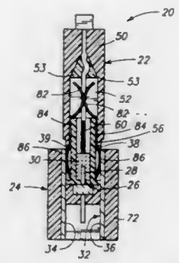
MULTICHANNEL TRANSMISSION LINE CONNECTOR ASSEMBLY

Paul M. Mockett, and David Forbush, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Continuation of Ser. No. 273,804, Jul. 12, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 707,058

Int. Cl.[6] H01R *13/658*

U.S. Cl. 439—101 **10 Claims**



1. A multichannel transmission line connector assembly for coupling to a multichannel transmission line, the multichannel transmission line having multiple conductors for carrying electrical power, control, data and ground signals; the connector assembly comprising:

a plug; the plug having a single linear array of first complementary coupling parts adapted for direct connection to associated conductors within the transmission line used to carry the power, control and data signals;

a receptacle detachably connected to the plug; the receptacle having a single linear array of second complementary coupling parts for electrical connection to the associated first complementary coupling parts when the plug is connected to the receptacle, the linear arrays of the first and second coupling parts being arrayed in a first direction, individual pairs of mated first and second complementary coupling parts having outer ends which are oriented to extend in a second direction transverse to the first direction when the plug is connected to the receptacle;

the receptacle also having a conductive ground signal plate with opposing ends and opposing sides, the ground signal plate extending in the first direction along the linear arrays of the first and second coupling parts in a strip line configuration so that the opposing ends align approximately with or project beyond outer most ones of the second complementary coupling parts, the ground signal plate extending in the second direction so that the opposing sides align approximately with or project beyond the outer ends of the mated pairs of first and second coupling parts when the plug is connected to the receptacle; and

a conductive interconnector adapted for electrically coupling the ground signal plate to one or more conductors within the transmission line used to carry the ground signal.

5,664,953

ELASTOMERIC LOCKING TAPER CONNECTOR WITH RANDOMLY PLACEABLE INTERMESHING MEMBER

Robert S. Reylek, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

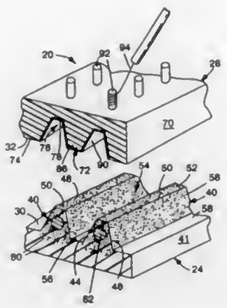
Continuation of Ser. No. 279,441, Jul. 25, 1994. This application Sep. 19, 1996, Ser. No. 715,917

Int. Cl.[6] H01R *25/00*

U.S. Cl. 439—111 **17 Claims**

1. An intermeshable electrical connector comprising:

a flexible electrically conductive member having an outer surface, a plurality of electrically conductive protruding elements, the elements forming the outer surface; and



a rigid member including at least one surface having electrically conductive elements correspondingly configured to those of the flexible member;

whereby the rigid member is randomly placable along the flexible member and when brought into engagement with the flexible member, the electrically conductive elements of the flexible member and the rigid member are retained in a releasable attachment with a force sufficient to ensure electrical connection and subsequent release and reconnection.

5,664,954

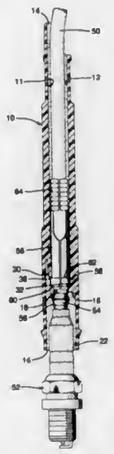
SPARK PLUG BOOT ASSEMBLY

Michael Wayne Rea, Salem, and Vincent James Tura, Jr., Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1996, Ser. No. 623,210

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—125 **9 Claims**



1. A spark plug boot assembly for receiving an ignition cable terminating in a terminal circumscribed by a protuberance, and for bi-directionally securing the ignition cable terminal within the assembly, the assembly comprising:

a hollow boot having an interior surface surrounding a central bore;

a plurality of aligned tangs spaced about the interior surface, each of the plurality having a base portion attached to the interior surface of the boot and having a body portion extending at an angle from the corresponding base portion into the central bore and terminating in an end portion opposing the base portion;

a plurality of bottom stops spaced about the interior surface of the boot and aligned at a first position along the longitudinal axis of the boot, the plurality of bottom stops extending into the central bore;

the end portion of the plurality of tangs aligned at a second position along the longitudinal axis of the boot spaced a predetermined length from the first position; and

wherein the predetermined length exceeds the width of the protuberance, thereby providing a bi-directional protuberance locking position between the first and second positions wherein insertion of the ignition cable into the central bore sufficient to locate the protuberance between the first and second locking positions provides for substantially a bi-directional locking engagement of the ignition cable within the boot.

5,664,955

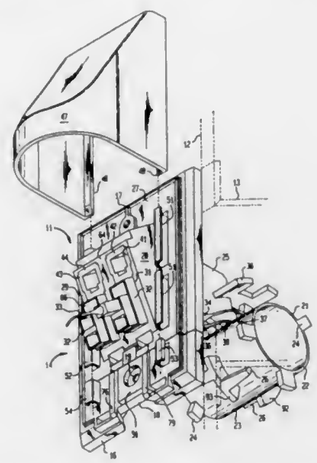
PROTECTIVE HOOD

Jaime Ray Arnett, Fishers, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 26, 1995, Ser. No. 533,156

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—135 **10 Claims**



1. A protective hood for mounting on a plate member having connector receiving couplers and spaced track means thereon, said hood comprising:

an elongated substantially hollow member having a substantially U-shaped open end and a closed end, said member having a sloped planar surface extending between said open end and said closed end;

means for mounting said on the plate member, said means comprising first and second elongated flanges extending toward each other from the ends of the legs of said U-shaped open end and extending to said closed end for engaging the track means on the plate member;

said flanges being spaced from each other a first transverse distance at said open end and tapering to a second, different transverse distance at said closed end.

5,664,956

ACTIVATOR PLUG

Bernhard Guglhör, Kulturenweg 11, DE-8959 Buching, Germany

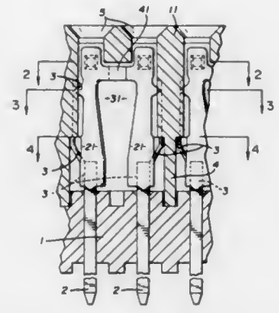
Division of Ser. No. 11,884, Feb. 1, 1993, Pat. No. 5,352,129.

This application Jun. 21, 1994, Ser. No. 262,945

Claims priority, application Germany, Feb. 5, 1992, 42 03 239.3

Int. Cl.[6] H01R *29/00*

U.S. Cl. 439—188 **2 Claims**



1. An activator plug for a power strip connector of printed circuit board circuits of electrical components with a contact strip, the activator plug including a number of metallic sockets fastened on an insulating base body for resilient reception of contact blades of a blade-contact connector, characterized in that each of said sockets has at least two resilient contact elements with one of said contact elements of each socket engaging at least one of said contact elements of an adjacent socket to produce an electrically conductive connection between the metallic sockets, provided that the blade-contact connector is not plugged in, and do not produce an electrically conductive connection when the blade-contact connector is inserted and spreads apart said resilient contact elements, and further characterized in that each said metallic socket makes an electrical connection between the blade-contact connector and a connect pin of said printed circuit board when the blade contact connector is inserted, and each of said metallic sockets has a U-shaped profile in a longitudinal direction relative to the insulating base body and extends around said at least two resilient contact elements secured in said U-shaped profile for receiving said blade-contact connector, and said contact elements are formed by circuit lugs that protrude into the area between said sockets as an extension of one of said resilient contact elements and overlap each other and engage each other when the blade-contact connector is not plugged in and are spread apart by the insertion of the blade-contact connector.

5,664,957

TRACK AND FIXTURE DISPLAY BRACKET

Ronald N. Starr, Elk Grove Village, Ill., assignor to Prestige Products, Inc., Elk Grove, Ill.

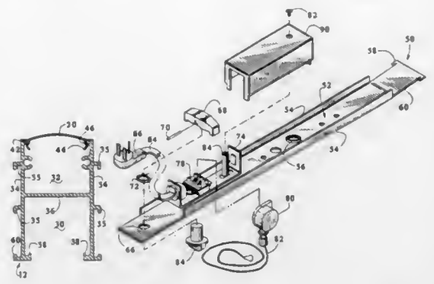
Continuation of Ser. No. 510,915, Aug. 3, 1995. This application Oct. 15, 1996, Ser. No. 732,830

Int. Cl.[6] H01R *4/60*

U.S. Cl. 439—207 **15 Claims**

1. A modular lighting display system comprising:

an outlet track having a first width and a first terminal end and a second terminal end, the outlet track including a pair of sidewalls and a dividing wall located between the pair of sidewalls and extending from the first terminal end to the second terminal end of the outlet track, the dividing wall defining a raceway portion and an outlet portion of approximately equal size, the raceway portion and the outlet portion each having an open section wherein the first width of the outlet track is extended exterior to each of the sidewalls by integrally formed clips forming a second width of the outlet track wherein the clips extend equidistantly from the sidewalls and are spaced along a height of the sidewalls wherein the second width is a maximum width of the outlet track;



a plurality of electrical outlets disposed along a length of the outlet portion of the outlet track;

a pair of rails constructed and arranged at the open section of each of the raceway portion and the outlet portion of the outlet track;

a fixture display bracket having at least one mounting tab, constructed to reside on the pair of rails at the open section of the outlet portion, the fixture display bracket having means for mounting a fixture thereto and a power cord; and

a domed lid covering and completely enclosing the raceway portion of the outlet track wherein the domed lid is mounted to the pair of rails of the open section of the raceway portion.

5,664,958

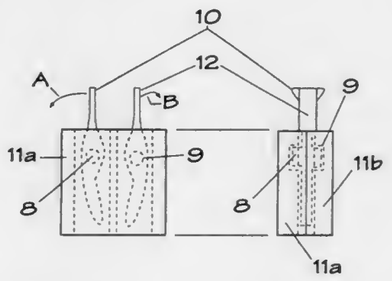
ELECTRICAL CONNECTOR FOR WORN ELECTRICAL OUTLETS

Dale Chadwick, Endwell; Mark Levy, Vestal; Gary Roden, and John Schneider, both of Apalachin, all of N.Y., assignors to Society of American Independent Inventors, Binghamton, N.Y.

Filed Jan. 22, 1996, Ser. No. 589,530

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—269.2 **12 Claims**



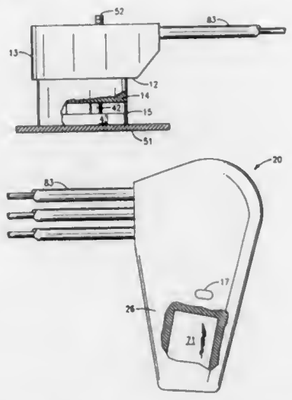
1. An adapter for securing the contact prongs of a conventional electric plug to a worn outlet, comprising:

a) a housing having at least two opposing, nonconducting side portions, each side portion having a top and a bottom;

b) a set of two contact prongs spaced apart from each other, said contact prongs being movably mounted to at least one of said housing side portions and extending out of the top of said housing; and

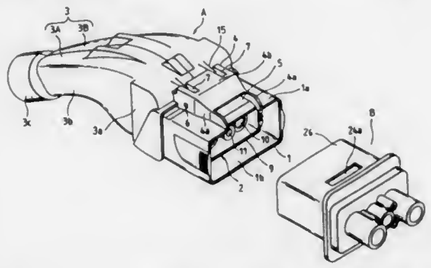
c) said housing having at least one aperture disposed at the bottom thereof, through which electric plug prongs of a conventional plug can be inserted to force said contact prongs into electrical connection therewith.

5,664,959
ELECTRICAL CONNECTOR PLUG
Richard J. Duell, Syracuse, and Roger J. Voorhis, Pennellville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Continuation of Ser. No. 573,097, Dec. 15, 1995. This application Dec. 23, 1996, Ser. No. 772,477
Int. Cl.[6] H01R *13/52*
U.S. Cl. 439—278 **2 Claims**



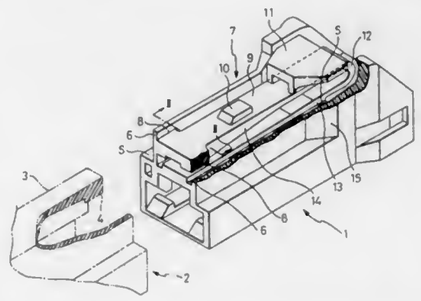
1. An improved electrical plug connector of the type having a body with a plurality of axially aligned cavities for receiving therein, respective terminal posts extending axially from a terminal assembly of a compressor having a thermal sensor in direct contact with its shell, wherein the improvement comprises:
a flexible skirt integrally attached to and extending axially from the body and so sized and shaped that when the connector is installed over the terminal posts, said flexible skirt fits tightly over the terminal assembly to provide a sealed relationship therebetween;
and said body includes an ear extending laterally from one side thereof, said ear being so sized and shaped as to fit snugly over said sensor to cover and hold it in place against the compressor shell.

5,664,960
POWER FEED CONNECTOR
Hirotaka Fukushima, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Nov. 30, 1995, Ser. No. 565,042
Claims priority, application Japan, Dec. 1, 1994, 6-298454
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—310 **8 Claims**



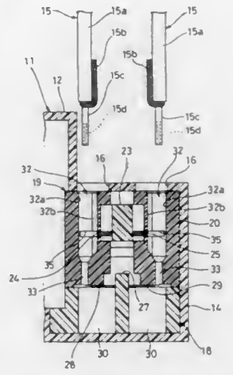
1. A power feed connector adapted to be detachably fitted relative to a power-receiving connector mounted on a vehicle body or the like comprising:
an outer casing;
a connector body slidably mounted within said outer casing, and receiving a plurality of terminals connected respectively to wires; and
a handle pivotally connected to said outer casing at one side of a front end portion of said handle, and directly connected in a loosely-fitted manner to a rear end portion of said connector body at the other side of the front end portion of said handle, wherein when said handle is pivoted with respect to said outer casing, said handle moves said connector body relative to said outer casing to connect and disconnect said connector body from the power-receiving connector.

5,664,961
CONNECTOR HOUSING WITH LOCK
Masanori Tsuji, and Motohisa Kashiyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Continuation of Ser. No. 377,613, Jan. 25, 1995, abandoned. This application Dec. 6, 1996, Ser. No. 760,898
Claims priority, application Japan, Jan. 27, 1994, 6-023550
Int. Cl.[6] H01R *13/625*
U.S. Cl. 439—358 **6 Claims**



1. A locking device for an electrical connector housing, comprising:
a lock arm disposed on a single outer wall surface of the connector housing, said lock arm having a front portion and a rear portion arranged in a longitudinal direction of said lock arm;
a retaining projection, disposed on an upper portion of said lock arm, for engaging a retaining portion of a mating connector housing;
an unlocking portion, disposed on said upper portion of said lock arm rearward of said retaining projection, for releasing engagement of said connector housing with the mating connector housing;
a pair of protective walls, disposed vertically on said outer wall surface of said connector housing, for protecting lateral portions of said lock arm, front inner wall surfaces of said protective walls respectively supporting both lateral sides of said front portion of said lock arm;
a resilient band portion having a support portion, integrally formed with said rear portion of said lock arm, supported on said outer wall surface by said support portion, said band portion being substantially U-shaped, wherein said protective walls extend in said longitudinal direction from said front portion toward said rear portion such that said lock arm is disposed therebetween and protected thereby; and
reinforcing ribs, disposed projecting from edges of a lower portion of said lock arm for reinforcing said lock arm, said reinforcing ribs tapering from said front portion of said lock arm to said rear portion of said lock arm such that a height of each of said ribs is greater at said front portion than at said rear portion.

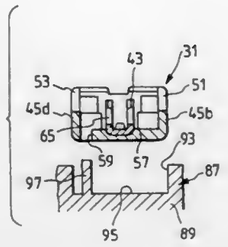
5,664,962
CABLE CONNECTION FOR SIGNAL PROCESSOR OF SEPARATE TYPE SENSORS
Sadao Noda, Iwakura, Japan, assignor to Sunx Kabushiki Kaisha, Tachikawa, Japan
Filed Jun. 13, 1994, Ser. No. 258,783
Claims priority, application Japan, Jun. 14, 1993, 5-141851
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—394 **2 Claims**



1. A signal processor for a sensor, comprising:
an enclosure for accommodating therein a signal processing circuit for processing an electrical signal;
a coaxial cable, having a shield wire, an outer insulating sheath, and an inner insulating sheath, the coaxial cable being coupled to the enclosure so that the electrical signal is transmitted therethrough;
a cable holder provided in the enclosure and having a first through hole into which the coaxial cable is inserted with the shield wire being folded up along the outer insulating sheath and a second through hole axially contiguous to the first through hole such that the inner insulating sheath is inserted thereinto;
first and second terminals disposed in the enclosure to intersect at a right angle to the first and second through holes of the cable holder respectively, the second terminal having a distal end capable of severing the inner insulating sheath of the coaxial cable; and
a lever provided in the enclosure to be manually movable, the cable holder being moved toward both terminals when the lever is moved, so that the first and second terminals are moved across the first and second through holes respectively, whereby the first terminal comes into contact with the shield wire of the coaxial cable and the second terminal severs the inner insulating sheath of the coaxial cable to thereby come into contact with a cable core of the coaxial cable.

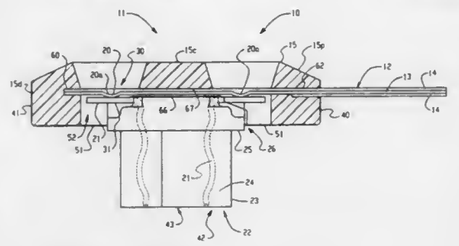
5,664,963
PRESS-CONNECTING JOINT CONNECTOR INCLUDING A RECEIVING STAND FOR CUTTING EXCESS WIRE PORTIONS
Hiroshi Yamamoto, and Akira Kato, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Division of Ser. No. 567,248, Dec. 5, 1995. This application Jul. 22, 1996, Ser. No. 685,979
Claims priority, application Japan, Dec. 5, 1994, 6-300775
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—409 **3 Claims**

1. A press-connecting joint connector comprising:
a connector housing defining a wire inserting section therein, said connector housing having an opening on an upper side thereof;



a wire retaining member disposed in said wire inserting section, said wire retaining member including at least a pair of wire cutting blades for cutting the insulation of said wires so as to electrically interconnect said wires, wherein said connector housing includes a cutter receiving hole provided in a bottom surface thereof into which a cutter is insertable to cut a waste end portion of at least one of said plurality of wires inside said connector body;
a cover for covering said opening; and
a receiving stand having a receiving portion for fixedly retaining said connector body, said cutter being fixedly secured to said receiving stand and extending therefrom.

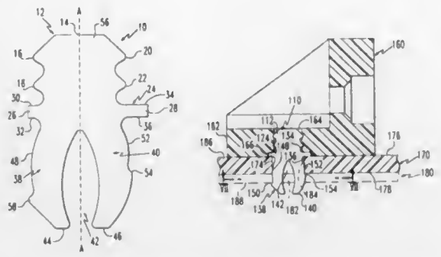
5,664,964
HIGH DENSITY TERMINATION SYSTEM WITH MOLDED-ON STRAIN RELIEF FRAME, AND METHOD
Larry M. Crofoot, Perry, and Alan L. Roath, Madison, both of Ohio, assignors to Ohio Associated Enterprises, Inc., Painesville, Ohio
Filed Apr. 10, 1996, Ser. No. 630,518
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—495 **54 Claims**



1. A termination comprising:
a substrate having a plurality of electrical conductors,
a strain relief frame molded to the substrate,
a connector housing separate from the frame and having a plurality of electrical terminals positioned with respect to the frame to orient the terminals with respect to the conductors, and
a plurality of the terminals being directly electrically connected to respective electrical conductors.

5,664,965
DEVICE FOR FIXING AN ELECTRICAL CONNECTOR TO A PRINTED CIRCUIT BOARD
Stephen L. Clark, Dillsburg, and David C. Horchler, Millersburg, both of Pa., assignors to Berg Technology, Inc., Reno, Nev.
Filed Mar. 29, 1996, Ser. No. 624,267
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—567 **18 Claims**

1. An assembly comprising:



(a) a first printed circuit board (PCB) having a top surface and a bottom surface and a mounting aperture extending between said top surface and said bottom surface;

(b) a component of an electrical connector having a mounting foot with a mounting aperture; and

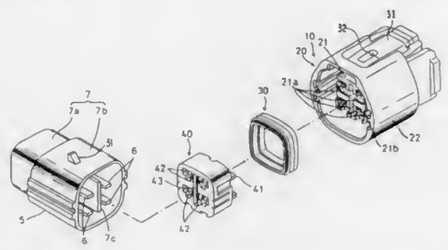
(c) a conductive metallic boardlock member extending axially through said aligned mounting apertures in said PCB and said mounting foot and having a mounting foot engagement means from where opposed first and second resilient legs depend from said mounting foot engagement means and said first leg has a first outer arcuate edge and a first projection extends outwardly from said first outer arcuate edge and said second leg has a second outer arcuate edge and a second projection extends outwardly from said second outer arcuate edge and said first and second projections are axially displaced from one another and wherein said first projection abuts against the bottom surface of the first PCB and said second projection is adapted to abut against a bottom surface of a second PCB which is different in thickness from said first PCB.

5,664,966

CONNECTOR WITH A CAP-TYPE RETAINER

Akihito Maegawa; Nobuyoshi Tanaka; Yukinori Saka, and Kiyofumi Ichida, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Apr. 26, 1996, Ser. No. 638,207
Claims priority, application Japan, Apr. 28, 1995, 7-128992
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **10 Claims**



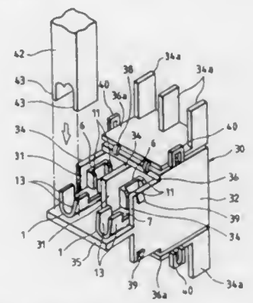
1. A retainer for a connector having a plurality of sockets and a terminal insertable in each socket thereof, said retainer having two projections, one each fully engageable in a respective socket of the connector when terminals of the sockets are correctly inserted, and not fully engageable when terminals of the sockets are not correctly inserted, wherein the projections are joined at the free ends thereof by a substantially orthogonal linking portion.

5,664,967

PRESS-CONNECTING CONNECTOR

Yuji Hatagishi, and Chieko Torii, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,680
Claims priority, application Japan, Sep. 19, 1994, 6-223749
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—596 **14 Claims**



1. A connector, comprising:

a first housing having a terminal receiving chamber provided therein for receiving a terminal including an electrical contact portion and a wire connecting portion for connecting a wire, said terminal receiving chamber being defined by first partition walls on opposite side thereof, a flat base plate and a first outer wall,

wherein said wire connecting portion of said terminal is exposed from said terminal receiving chamber; and

a covering member for covering said wire connecting portion, said covering member being either integrally or separately formed on said first housing, and

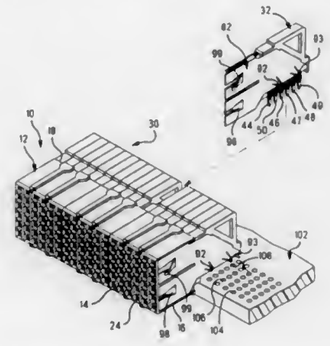
wherein said wire connecting portion is deformed so as to clamp to said wire by a tool including crimp assisting walls for assisting in deforming said wire connecting portion, when said wire connecting portion is not covered by said covering member.

5,664,968

CONNECTOR ASSEMBLY WITH SHIELDED MODULES

Scott Keith Micklevicz, Denver, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 29, 1996, Ser. No. 625,591
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—608 **6 Claims**



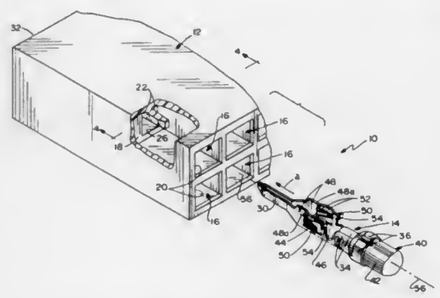
1. An electrical connector assembly comprising an insulating housing and assembled thereto a plurality of terminal modules and electrically conductive shields therebetween, each terminal module having a plurality of contacts including a mating contact portion, a conductor connecting portion and an intermediate portion therebetween with some or all of the intermediate portions encapsulated in an insulative web, each of the modules having an electrically conductive shield mounted thereto, the connector assembly characterized in that each shield includes at least a first resilient arm in electrical engagement with a selected one of the contacts in the module to which the shield is mounted and at least a second resilient arm extending outwardly from the module and in electrical engagement with an other selected contact in an adjacent module of the connector assembly.

5,664,969

ELECTRICAL CONNECTOR WITH IMPROVED TERMINAL POSITIONING MEANS

Bruce A. Peterson, Schaumburg; Richard A. Faje, Westmont; Frank L. Geoghegan, Hinsdale; Paul A. Rattin, Western Springs, and Joseph R. Weltz, Batavia, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 24, 1995, Ser. No. 518,952
Int. Cl.[6] H01R *13/432*
U.S. Cl. 439—746 **8 Claims**



1. An electrical connector for connecting a conductor of an electrical wire to a terminal of a mating connector, the electrical connector including

a dielectric housing having at least one elongated terminal-receiving cavity defining a longitudinal axis,

a terminal received in the cavity and having a mating portion adapted to mate with the terminal of the mating connector, a conductor-terminating portion, and an intermediate portion joining the mating and conductor-terminating portions, the intermediate portion including a base and a pair of elongated resilient side walls extending from the base, each side wall having an upper free end portion,

wherein the improvement in the connector is the terminal positioning and stabilizing means comprising:

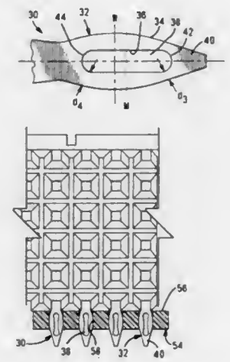
a pair of elongated slots within a wall of the cavity, each slot having opposed inner walls and being adapted to slidingly receive the free end portion of a respective one of the side walls of the terminal where both opposed surfaces of each terminal sidewall contact a respective inner wall of a respective slot to prevent movement of the terminal laterally or angularly of the longitudinal axis.

5,664,970

COMPLIANT SECTION FOR ELECTRICAL TERMINAL MOUNTED TO A CIRCUIT BOARD

Wayne Leroy Millhimes, Hershey, and Charles Dudley Copper, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 29, 1996, Ser. No. 610,097
Int. Cl.[6] H01R *13/42*
U.S. Cl. 439—751 **2 Claims**



1. An improved compliant section for a terminal connectable to a circuit board, the compliant section extending from a body section of said terminal and being insertable in a through-hole of a selected diameter in the circuit board having a selected thickness, the compliant section being of the type having legs with outer edges thereof forming selected shapes axially therealong and an elongate hole having a selected shape stamped transversely through the terminal separating the legs and defined between inwardly facing edges thereof, said oppositely facing leg outer edges being adapted to enter and become engaged with sidewalls of said through-hole in an interference fit to create force for retaining the terminal's compliant section in the through-hole and the terminal to the circuit board, said selected shapes of said leg outer edges being continuous arcuate surfaces, first diverging then converging toward an insertion end of said terminal and having a widest dimension at a selected axial location; and said hole being formed from parallell inwardly facing edges between first and second ends and having a transverse median at a selected axial location, the improvement comprising:

said hole being offset axially with respect to said outer edges of said compliant section such-that the transverse median of said hole is staggered axially with respect to said widest dimension of said outer edges of said legs and such that at the first end of said hole, the width of each said leg portion between outer and inner edges at said hole first end is less than the width of each said leg portion at said hole second end opposite said hole first end.

5,664,971

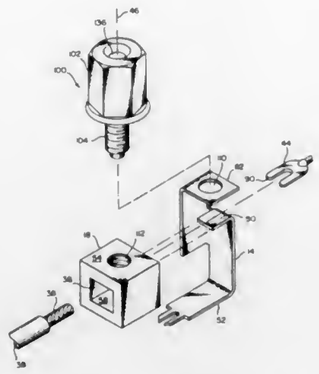
TERMINAL BINDING POST

John W. Coy, 11838 SW. 256th La., Vashon, Wash. 98070

Filed Aug. 1, 1996, Ser. No. 691,879
Int. Cl.[6] H01R *4/36*
U.S. Cl. 439—811 **16 Claims**

1. A terminal binding post for selectively mounting a wire and a fork connector thereto, the terminal binding post which comprises:

a housing formed of an electrically non-conductive material, a perimeter wall of the housing defining a cavity therein and an exterior thereout, the perimeter wall of the housing further defining an aperture extending between the exterior and the cavity of the housing, the aperture sized and dimensioned to receive the wire therethrough and a slot extending between



the exterior and cavity of the housing, the slot sized and dimensioned to receive the fork connector therethrough;

a contact member received within the cavity of the housing, the contact member having a first tab, the contact member formed of an electrically conductive material;

a clamping member having an exterior clamping surface and a clamping slot defined therein, the clamping slot defining an interior clamping surface, the first tab of the contact member received in the clamping slot, the clamping slot and the first tab defining a wire receiving space therebetween, the clamping member and the contact member further defining a fork connector receiving space therebetween, the fork connector receiving space separate from the wire receiving space, the clamping member received in the cavity of the housing for movement therein with respect to the contact member between a wire engaged position in which the clamping member securely engages the wire against the first tab and a wire disengaged position spaced from the wire engaged position, a fork connector engaged position in which the clamping member securingly engages the fork connector against the contact member and a fork connector disengaged position in which the clamping member is spaced from the fork connector engaged position;

means for moving the clamping member between the wire engaged position, the wire disengaged position, the fork connector engaged position and the fork connector disengaged position.

5,664,972
ELECTRICAL CONTACT ELEMENT

Bernd Zinn, Ennepetal, and Srboslav Lolic, Wuppertal, both of Germany, assignors to Grote & Hartmann GmbH & Co. KG, Wuppertal, Germany

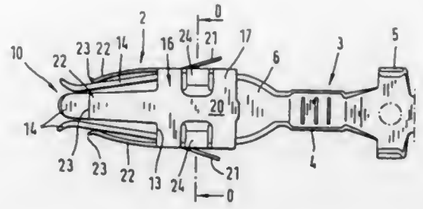
Continuation of Ser. No. 53,457, Apr. 27, 1993, Pat. No. 5,437,566. This application Dec. 29, 1994, Ser. No. 365,899
Claims priority, application Germany, Jul. 7, 1992, 9209097 U; Sep. 2, 1992, 9211819 U
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—839 **22 Claims**

1. Electrical contact element comprising:

a perforated piece of sheet metal that has a connection region (3) on one end for an electrical connection and a contact region (2) with a polygonal cross-sectional spring-arm base (7) with smooth walls on the other end;

the walls of the spring arm base (7) having front edges facing away from the connection region (3);

at least one spring arm (14) extending from each front edge of the polygonal spring arm base to form a contact casing (1) with a polygonal plug hole (15) whereat the spring arms are in mutually spaced-apart relation defining contact sites; and wherein

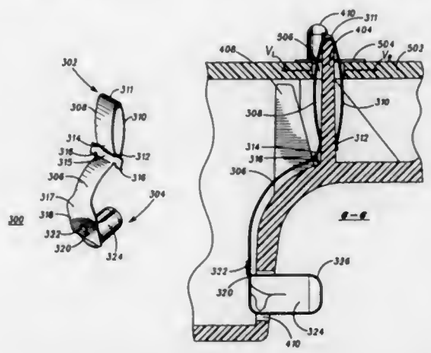


the spring arms (14) extend toward each other as far as the location of the plug hole (15) so as to form the plug hole, and then bend away at an angle to the outside to form a positioning funnel (10) for a contact plug pin in a front free end region of the spring arms.

5,664,973
CONDUCTIVE CONTACT

Steven Clark Emmert, Crystal Lake; Louis J. Lundell, Buffalo Grove; Michael Patrick Murray, Chicago, and Terrence E. Derdzinski, Fox River Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1995, Ser. No. 369,053
Int. Cl.[6] H01R *4/18*
U.S. Cl. 439—862 **17 Claims**



1. A single piece conductive contact comprising:

a contact having a first convex beam spring and a second convex beam spring opposing said first convex beam spring, said first convex beam spring and said second convex beam spring being coupled to form a vertex;

a spring portion having a fulcrum at an end of said second beam spring; and

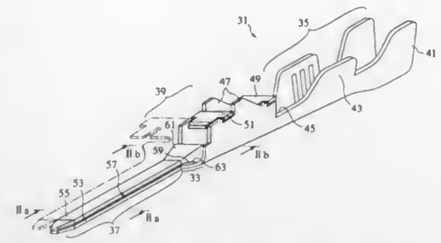
a charging post positioned at an end of said spring portion.

5,664,974
MALE TERMINAL AND METHOD OF MANUFACTURING THEREOF

Takayoshi Endo, and Osamu Sugiyama, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 30, 1995, Ser. No. 565,359
Claims priority, application Japan, Nov. 30, 1994, 6-297303
Int. Cl.[6] H01R *9/24*
U.S. Cl. 439—884 **20 Claims**

1. A male terminal for connecting a wire to a female terminal, said male terminal having a central longitudinal axis and being accommodated in a connector having a terminal accommodating chamber, comprising:



a wire connection part connected to said wire;

a substantially planar electrical contact part for electrical connection to said female terminal and comprising first and second substantially planar lateral free marginal portions, said first lateral free marginal portion being folded toward the second lateral free marginal portion so as to overlap the same and form an electrical contact part seam therebetween, said electrical contact part seam being laterally offset from said central longitudinal axis;

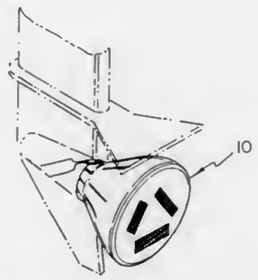
an engagement part arranged between said wire connection part and said electrical contact part, said engagement part being engaged in said terminal accommodating chamber of said connector when said male terminal is accommodated in said connector;

a joint part for connecting said engagement part with said electrical contact part comprising an upper plate portion and a lower plate portion, said upper plate portion being folded over said lower plate portion to overlap the same and form a joint part seam therebetween, said joint part seam being laterally offset from said central longitudinal axis whereby said upper plate portion extends transversely across said central longitudinal axis.

5,664,975
REFLECTIVE PROPELLER SAFETY COVER

William L. Carlisle, 3408 Peppermint Dr., Hopkinsville, Ky. 42240

Filed Sep. 28, 1994, Ser. No. 314,097
Int. Cl.[6] B63H *1/14*
U.S. Cl. 440—49 **1 Claim**



1. A reflective propeller safety cover for attaching over a propeller of a motor boat being towed by a trailer for preventing rear-end accidents from occurring comprising, in combination:

a bag formed of a fluorescent orange cloth material, the bag having a central axis, a generally circular flat bottom wall and a side wall integrally coupled to the periphery of the bottom wall and extended therefrom to terminate at an edge and with the bag having a fixed axial length as defined between the bottom wall and the edge along the central axis and an exterior diameter that is about 72% greater than the fixed axial length, the side wall and bottom wall thereby defining a hollow interior sized for holding a propeller of a motor boat, the edge thereby defining a mouth for allowing access to the interior for receiving a propeller and with the edge further turned back upon itself and secured to the side wall to create an annular channel, the side wall further having a lower portion and an upper portion with the lower portion having a generally concave shape as referenced with respect to the interior and with the upper portion having a generally convex shape as referenced with respect to the interior and with the lower portion of the side wall having a larger radius of curvature than the upper portion of the side wall, the side wall additionally having a generally rectangular aperture disposed therethrough for allowing the bag to be drained and a propeller that is disposed within the interior of the bag to be dried, a flap having a pair of parallel side edges and an end edge extended therebetween secured adjacent to the aperture and positionable therover to create a door, a pile type fastener secured about the periphery of the aperture, and a complimentary pile type fastener secured about the periphery of the door and with the fasteners coupled together in one position to prevent access to the interior through the aperture and the fasteners decoupled from each other in another position to allow access to the interior through the aperture;

a drawstring disposed within the channel to define an adjustable loop and with its ends extended from the channel and through the side wall, the loop adjustable in a tightened configuration for preventing access to the interior and the loop adjustable in a loosened configuration for allowing such access;

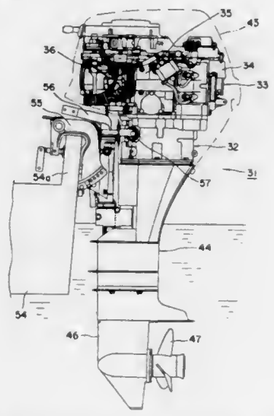
a slide lock slidably secured to the free ends of the drawstring for setting the adjustment of the loop; and

a plurality of reflective tape strips coupled to the bottom wall of the bag for providing a visual indication when light is shined thereupon.

5,664,976
OUTBOARD MOTOR

Shuichi Mishima, Iwata; Atsushi Noda, Hamamatsu; Hidetsugu Shimada, Hamamatsu; Masashi Takayanagi, Hamamatsu, and Fumio Matsui, Shizuoka-ken, all of Japan, assignors to Suzuki Kabushiki Kaisha, Shizuoka-ken, Japan

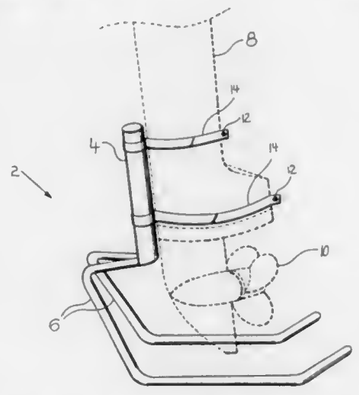
Filed Oct. 1, 1996, Ser. No. 720,746
Claims priority, application Japan, Dec. 4, 1995, 7-315273
Int. Cl.[6] B63H *1/15*
U.S. Cl. 440—52 **1 Claim**



1. An outboard motor comprising, in an installed state, an engine holder, an engine located to an upper portion of the engine holder, a drive shaft housing located to a lower portion of the engine holder for housing a drive shaft extending downward from the engine, and an oil pan formed to the engine holder, the oil pan being provided with a wall section to which steering brackets are secured through upper mounts, wherein a first seal member is disposed at a mating surface portion of an upper surface of the

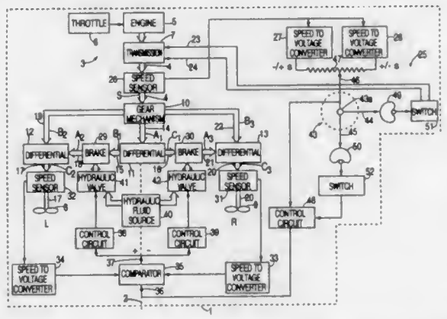
drive shaft housing and a lower surface of the oil pan and a second seal member is disposed at a mating surface of an upper surface of the oil pan and a lower surface of the engine to expose the drive shaft between the first and second seal members.

5,664,977
BOAT PROPELLER SLED
Paul J. Dinkowitz, and Janice M. O'Byrn, both of 1311 Turnbull St., New Smyrna Beach, Fla. 32168
Filed May 3, 1996, Ser. No. 642,559
Int. Cl.[6] B63H *5/125*
U.S. Cl. 440—65 **15 Claims**



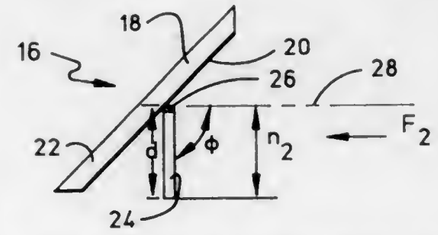
1. A boat propeller sled comprising a spine, at least one strap attached to said spine, and at least one rail attached to said spine, said rail comprising a rear ramp attached to a runner at a rear ramp angle of one hundred fifty_ degrees plus or minus fifteen degrees whereby said boat propeller sled may slide backwards without said rear ramp digging into a surface over which it slides.

5,664,978
PROPULSION SYSTEM FOR A VEHICLE
Edwin W. Howe, 1150 McDonald Pl., Baldwin, N.Y. 11510
Filed Apr. 8, 1996, Ser. No. 629,165
Int. Cl.[6] B63H *20/14*
U.S. Cl. 440—75 **20 Claims**



1. A propulsion system for a vehicle having a longitudinal axis comprising:
a single driving source having a driving shaft;
a pair of driven means, each of said pair of driven means being spaced from and on opposite sides of said longitudinal axis;
a first differential means having an input shaft coupled to said driving shaft and two output shafts;
a second differential means having an output shaft coupled to one of said pair of driven means, a first input shaft coupled to one of said two output shafts of said first differential means and a second input shaft coupled to said driven shaft;
a third differential means having an output shaft coupled to the other of said pair of driven means, a first input shaft coupled to the other of said two output shafts of said first differential means and a second input shaft coupled to said driving shaft; and
a control means coupled to said driving source, said first input shaft and said output shaft of said second differential means and said first input shaft and said output shaft of said third differential means to control the relative speed of each of said pair of driven means to enable controlling the speed of and maneuvering of said vehicle.

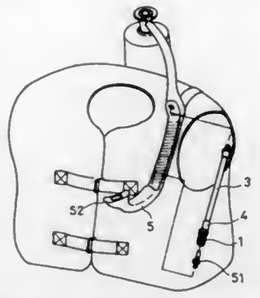
5,664,979
PIVOTING FIN FOR WATERCRAFT
Roger A. Benham, P.O. Box 830, San Diego, Calif. 92112
Continuation of Ser. No. 534,555, Sep. 27, 1995, abandoned.
This application Sep. 12, 1996, Ser. No. 712,959
Int. Cl.[6] B63B *1/00*
U.S. Cl. 441—79 **19 Claims**



1. A three dimensional structure defining a watercraft having a buoyancy for traversing a water surface along its longitudinal axis, comprising:
a hull having a lower surface for normal contact with and support of the hull on a body of water;
a fin having an inner end and an outer end, secured at said inner end to said lower surface and extending into said body of water;
hinge means intermediate said inner and outer ends of said fin for enabling an outer portion of said fin to freely pivot during use in either direction from a central position normal to said lower surface within a range of up to no more than about ninety degrees in said either direction about an axis parallel to the longitudinal axis of said watercraft.

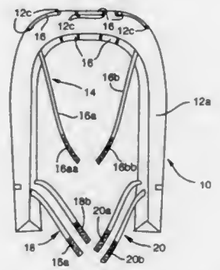
5,664,980
COUPLING FOR AN AIR HOSE OF A DIVER'S JACKET
Ying-Feng Lin, No. 25, Lane 50, Sec. 3, Chung-Hsiao Rd., Sanchung City, Taipei County, Taiwan
Filed Mar. 7, 1996, Ser. No. 611,513
Int. Cl.[6] B63C *9/125*
U.S. Cl. 441—92 **1 Claim**

1. An improved coupling for an air hose of a diver's jacket, comprising a coupling having one end thereof provided with multiple movable steel balls respectively located in multiple suitably sized holes circumferentially formed round said coupling, a restriction ring fitted onto said coupling, said restriction ring having inner annular flanges, a stop steel ring being disposed at a rear end of said coupling for confining said restriction ring on said coupling, a spring being disposed at a rear section of said annular flanges of said restriction ring for urging said restriction ring



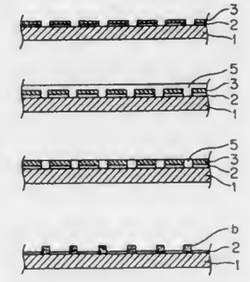
against said stop steel ring, said restriction ring being capable of pushing said, steel balls respectively into said holes of said coupling to project from an inner wall of said coupling, a plurality of oil rings being disposed in said coupling at suitable positions to enhance air-tightness, wherein one end of the air hose is fitted with one end of an outer sleeve which has locked therein an inner tube having multiple annular teeth so that the air hose may be held tightly between said outer sleeve and said inner tube, said outer sleeve having the other end thereof lockably connected to said coupling which accommodates an air intake element, said air intake element having one end portion thereof circumferentially provided with multiple intake holes and a groove for receiving a stop oil ring, said air intake element further having a spring fitted thereon and an annular raised stop portion at the other end thereof; said air intake element capable of urging against an inner rim of said coupling by means of said stop oil ring due to the action of said spring prior to connection of said coupling and a fastening element so that the inner wall of said coupling and said stop oil ring stop said intake holes to constitute suitable air-tightness, said fastening element further having a pushing portion capable of pushing said stop portion of said air intake element to cause said air intake element to displace out of said coupling to expose said intake holes to permit air through the air hose into a mouthpiece when said coupling is connected to said fastening element.

5,664,981
SWIMMING AID AND METHOD OF USE
Charles Lillo, 608 E. Third, Leland, Miss. 38756
Filed Sep. 16, 1996, Ser. No. 714,566
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—114 **17 Claims**



1. A swimming aid for assisting a user in learning how to swim, said swimming aid comprising:
a float member having a U-shaped configuration in use, and being adapted to be placed against the lower back of a user, to fit around the buttocks of the user and to extend down to the thigh area of the user;
securing means, affixed to a central portion of said float member and extending, in use, around the waist of the user, for securing the float member against the lower back of the user, and
further securing means, affixed to said float member at opposite ends thereof and extending, in use, around respective thighs of the user, for securing said opposite ends of said float member to the respective thighs of the user.

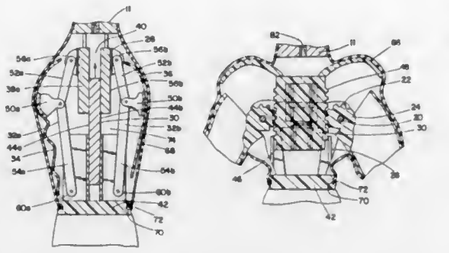
5,664,982
MANUFACTURING METHOD FOR A LIQUID CRYSTAL DISPLAY
Shigeki Nakano, Kajikawa-mura; Kenji Takano, Toyosaka; Akira Awaji, Toyoura-machi, and Takeshi Masuyama, Takatsuki, all of Japan, assignors to Shipley Company, L.L.C., Marlborough, Mass.
Filed Oct. 17, 1995, Ser. No. 544,145
Claims priority, application Japan, Oct. 18, 1994, 6-252285
Int. Cl.[6] C09K *19/00;* **H01J** *9/14*
U.S. Cl. 445—24 **3 Claims**



1. A manufacturing method for a matrix color liquid crystal display device comprising the steps of:
forming a transparent conductive film on a first transparent substrate;
patterning the transparent conductive film by coating the transparent conductive film with a colored, positive resist followed by exposure and development;
coating patterned transparent conductive fills with a blackened negative resist;
forming black stripes between the patterned transparent conductive films by subjecting the negative resist to back exposure through the first transparent substrate and then development;
removing the positive resist remaining on the patterned transparent conductive films;
forming color filters and a transparent electrode pattern on a second transparent substrate; and
sealing a liquid crystal between the first and second transparent substrates.

5,664,983
FIGURE TOY DISPLAYING MUSCLE GROWTH
John Rey Hollis, 21540 Encina Rd., Topanga, Calif. 90290
Filed Dec. 23, 1996, Ser. No. 772,699
Int. Cl.[6] A63H *3/36*
U.S. Cl. 446—199 **8 Claims**

1. A figure toy comprising:
a torso structure movable between a normal condition and an expanded condition, said torso structure being provided with front and rear torso shell members separately mounted to actuator means disposed generally interiorly to said front and rear torso shell members, said front and rear torso shell members having an outwardly directed surface contoured to simulate well-developed musculature;
arms pivotally connected to said torso structure, said arms being selectively pivotable between a first upraised position and a second lowered position, the inward ends of each of said arms being provided with a pinion in operative engagement with



said actuator means such that moving said arms to said lowered position from said upraised position causes said front and rear torso shell members to be moved from said normal condition wherein said front and rear torso shell members are positioned in relative proximity to each other to said expanded position wherein said front and rear torso members are relatively spaced apart;

a generally flexible, elastic and impermeable skin overlying said torso structure and areas of said figure toy adjacent thereto, said skin being in sealed engagement with the underlying structure at the margins of said skin, said skin interiorly defining a substantially airtight cavity, the gas occupying said cavity being approximately at atmospheric pressure when said torso structure is in said normal condition, and;

the volume of said cavity being enlarged and the gas pressure within said cavity being correspondingly reduced when said torso structure is moved to said expanded condition such that a partial vacuum is created within said cavity, said partial vacuum causing said skin to closely conform to the simulated musculature formed on the outer surface of said front torso shell member;

whereby moving said arms from said upraised position to said lowered position causes a visual change in said figure toy from a relatively normal appearance to a heavily muscled appearance, and moving said arms from said lowered position to said upraised position causes said figure toy to return to its relatively normal appearance.

5,664,984

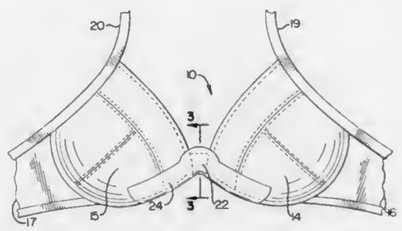
BRASSIERE HAVING FRONTAL MOISTURE CONTROL

Nancy E. Laughridge, 1105 E. Arch St., Lancaster, S.C. 29720

Filed May 8, 1996, Ser. No. 646,846

Int. Cl.[6] A41B *3/12;* **A41D** *27/00;27/14*

U.S. Cl. 450—57 **10 Claims**



1. A brassiere comprising:

a torso encircling body portion having a frontal portion, side portions and a back portion, a pair of breast cups located in said frontal portion, an area connecting said breast cups; and

an easily removable and replaceable moisture absorbent material shaped to fit and adhesively attached to the area between said breast cups and extending under at least a portion of each breast cup, said material being relatively more absorbent than said frontal portion for absorbing perspiration.

5,664,985

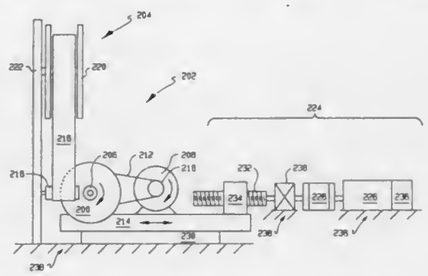
METHOD AND APPARATUS FOR TEXTURIZING DISKS

Roger O. Williams, Fremont; Ira B. Cushing, Sebastopol; Stephen J. Jurovich, Tracy; Curt M. Jacobs, Redwood Shores, all of Calif., and Robert A. Smith, Champaign, Ill., assignors to Exclusive Design Company, Inc., Fremont, Calif.

Filed Mar. 2, 1995, Ser. No. 397,621

Int. Cl.[6] B24B *49/02;51/00;* **G06F** *7/38*

U.S. Cl. 451—5 **71 Claims**



1. For use in connection with a disk texturizing apparatus, a method for creating a disk texturizing pattern comprising:

determining at least one parameter which is to be used for generating said disk texturizing pattern, said disk texturizing pattern defining rotational positions of a disk to be texturized and defining linear positions of a disk with respect to a texturizing medium to be brought into contact with the disk;

generating said disk texturizing pattern from said at least one parameter;

graphically displaying said disk texturizing pattern; and

verifying whether said disk texturizing pattern is in accordance with said at least one parameter;

whereby said disk texturizing apparatus is controllable to texturize disks according to the rotational and linear positions defined by said disk texturizing pattern.

5,664,986

APPARATUS FOR POLISHING A DIELECTRIC LAYER FORMED ON A SUBSTRATE

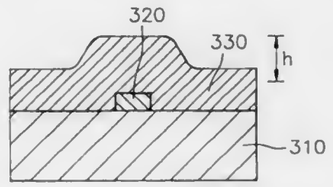
Jae-Woo Roh, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 27, 1995, Ser. No. 563,170

Claims priority, application Rep. of Korea, Feb. 15, 1995, 95-2765

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—7 **13 Claims**



1. An improved polishing apparatus for polishing a dielectric layer deposited on a top surface of a semiconductor substrate, the apparatus having a base provided with a top and a bottom surfaces, a table placed on the top surface of the base and provided with a top surface made of a porous material capable of absorbing particulate matters and a bottom surface, means for holding the semiconductor substrate, means for delivering an abrasive material

to the top surface of the table, means for rotating the holding means to cause a friction between the abrasive material and the dielectric layer, the rotating means being fixed on a predetermined position from the bottom surface of the base, wherein the improvement comprises:

thermally expanding means disposed between the top surface of the base and the bottom surface of the table;

heat insulating means, encompassing the thermally expanding means, for maintaining the temperature inside the thermally expanding means substantially constant; and

means for applying heat to the thermally expanding means to thereby control a vertical position of the table.

5,664,987

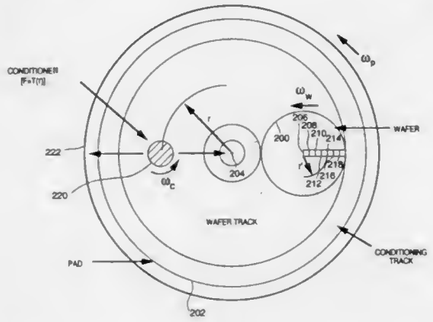
METHODS AND APPARATUS FOR CONTROL OF POLISHING PAD CONDITIONING FOR WAFER PLANARIZATION

Peter Henry Renteln, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 189,208, Jan. 31, 1994, abandoned. This application Sep. 4, 1996, Ser. No. 707,826

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—21 **20 Claims**



1. A method for polishing a top layer of each of a plurality of semiconductor wafers, comprising the steps of:

measuring a thickness of the top layer of at least one semiconductor wafer at a predetermined number of points of the top layer of the at least one semiconductor wafer;

rotating a platen, the platen including a pad covering a planar surface of the platen, the pad having an upper surface;

depositing an abrasive slurry onto the upper surface of the pad;

pressing the upper surface of the pad against successive rotating semiconductor wafers, a rotational axis of the semiconductor wafers offset from a rotational axis of the platen;

remeasuring the thickness of the top layer of the at least one semiconductor wafer at the predetermined number of points of the top layer of the at least one measured semiconductor wafer; and

based at least upon the measured thickness and the remeasured thickness, calculating when a removal rate of the top layer changes from a desired value by a predetermined value at a predetermined radius of the at least one measured and remeasured semiconductor wafer and, in response thereto, conditioning each area of the pad corresponding to the predetermined radius for an interval corresponding to the change in the removal rate at such predetermined radius.

5,664,988

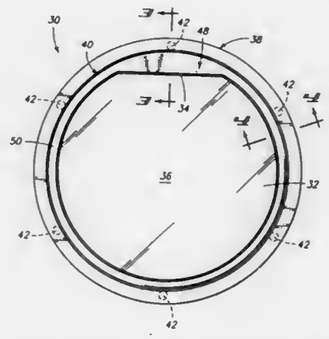
PROCESS OF POLISHING A SEMICONDUCTOR WAFER HAVING AN ORIENTATION EDGE DISCONTINUITY SHAPE

Hugh Stroupe; Sujit Sharan, and Gurtej S. Sandhu, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 299,506, Sep. 1, 1994, Pat. No. 5,533,924. This application Feb. 23, 1996, Ser. No. 605,911

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **14 Claims**



1. A process of polishing a semiconductor wafer having an orientation edge discontinuity shape, the process comprising the following steps:

positioning a wafer to be polished relative to a polishing head of a wafer polishing apparatus, the polishing head cooperatively substantially radially filling an edge void in the wafer created by the wafer edge discontinuity shape;

rotating a polishing platen relative to the polishing head;

rotating the polishing head with the wafer received thereon relative to the polishing platen;

positioning the rotating polishing head in juxtaposition to the rotating polishing platen to bear the wafer and the polishing platen relative to one another to polish the wafer; and

during polishing, allowing limited rotational movement of the wafer relative to the polishing head.

5,664,989

POLISHING PAD, POLISHING APPARATUS AND POLISHING METHOD

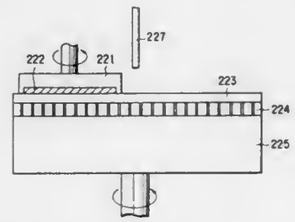
Rempei Nakata, Kamakura; Hisashi Kaneko, Fujisawa; Nobuo Hayasaka, Yokosuka; Takeshi Nishioka, Yokohama; Yoshikuni Tateyama, Hiratsuka; Yutaka Nakano, Yokkaichi, and Yasutaka Sasaki, Natori, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 18, 1996, Ser. No. 683,265

Claims priority, application Japan, Jul. 21, 1995, 7-185862; Jan. 5, 1996, 8-000332

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **30 Claims**



1. A polishing pad, comprising at least:

a first layer having a first main surface serving to polish a substrate and a second main surface; and

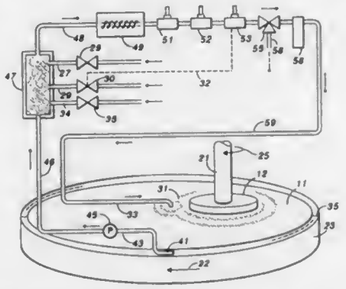
a second layer arranged on said second main surface of the first layer and having fine bags therein, said fine bags being positionally fixed relative to each other and isolated from each other, said fine bags hermetically containing fluid.

5,664,990

SLURRY RECYCLING IN CMP APPARATUS

John A. Adams, Escondido; Gerald A. Krulik, San Clemente, both of Calif., and C. Randall Harwood, Tempe, Ariz., assignors to Integrated Process Equipment Corp., Phoenix, Ariz.

Filed Jul. 29, 1996, Ser. No. 681,794
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—60 **28 Claims**



1. In CMP apparatus including a polishing pad, the improvement comprising:

a catch ring at least partially surrounding said pad for receiving and containing used slurry as said slurry flows off said pad;

a first tube for withdrawing a portion of said used slurry from said catch ring through a first end of said first tube;

a mixing manifold having an output, a first input coupled to said first tube and a second input for coupling to a source of fresh slurry, said mixing manifold blending the fluids supplied to the inputs thereof to produce recycled slurry; and

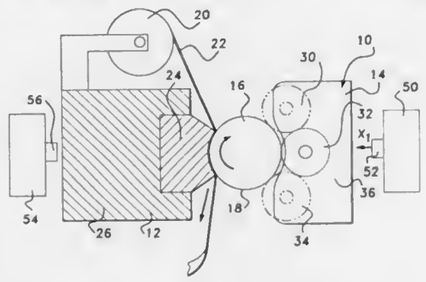
a second tube, coupled to the output of said mixing manifold for returning said recycled slurry to said pad.

5,664,991

MICROFINISHING AND ROLLER BURNISHING MACHINE

Kenneth A. Barton, II, 1477 Haslett Rd., P.O. Box 609, Haslett, Mich. 48840

Filed Jan. 11, 1996, Ser. No. 585,178
Int. Cl.[6] B24B *7/00;9/00*
U.S. Cl. 451—65 **18 Claims**



1. A surface finishing tool for use with a power means for rotating a workpiece about a central axis comprising:

a microfinishing assembly adapted to be positioned adjacent said workpiece and having at least one finishing means for surface finishing said workpiece, said at least one finishing means lying in a plane generally perpendicular to said central axis of rotation of said workpiece; and

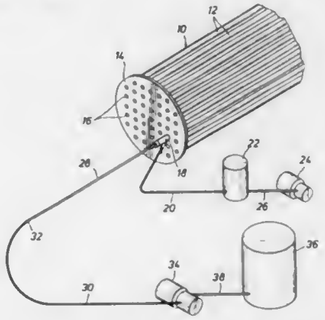
a burnishing assembly for applying a burnishing pressure to said workpiece; said burnishing assembly positioned adjacent said workpiece and spaced apart from said microfinishing assembly, said burnishing assembly having at least one burnishing roller lying in said plane generally perpendicular to said central axis of rotation of said workpiece wherein said microfinishing assembly and burnishing assembly are operable upon rotation of said workpiece to microfinish and burnish said workpiece respectively and said at least one burnishing roller is located directly opposite said at least one finishing means.

5,664,992

APPARATUS AND METHOD FOR CLEANING TUBULAR MEMBERS

Robert V. Williams, Jr., Houston, Tex., assignor to AbClean America, Inc., La Porte, Tex.

Filed Jun. 20, 1994, Ser. No. 262,742
Int. Cl.[6] B24C *3/32*
U.S. Cl. 451—76 **12 Claims**



1. An apparatus for cleaning a tubular member having an entrance end and an interior wall comprising:

a source of a pressurized gas/particulate solids mixture;

a source of a pressurized liquid medium;

means to introduce said pressurized liquid medium into said tubular member, said means for introducing said liquid medium comprising,

a conveying tube, said conveying tube having a first end for extending into said tubular member, and

a head assembly connected to said first end of said conveying tube, said head assembly including first nozzle means for accelerating liquid medium from said conveying tube in a direction at an angle, measured in the direction of flow of said liquid medium in said conveying tube, of 90° or less to the direction of flow of said liquid medium in said conveying tube, said head assembly further including a nose portion, said nose portion including a deflecting surface for enhancing direction of said liquid medium from said conveying tube into a radially outward pattern toward said interior wall, said nose portion further including a passageway, said passageway being in open communication with said axially extending bore and there are second nozzle means for directing liquid medium from said conveying tube into a radially outward pattern toward said interior wall, said second nozzle mean serving to accelerate said liquid medium;

means for introducing said pressurized gas/particulate solids mixture into said tubular member whereby said interior wall

guides said gas/particulate solids mixture along said tubular member in a direction away from said entrance end into said tubular member and in generally surrounding relationship to said conveying tube, at least a portion of said particulate solids being entrained in, and accelerated by, said liquid medium from said first nozzle means; and

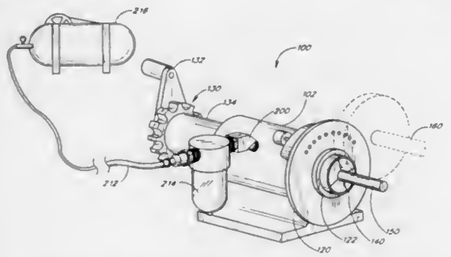
means for moving said conveying tube and said head assembly axially along the interior of said tubular member.

5,664,993

AIR BEARING FOR A SPIN INDEX FIXTURE

Miklos M. Huszar, Huntington Beach, Calif., assignor to TMX Engineering & Manufacturing, Santa Ana, Calif.

Filed Oct. 31, 1995, Ser. No. 550,718
Int. Cl.[6] B24B *41/06;* **F16C** *32/06*
U.S. Cl. 451—402 **6 Claims**



1. A spin index fixture comprising:

a housing, said housing having an air shaft formed therein;

an inner sleeve within said housing, said inner sleeve having an inner surface and an outer surface, said outer surface having grooves formed therein, said inner sleeve having air inlet holes formed between said grooves and said inner surface;

a spindle journaled within said inner sleeve and held within said housing by collars, said spindle being spaced apart from said inner sleeve by a clearance volume which allows movement of said spindle within said inner sleeve;

a hand crank coupled to said spindle;

a collet affixed to the front of said spindle; and

an air fixture affixed to said housing for connection to a source of pressurized air;

wherein said grooves and said air inlet holes form passages which interconnect said air fixture through said housing and said inner sleeve to communicate pressurized air into said clearance volume between said inner sleeve and said spindle, said pressurized air providing an air bearing between said inner sleeve and said spindle, wherein said pressurized air rotates the spindle upon entering said clearance volume between said inner sleeve and said spindle.

5,664,994

PAIR OF FISH-HOLDING TONGS

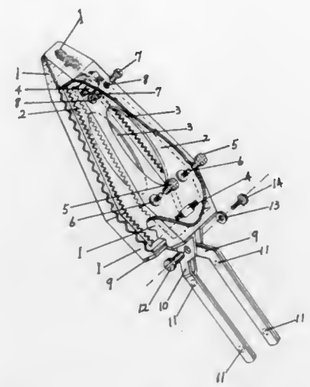
Tsan-Chao Lai, No.20-3, Alley 36, Lane 459, Section 1, Road An Her, City Tainau, Taiwan

Filed Jul. 23, 1996, Ser. No. 685,300
Int. Cl.[6] A22C *25/08*
U.S. Cl. 452—185 **3 Claims**

1. A pair of fish-holding tongs comprising:

two opposing outer head pieces, said head pieces include on an inner side thereof a series of fine raised rounded projections at a first, distal end and a series of larger raised rounded projections along the remaining periphery of said head pieces,

each head piece comprises an inner plate affixed to a central portion of said inner side of said head pieces, each said head pieces is joined with one of said inner plates to form a head piece/inner plate combination, said inner plates comprise a



series of raised rounded projections spaced apart from said rounded projections on each said head piece, said inner plates further include an open elliptical space in a central region thereof, such that when said opposing head pieces are placed in a closed position, a spherical cavity is formed between said inner plates, and

a pair of handles to open and close said head pieces; wherein

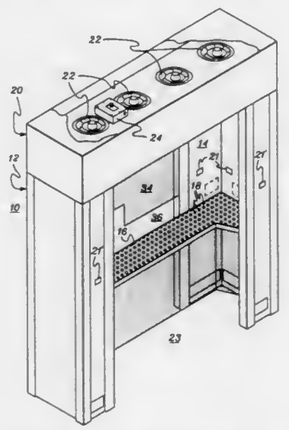
said inner plates are mounted on said head pieces with adjustable spring means situated between said head pieces and said inner plates, such that pressure exerted by said inner plates is changed by a user of said tongs altering an adjustment mechanism of said spring means, said adjustment mechanism is included in each of said head piece/inner plate combination.

5,664,995

ENVIRONMENTAL ENCLOSURE APPARATUS WITH AIR FLOW CONTROL AND BALANCING

Kevin Michael O'Keefe, Troy, N.Y., assignor to O.K. Filters Company, Inc., Troy, N.Y.

Filed Jun. 21, 1996, Ser. No. 669,878
Int. Cl.[6] F24F *3/16;* **B08B** *15/02*
U.S. Cl. 454—58 **48 Claims**



16. An environmental enclosure apparatus for disposition in a room containing conditioned gaseous fluid, the environmental enclosure apparatus comprising:

a workstation stand having a work chamber defined within the workstation stand;

a fan apparatus for moving gaseous fluid into the work chamber;

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a filter for filtering particulate from gaseous fluid moving into the work chamber;

at least one chase for supplying gaseous fluid to the fan apparatus, each chase being disposed within said workstation stand and extending from a lower portion of said workstation stand to an upper portion of said workstation stand;

wherein an inlet to each chase is disposed at said lower portion of said workstation stand and positioned within said workstation stand for drawing in said conditioned gaseous fluid from the room for supply to said fan apparatus; and

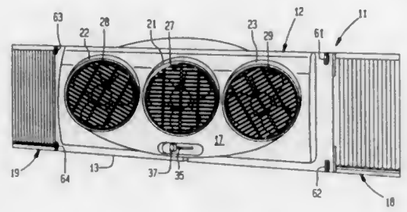
wherein said environmental enclosure apparatus is sized to reside within said room containing said conditioned gaseous fluid.

5,664,996

MULTIPLE BLADE WINDOW FAN

Jui-Shang Wang, Taipei, Taiwan; Rodney Jané , Westboro; John Longan, Natick, both of Mass., and John M. Staton, Briston, Conn., assignors to Duracraft Corporation, Southborough, Mass.

Filed Feb. 28, 1995, Ser. No. 395,721
Int. Cl.[6] F24F *7/013*
U.S. Cl. 454—210 **10 Claims**



1. A portable window fan comprising:

housing means comprising a bottom wall for mounting on a sill of a window with an open sash, a top wall for engaging the open sash, a rear wall defining a plurality of inlet openings, and a front wall defining three discharge regions substantially aligned with said inlet openings and spaced apart in a given direction substantially parallel to said top wall;

three fan blades mounted within said housing means, each fan blade arranged to produce air flow through a different one of said discharge regions;

electrical drive means coupled to said fan blades and operative to induce rotation thereof, said electrical drive means comprising an electric motor operatively coupled to each said fan blade;

grill means covering said discharge regions; and

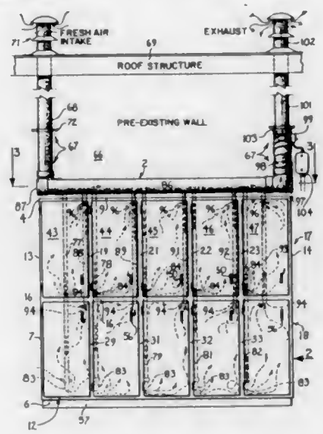
control circuit means including switch means for connecting said electric motors to a source of electrical energy, said switch means being selectively activatable into first, second and third operating conditions; said first operating condition providing energization of only one of said electric motors, said second operating condition providing energization of only two of said electric motors, and said third operating condition providing energization of all three said electric motors.

5,664,997

APPAREL AND EQUIPMENT LOCKER INCORPORATING CONTAMINATION AND TOXIC MATERIALS EXTRACTION AND EVACUATION SYSTEM

William R. Hess, 2297 Walnut Blvd., Walnut Creek, Calif. 94596

Filed Jun. 19, 1996, Ser. No. 666,079
Int. Cl.[6] F24F *7/08*
U.S. Cl. 454—253 **5 Claims**



1. A locker for extracting and evacuating contaminants and toxins from wearing apparel and personal equipment, comprising:

a) an enclosure having walls defining at least one chamber within which contaminated wearing apparel and personal equipment may be suspended for de-contamination;

b) at least one opening providing access to the interior of said at least one chamber to facilitate suspension therein of wearing apparel and personal equipment;

c) a door mounted on said enclosure in operative association with said at least one opening and selectively movable between open and closed condition, said door when in closed condition sealing said at least one opening against the passage of air therethrough; and

d) duct means communicating with said chamber and operable to deliver a moving volume of clean fresh air therethrough so as to entrain toxins and contaminants from the wearing apparel and personal equipment with said moving volume of air and simultaneously evacuate from said locker contamination air.

5,664,998

COMBINED SLOT MACHINE AND RACING GAME

Mac R. Seelig; Jerald Seelig, both of Absecon; Michael Hiltebrand, Pedricktown, and Douglas Cramer, Somers Point, all of N.J., assignors to Atlantic City Coin & Slot Service Co., Inc., Atlantic City, N.J.

Filed Jun. 7, 1995, Ser. No. 488,270
Int. Cl.[6] G07F *17/34*
U.S. Cl. 463—20 **15 Claims**

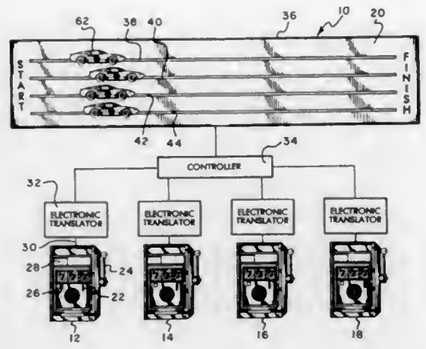
1. A gaming system comprising:

a plurality of slot machines, each machine including means for accepting one or more coins being bet, a display window for displaying the results of each play of the machine and means for determining whether the person playing the machine has won, each machine further including means for generating an output signal indicative of a condition of the machine and including information relating to the number of coins being bet;

a racing display remote from said plurality of machines but connected thereto, said display including a plurality of movable racing elements, the number of said elements being equal to the number of said gaming machines with each element being associated with a different one of said gaming machines;

means for moving each of said racing elements independent of each of the other racing elements, and

means connecting said output signals to said moving means whereby a signal from a machine functions to move its respective racing element through a predetermined distance based on the number of coins bet.

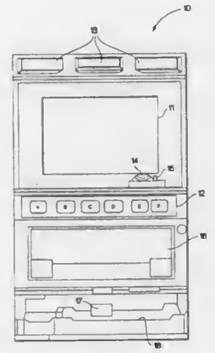


5,664,999

PICTURE AMUSEMENT APPARATUS

Satoru Kurihara, Tokyo, Japan, assignor to Sammy Industries, Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 526,053
Claims priority, application Japan, Jun. 23, 1995, 7-157265
Int. Cl.[6] G07F *17/34*
U.S. Cl. 463—20 **4 Claims**



1. A picture amusement apparatus comprising:

main game start enable means for making a slot machine game as the main game, ready to start on a display screen on condition that a medal is entered;

main game control means for running the main game conditional on the entry of a start signal in the slot machine game that is set to be ready to start by the main game start enable means;

main game determination means for determining the result of the slot machine game run by the main game control means;

sub-game shift selection means that allows the player to have the option to shift to a sub-game on a display different from the slot machine game, in response to the player's external maneuvering on condition that a profit is given in the main game by the main game determination means;

sub-game control means for running the sub-game on condition that the shifting to the sub-game is selected by the sub-game shift selection means, wherein said sub-game control means comprises increase criteria selection means which allows the player to select between two criteria in response to the player's external maneuvering, one criterion that sets the increase of the profit on condition that a select numeral stopped and presented in select numeral indicator partitions is greater than a basic numeral stopped and presented in a basic numeral screen partition and the other criterion that sets the increase of the profit on condition that the select numeral is smaller than the basic numeral, by comparing the basic numeral stopped and presented in said basic numeral screen with the select numeral stopped and presented in said select numeral indicator partitions; and

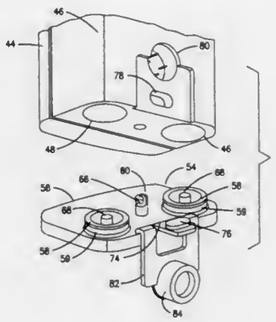
increase/decrease means for increasing or decreasing the profit provided by the main game determination means, according to the result of the sub-game that is run by the sub-game control means.

5,665,000

ERGONOMIC HAND-HELD ELECTRONIC DEVICE WITH KEYPAD INPUT AND DISPLAY SCREEN

Gary L. Burrell, Lenexa, and Jonathan C. Burrell, Olathe, both of Kans., assignors to Garmin Corporation, Olathe, Kans.

Continuation of Ser. No. 305,167, Sep. 13, 1994, abandoned.
This application Jun. 5, 1996, Ser. No. 657,567
Int. Cl.[6] A63F *9/22*; H02G *3/14*
U.S. Cl. 463—46 **2 Claims**



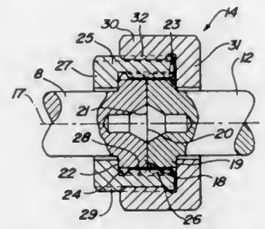
1. In a hand-held electronic device including a housing having exterior faces, the improvement comprising:

one of said faces having a pair of battery cavities opening thereon, said cavities each having a cylinder, with longitudinal axes of said cylinders not being within a plane of said one of said faces, and further including a cover constructed and arranged to close said cavities, said cover including a contact constructed and arranged to operatively associate with an associated one of each of said cavities, and said contacts being electrically connected, wherein said housing further includes an outlet for connection of external devices, said cover including an outlet extension formed of elastomeric material received sealingly in said outlet.

5,665,001
COUPLING FOR CONNECTING TWO SHAFTS

Werner Jacob, Frankfurt; Manfred Niederhüfner, Hanau, and Olaf Orlamünder, Offenbach, all of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Germany

Filed May 31, 1995, Ser. No. 456,157
Claims priority, application Germany, Jun. 3, 1994, 44 19 342.4
Int. Cl.[6] F16D *1/02*
U.S. Cl. 464—182 10 Claims

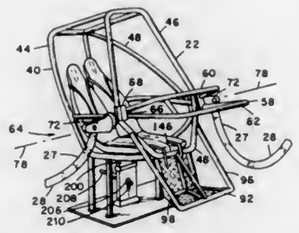


1. A coupling for connecting two shafts against rotation, said shafts defining a rotational axis, said coupling comprising:
first means for transmitting torque, said first torque transmitting means associated with the two shafts, said shafts having tensioning means at their end faces for axially tensioning the shafts relative to one another, said tensioning means includes first and second tensioning sleeves, said first and second tensioning sleeves including threads for axially coupling to one another, with one of said tensioning sleeves being associated with each shaft and being axially supported on said shafts;
said shafts towards end faces supporting one another including a shoulder which projects from an outer circumference and including a predetermined axial length, each of said shoulders including said first torque transmitting means, said first tensioning sleeve including a bore provided with second torque transmitting means which are engagable with said first torque transmitting means of each of the shoulders in a form-fitting manner.

5,665,002
CHAIR ASSEMBLY FOR AN AMUSEMENT RIDE

C. Grant Balwanz, 229 Golden Rod Dr., Seymour, Tenn. 37865

Filed Feb. 29, 1996, Ser. No. 610,161
Int. Cl.[6] A63G *9/00*
U.S. Cl. 472—118 17 Claims

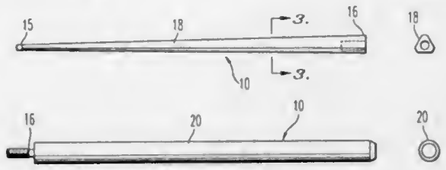


1. A chair assembly adapted to be used with an amusement ride comprising:
a cage having an interior;
a seat secured within the interior of the cage; and
a five-point harness assembly associated with the seat for securing an occupant therein, the harness assembly including a release buckle, two strap sections for draping across the shoulders of the seat occupant, two strap sections for extending around the hips of the seat occupant from opposite sides thereof, and a strap section for extending between the legs of the seat occupant wherein each of said strap sections has an end which is releasably securable to the release buckle at a location disposed in front of the occupant's torso; and
wherein the cage has two opposite sides and the assembly further includes means associated with the opposite sides of the cage for pivotally connecting the cage to the amusement ride for use therewith so that the cage is permitted to pivot relative to the amusement ride and wherein the pivoting means includes two bearing assemblies joined to the cage on opposite sides thereof, and each bearing assembly includes a spindle-carrying portion which is secured in a stationary condition with respect to the cage and a hub-carrying portion which is rotatably secured to the spindle-carrying portion for rotation with respect thereto, and the pivoting means is adapted to be connected to the amusement ride by way of the hub-carrying portion so that when the pivoting means is connected to the amusement ride as aforesaid, the cage is permitted to rotate relative to the amusement ride as the spindle-carrying portion is permitted to pivot relative to the hub carrying portion.

5,665,003
POOL STICK

Robert LeBeau, 607 Travis Blvd., Fairfield, Calif. 94533

Filed Apr. 29, 1996, Ser. No. 639,473
Int. Cl.[6] B29C *43/18*
U.S. Cl. 473—44 4 Claims



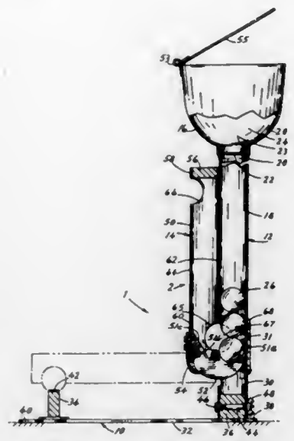
1. A pool cue for striking and propelling a pool ball on the playing surface of a pool or billiard table, said pool cue comprising:
an elongated body tapering from a first end to a second end, said first end having a larger transverse dimension than said second end; said body having a handle section and a slide section, said handle section extending from said first end to substantially midway the length of said elongated body and said slide section extending from substantially midway said elongated body to said second end;
said handle section having a substantially circular crossection along its length and said slide section having a substantially triangular crossection along its length;
said second end having a substantially resilient ball striking cue tip attached thereto for contacting a ball during game play.

5,665,004
AUTOMATIC GOLF BALL DISPENSER

Gene Vlahovic, W141 N5275 Thornhill Ct., Menomonee Falls, Wis. 53051

Filed Nov. 25, 1996, Ser. No. 730,583
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—137 20 Claims

1. An automatic golf ball dispenser comprising:
a platform having a first end and a second end;
a tee being fastened to said second end of said platform;
a delivery unit having a delivery tube and a supply tube;
said delivery tube having a first end and a second end, a first cutout at said first end of said delivery tube, and a second cutout at said second end of said delivery tube;
said supply tube having a first end, a second end, and a cutout located at substantially said second end of said supply tube,

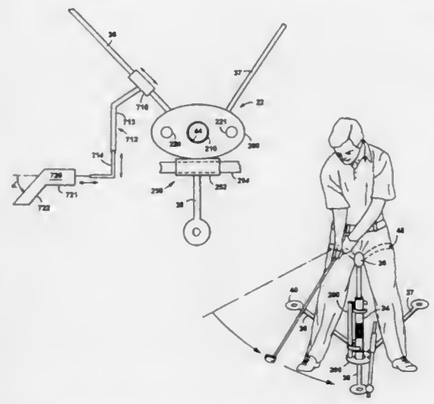


said second end of said supply tube being fastened to said first end of said platform, said first end of said delivery tube being pivotally connected to said supply tube at substantially said second end thereof; and
a projection being fastened to said first end of said platform, said projection slidably fitting into said second end of said supply tube, a bolt and a wing nut rigidly retaining said delivery unit relative to said platform, wherein said delivery unit being easily detachable from said platform by unthreading said wing nut, and removing said bolt.

5,665,005
SPORT SWING TRAINING DEVICE

Gregory A. Ritchie, 137 Hemlock Forest, Mineral, Va. 23117

Filed Aug. 30, 1996, Ser. No. 705,748
Int. Cl.[6] A63B *69/36;69/00*
U.S. Cl. 473—216 37 Claims

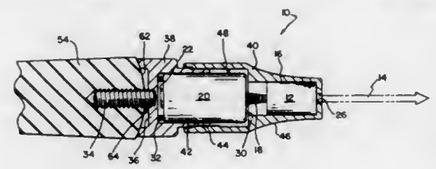


1. A sport swing training device comprising:
a base assembly;
a height adjustable stanchion comprising a first end and a second end, wherein the first end of the stanchion is attachable to the base assembly, the stanchion further comprising a spring to permit tipping of the stanchion when the stanchion is attached to the base assembly;
an adjustable seat secured to the second end of the stanchion; and
a restraining clutch attachable to the base assembly such that, when attached, the restraining clutch limits the range of tipping of the stanchion during a pre-swing stage and a swing stage for hitting a ball.

5,665,006
GOLF SWING TRAINING DEVICE

John Thomas Pellegrini, Michigan City, Ind., assignor to Plane Sight, Inc., Michigan City, Ind.

Division of Ser. No. 511,128, Aug. 4, 1995, Pat. No. 5,544,888.
This application Aug. 12, 1996, Ser. No. 694,402
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—220 10 Claims

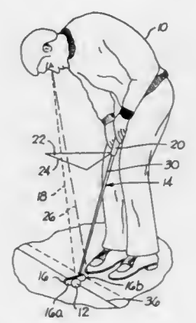


1. A golf swing training device comprising:
a golf club having a shaft defining a longitudinal axis of the golf club, a head at a first end of the shaft and a handle at an oppositely-disposed second end of the shaft, the handle having an aperture in a distal end surface thereof,
a housing secured to the handle of the golf club, the housing having a base surface longitudinally abutting the distal end surface of the handle;
means within the housing for producing a parallel light beam; and
a threaded member projecting from the housing and threadably received in the aperture in the handle so as to draw the base surface of the housing against the distal end surface of the handle and thereby attach the housing to the handle of the golf club such that the parallel light beam is emitted coaxially along the longitudinal axis of the shaft of the golf club in a direction away from the head of the golf club.

5,665,007
GOLF PUTTING TRAINING DEVICE

Eugene T. Tatum, 1617 Euclid Ave., Bowling Green, Ky. 42103

Filed Feb. 1, 1996, Ser. No. 595,279
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—238 15 Claims



1. In combination, a golf putting training device and a putter, said device and putter being used together to train a user to accurately putt a golf ball on a putting surface along a golf putting target line, said device further being

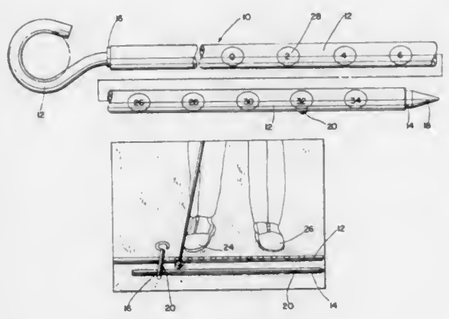
a unitary, substantially planar member releasably secured to a shaft of said putter at a point along a lower edge of a grip of said putter, said member having a shaft connecting portion and an edge defining portion defining a straight edge, said shaft connecting portion extending from said point away from a user holding the putter to said edge defining portion a distance sufficient to permit said straight edge to be visually aligned by a user so that said edge visually touches a heel of a putter head of the putter addressing the golf ball and extends both forward of and behind said heel in a direction substantially parallel to said target line when

(a) said member is secured to said shaft and said shaft is being gripped by the user and

(b) the user's visual alignment to the golf ball on the putting surface as defined by a line extending from the user's eyes to the golf ball is essentially vertical,

said straight edge having front and back ends spaced apart a distance sufficient such that when (i) said connecting member is secured to said shaft a distance of no less than 20 inches from said putter head as measured along said shaft and (ii) the user's visual alignment with the golf ball is essentially vertical, said user's visual alignment does not extend in front of said front end when said putter is at the apex of a back swing and does not extend behind said back end when said putter is at the apex of a follow through swing.

5,665,008
GOLF TRAINING APPARATUS
Scott L. Chaney, Dublin, Ohio, assignor to Distance Doctor. Inc., Dublin, Ohio
Filed Jun. 7, 1996, Ser. No. 664,244
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—271 **8 Claims**



1. A golf training apparatus, comprising:

an elongated tube having a first and second end, and a length sufficient to regulate a golfer's stance;

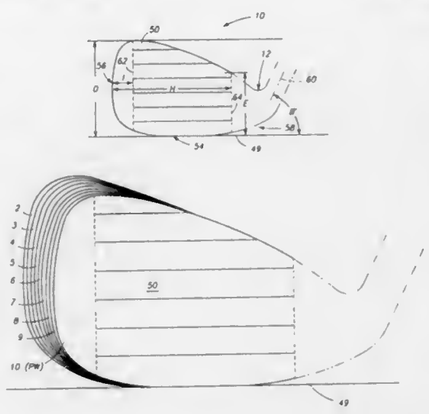
a lower leg lateral restraint having a first and second end, said lower leg lateral restraint movably positioned within said first end of said elongated tube, said first end of said lower leg lateral restraint having a sharp point for facilitating the insertion of said lower leg lateral restraint into the ground;

a lateral foot restraint having a first and second end, said lateral foot restraint movably positioned within said second end of said elongated tube, said first end of said lateral foot restraint having a sharp point for facilitating the insertion of said lateral foot restraint into the ground;

a locking mechanism for locking said elongated tube, said lower leg lateral restraint, and said lateral foot restraint together; and

wherein said elongated tube, said lower leg lateral restraint, and said lateral foot restraint can be disassembled into separate components for use as a golf training apparatus.

5,665,009
CORRELATED SET OF GOLF CLUB IRONS
Brad L. Sherwood, East 511 Eastview Dr., Spokane, Wash. 99208
Filed Aug. 8, 1996, Ser. No. 695,001
Int. Cl.[6] A63B *53/00*
U.S. Cl. 473—291 **23 Claims**



1. A correlated set of individually numbered golf club irons progressing from a high numbered club to a low numbered club; the clubs numbering at least three within the set; individual clubs having a front striking face, a rear face, a sole, a toe, a heel and a hosel; the front striking faces of clubs within the set individually having a total planar area defining a progressively decreasing loft angle in going from the high numbered club to the low numbered club; the substantial rear face of the low numbered club within the set having an open cavity volume provided therein, higher numbered clubs within the set having a respective rear face with an open cavity volume which progressively decreases within the set in going from lower number clubs to higher number clubs.

5,665,010
COMPOSITE GOLF CLUB SHAFT
S. Floyd Mori, Sandy, Utah, assignor to Advanced Retrofit Components Associated Leader (in) Golf, Inc., Lehi, Utah
Filed Feb. 7, 1996, Ser. No. 598,104
Int. Cl.[6] A63B *53/10;53/12*
U.S. Cl. 473—316 **14 Claims**



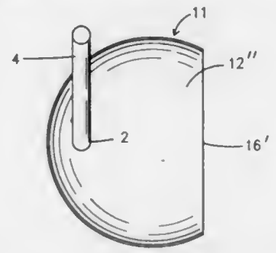
1. A golf club shaft, said shaft having opposite ends and comprising:

a handle portion at one end adapted to receive a hand grip;

a club head mounting portion at the other end adapted to receive a club head;

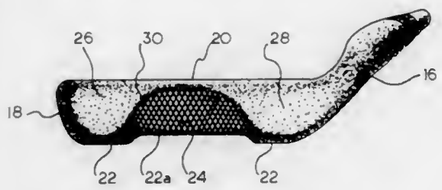
an intermediate portion extending between the handle portion and club head mounting portion, said intermediate portion having a flexible section adjacent the club head mounting portion that flexes during swing of the golf club and a substantially inflexible section adjacent the handle portion that resists flexing during swing of the golf club, said substantially inflexible section extending from the handle portion a distance of between about three inches to about five inches, and including reinforcing material along such section which increases the diameter of the shaft adjacent the handle portion so that the diameter of the shaft adjacent the handle portion is larger than the diameter of the handle portion.

5,665,011
GOLF PUTTER HEAD
Robert Thomas, 3116 Masters Dr., Clearwater, Fla. 34621
Filed Nov. 22, 1996, Ser. No. 755,145
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—324 **16 Claims**



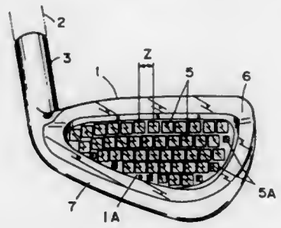
1. A golf club putter head formed entirely of a piece of monolithic synthetic ruby having a hitting surface with a uniform polished appearance and the hitting surface having a degree of flatness measured in light waves, using a zygo interferometer, of less than ¼ wavelength at 632.8 nm across one inch of the hitting surface.

5,665,012
GOLF CLUB HEAD
Julian W. Bunn, III, 1319 capital Blvd., Raleigh, N.C. 27603
Filed Feb. 12, 1996, Ser. No. 600,064
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—328 **23 Claims**



1. A golf club head including a face, back, sole, and a leading edge formed adjacent the sole and face; the sole including a rear edge portion, an intermediate surface and a pair of outer surfaces disposed on opposite sides of the intermediate surface with the outer surfaces being generally elevated relative to the intermediate surface; and wherein in an address position the intermediate surface lies substantially horizontal while the outer surfaces project and extend upwardly, relative to the intermediate surface, from the rear edge portion of the sole to the leading edge of the club.

5,665,013
IRON-TYPE GOLF CLUB HEAD
Kenji Kobayashi, Tsubame, Japan, assignor to Kabushiki Kaisha Endo Seisakusho, Niigata-ken, Japan
Division of Ser. No. 538,296, Oct. 2, 1995. This application Jun. 20, 1996, Ser. No. 665,662
Claims priority, application Japan, Aug. 1, 1995, 7-196725
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—331 **10 Claims**

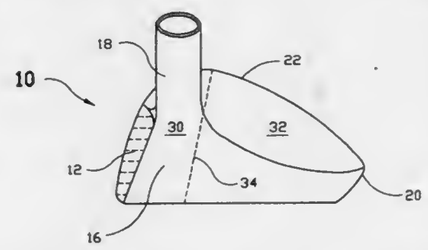


1. An iron-type golf club head comprising:

an iron-type metallic head body having a shaft attaching portion at one side and a face at its front side;

a plurality of cavities formed in a back surface of distinct said iron-type head body, each being rectangular shaped both in profile and plan view opposite to the face thereof, said cavities being formed by forging, whereby forging of said cavities increases the grain flow of the metallic head body within said cavities.

5,665,014
METAL GOLF CLUB HEAD AND METHOD OF MANUFACTURE
Robert A. Sanford, 408 W. Camp McDonald Rd., Prospect Heights, Ill. 60070, and Morris D. Logue, 612 Dunbar Cave Rd., Clarksville, Tenn. 37043
Continuation of Ser. No. 147,357, Nov. 2, 1993, abandoned. This application May 10, 1994, Ser. No. 241,231
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—345 **7 Claims**



1. A two-piece golf club head comprising:

(a) a first metal portion which includes a hitting face that has a thickness which is greater than that of the remainder of the first metal portion, said first metal portion having a shape with no reentrant angles and having been formed by powder metal injection molding; said first metal portion including a peripheral edge which defines a cavity;

(b) a second portion having an edge having a shape which complements the shape of and is adapted to mate with said first metal portion edge;

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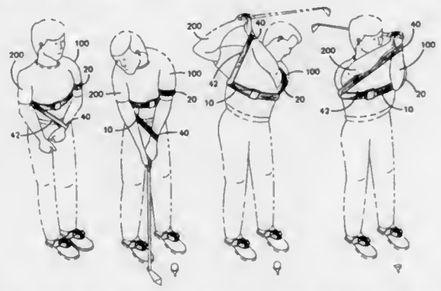
(c) said first metal portion and said second portion being permanently joined together at said edges to form a golf club head having an internal cavity.

5,665,015

GOLF CLUB SWING TRAINING METHOD

James Elwood Clark, III, 31644 Dunn Rd., Denham Springs, La. 70726

Filed May 3, 1996, Ser. No. 643,271
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—409 **18 Claims**



1. A method to improve a golfer's swing, the golfer having a leading arm and a trailing arm, the golfer's swing having a back swing portion, a downswing portion, and a follow through portion, said method comprising the steps of (1) providing an apparatus having a chest loop adapted to encircle the chest area of a golfer, a biceps loop connecting to said chest loop and adapted to encircle a golfer's leading arm biceps area, and a forearm loop connecting to said chest loop and adapted to encircle the forearm area of the leading arm of a golfer, said biceps loop and said forearm loop further adapted to co-operate during a golf swing to restrain the elbow of a golfer's leading arm from detaching during the follow through portion of a golf swing, and have substantially no impact on the golfer's leading arm during the back swing and downswing portion of a golf swing, (2) placing said chest loop about said golfer's chest, (3) placing said biceps loop about said golfer's leading arm biceps area and placing said forearm loop about said golfer's leading forearm area, and (4) said golfer performing a golf swing.

5,665,016

BASKETBALL TRAINING DEVICE

Hollis Burnett, San Jose, Calif., assignor to Leonard Nash, Navato, Calif.

Filed Nov. 20, 1995, Ser. No. 560,885
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—448 **4 Claims**

1. A basketball training device for use with a standard basketball goal, the standard basketball goal having a standard rim and backboard, said device comprising

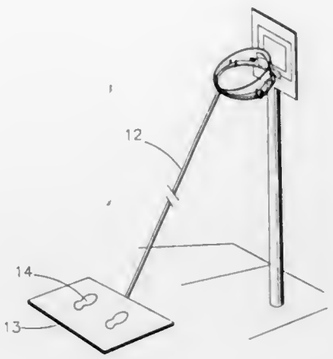
a principal annular member, said principal member comprising:

top and bottom annular surfaces, the bottom annular surface lying substantially in the same plane as the rim of the goal, the top annular surface tangential to the bottom annular surface;

an angle between 20 and 30 degrees between the annular surfaces at the point of tangency and defining the relative positions of the annular surfaces and consequently the desirable trajectory of an ideally shot ball;

a means for securing the principle annular member to the standard rim;

a ball striking flap disposed within the principle annular member at a location where it will be struck only by a ball with a undesirable trajectory;



an indicator switch in communication with the ball striking flap such that the indicator switch is activated upon contact by the ball striking flap when the ball striking flap is hit by a ball thrown by the user;

a power source in electrical communication with the indicator switch; and

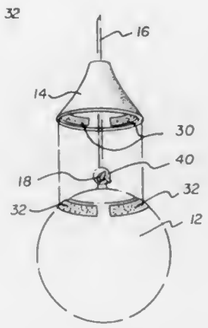
one or more electronic indicators in electrical communication with the power source and indicator switch, such that the indicator is in turn activated by the indicator switch when the ball striking flap is struck by a ball.

5,665,017

TETHER BALL SAFETY COVER

John D. Walters, 18656 Marimba St., Rowland Hts., Calif. 91748

Filed Jun. 28, 1996, Ser. No. 671,003
Int. Cl.[6] A63B *67/10*
U.S. Cl. 473—573 **6 Claims**



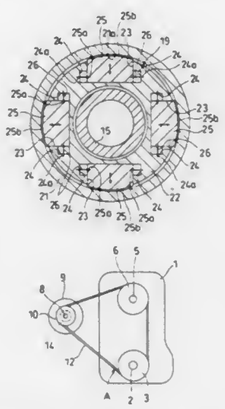
1. A Tether Ball Safety Cover comprising: a tether ball, a conical shaped protector, inner Velcro strips, and outer Velcro strips where the inner Velcro strips are permanently attached to the conical shaped protector and the outer Velcro strips are permanently attached to the tether ball and the inner Velcro strips and the outer Velcro strips are detachably mated to each other and therefore hold the tether ball and the conical shaped protector together, wherein the tether ball is supported by a rope which is threaded through a tether ball eye loop and the rope is terminated with a rope retaining knot where the conical shaped protector further comprises a rope aperture which allows the rope to pass through to the tether ball eye loop.

5,665,018

BELT TRANSMISSION

Hirofumi Miyata, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Kobe, Japan

Filed Aug. 8, 1995, Ser. No. 512,650
Claims priority, application Japan, Aug. 12, 1994, 6-190209
Int. Cl.[6] F16H *9/00*
U.S. Cl. 474—74 **5 Claims**



2. A belt transmission device comprising:

pulleys provided with a driving rotary shaft accompanied with a slight variation in angular velocity and a driven rotary shaft having rotational inertia respectively;

a transmission belt wound between both said pulleys; and

a clutch device through which at least one of said pulleys on said driving and driven rotary shafts is attached to said rotary shaft,

said clutch device comprising:

a one-way clutch for connecting said pulley and said rotary shaft so as to integrally rotate them only in the case of increase in angular velocity of said driving rotary shaft; and

a centrifugal clutch, provided in parallel with said one-way clutch on a transmission path, for disconnecting said pulley and said rotary shaft when the angular velocity of one of said rotary shafts is smaller than a set value and for connecting said pulley and said rotary shaft so as to integrally rotate them when the angular velocity of said driving rotary shaft is the set value or more.

5,665,019

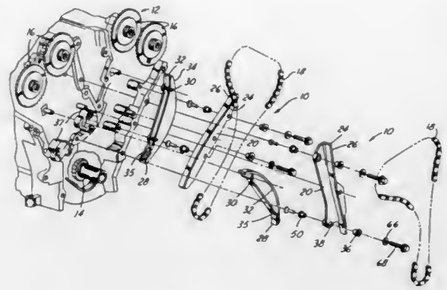
CHAIN GUIDE MOUNTING ASSEMBLY FOR THE REDUCTION OF CHAIN INDUCED NOISE AND VIBRATION IN A CHAIN DRIVEN OVERHEAD CAM INTERNAL COMBUSTION ENGINE

Eric J. Sheffer, Highland; William H. Osborne, Southfield, and Wayne A. Nowicki, Ypsilanti, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Feb. 5, 1996, Ser. No. 598,832
Int. Cl.[6] F16H *7/08;7/00;7/18;7/24*
U.S. Cl. 474—111 **19 Claims**

1. A chain guide mounting assembly for an internal combustion engine having a crankshaft, a camshaft, and a chain connecting said crankshaft to said camshaft, said assembly comprising:

an elongate chain guide member fastened to said engine by vibration isolation means, said chain guide member having a first end with a first bore formed therein and a second end, opposite said first end, with a second bore formed therein and a chain guide surface for guiding said chain, with said first and second bores receiving first and second vibration isolation means, respectively, with each said vibration isolation means comprising:



a first, substantially cylindrical resilient member having an exterior side wall, an axial bore therethrough and a flange portion at one end thereof fitted within one of said bores formed in said chain guide member such that an underside surface of said flange portion rests on a first outer surface of said chain guide member;

a second, substantially cylindrical resilient member having an exterior side wall, an axial bore therethrough and a flange portion at one end thereof fitted within said one of said bores formed in said chain guide member such that an underside surface of said flange portion rests on a second outer surface of said chain guide member;

a rigid, substantially cylindrical sleeve in interference engagement within said bores of said first and said second resilient members such that a radial preload is applied to said first and second resilient members; and,

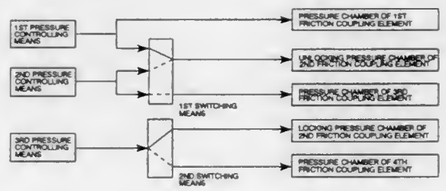
a fastener passing through said sleeve and said bores for fastening said chain guide member to said engine.

5,665,020

AUTOMATIC TRANSMISSION CONTROL SYSTEM

Shinya Kamada; Koichi Yamamoto, both of Hiroshima; Tomoo Sawazaki, Higashihiroshima; Hiroshi Shinozuka, Hiroshima; Kazushi Kurokawa, Hiroshima; Takamichi Teraoka, Hiroshima; Masakazu Hombo, Hiroshima; Naotaka Hirami, Hiroshima; Yasunori Kanda; Akinobu Aoki, both of Higashihiroshima; Tatsuhiko Iwasaki, Hiroshima-ken; Takeyoshi Kawa, and Kenji Sawa, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 536,565, Sep. 29, 1995, abandoned. This application Jan. 30, 1996, Ser. No. 594,116
Claims priority, application Japan, Sep. 30, 1994, 6-261243; Mar. 31, 1995, 7-100005
Int. Cl.[6] F16H *61/08*
U.S. Cl. 475—129 **26 Claims**



1. A hydraulic control system for an automatic transmission of the type having first to fourth friction coupling elements which are selectively locked and unlocked with hydraulic pressure for placing the automatic transmission into desired gears, each of said first, third and fourth friction coupling elements being provided with a single pressure chamber for receiving operating pressure for locking, and said second friction coupling element being provided with a locking pressure chamber for receiving operating pressure for

locking and an unlocking pressure chamber for receiving operating pressure for unlocking, said automatic transmission control system comprising:

source pressure supplying means for supplying source pressure to said friction coupling elements;

first pressure control means for controlling said source pressure as operating pressure and supplying said controlled operating pressure to said pressure chamber of said first friction coupling element and said unlocking pressure chamber of said second friction coupling element;

second pressure control means for controlling said source pressure as operating pressure and supplying said controlled operating pressure to said pressure chamber of said third friction coupling element and said unlocking pressure chamber of said second friction coupling dement;

third pressure control means for controlling said source pressure as operating pressure and supplying said controlled operating pressure to said pressure chamber of said fourth friction coupling element and said locking pressure chamber of said second friction coupling dement;

first switching means for causing hydraulic communication of said unlocking pressure chamber of said second friction coupling element alternatively with said first pressure control means and with said second pressure control means; and

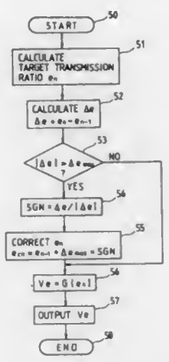
second switching means for causing hydraulic communication alternatively between said third pressure control means and said locking pressure chamber of said second friction coupling element and between said third pressure control means said pressure chamber of said fourth friction coupling element.

5,665,021

TOROIDAL CONTINUOUS VARIABLE TRANSMISSION

Eiji Inoue, Sagamihara, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Apr. 19, 1996, Ser. No. 624,680
Claims priority, application Japan, Apr. 28, 1995, 7-127418
Int. Cl.[6] B60K *41/14;* **F16H** *15/38*
U.S. Cl. 476—4 **1 Claim**



1. A toroidal continuous variable transmission comprising:

input disks to which a torque of an engine is transmitted through loading cams;

output disks arranged opposite the input disks;

an output shaft coupled to the output disks;

tilt-rotatable power rollers arranged between the input disks and the output disks to continuously change a transmission ratio according to changes of tilt angles in transmitting the torque from the input disks to the output disks;

actuators to change the tilt angles of the power rollers; and

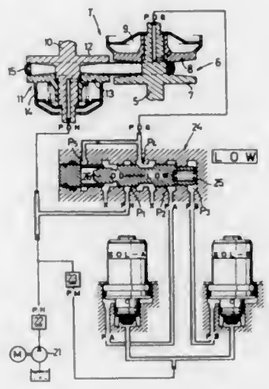
a controller for the actuators to obtain a target transmission ratio determined on car speed-related informations, said target transmission ratio being obtained by limiting the amount of change per unit time of the transmission ratio within a predetermined value.

5,665,022

CONTROL SYSTEM FOR BELT-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Tsunefumi Nilyama, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 610,707
Claims priority, application Japan, Mar. 2, 1995, 7-043299
Int. Cl.[6] B60K *41/12*
U.S. Cl. 477—46 **6 Claims**



1. A control system for a belt-type continuously variable transmission, comprising:

a drive pulley which is variable in groove width;

a driven pulley which is variable in groove width;

an endless belt wound around both of said pulleys;

a ratio control valve for controlling a gear ratio by increasing or decreasing a hydraulic pressure supplied to at least one of oil chambers for said pulleys for varying the widths of said pulleys; and

a solenoid valve means which is controlled to supply a control hydraulic pressure to said ratio control valve, wherein

said solenoid valve means comprises a first solenoid valve and a second solenoid valve, and in a lower gear ratio range, one of said solenoid valves is controlled and the other solenoid valve is fixed at a predetermined control quantity, while in a higher gear ratio range, the other solenoid valve is controlled and the one solenoid valve is fixed at the predetermined control quantity.

5,665,023

FAILSAFE CONTROL APPARATUS FOR BELT-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Takashi Aoki, Fujimi; Kelichi Hanyu, Iruma-gun; Kaoru Kajikawa, Kokubunji, and Junji Urano, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1994, Ser. No. 227,653
Claims priority, application Japan, Apr. 11, 1993, 5-117856; Jul. 16, 1993, 5-199050
Int. Cl.[6] B60K *41/12;* **F16H** *59/00;61/00*
U.S. Cl. 477—48 **21 Claims**

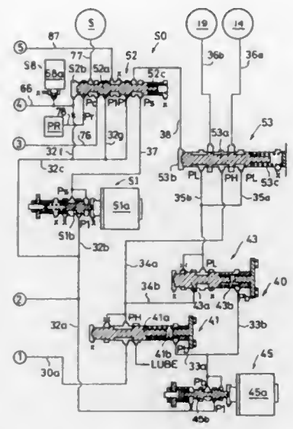
1. A control apparatus for a belt-type continuously variable transmission having a drive pulley, a driven pulley, a V-belt trained around said drive and driven pulleys, a drive cylinder for varying a pulley width of said drive pulley, and a driven cylinder for varying a pulley width of said driven pulley, comprising:

pressure regulator valve means for producing pulley control pressures to be supplied to said drive and driven cylinders;

a shift valve for distributing said pulley control pressure to said drive and driven cylinders to regulate drive and driven cylinder pressures in said drive and driven cylinders for a speed ratio control;

electric shift control means for operationally controlling said shift valve by means of an electric power; and

means for allowing said electric shift control means to move said shift valve to a first position at which a common pressure is supplied to both said drive cylinder and said driven cylinder when said electric power is lost.

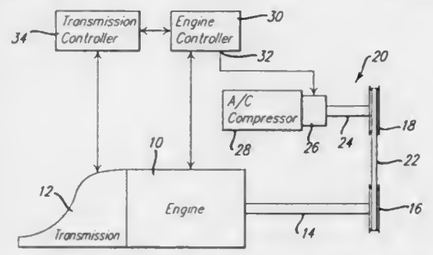


5,665,024

METHOD OF DETECTING DETERIORATION OF AUTOMATIC TRANSMISSION FLUID

Maurice B. Leising, Clawson; Hans Dourra, Dearborn, and Howard L. Benford, Bloomfield Hills, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 28, 1996, Ser. No. 623,267
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—61 **15 Claims**



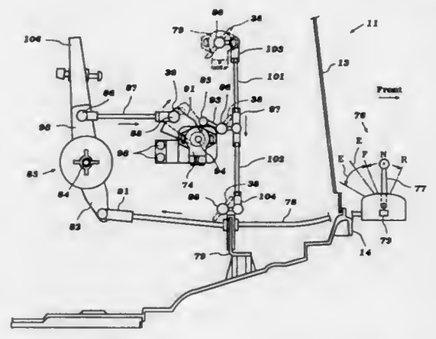
1. In a motor vehicle having an automatic transmission and air conditioner, the automatic transmission having a converter clutch and a turbine, the air conditioner having a compressor, the compressor having a clutch, the compressor clutch being engaged by an engine controller to which it is coupled, the transmission coupled to a transmission controller, the compressor clutch engaged by a sequence of engine controller and transmission controller steps wherein the engine controller sends a message to the transmission controller that the compressor clutch is to be engaged, the transmission controller starts electronic modulation of its converter clutch (EMCC) and, upon detecting slip, sends a message to the engine controller to engage the compressor clutch, the engine controller engaging the compressor clutch upon receipt of the message to do so from the transmission controller, a method of determining that the automatic transmission fluid has deteriorated by detecting whether shudder occurs during an initial period of EMCC slip.

5,665,025

ENGINE CONTROL LINKAGE

Masahiko Katoh, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushuki Kaisha, Hamamatsu, Japan

Filed Dec. 18, 1995, Ser. No. 573,662
Claims priority, application Japan, Dec. 16, 1994, 6-313184
Int. Cl.[6] F16H *59/24;59/68;* **G05G** *9/08*
U.S. Cl. 477—107 **8 Claims**



1. An engine control system for an internal combustion engine having at least one combustion chamber, an induction system for delivering at least an air charge to said combustion chamber, a throttle valve in said induction system for controlling the flow therethrough, a manual throttle actuator for operator control, means for operatively connecting said manual throttle actuator to said throttle valve for positioning said throttle valve, said operative connection permitting movement of said manual throttle actuator from an idle position through a pick-up position to a fully opened throttle position, said operative connection providing for a lost motion connection whereby movement of said manual throttle actuator from said idle position to said pick-up position effects no movement of said throttle valve and continued movement of said manual throttle actuator from said pick-up position to said fully opened position effects opening of said throttle valve from a substantially partially opened idle position to a fully opened full throttle position, means for maintaining said throttle valve in said substantially partially opened position when said manual throttle actuator is in a position less than its pick-up position in which the effective flow area of the induction passage is substantially greater than the amount of air necessary for the engine to operate at its idle speed, control means for maintaining the speed of said engine by controlling a system other than said throttle valve during the range when said manual throttle actuator is in positions between its idle position and its pick-up position, a throttle valve position sensor for sensing the position of said throttle valve, said control system controlling the speed of said engine in response to the signal from said throttle valve position sensor, means for determining the degree of movement necessary for said manual throttle actuator to move from its idle position to its pick-up position and for compensating for differences in the degree of movement necessary to begin to open said throttle valve from its idle position in response to changes in condition in the operative connection between said manual throttle actuator and said throttle valve.

5,665,026

METHOD AND APPARATUS FOR LIMITING THE SPEED OF A MOTOR VEHICLE

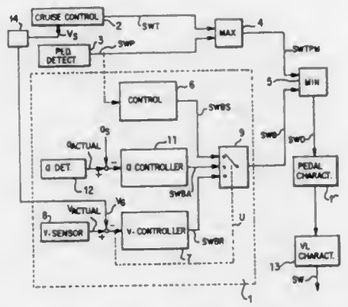
Thomas Linden, Stuttgart, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 18, 1996, Ser. No. 616,000

Claims priority, application Germany, Mar. 16, 1995, 195 09 492.1

Int. Cl.[6] B60K *31/00;26/00;* **F16H** *59/36*

U.S. Cl. 477—108 **12 Claims**



1. A method for limiting a speed of a motor vehicle to an adjustable maximum speed (v_G), the method comprising the steps of:

performing an acceleration-regulating system intervention on the motor vehicle with a required acceleration value (a_s), specified as a function of a difference between the maximum speed (v_G) and an actual speed (v_{actual}), when said difference is greater than a predetermined value (v_{dG}) and an actual acceleration reaches the required acceleration value (a_s); and

performing a speed-regulating system intervention on the motor vehicle when said difference between the maximum speed (v_G) and the actual speed (v_{actual}) is less than said predetermined value (v_{dG}) and a speed demanded by a driver is above the maximum speed (v_G).

5,665,027

SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Hidehiro Oba, Aichi-ken; Kagenori Fukumura, Toyota; Yasuo Hojo, Nagoya; Atsushi Tabata; Hiromichi Kimura, both of Okazaki; Masato Kaigawa, Toyota; Masahiko Ando, Okazaki; Akira Fukatsu, Anjo; Yoshihisa Yamamoto, Nishio; Masahiro Hayabuchi, Anjo, and Kazumasa Tsukamoto, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Aishin A.W. Co., Ltd., Anjo, both of Japan

Filed Jun. 3, 1994, Ser. No. 253,301

Claims priority, application Japan, Jun. 3, 1993, 5-157986; Jun. 3, 1993, 5-157992

Int. Cl.[6] B60K *41/04*

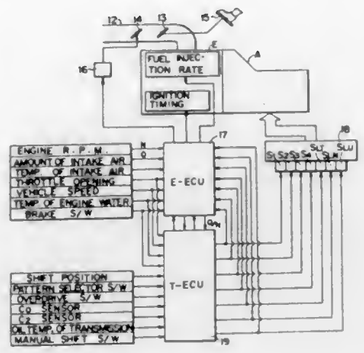
U.S. Cl. 477—109 **21 Claims**

1. A shift control system of an automatic transmission for setting a predetermined gear stage by applying first frictional engagement means and releasing second frictional engagement means, comprising:

a pressure regulating mechanism for regulating an oil pressure to be fed to or drained from said first frictional engagement means;

failure detecting means for detecting a failure of an apparatus to participate in the regulation and control of the oil pressure which is to be fed to or drained from at least one of said first and second frictional engagement means;

gear stage inhibiting means for inhibiting the setting of said predetermined gear stage when the failure is detected by said failure detecting means;



means for lowering an input torque to said automatic transmission at a shifting time; and

torque reduction increasing means for increasing the reduction of the input torque to be more, when the setting of said predetermined gear stage is inhibited by said gear stage inhibiting means when the failure is detected by said failure detecting means, than when the setting of said predetermined gear stage is not inhibited.

5,665,028

SHIFT CAPACITY CONTROL FOR AUTOMATIC TRANSMISSION

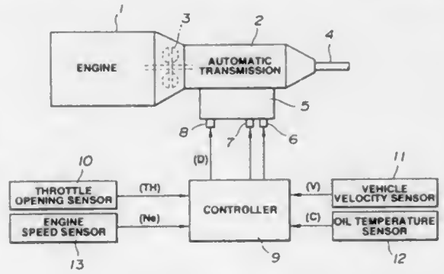
Kouichi Hayasaki, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 16, 1995, Ser. No. 389,323

Claims priority, application Japan, Feb. 23, 1994, 6-025513; Mar. 3, 1994, 6-033711

Int. Cl.[6] F16H *61/04*

U.S. Cl. 477—143 **60 Claims**



1. A system for controlling a shift capacity of an automatic transmission for a prime mover, the automatic transmission being shiftable by selective engagement of friction elements, the system comprising:

means for sensing a revolution of the prime mover and generating a revolution signal indicative of said revolution sensed;

means for determining a shift command to the automatic transmission and generating a shift command signal indicative of said shift command determined;

means for determining a state of a time variation in said revolution of the prime mover after said shift command signal is generated and generating a state signal indicative of said state determined;

means for determining a propriety of the shift capacity of the automatic transmission during a period of shifting thereof in response to said state signal and generating a propriety signal indicative of said propriety determined; and

means for controlling an engagement capacity of the friction element to be operated during a subsequent period of shifting in response to said propriety signal.

5,665,029

METHOD AND AN APPARATUS FOR CONTROLLING A CAR EQUIPPED WITH AN AUTOMATIC TRANSMISSION HAVING A LOCKUP CLUTCH

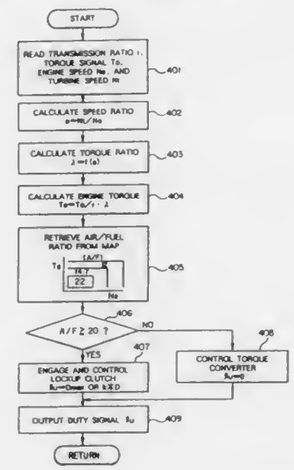
Toshimichi Minowa, Ibaraki-ken; Yutaka Nishimura; Ken'ichi Kawashima, both of Katsuta; Hiroshi Kuroiwa, Hitachi, and Masahiko Ibamoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 521,411, Aug. 30, 1995, Pat. No. 5,580,334, which is a division of Ser. No. 25,211, Mar. 2, 1993, Pat. No. 5,468,196. This application Aug. 22, 1996, Ser. No. 700,774

Claims priority, application Japan, Mar. 2, 1992, 4-044376

Int. Cl.[6] B60K *41/02*

U.S. Cl. 477—168 **9 Claims**



1. A method for controlling a car having an automatic transmission with a lockup clutch, comprising the steps of:

deciding a present air-fuel ratio of mixture introduced into an engine of said car;

judging as to whether said air-fuel ratio is within a predetermined region; and

engaging said lockup clutch when said air-fuel ratio is within said region.

5,665,030

Patent Not Issued For This Number

5,665,031

DUAL ACTION EXERCISE APPARATUS

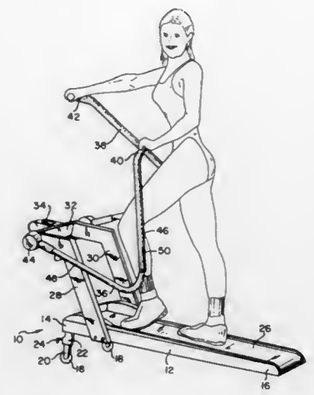
Yi Fong Hsieh, Succasunna, N.J., assignor to LifeGear, Inc., Rockaway Township, N.J.

Filed May 29, 1996, Ser. No. 654,526

Int. Cl.[6] A63B *22/10*

U.S. Cl. 482—54 **4 Claims**

1. Exercise apparatus comprising:



elongated base structure having a forward end and a rearward end;

leg movement support means mounted to said base structure between said forward end and said rearward end for enabling a user to exercise by partaking of alternating front-to-back leg reciprocation on said support means;

upright support structure mounted to said base structure adjacent said forward end;

left and right poles each having a first end and a second end and a generally horizontal hand grip at a respective first end; and

mounting means for pivotally mounting the respective second ends of said left and right poles to said support structure about co-linear horizontal pivot axes, the pivot axes being spaced above said support means at approximately the level of the knees of a user standing on said support means, the mounting means holding the left and right poles at a horizontal spacing so as to not interfere with the user's body while exercising on said support means;

wherein each of said left and right poles lies generally in a respective plane orthogonal to the pivot axes between its first and second ends and is further formed of two straight line segments of substantially equal length extending between the hand grip and the second end, the straight line segments being arranged at an acute angle to each other;

wherein each of said poles further includes a layer of cushioning material covering the hand grip and the adjacent one of the two straight line segments; and

wherein said mounting means further includes means for independently locking each of said left and right poles in a respective fixed position with said respective adjacent segment being selectively positionable in an angular range from substantially vertical to substantially horizontal;

whereby said poles can be positioned to function as stationary hand rails grippable along said adjacent segments.

5,665,032

MANUAL TREADMILL EXERCISER WITH AIR BLOWING RETARDANT ASSEMBLY

David Chen, Taichung, Taiwan, assignor to Stamina Products, Inc., Springfield, Mo.

Filed Sep. 7, 1995, Ser. No. 524,875

Int. Cl.[6] A63B *22/02*

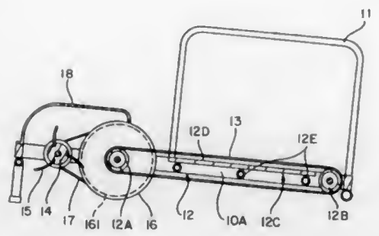
U.S. Cl. 482—54 **2 Claims**

1. A motorless manually operated treadmill exerciser comprising

a frame structure constructed and arranged to be mounted in an operative position on a solid horizontal support surface,

said frame structure including a pair of elongated transversely spaced generally parallel frame members positioned to support a treadmill assembly above the horizontal support surface when said frame structure is in said operative position,

said treadmill assembly including



a trailing roller mounted between trailing ends of said spaced frame members for rotation about a transversely extending trailing roller axis,

a leading roller mounted between forward end portions of said spaced frame members for rotation about a leading roller axis parallel to said trailing roller axis,

a flexible endless track trained about said leading and trailing rollers so as to define an upper flight and a lower flight, and

support structure extending between said pair of frame members between said leading and trailing rollers and between the upper and lower flights of said endless track,

said support structure being constructed and arranged to support the movement of the upper flight of said endless track in response to a forwardly facing user manually walking or running on an upper surface of the upper flight of the endless track, and

a retardant assembly constructed and arranged to establish a retardant to the continued movement of the endless track when the user desires to slow the walking or running speed or disembark,

said retardant assembly comprising

a shaft mounted between the forward end portions of said spaced frame members in forwardly spaced relation to said leading roller for rotation about an axis parallel with the leading roller axis,

a series of annularly spaced fan blades fixed to said shaft,

the transverse extent of said series of fan blades being substantially coextensive with the transverse extent of said endless track,

a motion transmitting mechanism operatively connected between said leading roller and said shaft,

said motion transmitting mechanism being constructed and arranged to rotate said shaft in response to the rotation of said leading roller at an increased speed proportional to the speed at which the leading roller is rotated due to the forwardly facing user walking or running on the upper surface of the upper flight of said endless track, and

a guard fixed to said spaced frame members and extending transversely over said series of fan blades,

said guard having a series of openings therein for the passage of air therethrough in a direction to impinge upon a forwardly facing user walking or running on the upper surface of the upper flight of the endless track,

said series of fan blades being spaced upwardly from the horizontal support surface when said frame structure is in said operative position with the space below said series of fan blades being open to provide an air inlet for said series of fan blades,

said series of fan blades and said guard and the openings therein being constructed and arranged to enable the rotation of said series of fan blades with said shaft due to a forwardly facing user walking or running on the upper surface of the upper flight of said endless track to create a flow of air entering through the open space below said series of fan blades to pass upwardly through the openings in said guard to impinge on the forwardly facing user with a velocity which is determined by the rate at which the user is walking or running on the upper surface of the upper flight of the endless track,

said shaft and series of fan blades thereon being devoid of any source of rotative power connected therewith and being rotated to create said flow of air solely by the manual effort of the forwardly facing user walking or running on the upper surface of the upper flight of said endless track,

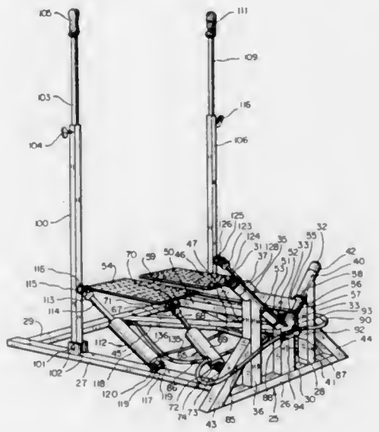
said shaft and series of fan blades thereon being constructed and arranged to enable said flow of air to establish a retardant to the continued movement of the endless track when the user desires to slow the walking or running speed or disembark.

5,665,033

SKI SIMULATING EXERCISE MACHINE

Dennis D. Palmer, 491 Aspen La., Park City, Utah 84060, assignor to Dennis D. Palmer, Draper, Utah

Filed Oct. 21, 1994, Ser. No. 327,365
Int. Cl.[6] A63B *22/08;22/20*
U.S. Cl. 482—71 **11 Claims**



1. An exercise machine comprising:

a first pivot axis that extends outwardly and upwardly from a first side of vertical plane;

second pivot axis that extends outwardly and upwardly from a second side of said vertical plane;

a first elongate foot support arm mounted to said first pivot axis so that said first foot support arm extend from said first pivot axis and is adapted to pivot about said first pivot axis in a reciprocating, rotational movement about said first pivot axis;

a second elongate foot support arm mounted to said pivot axis so that said second, foot support arm extends from said second pivot axis and is adapted to pivot about said second pivot axis in a reciprocating, rotational movement about said second pivot axis;

foot receiving means on each of said first and second foot support arms for supporting a user's foot; and

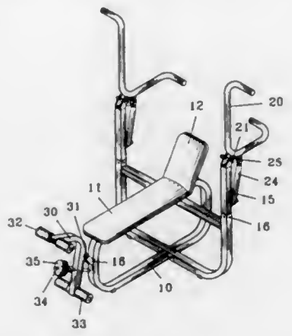
means for coordinating the movement each of the first and second foot support arms so that as said first foot support arm rotates clockwise about said first pivot axis, said second foot support arm rotates clockwise about said second pivot axis, and as first foot support arm rotates counterclockwise about said first pivot axis, said second foot support arm rotates counterclockwise about said second pivot axis, wherein said first and second foot support arms move in concert so that (1) as the foot receiving mean of the first foot the foot receiving means of the second foot support support arm moves upwardly and toward said vertical plane, arm moves downwardly and away from said vertical plane and (2) as the foot receiving means of the first foot support arm moves downwardly and away from said vertical plane, the foot receiving mean of the second foot support arm moves upwardly and toward said vertical plane.

5,665,034

EXERCISE MECHANISM FOR SIMULATING ROWING TYPE EXERCISES

Hong-Long Hwang, No. 210 Ming-Shan St., He-Ming Village, Shiou-Shuei Hsiang, Jang-hua County, Taiwan

Filed Jan. 19, 1996, Ser. No. 588,936
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—72 **2 Claims**



1. An exercise mechanism comprising:

a base including a seat cushion secured thereon for supporting a user, said base including two side portions each having a hole formed therein,

a pair of posts each including a lower end for engaging with said holes of said base and each including an upper end,

means for securing said posts to said base,

a pair of handles each including a lower portion pivotally coupled to said upper end of said post at a pivot shaft so as to allow said handles to be rotated about said pivot shafts, and

a pair of resistive means each including a lower end secured to said post and each including an upper end pivotally coupled to said lower portion of said handles at a pivot axle, so as to allow said handles to be rotated about said pivot shafts against said resistive means,

said handles and said resistive means being secured to said posts and being rotated in concert with said posts before said securing means secures said posts to said base.

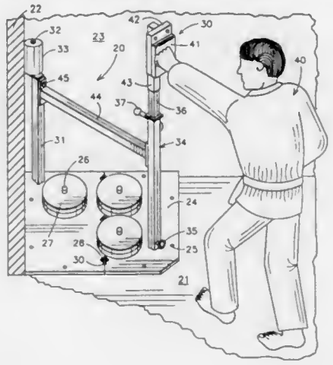
5,665,035

MARTIAL ARTS TRAINING APPARATUS

Ronald A. Tumminia, P.O. Box 181414, Casselberry, Fla. 32718

Filed Jan. 27, 1997, Ser. No. 788,417
Int. Cl.[6] A63B *69/00*
U.S. Cl. 482—83 **20 Claims**

1. A martial arts training apparatus comprising:



a base;

bracing frame member attached to said base and extending generally vertically therefrom adjacent a building wall;

a wall bracing member attached to said bracing frame member and positioned to abut an adjacent wall;

a training attachment support for supporting a training attachment thereto, said training attachment support being attached to said base and extending generally vertically therefrom;

a connecting frame member connecting said bracing frame member and said training attachment support; and

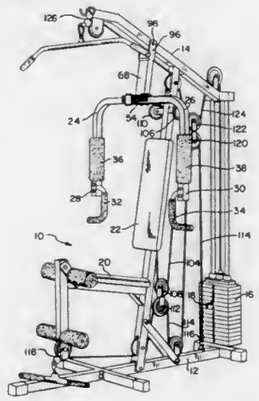
a martial arts training attachment removably attached to said training attachment support whereby a martial arts training apparatus can be placed adjacent a building wall for martial arts training.

5,665,036

EXERCISE APPARATUS FOR BENCH PRESS AND BUTTERFLY EXERCISES

Yi Fong Hsieh, Succasunna, N.J., assignor to LifeGear, Inc., Rockaway Township, N.J.

Filed Jul. 15, 1996, Ser. No. 680,019
Int. Cl.[6] A63B *23/12;21/06*
U.S. Cl. 482—100 **7 Claims**



1. Exercise apparatus which enables a user to selectively perform a bench press exercise or a butterfly exercise, the apparatus comprising:

a support frame having a base and an overhead member;

a weight stack arranged for vertical reciprocatory movement relative to said base;

a pair of exercise arms each being generally L-shaped and each having a hand grip at one end;

a pivot bar having a first end, a second end and a longitudinal axis extending from said first end to said second end;

means for mounting said pair of exercise arms at their ends opposite their hand grip ends to said pivot bar first end for pivoting movement each about a respective one of a pair of parallel pivot axes, said mounting means being effective to orient said exercise arms each with the hand grip end below the opposite end and each in a respective plane substantially coplanar with the respective pivot axis;

means for interconnecting said pair of exercise arms for concurrent pivoting movement in opposite angular directions about said pair of pivot axes;

means for mounting said pivot bar at said pivot bar second end to said overhead member for pivoting movement about a horizontal pivot axis orthogonal to said pivot bar longitudinal axis; and

means for coupling said pair of exercise arms to said weight stack to provide resistance to pivoting movement of said exercise arms each in a respective first angular direction about the respective one of said pair of pivot axes and to pivoting

movement of said pivot bar in a respective first angular direction about said horizontal pivot axis.

5,665,037

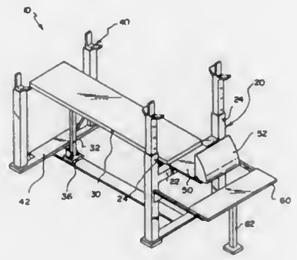
Patent Not Issued For This Number

5,665,038

FOUR IN ONE EXERCISE BENCH

Ray E. Miller, 17164 Mallard Ct., Eden Prairie, Minn. 55346

Filed Dec. 9, 1996, Ser. No. 762,271
Int. Cl.[6] A63B *21/078*
U.S. Cl. 482—104 **7 Claims**



1. A Four In One Exercise Bench comprising:
a pair of first telescoping weight supports projecting vertically;
a first cross member extending and connecting to said pair of first telescoping weight supports centrally;
a back support member pivotally secured at one end to said first cross member by a hinge;
a second pair of telescoping weight supports positioned near the end of said back support member opposite of said first cross member;
a second cross member extending and connecting to said pair of second telescoping weight supports near the bottom ends;
a head support member secured horizontally to said first cross member projecting away from said back support member; and
a back rest pivotally secured to said head support member opposite of said first cross member, allowing selection between back support during a seated overhead press or a head rest during a conventional bench press motion.

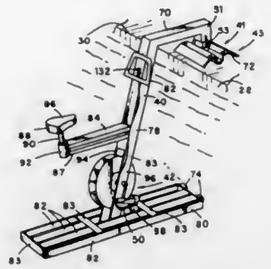
5,665,039

EXCERCISE AND/OR THERAPY APPARATUS HAVING AN IMPELLER FOR USE IN A POOL OF LIQUID

Jack F. Wasserman; Frank H. Speckhart, both of Knoxville, Tenn.; Alan Scott, and Wil Siersma, both of Carbondale, Colo., assignors to Hydroforce, Inc., Basalt, Colo.

Filed Apr. 26, 1996, Ser. No. 638,499
Int. Cl.[6] A63B *31/00;69/16;22/06*
U.S. Cl. 482—111 **15 Claims**

1. An exercise or therapy apparatus for use with liquid contained within a pool having walls, the apparatus comprising:
a frame positionable in a relatively stationary condition with respect to the walls of the pool; and
an impeller section including an impeller wheel rotatably attached to the frame for rotation relative thereto about an axis of rotation in conjunction with movements of a user's limb and having two opposite sides;
the impeller wheel being adapted to move the liquid of the pool through the impeller section as the impeller wheel is rotated as aforesaid and including two opposite side plates wherein



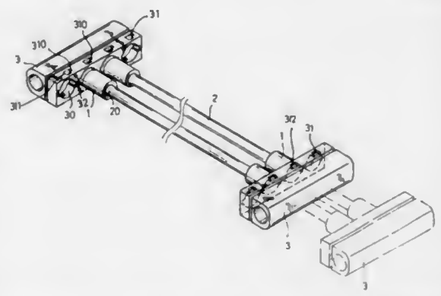
each side plate is disposed adjacent a corresponding side of the impeller wheel and defines an inlet for the impeller wheel adjacent the axis of rotation through which a stream of the liquid is drawn into the impeller section during the rotation of the impeller wheel so that as the impeller wheel is rotated as aforesaid and liquid is drawn into the impeller section, a stream of liquid is drawn into the impeller wheel through each of the side plates thereof; and
means associated with the impeller section for controlling the quantity of the stream of the liquid drawn into the inlet of each of the impeller side plates during rotation of the impeller wheel;
wherein the inlet defined by each side plate of the impeller wheel includes at least one opening through which the liquid stream is moved as it is drawn into the impeller section and the controlling means includes a valve having a first valve plate which is axially movable toward and away from the one opening provided in one side plate to alter the degree that the one opening of the one side plate is covered by the first valve plate and includes a second valve plate which is axially movable toward and away from the one opening provided in the other side plate to alter the degree that the one opening of the other side plate is covered by the second valve plate so that by axially moving the first and second valve plates toward and away from the openings provided in the side plates as aforesaid, the quantity of the liquid drawn into the impeller section through the impeller side plates during rotation of the impeller wheel is altered.

5,665,040

ELASTIC CORD MEMBER AND CONNECTOR ARRANGEMENT

Charles Ho, Room 3E45, No. 5, Sec. 5, Hsing Yi Road, Taipei, Taiwan

Filed Jul. 9, 1996, Ser. No. 677,235
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—126 **2 Claims**



1. A connector assembly for elastic cord members comprising:
(a) at least one connector member having at least one coupling hole with a notch disposed at each of two opposite sides of

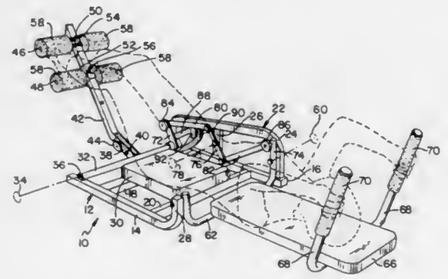
said coupling hole, said connector member having two L-shaped locating holes arranged in opposite directions from each other, each L-shaped locating hole in communication with one of said notches, each of said L-shaped locating holes having an outer end and an inner end and a front side;
(b) at least one elastic cord member; and
(c) at least one hollow substantially cylindrical coupling socket secured to said elastic cord member configured to be rotatably received in said at least one coupling hole, said coupling socket having a spring disposed so as to bear against a portion of said connector member when said at least one coupling member is inserted into said at least one coupling hole, said coupling socket having two locating lugs extending from opposite sides, said two locating lugs configured to pass through said notches when said coupling socket is inserted into said connector member through said coupling hole;
wherein inserting said coupling socket into said coupling hole causes each of said lugs to enter into said outer end of one of said L-shaped locating holes, such that rotation of said at least one coupling socket relative to the at least one connector causes each of said each locating lugs to reach said inner end of one of said L-shaped locating holes such that said spring urges said lugs against said front sides of each of said L-shaped locating holes to secure said coupling socket to said connector member.

5,665,041

ABDOMINAL EXERCISER

Yi Fong Hsieh, Succasunna, N.J., assignor to LifeGear, Inc., Rockaway Township, Morris County, N.J.

Filed Dec. 30, 1996, Ser. No. 775,456
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—140 **13 Claims**



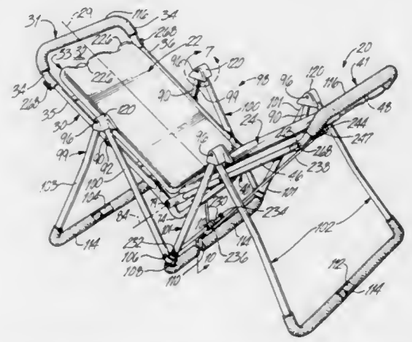
10. Abdominal exercise apparatus comprising:
a base member adapted for support on a substantially horizontal surface;
a generally planar seat pad fixedly disposed generally horizontally on said base member;
a side frame secured along one edge of said base member and extending upwardly therefrom;
a foot support assembly pivotably mounted to said base member at a first horizontal pivot axis transverse to said one edge and at a first side of said seat pad, said foot support assembly including a first member adjacent to said side frame and extending upwardly from said first pivot axis;
a back support assembly pivotably mounted to said base member at a second horizontal pivot axis parallel to said first pivot axis and across said seat pad from said foot support assembly, said back support assembly including a second member adjacent to said side frame and extending upwardly from said second pivot axis;
a first link bar having first and second ends and being pivotably mounted between its first and second ends to said side frame at a third horizontal pivot axis parallel to and between said first and second pivot axes;
a second link bar having first and second ends and being pivotably mounted at its first end to the first end of said first link bar and at its second end to said foot support assembly first member; and
a third link bar having first and second ends and being pivotably mounted at its first end to the second end of said first link bar and at its second end to said back support assembly second member whereby a user lyes in a supine position with his/her feet positioned on said foot support assembly and his/her back positioned on said back support assembly, and performs abdominal exercises.

5,665,042

EXERCISER

Lawrence Wayne Breaux, 30523 N. Deed Ave., Castaic, Calif. 91384

Filed May 6, 1996, Ser. No. 642,903
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—142 **26 Claims**



1. Exercise apparatus for supporting a user, the apparatus comprising:
first and second elongated and substantially rigid beds disposed so an end of one of the beds is adjacent an end of the other bed, each bed defining a respective major plane;
a support for the beds; and
means for securing the beds to the support so each bed can pivot about a separate respective support axis with respect to the support and so the beds can pivot with respect to each other about a substantially horizontal central axis between adjacent ends of the beds and extending transverse to the beds substantially within the two major planes so the distance between the adjacent ends of the beds remains substantially constant as the beds Pivot.

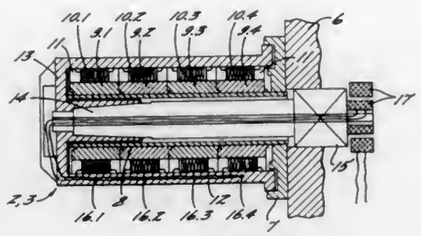
5,665,043

GODET FOR HEATING AND ADVANCING YARNS

Michael Hasselberg, Wetter; Andreas Nehler, Dortmund, and Bernd Neumann, Radevormwald, all of Germany, assignors to Barmag AG, Remscheid, Germany

Filed Nov. 9, 1995, Ser. No. 552,502
Claims priority, application Germany, Nov. 10, 1994, 44 40 129.9; Dec. 14, 1994, 44 44 590.3; Mar. 29, 1995, 195 11 575.9; Mar. 29, 1995, 195 11 502.3
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—10 **19 Claims**

1. A godet for heating and advancing a yarn and comprising:
a stationary support member,
a rotatable member rotatably mounted to said stationary support member and including a tubular jacket having an outer surface upon which the yarn is adapted to run,



means for heating the jacket,

at least one sensor mounted to said rotatable member for sensing the temperature of said jacket and producing an output signal indicative thereof,

data transmission means for transmitting by induction the output signal from said one sensor to an external control unit, and

an electronic memory mounted to one of said stationary support member and said rotatable member, with said memory being electrically connected to said temperature sensor such that the memory can store at least a portion of the output signal from the sensor to the control unit.

5,665,044

ROLLING ROLL WITH ROLLING RINGS

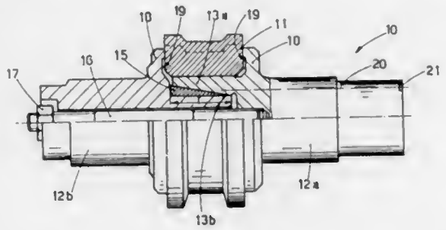
Ferruccio Tomat, Udine, and Roberto Canzutti, Pavia Di Udine, both of Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy

Filed Jun. 7, 1995, Ser. No. 483,703

Claims priority, application Italy, Jun. 29, 1994, UD94A0112

Int. Cl.[6] B23P *15/00*

U.S. Cl. 492—47 **5 Claims**



1. A rolling roll with rolling ring,comprising a pair of supporting half-shafts (**12***a*–**12***b*), which cooperate with each other and are suitable for the keying of the relative rolling ring, the keying being carried out substantially at the zone of cooperation between the half-shafts (**12***a*–**12***b*), the half-shafts being set in traction against each other by means of a tie rod the system being characterised in that the cooperation between the two half-shafts is obtained with a tapered coupling of a male/female type of the half-shafts to each other, this male/female coupling providing a zone of superimposing of terminal portions of the half-shafts, this zone covering at least an important part of the axial extent of the rolling ring.

5,665,045

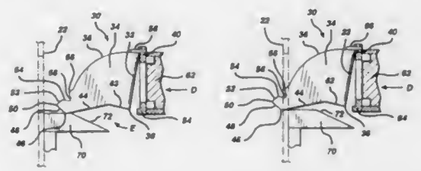
NINETY DEGREE POURING SPOUT

Robert J. Brucker, Barnardsville, N.J., assignor to Seal-Spout Corporation, Liberty Corner, N.J.

Division of Ser. No. 394,436, Feb. 24, 1995, Pat. No. 5,556,004, which is a continuation-in-part of Ser. No. 30,563, Nov. 1, 1994, Pat. No. Des. 374,400. This application Aug. 29, 1996, Ser. No. 704,962

Int. Cl.[6] B31B *1/90*

U.S. Cl. 493—87 **6 Claims**



1. An apparatus for inserting a spout into a container comprising:

spout blank supply means for supplying spout blanks to be formed into respective spouts, spout forming means for forming a spout from a respective spout blank, said spout having:

a central chute section having a chute height for being inserted into a container surface of the container,

first and second side walls extending from the central chute section of the spout, the first and second side walls each comprising curvilinear upper surfaces for pivoting the central chute section between a closed position and an open position with respect to the container surface,

first and second depending wings extending from the respective first and second side walls, defining a total spout height greater than the chute height and an slit height such that the central chute section is pivotable between the open position and the closed position with respect to the container surface;

ram means for engaging a spout and driving it into a container toward said container surface;

positioning means, attached to said ram means, for positioning the spout on said ram means, the positioning means comprising a spring loaded pin for engaging an upper edge of a spout to hold a spout in a desired position with respect to the ram means such that the spout is pivotable about said upper edge of said spout;

orientation means in cooperation with said positioning means for orienting the spout means to pivot about said upper edge to a desired orientation defining an angle relative to said ram direction for inserting the spout into a container surface, the orientation means having:

an angled ramp surface defining said angle relative to said ram direction for pivoting the spout; and

a flat ramp surface interconnecting the container surface and the angled ramp surface for defining an angle substantially parallel to said ram direction along which the spout is driven by the ram means for inserting the spout into the container surface; and

support means for supporting a container for spout insertion.

5,665,046

Patent Not Issued For This Number

5,665,047

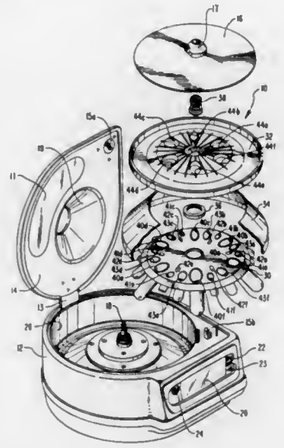
MULTIPLE FUNCTION CENTRIFUGE APPARATUS WITH INDEX PLATE AND METHOD

Owen D. Brimhall, South Jordan, Utah, assignor to Technical Research Associates, Inc., Salt Lake City, Utah

Filed Oct. 4, 1996, Ser. No. 726,244

Int. Cl.[6] B04B *5/02*

U.S. Cl. 494—16 **17 Claims**



1. A multiple function centrifuge comprising:

a housing;

a chamber in said housing;

a rotor shaft extending into said chamber;

a rotor mounted to said rotor shaft in said chamber, said rotor including a plurality of receptacle sets, each of said receptacle sets being configured to receive a centrifuge container having a predetermined size; and

an index plate rotatably mounted to said rotor shaft, said index plate having a single set of access ports, the orientation of said access ports being coordinated with the orientation of said plurality of receptacle sets to thereby limit access to a single receptacle set at a time of said plurality of receptacle sets.

5,665,048

CIRCUMFERENTIALLY DRIVEN CONTINUOUS FLOW CENTRIFUGE

Glen Jorgensen, 28 Beverly Dr., Marlboro, Mass. 01752

Filed Dec. 22, 1995, Ser. No. 577,830

Int. Cl.[6] B04B *9/00*

U.S. Cl. 494—18 **20 Claims**

6. A centrifuge for rotating a fluid retentive housing such that one or more selected materials suspended in a fluid retained within the housing are centrifuged upon rotation of the housing, the centrifuge comprising:

a frame;

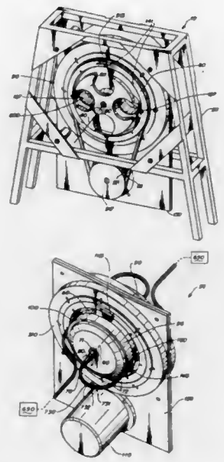
a first wheel mechanism having a first diameter; and

a second wheel mechanism having a second diameter greater than the first diameter;

the first and second wheel mechanisms being concentrically mounted on the frame for simultaneous co-rotation around a common axis;

the second wheel mechanism being circumferentially driven such that the second wheel mechanism rotates at a rotational speed X around the common axis;

the first wheel mechanism being interconnected to the second wheel mechanism such that the first wheel mechanism rotates at a rotational speed of 2X around the common axis upon circumferential driving of the second wheel mechanism;



the fluid retentive housing being mounted on the first wheel mechanism for co-rotation therewith.

5,665,049

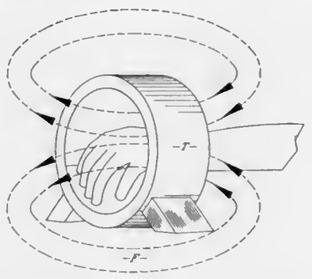
TREATMENT OF ACUTE DISEASES AS CAUSED BY THE SPORTS-TYPE INJURIES OF THE MUSCULOSKELETAL SYSTEM (EXCLUDING FRACTURES) WITH MAGNETIC FIELD THERAPY

Richard Markoll, Middlebury, Conn., assignor to Bio-Magnetic Field Therapy Systems Inc., Boca Raton, Fla.

Continuation of Ser. No. 867,362, Apr. 13, 1992, Pat. No. 5,387,176, which is a continuation-in-part of Ser. No. 519,410, May 4, 1990, Pat. No. 5,131,904. This application Feb. 3, 1995, Ser. No. 385,091

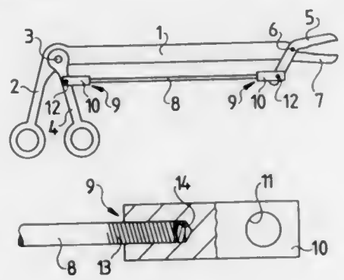
Int. Cl.[6] A61N *1/00*

U.S. Cl. 600—14 **8 Claims**



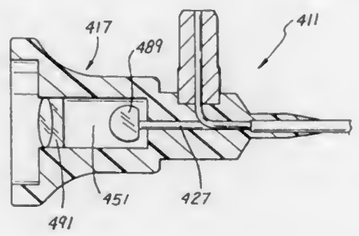
1. A process for treatment of acute disease of a body organ of the musculoskeletal system as caused by a sports-type injury excluding fractures with magnetic field therapy including the step of subjecting the diseased body organ to an electromagnetic field of under 20 Gauss and generated by an annular coil inside which the body organ is placed, the coil being driven by a pulsed DC voltage having a rectangular wave form consisting of an abruptly rising and abruptly deteriorating current pulsing at the rate of 1–30 pulse bursts per second.

5,665,050
APPARATUS FOR MEDICAL ENDOSCOPY WITH A SUPERELASTIC ELEMENT AND METHOD OF MAKING THE SAME
Rainer Benecke, Todendorf, Germany, assignor to Olympus Winter & Ibe GmbH, Hamburg, Germany
Filed Mar. 22, 1996, Ser. No. 620,943
Claims priority, application Germany, Mar. 25, 1995, 195 10 962.7
Int. Cl.[6] A61B *1/00*
U.S. Cl. 29—456 **6 Claims**



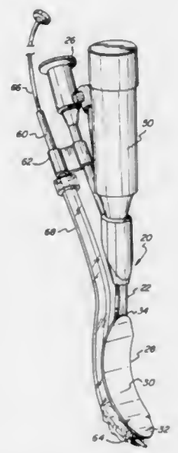
1. A method of making a positive connection in a medical instrument between a force-transmitting element and at least one load-receiving component wherein said force-transmitting element is made of a superelastic metal alloy, comprising the steps of
sublimating material from the superelastic metal alloy of the force-transmitting element to form a recess therein,
shaping the load-receiving component to form a mating part, and
coupling said component and element together.

5,665,051
ENDOSCOPE WITH AXIALLY MOVABLE OPTICAL FIBER GUIDE TO COMPENSATE CHANGES IN LENGTH
Richard L. Quick, Trabuco Canyon; John F. Forkner, South Laguna, and Gary M. Woker, Escondido, all of Calif., assignors to Imagyn Medical, Laguna Niguel, Calif.
Filed Aug. 12, 1994, Ser. No. 289,932
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—161 **30 Claims**



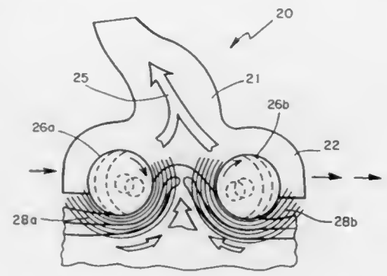
30. An endoscope comprising:
an elongated endoscope body having a proximal housing portion;
an elongated fiberoptic image guide in said endoscope body, having a distal end and a proximal end, and being adapted for transmitting an image proximally through the endoscope, a proximal end portion of said fiberoptic image guide being disposed within said proximal housing portion; and
an ocular lens assembly located in said proximal housing portion, including a decoupling lens unit and an axially spaced eye lens unit, wherein the decoupling lens unit is in a fixed mechanical relationship with the proximal end of the fiberoptic image guide and the eye lens unit is fixed to the endoscope proximal housing;
wherein the proximal end portion of the fiberoptic image guide is axially movable relative to the proximal housing portion.

5,665,052
MULTIFUNCTIONAL INTUBATING GUIDE STYLET AND LARYNGOSCOPE
James Roger Bullard, P.O. Box 14727, Augusta, Ga. 30909
Continuation of Ser. No. 245,026, May 17, 1994, Pat. No. 5,551,946. This application May 13, 1996, Ser. No. 645,442
Int. Cl.[6] A61B *1/267*
U.S. Cl. 600—194 **13 Claims**



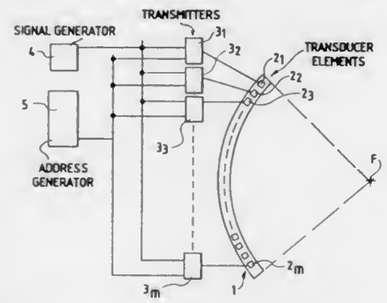
1. An intubating guide stylet and laryngoscope, comprising:
a rigid curved body, having a distal end for fitting into human oral and pharyngeal passageways, said body containing therein both a means for viewing and a means for illuminating a field adjacent said distal end of said body, and a laryngoscope blade affixed to said distal end of said body;
a hollow tubular stylet having a distal end and a proximal end, said stylet being affixed to said body by a connection remote from said stylet distal end, said hollow stylet having an inner diameter adapted to permit a flexible guide member having a distal end to be passed therethrough, and an outer diameter adapted to permit an endotracheal tube to be mounted on the exterior of said stylet; said stylet distal end being located adjacent said distal end of said body such that, upon passage of a flexible guide member through said stylet, the flexible guide member will be manipulated to position the guide member at a desired position in a patient's anatomy with direct vision by said illuminating and viewing means of said body, such that an endotracheal tube, when mounted to said stylet, may be advanced along the stylet onto the guide member to be positioned in the patient at the desired position in the patient's anatomy.

5,665,053
APPARATUS FOR PERFORMING ENDERMOLOGY WITH ULTRASOUND
Robert A. Jacobs, 99 Cliff Rd, Belle Terre, N.Y. 11777
Filed Sep. 27, 1996, Ser. No. 722,310
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—2 **8 Claims**



1. A combination endermology ultrasound apparatus for breaking down subcutaneous fatty tissue beneath the skin surface, the combination comprising:
an endermology body massager including a housing having a vacuum input for connection with a vacuum source, a vacuum chamber coupled to the vacuum input, and at least two spaced apart parallel rollers rotatably mounted in said chamber; and
ultrasound means disposed within said housing for emitting ultrasonic energy to the skin surface.

5,665,054
CONTROL METHOD FOR HYPERTHERMIA TREATMENT APPARATUS USING ULTRASOUND
Jacques Dory, Villiers-sur-Morin, France, assignor to Technomed Medical Systems S.A., Vaulx-en-Velin, France
Filed Jan. 19, 1995, Ser. No. 374,432
Claims priority, application France, Jan. 27, 1994, 94 00904
Int. Cl.[6] A61N *7/02*
U.S. Cl. 601—3 **20 Claims**



9. A method for controlling an ultrasonic hyperthermia treatment apparatus having a transducer with a plurality of piezoelectric elements, each element excited by an electrical signal, the method comprising the steps of:
a) emitting ultrasound focused at a focal spot;
b) varying a position of said focal spot during a shot, with respect to said transducer to cause a region to be treated to be scanned by the focal spot such that a plurality of positions of the focal spot defines an equivalent focal spot;
c) the speed of variation of the position of said focal spot with respect to said transducer is higher than the speed of diffusion of thermal energy in the region to be treated;
d) the variation of the position of said focal spot with respect to said transducer solely due to variation in relative phases of the electrical signals exciting said piezoelectric elements; and
e) the peak power of the focal spot and the degree of overlap between the plurality of positions of said focal spot are such that, during the shot, the energy radiated at every point in the region scanned by varying the position of said focal spot with respect to said transducer is substantially equal to the energy needed to destroy tissue cells in the region to be treated.

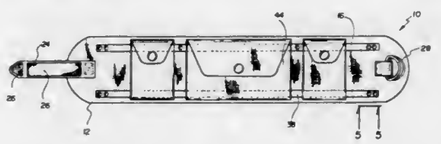
5,665,055

Patent Not Issued For This Number

5,665,056
WATER-CURABLE SUPPORTING BANDAGE
Nobuyasu Nakasugi, Kyoto, and Takayuki Sekine, Kawaguchi, both of Japan, assignors to Alcare Co., Ltd., Tokyo, and San-Apro Limited, Kyoto, both of Japan
Filed Nov. 9, 1994, Ser. No. 336,423
Claims priority, application Japan, Nov. 10, 1993, 5-304755
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—8 **15 Claims**

1. A water-curable support bandage comprising a flexible fabric coated with water-curable polyurethane resin composition containing a polyurethane prepolymer consisting of a polyol, a polyisocyanate, a catalyst and a stabilizer, wherein said polyol contains a polyethylene glycol and a bisphenol system diol, the bisphenol system diol being the product of the reaction of a bisphenol and an oxide in the presence of a catalyst, and wherein the sum of the content of the polyethylene glycol and the content of the bisphenol system diol contained as components of said polyol is at least about 50 percent by weight based on the components of said polyol, the compounding proportion of the polyethylene glycol to the bisphenol system diol in the polyol component is from about 1:0.2 to about 1:5 parts by weight, said bandage is enclosed in a water-impermeable container and said bandage is hardenable by curing of said resin composition after immersion in water.

5,665,057
HEATED BACK SUPPORTING DEVICE
Michael G. Murphy, 117 CR 110, Jonesboro, Ark. 72401
Filed Mar. 20, 1996, Ser. No. 618,743
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 **1 Claim**



1. A heated back-supporting device for allowing a user to tailor an amount of heat radiated to a preselected body portion comprising, in combination:
a belt portion having a generally elongated configuration, the belt portion having an interior surface and an exterior surface, the belt portion having two opposed long linear side edges and two opposed arcuate end portions, the interior surface having a pair of pockets formed therein, the exterior surface having a strap extending from one of the arcuate end portions, the strap having a pair of pile fasteners disposed thereon, the exterior surface having a dual D-ring secured to the arcuate end portion opposed from the strap, the dual D-ring coupling with the strap for securement around a waist of a user, the

exterior surface having a plurality of male snaps extending along the two opposed long linear side edges;

a pair of heated gel packets adapted for removable coupling within the pair of pockets formed in the interior surface of the belt portion;

a pair of securement strips each having a plurality of female snaps disposed on an interior surface thereof corresponding with the plurality of male snaps extending along the two opposed long linear side edges of the belt portion for securement thereto;

a plurality of utility pockets each having a pair of securement loops secured to a rear surface thereof, the securement loops dimensioned to theadably receive the pair of securement straps therethrough for securement to the belt portion;

a hammer holding portion comprised of a planar member having a pair of slots formed therethrough, the slots dimensioned to threadably receive one of the pair of securement straps therethrough for securement to the belt portion, the planar member having a generally U-shaped member secured to a lower portion thereof for coupling a hammer thereto.

5,665,058

ORTHOSIS FOR THE SHOULDER AND ARM

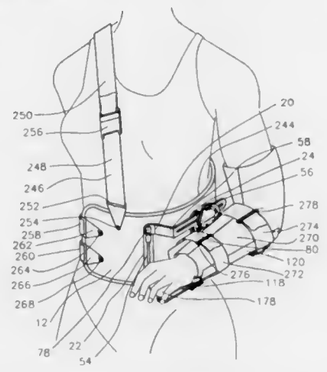
David Ernest Young, Watlington, United Kingdom, assignor to Innovative Care Limited, Abingdon Oxon, England

Filed Jul. 31, 1995, Ser. No. 509,296

Claims priority, application United Kingdom, Apr. 13, 1995, 9507724

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—20 **5 Claims**



1. An orthosis for immobilizing the shoulder joint and arm of a human patient in selected relative positions comprising attaching means for attaching said orthosis securely to a patient's waist; mounting means secured to said attaching means providing a pair of parallel and generally vertical slots; an antero-posteriorly extending bracket equipped with releasable securing means extending through said slots for infinite variable positioning of said bracket along said slots; said bracket having an antero-posteriorly extending slot; an arm support assembly for supporting a patient's arm; and slide means adjustably connecting said arm support assembly and said bracket for securing said arm support assembly into any selected position along the length of said bracket slot.

5,665,059

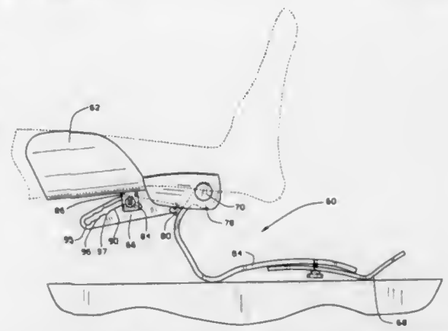
PIVOTALLY ADJUSTABLE SELF-SUPPORTING FOOT ORTHOSIS

Jeffrey D. Klearman; Robert Bronson, both of St. Louis, and Jerry M. Roth, House Springs, all of Mo., assignors to Therapy Concepts, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 324,723, Oct. 18, 1994, Pat. No. 5,571,037. This application Sep. 27, 1995, Ser. No. 534,662

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—27 **23 Claims**



1. An orthosis for supporting a patient's foot in a predetermined orientation, said orthosis including a calf section, a foot section pivotally connected to said calf section to thereby allow adjustment of a relative angle therebetween, and a brace extending between said foot section and said calf section for maintaining said relative angle in a fixed position, said brace having an elongate slot extending therethrough and a plurality of eyelets disposed about said elongate slot, each eyelet corresponding to a different relative angle between said calf and foot sections, said orthosis further comprising a latch adjustably connecting said brace to said calf section by extending through one of said eyelets.

5,665,060

BUNION TREATMENT APPARATUS AND METHOD

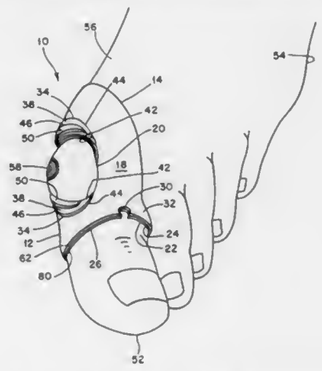
B. Robert Fabricant, Boca Raton, Fla., assignor to Dr. Fabricant's Foot Health Products, Inc., Hauppauge, N.Y.

Filed Dec. 15, 1995, Ser. No. 573,022

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—30 **12 Claims**

1. A bunion treatment apparatus for minimizing forces applied to



a bunion on a foot surface of a patient, said bunion treatment apparatus comprising:

a generally planar main portion constructed of flexible padding material and having a predetermined main portion thickness, a main portion planform area with an outer perimeter, and opposed first and second side surfaces, said second side surface being an exterior surface, said main portion having a bunion-receiving aperture formed at least partially therethrough; and

at least a first generally planar build-up portion separate from said planar main portion and being constructed of flexible padding material and having a predetermined build-up portion thickness, a build-up portion planform area, and opposed first and second side surfaces, said build-up portion planform area being less than said main portion planform area, said build-up portion being sized and shaped to at least partially surround said bunion-receiving aperture, said first side of said main portion adapted to be located against the foot surface of the patient, said bunion-receiving aperture adapted to surround the bunion and said opposed exterior second side surface of said main portion facing away from the foot surface, said first side of said build-up portion being positioned adjacent said opposed exterior second side surface of said main portion with said build-up portion at least partially surrounding said bunion-receiving aperture and said opposed exterior second side surface of said build-up portion facing away from the foot surface, whereby said bunion treatment apparatus minimizes the forces applied to the bunion.

5,665,061

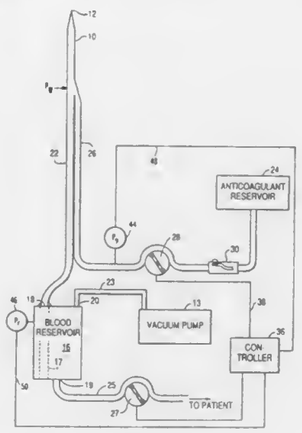
BIOLOGICAL/PHARMACEUTICAL METHOD AND APPARATUS FOR COLLECTING AND MIXING FLUIDS

Glen Delbert Antwiler, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 928,040, Aug. 11, 1992, Pat. No. 5,378,277. This application Dec. 27, 1994, Ser. No. 364,471

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—4 **17 Claims**



1. A blood collection apparatus including an extracorporeal flow path, the apparatus comprising:

means located in the flow path for receiving blood from a patient;

a reservoir located in the flow path downstream of the receiving means, the reservoir for collecting received blood;

means for transporting received blood from the receiving means to the reservoir;

means connected to the flow path for introducing anticoagulant into the received blood at a predetermined infusion rate before the blood leaves the reservoir;

means for detecting a first pressure value in the extracorporeal flow path and for generating a first pressure signal in accordance therewith, and for detecting a second pressure value in the anticoagulant introducing means, and for generating a second pressure signal in accordance therewith; and

control means for receiving the first and second pressure signals and for varying the predetermined infusion rate of the anticoagulant introducing means as a function of the first and second pressure signals.

5,665,062

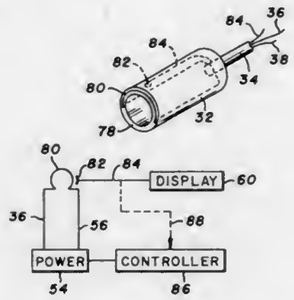
ATHERECTOMY CATHETER AND RF CUTTING METHOD

Russell A. Houser, 4572 Maureen Cir., Livermore, Calif. 94550

Filed Jan. 23, 1995, Ser. No. 376,226

Int. Cl.[6] A61B *17/00*

U.S. Cl. 604—22 **30 Claims**



1. A device for removing atheromas from a body lumen; including:

an elongate catheter having a proximal end and a distal end, a catheter wall defining a compartment within the catheter near the distal end, and an window through the catheter wall to allow entry into the compartment;

an electrically conductive tissue cutting element;

a carrier mounted movably relative to the catheter, for supporting the cutting element proximate the window for a controlled movement thereof along and adjacent the window; and

a heating means for generating an electrical current in the cutting element to heat the cutting element at least to a selected temperature above normal body temperature, and for maintaining the cutting element at least at said selected temperature during said controlled movement;

wherein the catheter is flexible and maneuverable to locate the distal tip of the catheter within a body lumen and to place the window against a tissue wall segment of the body lumen to acquire tissue within the compartment, and the cutting element, when so heated and undergoing the controlled movement, severs the acquired tissue and heats tissue adjacent the cutting element while severing.

5,665,063

METHODS FOR APPLICATION OF INTRALUMINAL PHOTOPOLYMERIZED GELS

Laurence A. Roth, Windham, N.H.; Stephen J. Herman, Andover, Mass.; Farhad Khosravi, Newton, Mass.; David Melanson, Chelmsford, Mass., and Michael Dumont, Stratham, N.H., assignors to Focal, Inc., Lexington, Mass.

Filed Jun. 24, 1994, Ser. No. 265,448

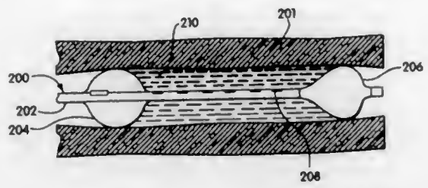
Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—53 **37 Claims**

1. A method for providing a polymeric coating on a surface of a body lumen which comprises the steps of:

a) providing a device which comprises:

i) an elongated shaft including at least one occlusion element for occluding the body lumen and an injection lumen for



injecting a fluent prepolymer material into a space defined at least at one end by the occlusion element; and

ii) an optical emitter positioned in the space defined at least at one end by the occlusion element;

b) positioning said at least one occlusion element at a desired location in the body lumen;

c) positioning the optical emitter at a treatment site;

d) actuating said at least one occlusion element to define a treatment space;

e) injecting a fluent prepolymer into the treatment space;

f) directing light through the optical emitter into the prepolymer to photopolymerize at least a portion of the prepolymer;

g) deactuating said at least one occlusion element; and,

h) withdrawing the device from the body lumen, thereby leaving a layer of polymeric material on at least a surface of the body lumen.

5,665,064

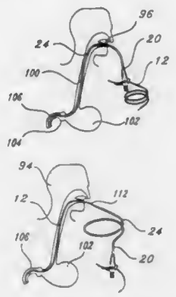
GASTROENTERIC FEEDING TUBE FOR ENDOSCOPIC PLACEMENT AND METHOD OF USE

Raymond O. Bodicky, Mehlville, and Ronald Crouther, Chesterfield, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 163,210, Dec. 6, 1993, abandoned. This application May 12, 1995, Ser. No. 439,610

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—54 **21 Claims**



11. A method of endoscopically inserting a feeding tube within the gastrointestinal tract of a living being comprising the steps:

placing a feeding tube into an instrument channel of an endoscope, the feeding tube having an elongated flexible tubular body with a longitudinally extending lumen therein, the tubular body having distal and proximal ends and at least one side aperture which extends between the lumen and the exterior of the tubular body adjacent the distal end of the lumen, the endoscope further including an illumination means and a viewing means and having a steerable distal tip, the feeding tube being positioned within the instrument channel of the endoscope such that the distal end of the tubular body is adjacent a distal end of the instrument channel of the endoscope, the feeding tube having a longitudinal length which is greater than twice the length of the endoscope's instrument channel;

inserting the distal end of the endoscope through a living being's mouth and down the living being's alimentary tract to the living being's stomach, and positioning the steerable tip of the endoscope so that it is facing the pyloric valve of the living being;

advancing the feeding tube within the instrument channel past the pyloric valve and into the intestinal tract of the living being;

removing the endoscope from about the feeding tube while holding the proximal end of the feeding tube stationary so as to not disturb the position of the distal end of the feeding tube within the intestinal tract of the living being;

attaching a connector to the proximal end of the feeding tube so that it is in fluid communication with the lumen of the feeding tube; and

connecting the connector to a source of fluid whereby fluid passes from the source of fluid through the connector and lumen to the side aperture adjacent the distal end of the feeding tube where the fluid leaves the tube and enters the intestinal tract of the living being.

5,665,065

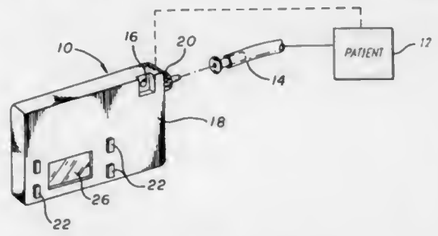
MEDICATION INFUSION DEVICE WITH BLOOD GLUCOSE DATA INPUT

Fredric C. Colman, Granada Hills, and Peter C. Lord, Santa Clarita, both of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed May 26, 1995, Ser. No. 452,406

Int. Cl.[6] A61M *35/00;37/00*

U.S. Cl. 604—66 **21 Claims**



1. A medication infusion device, comprising:

reservoir means for receiving and storing a supply of a selected medication;

delivery means for delivering a selected dosage of the medication from said reservoir means to a patient;

controller means for automatically controlling said delivery means to deliver the selected medication dosage to the patient according to a first medication dispensing protocol; and

means for inputting flood data to said controller means, said data being representative of a current patient condition parameter, said controller means including means responsive to said data for recommending a second medication dispensing protocol;

said controller means including patient accessible manual set means for enabling said controller means to deliver the medication to the patient according to a selected one of said first and second medication dispensing protocols.

5,665,066

METHODS AND APPARATUS FOR MIXING AND DISPENSING MULTI-PART COMPOSITIONS

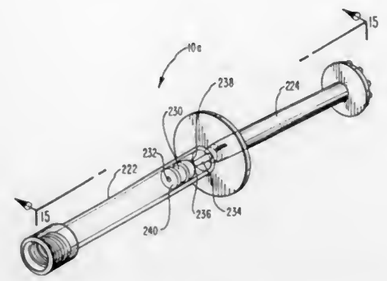
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Continuation-in-part of Ser. No. 117,217, Sep. 3, 1993, Pat. No. 5,328,462. This application Jul. 5, 1994, Ser. No. 270,924

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **27 Claims**

1. A system for mixing and dispensing multi-component compositions, said system comprising:



a syringe barrel for receiving multiple components to be mixed;

piston means for advancing the multi-component composition contained within the barrel, the piston means comprising a piston having a venting means for venting air contained within the syringe barrel through the piston so as to remove such air before the multi-component composition is dispensed, and a plunger selectively attachable to said piston such that when attached, said piston is sealed so as to prevent venting, and when the plunger is detached from said piston, the venting means of the piston is operable to permit venting of the air, said plunger and piston means being slidably disposed within said syringe barrel; and

mixing means for mixing said components within the syringe barrel.

5,665,067

APPARATUS FOR APPLYING A MULTIPLE-COMPONENT TISSUE ADHESIVE

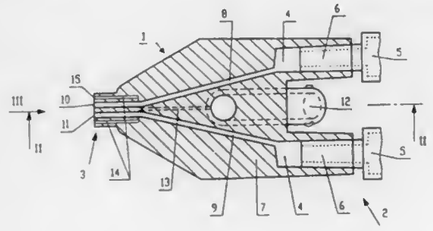
Albert Linder, Leonberg-Hoefingen, Germany; Andreas Kellner, Ulrichskirchen, Austria; Georg Habison, and Guenther Zuelow, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Feb. 24, 1995, Ser. No. 394,039

Claims priority, application Austria, Feb. 28, 1994, 414/94

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **21 Claims**



1. An apparatus for applying a multiple component tissue adhesive, comprising a one-piece construction member having a connecting part and a delivery part, a respective component conveying channel for each of the components of said tissue adhesive, as well as a gas conveying channel for a medicinal gas intended for atomizing said components of said tissue adhesive, said component and gas conveying channels extending from said connecting part to said delivery part and ending in separate exit openings and ending with a front end of said delivery part, wherein said component conveying channels are enclosed by said gas conveying channel at least over a portion of their longitudinal extension directly upstream of said respective exit openings.

5,665,068

DUAL CHAMBER PREFILLABLE SYRINGE

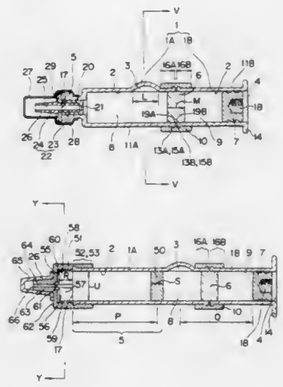
Noriyuki Takamura, Iwaki, Japan, assignor to Arte Corporation, Tokyo, Japan

Continuation of Ser. No. 200,567, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 885,978, May 20, 1992, abandoned. This application Aug. 1, 1995, Ser. No. 509,732

Claims priority, application Japan, Jun. 26, 1991, 3-057218

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—90 **8 Claims**



1. A dual chamber prefillable syringe, comprising:

a syringe outer cylinder having an inner wall and a recessed longitudinal bypass groove on the inner wall the bypass groove having a length, and the outer cylinder having an outer cylinder opening at one end thereof and an opposite cylindrical end having a liquid-tight seal;

a sealing plug of thickness less than the length of said bypass groove, the sealing plug providing a liquid-tight seal between the outer cylinder and the sealing plug at a position between the outer cylinder opening and said bypass groove to form a first inner chamber between the outer cylinder end and said sealing plug; and

a plunger disposed at a position between said outer cylinder opening and said sealing plug, the plunger forming a liquid-tight seal between the outer cylinder and the plunger and forming a second inner chamber between said plunger and said sealing plug;

wherein:

said syringe outer cylinder is split, in a direction perpendicular to a longitudinal direction of the outer cylinder and at a position between said outer cylinder opening and said bypass groove, dividing the outer cylinder into a front chamber outer cylinder and a rear chamber outer cylinder;

said front chamber outer cylinder includes said bypass groove, said cylindrical end, an inner, longitudinally extending wall, and a first split opening;

said rear chamber outer cylinder includes said outer cylinder opening, an inner, longitudinally extending wall, and a second split opening;

an inner peripheral edge of said first split opening of said front chamber outer cylinder is opposed over its entire periphery to an inner peripheral edge of said second split opening of said rear chamber outer cylinder, so that said front chamber outer cylinder and said rear chamber outer cylinder are disposed in series;

said front chamber outer cylinder and said rear chamber outer cylinder are held in a liquid-tight manner by a coupling component;

said bypass groove of said front chamber outer cylinder is spaced from said first split opening of said front chamber outer cylinder; and

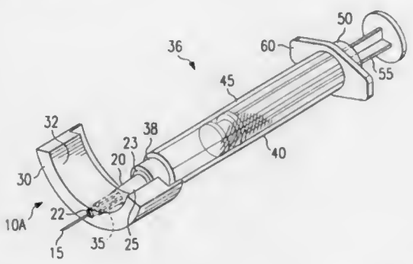
said sealing plug simultaneously contacts an entire periphery of both 1) said inner, longitudinally extending wall of said rear chamber outer cylinder and 2) said inner, longitudinally extending wall of said front chamber outer cylinder.

5,665,069

PRESSURE-DIRECTED PERIBULBAR ANESTHESIA DELIVERY DEVICE

Patricia Lynn Cumer, 1017 Pioneer Cir., Argyle, Tex. 76226, and Peter Ivan Rivera, 2184 Buckingham Rd., #407, Richardson, Tex. 75081

Filed Jul. 19, 1996, Ser. No. 684,548
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—116 **2 Claims**



1. A device for delivering peribulbar anesthesia comprising:

a) a syringe assembly comprising:

a needle hub including a proximal end, a distal end, and first threaded connector means therebetween;

a hollow needle having a length of 0.5 to 0.75 inches attached to the distal end of said needle hub; and

a syringe barrel including a plunger assembly attached to the proximal end of said needle hub; and

b) a flange releasably attached to said syringe assembly comprising:

a semi-circular skin-contacting side including means for transmitting sufficient pressure to space between the inferior orbital ridge and the lower eyelid of a patient to prevent the deposit of anesthetic throughout tissue in said space;

a semi-circular syringe-receiving side; and

a portion defining a tunnel between said skin-contacting side and said syringe-receiving side, said portion including second threaded connector means for engaging said first threaded connector means,

wherein said proximal end of said needle hub is located proximal of said syringe-receiving side and said distal end of said needle hub is located proximal of said skin-contacting side.

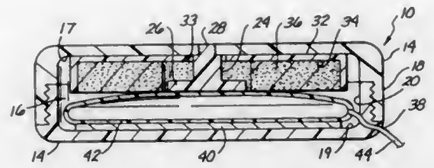
5,665,070

INFUSION PUMP WITH MAGNETIC BAG COMPRESSION

Charles J. McPhee, Huntington Beach, Calif., assignor to I-Flow Corporation, Irvine, Calif.

Filed Jan. 19, 1995, Ser. No. 374,877
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—131 **30 Claims**

1. An infusion pump for providing a pressurized liquid flow from a collapsible, deformable, liquid-filled reservoir bag, the pump comprising:



a housing comprising first and second housing portions removably attachable to each other and defining an interior chamber sized to receive and hold a collapsible, deformable, liquid-filled reservoir bag;

a platen of magnetizable metal disposed within the housing; and

magnet means disposed within the housing for movement between a first position of maximum distance from the platen and a second position of minimum distance from the platen;

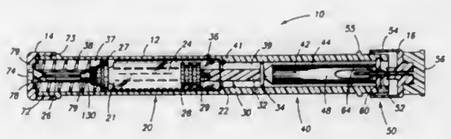
wherein a reservoir bag seated on the plate is compressed by the movement of the magnet means from the first position to the second position in response to the force of magnetic attraction between the magnet means and the platen.

5,665,071

RELOADABLE AUTOMATIC OR MANUAL EMERGENCY INJECTION SYSTEM

Ronald E. Wyrick, Spokane, Wash., assignor to Washington Biotech Corp., Spokane, Wash.

Continuation of Ser. No. 243,641, May 16, 1994, Pat. No. 5,540,664, which is a continuation-in-part of Ser. No. 68,644, May 27, 1993, Pat. No. 5,358,489. This application Jun. 26, 1996, Ser. No. 670,630
Int. Cl.[6] A61M *5/20*
U.S. Cl. 604—134 **4 Claims**



1. A fluid medication injection apparatus comprising:

a barrel having a cavity therein;

a syringe subassembly within the barrel and sized to slide within the cavity, the syringe subassembly having an ampule for housing fluid medication, a needle, and a plunger having a plunger shaft, the plunger being operable to force the fluid medication from the ampule through the needle;

a protective sheath provided on the needle;

a driver having a driver shaft operable to detachably engage the plunger shaft for forcing the syringe subassembly to inject the needle and displace fluid medication through the needle, the driver being movable between a cocked position and extended positions;

a driver release for controllably releasing the driver from the cocked position into an extended position; and

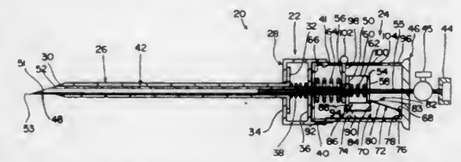
a sheath remover for engaging and removing the protective sheath from the needle.

5,665,072

SAFETY NEEDLE INSTRUMENT WITH MOVABLE CANNULA AND NEEDLE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 247,205, May 20, 1994, and a continuation-in-part of Ser. No. 254,007, Jun. 3, 1994, Pat. No. 5,478,317, said Ser. No. 247,205is a division of Ser. No. 800,507, Nov. 27, 1991, abandoned, said Ser. No. 254,007is a continuation of Ser. No. 800,507, Nov. 27, 1991, abandoned, Ser. No. 79,586, Jun. 22, 1993, and Ser. No. 260,439, Jun. 15, 1994, Pat. No. 5,423,760, which is a division of Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176, and Ser. No. 237,734, May 4, 1994, abandoned, which is a continuation of Ser. No. 868,578, Apr. 15, 1992. This application Jan. 11, 1995, Ser. No. 371,558
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—164 **12 Claims**



1. A safety needle instrument for establishing a portal in the wall of an anatomical cavity comprising

a housing;

an elongate cannula having a proximal end mounted by said housing and a distal end for introduction in the anatomical cavity, said cannula being movable relative to said housing during penetration between an extended rest position and a retracted position;

cannula bias means for biasing said cannula distally relative to said housing toward said rest position;

a needle disposed within said cannula and having a distal end for penetrating the anatomical cavity wall, said needle being movable relative to said housing between an extended position and a retracted position where said needle distal end is proximally spaced from said cannula distal end;

retracting means for moving said needle from said needle extended position to said needle retracted position;

means for manually moving said needle from said needle retracted position to said needle extended position;

locking means for locking said needle in said needle extended position while permitting a predetermined amount of proximal movement of said needle relative to said housing during penetration of the anatomical cavity wall;

needle bias means for biasing said needle distally relative to said housing in said needle extended position while permitting proximal movement of said needle during penetration of the anatomical cavity wall; and

releasing means responsive to penetration of said safety needle instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said needle proximally to said needle retracted position.

5,665,073

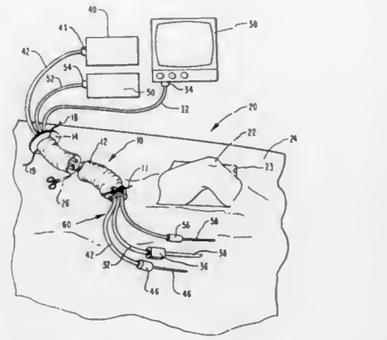
PROTECTIVE SHEATH AND SECUREMENT APPARATUS AND METHOD FOR SURGICAL CONDUITS

Christi Bulow, 562 E. 1700 South, Salt Lake City, Utah 84105, and Sharon Keller, 221 E. 100 South, Santaquin, Utah 84655

Filed Feb. 7, 1995, Ser. No. 384,777
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—263 **10 Claims**

1. A protective cover for surgical conduits comprising:

a tubular element fabricated from a fabric-like material and having a first diameter and a first length, said first diameter being larger than a second diameter, said second diameter representing a diameter of the surgical conduits, said first length being shorter than a second length, said second length



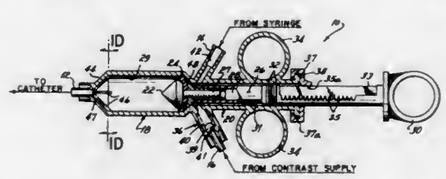
representing a length of the surgical conduits, said tubular element including a first end and a second end, said first end comprising a shield mounted to said first end, said shield comprising a planar element having a hole therethrough, said hole having a diameter corresponding to said first diameter of said tubular element, said shield including a guide member adjacent said hole and extending into said tubular element, said guide member forming a basal element, said shield being mounted to said first end with said tubular element being coupled to said hole, said hole providing access to the interior of said tubular element, said tubular element being foldable upon said basal element, said guide member having an open end to accommodate inserting the surgical conduits through said shield and said guide member comprising opposing channel members, said opposing channel members being separable to accommodate passage of instruments heads affixed to the surgical conduits.

5,665,074

LIMITED BACKFLOW REFLUX VALVE

Larry Kelly, Fairfield, Ohio, assignor to Liebel Flarsheim Company, Cincinnati, Ohio

Filed Sep. 28, 1995, Ser. No. 535,771
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—247 **32 Claims**



1. A limited backflow reflux valve for injecting fluid from a syringe into a patient, comprising:

a housing,

an inlet port in said housing,

an outlet port in said housing,

a bi-directional port in said housing,

a first check valve permitting fluid flow only from said inlet port to said bi-directional port through said housing, and

a second check valve permitting fluid flow from said bi-directional port to said outlet port through said housing, and permitting only a predetermined limited volume of fluid to backflow from said outlet port into said limited backflow

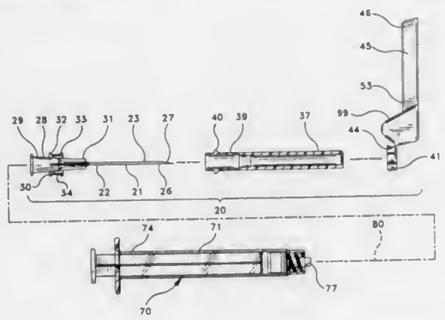
reflux valve housing, and preventing any further backflow into said limited backflow reflux valve housing from said outlet port beyond said limited volume.

5,665,075

METHOD OF MAKING A NEEDLE SHIELD ASSEMBLY

Sandor Gyure, West Orange, N.J.; Tracy R. Hottovy, Columbus, Nebr.; Alex S. Wallace, Mahwah, N.J.; Jay E. Booth, Canaan, Conn., and Bronwen Walters, Dania, Fla., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 3, 1996, Ser. No. 675,752
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—263 7 Claims



1. A method of making a needle shield assembly comprising the steps of:

(a) providing a needle shield and collar assembly comprising a collar having an aperture therethrough of at least 180° duration and an elongate needle shield having a distal end and a proximal end hingedly connected to said collar, said needle shield including two sidewalls defining a longitudinal opening;

(b) providing a needle cannula having a proximal end, a distal end and a lumen therethrough;

(c) providing a hub having a proximal end for connecting to a fluid transfer device and a distal end for connecting to the proximal end of said needle cannula;

(d) providing a base member having collar retaining portion configured to accept said collar through its aperture;

(e) providing a rigid elongate needle cover having a distal end, an open proximal end and a sidewall therebetween defining a cavity;

(f) attaching said base member to said hub;

(g) attaching said proximal end of needle cannula to said hub;

(h) placing said needle cover over said needle cannula and advance said needle cover until said proximal end of said needle cover removably engages said hub;

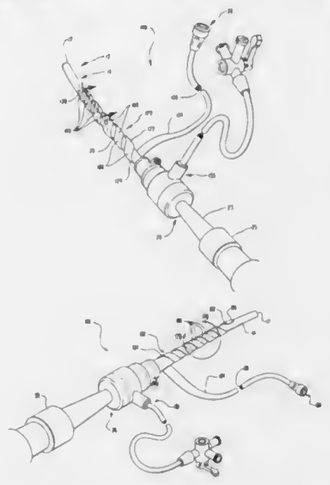
(i) connecting said collar to said needle hub by advancing said collar axially over said needle cover toward said hub until said collar eogages said collar retaining portion of said base member, said collar and needle shield assembly being oriented with said hub so that when said needle cover is removed from said needle hub, said collar is capable of pivoting from an open position where said needle cannula is exposed, to a closed needle protecting position where said needle cannula is within said longitudinal opening of said needle shield.

5,665,076

CATHETER APPARATUS WITH MEANS FOR SUBCUTANEOUS DELIVERY OF ANESTHETIC AGENT OR OTHER FLUID MEDICAMENT

Robert Roth, Festus, Mo.; Fred P. Lampropoulos, Sandy, Utah; Jim Mottola, South Jordan, Utah; Arlin Dale Nelson, Midvale, Utah, and Jerrold L. Foote, Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., South Jordan, Utah

Continuation of Ser. No. 417,824, Apr. 6, 1995, Pat. No. 5,533,986, which is a continuation-in-part of Ser. No. 198,625, Feb. 18, 1994, Pat. No. 5,405,334. This application Mar. 22, 1996, Ser. No. 621,017
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—264 14 Claims



1. An indwelling catheter apparatus comprising:

catheter means for insertion through subcutaneous tissue, said catheter means comprising an indwelling cannula adapted for insertion through subcutaneous tissue into a patient's body, and having an indwelling distal end and a proximal hub end adapted for securement outside of the body; and

sheath means, formed integrally with and surrounding at least a portion of said cannula, for delivering fluid medicament to essentially only the area of subcutaneous tissue surrounding the cannula, said sheath means extending into but essentially not beyond the subcutaneous tissue when the cannula is inserted, said sheath means including valve means for providing a fluid communication path between the sheath means and the surrounding subcutaneous tissue for said fluid medicament.

5,665,077

NITRIC OXIDE-RELEASING NITROSO COMPOSITIONS AND METHODS AND INTRAVASCULAR DEVICES FOR USING THEM TO PREVENT RESTENOSIS

Gerald M. Rosen, Lutherville; William R. Herzog, Jr., and Sovitj Pou, both of Baltimore, all of Md., assignors to Nitrosci Pharmaceuticals LLC, Farmington, Conn.

Filed Apr. 24, 1995, Ser. No. 426,848
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—266 22 Claims

1. A method for the prevention of the aggregation of platelets from blood flowing in a living being resulting from exposure of the blood to a foreign body, which comprises coating the surface of the foreign body which contacts the blood prior to contact therewith, with a physiologically acceptable polymer which is insoluble in the blood and which contains physically dissolved or dispersed therein



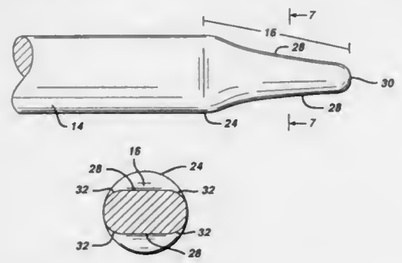
an amount of an α-substituted nitroso compound which slowly thermally decomposes at body temperature over a prolonged period and in so doing releases an amount of nitric oxide from the coating at a rate effective to inhibit the platelet aggregation which would otherwise be promoted by the foreign body.

5,665,078

SURGICAL NEEDLE WITH DECREASED PENETRATION

Walter McGregor, Flemington; William McJames, Belle Mead, both of N.J.; William Schaeffer, Yardley, Pa., and Semyon Shchervinsky, Whitehouse Station, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 479,309, Jun. 7, 1995, abandoned, which is a division of Ser. No. 138,947, Oct. 18, 1993, Pat. No. 5,478,327. This application Jul. 26, 1996, Ser. No. 687,676
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—272 1 Claim



1. A surgical needle comprising:

a tip portion having a blunt tip at a distal end thereof and at least one flat surface, said flat surface blending smoothly with an outer surface of said tip portion such that the tip portion has a continuously smooth outer surface lacking any discontinuities or sharp cutting edges, wherein said tip portion has a flat pressed circular cross-section having two flat surfaces, and said blunt tip bas two flat surfaces.

5,665,079

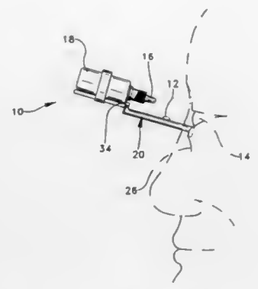
EYE DROP DISPENSER INCLUDING SLIDE

Norman O. Stahl, 3199 Monterey Dr., Merrick, N.Y. 11566

Continuation-in-part of Ser. No. 19,110, Feb. 18, 1993, Pat. No. 5,429,621. This application Jun. 30, 1995, Ser. No. 496,879
Int. Cl.[6] A61M *35/00*; B65D *37/00;47/18*
U.S. Cl. 604—298 30 Claims

1. An assembly for administering drops of fluid to an eye of an individual, comprising:

a container for storing fluid, said container including means for dispensing fluid in the form of drops;



a slide having a longitudinally-extending channel positioned directly under said dispensing means for directly receiving and transporting under the influence of gravity the dispensed drops to the eye, said channel terminating at a distal end which is gently curved to substantially conform to the geometry of an eye socket whereby said distal end may be safely rested against a lower portion of the eye to establish a continuous flow path from said channel to the eye during administration of the drops; and

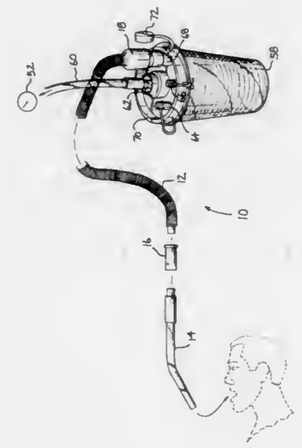
means for securing said slide to said container such that said dispensing means is portioned over said channel whereby the dispensed drops are directly received thereon.

5,665,080

OROPHARYNEAL SUCTIONING DEVICE

James T. Vandenberg, 3405 Beth Ct. NE., Lacey, Wash. 98516

Filed Mar. 8, 1996, Ser. No. 613,251
Int. Cl.[6] A61M *1/00;16/00*
U.S. Cl. 604—319 2 Claims



1. An oropharyngeal suctioning device for evacuation of fluid foreign material including vomitus and bodily secretions, comprising:

a suction tip for insertion into an oropharyngeal cavity of a patient and evacuation of the fluid foreign material, said suction tip having an inside diameter between ½ inch and 1 inch, said diameter being sufficiently large to permit passage of solid particles normally occurring in secretions such as vomitus and further permitting a rapid evacuation rate of the fluid foreign material at an applied negative pressure of no less than 304 mm Hg;

flexible patient vacuum tubing for carrying the fluid foreign material, said patient vacuum tubing having a correspondingly sized inside diameter between ½ inch and 1 inch and being 4 to 10 feet in length, said length being sufficient to enable said suction tip to be operated in the oropharyngeal cavity and further permitting the rapid evacuation rate of the fluid foreign material;

a first flexible adapter connecting said patient vacuum tubing to said suction tip, said first adapter providing an air-tight seal between said patient vacuum tubing and said suction tip;

a suction canister for collection of the fluid foreign material, said suction canister having at least a patient tubing port having a diameter of approximately 3/16 inch, a spout port of at least ½ inch inside diameter and up to 1 inch inside diameter, a vacuum inlet port for attachment of the interior of said canister to a source of negative pressure;

a second flexible adapter connecting said patient vacuum tubing to said spout port, said second adapter providing an air-tight seal between said patient vacuum tubing and said spout port; and

a vacuum line operably attached to said vacuum inlet port, said vacuum line providing a source of negative pressure and further providing no less than 304 mm Hg pressure differential at said vacuum inlet port.

5,665,081

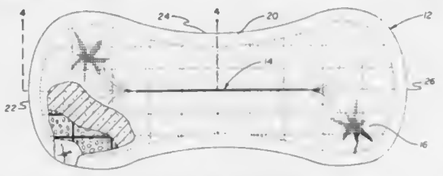
ODOR ABSORBING ANAL PAD

Kenneth J. Grosse, 431 Osborne Ave., Morrisville, Pa. 19067

Filed Jun. 26, 1995, Ser. No. 494,950

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—359 **1 Claim**



1. An odor absorbing anal pad comprising:

a pad member positionable into an abutting relationship with an anal region of an individual, the pad member comprising an upper web, and a lower web coupled to the upper web, the webs being shaped so as to define an outer peripheral edge of the pad member which extends from a first end of the pad member, along a medial portion thereof, and about a second end of the pad member, the pad member shaped so as to be enlarged at the first and second ends thereof such that a transverse width of the pad member proximal to the medial portion thereof is substantially less than a transverse width of the pad member proximal either of the first and second ends of the pad member, the pad member having a filler material positioned between the upper web and the lower web, a volume of granulated charcoal positioned in adjacency relative to the filler material and between the upper and lower webs, the pad member having a matrix of permeable chambers extending coextensively across an entire length and width and interior of the pad member and being positioned between the upper web and the lower web, each of the matrix of chambers containing a predetermined volume of granulated charcoal therewithin;

a gluteus insert extending from an upper surface of the pad member for wedging positioning between gluteus-maximus muscles and into direct contact with an anus of the individual, the gluteus insert projects from an upper surface of the pad member and is formed as an extension of the upper web, the upper web of the pad member is caused to assume a shape of the gluteus insert defining a first end wall of substantially V-shape extending upwardly from the pad member proximal to the first end thereof, lateral walls extending upwardly from the upper surface of the pad member and parallel to a longitudinal axis directed through the first and second ends of the pad member, and a second end wall of substantially V-shape extending upwardly from the upper surface of the pad member proximal to the second end thereof, the lateral walls are substantially concave in shape so as to follow a natural curve of an elongated recess of an anal region of an individual, the gluteus insert including a medial portion thereof located centrally between the first and second end walls, the gluteus insert extending a first distance from the upper surface of the pad member at the first and second end walls thereof, and tapering to a second distance from the upper surface of the pad member at the medial portion thereof, wherein the first distance is substantially greater than the second distance.

5,665,082

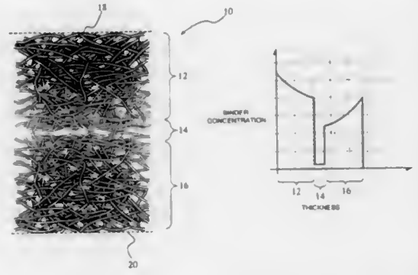
HIGHLY ABSORBENT TRANSFER LAYER STRUCTURE

Roger Boulanger, Ste-Julie, Canada, assignor to Johnson & Johnson Inc., Canada

Filed Nov. 1, 1995, Ser. No. 548,344

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—365 **19 Claims**



1. An integrally formed liquid-absorbent article of particulate material including first and second zones in intimate fluid communicative relationship, each zone having a multiplicity of interparticle interstices admitting passage of liquid, whereby liquid contained in one of said zones is capable of migrating toward the other of said zones, said liquid-absorbent article containing binder, said first zone having a higher average concentration of binder than said second zone;

wherein said liquid absorbent article is in the form of a sheet;

wherein said zones constitute superposed layers of said sheet;

wherein said liquid-absorbent article includes first and second opposite main faces, said first zone including said first main face and second zone including said second main face and wherein said liquid-absorbent article includes a third zone located between said first zone and said second zone, said third zone having a lower density than said first and second zones.

5,665,083

ABSORBENT MEMBER FOR ABSORBENT ARTICLE

Takamitsu Igaue, and Tsutomu Kido, both of Kawanoe, Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Continuation of Ser. No. 272,316, Jul. 8, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 631,117

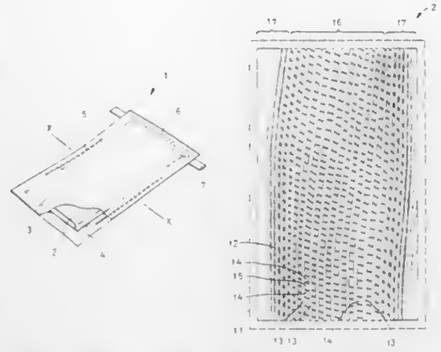
Claims priority, application Japan, Jul. 15, 1993, 5-175258

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—370 **1 Claim**

1. An absorbent member interposed between a liquid permeble topsheet and a liquid impermeable backsheet of an absorbent article, said absorbent member comprising:

an absorbent core;



a liquid permeable covering sheet for covering at least a body facing surface of said absorbent core; and

a reticulated sheet interposed between said absorbent core and said covering sheet, and having a relatively higher open ratio over a central region of said body facing surface than over any of opposite lateral side regions and opposite longitudinal end regions respectively surrounding said central region; wherein said reticulated sheet is a laminated three-layer sheet which comprises a central layer sheet having a relatively higher melting point, upper and lower layer sheets having melting points lower than the melting point of said central layer.

allel upper and lower horizontal edges forming a length of about 3⅛ inches with a longitudinal axis centrally therebetween and parallel front and rear vertical edges forming a height of about 2¾ inches therebetween, each sheet having a minority of its extent located over an upper rear side of the diaper;

each of the extenders also including an adhesive strip having long upper and lower horizontal parallel edges forming a length of about 5½ inches with a longitudinal axis centrally therebetween and having short vertical end edges forming a height of about 1⅞ inches therebetween, each adhesive strip having adhesive fully covering one surface thereof, about half of the length of the adhesive strip being adhesively secured to the sheet and about half of the length of the adhesive strip being adhesively secured to the diaper at the upper rear edge with their axes being overlapped, the adhesive strip overlapping between about 50 percent and 65 percent of the area of the inextensible sheet;

a piece of covering material having a length of about 6½ inches and of a height of about 2⅝ inches to cover that portion of the adhesive strip remote from the inextensible sheet prior to coupling to a diaper and a portion of its length over the inextensible sheet, the rear edge of the adhesive strip and the adjacent edge of the covering material being essentially coextensive whereby, when the covering material is removed, it will expose the adhesive for securement to the upper rear side of the diaper while allowing the opposite edge of the sheet free for contact and securement with an adhesive tab of the diaper; and

an adhesive tab secured to each upper front side of the diaper at its forward edge and secured to the forward edge of the sheet.

5,665,084

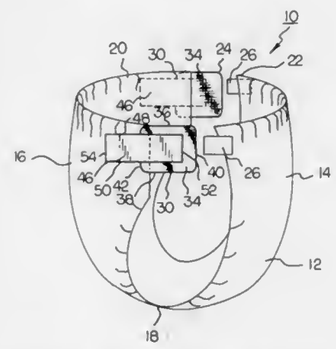
ATTACHABLY PRESSURE SENSITIVE APPARATUS FOR INCREASING GIRTH OF DISPOSABLE UNDERGARMENTS AND INCONTINENT DEVICES

Luke T. Richmond, The Wind Works, 3333 S. Center Rd., Burton, Mich. 48519

Filed Apr. 26, 1996, Ser. No. 639,171

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—389 **4 Claims**



1. An attachment system in combination with a diaper to allow diaper usage for larger children comprising:

a diaper having a central extent positionable between the legs of a child, with a horizontal forward edge and a horizontal rearward upper edge positionable in the front and rear of a child and defining a pair of upper front sides and a pair of upper rear sides to be joined on each side of the child during wearing;

a pair of diaper extenders, one positioned over each upper rear side of a diaper, each of the extenders including an inextensible sheet formed in a rectangular configuration having par-

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5,665,085

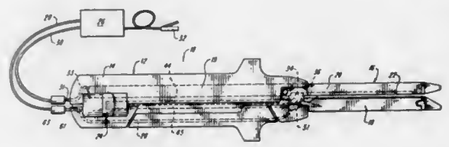
ELECTROSURGICAL CUTTING TOOL

Paul C. Nardella, North Easton, Mass., assignor to Medical Scientific, Inc., Taunton, Mass.

Continuation of Ser. No. 5,006, Jan. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 786,572, Nov. 1, 1991, abandoned. This application Aug. 3, 1994, Ser. No. 285,413

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—41 **29 Claims**



1. An electrosurgical device, comprising:

a proximal handle region;

a distal, tissue affecting portion including opposed first and second tissue engaging surfaces;

a tissue contacting, electrically isolated energy delivering electrode provided on one of the first or second tissue engaging surfaces;

a tissue contacting return electrode provided on one of the first or second tissue engaging surfaces, the return electrode being electrically isolated from the energy delivering electrode;

one or more surgical staples, provided on one of the first or second tissue engaging surfaces of the tissue affecting portion;

a driver means for deploying the staples;

means for effecting closure of one or more of the surgical staples, the means for effecting closure being provided on one of the first or second tissue engaging surfaces opposite the surgical staples; and

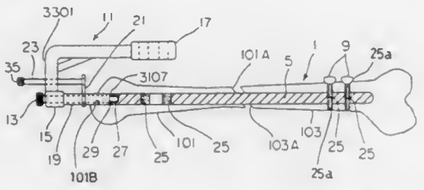
electrosurgical current delivery means for communicating electrical energy through the energy delivering electrode to tissue to effect cutting and/or cauterization of tissue.

5,665,086

INSTRUMENT FOR INSERTING AN INTRAMEDULLARY NAIL IN A BONE

Moritoshi Itoman, Kanagawa-ken, and Satoshi Ojima, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1995, Ser. No. 446,572
Claims priority, application Japan, May 20, 1994, 6-130986
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—64 **19 Claims**



1. An intramedullary nail inserting and mounting instrument comprising:

a base portion which can be mounted to one end of an intramedullary nail, the intramedullary nail being inserted in the bone marrow or the pair of bone pieces of a fractured bone to be interconnected;

a guide shaft portion integrally provided on said base portion and extending in a direction of extension of the intramedullary nail;

a pressing member which is movable along said guide shaft portion to contact one end of one of the bone pieces; and

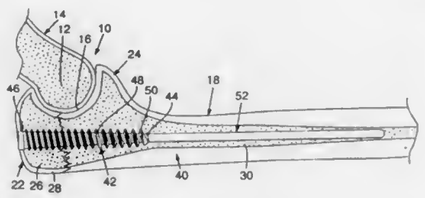
means for moving said pressing member along said guide shaft portion said pressing member moving means comprising a threaded portion provided on an outer peripheral surface of said guide shaft portion in a threaded hole formed in said pressing member, so that said threaded portion of said guide shaft portion can be screwed-engaged in said threaded hole of said pressing member.

5,665,087

METHOD AND SCREW FOR REPAIR OF OLECRANON FRACTURES

Randall J. Huebner, 18560 SW. Hart Rd., Aloha, Oreg. 97005

Filed Mar. 26, 1996, Ser. No. 622,368
Int. Cl.[6] A61B *17/72*
U.S. Cl. 606—65 **16 Claims**



1. A method for repairing olecranon fractures in the ulna comprising the steps of:

creating a hole in the proximal end of the ulna, the hole extending from the proximal end of the ulna to the fracture to define a first region, and from the fracture to the proximal end of the medullary canal to define a second region;

selecting a screw having a cancellous section end a medullary section extending from a leading end of the cancellous section to a leading end of the screw, where the cancellous section include a threaded region adjacent the medullary section and the medullary section is adapted to fit into the medullary canal of the ulna, the threaded region being provided with a larger outside diameter than the diameter of the hole in the second region;

installing the medullary section into the hole up to the threaded region; and

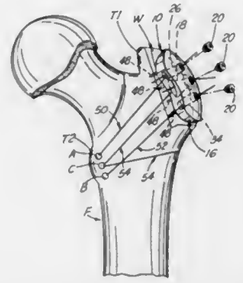
rotating the screw to drive the threaded region into the hole until the threaded region engages the cancellous bone surrounding the hole in the second region, end the medullary section extends from the second region substantially into the medullary canal, where the medullary section is chosen to have a diameter along its entire length that is less than the corresponding diameter of the medullary canal into which the medullary section is adapted to fit.

5,665,088

BONE SECTION REATTACHMENT APPARATUS AND METHOD

Carlos E. Gil, Bartlett, Tenn.; Michael Ries, Cooperstown, N.Y., and Steven A. Garner, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation of Ser. No. 132,567, Oct. 6, 1993, abandoned. This application Jun. 7, 1996, Ser. No. 660,502
Int. Cl.[6] A61B *17/80;17/82*
U.S. Cl. 606—69 **14 Claims**



1. A bone section reattachment apparatus for fusing a surgically removed dome portion of the greater trochanter to the patient's femur comprising;

a) a plate-like member having an outer convex surface and an inner concave surface that is sized and shaped to conform generally to the outer surface of the removed dome portion;

b) the plate-like member having a peripheral surface that extends between the outer and inner surfaces, the peripheral surface including opposed anterior and posterior peripheral portions;

c) a plurality of passageways extending transversely through the plate-like member and communicating with the opposed anterior and posterior portions of the peripheral surface of the plate-like member, each of the passageways having an inner wall surface;

d) each of the passageways having opposed anterior and posterior openings positioned respectively on the opposed peripheral anterior and posterior portions of the peripheral surface;

e) a plurality of generally vertical bores, each extending from the outer convex surface of the plate-like member to a passageway;

f) a plurality of elongated cables, each having cable ends that extend respectively through the plurality of passageways, each of said passageways being sized and shaped to allow overlapping of the cable ends at the passageway so that the cable ends of a particular cable can be overlapped and secured within the passageway;

g) a plurality of fasteners that respectively occupy the plurality of vertical bores during use, each of said fasteners forming a connection with a vertical bore that enables pressure to be applied to a pair of overlapped cable ends in a passageway;

h) the cables being of a length that enables a surgeon to pass each cable around the patient's femur and to pass the opposed cable ends through respective opposed openings of a passageway and into the passageway a distance that allows the cable ends to be overlapped, and then held in such overlapped position by a fastener; and

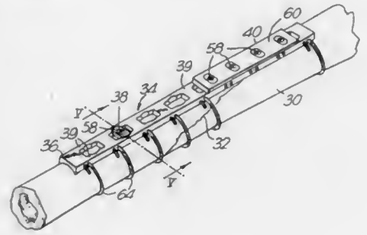
i) projecting portions extending distally from the inner concave surface of the plate-like member and being of sufficient length to extend into the removed dome portion.

5,665,089

BONE FIXATION SYSTEM

Desmond Meiring Dall, 2470 Inverness Ave., Los Angeles, Calif. 90033; Anthony William Miles, Tremont, 14 Upper Oldfield Park, Bath BA2 3JZ, United Kingdom, and Hans Friedrich Schmotzer, Gartenstrasse 7, CH-6330 Cham, Switzerland

PCT No. PCT/GB93/00566, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/18716, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 19, 1993, Ser. No. 302,883
Claims priority, application United Kingdom, Mar. 19, 1992, 9206018
Int. Cl.[6] A61B *12/80*
U.S. Cl. 606—71 **21 Claims**



1. A bone fixation system comprising:

cerclage cables; and

an elongate unitary body including a top face, a bottom face, a spaced pair of elongate side portions which define an oppositely directed pair of lateral edges, a multiplicity of spaced-apart bridge portions connecting said side portions, said bridge portions each having a pair of oppositely directed side edges shaped so that a plurality of approximately rectangular openings are defined between opposed side edges of adjacent bridge portions, and pairs of through-bores for receiving said cerclage cables disposed therein;

wherein said pairs of through-bores are located between adjacent approximately rectangular openings and extend through said bridge portions, each of said pairs of through-bores being positioned within said bridge portions such that crimping said side edges of each of said bridge portion substantially closes said pair through-bores to secure said cerclage cable disposed therein;

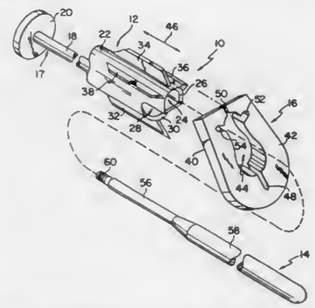
wherein said elongate unitary body is adapted to be located with said bottom face overlying a bone and fixed thereto by passing said cerclage cable around the bone and through one of said pairs of through-bores, pulling the cable tight, and locking it in place by crimping the bridge through which said through-bores pass.

5,665,090

BONE CUTTING APPARATUS AND METHOD

Charles A. Rockwood, San Antonio, Tex.; Jeffrey M. Ondria, Leesburg, Ind.; David A. Susaraba, and Jon C. Serbousek, both of Warsaw, Ind., assignors to DuPuy Inc., Warsaw, Ind.

PCT No. PCT/US92/07677, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/05211, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 9, 1992, Ser. No. 367,337
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **20 Claims**



1. A prosthetic implant and an apparatus of preparing a bone for receiving the prosthetic implant, the implant having a body portion and plurality of fins arranged in a predetermined pattern on the body portion, apparatus comprising:

a cutter including means for cutting fin tracks in the bone to guide the plurality of fins on the implant as the implant is installed into the bone;

a rod coupled to the cutter for locating the cutter relative to an intramedullary canal of the bone; and

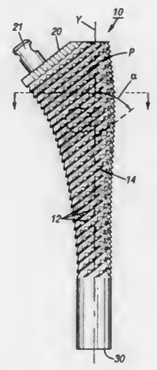
means coupled to the cutter for driving the cutter and rod into the bone.

5,665,091

SURGICAL BROACH

Philip C. Noble, Houston, Tex.; Michael A. Hammer, Kenilworth, N.J.; Glen A. Kashuba, River Edge, N.J.; Steven J. Sawicki, Lake Hopatcong, N.J.; Ben J. Verhoog, North Haledon, N.J., and Richard G. Eckrote, Lincoln Park, N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Feb. 9, 1996, Ser. No. 594,892
Int. Cl.[6] A61B *17/88*
U.S. Cl. 606—85 **29 Claims**



1. A broach suitable for preparing an intramedullary canal of a bone for receiving a prosthetic stem, said broach comprising:

(a) a longitudinal axis;

(b) an anterior face, a posterior face, a medial face, and a lateral face generally corresponding in shape to the respective anterior, posterior, medial, and lateral faces of a prepared intramedullary canal; and

(c) a plurality of cutting teeth having at least two different tooth configurations, wherein said plurality of teeth include a first set of teeth positioned on said lateral face and a second set of teeth positioned on at least one of said anterior and posterior faces, wherein each tooth of said first set of teeth has a different configuration from each tooth of said second set of teeth, and wherein said first set of teeth comprises at least one substantially pyramid-shaped tooth.

5,665,092

MARKER FOR SURGICAL PROCEDURES

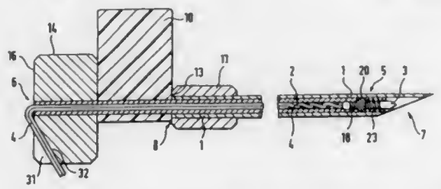
John R. Mangiardi, 988 Fifth Ave., New York, N.Y. 10021; Franklin G. Moser, 1601 Rising Glen Rd., Los Angeles, Calif. 90069; Allen B. Kantrowitz, 23 Woodland Pl., Chappaqua, N.Y. 10514; Karl Leibinger, Reutestrasse 3, 79100 Freiburg-Günterstal, and Franz Leibinger, Roethestrasse 38, 79312 Emmendingen, both of Germany

Continuation of Ser. No. 202,926, Feb. 28, 1994, abandoned. This application Dec. 1, 1995, Ser. No. 566,275

Claims priority, application Germany, Mar. 1, 1995, 43 06 277.6

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—86 **40 Claims**



1. A marker of a site on bone for surgical procedures on a patient, comprising

a tubular guide cannula,

an introduction tube having a proximal end and a distal end and arranged so as to be insertable within the cannula,

a flexible bar extending along and being displaceable within the tube, and a marking pin which is attached to a proximal end of the flexible bar and extends beyond the proximal end of the tube;

wherein the bar protrudes at the distal end of the introduction tube, the introduction tube together with the bar and the marking pin being arranged so as to be inserted into the guide cannula from a distal end of the cannula to place the proximal end of the introduction tube in a region of a proximal end of the guide cannula with the marking pin extending out of the proximal end of the guide cannula, the cannula, introduction tube and marking pin constituting means for positioning and attaching the marking pin to the site on the bone with the bar extending from the pin outwardly through skin and flesh of the patient as a marker of the site for the surgical procedures.

5,665,093

SURGICAL IMPLANTATION METHOD AND APPARATUS

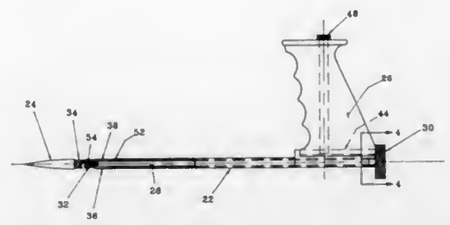
Joseph R. Atkins, 2190 Little York Rd., Dayton, Ohio 45414, and Vakeriy Moysaenko, 1185 Hillcrest Dr., Troy, Ohio 45323

Continuation-in-part of Ser. No. 570,772, Dec. 11, 1995, abandoned. This application Oct. 21, 1996, Ser. No. 735,204

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **15 Claims**

1. An apparatus for implanting a surgical device within the tissue of a patient including:



an elongated hollow member having a front end portion and a rear end portion;

a piercing member removably secured to the front end portion of the hollow member;

a rod member slidably received for movement within the hollow member and extending within the hollow member from the piercing member to a position adjacent the rear end portion of the hollow member;

a surgical device to be implanted within the tissue of a patient;

means located on one end of the rod member for securing one end of the surgical device to the rod member upon removal of the piercing member after the hollow member has been moved through the tissue of the patient to a position where the surgical device is to be implanted:

means removably secured to the other end of the rod member and positioned adjacent the rear end portion of the hollow member for withdrawing the rod member and the attached surgical device through the hollow member to the implanted position when actuated; and

drive means removably secured to the rear end portion of the hollow member for driving the hollow member within the tissue of the patient to the implanted position and enabling the rod member and the surgical device to be moved through the hollow member to a position where the device is to be implanted upon removal of the drive means from the hollow member.

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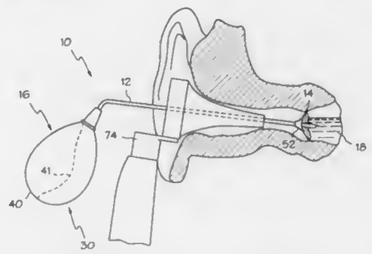
APPARATUS FOR ASPIRATING AND COLLECTING MIDDLE EAR SPECIMENS

Robert Arlin Goldenberg, 501 Stonehaven Rd., Dayton, Ohio 45429

Filed Nov. 13, 1995, Ser. No. 556,046

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—109 **20 Claims**



1. An apparatus for aspirating and collecting a middle ear fluid specimen through the ear drum of a patient, said apparatus comprising:

a hollow needle having a distal end adapted for puncturing through the ear drum of a patient, a proximal end and a bore connecting a first hole at said distal end with a second hole at said proximal end; and

a bulb having a wall defining at least part of a chamber and a first opening leading into said chamber, said proximal end of said hollow needle being mountable to said bulb so as to bring said second hole in fluid communication with said chamber through said first opening,

wherein said needle is of sufficient length and configuration to be disposed through a speculum and puncture the ear drum, while allowing the ear drum to be viewed through the speculum, and said bulb is operatively adapted to draw a specimen of middle ear fluid through said first hole and into said hollow needle.

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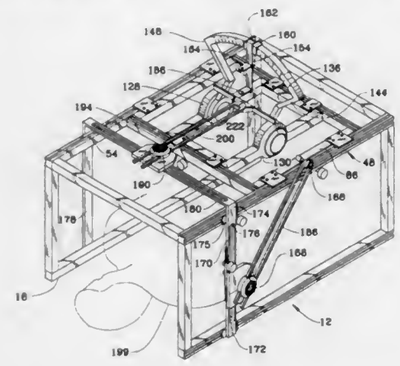
STEREOTACTIC GUIDANCE DEVICE

Robert E. Jacobson, 5995 SW. 71st., Third Fl., So. Miami, Fla. 33143

Filed Dec. 15, 1994, Ser. No. 356,517

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **24 Claims**



1. A surgery guidance device comprising:

a base for securing to a table, said base forming an adjustable guidance carrier for positioning over a patient's body characterized by two horizontally disposed spaced apart rigid lower support members each having a length with a first end and a second end, said lower support members having upwardly facing support legs positioned perpendicular thereto coupling horizontally disposed spaced apart rigid upper support members placed in a parallel plane to said lower support members, each upper support member having a length with a first end and a second end attached to said support legs, each upper and lower support member as joined by said support legs forming a side member assembly, and each end of each upper support member having a cross brace member disposed therebetween;

an interface frame assembly slidably disposed within said upper support members, said frame having an upper surface and a width and a length less than a length of said base, said upper surface of said interface frame assembly including at least one side rail crossing said width of said interface frame assembly, each said side rail having a guide track on its upper surface;

an arch frame assembly slidably disposed within said interface frame assembly having a width and a length, said arch frame assembly width less than said width of said interface frame assembly; an alignment slat secured to said arch frame assembly with said guide track operatively associated with said alignment slat; an arc member pivotally coupled to said arch frame assembly; means for tilting said arc member; and a delivery system pivotally coupled to said arc member.

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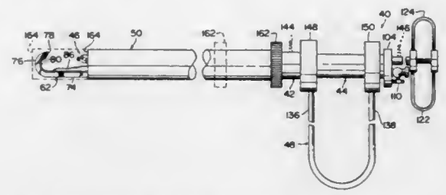
NEEDLE DRIVING APPARATUS AND METHODS OF SUTURING TISSUE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Mar. 7, 1995, Ser. No. 399,984

Int. Cl.[6] A61B *17/10*

U.S. Cl. 606—139 **40 Claims**



1. An apparatus for suturing anatomical tissue comprising

a hollow needle guide having a distal end;

a needle movably disposed within said needle guide and having proximal and distal ends;

suture material connected with said needle; and

manually articulable needle receiving means coupled with said needle guide for guiding said distal end of said needle as said proximal end of said needle is advanced distally through said needle guide and capturing said needle when said proximal end of said needle emerges from said distal end of said needle guide.

5,665,097

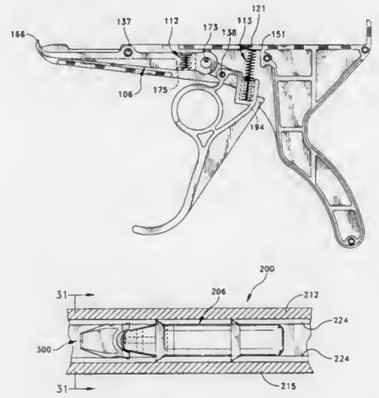
CLIP APPLICATOR

John W. Baker, 4 Wachusett Dr., Acton, Mass. 01720, and Jeffrey D. Baker, 5 Thistle La., Westford, Mass. 01886

Filed Apr. 21, 1995, Ser. No. 426,811

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—143 **10 Claims**



1. A clip applicator adapted to apply and remove C-shaped scalp clips wherein the C-shaped scalp clips each have two legs joined by a resilient bridge and including facing clamping jaws at their free ends and further wherein the bridge includes upper and lower ears adapted to urge the clamping jaws open in response to actuation of said clip applicator, said clip applicator comprising:

a body;

a trigger movably fastened to said body, said trigger having a trigger first position and a trigger second position relative to said body, wherein said trigger is normally pivotally biased in its said trigger first position by spring means, said trigger comprising (i) means for moving said trigger from its said trigger first position to its said trigger second position, and (ii) a lever-engaging portion;

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a lever movably fastened to said body, said lever having a lever first position and a lever second position relative to said body, wherein said lever is normally pivotally biased in its said lever first position by spring means, said lever comprising an elongate beam having a clip-engaging portion disposed at a distal end thereof and a trigger-engaging portion disposed at a proximal end portion thereof, wherein said lever is movable from said lever first position to said lever second position in response to said trigger moving from said trigger first position to said trigger second position, and further wherein said trigger-engaging portion of said lever loosely engages said lever-engaging portion of said trigger such that said clip-engaging portion of said lever is movable relative to said body when said lever is in said lever first position;

a magazine releasably fastened to said body and adapted to store a plurality of clips such that the free ends of the clips rest against the bridge of an adjacent and preceding clip, and to serially dispense the clips from said magazine, said magazine having an open end, said magazine comprising a tube having side walls, means for orienting the clips within said tube such that the free ends of the clips point towards the magazine open end, means for releasably locking the clips within said tube, and a lip projecting into said open end, said lip being shaped so as to be selectively engageable with the upper ear of each of the clips as each clip moves toward said open end, and said magazine being positioned on said body such that said clip-engaging portion of said lever is engageable with the lower ear of each of the clips as each clip moves toward said open end, and further wherein said clip-engaging portion of said lever moves toward said lip when said trigger is moved from said trigger first position toward said trigger second position; and

means for urging the clips toward said open end.

5,665,098

UNITARY REMOVAL OF PLAQUE

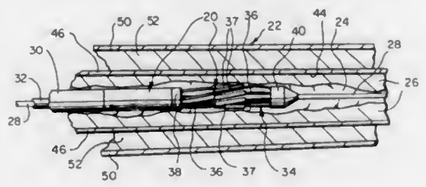
Thomas L. Kelly, West Linn, and Thomas A. Wiita, Lake Oswego, both of Oreg., assignors to EndoVascular Instruments, Inc., Vancouver, Wash.

Continuation of Ser. No. 470,805, Jun. 6, 1995, Pat. No. 5,571,122, which is a continuation-in-part of Ser. No. 973,514, Nov. 9, 1992, abandoned. This application Jul. 23, 1996, Ser. No. 685,393

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—159 **32 Claims**

1. A method of excising material comprising plaque from an



artery comprising the steps of:

inserting an instrument into the artery, the artery having an axis;

placing the instrument adjacent to the material comprising plaque in the artery;

grasping the material comprising plaque with the instrument without materially cutting the material comprising plaque by the instrument;

maintaining the grasp of material comprising plaque while displacing the instrument thereby generally axially separating a length of the material comprising plaque from other material in the artery;

removing the dislodged length of material comprising plaque from the artery.

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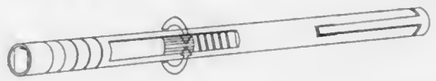
SURGICAL SCALPEL WITH AUTOMATICALLY RETRACTABLE BLADE

Giuseppe Pilo, via Muroni 22, and Antonio Giovanni Flumene, via Garavetti 6, both of 07100 Sassari, Italy

Filed May 12, 1995, Ser. No. 440,419

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **17 Claims**



1. An automatically retracting scalpel, comprising:

a sheath having a sidewall, an open first end and a second end;

a blade support having a first end carrying a scalpel blade and a second end, said blade support being slidably disposed in the sheath and capable of movement from a first position in which the scalpel blade is within the sheath and a second position in which the blade extends beyond the first end of the sheath;

a cylinder; and

a piston slidably moveable with respect to the cylinder and substantially air-tightly sealed to the cylinder, one of the piston and the cylinder being disposed at the second end of the blade support, the other of the piston and the cylinder being disposed at the second end of the sheath,

whereby movement of the blade support from the first position to the second position causes relative movement between the piston and the cylinder to create a vacuum in the cylinder capable of retracting the blade support to the first position, and wherein the sidewall of the sheath is provided with a first opening permitting access to the blade support to allow a user's digit to hold the blade support in the second position.

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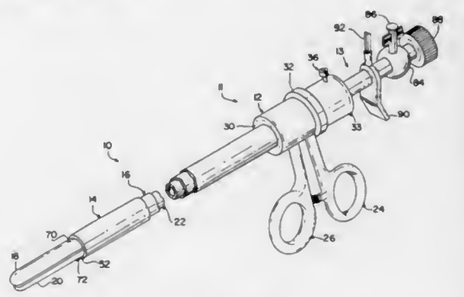
MULTIFUNCTIONAL INSTRUMENT WITH INTERCHANGEABLE OPERATING UNITS FOR PERFORMING ENDOSCOPIC PROCEDURES

InBae Yoon, 2101 Highlands Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 281,814, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 73,193, Jun. 8, 1993, Pat. No. 5,334,209, which is a continuation of Ser. No. 720,381, Jun. 25, 1991, Pat. No. 5,217,473, which is a division of Ser. No. 446,555, Dec. 5, 1989, Pat. No. 5,026,379. This application Jan. 20, 1995, Ser. No. 376,186

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **66 Claims**



1. An endoscopic instrument comprising

a housing;

an outer tubular member having a proximal end mounted by said housing and terminating distally at a distal end;

an intermediate member having a tubular body disposed telescopically within said outer tubular member, a proximal end mounted by said housing and an integral one-piece distal end defining a pair of opposed jaws resiliently biased apart;

an inner member removably disposed at least partly within said intermediate member and carrying an operating member; and

handle means coupled with at least one of said intermediate and outer tubular members for creating relative movement between said intermediate and outer tubular members, whereby said pair of opposed jaws is closed when said distal end of said outer tubular member is advanced distally over said jaws.

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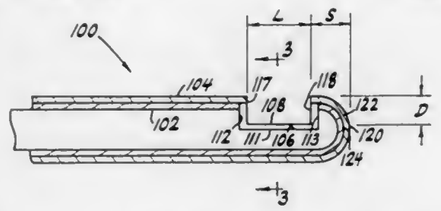
ENDOSCOPIC OR OPEN LIPECTOMY INSTRUMENT

Daniel G. Becker, Chicago, Ill.; Charles W. Gross, Ivy, Va., and Michael P. Glowa, St. Petersburg, Fla., assignors to Linvatec Corporation, Largo, Fla.

Filed Apr. 1, 1996, Ser. No. 626,708

Int. Cl.[6] A61B *17/14*

U.S. Cl. 606—180 **3 Claims**



1. A method of cutting tissue with a rotary powered surgical instrument having an elongated inner tube with a first distal cutting window rotatable within an elongated outer tube with a second distal cutting window comprising the steps of:

providing said second cutting window with a rectangular side-facing opening, formed by two parallel and spaced transverse edges and two parallel and spaced longitudinal edges;

rounding the longitudinal edges of said second cutting window;

providing said first cutting window with a rectangular side-facing opening, formed by two parallel and spaced transverse edges and two parallel and spaced longitudinal edges;

sharpening the longitudinal edges of said first cutting window;

rotating the inner tube within the outer tube.

5,665,102

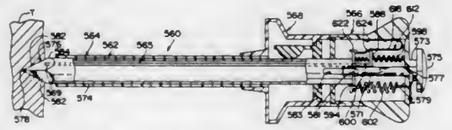
AUTOMATIC RETRACTABLE SAFETY PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 945,177, Sep. 15, 1992, which is a continuation-in-part of Ser. No. 745,071, Aug. 14, 1991, abandoned, Ser. No. 800,507, Nov. 27, 1991, abandoned, Ser. No. 805,506, Dec. 6, 1991, Pat. No. 5,330,432, Ser. No. 808,325, Dec. 16, 1991, Pat. No. 5,324,268, Ser. No. 848,838, Mar. 10, 1992, Pat. No. 5,445,617, Ser. No. 868,566, Apr. 15, 1992, Pat. No. 5,320,610, Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176, and Ser. No. 929,338, Aug. 14, 1992, Pat. No. 5,360,405. This application Mar. 7, 1996, Ser. No. 612,029

Int. Cl.[6] A61M *5/00*

U.S. Cl. 606—185 **13 Claims**



1. An automatic retractable safety penetrating instrument for introducing a sleeve into a cavity in a body comprising

a sleeve for providing a passage through a cavity wall and having a distal end for positioning in a body cavity, a proximal end for positioning externally of the body cavity and a lumen between said distal and proximal ends;

a penetrating member disposed in said lumen and having a central longitudinal axis, a distal tip for penetrating the cavity wall and a passage laterally offset from and parallel with said central longitudinal axis;

a retracting mechanism coupled with said penetrating member for moving said tip proximally relative to said sleeve from a penetrating member extended position wherein said tip protrude distally beyond said distal end of said sleeve to a penetrating member retracted position wherein said tip is disposed within said lumen;

a probe slidably disposed in said passage and having a distal end;

means for biasing said probe distally to a probe extended position wherein said distal end of said probe protrudes distally from said passage to be disposed externally of said penetrating member when said penetrating member is in said penetrating member extended position, said means for biasing permitting proximal movement of said probe relative to said penetrating member from said probe extended position to a probe retracted position in response to contact of said probe with the cavity wall during penetration of the cavity wall by said penetrating member and permitting distal movement of said probe from said probe retracted position toward said probe extended position in response to entry of said distal end of said sleeve into the body cavity; and

a locking and releasing mechanism locking said penetrating member in said penetrating member extended position and automatically releasing said penetrating member for movement to said penetrating member retracted position in response to movement of said probe distally from said probe retracted position toward said probe extended position.

5,665,103

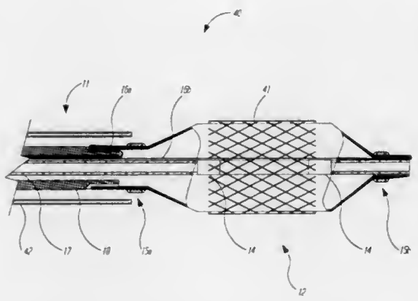
STENT LOCATING DEVICE

Daniel M. Lafontaine, Plymouth, and Roger N. Hastings, Maple Grove, both of Minn., assignors to SCIMED Life Systems, Inc., Maple Grove, Minn.

Filed Mar. 7, 1996, Ser. No. 612,158

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—192 **14 Claims**



1. A method of detecting a metallic stent inside a living body, comprising the steps of:

(i) providing a stent locator device having a proximal end, a distal end and a pair of electrodes mounted on the distal end;

(ii) providing a metallic stent;

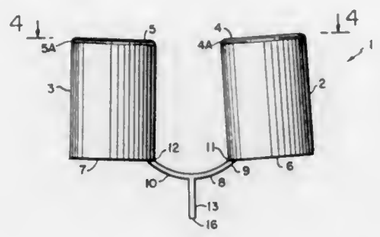
(iii) inserting the metallic stent inside the living body;

(iv) inserting the stent locator inside the living body; and

(v) locating the stent with the stent locator by detecting an electrical parameter when the electrodes on the stent locator are positioned adjacent the stent.

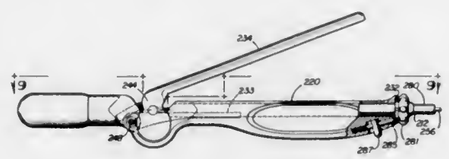
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5,665,104
BREATHING ENHANCER
Chi Hao Edwin Lee, 61 Twin Oaks Rd., Bridgewater, N.J. 08807
Filed Aug. 20, 1996, Ser. No. 700,213
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—199 2 Claims



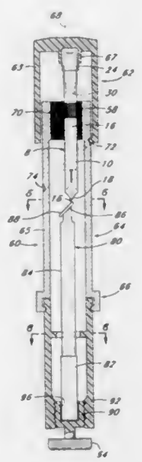
1. A breathing enhancer made from substantially rigid natural or synthetic material, comprising a pair of cylindrical dilators, adapted to be inserted into the nasal cavity and positioned therein adjacent nasal walls in said nasal cavity, each said cylindrical dilator having an inside wall and an outside wall, a top connecting said inside and said outside walls, and a base;
each said inside wall having a height greater than the height of each said outside wall, so that said top connecting said inside wall and said outside wall has a chamfered appearance;
a substantially rigid "U" shaped center connecting piece extending between said base of each said cylindrical dilator;
each said dilator fixedly secured to said "U" shaped center connecting piece so that at rest, said dilators slope convergently inward toward each other;
each said dilator having a substantially uniform cross sectional area, and having a height sufficient to support with said nasal walls during forceful deep inhalation and to prevent said nasal wall from collapsing.

5,665,105
RADIALLY ADJUSTABLE SURGICAL INSTRUMENT FOR HEART SURGERY
Gregory R. Furnish, and W. Michael Hipps, both of Lawrenceville, Ga., assignors to Snowden Pencer/Genzyme Corporation, Tucker, Ga.
Filed Mar. 20, 1996, Ser. No. 618,913
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—205 12 Claims



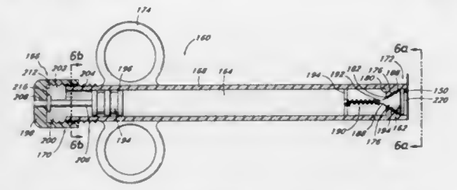
1. A hand-held surgical instrument comprising a handle adapted to be attached to a tool having at least one articulated member thereon, the handle comprising:
a) an elongated base having a body portion, a top surface, an opposite bottom surface, a first side, an opposite second side, a proximal end, and a distal end;
b) an elongated lever having a first surface, an opposite second surface, a front end, a rear end and an actuator arm adjacent the rear end adapted to be projected into the body portion of said base at a predetermined point;
c) means for connecting said actuator arm to said base at the predetermined point to allow said lever to pivot about a transverse axis at the predetermined point between a normally open position and a closed position;
d) means for actuating the articulated member of said tool when said lever is moved to the closed position;
e) means for biasing said lever in the normally open position; and
f) a tool positioning means for rotating said tool to a desired radial orientation with respect to said base and adjustably securing said tool at the desired radial orientation.

5,665,106
VASCULAR PATCH APPLICATOR
Julius G. Hammerslag, San Juan Capistrano, Calif., assignor to Hemodynamics, Inc., San Clemente, Calif.
Division of Ser. No. 314,357, Sep. 28, 1994, which is a continuation of Ser. No. 278,728, Jul. 21, 1994, Pat. No. 5,529,577, which is a continuation of Ser. No. 127,769, Sep. 28, 1993, abandoned. This application Sep. 7, 1995, Ser. No. 523,839
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—214 10 Claims



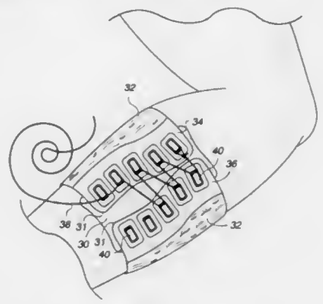
1. An adhesive patch applicator kit, comprising:
a housing having a rotatable cap, said housing having a chamber therein, said cap rotatable about a longitudinal axis of the housing;
an applicator within the chamber, said applicator removably connected to one of the housing or the rotatable cap;
a reservoir in the chamber, said reservoir connected to the other of the housing or the cap;
a tip on the reservoir for expressing adhesive from the reservoir; and
an adhesive patch removably attached to the applicator in between the applicator and the tip;
wherein rotation of the cap relative to the housing about the longitudinal axis expresses adhesive from the reservoir through the tip and on to the patch.

5,665,107
SURFACE OPENING ADHESIVE SEALER
Julius G. Hammerslag, San Juan Capistrano, Calif., assignor to Hemodynamics, Inc., San Clemente, Calif.
Division of Ser. No. 314,049, Sep. 28, 1994, which is a continuation of Ser. No. 278,728, Jul. 21, 1994, Pat. No. 5,529,577, which is a continuation of Ser. No. 127,769, Sep. 28, 1993, abandoned. This application Sep. 7, 1995, Ser. No. 524,511
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—214 5 Claims



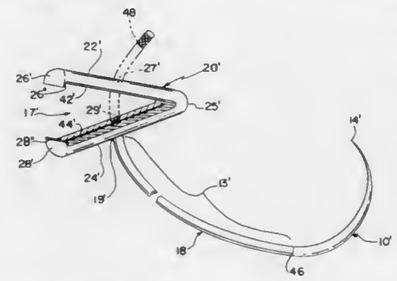
1. An applicator for percutaneously delivering a sealant patch to a surface of a perforated vascular wall, comprising:
a tubular housing having a proximal end and a distal, atraumatic delivery end, said housing defining a reservoir for containing a volume of tissue adhesive and a recess which removably receives a patch, said reservoir being positioned proximal of said recess;
a valve positioned in said housing between said reservoir and said recess to selectively place said reservoir in fluidic communication with said recess; and
a control at the proximal end of the housing, for controlling the expression of adhesive from said reservoir and through said valve.

5,665,108
SURGICAL DRESSING STRAP
Eugene R. Galindo, 11527 Orcas Ave., Lake View Terrace, Calif. 91342
Filed Sep. 16, 1996, Ser. No. 714,575
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—215 7 Claims



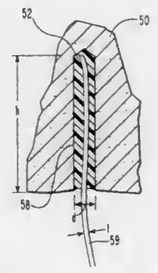
1. A dressing strap comprising;
a thin hydrocolloid pad having at least one straight edge, said pad having a top and a bottom surface;
a plastic barrier cover on said top surface;
a rectangular overlay sheet having top and bottom surfaces, a first edge of said overlay sheet attached to said barrier cover along a line parallel with said straight edge but displaced from said straight edge; and
a plurality of flexible hooks aligned on the top surface of said overlay sheet along a line parallel with said straight edge, said hooks being formed of a thin resilient rectangular plastic that is slightly curved up at each end, one end of each of said plurality of hooks being connected to a frame portion that is welded to said overlay sheet.

5,665,109
METHODS AND APPARATUS FOR SUTURING TISSUE
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Filed Dec. 29, 1994, Ser. No. 366,285
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 54 Claims



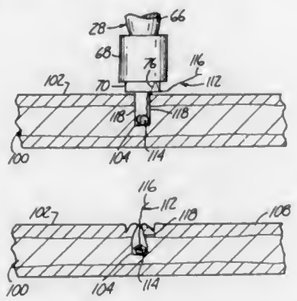
1. A suturing apparatus comprising
a needle having a sharp distal end for penetrating anatomical tissue;
a length of filamentous suture material having an end received by said needle; and
a knotting element having an attachment site secured to a first segment of said suture material and a grasping site including a pair of opposed surfaces for grasping a second segment of said suture material, said opposed surfaces having a first position for receiving said second segment of said suture material therebetween and a second position for non-releasably grasping said second segment of said suture material therebetween to effect a knot after said needle has penetrated the anatomical tissue and said suture material has been tensioned and received between said opposed surfaces.

5,665,110
SUTURE ANCHOR SYSTEM AND METHOD
Alan Chervitz, and E. Marlowe Goble, both of Logan, Utah, assignors to MedicineLodge, Inc., Logan, Utah
Filed Sep. 21, 1995, Ser. No. 531,780
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 5 Claims



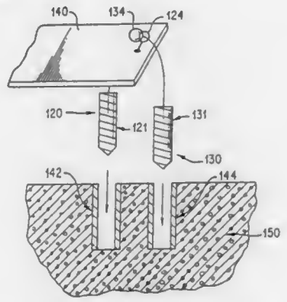
1. A process for anchoring at least one suture to a bone section consisting of, forming a hole into a bone, with said hole having a diameter and formed to a depth to provide an inner wall surface area that is at a minimum slightly greater than the surface area of an end section of a suture to be fitted therein; positioning an end section of at least one suture in said formed hole; and filling said suture containing hole with an adhesive material.

5,665,111
METHOD FOR ANCHORING A SURGICAL SUTURE TO BONE
Charles D. Ray, Golden Valley, and Eugene A. Dickhudt, New Brighton, both of Minn., assignors to RayMedica, Inc., Bloomington, Minn.
Filed Jan. 22, 1996, Ser. No. 589,739
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—232 14 Claims



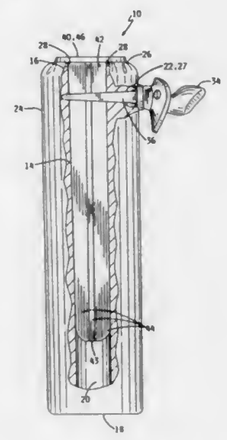
1. A surgical method for anchoring a suture, having a first end and second end, to a bone having a top surface, the method including:
forming an opening in the bone through the top surface;
positioning the first end of the suture within the opening such that the second end of the suture extends from the opening; and
crimping a region of the top surface of the bone surrounding the opening to secure the first end of the suture within the opening.

5,665,112
KNOTLESS SUTURE ANCHOR ASSEMBLY
Raymond Thal, 11321 Bright Pond La., Reston, Va. 22094
Division of Ser. No. 471,508, Jun. 6, 1995, Pat. No. 5,569,306. This application Jul. 15, 1996, Ser. No. 678,609
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—232 9 Claims



1. A knotless suture anchor assembly comprising:
a) a first anchor member assembly comprising a first anchor member having a first end and a second end, said first end of said first anchor member having a suture element attached thereto, wherein said suture element has a catch device located along its length;
b) a second anchor member assembly comprising a second anchor member having a first end and a second end, said first end of said second anchor member having a suture element attached thereto, wherein said suture element has a stop means located along its length, wherein said second anchor member is passed through said at least one catch device of said first anchor member assembly until said stop means engages said catch device; and
c) two hollow anchoring sleeves for installation and anchoring to a bone mass for receiving said first and second anchor members after said second anchor element has been passed through said catch device of said first anchor assembly member.

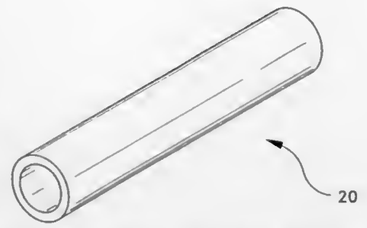
5,665,113
INFANT PACIFIER/PILLOW
Paulette S. Decker, 5508 9th St., Lubbock, Tex. 79416; Kelly R. Lynch; Chuck R. Lynch, both of 2508 S. Tyler, Amarillo, Tex. 79109; Doris D. Reeves, 4624 40th St., Lubbock, Tex. 79414, and Evelyn L. Avent, 2108 67th St., Lubbock, Tex. 79412
Filed Aug. 15, 1996, Ser. No. 698,579
Int. Cl.[6] A61J 17/00
U.S. Cl. 606—234 14 Claims



1. A combination infant pacifier/pillow device comprising:
(a) an elongate pillow comprising a top, a central aperture, and a side slot;
(b) a pacifier comprising an open center grasping handle, the open center grasping handle inserted into the side slot; and
(c) a removable pacifier holder comprising a throat portion, the throat portion inserted through the top and into the central aperture and through the open center grasping handle to releasably affix the pacifier to the pillow.

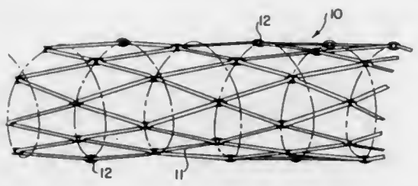
5,665,114
TUBULAR EXPANDED POLYTETRAFLUOROETHYLENE IMPLANTABLE PROSTHESES
Kevin Weadock, Somerset; David J. Lentz, Randolph, and Richard J. Zdrahala, Montville, all of N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.
Filed Aug. 12, 1994, Ser. No. 289,790
Int. Cl.[6] A61F 2/06;2/02
U.S. Cl. 623—1 12 Claims

1. An implantable member for use in repair or replacement with a body comprising an expanded polytetrafluoroethylene substrate having a wall structure including nodes and fibrils with pores present between said nodes and said fibrils, said pores filled with a fluid which solidifies and is crosslinked to form a solid precipitate



of a insoluble biocompatible, biodegradable material of natural origin said material being insoluble at a pH of about 7.4.

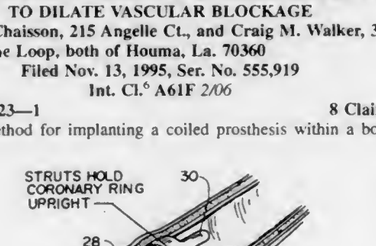
5,665,115
INTRALUMINAL STENT
Andrew H. Cragg, Bloomington, Minn., assignor to Boston Scientific Technology, Inc., Maple Grove, Minn.
Division of Ser. No. 344,524, Nov. 23, 1994, which is a continuation of Ser. No. 25,957, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 839,911, Feb. 21, 1992, Pat. No. 5,405,377. This application Jun. 7, 1995, Ser. No. 477,076
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 18 Claims



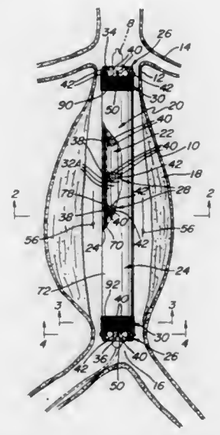
1. An intraluminal stent comprising a predetermined length of elastic wire having a zig-zag configuration and defining a series of axially displaced hoop members, each hoop member comprising a successive series of zig-zags with apices, the apices of axially oppositely disposed zig-zags in adjacent hoop members abutting one another and at least some of the abutting apices connected by a loop member which is not part of said elastic wire forming said zig-zag hoop members.

5,665,116
METHOD AND APPARATUS FOR CATHETERIZATION TO DILATE VASCULAR BLOCKAGE
Gary A. Chaisson, 215 Angelle Ct., and Craig M. Walker, 312 Keystone Loop, both of Houma, La. 70360
Filed Nov. 13, 1995, Ser. No. 555,919
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 8 Claims

1. A method for implanting a coiled prosthesis within a body passageway having a longitudinally extending central axis comprising the steps of:
a) disposing a coiled prosthesis upon a catheter in a coiled small diameter configuration;
b) inserting the prosthesis and catheter within the body passageway by catheterization of the body passageway;
c) expanding the prosthesis to unwind the coiled prosthesis to a larger diameter configuration that has a diameter larger than the small diameter configuration of step "a";
d) forming an annular ring with the prosthesis, having spaced apart first and second annular surfaces, wherein the length of the ring between annular surfaces is smaller than the diameter of the ring upon expansion, and said prosthesis having multiple, circumferentially spaced support members which extend longitudinally from each annular surface, each support member extending circumferentially only a partial distance around the circumference of the ring; and
e) withdrawing the catheter from the body passageway after the prosthesis has been expanded.



5,665,117
ENDOVASCULAR PROSTHESIS WITH IMPROVED SEALING MEANS FOR ANEURYSMAL ARTERIAL DISEASE AND METHOD OF USE
Valentine J. Rhodes, 608 Winding River Rd., Bricktown, N.J. 08723
Continuation-in-part of Ser. No. 562,768, Nov. 27, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 620,072
Int. Cl.[6] A61F 2/04
U.S. Cl. 623—1 13 Claims



1. An intraluminal prosthesis for introduction within a portion of a blood vessel, duct or lumen of a living being having an aneurysm in the wall thereof defining an aneurysmal space, the wall of the portion of the vessel, duct, or lumen having an interior surface, said prosthesis comprising a sleeve, an outer balloon, and sealing means for sealing said prosthesis to portions of the vessel, duct or lumen, said sleeve comprising an elongated tube having a passageway therethrough, a longitudinal axis, and a pair of ends, said passageway being arranged to convey fluid therethrough, said outer balloon being disposed about said sleeve and arranged to be filled with a filling material to cause an outer surface of said outer balloon to extend outward to engage the aneurysm in the wall of the vessel, duct or lumen and to substantially completely fill the aneurysmal space within the vessel, duct, or lumen, said sealing means being formed of a loose fibrillar material which stimulates hemostasis and fibrous tissue ingrowth and being disposed about said outer surface of said outer balloon to cover most of said outer surface, said prosthesis being arranged to be fixedly secured to the interior of the vessel, duct, or lumen with said ends of said sleeve means capable of being sealed to portions of the vessel, duct or

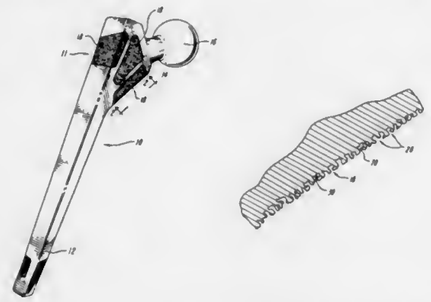
lumen on respective sides of the aneurysm by said sealing means, whereupon said sealing means precludes the ingress of fluid between the outer balloon and the interior of the vessel, duct or lumen at the situs of the aneurysm, while enabling fluid to be conveyed through said passageway, and to preclude the egress of material from between said outer balloon and the interior of the vessel, duct or lumen at the situs of the aneurysm.

5,665,118

BONE PROSTHESES WITH DIRECT CAST MACROTEXTURED SURFACE REGIONS AND METHOD FOR MANUFACTURING THE SAME

David L. LaSalle, Woonsocket, R.I.; Timothy M. Flynn, Norton, Mass.; Salvatore Caldarise, Hanson, Mass., and Richard P. Manginelli, Milton, Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Feb. 18, 1994, Ser. No. 198,607
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 8 Claims



1. A bone prosthesis comprising an implantable article having an outer bone engaging surface, wherein at least a portion of the outer bone engaging surface has cast thereinto an integral macrotextured surface that includes macropores, wherein at least some macropores have undercut edge profiles, and the macropores have a diameter in the range of about 150 to 600 micrometers.

5,665,119

FILLING MEMBER MADE FROM METAL FOR BONE CAVITIES

Hansjörg Koller, Winterthur, Switzerland, assignor to Sulzer Medizinaltechnik AG, Switzerland

Filed May 31, 1994, Ser. No. 251,862
Claims priority, application European Pat. Off., Jul. 1, 1993, 93810466
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 15 Claims



1. A metallic filling member for a bone cavity of a given shape comprising a fabric knitted from a titanium metal wire and is compressed by being plastically deformed into a three-dimensional shape which is substantially smaller that its original dimension and corresponds to the given shape of the bone cavity.

5,665,120

BIOMEDICAL MATERIAL INCLUDING TUBE-LIKE BIODEGRADEABLE NETY WORKS FILLED WITH HYDROXYLAPATITE

Torao Ohtsuka; Makoto Fukaya, both of Aichi; Hideo Tagai, Tokyo; Shigeo Niwa, Aichi; Kazuhiko Sawai, Aichi, and Hajime Ohta, Aichi, all of Japan, assignors to Tohkai Ceramic Material Co., Ltd., Japan

Continuation of Ser. No. 210,635, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 868,947, Apr. 15, 1992, abandoned. This application Mar. 15, 1996, Ser. No. 596,914
Claims priority, application Japan, Aug. 27, 1991, 3-296693
Int. Cl.[6] A61F 2/28
U.S. Cl. 623—16 14 Claims



1. A biomedical material comprising:

a flexible meshed tube having an outer diameter ranging from 50 mm to 10 mm and formed of a porous woven sheet of fibers having a particular shape which are biodegradable and capable of maintaining their shape within a time period ranging from 1 week to 30 weeks in an organism; and

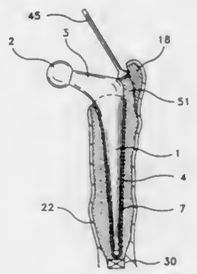
porous hydroxylapatite beads loosely filled in said meshed tube to permit free circulation of blood through the meshed tube and between said porous hydroxylapatite beads to promote osteoconduction, each of said porous hydroxylapatite beads having a plurality of pores connected to one another to form a network, each of said pores having a diameter ranging from 1 to 10 mm and a length larger than the pore diameter, each of said porous hydroxylapatite beads having a porosity ranging from 10 to 50%.

5,665,121

PREFORMED MANTLE

Graham A. Gie, Lympstone; Peter Lawes, Maidenhead, both of England; Lars Linder, Gävle, Sweden; Robin S. M. Ling, Dittisham, England, and Tom J. Slooff, Westerbeek, Netherlands, assignors to Howmedica International, Shannon, Ireland

Division of Ser. No. 377,296, Jan. 24, 1995, abandoned, which is a continuation of Ser. No. 6,882, Jan. 21, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 610,100
Claims priority, application United Kingdom, Mar. 3, 1992, 9202248
Int. Cl.[6] A61F 2/28;5/04
U.S. Cl. 623—16 5 Claims



1. A method of attaching a prosthesis in a bone canal comprising:

placing the prosthesis within a separate preformed polymethylmethacrylate sheath having a smooth inner and a roughened outer surface, said sheath having an open proximal end and a closed distal end and said inner surface permitting sliding movement of said prosthesis therein, and said sheath having a distal void to permit distal movement of said prosthesis therein;

preparing the surface of the bone to which the prosthesis is to be attached;

providing a layer of bone fragments on said surface of said bone; and thereafter

inserting said prosthesis and sheath so that the roughened surface of the sheath closely engages said bone fragments on said surface of said bone.

5,665,122

EXPANDABLE INTERVERTEBRAL CAGE AND SURGICAL METHOD

Parviz Kambin, 239 Chester Rd., Devon, Pa. 19333

Filed Jan. 31, 1995, Ser. No. 381,400
Int. Cl.[6] A61F 2/44
U.S. Cl. 623—17 19 Claims

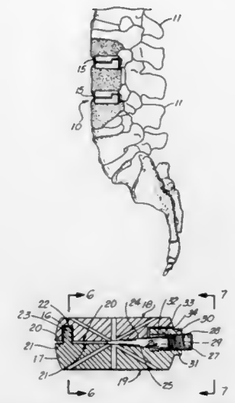
1. A bio-compatible intervertebral prosthesis for implantation between adjacent vertebrae comprising:

a) a cage body that includes a plurality of components including at least first and second separable cage sections configured and sized to be inserted between adjacent vertebrae;

b) said cage sections being separable along the longitudinal axis of said cage body;

c) the cage body having an anterior section with an internally threaded bore;

d) the cage body having an internal recess defined by a recess surface;



e) the cage body having anterior and posterior end portions;

f) An expansion screw with proximal and distal end portions, the proximal end having means thereon for forming a connection with a rotary driver for rotating the screw, the distal end portion being sized and shaped to force the first and second cage sections apart as the screw advances longitudinally within the cage body to engage the recess surface along the length of the distal end of said expansion screw and in a direction from the anterior to the posterior end portions thereof;

g) wherein said expansion screw has a length less than the length of the cage body and wherein said expansion screw does not extend beyond the end of said cage body; and

h) wherein the first and second cage sections move apart incrementally as the screw advances into the internally threaded bore and recess surface.

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5,665,123

MODIFIED WOOL AND PROCESS OF IMPARTING SHRINK-PROOFING PROPERTY TO WOOL

Reizo Gomibuchi, Uji, and Kyoushirou Wajima, Kyoto, both of Japan, assignors to Nippon Sanmo Sensyoku Co., Ltd., Japan

Continuation of Ser. No. 227,379, Apr. 14, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 523,514

Claims priority, application Japan, Apr. 15, 1993, 5-112143

Int. Cl.[6] **D06M** *11/68*

U.S. Cl. 8—128.1 **8 Claims**

1. A process of treating wool for imparting shrink-proofing property thereto, comprising the steps of immersing the wool in a first aqueous bath containing a water-soluble organic phosphine to obtain a pretreated wool, and then immersing said pretreated wool in a second aqueous bath consisting of (I) at least one modifying agent selected from the group consisting of:

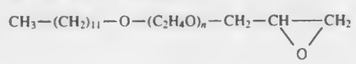
(1) Glyceroltriglycidyl ether

(2) Polypropyleneglycol diglycidyl ether,

(3) Propyleneglycol diglycidyl ether,

(4) 2,2-bis(bromomethyl)propyleneglycol diglycidyl ether

(5) Glycidyl ether of an ethylene oxide addition product of lauryl alcohol having the formula:

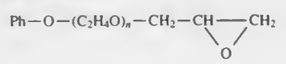


wherein,

(6) Sorbitan polyglycidyl ether,

(7) Neopentylglycol diglycidyl ether,

(8) Glycidyl ether of an ethylene oxide addition product of phenol having the formula:



wherein Ph represents a phenyl group and n is an integer of 2–10,

(9) Epichlorohydrin,

(10) Glycidol,

(11) Propylene oxide, ethyleneimine compounds, urea compounds, thiourea compounds, alkylene carbonates, unsaturated carboxylic acids, methacrylic acid, maleic anhydride, methyl acrylate, 2-hydroxyethyl methacrylate, acrylamide and methacrylamide, unsaturated nitriles, unsaturated alcohols, esters of an unsaturated alcohol, sulfonic acid salts having a vinyl group and selected from the group consisting of vinyl group-containing aliphatic sulfonic acid salts and styrene sulfonic acid salts, cyanic acid salts, poly(alkylene oxide) nonionic surfactants, salts of sulfates of said nonionic surfactants and silane coupling agents having a vinyl group, (II) a pH control agent giving said second aqueous bath a pH of 2–12 and (III) water.

5,665,124

PROCESS FOR DYEING AND PRINTING MATERIALS CONTAINING HYDROXYL AND/OR CARBOXAMIDE GROUPS

Horst Jäger, Leverkusen, and Joachim Wolff, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

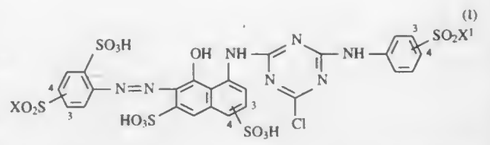
Filed Oct. 20, 1995, Ser. No. 546,005

Claims priority, application Germany, Oct. 28, 1994, 44 38 544.7

Int. Cl.[6] **C09B** *67/24;* **D06P** *1/38;3/10;3/66*

U.S. Cl. 8—526 **9 Claims**

1. A process for dyeing and printing materials containing hydroxyl groups, carboxamide groups or both, with a reactive dyestuff, which comprises applying to said materials a reactive dyestuff which, in the form of the free acid, corresponds to the following formula



(I)

in which the radicals SO_2X and SO_2X^1 and the second sulfo group in the radical of the aminonaphthol-disulfonic acid are each in the 3- or 4-position and X and X^1 denote $CH{=}CH_2$ or CH_2CH_2Z, in which Z denotes a substituent which can be split under dyeing conditions, and X and X^1 can be identical or different.

5,665,125

MIXTURES OF FIBRE-REACTIVE RING-OPENED PHTHALIMIDYLAZO DYES

Paul Herzig, Basel, and Anton Andreoli, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

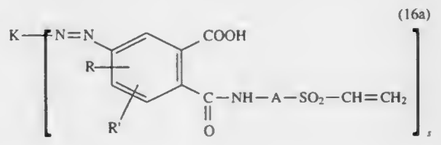
Division of Ser. No. 451,354, May 26, 1995, Pat. No. 5,532,345. This application Dec. 27, 1995, Ser. No. 579,189

Claims priority, application Switzerland, May 30, 1994, 1679/94

Int. Cl.[6] **C09B** *62/00;* **D06P** *3/66;1/382;1/384*

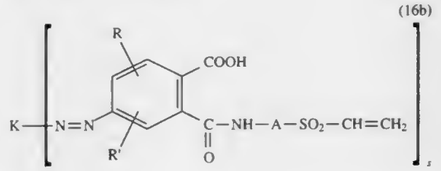
U.S. Cl. 8—543 **11 Claims**

1. A mixture of compounds comprising a compound of the formula



(16a)

and a compound of the formula



(16b)

in which

K is the radical of a coupling component,

s in the compounds of formulae (16a) and (16b) has identical meanings and is the number 1 or 2,

R and R' independently of one another are each hydrogen, sulfo, hydroxyl, C_1–C_4alkoxy, halogen or cyano,

A is C_1–C_6alkylene which is unsubstituted or substituted by halogen, hydroxyl, sulfato, carboxyl, cyano, C_2–C_4alkanoyloxy, C_1–C_4alkoxycarbonyl or carbamoyl or interrupted by a group —O— or —NR"—, or is C_1–C_6alkylenephenylene which is unsubstituted or substituted in the phenyl part by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or sulfo,

R" is hydrogen or C_1–C_4alkyl,

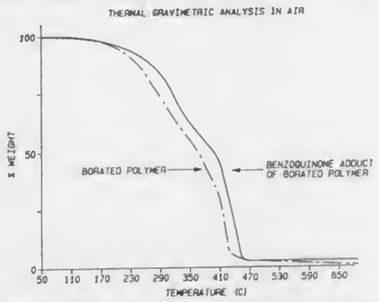
and the ratio of the compounds of formulae (16a) and (16b) is about 1:1.

5,665,126

ADDUCTS OF QUINONE COMPOUNDS AND AMINE-CONTAINING POLYMERS FOR USE IN LUBRICATING OILS AND IN FUELS

Abhimanyu O. Patil, Westfield, and Frank Femino, Kearney, both of N.J., assignors to Exxon Chemical Patents Inc, Linden, N.J.

Division of Ser. No. 344,775, Nov. 23, 1994, Pat. No. 5,588,972. This application Aug. 22, 1996, Ser. No. 701,371
Int. Cl.[6] C10L *1/22;* C10M *149/14*
U.S. Cl. 44—312 15 Claims



1. An oil soluble adduct useful as a fuel additive or lubricating oil additive comprising the reaction product of:

at least one quinone compound having at least one hydrogen on the quinone ring; and

an amine-containing polymer having within its structure at least one reactive amino group selected from the group consisting of primary amino groups, secondary amino groups and mixtures thereof, wherein the amine-containing polymer comprises

a Mannich condensation product of at least one alkyl substituted hydroxy aromatic compound formed by the alkylation of a hydroxy aromatic compound with a hydrocarbon polymer having a number average molecular weight of from about 300 to 20,000, an aldehyde reactant, and an amine compound having at least two reactive amino groups selected from the group consisting of primary amino groups, secondary amino groups, and mixtures thereof.

8. A lubricating oil composition containing from about 0.01 to 20 weight percent of the adduct of claim 1.

10. A fuel composition containing from about 0.001 to 0.5 weight percent of the adduct of claim 1.

5,665,127

PROCESS FOR PRODUCING SINTERED α-AL_2O_3 BODIES AND THEIR USE

Paul Möltgen, Laufenburg; Pirmin Wilhelm, Bad Säckingen, and Josef Schmoll, Goslar, all of Germany, assignors to H.C. Starck GmbH & Co. KG, Goslar, Germany

Filed Jan. 24, 1996, Ser. No. 590,629
Claims priority, application Germany, Feb. 6, 1995, 195 03 854.1
Int. Cl.[6] C04B *35/111*
U.S. Cl. 51—293 22 Claims

1. A process for producing sintered, microcrystalline bodies based on α-Al_2O_3, characterized in that the following steps are performed:

(a) deagglomerating or comminuting an α-Al_2O_3 powder having an average particle size equal to or less than 3 μm as the starting material and adding liquid to form a slip, with said powders comprising the solids content of the slip, with the powders having a particle size under 1 μm,

(b) drying the slip to a residual moisture content of equal to or less than 6% by weight to leave a dried powder,

(c) press-compacting the dried powder to form a green body having a density equal to or greater than 60% of the theoretical density, and

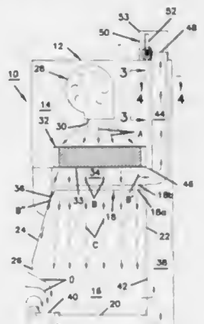
(d) then subjecting the green body to shock sintering at temperatures in the range from 1,300° to 1,550° C., the green body being brought to the sintering temperature from a low temperature of essentially no grain growth to said sinter temperature range in a time equal to or less than 60 seconds, then soaking at such range for under an hour and cooling.

5,665,128

CLEAN AIR CABINET WITH VALVED EXHAUST

Max D. Peters, Plymouth; Gerald D. Peters, Eden Prairie, and Teddy Lee Henderson, Robbinsdale, all of Minn., assignors to NuAire, Inc., Plymouth, Minn.

Continuation of Ser. No. 567,317, Nov. 5, 1995, abandoned. This application Sep. 24, 1996, Ser. No. 710,934
Int. Cl.[6] B01D *35/31*
U.S. Cl. 55—212 9 Claims



1. A clean air cabinet comprising;

a housing including walls defining a blower chamber and a sample chamber having a front wall, a floor, a top wall and a back wall, said blower chamber disposed vertically above said sample chamber;

a blower disposed within said blower chamber and having a blower inlet and a blower outlet;

a filter disposed between said blower and said top wall and cooperating with said top wall to define a volume between said filter and said top wall;

said blower positioned for air to be forced downwardly from said blower outlet and travel in substantially a straight path through said filter and through said top wall into said sample chamber;

restricted airflow passages formed through said top wall for restricting airflow through said top wall for said volume to have an elevated pressure relative to said sample chamber and a reduced pressure relative to said blower chamber;

an exhaust plenum having an exhaust inlet in airflow communication with said volume and an exhaust outlet exterior of said housing;

an access opening in said front wall;

an air recycling plenum for directing airflow from said sample chamber to said blower chamber;

a valve having a first position for blocking airflow through said exhaust plenum and a second position for permitting airflow through said exhaust plenum;

an actuator for moving said valve between said first and second positions;

said actuator including means responsive to operation of said blower for automatically moving said valve to said first position when said blower is not operating and for automatically moving said valve to said second position when said blower is operating; and

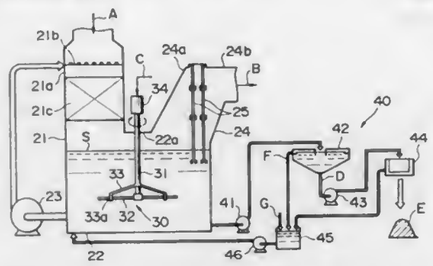
said exhaust plenum sized for airflow from said volume through said exhaust plenum to generate a suction at said access opening to draw air from an exterior of said housing through said access opening.

5,665,129

WET FLUE-GAS DSULFURIZATION SYSTEM

Kiyoshi Okazoe; Toyoshi Nakagawa, both of Tokyo, and Toru Takashina, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 523,826
Claims priority, application Japan, Oct. 12, 1994, 6-245855
Int. Cl.[6] B01D *47/14*
U.S. Cl. 55—257.1 4 Claims



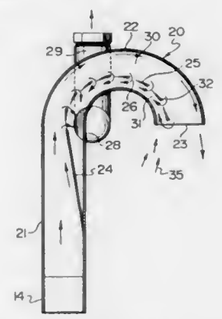
1. A wet flue-gas desulfurization system comprising an absorption column, a tank formed integrally with the bottom of the absorbent column to hold an absorbent slurry, a flue gas inlet formed at the top of the absorption column, a circulating pump for forcing the slurry upwardly from the tank into the flue gas inlet for contact with flue gas, means for removing sulfur dioxide by absorption from the flue gas through the medium of the absorbent slurry in the flue gas inlet, and a gas-outlet duct formed to rise integrally from the top of an end part of the tank, whereby the treated flue gas free from sulfur dioxide is discharged to the outside, said gas-outlet duct including a mist eliminator which is held upright, as a vertical partition, across the riser of the duct, with the lower end of the eliminator being extended partly into the bath of the absorbent slurry inside the tank.

5,665,130

RISER TERMINATOR FOR INTERNALLY CIRCULATING FLUID BED REACTOR

Bent B. Nielsen; Franco Berruti, and Leo A. Behie, all of Calgary, Canada, assignors to Natural Resources Canada, Ottawa, Canada

Filed Jan. 18, 1996, Ser. No. 588,401
Int. Cl.[6] B01D *45/00*
U.S. Cl. 55—307 10 Claims



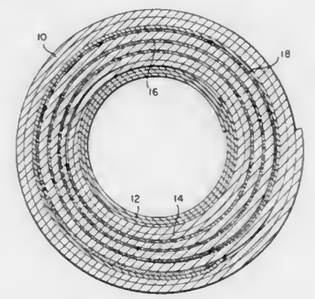
1. A separator device for separating a gas/solids mixture rising through a vertical riser tube, said separator device comprising a tubular member having a straight vertical tubular portion the lower end of which is adapted for attachment to the upper end of said riser tube and the upper end of which merges into a substantially semi-circular inverted U-shaped tubular lop and terminating in a downwardly directed opening, said U-shaped loop having an upper surface and a lower surface, a ramp portion of shallow angle in said vertical tubular portion adjacent said loop lower surface and terminating at the inlet to said loop to thereby create a venturi, a semi-circular wall dividing said tubular loop into a larger upper flow channel and a smaller lower flow channel, said divider wall commencing adjacent the highest point of said venturi ramp portion and having therein a plurality of longitudinally spaced lateral slots, and a gas discharge outlet in said lower flow channel for removing separated gas therefrom.

5,665,131

INFLATOR FILTER MADE OF WRAPPED MESH

Christopher Hock, Uintah; Linda M. Rink, Liberty; Kurt E. Kottke, Bountiful, and Paul Philpot, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 248,939, May 25, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,332
Int. Cl.[6] B01D *39/10;* B60R *21/28*
U.S. Cl. 55—487 8 Claims



1. A gas generator filter assembly having a multiple layered or stack-up wrapped cylindrical configuration consisting essentially of:

a hollow cylindrical inner core having at least one open end and internal and external surfaces constructed from at least one wrap of metal wire mesh or expanded metal filter material, and additional wraps of different filter material emanating from and being substantially coextensive with the external surface of said inner core such that said additional wraps are maintained in cylindrical relation about said core without further structural support, said additional wraps of different filter material comprise second, third and fourth wraps of filter material wrapped outward of said inner core, wherein the leading end of said second wrap is in contact with said core, the leading end of said third wrap is in contact with said second wrap, the leading end of said fourth wrap is in contact with both said second and third wraps and wherein the trailing ends of said third and fourth wraps terminate at approximately the same point within said assembly.

5,665,132

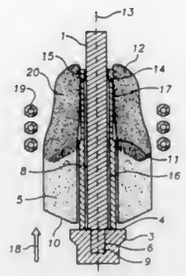
PROCESS FOR THE SINTERING OF HOLLOW CYLINDERS OF SILICON DIOXIDE SOOT

Klaus Ruppert, Maintal; Uwe Christiansen, Gelnhausen; Michael Hünermann, Alzenau; Klaus Dittmer, Gelnhausen, and Anton Steinkohl, Gründau, all of Germany, assignors to Heraeus Quarzglas GmbH, Hanau, Germany

Filed Sep. 12, 1995, Ser. No. 526,944
Claims priority, application Germany, Sep. 15, 1994, 44 32 806.0
Int. Cl.[6] C03B *8/00*
U.S. Cl. 65—17.1 6 Claims

1. Process for sintering a hollow cylinder of silicon dioxide soot, said process comprising,

providing a hollow cylinder of silicon dioxide soot having an upper end and a lower end,



supporting the lower end so that said cylinder is vertically oriented,

sintering said upper end while said lower end is supported during a first sintering phase,

holding said sintered upper end so that said cylinder is suspended vertically, and

sintering said lower end while said upper end is held during a second sintering phase.

5,665,133

PROCESS FOR PRODUCTION OF PURE TRANSPARENT QUARTZ

Koichi Orii, Kanagawa-ken; Yukinobu Hara, Aomori-ken; Tomoyuki Akiyama, Yamagata-ken; Koji Tsukuma, Ibaraki-ken, and Yoshikazu Kikuchi, Yamagata-ken, all of Japan, assignors to Tosoh Corporation, Shinnanyo, and Nippon Silica Glass Co., Ltd., Tokyo, both of Japan

Filed Oct. 10, 1995, Ser. No. 541,467

Claims priority, application Japan, Oct. 14, 1994, 6-249417

Int. Cl.[6] C03B *19/00;* **C03C** *15/00*

U.S. Cl. 65—17.6 **5 Claims**

1. A process for producing pure transparent quartz glass, comprising steps of molding powdery amorphous silica into an article, converting the molded powdery amorphous silica in a vacuum or a helium atmosphere into crystalline molded silica of high-temperature cristobalite structure, and then fusing the crystalline silica into glass, wherein the molded silica is converted into the crystalline silica without addition of any crystallization promoter.

5,665,134

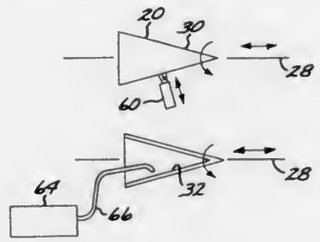
LASER MACHINING OF GLASS-CERAMIC MATERIALS

Kevin Kirby, Calabasas Hills; Doruk Engin, Pasadena, both of Calif.; Tony Jankiewicz, and Joe W. Barber, both of Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 487,366

Int. Cl.[6] C03B *33/00;32/00;31/00;* **C03C** *19/00*

U.S. Cl. 65—61 **18 Claims**



1. A method for fabricating a glass-ceramic radome, comprising the steps of:

providing a radome blank made of a glass-ceramic, material and having a longitudinal axis, and further having an inside surface and an outside surface;

providing a high-power laser utilizing a set of operating parameters;

rotating the radome blank about the longitudinal axis at a rate of rotation corresponding to a feed rate;

rough machining a rough-cut layer of the glass-ceramic material from a rough-machining surface of the radome using the high-power laser simultaneously with the step of rotating and with a point of application of a laser beam from the high-power laser traversing along the radome blank generally parallel to the longitudinal axis of the radome blank, the rough machining surface being selected from the group consisting of the inside surface and the outside surface of the radome blank, wherein the feed rate and the set of operating parameters of the high-power laser produce a material removal rate during the step of rough machining; and

final machining glass-ceramic material from the rough-machining surface by a final machining technique other than the high-power laser machining used in the step of rough machining.

5,665,135

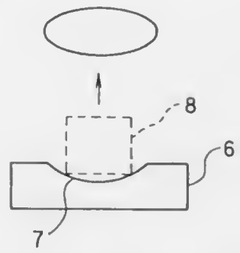
METHOD FOR FABRICATING PREFORMS FOR MOLDED LENSES

Tetsuro Izumitani, 685-58, Hodokubo, Hino-Shi, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,134

Int. Cl.[6] C03B *19/00*

U.S. Cl. 65—66 **5 Claims**



1. A method for fabricating a preform for a molded lens, consisting essentially of the steps of:

providing a heating dish including an upper concave surface portion, wherein the upper concave surface portion is polished or coated to a surface roughness of 100 Å or less, and wherein the heating dish is comprised of graphite or Cr_2O_3,

disposing an optical glass starting material having a surface roughness of 400 Å or less on the upper concave surface portion of the heating dish, provided that the heating dish is comprised of Cr_2O_3 if the optical glass starting material contains Pb^{2+} ions,

fire polishing by heating the optical glass starting material at a temperature between the yield point and about the softening point of the glass, provided that the fire polishing is conducted in a neutral or reducing atmosphere if the heating dish is comprised of graphite,

wherein a preform for a molded lens is obtained having a surface roughness of 100 Å or less.

5,665,136

PROCESS FOR PRODUCING MICRO LENSES USING A LASER BEAM

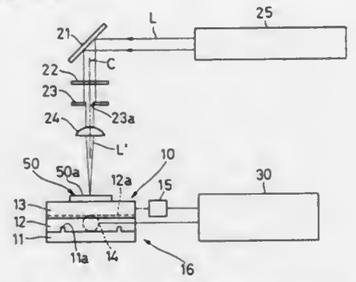
Yuichi Komachi, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1995, Ser. No. 490,486

Claims priority, application Japan, Jun. 29, 1994, 6-170201

Int. Cl.[6] C03B *29/00*

U.S. Cl. 65—102 **5 Claims**



1. A process for producing micro lenses comprising:

locally heating and melting a workpiece made of glass material, by irradiating a flat surface of said workpiece with a laser beam;

forming the surface of said workpiece into a convexly curved surface under the effect of surface tension occurrable to the glass material at the time the workpiece is melted; and

hardening said workpiece to thereby form a micro lens having said convexly curved surface;

wherein the glass material has a viscous property, the magnitude of which is sufficiently high to ensure that said convexly curved surface is formed, and a thermal expansion property, the magnitude of which is sufficiently low to prevent cracking of the glass material when the convexly curved surface is cooled.

5,665,137

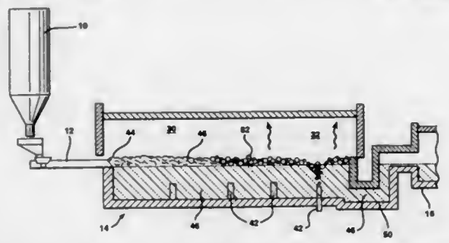
METHOD FOR CONTROLLING SECONDARY FOAM DURING GLASS MELTING

Jianzhong Huang, Westerville, Ohio, assignor to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Aug. 15, 1995, Ser. No. 515,412

Int. Cl.[6] C03B *5/16*

U.S. Cl. 65—134.1 **20 Claims**



1. A method for forming a molten glass composition comprising the steps of:

providing a glass melting furnace having first and second melt regions;

forming a molten glass composition in said first region of said glass melting furnace;

passing said molten glass composition to said second melt region; and

providing an oxidizing agent to said molten glass composition in said second melt region to oxidize said molten glass composition so as to minimize foaming of said molten glass composition in said second melt region.

5,665,138

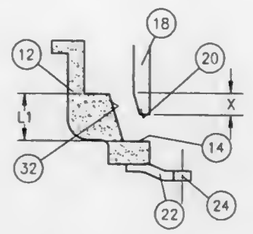
METERING SPOUT BOWL ASSEMBLY

Kenneth John Paul, Tolland, Conn., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Dec. 8, 1994, Ser. No. 352,007

Int. Cl.[6] C03B *7/084*

U.S. Cl. 65—325 **4 Claims**



1. A spout bowl assembly for a glass forming machine which forms containers from discrete gobs cut from individual streams of molten glass discharged from the spout bowl assembly, said spout bowl assembly comprising

a spout bowl for receiving molten glass including a bottom having a horizontal tube seating surface with a discharge hole defined therein, and

a tube for controlling the flow of received molten glass from said spout bowl into said discharge opening,

said tube having a cylindrical outer wall and a flat, horizontal bottom surface located vertically above said tube seating surface and vertically locatable between a first position in engagement with said tube seating surface to an elevated position a selected vertical distance above said tube seating surface,

said tube being located at a fixed location during the operation of said spout bowl assembly,

said spout bowl additionally including an annular wall extending upwardly from said tube seating surface said selected vertical distance, and

said annular wall and the bottom portion of said tube wall extending said selected distance from the bottom of the tube being selectively configured relative to one another so that during at least a portion of the displacement of said tube from said engaged position to said upper position the effective flow area between said tube and said annular wall will be changed so that during such portion of the displacement, vertical displacement will change the spacing between said tube bottom surface and said tube seating surface and will conjointly change the effective area between said tube and said wall.

5,665,139

MOLD FOR PRODUCTION OF A QUARTZ GLASS COMPONENT

Klaus Ruppert, Maintal; Uwe Christiansen, and Klaus Dittmer, both of Gelnhausen, all of Germany, assignors to Heraeus Quarzglas GmbH, Hanau, Germany

Filed Oct. 3, 1995, Ser. No. 538,583

Claims priority, application Germany, Oct. 27, 1994, 44 38 134.4

Int. Cl.[6] C03B *9/00;11/00*

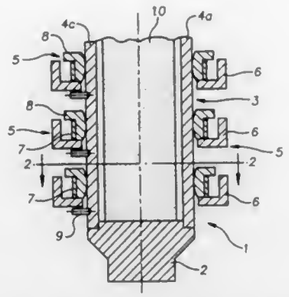
U.S. Cl. 65—357 **7 Claims**

1. Mold for the production of a quartz glass component by melting, said mold comprising:

a bottom,

a sidewall upstanding from said bottom and enclosing a cavity with an open top, said sidewall having a circumference, said sidewall comprising a plurality of segments each having vertical edges which abut vertical edges of adjacent segments, whereby said segments can separate under the action of outward radial forces from within the cavity,

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pretensioned elastic means surrounding said wall segments, said elastic means beings resistant to creep at the melting temperature of the quartz, and

tensioning means outside said sidewall and abutting said elastic means to put said elastic means under tension; said tensioning means surrounding said elastic means and being spaced from said sidewall about the entire circumference of said sidewall.

5,665,140

METHOD FOR THE PRODUCTION OF IRON CARBIDE

John K. Pargeter, Voorhees, N.J., and Mark S. Mazanek, Rosemont, Pa., assignors to Allmet Technologies, Inc., Philadelphia, Pa.

Division of Ser. No. 341,497, Nov. 17, 1994, Pat. No. 5,516,358. This application Dec. 4, 1995, Ser. No. 567,005

Int. Cl.[6] C01B *31/30*

U.S. Cl. 75—504 **5 Claims**

1. A method for the production of iron carbide from an iron oxide source material comprising the steps of:

a) finely dividing said iron oxide source material and mixing said finely divided material with a freely divided carbon source to form a mixture of finely divided iron oxide and finely divided carbon;

b) pelletizing said mixture of finely divided iron oxide and freely divided carbon to form pellets of said mixture having a diameter less than approximately 0.5 inches; and

c) heating said pellets to a temperature of at least 1100° C. under reducing conditions to form said iron carbide.

5,665,141

ULTRASONIC TREATMENT PROCESS

Robert E. Vago, Bettendorf, Iowa, assignor to Arjo Hospital Equipment AB, Sweden

Division of Ser. No. 180,676, Jan. 13, 1994, abandoned, which is a division of Ser. No. 967,670, Oct. 28, 1992, Pat. No. 5,305,737, which is a continuation-in-part of Ser. No. 753,008, Aug. 23, 1991, Pat. No. 5,178,134, which is a continuation-in-part of Ser. No. 726,948, Jul. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 322,128, Mar. 10, 1989, Pat. No. 5,048,520, which is a continuation-in-part of Ser. No. 175,936, Mar. 30, 1988, Pat. No. 4,942,868. This application Jan. 11, 1996, Ser. No. 584,774

Int. Cl.[6] B01D *19/00*

U.S. Cl. 95—30 **10 Claims**

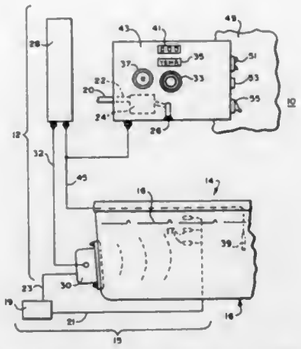
1. A method of treating a human bather comprising the steps of:

(a) filling a bathtub having a size sufficient to completely accommodate an adult human bather with water from a water supply source positioned adjacent said bathtub;

(b) adding a conditioning agent to the water in said bathtub;

(c) positioning a human bather within said bathtub;

(d) with the human bather in said bathtub, applying ultrasonic vibrations through the water within said bathtub, said ultrasonic vibrations having a vibration frequency in the range of about 15 kilohertz to about 100 kilohertz and a power density less than about five watts per square centimeter; and



(e) modulating said vibration frequency of said ultrasonic vibrations in accordance with a sweep frequency substantially different than said vibration frequency.

5,665,142

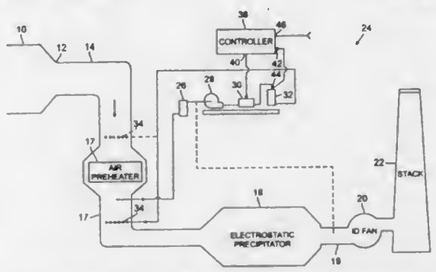
FLUE GAS CONDITIONING SYSTEM AND METHOD USING NATIVE SO_2 FEEDSTOCK

Robert A. Wright, Indianapolis, Ind., assignor to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Continuation of Ser. No. 226,712, Apr. 12, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 752,727

Int. Cl.[6] B03C *3/013*

U.S. Cl. 95—58 **10 Claims**



1. In a boiler system having an electrostatic precipitator and a flue gas conditioning system which conditions the flue gas by introducing sulfur trioxide into the flue duct through which the flue gas is flowing upstream of the electrostatic precipitator, an improved method for producing the sulfur trioxide comprising the steps of:

a. withdrawing a portion of the flue gas from the flue duct;

b. passing the flue gas through a catalytic converter to convert sulfur dioxide in the flue gas to sulfur trioxide;

c. introducing the sulfur trioxide generated by the catalytic converter into the flue duct upstream of the electrostatic precipitator; and

d. controllably varying the temperature of the catalytic converter based on a desired sulfur trioxide feedrate to controllably vary the amount of sulfur trioxide generated by the catalytic converter.

8. A flue gas conditioning system for conditioning flue gas generated by a boiler prior to the flue gas passing through an electrostatic precipitator, the boiler coupled to the electrostatic precipitator by a flue duct, the flue gas conditioning system comprising:

a. a heater having an inlet coupled to the flue duct;

b. a catalytic converter having an inlet coupled to an outlet of the heater and an outlet coupled to the flue duct; and

c. a controller coupled to the heater for controlling the heater, the controller having an input to which is coupled a sulfur trioxide demand signal, the controller including means for determining a desired amount of sulfur trioxide to be introduced into the flue duct to condition the flue gas based on the sulfur trioxide demand signal, means for determining a setpoint temperature for the catalytic converter based on the determined desired amount of sulfur trioxide and means for controlling the heater to heat the flue gas passing therethrough to achieve and maintain the catalytic converter at the desired setpoint temperature.

5,665,143

AIR FILTRATION SYSTEM

Allan Jarvis, and Richard J. Holmes, both of Salisbury, Great Britain, assignors to The Secretary of State of Defence In Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, England

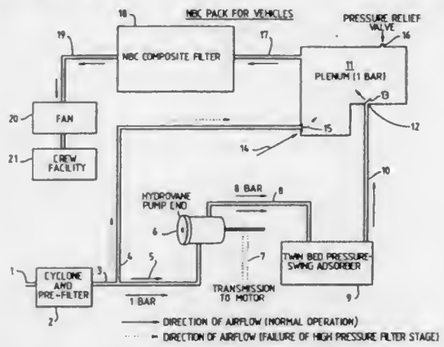
PCT No. PCT/GB94/01714, § 371 Date Feb. 16, 1996, § 102(e) Date Feb. 16, 1996, PCT Pub. No. WO95/05886, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 4, 1994, Ser. No. 591,676

Claims priority, application United Kingdom, Aug. 20, 1993, 9317325

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—96 **24 Claims**



1. A method of providing breathable air to a human or animal living area comprising passing air through a composite gas filtration system comprising a compressor fee pressure swing adsorption unit placed upstream of an adsorbent carbon filter unit in a gas supply line, characterised in that in the event of the pressure swing adsorption unit shutting down, air is automatically drawn or propelled from upstream of the compressor and pressure swing adsorption unit through the adsorbent carbon filter unit and passed to the living area.

5,665,144

METHOD AND APPARATUS UTILIZING HYDROCARBON POLLUTANTS FROM GLYCOL DEHYDRATORS

D. Jeffrey Hill, and E. Todd Wiggins, both of Rte. 4, Box 1109-80, Edmond, Okla. 73034

Filed Dec. 12, 1995, Ser. No. 570,790

Int. Cl.[6] B01D *19/00;53/26*

U.S. Cl. 95—179 **5 Claims**

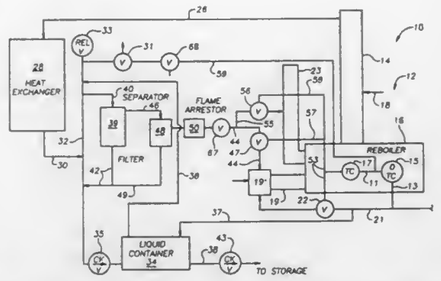
1. In a method for recovering water and aromatic hydrocarbons evaporated from glycol in a still column mounted on a reboiler, having a fire-tube provided with a fuel and air intake end, in a glycol regenerating apparatus, the improvement comprising:

(a) passing water and hydrocarbons vapor from said still column to a vapor condenser;

(b) passing uncondensed vapors from said vapor condenser to a condensate separator;

(c) passing effluent from said vapor condenser and said separator to a self emptying container; and,

(d) passing non-condensable hydrocarbon vapors from said condensate separator through a hydrocarbon vapor and air mingler at the fuel and air intake end of the fire-tube in said reboiler, whereby the only gaseous discharge from the reboiler regenerating apparatus is combustion products from the reboiler fire-tube.



5,665,145

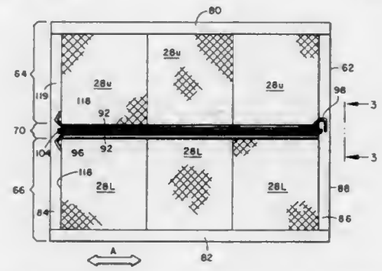
AIR FILTER CHANNEL AND PULLER

Doyle R. Goodman, Clarksville, and James A. Davis, Franklin, both of Tenn., assignors to American Standard Inc., Piscataway, N.J.

Filed Oct. 26, 1995, Ser. No. 548,629

Int. Cl.[6] B01D *46/10*

U.S. Cl. 95—273 **5 Claims**



1. A method of removing filters from the filter supporting rack of an air conditioning unit comprising the steps of:

forming an intermediate channel on a rack where the intermediate channel longitudinally extends in a direction generally parallel to a row of filters;

inserting a puller into the intermediate channel;

causing prongs on a distal end of the puller to engage the distal end of a filter row; and

removing the puller from the intermediate channel thereby removing the filters in a filter row.

5,665,146

DEHUMIDIFIER

Kunitaka Mizobe, 2-31-38, Hoshikuma Jyonan-ku, Fukuoka-shi, Fukuoka, Japan

PCT No. PCT/JP93/01391, § 371 Date Jan. 3, 1996, § 102(e) Date Jan. 3, 1996, PCT Pub. No. WO95/01828, PCT Pub. Date Jan. 19, 1995

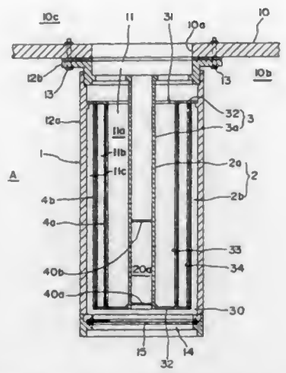
PCT Filed Sep. 29, 1993, Ser. No. 581,607

Claims priority, application Japan, Jul. 3, 1993, 5-042238 U; Aug. 12, 1993, 5-232619

Int. Cl.[6] B01D *53/22;53/26*

U.S. Cl. 96—7 **5 Claims**

1. A dehumidifier mounted on a wall portion of a container, comprising a cylindrical body forming an air passage to commu-



nicate the interior and exterior of said container with each other; and a plurality of bottom-fitted cylindrical air passage bodies where at least a part of a cylinder wall thereof comprises a water-proof film having moisture permeable, penetrated microscopic holes, in which said bottom-fitted cylindrical air passage bodies are arranged inside said cylindrical body, thereby shielding said air passage in a plurality of stages from the interior to the exterior of the container.

5,665,147

COLLECTOR PLATE FOR ELECTROSTATIC PRECIPITATOR

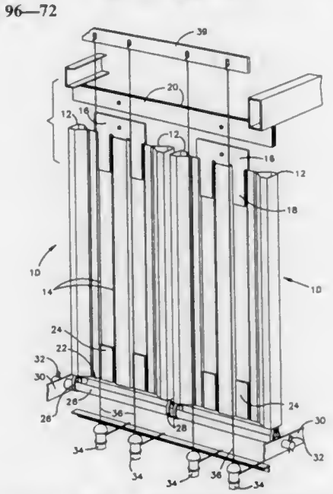
Robert W. Taylor, Overland Park, Kans., and Lewis Stokes, Hilliard, Fla., assignors to BHA Group, Inc., Kansas City, Mo.

PCT No. PCT/US93/03932, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/25170, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 27, 1993, Ser. No. 530,300

Int. Cl.[6] B03C *3/47*

U.S. Cl. 96—72 **9 Claims**



1. A collector plate for an electrostatic precipitator, said collector plate comprising:

a substantially rectangular panel;

a polygonal element at each end of said panel extending substantially along the vertical length of said panel, said polygonal element integrally formed with said panel and defining a closed periphery, thereby forming a substantially unobstructed enclosed region positioned symmetrically about the longitudinal plane of said collector plate, wherein said collector plate is formed of one unitary piece of material.

5,665,148

ADSORPTION AIR FILTER AND METHOD FOR ITS PRODUCTION

Horst Mühlfeld, Grasellenbach; Hansjörg Grimm, Weinheim; Peter Grynaeus, Birkenau; Thomas Dabisch, Mörlenbach, and Harald Stinl, Birkenau, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Oct. 30, 1995, Ser. No. 550,426

Claims priority, application Germany, Dec. 1, 1994, 44 42 713.1

Int. Cl.[6] B01D *53/04*

U.S. Cl. 96—153 **13 Claims**

1. An adsorption air filter, having a self-supporting shaped structure, comprising:

adsorber particles of regular or irregular form, having an average size of 100 to 7000 μm; and

binder particles of regular or irregular form, the melting range of the binder particles being less than that of the adsorber particles, and the average size of the binder particles being less than that of the adsorber particles, wherein the binder does not spread over the surface of the adsorber particles at temperatures below 100° C. and the binder particles are a thermoplastic polyurethane having a melting range from 130° to 140° C., the thermoplastic polyurethane including a soft-segment portion of polycaprolactone and a hard-segment portion of 1,4-butanediol and 1,6-hexanediol with diphenylmethane diisocyanate, and between 130° and 180° C. the thermoplastic polyurethane occurs as a highly viscous melt with a viscosity which changes only slightly over the temperature range from 130° to 180° C., said adsorber particles being joined to one another by the binder particles; and

wherein the self-supporting structure has a substantially irregular three-dimensional distribution of the adsorber and binder particles, the self-supporting structure being free of homogeneous agglomerate structures which are distributed uniformly within the entire filter volume and are visible with the naked eye.

5,665,149

ANTI-CORROSION PIGMENT AND USE THEREOF

Karl Gotzmann; Karlheinz Dorn, both of Budenheim; Hans-Dieter Nägerl, Dudenhofen, and Sieghard Göbelbecker, Bodenheim, all of Germany, assignors to Chemische Fabrik Budenheim, Budenheim, Germany

Filed Dec. 21, 1995, Ser. No. 576,673

Claims priority, application Germany, Dec. 22, 1994, 44 45 844.4; Nov. 10, 1995, 195 41 895.6

Int. Cl.[6] C09D *5/08;* **C09C** *1/02*

U.S. Cl. 106—14.12 **17 Claims**

1. Anti-corrosion pigment for surface protection of metals or metal alloys, with phosphate, wherein the anti-corrosion pigment comprises a mixture of β-tricalcium phosphate with a second phosphate selected from the group consisting of tertiary magnesium phosphate and dicalcium phosphate dihydrate, said pigment having better anti-corrosion properties than pigments which contain only β-tricalcium phosphate tertiary magnesium phosphate or dicalcium phosphate dihydrate.

12. An aqueous paint formulation comprising the pigment of claim 1.

5,665,150

DYE AND INK COMPOSITIONS

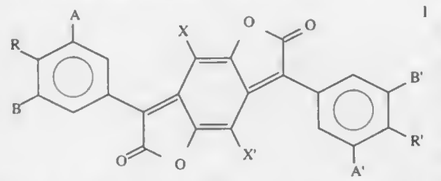
William M. Schwarz, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 27, 1996, Ser. No. 720,061

Int. Cl.[6] C09D *11/02;* **C07D** *307/91;307/92*

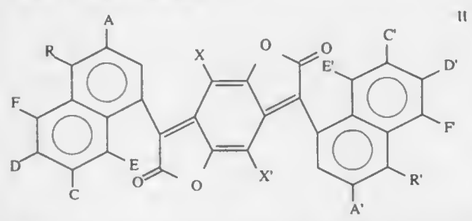
U.S. Cl. 106—31.43 **16 Claims**

1. An ink jet printing process which comprises (1) incorporating into an ink jet printer an aqueous ink composition which comprises water, a humectant, and a colorant of the formula



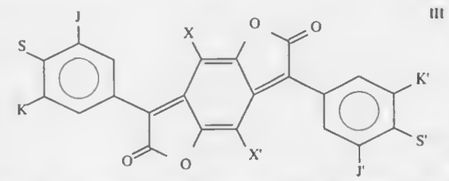
I

wherein (a) X and X' each, independently of one another, are hydrogen, alkyl, halogen, ester, or amide; (b) R and R' each, independently of one another, are hydrogen, hydroxy, alkoxy, aryloxy, ester, amine, amide, ether, thioether, or $-(O(CH_2)_y)_zOH$ wherein y is an integer of from 1 to 3 and z is an integer of from 1 to about 50; (c) A, A', B, and B' each, independently of one another, are hydrogen, —COOH, $-SO_3M$, wherein M is a cation, or —NR"R"', wherein R" and R"' each, independently of one another, are hydrogen, alkyl, or aryl, wherein at least one of A, A', B, and B' is not hydrogen; or



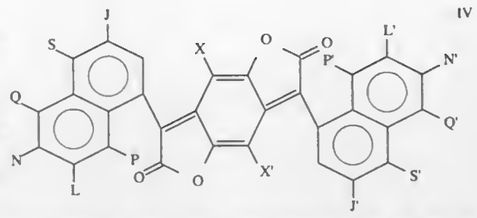
II

wherein (a) X and X' each, independently of one another, are hydrogen, alkyl, halogen, ester, or amide; (b) R and R' each, independently of one another, are hydrogen, hydroxy, alkoxy, aryloxy, ester, amine, amide, ether, thioether, or $-(O(CH_2)_y)_zOH$, wherein y is an integer of from 1 to 3 and z is an integer of from 1 to about 50; (c) A, A', C, C', D, D', E, E', F, and F' each, independently of one another, are hydrogen, —COOH, $-SO_3M$, wherein M is a cation, or —NR"R"', wherein R" and R"' each, independently of one another, are hydrogen, alkyl, or aryl, wherein at least one of A, A' C, C', D, D', E, E', F, and F' is not hydrogen; or



III

wherein (a) X and X' each, independently of one another, are hydrogen, alkyl, halogen, ester, or amide; (b) S and S' each, independently of one another, are hydrogen or $-(O(CH_2)_y)_zOH$, wherein y is an integer of from 1 to 3 and z is an integer of from 1 to about 50, wherein at least one of S and S' is not hydrogen; (c) J, J', K, and K' each, independently of one another, are hydrogen, —COOH, $-SO_3M$, wherein M is a cation, or —NR"R"', wherein R" and R"' each, independently of one another, are hydrogen, alkyl, or aryl; or



IV

wherein (a) X and X' each, independently of one another, are hydrogen, alkyl, halogen, ester, or amide; (b) S and S' each, independently of one another, are hydrogen or $-(O(CH_2)_y)_zOH$, wherein y is an integer of from 1 to 3 and z is an integer of from 1 to about 50, wherein at least one of S and S' is not hydrogen; (c) J, J' L, L', N, N', P, P', Q, and Q' each, independently of one another, are hydrogen, —COOH, $-SO_3M$, wherein M is a cation, or —NR"R"', wherein R" and R"' each, independently of one another, are hydrogen, alkyl, or aryl; and (2) causing droplets of the ink composition to be ejected in an imagewise pattern onto a substrate.

5,665,151

METHOD FOR MAKING ARTICLE WITH AND DETECTING WATER BASED INKS CONTAINING NEAR INFRARED FLUOROPHORES

Nelson Zamora Escano, and James John Krutak, Sr., both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 546,973, Oct. 23, 1995, Pat. No. 5,614,008. This application Nov. 18, 1996, Ser. No. 751,629

Int. Cl.[6] C09D *11/00;* **C08G** *69/00;* **C08L** *67/02*

U.S. Cl. 106—31.15 **21 Claims**

1. A method for invisibly marking, for identification purposes, an article with a water-dispersible polymer, wherein said polymer has from about 0.1 to about 10.0 ppm of a residue of a near infrared flourescing compound copolymerized therein, which comprises applying to said article a composition comprising

A. between about 1 and 10 weight percent of at least one water-dissipatable polyester comprising:

(i) monomer residues of at least one dicarboxylic acid;

(ii) about 4 to 25 mole percent, based on the total of all acid, hydroxy and amino equivalents, of monomer residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring where the functional groups are selected from the group consisting of hydroxy, carboxyl, carboxylate ester and amino;

(iii) monomer residues of at least one diol or a mixture of diol and a diamine; and optionally,

(iv) monomer residues of at least one difunctional monomer reactant selected from the group consisting of hydroxycarboxylic acids, amino carboxylic acids and aminoalkanols;

provided that at least 20 percent of the groups linking the monomeric units are ester linkages; said water-dissipatable polyester having from about 0.1 ppm by weight to about 10% by weight of a thermally stable near infrared fluorophoric compound copolymerized therein;

B. between about 5 and 75 weight percent of at least one humectant;

C. between about 0 and 15 weight percent of at least one lower aliphatic alcohol of no more than 3 carbon atoms;

D. water and optionally up to about 2 weight percent of one or more additives; wherein the weight percentages of components A–D equal 100%.

5,665,152

BIODEGRADABLE GRAIN PROTEIN-BASED SOLID ARTICLES AND FORMING METHODS

Sukh Bassi, Atchison, Kans.; Clodualdo C. Maningat, Platte City, Mo.; Rangaswamy Chinnaswamy, and Li Nie, both of Kansas City, Mo., assignors to Midwest Grain Products, Atchison, Kans.

Continuation-in-part of Ser. No. 564,707, Nov. 29, 1995, abandoned. This application Nov. 7, 1996, Ser. No. 745,106

Int. Cl.[6] C09D *189/00;103/02*

U.S. Cl. 106—145.1 45 Claims

1. A method of forming a biodegradable article comprising the steps of:

providing a formulation comprising from about 20–85% by weight of grain protein, from about 5–75% by weight starch, from about 10–40% by weight plasticizer and at least about 0.01% by weight of a reducing agent operable for cleaving disulfide bonds present in said grain protein; and

heating said formulation to a maximum temperature of up to about 80° in order to render the formulation substantially homogeneous and flowable while avoiding any substantial heat denaturation of said grain protein; and

molding said heated formulation into a biodegradable article, including the step of substantially denaturing said grain protein during said molding.

5,665,153

BITUMEN COMPOSITIONS

Jean-Claude Desalx; Marie-Francoise Morizur, and Denis Rabiot, all of Grand Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 20, 1995, Ser. No. 561,500

Claims priority, application European Pat. Off., Nov. 21, 1994, 94402657

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—273.1 5 Claims

1. A bitumen composition comprising bitumen and at least one alkene having a carbon chain length of 12 to 40 carbon atoms to which has been grafted one or more succinic anhydride functions.

5,665,154

PROCESS FOR MAKING OLEOPHILIC STAPLE FIBER-REINFORCED PAVEMENT SUITABLE FOR MAKING AND REPAIRING A GEOWAY AND USE THEREOF

James P. Modrak, Conyers, Ga., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 423,672, Apr. 17, 1995, abandoned, which is a division of Ser. No. 285,556, Aug. 3, 1994, Pat. No. 5,441,812. This application Nov. 15, 1996, Ser. No. 746,724

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—282 30 Claims

1. A process for making a fiber-reinforced pavement comprising asphalt cement suitable for making or repairing a geoway, comprising: providing a mixing device adapted for mixing pavement comprising asphalt cement and polyolefin reinforcing staple fibers; providing reinforcing polyolefin staple fibers which comprise oleophilic olefinic staple fiber having on its surface an antistatic finish in an amount effective to prevent clumping when a multiplicity of the fibers are airveyed; airveying the staple fibers to the mixing device; providing a pavement comprising asphalt cement and conducting it to the mixing device; and mixing the airveyed staple fibers and the pavement comprising asphalt cement in the mixing device to make a fiber-reinforced pavement.

5,665,155

ORGANOFUNCTIONAL POLYSILOXANES FOR MODIFYING THE SURFACE OF FINELY DIVIDED PARTICLES

Werner Höhner, Velbert, and Dietmar Schaefer, Hattingen, both of Germany, assignors to Th. Goldschmidt AG., Essen, Germany

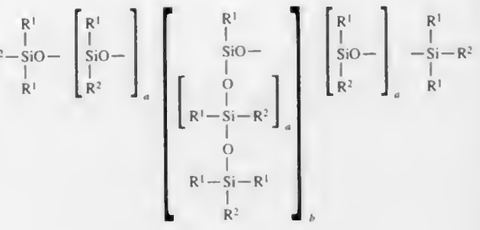
Filed Jan. 31, 1996, Ser. No. 595,053

Claims priority, application Germany, Jan. 2, 1995, 195 03 102.4

Int. Cl.[6] C09D *7/12;183/06;* C09C *3/12;* C08L *83/06*

U.S. Cl. 106—287.14 1 Claim

1. A coating material for modifying a surface of a finely divided pigment, filler or glass fiber wherein the coating material comprises a polyorganosiloxane with ester groups, epoxide groups or both linked to silicon atoms over carbon atoms and having a general formula

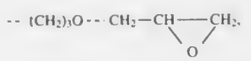


wherein

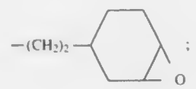
R^1 is an alkyl group with 1 to 18 carbon atoms, at least 90% of the R^1 groups being CH_3 groups;

R^2 to the extent of 50 to 99% is identical with the R^1 groups and, to the extent of 1 to 50%, is identical with the R^3 and R^4 groups;

R^3 is a group of the formula $-(CH_2)_n-CO-OR^5$, and/or



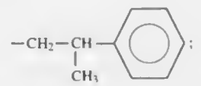
and/or



R^5 is an alkyl group with 1 to 4 carbon atoms;

n is a number from 3 to 20;

R^4 is a group of formula



the ratio of R^3 groups to R^4 groups being 1:25 to 10:1, with the proviso that there must be at least one R^3 group and at least one R^4 in the average molecule;

a is a number from 1 to 500; and

b is a number from 0 to 10.

5,665,156

SILANIZED SILICON ACIDS

Manfred Ettlinger, Karistein; Dieter Kerner, Hanau, and Jürgen Meyer, Rheinfelden, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 379,694, Jan. 27, 1995, abandoned. This application Oct. 9, 1996, Ser. No. 731,023

Claims priority, application Germany, Jan. 27, 1994, 44 02 370.7

Int. Cl.[6] C09C *1/30*

U.S. Cl. 106—287.14 2 Claims

1. Silanized, pyrogenically prepared silicic acids which are not dispersed in a solvent, produced by the process characterized in that the pyrogenically prepared silicic acids are placed in a mixer, and while being mixed the silicic acids are sprayed, optionally first with water and then with the compound $(RO)_3SiC_nH_{2n+1}$, where n=from 10 to 18 and R stands for an alkyl, with the proviso that the compound is not stearyltrimethoxy-silane, and mixing is continued for from 15 to 30 minutes, and then temperature stabilization is done at a temperature of from 100° to 160° C. over a period of time from 1 to 3 h.

5,665,157

CLEAN COLOR SHADE, YELLOW-TINGED RED IRON OXIDE PIGMENTS, AND A PROCESS FOR THEIR MANUFACTURE, AND THEIR USE

Wolfgang Oehlert; Wilfried Burow, both of Krefeld; Horst Brunn, Meerbusch, and Herbert Kunstmann, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Oct. 15, 1996, Ser. No. 730,088

Claims priority, application Germany, Oct. 26, 1995, 195 39 900.5; Jun. 24, 1996, 196 25 092.7

Int. Cl.[6] C09C *1/22*

U.S. Cl. 106—456 15 Claims

1. A clean color shade, yellow-tinged red iron oxide pigment having a loss on ignition of less than about 1% by weight, a P content of 0.13 to 0.50% by weight, a lightness (L*) of 50–60 CIELAB units, a chroma (C*) of more than 43.5 CIELAB units, a red value (a*) of more than 25 CIELAB units, and a yellow value (b*) of more than 25 CIELAB units as measured in a barite pellet.

5,665,158

CEMENT ADMIXTURE PRODUCT

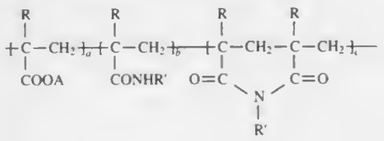
David Charles Darwin, Columbia, and Ellis Martin Gartner, Silver Spring, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 24, 1995, Ser. No. 505,985

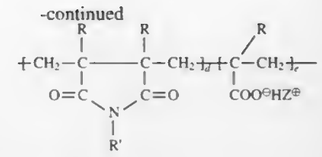
Int. Cl.[6] C04B *24/12*

U.S. Cl. 106—808 6 Claims

1. An improved cement comprising a essentially uniform mixture of a hydraulic cement and from 0.01 to 2 weight percent based on the weight of said hydraulic cement of an imidized acrylic polymer represented by the structure of:



-continued



wherein each R independently represents hydrogen atom or a methyl (CH_3—) group; R' represents a hydrogen atom or a C_2–C_{10} oxyalkylene group represented by $(BO)_nR''$ in which O represents an oxygen atom, B represent C_2–C_{10} alkylene group or mixtures thereof, R'' represents a C_1C_{10} alkyl and n represents an integer of from 1—200, or mixtures thereof; A represents hydrogen atom, a C_1–C_{10} alkyl group, R' or an alkali metal, alkaline earth or ammonium cation or a mixture thereof; $HZ^{\oplus}$ represents an ammonium cation wherein Z is a group $X_2N(BO)_zR'''$ such that X represents hydrogen, $(BO)_zR'''$ or mixtures thereof and R''' represents H., C_1–C_{10} alkyl group or BNH_2; B represents a C_2–C_{10} alkylene group or mixture of said groups and z is from 5 to 200; and a, b, c, d and e are numerical values representing molar percentage of the polymers structure such that a is a value of about 50 to 90; the sum of c+d is a value of from about 2 to the numerical value of [100–(a+e)]; and b is not more than [100–(a+c+c+e)]; and e is a value of from 0.1 to about 10.

5,665,159

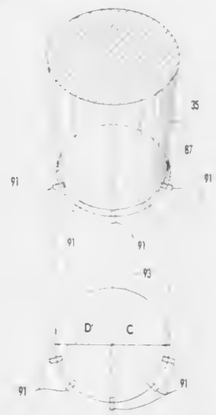
SYSTEM FOR CONTROLLING GROWTH OF A SILICON CRYSTAL

Robert H. Fuerhoff, St. Charles, Mo., assignor to MEMC Electronic Materials, Inc., St. Peters, Mo.

Division of Ser. No. 459,765, Jun. 2, 1995. This application Mar. 21, 1996, Ser. No. 620,137

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—201 18 Claims



1. A system for use in combination with an apparatus for growing a silicon crystal from a silicon melt, said system for determining a diameter of the silicon crystal being pulled from the silicon melt, said silicon melt having a surface with a meniscus which is visible as a bright area adjacent the silicon crystal, said system comprising:

a camera for generating an image pattern of a portion of the bright area adjacent the silicon crystal;

a detection circuit for detecting an optical characteristic of the image pattern;

a defining circuit for defining edges in the image pattern as a function of the detected optical characteristic, said defined edges corresponding to an edge of the bright area, and for defining a curve corresponding to the shape of the meniscus,

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said defined curve representing a circle that fits the defined edges in the image pattern corresponding to the edge of the bright area; and

a measurement circuit for determining a dimension of the defined curve and determining the diameter of the silicon crystal as a function of the determined dimension of the defined curve.

5,665,160

AIR KNIFE DEVICE FOR REGULATING THE THICKNESS OF A DEPOSIT

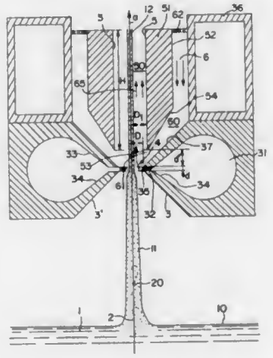
Jean Davene, Paris, and Laurent Dondin, Saint Algnan de Grandlieu, both of France, assignors to Kvaerner Clecim, St.-Christophe, France

Filed Oct. 26, 1995, Ser. No. 548,393

Claims priority, application France, Oct. 27, 1994, 94 12908

Int. Cl.[6] B05C *11/06*

U.S. Cl. 118—63 **8 Claims**



1. An air knife device for regulating the thickness of a layer of a protective product deposited on a strip leaving a product bath in a feed direction, said device comprising:

(a) at least one blower nozzle arranged over at least one downstream side of the strip and defined by two lips spaced a small distance apart and defining at least one first elongated orifice extending at least across an entire width of the strip;

(b) means for feeding the nozzle with a pressurized fluid in order to blow at least one flat fluid jet onto the strip at right angles to the strip;

(c) at least one flat wall arranged on at least one side of the nozzle in the feed direction and extending substantially parallel to the strip and over a length from an inside edge arranged along the corresponding lip of the nozzle and a small distance from it, so as to define at least one second elongated orifice, the flat wall being spaced apart from the strip by a small distance with respect to the length so as to define a flat space between said wall and the strip; and

(d) means for introducing an additional fluid into said flat space by passing through said second elongated orifice, said additional fluid mixing in said flat space with a portion of the fluid blown by the nozzle to form in said flat space a fluid cushion which is able to stabilize vibrations of the strip.

5,665,161

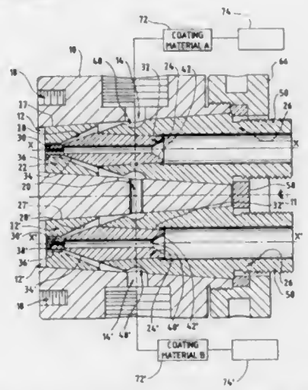
CROSS-HEAD DIE APPARATUS

James A. Milliman, Rome, N.Y., and Gary G. Thuot, St. Albans, Vt., assignors to Belden Wire & Cable Company, Richmond, Ind.

Continuation-in-part of Ser. No. 398,513, Feb. 28, 1995, abandoned. This application Aug. 29, 1996, Ser. No. 705,323

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—405 **10 Claims**



1. Cross-head die apparatus for applying coating materials to at least two elongated, filament members as they are moved longitudinally through said apparatus, comprising:

a) a body portion having:

i) first and second, laterally spaced, through, axial passageways, having respective front and rear ends;

ii) first and second radial passageways communicating between an interior of said body portion and interiors of said first and second axial passageways, respectively; and

iii) internal conduit means through which said first and second axial passageways mutually communicate;

b) first and second guide means respectively positioned within said first and second axial passageways to establish respective longitudinal paths of travel of said filament members through said axial passageways;

c) means positioned within said first and second axial passageways defining first and second, respective, annular flow paths for directing first and second flowable coating materials from said first and second radial passageways, through said first and second axial passageways to exit said front ends in covering relation to said filament members; and

d) flow control means connected to said first radial passageway for causing a portion of said first coating material to flow through said conduit means from said first to said second axial passageway to form a portion of the coating on the filament member passing through said second axial passageway.

5,665,162

COATING DEVICE

Kazuo Sasaki, and Toshio Hikichi, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,831

Claims priority, application Japan, Aug. 22, 1994, 6-196614

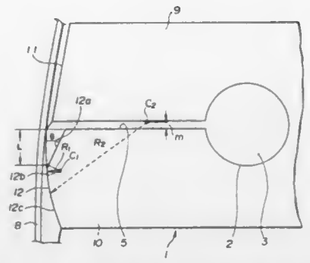
Int. Cl.[6] B05C *3/02*

U.S. Cl. 118—410 **3 Claims**

1. An extrusion coating device comprising a die having its distal end composed of an upper lip and a lower lip and having a slit provided between the upper lip and the lower lip, for extruding a paint through the slit to apply the paint onto a flexible support continuously running along distal end surfaces of the upper lip and the lower lip,

the distal end of the lower lip of the die having a surface comprising a planar surface portion, a first curved surface portion and a second curved surface portion arranged contiguously in order from upstream to downstream in a flow direction of the paint extruded through the slit,

the planar surface portion having an inclination angle of 5°–60° to a vertical plane orthogonal to the slit and a thickness of 0.2–2.0 mm, the first curved surface portion having a radius of curvature of 0.1–2.0 mm, the second curved surface portion having a center of curvature located at a point 0–30 mm distance from a slit surface of the lower lip toward the upper lip and having a radius of curvature of 5–200 mm.



5,665,163

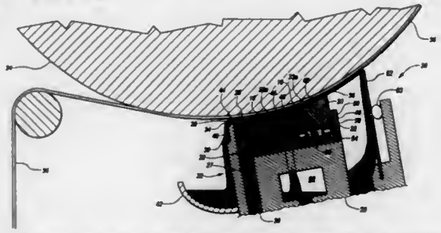
FILM APPLICATOR WITH ENTRAINED AIR REMOVAL AND SURFACE CONTROL

Alfred C. Li, Naperville, Ill.; Rex A. Becker, Janesville, Wis., and Leroy H. Busker, Rockton, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Aug. 22, 1995, Ser. No. 518,093

Int. Cl.[6] B05C *13/02*

U.S. Cl. 118—413 **19 Claims**



1. A coater apparatus for applying coating material to a traveling substrate guided by a backing roll, said apparatus comprising:

an applicator comprising a coater head housing disposed in close proximity to the backing roll such that the substrate guided by the backing roll moves between the backing roll and the coater head housing, wherein the coater head housing and the proximate opposed portion of the substrate over the backing roll defines an application chamber which opens toward the substrate and which extends along the substrate in the cross-machine direction, and wherein the application chamber receives and retains coating material, and wherein the application chamber is connected to a source of coating material;

portions of the coater head housing define a baffle plate upstream of the application chamber, wherein the baffle plate has portions defining a lip spaced from the backing roll, and wherein excess coating material within the application chamber overflows the baffle plate lip to escape the application chamber;

a static wedge member within the application chamber fixedly mounted to the housing, and which defines an application region between the static wedge member and the substrate, and wherein the static wedge member has an application surface which more closely approaches the substrate as the static wedge member extends downstream, in the direction of substrate travel, and wherein the application surface is substantially fixed with respect to the housing; and

an adjustable wedge member within the application chamber moveably mounted to the housing, and which defines an application region between the adjustable wedge member and the substrate, downstream of the static wedge member, wherein the adjustable wedge member has an application surface which more closely approaches the substrate as it extends downstream defining an application gap of a variable height between the substrate and the application surface, and wherein the adjustable wedge member is resiliently connected to the housing.

5,665,164

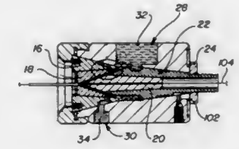
CO-EXTRUSION CROSS-HEAD DIE APPARATUS

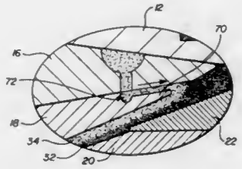
James A. Milliman, 8644 Emerald Cir. South, Rome, N.Y. 13440

Filed Jan. 2, 1996, Ser. No. 581,845

Int. Cl.[6] B05C *3/02;3/12;* A23G *1/22;3/16*

U.S. Cl. 118—420 **34 Claims**





1. Cross-head die apparatus having a longitudinal axis for applying two layers of coating material to a filamentary member as the latter is moved longitudinally through said apparatus along a path parallel to said axis, said apparatus comprising:

a) a body member having a through, axial bore extending between front and rear ends, a first radial bore through which a source of a first, flowable coating material communicates with said axial bore at a first location therein, and a second radial bore through which a source of a second, flowable coating material communicates with said axial bore at a second location therein, between said front end and said first location;

b) guide means defining an enclosed, elongated conduit within said axial bore, parallel to said axis, establishing a path of movement of said filamentary member through said body member from rear to front;

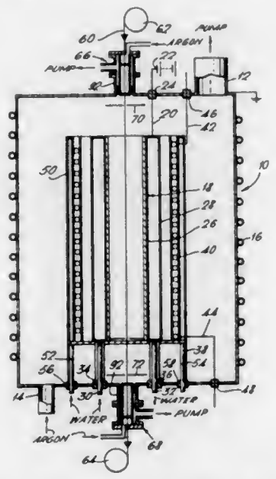
c) a die member positioned within said axial bore and having a circular orifice of larger diameter than said filamentary member adjacent said front end and coaxial with said conduit;

d) means defining first, second and third flow passageways within said axial bore, said first and second radial bores communicating with said first and second flow passageways, respectively, and said third passageway being substantially conical, having first and second ends and communicating at said first end with both said first and second passageways and at said second end with said orifice; and

e) at least a portion of said second passageway comprising an annular space within said axial bore having a forwardly disposed end communicating with said second radial bore and a rearwardly disposed end communicating with said third passageway, whereby said second coating material flows generally rearwardly through said annular space and thence forwardly into said third passageway in superposed relation with said first coating material for simultaneous deposit of both

said first and second coating materials upon said filamentary member as the latter exits said orifice.

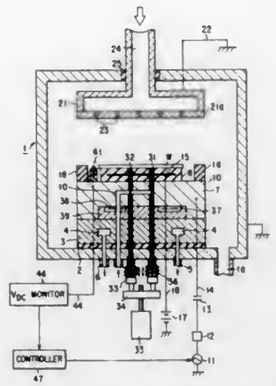
5,665,165
SEAL AND A CHAMBER HAVING A SEAL
John A. Spencer, Derby, and David S. Rickerby, Derbyshire, both of England, assignors to Rolls-Royce plc, London, England
Filed Oct. 17, 1996, Ser. No. 733,638
Claims priority, application United Kingdom, Oct. 27, 1995, 9522062
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—718 **31 Claims**



1. A chamber having means for creating and maintaining a predetermined pressure in the interior of the chamber, at least one seal to allow a fibre to be passed continuously through the seal into, or out of, the chamber, the seal comprising a first chamber, a second chamber, means to supply inert gas to the first chamber, means for extracting gas from the second chamber, a relatively small diameter first tube connecting the first chamber to one of the interior and exterior of the chamber, a relatively small diameter second tube connecting the first chamber and the second chamber, a relatively small diameter third tube connecting the second chamber to one of the exterior and interior of the chamber, the first, second and third tubes are aligned to allow the fibre to pass through the tubes from the interior of the chamber to the exterior of the chamber.

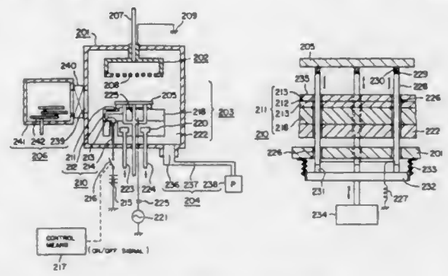
5,665,166
PLASMA PROCESSING APPARATUS
Youichi Deguchi, Tokyo; Satoru Kawakami, Sagamihara; Yoichi Ueda, Yokohama, and Mitsuaki Komino, Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan
Continuation of Ser. No. 187,863, Jan. 28, 1994, abandoned. This application Oct. 23, 1996, Ser. No. 735,489
Claims priority, application Japan, Jan. 29, 1993, 5-034249; Jan. 29, 1993, 5-034255; Feb. 15, 1993, 5-048541; Feb. 16, 1993, 5-049996
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **36 Claims**

1. A plasma processing apparatus, comprising:
a first electrode on which an object to be processed is to be disposed;
a second electrode arranged to face said first electrode;



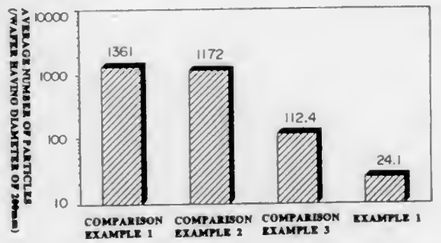
a high frequency power supply to supply a high frequency power to said first electrode;
means for supplying a processing gas for forming a plasma into a region between the first and second electrodes;
bias potential detecting means for detecting the bias potential of the first electrode, said bias detecting means having a detecting terminal positioned in a plasma-processing space formed by supply of a high frequency power to said first electrode;
electrostatic chucking means mounted on said first electrode for electrostatically chucking said object to be treated;
a DC power supply for applying a voltage to said electrostatic chucking means; and
current detecting means having one terminal connected to the electrostatic chucking means for detecting the current flowing between said electrostatic checking means and said DC power supply.

5,665,167
PLASMA TREATMENT APPARATUS HAVING A WORKPIECE-SIDE ELECTRODE GROUNDING CIRCUIT
Yoichi Deguchi, Machida; Satoru Kawakami, Sagamihara; Shiro Koyama, Fuchu, and Kenji Ishikawa, Sagamihara, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Japan
Filed Feb. 14, 1994, Ser. No. 194,665
Claims priority, application Japan, Feb. 16, 1993, 5-049995; Feb. 16, 1993, 5-049997; May 17, 1993, 5-139157
Int. Cl.[6] C23C *16/00;* **C23F** *1/02;* **H05H** *1/00*
U.S. Cl. 118—728 **13 Claims**



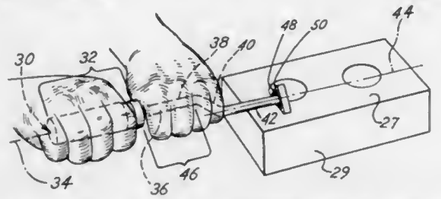
1. A plasma treatment apparatus, comprising:
a chamber;
plasma generating means for generating plasma in said chamber;
a workpiece-side electrode disposed in said chamber, for holding a workpiece;
a pin straightly penetrating said workpiece-side electrode, after a treatment is completed, said pin being in contact with said workpiece so as to detach said workpiece from said workpiece-side electrode; and
a conductive rubber member disposed at the distal end of said pin, said conductive rubber member having a lower hardness than said workpiece.

5,665,168
METHOD FOR CLEANING SEMICONDUCTOR SILICON WAFER
Masami Nakano; Isao Uchiyama, and Hiroyuki Takamatsu, all of Nishi-shirakawa-gun, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Aug. 14, 1995, Ser. No. 515,007
Claims priority, application Japan, Aug. 30, 1994, 6-205321
Int. Cl.[6] B08B *3/00*
U.S. Cl. 134—2 **5 Claims**



1. A method for cleaning a semiconductor silicon wafer comprising the steps of:
cleaning the semiconductor silicon wafer by using hydrofluoric acid aqueous solution containing a surfactant and thereafter
rinsing the semiconductor silicon wafer by using water containing ozone,
wherein the concentration of the surfactant contained in the hydrofluoric acid aqueous solution is in the range 0.01%–5.00% by weight, and
the concentration of the ozone contained in the water is not less than 0.5 ppm.

5,665,169
SCRAPING TOOL AND METHOD OF USE
John C. Lisle, and Randall J. Ploeger, both of Clarinda, Iowa, assignors to Lisle Corporation, Clarinda, Iowa
Filed Mar. 21, 1996, Ser. No. 620,705
Int. Cl.[6] B08B *1/00;* **A47L** *13/02*
U.S. Cl. 134—6 **4 Claims**

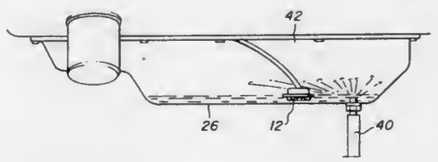


4. A process for removal of contaminant materials from flat, planar surfaces comprising the steps of:
a) providing a scraping tool including:
a handle, said handle being generally cylindrical with a radius and elongate for manual gripping, said handle having a center line axis in the elongate direction of the handle;
a shaft extending from the center line axis of the handle, said shaft being elongate in the axial direction at least about 1.5 times the elongate extension of the handle, said shaft including an inner section adjacent the handle;
and an outer section with a distal free end and an inner end connected by a transition section, said outer section axially spaced from the handle by the transition section, said transition section axially spaced from the handle at least about 0.5 times the elongate extension of the handle whereby the inner section of the shaft may be manually gripped simultaneously by fingers of one hand and the handle by fingers of the other hand, the outer section of the shaft defining an axis and being generally parallel to the inner section and radially spaced from the inner section approximately the radial distance of the radius of the handle;
a scraper blade; and
a fastener affixing the blade to the distal end of the outer section of the shaft, said scraper blade comprised of a carbide steel member having at least two scraping edges, said member further defined by a geometric block attached to the distal end transversely to the axis of the outer section, said block scraping edges also aligned transversely to the outer section axis and defined by a first surface generally parallel to said axis and a second surface forming an acute angle with the first surface;
b) manually positioning the tool with a scraper blade edge against the surface, and with one hand on the handle and the other hand on the inner section; and
c) moving the blade over the surface with a scraping motion.

5,665,170
SOLVENT SYSTEM
Burnell Lee, and William E. Moehle, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.
Filed Nov. 1, 1995, Ser. No. 551,642
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—19 **11 Claims**

5. A process for cleaning or degreasing an article, which process comprises:
(a) contacting the article for up to about twenty-four (24) hours with stabilized n-propyl bromide in the presence of a metal which catalyzes the dehydrobromination of n-propyl bromide at a temperature within the range of from about 60° to about 71° C., the n-propyl bromide being stabilized against dehydrobromination with less than about 0.1 wt % stabilizer the wt % being based upon the total weight of stabilizer and n-propyl bromide, thereby cleansing or degreasing the article.

5,665,171
METHOD FOR CLEANING AN OIL STRAINER AND PAN
Dwight Leaphart, 112 Cornish Way, Lexington, S.C. 29073
Filed Dec. 11, 1995, Ser. No. 570,545
Int. Cl.[6] B08B *9/08;3/08;3/10*
U.S. Cl. 134—22.18 **17 Claims**



1. A method for cleaning an oil strainer and pan in an internal combustion engine from which substantially all the lubricant has been drained, comprising:
pumping a sufficient amount of solvent into said oil pan so as to fill said oil pan to the level of said strainer only;
agitating said solvent in said pan; and
draining said solvent.

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5,665,172

METHOD FOR WASHING AN ARTICLE WITH COMPOSITION HAVING A BROMINATED HYDROCARBON AND STABILIZER

Katsuhide Oshima, Tokyo, and Shigemi Tanaka, Chiba, both of Japan, assignors to Dipsol Chemicals Co., Ltd., Tokyo, Japan

Division of Ser. No. 181,102, Jan. 13, 1994, Pat. No. 5,492,645. This application Sep. 20, 1995, Ser. No. 531,004
Claims priority, application Japan, Jan. 25, 1993, 5-10147
Int. Cl.[6] B08B *3/08*
U.S. Cl. 134—40 **19 Claims**

1. A method of cleaning oil or grease from an article comprising the steps of

contacting said article with a non-chlorofluorocarbon deterging solvent,

wherein said non-chlorofluorocarbon deterging solvent consists essentially of:

(A) a brominated hydrocarbon of a formula selected from the group consisting of $C_nH_{2n+1}Br$ and $C_mH_{2m-1}Br$, wherein n represents a number of 3 or above, and m represents a number of 2 or above, and

(B) a stabilizer selected from the group consisting of:

(i) a nitroalkane,

(ii) an epoxide,

(iii) an amine, and

(iv) an ether selected from the group consisting of 1,2-dimethoxyethane, 1,4-dioxane, diethyl ether, diisopropyl ether, dibutyl ether, trioxane, acetal, acetone dimethylacetal, γ-butyrolactone, methyl t-butyl ether, tetrahydrofuran, N-methylpyrrole and ethylene glycol monoalkyl ether; and

removing said oil or grease from said article.

5,665,173

MOVIE FILM CLEANING PROCESS

Burnell Lee, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Feb. 29, 1996, Ser. No. 609,316
Int. Cl.[6] B08B *7/00;* **C23G** *5/028;5/024;* **C11D** *7/50*
U.S. Cl. 134—40 **5 Claims**

1. A process for cleaning cellulose triacetate polymer based camera film, which process comprises immersing the film into a solvent system then removing and drying the film, wherein the solvent system is comprised of from about 40 to about 70 wt % of a n-propyl bromide product and from about 60 about to about 30 wt % alkane containing 6 to 7 carbon atoms.

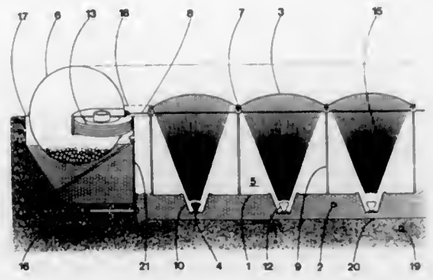
5,665,174

PLATFORM FOR RECOVERING SOLAR ENERGY

Johannes Nikolaus Laing, 7148 Remseck-2, Hofenerweg 37, Germany, and Inge Laing, 1253 La Jolla Rancho Rd., La Jolla, Calif. 92037

PCT No. PCT/EP93/00368, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/25856, PCT Pub. Date Dec. 23, 1993
Continuation-in-part of Ser. No. 898,160, Jun. 15, 1992, Pat. No. 5,286,305. This PCT application Feb. 16, 1993, Ser. No. 356,392
Int. Cl.[6] H01L *31/052;31/058*
U.S. Cl. 136—246 **22 Claims**

1. Platform for solar power stations rotatable about a vertical axis (D) having channels (**10**, **110**) floating on a liquid layer (**2**), and a transparent roof (**3**) above the channels (**10**, **110**) which refracts sunbeams (**122**, **123**, **126**) downwards and concentrates the incident radiation onto photocells (**4**) arranged below the roof (**3**), characterized in that the photocells (**4**) are in heat-conducting connection to the channels (**10**, **110**), and that the channels (**10**, **110**) are formed in such a way that the heat dissipation of the photocells (**4**) is predominantly passed into the liquid layer (**2**)



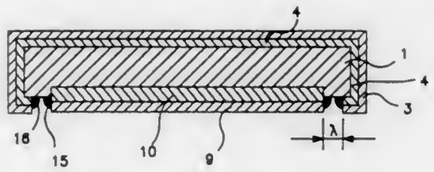
through a region of the channels (**10**, **110**) which lies below the surface of the liquid layer (**2**).

5,665,175

BIFACIAL SOLAR CELL

Yakov Safir, Giesegaardvej 104, DK-4100 Ringsted, Denmark

Division of Ser. No. 949,539, Jan. 14, 1993, Pat. No. 5,461,002. This application Aug. 7, 1995, Ser. No. 512,161
Claims priority, application Denmark, May 30, 1990, 1338/90
Int. Cl.[6] H01L *31/06*
U.S. Cl. 136—255 **2 Claims**



1. A bifacial solar cell which comprises:

a semiconductor substrate wafer;

a first active area of a first conductivity type provided on at least a part of a first side of said wafer;

a second active area of a second conductivity type provided on a second side of said wafer, the edge face of said wafer, and the periphery of said first side of the wafer; and

said first active area and second active area being separated by a third area, said third area being provided with a third ring-shaped active portion of the second conductivity type and a fourth ring-shaped active portion of the first conductivity type, said third active portion abutting said first active area and said fourth active portion abutting said second active area, whereby said first and second active areas provide a first PN junction and said third and fourth active portions provide a second PN junction, said two PN junctions being directed opposite in polarity to each other.

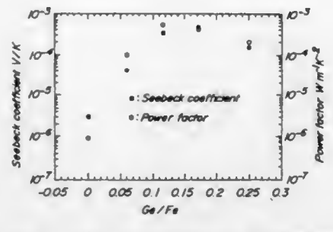
5,665,176

N-TYPE THERMOELECTRIC MATERIALS

Kazuhiko Shinohara, Yokohama; Masakazu Kobayashi; Keiko Ikoma, both of Yokosuka, and Fumio Munakata, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 20, 1994, Ser. No. 277,820
Claims priority, application Japan, Jul. 30, 1993, 5-190364
Int. Cl.[6] H01L *29/00*
U.S. Cl. 148—33 **5 Claims**

1. An n-type thermoelectric material composed mainly of an iron-silicon compound represented by a chemical formula of $FeSi_{2+z}$ in which $-0.1<z<0.1$, said thermoelectric material further comprising Co as an n-type dopant and Ge as an additional



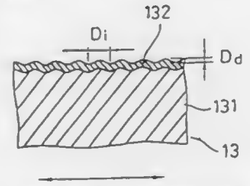
element, said iron-silicon compound being composed substantially of a low temperature phase (β-phase).

5,665,177

METHOD FOR PREPARING PERMANENT MAGNET MATERIAL, CHILL ROLL, PERMANENT MAGNET MATERIAL, AND PERMANENT MAGNET MATERIAL POWDER

Akira Fukuno, Chiba; Hideki Nakamura, Narita, and Tetsuhito Yoneyama, Narashino, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 5, 1992, Ser. No. 878,523
Claims priority, application Japan, Mar. 24, 1992, 4-097023
Int. Cl.[6] H01F *1/032*
U.S. Cl. 148—101 **7 Claims**



CHILL ROLL AXIAL DIRECTION

1. A method for preparing a permanent magnet material by cooling a molten alloy containing R wherein R is at least one rare earth element inclusive of Y, Fe or Fe and Co, and B, said method comprising:

providing a chill roll having an axis, a circumferential surface, and a plurality of grooves in the circumferential surface, said grooves extending in a direction about said chill roll, and wherein said direction includes a component in a circumferential direction of said circumferential surface, the step of providing a chill roll further including providing a chill roll having a distance in an axial direction of said chill roll between two adjacent ones of the grooves at least in a region with which the molten alloy comes in contact being 100 to 300 μm in an arbitrary cross section containing the axis; and

injecting the molten alloy through a nozzle against the circumferential surface of said chill roll such that said molten alloy is injected against said plurality of grooves having said distance between two adjacent ones of the grooves of 100 to 300 μm.

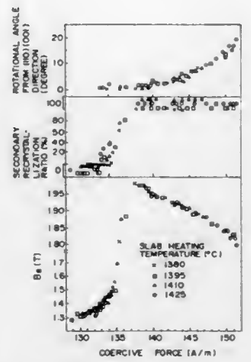
5,665,178

METHOD OF MANUFACTURING GRAIN-ORIENTED SILICON STEEL SHEET HAVING EXCELLENT MAGNETIC CHARACTERISTICS

Michiro Komatsubara; Masayoshi Ishida, and Kunihiro Senda, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Feb. 5, 1996, Ser. No. 596,996
Claims priority, application Japan, Feb. 13, 1995, 7-023997
Int. Cl.[6] H01F *1/14*
U.S. Cl. 148—111 **3 Claims**

1. A method of manufacturing a grain-oriented silicon steel sheet having excellent magnetic characteristics comprising the steps of:



(a) forming a silicon steel slab;

(b) hot rolling said silicon steel slab to form a hot-rolled sheet;

(c) cold rolling said hot-rolled sheet at least once to form a cold-rolled sheet, said cold rolling including an intermediate annealing between cold rollings;

(d) primary recrystallization annealing said cold-rolled sheet to form a primary recrystallized sheet having a coercive force;

(e) final finish annealing said primary recrystallized sheet to form said grain-oriented silicon steel sheet, said final finish annealing including a secondary recrystallization annealing and a purifying annealing, wherein said primary recrystallized sheet is coated with an annealing separation agent and is caused to undergo secondary recrystallization during said final finish annealing, and

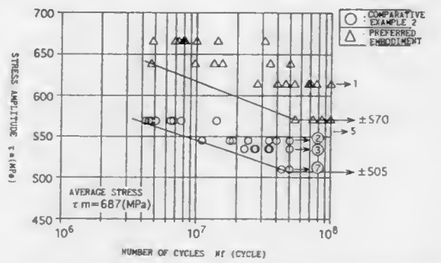
(f) controlling said coercive force of said primary recrystallized sheet prior to said secondary recrystallization.

5,665,179

PROCESS FOR PRODUCING A COIL SPRING

Yoshinobu Izawa; Satoru Kondo, both of Nagoya, and Hiroshi Yarita, Matsudo, all of Japan, assignors to Togo Seisakusho Corp., Aichi-ken, and Suzuki Metal Ind. Co., Ltd., Tokyo, both of Japan

Filed Jul. 27, 1995, Ser. No. 507,926
Claims priority, application Japan, Jul. 28, 1994, 6-177121
Int. Cl.[6] C21D *9/02;1/06;* **C23C** *8/26;* **C22C** *38/02*
U.S. Cl. 148—226 **3 Claims**



1. A process for producing a coil spring, comprising the steps of: oil quenching and tempering a wire made by cold drawing, the wire comprising:

C in an amount of 0.55 to 0.75% by weight;

Si in an amount of 1.00 to 2.50% by weight;

at least two primary metals selected from the primary metal group consisting of:

Mn in an amount of 0.30 to 1.5% by weight;

Ni in an amount of 1.00 to 4.00% by weight;

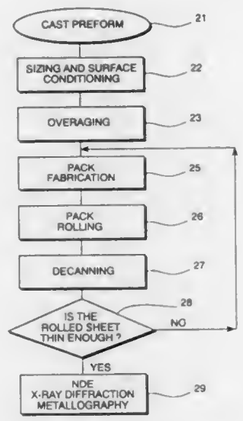
Cr in an amount of 0.50 to 2.50% by weight;

Mo in an amount of 0.10 to 1.00% by weight;

at least one secondary metal selected from the secondary metal group consisting of:

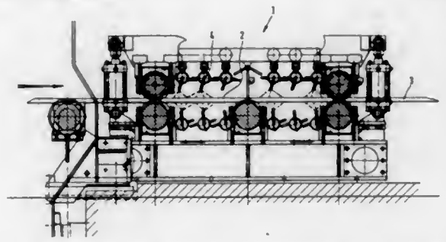
V in an amount of 0.05 to 0.60% by weight;
Nb in an amount of 0.05 to 0.60% by weight;
and the balance of substantially Fe;
hot tempering said wire, thereby preparing the tempered wire whose tensile strength falls in the range of from 1370 to 1670N/mm^2;
cold coiling; hardening; tempering; grinding; gas nitriding; high strength two-stage shot peening; and low temperature annealing said tempered wire.

5,665,180
METHOD FOR HOT ROLLING SINGLE CRYSTAL NICKEL BASE SUPERALLOYS
Venkat K. Seetharaman, Beavercreek; Sheldon L. Semiatin, Dayton, and Carl A. Lombard, Beavercreek, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 7, 1995, Ser. No. 499,723
Int. Cl.^{6} C22F *1/10*
U.S. Cl. 148—527 **6 Claims**



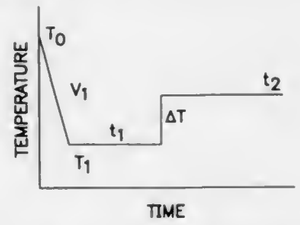
1. A method for producing a thin sheet of nickel base superalloy single crystal, comprising the steps of:
(a) providing a cast single crystal preform of a nickel base superalloy;
(b) grinding the surfaces of said preform to remove surface defects;
(c) enclosing said preform within plates of high temperature resistant alloy and applying parting agent coatings to the interfaces of said plates and preform;
(d) welding said plates to form an enclosure for said preform and evacuating said enclosure;
(e) successively heating said preform to about 1093° to 1150° C. for one hour and rolling said preform at roll speeds of about 0.12 to 0.25 m/s at about 5 to 15% reduction per said rolling to form a successively rolled preform having a total reduction in thickness of about 50 to 75%;
(f) removing said plates from said rolled preform, and successively repeating steps (c) through (e) for said rolled preform to form a thin sheet of said alloy having a preselected reduced thickness; and
(g) slowly cooling said thin sheet.

5,665,181
METHOD AND PRODUCTION PLANT FOR PRODUCING HOT-ROLLED WIDE STRIP
Wolfgang Rohde, Dormagen, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany
Filed Oct. 6, 1995, Ser. No. 540,309
Claims priority, application Germany, May 13, 1994, 44 16 752.0
Int. Cl.^{6} B22D *11/124;* **C21D** *9/573*
U.S. Cl. 148—541 **5 Claims**



1. A method for the production of hot-rolled wide strip in a production plant including a continuous casting plant for thin slab having a thickness of between 40 and 70 mm, an equalizing furnace and a rolling mill, wherein the thin slab has a temperature when leaving the continuous casting plant which is above 950° C., the method comprising lowering the temperature of the slab between the continuous casting plant and the equalizing furnace over a sufficient depth from a surface of the slab, so that a structure conversion from austenite to ferrite/perlite occurs.

5,665,182
HIGH-CARBON STEEL WIRE ROD AND WIRE EXCELLENT IN DRAWABILITY AND METHODS OF PRODUCING THE SAME
Akifumi Kawana; Hiroshi Oba; Ikuo Ochiai, and Seiki Nishida, all of Chiba-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP94/00579, § 371 Date Oct. 31, 1995, § 102(e) Date Oct. 31, 1995, PCT Pub. No. WO94/28188, PCT Pub. Date Dec. 8, 1994
PCT Filed Apr. 6, 1994, Ser. No. 545,674
Claims priority, application Japan, May 25, 1993, 5-122986
Int. Cl.^{6} C22C *38/00;38/04;* **C21D** *8/06*
U.S. Cl. 148—595 **10 Claims**

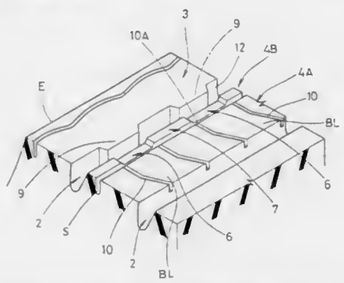


1. High-carbon steel wire rod or wire excellent in drawability which consists essentially of,
in weight percent,
C: 0.90–1.10%,
Si: not more than 0.40% and
Mn: not more than 0.50%,
is limited to
P: not more than 0.02%,
S: not more than 0.0% and
Al: not more than 0.003%,
the remainder being Fe and unavoidable impurities, and has a microstructure of, in terms of area ratio, not less than 80% upper bainite texture obtained by two-stepped transformation and an Hv of not more than 450.

5,665,183
TIRE INNER-LINERS COMPRISING A SOLID RUBBER AND A COMPLEX OF A REACTIVE RUBBER AND LAYERED SILICATE CLAY
Edward Nathan Kresge, Watchung, and David John Lohse, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Houston, Tex.
Continuation-in-part of Ser. No. 42,972, Apr. 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,606
Int. Cl.^{6} B60C *7/22;9/00;27/00*
U.S. Cl. 152—204 **16 Claims**

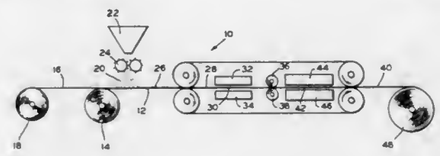
1. A tire innerliner comprising a complex and solid rubber formed into a layer of low air permeability shaded to underlie a tire carcass, said complex being composed of reactive rubber having a positively charged group and a layered silicate uniformly dispersed therein, the interlayer distance of said layered silicate being greater than 12 angstroms and the reactive rubber being soluble in or crosslinkable with the solid rubber.

5,665,184
HEAVY DUTY PNEUMATIC TIRE
Tetsuhiro Fukumoto, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Sep. 22, 1995, Ser. No. 532,104
Claims priority, application Japan, Sep. 28, 1994, 6-259550
Int. Cl.^{6} B60C *11/12*
U.S. Cl. 152—209 R **2 Claims**



1. A heavy duty pneumatic tire comprising a tread portion with a pair of tread edges, the tread portion having a tread surface,
a pair of main circumferential grooves disposed in said tread portion so as to divide the tread portion into a pair of shoulder lands between the tread edges and the main circumferential grooves, and an axially inner land between the main circumferential grooves,
each said main circumferential groove extending circumferentially of the tire and having a width of from 4 to 12% of the ground contact width TW of the tread portion,
a narrow circumferential groove disposed in the axially inner land and extending circumferentially of the tire along one of the main circumferential grooves so as to divide the axially inner land into an axially outer narrow land part and an axially inner major land part so that the axial width W1 of the narrow land part is in the range of from 0.1 to 0.2 times the axial width W2 of the major land part,
the narrow circumferential groove having a width of 0.5 to 2.5 mm, and a depth of 50 to 90% of the depth of the main circumferential grooves,
the narrow land part comprising circumferentially alternately arranged sunken parts and unsunken parts,
the unsunken parts having the same height as the tread surface, and
the sunken parts having a height lower than the tread surface but higher than the bottom of the narrow circumferential groove-, wherein
the shoulder land adjacent to said one of the main circumferential grooves is provided with protrusions and recesses, each protrusion protruding into the main circumferential groove and having a circumferential length,
the protrusions and recesses alternately arranged such that the circumferential position of each protrusion corresponds to the circumferential position of one of the sunken parts and the circumferential position of each recess corresponds to the circumferential position of one of the unsunken parts, and
the protrusions have the same height as the tread surface.

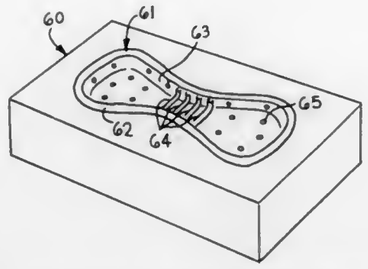
5,665,185
PROCESS FOR PREPARING GLASS FIBER CONTAINING POLYMER SHEET
Brian L. Meeker, Maumee, Ohio, assignor to ESFI Acquisition, Inc., Mogadore, Ohio
Filed Feb. 9, 1996, Ser. No. 599,331
Int. Cl.^{6} B32B *31/20*
U.S. Cl. 156—62.2 **8 Claims**



1. A process for preparing a glass fiber containing polymer sheet, comprising:
providing a non-woven carrier web;
superposing an adhesion film immediately adjacent the non-woven carrier web;
applying a layer of uniformly distributed, randomly oriented glass fibers onto the exposed surface of the adhesion film; and
laminating together the layer of glass fibers, adhesion film, and non-woven carrier web by heating same to a temperature above the plastic set temperature of the adhesion film and compressing the layer of glass fibers, adhesion film, and carrier web, said adhesion film adhering to the non-woven carrier web, and said glass fibers being encapsulated substantially within the exposed surface region of the adhesion film.

5,665,186
METHOD OF MAKING A FLEXIBLE ABSORBENT ARTICLE WITH FORMED MOISTURE BARRIER
Paul Joseph Datta, Appleton; Joseph Daniel Coenen, Menasha; Glenn Alan Mintern, Appleton, and David Wayne Powell, Neenah, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Division of Ser. No. 292,561, Aug. 18, 1994, Pat. No. 5,607,415. This application May 24, 1995, Ser. No. 449,049
Int. Cl.^{6} A61F *13/15;13/56;* **B32B** *31/12;31/04*
U.S. Cl. 156—66 **17 Claims**

1. A method of making an absorbent article, comprising the steps of:
providing a formable sheet of liquid impermeable material;
providing an absorbent assembly;
providing a sheet of liquid permeable material;
providing a mold surface;
forming the formable sheet on the mold surface to produce a moisture barrier defining a basin and an integral rim surrounding the basin, the basin having a width dimension, a length dimension greater than the width dimension, and a volume, the basin comprising a floor having corrugations formed in the floor parallel to the width dimension, the corrugations



beginning adjacent the rim and increasing in depth in the direction of the floor;

disposing the absorbent assembly in the basin; and

bonding the sheet of liquid permeable material to the moisture barrier to sandwich the absorbent assembly therebetween.

5,665,187

METHOD FOR CONNECTING COMPOSITE DRIVE SHAFT TO ANNULAR MEMBER

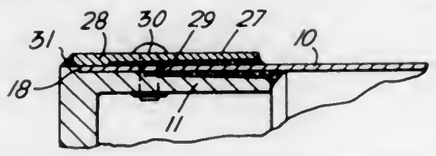
Lawson Mackellar, Bucks, United Kingdom, assignor to Turboflex Limited, Buckinghamshire, England

Division of Ser. No. 38,281, Mar. 29, 1993, Pat. No. 5,421,781. This application Jun. 5, 1995, Ser. No. 464,064

Claims priority, application United Kingdom, Apr. 3, 1992, 9208069

Int. Cl.[6] B29C *65/54;65/56;65/72*

U.S. Cl. 156—91 **11 Claims**



1. A method for connecting a composite drive shaft to an annular member to form a coupling comprising the steps of:

locating the shaft over the member;

injecting adhesive through holes in the shaft to bond the shaft to the member; and subsequently

providing an external sleeve over the shaft and member; and

injecting adhesive through holes in the external sleeve to bond the external sleeve to the shaft.

5,665,188

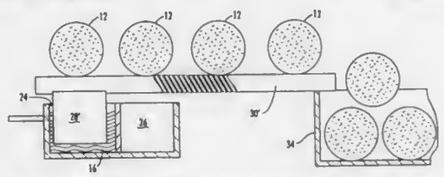
METHOD OF PRODUCING GAME BALLS USING HEAT ACTIVATED GLUE

John L. Parish, Jr.; Harry F. McClure; Dan S. Pitsenberger, all of Tullahoma, and James C. Larry, Manchester, all of Tenn., assignors to Worth, Inc., Tullahoma, Tenn.

Filed May 12, 1995, Ser. No. 440,208

Int. Cl.[6] B32B *7/08;31/02;31/26;* **B05D** *1/40*

U.S. Cl. 156—93 **19 Claims**



18. A method of manufacturing a game ball including the steps of:

a. forming a molded core having an exterior surface and a cover to mate with said exterior surface;

b. coating one surface of said cover with a heat activated adhesive;

c. drying said heat activated adhesive until it is not tacky, thereby allowing said cover to freely shift on said core when placed about said core;

d. placing said cover about said core;

e. connecting the edges of said cover together; and

f. heating the ball at a sufficient temperature and for a sufficient time to activate the heat activated adhesive whereby said heat activated adhesive will bond said cover to said core.

5,665,189

PROCESS FOR RECONDITIONING OF STANDARDIZED PLASTIC TIGHT HEAD DRUMS

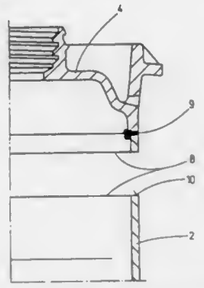
Udo Schutz, Selters, Germany, assignor to Schutz-Werke GmbH & Co. KG, Selters, Germany

Filed Sep. 20, 1995, Ser. No. 531,066

Claims priority, application Germany, Sep. 20, 1994, 44 33 418.4

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—98 **9 Claims**



1. Process for reconditioning a standardized tight head drum for re-use as a tight head drum, said standardized tight head drum having a drum body extending along a longitudinal axis, a lower head, and an upper head drum welded to said drum body at a seam, the process comprising:

a) mechanically separating the upper drum head along a parting cut line transverse to said longitudinal axis and below said seam, said parting cut resulting in an upper annular cut edge of the drum body;

b) smoothing said resulting upper annular cut edge to produce a smooth weld surface;

c) cleaning the interior of the drum body;

d) sizing said upper annular cut edge of the drum body; and

e) welding an upper head having a fill plug and a vent plug onto the sized upper annular cut edge of the drum body to produce a reconditioned tight head drum having the same nominal volume and the same height and diameter dimensions as said standardized tight head drum, then smoothing the weld, and leak testing the reconditioned tight head drum.

5,665,190

MOLDED WOODEN PANEL FOR DECORATIVE COVERINGS

Agustin Sansano Sanz, Ctra. Calig. KM. 3,5, Benicarlo (Castellon), Spain, 12580

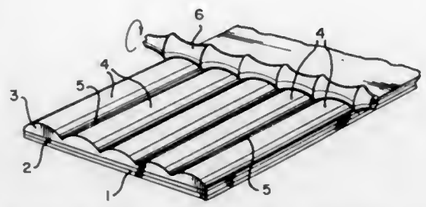
Division of Ser. No. 133,600, Oct. 7, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 389,734

Claims priority, application Spain, Oct. 8, 1992, 9202002

Int. Cl.[6] B32B *31/00;* **E04C** *2/12*

U.S. Cl. 156—154 **3 Claims**

1. A method of making a panel for decorative coverings, comprising the steps of:



applying an adhesive layer to one of a flexible support and a wooden sheet;

placing said wooden sheet on said flexible support so that said adhesive layer is disposed between said wooden sheet and said flexible support;

applying pressure to said wooden sheet and said flexible support such that a greater adherence is obtained; and

treating said wooden sheet by milling such that different segments having preselected geometric features are formed, a plurality of channels being formed between adjacent segments, the thickness of the wooden sheet being considerably smaller at said channels than a maximum thickness of said wooden sheet such that the resulting panel is flexible and will adapt perfectly, without breaking, to curved surfaces or to surfaces having different planes.

5,665,191

METHOD AND A DEVICE FOR CREATING IN A WEB OF SHEET MATERIAL A FOLD WHICH INCLUDES AT LEAST ONE ELASTIC THREAD

Dan Johansson, Västra Frölunda, Sweden, and Leidulf Indrebø, Jersøy, Norway, assignors to SCA Mölnlycke AB, Göteborg, Sweden

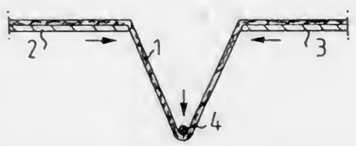
PCT No. PCT/SE94/00355, § 371 Date Nov. 9, 1995, § 102(e) Date Nov. 9, 1995, PCT Pub. No. WO94/23681, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 21, 1994, Ser. No. 537,764

Claims priority, application Sweden, Apr. 22, 1993, 9301349

Int. Cl.[6] B31D *5/04;* **A61F** *13/15*

U.S. Cl. 156—161 **10 Claims**



1. A method for creating in a web of sheet material a fold which contains at least one elastic thread, characterized by placing the web on two mutually spaced carrier elements; placing at least one pre-stretched elastic thread above the web, in a space defined between mutually opposing edges of the carrier elements; moving the carrier elements towards each other while, simultaneously, moving the elastic thread or threads down in the space between said carrier elements in abutment with the web in keeping with a rate at which the carrier elements are brought together, until at least one of the two opposing edges of the carrier elements which approach each other as they are brought together reaches a movement path of an elastic thread; and mutually joining those parts of the web which lie against one another when the carrier elements have been brought to a mutually combined state, at least along a line which extends transversely in relation to a direction in which the carrier elements are brought together.

5. A device for creating in a web of sheet material a fold which includes at least one elastic thread, characterized by two web-carrying elements which can be moved relative to one another between a mutually separated and a mutually combined position; carrier-element moving means; means for holding one or more elastic threads in a given position above the carrier elements and in a space defined therebetween in their mutually separated position; means for moving the elastic thread or threads down in the space between said carrier elements in keeping with a rate at which the carrier elements are moved towards each other; and means for joining together in the mutually combined state of the carrier elements mutually opposing parts of a web located in the space between said carrier elements, at least along a line which extends transversely relative to the direction in which the carrier elements are brought to their mutually combined state.

5,665,192

METHOD OF MAKING TUBES OUT OF COMPOSITE MATERIAL HAVING HIGH TRIBIOLOGICAL AND MECHANICAL CHARACTERISTICS

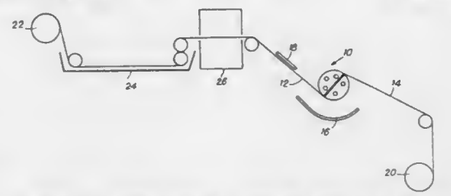
Peter Wolki, Monchengladbach, Germany; Emmanuel Edeline, Ecos, and Jean-Francois Cretegny, Marly Le Roi, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Oct. 20, 1995, Ser. No. 546,017

Claims priority, application France, Oct. 21, 1994, 94 12587

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—188 **18 Claims**



1. A method of manufacturing a composite material in the form of an annular tube by winding on a mandrel both a reinforcing fiber fabric comprising a woven structure of bare fibers with a thermosetting polymer and a sheet of matrix material comprising said thermosetting polymer with at least an additive and obtained from payout rolls, the method comprising the following steps:

a) preheating the mandrel to a predetermined temperature;

b) fixing the reinforcing fiber fabric and the sheet of matrix material to the mandrel;

c) causing the mandrel to rotate at a nominal speed to wind the fabric and the sheet simultaneously, the fabric and the sheet being subjected to a nominal tension;

d) during the rotation of the mandrel, actuating heating means for heating the material and cooling means for cooling the mandrel;

e) when the tube reaches a desired diameter, stopping both the heating means and the rotation of the mandrel;

f) after a determined duration that is sufficient for bringing a temperature of the mandrel to the predetermined temperature, stopping the cooling means; and

g) dismounting the mandrel.

5,665,193

METHOD OF DEBOSSING FROM CHARACTER AND INDICIA-FORMING PIGMENTED TAPE

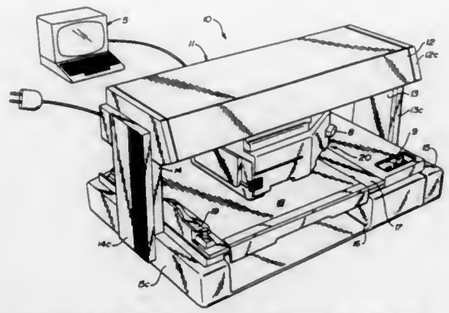
Charles T. Groswith, III, Los Altos, Calif.; Eugene F. Duval, Menlo Park, Calif.; Roger M. Gray, Lewisville, Tex.; Barry C. Kockler, Lewisville, Tex., and Robert E. Smith, Woodside, Calif., assignors to Taurus Impressions, Inc., Mountain View, Calif.

Division of Ser. No. 78,792, Jun. 17, 1993, Pat. No. 5,441,589. This application May 25, 1995, Ser. No. 452,604

Int. Cl.[6] B41J *1/30;3/28*

U.S. Cl. 156—234 **7 Claims**

1. A method of debossing character and indicia-forming pigmented tape onto the surface of a workpiece utilizing a dual station



daisy wheel hot debossing stamper including a movable print engine and movable platen comprising:

mounting a workpiece to be debossed on the platen;

moving the print engine on a line-by-line y-axis and the platen on a character-by-character x-axis to locate a desired character or desired indicia at a first print position with respect to the workpiece;

inserting a desired daisy wheel containing a series of character fingers into the print engine;

inserting a first pigmented tape-containing cartridge into the print engine aligned with the first print position with a tape of the first cartridge extending above the first print position, said tape in the first cartridge having of a first width;

rotating the character fingers of the daisy wheel to a desired position above the workpiece;

heating a character-containing portion of a positioned character finger;

force and thermally printing a desired character and in seriatim rotating and printing additional desired characters on the workpiece by hot transferring pigmented material from the tape to the workpiece;

removing the daisy wheel and first cartridge from the print engine;

inserting an indicia-forming debossment die into the print engine;

inserting a second pigmented tape-containing cartridge having a tape of a second width greater than the tape in the first cartridge into the print engine, with the tape of the second cartridge extending above a second print position spaced from the first print position;

heating the debossment die; and

force and thermally printing a desired indicia on the workpiece by heat transferring pigmented material from tape in the second tape cartridge to the workpiece.

5,665,194

IMAGE ENHANCEMENT

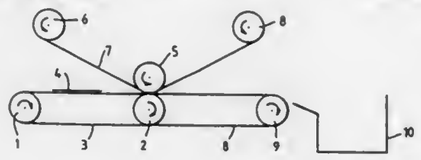
Ralph Kay, Basingstoke, United Kingdom, assignor to De La Rue Holographics Limited, London, United Kingdom

PCT No. PCT/GB93/00274, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO93/15914, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 10, 1993, Ser. No. 256,273

Int. Cl.[6] C09J *5/00*

U.S. Cl. 156—325 **21 Claims**



1. A method of enhancing an image provided by a thermoplastic marking material on a substrate which material can be thermally activated to take on adhesive properties, the method comprising selecting a transferable layer from a group of transferable layers including a visible pattern exhibiting transferable layer and a visible pattern generating transfer layer wherein at least a portion of the pattern repeats; bringing a transfer medium into contact with the substrate carrying the marking material, the transfer medium including a carrier and said selected transferable layer, the selected transferable layer being positioned in use between the carrier and the substrate; thermally activating the adhesive property of the marking material; and separating the carrier and substrate whereby areas of the selected transferable layer contacting the activated marking material remain on the marking material.

5,665,195

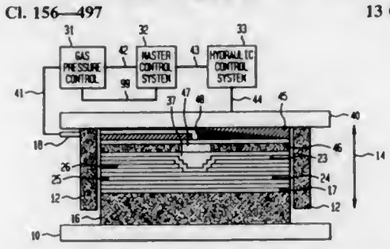
APPARATUS FOR FORMING CAVITIES WITHOUT USING AN INSERT

Govindarajan Natarajan, Pleasant Valley; Raschid Jose Bezama, Mahopac, and John Ulrich Knickerbocker, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 305,620, Sep. 14, 1994, Pat. No. 5,538,582. This application Jun. 7, 1995, Ser. No. 476,468

Int. Cl.[6] B23B *35/00*

U.S. Cl. 156—497 **13 Claims**



1. An apparatus for forming cavities in at least one ceramic layer having at least one cavity comprising, a first plate to accommodate said at least one ceramic layer having at least one cavity, at least one cavity forming membrane having at least one opening over at least a portion of said at least one cavity in said at least one ceramic layer, such that at least a portion of said at least one opening is over at least a portion of said at least one cavity, a second plate having at least one opening over at least a portion of said at least one membrane, such that at least a portion of said at least one opening is over at least a portion of said opening in said membrane, at least one external pressure application means over said second plate, and at least one internal pressure means over said at least one membrane for providing an internal pressure, wherein said at least one external pressure application means applies external pressure over said second plate and wherein said at least one internal pressure means provides said internal pressure within said at least one cavity through said at least one opening in said membrane to counter said external pressure and prevents said at least one cavity from deforming and thereby forms said at least one ceramic layer having at least one cavity.

5,665,196

WELD/CUT COUNTER-HEAD FOR MACHINE FOR JOINING AND CUTTING SHEETED MATERIALS

Robert Combe, and Serge Moulin, both of Sory le Comtal, France, assignors to Cera France Compagnie D'Equipement Robotique Appliquee, France

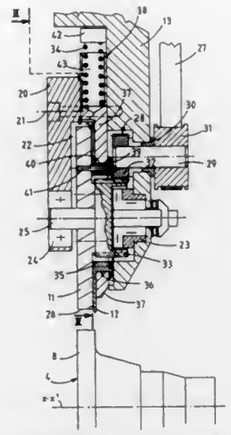
Filed May 24, 1995, Ser. No. 449,810

Claims priority, application France, May 24, 1994, 94 06502

Int. Cl.[6] B32B *31/04;* **C09J** *5/00*

U.S. Cl. 156—515 **9 Claims**

1. A welding and cutting counter head for, in cooperation with a welding head, joining and cutting sheeted workpiece materials, comprising:



a slide and a lateral cheek together forming an assembly having two shaft-supported bearings;

a shaft supported by said bearings and a welding counter-wheel having at least one lateral face rotatably supported on said shaft, said shaft and said counter-wheel supported on said slide for movement towards and away from a location where the materials are joined by the counter-wheel in cooperation with a welding head;

a driving transmission drivingly connected to the counter-wheel for driving the counter-wheel in rotation;

a cutting disk adjacent the counter-wheel lateral face and mounted for rotation with the counter-wheel;

means for mounting the cutting disk for floating radial motion relative to the counter-wheel;

resilient biasing means for biasing the cutting disk in the direction of advancement of the counter-wheel towards said materials joining location.

5,665,197

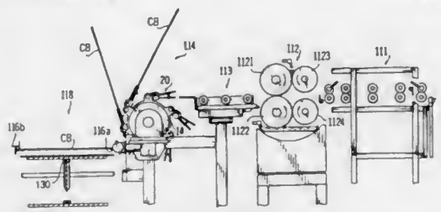
PLYWOOD LAY-UP SYSTEM

Yutaka Fujii, Fukuyama; Fuminori Akao, Fuchu, both of Japan, and John Omelchuk, Armstrong, Canada, assignors to Kitagawa Seiki Kabushiki Kaisha, Hiroshima-ken, Japan

Filed Feb. 27, 1995, Ser. No. 394,710

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—558 **37 Claims**



1. A plywood lay-up system, comprising:

means for accumulating veneer plies, said accumulating means being able to accept transferred veneer plies and to accumulate a plurality of veneer plies into a ply assembly, and subsequently to release said ply assembly;

means for supplying unitary core veneer plies; and a rotary carousel, comprising a rotor, said rotor having means for clamping arranged about a periphery of said rotor, said rotary carousel being able to transfer unitary core veneer plies from said supplying means to said accumulating means by clamping an edge of a unitary core veneer ply supplied by said supplying means in said clamps, rotating said rotor and bearing said unitary core veneer ply to said accumulating means, then releasing said clamping of said unitary core veneer ply at said accumulating means.

5,665,198

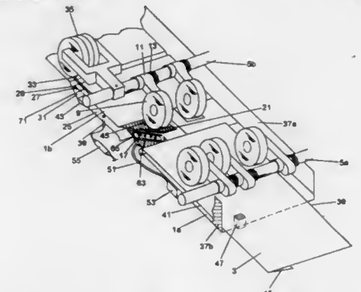
SYSTEM FOR ENVELOPE SEALING IN AN INSERTION MACHINE

Thomas E. Bieber, Coplay; Jack H. Shaneberger, Bath; Daniel B. Hein, Newtripoli, and David M. Skvoretz, N. Catasauqua, all of Pa., assignors to Bell & Howell Phillipsburg Company, Allentown, Pa.

Filed Jun. 7, 1995, Ser. No. 480,565

Int. Cl.[6] B05C *1/00*

U.S. Cl. 156—578 **8 Claims**



1. A sealer system for wetting and sealing flap portions of mail pieces, comprising:

horizontal surface means for receiving a mail piece;

transport means for transporting said mail piece along said horizontal surface means;

means for drawing open a flap portion of said mail piece;

fluid-application means for applying a predetermined amount of fluid to said flap of said envelope, said fluid-application means comprising:

fluid storage means for storing fluid, said fluid storage means comprising:

at least one pressurized tank means;

pump means for pumping said water into said pressurized tank means;

means for sensing a low-pressure limit and for actuating said pump means in response thereto;

means for sensing a high-pressure limit and for de-actuating said pump means in response thereto;

means for delivering said fluid at an elevated pressure to a solenoid valve means;

mail piece detector means for detecting the approach of said mail piece and for generating a detection signal in response thereto;

means for opening said valve in response to said detection signal and for closing said solenoid valve after a predetermined period of time;

brush means for delivering said fluid from said solenoid valve means to said flap portion of said mail piece: and,

means for closing said flap portion.

5,665,199

METHODOLOGY FOR DEVELOPING PRODUCT-SPECIFIC INTERLAYER DIELECTRIC POLISH PROCESSES

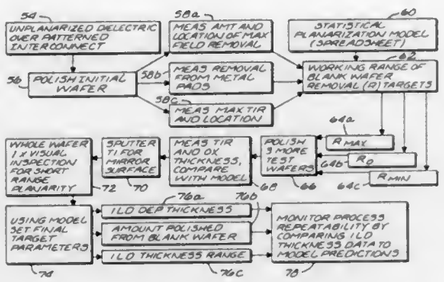
Kashmir S. Sahota, Fremont, and Steven C. Avanzino, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 23, 1995, Ser. No. 493,972

Int. Cl.[6] H01L *21/306*

U.S. Cl. 438—14 **24 Claims**

1. A method for characterizing polishing of semiconductor product wafers comprising a film coating having a film coating thick-



ness deposited over patterned features on an underlayer, said polishing being used to remove steps in said film coating caused by said patterned features, said semiconductor product wafers comprising a plurality of identical die sites across said semiconductor product wafer, said method comprising:

(a) polishing a first patterned test wafer selected from said semiconductor product wafers for a time long enough to remove an amount of film coating equal to the step height of said patterned features;

(b) determining four locations within a single die on said first patterned test wafer corresponding to (i) a location at or near the location of maximum removal of said film coating, (ii) a location at or near the location of minimum removal of said film coating, (iii) a first position over a measurable topographic feature and (iv) a second position adjacent said first position in a region not over said patterned features;

(c) measuring said film coating thickness at said four locations on said first patterned test wafer;

(d) determining the highest point on said film coating within said single die;

(e) measuring the difference between said film coating thickness at said highest point and said location at or near said location of minimum removal;

(f) adding said difference in said film coating thickness between said highest point and said location at or near said location of minimum removal to the difference between said film coating thickness at said location at or near said location of minimum removal and said location at or near said location of maximum removal to calculate a total indicated range;

(g) determining the total indicated range variation;

(h) calculating the maximum step height for a worst case step in said film coating;

(i) selecting at least one additional patterned test wafer from said semiconductor product wafers;

(j) selecting a removal target for each of said additional patterned test wafers such that said maximum step height for said worst case step in said film coating is maintained below a designated step height;

(k) measuring said film coating thickness of each of said additional patterned test wafers at said four locations;

(l) polishing each of said additional patterned test wafers for a time long enough to remove an amount of film coating equal to each of said removal targets;

(m) measuring said film coating thickness at said four locations on each of said additional patterned test wafers;

(n) determining said total indicated range and said total indicated range variation for each of said additional patterned test wafers;

(o) visually inspecting each of said additional patterned test wafers for steps in said film coating; and

(p) choosing an optimum removal target for processing said semiconductor product wafers.

5,665,200

SUBSTRATE PROCESSING METHOD AND SUBSTRATE PROCESSING APPARATUS

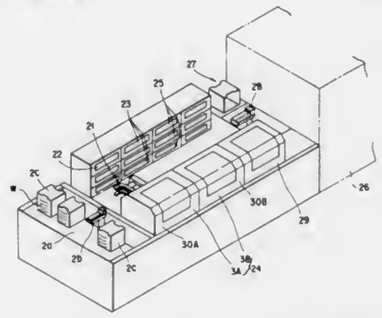
Akihiro Fujimoto, Kumamoto-ken; Takashi Takekuma, Yamaga, and Kiyomi Sonobe, Tokyo, all of Japan, assignors to Tokyo Electron Limited, Tokyo; Tokyo Electron Kyushu Limited, Tosu, and Iwaki Co., Ltd., Tokyo, all of Japan

Filed Sep. 7, 1995, Ser. No. 524,528

Claims priority, application Japan, Sep. 9, 1994, 6-240806; Sep. 30, 1994, 6-261916

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—694 **17 Claims**



1. A substrate processing method comprising the steps of:

coating a processing liquid on an object to be processed in a first processing unit of a processing chamber having first and second processing units;

conveying the object from said first processing unit to said second processing unit;

rinsing an unnecessary processing liquid remaining on a peripheral portion of the object in said second processing unit to remove the unnecessary processing liquid; and

conveying the rinsed object to an exposure apparatus to perform exposure processing for the object,

wherein a time from the end of the rinse step for one object to be processed to the end of the rinse step for a next object to be processed is shorter than a time required for the exposure for the one object.

5,665,201

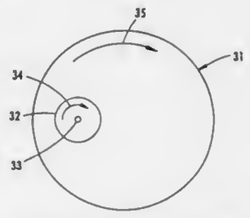
HIGH REMOVAL RATE CHEMICAL-MECHANICAL POLISHING

Kashmir S. Sahota, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 6, 1995, Ser. No. 469,264

Int. Cl.[6] H01L *21/304*

U.S. Cl. 438—693 **33 Claims**



1. A method of uniformly planarizing a dielectric layer on a semiconductor wafer, which method comprises:

conditioning the polishing pad with an abrasive diamond grit wheel, including varying the residence time of the abrasive diamond grit for different sections of the polishing pad;

after conditioning the polishing pad chemical-mechanical polishing the dielectric layer on the polishing pad while dispensing a slurry on the polishing pad;

rotating the polishing pad at a rate of about 10 to about 100 rpm; and

applying a pressure of about 6 to about 15 psi to the semiconductor wafer, whereby the dielectric layer is removed at a rate of about 3,000 Å/min. to about 12,000 Å/min.

5,665,202

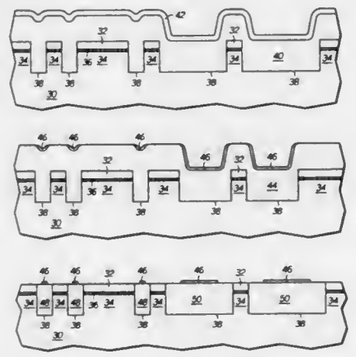
MULTI-STEP PLANARIZATION PROCESS USING POLISHING AT TWO DIFFERENT PAD PRESSURES

Chitra K. Subramanian; Asanga H. Perera; James D. Hayden, and Subramoney V. Iyer, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 24, 1995, Ser. No. 562,440

Int. Cl.[6] H01L *21/306*

U.S. Cl. 438—692 **20 Claims**



1. A process for fabricating a semiconductor device comprising the steps of:

providing a semiconductor substrate having elevated regions and recessed regions therein, wherein a first planarization layer overlies the elevated regions;

depositing a fill material to overlie the first planarization layer and the recessed regions;

forming a second planarization layer to overlie the fill material wherein the second planarization material is not lithographically patterned to expose any portion of the underlying fill material;

chemical-mechanical-polishing a first portion of the fill material using a polishing apparatus having a polishing pad, wherein the first portion is planarized using a first pad pressure; and

chemical-mechanical-polishing a second portion of the fill material using a second pad pressure, wherein the first pad pressure is greater than the second pad pressure.

5,665,203

SILICON ETCHING METHOD

Young Hoon Lee, Somers; Keith Raymond Milkove, Beacon, and John William Stiebritz, Jr., Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1995, Ser. No. 431,347

Int. Cl.[6] B44C *1/22*

U.S. Cl. 438—585 **16 Claims**

1. A method for forming vertical sidewalls from a silicon layer situated on top of a dielectric layer, comprising the steps of:

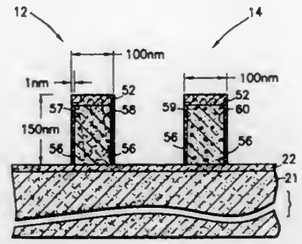
providing a patterned oxide layer on top of said silicon layer protecting the areas which are not to be etched during a subsequent etch step, and leaving other areas thereof exposed,

first reactive ion etching the exposed areas of the silicon layer through the patterned oxide layer at a pressure of less than 50 mTorr in an atmosphere of HBr, Cl_2, and O_2 whereby sidewalls of the patterned silicon layer are oxidized during said step,

terminating said step of first reactive ion etching of said silicon layer a predetermined distance above said dielectric layer,

removing substantially all Cl_2 from said atmosphere, and

second reactive ion etching the exposed areas of the silicon layer through said patterned oxide layer down to said dielectric layer at a pressure below 50 mTorr.



5,665,204

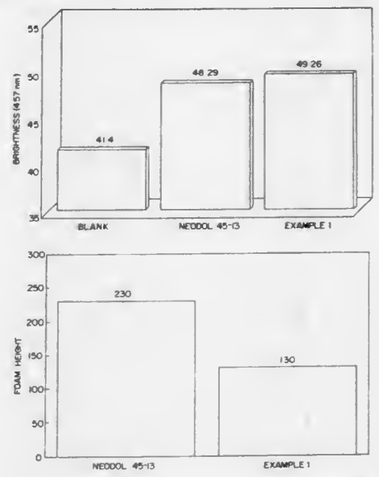
METHOD FOR DE-INKING PRINTED WASTE PAPER BY THE WASHING PROCESS USING AN ALKOXYLATED NONIONIC SURFACTANT

Jose M. Rodriguez; Gail M. Howell, both of Fort Mill, and Anthony B. Cook, Simpsonville, all of S.C., assignors to Geo Specialty Chemicals, Inc., Cleveland, Ohio

Filed Jul. 20, 1995, Ser. No. 504,302

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **10 Claims**



1. A process for deinking a printed wastepaper pulp slurry comprising:

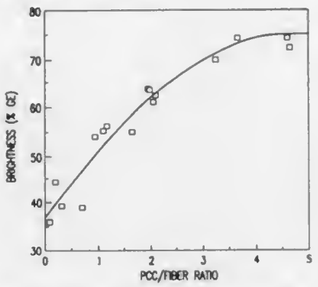
(a) adding to said pulp slurry a deinking composition consisting essentially of a nonionic ethoxylated and propoxylated surfactant of the formula (I):

$$R—O—(OCH_2CH_2)_n—(OCH_2CHCH_3)_m—(OCH_2CH_2)_q—O—X \quad (I)$$

wherein n is a number from about 1 to about 50, m is a number from about 1 to about 50, q is a number from about 1 to about 50, and R and X are H or an alkyl, alkenyl, or aryl group containing from about 3 to about 35 carbon atoms;

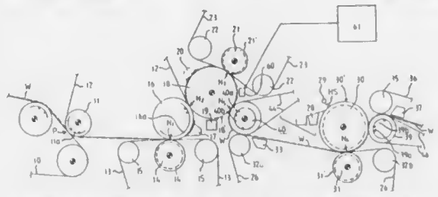
(b) washing said slurry in order to obtain a deinked paper pulp suspension and an ink suspension; and
(c) separating said deinked paper pulp suspension from said ink suspension.

5,665,205
METHOD FOR IMPROVING BRIGHTNESS AND CLEANLINESS OF SECONDARY FIBERS FOR PAPER AND PAPERBOARD MANUFACTURE
Narendra R. Srivatsa, Ramsey; Sanjay Patnaik, Westwood, both of N.J.; Paul Hart, Georgetown, S.C.; Thomas E. Amidon, Highland Mills, N.Y., and Jean J. Renard, Mobile, Ala., assignors to International Paper Company, Purchase, N.Y.
Filed Jan. 19, 1995, Ser. No. 375,026
Int. Cl.[6] D21H *17/64*
U.S. Cl. 162—181.4 **10 Claims**



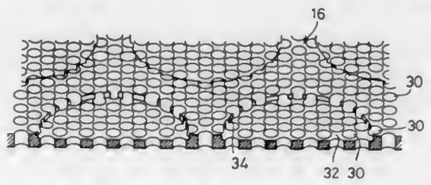
1. A method for adding filler to secondary fibers pulp for manufacture of paper or paperboard products, comprising the steps of:
introducing secondary fiber pulp slurry into a gas-liquid contactor apparatus at a location upstream of a contact zone thereof, and also introducing an alkaline salt slurry at a location downstream of the introduction point of the secondary fiber pulp and approximate to the contact zone;
combining the two slurries in the contact zone and immediately contacting said combined slurries with a suitable reaction gas in said contact zone, and mixing so as to precipitate filler complexes onto the secondary pulp fibers; and
using the secondary pulp fiber with filler precipitated thereon for the manufacture of paper or paperboard products.

5,665,206
METHOD AND DEVICE IN A PRESS SECTION OF A PAPER MACHINE FOR DETACHING A WEB FROM A FACE OF A PRESS ROLL
Juhani Niskanen, Jyvaskyla, Finland, assignor to Valmet Corporation, Helsinki, Finland
Continuation-in-part of Ser. No. 81,277, Jun. 23, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 555,091
Claims priority, application Finland, Jan. 18, 1991, 910288
Int. Cl.[6] D21F *3/02*
U.S. Cl. 162—206 **20 Claims**



1. Method for detaching a web from a smooth mantle face of a press roll in a press section of a paper machine, said press section having a closed draw transfer zone extending substantially between a point at which a transfer surface engages the web carried on said smooth mantle face and a point at which the web is separated from said smooth mantle face of said press roll for transfer to the transfer surface and in which a first negative pressure is applied through a transfer press element with which said transfer surface is associated, comprising the steps of:
simultaneous with the application of negative pressure to said transfer zone, heating the web and/or the mantle face of said smooth-faced press roll such that in said transfer zone, the temperature of the web and/or the mantle face is greater than about 50° C. and less than about 100° C. causing water between the mantle face of said smooth-faced press roll and the web and/or in the web to be heated and then vaporized in said transfer zone, the water vapor having a second pressure, and
regulating the first pressure and the temperature to which the web and/or mantle face is/are heated, to thereby regulate the second pressure, as a function of each other such that the absolute value of the second pressure is substantially equal to or greater than the absolute value of the first pressure.

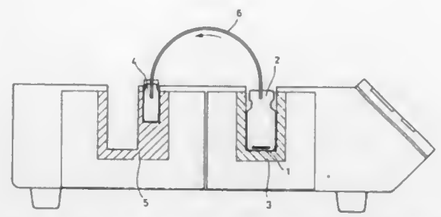
5,665,207
STRAINER FOR PAPER MAKING
Yoshihiko Aikawa, Shizuoka, Japan, assignor to Aikawa Iron Works Co., Ltd., Shizuoka-ken, Japan
Filed Sep. 27, 1991, Ser. No. 767,107
Claims priority, application Japan, Oct. 1, 1990, 2-102227 U
Int. Cl.[6] D21D *5/02*
U.S. Cl. 162—261 **6 Claims**



1. A screening apparatus for paper making which macerates and screens a paper feedstock, comprising:
a tank;
a rotor rotatably arranged in said tank; and
a unitary strainer arranged in proximity to said rotor and formed with through-holes through which an available fiber material is passed in a manner to be distributed substantially all over a surface thereof;
said strainer being formed on a surface thereof opposite to said rotor with a plurality of recesses;
said recesses each having a discontinuous currilinear edge functioning as a cutter, which cooperates with said rotor.

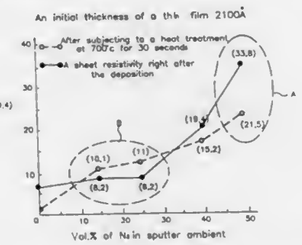
5,665,208
METHOD AND APPARATUS FOR THE QUANTITATIVE ENRICHMENT OF VOLATILE COMPOUNDS BY CAPILLARY DISTILLATION
Günter Giesselmann, Heusenstamm, Germany, assignor to Eppendorf-Netheler-Hinz GmbH, Hamburg, Germany
Filed Jun. 21, 1995, Ser. No. 493,083
Claims priority, application Germany, Jun. 21, 1994, 44 21 627.0
Int. Cl.[6] B01D *3/00*
U.S. Cl. 203—12 **26 Claims**

1. A method of quantitative enrichment of volatile compounds from at least one of liquid and suspended liquid substances, a processed amount of which lies in a macro-to-submicro range and which includes a volatile compound, by capillary distillation, said method comprising the steps of:
placing a predetermined amount of the at least one of liquid and suspended liquid substances into an evaporator having a bottom and at least one filter plate provided on the bottom for producing a continuous and constant stream of steam bubbles during boiling;
heating the at least one of the liquid and suspended liquid substances to a boiling temperature to boil the at least one of liquid and suspended liquid substances, forming the continuous constant stream of steam bubbles, whereby the volatile compound is evaporated from the at least one liquid and suspended liquid substances;
transferring the evaporated volatile compound from the evaporator to a condensing vessel via a capillary tube; and
condensing the volatile compound in the condensing vessel;
wherein the transferring step includes transferring the volatile compound via the capillary tube having an inside diameter in a range of 0.20–0.53 mm, and wherein the placing step includes placing the predetermined amount of the at least one of liquid and suspended liquid substances into the evaporator with the at least one filter plate having a pore size between 40 and 250 μm and covering at least 25% of the bottom of the evaporator.



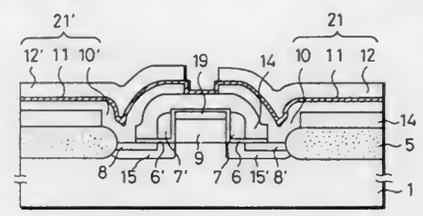
13. An apparatus for the quantitative enrichment of volatile compounds from at least one of liquid and suspended substances, a processed amount of which lies in a macro- to sub-micro range and which contains the volatile compound by capillary distillation of the volatile compound, the apparatus comprising:
an evaporator having a bottom;
at least one filter plate provided on the bottom of the evaporator for producing a continuous and constant stream of steam bubbles during boiling;
a condensing vessel;
and a capillary tube for connecting the evaporator and the condensing vessel,
wherein the capillary tube has an inside diameter of between 0.20 and 0.53 mm, and the at least one filter plate has a pore size of between 40 and 250 μm, and
wherein the filter plate has a surface covering at least 25% of the bottom of the evaporator.

5,665,209
METHOD FOR FORMING REFRACTORY METAL NITRIDE FILM
Jeong Soo Byun, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea
Filed May 10, 1995, Ser. No. 437,893
Int. Cl.[6] C23C *14/00*
U.S. Cl. 204—192.17 **11 Claims**



1. A method for forming a refractory metal nitride film comprising:
depositing a refractory metal film containing nitrogen on a substrate in a mixed gas atmosphere of Ar and N_2 having a volumetric content of nitrogen in the mixed gas not exceeding 20%; and
subjecting the refractory metal film to a heat treatment.

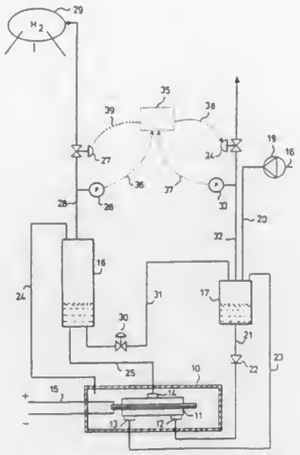
5,665,210
METHOD OF FORMING INSULATING FILMS, CAPACITANCES, AND SEMICONDUCTOR DEVICES
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 41,520, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 729,533, Jul. 15, 1991, abandoned. This application May 27, 1994, Ser. No. 250,344
Claims priority, application Japan, Jul. 24, 1990, 2-195174; Jul. 24, 1990, 2-195175; Jul. 24, 1990, 2-195176
Int. Cl.[6] C23C *14/34*
U.S. Cl. 438—3 **13 Claims**



1. A method of forming an oxide dielectric layer of a storage capacitor coupled with a transistor for a DRAM (dynamic random access memory), said method comprising the steps of:
preparing a semiconductor substrate having at least source, drain and channel regions of said transistor formed therein;
forming a lower electrode of said storage capacitor on said semiconductor substrate, said lower electrode being connected to one of said source or drain of said transistor;
forming said oxide dielectric layer on said lower electrode by sputtering in a sputtering gas, said oxide dielectric layer comprising an oxide of a metal; and
forming an upper electrode of said capacitor on said dielectric layer,
wherein said sputtering gas contains an oxygen containing gas at a concentration of 75% or higher.

5,665,211
ELECTROLYSIS APPARATUS FOR PRODUCING HYDROGEN
Jyrki Leppänen, Helsinki, and Jukka-Pekka Nieminen, Porvoo, both of Finland, assignors to Neste Oy, Espoo, Finland
PCT No. PCT/FI93/00343, § 371 Date Apr. 20, 1995, § 102(e) Date Apr. 20, 1995, PCT Pub. No. WO94/05830, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 31, 1993, Ser. No. 392,939
Claims priority, application Finland, Aug. 31, 1992, 923904
Int. Cl.[6] C25B *1/12;9/00;15/08*
U.S. Cl. 204—237 **14 Claims**

6. An electrolysis apparatus for producing hydrogen by decomposing electrolytic liquid with the aid of electric current into hydrogen and oxygen in a closed pressurized electrolytic cell placed within a closed pressure shell having an interior filled with a liquid, wherein the electrolytic cell is maintained pressurized by means of pressure of oxygen produced in the decomposition of the electrolytic liquid, and that the interior of the pressure shell is communicating with a gas source containing pressurized oxygen produced in the electrolytic cell by a pipe line transmitting the pressure of the oxygen gas source to the liquid in the pressure shell to pressurize the interior of the pressure shell, and wherein the



interior of the pressure shell is isolated from an interior of the electrolytic cell in which the electrolytic liquid is decomposed, the hydrogen and oxygen produced in the electrolytic cell being conducted into liquid separators for separating the electrolysis liquid from the gases, the separated electrolysis liquid being returned into the electrolytic cell.

5,665,212

FLEXIBLE, CONDUCTING PLASTIC ELECTRODE AND PROCESS FOR ITS PREPARATION

Shihuang Zhong, Kensington; Michael Kazacos, Sylvania Heights; Maria Skyllas Kazacos, Sylvania, and Vahid Haddadi-Asl, Hillsdale, all of Australia, assignors to Unisearch Limited ACN 000 263 025, Kensington, Australia

PCT No. PCT/AU93/00456, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/06164, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 6, 1993, Ser. No. 397,096

Claims priority, application Australia, Sep. 4, 1992, PL4504; THX, Sep. 2, 1993, 0199944; China, Sep. 4, 1993, 93119066.5

Int. Cl.[6] C25D *17/04*

U.S. Cl. 304—297 R **42 Claims**

1. A flexible, conducting plastic substrate material for a conducting electrode, said plastic substrate material comprising:

(a) a conductive filler material;

(b) a thermo-plastic polymer; and

(c) an elastomeric polymer at least partially cross-linked with (b);

wherein (a) is present in an amount such that the plastic substrate material is electrically conducting and (b) is cross-linked with (c) to a degree such that the plastic substrate material is flexible and has high tensile strength.

5,665,213

CONTINUOUS PREBAKED ANODE CELL

Drago D. Juric, Camberwell, Australia, assignor to Comalco Aluminium Limited, Victoria, Australia

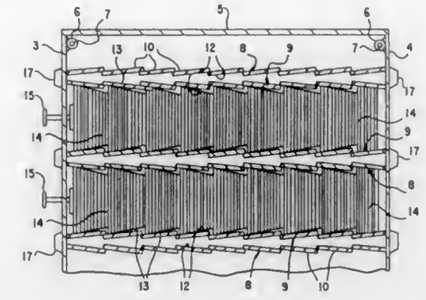
Continuation of Ser. No. 457,117, Jun. 1, 1995, abandoned, Division of Ser. No. 211,716, Apr. 22, 1994, Pat. No. 5,456,808. This application Oct. 11, 1996, Ser. No. 730,011

Claims priority, application Australia, Nov. 7, 1991, PK9368

Int. Cl.[6] C25D *17/04*

U.S. Cl. 204—297 R **24 Claims**

1. A support structure for supporting continuous prebaked anodes in an aluminium smelting cell, comprising a pair of rigid side plates and a pair of rigid end plates rigidly connected to define



an enclosed supporting structure, at least one pair of spaced rigid electrically conductive cross plates configured to provide wedging surfaces against which side surfaces of a continuous prebaked anode are held by clamping means supported by one of said side plates, means for introducing electrical current into said cross plates and elevating and lowering means carried by said supporting structure to facilitate proper positioning of the anode and feeding of the anodes with respect to the supporting structure.

5,665,214

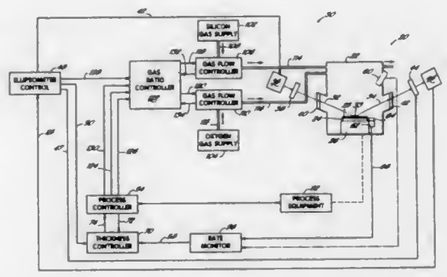
AUTOMATIC FILM DEPOSITION CONTROL METHOD AND SYSTEM

Armando Iturralde, San Antonio, Tex., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed May 3, 1995, Ser. No. 433,813

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—298.03 **13 Claims**



1. An apparatus for controlling a thickness of a thin film being deposited by a thin film deposition process on a wafer located in a thin film processing chamber, the apparatus comprising:

a deposition rate monitor having a sensor mounted with respect to the thin film processing chamber and producing during the deposition process a deposition rate feedback signal correlated to a rate of deposition of the thin film being deposited on the wafer;

an ellipsometer mounted with respect to the thin film processing chamber for producing during the deposition process a film thickness feedback signal as a function of measured optical characteristics of the thin film being deposited on the wafer; and

a thickness controller connected to the deposition rate monitor and the ellipsometer, the thickness controller providing a film thickness control signal for controlling the thin film deposition process as a function of the deposition rate feedback signal, the film thickness feedback signal and a film thickness setpoint signal.

5,665,215

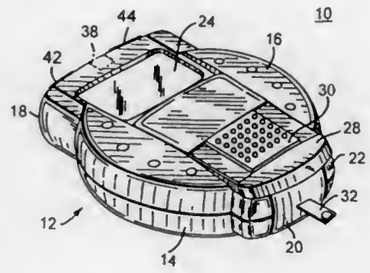
METHOD AND APPARATUS FOR MAKING PREDETERMINED EVENTS WITH A BIOSENSOR

Stephan A. Bussmann, Granger; Joseph E. Ruggiero, Goshen, and Christine G. Trippel, Mishawaka, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed Sep. 25, 1995, Ser. No. 533,158

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—403 **10 Claims**



1. A biosensor comprising:

means for receiving a user sample;

processor means responsive to said user sample receiving means for performing a test sequence for measuring a set parameter value;

memory means coupled to said processor means for storing said set parameter data values;

a marker member, said marker member being manually coupled by the user to said processor means for selectively marking one of a plurality of set events with a stored set parameter data value, said marker member including a plurality of different electrically measurable values corresponding to said plurality of set events.

5,665,216

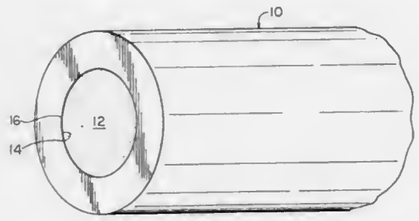
CAPILLARY COLUMN FOR HIGH PERFORMANCE ELECTROPHORETIC SEPARATION AND DETECTION OF SDS PROTEINS AND SYSTEM AND USING THE SAME

Barry L. Karger, Newton; Katalin Ganzler, Melrose, and Aharon S. Cohen, Brookline, all of Mass., assignors to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 421,609, Oct. 19, 1989, Pat. No. 5,112,460, which is a continuation-in-part of Ser. No. 359,728, May 19, 1989, abandoned, which is a continuation of Ser. No. 921,311, Oct. 21, 1986, Pat. No. 4,865,706. This application Oct. 7, 1991, Ser. No. 774,044

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—605 **7 Claims**



1. A capillary column containing a UV-transparent polymer network for high performance electrophoretic separation and high sensitivity detection of SDS-proteins comprising:

a capillary having an interior cavity and a wall with an inner surface;

a layer of coating material on said inner surface of said wall;

a UV-transparent hydrophilic polymer network filling said interior cavity; and

a UV-transparent buffer, said buffer being selected from a group consisting of Tris-Ches, MES-Na, and AMPO-cacodylic acid (CACO).

5,665,217

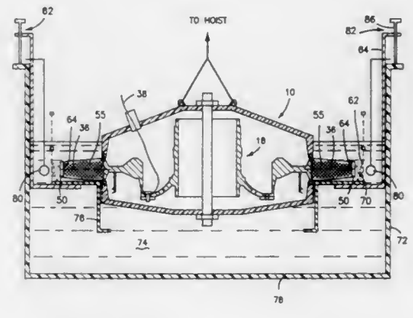
METHOD FOR ABRASIVE TIPPING OF INTEGRALLY BLADED ROTORS

Gary A. Gruver, South Windsor; Joseph J. Parkos, Jr., East Haddam, and Robert G. Adinolfi, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 138,530, Oct. 15, 1993, Pat. No. 5,486,281. This application Apr. 24, 1995, Ser. No. 427,196

Int. Cl.[6] C25D *5/02*

U.S. Cl. 205—110 **6 Claims**



1. A method for forming abrasive surfaces on the tips of a plurality of workpieces by deposition from a plating solution containing a matrix material and an abrasive grit material, said method comprising the steps of:

providing a mechanical masking device having an arcuate periphery and a plurality of openings arranged around the arcuate periphery of said device;

said mechanical masking device providing step further comprising providing a mechanical masking device having an internal space adapted to be closed off from said plating solution used to form said abrasive surface;

installing an array containing said plurality of workpieces within said mechanical masking device so that first portions of said workpieces including tip portions thereof extend through said openings in said arcuate periphery, said workpieces each having a longitudinal axis;

said array installing step comprising installing said array so that second portions of said workpieces including root portions thereof are located within said internal space, the workpieces being sealed in said openings so that said second portions of said workpieces are not exposed to said plating solution;

immersing said mechanical masking device with said installed array of workpieces in a tank containing said plating solution comprising a matrix material and an abrasive grit material; and

applying a current through said plating solution to form said abrasive surfaces on the tips of said workpieces.

5,665,218

METHOD OF PRODUCING AN OXYGEN GENERATING ELECTRODE

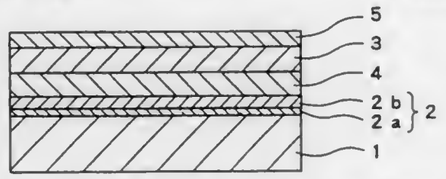
Koichi Ashizawa, Yokohama; Toshio Horie, Tokyo, and Hitoshi Kato, Utsunomiya, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 271,090, Jul. 6, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,667

Claims priority, application Japan, Jul. 21, 1993, 5-179654; Apr. 4, 1994, 6-065889

Int. Cl.[6] C25D *5/00*

U.S. Cl. 205—171 9 Claims



1. A method of producing an oxygen generating electrode, comprising the steps of:

preparing a base material having at least a surface thereof made of titanium alone or a titanium alloy;

forming a primary coating on the surface of the base material; and

forming a catalyst layer on the primary coating, the catalyst layer containing an oxide of a platinum group element as a main component, and wherein

said primary coating is composed of

(1) a titanium oxide coating and an oxide mixture layer, wherein (a) the titanium oxide coating is made of a titanium oxide only and includes a first titanium oxide layer formed by electrolytically oxidizing the surface of the base material in an electrolyte solution to which no titanium ions have been provided, and a second titanium oxide layer formed on the first titanium oxide layer by a thermal decomposition method which involves applying a solution containing a titanium compound to the electrolytically prepared oxide layer, and (b) the oxide mixture layer includes at least one layer formed on the titanium oxide coating and consists of a mixture containing an oxide of an element belonging to a group other than the platinum group, as a main component, and an oxide of a platinum group element, or

(2) a titanium oxide coating and an oxide layer, wherein (a) the titanium oxide coating is made of a titanium oxide only and includes a first titanium oxide layer formed by electrolytically oxidizing the surface of the base material in an electrolyte solution to which no titanium ions have been provided, and a second titanium oxide layer formed on the first titanium oxide layer by a thermal decomposition method which involves applying a solution containing a titanium compound to the electrolytically prepared oxide layer, and (b) the oxide layer is formed on the titanium oxide coating and consists of an oxide of an element belonging to a group other than the platinum group, or

(3) a titanium oxide coating, an oxide layer and an oxide mixture layer, wherein (a) the titanium oxide coating is made of a titanium oxide only and includes a first titanium oxide layer formed by electrolytically oxidizing the surface of the base material and a second titanium oxide layer formed on the first titanium oxide layer by a thermal decomposition method, (b) the oxide layer is formed on the second titanium oxide layer and consists of a single oxide of an element belonging to a group other than the platinum group, and (c) the oxide mixture layer is formed on the oxide layer and consists of an oxide of an element belonging to a group other than the platinum group, the oxide mixture layer including at least one layer wherein the layer or layers consist of a mixture containing an oxide of an element belonging to a group other than the platinum group, as a main component, and an oxide of a platinum group element; and

said first titanium oxide layer is formed by immersing the base material in an electrolyte, and then carrying out an electrolytic oxidation process using a quantity of electricity of 3 mAh/cm^2 or less at a potential of 0.5 to 15 V with respect to the normal hydrogen electrode potential, thereby forming a layer of a titanium oxide having a thickness of 1 to 20 nm on the surface of the base material.

5,665,219

PROCESS FOR CONTINUOUS MANUFACTURE OF AN ELECTRICAL CONDUCTOR MADE OF COPPER-PLATED AND TIN-PLATED ALUMINUM

Ning Yu, Montmirail, France, assignor to Axon'Cable SA, Montmirail, France

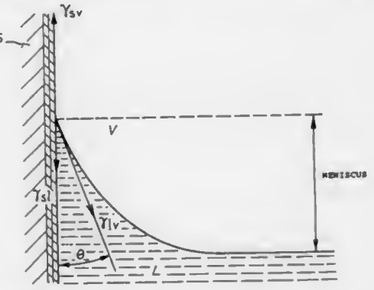
PCT No. PCT/FR93/01148, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/13866, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 22, 1993, Ser. No. 446,824

Claims priority, application France, Dec. 14, 1992, 9215032

Int. Cl.[6] C25D *5/10;7/06;5/44*

U.S. Cl. 205—182 6 Claims



1. A process for continuous manufacture of an electrical conductor, the conductor having an at least partially aluminum-based central core coated by continuous electrodeposition with at least one metal layer, the process including successively with intermediate rinsings the degreasing of the core, its pickling and the treatment of its surface to create thereon bonding points in the form of microscopic metal seeds, the process further comprising the steps in sequence of:

electrochemically depositing copper on the conductor in a first aqueous bath maintained at a temperature of between 20° C. and 60° C., containing KCN, CuCN, K_2CO_3 and $KNaC_4H_4O_6$ with a current intensity of between 1 and 10Amperes per square decimeter (A/dm^2).

rinsing the conductor at ambient temperature,

electrochemically depositing tin on the conductor in a second aqueous bath maintained at a temperature of between 20° C. and 60° C., containing essentially tin and methanesulphonic acid and, optionally, additives, with a current intensity of between 1 and 100 A/dm^2, and

rinsing the conductor with water at 60° C., the conductor having a coating which provides a wetting angle between 10° and 60°.

5,665,220

ELECTROLYTIC MAGNESIUM PRODUCTION PROCESS

Ram Autar Sharma, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1995, Ser. No. 579,057

Int. Cl.[6] C25C *3/06;3/00*

U.S. Cl. 205—359 14 Claims

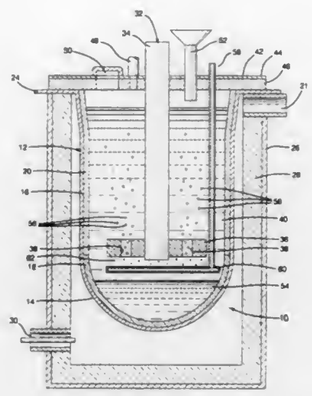
5. In the method of producing magnesium in which:

(1) a feedstock containing a major portion of magnesium chloride and optionally a minor portion of water as a hydrate and/or magnesium oxide is added to an electrolyte comprising magnesium chloride, salts of alkali metal and/or alkaline earth metal chlorides and impurity quantities of magnesium oxide;

(2) an electrical current is passed through the electrolyte under an electrical potential applied between an anode and a cathode;

(3) chlorine gas is evolved at the anode and magnesium metal at the cathode; the improvement comprising:

adding hydrogen into said electrolyte in the region of chlorine evolution during passage of said electrical potential to convert magnesium oxide to magnesium chloride.



5,665,221

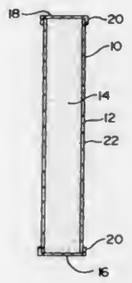
ELECTRICAL APPARATUS FOR CONTROLLING LIQUID CONTAMINANTS

Bruce W. Owen, Willowick, Ohio, assignor to A Rx Technologies Inc., Willowick, Ohio

Filed Dec. 3, 1996, Ser. No. 758,333

Int. Cl.[6] C02F *1/46*

U.S. Cl. 205—695 6 Claims



1. A device for treating a body of liquid flowing through a container to inhibit the precipitation of contaminants suspended in the liquid, comprising means electrically grounding the container, a weak electrical current generator having an electric half-cell, including a cupriferous tube containing a mixture of vegetable oil, and powders of copper, zinc, manganese, cellulose and predominantly iron, and means locating said tube in the path of fluid flow, said half-cell forming an electric circuit with the grounded container via the liquid and generating electrons to neutralize the charged contaminants and prevent their precipitation and deposition on the walls of the container.

5,665,222

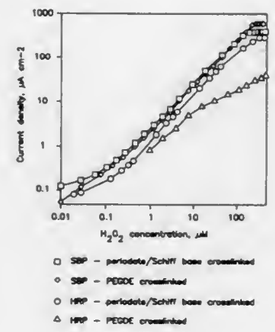
SOYBEAN PEROXIDASE ELECTROCHEMICAL SENSOR

Adam Heller, Austin, Tex., and Mark S. Vreeke, Boulder, Colo., assignors to E. Heller & Company, Alameda, Calif.

Filed Oct. 11, 1995, Ser. No. 540,789

Int. Cl.[6] G01N *27/26;27/327*

U.S. Cl. 205—792 19 Claims



19. A method for analyzing the composition of a sample nucleic sequence comprising the steps of:

immobilizing a sample nucleic acid on a non-corroding electrode;

incubating the sample nucleic acid-electrode with a nucleic acid probe having bound thereto a thermostable soybean peroxidase, under varying hybridization conditions; and

correlating changes in electrical signals produced by the electrode in the presence of added hydrogen peroxide under the varying hybridization conditions with variation in hybridization of the nucleic acid probe to the sample nucleic acid and to the composition of the sample nucleic acid sequence.

5,665,223

SELECTIVE BIFUNCTIONAL MULTIMETALLIC REFORMING CATALYST

Paula L. Bogdan, Mount Prospect, Ill., assignor to UOP, Des Plaines, Ill.

Filed Jun. 5, 1995, Ser. No. 463,450

Int. Cl.[6] C10G *35/06;35/085;* B01J *23/63*

U.S. Cl. 208—138 13 Claims

1. A catalytic composite comprising a combination of a refractory inorganic oxide support with about 0.01 to 5 mass % on an elemental basis of a Group IVA(IUPAC 14) metal component, about 0.01 to 2 mass % on an elemental basis of a platinum-group metal component, and about 0.05 to 5 mass % on an elemental basis of a europium component wherein more than about 50% of the europium is present as EuO and wherein the atomic ratio of europium to platinum-group metal is at least about 1.3.

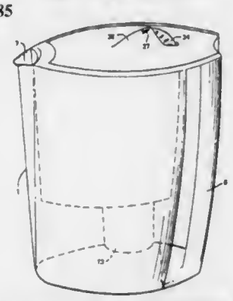
10. A process for the catalytic reforming of a naphtha feedstock which comprises contacting the feedstock at reforming conditions including a temperature of about 425° to 565° C., a pressure of about 350 to 2500 kPa (ga), a liquid hourly space velocity of about 1 to 5 hr^{-1}, and a mole ratio of hydrogen to naphtha feedstock of about 2 to 10, with a catalytic composite comprising a combination of a refractory inorganic oxide support with about 0.01 to 5 mass % on an elemental basis of a Group IVA(IUPAC 14) metal component, about 0.01 to 2 mass % on an elemental basis of a platinum-group metal component, and about 0.1 to 5 mass % on an elemental basis of a europium component, wherein more than about 50% of the europium is present as EuO and wherein the atomic ratio of europium to platinum-group metal is at least about 1.3.

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5,665,224
FILTER JUG

Michael Levene, Middlesex, and Nick Oakley, London, both of Great Britain, assignors to William Levine Limited, Middlesex, Great Britain

PCT No. PCT/GB93/01685, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/04245, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 9, 1993, Ser. No. 387,862
Claims priority, application United Kingdom, Aug. 14, 1992, 9217318; Apr. 8, 1993, 9306303
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—85 **13 Claims**

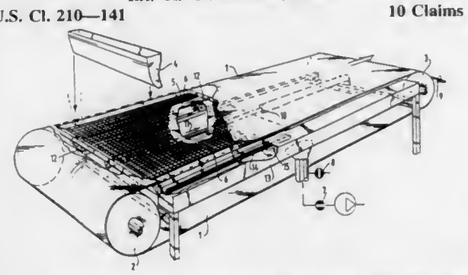


1. A filter jug to contain water or other liquid, the jug comprising a first compartment to receive liquid from a supply, a second compartment to hold filtered liquid to be poured from an outlet of the second compartment and a filter chamber through which liquid must pass from the first compartment to the second compartment, the filter chamber having a removable lid with a projection extending into the chamber and the chamber containing a filter medium, the filter medium being present in a flexible bag having a liquid-pervious wall and the projection of the removable lid of the filter chamber being shaped and dimensioned to extend into the chamber to urge the flexible bag against the walls of the chamber so as to eliminate air gaps through which water could bypass the filter medium in the bag.

5,665,225
SEPARATING DEVICE

Alphons Arnoldus Johannes Antonius Prinssen, Den Bosch, and Karel Antoon Thissen, Utrecht, both of Netherlands, assignors to Pannevis B.V., Netherlands

Filed Jun. 8, 1995, Ser. No. 488,717
Claims priority, application Netherlands, Jun. 9, 1994, 9400942
Int. Cl.[6] B01D *33/80;33/04*
U.S. Cl. 210—141 **10 Claims**

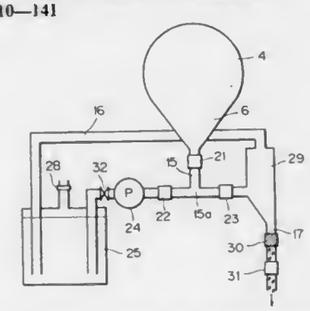


1. A device for separating liquids and solids from a mixture, said device comprising:
an endless filter belt; means for supplying a mixture to the filter belt; a suction box supporting the filter belt, wherein the at least one suction box is located under the filter belt and is configured and arranged to move along the filter belt; an underpressure device operable for generating a lower pressure relative to an ambient pressure; at least one stationary underpressure box connected to the underpressure device; control means for alternately generating the lower pressure and ambient pressure in the suction box; and discharge means connected to the suction box, wherein the suction box is bounded on at least one side by a stationary underpressure box and for each underpressure box, the suction box including connecting means co-acting with the underpressure box such that the suction box is reciprocally movable along the stationary underpressure box.

5,665,226
SUBSTANCE COLLECTING APPARATUS FOR PRECIPITATION CLASSIFYING DEVICE

Yugo Nishiyama, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 2, 1995, Ser. No. 510,304
Claims priority, application Japan, Aug. 3, 1994, 6-182351
Int. Cl.[6] B01D *17/12;* **B03B** *5/00*
U.S. Cl. 210—141 **5 Claims**



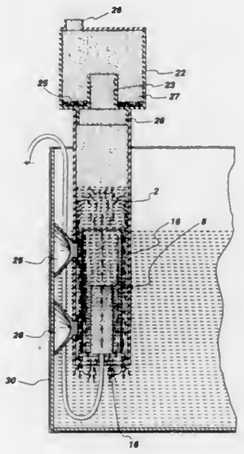
1. A solid substance collecting apparatus for a precipitation classifying device, comprising:
a classifying tank for holding a liquid containing solid substances dispersed therein,
a partition part disposed at a lower part of the classifying tank,
a liquid-substance separating tube for separating the liquid and the solid substances dispersed therein,
a reservoir tank for accumulating the liquid,
a first pipe having one end and first and second other ends which diverge from a diverging point, wherein the one end is connected with the partition part, the first other end is connected with a lower part of the liquid-substance separating tube, and the second other end is in contact with the liquid in the reservoir tank,
a second pipe having one end connected with an upper part of the liquid-substance separating tube and an other end in contact with the liquid of the reservoir tank,
a third pipe having one end connected with a substance collecting open outlet of the liquid-substance separating tube,
a pump connected to the first pipe and disposed between the reservoir tank and the diverging point,
a first electrovalve in reversibly closing relationship with the first pipe and disposed between the diverging point and the partitioned part,
a second electrovalve in reversibly closing relationship with the first pipe and disposed between the diverging point and the pump,
a third electrovalve in reversibly closing relationship with the first pipe and disposed between the diverging point and the liquid-substance separating tube,
fourth and fifth electrovalves, each in reversibly closing relationship with the third pipe, having an interval therebetween, and control means for controlling the reversibly closing relationships of the respective first, second, third, fourth and fifth electrovalves and movement of the pump.

4. A solid substance collecting apparatus as claimed in claim 1, wherein the control means controls the first, second and third electrovalves such that when the first electrovalve is opened, the second and third electrovalves are simultaneously closed, and when the first electrovalve is closed, the second and third electrovalves are simultaneously opened.

5,665,227
DUAL-FLOW PROTEIN SKIMMER

Ronald Watt, 119 Meadowbrook Ave., Beaconsfield, Quebec, Canada, H9W 5B9

Filed Nov. 29, 1995, Ser. No. 563,124
Int. Cl.[6] C02F *1/24;* **A01K** *63/04*
U.S. Cl. 210—169 **7 Claims**

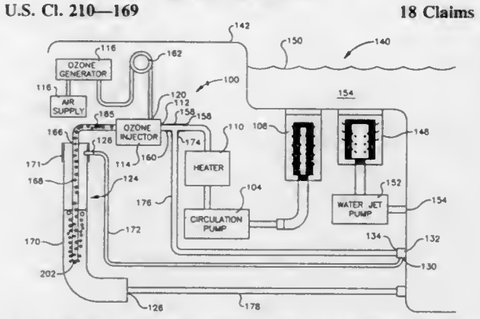


1. A protein skimmer for removing impurities from the water of a saltwater aquarium, said protein skimmer being adapted to be placed in an aquarium, said protein skimmer comprising:
a) a first outer tubular member having an open top portion and an open bottom portion, said open bottom portion of said first outer tubular member having a substantially unobstructed direct communication with the area directly below said first outer tubular member bottom portion whereby water from the aquarium is capable of substantially unobstructed direct flow into and out of the bottom portion of said first outer tubular member;
b) a second inner tubular member having an open top portion and an open bottom portion, said second inner tubular member having a longitudinal dimension which is shorter than a longitudinal dimension of said first outer tubular member, said second inner tubular member being secured inside said first outer tubular member so that the bottom portion of said second inner tubular member is adjacent and in direct fluid communication with the bottom portion of said first outer tubular member, said first outer and said second inner tubular members defining therebetween a space; and
c) an air diffuser capable of being connected to an air source to provide air diffusing means for creating air bubbles having a diameter not exceeding 1 mm, said air diffuser being located inside said second inner tubular member adjacent said bottom end of said second inner tubular member;
a foam collector for receiving foam with proteins that overflow the top of said first outer tubular member;
whereby the air bubbles created by the air diffusing means rise within said second inner tubular member and displace a body of water upwardly until it rises out of said second inner tubular member where it falls under the effect of gravity into said space in between said first outer and second inner tubular members.

5,665,228
OZONE MIXING SYSTEM FOR A HYDROTHERAPY SPA

Gregg W. Leaverton; Steven A. Rork, and Edward G. Ramsauer, all of Oceanside, Calif., assignors to Dimension One Spas, Inc., Oceanside, Calif.

Continuation of Ser. No. 589,400, Jan. 22, 1996. This application Oct. 15, 1996, Ser. No. 730,145
Int. Cl.[6] C02F *1/78*
U.S. Cl. 210—169 **18 Claims**

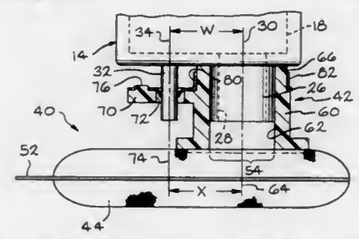


1. A mixing system for ozonating water of a hydrotherapy spa, said mixing system comprising:
a reservoir containing a water to be ozonated;
means for splitting said water to be ozonated into a first portion and a second portion;
means for contacting said first portion of said water to be ozonated with a fresh ozone stream to form a first solution of water and ozone, wherein said first portion contacting means includes a first input for receiving said first portion of said water to be ozonated from said splitting means, a second input for receiving said fresh ozone stream, and an output for discharging a first mixture containing said first solution of water and ozone and an undissolved ozone stream;
means coupled to said output of said first injector means for recapturing undissolved ozone by separating said undissolved ozone stream from said first solution of water and ozone; and
means for contacting said second portion of said water to be ozonated with said undissolved ozone stream to form a second solution of water and ozone, wherein said second portion contacting means has a first input coupled to said recapturing means for receiving said undissolved ozone stream, a second input coupled to said splitting means for receiving said second portion of said water to be ozonated, and an output for discharging said second solution of water and ozone into said reservoir.

5,665,229
IN-TANK FUEL FILTER WITH FLOATING MOUNTING

Edward J. Fitzpatrick, Findlay; Michael J. Davidson, and Bernard R. Smith, both of Ottawa, all of Ohio, assignors to Kuss Corporation, Findlay, Ohio

Filed Jul. 7, 1995, Ser. No. 499,175
Int. Cl.[6] B01D *35/02*
U.S. Cl. 210—232 **18 Claims**



1. An in-tank fuel filter assembly comprising, in combination, a filtration body defining an interior and an aperture,

an outlet fitting secured to said filtration body about said aperture, said outlet fitting adapted to receive an inlet fitting of a fuel pump and provide communication with said interior of said filtration body, and

a retainer secured to said outlet fitting and adapted to receive a mounting lug of such fuel pump, said retainer including a plurality of fingers having gripping ends arranged in a non-circular configuration, whereby said non-circular configuration of said plurality of fingers engages such mounting lug notwithstanding variations in spacing from such inlet fitting, wherein said retainer includes apertures and wherein said outlet fitting includes a flange having posts for engaging said apertures to secure said retainer to said outlet fitting.

5,665,230

FUEL FILTER

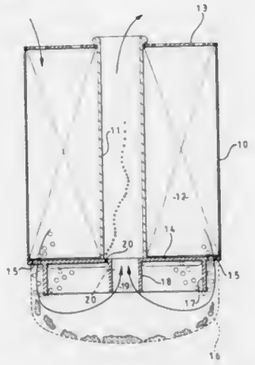
Peter Francis Bradford, Sudbury, England, assignor to Lucas Industries Public Limited Company, West Midlands, United Kingdom

Filed Aug. 25, 1995, Ser. No. 519,819

Claims priority, application United Kingdom, Sep. 2, 1994, 9417657

Int. Cl.[6] B01D *35/01*

U.S. Cl. 210—305 **8 Claims**



1. A fuel filter element in combination with a bowl, comprising an outer tube,

an inner tube with a bore therethrough situated generally concentrically within said outer tube, said outer and inner tubes defining an annular space having opposite top and bottom ends,

top and bottom support plates closing said top and bottom ends respectively of said tubes,

a filter medium in said annular space, said top and bottom support plates including fuel flow apertures for allowing fuel to flow into and through said filter medium in said annular space, said bottom support plate having an outer peripheral edge, said apertures in said bottom support plate being situated closely adjacent said outer peripheral edge,

said bottom support plate being closable by the bowl situated to engage said bottom support plate radically outward of said apertures therethrough, a first annular baffle extending axially downward from said bottom support plate and situated radially inwardly of the apertures in said bottom support plate,

a second annular baffle extending axially downward from said bottom support plate and radially inward of said first annular baffle,

said first and second annular baffles and a bottom surface of said bottom support plate between said annular baffles defining an air collection chamber,

wherein one of said bottom support plate and said second annular baffle includes an air escape orifice communicating said air collection chamber with the bore of said inner tube.

5,665,231

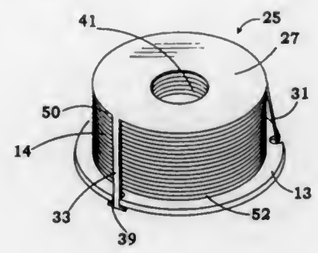
FULL FLOW/BYPASS FILTER ASSEMBLY

Brian James Langsdorf, Toledo; Ralph Allen Knopp, Grand Rapids, and Gerard Walter Bilski, Perrysburg, all of Ohio, assignors to AlliedSignal Inc., Morristown, N.J.

Filed Nov. 1, 1995, Ser. No. 551,683

Int. Cl.[6] B01D *27/14*

U.S. Cl. 210—314 **17 Claims**



1. In a multi-media lubricant filter of the type having a hollow cylindrical shell closed at one end, a generally columnar stack of flat filter media lamina for providing filtration for one lubricant circuit, means including a helical compression spring for axially compressing the stack of filter media lamina, and other filter media providing filtration for another lubricant circuit; the improvement comprising a harness for retaining the filter media lamina in stacked columnar alignment comprising a generally circular lubricant impervious end piece having a diameter somewhat greater than the lateral extent of the filter media lamina, the end piece adapted to engage one end filter media lamina, an annular portion for engaging the opposite end filter media lamina, a plurality of elongated strips integral with and extending from the periphery of the annular portion and terminating at remote free ends, and means peripherally disposed about the end piece for receiving and retaining the free ends of the elongated strips, the helical compression spring being disposed between the shell closed end and the end piece and the retaining strap extending from one elongated strip free end for engaging the helical spring and holding the spring in position adjacent the end piece during filter assembly.

5,665,232

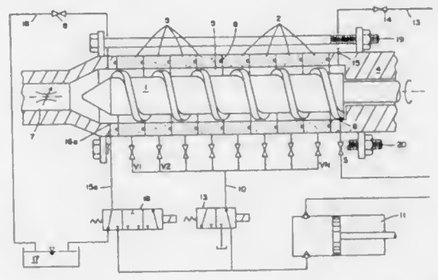
APPARATUS FOR SEPARATING OFF THE LIQUID PORTION FROM THE SOLIDS PORTION OF TWO-PHASE SYSTEMS

Dietrich Schlegel, Schlackstrasse 3, D-52080 Aachen, Germany

Filed Aug. 18, 1995, Ser. No. 516,778

Int. Cl.[6] B30B *9/14*; **B01D** *29/35;39/20*

U.S. Cl. 210—408 **20 Claims**



2. An apparatus for separating liquids and solids from a finely dispersed mineral slurry, comprising:

a screw;

a cylindrical filter surrounding said screw and arranged along an axis of said screw to delimit a screw channel having a material feed at one end and a discharge at an opposite end, said cylindrical filter having a two-stage construction for building up a resting filter cake layer having a higher solids content than the mineral slurry conveyed in said screw channel, including a first filter section having a first filter means formed from a plurality of layers of screen sintered together or a porous sintered metal, and a second filter section having a second filter means formed from a porous ceramic material and having a higher resistance to abrasion than said first filter means.

5,665,233

FILTER APPARATUS FOR SELECTIVELY REMOVING LEUKOCYTES

Tatsuya Fukuda; Takao Nishimura, and Naokuni Yamawaki, all of Olta, Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Division of Ser. No. 353,335, Dec. 5, 1994, Pat. No. 5,478,470, which is a continuation of Ser. No. 946,454, Nov. 13, 1992, abandoned. This application Sep. 21, 1995, Ser. No. 531,700

Claims priority, application Japan, Aug. 22, 1991, 3-233702; Jul. 9, 1992, 4-204265

Int. Cl.[6] B01D *29/00;29/05*

U.S. Cl. 210—483 **10 Claims**

1. A filter apparatus for selectively removing leukocytes from a leukocyte-containing suspension, which comprises a container having an inlet for a leukocyte-containing suspension and an outlet for a filtrate, and a porous structure packed in said container, said porous structure comprising a main porous element having an average pore diameter of 1 to 25 μm and a total pore volume of 0.40 to 0.95 ml/ml of the main porous element, wherein the sum of respective pore volumes of pores of said main porous element which have a pore diameter of 1 to 30 μm is 90% or more, based on said total pore volume, and at least one preliminary porous element disposed upstream of said main porous element with respect to a flow direction in which a leukocyte-containing suspension to be treated for removal of leukocytes is adapted to be flowed, said preliminary porous element having an average pore diameter which is larger than the average pore diameter of said main porous element so that said porous structure has an average pore diameter of 1 to 300 μm,

said porous structure having an average pore diameter gradient such that the average pore diameter is substantially continuously or stepwise decreased in said flow direction from an upstream end portion to a downstream end portion of the porous structure, wherein said upstream end portion and said downstream end portion each have a thickness of 0.5 mm or less, as measured in a thicknesswise direction from the upstream end surface and from the downstream end surface of said porous structure, respectively, and wherein said upstream end portion of said porous structure has an average pore diameter of 10 to 300 μm and said downstream end portion of said porous structure has an average pore diameter of 1 to 25 μm, with the proviso that the average pore diameter of the upstream end portion of said porous structure is 2 to 100 times that of the downstream end portion of said porous structure,

wherein said preliminary porous element is capable of capturing at least 60% of all leukocytes contained in said leukocyte-containing suspension.

5,665,234

MICRO-FILTER DISC AND A METHOD FOR ITS PRODUCTION

Angelo Dilenge, Siershan, Germany, and Peter Grüter, Regensdorf, Switzerland, assignors to Lukopat AG, Glarus, Switzerland

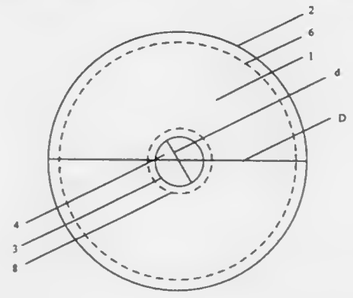
PCT No. PCT/EP94/00947, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO94/22555, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 24, 1994, Ser. No. 530,095

Claims priority, application Germany, Mar. 29, 1993, 93 105 152.8

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—496 **38 Claims**



1. A micro-filter disc including kieselguhr for the sterilization of water wherein:

(a) said micro-filter disc comprises at least two types of silicately bonded kieselguhr, at least one of which is pre-calcined and burnt later; and

(b) said micro-filter disc comprises pore sizes of a magnitude of 0.05 to 0.5μ.

5,665,235

SUPPORTED FIBROUS WEB ASSEMBLY

Michael R. Gildersleeve, Nesconset; Tony Alex, Merrick; Thomas C. Gsell, Glen Cove, all of N.Y., and M. JoAnna Abes, Mountainside, N.J., assignors to Pall Corporation, East Hills, N.Y.

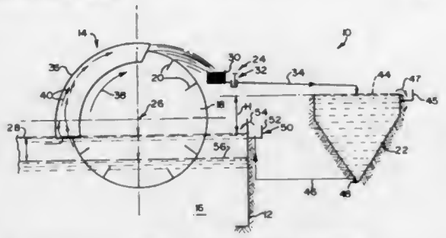
Filed May 9, 1995, Ser. No. 437,806

Int. Cl.[6] B01D *39/16*

U.S. Cl. 210—503 **28 Claims**

1. A supported fibrous web assembly comprising (a) a support material, (b) a first fibrous web, and (c) a second fibrous web, wherein said first fibrous web is positioned between and adhered to said support material and said second fibrous web, said first fibrous web is a nonwoven web of multicomponent fibers comprising at least about 10 wt. % of a first polymer and no more than about 90 wt. % of a second polymer such that said second polymer is present on at least a portion of the surface of said multicomponent fibers and has a softening temperature below the softening temperatures of said first polymer, second fibrous web and support material, said supported fibrous web assembly has a water flow rate of at least about 20% of the water flow rate of said second fibrous web alone, and the peel strengths as between said first fibrous web and said support material and as between said first fibrous web and said second fibrous web are at least about 50 kg/m.

5,665,236
PURIFICATION OF LIQUIDS
Zacharias Joseph Van Den Berg, Farm Onder Leeupoort, South Africa, assignor to Tecroveer (Proprietary) Limited, Westonaria, South Africa
Filed Feb. 20, 1996, Ser. No. 603,456
Int. Cl.[6] C02F 3/08
U.S. Cl. 210—619 13 Claims

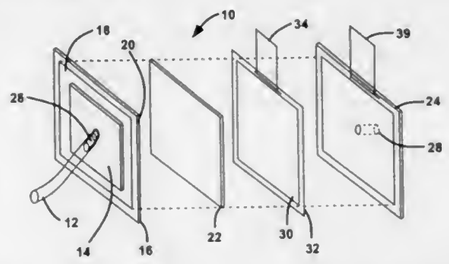


1. A method of purifying a liquid which includes
feeding liquid to be purified into a receptacle;
agitating the liquid in the receptacle by means of an aerating device;
utilizing the aerating device for transferring the agitated liquid to a separating unit arranged downstream of the receptacle, the separating unit being configured to have a liquid level therein which is always higher than a maximum liquid level in the receptacle;
controlling the rate of transfer of agitated liquid from the receptacle to the separating unit by depositing the liquid into a liquid carrying conduit arranged downstream of the aerating device and mounting a control means downstream of the conduit further to control the rate of transfer of liquid to the separating unit; and
removing cleaner liquid from the separating unit and returning residue via an outlet of the separating unit to the receptacle hydrostatically.

5,665,237
METHOD FOR SEPARATING MATERIALS
William G. Kozak, Hatfield; Dharmesh Chovatia, Bensalem, and George A. Smith, Newtown, all of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.
Continuation-in-part of Ser. No. 287,014, Aug. 8, 1994, Pat. No. 5,501,796. This application Feb. 28, 1995, Ser. No. 395,738
The portion of the term of this patent subsequent to Aug. 8, 2014, has been disclaimed.
Int. Cl.[6] B01D 11/04
U.S. Cl. 210—638 23 Claims

23. A process for the separation of naphthalenesulfonate-based carbonyl condensates from water, said process comprising:
contacting a mixture comprised of water and a naphthalenesulfonate-based carbonyl condensate selected from the group consisting of formaldehyde condensates of naphthalenesulfonic acids, formaldehyde condensates of lower-alkyl substituted naphthalenesulfonic acids, and mixtures of two or more of such members, said condensate having a number average molecular weight of from about 2,000 to about 4,000 and a weight average molecular weight of from about 7,000 to about 13,000, wherein said naphthalene-based condensate comprises 10 parts per million to about 5% by weight of said mixture thereof with water, wherein said mixture has a pH below about 3, with a liquid organic phase comprised of a cationic lipophilic amine selected from the group of tri-alkyl tertiary amines wherein the total number of carbon atoms in the alkyl groups is at least 22 and each of the alkyl groups has at least four carbon atoms, wherein the ratio of cationic amine equivalents of said cationic lipophilic amine to sulfonate equivalents of said naphthalenesulfonate-based carbonyl condensate is from about 0.3:1 to about 30:1, to form an aqueous phase depleted with respect to said mixture of naphthalenesulfonate-based carbonyl condensate and a liquid organic phase enriched in naphthalenesulfonate-based carbonyl condensate, and
separating said aqueous phase depleted with respect to said mixture of naphthalenesulfonate-based carbonyl condensate and said liquid organic phase enriched with respect to naphthalenesulfonate-based carbonyl condensate, wherein said contacting and separating are effective in reducing the concentration of said naphthalenesulfonate-based carbonyl condensate in said mixture to less than about 0.01% by weight.

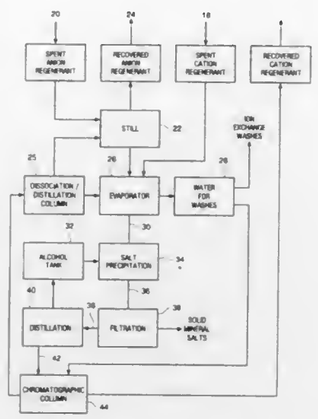
5,665,238
METHOD AND APPARATUS FOR THE COLLECTION STORAGE AND REAL TIME ANALYSIS OF BLOOD AND OTHER BODILY FLUIDS
Peggy A. Whitson, El Lago, and Vaughan L. Clift, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 247,187, May 19, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 605,300
Int. Cl.[6] B01D 37/00;61/00
U.S. Cl. 210—649 3 Claims



2. A method for passively separating into cellular and acellular fractions a blood sample having a volume of up to about 20 milliliters, comprising the steps of:
providing a housing comprising at least one opening therethrough for receiving a blood sample;
providing a fibrous filter comprising a first surface, substantially all of which fluidly communicates with a blood sample in said blood sample collection chamber, a second surface abutting and fluidly communicating with said serum sample collection chamber, and an intermediate portion having a given height sandwiched between and in fluid communication with both said first and said second surfaces, wherein said fibrous filter has a pore size of about 3 microns or less and is coated with a mixture comprising between about 1–40% mannitol and between about 0.1–15% albumin; and
separating said blood sample into cellular and acellular fractions by filtering said blood sample from said blood sample collection chamber, across said first surface, across said intermediate portion, and across said second surface into said serum collection chamber and onto an absorbent matrix.

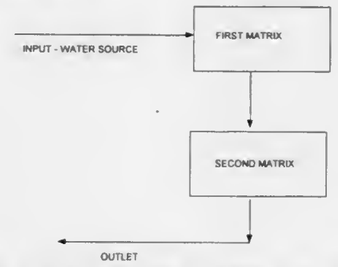
5,665,239
PROCESSES FOR DEIONIZATION AND DEMINERALIZATION OF FLUIDS
Arthur Katzaklan, Jr., Elk Grove; Donald C. McGehee, Carmichael; Charles E. Grix, Sacramento, all of Calif., and Frank A. Brigano, Hoffman Estates, Ill., assignors to Culligan International Company, Northbrook, Ill.
Filed Jan. 16, 1996, Ser. No. 585,821
Int. Cl.[6] B01D 15/08
U.S. Cl. 210—656 15 Claims

1. A process for deionization and demineralization of a fluid containing ions comprising:



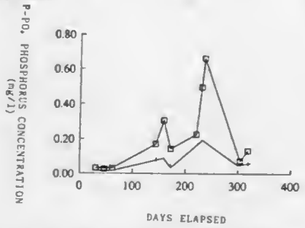
(a) Loading an amine or ammonia buffer onto a first weakly acidic cation exchange resin to occupy cation exchange sites and to form a first bed comprising a first amine-buffered resin;
(b) Passing said fluid containing ions through said first bed comprising said first amine-buffered resin and exchanging cations of said fluid for amine cations of said first amine-buffered resin to form a first effluent comprising an anion-buffer salt complex;
(c) Passing said anion-buffer salt complex through a first weakly basic anion exchange resin where an anion portion of said anion-buffer salt complex is split from said anion-buffer salt complex by adsorption of said anion portion onto said weakly basic anion exchange resin to form a second effluent comprising buffer in free hydrated base form;
(d) Passing said buffer in free hydrated base form to a second weakly acidic cation exchange resin where said buffer loads onto said second weakly acidic cation exchange resin as in step (a) and repeating the process of steps (b)–(d);
(e) Regenerating said first weakly acidic cation exchange resin with an organic acid to reestablish said first weakly acidic cation exchange resin to hydrogen form and to form a spent organic acid regenerant comprising a mixture of cation salts of the organic acid regenerant and free organic acid regenerant;
(f) Regenerating said first weakly basic anion exchange resin with an organic base to reestablish said first weakly basic anion exchange resin to free hydrated base form and to form a spent organic base regenerant comprising a mixture of anion salts of said organic base regenerant and free organic base regenerant;
(g) Distilling said spent organic base regenerant to remove free organic base regenerant for reuse in step (f);
(h) Combining said anion salts of said organic base regenerant with said spent organic acid regenerant to form a regenerant product solution having an acidic pH comprising an organic acid, an organic acid/organic base complex and neutral inorganic salts;
(i) Subjecting said regenerant product solution to evaporation so that water is condensed and collected leaving a concentrated regenerant product solution comprising said organic acid regenerant, residual organic acid/organic base complex and neutral inorganic salts;
(j) Combining said concentrated regenerant product solution with an alcohol causing said neutral inorganic salts to precipitate;
(k) Filtering to remove said neutral inorganic salts precipitated in step (j) and distilling filtrate to remove said alcohol;
(l) Passing alcohol-free filtrate formed in step (k) through a chromatographic column to separate free organic acid from said organic acid/organic base complex;
(m) Passing said organic acid/organic base complex collected in step (l) to a dissociation-distillation column where dissociation of said organic acid/organic base complex yields free organic base and water, which are separated from said organic acid/organic base complex, and collected and reused in step (g); and
(n) Returning separated free organic acid from step (l), which contains up to 5% organic acid/organic base complex to step (e).

5,665,240
POINT-OF-USE REMOVAL OF LEAD IN DRINKING WATER USING PHOSPHATE AND CARBONATE MINERALS
Puikwan Andy Hong, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah
Filed Mar. 24, 1995, Ser. No. 410,216
Int. Cl.[6] B01J 39/00
U.S. Cl. 210—665 8 Claims



1. A process for removing lead from drinking water discharged from a drinking water outlet comprising:
(a) directing the water through a first matrix comprising a mineral of between 10 and 100 weight percent of a solid phosphate mineral which is slightly soluble in water, the remaining portion being a solid carbonate mineral which is slightly soluble in water, such that there is sufficient contacting between the water and the first matrix to introduce sufficient phosphate ions into the water to form lead precipitate and reduce the lead concentration in the water to below 15 parts per billion, the phosphate mineral and the carbonate mineral containing the same element as a cation,
(b) directing the lead depleted water from step (a) through a second matrix, the second matrix comprising a mineral that when in equilibrium with the water reduces the phosphate ion concentration to 60 mg/L or below.

5,665,241
DEPHOSPHORIZING MATERIAL AND DEPHOSPHORIZING METHOD
Terunobu Maeda, Ibaraki-ken, and Atsunori Negishi, Tsukuba, both of Japan, assignors to Hazama Corporation, Tokyo, Japan
PCT No. PCT/JP95/00449, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO95/25586, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 16, 1995, Ser. No. 557,064
Claims priority, application Japan, Mar. 18, 1994, 6-048993
Int. Cl.[6] C02F 1/52
U.S. Cl. 210—683 10 Claims



1. A dephosphorizing material wherein a fine pore rendering percent water absorption of not less than 10% is formed therein by

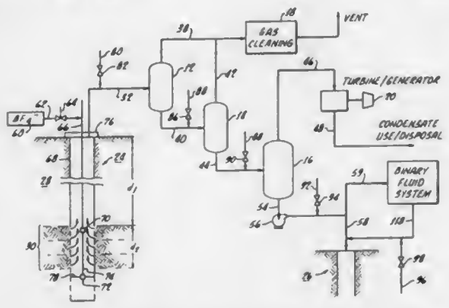
solidifying starting materials comprising iron or an iron-containing compound, a cementitious material, water, and a mixing agent for accelerating bleeding, while bleeding not less than 2.0% by weight of the water contained in said starting materials.

5,665,242

INHIBITION OF SILICA PRECIPITATION

Darrell L. Gallup, Santa Rosa, Calif., assignor to Union Oil Company of California, El Segundo, Calif.

Filed Aug. 25, 1995, Ser. No. 519,668
Int. Cl.[6] C02F 5/08
U.S. Cl. 210—696 37 Claims



1. A method for inhibiting the formation of a silicon-containing precipitate from an aqueous brine solution derived from a geothermal reservoir said method comprising:

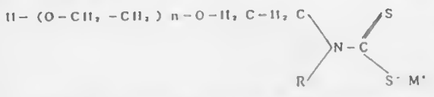
adding a fluoroborate species to said brine solution comprising a silicon-containing component to inhibit the formation of silicon-containing precipitate at a pH of said brine solution above 4.0, said fluoroborate species comprising tetrafluoroborate. BF_3OH^- and any species in solution comprising boron and fluorine which comprises or is in equilibrium with tetrafluoroborate ions or BE_3OH^-.

5,665,243

METHOD FOR REMOVING METAL CONTAINED IN SOLUTION USING SURFACTANT HAVING CHELATING ABILITY

Naoki Abe, Okazaki; Koji Mizuno, Toyota; Masayuki Sumiyoshi, Okazaki; Katsuya Murakami, Toyota; Kojiro Murayama, Toyota; Koichi Sugiura, Toyota; Fumio Kawahara, Toyota; Mitsuru Tomoto, Toyota, and Heijiro Ojima, 7, Shimoshigehara-cho 4-chome, Kariya-shi, Aichi-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; MEC International Corporation, both of Toyota, and Heijiro Ojima, Kariya, all of Japan

Division of Ser. No. 527,206, Sep. 12, 1995, Pat. No. 5,587,060. This application Aug. 30, 1996, Ser. No. 705,674
Claims priority, application Japan, Sep. 13, 1994, 6-219103; Aug. 11, 1995, 7-205765; Aug. 28, 1995, 7-218820
Int. Cl.[6] C02F 5/10
U.S. Cl. 210—698 4 Claims



1. A method of removing metal from an oil emulsified aqueous solution, comprising

emulsifying an aqueous solution, with a surface active agent containing a hydrophilic group, a hydrophobic group and a chelating group, the chelating group containing a ligand with a negative electric charge not equal to the positive electric charge of metal ion to be chelated by the chelating group, wherein the electric charge is not neutralized even after the metal chelation.

5,665,244

REDUCTION OF IMPURITIES IN BAYER PROCESS ALUMINA TRIHYDRATE

Alan Rothenberg, Wilton, Conn.; Greg Flieg, Prairieville, La., and Robert Cole, Portland, Tex., assignors to Cytec Technology Corporation, Wilmington, Del.

Filed Nov. 6, 1996, Ser. No. 746,037
Int. Cl.[6] C01F 7/20
U.S. Cl. 210—734 10 Claims

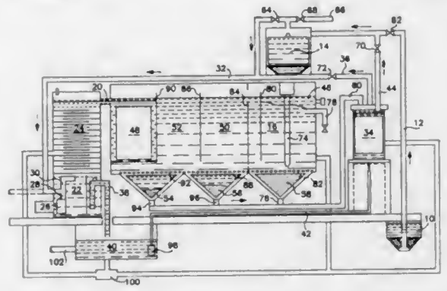
1. A process for reducing alumina trihydrate impurity levels in the Bayer process by centrifugation, comprising contacting and efficiently mixing an alumina trihydrate suspension containing leachable soda with a water-soluble polymer containing pendant hydroxamic acid or salt groups in an amount effective to flocculate the suspended solids therein, said polymer having a molecular weight ranging from about 1×10^4 to about 1×10^8 and a degree of hydroxamation ranging from about 1 to about 90 mole percent, and centrifuging resultant flocculated solids to thereby separate centrifuged solids containing said alumina trihydrate from said suspension, and reduce said leachable soda in the separated alumina trihydrate.

5,665,245

PROCESS FOR RECIRCULATING AND PURIFYING WASTE WATER FROM A VEHICLE WASHING INSTALLATION

Harald Kloss, Bad-Vilbel, and Erhard Crema, Maintal, both of Germany, assignors to BL Patentverwaltungs und Vertriebs GmbH, Germany

PCT No. PCT/EP93/01707, § 371 Date Apr. 11, 1995, § 102(e) Date Apr. 11, 1995, PCT Pub. No. WO94/01368, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 2, 1993, Ser. No. 360,674
Claims priority, application Germany, Jul. 3, 1992, 9208900 U; Sep. 23, 1992, 42 31 880.7; Mar. 8, 1993, 43 07 046.9
Int. Cl.[6] B01D 17/12
U.S. Cl. 210—744 13 Claims



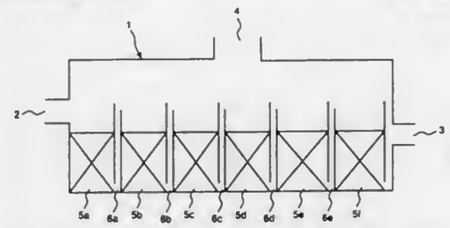
1. A process for purifying waste water from a vehicle washing installation comprising collecting said waste water, the water containing oil, in the first container, passing the collected waste water from the first container to a third container by negative pressure generated by a water jet pump having a water seal of purified waste water, automatically emptying water from the third container into a second container, directly or indirectly, when a predetermined amount of waste water is reached in the third container, said waste water being passed through a separator for purification, a portion of the water purified in said separator being provided for said water seal either before it enters the third container or between the third and second container,and returning the waste water from the second container to the vehicle washing installation for reuse.

5,665,246

CATALYZED HYPOCHLORITE DECOMPOSITION PROCESS

Maoliosa Carlin, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 104,065, Aug. 12, 1993, abandoned. This application Apr. 26, 1995, Ser. No. 427,824
Claims priority, application United Kingdom, Apr. 9, 1991, 9107404
Int. Cl.[6] C01B 13/02
U.S. Cl. 210—750 4 Claims



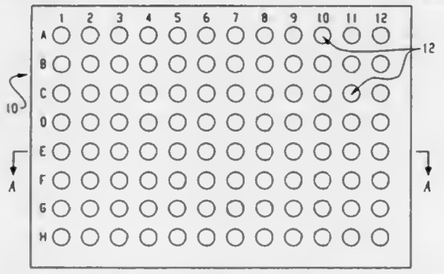
1. A catalysed hypochlorite decomposition process comprising contacting a hypochlorite ion containing liquid stream with a particulate catalyst that is capable of decomposing hypochlorite ions with the liberation of gaseous oxygen, disposed in at least two serially connected beds arranged in cascade with risers free of catalyst between successive beds, said liquid stream being passed down through at least the first two of said serially connected beds, substantially in counter current flow to the gaseous oxygen liberated by the decomposition of the hypochlorite ions and up through the risers between the successive beds, under the action of gravity.

5,665,247

PROCESS FOR SEALING MICROPLATES UTILIZING A THIN POLYMERIC FILM

Ronald J. Valus, Valley View, Ohio, and Jonathan N. Lipsky, Hanover, Mass., assignors to Whatman Inc., Cleveland, Ohio

Filed Sep. 16, 1996, Ser. No. 714,760
Int. Cl.[6] B01D 21/26;37/00
U.S. Cl. 210—767 8 Claims



1. A process for maintaining a differential pressure substantially constant over a multi-well microfiltration device, said device comprising an upper surface having multiple well openings, each of said well openings having a perimeter on the upper surface of said device and a central opening for receiving media to be filtered, sidewalls extending downward from said perimeter below said central opening, and a bottom surface such that a well for retaining a media to be filtered is formed, said process comprising:

occupying at least two wells of said device with a media to be filtered;

creating a differential pressure around said device;

placing a flexible sealing member over said upper surface and each of said multiple well openings of said device;

stretching said flexible sealing member so as to seal said perimeter and said central opening of each individual well of said multi-well micro filtration device; and

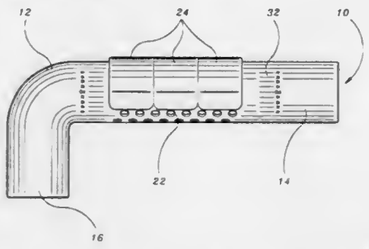
filtering said media from each occupied well of said device at a rate independent of the filtration rate of any other well of said device, while maintaining a substantially constant differential pressure around said device such that said flexible sealing member collapses into each well of said device, preventing air breakthrough, at a rate which varies among said wells of said device correspondingly to said independent rate of filtration of each occupied well, until filtration in all wells containing media is complete.

5,665,248

METHOD OF PURGING AIR FROM A SWIMMING POOL HOSE

Clifford Ron McKiddy, II, 824 Ariege Dr., St. Louis, Mo. 63141

Filed Sep. 18, 1995, Ser. No. 529,914
Int. Cl.[6] B01D 35/01
U.S. Cl. 210—805 2 Claims



1. A method for purging air from a swimming pool hose, containing a fluid/air mixture, connected to a hydraulic vacuum pump through a skimmer/filter basket of a poolside skimmer, the method comprising the steps of:

providing an in-line tubular member comprising a front-end, a rear-end, an outer surface, an inner surface, one or more apertures interdisposed between the front-end and the rear-end, and one or more covers capable of substantially closing said one or more apertures, said one or more apertures extending from the outer surface of the in-line tubular member to the inner surface of the in-line tubular member;

connecting the front-end of the in-line tubular member to a swimming pool vacuum hose and the rear-end of the in-line tubular member to the hydraulic pumping suction of a poolside skimmer/filter basket such that said one or more apertures are substantially immersed in water;

opening one or more of the one or more covers for an optimum time interval to allow water to be siphoned through the one or more apertures and into the hydraulic pump such that the hydraulic pump establishes and maintains its prime while evacuating air from the vacuum hose;

closing the one or more covers after the air has been purged from the vacuum hose such that hydraulic pump siphons water through the vacuum hose and not through the one or more apertures.

5,665,249

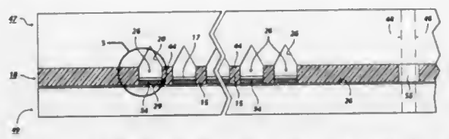
MICRO-ELECTROMECHANICAL DIE MODULE WITH PLANARIZED THICK FILM LAYER

Cathie J. Burke, Rochester; William G. Hawkins, Webster; Herman A. Hermanson, Penfield; Michael C. Ferringer, Ontario; Almon P. Fisher, Rochester, and Diane Atkinson, Webster, all of N.Y., assignors to Xerox Corporation, Stanford, Conn.

Filed Oct. 17, 1994, Ser. No. 330,146
Int. Cl.[6] B24B 1/00; B41J 2/04
U.S. Cl. 216—2 10 Claims

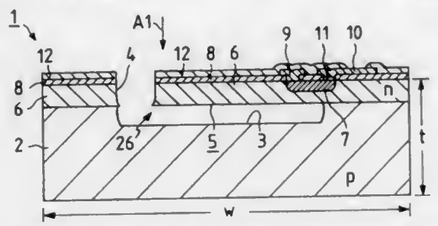
1. A method of fabricating a plurality of micro-electromechanical die modules having a patterned, polymeric thick film layer bonded between two substrates, comprising the steps of:

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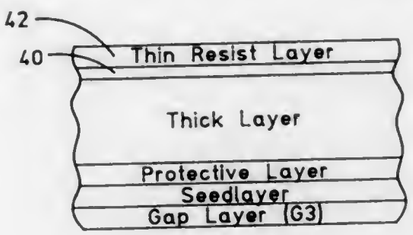
(a) forming a plurality of electrical circuits on a planar surface of a first substrate;
(b) passivating the electrical circuits;
(c) depositing a thick film, polymeric insulative layer on the first substrate surface and over the passivated electrical circuits, said thick film layer having an outer surface;
(d) patterning the thick film layer to provide at least one recess in the thick film layer at locations for each electrical circuit, each recess having an edge at the outer surface of the thick film layer;
(e) curing the patterned thick film layer on the first substrate;
(f) performing a chemical-mechanical polishing of the outer surface of the patterned thick film layer to planarize the outer surface of the patterned thick film layer and remove topographic formations produced by any of the previous steps; and
(g) bonding a planar surface of a second substrate to the planarized outer surface of the patterned thick film layer on the first substrate.

5,665,250
METHOD OF MANUFACTURING SURFACE TYPE ACCELERATION SENSOR METHOD OF MANUFACTURING
Hitoshi Iwata, and Makoto Murate, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Division of Ser. No. 538,697, Oct. 3, 1995. This application Mar. 29, 1996, Ser. No. 622,877
Claims priority, application Japan, Oct. 6, 1994, 6-243127
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—52 **2 Claims**



1. A method of manufacturing a surface type acceleration sensor, said method comprising the steps of:
forming a p-type silicon layer in a region on the front face side of the p-type single crystal silicon base plate by adding impurities;
embedding the p-type silicon layer in an epitaxial growth layer when the epitaxial growth layer made of n-type single crystal silicon is formed on an upper face of the p-type single crystal silicon base plate;
forming a p-type silicon layer for the formation of an opening portion on the epitaxial growth layer by adding impurities;
forming a strain gauge made of p-type silicon on an upper face of the epitaxial growth layer;
forming a passivation film for covering a wiring pattern after the formation of the wiring pattern connected to the strain gauge;
changing each p-type silicon layer into a porous silicon layer when anode formation processing is conducted under the condition that an etching resist is formed on an upper face of the passivation film; and
forming a cavity in a portion where the porous silicon layer is located when the porous silicon layer is removed by alkali etching.

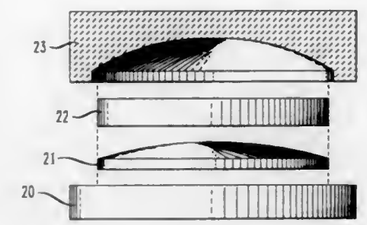
5,665,251
RIE IMAGE TRANSFER PROCESS FOR PLATING
Neil Leslie Robertson, Campbell; Hugo Alberto Emilio Santini, San Jose, and Clinton David Snyder, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 23, 1994, Ser. No. 344,241
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—22 **39 Claims**



1. A method of forming a miniature metallic structure over a nonconductive material layer by plating with a pattern shaped to correspond to said miniature metallic structure, the method comprising the steps of:
depositing a seedlayer on the nonconductive material layer;
depositing a protective layer on the seedlayer for protecting the seedlayer;
depositing a relatively thick layer of material on the protective layer;
the material of the relatively thick layer of material being of a type which, can be patterned by reactive ion etching, which is a first etch, and which, after patterning, is not removable by a second etch;
the seedlayer being of a type of material which is damaged by said first etch and is not removable by said second etch;
the protective layer being of a type of material which is not removable by said first etch but is removable by said second etch;
masking a top surface of the relatively thick layer to expose a surface portion of the relatively thick layer of material;
etching the relatively thick layer of material with said first etch to remove a thickness of the relatively thick layer of material below the exposed surface portion to expose a portion of the protective layer;
etching the exposed portion of the protective layer with said second etch to expose a seedlayer portion where the miniature metallic structure is to be formed;
plating a metallic layer on the exposed seedlayer portion to form the miniature metallic structure;
the miniature metallic structure being a type of material which is not removed by said first etch; and
removing with said first etch the relatively thick layer of material leaving the miniature metallic structure with a protective layer around it.

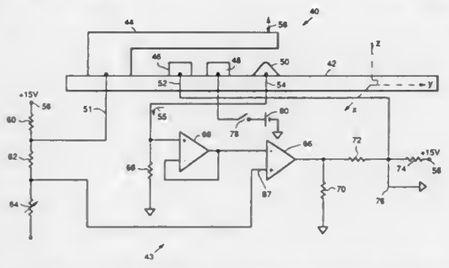
5,665,252
METHOD OF SHAPING A POLYCRYSTALLINE DIAMOND BODY
Sungho Jin, Millington, and Wei Zhu, North Plainfield, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jul. 12, 1995, Ser. No. 501,632
Int. Cl.[6] B29D *11/00;25/00*
U.S. Cl. 216—33 **12 Claims**

1. Method of making an article that comprises a processed polycrystalline diamond body, the method comprising
a) providing a starting polycrystalline diamond body having a major surface, and transforming the starting body into the processed body by a process that comprises



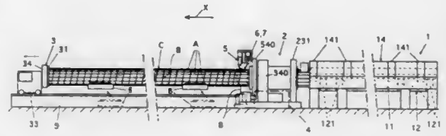
b) removing a quantity of diamond material from the major surface of the starting body, with the amount of diamond to be removed at a first location on the major surface being greater than the amount to be removed at a second location, the quantity of diamond material to be removed by a process that comprises contacting the major surface with a quantity of etchant metal such that the etchant metal is in intimate contact with the major surface; wherein
c) the major surface is contacted such that, at a processing temperature, the quantity of etchant metal has a non-constant thickness, with a greater thickness overlying the first location than is overlying the second location; and wherein
the quantity of etchant metal is maintained in intimate contact with the major surface until the quantity of diamond material is removed from the major surface.

5,665,253
METHOD OF MANUFACTURING SINGLE-WAFER TUNNELING SENSOR
Randall L. Kubena, Agoura, and Gary M. Atkinson, Thousand Oaks, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Division of Ser. No. 292,897, Aug. 19, 1994, Pat. No. 5,596,194. This application May 31, 1995, Ser. No. 456,211
Int. Cl.[6] H01L *21/027;* **H01J** *37/244*
U.S. Cl. 216—41 **18 Claims**



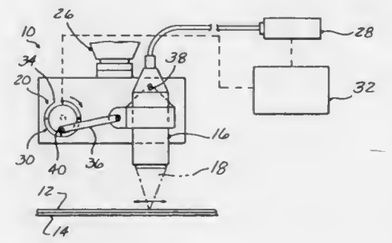
1. A method for fabricating a tunneling tip sensor for sensing a z-axis force, comprising:
providing a single semiconductor wafer having a surface that lies in an xy-plane;
forming a metal layer on the wafer's surface;
photolithographically patterning the metal layer to form a cantilever pad and a tunneling electrode that adhere to the wafer's surface;
photolithographically extending the cantilever pad to form a cantilever electrode that extends over the tunneling electrode to define a tunneling tip sensor having a unitary structure on the semiconductor wafer, said cantilever and tunneling electrodes forming a part of a circuit in which a tunneling current flows between the cantilever and tunneling electrodes in response to an applied bias voltage across the two electrodes and in which a force applied along a z-axis perpendicular to the xy-plane urges said cantilever electrode to deflect relative to said tunneling electrode and to modulate an output signal.

5,665,254
METHOD OF MANUFACTURING A REINFORCING BAR CAGE AND APPARATUS FOR MANUFACTURING THE SAME
Hideo Isono, Nishinomiya, and Takeshi Okabe, Hirakata, both of Japan, assignors to Matsumura-Gumi Corporation, Osaka, and Daiichi Unyusagyo Co. Ltd., Nishinomiya, both of Japan
Filed Jul. 31, 1995, Ser. No. 509,339
Claims priority, application Japan, Apr. 12, 1994, 6-73052
Int. Cl.[6] B23K *11/34;* **B21F** *27/10*
U.S. Cl. 219—56 **18 Claims**



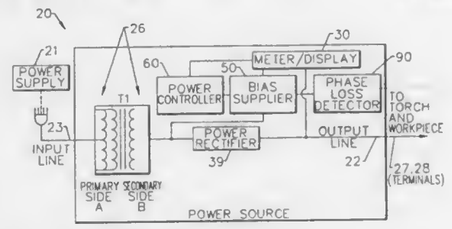
1. A method of manufacturing a reinforcing bar cage comprising the steps of arranging longitudinally extending main reinforcements in a cylindrical form, arranging and connecting a hoop to said cylindrically arranged main reinforcements by welding crossed portions of said main reinforcements and said hoop, and additionally heating said crossed portions by gas combustion heating to prevent hardening and reduction of extensibility of said welded crossed portions.

5,665,255
LASER WELDING APPARATUS AND METHOD FOR HIGH TEMPERATURE GRADIENT COOLING ALLOYS
Peter L. Busuttil, Troy, Mich., assignor to Progressive Tool & Industries Company, Southfield, Mich.
Filed Aug. 1, 1995, Ser. No. 509,903
Int. Cl.[6] B23K *26/08*
U.S. Cl. 219—121.63 **19 Claims**



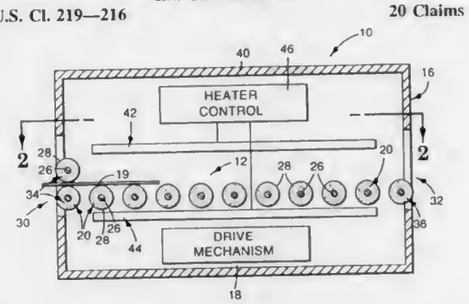
10. An apparatus for laser welding a plurality of metal alloy workpieces to one another with a laser head emitting a laser beam, the laser head and workpieces moving relative to one another at a predetermined velocity along a weld path, the apparatus comprising:
means for modulating power of said laser beam to a selected modulated power output having a frequency;
means for superimposing an oscillating motion of said laser beam in a direction coaxial with said weld path over said relative velocity of movement of said laser head along said weld path such that a rate of cooling of molten metal formed by said laser beam along said weld path is controlled to a predetermined rate; and
means for synchronizing a stroke rate of said oscillating motion with said frequency of said modulating means.

5,665,256
CUTTING OR WELDING SYSTEM HAVING PHASE LOSS DETECTOR AND METHOD OF DETECTING PHASE LOSS FOR SAME
Tibor E. Toth, Florence, S.C., assignor to The ESAB Group, Inc., Florence, S.C.
Filed Dec. 19, 1995, Ser. No. 574,973
Int. Cl.[6] B23K *9/095*
U.S. Cl. 219—130.21 28 Claims



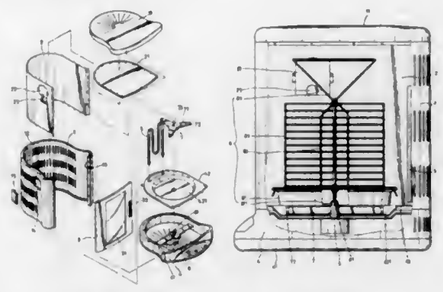
1. A cutting or welding system comprising:
a cutting or welding torch; and
a power source operatively connected to said cutting or welding torch, said power source including a power circuit comprising an electrical input line positioned to receive power from an external power supply, a transformer having a primary side connected to said input line and a secondary side, a rectifier operatively connected to the secondary side of said transformer, and an output line connected to said rectifier, wherein said transformer further comprises auxiliary windings coupled to said primary side and means operatively connected to said auxiliary windings of said transformer for detecting phase loss responsive to a ripple voltage exceeding a predetermined threshold.

5,665,257
FLAT BED THERMOPHOTOGRAPHIC FILM PROCESSOR
John A. Svendsen, Marine on the St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 289,284, Aug. 11, 1994, abandoned, which is a division of Ser. No. 862,830, Apr. 3, 1992, Pat. No. 5,352,863. This application Oct. 23, 1995, Ser. No. 553,815
Int. Cl.[6] H05B *1/00*
U.S. Cl. 219—216 20 Claims



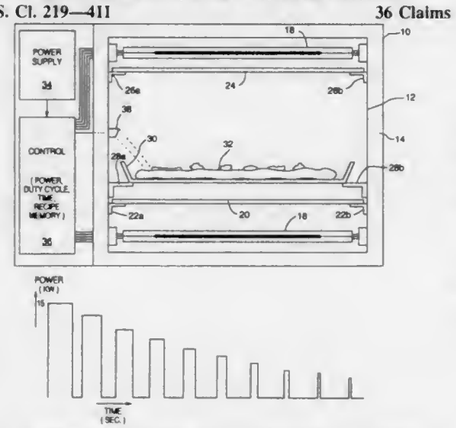
1. A thermal processor adapted to develop a thermally-developable image in an imaging material, comprising:
a heated oven having an imaging material transport path; and
at least three rotating members positioned within the oven along the transport path for supporting the imaging material, the rotating members being heated by the heated oven, the rotating members comprising means for preventing the rotating members from conducting heat to the imaging material in an amount and at a rate sufficient to unevenly develop the image as the rotating members support the imaging material.

5,665,258
VERTICAL ELECTRIC-HEATING OVEN
Tony Hsu, Yung-Kang, Taiwan, assignor to Lundar Electric Ind. Co., Ltd., Tainan Hsien, Taiwan
Filed May 16, 1995, Ser. No. 442,341
Int. Cl.[6] F24C *7/04;15/16*
U.S. Cl. 219—388 1 Claim



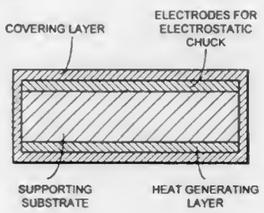
1. A vertical electrically heated oven, comprising:
a substantially U-shaped shell having longitudinally spaced top and bottom ends and a pair of side edges, said top end having a cover secured thereto;
a base having an upper end affixed to said bottom end of said shell;
reflecting means coupled to said base interior to said shell for defining a baking space and reflecting heat therein, said reflecting means including (a) a bottom reflector overlaying said base and secured thereto, said bottom reflector having a centrally disposed recessed dish portion with an aperture formed through a central portion thereof, (b) a U-shaped reflector coupled respectively on opposing sides to said pair of side edges of said shell and having longitudinally spaced top and bottom ends, said bottom end of said U-shaped reflector being coupled to said bottom reflector, and (c) a top reflector secured to said top end of said U-shaped reflector;
an electric heater extending longitudinally within said baking space, said electric heater being disposed adjacent a rear portion of said bottom reflector;
a door having one side pivotally coupled to a first of said pair of side edges of said shell, said door including a latch on an opposing side thereof for coupling with a second of said pair of side edges of said shell for enclosing said baking space;
a rotary driver disposed with in said base and having a shaft extending through said aperture of said bottom reflector;
a level-expanding bearer disposed within said recessed dish portion of said bottom reflector and having a plurality of end portions, said level-expanding bearer having a central through opening formed therein for passage of said shaft therethrough and having a plurality of rollers respectively coupled to said plurality of end portions; and,
a rack assembly disposed on said plurality of rollers and coupled to said shaft for rotation therewith to rotate food placed thereon within said baking space and provide even baking of the food, said rack assembly including:
(1) a dish member coupled to said shaft and disposed on said plurality of rollers;
(2) a round rack coupled to said dish, said round rack having a support section extending vertically from a central portion thereof;
(3) a first trellis member releasably securable to said round rack to extend vertically therefrom to define a circularly shaped cooking space therein;
(4) a second trellis member disposed on said round rack concentrically within said circular cooking space to define an annular cooking space therebetween; and,
(5) a suspension rack releasably coupled to said round rack, said suspension rack having (a) a cone-shaped suspension loop coupled to said support section of said round rack for rotation therewith, and (b) a plurality of suspension members releasably coupled to said suspension loop.

5,665,259
METHOD OF COOKING FOOD IN A LIGHTWAVE OVEN USING VISIBLE LIGHT WITHOUT VAPORIZING ALL SURFACE WATER ON THE FOOD
Eugene Westerberg, Palo Alto, Calif., assignor to Quadlux, Inc., Fremont, Calif.
Continuation-in-part of Ser. No. 738,207, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 350,024, May 12, 1989, Pat. No. 5,036,179, and a continuation-in-part of Ser. No. 769,340, Oct. 1, 1901, abandoned, which is a continuation of Ser. No. 664,494, Mar. 5, 1991, abandoned, which is a continuation of Ser. No. 195,967, May 19, 1988, abandoned. This application Nov. 1, 1993, Ser. No. 146,415
Int. Cl.[6] H95B *3/00;* F27B *9/06;* H05B *3/00;6/80*
U.S. Cl. 219—411 36 Claims



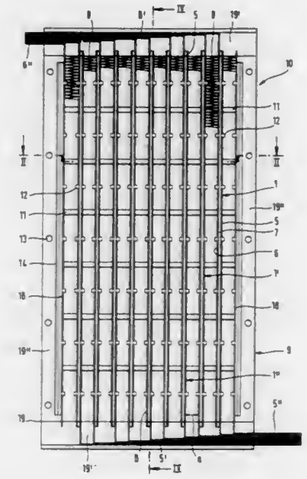
1. The method of cooking food in a lightwave oven having a plurality of high power lamps providing radiant energy in the electromagnetic spectrum including a significant portion in the near-visible and visible ranges comprising the steps of:
irradiating the food by applying power to at least one of said lamps without vaporizing all the surface water on the food for avoiding browning of the surface thereby enabling deep penetration of the food by radiation in the near-visible and visible ranges and then applying reduced radiation to the food.

5,665,260
CERAMIC ELECTROSTATIC CHUCK WITH BUILT-IN HEATER
Nobuo Kawada; Shoji Kano; Koji Hagiwara; Nobuo Arai, all of Gunma-ken; Junichi Arami, Tokyo, and Kenji Ishikawa, Kanagawa-ken, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Tokyo Electoron Limited, both of Tokyo, Japan
Filed Dec. 27, 1994, Ser. No. 364,196
Claims priority, application Japan, Dec. 27, 1993, 5-330764; Dec. 20, 1994, 6-316374
Int. Cl.[6] H05B *3/68;3/44*
U.S. Cl. 219—464 6 Claims



1. A ceramic electrostatic chuck having a built-in heater comprising a supporting substrate having opposite first and second surfaces, a heat generating layer of an electroconductive ceramic bonded to the first surface, an electrode layer bonded to the second surface so as to sandwich the substrate between the heat generating layer and the electrode layer, and a covering layer of an electrically insulating ceramic covering said electrode layer and said heat generating layer, wherein said electrode layer and said heat generating layer have a surface roughness Rmax of 5 μm or larger.

5,665,261
MOTOR VEHICLE ELECTRIC HEATING DEVICE HAVING ANGLED OFF METAL HEATING PLATES ARRANGED TO MUTUALLY ABUT ONE ANOTHER AT OPPOSITE ENDS
Herbert Damsohn, Alchwald; Karl-Gerd Krumbach, Burgstetten; Michael Loehle, Esslingen, and Eberhard Zwittig, Hochdorf, all of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany
Filed Sep. 21, 1995, Ser. No. 531,769
Claims priority, application Germany, Sep. 28, 1994, 44 34 613.1
Int. Cl.[6] B60L *1/02;* H05B *3/06*
U.S. Cl. 219—504 20 Claims



18. An electric heating device, comprising:
a frame;
a plurality of parallel metal plates fastened to said frame and arranged in pairs, wherein each pair has a first parallel metal plate which includes an angled-off section at a first end and a second parallel metal plate which includes an angled-off section at a second end which is opposite to the first end; and
a heating element disposed between each pair of the parallel metal plates,
wherein the angled-off sections at the first ends are angled in a first direction and are configured to be in mutual abutment with one another, and
wherein the angled-off sections of the second ends are angled in a second direction and are configured to be in mutual abutment with one another.

5,665,262

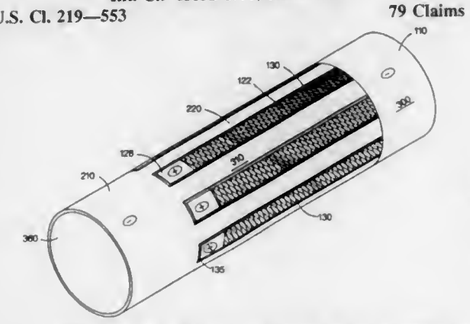
TUBULAR HEATER FOR USE IN AN ELECTRICAL SMOKING ARTICLE

Mohammad R. Hajaligol, Richmond; Grier S. Fleischhauer, Midlothian, both of Va.; Seetharama C. Deevi, Oak Ridge, Tenn.; Charles T. Higgins, Richmond; Patrick H. Hayes, Chester, both of Va.; Herbert Herman, Port Jefferson; Robert V. Gansert, Lake Grove, both of N.Y.; Alfred L. Collins, Powhatan, Va.; Billy J. Keen, Jr., Chesterfield, Va.; Bernard C. Laroy, Richmond, Va., and A. Clifton Lilly, Jr., Chesterfield, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 224,848, Apr. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 118,665, Sep. 10, 1993, Pat. No. 5,388,594, which is a continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,502,214, which is a continuation-in-part of Ser. No. 666,926, Mar. 11, 1991, abandoned. This application Jan. 9, 1995, Ser. No. 370,125

Int. Cl.[6] H05B *3/10;* **A24F** *1/22*

U.S. Cl. 219—553 **79 Claims**



1. A heater for use in a smoking article having a source of electrical energy for heating a cylindrical cigarette, the heater comprising:

a cylindrical tube, said tube comprised of an electrically conducting material, said tube provided with a plurality of gaps therethrough to define (a) a plurality of electrically conducting blades defining a receptacle to receive an inserted cylindrical cigarette and (b) an electrically conducting, common end hub supported within the smoking article, the blades extending from the end hub;

an electrical insulator deposited on at least one of the plurality of electrically conducting blades;

an electrically resistive heater element deposited on said insulator, a first end of said heater element electrically connected to the at least one of the plurality of electrically conducting blades, a second end of said heater element and a portion of said heater element between the first and second ends electrically insulated from said at least one electrically conducting blade by said insulator;

wherein said end hub is in electrical contact with the source of electrical energy and the second end of said heater element is in electrical contact with the source of electrical energy, wherein a resistive heating circuit is formed to heat said electrically resistive heater element, which in turn heats the inserted cigarette.

5,665,263

TEMPERATURE-PROTECTED INDUCTOR-BASED COOKING HEATER

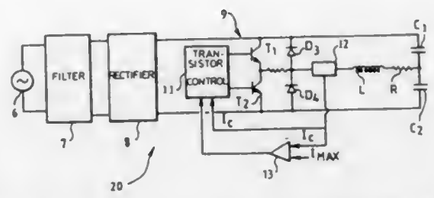
Jean-Yves Gaspard, Saran, France, assignor to C E P E M, St Jean De La Ruelle, France

Filed Nov. 15, 1995, Ser. No. 559,045

Claims priority, application France, Nov. 15, 1994, 94 13652

Int. Cl.[6] H05B *6/06;6/12*

U.S. Cl. 219—625 **15 Claims**



1. An induction cooking heater of the type comprising at least one inductor, a generator delivering a high-frequency current to supply the inductor and a magnetic circuit located beneath the inductor, wherein the magnetic circuit has a reluctance calibrated so that it gets saturated from a predetermined temperature lower than the maximum permissible temperature for the inductor, and wherein it further comprises:

means giving rise to an increase in the drawing of current in the inductor beyond a boundary value as soon as the magnetic circuit gets saturated;

regulation means detecting the increase in the drawing of current in the inductor beyond the boundary value and then limiting the power delivered to the inductor.

5,665,264

SUBMERGED NOZZLE MOUNTING/DISMOUNTING APPARATUS

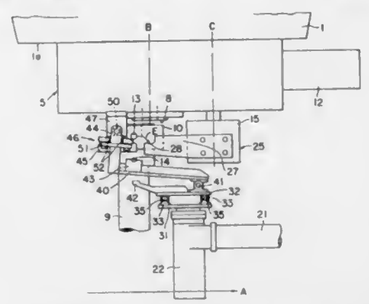
Mitsukuni Sato, Okayama; Kenji Yamamoto, Akaiwa-Gun; Koji Ishii, Okayama; Koichi Ozawa, Chiyoda-Ku; Taizo Sera, Chiyoda-Ku, and Jun Kubota, Chiyoda-Ku, all of Japan, assignors to Shinagawa Shirorenga Kabushiki Kaisha, Tokyo-To, Japan

Filed Aug. 2, 1995, Ser. No. 510,512

Claims priority, application Japan, Aug. 10, 1994, 6-188591

Int. Cl.[6] B22D *41/56*

U.S. Cl. 222—607 **11 Claims**



1. A submerged nozzle mounting/dismounting apparatus for mounting a substantially vertical submerged nozzle on and dismounting the same from a slide valve device which is provided on and below a bottom wall of a molten metal vessel and through which a molten metal in said vessel flows downward into and through the submerged nozzle, wherein said apparatus comprises a submerged nozzle holding mechanism provided below said slide valve device and having substantially horizontally extending support arms with receiving means for supporting mounting pins provided on an upper part of the submerged nozzle for holding the submerged nozzle pressed against the slide valve device, said submerged nozzle mounting/dismounting apparatus comprising:

a robot arm;

submerged nozzle support means mounted on said robot arm for supporting the submerged nozzle through support pins provided on the submerged nozzle, said nozzle support means being capable of horizontal sliding movement in a direction across said support arms of the submerged nozzle holding mechanism for horizontal positional adjustment of the submerged nozzle and being capable of vertical movement for vertical positional adjustment of the submerged nozzle;

a guide member fixedly provided below said slide valve device and having an upper guide surface and a side guide surface; and

a contact mechanism provided on said submerged nozzle support means and having contact means for contacting and being guided along said upper guide surface and said side guide surface to enable the submerged nozzle supported on said submerged nozzle support means to be adjusted in horizontal position relative to said support arms and to be vertically moved for mounting said mounting pins of the submerged nozzle onto said support arms and for dismounting said mounting pins from said support arms.

5,665,265

NON WOVEN GEL ELECTROLYTE FOR ELECTROCHEMICAL CELLS

Paul J. Gies, Atlanta; Manuel Oliver, Duluth, both of Ga.; Florence O. Eschbach, Santa Clara, Calif.; Veronica R. Reichert, Bethlehem, and Christen E. Coalson, Atlanta, both of Ga., assignors to Motorola, Inc.,, Schaumburg, Ill.

Filed Sep. 23, 1996, Ser. No. 727,352

Int. Cl.[6] H01M *10/40;* **H01G** *9/025*

U.S. Cl. 252—62.2 **14 Claims**

1. A polymer gel electrolyte system for use in an electrochemical cell having positive and negative electrodes, said polymer gel electrolyte system comprising:

an electrolyte active species adapted to promote ion transport between said positive and said negative electrodes; and

a polymer support structure comprising an inert, non woven first polymer component and a gelling second polymer component, said gelling second polymer selected from the group consisting of polyvinylidene fluoride (PVDF), polyurethane, polyvinyl acetate, polyvinylpyrrolidinone, copolymers of any of the foregoing, and combinations thereof.

5,665,266

AZEOTROPIC AND AZEOTROPE-LIKE COMPOSITIONS WITH HCL AND HALOCARBON

Barry Asher Mahler, Glen Mills; Vinci Martinez Felix, Kennett Square, both of Pa., and Ralph Newton Miller, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 208,256, Mar. 9, 1994, abandoned, which is a continuation-in-part of Ser. No. 55,486, Apr. 30, 1993, Pat. No. 5,421,964. This application Apr. 11, 1995, Ser. No. 425,265

Int. Cl.[6] C09K *5/04;* **C11D** *7/30;7/50*

U.S. Cl. 252—67 **3 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of about 0.1 to 5 mole % chloropentafluoroethane and about 95 to 99.9 mole % HCl wherein said composition has a boiling point that ranges from about −50° C. at about 75 psia to about 25° C. at about 690 psia.

5,665,267

SHAMPOO COMPOSITIONS AND SUSPENDING AGENT THEREFOR

Teresa Jolanta Dowell, Downers Grove; Gerald Patrick Newell, Hoffman Estates, and Eugene Zeffren, Lincolnshire, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Division of Ser. No. 301,192, Sep. 6, 1994, Pat. No. 5,587,154, which is a division of Ser. No. 969,382, Oct. 30, 1992, Pat. No. 5,393,519, which is a continuation of Ser. No. 859,128, Mar. 27, 1992, abandoned. This application Oct. 11, 1996, Ser. No. 728,932

Int. Cl.[6] C11D *3/48;9/50;* **A61K** *7/00*

U.S. Cl. 510—123 **13 Claims**

1. A suspending agent for suspending a water-insoluble compound in an aqueous composition comprising:

(a) about 1% to about 10% by weight of the aqueous composition of an amine having the general structural formula



wherein R_1 is an alkyl group including at least 16 carbon atoms; R_2 is selected from the group consisting of hydrogen, an alkyl group having one to about 22 carbon atoms, benzyl and phenyl; and R_3 is selected from the group consisting of hydrogen, methyl, benzyl and phenyl, wherein said amine has a water solubility of 0.5 grams or less per 100 milliliters of water, and wherein said amine is a solid compound at room temperature; and

(b) a sufficient amount of an acid such that essentially no solid particles of the amine are present in the composition, said acid selected from the group consisting of an inorganic mineral acid, an aliphatic carboxylic acid including up to about 22 carbon atoms, an aromatic carboxylic acid, and combinations thereof.

5,665,268

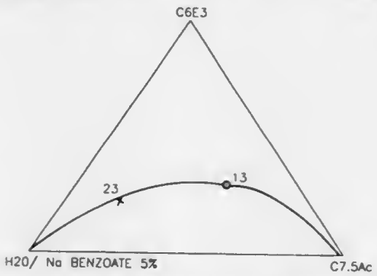
NEAR TRICRITICAL POINT COMPOSITIONS

Louis Oldenhove DeGuertechin, Meerstraat 2, B-3870, Heks, and Guy Broze, Rue Claskin, 32, B-4460, Grace-Hollogne, both of Belgium

Continuation-in-part of Ser. No. 191,892, Feb. 4, 1994, abandoned. This application Sep. 12, 1994, Ser. No. 304,621

Int. Cl.[6] C11D *7/50*

U.S. Cl. 510—214 **10 Claims**



1. A liquid cleaning composition having a surface tension at 25° C. of about 10 to 35 mN/m and incorporating at least a polar solvent, a water soluble or water dispersible low molecular weight amphiphile and a non-polar or weakly polar solvent and deriving from three co-existing liquid phases which are capable of being converted into one single phase according to a reversible equilibrium, wherein the first phase is the most abounding with the polar solvent, the second phase is the most abounding with the water soluble or water dispersible low molecular weight amphiphile and the third phase is the most abounding with the non-polar solvent or weakly polar solvent, and the interfacial tension between said first phase and said second phase is 0 to about 1×10^{-3} mN/m, and the

interfacial tension between second phase and third phase is 0 to about 1×10^{-3} mN/m, and the interfacial tension between first phase and third phase is 0 to about 1×10^{-3} mN/m, wherein said polar solvent is at a concentration of about 20 wt. % to about 50 wt. %, said amphiphile is present at a concentration of about 5 to about 60 wt. %, said composition being surfactant free and said non-polar solvent or weakly polar solvent is present at a concentration of about 4 to about 55 wt. %.

5,665,269

WATER BASED, SOLVENT FREE, TWO COMPONENT ALIPHATIC POLYURETHANE COATING

Richard E. Hart, Irvine, Calif., assignor to R. E. Hart Labs, Inc., Irvine, Calif.

Division of Ser. No. 28,966, Mar. 10, 1993, Pat. No. 5,352,733. This application Sep. 27, 1994, Ser. No. 312,765

Int. Cl.[6] C08G *18/32*

U.S. Cl. 252—193 **10 Claims**

1. A polyester-polyol blend for use in preparing coating compositions comprising:

(a) from 0.33 to 0.67 equivalents of a modified polyester-polyol said polyester-polyol being modified by being reacted with from 1 to 2% by weight of a trihydric polyol and from about 10–15% by weight of a polyfunctional diol containing a carboxylic acid group, said modified polyester-polyol having a molecular weight of between about 1000 to 2000, an equivalent weight of between about 750 to 850 and a hydroxyl number of between about 55 to 100;

(b) 0.45 to 0.75 equivalents of a low viscosity polyol comprising a member selected from the group consisting of aliphatic polyether polyols and polyester-polyols and trihydric polyol modified polyester-polyols having an equivalent weight of between about 150 and 200 and an hydroxyl number of between about 300 and 350;

(c) 0.33 to 0.67 equivalents of a low molecular weight chain extending diol or triol having from three to eight carbon atoms and having a equivalent weight of from about 30 to 60;

(d) 0.15 to 0.33 equivalents of a float neutralizing amine selected from the group consisting of diethanol amine and triethanol amine and mixtures thereof;

(e) 0.15 to 0.33 equivalents of a second neutralizing amine selected from the group consisting of 2-amino-2-methyl-1-propanol and tris(hydroxymethyl)aminomethane; and

(f) 1–5% by weight of a nonreactive non-ionic detergent; said polyester-polyol blend having a solids content of between 90 and 100%, an equivalent weight of between about 165 to 365; an hydroxyl number of between about 180 to 300, an acid number of between about 10 and 50 and a viscosity of between about 600 to 1500 cps at. 25° C.

5,665,270

OPTICALLY ACTIVE TRIFLUOROLACTIC ACID DERIVATIVE AND LIQUID CRYSTAL COMPOSITION

Masatoshi Fukushima, and Shinichi Saito, both of Chiba-ken, Japan, assignors to Chisso Corporation, Ohsaka-fu, Japan

PCT No. PCT/JP92/00646, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO92/20641, PCT Pub. Date Nov. 26, 1992

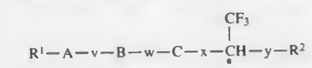
PCT Filed May 20, 1992, Ser. No. 142,292

Claims priority, application Japan, May 20, 1991, 3-114947; Aug. 23, 1991, 3-212312; Oct. 3, 1991, 3-256573

Int. Cl.[6] C09K *19/52;* **C07D** *239/02;* **C07C** *69/76;25/13*

U.S. Cl. 252—299.01 **9 Claims**

1. An optically active compound expressed by the formula (I)

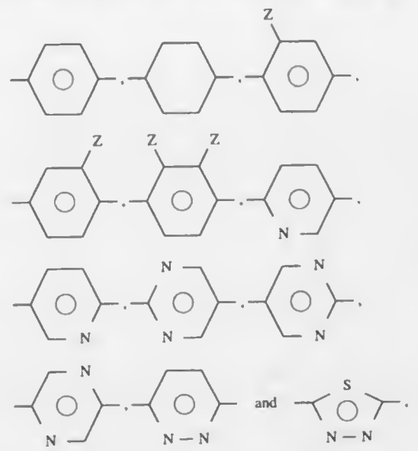


(I)

$$R^1-A-v-B-w-C-x-\underset{*}{\underset{|}{CH}}-y-R^2$$

(CF_3 on the CH)

wherein R^1 represents either one of an alkyl group, or alkoxy group of 1 to 18 carbon atoms, or an alkanoyl group, alkanoyloxy group or alkoxycarbonyl group of 2 to 18 carbon atoms, R^2 represents an alkyl group which may be substituted by an alkoxy group (the total of the carbon atoms being 1 to 15), A, B and C each independently are selected from the group consisting of



and

or C represents a single bond when w defined below represents a single bond, Z represents a chlorine atom or a fluorine atom, v and w each independently are selected from the group consisting of —COO—, —OCO—, —CH_2O—, —OCH_2—, —CH_2CH_2—, —CH=CH—, —C≡C— and a single bond, and x and y each are respectively selected from the following combinations consisting of —COO— and —COO—, —COO— and —CO—, —COO— and —CH_2O—, —COO— and —CH_2OCO—, —COO— and —CH_2OCOO—, —O— and —CH_2O—, —O— and —CH_2OCO—, —O— and —CH_2OCOO—.

5,665,271

SILACYCLOHEXANE COMPOUNDS, PREPARATION THEREOF, LIQUID CRYSTAL COMPOSITIONS COMPRISING THE SAME, AND LIQUID CRYSTAL DEVICES COMPRISING THE COMPOSITIONS

Tsutomu Ogihara; Takaaki Shimizu; Takeshi Kinsho; Tatsushi Kaneko; Kazuyuki Asakura, and Mutsuo Nakashima, all of Niigata-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

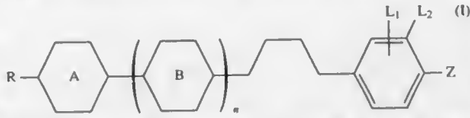
Filed Feb. 12, 1996, Ser. No. 598,595

Claims priority, application Japan, Feb. 13, 1995, 7-047798; May 12, 1995, 7-138459

Int. Cl.[6] C09K *19/34;* **C07F** *7/08*

U.S. Cl. 252—299.61 **29 Claims**

1. A silacyclohexane compound selected from the group consisting of compounds of the following formulas (I) and (II)



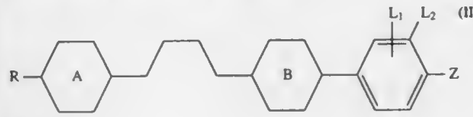
(I)

wherein R represents a linear alkyl group having from 1 to 10 carbon atoms, a mono or difluoroalkyl group having from 1 to 10 carbon atoms, a branched alkyl group having from 3 to 8 carbon atoms, an alkoxyalkyl group having from 2 to 7 carbon atoms, or an alkenyl group having from 2 to 8 carbon atoms; one of



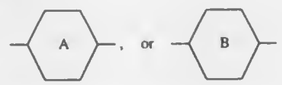
and

represents a trans-1-sila-1,4-cyclohexylene group or trans-4-sila-1,4-cyclohexylene group in which the silicon atom at the 1 or 4 position has a substituent of H, F, Cl or CH_3, and the other represents a trans-1,4-cyclohexylene group, or such a trans-1-sila-1,4-cyclohexylene group or trans-4-sila-1,4-cyclohexylene group as defined above; n is 0 or 1, L_1 represents H or F, L_2 represents H, F or Cl, and Z represents CN, F, Cl, CF_3, $CClF_2$, CHClF, OCF_3, $OClCF_2$, $OCHF_2$, OCHClF, $(O)_mCY{=}CX_1X_2$ wherein m is 0 or 1, Y and X_1 independently represent H, F or Cl, X_2 represents F or Cl, $O(CH_2)_r(CF_2)_sX_3$ wherein r and s are respectively, 0, 1 or 2 provided that r+s is 2, 3 or 4, and X_3 represents H, F or Cl, or R or OR wherein R is as defined above, and



(II)

R, L_1, L_2, Z,



are, respectively, as defined in the formula (I).

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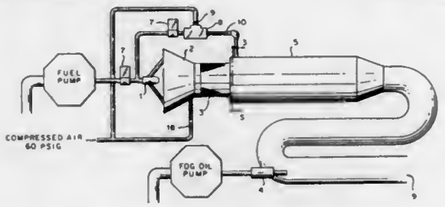
MULTIFUEL COMBUSTION ENGINE AND USE IN GENERATING OBSCURANT SMOKE

William A. Adams, Baltimore; Janice A. Fritz, Bel Air, and Terry L. Thurman, Aberdeen, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 27, 1995, Ser. No. 507,960

Int. Cl.[6] C09K *3/30;* **F02C** *3/20;* **F23R** *3/36*

U.S. Cl. 252—305 **25 Claims**



1. A multifuel combustion engine, comprising:

(a) an engine head having an inlet and an outlet;

(b) means for providing air to the inlet of said engine head;

(c) means for providing fuel to the inlet of said engine head so that the air and fuel are discharged into said engine head forming a fuel-air charge;

(d) a combustion chamber positioned at the outlet of said engine head, said combustion chamber having an inlet and an outlet;

(e) valve means for controlling the flow of the fuel-air charge from said engine head outlet to said combustion chamber inlet;

(f) means for providing a fuel-air spray to said combustion chamber, said fuel-air spray being distinct and separate from the fuel-air charge within said engine head, said fuel-air spray being used to begin operation of said engine;

(g) means for igniting said fuel-air spray within said combustion chamber; and

(h) means for preheating said combustion chamber.

22. A method of burning different fuels in a combustion engine comprising the steps of:

(a) preheating a combustion chamber;

(b) providing a first fuel-air mix directly to the combustion chamber;

(c) igniting said first fuel-air mix within said combustion chamber;

(d) simultaneously providing a second fuel-air mix to an engine head connected to said combustion chamber so that the second fuel-air mix is exhausted into said combustion chamber from said engine head; and

(e) after reaching operating temperature within said combustion chamber, stopping the direct flow of the first fuel-air mix to the combustion chamber and stopping the flow of compressed air to the engine head.

24. A method of generating obscurant smoke from the method of claim **22**, further comprising the step of injecting fog oil into the exhaust of said combustion chamber after said combustion chamber has reached operating temperature.

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HALS PHOSPHONITES AS STABILIZERS

Michael Rasberger, Riehen, and Rita Pitteloud, Praroman, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

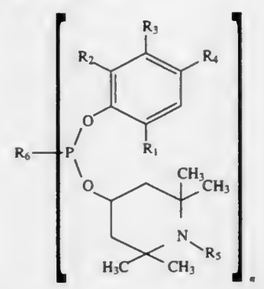
Filed Apr. 5, 1995, Ser. No. 416,660

Claims priority, application Switzerland, Apr. 13, 1994, 1111/94

Int. Cl.[6] C09K *15/00;* **C07F** *9/28*

U.S. Cl. 252—397 **16 Claims**

1. A compound of the formula I



(I)

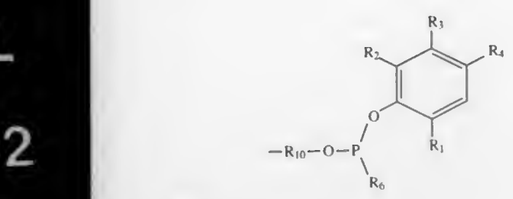
in which

R_1 and R_2, independently of one another, are hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; unsubstituted or C_1–C_4alkyl-substituted phenyl; unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkenyl; C_7–C_9phenylalkyl or —CH_2—S—R_7,

R_3 is hydrogen or methyl,

R_4 is hydrogen, C_1–C_{25}alkyl, C_2–C_{24}alkenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; unsubstituted or C_1–C_4alkyl-substituted phenyl; unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkenyl; C_7–C_9phenylalkyl, —CH_2—S—R_7, —$(CH_2)_pCOOR_8$ or —$(CH_2)_qOR_9$,

R_5 is hydrogen, C_1–C_8alkyl, O., OH, NO, —CH_2CN, C_1–C_{18}alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_3–C_6alkynyl, C_1–C_8acyl, or C_7–C_9phenylalkyl which is unsubstituted or substituted on the phenyl ring by C_1–C_4alkyl; or R_5 furthermore is a radical of the formula II



(II)

in which

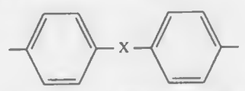
R_6 is as defined below for n=1,

if n is 1,

R_6 is C_1–C_{25}alkyl, C_2–C_{24}alkenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; unsubstituted or C_1–C_4alkyl- or phenyl-substituted phenyl; unsubstituted or C_1–C_4-alkyl-substituted C_5–C_8cycloalkenyl; or C_7–C_9phenylalkyl which is unsubsidized or substituted on the phenyl ring by C_1–C_4alkyl;

if n is 2,

R_6 is a radical of the formula III



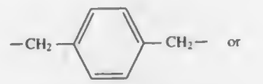
(III)

R_7 is C_1–C_{18}alkyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl; unsubstituted or C_1–C_4alkyl-substituted phenyl; C_7–C_9phenylalkyl or —$(CH_2)_r$COOR$_8$,

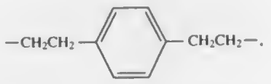
R_8 is C_1–C_{18}alkyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl; unsubstituted or C_1–C_4alkyl-substituted phenyl; or C_7–C_9phenylalkyl,

R_9 is C_1–C_{25}alkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl; C_7–C_9phenylalkyl, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_2–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—R_{11}; C_6–C_9cycloalkylcarbonyl, unsubstituted or C_1–C_{12}alkyl-substituted benzoyl; thienoyl or furoyl,

R_{10} is C_1–C_{18}alkylene, C_4–C_{18}alkylene which is interrupted by oxygen, sulfur or >N—R_{11}; C_4–C_{18}alkenylene, phenylethylene,



or



R_{11} is hydrogen or C_1–C_8alkyl,

R_{12} and R_{13}, independently of one another, are hydrogen, CF_3, C_1–C_{12}alkyl or phenyl or

R_{12} and R_{13}, together with the carbon atom to which they are bonded, form an unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkylidene ring;

X is a direct bond, oxygen, sulfur or



n is 1 or 2,

p is 0, 1 or 2,

q is an integer from 3 to 8, and

r is 1 or 2.

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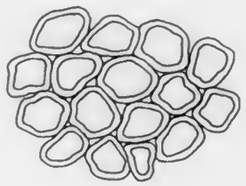
ELECTRICALLY CONDUCTIVE BLACK SILICONE PAINT HAVING SPACECRAFT APPLICATIONS

Lynn E. Long, Manhattan Beach, and Martin R. Gallardo, Sylmar, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1995, Ser. No. 577,981

Int. Cl.[6] H01B *1/24;* **B64G** *1/14;* **C08K** *3/04*

U.S. Cl. 252—511 **16 Claims**



1. A paint system comprising a mixture of:

100 parts by weight of a silicone-based polymer, and

from about 1.35 to about 3.5 parts by weight of an electrically conductive carbon pigment having a porous, sponge-like structure and having a specific surface area of at least 500 m^2/g.

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OPTICAL DEVICE AND OPTICAL APPARATUS INCLUDING SAME

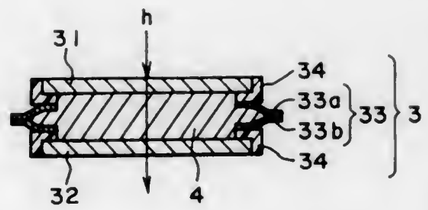
Naoki Kobayashi, Tokyo; Shoichi Shimura, and Kazuhiro Oki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 799,183, Nov. 27, 1991, abandoned. This application Nov. 15, 1996, Ser. No. 749,726

Claims priority, application Japan, Nov. 28, 1990, 2-322453

Int. Cl.[6] F21V *9/00;* **G02B** *26/00;5/24*

U.S. Cl. 252—582 **26 Claims**



1. An optical device, comprising:

a pair of transparent plates disposed oppositely spaced from each other, a connecting member attached to the transparent plates so as to define a closed space in combination with the transparent plates and deformable under application of an external drive force, and a transparent substance disposed within the closed space;

wherein said transparent substance is liquid at room temperature and comprises at least one compound selected from the group consisting of polyether-modified organopolysiloxane, polyether alcohol-modified organopolysiloxane and fluorine-containing compounds.

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PROCESS FOR THE PRODUCTION OF A PYROTECHNIC OR EXPLOSIVE DEVICE

Ian John Kirby, Ayr, and Graeme Allan Leiper, Prestwick, both of United Kingdom, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Jun. 4, 1996, Ser. No. 659,097

Int. Cl.[6] C06B *21/00*

U.S. Cl. 264—3.1 **14 Claims**

1. A process for preparing a pyrotechnic or explosive device containing a hazardous solid pyrotechnic or explosive material in a casing, the process comprising the steps of:

forming a dispersion of the ingredients of said pyrotechnic or explosive material in a sufficient quantity of inert liquid to prevent ignition or detonation of the material by impact, friction, heat or electrostatic discharge;

forming the said dispersion into droplets;

feeding said droplets into a cooling medium at a temperature below the freezing point of said inert liquid whereby said droplets are frozen into solidified droplets; loading a charge of said solidified droplets into a casing for said pyrotechnic device;

freeze-drying said charge of solidified droplets in situ in said casing to produce particles of said hazardous material; and, optionally, pressing the said particles within said casing.

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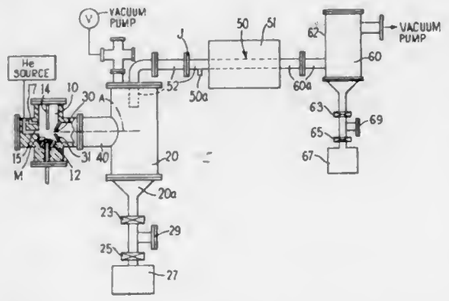
NANOPARTICLE SYNTHESIS APPARATUS AND METHOD

D. Lynn Johnson; Vinayak P. Dravid; Mao-Hua Teng; Jonathon J. Host; Jinha Hwang, and Brian R. Elliott, all of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 330,326, Oct. 27, 1994, Pat. No. 5,472,749. This application Nov. 14, 1995, Ser. No. 557,304

Int. Cl.[6] B05B *17/04*

U.S. Cl. 264—6 **37 Claims**



1. Method of making nanoparticles of a material, comprising directing a gaseous jet in a first chamber in a direction to carry nanoparticles through a flow restriction orifice between said first chamber and a second chamber downstream of said first chamber in a manner to provide a second stage of said gaseous jet downstream of said orifice and substantially isolated from said first chamber for flow to said second chamber, and collecting said nanoparticles from said second stage of said gaseous jet downstream from said orifice.

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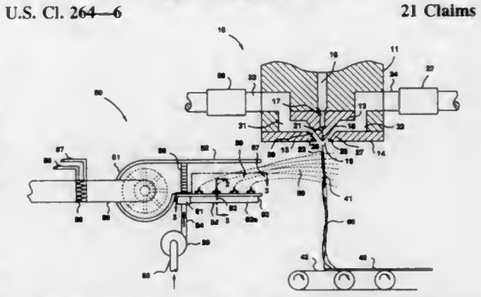
AIRLESS QUENCH METHOD AND APPARATUS FOR MELTBLOWING

Martin A. Allen, and John T. Fetcko, both of Dawsonville, Ga., assignors to J & M Laboratories, Inc., Dawsonville, Ga.

Filed Jan. 17, 1996, Ser. No. 587,988

Int. Cl.[6] B29C *47/88*

U.S. Cl. 264—6 **21 Claims**



1. An apparatus for meltblowing thermoplastic materials, comprising:

(a) a meltblowing die for extruding a thermoplastic to produce a plurality of side-by-side molten or semi-molten fibers;

(b) a collector surface whereupon the extruded fibers deposit to form a nonwoven web;

(c) a plurality of airless nozzles, each nozzle comprising (i) a plate having an orifice formed therein, (ii) an impact pin positioned opposite the orifice, and (iii) means for delivering pressurized water to the nozzles whereby water flows through each nozzle and impacts on the impact pin breaking the water into microsized droplets forming a fog; and

(d) means for delivering the fog into contact with the fibers.

12. A method for cooling thermoplastic fibers discharged from a meltblowing die onto a collector, the improvement comprising contacting the fibers at a location between the discharge and collector with a fog of microsized water droplets generated by airless nozzles.

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LOW DENSITY SILICON NITRIDE-CONTAINING BEADS, AGGREGATES THEREOF, AND METHOD FOR PREPARING SAME

Ross H. Plovnick, St. Louis Park; Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 300,143, Sep. 2, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 743,527

Int. Cl.[6] B29B *9/00*

U.S. Cl. 264—6 **14 Claims**

1. A method for preparing beads comprising silicon nitride comprising the steps of:

(a) providing a sufficient amount of a mixture comprising (i) an aqueous solution of a water-soluble organic polymer and (ii) a powder comprising silicon, silicon nitride, or a combination thereof, to provide after steps (b), (c), and (d) a plurality of free flowing, sintered silicon nitride beads in which each of the beads comprises at least 95% by weight silicon nitride, based on the total weight of the bead, and in which each of the beads has a bulk density no greater than about 60% of theoretical density;

(b) injecting said mixture into an aqueous coagulating solution to form a plurality of beads;

(c) removing volatiles from said beads; and

(d) sintering said beads of step (c) in the presence of nitrogen to form a plurality of free flowing, sintered silicon nitride beads in which each of said beads comprises at least 95% by weight silicon nitride, based on the total weight of the bead, and in which each of said beads has a bulk density no greater than about 60% of theoretical density.

7. A method for preparing an aggregate comprising the steps of:

(a) providing a mixture comprising a sufficient amount of (i) an aqueous solution of a water-soluble organic polymer and (ii) a

powder comprising silicon, silicon nitride, or a combination thereof, to provide after steps (b), (c), (d), and (e) an aggregate comprising a plurality of sintered silicon nitride beads bonded together in which each of the beads comprises at least 95% by weight silicon nitride, based on the total weight of the bead, and each of the beads has a bulk density no greater than about 60% of theoretical density;

(b) injecting said mixture into an aqueous coagulating solution to form a plurality of beads;

(c) contacting said beads with an aqueous solution comprising a fugitive bonding agent to form a precursor aggregate in which said beads of step (b) are held together;

(d) removing volatiles from said precursor aggregate; and

(e) sintering the precursor aggregate of step (d) in the presence of nitrogen to form said aggregate comprising a plurality of sintered silicon nitride beads bonded together in which each of said beads comprises at least 95% by weight silicon nitride, based on the total weight of said bead, and each of said beads has a bulk density no greater than about 60% of theoretical density.

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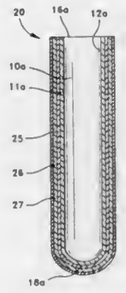
BLOOD COLLECTION TUBE ASSEMBLY

Yelena G. Tropsha, 108 Aberdeen Ct., Carrboro, N.C. 27510

Division of Ser. No. 594,068, Jan. 30, 1996. This application Oct. 2, 1996, Ser. No. 724,746

Int. Cl.[6] B05D *3/06*

U.S. Cl. 264—483 **2 Claims**



1. A method of depositing a multilayer barrier coating on a plastic substrate in a previously evacuated chamber comprising:

(a) selecting a curable component comprising: i) polyfunctional acrylates, or ii) mixtures of monoacrylates and polyfunctional acrylates;

(b) flash vaporizing said component into said chamber;

(c) condensing a first layer of a film of vaporized component onto the outer surface of said container;

(d) curing said film;

(e) vaporizing an organosilicon component and admixing the volatilized organosilicon component with an oxidizer component and optionally an inert gas component to form a gas steam exterior to the chamber;

(f) establishing a glow discharge plasma in the chamber from one or more of the gas stream components;

(g) controllably flowing the gas stream into the plasma while confining at least a portion of the plasma therein;

(h) depositing a second layer of silicon oxide adjacent said first layer; and

(i) dip coating a third layer of PVDC onto said second layer.

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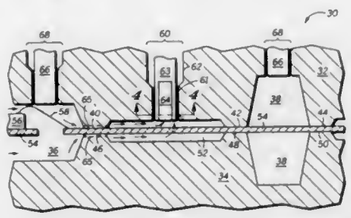
METHOD FOR MOLDING USING VENTING PIN

Brian Drummond, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 2, 1993, Ser. No. 160,310

Int. Cl.[6] B29C *33/10;45/02*

U.S. Cl. 264—39 **6 Claims**



1. A method for molding comprising the steps of:

providing a resin compound for molding;

providing a mold tool having first and second platens which oppose one another, each of the first and second platens comprising a package cavity, a package ring cavity which surrounds the package cavity, a clamping area next to the package cavity, and a clamping relief cavity next to the clamping area, said clamping area and said clamping relief area being located between the package cavity and the package ring cavity, and wherein at least one of the first and second platens comprises:

a venting hole extending from the clamping relief cavity, the venting hole having a first diameter and a first portion; and

a venting pin slidably fit within the venting hole and having at least one flat formed thereon, wherein the at least one flat has a depth from a circumference of the venting pin which creates a gap between the venting pin and the venting hole, and wherein the gap is sufficiently small to prevent seepage of the resin compound into the venting hole;

providing a lead frame having a semiconductor element coupled thereto;

bringing the first and second platens together such that the package cavity, the clamping area, the clamping relief cavity, and the package ring cavity of the first platen are aligned with the package cavity, the clamping area, the clamping relief cavity, and the package ring cavity, respectively, of the second platen, such that the lead frame is positioned between the first and second platens, and such that the semiconductor element is contained within the package cavity of each of the first and second platens and portions of the lead frame extend into the package cavity and the package ring cavity;

retracting the venting pin into the venting hole, wherein upon retracting the gap is created between the at least one flat of the venting pin and the venting hole and the at least one flat extends beyond the first portion of the venting hole; and

introducing the resin compound into the package cavity of each of the first and second platens to encapsulate the semiconductor element, thereby forcing air from the package cavity to the clamping relief cavity and through the gap created between the at least one flat of the venting pin and the venting hole;

wherein the step of retracting is performed before the step of introducing the resin compound.

5,665,282

INJECTION MOLDING METHOD OF AN INJECTION MOLDING MACHINE

Nobuyuki Nakamura, Nagano, Japan, assignor to Nissei Plastic Industrial Co., Ltd., Nagano-ken, Japan

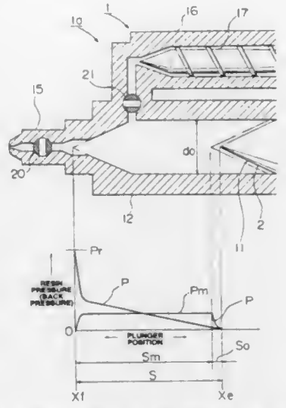
Filed Jul. 12, 1995, Ser. No. 501,541

Claims priority, application Japan, Jul. 20, 1994, 6-190982

Int. Cl.[6] B29C *45/76;45/77*

U.S. Cl. 264—40.1 **12 Claims**

1. An injection molding method for injecting resin into a mold by means of an injection barrel cylinder having a pushing-out member movable therein, said method comprising the steps of:



calculating a stroke length of the pushing-out member from a retracted position to a maximum forward position where the pushing-out member bottoms out against the injection barrel cylinder;

retracting the pushing-out member by said stroke length to the retracted position to fill the injection barrel cylinder with a measured amount of resin; and

advancing the pushing-out member to the maximum forward position where the pushing-out member bottoms out against the injection barrel cylinder to thereby inject the measured amount of resin into the mold.

5,665,283

PROCESS FOR DETERMINING THE CHANGEOVER POINT WHEN PRODUCING PLASTIC INJECTION MOULDINGS AND DIE-CASTINGS

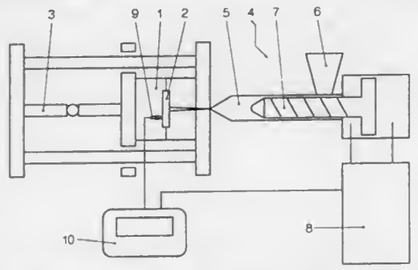
Christopherus Bader, Neftenbach, and Luigi Greco, Pfyn, both of Switzerland, assignors to K.K. Holding AG, Winterthur, Switzerland

Filed Sep. 18, 1995, Ser. No. 529,536

Claims priority, application Switzerland, Oct. 19, 1994, 03135/94

Int. Cl.[6] B29C *45/77*

U.S. Cl. 264—40.1 **19 Claims**



1. A process for determining a changeover point in the production of an injection moulding or die-casting, whereby employing an injection device, a cavity of a mould is filled according to a filling program up to the changeover point after which a pressure in the cavity curve is generated according to a hold pressure program, performing several successive measurements of the pressure inside the cavity and determining after each measurement whether the changeover point has been reached or not by algorithmic processing of the current measured pressure value and previous measured pressure values in a computing unit, characterized by the algorithmic processing of the measured pressure values by functional combination of classification pressure variables derived from the measured pressure values using fuzzy logic.

5,665,284

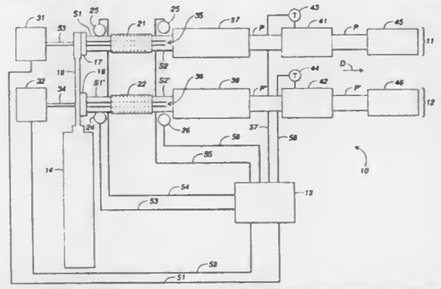
PROCESS FOR MANUFACTURING FOAM-FILLED EXTRUDED PRODUCTS

Ronald Dean Erwin, Peachtree City, and Marvin Ray Whitley, Norcross, both of Ga., assignors to Ronald D. Erwin, Peachtree City, Ga.

Filed Apr. 26, 1995, Ser. No. 427,892

Int. Cl.[6] B29C *44/06;44/14*

U.S. Cl. 264—40.7 **7 Claims**



1. A process for fabricating an article having an inner rigid foam core and an outer resilient plastic shell, said article having a predetermined length and shape, said method comprising the steps of:

(a) extruding a thermoplastic material around a tube having a liquid foam material flowing therethrough;

(b) partially hardening the thermoplastic material while it is around the tube to form the outer resilient plastic shell;

(c) transporting the plastic shell over an opening formed in the tube and injecting liquid foam material into the plastic shell;

(d) transporting the plastic shell filled with the liquid foam material through a cooling and sizing tank whereby the liquid foam material is hardened to form the inner rigid foam core and the article comprising the inner rigid foam core and the outer resilient plastic shell is shaped into the predetermined shape;

(e) transporting the article out of the cooling and sizing tank; and

(f) cutting the article to a predetermined length.

5,665,285

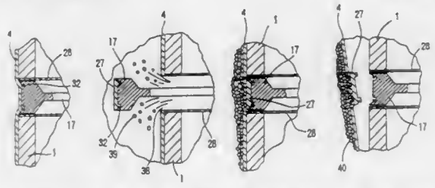
METHOD FOR PRODUCING A MOLDED FOAM ARTICLE WITH AN INTEGRAL SKIN

Kazuhide Hattori; Hiroyuki Yamaji, both of Yokkaichi; Yoshikazu Hatakeyama; Yoshiyuki Shida, both of Sanjo; Atsushi Tamura, Shinagawa; Takumi Kitaoka, Shinagawa, and Takashi Kohama, Shinagawa, all of Japan, assignors to Mitsubishi Yuka Badische Co., Ltd., Mie-ken; Sanko Sogyo Co., Ltd., Niigata-ken, and Aron Kasei Co., Ltd., Osaka-fu, all of Japan

Filed Jan. 24, 1995, Ser. No. 377,157

Int. Cl.[6] B29C *44/06;44/18*

U.S. Cl. 264—45.4 **4 Claims**



1. A method of producing a molded foam article with an integral skin in a cavity of a mold having a parting line plane comprising the steps of:

blow-molding a parison suspended in a blow-molding metal mold to form a hollow member; cutting a hole in said hollow member in registry with a drivable cutter slidably and rotat-

ably fitted within a bore which opens into the cavity of said mold at a location other than the parting line plane of said mold, said drivable cutter being a frontal part of a filler for pre-expanded thermoplastic resin beads and being extendable and retractable into and out of said mold cavity; injecting said pre-expanded resin beads into the cavity of said hollow member through said hole prior to cooling and solidification of said hollow member, and heating said resin beads by introducing hot steam into the cavity of said hollow member while temporarily closing said hole defined in said hollow member to cause the beads to expand further and fuse together to fill the cavity of said hollow member with a molded foam integral therewith.

5,665,286

METHOD FOR THE CONTINUOUS PRODUCTION OF FOAM BLOCKS OR SHEETS

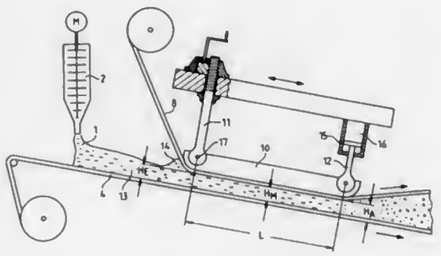
Hans-Michael Sulzbach; Herbert Stellen, both of Königswinter, and Horst Klahre, Sankt Augustin, all of Germany, assignors to Machinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed Jun. 21, 1995, Ser. No. 493,082

Claims priority, application Germany, Jun. 29, 1994, 44 22 762.0

Int. Cl.[6] B29C *44/24;44/46*

U.S. Cl. 264—46.2 **4 Claims**



1. A method for the continuous production of foam blocks or sheets having essentially rectangular cross-sections from a foamable, liquid reaction mixture, optionally in the form of a liquid froth, comprising applying the reaction mixture from a stationary mixhead onto a moving lower facing sheet which is inclined in the longitudinal direction, supplying an upper covering sheet from above, said upper covering sheet being brought into contact with the reaction mixture by passing said covering sheet around a deflecting element which is positioned above said lower sheet, said upper covering sheet covering said deflecting element is transported at a speed of 1/10 to 1/1000 that of said lower facing sheet and is removed from said reaction mixture downstream of said deflecting element, and said deflecting element is flat in the longitudinal direction, so that a channel is formed between said lower covering sheet and said upper covering sheet guided by said deflecting element, the positioning and structure of said deflecting device being such that the length L of said channel in the longitudinal direction is several times its central height H_M, and wherein the height of the channel H_E, at the point of entry of the reaction mixture, is adjustably fixed and the height of said channel H_A, at the point of exit of the reaction mixture, is self adjustable according to an adjustable constant downward pressure of said deflecting element.

5,665,287

FROTH PROCESS FOR CONTINOUS MANUFACTURE OF POLYURETHANE FOAM SLAB-STOCKS

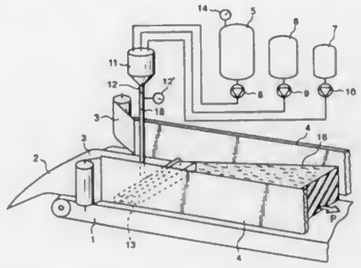
Carlo Fiorentini, Saronno, Italy, and Anthony C. Murray Griffiths, Paphos, Switzerland, assignors to Foaming Technologies Cardio BV, Rotterdam, Netherlands

Filed Jul. 8, 1994, Ser. No. 271,918

Claims priority, application Italy, Jul. 14, 1993, MI93A1543; Sep. 30, 1993, MI93A2090

Int. Cl.[6] B29C *44/28*

U.S. Cl. 264—53 **45 Claims**



1. A process for the continuous production of polyurethane slab-stock foam including the steps of:

forming a mixture of reactive chemical components;

mixing the reactive chemicals with a non-reactive low boiling liquid blowing agent under sufficient pressure conditions to maintain the mixture in a liquid state;

distributing the mixture under pressure controlled conditions by passing the resulting mixture along an elongated pressure equalizing chamber and through an enlarged pressure-drop slot dimensioned to maintain back pressure on the upstream mixture so as to maintain the mixture containing the blowing agent in a liquid state yet permit frothing of the mixture to be initiated under pressure controlled conditions to avoid, upon discharge of the mixture from the pressure-drop slot, turbulent evaporation of the blowing agent;

thereafter forming the discharged mixture into a progressively non-reactive expanding frothing material by progressively releasing gaseous blowing agent from the liquid mixture into the frothing material as the frothing material flows along a frothing cavity and through an outlet aperture; and

discharging the expanding frothing material onto a substrate and permitting the reactive chemicals to react and rise freely into slab stock where the volume of the discharged froth is less than about 50% of a final foam volume.

5,665,288

METHOD OF MAKING WATER-BLOWN POLYURETHANE SEALING DEVICES

Thirumurti Narayan, Grosse Ile, and Steven Hicks, Trenton, both of Mich., assignors to BASF Corporation, Mount Olive, N.J.

Division of Ser. No. 367,036, Dec. 29, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,100

Int. Cl.[6] B29C *44/02*

U.S. Cl. 264—53 **9 Claims**

1. A process of molding polyurethane articles, the process comprising:

providing a polyurethane composition comprising:

(I) an isocyanate prepolymer composition having a % free NCO of between 16 and 20 and a viscosity of from 200 to 600 cPs, the composition comprising the result of reacting:

(a) an isocyanate blend comprising:

(i) 0 to 10 pbw 2,4'-diphenylmethane diisocyanate;

(ii) 30 to 80 pbw 4,4'-diphenylmethane diisocyanate; and

(iii) 1 to 10 pbw of a mixture of uretonimine containing molecules and carbodiimide containing molecules; and

(b) from 10 to 70 pbw of an ethoxylated and propoxylated glycerine having a number average molecular weight of between 1,000 and 10,000 and a hydroxyl number of between 20 to 100 wherein all pbw are based on the total weight of (a) and (b);

(II) an isocyanate-reactive component;

(III) a chain extender; and

(IV) a blowing agent consisting essentially of water; and

placing the polyurethane composition inside a mold for a period of time sufficient to produce a molded polyurethane article.

5,665,289

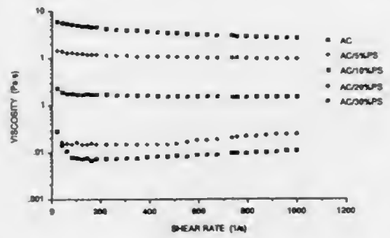
SOLID POLYMER SOLUTION BINDERS FOR SHAPING OF FINELY-DIVIDED INERT PARTICLES

Chan I. Chung, 2482 Whitehall Ct., Schenectady, N.Y. 12309, and Miao Yong Cao, Troy, N.Y., assignors to Chan I. Chung

Continuation-in-part of Ser. No. 881,822, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 520,076, May 7, 1990, abandoned. This application Mar. 8, 1995, Ser. No. 400,577

Int. Cl.[6] C04B *38/04;38/06*

U.S. Cl. 264—628 **6 Claims**



1. A method of forming shaped parts from finely divided inert molding particles which comprises the steps of generally uniformly mixing said molding particles with a binder which comprises a minor fraction of at least one high molecular weight polymer and a major fraction of a low molecular weight chemical which is a crystalline solid at room temperature to form a mixture thereof, said mixing being carried out at a temperature at which at least said chemical of said binder is in a molten state, said polymer having a melting or fusion temperature at least as high as said chemical and being essentially soluble in said solid chemical when at least said chemical is in the molten state to form an essentially homogeneous solution and when such solution is cooled from such state below the melting temperature of said chemical solidifying without significant phase separation into an essentially homogeneous solid solution, said chemical being substantially non-volatile at its melting temperature and being soluble at a temperature below its melting temperature in a liquid solvent in which at least one said polymer is essentially insoluble; shaping said mixture while said binder remains in a molten state into a shaped part and allowing said binder to cool to below the of said part; and selectively and non-destructively essentially removing said low molecular weight chemical fraction of said binder from said part while at least one said polymer remains and creates a porous solid matrix holding said molding particles in said part shape by extracting at least substantially all of the solid chemical selectively of said polymer in a liquid solvent in which the chemical is soluble and said polymer is insoluble, said extraction being carried out at a temperature below the melting temperature of said solid chemical, whereby the shaped part remains rigid during the extraction and essentially faithfully retains its initial shape.

5,665,290

PROCESS FOR MANUFACTURING BRICK MOULDINGS

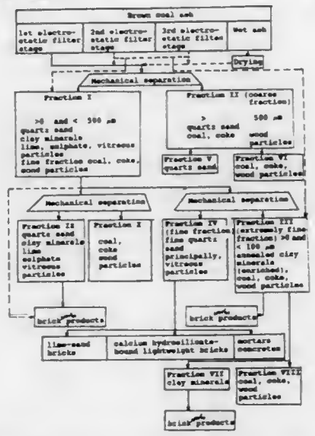
Thomas Koslowski, and Thomas Fandel, both of Aachen, Germany, assignors to SICOWA Verfahrenstechnik fur Baustoffe GmbH & Co. KG, Aachen, Germany

Continuation of Ser. No. 982,649, Dec. 1, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,517

Claims priority, application Germany, Dec. 2, 1991, 41 39 642.1

Int. Cl.[6] C04B *33/32*

U.S. Cl. 264—669 **14 Claims**



1. A method for manufacturing bricktype mouldings comprising the steps of:

preparing a moulding compound from a mixture consisting essentially of an enriched annealed clay minerals material, containing pozzuolanic components and lime, derived as a fraction from ash, with particle sizes less than about 300 μm, a filler material and water to provide about 5 to 7% by weight moisture so that the moulding compound has an earthy moisture content;

moulding said moulding compound to produce individual, inherently stable green products by compression moulding at a pressure of approximately 15 N/mm^2 to 20 N/mm^2;

drying said moulded green products; and

firing said dried green products;

wherein the pozzuolanic components and lime are present in the ash fraction in a quantity sufficient to enable reaction products of the lime with the pozzuolanic components to develop during drying to maintain the stability of the molded green products, absent moisture, during firing.

5,665,291

METHOD FOR PRODUCING HIGH DENSITY SINTERED SILICON NITRIDE(Si_3N_4)

Katuhiko Honma, Akashi; Tsuneo Tatsuno, Kobe; Hiroshi Okada, Amagasaki; Masato Moritoki, Miki, and Takao Fujikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

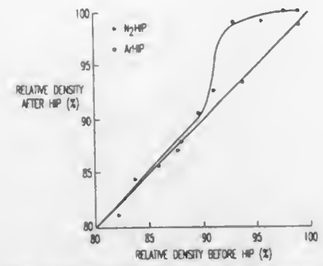
Continuation of Ser. No. 251,052, Sep. 26, 1988, Pat. No. 5,603,876, which is a continuation of Ser. No. 312,727, Oct. 19, 1981, abandoned. This application Jun. 5, 1995, Ser. No. 463,273

Claims priority, application Japan, Oct. 20, 1980, 55-146581; Dec. 2, 1980, 55-170155; Jan. 27, 1981, 56-11180; Jun. 17, 1981, 56-94385

Int. Cl.[6] C04B *35/584*

U.S. Cl. 264—666 **20 Claims**

1. A method for producing high density sintered silicon nitride (Si_3N_4) having a relative density of at least 98%, said method comprising:



forming silicon nitride powder into a desired shape to obtain a silicon nitride green compact;

presintering said green compact under a nitrogen gas atmosphere ranging in pressure from 1 to 30 atmospheres at a temperature of 1500°–1600° C. for 50–200 minutes into a presintered Si_3N_4 body whose α—Si_3N_4 content ranges from 80–20% and whose β—Si_3N_4 content ranges from 20–80% and which has a relative density of at least 92%;

removing the presintered body at room temperature from the presintering furnace;

charging the cooled presintered body into a hot isostatic pressing furnace;

subjecting said presintered Si_3N_4 body to hot isostatic pressing without being confined by a capsule in an inert gas atmosphere of a temperature in the range of 1500°–2100° C. and of a nitrogen gas partial pressure of at least 500 atm until a Si_3N_4 body is obtained of at least 80% β—Si_3N_4 having a relative density of at least 98%; and

discharging the sintered body at room temperature from the hot isostatic pressing force.

5,665,292

PROCESS FOR MOLDING A SOLID COSMETIC COMPOSITION

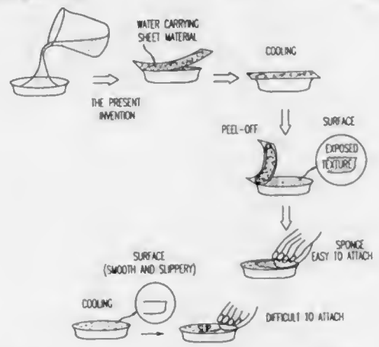
Yoichiro Tanaka, and Kazuo Suzuki, both of Tokyo, Japan, assignors to Kosé Corporation, Tokyo, Japan

Division of Ser. No. 171,615, Dec. 22, 1993, Pat. No. 5,540,921. This application Jun. 6, 1995, Ser. No. 469,369

Claims priority, application Japan, Mar. 10, 1993, 5-016236 U; Jun. 29, 1993, 5-182237

Int. Cl.[6] B28B *1/26;* **B29C** *33/58*

U.S. Cl. 264—86 **14 Claims**



1. A process for molding a solid cosmetic composition consisting essentially of an oil-in-water emulsion composition, which comprises,

filling a heated cosmetic composition into a container,

wherein said heated cosmetic composition consists essentially of:

(a) a water-soluble solidifying agent selected from the group consisting of agar and gelatin,

(b) an oil component, and

(c) water,

applying a water-carrying sheet material carrying water therein to a surface of the heated cosmetic composition before solidification by subsequent cooling,

solidifying the heated cosmetic composition having said water-carrying sheet material thereon by cooling, and then

releasing said water-carrying sheet material,

to thereby expose an inside texture of the composition at the surface and produce a minute irregular non-continuous surface layer promoting ease of application of the solid cosmetic composition.

5,665,293

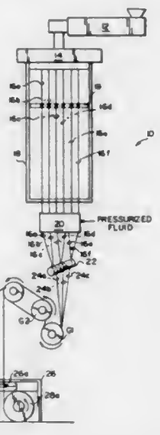
METHOD OF MAKING SPUN YARN PACKAGES MULTIPLE INDIVIDUALLY SEPARABLE YARN ENDS

Theodore G. Karageorgiou, Arden, N.C.; Gary W. Hanwell, Anderson, S.C.; David L. Caldwell, Greenville, S.C.; Jewell D. Purvis, Anderson, S.C.; Jerry M. Walker, Pendleton, S.C.; Freddie L. Banks, Belton, S.C.; Charles E. Eatmon, Mars Hill; Otto M. Ilg, Asheville, both of N.C.; Eugene Carnes, Star, S.C.; James A. Hucks, Anderson, S.C.; James F. Coker, Anderson, S.C.; Carl R. Holzer, Anderson, S.C.; John E. Emery, II, Anderson, S.C.; David M. Pendley, Anderson, S.C.; Dennis W. Pomeroy, Westminster, S.C.; Richard Arnold, Greenville, S.C.; Billy K. Osborne, Hartwell, Ga.; Philip T. Earley, Anderson, S.C.; John M. Temples, Hartwell, Ga.; Larry D. Blackston, Pendleton, and Thomas M. Toney, Anderson, both of S.C., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Mar. 8, 1996, Ser. No. 613,143

Int. Cl.[6] C01D *5/12;* **D02J** *1/08*

U.S. Cl. 264—103 **16 Claims**



10. A method of making generally cylindrical packages of melt-spun synthetic filaments comprising the steps of:

(a) spinning a melt-spinnable polymer through orifices to form at least a pair of yarn ends each comprised of a plurality of individual melt-spun filaments;

(b) solidifying the melt-spun filaments in a quench cabinet;

(c) interlacing the individual filaments forming each of the pair of yarn ends;

(d) converging the pair of yarn ends to form a substantially planar yarn end ribbon having the pair of yarn ends in a side-by-side untwisted contacting relationship with one another; and

(e) forming a generally cylindrical yarn package by winding the yarn end ribbon about a continuously rotating yarn package core, said winding including reciprocally traversing the yarn end ribbon parallel to the longitudinal axis of the yarn package core while maintaining the side-by-side untwisted contacting relationship between the pair of yarn ends of the yarn end ribbon.

5,665,294

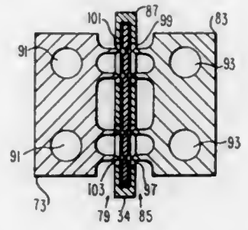
METHOD OF MAKING CLEANING PADS FOR TAPE TRANSPORT CLEANING DEVICES

James M. Wittes, Bernardsville, N.J., assignor to AccTech, L.L.C., Nanuet, N.Y.

Division of Ser. No. 234,438, Apr. 28, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 519,532

Int. Cl.[6] B29C *59/02*

U.S. Cl. 264—160 **11 Claims**



1. A method of making a generally planar foam cleaning element for use in devices for cleaning tape-contacting members in tape transport mechanisms, each of said devices having a cleaning element holder with a receptacle for receiving said cleaning element, said receptacle having a pair of spaced apart side walls and at least one ridge extending into said receptacle to reduce the spacing between said walls along a line transverse to the edges of said side walls, said method comprising the steps of;

(a) providing a foam pad with two ends, said pad having a thickness to fit between said side walls; and

(b) forming a fused indentation in said pad at a location intermediate said ends and dimensioning said indentation to reduce said thickness of said pad along a line at said location so that said ridge fits into said indentation.

5,665,295

PROCESS FOR THE PRODUCTION OF COMPOSITE MOLDED ARTICLE

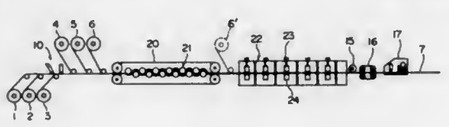
Hiromitsu Takamoto; Hidetoshi Okamura, and Yuzo Aito, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 3, 1995, Ser. No. 510,882

Claims priority, application Japan, Aug. 4, 1994, 6-183355; Sep. 6, 1994, 6-212499; Nov. 7, 1994, 6-272268; Feb. 9, 1995, 7-021952; May 8, 1995, 7-109504

Int. Cl.[6] B29C *43/30*

U.S. Cl. 264—172.19 **66 Claims**



1. A process for the production of a composite molded article in which a core portion of a porous resin layer is present between surface portions of a fiber-reinforced resin and the whole of the composite molded article is integrated, the process comprising the following steps,

(a) the mixture preparation step of preparing a particles-containing resinous mixture of a curable liquid molding resin with light-weight filler particles having an average particle size of 0.01 to 2 mm, the light-weight filler particles being a mixture of rigid particles and compressible particles,

(b) the laminate preparation step of preparing a laminate of a reinforcing fibrous sheet/separation sheet/layer of the resinous mixture in the above step (a)/separation sheet/reinforcing fibrous sheet,

(c) the impregnation step of centripetally pressing and centrifugally relaxing the laminate at least once each, thereby removing gas bubbles other than gas bubbles contained in the particles with infiltrating the liquid molding resin contained in the layer of the resinous mixture into the reinforcing fibrous sheets through the separation sheets, and

(d) (d-1) the step of heating the laminate under pressure or under no pressure to cure the resin to form the composite molded article, or

(d-2) the step of heating the laminate under pressure or under no pressure to partially cure the resin to form a partially cured composite material having shape retainability, and then completing the curing of the partially cured composite material in a mold to form the composite molded article.

5,665,296

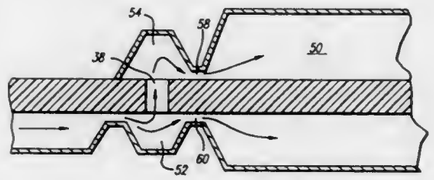
MOLDING TECHNIQUE FOR MOLDING PLASTIC PACKAGES

Praveen Jain, Gilbert, and Rudra Kar, Mesa, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 217,412, Mar. 24, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,038

Int. Cl.[6] B29C *45/14*

U.S. Cl. 264—272.15 **1 Claim**



1. A method for assembling an integrated circuit package, comprising the steps of:

a) placing a die and a lead frame into a mold cavity of a mold to separate said mold cavity into a top chamber and a bottom chamber, said mold having a first gate adjacent to a first side of said lead frame and a second gate adjacent to an opposing second side of said lead frame, wherein the lead frame has a hole that allows fluid communication between said first gate and said second gate; and,

b) injecting an encapsulant into said first gate, wherein a portion of said encapsulant flows through said lead frame hole from said first gate to said second gate before said encapsulant flows through said first gate and said second gate and into said top chamber and said bottom chamber across each side of said lead frame and fills said mold cavity to encapsulate said die, wherein said encapsulant flows through said first gate into said top chamber and through said second gate into said bottom chamber in a direction essentially parallel with said first and second sides of said lead frame.

5,665,297

TUBULAR MATERIALS

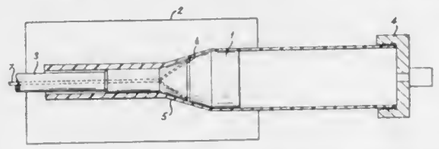
Ian MacMillan Ward; Gordon Craggs, both of Bramhope; Alan Selwood, Harrogate, and Ajay Kumar Taralya, Leeds, all of England, assignors to British Technolog Group Limited, London, England

Continuation of Ser. No. 13,164, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 887,392, May 21, 1992, abandoned, which is a continuation of Ser. No. 767,365, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 439,888, Nov. 20, 1989, abandoned. This application Aug. 24, 1994, Ser. No. 295,005

Claims priority, application United Kingdom, Nov. 30, 1988, 8827967

Int. Cl.[6] B29C *55/26*

U.S. Cl. 264—292 37 Claims



1. A process for the production of a biaxially oriented tubular material having a wall thickness of at least 0.215 mm which comprises the steps of:

providing an expanding former having an exterior surface;

deforming a hollow workpiece of wall thickness at least 4 mm having an interior surface and an exterior surface and comprising an orientable thermoplastic polymer, by drawing it with application of heat directly over said exterior surface of said expanding former, in the solid phase, without the application of any liquid or lubricant to said interior surface of the workpiece during deformation thereof; and

drawing said deformed workpiece off said expanding former using a tension transmitting mechanism exerting a draw tension sufficient to draw the workpiece over the former but insufficient to cause tensile failure of the workpiece to produce drawn biaxially oriented material in tubular form having a wall thickness of at least 0.215 mm;

the process being carried out without the workpiece contacting an external solid surface at the deformation, such that there is no external force acting on the workpiece in a direction perpendicular to the axis of the workpiece at the deformation.

5,665,298

METHOD FOR THE MANUFACTURE OF PNEUMATIC VEHICLE TIRES USING MICROWAVE ENERGY

Klaus Unseld, Hanau, and Manfred Gerresheim, Obertshausen, both of Germany, assignors to SP Reinfenwerke GmbH, Hanau, Germany

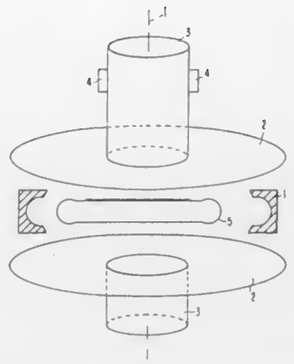
Filed Dec. 27, 1994, Ser. No. 364,038

Claims priority, application Germany, Jan. 4, 1994, 44 00 092.8

Int. Cl.[6] B29C *35/08*

U.S. Cl. 264—402 23 Claims

1. A method for the manufacture of pneumatic vehicle tires comprising a carcass extending between two bead rings and a breaker arranged between carcass and tread, wherein the respective tire blank is built up using exclusively non-metallic components and at least part of the thermal energy required in the course of vulcanization and shaping which takes place under the action of heat and pressure is introduced into the tire in the form of microwave energy generated by a microwave generation device comprising two parallel circular microwave reflecting plates, the plane of said plates being substantially perpendicular to the axial direction of said tire blank, each of said plates having a central passage opening and a wave guide for direction of generated microwaves into a space between said plates, wherein the microwave radiation is introduced into a heating mold of a tire heating press, said



heating mold being disposed within the space during the vulcanization of said tire blank and being used as a microwave container.

5,665,299

METHOD OF PRODUCING PATTERNED SHAPED ARTICLE

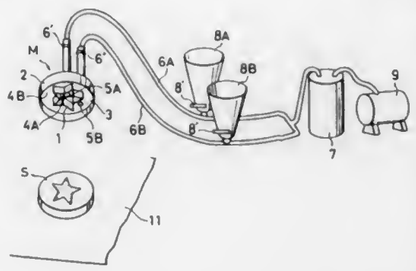
Hiroshi Uchida, Ashikaga; Mituhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

Division of Ser. No. 198,267, Feb. 18, 1994, Pat. No. 5,576,031. This application Sep. 18, 1996, Ser. No. 715,479

Claims priority, application Japan, Feb. 19, 1993, 5-53139

Int. Cl.[6] B29C *31/10;39/12*

U.S. Cl. 264—510 11 Claims



1. A method of producing a pattern shaped article comprising the steps of

placing on a base surface a form constituted of at least one partition member defining the boundary of the pattern to be produced, a peripheral frame surrounding the partition member at a prescribed spacing therefrom and a cover for closing the upper ends of the partition member and the peripheral frame,

supplying dry particles to a pattern space enclosed by the partition member and a pattern space between the partition member and the peripheral frame,

removing the form from the base surface,

forming a particle course having a prescribed pattern, and

causing the particles to set into an integral mass.

5,665,300

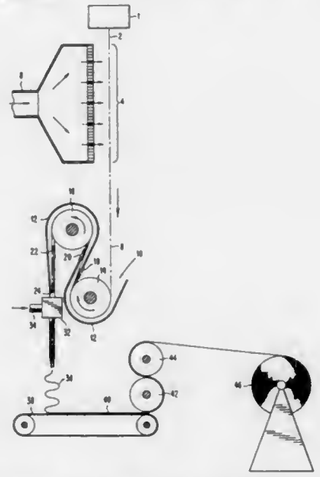
PRODUCTION OF SPUN-BONDED WEB

Edward L. Brignola, Old Hickory; Alvin A. Fleck, Madison; Price W. LaCroix, Hendersonville; Edward K. Willis, Mt. Juliet, all of Tenn., and Leon H. Zimmerman, deceased, late of Nashville, Tenn., by Patricia B. Zimmerman, legal representative, assignors to Reemay Inc., Old Hickory, Tenn.

Filed Mar. 27, 1996, Ser. No. 622,312

Int. Cl.[6] D01D *5/098;* D04H *3/00*

U.S. Cl. 264—555 13 Claims



1. In a process for the formation of a spun-bonded web wherein a molten melt-processable thermoplastic polymeric material is passed through a plurality of extrusion orifices to form a multifilamentary spinline, said multifilamentary spinline is drawn in order to increase its tenacity, is passed through a quench zone wherein solidification occurs, is collected on a support to form a web, and is bonded to form a spun-bonded web; the improvement of passing said multifilamentary spinline in the direction of its length intermediate said quench zone and said support while wrapped about at least two spaced driven draw rolls that are surrounded at areas where said multifilamentary spinline contacts said rolls by a shroud having an entrance end and an exit end that is provided so that said entrance end of said shroud receives said multifilamentary spinline and a pulling force is exerted on said multifilamentary spinline primarily by the action of said spaced driven draw rolls to accomplish the drawing thereof adjacent said extrusion orifices, and exerting a further pulling force on said multifilamentary spinline by passage through a pneumatic forwarding jet located at the exit end of said shroud that assists in the contact of said multifilamentary spinline with said spaced driven draw rolls and expels said multifilamentary spinline in the direction of its length from the exit end of said shroud toward said support.

5,665,301

APPARATUS AND METHOD FOR FORMING FIBER REINFORCED COMPOSITE ARTICLES

John Sulo Matias Alanko, Aurora, Canada, assignor to Arctek Inc., Aurora, Canada

Filed Jul. 11, 1995, Ser. No. 500,590

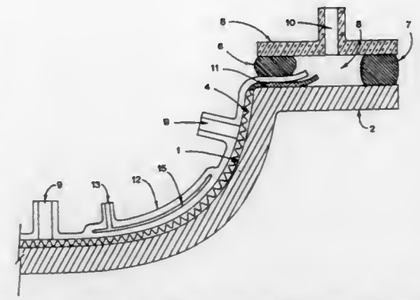
Int. Cl.[6] B29C *70/44*

U.S. Cl. 264—571 8 Claims

1. An apparatus for manufacturing a fiber reinforced polymer article comprising of:

a contact mold with a periphery and an inner surface defining the shape of the outer surface of the article to be molded,

a peripheral integral mold flange on the contact mold periphery such that the mold periphery is extended in a continuous relatively planar configuration,



an impervious flexible silicone bag mold defining the shape of the inner surface of the article to be molded and containing means for introducing liquid polymer through the bag into the dry reinforcement of the article to be molded,

a clamping assembly to provide a means of sealing the silicone bag peripherally to the mold flange having a rigid planar shell with inner and outer seals which contact the contact mold flange to create a vacuum chamber around the periphery of the article to be molded,

a self sealing microporous conduit in fluid communication with the peripheral vacuum chamber and the reinforcement of the article to be molded for the purpose of evacuating the mold cavity defined by the contact mold surface and the silicone bag inner surface.

5,665,302

METHOD AND EQUIPMENT FOR BRINGING METAL ALLOY INGOTS, BILLETS AND THE LIKE TO THE SEMISOLID OR SEMILIQUID STATE IN READINESS FOR THIXOTROPIC FORMING

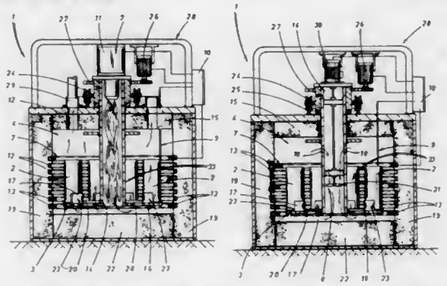
Gianni Benni, Calderara Di Reno-Bologna; Giorgio Muneratti, Polesella-Rovigo; William Taddia, Vigarano Mainarda-Ferrara, and Romano Bettarelli, S. Maria Maddalena-Rovigo, all of Italy, assignors to Reynolds Wheels International Ltd., Lugano, Switzerland

Filed Sep. 20, 1995, Ser. No. 531,248

Claims priority, application Italy, Sep. 23, 1994, BO94A0417

Int. Cl.[6] F27B *9/10;* F27D *3/12;7/00*

U.S. Cl. 266—80 11 Claims



1. Equipment for bringing metal alloy ingots and billets to the semisolid or semiliquid state in readiness for thixotropic forming comprising:

a heat chamber;

conveying and positioning means internal of said heat chamber for conveying a plurality of ingots between an infeed zone at which the ingots are introduced into the heat chamber in the solid state and an outfeed zone at which the ingots are removed from the chamber in the semisolid or semiliquid state;

heating means operating internally of the heat chamber in conjunction with forced ventilation means to establish convection currents of the heated air to flow over the ingots;

means to sense the temperature of the ingots in the heat chamber;

a unit responsive to the sensed temperature of the ingots for controlling the operation of the conveying and positioning means, the forced ventilation means and the heating means.

5,665,303

ARRANGEMENT FOR HEAT TREATMENT OF STEEL WIRE

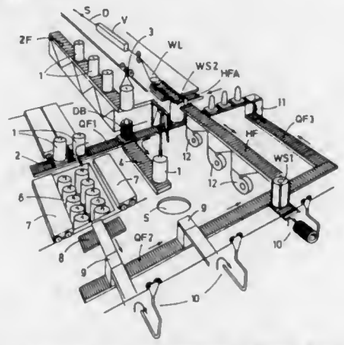
Albert Hauck, Hilchenbach, Germany, assignor to SMS Schloeman-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Oct. 13, 1995, Ser. No. 543,188

Claims priority, application Germany, Oct. 14, 1994, 44 36 712.0

Int. Cl.[6] C21D *9/56*

U.S. Cl. 266—106 **5 Claims**



1. An arrangement for heat treatment of steel wire emerging from a continuous wire rolling mill, the arrangement comprising a horizontal conveyor, a laying head for placing the steel wire in the form of a row of successive and overlapping loops onto the horizontal conveyor, means for subjecting the steel wire to heat treatment while placed on the horizontal conveyor, the horizontal conveyor having an end, a loop collecting unit for collecting the steel wire into a wire coil at the end of the horizontal conveyor, further comprising a second loop collecting unit, the second loop collecting unit being moveable into and out of a conveying path of the horizontal conveyor behind the laying head, and coil conveyor units connected to the second loop collecting unit, the coil conveyor unit comprising transfer units for transferring the wire coils to at least one of a coil heating unit and a coil cooling unit, wherein the horizontal conveyor comprises behind the laying head a conveyor portion, the conveyor portion being moveable transversely out of the conveying path of the horizontal conveyor and being replaceable by the second loop collecting unit, and wherein the coil conveyor unit comprises a first transverse conveyor for conveying empty coil support pallets into the loop collecting unit and for conveying coil support pallets with wire coils out of the second loop collecting unit, wherein a conveying path of the first transverse conveyor is located underneath a unit for placing heat insulation hoods onto the coil support pallets which have been moved out of the second loop collecting unit and loaded with wire coils.

5,665,304

DISPLAY UNIT

Thomas Heinen, Solingen, and Christian Engel, Bad Schwartau, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

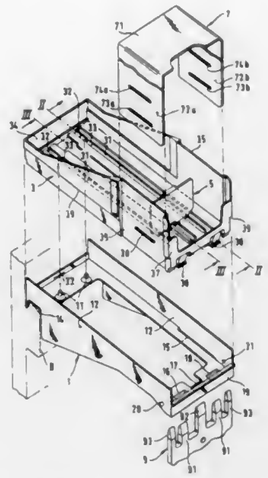
Filed Dec. 12, 1995, Ser. No. 570,920

Int. Cl.[6] A47F *3/02*

U.S. Cl. 312—71 **15 Claims**

1. A display unit for displaying goods comprising:

a base member;



a rack unit for holding goods, said rack unit being capable of accommodating said goods in a stack, said rack unit having a front wall and at least two side walls and being releasably mountable on said base member;

a slide member connected to said rack unit for pushing a stack of goods forward towards the front of said rack unit, the stacking direction of said goods being parallel with the direction of motion of said slide member;

first lock means for locking said slide member in a backward position, said first lock means being automatically disengaged, by mounting said rack unit on said base member, thereby allowing the slide member to move forward thereby exerting a force in the forward direction on the rear end of a stack of goods;

a theft protection member, said theft protection member being releasably mountable on said rack unit, thereby limiting access to goods in said rack unit;

a second lock means for locking said rack unit on said base member, said second lock means being automatically engagable by mounting said rack unit on said base member, said second lock means being disengaged by a key; and

means to adjust the height of the different levels of said theft protection member to accommodate different sizes of goods, said theft protection member being lockable at one of at least two predetermined height levels, by mounting said rack unit on said base member.

5,665,305

LIGHTING SYSTEM WITH MULTIPLE BEAM SHAPES

Richard S. Belliveau, 2209 W. Braker La., Austin, Tex. 78758, and John W. Lane, II, 4607 Duval St., Austin, Tex. 78751

Filed Nov. 13, 1995, Ser. No. 557,743

Int. Cl.[6] F21V *5/04*

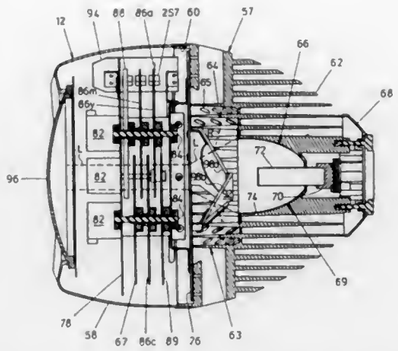
U.S. Cl. 362—268 **12 Claims**

1. Overlapping lenses for use in a light fixture provided to project a beam of light comprising:

the beam projecting a first beam shape having a first cross-sectional geometry;

first means supported in the fixture and movable into a position to interrupt the beam of light for altering the first projected beam shape from the first cross-sectional geometry to a second projected beam shape having a second cross-sectional geometry different from the first geometry, the first means including at least one lenticular lens element; and

second means, separate from the first means, supported in the fixture and movable into a position to interrupt the beam of light for altering the second projected beam shape from the second cross-sectional geometry to a third projected beam shape having a third cross-sectional geometry different from the first and second geometries, the second means including another lenticular lens element overlapping the one lenticular lens element of the first means.



5,665,306

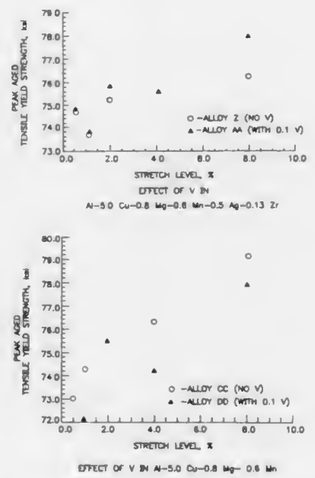
AEROSPACE STRUCTURAL MEMBER MADE FROM A SUBSTANTIALLY VANADIUM-FREE ALUMINUM ALLOY

Lynette M. Karabin, Ruffdale, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 408,470, Mar. 22, 1995, abandoned. This application Dec. 26, 1995, Ser. No. 578,771

Int. Cl.[6] C22C *21/00*

U.S. Cl. 420—535 **9 Claims**



1. A sheet-derived, aerospace structural member having improved combinations of strength and toughness, said structural member being made from a substantially vanadium-free, substantially lithium-free aluminum-based alloy consisting essentially of: about 4.85–5.3 wt. % copper, about 0.5–1.0 wt. % magnesium, about 0.4–0.8 wt. % manganese, about 0.2–0.8 wt. % silver, about 0.05–0.25 wt. % zirconium, up to about 0.1 wt. % silicon, and up to about 0.1 wt. % iron, the balance aluminum, incidental elements and impurities, said structural member having a typical tensile yield strength level of about 77 ksi or higher at room temperature.

5,665,307

AQUEOUS DISINFECTING AGENT

Ulrich Kirschner, Morfelden-Walldorf, and Thomas Pohl, Bad Homburg v. d. H., both of Germany, assignors to Fresenius AG, Bad Homburg v. d. H., Germany

Continuation-in-part of Ser. No. 262,944, Jun. 21, 1994, abandoned, which is a continuation of Ser. No. 857,847, Mar. 26, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,822

Claims priority, application Germany, Mar. 27, 1991, 41 10 078.6; Jan. 6, 1992, 42 00 066.1

Int. Cl.[6] A01N *25/02;37/02;* **C07C** *59/265*

U.S. Cl. 422—28 **6 Claims**

1. A process for the disinfection of a hepatovirally contaminated surface which comprises contacting a hepatitis B contaminated surface with an aqueous solution, consisting essentially of, as sole virucidal components, a member of the group consisting of citric acid and one or more components selected from the group consisting of lactic acid, malic acid and tartaric acid wherein the concentration of any of the additional acid components is between 5 and 20 wt. % of the citric acid, at a temperature of between about 20° C. to about 75° C. for at least 5 minutes.

5,665,308

URINE OCCULT BLOOD TEST APPARATUS

Hiroki Watanabe, 30-20, Hieidaira 3-chome, Ootsu-shi, Shiga-ken, Japan

Filed Oct. 12, 1995, Ser. No. 541,272

Claims priority, application Japan, Jan. 27, 1995, 7-012019

Int. Cl.[6] A61M *25/09;* **G01N** *33/49*

U.S. Cl. 422—58 **7 Claims**



1. A urine occult blood test apparatus comprising:

an elongated catheter (**1***a*) insertable in a working channel of a cystoscope;

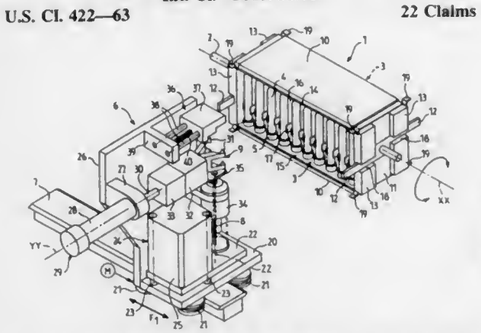
a urine occult blood test member (**2**), said test member (**2**) being provided on a surface of a tip portion of said catheter (**1***a*) and covered with a substance (**3**) harmless to a human body and soluble in several minutes after insertion into a human body; and

wherein said test member (**2**) is covered with said substance (**3**) during insertion, but exposed after positioning near a ureteral meatus due to solution of said substance (**3**) and existence of urine occult blood near the ureteral meatus can be tested.

5,665,309
DEVICE FOR AGITATING AND FOR TAKING SAMPLES OF BLOOD PRODUCTS FROM TUBES WHICH ARE GROUPED TOGETHER IN RACKS

Henri Champseix, Montferreir Sur Lez; Serge Champseix, Teyran; Roger Le Comte, Carnon, and Didier LeFevre, Saint Clement De Riviere, all of France, assignors to ABX, Montpellier Cedex, France

Filed Feb. 7, 1996, Ser. No. 597,969
Claims priority, application France, Feb. 7, 1995, 95 01397
Int. Cl.[6] G01N *35/10*
U.S. Cl. 422—63 **22 Claims**

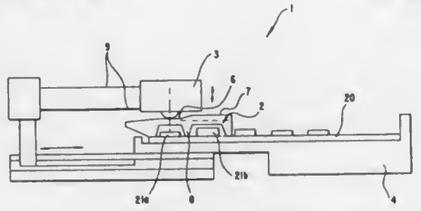


1. A device for agitating and taking samples of blood products from tubes which are closed by stoppers and grouped together in a rack, comprising:
a rack support adapted for holding at least one rack;
at least one rack held by said rack support and including means for holding a plurality of the tubes, each of the tubes being held in a selected position;
a sampling station including means for withdrawing a sample of a blood product from a tube at said sampling station;
gripping means for taking hold and withdrawing from said rack one of said tubes at a selected position, bringing one of said tubes from said selected position to said sampling station and from said sampling station to said selected position without agitation, and replacing said one of said tubes to said selected position;
drive means for displacing the gripping means; and
means for agitating said rack support and said at least one rack, said means for agitating being operable during operation of said means for bringing and means for withdrawing.

5,665,310
DEVICE WITH SPACER FOR THE REFLECTOMETRIC EVALUATION OF TEST ELEMENTS

Manfred Augstein, Mannheim, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jul. 18, 1995, Ser. No. 503,695
Claims priority, application Germany, Jul. 19, 1994, 44 25 432.6
Int. Cl.[6] G01N *21/01*
U.S. Cl. 422—66 **13 Claims**

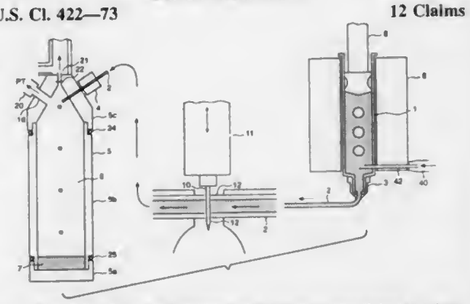


1. A device for reflectometric evaluation of test elements wherein each test element includes a plurality of adjacent test fields thereupon, said device comprising:
measuring means for performing a reflectometric evaluation;
support means for supporting a test element thereupon, said support means being disposed adjacent said measuring means;
spacer means for spacing said measuring means a defined distance from at least one surface of said plurality of adjacent test fields, said spacer means being located between the test element on said support means and said measuring means, and having at least one measuring opening therein, wherein said at least one measuring opening provides access to the test element by the measuring means, and wherein an upper surface of the spacer means comprises a plurality of levels having a plurality of different heights for supporting the measuring means at said defined distance above the test element, corresponding to surfaces of the plurality of adjacent test fields.

5,665,311
BLOOD TESTING DEVICE

Peter Gorog, and Iren Kovacs, both of 20 Grenville Court, Lymer Avenue, Dulwich Wood Park, London SE19 1LS, England

PCT No. PCT/GB87/00633, § 371 Date Feb. 3, 1989, § 102(e) Date Feb. 3, 1989, PCT Pub. No. WO88/02116, PCT Pub. Date Mar. 24, 1988
PCT Filed Sep. 10, 1987, Ser. No. 314,663
Claims priority, application United Kingdom, Sep. 10, 1986, 8621757
Int. Cl.[6] G01N *33/49*
U.S. Cl. 422—73 **12 Claims**



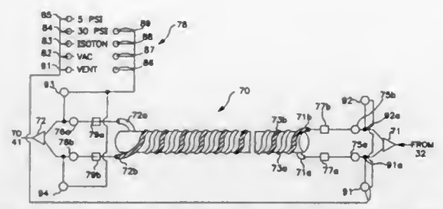
1. Apparatus for the investigation of blood, comprising a columnar reservoir for holding the blood, an elongate tube leading from the reservoir to a waste blood holding vessel, means for measuring blood pressure at a downstream end of said elongate tube, means for introducing into the reservoir a fluid immiscible with blood to displace the blood through the tube, while simultaneously stirring the blood in the columnar reservoir, the means for introducing the immiscible fluid into the columnar reservoir, comprising a pressurisable vessel for the immiscible fluid, means for applying a constant pressure head to the pressurisable container, and a capillary tube leading from the pressurisable vessel to the columnar reservoir, the capillary tube having a resistance to flow substantially greater than that of the tube leading from the columnar reservoir to the waste blood holding vessel.

5,665,312
BLOOD ANALYSIS SYSTEM HAVING BLOOD STORAGE, TRANSPORT AND AUTOMATIC SLIDE-MAKING CAPABILITIES

Cynthia J. Sperber, Fort Lauderdale; Daniel Dashui Gao, Miami, both of Fla., and Marshall D. Graham, Nicholasville, Ky., assignors to Coulter International Corp., Miami, Fla.

Filed Nov. 14, 1995, Ser. No. 557,229
Int. Cl.[6] G01N *35/10;* **B05C** *11/08*
U.S. Cl. 422—81 **17 Claims**

1. In an automated blood analysis system comprising a blood analyzer (**20**) for analyzing a blood specimen to determine constituents thereof, said blood analyzer comprising (i) means (**21**) for receiving a plurality of blood sample containers, each container containing a blood specimen to be analyzed; (ii) means (**32**) for aspirating a first portion of said blood specimen from one of said blood sample containers; and (iii) means (**22**) for analyzing said first blood specimen portion to determine the constituents thereof; the improvement comprising:
(a) a slide maker (**40**) for automatically producing blood smears on individual microscope slides, said slide maker including slide production control means (**10**) for causing said aspirating means (**32**) to aspirate a second portion of said blood specimen from said one of said blood sample containers; a blood drop dispenser (**41**) for selectively dispensing individual drops of blood on a microscope slide; and slide manipulating and smearing means (**42**) for smearing a blood drop dispensed on a microscope slide to produce a blood smear on said microscope slide; and
(b) specimen transport means (**60**) interconnecting said blood analyzer and said slide maker, said specimen transport means comprising means for transporting said second blood specimen portion from said aspirating means (**32**) to said drop dispenser (**41**), said transport means comprising conduit means (**63**) forming a fluid coupling between said aspirating means and said drop dispenser, said conduit means defining a generally helical path for blood contained therein, and means (**68**) for urging blood to flow within said conduit means between said aspirating means and said drop dispenser.



5,665,313
DETECTING AGENT

Takashi Shimada; Masako Yamakawa, and Youji Nawa, all of Hiratsuka, Japan, assignors to Japan Pionics Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,681
Claims priority, application Japan, Sep. 5, 1994, 6-234490
Int. Cl.[6] G01N *33/52*
U.S. Cl. 422—86 **15 Claims**

1. An agent for detecting a hydride gas which consists essentially of a discoloring component supported on an inorganic carrier, the discoloring component consisting essentially of (i) at least one member selected from the group consisting of a molybdenum-containing acid and a salt thereof and (ii) a cupric salt.

5,665,314
TEMPERATURE CONTROL IN A PORTABLE ANALYTICAL INSTRUMENT

Terry A. Berger, Newark, Del., and Mark A. Nickerson, Landenberg, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

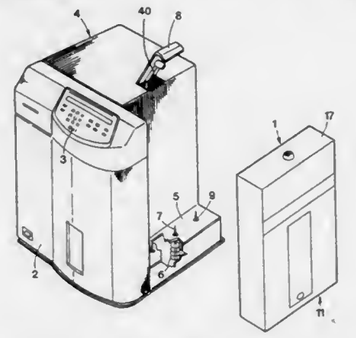
Filed Oct. 11, 1994, Ser. No. 320,486
Int. Cl.[6] G01N *30/02;* **B01D** *53/02*
U.S. Cl. 422—89 **16 Claims**

1. A system for temperature control of a zone in a portable analytical instrument, comprising:
a reservoir of heating fluid, said fluid having energy chemically stored therein;
a first converter for receiving a flow of the heating fluid and effecting an exothermic thermochemical reaction that converts the energy stored in the heating fluid into heat,
a flow regulator, responsive to a first control signal, for controlling the flow of the heating fluid to the converter so as to determine a selectable quantity of heat so generated;
a first heat transport for transporting the quantity of heat from the converter to the zone;
a reservoir of cooling fluid;
a second converter for receiving a flow of the cooling fluid and effecting an endothermic reaction that absorbs heat;
a flow regulator, responsive to a second control signal, for controlling the flow of the cooling fluid to the converter so as to determine a selectable quantity of heat so absorbed; and
a second heat transport for transporting the quantity of heat from the zone to the converter.

5,665,315
AUTOMATIC CONNECTION BOX FOR DISTRIBUTING REAGENTS IN A HAEMATOLOGICAL ANALYZER

Jean-Edouard Robert, Neuilly sur Seine; Roger Le Comte, Carnon, and Henri Champselx, Montferrier S/Lez, all of France, assignors to ABX SA, Montpellier, France

Filed Aug. 18, 1995, Ser. No. 516,550
Claims priority, application France, Aug. 18, 1994, 94 10106
Int. Cl.[6] B01L *3/00;11/00;* **G01N** *33/48;27/30*
U.S. Cl. 422—102 **6 Claims**



1. A system for distributing reagents in an analytical instrument comprising:
an analyzer device and a reagent distribution device,
said analyzer device including a horizontal supporting plate disposed at a side thereof, the horizontal supporting plate being moveable in a vertical direction and having a plurality of orifices therethrough, said analyzer device further including a plurality of upwardly oriented opening mechanisms located below said plurality of orifices,
said reagent distribution device being dimensioned to fit onto the side of said analytical device and including a container structure having a first end and a second end, a plurality of flexible retractable reagent bags disposed within said container structure, and at least one retractable residue bag disposed within said container structure, wherein

each of said plurality of reagent bags extends between said first and second ends and has a reagent closure member disposed at said first end of said container structure and each of the at least one residue bag extends between said first and second ends and has a residue closure member disposed at said second end of said container structure, such that, when said first end of said container is placed on the horizontal supporting plate, the supporting plate slides along the side of the analyzer device, and at least one of said opening mechanisms passes through said orifices and engages with a corresponding one of said reagent closure members.

5,665,316

PORTABLE OXYGEN GENERATOR

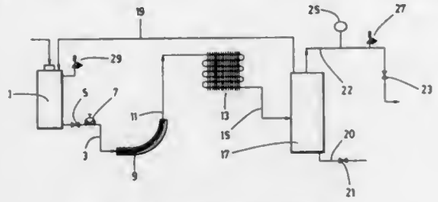
Tino Salonia, Richmond Hill, and Davor Grunwald, Willowdale, both of Canada, assignors to $Geno_2X$ Corporation, Richmond Hill, Canada

Continuation-in-part of Ser. No. 312,084, Sep. 27, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 576,913

Claims priority, application Canada, Aug. 31, 1994, 2131266

Int. Cl.[6] C01B *13/02*; B01J *8/00*

U.S. Cl. 422—113 **7 Claims**



1. A portable oxygen generator comprising:

a. a feed tank for aqueous hydrogen peroxide having a bottom opening with a supply valve to supply aqueous hydrogen peroxide and having a top opening with a return valve to receive equalizing pressure;

b. supply pipe means to receive and conduct aqueous hydrogen peroxide from the feed tank including a regulator, and on\off valve and piping;

c. A reactor to receive hydrogen peroxide from the supply pipe means and to decompose the hydrogen peroxide to oxygen and water in the presence of a catalyst, in which the reactor is a pipe having a round cross section and the catalyst comprises lead strips, each lead strip having a rectangular cross section and a length approximately equal to the length of the reactor, wherein said lead strips are laid longitudinally within the reactor and packed in juxtaposition across the cross section of the reactor to leave gaps between the lead strips for the flow of hydrogen peroxide and water and oxygen through the reactor;

d. a cooling coil to receive oxygen and water from the reactor, to condense the water and to cool the oxygen;

e. a separator tank for oxygen and water having a top opening with an intake valve to receive oxygen and water from the cooling coil, a return/exhaust valve to supply balancing pressure to the feed tank and to exhaust oxygen for a user and a bottom opening with a cap;

f. a product line means to communicate with the separator tank to supply oxygen for use by an operator of the system; and

g. a return line to communicate between the feed tank and the separator tank to balance their pressure;

h. wherein the feed tank and the separator tank are removably held within the generator by a support structure having a plurality of plugs mounted to move into or out of the top and bottom openings in the feed tank and separator tank, said plugs including:

i. a top feed tank plug to seal against top feed tank opening, to activate the return valve within said opening and having a tube to communicate with said return valve and the return line;

ii. a bottom feed tank plug to seal against the bottom feed tank opening, to activate the supply valve within said opening and having a supply tube to communicate from the supply valve to the supply pipe means;

iii. a top separator tank plug to seal against the top separator tank opening, to activate the intake and the return/exhaust valves within said opening and having an intake tube to communicate from the cooling coil to the intake valve and a return/exhaust tube to communicate from the return/exhaust valve to the return pipe and the product pipe; and

iv. a bottom separator tank plug to fit within the cap in the bottom separator tank opening;

i. plug control means to control the movement of the plugs; and

j. on/off valve control means to control the state of the on/off valve in the supply pipe means.

5,665,317

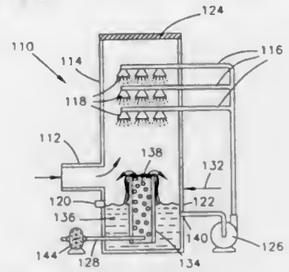
FLUE GAS SCRUBBING APPARATUS

Dennis J. Laslo, Lebanon, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1995, Ser. No. 580,693

Int. Cl.[6] C01B *17/00*; B01F *3/04*

U.S. Cl. 422—171 **16 Claims**



1. A gas scrubbing apparatus comprising:

a passage;

an inlet formed in the passage for introducing flue gases into the passage, the flue gases comprising acidic gases;

means for introducing an alkali-containing fluid into the passage such that the alkali-containing fluid removes the acidic gases from the flue gases;

a tank disposed in proximity to the passage for receiving the alkali-containing fluid from the passage;

means for injecting an oxygen-containing gas into the tank so as to cause the alkali-containing fluid to flow up through a first region structurally delineated within the tank and down through a second region structurally delineated within the tank, the injecting means simultaneously expanding, agitating and oxidizing the alkali-containing fluid within the first region prior to flowing into the second region; and

means for drawing the alkali-containing fluid from the tank and returning the alkali-containing fluid to the introducing means.

5,665,318

ARRANGEMENT FOR TREATMENT OF EXHAUST GASES FOR A COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

Helmut Rembold, Stuttgart; Hubert Dettling, Waiblingen, and Heinz Stutzenberger, Vaihingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

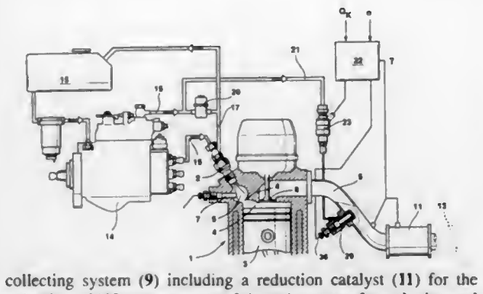
Filed Oct. 12, 1995, Ser. No. 542,116

Claims priority, application Germany, Oct. 12, 1994, 44 36 415.6

Int. Cl.[6] B01D *50/00*; F01N *3/10*

U.S. Cl. 422—177 **17 Claims**

1. An arrangement for treating exhaust gases of a compression-ignition internal combustion engine comprising an exhaust-gas



collecting system (**9**) including a reduction catalyst (**11**) for the reduction of NO_x components of the exhaust gas from the internal combustion engine, an electrically controlled valve (**23**) as a metering device for a metered introduction of a reducing agent into a stream of the exhaust gas supplied to the catalyst (**11**) as a function of operating values, stored in a control device, for the NO_x content of the exhaust gas given various operating parameters of the internal combustion engine and of the catalyst, and with an evaporator device (**26**), said evaporator device communicates with said controlled valve (**23**) via a connecting line (**35**) for vaporizing the reducing agent introduced in vapor form into the exhaust-gas stream, said evaporating device includes a hollow body (**30**) which projects into the exhaust-gas stream, the hollow body includes a heating device (**32**) in an interior space (**31**) which is separated from the exhaust-gas stream by a porous wall, a reducing agent is introduced into the interior space, the reducing agent is heated to an evaporation temperature and then introduced into the exhaust gas.

5,665,319

METHOD OF SEPARATING CARBON DIOXIDE FROM CARBON DIOXIDE CONTAINING GAS AND COMBUSTION APPARATUS HAVING FUNCTION TO SEPARATE CARBON DIOXIDE FROM THE COMBUSTION GAS

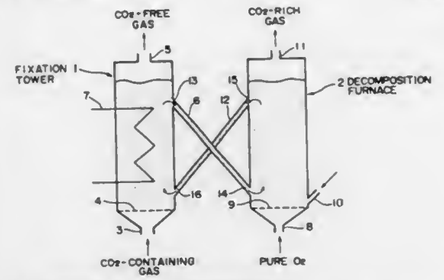
Toshimasa Hirama; Hideo Hosoda, both of Sapporo; Kunihiro Kitano, Ebetsu, and Tadaaki Shimizu, Niigata, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Division of Ser. No. 470,012, Jun. 6, 1995, abandoned. This application Feb. 5, 1996, Ser. No. 596,738

Claims priority, application Japan, Dec. 7, 1994, 6-182891

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—177 **3 Claims**



1. A combustion apparatus comprising:

a tubular, vertically extending housing member and separating means for dividing said housing member into an upper, fixation chamber and a lower, combustion chamber contiguous to said fixation chamber, said fixation chamber and said combustion chamber containing a fluidized bed of particles of a metal oxide;

air feeding means provided in a bottom portion of said combustion chamber for feeding air through said housing to maintain said metal oxide particles in a fluidized state in said fixation chamber and said combustion chamber;

fuel feeding means provided in a lower portion of said combustion chamber for feeding solid fuel particles to said combustion chamber, so that part of said solid fuel particles are combusted to provide a first combustion zone within said combustion chamber, to form a carbon dioxide-containing gas and to leave uncombusted solid fuel particles;

heat exchanging means disposed within said combustion chamber for recovering part of the heat of said combustion of said solid fuel particles;

temperature controlling means, operative independently of said heat exchange means and disposed within said fixation chamber, for controlling the temperature within said fixation chamber so that said carbon dioxide in said carbon dioxide-containing gas is reacted with said metal oxide particles and fixed as the corresponding metal carbonate in said fixation chamber, thereby to form a carbon dioxide-free gas in said fixation chamber;

a gas-solid separating means connected to an upper portion of said fixation chamber for receiving a mixture containing said metal carbonate particles, said uncombusted solid fuel particles and said carbon dioxide-free gas from said fixation chamber and for separating said mixture into a solid phase containing said metal carbonate particles and said uncombusted solid fuel particles and a gas phase containing said carbon dioxide-free gas;

a first gas outlet for venting said carbon dioxide-free gas from said combustion apparatus;

a decomposition furnace providing a second combustion zone disposed below and connected to said gas-solid separating means to receive said solid phase therefrom;

oxygen feeding means provided in a bottom portion of said decomposition furnace for feeding oxygen gas to said decomposition furnace and for maintaining said solid phase in a fluidized state in said decomposition furnace, so that said uncombusted solid fuel particles are combusted in said decomposition furnace with the simultaneous decomposition of said metal carbonate into said metal oxide, thereby to form a carbon dioxide-rich gas in said decomposition furnace;

a second gas outlet provided in a top of said decomposition furnace for withdrawing said carbon dioxide-rich gas therefrom; and

transport means extending between said combustion chamber and said decomposition chamber for transporting said metal oxide particles from said decomposition furnace to said combustion chamber.

5,665,320

DECOMPOSITION METHOD FOR HALOGENATED COMPOUND AND DECOMPOSITION APPARATUS THEREFOR

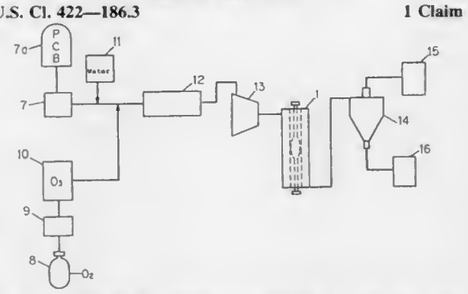
Makoto Ogoshi, 3-8, Tanoura 1-chome, Moji-ku, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Nov. 3, 1992, Ser. No. 970,860

Claims priority, application Japan, Jun. 27, 1992, 4-193013

Int. Cl.[6] B01J *19/12*

U.S. Cl. 422—186.3 **1 Claim**



1. A decomposition system for a halogenated compound comprising a light source for emitting light in the range of 250 nm to 650 nm, a light source tube having an inner cylinder containing such light source, a photo-decomposition reaction tube including an outer cylinder housing said light source tube coaxially and

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defining a dehalogenation chamber between said outer cylinder and said light source tube and including a raw material inlet to said chamber disposed tangentially to said outer cylinder, a source of ozone, a source of basic aqueous liquid, a mixer connected to receive ozone from said source of ozone and to receive basic aqueous liquid from said source of basic aqueos liquid, said mixer comprising means for mixing a solution containing halogenated compound with ozone from said source of ozone and basic aqueous liquid from said source of basic aqueous liquid into an emulsion, and means for supplying the emulsion to said raw material inlet to said chamber.

5,665,321

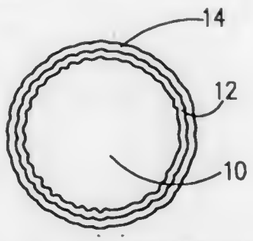
PROCESS FOR THE REACTION AND ABSORPTION OF GASEOUS AIR POLLUTANTS, APPARATUS THEREFOR AND METHOD OF MAKING SAME

Larry E. Campbell, Louisville, Tenn.; Robert Danziger, Los Angeles; Eugene D. Guth, Torrance, both of Calif., and Sally Padron, Knoxville, Tenn., assignors to Goal Line Environmental Technologies, Los Angeles, Calif.

Division of Ser. No. 192,003, Feb. 4, 1994, Pat. No. 5,451,558. This application Jun. 12, 1995, Ser. No. 489,987

Int. Cl.[6] B01D *53/74;53/86*

U.S. Cl. 423—210 **44 Claims**



1. A process of removing gaseous pollutants from combustion stack gases comprising contacting a catalyst absorber, comprising an oxidation catalyst specie selected from platinum, palladium, rhodium, cobalt, nickel, iron, copper, molybdenum or combinations thereof disposed on a high surface area support, said oxidation catalytic specie being intimately and entirely coated with an absorber selected from a hydroxide, carbonate, bicarbonate or mixture thereof of an alkali or alkaline earth or mixtures thereof wherein said oxidation catalyst specie and absorber are present in discrete layers, with said combustion stack gas containing said pollutants such as carbon monoxide, sulfur oxides and nitrogen oxides at a space velocity of 5,000 to 50,000 hr^{-1}, and at a temperature above 150° F. until the catalyst absorber is at least partially saturated.

5,665,322

METHOD OF CLEANING EXHAUST GAS

Yoshida Kiyohide; Sumiya Satoshi; Muramatsu Gyo, all of Kumagaya, and Sato Shinri, Sapporo, all of Japan, assignors to Kabushiki Kaisha Riken, Saitama-Ken, Japan

Continuation of Ser. No. 255,125, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 757,966, Sep. 12, 1991, abandoned, which is a division of Ser. No. 493,974, Mar. 15, 1990, Pat. No. 5,075,274. This application Dec. 28, 1995, Ser. No. 579,804

Claims priority, application Japan, Mar. 15, 1989, 1-63019; Mar. 15, 1989, 1-63020; Oct. 3, 1989, 1-258568; Oct. 3, 1989, 1-258569; Oct. 3, 1989, 1-258570; Nov. 10, 1989, 1-293121; Nov. 10, 1989, 1-293122

Int. Cl.[6] B01D *53/50*

U.S. Cl. 423—213.5 **8 Claims**

1. A method of cleaning an exhaust gas containing oxygen, particulate matter, SO_2, unburned hydrocarbons and CO, comprising passing said exhaust gas through an exhaust gas cleaner having a heat-resistant, porous ceramic-foam filter as a carrier, said filter being constituted by two portions consisting of a portion having a relatively low density and a high-density, thin layer portion having a thickness of 5–2,000 μm and formed on one side of said low-density portion, said low-density portion supporting a catalyst consisting essentially of (a) at least one of alkali metal elements, and (b) one or more elements selected from the group consisting of Sn, Fe, Co, Ni, IB elements, IIB elements, V, Nb, Ta, Cr, Mo, W, Mn, and Re of the Periodic Table, and said high-density, thin layer portion supporting an amount of catalyst consisting essentially of one or more of the elements selected from the group consisting of Ru, Rh, Pd, Os, Ir, and Pt effective for increasing the conversion of particulate matter, unburned hydrocarbons, and CO while not substantially converting SO_2 to SO_3, wherein said low-density portion is located on the exhaust gas inlet side of said filter, and said high-density thin layer portion is located on the exhaust gas outlet side of said filter, so that particulate matter in said exhaust gas is burned or ignited in said low-density portion and unburned hydrocarbons and CO in said exhaust gas are caused to react with remaining oxygen in said high-density, thin layer portion, thereby cleaning the exhaust gas while suppressing the formation of SO_3.

5,665,323

PREPARATION OF AMMONIUM RARE EARTH DOUBLE OXALATES AND RARE EARTH OXIDES PRODUCED THEREFROM

Claire David, Paris, France, assignor to Rhone-Poulenc Chimie, Courbevole Cedex, France

Continuation of Ser. No. 131,580, Oct. 4, 1993, abandoned, which is a continuation of Ser. No. 791,206, Nov. 13, 1991, abandoned. This application May 8, 1995, Ser. No. 437,217

Claims priority, application France, Nov. 13, 1990, 90 14030

Int. Cl.[6] C01F *17/00;* **C07F** *5/00*

U.S. Cl. 423—263 **19 Claims**

1. A process for the preparation of an ammonium rare earth double oxalate, comprising (a) forming a suspension by intimately admixing, in an aqueous medium, (i) at least one rare earth neutral oxalate with (ii) at least one precursor compound liberating ammonium ions in water and (iii) at least one precursor compound liberating oxalate ions in water, and converting the rare earth neutral oxalate by precipitation into a precipitate of an ammonium rare earth double oxalate, (b) separating the double oxalate precipitate formed in step (a).

5,665,324

RECOVERY OF VALUABLE SUBSTANCES

Teruyoshi Izawa, Kasugai; Kazunori Kudo, Mizunami; Yoshihiro Kani, Tajimi; Ken Araki, Hirakata; Tamotsu Kato, Hirakata, and Takashi Furui, Hirakata, all of Japan, assignors to Taihei Chemical Industrial Co., Ltd., and C. Uyemura & Co., Ltd., both of Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,671

Claims priority, application Japan, Jul. 27, 1994, 6-194866

Int. Cl.[6] C01B *25/32*

U.S. Cl. 423—308 **11 Claims**

1. A method for producing hydroxyapatite, said method comprising the steps of:

(a) adding oxalic acid to a spent electroless nickel plating solution to precipitate nickel oxalate therefrom, said spent plating solution comprising a water-soluble nickel salt, an organic material complexing agent for the nickel salt, a hypophosphite, a phosphite and an alkali metal ion;

(b) separating the nickel oxalate precipitate from the solution obtained from step (a);

(c) adding a mineral acid and a calcium compound to the solution obtained from step (b), wherein said calcium compound is selected from the group consisting of calcium oxide, calcium hydroxide, calcium carbonate, calcium sulfate, calcium chloride and a calcium salt of an organic acid;

(d) evaporating water from the solution obtained from step (c) to obtain dry solids and firing said solids in air (1) to convert the alkali metal ion into an alkali metal salt of the mineral acid added in step (c), (2) to convert the phosphorus value of the spent solution of step (a) into hydroxyapatite and (3) to remove the organic material through pyrolysis, thereby forming a mixture of alkali metal salt and hydroxyapatite;

(e) contacting the mixture of alkali metal salt and hydroxyapatite obtained from step (d) with water to form an aqueous solution of the alkali metal salt including undissolved hydroxyapatite; and

(f) recovering the hydroxyapatite.

5,665,325

PROCESS FOR PRODUCING SUBSTANTIALLY BINDER-FREE ZEOLITE

Johannes Petrus Verduijn, Leefdaal, Belgium, assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation of Ser. No. 335,222, Nov. 7, 1994, Pat. No. 5,460,796, which is a continuation of Ser. No. 90,157, Jul. 23, 1993, abandoned. This application May 26, 1995, Ser. No. 450,512

Claims priority, application United Kingdom, Jan. 23, 1991, 9101456

Int. Cl.[6] C01B *39/24;39/30;39/36;39/42*

U.S. Cl. 423—709 **20 Claims**



1. A zeolite-bound zeolite which is substantially free of non-zeolitic binder comprising a plurality of first matrix zeolite crystals said first matrix zeolite being selected from the group consisting of MFI, KFI, Y, Beta, Omega, Chabasite, T, Offretite, ZSM-22, ZSM-23, titanosilicate, ZSM-34, and ZSM-12 bound together with second zeolite crystals which are of the same type or a crystallographic match of said first matrix zeolite, said second zeolite crystals having a submicron particle size and being smaller than said first matrix zeolite crystals.

5,665,326

METHOD FOR SYNTHESIZING TITANIUM NITRIDE WHISKERS

Arvind Goel, and Vithal Revankar, both of Buffalo, N.Y., assignors to Advanced Refractory Technologies, Inc., Buffalo, N.Y.

Filed Nov. 13, 1995, Ser. No. 556,704

Int. Cl.[6] C01B *21/076*

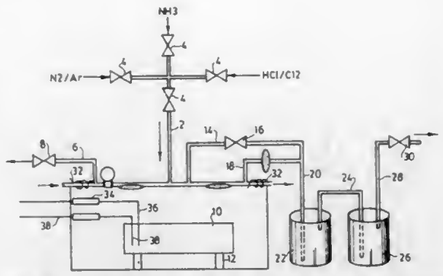
U.S. Cl. 423—411 **23 Claims**

1. A method for making titanium nitride whiskers comprising: in concurrent reactions in a reactant bed,

reacting titanium in the presence of nitrogen in a direct nitridation reaction under conditions necessary to make titanium nitride whiskers; and

reacting titania in the presence of nitrogen in a carbothermal nitridation reaction under conditions necessary to make titanium nitride whiskers.

14. A method for making titanium nitride whiskers comprising: in concurrent reactions in a reactant bed,



reacting titanium in the presence of nitrogen in a direct nitridation reaction under conditions necessary to make titanium nitride whiskers; and

reacting titanium in the presence of nitrogen in a transport species reaction under conditions necessary to make titanium nitride whiskers.

5,665,327

PROCESS FOR THE MANUFACTURE OF ANHYDROUS SODIUM CARBONATE

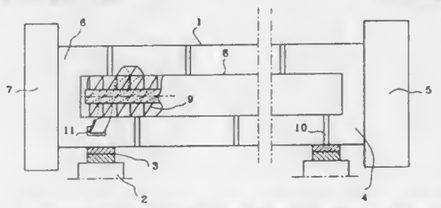
Philippe Warny, Waterloo, Belgium, assignor to SOLVAY (Société Anonyme), Brussels, Belgium

Filed Jul. 17, 1995, Ser. No. 503,290

Claims priority, application France, Jul. 19, 1994, 94 09013

Int. Cl.[6] C01D *7/35*

U.S. Cl. 423—421 **13 Claims**



1. A process for the manufacture of anhydrous sodium carbonate in a drier kiln while avoiding oxidation of kiln walls, said kiln including a rotary drum with an upstream region and a downstream region, comprising:

introducing sodium carbonate monohydrate into said upstream region of said drum, collecting anhydrous sodium carbonate in said downstream region of said drum and recycling a fraction of said anhydrous sodium carbonate from said downstream region into said upstream region of said drum, said recycling of said anhydrous sodium carbonate being performed inside the drum while avoiding oxidation of kiln walls by avoiding entry of air into the drum.

5,665,328

COMPOUNDS, COMPOSITIONS AND METHODS FOR BINDING BIO-AFFECTING SUBSTANCES TO SURFACE MEMBRANES OF BIO-PARTICLES

Paul Karl Horan; Sue Ellen Slezak, both of Downingtown, and Bruce D. Jensen, Schwenksville, all of Pa., assignors to Phanos Technologies, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 189,192, May 2, 1988, abandoned. This application Dec. 1, 1992, Ser. No. 984,269

U.S. Cl. — **13 Claims**

1. A composition for binding a diagnostic agent to the surface membrane of a viable bioparticle capable of physiological function, said composition comprising a compound of the formula, R-B-R_1, wherein B represents a diagnostic agent selected from the group consisting of cyanine, acridine, pyridine, anthraquinone, coumarin, quinoline, xanthene, phenoxazine, phenothiazine and

hexatriene dyes and and R and R_1 represent substituents independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkaryl or aralkyl, the hydrocarbon chains of which are linear or branched, said substituents being unsubstituted or substituted with one or more non-polar functional groups, one of R or R_1 having at least 12 linear carbon atoms and the sum of the linear carbon atoms in R and R_1 totaling at least 23, said compound being sufficiently non-polar as to have a surface membrane retention coefficient of at least about 90 during a 24 hour period in saline containing up to 10 percent serum and the percent change in said coefficient during said period being less than 10 percent, and the compound solubility determination deviation of said compound being no more than 20 percent during two hours when dissolved in said binding medium; and a compatible binding medium in which said compound is dissolved, said medium being iso-osmotic for the bioparticle to which the compound is to be bound.

5,665,329

HETEROATOM-BEARING LIGANDS AND METAL COMPLEXES THEREOF

Kondareddiar Ramalingam, Dayton, and Natarajan Raju, Kendall Park, both of N.J., assignors to Bracco International B.V., Amsterdam

Division of Ser. No. 242,093, May 18, 1994, which is a continuation-in-part of Ser. No. 77,981, Jun. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 480,048

Int. Cl.[6] A61K *51/04;* **A61B** *5/055;* **C07F** *9/00;* **C07D** *233/54*

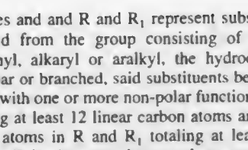
U.S. Cl. 424—1.65 **7 Claims**

1. A complex comprising a compound complexed with a metal, the compound having the following formula, Ia, Ib or Ic:



Ia

Ib



Ic

where

Q is the group $—(C(RR))_{m1}—Y^1—(C(RR))_{m2}—(Y^2(C(RR))_{m3})_n—$, where Y^1 and Y^2 are independently —NR—, —O—, —SO—, —S—, $—SO_2—$, or —Se—; n is an integer selected from 0 or 1; and m1, m2 and m3 are integers independently selected from 0 to 4, provided that the sum of m1 and m2 is greater than zero; with the proviso that if the R of —NR— of Y^1 is not hydrogen, and n=0, then either m1=0 or m2=0;

all R and R* groups are independently:

(i) R^2;
(ii) halogen;
(iii) $—OR^2$;
(iv) $—C(O)—OR^2$;
(v) $—C(O)—N(R^2)_2$;
(vi) $—N(R^2)_2$;
(vii) -alkyl-$C(O)—OR^2$;
(viii) -alkyl-$C(O)—N(R^2)_2$;
(ix) -alkyl-$N(R^2)_2$;
(x) -aryl-$C(O)—OR^2$;
(xi) -aryl-$C(O)—N(R^2)_2$;
(xii) -aryl-$N(R^2)_2$;
(xiii) acyl;
(xiv) acyloxy;
(xv) heterocyclo;
(xvi) hydroxyalkyl;
(xvii) $—SO_2—R^2$;
(xviii) -alkyl-$SO_2—R^2$;
(xix) —(A)p—R^3, where A is a linking group, p is 0 or a positive integer, and R^3 is a bioactive moiety; or
(xx) two R groups, or an R group and an R* group, taken together with the one or more atoms to which they are bonded, form a saturated or unsaturated, spiro or fused, carbocyclic or heterocyclic ring which may be unsubstituted or substituted by one or more groups selected from the groups (i) to (xix) above;

with the proviso that a carbon atom bearing an R group is not directly bonded to more than one heteroatom;

R^1 is hydrogen, a thiol protecting group, or the group —(A)p—R^3 defined above; and

R^2 is independently hydrogen, alkyl, alkenyl, alkynyl, or aryl.

5,665,330

DUAL PURPOSED DIAGNOSTIC/THERAPEUTIC AGENT HAVING A TRI-IODINATED BENZOYL GROUP LINKED TO A COUMARIN

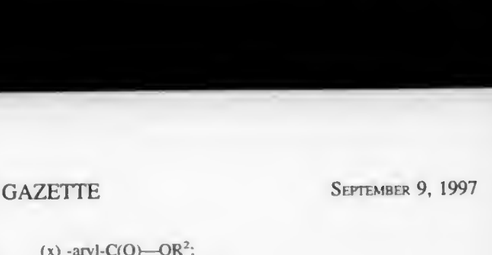
Sui-Ming Wong, Collegeville, Pa., assignor to Nano Systems LLC, Collegeville, Pa.

Filed Feb. 8, 1995, Ser. No. 385,502

Int. Cl.[6] A61K *49/04;* **A01N** *43/16;* **C07D** *311/78*

U.S. Cl. 424—9.44 **14 Claims**

1. A compound having the structure



wherein

R is alkyl comprising from 1 to 6 carbon atoms;

R^1, R^2, R^3, and R^4 is each independently OCH_3, H or I

n is 0 or 1; and

m is 0 or 1.

5,665,331

CO-MICROPRECIPITATION OF NANOPARTICULATE PHARMACEUTICAL AGENTS WITH CRYSTAL GROWTH MODIFIERS

Pranab Bagchi, Webster; Raymond P. Scaringe, Rochester, both of N.Y., and H. William Bosch, Bryn Mawr, Pa., assignors to NanoSystems L.L.C., Collegeville, Pa.

Filed Jan. 10, 1995, Ser. No. 370,998

The portion of the term of this patent subsequent to Oct. 1, 2013, has been disclaimed.

Int. Cl.[6] A61K *49/04;9/14*

U.S. Cl. 424—9.45 **61 Claims**

1. A process of forming nanoparticulate dispersions of diagnostic pharmaceutical agents comprising:

first step of dissolution of the pharmaceutical agent and a crystal growth modifier (CGM) in a aqueous base,

a second step of adding to it an aqueous solution of one or more surface modifiers and a third step of neutralizing the formed alkaline solution with an acid to form a dispersion,

wherein the CGM compound is structurally, on a molecular basis, at least 75% identical to the pharmaceutical agent compound.

5,665,332

SYSTEM FOR DELIVERING FOAMS CONTAINING MEDICAMENTS

David D. Mundschenk, Dania, Fla.; Albert Saferstein, Armonk, and Gary Gerard Fores, Sea Cliff, both of N.Y., assignors to OralCare Systems, Inc., Virginia Beach, Va.

Filed Mar. 28, 1994, Ser. No. 218,796

Int. Cl.[6] A61K *7/16*

U.S. Cl. 424—49 **18 Claims**

1. A system for delivering a chemical agent comprising

a medicament in the form of an aerated foam, the system comprising a propellantless dispenser containing a foamable dental formulation comprising the chemical agent in the form of a solution or stable suspension and an aqueous solution of an anionic surface active agent as a foaming agent,

said foaming agent being selected from the group consisting of cocomonoglyceride sulfonate, sodium lauryl sarcosinate, sodium dodecylbenzene sulfonate, dioctyl sodium sulfosuccinate, sodium lauryl sulfoacetate, sulfolaurate, 2-hydroxylalkyl sulfate, sodium lauryl sulfate, and the mixtures thereof.

5,665,333

METHODS, COMPOSITIONS, AND DENTAL DELIVERY SYSTEMS FOR THE PROTECTION OF THE SURFACES OF TEETH

Andrew M. Homola, 16823 Sorrel Way, Morgan Hill, Calif. 95037, and Ronald K. Dunton, 40 Highgate Rd., Santa Cruz, Calif. 95066

Filed Jan. 17, 1995, Ser. No. 373,946

Int. Cl.[6] A61K *7/22;* **A61C** *15/00;* **A46B** *9/04;* **C09K** *3/00*

U.S. Cl. 424—54 **25 Claims**

1. A polyelectrolyte, which is polyethyleneimine in which 5 to 95 mole % of the nitrogen atoms have been derivatized by reaction with a C_{8-20} fatty acid halide and 5 to 95 mole % of the nitrogen atoms have been quaternized with HF.

5,665,334

BENZOFURAN DERIVATIVES AND METHODS FOR THEIR USE AS STABILIZERS AND SUNSCREENS AGAINST HIV RADIATIONS

Giuseppe Raspanti, and Giorgio Zanchi, both of Bergamo, Italy, assignors to 3V Inc., Weehawken, N.J.

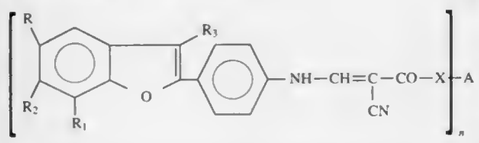
Filed Dec. 21, 1995, Ser. No. 576,347

Int. Cl.[6] A61K *7/42;* **C07D** *307/82*

U.S. Cl. 424—59 **21 Claims**

1. A compound of the formula (I)

(I)



wherein

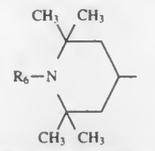
R and R_1, which can be the same or different, are hydrogen or a C_1–C_8 straight or branched alkyl group, R_2 is hydrogen or the group OR_4, wherein R_4 is a C_1–C_4 alkyl group,

R_3 is hydrogen, methyl or ethyl,

X is oxygen or the NR_5 group, wherein R_5 is hydrogen or C_1–C_{18} straight or branched alkyl group n is the number 1 or 2,

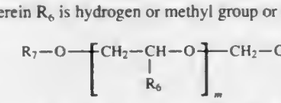
A, when n is 1, is a C_1–C_{20} straight or branched alkyl group, C_6–C_{12} cycloalkyl group, the group of formula (II),

(II)



wherein R_6 is hydrogen or methyl group or a group of formula (III)

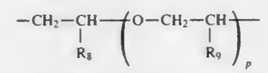
(III)



wherein R_6 has the above meanings and R_7 is C_1–C_{18} straight or branched alkyl group, phenyl, phenyl substituted with a C_1–C_4 straight or branched alkyl group, m can have the values from 0 to 4,

A, when n is 2, is C_2–C_{12} alkylene or the group of formula (IV)

(IV)



wherein R_8 and R_9, which may be the same or different, are hydrogen or methyl group, p is a number from 1 to 4.

5,665,335

COMBINATIONS OF VASOACTIVE SUBSTANCES WITH FATTY ACIDS TO PREVENT HAIR LOSS

Ezio Bombardelli; Aldo Cristoni, and Paolo Morazzoni, all of Milan, Italy, assignors to Indena S.A., Milan, Italy

Filed Jul. 6, 1995, Ser. No. 498,864

Claims priority, application Italy, Jul. 19, 1994, MI94A1497

Int. Cl.[6] A61K *7/00;7/06*

U.S. Cl. 424—70.1 **22 Claims**

1. A composition for the treatment of hair loss and seborrhea, comprising a therapeutically effective amount of the combination of (1) at least one fatty acid or fatty acid ester, and (2) at least one coumarin, alkaloid, alkaloid fatty acid, alkaloid ester, or combination thereof.

5,665,336

ACIDIC POST-TREATMENT OF HAIR DYED WITH DIHYDROXYINDOLE

Leszek Wolfram, Stamford, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 169,953, Dec. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 892,866, Jun. 3, 1992, abandoned. This application Aug. 21, 1995, Ser. No. 517,179

Int. Cl.[6] A61K *7/06;7/13*

U.S. Cl. 424—70.6 **10 Claims**

1. A process for lightening the color of hair previously dyed to a gray to black coloration with dihydroxyindole, the process comprising the steps of applying an aqueous, acidic composition having a pH of about 2 to about 7 to the hair, the composition consisting essentially of an acid component with the proviso that the acid component is not periodic acid, the acid component being the sole color modifier in said composition and said composition being applied to the hair for a period of time effective to increase the Hunter L value of the dyed hair by 2.5 or more units, and rinsing the hair.

5,665,337

LOW RESIDUE HAIR CARE COMPOSITIONS USING GRAFTED COPOLYMERS

Jose Antonio Carballada, and Lauren Ann Thaman, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 21, 1996, Ser. No. 621,737

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—70.12 **34 Claims**

1. A rinse-off hair care composition comprising:

A. from about 0.25% to about 70%, by weight of the rinse-off hair care composition, of a copolymer component comprising:

i. from about 1.5% to about 70%, by weight of said copolymer component, of a silicone-grained adhesive hair styling copolymer having a weight average molecular weight from about 300,000 to about 5,000,000, which has a vinyl polymeric backbone having grafted to it monovalent siloxane polymeric moieties, said copolymer comprising monomers selected from the group consisting of A monomers, B monomers, C monomers and mixtures thereof;

wherein the weight percent of said copolymer in said rinse-off hair care composition is from about 0.10% to about 7%; and wherein said copolymer is prepared by the polymerization combination of the following relative weight percentages of said A monomers, said B monomers, and said C monomers:

a. from about 45% to about 85%, by weight of said copolymer, of a hydrophobic, vinyl A monomer, free radically copolymerizable with said B monomers and said C monomers;

b. from 0% to about 5%, by weight of said copolymer, of a hydrophilic reinforcing B monomer, copolymerizable with said A monomer and said C monomer, said B monomer being selected from the group consisting of polar monomers and macromers and mixtures thereof; and

c. from about 25% to about 50%, by weight of said copolymer, of a polysiloxane-containing C monomer, copolymerizable with said A monomer and said B monomer, said C monomer having a weight average molecular weight of from about 5,000 to about 13,000; and having the general formula:

$X(Y)_nSi(R)_{3-m}(Z)_m$ wherein:

X is a vinyl group copolymerizable with said A monomers and said B monomers;

Y is a divalent linking group;

R is a hydrogen, lower alkyl, aryl or alkoxy;

Z is a monovalent siloxane polymeric moiety having a number average molecular weight of at least about 1500, is essentially unreactive under copolymerization conditions, and is pendant from said vinyl polymeric backbone after polymerization;

n is 0 or 1; and

m is an integer from 1 to 3; and

ii. from about 30% to about 98.5%, by weight of said copolymer component, of a hydrophobic volatile solvent; and

B. from about 30% to about 99.75%, by weight of the rinse-off hair care composition, of a carrier suitable for application to hair, and wherein said rinse-off hair care composition has a residue index on hair of greater than about 20.

5,665,338

HAIR TREATMENT COMPOSITION

Tadashi Tanimura, Sakura, and Yoshiko Tabata, Tokyo, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 151,844, Nov. 15, 1993, abandoned. This application Oct. 30, 1995, Ser. No. 550,517

Claims priority, application Japan, Nov. 30, 1992, 4-320348

Int. Cl.[6] A61K *7/09*

U.S. Cl. 424—70.51 **11 Claims**

1. A hair treatment composition consisting essentially of the following components:

(A) at least one keratin-reducing substance;

(B) at least one nonionic amphiphatic compound which contains at least one long-chain branched alkyl or alkenyl group per molecule, and which has an HLB of 2–12, said compound itself or a mixture of said compound and water maintaining a liquid crystal structure at a temperature ranging from 0°–5° C. which is at least one compound selected from the group consisting of compounds designated as (B-1) through (B-4):

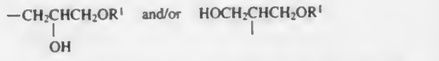
(B-1):

glycerylated polyols of formula (1):

$$A_a(G) \quad (1)$$

wherein G is the residue in which a hydroxyl group(s) has been eliminated from a polyol selected from the group consisting pentaerythritol, sorbitol, maltitol, glucose, and fructose;

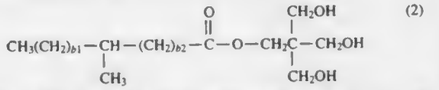
A denotes



in which R^1 is a branched alkyl or alkenyl group having 10–36 carbon atoms, and a is an integer of one up to the total number of the hydroxyl groups in the polyol;

(B-2):

methyl-branched fatty acid esters of formula (2):

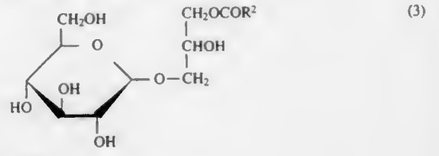


(2)

wherein b_1 and b_2 are individually zero or an integer of 1–33, and the sum of b_1 and b_2 is 6–33;

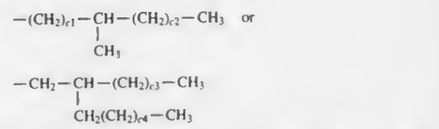
(B-3):

branched fatty acid glyceroglycolipids of formula (3):



(3)

wherein R^2 is



in which c_1 and c_2 are individually zero or an integer of 1–33, the sum of c_1 and c_2 is 6–33, c_3 and c_4 are individually zero or an integer of 1–31, and the sum of c_3 and c_4 is 4–31; and

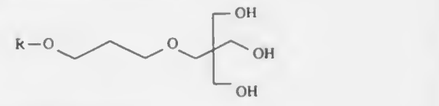
(B-4):

trismethylolamides of formula (5):

$$R^3—CONHC(CH_2OH)_3 \quad (5)$$

wherein R^3 is a linear or branched alkyl group having 6–22 carbon atoms;

a compound of the formula:



wherein R is isostearyl;

(C) water; and

(D) at least one additive selected from the group consisting of surfactants, oily substances, moisturizers, hair protecting agents, feel improvers, coloring matter, perfume bases, thickeners, solubilizing agents, ultraviolet absorbants, antiphlogistics and hair growth ingredients.

5,665,339

ANHYDROUS AFTER SHAVE LOTIONS

Mason Stanley Simmons, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 295,188, Aug. 24, 1994, Pat. No. 5,449,512. This application Jun. 7, 1995, Ser. No. 472,794

Int. Cl.[6] A61K *7/15;7/48*

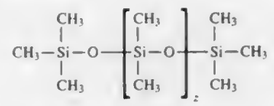
U.S. Cl. 424—73 **12 Claims**

1. An anhydrous after shave lotion comprising:

a. from about 0.1% to about 10% of a perfume;

b. from about 10% to about 90% of a C_1 to a C_6 monohydric alcohol; and

c. from about 10% to about 90% of a linear methylsiloxane having a formula:



wherein z has a value from about 0 to about 3, and the viscosity of said silicone fluid is less than about 5 cs.

5,665,340

COMBINED TWO-PART REDUCING AGENT/ HUMECTANT SHAVING SYSTEM FOR IMPROVED SHAVING COMFORT

Karla Leum Stoner, Frederick, and Charles W. Slife, New Market, both of Md., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 247,915, May 23, 1994, Pat. No. 5,500,210. This application Jan. 11, 1996, Ser. No. 584,765

Int. Cl.[6] A61K *7/15*

U.S. Cl. 424—73 **5 Claims**

1. A shaving system consisting essentially of, in separate containers packaged for use in combination,

(a) a shaving cream, foam or gel comprising about 70 to 90% water, about 5 to 25% of a surface active foaming agent selected from one or more water-soluble soaps, anionic surfactants and non-ionic surfactants, and about 0.2 to 20% of a reducing agent that breaks disulfide linkages in hair; and

(b) an aftershave splash, lotion or gel comprising about 20 to 80% water, about 0 to 50% ethyl alcohol, and about 5 to 50% of a humectant.

5,665,341

Patent Not Issued For This Number

5,665,342

SCALP AND HAIR CARE PRODUCT AND PROCESS OF PREPARING SAME

Ofelia Salinas, Rte. 2, Box 685, Bishop, Tex. 78343

Filed Jun. 6, 1995, Ser. No. 470,011

Int. Cl.[6] A61K *7/06;35/78*

U.S. Cl. 424—74 **19 Claims**

1. A process for preparing a composition comprising the steps of obtaining an amount of water, adding to the water a mixture of potato skins and lantana leaves, heating the mixture to boiling, maintaining the boiling of the water for a time of about three minutes to about one hour, allowing the mixture to cool to ambient temperature, and filtering the cooled mixture to obtain an aqueous solution of biochemicals.

5,665,343

POLYMERIC PLATINUM COMPLEX, PREPARATION THEREOF, AND ANTICANCER AGENT COMPRISING THEREOF

Youn Soo Sohn; Hyounggee Baek; Yang Ha Cho, and Ok-Sang Jung, all of Seoul, Rep. of Korea, assignors to Il-Yang Pharm. Co., Ltd, and Korea Institute of Science and Technology, both of Seoul, Rep. of Korea

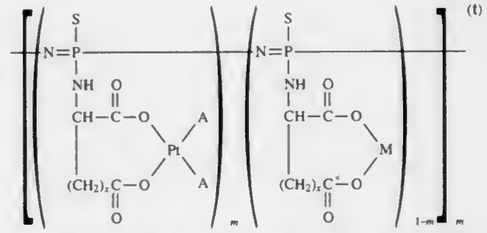
Filed Jan. 2, 1996, Ser. No. 582,557

Claims priority, application Rep. of Korea, Oct. 2, 1995, 33694/1995

Int. Cl.[6] A61K *31/785;33/24*

U.S. Cl. 424—78.26 **16 Claims**

1. A polymeric platinum complex represented by following formula (I):



(I)

wherein, polymeric backbone is a polyphosphazene having P=N repeating unit; S represents hydroxy group, alkoxy group such as methoxy, ethoxy or (2 -methoxy)ethoxy group, or alkylamine group such as methylamine or dimethylamine group as solubilizing group and S is attached to the phosphorus on the polymeric backbone through an oxygen or nitrogen atom: A represents ammonia, or C_1–C_3 alkylamine such as methylamine, ethylamine or cyclopropylamine as monodentate neutral ligand, or ω-type bidentate chelate amine selected from the group consisting of ethylenediamine, propylenediamine, 2-hydroxy-1,3-diaminopropane, 2,2-dimethyl-1,3-diaminopropane, 1,1-diaminomethylcyclobutane, tetrahydro-4H-pyrane-4,4-dimethanamine, 2,2-bisaminomethyl-1,3 -propandio and trans(±)-1,2-diaminocyclohexane; x designating the type of dicarboxylic amino acid as ion group represents 0, 1 or 2, M designates two sodium or potassium ions or alkaline metal ions or one calcium or barium ion or one alkaline earth metal ion; m is 0.2 to 1; and n is 10 to 100.

5,665,344

VOLATILES OF JAPANESE HONEYSUCKLE FLOWERS AS ATTRACTANTS FOR ADULT LEPIDOPTERAN INSECTS

Sammy D. Pair, Atoka, Okla., and Robert J. Horvat, Athens, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 9, 1995, Ser. No. 556,182

Int. Cl.[6] A01N *35/06;35/02;31/02*

U.S. Cl. 424—84 **12 Claims**

1. A composition for attracting insects comprising an attractant component which comprises at least two volatiles of the Japanese honeysuckle flower, one of said volatiles comprising cis-jasmone, and further wherein the concentration of cis-jasmone in said attractant component is greater than or equal to about 10% by weight.

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5,665,345

METHODS OF INHIBITING VIRAL REPLICATION USING IL-10

Robert Yarchoan; M. Wayne Saville; Giovanna Tosato, all of Bethesda, and Kazuyuki Taga, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 24, 1993, Ser. No. 66,785
Int. Cl.[6] A61K *45/05*
U.S. Cl. 424—85.2 30 Claims

1. A method of therapeutically inhibiting the replication of human immunodeficiency virus in human cells in or from a human subject comprising administering to the cells a replication inhibiting amount of interleukin-10.

5,665,346

HUMAN INTERLEUKIN-8 ANALOGS

Ian Clark-Lewis, Vancouver, Canada, and Bernhard Moser, Bern, Switzerland, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

PCT No. PCT/CA92/00528, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO93/11159, PCT Pub. Date Jun. 10, 1993
Continuation-in-part of Ser. No. 801,578, Dec. 4, 1991, abandoned. This PCT application Dec. 3, 1992, Ser. No. 244,702
Int. Cl.[6] A61K *38/20;38/19;* C07K *14/52;14/54*
U.S. Cl. 424—85.2 28 Claims

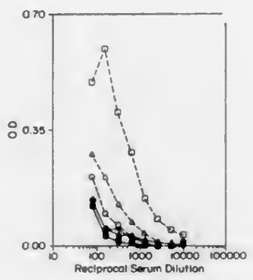
1. An interleukin-8 (IL-8) analog comprising an amino acid sequence substantially equivalent to the human IL-8 1–72 sequence, wherein the amino acid sequence of said analog begins at residue Leu5 and continuing C-terminally at least to residue 51 or begins at residue Glu4, wherein said Glu4 is substituted for an amino acid other than Glu.

5,665,347

IL-12 INHIBITION OF B1 CELL ACTIVITY

Dennis W. Metzger, Sylvania, Ohio, and Victor H. Van Cleave, Londonderry, N.H., assignors to Genetics Institute, Cambridge, Mass., and Medical College of Ohio, Toledo, Ohio

Filed Feb. 2, 1995, Ser. No. 382,658
Int. Cl.[6] A61K *38/20;45/05*
U.S. Cl. 424—85.2 7 Claims



1. A method of suppressing B1 cell activity in a host, comprising administering to the host an effective amount of IL-12.

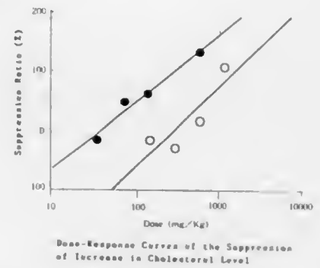
2. A method associated with treating B1 cell activity of a disease involving a B1 cell disorder in a host, comprising administering to the host an effective amount of IL-12.

5,665,348

CHOLESTEROL-LOWERING DRUG

Minenobu Okayama, and Shuji Sato, both of Tsukuba, Japan, assignors to Hisamitsu Pharmaceutical Co, Inc., Tosu, Japan

PCT No. PCT/JP93/00022, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO93/13781, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 11, 1993, Ser. No. 256,486
Claims priority, application Japan, Jan. 14, 1992, 4-024531
Int. Cl.[6] A61K *31/785*
U.S. Cl. 424—78.35 6 Claims



Dose-Response Curves of the Suppression of Increase in Cholesterol Level

1. A pharmaceutical drug composition for lowering the cholesterol content in a patient which contains as the main active component a non-crosslinked anion exchange resin, said anion exchange resin being a homopolymer obtained from the polymerization of a member selected from the group consisting of acryloyloxyethyltrimethylammonium chloride, acryloyloxyethyl-N,N-dimethylbenzyl-ammonium chloride and acryloyloxyethyl-N,N-dimethylhexylammonium chloride, the degree of polymerization being between 10 and 10,000.

5,665,349

RECOMBINANT BACULOVIRUS WITH INSECTICIDAL ACTIVITY

Charles S. Levings, III, Raleigh, N.C., and Kenneth L. Korth, Ardmore, Okla., assignors to North Carolina State University, Raleigh, N.C.

Continuation of Ser. No. 139,440, Oct. 20, 1993, abandoned. This application Sep. 22, 1995, Ser. No. 533,215
Int. Cl.[6] A01N *63/00;* C12N *7/01;15/29;15/34;15/86*
U.S. Cl. 424—93.2 34 Claims

1. A method of reducing the population of an insect in an agricultural field comprising applying to the field a recombinant baculovirus capable of producing polyhedrin protein and which is able to infect the insect, said recombinant baculovirus applied in an amount effective to reduce the population of the insect, and said baculovirus containing and expressing heterologous DNA selected from the group consisting of:

(a) isolated DNA which encodes the maize mitochondrial pore-forming protein URF13;

(b) isolated DNA which hybridizes to isolated DNA of (a) above under conditions represented by a wash stringency of 0.3M NaCl, 0.03M sodium citrate, and 0.1% SDS at 60° C., and which encodes a membrane protein; and

(c) isolated DNA differing from the isolated DNAs of (a) and (b) above in codon sequence due to the degeneracy of the genetic code, and which encodes the protein encoded by DNA of (a) or (b) above.

5,665,350

CELL CYCLE DEPENDENT TRANSPLANTATION AND EX VIVO GENE THERAPY

Peter J. Quesenberry, Shrewsburg, Mass., assignor to University of Massachusetts Medical Center, Worcester, Mass.

Filed Nov. 23, 1994, Ser. No. 344,080
Int. Cl.[6] A61K *48/00;* C12N *5/08*
U.S. Cl. 424—93.21 6 Claims

1. A method of introducing cells into a host mammal, said method comprising the steps of:

a) providing a population of pluripotent hematopoietic stem cells;

b) expanding said population of stem cells to yield a population of expanded stem cells;

c) treating said population of expanded stem cells to induce said population of expanded stem cells to become quiescent stem cells; and

d) introducing said quiescent stem cells into said host mammal.

5,665,351

METHOD FOR CONTROLLING FUNGAL DISEASES IN TURFGRASSES

Muraleedharan G. Nair, Okemos; Joseph M. Vargas, East Lansing; Jon F. Powell, Lansing, all of Mich.; Amitabh Chandra, Ogden, Utah, and Alvin Ronald Detweiler, Haslett, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 568,781, Dec. 7, 1995. This application Sep. 25, 1996, Ser. No. 719,425
Int. Cl.[6] A01N *25/00;63/00;* C12N *1/20*
U.S. Cl. 424—93.47 8 Claims

1. A method for inhibiting *Sclerotinia homoeocarpa* on a turfgrass which comprises:

repeatedly applying to said turfgrass biologically pure cells of *Pseudomonas aureofaciens* RTCC 55670 in an amount effective to inhibit the *Sclerotinia homoeocarpa* on the grass.

5,665,352

PROCESS FOR REDUCING THE EXTENT OF CRYPTOSPORIDIUM DIARRHOEAS

Henri Blehaut, Neuilly sur Seine, and Bernard Hublot, Compiegne, both of France, assignors to Laboratoires Biocodex, Montrouge, France

Filed Oct. 12, 1994, Ser. No. 321,908
Claims priority, application France, Oct. 25, 1993, 93 12692
Int. Cl.[6] A01N *63/04;63/00*
U.S. Cl. 424—93.51 3 Claims

1. Process for reducing the extent of *Cryptosporidium diarrhoeas*, which comprises administering to a patient in need thereof a therapeutically effective amount of living yeasts of the *Saccharomyces boulardii* species.

5,665,353

COMPOSITION CONTAINING AN ANALOG OF HAEMOPHILUS HIN47 WITH REDUCED PROTEASE ACTIVITY

Sheena M. Loosmore, Aurora; Yan-Ping Yang, Willowdale; Pele Chong, Richmond Hill; Raymond P. Oomen, Schomberg, and Michel H. Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Continuation of Ser. No. 296,149, Aug. 26, 1994, which is a continuation-in-part of Ser. No. 278,091, Jul. 21, 1994, Pat. No. 5,506,139. This application Jun. 7, 1995, Ser. No. 472,173
The portion of the term of this patent subsequent to Jun. 7, 2012, has been disclaimed.
Int. Cl.[6] A61K *38/48;* C12N *9/52*
U.S. Cl. 424—94.63 6 Claims

1. An immunogenic composition, comprising, as an active component thereof an immuno-effective amount of an isolated and purified analog of *Haemophilus influenzae* Hin47 protein having a decreased protease activity which is less than about 10% of that of natural Hin47 protein, wherein at least one amino acid of the natural Hin47 protein contributing to protease activity and which is selected from the group consisting of amino acids 91,121 and 195 to 201 of natural Hin47 protein has been deleted or replaced by a different amino acid to provide said reduced protease activity.

5,665,354

BACILLUS LICHENIFORMIS PRODUCING ANTIFUNGAL AGENTS AND USES THEREOF FOR CONTROL OF PHYTOPATHOGENIC FUNGI

Carlos A. Neyra, Kendall Park, and Lakshmi Sadasivan, Piscataway, both of N.J., assignors to Rutgers, The State University of New Jersey, Piscataway, N.J.

Division of Ser. No. 268,922, Jun. 30, 1994. This application May 26, 1995, Ser. No. 451,512
Int. Cl.[6] A61K *35/74*
U.S. Cl. 424—115 11 Claims

1. A substance isolated from *Bacillus licheniformis*, strain PR1-36a which exerts an antifungal effect.

5,665,355

DIAGNOSIS AND TREATMENT OF AIDS ONSET

Daniele Primi, Brescia, Italy, assignor to Consorzio per le Biotecnologie, Brescia, Italy

Division of Ser. No. 408,011, Oct. 18, 1994, which is a continuation of Ser. No. 973,485, Nov. 9, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 488,212
Int. Cl.[6] A61K *39/21*
U.S. Cl. 424—140.1 1 Claim

1. A method of removing antibodies from a person infected with HIV comprising:

(a) removing blood from the person infected with HIV;

(b) removing antibody from the blood of the person, the antibody having a paratope specific to an epitope on TCR-Vβ; and

(c) reintroducing the blood into the person.

5,665,356

HUMAN ANTI-RH (D) MONOCLONAL ANTIBODIES

Benjamin Arthur De Burgh Bradley, Winterbourne Down; Alan Doyle, Salisbury, and Belinda Mary Kumpel, Bristol, all of England, assignors to The National Blood Authority, Watford, England

Division of Ser. No. 57,560, May 6, 1993, Pat. No. 5,487,891, which is a continuation of Ser. No. 469,516, Apr. 3, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 477,552
Claims priority, application United Kingdom, Sep. 18, 1987, 8722018
Int. Cl.[6] A61K *39/395;* C12N *5/12*
U.S. Cl. 424—153.1 24 Claims

1. A method of suppressing an immunogenic response, wherein said immunogenic response is an anti-D response, in an Rh(D) negative, Rh(D) variant, or Rh(D[u]) human subject, following exposure of said subject to Rh(D) positive red blood cells by transfusion or pregnancy, comprising administering to said subject a human monoclonal antibody having the following characteristics:

(a) binding to Rh(D) antigen, but not C, c, E or e antigens of the Rh blood group system;

(b) being IgG1 proteins;

(c) having kappa light chains;

(d) being Glm (3) or Glm (1, 17) allotype;

(e) binding to D[u] cells by the indirect antiglobulin test;

(f) binding to D^{IV}, D^{V} and D^{Tar} (D^{VII}) variant antigens; and

(g) not binding to D^{VI} or D^{B} variant antigens;

or antigen-binding fragments thereof.

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5,665,357

ANTIBODIES RECOGNIZING TUMOR ASSOCIATED ANTIGEN CA 55.1

Michael Samuel Rose, Wilmslow; Christopher Boot, Northwich; Clive Graham Copley; Douglas Stephen Paterson, both of Macclesfield; Susan Margaret Hall, Adlington; Andrew Firman Wright, and David Charles Blakey, both of Macclesfield, all of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

Filed Dec. 2, 1994, Ser. No. 353,400

Claims priority, application United Kingdom, Dec. 3, 1993, 9324819; Jun. 3, 1994, 9411089

Int. Cl.[6] A61K *39/395;* **C07K** *19/00;* **G01N** *33/53;* **C12N** *5/12*

U.S. Cl. 424—178.1 **15 Claims**

1. An antigen binding structure having complementarity determining regions (CDRs) recognising antigen CA55.1 in which the CDRs have the following sequences:

a) heavy chain

CDR1 G Y W I H (SEQ ID NO: 27)

CDR2 E V N P S T G R S D Y N E K F K N (SEQ ID NO: 28)

CDR3 E R A Y G Y D D A M D Y (SEQ ID NO: 29)

b) light chain

CDR1 K S S Q S L L N S R T R K N Y L A (SEQ ID NO: 30)

CDR2 W A S T R T S (SEQ ID NO: 31)

CDR3 K Q S Y T L R T (SEQ ID NO: 32)

or a conservative analogue thereof.

5,665,358

ANTIBODY DRUG-CONJUGATES

Russell L. Barton, Indianapolis; Deborah L. Guttman-Carlisle, Sheridan, and Gary A. Koppel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 541,847, Oct. 10, 1995, which is a division of Ser. No. 40,323, Mar. 30, 1993, Pat. No. 5,556,623. This application May 17, 1996, Ser. No. 649,568

Int. Cl.[6] A61K *39/395;39/44*

U.S. Cl. 424—179.1 **19 Claims**

1. A compound of the formula

$$R^1-CO-\underset{\displaystyle R^5}{CH}-CO-NH-CH_2-CH_2-COOR^4$$

wherein

R^1 is C_1–C_4 alkyl;

R^4 is a carboxy protecting group;

R^5 is H ═C(OH)2, ═CHOR[6], or ═CHSR[6]; and

R^6 is C_1–C_4 alkyl.

6. A compound of the formula

$$R^1-CO-\underset{\displaystyle \|}{\overset{\displaystyle HC-R^2}{C}}-CO-NH-CH_2-CH_2-COOR^7$$

wherein

R^1 is C_1–C_4 alkyl;

R^2 is a monovalent drug derivative having a reactively-available amino, hydroxy or thiol function to which the ═CH— is attached; and

R^7 is H, a carboxy protecting group, or a carboxy activating group, or a moiety which completes a salt of the carboxy group.

5,665,359

METHOD AND COMPOSITIONS FOR LOWERING BLOOD LIPIDS

Walter Kwok Keung Ho, Flat 12B, Residence 13, Chinese University of Hong Kong; Hson-Mou Chang, Flat 4D, Lily Court, World Wide Gardens, both of Shatin, N.T., Hong Kong, and Chi-Ming Lee, 100 Pyler City Rd., Orange, Conn. 06477

Filed Apr. 29, 1994, Ser. No. 235,550

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **14 Claims**

1. A method of decreasing blood lipid levels comprising administering to a patient in need thereof an effective amount of shanzha to decrease the level of lipid in the blood.

5,665,360

METHOD OF TREATING PERIPHERAL NEUROPATHIES OF THE FEET AND LEGS

Richard H. Mann, 2047 SW. 36th Ave., Delray Beach, Fla. 33445

Continuation of Ser. No. 61,020, May 14, 1993, abandoned. This application Sep. 15, 1995, Ser. No. 528,999

Int. Cl.[6] A61K *35/78;39/385*

U.S. Cl. 424—195.1 **10 Claims**

1. A method of treating pain or burning sensations of peripheral neuropathies of the feet and legs due to infection with the acquired immune deficiency syndrome virus or associated with acquired immune deficiency syndrome treatments, the method comprising topically applying an effective amount of a capsicum oleoresin composition in a pharmaceutically acceptable carrier to the affected areas of the feet and legs for a time sufficient to relieve the symptoms due thereto, said composition comprising crude capsicum oleoresin.

5,665,361

INCREASING FREEZING POINT OF FOOD WITH SEA BUCKTHORN ICE NUCLEATING AGENT

Alfred Jann, Marin-Thonon, France; Rolv Lundheim, Trondheim, Norway; Peter Niederberger, Epalinges, and Michel Richard, Peney-le-Jorat, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 344,210, Nov. 23, 1994. This application Jun. 28, 1996, Ser. No. 673,261

Claims priority, application European Pat. Off., Dec. 11, 1993, 93120039

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **16 Claims**

1. A process for increasing the temperature at which a food product freezes comprising adding to a food product a substance selected from the group consisting of juice obtained from berries of sea buckthorn and an aqueous extract obtained from sea buckthorn tissue selected from the group consisting of berry tissue and leaf tissue.

5,665,362

VIRAL VACCINES

Stephen Charles Inglis; Michael Edward Griffith Boursnell, and Anthony Charles Minson, all of Cambridge, United Kingdom, assignors to Cantab Pharmaceuticals Research Limited, Cambridge, United Kingdom

Continuation of Ser. No. 30,073, May 20, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 384,963

Claims priority, application United Kingdom, Sep. 25, 1990, 9020799; Mar. 8, 1991, 9104903

Int. Cl.[6] A61K *39/245*

U.S. Cl. 424—205.1 **24 Claims**

1. A vaccine comprising a pharmaceutically acceptable excipient and an effective immunizing amount of a mutant herpesvirus, said mutant herpesvirus containing a genome in which a viral gene encoding a protein which is essential for production of infectious virus has been deleted or inactivated, wherein said mutant virus is able to cause production of infectious new virus particles in a recombinant complementing host cell expressing a gene which complements said essential vital gene, but is unable to cause production of infectious new virus particles when said mutant virus infects a host cell other than said recombinant complementing host cell, for prophylactic or therapeutic use in generating an immune response in a subject infected therewith.

5,665,363

INOCULATION OF ANIMALS WITH DRIED, PELLETED BIOLOGICAL MATERIALS

Richard D. Hansen, Ankeny, Iowa, and James F. Drake, Minneapolis, Minn., assignors to InnoVac Co., Lincoln, Nebr.

Continuation of Ser. No. 356,477, Dec. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 198,836, Feb. 18, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 712,213

Int. Cl.[6] A61K *39/155*

U.S. Cl. 424—211.1 **9 Claims**

1. A method for vaccinating cattle with an immunogen for providing a protective immune response against at least one of a bacteria, a virus or a protozoa, said method comprising the step of implanting a biologically active pellet containing an effective immune stimulating amount of said immunogen subcutaneously into an ear of said cattle.

5,665,364

COMPOSITIONS FOR TOPICAL DELIVERY OF ACTIVE INGREDIENTS

David Michael McAtee, Fairfield; Lourdes Dessus Albacarys, West Chester, and Joseph Anthony Listro, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 24, 1995, Ser. No. 506,149

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **23 Claims**

1. A topical personal care composition comprising:

(a) from about 0.1% to about 20% by weight of an amphoteric surfactant having the following structure

$$R^1-\overset{\displaystyle O}{\overset{\displaystyle \|}{C}}-NH-(CH_2)_m)_n-\overset{\displaystyle +}{\underset{\displaystyle R^3}{\overset{\displaystyle R^2}{N}}}-R^4-X^-$$

wherein R^1 is unsubstituted, saturated or unsaturated, straight or branched chain alkyl having from about 9 to about 22 carbon atoms; m is an integer from 1 to about 3; n is 0 or 1; R^2 and R^3 are independently selected from alkyl having from 1 to about 3 carbon atoms and monohydroxyalkyl having from 1 to about 3 carbon atoms; R^4 is selected from saturated or unsaturated alkyl having from 1 to about 5 carbon atoms and saturated or unsaturated monohydroxyalkyl having from 1 to about 5 carbon atoms; X is selected form the group consisting of CO_2, SO_3, and SO_4; and pharmaceutically acceptable salts of the foregoing compounds;

(b) from about 0.1% to about 20% by weight of an anionic surfactant,

(c) from about 0.001% to about 20% of an active ingredient, and

(d) from about 40% to about 99.799% by weight water.

5,665,365

FORMULATIONS CONTAINING COUMARINS AND THE USE THEREOF IN THE PHARMACEUTICAL AND COSMETIC FIELDS

Ezio Bombardelli; Aldo Cristoni, and Paolo Morazzoni, all of Milan, Italy, assignors to Indena S.p.A., Milan, Italy

Filed Jul. 6, 1995, Ser. No. 498,867

Claims priority, application Italy, Jul. 26, 1994, MI94A1590

Int. Cl.[6] A61K *31/35;31/70*

U.S. Cl. 424—401 **23 Claims**

1. A topical pharmaceutical or cosmetic composition for increasing blood capillary density comprising about 1 to 2.5% by weight of at least one coumarin and about 0.3 to 1.5% by weight of at least one proanthocyanidin.

5,665,366

SKIN CARE METHOD AND COMPOSITION

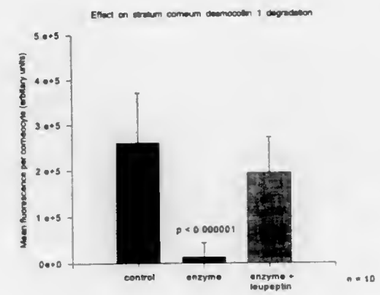
Anthony Vincent Rawlings, Wyckoff, N.J., and Allan Watkinson, Bedford, Great Britain, assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 304,718, Sep. 12, 1994, abandoned. This application Jan. 2, 1996, Ser. No. 582,033

Claims priority, application United Kingdom, Sep. 15, 1993, 9319103; Mar. 22, 1994, 9405639

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **7 Claims**



1. A method of relieving or ameliorating dry skin, acne and for smoothening skin which by topical application to the skin of a composition consisting essentially of a stratum corneum serine protease which in its active form is inhibited by antipain and leupeptin and is capable of decomposing the substrate boc-phe-ser-arg-aminomethylcoumarin.

5,665,367

SKIN CARE COMPOSITIONS CONTAINING NARINGENIN AND/OR QUERCETIN AND A RETINOID

Allan Robert Burger, Passaic; Stewart Paton Granger, Paramus, and Ian Richard Scott, Allendale, all of N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Sep. 27, 1996, Ser. No. 722,540

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **6 Claims**

1. A skin conditioning composition comprising

(a) from about 0.001% to about 10% of a compound selected from the group consisting of retinol, a retinyl ester and mixtures thereof;

(b) from about 0.0001% to about 50% of a flavonoid selected from the group consisting of naringenin, quercetin, and mixtures thereof; and

(c) a cosmetically acceptable vehicle.

5,665,368

SPRAYABLE COMPOSITIONS CONTAINING DISPERSED POWDERS AND METHODS FOR USING THE SAME

Peter J. Lentini, Glen Oaks, and Paul C. Tchinnis, Coplague, both of N.Y., assignors to Estee Lauder, Inc., New York, N.Y.

Continuation of Ser. No. 333,707, Nov. 3, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 753,031

Int. Cl.[6] A61K *6/00;7/11*

U.S. Cl. 424—401 **32 Claims**

1. A sprayable composition suitable for topical application to human skin or hair which comprises:

(a) from about 20 to about 80 percent of an oil component;

(b) from about 2 to about 12 percent of a water-in-oil emulsifier dispersed within the oil component;

(c) from about 2 to about 20 percent of an organoclay component dispersed within the oil component, wherein the organoclay component comprises from about 5 to about 15 percent of an organoclay, from about 75 to about 95 percent of a nonpolar carrier, and from about 1 to about 10 percent of a polar swelling agent;

(d) from about 1 to about 12 percent of a substantially insoluble powder dispersed within the oil component; and

(e) from about 5 to about 50 percent of an aqueous component emulsified within the oil component to form a water-in-oil emulsion, wherein the aqueous component comprises from about 0.01 to about 2.00 percent of an electrolyte, said composition being sprayable via non-aerosol means, and undergoing a reduction in viscosity upon exposure to a shear force exerted by said non-aerosol means.

5,665,369

FAST-DISPENSING SOLID PVP-CONTAINING CROP PROTECTION FORMULATION AND PROCESS THEREFOR

David John Wedlock, Bunbury nr. Tarporley, United Kingdom, and Gerhard De Lind Van Wijngaarden, The Hague, Netherlands, assignors to American Cyanamid Company, Madison, N.J.

PCT No. PCT/EP93/02770, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/08455, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 6, 1993, Ser. No. 406,988

Claims priority, application European Pat. Off., Oct. 8, 1992, 92309173.0

Int. Cl.[6] A01N *25/12*

U.S. Cl. 424—408 **10 Claims**

1. A process for the preparation of a solid formulation of a crop protection agent that disperses rapidly in water to release greater than 80% by mass of said agent in less than one minute, which process comprises co-extruding said crop protection agent with polyvinylpyrrolidone, subsequently cooling the extrudate until brittle and then milling, wherein said crop protection agent dissolves in polyvinylpyrrolidone to form a solid solution.

5,665,370

COMPOSITIONS CONTAINING COCKROACH AGGREGATION PHEROMONES, THEIR PRODUCTION AND USES

Michael J. Gehret, Lititz, and Frank N. Chang, Dresher, both of Pa., assignors to Temple University Of The Commonwealth System Of Higher Education, Philadelphia, Pa.

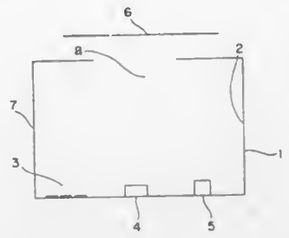
Filed Feb. 22, 1995, Ser. No. 393,090

Int. Cl.[6] A01N *25/10*

U.S. Cl. 424—413 **15 Claims**

1. A method of producing an insecticidal product, comprising a solid substrate impregnated with sterile cockroach aggregation pheromones, comprising

placing in a contained environment at least one solid substrate, cockroach food, water, and a cockroach colony;



allowing the cockroaches to move freely within the contained environment for a period of time effective to allow the solid substrate to be impregnated with aggregation pheromones;

separating the pheromone product from the colony; and

further comprising sterilizing the separated product.

5,665,371

MEDICINES WHICH CONTAIN DERIVATIVES OF PROLINE OR HYDROXYPROLINE

Wilhelm Hoerrmann, Staltacherstrasse 34, Iffeldorf, Germany, D-82392

Continuation of Ser. No. 370,842, Jan. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 152,097, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 875,189, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 544,177, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 375,675, Jul. 5, 1989, abandoned, which is a continuation of Ser. No. 17,254, Jan. 20, 1987, abandoned. This application Dec. 11, 1996, Ser. No. 763,346

Claims priority, application Germany, May 20, 1985, 35 18 078.1

Int. Cl.[6] A61F *2/02;* **A61K** *9/48;9/20;31/185*

U.S. Cl. 424—423 **4 Claims**

1. A method of treating carcinomas or tumors of neuroectodermal origin selected from a group consisting of astrocytomas, gliomas and melanomas in a human patient, comprising administration to said patient orally or intravenously, about 0.01 g/kg–0.1 g/kg daily, of at least one N-alkyl compound selected from the group consisting of N-methyl-hydroxy-proline, N-methyl-proline, N-ethyl-hydroxy-proline, N-ethyl-proline, N-propyl-hydroxy-proline, N-propyl-proline, N-butyl-hydroxy-proline, N-butyl-proline and pharmaceutically acceptable derivatives of said N-alkyl compounds.

5,665,372

AUTOLOGOUS DERMAL FIBROBLASTS FOR THE REPAIR OF SKIN AND SOFT TISSUE DEFECTS

William K. Boss, Jr., Cedar Grove, N.J., assignor to Isolagen Technologies, Inc., West Orange, N.J.

Division of Ser. No. 508,773, Jul. 28, 1995, Pat. No. 5,591,444. This application Jun. 6, 1996, Ser. No. 660,783

Int. Cl.[6] A61F *2/02;2/10;* **A61M** *31/00*

U.S. Cl. 424—426 **1 Claim**

1. A method of repairing sequelae of acne vulgaris in a subject which comprises the steps of:

a) providing a fibroblast-seeded clot having dermal fibroblasts derived from the subject, said fibroblasts being substantially free of cells other than fibroblasts, and said clot being substantially free of proteins that are immunogenic in the subject;

b) abrading a site of sequelae of acne vulgaris of a subject to the level of the middle or deep dermis; and

c) applying the clot to the abraded site, so that the seeded fibroblasts are juxtaposed to dermis.

5,665,373

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT OF THE CORNEAL FOLLOWING LASER IRRADIATION

Stella M. Robertson, Arlington, and Herman Melvin Kunkle, Jr., Mansfield, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 279,765, Jul. 25, 1994, Pat. No. 5,401,510, which is a continuation of Ser. No. 218,393, Mar. 28, 1994, abandoned, which is a division of Ser. No. 101,862, Aug. 4, 1993, Pat. No. 5,360,611, which is a continuation of Ser. No. 866,730, Apr. 10, 1992, Pat. No. 5,271,939, which is a continuation of Ser. No. 531,179, May 31, 1990, Pat. No. 5,124,392, which is a continuation-in-part of Ser. No. 253,009, Oct. 3, 1988, Pat. No. 4,939,135. This application Mar. 16, 1995, Ser. No. 405,060

Int. Cl.[6] A61K *31/557*

U.S. Cl. 424—427 **1 Claim**

1. A method for treating photoablation of a cornea following laser irradiation and resulting volumetric removal of corneal tissue, comprising applying to the affected cornea a composition containing a fatty acid derivative selected from the group consisting of prostaglandins, thromboxanes and leukotriene in an amount effective to treat said photoablation and a pharmaceutically acceptable carrier therefor.

5,665,374

ULTRAMULSION CONTAINING INTERDENTAL DELIVERY DEVICES

Ira D. Hill, Locust; Peter P. Walters, Neshanic, both of N.J., and Dale G. Brown, Wharton, Tex., assignors to WhiteHill Oral Technologies, Inc., Chadds Ford, Pa.

Filed Jun. 5, 1995, Ser. No. 462,599

Int. Cl.[6] A61C *3/00;* **A61H** *13/00;* **A61K** *6/00;* **B05D** *3/00*

U.S. Cl. 424—435 **29 Claims**

1. A non-floss type interdental delivery device containing an ULTRAMULSION which is a high shear dispersion of a silicone in a surfactant formed by heating a mixture of surfactant and silicone, followed by high shear mixing, said ULTRAMULSION dispersion being released into the oral cavity when the device is used to clean, massage and/or treat surfaces in the mouth, wherein:

a. the silicone is insoluble in said surfactant, has a viscosity greater than about 100,000 cs, and a particle size up to about 10 microns,

b. the surfactant to silicone ratio in the high shear dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone,

c. the silicone is oriented, exhibits enhanced substantivity to surfaces in the oral cavity and functions as a reservoir for one or more lipid soluble and lipid dispersible oral care active ingredients.

19. A non-floss type interdental device according to claim 1, wherein the device is for treating periodontal pockets.

5,665,375

METHOD OF ALTERING THE CONTENTS OF EGGS

Albert H. Meier, Baton Rouge, La., and John M. Wilson, Charlestown, Mass., assignors to Board of Supervisors of Louisiana University and Agricultural and Mechanical College, Baton Rouge, La.

Filed May 31, 1995, Ser. No. 455,390

Int. Cl.[6] A61K *9/14;31/195*

U.S. Cl. 424—439 **13 Claims**

1. A method of reducing the cholesterol content in eggs produced by poultry which comprises administering to said poultry an effective amount for reducing the cholesterol content of the eggs produced by said poultry of L-Dihydroxyphenylalanine (L-DOPA).

5,665,376

METHOD FOR REDUCING EXCESSIVE STOMACH ACID

Ubaldo Russo, Via Boccacia 19, Bovino, Foggia, Italy

Continuation-in-part of Ser. No. 194,036, Feb. 9, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 552,254

Int. Cl.[6] A61K *9/16;9/26*

U.S. Cl. 424—440 **5 Claims**

1. A method of treating excess stomach acidity by ingesting a dose of at least 2000 mg of fava bean flour, wherein said dose is incorporated into at leas one molded 4000 mg chewable wafer and said fava bean flour is the main active ingredient for a reduction of the excess stomach acidity.

5,665,377

ADMINISTRATION SYSTEM FOR ESTRADIOL

Jacques Gonella, Muttenz, Switzerland, assignor to Giapharma SA, Zug, Switzerland

Continuation of Ser. No. 58,517, May 3, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,897

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 **8 Claims**

1. An adhesive plaster for the transdermal administration of estradiol, which is composed of an impermeable carrier film and of an adhesive composition coated thereon, wherein the adhesive composition, which represents a matrix or reservoir layer, is a solvent-based polyacrylate or polyisobutylene adhesive which contains lauric acid as permeability enhancer at a concentration of 1 to 25% and estradiol as an active substance at a concentration of 0.5 to 3%.

5,665,378

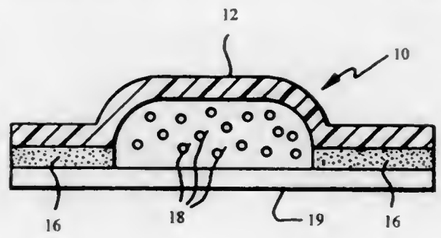
TRANSDERMAL THERAPEUTIC FORMULATION

Roosevelt Davis, and Susan A. Primo-Davis, both of 27 Lullwater Estate Rd., Atlanta, Ga. 30307

Continuation-in-part of Ser. No. 315,343, Sep. 30, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 560,806

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 **19 Claims**



1. A transdermal therapeutic formulation comprising

a therapeutically effective amount of capsaicin;

a therapeutically effective amount of at least one nonsteroidal anti-inflammatant;

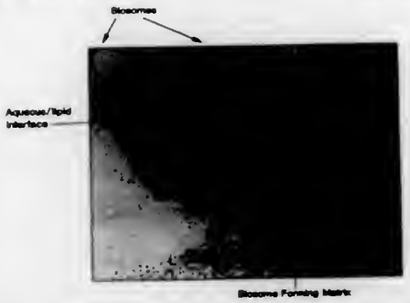
a therapeutically effective amount of pamabrom; and

a premeation enhancing amount of at least one skin permeation enhancer selected from the group consisting of menthol, eucalyptol, glyceryl monostearate and d-limonene.

5,665,379
LIPID PARTICLE FORMING MATRIX, PREPARATION AND USE THEREOF

Bengt Herslöf, Stockholm, and Alf Gunnar Martin Nicklasson, Södertälje, both of Sweden, assignors to Pharmacia & Upjohn Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 859,417, May 27, 1992, abandoned.
This application May 13, 1994, Ser. No. 242,054
Claims priority, application Sweden, Sep. 28, 1990, 9003100
Int. Cl.[6] A61K *9/127;9/14*
U.S. Cl. 424—450 40 Claims



1. An essentially water-free, liquid or semi-solid, lipid particle forming matrix comprising a bioactive material and a system of analytically pure lipids comprising at least two lipids of different polarity, wherein

i) at least one lipid is phosphatidylcholine, which is a polar and amphiphilic bilayer forming phospholipid in an amount of 5 to 50% (w/w) of the lipids, and, the remainder of said system is,

ii) at least one lipid that is a nonpolar lipid and comprises a mixture of monoacyl glycerols wherein the acyl group of each is selected from the group consisting of caprylate (C:8) and caprate (C:10), and

wherein the said composition forms discrete lipid particles spontaneously at the interface between aqueous and lipid phase after contact with external water of an aqueous medium by budding.

5,665,380
LIPID VESICLE FUSION AS A METHOD OF TRANSMITTING A BIOLOGICALLY ACTIVE MATERIAL TO A CELL

Donald F. H. Wallach, Hollis, and Carole Varanelli, Chester, both of N.H., assignors to Micro-Pak, Inc., Wilmington, Del.

Continuation of Ser. No. 169,422, Dec. 17, 1993, abandoned.
This application Apr. 11, 1995, Ser. No. 420,324
Int. Cl.[6] A61K *9/127;9/38*
U.S. Cl. 424—450 30 Claims

1. A method of transmitting a biologically active material to a cell in vitro, comprising the steps of:

(a) forming a carrier vesicle having about 2–10 lipid bilayers encapsulating said biologically active material, said carrier vesicle being in the form of a paucilamellar lipid vesicle having a non-phospholipid material as the primary structural lipid in said bilayers, said non-phospholipid material being selected from the group consisting of polyoxyethylene fatty ethers having the formula:

$$R—CO(C_2H_4O)_nH$$

where n ranges from 2–4 and R is a hydrocarbon chain selected from the group consisting of cetyl alcohol, stearyl alcohol and oleoyl alcohol or derivatives thereof,

(b) delivering said carrier vesicle containing said biologically active material to a location proximate to said cell in vitro;

(c) allowing said lipid bilayer of said carrier vesicle and the membrane of said cell to fuse; and

(d) allowing said biologically active material to diffuse into said cell.

5,665,381
INHIBITION OF AGGREGATION OF DRUG CONTAINING PARTICLES

Crispin G. S. Eley, Fullerton, and Eric A. Forssen, LaCañada, both of Calif., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation of Ser. No. 820,610, Feb. 25, 1992, abandoned.
This application Jun. 6, 1995, Ser. No. 472,001
Int. Cl.[6] A61K *9/133*
U.S. Cl. 424—450 7 Claims

1. A method for inhibiting aggregation of unilamellar liposomes containing an encapsulated drug and containing residual amounts of multivalent anions disposed on the outer surface of said liposomes, comprising

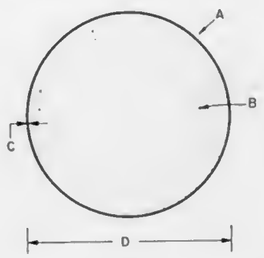
(a) forming a dispersion of unilamellar liposomes containing an encapsulated drug wherein residual amounts of a multivalent anion are disposed on the outer surface of said liposomes; and

(b) adding to said dispersion an effective amount to inhibit aggregation of a divalent cation selected from the group consisting of calcium and magnesium; wherein the liposomes have a mean diameter less than 200 nm and would otherwise aggregate in the absence of the divalent cation.

5,665,382
METHODS FOR THE PREPARATION OF PHARMACEUTICALLY ACTIVE AGENTS FOR IN VIVO DELIVERY

Mark W. Grinstaff, Pasadena; Patrick Soon-Shiong, Los Angeles, both of Calif.; Michael Wong, Champaign, Ill.; Paul A. Sandford, Los Angeles, Calif.; Kenneth S. Suslick, Champaign, Ill., and Neil P. Desai, Los Angeles, Calif., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 200,235, Feb. 22, 1994, Pat. No. 5,498,421, which is a continuation-in-part of Ser. No. 23,698, Feb. 22, 1993, Pat. No. 5,439,686, and a continuation-in-part of Ser. No. 35,150, Mar. 26, 1993, Pat. No. 5,362,478.
This application Jun. 7, 1995, Ser. No. 485,448
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 11 Claims



1. A method for the preparation of pharmaceutically active agents for in vivo delivery, said method comprising subjecting aqueous medium containing biocompatible material capable of being crosslinked by disulfide bonds and a pharmaceutically active agent to high intensity ultrasound conditions for a time sufficient to promote crosslinking of said biocompatible material by disulfide bonds;

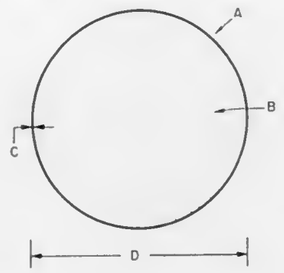
wherein said pharmaceutically active agent issubstantially completely contained within a polymeric shell, and

wherein the largest cross-sectional dimension of said shell is no greater than about 10 microns.

5,665,383
METHODS FOR THE PREPARATION OF IMMUNOSTIMULATING AGENTS FOR IN VIVO DELIVERY

Mark W. Grinstaff, Pasadena; Patrick Soon-Shiong, Los Angeles, both of Calif.; Michael Wong, Champagne, Ill.; Paul A. Sandford, Los Angeles, Calif.; Kenneth S. Suslick, Champagne, Ill., and Neil P. Desai, Los Angeles, Calif., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 200,235, Feb. 22, 1994, Pat. No. 5,498,421, which is a continuation-in-part of Ser. No. 23,698, Feb. 22, 1993, Pat. No. 5,439,686, and a continuation-in-part of Ser. No. 35,150, Mar. 26, 1993, Pat. No. 5,362,478.
This application Jun. 7, 1995, Ser. No. 488,804
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 9 Claims



1. A method for the preparation of immunostimulating agents for in vivo delivery, wherein said method comprises subjecting aqueous medium containing biocompatible material capable of being crosslinked by disulfide bonds and an immunostimulating agent to high intensity ultrasound conditions for a time sufficient to promote crosslinking of said biocompatible material by disulfide bonds;

wherein said immunostimulating agent is substantially completely contained within a polymeric shell, and

wherein the largest cross-sectional dimension of said shell is no greater than about 10 microns.

5,665,384
OILY CAPSULES OF KETOPROFEN

Frederic Courteille, Cachan, and Michel Veillard, Sceaux, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony Cedex, France

Continuation of Ser. No. 934,531, Dec. 2, 1992, abandoned.
This application Jun. 13, 1994, Ser. No. 258,905
Claims priority, application France, Apr. 6, 1990, 9004468
Int. Cl.[6] A61K *35/37;35/38*
U.S. Cl. 424—451 11 Claims

1. A pharmaceutical composition comprising an oil solution of a ketoprofen salt, wherein oil is present in an amount greater than about 90% by weight of the solution and wherein ketoprofen salt is present in an amount of 1–8% by weight of the solution.

5,665,385
DIETARY METAL SUPPLEMENTS

Barry L. Johnson, Liberty, Utah, and Al. F. Czap, Sandpoint, Id., assignors to Sound Nutrition, Inc., Sandpoint, Id.

Filed Dec. 9, 1994, Ser. No. 353,539
Int. Cl.[6] A61K *9/48;9/16;9/26*
U.S. Cl. 424—451 26 Claims

1. A composition for supplementing a metal in the diet of a warm-blooded animal, comprising a metal chelidamate salt and a pharmaceutically acceptable carrier or diluent.

5,665,386
USE OF ESSENTIAL OILS TO INCREASE BIOAVAILABILITY OF ORAL PHARMACEUTICAL COMPOUNDS

Leslie Z. Benet, Belvedere; Vincent J. Wacher, San Francisco, and Reed M. Benet, Belvedere, all of Calif., assignors to AvMax, Inc., Berkeley, Calif.

Filed Jun. 7, 1995, Ser. No. 486,186
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 10 Claims

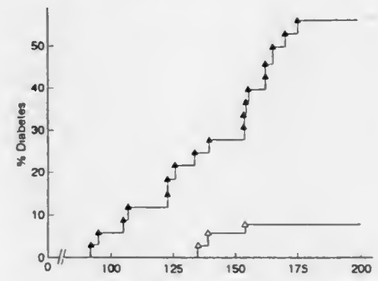
1. A method for increasing bioavailability of an orally administered hydrophobic pharmaceutical compound, which comprises:

orally administering said pharmaceutical compound to a mammal in need of treatment with said pharmaceutical compound concurrently with an essential oil or a component of an essential oil in an amount of said essential oil or essential oil component sufficient to provide bioavailability of said pharmaceutical compound in the presence of said essential oil or essential oil component greater than bioavailability of said pharmaceutical compound in the absence of said essential oil or essential oil component, and sufficient to provide a concentration of said essential oil or essential oil component in the gut of said mammal equal to or greater than a concentration of said essential oil or essential oil component that reduces conversion of cyclosporine to hydxoxylated products by 10%, compared to controls, in an assay system containing 250 μg rat liver microsomes, 1 μM cyclosporine, and 1 mM reduced nicotinamide adenine dinucleotide phoshate (NADPH) in 1 ml of 0.1M sodium phosphate buffer, pH 7.4.

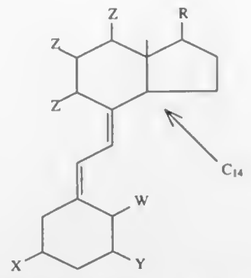
5,665,387
METHODS AND COMPOSITIONS FOR PRIMARY AND SECONDARY PREVENTION OF AUTOIMMUNE DIABETES

Chantal Mathieu, Buizingen; Mark Waer, Heverlee, and Roger Bouillon, Herent, all of Belgium, assignors to K.U. Leuven Research & Development, Belgium

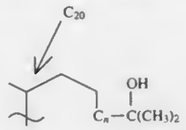
Filed Sep. 1, 1994, Ser. No. 299,936
Int. Cl.[6] A61K *9/20*
U.S. Cl. 424—464 19 Claims



1. A method for modulating the immune system of a subject comprising administrating an amount in a range of 0.1 ug to 1 mg per kilogram body-weight of said subject of a first compound based on the formula



wherin x is H_2 or H(OH); Y is H(OH) or H(F); Z is H_2 or H (alkyl) (C_1–C_4); W is H_2,=CH_2 or H(CH_3) and R is

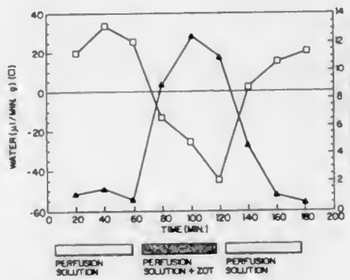


wherein one or more carbon atoms may be replaced by O or S and wherein n<3, or alkyl-, aryl-, alkenyl-, alkynyl-, fluoro-, thio-, cycloalkyl-, epoxy-, hydroxyl- or keto-containing derivatives thereof; and
wherein said amount is effective to modulate the immune system in an animal or patient to which said amount is administered.

5,665,388
METHOD FOR PREPARATION OF AN ALKALINE AND ASPIRIN COMBINATION COMPOUND
Howard P. Phykitt, Wilson, N.C., assignor to Health Corporation, Rocky Mount, N.C.
Filed Nov. 13, 1995, Ser. No. 555,900
Int. Cl.[6] A61K *9/20*
U.S. Cl. 424—464 **20 Claims**

1. A method of manufacturing a stabilized, essentially sodium free, granular aspirin compound mixed with a granular potassium bicarbonate compound, said method comprising the steps of:
(a) determining a desirable dose size of said stabilized, essentially sodium free, granular aspirin compound mixed with said granular potassium bicarbonate compound which is to be packaged;
(b) weighing out a predetermined amount of granular aspirin, having a predetermined particle size, based on said dose size determined in step (a);
(c) placing a predetermined amount of said granular potassium bicarbonate compound into a container, said potassium bicarbonate compound being substantially uniformly distributed over a bottom surface of said container to a predetermined depth;
(d) placing said container, containing said granular potassium bicarbonate compound therein, into a heat treating apparatus;
(e) heat treating said predetermined amount of said granular potassium bicarbonate compound at a predetermined temperature which is at least sufficient to convert an outer surface layer of said granular potassium bicarbonate compound to potassium carbonate and for a predetermined time which is at least sufficient to ensure that essentially all of said outer surface layer of said granular potassium bicarbonate compound is converted to said potassium carbonate;
(f) weighing out a predetermined amount of said granular potassium bicarbonate compound, after completion of said heat treating in step (e), based on said predetermined dose size determined in step (a);
(g) placing said predetermined amount of said granular aspirin, weighed out in step (b), into a package; and
(h) placing said predetermined amount of said granular potassium bicarbonate compound, weighed out in step (f), into said package thereby forming said stabilized, essentially sodium free, granular aspirin compound mixed with said granular potassium bicarbonate compound.

5,665,389
ORAL DOSAGE COMPOSITION FOR INTESTINAL DELIVERY AND METHOD OF TREATING DIABETES
Alessio Fasano, Ellicott City, Md., assignor to University of Maryland at Baltimore, Baltimore, Md.
Continuation-in-part of Ser. No. 443,864, May 24, 1995. This application Feb. 9, 1996, Ser. No. 598,852
Int. Cl.[6] A61K *9/20*
U.S. Cl. 424—464 **3 Claims**



1. A method for treating diabetes comprising orally administering, to a diabetic subject, an oral dosage composition for intestinal delivery of a therapeutic agent comprising:
(A) a therapeutically effective amount of insulin; and
(B) an intestinal absorption enhancing effective amount of purified *Vibrio cholera* zonula occludens toxin.

5,665,390
STABILIZED TABLET FORMULATION
Patrick Gerard Faulkner, Collegeville; Mark Warren Fisher, King of Prussia, both of Pa.; Joseph Peter Sauer, Clemlnton, and Carlos Roberto Hernandez, Pensauken, both of N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.
Filed May 26, 1995, Ser. No. 451,790
Claims priority, application United Kingdom, Sep. 3, 1993, 9318348; Nov. 19, 1993, 9323864; Jun. 14, 1994, 9411903
Int. Cl.[6] A61K *31/56;31/575;9/20;47/12*
U.S. Cl. 424—465 **2 Claims**

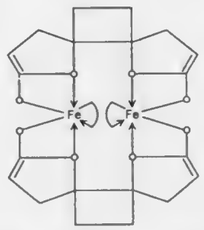
1. A method of preparing stabilized tablet formulations of substituted 3,5-diene steroidal compounds wherein the improvement comprises, the process of reducing the significant increase in the rate of formation of degradation products formed from substituted 3,5-diene steroidal compounds whether compressed into tablets by wet granulation or by direct compression, with commonly used pharmaceutical excipients which consists essentially of the step of directly compressing said substituted 3,5-diene steroidal compound admixed with
(A) from about 0.05% to about 2% by weight of butylated hydroxyonisol or butylated hydroxytoluene, as antioxidant, and
(B) from about 1% to about 3% by weight of stearic acid or palmitic acid, as stabilizing tablet lubricant.

5,665,391
CULTURED, FULL-THICKNESS INTEGUMENT SUBSTITUTES BASED ON THREE-DIMENSIONAL MATRIX MEMBRANES
Peter Lea, Toronto, Canada, assignor to Spectral Diagnostics Inc., Toronto, Canada
Filed Oct. 12, 1995, Ser. No. 542,174
Int. Cl.[6] A61F *2/10*
U.S. Cl. 424—484 **18 Claims**



1. A cultured, full-thickness integument substitute implanted in or to be implanted in a patient requiring the same, comprising a three-dimensional matrix membrane with essentially two surfaces, in that the length and width thereof are substantially greater than the thickness thereof which is from about 0.1 mm to about 5 mm, said matrix membrane being non-reactive with respect to cells and components of normal integument; said membrane having pores in the area of a first surface thereof which are directly connected to, but substantially larger on average than those in the area of the opposite surface of said membrane, having a mean pore diameter in the range of from about 50 µm to about 900 µm, said pores having immobilized therein cells and components of a dermal layer of said integument; said membrane having pores in the area of a second surface thereof which are directly connected to but substantially smaller on average than those in the area of the opposite surface of said membrane, having a mean pore diameter in the range of from about 0.5 µm to about 100 µm, said pores having immobilized therein cells and components of an epidermal layer of said integument; said membrane also having a lateral pore structure in the internal space thereof interconnecting said pores which pass from one surface to the other of said membrane, permitting coplanar flow of a liquid or suspension therethrough.

5,665,392
FORMULATION FOR TREATING THALASSEMIA AND A PROCESS FOR PREPARING THE SAME
Sarkar Ajit Kumar; Kumar Sudarshan, both of New Delhi; Priyadarshi Harsh, Allahabad; Khanna Sushil Rattan, and Dass Ghansham, both of Delhi, all of India, assignors to Council of Scientific and Industrial Research, New Delhi, India
Filed Jul. 11, 1995, Ser. No. 500,628
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **10 Claims**



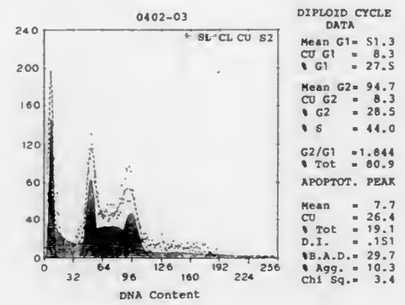
1. A pharmaceutical formulation for treating patients suffering from thalassemia which comprises:
a. powder of Anemonin Pretensis in an amount in the range of 0.02 to 0.12 wt % of the formulation,
b. quinine sulphate in an amount in the range of 0.0005 to 0.003 wt % of the formulation,
c. distilled or demineralized water in an amount in the range of 0 to 40 wt % of the formulation and
d. ethanol in an amount in the range of 99.88 to 60 wt % of the formulation.

7. A process for the preparation of a pharmaceutical composition for treating patients suffering from Thalassemia, said process comprising mixing:
a. powder of Anemonin Pretensis in an amount in the range of 0.02 to 0.12 wt % of the formulation,
b. quinine sulphate in an amount in the range of 0.0005 to 0.003 wt % of the formulation,
c. distilled or demineralized water in an amount in the range of 0 to 40 wt % of the formulation, and
d. ethanol in an amount in the range of 99.8 to 60 wt % of the formulation.

9. A pharmaceutical formulation for treating patients suffering from thalassemia which comprises:
a. Powder of Anemonin Pretensis in an amount of 0.08 wt % of the formulation,
b. Quinine sulphate in an amount 0.001 wt % of the formulation,
c. Water in an amount of 40 wt %, and
d. Ethanol is an amount of 59.919 wt % of the formulation.

10. A pharmaceutical formulation for treating patients suffering from thalassemia which comprises:
a. Powder of Anemonin Pretensis in an amount of 0.09 wt % of the formulation,
b. Quinine sulphate in an amount 0.001 wt % of the formulation,
c. Water in an amount 80 wt % of the formulation and
d. Ethanol in an amount of 19.909 wt % of the formulation.

5,665,393
HERBAL COMPOSITION FOR TREATING PROSTATE CARCINOMA
Sophie Chen, Millwood, N.Y., and Xuhui Wang, Shanghai, China, assignors to International Medical Research, Inc., Brea, Calif.
Filed Sep. 3, 1996, Ser. No. 697,920
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **9 Claims**



1. A composition comprising material from the following herbs: Panax pseudo-ginseng Wall, Isatis Indigotica Fort, Ganoderma lucidum Karst, Dendranthema morifolium Tzvel, Glycyrrhiza glabra L., Scutellaria baicalensis Georgi, Rabdosia robescens and Serenoa repens.

5,665,394
MATRIX FOR SUSTAINED-RELEASE PREPARATION

Yasutaka Igari, Hyogo; Akira Saikawa; Kayoko Okamoto, both of Osaka; Shigeru Kamei, Hyogo; Masahisa Oka, Kanagawa, and Atsunori Sann, Saitama, all of Japan, assignors to Takeda Chemical Industries, Ltd., and Wako Pure-chemical Industries, Ltd., both of Osaka, Japan

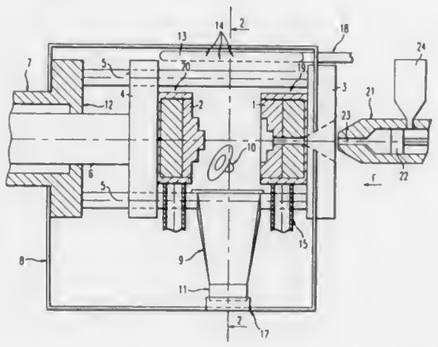
Division of Ser. No. 391,699, Feb. 21, 1995, Pat. No. 5,594,091. This application Sep. 30, 1996, Ser. No. 723,152
Claims priority, application Japan, Feb. 21, 1994, 6-022858; Feb. 21, 1994, 6-022880
Int. Cl.[6] A61K *9/50;9/48;* A61F *2/02;9/02*
U.S. Cl. 424—501 10 Claims

1. A matrix for sustained-release preparation comprising an ester formed at a terminal carboxyl group of a straight-chain polyester which essentially consists of an α-hydroxymonocarboxylic acid, the polyester having a weight-average molecular weight of about 1,500 to about 50,000.

5,665,395
DEVICE FOR INJECTION MOLDING OF SLURRIES

Claude Quichaud, Ville D'Avray; Pierre Guy Peytavin, Neuilly-sur-Seine, and Francois David, Ifs, all of France, assignors to Impac Technologies, Boulogne-Billancourt, France

Division of Ser. No. 241,586, May 12, 1994. This application Jun. 7, 1995, Ser. No. 487,389
Claims priority, application France, May 24, 1993, 93 06129
Int. Cl.[6] B29C *45/00*
U.S. Cl. 425—73 16 Claims

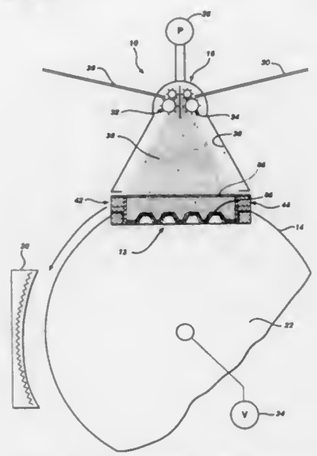


1. An apparatus for producing a green obtained by injection and solidification in a mold, brought to a temperature lower than 0° C., of a slurry containing at least one of a metallic and non-metallic powder in suspension in a liquid, which comprises:
- a device for injecting said slurry into said mold;
- a gas tight vessel within which the mold is housed, the vessel having an outlet aperture in a wall thereof for passage of the green therethrough, the outlet aperture being one of continuously and discontinuously opened;
- an opening and closing mechanism housed in the vessel, said mechanism ensuring opening and closing of the mold and ejection of the green from the mold; and
- a gas supply distributor communicating with the interior of the vessel and supplying one of a continuous and discontinuous current of dry gas to the interior of a vessel, said dry gas having a dew point which is not greater than the temperature of the mold.

5,665,396
APPARATUS FOR MAKING THREE-DIMENSIONAL FABRICS

John Thomas Ulman, Woodbridge, N.J., assignor to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 999,328, Dec. 31, 1992, Pat. No. 5,540,872. This application May 22, 1995, Ser. No. 446,262
Int. Cl.[6] D04H *01/72;* B27N *5/00*
U.S. Cl. 425—80.1 6 Claims

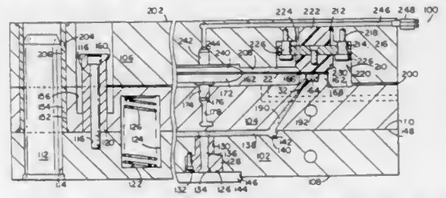


1. An apparatus for manufacturing a three-dimensional fabric material which may be used in absorbent garments or dressings, comprising:
- an apertured collector element having a predetermined three-dimensional shape;
- means for positioning fabric material which contains a thermobondable component adjacent to one side of said apertured collector element;
- means for developing a pressure differential between said one side of said apertured collector element and a second, opposite side to force said fabric material against said one side of said apertured collector element so that said fabric material conforms to said predetermined three-dimensional shape; and
- means for heating said so-conformed fabric material to melt the thermobondable component and then cooling to solidify the fabric material into said three-dimensional shape.

5,665,397
APPARATUS FOR MAKING VEHICLE PANEL ASSEMBLY

Daniel J. Fisher; Marc A. Lovell, both of Holland, and James L. Brodie, Hudsonville, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 27,078, Mar. 5, 1993, Pat. No. 5,544,458. This application Jul. 21, 1995, Ser. No. 505,483
Int. Cl.[6] B29C *45/14*
U.S. Cl. 425—116 17 Claims



1. A mold assembly for forming a polymeric structure on one surface of a sheet-like panel having opposite surfaces, comprising:

a pair of cooperating mold sections movable between open and closed positions, said mold sections adapted to receive, engage and hold the sheet-like panel therebetween when said mold sections are in said closed position, each mold section having a facing surface which faces the other mold section;

a mold cavity defined in a first portion of said facing surface of a first of said mold sections, said first portion of said facing surface of said first mold section having a support area adjacent said mold cavity, said support area adapted to support and seal against the one surface of the sheet-like panel such that said mold cavity opens to the one surface of the panel when the panel is held between said mold sections in said closed position;

a heat insulative pad on the second of said mold sections, said pad being urged against the surface of the sheet-like panel which is opposite the one surface at a position opposite said mold cavity to hold the one surface of the panel against said support area and overlying said mold cavity when said mold sections are in said closed position; and

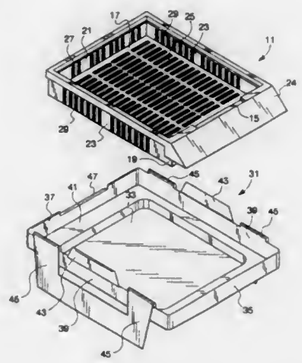
a resilient member located between said heat insulative pad and said second mold section, said resilient member urging said heat insulative pad against the opposite surface of the panel when said mold sections are in closed position,

whereby when a polymeric molding material is introduced in said mold cavity, a polymeric structure defined by said mold cavity will be formed on the one surface of the panel.

5,665,398
APPARATUS FOR EMBEDDING TISSUE SAMPLES

James B. McCormick, 6755 Longmeadow Dr., Lincolnwood, Ill. 60646

Filed Nov. 20, 1995, Ser. No. 560,653
Int. Cl.[6] B29C *39/10;39/26*
U.S. Cl. 425—117 6 Claims

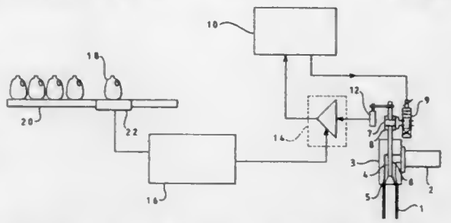


1. A system for providing an embedded tissue specimen subsequent to fluid treatment preparatory to histological examination comprising the combination of a rectangular cassette having four side walls and a bottom wall for use in the preparation of tissue specimens for histological examination and an embedding mold having a first cavity for receiving the treated specimen and a second cavity having four side walls for receiving said cassette, said cassette having a plurality of slots in each of said four side walls and a plurality of apertures in said bottom wall, said slots having a width sufficiently narrow to cause capillary pumping of molten wax when a predetermined amount of molten wax is dispersed into said embedding mold, said embedding mold having a depressed section in one of the side walls of said second cavity, said depressed section serving as a weir to provide an overflow of an excess of said molten wax to provide said predetermined amount of said molten wax.

5,665,399
INTERFACE UNITS FOR EXTRUSION BLOW MOULDING CONTROL SYSTEMS

George Robin Enderby, Orchard Way, Teddington, Gloucestershire GL20 8JA, England

Filed Oct. 26, 1995, Ser. No. 548,862
Claims priority, application United Kingdom, Nov. 3, 1994, 9422187
Int. Cl.[6] B29C *49/78*
U.S. Cl. 425—140 9 Claims

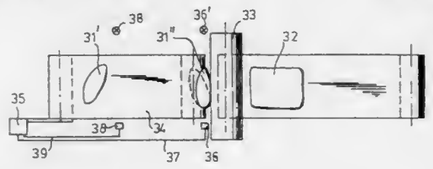


1. An interface unit for an extrusion blow moulding control system for controlling parison wall thickness in an extrusion blow moulding machine, the interface unit being adapted to receive a position feedback signal dependent on the actual width of an extrusion die gap defining parison wall thickness within the machine, as determined by transducer means from the position of a movable member delimiting the die gap, and to supply an output signal to a wall thickness controller for supplying a desired position signal to displacement means for controlling the position of the movable member to provide a desired width of the die gap in dependence on a required parison wall thickness profile set within the wall thickness controller, wherein the interface unit comprises signal processing means for receiving the position feedback signal from the transducer means and a weight feedback signal from weighing means indicative of weight variation of products outputted by the machine, and for applying a correction to the position feedback signal in dependence on the weight feedback signal to compensate for underweight or overweight products outputted by the machine so as to produce said output signal for supplying to the wall thickness controller.

5,665,400
APPARATUS FOR FORMING A FLAT PIECE OF DOUGH FROM A DOUGH BODY

Curinus Cornelis Vrouwenvelder, BA 's-Hertogenbosch, Netherlands, assignor to Johan Hendrik Bernard Kaak, Gaanderen, Netherlands

Filed Oct. 17, 1995, Ser. No. 544,318
Claims priority, application Netherlands, Oct. 26, 1994, 94 01776
Int. Cl.[6] B29C *47/34*
U.S. Cl. 425—145 11 Claims



1. Apparatus for forming a flat piece of dough from a discrete dough body, said apparatus comprising:
- a first dough conveying means for conveying the discrete dough body, said first dough conveying means having a downstream end;
- a roller for applying pressure to the discrete dough body for forming it into a flat piece of dough, said roller being disposed near the downstream end of the first dough conveying means,

a sensor for detecting the presence of a discrete dough body on the conveying means at a predetermined distance upstream of the roller;

a further dough conveying means for conveying the flat piece of dough, said further dough conveying means being positioned in series with and downstream of the first dough conveying means; and

driving means for driving the first dough conveying means to convey the dough body to said predetermined distance upstream of the roller at a conveying velocity and then to convey the discrete dough body from said predetermined distance upstream of the roller to the roller at an accelerated velocity which is greater than said conveying velocity whereby the discrete dough body is oriented by its contact with the roller at said accelerated velocity.

5,665,401

APPARATUS FOR PRODUCING AN OBJECT USING STEREOLITHOGRAPHY

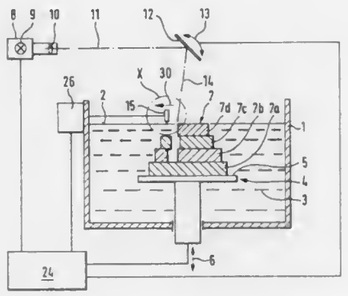
Jürgen Serbin, Gräfelfing; Peter Wolff, Brunnthal, and Gabriele Krug, München, all of Germany, assignors to EOS GmbH Electro Optical Systems, Planegg, Germany

Filed Apr. 24, 1996, Ser. No. 637,222

Claims priority, application Germany, Apr. 25, 1995, 195 15 165.8

Int. Cl.[6] B29C *35/08;67/00*

U.S. Cl. 425—174.4 **6 Claims**



1. Apparatus for producing an object using stereolithography, said apparatus comprising:

a container,

a bath of a liquid or powder material filling said container and having a free surface, said material being solidifiable under the action of electromagnetic radiation,

a support for positioning said object relative to said free surface of said bath so as to form a layer of said material adjacent to said free surface,

a device for solidifying said layer using electromagnetic radiation,

a wiper device extending along a first direction across said free surface,

drive means for moving said wiper device across said free surface along a second direction,

said wiper device having a leading first surface portion and a trailing second surface portion when moving along said second direction,

said first and second surface portions extending in said first direction, said first surface portion having a first surface tension value and said second surface portion having a second surface tension value different from said first surface tension value.

5,665,402

EXTRUSION MACHINE

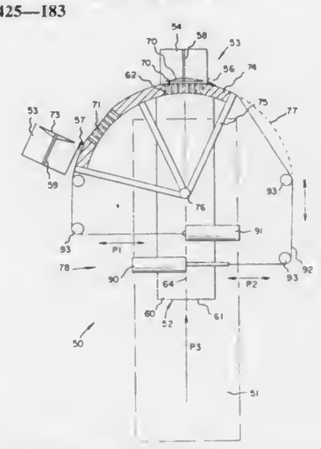
Robert Czarnetzki, Deggendorf, and Wolfram Lihotzky-Vaupel, Niederalteich, both of Germany, assignors to Emil Lihotzky Maschinenfabrik, Plattling, Germany

Filed Jun. 23, 1995, Ser. No. 494,058

Claims priority, application Germany, Jun. 24, 1994, 44 22 248.3

Int. Cl.[6] B29C *47/08*

U.S. Cl. 425—183 **12 Claims**



1. An extrusion machine comprising:

a machine frame;

an extrusion press mounted to said frame and having a material inlet opening, a material outlet opening, a die located in front of said material outlet opening, a cutting tool associated with said die, and a replacement element for a predetermined displaceable one of said die and said cutting tool;

a drive means for driving material through said extrusion press and out of said material outlet opening along a central outlet axis;

a changer mechanism located adjacent said material outlet opening of said extrusion press which interchanges said displaceable one and said replacement element in front of said material outlet opening without interruption of the operation of said extrusion press, said changer mechanism including

a support member which is circular arc-shaped and which has a respective receiving portion for each of said displaceable one and said replacement element whereby said displaceable one and said replacement element are alternately positioned by a movement of said support member between an operating position in front of said material outlet and a non-operating position, and when in the non-operating position said displaceable one and said replacement element are removable, and

a pivot pin to which said support member is mounted for pivoting movement about a pivot axis perpendicular to said central outlet axis; and

a moving means for moving said support member pivotally about said pivot pin to move said displaceable one and said replacement element alternately between the operating and non-operating positions simultaneously.

5,665,403

DOUBLE TAPERED DIE MOUNT

Oszkar Bittner, Muncy, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Dec. 29, 1994, Ser. No. 365,894

Int. Cl.[6] B29B *9/00*

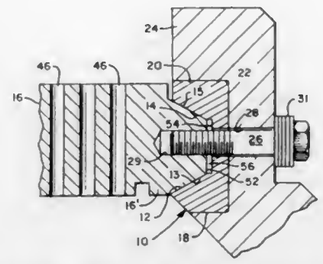
U.S. Cl. 425—186 **7 Claims**

4. A pelletizer comprising:

a frame;

a die holder rotatably mounted to said frame;

said holder defining an axis of rotation;



a curved channel shaped die mount on said holder, said mount having a center of curvature on said axis of rotation;

said mount having a plurality of inwardly slanting channel walls defining a die receiving channel;

an annular die having a plurality of tapered surfaces, said tapered surfaces in congruent contact with said channel walls; and

bolt means for holding said die, said die-mount and said die holder in contact.

5,665,404

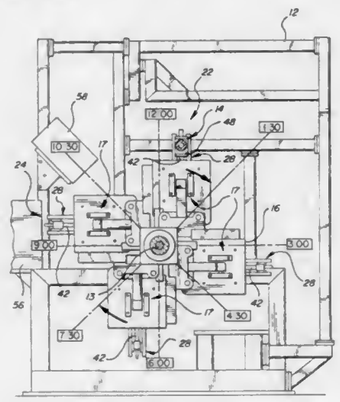
APPARATUS FOR BLOW-MOLDING HOLLOW ARTICLES

Lawrence H. Weber, Ypsilanti, and David M. Johnson, Saline, both of Mich., assignors to R & B Machine Tool Company, Saline, Mich.

Filed Dec. 5, 1995, Ser. No. 567,778

Int. Cl.[6] B29C *49/04*

U.S. Cl. 425—503 **5 Claims**



1. A rotary blow-molding apparatus for blow-molding hollow articles, said apparatus comprising:

a support frame;

a carrousel supported on said frame for rotation about a central axis;

at least two mold stations supported on said carrousel to rotate along a circular mold station path, each said mold station including at least one mold with at least one mold cavity adapted to hold an article during blow molding;

a parison-extrusion work station disposed adjacent said frame and said mold station path;

a parison extruder including an extrusion head located at said extrusion work station, said extruder adapted to extrude parison into each said mold through said extrusion head;

an article-release work station disposed adjacent said frame and spaced from said parison-extrusion work station around said mold station path;

an indexer operatively connected to said carrousel and adapted to pause said carrousel in a number of indexing positions, said indexing positions and work stations angularly spaced so that each said mold station pauses in angular alignment with each said work station allowing operations to be performed on each said mold station at each said work station;

said indexer further adapted to pause said carrousel in twice as many indexing positions as there are mold stations to allow at least one additional operation to be carried out on each mold station following said article-release work station and prior to said parison-extrusion work station.

5,665,405

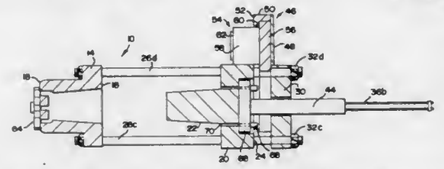
SELF-CONTAINED MOLDING APPARATUS AND METHOD FOR CLAMPING THE MOLD UNIT OF AN INJECTION MOLD APPARATUS

Siebolt Hettinga, 2123 NW. 111th St., Des Moines, Iowa 50325

Filed Feb. 21, 1995, Ser. No. 391,591

Int. Cl.[6] B29C *45/64*

U.S. Cl. 425—589 **34 Claims**



34. A plastic injection molding apparatus for molding a plastic article, comprising:

(a) a first mold section;

(b) a second mold section forming a mold cavity with said first mold section when moved into sealed engagement with said first mold section; and

(c) a pressure actuator slidable into a position proximate to said second mold section, said pressure actuator capable of supplying sufficient pressure to said second mold section to clamp said second mold section into sealed engagement with said first mold section to form said mold cavity.

5,665,406

POLYOL COATED CHEWING GUM HAVING IMPROVED SHELF LIFE AND METHOD OF MAKING

Michael A. Reed, Merrillville, Ind.; Lindell C. Richey, Lake Zurich, Ill.; Jeffrey S. Hook, Berwyn, Ill.; Robert J. Yatka, Orland Park, Ill.; Henry T. Tyrpin, Midlothian, Ill.; Kevin B. Broderick, Berwyn, Ill., and Marc A. Meyers, Naperville, Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

PCT No. PCT/US93/08730, § 371 Date Dec. 27, 1995, § 102(e) Date Dec. 27, 1995, PCT Pub. No. WO95/07622, PCT Pub. Date Mar. 23, 1995

Continuation-in-part of Ser. No. 857,577, Mar. 26, 1992, Pat. No. 5,270,061, and a continuation-in-part of Ser. No. 855,251, Mar. 23, 1992, Pat. No. 5,248,508. This PCT application Sep. 15, 1993, Ser. No. 578,608

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—5 **28 Claims**

1. A dual composition hard coated chewing gum, comprising:

from about 35 to about 90 weight percent of a gum center, including a bulk portion, a chewing gum base and one or more flavoring agents; and

from about 10 to about 65 weight percent of an outer coating containing from about 50 to about 100%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol, and which comprises at least two sequential layers, each containing about 50 to about 100%, by weight, of at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers constituting an inner component of the outer coating and an outer component of the outer coating;

the layers of the inner component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol;

the layers of the outer component of the outer coating comprising at least one polyol selected from the group consisting of lactitol, maltitol, hydrogenated isomaltulose and erythritol; and wherein

at least one polyol contained in the outer component of the outer coating is not present in the inner component of the outer coating.

5,665,407

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED SEASONING LIQUORS

Sadao Nagata; Shigeru Endo, both of Ohimachi, and Keiichi Kishi, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,828

Claims priority, application Japan, Oct. 28, 1994, 6-264754

Int. Cl.[6] A23L *1/105;1/20*

U.S. Cl. 426—18 **8 Claims**

1. A process for the production of a light-colored seasoning liquor, which comprises the steps of:

forming a koji-making material comprising a blend material of (A) 90-70% by weight of a material consisting of 25–100% by weight of gluten and 75-0% by weight of wheat and (B) 10–30% by weight of soybeans, all percentages by weight being on a dry basis;

adding a seed koji to the koji-making material to obtain a koji product;

adding to the koji product an aqueous solution of common salt to form a salt-containing koji product;

fermenting the salt-containing koji product; and then

squeezing the fermented koji product to obtain a light-colored seasoning liquor.

5,665,408

PACKAGING FOR FOODSTUFFS AND WRAPPED FOODSTUFF USING SUCH PACKAGING

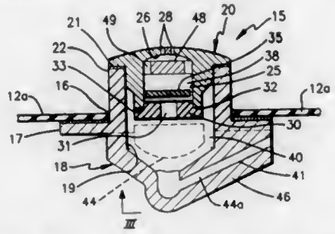
James Coupe, Verriere le Buisson, and Michel Flament, Marcoussis, both of France, assignors to Societe Civile BK, Paris, France

Filed Apr. 19, 1995, Ser. No. 424,632

Claims priority, application France, Apr. 20, 1994, 94 04719

Int. Cl.[6] B65D *85/00*

U.S. Cl. 426—113 **8 Claims**



1. Package for foodstuffs, adapted to receive food to be cooked at least in part in situ, said package comprising: an automatic closure device fixed in sealed manner through one wall (**12***a*) of the package, said automatic closure device comprising a first chamber (**38**) communicating with the outside and enclosing a valve (**35**), a second chamber (**40**) communicating with said first chamber through a passage (**31**) adapted to be closed by said valve, a channel (**41**) of small cross section extending between said second chamber and the interior of the package, and a block of thermofusible material (**44**) disposed in said second chamber, whereby said block of thermofusible material will soften during cooking, flow into said channel and upon cooling solidify therein to provide a hermetic seal.

5,665,409

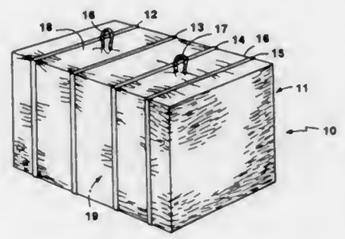
APPARATUS FOR CARRYING HAY BALES

Bryan Lance Drewry, 625 Coyne Rd., Imperial, Calif. 92251

Continuation of Ser. No. 349,980, Dec. 6, 1994, abandoned. This application Jan. 3, 1997, Ser. No. 774,716

Int. Cl.[6] A23K *1/00;* **B66C** *1/12*

U.S. Cl. 426—132 **26 Claims**



1. A hay bale that can be carried, comprising:

a. a high-density compressed hay bale that is difficult to penetrate with a manual hay bale carrying apparatus, the high-density compressed hay bale having an interior region and a first exterior surface; and

b. a first essentially permanent carrying device, secured within a substantially solid portion of the interior region of the high-density compressed hay bale and extending from the first exterior surface of the high-density compressed hay bale, for carrying said high-density compressed hay bale, said first essentially permanent carrying device remaining secured within the interior region of the high-density compressed hay bale when a force is applied to the first essentially permanent carrying device at essentially any angle relative to the first exterior surface, the first essentially permanent carrying device including:

(1) a first handle extending from said first exterior surface of said high-density compressed hay bale,

(2) a first coupler disposed within said interior region of said high-density compressed hay bale, said first coupler having a handle end and a stopper end, said first handle being located at said handle end of said first coupler, and

(3) a first stopper, located at said stopper end of said first coupler, for securing said first coupler within said interior region of said high-density compressed hay bale.

5,665,410

METHOD FOR EXTENDING A DOUGH RISE PERIOD

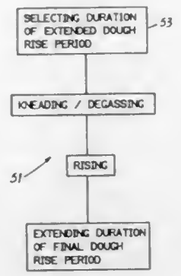
Joanne M. Turchany, Kewaskum, and Robert V. Myszka, Germantown, both of Wis., assignors to The West Bend Company, West Bend, Wis.

Filed Dec. 28, 1995, Ser. No. 580,352

Int. Cl.[6] A21D *8/00*

U.S. Cl. 426—231 **15 Claims**

1. A method for extending the duration of a final dough rise period in an automatic breadmaking machine for processing dough using a final dough rise period, the method comprising the steps of:



selecting a rise-extending time from a group of at least two preprogrammed times for extending the duration of the final dough rise period; and

initiating a breadmaking cycle.

5,665,411

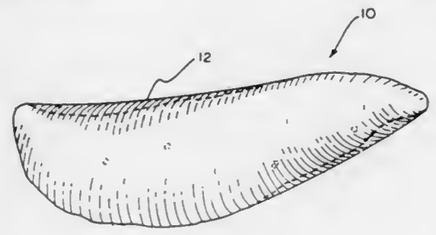
METHOD OF PACKAGING AND MICROWAVING SWEET POTATO

Robert P. Bassetti, 2778 NC 50 South, Benson, N.C. 27504

Filed Mar. 20, 1995, Ser. No. 407,119

Int. Cl.[6] B65B *25/22;* **A23L** *3/00*

U.S. Cl. 426—234 **3 Claims**



1. A method of packaging, protecting, preserving, and microwaving a sweet potato wherein only one package serves to protect and preserve the sweet potato as well as to containerize the same for microwaving, comprising the steps of: after harvesting and cleaning the sweet potato, but prior to transporting it to market, wrapping the sweet potato individually within an air permeable, heat-shrinkable plastic film that is sufficiently air permeable to allow an exchange of oxygen and carbon dioxide through the film to enable the wrapped sweet potato to continue to respire while at the same time preventing excessive moisture loss from the wrapped sweet potato to prevent withering and drying of the sweet potato; said film being capable of allowing said sweet potato to be cooked in said film in a microwave oven; then heating and shrinking the plastic film around the entire sweet potato such that the plastic film is tightly bound around the entire sweet potato; transporting the shrink-wrapped sweet potato from the wrapping site to market with the sweet potato remaining shrink-wrapped with the same plastic film during transport and at market such that the sweet potato is protected and respiration is accomodated by the same plastic film; and cooking the packaged sweet potato within the same individual heat-shrunk plastic film by placing the shrink-wrapped sweet potato in a microwave oven and cooking the same while being so wrapped.

5,665,412

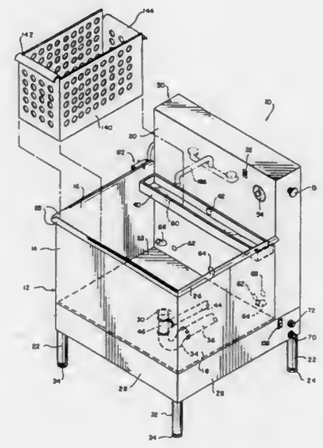
METHOD FOR THAWING FROZEN FOOD

Robert Fuller, 1211 Evergreen Ave., South, Clearwater, Fla. 33516, and David Pasek, 3338 Hunt Club Dr., Clearwater, Fla. 33519

Division of Ser. No. 730,579, Jul. 15, 1991, Pat. No. 5,146,843, which is a continuation of Ser. No. 193,194, May 9, 1988, abandoned, which is a continuation of Ser. No. 771,727, Sep. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 646,087, Aug. 31, 1984, abandoned, and Ser. No. 669,791, Nov. 9, 1984, abandoned. This application Jul. 9, 1992, Ser. No. 911,032

Int. Cl.[6] A23L *1/00*

U.S. Cl. 426—524 **6 Claims**



1. A method of thawing frozen foods, comprising the steps of:

(a) immersing frozen food in a container;

(b) filling said container with a fluid thawing medium to a predetermined level;

(c) controllably supplying said thawing medium at a first predetermined flow rate to said container, such that fluid thawing medium in said container rises above said predetermined level;

(d) removing fluid thawing medium from said container to discard it;

(e) removing fluid thawing medium from said container at a first location and recirculating it back into said container, at a second and higher predetermined flow rate, at a plurality of second locations located adjacent to the bottom of said container;

(f) agitating fluid thawing medium in said container; and

(g) maintaining a substantially even fluid thawing medium temperature throughout said container, wherein said fluid thawing medium is water.

5,665,413

FOOD COMPOSITION DERIVED FROM FRUIT OF GENUS ACTINIDIA

Michael Joseph Paul Rossiter, 18 Balloch Street, Hamilton, New Zealand, 2001

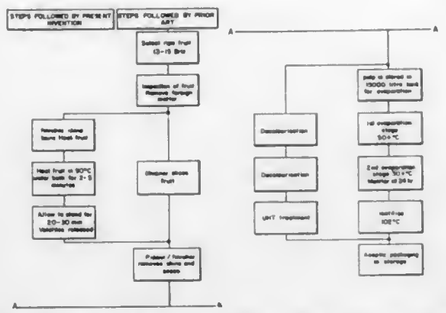
Filed Feb. 16, 1995, Ser. No. 389,831

Claims priority, application New Zealand, Aug. 17, 1992, 243986

Int. Cl.[6] A23L *1/212*

U.S. Cl. 426—565 **40 Claims**

1. A puree derived from the fruit of the genus Actinidia having substantially little degradation of the fruit's naturally occurring pectins, the puree being further characterised in that its viscosity



will increase upon the application of a shear force, or shear force and aeration.

5,665,414

CELLULOSIC MATERIALS FOR INCORPORATION INTO FOOD PRODUCTS AND METHODS OF MAKING SAME

Bob E. Sherwood, Amenia, N.Y., and Juuko Johannes Virtanen, Marion, Iowa, assignors to Edward Mendell Co., Inc., Patterson, N.Y.

Filed Apr. 6, 1995, Ser. No. 419,633
Int. Cl.[6] A23C *19/09;* **A23L** *1/0534*
U.S. Cl. 426—582 **18 Claims**

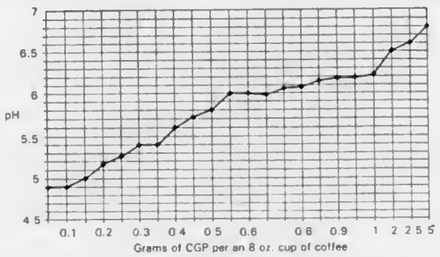
1. A substantially non-agglomerating cheese product in shredded, grated or particulated form, comprising:
a) an edible cheese material which is shredded, grated or particulate; and
b) a cellulose derived from a pulp selected from the group consisting of wood pulps, cotton pulps and eucalyptus pulps having an ISO brightness from about 80 to about 90, said cellulose being present in an amount which is sufficient to substantially prevent agglomeration of said cheese material.

5,665,415

COMPOSITION AND METHOD FOR INCREASING THE PH OF ACID FOODS

Alan E. Kligerman, Linwood, and Sarah Hartzell, Mays Landing, both of N.J., assignors to Akpharma Inc., Pleasantville, N.J.

Filed Jul. 26, 1995, Ser. No. 507,095
Int. Cl.[6] A23F *3/20;5/22;* **A23L** *1/304*
U.S. Cl. 426—590 **20 Claims**



1. A method of increasing the pH of acidic foods and acidic beverages comprising combining calcium glycerophosphate with an acidic food or an acidic beverage in an amount effective to increase the pH of the acidic food or acidic beverage to a level such that, when a consumer ingests the combination of calcium glycerophosphate and acidic food or acidic beverage, the consumer will experience less esophaged and gastrointestinal distress than if the acidic food or acidic beverage had been ingested without the calcium glycerophosphate.

5,665,416

SIMULATED EGG PATTY

Michelle Mrozik Manderfeld; John D. Efstathiou, both of Plymouth, and Arlene H. Voecks, Monticello, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Division of Ser. No. 381,779, Feb. 1, 1995, Pat. No. 5,620,735.
This application Aug. 25, 1995, Ser. No. 519,673
Int. Cl.[6] A23L *1/32*
U.S. Cl. 426—614 **29 Claims**

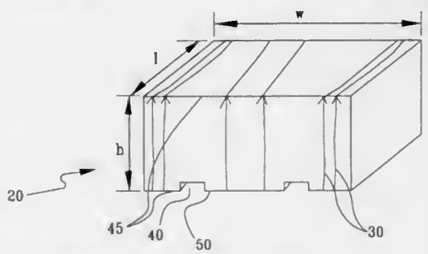
1. A method for producing a simulated egg patty, said method comprising:
(1) forming a predetermined amount of egg yolk into a predetermined shape;
(2) freezing the shaped egg yolk at a temperature less than about 20° F. for a time sufficient to provide a frozen shaped egg yolk which is gel-like and self supporting and retains its shape upon thawing;
(3) combining the frozen shaped egg yolk with a predetermined amount of egg white; and
(4) cooking the combined egg yolk and egg white to obtain a simulated egg patty;
wherein the cooked egg yolk has similar mouthfeel and texture to cooked fresh egg yolk such that the simulated egg patty mimics a fried egg.

5,665,417

HIGH DENSITY ANIMAL FEED BALES

Galan M. Rogers, Burley, and Kenneth L. Schmidt, Rupert, both of Id., assignors to The Amalgamated Sugar Company, LLC., Ogden, Utah

Filed Dec. 28, 1995, Ser. No. 580,309
Int. Cl.[6] A23K *1/00*
U.S. Cl. 426—636 **19 Claims**



1. A high density animal feed bale including:
fibrous pulp; and
an effective amount of additive, said pulp and additive being compressed in a dried state to a density of at least about 40 lb/ft^3.

5,665,418

FIBROUS KONJAK AND METHOD OF MANUFACTURING THE SAME

Masamitsu Sono, Yokohama, Japan, assignor to Yugen Kaisha Sono Kohsakusho, Japan

Filed Jul. 31, 1995, Ser. No. 509,350
Claims priority, application Japan, Jul. 29, 1994, 6-196316
Int. Cl.[6] A23L *1/05*
U.S. Cl. 426—640 **4 Claims**

1. A method of manufacturing a fibrous konjak containing 5 to 10% moisture, characterized in that it comprises the steps of kneading a mixture of konjak roots and lime to produce a preparation in the form of flat pieces, solidifying the preparation, pressure-crushing the preparation, heating the crushed preparation at a temperature between 80° and 100° C. using steam or boiling water for 20 to 30 minutes to remove any smell of konjak, washing the crushed preparation, removing moisture from the crushed preparation to turn it into a granular state and drying it into a fibrous konjak product.

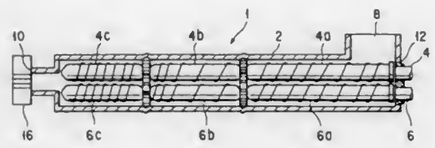


5,665,419

METHOD OF PRODUCING MEAT-LIKE PROTEIN FOODS

Taiji Teraguchi, Chigasaki; Koji Tsuchikawa, Yokohama, and Yuzo Ikuta, Yokosuka, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Japan

Division of Ser. No. 264,154, Jun. 22, 1994. This application Jun. 7, 1995, Ser. No. 475,327
Claims priority, application Japan, Jun. 28, 1993, 5-157010
Int. Cl.[6] A23J *3/16;3/22*
U.S. Cl. 426—656 **4 Claims**



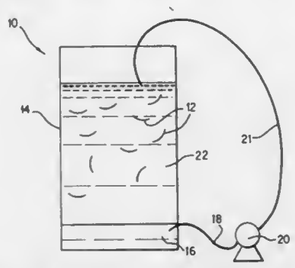
1. A food produced by a method of producing a meat-like protein food, the method comprising the steps of:
mixing water and a material containing soy protein isolate, defatted soybean meal, wheat gluten, corn starch, sugar ester, pork extract, amino acid seasoning liquid, salt, and edible oil, in an extruder having a die provided at an extrusion port thereof while heating and pressurizing the water and the material, thus obtaining a mixture, said die including a porous plate for providing an orientation to the mixture obtained in the mixing step, and a cooling mechanism for cooling the mixture provided with the orientation after passing the porous plate when the mixture is extruded from said extruder;
extruding said mixture obtained in the mixing step from said extruder via said die, providing an orientation to the mixture, and cooling the mixture, thus obtaining a sheet-like protein material;
preparing a plurality of said sheet-like protein materials and laminating the sheet-like protein materials with their directions of orientation made to coincide with each other;
compressing-molding the laminated protein materials obtained in said laminating step while heating the same, thus obtaining a protein food; and
cooking the protein food;
whereby said food comprises protein fibers having an orientation in the direction of extrusion.

5,665,420

IMPULSE-JET METHOD AND APPARATUS FOR UNIFORMLY DISPERSING ARTICLES IN A TREATMENT SOLUTION

Robert A. Janssen, Alpharetta; Barbara L. Heyl, Atlanta; Roger J. Hoffman, Cumming, and Thomas E. Shank, Sugar Hill, all of Ga., assignors to Ciba Vision Corporation, Duluth, Ga.

Filed Dec. 5, 1994, Ser. No. 349,716
Int. Cl.[6] B05D *5/06*
U.S. Cl. 427—2.12 **18 Claims**



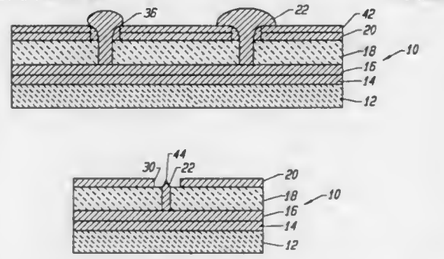
1. A method of uniformly treating an article in a treatment solution within a container, comprising the steps of:
(a) immersing an article in a treatment solution, wherein the article has a density differing from the treatment solution; and
(b) applying a force on the article for a period of time by applying a treatment solution flow opposite the direction of the stagnant force on the article;
said applied force being sufficient to prevent said article from contacting said container for a time sufficient to allow the lenses to be treated non-uniformly such that the aesthetic or functional utility of the lens is substantially impaired, and said treatment solution flow causing mixing of said treatment solution, thereby enhancing uniformity of article treatment by reducing localized concentration gradients due to container proximity or static conditions.

5,665,421

METHOD FOR CREATING GATED FILAMENT STRUCTURES FOR FIELD EMISSION DISPLAYS

David L. Bergeron, San Jose; John M. Macaulay; Roger W. Barton, both of Palo Alto, and Jeffrey D. Morse, Martinez, all of Calif., assignors to Candescent Technologies, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 383,408, Jan. 31, 1995, Pat. No. 5,578,185, which is a continuation-in-part of Ser. No. 260,150, Jun. 29, 1994, Pat. No. 5,541,957, which is a continuation-in-part of Ser. No. 158,102, Nov. 24, 1993, Pat. No. 5,559,389, which is a continuation-in-part of Ser. No. 118,490, Sep. 8, 1993, Pat. No. 5,462,467. This application Oct. 8, 1996, Ser. No. 725,941
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—64 **2 Claims**



1. A method of creating gated filament structures for a field emission display, comprising the steps of:

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providing a multi-layer structure including a substrate, an insulating layer, a metal gate layer positioned on a top surface of the insulating layer and a gate encapsulation layer positioned on a top surface of the metal gate layer;

providing a plurality of gates defining a plurality of apertures on the top of the insulating layer, with corresponding apertures in the encapsulating layer;

forming a plurality of spacers in the apertures at their edges on the top surface of the insulating layer;

using the spacers as masks for etching the insulating layer and forming a plurality of pores in the insulating layer; and

electroless plating the pores with a filament material and create a plurality of filaments, each having a substantially cylindrical body section.

5,665,422

PROCESS FOR FORMATION OF AN ULTRA FINE PARTICLE FILM

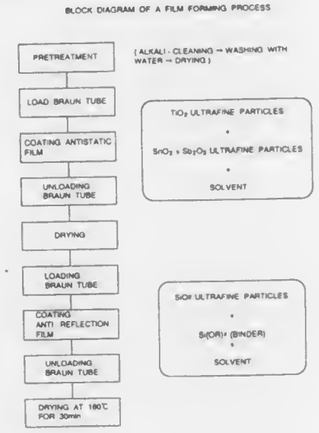
Yoshishige Endo, Tsuchiura; Masahiko Ono, Ibaraki-ken; Hiromitsu Kawamura, and Katsumi Kohara, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 62,747, May 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 855,055, Mar. 19, 1992, abandoned. This application Mar. 30, 1995, Ser. No. 413,447

Claims priority, application Japan, Mar. 19, 1991, 3-054371; May 18, 1992, 4-124502; Mar. 31, 1994, 6-062274

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—71 **12 Claims**



1. A process for forming an ultrafine particle film in which an ultrafine particle film is formed on a substrate by ultrafine particles and a binder filled in gaps between the ultrafine particles, said process comprising:

forming a first layer by application of a coating solution of ultrafine particles with a refractive index higher than that of a substrate, and

forming a second layer by application of a mixed coating solution of ultrafine particles with a refractive index lower than that of the substrate and a binder.

5,665,423

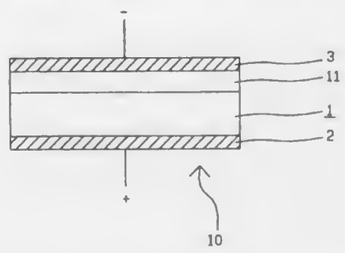
METHOD FOR MANUFACTURING A PHOTODETECTOR FOR SENSING LIGHT HAVING A WAVELENGTH WITHIN A WIDE RANGE

Ming-Kwei Lee, Kaouhsiung, Taiwan, assignor to National Science Council, Taipei, Taiwan

Filed Feb. 10, 1995, Ser. No. 386,960

Int. Cl.[6] B05D *5/12;* **H01L** *31/18*

U.S. Cl. 438—88 **22 Claims**



1. A method for manufacturing a photodetector for sensing light having a wavelength comprising the steps of:

(a) preparing a substrate having a back surface;

(b) applying a first conducting layer on said back surface;

(c) annealing said substrate applied with said first conducting layer in an inert gas atmosphere;

(d) applying an anti-corrosion layer on said first conducting layer;

(e) immersing said anti-corrosion layer-applied substrate in a hydrofluoric acid aqueous solution with a concentration over 5%;

(f) eroding said substrate under a current density of over 5 milliampere per square centimeter (mA/cm^2) to obtain a porous layer thereon; and

(g) applying a second conducting layer to an upper surface of said porous layer to obtain said photodetector.

5,665,424

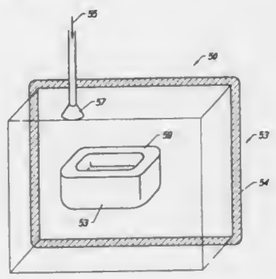
METHOD FOR MAKING GLASS ARTICLES HAVING A PERMANENT PROTECTIVE COATING

Dan Sherman, 540 Sand Dollar Dr., LaSelva Beach, Calif. 95076

Continuation-in-part of Ser. No. 212,168, Mar. 11, 1994. This application Oct. 16, 1995, Ser. No. 543,503

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—109 **28 Claims**



1. A method of applying a protective coating onto a surface to be coated, said method comprising:

providing a surface to be coated, said surface to be coated is selected from the group consisting of a ceramic, a float glass, an artistic glass, a sandblasted glass, and a Pyrex glass product, said surface to be coated having adjacent thereto a surrounding surface;

enclosing said surface to be coated in a temporary chamber, said temporary chamber being coupled to said surrounding surface to substantially prevent contaminants from entering into said temporary chamber;

introducing a silane and a carbon source into said temporary chamber at a pressure of about 700 Torr and less, and at a temperature ranging from 1° to about 35° C.; and

reacting said silane and said carbon source on said surface to be coated to form said protective coating thereon.

5,665,425

WOOD MEAL AND METHOD OF MANUFACTURING THE SAME

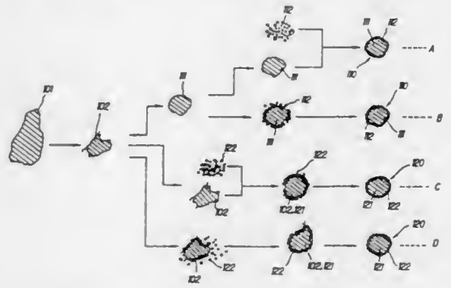
Sadao Nishibori, and Yuzo Itakura, both of Tokyo, Japan, assignors to Misawa Homes Co. Ltd., Tokyo, Japan

Division of Ser. No. 300,864, Sep. 6, 1994, abandoned, which is a continuation of Ser. No. 885,698, May 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,732

Claims priority, application Japan, May 23, 1991, 3-147920; Jul. 26, 1991, 3-208929; Oct. 28, 1991, 3-307132

Int. Cl.[6] B05B *7/06;1/40*

U.S. Cl. 427—180 **20 Claims**



1. A method for making wood meal comprising the steps of:

a) providing raw material wood;

b) crushing the raw material wood into treated wood meal;

c) pulverizing the treated wood meal into wood meal granules by the frictional forces of a plurality of balls in a ball mill such that the wood meal granules have substantially rounded shape without rugged edges and without elongated protruding portions, thereby increasing the bulking density of the treated wood meal;

d) providing a plurality of particles that are smaller and harder than the wood meal granules; and

e) fixing the plurality of particles to the surfaces of the wood meal granules in the ball mill such that the plurality of particles are forced into the surfaces of the wood meal granules.

5,665,426

SOFT TREATED TISSUE

Duane Gerard Krzysik, Appleton; Lee Patrick Garvey, Little Chute; Cynthia Watts Henderson, Neenah, and Michael Chauncey Tuck, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Nennah, Wis.

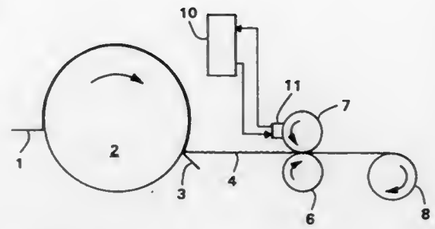
Filed Feb. 6, 1995, Ser. No. 384,170

Int. Cl.[6] B05D *1/00*

U.S. Cl. 427—211 **15 Claims**

1. A method of making a soft tissue product comprising:

a) heating a composition comprising an oil and a wax to a temperature above the melting point of the composition, causing said composition to melt, said composition having a melting point of from about 30° C. to about 70° C.;



b) uniformly applying the melted composition to one or both surfaces of a tissue web in spaced-apart deposits; and

c) resolidifying the deposits of the melted composition.

5,665,427

PROCESS FOR STABILIZING PARTICULATE ALKALI METAL PERCARBONATE

Graham Robert Horne, Warrington, and Alun Pryce James, Liverpool, both of United Kingdom, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB94/02776, § 371 Date May 30, 1996, § 102(e) Date May 30, 1996, PCT Pub. No. WO95/18065, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 21, 1994, Ser. No. 647,938

Claims priority, application United Kingdom, Dec. 29, 1993, 9326522

Int. Cl.[6] B05D *7/00;* **C01B** *31/24*

U.S. Cl. 427—212 **42 Claims**

1. A process for stabilizing a particulate alkali metal percarbonate by coating it with an effective amount of boric acid or borate containing coating material, wherein the coating material comprises a complex of boric acid or a borate with an organic diol, a polyol, a hydroxycarboxylic acid, or a water soluble salt of a hydroxycarboxylic acid.

5,665,428

PREPARATION OF PEPTIDE CONTAINING BIODEGRADABLE MICROSPHERES BY MELT PROCESS

Younsik Cha; Young Kweon Choi, both of Salt Lake City, Utah, and Chaul Min Pai, Taejon, Rep. of Korea, assignors to Macromed, Inc., Salt Lake City, Utah

Filed Oct. 25, 1995, Ser. No. 547,962

Int. Cl.[6] B01J *13/02;* **B05D** *7/00*

U.S. Cl. 427—213.3 **24 Claims**

1. A process for preparing microspheres of an admixture of a biodegradable low melting point block copolymer and a water soluble and heat resistant peptide/protein drug, which comprises:

(a) preparing a molten mixture of an effective amount of peptide/protein drug microparticles and a biodegradable block copolymer at a temperature above the melting temperature of said block copolymer;

(b) dispersing said molten mixture into a continuous fluid medium in such a manner as to form microdroplets of said molten mixture in said fluid medium;

(c) lowering the temperature of said microdroplets in a cooling environment below the melting point of said block copolymer to form solid microspheres; and

(d) separating said microspheres from said continuous fluid medium.

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5,665,429

ENCAPSULATED MAGNETIC PARTICLES PIGMENTS AND CARBON BLACK, COMPOSITIONS AND METHODS RELATED THERETO

Hamdy A. Elwakil, Hoffman Estates, Ill., assignor to Videojet Systems International, Inc., Wood Dale, Ill.

Division of Ser. No. 334,760, Nov. 4, 1994, which is a division of Ser. No. 909,977, Jul. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 879,936, May 8, 1992, abandoned. This application May 23, 1995, Ser. No. 447,786
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—218 21 Claims

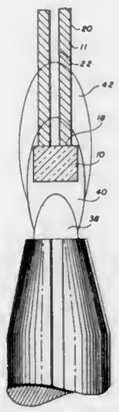
1. A method for encapsulating particles selected from the group consisting of magnetic particles and pigments having a particle diameter from about 0.1 to about 100 microns, comprising forming a melt by heating an ionomer and a hydrocarbon oil, dispersing said particles in said melt, and allowing said dispersion to cool, said melt being free of volatile organic solvents and said melt comprising from about 10 to about 90 percent by weight of the encapsulated product.

5,665,430

CHEMICAL VAPOR DEPOSITION METHOD FOR DEPOSITING DIAMOND USING A HIGH TEMPERATURE VACUUM SUBSTRATE MOUNT

Kathleen Doverspike, Alexandria, and James E. Butler, Arlington, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 953,908
Int. Cl.[6] C23C *16/26*
U.S. Cl. 427—249 5 Claims



1. A method for the chemical vapor deposition of diamond comprising the steps of:

(a) applying a thermally conductive paint between a substrate seed crystal, said substrate seed crystal having a surface, and an end surface of a vacuum line, the vacuum line protruding through a mount;

(b) holding within a chemical vapor deposition flame said substrate seed crystal upon said mount by applying a vacuum to said substrate seed crystal via said vacuum line protruding through said mount, wherein a portion of an outer surface of said vacuum line in contact with said mount is coated with a thermally conductive lubricant;

(c) flowing a heat exchanging fluid through said mount to maintain said surface of said substrate seed crystal at a temperature suitable for chemical vapor deposition of diamond; and

(d) directing a deposition species for chemical vapor deposition to deposit diamond onto said surface of said substrate seed crystal.

5,665,431

TITANIUM CARBONITRIDE COATED STRATIFIED SUBSTRATE AND CUTTING INSERTS MADE FROM THE SAME

Krishnan Narasimhan, Birmingham, Mich., assignor to Valenite Inc., Madison Heights, Mich.

Filed Sep. 3, 1991, Ser. No. 753,456
Int. Cl.[6] C23C *16/36*
U.S. Cl. 427—255 10 Claims



1. A process for forming a titanium carbonitride coated stratified cobalt enriched cemented carbide cutting insert, said cemented carbide comprising about 70 to 97 percent by weight tungsten carbide and a matrix binder comprising cobalt with a cobalt enriched stratified surface, wherein said process comprises chemically vapor depositing a layer of titanium carbonitride on said cemented carbide substrate by heating gaseous reactants comprising titanium chloride, methane, hydrogen, and nitrogen with an optimum carbon/nitrogen ratio, under suitable conditions to form a titanium carbonitride coated insert having an eta phase in the cemented carbide substrate adjacent said titanium carbonitride coating, said eta phase comprising chemical compounds consisting essentially of cobalt, tungsten and carbon, and contacting said titanium carbonitride surface with a carburizing gas for a sufficient time and at a sufficient temperature to convert substantially all of said eta phase to elemental cobalt and tungsten carbide.

5,665,432

PROCESS FOR TREATING TIMBER

Yosei Kuwazuru; Shinji Yoshida, both of Osaka-fu, and Akira Igarashi, Hyogo-ken, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 412,151, Mar. 28, 1995, abandoned. This application Aug. 21, 1996, Ser. No. 701,054
Claims priority, application Japan, Mar. 29, 1994, 6-059107; Dec. 28, 1994, 6-326548
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—325 12 Claims

1. A process for treating timber, consisting essentially of:

providing a freshly sawn timber having a high moisture content above a fiber saturation point of the timber,

immersing the high moisture content timber which has not been subjected to a drying treatment in a first liquid consisting essentially of a first organic solvent compatible with water, and then subsequently without drying,

immersing the timber in a second liquid consisting essentially of a wood preservative and a second organic solvent which has a boiling point of not less than 150° C., the second liquid being compatible with the first organic solvent.

5,665,433

METHOD FOR IMPROVING PHYSICAL CHARACTERISTICS OF CURED CONTAINER COATINGS SUBJECTED TO STEAM PROCESSING

Youssef Moussa, Cincinnati, and Kareem K. Kaleem, Loveland, both of Ohio, assignors to BASF Corporation, Southfield, Mich.

Filed Dec. 20, 1995, Ser. No. 575,197
Int. Cl.[6] B05D *3/02;3/04*
U.S. Cl. 427—377 15 Claims

1. A method for obtaining cured container coatings resistant to degradation caused by steam processing, comprising

a) applying to a container, a coating composition comprising a first component which is a primary carbamate functional compound and a second component comprising a compound having a plurality of functional groups that are reactive with said carbamate group(s) on the carbamate functional compound,

b) baking said coating composition to form a cured film on the container,

c) filling the container having a cured film thereon, and

d) subjecting the filled container to steam processing at temperatures between 80° C. and 130° C. at pressures between 20 and 60 psi, for times ranging from 15 to 90 minutes.

5,665,434

PROCESSES FOR COATING MOLDED PLASTIC SUBSTRATES WITH AQUEOUS COATING COMPOSITIONS

Manfred Mass; Herrmann Kerber, and Helga Stegen, all of Wuppertal, Germany, assignors to Herberts Gesellschaft mit Beschrankter Haftung, Wuppertal, Germany

Continuation of Ser. No. 671,823, Jun. 14, 1996, abandoned, which is a continuation of Ser. No. 361,507, Dec. 22, 1994, abandoned. This application Jan. 17, 1997, Ser. No. 785,697
Claims priority, application Germany, Dec. 23, 1993, 43 44 028.2
Int. Cl.[6] B32B *25/12*
U.S. Cl. 427—393.5 7 Claims

1. A method of coating plastic components including the steps of:

(i) forming a molded plastic substrate;

(ii) applying an aqueous coating composition to said substrate;

(iii) such aqueous coating composition being based on polyols with ammonium groups and polyisocyanates, which coating composition may contain pigments and/or extenders, customary lacquer additives and one or more organic solvents, characterized in that it contains:

A) as binder at least one (meth)acrylic copolymer with a hydroxyl value of 20 to 150 mg KOH/g and with an amine value of 10 to 150 mg KOH/g, both values being related to solid resin, wherein 2 to 50 wt. % of the solid binder resin may be replaced with one or more other binders, wherein the (meth)acrylic copolymer is neutralized with an acid containing at least one isocyanate-reactive group; and

B) as crosslinking agent at least one polyisocyanate, which may be blocked,

wherein components A) and B) are present in quantities such that the ratio of the sum of isocyanate-reactive groups in the binder component A) to the blocked and unblocked isocyanates in component B) is 1:0.5 to 1:3.

5,665,435

METHOD FOR FLUORINATION OF DIAMOND SURFACES

Vincent S. Smentkowski, Pittsburgh, and John T. Yates, Jr., Allison Park, both of Pa., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Filed Aug. 31, 1995, Ser. No. 521,894
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—551 8 Claims

1. A method for the fluorination of a diamond surface comprising:

depositing a layer of perfluorinated alkyl iodides having the formula $C_nF_{2n+1}I$ on said diamond surface wherein n is a positive integer from 1 to 13;

producing perfluorinated alkyl free radicals by photodecomposing C—I bonds of said perfluorinated alkyl iodides on said diamond surface;

forming a perfluorinated alkyl layer by anchoring said photochemically induced perfluorinated alkyl free radicals to said diamond surface; and

decomposing said perfluorinated alkyl layer on said diamond surface to produce chemisorbed fluorine on said diamond surface.

5,665,436

METHOD OF TREATING GLASSES OF PLASTICS MATERIAL

Salvatore Chitarra, Antony, and Daniel Teva, Gagny, both of France, assignors to Valeo Vision, Bobigny Cedex, France

Filed Oct. 11, 1994, Ser. No. 307,509
Claims priority, application France, Sep. 17, 1993, 93 11105
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—558 5 Claims

1. A method for treating glasses of transparent plastics material, comprising the steps of subjecting the surface of each glass to ultraviolet radiation emitted by electrodeless lamps, subsequently depositing a protective coating thereon, further including the steps of placing the glasses on a conveyor belt, moving the belt and glasses placed thereon through a tunnel, via: an entry screen; the interior of the tunnel; and an exit screen, the tunnel having disposed therein the battery of electrodeless lamps, subjecting the battery of electrodeless lamps to the action of microwaves generated by a magnetron outside of the tunnel, the lamps emitting ultraviolet radiation in response thereto.

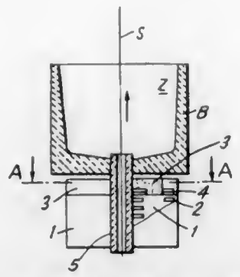
5,665,437

PROCESS AND DEVICE FOR COATING THE SURFACE OF STRIP MATERIAL

Klaus Frommann, Meerbusch; Walter Ottersbach; Werner Haupt, both of Duisburg, all of Germany; Vladimir A. Paramonov, Moscow, Russian Federation; Anatolij I. Tychinin, Moscow, Russian Federation; Anatolij I. Moroz, Moscow, Russian Federation; Boris L. Birger, Riga, Latvia, and Vladimir M. Foliforow, Riga, Latvia, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

PCT No. PCT/DE93/01022, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/13850, PCT Pub. Date Jun. 23, 1994
PCT Filed Oct. 22, 1993, Ser. No. 448,485
Claims priority, application Germany, Dec. 8, 1992, 42 42 380.5
Int. Cl.[6] H05B *6/02;* B05D *1/18;* B22D *11/00;* B05C *3/00*
U.S. Cl. 427—591 5 Claims

1. A process for coating a strip material surface with a metal coating, comprising the steps of: conducting the strip material upwardly in a vertical direction through a bath of molten coating material arranged in a container that has, below a melting bath level, a passage duct, so that the strip material passes through said passage duct, into said bath and is coated with the metal coating; inducing induction currents in the coating material in the passage duct by an electromagnetic travelling field generated by inductor means including iron cores, and producing, by interaction with the

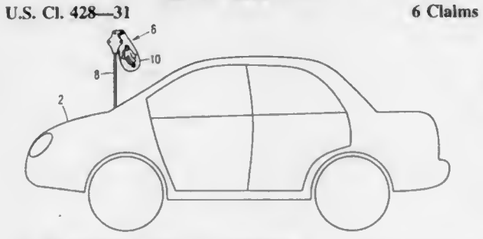


electromagnetic travelling field, an electromagnetic force to restrain the coating material from flowing out the passage duct; and directing one of a constant direct current field and an alternating current field opposite to the travelling field with additional iron cores arranged above the iron cores of the inductor means and below the container, in an area sufficiently proximate the container in order to damp movement in the coating material.

5,665,438
ANTENNA ACCESSORY FOR VEHICLE IDENTIFICATION

Inita Lee, 135 Westgate Clr., Santa Rosa, Calif. 95401, and Kenneth Tarlow, 94 Birch Ave., Corte Madera, Calif. 94925

Filed Oct. 3, 1995, Ser. No. 538,210
Int. Cl.[6] B60R *13/04*
U.S. Cl. 428—31 **6 Claims**



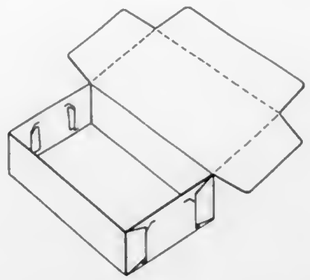
1. An antenna accessory, comprising:
main body adapted to be attached to a tip of a vehicle antenna; and
display panel having a top end hingeably attached to said main body, said display panel being rotatable about a horizontal axis from a lowered generally vertical position to a raised generally horizontal position for attracting attention.

5,665,439
ARTICLES OF MANUFACTURE FASHIONED FROM HYDRAULICALLY SETTABLE SHEETS

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, said Ser. No. 164,012is a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 101,500, Aug. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 164,012
The portion of the term of this patent subsequent to Jan. 31, 2012, has been disclaimed.
Int. Cl.[6] B32B *13/00*; C04B *14/00*
U.S. Cl. 428—34.5 **144 Claims**

1. An article of manufacture comprising at least a portion of a substantially hardened hydraulically settable sheet, the sheet being

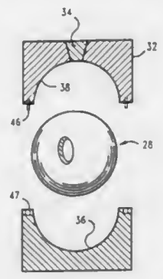


formed from a hydraulically settable mixture comprising a hydraulically settable binder, rheology-modifying agent, fibers, and water, wherein the fibers are substantially homogeneously dispersed throughout the hydraulically settable sheet such that the sheet can be bent, folded or rolled to significantly mechanically deform the sheet after the hydraulically settable sheet has been substantially dried during formation of the article of manufacture without complete rupture of the hydraulically settable sheet, said hydraulically settable sheet having a maximum thickness of about 5 mm.

5,665,440
CASTING OF PARTICLE-BASED HOLLOW SHAPES

Paul Menchhofer, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 83,965, Jun. 25, 1993, Pat. No. 5,419,860. This application Mar. 27, 1995, Ser. No. 411,431
Int. Cl.[6] B29D *22/00*; C04B *35/634*
U.S. Cl. 428—34.5 **6 Claims**

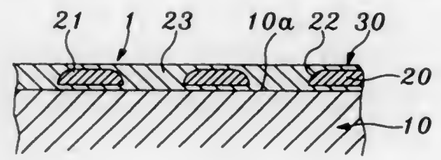


1. A one-piece seamless substantially closed continuous-walled ceramic article defining an interior space therein, said article being produced by the steps of providing a thermally settable ceramic slurry containing ceramic particles dispersed therein, providing a substantially continuous and substantially spheroidal forming surface, coating the slurry onto at least a portion of the spheroidal forming surface in a relatively thin layer, tumbling the spheroidal forming surface so that the slurry substantially uniformly coats the spheroidal forming surface, controlling the temperature of the slurry so that the coated slurry sets into a relatively hard mass having a hollow, spheroidal shape generally conforming to the spheroidal shape of the forming surface, and separating the hardened mass from the spheroidal forming surface as a substantially self-supporting solid spheroid.

5,665,441
HOLLOW CYLINDRICALL MEMBER

Hiroyasu Suzue, and Yuichi Aizawa, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Continuation of Ser. No. 966,751, Oct. 27, 1992, abandoned. This application Sep. 30, 1994, Ser. No. 312,929
Claims priority, application Japan, Oct. 29, 1991, 3-283134; Nov. 29, 1991, 3-105675 U
Int. Cl.[6] A63B *53/12*; B32B *1/08*
U.S. Cl. 428—34.7 **8 Claims**

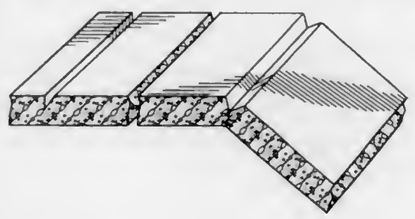


1. A hollow cylindrical member, comprising:
a first layer comprising a synthetic resin and reinforcing fibers; and
a second layer comprising a synthetic resin and a metallic member, said second layer circumscribing said first layer such that said metallic member is in non-contact with said first layer, wherein said metallic member comprises a perforated metal plate having a plurality of openings formed therethrough, said metal plate having radially opposite facing first and second surface portions which are flat with respect to one another.

5,665,442
LAMINATED SHEETS HAVING A HIGHLY INORGANICALLY FILLED ORGANIC POLYMER MATRIX

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Division of Ser. No. 152,354, Nov. 19, 1993, Pat. No. 5,508,072, which is a continuation-in-part of Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 982,383, Nov. 25, 1992, abandoned, Ser. No. 101,500, Aug. 3, 1993, and Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,673
Int. Cl.[6] B32B *5/16*; *9/04*
U.S. Cl. 428—36.4 **109 Claims**

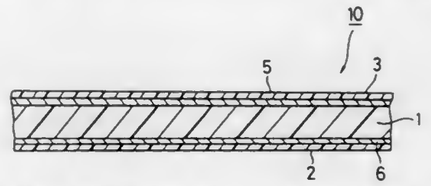


1. A laminated sheet comprising a first sheet having an inorganically filled matrix and a second sheet laminated to a side of the first sheet, the inorganically filled matrix comprising a substantially homogeneous mixture of organic binder and an inorganic aggregate, and a fibrous material dispersed throughout the inorganically filled matrix, the organic binder being selected from the group consisting of polysaccharides, proteins, and mixtures or derivatives thereof, the inorganic aggregate having a concentration in a range from about 40% to about 98% by volume of total solids in the inorganically filled matrix of the first sheet, wherein the inorganically filled matrix has a thickness less than about 1 cm and degrades after prolonged exposure to water.

5,665,443
HEAT SENSITIVE LABEL FOR PACKAGING A DRY-CELL BATTERY

Tetsuo Hata; Takeshi Kyogane; Masakazu Hirayama, and Hiroyuki Fujita, all of Osaka, Japan, assignors to Fuji Seal, Inc., Osaka, Japan

Filed Apr. 29, 1996, Ser. No. 639,680
Claims priority, application Japan, Apr. 28, 1995, 7-105467
Int. Cl.[6] B32B *7/12*; H01M *2/02*
U.S. Cl. 428—34.9 **9 Claims**

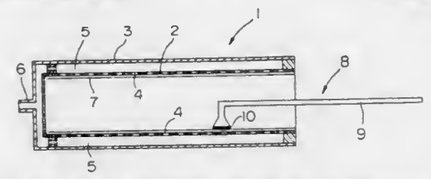


1. A heat sensitive label for packaging a dry-cell battery comprising a label substrate, a heat sensitive adhesive layer provided on one surface of said label substrate and a printing layer provided on another surface of said label substrate opposite said heat sensitive layer, said printing layer including an ultraviolet ray curing ink containing an ultraviolet ray initiator.

5,665,444
TUBE-SHAPED FILM HAVING ITS INNER PERIPHERAL SURFACE TREATED, METHOD FOR TREATING INNER PERIPHERAL SURFACE OF TUBE-SHAPED FILM AND APPARATUS THEREFOR

Yosuke Eguchi; Atsuki Wada; Tomohiro Nagase, and Yoshiro Hirajima, all of Neyagawa, Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

PCT No. PCT/JP96/00051, § 371 Date Aug. 13, 1996, § 102(e) Date Aug. 13, 1996, PCT Pub. No. WO96/22323, PCT Pub. Date Jul. 25, 1996
PCT Filed Jan. 17, 1996, Ser. No. 693,130
Claims priority, application Japan, Jan. 18, 1995, 7-005731
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—36.91 **16 Claims**



1. A tube-shaped film, made of fluorine resin, having a fold-free, smooth, and uniform inner peripheral surface formed by applying pre-treatment liquid containing an ultraviolet-absorbing compound and fluorosurfactant to an inner peripheral surface thereof and subsequently irradiating the inner peripheral surface thereof with ultraviolet laser beams to impart adhesiveness and wettability thereto.

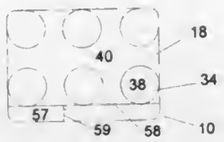
5,665,445
DATA STORAGE OBJECT LABEL WITH REMOVAL AREA

Robert S. Carney, Jr., 4232 Colfax Ave. South, Minneapolis, Minn. 55409

Filed Jun. 5, 1995, Ser. No. 461,875
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—40.1 **7 Claims**

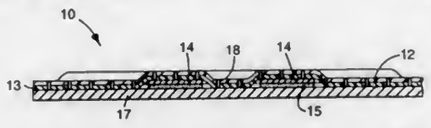
1. A data storage object label for labeling to a data storage object, comprising:

Rear view



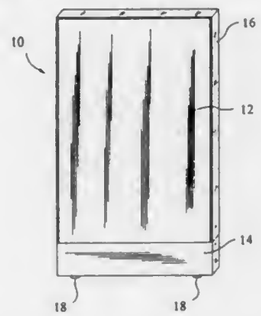
(a) a first layer having a first side and a second side;
(b) said first side of said first layer forming a front side of said data storage object label and providing a surface for receiving indicia;
(c) said second side of said first layer being covered by a continuous coating of removable adhesive;
(d) a second layer, of a non-adhesive material selected from the group consisting essentially of ink or varnish, applied over the continuous adhesive coating that is on the second side of the first layer, and said second layer forming the back side of said label into one or more area(s) where the adhesive coating that is on the second side of the first layer is exposed; and
(e) at least one removal area formed on the back side of said data storage object label, wherein the at least one removal area has a percentage of exposed adhesive of about zero percent (0%) to between fifty percent and (50%) of the percentage of exposed adhesive for the entire area of the label, thereby facilitating removal of said data storage object label.

5,665,446
LAMINATE FOR PRECISE APPLICATION OF GRAPHICS TO A SUBSTRATE
Douglas C. Sundet, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 16, 1995, Ser. No. 559,025
Int. Cl.[6] B32B *3/24*
U.S. Cl. 428—40.1 **17 Claims**



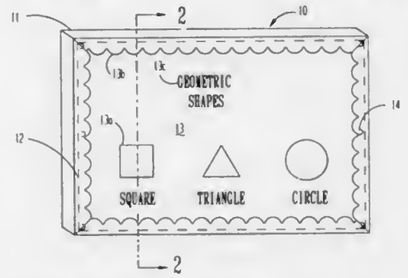
1. A laminate from which graphics can be precisely applied to a substrate, said laminate comprising:
a transparent polymeric cover sheet having opposite outer and inner major surfaces,
a layer of removable pressure-sensitive adhesive having opposite front and rear major surfaces that is coextensive with and has said rear surface adhered to the inner major surface of the cover sheet, said transparent polymeric cover sheet and said layer of removable pressure sensitive adhesive having spaced vents between said outer and front surfaces over the entire area of each of said outer and front surfaces,
polymeric film graphics having opposite major surfaces with one of the major surfaces of said film graphics being adhered to the front surface of said layer of removable pressure sensitive adhesive, and
a second layer of pressure-sensitive adhesive coextensive only with each of the graphics adhered to the major surfaces of the graphics opposite said layer of removable pressure sensitive adhesive;
said adhesives being adapted to be made wet during application of the graphics to a substrate with a liquid that lubricates the adhesives so that the graphics can be applied to a substrate at a precise position and that can evaporate through said vents to leave the graphics firmly adhered to the substrate at said position.

5,665,447
SOUND SCREEN INSULATION WITH ASPHALT SEPTUM
Gerald G. Greaves, Granville, Ohio; Jeffrey J. Van Sloun, Rockford, Mich.; Catherine A. Barron, Reynoldsburg, and Charles R. J. Weir, Westerville, both of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.
Filed Oct. 18, 1995, Ser. No. 544,687
Int. Cl.[6] B32B *3/02;* **E04B** *1/82*
U.S. Cl. 428—68 **13 Claims**



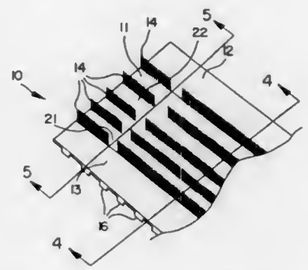
1. An insulation panel for reducing sound, comprising:
a core comprising an asphalt layer and insulation layers positioned on both sides of the asphalt layer and laminated thereto;
a rigid frame positioned around and secured to at least three edges of the panel; and
a cover layer positioned on at least one side of the core.

5,665,448
ELECTROSTATIC DISPLAY DEVICE
Barbara Graham, 6410 Northway Dr., Spring, Tex. 77389; Katherine L. Kilman, 3212 44th St., Lubbock, Tex. 79413, and Robert L. Graham, 6410 Northway Dr., Spring, Tex. 77389
Filed Aug. 24, 1994, Ser. No. 294,921
Int. Cl.[6] B32B *27/02;* **B44C** *5/04*
U.S. Cl. 428—79 **16 Claims**



1. A visual display device, comprising:
a) a support having affixed thereto a substrate of a nonwoven thermoplastic fabric, said fabric carrying a persistent electrostatic charge imparted to the fabric or fibers thereof by passing the fabric through an electrostatic field; and
b) a manipulative article formed from materials selected from the group consisting of paper, fabrics having plant based fibers, fabrics having animal based fibers, and fabrics having thermoplastic fibers, said manipulative article being secured in detachable engagement with the nonwoven thermoplastic fabric by the electrostatic charge imparted to the nonwoven thermoplastic fabric.

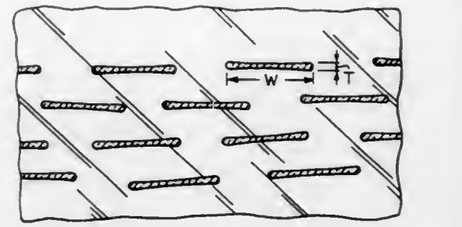
5,665,449
FASTENER ASSEMBLY WITH MECHANICAL END SEALS
Patrick J. Billarant, Charlotte, N.C., assignor to Aplix, Inc., Charlotte, N.C.
Continuation-in-part of Ser. No. 566,870, Dec. 4, 1995, which is a continuation of Ser. No. 381,507, Jan. 31, 1995, Pat. No. 5,500,268. This application Apr. 17, 1996, Ser. No. 633,627
Int. Cl.[6] A44B *21/00*
U.S. Cl. 428—100 **5 Claims**



1. A fastener assembly for being molded into a foamed cushion, and comprising:
(a) a base having first and second major surfaces defining first and second opposed ends and first and second opposed side edges;
(b) a multiplicity of attachment members carried by the base and extending outwardly from the first major surface of said base;
(c) first and second laterally-extending end sealing gaps respectively formed a spaced-apart distance inwardly from the first and second opposed ends of the base, each of said sealing gaps being defined by a widthwise and lengthwise area between the attachment members of the first major surface of the base and being devoid of said attachment members for permitting a sealing dam carried by a mold in which the foamed cushion is molded to fit into said sealing gap and sealingly engage the first major surface of said base to form a foam-tight seal between the end of the base and the sealing dam of the mold to prevent intrusion of liquid foam past the end of the base onto those attachment members located between the sealing gaps during molding of the cushion;
(d) a multiplicity of permanent anchors carried by the base and extending outwardly from the second major surface of said base, the anchors being spaced apart sufficiently to allow foam intrusion between said anchors to permanently attach said fastener assembly to the foamed cushion; and
(e) first and second magnetically-attractable side edge sealing members attached to said base adjacent respective ones of said first and second opposing side edges of said base for being attracted to magnets positioned in the mold in which the foamed cushion is molded to form a foam-tight seal between the side edges of the base and the mold to prevent intrusion of liquid foam past the side edges of the base onto the attachment members of the base during molding of the cushion.

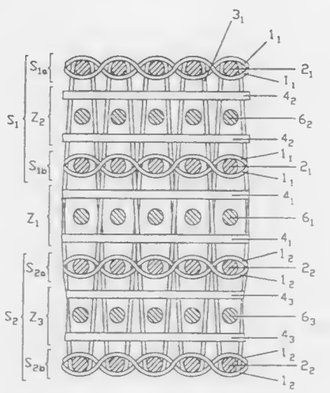
5,665,450
OPTICALLY TRANSPARENT COMPOSITE MATERIAL AND PROCESS FOR PREPARING SAME
Delbert E. Day; James O. Stoffer, and John M. Barr, all of Rolla, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.
Continuation-in-part of Ser. No. 934,054, Aug. 21, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,337
Int. Cl.[6] B32B *5/12*
U.S. Cl. 428—114 **27 Claims**

1. A polymer composite comprising
transparent polymer matrix having at least one planar surface and



at least one glass ribbon having a width and a length which define a first planar surface embedded within the matrix,
wherein the first planar surface of the at least one ribbon is substantially parallel to the at least one planar surface of the polymer matrix,
wherein the polymer matrix and the at least one glass ribbon have refractive indices that are substantially the same.

5,665,451
TEXTILE INSERT FOR PRODUCING A FIBROUS COMPOSITE MATERIAL AND FIBROUS COMPOSITE MATERIAL COMPRISING SUCH A TEXTILE INSERT
Michael Dorn, Frick, Switzerland, and Harald Engels, Mönchengladbach, Germany, assignors to Textilma AG, Hergiswil, Switzerland
PCT No. PCT/CH94/00200, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/10405, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 6, 1994, Ser. No. 481,250
Claims priority, application Switzerland, Oct. 12, 1993, 3071/93
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 **13 Claims**



1. A band-shaped textile insert for producing a fiber composite material according to the pultrusion or extrusion process including at least two woven layers, each layer comprising interwoven warp threads running in a longitudinal direction and weft threads running in a transverse direction, said two woven layers being only connected to each other across one or more areas of their cross section by means of connecting threads oriented in a connection direction and further comprising a system of standing threads running in a longitudinal direction, the two woven layers being separable from each other and deformable at areas that are not connected to each other.

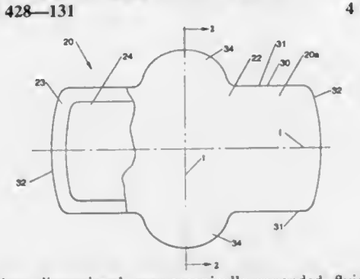
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5,665,452

THREE-DIMENSIONAL, MACROSCOPICALLY EXPANDED, APERTURED LAMINATE WEBS

Fred M. Langdon, and G. Chris Dobrin, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 3, 1994, Ser. No. 205,968
Int. Cl.[6] B32B *5/12;3/10;* B27N *3/00*
U.S. Cl. 428—131 4 Claims



1. A three-dimensional, macroscopically expanded, fluid previous web suitable for use as a topsheet on an absorbent article, said web having a first surface and a second surface, said first surface and said second surface being located in planes remote from one another, said web comprising:

(a) a first layer of substantially transparent, polymeric material, said first layer having an inner surface and an outer surface;

(b) a nonwoven web secured to said inner surface of said first layer of substantially transparent polymeric material, said nonwoven web being visible through said first layer of substantially transparent polymeric material; and

(c) a plurality of capillaries extending from said first surface of said web to said second surface of said web for the transmission of fluids through said web, each of said, capillaries originating-as an-aperture in said first surface of said web and having a continuously interconnected sidewall portion between said first and second surfaces, said continuously interconnected sidewall terminating to form an aperture in said second surface.

5,665,453

Patent Not Issued For This Number

5,665,454

BIAXIALLY ORIENTED POLYETHYLENE-2,6-NAPHTHALATE FILM AND MAGNETIC TAPE FORMED THEREFROM

Masahiro Hosoi, Tokyo; Hisashi Hamano; Yasuhiro Saeki, both of Sagamihara, and Masami Etchu, Yokohama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 949,854, Nov. 20, 1992, abandoned.
This application Sep. 19, 1994, Ser. No. 308,203
Claims priority, application Japan, Mar. 22, 1991, 3-081103
Int. Cl.[6] B32B *5/02;27/06;27/20;27/36*
U.S. Cl. 428—141 12 Claims

1. A biaxially oriented, polyethylene-2,6-naphthalate film having a longer length in the longitudinal direction than width in the transverse direction, and

(A) having a Young's modulus of at least 550 kg/mm^2 in the longitudinal direction and a Young's modulus of at least 800 kg/mm^2 in the transverse direction, the Young's modulus in the transverse direction being greater than the Young's modulus in the longitudinal direction by at least 230 kg/mm^2,

(B) containing 0.005 to 2.0% by weight of fine particles having a volume shape factor of 0.3 to π, a relative standard deviation of 0.5 or less and an average particle diameter of 0.2 to 2.5 μm,

(C) having a heat shrinkage in the longitudinal direction, after heat treatment at 70° C. for 1 hour under no load, of 0.1% or less, and

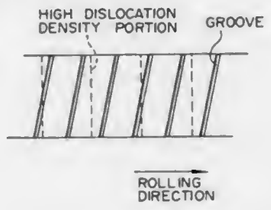
(D) having a surface roughness, Ra, of 1 to 12 nm.

5,665,455

LOW-IRON-LOSS GRAIN-ORIENTED ELECTROMAGNETIC STEEL SHEET AND METHOD OF PRODUCING THE SAME

Seiji Sato; Masayoshi Ishida; Kunihiro Senda; Kazuhiro Suzuki, and Michiro Komatubara, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 363,697, Dec. 23, 1994, abandoned.
This application Apr. 26, 1996, Ser. No. 638,314
Claims priority, application Japan, Dec. 28, 1993, 5-335649; Mar. 23, 1994, 6-051608; Mar. 31, 1994, 6-063179
Int. Cl.[6] B32B *3/28*
U.S. Cl. 428—167 10 Claims



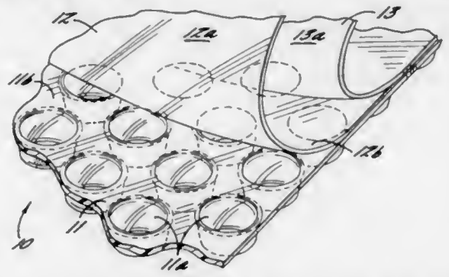
1. A grain-oriented electromagnetic steel sheet comprising a finish-annealed grain-oriented steel sheet, said steel sheet having a multiplicity of linear grooves formed in a surface thereof, said linear grooves extending in a direction crossing the direction of rolling of said steel sheet at a predetermined pitch in the direction of rolling, and a multiplicity of linear high dislocation density regions extending in a direction crossing the direction of rolling of said steel sheet at a predetermined pitch in the direction of rolling at positions substantially different from positions where said linear grooves are formed.

5,665,456

HEAT-SHRINKABLE FLEXIBLE CUSHIONING MATERIAL AND METHOD OF FORMING THE SAME

Charles P. Kannankeril, North Caldwell, N.J., and Lawrence J. Pillote, Naperville, Ill., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Dec. 6, 1995, Ser. No. 568,308
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—178 17 Claims



1. A flexible cushioning material characterized by being heat-shrinkable to enclose tightly and cushion articles about which said cushioning material is wrapped, said cushioning material comprising

first and second layers of plastic film laminated together and defining a multiplicity of spaced apart, gas filled bubbles therebetween, and

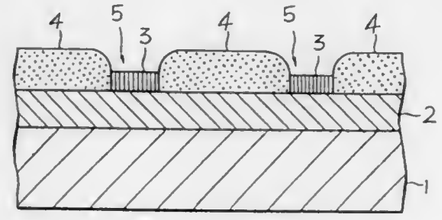
a layer of heat-shrinkable plastic film disposed in superposed relation to one of said first and second layers such that adjacent surfaces thereof are contiguous, at least portions of said contiguous surfaces thereof being laminated together whereby the cushioning material is adapted to be wrapped about an article and then heated to shrink said heat-shrinkable layer such that said cushioning material tightly encloses and cushions the article.

5,665,457

PRINTED DECORATIVE PAPER HAVING A THREE DIMENSIONAL PATTERN AND A PROCESS FOR THE PRODUCTION THEREOF

Tohru Sato, Tokyo; Yoshimi Yoshida, Tokto, and Fumio Watanabe, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd, and Toyo Ink Manufacturing Co. Ltd., both of Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,004
Claims priority, application Japan, Jul. 18, 1994, 6-187827
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—195 13 Claims



1. A process for producing printed decorative paper having a three dimensional pattern comprising the steps of:

forming a printed design layer of a water-based ink as an undercoat on a surface of base paper;

overlaying said undercoat with a printed design pattern layer formed of a water-based curable ink containing a repellent corresponding with said pattern in the undercoat;

applying a water-based curable topcoat to the entire surface of the base paper; and

heating the applied coats with the temperature being varied stepwise such that said topcoat in the areas where said printed design pattern layer is formed is repelled to form concavities.

5,665,458

HEAT ACTIVATED APPLIQUE ON PRESSURE SENSITIVE RELEASE PAPER AND METHOD OF MAKING

John Mahn, Jr., Cincinnati, Ohio, assignor to Specialty Adhesive Film Co., Cleves, Ohio

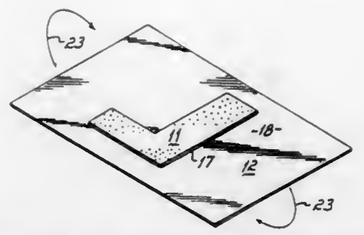
Division of Ser. No. 227,636, Apr. 14, 1994, Pat. No. 5,422,447.
This application Nov. 8, 1995, Ser. No. 554,315
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—202 5 Claims

1. A heat activated applique comprising a lower support layer;

a continuous opaque indicia-bearing layer having a first surface bonded to said support layer with a pressure sensitive adhesive;

an upper heat activated adhesive layer bonded to a second surface of said indicia-bearing layer;

cut lines through said heat activated adhesive layer and said indicia-bearing layer and not through said support layer;



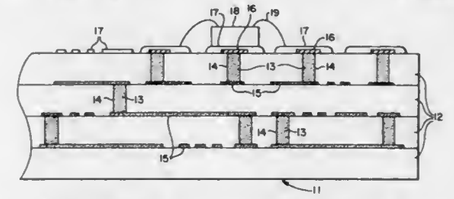
wherein said cut lines separate indicia-bearing portions of said applique from waste portions.

5,665,459

LOW-TEMPERATURE FIRED CERAMIC CIRCUIT SUBSTRATE AND THICK-FILM PASTE FOR USE IN FABRICATION THEREOF

Junzo Fukuta, Nagoya; Masashi Fukaya, Kuwana, and Hideaki Araki, Nagoya, all of Japan, assignors to Sumitomo Metal Ceramics Inc., Mine, Japan

Filed Feb. 26, 1996, Ser. No. 606,798
Claims priority, application Japan, Mar. 6, 1995, 7-044684
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 4 Claims



1. A low-temperature fired ceramic circuit substrate fired at a temperature ranging between 800° and 1,000° C. comprising:

a plurality of insulating layers each formed by firing a mixture of $CaO—SiO_2—Al_2O_3—B_2O_3$ glass and Al_2O_3 at a temperature ranging between 800° to 1,000° C.;

an Ag thick-film conductor layer formed in the insulating layer and consisting essentially of Ag;

an Au thick-film conductor layer formed on a surface of the substrate and consisting essentially of Au; and

an Ag—Pd thick-film layer formed between the Ag and the Au thick-film conductor layers and consisting essentially of:

(a) 100 parts metal composition consisting of 70 to 95 parts Ag and 5 to 30 parts Pd by weight; and

(b) 2 to 10 parts lead borosilicate glass by weight.

5,665,460

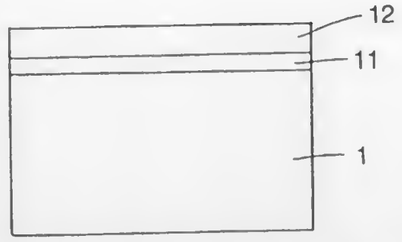
MAGNETIC RECORDING MEDIUM

Ryuji Sugita; Kiyokazu Tohma, both of Hirakata; Tatsuaki Ishida, Sakai, and Kazunari Yoshimoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1995, Ser. No. 548,422
Claims priority, application Japan, Nov. 1, 1994, 6-268703
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—212 16 Claims

1. A magnetic recording medium comprising a first magnetic layer positioned on a substrate and a second magnetic layer positioned on the first magnetic layer,

wherein the first magnetic layer comprises a film of a partial oxide comprising Co having an oxygen content of 5 to 48% by atom in which a growth direction of crystalline grain is substantially normal to the film plane and the easy magnetization axis is in a direction of the film plane, and



the second magnetic layer comprises a film of a partial oxide comprising Co having an oxygen content of 5 to 48% by atom in which the growth direction of crystalline grain is inclined at an angle of 20° to 85° to the line normal to the film plane and the easy magnetization axis is inclined at an angle of 20° to 85° to the line normal to the film plane.

5,665,461

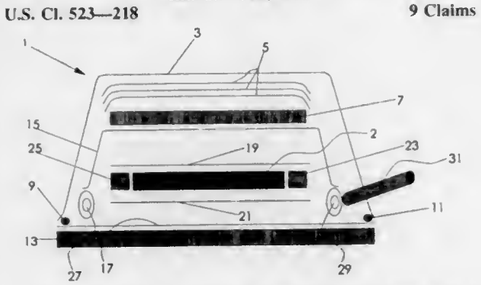
LOW MOISTURE ABSORPTION SYNTACTIC FOAM

Raymond S. Wong, San Ramon, and Clarence Lynn Mahoney, Berkeley, both of Calif., assignors to The Dexter Corporation, Pittsburgh, Calif.

Filed Sep. 15, 1992, Ser. No. 945,176

Int. Cl.[6] C08J *9/32*

U.S. Cl. 523—218 **9 Claims**



1. A syntactic foam comprising a uniformly thin sheet with a thickness of about 0.007 to about 0.125 inch that does not vary in thickness by more than about ±5%, which sheet is a composite filled with hollow microspheres in a polymer matrix resin where the resin encapsulates the microspheres and the filled composite at weight equilibrium has less than 15% of the available internal volume of the microspheres occupied by liquid water whereby the composite possesses enhanced moisture resistance.

5,665,462

CLOSURE

George Galloway Dewar, Cremorne, Australia, assignor to Dewco Investments Pty Ltd, Dee Why, Australia

Filed Mar. 20, 1995, Ser. No. 406,149

Claims priority, application Australia, Mar. 18, 1994, PM4582; Aug. 29, 1994, PM7741

Int. Cl.[6] B32B *5/02;29/00*

U.S. Cl. 428—220 **29 Claims**

1. A closure for a container having an opening, comprising:

(i) at least one resilient mass of fibres selected from synthetic fibres, natural fibres and mixtures thereof, said at least one resilient mass of fibres having a density of 0.15 to 2.00 g/cm^3 and having one of an interlocked structure, an associated structure and a combination thereof; and

(ii) one or more additives, wherein the additives function to coat, impregnate or coat and impregnate at least a portion of the resilient mass of fibers, wherein the at least resilient mass and one or more additives form the closure, the closure being essentially impermeable to liquids and gases and, further, being sized and having a density to enable the closure to be sealingly inserted into the opening of said container.

5,665,463

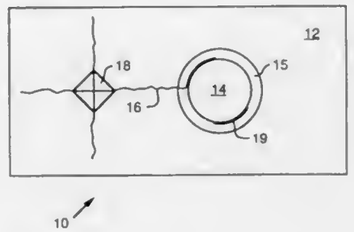
FIBROUS COMPOSITES INCLUDING MONAZITES AND XENOTIMES

Peter E. D. Morgan, and David B. Marshall, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 424,767, Apr. 19, 1995, Pat. No. 5,514,474, which is a continuation of Ser. No. 228,059, Apr. 15, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,155

Int. Cl.[6] B32B *7/00*

U.S. Cl. 442—103 **20 Claims**



1. A ceramic composite, comprising:

a fibrous material forming a fibrous structure; and

a weak bond material selected from the group consisting of monazites and xenotimes, said weak bond material infiltrating said fibrous structure and forming a weak bond with said fibrous material.

5,665,464

CARBON FIBER-REINFORCED CARBON COMPOSITE MATERIAL AND PROCESS FOR THE PREPARATION THEREOF

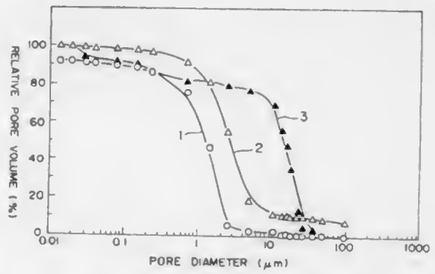
Jun Takayasu; Kazuyuki Murakami; Eiki Tsushima, and Takayuki Izuml, all of Saitama-ken, Japan, assignors to Tonen Corporation, Japan

Filed Nov. 28, 1995, Ser. No. 563,596

Claims priority, application Japan, Dec. 1, 1994, 6-323507

Int. Cl.[6] C04B *35/52;35/76;* **B32B** *3/26*

U.S. Cl. 428—312.2 **6 Claims**



1. A carbon fiber-reinforced carbon composite material comprising a matrix of carbon, and unidirectionally oriented carbon fibers dispersed in said matrix, wherein the content of said carbon fibers is at least 50% based on the volume of said composite material, wherein the volume of pores having a pore diameter of 10 μm or more is not greater than 5% of the total pore volume of said composite material, and wherein at least 90% of said total pore volume is the volume of open pores having an open cellular structure.

5,665,465

ARTICLE COMPRISING EXCHANGE-COUPLED MAGNETIC MATERIALS

Ernst Michael Gyorgy, deceased, late of Chatham, N.J., by Suzanne Rachel Gyorgy, executrix; Julia Mae Phillips, Albuquerque, N. Mex.; Yuri Suzuki, Summit, and Robert Bruce van Dover, Maplewood, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 6, 1995, Ser. No. 554,071

Int. Cl.[6] G11B *5/66;* **B32B** *33/00*

U.S. Cl. 428—328 **15 Claims**

1. An article comprising a first magnetic material layer and a second magnetic material layer having an interface with the first magnetic material layer, associated with each of the first and second magnetic material layers being a spin orientation, the first and second magnetic material layers selected such that, over a temperature range that includes room temperature, exchange coupling causes the spin orientation in at least a portion of the second magnetic material layer that is adjacent to said interface to be a function of the spin orientation of the first magnetic material layer such that a M-H loop of said second magnetic material layer is an asymmetric M-H loop; CHARACTERIZED IN THAT

a) the first and second magnetic material layers comprise a first and a second metal oxide magnetic material, respectively;

b) said first and second magnetic material layers are epitaxial with each other; and

c) the spin orientation of the first magnetic material layer has a preferred direction that is substantially parallel to said interface.

5,665,466

TREATMENT PROCESS FOR TITANIUM DIOXIDE PIGMENTS, NOVEL TITANIUM DIOXIDE PIGMENT AND ITS USE IN PAPER MANUFACTURE

Anny Guez, Paris, and Rémy Lorang, Cernay, both of France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed Nov. 8, 1995, Ser. No. 555,053

Claims priority, application France, Nov. 23, 1994, 94 14017

Int. Cl.[6] B32B *5/16;* **C09C** *1/36*

U.S. Cl. 428—329 **5 Claims**

1. A titanium dioxide pigment comprising a titanium dioxide core coated successively with layers of alumina phosphate, alumina and magnesium oxide.

5,665,467

MAGNETO-OPTICAL RECORDING MEDIUM

Junichiro Nakayama; Michinobu Mieda, both of Shiki-gun; Hiroyuki Katayama; Akira Takahashi, both of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1994, Ser. No. 196,978

Claims priority, application Japan, Feb. 25, 1993, 5-036472

Int. Cl.[6] G11B *5/66*

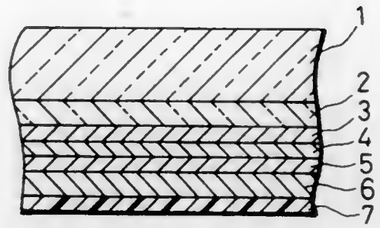
U.S. Cl. 428—332 **18 Claims**

1. A magneto-optical recording medium comprising a first magnetic layer formed on a substrate, a second magnetic layer formed over said first magnetic layer and a third magnetic layer formed over said second magnetic layer, said magnetic layers made of rare-earth-transition metal alloys, wherein:

said first magnetic layer has a perpendicular magnetization in a temperature range between room temperature and its Curie temperature;

said second magnetic layer made of GdFeCo is structured such that its Curie temperature is higher than the Curie temperature of said first magnetic layer, coercive force thereof at room temperature is substantially zero, and that it has an in-plane magnetization at room temperature and a transition occurs therein from the in-plane magnetization to a perpendicular magnetization at above a predetermined temperature; and

said third magnetic layer is structured such that its Curie temperature is higher than the Curie temperature of said first magnetic layer and lower than the Curie temperature of said second magnetic layer, coercive force thereof at room temperature is smaller than the coercive force of said first magnetic layer, and that it has a perpendicular magnetization in a temperature range between room temperature and its Curie temperature.



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MAGNETO-OPTICAL RECORDING MEDIUM

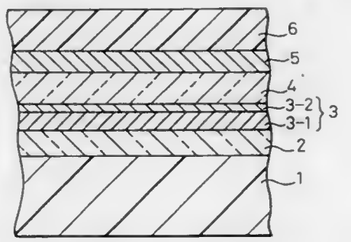
Masahiko Sekiya; Tohru Horiguchi, both of Hino, and Kiyoshi Chiba, Chofu, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 1, 1994, Ser. No. 269,680

Claims priority, application Japan, Jul. 2, 1993, 5-164536; Oct. 15, 1993, 5-258266; Nov. 16, 1993, 5-286755

Int. Cl.[6] G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—332 **23 Claims**



1. A magneto-optical recording medium for direct overwriting which comprises modifying at least one of a power level and pulse width of applied optical pulses without changing the direction of the bias magnetic field,

said medium comprising a first dielectric layer, a recording layer, a second dielectric layer, and a metal reflecting layer in this order over a transparent substrate,

wherein said recording layer is composed of a first magnetic layer and a second magnetic layer,

wherein said first magnetic layer comprises a rare-earth transition-metal amorphous alloy and has a perpendicular easy magnetization axis, wherein said first magnetic layer has a thickness of 10 to 200 nm and has a compensation temperature above room temperature,

wherein said second magnetic layer comprises a first component made of an alloy of at least one of Co and Fe and a second component made of,(i) at least one of a rare earth metal and a noble metal or (ii) an alloy of Co and at least one metal selected from the group consisting of Ti, Cr, Mn, Cu, Zn, Ga and Ge; wherein said second magnetic layer has an in-plane easy magnetization axis parallel to the second magnetic layer

when formed separately on a dielectric layer, and wherein said second magnetic layer has a thickness of not more than 3 nm.

5,665,469

MULTILAYER ORIENTED HEAT-SEALABLE POLYPROPYLENE FILM

Rainer Brandt, Walsrode, and Ulrich Reiners, Neuenkirchen, both of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Nov. 30, 1995, Ser. No. 565,039

Claims priority, application Germany, Dec. 7, 1994, 44 43 458.8

Int. Cl.[6] B32B *27/32;31/12*

U.S. Cl. 428—349 **4 Claims**

1. An oriented, particularly a biaxially oriented, sealable, metallizable multilayer film, characterized in that it is built up as follows:

ABCBD

a) where C represents a core layer comprising isotactic polypropylene with a melt flow index between 0.5 and 4.5 g/10 min,

b) A represents a base layer for vacuum evaporation, comprising 0.1–0.5% of organic or inorganic spacing particles and 1 to 10% of an ethylene/octene copolymer with a density <0.915 g/cm^3, and 89.5 to 98.9% of a heat-sealable propylene/ethylene copolymer with an ethylene content of 1 to 8%,

c) B represents the two intermediate layers comprising a propylene homopolymer with a melt flow index between 2 and 12 g/10 min,

d) and D represents a sealable layer comprising an olefinic homo-, co- or terpolymer and 0.1 to 0.5% of inorganic or organic spacing particles, or mixtures thereof.

5,665,470

GLASS FIBERS AND FIBER-REINFORCED PLASTICS

Charles R. Key, Simpsonville, S.C., and Yen-Jer Shih, Belle Mead, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 280,912, Jul. 27, 1994, Pat. No. 5,491,182. This application Nov. 15, 1995, Ser. No. 558,299

Int. Cl.[6] C08K *9/04*

U.S. Cl. 428—378 **2 Claims**

1. Glass fibers which are used to prepare a fiber-reinforced plastic which contains a plastic resin, wherein the glass fibers comprise a residue of a sizing composition, the sizing composition comprising a polymer prepared from at least one monomer(s) selected from the group consisting of acrylic acid, methacrylic acid, C_1–C_{18} alkyl esters of acrylic acid, C_1–C_{18} alkyl esters of methacrylic acid, glycidyl acrylate, glycidyl methacrylate, C_1–C_4 hydroxyalkyl esters of acrylic acid, C_1–C_4 hydroxyalkyl esters of methacrylic acid, vinyl esters of saturated aliphatic monocarboxylic acids containing up to 10 carbon atoms, (meth)acrylamide and their N-substituted derivatives, vinyl ethers, N-vinyl lactams, halogenated vinyl compounds, alkyl vinyl ketones, (meth)allyl ester of saturated aliphatic monocarboxylic acids, vinyl pyrrole, olefins, diesters of itaconic, maleic and/or fumaric acid, and styrene, the polymer having a weight average molecular weight of not more than 55,000, as determined by gel permeation chromotography; and an ingredient selected from the group consisting of a silane coupling agent, a lubricant suitable for use in the sizing composition and acetic acid, wherein the fiber-reinforced plastic prepared from the sized glass fibers and the plastic resin exhibit improved clarity compared to fiber-reinforced plastics prepared from glass fibers which comprise the residue of the sizing composition which utilizes a polymer of similar composition and having a weight average molecular weight of greater than 55,000.

5,665,471

FIBER TREATMENT COMPOSITIONS AND METHODS FOR THE PREPARATION THEREOF

Jeffrey Alan Kosal, Midland, and Anthony Revis, Freeland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 376,563, Jan. 23, 1995, Pat. No. 5,514,418, which is a division of Ser. No. 176,557, Dec. 30, 1993, Pat. No. 5,413,724. This application Jan. 29, 1996, Ser. No. 593,196

Int. Cl.[6] D02G *3/36*

U.S. Cl. 428—378 **11 Claims**

1. A treated substrate prepared by a method comprising the steps of:

(I) mixing:

(A) an allyl ester, vinyl ester, or unsaturated acetate selected from the group consisting of isopropenyl acetate and 2-methyl-1-butenyl acetate,

(B) at least one organohydrogensiloxane,

(C) a metal catalyst, and

(D) a dispersant selected from the group consisting of:

(i) surfactants; and

(ii) an acetonitrile solvent;

(II) applying the mixture from (I) to a substrate; and

(III) heating the substrate.

5,665,472

THERMAL TRANSFER SHEET

Konosuke Tanaka, and Keiichi Ogawa, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Aug. 23, 1996, Ser. No. 703,604

Claims priority, application Japan, Aug. 25, 1995, 7-238947

Int. Cl.[6] B41M *5/20*

U.S. Cl. 428—402 **3 Claims**

1. A thermal transfer sheet comprising: a substrate film; and a hot-melt ink layer provided on one side of the substrate film, the hot-melt ink layer containing a bismuth oxide/borosilicate glass frit having a softening point of 400° to 500° C. and consisting essentially of 75 to 85% by weight of Bi_2O_3, 12 to 18% by weight of B_2O_3, 0.1 to 5.0% by weight of SiO_2, 0.05 to 3.0% by weight of CeO_2, 0.1 to 3.0% of Li_2O and 0.05 to 3.0% by weight of Na_2O.

5,665,473

PACKAGE FOR MOUNTING A SEMICONDUCTOR DEVICE

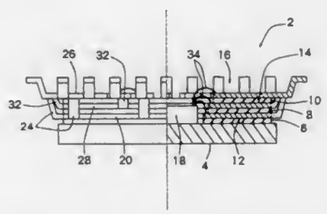
Tokio Okoshi; Yuka Kato; Hideki Okoshi; Kenichiro Miyahara, and Masakatsu Maeda, all of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Filed Sep. 12, 1995, Ser. No. 527,225

Claims priority, application Japan, Sep. 16, 1994, 6-222165; Dec. 14, 1994, 6-310680

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—457 **18 Claims**



1. A package for mounting a semiconductor device, comprising a base plate, and

a plurality of conductive layers comprising a power layer, a ground layer and signal layer,

one of said conductive layers laminated onto said base plate via an adhesive layer,

the remaining conductive layers laminated together and to said conductive layer laminated onto said base plate via an adhesive layer interposed between adjacent layers,

wherein the modulus of elasticity at 25° C. of said adhesive layers is 10 Kg/mm^2 or less.

5,665,474

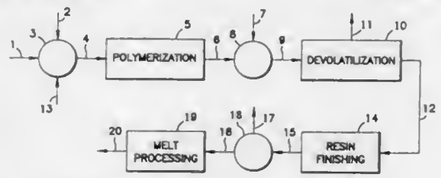
PAPER HAVING A MELT-STABLE LACTIDE POLYMER COATING AND PROCESS FOR MANUFACTURE THEREOF

Patrick Richard Gruber, St. Paul; Jeffrey John Kolstad, Wayzata; Christopher M. Ryan, Dayton; Eric Stanley Hall, Crystal, and Robin Sue Eichen Conn, Minneapolis, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 34,099, Mar. 22, 1993, Pat. No. 5,475,080, which is a continuation-in-part of Ser. No. 955,690, Oct. 2, 1992, Pat. No. 5,338,822. This application Aug. 31, 1995, Ser. No. 521,923

Int. Cl.[6] B32B *27/10;* **B05D** *3/02;* **C08G** *63/08*

U.S. Cl. 428—481 **26 Claims**



1. A coated paper product comprising:

(a) a paper substrate having a first surface; and

(b) a polymer coating on said paper substrate first surface; said polymer coating comprising a melt stable polymer composition formed from at least: meso-lactide; lactide reactant; and, epoxidized oil;

(i) said polymer composition having a number average molecular weight of from about 10,000 to about 200,000;

(ii) said polymer composition having a lactide monomer concentration of less than about 5% by weight; and

(iii) said lactide reactant being selected from the group consisting of L-lactide, D-lactide and mixtures thereof;

(c) said polymer composition being formed from a reaction mixture comprising about 3% to about 50% by weight meso-lactide, based on the total weight of meso-lactide and lactide reactant in the reaction mixture; and

(d) said polymer composition being a polymeric material in a form such that, when isolated and devolatilized, and before incorporation into said polymer coating, it will form less than 1% by weight lactide, upon heating at 180° C. for 1 hour.

5,665,475

EMBOSSING FOIL, IN PARTICULAR A HOT EMBOSSING FOIL, PREFERABLY FOR THE PRODUCTION OF MOTOR VEHICLE LICENCE PLATES

Hubert Süssner, Oberasbach, Germany, assignor to Leonhard Kurz GmbH & Co., Furth, Germany

PCT No. PCT/DE94/00287, § 371 Date Oct. 4, 1995, § 102(e) Date Oct. 4, 1995, PCT Pub. No. WO94/25295, PCT Pub. Date Nov. 10, 1994

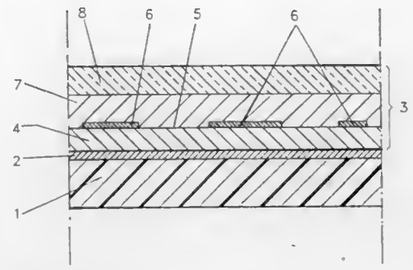
PCT Filed Mar. 14, 1994, Ser. No. 535,013

Claims priority, application Germany, Apr. 24, 1993, 43 13 519.6

Int. Cl.[6] B41M *5/10*

U.S. Cl. 428—488.4 **5 Claims**

1. A hot embossing foil for motor vehicle license plates, which comprises:



a carrier film; and

a transfer layer detachable from said carrier film, said transfer layer comprising in seriatim, a transparent protective lacquer layer; a decorative lacquer layer disposed at least region-wise and representative of graphic elements and formed by a lacquer containing pigments which luminesce upon being irradiated by UV light; a colored lacquer layer and an adhesive layer for fixing said transfer layer to a substrate to be decorated, said decorative lacquer layer or said transparent protective lacquer layer containing a material selected from the group consisting of a UV-absorber additive in an amount of from 0.5 to 2% by weight and a HALS-stabilizer in an amount of from 0.1 to 1.0% by weight.

5,665,476

TRANSFER PAPER AND A PROCESS FOR TRANSFERRING PHOTOCOPIES TO TEXTILES

Buelent Oez, Am Exerzierplatz 3a, Mannheim, Germany, D-68167

Filed Nov. 13, 1995, Ser. No. 558,110

Int. Cl.[6] B41M *5/10*

U.S. Cl. 428—488.4 **20 Claims**

1. Transfer paper for transferring colored xerocopy prints to textile substrates, comprising a carrier paper and a coating on the carrier paper, wherein the coating comprises

a) 2.5 to 10 parts by weight of a melamine-formaldehyde resin esterified with methanol as a crosslinking component;

b) 200 to 300 parts by weight of at least one polyurethane; and

c) 7–36 parts by weight of an acrylic acid ester/acrylic acid copolymer as a thickener.

5,665,477

HYDROGEL ADHESIVE FOR ATTACHING MEDICAL DEVICE TO PATIENT

William G. Meathrel, Buffalo, N.Y.; Mohammad Saleem, Gananoque, and Shirley A. Binks, Ontario, both of Canada, assignors to Graphic Controls Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 222,729, Apr. 4, 1994, Pat. No. 5,474,065. This application Jun. 7, 1995, Ser. No. 487,806

Int. Cl.[6] B32B *27/30;* **A61L** *25/00;* **B05D** *5/10;* **C09J** *4/02*

U.S. Cl. 428—500 **39 Claims**

1. In a process for producing a medical device attaching to a patient, the improvement comprising the steps of:

applying a coating of a precursor composition comprising acrylic acid monomer and an alcoholamine to said medical device; and

polymerizing said precursor composition to produce a hydrogel which is adhesive under both wet and dry conditions.

26. The product produced by the process recited in claim 1.

5,665,478

MAGNETIC RECORDING MEDIA FOR LONGITUDINAL RECORDING

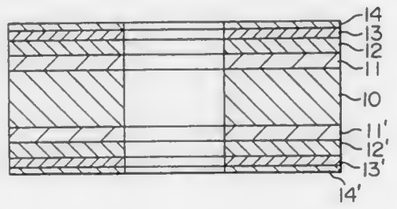
Hiroyuki Suzuki, Kawasaki; Yoshihiro Shiroishi, Hachioji; Sadao Hishiyama, Sayama; Tomoyuki Ohno, Kokubunji; Yotsuo Yahisa, Fuchu; Yoshibumi Matsuda, Kokubunji; Norikazu Tsumita, Kanagawa-ken; Masaki Ohura, Odawara; Takaaki Shirakura, Chigasaki; Noriyuki Shige, Odawara, and Kazumasa Takagi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 844,528, Mar. 2, 1992, abandoned, which is a division of Ser. No. 391,181, Aug. 8, 1989, Pat. No. 5,143,794. This application Oct. 24, 1994, Ser. No. 328,400

Claims priority, application Japan, Aug. 10, 1988, 63-197919; Aug. 24, 1988, 63-208317; Mar. 6, 1989, 1-051889

Int. Cl.[6] H01F *1/00*

U.S. Cl. 428—611 44 Claims



1. A magnetic recording medium for longitudinal recording, which comprises a nonmagnetic substrate and a magnetic layer provided on the nonmagnetic substrate, the magnetic layer being crystalline and composed mainly of an alloy comprising Co, and simultaneously a material X composed of at least one element selected from a first group consisting of Cr, Mo and W, a material Y' composed of at least one element selected from a second group consisting of Ti, Zr, Hf, Ta, Nb, Ru and Rh, and a material Z composed of at least one element selected from a third group consisting of Al and Si, wherein the magnetic layer contains 0.1 at % to 15 at % of oxygen.

5,665,479

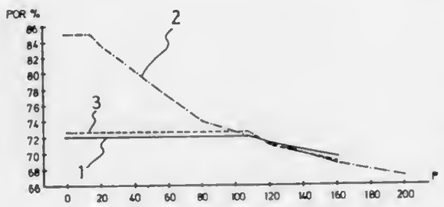
SINTERED MULTILAYER METAL FIBER WEB

Johan Vandamme, Deinze, and Jan Loncke, Zwevegem, both of Belgium, assignors to N.V. Bekaert S.A., Belgium

Filed Dec. 12, 1995, Ser. No. 570,895

Int. Cl.[6] B32B *5/18*

U.S. Cl. 428—613 6 Claims



1. A pressure resistant sintered non-woven multilayer metal fiber web having a porosity of between 50% and 74%, a weight of between 750 and 1600 g/m^2 and wherein the fiber diameter in each succesive layer is between 1.2 to 2 times less than the fiber diameter in the previous layer.

5,665,480

COPPER-LEAD ALLOY BEARING

Tadashi Tanaka; Masaaki Sakamoto; Koichi Yamamoto, and Tsukimitsu Higuchi, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Continuation of Ser. No. 340,325, Nov. 14, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,098

Claims priority, application Japan, Dec. 22, 1993, 5-346663

Int. Cl.[6] F16C *33/12;* B32B *15/20;* C22C *9/08*

U.S. Cl. 428—645 9 Claims

1. A corrosion-resistant copper-lead alloy multilayer bearing comprising a back metal and a copper-lead-based bearing alloy layer bonded thereto, said copper-lead-based bearing alloy layer consisting by weight of 10.5 to 18% Ni, 0.5 to 8% Sn, 10 to 26% Pb, 0.005 to 0.1% P, and the balance Cu and incidental impurities said bearing having high corrosion resistance to both lubricant with a high sulfur content and corrosive degraded lubricant.

5,665,481

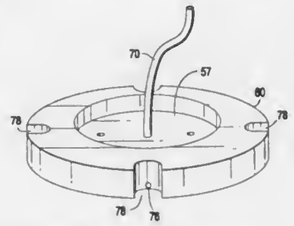
METAL-AIR BATTERY

Nicholas Shuster, Madison, Ohio; Harvey N. Seiger, Boynton Beach, Fla.; Daniel J. Spak, Cuyahoga Falls, and David E. Harney, Twinsburg, both of Ohio, assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 14, 1995, Ser. No. 557,440

Int. Cl.[6] H01M *12/06*

U.S. Cl. 429—27 16 Claims



1. An improved metal-air battery, comprising:
a) a case;
b) a liquid electrolyte partially filling said case;
c) a support structure;
d) an anode immersed within said electrolyte and held in position by said support structure;
e) a porous cathode arrangement at the surface of said electrolyte, said cathode arrangement having a cathode, with a portion thereof being within said electrolyte and the remainder thereof being above said surface, said cathode arrangement being constructed and arranged to float at said surface and being vertically moveable relative to said anode as the level of said electrolyte drops; and
f) means for making electrical contact with said anode and said cathode.

5,665,482

FLUORITE STRUCTURE TYPE CERIA TYPE SOLID ELECTROLYTE

Toshiyuki Mori, Tsuchiura; Hideto Kuramochi, and Hiroshi Yamamura, both of Tsukuba, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Jan. 3, 1996, Ser. No. 582,417

Claims priority, application Japan, Jan. 10, 1995, 7-002026

Int. Cl.[6] H01M *8/10*

U.S. Cl. 429—33 12 Claims

1. A defective fluorite structure solid electrolyte of the following formula (1):

$$\{(M_{1-a}A_a)_xCe_{1-x}\}O_{2-y} \quad (1)$$

wherein M is a trivalent rare earth element other than Ce, A is a monovalent alkali metal or a bivalent alkaline earth metal, and a, x and y are $0<a<0.6$, $0.2<x<0.5$ and $0<y<0.55$, respectively.

5,665,483

SEALED STORAGE BATTERY

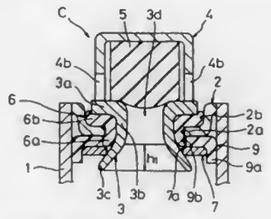
Ken Saito; Naoyoshi Hinotsu; Hikaru Sakamoto, and Koichi Hoshino, all of Iwaki, Japan, assignors to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan

Division of Ser. No. 456,564, Jun. 1, 1995, Pat. No. 5,586,993. This application May 16, 1996, Ser. No. 649,048

Claims priority, application Japan, Jun. 3, 1994, 6-121641

Int. Cl.[6] H01M *2/12;2/08;2/10;2/02*

U.S. Cl. 429—53 11 Claims



1. A sealed storage battery comprising:
a sealing assembly having a hollow rivet fitted and fixed via an insulating gasket to an annular cover plate which seals an opening of a container; and
a safety valve received in an electrode cap fixed to a head of the hollow rivet such that the safety valve communicates with an interior of the battery via an axial bore formed in a hollow shaft of the hollow rivet,
said hollow shaft being caulked and having an uncurled distal end portion, said distal end portion being diametrically enlarged relative to both a proximal end portion of the hollow shaft and an intermediate portion of the hollow shaft, whereby said hollow rivet is fixed to said cover plate.

5,665,484

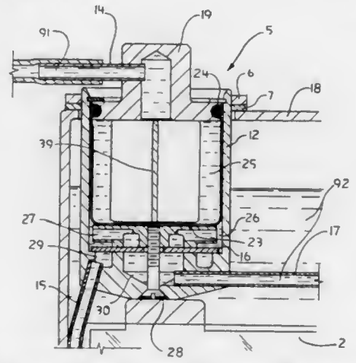
ELECTROLYTE CONDITIONING SYSTEM

John G. Bolger, Orinda, Calif., assignor to Inductran Corporation, Orinda, Calif.

Filed Sep. 18, 1995, Ser. No. 529,363

Int. Cl.[6] H01M *2/40*

U.S. Cl. 429—62 20 Claims



1. An apparatus for circulating and controlling the temperature of the liquid electrolyte within cells of a battery, such apparatus comprising:
fluid actuated pumps hydraulically connected to each cell of said battery;
inlet means for admitting electrolyte from a first location in said cells into said pumps;
outlet means for discharging electrolyte from said pumps to a second location in said cells;
fluid conduit means in said pumps for admitting or removing actuating fluid from said pumps;
bladders within said pumps for separating said electrolyte and said actuating fluid while said bladders alternately cause electrolyte to be expelled through said outlet means or to be ingested through said inlet means.

5,665,485

SPLASHPROOF CONSTRUCTION FOR PORTABLE TYPE ELECTRONIC DEVICE

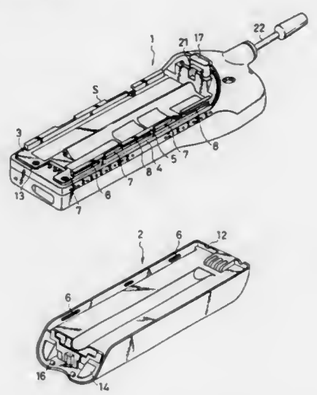
Tatsuo Kuwayama; Isamu Sekine; Tatsuya Okawa; Takeshi Sato, and Ryuichi Takahashi, all of Tokyo, Japan, assignors to Kokusai Electric Co., Ltd., Japan

Filed Jun. 2, 1995, Ser. No. 459,830

Claims priority, application Japan, Jun. 3, 1994, 6-145413; Jun. 3, 1994, 6-145417; Jun. 3, 1994, 6-145418; Jun. 3, 1994, 6-145419

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—100 7 Claims



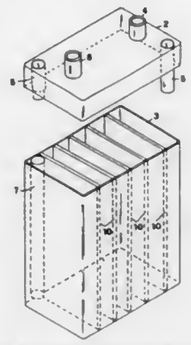
1. A splashproof construction for a portable electronic device comprising:
an electronic device main unit; and
a battery pack to be mounted on the electronic device main unit,
wherein one of the electronic device main unit or the battery pack includes a contact area and a guide rail disposed adjacent to the contact area, said contact area comprising a first surface formed along a peripheral edge of the electronic device main unit or the battery pack and a second surface which is elevated with respect to said first surface, and
the other one of the electronic device main unit or the battery pack including a peripheral wall, a third surface disposed within said peripheral wall, and a guide groove slidably engagable with the guide rail, said peripheral wall being aligned with said first surface and said third surface being aligned with said second surface to define a splashproof seal when the battery pack is mounted on the electronic device main unit.

5,665,486

CONTAINER FOR RAPID CHARGED STORAGE BATTERIES

Olimpio Stocchiero, via Kennedy, 5, 36050 Montorso Vicentino (VI), Italy

PCT No. PCT/EP94/00696, § 371 Date Nov. 7, 1995, § 102(e) Date Nov. 7, 1995, PCT Pub. No. WO94/20994, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 8, 1994, Ser. No. 505,243
Claims priority, application Italy, Mar. 9, 1993, VI93A0033
Int. Cl.[6] H01M *10/04*
U.S. Cl. 429—100 **3 Claims**



1. A container for facilitating rapid charge of electrolyte in a storage battery comprising:

a box having an open top formed with a perimetrical edge and with one or more cells, each cell of which is suitable to receive the electrolyte;

a cover secured to the top for closing the box along the perimetrical edge; the cover formed with a first and a second opening for each cell;

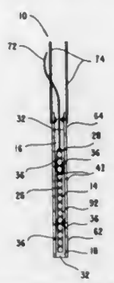
each cell of said container having at least one electrolyte feed pipe having an upper end communicating with the first opening in the cover, a lower end extending into the container adjacent to the bottom of the box, and a level pipe for establishing an electrolyte level in each cell having an upper end communicating with the second opening in the cover and a lower end extending into the container below the perimetrical edge of the top for establishing an electrolyte level in the container above the lower end of the feed pipe and said level pipe including a pipe portion formed in the cover molding.

5,665,487

WATER-ACIVATED STORAGE BATTERY

Shiraz Dhanji, Deerfield Beach, Fla., assignor to Sartech Systems, Inc., Deerfield Beach, Fla.

Filed Oct. 31, 1995, Ser. No. 550,982
Int. Cl.[6] H01M *6/34*
U.S. Cl. 429—119 **22 Claims**



1. A water-activated battery stored in a dry condition and activated at the time of use by the addition of a conductive aqueous solvent, comprising:

a cathode member,

an anode member,

conductive aqueous solvent in contact with said cathode member and said anode member,

a battery casing enclosing said cathode member and said anode member and retaining said conductive aqueous solvent,

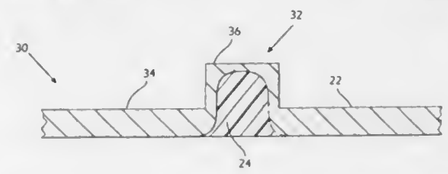
spacer members spacing said cathode member from said anode member, said spacer members comprising a spacer clip including a block of clip material having a block face and having a plurality of clip legs extending substantially perpendicularly from said block face, said cathode member being retained between said clip legs, and said anode member being positioned adjacent to and spaced apart from said cathode member and abutting at least one of said clip legs.

5,665,488

METHOD OF MAKING A BATTERY SEPARATOR AND THE BATTERY SEPARATOR PRODUCED THEREBY

James Young, Sunriver; Gregory T. Humphrey, Albany, and Daniel K. Lee, Lebanon, all of Oreg., assignors to AMTEK Research International LLC, Eugene, Oreg.

Filed Aug. 16, 1995, Ser. No. 515,855
Int. Cl.[6] H01M *2/18*
U.S. Cl. 429—143 **9 Claims**



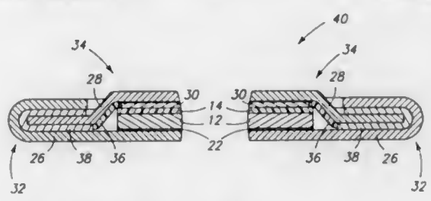
1. A method of forming a battery separator comprising providing a sheet of microporous polyolefin having first and second planar faces, applying at lease one bead of a rib core material on a first planar face of said flat sheet, and pressing said bead of rib core material into said flat sheet with a force and at a temperature sufficient to cause said rib core material to displace the microporous polyolefin of said flat sheet outwardly from the second planar face and to an extent such that the bead of rib core material is flush with or recessed from said second planar face to thereby form a rib extending solely from said second planar face, which said rib is comprised of an outer surface of said microporous polyolefin material and an inner core of said rib core material.

5,665,489

THIN PROFILE BATTERIES WITH SOLID ELECTROLYTE

Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.

Division of Ser. No. 321,251, Oct. 11, 1994, Pat. No. 5,494,495. This application Nov. 22, 1995, Ser. No. 561,818
Int. Cl.[6] H01M *2/08;6/18*
U.S. Cl. 429—172 **6 Claims**



1. A button-type battery comprising:

a cathode having a solid electrolyte proximate thereto;

an anode positioned against the solid electrolyte;

a conductive first terminal housing member in electrical contact with one of the anode or the cathode, the first terminal housing member having a periphery;

a conductive second terminal housing member in electrical contact with the other of the anode or the cathode, the second terminal housing member having a periphery;

the first and second terminal housing members forming an enclosed dry battery housing which holds and protects the anode and the cathode, an electrically insulative gasket material being received intermediate the first and second terminal housing member peripheries to provide a fluid-tight seal and to provide electrical insulation between the first and second terminal housing members; and

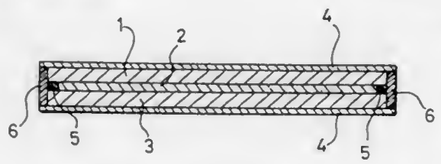
wherein the cathode is bonded to a conductive substrate which bears against and electrically connects with one of the first or second terminal housing members, and the anode has a diameter which is smaller than that of the cathode and solid electrolyte, the gasket material being received atop the solid electrolyte as well as between the first and second terminal member peripheries.

5,665,490

SOLID POLYMER ELECTROLYTE, BATTERY AND SOLID-STATE ELECTRIC DOUBLE LAYER CAPACITOR USING THE SAME AS WELL AS PROCESSES FOR THE MANUFACTURE THEREOF

Masataka Takeuchi; Koji Tokita; Miyuki Ueda; Jun Noguchi; Hideo Yashima; Eri Tamura, and Kazuhiko Ooga, all of Chiba, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 343,603, Nov. 30, 1994, Pat. No. 5,597,661. This application Jun. 7, 1995, Ser. No. 478,760
Claims priority, application Japan, Jun. 3, 1993, 5-133620; Nov. 29, 1993, 5-323192; Nov. 29, 1993, 5-323193; Mar. 4, 1994, 6-060067; May 24, 1994, 6-133839; Aug. 18, 1994, 6-218260; Oct. 13, 1994, 6-274369; Feb. 21, 1995, 7-056514
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—192 **53 Claims**



1. A solid polymer electrolyte comprising a composite of:

(a) a polymeric component, wherein said polymeric component comprises at least one member selected from the group consisting of:

(i) a polymer obtained from at least one compound having alcoholic hydroxyl groups, wherein at least one hydrogen atom of said alcoholic hydroxy groups is replaced by a unit represented by general formula (X):

$$CH_2{=}C(R^1)C(=O)\{O(CH_2)_x(CH(CH_3))_y\}_zNHC(=O)OR^2- \quad (X)$$

wherein R^1 represents a hydrogen or a methyl group;

R^2 represents a divalent organic group containing at least one oxyalkylene group and said organic group may be linear, branched or cyclic and may contain one or more atoms other than carbon, hydrogen or oxygen;

x and y each represents zero or an integer of between 1 and 5;

z represents zero or an integer of between 1 and 10, provided that z is zero when both x and y are zero;

wherein subunit $\{O(CH_2)_x(CH(CH_3))_y\}_z$ of said unit of formula (X) may comprise substituents (CH_2) and ($CH(CH_3)$) in various arrangements, provided that each of R^1, R^2, x, y and z of each said unit of formula (X) are as defined above and each unit may be the same or different; and

(ii) a copolymer comprising at least one of said compounds as a co-monomer; and

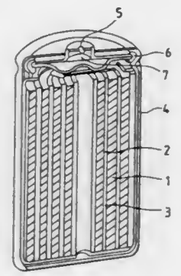
(b) at least one electrolyte salt.

5,665,491

NONAQUEOUS SECONDARY BATTERY

Hideki Tomlyama, and Masuo Kabutomori, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1996, Ser. No. 764,728
Claims priority, application Japan, Dec. 11, 1995, 7-321507
Int. Cl.[6] H01M *6/14*
U.S. Cl. 429—194 **12 Claims**



1. A nonaqueous secondary battery comprising a positive electrode sheet having on a current collector an electrode material mixture layer containing a lithium-containing transition metal oxide as a positive electrode active material, a negative electrode sheet having on a current collector an electrode material mixture layer containing a negative electrode material capable of intercalating and deintercalating lithium, and a nonaqueous electrolyte containing a lithium salt, wherein in at least one of said positive electrode sheet and said negative electrode sheet, in the case of said positive sheet, a layer containing no positive electrode active material is provided between plural electrode material mixture layers containing the positive electrode active material or between the electrode material mixture layer and the current collector; and in the case of said negative electrode sheet, a layer containing no negative electrode material capable of intercalating and deintercalating lithium is provided between plural electrode material mixture layers containing the negative electrode material or between the electrode material mixture layer and the current collector.

5,665,492

COMPOSITE ELECTRODE INCLUDING ORGANIC DISULFIDE COMPOUND, METHOD OF PRODUCING THE SAME, AND LITHIUM SECONDARY BATTERY UTILIZING THE SAME

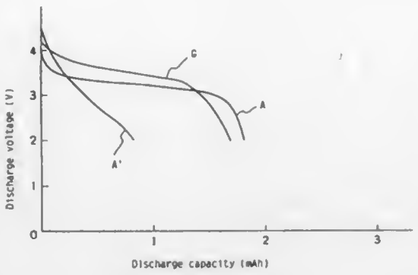
Tadashi Sotomura, Kashiwara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 23, 1996, Ser. No. 589,247
Claims priority, application Japan, Feb. 8, 1995, 7-020216; Feb. 17, 1995, 7-029687
Int. Cl.[6] H01M *4/60;4/66*
U.S. Cl. 429—213 **14 Claims**

1. A composite electrode comprising:

(a) a substrate made of metallic copper, metallic silver or an alloy including copper or silver as a main component, and

(b) a composition supported on said substrate, said composition comprising polyaniline and an organic disulfide compound which contains at least one sulfur-sulfur bond, wherein said sulfur-sulfur bond is cleaved when electrolytically reduced to form a sulfur-metal ion (including proton) bond and said



sulfur-metal ion bond is regenerated into said sulfur-sulfur bond when electrolytically oxidized.

5,665,493

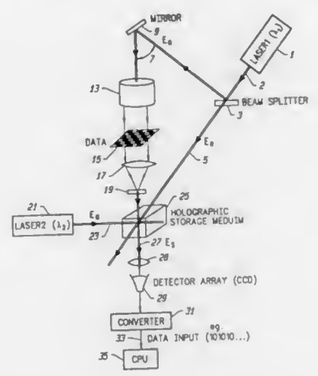
GATED RECORDING OF HOLOGRAMS USING RARE-EARTH DOPED FERROELECTRIC MATERIALS

Yu Sheng Bai; Ravinder Kachru, both of Redwood City; Lambertus Hesselink, Woodside, and Roger M. Macfarlane, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Oct. 3, 1995, Ser. No. 538,704

Int. Cl.[6] G03H *1/02;1/04*

U.S. Cl. 430—1 **23 Claims**



1. A method of writing to a holographic recording medium containing a ferroelectric material doped with a rare earth element, the method comprising the following steps:

separating a first radiation beam of a first wavelength into a reference beam and an object beam;

spatially modulating the object beam to produce a spatially modulated object beam;

combining the reference beam and the spatially modulated object beam to form an interference pattern on a first region of said holographic recording medium; and

directing a gating radiation beam containing at least a second wavelength onto a second region at least partially coextensive with said first region of the holographic recording medium, whereby photons of the first and second wavelengths together promote electrons of the holographic recording medium to a conduction band by a two-photon process such that the interference pattern is recorded in said holographic recording medium, wherein at least one of the first radiation beam and the gating beam is provided at an intensity of at most about 1000 watts/cm^2.

5,665,494

PHOTOSENSITIVE COMPOSITION FOR VOLUME HOLOGRAM RECORDING

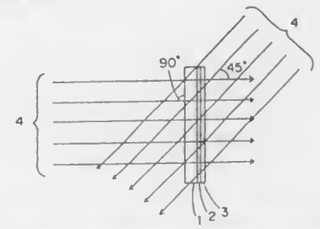
Masami Kawabata, Takatsuki; Akihiko Sato, Suita, and Iwao Sumiyoshi, Osaka, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka-fu, Japan

Division of Ser. No. 152,094, Nov. 15, 1993, Pat. No. 5,453,340, which is a division of Ser. No. 870,422, Apr. 17, 1992, abandoned. This applicatioo Oct. 24, 1994, Ser. No. 327,551

Claims priority, application Japan, Apr. 17, 1991, 3-85177; Mar. 25, 1992, 4-67021

Int. Cl.[6] G03H *1/02;* G03C *1/72*

U.S. Cl. 430—2 **4 Claims**



1. A photosensitive composition for volume hologram recording which is used for recording an interference fringe produced by a laser beam or a light having excellent coherence, as fringes having different refractive indexes, said composition consisting essentially of:

(a) a cationic polymerizable compound which is liquid at ambient temperature;

(b) a radical polymerizable compound which is different from said cationic polymerizable compound (a);

(c) a cyanine dye; and

(d) a diaryliodonium salt selected from the group consisting of diaryliodonium tetrafluoroborate, diaryliodonium hexafluorophosphate, diaryliodonium hexafluoroarsenate and diaryliodonium hexafluoroantimonate.

5,665,495

METHOD FOR FABRICATING A SEMICONDUCTOR WITH A PHOTOMASK

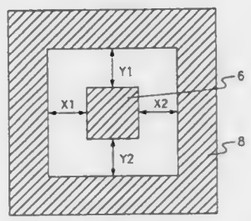
Joon Hwang, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Mar. 7, 1995, Ser. No. 399,930

Claims priority, application Rep. of Korea, Mar. 10, 1994, 1994-4719

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **2 Claims**



1. A method for fabricating a semiconductor with scribe lines using a photomask having vernier patterns in scribe line areas, comprising the steps of:

providing the photomask with said vernier patterns in each corner of four sides of said scribe line areas;

exposing the photomask and overlapping during the exposing the vernier patterns to form an overlapped exposed pattern in a portion of the scribe lines on the semiconductor; and

measuring the overlapped exposed pattern to inspect errors.

5,665,496

METHOD FOR PRODUCING COLOR FILTER

Hiroyoshi Omika; Yutaka Otsuki; Hitoshi Yuasa; Eiji Yoda; Toru Nakamura, all of Yokohama; Masayuki Ando, Kashiwa; Teruhisa Kuroki, Kawasaki, and Norikatsu Ono, Narashino, all of Japan, assignors to Nippon Oil Co., Ltd., Minato-ku, and Dai Nippon Printing Co., Ltd., Shinjuki-ku, both of Japan

Filed Jun. 13, 1995, Ser. No. 489,817

Claims priority, application Japan, Jun. 24, 1994, 6-143156; Jun. 24, 1994, 6-143157; Jul. 28, 1994, 6-177032

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—7 **13 Claims**

1. A method for producing a color filter comprising the steps of:

(a) forming a positive photosensitive coating film on a transparent electrically conductive layer of a transparent substrate having said transparent electrically conductive layer thereon;

(b) forming on said positive photosensitive coating film a light-irradiated region where a light irradiation amount is different in two steps using a mask having light transmittances different in two steps;

(c) developing a light-irradiated portion of the positive photosensitive coating film irradiated with a higher light irradiation amount to lay-upon said transparent electrically conductive layer followed by electrodepositing a light shielding layer thereon;

(d) forming on the positive photosensitive coating film undeveloped in said step (c) a light-irradiated region where a light irradiation amount is different in two steps using a mask having light transmittances different in two steps;

(e) developing a light-irradiated portion of the photosensitive coating film irradiated with a higher light irradiation amount in the light-irradiated region formed in said step (d) to lay-open the transparent electrically conductive layer followed by electrodepositing a colored coating thereon to form a colored layer;

(f) forming on the positive photosensitive coating film undeveloped in said step (e) a light-irradiated region where a light irradiation amount is different in at least three steps using a mask having light transmittances different in two steps or a mask having light transmittances different in three steps; and

(g) developing the photosensitive coating film in the light-irradiated region formed in said step (f) to lay-open the transparent electrically conductive layer followed by electrodepositing a colored coating thereon to form a colored layer, operation of said developing and electrodepositing in this step being sequentially repeated at least twice in an order of decreasing light irradiation amounts, to thereby form at least a colored layer,

wherein ultrasonic wave is irradiated to said transparent substrate having said transparent electrically conductive layer before said electrodepositing in at least one of said steps (c), (e) and (g).

5,665,497

IMAGE RECORDING METHOD

Hiroyuki Obata, and Kohji Ichimura, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 9,402, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 613,712, Nov. 15, 1990, abandoned. This application Nov. 9, 1995, Ser. No. 556,011

Claims priority, application Japan, Mar. 16, 1989, 64262; Mar. 17, 1989, 65462; Mar. 17, 1989, 65463; Mar. 16, 1990, 64261

Int. Cl.[6] G03G *17/04;13/04*

U.S. Cl. 430—35 **2 Claims**

1. An image recording method in which a photosensitive member consisting of a photoconductive layer which is formed on a substrate with a conductive layer interposed therebetween is disposed face-to-face with a charge retaining medium consisting of an insulating layer which is formed on a substrate with a conductive layer interposed therebetween, and image exposure is carried out from said photosensitive member side with a voltage being applied across an air gap between the two conductive layers of said photosensitive member and said charge retaining medium, thereby inducing a field emission and a resulting electric discharge in said air gap between said photosensitive member and said charge retaining medium, and thus storing an electric charge in the form of an image on the surface of said charge retaining medium, comprising the steps of:

placing the charge retaining member and the photosensitive member in a vacuum chamber in which gas pressure is controlled by a pump; and

controlling the pump to change the gas pressure between said photosensitive member and said charge retaining medium, thereby switching field emission and the resulting electric discharge ON/OFF in said air gap and effecting image recording without changing said air gap.

5,665,498

IMAGING ELEMENT CONTAINING POLY(3,4-ETHYLENE DIOXYPYRROLE/STYRENE SULFONATE)

Dennis J. Savage, Rochester; Brian A. Schell, Honeoye Falls, and Brian K. Brady, North Chili, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1996, Ser. No. 753,306

Int. Cl.[6] G03G *5/14;* G03C *1/85*

U.S. Cl. 430—41 **18 Claims**

1. An imaging element comprising

a support,

at least one image-forming layer superposed on said support;

a transparent electrically conductive layer superposed on said support comprising a dispersion of poly(3,4-ethylene dioxypyrrole/styrene sulfonate) in a film-forming binder.

5,665,499

METHOD FOR DEVELOPMENT OF ELECTROPHOTOGRAPHIC PRINTING PLATE PRECURSOR

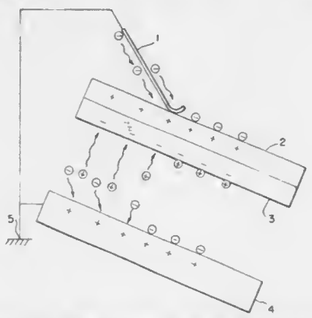
Shigeyuki Dan, and Takao Nakayama, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 518,336, Aug. 23, 1995, Pat. No. 5,597,671. This application Sep. 12, 1996, Ser. No. 712,847

Claims priority, application Japan, Sep. 20, 1994, 6-225077

Int. Cl.[6] G03G *13/28*

U.S. Cl. 430—49 **4 Claims**



1. A method for developing an electrophotographic printing plate precursor, which comprises placing an electrode so as to face a latent electrostatic image bearing photoconductive layer of the electrophotographic printing plate precursor which comprises an electrically conductive support having thereon a photoconductive layer and a back layer, said back layer being provided on the surface of said support opposite to said photoconductive layer, wherein said back layer comprises at least an outermost layer having a surface resistivity of from 1×10^{10} to $1\times10^{14}\Omega$ and an inner layer having a surface resistivity of less than $1\times10^{10}\Omega$, supplying a developing solution between said electrode and said

photoconductive layer, and wet developing the electrophotographic printing plate precursor while contacting an electrically conductive element with the back layer of the electrophotographic printing plate precursor.

5,665,500

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Yasuo Suzuki, Fuji, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,066

Claims priority, application Japan, Oct. 31, 1994, 6-290468; Feb. 2, 1995, 7-037651; Oct. 24, 1995, 7-299099

Int. Cl.[6] G03G *5/04*

U.S. Cl. 430—59 **46 Claims**

1. An electrophotographic photoconductor, comprising an electroconductive support, and a photoconductive layer formed thereon as a surface top layer of said photoconductor, said photoconductive layer comprising a charge generating material and a charge transporting material, and having an oxygen transmission coefficient of 2.0×10^{-11} $cm^3 \bullet cm/cm^2 \bullet s \bullet cmHg$ or less, said charge transporting material having a charge mobility of 1×10^{-5} $cm^2/V \bullet s$ or more at an electric field strength of 5×10^5 V/cm.

5,665,501

PHOTOCONDUCTIVE ELEMENT WITH POLYCARBONATE BINDER

Petrus J. M. Derks, Velden, and Hendrik J. A. Ogrinc, Venlo, both of Netherlands, assignors to Oce-Nederland, B.V., Venlo, Netherlands

Filed Nov. 1, 1996, Ser. No. 740,690

Claims priority, application Netherlands, Nov. 9, 1995, 1001611

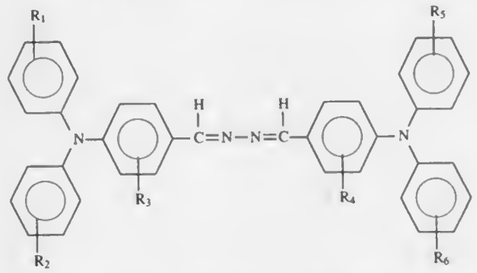
Int. Cl.[6] G03G *5/06;5/047*

U.S. Cl. 430—59 **13 Claims**

1. A photoconductive element having a photoconductive layer containing a polycarbonate binder based on di-(monohydroxyaryl) alkane, wherein the polycarbonate contains a branching agent selected from the group consisting of 1,2,4-benzene tricarboxylic acid, 1,3,5-benzene tricarboxylic acid, 1,2,4-benzene tricarboxylic acid chloride and 1,3,5-benzene tricarboxylic acid chloride.

6. A photoconductive element having a photoconductive layer with a generating layer and a transport layer, the latter containing a polycarbonate binder based on di-(monohydroxyaryl) alkane, wherein the polycarbonate contains a branching agent selected from the group consisting of 1,2,4-benzene tricarboxylic acid, 1,3,5-benzene tricarboxylic acid chloride, 1,2,4-benzene tricarboxylic acid chloride and 1,3,5-benzene tricarboxylic acid chloride.

11. A photoconductive element according to claim 6, wherein an azine transport substance having the following molecular formula is mixed in the transport layer:



where R_1–R_6 comprise a hydrogen atom or an alkyl group with 1–4 carbon atoms.

5,665,502

ELECTROPHOTOGRAPHIC PHOTORECEPTOR AND METHOD FOR PRODUCING THE PHOTORECEPTOR

Kunio Ohashi; Mitsuru Tokuyama, both of Nara; Hiroshi Kinashi, Kyoto; Mamoru Nozomi, Kanagawa; Tadashi Umehara, Niigata, and Toshiya Asari, Kanagawa, all of Japan, assignors to Mitsubhishi Kasei Corporation, Tokyo, and Sharp Kabushiki Kaisha, Osaka, both of Japan

Continuation of Ser. No. 148,921, Nov. 5, 1993, Pat. No. 5,536,607. This application Jan. 31, 1996, Ser. No. 594,402

Claims priority, application Japan, Nov. 5, 1992, 4-296132

Int. Cl.[6] G03G *5/10*

U.S. Cl. 430—62 **14 Claims**

1. An electrophotographic photoreceptor comprising a cylindrical electrically conductive substrate having thereon at least a photoconductive layer, said conductive substrate having a marking portion in which the light reflectance of the surface of said conductor substrate has been changed by a laser light treatment, wherein the light reflectance of said marking portion is not higher than 50% of the light reflectance of said conductive substrate at the portion other than said marking portion, in terms of a relative light reflectance.

5,665,503

POSITIVE CHARGE TYPE ORGANIC PHOTOCONDUCTIVE LAYER

Sei Tsunoda; Toshio Kobayashi, both of Amagasaki; Shigeo Tsuda, Kamakura; Kikuo Hayama, and Hiromi Yamada, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 925,606, Aug. 4, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 289,996

Claims priority, application Japan, Sep. 12, 1991, 3-232875

Int. Cl.[6] G03G *15/04*

U.S. Cl. 430—66 **7 Claims**

1. A positive charge type organic photoconductive layer comprising:

a film containing 15% to 40% by weight of a χ type crystal of a metal-free phthalocyanine compound in a binder resin, said film having a thickness of from 10 μm to 30 μm; and

a coating on said film, said coating being a reactive product of a mixture of a diglycidyl ether epoxy resin of bisphenol F and an amine compound.

5,665,504

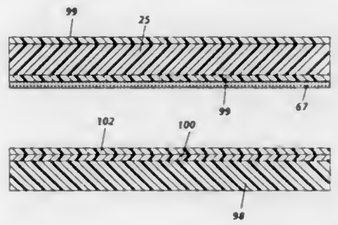
SIMULATED PHOTOGRAPHIC-QUALITY PRINTS USING A PLASTICIZER TO REDUCE CURL

Shadi L. Malhotra, Ontario, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,784

Int. Cl.[6] G03G *13/14*

U.S. Cl. 430—97 **20 Claims**



1. A method of creating simulated photographic-quality prints, including the steps of:

providing a coated transparent substrate having a toner image formed thereon by a xerographic or ink jet process;

providing one surface of a backing member with a first coating comprising a polymeric adhesive binder having a glass transition temperature of less than 55° C.;

providing said one surface of said backing sheet with a second coating in contact with said first coating wherein said second coating comprises a hydrophilic polymer having a melting point of greater than 50° C.; and a plasticizer having a melting point less than 75° C.; and

adhering said substrate to said one surface of said backing sheet at a temperature of about 100° C. to about 150° C. and a pressure of about 75 psi to about 125 psi.

5,665,505

SIMULATED PHOTOGRAPHIC-QUALITY PRINTS USING A TRANSPARENT SUBSTRATE CONTAINING A WRONG READING IMAGE AND A BACKING SHEET CONTAINING A RIGHT READING IMAGE OF DIFFERENT INFORMATION

Shadi L. Malhotra, Ontario, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,227

Int. Cl.[6] G03G *15/22*

U.S. Cl. 430—97 **20 Claims**

1. A method of creating simulated photographic-quality prints using non-photographic imaging, including the steps of:

providing a coated transparent substrate having first images formed thereon using a non-photographic imaging process, said first images being wrong reading;

providing a coated substrate having second images which are right reading formed thereon using a non-photographic imaging process, said second images representing different information than said first images; and

using heat and pressure, adhering an imaged side of said transparent substrate containing said first images to an imaged side of said coated substrate containing said second images whereby said wrong and right reading images form integrated information.

5,665,506

TONER FOR THE DEVELOPMENT OF ELECTROSTATIC IMAGE AND PROCESS FOR THE PREPARATION THEREOF

Koichi Kashima; Hajime Yamazaki; Shinji Otani; Kiyokazu Takasou; Makoto Nagaoka, and Hiroshi Hamada, all of Kanagawa, Japan, assignors to Hodogaya Chemical Co., Ltd., Kawasaki, Japan

Filed Jan. 30, 1996, Ser. No. 593,521

Claims priority, application Japan, Jan. 31, 1995, 7-032811

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—106 **4 Claims**

1. A process for preparing a particulate toner for developing an electrostatic image, which comprises:

suspending a polymerizable monomer composition comprising a polymerizable monomer, a resin dissolved therein, and a coloring agent in an aqueous medium not containing a dispersant to prepare a pre-suspension,

jetting the pre-suspension through a nozzle under elevated pressure in a flowing direction which is forced to vary so that the pre-suspension collides with a predetermined plane or with each other,

then immediately passing the pre-suspension through an apparatus for throttling the path to produce back pressure and shearing stress to prepare a suspension containing a particulate polymerizable monomer, and

subjecting the resulting suspension to polymerization,

wherein the content of the resin is from 1 to 50% by weight based on the total amount of the polymerizable monomer and the resin.

5,665,507

RESIN-COATED CARRIER FOR ELECTROPHOTOGRAPHIC DEVELOPER

Masahiro Takagi; Masahito Shinoki, and Takayoshi Aoki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 16,201, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 798,921, Nov. 29, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 221,982

Claims priority, application Japan, Nov. 30, 1990, 2-330632

Int. Cl.[6] G03G *9/00*

U.S. Cl. 430—108 **3 Claims**

1. A carrier for an electrophotographic developer, comprising:

(a) a particle composed of a magnetic material;

(b) a first fluoro resin coating adhered to only a portion of the particle surface and forming a reticular coating thereon; and

(c) a second fluoro resin coating adhered to the particle surface on a portion other than the portion on which the first fluoro resin is adhered wherein the first and second fluoro resin coatings do not overlap each other;

wherein the critical surface tension of the second fluoro resin is more than 5 dynes/cm greater than the critical surface tension of the first fluoro resin;

said first fluoro resin coating consisting essentially of a vinylidenefluoride-trifluoroethylene copolymer, a vinylidenefluoride-tetrafluoroethylene copolymer, or a vinylidenefluoride-hexafluoropropylene copolymer; and

said second fluoro resin coating consisting essentially of a tetrafluoroethylene-vinyl ether copolymer, a monochlorotrifluoroethylene-vinyl chloride copolymer, or an ethylene-tetrafluoroethylene copolymer.

5,665,508

ELECTROPHOTOGRAPHY CARRIER HAVING DOMAINS DISPERSED IN A MATRIX RESIN WITH A DISPERSION ASSISTANT INTERPOSED

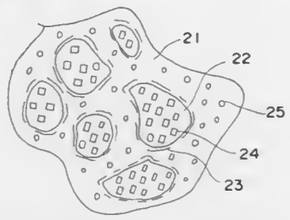
Sanji Inagaki, Toyokawa; Shoichi Tsuge, Okazaki; Mineyuki Sako, Toyohashi; Kenzo Toya, Okazaki, and Takashi Akazawa, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 916,678, Jul. 22, 1992, abandoned. This application Jul. 29, 1994, Ser. No. 282,478

Claims priority, application Japan, Jul. 23, 1991, 3-182359; Jul. 23, 1991, 3-182360; Jul. 23, 1991, 3-182362; Mar. 26, 1992, 4-068277

Int. Cl.[6] G03G *9/00;9/083;* **B32B** *5/16;* **C04B** *35/04*

U.S. Cl. 430—108 **18 Claims**



1. A carrier for electrophotography comprising:

a plurality of domains comprising a domain resin and magnetic particles;

a matrix comprising a coloring agent and a matrix resin having a low compatibility with the domain resin; and

a dispersion assistant having a high compatibility with both the domain resin and the matrix resin and having an Izod impact value higher than that of the matrix resin, said domains being dispersed in the matrix resin with the dispersion assistant interposed, said dispersion assistant composed of a copolymer comprising the domain resin component and the matrix resin component;

said carrier having a size distribution in a range of from 50 micrometers to 100 micrometers.

5,665,509

ELECTROPHOTOGRAPHIC CARRIER COMPOSITIONS HAVING IMPROVED LIFE

Thomas Brantly, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed Nov. 13, 1996, Ser. No. 748,377

Int. Cl.[6] G03G *9/113*

U.S. Cl. 430—108 **16 Claims**

1. An electrophotographic carrier composition, comprising carrier particles comprising a core and a coating thereupon, said coating comprising a resin and a mixture of positive and negative charge agents.

5,665,510

TONER FOR ELECTROPHOTOGRAPH AND PROCESS FOR THE PRODUCTION THEREOF

Kazuyoshi Hattori, Shizuoka, Japan, assignor to Tomoegawa Paper Co., LTD., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,832

Claims priority, application Japan, Sep. 29, 1994, 6-259090; Aug. 22, 1995, 7-236137

Int. Cl.[6] G03G *9/093*

U.S. Cl. 430—109 **7 Claims**

1. A toner for electrophotography produced by the process which consists essentially of

mixing toner matrix particles containing a binder resin having an epoxy group and a colorant with a curing agent to form a mixture,

heat-treating said mixture or applying a mechanical impact force on the mixture to thereby form a cured coating of the resin having an epoxy group and the curing agent on the surface of each of the toner matrix particles.

5,665,511

SURFACE-TREATED INORGANIC FINE PARTICLE AND ELECTROPHOTOGRAPHIC DEVELOPER USING THE SAME

Takashi Imai; Satoshi Inoue; Masanori Ichimura; Yutaka Sugizaki; Susumu Saito; Masaru Miura; Michio Take; Yasuo Yamamoto; Koji Fukushima, and Manabu Serizawa, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 209,736, Mar. 14, 1994, abandoned, which is a division of Ser. No. 877,245, May 1, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,729

Claims priority, application Japan, May 14, 1991, 3-137042

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **18 Claims**

1. An electrophotographic dry developer comprising toner particles and surface-treated inorganic particles, said surface-treated inorganic particles consisting essentially of inorganic particles having an average particle size of 5–200 nm, a hydrophobizing agent selected from the group consisting of titanate coupling agent, aluminum coupling agent and zirconium aluminate coupling agent deposited on the surface of said inorganic particles and an amino group-containing coupling agent deposited on the surface of said inorganic particles, wherein 0.01–0.1 part by weight of said amino group-containing coupling agent is deposited on the surface of said inorganic particles per one part by weight of said hydrophobizing agent.

5,665,512

MONO-COMPONENT TONER FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE AND DEVELOPING METHOD

Chikara Tsutsui, Nishinomiya; Hiroyuki Fukuda, Kobe, and Junju Machida, Toyonaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 1, 1995, Ser. No. 551,561

Claims priority, application Japan, Nov. 2, 1994, 6-269897; Nov. 2, 1994, 6-269898

Int. Cl.[6] G03G *9/097*

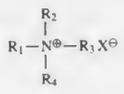
U.S. Cl. 430—110 **42 Claims**

1. A mono-component toner comprising:

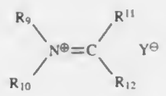
binder resin;

a colorant; and

a first charge control agent having negative chargeability and an amount of solubility between 10% to 50% by weight in toluene; and a second charge control agent, an amount of the first charge control agent being larger than that of the second charge control agent and a total amount of the first and second charge control agent being 1 part by weight to 7 parts by weight with respect to 100 parts by weight of the binder resin, said second charge control agent being selected from the group consisting of the following formula (A) and (B):



(A)



(B)

wherein

each of R1–R4 is a member selected from the group consisting of hydrogen atom, alkyl group, aryl group, aryl-alkyl group, alkenyl group, fluoride alkyl group having carbon atoms of 1–69 and fluorine atoms of 3–66 and fluoride alkenyl group having carbon atoms of 1–69 and fluorine atoms 3–66, with the proviso that at least one of R1–R4 is a fluoride alkyl group or a fluoride alkenyl group, said fluoride alkyl group and fluoride alkenyl group being unsubstituted or substituted with a member selected from the group consisting of hydroxyl group, chloromethyl group, carboxyl amide group, sulfonic amide group, urethane group, amine group, R5-O-R6 group and R7-C(O)-R8 wherein each of R5–R8 is an alkyl group having carbon atoms of 1–30;

X is an organic anion or an inorganic anion;

each of R9–R12 is a member selected from the group consisting of hydrogen atom, alkyl group, aryl group, aryl-alkyl group, alkenyl group, fluoride alkyl group having carbon atoms of 1–69 and fluorine atoms of 3–66 and fluoride alkenyl group having carbon atoms of 1–69 and fluorine atoms of 3–66, with the proviso that at least one of the R9–R12 representing the fluoride alkyl group or the fluoride alkenyl group, said fluoride alkyl group and fluoride alkenyl group being unsubstituted or substituted with a member selected from the group consisting of hydroxyl group, chloromethyl group, carboxyl amide group, sulfonic amide group, urethane group, amine group, R5—O—R6 group and R7—C(O)—R8; and

Y is an organic anion or an inorganic anion.

5,665,513

TONER FOR DEVELOPING ELECTROSTATIC CHARGED IMAGE

Tetsuya Ida; Masaaki Taya, and Tsuyoshi Takiguchi, all of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

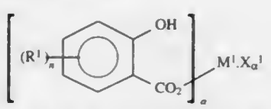
Filed Aug. 29, 1996, Ser. No. 705,522

Claims priority, application Japan, Aug. 30, 1995, 7-243888

Int. Cl.[6] G03G *9/097*

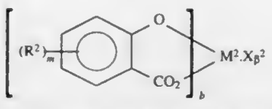
U.S. Cl. 430—110 **16 Claims**

1. A toner for developing an electrostatic image, comprising toner particles containing a mixture of a binder resin, a coloring agent and the following compounds (I) and (II), wherein the mixing ratio in weight of the compounds (I) to (II) is within a range of from 99:1 to 30:70



(I)

wherein, R^1 is alkyl group; halogen group or nitro group; n is an integer within a range of from 1 to 4; a is 1 or larger integer; M^1 is a divalent or higher metal: X^1 is an anion or a cation; and α is 0 or larger integer



(II)

wherein, R^2 is alkyl group, halogen group or nitro group; m is an integer within a range of from 1 to 4; b is 1 or larger integer; M^2 is a divalent or higher metal; X^2 is an anion or cation; and β is 0 or larger integer.

5,665,514

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Koichi Shirai; Kazunobu Imoto, and Shinji Kometani, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Jan. 11, 1996, Ser. No. 585,195

Claims priority, application Japan, Jan. 11, 1995, 7-018335

Int. Cl.[6] B32B *3/26;* **G03C** *8/52*

U.S. Cl. 430—201 **8 Claims**

1. A thermal transfer image-receiving sheet comprising a substrate and a colorant-receptive layer formed on at least one surface of the substrate, said substrate comprising a laminate of a plurality of plastic films, said laminate comprising at least (i) a plastic core layer containing microvoids, and (ii) a plastic skin layer containing microvoids and being formed either (i) on one surface of the core layer such that the skin layer is disposed between the colorant-receptive layer and the core layer or (ii) on both surfaces of the core layer such that the skin layer is disposed between the colorant-receptive layer and the core layer and on an opposite surface of the core layer,

wherein the volume fraction of the total volume of the microvoids contained in the skin layer based on the volume of the whole skin layer is smaller than the volume fraction of the total volume of the microvoids contained in the core layer based on the volume of the whole core layer, and

wherein the volume fraction of the skin layer is in the range of 1.0 to 15.0%.

5,665,515

METHOD FOR OBTAINING A PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Lode Deprez, Wachtebeke; Marcel Monbaliu, Mortsel, and Jean-Marie Dewanckele, Drongen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Oct. 18, 1995, Ser. No. 544,662

Claims priority, application European Pat. Off., Oct. 24, 1994, 942 03 061.0

Int. Cl.[6] G03C *8/44;8/36;8/32;* **G03F** *7/07*

U.S. Cl. 430—204 **6 Claims**

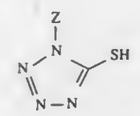
1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process using a photographic material comprising on a support a silver halide emulsion layer and a layer containing physical development nuclei comprising the steps of:

image-wise exposing said photographic material;

developing a thus obtained image-wise exposed photographic material by guiding said image-wise exposed photographic material through an alkaline processing liquid comprising a hydrophobizing agent, in 15s or less and;

directly thereafter guiding a thus obtained developed photographic material through a stabilising liquid wherein said stabilising liquid has a pH of from 5 to 7 and comprises a buffer;

characterized in that said stabilising liquid comprises a compound having a mercapto-group having a pH_a of 4.5 or less and corresponding to the following formula:



(I)

wherein Z represents an alkyl, an aryl, an alkenyl, an alkynyl or a heterocyclic ring.

5,665,516

IMAGING ELEMENT FOR MAKING LITHOGRAPHIC PRINTING PLATES ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Hendrik Kokelenberg, Schoten; Ronny De Clercq, Aalter; Jan Gilleir, Mortsel; Paul Coppens, Turnhout, all of Belgium, and Johan Loccufier, Zwijnaarde, Germany, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 6, 1996, Ser. No. 744,282

Claims priority, application European Pat. Off., Nov. 9, 1995, 95203052

Int. Cl.[6] G03C *8/50;8/28;* **G03F** *7/07*

U.S. Cl. 430—204 **10 Claims**

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer and (iii) an intermediate layer between said image receiving layer and said photosensitive layer, characterized in that said intermediate layer comprises particles of an alkali insoluble polymeric organic compound obtainable by polycondensation, said particles having a number average size between 0.02 μm and 10 μm.

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5,665,517
ACIDIC ION EXCHANGE RESIN AS A CATALYST TO SYNTHESIZE A NOVOLAK RESIN AND PHOTORESIST COMPOSITION THEREFROM

M. Dalil Rahman, Flemington, N.J.; Daniel P. Aubin, Voluntown, Conn.; Elaine G. Kokinda, Somerville, and Dana L. Durham, Flemington, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jan. 11, 1996, Ser. No. 587,874
Int. Cl.[6] G03F *7/004;* **C08F** *6/00;* **C02F** *1/42*
U.S. Cl. 430—270.1 **8 Claims**

1. A method for producing a water insoluble, aqueous alkali soluble novolak resin comprising:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of a solid acid catalyst, said catalyst being a solid acid catalyst which can be separated by filtration after the condensation reaction, wherein said acid catalyst is an acidic ion exchange resin which is insoluble in substituted phenols, formaldehyde, propylene glycol methyl ether acetate, dipropylene glycol methyl ether, and 3-methoxy-3-methyl butanol;

b) after the condensation, removing the solid catalyst; and

c) removing the unreacted phenolic compounds and thereby producing a water insoluble, aqueous alkali soluble, film forming novolak resin having a sodium and iron ion level of less than 200 ppb each.

3. A method for producing a positive photoresist composition comprising:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of an acid catalyst, said catalyst being a solid acid catalyst which can be separated by filtration after the condensation reaction, wherein said acid catalyst is an acidic ion exchange resin which is insoluble in substituted phenols, formaldehyde, propylene glycol methyl ether acetate, dipropylene glycol methyl ether, and 3-methoxy-3-methyl butanol;

b) after the condensation, removing the catalyst; and

c) removing the unreacted phenolic compounds and thereby producing a water insoluble, aqueous alkali soluble, film forming novolak resin having a sodium and iron ion level of less than 200 ppb each;

d) providing an admixture of: 1)a photosensitive component in an amount sufficient to photosensitize a photoresist composition; 2) the water insoluble, aqueous alkali soluble, film forming novolak resin of c) and 3) a suitable photoresist solvent, and thereby forming a photoresist composition.

6. A method for producing a semiconductor device by producing a photo-image on a suitable substrate comprising:

a) condensing formaldehyde with one or more phenolic compounds, in the presence of an acid catalyst, said catalyst being a solid acid catalyst which can be separated by filtration after the condensation reaction, wherein said acid catalyst is an acidic ion exchange resin which is insoluble in substituted phenols, formaldehyde, propylene glycol methyl ether acetate, dipropylene glycol methyl ether, and 3-methoxy-3-methyl butanol;

b) after the condensation, removing the catalyst; and

c) removing the unreacted phenolic compounds and thereby producing a water insoluble, aqueous alkali soluble, film forming novolak resin having a sodium and iron ion level of less than 200 ppb each;

d) providing an admixture of: 1) a photosensitive component in an amount sufficient to photosensitize a photoresist composition; 2) the water insoluble, aqueous alkali soluble, film forming novolak resin of c) and 3) a suitable photoresist solvent and thereby forming a photoresist composition;

e) costing a suitable substrate with the photoresist composition;

f) heat treating the coated substrate of e) until substantially all of the photoresist solvent is removed; image-wise exposing the photosensitive composition and removing the image-wise exposed areas of such composition with a suitable developer, such as ar aqueous alkaline developer.

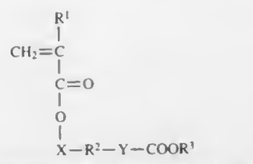
5,665,518
PHOTORESIST AND MONOMER AND POLYMER FOR COMPOSING THE PHOTORESIST

Katsumi Maeda; Kaichiro Nakano; Takeshi Ohfuji, and Etsuo Hasegawa, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 19, 1996, Ser. No. 588,607
Claims priority, application Japan, Jan. 26, 1995, 7-011043; Aug. 9, 1995, 7-203150
Int. Cl.[6] G03F *7/039;* **C07C** *69/54;* **C07D** *309/12;307/20*
U.S. Cl. 430—270.1 **3 Claims**



1. A vinylmonomer represented with the following general formula (I):



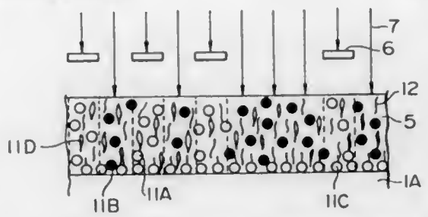
(I)

wherein R^1 represents one of a hydrogen atom and a methyl group, R^2 represents a dihydric, bridged cyclic hydrocarbon group having a carbon number in the range of 7 to 13 both inclusive, R^3 represents one of a hydrogen atom and an acid decomposable group, X represents one of an alkylene group and a coupler for coupling elements with each other so that an oxygen-carbon bond is established between said elements, and Y represents one of an alkylene group and a coupler for coupling elements with each other so that a carbon-carbon bond is established between said elements.

5,665,519
RESIST MATERIAL

Kunihiko Kasama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 30, 1996, Ser. No. 593,939
Claims priority, application Japan, Jan. 30, 1995, 7-013140
Int. Cl.[6] G03F *7/038;7/039*
U.S. Cl. 430—270.1 **7 Claims**



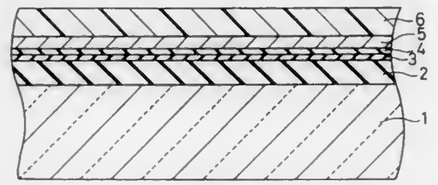
1. A positive chemical amplification type resist material which contains at least a resin and a photosensitive acid generator and changes solubility thereof by using a catalytic reaction of an acid generated by the photosensitive acid generator, wherein a straight-chain compound having a vertically orienting nature is added.

5. A negative chemical amplification type resist material which contains at least a resin and a photosensitive acid generator and changes solubility thereof by using a catalytic reaction of an acid generated by the photosensitive acid generator, wherein a straight-chain compound having a vertically orienting nature is added.

5,665,520
OPTICAL RECORDING MEDIUM

Kazumi Yoshioka, Yawata; Tetsuya Akiyama, Habikino; Takeo Ohta, Nara, and Hidemi Isomura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 30, 1995, Ser. No. 452,497
Claims priority, application Japan, Jun. 13, 1994, 6-155186
Int. Cl.[6] G11B *7/24*
U.S. Cl. 430—270.13 **12 Claims**



1. An optical recording medium comprising a transparent substrate, a first dielectric layer comprising a mixed material of ZnS and SiO_2 formed on one surface of said transparent substrate, a recording layer formed on said first dielectric layer, a second dielectric layer comprising a mixed material of ZnS and SiO_2 formed on said recording layer, and a reflecting layer formed on said second dielectric layer; wherein:

(i) said recording layer has properties of becoming amorphous after its temperature is increased, then melting and quenching by absorbing energy from the irradiation of a laser beam, and of crystallizing its amorphous state by temperature rise;

(ii) said second dielectric layer is thinner than said first dielectric layer and is 35–70 nm thick;

(iii) said reflecting layer is 70–120 nm thick and comprises Al and at least one metal selected from the group consisting of Ti, Ni, Cr, Cu, Ag, Au, Pt, Mg, Si and Mo;

(iv) the combined thickness of the first dielectric layer, the recording layer, the second dielectric layer and the reflecting layer is 250–430 nm; and

(v) the compressire stress of said first dielectric layer, said recording layer, said second dielectric layer, and said reflecting layer is 0.5×10^9 dyn/cm^2 or less.

5,665,521
LITHOGRAPHIC ELEMENT COMPRISING SUPPORT AND HYDROPHILIC LAYER

Yoshihiro Takagi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1996, Ser. No. 591,409
Claims priority, application Japan, Jan. 25, 1995, 7-009714
Int. Cl.[6] G03F *7/11*
U.S. Cl. 430—272.1 **10 Claims**

1. A process for the preparation of a lithographic plate comprising the steps of:

imagewise exposing to light a lithographic element which comprises a support, a hydrophilic layer and a light-sensitive layer in that order to form a hardened area and an unhardened area in the light-sensitive layer, wherein the hydrophilic layer contains fine particles of silicon dioxide dispersed in gelatin, said particles having an average particle size in the range of 0.1 to 10 μm, said particles being contained in the layer in an amount of not more than 2 g per m^2, and said gelatin having an average molecular weight in the range of 10,000 to 300,000, and wherein the light-sensitive layer contains a photopolymerization initiator, a cross-linkable polymer and a sulfur compound, said cross-linkable polymer having a group containing hydrogen, and said hydrogen being removable by attack of sulfur radical; and

removing the unhardened area of the light-sensitive layer.

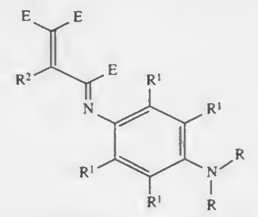
5,665,522
VISIBLE IMAGE DYES FOR POSITIVE-ACTING NO-PROCESS PRINTING PLATES

Dennis E. Vogel, Lake Elmo; Robert J. Balchunis, St. Paul; James P. Gardner, Stillwater; George V.D. Tiers, St. Paul, and Kim M. Vogel, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1995, Ser. No. 433,887
Int. Cl.[6] G03F *7/039;7/105;7/26*
U.S. Cl. 430—278.1 **29 Claims**

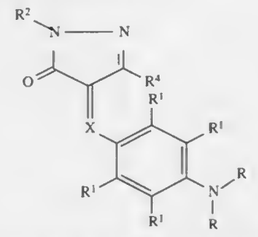
1. An article comprising a substrate coated with a photosensitive composition comprising: (a) a photoinitiator which generates a strong acid upon exposure to radiation; (b) a polymer having acid-labile groups pendant from the polymer backbone; and (c) a dye capable of being irreversibly bleached by said acid, providing a visible image upon exposure to radiation.

2. The article of claim 1 wherein said dye has a central nucleus selected from the group of formulas consisting of:



I

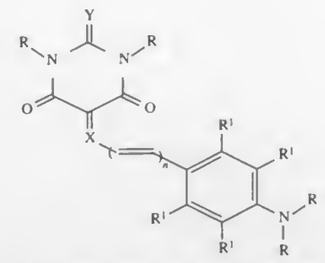
wherein R is independently an alkyl, cycloalkyl, alkaryl, or alkanoyl group having from 1 to 16 carbon atoms, or each R together with the nitrogen atom to which they are attached represents the necessary atoms to form a five- or six-membered ring; R^1 is independently hydrogen, halogen, cyano, or an alkyl, cycloalkyl, or alkoxy group having from 1 to 8 carbon atoms; or R and R^1 together with the nitrogen and two carbon atoms by which they are connected represent the necessary atoms to form a five- or six-membered ring; R^2 is Ar or an alkyl, cycloalkyl, or alkaryl group having from 1 to 16 carbon atoms; Ar is a substituted or unsubstituted aryl group; E is independently an electron withdrawing group selected from the group consisting of CN, SO_2R^3, $C(O)R^3$, and NO_2; and R^3 is independently an alkyl, cycloalkyl, or alkaryl group having from 1 to 16 carbon atoms, or each R^3 taken together with the atoms to which they are attached represent the necessary atoms to form a five- or six-membered ring;



II

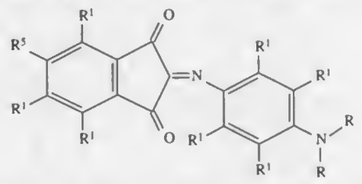
wherein X is N or CR^1; R^4 is H, CH_3, NHR^2, $NHC(O)R^2$, or NR_2; and R, R^1 and R^2 are as previously defined;

III



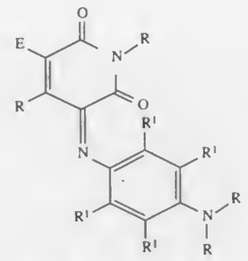
wherein Y is O or S; n is 0 or 1; and R, R^1, and X are as previously defined with the proviso that when Y is S, then X is N;

IV



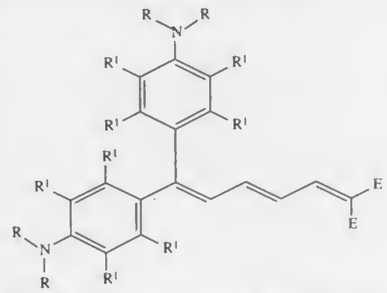
wherein R and R^1 are as previously defined; R^5 is R^1, or R^5 and R^1 taken together with the two carbon atoms by which they are connected represent the necessary atoms to form a five- or six-membered carbocyclic or heterocyclic, non-aromatic or aromatic ring;

V



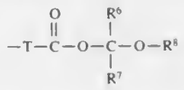
wherein R, R^1, and E are as previously defined; and

VI



wherein R, R^1, and E are as previously defined.

3. The article of claim **2** wherein said polymer is of the formula:



wherein R^6 and R^7 each represent H or an alkyl group with 1 to 18 carbon atoms with the proviso that at least one of R^6 and R^7 must be hydrogen; R^8 represents an alkyl group with 1 to 18 carbon atoms; or any two of R^6, R^7, and R^8 may together form a substituted or unsubstituted ring having from 3 to 36 carbon atoms; and T represents an optional divalent linking group bonded to the polymer backbone selected from the group consisting of O, NH, S, and an alkylene group containing from 1 to about 18 carbon atoms.

12. The article of claim **3** wherein said substrate is an aluminum sheet.

14. A process for forming a visible image on an article comprising the steps of (a) providing a substrate coated with a photosensitive composition comprising: (1) a photoinitiator which generates a strong acid upon exposure to radiation; (2) a polymer having acid-labile groups pendant from the polymer backbone; and (3) a dye capable of being irreversibly bleached by said acid; and (b) irradiating said article, thereby providing a visible image.

5,665,523

HEAT-RESISTANT NEGATIVE PHOTORESIST COMPOSITION, PHOTOSENSITIVE SUBSTRATE, AND PROCESS FOR FORMING NEGATIVE PATTERN

Toshihiko Omote, and Hirofumi Fujii, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

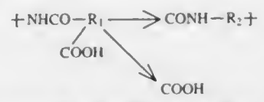
Continuation of Ser. No. 411,469, Mar. 28, 1995, abandoned. This application Nov. 18, 1996, Ser. No. 751,555

Claims priority, application Japan, Mar. 29, 1994, 6-058606

Int. Cl.[6] G03F *7/004;7/34*

U.S. Cl. 430—282.1 **6 Claims**

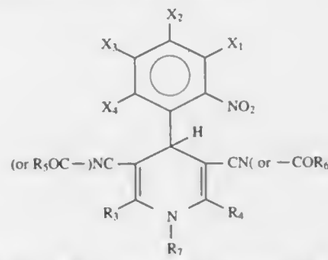
1. A heat-resistant negative photoresist composition consisting essentially of a resin component containing a structural unit represented by formula (I):



(I)

wherein the arrows each indicates a bond which can be substituted by isomerization, R_1 represents a tetravalent aromatic or aliphatic hydrocarbon residue, and R_2 represents a divalent aromatic or aliphatic hydrocarbon residue, and

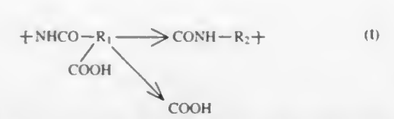
a compound represented by formula (II) which shows basicity upon irradiation with actinic rays:



(II)

wherein R_3 and R_4 each represents a hydrogen atom or an alkyl group containing 1 to 3 carbon atoms, R_5 and R_6 each is one selected from the group consisting of an alkyl group containing 1 to 4 carbon atoms, an alkoxyl group containing 1 to 4 carbon atoms, an anilino group, a toluidino group, a benzyloxy group, an unsubstituted amino group and a dialkylamino group, R_7 is an alkyl group containing 1 to 3 carbon atoms, an alkoxyl group containing 1 to 3 carbon atoms or an alkoxyalkyl group, and X_1 to X_4 each is one selected from the group consisting of a hydrogen atom, a fluorine atom, a nitro group, a methoxy group, a dialkylamino group, an unsubstituted amino group, a cyano group and a fluorinated alkyl group.

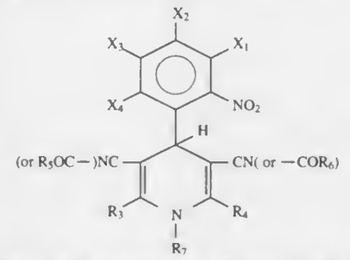
6. A photosensitive substrate comprising a substrate having coated on the surface of the substrate a heat-resistant negative photoresist composition consisting essentially of a resin component containing a structural unit represented by formula (I):



(I)

wherein the arrows each indicates a bond which can be substituted by isomerization, R_1 represents a tetravalent aromatic or aliphatic hydrocarbon residue, and R_2 represents a divalent aromatic or aliphatic hydrocarbon residue, and

a compound represented by formula (II) which shows basicity upon irradiation with actinic rays:



(II)

wherein R_3 and R_4 each represents a hydrogen atom or an alkyl group containing 1 to 3 carbon atoms, R_5 and R_6 each is one selected from the group consisting of an alkyl group containing 1 to 4 carbon atoms, an alkoxyl group containing 1 to 4 carbon atoms, an anilino group, a toluidino group, a benzyloxy group, an unsubstituted amino group and a dialkylamino group, R_7 is an alkyl group containing 1 to 3 carbon atoms, an alkoxyl group containing 1 to 3 carbon atoms or an alkoxyalkyl group, and X_1 to X_4 each is one selected from the group consisting of a hydrogen atom, a fluorine atom, a nitro group, a methoxy group, a dialkylamino group, an unsubstituted amino group, a cyano group and a fluorinated alkyl group.

5,665,524

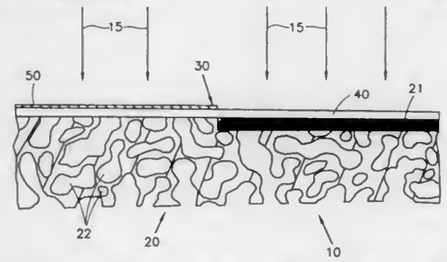
METHOD FOR PRODUCING A PRINTING PLATE AND METHOD IF ITS USE

Shigetora Kashio, Okazaki; Toju Kosuga, Nishinomiya, and Kuniyuki Takahashi, Urayasu, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 463,043, Jun. 5, 1995, abandoned. This application Nov. 26, 1996, Ser. No. 756,539

Int. Cl.[6] G03F *7/00;7/26;* **G03C** *5/00;5/16*

U.S. Cl. 430—300 **1 Claim**



1. In a method of forming an image on a planar surface of a thermoplastic resin sheet having a printing surface and a reverse surface, which sheet comprises an open-cell structure throughout the thickness of said sheet, which open-cell structure serves as a sponge comprising an ink reservoir having passageways for fluid ink to flow from cell to cell in said reservoir and to said printing surface thereby providing a continuous supply of ink to the imaged printing surface of said plate,

the steps for creating said image on said sheet surface at substantially the same surface plane as said planar surface of said sheet without raising any relief surface above any part of said image surface, and without closing or collapsing any substantial volume of said open cells comprising said reservoir, which steps comprise:

selectively applying thermal exposure to seal, at a temperature of about 50°– 150° C., limited superficial cells of said sheet at said planar surface only, without substantial penetration beneath said surface and without causing said cells to collapse beneath said planar surface, thereby forming superficial sealing of cells rendering a non-image pattern which is essentially impermeable to flow of fluid ink to provide solidified surface portions located only at said planar surface of said sheet, while leaving other surface portions unsealed to provide printing surfaces in accordance with said image,

soaking the resulting imaged sheet for hours sufficient to infuse fluid printing ink throughout the entire sheet by causing said ink to enter and substantially completely film with fluid printing ink essentially all of said open cells of said sheet, and

repeatedly applying the resulting printing surface to substrates to print said image thereon with ink stored within said plate and flowing through said open cells and through said unsealed areas of said planar surface.

5,665,525

METHOD FOR PRODUCING PRINTED CIRCUIT BOARDS

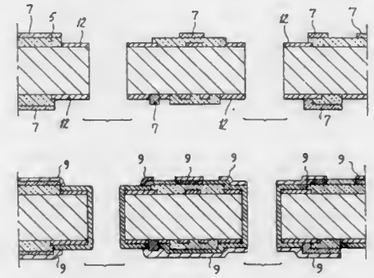
Seppo Pienimaa, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 49,604, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 764,442, Sep. 24, 1991, abandoned. This application Oct. 6, 1995, Ser. No. 540,573

Claims priority, application Finland, Oct. 30, 1990, 905366

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—315 **8 Claims**



1. A method for producing printed circuit boards, comprising the steps of:

(a) providing a substrate for a printed circuit board, said substrate having a base material and copper claddings on respective opposed faces over said base material;

(b) punching holes through the substrate and claddings to thereby form holes through said substrate defined by base material walls, said base material walls being substantially free of the copper claddings;

(c) cleaning and deburring the copper claddings by a mechanical technique;

(d) using image transfer and etching techniques to produce first conductor patterns in the claddings that leave exposed surfaces of the base material, said first conductive patterns leaving at least one portion of said cladding adjacent to and not extending into at least one of said holes on at least one of said opposed faces;

(e) applying a first photoimageable polymer insulating layer to said faces of said printed circuit board including said exposed surfaces of said base material and said claddings;

(f) subjecting the printed circuit board to exposure and development of the first polymer insulating layer to expose selected portions of the claddings, said selected portions including said

at least one portion of said cladding adjacent to at least one of said holes on at least one of said opposed faces;

(g) subjecting the opposite faces of the printed circuit board to an adhesion improvement and activation treatment necessary for chemical deposition of metal;

(h) applying a second photoimageable and developable insulating layer on at least one of said faces of the printed circuit board;

(i) performing image transfer and development of said second insulating layer to provide a pattern of said second insulating layer to protect first selected areas from subsequent metallization and to leave other areas unprotected from metallization, said at least one portion of cladding being an area unprotected from metallization by said pattern of said second insulating layer; and

(j) applying metallization to unprotected areas of the printed circuit board by chemical deposition to produce simultaneously, in a single process, desired second conductor patterns, contact areas and interconnections between said first and second conductor patterns through said holes in the unprotected areas, said metallization extending over the face of said unprotected areas and through said holes to thereby cover said at least one portion of cladding adjacent to at least one of said holes and extend through, to thereby cover, the base material walls of said at least one of said holes, whereby said metalization is provided with a wide area for connection to the cladding by extending along the face of the cladding extending over the face of the substrate.

5,665,526

THERMALLY STABLE PHOTOIMAGING COMPOSITION

Voya Rista Markovich, Endwell; Ashit Arvind Mehta, Vestal; Eugene Roman Skarvinko, Binghamton, and David Wei Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 594,780, Oct. 9, 1990. This application Jun. 6, 1995, Ser. No. 471,644

Int. Cl.[6] G03C *5/00;* **C08F** *2/46*

U.S. Cl. 430—325 **16 Claims**

1. A process for photopatterning a solder mask on an organic dielectric circuit board, such solder mask being thermally stable at 360° C. and having a coefficient of thermal expansion of 28–40 ppm/° C., comprising the steps of:

(a) providing a photosensitive solder mask, consisting essentially of:

30–70% by a combined resin-filler weight of a cationic polymerizable bisphenol A formaldehyde novolak epoxy resin,

0.5% to approximately 10% per resin weight of a photosensitive, cationic photoinitiator,

a solvent and

30–70% by a combined resin-filler weight of an optically transparent silicon dioxide filler transparent to wavelength of 310 to 400 nanometers, wherein said solder mask is both an encapsulant and a dielectric;

(b) then disposing said solder mask upon the organic dielectric circuit board;

(c) then exposing the solder mask through a pattern to light;

(d) then removing the unexposed areas of the solder mask by placing in a developer;

(e) then applying solder to the patterned circuit board; and

(f) then reflowing the solder in a furnace; wherein the solder mask is characterized by adhering to the circuit board during step (f).

5,665,527

PROCESS FOR GENERATING NEGATIVE TONE RESIST IMAGES UTILIZING CARBON DIOXIDE CRITICAL FLUID

Robert David Allen, San Jose, and Gregory Michael Wallraff, Morgan Hill, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 390,613, Feb. 17, 1995, abandoned. This application Feb. 3, 1997, Ser. No. 794,135

Int. Cl.[6] G03F *7/36*

U.S. Cl. 430—325 **6 Claims**

1. A process for generating a negative tone resist image comprising the steps of:

(a) coating a substrate with a polymeric film comprising:

(i) a polymer having pendant acid labile groups, the polymer is a halogenated polymer or a polymer having a pendant alkylsiloxy ester substituent or a pendant halogenated alkyl ester substituent, and

(ii) a photosensitive acid generator,

(b) imagewise exposing the film to radiation to generate free acid; and

(c) developing the negative tone image with carbon dioxide critical fluid.

5,665,528

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING DYE

Koji Wariishi; Keisuke Matsumoto, and Keiichi Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

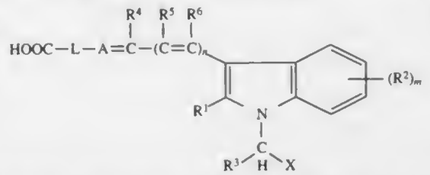
Filed Aug. 9, 1995, Ser. No. 513,184

Claims priority, application Japan, Aug. 9, 1994, 6-186949

Int. Cl.[6] G03C *1/83*

U.S. Cl. 430—516 **17 Claims**

1. A silver halide photographic material comprising at least one silver halide emulsion layer and at least one non-light-sensitive hydrophilic colloidal layer provided on a support, wherein the silver halide emulsion layer or the hydrophilic colloidal layer contains a dye represented by the formula (I):



(I)

in which L is a single bond, a divalent aliphatic group, a divalent aromatic group or a combination thereof; A is a five- or six-membered nitrogen containing heterocyclic ring; R^1 is hydrogen, an aliphatic group, an aromatic group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxy group, an aryloxy group, an acyloxy group, a sulfonyloxy group, a carbamoyloxy group, a carbamoyl group, a halogen atom, hydroxyl or carboxyl; R^2 is an aliphatic group, an aromatic group, an acyl group, a sulfonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxy group, an aryloxy group, an acyloxy group, a sulfonyloxy group, a carbamoyloxy group, amino, a substituted amino group, a heterocyclic group, an amido group, a carbamoyl group, a sulfonamido group, a halogen atom, hydroxyl, nitro, cyano or carboxyl; R^3 is hydrogen, an aliphatic group, an aromatic group or a halogen atom; each of R^4, R^5 and R^6 independently is hydrogen, an alkyl group, cyano or a halogen atom; m is an integer of 0 to 4; when m is 2, 3 or 4, the groups represented by R^2 may be different from each other; n is 0 or 1; and X is an electron attractive group having a Hammett's substituent constant (σ^m) of 0.3 to 1.5..

5,665,529

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC MATERIAL

Atsuhiro Ohkawa; Hisashi Mikoshiba; Masaaki Tsukase; Yasuhiro Ishiwata, and Hideaki Naruse, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

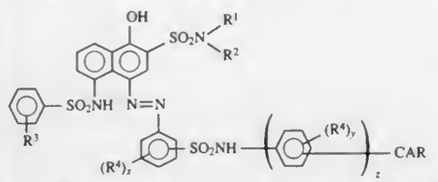
Filed Apr. 3, 1996, Ser. No. 627,094

Claims priority, application Japan, Apr. 13, 1995, 7-111093

Int. Cl.[6] G03C *8/20;7/26*

U.S. Cl. 430—562 **1 Claim**

1. A color diffusion transfer photographic material which comprises at least one silver halide emulsion layer and at least one compound represented by the following formula (I):



(I)

wherein R^1 and R^2 each independently represents an alkyl group having 1 to 6 carbon atoms, a phenyl group, a 1-naphthyl group or a 2-naphthyl group, and R^1 and R^2 may be linked to form a 5- or 6-membered ring directly or via an oxygen atom or a nitrogen atom; R^3 represents an $—NHSO_2R_{10}$ group, an $—SO_2NHCOR_{10}$ group, an $—SO_2NHSO_2R_{10}$ group or an $—NHCOR_{10}$ group; R^{10} represents an alkyl group; R^4 an R^5 each represents a halogen atom, an amino group, a cyano group, a nitro group, an alkyl group, an alkoxyl group, an alkylsulfonyl group, a sulfamoyl group, a carbamoyl group or an alkoxycarbonyl group, and when there are a plurality of R^4 and R^5, they may be the same or different; CAR represents a group which releases a dye different from the compound represented by formula (I) in diffusibility by oxidation; x and y each represents 0, 1 or 2; and z represents 0 or 1.

5,665,530

SILVER HALIDE EMULSION AND PHOTOGRAPHIC MATERIAL USING THE SAME

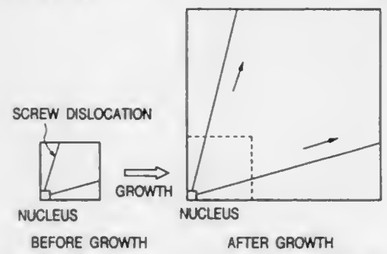
Takayoshi Oyamada; Takekimi Shiozawa, and Seiji Yamashita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 30, 1995, Ser. No. 521,579

Claims priority, application Japan, Aug. 30, 1994, 6-227431

Int. Cl.[6] G03C *1/035;1/815*

U.S. Cl. 430—567 **14 Claims**



1. A silver halide emulsion which comprises at least one dispersion medium and a plurality of silver halide grains, wherein at least 30% of the total grain projected area of said silver halide grains is accounted for by tabular grains having (i) a {100} face as a major face, (ii) a diameter/thickness aspect ratio of at least 1.5, (iii) a nucleus formed during nucleus formation, said nucleus being present within a square of not more than 10% of the entire projected area of each of said silver halide grains upon viewing said silver halide grains from a direction perpendicular to the major faces, the square containing one corner of each of said silver halide grains, and (iv) a dislocation line, there occurring only one edge intersection of said dislocation line or an extension line of said dislocation line at or within 15% edge length from the nucleus-containing corner upon viewing the silver halide grains from a direction perpendicular to the major faces.

5,665,531

METHOD OF GELATION OF PHOTOGRAPHIC EMULSIONS, OIL IN WATER EMULSIONS, OR GELATIN SOLUTIONS AND UNIT THEREFOR

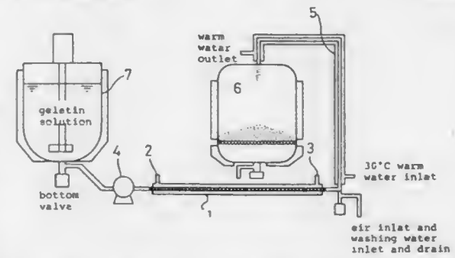
Kunio Mutoh, and Akira Kojima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1995, Ser. No. 532,520

Claims priority, application Japan, Sep. 22, 1994, 6-252725

Int. Cl.[6] G03C *1/015;1/025;1/047;* **B01J** *13/00*

U.S. Cl. 430—569 **2 Claims**



2. A method of gelation of a photographic emulsion, oil in water emulsion containing gelatin, or a gelatin solution which comprises the steps of continuously rapidly cooling the photographic emulsion, oil in water emulsion, or gelatin solution in a sol state to a sol-gel transformation point temperature or lower by a conduction heat exchange system to obtain a rapidly cooled product, and continuously conveying said rapidly cooled product through a pipe to a storage vessel cooled to the sol-gel transformation point temperature or lower before transformation to a gel state while keeping the outside of the pipe at the sol-gel transformation point temperature or higher to avoid adhesion of said rapidly cooled product being transformed into a gel state to the inside surface of the pipe.

5,665,532

BLACK AND WHITE PAPER WITH VARIABLE GRADATION

Manfred Peters, Leverkusen; Thomas Kaluschke, Leichlingen; Hans Öhlschläger, and Bruno Mücke, both of Bergisch Gladbach, all of Germany, assignors to Agfa-Gevaert AG, Germany

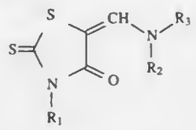
Filed Jul. 22, 1996, Ser. No. 681,270

Claims priority, application Germany, Jul. 31, 1995, 19 528 057.1; Jan. 15, 1996, 19 601 141.8

Int. Cl.[6] G03C *1/16;1/18;1/29*

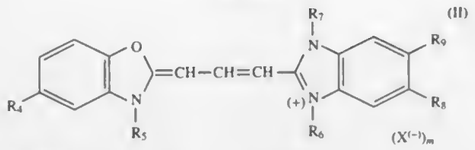
U.S. Cl. 430—571 **4 Claims**

1. Black & white paper with variable gradation which comprises a silver chloride-bromide emulsion which is divided into at least three portions, one portion is sensitized with a blue sensitizer and two further portions are sensitized both with differing quantities of blue sensitizer and with differing quantities of a green sensitizer, wherein the blue sensitizer is of the formula (I) and the green sensitizer is of the formula (II)



(I)

-continued



(II)

in which

R_1 means alkyl, alkenyl, aryl or aralkyl,

R_2 and R_3 mutually independently mean hydrogen, alkyl, alkenyl or aryl or together mean the remaining members of a 5 to 7 member ring which can further contain a further hetero atom,

R_4 means hydrogen, halogen, alkyl, alkoxy or aryl,

R_5 and R_6 mutually independently mean alkyl, carboxyalkyl or sulpho-alkyl,

R_7 means alkyl, hydroxyalkyl or acyloxyalkyl,

R_8 means halogen, CN or CF_3,

R_9 means hydrogen, halogen or CF_3

$X^{(-)}$ means an anion and

m means 0 or 1, wherein m means 0 if at least one of residues R_5 and R_6 means sulphoalkyl.

5,665,533

SKIN TEST TO HUMAN PAPILLOMAVIRUS TYPE 16

Reinhard Höpfl, Innsbruck, Austria; Ingrid Jochmus-Kudielka, Washington, D.C., and Lutz Gissmann, Wiesloch, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 94,590, Jul. 21, 1993, abandoned, which is a continuation of Ser. No. 975,969, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 729,317, Jul. 15, 1991, abandoned. This application Mar. 22, 1995, Ser. No. 408,175

Claims priority, application Germany, May 17, 1991, 9106105 U

Int. Cl.[6] **C12Q** *1/70;* **C12N** *15/37;7/00;* **A61K** *39/12*

U.S. Cl. 435—5 **6 Claims**

1. A method for detecting a cell-mediated immune response to human papilloma virus comprising

a. performing an intracutaneous skin test with an effective amount of protein L1 of human papilloma virus 16 or immunologically active parts thereof, and a means for administering said protein into the skin with a pharmaceutically acceptable diluent, and

b. observing reactivity to the protein on the skin at the administration site.

5,665,534

METHOD OF DETECTING BOVINE DIARRHOEA VIRUS INFECTION, NUCLEOTIDE SEQUENCE ENCODING A PROTEIN INDUCED BY THIS VIRUS INFECTION AND RECOMBINANT PROTEINS AND ANTIGENS RELATING THERETO

Danielle Marie Helene Jeanne Vandenbergh, Cheratte; Corine Martine Therese Ghislaine LeComte, Ocquier, both of Belgium; Gilles-Emile Chappuis, Lyons, and Jean-Jacques Pin, Saint Bonnet de Mure, both of France, assignors to Rhone Merieux, Lyons, France

Continuation of Ser. No. 895,999, Jun. 11, 1992, abandoned. This application Apr. 5, 1995, Ser. No. 417,276

Claims priority, application France, Jun. 11, 1991, 91 07076

Int. Cl.[6] **C12Q** *1/70;* **G01N** *33/53*

U.S. Cl. 435—5 **22 Claims**

1. A method for detecting infection of a blood sample by a bovine diarrhoea virus (BVD), comprising a first test for the detection of anti-bovine diarrhoea virus antibodies and a second test for the detection of viral particles wherein anti-p80 antibodies are detected by means of a recombinant p80 antigen encoded by SEQ ID NO:1 produced in a eukaryotic host, and wherein the presence of viral particles i detected by means of antibodies directed against bovine diarrhoea virus protein p80, for the recognition of any bovine diarrhoea virus strain maintaining BDV antigenic recognition and detection of persistent viremias and acute infections caused by any bovine diarrhoea virus strain.

5,665,535

POLYPEPTIDES ENCODED BY DNA SEQUENCES DERIVED FROM THE GENOME OF THE PAPILLOMAVIRUS HPV39, ANTIBODIES THERETO, AND THEIR USE IN IN VITRO DIAGNOSIS

Gérard Orth, Sceaux, France; Christoph Volpers, and Rolf E. Streeck, both of Wiesbaden, Germany, assignors to Institut National de la Sante et de la Recherche Medicale, and Institut Pasteur, both of France

Division of Ser. No. 74,879, Nov. 16, 1993. This application Jun. 6, 1995, Ser. No. 468,057

Claims priority, application France, Dec. 20, 1990, 90 16044

Int. Cl.[6] **C12Q** *1/70;* **C07K** *1/100;* **C12N** *7/00;* **A61K** *39/395*

U.S. Cl. 435—5 **27 Claims**

1. A purified polypeptide encoded by a gene of HPV39, wherein said gene is selected from the group consisting of E1, E2, E4, E6, E7, L1 and L2.

5,665,536

DIAGNASTIC METHOD AND TEST KIT FOR THE SEROLOGICAL DETECTION OF THE AIDS VIRUS

Allan L. Goldstein, Washington, D.C., and Su-Sun Wang, Belmont, Calif., assignors to Viral Technologies, Inc., Alexandria, Va.

Division of Ser. No. 884,153, May 18, 1992, which is a continuation of Ser. No. 577,672, Sep. 5, 1990, abandoned, which is a division of Ser. No. 300,176, Jan. 23, 1989, Pat. No. 4,983,387, which is a continuation of Ser. No. 864,599, May 19, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 476,647

Int. Cl.[6] **C12Q** *1/70*

U.S. Cl. 435—5 **12 Claims**

1. A method for detection of HIV antigen in body fluids of human patients which comprises contacting a sample of the body fluid with a polyclonal or monoclonal antibody to a peptide fragment of the p17 protein of HIV-1 and having up to about 40 amino acids including the amino acid sequence of the formula Ile-Y_1-Y_2-Lys-Asp-Thr-Lys-Glu-Ala-Leu-Y_3-Lys-Ile-Glu-Glu-Glu-Gln-Asn wherein

Y_1 is Asp or Glu,

Y_2 is Val or Ile,

Y_3 is Glu or Asp,

and measuring the formation of antigen-antibody complexes by radioimmunoassay, enzyme-linked immunosorbent assay or indirect immunofluorescent assay.

5,665,537

HERPES SIMPLEX VIRUS TYPE 2-GLYCOPROTEIN G PROTEINS AND POLYPEPTIDES

Deborah Lynn Parkes, Oakland, and Stephen Ralph Coates, Orinda, both of Calif., assignors to Chiron Diagnostics Corporation, Medfield, Mass.

Continuation of Ser. No. 129,021, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 832,982, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 351,740, May 12, 1989, abandoned. This application Nov. 21, 1995, Ser. No. 561,171

Int. Cl.[6] **C12Q** *1/70;* **G01N** *33/53;* **C07K** *14/35;19/00*

U.S. Cl. 435—5 **6 Claims**

1. A method of testing human body fluids for the presence of HSV-2 type-specific antibodies which comprises contacting a composition containing a recombinantly produced nonglycosylated protein with a sample of a human body fluid and determining whether said nonglycosylated protein binds to HSV-2 antibodies in said sample, wherein said nonglycosylated protein is selected from the group consisting of an unique sequence HSV-2 gG protein which has the amino acid sequence from amino acid 16 to amino acid 462 as shown in FIG. 2; a fusion protein consisting of the unique sequence HSV-2 gG protein which has the amino acid sequence from amino acid 16 to amino acid 462 as shown in FIG. 2, attached to which at its carboxyl terminus is an alpha-peptide, sequence of beta-galactosidase; and a fusion protein consisting of an unique sequence HSV-2 gG protein which has the amino acid sequence from amino acid 16 to amino acid 462 as shown in FIG. 2, attached to which at its carboxyl terminus is an alpha-peptide sequence of beta-galactosidase and at its amino terminus is a trpE leader amino acid sequence.

5,665,538

ULTRASENSITIVE MICROTRACE PROCEDURE FOR MONITORING THE ORIGIN OF A MATERIAL

James Howard Slater, 38 Heol-Y-Deyln, Lisvane, Cardiff CF4 5SR, and John Edward Minton, 2 Mill Place, Lisvane, Cardiff CF4 5TF, both of Great Britain

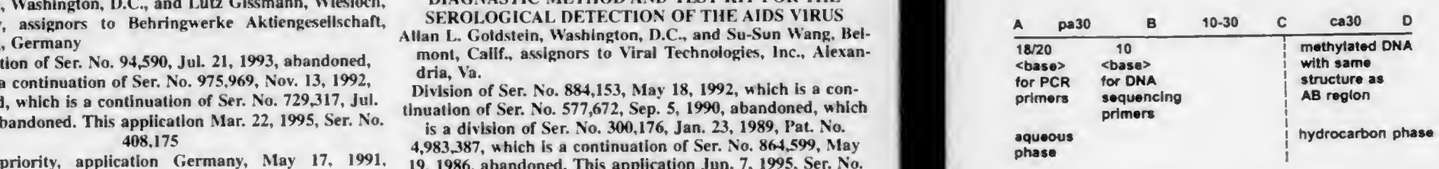
PCT No. PCT/GB91/00719, § 371 Date Dec. 29, 1992, § 102(e) Date Dec. 29, 1992, PCT Pub. No. WO91/17265, PCT Pub. Date Nov. 14, 1991

PCT Filed May 7, 1991, Ser. No. 946,336

Claims priority, application United Kingdom, May 4, 1990, 9010138

Int. Cl.[6] **C12Q** *1/68*

U.S. Cl. 435—6 **10 Claims**



1. A method of monitoring the movement of a petroleum material in an aqueous medium comprising,

adding a microtrace additive to the petroleum material, wherein the microtrace additive is DNA in a final concentration in the range of 0.01 to 1000 pg/DNA/μl petroleum material, and wherein the DNA is formulated to be soluble in said petroleum material such that the overall hydrophobicity of the microtrace additive causes it to partition into the petroleum material, and wherein said formulation ensures that the DNA is dissolved in or dispersed within the petroleum material such that it essentially cannot be removed by aqueous washing;

sampling the microtrace additive-containing petroleum material after movement thereof;

removing the microtrace additive from the petroleum material; and

detecting the DNA microtrace additive by means of an amplification reaction.

5,665,539

IMMUNO-POLYMERASE CHAIN REACTION SYSTEM FOR ANTIGEN DETECTION

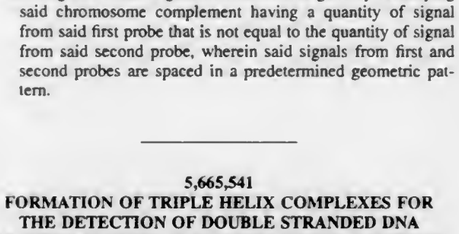
Takeshi Sano; Charles R. Cantor, and Cassandra L. Smith, all of Boston, Mass., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 729,460, Jul. 12, 1991, Pat. No. 5,328,985. This application Oct. 4, 1993, Ser. No. 131,301

Int. Cl.[6] **C12Q** *1/66*

U.S. Cl. 435—6 **14 Claims**

1. A method for detecting a rare ligand in a sample, said method comprising steps:



(1) contacting said sample with a conjugate comprising a non-nucleic acid receptor capable of specifically binding said rare ligand and a nucleic acid marker comprising a predetermined nucleotide sequence to form a specifically bound complex of said rare ligand and said conjugate;

(2) specifically detecting the presence of said nucleic acid maker of said complex,

wherein the presence of said nucleic acid marker indicates the presence of said rare ligand in said sample.

5,665,540

MULTICOLOR IN SITU HYBRIDIZATION METHODS FOR GENETIC TESTING

Roger V. Lebo, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 871,967, Apr. 21, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 159,070

Int. Cl.[6] **C12Q** *1/68*

U.S. Cl. 435—6 **21 Claims**

1. A method to identify an abnormal number of a gene in a chromosome complement from cells of a patient, comprising:

obtaining a sample of cells from the patient comprising said chromosome complement;

hybridizing a first probe labeled with a first fluorescent color to said chromosome complement, wherein said first labeled probe hybridizes specifically to a chromosome region adjacent to said gene;

hybridizing a second labeled probe to said chromosome complement, wherein said second labeled probe hybridizes specifically to said gene and the label of said second labeled probe has a fluorescent color distinguishable from said first fluorescent color;

detecting signals from said first and second probes;

detecting an abnormal gene number of said gene by identifying said chromosome complement having a quantity of signal from said first probe that is not equal to the quantity of signal from said second probe, wherein said signals from first and second probes are spaced in a predetermined geometric pattern.

5,665,541

FORMATION OF TRIPLE HELIX COMPLEXES FOR THE DETECTION OF DOUBLE STRANDED DNA SEQUENCES USING OLIGOMERS WHICH COMPRISE AN 8-MODIFIED PURINE BASE

Paul S. Miller, and Purshotam Bhan, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 751,813, Aug. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 368,027, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 924,234, Oct. 28, 1986, abandoned. This application Feb. 10, 1994, Ser. No. 194,789

Int. Cl.[6] **C12Q** *1/68;* **C07H** *21/00;21/04*

U.S. Cl. 435—6 **30 Claims**

1. A method of detecting a specific segment of double stranded nucleic acid without interrupting base-pairing of said double

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stranded nucleic acid which comprises contacting said nucleic acid segment with an Oligomer and detecting said segment, wherein said Oligomer

(1) comprises at least one 8-oxo-adenine or 8-oxo guanine nucleosidyl unit, and

(2) is sufficiently complementary to said nucleic acid segment, or a portion of the nucleotide sequences thereof, to form a triple helix structure wherein

(a) one strand of the nucleic acid segment comprises a polyhomopurine sequence of at least 7 adjacent purine bases,

(b) the Oligomer is parallel with respect to 5' to 3' orientation to the strand of the nucleic acid segment having the polyhomopurine sequence,

(c) guanine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of

(i) 8-oxo-adenine, and

(ii) cytosine or a cytosine analog, either of which is protonated at N-3 of cytosine under physiological pH so as to hydrogen bond with guanine, and

(d) adenine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of 8-oxo-guanine, thymine and uracil.

8. A triple helix structure which comprises a double stranded nucleic acid sequence and an Oligomer which

(1) comprises at least one 8-oxo-adenine or 8-oxo guanine nucleosidyl unit, and

(2) is sufficiently complementary to read a polyhomopurine sequence in one strand of the nucleic acid sequence and to form triplets, wherein

(a) the Oligomer is parallel with respect to 5' to 3' orientation to the strand having the polyhomopurine sequence,

(b) guanine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of

(i) 8-oxo-adenine, and

(ii) cytosine or a cytosine analog, either of which is protonated at N-3 of cytosine under physiological pH so as to hydrogen bond with guanine, and

(c) adenine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of 8-oxo-guanine, thymine and uracil.

16. An Oligomer capable of reading a polyhomopurine sequence of one strand of a double stranded nucleic acid sequence,

(1) wherein said Oligomer has at least one 8-oxo-adenine nucleosidyl unit,

(2) guanine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of

(a) 8-oxo-adenine, and

(b) cytosine or a cytosine analog, either of which is protonated at N-3 of Cytosine under physiological pH so as to hydrogen bond with guanine, and

(3) adenine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of 8-oxo-guanine, thymine and uracil.

23. A method of making a synthetic Oligomer which binds to a specific segment of double stranded nucleic acid to form a triple helix structure by hydrogen bonding thereto, said method comprising the steps of:

(a) identifying a double stranded nucleic acid target segment wherein the nucleoside sequence of one strand of the nucleic acid segment comprises a polyhomopurine sequence of at least 7 adjacent purine bases; and

(b) synthesizing said synthetic Oligomer complementary to said target sequence, said synthetic Oligomer including at least one 8-oxo-adenine or 8-oxo-guanine nucleosidyl unit,

wherein said synthetic Oligomer has a nucleosidyl unit having a base selected from the group consisting of

(i) 8-oxo-adenine, and

(ii) cytosine or a cytosine analog, either of which is protonated at N-3 of cytosine under physiological pH when the complementary location in the polyhomopurine sequence has a G, and

wherein such synthetic Oligomer has a nucleosidyl unit having a base selected from the group consisting of 8-oxo-guanine, thymine and uracil when the complementary location in the polyhomopurine sequence has an A, and

wherein said Oligomer is orientated 5' to 3' and binds parallel to the strand having the polyhomopurine sequence.

26. An Oligomer capable of reading a polyhomopurine sequence of one strand of a double stranded nucleic acid sequence,

(1) wherein said Oligomer has at least one 8-oxo-adenine or 8-oxo-guanine nucleosidyl unit,

(2) guanine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of

(a) 8-oxo-adenine, and

(b) cytosine or a cytosine analog, either of which is protonated at N-3 of cytosine under physiological pH so as to hydrogen bond with guanine,

(3) adenine in the polyhomopurine sequence is read by a base in the Oligomer selected from the group consisting of 8-oxo-guanine, thymine and uracil, and

(4) said Oligomer comprises an alkyl- or aryl-phosphonate Oligomer.

5,665,542

TOXOPLASMA GONDII P28 GENE AND METHODS FOR ITS USE

Jeffrey B. Prince, Mountain View; Fausto G. De Araujo, Palo Alto; Somesh D. Sharma, Los Altos, and Jack S. Remington, Menlo Park, all of Calif., assignors to Research Institute of Palo Alto Medical Foundation, Palo Alto, Calif.

Continuation of Ser. No. 431,578, Nov. 3, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 264,951

Int. Cl.[6] C12Q *1/68*; C07H *21/02;21/04*

U.S. Cl. 435—6 **22 Claims**

1. An isolated DNA or RNA molecule, which contains a nucleotide coding sequence encoding *Toxoplasma gondii* protein P28 or a complementary DNA or RNA sequence that specifically hybridizes with said *Toxoplasma gondii* protein P28 sequence.

5,665,543

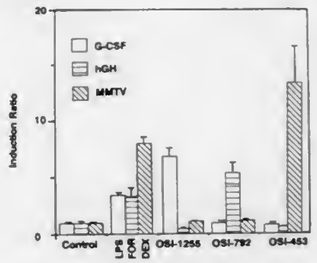
METHOD OF DISCOVERING CHEMICALS CAPABLE OF FUNCTIONING AS GENE EXPRESSION MODULATORS

J. Gordon Foulkes, Huntington Station; Franz Leichtfried, Bellerose; Christian Pieler, Westbury; John R. Stephenson, Rockville Centre, and Robert Franco, Spencerport, all of N.Y., assignors to Oncogene Science, Inc., Uniondale, N.Y.

Continuation of Ser. No. 134,215, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 13,343, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 555,196, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 382,712, Jul. 18, 1989, abandoned. This application Jun. 28, 1994, Ser. No. 267,834

Int. Cl.[6] C12Q *1/68*; C12N *15/85*; C12P *21/02*

U.S. Cl. 435—6 **26 Claims**



1. A method of determining whether a chemical not previously known to be a modulator of protein biosynthesis specifically transcriptionally modulates the expression of a gene-of-interest which comprises:

(a) contacting a sample which contains a predefined number of identical eucaryotic cells with a predetermined concentration

of the chemical to be tested, each comprising a single DNA construct consisting essentially of in 5' to 3' order

(i) a modulatable transcriptional regulatory sequence of the gene-of-interest,

(ii) a promoter of the gene-of-interest, and

(iii) a reporter gene which expresses a polypeptide that produces a detectable signal, coupled to, and under the control of, the promoter, under conditions wherein the chemical if capable of acting as a transcriptional modulator of the gene-of-interest, causes a detectable signal to be produced by the polypeptide expressed by the reporter gene;

(b) quantitatively determining the amount of the signal produced in (a);

(c) comparing the amount of signal determined in (b) with the amount of signal produced and detected in the absence of any chemical being tested and with the amount of signal produced and detected upon contacting the sample in (a) with other chemicals, thereby identifying the test chemical as a chemical which causes a change in the amount of detectable signal produced by the polypeptide expressed by the reporter gene, and thereby determining whether the test chemical specifically transcriptionally modulates expression of the gene-of-interest.

5,665,544

RNA FINGERPRINTING TO DETERMINE RNA POPULATION DIFFERENCES

Alexander Anatoljevich Chenchik; Ludmila Borisovna Diachenko; Robert Shaviovich Beabealashvili, all of Moscow, Russian Federation, and Christopher John Carter, Amersham, England, assignors to Amersham International plc, Buckinghamshire, England

PCT No. PCT/GB93/01102, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO93/24655, PCT Pub. Date Dec. 9, 1993

PCT Filed May 27, 1993, Ser. No. 343,449

Claims priority, application United Kingdom, May 27, 1992, 92304790

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **12 Claims**

1. A method of producing a fingerprint of a eukaryotic poly(A)+ RNA preparation comprising;

adding to the poly(A)+ RNA preparation or to a single-stranded cDNA preparation derived therefrom at least one oligonucleotide primer and four different nucleotides, wherein three of the nucleotides permit elongation and one of the nucleotides is a chain terminator;

synthesizing cDNA products from said RNA preparation or DNA products from said single-stranded cDNA preparation; and

separating said cDNA products or DNA products to produce a fingerprint.

5,665,545

TERMINAL REPEAT AMPLIFICATION METHOD

Lawrence Malek, Brampton, and Roy Sooknanan, Toronto, both of Canada, assignors to Akzo Nobel N.V., Arnheim, Netherlands

Filed Nov. 28, 1994, Ser. No. 345,505

Int. Cl.[6] C12Q *1/68*; C12P *19/34*

U.S. Cl. 435—6 **22 Claims**

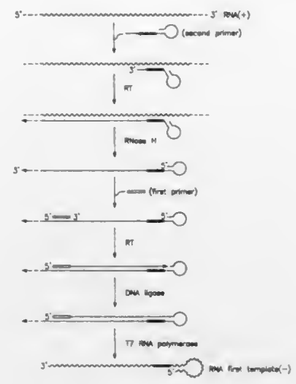
1. A process for the amplification of a specific nucleic acid sequence at a relatively constant temperature and without serial addition of reagents, comprising the steps of:

(A) providing a single reaction medium containing reagents comprising:

(i) a first oligonucleotide primer;

(ii) an RNA polymerase;

(iii) a DNA polymerase;



(iv) a ribonuclease that hydrolyses RNA of an RNA-DNA hybrid without hydrolysing single- or double-stranded RNA or DNA;

(v) ribonucleoside and deoxyribonucleoside triphosphates;

(vi) a DNA ligase;

(vii) a second oligonucleotide primer comprising a 3'-terminal priming sequence that is complementary to the specific nucleic acid sequence, minus-sense sequences of a promoter and an initiation site that are recognized by said RNA polymerase, a 5'-terminal sequence that is self-complementary to said minus-sense sequence of said initiation site, and a 5'-terminal phosphate group; and

(viii) a single-stranded RNA comprising said specific nucleic acid sequence:

(B) maintaining conditions such that

(i) said second oligonucleotide primer hybridizes to said single-stranded RNA;

(ii) said DNA polymerase uses said single-stranded RNA as a template to synthesize a complementary DNA by extension of said second oligonucleotide primer and thereby forms an RNA-DNA hybrid;

(iii) said ribonuclease hydrolyses RNA which comprises said RNA-DNA hybrid;

(iv) said first oligonucleotide primer hybridizes to said complementary DNA;

(v) said DNA polymerase uses said complementary DNA as template to synthesize a DNA segment which terminates at said second oligonucleotide primer by extension of said first oligonucleotide primer;

(v) said DNA ligase joins said DNA segment to said second oligonucleotide primer and thereby forms a DNA second template; and

(vi) said RNA polymerase recognizes said promoter and transcribes said DNA second template,

thereby providing copies of an RNA first template which comprises a sequence complementary to said specific nucleic acid sequence, minus-sense sequences of said promoter and said initiation site, and a 5'-terminal sequence that is self-complementary to said minus-sense sequence of said initiation site, and

(C) maintaining conditions such that a cycle ensues wherein:

(i) said first oligonucleotide primer hybridizes to said RNA first template;

(ii) said DNA polymerase uses said RNA first template to synthesize a DNA second template by extension of said first oligonucleotide primer and thereby forms as RNA-DNA hybrid, said DNA second template comprising plus-sense sequences of said promoter and said initiation site, and a 3'-terminal priming sequence that is self-complementary to said plus-sense sequence of said initiation site;

(iii) said ribonuclease hydrolyses RNA which comprises said RNA-DNA hybrid;

(iv) said 3'-terminal priming sequence of said DNA second template hybridizes to said plus-sense sequence of said initiation site;

(v) said DNA polymerase uses said DNA second template as template to synthesize said promoter by extension of said DNA second template; and

(vi) said RNA polymerase recognizes said promoter and transcribes said DNA second template, thereby providing copies of said RNA first template; and thereafter,

(D) maintaining conditions such that a cycle ensues for a time sufficient to achieve a desired amplification of said specific nucleic acid sequence.

5,665,546

FREE RADICAL SCAVENGERS USEFUL FOR REDUCING AUTOFLOURESCENCE IN FIXED CELLS

Michael Lee Cubbage; Shyh-Chen Ju, both of Houston; Joel Bresser, Bellaire, and Rebecca Jurtshuk, Houston, all of Tex., assignors to Aprogenex, Inc., Houston, Tex.

Continuation of Ser. No. 915,893, Jul. 17, 1992, abandoned. This application Feb. 22, 1995, Ser. No. 393,945

Int. Cl.[6] C12Q *1/68;1/70;* **C07H** *21/02;* **G01N** *33/567*

U.S. Cl. 435—6 **40 Claims**

1. An in situ fluorimetric process which process comprises the steps of:

(a) contacting a biological entity with a solution comprising a fluorescent probe that binds to a target molecule in or on said biological entity, said contacting performed in a manner such that said fluorescent probe binds to said target molecule so as to make said fluorescent probe a biological entity-bound probe,

(b) contacting the biological entity with a solution comprising a free radical scavenger selected from the group consisting of Vitamin E, thiophenol and 2,2,6,6, -tetramethyl-piperidine-N-oxyl for a period of time of not less than 5 minutes and not more than 16 hours,

(c) causing the biological entity-bound probe to absorb light of wavelengths that are fluorescent absorption wavelengths of said biological entity-bound probe, and

(d) detecting light of a wavelengths that are fluorescent emission wavelengths of said biological entity-bound probe;

wherein step (a) takes place before step (b), after step (b),or during step (b),

wherein said biological entity is a cell or a virus, and

wherein the autofluorescence that contributes to the light detected during step (d) is less in the presence of said free radical scavenger than in the absence of said free radical scavenger.

5,665,547

METHODS OF COMPARING LEVELS OR AMOUNTS OF MRNAS

Arthur B. Pardee, Brookline, and Peng Liang, Watertown, both of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 351,748, Dec. 8, 1994, which is a continuation of Ser. No. 33,084, Mar. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,343, Mar. 11, 1992, Pat. No. 5,262,311. This application Apr. 25, 1995, Ser. No. 430,536

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04*

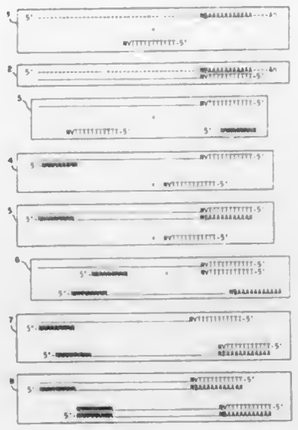
U.S. Cl. 435—6 **24 Claims**

1. A method of comparing the presence or level of individual mRNA molecules in two or more nucleic acid samples, comprising the steps of:

providing a first nucleic acid sample including mRNA molecules;

providing a second nucleic acid sample including mRNA molecules;

contacting each of said first nucleic acid sample and said second nucleic acid sample with a first oligodeoxynucleotide primer



that hybridizes to a portion of a polyadenosine (polyA) tract in mRNAs in said first and second nucleic acid samples and also to at least one non-polyA nucleotide immediately upstream of said polyA portion;

reverse transcribing said mRNAs to which said first primer hybridizes to produce a first population of DNA strands that are complementary to said mRNAs in said first nucleic acid sample to which said first primer hybridizes, and a second population of DNA strands that are complementary to said mRNAs in said second nucleic acid sample to which said first primer hybridizes;

contacting said first and second populations of DNA strands with a second oligodeoxynucleotide primer under conditions in which said second primer hybridizes with at least some of the DNA strands in said first and second populations;

extending said second primer to produce a third population of DNA strands that are complementary to the DNA strands in said first population to which said second primer hybridizes, and a fourth population of DNA strands that are complementary to the DNA strands in said second population to which said second primer hybridizes;

amplifying portions of the DNA strands in said first and third populations of DNA strands with said first and second primers to produce a first population of amplification products;

amplifying portions of the DNA strands in said second and fourth populations of DNA strands with said first and second primers to produce a second population of amplification products;

comparing the presence or level of individual amplification products in said first and second populations of amplification products.

5,665,548

CHARACTERIZATION AND DETECTION OF SEQUENCES ASSOCIATED WITH AUTOIMMUNE DISEASES

Henry A. Erlich, Oakland, and Glenn T. Horn, Emeryville, both of Calif., assignors to Roche Molecular Systems, Inc., Branchburg, N.J.

Division of Ser. No. 121,519, Nov. 17, 1987, which is a continuation-in-part of Ser. No. 899,512, Aug. 22, 1986, abandoned, and Ser. No. 899,344, Aug. 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 839,331, Mar. 13, 1986, abandoned. This application May 23, 1995, Ser. No. 448,021

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **11 Claims**

1. A process for detecting if a sequence associated with susceptibility to insulin dependent diabetes mellitus (IDDM) or DR4-associated *Pemphigus vulgaris* is present in a DNA sample, comprising:

(a) exposing said DNA sample to an oligonucleotide probe under stringent hybridization conditions, wherein said probe is fifteen to twenty-five nucleotides in length and complementary to a sequence in the second exon of a class II HLA-β-chain gene, wherein said probe differentiates between alleles present at a higher frequency in individuals susceptible to insulin dependent diabetes mellitus (IDDM) or DR4-associated *Pemphigus vulgaris* and alleles found at higher frequency in non-susceptible individuals, wherein said probe comprises a sequence selected from the group of sequences consisting of

5'-GACATCCTGGAAGACGAGC-3',

5'-GACATCCTGGAAGACGAGCGG-3',

and DNA sequences fully complementary thereto; and

(b) detecting whether said probe has hybridized to said DNA sample.

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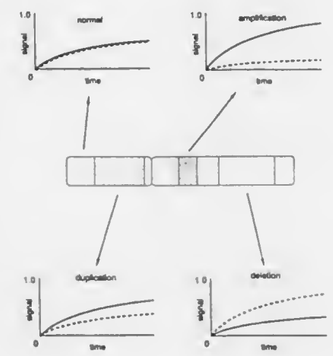
COMPARATIVE GENOMIC HYBRIDIZATION (CGH)

Daniel Pinkel, Walnut Creek; Joe W. Gray, San Francisco, both of Calif.; Anne Kallioniemi; Olli-Pekka Kallioniemi, both of Tampere, Finland, and Frederic Waldman, San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 166,147, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 969,948, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,659, Mar. 4, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,122

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **54 Claims**



1. A method of comparing copy numbers of unique DNA sequences in a first cell or cell population relative to copy numbers of substantially identical sequences in a second cell or cell population, said method comprising the steps of:

(a) labelling genomic DNA sequences from each cell or cell population with a different label;

(b) hybridizing said labelled DNA sequences from each cell or cell population to a reference genome under the following conditions:

(i) either the labelled DNA sequences, and/or the reference genome have their repetitive sequences blocked and/or removed; and

(ii) unique DNA sequences in the labelled DNA sequences and unique DNA sequences in the reference genome are retained;

(c) comparing the intensities of the signals from the labelled DNA sequences hybridized to the reference genome.

5,665,550

GENES AND GENETIC ELEMENTS ASSOCIATED WITH SENSITIVITY TO CHEMOTHERAPEUTIC DRUGS

Igor B. Roninson, Wilmette, and Andrei Gudkov, Chicago, both of Ill., assignors to Board of Trustees of the University of Illinois-Urbana, Chicago, Ill.

Continuation of Ser. No. 33,086, Mar. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 599,730, Oct. 19, 1990, Pat. No. 5,217,889. This application Jun. 7, 1995, Ser. No. 480,552

Int. Cl.[6] C12Q *1/68;* **C12P** *21/02*

U.S. Cl. 435—6 **93 Claims**

1. A method of identifying genetic suppressor elements (GSEs) that confer a selectable phenotype upon a eukaryotic cell, the method comprising the steps of:

(a) synthesizing randomly fragmented cDNA from the total mRNA of a eukaryotic cell to yield DNA fragments having a size of less than about 700 basepairs;

(b) transferring the DNA fragments to an expression vector to yield a library, wherein each of the DNA fragments is operatively linked to a protein translation initiation codon, and wherein the expression vector which expresses the DNA fragments in a living eukaryotic cell that which exhibits the selectable phenotype;

(c) genetically modifying living eukaryotic cells by introducing the genetic suppressor element library into the cells;

(d) isolating or enriching for genetically modified living eukaryotic cells containing genetic suppressor elements which centers the selectable phenotype by selecting cells that express the selectable phenotype, and;

(e) obtaining the genetic suppressor elements from the genetically modified cells.

5,665,551

PURIFIED NUCLEIC ACID ENCODING A THERMOSTABLE PYROPHOSPHATASE

David Harrow Gelfand, Oakland, and Alice Ming Wang, Lafayette, both of Calif., assignors to Roche Molecular Systems, Inc., Branchburg, N.J.

Filed Sep. 13, 1995, Ser. No. 528,384

Int. Cl.[6] C12N *9/14;15/55*

U.S. Cl. 435—6 **7 Claims**

7. A method for isolating a target DNA fragment comprising a DNA coding for a thermostable pyrophosphatase from a bacterium of the genus Thermus, comprising:

(a) forming a genomic library from said bacterium;

(b) transforming or transfecting an appropriate host cell with the library of step (a);

(c) contacting DNA from a transformed or transfected host cell of step

(b) with a DNA probe consisting of SEQ ID NO: 1 under hybridization conditions consisting of the following:

(1) hybridization: 6× SSPE, 2× Denhardt's reagent, 0.5% SDS, and 100 μg/ml denatured, sheared salmon sperm DNA at 50°–55° C.; and

(2) wash: 2× SSPE, 0.1% SDS for 15 minutes at 55° C.;

(d) isolating DNA which encodes a thermostable pyrophosphatase.

5,665,552

ANTIBODIES TO PLASMODIUM FALCIPARUM

S. Melissa Maret, Laytonsville; Hans H. Feindt, Parkton; Gerald DeWayne Hahn, Severn, and Keith Ulthoven, West Friendship, all of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 250,309, May 27, 1994, Pat. No. 5,478,741, which is a continuation of Ser. No. 945,287, Sep. 11, 1992, abandoned. This application Mar. 21, 1995, Ser. No. 408,418

Int. Cl.[6] G01N *33/53;* **C07N** *15/06*

U.S. Cl. 435—7.22 **10 Claims**

1. A method for detecting HRP-II of *Plasmodium falciparum* comprising the steps of:

VOL 12 02 ISS 2 SE 9 1997 UMI

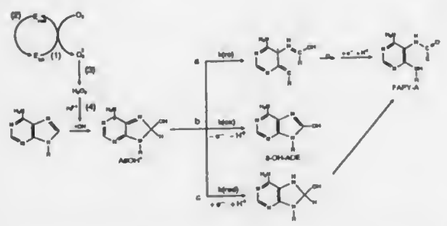
a) contacting a sample with a monoclonal antibody produced by a hybridoma having ATCC Accession No. HB11111 or Accession No. HB11112;
b) allowing the antibody to bind to the HRP-II to form an antibody/HRP-II complex, and;
c) detecting the HRP-II by means of a detectable label included in the complex.

5,665,553

METHODS FOR DETERMINING AND MODULATING CELLULAR REDOX POTENTIAL AND GENOTOXIC STATES

Donald C. Malins, Seattle, Wash., assignor to Pacific Northwest Research Foundation, Seattle, Wash.

PCT No. PCT/US94/04838, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO94/25626, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 29, 1994, Ser. No. 535,185
The portion of the term of this patent subsequent to Oct. 6, 2014, has been disclaimed.
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **18 Claims**



1. A method of screening for or prognosing genotoxic injury in a specimen caused by oxidative attacks to its cellular DNA by determining the redox potential of that specimen comprising the steps of:
a) obtaining a specimen from a test subject;
b) assaying the specimen to determine its cellular redox potential; and
c) identifying an increased risk of neoplasia resulting from genotoxic injury or increased probability of its manifestation in the test specimen when the cellular redox potential favors an oxidative state or identifying a decreased risk from genotoxic injury or decreased probability of its manifestation in the test specimen when the cellular redox potential favors a reductive state.

5,665,554

MAGNETIC BEAD PRECIPITATION METHOD

Michael Alan Reeve, Oxon, and Philip Steven Robinson, Bucks, both of United Kingdom, assignors to Amersham International PLC, Buckinghamshire, United Kingdom

PCT No. PCT/GB94/01365, § 371 Date Nov. 14, 1996, § 102(e) Date Nov. 14, 1996, PCT Pub. No. WO95/33827, PCT Pub. Date Dec. 14, 1995
PCT Filed Jun. 9, 1995, Ser. No. 737,220
Claims priority, application United Kingdom, Jun. 9, 1994, 9411572
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **7 Claims**

1. A method of recovering a first molecular species from a starting liquid containing in solution the first molecular species in admixture with a second molecular species, which method comprises the steps of:
precipitating the second molecular species to form an aggregated precipitate of the second molecular species in the liquid,
adding magnetically attractable beads to form a suspension of the beads in the liquid,
precipitating the first molecular species to form an aggregated precipitate of the first molecular species which entraps the magnetically attractable beads,
applying a magnetic field to draw down the magnetically attractable beads and the associated aggregated precipitate of the first molecular species,
removing the supernatant liquid containing the aggregated precipitate of the second molecular species.

5,665,555

METHOD OF DETERMINING THE EFFECT OF A TEST SUBSTANCE ON A CLONE OF A *CENTROPTILUM TRIANGULIFER* MAYFLY

Bernard W. Sweeney, West Grove; David H. Funk, Lincoln University, both of Pa., and Laurel June Standley, Wilmington, Del., assignors to Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.

Filed Dec. 15, 1993, Ser. No. 168,099
Int. Cl.[6] C12Q *1/02*
U.S. Cl. 435—7.21 **16 Claims**

1. A method of testing for the presence of any test substance in an environment to which any life stage of at least one clone of a *Centroptilum triangulifer* mayfly is exposed and which has an effect on the mayfly comprising the steps:
(A) identifying and selecting at least one clone of *Centroptilum triangulifer* as a test clone to be subjected to the test substance;
(B) exposing each test clone to the test substance for a predetermined time; and
(C) determining the effect of the test substance on each test clone by at least one of
(i) observing the test clone for a lethal or sublethal effect; and
(ii) sacrificing the test clone, and analyzing the sacrificed test clone for at least one of
(a) the presence of at least one of the test substance and any of its metabolites,
(b) the quantity of at least one of the test substance and any of its metabolites, and
(c) a lethal or sublethal effect of at least one of the test substance and any of its metabolites.

5,665,556

COMPLEMENT COMPONENTS AND BINDING LIGANDS IN FERTILITY

Deborah J. Anderson, Brookline, Mass.; Peter M. Johnson, West Kirby, England, and Richard M. Jack, Brighton, Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Continuation of Ser. No. 137,820, Oct. 19, 1993, Pat. No. 5,474,927, which is a continuation of Ser. No. 487,039, Mar. 2, 1990, abandoned. This application May 15, 1995, Ser. No. 441,067
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.21 **3 Claims**

1. A method for identifying an acrosome-reacted sperm in a sperm-containing sample, said method comprising detecting the presence of a complement receptor on said sperm, wherein said sperm in said sperm-containing sample are of unknown acrosomal reactivity and wherein said complement receptor is membrane cofactor protein or decay accelerating factor, said method comprising the steps of:
(a) contacting said sperm-containing sample containing said sperm of unknown acrosomal reactivity with a binding partner for said complement receptor or for complement component C3 or a fragment or variant thereof, said fragment or variant thereof having the ability to bind to said complement receptor; and

(b) detecting the presence of said sperm-bound binding partner, thereby identifying said acrosome-reacted sperm.

5,665,557

METHOD OF PURIFYING A POPULATION OF CELLS ENRICHED FOR HEMATOPOIETIC STEM CELLS POPULATIONS OF CELLS OBTAINED THEREBY AND METHODS OF USE THEREOF

Lesley Murray, San Jose, Calif., and D. Robert Sutherland, Oakville, Canada, assignors to Systemix, Inc., Palo Alto, Calif., and The Toronto Hospital Research Institute, Toronto, Canada

Filed Nov. 14, 1994, Ser. No. 340,048
Int. Cl.[6] C12N *5/08;* C12Q *1/24*
U.S. Cl. 435—7.24 **21 Claims**

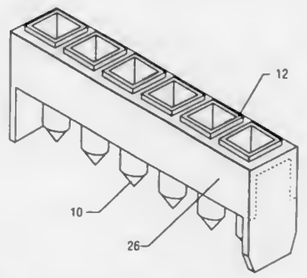
1. A method of obtaining a composition substantially enriched in a subpopulation of hematopoietic stem cells comprising:
obtaining a source of human hematopoietic cells;
separating a population of human hematopoietic cells from the source;
contacting the population of human hematopoietic cells with a monoclonal antibody specific for the marker CDw109; and
separating the subpopulation that is specifically bound by the monoclonal antibody thereby obtaining a composition substantially enriched in a subpopulation of human hematopoietic stem cells.

5,665,558

METHOD AND APPARATUS USEFUL FOR DETECTING BLOODGROUP ANTIGENS AND ANTIBODIES

Thomas H. Frame, Spring; David E. Hatcher, Houston, and John J. Moulds, Houston, all of Tex., assignors to Gamma Biologicals, Inc., Houston, Tex.

Filed May 17, 1994, Ser. No. 243,296
Int. Cl.[6] G01N *33/538;33/546;33/558;33/566*
U.S. Cl. 435—7.25 **19 Claims**



1. A method for detecting a bloodgroup antigen on erythrocytes, comprising the steps of:
obtaining a sample of erythrocytes to be tested;
adding said sample to a reaction tube, said tube having a lengthwise axis and containing a reaction medium, said reaction medium comprising a plurality of particles which have immunoglobulin-binding ligands selected from the group consisting of Protein. A, Protein G, Protein A/G and a universal kappa light chain binding protein coupled to the surface of said particles and antibodies specific for said bloodgroup antigen coupled to said ligand on said particles;
centrifuging said reaction tube for a time sufficient to pellet to the bottom of said reaction tube erythrocytes that do not attach to said antibodies on said particles;
detecting attachment of said erythrocytes to said particles or lack thereof; and
correlating attachment with the presence of said bloodgroup antigen.

5,665,559

PRODUCTION OF MONOCLONAL ANTIBODIES TO BACTEROIDES GINGIVALIS BY HYBRIDOMA BGII, VF9/2D

Lloyd G. Simonson, Deerfield, Ill., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1989, Ser. No. 356,899
Int. Cl.[6] G01N *33/569;33/577;* C07K *16/12*
U.S. Cl. 435—7.32 **17 Claims**

1. A monoclonal antibody produced by the hybridoma deposited under ATCC accession number HB 9968 that specifically binds to *Bacteroides gingivalis*.

5,665,560

CHOLESTEROL OXIDASE

Kinya Fujishiro, Shizuoka-ken, and Takayuki Uwajima, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 262,338, Jun. 17, 1994, Pat. No. 5,602,017, which is a continuation of Ser. No. 14,531, Feb. 8, 1993, Pat. No. 5,371,005, which is a continuation of Ser. No. 798,660, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,539, Apr. 10, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 460,114
Claims priority, application Japan, Apr. 10, 1990, 2-94296
Int. Cl.[6] G12N *9/04;* C12Q *1/60;* G01N *33/50;33/92*
U.S. Cl. 435—11 **3 Claims**

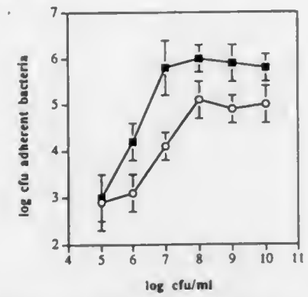
1. A method for quantitative determination of cholesterol contained in a sample which comprises:
exposing the sample to a cholesterol oxidase to oxidize the cholesterol, and
measuring the amount of oxidized cholesterol or hydrogen peroxide thereby determining the amount of cholesterol,
wherein the cholesterol oxidase has the amino acid sequence as defined in the Sequence Listing by SEQ ID NO: 4, and the following physicochemical properties:
(a) activity which catalyzes the reaction of oxidizing cholesterol in the presence of oxygen to form hydrogen peroxide and 4-cholesten-3-one;
(b) an isoelectric point at a pH of 4.7;
(c) substrate specificity so that the enzyme acts on cholesterol, β-sitosterol, stigmasterol, pregnenolone, dehydroisoandrosterone and estradiol but does not act on vitamin D_3, cholic acid, androsterone, cholesterol linoleate or lanosterol;
(d) a working pH in a range of 5.0 to 7.5, and the enzyme is stable in a pH range of 5.3 to 7.5 when heated at 50° C. for 60 minutes;
(e) optimum temperature of about 50° C.;
(f) the enzyme is inactivated at a pH of 10.0 or more or at pH of 4.0 or less when heated at 50° C. for an hour and the enzyme is also inactivated by about 83% when heated at a pH of 7.0 and a temperature of 60° C. for an hour;
(g) the enzyme is inhibited by p-chloromercury benzenesulfonate, silver nitrate and o-hydroxyquinoline and in the presence of bovine serum albumin, resistance to heat and stability during storage are improved;
(h) Michaelis' constant to cholesterol (Km value) of 3.0×10^{-5}M; and
(i) molecular Weight of about 43,000 (gel filtration).

5,665,561

MODULATORS OF PNEUMOCOCCAL ADHERENCE TO PULMONARY AND VASCULAR CELLS AND DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

Elaine I. Tuomanen, and Diana R. Cundell, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Jun. 6, 1994, Ser. No. 254,577
Int. Cl.[6] C12Q *1/04;1/02;1/14;* A01N *43/04*
U.S. Cl. 435—34 42 Claims



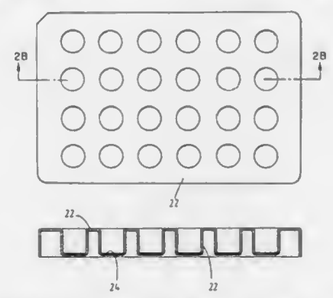
1. A pharmaceutical composition comprising an amount of a carbohydrate containing a disaccharide N-acetyl-D-galactosamine β1-3Gal motif effective to induce elution of adherent Streptococcus pneumoniae from host cells, an amount of a second carbohydrate containing a disaccharide N-acetyl-D-galactosamine β1-4Gal motif effective to induce elution of adherent *S. pneumoniae* from host cells, and a pharmaceutically acceptable carrier.

5,665,562

DEVICES AND METHODS FOR THE MEASUREMENT OF CELLULAR BIOCHEMICAL PROCESSES

Neil David Cook, Peterston-Super-Ely, United Kingdom, assignor to Amersham International plc, Buckinghamshire, England

PCT No. PCT/GB94/01040, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/26413, PCT Pub. Date Nov. 24, 1994
PCT Filed May 16, 1994, Ser. No. 373,316
Claims priority, application European Pat. Off., May 17, 1993, 93303806
Int. Cl.[6] C12Q *1/16;* G01N *23/06*
U.S. Cl. 435—35 18 Claims



1. A multiwell plate comprising an array of wells held in fixed relationship to one another, wherein each well is a vessel having an axis, an open top, opaque side walls and a base, wherein the base includes a region and there is provided in or on an interior surface of the region a layer comprising a scintillant substance and which permits the attachment or growth of cells, and wherein the region of the base and the layer comprising a scintillant substance are both optically transparent.

5,665,563

COUPLED TRANSCRIPTION AND TRANSLATION IN EUKARYOTIC CELL-FREE EXTRACT

Gregory S. Beckler, Portage, Wis., assignor to Promega Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 266,228, Jun. 27, 1994, Pat. No. 5,492,817, which is a continuation of Ser. No. 149,715, Nov. 9, 1993, Pat. No. 5,324,637, which is a continuation of Ser. No. 775,136, Oct. 11, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,439
Int. Cl.[6] C12P *21/00*
U.S. Cl. 435—68.1 4 Claims

1. A method for enhanced protein production from a DNA template comprising

a first step in which DNA, magnesium, ribonucleotide triphosphates and an RNA polymerase are mixed to form a solution and allowed to incubate for 2–30 minutes during which time RNA is transcribed from the DNA, and

a step following said first step in which said solution is mixed with a eukaryotic cell-free extract containing magnesium, so that further transcription is coupled to simultaneous translation of the RNA into protein.

5,665,564

ISOLATION AND CHARACTERISATION OF GENES RESISTANT TO ANTHRACYCLINE ANTIBIOTICS

Marinella Caruso; Anna Luisa Colombo, both of Milan; Luisa Garofano, Monza; Francesca Torti, Milan, and Guiseppe Zanella, Buccinasco, all of Italy, assignors to Pharmacia & Upjohn S.p.A., Milan, Italy

Continuation of Ser. No. 960,303, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 790,027, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 458,677, Mar. 27, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,319
Claims priority, application United Kingdom, May 27, 1988, 8812697
Int. Cl.[6] C12N *5/00;15/00;* C07H *17/00*
U.S. Cl. 435—69.1 17 Claims

1. An isolated DNA molecule which is a DNA molecule having the restriction enzyme map shown in FIG. 1 or in FIG. 2, wherein said DNA molecule comprises a gene encoding doxorubicin resistance and is derived from *Streptomyces peucetius.*

5,665,565

TRANSFECTION OF ENTERIC PARASITES

William A. Petri, Jr.; R. Randolph Vines; Jay E. Purdy, and Barbara J. Mann, all of Charlottesville, Va., assignors to The University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 273,962, Jul. 12, 1994. This application Feb. 13, 1995, Ser. No. 387,315
Int. Cl.[6] C12P *21/06;* C12N *15/00;1/20;* C07H *21/04*
U.S. Cl. 435—69.1 26 Claims

1. A method for obtaining an enteric protozoan which expresses foreign genes comprising the steps of:

transfecting the enteric protozoan *Entamoeba histolytica* with an expression vector containing (i) at least 157 base pairs of 5' flanking DNA sequence isolated from a protein-encoding gene of the enteric protozoan *Entamoeba histolytica* which enables expression of the foreign gene in said enteric protozoan and (ii) a gene which is to be expressed operably linked to said flanking DNA sequence, and isolating a transformed enteric protozoan.

5,665,566

CLONING OF ENTEROKINASE AND METHOD OF USE

Edward R. LaVallie, Tewksbury, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 5,944, Jan. 15, 1993, abandoned. This application Feb. 23, 1994, Ser. No. 200,900
Int. Cl.[6] C12N *15/63;15/70;15/79;15/57*
U.S. Cl. 435—69.3 20 Claims

9. An isolated DNA consisting of a nucleic acid which encodes the amino acid sequence of SEQ ID NO: 2.

10. A nucleic acid vector comprising the DNA according to claim 9.

11. A host cell transformed or transfected with the nucleic acid vector of claim 10.

12. A method for producing a polypeptide having enterokinase activity comprising:

(a) growing, in culture, of claim 11, and

(b) isolating from said host cell or said culture the polypeptide encoded by said DNA.

5,665,567

PREPARATION OF HETERODIMERIC PDGF-AB USING A BICISTRONIC VECTOR SYSTEM IN MAMMALIAN CELLS

Wolfram Eichner, Festeburg; Volker Achterberg, Hamburg; Albrecht Dörschner, Hamburg; Wolfgang Meyer-Ingold, Hamburg; Heiko Mielke, Neu Wulmstorf; Wilhem Dirks, Brunswick; Manfred Wirth, Wolfenbuttel, and Hansjörg Hauser, Brunswick, all of Germany, assignors to Beiersdorf AG, Hamburg, and Gesellschaft fur Biotechnologische Forschung mbH, Brunswick, both of Germany

PCT No. PCT/EP93/02295, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/05786, PCT Pub. Date Mar. 17, 1994
PCT Filed Aug. 26, 1993, Ser. No. 387,845
Claims priority, application Germany, Aug. 27, 1992, 42 28 457.0
Int. Cl.[6] C12N *15/18;1/21;5/10*
U.S. Cl. 435—69.4 12 Claims

1. A bicistronic expression unit for the recombinant preparation of heterodimeric PDGF-AB (Platelet Derived Growth Factor AB) in mammalian cells as host cells, characterized by the formula

p-5'UTR-C_1-IRES-C_2-3'UTR-poly A,

in which

p is a transcriptional promoter,

5'UTR (5' untranslated region) is an untranslated nucleotide sequence,

C_1 is a cistron encoding the B chain of PDGF, a biologically active analog, or a biologically active fragment thereof,

IRES (Internal Ribosomal Entry Site) is a nucleotide sequence of viral, cellular or synthetic origin that mediates an internal binding of the ribosomes,

C_2 is a cistron encoding the A chain of PDGF or a biologically active analog, or biologically active fragment thereof,

3'UTR (3' untranslated region) is an untranslated nucleotide sequence,

and polyA is a polyadenylation signal,

where the C_1, IRES and C_2 are connected to each other in an operative manner.

5,665,568

NUCLEIC ACID ENCODING THE MATURE β_A CHAIN OF INHIBIN AND METHOD FOR SYNTHESIZING POLYPEPTIDES USING SUCH NUCLEIC ACID

Anthony J. Mason, and Peter H. Seeburg, both of San Francisco, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 197,792, Feb. 17, 1994, Pat. No. 5,525,488, which is a division of Ser. No. 958,414, Oct. 18, 1992, Pat. No. 5,310,661, which is a division of Ser. No. 744,207, Aug. 12, 1991, Pat. No. 5,215,893, which is a division of Ser. No. 215,466, Jul. 5, 1988, Pat. No. 5,089,396, which is a division of Ser. No. 906,729, Dec. 31, 1986, Pat. No. 4,798,885, which is a continuation-in-part of Ser. No. 827,710, Feb. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 783,910, Oct. 3, 1985, abandoned. This application Jun. 2, 1995, Ser. No. 459,850
Int. Cl.[6] C12N *15/16;15/63;* C07K *14/575*
U.S. Cl. 435—69.4 30 Claims

1. Non-chromosomal DNA encoding a porcine or human inhibin β_A chain polypeptide wherein the porcine inhibin β_A chain polypeptide has at least the sequence of residues at positions 309–424 of SEQ ID NO: 31, or is a hormonally active variant thereof wherein the variant differs from the porcine inhibin β_A chain polypeptide of SEQ ID NO: 31 by deletion of the lysine at position 321 or 322, or by substitution of the lysine residue at position 322 with a histidine or serine, or by substitution of the lysine residue at position 315 with an arginine and the valine residue at position 316 with the threonine, or by deletion of the cysteine residue at position 388 or 389, or by substitution of the arginine residue at position 395 with a glutamine, or by substitution of the lysine residue at position 411 with a glutamine, and wherein the human inhibin β_A chain polypeptide has at least the sequence of residues at positions 311–426 of SEQ ID NO: 41, or is a hormonally active variant thereof wherein the variant differs from the human inhibin β_A chain polypeptide of SEQ ID NO: 41 by deletion or substitution of an amino acid residue within positions 321–325, 392–404, or 415–426, or by insertion of an amino acid residue adjacent to a residue within said positions, or by substitution of the phenylalanine residue at position 330 with an isoleucine or leucine, or by substitution of tryptophan residue at position 335 with a tyrosine or phenylalanine, or by substitution of the tryptophan residue at position 338 with a tyrosine or phenylalanine, or by substitution of the isoleucine at position 339 with a phenylalanine or valine, or by substitution of the tyrosine residue at position 345 with a tryptophan or threonine, or by substitution of the histidine residue at position 346 with a lysine, or by substitution of the alanine residue at position 347 with a serine, or by substitution of the asparagine residue at position 348 with a glutamine, tyrosine, or histidine, or by substitution of the tyrosine residue at position 349 with a threonine or asparagine, or by substitution of the phenylalanine residue at position 368 with a tyrosine, or by substitution of the histidine residue at position 381 with an asparagine or lysine, or by substitution of the phenylalanine residue at position 384 with a tyrosine.

5,665,569

HIV IMMUNOTHERAPEUTICS

Tsuneya Ohno, Boston, Mass., assignor to Nissin Shokuhin Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/US93/07967, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO94/04574, PCT Pub. Date Mar. 3, 1994
Continuation-in-part of Ser. No. 111,080, Aug. 24, 1993, Pat. No. 8,558,865, which is a continuation-in-part of Ser. No. 39,457, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 748,562, Aug. 22, 1991, abandoned. This PCT application Aug. 24, 1993, Ser. No. 211,980
Int. Cl.[6] C12N *1/20;15/13;* C07H *21/04*
U.S. Cl. 435—69.6 3 Claims

1. A polynucleotide encoding an NM01 antibody characterized by the ability to specifically bind to the amino acids G-P-G-R (SEQ ID NO: 1) of HIV-1 gp120 or gp160 protein and the ability to neutralize in vitro the infection of H9 cells by live HIV-1 strains

MN and IIIB as determined by reverse transcriptase p24, MT-2, and syncytia formation assays.

5,665,570

ANTIBODY-ENCODING RECOMBINANT DNA AND ITS USE

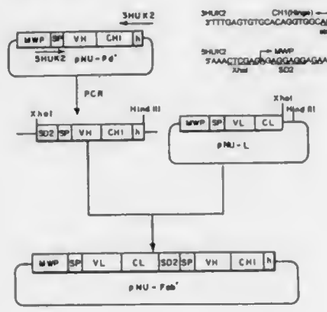
Hideo Yamagata, Hachioji; Shigezo Udaka, Nagoya; Yasushi Inoue, Funahashi; Hiroko Tada, Okayama, and Susumu Iwasa, Tsuzuki-gun, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 7, 1995, Ser. No. 384,545

Claims priority, application Japan, Feb. 10, 1994, 6-016385

Int. Cl.[6] C12P *21/08;* C12N *1/20;15/75;* C07H *21/04*

U.S. Cl. 435—69.6 17 Claims



1. A method for producing a functional recombinant antibody, comprising cultivating *Bacillus brevis* bacterium transformed with a vector that contains DNA coding for an antibody under conditions wherein functional recombinant antibody is produced.

5,665,571

PROBES FOR PAPILLOMAVIRUSES AND AN IN VITRO DIAGNOSTIC PROCEDURE FOR PAPILLOMA INFECTIONS

Sylvie Beaudenon, Clamart; Dina Kremsdorf; Odile Croissant, both of Paris, and Gérard Orth, Sceaux, all of France, assignors to Institut Pasteur, and Institut National de la Sante et de la Recherche Medicale, both of France

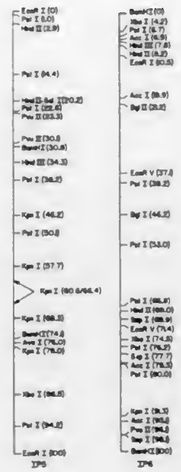
Division of Ser. No. 914,005, Jul. 16, 1992, Pat. No. 5,411,857, which is a continuation of Ser. No. 714,347, Jun. 12, 1991, abandoned, which is a continuation of Ser. No. 584,397, Sep. 13, 1990, which is a continuation of Ser. No. 453,219, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 275,953, Nov. 25, 1988, abandoned, which is a continuation of Ser. No. 8,003, Jan. 29, 1987, abandoned. This application Apr. 3, 1995, Ser. No. 415,511

Claims priority, application France, Jan. 31, 1986, 86 01425

Int. Cl.[6] C12P *19/34;* C12N *7/00;1/21;15/10*

U.S. Cl. 435—91.1 14 Claims

1. A process for producing cloned recombinant human papillomavirus DNA, wherein the process comprises replicating a vector in a host cell, wherein said vector comprises human papillomavirus IP5 DNA, by growing a host cell comprising said vector under



conditions such that recombinant human papillomavirus IP5 DNA is replicated.

5,665,572

POLYMERASE CHAIN REACTION AMPLIFICATION METHOD USING A SINGLE PRIMER WHICH RANDOMLY ANNEALS

Joh-E Ikeda, Ibaraki; Shinji Hadano, and Haruhiko Yokoi, both of Kanagawa, all of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 936,831, Aug. 28, 1992, abandoned. This application Aug. 23, 1994, Ser. No. 294,606

Claims priority, application Japan, Aug. 30, 1991, 3-220570

Int. Cl.[6] C12P *19/34;* C12Q *1/68;* C07H *21/02;21/04*

U.S. Cl. 435—91.2 5 Claims

1. A method for amplifying template DNA having an unknown sequence by a polymerase chain reaction (PCR) using oligonucleotide primers comprising a contiguous sequence which consists of SEQ ID No. 1, which method comprises the steps of:

(a) conducting multiple PCR cycles on a first reaction solution containing said template DNA, said oligonucleotide primers, and an amphipathic polymer, each PCR cycle comprising:

(i) denaturing double-stranded DNA into single-stranded DNA, wherein in the first of said multiple PCR cycles the double-stranded DNA is said template DNA,

(ii) annealing said oligonucleotide primers to the single-stranded DNA at 10°–40° C. for 90–150 minutes, and

(iii) synthesizing extension products of said oligonucleotide primers, which products are complementary duplicates of Various regions of the single-stranded DNA,

wherein the amphipathic polymer increases the annealing efficiency of the oligonucleotide primers and single-stranded DNA,

so that a plurality of extended primer molecules are synthesized each having the nucleotide sequence of said oligonucleotide primer at both ends and a nucleotide sequence of each region of the template DNA; and

(b) conducting multiple PCR cycles under stringency conditions higher than in step (a) on a second reaction solution containing the reaction solution produced by step (a) and an additional amount of said oligonucleotide primers, but not containing said amphipathic polymer, thereby amplifying the template DNA as a group of various DNA sequences therein.

5,665,573

POLYMERIZATION OF LIGNIN AT ALKALINE PH

Birgitte Yde, Farum, Denmark, assignor to Novo Nordisk A/S, Bogsvaerd, Denmark

PCT No. PCT/DK93/00217, § 371 Date Dec. 1, 1994, § 102(e) Date Dec. 1, 1994, PCT Pub. No. WO94/01488, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 2, 1993, Ser. No. 347,358

Claims priority, application Denmark, Jul. 2, 1992, 0869/92; Aug. 20, 1992, 1030/92

Int. Cl.[6] C12P *7/12*

U.S. Cl. 435—118 11 Claims

1. A method of enzymatic polymerization and modification of non-sulfonated lignin or non-sulfonated lignin containing material by treatment with a peroxidase, wherein, the enzymatic polymerization is performed at alkaline pH values, wherein hydrogen peroxide is added under controlled conditions in which the hydrogen peroxide is not introduced all at once, and polymerization is performed in the absence of any organic solvents.

5,665,574

METHOD FOR PREPARING N-ACETYLNEURAMINIC ACID

Yoji Tsukada, Kyoto, and Yasuhiro Ohta, Uji, both of Japan, assignors to Marukin Shoyu Co., Ltd., Japan

Continuation of Ser. No. 122,555, Sep. 30, 1993, Pat. No. 5,472,860. This application Sep. 14, 1995, Ser. No. 528,120

Claims priority, application Japan, Feb. 3, 1992, 4-17206

Int. Cl.[6] C12P *19/02;19/06;* C07H *3/02;* C12N *9/08*

U.S. Cl. 435—105 13 Claims

1. A method for preparing N-acetylneuraminic acid comprising:

reacting N-acetylglucosamine with pyruvic acid at a pH within the range from about 10 to about 12 in the presence of N-acetylneuraminic acid lyase; and

recovering N-acetylneuraminic acid.

5,665,575

MICROBIAL ESTERASE FOR THE ENANTIOSELECTIVE CLEAVAGE OF 1-PHENYLETHYL ACETATE

Hans-Willi Krell, Penzberg, and Peter Rasor, München, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP93/01302, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/24648, PCT Pub. Date Dec. 9, 1993

PCT Filed May 25, 1993, Ser. No. 338,499

Claims priority, application Germany, May 27, 1992, 42 17 506.2

Int. Cl.[6] C12P *7/22*

U.S. Cl. 435—156 6 Claims

1. A purified microbial esterase which enantioselectively cleaves (S)-1-phenylethyl acetate, having molecular weight of about 100,000 daltons when determined by means of native polyacrylamide gel electrophoresis and having an isoelectric point of about 4.7, and which is obtained from *Arthrobacter spec.*

5,665,576

CALLUS CELL INDUCTION AND THE PREPARATION OF TAXANES

Paul M. Cino, Bound Brook; Steven R. Schwarz, Milltown, both of N.J., and Dana L. Cazzulino, New York, N.Y., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 202,718, Feb. 23, 1994, Pat. No. 5,527,702, which is a continuation of Ser. No. 864,826, Apr. 7, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,286

Int. Cl.[6] C12P *1/00;7/22;* C12N *5/00*

U.S. Cl. 435—156 7 Claims

1. A method for the production of at least one taxane, comprising the steps of:

(A) inducing the formation of callus cells capable of producing at least one taxane, wherein said callus cells are formed from explant tissue according to a method comprising the steps of:

(i) contacting said explant tissue with a liquid medium without completely submerging said tissue in said medium; and

(ii) holding said explant tissue and liquid medium at conditions suitable for the induction of callus cells, whereby callus cells are formed which are capable of producing at least one taxane;

(B) culturing said cells under liquid suspension cell culture conditions to produce said taxane(s); and

(C) recovering said at least one taxane.

5,665,577

VECTORS CONTAINING HIV PACKAGING SEQUENCES, PACKAGING DEFECTIVE HIV VECTORS, AND USES THEREOF

Joseph G. Sodroski, Medford; William A. Haseltine; Mark Poznansky, both of Cambridge, all of Mass.; Andrew Lever, Pinner Middlesex, England, and Heinrich Gottlinger, Munich, Germany, assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation of Ser. No. 827,588, Jan. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 540,746, Jun. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 307,664, Feb. 6, 1989, abandoned. This application Nov. 15, 1993, Ser. No. 152,902

Int. Cl.[6] C12N *5/10;15/49;15/63*

U.S. Cl. 435—172.3 72 Claims

1. An HIV vector comprising:

(a) a DNA segment from an HIV genome, wherein the DNA segment comprises the HIV gag, pol and env genes; wherein said HIV vector lacks the HIV packaging sequence necessary to package HIV RNA into virions; wherein said HIV packaging sequence is the nucleotide sequence located between the 5' major splice donor site and the initiation codon of the gag gene on the HIV genome; and

(b) a promoter operably linked to the DNA segment from an HIV genome of (a); wherein the HIV vector, when introduced into a eukaryotic host cell, express HIV gag, pol and env proteins to form HIV virions that do not contain sufficient HIV RNA to result in a replication competent HIV virion.

5,665,578

VECTOR AND METHOD FOR ACHIEVING HIGH LEVEL OF EXPRESSION IN EUKARYOTIC CELLS

Stephen D. Gillies, 145 Gilson Rd., Scituate, Mass. 02066

Continuation of Ser. No. 879,700, May 5, 1992, abandoned, which is a continuation of Ser. No. 635,799, Jan. 2, 1991, abandoned, which is a continuation of Ser. No. 837,595, Mar. 7, 1986, abandoned. This application Apr. 5, 1994, Ser. No. 223,381

Int. Cl.[6] C12N *5/10;15/63;15/64*

U.S. Cl. 435—172.3 9 Claims

9. An expression vector comprising:

(a) a selectable marker gene comprising a promoter operatively linked to a nucleic acid encoding a selectable marker enzyme;

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(b) a transcription unit comprising a promoter operatively linked to a nucleic acid encoding a protein;

(c) an enhancer located between the selectable marker gene and the transcription unit, which enhancer stimulates transcription of both the selectable marker gene and the transcription unit compared to the transcription of both the selectable marker gene and the transcription unit in the absence of the enhancer; and

(d) a blocking element comprising a promoter interposed between the enhancer and the selectable marker gene, which blocking element selectively attenuates the stimulation of transcription of the selectable marker gene.

5,665,579

INVERTASE GENES AND USES THEREOF

Leona C. Fitzmaurice; T. Erik Mirkov; Kathryn J. Elliott; William Owen Butler, all of San Diego, Calif.; Yoshihiro Konno, Onishi, Japan, and Craig Duane Dickinson, San Diego, Calif., assignors to The Salk Institute Biotechnology/ Industrial Associates, Inc., San Diego, Calif.

Continuation of Ser. No. 771,331, Oct. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,344, Feb. 22, 1991, abandoned. This application May 17, 1994, Ser. No. 245,809

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82;15/56*

U.S. Cl. 435—172.3 **17 Claims**

17. A method for obtaining a tomato plant having altered tomato vacuolar invertase expression comprising introducing DNA encoding a tomato vacuolar invertase or a fragment thereof, in the sense or anti-sense orientation into a tomato plant thereby producing a tomato plant having altered tomato vacuolar invertase expression.

5,665,580

ANTISENSE OLIGONUCLEOTIDE INHIBITION OF PAPILLOMAVIRUS TRANSFORMED CELLS

Stanley T. Crooke, Carlsbad, Calif.; Christopher K. Mirabelli, Dover, Mass.; David J. Ecker, Encinitas, and Lex M. Cowsert, Carlsbad, both of Calif., assignors to Isis Pharmaceuticals, Inc., Carlsbad, Calif.

PCT No. PCT/US93/03075, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/20095, PCT Pub. Date Oct. 14, 1993

Continuation of Ser. No. 860,925, Mar. 31, 1992, Pat. No. 5,457,189, which is a continuation-in-part of Ser. No. 445,196, Dec. 4, 1989, abandoned. This PCT application Mar. 31, 1993, Ser. No. 307,682

Int. Cl.[6] C12N *15/00;* **C07H** *21/04*

U.S. Cl. 435—172.3 **3 Claims**

1. A method of inhibiting the growth of human papillomavirus transformed cancer cells in vitro comprising introducing an antisense oligonucleotide having SEQ ID NO: 8 into said cancer cells in an amount sufficient to inhibit cell growth.

5,665,581

ATTENUATION OF FUNGAL VIRULENCE BY SYNTHETIC INFECTIOUS MYCOVIRUS TRANSCRIPTS

Baoshan Chen, Bloomfield; Gil Ho Choi, Nutley, and Donald Lee Nuss, Passaic, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 3, 1994, Ser. No. 253,451

Int. Cl.[6] C12N *13/00*

U.S. Cl. 435—173.6 **2 Claims**

1. A method for artificially inserting into a fungal cell a selected mycovirus RNA, which method comprises obtaining the coding strand of said mycovirus RNA, and causing said coding strand to enter said fungal cell by performing electroporation.

5,665,582

ISOLATION OF BIOLOGICAL MATERIALS

Albert P. Kausch, Stonington, Conn., and Sandya Narayanswami, Bar Harbor, Me., assignors to Dekalb Genetics Corp., Mystic, Conn.

Continuation-in-part of Ser. No. 605,852, Oct. 29, 1990, abandoned, which is a continuation of Ser. No. 146,434, Oct. 29, 1993, Pat. No. 5,508,164. This application Apr. 18, 1994, Ser. No. 229,288

Int. Cl.[6] C12N *7/02;11/06;* **C08B** *37/04*

U.S. Cl. 435—181 **23 Claims**

1. A method for reversibly anchoring a biological material to a solid support comprising the steps of:

(a) placing a reversible polymer onto the solid support;

(b) attaching a reversible linker to the polymer; and

(c) linking the biological material to the reversible linker with a binding composition, said binding composition comprising a nucleic acid, an antibody, an anti-idiotypic antibody or protein A, to reversibly anchor the biological material to the solid support;

wherein said biological material is a chloroplast, plastid, chromosome, fragment of chromosome, protein or nucleic acid.

5,665,583

METHODS AND MATERIALS RELATING TO IMPDH AND GMP PRODUCTION

Frank R. Collart, 1056 Crestwood La., Bolingbrook, Ill. 60439, and Eliezer Huberman, 424 Sunset Ave., LaGrange, Ill. 60525

Filed Aug. 12, 1988, Ser. No. 232,302

Int. Cl.[6] C12N *15/52;1/21;15/63;15/85*

U.S. Cl. 435—191 **18 Claims**

1. A purified and isolated nucleic acid segment or its complement comprising at least 20 nucleotides in common with the nucleotide sequence of FIG. **1**A, FIG. **1**B, FIG. **1**C and FIG. **1**D; FIG. **2**A, FIG. **2**B, FIG. **2**C, and FIG. **2**D; or FIG. **3**A, FIG. **3**B, and FIG. **3**C when aligned sequentially, the segment capable of hybridizing to the sequence shown in FIG. **1**A, FIG. **1**B, FIG. **1**C, and FIG. **1**D; FIG. **2**A, FIG. **2**B, FIG. **2**C and FIG. **2**D; or FIG. **3**A, FIG. **3**B, and FIG. **3**C under stringent conditions.

5. A purified and isolated nucleic acid segment encoding the same sequence of amino acids as shown in FIG. **1**A, FIG. **1**B, FIG. **1**C, and FIG. **1**D; FIG. **2**A. FIG. **2**B, FIG. **2**C, and FIG. **2**D; or FIG. **3**A, FIG. **3**B, and FIG. **3**C.

5,665,584

DNA FRAGMENT CONTAINING A TANNASE GENE, A RECOMBINANT PLASMID, A PROCESS FOR PRODUCING TANNASE, AND A PROMOTER

Osamu Hatamoto; Teruo Watarai; Kiyoshi Mizusawa, and Elichi Nakano, all of Noda, Japan, assignors to Noda Institute For Scientific Research, and Kikkoman Corporation, both of Noda, Japan

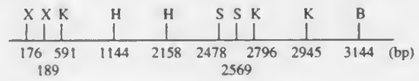
Filed Jun. 5, 1995, Ser. No. 460,860

Claims priority, application Japan, Jul. 12, 1994, 6-159973; Apr. 10, 1995, 7-083973

Int. Cl.[6] C12N *9/18;15/00;* **C07H** *21/04*

U.S. Cl. 435—197 **6 Claims**

1. A DNA fragment of 3,563 base pairs comprising a gene coding for tannase and derived from a microorganism belonging to the genus Aspergillus, with the following restriction enzyme map:



B: Bam HI, H: Hind III, K: Kpn I, S: Sal I, X: Xba I.

5,665,585

RECOMBINANT PRODUCTION OF GLUCOAMYLASE P IN TRICHODERMA

Tuula Torkkeli; Vesa Joutsjoki; Helena Torkkeli; Arja Vainio, all of Helsinki; Richard Fagerström, Espoo; Sirpa Aho; Matti Korhola, both of Helsinki, all of Finland, and Helena Nevalainen, North Epping, Australia, assignors to Alko-Yhlot Oy, Finland

Continuation of Ser. No. 104,853, Aug. 12, 1993, abandoned, and a continuation-in-part of Ser. No. 937,789, Sep. 3, 1992, abandoned. This application Feb. 7, 1995, Ser. No. 385,370

Int. Cl.[6] C12N *1/15;9/30;15/56*

U.S. Cl. 435—203 **34 Claims**

26. A method for producing glucoamylase P, wherein said method comprises expression of said glucoamylase P from Trichoderma, wherein said DNA encoding said glucoamylase P has a DNA sequence encoding, or capable of being processed by said Trichoderma host cell to encode, a protein, said protein comprising an amino acid sequence selected from the group consisting of:

a. amino acids 1-616 as shown in SEQ ID NO. 2 (FIG. 5A) or in SEQ ID NO. 4 (FIG. **13**); and

b. amino acids 30-616 as shown in SEQ ID NO. 2 (FIG. 5A) or in SEQ ID NO. 4 (FIG. **13**).

5,665,586

PROTEASE FROM *STREPTOMYCES FRADIAE*

Etsuo Nakamura, Kobe; Hiroshige Tsuzuki, Tsuzuki-gun; Kengo Kitadokoro, Minoo; Masaru Shin, Kobe, and Hiroshi Teraoka, Sakai, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00592, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/23530, PCT Pub. Date Nov. 25, 1993

PCT Filed Apr. 30, 1993, Ser. No. 343,428

Claims priority, application Japan, May 19, 1992, 4-126511

Int. Cl.[6] C12N *9/52;9/50;1/00;1/20*

U.S. Cl. 435—220 **3 Claims**

1. A protease derived from *Streptomyces fradiae* for cleaving a peptide bond including a carboxyl group of a glutamic acid residue in a peptide and having the following characteristics:

(1) an optimal pH: approximately 8.2; and

(2) a stable pH range: 6.0 through 9.0 at a temperature of 37° C.

5,665,587

MODIFIED SUBTILISINS AND DETERGENT COMPOSITIONS CONTAINING SAME

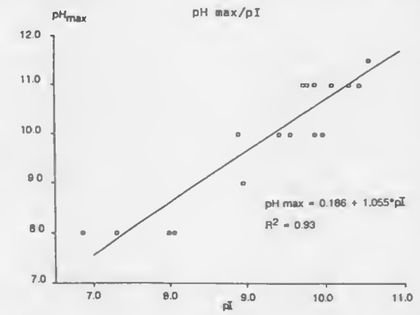
Dorrit Aaslyng, Roskilde; Sven Branner, Lyngby; Sven Hastrup, Copenhagen; Leif Nørskov-Lauritsen, Tappernoje; Ole Hvilsted Olsen, Brønshøj; Merete Simonsen, Farum, all of Denmark; Eric Casteleijn, Capell a/d Ijssel, Netherlands; Maarten Robert Egmond, Linschoten, Netherlands; Johan Haverkamp, Bergschenhoek, Netherlands; John David Marugg, Utrecht, Netherlands, and Arnoldus Theodorus Anthonius Mooren, Vlaardingen, Netherlands, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Unilever PLC, London, United Kingdom

Continuation of Ser. No. 776,115, Oct. 15, 1991, which is a continuation-in-part of Ser. No. 516,026, Apr. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 544,003, Jun. 26, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,190

Claims priority, application Denmark, Jun. 26, 1989, 3169/89; United Kingdom, Jun. 26, 1989, 8914604; Jul. 7, 1989, 8915660

Int. Cl.[6] C12N *9/52;9/54;9/56;* **C11D** *3/386*

U.S. Cl. 435—221 **50 Claims**



1. A modified subtilisin comprising a mutation in an amino acid sequence of a subtilisin at a position numbered according to the amine acid sequence of the mature subtilisin BPN', wherein the mutation is selected from the group consisting of:

R10F,

R10F+R19Q+E89S+E136Q+R145A+D181N+E271Q+R275Q,

R10F+R45A+E89S+E136Q+R145A+D181N+R186P+E271Q,

R10L,

Q12K+P14D+T22K+T38K+N43R+Q59E+N76D+A98R+S99D+H120D+N140D+S141R+S156E+A158R+A172D+N173K+T213R+N248D+ T255E+S256K+S259D+A272R,

Q12K+P14D+T22K+T38K+N43R+Q59E+N76D+A98R+S99D+S156E+A158R+A172D+N173K+T213R+N248D+T255E+S256K+S259 +A272R,

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D14K,

D14K+D120K,

D14K+D120K+D140K,

D14K+D120K+D140K+D172K,

A15K,

A15R,

K27D,

K27D+D120K,

K27R,

K27V,
*36D+Q59E+N76D+A98R+S99D+H120D+N140D+S141R+S156E+A158R+A172D+N173K+K235L+N248D+T255E+S256K+S259D+A272R,
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*36D+R170Y+G195E+K251E,
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N43R,
V51D,
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E89S+D181N,
E89S+K251N,
Y91F,
E112T,
E136Q,
E136Q+R10I,
E136R,
S141K,
S141R,
R145A,
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D197N+E271Q,
Y209L,
W241L+H249R,
W241Y+H249R,
K251E,
K251N,
K251R,
T255E,
S256K,
S256R,
S259D,
S259L,
Y263W,
B271G+K27V,
E271Q,
E271G, and
A272R.

5,665,588

DNA ENCODING NATURAL KILLER LYTIC ASSOCIATED PROTEIN

Jackie Kornbluth, 174 Pebble Beach Dr., Little Rock, Ark. 72212

Continuation-in-part of Ser. No. 126,501, Sep. 24, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 398,008

Int. Cl.[6] C12N *15/00;5/00;* **C07H** *21/04*

U.S. Cl. 435—348 **9 Claims**

1. DNA encoding a natural killer lytic associated protein, wherein said DNA has the sequence shown in SEQ ID No. 1.

5,665,589

HUMAN LIVER EPITHELIAL CELL LINES

Curtis C. Harris, Bethesda; Katharine H. Cole, Dayton, both of Md.; John F. Lechner, Albuquerque, N. Mex., and Roger Reddel, St. Ives, Australia, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 879,165, May 1, 1992, Pat. No. 5,529,920, which is a continuation of Ser. No. 377,967, Jul. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 284,368, Dec. 14, 1988, abandoned, and Ser. No. 284,331, Dec. 14, 1988, abandoned. This application Mar. 3, 1993, Ser. No. 25,336

Int. Cl.[6] C12N *5/06;5/10*

U.S. Cl. 435—370 **15 Claims**

1. A continuous epithelial cell line isolated from normal adult human liver tissue consisting of cells which have the following characteristics:

1) the cells are immortalized by transformation with a virus selected from the group consisting of SV40 virus, adenovirus, and papilloma virus;

2) the cells metabolically activate carcinogen precursor compounds to DNA-adduct forming compounds;

3) the cells demonstrate a pattern of gene expression, wherein said pattern of gene expression is such that the cells:

a) do not express α-fetoprotein; and

b) express mRNA encoding at least one of the proteins selected from the group consisting of a transferrin, α-1-antitrypsin, α2 macroglobulin, a catalase, superoxide dismutase and glutathione peroxidase; and

4) the cells are non-tumorigenic.

5,665,590

METHOD FOR ISOLATING AND DIRECTLY CLONING GENES WHICH ENCODE CELL-SURFACE AND SECRETED PROTEINS

Zhi Yang, Menlo Park, Calif., assignor to SyStemix, Inc., Palo Alto, Calif.

Filed Jul. 29, 1994, Ser. No. 282,951

Int. Cl.[6] C12N *5/10;15/85*

U.S. Cl. 435—6 **43 Claims**

1. A composition comprising a DNA vector comprising, 5' to 3':

a) a cloning site

b) a region encoding an identifiable peptide; and

c) a region encoding a membrane anchoring domain;

wherein the identifiable peptide may also be the membrane anchoring domain, further wherein, upon cloning of a nucleotide encoding a signal peptide, or a functional portion thereof, in-frame with the region encoding the identifiable peptide, expression thereof results in appearance of the identifiable peptide on a cell surface.

5,665,591

REGULATION OF SMOOTH MUSCLE CELL PROLIFERATION

Gail E. Sonenshein, Brookline; Roger Lawrence, Hull, and Robert E. Bellas, Boston, all of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Dec. 6, 1994, Ser. No. 354,101

Int. Cl.[6] C12N *5/06;5/08*

U.S. Cl. 435—375 **3 Claims**

1. A method for stimulating the proliferation of smooth muscle cells comprising the steps of:

a) providing a purified transcription factor wherein said factor is comprised of two subunits of 50 and 70 kD that have a combined molecular weight of 120 kD wherein neither subunit is c-rel, rel B, or p65, and said factor specifically binds to a double-stranded nucleic acid containing the sequence 5'-GGGTTTTCCCC-3' (SEQ ID NO 2); and

b) administering an effective amount of said factor to smooth muscle cells in vitro to stimulate proliferation.

5,665,592

FELINE IMMUNODEFICIENCY VIRUS ISOLATE NCSU$_1$

Wayne A. F. Tompkins, and Mary B. Tompkins, both of Apex, N.C., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 105,710, Aug. 12, 1993, Pat. No. 5,413,927, which is a continuation-in-part of Ser. No. 752,424, Sep. 3, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 365,901

Int. Cl.[6] C12N *5/00;7/00;7/02;15/49*

U.S. Cl. 435—325 **21 Claims**

1. Isolated DNA coding for feline immunodeficiency virus NCSU$_1$ (ATCC deposit number VR2333).

5,665,593

ANTISENSE OLIGONUCLEOTIDES WHICH COMBAT ABERRANT SPLICING AND METHODS OF USING THE SAME

Ryszard Kole, and Zbigniew Dominski, both of Orange County, N.C., assignors to University of North Carolina, Chapel Hill, N.C.

Continuation of Ser. No. 62,471, May 11, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 379,079

Int. Cl.[6] C12N *5/06;5/16;* **C07H** *21/00;* **A61K** *31/70*

U.S. Cl. 435—375 **13 Claims**

1. A method of upregulating expression of a native protein in a cell in vitro, said cell containing a DNA encoding said native protein, which DNA contains a mutation which causes downregulation of said native protein by aberrant splicing in a pre-mRNA,

wherein said DNA encodes said pre-mRNA;

wherein said pre-mRNA contains a native intron having a first set of splice elements, which native intron is removed by splicing when said mutation is absent to produce a first mRNA encoding said native protein;

and wherein said pre-mRNA further contains an aberrant intron different from said native intron having a second set of splice elements, which aberrant intron is removed by splicing when said mutation is present to produce an aberrant second mRNA different from said first mRNA;

said method comprising:

administering to said cell an antisense oligonucleotide which hybridizes to said pre-mRNA in the nucleus of said cell to create a duplex thereof under conditions which permit splicing,

wherein said antisense oligonucleotide does not activate RNase H;

and wherein said antisense oligonucleotide blocks a member of said aberrant second set of splice elements;

so that said native intron is removed by splicing and said native protein is produced.

5,665,594

GAS PERMEABLE BIOREACTOR AND METHOD OF USE

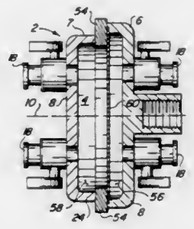
Ray P. Schwarz, Friendswood; Frederick A. Archibald, III, and William J. Anderson, both of Houston, all of Tex., assignors to Synthecon, Inc., Houston, Tex.

PCT No. PCT/US94/10126, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO95/07344, PCT Pub. Date Mar. 16, 1995

Continuation-in-part of Ser. No. 118,512, Sep. 9, 1993, Pat. No. 5,437,998. This PCT application Sep. 9, 1994, Ser. No. 416,908

Int. Cl.[6] C12M *1/04;1/10;3/02*

U.S. Cl. 435—394 **14 Claims**



8. A method for growing cells in a gas permeable bioreactor comprising:

filling a bioreactor formed from a vessel with walls constructed at least partially of a gas permeable material, said vessel having an inside surface, closed ends, a permeable membrane positioned to provide a cell growth chamber and a reservoir chamber in said vessel, and a substantially horizontal longitudinal central axis extending between said ends, with a liquid culture medium and cells;

suspending said cells, without appreciable mixing, in the liquid culture medium in the cell growth chamber in the vessel by rotating said bioreactor about its substantially horizontal longitudinal central axis at a rate that suspends said cells in the liquid culture medium; and

continuing rotation of the bioreactor for a time period that permits cell growth; characterized by permeating gas through the gas permeable material;

moving gas bubbles suspended in the liquid culture medium out of the cell growth chamber; and

trapping gas bubbles suspended in the liquid culture medium in the reservoir chamber.

5,665,595

IMMUNOGLOBULINS AGAINST INSECT TISSUE

James K. Petell, Bay City, and Kathi J. Halvin, Saginaw, both of Mich., assignors to DowElanco, Indianapolis, Ind.

Continuation of Ser. No. 31,072, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 712,025, Jun. 7, 1991, abandoned. This application Mar. 18, 1994, Ser. No. 216,119

Int. Cl.[6] C12N *5/12;* **C07K** *16/44*

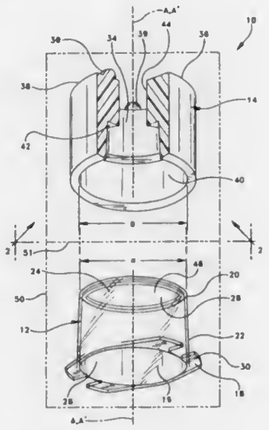
U.S. Cl. 435—332 **10 Claims**

1. A monoclonal antibody which specifically binds to apical midgut intestinal membrane tissue of at least one insect species in the Order Lepidoptera and Coleoptera, wherein said antibody is selected from the group consisting of M2U85, produced by the hybridoma M2U85, M2U96, produced by the hybridoma M2U96, M2U100, produced by the hybridoma M2U100, and M2U110, produced by the hybridoma M2U110.

5,665,596
DEVICE FOR CELL CO-CULTURE AND METHOD FOR ITS USE IN CULTURING CELLS

Edward F. Mussi, Saline, Mich., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 31, 1995, Ser. No. 509,394
Int. Cl.[6] C12M *3/00*
U.S. Cl. 435—373 18 Claims



18. A method for culturing one population of cells on one side of a porous membrane associated with a cell culture insert and another population of cells on another side of the porous membrane comprising:

mounting an adapter on a cell culture insert on an exterior side of a porous membrane of the cell culture insert having a first receptacle therewithin on a interior side of the membrane, said adapter consisting essentially of an insert end, a open end, having a passage with a longitudinal axis therethrough and having a shoulder intermediate said open end and said insert end, said insert end having an inside diameter sized to accept an end of the cell culture insert having the porous membrane mounted therein, so that when said adapter is releasably coaxially mounted over said end of the cell culture insert, the insert contacts said shoulder and closes said passage, thereby forming a second receptacle for containing fluid over the exterior side of the porous membrane open toward said open end of said adapter;

positioning the insert having said adapter mounted thereon on a surface so that said second receptacle is upward and open;

adding a suspension of a first population of cells in a suitable medium into said second receptacle;

incubating the insert so that said first population of cells forms a substantially confluent layer on the exterior side of said membrane;

removing the medium from said second receptacle;

removing said adapter from the insert;

placing the insert in a container so that the insert is suspended with said first receptacle upward and open;

adding a suspension of a second population of cells in a suitable medium into the first receptacle and onto the interior side of the membrane;

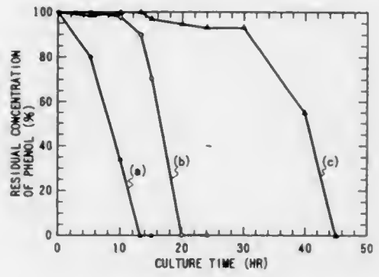
adding a suitable medium into the container; and

incubating the container with the insert so that said second population of cells forms a substantially continuous layer on the interior side of the membrane.

5,665,597
BACTERIUM KB2

Takeshi Imamura, Chigasaki, and Tetsuya Yano, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,541
Claims priority, application Japan, Dec. 2, 1994, 6-299323
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—253.3 1 Claim



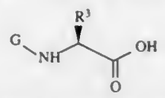
1. A biologically pure culture of *Pseudomonas alcaligenes* KB2, identified under Deposition No. FERM P-14644 in National Institute of Bioscience and Human Technology, Agency of Industrial Science and Technology.

5,665,598
SYNTHESIS OF CHIRAL N-PROTECTED-α-SUBSTITUTED-GLYCINE FREE ACIDS BY ZINC-MEDIATED ADDITION OF ORGANIC HALIDE TO GLYCINE CATION EQUIVALENT

Norman A. Abood, Morton Grove, and Roger A. Nosal, Buffalo Grove, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

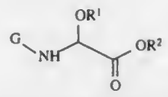
Division of Ser. No. 227,217, Apr. 13, 1994, Pat. No. 5,508,466.
This application Jan. 29, 1996, Ser. No. 593,732
Int. Cl.[6] C07C *271/12;269/04*
U.S. Cl. 435—280 8 Claims

1. A method for preparing a naturally occurring or unnaturally occurring N-protected chiral free acid of Formula IV,



(IV)

said method comprising reacting a mixture of elemental zinc and an N-protected-α-substituted-glycine cation derivative of Formula I:

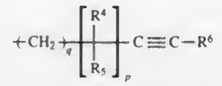


(I)

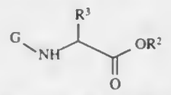
wherein G is the N-protecting group; wherein R^1 is selected from the group consisting of hydrido, alkyl, cycloalkyl, alkoxyalkyl, acyl, aralkyl, aryl and aroyl; and wherein R^2 is selected from the group consisting of alkyl, cycloalkyl, alkoxyalkyl, aralkyl and aryl; with an organic halide of Formula II:

$$R^3X \qquad \text{(II)}$$

wherein X is selected form the group consisting of chloro, bromo and iodo; and wherein R^3 is a radical selected from the group consisting of alkyl, cycloalkyl, alkoxyalkyl, alkoxycarbonylalkyl, allyl, benzyl, propargyl and substituted-propargyl radicals of the formula:



wherein each of R^4 and R^5 is a radical independently selected from the group consisting of hydrido, alkyl, alkenyl and phenyl; wherein R^6 is selected from, the group consisting of hydrido, alkyl, benzyl and phenyl; wherein p is a number selected from zero through five, inclusive; and wherein q is a number selected from zero through five, inclusive; in a polar solvent to provide an N-protected-α-substituted-glycine racemic ester of Formula III:



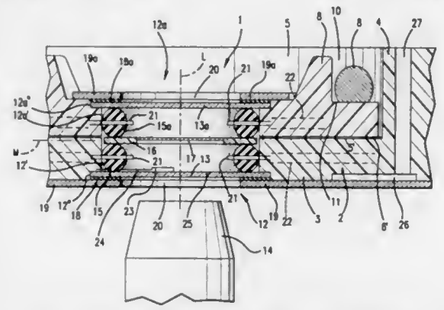
(III)

wherein G, R^2 and R^3 are as defined above; and resolving and hydrolyzing the racemic ester of Formula III with an α-carbon resolving enzyme selected from the group consisting of α-chymotrypsin, papain, subtilisin and trypsin, to provide the N-protected chiral free acid of Formula IV, and recovering the chiral free acid of Formula IV.

5,665,599
CHAMBER FOR CULTIVATING CELLS

Will Minuth, Starenstrasse 2, D-93077 Bad Abbach, Germany

Filed Nov. 22, 1995, Ser. No. 561,663
Claims priority, application Germany, Dec. 1, 1994, 44 42 797.2; Dec. 9, 1994, 44 43 902.4
Int. Cl.[6] C12M *1/22*
U.S. Cl. 435—288.3 16 Claims



1. A microscope chamber for cultivating cells comprising:

a multipart housing (**1**) with at least a first housing part (**2**) with a first recess (**12**) and a second housing part (**6**) with a second recess (**12***a*);

said first recess of said first housing part and said second recess of said second housing part arranged in axial alignment when said multipart housing is closed;

said first housing part and said second housing part forming a portion of an interior of said microscope chamber;

at least a first and a second sealing ring (**15**, **15***a*) each of which being positioned in said first recess (**12**) and said second recess (**12***a*) and surrounding an axis of said first and second recess; first and second disks (**13**, **13***a*), each of which is provided on said first and second housing parts, which closes said interior of said microscope chamber to the outside and forms an observation window with said at least first and second sealing rings (**15**, **15***a*) resting against an inner surface of said first and second disks (**13**, **13***a*), with at least said first disk of said first housing part being supported on a surface facing away from an interior of said microscope chamber and being directly opposite to said first sealing ring (**15**) being supported on a holding plate (**19**);

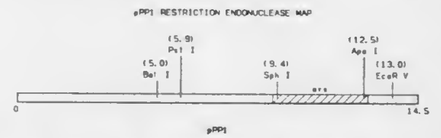
said holding plate having an opening (**20**) that exposes said observation window and is removably attached to said first and second housing parts; and

a cell carrier ring (**16**) on which a cell carrier (**17**) is held, and which is positioned in between said at least first and second sealing rings (**15**, **15***a*), with said at least first and second sealing ring resting against said cell carrier ring (**16**) such that said interior of the chamber is divided into two separate part-chambers.

5,665,600
PICHIA PASTORIS LINEAR PLASMIDS AND DNA FRAGMENTS THEREOF

Mary Jane Hagenson; Kathryn A. Barr, both of Bartlesville, Okla.; David W. Stroman, Richardson, Tex.; Frank H. Gaertner; Michael M. Harpold, both of San Diego, Calif., and Ronald D. Klein, Schoolcraft, Mich., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Sep. 18, 1991, Ser. No. 761,528
Int. Cl.[6] C12N *15/63;15/81*
U.S. Cl. 435—320.1 3 Claims

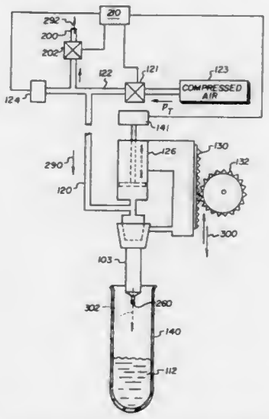


1. An isolated linear DNA plasmid obtainable from *Pichia pastoris* NRRL Y-11430 and having an approximate length of 14,000 base pairs and the restriction map of FIG. 1.

5,665,601
AVOIDING BUBBLE FORMATION WHILE SENSING AIR-LIQUID INTERFACE USING PRESSURIZED AIR FLOW

Kathleen Ellen Kilmer, Penfield, N.Y., assignor to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Jan. 22, 1996, Ser. No. 589,749
Int. Cl.[6] G01N *35/10*
U.S. Cl. 436—54 8 Claims



7. In a method of sensing the presence of an air-liquid interface by an aspirator/dispenser having a vessel lowered to and into a liquid forming said interface, the method comprising the steps of a) pressurizing said aspirator/dispenser vessel while lowering said vessel, b) detecting pressure levels in said vessel during said step

a), and c) terminating said step a) when a pressure build-up representative of encounter of said vessel with said interface occurs,

the improvement wherein said steps a) and b) include the step of venting said aspirator/dispenser to the atmosphere at an outlet separate from said vessel while lowering said vessel, so that when said pressure build-up occurs, excess pressure is released from said vessel instantly while step c) is occurring so that no bubbles are expelled into the liquid because of excess pressure.

5,665,602

METHOD FOR THE DETERMINATION OF THE FAT CONTENT OF SAMPLES, PREFERABLY ORGANIC SAMPLES

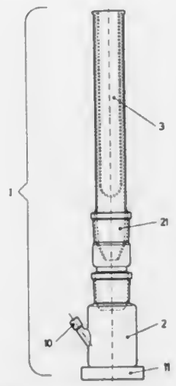
Rafael Caviezel, Saas, Switzerland, assignor to Buchi Labortechnik AG, Flawil, Switzerland

Filed Nov. 9, 1995, Ser. No. 555,791

Claims priority, application Switzerland, Sep. 4, 1995, 2507/95

Int. Cl.[6] G01N *33/92*

U.S. Cl. 436—71 **14 Claims**



1. A method for determining the fat content of a sample, preferable an organic sample, comprising steps of:

a) extracting a fat portion from the sample at a temperature of at least 100° C. with a solvent having a boiling point of at least 110° C.

b) simultaneously saponifying the extracted fat portion by means of a base, said saponification yielding salts of fatty acids of the sample as a reaction product,

c) adding an acid solution to the reaction product to convert the salts of fatty acids into fatty acids of the reaction product, and

d) analyzing a sample of the reaction product and determining a total content of fatty acids within the organic sample.

5,665,603

THIOHYDANTOIN FORMATION AND SELECTIVE MODIFICATION OF THE CARBOXY TERMINUS OF AN ASPARTIC ACID- AND/OR GLUTAMIC ACID-CONTAINING PROTEIN

Victoria L. Boyd, San Carlos; MeriLisa Bozzini, Burlingame, and Robert J. DeFranco, San Carlos, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Continuation-in-part of Ser. No. 96,658, Jul. 26, 1993. This application Jul. 8, 1994, Ser. No. 272,496

Int. Cl.[6] A61K *38/02*

U.S. Cl. 436—90 **24 Claims**

1. A method of converting an N-protected amino acid to a corresponding amino acid thiohydantoin, comprising reacting the N-protected amino acid, in the presence of a base, with a compound selected from the group consisting of

$(R_1O)(R_2O)P(=O)X$ and

$(R_1O)(R_2O)P(=O)—Y—P(=O)(OR_3)(OR_4)$

where R_1 and R_2 are each alkyl having up to 10 carbon atoms, aryl having up to 10 carbon atoms, or alkaryl having up to 8 carbon atoms, wherein R_1 and R_2 are the same or different and may be covalently linked to each other; X is bromine or chlorine; and Y is oxygen or sulfur; to form an activated, N-protected amino acid, and

reacting the activated, N-protected amino acid with a thiocyanate reagent under conditions effective to convert the activated amino acid to an N-protected thiohydantoin.

5,665,604

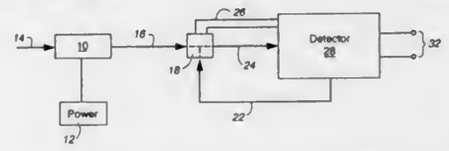
METHOD AND APPARATUS FOR DETECTING HALOGENATED HYDROCARBONS

Matthew Monagle, and John J. Coogan, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Aug. 18, 1995, Ser. No. 516,838

Int. Cl.[6] G01N *21/73*

U.S. Cl. 436—139 **12 Claims**



7. A process for the sensitive detection of halogenated hydrocarbons (HHCs) in an air sample that may contain one or more of said HHCs comprising the steps of:

directing said air sample through a silent discharge device that generates free radicals;

oxidizing said one or more HHCs with said free radicals to produce water, carbon dioxide, and an acid containing one or more halogens from said HHCs;

detecting the presence of said acid; correlating a presence of halogenated hydrocarbons (HHCs) to said presence of said acid; and

outputting a signal indicative of the presence of said HHCs in said gas sample.

5,665,605

PARTICLE AGGREGATION METHOD AND APPARATUS

William Terence Coakley, Cardiff; Martin Alan Grundy, Pembroke Dock, both of United Kingdom, and Werner Bolex, Vienna, Austria, assignors to University College Cardiff Consultants Limited, United Kingdom

PCT No. PCT/GB93/00504, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/19367, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 10, 1993, Ser. No. 302,658

Claims priority, application United Kingdom, Mar. 10, 1992, 9205128

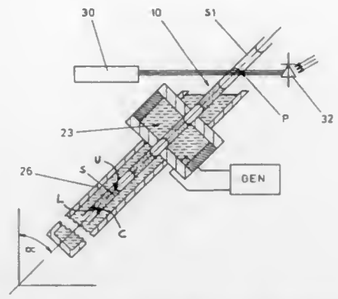
Int. Cl.[6] G01N *33/557;1/18*

U.S. Cl. 436—174 **10 Claims**

1. A method of carrying out an immuno-agglutination assay, the method comprising:

providing a sample of liquid in which particles potentially susceptible to agglutination are suspended;

containing said sample within a tube in a manner producing an upper and a lower boundary on said liquid sample within the tube, said lower boundary forming a meniscus onto which said particles are allowed to settle;



placing said tube such that it is encircled by a tubular ultrasound transducer;

exciting said tubular ultrasound transducer to generate a standing wave ultrasound field within said tube, said standing wave field extending radially of said tube and exhibiting a progressive change in pressure amplitude radially within said tube so that particles suspended in said liquid sample are displaced radially of said tube to aggregate at least one predetermined annular region;

terminating the exposure of said liquid sample to said standing wave and allowing said particles to settle; and

inspecting said particles whilst said particles are settling to determine whether they remain aggregated together or whether they disperse.

5,665,606

METHOD FOR ASSAYING A SUBSTANCE USING A POLYACRIDINIUM COMPOUND

Akira Miike, Sunto-gun, Japan, assignor to Kyowa Medex Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 420,316

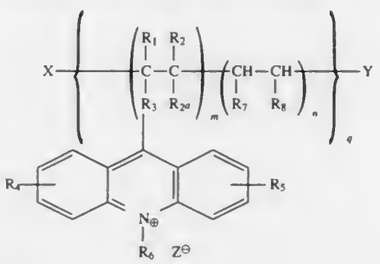
Claims priority, application Japan, Apr. 11, 1994, 6-072066

Int. Cl.[6] G01N *33/533;33/544;33/574;33/577*

U.S. Cl. 436—526 **1 Claim**

1. A method for assaying a ligand in a sample, comprising the steps of:

reacting said ligand in a reaction solution with its specific binding partner, said binding partner being bound to a polyacridinium compound represented by formula (I):



wherein m is an integer of 1 to 10,000,

n is an integer of 0 to 10,000,

$2 \leqq q \leqq 20{,}000$,

X denotes hydrogen or a lower alkyl,

Y denotes hydrogen, a lower alkyl or a metal,

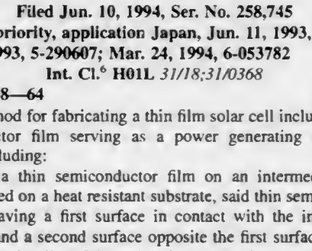
R_1, R_2 and R_{2a} independently denote hydrogen, a lower alkyl, a lower alkanoyl, optionally substituted aroyl, carboxyl or cyano,

R_3 is represented by the formula $—(COO)_s—W—(OCO)_p—$, $—(COO)_s—W—N(R_9)CO—$, $—COO—W—W_a(N(R_9)CO)_p—$, or $—CON(R_9)—W—(N(R_{9a})CO)_p—$ (in which W and W_a are different and denote alkylene, optionally substituted phenylene, or optionally substituted naphthylene, R_9 and R_{9a} independently denote hydrogen, a lower alkylsulfonyl, or optionally substituted arylsulfonyl, and s and p are independently 0 or 1),

R_4 and R_5 independently denote hydrogen, a lower alkyl, a lower alkoxy, carboxyl or sulfo,

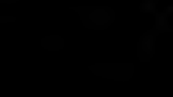
R_6 denotes optionally substituted lower alkyl,

R_7 denotes carboxyl, lower alkoxycarbonyl,



(in which R_{10} denotes alkylene, optionally substituted phenylene, or optionally substituted naphthylene),

R_8 denotes carboxyl, lower alkoxycarbonyl, optionally substituted lower alkyl, or optionally substituted aryl, or R_7 and R_8 together form a group represented by the formula



and

Z denotes halogen, methanesufonyloxy or trifluoromethanesulfonyloxy wherein the optional substituent on said optionally substituted aroyl, said optionally substituted aryl, said optionally substituted arylsulfonyl, said optionally substituted phenylene and said optionally substituted naphthylene is 1 to 3 moieties independently selected from the group consisting of lower alkyl, hydroxy, halogen, lower alkoxy, sulfo and carboxyl, and wherein the optional substituent on said optionally substituted lower alkyl is 1 to 3 moieties independently selected from the group consisting of sulfonyl, carboxyl and hydroxyl;

measuring a luminescent intensity of the reaction solution; and correlating said luminescent intensity with the presence or amount of said antigen, antibody or nucleic acid.

5,665,607

METHOD FOR PRODUCING THIN FILM SOLAR CELL

Yoshitatsu Kawama; Mikio Deguchi; Shigeru Mitsui; Hideo Naomoto; Satoshi Arimoto; Satoshi Hamamoto; Hiroaki Morikawa, and Hisao Kumabe, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,745

Claims priority, application Japan, Jun. 11, 1993, 5-140576; Nov. 19, 1993, 5-290607; Mar. 24, 1994, 6-053782

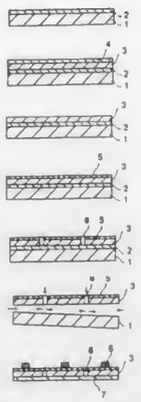
Int. Cl.[6] H01L *31/18;31/0368*

U.S. Cl. 438—64 **22 Claims**

1. A method for fabricating a thin film solar cell including a thin semiconductor film serving as a power generating layer, said method including:

forming a thin semiconductor film on an intermediate layer disposed on a heat resistant substrate, said thin semiconductor film having a first surface in contact with the intermediate layer and a second surface opposite the first surface;

forming a plurality of through holes penetrating through the thin semiconductor film and reaching the intermediate layer; and



etching the intermediate layer through the through-holes to separate the thin semiconductor film from the heat resistant substrate.

17. The method of claim 1 including:

forming a first silicon oxide film as the intermediate layer, a thin polycrystalline silicon film as the thin semiconductor film, a second silicon oxide film, and a silicon nitride film successively on the substrate; and

zone-melting and recrystallizing the thin polycrystalline silicon film.

5,665,608

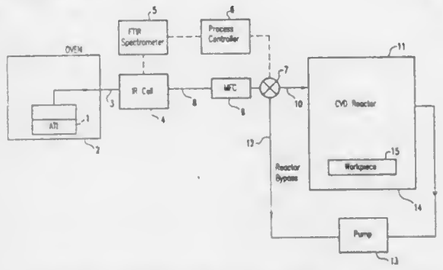
METHOD OF ALUMINUM OXIDE LOW PRESSURE CHEMICAL VAPOR DEPOSITION (LPCVD) SYSTEM-FOURIER TRANSFORM INFRARED (FTIR) SOURCE CHEMICAL CONTROL

Jonathan Daniel Chapple-Sokol, Poughkeepsie; Richard Anthony Conti, Mt. Kisco; James Anthony O'Neill, New City; Narayana V. Sarma, Verbank; Donald Leslie Wilson, New Windsor, all of N.Y., and Justin Wai-Chow Wong, South Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 234,900, Apr. 28, 1994, Pat. No. 5,431,734. This application Feb. 10, 1995, Ser. No. 386,403

Int. Cl.[6] H01L *21/66*

U.S. Cl. 438—7 **4 Claims**



1. A method of monitoring and controlling the flow of a reactant vapor to a reactor chamber, said method comprising the steps of:

transporting said reactant vapor through an infrared cell in a reactant delivery line, said infrared cell having windows transparent to infrared radiation;

analyzing said reactant vapor flowing through said infrared cell using a Fourier transform infrared spectrometer;

sending information derived from said analyzing step to a process controller which controls a valve in said reactant delivery line down stream from said infrared cell; and

remotely operating said valve in response to said information sent to said process controller to send said reactant vapor through a first line to said reactor chamber or through a second line to bypass said reactor chamber when contaminants are detected by said infrared cell while maintaining the pressure of said reactant delivery line.

5,665,609

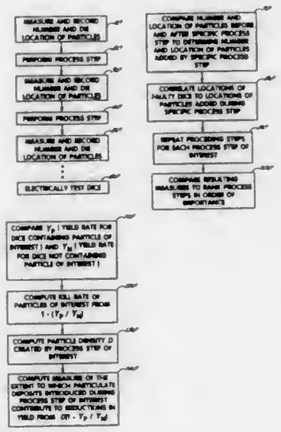
PRIORITIZING EFFORTS TO IMPROVE SEMICONDUCTOR PRODUCTION YIELD

Kiyoshi Mori, San Antonio, Tex., assignor to Sony Corporation, Tokyo, Japan, and Sony electronics, Inc., Park Ridge, N.J.

Filed Apr. 21, 1995, Ser. No. 426,711

Int. Cl.[6] H01L *21/66*

U.S. Cl. 438—16 **7 Claims**



1. A method of identifying causes which reduce the yield of a manufacturing process, said process producing wafers containing semiconductor circuitry and involving multiple processing steps including a first specific process step which potentially introduces particulate deposits on wafers, comprising the steps of:

detecting a number and location of particulate deposits on a wafer prior to and subsequent to said first specific process step, and determining therefrom a number and locations of particulate deposits introduced during said first specific process step;

electrically testing semiconductor circuitry in a plurality of locations of said wafer subsequent to said first specific process step, and identifying locations of said wafer which contain faulty circuitry;

correlating the locations of particulate deposits introduced during said first specific process step to the locations of said wafer containing faulty circuitry subsequent to said first specific process step, said correlating comprising computing a first yield rate for locations containing a detected particle, by computing a ratio of a number of tested locations that contained a particle and were not faulty, to a number of tested locations that contained a particle, and computing a second yield rate for locations not containing a detected particle, by computing a ratio of a number of tested locations that did not contain a particle and were not faulty, to a number of tested locations that did not contain a particle; and

determining, from said correlating, a first measure of the extent to which particulate deposits introduced during said first specific process step contribute to reductions in yield of said manufacturing process.

5,665,610

SEMICONDUCTOR DEVICE CHECKING METHOD

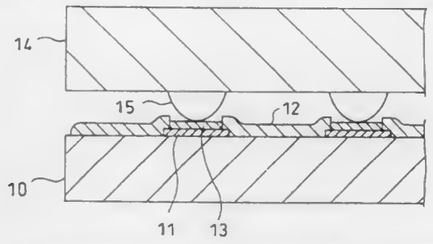
Yoshiro Nakata, Kyoto; Shinichi Oki, Osaka; Koichi Nagao, Osaka; Kenzo Hatada, Osaka; Shigeoki Mori, Kanagawa; Takashi Sato, and Kunio Sano, both of Yamanashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 17, 1996, Ser. No. 650,486

Claims priority, application Japan, May 19, 1995, 7-121008

Int. Cl.[6] H01L *21/66*

U.S. Cl. 438—18 **10 Claims**



1. A method for checking a semiconductor device comprising:

a first step of forming a check electrode on the main face of a semiconductor chip which is formed on a semiconductor wafer;

a second step of forming a plated layer made of a metal which is hard to oxidize on the surface of said check electrode of said semiconductor chip;

a third step of causing a probe terminal of a contactor to come in contact with said check electrode on which said plated layer is formed in the state where said probe terminal is not moved in parallel with the main face of said semiconductor chip; and

a fourth step of applying a voltage to said probe terminal to check said semiconductor chip in the state where said probe terminal is in contact with said check electrode.

5,665,611

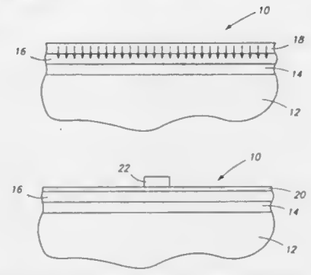
METHOD OF FORMING A THIN FILM TRANSISTOR USING FLUORINE PASSIVATION

Gurtej S. Sandhu; Shubneesh Batra, and Pierre C. Fazan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jan. 31, 1996, Ser. No. 594,127

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—162 **29 Claims**



1. A method of forming a thin film transistor relative to a substrate comprising the following steps:

forming a thin film transistor layer of polycrystalline material on a substrate, the polycrystalline material comprising grain boundaries;

forming a fluorine containing layer adjacent the polycrystalline thin film layer;

annealing the fluorine containing layer at a temperature and for a time period which in combination are effective to drive fluorine from the fluorine containing layer into the polycrystalline thin film layer and form Si—F bonds at the grain boundaries to passivate said grain boundaries; and

forming a transistor gate operatively adjacent the thin film transistor layer.

5,665,612

METHOD FOR FABRICATING A PLANAR BURIED HETEROSTRUCTURE LASER DIODE

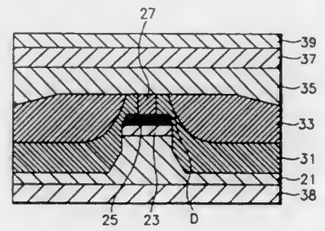
Jung-Kee Lee; Dong-Hoon Jang; Jeong-Soo Kim, and Kyung-Hyun Park, all of Eoeun-dong, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Rep. of Korea

Filed Aug. 7, 1995, Ser. No. 512,224

Claims priority, application Rep. of Korea, Aug. 8, 1994, 94-19496

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—40 **10 Claims**



1. A method for fabricating a planar buried heterostructure laser diode, said method comprising the steps of:

sequentially forming a first clad layer, an undoped active layer and a second clad layer on an n substrate through a first crystal growth;

forming a patterned mask layer on said second clad layer;

non-selectively etching said second clad layer, said active layer, said first clad layer and said substrate using a non-selective etching solution of InP and said mask layer as an etching mask to form a mesa structure of the laser diode;

selectively etching said substrate and said first and second clad layers using a selective etching solution of InP, to decrease a contact area between said mask layer and said second clad layer and to reduce a distance between said active layer and a second current blocking layer to be formed later;

sequentially forming first and said second current blocking layers on a structure formed by said selective etching step through a second crystal growth;

sequentially forming a third clad layer and an ohmic contact layer thereon after removal of said mask layer through a third crystal growth; and

forming a first electrode on a surface of said ohmic contact layer and forming a second electrode on a rear surface of said substrate.

5,665,613

METHOD OF MAKING SEMICONDUCTOR DEVICE HAVING SIMOX STRUCTURE

Sadao Nakashima; Katsutoshi Izumi, both of Tokyo; Norihiko Ohwada, Musashino, and Tatsuhiko Katayama, Hiratsuka, all of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Kanagawa; Nippon Telegraph and Telephone Corporation, and NIT Electronics Technology Corporation, both of Tokyo, all of Japan

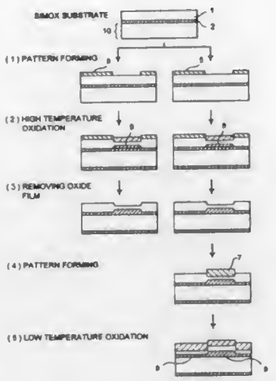
Filed Jun. 2, 1995, Ser. No. 458,507

Claims priority, application Japan, Jun. 3, 1994, 6-145486

Int. Cl.[6] H01L *21/76*

U.S. Cl. 438—151 **5 Claims**

2. A method of producing a semiconductor devices of high and low voltage on a single SIMOX substrate having a buried oxide



layer dielectrically separating a top silicon layer from a substrate silicon, comprising the steps of:

forming an oxidation shield mask on the region of the top silicon layer on which a low voltage semiconductor device is desired;

growing a thickened part of the buried oxide layer in regions not shielded by the mask by heating the SIMOX substrate under an oxygen atmosphere to at least about 1,150° C.; and

forming semiconductor devices having different breakdown voltages on the top silicon layer with a high-voltage device located over the thickened part of the buried oxide layer and the low-voltage device located over the unthickened portion of the buried oxide layer.

5,665,614

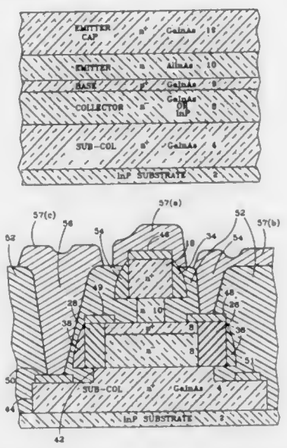
METHOD FOR MAKING FULLY SELF-ALIGNED SUBMICRON HETEROJUNCTION BIPOLAR TRANSISTOR

Madjid Hafizi, Santa Monica, and William E. Stanchina, Thousand Oaks, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 470,811

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—320 **18 Claims**



1. A method for forming emitter, base and collector contacts to a heterojunction bipolar transistor which includes, in sequence, subcollector, collector, base, emitter and emitter cap layers, comprising:

forming a first overhang on said emitter cap layer that overhangs said emitter layer,

forming a second overhang on said base and collector layers that overhangs an upper portion of said subcollector layer but is spaced inward from a lower portion of said subcollector layer,

forming an emitter contact to said emitter cap,

forming a base contact to said base layer using said emitter cap layer's first overhang as a mask, and

forming a collector contact to said lower subcollector portion using said base/collector layer second overhang as a mask.

5,665,615

METHOD OF MAKING BICMOS SEMICONDUCTOR DEVICE

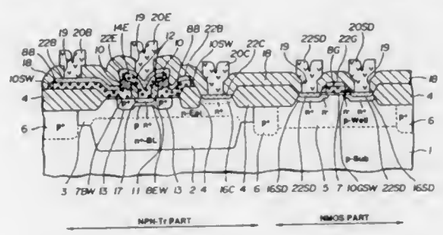
Hiroaki Anmo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 13, 1996, Ser. No. 600,539

Claims priority, application Japan, Feb. 14, 1995, 7-025219

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—202 **6 Claims**



1. A method of manufacturing a BiCMOS semiconductor device comprising a substrate, a vertical bipolar transistor and an LDD (lightly doped drain)-type MOS transistor, the latter two being both provided on said substrate, said method comprising the steps of:

(1) forming a first semiconductor film on said substrate and subjecting said first semiconductor film to a patterning to form a first conductive base terminal electrode of said vertical bipolar transistor and a gate electrode of said LDD-type MOS transistor;

(2) subjecting said substrate to low-concentration ion-implantation in which said gate electrode is used as a mask to form an LDD region of said LDD-type MOS transistor;

(3) covering an entire surface of said substrate with an insulating layer;

(4) forming an emitter window to expose said substrate by subjecting each of said insulating layer and said base terminal electrode to a patterning simultaneously;

(5) forming an insulating emitter side wall on an inner side surface of said emitter window;

(6) depositing a second semiconductor film on an entire surface of said substrate;

(7) subjecting said second semiconductor film to a patterning to form a second conductive emitter terminal electrode;

(8) subjecting said insulating layer to an etch back process by using said emitter terminal electrode as a mask to expose at least an upper surface of said gate electrode, a portion of said base terminal electrode and an active region of said substrate and form a gate side wall on a side surface of said gate electrode; and

(9) subjecting said substrate to a high-concentration ion-implantation in which said gate electrode and said gate side wall are used as a mask to form drain/source regions of said LDD-type MOS transistor.

5,665,616

PROCESS OF MANUFACTURING A SEMICONDUCTOR DEVICE

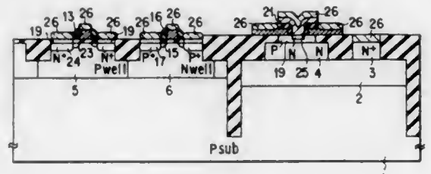
Koji Kimura, Chigasaki, and Hiroshi Naruse, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 9, 1996, Ser. No. 731,012

Claims priority, application Japan, Oct. 10, 1995, 7-289392

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—234 **6 Claims**



1. A process of manufacturing a semiconductor device comprising the steps of:

forming a first insulating film in a bipolar transistor formation region of a main surface of a silicon semiconductor substrate;

forming a second insulating film constituting a gate oxide film in a MOS transistor formation region on the main surface of the silicon semiconductor substrate;

forming a silicon gate electrode on the gate oxide film of the MOS transistor formation region;

forming a base electrode made of silicon on the first insulating film in the bipolar transistor formation region;

coating a side wall and an upper surface of the gate electrode and base electrode with a third insulating film;

forming source/drain regions in the MOS transistor formation region;

removing a portion of the first insulating film which is in an emitter region and contacts the lower surface of the base electrode, thereby exposing a portion of the main surface of the semiconductor substrate facing the removed region;

epitaxially growing a silicon film on the exposed portion on the main surface of the semiconductor substrate and on the source/drain regions, thereby making the silicon film of the exposed portion on the main surface of the semiconductor substrate serving as a base region;

forming an emitter region by diffusing impurities into the base region;

forming a silicon emitter electrode on the emitter region;

depositing a metal layer on the source/drain regions, gate electrode, base electrode and emitter electrode; and

forming metal silicide in a self-aligned manner with the source/drain regions, gate electrode, base electrode and emitter electrode, by thermal heating the metal layer to react the heated metal layer with silicon of the source/drain regions, gate electrode, base electrode and emitter electrode.

5,665,617

Patent Not Issued For This Number

5,665,618

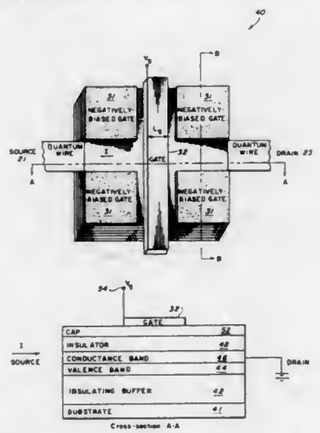
METHOD OF FORMING AN INTERBAND LATERAL RESONANT TUNNELING TRANSISTOR WITH SINGLE NARROW GATE ELECTRODE

Jerry R. Meyer, Catonville; Craig A. Hoffman, Columbia, and Filbert J. Bartoli, Jr., Upper Marlboro, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 338,842, Nov. 14, 1994. This application Jan. 27, 1995, Ser. No. 379,833

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—172 **7 Claims**



1. A method for making a tunneling transistor consisting of the following steps:

depositing a nonconducting buffer layer of material on a substrate to ease a mismatch between said substrate and succeeding layers of material;

depositing a first quantum well layer of material on the conducting buffer layer to form a valence band wherein holes are located;

depositing a second quantum well layer on material on said first quantum well layer of material to form a conduction layer containing electrons and providing electrical conduction between a source and a drain so as to enable interband lateral resonant tunneling;

depositing an insulation layer of material on said second quantum well layer of material;

depositing a cap layer of material to prevent oxidation of the layer of insulating material; and

depositing a single electrode of a width small enough to induce quantized energy subband levels with energy separations greater than the thermal energy k_bT, where T is 300K, due to lateral confinement induced by the electrode on said cap layer of material between the source and the drain so as to form a gate controlling a flow of electrons in said second quantum well layer of material.

5,665,619

METHOD OF FABRICATING A SELF-ALIGNED CONTACT TRENCH DMOS TRANSISTOR STRUCTURE

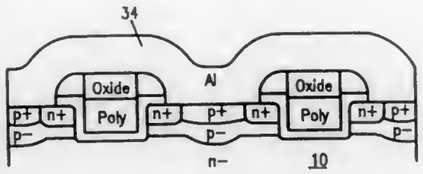
Sze-Hon Kwan, Sunnyvale, and Izak Bencuya, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 431,782, May 1, 1995, abandoned. This application May 13, 1996, Ser. No. 645,446

Int. Cl.[6] H01L *21/265*

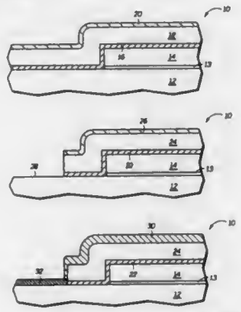
U.S. Cl. 438—270 **3 Claims**

1. A method of fabricating a trench DMOS transistor structure wherein the contact to the source and body of the transistor is self-aligned to the trench, the method comprising the sequential steps of:



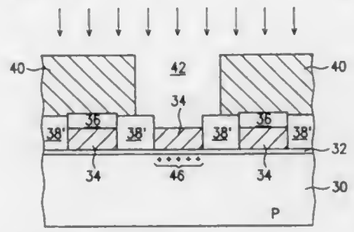
forming a layer of silicon oxide on an underlying layer of N-type epitaxial silicon;
forming a layer of nitride over the silicon oxide layer;
forming a deposited oxide layer over the nitride layer to define an oxide/nitride/oxide (ONO) sandwich;
defining a trench mask over the deposited oxide layer to expose pre-selected surface regions of the deposited oxide layer;
etching the ONO sandwich to expose surface regions of the N− epitaxial layer underlying the exposed deposited oxide surface regions;
etching the exposed surface regions of the N− epitaxial layer to define trenches in the N− epitaxial layer;
removing the deposited oxide layer;
forming silicon oxide on exposed surfaces of the trenches;
depositing a layer of polysilicon to fill the trenches;
etching the polysilicon layer to define polysilicon gate regions in the trenches, said polysilicon gate regions being planarized to an upper surface of the nitride layer;
growing a polyoxide pad on the exposed upper surface of each polysilicon gate region;
implanting P-dopant in the active device regions to form a region of P-type conductivity between the trenches;
defining an N+ source mask to use as a mask to introduce N-dopant to define N+ source regions adjacent to the trenches;
oxidizing the polyoxide pads to form oxide spacers that extend over the source regions;
implanting P-dopant into the active device regions to form a P+ body ohmic contact region between the source regions in the active region; and
forming a conductive layer over the polyoxide pads and the oxide spacers for contact with the ohmic contact region.

5,665,620
METHOD FOR FORMING CONCURRENT TOP OXIDES USING REOXIDIZED SILICON IN AN EPROM
Bich-Yen Nguyen; Sergio A. Ajuria; Wayne Paulson, and Jon Dahm, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 1, 1994, Ser. No. 283,364
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 438—593 **20 Claims**



1. A method for forming a semiconductor device, comprising the steps of:
providing a semiconductor substrate;
forming a silicon layer overlying the semiconductor substrate;
forming a first dielectric layer overlying the silicon layer;
forming a second dielectric layer overlying the first dielectric layer;
forming an amorphous silicon layer overlying the second dielectric layer;
etching the amorphous silicon layer to form a patterned amorphous silicon layer;
forming an exposed portion of the semiconductor substrate, wherein the exposed portion of the semiconductor substrate is formed after the patterned amorphous silicon layer been formed; and
thermally oxidizing the patterned amorphous silicon layer to convert the patterned amorphous silicon layer into a thermal oxide layer overlying a portion of the second dielectric layer and thermally oxidizing the exposed portion of the semiconductor substrate to form a first gate dielectric layer, wherein the patterned amorphous silicon layer and the exposed portion of the semiconductor substrate are thermally oxidized at the same time.

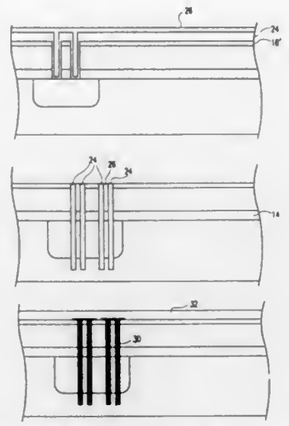
5,665,621
READ-ONLY-MEMORY PROCESS WITH SELF-ALIGNED CODING
Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taipei, Taiwan
Filed Dec. 22, 1995, Ser. No. 577,031
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 438—278 **21 Claims**



11. A process of fabricating a non-volatile memory on a semiconductor substrate, comprising the following steps of:
(a) forming buried bit lines in the semiconductor substrate and forming word lines on the semiconductor substrate;
(b) forming cap layers over the word lines to form stacked word lines/cap layers;
(c) forming stoppers between the stacked word lines/cap layers by,
(1) depositing a photoresist on the semiconductor substrate between and over the stacked word lines/cap layers,
(2) etching back the photoresist to form exposed top surfaces of the cap layers with photoresist therebetween;
(d) removing the cap layers;
(e) forming a coding mask and defining planned coding windows; and,
(f) implanting ions into the semiconductor substrate through the word lines which are exposed through the coding windows, wherein the stoppers are used to prevent penetration of the ions.

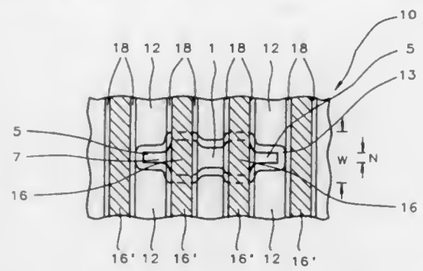
5,665,622
FOLDED TRENCH AND RIE/DEPOSITION PROCESS FOR HIGH-VALUE CAPACITORS
Karl Paul Ludwig Muller, Wappingers Falls, and Wesley C. Natzle, New Paltz, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 15, 1995, Ser. No. 404,780
Int. Cl.[6] H01L *21/8242;21/3065*
U.S. Cl. 438—243 **25 Claims**

1. A method of forming a feature in a first body of material including the steps of



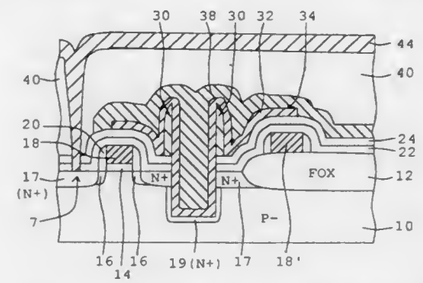
forming a recess in said body of material,
isotropically forming selectively etchable material in said recess to a thickness,
forming a layer of an etch-resistant material over said layer of selectively etchable material,
selectively exposing regions of said selectively etchable material, and
anisotropically etching said selectively etchable material and said first body of material in said regions exposed by said selectively exposing step,
wherein said step of forming an etch resistant material is performed by thermal oxidation.

5,665,623
METHOD OF FABRICATING TOTALLY SELF-ALIGNED CONTACTS FOR DYNAMIC RANDOMACCESS MEMORY CELLS
George Wen Jya Liang, Hsinchu; Chan-Jen Kno, Tainan, and Chao-Ming Koh, Taipei, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan
Filed Dec. 27, 1995, Ser. No. 578,925
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—239 **22 Claims**



1. A method for fabricating totally self-aligned contacts on a semiconductor substrate having device areas with field effect transistors formed therein, comprising the steps of:
depositing on said semiconductor substrate a pad oxide;
depositing on said pad oxide a silicon nitride layer;
patterning by photoresist masking and anisotropic etching said silicon nitride layer leaving portions over said planned device areas, said patterned silicon nitride layer having wide portions in areas for field effect transistor gate electrodes and narrow portions over planned source/drain areas where said totally self-aligned contacts are to be formed;
thermally oxidizing said substrate in areas free of said silicon nitride by the method of local oxidation of silicon (LOCOS), and thereby forming field oxide areas around said device areas, said thermal oxide also extending laterally under the perimeter of said silicon nitride layer and forming bird's beak oxide structures that further reduce said device areas;
removing said patterned silicon nitride layer and said pad oxide layer, and thereby exposing the surface of said device areas;
forming a gate oxide on said device areas by thermal oxidation;
depositing a polysilicon layer;
depositing a first insulating layer on said polysilicon layer;
patterning said first insulating layer and said polysilicon layer, and thereby forming gate electrodes having thereon a cap oxide layer;
forming source/drain areas in said device areas adjacent to said gate electrodes by implantation;
depositing a blanket conformal sidewall insulating layer; and
anisotropically etching back said sidewall layer, and thereby forming sidewall spacers on said gate electrodes;
depositing a conformal second insulating layer on said device areas and elsewhere on said substrate;
etching contact openings, by photoresist masking and anisotropic etching, in said second insulating layer over said narrow portions of said device areas, said contact openings extending over said field oxide bird's beak areas and over portions of said gate electrodes; and
partially etching into said field oxide areas, and thereby removing a portion of said bird's beak oxide adjacent to said contact openings;
removing said photoresist masking, and thereby completing said totally self-aligned contact openings to said source/drain areas.

5,665,624
METHOD FOR FABRICATING TRENCH/STACKED CAPACITORS ON DRAM CELLS WITH INCREASED CAPACITANCE
Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan
Filed Oct. 22, 1996, Ser. No. 735,221
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—244 **10 Claims**



1. A process for fabricating a DRAM, comprising the steps of:
providing a substrate having an upper surface;
forming a MOS transistor on the substrate, the MOS transistor having a gate and source and drain regions; and
forming a charge storage capacitor coupled to the MOS transistor, comprising the steps of:
etching a trench in the substrate adjacent to the MOS transistor,
forming a plug within the trench, a plug wall extending above the upper surface of the substrate,
depositing a spacer material over the substrate and on the plug wall,
selectively etching the plug from the spacer material and from the trench.

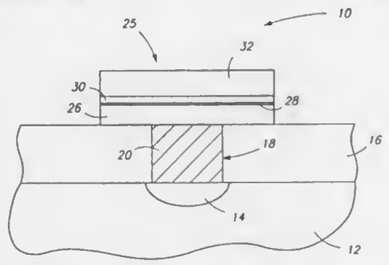
depositing a first polysilicon layer over the spacer material and within the trench,
forming a dielectric film over a surface of the first polysilicon layer, and
forming a second polysilicon layer over at least a portion of the dielectric film.

5,665,625

METHOD OF FORMING CAPACITORS HAVING AN AMORPHOUS ELECTRICALLY CONDUCTIVE LAYER

Gurtej S. Sandhu, Boise, and Kris K. Brown, Garden City, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 19, 1995, Ser. No. 444,852
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—396 **10 Claims**



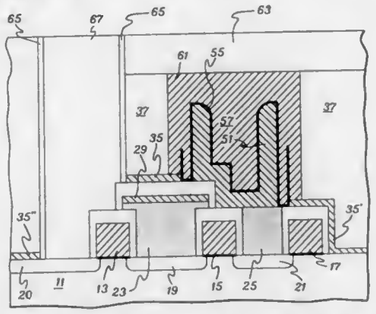
1. A method of forming a capacitor comprising the following steps:
forming a first electrically conductive capacitor plate over a substrate;
forming an electrically conductive layer over the first capacitor plate, the electrically conductive layer comprising TiC_x, wherein "x" is greater than 0;
forming a capacitor dielectric layer over the electrically conductive layer; and
forming a second electrically conductive capacitor plate over the capacitor dielectric layer.

5,665,626

METHOD OF MAKING A CHIMNEY CAPACITOR

John Edward Cronin, Milton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 405,164, Mar. 16, 1995, Pat. No. 5,539,230. This application Jun. 5, 1995, Ser. No. 464,432
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—396 **14 Claims**



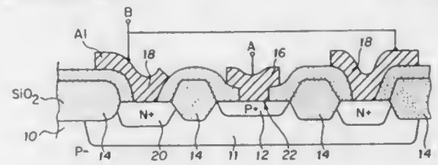
1. A method for fabricating within an integrated circuit ("IC") chip a circuit structure that comprises a capacitor having an upper plate and a lower plate, said method comprising the steps of:
(a) fabricating a first electrical contact and a second electrical contact as part of said IC chip; and
(b) forming said capacitor such that said first electrical contact is at least partially disposed beneath and contacts said upper plate of said capacitor and said second electrical contact is at least partially disposed beneath and contacts said lower plate of said capacitor and said upper plate has a planar upper surface, wherein said first electrical contact and said second electrical contact facilitate electrical access to said capacitor.

5,665,627

METHOD OF IRREVERSIBLY LOCKING A PORTION OF A SEMICONDUCTOR DEVICE

Richard Pierre Fournel, Trets; Serge Fruhauf, Peynier, and François Tailliet, Epinay Sur Seine, all of France, assignors to SGS Thomson Microelectronics S.A., Saint Genis, France

Division of Ser. No. 345,117, Nov. 28, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,699
Claims priority, application France, Nov. 30, 1993, 93 14330
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—467 **18 Claims**



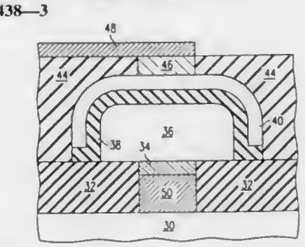
1. A method of irreversibly locking a portion of a semiconductor device using only a supply voltage and ground voltage used in the semiconductor device, comprising the steps of:
(i) forming in the semiconductor device an NP junction;
(ii) forming on a surface of the semiconductor device, in contact with the NP junction a metallization layer;
(iii) applying a bias current to the NP junction;
(iv) comparing a voltage measured across the NP junction with a predetermined threshold voltage, to produce a locking signal output; and
(v) irreversibly locking the portion of the semiconductor device, by applying a forward current at a low voltage for a duration of several seconds to the NP junction, the current producing a current density between the metallization layer and the NP junction to heat the metallization layer and the NP junction just sufficiently, to diffuse metal from the metallization layer into the NP junction and short-circuit the NP junction.

5,665,628

METHOD OF FORMING CONDUCTIVE AMORPHOUS-NITRIDE BARRIER LAYER FOR HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 283,441, Aug. 1, 1994, Pat. No. 5,585,300. This application Jun. 7, 1995, Ser. No. 485,166
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—3 **18 Claims**



1. A method of forming a microelectronic structure, said method comprising:
(a) forming an oxidizable layer;

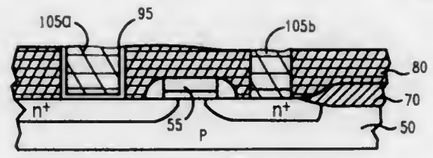
(b) forming a ternary or greater amorphous nitride layer on said oxidizable layer, wherein said amorphous nitride layer is selected from the group consisting of: Ti—Si—N, Ta—Si—N, Ta—B—N, Ti—B—N, and combinations thereof;
(c) forming an oxygen stable layer on said amorphous nitride layer, wherein said oxygen stable layer is selected from the group consisting of: platinum, palladium, rhenium, rhodium, ruthenium oxide, tin oxide, indium oxide, rhenium oxide, osmium oxide, rhodium oxide, iridium oxide, and combinations thereof; and
(d) forming a layer of a high-dielectric-constant material on said oxygen stable layer, wherein the amorphous nitride layer substantially inhibits diffusion of oxygen to the oxidizable layer, whereby deleterious oxidation of the oxidizable layer is reduced.

5,665,629

FOUR TRANSISTOR SRAM PROCESS

Bomy Able Chen, Hopewell Junction, N.Y., and Gorden Seth Starkey, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,016
Int. Cl.[6] H01L *21/8244*
U.S. Cl. 438—384 **15 Claims**



1. A method of forming a contact stud with an integral vertical resistor using a self aligned process, said method comprising the steps of:
providing a plurality of devices and a plurality of contact areas on a substrate, each said device having at least one contact area;
depositing an insulating layer over said substrate, said deposited insulating layer overlying and in contact with said plurality of contact areas;
etching contact hole openings in said insulating layer to expose said plurality of contact areas;
patterning a layer of resistive material to substantially cover and in contact with selected contact hole openings;
depositing a conductive material into all of said contact hole openings so as to substantially over-fill said contact hole openings and be in electrical contact with said plurality of contact areas and said patterned layer of resistive material; and,
removing said conductive material and said patterned layer of resistive material from said substrate outside of said contact hole openings.

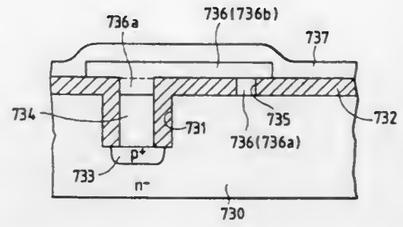
5,665,630

DEVICE SEPARATION STRUCTURE AND SEMICONDUCTOR DEVICE IMPROVED IN WIRING STRUCTURE

Keiji Ishizuka, Kawasaki; Yuzo Kataoka, Hiratsuka; Toshihiko Ichise, Kawasaki; Hidekazu Takahashi, Atsugi, and Hayao Ohzu, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 996,643, Dec. 24, 1992, abandoned, which is a division of Ser. No. 707,022, May 29, 1991, Pat. No. 5,200,639. This application Nov. 16, 1994, Ser. No. 341,965
Claims priority, application Japan, May 31, 1990, 2-139623; May 31, 1990, 2-139624; Jun. 29, 1990, 2-169947
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—620 **6 Claims**

1. A method for producing a semiconductor integrated circuit device wherein plural semiconductor elements are found in a common semiconductor substrate of a first conductivity type and a separation region for separating said plural semiconductor elements, said method comprising the steps of:
forming a separation region having a groove comprising a bottom section of a semiconductor of a second conductivity type opposite to the first conductivity type and a side wall of an insulator;
forming a metal made of aluminum by selectively depositing aluminum within said groove by means of a CVD process using alkylaluminumhydride and burying said metal within said groove;
forming a contact hole in an insulating film provided on one of said semiconductor elements;
simultaneously deposting a conducting material in said contact hole and on said aluminum within said groove; and
electrically connection said deposited conducting material in said contact hole and on said aluminum within said groove with a wiring layer.

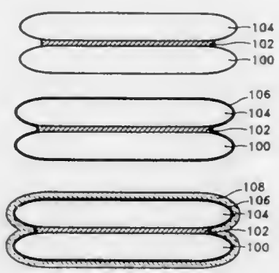


5,665,631

SOI SUBSTRATE MANUFACTURING METHOD

Byoung-hun Lee, Suwon; Chi-jung Kang, Seoul; Kyung-wook Lee, Seongnam, and Gi-ho Cha, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 28, 1995, Ser. No. 563,803
Claims priority, application Rep. of Korea, May 11, 1995, 95-11622
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—459 **12 Claims**



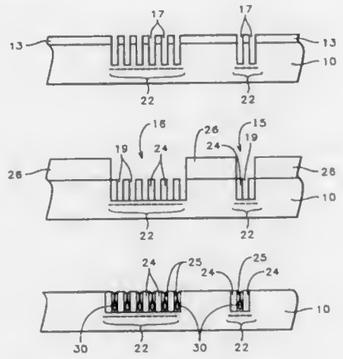
1. A method of manufacturing a SOI substrate, comprising the steps of:
bonding a supporting substrate to a semiconductor substrate;
forming an oxidized layer over the exposed surfaces of the bonded supporting substrate and semiconductor substrate;
forming a semiconductor material layer of first thickness over the oxidized layer;
removing an upper portion of the semiconductor substrate and portions of the oxidized layer and semiconductor material layer covering the removed portion of the semiconductor substrate to produce a modified semiconductor substrate having a substantially planar upper surface, and a modified semiconductor material layer having first thickness.

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5,665,632
STRESS RELAXATION IN DIELECTRIC BEFORE METALIZATION

Water Lur, Taipei, and Edward Houn, Tainan, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 195,090, Feb. 14, 1994, Pat. No. 5,516,720. This application Feb. 28, 1996, Ser. No. 608,071
Int. Cl.[6] H01L *21/31;21/764*
U.S. Cl. 438—422 **13 Claims**

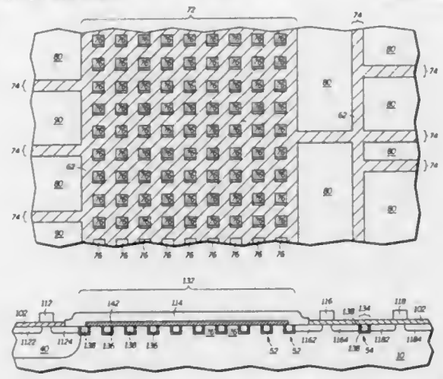


1. The method of forming stress releasing voids in device isolation regions of an integrated circuit by means of a mask of plurality comprising:
providing a first insulating layer over the surface of a silicon substrate;
etching through portions of said first insulating layer not covered by a said mask plurality pattern to said silicon substrate so as to provide a plurality of narrow openings exposing portions of said silicon substrate that will form the said device isolation regions;
etching a first set of narrow trenches into said exposed portions of said silicon substrate within said narrow openings using said first insulating layer as a mask;
selectively ion implanting channel-stops through said openings into said substrate underneath said first set of trenches;
removing remaining said first insulating layer;
depositing a second insulating layer over the surface of said substrate and within said first set of trenches;
etching back said second insulating layer to leave spacers on the sidewalls of said first set of trenches wherein said spacers fill said narrow first set of trenches;
covering the surface of said substrate with a layer of photoresist and patterning said photoresist using a mask pattern to provide a set of wide and narrow openings wherein said wide and narrow openings are positioned over said first set of trenches;
etching a second set of trenches into said silicon substrate not covered by said photoresist mask and said spacers wherein said second set of trenches are immediately contiguous with said first set of trenches and wherein said first and second sets of trenches together correspond to said wide and narrow openings;
removing said photoresist layer;
depositing a third insulating layer over the surface of said substrate and within said second set of trenches wherein said third insulating layer has step coverage such that voids are formed within said second set of trenches and wherein said voids are completely enclosed within said third insulating layer within said second set of trenches; and
etching back said third insulating layer resulting in wide and narrow trenches filled with said second and third insulating layers wherein said voids formed within said third insulating layer complete said thermal stress releasing device isolation of said integrated circuit.

5,665,633
PROCESS FOR FORMING A SEMICONDUCTOR DEVICE HAVING FIELD ISOLATION

George R. Meyer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1995, Ser. No. 417,524
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—427 **24 Claims**

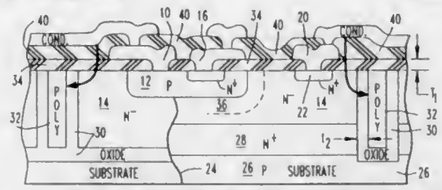


1. A process for forming a semiconductor device comprising the steps of:
forming a first trench within a first region of a substrate, wherein:
the first trench defines a single mesa within the first region; and the first trench has a width no greater than about two microns along opposite sides of the single mesa;
forming a fill layer within the first trench; and
removing a portion of the fill layer to form a first field isolation region having a width of at least ten microns, wherein the first field isolation region has a planar surface and lies within the first region and includes a remaining portion of the fill layer and the single mesa but no other mesa.

5,665,634
METHOD OF INCREASING MAXIMUM TERMINAL VOLTAGE OF A SEMICONDUCTOR DEVICE

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 53,243, Apr. 28, 1993. This application Jun. 5, 1995, Ser. No. 463,560
Int. Cl.[6] H01L *21/283;21/31*
U.S. Cl. 438—404 **10 Claims**

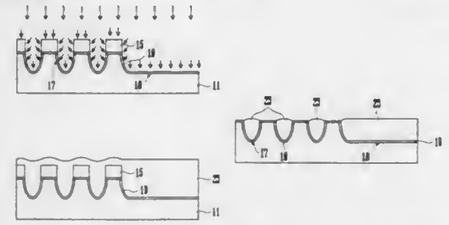


1. A method of increasing maximum terminal voltage of a semiconductor island passively isolated from an adjacent conductive region comprising the steps of:
a. providing an island passively isolated from an adjacent conductive region;
b. covering the surface of the island with a first insulating layer;
c. establishing a contact to a surface area of the island through the first insulating layer;
d. covering at least a portion of the lateral edge of the island with a second insulating layer; and
e. establishing an electrical connection between the contact and a conductor which extends laterally over the edge of the island and the adjacent conductive region and which is vertically spaced from the surface of the island and the adjacent conductive region by both the first and the second insulating layers.

5,665,635
METHOD FOR FORMING FIELD OXIDE FILM IN SEMICONDUCTOR DEVICE

Sung Ku Kwon, and Seung Moo Lee, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 14, 1996, Ser. No. 749,024
Claims priority, application Rep. of Korea, Nov. 30, 1995, 95-45481
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—427 **17 Claims**



1. A method for forming field oxide films in a semiconductor device, comprising the steps of:
forming a first insulating film on a semiconductor substrate;
forming a second insulating film on the first insulating film, said second insulating film being different from said first insulating film in material;
etching the second insulating film, the first insulating film and the semiconductor substrate, in sequence, within element-isolating regions, to form a narrow trench and a wide trench;
forming a third insulating film on the surfaces of the trenches through thermal oxidation;
surface-treating the exposed surfaces of the third and the second insulating films in such a way that a subsequent insulating film might be deposited at rapid rate on the third insulating film but at slow rate on the second insulating film;
depositing a blanket of a fourth insulating film over the resulting structure until the upper surface of the fourth becomes flat at a level higher than the height of the second insulating film;
thermally treating the fourth insulating film to make it fine and dense;
subjecting the fourth insulating film to etch back; and
removing the second insulating film so as to create an element-isolating film structure in which the trenches are filled with the fourth insulating film.

5,665,636
SUSCEPTER AND PROCESS FOR PRODUCTION THEREOF

Kazuo Saito, and Takeshi Ishimatsu, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

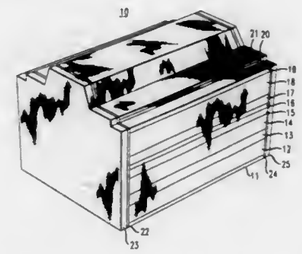
Filed Jan. 18, 1995, Ser. No. 374,233
Claims priority, application Japan, Feb. 3, 1994, 6-033127
Int. Cl.[6] C01B *31/00*
U.S. Cl. 117—88 **2 Claims**

1. In a method of producing a semiconductor wherein a semiconductor substrate is mounted on a heating substrate, the semiconductor substrate is heated via the heating substrate and a thin layer of a semiconductor material is formed epitaxially on the heated semiconductor substrate by thermal decomposition or a hydrogen reduction reaction of a gaseous component at a high temperature, the improvement comprising using as a heating substrate a vitreous carbon formed by carbonizing a polycarbodiimide resin in vacuum or in an inert gas atmosphere, wherein the vitreous carbon has a bulk density of 1.51–1.8 g/cm^3, a bending strength of 1,800–4,000 kg/cm^2, a Shore hardness of 121–140, a porosity of 0–0.9% and an ash content of 0–4 ppm.

5,665,637
PASSIVATED FACETED ARTICLE COMPRISING A SEMICONDUCTOR LASER

Naresh Chand, Berkeley Heights, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 17, 1995, Ser. No. 560,148
Int. Cl.[6] H01L *21/20*
U.S. Cl. 372—46 **6 Claims**

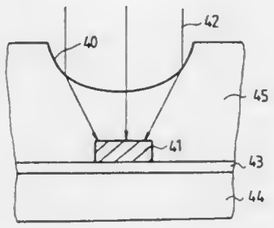


1. Article comprising a semiconductor laser having a laser cavity defined by two laser facets, at least one of said laser facets being covered by a passivation layer on a substantially contamination-free laser facet;
characterized in that
the passivation layer comprises at least one element selected from the group consisting of Mg, Zn, Cd and Hg, and further comprises at least one element selected from the group consisting of S, Se and Te.

5,665,638
METHOD FOR REPAIRING A DEFECT GENERATED CELL USING A LASER

Hee Kook Park, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jul. 7, 1995, Ser. No. 499,672
Claims priority, application Rep. of Korea, Jul. 7, 1994, 1994-16359
Int. Cl.[6] H01L *21/268*
U.S. Cl. 438—4 **2 Claims**

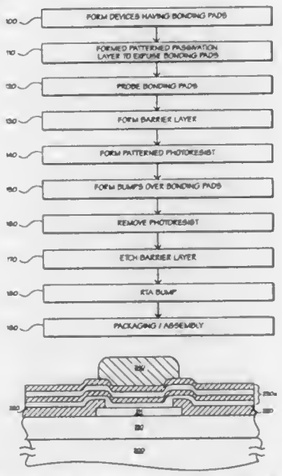


1. A method for repairing a defect-generated cell using a laser beam for disconnecting a defect-generated portion of a fuse conductive line in the fabricating process of semiconductor integrated circuits, characterized in that an insulation layer on the fuse conductive line is isotropically etched forming a concave recess in order to refract the laser beam upon the defect-generated portion of the fuse conductive line.

5,665,639
PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE BUMP ELECTRODE USING A RAPID THERMAL ANNEAL

Bryan R. Seppala; Todd G. Backer, both of Apple Valley, and Lothar Maier, Eden Prairie, all of Minn., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed Feb. 23, 1994, Ser. No. 200,673
Int. Cl.[6] H01L *21/283;21/58;21/60*
U.S. Cl. 438—15 **27 Claims**



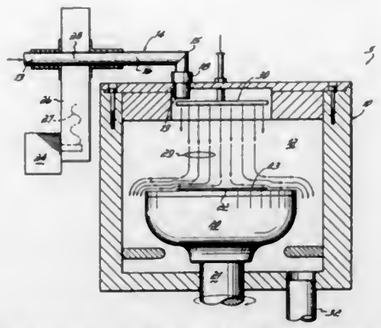
1. A method for use in semiconductor device fabrication comprising the steps of:
(a) forming over a semiconductor substrate a semiconductor device having a bonding pad;
(b) forming over the semiconductor device a layer having an opening which exposes a portion of the bonding pad;
(c) forming a bump comprising gold over the exposed portion of the bonding pad; and
(d) annealing the bump with a rapid thermal anneal.

5,665,640
METHOD FOR PRODUCING TITANIUM-CONTAINING THIN FILMS BY LOW TEMPERATURE PLASMA-ENHANCED CHEMICAL VAPOR DEPOSITION USING A ROTATING SUSCEPTOR REACTOR

Robert F. Foster, Phoenix; Joseph T. Hillman, Scottsdale, both of Ariz., and Rene E. LeBlanc, East Haven, Conn., assignors to Sony Corporation, Tokyo, Japan, and Materials Research Corp., Orangeburg, N.Y.

Filed Jun. 3, 1994, Ser. No. 253,393
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—680 **26 Claims**

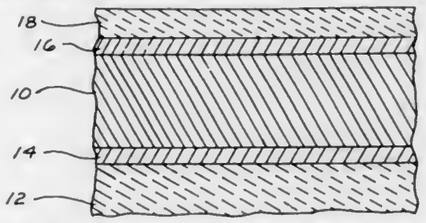
1. A method of depositing, by chemical vapor deposition, a film containing titanium on a substrate located in a reaction chamber comprising:
providing a substrate inside a chemical vapor deposition reaction chamber;
supplying a first gas into said reaction chamber and exciting said first gas to form a plasma including activated radicals of the first gas, the activated radicals existing proximate the substrate and having a tendency to recombine with each other within the plasma to form stable molecules and thereby having a limited active life;
supplying a second gas including a titanium tetrahalide into said reaction chamber above the substrate to mix with the first gas radicals;
combining the activated radicals and the titanium tetrahalide-containing second gas for creating said titanium-containing film on said substrate heated to a temperature in the range of approximately 200° C. to 800° C., the combination step including rotating said substrate to draw a mixture of the first gas radicals and the second gas to a surface of the substrate and to reduce recombinations of radicals before they reach said substrate surface such that a sufficient number of the activated first gas radicals have not recombined to form stable molecules and thus are available to react with the second gas and supply energy to a surface reaction at the substrate surface, the energy from the activated radicals drawn down to the rotating substrate reducing the amount of thermal energy necessary at the substrate surface for thereby depositing a titanium-containing film on the substrate surface at the selected substrate temperature range.



5,665,641
METHOD TO PREVENT FORMATION OF DEFECTS DURING MULTILAYER INTERCONNECT PROCESSING

Lewis Shen, and Robin W. Cheung, both of Cupertino, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 330,489, Oct. 28, 1994, abandoned.
This application Sep. 14, 1995, Ser. No. 528,365
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—643 **7 Claims**

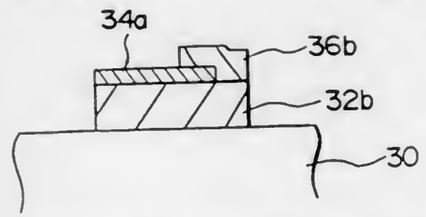


1. A process for preventing the formation of defects in aluminum-containing interconnects formed over a semiconductor substrate and employed in silicon-based semiconductor devices, said semiconductor substrate having a surface, wherein said interconnects are formed by:
(a) depositing an aluminum-containing interconnect layer over a first oxide layer supported over a silicon substrate at a first temperature T_s, said aluminum-containing interconnect layer having only one degree of freedom for movement in the direction perpendicular to said surface of said semiconductor substrate;
(b) forming an anti-reflection coating on said aluminum-containing interconnect layer at a second temperature T_{ARC}, wherein T_{ARC} is measured in °C. and is given by $(T_s\text{-}100) \leq T_{ARC} \leq T_s$;
(c) depositing a hard mask on said anti-reflection coating at a third temperature T_m wherein T_m is measured in °C. and is given by $(T_s\text{-}100) \leq T_m \leq T_s$;
(d) patterning said hard mask to form an interconnect pattern for transfer to said aluminum-containing interconnect layer; and
(e) etching in succession said hard mask, said anti-reflection coating, and said aluminum-containing interconnect layer to transfer said interconnect pattern from said hard mask to said aluminum-containing interconnect layer, thereby forming said aluminum-containing interconnects,
thereby preventing the formation of voids in said aluminum-containing interconnect layer or ting defects on said first oxide layer while avoiding compression of said aluminum-containing interconnect layer during cooling.

5,665,642
PROCESS OF MAKING A SEMICONDUCTOR DEVICE WITH A MULTILAYER WIRING AND PILLAR FORMATION

Katsuyuki Kato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 233,997, Apr. 28, 1994, Pat. No. 5,554,888.
This application May 18, 1995, Ser. No. 444,288
Claims priority, application Japan, Apr. 30, 1993, 5-104766
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 438—642 **8 Claims**



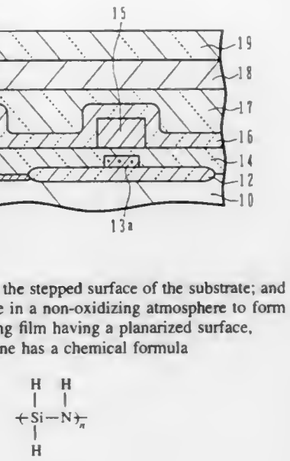
1. A process for producing a semiconductor device comprising:
forming a bottom conductive layer;
forming an auxiliary conductive layer on the bottom conductive layer;
patterning just the auxiliary conductive layer formed on the bottom conductive layer thereby forming a first pattern of the auxiliary conductive layer;
forming a pillar conductive layer on the first pattern of the auxiliary conductive layer, the first pattern of the auxiliary conductive layer having a top surface, an edge and a side surface;
patterning the pillar conductive layer with a second pattern corresponding to a pattern of connection having a region overlapping the top surface of the first pattern of the auxiliary conductive layer and a region extending over the edge of the first pattern of the auxiliary conductive layer and covering the side surface of the first pattern of the auxiliary conductive layer thus forming a second pattern of a pillar connection portion; and
etching the bottom conductive layer with an etching mask defined by the second pattern of the pillar connection portion and the first pattern of the auxiliary conductive layer to pattern the bottom conductive layer.

5,665,643
MANUFACTURE OF PLANARIZED INSULATING LAYER

Daeshik Shin, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1995, Ser. No. 509,283
Claims priority, application Japan, Nov. 15, 1994, 6-280619
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—763 **22 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of:
preparing a semiconductor substrate having a stepped surface thereupon;
coating polysilazane on the stepped surface of the substrate; and
curing said polysilazane in a non-oxidizing atmosphere to form an interlevel insulating film having a planarized surface,
wherein said polysilazane has a chemical formula

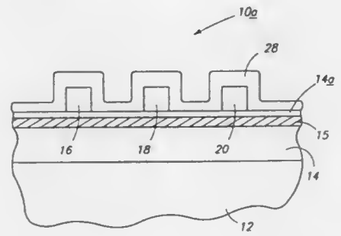


where n is several thousands.

5,665,644
SEMICONDUCTOR PROCESSING METHOD OF FORMING ELECTRICALLY CONDUCTIVE INTERCONNECT LINES AND INTEGRATED CIRCUITRY

Gurtej S. Sandhu, and Ravi Iyer, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 3, 1995, Ser. No. 552,880
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—641 **23 Claims**



1. A semiconductor processing method of forming a pair of electrically conductive interconnect lines each having a respective electrical conductive covering predominately coextensive therewith, the method comprising the following steps:
providing at least two spaced electrically conductive interconnect lines over a first electrically insulating material, the lines having respective tops and sidewalls;
selectively depositing a second electrically insulating material layer over the two interconnect lines and the first insulating material in a manner which deposits a greater thickness of the second insulating material atop the two interconnect lines than a thickness of the second insulating material over the first insulating material;
anisotropically etching the second insulating material layer inwardly to at least the first insulating material yet leaving second insulating material over the tops and the sidewalls of the two conductive lines; and
providing an electrically conductive layer over the anisotropically etched second insulating layer to form a common conductive layer which is predominately coextensive with the two lines over the etched second insulating material.

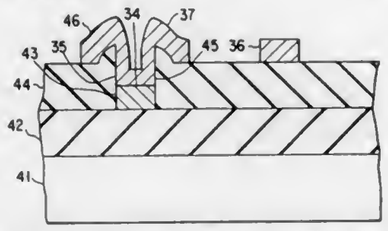
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5,665,645

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING RETICLES

Masaaki Kinugawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 86,509, Jul. 1, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 668,522
Claims priority, application Japan, Jul. 2, 1992, 4-175515
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—637 3 Claims



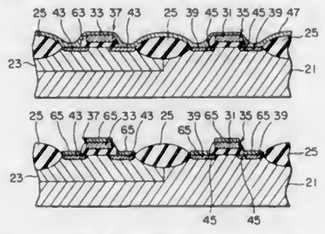
1. A method of manufacturing a semiconductor device, the method comprising the steps of:
depositing a first metal layer on a first insulating film on a wafer,
forming a first mark on a scribe line of said wafer by photolithographically patterning and etching said first metal layer using a first reticle;
depositing a second insulating film on said first insulating film and said first mark;
forming an opening, above said first mark, as a second mark by photolithographically patterning and etching said second insulating film using a second reticle;
depositing a second metal layer in said opening and on said second insulating film;
forming a deposit completely covering said first mark located in said opening by photolithographically patterning and etching said second metal layer using a third reticle, said deposit also covering a portion of said second insulating film completely surrounding said opening; and
forming a third mark on said scribe line of said wafer at a position remote from said deposit by photolithographically patterning and etching said second metal layer using said third reticle.

5,665,646

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE WITH LOW ELECTRIC RESISTANCE SILICIDE LAYER ON SILICON SURFACE

Tomohisa Kitano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 6, 1995, Ser. No. 399,361
Claims priority, application Japan, Mar. 7, 1994, 6-035812
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—592 26 Claims



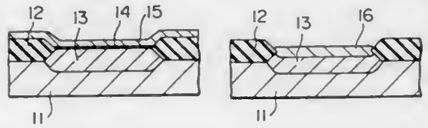
1. A method for manufacturing a semiconductor device having a process of forming a silicide layer having relatively low electric resistance with a sheet resistance of less than or equal to about 3 ohms per unit area on a surface of a silicon layer, said process comprising steps of:
depositing a film of refractory metal on the surface of the silicon layer;
subjecting said deposited film to a chemical reaction heat treatment at a reaction temperature to convert said film into a layer of amorphous silicide of refractory metal therein, said amorphous silicide having a high electrical resistance relative to said silicide layer having relatively low electric resistance; and
subjecting said layer of amorphous silicide to a phase transition heat treatment at a transition temperature higher than said chemical reaction temperature to convert said layer of amorphous silicide into said silicide layer having relatively low electric resistance.

5,665,647

MAKING METAL SILICIDE USING OXIDE FILM

Takashi Ishigami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 7, 1996, Ser. No. 611,723
Claims priority, application Japan, Mar. 8, 1995, 7-048071
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—664 8 Claims



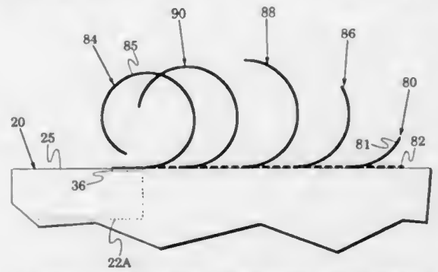
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a silicon oxide film having a thickness of not more than 5 nm on a silicon substrate with a solution exhibiting an oxidation effect;
forming a metal film on the silicon oxide film; and
forming a silicide layer on an upper surface of the silicon substrate by performing heat treatment.

5,665,648

INTEGRATED CIRCUIT SPRING CONTACT FABRICATION METHODS

Michael J. Little, Woodland Hills, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Dec. 21, 1995, Ser. No. 577,680
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—117 17 Claims



1. A method of fabricating a spring contact on a surface of a semiconductor die, comprising the steps of:
depositing a release layer on said die;
depositing a contact layer over a region of said surface and over said release layer in the presence of deposition conditions which induce a stress in said contact layer;
positioning said contact layer with a base portion of said contact layer overlying said region and a spring portion of said contact layer overlying said release layer; and

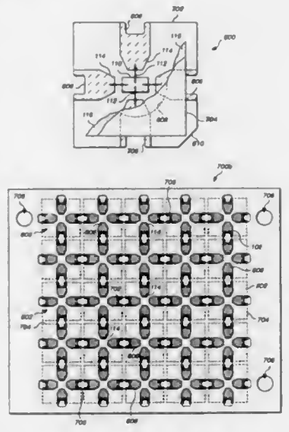
removing said release layer to permit said stress to raise said spring portion from said die.

5,665,649

PROCESS FOR FORMING A SEMICONDUCTOR DEVICE BASE ARRAY AND MOUNTING SEMICONDUCTOR DEVICES THEREON

James Marvin Harris, Terrell; Brigitte Ursula Kiba, Plano, and Porter B. Click, Jr., Garland, all of Tex., assignors to Gardiner Communications Corporation, Garland, Tex.

Continuation-in-part of Ser. No. 254,977, Jun. 7, 1994, Pat. No. 5,596,171, which is a division of Ser. No. 65,579, May 21, 1993, Pat. No. 5,490,279. This application Feb. 5, 1996, Ser. No. 596,589
Int. Cl.[6] H01L *21/48;21/58;21/60;21/70*
U.S. Cl. 438—110 11 Claims



1. A method of packaging a semiconductor device, said method comprising the steps of:
a) forming an array of bases using a platable plastic sheet which is plated with a conducting material to form individual leads on each base of the array of bases;
b) attaching individual dies of semiconductor devices on each of the bases forming the array;
c) capping each of the individual bases with a protective cap;
d) attaching an adhesive sheet to each protective cap of the array; and
e) milling the platable plastic sheet from the side opposite the adhesive sheet to separate the individual bases and form separate packaged semiconductor devices, the adhesive sheet maintaining the separate packaged semiconductor devices in a spaced relationship.

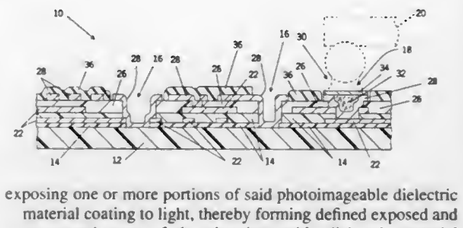
5,665,650

METHOD FOR MANUFACTURING A HIGH DENSITY ELECTRONIC CIRCUIT ASSEMBLY

John Matthew Lauffer, Waverly, N.Y.; Donald Herman Glatzel, New Milford, Pa., and David John Russell, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1996, Ser. No. 675,458
Int. Cl.[6] H01L *21/60*
U.S. Cl. 216—20 15 Claims

1. A method for manufacturing a high density electronic circuit assembly, comprising:
coating at least one planar surface of a substrate member with a photoimageable dielectric material;



exposing one or more portions of said photoimageable dielectric material coating to light, thereby forming defined exposed and unexposed areas of the photoimageable dielectric material coating on the surface of the substrate;
developing said coated surface of the substrate and thereby removing the unexposed photoimageable dielectric material from the surface of the substrate and forming defined open surface areas on the substrate;
partially curing the remaining exposed photoimageable dielectric material on the surface of the substrate;
laminating a layer of an electrically conductive material with said dielectric material and said substrate member, said dielectric material being disposed between said layer of electrically conductive material and said substrate and said laminating being carried out at a temperature and for a length of time sufficient to complete the curing of said dielectric material;
selectively etching said electrically conductive material and forming at least one first defined electrical circuit disposed on said dielectric material,
applying an additional coating of a photoimageable dielectric material on said first defined electrical circuit and said cured dielectric material;
exposing one or more portions of said additional coating of photoimageable dielectric material to light, thereby forming defined exposed and unexposed areas of photoimageable dielectric material wherein at least a portion of said unexposed areas are selectively aligned with one or more selected portions of the first electrical circuit and selected ones of the open areas on said substrate;
developing said additional coating of photoimageable dielectric material and thereby removing the unexposed photoimageable dielectric material from the additional coating;
curing the remaining exposed photoimageable dielectric material on the additional coating and thereby forming a selectively disposed second layer of dielectric material;
selectively forming at least one additional electrical circuit, said additional electrical circuit being disposed on said additional layer of dielectric material, selected portions of the first defined electrical circuit, and selected ones of the open surface areas on said substrate member.

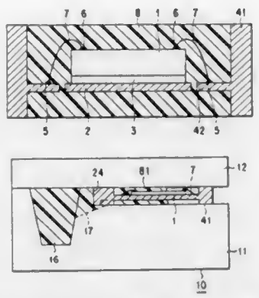
5,665,651

PROCESS FOR ENCAPSULATING A SEMICONDUCTOR DEVICE AND LEAD FRAME

Junichi Asada, Yokkaichi; Masahiko Hori, Yokohama, and Shinji Takei, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 467,533, Jun. 7, 1995, Pat. No. 5,493,151, which is a continuation of Ser. No. 273,323, Jul. 11, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,179
Claims priority, application Japan, Jul. 15, 1993, 5-197938
Int. Cl.[6] H01L *21/56;21/58;21/60*
U.S. Cl. 29—827 6 Claims

1. A method for manufacturing semiconductor devices, comprising:
a step of mounting a semiconductor chip on a lead frame, inserting said lead frame between facing flat surfaces of a cope and a drag constructing a mold, and forming a cavity by use of the flat surfaces of said mold, and frame portions, tie bars and outer leads of said lead frame;
a step of injecting mold resin into said cavity and curing the same to form a package of mold resin; and



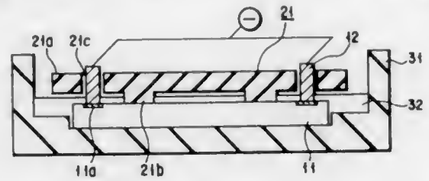
a step of taking out said lead frame from said mold, cutting off peripheral portions of the resin mold of said lead frame to expose the same in an upper surface, lower surface and side surface of said package, thus forming the outer leads whose surfaces make substantially the same plane as upper, lower and side surfaces of said package.

5,665,652

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE WHEREIN ELECTRODES ON A SEMICONDUCTOR CHIP ARE ELECTRICALLY CONNECTED TO LEAD TERMINALS BY PLATING BONDING

Shinya Shimizu, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 26, 1996, Ser. No. 592,482
Claims priority, application Japan, Apr. 12, 1995, 7-086876
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—127 **4 Claims**



1. A method for manufacturing a semiconductor device, comprising the steps of:

positioning insulative members on a surface of a semiconductor chip on which electrodes are formed, said insulative members having guide holes corresponding to the electrodes, and guiding lead terminals into the guide holes, respectively, said lead terminals being separated from one another; and

soaking the semiconductor chip in a solution of electrolytic plating together with the insulative members while the electrodes and the lead terminals contact each other to form metal plating layers for electrically connecting the lead terminals and the electrodes.

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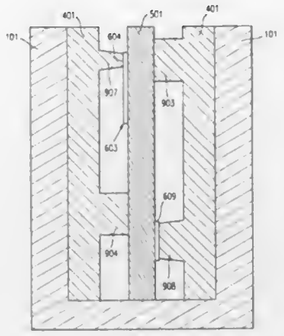
METHOD FOR ENCAPSULATING AN ELECTROCHEMICAL SENSOR

Rex O. Bare, Lake Forest, and Andy Scherer, San Dimas, both of Calif., assignors to Unifet, Incorporated, San Diego, Calif.

Filed Mar. 29, 1995, Ser. No. 412,705
Int. Cl.[6] H01L *25/04;25/16;23/31*
U.S. Cl. 438—49 **20 Claims**

1. A method for encapsulating an electrochemical sensor including the steps of:

(a) forming a master pattern having a three-dimensional external profile and at least one depression;



(b) fabricating an essentially flexible tool using the master pattern, the flexible tool having a cavity with a three-dimensional internal profile substantially matching the three-dimensional external profile of the master pattern, and having at least one protruding flexible structure, each flexible structure corresponding to one of the depressions on the master pattern;

(c) placing a hybrid having at least one electrochemical sensor, and at least one contact area on the sensor, into contact with the flexible tool, such that the hybrid is supported within the cavity, and such that at least one contact area of the hybrid is in contact with at least one of the protruding flexible structures so as to seal the contact area of the hybrid to the flexible structure;

(d) applying a potting material to the hybrid to encapsulate the electrochemical sensor; and

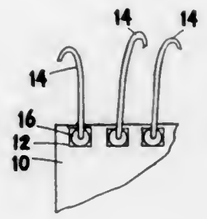
(e) disengaging the encapsulated hybrid from the flexible tool, the flexible tool ensuring that each sealed contact area remains exposed after encapsulation and disengagement of the flexible tool from the hybrid.

5,665,654

METHOD FOR FORMING AN ELECTRICAL CONNECTION TO A SEMICONDUCTOR DIE USING LOOSE LEAD WIRE BONDING

Darryl M. Stansbury, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 386,644, Feb. 10, 1995, Pat. No. 5,612,256. This application Feb. 9, 1996, Ser. No. 598,882
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—23 **42 Claims**



1. A method for forming an electrical connection to a semiconductor die, comprising:

wire bonding a metal wire to a pad of the die;

severing the metal wire to form a loose lead attached to the pad;

assembling the die in an electronic device; and then

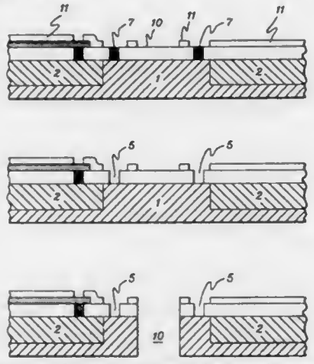
bonding the loose lead to an electrical component.

5,665,655

PROCESS FOR PRODUCING CRACKSTOPS ON SEMICONDUCTOR DEVICES AND DEVICES CONTAINING THE CRACKSTOPS

Eric Jeffrey White, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 998,163, Dec. 29, 1992, abandoned. This application Jul. 13, 1995, Ser. No. 501,908
Int. Cl.[6] H01L *21/304*
U.S. Cl. 438—584 **27 Claims**



1. A method for forming crackstops in a semiconductor device comprising the steps of:

(a) depositing a dielectric material on a semiconductor substrate having a plurality of active and inactive regions;

(b) patterning said dielectric material with vias in said active regions and with grooves in said inactive regions, each groove forming a continuous loop surrounding one of said active regions;

(c) depositing a first metal in said vias and said grooves to create a plurality of contacts and a plurality of metal rings respectively; and

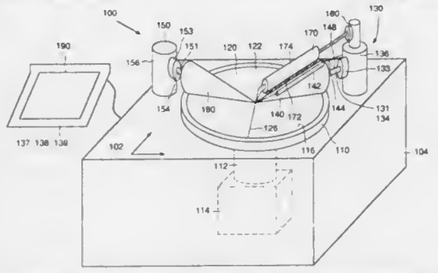
(d) removing said first metal from said grooves, whereby severing said substrate along dicing lines is capable of creating a chip possessing one of said grooves.

5,665,656

METHOD AND APPARATUS FOR POLISHING A SEMICONDUCTOR SUBSTRATE WAFER

Rahul Jairath, Austin, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 17, 1995, Ser. No. 443,133
Int. Cl.[6] H01L *21/304*
U.S. Cl. 438—692 **12 Claims**



1. A method of polishing a semiconductor wafer comprising the steps of:

affixing a semiconductor wafer to a turntable having a central axis;

rotating the turntable and affixed semiconductor wafer about the central axis of the turntable at a controlled angular velocity and angular direction;

positioning a polishing pad at a selected location relative to the semiconductor wafer, the polishing pad having an outer conic quadric surface, having a central axis and having a lateral edge substantially perpendicular to the central axis of the turntable in a plane parallel to the plane of the turntable; and

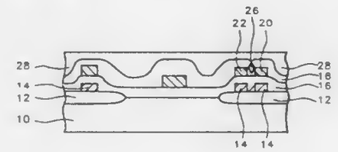
pressing the polishing pad into contact with the rotating semiconductor wafer at a controlled pressure.

5,665,657

SPIN-ON-GLASS PARTIAL ETCHBACK PLANARIZATION PROCESS

Jin-Yuan Lee, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin-Chu, Taiwan

Filed Sep. 18, 1995, Ser. No. 529,636
Int. Cl.[6] H01L *21/465*
U.S. Cl. 438—624 **24 Claims**



1. The method of planarizing the dielectric layers between conductive layers in integrated circuits without the incorporation of voids in said dielectric layers comprising:

providing device structures in and on a semiconductor substrate;

providing at least one patterned conductive layer having spaced conductive lines for contacting of said device structures; said spaced conductive lines and the surface of said substrate present a non-planar top surface having valleys between said spaced conductive lines;

forming a first dielectric layer over said non-planar top surface whereby closed cavities are formed between said spaced conductive lines;

covering said first dielectric layer with a first spin-on-glass layer;

anisotropically etching said first spin-on-glass layer and said first dielectric layer to a depth which exposes said closed cavities and forms open hollows, wherein said etching continues to a depth which does not expose said spaced conductive lines;

covering the remaining first spin-on-glass layer with a second spin-on-glass layer whereby said open hollows are filled with said second spin-on-glass layer;

curing both said first and second spin-on-glass layers;

anisotropically etching at least said second spin-on-glass layer to expose at least portions of the first dielectric layer over said spaced conductive lines;

depositing a second dielectric layer over said first and second spin-on-glass layers to complete said planarization;

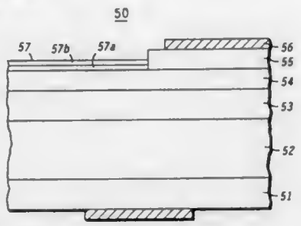
anisotropically etching via holes in selected locations through said first and second dielectric layers to expose said spaced conductive lines; and

forming metal contacts through said via holes to contact said conductive lines.

5,665,658
METHOD OF FORMING A DIELECTRIC LAYER STRUCTURE

Matthias Passlack, Chandler, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Mar. 21, 1996, Ser. No. 620,688
Int. Cl.[6] H01L *21/02*
U.S. Cl. 438—763 23 Claims

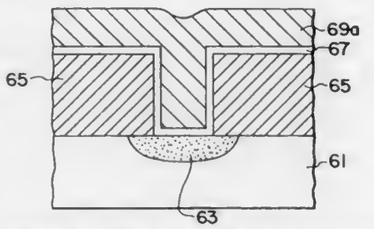


1. A method of forming a dielectric layer structure on a supporting semiconductor structure comprising the steps of:
providing a supporting semiconductor structure of III–V material having a surface to be coated with the dielectric layer structure;
depositing a layer of Ga_2O_3 on the surface of the supporting structure; and
depositing a layer of material with low bulk trap density relative to the Ga_2O_3 on the layer of Ga_2O_3 to form the dielectric layer structure.

5,665,659
METHOD FOR FORMING METAL LAYER OF A SEMICONDUCTOR DEVICE

Sang-in Lee; Gil-heyun Choi, and Young-soo Jeon, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 9, 1994, Ser. No. 257,420
Claims priority, application Rep. of Korea, Jun. 10, 1993, 1993/10567
Int. Cl.[6] C23C *14/34;* H01L *21/324;21/44*
U.S. Cl. 438—646 47 Claims

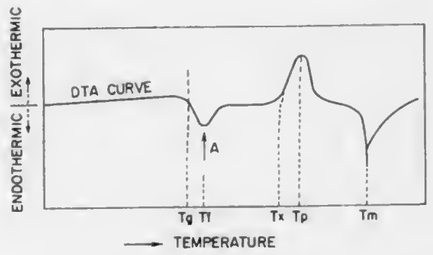


1. A method for forming a metal layer on an underlying layer formed on a semiconductor substrate, comprising the steps of:
forming an underlying layer on a semiconductor substrate and annealing said underlying layer;
subsequent to said step of annealing, maintaining said semiconductor substrate at a first temperature which is between 200° C. and 400° C. for an amount of time;
following said step of maintaining, in a vacuum, depositing a metal at a second temperature on said underlying layer to form a metal layer;
heating said metal layer to a third temperature without breaking said vacuum, thereby causing reflow of grains of said metal layer; and
following said step of heating said metal layer to said third temperature, cooling said metal layer;
wherein said second temperature is lower than said third temperature, and said first temperature is intermediate said second and third temperatures.

5,665,660
GLASS COMPOSITION FOR BONDING A PHOSPHOR AND A FLUORESCENT LAMP

Hiroshi Yamawaki; Masahiko Yoshino, both of Odawara; Yasuo Oguri, Setagaya, and Masayuki Yamane, Yokohama, all of Japan, assignors to Kasei Optnix, Ltd., Tokyo, Japan

PCT No. PCT/JP95/00867, § 371 Date Jan. 2, 1996, § 102(e) Date Jan. 2, 1996, PCT Pub. No. WO95/31002, PCT Pub. Date Nov. 16, 1995
PCT Filed May 2, 1995, Ser. No. 569,223
Claims priority, application Japan, May 6, 1994, 6-094073; Jun. 30, 1994, 6-149494; Nov. 9, 1994, 6-274812; Apr. 27, 1995, 7-103530
Int. Cl.[6] H01J *61/46*
U.S. Cl. 501—32 7 Claims



1. A fluorescent lamp, in which a glass composition for bonding a phosphor, represented by the general formula,

$$xMO.yB_2O_3.zM'_2O_3.uM''O_2.vM'''_2O_5$$

wherein M is at least one element selected from the group consisting of Mg, Ca, Sr, Ba and Zn, M' is at least one element selected from the group consisting of Al, Sc, Y and lanthanoid elements, M'' is at least one element selected from the group consisting of Ti, Zr, Hf, Th and Si, M''' is a least one element selected from the group consisting of Nb and Ta, x, y, z, u and v satisfy the relationships of $0<x\leqq70$, $15\leqq y\leqq80$, $0\leqq z\leqq50$, $0\leqq u\leqq30$, $0\leqq v\leqq30$, $0.5\leqq u+v\leqq50$ and $x+y+z+u+v=100$, represented by mol %, is incorporated in a phosphor layer on the inner surface of a glass tube.

5,665,661
CRYSTALLIZATION OF GRAIN BOUNDERY PHASES IN SILICON CARBIDE CERAMICS

Roger Lee Ken Matsumoto, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

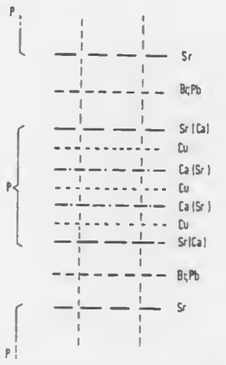
PCT No. PCT/US93/12623, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO94/14726, PCT Pub. Date Jul. 7, 1994
Continuation of Ser. No. 998,167, Dec. 29, 1992, Pat. No. 5,281,564. This PCT application Dec. 28, 1993, Ser. No. 454,350
Int. Cl.[6] C04B *35/577*
U.S. Cl. 501—92 20 Claims

12. An article comprising a sintered silicon carbide composition comprising a mixture, said mixture comprising:
at least one material selected from the group consisting of beta-silicon carbide and alpha-silicon carbide;
a high metal content silicide of a transition metal of IUPAC Group 3, 4, 5, 6, 7, 8, 9, 10 or 11;
at least one carbide of said transition metal; and
a devitrified glass comprising a polycrystalline decomposition reaction product of a silicate glass, said decomposition resulting from the evolution of silicon monoxide gas from said silicate glass.

5,665,662
HIGH-TEMPERATURE SUPERCONDUCTOR

Oliver Eibl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE89/00154, § 371 Date Nov. 8, 1990, § 102(e) Date Nov. 8, 1990, PCT Pub. No. WO89/08929, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 10, 1989, Ser. No. 576,408
Claims priority, application Germany, Mar. 14, 1988, 38 08 447.3
Int. Cl.[6] C01F *11/02;* H01L *39/12*
U.S. Cl. 501—123 11 Claims



1. A superconductor of the Bi—Sr—(Ca)—CuO_x system comprising:

$(Bi_{1-u}Pb_u)_2(Sr_{1-z-y}Ca_zBi_y)_4Cu_3O_{10-d}$ wherein $0.1<x<0.5$

$0\leqq y<x<0.5$

$0\leqq d$

$0\leqq u$

having a transition temperature greater than 90 K., said superconductor consisting of unit cells, each unit cell including a structure having first and second alternating layers, said first alternating layer including a double layer of at least one of Bi-oxide and Bi/Pb-oxide, said second alternating layer including perovskite cells having alternating layers of Cu-oxide and at least one of Sr-oxide and Ca-oxide, and said structure including three Cu-oxide layers between two double layers.

5,665,663
METHOD FOR MANUFACTURING OXIDE CERAMIC SINTERED BODIES

Yukio Kishi, Funabashi, Japan, assignor to Nihon Cement Co., Ltd., Tokyo, Japan

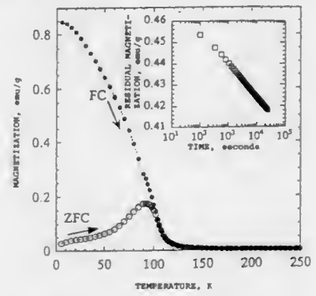
Continuation of Ser. No. 87,746, Jul. 12, 1993, abandoned. This application Nov. 6, 1995, Ser. No. 554,098
Int. Cl.[6] C04B *35/46*
U.S. Cl. 264—628 5 Claims

1. A method for manufacturing a titania ceramic body, which has a surface with a plurality of pores not exceeding 100 pores per square millimeter, comprising:
preparing a new titania powder having a purity of at least 99.8 wt % titania by weight and an average particle diameter up to 0.5 μm;
compacting said titania powder to produce a compact;
sintering said compact at a temperature in the range of about 1000° C. to about 1300° C. under ordinary pressure in a gas selected from the group consisting of air, an inert atmosphere and a reducing atmosphere to produce body;
hot isostatic pressure treating said sintered body at a temperature in the range of about 800° C. to the temperature at which said sintering is carried out in an argon atmosphere under pressure of at least 500 kg/cm^2 to produce a ceramic body; and
grinding and polishing said ceramic body to produce a final ceramic body.

5,665,664
GRAIN BOUNDARY-FREE CRYSTALLINE BODY OF MANGANESE-BASED COMPOSITE OXIDE AND METHOD FOR THE PREPARATION THEREOF

Yasuhide Tomioka, and Yoshinori Tokura, both of Ibaraki-ken, Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, and Angstrom Technology Partnership, both of Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,620
Claims priority, application Japan, Nov. 4, 1994, 6-271566
Int. Cl.[6] C04B *35/50;* C30B *13/00*
U.S. Cl. 501—152 6 Claims



1. A grain boundary-free crystalline body of a manganese-containing composite oxide of a perovskite structure having a chemical composition expressed by the general formula

$$Pr_{1-x}M_xMnO_3,$$

in which M is calcium or strontium and the subscript x is a number in the range from 0.3 to 0.5.

5,665,665
METHOD FOR MAKING SUPPORTED CATALYST SYSTEMS AND CATALYST SYSTEMS THEREFROM

Jeffrey Lawrence Brinen, League City; Anthony Nicholas Speca, Kingwood; Kelly Tormaschy, Houston, and Kathryn Ann Russell, Seabrook, all of Tex., assignors to Exxon Chemical Patents, Inc., Wilmington, Del., and Hoechst, Frankfurt Main, Germany

Continuation of Ser. No. 344,837, Nov. 23, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 559,928
Int. Cl.[6] C08F *4/42;* B01J *19/06*
U.S. Cl. 502—9 12 Claims

1. A process for producing a supported catalyst said process comprising the steps of:
(a) forming a spray from a volume of catalyst solution wherein the catalyst solution comprises a metallocene catalyst component; and
(b) contacting the spray with a porous support material while agitating the support material
wherein the volume of catalyst solution is in the range of from more than one times the total pore volume of the support material to less than that volume of solution required to form a slurry when contacted with the porous support.

5,665,666

Patent Not Issued For This Number

5,665,667
PROCESS FOR THE PREPARATION OF VINYL ACETATE CATALYST

Michael F. Lemanski, Chester, N.Y.; Christos Paparizos, Willowick, Ohio; Patricia R. Blum, Macedonia, Ohio; Larry M. Cirjak, Burton, Ohio, and Marc A. Pepera, Northfield, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 252,800, Jun. 2, 1994, Pat. No. 5,536,693. This application Jan. 20, 1995, Ser. No. 375,867

Int. Cl.[6] B01J *23/44;37/08*

U.S. Cl. 502—300 15 Claims

1. A method for the preparation of fluidizable catalyst having the formula Pd-M-A where M is selected from the group consisting of Ba, Au, Cd, Bi, Cu, Mn, Fe, Co, Ce, U and mixtures thereof, A is selected from the group consisting of an alkali metal and mixtures thereof and M is present in a range of from 0 to about 5 wt % and A is present in a range of greater than 0 to 10 wt % which is useful in the oxacylation of olefins and diolefins in a fluid bed reactor comprising:

a) preparing a fixed bed catalyst precursor consisting primarily of Pd-M supported on a fixed bed catalyst support,

b) milling the fixed bed catalyst precursor with a fluid bed catalyst binder to form a slurry,

c) drying the slurry to form microspheroidal particles of solid fluid bed catalyst precursor,

d) calcining the dried solid fluid bed catalyst precursor, and

e) impregnating the microspheroidal particles of fluid bed catalyst precursor with a solution of an alkali metal salt to produce a fluid bed catalyst.

5,665,668
METHOD OF MAKING A CATALYST

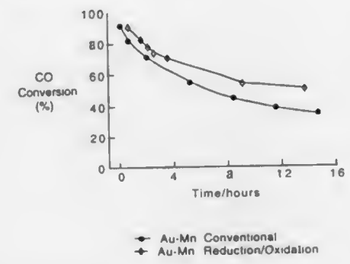
Bojidara Grigorova, 52 Morsim Road, Hyde Park, Sandton, Transvall, South Africa; Atanas Palazov, 15 Pitchford Road, Northcliff, Johannesburg, Transvaal, South Africa; John Mellor, 22 Bedford Avenue, Craighall Park, Johannesburg, South Africa; James Anthony Jude Tumilty, 7B First Avenue, Rivonia, Sandton, Transvaal, South Africa, and Anthony Harold Gafin, 64 Fir Road, Glenhazel, Johannesburg, Transvaal, South Africa

Continuation-in-part of Ser. No. 201,678, Feb. 25, 1994, abandoned. This application Feb. 1, 1995, Ser. No. 382,076

Claims priority, application South Africa, Jan. 25, 1994, 95/0504

Int. Cl.[6] B01J *23/52*

U.S. Cl. 502—344 17 Claims



1. A method of preparing a catalyst containing at least two metals captured on a porous support, at least one of the metals being a transition metal and the other being gold, including the steps of providing solutions of the metals, impregnating the support with the solution of the transition metal, exposing the impregnated support to a reducing atmosphere at a temperature exceeding 300° C., impregnating the thus treated support with the solution of gold, and exposing the support, impregnated with both of the solutions, to a temperature exceeding 300° C. in an oxidizing atmosphere.

5,665,669
METALLIC HONEYCOMB BODY FOR SUPPORTING CATALYST AND PRODUCTION METHOD THEREOF

Mikio Yamanaka; Masuhiro Fukaya; Nobuhiro Fujita, all of Futtsu; Yasushi Ishikawa, Tokai; Toshikazu Nakagawa, Tokai; Masao Yashiro, Tokai, and Hitoshi Ohta, Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

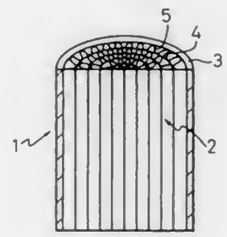
PCT No. PCT/JP94/00205, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO94/17911, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 10, 1994, Ser. No. 318,753

Claims priority, application Japan, Feb. 12, 1993, 5-024517

Int. Cl.[6] B01J *21/04;* C22C *38/22;38/06*

U.S. Cl. 502—527 11 Claims



1. A metallic honeycomb body for supporting a catalyst characterized in that flat foils consisting essentially of a ferritic stainless steel containing 1.1 to 3.5 wt % of Si and not greater than 0.8 wt % of Al and corrugated foils formed by corrugating said flat foils are alternately stacked or the flat foil and corrugated foil are integrally wound, and bond portions between said flat foil and said corrugated foil stacked or wound with each other are bonded by mutual diffusion of constituent atoms of each of said foils.

3. A method of producing a metallic honeycomb body for supporting a catalyst, comprising:

alternately stacking flat foils consisting of a ferritic stainless steel containing 1.1 to 3.5 wt % of Si and not greater than 0.8 wt % of Al and corrugated foils produced by corrugating said flat foils or integrally winding the flat foil and the corrugated foil to form a metal honeycomb body; and

applying heat-treatment to said metallic honeycomb body by loading said metallic honeycomb body into a vacuum heat-treating furnace, and keeping it in a vacuum of 10^{-2} to 10^{-4} Torr and at a temperature of 1,200° to 1,300° C. for 1 to 30 minutes inside said heat-treating furnace.

5,665,670
RECORDING ELEMENT FOR DIRECT THERMOSENSITIVE PRINTING

Mitchell Stewart Burberry, Webster; Bruce Crinean Campbell, Rochester; Daniel Jude Harrison, and Elizabeth Vandyke Patton, both of Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 634,747

Int. Cl.[6] B41M *5/30;5/32;5/40*

U.S. Cl. 503—201 11 Claims

1. A thermosensitive recording element comprising a base having coated thereon a thermosensitive recording layer comprising a dye precursor, said base comprising a composite film laminated to at least one side of a support, said thermosensitive recording layer being on said composite film side of said base, and said composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer.

11. A process for forming an image comprising imagewise-heating, by means of a thermal head, the thermosensitive recording element of claim 1.

5,665,671
COMPOUND TO DEFEND PLANTS FROM VEGETAL PARASITES

Roberto Zanin, c/o Hydro Geo—48 Silo Way, Bloomfield, Conn. 06002

Filed Jul. 20, 1995, Ser. No. 504,835

Claims priority, application Italy, Jul. 21, 1994, TV94A0087

Int. Cl.[6] A01N *59/16;* C07F *1/08*

U.S. Cl. 504—117 7 Claims

1. A compound to defend plants from parasites consisting essentially of copper, humic acid, and fulvic acid.

5,665,672
FUNGICIDAL COMPOSITIONS FOR THE TREATMENT OF CROWN AND ROOT ROT IN TURFGRASS

Leon T. Lucas, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

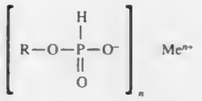
Continuation of Ser. No. 241,785, May 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 3,632, Jan. 13, 1993, Pat. No. 5,336,661. This application Feb. 1, 1996, Ser. No. 595,348

Int. Cl.[6] A01N *55/02*

U.S. Cl. 504—126 19 Claims

1. A process for treating turfgrass to enhance turf quality which comprises applying to said turfgrass in an amount effective to enhance turf quality:

(a) one part by weight of a monoester salt of a phosphorous acid of formula (I):



(I)

in which

R is an alkyl radical having 2 to 4 carbon atoms,

Me is an alkali metal, alkaline earth, or aluminum atom, and

n is a whole number from 1 to 3 equal to the valence of Me; and

(b) from 1.5 to 2.5 part by weight of an ethylene bisdithiocarbamate contact fungicide selected from the group consisting of manganese ethylene bisdithio-carbamate and manganese-zinc ethylene bisdithiocarbamate.

5,665,673
POTENTIATING HERBICIDAL COMPOSITIONS

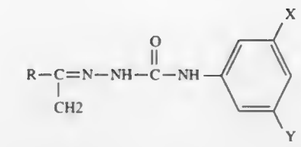
Richard J. Anderson, 3367 Kenneth Dr., Palo Alto, Calif. 94303; Ian S. Cloudsdale, 730 Rebecca Dr., Boulder Creek, Calif. 95006; Robert J. Lamoreaux, 145 Lang St., San Juan Batista, Calif. 94045; Kristine Schaefer, R.R. 1, Box 160, Adel, Iowa 50003, and Jost Harr, Vorderbergstrasse 19 CH-4104, Oberwil, Switzerland

Continuation of Ser. No. 156,503, Nov. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 972,056, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 704,684, May 17, 1991, abandoned, which is a continuation of Ser. No. 490,792, Mar. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 291,850, Dec. 29, 1988, abandoned. This application Mar. 3, 1995, Ser. No. 400,420

Int. Cl.[6] A01N *37/08;37/10;43/40;43/46*

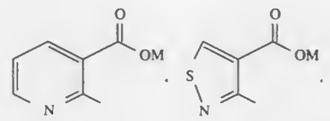
U.S. Cl. 504—130 10 Claims

1. A herbicidal composition comprising a herbicidally effective aggregate amount of an auxin transport inhibitor of the formula A

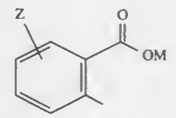


wherein,

X and Y represent independently, hydrogen, fluorine or chlorine, and R is the group



or



wherein

Z is hydrogen, fluorine or chlorine and M is hydrogen or a salt forming moiety and one other herbicide

wherein the herbicide is dicamba and the auxin transport inhibitor is present in an amount producing a potentiating effect in a weight ratio of the auxin transport inhibitor to dicamba from 1:50 to 5:1.

5,665,674
COMPOSITIONS CONTAINING SEMICARBAZONES

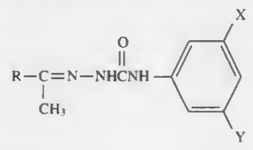
Richard J. Anderson, Palo Alto; Ian S. Cloudsdale, Boulder Creek; Robert J. Lamoreaux, San Jaun, all of Calif.; Kristine J. Schaefer, Adel, Iowa, and Jost Harr, Oberwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 400,420, Mar. 3, 1995, which is a continuation of Ser. No. 156,503, Nov. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 972,056, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 704,684, May 17, 1991, abandoned, which is a continuation of Ser. No. 490,792, Mar. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 291,850, Dec. 29, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 479,266

Int. Cl.[6] A01N *37/10;39/02*

U.S. Cl. 504—144 6 Claims

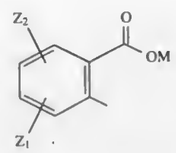
1. A herbicidal composition comprising a herbicidally effective aggregate amount of an auxin transport inhibitor of formula A:



wherein,

X and Y represent independently, hydrogen, fluorine or chlorine, and R is the group

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wherein Z_1 and Z_2 are independently, fluorine or chlorine and M is hydrogen, or a salt forming moiety and one other herbicide, wherein said one other herbicide is MCPP and the auxin transport inhibitor is present in amount producing a potentiating effect in a weight ratio of the auxin transport inhibitor to MCPP from 1:50 to 5:1.

5,665,675

AMINOBENZENESULFONAMIDE DERIVATIVE AND RECORDING MEDIUM USING THE SAME

Tomoaki Nagai; Kaoru Hamada, and Akio Sekine, all of Tokyo, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

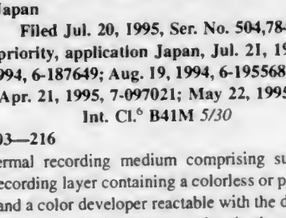
Filed Jul. 20, 1995, Ser. No. 504,784

Claims priority, application Japan, Jul. 21, 1994, 6-168516; Aug. 10, 1994, 6-187649; Aug. 19, 1994, 6-195568; Nov. 4, 1994, 6-270959; Apr. 21, 1995, 7-097021; May 22, 1995, 7-122393

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—216 **30 Claims**

1. A thermal recording medium comprising substrate having thereon a recording layer containing a colorless or pale colored dye precursor, and a color developer reactable with the dye precursor to develop a color as main ingredients, wherein the color developer includes at least one compound of Formula (1) with the dye precursor to develop a color as main ingredients, wherein the color developer includes at least one compound of Formula (1):



(1)

oxygen atom or sulfur atom; and R is a substituted or unsubstituted group which is selected from the group consisting of phenyl group, naphthyl group, aralkyl group, a lower alkyl group of 1 to 6 carbon atoms, cycloalkyl group, and a lower alkenyl group of 2 to 6 carbon atoms, Z is a lower alkyl group of 1 to 6 carbon atoms or an electron attracting group and n is an integer from 0 to 4.

5,665,676

PRINTING SHEET AND MANUFACTURING METHOD THEREFOR

Yoshinori Nakamura; Huy Sam, both of Miyagi; Yoshio Fujiwara, Tochigi; Toshikazu Nagura; Shigeo Hayasi, both of Kanagawa, and Yukio Kusaka, Tochigi, all of Japan, assignors to Sony Corporation, and New Oji Paper Co., Ltd., both of Tokyo, Japan

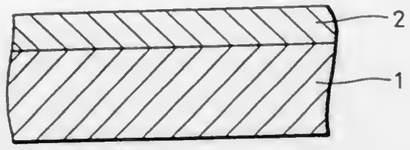
Continuation of Ser. No. 257,093, Jun. 7, 1994, Pat. No. 5,470,817. This application Aug. 16, 1995, Ser. No. 515,647

Claims priority, application Japan, Jun. 8, 1993, 5-164321

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **8 Claims**

1. A printing sheet for use in a thermal transfer system including a support having a dye receiving layer disposed thereon, said dye receiving layer consisting essentially of:



(A) a film forming resin selected from the group consisting of: thermoplastic resins, thermosetting resins, ultraviolet setting resins, electron setting resins and mixtures of any of the foregoing resins;

(B) from about 0.5 to about 30 parts by weight per 100 parts by weight of said film forming resin component (A) of a previously prepared isocyanate group-containing polymer produced by reaction of:

(a) a multifunctional polyisocyanate with

(b) a co-reactant selected from

(i) a combination of a carboxy-terminated polysiloxane and a diamine;

(ii) a combination of a hydroxy-terminated polysiloxane and a diamine; or

(iii) a combination of a carboxy-terminated polysiloxane and water,

said isocyanate group-containing polymer having a molecular weight of from about 3,000 to about 15,000; and

(C) optionally including an additive selected from the group consisting of: dye dispersing agents, fluorescent whitening agents, white pigments, antistatic agents, plasticizers, UV absorbers and antioxidants.

5,665,677

N-ALKYL-N-PARA-AMINOARYL SUBSTITUTED DICYANOVINYL ANILINE DYES FOR USE IN THERMAL TRANSFER PRINTING

Luc Vanmaele, Lochristi, and Wilhelmus Janssens, Aarschor, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

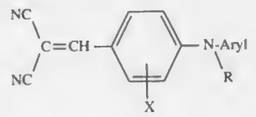
Continuation-in-part of Ser. No. 426,984, Apr. 21, 1995, Pat. No. 5,514,638. This application Jan. 24, 1996, Ser. No. 590,832

Claims priority, application European Pat. Off., May 25, 1994, 94201480

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **6 Claims**

1. A dye donor element for use according to thermal dye transfer methods comprising a support having thereon a dye layer comprising a binder and a yellow dye of the class of N-alkyl-N-para-aminoaryl-substituted dicyanovinylaniline dyes corresponding to the following general formula (I):



wherein:

X represents a substituent selected from the group consisting of an alkenyl group, an aryl group, a halogen, an acylamino group, an aminocarbonyl group, an alkoxy group, an aryloxy group and an alkenyloxy group,

Aryl represents an aryl group para substituted with NR^1R^2,

R represents an alkyl group,

R^1, R^2 each independently represents hydrogen, an alkyl group, an aryl group or R^1 and R^2 together with the atoms to which they are attached represent the necessary atoms to complete a ring system.

5,665,678

COMPOSITIONS AND SUSPENSION CONTAINING A LOW-MELTING TEMPERATURE PESTICIDE

James Franklin Essinger, Jr., Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 223,334, Apr. 5, 1994. This application May 31, 1995, Ser. No. 456,260

Int. Cl.[6] A01N *25/22*

U.S. Cl. 504—116 **39 Claims**

1. An aqueous, stable pesticidal suspension which comprises:

a low melting temperature pesticide active ingredient;

a nucleating agent selected from the group consisting of carboxylic acids, esters, and amides having a melting point in the range from about 30° to about 130° and having a chain length in the range from about 3 to about 30;

water; and

a plurality of porous carrier particles dispersed in said water, said particles having mean size in the range from 2 to 20 μm, said active ingredients being crystallized in said porous carrier particles and said active ingredient containing said nucleating agent.

5,665,679

METHOD OF DESICCATING POTATO VINES WITH COPPER ALKYLENEDIAMINE

Thomas Bond McInnes, Valdosta, Ga., assignor to Griffin Corporation, Valdosta, Ga.

Filed Oct. 18, 1995, Ser. No. 544,592

Int. Cl.[6] A01N *59/20*

U.S. Cl. 504—164 **18 Claims**

1. A method of desiccating potato vines comprising applying to said potato vines an effective amount of an aqueous solution of a copper-alkylenediamine complex such that said potato vines are desiccated thereby.

5,665,680

METHOD FOR INCREASING YIELD OF SOYBEAN BY INHIBITION OF GIBBERELLIN BIOSYNTHESIS

Kimio Nakaseko, Sapporo; Hideyuki Shibata, Kobe; Seigo Ouchi, Toyonaka, and Akira Nishikawa, Akashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 16, 1995, Ser. No. 515,246

Claims priority, application Japan, Aug. 24, 1994, 6-199384

Int. Cl.[6] A01N *43/653;43/40;35/06;43/54*

U.S. Cl. 504—239 **14 Claims**

1. A method for increasing yield of soybean, which comprises foliar-applying an effective amount of a compound having a gibberellin biosynthesis inhibiting activity to soybean plants at the time of formation of pollen , at the time of formation of embryo sac or at the time of flowering.

5,665,681

2-PHENYL-7-CHLORO-PERHYDROIMIDAZO[1,5A]PYRIDINES

Karl Seckinger, Riegel, Germany; Sasank Sekhar Mohanty, Arlesheim; Karlheinz Milzner, Basel, both of Switzerland, and Fred Kuhnen, Weil am Rhein, Germany, assignors to Sandoz Ltd., Basel, Switzerland

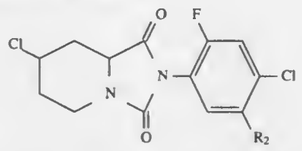
Filed Jun. 20, 1995, Ser. No. 492,687

Claims priority, application United Kingdom, Jun. 23, 1994, 9412603

Int. Cl.[6] A01N *43/90;* **C07D** *471/04*

U.S. Cl. 504—246 **7 Claims**

1. A compound of formula I



(I)

wherein

R_2 is halogen, C_{1-6}alkyl, C_{1-6}alkoxy, C_{1-6}alkylcarbonyloxy, C_{1-6}alkoxycarbonyl, C_{1-6}alkoxycarbonyl-C_{1-4}alkyl or C_{1-6}alkoxycarbonyl-C_{2-4}alkenyl.

5,665,682

METHOD OF MANUFACTURING AN OXIDE SUPERCONDUCTOR WITH HIGH CRITICAL CURRENT DENSITY

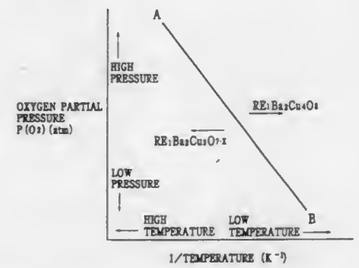
Osamu Okamura; Atsushi Kume, and Yuh Shiohara, all of Tokyo, Japan, assignors to International Superconductivity Technology Center, Tokyo; The Kansai Electric Power Co., Inc., Osaka, and Fujikura Ltd., Tokyo, all of Japan

Division of Ser. No. 407,036, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 79,757, Jun. 22, 1993, abandoned This application Aug. 14, 1995, Ser. No. 514,731

Claims priority, application Japan, Jun. 22, 1992, 4-163168

Int. Cl.[6] B05D *5/12;3/02*

U.S. Cl. 505—446 **14 Claims**



1. A method of manufacturing an oxide superconductor, comprising the steps of:

(a) applying a solution containing organic compounds of a plurality of metallic elements for constituting an oxide superconductive layer with a composition of $RE_1Ba_2Cu_3O_{7-x}$ onto a substrate, wherein RE is a rare earth element selected from the group consisting of Y, Eu, Gd, Dy, Ho, Er and Yb;

(b) calcining the substrate applied with the solution to obtain a calcined body in which the organic compounds contained in the solution are thermally decomposed;

(c) heating the calcined body to produce a $RE_1Ba_2Cu_4O_8$ phase; and

(d) decomposing the $RE_1Ba_2Cu_4O_8$ phase into a $RE_1Ba_2Cu_3O_{7-x}$ phase and a CuO phase, to obtain the oxide superconductor having the superconductive layer formed on the substrate, where the CuO phase and micro-defects caused by this decomposing step are introduced into the superconductive layer as pinning centers.

5,665,683

LUBRICANT AND LUBRICANT CONCENTRATE

Erasmus Froeschmann, Bremen, Germany, assignor to Bremer & Leguil GmbH, Duisburg, Germany

Continuation of Ser. No. 618,526, Nov. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 302,685, Jan. 24, 1989, abandoned. This application Nov. 3, 1993, Ser. No. 147,014

Claims priority, application Germany, Apr. 10, 1987, 37 12 133.2

Int. Cl.[6] C10M *141/10;141/08*

U.S. Cl. 508—271 **37 Claims**

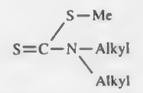
1. Lubricant comprising:

(a) an oil base selected from the group consisting of a mineral oil, synthetic oil, and mixtures thereof,

(b) at least one tetravalent to octavalent alcohol derivative having a density (d_{20}) of at least 0.900 and containing at least one quaternary carbon atom in its molecule, said alcohol being selected from the group consisting of mono -, di -, and tripentaerythritols, all the alcoholic groups of which are esterified by a carboxylic acid containing a straight or branched alkyl, aralkyl or aryl group having 6 to 18 carbon atoms,

(c) a sterically hindered phenol,

(d) at least one dialkyldithiocarbarnate compound having the formula



where Me is selected from the group consisting of B, V, Cr, Mo, W, Mn, Co, Ni, and mixtures thereof, and wherein each alkyl is an alkyl group having 4 to 8 carbon atoms,

(e) at least one compound selected from the group consisting of dialkylaryl -, monoalkyldiaryl -, trialkyl - and triarylphosphite, wherein the alkyl group is straight, branched or cyclic and contains 8 to 12 carbon atoms and the aryl group is a phenyl group substituted in the o- or p-position by an alkyl group having 1 to 6 carbon atoms, and

(f) a thiazole,

wherein said component (b) is present in an amount of from 0.1 to 40% by weight, said component (d) present in a weight amount of from 0.1 to 10%, said component (e) present in a weight amount of from 0.1 to 5%, said component (f) present in a weight amount of from 0.1 to 5%, wherein said percent weight amounts are based on the weight of component (a).

5,665,684

LUBRICATING OIL COMPOSITION

Katsuya Arai; Satoshi Asano, and Sadao Wada, all of Saitama-Ken, Japan, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

PCT No. PCT/US94/06001, § 371 Date Jan. 3, 1996, § 102(e) Date Jan. 3, 1996, PCT Pub. No. WO94/28094, PCT Pub. Date Dec. 8, 1994

PCT Filed May 27, 1994, Ser. No. 553,288

Claims priority, application Japan, May 27, 1993, 5-148669

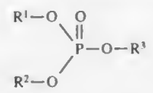
Int. Cl.[6] C10M *135/18;141/10*

U.S. Cl. 508—365 **5 Claims**

1. A lubricating oil composition which comprises a base oil containing:

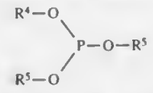
(A) from 0.01 to 0.8 wt %, based on the whole composition, of at least one compound selected from the group consisting of:

(a) phosphoric esters of the general formula



wherein R^1, R^2 and R^3 may be the same or different and each represents a hydrogen atom or a hydrocarbyl group having 3 to 23 carbon atoms, with the proviso that at least one of R^1 to R^3 is a hydrocarbyl group having 3 to 23 carbon atoms, and

(b) phosphorous esters of the general formula:



wherein R^4, R^5 and R^6 may be the same or different and each represents a hydrogen atom or a hydrocarbyl group having 3 to 23 carbon atoms, with the proviso that at least one of R^4 to R^6 is a hydrocarbyl group having 3 to 23 carbon atoms;

(B) from 50 to 2,000 ppm in terms of molybdenum, based on the whole composition of sulfurized oxymolybdenum dithiocarbamate having at least one hydrocarbyl group having 8 to 18 carbon atoms, and

(C) from 0.3 to 2.5% by weight, based on the whole composition, of a calcium salicylate having a total base number of 10 to 100.

5,665,685

GEAR AND TRANSMISSION LUBRICANT COMPOSITIONS OF IMPROVED SLUDGE-DISPERSIBILITY, FLUIDS COMPRISING THE SAME

Shoji Takigawa, Yawata, Japan, assignor to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Continuation of Ser. No. 253,053, Jun. 2, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,306

Int. Cl.[6] C10M *137/00;137/08;149/00*

U.S. Cl. 508—421 **24 Claims**

1. A gear or transmission lubricant composition, which comprises:

a major portion of mineral base oil, having a viscosity of 1~50 cSt. at 100° C. and having a viscosity index of at least 60; containing, based on the weight of the composition,

0.05–3% of (A) at least one phosphorous-containing metal-free organic compound, selected from the group consisting of compounds represented by any of the following formulae (1), (2), (3) and (4):

$$O{=}P(OR)_p(OH)_{3-p} \quad (1)$$

$$O{=}P(OR)_q(OH)_{3-p}.\ NH_rR'_{3-r} \quad (2)$$

$$P(OR)_q(OH)_{3-p} \quad (3)$$

$$P(OR)_q(OH)_{3-q}.\ NH_rR'_{3-r} \quad (4)$$

wherein p is an integer of 1~3; q and r are independently integers of 1 or 2; R is selected from the group consisting of saturated or unsaturated aliphatic hydrocarbyl groups containing at least 4 carbon atoms and alkyl-substituted aryl groups; R' is selected from the group consisting of saturated or unsaturated aliphatic hydrocarbyl groups containing at least 4 carbon atoms;

and 2–25% of (B) at least one oil-soluble copolymer containing 92~99% by weight of monomer units of (a) alkyl acrylate or methacrylate and 1~8% by weight of monomer units of (b) N,N-dialkylaminoalkyl acrylate or N,N-dialkylaminoalkyl methacrylate.

5,665,686

POLYOL ESTER COMPOSITIONS WITH UNCONVERTED HYDROXYL GROUPS

Richard Henry Schlosberg, Bridgewater, N.J.; Lavonda Denise Sherwood-Williams, Baton Rouge, La.; Haven S. Aldrich, Westfield, and John S. Szobota, Norristown, both of N.J., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Mar. 14, 1995, Ser. No. 403,366

Int. Cl.[6] C10M *105/38*

U.S. Cl. 508—485 **55 Claims**

1. A synthetic ester composition exhibiting thermal and oxidative stability which comprises the reaction product of:

a branched or linear alcohol having the general formula $R(OH)_n$, wherein R is an aliphatic or cyclo-aliphatic group having from about 2 to 20 carbon atoms and n is at least 2; and

at least one branched mono-carboxylic acid which has a carbon number in the range between about C_5 to C_{13}; wherein said synthetic ester composition has between 5–35% unconverted hydroxyl groups, based on the total amount of hydroxyl groups in said branched or linear alcohol.

5,665,687

CLEANING COMPOSITION CONTAINING LIPID GRAINS

Carine Khayat, la Varenne, and Didier Candau, Bievres, both of France, assignors to L'Oreal, Paris, France

Filed Jun. 19, 1995, Ser. No. 491,697

Claims priority, application France, Jun. 17, 1994, 94 07481

Int. Cl.[6] C11D *3/302;3/46;* **A61K** *47/44*

U.S. Cl. 510—136 **13 Claims**

1. An oil-in-water emulsion comprising oil, water, an emulsifying agent having a hydrophilic-lipophilic balance below or equal to about 12.5 and present in an emulsifying amount, and solid non-hydrophilic lipid grains consisting essentially of at least one lipid and having a melting point below 50° C., said grains incorporating a cleansing agent, and wherein said grains have an average diameter ranging from 50 to 2000 μm in the emulsion without the grains fusing with the oil, and are present in an amount sufficient to provide skin cleansing, scrubbing, and caring action.

5,665,688

PHOTORESIST STRIPPING COMPOSITION

Kenji Honda, Barrington; Donald F. Perry, Providence, and Taishih Maw, Cumberland, all of R.I., assignors to Olin Microelectronics Chemicals, Inc., Norwalk, Conn.

Filed Jan. 23, 1996, Ser. No. 590,010

Int. Cl.[6] C11D *7/26;7/32;7/50*

U.S. Cl. 510—178 **3 Claims**

1. A photoresist stripper composition comprising:

(a) from about 20 to about 70% by weight of a cyclic amide organic polar solvent having a dipole moment of more than 3.5;

(b) from about 70 to about 20% by weight of an alkanolamine compound; and

(c) from about 0.1 to about 10% by weight of 6,6',6"-(1,3,5-triazine-2,4,6-triyltriimino) tris(hexanoic acid); all percents based on the weight of the stripper composition.

5,665,689

CLEANING COMPOSITIONS COMPRISING MIXTURES OF PARTIALLY ESTERIFIED FULL ESTERIFIED AND NON-ESTERFIED ETHOXYLATED POLYHYDRIC ALCOHOLS AND N-ALKYL ALDONAMIDES

Patrick Durbut, Verviers, Belgium, assignor to Colgate-Palmolive Co., Piscataway, N.J.

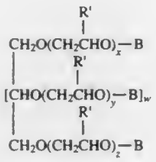
Filed Sep. 4, 1996, Ser. No. 708,379

Int. Cl.[6] C11D *17/00;1/74;3/32*

U.S. Cl. 510—365 **9 Claims**

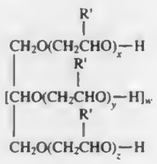
1. A duty liquid composition consisting essentially of approximately by weight:

(a) 0.5 to 40% of a partially esterified ethoxylated glycerol surfactant, wherein said partially esterified ethoxylated glycerol surfactant is a mixture of a fully esterified ethoxylated polyhydric alcohol, a partially esterified ethoxylated polyhydric alcohol and a nonesterified ethoxylated polyhydric alcohol, of the formulas



Formula (I)

and



Formula (II)

wherein w equals one to four, B is selected from the group consisting of hydrogen or a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms wherein at least one of the B groups is represented by said



and R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the ratio of monoester/diester/triester is 45 to 90/5 to 40/1 to 20, wherein the ratio of Formula (I) to Formula (II) is a value between 3 to 0.02;

(b) 0.1 to 10% of a N-alkyl aldonamide surfactant;

(c) 0.5 to 8% of at least one solubilizer; and

(d) the balance being water.

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5,665,690
LOW TOXICITY SOLVENT COMPOSITION

Joseph A. Lucas, Kent, and Zeljko E. Halar, Tacoma, both of Wash., assignors to Inland Technology Incorporated, Tacoma, Wash.

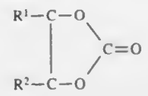
Division of Ser. No. 109,693, Aug. 20, 1993, Pat. No. 5,449,474, which is a continuation of Ser. No. 839,854, Feb. 21, 1992, abandoned. This application Aug. 30, 1995, Ser. No. 521,610

Int. Cl.[6] C09D *9/00;* **C11D** *7/26;7/50;* **C23G** *5/032*

U.S. Cl. 510—407 **18 Claims**

1. A low toxicity, homogeneous, single phase solvent composition consisting essentially of:

(a) an allcyclic carbonate having the formula



wherein R_1 and R_2 are each selected from the group consisting of hydrogen, methyl, or ethyl, in an amount sufficient to provide said composition with a polar solvent component;

(b) a terpene in an amount sufficient to provide said composition with a nonpolar solvent component; and

(c) a glycol ether or glycol ether acetate having the formula

$$(R_4—O)_{n2}—(R_3—O)_{n1}—R_5$$

wherein n_1 and n_2 are the numerals 1 through 3, R_3 is a hydrocarbon radical having 2 to 3 carbon atoms, R_4 is a hydrogen or hydrocarbon radical having 1 to 4 carbon atoms, and R_5 is a hydrogen or an acetate radical, in an amount sufficient to couple said alicyclic carbonate and said terpene in a homogeneous single-phase solution;

said solvent composition further being substantially free of N-methyl pyrrolidone.

5,665,691
PROCESS FOR MAKING A LOW DENSITY DETERGENT COMPOSITION BY AGGLOMERATION WITH A HYDRATED SALT

Paul Amatt France; Larry Rudolph Genskow, both of West Chester, Ohio, and Wayne Edward Belmesch, Covington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 4, 1995, Ser. No. 539,036

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—444 **4 Claims**

1. A process for preparing a low density detergent composition comprising the steps of:

(a) agglomerating a detergent surfactant paste and dry starting detergent material in a high speed mixer to obtain detergent agglomerates, wherein the mean residence time of said detergent agglomerates in said high speed mixer is in a range from about 2 seconds to about 45 seconds, said dry starting detergent material includes from about 3% to about 20% of unpuffed borax pentahydrate that has not been dried, sodium carbonate and phosphate;

(b) mixing said detergent agglomerates in a moderate speed mixer to further agglomerate said detergent agglomerates, wherein the mean residence time of said detergent agglomerates in said moderate speed mixer is in range from about 0.5 minutes to about 15 minutes; and

(c) drying said detergent agglomerates so as to form said detergent composition having a surfactant level of from about 20% to about 55% and having a density of from about 300 g/l to about 450 g/l.

5,665,692
PROCESS FOR PRODUCING DETERGENT AGGLOMERATES IN WHICH PARTICLE SIZE IS CONTROLLED

George John Kaminsky, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 387,956, Feb. 13, 1995, abandoned. This application Jul. 25, 1996, Ser. No. 682,339

Int. Cl.[6] C11D *11/00;1/37;3/10*

U.S. Cl. 510—444 **12 Claims**

1. A process for preparing detergent agglomerates comprising the steps of:

(a) inputting from about 5% to about 70% by weight of a detergency builder into a high speed mixer/densifier;

(b) charging a viscous surfactant paste into said high speed mixer/densifier, wherein said surfactant paste consisting essentially of, by weight of said surfactant paste, from about 70% to 95% of a mixture of alkyl sulfate and linear alkylbenzene sulfonate surfactants in a weight ratio of from about 1:1 to about 5:1 and from about 5% to about 30% of water;

(c) agglomerating said surfactant paste and said builder by treating said surfactant paste and said builder initially in said high speed mixer/densifier and subsequently in a moderate speed mixer/densifier so as to form detergent agglomerates having a particle size range of from about 300 to about 700 microns and undersized agglomerates having a particle size below said particle size range;

(d) regulating said detergent agglomerates within said particle size range by increasing the amount of sodium carbonate in said surfactant paste from about 0.5% to about 1.5%, by weight of said surfactant paste, to reduce the particle size of said detergent agglomerates; and

(e) recycling said undersized agglomerates having a particle size below said particle size range which exit from said moderate speed mixer/densifier back into said high speed mixer/densifier.

5,665,693
USE OF CARBOXYL-CONTAINING REACTION PRODUCTS OF PROTEINS OR PROTEIN HYDROLYZATES IN DETERGENTS AND CLEANERS

Matthias Kroner, Elsenberg; Gunnar Schornick, Neuleiningen; Richard Baur, Mutterstadt; Alexander Kud, Eppelsheim, and Volker Schwendemann, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00982, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/24254, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 29, 1994, Ser. No. 530,238

Claims priority, application Germany, Apr. 10, 1993, 43 11 854.2

Int. Cl.[6] C11D *3/37*

U.S. Cl. 510—476 **2 Claims**

1. A reduced-phosphate or phosphate-free detergent or cleaner comprising carboxyl-containing reaction products obtained by reaction of

(a) at least one monomer selected from the group consisting of maleic anhydride, maleic acid and fumaric acid, and

(b) proteins or protein hydrolyzates not hydrolyzed further than the dipeptide stage,

at temperatures from 120° to 300° C. under superatmospheric pressure in the absence of free-radical initiators, an aqueous medium and an organic solvent to form reaction products having an acid of at least 1.5 mmol of NaOH/g of reaction product.

5,665,694
BLOCK DETERGENT CONTAINING NITRILOTRIACETIC ACID

Thomas Whitner Backes, Chesterfiled; Sean Douglas Dingman, St. Louis, and Sheldon Philip Verrett, Olivette, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 278,770, Jul. 22, 1994, Pat. No. 5,425,895. This application Mar. 7, 1995, Ser. No. 399,867

Int. Cl.[6] C11D *17/02;7/33*

U.S. Cl. 510—480 **34 Claims**

1. A solid, block detergent comprising:

a. from about 25% to about 60% by weight of the formulation of an alkali metal salt of nitrilotriacetic acid;

b. from about 0.1% to about 10% by weight of the formulation of acid;

c. from about 5% to about 40% by weight of the formulation of a first alkali metal containing compound selected from the group consisting of alkali metal hydroxides, alkali metal silicates and mixtures of alkali metal hydroxides and silicates, wherein when the alkali metal containing compound is an alkali metal hydroxide or a mixture containing an alkali metal hydroxide, the alkali metal containing compound must include from about 0.1% to about 20% by weight of the formulation potassium hydroxide; and

d. from about 5% to about 25% by weight of the formulation of a second alkali metal containing compound selected from the group consisting of alkali metal carbonates, alkali metal sulfates and mixtures of alkali metal carbonates and alkali metal sulfates.

5,665,695
SURFACTANT COMPOSITION AND METHOD OF MAKING THE SAME

Richard J. Kaiser, Bethlehem, Pa., assignor to Binney & Smith Inc., Easton, Pa.

Division of Ser. No. 404,362, Mar. 15, 1995, Pat. No. 5,599,933, which is a continuation of Ser. No. 110,877, Aug. 24, 1993, abandoned, which is a division of Ser. No. 839,330, Feb. 20, 1992, Pat. No. 5,262,535. This application May 30, 1995, Ser. No. 453,262

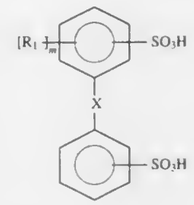
Int. Cl.[6] C11D *1/24*

U.S. Cl. 510—495 **36 Claims**

2. A cleansing composition comprising

(a) from about 1.0% to about 50% by weight of the reaction product of:

1) a compound of the formula



wherein m is 2, at least one R_1 is a straight or branched, unsaturated non-aromatic hydrocarbon of 4–18 carbon atoms and the other R_1 is a straight or branched, saturated or unsaturated non-aromatic hydrocarbon of 4–18 carbon atoms; and x is O; and

2) an amine selected from the group consisting of primary, secondary, tertiary, and higher amines, which are liquid at room temperature, wherein said higher amines are combinations of primary, secondary, and tertiary amines; and

(b) a carrier; wherein said reaction product is produced by reacting compound 1 and amine 2 until a pH of about 7 to about 10 is obtained.

5,665,696
MULTI-SUBSTITUTED TETRAHYDROUFURANS AND TETRAHYDROPYRANS

Paul David Noire, New York City, N.Y., assignor to Givaudan-Roure (International) SA, Vernier-Geneve, Switzerland

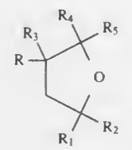
Division of Ser. No. 363,685, Dec. 23, 1994, Pat. No. 5,510,326. This application Dec. 22, 1995, Ser. No. 577,487

Int. Cl.[6] A61K *7/46*

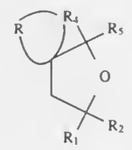
U.S. Cl. 512—11 **7 Claims**

1. A compound selected from the group consisting of tetrahydrofurans of structures 1 or 2, or tetrahydropyrans of structure 3:

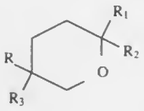
1



2



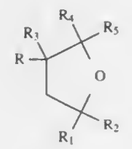
3



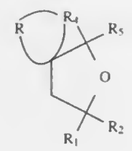
wherein R is acyclic, where acyclic refers to a chain of at least four carbon atoms substituted with at least three methyl groups in the chain, mono carbocyclic, where carbocyclic refers to a ring of 5–8 carbon atoms, and with at least two methyl groups on the ring, or bi-carbocyclic where bi-carbocyclic refers to two carbon rings, each ring having between 5–8 carbon atoms fused together, substituted with at least two methyl groups, and where R_2=CH_3, or higher alkyl group having 2 to 6 carbon atoms, R_2H, C_3, or higher alkyl group having 2 to 6 carbon atoms, R_3H, or CH_3, and R_4 and R_5=H, CH_3, or higher alkyl group having 2 to 6 carbon atoms.

3. An odorant composition, which includes a compound selected from the group consisting of tetrahydrofurans of structures 1 or 2, or tetrahydropyrans of structure 3:

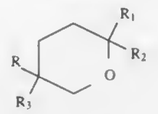
1



2



-continued



wherein R is acyclic, where acyclic refers to a chain of at least four carbon atoms substituted with at least three methyl groups in the chain, mono carbocyclic, where carbocyclic refers to a ring of 5–8 carbon atoms, and with at least two methyl groups on the ring, or bi-carbocyclic where bi-carbocyclic refers to two carbon rings, each ring having between 5–8 carbon atoms fused together, substituted with at least two methyl groups, and where R_1=CH_3, or higher alkyl group having 2 to 6 carbon atoms, R_2=H, CH_3, or higher alkyl group having 2 to 6 carbon atoms. R_3=H, or CH_3, and R_4 and R_5=H, CH_3, or higher alkyl group having 2 to 6 carbon atoms.

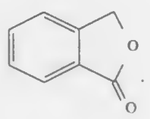
5,665,697

USE OF 1 (3H)-ISOBENZOFURANONE IN PERFUMERY

Richard M. Boden, Ocean, and William L. Schreiber, Freehold, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 18, 1996, Ser. No. 733,388
Int. Cl.[6] A61K *7/46*
U.S. Cl. 512—13 **2 Claims**

1. A cologne consisting essentially of water, ethanol and an aroma imparting quantity of the 1(3H)-isobenzofuranone having the structure:



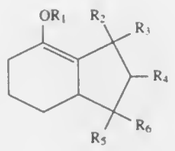
5,665,698

METHYL SUBSTITUTED TETRAHYDROINDANE ALKYL ENOL ETHERS, PERFUMERY USES THEREOF, PROCESSES FOR PREPARING SAME, AND PROCESS INTERMEDIATES

Anubhav P. S. Narula; James Joseph Koestler, both of Hazlet, N.J.; Peter J. Hartong, AN Naarden, Netherlands; Marie R. Hanna, Keyport, and Charles E. J. Beck, Summit, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 6, 1996, Ser. No. 709,506
Int. Cl.[6] A61K *7/46*
U.S. Cl. 512—19 **11 Claims**

1. A mixture of compounds defined according to structure:



wherein R_1 is selected from the group consisting of methyl and ethyl; wherein R_4 represents methyl or hydrogen; wherein R_2, R_3, R_5 and R_6 each represents methyl or ethyl with the provisos that:

(1) at least three of R_2, R_3, R_5 and R_6 represent methyl; and

(2) when each of R_2, R_3, R_5 and R_6 is methyl, then R_4 is methyl.

4. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of intimately admixing with a perfume base, a cologne base or a perfumed article base an aroma augmenting or enhancing quantity of the composition of matter defined according to claim 1.

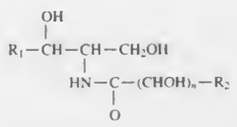
5,665,699

USE OF CERAMIDES AS THICKENERS

Michel Philippe, Wissous; Didier Semeria, Courtry; Claude Mahieu, Paris, all of France, and Alain Ribier, deceased, late of Paris, France, by Roger Ribier, executor, assignors to L'Oreal, Paris, France

Filed Jan. 22, 1996, Ser. No. 589,461
Claims priority, application France, Jan. 20, 1995, 95-00660
Int. Cl.[6] A61K *7/46*
U.S. Cl. 512—27 **23 Claims**

1. A method of thickening a medium comprising the step of including in said medium to be thickened an effective amount of at least one compound of formula (I) as an agent for thickening said medium:



(I)

wherein R_1 represents a saturated or unsaturated linear or branched hydrocarbon radical containing 9 to 25 carbon atoms, R_2 represents a saturated or unsaturated linear or branched hydrocarbon radical containing 5 to 29 carbon atoms, and n is 0 or 1.

5,665,700

PHARMACEUTICAL FORMULATIONS

Young W. Cho, Freemantle, Australia; Michael John Flynn, and Thomas Smith Shepherd, both of Surrey, England, assignors to Skua Investments Limited, Douglas, Isle of Man

Continuation of Ser. No. 927,394, Nov. 6, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,293
Int. Cl.[6] A61K *38/02;9/107*
U.S. Cl. 514—2 **46 Claims**

1. A water-in-oil pharmaceutical formulation for oral or rectal administration comprising a hydrophilic phase dispersed in a lipophilic phase to form an emulsion,

wherein said hydrophilic phase comprises (a) water, (b) a biologically active material and (c) in association with the biologically active material, lecithin or a lecithin precursor,

wherein said lipophilic phase comprises (a) one or more oils, (b) a phospholipid and (c) a lipophilic surfactant,

and wherein an emulsion is formed from said hydrophilic phase dispersed in said lipophilic phase.

5,665,701

PLATELET MEMBRANE GLYCOPROTEIN F11 AND POLYPEPTIDE FRAGMENTS THEREOF

Elizabeth H. Kornecki, and Yigal H. Ehrlich, both of Staten Island, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Nov. 17, 1994, Ser. No. 342,449
Int. Cl.[6] A61K *38/16;* **C07K** *14/705*
U.S. Cl. 514—8 **15 Claims**

1. A purified platelet membrane glycoprotein designated F11.

5,665,702

IONIC MOLECULAR CONJUGATES OF N-ACYLATED DERIVATIVES OF POLY(2-AMINO-2-DEOXY-D-GLUCOSE) AND POLYPEPTIDES

Shalaby W. Shalaby, Anderson, S.C.; Steven A. Jackson, Holliston, Mass.; Francis Ignatious, Milford, Mass., and Jacques-Pierre Moreau, Upton, Mass., assignors to Biomeasure Incorporated, Milford, Mass.

Filed Jun. 6, 1995, Ser. No. 468,947
Int. Cl.[6] A61K *38/12*
U.S. Cl. 514—9 **14 Claims**

1. A copolymer comprising an N-acylated derivative of poly(2-amino-2-deoxy-D-glucose), wherein between 1 and 50 percent of the free amines of said poly(2-amino-2-deoxy-D-glucose) are acylated with a first acyl group, said first acyl group is COE_1 where E_1 is selected from the group consisting of C_{3-33} carboxyalkyl, C_{3-33} carboxyalkenyl, C_{7-39} carboxyarylalkyl, and C_{9-39} carboxyarylalkenyl, between 50 and 99 percent of the free amines of said poly(2-amino-2-deoxy-D-glucose) are acylated with a second acyl group, said second acyl group is COE_2 where E_2 is selected from the group consisting of C_{1-30} alkyl, C_{2-30} alkenyl, C_{6-37} arylalkyl, and C_{8-37} arylalkenyl, provided at least one of the free amines of said poly(2-amino-2-deoxy-D-glucose) is acylated with said first acyl group, and the hydroxy groups of said poly(2-amino-2-deoxy-D-glucose) are free or up to 30 percent of them are acylated with said first acyl group or said second acyl group.

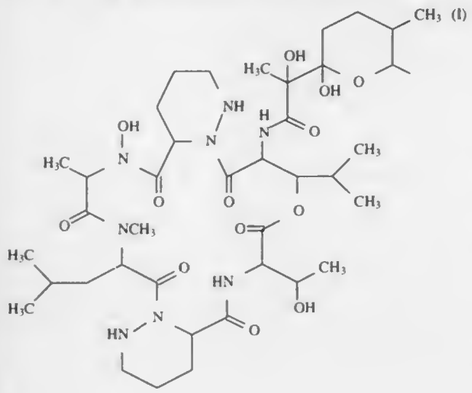
5,665,703

GE3 COMPOUND

Tamio Mizukami; Yasushi Sakai; Tetsuo Yoshida; Tsutomu Agatsuma, all of Machida; Keiko Ochiai, Ebina, and Shiro Akinaga, Sunto-gun, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

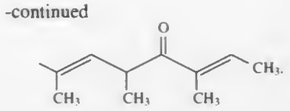
Filed Dec. 5, 1995, Ser. No. 567,529
Claims priority, application Japan, Apr. 7, 1994, 6-069760
Int. Cl.[6] C07K *11/02*
U.S. Cl. 514—11 **2 Claims**

1. GE3 compound represented by the formula (I):



(I)

-continued



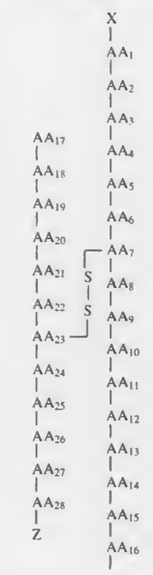
5,665,704

RECEPTOR SPECIFIC ATRIAL NATRIURETIC PEPTIDES

David Lowe, Brisbane; Brian C. Cunningham, Piedmont; David Oare, Belmont; Robert S. McDowell, San Francisco, and John Burnier, Pacifica, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 362,552, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 152,994, Nov. 12, 1993. This application May 25, 1995, Ser. No. 451,240
Int. Cl.[6] C07K *14/58;* **A61K** *38/00*
U.S. Cl. 514—12 **14 Claims**

1. A compound represented by Formula (I)



(I)

where

X is selected from the group consisting of H, C_1–C_6alkanoyl, Ser-Pro-Lys-, Thr-Ala-Pro-Arg-(SEQ ID NO: 1) and C_1–C_6alkanoyl-Thr-Ala-Pro-Arg-(SEQ ID NO: 1);

AA_1 is absent or is selected from the group consisting of Ser, Met, Gly, Asp, Ala, Tyr and His;

AA_2 is absent or is selected from the group consisting of Leu, Asp, Met, Val, Ser, Ala, Phe, Pro and Lys;

AA_3 is absent or is selected from the group consisting of Cys, Glu, Ser, Gln, His, Gly, Arg and Asp;

AA_4 is absent or is selected from the group consisting of Arg, Gly, Ala, Asp, Met, Leu, Tyr and Pro;

AA_5 is absent or is selected from the group consisting of Ser, Cys and Asp;

AA_6 is absent or is selected from the group consisting of Ser, Gly and Glu;

AA_7 is selected from the group consisting of Cys, N-methyl-Cys, D-Cys and Pen;

AA_8 is selected from the group consisting of Phe, N-methyl-Phe, Trimethylphenyl-Ala, halo(F, Cl, Br and I)phenyl-Ala, Trifluoromethylphenyl-Ala, Tyr, O-methyl-Tyr, Cha,

β-napthyl-Ala, α-napthyl-Ala, biphenyl-Ala, diphenyl-Ala, D-Ala, dibenzyl-Ala, florenyl-Ala, adamantyl-Ala, and α-napthyloxy-Ala;
AA_9 is selected from the group consisting of Gly, Arg, Thr, Val, Asp, Ala, D-Ala, Pro and Glu;
AA_{10} is selected from the group consisting of Gly, Arg, Ser, Ala, His, Pro and Lys;
AA_{11} is selected from the group consisting of Arg, Lys, N-methyl-Arg, Asp, Ser and Pro;
AA_{12} is selected from the group consisting of Met, Ile, D-Leu, Nle and Leu;
AA_{13} is selected from the group consisting of Asp and Glu;
AA_{14} is selected from the group consisting of Arg, N-methyl-Arg, Pro and Ser;
AA_{15} is selected from the group consisting of Ile, N-Methyl-Ile and Leu;
AA_{16} is selected from the group consisting of Gly, Tyr, Phe, Ser, Pro and a positively charged amino acid residue selected from Orn, Har, Lys, ρ-amidinophenyl-Ala and Arg;
AA_{17} is selected from the group consisting of Ala, Ser, N-methyl-Ala, and Pro;
AA_{18} is selected from the group consisting of Gln, Ser and homo-Cys;
AA_{19} is Ser;
AA_{20} is selected from the group consisting of Gly and Ala;
AA_{21} is Leu;
AA_{22} is selected from the group consisting of Gly and Ala;
AA_{23} is Cys;
AA_{24} is Asn;
AA_{25} is selected from the group consisting of Ser and Val;
AA_{26} is selected from the group consisting of Phe, D-Phe, N-methyl-Phe and Leu;
AA_{27} is selected from the group consisting of Arg, Orn, Har, Lys, ρ-amidinophenyl-Ala and Arg-Arg;
AA_{28} is selected from the group consisting of Tyr, Arg, Orn, Har, Lys, ρ-amidinophenyl-Ala, and homoCys; and
Z is selected from the group consisting of OH and NR^1R^2 where R^1 and R^2 are independently selected from the group consisting of
H, C_1–C_4alkyl, C_6–C_{12}aryl and C_6–C_{12}aryl-C_1–C_6alkyl; and where the amide bond (—C(=O)—NH—) bonding residues AA_7 and AA_8 may optionally be replaced with an amide isostere selected from the group consisting of
—CH_2—NH—,
—CH_2—S—,
—CH_2—$S(O)_n$—, where n is 1 or 2,
—CH_2—CH_2—,
—CH=CH— (E or Z),
—C(=O)—CH_2—,
—CH(CN)—NH—,
—C(OH)—CH_2—, and
—O—C(=O)—NH—
provided that at least two of AA_9, AA_{11}, and AA_{16} are selected according to the following scheme
AA_9 is Arg, Thr or Glu;
AA_{11} is Asp, Ser or Pro; and
AA_{16} is a positively charged amino acid residue selected from the group consisting of
Arg, homoArg, Lys, Orn, and ρ-amidinophenyl-Ala; and pharmaceutically acceptable salts thereof.

5,665,705

GLUCAGON ANALOGS WITH SERINE REPLACEMENTS

Robert B. Merrifield, Cresskill, N.J., and Cecilia G. Unson, New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 255,558, Jun. 8, 1994, Pat. No. 5,480,867, which is a continuation of Ser. No. 175,137, Dec. 29, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,334

Int. Cl.[6] A61K *38/26;* **C07K** *14/00;14/605*

U.S. Cl. 514—12 **30 Claims**

1. A glucagon analog peptide wherein
(a) histidine at the 1-position is either present or absent;
(b) the aspartic acid residue at the 9-position is either absent or replaced with another amino acid residue;
(c) the serine residue at the 11-position is optionally replaced with an aliphatic amino acid residue;
(d) the serine residue at the 16-position is replaced with an aliphatic amino acid residue;
(e) the aspartic acid residue at the 21-position is optionally replaced with an aliphatic amino acid residue; and
(f) the carboxy terminus is optionally amidated;
said analog being further characterized by a relative membrane receptor binding activity compared to glucagon of at least about 40%, an inhibition index less than 10 and an adenylate cyclase activity less than 1% of that of glucagon; and pharmaceutically acceptable acid addition salts thereof wherein said analog is selected from the group consisting of wherein said analog is selected from the group consisting of des-His ^{1}Nle^{9}Ala^{16} glucagon (SEQ ID NO: 16), Nle^{9}Ala^{11}Gln^{16} glucagon (SEQ ID NO: 17), Nle^{9}Ala^{11}Ala^{16} glucagon (SEQ ID NO: 18) or the amide thereof (SEQ ID NO: 9), des-His^{1}Nle^{9}Ala^{11}Ala^{16} glucagon (SEQ ID NO: 19), des-His^{1}Trp^{9}Ala^{11}Ala^{16} glucagon (SEQ ID NO: 20) or the amide thereof (SEQ ID NO: 11), des-His^{1}Leu^{9}Ala^{11}Ala^{16} glucagon (SEQ ID NO: 21) or the amide thereof (SEQ ID NO: 12), des-His^{1}Phe^{9}Ala^{11}Ala^{16} glucagon (SEQ ID NO: 22), des-His^{1}Nle^{9}Ala^{11}Gln^{16} glucagon (SEQ ID NO: 23), and des-His^{1}Glu^{9}Ala^{11}Ala^{16}Glu^{21} glucagon (SEQ ID NO: 24).

5,665,706

NERVE GROWTH INDUCTION, STIMULATION AND MAINTENANCE AND ENZYME POTENTIATION

John Paul DaVanzo, Greenville, and Joseph West Paul, Jr., Ayden, both of N.C., assignors to East Carolina University, Greenville, N.C.

Continuation of Ser. No. 339,886, Nov. 14, 1994, abandoned, which is a division of Ser. No. 998,070, Dec. 14, 1992, abandoned, which is a division of Ser. No. 681,310, Apr. 8, 1991, Pat. No. 5,194,426, which is a division of Ser. No. 253,167, Oct. 4, 1988, Pat. No. 5,023,238. This application Oct. 12, 1995, Ser. No. 545,043

Int. Cl.[6] A61K *38/00;38/27*

U.S. Cl. 514—21 **40 Claims**

1. A method of stimulating nerve growth in a host requiring nerve growth stimulation comprising administering a nerve growth stimulating effective amount of a composition consisting essentially of nerve growth factor and 2-amino-1,1,3-tricyano-1-propene.

5,665,707

TREATMENT FOR TOXOPLASMOSIS WITH A COMPOSITION COMPRISING A LINCOSAMIDE AND A SPIROPIPERIDYL DERIVATIVE OF RIFAMYCIK S

Jack S. Remington, Menlo Park, and Fausto G. Araujo, Palo Alto, both of Calif., assignors to Palo Alto Medical Foundation, Palo Alto, Calif.

Continuation of Ser. No. 203,539, Feb. 28, 1994, Pat. No. 5,529,994, which is a continuation-in-part of Ser. No. 57,288, May 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,721

Int. Cl.[6] A61K *31/70;31/33*

U.S. Cl. 514—24 **7 Claims**

1. A method of reducing the severity of toxoplasmosis resulting from infection of a mammalian host with *Toxoplasma gondii*, which method comprises:
administering to a host in need of said treatment, either after infection or before exposure to said infection, a therapeutically effective amount of a lincosamide in combination with a therapeutically effective amount of a compound that is a spiropiperidyl derivative of rifamycin S, wherein said derivative comprises an imidazole ring that includes carbons at positions 3 and 4 of the rifamycin ring, the carbon at position 2 of said imidazole ring also being a ring carbon at position 4 of a piperidine ring system, thereby forming a spiropiperidyl ring system, said spiropiperidyl ring system optionally comprising a lower hydrocarbon substituent on the nitrogen of said piperidine.

5,665,708

PROCESS AND ANTIPARASITIC INTERMEDIATES FOR DORAMECTIN

Constantine Sklavounos, Waterford; Thomas Charles Crawford, Ledyard; Neil Demers, Clinton, all of Conn.; Stephen Paul Gibson, Westbrook, England, and Charles William Murtiashaw, deceased, late of North Stonington, Conn., by Martha Murtiashaw, Administratrix, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/IB94/00283, § 371 Date Mar. 8, 1996, § 102(e) Date Mar. 8, 1996, PCT Pub. No. WO95/09863, PCT Pub. Date Apr. 13, 1995

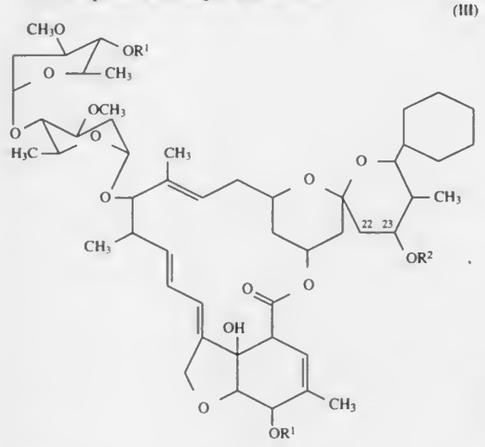
Continuation of Ser. No. 131,812, Oct. 5, 1993, abandoned. This PCT application Sep. 19, 1994, Ser. No. 617,740

Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—30 **23 Claims**

1. A compound according to formula (III):

(III)



wherein:
R^1 is (C_2–C_5)alkanoyl or aryloxyacetyl; and
R^2 is hydrogen or aryloxythiocarbonyl.

5,665,709

POLYSUBSTITUTED BENZIMIDAZOLE NUCLEOSIDES AS ANTIVIRAL AGENTS

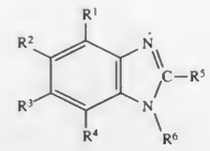
Leroy B. Townsend, and John C. Drach, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 50,470, May 3, 1993, Pat. No. 5,574,058, which is a continuation-in-part of Ser. No. 607,899, Nov. 1, 1990, Pat. No. 5,248,672. This application Jun. 7, 1995, Ser. No. 472,982

Int. Cl.[6] A61K *31/70;* **C07H** *19/23*

U.S. Cl. 514—43 **36 Claims**

1. An antiviral compound selected from the group consisting of compounds having the following formula, and pharmaceutically acceptable salts thereof:



wherein:
R_1 is H, R_2 is B, R_3 is Br, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 57 in the text);
R_1 is H, R_2 is F, R_3 is F, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl) denoted compound 65 in the text);
R_1 is H, R_2 is Cl, R_3 is F, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 65a in the text);
R_1 is H, R_2 is H, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 67 in the text);
R_1 is Cl, R_2 is H, R_3 is Cl, R_4 is H, R_5 is CF_3 and R_6 is β-D-ribofuranosyl (denoted compound 81b in the text);
R_1 is Cl, R_2 is H, R_3 is CF_3, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 81c in the text);
R_1 is H, R_2 is Br, R_3 is H, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 87 in the text);
R_1 is H, R_2 is H, R_3 is Br, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 90 in the text);
R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 92 in the text); and
R_1 is Br, R_2 is Br, R_3 is Br, R_4 is H, R_5 is Cl and R_6 is β-D-ribofuranosyl (denoted compound 103 in the text).

5,665,710

METHOD OF MAKING LIPOSOMAL OLIGODEOXYNUCLEOTIDE COMPOSITIONS

Aquilur Rahman, Gaithersburg, Md.; Alain Thierry, Washington, D.C., and Anatoly Dritschilo, Bethesda, Md., assignors to Georgetown University, Washington, D.C.

Continuation of Ser. No. 28,593, Mar. 8, 1993, abandoned, which is a continuation of Ser. No. 516,988, Apr. 30, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 165,000

Int. Cl.[6] C07H *1/00;21/00*

U.S. Cl. 514—44 **3 Claims**

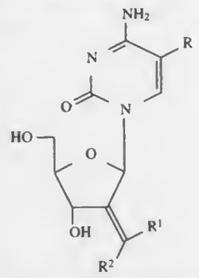
1. A method of encapsulating an oligodeoxynucleotide or an analog thereof in liposomes, which comprises:
a) mixing lipids for constituting said liposomes, and drying said lipids under reduced pressure;
b) adding to said dried lipids a solution comprising said oligodeoxynucleotide or said analog thereof, wherein said analog is a methylphosphonate, phosphorothioate or phosphoramidate analog, at a ratio of about 1–3 μl of oligonucleotide-containing solution per mg of lipid,
c) incubating said lipids and said solution for about 4 to 24 hours, and then mixing said lipids and said solution, whereby liposomes are formed; and
d) separating said liposomes from oligodeoxynucleotide or oligodeoxynucleotide analog that is not encapsulated in said liposomes,
such that said method incorporates at least about 45% of said oligodeoxynucleotide or said analog thereof into said isolated liposomes.

5,665,711
ANTITUMOR COMPOSITION FOR ORAL ADMINISTRATION

Atsushi Sakai; Kyouichi Hirotsu; Hirotsugu Tada, and Toshiyuki Shibata, all of Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Dec. 12, 1995, Ser. No. 570,978
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—49 **5 Claims**

1. An antitumor composition for oral administration, comprising an effective amount of a 2'-deoxy-2'-methylidenecytidine compound of the formula



(I)

wherein R is a hydrogen or a halogen, and R^1 and R^2 are the same or different and each is a hydrogen, a halogen or an alkyl having 1 to 4 carbon atoms, an acid addition salt thereof or a hydrate thereof, and a sucrose ester of fatty acid(s), wherein said tumor is sensitive to treatment with said compound.

5,665,712

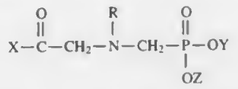
Patent Not Issued For This Number

5,665,713
PHARMACEUTICAL COMPOSITION FOR INHIBITING THE GROWTH OF VIRUSES AND CANCERS

James Berger Camden, West Chester, Ohio, assignor to Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 12, 1995, Ser. No. 420,940
Int. Cl.[6] A61K *31/66*
U.S. Cl. 514—76 **18 Claims**

1. A method of treating cancer in warm blooded mammals comprising administering a safe and effective amount of a pharmaceutical composition comprising a N-phosphonoglycine derivatives of the formula:



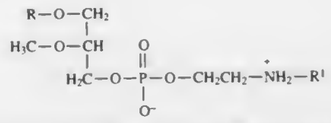
wherein X is selected from the group consisting of hydroxyl, alkoxy or chloroxy up to 12 carbon atoms; lower alkenoxy, cyclohexyloxy, morpholino, pyrrlidinyl, piperidino and NHR'; Y and Z each independently selected from hydrogen and lower alkyl; and R is selected from the group consisting of hydrogen, formyl, acetyl, benzoyl, nitrobenzoyl and chlorinated benzoyl; and R' is selected from the group consisting of hydrogen, lower alkyl and lower alkenyl, cyclohexyl, phenalkyl of up to 8 carbon atoms, phenyl, chlorinated phenyl and anisyl; and certain salts of these compounds, which salts are selected from the group consisting of the Group I and II metals having an atomic number of up to 30, hydrochloride, salicylate, acetate, pyridine, ammonium, lower aliphatic hydrocarbon amine, lower alkanol amine and aniline.

5,665,714
N-SUBSTITUTED GLYCEROPHOSPHOETHANOLAMINES

Friedrich Paltauf; Albin Hermetter, both of Graz, and Rudolf Franzmair, Linz, all of Austria, assignors to Clarion Pharmaceuticals Inc., Madison, Wis.

Filed Dec. 3, 1996, Ser. No. 758,934
Int. Cl.[6] A61K *31/415;* **C07D** *233/16;403/04*
U.S. Cl. 514—94 **30 Claims**

1. An N-substituted glycerophosphoethanolamine of the formula:



(I)

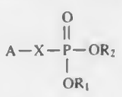
and the isomeric forms thereof; wherein R represents a substituted or unsubstituted straight or branched chain C_{14-20} alkyl or alkenyl, said substituent being one or more of halo, C_{1-3} alkoxy or cyano, provided that a double bond of said alkenyl does not involve the carbon atom of said alkenyl that is bonded to the oxygen of the glyceryl backbone; and R^1 is 3-(2-imidazolinyl)-2-imidazolinyl or 2-imidazolinyl; and the pharmaceutically acceptable salts thereof.

5,665,715
FARNESYL:PROTEIN TRANSFERASE INHIBITORS AS ANTICANCER AGENTS

David M. Stemerick, Fairfield, Ohio, assignor to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 148,188, Nov. 8, 1993, Pat. No. 5,463,181, which is a continuation of Ser. No. 21,411, Feb. 23, 1993, abandoned. This application Jul. 28, 1995, Ser. No. 508,958
Int. Cl.[6] A61K *31/66*
U.S. Cl. 514—125 **2 Claims**

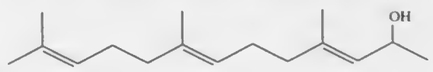
1. A method of treating a patient afflicted with a neoplastic disease state selected from the group consisting of leukemia, lung carcinoma, colon carcinoma, and pancreas carcinoma comprising the administration thereto of a therapeutically effective antineoplastic amount of a compound of the formula



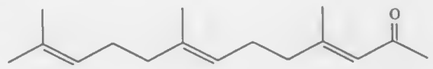
wherein X is CCl_2 or CF_2,

R_1 and R_2 are each independently H; C_1-C_4 alkyl; $(CH_2)_n$-Z, wherein n is the integer 0,1,2,3 or 4 and Z is phenyl or naphthyl, unsubstituted or substituted with from 1 to 3 substituents selected from the group consisting of C_1-C_4 alkyl, C_1-C_4 alkoxy, halogen, CF_3, OCF_3, OH, CN, NO_2 and NH_2; or a pharmaceutically acceptable cation, and

A is a radical selected from the group consisting of



and

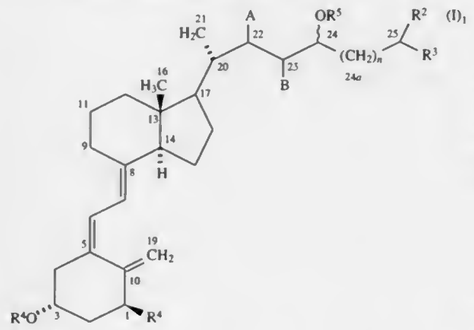


5,665,716
24-HOMO VITAMIN D DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND PHARMACEUTICAL PREPARATIONS OBTAINED THEREFROM

Gerald Kirsch; Günter Neef; Katicia Schwarz; Matthias Bräutigam; Ruth Thieroff-Ekerdt, and Petra Rach, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Oct. 2, 1990, Ser. No. 592,017
Claims priority, application Germany, Oct. 2, 1989, 39 33 034.6
Int. Cl.[6] A61K *31/59;* **C07C** *401/00*
U.S. Cl. 514—167 **10 Claims**

1. A 24-homo vitamin D derivative of formula I



(I)

in which

R^1 is hydrogen, hydroxy, alkanoyloxy of 1 to 8 carbon atoms or benzoyloxy,

R^2 and R^3, independently of one another, each is alkyl of 1 to 4 carbon atoms, or trifluoromethyl or together form a saturated carbocyclic ring of 3 to 9 carbon atoms formed with carbon atom 25,

R^4 and R^5, independently of one another, each is hydrogen, alkanoyl of 1 to 8 carbon atoms or benzoyl,

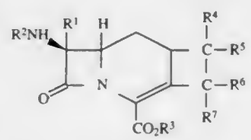
A and B each are hydrogen or together form a second bond, and n is 1, 2, 3,4 or 5.

5,665,717
CARBACEPHALOSPORIN COMPOUND, THEIR PREPARATION AND USE

Richard Leonard Elliott; Neville Hubert Nicholson, both of Betchworth, and Andrew Kenneth Takle, Betchwork, all of Great Britain, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP94/00811, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO94/21633, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 10, 1994, Ser. No. 522,411
Claims priority, application United Kingdom, Mar. 20, 1993, 9305837
Int. Cl.[6] A61K *31/395;* **C07D** *221/06*
U.S. Cl. 514—210 **16 Claims**

1. A carbacephalosporin compound of formula (I) or a salt thereof:



(I)

wherein

R^1 is hydrogen, methoxy or formamido;

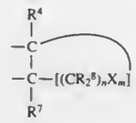
R^2 is an acyl group;

CO_2R^3 is a carboxy group or a carboxylate anion, or R^3 is a readily removable carboxy protecting group or a pharmaceutically acceptable salt-forming group or in vivo hydrolysable ester group;

R^4, R^5, R^6 and R^7 independently represent hydrogen or a substituent;

wherein R^4 and R^7 optionally are absent and replaced by a chemical bond between the two carbon atoms shown;

and wherein R^5 and R^6 optionally are linked together into a cyclic system of formula:



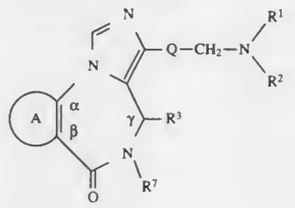
wherein X represents —O— or —NR^8—, wherein each R^8 is the same or different and independently represents hydrogen or a substituent, or two groups R^8 may be linked into a ring system, or any two adjacent —CR^8_2— units is replaced by a —CR^8=CR^8— unit, and wherein n is an integer 1 to 7, m is O, 1, 2 or 3.

5,665,718
IMIDAZODIAZEPINES

Thierry Godel, Basel; Walter Hunkeler, Magden; Heinz Stadler, and Ulrich Widmer, both of Rheinfelden, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 545,471, Nov. 20, 1995, which is a continuation of Ser. No. 400,917, Mar. 8, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 586,439
Claims priority, application Switzerland, Mar. 16, 1994, 783/94; Jan. 3, 1995, 10/95
Int. Cl.[6] A61K *31/555;* **C07D** *521/000*
U.S. Cl. 514—220 **26 Claims**

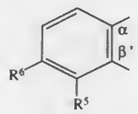
1. A compound of the formula



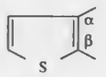
I

wherein

A together with the two carbon atoms denoted by α and β is one of the residues

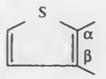


(A[1])



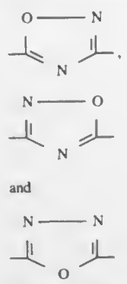
(A[2])

and



(A[3])

Q is one of the residues



(Q¹)

(Q²)

and

(Q³)

R^1 and R^2 each independently are hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower hydroxyalkyl, lower alkoxy-lower alkyl, $(C_3–C_6)$-cycloalkyl, $(C_3–C_6)$-cycloalkyl-lower alkyl, amino-lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl or aryl-lower alkyl or together with the nitrogen atom are 1-pyrrolidinyl, 1-pyrrolinyl, piperidino, 2,6-dimethylpiperidino, 3,3-dimethylpiperidino, hexamethyleneimin-1-yl, heptamethyleneimin-1-yl, morpholino, 4-methyl-1-piperazinyl, or isoindolin-2-yl,

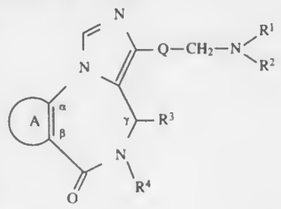
R^3 is hydrogen and R^4 is lower alkyl or R^3 and R^4 together are dimethylene or trimethylene and

R^5 and R^6 each independently are hydrogen, halogen, trifluoromethyl, lower alkoxy or nitro,

the compounds of formula I having the (S) configuration with reference to the carbon atom denoted by γ when R^3 and R^4 together are dimethylene or trimethylene,

or a pharmaceutically acceptable acid addition salt thereof.

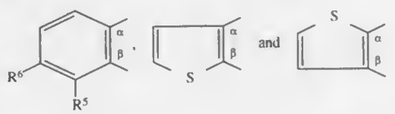
26. A method of treating convulsion, anxiety states, muscle tensions, tension states and insomnia which comprises administering to a patient in need of such treatment an effective amount of a compound of the formula



I

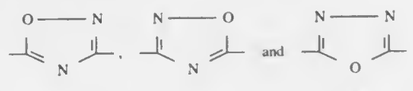
wherein

A together with the two carbon atoms denoted by α and β is one of the residues



(A¹) (A²) (A³)

Q is one of the residues



(Q¹) (Q²) (Q³)

R^1 and R^2 each independently are hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower hydroxyalkyl, lower alkoxy-lower alkyl, $(C_3–C_6)$-cycloalkyl, $(C_3–C_6)$-cycloalkyl-lower alkyl, amino-lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl or aryl-lower alkyl or together with the nitrogen atom are a 5- to 8-membered heterocycle optionally containing a further hetero atom or a fused benzene ring,

R^3 is hydrogen and R^4 is lower alkyl or R^3 and R^4 together are dimethylene or trimethylene and

R^5 and R^6 each independently are hydrogen, halogen, trifluoromethyl, lower alkoxy or nitro,

the compounds of formula I having the (S) configuration with reference to the carbon atom denoted by γ when R^3 and R^4 together are dimethylene or trimethylene,

or a pharmaceutically acceptable acid addition salt thereof.

5,665,719

BENZOXAZINONE AND BENZOPYRIMIDINONE PIPERIDINYL TOCOLYTIC OXYTOCIN RECEPTOR ANTAGONISTS

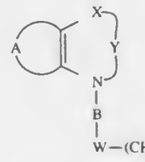
Mark G. Bock, Hatfield; Ben E. Evans, Lansdale; Peter D. Williams, Harleysville; Roger M. Freidinger, Lansdale; Douglas J. Pettibone, Chalfont; Doug W. Hobbs, and Paul S. Anderson, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 92,840, Jul. 16, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,693

Int. Cl.⁶ C07D *401/02;403/02;* **A61K** *31/54;31/545*

U.S. Cl. 514—227.8 **20 Claims**

1. A compound of the formula

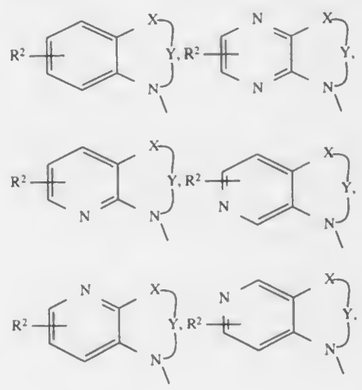


wherein

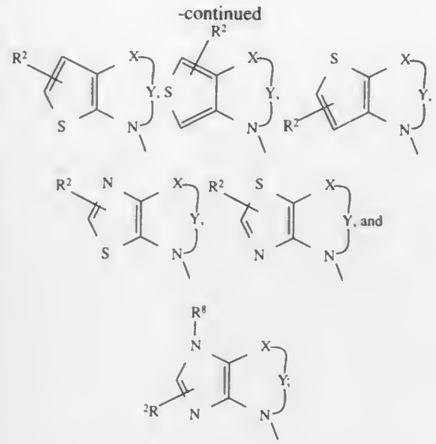
Y is CH_2, C=O, C=S, C=N—H or C=N—CHH_3;

X is selected from the group consisting of CH_2—O—, —$C(R^8)_2$—O—, —$C(R^8)_2$—CH_2—, —$CH(R^{11})$—O—, —$CH(R^{11})$—CH_2, —C(O)—CH_2—, —CH_2—NH—, —CH_2—NR^8—, —O—CH_2—, —$C(R^8)$=N—, —N=$C(R^8)$—, —NH—CH_2—, —NR^8—CH_2—, —CH_2'—CH_2, —CH=CH—, —C(OH)=CH—, and —$S(O)_m$—CH_2—;

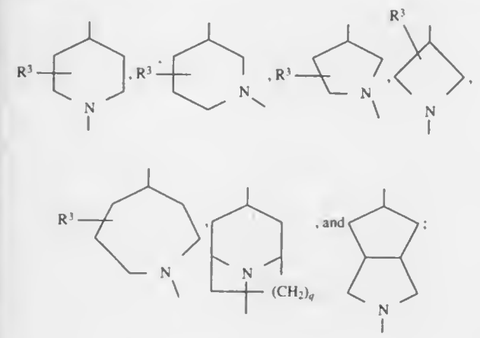
"A" represents a fused aromatic or heteroaromatic ring such that the bicyclic ring system containing the A ring is selected from the group consisting of



-continued



B is a heterocyclic or heterobicyclic ring selected from the group consisting of



W is —CO—, —COO—, —CONRS—, —C(=NR^8)—, —C(O)—CH(R^{10})—, —C(=NCH_2Ph)— or —SO_2—;

R^1 is selected from the group consisting of camphor-10-yl, C_{1-5} alkoxyl, styryl, hydroxystyryl, furyl, thienyl, pyrrolyl, naphthyl, indolyl, tetrahydronaphthyl, unsubstituted, mono- or di-substituted pyridyl where said substituent on said pyridyl are each independently selected from C_{1-5} alkyl, C_{1-5} alkoxy, halogen, hydroxyl or R^7, pyrazinyl, quinolinyl, substituted thienyl where said substituent is selected from the group consisting of C_{1-5} alkoxycarbonyl, C_{1-5} alkylcarbonyl, carboxyl and pyridyl, C_{1-5} alkyl-substituted pyrrolyl, unsubstituted or substituted cyclohexyl where said substituent is R^4, and unsubstituted or substituted phenyl where said substituents are one or more of R^5, R^6 or R^7;

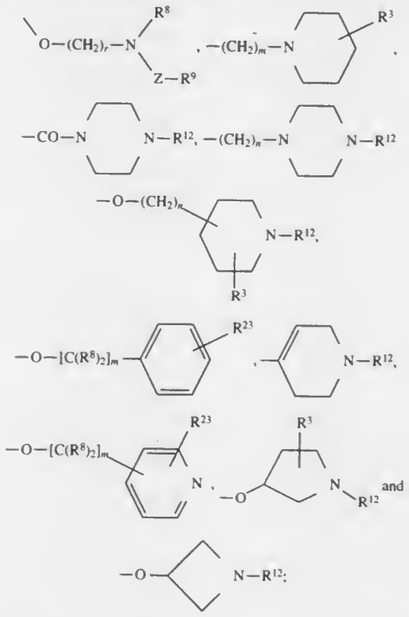
R^2 is selected from the group consisting of hydrogen, hydroxyl, C_{1-5} alkoxyl, C_{1-5} alkyl, amino, C_{1-5} alkylcarbonylamino, nitro, methanesulfonylamino, trifluoromethyl and halogen;

R^3 is selected from the group consisting of hydrogen, amino, C_{1-5} alkyl, C_{1-5} alkoxycarbonyl, hydroxy-C_{1-10} alkyl, methylthio-C_{1-10} alkyl, methylsulfonyl-C_{1-10} alkyl, methylsulfonyl, cyano, carbamoyl and carboxy;

R^4 is independently one or two members of the group consisting of hydrogen, oxo, hydroxyl, C_{1-5} alkoxyl, C_{1-5} alkoxycarbonylamino-C_{1-5} alkyl and amino-C_{1-5} alkyl;

R^5 and R^6 are each independently selected from the group consisting of hydrogen, halogen, phenyl, hydroxyphenyl, phenoxy, hydroxyphenoxy, phenyl-C_{1-5} alkyl, C_{1-10} alkyl, trifluoromethyl, C_{3-6} cycloalkyl, cyano, carboxy-C_{1-5} alkyl, C_{1-10} alkoxy-C_{1-5} alkyl, C_{1-10} alkoxycarbonyl-C_{1-5} alkyl, C_{1-10} alkoxycarbonyl-C_{2-6} alkenyl, mono- or di-C_{1-10} alkylamino-C_{1-5} alkyl, cyano-C_{1-5} alkyl, halo-C_{1-5} alkyl, —$S(O)_m$—CH_3, —NO_2, hydroxyl, hydroxy-C_{1-5} alkyl, C_{1-10} alkoxyl, substituted C_{1-5} alkoxy in which the alkyl group of said alkyloxy substitutent is substituted with a C_{2-6} alkenyl group, substituted C_{1-5} alkoxy in which the alkyl group of said alkyloxy substitutent is substituted with a C_{2-6} alkynyl group, C_{3-6} cycloalkyloxy, C_{3-6} cycloalkyl-C_{1-5} alkoxy, trifluoromethoxy, carboxy, C_{1-10} alkoxycarbonyl, C_{1-10} alkylcarbonyl, —$N(R^{13})_2$ and —NH—COR^{14};

R^7 is selected from the group consisting of hydrogen, C_{1-5} alkoxy, carboxyl, amino-C_{2-5} alkoxy, —CO—R^{16},



R^8 is independently selected from hydrogen or C_{1-5} alkyl;

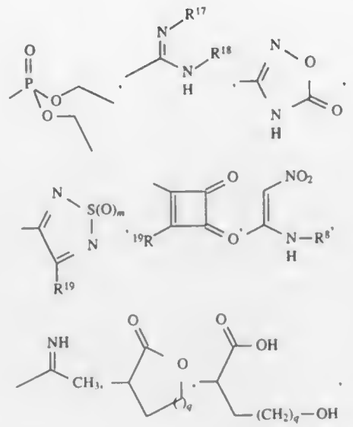
R^9 is selected from the group consisting of Het, amino, —$N(R^8)$—$(CH_2)_q$—CO—R^{14}, C_{1-5} alkoxyl, mono- or di-C_{1-10} alkylamino-C_{1-5} alkyl, mono- or di-C_{1-10} alkylamino-C_{2-6} alkylamino, unsubstituted C_{1-5} alkyl and substituted C_{1-5} alkyl where said substitutent is selected from the group consisting of carboxyl, hydroxyl, amino, methylsulfonyl, —$N(R^8)_2$, —NHR^8, C_{1-5} alkoxycarbonyl, C_{1-10} alkoxycarbonylamino and Het;

R^{10} is selected from the group consisting of hydrogen, hydroxyl, C_{1-5} alkoxycarbonyl, C_{1-5} alkoxycarbonylamino, hydroxy-C_{1-5} alkyl, amino, —$N(R^8)_2$, —NHR^8, cyano, C_{1-5} alkyl and C_{1-5} alkoxy;

R^{11} is selected from the group consisting of C_{1-5} alkyl, trifluoromethyl and unsubstituted, mono-, di- or tri- substituted phenyl wherein said substituents on said phenyl are independently selected from the group consisting of C_{1-5} alkyl, C_{1-10} alkoxyl, halogen and trifluoromethyl;

$R^{12}$is selected from the group consisting of hydrogen, C_{1-10} alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl-C_{1-5} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-10} alkoxycarbonyl, C_{1-5} alkylcarbonyl, tetrazolyl, cyano, 4-tetrahydropyranyl, 4-tetrahydrothiopyranyl, 4-piperidinyl, N-(C_{1-10} alkoxycarbonyl)-4-piperidinyl, N-(C_{1-5} alkyl)-4-piperidinyl, 2-pyrimidinyl optionally substituted with one to two members of the group consisting of halogen, carbamoyl, carboxyl, cyano, 5-tetrazolyl, aminothiocarbonyl, —C(NHR^{18})=NR^{17}, amino-C_{1-5}-alkyl, and mono- or di- C_{1-10}-alkylamino-C_{1-5}-alkyl.

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—SO_2—R^{15}, —CO—R^{16}, unsubstituted or substituted pyridyl wherein said substituent on said pyridyl is selected from hydrogen, halogen, C_{1-10} alkoxycarbonyl, carboxy, nitro or amino, and mono- or di-substituted C_{1-10} alkyl wherein said substituents on said C_{1-10} alkyl are independently selected from the group consisting of hydroxyl, C_{1-10} alkoxycarbonyl, carboxyl, hydroxyl, C_{1-5} alkoxyl, cyano, methylsulfonyl, aminocarbonyl, imidazolyl, tetrazolyl, morpholinyl, piperazinyl, benzodioxanyl, quinolinyl, isoquinolinyl, furyl, furopyridyl, thienyl, 5-halo-2-thienyl, 3,5-dimethyl-4-isoxazolyl, pyrazinyl, C_{1-5} akyl-substituted pyrazinyl, pyrimidinyl, pyridazinyl, thiazolyl, C_{1-10} alkyl-substituted thiazolyl, oxadiazolyl, phenyl-substituted oxadiazolyl, chlorophenyl-substituted thiazolyl, benzimidazolyl, thienopyridyl, mono or di- chlorothienopyridyl, furopyridyl, uracil, tinsubstituted, mono-, or di-substituted pyridyl wherein said substituents on said pyridyl are independently selected from hydrogen, halogen, C_{1-10} alkoxy, C_{1-10} alkyl, amino-C_{1-5} alkyl, mono or di-C_{1-5} alkylamino-C_{1-5} alkyl, C_{1-10} alkylcarbonyl, C_{1-10} alkoxycarbonyl, carboxy, nitro, hydroxy, hydroxy C_{1-5} alkyl, C_{1-5} alkoxy-C_{1-5} alkyl or amino, mono-, or di-substituted pyridyl-N-oxide wherein said substituents on said pyridyl-N-oxide are independently selected from hydrogen, halogen, C_{1-10} alkoxy, C_{1-10} alkyl, amino-C_{1-5} alkyl, mono or di-C_{1-5} alkyl-amino-C_{1-5} alkyl, C_{1-10} alkylcarbonyl, C_{1-10} alkoxy-carbonyl, carboxy, nitro, hydroxy, hydroxy C_{1-5} alkyl, C_{1-5} alkoxy-C_{1-5} alkyl or amino, and unsubstituted, mono- or di-substituted phenyl wherein said substituents on said phenyl are independently selected from hydrogen, halogen, hydroxyl, C_{1-10} alkoxyl, C_{1-10} alkoxycarbonyl, cyano or carboxyl;

R^{13} is independently selected from the group consisting of hydrogen, C_{1-5} alkyl and C_{1-5} alkylsulfonyl;

R^{14} is selected from the group consisting of C_{1-5} alkyl, C_{1-5} alkoxyl, amino-C_{1-5} alkyl, phenyl and benzimidazolyl;

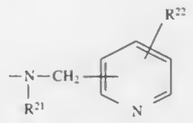
R^{15} is selected from the group consisting of amino, C_{1-10} alkoxy-carbonylamino, amino-C_{2-10} alkylamino, mono- or di-C_{1-10} alkylamino-C_{2-10} alkylamino, 3-azetidinyl, 1-benzyl-3-azetidinyl, 1-(C_{1-10} alkyl)-3-azetidinyl, unsubstituted or 1-substituted piperidinyl in which said subsituent on said piperidinyl is selected from the group consisting of benzyl, C_{1-5} alkoxycarbonyl, C_{1-5} alkyl, hydroxy-C_{2-5} alkyl, C_{1-5} alkoxy-C_{2-5} alkyl, pyridylmethyl, or C_{1-5} alkylpyridylmethyl, unsubstituted or 1-substituted 3-pyrrolidinyl in which said substituent on said pyrrolidinyl is selected from the group consisting of benzyl, C_{1-5} alkoxycarbonyl, C_{1-5} alkyl, hydroxy-C_{2-5} alkyl, C_{1-5} alkoxy-C_{2-5} alkyl, pyridylmethyl, or C_{1-5} alkylpyridylmethyl, unsubstituted or 1-substituted 1-piperazinyl in which said substituent on said piperazinyl is selected from the group consisting of benzyl, C_{1-5} alkoxycarbonyl, C_{1-5} alkyl, hydroxy-C_{2-5} alkyl, C_{1-5} alkoxy-C_{2-5} alkyl, pyridylmethyl, or C_{1-5} alkyl-pyridylmethyl, pyridyl, 1-(C_{3-6} cycloalkyl)-4-piperazinyl, trihalomethyl, C_{1-10} alkoxycarbonyl, carboxyl, phenylamino, vinyl, C_{1-10} alkoxycarbonylamino, methylsulfonylamino, trihalomethyl-sulfonylamino, amino, guanido, propargylamino, mono- or di-C_{1-10} alkylamino-C_{2-10} alkylamino, C_{1-10} alkylamino, cyanoamino, C_{1-10} alkoxycarbonyl-C_{1-10} alkylamino, C_{1-10} alkoxy-carbonyl-C_{1-10} alkylamino-C_{1-10} alkyl, carboxy-C_{1-10} alkylamino-C_{1-10} alkyl, unsubstituted, mono- or di- substituted phenyl wherein said substituents on said phenyl are independently selected from halogen, amino-C_{1-10} alkyl, mono- or di-C_{1-10} alkylamino-C_{2-10} alkyl-amino, C_{1-10} alkoxycarbonyl, carboxyl, C_{1-10} alkoxyl, 1-(C_{1-10} alkoxycarbonyl)-4-piperidinyloxy or 4-piperidinyloxy, and mono- or di-substituted C_{1-10} alkyl wherein said substituents on said alkyl are independently selected from halogen, R^{20}, azido, guanido, acetamidinyl, C_{1-10} alkoxycarbonyl, carboxy, carboxymethoxy, carboxy-C_{1-10} alkylcyclopentyl, C_{1-10} alkoxycarbonyl-amino, amino, cyano, methylsulfonyl, imidazolyl, morpholinyl, azetidinyl, pyrrolidinyl, piperazinyl, piperidinyl, 2,2,6,6-tetramethyl-1-piperidinyl, 3-hydroxy-1-pyrrolidinyl, C_{1-5} alkoxy-C_{1-5} alkyl-substituted 1-pyrrolidinyl, 1-(C_{1-10} alkyl)-4-piperazinyl, piperidinyl, N-tetrahydroisoquinolinyl, aza-cycloheptyl, mono- or di- substituted 1-piperidinyl wherein said substitutents on said piperidinyl are independently selected from C_{1-5} alkyl, hydroxyl, C_{1-5} alkoxyl, cyano, or spiro-cyclopentyl, C_{3-8} cycloalkyl wherein said cycloalkyl is optionally substituted with nitro, amino, tri- or di-C_{1-5} alkyl-amino, R^{20}, 1-pyrrolidinyl, or 1-piperidinyl, unsubstituted, mono- or di-substituted amino wherein said substituents on said amino are independently selected from benzyl, C_{1-10} alkyl, hydroxy-C_{2-10} alkyl, C_{1-10} alkoxy-C_{2-10} alkyl, C_{3-6} cycloalkyl, C_{1-5} alkoxycarbonyl-C_{1-10} alkyl, carboxy-C_{1-10} alkyl or C_{3-8} cycloalkyl-substituted C_{1-10} alkyl, C_{1-10} alkoxycarbonyl, carboxy, carboxymethoxy, carboxy-C_{1-10} alkylcyclopentyl, C_{1-10} alkoxycarbonylamino, cyano, methylsulfonyl, imidazolyl, morpholinyl, azetidinyl, or 1-(C_{1-10} alkyl)-4-piperazinyl;

R^{17} is selected from the group consisting of hydrogen, hydroxyl, cyano, C_{1-10} alkylsulfonyl, trihalomethylsulfonyl, C_{1-10} alkylcarbonyl and trihalomethylcarbonyl;

R^{18} is selected from the group consisting of hydrogen, C_{1-10} alkyl, mono- or di-C_{1-10} alkylamino-C_{2-10} alkyl and C_{3-6} cycloalkyl;

R^{19} is selected from the group consisting of C_{1-10} alkoxy, hydroxyl, mono- or di-C_{1-10} alkylamino-C_{2-10} alkylamino and di-C_{1-10} alkylamino —C_{1-10} alkyl;

R^{20} is



R^{21} is selected from the group consisting of hydrogen, C_{1-10} alkyl, and C_{3-8} cycloalkyl;

R^{22} is independently one to two members from the group consisting of hydrogen, C_{1-5} alkyl, halogen, C_{1-5} alkoxylcarbonyl, C_{1-5} alkoxy, and carboxy;

R^{23} is selected from the group consisting of hydrogen, cyano, amino, C_{1-5} alkylcarbonylamino, halogen, halomethyl, —CHO, nitro, carboxy, C_{1-5} alkoxycarbonyl, and unsubstituted or substituted C_{1-5} alkyl wherein said substituent on said alkyl is selected from amino, mono- or di-C_{1-5} alkylamino, cyano, C_{1-5} alkoxycarbonyl, carboxy, piperazinyl, 4-[C_{1-5} alkoxycarbonyl]-1-piperazinyl, 4-(C_{1-5} alkylcarbonyl)-1-piperazinyl, piperidinyl or substituted piperidinyl wherein said substituent on said piperidine is selected from hydroxyl, C_{1-5} alkoxycarbonyl or carboxyl; and

Het is selected from the group consisting of imidazolyl, piperidinyl, C_{1-5} alkyl-substituted piperidinyl, piperazinyl, C_{1-5} alkyl-substituted piperizinyl, C_{1-5} alkoxycarbonyl-substituted piperazinyl, morpholinyl, tetrazolyl, C_{1-5} alkylcarbonyl-substituted piperidinyl, C_{1-5} alkoxy-carbonyl-substituted piperidinyl, pyrrolidinyl, C_{1-5} alkyl-substituted pyrrolidinyl, and pyridyl;

Z is —CO— or —SO_2—;

m is an integer of from 0 to 2;

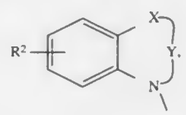
n is an integer of from 0 to 3;

p is an integer of from 1 to 4;

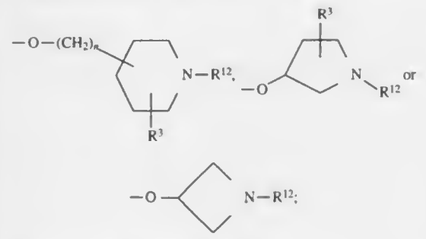
q is an integer from 1 to 2; and

r is an integer of from 2 to 4;

provided that when the A containing bicyclic ring system is



and Y is —C═O, and X is —$(CH_2)_2$—, —CH═CH—, —$C(R^8)_2$—CH_2—, —$CH(R^{11})$—CH_2 or —C(OH)═CH—, then R^1 is substituted phenyl wherein R^7 is



and the pharmaceutically acceptable salts thereof.

5,665,720

BENZOXAZINONES AS INHIBITORS OF HIV REVERSE TRANSCRIPTASE

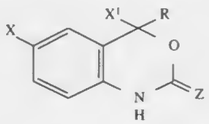
Steven D. Young, Lansdale; Susan F. Britcher, Norristown; Linda S. Payne, Lansdale; Lekhanh O. Tran, West Chester, and William C. Lumma, Jr., Pennsburg, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 188,005, Jan. 28, 1994, which is a continuation-in-part of Ser. No. 54,805, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 976,607, Aug. 7, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 458,529

Int. Cl.[6] A61K *31/535*

U.S. Cl. 514—230.5 **3 Claims**

1. A pharmaceutical composition comprising a compound of the formula



I

wherein:

X is halo,

X^1 is trihalomethyl, or pentahaloethyl;

Z is O;

R is

(a) C_{1-8} alkyl, unsubstituted or substituted with A, and A is halo, C_{3-6} cycloalkyl, CN, hydroxy, C_{1-4} alkoxy, C_{2-4} alkynyl-C_{1-4} alkoxy, aryloxy, C_{1-4} alkylcarbonyl, nitro, di(C_{1-2} alkyl)amino, C_{1-4} alkylamino-C_{1-2} alkyl, heterocycle, or arylthio;

(b) C_{2-2} alkenyl, unsubstituted or substituted with

(i) A, or

(ii) aryl, unsubstituted or substituted with A;

(c) C_{2-5} alkynyl, unsubstituted or substituted with

(i) A, or

(ii) aryl, unsubstituted or substituted with A; cr

(d) C_{3-4} cycloalkyl, unsubstituted or substituted with

(i) A, or

(ii) aryl, unsubstituted or substituted with A,

in admixture with a nucleoside analog having biological activity against HIV reverse transcriptase,

or a pharmaceutically acceptable salt of any of the above.

5,665,721

HETEROCYCLIC SUBSTITUTED CYCLOPENTANE COMPOUNDS

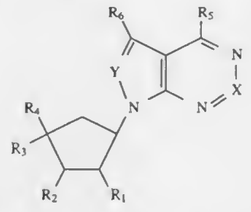
Shripad S. Bhagwat, Libertyville, and Marlon Daniel Cowart, Round Lake Beach, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 7, 1995, Ser. No. 472,816

Int. Cl.[6] A61K *31/505;* **C07D** *407/02*

U.S. Cl. 514—253 **32 Claims**

1. A compound of the Formula I



Formula I

wherein

X is —CR_7 where R_7 is hydrogen, halogen, loweralkyl, loweralkoxy or —S— loweralkyl;

Y is —N or —CH;

R_1 and R_2 are each independently hydroxy, alkoxy, or acyloxy or R_1 and R_2 are both hydroxy protected with an individual hydroxy protecting group or with a single dihydroxy-protecting group or R_1 and R_2 are absent and there is a double bond between the carbon atoms to which R_1 and R_2 are attached;

R_3 is hydrogen, hydroxy, or alkoxy;

R_4 is a) hydrogen, b) amino, c) halogen, d) hydroxy, e) sufonamido, f) —P(O)(OH)$_2$, g) —P(O)—R_8R_9 wherein R_8 and R_9 are each independently hydrogen, hydroxy, loweralkyl, aryl, or arylalkyl, h) —NHR_{10} wherein R_{10} is hydrogen or an amino protecting group, i) —NHC(O)NHR_{11} where R_{11} is hydrogen or loweralkyl, or j) —A—R_{12} wherein A is O, S(O)$_n$ or —$N(R_{13})$— wherein R_{13} is hydrogen or loweralkyl, n is zero, one or two, and R_{12} is hydrogen, loweralkyl, alkylsulfonyl, acyl, alkoxycarbonyl, aryl, heteroaryl, arylalkyl, arylsulfonyl, haloalkyl, heteroarylalkyl, heteroarylsulfonyl, aminoalkyl or heterocyclic or k) R4 is a ring N-member of a heteroaryl or heterocycle; or

R_3 and R_4 taken together are =O, or taken together with the carbon atom to which they are attached, form a spirocyclic ring;

R_5 is hydrogen, loweralkyl, aryl, arylalkyl, heteroaryl, amino, alkylamino, alkoxy, acylamino, arylalkynyl, arylamino, arylmercapto, alkylmercapto, halogen, heterocyclic, hydrazino, —NHC(O)NH_2, or —$NR_{14}R_{15}$ wherein R_{14} and R_{15} are each independently hydrogen or an amino protecting group or —$NR_{14}R_{15}$ is a nitrogen containing heterocycle of 5 to 7 members; and

R_6 is loweralkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkoxycarbonyl, carboxy, aryl, heteroaryl, heteroarylalkyl, arylalkyl, arylalkenyl, arylalkynyl, cyano, halogen, heteroarylalkynyl, or —C(O)NHR_{16} wherein R_{16} is alkyl, aryl, or heterocyclic.

5,665,722

BENZOFURAN DERIVATIVES AS D_4 RECEPTOR ANTAGONISTS

Janusz Jozef Kulagowski, Bishops Stortford, United Kingdom; Paul David Leeson, Monmouth Junction, N.J., and Ian Michael Mawer, Bishops Stortford, United Kingdom, assignors to Merck, Sharp & Dohme, Ltd., Hoddesdon, England

PCT No. PCT/GB95/00947, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/29911, PCT Pub. Date Nov. 9, 1995

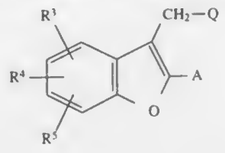
PCT Filed May 26, 1995, Ser. No. 732,255

Claims priority, application United Kingdom, Apr. 28, 1994, 9408458; Aug. 5, 1994, 9415910

Int. Cl.[6] C07D *405/06;401/06;* **A61K** *31/495*

U.S. Cl. 514—253 **11 Claims**

1. A compound of formula I, or a salt or prodrug thereof:

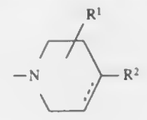


(I)

wherein

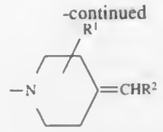
A represents hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, halogen, cyano or trifluoromethyl;

Q represents a moiety of formula Qa, Qb, Qc or Qd:

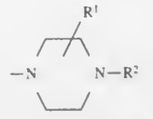


(Qa)

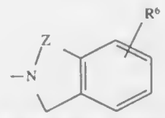
-continued



(Qb)



(Qc)



(Qd)

in which the broken line represents an optional chemical bond;

R^1 represents hydrogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocydoalkyl(C_{1-6})alkyl, heteroaryl, heteroaryl(C_{1-6})alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^2 represents an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})aryl, aryloxy(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, heteroaryl, heteroaryl(C_{1-6})alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^3, R^4 and R^5 independently represent hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CONR^aR^b$;

Z represents —CH_2— or —CH_2CH_2—;

R^6 represents hydrogen or halogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, aryl, aryloxy, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy or heteroaryl group; and

R^a and R^b independently represent hydrogen, hydrocarbon or a heterocyclic group.

5,665,723

FIBRINOGEN RECEPTOR ANTAGONISTS

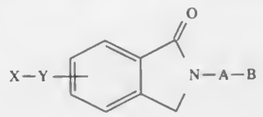
George D. Hartman, Lansdale; John H. Hutchinson, Philadelphia, and Wasyl Halczenko, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 391,851, Feb. 22, 1995. This application Jun. 2, 1995, Ser. No. 460,372

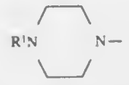
Int. Cl.[6] A61K *31/495;31/40;* **C07D** *405/00;405/00*

U.S. Cl. 514—255 **21 Claims**

1. A fibrinogen receptor antagonist of the following formula

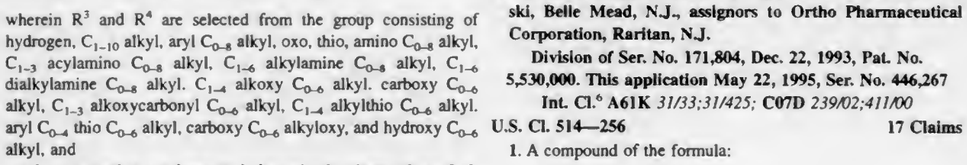


and pharmaceutically acceptable salts thereof, where X is



wherein R^1 is selected from the group consisting of hydrogen, C_{1-10} alkyl, aryl C_{0-8} alkyl, oxo, thio, amino C_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl, C_{1-6} alkylamino C_{0-8} alkyl, C_{1-6} dialkylamino C_{0-8} alkyl, C_{1-4} alkoxy C_{0-6} alkyl, carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl, C_{1-4} alkylthio C_{0-6} alkyl, aryl C_{0-4} thio C_{0-6} alkyl, carboxy C_{0-6} alkyloxy, and hydroxy C_{0-6} alkyl;

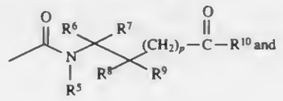
Y and A are independently chosen from the group consisting of

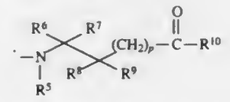


wherein R^3 and R^4 are selected from the group consisting of hydrogen, C_{1-10} alkyl, aryl C_{0-8} alkyl, oxo, thio, amino C_{0-8} alkyl, C_{1-3} acylamino C_{0-8} alkyl, C_{1-6} alkylamine C_{0-8} alkyl, C_{1-6} dialkylamine C_{0-8} alkyl. C_{1-4} alkoxy C_{0-6} alkyl. carboxy C_{0-6} alkyl, C_{1-3} alkoxycarbonyl C_{0-6} alkyl, C_{1-4} alkylthio C_{0-6} alkyl. aryl C_{0-4} thio C_{0-6} alkyl, carboxy C_{0-6} alkyloxy, and hydroxy C_{0-6} alkyl, and

where m and n are integers independently chosen from 0–6, wherein and Y is attached to a ring atom of the aromatic six-membered ring;

B is chosen from the group consisting of:





where p=0–2, and where R_5, R_6, R_7, R_8 and R_9 are independently chosen from the group consisting of: hydrogen, fluorine, C_{1-8} alkyl, hydroxyl, C_{0-6} alkyl—CH=CH—C_{1-6} alkyl C_{0-6} alkyl—$CH=CH_2$ C_{0-6} alkyl—CH=CH—C_{0-6} alkylaryl C_{0-6} alkyl—C≡C—C_{1-6} alkyl C_{0-6} alkyl≡C—CH C_{0-6} alkyl—C≡C—C_{0-6} alkylaryl hydroxy C_{1-6} alkyl, carboxy C_{0-6} alkyl, C_{1-6} alkyloxy, C_{3-8} cycloalkyl, aryl C_{1-6} alkyloxy, aryl C_{0-6} alkyl, C_{1-6} alkylcarbonyloxy, C_{0-6} alkylamino C_{0-6} alkyl, aryl C_{0-6} alkylamino C_{0-6} alkyl, C_{0-6} dialkylamino C_{0-6} alkyl, aryl C_{0-6} alkylcarbonyloxy, C_{1-8} alkylsulfonylamino C_{0-6} alkyl, C_{1-6} alkylaminocarbonyloxy, aryl C_{0-6} alkylaminocarbonyloxy, aryl C_{0-8} alkylsulfonylamino C_{0-6} alkyl, C_{1-8} alkyloxycarbonylamino C_{0-8} alkyl, aryl C_{0-8} alkyloxycarbonylamino C_{0-8} alkyl, C_{1-8} alkylcarbonylamino C_{0-6} alkyl, aryl C_{0-6} alkylcarbonylamino C_{0-6} alkyl, C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl, aryl C_{0-8} alkylaminocarbonylamino C_{0-6} alkyl, C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl, aryl C_{0-8} alkylaminosulfonylamino C_{0-6} alkyl, C_{1-6} alkylsulfonyl C_{0-6} alkyl, aryl C_{0-6} alkylsulfonyl C_{0-6} alkyl, C_{1-6} alkylcarbonyl C_{0-8} alkyl, aryl C_{0-6} alkylcarbonyl C_{0-8} alkyl, C_{1-6} alkylthiocarbonylamino C_{0-6} alkyl, aryl C_{0-6} alkylthiocarbonylamino C_{0-6} alkyl, C_{0-8} alkylaminocarbonyl C_{0-6} alkyl, and aryl C_{0-8} alkylaminocarbonyl C_{0-6} alkyl, unsubstituted or substituted with one or more substituents selected from R^1, and



where AA is an L- or D-amino acid, or its corresponding ester, connected through an amide linkage;

R^{10} is chosen from the group consisting of:

hydroxy, C_{1-8} alkyloxy, aryl C_{0-6} alkyloxy, C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, aryl C_{1-8} alkylcarbonyloxy C_{1-4} alkyloxy, C_{1-8} alkylaminocarbonyt C_{1-4} alkyloxy, C_{1-8} dialkylaminocarbonyl C_{1-4} alkyloxy, and an L- or D- amino acid joined by an amide linkage, wherein the carboxylic acid moiety of said amino acid is as the free acid or is esterified by C_{1-6} alkyl.

5,665,724

SUBSTITUTED PYRIMIDINYLAMINOTHIAZOLE DERIVATIVES USEFUL AS PLATELET AGGREGATION INHIBITORS

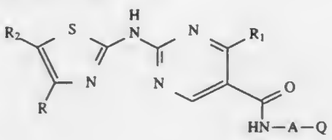
Pauline J. Sanfilippo, Chester Springs, Pa., and Maud Urbanski, Belle Mead, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 171,804, Dec. 22, 1993, Pat. No. 5,530,000. This application May 22, 1995, Ser. No. 446,267

Int. Cl.[6] A61K *31/33;31/425;* **C07D** *239/02;411/00*

U.S. Cl. 514—256 **17 Claims**

1. A compound of the formula:



wherein

R and R_2 are independently selected from hydrogen, alkyl (C_1–C_5), trifluoromethyl, phenyl, and substituted phenyl, where the phenyl substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, tosyl, bromo, chloro, iodo, fluoro, alkyl (C_1–C_5), carboalkoxy (C_1–C_4) and alkoxy (C_1–C_5);

R_1 is selected from the group consisting of hydrogen, alkyl (C_1–C_5), trifluoromethyl, phenyl, substituted phenyl and substituted heterocycle wherein the phenyl substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, tosyl, bromo, chloro, iodo, fluoro, alkyl (C_1–C_5), carboalkoxy (C_1–C_4) and alkoxy (C_1–C_5) and the heterocycle substituents are selected from hydrogen, alkyl (C_1–C_5), trifluoromethyl, phenyl, or substituted phenyl, where the phenyl substituents are selected from the group consisting of cyano, nitro, trifluoromethyl, carboxy, amino, carboxamido, tosyl, bromo, chloro, iodo, fluoro, alkyl (C_1–C_5), carboalkoxy (C_1–C_4) and alkoxy (C_1–C_5);

A is selected from the group consisting of alkyl (C_2–C_9), branched alkyl (C_3–C_9) or phenyl;

Q is selected from hydroxy, alkoxy (C_1–C_5), halogen or NR_3R_4, where R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl (C_1–C_5), and cycloalkyl (C_3–C_8), or NR_3R_4 is taken together to form a heterocyclic ring selected from the group consisting of piperidine, pyrrolidine, pyrrolidinone, piperidinone, phthalimide and imidazole or NR_3R_4 is a guanidine, urea, thiourea, amidine, or substituted amidine wherein the substituents are selected from the group consisting of alkyl (C_1–C_4), hydroxyl and amino; and

the pharmaceutically acceptable salts thereof.

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5,665,725
PIPERIDINE DERIVATIVES HAVING ANXIOLYTIC EFFECT

Ejner K. Moltzen, Frederiksberg C, and Jens Kristian Perregaard, Jaegerspirs, both of Denmark, assignors to H. Lundbeck, Copenhagen-Valby, Denmark

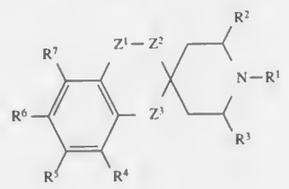
Filed Dec. 13, 1993, Ser. No. 166,647

Claims priority, application Denmark, Jun. 13, 1991, 1129/91; Jun. 13, 1991, 1131/91; Feb. 10, 1992, 0157/92

Int. Cl.[6] A61K *31/44;* **C07D** *491/20*

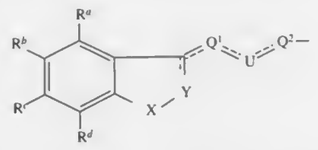
U.S. Cl. 514—278 **7 Claims**

1. A piperidine compound having Formula I:



I

wherein R^1 is a group having the general Formula II:



II

wherein X is CHR^{10}, O, S, SO, SO_2 or NR^{10}; wherein R^{10} is hydrogen, lower alkyl, lower alkenyl, sulfonyl, arylalkyl, phenyl or phenyl substituted with one or more substituents independently selected from the group consisting of halogen, lower alkyl, lower alkoxy, hydroxy, trifluoromethyl, and cyano; or

R^{10} is a heteroaromatic group, selected from the group consisting of 2-thienyl, 3-thienyl, 2-furanyl, 3-furanyl, 2-thiazolyl, 2-oxazolyl, 2-imidazolyl, 2-pyridyl, 3-pyridyl, and 4-pyridyl;

wherein one or two of the dotted lines may be a bond;

when the dotted line emanating from Y indicates a bond, Y is N or CH; or when said dotted line indicates no bond, Y is CH_2, or NH;

R^a–R^d are independently selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl and trifluoromethylthio;

U is CH_2, O or S; or

when, one of the dotted lines emanating from U indicates a bond and U is CH; the bond between U and Q^1 or Q^2, respectively, may also be a triple bond and in such a case U is "C";

Q^1 is selected from a bond, C_1–C_{18} alkylene or C_2–C_{18} alkenylene and Q^2 is C_2–C_{20} alkylene, C_2–C_{20} alkenylene or a group $Q^{2'}D$ wherein $Q^{2'}$ is as defined for Q^2 and D is CR^8R^9 wherein R^8 and R^9 are independently selected from the substituents defined below for R^4–R^7, and a cycloalkylene group; wherein Q^1 and Q^2 are optionally substituted with one or more hydroxy groups, any such hydroxy group being optionally esterified with an aliphatic carboxylic acid having from two to twenty-four carbon atoms, inclusive; wherein the total number of carbon atoms in Q^1 and Q^2 is from 3 to 20; and

R^2 and R^3 are independently hydrogen, lower alkyl or they may be linked together thereby forming an ethylene or propylene bridge;

R^4 to R^7 are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl and trifluoromethylthio; and

Z^1 is CH_2, or O or S;

Z^2 and Z^3 are independently $(CH_2)_n$, wherein n is 0 or 1, O or S, with the proviso that Z^1 may not be S or O when Z^2 is S or O, and that Z^2 and Z^3 may not both be (CH_2), wherein n is 0;

or Z^1 and Z^2 taken together represent a group —CH=CH—;

or when Z^3 is $(CH_2)_n$ wherein n is 0, Z^1 and Z^2 taken together can form a 3-membered divalent group, optionally containing one unsaturated bond, and optionally containing one O- or S-heteroatom;

with the proviso that the combination of Z^1, Z^2, and Z^3 cannot represent a benzofuranyl system; and

with the proviso that at least one of Z^1, Z^2 and Z^3 is O or S; or an acid addition salt thereof.

5,665,726
BENZO[5,6]CYCLOHEPTAPYRIDINES, COMPOSITIONS AND METHODS OF USE

John J. Piwinski, Parsippany; Ashit K. Ganguly, Upper Montclair; Michael J. Green, Skillman, and Jesse Wong, Union, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 950,986, Sep. 23, 1992, Pat. No. 5,438,062, which is a continuation of Ser. No. 816,777, Jan. 2, 1992, abandoned, which is a division of Ser. No. 345,605, May 1, 1989, Pat. No. 5,089,496, which is a continuation-in-part of Ser. No. 181,860, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 925,342, Oct. 31, 1986, Pat. No. 4,826,853. This application May 3, 1995, Ser. No. 433,300

Int. Cl.[6] C07D *401/04;401/14;* **A61K** *31/445*

U.S. Cl. 514—290 **4 Claims**

1. A compound having the name:

4-(8-chloro-5,6-dihydro-11H-benzo[5,6]cyclohepta[1,2-b]pyridin-11 -ylidene)-1-[(3-pyridinyl)acetyl]piperidine;

1-(4-pyridylacetyl)-4-(8-chloro-5,6-dihydro-11H -benzo[5,6]cyclohepta[1,2-b]pyridin-11-ylidene)piperidine; or

1-(2-pyridylacetyl)-4-(8-chloro-5,6-dihydro-11H -benzo[5,6]cyclohepta[1,2-b]pyridin-11-ylidene)piperidine.

5,665,727
USE OF 11,28-DIOXA-4-AZATRICYCLO[22.3.1.0^{4,9}]OCTACOS-18-ENE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Maximilian Grassberger, Vienna; Josef Gottfried Meingassner, Perchtoldsdorf; Anton Stütz, and Peter Stütz, both of Vienna, all of Austria, assignors to Sandoz Ltd., Basel, Switzerland

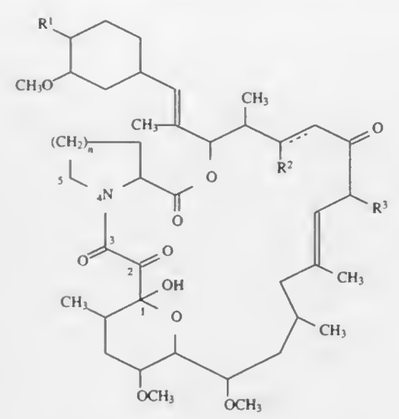
Division of Ser. No. 982,925, Nov. 30, 1992, Pat. No. 5,366,971, which is a continuation of Ser. No. 608,430, Nov. 2, 1990, abandoned, which is a continuation of Ser. No. 268,114, Nov. 7, 1988, abandoned. This application Aug. 15, 1994, Ser. No. 291,010

Claims priority, application Austria, Nov. 9, 1987, 2952/87; Germany, Dec. 17, 1987, 37 42 805.5

Int. Cl.[6] A61K *31/44;31/40*

U.S. Cl. 514—291 **18 Claims**

1. A method of topically treating inflammatory or hyperproliferative skin diseases or cutaneous manifestations of immunologically-mediated illnesses, in a mammal in need of said treatment, which comprises administering topically to said mammal in an amount effective for the treatment of inflammatory or hyperproliferative skin diseases or cutaneous manifestations of immunologically mediated illnesses a compound of formula I



I

wherein

R^1 is optionally protected hydroxy,

R^2 is hydrogen or optionally protected hydroxy,

R^3 is methyl, ethyl, propyl or allyl,

n is 1 or 2 and

the symbol of a line and dotted line is a single bond or a double bond,

in free form or in pharmaceutically acceptable salt form.

5,665,728
METHOD OF TREATING HYPERPROLIFERATIVE VASCULAR DISEASE

Randall Ellis Morris, Los Altos, and Clare Robert Gregory, Menlo Park, both of Calif., assignors to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 238,305, May 12, 1994, Pat. No. 5,516,781, which is a continuation-in-part of Ser. No. 980,000, Nov. 23, 1992, abandoned, which is a continuation of Ser. No. 819,314, Jan. 9, 1992, abandoned. This application May 26, 1995, Ser. No. 451,627

Int. Cl.[6] A61K *31/345*

U.S. Cl. 514—291 **2 Claims**

1. A method of treating a hyperproliferative vascular disease selected from the group consisting of intimal smooth muscle cell proliferation, restenosis, and vascular occlusion, wherein the intimal smooth muscle cell proliferation, restenosis, or vascular occlusion is caused by an infectious disorder, hypothermia, or irradiation, which comprises administering an antiproliferative effective amount of rapamycin to said mammal orally, parenterally, intravascularly, intranasally, intrabronchially, transdermally, rectally, or via a vascular stent impregnated with rapamycin.

5,665,729
CEREBROPROJECTION METHOD

Walter Lösel, Gau-Algesheim; Otto Roos, Schwabenheim; Dietrich Arndts, Appenheim; Franz Josef Kuhn, Gau-Algeshiem, and Ilse Strelle, Stromberg, all of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

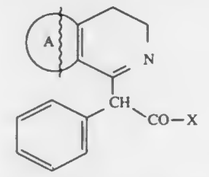
Division of Ser. No. 238,298, May 5, 1994, abandoned, which is a continuation of Ser. No. 36,299, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 812,321, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 809,610, Dec. 17, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 456,357

Claims priority, application Germany, Dec. 22, 1990, 40 41 482.5

Int. Cl.[6] A61K *31/475;31/47;31/435*

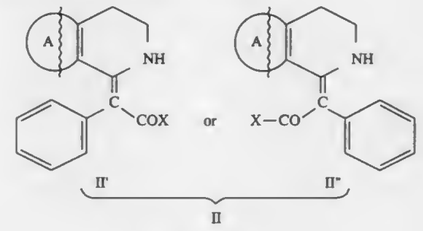
U.S. Cl. 514—292 **9 Claims**

1. A method of providing cerebroprotection in a warm-blooded animal which comprises administering to said animal a therapeutically effective amount of a carbocyclically and heterocyclically fused dihydropyridine of formula



I

or the tautomeric form thereof of formula



II

wherein X represents OR_1; NHR_2; NR_3R_4 and

R_1 represents hydrogen, C_{1-4}-alkyl, C_{1-4}-alkoxyalkyl

R_2 represents hydrogen; C_{3-6}-alkenyl, C_{3-6}-alkynyl; C_{3-6}-cycloalkyl; C_{3-6}-cycloalkenyl; straight-chained or branched C_{1-6}-alkyl which may if desired be mono- or polysubstituted with the substituents of groups a) to c) listed below, which may be identical or different:

a) halogen; cyano; hydroxy; mercapto; C_{1-4}-alkoxy; C_{1-4}-alkylthio; amino; mono-C_{1-4}-alkylamino; di-C_{1-4}-alkylamino (wherein the alkyl radical may be identical or different) phenoxy (wherein the phenyl ring may be substituted as described in b) below.

b) phenyl; optionally mono- or polysubstituted, by identical or different substituents, by the groups halogen, trifluoromethyl, C_{1-4}-alkoxy, hydroxy, mercapto, C_{1-4}-alkylthio, C_{1-4}-alkyl, amino, mono-C_{1-4}-alkylamino, di-C_{1-4}-alkylamino (wherein the alkyl groups may be identical or different), C_{2-3}-acylamino, C_{2-3}-acyloxy and the group —O—$(CH_2)_n$—O vicinally by bound to the phenyl system (wherein n=1 or 2)

c) a 5- or 6-membered saturated or wholly or partially unsaturated monocyclic heterocyclic group having up to 3 heteroatoms selected from the group N, O, S; and as a bicyclic heterocycle indole (whilst the above-mentioned heterocycles may be mono- or polysubstituted by C_{1-4}-alkyl), C_{3-6}-cycloalkyl; C_5 or C_6-cycloalkenyl; C_{2-3}-acyl; C_{1-4}-alkylsulphonyl; or phenyl (which may in turn be substituted up to three times as described in b));

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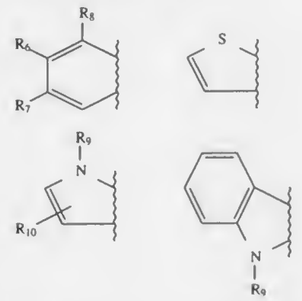
or R_2 represents phenyl, which may be substituted as described in b) above;

R_3 and R_4 independently of each other represent C_{1-4}-alkyl, which may if desired be phenyl-substituted, whilst the phenyl substituent may in turn be substituted as under b) hereinbefore; or

R_3 and R_4 together with the nitrogen atom to which they are bound represent a wholly or partially saturated heterocyclic 5- or 6-membered ring (which may also contain up to 2 further heteroatoms from the group N, O, S), whilst the heterocyclic group thus obtained may be substituted by C_{1-4}-alkyl, hydroxy or $(CH_2)_p$-R_5 (where p=0 or 1) and

R_5 represents a phenyl radical which is optionally substituted as under b) hereinbefore;

A represents the fused ring systems



wherein

R_8 represents hydrogen; C_{1-4}-alkyl or C_{1-4}-alkoxy

R_6 and R_7 which may be identical or different represent hydrogen; hydroxy; C_{1-4}-alkyl; C_{1-4}-alkoxy; amino; methanesulphonylamino or

R_6 and R_7 together represent -O—$(CH_2)_n$—O— (where n=1 or 2)

R_9 represents hydrogen; C_{1-4}-alkyl

R_{10} represents hydrogen or 2-phenyl-2-ethoxycarbonylacetyl;

and the salts thereof with physiologically acceptable acids, bases or complex-forming agents.

5,665,730

PHARMACEUTICALLY USEFUL IMIDAZOPYRIDINES

Jörg Senn-Bilfinger; Gerhard Grundler, and Georg Rainer, all of Konstanz, Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

PCT No. PCT/EP94/00335, § 371 Date Aug. 15, 1995, § 102(e) Date Aug. 15, 1995, PCT Pub. No. WO94/18199, PCT Pub. Date Aug. 18, 1994

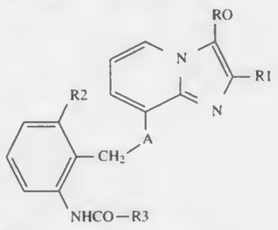
PCT Filed Feb. 7, 1994, Ser. No. 505,271

Claims priority, application Switzerland, Feb. 15, 1993, 453/93; Jun. 29, 1993, 1945/93

Int. Cl.[6] A16K *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **9 Claims**

1. A compound of formula I



(I)

in which

R0 denotes methyl or hydroxymethyl.

R1 denotes 1–4C-alkyl,

R2 denotes 1–4C-alkyl,

R3 denotes 1–4C-alkoxy and

A denotes O (oxygen) or NH,

or a salt thereof.

5,665,731

METHOD AND COMPOSITION FOR TREATING WITH A VASODILATOR INFLAMMATION, BONE LOSS AND DETACHMENT OF TEETH AS ASSOCIATED WITH PERIODONTAL

Richard K. Hennessey, 803 Cottonwood Dr., Severna Park, Md. 21146

Filed Jun. 7, 1995, Ser. No. 472,976

Int. Cl.[6] A61K *7/22;31/47;31/485*

U.S. Cl. 514—307 **7 Claims**

1. A process for treating inflammation of gums, bone loss and detachment of teeth in a patient in need of such treatment, comprising topically or by injection administering to an external area near the inflamed gum, bone or teeth an effective amount of a composition comprising:

(a) a therapeutically effective amount of an active ingredient comprising papaverine or a pharmaceutically acceptable salt thereof; and

(b) a carrier for the topical administration of said active ingredient, wherein

said active ingredient is at least partially soluble in said carrier, and said carrier enables the penetration of the active ingredient through the gums and absorption of said active ingredient into the inflamed tissue.

5,665,732

INDAZOLE DERIVATIVES

Raymond Baker, Green Tye; Janusz Jozef Kulagowski, Bishops Stortford; Paul David Leeson, Cambridge, and Adrian Leonard Smith, Bishops Stortford, all of United Kingdom, assignors to Merck, Sharp & Dohme Ltd., Hoddeson, England

PCT No. PCT/GB94/00503, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/21626, PCT Pub. Date Sep. 29, 1994

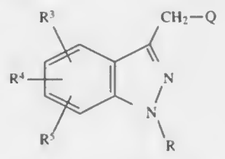
PCT Filed Mar. 14, 1994, Ser. No. 530,226

Claims priority, application United Kingdom, Mar. 18, 1993, 9305641

Int. Cl.[6] A61K *31/435;31/415;* **C07D** *401/06*

U.S. Cl. 514—307 **8 Claims**

1. A compound of formula I, or a pharmaceutically acceptable salt or prodrug thereof:

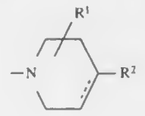


(I)

wherein

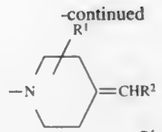
R represents hydrogen or C_{1-6} alkyl;

Q represents a moiety of formula Qa, Qb or Qc:

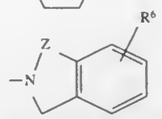


(Qa)

-continued



(Qb)



(Qc)

in which the broken line represents an optional chemical bond;

R^1 represents hydrogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, heteroaryl, heteroaryl(C_{1-6}) alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^2 represents an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl(C_{1-6})alkyl, aryl, aryl(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, heteroaryl, heteroaryl(C_{1-6}) alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^3, R^4 and R^5 independently represent hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^1 or —$CONR^aR^b$;

Z represents —CH_2— or —CH_2CH_2—;

R^6 represents hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkyl or halogen; and

R^a and R^b independently represent hydrogen, hydrocarbon or a heterocyclic group.

5,665,733

3-PHENYLISOQUINOL-1(2H)-ONE DERIVATIVES THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Mireille Sevrin, Paris; Benoit Marabout, Chilly Mazarin; Jacques Froissant, Morée, and Catherine Guinot, Paris, all of France, assignors to Synthelabo, Le Plessis Robinson, France

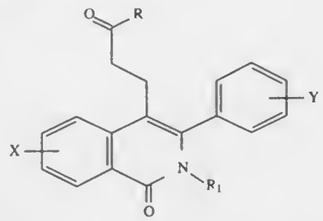
Filed Dec. 28, 1995, Ser. No. 579,677

Claims priority, application France, Dec. 29, 1994, 94 15837

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—309 **7 Claims**

1. A compound of formula (I)



(I)

in which

X represents a hydrogen atom, a halogen atom, a trifluoromethyl group, a C_1–C_3 alkyl group or a C_1–C_3 alkoxy group in which case two such alkoxy groups X can be present,

Y represents a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group or a C_1–C_3 alkoxy group,

R_1 represents a C_1–C_4 alkyl group, and

R represents a hydroxyl group, a methoxy group, an ethoxy group or a group of formula NR_2R_3 in which R_2 and R_3 each independently represents a hydrogen atom or a C_1–C_4 alkyl group, or a pharmaceutically acceptable addition salt thereof.

5,665,734

Patent Not Issued For This Number

5,665,735

UNBRIDGED BIS-ARYL CARBINOL DERIVATIVES COMPOSITIONS AND METHODS OF USE

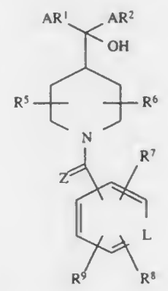
Richard Friary, Bridgewater; John J. Piwinski, Parsippany, and Jesse K. Wong, Union, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 307,801, Sep. 26, 1994, which is a continuation-in-part of Ser. No. 858,919, Mar. 27, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,149

Int. Cl.[6] A61K *31/445;* **C07D** *211/22;211/26;211/32*

U.S. Cl. 514—318 **22 Claims**

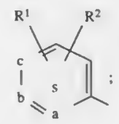
1. A method of treating inflammation or allergy comprising administering to a mammal in need of such treatment an antiinflammatory or anti-allergic effective amount of a compound of Formula 1.0



(1.0)

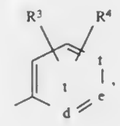
or a pharmaceutically acceptable salt or solvate thereof, wherein:

AR^1 represents



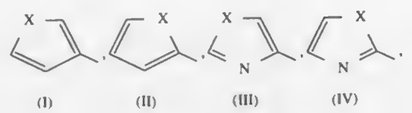
;

AR^2 represents

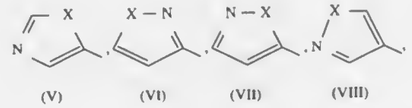


or a five-membered heterocyclic aromatic group selected from the group consisting of Formulas I to XII:

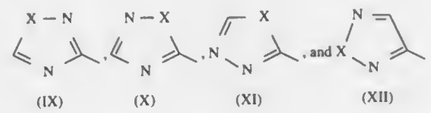
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(I) (II) (III) (IV)



(V) (VI) (VII) (VIII)



(IX) (X) (XI) (XII)

wherein X represents O, S, or NR^{10} wherein R^{10} is as defined below, said five-membered heterocyclic aromatic group can optionally be substituted with a group R^1 as defined below;

one of a, b and c represents N or N^+O^- and the remaining a, b, and c represent C, or all of a, b and c represent C;

one of d, e and f represents N or N^+O^- and the remaining d, e, and f represent C, or all of d, e and f represents C;

L represents N^+O^-;

R^1, R^2, R^3, and R^4 are each independently selected from the group consisting of: H, halo, $—CF_3$, $—OR^{11}$, $—C(O)R^{11}$, SR^{11}, $—S(O)_qR^{12}$ wherein q is 1 or 2, $—N(R^{11})_2$, $—NO_2$, $—OC(O)R^{11}$, $—CO_2R^{11}$, $—OCO_2R^{12}$, $—CON(R^{11})_2$, $—NR^{11}C(=O)R^{11}$, —CN, alkyl, aryl, alkenyl and alkynyl, said alkyl group is optionally substituted with $—OR^{11}$, $—SR^{11}$, $—N(R^{11})_2$ or $—CO_2R^{11}$, and said alkenyl group is optionally substituted with halo, $—OR^{12}$ or $—CO_2R_{11}$;

R^5 and R^6 are each independently selected from the group consisting of: H, alkyl and aryl; or R^5 can be taken together with R^6 to represent =O or =S;

R^7, R^8 and R^9 are each independently selected from the group consisting of: H, halo, $—CF_3$, $—OR^{11}$, $—C(O)R^{11}$, $—SR^{11}$, $—S(O)_eR^{12}$ wherein e is 1 or 2, $—N(R^{11})_2$, $—NO_2$, CN, $—CO_2R^{11}$, $—OCO_2R^{12}$, $—OC(O)R^{11}$, $—CON(R^{11})_2$, $—NR^{11}C(O)R^{11}$, alkyl, aryl, alkenyl and alkynyl, said alkyl group is optionally substituted with $—OR^{11}$, $—SR^{11}$, $—N(R^{11})_2$, or $—CO_2R^{11}$, and said alkenyl group is optionally substituted with halo, $—OR^{12}$ or $—CO_2R^{11}$;

R^{10} is selected from the group consisting of: H and alkyl;

R^{11} is selected from the group consisting of: H, alkyl and aryl;

R^{12} is selected from the group consisting of: alkyl and aryl; and

Z is selected from the group consisting of: O and S, or Z optionally represents H and R^{10};

wherein said alkyl contains from one to twenty carbon atoms, said alkenyl contains from 2 to 12 carbon atoms, said alkynyl contains from 2 to 12 carbon atoms, and said aryl contains from 6 to 14 carbon atoms.

5,665,736

N-BENZOYLMETHYL-PIPERDINES

Rafael Foguet; Santiago Gubert; Aurelio Sacristan, and José A. Ortiz, all of Barcelona, Spain, assignors to Ferrer Internacional, S.A., Barcelona, Spain

PCT No. PCT/EP95/01007, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/25732, PCT Pub. Date Sep. 28, 1995

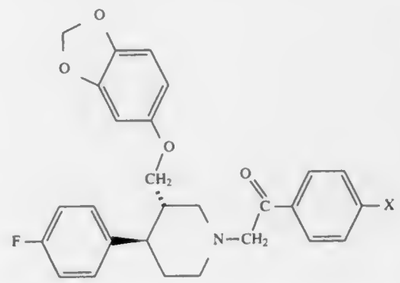
PCT Filed Mar. 17, 1995, Ser. No. 557,008

Claims priority, application Spain, Mar. 18, 1995, 9400582

Int. Cl.[6] A61K *31/445;* **C07D** *405/12*

U.S. Cl. 514—321 **10 Claims**

1. A N-Benzoylmethyl-piperidine of formula (I):



(I)

wherein X is a halogen atom or a pharmaceutically acceptable addition salt thereof.

5,665,737

SUBSTITUTED BENZOXAZOLES

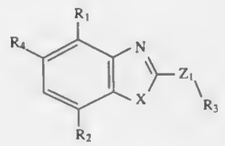
John David Cavalla, Cambridge, England; Lloyd J. Dolby, Eugene, Oreg.; Peter Hofer, Liestal, Switzerland, and Mark Chasin, Manalapan, N.J., assignors to Euro-Celtique, S.A., Luxembourg, Luxembourg

Filed Oct. 12, 1994, Ser. No. 321,730

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—338 **24 Claims**

1. A compound of the formula:



wherein:

X is O or S;

R_1 is selected from the group consisting of hydrogen, halogen, hydroxy, nitro, QZ_2, OQZ_2, $OCOQZ_2$, $NHQZ_2$ and $NCOQZ_2$;

R_2 is selected from the group consisting of halogen, hydroxy, nitro, QZ_2, OQZ_2, $OCOQZ_2$, $NHQZ_2$ and $NCOQZ_2$ wherein:

Q is a straight-chain or branched alkylene, alkenylene or alkynylene group having from 1 to 12 carbon atoms;

Z_2 is pyridyl optionally substituted with one to three groups selected from halogen atoms, C_1–C_6 alkyl groups, OH, OQH, NO_2, NH_2, CO_2QH, $CON(QH)_2$, OCOQH, and $OCON(QH)_2$;

wherein at least one of R_1 or R_2 has a substituent with Z_2;

R_3 is a six membered carbocyclic aryl substituted with 1–3 members of the group consisting of OH, O—(C_1–C_6) alkyl, O(CO)(C_1–C_6) alkyl, O—(C_3–C_{10}) cycloalkyl, R_5 or R_6;

Z_1 is a linkage selected from the group consisting of $—CH_2—$, $—CH_2CH_2—$, $—CH(CH_3)—$ and $—C(CH_3)_2—$;

R_4 is hydrogen or a halogen;

R_5 is hydrogen or C_1–C_{12} alkyl; and

R_6 is C_1–C_4 alkyl.

5,665,738

IMIDAZOLE DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Sung-Eun Yoo; Kyu-Yang Yi; Sang-Hee Lee; Hye-Ryung Kim; Jee-Hee Suh; Nak-Jeong Kim; Seon-Ju Kim; Ok-Ja Cha, all of Daejeon; Young-Ah Shin, Chungjoo; Wha-Sup Shin, Daejeon; Sung-Hou Lee, Daejeon; Yi-Sook Jung, Daejeon; Byung-Ho Lee, Daejeon; Ho-Won Seo, Daejeon, and Hye-Suk Lee, Daejeon, all of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

PCT No. PCT/KR95/00058, § 371 Date Nov. 13, 1996, § 102(e) Date Nov. 13, 1996, PCT Pub. No. WO95/32198, PCT Pub. Date Nov. 30, 1995

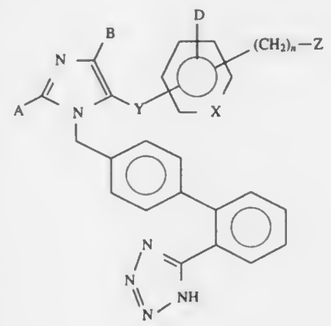
PCT Filed May 19, 1995, Ser. No. 737,563

Claims priority, application Rep. of Korea, May 21, 1994, 94-11099

Int. Cl.[6] A61K *31/415;31/44;* **C07D** *403/14*

U.S. Cl. 514—341 **5 Claims**

1. An imidazole compound of formula(I) and pharmacologically acceptable salts thereof:



(I)

wherein:

A is a straight, branched or cyclic C_1–C_6 alkyl group, or OR_1 wherein R_1 is a hydrogen, or a straight, branched or cyclic C_1–C_6 alkyl radical;

B is a halogen, CF_3 or CF_2CF_3;

X is N or N-oxide;

Y is $—CH_2—$, $—CH(OR_1)—$ wherein R_1 is the same as defined above, or —C(=O)—;

n is 0 or an integer of 1 to 4;

Z is a halogen, —OH, $—OR_1$, $—NR_1R_2$, $—N(=O)R_3R_4$, $—C(=O)R_1$, $—C(=O)OR_1$, $—CH(OR_1)_2$ or $—C(=O)NR_1R_2$ wherein R_1 is the same as defined above, R_2 is, independently of R_1, a hydrogen, or a straight, branched or cyclic C_1–C_6 alkyl radical, and R_3 and R_4 are independently a straight, branched or cyclic C_1–C_6 alkyl radical; and

D is a hydrogen, or a straight, branched or cyclic C_1–C_6 alkyl radical.

5,665,739

SUBSTITUTED BENZOYLGUANIDINES, PROCESS AND THEIR PREPARATION, THEIR USE AS PHARMACEUTICAL OR DIAGNOSTIC, AND PHARMACEUTICAL CONTAINING THEM

Hans-Jochen Lang, Hofheim/Taunus; Heinz-Werner Kleeman, Bad Homburg; Wolfgang Scholz, Eschborn, and Udo Albus, Florstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

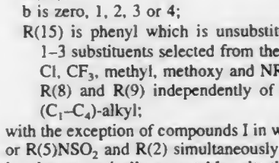
Continuation-in-part of Ser. No. 334,008, Nov. 2, 1994, abandoned, which is a continuation of Ser. No. 165,649, Dec. 13, 1993, abandoned. This application May 15, 1995, Ser. No. 440,619

Claims priority, application Germany, Dec. 15, 1992, 42 42 191.8; Apr. 9, 1993, 43 11 800.3

Int. Cl.[6] A61K *31/44;* **C07D** *213/02*

U.S. Cl. 514—345 **11 Claims**

1. A benzoylguanidine of the formula I



R(1) is hydrogen, F, Cl, Br, I, $—NO_2$, —C≡N, R(16)—C_pH_{2p}—O_q, R(4)—SO_m or R(5)R(6)N—SO_2—;

is zero, 1, 2 or 3;

q is zero or 1;

R(16) is C_rF_{2r+1};

r is 1, 2 or 3,

m is zero, 1 or 2;

R(4) and R(5) independently of one another are (C_1–C_8)-alkyl, (C_3–C_6)-alkenyl, $—C_nH_{2n}—$R(7) or CF3;

n is zero, 1, 2, 3 or 4

R(7) is (C_3–C_7)-cycloalkyl or phenyl, which is unsubstituted or substituted by 1–3 substituents selected from the group consisting of F, Cl, CF_3, methyl, methoxy and NR(8)R(9);

R(8) and R(9) independently of one another are H or C_1–C_4-alkyl; or

R(5) is H;

R(6) H or (C_1–C_4)-alkyl; or

R(5) and R(6) are together 4 or 5 methylene groups, of which one CH_2 group can be replaced by oxygen, S, NH, N—CH_3 or N-benzyl;

R(2) is (C_1–C_9)-heteroaryl, which is linked via C or N and which is unsubstituted or substituted by 1–3 substituents selected from the group consisting of F, Cl, CF_3, CH_3, methoxy, hydroxy, amino, methylamino and dimethylamino; or

R(2) is —SR(10), —OR(10), —NR(10)R(11) or —CR(10)R(11)R(12);

R(10) is $—C_nH_{2n}—$(C_1–C_9)-heteroaryl, which is unsubstituted or substituted by 1–3 substituents selected from the group consisting of F, Cl, CF_3, CH_3, methoxy, hydroxyl, amino, methylamino and dimethylamino;

a is zero, 1 or 2;

R(11) and R(12) independently of one another have the definition given R(10) or are hydrogen or (C_1–C_4)-alkyl;

R(3) has the definition given for R(1) or is (C_1–C_6)-alkyl or —X—R(13);

X is oxygen, S or NR(14);

R(14) is H or (C_1 –C_3)-alkyl;

R(13) is H, (C_1–C_6)-alkyl, (C_3–C_8)-cycloalkyl:or $—C_bH_{2b}—$R(15);

b is zero, 1, 2, 3 or 4;

R(15) is phenyl which is unsubstituted or substituted by 1–3 substituents selected from the group consisting of F, Cl, CF_3, methyl, methoxy and NR(8)R(9);

R(8) and R(9) independently of one another are H or (C_1–C_4)-alkyl;

with the exception of compounds I in which R(1) is R(4)-SO_m or R(5)NSO_2 and R(2) simultaneously is (C_1–C_9)-heteroaryl, and the pharmaceutically acceptable salts thereof.

5,665,740

ISOPROPYL 2-METHOXYETHYL 4-(2-CHLORO-3-CYANO-PHENYL)-1, 4-DIHYDRO-2,6-DIMETHYL-PYRIDINE-3,5-DICA RBOXYLATE

Heinrich Meier, Kobe, Japan; Wolfgang Hartwig, Stamford, Conn.; Bodo Junge; Rudolf Schohe-Loop, both of Wuppertal, Germany; Zhan Gao, Beijing, China; Bernard Schmidt, Lindlar, Germany; Maarten de Jonge, Overath, Germany, and Teunis Schuurman, Lohmar, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 2, 1994, Ser. No. 348,436

Claims priority, application Germany, Dec. 10, 1993, 43 42 194.6; Jul. 13, 1994, 44 24 677.3

Int. Cl.[6] C07D *211/86;* A61K *31/455*

U.S. Cl. 514—556 4 Claims

1. Isopropyl 2-methoxyethyl 4-(2-chloro-3-cyano-phenyl)-1,4-dihydro-2,6-dimethyl-pyridine-3,5-dicarboxylate as a racemate or as its enantiomeric form.

5,665,741

1,4-DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID ESTERS IN TREATMENT OF NEURONAL DISEASES

Klaus Urbahns; Otto Behner; Siegfried Goldmann, all of Wuppertal; Hans-Georg Heine, Krefeld; Bodo Junge, Wuppertal; Rudolf Schohe-Loop, Wuppertal; Egbert Wehinger, Wuppertal; Hartmund Wollweber, Wuppertal; Henning Sommermeyer, Köln; Thomas Glaser, Overath; Reilinde Wittka, Köln, and Jean-Marie-Viktor de Vry, Rösrath, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

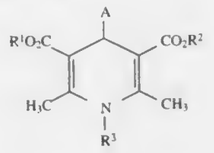
Filed Aug. 18, 1995, Ser. No. 516,668

Claims priority, application Germany, Aug. 25, 1994, 44 30 094.8

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—356 11 Claims

1. Method of treating neuronal diseases by selectively modulating on calcium dependent potassium channels of high conductivity by administering 1,4-dihydropyridine-3,5-dicarboxylic acid esters of the general formula (I)



(I)

in which

A represents aryl having 6 to 10 carbon atoms or pyridyl, which are optionally substituted up to 3-fold in an identical or different manner by nitro, cyano, halogen, trifluoromethyl or by straight-chain or branched alkylthio having up to carbon atoms,

R^1 and R^2 are identical or different and represent cycloalkyl having 3 to 6 carbon atoms or represent straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted up to 2-fold in an identical or different manner by straight-chain or branched alkoxy having up to 4 carbon atoms, halogen or by a group of the formula $—NR^4R^5$, wherein

R^4 and R^5 are identical or different and denote hydrogen, benzyl, phenyl or straight-chain or branched alkyl having up to 4 carbon atoms, and

R^3 represents cycloalkyl having 3 to 6 carbon atoms or represents straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by hydroxyl, phenyl or by straight-chain or branched alkoxy or alkoxycarbonyl having in each case up to 6 carbon atoms, and salts thereof.

5,665,742

BATH MEDICINE COMPOSITION AND ITS USE IN INHIBITING THE GENERATION OF BODY ODOR

Shinobu Mori, Kanuma; Wataru Okawa, and Hidenori Yorozu, both of Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 24, 1995, Ser. No. 448,774

Claims priority, application Japan, May 31, 1994, 6-118062

Int. Cl.[6] A61K *31/44;31/17;31/14;31/075*

U.S. Cl. 514—358 14 Claims

1. A bath medicine composition comprising at least one germicide (A) selected from the group consisting of phenolic germicides, cationic germicides and trichlorocarbanilide, and a carbon dioxide generating component (B), wherein component B comprises a carbonate and an acid.

5,665,743

6-HETEROCYCLIC-4-AMINO-1,3,4,5-TETRAHYDROBENZ[CD] INDOLES

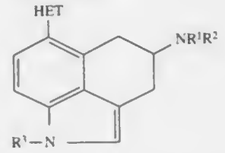
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Charles J. Paget, Jr., Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 299,175, Aug. 31, 1994, which is a division of Ser. No. 954,105, Sep. 30, 1992, Pat. No. 5,364,856, which is a continuation-in-part of Ser. No. 677,016, Mar. 28, 1991, Pat. No. 5,244,912. This application May 31, 1995, Ser. No. 454,888

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—361 9 Claims

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, $—(CH_2)_nS(C_1$–C_4 alkyl), $—C(O)R^4$, or $—(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

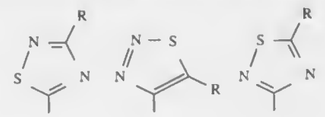
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

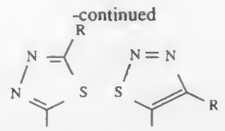
R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



-continued



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,665,744

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZN [CD] INDOLES

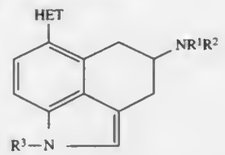
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, which is a division of Ser. No. 954,171, Sep. 20, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Jun. 2, 1995, Ser. No. 459,431

Int. Cl.[6] C07D *417/04;* A61K *31/41*

U.S. Cl. 514—361 9 Claims

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, $—(CH_2)_nS(C_1$–C_4 alkyl), $—C(O)R^4$, or $—(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

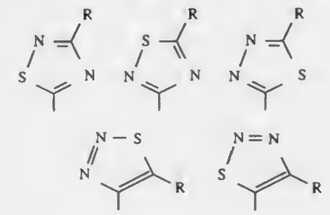
R^3 is hydrogen, C_3–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,665,745

HETEROCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE

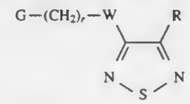
Charles A. Alt, Greenwood; Leander Merritt; Gary A. Rhodes, both of Indianapolis; Roger L. Robey; Eldon E. Van Meter, both of Greenwood; John S. Ward, Indianapolis, and Charles H. Mitch, Columbus, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 443,673, Jun. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 327,766, Oct. 24, 1994. This application Jun. 6, 1995, Ser. No. 470,791

Int. Cl.[6] C07D *417/14;* A61K *31/41*

U.S. Cl. 514—362 31 Claims

1. A compound of formula I, or the quaternized form thereof:



(I)

wherein

W is oxygen or sulphur;

R is hydrogen, amino, halogen, NHR^6, NR^6R^7, R^4, $—OR^4$, $—SR^4$, $—SOR^4$, $—SO_2R^4$, C_{3-10}-cycloalkyl, C_{4-12}-(cycloalkylalkyl), —Z— C_{3-10}-cycloalkyl or —Z—C_{4-12}-(cycloalkylalkyl); or

R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with one or more substituents independently selected from halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CF_3$, $—CONH_2$ and $—CSNH_2$; or

R is $—OR^5Y$, $—SR^5Y$, $OR^5—Z—Y$, $—SR^5ZY$, $—O—R^5—Z—R^4$ or $—S—R^5—Z—R^4$;

Z is oxygen or sulphur;

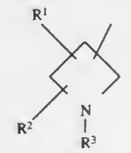
R^4 is C_{1-15}-alkyl, C_{2-15}-alkenyl or C_{2-15}-alkynyl, each of which is optionally substituted with one or more substituents independently selected from halogen, $—CF_3$, —CN, Y, phenyl and phenoxy, wherein phenyl or phenoxy is optionally substituted with one or more substituents independently selected from halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CF_3$, $—CONH_2$ and $—CSNH_2$;

R^5 is C_{1-15}-alkylene, C_{2-15}-alkenylene, and C_{2-15}-alkynylene;

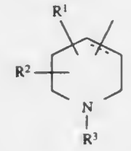
Y is a 5 or 6 membered heterocyclic group;

G is selected from one of the following azacyclic or azabicyclic ring systems:

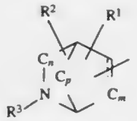
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het-2



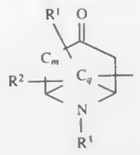
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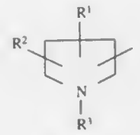
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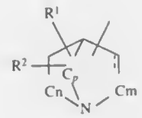
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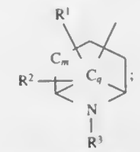
het-5



het-6



het-7



or G is C_3–C_8 cycloalkyl optionally substituted by R^1, R^2 or —NR^6R^7; or G is C_{1-6}-alkyl optionally substituted by —NR^6R^7;

R^6 and R^7 independently are hydrogen or C_{1-6}-alkyl; or R^6 and R^7 together form a C_3–C_5-alkylene group which together with the nitrogen atom form a 4- to 6-membered ring;

R^1 and R^2 independently are hydrogen, C_{1-15}-alkyl, C_{2-5}-alkenyl, C_{2-5}-alkynyl, C_{1-10}-alkoxy, or C_{1-5}-alkyl substituted with one or more substituents independently selected from —OH, —$COR^{6'}$, CH_2—OH, halogen, —NH_2, carboxy, and phenyl;

$R^{6'}$ is hydrogen or C_{1-6}-alkyl;

R^3 is hydrogen, C_{1-5}-alkyl, C_{2-5}-alkenyl or C_{2-5}-alkynyl;

m, n, p and r are independently 0, 1 or 2;

q is 1 or 2; and

------- is a single or double bond; provided that: 1) when W is oxygen and G is alkyl, R cannot be halogen; and 2) one of m, n, or p must be other than 0; or

a pharmaceutically acceptable salt or solvate thereof.

5,665,746

MONO- AND BICYCLIC DNA GYRASE INHIBITORS

Jürgen Geiwiz, Lörrach, Germany; Erwin Götschl, Reinach, Switzerland; Paul Hebeisen; Helmut Link, both of Basel, Switzerland, and Thomas Lübbers, Lörrach, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

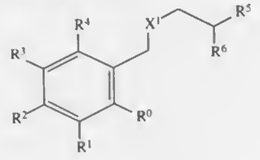
Division of Ser. No. 407,730, Mar. 20, 1995, Pat. No. 5,589,473. This application Oct. 11, 1995, Ser. No. 540,678

Claims priority, application European Pat. Off., Mar. 30, 1994, 94104995; Feb. 7, 1995, 95101595

Int. Cl.[6] A61K *31/41*; **C07D** *291/08*

U.S. Cl. 514—364 **38 Claims**

1. A compound of the formula



wherein

X^1 is —S— or —SO—;

R^1 is hydrogen, halogen or optionally substituted lower alkyl, the optional substituent being halogen;

R^2 is hydrogen, hydroxy, amino, lower alkylamino, di-lower alkylamino, optionally substituted lower alkoxy or a group -OP;

OP is an easily hydrolyzable group;

R^3 is hydrogen, hydroxy, lower alkyl, halogen or a group -OP;

R^4 is halogen, hydroxy or a group -OP;

R^5 is a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more of the following substituents selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy amino, a group -OP, lower alkylamino, di-lower-alkylamino, lower cycloalkylamino, di-lower-cycloalkylamino, heterocycleamino, heterocycleoxy, heterocyclethio, where heterocycle refers to a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more groups selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy, amino, or a group -OP, and which can be optionally fused to a saturated or unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, quarternary ammonium group, acylamino, amidino optionally mono-, di-, or tri-substituted by lower alkyl, iminoyl optionally mono- or di-substituted by lower alkyl, carbamoyloxy optionally substituted by lower alkyl or lower aryl, lower alkylthio, lower cycloalkyloxy, lower cycloalkylthio, lower alkenylalkoxy, lower alkenylalkylthio, aryloxy, acyloxy, lower alkylsulfinyl or lower alkylsulfonyl,, lower alkenylalkylsulfinyl or lower alkenylalkylsulfonyl, lower cycloalkylsulfinyl or lower cycloalkylsulfonyl, arylsulfinyl or arylsulfonyl, or hydroxyimino, or by 1–2 groups of the formula -(E)$_m$-Y, wherein Y is alkyl, alkenyl, alkenylalkyl, alkynylalkyl, lower cycloalkyl, lower cycloalkyl-lower alkyl, lower cycloalkyl-lower alkenylalkyl, heterocycle, heterocycle-lower alkyl, heterocycle-lower alkenylalkyl, where heterocycle refers to a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more groups selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy, amino, or a group -OP, and which can be optionally fused to a saturated or unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, aryl, aryl-lower alkyl, or aryl-lower alkenylalkyl, each of the foregoing Y being optionally substituted by one or more halogen, amino, oxo, thioxo, cyano, nitro, azido, sulfamoyl or aminosulfonyl, lower alkylamino, di-lower-alkylamino, lower cycloalkylamino, di-lower-cycloalkylamino, hydroxy, lower alkoxy, a group -OP, or acylamino, and each of the foregoing Y also being optionally substituted by carboxy which is optionally esterified or amidated; E is —O—, —S—, —SO_2—, —COO—, —OCO—, —$CONR^7$—, —NR^7—, —NR^7—CO—, —NR^7SO_2—, —NR^7COO— or —NR^7CONR^7—, where R^7 is hydrogen or lower alkyl, and m is zero or 1;

R^6 is —NR^7-A or —N=B, in which R^7 is hydrogen or lower alkyl, A is optionally substituted iminoyl, optionally substituted (thio)acyl, optionally substituted esterified carboxy, optionally substituted amidated (thio)carboxy or a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more of the following substituents selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy amino, a group -OP, lower alkylamino, di-lower-alkylamino, lower cycloalkylamino, di-lower-cycloalkylamino, heterocycleamino, heterocycleoxy, heterocyclethio, where heterocycle refers to a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more groups selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy, amino, or a group -OP, and which can be optionally fused to a saturated or unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, quaternary ammonium group, acylamino, amidino optionally mono-, di-, or tri-substituted by lower alkyl, iminoyl optionally mono- or di-substituted by lower alkyl, carbamoyloxy optionally substituted by lower alkyl or lower aryl, lower alkylthio, lower cycloalkyloxy, lower cycloalkylthio, lower alkenylalkoxy, lower alkenylalkylthio, aryloxy, acyloxy, lower alkylsulfinyl or lower alkylsulfonyl, lower alkenylalkylsulfinyl or lower alkenylalkylsulfonyl, lower cycloalkylsulfinyl or lower cycloalkylsulfonyl, arylsulfinyl or arylsulfonyl, or hydroxyimino or by 1–2 groups of the formula -(E)$_m$-Y, wherein Y is alkyl, alkenyl, alkenylalkyl, alkynylalkyl, lower cycloalkyl, lower cycloalkyl-lower alkyl, lower cycloalkyl-lower alkenylalkyl, heterocycle, heterocycle-lower alkyl, heterocycle-lower alkenylalkyl, where heterocycle refers to a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more groups selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy, amino, or a group -OP, and which can be optionally fused to a saturated or unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, aryl, aryl-lower alkyl, or aryl-lower alkenylalkyl, each of the foregoing Y being optionally substituted by one or more halogen, amino, oxo, thioxo, cyano, nitro, azido, sulfamoyl or aminosulfonyl, lower alkylamino, di-lower-alkylamino, lower cycloalkylamino, di-lower-cycloalkylamino, hydroxy, lower alkoxy, a group -OP, or acylamino, and each of the foregoing Y also being optionally substituted by carboxy which is optionally esterified or amidated; E is —O—, —S—, —SO_2—, —COO—, —OCO—, —$CONR^7$—, —NR^7—, —NR^7—CO—, —NR^7SO_2—, —NR^7COO— or —NR^7CONR^7—, where R^7 is hydrogen or lower alkyl, and m is zero or 1 and B is optionally substituted alkylidene;

R^0 is cyano or optionally substituted esterified carboxy; or the pharmaceutically acceptable salts thereof carrying an acidic and/or basic substituent.

5,665,747

1,1-BIS(HETEROAZOLYL)ALKANE DERIVATIVES AND THEIR USE AS NEUROPROTECTIVE AGENTS

Robin Bernard Boar, 25 Meadow Way Letchworth, Hertfordshire, Great Britain, SG6 3JB; Duncan Alastair Gray, Little Cefn Farm Hyssington Churchstoke, Powys, Great Britain, SY15 6EQ, and Dennis Mark O'Shea, 26 Hurtstlings Welwyn Garden City, Hertfordshire, Great Britain, AL7 3LX

Filed Jun. 7, 1995, Ser. No. 485,719

Claims priority, application Sweden, Jun. 7, 1994, 9401965

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—365 **6 Claims**

1. A method for the treatment of acute and chronic neuropsychiatric disorders characterized by progressive processes that lead to neuronal cell death and dysfunction which comprises administering to a host in need of such treatment a therapeutically effective amount of a compound having the general formula (1)



(1)

wherein:

X_1 and X_2 are independently O, S or Se;

Y_1 and Y_2 are independently C or N with the proviso that at least one of Y_1 and Y_2 is N;

Y_3 and Y_4 are independently C or N with the proviso that at least one of Y_3 and Y_4 is N;

R_1 and R_2 each represent at least on group independently selected from the group consisting of H, lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, lower acyloxy-lower alkyl and CF_3;

unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, quaternary ammonium group, acylamino, amidino optionally mono-, di-, or tri-substituted by lower alkyl, iminoyl optionally mono- or di-substituted by lower alkyl, carbamoyloxy optionally substituted by lower alkyl or lower aryl, lower alkylthio, lower cycloalkyloxy, lower cycloalkylthio, lower alkenylalkoxy, lower alkenylalkylthio, aryloxy, acyloxy, lower alkylsulfinyl or lower alkylsulfonyl, lower alkenylalkylsulfinyl or lower alkenylalkylsulfonyl, lower cycloalkylsulfinyl or lower cycloalkylsulfonyl, arylsulfinyl or arylsulfonyl, or hydroxyimino or by 1–2 groups of the formula -(E)$_m$-Y, wherein Y is alkyl, alkenyl, alkenylalkyl, alkynylalkyl, lower cycloalkyl, lower cycloalkyl-lower alkyl, lower cycloalkyl-lower alkenylalkyl, heterocycle, heterocycle-lower alkyl, heterocycle-lower alkenylalkyl, where heterocycle refers to a 4 to 7 member saturated or unsaturated heterocycle containing 1–4 nitrogen atoms and/or 1–2 sulfur or oxygen atoms which can be optionally substituted by one or more groups selected from lower alkyl, lower alkoxy, lower acyl, halogen, hydroxy, oxo, optionally esterified or amidated carboxy, amino, or a group -OP, and which can be optionally fused to a saturated or unsaturated 5 to 7 membered ring which can contain 1–4 nitrogen atoms and/or a sulfur or oxygen atom, aryl, aryl-lower alkyl, or aryl-lower alkenylalkyl, each of the foregoing Y being optionally substituted by one or more halogen, amino, oxo, thioxo, cyano, nitro, azido, sulfamoyl or aminosulfonyl, lower alkylamino, di-lower-alkylamino, lower cycloalkylamino, di-lower-cycloalkylamino, hydroxy, lower alkoxy, a group -OP, or acylamino, and each of the foregoing Y also being optionally substituted by carboxy which is optionally esterified or amidated; E is —O—, —S—, —SO_2—, —COO—, —OCO—, —$CONR^7$—, —NR^7—, —NR^7—CO—, —NR^7SO_2—, —NR^7COO— or —NR^7CONR^7—, where R^7 is hydrogen or lower alkyl, and m is zero or 1 and B is optionally substituted alkylidene;

R^0 is cyano or optionally substituted esterified carboxy; or the pharmaceutically acceptable salts thereof carrying an acidic and/or basic substituent.

5,665,748

OXAZOLIDINEDIONE DERIVATIVES AND THEIR USE

Takashi Sohda, Takatsuki; Hitoshi Ikeda, Higashiosaka; Yu Momose, Takarazuka, and Sachiko Imai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

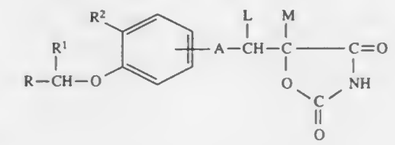
Continuation of Ser. No. 201,021, Feb. 24, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,107

Claims priority, application Japan, Feb. 26, 1993, 5-038236; Aug. 9, 1993, 5-197304

Int. Cl.[6] C07D *277/22*; **A61K** *31/42*

U.S. Cl. 514—365 **13 Claims**

1. A 2,4-oxazolidinedione compound of the formula:



wherein

R is oxazolyl, thiazolyl or triazolyl which groups are unsubstituted or are substituted by 1 to 3 substituents selected from the group consisting of

(1) C_1–C_3 alkyl,

(2) phenyl,

(3) naphthyl,

(4) furyl, and

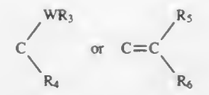
(5) thienyl,

A is bivalent straight or branched hydrocarbon having 1 to 4 carbon atoms,

R^1 and R^2 are each hydrogen or alkyl of 1 to 4 carbon atoms, and L and M are each hydrogen or are combined with each other to form a bond,

or a pharmaceutically acceptable salt thereof.

and A is



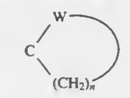
wherein W is O, S, NH or N-lower alkyl,

R_3 is H, lower alkyl or lower acyl,

or WR_3 is H,

R_4 is lower alkyl or lower perfluoroalkyl,

or R_3 and R_4 together form a ring



wherein n is 2, 3 or 4,

R_5 and R_6 independently are H or lower alkyl;

geometrical and optical isomers and racemates thereof where such isomers exist, as well as pharmaceutically acceptable acid addition salts thereof and solvates thereof.

5,665,749

BENZISOTHIAZOLES DERIVATIVES AS INHIBITORS OF 5-LIPOXYGENASE BIOSYNTHESIS

James Frederick Eggler, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

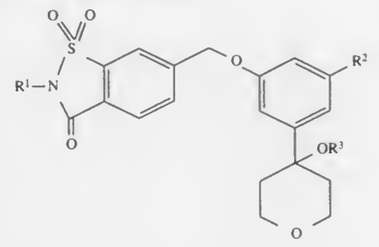
PCT No. PCT/IB95/00037, § 371 Date Sep. 30, 1996, § 102(e) Date Sep. 30, 1996, PCT Pub. No. WO95/26346, PCT Pub. Date Oct. 5, 1995

Continuation of Ser. No. 218,788, Mar. 28, 1994, abandoned. This PCT application Jan. 18, 1995, Ser. No. 716,341

Int. Cl.[6] C07D *417/12;* A01K *31/425*

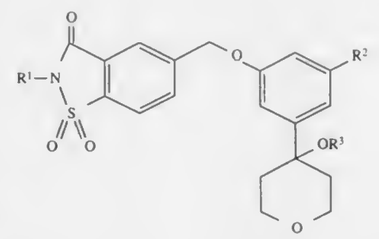
U.S. Cl. 514—373 **9 Claims**

1. A compound of the formula



(I)

or



(II)

wherein

R^1 is $(C_1–C_6)$alkyl, $(C_3–C_{10})$cycloalkyl, $(C_3–C_6)$alkenyl, $(C_3–C_6)$alkynyl or $(C_1–C_6)$alkyl-phenyl wherein the alkyl portion is optionally substituted by methyl or ethyl and the phenyl portion is optionally substituted by $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkyl, F, Cl, Br or CF_3;

R^2 is hydrogen or fluoro; and

R^3 is hydrogen, methyl, ethyl, propyl, isopropyl, CF_2H or CF_3.

5,665,750

SYNERGISTIC FUNGICIDAL DIFENZOQUAT COMPOSITIONS

Peter Nigel Tayler, Hampshire, England, assignor to American Cyanamid Company, Parsippany, N.J.

Filed Jun. 2, 1995, Ser. No. 459,153

Claims priority, application United Kingdom, Nov. 7, 1994, 942243

Int. Cl.[6] A01N *43/56;43/64*

U.S. Cl. 514—383 **11 Claims**

1. A method for the synergistic control of a phytopathogenic fungus and the prevention or control of disease caused thereby which comprises contacting said fungus with a synergistic fungicidally effective amount of a combination of difenzoquat and metconazole wherein said difenzoquat and metconazole are present in a weight ratio of about 0.10:1 to 15:1.

5,665,751

PHARMACEUTICAL COMPOSITION FOR INHIBITING THE GROWTH OF CANCERS

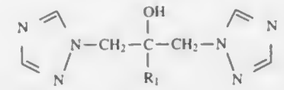
James Berger Camden, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 473,818

Int. Cl.[6] A61K *31/425*

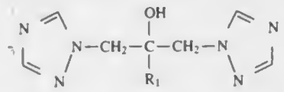
U.S. Cl. 514—383 **16 Claims**

1. A method of treating cancer and viral infections in warm blooded mammals comprising administering a safe and effective amount of a 1,3-bis-triazolyl-2-propanol derivative of the formula:



wherein R^1 is a substituted alkyl, cycloalkyl, aryl or haloaryl or aralkyl; and salts and metal complexes and ethers or esters thereof, and the non-toxic, pharmaceutically acceptable acid addition salts with both organic and inorganic acids.

12. A method of treating influenza infections in warm blooded mammals comprising administering a safe and effective amount of a 1,3-bis-triazolyl-2-propanol derivative of the formula:



wherein R^1 is aryl or haloaryl or aralkyl and salts or metal complexes or ethers or esters thereof, and the non-toxic, pharmaceutically acceptable acid addition salts with organic or inorganic acids.

5,665,752

USE OF IMIDAZOPYRAZOLE DERIVATIVES AS ANALGESICS AND ANTI-INFLAMMATORY AGENTS

Atsusuke Terada; Kazuyuki Wachi; Hachio Miyazawa; Yoshio Iizuka; Kazuo Hasegawa, and Keiichi Tabata, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

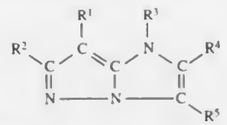
Division of Ser. No. 260,896, Jun. 16, 1994, which is a division of Ser. No. 975,987, Nov. 13, 1992, Pat. No. 5,354,768, which is a continuation of Ser. No. 831,004, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 620,839, Nov. 29, 1990, abandoned, which is a division of Ser. No. 596,578, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 384,725, Jul. 25, 1989, abandoned. This application Apr. 7, 1995, Ser. No. 418,825

Claims priority, application Japan, Jul. 26, 1988, 1-186132

Int. Cl.[6] A61K *31/415;* C07D *235/00*

U.S. Cl. 514—393 **13 Claims**

1. A method of relieving or alleviating allergic reactions by the administration to a mammal suffering from said allergic reactions of an effective amount of an inhibitor of 5-lipoxygenase, wherein said inhibitor is selected from the group consisting of compounds of formula (I):



(I)

in which:

R^1 and R^2 are independently selected from the group consisting of: hydrogen atoms; $C_1–C_{25}$ alkyl groups; substituted $C_1–C_6$ alkyl groups having at least one substituent selected from the group consisting of substituents (a), defined below; $C_3–C_8$ cycloalkyl groups; $C_2–C_6$ alkenyl groups; aralkyl groups in which the alkyl part is $C_1–C_4$ and the aryl part is $C_6–C_{10}$ and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; arylalkenyl groups in which the aryl part is a $C_6–C_{10}$ aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below, and the alkenyl part is $C_2–C_3$ alkenyl; $C_6–C_{10}$ aryl groups; $C_6–C_{10}$ aryl groups having at least one substituent selected from the group consisting of substituents (b), defined below; cyano groups; and halogen atoms;

R^3 represents: a hydrogen atom; a $C_1–C_{25}$ alkyl group; a substituted $C_1–C_6$ alkyl group having at least one substituent selected from the group consisting of substituents (a), defined below; an aralkyl group in which the alkyl part is $C_1–C_4$ and the aryl part is $C_6–C_{10}$ and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; a $C_1–C_6$ aliphatic carboxylic acyl group; or an aromatic carboxylic acyl group in which the aryl part is a $C_6–C_{10}$ carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; R^4 and R^5 are independently selected from the group consisting of: hydrogen atoms; $C_1–C_{25}$ alkyl groups; substituted $C_1–C_6$ alkyl groups having at least one substituent selected from the group consisting of substituents (a), defined below; $C_3–C_8$ cycloalkyl groups; $C_2–C_6$ alkenyl groups; aralkyl groups in which the alkyl part is $C_1–C_4$ and the aryl part is $C_6–C_{10}$ and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; arylalkenyl groups in which the aryl part is a $C_6–C_{10}$ aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below, and the alkenyl part is $C_2–C_3$ alkenyl; $C_6–C_{10}$ aryl groups; and $C_6–C_{10}$ aryl groups having at least one substituent selected from the group consisting of substituents (b), defined below;

substituents (a):

hydroxy groups, halogen atoms, carboxy groups, cyano groups, and $C_2–C_7$ alkoxycarbonyl groups

substituents (b):

$C_1–C_6$ alkyl groups; halogen atoms; $C_1–C_6$ alkoxy groups; aryloxy groups in which the aryl part is an unsubstituted $C_6–C_{10}$ carbocyclic aryl group; aralkyloxy groups in which the alkyl part is $C_1–C_4$ and the aryl part is $C_6–C_{10}$ and is unsubstituted; $C_1–C_6$ aliphatic carboxylic acyl groups; aromatic carboxylic acyl groups in which the aryl part is a $C_6–C_{10}$ carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of $C_1–C_4$ alkyl groups, $C_1–C_4$ alkoxy groups and halogen atoms; $C_1–C_6$ aliphatic carboxylic acyloxy groups; aromatic carboxylic acyloxy groups in which the aryl part is a $C_6–C_{10}$ carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of $C_1–C_4$ alkyl groups, $C_1–C_4$ alkoxy groups and halogen atoms; amino groups; $C_1–C_4$ alkylamino groups; dialkylamino groups in which each alkyl part is $C_1–C_4$; $C_1–C_6$ aliphatic carboxylic acylamino groups; aromatic carboxylic acylamino groups in which the aryl part is a $C_6–C_{10}$ carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of $C_1–C_4$ alkyl groups, C_1 - C_4 alkoxy groups and halogen atoms; $C_1–C_4$ haloalkyl groups; carbamoyl groups; alkylcarbamoyl and dialkylcarbamoyl groups in which the or each alkyl group is $C_1–C_4$; carboxy groups; hydroxy groups; cyano groups; and $C_2–C_7$ alkoxycarbonyl groups;

and pharmaceutically acceptable salts thereof.

5,665,753

CYTOKINE INHIBITING IMIDAZOLE SUBSTITUTED HYDROXAMIC ACID DERIVATIVES

James Simpson Frazee, Sewell, N.J.; John Gerald Gleason, Downingtown, and Brian Walter Metcalf, Radnor, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US95/02606, § 371 Date Sep. 3, 1996, § 102(e) Date Sep. 3, 1996, PCT Pub. No. WO95/23790, PCT Pub. Date Sep. 8, 1995

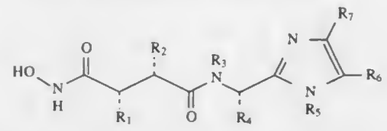
PCT Filed Mar. 3, 1995, Ser. No. 702,528

Claims priority, application United Kingdom, Mar. 3, 1994, 9404046

Int. Cl.[6] A01N *43/52;* A61K *31/415;* C07D *233/64;235/04*

U.S. Cl. 514—394 **16 Claims**

1. A compound according to the formula



(I)

wherein

R_1 is hydrogen, hydroxy, optionally substituted $C_{1–6}$ alkyl, optionally substituted $C_{1–6}$ alkenyl, phenyl, optionally substituted phenyl $C_{1–6}$ alkyl-, $R_7—S(O)_nC_{1–6}$-alkyl-;

n is 0 or an integer having a value of 1 or 2;

R_7 is $C_{1–6}$ alkyl, phenyl, phenyl $C_{1–6}$ alkyl, heterocyclic, heterocyclic $C_{1–6}$ alkyl, heteroaryl, heteroaryl $C_{1–6}$ alkyl, $C_{1–6}$ alkyl carbonyl, or phenacyl, all of which may be optionally substituted one to four time independently from C1–6 alkyl, $C_{1–6}$ alkoxy, hydroxy, thio $C_{1–6}$alkyl, amino, halogen, CF_3 or nitro;

R_2 is hydrogen, $C_{1–6}$alkyl, $C_{1–6}$ alkenyl, phenyl $C_{1–6}$ alkyl, cycloalkyl $C_{1–6}$ alkyl, or cycloalkenyl $C_{1–6}$ alkyl;

R_3 is hydrogen or methyl;

R_4 is hydrogen, $C_{1–6}$ alkyl, cyclopropyl, an amino acid residue, optionally substituted phenyl, optionally substituted phenyl $C_{1–6}$ alkyl-, optionally substituted —$C_{1–6}$-alkyl-oxy $C_{1–6}$alkyl, optionally substituted —$C_{1–6}$ alkyl oxy $C_{1–6}$ alkyl phenyl, or an optionally substituted —$C_{1–6}$ alkyl oxy phenyl;

wherein the phenyl or benzyl moiety is independently substituted one to four times by halogen, $C_{1–6}$ alkyl, $C_{1–6}$ alkoxy, hydroxy, thiol, $C_{1–6}$alkylthio-, —$NR_{12}R_{13}$, —NHR^a, —NO_2, —$C(O)_2R_{14}$, —$C(O)_2NR_{12}R_{13}$, cyanoamino, $R_{14}C(O)$—O—, $C_{1–6}$ alkyl OH, $C_{1–6}$ alkyl-$C(O)_2R_{14}$, $C_{1–6}$ alkyl-oxy-$C_{1–6}$ alkyl, $C(O)C_{1–6}$ alkyl$NR_{12}R_{13}$, or $C_{1–6}$ alkyl-$(O)_2C—R_{14}$;

R^a is hydrogen, $C_{1–6}$ alkyl, or the side chain of an amino acid,

R_{14} is hydrogen, $C_{1–6}$ alkyl, $C_{3–7}$ cycloalkyl, $C_{3–7}$ cycloalkyl $C_{1–6}$ alkyl, aryl $C_{1–6}$ alkyl, heteroaryl$C_{1–6}$alkyl, or heterocyclic $C_{1–6}$ alkyl;

R_5 is hydrogen or $C_{1–6}$ alkyl;

R_6 and R_7 are independently hydrogen, halogen, CF_3, $C_{1–6}$ alkyl, aryl, aryl$C_{1–6}$alkyl, heteroaryl, heteroaryl$C_{1–6}$alkyl, heterocyclic, heterocyclic $C_{1–6}$ alkyl, (CHR_8)m' OH, (CHR_8)m $C(O)_2R_{10}$, (CHR_8)m $C(OH)(R_9)_2$, (CR_8R_9)-OH, $C(O)R_{11}$, $C(O)NR_{12}R_{13}$, $C(O)_2R_{10}$, or NO_2; or R_6 and R_7 can together form a fused C 2–4 alkylene, aryl or heteroaryl moiety;

m is 0 or an integer having a value of 1 or 2;

m' is an integer having a value of 1, 2, or 3;

R_8 and R_9 are independently hydrogen, $C_{1–4}$ alkyl or phenyl;

R_{10} is hydrogen, $C_{1–6}$ alkyl, $C_{3–7}$ cycloalkyl, $C_{3–7}$ cycloalkyl $C_{1–}$alkyl, $C_{5–7}$ cycloalkenyl, aryl$C_{1–6}$alkyl, heteroaryl$C_{1–6}$alkyl, heterocyclic, heterocyclic $C_{1–6}$ alkyl all of which may be optionally substituted by halogen, hydroxyl, —$C_{1–6}$alkoxy, -thio$C_{1–6}$ alkyl, or CF3;

R_{11} is hydrogen, $C_{1–6}$ alkyl, $C_{3–7}$ cycloalkyl, $C_{3–7}$ cycloalkyl $C_{1–6}$ alkyl, $C_{5–7}$ cycloalkenyl, aryl, aryl$C_{1–6}$alkyl, heteroaryl, heteroaryl$C_{1–6}$ alkyl, heterocyclic, heterocyclic $C_{1–6}$ alkyl all of which may be optionally substituted by halogen, hydroxyl, —$C_{1–6}$ alkoxy, -thio$C_{1–6}$ alkyl, or CF_3;

R_{12} and R_{13} are independently hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl C_{1-6} alkyl, aryl, arylC_{1-6} alkyl, heteroaryl, heteroaryl C_{1-6} alkyl, heterocyclic, heterocyclic C_{1-6} alkyl or R_{12} and R_{13} may together with the nitrogen to which they are attached form a 5 to 7 membered ring which may additionally contain another heteroatom selected from O/N/or S;

or a pharmaceutically acceptable salt thereof.

5,665,754

SUBSTITUTED PYRROLIDINES

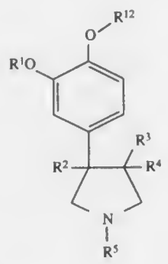
Paul Lawrence Feldman, Durham, and Jeffrey Alan Stafford, Cary, both of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Sep. 20, 1993, Ser. No. 123,837

Int. Cl.[6] A61K *31/40;* **C07D** *207/09*

U.S. Cl. 514—397 **26 Claims**

1. A compound of Formula (I)



(I)

wherein:

R^1 is alkyl, haloalkyl, cycloalkyl, bridged polycycloalkyl, aryl, aralkyl, heteroaralkyl, aryloxyalkyl or a 5 to 6-membered heterocyclic aromatic group optionally fused to a benzene ring and optionally substituted with one or more substituents selected from halogen, alkyl, hydroxy, alkoxy, haloalkyl, nitro, amino, acylamino, alkylthio, alkylsulfinyl and alkylsulfonyl;

R^2 is H, alkyl, haloalkyl, cycloalkyl, aryl, —CO-alkyl, —CO-cycloalkyl, —CO-aryl, —COO-alkyl, —COO-cycloalkyl, —COO-aryl, CH_2OH, CH_2—O-alkyl, —CHO, —CN, —NO_2 or SO_2R^{10};

R^3 is —CO-alkyl, —CO-haloalkyl, —CO-cycloalkyl, —COO-alkyl, —COO-cycloalkyl, —COOH, —CO-aryl, —$CONR^6R^7$, —CH_2OH, —CH_2O-alkyl, —CHO, —CN, —NO_2, —NR^8COR^9, —$NR^8SO_2R^{10}$ or —SO_2R^{10};

R^4 is H, alkyl, haloalkyl, cycloalkyl, —CO-alkyl, —CO-haloalkyl, —CO-cycloalkyl, —COO-alkyl, —COO-cycloalkyl, —COOH, —CO-aryl, —$CONR^6R^7$, —CN, —CHO or SO_2R^{10};

R^5 is —CN or —C(X)—R^{11} or SO_2R^{10};

R^6 and R^7 are independently selected from H, alkyl, cycloalkyl, aryl or aralkyl or R^6 and R^7 together form a 4- to 7-membered heterocyclic or carbocyclic ring;

R^8 is H, alkyl or cycloalkyl;

R^9 is alkyl, cycloalkyl, aryl, alkoxy, aralkoxy or —NR^6R^7;

R^{10} is alkyl, cycloalkyl, trifluoromethyl, aryl, aralkyl or —NR^6R^7;

R^{11} is H, alkyl, haloalkyl, cycloalkyl, aryl, aralkyl, C_{1-6} alkoxy, aralkoxy, aryloxy, —NR^6R^7 or a 5 to 6-membered heterocyclic aromatic group optionally fused to a benzene ring and optionally substituted with one or more substituents selected from halogen, alkyl, hydroxy, alkoxy, haloalkyl, nitro, amino, acylamino, alkylthio, alkylsulfinyl and alkylsulfonyl;

R^{12} is C_{1-3}alkyl, cyclopropyl or C_{1-3}haloalkyl; and

X is O or S.

5,665,755

SPECIFIC EATABLE TASTE MODIFIERS

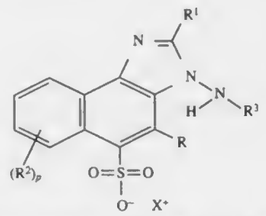
Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, and a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Oct. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 462,063

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—398 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



M-1

wherein p is an integer of 1 to 4, each R, R^1, and R^2 is independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; and R^3 is selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic where C=C or C=N bonds exist, the level of saturation may be decreased by substituting a hydrogen atom on the carbon or nitrogen atom participating in the C=C or C=N bond and wherein X^+ is a physiologically acceptable cation.

5,665,756

AMINOALKYLOXIMES USEFUL IN THE TREATMENT OF DEPRESSION AND OBSESSIVE COMPULSIVE DISORDERS

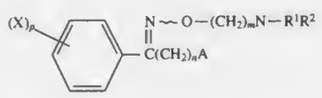
Gregory M. Shutske, Pittstown; Brian S. Freed, Phillipsburg, both of N.J.; John D. Tomer, IV, Perkasie, Pa., and R. Richard L. Hamer, Lebanon, N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Filed Aug. 3, 1994, Ser. No. 285,668

Int. Cl.[6] C07C *251/58;233/61;* **A61K** *31/415;31/15*

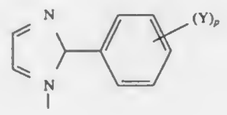
U.S. Cl. 514—399 **7 Claims**

1. A compound of the formula



wherein:

a. X is hydrogen, loweralkyl, loweralkoxy, halogen, trifluoromethyl, or a group of the formula



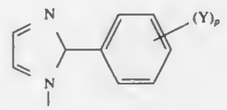
wherein Y is hydrogen or loweralkyl, and p is 1 or 2;

b. A is a group of the formula



c. R^1 and R^2 are independently hydrogen or loweralkyl;

d. m is 2 to 6, and n is 0, or 2 to 6, inclusive, the geometric and optical isomers thereof; or the pharmaceutically acceptable salts thereof; with the proviso that when n is 0, one of the X substituents is



wherein Y is hydrogen or loweralkyl, and p is 1 or 2.

5,665,757

METHOD FOR TREATING ANXIETY

Robert W. Dunn, 30 Hillcrest Blvd., Warren, N.J. 07059, and Suzanne La Marca, Cliffwood Beach, N.J., assignors to Robert W. Dunn, Warren, N.J.

Filed Jul. 13, 1994, Ser. No. 274,596

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—403 **6 Claims**

1. A method of treating anxiety in a warm blooded animal comprising administering to said warm blooded animal an anti-anxiety effective amount of a nitric oxide synthase inhibitor.

5,665,758

6-HETEROCYCLIC-4-AMINO-1,3,4,5-TETRAHYDROBENZ[CD] INDOLES

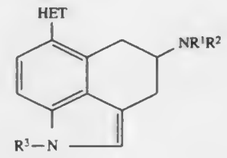
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Charles J. Paget, Jr., Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 299,175, Aug. 31, 1994, Pat. No. 5,594,019, which is a division of Ser. No. 954,105, Sep. 30, 1992, Pat. No. 5,364,856, which is a continuation-in-part of Ser. No. 677,016, Mar. 28, 1991, Pat. No. 5,244,912. This application May 31, 1995, Ser. No. 454,900

Int. Cl.[6] A61K *31/40;* **C07D** *401/02*

U.S. Cl. 514—406 **10 Claims**

1. A compound of the formula



wherein:

R^1 is a hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —C(O)R^4, or —$(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

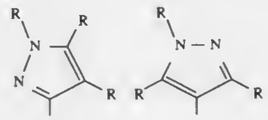
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,665,759

METHODS AND COMPOSITIONS FOR PROTECTING ANIMALS AGAINST ATTACK AND INFESTATION BY HELMINTH, ACARID AND ARTHROPOD ENDO- AND ECTOPARASITES

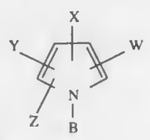
Mary Ehlers Doscher, Trenton, N.J., assignor to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 842,283, Feb. 26, 1992, Pat. No. 5,371,239, which is a continuation-in-part of Ser. No. 455,685, Dec. 22, 1989, abandoned. This application Sep. 14, 1994, Ser. No. 306,072

Int. Cl.[6] A01N *43/36*

U.S. Cl. 514—427 **16 Claims**

1. A method for treating, controlling, preventing or protecting a warm-blooded animal from infestation or infection by helminths, acarids or arthropod endo- or ectoparasites which comprises administering or applying to said animal an anthelmintically, acaricidally or endo- or ectoparasiticidally effective amount of a pyrrole carbonitrile or nitropyrrole compound wherein the compound has the structure:



(I)

wherein

W is CN or NO_2;

X is CN, Br, Cl, I or CF_3;

Y is H, Br, Cl, I or CF_3;

Z is H, Br, Cl or I; and

B is CR,



hydrogen,

C_1–C_6 alkyl optionally substituted with one to three halogen atoms,
- one tri(C_1–C_4 alkyl)silyl,
- one hydroxy,
- one cyano,
- one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,
- one C_1–C_4 alkylthio,
- one phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
- one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
- one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
- one benzyloxycarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

C_3–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenol group,

C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group,

C_1–C_6 alkyl substituted with one to three halogen atoms and one C_1–C_4 alkoxy group,

C_3–C_6 1,2-alkadienyl, or cyano;

R is

C_1–C_6 alkyl optionally substituted with one to three halogen atoms,
- one hydroxy,
- one cyano,
- one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms,
- one C_1–C_4 alkylthio,
- one phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one phenoxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one benzyloxy group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one C_1–C_6 alkylcarbonyloxy group optionally substituted with one to three halogen atoms,
- one C_2–C_6 alkenylcarbonyloxy group optionally substituted with one to three halogen atoms,
- one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,
- one C_1–C_6 alkoxycarbonyl group optionally substituted with one to three halogen atoms or one to three C_1–C_4 alkoxy groups, or
- one benzyloxycarbonyl group optionally substituted on the phenyl ring with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups,

C_3–C_6 alkenyl optionally substituted with one to three halogen atoms or one phenyl group,

C_3–C_6 alkynyl optionally substituted with one to three halogen atoms or one phenyl group,

phenyl optionally substituted with one to three halogen atoms, one or two C_1–C_4 alkyl groups, one or two C_1–C_4 alkoxy groups, CF_3, CN, NO_2, di(C_1–C_4alkyl)amino or C_1–C_4 alkanoylamino,

phenoxy optionally substituted with one to three halogen atoms, one or two C_1–C_4 alkyl groups, one or two C_1–C_4 alkoxy groups, CF_3, CN or NO_2, di(C_1–C_4alkyl)amino or C_1–C_4 alkanoylamino,

C_1–C_6 alkoxy optionally substituted with one to three halogen atoms,

C_2–C_6 alkenyloxy optionally substituted with one to three halogen atoms,

di(C_1–C_4alkyl)amino,

N-(C_1–C_4alkyl)-N-phenylamino or N-(C_1–C_4 alkyl)-N-halophenylamino, or

C_3–C_6 polymethyleneimino.

5,665,760

LYOPHILIZED THIOXANTHENONE ANTITUMOR AGENTS

Stephen Brown, and Gurdial Singh Sandhu, both of Northumberland, England, assignors to Sanofi Winthrop, Inc., New York, N.Y.

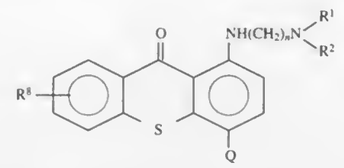
Filed Sep. 18, 1995, Ser. No. 529,934

Int. Cl.[6] A01N *43/18*

U.S. Cl. 514—437 **10 Claims**

1. A reconstituted lyophilized formulation for the treatment of mammalian tumors comprising:

a) of from about 1 to about 50 mg/ml of an antitumor agent having the formula



wherein n is 2 or 3;

R^1 and R^2 are independently lower-alkyl;

Q is a residue chosen from the group consisting of CH_2NHR^3, $CH_2N(R^4)SO_2R^7$, CH_2NHCHO, CH=N—Ar, $C(O)NR^5R^6$, $CH_2N(R^4)C(O)R^7$, $CH_2N(C_2H_5)CHO$, $CH_2N(R^4)P(O)(O\text{-lower-alkyl})_2$, $CH_2N{=}CH{-}N(R^9)(R^{10})$, $CH_2N(R^4)C(O)CF_3$ and $CH_2N(R^4)C(O)OR^7$;

R^3 is hydrogen or lower-alkyl;

R^4 is hydrogen, lower-alkyl or Ar;

R^5 is hydrogen, lower-alkyl or Ar;

R^6 is hydrogen or lower-alkyl;

R^7 is lower-alkyl, or Ar;

R^8 is hydrogen, lower-alkyl, lower-alkoxy, or hydroxy;

Ar is phenyl or phenyl substituted with methyl, methoxyl, hydroxy, halogen or nitro, with the proviso that when n is 2, R^1 and R^2 are ethyl, R^8 is hydrogen and Q is CH_2NHSO_2Ar, the Ar group cannot be 4-monosubstituted by methyl or halogen; and

R^9 and R^{10} are independently lower-alkyl; or a pharmaceutically acceptable acid-addition salt or solvate thereof;

b) of from about 10 to about 125 mg/ml of a stabilizer selected from the group consisting of mannitol and sucrose; and

c) of from about 0.025 to about 0.25M of a lactate buffer, said formulation having a pH of from about 3.0 to about 4.5.

5,665,761

METHODS FOR ADMINISTRATION OF TAXOL

Renzo Mauro Canetta, Madison, Conn.; Elizabeth Elsenhauer, Kingston, Canada, and Marcel Rozencweig, Bradford, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation of Ser. No. 559,890, Nov. 20, 1995, Pat. No. 5,621,001, which is a continuation of Ser. No. 232,404, Apr. 25, 1994, which is a continuation of Ser. No. 923,628, Aug. 3, 1992. This application Nov. 22, 1996, Ser. No. 755,740

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—449 **4 Claims**

1. A method for reducing peripheral neurotoxicity symptoms in patients suffering from lung cancer and undergoing taxol therapy comprising reducing peripheral neurotoxicity symptoms in said patients while maintaining an anti-tumor effect by administering about 135 mg/m^2 taxol over a period of about 24 hours.

5,665,762

DECONTAMINATING CLINICAL SAMPLES

Peter G. Carroll, Walnut Creek; Stephen T. Isaacs, Orinda, and George D. Cimino, Richmond, all of Calif., assignors to Carus Corporation, Concord, Calif.

Division of Ser. No. 253,619, Jun. 3, 1994, Pat. No. 5,556,958, which is a continuation of Ser. No. 32,490, Mar. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 428,494, Oct. 26, 1989, Pat. No. 5,221,608. This application Jun. 5, 1995, Ser. No. 462,954

Int. Cl.[6] A61K *39/00;35/14;35/48*

U.S. Cl. 514—455 **17 Claims**

1. A method of pathogen inactivation, comprising:

a) providing, in any order: i) an aminomethoxypsoralen; ii) psoralen activation means; iii) a biological fluid intended for in vitro testing suspected of being contaminated with one or more pathogens;

b) adding said aminomethoxypsoralen to said biological fluid; and

c) activating said aminomethoxypsoralen by said psoralen activation means, so that said activated aminomethoxypsoralen binds covalently to the nucleic acid of said pathogens.

5,665,763

THERAPEUTIC PHENOXYALKYLPYRIDAZINES AND INTERMEDIATES THEREFOR

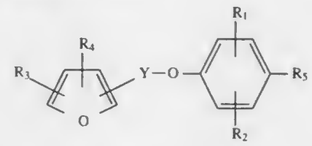
David J. Aldous, Glenmore; Thomas R. Bailey, Phoenixville; Guy Dominic Diana, and Theodore J. Nitz, both of Pottstown, all of Pa., assignors to Sanofi, S.A., France

Division of Ser. No. 461,285, Jun. 5, 1995, Pat. No. 5,567,717, which is a division of Ser. No. 242,528, May 13, 1994, Pat. No. 5,514,679. This application Aug. 30, 1996, Ser. No. 706,109

Int. Cl.[6] A61K *31/34;31/38;* **C07D** *307/42;409/12*

U.S. Cl. 514—461 **7 Claims**

1. A compound of formula:



wherein:

Y is an alkylene bridge of 3–9 carbon atoms;

R_1 and R_2 are each individually chosen from hydrogen, halo, amino, hydroxyhaloalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonyl, alkylaminoalkyl, alkyl, alkenyl, amino, alkylthio, hydroxy, dialkylaminoalkyl, cyanomethyl, alkoxy, nitro, carboxy, alkoxycarbonyl, difluoromethyl, alkynyl, trifluoromethyl or cyano;

R_3 and R_4 are each independently chosen from hydrogen, alkyl, alkoxy, hydroxy, cycloalkyl, hydroxyalkyl, alkoxyalkyl, hydroxyalkoxy, alkylthioalkyl, alkanoyl, alkanoyloxy, alkylsulfinylalkyl, alkylsulfonylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkoxycarbonyl, carboxy, cyanomethyl, fluoroalkyl, cyano, phenyl, alkynyl, alkoxy, or halo;

R_5 is alkoxycarbonyl, phenyl, or substituted phenyl wherein the substitution is with alkyl, alkoxyalkyl, cycloalkyl, haloalkyl, halo, hydroxyalkyl, alkoxy, hydroxy, furyl, thienyl, fluoroalkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,665,764

TRICYCLIC INHIBITORS OF MATRIX METALLOPROTEINASES

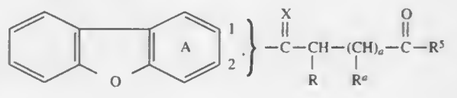
Donald Hupe; Linda Lea Johnson, both of Ann Arbor; Joseph Armand Picard, Canton; Andrew David White, Lakeland, and Qi-Zhuang Ye, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 2, 1995, Ser. No. 460,436

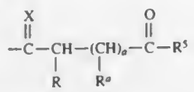
Int. Cl.[6] A61K *31/34*

U.S. Cl. 514—468 **12 Claims**

1. A compound of Formula



wherein



is attached at the 1 or 2 position of the A ring;
wherein X is
O, or
N—OR^6 wherein R^6 is
hydrogen,
—(CH$_2$)$_n$-aryl wherein n is zero or an integer of 1 to 5,
alkyl, or
—(CH$_2$)$_n$-cycloalkyl wherein n is as defined above;
R and R^a are each the same or different and each is
hydrogen,
—(CH$_2$)$_n$-aryl wherein n is as defined above,
—(CH$_2$)$_n$-heteroaryl wherein n is as defined above,
—(CH$_2$)$_p$—R^7—(CH$_2$)$_q$-aryl wherein R^7 is O or S and p or q is each zero or an integer of 1 to 5 and the sum of p+q equals an integer of 5,
—(CH$_2$)$_p$—R$_7$—(CH$_2$)$_q$-heteroaryl wherein p, q, and R^7 are as defined above,
alkyl,
—(CH$_2$)$_n$-cycloalkyl wherein n is as defined above, or
—(CH$_2$)$_r$—NH$_2$ wherein r is an integer of 1 to 9;
a is zero or an integer of 1 to 3; and
R^5 is
OH, or
NH—OR^6 wherein R^6 is as defined above;
with the proviso that when X is O, and R^5 is not NH—OR^6, at least one of R or R^a is not hydrogen; and corresponding isomers thereof; or a pharmaceutically acceptable salt thereof.

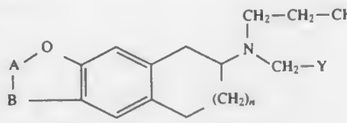
5,665,765

5,6,7,8-TETRAHYDRONAPHTHO[2,3-B]FURAN AND INDANO[5,6-B]FURAN AMINE COMPOUNDS

Jean-Louis Peglion, Le Vesinet; Joel Vian, Chaville; Aimée Dessinges, Thiais; Mark Millan, Le Peco, and Valérie Audinot, Poissy, all of France, assignors to Adir et Compagnie, Courbevoie, France

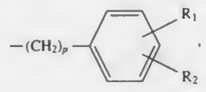
Filed Sep. 27, 1996, Ser. No. 720,039
Claims priority, application France, Sep. 29, 1995, 95 11446
Int. Cl.^{6} A61K *31/34; C07D 307/92*
U.S. Cl. 514—468 **7 Claims**

1. A compound selected from the group consisting of those of formula I:

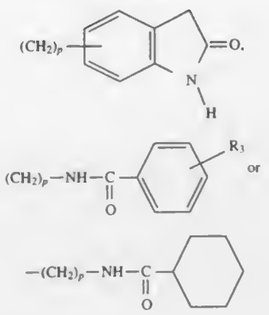


(I)

wherein:
A–B represents CH=CH or CH$_2$–CH$_2$;
n represents zero or one; and
Y represents:
(C$_2$–C$_{10}$)alkenyl in straight or branched chain;
ω-(cycloalkyl)alkyl, ω-(methylcycloalkyl)alkyl, or ω,ω-(dicycloalkyl)alkyl in each of which each cycloalkyl contains 3 to 7 carbon atoms inclusive, and the alkyl moiety contains 1 to 4 carbon atoms inclusive in straight or branched chain;
or
a group of formula:



-continued



wherein:
p is an integer of 1 to 4 inclusive,
R$_1$ represents hydrogen, halogen, hydroxy, or methoxy,
R$_2$ represents halogen, hydroxy, (C$_1$–C$_5$)alkoxy, phenyl, —NH—CO—CH$_3$, —NH—CO—CF$_3$, or —NH—SO$_2$—CH$_3$, and
R$_3$ represents halogen, (C$_1$–C$_5$)alkoxy, trifluoromethyl, cyano, phenyl, p-aminophenyl, or p-acetylphenyl;
in racemic form or in the form of optical isomers; and addition salts thereof with pharmaceutically-acceptable acids.

5,665,766

ESTER OF AN ORGANIC NITRATE AND A SALICYLATE

William Byrne, Dublin, and Andrew Rynne, Clane, both of Ireland, assignors to Cal International Limited, Dublin, Ireland

PCT No. PCT/IE93/00040, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO94/03421, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 26, 1993, Ser. No. 374,650
Claims priority, application Ireland, Jul. 30, 1992, 92 2474
Int. Cl.^{6} A61K *31/34;* **C07D** *493/00*
U.S. Cl. 514—470 **25 Claims**

1. A salicylate ester of an organic nitrate, wherein said organic nitrate is either directly or indirectly esterifiable and selected from the group consisting of isosorbide nitrate, glyceryl nitrate, pentaerythritol nitrate, Mannitol Hexanitrate, Trolnitrate Phosphate, Pentaerythritol Tetranitrate, Propatyl Nitrate, Clonitrate and Isosorbide Dinitrate.

5,665,767

CRYSTALLINE CYCLODEXTRIN COMPLEXES OF RANITIDINE HYDROCHLORIDE, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Wilfried Fischer, and Karin Klokkers, both of Holzkirchen, Germany, assignors to Hexal Pharma GmbH, Holzkirchen, Germany

PCT No. PCT/EP94/00645, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO94/20091, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 4, 1994, Ser. No. 513,779
Claims priority, application Hungary, Mar. 5, 1993, 93,6024
Int. Cl.^{6} A61K *31/34;31/715*
U.S. Cl. 514—471 **10 Claims**

1. Complexes of ranitidine hydrochloride as guest substance with β-cyclodextrin host substance.

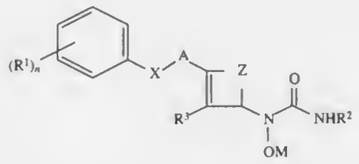
5,665,768

HETEROARYL CYCLOALKENYL HYDROXYUREAS

Akiyoshi Kawai, and Rodney W. Stevens, both of Handa, Japan, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/JP94/01093, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/03292, PCT Pub. Date Feb. 2, 1995
PCT Filed Jul. 5, 1994, Ser. No. 586,833
Claims priority, application Japan, Jul. 20, 1993, 5-179401
Int. Cl.^{6} A61K *31/34*
U.S. Cl. 514—471 **10 Claims**

1. A compound of the following chemical formula:



and the pharmaceutically acceptable salts thereof, wherein each R^1, independently, is hydrogen, hydroxy, chloro, fluoro, C$_1$–C$_4$ alkyl, C$_1$C$_4$ alkoxy, C$_1$–C$_4$ haloalkyl or C$_1$– C$_4$ haloalkoxy;
R^2 is hydrogen or C$_1$–C$_4$ alkyl;
R^3 is hydrogen, chloro, fluoro or C$_1$–C$_4$ alkyl;
X is O, S, SO or SO$_2$;
Z is methylene or ethylene;
A is divalent radical derived from furan, thiophene, pyridine, benzofuran, benzothiophene or quinoline, or one of these groups having one substituent selected from chloro, fluoro, C$_1$–C$_4$ alkyl, C$_1$–C$_4$ alkoxy, C$_1$–C$_4$ haloalkyl and C$_1$–C$_4$ haloalkoxy;
n is 1, 2 or 3; and
M is hydrogen or a pharmaceutically acceptable cation.

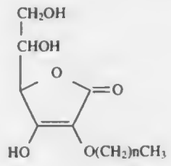
5,665,769

PHARMACEUTICAL COMPOSITION FOR PREVENTING AND TREATING RETINAL DISEASES

Kaneyoshi Kato, Kawanishi; Hiroshi Kuriyama, Toyonaka, and Hiroaki Naka, Kobe, all of Japan, assignors to Senju Pharmaceuticals Co., Ltd., Osaka, Japan

Filed Jan. 28, 1994, Ser. No. 187,452
Claims priority, application Japan, Feb. 2, 1993, 5-015645
Int. Cl.^{6} A61K *31/34*
U.S. Cl. 514—474 **11 Claims**

1. A method for treating a retinal disease resulting from ischemia in the eye, selected from the group consisting of diabetes, retinopathy of prematurity, retinal vein obstruction, retinal artery obstruction, retinal detachment and senile disciform macular degeneration, which comprises administering to a subject in need thereof an effective amount of a compound of the formula (I):



(I)

wherein n is an integer of 8 to 20.

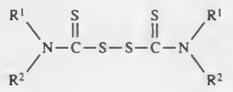
5,665,770

METHOD FOR TREATMENT OF CATARACT WITH RADICAL SCAVENGER

Motome Terao, Hyogo-ken, and Yoshimasa Ito, Nara-ken, both of Japan, assignors to Gakko Hojin Kinki Daigaku, Osaka, Japan

Filed Nov. 3, 1994, Ser. No. 335,351
Claims priority, application Japan, Nov. 5, 1993, 5-277061
Int. Cl.^{6} A61K *31/27;31/41*
U.S. Cl. 514—476 **23 Claims**

1. A pharmaceutical composition for treatment of cataract which comprises fine particles selected from the group consisting of emulsions, nanocapsules, albumin microspheres and liposomes, carrying an anti-cataract agent containing a radical scavenger comprising a disulfide derivative of formula:



(III)

wherein R^1 and R^2 are independently a straight or branched lower alkyl which may be substituted by hydroxy, lower alkyloxy or lower alkyl carbonyloxy.

5,665,771

PLATINUM COMPLEXES

Barry A. Murrer, Reading, United Kingdom, assignor to Johnson Matthey Public Limited Company, London, United Kingdom

Filed Feb. 7, 1996, Ser. No. 597,953
Claims priority, application United Kingdom, Feb. 14, 1995, 9502799
Int. Cl.^{6} A61K *31/28;* **C07F** *15/00*
U.S. Cl. 514—492 **10 Claims**

1. A cis-platinum complex of general formula Ia or Ib



Ia



Ib

where each A, is a leaving group and may be the same or different, or together form a bi-dentate carboxylate or sulphate, each B, which may be the same or different, is halo, hydroxy, carboxylate, carbamate or carbonate ester,
Z is a substituted amine wherein the substituent sterically hinders access of the Pt atom to a DNA strand of a tumour ceil, and
X is NH$_3$ or mono- or di-alkyl substituted NH$_3$.

5,665,772

O-ALKYLATED RAPAMYCIN DERIVATIVES AND THEIR USE, PARTICULARLY AS IMMUNOSUPPRESSANTS

Sylvain Cottens, Witterswil, and Richard Sedrani, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

PCT No. PCT/EP93/02604, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/09010, PCT Pub. Date Apr. 28, 1994

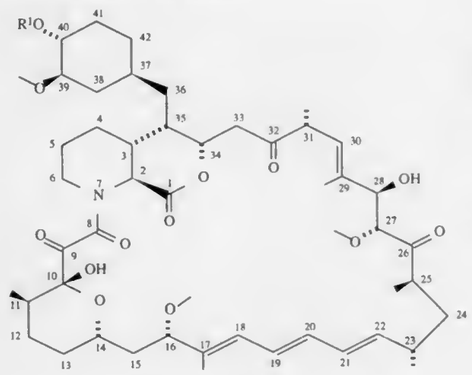
PCT Filed Sep. 24, 1993, Ser. No. 416,673

Claims priority, application United Kingdom, Oct. 9, 1992, 9221220

Int. Cl.[6] A61K *31/395;* **C07D** *498/16*

U.S. Cl. 514—514 **10 Claims**

1. A compound of the formula



wherein R^1 is hydroxy(C_{1-6})alkyl or hydroxy(C_{1-3})alkoxy(C_{1-3})alkyl.

9. A method of preventing allograft rejection in a subject in need of such treatment, which comprises administering to said subject a compound according to claim **1** in an amount effective to prevent allograph rejection.

5,665,773

CLOPROSTENOL AND FLUPROSTENOL ANALOGUES AND THEIR USE TO TREAT GLAUCOMA AND OCULAR HYPERTENSION

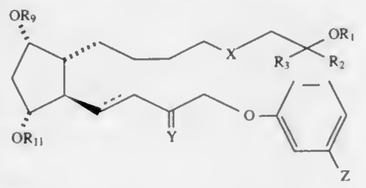
Peter G. Klimko, Fort Worth, Tex.; John E. Bishop, Nashua, N.H.; Verney L. Sallee, Burleson, and Paul W. Zinke, Forth Worth, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 280,681, Jul. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 101,598, Aug. 3, 1993, Pat. No. 5,510,383. This application Dec. 18, 1996, Ser. No. 769,293

Int. Cl.[6] A61K *31/557;* **C07C** *59/46;69/608*

U.S. Cl. 514—530 **20 Claims**

1. A method of treating glaucoma and ocular hypertension which comprises topically administering to the affected eye a therapeutically effective amount of a compound of formula:



(IV)

wherein:

R_1=H; C_1–C_{12} straight-chain or branched alkyl; C_1–C_{12} straight-chain or branched acyl; C_3–C_8 cycloalkyl; or a cationic salt moiety;

R_2, R_3=H, or C_1–C_4 straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

X=O, S, or CH_2;

---- represents any combination of a single bond, or a cis or trans double bond for the alpha (upper) chain; and a single bond or trans double bond for the omega (lower) chain;

R_9=H, C_1–C_{10} straight-chain or branched alkyl, or C_1–C_{10} straight-chain, or branched acyl;

R_{11}=H, C_1–C_{10} straight-chain or branched alkyl, or C_1–C_{10} straight-chain or branched acyl;

Y=O; or H and OR_{15} in either configuration wherein R_{15}=H, C_1–C_{10} straight-chain or branched alkyl, or C_1–C_{10} straight-chain or branched acyl; and

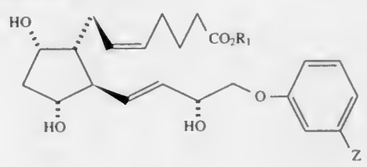
Z=Cl or CF_3;

with the proviso that when R_2 and R_3 taken together represent O, then R_1' C_1–C_{12} straight-chain or branched acyl; and when R_2=R_3=H, then R_1' a cationic salt moiety; and

with the further proviso that the following compounds be excluded:

cyclopentane heptenol-5-cis-2-(3-αhydroxy-4-m-chlorophenoxy-1-transbutenyl)-3,5-dihydroxy;

and compounds of the formula:



wherein R_1=hydrogen, a cationic salt moiety, C_1–C_{12} straight chain or branched alkyl or C_3–C_8 cycloalkyl; and

Z=Cl or CF_3.

5,665,774

IMMUNOSUPPRESSIVE COMPOUNDS

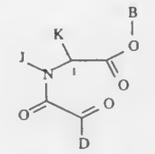
David M. Armistead, 5 Cutting Dr., Maynard, Mass. 01754; Joshua S. Boger, 243 Old Pickard Rd., Concord, Mass. 01742; Harold V. Meyers, 208 Katahdin Dr., Lexington, Mass. 01273; Jeffrey O. Saunders, 71 New Estate Rd., Littleton, Mass. 01460, and Roger D. Tung, 2561 Massachusetts Ave. #2, Cambridge, Mass. 02140

Division of Ser. No. 547,814, Jul. 2, 1990, Pat. No. 5,192,773. This application Mar. 8, 1993, Ser. No. 27,870

Int. Cl.[6] C07C *229/36;229/24*

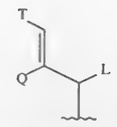
U.S. Cl. 514—533 **18 Claims**

1. An immunosuppressant compound represented by the formula:



and pharmaceutically acceptable salts thereof;

wherein B is CHL—Ar, (C1–C6)-straight or branched alkyl, (C2–C6)-straight or branched alkenyl, (C5–C7)-cycloalkyl, (C5–C7)-cycloalkenyl or Ar substituted (C1–C6)-alkyl or alkenyl, or



wherein L and Q are independently hydrogen, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl;

wherein T is Ar or substituted cyclohexyl with substituents at positions 3 and 4 which are independently selected from the group consisting of hydrogen, hydroxyl, O-(C1–C4)-alkyl or O-(C2–C4)-alkenyl;

wherein Ar is selected from the group consisting of 1-naphthyl, 2-naphthyl, 2-furyl, 3-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl and phenyl having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, CF_3, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl, O-(C1–C4)-straight or branched alkyl or O-(C2–C4)-straight or branched alkenyl, O-benzyl, O-phenyl, amino and phenyl;

wherein D is O-(C1–C4)-straight or branched alkyl or O-(C2–C4)-straight or branched alkenyl;

wherein J is hydrogen or C1 or C2 alkyl;

wherein K is (C1–C4)-straight or branched alkyl, benzyl or cyclohexylmethyl;

wherein D is not identical to —O—B; and

wherein the stereochemistry at carbon position 1 is R or S; provided that

when J is hydrogen; D is methoxy or ethoxy; and B is methyl or ethyl then K is not methyl; and

when J is hydrogen; D is methoxy and B is n-butyl, then K is not methyl.

5,665,775

DIFFERENT WAY OF MANAGEMENT OF NEONATAL HYPERBILIRUBINEMIA

Husni H. Abu Seir; Wael F. Sunnoqrot; Ma'an M. Shuqair, and Bassam M. El-Wadi, all of Amman, Jordan, assignors to Arab Pharmaceutical Manufacturing Co., Ltd., Sult-Jordan, Jordan

Filed Jul. 28, 1995, Ser. No. 508,466

Int. Cl.[6] A61K *31/22;31/205;31/20*

U.S. Cl. 514—546 **32 Claims**

1. A method for treating neonatal hyperbilirubinemia (NHB) by administering to an infant an antihyperbilirubinemia preparation (AHB preparation) comprising castor oil, honey and cellulose fibers as active ingredients and physiologically acceptable additives.

5,665,776

ADDITIVES ENHANCING TOPICAL ACTIONS OF THERAPEUTIC AGENTS

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Rydal, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jan. 22, 1993, Ser. No. 8,223

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **44 Claims**

1. A method for enhancing the therapeutic effect of a composition comprising a first ingredient selected from the group consisting o a retinoid, an antifungal agent, and antibacterial agent, a pigmented age spots removing agent, a warts removing agent, an agent for treating acne selected from the group consisting of retinoic acid, erythromycin, tetracycline, clindamycin, minocycline and meclocycline and a keratoses removing agent for the topical administration to a person in need thereof, comprising

combining with said composition an enhancing amount of at least one second ingredient selected from the group consisting of hydroxycarboxylic acids, lactones and salts thereof and related ketocarboxylic acids, esters, lactones and salts thereof

the second ingredient being present in an amount of from 0.01 to 99 weight percent of the total composition and effective to enhance the efficacy of said composition.

5,665,777

BIPHENYL HYDROXAMATE INHIBITORS OF MATRIX METALLOPROTEINASES

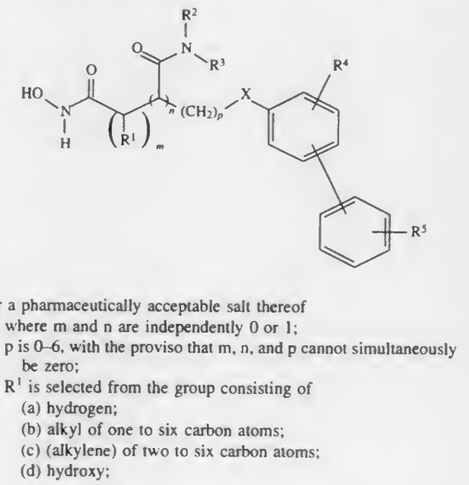
Stephen W. Fesik, Gurnee; James B. Summers, Jr.; Steven K. Davidsen, both of Libertyville; George S. Sheppard, Wilmette; Douglas H. Steinman, Morton Grove; George M. Carrera, Jr., Des Plaines; Alan Florjancic, Lake Bluff, and James H. Holms, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 14, 1995, Ser. No. 555,690

Int. Cl.[6] A61K *31/19;* **C07C** *255/00;259/08*

U.S. Cl. 514—575 **14 Claims**

1. A compound of formula



or a pharmaceutically acceptable salt thereof

where m and n are independently 0 or 1;

p is 0–6, with the proviso that m, n, and p cannot simultaneously be zero;

R^1 is selected from the group consisting of

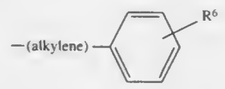
(a) hydrogen;

(b) alkyl of one to six carbon atoms;

(c) (alkylene) of two to six carbon atoms;

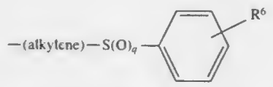
(d) hydroxy;

(e)



where the alkylene portion is of one to six carbon atoms, and R^6 is selected from the group consisting of alkyl of one to six carbon atoms, haloalkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, and hydroxy;

(f)



wherein q is 0, 1 or 2, the alkylene portion is of one to six carbon atoms, and R^6 is defined above;

(g) -(alkylene)-CO_2R^7 wherein the alkylene portion is of one to six carbon atoms, and R^7 is hydrogen or alkyl of one to six carbon atoms;

R^2 and R^3 are independently selected from the group consisting of
(a) hydrogen;
(b) alkyl of one to six carbon atoms;
(c) phenyl;
(d) phenyl substituted with
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms, or
hydroxy;
(e) pyridyl, and
(f) pyridyl substituted with
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, or
alkoxy of one to six carbon atoms; or
R^2 and R^3 taken together with the nitrogen atom to which they are attached define a 5- or 6-membered saturated heterocyclic ring in which the heterocyclic ring optionally contains an additional heteroatom selected from the group consisting of $—NR^8$ wherein R^8 is hydrogen or alkyl of one to six carbon atoms, —O—, —S—, or $—S(O)_r—$ wherein r is 1 or 2;
X is absent or is selected from the group consisting of
(a) —O—;
(b) —NH—; and
(c) —S—;
with the provisos that
(a) when X is oxygen, and m and n are zero, p is an integer of two to six, inclusive, and
(b) when X is oxygen and m is one and n is zero; then p is an integer of one to six, inclusive;
R^4 and R^5 are independently selected from the group consisting of
(a) hydrogen;
(b) alkyl of one to six carbon atoms;
(c) halogen;
(d) cyano;
(e) cyanoalkyl of one to six carbon atoms;
(f) haloalkyl of one to six carbon atoms,
(g) hydroxy, and
(h) alkoxy of one to six carbon atoms.

5,665,778

CERAMIDES, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS IN COSMETICS AND IN DERMOPHARMACY

Didier Semeria, Courtry; Michel Philippe, Antony, and Claude Mahieu, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 12, 1994, Ser. No. 321,678
Claims priority, application France, Oct. 12, 1993, 93 12106
Int. Cl.[6] A01N *37/18*
U.S. Cl. 514—613 **15 Claims**

1. Compound corresponding to the formula:

$$R_1CHOH—CH(NHCOR_2)—CH_2OH \quad (I)$$

in which:
R_1 is a C_{11} to C_{21} alkyl or alkenyl radical;
R_2 is a fully saturated linear or branched C_1 to C_{29} hydroxyalkyl radical or a C_7 to C_{29} hydroxyaralkyl radical, the hydroxyl group being in the position alpha to the carbonyl, the compound being in the form of a racemic mixture of the erythro and threo diastereoisomers for the aminodiol part

$$R_1CHOH—CH(NH—)—CH_2OH,$$

in erythro/threo ratios of from 85:15 to 20:80.

5,665,779

PHARMACEUTICAL COMPOSITION FOR INHIBITING THE INFECTION WITH AIDS VIRUS

Shinichi Kondo, Yokohama; Yoko Ikeda, Tokyo; Masa Hamada, Naito-machi; Tomio Takeuchi, Tokyo, and Hiroo Hoshino, Maebashi, all of Japan, assignors to Zaidan, Hojin, Biseibutsu, Kagaku, Kenkyu, Kai, Tokyo, Japan

PCT No. PCT/JP92/01703, § 371 Date Jun. 24, 1994, § 102(e) Date Jun. 24, 1994, PCT Pub. No. WO93/12776, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 25, 1992, Ser. No. 256,121
Claims priority, application Japan, Dec. 27, 1991, 3-346341
Int. Cl.[6] A61K *31/16*
U.S. Cl. 514—626 **1 Claim**

1. A method for inhibiting infection of human T-cells with AIDS virus, which comprises treating human T-cells in vitro with D-β-lysylmethanediamine of the formula (I)

$$H_2NCH_2CH_2CH_2CH(NH_2)CH_2CONHCH_2NH_2 \quad (I)$$

pharmaceutically acceptable salt or hydrate thereof in an effective amount to inhibit the infection with said AIDS virus.

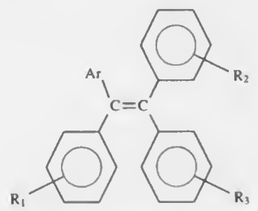
5,665,780

REVERSAL OF MULTI-DRUG RESISTANCE BY TETRAARYLETHYLENES

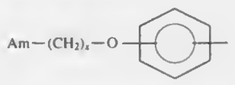
Sai Prasad Sunkara, Cincinnati, Ohio, assignor to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 357,361, Dec. 15, 1994, Pat. No. 5,523,304, which is a continuation of Ser. No. 248,563, May 24, 1994, abandoned, which is a continuation of Ser. No. 832,541, Feb. 6, 1992, abandoned. This application Dec. 6, 1995, Ser. No. 568,067
Int. Cl.[6] A61K *31/135*
U.S. Cl. 514—651 **10 Claims**

1. A method of reversing multidrug resistance in a patient having a multidrug resistant tumor which comprises administering to said patient a multidrug resistance reversing amount of a compound of the formula



wherein Ar is a group of the formula



wherein Am is a di(C_{1-4}alkyl)substituted amino group, x is an integer of from 1 to 4 and R_1, R_2, and R_3 are each independently selected from hydrogen and methoxy or an acid addition salt thereof.

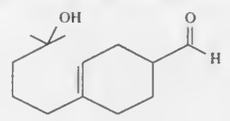
5,665,781

USE OF UNSATURATED ALDEHYDE AND ALKANOL DERIVATIVES FOR THEIR MOSQUITO REPELLENCY PROPERTIES

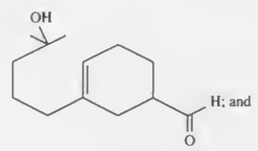
Craig B. Warren, Monmouth Beach; Anna B. Marin, Long Branch, both of N.J., and Jerry F. Butler, Gainesville, Fla., assignors to International Flavors & Fragrances Inc., New York, N.Y., and The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 496,124, Jun. 27, 1995, Pat. No. 5,576,010, which is a continuation-in-part of Ser. No. 253,244, Jun. 2, 1994, Pat. No. 5,472,701, which is a division of Ser. No. 61,044, May 14, 1993, Pat. No. 5,464,626. This application Oct. 18, 1996, Ser. No. 733,386
Int. Cl.[6] A01N *35/02;25/08*
U.S. Cl. 514—703 **8 Claims**

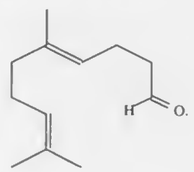
1. A method of repelling the insect species: *Aedes aegypti* for a finite period of time from a three-dimensional space inhabited by said *Aedes aegypti* consisting essentially of the step of exposing said three-dimensional space to an effective Aedes aegypti-repelling concentration and quantity of at least one substance selected from the group consisting of:
(i) a mixture of compounds having the structures:



and



and
(ii) a compound having the structure:



5,665,782

HYDROLYZED GLEATIN AS A FLAVOR ENHANCER IN A CHEWABLE TABLE

Thomas A. Alexander, Granger; Lawrence J. Daher; Gerald Gold, both of Elkhart; Clarence L. Hancock, Edwardsburg, and Donald L. Peterson, Elkhart, all of Ind., assignors to Miles Inc.

Continuation of Ser. No. 283,675, Aug. 1, 1994, abandoned, and Ser. No. 107,202, Aug. 13, 1993, abandoned. This application May 4, 1995, Ser. No. 434,835
Int. Cl.[6] A61K *47/42;9/20;33/06;33/08*
U.S. Cl. 514—774 **10 Claims**

1. A method of making a chewable antacid tablet comprising the steps of:
a. combining an antacid ingredient requiring taste masking, and an effective amount of hydrolyzed gelatin to mask the taste of said ingredient and enhance the flavor of the chewable antacid tablet, wherein said hydrolyzed gelatin is present in an amount of between 2 and 30 mg in said chewable tablet;
b. blending the combined components; and
c. tableting.

5,665,783

RECYCLABLE REGENERANT FOR WEAK ACID ION EXHANGE RESINS

Arthur Katzakian, Jr., Elk Grove; Henry Cheung, Livermore; Charles E. Grix, Sacramento, and Donald C. McGehee, Carmichael, all of Calif., assignors to Ecotech, Rancho Cordova, Calif.

Filed Feb. 8, 1996, Ser. No. 598,462
Int. Cl.[6] C08F *08/42*
U.S. Cl. 521—26 **21 Claims**

1. A process for regenerating spent weak cationic exchange resin comprising contacting the spent cationic exchange resin with a solution containing a monovalent cationic salt of a carboxylic acid selected from a group consisting of α-hydroxy carboxylic acids and hydroxylated benzoic acids.

5,665,784

RECOVERY OF POLYESTER FROM SPENT FILM

Tony C. Moore; Carl S. Nichols, and Joseph C. Tucker, all of Charlotte, N.C., assignors to Wellman, Inc., Charlotte, N.C.

Division of Ser. No. 945,675, Sep. 16, 1992, Pat. No. 5,523,329, which is a continuation of Ser. No. 723,814, Jul. 1, 1991, abandoned. This application Oct. 30, 1995, Ser. No. 550,196
Int. Cl.[6] C08J *11/04;* **C08K** *5/07*
U.S. Cl. 521—48 **3 Claims**

1. A polyester fiber comprising;
polyester;
cyclohexanone present in an amount greater than 0% up to about 0.06% by weight based on the weight of the polyester:
blue dye present in an amount greater than 0% up to 0.5% by weight based on the weight of the polyester; and
polyvinylidene chloride present in an amount greater than 0% up to about 15 ppm by weight based on the weight of the polyester.

5,665,785

PROCESS FOR FORMING MICROCELLULAR STRUCTURES HAVING AN INTEGRAL SKIN AND PRODUCTS THEREOF

Thomas Roy McClellan, Mission Viejo; John T. Mizulo, Irvine; Edwin S. Nelson, North Hollywood, and Grant R. Pato, Costa Mesa, all of Calif., assignors to Urethane Technologies, Inc., Orange, Calif.

Continuation of Ser. No. 126,316, Sep. 24, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,730
Int. Cl.[6] C08J *9/32*
U.S. Cl. 521—51 **24 Claims**

1. A process for preparing microcellular structures having substantially non-cellular skins comprising:
providing a non-aqueous reactive polymer-forming system;
suspending in said polymer-forming system a material which functions as a combined nonaqueous blowing agent and release agent, said material consisting of a plurality of thermoplastic microspheres encapsulating a volatile material and wherein no additional blowing agents and/or release agents are included; said microspheres having a diameter of about 5 μm to 15 μm and an expansion initiation temperature of about 80° C. to 130° C.;
contacting at least a portion of said plurality of thermoplastic microspheres with a shaping surface at a temperature between about 40% and 90% of said expansion initiation temperature; and
polymerizing said reactive polymer-forming system in which said plurality of thermoplastic microspheres is suspended, to

produce a microcellular structure having a substantially non-cellular skin which is readily released from said shaping surface.

5,665,786

BIODEGRADABLE POLYESTER AND NATURAL POLYMER COMPOSITIONS AND EXPANDED ARTICLES THEREFROM

Wayne Xu, Peoria, and William M. Doane, Morton, both of Ill., assignors to Bradley University, Peoria, Ill.

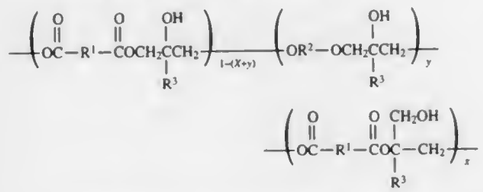
Filed May 24, 1996, Ser. No. 653,635

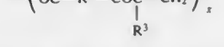
Int. Cl.[6] C08J *9/00*

U.S. Cl. 521—84.1 **4 Claims**

1. An expanded article, comprising:

a compressible, resilient body, the body including two biodegradable components, the first component being starch or a modified starch, the second component being a water insoluble synthetic polymer comprising a hydroxy-functional polyester, wherein the hydroxy-functional polyester has repeating units represented by Formula B:





wherein each of R^1 and R^2 is individually a divalent organic moiety which is predominately hydrocarbon, each R^3 is individually hydrogen or lower alkyl, y is a fraction from 0 to 0.5, and x is a fraction from about 0.05 to about 0.4, the body having an exterior surface and an interior cellular structure, the synthetic polymer predominating at the exterior surface, the starch component predominating in the interior cellular structure.

5,665,787

LOADED SYNTACTIC FOAM-CORE MATERIAL

Gregory P. Nowak, Belleville, Ill.; Alan F. Tegeler, O'Fallon, and Tracy L. Timmons, Maryland Heights, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 480,778

Int. Cl.[6] C08J *9/28;9/32;9/35*

U.S. Cl. 521—54 **4 Claims**

1. A method for preparing a readily conformable, high strength, low density syntactic foam-core composite comprising the steps of:

(a) mixing 56 parts by weight of a resin and 8 parts by weight of a solvent for the resin to form a resin-solvent system;

(b) separately mixing 1.5 parts by weight particulate carbon and 30 parts by weight of a solvent for the resin to produce a slurry, dismebrating the resulting slurry, and blending the dismembrated slurry with the resin-solvent system to thereby form a loaded resin-solvent system;

(c) adding 41 parts by weight of microspheres and 3 parts by weight of fiberglass to the loaded resin-solvent mixture to thereby form a loaded resin-solvent-microsphere system;

(d) mixing the resin-solvent-microsphere system under vacuum to extract a portion of the solvent from the resin until no more than 10 but greater than 7 parts by weight of solvent remain to create a fully admixed system;

(e) at least partially curing the resin in the fully admixed system by extracting more than one-half of the remaining solvent.

5,665,788

AZEOTROPIC COMPOSITIONS OF DIMETHOXYMETHANE AND CYCLOPENTANE AND THE USE THEREOF IN THE PRODUCTION OF FOAMS

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Herman P. Doerge, Pittsburgh, Pa., and Eric F. Boonstra, Oakdale, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Division of Ser. No. 665,934, Jun. 19, 1996. This application Nov. 1, 1996, Ser. No. 742,358

Int. Cl.[6] C08J *9/00;9/14*

U.S. Cl. 521—114 **3 Claims**

1. A polyurethane foam which has been produced by reacting a polyisocyanate with an isocyanate reactive material in the presence of an azeotropic composition consisting essentially of

a) from about 58 to about 77% by weight of dimethoxymethane and

b) from about 23 to about 42% by weight of cyclopentane.

5,665,789

Patent Not Issued For This Number

5,665,790

Patent Not Issued For This Number

5,665,791

PHOTOSENSITIVE POLYMER FILMS AND THEIR METHOD OF PRODUCTION

Chung J. Lee, and Jahja I. Trisnadi, both of Austin, Tex., assignors to Tamarack Storage Devices, Inc., Austin, Tex.

Filed Sep. 21, 1995, Ser. No. 531,521

Int. Cl.[6] C08F *2/46;* **G03H** *1/04*

U.S. Cl. 522—25 **20 Claims**

1. A solution comprising a photosensitive polymer composition for storing holographic images, wherein said photosensitive polymer composition comprises:

a polymer carrier comprising at least one =N—C(=O)— group;

a polymerizable compound; and

an initiation system for photo-polymerizing said polymerizable compound, said initiation system comprising:

a dye; and

a photosensitive initiator comprising an initiator and a photosensitive co-initiator consisting essentially of an amino acid.

5,665,792

STABILIZERS FOR USE WITH PHOTOACID PRECURSOR FORMULATIONS

John Alan Lawton, Landenberg, Pa.; William John Nebe, and Glen Anthony Thommes, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 7, 1995, Ser. No. 488,468

Int. Cl.[6] G03C *9/08;* **C08K** *3/26;5/098*

U.S. Cl. 522—31 **11 Claims**

1. A stabilized photohardenable epoxy composition comprising:

a photohardenable epoxy, a photoacid precursor useful for initiation of cationic polymerizations and a stabilizer having a limited solubility in the composition and having a density which is different from that of the composition, wherein the stabilizer is a salt of a Group IA or a Group IIA metal ion and a weak acid having a solubility in the composition that is at least more than 1×10^{-4} g/l but less than 0.5 g/l and wherein the weak acid is an acid having a pKa in water that is greater than 3.0, and wherein the stabilizer is present in an amount that is in excess of its solubility.

5,665,793

PHOSPHORESCENT HIGHWAY PAINT COMPOSITION

Irving Anders, 54 Crossway, Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 525,850, Sep. 8, 1995, abandoned, which is a division of Ser. No. 257,350, Jun. 9, 1994, Pat. No. 5,472,737. This application Apr. 1, 1996, Ser. No. 625,096

Int. Cl.[6] F21V *7/22;* **C08K** *3/10*

U.S. Cl. 523—172 **14 Claims**

1. A luminescent composition comprising:

a luminescent substance comprising a compound expressed by the matrix MAl_2O_4 in which M is at least one metal element selected from the group consisting of calcium, strontium and barium or alternatively, is a matrix MAl_2O_4 in which M is a plurality of metal elements comprised of magnesium and at least one element selected from the group consisting of calcium, strontium and barium; and a water miscible polyurethane resin.

5,665,794

METHOD FOR CONTROLLING CURE INITIATION AND CURING TIMES OF PLATINUM GROUP METAL CURING FLUOROSILICONE COMPOSITIONS

Myron Timothy Maxson, Midland, and Lee Walter Miller, Bay City, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 20, 1996, Ser. No. 650,386

Int. Cl.[6] C08K *9/00*

U.S. Cl. 523—209 **27 Claims**

1. A method for controlling cure initiation time and curing time of a platinum group metal curable fluorosilicone composition, the method comprising forming a fluorosilicone composition comprising

(A) 100 parts of a fluorine-containing polydiorganosiloxane comprising at least two alkenyl radicals per molecule, and repeating units described by formula R^1R^fSiO and optionally R^1R^2SiO, where R^1 is an alkyl radical comprising from one to about four carbon atoms, R^2 is an alkenyl radical comprising from two to about 10 carbon atoms, and R^f is a perfluoroalkylethyl radical comprising from three to about 12 carbon atoms,

(B) 10 to 70 weight parts of a treated reinforcing silica filler,

(C) an amount of a platinum group metal-containing hydrosilation catalyst sufficient to effect curing of the composition, and

(D) a crosslinker mixture comprising an alkylhydrogensiloxane comprising at least 3 silicon-bonded hydrogen atoms per molecule with the remaining bonds of the silicon atoms being to oxygen or alkyl radicals comprising one to four carbon atoms and a dialkylhydrogen perfluoroalkylethylsiloxane; controlling the weight ratio of the alkylhydrogensiloxane to dialkylhydrogen perfluoroalkylethylsiloxane within a range of about 0.1:1 to 9:1 to control cure initiation time and curing time; and curing the fluorosilicone composition.

5,665,795

RESIN COMPOSITIONS AND MOLDED ARTICLES

Yuji Koushima, Yokohama; Teiji Kohara, Kawasaki, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00318, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO94/20575, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 28, 1994, Ser. No. 464,629

Claims priority, application Japan, Mar. 1, 1993, 5-064743; Jun. 8, 1993, 5-164060

Int. Cl.[6] C08K *7/18;7/20*

U.S. Cl. 523—223 **16 Claims**

1. A resin composition which comprises 30–95 parts by weight of a thermoplastic norbornene resin having a number-average molecular weight of 10,000–200,000 and 5–70 parts by weight of a spherical inorganic filler having an average particle diameter of 0.05–50 μm.

5,665,796

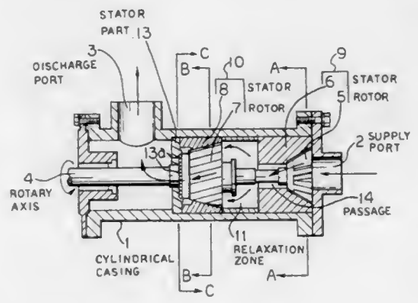
METHOD FOR THE CONTINUOUS PREPARATION OF ORGANOPOLYSILOXANE EMULSIONS

Hidehiko Hosokawa; Junichi Maeshima, and Fumitaka Suto, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 498,963, Jul. 6, 1995, Pat. No. 5,563,189. This application Feb. 5, 1996, Ser. No. 596,971

Int. Cl.[6] C08J *3/03*

U.S. Cl. 523—322 **6 Claims**



1. Apparatus for preparing organopolysiloxane emulsions comprising means for continuously feeding and supplying organopolysiloxane liquid or gums, water and emulsifying agents, including a cylindrical casing having a supply port and a discharge port, the cylindrical casing having mounted therein between its supply and discharge ports a first-stage shearing and stirring mechanism and a second-stage shearing and stirring mechanism, the first-stage shearing and stirring mechanism comprising a turbine rotor having blades slanted obliquely from the radial direction when viewed in the axial direction, and a stator arranged about the circumference of the rotor, the second-stage shearing and stirring mechanism comprising a turbine rotor having blades describing spiral curves with respect to the axial direction, and a stator arranged about the circumference of its rotor, the first and second-stage mechanisms being arranged serially along the direction of flow of fed materials and being separated one from another by a relaxation zone; means for subjecting the fed materials in the first-stage shearing and stirring mechanism to an intake and shearing action at a shear rate of at least 100 reciprocal seconds; and after passage through the relaxation zone, means for subjecting the materials in the second-stage shearing and stirring mechanism to phase reversal, rotational effects, and shearing action, at a shear rate of at least 100 reciprocal seconds; whereby an organopolysiloxane-in-water or water-in-organopolysiloxane emulsion is discharged from the discharge port of the cylindrical casing.

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5,665,797

RESIN COMPOSITION FOR SEALING FILM-MADE LIQUID CRYSTAL CELLS

Syuji Tahara, Ichihara; Koichi Machida, Mobara; Seiji Itami, Chosel-gun, and Masayuki Horiuchi, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

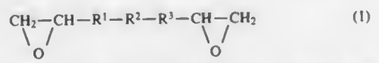
Continuation of Ser. No. 264,938, Jun. 24, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,479

Claims priority, application Japan, Jun. 29, 1993, 5-159288

Int. Cl.[6] C08L *63/00*

U.S. Cl. 523—400 **6 Claims**

1. A resin composition for sealing liquid crystal cells comprising an epoxy resin containing a polysulfide modified epoxy resin, a hydrazide compound, a urea compound as a cure accelerator in an amount of 0.2 to 5% by weight of the resin composition and filler, wherein the epoxy resin contains said polysulfide modified epoxy resin in an amount of 20 to 100% by weight, said hydrazide compound is present in an amount which provides a molar ratio of hydrazide groups to epoxy groups in the range of ⅓ to ⅔ moles of hydrazide groups per one mole of epoxy groups in the epoxy resin and said polysulfide modified epoxy resin is expressed by general formula (1):



(1)

wherein each of R^1 and R^3 represents at least one organic group selected from the group consisting of bisphenol structures, aliphatic oxyether structures and aliphatic thioester structures and R^2 represents a polysulfide structure expressed by $—(C_2H_4OCH_2OC_2H_4S_m)_n—$, where m represents the number of sulfur atoms contained in a polysulfide structure and is 1 or 2, and n represents the average number of polysulfide structures contained in the above formula and is 1 to 50.

5,665,798

COMPOSITE WOOD PRODUCTS FROM SOLVENT EXTRACTED WOOD RAW MATERIALS

Jerry R. Speaks, Union; Roger O. Campbell, and Michael A. Veal, both of Federal Way, all of Wash., assignors to North Pacific Paper Corporation, Longview, Wash.

Filed Dec. 27, 1995, Ser. No. 578,991

Int. Cl.[6] C08L *1/02*

U.S. Cl. 524—14 **16 Claims**

1. A composite wood product comprising: solvent extracted wood particulates embedded in a matrix of a binder comprising a hardened thermosetting resin, the extracted wood particulates having significantly reduced pitch content as compared to the natural pitch content of the wood and the extracted wood particulates, before incorporation into the wood product, having minimally reduced cellulose and lignin content thereby retaining structural integrity so that strength of the composite is not reduced in comparison to a composite of wood chips with naturally occurring levels of pitch.

5,665,799

RUBBER COMPOSITION AND A VULCANIZING ADHESION METHOD USING THE SAME

Naoki Inui, Nara; Hironobu Iyama, Osaka; Kyoko Tsuta, Hyogo, and Hideo Nagasaki, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 7, 1995, Ser. No. 525,267

Claims priority, application Japan, Sep. 7, 1994, 6-213854; Sep. 20, 1994, 6-224795

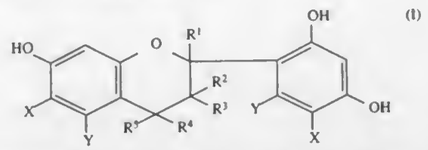
Int. Cl.[6] C08K *5/15;5/3437;* **C08L** *9/00*

U.S. Cl. 524—87 **13 Claims**

1. A rubber composition (1) which comprises:

100 parts by weight of a rubber (A) selected from natural rubber, styrene-butadiene copolymer rubber, butadiene rubber, isoprene rubber, acrylonitrile-butadiene copolymer rubber, chloroprene rubber, butyl rubber and halogenated butyl rubber;

0.5 part or more by weight of a hydroxy flavan compound (B1) represented by the formula (I):



(I)

wherein R^1, R^2, R^3, R^4 and R^5, which may be the same or different, each represent hydrogen or an aliphatic group having 1–6 carbon atoms, or R^1 and R^2 together with the carbon atoms to which they are attached form an alicyclic ring having 4–10 carbon atoms, or R^4 and R^5 together with the carbon atom to which they are attached form an alicyclic ring having 4–10 carbon atoms, and X and Y, which may be the same or different, each represent a hydrogen atom, a hydroxy group or an aliphatic group having 1–8 carbon atoms; and

0.5–5 parts by weight of a 2,2,4-trimethyl-1,2 -dihydroquinoline polymer (C1) comprising 1% or less by weight of a primary amine, 3% or less by weight of the monomer and 30% or more by weight of the dimer based on the total weight of the polymer.

5,665,800

ELASTIC SUBSTANTIALLY LINEAR OLEFIN POLYMERS

Shih-Yaw Lai, Sugar Land; John R. Wilson, Richwood; George W. Knight, Lake Jackson, all of Tex., and James C. Stevens, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 606,633, Feb. 26, 1996, abandoned, which is a continuation of Ser. No. 433,784, May 3, 1995, abandoned, which is a division of Ser. No. 370,051, Jan. 9, 1995, Pat. No. 5,525,695, which is a division of Ser. No. 44,426, Apr. 7, 1993, Pat. No. 5,380,810, which is a division of Ser. No. 776,130, Oct. 15, 1991, Pat. No. 5,272,236. This application Oct. 16, 1996, Ser. No. 730,766

Int. Cl.[6] C08K *5/49*

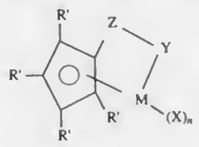
U.S. Cl. 524—115 **73 Claims**

1. A copolymer of ethylene with a C_3–C_{20} alpha-olefin characterized as having long chain branches, a melt flow ratio, I_{10}/I_2, 5.63, and a molecular weight distribution, M_w/M_n, defined by the equation:

$$M_w/M_n \leq (I_{10}/I_2) - 4.63,$$

produced by continuously contacting ethylene and a C_3–C_{20} alpha-olefin with a catalyst composition in a polymerization reactor under continuous steady state polymerization conditions, wherein said catalyst composition is made from components comprising:

(a) a metal coordination complex corresponding to the formula:



wherein:

M is a metal of group 3–10, or the Lanthanide series of the Periodic Table of Elements;

R' each occurrence is independently selected from the group consisting of hydrogen, alkyl, aryl, silyl, germyl, cyano, halo and combinations thereof having up to 20 non-hydrogen atoms;

Z is a moiety comprising hydrogen, boron, or a member of group 14 of the Periodic Table of the Elements, and optionally sulfur or oxygen, said moiety having up to 20 non-hydrogen atoms;

X independently each occurrence is an artionic ligand group or neutral Lewis base ligand group having up to 30 non-hydrogen atoms;

n is 0, 1, 2, 3, or 4, and is 2 less than the valence of M; and

Y is an anionic or nonionic ligand group bonded to Z and M comprising nitrogen, phosphorus, oxygen or sulfur and having up to 20 non-hydrogen atoms, optionally Y and Z together form a fused ring system, and

(b) an activating cocatalyst, and

wherein said continuous process conditions include recovering the copolymer by continuously removing said copolymer via a reactor exit stream.

5,665,801

HIGH MOLECULAR WEIGHT POLYESTER FLAME RETARDANT AND PROCESS FOR PREPARING THE SAME

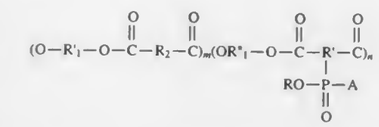
Shinn-Jen Chang, Hsinchu; Yuung-Ching Sheen, Tainan Hsien; Rong-Shuh Chang, Hsinchu; Tsai-Wie Tseng, Hsinchu, and Jen-Lien Lin, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 20, 1995, Ser. No. 492,539

Int. Cl.[6] C08K *5/53;* **C09K** *21/00;* **C08G** *79/02*

U.S. Cl. 524—125 **14 Claims**

1. A process for preparing a high-molecular weight flame retardant polyester having the formula:



(II)

wherein R'_1 is a C_2–C_{10} alkylene group or an aromatic group; R''_1 is a C_2–C_{10} alkylene group or an aromatic group; R_2 is a C_2–C_2 alkylene group or an aromatic group; R' is a C_2–C_{12} alkylene group or an aromatic group; A is R or OR, where R is a C_1–C_{12} alkyl group or an aromatic group; m is an integer from 1 to 10; and n is an integer from 1 to 10; comprising the following steps;

(a) feeding in a single batch or in two batches a metal complex serving as catalyst, an unsaturated dicarboxylic acid or a derivative thereof, a saturated dicarboxylic acid or a derivative thereof, a diol, and a phosphorus compound having the formula:



in a single reactor, and reacting at a temperature of 80°–120° C. to form a phosphorus-containing diacid;

(b) raising the temperature of the reactor to 170°–270° C. to initiate an esterification reaction; and thereafter

(c) polymerizing at a temperature of 245°–285° C. and a pressure less than 1.5 mmHg to obtain the high molecular weight flame retardant polyester.

5,665,802

POLYIMIDE FILM AND MANUFACTURING METHOD THEREOF

Haruhiko Maki, Kyoto; Hirosaku Nagano, Ohtsu, and Yoshiaki Inaba, Osaka, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 494,791, Jun. 26, 1995, abandoned, which is a continuation of Ser. No. 796,915, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 379,837, Jul. 14, 1989, abandoned. This application Sep. 9, 1996, Ser. No. 711,072

Claims priority, application Japan, Jul. 15, 1988, 63-177526

Int. Cl.[6] C08K *5/523;5/521;5/53*

U.S. Cl. 524—141 **19 Claims**

1. A method of manufacturing a polyimide film having a thickness of at least 75 μm and which is excellent in tensile strength and flexibility, which comprises adding a dehydration-cyclization agent, a catalyst and an organic phosphorus compound to polyamide acid and then film-forming, wherein the organic phosphorus compound is added in a range of 0.5–5 weight % based on polyimide.

5,665,803

SHAPED ARTICLES HAVING IMPROVED PROPERTIES

Ronald Sinclair Nohr, Roswell; John Gavin MacDonald, Decatur; Peter Michlovich Kobylivker, Marietta, and Gunilla Elsa Gillberg-LaForce, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

PCT No. PCT/US93/09748, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/09066, PCT Pub. Date Apr. 28, 1994

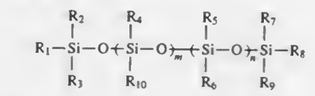
Continuation-in-part of Ser. No. 958,630, Oct. 9, 1992, abandoned. This PCT application Oct. 12, 1993, Ser. No. 411,628

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **25 Claims**

1. A melt-extrudable thermoplastic composition which comprises a thermoplastic polyolefin and an improved additive system comprising a first component and a second component, in which:

(A) said first component is an alkyl-substituted polysiloxane having the general formula,



in which:

(1) R_1–R_9 are independently selected monovalent C_1–C_3 alkyl groups;

(2) R_{10} is a monovalent C_6–C_{30} alkyl group;

(3) m represents an integer of from about 5 to about 50;

(4) n represents an integer of from 0 to about 200;

(5) said first component has a number-average molecular weight of from about 3,000 to about 36,000; and

(6) said first component has a polydispersity of from about 1.1 to about 2.5;

(B) said second component is a hydrophobic fumed silica, in which the weight ratio of the said first component to said second component is in the range of from about 10 to about 70; and

(C) said improved additive system is present in an amount of from about 0.01 to about 3 percent by weight, based on the amount of thermoplastic polyolefin.

5,665,804

SILICONE LATEX SOLVENT THICKENING

Michael Philip Louis Hill; Eric Jude Joffre, and Linda Moy Madore, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 5, 1996, Ser. No. 596,853
Int. Cl.[6] C08K 5/54; A61K 7/42
U.S. Cl. 524—268 16 Claims

1. A method of modifying the viscosity of a solvent, the method comprising (I) adding a silicone latex containing water and a plurality of cured crosslinked polysiloxane particles to a solvent after the particles have been cured and without removing the water from the cured particles in the latex; and (II) mixing the latex containing the water and the cured particles and the solvent together to thicken the solvent; the latex being prepared by a method comprising:

(A) mixing (i) 100 weight parts of a siloxane polymer having a viscosity of greater than 5,000 mPa.s but less than 500,000 mPa.s at 25° C., (ii) 0.5–10 weight parts of a surfactant, and (iii) 0.5–25 weight parts of water, (B) emulsifying the mixture into a gel phase having a siloxane polymer content of at least 80% by weight; (C) diluting the emulsion with further water to a siloxane polymer content of at least 75% by weight, (D) adding 0.00001–20 weight parts catalyst either before or after the emulsification, or before or after the dilution; (E) adding 0.1–20 weight parts crosslinker either before or after the emulsification, or before or after the dilution; or in place of adding (D) and (E), adding 1–5 weight parts self catalytic crosslinker either before or after the emulsification, or before or after the dilution.

5,665,805

ROOM TEMPERATURE CURING SILICONE ELASTOMER COMPOSITION

Hidekatsu Hatanaka, and Seiji Hori, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1996, Ser. No. 748,463
Claims priority, application Japan, Nov. 29, 1995, 7-334003
Int. Cl.[6] C08K 5/09
U.S. Cl. 524—322 8 Claims

1. A room temperature curing silicone elastomer composition that is comprising

(A) 100 parts by weight of diorganopolysiloxane comprising (a) a diorganopolysiloxane having a viscosity at 25° C. of 0.1 to 1,000 Pa.s and having both molecular chains terminals blocked by silanol groups and (b) a diorganopolysiloxane having a viscosity at 25° C. of 0.1 to 1,000 Pa.s and having one terminal of the molecular chain blocked by a silanol group and the other terminal blocked by a trialkylsiloxy group, the molar ratio of diorganopolysiloxane of (a) to diorganopolysiloxane of (b) being in the range of 1.0:0.3 to 1.0:3.0;

(B) 0.1 to 20 parts by weight of organosilane represented by the general formula $R^1_{4-a}Si(OR^2)_a$ wherein R^1 and R^2 are monovalent hydrocarbon groups having 1 to 20 carbon atoms and a is 3 or 4 or a partial hydrolyzate thereof;

(C) 5 to 30 parts by weight of solid organopolysiloxane resin of $R^3{}_3SiO_{1/2}$ units wherein R^3 is a monovalent hydrocarbon group having 1 to 20 carbon atoms or a hydroxyl group) and $SiO_{4/2}$ units, where the molar ratio of $R^3{}_3SiO_{1/2}$ units to $SiO_{4/2}$ units is in the range of 0.5:1.0 to 1.2:1.0;

(D) 0.01 to 20 parts by weight of a curing catalyst, and

(E) 0.5 to 2 parts by weight of higher fatty acid.

5,665,806

POLYPHTHALAMIDE RESIN FORMULATIONS

Mark G. Reichmann, Roswell, Ga., assignor to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 410,816, Mar. 27, 1995, Pat. No. 5,585,429. This application Feb. 8, 1996, Ser. No. 598,666
Int. Cl.[6] C08J 3/20
U.S. Cl. 524—401 6 Claims

1. A polyphthalamide composition comprising a polyphthalamide, a copper-containing stabilizer comprising copper (I) iodide and potassium iodide, and a functionalized polyolefin, and from about 0.1 to about 2.0 wt % of an alkali metal halide selected from the group consisting of lithium halides and sodium halides, based on combined weight of said polyphthalamide and said alkali metal halide.

5,665,807

COMPOSITE MATERIALS RESISTANT TO WEAR AND A PROCESS FOR THEIR MANUFACTURE

Jean-Marie Roman, Echirolles; Gérard Blenvenu, and Jürgen Gauger, both of Annemasse, all of France, assignors to GEC Alsthom Neyrpic, Grenoble, France

Division of Ser. No. 980,210, Nov. 23, 1992, Pat. No. 5,527,849. This application Dec. 11, 1995, Ser. No. 570,336
Claims priority, application France, Nov. 21, 1991, 91-14608
Int. Cl.[6] C08K 3/14;7/04
U.S. Cl. 524—404 10 Claims

1. Composite materials resistant to wear and intended for covering pieces subjected to the phenomena of wear, erosion, cavitation and abrasion especially in a corrosive media, comprising a mixture of

(i) an organic matrix which is an elastomeric polymer which is sufficiently elastic to absorb shocks from large suspended particles in a flowing fluid;

(ii) a network of quasi spherical non-oxidized ceramic particles, substantially of submicronic dimension and having in general a diameter ranging between 0.1 μm and 10 μm, distributed uniformly in said matrix, said, quasi-spherical particles imparting resistance to impact of large particles which strike said material; and

(iii) a macromolecular dispersant capable of reducing interfacial tension between said elastic organic matrix and said quasi spherical non-oxidized ceramic particles.

5,665,808

LOW TOXICITY COMPOSITE BULLET AND MATERIAL THEREFOR

Stephen J. Bilsbury, 1225 State St., Alton, Ill. 62002, and Bruce E. Burdick, 3656 Western Ave., Alton, Ill. 62002-3156

Filed Jan. 10, 1995, Ser. No. 370,661
Int. Cl.[6] C08K 3/08
U.S. Cl. 524—439 22 Claims

1. A practice ammunition comprising a compacted mixture of fine lead powder and of a inert, acid-resistant, non-toxic thermoplastic resin; the fine lead powder having a particle size of less than no. 12 shot and being greater than 90% of the mixture by weight; the mixture having a minimum specific gravity of 7.0; and the resin encapsulating the lead particles to minimize the lead exposure to the surrounding environment.

5,665,809

EXTRUDED SILICONE GEL PROFILES

Janusz Wójtowicz, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 522,650, Sep. 1, 1995, abandoned. This application Dec. 2, 1996, Ser. No. 749,601
Int. Cl.[6] C08K 3/10
U.S. Cl. 524—439 32 Claims

1. A method of fabricating an extruded silicone gel profile made of cured silicone gel material, comprising the steps of:

(i) mixing to homogeneity a reactive silicone mixture which undergoes a cure at a temperature greater than about 35° C. to form cured silicone gel material, the mixing being conducted at a temperature below that at which the reactive silicone mixture readily cures in a static mixer, the reactive silicone mixture comprising a mixture of

(a) a first silicone component which is $(R^1R^2{}_2SiO_{0.5})(R^1R^2SiO)_a(R^2{}_2SiO)_b(R^1R^2{}_2SiO_{0.5})$, $(R^2{}_3SiO_{0.5})(R^1R^2SiO)_c(R^2{}_2SiO)_d(R^2{}_3SiO_{0.5})$, or combinations thereof;

in which R^1 is selected from the group consisting of vinyl, allyl, and hexenyl and combinations thereof; and R^2 is selected from the group consisting of methyl, ethyl, higher alkyl, 3,3,3-trifluoropropyl, phenyl, and combinations thereof; and

(b) a second silicone component which is $(R^3R^2{}_2SiO_{0.5})(R^3R^2SiO)_e(R^2{}_2SiO)_f(R^3R^2{}_2SiO_{0.5})$, $(R^2{}_3SiO_{0.5})(R^3R^2SiO)_g(R^2{}_2SiO)_h(R^2{}_3SiO_{0.5})$, $(R^3R^2{}_2SiO_{0.5})_4SiO_2$, or combinations thereof,

in which R^3 is hydrogen and R^2 is as defined above;

the subscripts a–h being such that the cured silicone gel material, with or without the addition of an extender fluid, exhibits a Voland hardness of 6–225 grams, a Voland tack of about 1–75 grams and a Voland stress relaxation of about 10–95%;

(ii) passing the reactive silicone mixture through a shaped dye; and

(iii) extruding the reactive silicone mixture through the shaped dye into a heated fluid bath, wherein the fluid is heated to a temperature greater than about 85° C., to form an extruded silicone gel profile made of cured silicone gel material, substantially having the shape of the dye.

5,665,810

PUNCTURE RESISTANT MATERIAL

Kim Patchett, 103 Bradleigh Avenue, RM17 5RH Grays, Essex, United Kingdom, and Stuart Ian Wallace, 51 Second Avenue, CO13 9LY Flinton-On-Sea, Essex, United Kingdom

Filed May 31, 1995, Ser. No. 455,163
Claims priority, application United Kingdom, May 31, 1994, 9410849.5; Dec. 7, 1994, 9424773.1
Int. Cl.[6] C08K 3/34; F41H 1/02; A41D 19/00; B32B 19/02
U.S. Cl. 524—449 12 Claims

1. A puncture resistant polymeric sheet material comprising a plurality of discrete platelets disposed substantially parallel to the plane of the sheet material in an overlapping interrelation, characterized in that the orientation of the platelets in the sheet material has been effected by subjecting a mixture of the platelets and a polymeric material to externally applied positive or negative pressure in a forming process to align the platelets within the polymeric material.

5,665,811

ALKENYLSUCCINIC ACID EMULSION SIZING AGENT (2)

Yasusuke Takeda; Sadao Kotsuka, and Takeshi Kouchi, all of Kanagawa, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,876
Claims priority, application Japan, Oct. 14, 1994, 6-274325
Int. Cl.[6] C08K 5/09; D21H 17/16
U.S. Cl. 524—487 2 Claims

1. An alkenylsuccinic acid emulsion sizing agent having a solid concentration of at least 30% by weight, which comprises an active component comprising:

(1) from 70 to 95 parts by weight of an alkenylsuccinic acid obtained by reacting a branched internal olefin having 12 to 18 carbon atoms with maleic anhydride; and

(2) from 5 to 30 parts by weight of an oxidized wax having a softening point of 100° C. or above and an acid value of from 10 to 40 mg KOH/g; and

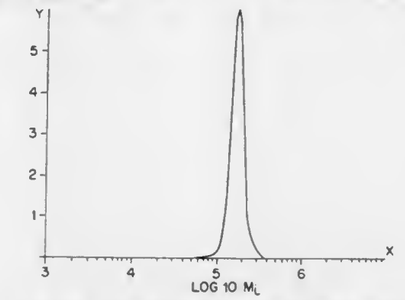
wherein said active component is dispersed in water using a high-molecular weight dispersion stabilizer or a mixed system of a high-molecular weight dispersion stabilizer with an emulsifier.

5,665,812

FUNCTIONAL DIENE POLYMERS, THEIR METHOD OF PREPARATION AND THEIR USE IN SILICA-FILLED ELASTOMERIC COMPOSITIONS WHICH CAN BE USED FOR TIRES

Jean-Noël Gorce, Riom, and Gérard Labauze, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Establissements Michelin-Michelin & Cie, Clermont-Ferrand Cedex, France

Filed Apr. 3, 1995, Ser. No. 415,523
Claims priority, application France, Jul. 15, 1994, 94 08887
Int. Cl.[6] C08K 3/04;9/06; C08F 8/00
U.S. Cl. 524—495 24 Claims

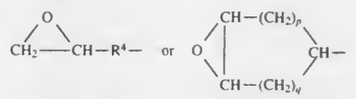


1. A process of preparing diene polymers functionalized by means of an epoxidized alkoxysilane compound said functionalized polymers having the general formula $(Y)_m—R^1—Si(OR^2)_2—P$ in which P is the chain of a diene polymer, said process consisting in preparing by catalysis with a polymerization initiator, a living diene polymer and characterized by the fact that there is added, by mixing, to the living polymer a functionalizing agent having the general formula:

$$(Y)_m—R^1—Si(OR^2)_{3-n}—R^3n$$

in which

Y represents the radical



R^1 represents an alkyl, cycloalkyl, or aryl radical having from 1 to 10 carbon atoms,

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R^2 represents an alkyl, aryl, cycloalkyl, alkaryl, or aralkyl radical having from 1 to 12 carbon atoms,
R^3 represents an alkyl, aryl or alkaryl radical having from 1 to 12 carbon atoms,
R^4 represents a hydrocarbon radical having from 1 to 6 carbon atoms and which may comprise one or more oxygen atoms in the hydrocarbon chain,
n is a whole number selected from among the values 0 and 1,
m is a whole number selected from among the values 1 and 2,
p and q are whole numbers selected from among the values 0, 1, 2, 3 and 4, it being understood that the sum of p+q must represent a whole number between 2 and 5 inclusive, in an amount such that the molar ratio (MR) of functionalizing agent to number of active sites of the initiator is equal to or greater than 1; that the agent and the living polymer are allowed to react; and that the functionalized polymer is recovered.

5,665,813

Patent Not Issued For This Number

5,665,814

LOW COST, BLUSH-RESISTANT SILANE/SILICA SOL COPOLYMER HARDCOAT FOR OPTICAL CLEAR PLASTICS

William Lewis, Chula Vista, Calif., and George Galic, Columbia Heights, Minn., assignors to Abchem Manufacturing, Chula Vista, Calif.

Filed May 4, 1995, Ser. No. 430,251
Int. Cl.[6] C08L *83/06*
U.S. Cl. 524—588 **7 Claims**

1. A silane/silica sol copolymer liquid thermosetting hardcoating composition for imparting scratch resistance to transparent plastic substrates, said composition comprising a reaction product of:
a. an acidified aqueous dispersion of colloidal silica having average particle size <100 millimicrons in diameter, with
b. a monomethyl trialkoxy silane mix consisting essentially of 67–100% monomethyltriethoxysilane and 33–0% monomethyltrimethoxysilane,
wherein said reactants are copolymerized in a ratio of not less than 30:70 and not more than 70:30% and said reaction product along with
c. a latent condensation catalyst, and
d. at least one tail solvent; such that said silane/silica sol copolymer liquid thermosetting hardcoating composition, when standing at ambient temperature, does not gel within 30 days.

5,665,815

POLYAMIDE COMPOSITIONS EXHIBITING IMPROVED RHEOLOGY

Robert Vankan, Liers; Philippe Degee, Grace-Hollogne; Robert Jerome, Esneux, and Philippe Teyssie, Neuville-En-Condroz, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Aug. 14, 1995, Ser. No. 515,011
Claims priority, application France, Aug. 16, 1994, 94 10140
Int. Cl.[6] C08L *77/00;79/00*
U.S. Cl. 524—600 **10 Claims**

1. A composition, comprising:
polyamide obtained by polycondensation of at least one xylylenediamine with at least one dicarboxylic acid, and
at least one copolymer including methyl methacrylate, and an acid selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof, the total quantity of acrylic and/or methacrylic acid relative to the weight of copolymer being not more than 30%, said copolymer at least partially neutralized with at least one alkali or alkaline-earth metal.

5,665,816

AQUEOUS DISPERSIONS FOR ADHESIVES

Bettina Gerharz, Mainz, and Helmut Hintz, Karben, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 30, 1995, Ser. No. 521,416
Claims priority, application Germany, Sep. 2, 1994, 44 31 344.6
Int. Cl.[6] C08L *1/26;51/02;51/04;51/06*
U.S. Cl. 524—733 **17 Claims**

1. An aqueous dispersion which is prepared by aqueous polymerization of vinyl acetate, ethylene and more than 25% by weight based on the total weight of monomers employed of at least one comonomer selected from the group consisting of vinyl esters of aliphatic (C_3–C_{18})-carboxylic acids, acrylic acid esters, methacrylic acid esters, and maleic acid diesters of aliphatic (C_1–C_{18})-alcohols,
in the presence of 0.05 to 0.95% by weight of α, β-unsaturated carboxylic acids, 0 to 0.95% by weight of methacrylic acid esters or acrylic acid esters which carry epoxide or hydroxyl groups, and 1.5 to 20% by weight of cellulose ether, in each case based on the total weight of the monomers employed
to form an aqueous dispersion of a copolymer containing said cellulose ether in at least partly grafted form;
wherein said copolymer has a glass transition temperature of –40° to 0° C.

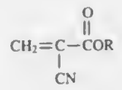
5,665,817

CYANOACRYLATE ADHESIVE COMPOSITIONS

Richard J. Greff, Yorba Linda, Calif.; Patrick J. Tighe, Littleton, Colo.; Michael M. Byram, and Leonard V. Barley, both of Colorado Springs, Colo., assignors to MedLogic Global Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 299,993, Sep. 1, 1994, Pat. No. 5,480,935. This application Dec. 26, 1995, Ser. No. 578,492
Int. Cl.[6] C08K *5/09*
U.S. Cl. 524—776 **8 Claims**

1. An alkyl cyanoacrylate composition which comprises
(a) from about 75 to 82 weight percent of an alkyl cyanoacrylate;
(b) from about 50 to about 500 parts per million SO_2, based on the entire weight of the composition, as a polymerization inhibitor; and
(c) from about 18 to about 25 percent by weight of a biocompatible plasticizer which is acetyl tri-n-butyl citrate
wherein the alkyl cyanoacrylate, in monomeric form, is represented by formula I:



where R is alkyl of 4 to 10 carbon atoms.

5,665,818

HIGH ACTIVITY STAGED REACTOR PROCESS

Michael William Tilston, St. Albans, and Thomas Edward Spriggs, Cross Lane, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 5, 1996, Ser. No. 609,595
Int. Cl.[6] C08F *2/34*
U.S. Cl. 525—53 **9 Claims**

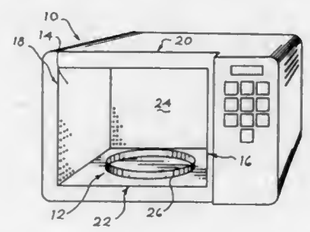
1. A process comprising contacting recycle gas containing ethylene and at least one alpha-olefin comonomer having 3 to 8 carbon atoms with a transition metal based catalyst system in two fluidized bed reactors connected in series, in the gas phase, under polymerization conditions, with the provisos that:
(a) the first reactor is operated at a temperature at or above the dew point of the recycle gas, but no higher than about 5 degrees C. above said dew point;
(b) the mixture of ethylene copolymer matrix and active catalyst formed in the first reactor in the series is transferred to the second reactor in the series;
(c) other than the active catalyst referred to in proviso (b), no additional catalyst is introduced into the second reactor;
(d) in the reactor in which a low melt index copolymer is made:
(1) the alpha-olefin is present in a ratio of about 0.01 to about 0.4 mol of alpha-olefin per mol of ethylene; and
(2) optionally, hydrogen is present in a ratio of about 0.001 to about 0.3 mol of hydrogen per mol of ethylene; and
(e) in the reactor in which a high melt index polymer is made:
(1) optionally, alpha-olefin is present in a ratio of about 0.005 to about 0.6 mol of alphaoolefin per mol of ethylene; and
(2) optionally, hydrogen is present in a ratio of about 0.001 to about 3 mols of hydrogen per mol of ethylene.

5,665,819

FERRITE COMPOSITIONS FOR USE IN A MICROWAVE OVEN

Rudolf K. Tenzer, Martinsville, N.J., assignor to Ceramic Powders, Inc., Joliet, Ill.

Division of Ser. No. 248,599, May 25, 1994, Pat. No. 5,523,549. This application Jan. 24, 1996, Ser. No. 590,493
Int. Cl.[6] C04B *35/26*
U.S. Cl. 252—62.61 **9 Claims**



1. A ferrite composition comprising 1 to 10 mol % of a material selected from the groups consisting of Li_2O, NiO, CuO, SrO, BaO, 1 to 5 mol % of Mn_2O_3, 10 to 30 mol % of MgO, 10 to 30 mol % of ZnO, and 50 to 60 mol % of Fe_2O_3.

5,665,820

MODIFIED ELASTOMERIC POLYPROPYLENES

Dirk Leistner, Linz; Manfred Rätzsch, Kirchschlag, both of Austria; Achim Hesse, Dresden, Germany; Norbert Hafner, Linz, Austria; Markus Gahleitner, Neuhofen, Austria, and Klaus Bernreitner, Linz, Austria, assignors to PCD Polymere Gesellschaft m.b.H., Linz, Austria

Division of Ser. No. 277,310, Jul. 22, 1994, abandoned. This application Oct. 11, 1995, Ser. No. 541,093
Claims priority, application Austria, Jul. 26, 1993, 1484/93
Int. Cl.[6] C08L *51/06*
U.S. Cl. 525—66 **3 Claims**

1. A method of imparting increased compatibility to blends of polyolefins and nonolefinic thermoplastics, by adding to such blends, elastomeric polypropylenes (ELPPs) modified with ethylenically unsaturated graft monomers and/or blends thereof with isotactic polypropylenes (IPPs) modified with ethylenically unsaturated graft monomers.

5,665,821

POLYPHENYLENE ETHER RESIN COMPOSITIONS

Jong-chul Lim, Kyungki-do; Jaegoo Doh, Seoul; Hyungsu Kim, Seoul; Jeheum Lee, Seoul, and Tae-uk Kim, Kyungki-do, all of Rep. of Korea, assignors to Cheil Industries Inc., Taegu, Rep. of Korea

Filed Aug. 28, 1995, Ser. No. 520,060
Claims priority, application Rep. of Korea, Apr. 25, 1995, 95-9731
Int. Cl.[6] C08G *63/48*
U.S. Cl. 525—70 **12 Claims**

1. A resin composition with excellent natural color on molded articles consisting essentially of;
(A) 5 to 95 parts by weight of a polyphenylene ether;
(B) 1 to 50 parts by weight of a functionalized aromatic vinyl graft copolymer which is prepared by melt blending in the melt 100 parts by weight of a graft copolymer(a) prepared by grafting 20–99 parts by weight of aromatic vinyl monomers onto 80 to 1 parts of synthetic rubber polymer, 0.01 to 2 parts by weight of an organic peroxide(b) and 0.01 to 10 parts by weight of reactive monomers(c) having an unsaturated carboxylic acid or anhydride group; and
(C) 5 to 95 parts by weight of a polyamide and optionally
(D) 0 to 40 parts by weight of a synthetic resinous impact modifier.

5,665,822

THERMOPLASTIC ELASTOMERS

Steven P. Bitler, Menlo Park; Ray F. Stewart, Redwood City; David A. Kamp, Sunnyvale, all of Calif.; Robert G. Freelin, McLean, Va., and Valentine Y. Yoon, Redwood City, Calif., assignors to Landec Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 773,047, Oct. 7, 1991, abandoned, and a continuation-in-part of Ser. No. 957,270, Oct. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 773,047, Oct. 7, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 48,280
Int. Cl.[6] C08L *53/00*
U.S. Cl. 525—92 C **65 Claims**

1. A thermoplastic elastomer (TPE) comprising polymeric molecules which comprise
(i) at least two polymeric A blocks,
(a) each of the A blocks being crystalline and having a melting point T_q, and
(b) at least one of the A blocks comprising a side chain comprising crystallizable moieties which render the block crystalline; and
(ii) at least one polymeric B block which
(a) is linked to at least two A blocks,
(b) is amorphous at temperatures at which the TPE exhibits elastomeric behavior.

(c) has a glass transition point T_{gs} which is less than $(T_g-10)°$ C., and

(d) is selected from the group consisting of polyethers, polyacrylates, polyamides, polyurethanes and polysiloxanes.

5,665,823

POLYISOBUTYLENE POLYMERS HAVING ACRYLIC FUNCTIONALITY

Anil Kumar Saxena, and Toshio Suzuki, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 30, 1996, Ser. No. 708,070

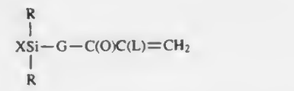
Int. Cl.[6] C08L *83/06*

U.S. Cl. 525—106 **23 Claims**

1. A method for preparing an acrylic-functional polyisobutylene polymer in which at least 50 mole percent of the repeat units are isobutylene units, said method comprising reacting

(A) a polyisobutylene polymer in which at least 50 mole percent of the repeat units are isobutylene units and which contains at least one carbon-bonded silanol group in its molecule; and

(B) a silane of the formula



wherein R is independently selected from the group consisting of hydrocarbon groups having 1 to 14 carbon atoms and halogenated hydrocarbon groups having 1 to 10 carbon atoms, X is a hydrolyzable group, G is an alkylene oxide group having 1 to 4 carbon atoms and L is selected from the group consisting of hydrogen and an alkyl radical having 1 to 4 carbon atoms.

5,665,824

ALKALINE AND WATER SOLUBLE ARTICLES AND METHOD OF MAKING SAME

Peter I. Chang, and Carl D. Ray, both of Terre Haute, Ind., assignors to Tredegar Industries, Inc., Richmond, Va.

Filed Jan. 31, 1995, Ser. No. 381,543

Int. Cl.[6] C08L *71/02*

U.S. Cl. 525—185 **1 Claim**

1. An alkaline-soluble thermoplastic composition comprising a blend of at least one alkaline soluble polymer present at about 60 to about 90%, by weight, and a property modifier comprising polycaprolactone, present at about 30 to about 40%, by weight, based on the weight of the alkaline soluble thermoplastic composition wherein the alkaline soluble polymer comprises about 45 to about 65%, by weight, an ethyl acrylate/methacrylic acid copolymer; about 25 to 30%, by weight, of an ethyl acrylate/acrylate acid/styrene-modified terpolymer; about 5 to about 10%, by weight, of a blending agent suitable to blend the ethyl acrylate/methacrylic acid copolymer with the ethyl acrylate/acrylate acid/styrene modified terpolymer; and, optionally, about 0.5 to about 2.5 anti-block additive.

5,665,825

PLAIN BEARING MATERIAL

Glyndwr John Davies, and Philip Moisey, both of Rugby, England, assignors to T&N Technology Limited, Rugby, England

PCT No. PCT/GB94/00134, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/18271, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 24, 1994, Ser. No. 495,549

Claims priority, application United Kingdom, Feb. 9, 1993, 9302533

Int. Cl.[6] C08L *81/00;27/18*

U.S. Cl. 525—189 **1 Claim**

1. A plain bearing material comprising:

a material having interpenetrating networks of polytetrafluoroethylene and polyphenylenesulphide and wherein said material comprises substantially similar portions by volume of said polytetrafluoroethylene and said polyphenylenesulphide.

5,665,826

PNEUMATIC TIRE

Adel Farhan Halasa, Bath; Laurie Elizabeth Austin, Hartville, and Susan Ann Weakland, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 505,441, Jul. 21, 1995, Pat. No. 5,623,035. This application Oct. 15, 1996, Ser. No. 732,579

Int. Cl.[6] C08L *9/00;* **C08K** *3/36*

U.S. Cl. 525—237 **19 Claims**

1. A pneumatic tire, said pneumatic tire having an outer circumferential tread where said tread is a sulfur cured rubber composition which is comprised of (a) a rubbery copolymer of α-methylstyrene and 1,3-butadiene made by a process which comprises copolymerizing α-methylstyrene monomer and 1,3-butadiene monomer in an organic solvent at a temperature which is within the range of about 60° C. to about 100° C. in the presence of a catalyst system which is comprised of (a) a dialkyl magnesium compound, (b) a cesium alkoxide containing from about 2 to about 12 carbon atoms, and (c) polar modifier; wherein the molar ratio of the cesium alkoxide to the dialkyl magnesium compound is within the range of about 6:1 to about 1:5, and wherein the molar ratio of the polar modifier to the dialkyl magnesium compound is within the range of about 10:1 to about 1:2; and (b) at least one additional rubbery polymer which is co-curable with the rubbery copolymer of α-methylstyrene and 1,3-butadiene.

5,665,827

SYNTHESIS OF MULTIBLOCK POLYMERS USING GROUP IIA AND IIB METAL CYCLIC ORGANOMETALLIC INITIATORS

James E. Hall, Mogadore, Ohio, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 7, 1996, Ser. No. 743,783

Int. Cl.[6] C08F *297/04;297/02*

U.S. Cl. 525—280 **23 Claims**

1. A process for preparing a triblock polymer comprising the steps of (1) reacting a first monomer charge of at least one anionically polymerizable monomer with an initiator comprising a cyclic organometallic compound that comprises a divalent metal atom and an organic moiety contained in a ring, to form a first block having two terminal active ends (2) forming a triblock polymer by reacting a second monomer charge of at least one anionically polymerizable monomer with the first block to form a second block on each of the terminal active ends of the first block, said second monomer charge being dissimilar in composition to the first monomer charge.

5,665,828

ACRYL-FUNCTIONAL POLYBUTYLENE

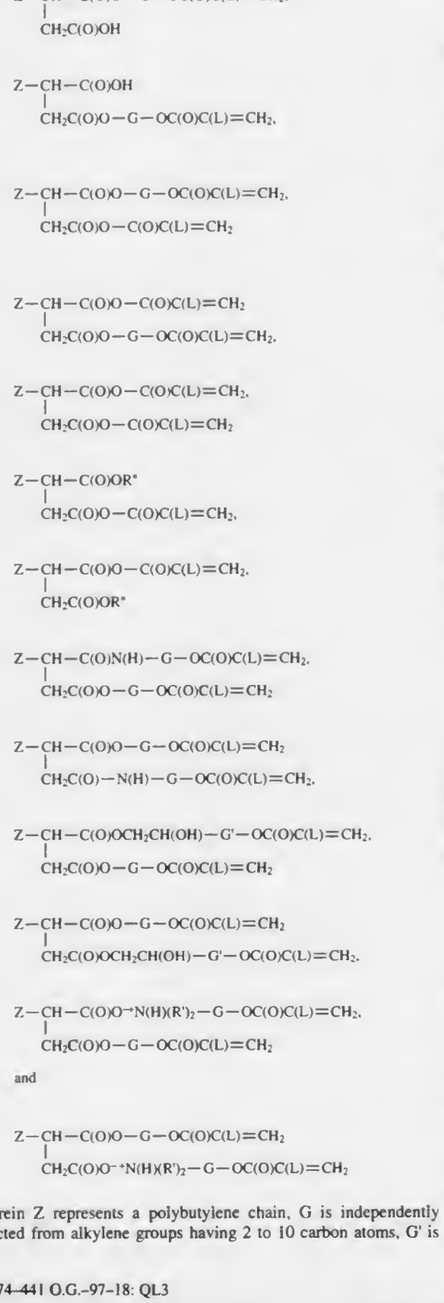
Kenneth Michael Lee, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 31, 1996, Ser. No. 741,988

Int. Cl.[6] C08F *267/04*

U.S. Cl. 525—285 **18 Claims**

1. A functional polymer which contains at least one acryl group in its molecule, said polymer having a formula selected from the group consisting of



wherein Z represents a polybutylene chain, G is independently selected from alkylene groups having 2 to 10 carbon atoms, G' is independently selected from alkylene groups having 1 to 10 carbon atoms, L is independently selected from the group consisting of hydrogen and an alkyl radical having 1 to 18 carbon atoms, R" is selected from the group consisting of methyl, ethyl and propyl and R' is independently selected from alkyl radicals having 1 to 6 carbon atoms.

5,665,829

PROCESS FOR THE POLYMERIZATION OF OLEFINIC-CONTAINING MONOMERS EMPLOYING ANIONIC INITIATORS

Neil Shepherd, Waltham Abbey, and Malcolm John Stewart, Henlow, both of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Gt. Britain & Northern Ireland, England

Continuation-in-part of Ser. No. 238,738, May 5, 1994, abandoned, which is a division of Ser. No. 920,368, Aug. 17, 1992, Pat. No. 5,331,058. This application Apr. 12, 1995, Ser. No. 419,677

Claims priority, application United Kingdom, Feb. 8, 1990, 9002804

Int. Cl.[6] C08F *36/04;12/04;8/42*

U.S. Cl. 525—332.3 **19 Claims**

1. A siloxy-terminated hydrocarbon polymer having the formula VI:

VI

wherein R^1, R^2 and R^3 are independently selected from saturated and unsaturated aliphatic and aromatic radicals, A is a saturated hydrocarbon bridging group optionally containing at least one aromatic group, $-(M)_n-$ represents a polymer of an olefinic-containing monomer n having a value such that the average molecular weight of the polymeric chain is from about 100,000 to 5,000,000 and X is selected from carboxyl, hydroxyl, mercapto, amino and a metal halide group.

7. Siloxy-terminated hydrocarbon polymer containing at least one polymer chain per molecule of formula V

V

wherein R^1, R^2 and R^3 are independently selected from saturated and unsaturated aliphatic and aromatic radicals, A is $-(CH_2)_m-$ where m is an integer from 3 to 15 and $-(M)_n-$ represents a polymer of an olefinic containing monomer, n having a value such that the average molecular weight of the polymeric chain is from about 1000 to about 5,000,000.

5,665,830

CONTROLLING PREMATURE CURING OF VULCANIZABLE HALOGEN-CONTAINING POLYMERS

Jay Bernard Class, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

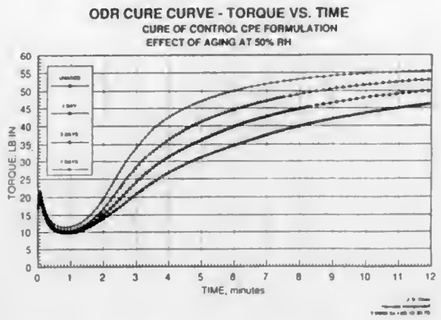
Continuation of Ser. No. 355,368, Dec. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 184,714, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 168,695, Dec. 16, 1993, abandoned. This application Jul. 22, 1996, Ser. No. 681,020

Int. Cl.[6] C08C *19/22;* **C08F** *8/00*

U.S. Cl. 525—349 **15 Claims**

1. A process of reducing the effects of moisture during storage prior to vulcanization of a vulcanizable chlorine- or bromine-containing polymer composition containing water, comprising

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blending before storage, into said vulcanizable composition, a thioester derivative of 2,5-dimercapto-1,3,4-thiadiazole crosslinking agent and polyethylene glycol having the formula $HO—(CH_2CH_2O—)_nH$ wherein n is 3 to 14, whereby the scorch time of the vulcanizable compound is not significantly affected by the water content of said composition, wherein the vulcanizable composition is stored for at least 1 day, and wherein the vulcanizable composition absorbs about 0.05% to about 2% water by weight of the vulcanizable composition as a result of humidity during storage.

5,665,831

BIOCOMPATIBLE BLOCK COPOLYMER

Peter Neuenschwander, Haegelerstrasse 4, CH-5400 Baden; Georg K. Uhlschmid, Gladbachstrasse 104, CH-8044 Zurich; Ulrich W. Suter, Lavendelweg 8, CH-8050 Zurich; Gianluca Ciardelli, Zurich; Thomas Hirt, Gommiswald; Olivier Keiser, Zurich, all of Switzerland; Kazushige Kojima, Nagoya, Japan; Andreas Lendlein, Siershahn, Germany, and Sandro Mutter, Zofingen, Switzerland, assignors to Peter Neuenschwander, Baden; Georg K. Uhlschmid, and Ulrich W. Suter, both of Zurich, all of Switzerland

Filed Aug. 10, 1995, Ser. No. 513,399

Claims priority, application Switzerland, Aug. 10, 1994, 02 478/94

Int. Cl.[6] C08G *18/42;63/672;63/06*

U.S. Cl. 525—415 **24 Claims**

1. A biocompatible multi-block copolymer, comprising at least two chemically different block units,

(1) a first block obtained by transesterification of poly-(R)-3-hydroxybutyric acid or copolymers thereof with 3-hydroxyvaleric acid, with ethylene glycol, and

(2) a second block comprising an α,ω-dihydroxypolyester which is different from said first block or an α, ω-dihydroxypolyether,

wherein said multi-block copolymer is obtained by linear polycondensation of said first block and said second block with a diisocyanate, diacid halide or phosgene.

5,665,832

FLAMEPROOFED THERMOPLASTIC MOULDINGS HAVING IMPROVED PROPERTIES

Herbert Magerstedt, Moers, and Friedemann Paul, Bergisch Gladbach, both of Germany, assignors to Bayer Aktiengesellschaft

Filed Nov. 12, 1996, Ser. No. 745,814

Claims priority, application Germany, Nov. 20, 1995, 195 43 186.3

Int. Cl.[6] C08F *20/00;* **C08K** *5/00*

U.S. Cl. 525—437 **7 Claims**

1. Thermoplastic moulding compositions, containing

A) from 25 to 97 parts by weight of polyalkylene terephthalate,

B) from 3 to 20 parts by weight of disodium tetrabromophthalate,

C) from 0 to 10 parts by weight of antimony trioxide or antimony pentoxide and

D) from 0 to 45 parts by weight of reinforcing agent,

wherein the sum of A+B+C+D totals 100 and wherein up to 25 parts by weight of polyalkylene terephthalate may be replaced by aromatic poly-carbonate and/or graft polymer, and wherein from 1 to 10 part by weight (referred to 100 parts by weight of the total weight) of polyolefins may be added.

5,665,833

METHOD FOR CONTROLLING A POLYMERIZATION RATE OF STYRENE RESINS

Hiroto Mukaiyama, Sodegaura, and Hayato Kihara, Ichihara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 18, 1996, Ser. No. 683,197

Claims priority, application Japan, Jul. 18, 1995, 7-181954

Int. Cl.[6] C08F *4/32;12/08*

U.S. Cl. 526—88 **7 Claims**

1. A method for controlling a polymerization rate, in a continuous radical polymerization of styrene monomer or a mixture of styrene monomer and at least one monomer copolymerizable therewith using a complete mixing type reactor, without substantially changing an average molecular weight of a polymer formed, comprising the steps of:

(a) keeping a polymerization temperature substantially constant at t(°C.),

(b) setting a feeding rate of the styrene monomer or the mixture of styrene monomer and at least one monomer copolymerizable therewith to A times larger rate than that in a polymerization conducted in the absence of a radical polymerization initiator, and

(c) controlling an amount of the radical polymerization initiator added in the range of from $(0.1/n)\times10^{-3}$ to $(2.0/n)\times10^{-3}$ mol per 1 liter of the monomer fed, n being a number of radical generating functional groups present in one molecule of the radical polymerization initiator, such that a polymer concentration x satisfies the mathematical expression: $x \geqq 0.3t+6\cdot(A-1)+12$ and that x be kept substantially constant, wherein A represents a ratio of a polymerization rate after being controlled to a rate of polymerization conducted in the absence of the radical polymerization initiator at the polymerization temperature t(°C.) and the polymer concentration x in a polymerization liquid.

5,665,834

METHOD OF POLYMERIZING ALPHA-OLEFINS WITH BORYL ZIRCONOCENE ORGANIC 1,1-DIMETALLIC COMPOUND CATALYSTS

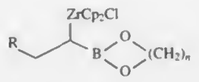
Morris Srebnik, Sylvania; Bin Zheng, and Laurent Deloux, both of Toledo, all of Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 262,790, Jun. 20, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 558,251

Int. Cl.[6] C08F *4/64*

U.S. Cl. 526—134 **13 Claims**

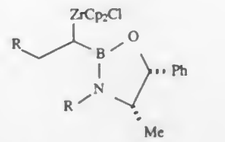
1. A method of polymerizing olefin or styrene monomers comprising reacting said monomer monomer in the presence of a polymerization catalyst that is a bimetallic compound having the structure:



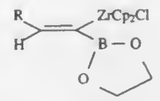
(I)

n = 3

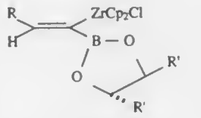
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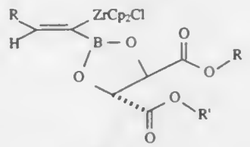
(II)



(III)



(IV)



(V)

wherein in structure III, R is t-butyl;

wherein in structures I, II, IV and V, R is an organic radical having 2–20 carbon atoms that is aliphatic, aromatic, heteroaromatic or cyclic or their halogenated substituted derivatives and R' is an alkyl group of 1–8 carbon atoms.

5,665,835

POLAR PRESSURE-SENSITIVE ADHESIVES

Thomas C. Epple, Madison, Ohio; Carol A. Koch, San Gabriel, Calif.; Prakash Mallya, Pasadena, Calif., and Colin C. Smith, Glendale, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Division of Ser. No. 103,858, Aug. 9, 1993. This application Jun. 7, 1995, Ser. No. 487,489

Int. Cl.[6] C08F *4/52*

U.S. Cl. 526—185 **22 Claims**

1. A high polar acrylate content pressure-sensitive adhesive copolymer formed by copolymerizing, in solution, a mixture of acrylic monomers comprising at least one alkyl acrylate containing from about 4 to about 8 carbon atoms in the alkyl group in the presence of from 15 to about 50 percent, by weight of the mixture of acrylic monomers, of a polar acrylate monomer of the formula:

CH_2=CYCOO—R—Z

wherein Y is selected from the group consisting of hydrogen and methyl, R is selected from the group consisting of alkyl, cycloalkyl, aromatic, alkyl ester and alkyl ether containing up to about 12 carbon atoms and Z is selected from the group consisting of COOH and CH_2OH, said monomer, when homopolymerized having a glass transition temperature of less than about 50° C., said copolymer having a glass transition temperature of at least 10° C. below use temperature and cross linked in the presence of a chemical crosslinking agent.

5,665,836

METHOD OF PREPARING VINYL CHLORIDE POLYMERS AND COPOLYMERS OF IMPROVED ANTISTATIC PERFORMANCE

Toshihiko Tanaka, and Hiroshi Minamide, both of Yokkaichi, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Continuation of Ser. No. 155,770, Nov. 23, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 510,938

Claims priority, application Japan, Dec. 10, 1992, 4-330442; Dec. 10, 1992, 4-330443

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—210 **3 Claims**

1. A method of producing suspension polymerized vinyl chloride polymer or copolymer of improved flowability and anti-static performance when dried and in powder form, comprising the steps of:

(a) suspension polymerizing in an aqueous medium and in the presence of a suspending agent, a vinyl chloride monomer, or a mixture of monomers containing vinyl chloride as a major component, to form a slurry of polymer or copolymer suspended in said aqueous medium,

(b) recovering unreacted vinyl chloride monomer from said slurry,

(c) adding an aqueous solution of polyhydric alcohol having a concentration of 5 to 90% to said slurry, wherein said polyhydric alcohol is ethylene glycol, a polycondensate of ethylene glycol, propylene glycol, a polycondensate of propylene glycol, or pentaerythritol, and wherein said polyhydric alcohol is added to said slurry in an amount of 0.001 to 0.5 parts by weight based on 100 parts by weight of vinyl chloride polymer or copolymer, separating the polymer or copolymer from said slurry and recovering said polymer or copolymer in powder form.

5,665,837

INITIATION VIA HALOBORATION IN LIVING CATIONIC POLYMERIZATION

Rudolf Faust, Lexington, and Lajos Balogh, Chelmsford, both of Mass., assignors to University of Massachusetts Lowell, Lowell, Mass.

Filed Dec. 23, 1993, Ser. No. 173,493

Int. Cl.[6] C08F *4/14*

U.S. Cl. 526—237 **28 Claims**

1. A composition comprising a polymer component which consists essentially of an asymmetric telechelic polyolefin having a boron-containing head group covalently bonded to the polyolefin.

5,665,838

FLUOROALKENE/HYDROCHLOROFLUOROCARBON TELOMERS AND THEIR SYNTHESIS

Richard Edwin Peavy, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 427,329, Apr. 24, 1995, Pat. No. 5,552,500. This application May 16, 1996, Ser. No. 649,961

Int. Cl.[6] C08F *14/18*

U.S. Cl. 526—255 **6 Claims**

1. A fluorotelomer produced by the process comprising reacting a fluoroalkene monomer of from 2 to 3 carbon atoms and 2 to 6 fluorine atoms, or a mixture thereof with a copolymerizable monomer, with a hydrochlorofluorocarbon telogen in solution in said hydrochlorofluorocarbon in the presence of a free radical initiator at a temperature in excess of 105° C. and up to 200° C., wherein said hydrochlorofluorocarbon consists essentially of an organic compound having the formula:



wherein R^1, R^2, R^3, and R^4 are each independently Cl or F;

R5 and R6 are each independently H, Cl, or F, provided that when either of R^5 or R^6 is F, the other is H; and n is 0 or 1, and recovering a fluorotelomer having a number average molecular weight between 1800 and 75,000.

5,665,839

RING OPENING MONOMERS

Ezio Rizzardo, Wheelers Hill; Richard Alexander Evans, Clayton; Graeme Moad, Kallista Victoria, and San Hoa Thang, Clayton South, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU93/00667, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO94/14792, PCT Pub. Date Jul. 7, 1994

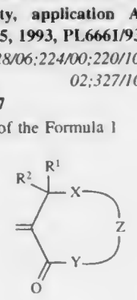
PCT Filed Dec. 21, 1993, Ser. No. 464,701

Claims priority, application Australia, Dec. 22, 1992, PL6516/92; Jan. 5, 1993, PL6661/93

Int. Cl.[6] C08F *228/06;224/00;220/10;220/44;212/08;* **C07D** *327/02;327/10*

U.S. Cl. 526—257 **9 Claims**

1. Compounds of the Formula I



Formula I

wherein:

Rand R^2 are independently selected from the group comprising hydrogen, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, phenyl, and substituted phenyl;

X is sulfur;

Y is oxygen; and

Z is any linking functionality.

5,665,840

POLYMERIC NETWORKS FROM WATER-SOLUBLE PREPOLYMERS

Thomas Pöhlmann, Niedernberg; Achim Müller, Aschaffenburg, and Bernhard Seiferling, Goldbach, all of Germany, assignors to Novartis Corporation, East Hanover, N.J.

Filed Nov. 3, 1995, Ser. No. 552,649

Int. Cl.[6] C08F *26/10;* **C08L** *39/06*

U.S. Cl. 526—264 **32 Claims**

1. A water-soluble crosslinkable prepolymer that comprises, in the copolymer chain, units derived from the following monomeric structural units: a vinyl lactam (a), vinyl alcohol (b), optionally a lower alkanecarboxylic acid vinyl ester (c), a vinylic crosslinking agent (d) and optionally a vinylic photoinitiator (e).

5,665,841

ACETAL GROUP-CONTAINING ALKOXY-STYRENE POLYMERS, METHOD OF PREPARING THE SAME AND CHEMICAL AMPLIFIED PHOTORESIST COMPOSITION MAINLY COMPRISING THE SAME

Ji-Hong Kim; Sun-Yi Park; Seong-Ju Kim, and Joo-Hyeon Park, all of Taejeon, Rep. of Korea, assignors to Korea Kumho Petrochemical Co., Ltd., Seoul, Rep. of Korea

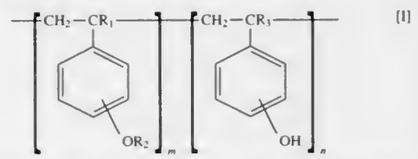
Filed Oct. 30, 1996, Ser. No. 744,738

Claims priority, application Rep. of Korea, Nov. 28, 1995, 95-44207

Int. Cl.[6] C08F *24/00*

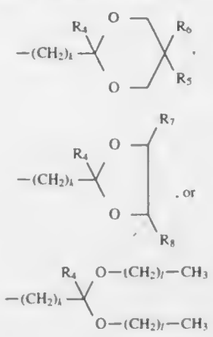
U.S. Cl. 526—266 **3 Claims**

1. An alkoxy-styrene polymer with a weight average molecular weight of about 500 to 10,000,000, represented by the following general formula I:



[I]

wherein R_1 and R_3 may be the same or different, and represent a hydrogen atom or a methylene group; R_2 represents



wherein R_4, R_5, R_6, R_7 and R_8 may be the same or different, and independently represent a hydrogen atom, an alkyl group or an aryl group; m+n=1; k is an integer of 1–5; and l is an integer of 0–5.

5,665,842

ORGANIC COMPOUNDS

Bernhard Leikauf, Linn, Switzerland, assignor to MBT Holding AG, Zurich, Switzerland

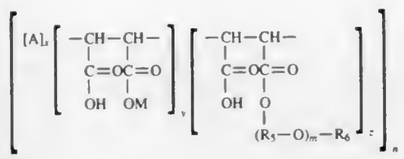
Continuation of Ser. No. 360,160, Dec. 20, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 471,697

Claims priority, application United Kingdom, Dec. 21, 1993, 9326005; Dec. 21, 1993, 9326046

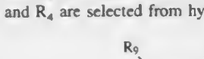
Int. Cl.[6] C08F *30/08*

U.S. Cl. 526—279 **4 Claims**

1. A random copolymer corresponding to Formula I in free acid or salt form having the following types and numbers of monomer units;

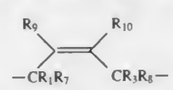


wherein A is selected from the moieties (i) and (ii);



(i)

wherein R_1 and R_3 are selected from C_{1-8}alkyl, C_{2-8}alkenyl, C_{2-8} alkylcarbonyl, C_{1-8}alkoxy, carboxyl and hydrogen, or R_1 and R_3 can together with R_2 and/or R_4 form a ring; and R_2 and R_4 are selected from hydrogen and C_{1-4}alkyl; and



(ii)

wherein R_1 and R_3 are as for (i) and R_7, R_8, R_9 and R_{10} are individually selected from hydrogen and C_{1-6}alkyl, or R_1 and R_3 together with R_7 and/or R_8, R_9 and R_{10} form a continuous C_{2-8} hydrocarbon chain joining the carbon atoms to which they are attached, the hydrocarbon chain optionally comprising at least one hetero atom and the ring optionally having at least one anionic group;

M is selected from hydrogen and the residue of a hydrophobic polyalkylene glycol or a polysiloxane, with the proviso that when A is (ii) and M is the residue of a hydrophobic polyalkylene glycol, M must be different from the group $—(R_5O)_mR_6$, R_5 is a C_{2-8}alkylene radical;

R_6 is selected from C_{1-20}alkyl, C_{6-9}cycloalkyl and phenyl;

n, x and z are numbers from 1 to 100;

y is 0 to 100;

m is 2 to 100; and

the ratio of x to (y+z) is from 1:10 to 10:1 and the ratio of y:z is from 5:1 to 1:100.

5,665,843

ALLYLBIGUANIDE POLYMER AND METHOD OF PRODUCING SAME

Kokoro Iio, Ushiku, Japan, assignor to Director-General of Agency of Industrial Science and Technology, Japan

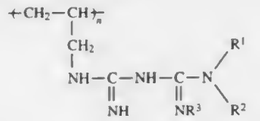
Filed Feb. 1, 1996, Ser. No. 595,578

Claims priority, application Japan, Feb. 13, 1995, 7-024036

Int. Cl.[6] C08F *20/52*

U.S. Cl. 526—310 **8 Claims**

1. An allylbiguanide polymer consisting essentially of recurring units having the following formula:



wherein R^1, R^2 and R^3 stand, independently of each other, for a hydrogen atom, a substituted or non-substituted aliphatic hydrocarbon group, a substituted or non-substituted alicyclic hydrocarbon group or a substituted or non-substituted aromatic group and n represents an average degree of polymerization of at least 2, or an acid addition salt thereof.

5,665,844

POLYMER FILMS FOR DETECTING CHEMICAL SUBSTANCES

Werner Prass, Mainz; Thomas Stehlin, Hofheim, both of Germany; Yuan Llu, Kawagoe, Japan; Shizuo Ogura, Tsurugashima, Japan; Tetsu Yamamoto, Kawagoe, Japan; Akihiko Tokida, Kawagoe, Japan, and Kenji Motosugi, Kawagoe, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

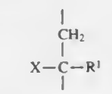
Filed Nov. 15, 1993, Ser. No. 152,405

Claims priority, application Japan, Nov. 17, 1992, 4-307283

Int. Cl.[6] C08F *220/10*

U.S. Cl. 526—328 **17 Claims**

1. A film for detecting chemical substances comprising a homopolymer or a copolymer having recurring unite represented by the following formula (I):



(I)

wherein X is —H, —F, —Cl, —Br, $—CH_3$, $—CF_3$, —CN or $—CH_2C_3$; and R^1 is $—R^2$ or $—Z—R^2$;

wherein Z is —O—, —S—, —NH—, $—NR^{2'}—$, —(C═Y)—, —(C═Y)—Y—, —Y—(C═Y)—, $—(SO_2)—$, —Y'—(SO_2)—, $—(SO_2)—Y'—$, $—Y'—(SO_2)—Y'—$, —NH—(C═O)—, —(C═O)—NH—, $—(C═O)—NR^{2'}—$, —Y'—(C═Y)—Y'— or —O—(C═O)—$(CH_2)_n$—(C═O)—O—;

wherein Y if independently O or S,

and Y' is independently O or NH,

and n is an integer of 0 to 20;

and wherein R^2 and $R^{2'}$ represent independently a hydrogen atom, a linear alkyl group, a branched alkyl group, a cycloalkyl group, an unsaturated hydrocarbon group, an aryl group, or a saturated or unsaturated hetero ring,

and further provided that R^1 is not a hydrogen atom, a linear alkyl group or a branched alkyl group,

wherein said film has a thickness of less that one micron.

5,665,845

ELECTRONIC DEVICE WITH A SPIN-ON GLASS DIELECTRIC LAYER

Derryl D. J. Allman, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Division of Ser. No. 214,477, Mar. 17, 1994, Pat. No. 5,527,872, which is a continuation-in-part of Ser. No. 582,570, Sep. 14, 1990, Pat. No. 5,302,198. This application Mar. 1, 1996, Ser. No. 609,589

Int. Cl.[6] C08G *79/08*

U.S. Cl. 528—8 **8 Claims**

1. An electronic device having a dielectric layer, comprised of a boron-oxide substituted polyorganosiloxane polymer having greater than 1 wt. % boron-oxide, at least 30 atomic wt. % carbon and a silane adhesion promoter incorporated therein.

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5,665,846

FLUORINATED AMIDE COMPOUNDS AND CURABLE COMPOSITIONS

Shinichi Sato; Noriyuki Koike; Takashi Matsuda, and Yasushi Yamamoto, all of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

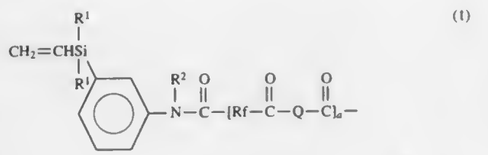
Filed Jan. 23, 1996, Ser. No. 590,318

Claims priority, application Japan, Jan. 23, 1995, 7-027296; Jan. 23, 1995, 7-027297

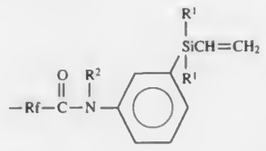
Int. Cl.[6] C08L *77/04*

U.S. Cl. 528—15 **15 Claims**

1. A fluorinated amide compound of the following general formula (1):



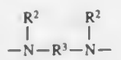
(1)



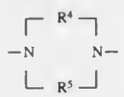
wherein R^1 is a substituted or unsubstituted monovalent hydrocarbon group,

R^2 is a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group,

Q is a group represented by the following general formula (2) or (3):



(2)



(3)

wherein R^3 is a substituted or unsubstituted divalent hydrocarbon group which may have at least one intervening atom selected from oxygen, nitrogen and silicon atoms, R^4 and R^5 are independently selected from substituted or unsubstituted divalent hydrocarbon groups,

Rf is a divalent perfluoroalkylene or perfluoropolyether group, and

letter a is an integer inclusive of 0.

2. A curable composition comprising

(A) a fluorinated amide compound of formula (1) as set forth in claim **1**,

(B) a fluorinated organohydrogensiloxane containing at least one monovalent perfluorooxyalkyl, monovalent perfluoroalkyl, divalent perfluorooxyalkylene or divalent perfluoroalkylene group and at least two hydrosilyl groups in a molecule, and

(C) a catalytic amount of a platinum group compound,

component (B) being present in an amount to give 0.5 to 5 mol of the hydrosilyl group per mol of the aliphatic unsaturated group in the composition.

5,665,847

PRODUCTION OF NITROSAMINE-FREE SILICONE ARTICLES

Larry Neil Lewis, Scotia, and Edward Matthew Jeram, Burnt Hills, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 298,981, Aug. 31, 1994, abandoned. This application Jan. 31, 1996, Ser. No. 594,508

Int. Cl.[6] C08G *77/06;77/12*

U.S. Cl. 528—15 **7 Claims**

1. A method for making nitrosamine-free silicone articles comprising the following steps:

(a) mixing (A) a vinyl-containing organopolysiloxane; (B) a silicone hydride siloxane; (C) a filler; (D) a catalytic amount of catalyst;

(b) curing the mixture of said step (a); and

(c) post-baking the cured mixture of said step (b) in an atmosphere selected from the group consisting of helium, nitrogen, argon, carbon dioxide, methane and mixtures thereof whereby said cured silicone articles have a nitrosamine content below 1 ppb.

5,665,848

CROSSLINKERS FOR SILAZANE POLYMERS

Thomas Duncan Barnard, Midland; Duane Ray Bujalski, Auburn, and Gregg Alan Zank, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 20, 1996, Ser. No. 650,389

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—24 **15 Claims**

1. A method of crosslinking a silazane polymer comprising:

preparing a mixture comprising a silazane polymer having Si—H bonds, a crosslinker selected from the group consisting of alkenyl functional cyclosiloxanes and alkenyl functional cyclosilazanes and a crosslinking promoter; and

heating the mixture to a temperature sufficient to crosslink the silazane polymer.

5,665,849

MODIFIED HYDROGEN SILSESQUIOXANE SPIN-ON GLASS

Chih-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 390,181, Feb. 17, 1995. This application Jun. 7, 1995, Ser. No. 476,294

Int. Cl.[6] C08G *77/12*

U.S. Cl. 528—31 **2 Claims**

1. A modified hydrogen silsesquioxane film precursor for coating a semiconductor substrate, said modified hydrogen silsesquioxane film precursor comprising:

hydrogen silsesquioxane resin; and

a modifying agent selected from the group consisting of methyl trimethoxysilane, 1,2-bis(trimethoxysilyl)ethane, trimethylchlorosilane, methyltrichlorosilane, and (tri-3,3,3 fluoropropyl)trimethoxysilane;

in a resin to modifying agent volume ratio between 40:1 and 2:8.

5,665,850

POLYMERIC ORGANOMETALLIC PHOTOINITIATORS AND THE CATIONICALLY CROSSLINKABLE POLYORGANOSILOXANE COMPOSITIONS WHICH COMPRISE THEM

Christian Priou, Villeurbanne, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

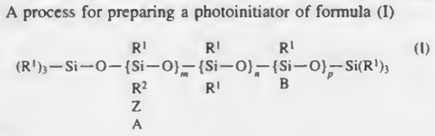
Division of Ser. No. 380,038, Jan. 30, 1995, Pat. No. 5,626,968. This application Nov. 14, 1996, Ser. No. 749,938

Claims priority, application France, Jan. 31, 1994, 94 01239

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—31 **6 Claims**

1. A process for preparing a photoinitiator of formula (I)



(I)

wherein:

m is an integer or fractional number ranging from 0.5 to 50;

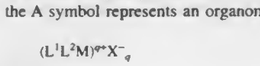
n is an integer or fractional number ranging from 0 to 500;

p equal to 0;

the sum m+n is greater than or equal to 2;

the R^1 symbols are identical or different and each represents a linear or branched alkyl radical having from 1 to 6 carbon atoms or a phenyl radical;

the A symbol represents an organometallic salt of formula (II):



(II)

in which formula:

M represents a metal selected from the group consisting of Mn, Cr, Mo, W, Fe, Re and Co;

L^1 represents one ligand or 2 ligands, which are identical or different, bonded to the metal M by π bonds, which ligand(s) are selected from the group consisting of η^3-allylalkyl, η^5-cyclopentadienyl, η^7-cycloheptatrienyl and η^6-aromatic compounds selected from the group consisting of η^6-benzene ligands and compounds having from 2 to 4 aromatic rings, each ring being capable of contributing 3 to 8 π electrons to the valency layer of the metal M;

L^2 represents 0 to 3 identical or different ligand(s) bonded to the metal M by σ electrons, and is selected from the group consisting of CO and NO_2^+;

X^- is a halogenated complex anion selected from the group consisting of BF_4^-, PF_6^-, AsF_6^-, and SbF_6^- and mixtures thereof;

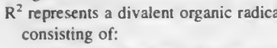
q is a positive integer equal to 1 or 2;

the valency bond uniting the monovalent symbol A to Z being carried by a carbon atom of the ligand L^1 or one of the two ligands L^1;

R^2 represents a divalent organic radical selected from the group consisting of:

(1) linear or branched alkylene radicals having from 2 to 6 carbon atoms; and

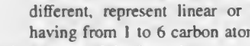
(2) radicals of formula:



(III)

in which the R^3 and R^4 radicals, which are identical or different, represent linear or branched alkylene radicals having from 1 to 6 carbon atoms; and

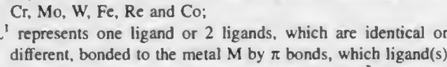
Z is a group of the formula:



(V)

in which the R^4 radicals are identical or different and each represent a linear or branched alkyl radical having from 1 to 6 carbon atoms when R^2 is represented by (1) or (2);

said process comprising the steps of reacting a compound of formula (VIII)



(VIII)

wherein:

R^1, m and n have the same meaning indicated above for formula (I),

with a precursor of the A—Z—R^2— substituent carrying an ethylenic unsaturation at the free end of the hydrocarbon group bonded to the A—Z— assembly by a hydrosilation reaction in the presence of a catalyst to yield a compound of formula (I).

5,665,851

AMINOPLASTIC RESINS AND THEIR USE AS A CROSSLINKING AGENT FOR CELLULOSE

Didier Wilhelm, Issy-les-Moulineaux; Alain Blanc, Saint-Denis, both of France, and William C. Floyd, Chester, S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

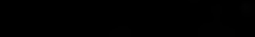
Filed Aug. 21, 1995, Ser. No. 517,568

Claims priority, application France, Aug. 22, 1994, 94 10186

Int. Cl.[6] C08G *12/08;12/30;12/32*

U.S. Cl. 528—230 **22 Claims**

1. Aminoplastic resin based on one or more amino derivatives and one or more aldehydes, characterized in that the amino derivative is melamine, glycoluril or their mixture in variable proportions and that the aldehyde is a product of formula (I)



(I)

in which R represents a dialkoxymethyl group, 1,3-dioxolan 2-yl group optionally substituted on the vertex 4 and/or 5 by one or more alkyl groups or a 1,3-dioxan 2-yl group optionally substituted on the vertices 4, 5 and/or 6 by one or more alkyl groups, optionally mixed with glyoxal.

5,665,852

SUBSTITUTED UREA AND OXIME MODIFIED AMINO CROSSLINKING AGENTS, CURABLE COMPOSITIONS CONTAINING THE SAME AND POROCESS FOR PREPARING PYRROLIDONE UREA

Balwant Singh, Stamford; Laurence W. Chang, Orange; Larry S. Anderson, Bethel, all of Conn., and Stephen F. Donovan, Yardley, Pa., assignors to Cytec Technology Corp., Wilmington, Del.

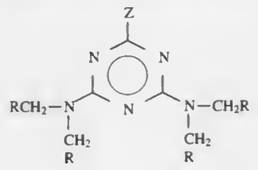
Filed Jun. 7, 1995, Ser. No. 480,358

Int. Cl.[6] C08L *61/28;61/32;61/20*

U.S. Cl. 528—254 **7 Claims**

1. An amino crosslinking agent selected from the group consisting of

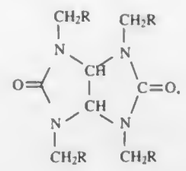
(i) a triazine compound represented by the formula (I)



(I)

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(ii) a glycoluril compound represented by the formula (II)



(II)

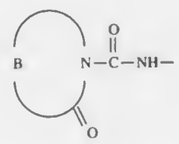
(iii) an oligomer of (i) or of (ii), and

(iv) a mixture of at least two of any of (i), (ii) and (iii),

wherein Z is selected from the group consisting of $-N(CH_2R)_2$, aryl having 6 to 10 carbon atoms, alkyl having 1 to 20 carbon atoms, cycloalkyl having 6 to 10 carbons and an acetyl group, and

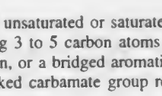
each R is independently selected from the group consisting of

(a) a substituted urea group represented by the formula



wherein B is an unsaturated or saturated aliphatic ring forming group having 3 to 5 carbon atoms optionally substituted by a keto oxygen, or a bridged aromatic,

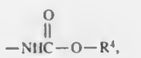
(b) an oxime blocked carbamate group represented by the formula



wherein R^1 and R^3 are independently selected from an alkyl group having 1 to 8 carbon atoms and can together form a cyclic ring having a total of up to 16 carbon atoms including substitution,

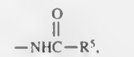
(c) $-OR^3$, wherein R^3 is hydrogen or an alkyl group having 1 to 12 carbon atoms,

(d)



wherein R^4 is an alkyl group having 1 to 18 carbon atoms, cycloalkyl group having 6 to 10 carbons or an aryl group having 6 to 20 carbon atoms, and

(e)



wherein R^5 is hydrogen, an alkyl group having 1 to 18 carbon atoms, cycloalkyl group having 6 to 10 carbons or an aryl group having 6 to 20 carbon atoms, provided that at least one R group is selected from or (b).

5,665,853

DRY STRENGTH RESIN COMPOSITIONS

Jose M. Rodriguez, Eatonton, Ga., assignor to Geo Speciality Chemicals, Inc., Cleveland, Ohio

Continuation of Ser. No. 505,724, Jul. 21, 1995, abandoned.
This application Sep. 3, 1996, Ser. No. 711,316
Int. Cl.[6] C08G 63/66; C08L 67/00
U.S. Cl. 528—300 3 Claims

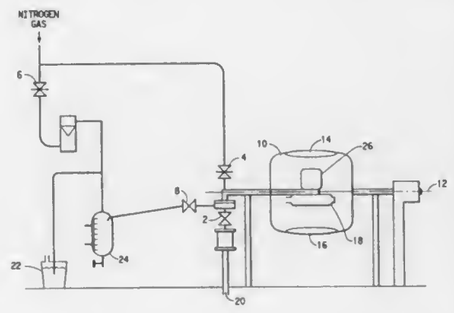
1. A resin composition consisting of a water-soluble polymer molecule wherein the backbone of said polymer molecule consists of sorbitol copolymerized with a co-monomer selected from the group consisting of an alkylamine, citric acid, and formaldehyde.

5,665,854

LOW TEMPERATURE NYLON POLYMERIZATION PROCESS

Leonard Edward Raymond Kosinski, Chadds Ford, and Richard Robert Soelch, Landenberg, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 36,589,.Mar. 25, 1993, Pat. No. 5,403,910.
This application Mar. 24, 1995, Ser. No. 410,254
Int. Cl.[6] C08G 69/28
U.S. Cl. 528—336 19 Claims



1. A process for the preparation of polyamides which process comprises the steps of:

a) polymerizing under conditions such that the reacting mass never completely liquefies, at reaction temperatures below the melting transition temperatures of the initial materials, the intermediate condensation products and the end products, an oxygen free aminocarboxylic acid,

1) in an oxygen-free environment,

2) at essentially atmospheric pressure,

3) while supplying amine, amines, diamines or carboxylic acid(s), in an amount sufficient to achieve the desired balance of acid and amine ends,

4) under an inert gas atmosphere, either purged or unpurged,

5) while providing a degree of agitation to maintain the necessary level of motion in the mass to produce a freely flowing product;

6) in the substantial absence of a solvent, suspending agent or diluent; and

b) further polymerizing the prepolyamide product of step (a) in the solid phase to a polyamide of desired molecular weight and then cooling the product in an oxygen-free environment.

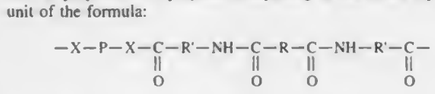
5,665,855

POLYMERS AND COPOLYMERS ORIGINATING FROM THE ADDITION OF OLIGOMERS CONTAINING DIAMINO AND DIHYDROXY ENDS AND OF BISOXAZINONES OR BIOXAZOLINONES, AND PROCESS FOR OBTAINING THEM

Margarita Acevedo, Madrid, Spain; Alain Fradet, Issy Les Moulineaux, and Didier Judas, Paris, both of France, assignors to Elf Atochem S.A., Puteaux, France

Filed Jul. 23, 1993, Ser. No. 95,347
Claims priority, application France, Jul. 24, 1992, 92 09184
Int. Cl.[6] C08G 73/00;63/00
U.S. Cl. 528—353 14 Claims

I. A polymer or copolymer comprising at least one repeating unit of the formula:

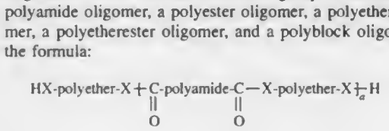


in which

R is selected from the group consisting of a single bond; a hydrocarbon chain $-(CH_2)_q-$, q being an integer between 1 and 10 in which at least carbon atom is unsubstituted or mono- or disubstituted and may contain an aliphatic or an aromatic ring or an olefinic unsaturation; an ortho-, meta-, or para-phenylene group; and an ortho-, meta- or para- alkylphenylene group,

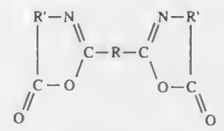
R' is a $-(CH_2)-$ group with p being 1 or 2, in which at least carbon atom is unsubstituted or mono- or disubstituted with an alkyl group selected from the group consisting of methyl, ethyl and propyl; or an ortho-phenylene group, and

the group —X—P—X— is the residue of a difunctional oligomer HX—P—XH, in which X denotes O or NH and P is an oligomeric chain selected from the group consisting of a polyamide oligomer, a polyester oligomer, a polyether oligomer, a polyetherester oligomer, and a polyblock oligomer of the formula:



with a ≥ 1,

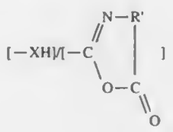
wherein said polymer or copolymer is the reaction product by mass addition of at least one oligomer HX—P—XH whose solution viscosity determined in meta-cresol at 30° C. at a concentration of 0.5 g/dl is lower than 0.50 dl g^{-1} and whose number average molar mass M_n is between 300 and 5000, with at least one bisoxazinone and bisoxazolinone of the formula:



in which X, R and R' are as defined above,

at a temperature above the melting point of the at least one oligomer, and

wherein said at least one oligomer is reacted with said at least one bisoxazinone and bisoxazolinone in a proportion such that the ratio



is between 0.95 and 1.05.

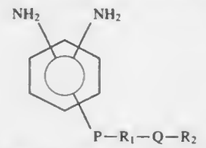
5,665,856

DIAMINOBENZENE DERIVATIVES AND POLYIMIDES PREPARED THEREFROM

Takayasu Nihira; Yoshio Miyamoto; Hideyuki Endo, and Toyohiko Abe, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,365
Claims priority, application Japan, Apr. 28, 1994, 6-91845
Int. Cl.[6] C08G 73/10;69/26
U.S. Cl. 528—353 7 Claims

1. A polyimide obtained by reacting a diamine containing at least one mol % of a diaminobenzene derivative of the formula (I)



(I)

wherein each of P and Q which may be the same or different from each other, is a single bond, or a bivalent organic group selected from the group consisting of —O—, —COO— and —CONH—, R_1 is a C_{2-22} straight chain alkylene group, and R_2 is a cyclic group selected from the group consisting of an aromatic ring, an aliphatic ring, a heterocyclic ring and substituted forms of such rings, with a tetracarboxylic acid or its derivative to obtain a polyimide precursor having a reduced viscosity of from 0.05 to 5.0 dl/g (in N-methylpyrrolidone at 30° C., concentration: 0.5 g/dl) and subjecting the polyimide precursor to ring closure.

5,665,857

CONJUGATED POLYMER WITH BUILT-IN FLUORESCENT CENTERS AND METHOD OF MANUFACTURE

Song Q. Shi, Phoenix, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Sep. 12, 1994, Ser. No. 304,450
Int. Cl.[6] C08G 61/02; C08L 65/00;65/04; C08J 3/28
U.S. Cl. 528—373 15 Claims

1. A conjugated polymer with built-in fluorescent dye molecules as fluorescent centers, wherein the conjugated polymer includes poly(phenylene vinylene).

5,665,858

PROCESS FOR COAGULATION FINISHING OF POLYMERS

Cornelis Martinus Van Dijk, and Paulus Alexander Maria Grotenhuis, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1995, Ser. No. 564,686
Claims priority, application European Pat. Off., Nov. 29, 1994, 94308787
Int. Cl.[6] C08F 6/12
U.S. Cl. 528—495 11 Claims

1. In a process for coagulation finishing (co)polymers, characterized in that a (co)polymer is formed by anionically polymerizing at least one anionically polymerizable monomer in a solvent to produce a polymer cement, terminating theanionic polymerization, and mixing the cement with steam, the improvement which comprises carrying out the coagulation of said (co)polymer in the presence of polyvinyl alcohol as dispersant.

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5,665,859

MOLECULES INFLUENCING THE SHEDDING OF THE TNF RECEPTOR, THEIR PREPARATION AND THEIR USE

David Wallach, Rehovot, Israel; Cord Brakebusch, Braunschweig, Germany; Eugene Varfolomeev, and Michael Batkin, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Oct. 12, 1994, Ser. No. 321,668

Claims priority, application Israel, Oct. 12, 1993, 107268

Int. Cl.[6] C07K *7/06;14/715;14/81;* C12N *9/64*

U.S. Cl. 530—328 18 Claims

1. A peptide consisting of a sequence comprising residues 202–211 of SEQ ID NO:2 except for the deletion of residue 202, the deletion of residues 202 and 203, the deletion of residues 203 and 204, the substitution of Pro at residues 202, 203 or 204, or the substitution of ASp or Gly at residue 202, said peptide having the property of being recognized by a protease capable of cleaving the soluble p55 TNF-R from cell-bound TNF-R, but inhibiting the proteolytic activity thereof.

5,665,860

HUMAN CANCER INHIBITORY PEPTIDE AMIDES

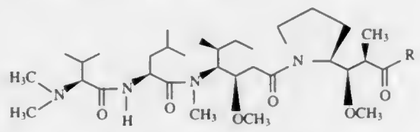
George R. Pettit, Paradise Valley; Jayaram K. Srirangam, Tempe, and Michael D. Williams, Mesa, all of Ariz., assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Continuation of Ser. No. 283,684, Aug. 1, 1994, Pat. No. 5,530,097. This application Jun. 13, 1996, Ser. No. 671,121

Int. Cl.[6] A61K *38/04;* C07K *5/00*

U.S. Cl. 530—330 5 Claims

1. A compound having the general structure below:



wherein R is selected from the group consisting of: Doe "10a"; NH-2ClPEA "10b"; NH-3ClPEA, "10c"; and NH-4ClPEA, "10d".

5,665,861

CARDIODILATIN FRAGMENT, PROCESS FOR PREPARING SAME AND USE THEREOF

Wolf-Georg Forssmann, Heidelberg; Jeanette M. Alt, Burgwedel; Gerhard Becker, Neckargemund, and Franz Herbst, Lelmen, all of Germany, assignors to HaemoPep Pharma GmbH, Hanover, Germany

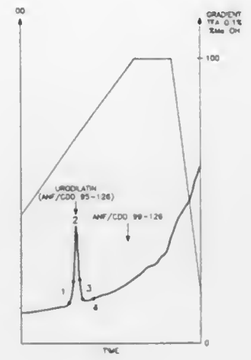
Division of Ser. No. 185,240, Jan. 24, 1994, Pat. No. 5,449,751, which is a continuation of Ser. No. 994,084, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 795,248, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 401,401, Sep. 1, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 480,359

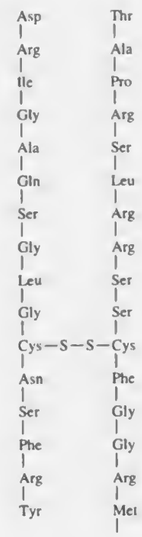
Claims priority, application Germany, Mar. 2, 1987, 37 06 731.1; May 22, 1987, 37 17 329.4; Dec. 9, 1987, 37 41 641.3

Int. Cl.[6] C07K *1/02;1/04;1/06;1/14*

U.S. Cl. 530—334 10 Claims

7. A process for ootaining from urine a peptide having the amino acid sequence 95–126 of ANF/CDD 1–126 (gamma-hANaP), which is designated urodilatin (ANF/CDD 95–126), of the formula





comprising adding alginic acid to the urine, eluting peptides adsorbed on the alginic acid, fractionating the eluate, and determining the urodilatin (ANF/CDD 95–126)-active fraction.

5,665,862

NEUROTROPHIC FACTOR

Gerald D. Fischbach, Cambridge; Douglas L. Falls, Natick; Kenneth M. Rosen, West Roxbury, and Gabriel Corfas, Brookline, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 953,742, Sep. 29, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 168,091

Int. Cl.[6] C07K *14/435;14/475*

U.S. Cl. 530—350 12 Claims

1. An isolated neurotrophic polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID Nos. 4, 33, 35, and 36, which neurotrophic factor induces the formation of nicotinic acetylcholine receptors in a surface membrane of a cell.

5,665,863

POLYPEPTIDES HAVING GRANULOCYTE COLONY STIMULATING ACTIVITY, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Patrice Yeh, Paris, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00086, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO93/15211, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 29, 1993, Ser. No. 256,938

Claims priority, application France, Jan. 31, 1992, 92 01065

Int. Cl.[6] C12N *15/27;* C07K *14/53*

U.S. Cl. 530—351 13 Claims

1. Recombinant polypeptide comprising G-CSF coupled to albumin or a natural variant of albumin, wherein said G-CSF comprises residues Thr586-Pro759 of the sequence given in FIG. 1 (SEQ ID NO:2 residues Thr610-Pro783).

5,665,864

ANTIBODIES TO A HUMAN INTEGRIN ALPHA/BETA HETERODIMERIC PROTEIN

Vito Quaranta, La Jolla, and Richard N. Tamura, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 14,090, Feb. 4, 1993, Pat. No. 5,344,919, which is a continuation of Ser. No. 293,384, Jan. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 16,552, Feb. 19, 1987, abandoned. This application Sep. 2, 1994, Ser. No. 300,380

Claims priority, application Canada, Feb. 18, 1988, 559249

Int. Cl.[6] C07K *16/00;16/18;16/30*

U.S. Cl. 530—387.1 3 Claims

1. An antibody that immunoreacts with an isolated human heterodimeric protein complex of 400 kd by SDS PAGE or 500 kd by gel filtration, wherein said complex immunoreacts with the monoclonal antibody having ATCC accession number HB 9318, and wherein said complex consists essentially of:

a) a first glycopeptide characterized by having an apparent molecular weight in SDS-PAGE under reducing conditions of 205 kd and under non-reducing conditions of 190 kd, and glycosidase susceptibility to treatment with endo F and neuraminidase but not endo H; and

b) a second glycopeptide characterized by having an apparent molecular weight in SDS-PAGE under reducing conditions of 125 kd and under non-reducing conditions of 150 kd, and susceptibility to treatment with glycosidases selected from the group consisting of endo F, endo H and neuraminidase, said second glycopeptide including the N-terminal amino acid residue sequence F-N-L-D-T-R-E-D-N-V-I-R-K-Y-G-D-P-G-S-L-F.

5,665,865

METAL BINDING PROTEINS

Richard A. Lerner, La Jolla; Victoria A. Roberts, San Diego; Elizabeth D. Getzoff, San Diego; John A. Tainer, San Diego, all of Calif., and Stephen J. Benkovic, State College, Pa., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 64,795, May 19, 1993, abandoned, which is a continuation of Ser. No. 539,980, Jun. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 521,258, May 8, 1990, abandoned. This application Nov. 22, 1994, Ser. No. 343,658

Int. Cl.[6] A61K *39/395;* C12N *1/21*

U.S. Cl. 530—387.3 32 Claims

1. An isolated protein which forms a coordination complex with a metal cation, comprising:

(a) a sequence of amino acid residues that includes a variable domain of an immunoglobulin, wherein said variable domain is a light chain variable domain having an L3 region; and

(b) three contact amino acid residues in said variable domain that define a metal binding site, wherein said three contact amino acid residues are located at any three of the four Kabat amino acid residue position numbers 90, 92, 95 and 97.

12. A modified, isolated protein which forms a coordination complex with a metal cation, comprising:

(a) a sequence of amino acid residues that includes a variable domain of an immunoglobulin; and

(b) three contact amino acid residues in said variable domain that define a metal binding site, wherein said protein is an immunoglobulin.

5,665,866

PROCESS FOR OBTAINING ANTIBODIES UTILIZING HEAT TREATMENT

Andrew Neil Charles Weir, Maidenhead, and Neil Andrew Bailey, Cheltenham, both of United Kingdom, assignors to Celltech Therapeutics Limited, Berkshire, United Kingdom

PCT No. PCT/GB93/01548, § 371 Date Mar. 14, 1995, § 102(e) Date Mar. 14, 1995, PCT Pub. No. WO94/02608, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 22, 1993, Ser. No. 367,313

Claims priority, application United Kingdom, Jul. 22, 1992, 9215540

Int. Cl.[6] C12P *21/08;* C07K *16/00;* C12N *15/13;15/69*

U.S. Cl. 530—390.5 12 Claims

1. A process to facilitate the isolation of soluble, correctly-folded antibody molecules comprising subjecting a preparation comprising soluble, correctly-folded antibody molecules and partially degraded or incorrectly folded antibodies to a step to raise the operating temperature to an elevated temperature within the range of 34° C. to 60° C. in order to facilitate the removal of the partially degraded or incorrectly folded antibodies.

5,665,867

Patent Not Issued For This Number

5,665,868

CHROMATOGRAPHIC AGENT AND ITS USE FOR THE SEPARATION OR PROTEINS, POLYPEPTIDES OF METALS

Candadai Seshadri Ramadoss; Hiten Vasant Lakhey, and Patnam Rajagopaliengar Krishnaswamy, all of Bangalore, India, assignors to Vittal Mallya Scientific Research Foundation, Bangalore, India

Filed Sep. 13, 1991, Ser. No. 759,030

Claims priority, application United Kingdom, Sep. 14, 1990, 9020098; Canada, Jun. 17, 1991, 2044717

Int. Cl.[6] C07K *17/00*

U.S. Cl. 530—412 11 Claims

1. A process for the purification of a biological material, which comprises the steps of:

a. contacting a chromatographic agent comprising a phosvitin-metal chelate complex immobilized and coupled to a matrix effective for chromatography, with a mixture of a biological material comprising a metal-dependent enzyme or a metal-dependent protein, to form a combination complex between said phosvitin-metal chelate complex and said metal-dependent enzyme or said metal-dependent protein, whereby said combination complex is separated from said mixture; and

b. eluting said metal-dependent enzyme or said metal-dependent protein to obtain said enzyme or protein in purified form.

5,665,869
METHOD FOR THE RAPID REMOVAL OF PROTOPORPHYRIN FROM PROTOPORPHYRIN IX-CONTAINING SOLUTIONS OF HEMOGLOBIN

James R. Ryland, Louisville; Maura-Ann H. Matthews, Boulder; Ulrich P. Ernst, Lafayette, all of Colo.; Daniel E. Houk, Concord, Calif.; David W. Traylor, Wheat Ridge, Colo., and Lee R. Williams, Concord, Calif., assignors to Somatogen, Inc., Boulder, Colo.

Filed Nov. 15, 1993, Ser. No. 153,071

Int. Cl.[6] C07K *14/805;* **A23J** *1/00*

U.S. Cl. 530—412 **38 Claims**

38. A method for the production of a substantially protoporphyrin IX free hemoglobin solution comprising:

(a) exposing, via sparging, a crude protoporphyrin IX-containing hemoglobin solution to essentially pure carbon monoxide after breakage of cells containing a recombinant protoporphyrin IX-containing hemoglobin followed by

(b) heating the crude protoporphyrin IX-containing hemoglobin solution via steam injection for from about 10 to about 11 seconds at about 81° C. to reduce protoporphyrin IX-containing hemoglobin in said crude protoporphyrin IX-containing hemoglobin solution to less than about 1 percent of total hemoglobin, wherein said steam injection is accomplished with expansion steam injection.

5,665,870
METHOD OF PURIFYING KERATINOCYTE GROWTH FACTOR (KGF)

Jeffrey S. Ruhin, Rockville; Paul W. Finch, Bethesda, both of Md., and Stuart A. Aaronson, Great Falls, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 106,775, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 780,847, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 304,281, Jan. 31, 1989, abandoned. This application May 31, 1995, Ser. No. 455,628

Int. Cl.[6] C07K *1/14;14/50;1/16;1/18*

U.S. Cl. 530—412 **1 Claim**

1. A method of purifying keratinocyte growth factor (KGF) comprising:

(i) Contacting a first solution comprising KGF with heparin that is bound to an inert support, wherein said contacting occurs under conditions in which KGF binds to heparin to form a KGF:heparin complex:

(ii) dissociating KGF from the KGF:heparin complex to form a second solution comprising KGF;

(iii) fractionating the second solution by HPLC, molecular sieving, or ion-exchange chromatography; and

(iv) testing the fractions of step (iii) for KGF biological activity, thereby determining which fractions contain purified KGF.

5,665,871
MIXTURES OF COPPER PHTHALOCYANINE AND COPPER-CONTAINING AZO DYES, THEIR PRODUCTION AND USE

Reinhard Pedrazzi, Allschwil, Switzerland, assignor to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Filed Nov. 9, 1995, Ser. No. 556,155

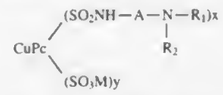
Claims priority, application Germany, Nov. 10, 1994, 44 40 091.8

Int. Cl.[6] C09B *67/22;* **C09D** *11/16;* **D21H** *19/00;* **B41J** *2/01*

U.S. Cl. 534—573 **24 Claims**

1. A mixture comprising:

one or more phthalocyanine dyes of formula I



I

wherein

CuPc is the radical of a Cu-phthalocyanine dye,

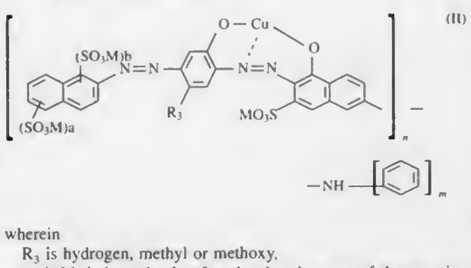
A is a substituted or unsubstituted, linear or branched C_2–C_6-alkylene group,

R_1 and R_2, independently of one another, are hydrogen or substituted or unsubstituted, linear or branched C_1–C_6-alkyl,

M is hydrogen, lithium, sodium, .potassium, ammonium or substituted ammonium,

x and y are 1 to 3, with the provision that the sum of x+y is 3 to 4, and;

one or more azo dyes of formula II:



(II)

wherein

R_3 is hydrogen, methyl or methoxy,

each M, independently of each other, has one of the meanings given in formula I,

a is 1 or2,

b is 0 or 1,

n is 1 or 2, and

m is 0 or 1, with the provision that when n equals 1, m equals 1, and when n equals 2, m equals 0.

7. A process for the production of a storage-stable dyestuff formulation, which comprises mixing water and one or more dyestuffs of formula I and one or more dyestuffs of formula II according to claim 1, to produce an aqueous solution and de-salting the resulting aqueous solution by using a membrane process in a pH range of between 7 and 13.

5,665,872
LDL RECEPTOR ANALOG PROTEIN AND DNA CODING THEREFOR

Yasushi Saito, Chiba; Akio Iwasaki, Tsuchiura; Koichi Arai, Urawa, and Hiroyuki Yamazaki, Higashimurayama, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Oct. 8, 1996, Ser. No. 727,034

Claims priority, application Japan, Oct. 9, 1995, 7-261440; Apr. 24, 1996, 8-102451

Int. Cl.[6] C07H *21/04;* **C12N** *15/85;15/63;* **C07K** *14/46*

U.S. Cl. 536—23.5 **7 Claims**

1. DNA having a nucleotide sequence as shown in SEQ ID NO: 1.

5,665,873
GLUCOCORTICOID RESPONSE ELEMENTS

Priscilla A. Schaffer, Holliston, and Mary Ann Hardwicke, Brookline, both of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Filed Feb. 9, 1995, Ser. No. 386,157

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—24.1 **20 Claims**

1. An herpesvirus glucocorticoid response element having the sequence 5'-TGTCCT (N)$_5$ AGGACA -3', wherein x is five to twenty nucleotides [SEQ ID NO:48.

2. The herpesvirus glucocorticoid response element having the sequence 5'-AGGACA (N)$_x$ TGTCCT -3', wherein x is five to twenty nucleotides [SEQ ID NO:66.

5,665,874
CANCER RELATED ANTIGEN

Francis P. Kuhajda, Lutherville, and Gary R. Pasternack, Baltimore, both of Md., assignors to John Hopkins University, Baltimore, Md.

Division of Ser. No. 188,426, Jan. 24, 1994, which is a continuation-in-part of Ser. No. 96,908, Jul. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 917,716, Jul. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 735,522, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,407, Dec. 4, 1990, abandoned, which is a continuation of Ser. No. 297,722, Jan. 17, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 469,005

Int. Cl.[6] C07H *21/02;21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 536—24.3 **10 Claims**

1. A nucleic acid molecule produced by recombinant methods, containing a nucleotide sequence comprising inserts from clones pFAS 1.6, pFAS3.0, pFAS2.2 and pFAS4.6 deposited under ATCC accession Nos. 75643, 75645, 75644 and 75646, respectively, assembled in accordance with a Clone Map shown in FIG. 12D.

5,665,875
WATER-SOLUBLE TETRAAZAPORPHINS AND FLUOROCHROME FOR LABELING

Seiji Tai; Mitsuo Katayose, and Hiroo Watanabe, all of Hitachi, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

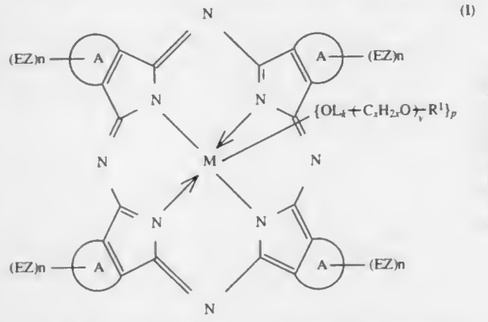
Division of Ser. No. 145,199, Nov. 3, 1993. This application Jun. 5, 1995, Ser. No. 460,930

Claims priority, application Japan, Nov. 10, 1992, 4-299773; Aug. 25, 1993, 5-210059

Int. Cl.[6] C09B *47/00;* **C07F** *7/08*

U.S. Cl. 536—26.6 **12 Claims**

1. A water-soluble tetraazaporphin represented by the formula:



(I)

wherein M is Al, Si, P, Ga, Ge or Sc; k is zero or an integer of 1; in the case of k being 1, L is

—$Si(CH_3)_2(CH_2)_aNH$—,

—$Si(CH_3)_2(CH_2)_bNH.COO$—,

—$Si(CH_3)_2O$— or

—$Si(CH_3)_2NH$—;

a and b are independently an integer of 1 to 6; x is an integer of 1 to 6; y is an integer of 1 to 200; R^1 is a linear, branched or cyclic alkyl group, an aryl group, a heterocyclic group or an aralkyl group; p is an integer of 1 or 2 indicating the number of groups represented by the formula —OL_4—$(C_xH_{2x}O)_y$—R^1 which is bonded to M; four A's, which may be the same or different, are independently a fused polycyclic aromatic ring formed from two or more aromatic rings, which may have substituents XQ's or Q's in a number of m (X is an oxygen atom, a sulfur atom, a nitrogen atom, a phosphorus atom, a silicon atom, a selenium atom, NH.CO, $NH.PO_2$, $NH.SO_2$, O.CO, $O.SO_2$, $O.PO_2$, S.CO, $S.SO_2$, $S.PO_2$, CO, SO_2 or PO_2; Q is a saturated or unsaturated hydrocarbon group or a heterocyclic group; and each m is the same or different and independently an integer of 1 to 4; each n is the same or different and independently zero or an integer of 1 or more, 4n (the sum of four n's, namely, the total number of EZ's) being an integer of 1 or more; each substituent (EZ) in a number of n is the same or different and independently bonded to the fused polycyclic aromatic ring A and/or Q; and E is a cationic group in the case of Z being an anion, E is an anionic group in the case of Z being a cation, and E is a bonded group containing a polyethylene glycol residue, a polyether residue, a polyamine residue, a polyalcohol residue or a polycarboxylic acid residue in the case of Z being absent.

5,665,876
3-(AMINOACYL-AMINO)-SACCHARIDES AND PROCESSES FOR THEIR PREPARATION

Klaus Buchholz, Braunschweig; Martina Noll-Borchers, Muelheim an der Ruhr, and Martina Pietsch, Duisburg, all of Germany, assignors to Verein der Zuckerindustrie, Bonn, Germany

PCT No. PCT/EP94/01339, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/25474, PCT Pub. Date Nov. 10, 1994

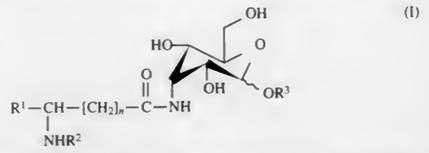
PCT Filed Apr. 28, 1994, Ser. No. 530,286

Claims priority, application Germany, May 3, 1993, 43 14 407.1

Int. Cl.[6] C07H *5/04;15/12;* **C07C** *229/00*

U.S. Cl. 536—29.1 **6 Claims**

1. A 3-(aminoacyl-amino)-saccharide of the general formula I,



(I)

wherein R^1 is selected from the group consisting of hydrogen, a carboxyl group, a phenyl group and an alkyl group with 1–10 C-atoms which is optionally substituted by a phenyl, carboxyl, hydroxyl, mercapto or amino group, wherein said substitutents are optionally protected with protective groups; R^2 is selected from the group consisting of hydrogen, an amino protective group and a peptide group; and R^3 is hydrogen or a fructosyl radical; and n is 0 or 1.

5,665,877
SYNTHESIS OF BISINDOLYLMALEIMIDES

Margaret M. Faul, Zionsville; Michael R. Jirousek, and Leonard L. Winneroski, II, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

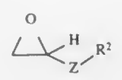
Division of Ser. No. 452,613, May 25, 1995, Pat. No. 5,614,647, which is a division of Ser. No. 317,140, Oct. 3, 1994, Pat. No. 5,541,347, which is a continuation-in-part of Ser. No. 163,060, Dec. 7, 1993, abandoned. This application May 17, 1996, Ser. No. 650,922

Int. Cl.[6] C07D *498/22*

U.S. Cl. 540—469 **6 Claims**

1. A process which comprises

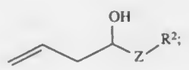
(a) Alkylating a compound of Formula (III):



(III)

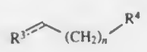
wherein,

R^2 is —O-triphenylmethyl or —O-methoxytriphenylmethyl; Z is $—(CH_2)_n—$; and n is independently 1, 2, or 3 with a lithium acetylide, a cerium acetylide, or organometalic reagent selected from vinyl cuprate, vinyl aluminum, vinyl tin, vinyl lithium, or vinyl Grignard; to produce a compound of the Formula (IV):

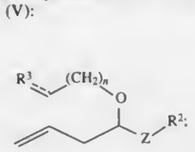


(IV)

(b) Reacting a compound of the Formula (IV) with a compound of the Formula:

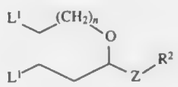


wherein R^3 is halo, a protected hydroxy, or combines with the adjacent carbon to form an olefin; R^4 is chloro, bromo, or iodo; and n is independently 1,2, or 3; to form a compound of the Formula (V):



(V)

(c) Converting the compound of the Formula (V) to a compound of the Formula (II):

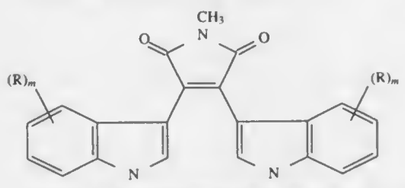


(II)

wherein:

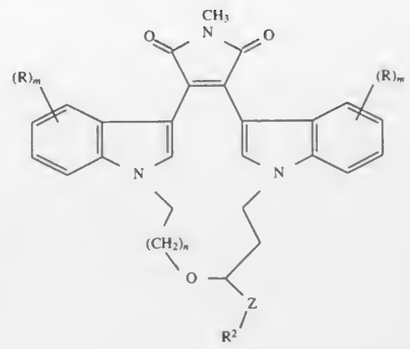
L^1 is independently a leaving group; and

(d) Alkylating a compound of Formula (VIII):



(VIII)

wherein R is independently hydrogen, halo, C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy, haloalkyl, nitro, NR^5R^6, or $—NHCO(C_1–C_4$ alkyl), R^5 and R^6 are independently hydrogen, metal, phenyl, benzyl, or combine to the nitrogen to which they are bonded to form a saturated or unsaturated 5 or 6 membered ring, and m is independently 0, 1, 2, or 3, with a compound of Formula II, to produce a compound of the formula:



5,665,878

STEREOSELECTIVE PROCESS FOR PRODUCING DIHYDRO-2,3-BENZODIAZEPINE DERIVATIVES

Benjamin A. Anderson, Zionsville; Marvin M. Hansen; David L. Varie, both of Indianapolis; Jeffrey T. Vicenzi, Brownsburg, and Milton J. Zmijewski, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 298,645, Aug. 31, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 413,036

Int. Cl.[6] C07D *405/02;405/04*

U.S. Cl. 540—557 **25 Claims**

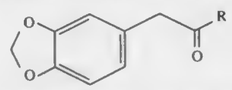
1. A process for preparing a compound having the general formula:

(I)

wherein R Aryl represents an unsubstituted or substituted aryl group is hydrogen or C_1–C_{10} alkyl; and

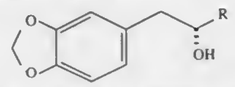
X is hydrogen, C_1–C_{10} alkyl, acyl, aryl or carboxyl, or a substituted derivative thereof; said process comprising the steps of:

a) providing a quantity of a compound having the formula:



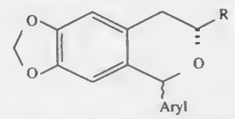
(II)

b) asymmetrically reducing the compound of formula II to yield a compound having the formula:



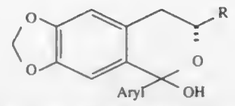
(III)

c) reacting the compound of formula III with an arylaldehyde compound of formula Aryl.CHO to yield an isochroman compound having the formula:



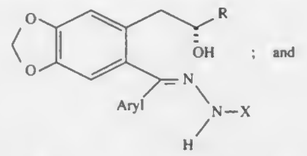
(IV)

d) reacting the compound of formula IV with an oxidizing agent to yield a compound of the formula:



(V)

e) reacting the compound of formula V with a hydrazide derivative of formula H_2NNHX to yield a compound of the formula:

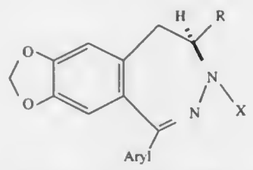


(VI)

; and

f) reacting the compound of formula VI with a (i) sulfonyl halide reagent and a base, to form an intermediate sulfonate; or (ii) by direct Mitsunobu cyclization to yield the compound of formula I.

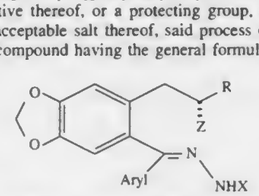
16. A process for preparing a compound having the general formula:



(I)

wherein R is hydrogen or a C_1–C_{10} alkyl; Aryl represents an unsubstituted or substituted aryl group; and

X is hydrogen, C_1–C_{10} alkyl, acyl, aryl, carboxyl or a substituted derivative thereof, or a protecting group, or a pharmaceutically acceptable salt thereof, said process comprising cyclising a compound having the general formula



(VIII)

wherein Z represents a leaving atom or group to afford a compound having the general formula I, whereafter, if desired, forming a pharmaceutically acceptable salt.

5,665,879

AMPHIPHILIC DERIVATIVES OF PIPERAZINE

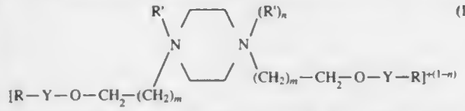
Timothy D. Heath, and Igor Solodin, both of Madison, Wis., assignors to Megabios Corporation, Burlingame, Calif.

Continuation-in-part of Ser. No. 157,727, Nov. 24, 1993, abandoned. This application Jun. 7, 1994, Ser. No. 255,319

Int. Cl.[6] C07D *241/04;295/00;* **A01N** *43/04;* **A61K** *31/70*

U.S. Cl. 544—358 **30 Claims**

1. A heterocyclic, amphiphilic cation of the formula



(I)

wherein each R independently is a straight-chain, aliphatic hydrocarbyl group of from 5 to 29 carbon atoms inclusive, each Y is $—CH_2—$ or —CO—, each R' independently is a lower alkyl, each m independently is an integer from 0 to 7 inclusive and n is zero or 1, with the proviso that the total number of carbon atoms in R and $—(CH_2)_m—$ is at least 10.

5,665,880

METHOD OF PREPARATION OF PHYSOSTIGMINE CARBAMATE DERIVATIVES FROM ESERETHOLES

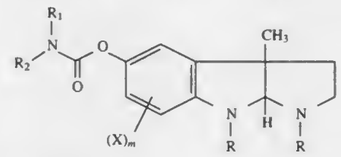
Thomas B. K. Lee, Whitehouse Station, and Zhongli Gao, Somerville, both of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Filed Oct. 31, 1996, Ser. No. 739,402

Int. Cl.[6] C07D *471/02*

U.S. Cl. 546—147 **10 Claims**

1. A process for the preparation of a compound of the formula



(I)

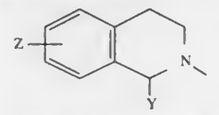
wherein

R is loweralkyl;

R_1 is hydrogen, loweralkyl, lowercycloalkyl, lowercycloalkyl-loweralkyl, lowerbicycloalkyl, aryl or arylloweralkyl;

R_2 is loweralkyl, lowercycloalkyl, lowercycloalkylloweralkyl, lowerbicycloalkyl, aryl or arylloweralkyl; or

R_1 and R_2 taken together with the nitrogen atom to which they are attached form a group of the formula (Ia)



(Ia)

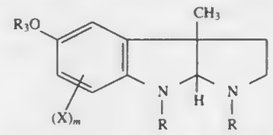
wherein Y is hydrogen or loweralkyl and Z is hydrogen, loweralkyl, halogen, loweralkoxy or hydroxy;

X is loweralkyl, loweralkoxy, halogen or trifluoromethyl; and

m is 0, 1 or 2;

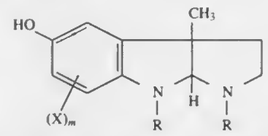
or a pharmaceutically acceptable salt thereof; which process comprises

(a) contacting a compound of formula (II)



(II)

wherein R, X and m are as defined above and R_3 is loweralkyl, with fortified hydrogen bromide to afford a compound of formula (III)



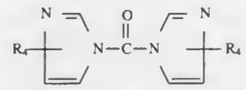
(III)

wherein R, X and m are as defined above;

(b) contacting the reaction mixture containing the compound of Formula (III) either

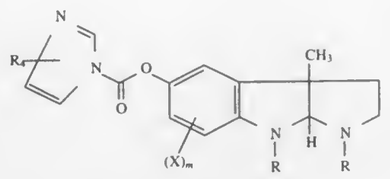
(1) with an isocyanate of the formula R_1NCO and isolating a product of formula (I) wherein R_2 is hydrogen; or

(2) with a compound of formula (IV)



(IV)

wherein R_4 is hydrogen or loweralkyl to afford a compound of formula (V)



(V)

wherein R, R_4, X and m are as above;

(c) contacting the reaction mixture containing the compound of formula (V) obtained in step (b) with a compound of the formula

R_1R_2NH

wherein R_1 and R_2 are as above in the presence of a carboxylic acid of the formula

R_5COOH

wherein R_5 is loweralkyl; and forming and isolating the product of formula (I).

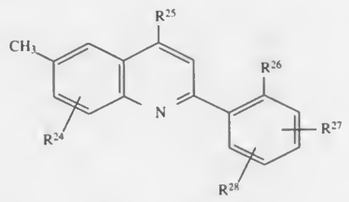
5,665,881

QUINOLINE COMPOUNDS

Yoshihisa Inoue; Hajime Ebisu; Naomichi Ishida; Norifumi Nakamura, all of Osaka; Jun Sasaki, Kanagawa; Takashi Okazoe, Kanagawa; Yoshitomi Morizawa, Kanagawa, and Arata Yasuda, Kanagawa, all of Japan, assignors to The Green Cross Corporation, Osaka, and Asahi Glass Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 55,873, May 4, 1993, Pat. No. 5,478,832.
This application Oct. 10, 1995, Ser. No. 541,965
Claims priority, application Japan, May 8, 1992, 4-143407; Jun. 10, 1992, 4-176188
Int. Cl.[6] C07D *215/14*
U.S. Cl. 546—170 **8 Claims**

1. A 2-(2-carboxyphenyl)-6-methyl-4-quinoline carboxylic acid compound of formula (4):



(4)

wherein R^{25} is —COOH or —$COOR^{11}$; R^{26} is —COOH or —$COOR^{12}$; R^{24}, R^{27} and R^{28} may be the same or different and each independently is a hydrogen atom, a halogen atom, a lower alkyl, alkoxy or C_mF_{2m+1}—group, wherein m is an integer of 1 to 6; and R^{11} and R^{12} are the same or different and each independently is a lower alkyl, alkenyl, cyclo lower alkyl, aryl or aralkyl group.

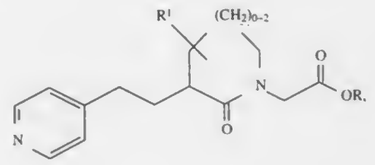
5,665,882

PYRIDYL ETHYLATION OF LACTAMS

John Y. L. Chung, Edison; Dalian Zhao; James M. McNamara, both of Fanwood, and David L. Hughes, Old Bridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/12671, § 371 Date Aug. 29, 1996, § 102(e) Date Aug. 29, 1996, PCT Pub. No. WO95/25101, PCT Pub. Date Sep. 21, 1995
PCT Filed Nov. 7, 1994, Ser. No. 702,487
Int. Cl.[6] C07D *211/76;223/10;401/06*
U.S. Cl. 546—193 **10 Claims**

1. A process for preparing compounds of the following formula:



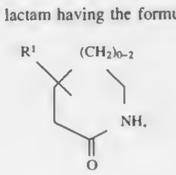
wherein

R is C_{1-4} alkyl or benzyl; and

R^1, when present, is C_{1-4} alkyl, OH, O—C_{1-4} alkyl, or S—C_{1-4} alkyl;

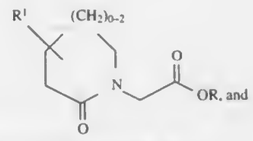
comprising

a) alkylating a lactam having the formula



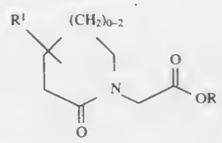
(i)

to form



(ii)

b) dissolving the substituted lactam

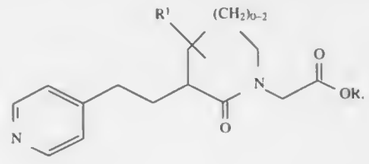


(ii)

in a non-aqueous solvent solution,

c) dissolving a silyl derivative in the solution of b), and

d) adding 4-vinylpyridine to the solution of c) to form



(iii)

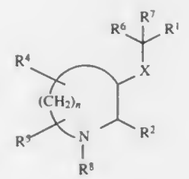
5,665,883

ARALKOXY AND ARALKYLTHIO SUBSTITUTED AZACYCLIC COMPOUNDS AS TACHYKININ ANTAGONISTS

Raymond Baker, Much Hadham; Angus Murray MacLeod; Eileen Mary Seward, both of Bishops Stortford, and Christopher John Swain, Duxford, all of United Kingdom, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB95/00228, § 371 Date Sep. 26, 1996, § 102(e) Date Sep. 26, 1996, PCT Pub. No. WO95/21819, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 6, 1995, Ser. No. 676,157
Claims priority, application United Kingdom, Feb. 11, 1994, 9402688
Int. Cl.[6] C07D *401/06;* A61K *31/445*
U.S. Cl. 546—210 **10 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein

n is 3 and where any carbon atom of $(CH_2)_n$ may be substituted by R^4 and/or R^5;

X represents O or S;

R^1 represents $(CH_2)_q$phenyl, wherein q is 0, 1, 2 or 3, which may be optionally substituted in the phenyl ring by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, SO_2R^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a and $CONR^aR^b$;

R^2 represents aryl selected from phenyl and naphthyl; heteroaryl selected from indazolyl, thienyl, furyl, pyridyl, thiazolyl, tetrazolyl and quinolyl; benzhydryl; or benzyl; wherein each aryl or heteroaryl moiety may be substituted by C_{1-6}alkyl, C_{1-6}alkoxy, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, halo or trifluoromethyl;

R^4 and R^5 each independently represent H, halo, C_{1-6}alkyl, oxo, CO_2R^a or $CONR^aR^b$;

R^6 represents H or C_{1-6}alkyl;

R^7 represents trifluoromethyl, C_{2-6}alkenyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, $(CH_2)_pNR^9R^{10}$, CO_2R^{16}, $CONR^9R^{10}$, $(CH_2)_pCO_2R^{16}$, $(CH_2)_pCONR^9R^{10}$, $(CH_2)_pNR^9COR^{16}$, $(CH_2)_pNHSO_2R^{11}$; $(CH_2)_pOR^{16}$, $(CH_2)_pOC(O)R^9$ or $(CH_2)_pOC_{1-4}$alkylCOR^{17} or C_{1-6}alkyl substituted by a hydroxy group;

R^8 represents H, COR^a, CO_2R^a, $COCONR^aR^b$, $COCO_2R^a$, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, C_{1-6}alkyl optionally substituted by a group selected from $(CO_2R^a$, $CONR^aR^b$, hydroxy, cyano, COR^a, NR^aR^b, $C(NOH)NR^aR^b$, CONHphenyl(C_{1-4}alkyl), $COCO_2R^a$, $CONHNR^aR^b$, $C(S)NR^aR^b$, $CONR^aC_{1-6}$alkylR^{12}, $CONR^{13}C_{2-6}$alkynyl, $CONR^{13}C_{2-6}$alkenyl, $COCONR^aR^b$, $CONR^aC(NR^b)NR^aR^b$, $CONR^a$heteroaryl, and phenyl optionally substituted by one or more substituents selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo and trifluoromethyl) or C_{1-6}alkyl, optionally substituted by oxo, substituted by an optionally substituted aromatic heterocycle;

R^a and R^b each independently represent H, C_{1-6}alkyl, trifluoromethyl or phenyl optionally substituted by C_{1-6}alkyl, halo or trifluoromethyl;

R^9 and R^{10} each independently represents H or C_{1-6}alkyl;

R^{11} represents $NR^{14}R^{15}$ or an optionally substituted aromatic or non-aromatic azacyclic or azabicyclic group;

R^{12} represents OR^a, $CONR^aR^b$ or heteroaryl;

R^{13} represents H or C_{1-6}alkyl;

R^{14} and R^{15} each independently represent H, C_{1-6}alkyl, phenyl optionally substituted by 1, 2 or 3 of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl, or phenylC_{1-4}alkyl optionally substituted in the phenyl ring by 1, 2 or 3 of C_{1-6}alkyl, C_{1-6}alkoxy, halo or trifluoromethyl;

R^{16} represents C_{1-6}alkyl;

R^{17} represents C_{1-6}alkoxy, amino, C_{1-4}alkylamino or di(C_{1-4}alkyl)amino; and

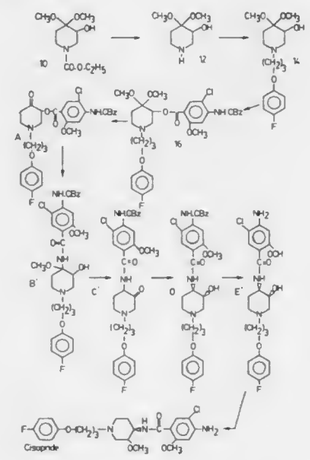
p is 1 to 4.

5,665,884

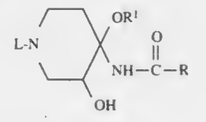
PREPARATION OF CISAPRIDE

Yee-Fung Lu, Aurora; Raymond So, Richmond Hill; Clarke Slemon, Willowdale; Jan Oudenes, Thornhill, and Teng-Ko Ngooi, Richmond Hill, all of Canada, assignors to Torcan Chemical Ltd., Aurora, Canada

Division of Ser. No. 319,681, Oct. 7, 1994, Pat. No. 5,585,387.
This application Aug. 21, 1996, Ser. No. 701,125
Int. Cl.[6] C07D *211/74*
U.S. Cl. 546—220 **7 Claims**



1. 1-Aryloxyalkyl- or 1-aralkyl-3-hydroxy-4 -loweralkoxy-4-arylamido piperidines of the general formula B:



(B)

in which L represents aralkyl or aryloxyalkyl in which the alkyl portion has from 1 to 6 carbon atoms and the aryl nucleus is optionally substituted with up to 3 substituents independently selected from halo, lower alkyl and lower alkoxy, or alkyl having from 1 to 6 carbon atoms; R represents a phenyl group optionally substituted with up to three substituents independently selected from halo, amino, protected amino, alkyl of from 1 to 6 carbon atoms, and alkoxy of from 1 to 6 carbon atoms; and R' represents alkyl of 1–6 carbon atoms, or benzyl.

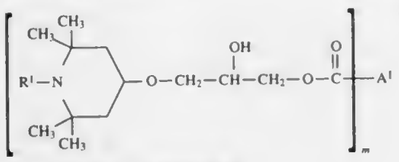
5,665,885

ADDUCTS OF HINDERED AMINE-EPOXIDES AS STABILIZERS

Alfred Steinmann, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

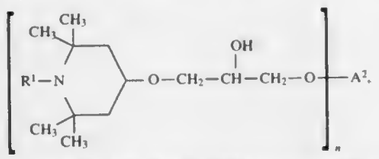
Division of Ser. No. 271,706, Jul. 7, 1994, Pat. No. 5,457,204. This application Jun. 7, 1995, Ser. No. 475,129
Claims priority, application Switzerland, Jul. 13, 1993, 2097-93
Int. Cl.[6] C07D *211/10;211/44;251/24*
U.S. Cl. 546—242 **5 Claims**

. 1. An ester of the formula I



(I)

or a phenol ether of the formula II

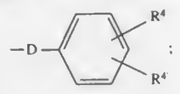


(II)

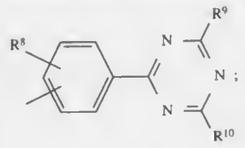
in which m and n are each an integer from the range from 1 to 6;

A^1 is an m-valent hydrocarbon radical having 2 to 30 carbon atoms or an aromatic radical, which hydrocarbon radical or aromatic radical contains a heteroatom selected from oxygen, nitrogen and sulfur, and the free valencies of which being located on carbon atoms;

A^2, in the case where n=1, is phenyl, which is substituted by 1 to 3 radicals selected from the group consisting of C_1–C_4alkoxy and a radical of the formula



or a triazinylphenyl radical of the formula



where

D is one of the groups —CO—, —S—, —O— or —SO_2—,

R^4 and $R^{4'}$ independently of one another are hydrogen or C_1–C_4alkyl,

R^8 is hydrogen or C_1–C_4alkyl, and

R^9 and R^{10} independently of one another are C_3–C_{18}alkyl or C_5–C_8cycloalkyl, and

A^2, in the case where n is 2–6, is an n-valent aromatic or araliphatic hydrocarbon radical having 5 to 30 carbon atoms, which contains a heteroatom selected from oxygen, nitrogen and sulfur, and n free valencies of which are located on those carbon atoms which are a constituent of aromatic rings;

R^1 is hydrogen; a hydrocarbon or hydrocarbonoxy radical having 1 to 36 carbon atoms, which is unsubstituted or substituted by —CO—$N(R^3)_2$ or interrupted by —CO—$N(R^3)$—or —$N(R^3)$—CO—or 1 to 6 oxygen or sulfur atoms; benzoyl or naphthoyl, each of which is substituted by 1 to 3 C_1–C_4alkyl or C_1–C_4alkoxy radicals; or —CO—R^2; in which R^2 is C_1–C_{18}alkyl; C_5–C_8 cycloalkyl; phenyl; naphthyl; C_7–C_9phenylalkyl; or C_{11}–C_{14}naphthylalkyl; and R^3 has the same meanings as R^2 or is hydrogen.

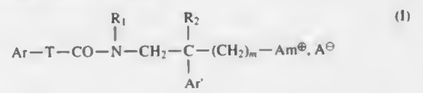
5,665,886

SALTS OF SUBSTITUTED NITROGENOUS HETEROAROMATIC COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Nathalie Chabert, Cournonterral; Xavier Emonds-Alt, Combaillaux; Vincenzo Proletto, Saint Georges d'Orques, and Didier Van Broeck, Montpellier, all of France, assignors to Sanofi, France

PCT No. PCT/FR95/00368, § 371 Date Nov. 24, 1995, § 102(e) Date Nov. 24, 1995, PCT Pub. No. WO95/26339, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 24, 1995, Ser. No. 545,772
Claims priority, application France, Mar. 25, 1994, 94 03561
Int. Cl.[6] C07D *213/38;213/36*
U.S. Cl. 546—300 **11 Claims**

1. A compound of formula



(I)

in which:

Ar represents an aromatic or heteroaromatic mono-, di- or tricyclic group which may be substituted;

T represents a direct bond; a hydroxymethylene group; a (C_1–C_4)alkoxymethylene group; a (C_1–C_5)alkylene group; an oxygen atom; a —NR_3 group; a vinylene group;

Ar' represents phenyl which may be unsubstituted or substituted one or more times by a substituent selected from: a halogen atom, trifluoromethyl, hydroxy, (C_1–C_4)alkoxy, (C_1–C_4)alkyl, said substituents being identical or different; thienyl; benzothienyl; naphthyl; indolyl which may be N-substituted by a (C_1–C_4)alkyl or benzyl;

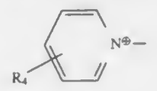
R_1 represents hydrogen; (C_1–C_4)alkyl; ω-hydroxy-(C_2–C_4)alkylene; ω-(C_1–C_4)alkoxy-(C_2–C_4)alkylene; ω-benzyloxy-(C_2–C_4)alkylene; ω-formyloxy-(C_2–C_4)alkylene; ω-(C_1–C_4)alkylcarbonyloxy-(C_2–C_4)alkylene; ω-benzoyloxy-(C_2–C_4)alkylene; ω-R_6NHCOO—(C_2–C_4)alkylene; ω-(C_1–C_4)alkylthio-(C_2–C_4)alkylene; ω-carboxy-(C_2–C_4)alkylene; ω-(C_1–C_4)alkoxycarbonyl-(C_2–C_4)alkylene; ω-R_7R_8NCO—(C_2–C_4)alkylene; ω-R_9R_{10}N—(C_2–C_4)alkylene; ω-$R_{11}CONR_{12}$—(C_2–C_4)alkylene; ω-$R_{13}OCONR_{12}$—(C_2–C_4)alkylene; ω-$R_7R_8NCONR_{12}$—(C_2–C_4)alkylene; ω-$R_{14}SO_2NR_{12}$—(C_2–C_4) alkylene; ω-(C_1–C_4)alkylcarbonyl-(C_2–C_4)alkylene; ω-cyano-(C_1–C_3)alkylene;

R_2 represents hydrogen;

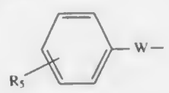
or R_1 and R_2 together form a 1,2-ethylene, 1,3-propylene or 1,4-butylene group;

R_3 represents hydrogen or (C_1–C_4)alkyl;

$Am^{\oplus}$ represents a substituted 1-pyridylium radical of formula:



R_4 represents a group:



W represents a direct bond; a methylene group; an oxygen atom; a sulfur atom; a —NR_3—group;

R_5 represents hydrogen; a halogen; hydroxy; (C_1–C_4)alkoxy; (C_1–C_4)alkyl; trifluoromethyl;

R_6 represents (C_1–C_7)alkyl or phenyl;

R_7 and R_8 each independently represent hydrogen or (C_1–C_7)alkyl; R_8 may also represent (C_3–C_7)cycloalkyl, (C_3–C_7)cycloalkylmethyl, phenyl or benzyl;

or R_7 and R_8 together with the nitrogen atom to which they are bound constitute a heterocycle selected from azetidine, pyrrolidine, piperidine, morpholine, thiomorpholine or perhydroazepine;

R_9 and R_{10} each independently represent hydrogen or a (C_1–C_7)alkyl; R_{10} may also represent (C_3–C_7)cycloalkylmethyl or benzyl;

R_{11} represents hydrogen, (C_1–C_7)alkyl, vinyl, phenyl, benzyl, pyridyl or (C_3–C_7)cycloalkyl which may be unsubstituted or substituted by one or more methyl groups;

R_{12} represents hydrogen or (C_1–C_7)alkyl;

R_{13} represents (C_1–C_7)alkyl or phenyl;

R_{14} represents (C_1–C_7)alkyl; a free amino group or an amino group substituted by one or two (C_1–C_7)alkyls; phenyl which may be unsubstituted or substituted one or more times by a substituent selected from: a halogen atom, (C_1–C_7)alkyl, trifluoromethyl, hydroxy, (C_1–C_7)alkoxy, carboxy, (C_1–C_7)alkoxycarbonyl, (C_1–C_7)alkylcarbonyloxy, cyano, nitro, a free amino group or an amino group substituted by one or two (C_1–C_7)alkyls, said substituents being identical or different;

m is 2 or 3;

A^- is an anion;

and its salts with mineral or organic acids, in an optically pure or a racemic form.

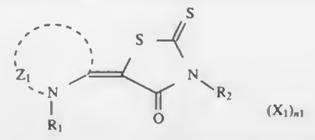
5,665,887

METHINE COMPOUND

Toyohisa Oya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1996, Ser. No. 695,378
Claims priority, application Japan, Aug. 10, 1995, 7-204281
Int. Cl.[6] C07D *277/20*
U.S. Cl. 548—178 **3 Claims**

1. A methine compound represented by general formula (I):



(I)

wherein Z_1 represents a group of nonmetal atoms necessary for completing a five- or six-membered nitrogen-containing heterocycle; R_1 represents an unsubstituted or substituted alkyl group; R_2 represents a linear or branched alkyl, alkenyl, or alkynyl group containing at least one carboxyl group and at least one ester bond, amide bond, or ether bond; X_1 represents a counter ion necessary for charge neutralization; and n_1 represents a number of 0 or larger necessary for intramolecular charge neutralization.

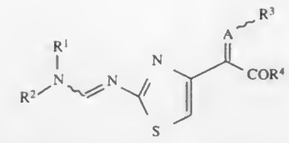
5,665,888

PROTECTED AMINOTHIAZOLYLACETIC ACID DERIVATIVES

Yoshio Urawa; Akihiko Shimotani; Takeo Kanai, all of Ibaraki Prefecture, and Masahiko Tsujii, Chiba Prefecture, all of Japan, assignors to Eisai Chemical Co., Ltd., Ibaraki Prefecture, Japan

Filed Mar. 28, 1995, Ser. No. 412,190
Claims priority, application Japan, Mar. 30, 1994, 6-082619; Jun. 22, 1994, 6-139918; Nov. 17, 1994, 6-283543
Int. Cl.[6] C07D *277/42*
U.S. Cl. 548—194 **1 Claim**

1. A protected aminothiazolylacetic acid derivative represented by the following formula (I):



(I)

wherein A represents a nitrogen atom R^1 and R^2 may be the same or different and individually represent a hydrogen atom, a lower alkyl group or a substituted or unsubstituted aryl group, R^3 represents a lower alkoxy group, a halogenated lower alkoxy group, a triphenylmethoxy group, or an acyloxy group, and R^4 represents a halogen atom, a hydroxy group, or a substituted or unsubstituted amino group; or a salt thereof.

5,665,889

METHOD FOR THE PRODUCTION OF N-VINYL-2-PYRROLIDONE BY VINYLATION

Shiao-Jung Chu; Pine-Sci Kuo; Chu-Chang Dai, all of Hsinchu Hsien; Hsi-Yen Hsu, Taipei, and Ching-Tang Lin, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 22, 1996, Ser. No. 589,517
Int. Cl.[6] C07D *207/263*
U.S. Cl. 548—543 **9 Claims**

1. A method for the production of N-vinyl-2-pyrrolidone by vinylation, comprising the following steps:

(a) reacting 2-pyrrolidone with acetylene in the presence of hydroxy end-capped ether oligomers having a molecular weight of less than 1000 or linear diols having at least 4 carbon atoms as co-catalysts under the catalyzation of alkali metal salts at a temperature ranging from 100° C. to 200° C. and a pressure between 7.5 and 30 atmosphere pressure; and

(b) separating the N-vinyl-2-pyrrolidone;

wherein the improvement is characterized in that:

(i) said ether oligomers having the formula of $HO(CH_2CH_2CH_2CH_2O)_nH$, where n=1~14; and

(ii) said linear diols having the formula of $HO—(CH_2)_n—OH$, where $n \geqq 4$.

5,665,890

STEREOSELECTIVE RING OPENING REACTIONS

Eric N. Jacobsen, Boston; James L. Leighton, Sommerville, and Luis E. Martinez, Cambridge, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 14, 1995, Ser. No. 403,374
Int. Cl.[6] C07B *53/00;57/00;* **C07C** *247/00;* **C07D** *317/36*
U.S. Cl. 549—230 **82 Claims**

1. A process of stereoselective chemical synthesis which comprises reacting a nucleophile and a chiral or prochiral cyclic substrate in the presence of a non-racemic chiral catalyst to produce a stereoisomerically enriched product, wherein said cyclic substrate comprises a carbocycle or heterocycle having a reactive

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center susceptible to nucleophilic attack by said nucleophile, and said chiral catalyst comprises an asymmetric tetradentate ligand complexed with a metal atom, which complex has a rectangular planar or rectangular pyrimidal geometry.

5,665,891
OXIDATION OF KETONES

Scott William Brown, Wigan; Alexander Johnstone, South Wirral, and William Ronald Sanderson, Warrington, all of United Kingdom, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB94/00440, § 371 Date Oct. 12, 1995, § 102(e) Date Oct. 12, 1995, PCT Pub. No. WO94/21624, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 8, 1994, Ser. No. 513,904
Claims priority, application United Kingdom, Mar. 13, 1993, 9305223
Int. Cl.[6] C07C *407/00;* **C07D** *313/04*
U.S. Cl. 549—272 **28 Claims**

1. In a process for the oxidation of ketones comprising the reaction of a ketone with hydrogen peroxide in the presence of a solvent and employing a heterogeneous catalyst, the improvement wherein the solvent comprises a carboxylic acid or anhydride and the catalyst comprises gamma alumina.

5,665,892
SUCROSE PHOSPHATE SYNTHASE (SPS), ITS PROCESS FOR PREPARATION ITS CDNA, AND UTILIZATION OF CDNA TO MODIFY THE EXPRESSION OF SPS IN PLANT CELLS

Charles Van Assche, Marseille; Danielle Lando; Jean Michel Bruneau, both of Paris, all of France; Toni Alois Voelker, Davis, Calif., and Monica Gervais, Saint-Leu-La-Foret, France, assignors to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 672,646, Mar. 18, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 175,471
Claims priority, application European Pat. Off., Jul. 20, 1990, 90402084
Int. Cl.[6] A01H *4/00;* **C12N** *15/82;5/14*
U.S. Cl. 800—205 **67 Claims**

44. A method of increasing the yield of a tomato plant sink tissue, said method comprising:

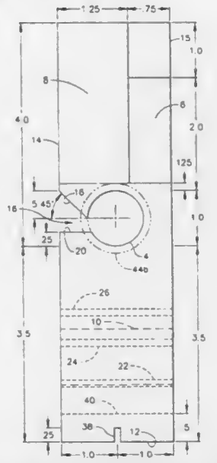
growing a tomato plant having integrated into its genome a construct comprising, as operably linked components in the 5' to 3' direction of transcription, a transcription initiation region functional in a tomato plant cell and a DNA encoding a sucrose phosphate synthase derived from corn, wherein said DNA encoding a sucrose phosphate synthase is not naturally linked to said transcription initiation region, and wherein said tomato plant cell is grown under conditions which permit said transcription initiation region to function,

whereby the amount of sucrose available to said tomato plant sink tissue is increased compared to the amount of sucrose measured in a control tomato plant sink tissue.

5,665,893
REFERENCE BLOCK FOR DETERMINING OPERATING CHARACTERISTICS OF ULTRASONIC TRANSDUCER IN RIGHT CIRCULAR CYLINDER TYPE PROBE

Thurman Dale Smith, Richland, Wash., assignor to General Electric Company, San Jose, Calif.

Filed Jun. 6, 1996, Ser. No. 660,613
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—1.82 **20 Claims**



1. A device for calibrating an ultrasonic transducer of a probe, comprising a block of material having a planar front face, a planar rear face parallel to said front face, a circular cylindrical access hole having a centerline axis which is parallel to said front face, and an open window extending in parallel with said access hole and providing access to said access hole from said front face, and means for reflecting ultrasound waves transmitted from a focal point in said block back to said focal point.

14. A device for calibrating an ultrasonic transducer of a right circular cylinder type probe, comprising a block of material having a planar front face, a planar rear face parallel to said front face, a planar base perpendicular to said front and rear faces, a concave circular cylindrical section which has a radius of curvature slightly greater than a radius of the probe, said concave circular cylindrical section having a centerline axis which is parallel to said base and to said front face and having a focal point along said centerline axis, and a first slot of constant depth extending substantially perpendicular to said planar base, said first slot forming a first planar ultrasonic wave reflecting surface which extends parallel to said planar base to a first depth from said planar base, said first ultrasonic wave reflecting surface being disposed to reflect ultrasound waves transmitted from said focal point back to said focal point.

5,665,894
INSTRUMENT CALIBRATING DEMAND FLOW REGULATOR

George D. Baker, Cambridge, Md., assignor to Air Liquide America Corporation, Houston, Tex.

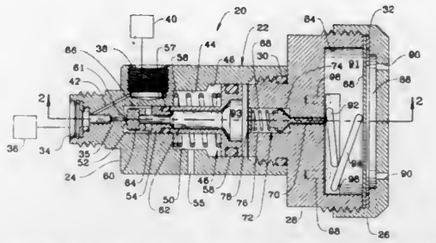
Filed Mar. 1, 1996, Ser. No. 609,833
Int. Cl.[6] G01N *31/00*
U.S. Cl. 73—1.05 **20 Claims**

1. Calibration system for calibrating an instrument, comprising:

a source of calibration gas;

a housing having an interior, said housing being provided with an inlet connected to the source of calibration gas, and an outlet for connection to the instrument to be calibrated;

a movable element disposed within the interior of the housing and movable in response to a pressure differential on opposite sides of the movable element;



a demand flow valve element disposed within the interior of the housing to form a first space within the interior between the movable element and the demand flow valve element;

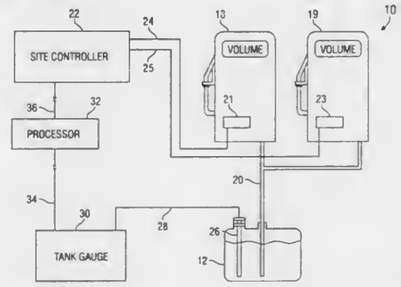
a pressure regulating valve device disposed within the interior of the housing to form a second space within the interior between the demand flow valve element and the pressure regulating valve device;

said demand flow valve element being movable between one position in which gas flow between said first space and said second space is prevented and a second position in which gas flow between said first space and said second space is permitted, said demand flow valve element being operatively associated with said movable element so that movement of the movable element caused by a pressure differential across the movable element results in movement of the demand flow valve element from the first position to the second position, said pressure regulating valve device being movable between a first position in which the flow of calibration gas into the second space is prevented and a second position in which the flow of calibration gas into the second space is permitted, said pressure regulating valve device being movable from the first position to the second position in response to the pressure in the second space being reduced to a predetermined level after said demand flow valve has moved away from said first position.

5,665,895
APPARATUS AND METHOD FOR CALIBRATING A STORAGE TANK

Robert P. Hart, East Hampton, Conn., and Leonid M. Malinin, Cambridge, Mass., assignors to Veeder-Root Company, Simsbury, Conn.

Continuation-in-part of Ser. No. 459,122, Jun. 2, 1995, Pat. No. 5,544,518. This application Jan. 11, 1996, Ser. No. 587,885
Int. Cl.[6] G01M *3/04*
U.S. Cl. 73—1.73 **31 Claims**



1. An apparatus for calibrating a liquid storage tank, comprising:

(a) a sensor for sensing the level of the liquid in the tank, said sensor providing first output signals proportional to the sensed liquid levels;

(b) at least one metering device for measuring the amount of liquid being dispensed into or out of the storage tank, said at least one metering device providing second output signals proportional to the amount of liquid being dispensed and third

output signals communicating information on the beginning and end of each dispensing period; and

(c) a processor having multiple inputs for receiving said first, second and third output signals, said processor being operative:

(i) to store a first set of data values which represent differential amounts of liquid dispensed into or out of the storage tank as measured by the at least one metering device per unit of associated differential height change as measured by the sensor;

(ii) to generate a second set of data values which represent estimates of the differential amounts of liquid dispensed into or out of the storage tank per unit of associated differential height change, said processor being programmed with an algorithm which employs a mathematical formula for computing said second set of data values which expresses the differential amounts of liquid dispensed into or out of the tank per unit of associated differential height change as a function of the liquid level measurements and a number of calibration parameters including the dimensions of the tank and at least one of the orientation of the tank relative to gravity field and the position of the sensor inside the tank; and

(iii) to calibrate the tank by searching for the calibration parameters which yield the minimum error between the first and second sets of data, said error being generated by a merit function the output of which produces error values, said values being such that the smaller the value the closer the agreement between the first and second sets of data and the minimum error being defined as the smallest of these values.

5,665,896

CALIBRATION OF AN ARTICULATING PROBE HEAD FOR A COORDINATE POSITIONING MACHINE

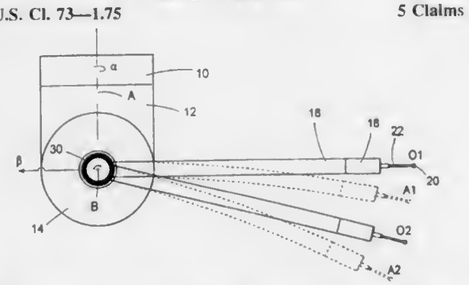
David R. McMurtry, Wotton-Under-Edge, United Kingdom, assignor to Renishaw PLC, Gloucestershire, United Kingdom

Filed Aug. 21, 1996, Ser. No. 700,788

Claims priority, application United Kingdom, Aug. 23, 1995, 9517214

Int. Cl.[6] G01B *7/00*

U.S. Cl. 73—1.75 **5 Claims**



1. A method of operating a coordinate positioning machine having: an arm and a table movable one relative to another; an articulating probe head mounted to the arm for orienting a probe relative to the arm about at least one rotary axis, the probe head having at least one rotary axis member supporting said probe and an angular displacement transducer for measuring the angular orientation of said rotary axis member relative to a datum; the method comprising the steps of:

measuring the position of the probe at first and second angular orientations of said rotary axis member;

calculating an actual angular displacement between said measured probe positions;

orienting said rotary axis member to a third angular orientation, lying between said first and second angular orientations;

determining the position of the probe at the third angular orientation of said rotary axis member, by calculating, from said actual angular displacement, said third angular orientation, and at least the difference between said first and second angular orientations, an actual angular orientation of the probe corresponding to said third angular orientation of the rotary axis member.

5,665,897

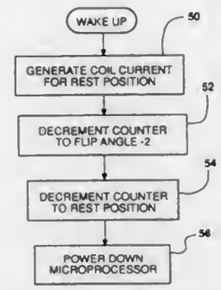
METHOD OF CALIBRATING AND ZEROING STEPPER MOTOR GAUGES

Raymond Lippmann, Ann Arbor; Gail Monica Sylvester, Frankenmuth; Ronald Kenneth Selby, Burton; James Edward Nelson, North Branch, and Michael John Schnars, Clarkston, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 9, 1996, Ser. No. 695,045

Int. Cl.[6] G01D *18/00*

U.S. Cl. 73—1.01 **15 Claims**



1. A method of securing a rest position of a vehicle gauge driven by a stepper motor having a rotating field controlled by a motor driver including a microprocessor wherein the gauge has a stop, and wherein when the field is rotated beyond the stop the motor is subject to reaching an unstable angle and flipping back a fixed angle from the stop, comprising the steps of:

calibrating the gauge to establish a rest position near the stop;

when vehicle ignition is turned off, setting the gauge at the rest position and powering down the microprocessor; and

then when the vehicle is not in use, maintaining the rest position by

powering up the microprocessor,

energizing the motor driver to the rest position value, and

rotating the motor field in reverse through a preset angle so that if the gauge actually was at the rest position the gauge reaches the stop, the field rotates through the unstable angle and flip back occurs, whereby the gauge is returned to the rest position.

5,665,898

METHOD AND APPARATUS FOR TESTING SOLENOIDS IN A SAFETY SYSTEM BY BYPASSING THE SOLENOID OPERATED PILOT VALVE

Martin James Smith, Rancho Palos Verdes; Peter Yau-kwong Leung, Irvine; Richard Arthur Stanley, Tustin; Larry Lee Drake, Downey, and Richard Thomas Mangan, La Habra Heights, all of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 29, 1993, Ser. No. 174,972

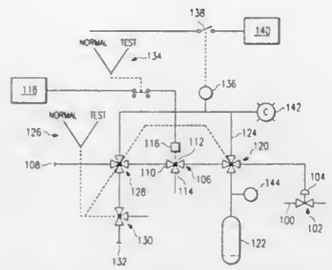
Int. Cl.[6] F16K *31/12*

U.S. Cl. 73—1.72 **15 Claims**

1. An apparatus for testing a solenoid and its associated solenoid operated valve in a safety system, comprising:

a. a test pressure source containing a compressed gas;

b. a first valve in fluid communication with the test pressure source;



c. a valve which substantially isolates a fluid source from a component having an operator in fluid communication with the first safety system valve;

d. a bypass line in fluid communication with the first valve and a pneumatic supply source;

e. a first solenoid operated valve in fluid communication with the first valve and having an inlet, an outlet, a vent and a solenoid;

f. a second valve in fluid communication with the pneumatic supply source, the inlet of the first solenoid operated valve, the bypass line and a solenoid operated vent valve

thereby permitting the testing of the first solenoid operated valve and its associated solenoid without operating the safety system valve.

5,665,899

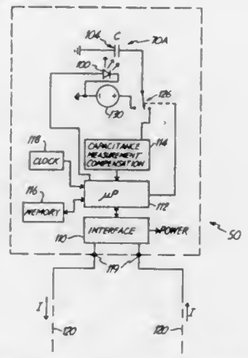
PRESSURE SENSOR DIAGNOSTICS IN A PROCESS TRANSMITTER

Charles R. Willcox, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Feb. 23, 1996, Ser. No. 605,941

Int. Cl.[6] G01F *1/38*

U.S. Cl. 73—1.63 **17 Claims**



1. A transmitter adapted to couple to a two-wire loop in a process control system, comprising:

a pressure sensor comprising:

a pressure responsive structure for receiving a process pressure;

a capacitor having at least one capacitor plate coupled to the pressure responsive structure and having a capacitance related to the process pressure;

measurement circuitry coupled to the capacitor providing a pressure output related to the capacitance;

input circuitry for completely powering the transmitter from a loop current received from the two-wire loop and output circuitry for transmitting the pressure output on the two-wire loop; and

diagnostic circuitry coupled to the pressure sensor and powered solely from the loop current received by the input and output circuitry, the diagnostic circuitry providing a perturbation input to the pressure sensor and providing a sensor diagnostic output based upon a change in pressure output caused by a change in capacitance in response to the perturbation input.

5,665,900

APPARATUS FOR TESTING WEAR-RESISTANCE OF A PINCH ROLLER TO BE INCORPORATED IN A VIDEO CASSETTE RECORDER

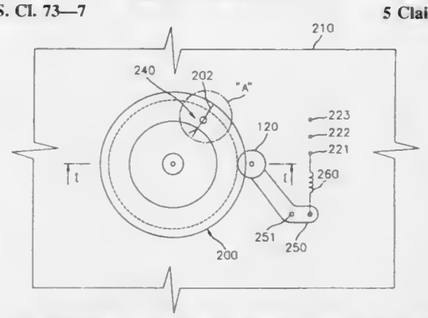
Dae-Sun Yoo, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 29, 1996, Ser. No. 639,414

Claims priority, application Rep. of Korea, Apr. 29, 1995, 95-9189

Int. Cl.[6] G01N *3/56*

U.S. Cl. 73—7 **5 Claims**



1. An apparatus for testing wear-resistance of a pinch roller, comprising:

a base provided with at least one post;

a drum rotatably mounted on the base, wherein a tape is wound around an circumferential surface thereof;

means for rotating the drum;

means for holding the tape; and

a pinch roller holder pivotally mounted on the base, wherein a pinch roller to be tested is rotatably mounted on one end portion thereof and the other end portion is, selectively connected to the post through an elastic member, thereby allowing the pinch roller to resiliently press the tape against the drum.

5,665,901

SHOCK ABSORBER TESTING DEVICE

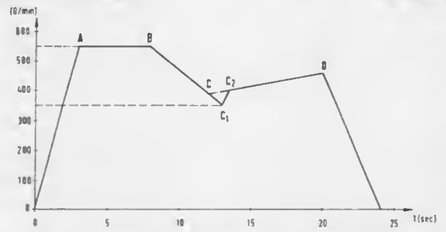
Frank Ilzig, Schweinfurt, and Norbert Omlor, Bergtheim, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 30, 1996, Ser. No. 655,763

Claims priority, application Germany, May 30, 1995, 195 19 136.6

Int. Cl.[6] G01M *17/04*

U.S. Cl. 73—11.08 **20 Claims**



1. A process for the in situ testing of the performance of at least one shock absorber being tested by comparison to the performance characteristics of a reference shock absorber, said at least one

shock absorber being tested being mounted on a wheel of a vehicle during said testing process and said at least one shock absorber having at least one resonant frequency, said vehicle including said wheel, said at least one shock absorber being tested mounted on said wheel and a vehicle body, said process comprising the steps of:

providing a wheel support member;

providing means for oscillating said wheel support member over a range of oscillation frequencies;

disposing said wheel of said vehicle on said wheel support member;

oscillating said wheel support member at an oscillation frequency;

sensing the induced oscillations of at least one of said vehicle body and said wheel during at least a portion of said step of oscillating said wheel support member;

increasing said oscillation frequency of said wheel support member up to a first oscillation frequency at a measurement point A, said first oscillation frequency being greater than said at least one resonant oscillation frequency of said at least one shock absorber being tested;

maintaining said oscillation frequency of said wheel support member of said first oscillation frequency until a measurement point B, at which the induced oscillations of said wheel are substantially about matched to said first oscillation frequency;

decreasing said oscillation frequency of said wheel support member to a second oscillation frequency at a measurement point C, at which said sensed induced oscillations of said vehicle body are less than a first determined value, said second oscillation frequency being substantially less than said at least one resonant frequency of said at least one shock absorber being tested;

increasing said oscillation frequency of said wheel support member to a third oscillation frequency at a measurement point D, at which said sensed induced oscillations of said vehicle body are less than a second determined value; and

comparing said sensed induced oscillations of said vehicle including said at least one shock absorber being tested between at least said measurement points C and D to the reference oscillations between at least said measurement points C and D of said reference shock absorber.

5,665,902

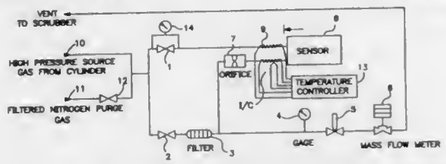
METHOD TO ANALYZE PARTICLE CONTAMINANTS IN COMPRESSED GASES

Hwa-chi Wang, Downers Grove, and Richard J. Udischas, Chicago, both of Ill., assignors to American Air Liquide, Inc., Walnut Creek, Calif.

Filed May 10, 1994, Ser. No. 240,485

Int. Cl.[6] G01N *1/00*

U.S. Cl. 73—28.01 **10 Claims**



1. A system for analyzing impurity in compressed gas, comprising a sensor for measuring said impurity within said gas, a temperature controller for controlling the temperature of said gas in a temperature zone prior to said gas entering said sensor, a pressure balancer comprising a first valve located between a source of said compressed gas and said sensor, a second valve for introducing said gas to said system, a filter located downstream of said second valve for substantially removing impurities in the source gas and/or introduced by the upstream components, a third valve located downstream from said filter for controlling the exhaust of the gas from the system, and an orifice located between said filter and sensor for back-filling said gas to said sensor until there is a pressure equilibrium across said first valve.

5,665,903

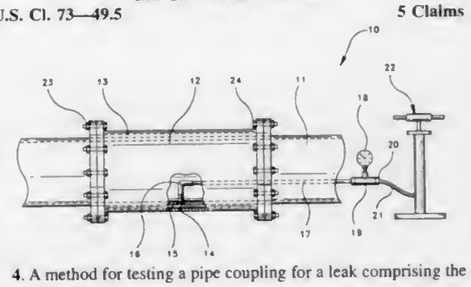
TECHNIQUE FOR TESTING PIPE COUPLINGS FOR DEFECTS

William John Moran, 119 Brook St., Carbondale, Pa. 18407

Filed Oct. 21, 1996, Ser. No. 734,099

Int. Cl.[6] G01M *3/28;3/04*

U.S. Cl. 73—49.5 **5 Claims**



4. A method for testing a pipe coupling for a leak comprising the following steps:

selecting a section of pipe longer than said pipe coupling to be tested;

drilling a hole in said section of pipe;

attaching a 90 degree ell to said hole from the inside of said section of pipe;

attaching tube means, having a length of about one-half the length of said section of pipe, to said ell;

attaching a tee means to said tube means at an end furthermost from said 90 degree ell;

attaching air pressure gage means to said tee means;

attaching a source of air pressure to said tee means;

affixing said pipe coupling to be tested to said section of pipe at a location covering said hole;

mechanically sealing said pipe coupling against the outside surface of said section of pipe;

applying air under a pressure, as indicated by said air pressure gage means, of about 100 psi through said tube means and said 90 degree ell to a space between said section of pipe and said pipe coupling; and

observing any pressure decrease at said air pressure gage means to indicate the occurrence of a leak in said pipe coupling.

5,665,904

OSMOMETRIC DEVICE AND PROCESS FOR DETERMINING THE ANALYTE CONTENT OF A SOLUTION OF MIXED SUBSTANCES

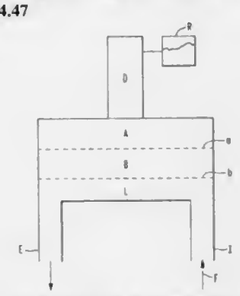
Gerd Böling, Inden-Pier, Germany, assignor to Forschungszentrum Jülich GmbH, Jülich, Germany

Filed Sep. 5, 1996, Ser. No. 708,449

Claims priority, application Germany, Mar. 8, 1994, 44 07 637.1

Int. Cl.[6] G01N *7/10;13/04*

U.S. Cl. 73—64.47 **4 Claims**



2. A method of determining the content of an analyte in an unassayed solution of a mixture of said analyte with at least one more substance in a fluid flow subject to chemical analysis using an osmometric measuring device including inner and outer osmotic

cells separated by an inner rigid or rigidly supported membrane permitting the establishment of different pressures in said inner and outer osmotic cells and being impermeable for said analyte but permeable for an osmoticum in said cells, a pressure measuring device arranged in pressure transmitting communication with said inner cell for determining the pressure of said osmoticum therein and a fluid conduit structure disposed adjacent said outer osmotic cell and being separated therefrom by an outer osmotic membrane which is permeable for said analyte but impermeable for other substances in said unassayed solution, said osmotic cells including initially both the same osmoticum with the same osmolarity in an initial or regenerated basic state, said method comprising the steps of:

admitting to said fluid conduit structure, which extends along said outer membrane, first a solvent-type solution (containing substantially a chemical solvent) for establishing a certain operating pressure, then admitting to said fluid conduit structure said unassayed solution of said mixture of substances including said analyte to cause a resulting pressure over time distribution in said inner osmotic cell and determining from the hydrostatic pressure change measured in said inner osmotic cell as a result of the permeation of said analyte into said outer osmotic cell, the content of said analyte in said unassayed solution of said mixture of substances.

5,665,905

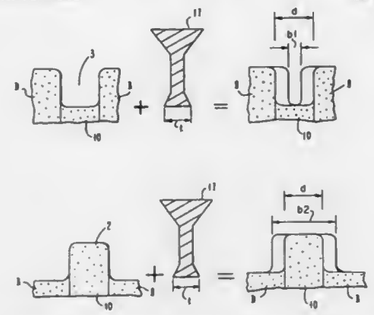
CALIBRATION STANDARD FOR 2-D AND 3-D PROFILOMETRY IN THE SUB-NANOMETER RANGE AND METHOD OF PRODUCING IT

Johann W. Bartha, Aidlingen; Thomas Bayer, Sindelfingen; Johann Greschner, Pliezhausen; Martin Nonnenmacher, deceased, late of Schoenaich, by Regine Nonnenmacher, legal representative, and Helga Weiss, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 255,209, Jun. 7, 1994, Pat. No. 5,534,359. This application Jun. 7, 1995, Ser. No. 472,100

Int. Cl.[6] G01B *5/20*

U.S. Cl. 73—105 **10 Claims**



1. A method for measuring the width of a tip in an Atomic Force Microscope/Scanning Tunneling Microscope using a calibration standard wherein said calibration standard has at least one pair of different kinds of structures, the structures of each of said pair of different kinds of structures having substantially the same width, comprising the steps of:

providing a tip,

measuring the width, to provide a measured width b1, of a first kind of structure of said at least one pair of different kinds of structures,

measuring the width, to provide a measured width b2, of a second kind of structure of the same pair,

said steps of measuring comprise the step of profiling said first and second kinds of structures of said at least one pair with said tip, and

calculating the width of said tip as a function of said measured widths b1 and b2.

5,665,906

DEVICE FOR GENERATING A SYNTHETIC SIGNAL FOR TESTING KNOCK CONTROL FUNCTIONS

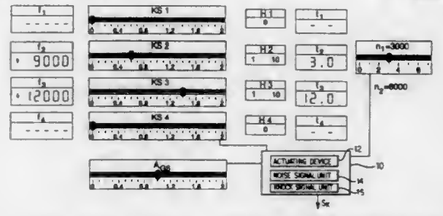
Michael Bayer, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany

Filed May 31, 1996, Ser. No. 657,772

Claims priority, application Germany, May 31, 1995, 195 20 033.0

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—118.1 **13 Claims**



1. A device for generating a synthetic signal for testing knock control functions in an engine control device of a motor vehicle, comprising:

a basic noise signal generating unit having a basic noise signal output;

a knock signal generating unit having a knock signal output, said basic noise signal output and knock signal output being superimposed to form a total signal;

an actuating device for changing at least one of an amplitude and frequency curve of at least one of the basic noise signal, the knock signal, and the total signal.

5,665,907

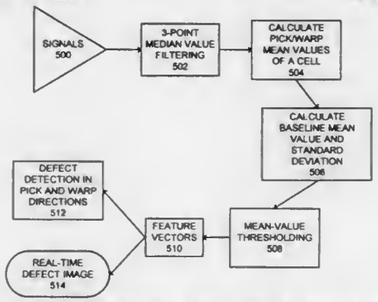
ULTRASONIC IMAGING SYSTEM FOR IN-PROCESS FABRIC DEFECT DETECTION

Shuh-Haw Sheen; Hual-Te Chien, both of Naperville; William P. Lawrence, and Apostolos C. Raptis, both of Downers Grove, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 301,120, Sep. 6, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 609,955

Int. Cl.[6] G01L *5/04;* G01N *29/00*

U.S. Cl. 73—159 **10 Claims**



8. A method for monitoring a fabric using an array of pairs of air-coupled ultrasonic transducers spaced apart from the fabric comprising the steps of:

generating ultrasonic waves relative to the fabric using a plurality of ultrasonic transducers;

receiving ultrasonic waves coupled through the fabric and generating a signal; and

integrating said generated signal to identify a peak energy signal;

utilizing a computer digital signal processor to perform the steps of:

digitizing said peak energy signal;

median value filtering said digitized signal to filter out high frequency noise;

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calculating a mean value and standard deviation of said median value filtered signal;

identifying mean value thresholds; and

utilizing said calculated mean value and standard deviation and said identified mean value thresholds to detect a defect in the fabric.

5,665,908

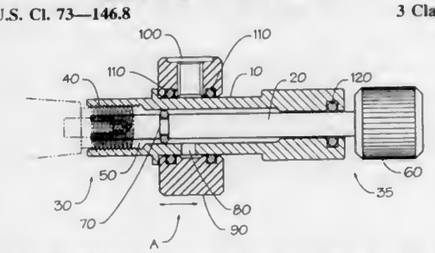
MANUAL TIRE DEFLATING AND PRESSURE INDICATING DEVICE

Ronald L. Burkey, 38931 Avenida Arriba, and Lee Burkey, 38150 De Portola Rd., both of Temecula, Calif. 92592

Filed Jun. 26, 1996, Ser. No. 670,629

Int. Cl.[6] B60C *23/02*; **F16K** *15/20*

U.S. Cl. 73—146.8 **3 Claims**



1. A tire deflating device for use with a tire having a valve stem incorporating a valve, and an air pressure gauge, the tire deflating device comprising:

a cylindrical housing wall providing at one end thereof, a means for engaging the valve stem for sealingly joining the housing wall with the valve stem;

an elongate tool slidably and rotatably engaged within the cylindrical housing and providing, at a distal end thereof, adjacent to the one end of the cylindrical housing, a means for engaging the tire valve so as to be able to rotate said valve for removal thereof, and at a proximal end thereof, extending out from the cylindrical housing, a means for manually grasping, rotating and longitudinally sliding the elongate tool within the housing wall;

a movable means for engaging the air pressure gauge for, in a manually selected position of the engaging means, sealing the gauge in communication with the valve stem and in an alternate manually selected position of the engaging means, uncovering an aperture means in the housing wall for bleeding air from the tire, the movable means for engaging being manually movable between the selected position and the alternate manually selected position until the tire is deflated to a desired extent.

5,665,909

FREE-FALL, WIRE-GUIDED HYDROGRAPHIC PROFILER

Kenneth W. Doherty, Falmouth; John M. Toole, North Falmouth, and Robert C. Millard, Waquoit, all of Mass., assignors to Woods Hole Oceanographic Institution, Woods Hole, Mass.

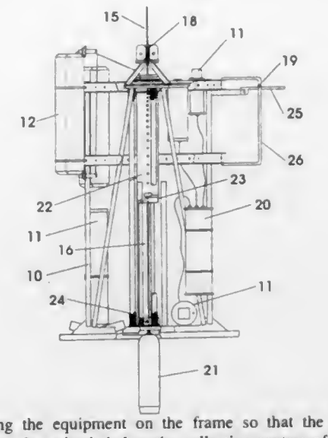
Filed May 17, 1996, Ser. No. 650,040

Int. Cl.[6] G01N *1/00*

U.S. Cl. 73—170.34 **7 Claims**

5. A method for transporting equipment such as sensors and samplers at approximately constant velocity along a wire or cable, comprising the following steps:

mounting the equipment on a frame-like structure having a central passageway through which the guiding wire or cable passes;



arranging the equipment on the frame so that the collective center of gravity is below the collective centers of buoyancy and drag, and said centers of gravity, buoyancy, and drag are approximately collinear with the central passageway;

spatially arranging the equipment on the frame, optionally together with other drag elements, so to provide drag appropriate to achieving the desired decent velocity;

deploying the apparatus on a cable lowered into a body of water;

providing a deceleration device to stop the frame and equipment without damage at the lower end of the wire or cable;

retrieving the frame by raising the cable.

5,665,910

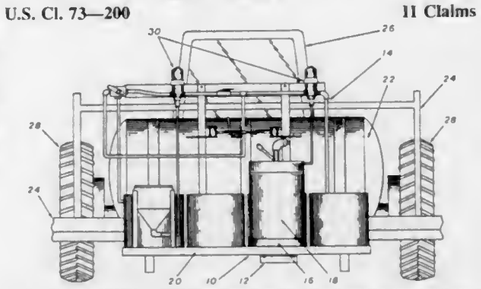
LIQUID CHEMICAL APPLICATOR MEASURING DEVICE

Scott William Knutson, R.R. 1, Box 84, and Curtis Jon Knutson, R.R. 1, Box 82, both of Fisher, Minn. 56723

Continuation-in-part of Ser. No. 547,064, Oct. 23, 1995, abandoned. This application Jul. 9, 1996, Ser. No. 677,177

Int. Cl.[6] G01F *17/00*

U.S. Cl. 73—200 **11 Claims**



1. An agriculture chemical application unit with chemical measuring device comprising:

A direct injection sprayer unit having a separate water holding tank and chemical holding tank said sprayer unit being powered by an attached tractor;

An accessory bay mount;

A load cell fixably mounted inside said accessory bay mount;

A means of attaching said accessory bay mount to said sprayer unit;

A strain gauge display mounted in said tractor;

A connection means between said strain gauge display and said load cell with a second connection to a electrical power supply; and

A means for removably mounting said chemical tank on said load cell above said accessory bay mount.

5,665,911

MOUNTING FLANGE FOR A MOUNTING FIXTURE FOR MOUNTING WHEELS FROM DIFFERENT MAKES OF MOTOR VEHICLES ON THE SHAFT OF A BALANCING MACHINE

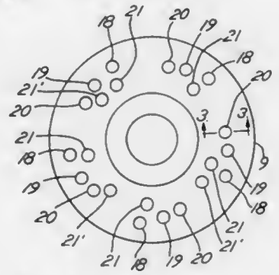
Horst Warkotsch, Burgwedel, Germany, assignor to Haweka Auswuchttechnik Horst Warkotsch, GmbH, Germany

Filed Apr. 10, 1996, Ser. No. 630,368

Claims priority, application Germany, Apr. 22, 1995, 295 06 853

Int. Cl.[6] G01M *1/06*

U.S. Cl. 73—487 **7 Claims**



1. Mounting flange for mounting a fixture for mounting wheels from different makes of motor vehicles on the shaft of a balancing machine which comprises

a central hole in said mounting flange for axially guiding said mounting flange on said shaft,

a first set of wheel centering holes surrounding said central hole equally spaced on a circle of one diameter and a second set of wheel centering holes equally spaced on a circle of a different diameter,

removable centering pins equally disposed in said first or second set of wheel centering holes and terminating in centering cones, and

a depression in the face of said mounting flange surrounding each wheel centering hole of the first and second set of centering holes, each one of said (depression) depressions in said first set having the same appearance, but different from the appearance of the depressions in said second set of centering holes.

5,665,912

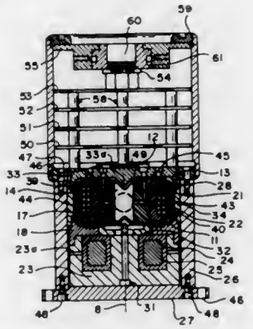
ACTIVE MAGNETOHYDRODYNAMIC RATE SENSOR

Darren R. Laughlin, Albuquerque, N. Mex., assignor to A-Tech Corporation, Albuquerque, N. Mex.

Filed Jul. 3, 1996, Ser. No. 674,778

Int. Cl.[6] G01P *9/00*

U.S. Cl. 73—504.05 **14 Claims**



1. A magnetohydrodynamic rate sensor comprising:

first and second conductive annular fluid channels disposed along a common rotational axis, and connected together by a pumping means which forms a radial flow of a conductive liquid proof mass within said annular channels;

a magnetic field generating means for creating an alternating electromagnetic field perpendicular to said first and second channels, whereby an electric field is established across said first and second channels; and

a sense winding disposed around a toroidal transformer core in parallel with said first and second conductive annular fluid channels for sensing said electric field which varies in magnitude with said alternating electromagnetic field and a rotational velocity of said first and second annular channels with respect to said conductive liquid proof mass.

5,665,913

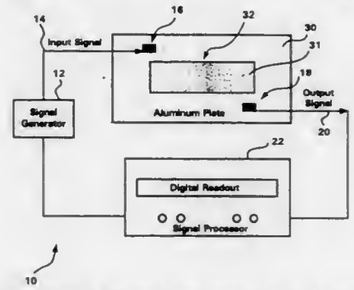
METHOD AND APPARATUS FOR EVALUATION AND INSPECTION OF COMPOSITE-REPAIRED STRUCTURES

J. H. Chung, Rockwall, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Mar. 7, 1996, Ser. No. 612,421

Int. Cl.[6] G01N *29/06*

U.S. Cl. 73—583 **6 Claims**



1. An apparatus for testing and inspection of a composite-repaired area of a structure, comprising:

a signal generator generating a test signal;

means coupled to the structure and receiving the test signal from the signal generator for converting the test signal to a mechanical signal for transmission through a portion of the composite-repaired area of the structure;

means coupled to the structure for receiving the mechanical signal transmitted through the structure and converting the received mechanical signal into a response signal; and

a signal processor coupled to the means for receiving includes a filter and an integrator, said filter masks from the responsive signal a range of signals outside the frequency of the test signal generating a sine sweep response, said integrator integrating the sine sweep and outputs a display signal indicative of the present condition of the composite-repaired area of the structure for comparison to a baseline reference signal representing a previously repaired condition of the composite-repaired area.

5,665,914

SEMICONDUCTOR ACCELERATION SENSOR AND ITS FABRICATION METHOD

Masahiro Yamamoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1996, Ser. No. 598,975

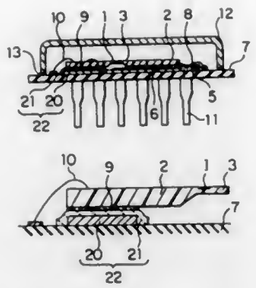
Claims priority, application Japan, May 2, 1995, 7-108802

Int. Cl.[6] G01P *15/00*

U.S. Cl. 73—514.16 **4 Claims**

1. A semiconductor acceleration sensor comprising:

a circuit substrate;



a thick film circuit including at least a circuit conductor and a glass insulating layer disposed on said circuit substrate;

a pedestal disposed on said circuit substrate;

a flexible acceleration detecting beam mounted on said pedestal and deflecting in response to an acceleration acting on said beam;

a sensor device disposed on said acceleration detecting beam for converting deflection of said acceleration detecting beam into an electrical signal; and

a sensor conductor electrically connecting said sensor device to said thick film circuit, wherein said pedestal includes at least one of said circuit conductor and said glass insulating layer.

5,665,915

SEMICONDUCTOR CAPACITIVE ACCELERATION SENSOR

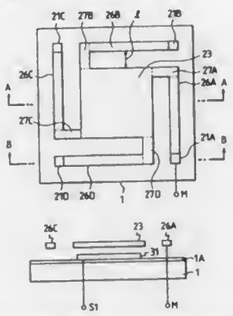
Mitsuo Kobayashi, and Katsumichi Ueyanagi, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 36,697, Mar. 25, 1993, abandoned. This application Jul. 27, 1994, Ser. No. 281,100

Claims priority, application Japan, Mar. 25, 1992, 4-066470; Aug. 27, 1992, 4-227651; Jul. 28, 1993, 5-185828

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 **11 Claims**



1. A semiconductor capacitive acceleration sensor comprising:

a semiconductor substrate;

a plurality of supporters made of a conductive semiconductor and disposed on an upper face of said semiconductor substrate through an insulating layer, said supporters being placed at positions which correspond to corners of a regular polygon, respectively;

beams respectively connected with said supporters at one end, each of said beams extending along a side of the regular polygon from the one end to an opposite end, said beams being rotationally symmetrical about the center of the regular polygon;

a movable electrode located within the regular polygon and spaced from said beams;

connecting means for connecting said movable electrode with the opposite ends of said beams, respectively; and

a stationary electrode disposed on said upper face of said semiconductor substrate through said insulating layer, said stationary electrode being separated from a lower face of said movable electrode by a predetermined distance.

5,665,916

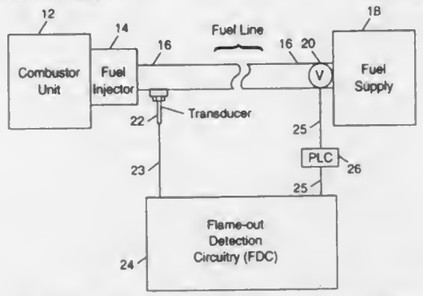
FUEL LINE BASED ACOUSTIC FLAME-OUT DETECTION SYSTEM

Richard L. Puster, Hampton, and John M. Franke, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 28, 1996, Ser. No. 672,294

Int. Cl.[6] G01H *17/00*

U.S. Cl. 73—590 **17 Claims**



1. In combination, a flame producing structure and a flame-out detection electronic circuit for shutting off fuel to the flame producing structure for safely stopping the operation thereof, comprising:

a combustor unit for said flame producing structure,

a fuel supply providing fuel for said combustor unit;

a fuel line connecting said fuel supply to said combustor unit;

valve means within said fuel line for controlling the flow of fuel from said fuel supply to said combustor unit;

a fuel injector receiving fuel from said fuel line for transmission to said combustor unit;

sensing means connected to said fuel line for detecting pressure oscillations produced in said fuel line during operation of said combustor unit;

electronic circuit means receiving signals from said sensing means;

said electronic circuit means being responsive to changes in pressure detected by said sensing means due to changes in the fuel pressure oscillations within said fuel line caused by combustor flame-out, to effect shut-off of fuel from said fuel supply and provide a safe shut down of combustor operation.

5,665,917

METHOD FOR CONSTRUCTING SUPERSONIC SHOCK-WAVE VIBRATOR DEVICES FOR APPLYING VIBRATORY FORCE FOR MEASURING PURPOSES OR TESTING PURPOSES BY USING CAVITATING SPACE

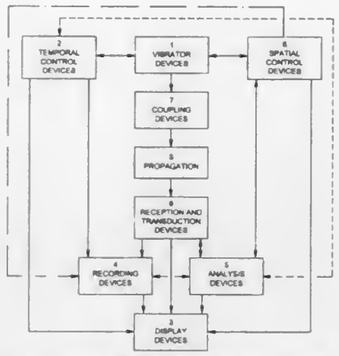
Stephen Bruce Berman, 1601 Lipan Trail, Austin, Tex. 78733

Filed Nov. 14, 1995, Ser. No. 557,942

Int. Cl.[6] G01M *7/02*

U.S. Cl. 73—662 **2 Claims**

1. A method of applying vibratory forces to a body comprising the steps of:



passing sound waves through a vibratory device, said vibratory device comprising:

a housing; and

fluid located within said housing;

allowing a cavitating space to form, expand and collapse within said fluid; and

applying the vibratory force resulting from the collapse of the cavitating space to a body.

5,665,918

LINEAR VIBRATION ACTUATOR UTILIZING COMBINED BENDING AND LONGITUDINAL VIBRATION MODES

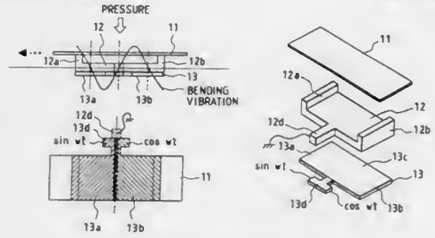
Hironori Takano, Yokohama, and Masami Sugimori, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,473

Claims priority, application Japan, Dec. 26, 1994, 6-322418; Jan. 9, 1995, 7-001207

Int. Cl.[6] G01N *29/02*; **H01L** *41/08*

U.S. Cl. 73—662 **24 Claims**



1. A vibration driven actuator comprising:

a vibration member including an electro-mechanical energy conversion element that excites bending and longitudinal vibrations in the vibration member, and produces a driving force using specific vibrations obtained by synthesizing the bending and longitudinal vibrations; and

at least one projection portion formed on at least one of said energy conversion element and said vibration member at a position which corresponds to a node of the bending vibrations, said at least one projection portion including an electrical connection part formed thereon for supplying a signal to said energy conversion element.

5,665,919

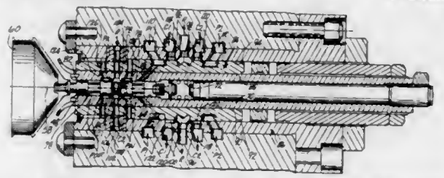
HIGH FREQUENCY VIBRATION TEST FIXTURE WITH HYDRAULIC SERVO VALVE AND PISTON ACTUATOR

William B. Woyski, La Habra Heights; Robert C. Tauscher, Hacienda Heights, both of Calif., and Klaus L. Cappel, Madison, Ala., assignors to Team Corporation, Burlington, Wash.

Continuation of Ser. No. 248,372, May 24, 1994, abandoned, which is a division of Ser. No. 871,678, Apr. 20, 1992, Pat. No. 5,343,752. This application Jan. 31, 1996, Ser. No. 594,473

Int. Cl.[6] G01M *7/06*

U.S. Cl. 73—665 **9 Claims**



1. A high frequency linear hydraulic servo valve-actuated vibration test assembly for producing alternating hydraulic fluid flow control outputs the servo valve-actuated test assembly comprising:

an energy input source comprising a transducer to receive an alternating input signal of a selected frequency and convert the input signal to linear mechanical vibrational motion;

a servo valve having a pair of fluid flow control output ports and in which an output flow of hydraulic fluid is produced from the control output ports of the servo valve; the servo valve including a movable hydraulic pilot valve spool that receives the vibrational motion from the transducer to apply linear reciprocating motion to the pilot valve spool along an axis; a movable hydraulic slave valve spool surrounding and concentric with the pilot valve spool; a fixed pilot valve sleeve surrounding and concentric with the pilot valve spool, the pilot valve sleeve located between the pilot valve spool and the slave valve spool, to direct alternating fluid flow to the slave valve spool as a result of the linear motion of the pilot valve spool to thereby induce linear motion of the slave valve spool; and a fixed slave valve sleeve surrounding and concentric with the slave valve spool to receive alternating fluid flow from the movable slave valve spool to direct the output flow of hydraulic fluid to the fluid flow control output ports of the servo valve, the slave valve spool and the slave valve sleeve providing a power amplification stage for the servo valve output flow that minimizes the volume of trapped hydraulic fluid passing from the pilot valve spool and the pilot valve sleeve to the output ports of the servo valve;

the servo valve-actuated test assembly further comprising a vibration test fixture having a slip table and a piston actuator affixed to the slip table, the output flow of hydraulic fluid from the control output ports of the servo valve directed to the piston for applying a reciprocating linear motion to the piston; and in which the output flow from the control outlet ports of the servo valve has an output frequency and the reciprocating motion of the piston is transferred to the slip table to induce vibrational motion in the slip table at a frequency corresponding to the output frequency of the output flow of fluid from the servo valve.

5,665,920

DEVICE WITH EXCHANGEABLE SEALING ELEMENT FOR MEASURING PRESSURE OR DIFFERENTIAL PRESSURE

Rainer Martin, Efringen-Kirchen, Germany, assignor to Endress + Hauser GmbH + Co., Maulburg, Germany

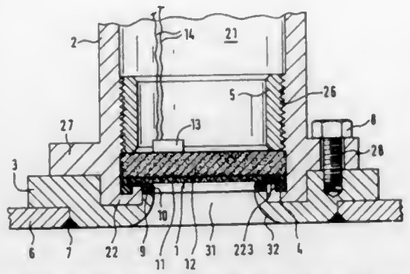
Filed Jan. 11, 1996, Ser. No. 584,055

Claims priority, application European Pat. Off., Jan. 12, 1995, 95100337

Int. Cl.[6] G01L *7/08*; *9/00*

U.S. Cl. 73—715 **10 Claims**

1. A device for measuring pressure or differential pressure of a measuring medium in a container, having



a ceramic pressure sensor (1) having a side facing the measuring medium,

a housing (2) containing the pressure sensor (1),

a connection element (3) which is connected releasably to the housing (2) and is intended for fastening the device on a wall (6) of the container which contains the measuring medium,

an outer sealing element (4) which is inserted between the housing (2) and pressure sensor (1) and

an exchangeable inner sealing element (9) which is inserted between the pressure sensor (1) and connection element (3), the inner sealing element engages the pressure sensor (1) on the side of the pressure sensor (1) facing the measuring medium;

the sealing elements are arranged coaxially with the outer sealing element (4) having a larger diameter than the inner sealing element (4).

5,665,921

GAS TIGHT PRESSURE SENSOR SEALED WITH FLEXIBLE METALLIC ADAPTOR AND HAVING CERAMIC SENSOR ELEMENT

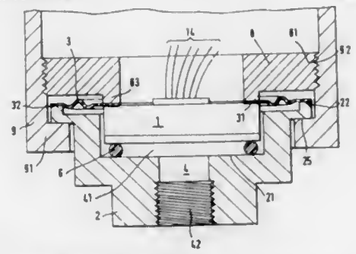
Peter Gerst, Weil am Rhein; Karlheinz Banholzer, Hausen, and Winfried Maier, Maulburg, all of Germany, assignors to Endress & Hauser GmbH & Co., Maulburg, Germany

Filed Mar. 4, 1996, Ser. No. 610,361

Claims priority, application European Pat. Off., Mar. 31, 1995, 95104780

Int. Cl.[6] G01L *7/08;9/00*

U.S. Cl. 73—715 **6 Claims**



1. A pressure sensor comprising:

a ceramic sensor element having an active surface for contacting the measuring medium,

a metallic housing and

a metallic adapter which is arranged between the sensor element and housing, the metallic adaptor being connected in a gas-tight manner both to the housing and to the sensor element, the metallic adapter being designed as a diaphragm, and the sensor element being fixed by means of a sensor fastening which is located on a surface of the sensor element in the housing which is not the active surface,

wherein the diaphragm is designed to be annular, and have an outer border region that bears on an annular surface of the housing and an inner border region that bears on a surface of the sensor element which is not the active surface.

5,665,922

BENDING STRAIN MEASUREMENT APPARATUS FOR AN ABDOMEN OF AN ANTHROPOMORPHIC DUMMY AND ABDOMINAL INJURY PRESUMPTION APPARATUS USING THE SAME

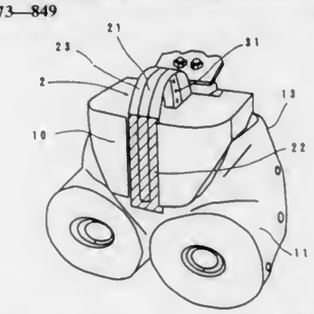
Kouji Tsukada; Hidekazu Nishigaki; Yasuaki Ikeda; Shigeru Sakuma; Shin-ichi Ishiyama; Fumio Matsuoka; Yoshihisa Kanno, all of Aichi-ken, Japan, and Shigeki Hayashi, West Bloomfield, Mich., assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Oct. 26, 1995, Ser. No. 548,476

Claims priority, application Japan, Oct. 27, 1994, 6-301315

Int. Cl.[6] G01N *3/20;* G01M *19/00*

U.S. Cl. 73—849 **25 Claims**



1. A bending strain measurement apparatus for an abdomen of an anthropomorphic dummy comprising:

a band constituted of an elastic thin plate member and arranged in a longitudinal direction of said abdomen, said band having one end thereof fixed in a vicinity of said abdomen of said dummy and a plurality of gauges arranged on said band in a longitudinal direction thereof for detecting a bending strain of said abdomen when an obstacle collides with said abdomen; and

a measuring device for measuring a time history of the bending strain based on a bending strain of respective portions of said band detected by said gauges arranged on said band as a time transition of the bending strain of the respective portions of the band.

5,665,923

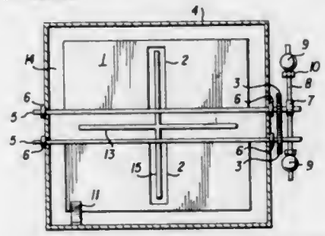
FULL RANGE-HIGH ACCURACY AIR FLOW SENSING DEVICE

Winfield LeRoy Kelley, Miami, Fla., assignor to Warren Technology, Inc., Hialeah, Fla.

Filed Dec. 26, 1995, Ser. No. 578,779

Int. Cl.[6] G01F *1/46*

U.S. Cl. 73—861.66 **21 Claims**



1. Air flow sensing device comprising rotatable spaced dampers, means to rotate said dampers, counter-weight means attached to said means to rotate to bias said dampers to a closed position with respect to air flow and pressure sensor means to determine the velocity of the air passing between said dampers in said closed position.

5,665,924

GAS SAMPLING POINT FOR SMOKE/POLLUTION DETECTION SYSTEM

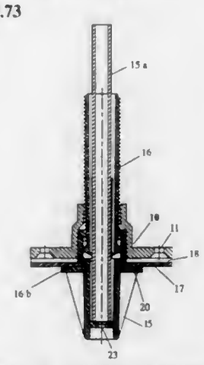
Martin Terence Cole, Keysborough, Australia, assignor to I.E.I. PTY. Ltd., Clayton, Australia

Continuation of Ser. No. 335,787, Nov. 10, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 662,490

Claims priority, application Australia, May 14, 1992, PL 2452; Feb. 22, 1993, PL 7435

Int. Cl.[6] G01N *1/22*

U.S. Cl. 73—864.73 **6 Claims**



1. A gas sampling point construction adapted to be mounted on a panel having an aperture therethrough, said construction comprising a tubular member of such size as freely to be accommodated in said aperture; a capillary tube accommodated in said tubular member, said capillary tube and said tubular member having open opposite ends to enable a sample of gas to pass therethrough; shroud means carried by said tubular member, said shroud means including a flange having an unstressed condition in which said flange may overlie and extend beyond said aperture and being formed of resilient material enabling said flange to assume a collapsed condition for passage through said aperture, the resilience of said material enabling said flange to return to said unstressed condition following passage through said aperture; and retention means for securing said tubular member and said shroud means to the panel, the construction and arrangement of said shroud being such that the sampling point construction may be inserted into the aperture from either end thereof and slid through the aperture to a position in which said flange in said unstressed condition provides an aesthetic cover for one end of said aperture.

5,665,925

DEVICE FOR PERFORMING A WEIGHT MEASUREMENT IN CENTRIFUGES

Hans Gerteis, Bietigheim-Bissingen, Germany, assignor to Heinkel Industriezentrifugen GmbH & Co., Bietigheim-Bissingen, Germany

Filed Apr. 28, 1994, Ser. No. 234,042

Claims priority, application Germany, May 13, 1993, 43 16 081.6

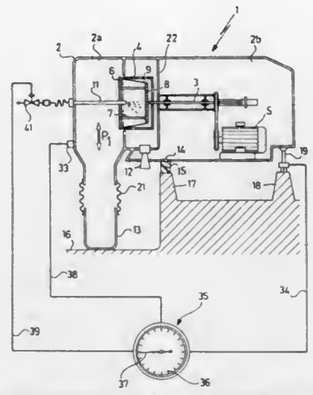
Int. Cl.[6] G01G *9/00;23/01*

U.S. Cl. 73—865 **4 Claims**

1. In apparatus for determining the weight of a material being processed in a pressure-sealed centrifuge mounted for pivotal movement, the combination including

means for measuring the force required to prevent appreciable pivotal movement of the centrifuge which would otherwise be caused by the weight of the material,

means for sensing a gas pressure within the sealed centrifuge, said gas pressure producing torques which would tend to pivot the centrifuge and interfere with the force measurement,



and means responsive to the force measuring means and to the gas pressure sensing means for determining the weight of the material.

5,665,926

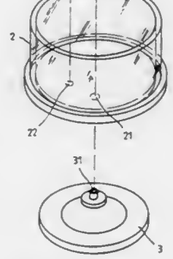
MUSICAL BOX STRUCTURE

Chia-Shiang Chen, No. 11, Alley 65, Lane 201, Wu Lin Road, Hsinchu, Taiwan

Filed Mar. 29, 1996, Ser. No. 625,072

Int. Cl.[6] G10F *1/06*

U.S. Cl. 84—95.2 **1 Claim**



1. A music box comprising:

a driving mechanism including a bottom face and a drum having geared teeth;

a base comprising a bush;

a transparent casing having an axle hole and a lateral hole;

an axle rod extending from said bottom face of the drive mechanism and through said axle hole and then being affixed to said bush of the base;

a pole extending from said driving mechanism through the lateral hole to said base;

a bracket attaching a toothed wheel to the driving mechanism, said tooth wheel engaging the geared teeth of the drum; and,

an enclosure housing said driving mechanism, said tooth wheel including a spring and a threaded stud, said threaded stud being attached to said enclosure, said transparent housing enveloping said enclosure.

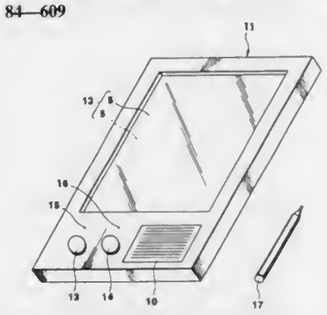
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5,665,927

METHOD AND APPARATUS FOR INPUTTING MUSICAL DATA WITHOUT REQUIRING SELECTION OF A DISPLAYED ICON

Masahide Taki, Fussa, and Hajime Manabe, Higashiyamato, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 265,731
Claims priority, application Japan, Jun. 30, 1993, 5-189151; Jun. 30, 1993, 5-189152; Jun. 30, 1993, 5-189153
Int. Cl.[6] G10H *1/00;* G06K *9/00;11/00*
U.S. Cl. 84—609 25 Claims



1. Musical data inputting apparatus comprising:

operation-receiving means of a non-keyboard type having a two-dimensional surface for receiving a hand-writing operation on said surface, said hand-writing operation being performed without requiring selection of an icon from a list of visible icons;

horizontal line means for providing said two-dimensional surface of said operation-receiving means with a plurality of horizontal lines vertically spaced from one another;

position detecting means for detecting a vertical position of said hand-writing operation on said two-dimensional surface of said operation-receiving means relative to said horizontal lines to obtain pitch data representative of a pitch of a musical note based on said detected vertical position;

operation recognizing means for recognizing said hand-writing operation performed on said two-dimensional surface of said operation-receiving means to obtain time data representative of a length of said musical note based on said recognized hand-writing operation; and

musical-sound recognizing means for recognizing musical-sound data based on the pitch data obtained by said position detecting means and the time data obtained by said operation recognizing means.

5,665,928

METHOD AND APPARATUS FOR SPLINE PARAMETER TRANSITIONS IN SOUND SYNTHESIS

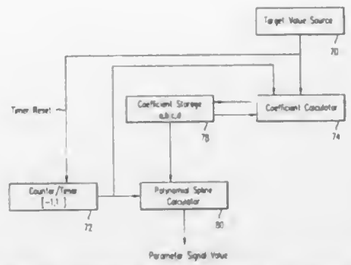
Avery L. Wang, Redwood City, Calif., assignor to Chromatic Research, Sunnyvale, Calif.

Filed Nov. 9, 1995, Ser. No. 555,626
Int. Cl.[6] G10H *7/00;* H03F *1/26*
U.S. Cl. 84—621 33 Claims

1. A method of controlling a transition in a parameter of a sound with respect to time, comprising the steps of:

determining a first level of the sound parameter at an initial time, and a second level of the sound parameter at a target time following the initial time; and

fitting a spline function between the first level and the second level over a time increment between the initial time and the target time, wherein the spline function is a smoothly changing value of the sound parameter.

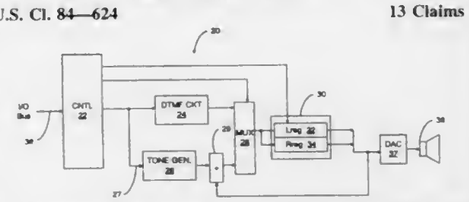


5,665,929

TONE SIGNAL GENERATOR FOR PRODUCING MULTIOPERATOR TONE SIGNALS USING AN OPERATOR CIRCUIT INCLUDING A WAVEFORM GENERATOR, A SELECTOR AND AN ENVELOPER

Qiujie Dong; Michael V. Jenkins, and Salvador R. Bernadas, all of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Jun. 30, 1995, Ser. No. 497,035
Int. Cl.[6] G10H *1/04;7/00*
U.S. Cl. 84—624 13 Claims



1. A system for generating a frequency modulation (FM) multioperator tone comprising:

an operator circuit, the operator circuit generating a plurality of virtual operator outputs, each virtual operator output being generated during a respective time slot, the operator circuit including a storage location, the storage location holding the virtual operator output of one of the plurality of virtual operator outputs, the operator circuit using the operator output of the one of the plurality of virtual operator outputs as a modulation input for a next sequential virtual operator of the plurality of virtual operator outputs, the operator circuit including

a waveform generator that furnishes a waveform signal in response to a phase angle address signal, the waveform generator comprising a plurality of wave tables, each storing a different waveform,

a selector that selects one of the wave tables in response to a plurality of selection signals such that the selected wave table provides the waveform signal upon being addressed by the phase angle address signal, whereby selection of the selected wave table varies with each selection signal, and

an enveloper that impresses an envelope signal on the waveform signal to produce an enveloped signal, the enveloped signal being used as a carrier or modulator for generating the FM multioperator tone, and

an output accumulator, the output accumulator selectively receiving each of the plurality of virtual operator outputs, the output accumulator selectively accumulating some of the plurality of virtual operator outputs to provide the multioperator tone.

5,665,930

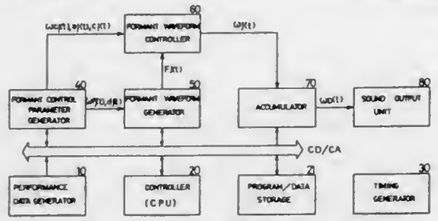
Patent Not Issued For This Number

5,665,931

APPARATUS FOR AND METHOD OF GENERATING MUSICAL TONES

Yutaka Washiyama, Hamamatsu, Japan, assignor to Kawai Musical Inst. Mfg. Co., Ltd., Shizuoka-ken, Japan

Filed Sep. 27, 1994, Ser. No. 312,612
Claims priority, application Japan, Sep. 27, 1993, 5-239669
Int. Cl.[6] G10H *7/00;1/06*
U.S. Cl. 84—623 24 Claims



1. An apparatus for generating musical tones comprising:

formant waveform signal storage means for storing formant waveform signals having waveforms synthesized from frequency components of formants of musical tones;

reading means for reading a formant waveform signal from said formant waveform storage means;

formant density data generating means for generating formant density data indicative of the density of the frequency components of a formant of the formant waveform signal read out by said reading means;

reading control means for controlling, during the reading of the formant waveform signal by said reading means, the density of the frequency components of the formant of the formant waveform signal according to the formant density data generated from said formant density data generating means;

formant center frequency data generating means for generating formant center frequency data of a formant center signal for synthesis as a center signal with the formant waveform signal read out by said reading means, the formant center frequency data being independent of the formant density data;

formant center signal generating means for generating the formant center signal at a frequency corresponding to the formant center frequency data generated by said formant center frequency data generating means; and

synthesizing means for synthesizing formant waveform signals with a formant, which has a density of frequency components controlled by said reading control means, on the formant center signal generated from said formant center signal generating means.

5,665,932

INITIATION OF BLASTING

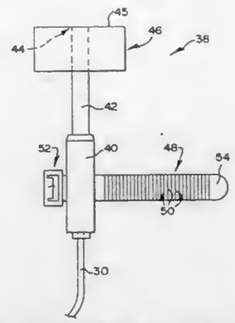
Johanna Catharina Viljoen, Doringkloof, and Jéan Pierre Jordan Le Roux, Saiccervillage, both of South Africa, assignors to AECI Explosives Limited, Johannesburg, South Africa

Filed Dec. 14, 1993, Ser. No. 167,553
Claims priority, application South Africa, Dec. 18, 1992, 92/9863
Int. Cl.[6] C06C *5/06*
U.S. Cl. 102—275.7 1 Claim

1. A system for the initiation of blasting which comprises:

an initial shock tube having, at one end thereof, an initiator connected thereto for the initiation of a detonation therein which propagates along its interior;

a connection device for connecting the initial shock tube, at a position remote from the initiator, to a plurality of further shock tubes and for transferring the detonation from the initial shock tube to the further shock tubes;



said plurality of further shock tubes for connection by the connection device to the initial shock tube, each for receiving a detonation transferred from the initial shock tube thereto by the connection device and for propagating the detonation to a charge of explosive in a borehole,

said connection device is an assembly wherein a high explosive charge is a detonator with an end connected to the end of the initial shock tube, at the end of the initial shock tube remote from the initiator, the assembly comprising a securing strap for strapping each said further shock tubes to the detonator, whereby said further shock tubes are circumferentially disposed around the detonator, and extends alongside the detonator and initial shock tube substantially parallel thereto;

wherein said assembly includes a stem fast with the detonator of said assembly, said stem projecting axially away from an end of the detonator remote from the initial shock tube, said stem having an end remote from the detonator fast with a floor of a cup for receiving said ends of said further shock tubes, said remote end of the stem being located at a radially interior central position of said cup,

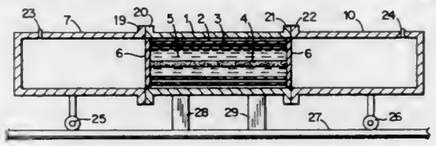
the connection device comprising said high explosive charge for connection to, and initiation by, said initial shock tube at a position remote from the initiator, and means for holding a plurality of said further shock tubes in close proximity to said high explosive charge whereby said further shock tubes are held by said connection device, said further shock tubes parallel to said initial shock tube where said initial shock tube is connected to the high explosive charge and spaced radially therefrom, and so that any transfer of a detonation from said initial shock tube to the further shock tubes takes place in a direction which is radial relative to the initial shock tube and radial relative to the further shock tubes.

5,665,933

DEVICE FOR CLADDING TUBES BY MEANS OF AN EXPLOSIVE PROCESS

Ingemar Persson, Gyttorp, Sweden, assignor to B Omentum Leasing AB, Saltsjobaden, Sweden

PCT No. PCT/SE93/00209, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO93/17825, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 10, 1993, Ser. No. 302,686
Claims priority, application Sweden, Mar. 11, 1992, 9200751
Int. Cl.[6] F42D *3/00;* B21C *1/00*
U.S. Cl. 102—333 5 Claims



1. A device for internally cladding an outer tube with an inner tube by means of an explosion process, said device comprising: an

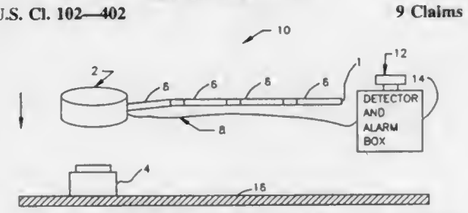
outer tubular fixture in which a workpiece in the form of the outer tube and the inner tube is inserted; a closed expansion chamber connected with at least one end of the tubular fixture; a first sealing cap of easily destroyed material is located between the expansion chamber and the workpiece and a second sealing cap is located at an opposite end of the tubular fixture, said sealing caps provided to retain a liquid pressure-transmitting medium in the inner tube prior to detonating an explosive substance within the inner tube (3).

5,665,934

ARMED-STATE DETECTOR FOR ANTITANK MINES

John E. B. Tuttle, Falls Church, Va.; Neal Tesny, Ellicott City, Md., and Thomas J. Bock, Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 31, 1996, Ser. No. 700,747
Int. Cl.[6] B63G *9/00*
U.S. Cl. 102—402 **9 Claims**



1. A device to determine the state of the fuze of a land mine comprising:
- means for detecting the presence of a magnetic field being radiated by the fuze of said mine;
- means for processing said detected magnetic field so as to indicate the state of the fuze of said land mine.

5,665,935

CAST PRIMER AND SMALL DIAMETER EXPLOSIVE COMPOSITION

Donald M. Stromquist, Salt Lake City, and Boyd J. Wathen, Lehi, both of Utah, assignors to Dyno Nobel Inc., Salt Lake City, Utah

Continuation of Ser. No. 790,340, Nov. 12, 1991, abandoned. This application Feb. 22, 1994, Ser. No. 200,819
Int. Cl.[6] C06B *29/08*
U.S. Cl. 149—83 **20 Claims**

1. A cast, solid explosive composition for use as a primer and a small diameter explosive, consisting essentially of a cast, solid, cured initially pourable mixture of at least one liquid water-soluble polyhydric alcohol of low volatility and dry sodium perchlorate oxidizer salt;
- wherein the cast, cured, solid composition can be detonated with the explosive power of a No. 8 blasting cap.

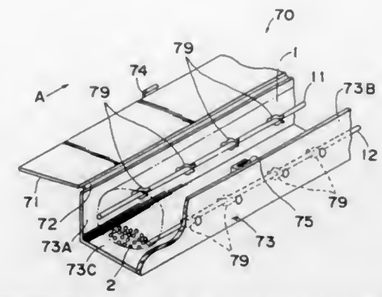
5,665,936

WIRE SPACING DEVICE

Naohito Sawamura, and Yoshihiro Kumazawa, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Division of Ser. No. 981,257, Nov. 25, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 322,360
Claims priority, application Japan, Nov. 25, 1991, 3-096489 U; Nov. 27, 1991, 3-097449 U
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—32 **3 Claims**

1. A wire spacing device in combination with an electric wire harness, said electric wire harness comprising a first electric wire



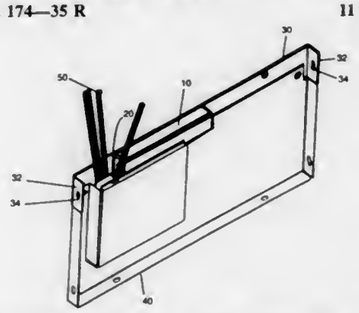
for transmitting a first signal having a first power, a second electric wire for transmitting a second signal having a second power which is higher than said first power and which generates an electromagnetic field, and a plurality of additional electric wires, said wire spacing device comprising:
- a housing means having a first wall, a second wall connected with and perpendicular to said first wall, and a third wall connected with and perpendicular to said first wall so as to oppose said second wall with a predetermined clearance therebetween for accommodating said wire harness therein, said first, second and third walls extending in a first direction;
- a first hold means provided on said second wall for holding said first electric wire; and
- a second hold means provided on said third wall for holding said second electric wire, whereby when said wire harness is accommodated in said wire spacing device, said first and second electric wires are held by said first and second hold means, respectively, and are separated by a predetermined distance, thereby to protect said first electric wire from the electromagnetic field of said second electric wire.

5,665,937

SCSI STRAIN RELIEF BULKHEAD WITH EMI SHIELDING

Paul T. Tirrell, Uxbridge, Mass., assignor to EMC Corporation, Hopkinton, Mass.

Filed Dec. 29, 1995, Ser. No. 580,740
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 R **11 Claims**



1. An apparatus for providing EMI shielding and adjustable strain relief for a plurality of data cables connected to printed circuit boards mounted in a housing, comprising:
- a conductive bracket capable of being attached to said housing, said conductive bracket being formed of a substantially rigid material and having an inner wall;
- a conductive guide track, permanently attached to said inner wall of said conductive bracket and being formed from a substantially rigid material extending away from said inner

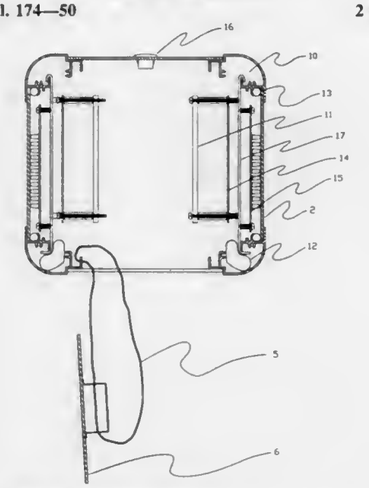
wall perpendicularly for a first specified distance, and then curved at substantially a 90 degree angle to form at least one flange extending horizontally in parallel to said inner wall, thus forming a cable opening between said inner wall and said flange of a predetermined size that is less than the diameters of said data cables;
- a conductive vise slidably mounted on said flange of said conductive guide track and having a motion impelling device permitting said vise to move forward and backward on said flange; and
- a conductive cover panel capable of being removably attached to said conductive bracket and said housing so that said data cables may be inserted through said cable opening, so that after said conductive cover panel is attached to said bracket and said housing, said conductive vise may be moved against said data cables, compressing said data cables into contact with each other, with said conductive bracket, with said conductive cover panel and with said conductive vise, thus providing both a strain relief and an EMI shield for said data cables.

5,665,938

ELECTRONIC DISPLAY ENCLOSURE

Jerry A. Boshear, 1530 Crocker St., Simi Valley, Calif. 93065, and Charles R. Smiley, 18351 Blackhawk St., Northridge, Calif. 91326

Filed Jul. 21, 1994, Ser. No. 278,161
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—50 **2 Claims**



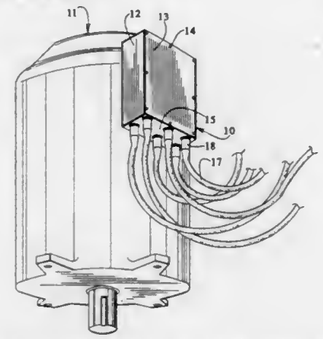
1. A display enclosure comprising:
- four linear, elongated extrusions oriented in parallel juxtaposition, and forming four corners of the enclosure, the four extrusions mutually interconnected at their ends by a pair of opposing end plates;
- a top plate, a bottom plate and at least one filter lens, each secured between two of the extrusions for enclosing the enclosure;
- at least one electronic sub-assembly mounted and positioned within the enclosure behind the at least one lens, for viewing the at least one sub-assembly therethrough, wherein the corners of the enclosure each provide a lip, the at least one electronic sub-assembly being hooked over at least one of said lips and frictionally engaged with an opposing at least one of said lips for rigidly mounting the at least one sub-assembly therebetween.

5,665,939

METHOD AND QUICK-DISCONNECT APPARATUS FOR A THREE-PHASE MOTOR

Glenn F. Jorgensen, Ridgewood, N.J., and Michael W. Kelly, Joliet, Ill., assignors to Power House Tool, Inc., Joliet, Ill., and JNT Technical Services, Inc., Little Ferry, N.J.

Filed Nov. 4, 1994, Ser. No. 336,099
Int. Cl.[6] H02G *3/18*
U.S. Cl. 174—50.52 **12 Claims**



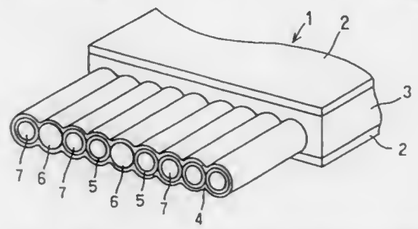
1. A quick-disconnect apparatus for a high voltage, high amperage three-phase motor, comprising:
- a junction box having a first plurality of quick-disconnect receptacles;
- a second plurality of bus bars electrically connecting said quick-disconnect receptacles into groups; and
- a third plurality of power cables individually connected at a first end to said motor and at a second end to said second plurality of bus bars.

5,665,940

FLAT CABLE

Shigeki Chimura, Kariya, and Masato Kamino, Toukai, both of Japan, assignors to Nippondenso Co., Ltd, Kariya, Japan

Filed Jun. 6, 1995, Ser. No. 468,562
Claims priority, application Japan, Jul. 1, 1994, 6-150957; Nov. 9, 1994, 6-275235
Int. Cl.[6] H01B *7/02*
U.S. Cl. 174—116 **15 Claims**



1. A flat cable for connecting terminals of a plurality of different electric devices, said flat cable comprising:
- a plurality of conductive wires disposed in a flat board shape, each of said conductive wires having a same value of electric resistance;
- at least one insulating wire interposed between said conductive wires for dividing said conductive wires into a plurality of channels to have values of electric resistance specific to said electric devices to be connected and at least one of said channels has a resistance value different from another of said channels; and
- a holder member for holding said conductive wires and said at least one insulating wire in a flat board shape.

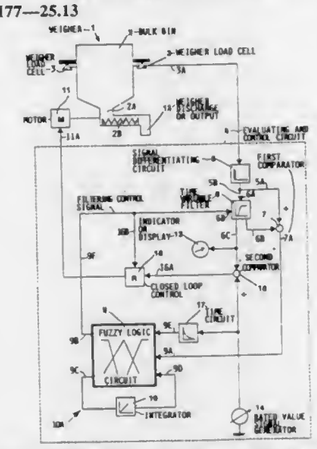
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5,665,941

METHOD AND APPARATUS FOR FILTERING OUT SIGNAL COMPONENTS FROM OUTPUT SIGNALS OF A DIFFERENTIAL DOSING SCALE USING A FUZZY LOGIC FILTER

Josef Wehhofer; Hans Werner, and Volker Tews, all of Darmstadt, Germany, assignors to Carl Schenck AG, Darmstadt, Germany

Filed Mar. 18, 1994, Ser. No. 210,894
Claims priority, application Germany, Mar. 22, 1993, 43 09 109.1
Int. Cl.[6] G01G *13/24;11/08*
U.S. Cl. 177—25.13 14 Claims



1. A method for filtering out measurement falsifying signal components from measured output signals of a differential dosing scale, comprising the following steps:

(a) measuring scale output signals from said scale to provide values that include variations representing said measurement falsifying signal components,

(b) processing said values in accordance with fuzzy logic rules by allocating different sizes of said values to sets of values representing the type and size of a disturbance or interference that causes said measurement falsifying signal components,

(c) producing a filter control signal from said value sets,

(d) passing said measurement falsifying signal components through a filter (6) having a controllable variable time response characteristic for filtering out said measurement falsifying signal components, and

(e) controlling said variable time response characteristic of said filter (6) in response to said filter control signal for imposing a time variable filtering degree.

5,665,942

OPTICAL-SCANNING SYSTEM EMPLOYING LASER AND LASER SAFETY CONTROL

Guy L. Williams, Yamhill; Timothy A. Jenness, Beaverton, and Scott E. Wilson, Sherwood, all of Oreg., assignors to Microfield Graphics, Inc. (Softboard, Inc.), Portland, Oreg.

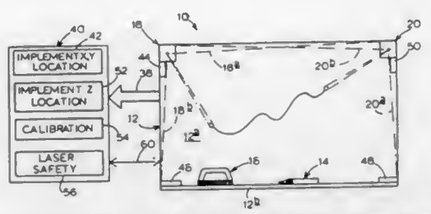
Division of Ser. No. 148,660, Nov. 5, 1993. This application Aug. 16, 1995, Ser. No. 516,434
Int. Cl.[6] G08C *21/00;* H01S *3/10;* G02B *5/32;* G02F *1/29*
U.S. Cl. 178—18 5 Claims

1. In an optical-scanning system

a light-beam source in the form of a laser,

a power-operated, rotational scanning instrumentality positioned adjacent said source and operable, with rotation, to scan a beam from the source in successive scanning sweeps through a scanning zone,

system-monitoring laser safety structure operatively and informationally connected, respectively, to said source and to said



instrumentality, operable, in response to the currently understood operational status of said instrumentality, to alter accordingly the effective power output of said source, and

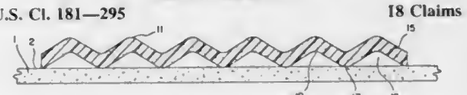
duty-cycle substructure which is responsive to information regarding instrumentality angular position to create a power-flow duty cycle for said source which is less than 100-percent, whereby the source is powered at one selected operating level during the time of a scanning sweep, and powered at another, lower, selected sleep level between successive scanning sweeps.

5,665,943

NESTABLE SOUND ABSORBING FOAM WITH REDUCED AREA OF ATTACHMENT

Peter D'Antonio, Upper Marlboro, Md., assignor to RPG Diffusor Systems, Inc., Upper Marlboro, Md.

Filed Jun. 15, 1995, Ser. No. 490,898
Int. Cl.[6] E04B *1/82*
U.S. Cl. 181—295 18 Claims



1. A sound absorbing panel for installation on a flat wall surface, comprising:

a) a sound absorbing panel defining an area of coverage over a wall surface and having a front surface and a rear surface, said rear surface including at least one area defining, along with a flat wall surface on which said panel is attached, a chamber comprising a variable depth air cavity with said at least one area spaced from said flat wall surface, said cavity enhancing sound absorption;

b) said rear surface having an attachment surface for attaching said panel to a wall surface, said attachment surface defining a small percentage of said area of coverage of said panel, said one area being relatively large in area as compared to an area of said attachment surface;

c) said front surface defining a surface configuration enhancing sound absorption;

d) said panel being made of a fire-resistant non-fibrous foam material having a Class A rating as defined by the 1991 National Fire Protection Association Life Safety Code Section 6-5.3.2.

5,665,944

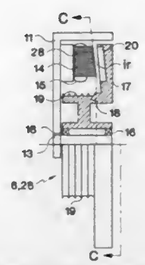
ELEVATOR MACHINERY

Esko Aulanko, Kerava, and Harri Hakala, Hyvinkää, both of Finland, assignors to Kone Oy, Helsinki, Finland

Filed Jun. 28, 1994, Ser. No. 266,696
Claims priority, application Finland, Jun. 28, 1993, 932976; Dec. 28, 1993, 935908
Int. Cl.[6] B66B *1/00;* H02K *7/00;11/00*
U.S. Cl. 187—277 25 Claims

20. Elevator machinery comprising:

a motor provided with a frame plate, at least one bearing, a shaft, at least one stator with a winding and a rotating disc-shaped rotor with an air gap therebetween, the air gap being formed by faces of the stator and rotor which are at least in



part non-perpendicular to the shaft such that at least a portion of the air gap is inclined with respect to the shaft and such that only one air gap is provided in the motor, the stator forming a non-continuous semicircular sector; and

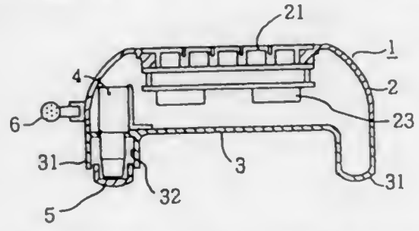
at least one traction sheave for moving elevator ropes, the at least one traction sheave being provided with rope grooves, the at least one traction sheave being joined with the rotor and having a diameter that is smaller than the diameter of the rotor.

5,665,945

PORTABLE CONTROLLER WITH DEADMAN SWITCH

Mikio Oshima, Fukuoka, Japan, assignor to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

PCT No. PCT/JP95/01862, § 371 Date May 10, 1996, § 102(e) Date May 10, 1996, PCT Pub. No. WO96/09147, PCT Pub. Date Mar. 28, 1996
PCT Filed Aug. 7, 1995, Ser. No. 640,960
Claims priority, application Japan, Sep. 19, 1994, 6-251406
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—1 R 1 Claim



1. A portable controller in which a finger fitting portion is provided at least at one side edge of a back plate of a casing, and a deadman switch which is turned OFF when no pressure is applied to the finger fitting portion, is turned ON by pressing force (pressure) when the finger fitting portion is gripped, and is turned OFF when the finger fitting portion is pressed by pressing force (pressure) greater than the pressing force (pressure) when the finger fitting portion is gripped,

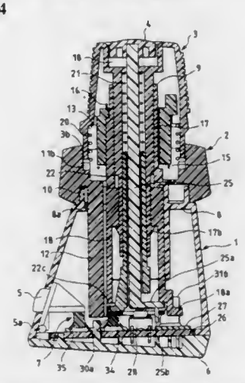
wherein the deadman switch comprises a pressing plate which can be inserted into a recessed portion provided at the finger fitting portion or can be withdrawn therefrom, a shaft having shape of an offset provided at the pressing plate, a dog plate fitted over the offset portion of the shaft and having a plurality of holes at the circumferential edge of the shaft, a plurality of bosses inserted into the plurality of holes of the dog plate, a spacer in contact with the respective top portions of the bosses and fitted over the shaft, a spring provided at the shaft outer circumferential portion so that one end is supported in the state pressed onto a fixed portion provided at the shaft front end side, and the other end presses the spacer, and a three-point type limit switch attached on the back plate, and such that when the dog is engaged with the dog plate so that the limit switch is in free state, the limit switch is turned OFF, when the dog plate slightly pushes the dog, the limit switch is turned ON, and when the dog plate comes into contact with the spacer to push the dog more deeply against spring force of the spring, the limit switch is turned OFF.

5,665,946

COMBINED-OPERATION TYPE SWITCHING APPARATUS INCLUDING ROTATIONAL AND PUSH OPERATORS

Akio Nishijima; Takashi Asakawa, both of Iwaki, and Shuichi Matsumoto, Kanagawa, all of Japan, assignors to Alps Electric Co., Ltd., and Sony Corporation, both of Tokyo, Japan

Filed Oct. 5, 1995, Ser. No. 539,644
Claims priority, application Japan, Oct. 7, 1994, 6-244228
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—4 7 Claims



1. A combined-operation type switching apparatus comprising:

a housing including a guide tube;

an operation unit mounted on the housing, the operation unit including a shaft having an end inserted into the housing through the guide tube, the operation unit being movable along an axis of the shaft relative to the housing from a first axial position to a second axial position, the distance between the first and second axial positions being an operating distance, the operation unit also being rotatable around the axis of the shaft relative to the housing;

a first resilient member for biasing the operation unit in a direction of the axis of the shaft into the first axial position;

a drive unit movably attached to the end of the shaft such that the drive unit is slidable along the axis of the shaft relative to the operation unit, the drive unit including a pressing portion;

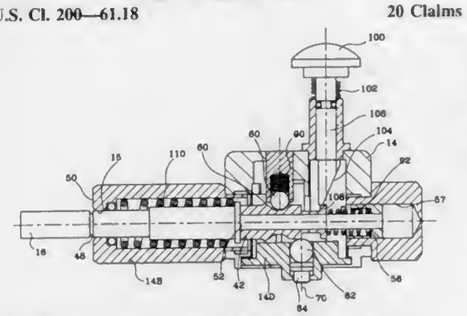
a second resilient member for biasing the drive unit away from the operation unit; and

a push switch having a fixed contact fixedly mounted to the circuit board located within the housing, the push switch also having movable contact which is movable from a non-actuated position away from the fixed contact to an actuated position in which the movable contact abuts the fixed contact, a distance between the non-actuated position and the actuated position being a stroke length of the push switch;

wherein movement of the operation unit along the axis of the shaft from the first axial position to the second axial position causes the pressing portion of the drive unit to actuate the push switch by pushing the movable contact against the fixed contact; and

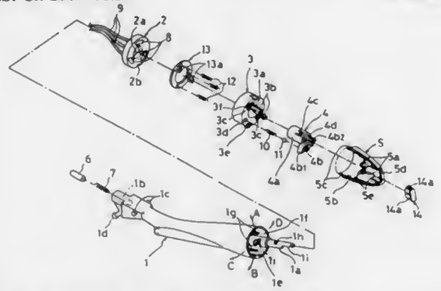
wherein the operating distance of the operation unit is greater than the stroke length of the push switch such that actuation of the push switch occurs before the operation unit is moved into the second axial position, and subsequent movement of the operation unit toward the second axial position after actuation of the push switch causes compression of the second resilient member, thereby causing the pressing portion of the drive unit to reliably maintain actuation of the push switch when the operation unit is in the second axial position.

5,665,947
CABLE ACTUATED SWITCHING MECHANISM WITH MECHANICAL SNAP ACTION CAPIBILITY AND BROKEN CABLE MONITORING CAPABILITY
David E. Falcon, Oak Creek, Wis., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Dec. 20, 1995, Ser. No. 575,568
Int. Cl.[6] H01H *17/00*
U.S. Cl. 200—61.18 20 Claims



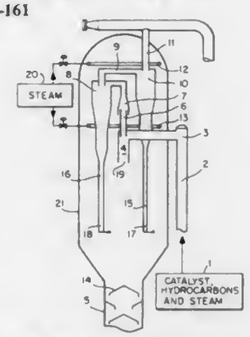
1. A cable actuated switching mechanism, comprising:
a housing structure;
a shaft slideably disposed within said housing structure, said shaft being movable relative to said housing structure along a first path in a direction parallel to an axial centerline of said shaft in response to a force exerted by a cable attached to an end of said shaft;
a cam structure having an opening formed therethrough, said opening being shaped to receive said shaft therein in slideable relation with said cam structure;
a switch operator which is movable along a second path between a first position and a second position in response to movement of said cam structure in either a first direction or a second direction parallel to said first path; and
means for locking said switch operator in said second position after said switch operator moves into said second position.

5,665,948
AUTOMOBILE KNOB SWITCH
Takahiro Oikawa, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan
Filed Apr. 5, 1996, Ser. No. 628,300
Claims priority, application Japan, Apr. 11, 1995, 7-110060
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—61.54 12 Claims



1. An automobile knob switch, comprising:
an operating lever having a shaft rod;
a terminal plate inserted into an opening part of said operating lever, said terminal plate having stationary contact plates formed thereon;
a moderator having a cylinder part;
a movable plate having a movable contact plate that contacts the stationary contact plates formed on said terminal plate, a through hole through which the cylinder part of said moderator is inserted, and latching pieces;
said moderator having an elastic claw with which the moderator is fitted onto the shaft rod; and
a knob having latching parts to which the latching pieces of said movable plate are engaged.

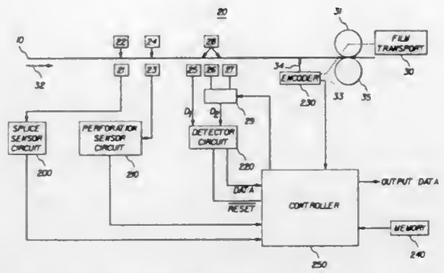
5,665,949
CATALYTIC CRACKING PROCESS FOR HYDROCARBONS
Jose Mozart Fusco, Niteroi; Jose Geraldo Furtado Ramos, Rio de Janeiro; Valmor Neves Vieira, Sao Mateus do Sul, and Eduardo Cardoso de Melo Guerra, Petropolis, all of Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil
Division of Ser. No. 305,399, Sep. 13, 1994, Pat. No. 5,569,435. This application Jul. 26, 1995, Ser. No. 507,558
Claims priority, application Brazil, Sep. 13, 1993, 9303773
Int. Cl.[6] C10G *11/00*
U.S. Cl. 208—161 6 Claims



1. A catalytic cracking process for hydrocarbons comprising the following steps:
(a) mixing a hydrocarbon feed stock with a suspension of catalyst particles in a catalytic cracking zone;
(b) cracking said feed stock in a riser;
(c) feeding the reacted suspension into a cyclone separator system to bring about separation of the gas phase from the particle phase, a gas stream being led into the fractioning system through an outlet pipe;
(d) collecting the particle phase in a smaller diameter vessel lying in a bottom part of a separator vessel for directing the particle phase into a regenerating zone;
(e) purging stagnated parts of said separator vessel by injecting a purge fluid through purge fluid injecting devices; and
(f) stripping catalysts in said separator vessel;
wherein said feeding step (c) of the reacted suspension takes place directly from the riser to an unconfined cyclonic device comprising a diplegless cyclone having an open lower mouth and an upper annular space between concentric pipes which opens into said separator vessel and wherein in said purging step (e) the purge flow through purge fluid injecting devices is adjusted so that all of the purged material, together with the stripping fluid, flows from within the separator vessel through the annular space between the concentric pipes.

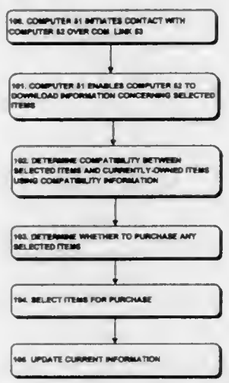
5,665,950
FAT BIT BAR CODE READER
Bruce E. Rottner, Rochester; Kenneth Alan Lindsay, Jr., Brockport, and William Joseph Clare, Bergen, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 30, 1995, Ser. No. 453,434
Int. Cl.[6] G06F *17/00*
U.S. Cl. 235—375 17 Claims

1. A reader for reading fat bits on film in the form of a strip of film with one or more frames having a boundary edge with sufficient space containing one or more fat bits for each frame, said reader comprising:



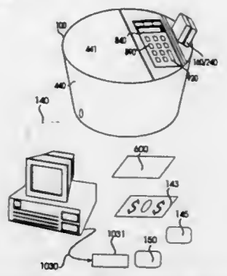
a light source for directing light through said strip,
a pair of optical sensors for receiving light from said light source passing through said boundary edge of said strip, said sensors each providing an output signal corresponding to the intensity of said received light representative of the presence and absence of said fat bit on said boundary edge, and said sensors are spaced from each other,
means for moving said strip so that said boundary edge of said strip passes along a path across said pair of sensors and between said light source and said sensors, and
means responsive to said output signals of both said sensors for measuring the width of each said fat bit as said strip passes said sensors, said measuring means comprising means responsive to the distance said strip moves by said moving means for determining a displacement of said strip corresponding to the width of each said fat bit.

5,665,951
CUSTOMER INDICIA STORAGE AND UTILIZATION SYSTEM
Gary H. Newman, 115 N. Branch Rd., and Sumin Tchen, 188 Independence Rd., both of Concord, Mass. 01742
Filed Feb. 8, 1996, Ser. No. 597,436
Int. Cl.[6] G06F *17/00*
U.S. Cl. 235—375 28 Claims



1. A system for assisting a customer, the system comprising:
A. machine-readable currently-owned item indicia store for storing indicia identifying at least one selected characteristic of at least one item currently owned by the customer; and
B. a compatibility determination subsystem for generating a compatibility assessment in response to the currently-owned item indicia stored by said currently-owned item indicia store, indicia identifying at least one selected characteristic for at least one item provisionally selected by the customer, and compatibility parameter information identifying compatibilities among various types of indicia.

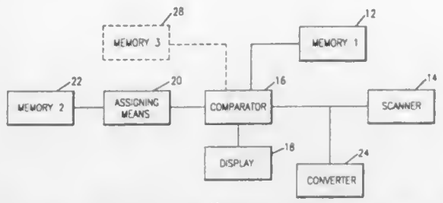
5,665,952
METHOD OF STREAMLINING THE ACKNOWLEDGEMENT OF A MULTIPLICITY OF CONTRIBUTION OR GIFT COMMITMENTS MADE AT A PLURALITY OF REMOTE LOCATIONS TO DISTINCT FUND-RAISING ORGANIZATIONS AND GIFT RECIPIENTS AND SYSTEM THEREFOR
Witold A. Ziarno, 4519 S. St. Louis Ave., Chicago, Ill. 60632
Continuation-in-part of Ser. No. 318,914, Oct. 5, 1994, and Ser. No. 555,506, Nov. 8, 1995, which is a continuation of Ser. No. 127,770, Sep. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 117,909, Sep. 7, 1993, abandoned, and Ser. No. 533,338, Sep. 25, 1995, which is a continuation-in-part of Ser. No. 194,204, Feb. 8, 1994, abandoned, Ser. No. 199,072, Feb. 8, 1994, Pat. No. 5,506,393, and Ser. No. 402,622, Mar. 13, 1995. This application Sep. 21, 1995, Ser. No. 508,743
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 18 Claims



1. A method of streamlining the processing and acknowledgment of a plurality of contribution or gift commitments, comprising the steps of,
dispersing by or among a crowd of prospective contributors or gift givers located at a plurality of remote locations a plurality of portable non-lane monetary contribution or gift acceptance devices for the entry and recordation of data inputs consisting essentially of monetary contribution or gift commitments to obtain entered and recorded monetary contribution or gift commitment data inputs batch off-loading of said data inputs from said non-lane monetary contribution or gift acceptance devices to a data input receiving device whereby recordation of each of the contributions is uninterrupted by verification of validation and/or authorization, automatically correlating said entered and recorded monetary contribution or gift commitment data inputs with address data of respective contributors or gift givers making monetary contribution or gift commitments to obtain data sets, communicating said data sets to a central processing location device to obtain address correlated data, and acknowledging the respective contribution or gift commitments data inputs from a remote data processing location device from where the contribution or gift commitments were entered,
in which a multiplicity of contribution or gift commitments made at a plurality of remote locations, to distinct gift recipients or fund-raising organizations are readily acknowledged.

5,665,953
SELF-CONTAINED PERSONAL DATA COLLECTOR FOR REDEEMING COUPONS
Anthony Mazzamuto, Tarzana, and Ricardo L. Lozano, Sherman Oaks, both of Calif., assignors to Lobar Code Inc.
Filed Feb. 14, 1996, Ser. No. 601,265
Int. Cl.[6] G06K *15/00*
U.S. Cl. 235—383 28 Claims

1. A self-contained personal data collector for redeeming product coupons having product code information in machine readable form thereon, the data collector comprising:



(a) a first memory device containing a product coupon list having a plurality of entries, each entry including product code information for a product;
(b) a scanner for scanning machine readable product code information from a coupon;
(c) a comparator for comparing the scanned product code information with the entries of the product coupon list in the first memory device to find a match;
(d) a display for displaying the matched product code information;
(e) means for assigning a unique identifier to the matched product code information; and
(f) a second memory device for storing a list of matched product code information and corresponding unique identifiers as individual item entries, wherein the item entries can be retrieved and tallied by a register at a product purchase location.

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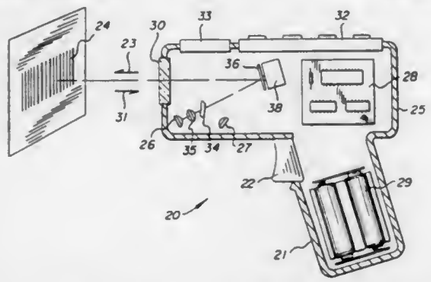
ELECTRO-OPTICAL SCANNER MODULE HAVING DUAL ELECTRO-MAGNETIC COILS

Simon Bard, Stony Brook; Askold Strat, Patahague, and Paul Dvorkis, Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of Ser. No. 302,071, Sep. 6, 1994, Pat. No. 5,486,944, which is a continuation-in-part of Ser. No. 981,448, Nov. 25, 1992, Pat. No. 5,478,997, which is a continuation-in-part of Ser. No. 897,835, Jun. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 506,674, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 260,692, Oct. 21, 1988, Pat. No. 4,933,538. This application Jan. 22, 1996, Ser. No. 589,350

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **8 Claims**



1. A scanner module for scanning encoded indicia with light, comprising;
a) a support;
b) a movable assembly including an annular frame and a scanner component for directing light therefrom, a permanent magnet for generating a permanent magnetic field and jointly mounted with the scanner component, and means including a flexible, resilient member having one end connected to the support, and an opposite end connected to the frame for cantilever mounting the permanent magnet and the scanner component on the support for joint oscillating movement; and
c) an energizable electromagnetic coil for generating a magnetic field that interacts with said permanent magnetic field to alternatively attract and repel the permanent magnet and the scanner component to direct light from the scanner component to move in a one-dimensional scan pattern across the encoded indicia.

5,665,955

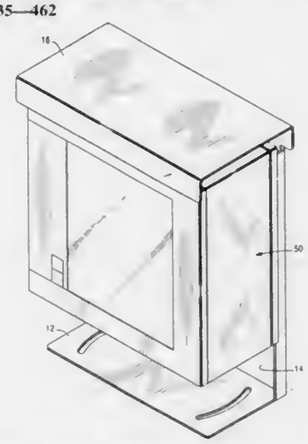
VERTICALLY MOUNTED BAR CODE SCANNER ASSEMBLY

Donald A. Collins, Jr., Duluth, and Rex A. Aleshire, Buford, both of Ga., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 392,567, Feb. 23, 1995, abandoned. This application Oct. 17, 1996, Ser. No. 733,349

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **3 Claims**



1. A bar code scanner assembly comprising:
a bar code scanner having a generally box-like housing including a back surface and a front surface containing a scanning aperture which emits scanning light beams;
wherein the scanner is designed to be mounted in a generally horizontal orientation within a checkout counter, such that the front surface of the housing is flush with a top surface of the checkout counter, and in a substantially vertical orientation on top of the checkout counter, such that the front surface of the housing is generally vertical; and
a mounting bracket including a bottom wall which fastens to the top surface of the checkout counter, and a vertical wall coupled to the bottom wall;
wherein the vertical wall of the mounting bracket couples to the back surface of the housing placing the scanner in the substantially vertical orientation on the checkout counter.

5,665,956

BAR CODE READING AND DATA COLLECTION UNIT WITH ULTRASONIC WIRELESS DATA TRANSMISSION

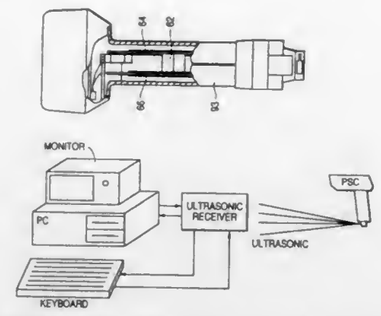
Chay La, Rochester, and Raymond J. Boyd, Holcomb, both of N.Y., assignors to PSC Inc., Webster, N.Y.

Filed Oct. 31, 1994, Ser. No. 331,434

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **12 Claims**

1. A bar code scanner, comprising:
an ultrasonic sensor configured to transmit ultrasonic frequencies and to receive ultrasonic frequencies;



an amplifier connected to the ultrasonic sensor and configured to amplify the received ultrasonic frequencies as an amplified signal;
a demodulator connected to the amplifier and configured to demodulate the amplified signal as a demodulated signal;
a low pass filter connected to the demodulator and configured to filter out any frequency components of the demodulated signal above a predetermined frequency and to output a filtered signal as a result thereof;
a comparator connected to the low pass filter and configured to determine if the filtered signal exceeds a predetermined voltage threshold;
an ultrasonic driver connected to the ultrasonic sensor and configured to receive digital data and to convert the digital data into an ultrasonic signal that is provided to the ultrasonic sensor to be transmitted over-the-air; and
a processor connected to the comparator and to the ultrasonic driver, the processor configured to output the digital data to be transmitted over-the-air to the ultrasonic driver, the processor configured to receive the comparison result from the comparator in order to determine a time period in which no ultrasonic signals are detected in order to transmit the digital data as the ultrasonic signal over-the-air.

5,665,957

LENS DEVICE COMPRISING LIGHT BLOCKING MEANS AND AN OPTICAL PICKUP APPARATUS USING THE LENS DEVICE

Chul-woo Lee; Dong-ho Shin, both of Seoul; Kyung-hwa Rim, Suwon; Chong-sam Chung, Sung Nam; Kun-ho Cho, Suwon; Pyong-yong Seong; Jang-hoon Yoo, both of Seoul, and Yong-hoon Lee, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

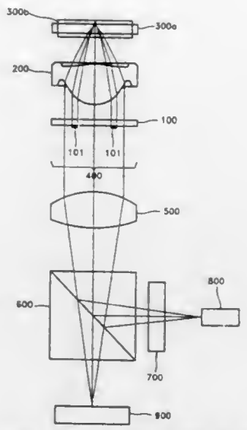
Filed May 1, 1996, Ser. No. 640,553

Claims priority, application Rep. of Korea, Aug. 30, 1995, 95-27715; Sep. 25, 1995, 95-31679; Oct. 4, 1995, 95-33914; Jan. 25, 1996, 96-1605; Feb. 14, 1996, 96-3605

Int. Cl.[6] G01S *1/20;* **H01J** *3/14;* **G11B** *7/00*

U.S. Cl. 250—201.5 **41 Claims**

1. An optical pickup device comprising:
a light source;
an objective lens provided along a light path from said light source projecting light onto a disc, said objective lens focussing light into a focal zone and having a predetermined effective diameter; and
light controlling means provided in the light path of said lens for preventing light in an intermediate axial region of said light path from reaching said focal zone, said intermediate axial region being located between a near axial region which includes a center of said light path and a far axial region located radially outward from said intermediate region, said light controlling means permitting light in said near and far regions of said light path to reach said focal zone.



5,665,958

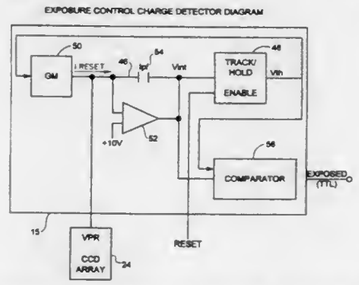
METHOD AND APPARATUS FOR EXPOSURE CONTROL IN LIGHT-BASED MEASUREMENT INSTRUMENTS

Eric P. Rudd, Hopkins, and Timothy A. Skunes, Mahtomedi, both of Minn., assignors to CyberOptics Corporation, Golden Valley, Minn.

Division of Ser. No. 232,738, Apr. 25, 1994, Pat. No. 5,519,204. This application Jan. 17, 1996, Ser. No. 587,399

Int. Cl.[6] H04N *5/217;* **G11C** *27/04;* **G01J** *1/32*

U.S. Cl. 250—205 **2 Claims**



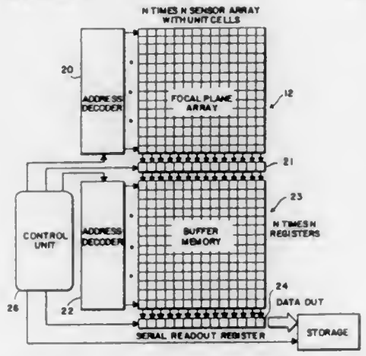
1. A circuit for detecting the operating state of an anti-blooming circuit associated with a CCD array, the CCD array having an operating range including a normal operating range and a saturated operating range and the anti-blooming circuit being adapted for maintaining the CCD array within the normal operating range when said CCD array is exposed to light, by draining excess charge generated by the CCD array during a light exposure cycle, comprising:
integrator means operably coupled to file said anti-blooming circuit for accumulation of said excess charge;
comparator means operably coupled to said integrator means for determining when said excess charge reaches a predetermined threshold and generating a signal to end said exposure cycle;
leakage current differentiating means operably coupled to said integrator means for differentiating said excess charge from leakage currents; and
integrator reset means for resetting said integrator when said exposure cycle is ended.

5,665,959

SOLID-STATE IMAGE SENSOR WITH FOCAL-PLANE DIGITAL PHOTON-COUNTING PIXEL ARRAY

Eric R. Fossum, La Crescenta, and Bedabrata Pain, Los Angeles, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Adminstration, Washington, D.C.

Continuation-in-part of Ser. No. 372,640, Jan. 13, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 673,014
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 4 Claims



1. A solid-state photon-counting imaging device for ultralow light level detection comprising:

a layer of photosensitive material;

a source of reference potential;

a source of reference voltage charge;

an N×V array of photodetector diodes arranged in rows and columns in said layer of photosensitive material where each separate number N represents an integral number of rows and columns of photodetector diodes in said array and the number N of rows is independent of the number N of columns, each photodetector diode having a first terminal and a second terminal, said first terminal of every photodetector diode being connected to said source of reference potential;

control means for generating separately cyclical reset clock pulses and select clock pulses separated in time by a predetermined interval;

an array of high gain, low noise unit cells, one unit cell for each photodetector diode in every row of said N×N array of photodetectors in a VLSI focal-plane array on said layer of photosensitive material, each unit cell having an input terminal, a high-gain voltage amplifying means, a select switch, and an output terminal connected in series, and in that order, said input terminal of each unit cell being connected to said second terminal of a respective one of said photodetector diodes, and each unit cell further having a reset switch responsive to said reset clock pulses for resetting a voltage charge of input capacitance at said input terminal to a reference voltage charge common to all of said unit cells;

an array of digital counters, one digital counter for each photodetector diode in at least one row, each digital counter connected to said output terminal of a respective cell unit for counting voltage pulses occurring at said output terminal;

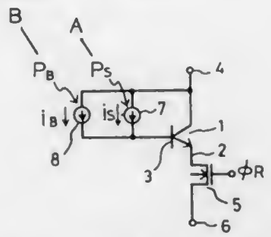
whereby each unit cell is prepared by said reset pulse for a possible event of a photon incident on a respective one of said photodetector diodes producing a photoelectron increased voltage charge of said input capacitance, said increased voltage charge being automatically amplified by said voltage amplifying means in order for it to be sampled through said select switch in response to said select pulse closing said select switch, thereby producing at said output terminal of a unit cell connected to a respective photodetector diode a voltage pulse to be counted by a respective one of said digital counters.

5,665,960

PHOTOELECTRIC CONVERTER DEVICE AND METHOD OF MANUFACTURING THE SAME

Satoshi Machida; Yukito Kawahara; Masahiro Yokomichi, and Yoshikazu Kojima, all of Chiba, Japan, assignors to Seiko Instruments Inc., Chiba, Japan

Filed Mar. 20, 1996, Ser. No. 618,837
Claims priority, application Japan, Mar. 22, 1995, 7-063229
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—214.1 5 Claims



1. In a photoelectric converter device comprising a transistor containing a control electrode region made of a semiconductor of a first conductivity type for accumulating carriers generated by an electromagnetic wave emitted by an object to be detected, a first main electrode region made of a semiconductor of a second conductivity type, and a second main electrode region made of a semiconductor of the second conductivity type, for performing an operation to accumulate the carriers, an operation of reading signals based on the carriers, and an operation of extinguishing the carriers,

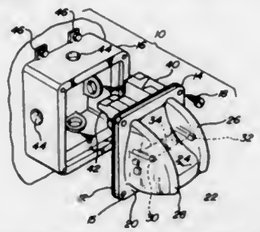
the improvement comprising a means for introducing an electromagnetic wave other than the electromagnetic wave emitted by the object to be detected into said transistor during the accumulating or reading operation.

5,665,961

PHOTOELECTRIC SWITCH FOR USE WITH A MACHINE CONTROL CIRCUIT

Mark C. Matzka, Rochester Hills, Mich., assignor to Break-A-Beam, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 782,420, Oct. 25, 1991, Pat. No. 5,367,158. This application Oct. 26, 1994, Ser. No. 329,521
Int. Cl.[6] G01V *8/00;* H01J *40/14*
U.S. Cl. 250—221 23 Claims



1. A photoelectric switch for use in conjunction with a machine for performing a machining operation and a control circuit responsive to a pair of said photoelectric switches generating an input signal to activate said machine, said control circuit preventing said machine from performing said machining operation unless said control circuit receives an input signal from both of said photoelectric switches within a predetermined period of time, said machine being actuated by an AC electrical power source providing an AC voltage within a predetermined AC voltage range, each photoelectric switch of said pair of photoelectric switches comprising:

a cover having a contoured finger rest surface;

means for generating a light beam above said finger rest surface, said light beam being occluded by an operator placing at least one finger on said finger rest surface;

a relay having an activated state in which it generates said input signal;

means for activating said relay to said activated state in response to said beam being occluded by said at least one finger being placed on said finger rest surface;

means for deactivating said relay in response to the termination of said occlusion of said light beam; and

light beam failure means, responsive to said means for generating a light beam when said means for generating a light beam fails, to output a signal to said relay inhibiting the activation of said relay;

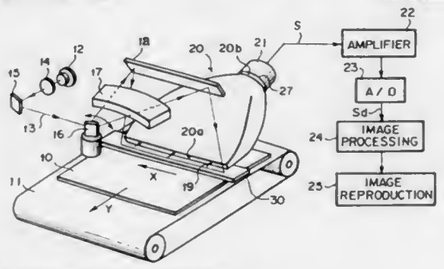
wherein said light beam failure means comprises a light emitting failure circuit electrically connected to said means for generating a light beam and to said relay.

5,665,962

IMAGE READER AND IMAGE RECORDER WITH INTERPOSED PHOTOCHROMIC MATERIAL FOR REDUCING FLARE

Toshihito Kimura, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 15, 1995, Ser. No. 404,455
Claims priority, application Japan, Apr. 19, 1994, 6-080293
Int. Cl.[6] G03B *42/02;* H04N *1/04*
U.S. Cl. 250—226 13 Claims



1. An image recorder comprising:

a first light source for emitting an optical beam for reading purposes that scans a recording material on which an image is recorded;

a photodetector for reading an image by photoelectrically detecting light that has a wavelength differing from that of the optical beam and is emitted from the recording material as a result of the scanning of the recording material; and

a flare suppression material which increases transmissivity upon exposure to the optical beam but decreases the transmissivity upon exposure to the emitted light, the flare suppression material being positioned so as to receive the recording optical beam advancing towards the recording material, wherein the photodetector is positioned so as to receive the emitted light through the flare suppression material.

5,665,963

REFLECTIVE COLOR FILTER FOR COLOR CORRECTION OF PHOTODETECTOR FILTERS

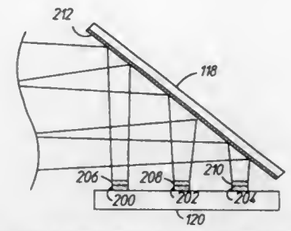
David K. Campbell, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 24, 1996, Ser. No. 590,539
Int. Cl.[6] G01J *3/50*
U.S. Cl. 250—226 3 Claims

1. An optical system comprising:

a photosensitive element;

a first optical filter on the photosensitive element, the first optical filter suppressing light having wavelengths longer than a first wavelength;



a reflective optical filter, adjacent to the photosensitive element, the reflective optical filter suppressing light having wavelengths longer than a second wavelength, the second wavelength shorter than the first wavelength; and

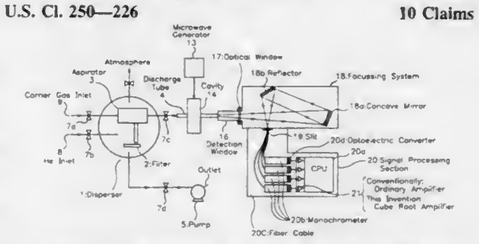
wherein light reflects from the reflective optical filter through the first optical filter onto the photosensitive element, the reflective optical filter thereby preventing light having longer wavelengths than the second wavelength from impinging onto the photosensitive element.

5,665,964

PARTICLE COMPONENT ANALYZING APPARATUS, AND EQUIVALENT PARTICLE DIAMETER MEASURING METHOD USING SAME

Hisao Takahara; Yukihiko Takamatsu, and Yasuhiro Tanibata, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Continuation of Ser. No. 559,456, Nov. 15, 1995, abandoned, which is a division of Ser. No. 329,895, Oct. 27, 1994, Pat. No. 5,510,611. This application Dec. 30, 1996, Ser. No. 775,449
Claims priority, application Japan, Feb. 25, 1994, 94/27740; May 11, 1994, 94/97309
Int. Cl.[6] G01J *3/50*
U.S. Cl. 250—226 10 Claims



1. A method of determining the composition and characteristics of particles comprising a plurality of elements, said method comprising the steps of:

(1) setting a plurality of monochrometers to detect a plurality of different wavelenghts of said plurality of elements;

(2) scanning a filter to draw particles collected thereon;

(3) applying microwave induced plasma to said particles to cause said particles to emit an emission spectrum having a plurality of different wavelenghts indicative of said plurality of elements comprising said particles;

(4) synchronously detecting the plurality of wavelenghts in the emission spectrum of said plurality of elements using said plurality of monochrometer;

(5) counting the number of particulars ones of the synchronously detected plurality of elements in each emission spectrum;

(6) determining a correlated relationship of emission intensity of one element of the synchronously detected plurality of elements in each emission spectrum against emission intensity of one or more other elements of the synchronously detected plurality of element in each emission spectrum; and

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(7) determining existence of said plurality of elements as a compound or mixture, and ratio of elements using said correlated relationship obtained in the prior step.

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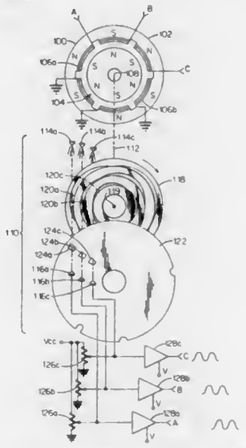
ENCODER APPARATUS AND METHODS EMPLOYING OPTICAL AND GRAPHICAL PROGRAMMING

Ormonde G. Durham, III, Jordanville, N.Y., assignor to Opto Generic Devices Inc., Van Hornesville, N.Y.

Continuation-in-part of Ser. No. 394,473, Feb. 27, 1995, abandoned. This application Sep. 5, 1996, Ser. No. 711,629

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.13 **65 Claims**



1. An optical encoder apparatus for converting cyclic motion of an electro-mechanical machine into an electrical commutation signal having a waveform and a frequency for driving said machine at an operating speed, said apparatus comprising:

photo-detection means for generating an electrical signal in response to a pattern of radiant energy incident on said photo-detection means; and

optical means, optically coupled to said photo-detection means, and configured to be actuated by the cyclic motion of said machine, for modifying the pattern of radiant energy incident on said photo-detection means in accordance with a graphical function as said optical means is actuated by the cyclic motion of said machine,

said optical means including an optical element configured to scan relative to said photo-detection means in accordance with the cyclic motion of said machine, said optical element containing an optically detectable pattern which is optically coupled to said photo-detection means,

said optical means further including aperture means associated with said photo-detection means, for permitting a controlled amount of radiant energy to pass to said photo-detection means,

said aperture means and the pattern of said optical element being defined by said graphical function, said graphical function being derived form the waveform of said commutation signal and defining a relationship between the operating speed of the cyclic motion of said machine and the frequency of said communication signal,

whereby said commutation signal is generated from said photo-detection means as the pattern of said optical element is scanned relative to said aperture means.

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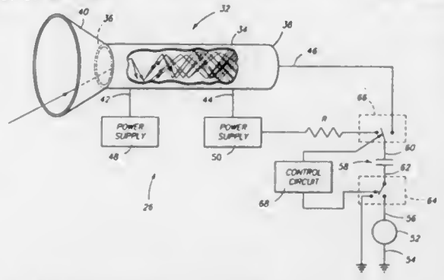
CURRENT MEASURING SYSTEM

David A. Dahl; Anthony D. Appelhans, and John E. Olson, all of Idaho Falls, Id., assignors to Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Filed Sep. 29, 1995, Ser. No. 536,233

Int. Cl.[6] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—281 **21 Claims**



13. A mass spectrometer comprising:

means for ionizing a sample to produce charged fragments including negative ions;

means for separating the charged fragments based on charge to mass ratio;

an analog electron multiplier including a tube, including a first voltage application electrode connected to a first positive voltage, including an ion input horn directly receiving negative ions and directing them into the tube, including a second voltage application electrode connected to a second positive voltage greater than the first positive voltage, and including an output detection electrode;

an electrometer having a first electrode at ground potential, and a second electrode; and

a capacitor having a first electrode electrically connected to the output detection electrode of the electron multiplier and having a second electrode electrically connected to the second electrode of the electrometer, whereby there is no need to employ a dynode external to the electron multiplier to convert negative ions to positive ions.

5,665,967

APPARATUS AND METHOD FOR SURFACE ANALYSIS

Peter A. Coxon, Buxted, and Bruce J. McIntosh, East Grinstead, both of England, assignors to Thermo Instrument Systems Inc., Sunnyvale, Calif.

Filed May 24, 1996, Ser. No. 653,390

Claims priority, application United Kingdom, May 26, 1995, 9510699

Int. Cl.[6] H01J *49/40*

U.S. Cl. 250—287 **12 Claims**

1. Apparatus for the analysis of a surface of a specimen by electron spectroscopy and secondary ion mass spectrometry, said apparatus comprising:

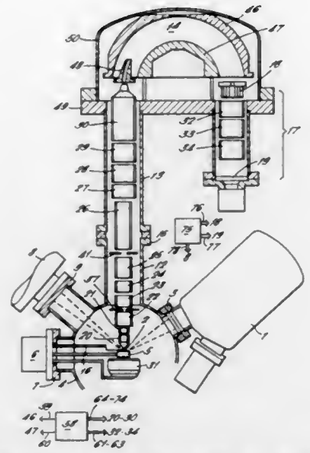
a) first irradiation means for irradiating a specimen to cause said specimen to emit electrons from a surface;

b) second irradiation means for irradiating said specimen and generating therefrom one or more bunches of secondary ions, the secondary ions in each of said bunches having a spread of initial kinetic energies;

c) means for accelerating said secondary ions by passing said secondary ions through a potential gradient;

d) charged-particle detection means for producing an electrical signal indicative of the number of said emitted electrons or said secondary ions which impinge thereon;

e) disposed between said specimen and said charged-particle detection means:



1) means defining one or more linear drift regions which at least some of said electrons, or said ions after passing through said potential gradient, enter and leave without change in direction and in which ions in each of said bunches separate in time according to their velocities; and

2) charged-particle deflection means which charged-particles enter in one direction and leave in another direction, said deflection means having notational entrance and exit planes disposed such that an energy-dispersed electron image of electrons passing through said entrance plane is formed in said exit plane, and in which ions of a given mass-to-charge ratio in each of said bunches separate in time by virtue of the faster ions taking longer paths and therefore having longer transit times, said deflection means including electrodes;

f) charged-particle focusing means for transmitting said electrons or said ions through at least one of said linear drift regions so that at least when electrons are being transmitted a charged-particle image of at lest a part of said surface from which said electrons are emitted is formed at said entrance plane, said focusing means including electrodes;

g) switchable power supply means for supplying electrical potentials to at least some of said electrodes of said charged-particle deflection means and said charged-particle focusing means to enable said deflection means and said focusing means to transmit ions or electrons as required;

h) means, operable when said charged-particle deflection means and said charged-particle focusing means are transmitting ions, for measuring the time taken for each of said ions comprised in said bunches to travel to said charged-particle detection means, thereby determining the mass-to-charge ratio of at least some of the ions emitted from at least a part of said surface; and

i) lens means, operable when said charged-particle deflection means and said charged-particle focusing means are transmitting electrons, for allowing only electrons having a desired range of energies to reach said charged-particle detection means, thereby determining the energy at which at least some of the electrons are emitted from said specimen;

said apparatus being so arranged that the separation in time of ions having the same mass-to-charge ratio during their passage through said linear drift region, due to said spread in initial kinetic energies, is compensated by the different times taken for ions having the same mass-to-charge ratio but different energies to travel through said charged-particle deflection means along their different paths, so that ions of the same mass-to-charge ratio in each of said bunches arrive at said charged-particle detector at the same time.

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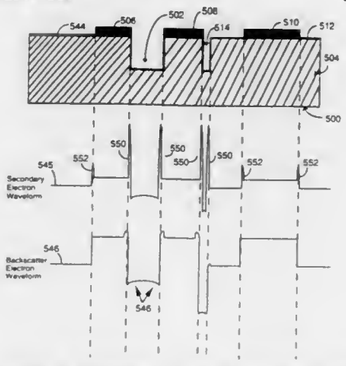
INSPECTING OPTICAL MASKS WITH ELECTRON BEAM MICROSCOPY

Dan Meisburger, San Jose; Alan D. Brodie, Palo Alto,; Zhong-Wei Chen, San Jose; Jack Y. Jau, Fremont, all of Calif., and Brian J. Grenon, Colchester, Vt., assignors to KLA Instruments Corporation, San Jose, Calif.

Continuation of Ser. No. 252,763, Jun. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 889,460, May 27, 1992, abandoned. This application Feb. 26, 1996, Ser. No. 607,191

Int. Cl.[6] H01J *37/26*

U.S. Cl. 250—310 **2 Claims**



1. A system to automatically inspect an optical mask, said system comprising:

an evaporative film coating system to apply a conductive coating to a top surface of said optical mask to produce a conductive optical mask;

a grounding strap to connect said conductive coating of said conductive optical mask to electrical ground;

a field emission electron source to provide an electron beam;

a charged particle beam column to deliver and scan said electron beam from said field emission electron source on a top surface of said conductive coating;

a backscatter electron detector to detect backscattered electrons from said conductive optical mask to generate a backscatter electron waveform as said electron beam scans said conductive optical mask; and

a secondary electron detector to detect secondary electrons from said conductive optical mask to generate a secondary electron waveform as said electron beam scans said conductive coating.

5,665,969

X-RAY DETECTOR AND METHOD FOR MEASURING ENERGY OF INDIVIDUAL X-RAY PHOTONS FOR IMPROVED IMAGING OF SUBJECTS USING REDUCED DOSE

John U. Beusch, Stow, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

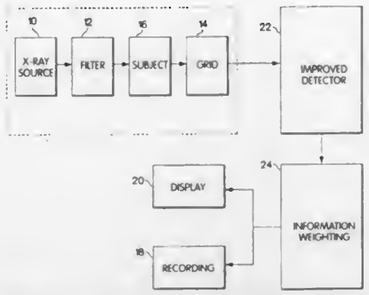
Continuation of Ser. No. 483,193, Jun. 7, 1995, abandoned. This application Nov. 14, 1996, Ser. No. 744,220

Int. Cl.[6] G01T *1/29*

U.S. Cl. 250—370.09 **31 Claims**

1. An x-ray detector for detecting x-rays to provide a measure of energy of individual x-ray photons from a source which emits x-ray photons having a plurality of energy levels, comprising:

a detection mechanism which generates a response to an x-ray photon as a function of the energy of the x-ray photon, wherein the response is generated in each of a plurality of pixels in response to x-ray photons impacting the individual pixels;



a readout circuit connected to the detection mechanism which reads out the response of each pixel at a readout rate defined by a period, wherein the likelihood of arrival of more than one x-ray photon in one pixel in one period is negligible;

a weighting circuit having an input connected to receive responses from the readout circuit and an output providing a weighted response for each pixel; and

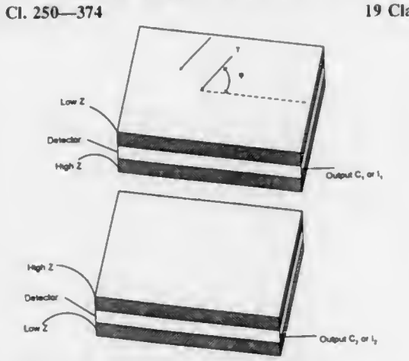
a summation circuit connected to the output of the weighting circuit which accumulates, for each pixel, a sum of weighted responses of the pixel.

5,665,970

DIRECTIONAL RADIATION DETECTOR AND IMAGER

Stanley Kronenberg, Skillman, and George J. Brucker, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 3, 1996, Ser. No. 687,095
Int. Cl.[6] G01T *1/18;1/20;1/24;7/00*
U.S. Cl. 250—374 **19 Claims**



1. A directional radiation detector comprising:

means sensitive to radiation having at least a first and second side;

a first region of material having a first atomic number and disposed on the first side of the means sensitive to radiation;

a second region of material having a second atomic number which is different from that of the atomic number of the first region of material and disposed on the second side of the means sensitive to radiation;

wherein the first and second atomic numbers of the first and second regions are sufficiently different such that when radiation is incident to the detector, there is a difference in forward and backward emissions of electrons between the first and second regions;

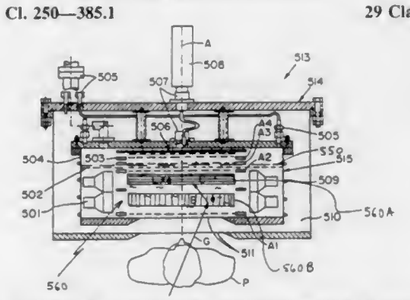
means to detect a signal from the means sensitive to radiation.

5,665,971

RADIATION DETECTION AND TOMOGRAPHY

Min Chen, Brookline, Mass., and Alexander I. Bolozdynya, Hoffman Estates, Ill., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 385,763, Feb. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 44,962, Apr. 12, 1993, abandoned. This application Aug. 8, 1995, Ser. No. 512,321
Int. Cl.[6] G01T *1/161;1/185;1/205*
U.S. Cl. 250—385.1 **29 Claims**



1. Apparatus for detecting the incoming direction of incident radiation from which the origin of the radiation can be located comprising:

a) a detection chamber containing a volume of converter molecules, and wherein, upon collision of incident radiation with a molecule at a point $X_1Y_1Z_1$, a photon is produced which scatters at an angle θ_1, along with a first recoil electron e_1 and initial scintillation light at time t_0, and wherein said photon, in turn, collides with another molecule at a point $X_2Y_2Z_2$, resulting in absorption of said photon and production of a second recoil electron e_2;

b) a first detector array exposed to said volume of molecules for determining t_0;

c) a second detector array exposed to said volume of molecules for detecting the time of arrival, of at least one of said first and second recoil electrons whereby said angle θ_1 may be calculated and thus the incoming radiation direction; and

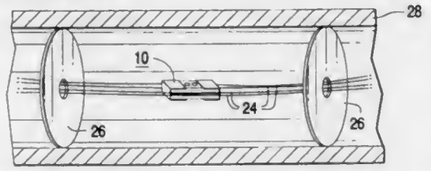
d) a processor responsive to said first and second detector arrays for calculating said angle θ_1.

5,665,972

METHOD AND APPARATUS FOR MONITORING CONTAMINATION

Jeffrey W. Dickinson, Loveland, Colo.; Charles G. Hudson, Chattanooga, Tenn.; Daniel S. Johnson, Larimer, Colo.; Richard McGinley, Ocala, Fla., and Richard J. Sexton, Boulder, Colo., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1995, Ser. No. 581,664
Int. Cl.[6] G01T *1/169;1/11*
U.S. Cl. 250—394 **34 Claims**



1. A method for measuring the level of contamination in a given inaccessible monitored area to approximately background levels, per unit of time, comprising the steps of:

sizing a plurality of detectors, which are responsive to measure the contamination to be monitored to background levels, to fit within and readily move through the monitored area;

coupling the plurality of detectors in tandem, a fixed distance from each other, sized to enable the detectors to traverse approximately 90° bends inside a tubular conduit, with a flexible coupling to form a detector string that enables the detector assemblies to rock with respect to each other as they traverse the bends;

inserting the detector string within the monitored area;

leaving the detector string within the area for a specified period of time; and

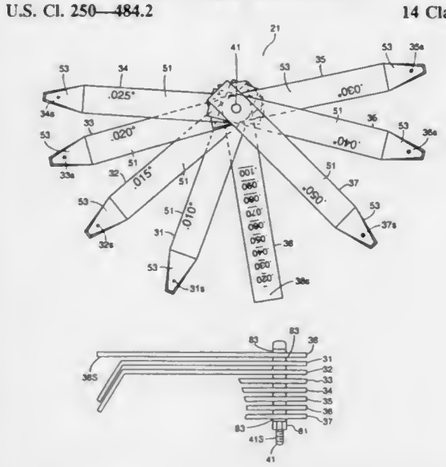
reading the accumulated measurement monitored from the detectors.

5,665,973

PENETRANT TRANSPARENT COMPARATOR

Terry L. Christenson, Roanoke, Tex., assignor to Lockheed Corporation, Fort Worth, Tex.

Filed Oct. 25, 1995, Ser. No. 548,229
Int. Cl.[6] G01B *1/00;5/02;5/26*
U.S. Cl. 250—484.2 **14 Claims**



1. A penetrant comparator, comprising:

a transparent member comprising an elongated portion and a tip portion forming an obtuse angle relative to said elongated portion,

said tip portion having a narrowed end, and

a spot of material on said tip portion that fluoresces in the presence of blacklight.

5,665,974

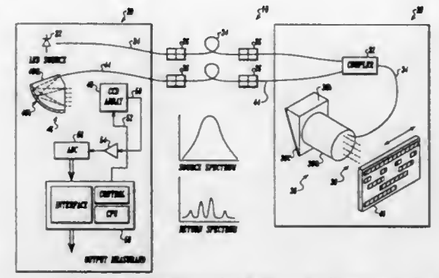
SELF-MONITORING OPTICAL ENCODER FOR WAVELENGTH DIVISION MULTIPLEXING OPTICAL SENSORS

Tuong Kien Truong, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 16, 1995, Ser. No. 559,543
Int. Cl.[6] G06K *7/10*
U.S. Cl. 250—555 **11 Claims**

5. An optical code plate for use in an optical position sensor, comprising:

a plate having a plurality of tracks disposed thereon, each of the tracks comprising reflective and non-reflective segments that together form a code indicative of a number of discrete positions of the code plate, the plate further including a monitoring track that encodes an expected number of non-reflective segments at each discrete position of the code plate.

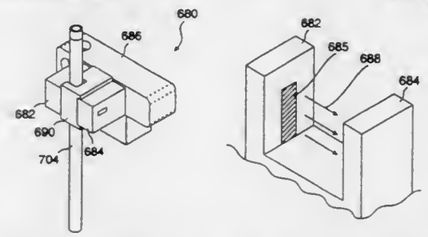


5,665,975

OPTICAL DETECTIOR INCLUDING AN OPTICAL ALIGNMENT BLOCK AND METHOD

Haim Kedar, Palo Alto, Calif., assignor to Affymax Technologies N.V., Curacao, Netherlands

Division of Ser. No. 149,675, Nov. 2, 1993, Pat. No. 5,503,805. This application Jun. 6, 1995, Ser. No. 470,814
Int. Cl.[6] G01N *15/06*
U.S. Cl. 250—573 **14 Claims**



1. An optical alignment block for use with an optical detector in detecting the presence of a liquid within a substantially translucent tube, said optical detector comprising a forked body having spaced apart first and second prongs, said first prong including a transmitter and said second prong including a collector, said optical alignment block comprising:

an opaque body defining a channel having two open ends and an open face so that said tube may be press fit into said channel by pressing said tube into said open face;

wherein said opaque body further defines a pinhole aperture extending therethrough, said aperture being orthogonal to a radial axis of said tube when said tube is within said channel; and

wherein said opaque body is sized and shaped to be removably held between said prongs of said optical detector with said tube being positioned in close proximity to said transmitter and said pinhole aperture being positioned in close proximity to said collector.

5,665,976

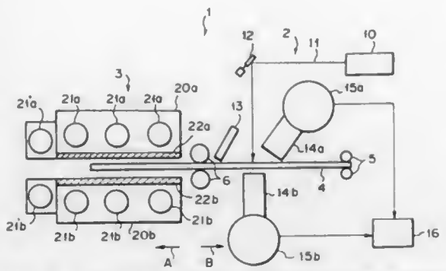
RADIATION IMAGE READ-OUT AND ERASING METHOD AND APPARATUS

Satoshi Arakawa, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1996, Ser. No. 708,692
Claims priority, application Japan, Sep. 5, 1995, 7-28185
Int. Cl.[6] G01N *23/04*
U.S. Cl. 250—588 **6 Claims**

1. A radiation image read-out and erasing method for reading out a radiation image stored on a stimulable phosphor sheet and

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erasing the residual image information remaining on the stimulable phosphor sheet comprising the steps of

reading out a radiation image stored on a stimulable phosphor sheet by exposing the stimulable phosphor sheet to stimulating rays, photoelectrically detecting light emitted by the stimulable phosphor sheet by a photoelectric read-out means and converting it into an electric image signal in a read-out section while feeding the stimulable phosphor sheet through a read-out section toward an erasing section,

exposing the portion of the stimulable phosphor sheet which is fed to the erasing section after passing through the read-out section to first erasing light, and

exposing the stimulable phosphor sheet to second erasing light while feeding the stimulable phosphor sheet through the erasing section toward the read-out section,

wherein the improvement comprises that the first erasing light contains no light component in a wavelength range which can be detected by the photoelectric read-out means and the second erasing light contains a light component in the wavelength range which can be detected by the photoelectric read-out means.

5,665,977

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH DEFECT DECOMPOSING AND BLOCKING LAYERS

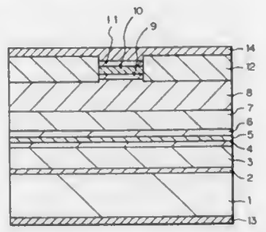
Akira Ishibashi; Satoshi Matsumoto; Masaharu Nagai; Satoshi Ito, all of Kanagawa; Shigetaka Tomiya; Kazushi Nakano, both of Tokyo, and Etsuo Morita, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 389,790, Feb. 16, 1995, abandoned. This application Aug. 2, 1996, Ser. No. 691,536

Claims priority, application Japan, Feb. 16, 1994, 6-041876; May 31, 1994, 6-142641; Jun. 21, 1994, 6-162770; Aug. 5, 1994, 6-204245

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—17 **6 Claims**



1. A semiconductor light emitting device comprising:

a defect decomposing layer, a defect blocking layer, a first cladding layer, an active layer and a second cladding layer which are stacked in that order on a semiconductor substrate,

said defect decomposing layer serving to decompose a fixed dislocation into a movable dislocation,

and said defect blocking layer serving to block intrusion of defects beyond it,

said defect decomposing layer and said defect blocking layer comprising superlattice structures with the decomposing layer having well layers and barrier layers which are lattice-mismatched with regard to the substrate by having larger and smaller lattice constants than the substrate, respectively.

5,665,978

NONLINEAR ELEMENT AND BISTABLE MEMORY DEVICE

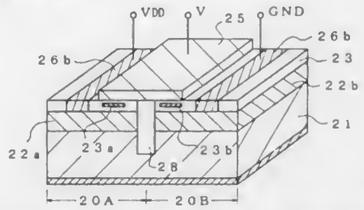
Takeshi Uenoyama, Kyoto, and Yasuhito Kumabuchi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 24, 1996, Ser. No. 653,639

Claims priority, application Japan, May 25, 1995, 7-126155

Int. Cl.[6] H01L *29/06;39/00*

U.S. Cl. 257—30 **23 Claims**



11. A bistable memory device comprising a load element and a drive element wherein said load and drive elements are arranged in series in that order between a first power source for supplying a higher voltage and a second power source for supplying a lower voltage,

said drive element including:

a first conductive layer which has a first fermi level;

a second conductive layer which has a second fermi level at the same energy level as said first fermi level when no voltage is applied and which is connected to said load element;

an insulating layer which is formed between said first and second conductive layers and which has a barrier level at an energy level higher than said first and second fermi levels when no voltage is applied;

an impurity layer;

said impurity layer being formed in said insulating layer;

said impurity layer containing an impurity element having in any of its shells a vacant orbit not filled with an electron;

said impurity layer having an impurity level which is an energy level for filling said vacant orbit and is higher than said first fermi level but lower than said barrier level wherein, when a voltage that increases the potential of said second conductive layer is applied between said first and second conductive layers and is increased, a negative-resistance characteristic, associated with a transition from the state of resonance to the state of non-resonance between said first conductive layer and said impurity layer, is exhibited in a specific voltage range;

wherein a voltage of an intermediate point between said drive element and said load element is one of voltages at two stable points corresponding to intersections of voltage-current characteristic curves of said drive and load elements.

5,665,979

COULOMB-BLOCKADE ELEMENT AND METHOD OF MANUFACTURING THE SAME

Yasuo Takahashi; Masao Nagase, and Akira Fujiwara, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan

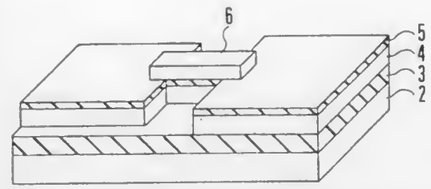
Division of Ser. No. 546,529, Oct. 20, 1995, Pat. No. 5,604,154. This application Nov. 13, 1996, Ser. No. 746,654

Claims priority, application Japan, Oct. 27, 1994, 6-263809; Sep. 6, 1995, 7-228872

Int. Cl.[6] H01L *29/06;39/00*

U.S. Cl. 257—30 **8 Claims**

1. A Coulomb-blockade element comprising:



a silicon layer formed on a substrate through an insulating film, said silicon layer including

a narrow wire portion serving as a conductive island for confining a charge, and

first and second electrode portions which are formed to be connected to two ends of said narrow wire portion and are wider than said narrow wire portion, each of said first and second electrode portions having constrictions on at least one of upper and lower surfaces thereof, which make a portion near said narrow wire portion thinner than said narrow wire portion.

5,665,980

FABRICATION METHOD OF SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE CONSTRUCTED FROM SHORT WEAK LINKS WITH ULTRAFINE METALLIC WIRES

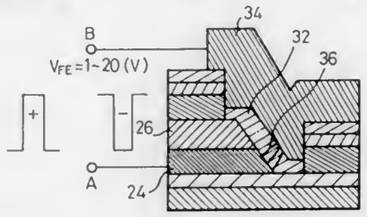
Yoshio Onuma, Nagano, and Katsuyoshi Hamasaki, Nagaoka, both of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Continuation of Ser. No. 961,169, Oct. 16, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,156

Claims priority, application Japan, Oct. 18, 1991, 3-299802; Oct. 18, 1991, 3-299803

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—35 **14 Claims**



1. A superconducting quantum interference device (DC-SQUID) comprising:

two weak link type Josephson elements interconnected in a loop;

each of said two weak link type Josephson elements comprising:

an insulating base support structure having a base electrode layer therein, the base electrode layer being formed on a lower portion of the insulating base support structure and having an upper surface covered by an upper portion of the insulating base support structure,

a window extending through the upper portion of the insulating base support structure and the base electrode layer and defining an exposed, oblique end face of the base electrode layer,

an insulating barrier film, formed by sputtering, on the oblique end face of the base electrode layer, and

a counterelectrode extending into the window and formed on the insulating barrier film and defining therewith an edge-sandwich Josephson element, the insulating barrier film having pinholes extending therethrough; and

means for connecting the two weak link type Josephson elements for simultaneously conducting a pulsed current therethrough and forming a nanometric bridge in each thereof, extending through the pinholes in the insulating barrier film and comprising field evaporated material, of one of the base electrode layer and the counterelectrode layer, transferred into and filling the pinholes and thereby electrically linking the base electrode layer with the counterelectrode layer of the device and providing a superconductive link between the base electrode layer and the counterelectrode layer, the respective nanometric bridges having equivalent electrical characteristics.

5,665,981

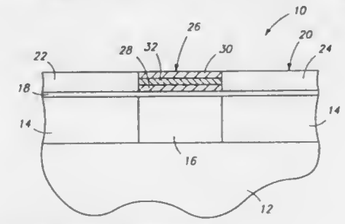
THIN FILM TRANSISTORS AND METHOD OF PROMOTING LARGE CRYSTAL GRAIN SIZE IN THE FORMATION OF POLYCRYSTALLINE SILICON ALLOY THIN FILMS

Sanjay Banerjee, Austin, Tex., and Shubneesh Batra, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 447,568, May 23, 1995, abandoned, which is a division of Ser. No. 328,097, Oct. 24, 1994, abandoned. This application Nov. 22, 1996, Ser. No. 755,152

Int. Cl.[6] H01L *29/76;31/036;31/112*

U.S. Cl. 257—66 **10 Claims**



1. A thin film transistor comprising:

a thin film source region;

a thin film drain region;

a thin film channel region intermediate the thin film source region and the thin film drain region; and

the thin film channel region comprising at least an inner layer, an outer layer and a middle layer sandwiched between the inner layer and the outer layer, the middle sandwich layer consisting essentially of germanium.

5,665,982

SEMICONDUCTOR PHOTO-DEVICE HAVING OBLIQUE TOP SURFACE OF STEM FOR ELIMINATING STRAY LIGHT

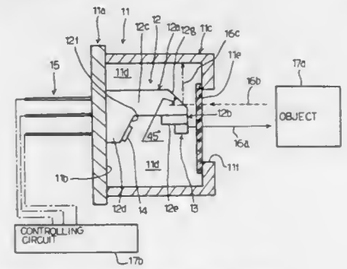
Masahiro Torikai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,673

Claims priority, application Japan, Jul. 21, 1994, 6-190957

Int. Cl.[6] H01L *27/15*

U.S. Cl. 257—81 **6 Claims**



1. A semiconductor photo-device comprising:

a package having a non-transparent wall member and a transparent window member for forming in combination an internal space;

a semiconductor photo-emitting element provided in said internal space and having a photo-radiating surface for radiating a visual light beam through said transparent window member toward an object outside of said package; and

a stem fixed to said non-transparent wall member in said internal space and supporting said semiconductor photo-emitting element, said stem having a top surface opposed to said transparent window member and declining at 45 degrees with respect to a virtual surface perpendicular to an optical path of said visual light beam so as to prevent said object from a stray light reflecting on said top surface.

5,665,983

PHOTOCOUPLER DEVICE HAVING LIGHT EMITTING DEVICE AND PHOTO DETECTOR

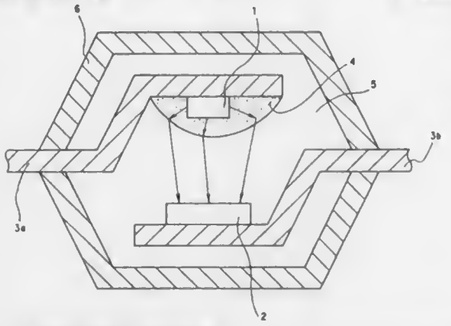
Hiroki Nagano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,769

Claims priority, application Japan, Sep. 8, 1994, 6-214541

Int. Cl.[6] H01L *27/15*

U.S. Cl. 257—81 **5 Claims**



1. A photocoupler comprising:

a light emitting device and a photo detector disposed in a facing relationship to each other;

a transparent resin which covers over said light emitting device;

a light transmitting resin which molds said transparent resin and said photo detector; and a light shielding resin which molds said light transmitting resin;

light scattering material being mixed in said transparent resin which covers over said light emitting device, and said light scattering material being absent from said light transmitting resin.

5,665,984

LIGHT-EMITTING DIODE

Koichi Hasegawa, and Isao Kabe, both of Chichibu, Japan, assignors to Showa Denko K.K., Tokyo, Japan

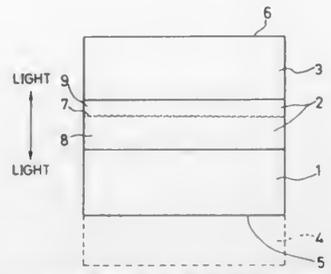
Filed Aug. 29, 1996, Ser. No. 705,095

Claims priority, application Japan, Aug. 29, 1995, 7-220684

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **7 Claims**

1. A light-emitting diode comprising a first layer of Si-doped N-type $Ga_{1-x}Al_xAs$, a second layer of Si-doped P-type $Ga_{1-y}Al_yAs$ and a third layer of P-type $Ga_{1-z}Al_zAs$, in that order, in which the first and third layers have a higher Al concentration than the second layer, an Al concentration in the second layer decreases going from a first layer side to a third layer side, an Al concentration in a portion of the second layer in contact with the third layer is higher than an Al concentration value in a portion of the second layer in contact with the first layer minus 0.06 or less, the second layer is formed to a thickness of approximately 8 μm or more to approximately 50 μm or less, and light emission is via the first layer.



5,665,985

LIGHT-EMITTING DIODE OF EDGE-EMITTING TYPE, LIGHT-RECEIVING DEVICE OF LATERAL-SURFACE-RECEIVING TYPE, AND ARRAYED LIGHT SOURCE

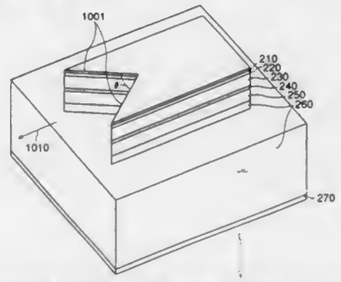
Hirokazu Iwata, Miyagi-ken, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 365,122, Dec. 28, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,336

Claims priority, application Japan, Dec. 28, 1993, 5-337403

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—95 **11 Claims**



1. A semiconductor device of an edge emitting type comprising:

a semiconductor substrate; and

a plurality of semiconductor layers formed on said semiconductor substrate and each having an inwardly curved edge to form a concave lateral surface in a horizontal direction said semiconductor layers including an active layer for emitting light, wherein said concave lateral surface is used as a light-emitting surface.

5,665,986

COMPOUND SEMICONDUCTOR LIGHT EMITTING DEVICE AND METHOD OF PREPARING THE SAME

Yoshiki Miura; Hideki Matsubara; Masato Matsushima, all of Hyogo; Hisashi Seki, and Akinori Koukitu, both of Tokyo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 7, 1996, Ser. No. 614,837

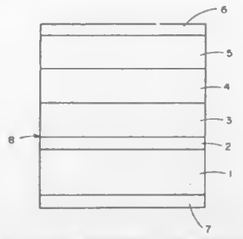
Claims priority, application Japan, Mar. 27, 1995, 7-068047; Mar. 27, 1995, 7-068051

Int. Cl.[6] H01L *33/00;31/0328;31/0336*

U.S. Cl. 257—96 **20 Claims**

1. A compound semiconductor device comprising:

an electrically conductive substrate at least substantially consisting of a compound semiconductor material selected from the group consisting of GaAs, GaP, InAs and InP;



a buffer layer at least substantially consisting of GaN, having a thickness of 10 nm to 80 nm, and being arranged on said substrate;

an epitaxial layer at least substantially consisting of $Al_xGa_{1-x}N$ ($0 \leqq x < 1$) and being arranged on said buffer layer;

an incommensurate plane being located at an interface between said buffer layer and said epitaxial layer;

a light emitting layer being arranged on said epitaxial layer;

a cladding layer being arranged on said light emitting layer;

a first electrode being arranged on said cladding layer; and

a second electrode being arranged on a surface of said substrate opposite said buffer layer.

5,665,987

INSULATED GATE STATIC INDUCTION THYRISTOR WITH A SPLIT GATE TYPE SHORTED CATHODE STRUCTURE

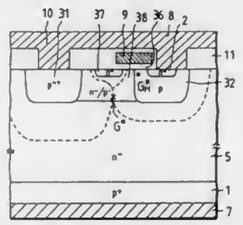
Kimihiro Muraoka; Yoshinobu Ohtsubo, both of Kanagawa-ken; Toshio Higuchi, Tokyo; Makoto Iguchi, Kanagawa-ken, and Takashige Tamamushi, 2-18-17, Shimoochiai, Shinjuku-Ku, Tokyo, 161, all of Japan, assignors to Toyo Denki Seizo Kabushiki Kaisha, and Takashige Tamamushi, both of Tokyo, Japan

Continuation of Ser. No. 140,763, Oct. 21, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 414,346

Claims priority, application Japan, Oct. 27, 1992, 4-311261

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—133 **19 Claims**



1. An insulated gate static induction thyristor with a split gate type shorted cathode structure, comprising an anode region, a cathode region and a control region formed in a high-resistivity layer, wherein:

said control region includes first and second gate regions split therefrom;

said cathode region is formed in said second gate region;

a channel region is formed in said high-resistivity layer which is surrounded by said first and second gate regions;

a shield gate electrode formed in contact with said first gate region and a cathode electrode formed in contact with said cathode region are electrically shorted to each other to form a shorted cathode structure;

an insulated gate control gate electrode is formed above said second gate region with an insulating layer interposed therebetween to form an essentially insulated gate transistor between said cathode region and said high-resistivity layer, a current flow through said channel region between said cathode region and said anode region being controlled by a voltage which is applied to said insulated gate control gate electrode;

a first depletion layer by the contact potential between said first gate region and said high-resistivity layer and a second depletion layer by the contact potential between said second gate region and said high-resistivity layer near said cathode region, said first and second depletion layer essentially contact each other enabling a potential of said second gate region to be controlled by a potential of said first gate region;

a potential barrier which is controllable by a static induction effect is formed in said channel region and a height of said potential barrier is static inductively controlled by a voltage which is applied to said insulated gate control gate electrode,

holes injected from said anode region mainly flow through said first gate region and partly flow through said channel region and into said cathode electrode shorted to said shield gate electrode;

electrons injected from said cathode region mainly flow through said insulated gate transistor and said channel region;

an auxiliary cathode region of a same conductivity type as that of said cathode region is formed in a region of said high-resistivity layer which is surrounded by said first and second gate regions, and an essentially insulated gate transistor is formed between said auxiliary cathode region and said cathode by said second gate region and said insulated gate control gate electrode formed above said second gate region but isolated therefrom by said insulating layer; and wherein electrons injected from said cathode region are stored in said auxiliary cathode region, and a potential barrier which is controlled by said static induction effect is formed in said high-resistivity layer adjoining said auxiliary cathode region by said first and second depletion layers spreading from said first and second gate regions.

5,665,988

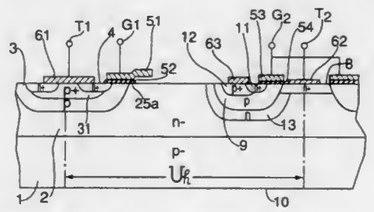
CONDUCTIVITY-MODULATION SEMICONDUCTOR

Qin Huang, Blacksburg, Va., assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 385,769, Feb. 9, 1995, abandoned. This application Sep. 27, 1996, Ser. No. 721,939

Int. Cl.[6] H01L *29/74;31/111;23/58;29/76*

U.S. Cl. 257—133 **12 Claims**



1. A semiconductor device, comprising:

a first layer of a first conductivity type on a second layer of a second conductivity type;

said first layer having a high resistance;

a drain region of said first conductivity type in a first surface region of said first layer;

said drain region having a low resistance;

a first main electrode formed on a surface of said drain region;

a minority carrier injection region of said second conductivity type formed in a second surface region of said first layer;

a base region of said second conductivity type formed in a third surface region of said first layer;

an emitter region of said first conductivity type formed in a surface region of said base region;

a second main electrode on a surface of said base region and said emitter region;

a first gate electrode including means for injecting a plurality of majority carriers into said first layer from said emitter region being responsive to a voltage applied to said first gate electrode greater than a first threshold voltage;

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a second gate electrode including means for injecting a plurality of minority carriers into said first layer from said minority carrier injection region and means for injecting a plurality of majority carriers into said drain region responsive to a voltage applied to said second gate electrode greater than a second threshold voltage;

a source region of said first conductivity type formed in a first surface region of said minority carrier injection region; and

a floating short-circuit electrode contacting a surface of said minority carrier injection region and a surface of said source region.

5,665,989

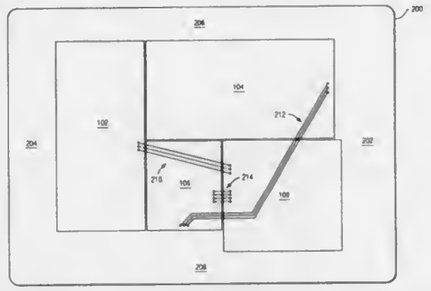
PROGRAMMABLE MICROSYSTEMS IN SILICON

Carlos Dangelo, Los Gatos, Calif., assignor to LSI Logic, Milpitas, Calif.

Filed Jan. 3, 1995, Ser. No. 367,556

Int. Cl.[6] H01L *27/06;21/70*

U.S. Cl. 257—210 **19 Claims**



1. An integrated circuit formed on a silicon substrate, wherein the silicon substrate has a planar surface, the integrated circuit comprising:

a first core formed on the planar surface of the silicon substrate, wherein the first core includes a first microcircuit with a first conductor contact;

a second core formed on the planar surface of the silicon substrate, wherein the second core includes a second microcircuit with a second conductor contact;

a first conductive path from the first conductor contact to a first point outside the planar surface;

a second conductive path from the second conductor contact to a second point outside the planar surface; and

a third conductive path between the first and second points;

wherein the third conductive path electrically connects the first and second cores of the silicon substrate outside the planar surface of the silicon substrate.

5,665,990

METAL OXIDE SEMICONDUCTOR DEVICE WITH SELF-ALIGNED GROOVE CHANNEL AND METHOD FOR MANUFACTURING THE SAME

Won-Gu Kang; Sung-Weon Kang; Yeo-Whan Kim, and Jong-Sun Lyu, all of Daejeon, Rep. of Korea, assignors to Electronics & Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

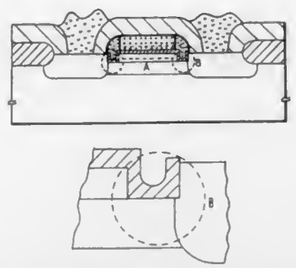
Continuation of Ser. No. 351,706, Dec. 8, 1994, abandoned. This application Nov. 14, 1996, Ser. No. 749,153

Claims priority, application Rep. of Korea, Oct. 26, 1994, 94-27479

Int. Cl.[6] H01L *29/41*

U.S. Cl. 257—330 **10 Claims**

1. A metal oxide semiconductor device with a self-aligned groove channel structure comprising:



a substrate in which a first channel region of a first conductivity type and source and drain regions of a second conductivity type are formed, a first gate insulating layer formed on the first channel region, and a first gate electrode formed in contact with the gate insulating layer;

a second gate electrode having a self-aligned groove structure formed in the substrate at first and second sides of the first gate electrode and the first channel region;

a second gate insulating layer formed between the substrate and the second gate electrode;

a non-planar second channel region of the first conductivity type formed under the second gate insulating layer and doped with a different concentration of an impurity from the first channel region and wherein

the self-aligned groove structure comprises first and second grooves respectively disposed at the first and second sides of the first gate electrode and the first channel region, each groove having first and second sidewalls extending vertically in the substrate, the first sidewall of the first groove extending from a top surface of the first channel region downward to a bottom of the first groove in the substrate and the second sidewall of the first groove extending upward from the bottom of the first groove to a top surface of one of the source and drain regions and the first sidewall of the second groove extending from the top surface of the first channel region downward to a bottom of the second groove and the second sidewall of the second groove extending upward from the bottom of the second groove to a top surface of another of the source and drain regions.

5,665,991

DEVICE HAVING CURRENT BALLASTING AND BUSING OVER ACTIVE AREA USING A MULTI-LEVEL CONDUCTOR PROCESS

Taylor R. Efland, Richardson; Satwinder Malhi, Garland; Michael C. Smayling, Missouri City; Joseph A. Devore; Ross E. Teggatz, both of Dallas, and Alec J. Morton, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 850,601, Mar. 13, 1992. This application May 31, 1995, Ser. No. 456,238

Int. Cl.[6] H01L *23/522;23/528*

U.S. Cl. 257—335 **7 Claims**

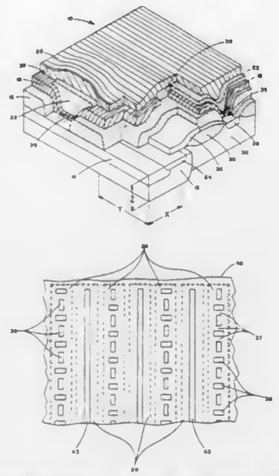
1. An integrated circuit device comprising:

a semiconductor die;

an insulating layer covering the die having a pattern of etched contact openings for selective contact with conductive layers;

a first conductive layer overlying the insulating layer and making contact to the die through the etched openings in the insulating layer;

a second insulating layer overlying the first conductive layer having a pattern of etched via openings alternating with respect to the pattern of etched contact openings and wherein rows of alternating contacts and vias are staggered with respect to each other; and



a second conductive layer overlying the second insulating layer making contact down to the first conductive layer through the pattern of via openings in the second insulating layer.

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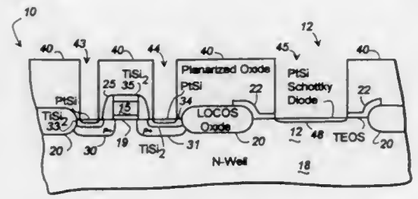
INTEGRATED CIRCUIT INCLUDING A FET DEVICE AND SCHOTTKY DIODE

Stephen A. Keller, Sugarland, and Rajiv R. Shah, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 316,588, Sep. 29, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 621,674

Int. Cl.[6] H01L *27/095*

U.S. Cl. 257—377 **1 Claim**



1. An integrated circuit, comprising:

a semiconductor substrate;

a FET device formed in said substrate, said FET device having source, drain, and gate elements;

a region of $TiSi_2$ in each of said source, drain, and gate elements; and

a Schottky diode comprising a layer comprising a metal in said substrate, wherein one of said $TiSi_2$ regions in said source and drain elements includes a region of platinum silicide.

5,665,994

INTEGRATED DEVICE WITH A BIPOLAR TRANSISTOR AND A MOSFET TRANSISTOR IN AN EMITTER SWITCHING CONFIGURATION

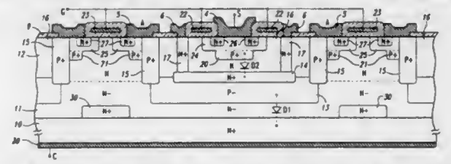
Sergio Palara, Catania, Italy, assignor to CO.RI.M.ME. Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Sep. 16, 1994, Ser. No. 307,877

Claims priority, application European Pat. Off., Sep. 17, 1993, 93830385

Int. Cl.[6] H01L *29/76;29/00*

U.S. Cl. 257—378 **20 Claims**



1. A device comprising at least a pair of transistors, namely a bipolar one and a MOSFET one, connected into an emitter switching configuration and integrated on a semiconductor material, which device comprises:

a substrate of the N type having a first surface, a second opposite surface, and a high concentration of impurities;

at least one layer of the N type overlying the first surface of the substrate and having a lower concentration of impurities than the substrate, such layer and substrate including the collector region of the bipolar transistor;

a metallic layer which extends across the second opposite surface of the substrate from the at least one layer and constitutes the collector terminal of the bipolar transistor;

a region of the P type having a low concentration of impurities which is buried in the N-type layer and includes the base region of the bipolar transistor;

an isolation region of the P type having a high concentration of impurities and extending from a front surface of the at least one layer overlying the substrate, as far as the edge of the base region, thereby bounding inwardly an isolated region of the N type which includes the drain region of the MOSFET transistor;

electrically conductive means of contact on said isolation region which include the base terminal of the bipolar transistor;

a buried region of the N type having a high concentration of impurities which forms a junction with the base region and includes the emitter region of the bipolar transistor;

a region of the P type which extends from the front surface of the at least one layer overlying the substrate inwards of the isolated region and includes the channel of the MOSFET transistor;

a region of the N type having a high concentration of impurities which extends from the front surface of the at least one layer overlying the substrate in said region of the P type including the channel of the MOSFET transistor and includes the source region of the MOSFET transistor;

electrically conductive means of contact on said source region which include the source terminal of the MOSFET transistor;

a strip of an electrically conductive material overlying the channel, being insulated from the front surface of the at least one layer overlying the substrate by a layer of an insulating material, and including the gate electrode of the MOSFET transistor; and

an additional region of the N type having a high concentration of impurities and extending from the front surface of the at least one layer overlying the substrate inwards of the isolated region of the N type and surrounding the region of the P type which includes the channel.

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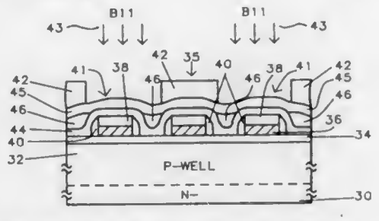
POST PASSIVATION PROGRAMMED MASK ROM

Chen-Chiu Hsue, Hsin-Chu; Shing-Ren Shev, Tau-Yuan; Kuan-Cheng Su, Taipei, and Chen-Hui Chung, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 139,854, Oct. 22, 1993, Pat. No. 5,429,974. This application Apr. 27, 1995, Ser. No. 429,603

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—390 **15 Claims**



1. An array of read only memory cells, comprising:
a semiconductor substrate doped to a first conductivity type having a surface;
a layer of insulating material on the surface of the semiconductor substrate;
first, second and third gate electrodes spaced laterally over the layer of insulating material, each of the gate electrodes having an upper gate electrode surface;
a first insulating glass layer over each of the upper gate electrode surfaces and over the layer of insulating material between the first and second and between the second and third gate electrodes;
second doped insulating glass layers on the first insulating glass layer between the first and second gate electrodes and between the second and third gate electrodes, the second doped insulating glass layers extending below the upper gate electrode surfaces and localized so that the second doped glass layers do not extend over the first, second and third gate electrodes,
the first insulating glass layer and the second doped insulating glass layers providing a planarized surface above the upper gate electrode surfaces; and
a passivation layer over the planarized surface.

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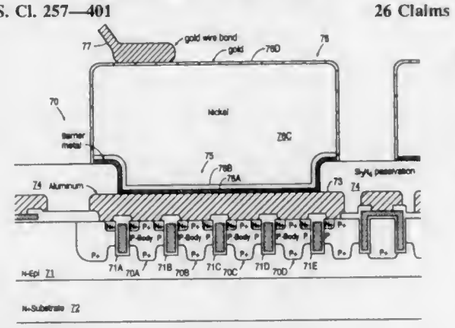
VERTICAL POWER MOSFET HAVING THICK METAL LAYER TO REDUCE DISTRIBUTED RESISTANCE

Richard K. Williams, Cupertino, and Mohammad Kasem, Santa Clara, both of Calif., assignors to Siliconix Incorporated, Del.

Filed Dec. 30, 1994, Ser. No. 367,486

Int. Cl.[6] H01L *29/76;29/94;23/48*

U.S. Cl. 257—401 **26 Claims**



1. A vertical power transistor comprising:
a die comprising a semiconductor material;
a plurality of transistor cells arrayed on said die, each of said cells containing a first region located near a surface of said die and a control element and being arranged so as to permit a current to flow between said first region and a second region located at a position separated from said surface, the magnitude of said current being controlled by an electrical signal applied to said control element;
a thin metal layer in electrical contact with said first region of each of said cells;
a thick metal layer formed in electrical contact with said thin metal layer so as to form a low-resistance path between said first region of each of said cells; and
a passivation layer overlying a portion of a top surface of said die, said passivation layer abutting a lateral edge of said thick metal layer but not overlapping a top surface of said thick metal layer, at least a portion of a top surface of said passivation layer remaining uncovered.

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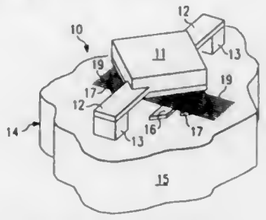
GRATED LANDING AREA TO ELIMINATE STICKING OF MICRO-MECHANICAL DEVICES

Douglas J. Weaver, Dallas, and John N. Randall, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1994, Ser. No. 221,735

Int. Cl.[6] H01L *27/14*

U.S. Cl. 257—414 **10 Claims**



1. A micro-mechanical device, comprising:
one or more deflecting beam elements, each beam element having a deflectable beam, an address electrode, and a landing electrode;
wherein the spacing of each said beam from an associated landing electrode permits said beam to contact said landing electrode in response to a voltage applied to said address electrode; and
wherein each said landing electrode is covered with a grating at least where said beam contacts said landing electrode.

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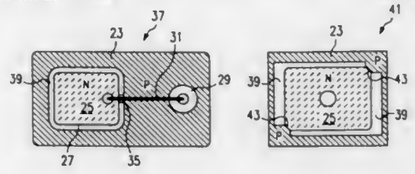
GEOMETRIC ENHANCEMENT OF PHOTODIODES FOR LOW DARK CURRENT OPERATION

Peter D. Dreiske, Plano; Arthur M. Turner, Allen, and David I. Forehand, Wylie, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 247,747, May 23, 1994, Pat. No. 5,593,902. This application Feb. 14, 1996, Ser. No. 601,557

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—446 **20 Claims**



11. A focal plane array comprising:
(a) a substrate containing an electrical circuit therein; and
(b) a photodiode array secured to said substrate and electrically coupled to said substrate, said diode array comprising a plurality of photodiodes, each of said photodiodes including:
(i) a first region of semiconductor material of predetermined conductivity type; and
(ii) a second region of opposite conductivity type surrounded by said first region so that exterior portions thereof oppose exterior portions of said first region and spaced from said first region along a major portion of the second region opposing said first region, the remainder of said second region opposing said first region forming a semiconductor junction with said first region.

5,665,999

METAL-SEMICONDUCTOR DIODE AND PROCESS FOR PREPARING METAL-SEMICONDUCTOR DIODES

Hans Brugger, Senden, Germany, assignor to Daimler Benz AG, Stuttgart, Germany

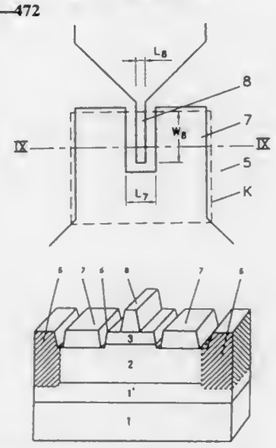
PCT No. PCT/EP95/01300, § 371 Date Nov. 5, 1995, § 102(e) Date Nov. 5, 1995, PCT Pub. No. WO95/28743, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 8, 1995, Ser. No. 564,312

Claims priority, application Germany, Apr. 14, 1994, 44 12 475.9

Int. Cl.[6] H01L *29/47*

U.S. Cl. 257—472 **15 Claims**



1. A metal-semiconductor diode, comprising:
a depletion zone from deformed $In_xGa_{1-x}As_x$;
a metal contact on said depletion zone, said depletion zone having an indium content (x) which continuously increases in the direction of the metal contact.

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MICROCAVITY CAPACITIVE DEVICE

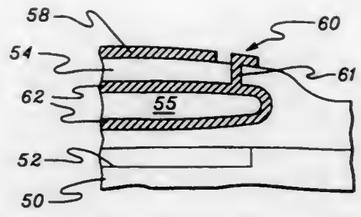
Michael Steven Dusablon, Sr., Milton, and Eric Jeffrey White, North Ferrisburg, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 331,440, Oct. 31, 1994, Pat. No. 5,508,234. This application Dec. 18, 1995, Ser. No. 574,596

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—532 **5 Claims**

1. A capacitive device comprising:
a support structure having a void therein;
a dielectric material disposed above said support structure and filling said void, said dielectric material having a cavity therein;
a first metal plate disposed above said dielectric material near said cavity in said dielectric material;
a second metal plate disposed within said cavity in said dielectric material; and
a first electrical contact to said first metal plate and a second electrical contact to said second metal plate, wherein a capacitor is formed between said first metal plate and said second metal plate.



5,666,001

TRANSISTOR WHEREIN THE BASE AREA IS COVERED WITH AN INSULATING LAYER WHICH IS OVERLAID WITH A CONDUCTIVE FILM THAT MIGHT BE POLYSILICON CRYSTAL OR ALUMINUM

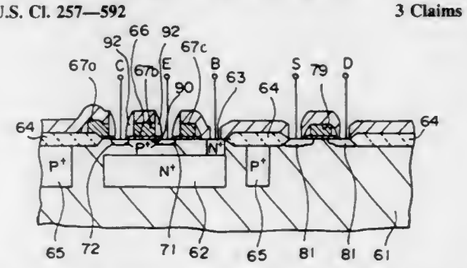
Hiroyuki Miwa, Kanagawa, Japan, assignor to Siemens Aktiengesellschaft, Munich, Germany

Division of Ser. No. 127,507, Sep. 28, 1993, Pat. No. 5,416,031. This application Feb. 24, 1994, Ser. No. 201,026

Claims priority, application Japan, Sep. 30, 1992, 4-285045; Sep. 30, 1992, 4-285046; Sep. 30, 1992, 4-285047

Int. Cl.[6] H01L *29/76;29/00;27/082;27/102*

U.S. Cl. 257—592 **3 Claims**



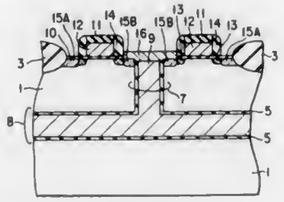
1. A bipolar transistor in which injury to a base region is prevented by providing a conductive film over an insulation film on a substrate in which the transistor is formed comprising, spaced collector and emitter regions both of a first conductivity type in the surface of said substrate of a second conductivity type, a first insulating layer formed on said substrate between said spaced collector and emitter regions, a conductive layer formed on said first insulation layer between said emitter and collector regions, a lateral base connection connected to said substrate between said emitter and collector regions, a space formed in said conductive layer to form separate collector and emitter electrodes, and a second insulating layer formed in said space formed in said conductive layer, and also formed on the opposite ends of said conductive layer adjacent said collector and emitter regions so as to form insulation side walls thereon.

5,666,002

SEMICONDUCTOR DEVICE WITH WIRING LAYER IN TUNNEL IN SEMICONDUCTOR SUBSTRATE

Tadashi Yamamoto, Kawasaki, and Souichi Sugiura, Yamato, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 262,890, Jun. 21, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 521,279
Claims priority, application Japan, Jun. 22, 1993, 5-150437
Int. Cl.[6] H01L *29/40;29/78*
U.S. Cl. 257—621 24 Claims



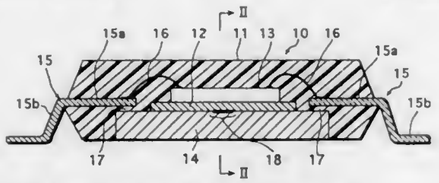
1. A semiconductor device comprising:
a semiconductor substrate;
a semiconductor element formed on a surface of said semiconductor substrate;
a tunnel formed in said semiconductor substrate at a position under said semiconductor element, said tunnel linearly extending in only one direction;
a contact hole extending from the surface of said semiconductor substrate and reaching said tunnel; and
a wiring layer buried in said tunnel and said contact hole.

5,666,003

PACKAGED SEMICONDUCTOR DEVICE INCORPORATING HEAT SINK PLATE

Kazutaka Shibata, and Sadahito Nishida, both of Kyoto, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan

Filed Oct. 23, 1995, Ser. No. 551,925
Claims priority, application Japan, Oct. 24, 1994, 6-284080; Oct. 24, 1994, 6-284081; Jul. 31, 1995, 7-194662; Jul. 31, 1995, 7-194663; Jul. 31, 1995, 7-194664
Int. Cl.[6] H01L *23/34;23/28*
U.S. Cl. 257—796 8 Claims



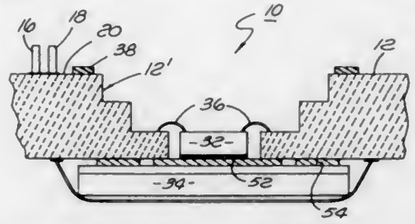
1. A packaged semiconductor device comprising:
a die pad;
a semiconductor chip mounted on the die pad;
a plurality of leads electrically connected to the semiconductor chip;
a heat sink plate bonded to the die pad opposite to the semiconductor chip, the heat sink plate having a peripheral portion partially overlapping each of the leads but electrically insulated therefrom; and
a resin package enclosing at least the semiconductor chip together with the die pad and a part of each said lead;
wherein the die pad has a contact surface for direct contact with the heat sink plate;
wherein the heat sink plate is directly bonded to the die pad only in a limited central region without intervention of a separate bonding layer; and
wherein the limited central region is smaller than said contact surface.

5,666,004

USE OF TANTALUM OXIDE CAPACITOR ON CERAMIC CO-FIRED TECHNOLOGY

Bidyut K. Bhattacharyya, and Larry Mosley, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 561,170, Nov. 21, 1995, abandoned, which is a continuation of Ser. No. 315,125, Sep. 28, 1994, abandoned. This application Nov. 27, 1996, Ser. No. 757,480
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—724 3 Claims



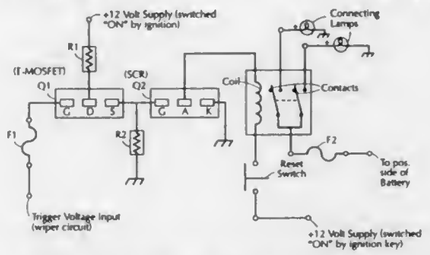
1. An integrated circuit package, comprising:
a package that has a first outer surface and an opposite second outer surface, said package further containing a surface pad located on a bonding shelf and a center opening;
a capacitor that is mounted to said first outer surface of said package;
an integrated circuit that is mounted and electrically connected to said capacitor through said center opening of said package; and,
a bond wire that couples said integrated circuit to said surface pad.

5,666,005

ELECTROSTATIC WINDSHIELD WIPER AND HEADLIGHT CONTROL CIRCUIT

Stephen Lionel Watford, 12 Parnell Pl., Jersey City, N.J. 07305

Filed Nov. 7, 1995, Ser. No. 551,767
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 307—10.8 20 Claims



1. An electrostatic control circuit for activating an automobile lighting system in response to activation of a windshield wiper system, said control circuit comprising
an insulated-gate field effect transistor having a gate for connection to a windshield wiper circuit, a drain for connection to a power supply and a source for connection to ground, said gate having no physical contact with said drain and said source;
a rectifier having a gate connected to said source of said electron valve and to said ground, a cathode for connection to ground and an anode; and
a relay having a coil connected to and between said anode of said rectifier and the power supply, at least one stationary contact for connection to a lighting circuit and at least one normally open movable contact for connection to the power supply whereby upon activation of the windshield wiper circuit and a flow of current from the power supply through said coil of said relay, said movable contact closes on said station-

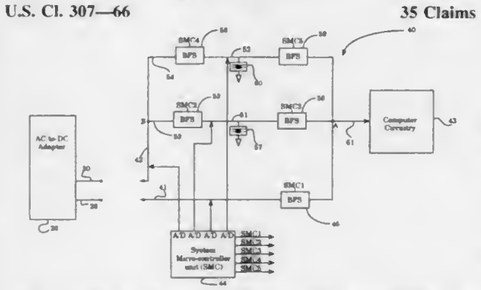
ary contact to effect a flow of current to the lighting circuit from the power supply.

5,666,006

CIRCUIT OFFERING SEQUENTIAL DISCHARGE AND SIMULTANEOUS CHARGE FOR A MULTIPLE BATTERY SYSTEM AND METHOD FOR CHARGING MULTIPLE BATTERIES

David B. Townsley, Cupertino, and James J. Blanc, San Mateo, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 12, 1994, Ser. No. 241,594
Int. Cl.[6] H02J *7/18*
U.S. Cl. 307—66 35 Claims



1. A circuit for at least supplying power to a plurality of components through a main power line within a computer system, said circuit comprising:
a first battery selectively chosen to sequentially discharge its power to said plurality of components through a first battery power output line, and alternatively, to receive power to charge said first battery from a first battery power input line;
a second battery selectively chosen to sequentially discharge power to said plurality of components through a second battery power output line, and alternatively, to receive power to charge said second battery from a second battery power input line;
a first switch; and
a first power line selectively coupled to one of the main power line, said first battery power output line and said second battery power output line by enabling at least said first switch, said first power output line provides power to said plurality of components when coupled thereto, charges said first battery when coupled to said first battery power output line, and alternatively charges said second battery when coupled to said second battery power output line.

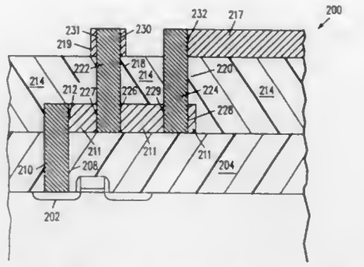
5,666,007

INTERCONNECT STRUCTURES FOR INTEGRATED CIRCUITS

Henry Wei-Ming Chung, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 240,044, May 9, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,787
Int. Cl.[6] H01L *23/52;23/535*
U.S. Cl. 257—751 59 Claims

37. An interconnect structure comprising:
a generally horizontal interconnect, of thickness t and linewidth w, having a first portion; and
a generally vertical interconnect terminating the first conductive layer and in contact with the first conductive layer first portion at an approximately vertical interface;



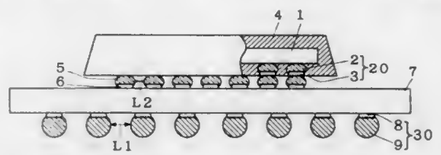
wherein the thickness t of the horizontal interconnect significantly exceeds the linewidth w of the horizontal interconnect.

5,666,008

FLIP CHIP SEMICONDUCTOR DEVICE

Yoshihiro Tomita; Akiyoshi Sawai, both of Tokyo, and Katsunori Asai, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Ryoden Semiconductor System Engineering Corporation, Hyogo, both of Japan

Filed Sep. 6, 1996, Ser. No. 708,559
Claims priority, application Japan, Mar. 27, 1996, 8-072215
Int. Cl.[6] H01L *23/48;23/52*
U.S. Cl. 257—778 18 Claims



1. A semiconductor device comprising:
a semiconductor chip having a first major surface and a second major surface, said semiconductor chip including a plurality of protruding electrodes having a first thickness and disposed on the second major surface;
a plurality of connecting terminals having a second thickness and directly connected to corresponding protruding electrodes;
a resin covering the second major surface of said semiconductor chip and said plurality of protruding electrodes; and
a connecting board having a larger area than said semiconductor chip, said connecting board having a first major surface and a second major surface, said connecting board including a plurality of electrode regions on the first major surface of said connecting board and a plurality of external electrodes having a third thickness on the second major surface of said connecting board, said electrode regions being electrically connected to corresponding external electrodes and directly connected to corresponding connecting terminals, adjacent external electrodes of said connecting board being farther apart than adjacent protruding electrodes of said semiconductor chip.

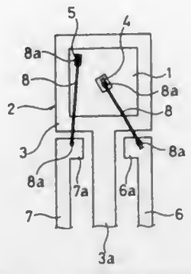
5,666,009

WIRE BONDING STRUCTURE FOR A SEMICONDUCTOR DEVICE

Hiroshi Kumano, and Yasuyuki Higuchi, both of Kyoto, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan

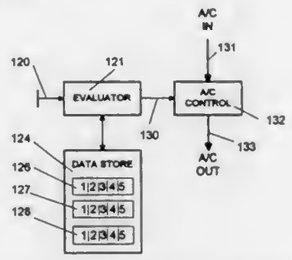
Continuation of Ser. No. 242,637, May 13, 1994, abandoned. This application Jun. 10, 1996, Ser. No. 661,144
Claims priority, application Japan, May 25, 1993, 5-122285
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—784 7 Claims

1. A semiconductor device having a rectangular semiconductor chip having sides and a lead terminal adjacent the semiconductor chip, said semiconductor device comprising:



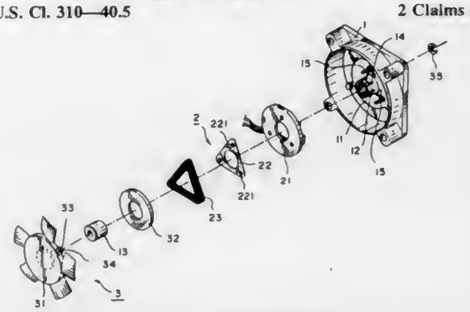
a bonding pad formed on a surface of the semiconductor chip;
a wide terminal end formed on the lead terminal; and
a bonding wire electrically a) connected to the wide terminal end by wedge bonding and b) connected to the bonding pad by wedge bonding,
wherein the bonding pad has sides which extend parallel to a direction along a projected straight line, said projected straight line connects a bonding point on the bonding pad and a bonding point on the wide terminal end and, wherein said sides of said bonding pad incline at an angle relative to each side of said semiconductor chip.

5,666,010
SAFETY SYSTEM FOR MACHINE TOOLS
Gus Stratiotis, 923 Palmito Dr., Millbrae, Calif. 94030
Filed Aug. 30, 1995, Ser. No. 520,916
Int. Cl.[6] H02H *11/00*
U.S. Cl. 307—328 **17 Claims**



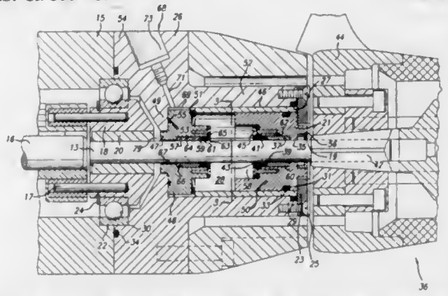
1. A safety system for a machine tool having an operator, comprising:
a machine tool having safety apparatus, said safety apparatus including a safety power control device for providing supply power for operating said tool machine;
a protective safety device for said operator;
said protective safety device including detecting means for determining use of said protective device and providing a status either of a safe operating condition or an unsafe operating condition of said protective device, and
signalling means sensing said status and generating a status signal;
said power control device including
interrupting means for interrupting said supply power, interrogating means for determining said status of said detecting means;
said interrogating means generating an interrogating signal;
said signalling means receiving said interrogating signal and generating said status signal in response to said interrogating signal;
said interrupting means powering down said supply power upon not receiving said status signal indicating a safe operating condition in response to said interrogating signal.

5,666,011
MINIATURE FAN MOTOR ASSEMBLY
Ching-Shen Hong, No. 3, Lane 45, Yi-Yung Road, Kaohsiung, Taiwan
Filed Sep. 8, 1995, Ser. No. 524,940
Int. Cl.[6] H02K *7/00*
U.S. Cl. 310—40.5 **2 Claims**



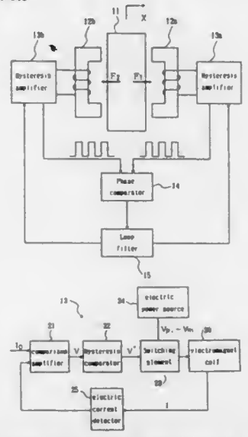
1. A miniature fan motor assembly comprising:
a housing base including a base plate, said base plate including a tubular post extending from a side thereof, said tubular post including a plurality of slots extending along a longitudinal direction thereof;
a cylinder mounted in the tubular post, said plurality of slots causing said tubular post to engage and position said cylinder;
a rotor comprising a fan and a shaft post, said fan being mounted on said shaft post, said shaft post being rotatably mounted in the cylinder;
a magnet securely mounted to the fan; and
a stator comprising a circuit board securely mounted around the tubular post, a silicon steel plate and a coil winding together adhering to the circuit board, said silicon steel plate and said coil winding being in the form of a thin sheet, said coil winding generating a magnetic field interacting with said magnet to drive said rotor.

5,666,012
ROTATING SHAFT SEAL
Calvin A. Gongwer, Glendora, Calif., assignor to Innerspace Corporation, Covina, Calif.
Filed Jul. 29, 1994, Ser. No. 283,248
Int. Cl.[6] H02K *5/12*
U.S. Cl. 310—87 **13 Claims**



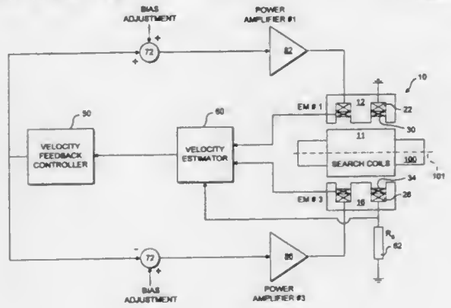
1. An electric motor adapted for use at high pressure comprising:
an electric motor within a housing, said housing is at or near atmospheric pressure;
a rotating shaft coupled to said electric motor and extending through said housing into a high pressure environment having a pressure greater than atmospheric pressure;
a stationary main shaft-seal surrounding said rotating shaft near said electric motor such that a differential pressure can be sustained across said main shaft-seal;
a moveable piston shaft-seal slidably connected to and encircling said rotating shaft, said piston shaft-seal located at a position opposing said main shaft-seal and exposed to said high pressure environment; and
a variable space containing a viscous fluid located within said housing between said stationary main shaft-seal and said piston shaft-seal and isolated from the high pressure environment by said piston shaft seal, whereby said piston shaft-seal moves axially along said rotating shaft within said variable space in accordance with the amount of leakage of said main shaft seal and said pressure differential.

5,666,013
MAGNETIC BEARING
Takeshi Mizuno, Inagi, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan
Filed Nov. 29, 1993, Ser. No. 158,900
Claims priority, application Japan, Dec. 7, 1992, 4-326618
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **11 Claims**



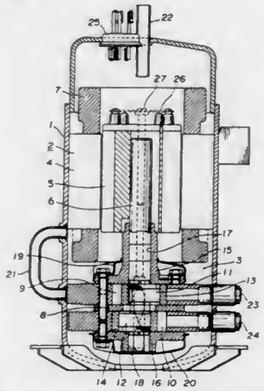
1. An electromagnetic bearing comprising: a rotor; an electromagnet for magnetically levitating the rotor at a predetermined position; a hysteresis amplifier for supplying an exciting current to the electromagnet; and control means for controlling the exciting current supplied by the hysteresis amplifier in accordance with a phase of an output of the hysteresis amplifier.

5,666,014
VELOCITY-CONTROLLED MAGNETIC BEARINGS
Hsiang-Ming Chen, Latham, N.Y., assignor to Mechanical Technology Inc., Latham, N.Y.
Filed Jul. 20, 1994, Ser. No. 277,897
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **5 Claims**



1. A radial bearing apparatus comprising:
a stator of electromagnets;
a rotor journaled for rotation within said stator;
said stator including a plurality of search coils and magnetizing coils, said search coils measuring signals related to velocity of said rotor;
a velocity estimator receiving voltage signals from said search coils and producing a velocity signal of said rotor; and
a velocity feedback controller comprising:
a velocity trimmer responsive to said velocity signal from said velocity estimator;
a zero force seeking loop responsive to said velocity trimmer;
a high-frequency gain and phase compensator responsive to said zero force seeking loop;
a summer responsive to said compensator and a feed forward control signal;
and
a self-starter in communication with said velocity feedback controller.

5,666,015
ELECTRIC MOTOR FOR A COMPRESSOR WITH A ROTOR WITH COMBINED BALANCE WEIGHTS AND OIL SEPARATION DISK
Masaharu Uchibori, Ohra; Keijiro Igarashi, Ohta; Tomonori Kinoshita, Kumagaya; Takashi Miyauchi, Ohta, and Kazuhiko Arai, Oizumi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 21, 1994, Ser. No. 231,197
Claims priority, application Japan, Apr. 30, 1993, 5-124714; Apr. 30, 1993, 5-124715; May 13, 1993, 5-134149; May 18, 1993, 5-138893
Int. Cl.[6] H02K *1/22*
U.S. Cl. 310—261 **7 Claims**



1. A rotor of an electric motor for a compressor having a compressing element and an electric motor for driving said compressing element which are accommodated in a closed container, said rotor comprising:
a rotor core comprising a plurality of laminations of a material having magnetic properties;
a first end surface member of a nonmagnetic material disposed at one end of said rotor core and having a disk portion for oil separation and a balance weight portion;
a second end surface member of a nonmagnetic material disposed at the other end of said rotor core; and
a plurality of fastener members which extend through said first end surface member, said rotor core, and said second end surface member to integrally fasten said rotor core, said first end surface member and said second end surface member.

5,666,016

WINDING SUPPORT FOR A ROTARY ELECTRICAL COMPONENT

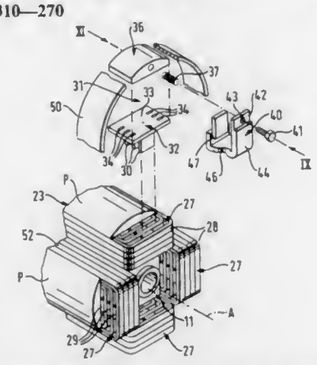
John Cooper, Hemel Hempstead, United Kingdom, assignor to Lucas Industries PLC, Great Britain

Filed Mar. 5, 1996, Ser. No. 611,412

Claims priority, application United Kingdom, Mar. 14, 1995, 9505072

Int. Cl.[6] H02K *3/46*

U.S. Cl. 310—270 **20 Claims**



1. A winding support for a rotary electrical component, the rotary electrical component being rotatable about an axis of rotation and having poles extending in the direction of the axis of rotation and a plurality of windings which are wound on the poles so as to project beyond axis ends of the poles, the windings projecting beyond the axial ends of the poles being spaced apart in the direction of the axis of rotation of the rotary electrical component, the winding support comprising a first part formed from insulative material having spaced apart fingers to be positioned in respective spaces between the windings where the windings project beyond an axial end of one said pole and a second part to be fastened to the first part for holding the windings in place relative to the first part thereby securing the windings against movement relative to each other in the direction of the axis of rotation.

5,666,017

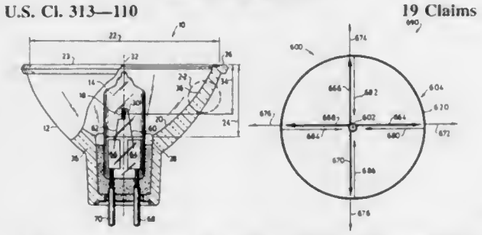
DAYLIGHT LAMP

Kevin P. McGuire, Rochester, N.Y., assignor to Tailored Lighting Inc., Pittsford, N.Y.

Continuation-in-part of Ser. No. 291,168, Aug. 16, 1994, Pat. No. 5,569,983, which is a continuation-in-part of Ser. No. 216,495, Mar. 22, 1994, Pat. No. 5,418,419. This application Feb. 27, 1996, Ser. No. 606,645

Int. Cl.[6] H01J *5/16*

U.S. Cl. 313—110 **19 Claims**



1. A lamp for producing a spectral light distribution substantially identical in uniformity to the spectral light distribution of a desired daylight with a color temperature of from about 3500 to about 10,000 degrees Kelvin throughout the entire visible light spectrum from about 380 to about 780 nanometers, comprising:

(a) an enclosed lamp envelope having an interior surface and an exterior surface;

(b) a light-producing element substantially centrally disposed within said lamp envelope and which, when excited by electrical energy, emits radiant energy throughout the entire visible spectrum with wavelengths from about 200 to about 2,000 nanometers at non-uniform levels of radiant energy across the visible spectrum; and

(c) at least one coating on at least one of said surfaces and having a transmittance level in substantial accordance with the formula

$$T(l)=[D(l)-[S^*(l)\times(1-N)]]/[S(l)\times N],$$

wherein T(l) is the transmission of said envelope coating for said wavelength l from about 380 to about 780 nanometers, D(l) is the radiance of said wavelength for the desired daylight, S(l) is the radiance of said element at said wavelength at normal incidence to said lamp envelope, S*(l) is the radiance of said element at said wavelength at non-normal incidence to said lamp envelope, and N is the percentage of visible spectrum radiant energy directed normally towards said exterior surface of said lamp envelope.

5,666,018

CATHODE WITH FAST HEAT SWITCH-ON AND SWITCH-OFF MECHANISM AND GRID-TYPE ELECTRON TUBE INCLUDING SUCH A CATHODE

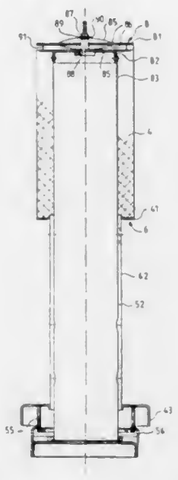
Michel Langlois, Concise/Thonon, and Robert Frossard, Thonon, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

Continuation of Ser. No. 281,171, Jul. 27, 1994, abandoned. This application Jun. 14, 1996, Ser. No. 663,592

Claims priority, application France, Jul. 27, 1993, 93 09230

Int. Cl.[6] H01J *1/88*

U.S. Cl. 313—278 **15 Claims**



1. A cathode for an electron tube having a hollow cylindrical structure, comprising:

thermo-emissive wires mounted between two conductive supports, these supports being mechanically fixed to each other; and

at least one spring proximal to the wires and integrated with one of the supports to neutralize the tensile and compressive stresses in the wires, wherein each of said at least one spring is made of graphite.

5,666,019

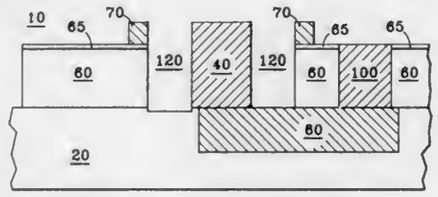
HIGH-FREQUENCY FIELD-EMISSION DEVICE

Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.

Filed Sep. 6, 1995, Ser. No. 524,225

Int. Cl.[6] H01J *19/24*

U.S. Cl. 313—306 **18 Claims**



11. A microelectronic triode device, comprising:

(a) a planar substrate;

(b) a planar cathode disposed substantially parallel to said substrate, said cathode having an electron-emitting lateral edge;

(c) an anode spaced apart from said electron-emitting lateral edge by a predetermined gap width, said anode having a height measured perpendicularly to said substrate and said anode having a first side facing toward said electron-emitting lateral edge of said cathode and a second side facing a direction substantially opposite to said first side;

(d) a conductive layer disposed substantially parallel to and contiguous with said substrate, wherein at least a portion of said anode is disposed in ohmic contact with at least a portion of said conductive layer, thereby providing a buried anode contact layer;

(e) a control electrode having a first dimension measured along an axis parallel to said substrate and a second dimension measured along an axis perpendicular to said substrate,

(I) said control electrode being disposed on a plane spaced apart from and substantially parallel to said cathode,

(ii) said control electrode being spaced apart from said anode,

(iii) said first dimension equaling only a minor fractional part of said predetermined gap width,

(iv) said second dimension of said control electrode equaling only a minor fractional part of said height of said anode,

(v) said control electrode being at least partially aligned with said electron-emitting lateral edge of said cathode,

(vi) said control electrode including an annular portion, which annular portion substantially surrounds said anode in substantially concentric alignment with said anode, and

(vii) said control electrode further including a conductive control electrode contact juxtaposed with and spaced apart from said second side of said anode;

(f) a first electrically insulative layer of a first predetermined thickness disposed between said cathode and said plane of said control electrode;

(g) a second electrically insulative layer of a second predetermined thickness disposed between said buried anode contact layer and said plane of said control electrode;

(h) means for applying electrical bias voltages to said cathode and to said buried anode contact layer sufficient to cause current of electrons from said electron-emitting lateral edge of said cathode to said anode; and

(j) means for applying an electrical signal to said control electrode, whereby said current of electrons may be controlled.

5,666,020

FIELD EMISSION ELECTRON GUN AND METHOD FOR FABRICATING THE SAME

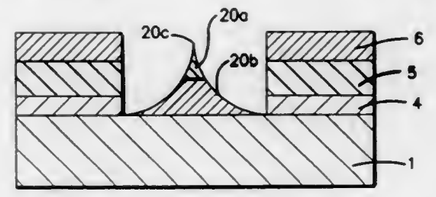
Hisashi Takemura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 16, 1995, Ser. No. 558,520

Claims priority, application Japan, Nov. 16, 1994, 6-281045

Int. Cl.[6] H01J *1/46;21/10;1/02;1/16;19/40*

U.S. Cl. 313—306 **74 Claims**



1. An emitter structure of a field emission electron gun, said emitter structure comprising: an emitter being electrically conductive and being pointed at the top,

wherein the top of said emitter has the highest resistance of every other part, so that the top of said emitter has the highest heat energy of every other part when said emitter emits electrons.

5,666,021

LAMP HOLDER

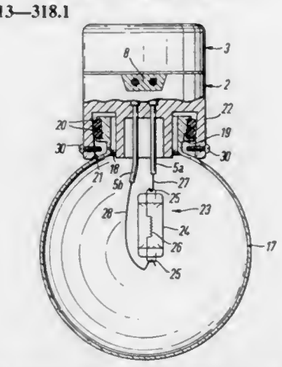
Robert Ernest Myson, Ingatestone, United Kingdom, assignor to Luminaire Developments Limited, Channel Islands

Division of Ser. No. 304,088, Sep. 9, 1994, Pat. No. 5,562,481. This application Dec. 18, 1995, Ser. No. 574,266

Claims priority, application United Kingdom, Sep. 10, 1993, 9318824

Int. Cl.[6] H01J *5/48;5/50*

U.S. Cl. 313—318.1 **6 Claims**



1. A lamp holder comprising a base and two electrical contacts for forming a connection with a bulb, characterized in that the bulb comprises an envelope around an electrical filament with two wires extending therefrom each passing through the envelope and each forming a loop protruding from the envelope, the two loops being at opposed ends of the envelope, wherein each electrical contact has a wire with a hook at its free end formed to engage one of the two loops, a shorter one of wires engaging the one of said two loops at the nearer end of the bulb, and the other longer spring wire engaging the other of said two loops at the far end of the bulb in a manner that induces a spring tension in the spring wire, so holding the bulb suspended between the two hooks and in electrical contact therewith.

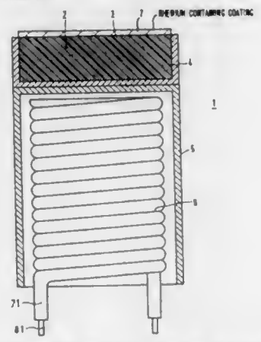
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5,666,022

DISPENSER CATHODE AND METHOD OF MANUFACTURING A DISPENSER CATHODE

Jacobus A. J. M. Deckers, Eindhoven; Theodorus H. Weekers, Weert; Albert Manenschijn, Eindhoven; Franciscus M. M. Snijkers, Eindhoven, and Petrus A. M. Van Der Heide, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 326,613, Oct. 19, 1994, abandoned.
This application Oct. 7, 1996, Ser. No. 726,900
Claims priority, application Belgium, Oct. 28, 1993, 09301155; Oct. 28, 1993, 09301156
Int. Cl.[6] H01J *1/14*
U.S. Cl. 313—346 DC 8 Claims



1. A dispenser cathode having a cathode body within a holder, the cathode body comprising a refractory metal, a rare earth metal-containing material and electron emissive material characterized in that the entire cathode body within said holder is obtained by pressing a mixture comprising grains of the refractory metal, grains of the rare earth metal-containing material and a pulverulent barium containing material and sintering the resultant pressed mixture, the grain size of the majority of grains of the refractory metal being smaller than 5 μm and the grains of the rare earth metal-containing material having an average grain size of less than 10μ.

5,666,023

DEVICE FOR PRODUCING A PLASMA, ENABLING MICROWAVE PROPAGATION AND ABSORPTION ZONES TO BE DISSOCIATED HAVING AT LEAST TWO PARALLEL APPLICATORS DEFINING A PROPOGATION ZONE AND AN EXCITER PLACED RELATIVE TO THE APPLICATOR

Jacques Pelletier, Saint Martin d'Heres, France, assignor to Soci été Responabilité Limité, Metal Process, Montevrain, France

Filed Nov. 2, 1995, Ser. No. 552,306
Claims priority, application France, Nov. 4, 1994, 94 13499
Int. Cl.[6] H05H *1/46*
U.S. Cl. 313—359.1 13 Claims

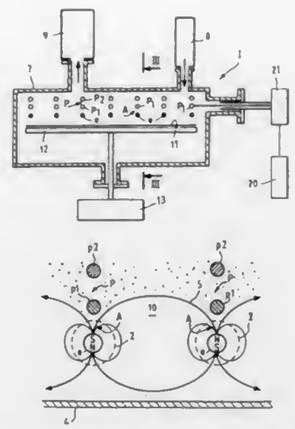
1. A distribution device for distributing microwave power to excite a plasma inside an enclosure, the device comprising:

a source of microwave energy;

at least one first applicator of microwave energy; and

at least one wire-shaped plasma exciter placed at a distance from the first microwave applicator to define between them an absorption zone, electrons being accelerated by the microwave field along determined trajectories;

wherein the distribution device includes at least one second applicator of microwave energy to co-operate with a first applicator and an exciter to form at least one excitation triplet in which firstly the first applicator and the second applicator



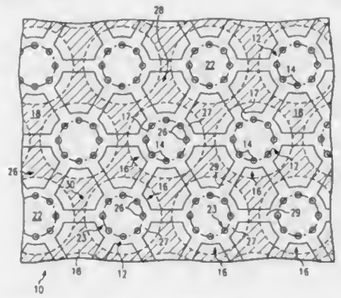
are mounted substantially parallel to each other and are spaced apart by a given amount to define between them a propagation zone for microwave energy, and secondly the exciter is disposed inside the enclosure by being placed relative to the first and second applicators in such a manner that the trajectories of the electrons do not cross the propagation zone, thereby dissociating the propagation zone and the absorption zone.

5,666,024

LOW CAPACITANCE FIELD EMISSION DEVICE WITH CIRCULAR MICROTIP ARRAY

Kenneth G. Vickers, Whitesboro, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1995, Ser. No. 518,909
Int. Cl.[6] H01J *1/62;63/04;1/16;1/53*
U.S. Cl. 313—494 25 Claims



9. An electron emitter plate comprising:

a substrate;

a first layer of conductive material deposited on said substrate;

a layer of insulating material deposited on said substrate over said first layer of conductive material;

a second layer of conductive material deposited on said substrate over said layer of insulating material; said second layer of conductive material having a plurality of apertures arranged in a loop and an absence of second layer conductive material within a majority of an interior of said loop; and

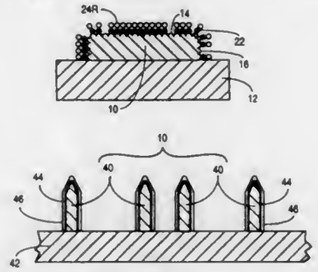
a conductive microtip formed in each aperture in electrical communication with said first layer of conductive material.

5,666,025

FLAT-PANEL DISPLAY CONTAINING STRUCTURE FOR ENHANCING ELECTRON EMISSION FROM CARBON-CONTAINING CATHODE

Michael W. Geis, Acton, Mass.; John M. Macaulay, Palo Alto, Calif., and Jonathan C. Twichell, Acton, Mass., assignors to Candescent Technologies Corporation, San Jose, Calif.

Division of Ser. No. 445,618, May 22, 1995, which is a division of Ser. No. 90,228, Jul. 9, 1993, Pat. No. 5,463,271. This application Oct. 17, 1995, Ser. No. 543,981
Int. Cl.[6] H01J *1/30;19/24*
U.S. Cl. 313—495 13 Claims



1. A flat-panel display comprising:

an emissive cathode structure that comprises (a) a carbon-containing electron-emissive cathode, (b) electronegative atoms chemically bonded to the cathode, the electronegative atoms comprising at least one of oxygen and fluorine, and (c) atoms of electropositive metal chemically bonded to the electronegative atoms; and

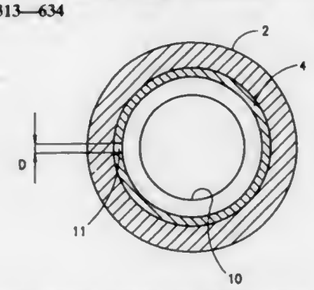
a generally flat encapsulating body that surrounds the emissive cathode structure to form a highly evacuated sealed enclosure.

5,666,026

DIELECTRIC BARRIER DISCHARGE LAMP

Hiromitsu Matsuno; Nobuyuki Hishinuma; Kenichi Hirose; Kunio Kasagi; Fumitoshi Takemoto, all of Hyogo-ken; Yoshinori Aiura, Tokyo, and Tatsushi Igarashi, Hyogo-ken, all of Japan, assignors to Ushiodenki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,655
Claims priority, application Japan, Sep. 20, 1994, 6-250201
Int. Cl.[6] H01J *17/16;61/06*
U.S. Cl. 313—634 12 Claims



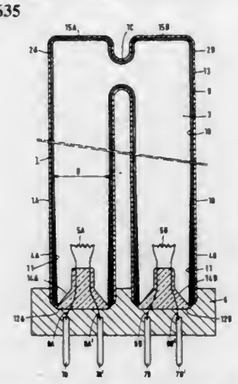
1. Dielectric barrier discharge lamp having a generally cylindrical double-tube arrangement of an outer tube coaxially disposed about an inner tube, an outer electrode being disposed on an outside surface of the outer tube, an inner electrode being disposed on an inside surface of the inner tube, and a discharge space being provided between the outer tube and the inner tube which is filled with a discharge gas for formation of excimer molecules by dielectric barrier discharge; wherein said inner electrode is a generally tubular part which includes a slit in an axial direction along the full length thereof.

5,666,027

LOW-PRESSURE MERCURY VAPOUR DISCHARGE LAMP AND METHOD OF MANUFACTURING SAME

Johannes M. M. Jaspers, Roosendaal, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,039
Claims priority, application Belgium, Dec. 24, 1993, 09301463
Int. Cl.[6] H01J *61/42;61/35*
U.S. Cl. 313—635 12 Claims



1. A low-pressure mercury vapour discharge lamp, comprising:

a tubular discharge vessel enclosing a discharge space in a gastight manner, said discharge vessel having end portions and an internal surface with an internal diameter D,

mercury and a rare gas within said discharge space,

discharge electrodes arranged in said end portions

a luminescent layer on an inner surface, and

a protective layer comprising a metal oxide on said luminescent layer,

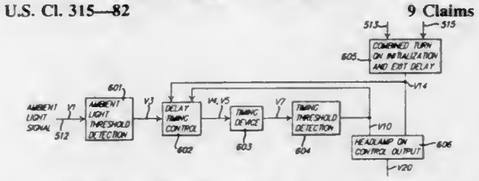
at least 75% by weight of the metal oxide in total being present in the end portions, said end portions each extending up to a distance beyond the electrodes which is three times the internal diameter D of the discharge vessel.

5,666,028

AUTOMOBILE HEADLAMP AND RUNNING LIGHT CONTROL SYSTEM

Jon H. Bechtel; David J. Schmidt, both of Holland, and Robert C. Knapp, Coloma, all of Mich., assignors to Gentex Corporation, Zeeland, Mich.

Filed Apr. 6, 1994, Ser. No. 223,972
Int. Cl.[6] G02F *1/17;* H05B *39/00*
U.S. Cl. 315—82 9 Claims



7. A headlamp and automatic mirror control system for a vehicle having a headlamp and an automatically dimming rearview mirror, said control system comprising, in combination, ambient light sensing means for determining the ambient light level, first control means for selecting an energized or deenergized state of said headlamp as a function of the ambient light level as determined by said ambient light sensing means, second control means for determining an operating threshold of said automatically dimming rearview mirror as a function of the ambient light level as determined by said ambient light sensing means, and switching means operable to energize and deenergize said headlamp in response to said

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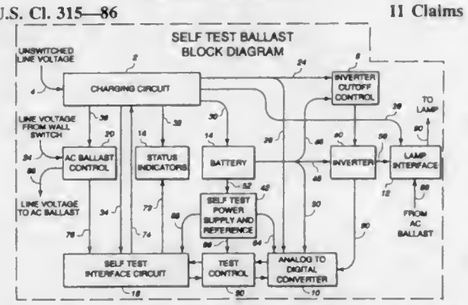
first control means, said vehicle including an ignition switch, said control system including an exit delay manually adjustable means for selectively manually adjusting an exit delay time period during which said headlamp is maintained in an energized state after said ignition switch is opened.

5,666,029

FLUORESCENT EMERGENCY BALLAST SELF TEST CIRCUIT

Charles W. McDonald, England, Ark., assignor to The Bodine Company, Collierville, Tenn.

Filed May 3, 1994, Ser. No. 237,572
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—86 **11 Claims**



1. A method of monitoring the operating condition of a lighting system, which system includes a component capable of producing light in response to an alternating current, circuitry connected to conduct alternating current to the component from a primary power source; a secondary power source providing a direct current, an inverter operable to change the direct current from the secondary power source into an alternating current for the component and a circuit connected to conduct alternating current from the inverter to the component, said method comprising:

testing operation of the secondary power source and the inverter by:

operating the inverter to change direct current from the secondary power source to alternating current to the component; and

measuring the alternating current being delivered to the component from the inverter;

wherein the system further includes a circuit unit having an impedance and connected to supply direct current from the secondary power source to the inverter, and said step of measuring the alternating current is performed by measuring the direct current supplied by the circuit unit.

5,666,030

MULTIPLE WINDOW GENERATION IN COMPUTER DISPLAY

Donald H. Parson, Liberty, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 20, 1994, Ser. No. 277,682
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 **6 Claims**

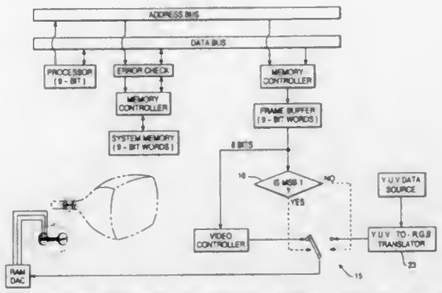
1. In a computer, the improvement comprising:

a) two sources of data for a display;

b) a frame buffer which contains, for each pixel of the display,

i) N bits of color information and

ii) one bit for selecting a data source; and



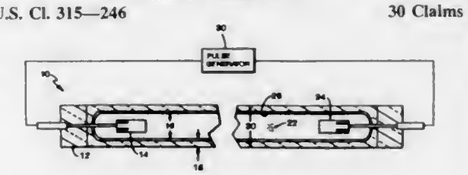
c) a converter for converting the color information into analog voltages for the display.

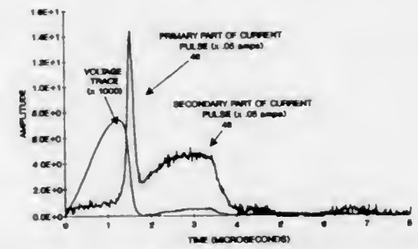
5,666,031

NEON GAS DISCHARGE LAMP AND METHOD OF PULSED OPERATION

Scott Jennato, Candia, and Harold L. Rothwell, Jr., Hopkinton, both of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 213,649, Mar. 16, 1994, Pat. No. 5,565,741, and Ser. No. 298,896, Aug. 31, 1994, Pat. No. 5,523,655. This application Dec. 12, 1995, Ser. No. 570,927
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—246 **30 Claims**





1. A method of pulsing a positive column discharge lamp having a rare gas fill and a phosphor coating comprising the steps of:

providing pulsed power to the enclosed gas fill, wherein the pulse has at least a first portion prior in time and a second portion later in time, the first portion having a pulse width selected to excite ultraviolet photon emission from the rare gas, and the second portion having a pulse width selected to enhance the additional light output from the rare gas, while applying sufficient voltage and current to cause ionization of the lamp fill.

5,666,032

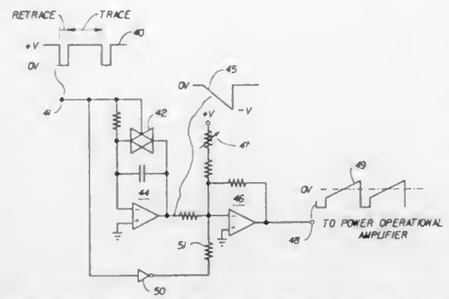
LINEAR SCAN CONTROL FOR A CRT DISPLAY SYSTEM

John Michael Kresock, Elba, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,060
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 315—370 **9 Claims**

1. An improved linear fast scan control circuit for a CRT display system having a deflection drive analog amplifier circuit responsive to an input signal having scan and retrace intervals for generating an output deflection signal for driving a deflection yoke of a CRT display wherein initial scan position is subject to a nonlinear scan distortion resulting from transient response characteristics of the deflection drive amplifier circuit; the improvement comprising;

means for supplying a substantially step increase signal to the input signal to said deflection drive analog amplifier circuit at the beginning of said scan interval after conclusion of the retrace interval, the step signal being of an amplitude and polarity that substantially eliminates said nonlinear scan distortion.



5,666,033

CIRCUIT FOR HORIZONTAL SCANNING OF A VIDEO DISPLAY APPARATUS, PROVIDED WITH AN S CAPACITAN

Régis Vingtrois, Port en Bessin, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1996, Ser. No. 715,053
Claims priority, application France, Sep. 20, 1995, 95 11035
Int. Cl.[6] H01J *29/70;29/76*
U.S. Cl. 315—408 **5 Claims**

1. A circuit for horizontal scanning, referred to as diode modulator, for use in a video display apparatus, comprising a main semiconductor switching element with an active terminal and a terminal connected to ground, arranged in parallel with two diodes connected in cascade in a direction opposite to the direct direction of the main switching element, provided with a first branch connected between the active terminal of the main switching element and ground, and consisting of the cascade arrangement of a deflection coil, a first S capacitance and an inductance, and provided with a second branch consisting of the cascade arrangement of an additional S capacitance and a thyristor for activating or deactivating said additional S capacitance, characterized in that

in the first branch, the deflection coil is arranged between the active terminal of the main switching element and the first S capacitance,

in the second branch

the additional S capacitance is connected to the common point between the deflection coil and the first S capacitance and,

the cathode of the thyristor is connected to the median common point of the two diodes of the modulator via a series diode which is connected to the cathode of the thyristor in cascade with said thyristor and with the same pass direction,

a first resistor is connected between the median point and the gate of the thyristor,

a second resistor is connected between the gate of the thyristor and the cathode of the thyristor,

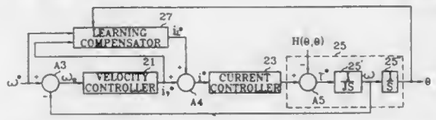
and a third resistor is connected between the cathode of the thyristor and ground.

5,666,034

METHOD FOR CONTROLLING VELOCITY OF A ROTARY MOTOR AND AN APPARATUS THEREFOR

Gan-soo Seoung; Young-hun Kim, and In-jung Ha, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 3, 1996, Ser. No. 675,623
Claims priority, application Rep. of Korea, Jul. 4, 1995, 95-19515
Int. Cl.[6] B65H *59/38;* **G11B** *15/43*
U.S. Cl. 318—6 **9 Claims**



1. A velocity control apparatus for a rotary motor, the velocity control apparatus comprising:

velocity measuring means for obtaining a velocity error by comparing an input reference angular velocity with an actual angular velocity detected from the motor;

a velocity controller for receiving the velocity error and outputting a current command for controlling the angular velocity of the motor;

a learning compensator for receiving the input reference angular velocity and the current command output from the velocity controller and an angular position of the motor and for correcting an effect of the disturbance expressed as a function of the angular position and the angular velocity of the motor via a plurality of repetitive learning steps;

current command compensating means for obtaining a corrected current command by adding the current command output from the velocity controller and the disturbance correction value obtained in the learning compensator; and

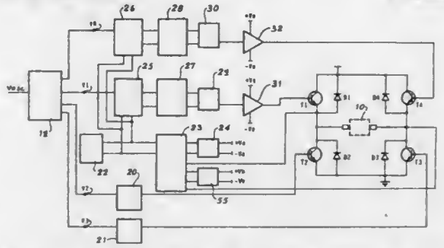
a current controller for receiving the corrected current command and outputting a torque command to the motor.

5,666,035

DIRECT CURRENT ACTUATOR CONTROL SYSTEM USING PULSE-WIDTH MODULATION IN FOUR BIPOLAR TRANSISTORS CONNECTED IN H-MANNER

Alain Basire, Versailles, and Michel Marceau, Montfort L'Amau, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 23, 1994, Ser. No. 363,396
Claims priority, application France, Dec. 23, 1993, 93 15564
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—254 **8 Claims**



4. A system for the control of direct current actuators in power electronics, based on pulse width modulation, comprising:

a H-bridge of four switches, each switch incorporating a transistor and a diode connected in reverse parallel between the emitter and the collector thereof;

a control circuit for said transistors, wherein each transistor is of the bipolar type and wherein the control circuit supplies four signals permitting the time shifting of the switching of these four transistors in such a way that, during a switching of one of them, no pair of transistors is switched on simultaneously, either with respect to the transistors belonging to the lateral

branches of the bridge or the transistors belonging to the two opposite sides of the bridge; and

for controlling the transistors of the top of the bridge, two switching power supplies based on an oscillator driving a mains transformer, wherein, at the secondary of said transformer, the signal is rectified and filtered to supply the voltages +Va and −Va and +Vb and −Vb, wherein each of the second signals is overmodulated to drive a control transformer, said overmodulation being obtained through the same oscillator and a modulation logic and wherein for driving the corresponding bridge bipolar transistor, the signal is demodulated with the aid of a rectifier and amplified adapting the level thereof.

5,666,036

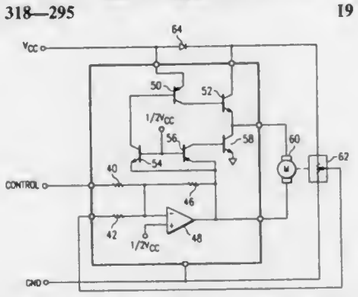
CIRCUIT FOR DRIVING THE MOTOR OF A TEMPERATURE BLEND DOOR

David Frank Swanson, Howell, Mich., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 31, 1995, Ser. No. 456,060

Int. Cl.[6] H02P *1/22*

U.S. Cl. 318—295 **19 Claims**



1. A circuit for driving a motor used to control an HVAC blend door comprising:

a motor having a first input, a second input, and a shaft connected to the HVAC blend door and a potentiometer having an output;

an amplifier stage having a first input for receiving a control voltage, having a second input connected to the output of the potentiometer, having a third input connected to a reference voltage and having an output connected to the first in put of the motor; and

a three state driver circuit having an input connected to the output of the amplifier stage and having an output connected to the second input of the motor, the output of the three state driver circuit being turned off when the output of the amplifier stage is at a steady state voltage, the amplitude of the voltage at the output of the three state driver circuit, when the three state driver circuit is mined on, being different from the amplitude of the voltage at the output of the amplifier stage.

5,666,037

ARRANGEMENT FOR MEASURING OR DETECTING A CHANGE IN A RETRO-REFLECTIVE ELEMENT

Gerd Reime, Friedenstr. 88, D-75328 Schömberg, Germany

PCT No. PCT/DE94/00714, § 371 Date Apr. 15, 1996, § 102(e) Date Apr. 15, 1996, PCT Pub. No. WO95/01561, PCT Pub. Date Jan. 12, 1995

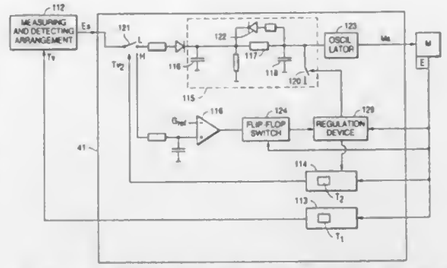
PCT Filed Jun. 18, 1994, Ser. No. 578,685

Claims priority, application Germany, Jul. 2, 1993, 93 09 837 U; Nov. 19, 1993, 43 39 572.4; Nov. 19, 1993, 43 39 574.0; Feb. 3, 1994, 44 03 221

Int. Cl.[6] G01J *5/02;* **H02H** *7/08;* **A47L** *1/00*

U.S. Cl. 318—483 **13 Claims**

1. An arrangement for indicating a change in a reflective element of a radiation-permeable medium having a detection side disposed opposite the reflective element, the arrangement comprising:



at least two measured sections for generating, reflecting and receiving radiation for measurement, each measured section including:

a radiation source disposed adjacent the detection side of the medium for generating radiation for transmission through the radiation-permeable medium thereby resulting in generated radiation;

a sensor-active surface on the reflective element for reflecting at least a portion of the generated radiation thereby resulting in reflected radiation emerging from the detection side of the medium; and

a radiation receiver disposed adjacent the detection side of the medium at a distance from the radiation source for receiving the reflected radiation, the radiation receiver having an output for producing a detection signal representing received radiation;

a switch arrangement operatively coupled to the at least two measured sections for periodically actuating respective ones of the measured sections in a successive, repeating switching sequence according to a predetermined switching sequence frequency, wherein the detection signal includes a modulation frequency corresponding to the predetermined switching sequence frequency;

an adjusting device operatively coupled to the at least two measured sections for adjusting the detection signal so that, in a rest state of the sensor-active surface of each measured section, a part of the detection signal corresponding to each measured section has an average amplitude value equal to an average amplitude value of parts of the detection signal corresponding to other ones of the measured sections;

a filter circuit connected to the radiation receiver of each measured section for producing a filtered detection signal; and

an evaluation device having an input for receiving the filtered detection signal and producing an output signal in dependence of a difference between parts of the filtered detection signal corresponding to respective ones of the at least two measured sections.

5,666,038

POSITIONING TABLE DEVICE INCLUDING CORRECTION OF ENERGIZATION ELECTRIC CURRENT TO SELECTED COILS OF A PERMANENT MAGNET OF A DRIVE DEVICE

Shinji Ohishi, Oyama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 263,000

Claims priority, application Japan, Jun. 24, 1993, 5-175959; Dec. 6, 1993, 5-305303

Int. Cl.[6] B64C *17/06*

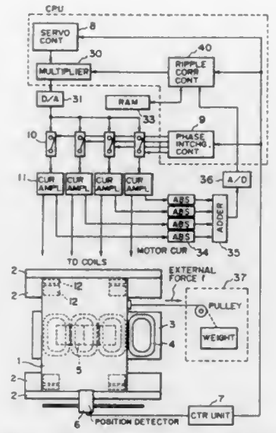
U.S. Cl. 318—625 **8 Claims**

1. A positioning table device comprising:

a table;

guiding means for guiding movement of said table in a predetermined direction;

driving means for producing a thrust for moving said table along the predetermined direction in association with said guiding



means, said driving means including a permanent magnet provided on said table and a plurality of coils provided along the predetermined direction, said plurality of coils being movable to be opposed to said permanent magnet sequentially with the movement of said table guided by said guiding means;

position detecting means for detecting a position of said table in the predetermined direction and for producing a detection output;

designating means for designating an energization electric current in accordance with the detection output of said position detecting means and for outputting a current designation signal;

coil selecting means for selecting a coil, of said plurality of coils, to be energized in accordance with the position of said table in the predetermined direction and for outputting a coil selection signal;

correcting means for correcting the energization electric current designated by said designating means when coils to be energized are changed by said coil selecting means, such that a change in coil energization electric current is slowed, whereby combined energization electric currents applied to said coils are maintained substantially at a constant magnitude, said correcting means comprising (i) a filter for slowing a change in the coil selection signal output from said coil selecting means, for changing coils to which electric current is supplied, and (ii) multipliers respectively associated with said coils, each multiplier applying to current supplying means, as a correction current signal, a product of an output of said filter and the current designation signal output from said designating means; and

current supplying means for energizing the coil selected by said coil selecting means, in accordance with the energization electric current corrected by said correcting means.

5,666,039

CHARGE REQUESTING BATTERY PACK AND CHARGE-REQUEST CONTROLLED CHARGER

Shigefumi Odaohara, Yamato; Arimasa Naitoh, Fujisawa, and Toshitsugu Mito, Atsugi, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1994, Ser. No. 278,743

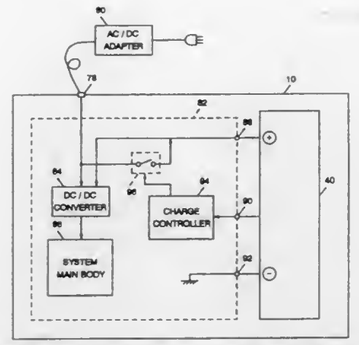
Claims priority, application Japan, Jul. 26, 1993, 5-184098

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—5 **8 Claims**

1. A battery pack comprising:

a battery;



detecting means, coupled to said battery, for detecting charge remaining in the battery;

interpreting means, coupled to said detecting means, for determining when to start and stop charging of said battery based on information from said detecting means; and

signalling means that output a charge request, when it is determined to start charging said battery, and output a charge-stop request, when it is determined to stop charging said battery.

5,666,040

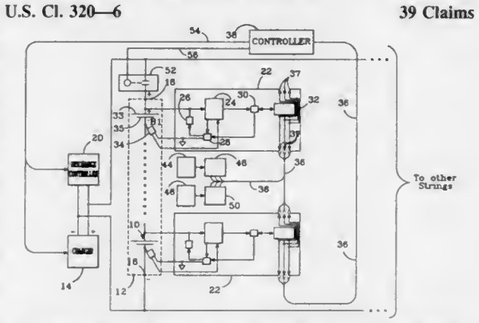
NETWORKED BATTERY MONITOR AND CONTROL SYSTEM AND CHARGING METHOD

Frank Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Aug. 27, 1996, Ser. No. 704,226

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—6 **39 Claims**



1. A networked battery monitor and control system, comprising:

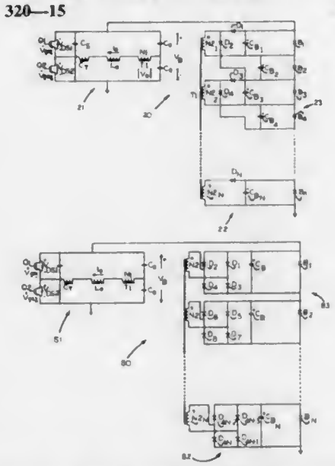
monitor circuitry to compare at least one parameter of each battery in a group of batteries with predetermined limits, said monitor circuitry producing go/no-go signals with respect to each of said limits,

bypass circuitry responsive to said monitor circuitry and connectable across the terminals of individual batteries when their respective battery voltages exceed respective predetermined limits, to reduce the amount of charging current flowing through them,

a controller that receives said go/no-go signals and reduces the charging current to a group of batteries when said bypass circuitry is unable to reduce the voltage of a battery in the group below a predetermined limit, said controller located remote from said monitor circuitry, and

cabling interconnecting said monitor circuitry and said remote controller for carrying said go/no-go signals between them.

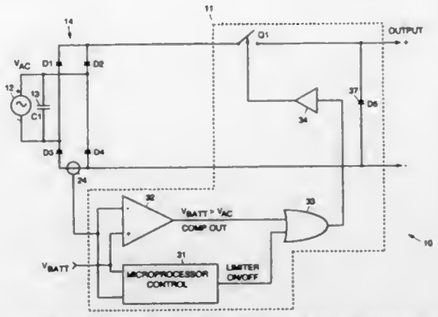
5,666,041
BATTERY EQUALIZATION CIRCUIT WITH RAMP CONVERTER
Thomas A. Stuart, Maumee, and Zhong Ye, Toledo, both of Ohio, assignors to The University of Toledo, Toledo, Ohio
Filed Aug. 27, 1996, Ser. No. 703,445
Int. Cl.[6] H02J *7/00;* **H01M** *10/44*
U.S. Cl. 320—15 **28 Claims**



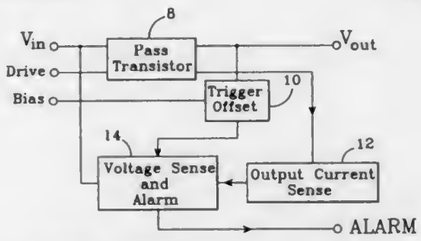
1. An electronic battery equalization circuit for equalizing voltages of a plurality of batteries in a battery pack, comprising:
a current source for supplying a charging current during a first half cycle and a second half cycle;
a transformer connected to said current source;
a primary circuit connected to said transformer, said primary circuit comprising a primary winding, an inductor connected in series to the primary winding, a current transformer connected in series to the inductor and a pair of semiconductor devices; and
at least one secondary circuit connected to said transformer comprising a secondary winding being coupled to a different pair of batteries of the plurality of batteries, a pair of diodes connected in series, each diode being connected to a different battery of the plurality of batteries, and a capacitor being connected across the different battery of the plurality of batteries,
wherein the charging current from said current source is supplied to at least one battery in a first half of the battery pack during the first half cycle, and
wherein a charging current from said current source is supplied to at least one battery in a second half of the battery pack during the second half cycle.

5,666,042
SWITCHING CURRENT SPIKE LIMITER FOR THREE PHASE COUPLED INDUCTOR CONDUCTIVE BATTERY CHARGER
Dave Lewis, Torrance, Calif., assignor to Delco Electronics Corp., Kokomo, Ind.
Filed Aug. 21, 1995, Ser. No. 515,084
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—40 **3 Claims**

1. An input current limited polyphase boost inductor battery charger comprising:
an AC power source;
a diode bridge coupled across the AC power source to define a rectified power source, such rectified power source being coupled to a boost inductor circuit through a current limiting switch, said boost inductor circuit including an inductor having a plurality of windings, a plurality of bridge switches coupled to respective windings of the inductor, a plurality of bridge diodes coupling respective windings to a battery to be charged, and a bridge controller for turning the bridge switches on and off to charge the battery with current delivered to said battery through said bridge diodes; and
a current limit controller for monitoring the voltages of said AC power source and said battery and for turning the current limiting switch off to interrupt the coupling between the AC power source and the boost inductor circuit when the voltage of said AC power source is greater than the voltage of said battery.

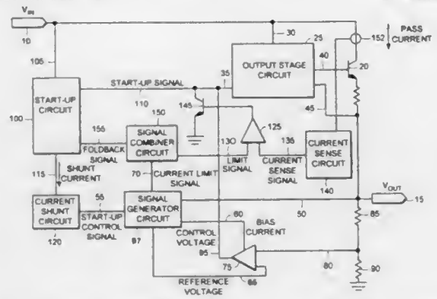


5,666,043
VOLTAGE DETECTOR WITH TRIGGER BASED ON OUTPUT LOAD CURRENCY
Peter S. Henry, Fremont, and Evaldo M. Miranda, San Jose, both of Calif., assignors to Analog Devices, Inc., Norwood, Mass.
Continuation of Ser. No. 479,662, Jun. 7, 1995, abandoned. This application Apr. 12, 1996, Ser. No. 679,494
Int. Cl.[6] G05F *1/573;1/44*
U.S. Cl. 323—277 **23 Claims**



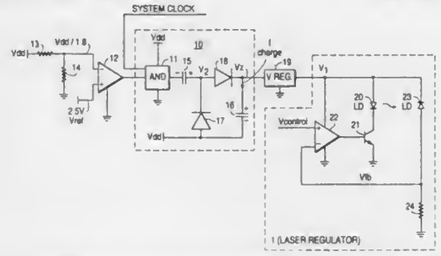
1. An electronic system, comprising:
a linear voltage regulator having a pass transistor with an input terminal connected to receive an unregulated voltage and an output terminal providing load current at a regulated output voltage,
a voltage sensor connected across the input and output terminals of said pass transistor to sense the difference between said regulated and unregulated voltages,
an alarm circuit including circuitry connected to establish a trigger voltage indicative of the regulator's imminent loss of regulation, and a current sensor connected to sense said load current and to adjust said trigger voltage in response to changes in said load current, said alarm circuit connected to activate an alarm signal whenever the voltage sensed by said voltage sensor equals said trigger voltage, and
a controller which takes preventive and corrective measures in response to the activation of said alarm circuit.

5,666,044
START UP CIRCUIT AND CURRENT-FOLDBACK PROTECTION FOR VOLTAGE REGULATORS
Claudio Tuozzolo, Cranston, R.I., assignor to Cherry Semiconductor Corporation, East Greenwich, R.I.
Filed Sep. 27, 1996, Ser. No. 722,342
Int. Cl.[6] G05F *1/573;1/40*
U.S. Cl. 323—277 **24 Claims**



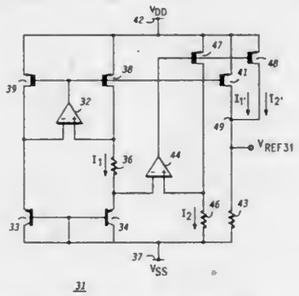
1. A circuit, connectable to a pass transistor for starting-up and limiting pass current in the pass transistor, having an output terminal with an output voltage, the circuit comprising:
a start-up circuit to provide a start-up signal and a foldback signal, wherein the start-up signal and the foldback signal are responsive to a start-up control signal;
an output stage circuit, having an input terminal with an input voltage, responsive to the start-up signal, to control the pass current in response to the input voltage when the pass transistor is coupled to the output stage circuit;
a signal generator circuit, coupled to the output voltage terminal, to provide a current limit signal and the start-up control signal, wherein the current limit signal and the start-up control signal are responsive to the output voltage; and
a current limit amplifier responsive to a current sense signal and a limit signal, and coupled to the input terminal of the output stage to limit the pass current from exceeding a current limit threshold, where the current sense signal is indicative of the pass current and the limit signal is responsive to the foldback signal and the current limit signal.

5,666,045
LASER DRIVE AND CONTROL SYSTEMS USEFUL FOR LASER DIODE PROTECTION
Scott R. Grodevant, Hilton, N.Y., assignor to PSC Inc., Webster, N.Y.
Filed Dec. 9, 1994, Ser. No. 353,421
Int. Cl.[6] G05F *1/40;* **H01S** *3/00*
U.S. Cl. 323—282 **20 Claims**



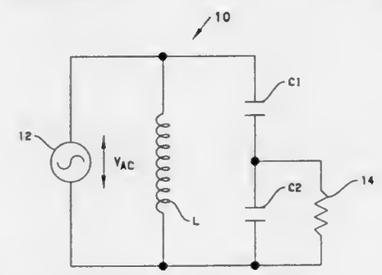
1. A system for driving and controlling a laser diode, the system preventing excess current from a power source, which provides an operating voltage for the laser diode, from causing damage to the laser diode when the voltage supplied by the power source to the laser diode decreases below a certain voltage which causes the excess current, said system comprising:
means for comparing said certain voltage with a voltage corresponding to the voltage across the laser diode and for outputting a comparison signal as a result thereof; and
means responsive to the comparison signal from said comparing means for regulating the voltage across the laser diode for increasing voltages across the laser diode when the voltage corresponding to the voltage across the laser diode drops below said certain voltage thereby preventing damaging the laser diode.

5,666,046
REFERENCE VOLTAGE CIRCUIT HAVING A SUBSTANTIALLY ZERO TEMPERATURE COEFFICIENT
David F. Mietus, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 24, 1995, Ser. No. 518,768
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—313 **22 Claims**



1. A reference voltage circuit, comprising:
a first amplifier circuit for generating a current having a positive temperature coefficient, the first amplifier circuit including a delta voltage generating circuit and having an output;
a second amplifier circuit for generating a current having a negative temperature coefficient, a portion of the delta voltage generating circuit common to the second amplifier circuit, the second amplifier circuit having an output, wherein the outputs of the first and second amplifier circuits are coupled to form a common electrode; and
a summing circuit coupled to the common electrode.

5,666,047
DIELECTRIC TRANSFORMER
Leopold J. Johnson, Valley Center, and Russell E. Hammond, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 5, 1995, Ser. No. 539,643
Int. Cl.[6] H01F *27/40*
U.S. Cl. 323—359 **7 Claims**



1. A dielectric power transformer comprising:
a power source;

a load;

a single tuning inductor having a nonmagnetic core operably coupled to one of said power source and said load; and

a capacitive voltage divider connected in parallel with said tuning inductor operably coupled to one of said power source and said load to transform power from said power source to said load.

5,666,048

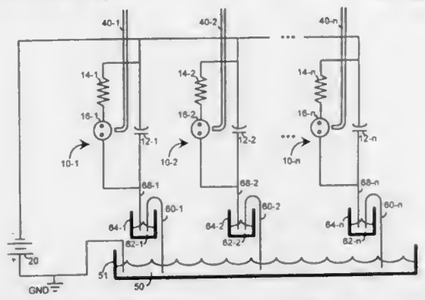
TECHNIQUE AND APPARATUS FOR MEASURING A DIRECT CURRENT FLOWING THROUGH A CONDUCTOR AT HIGH VOLTAGE

Donald P. Labriola, II, La Verne, and John R. Fassett, Irvine, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 26, 1995, Ser. No. 494,477

Int. Cl.[6] G01R *19/18*

U.S. Cl. 324—120 **10 Claims**



1. An apparatus for electrophoretic separation of one or more samples, comprising:

a plurality of separation channels containing said sample(s) and an electrolyte;

voltage supply having a high voltage terminal and a low voltage terminal for passing direct electrical currents through the channels to cause the sample(s) to separate into components;

a plurality of capacitors, each capacitor connected between the high voltage terminal and a corresponding separation channel so that the direct current passing through each capacitor and its corresponding separation channel will charge such capacitor;

means for causing each of the capacitors to discharge when voltage across each of the capacitors reaches a maximum voltage; and

means for determining the magnitudes of the direct currents.

5,666,049

SEMICONDUCTOR TESTING APPARATUS, SEMICONDUCTOR TESTING CIRCUIT CHIP, AND PROBE CARD

Toshio Yamada, Osaka; Atsushi Fujiwara, Kyoto; Michihiro Inoue, Nara, and Kazuhiro Matsuyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

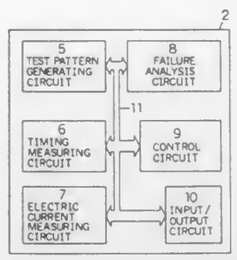
Division of Ser. No. 113,689, Aug. 31, 1993, Pat. No. 5,497,097. This application Sep. 11, 1995, Ser. No. 526,216

Claims priority, application Japan, Sep. 1, 1992, 4-233379; Feb. 24, 1993, 5-035039; Apr. 5, 1993, 5-077846

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—158.1 **4 Claims**

1. A semiconductor testing circuit chip having an exclusive function of testing a single semiconductor integrated-circuit chip out of a plurality of semiconductor integrated-chips being tested simultaneously, said testing circuit chip comprising:



a test-pattern generating circuit for generating a test pattern to be applied to said semiconductor integrated-circuit chip under test;

a timing measuring circuit which receives a waveform generated by said integrated-circuit chip under test in response to the test pattern generated by said test pattern generating circuit, said timing measuring circuit operative for measuring the timing of the received waveform;

an electric current measuring circuit for measuring the electric current consumed by said semiconductor integrated-circuit chip under test so as to determine a failure of said semiconductor integrated-circuit chip under test on the basis of the current consumed; and

a failure analysis circuit, which receives timing data from said timing measuring circuit, for analyzing the failure of said semiconductor integrated-circuit chip under test on the basis of the timing data generated by said time measuring circuit.

5,666,050

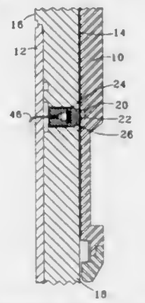
DOWNHOLE MAGNETIC POSITION SENSOR

Brett Bouldin, Spring, and Steve Owens, The Woodlands, both of Tex., assignors to PES, Inc., The Woodlands, Tex.

Filed Nov. 20, 1995, Ser. No. 560,813

Int. Cl.[6] G01B *7/14;* **E21B** *43/119;47/04;49/04*

U.S. Cl. 324—207.26 **20 Claims**



1. A well apparatus for detecting the position of a first element movable relative to the inside surface of a magnetically permeable second element, comprising:

a magnetic source attached to the first element at a position downhole in the well;

a recess in the second element having an opening, at the inside surface of the second element, proximate to said magnetic source as the first element moves relative to the second element;

a magnetically nonpermeable plug within said recess; and

a magnetic sensor within said plug at a distance from the second element inside surface, less than the mean diameter of said recess opening, for detecting and for transmitting a signal indicating the proximity of said magnetic source relative to said magnetic sensor.

5,666,051

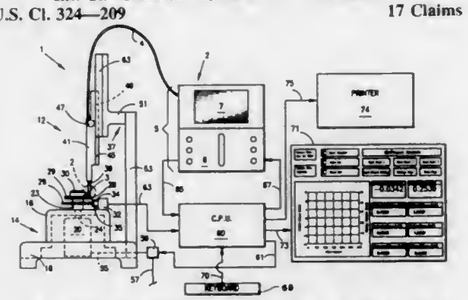
SYSTEM AND METHOD FOR MAPPING RESIDUAL SURFACE STRESSES IN A VALUE RING

Warren R. Junker, Monroeville; Lee W. Burtner, Elizabeth Twp., Allegheny County; Michael G. Peck; Richard J. Makar, both of Greensburg, and David A. Chizmar, Export, all of Pa., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Oct. 4, 1995, Ser. No. 539,241

Int. Cl.[6] G01R *33/12;* **G01N** *27/72;* **G01B** *7/24*

U.S. Cl. 324—209 **17 Claims**



1. A system for mapping the magnitude of residual surface stresses over a surface of an annular metallic component, comprising:

an eddy current probe having a detection coil for emanating a fluctuating electromagnetic field that focuses primarily on the surface of the metallic component, wherein the maximum width of the detection coil is substantially smaller than the radial width of the metallic component scanned to avoid interaction between said fluctuating magnetic field and edges of said component, and a probe circuit connected to said coil for both conducting a fluctuating electric current through said coil and detecting changes in the impedance of the coil;

means for scanning said detection coil over the surface of said annular metallic component in a 360° path around a central annular portion of said component while monitoring changes in coil impedance detected by said probe circuit, including a turntable means for rotating said annular metallic component, and a support arm for positioning said detection coil against the surface of the annular metallic component while said component rotates, and

processor means electrically connected to said scanning means and said probe circuit for converting said changes in impedance into signals generating a map of the magnitude of residual surface stresses around a central portion of the surface of the annular component.

5,666,052

MAGNETIC SENSOR HAVING A SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE AND A PICKUP COIL WOUND ON A TUBULAR RESINOUS BOBBIN WITH EMBEDDED HIGH THERMAL CONDUCTIVITY MATERIAL

Kenichi Sata, Ibaragi, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01081, § 371 Date Aug. 17, 1994, § 102(e) Date Aug. 17, 1994, PCT Pub. No. WO95/04287, PCT Pub. Date Feb. 9, 1995

PCT Filed Aug. 2, 1993, Ser. No. 290,765

Claims priority, application Japan, Mar. 6, 1992, 4-49397

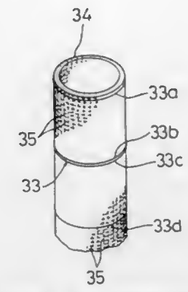
Int. Cl.[6] G01R *33/035;* **H01L** *39/22;* **H01F** *5/02*

U.S. Cl. 324—248 **9 Claims**

1. A magnetic sensor comprising:

a SQUID which is in the superconducting state on a level of cryogenic temperature;

a tubular resinous bobbin (**34**) having plural wires (**35**), each coated with a resinous film and made of non-magnetic material with high thermal conductivity, the plural wires (**35**) being



embedded in the body of the resinous bobbin (**34**) and netted in a grid pattern so as to extend substantially in an axial direction of the bobbin (**34**) and a circumferential direction of the bobbin (**34**); and

a magnetic-flux input circuit (**32**) which is connected to the SQUID and has a pick-up coil (**33**) wound around the tubular resinous bobbin (**34**).

5,666,053

CHARGED PARTICLE BEAM APPARATUS FOR MEASURING MAGNETIC FIELD

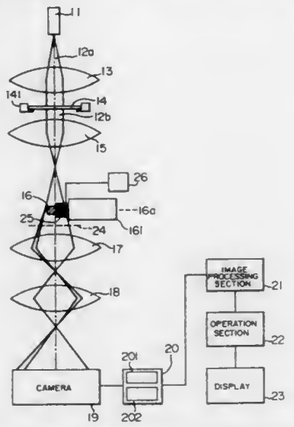
Hiroshi Suzuki, Kokubunji; Hiroyuki Shinada, Chofu; Katsuhiro Kuroda, Hachioji; Yusuke Yajima, Kokubunji; Yoshio Takahashi, Kunitachi; Hideo Saito, Hachioji, and Masato Nakajima, Chofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,951

Claims priority, application Japan, Feb. 23, 1994, 6-025065

Int. Cl.[6] G01R *33/00;* **G21K** *1/00;* **G06G** *7/48*

U.S. Cl. 324—250 **38 Claims**



1. A method of measuring a magnetic field comprising the steps of:

transmitting a charged particle beam through a reference specimen, forming an image from the charged particle beam with a desired magnification and detecting a first image;

storing digitally the first image detected;

passing the charged particle beam through a region containing a magnetic field to be measured, forming an image with a desired magnification from the charged particle beam deflected by the magnetic field to be measured, and detecting a second image, said second image being independent of the first image;

storing digitally, separate from the first image, the second image detected;

processing digitally the first image and the second image stored and determining the displacement of the charged particle beam; and

determining the magnetic field distribution to be measured in space by calculations based on the displacement.

5,666,054

GRADIENT COILS FOR THERAPY TOMOGRAPHS

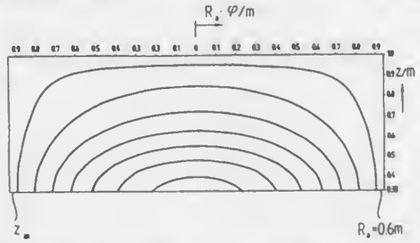
Michael Westphal, Offenbach, Germany, assignor to Bruker Analytische Messtechnik GmbH, Rheinstetten, Germany

Filed Nov. 20, 1995, Ser. No. 560,874

Claims priority, application Germany, Dec. 21, 1994, 44 45 747.2

Int. Cl.[6] G01R *33/385;* **H01F** *7/20*

U.S. Cl. 324—318 **26 Claims**



1. A gradient coil system for the production of a magnetic transverse gradient field $G_x=dB_z/dx$ in a nuclear magnetic resonance (NMR) tomograph with a main field magnet for the production of a homogeneous static main magnetic field B_z in a measuring volume whose center coincides with an origin of a Cartesian x-, y-, z-coordinate system, wherein the main magnetic field B_z is directed along the z-axis, and the magnetic transverse gradient field G_x varies along the x-axis of this coordinate system, wherein the gradient coil system comprises four partial coils (S_{1x}, S_{2x}, S_{3x}, S_{4x}) each having two current connections (A_1, A_2) which are arranged mirror symmetrically with respect to the xy-plane (z=0) and mirror symmetrically with respect to the zy-plane (x=0), wherein each partial coil contains winding sections on an inner and on an outer cylinder (Z_{ix}, Z_{ax}) extending about the z-axis and, in each case, in a radial connecting plane (V_{+x}, V_{-x}) essentially parallel to the xy-plane, wherein the winding sections of each partial coil have current flowing through them in series during operation and wherein the radial connecting planes (V_{+x}, V_{-x}) of those partial coils (S_{1x}, S_{4x}; S_{2x}, S_{3x}) which lie across from each other relative to the xy-plane are separated from another, and wherein the partial coils (S_{1x}, S_{2x}, S_{3x}, S_{4x}) are configured such that the winding sections on the inner and on the outer cylinder (Z_{ix}, Z_{ax}) are axially more distant from the xy-plane than the corresponding radial connecting surface (V_{+x}, V_{-x}).

5,666,055

SURFACE COIL SYSTEM FOR A SINGLE CHANNEL NMR RECEIVER

Randall W. Jones, 1025 Chapel Hill Dr., Elkhorn, Nebr. 68022, and Fred Davis, 8108 S. 87th St., Apt. #6, LaVista, Nebr. 68128

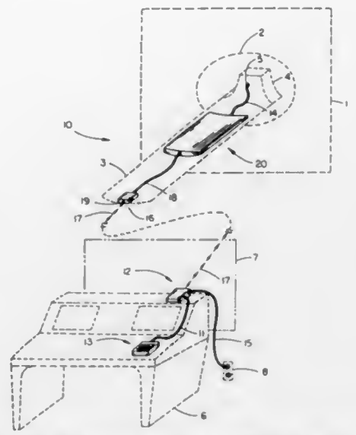
Filed Oct. 2, 1995, Ser. No. 537,534

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **20 Claims**

1. A surface coil system for single channel MRI reception comprising:

a coil system including a plurality of self-resonant, overlapping coil conductor sections arranged relative to one another and to anatomical regions of a patient such that a combination of regions form a desired larger region of interest;



each of said coil sections including a plurality of coil conductor elements, each said coil element activatable to generate a MRI output signal;

a control unit located remotely from said coil system and in electromagnetic communication therewith, having means for selectively electronically activating and deactivating each of said coil sections to cause the coil elements within each section to produce MRI output signals when activated;

said control unit including means for broadcasting an electromagnetic signal through space to the coil system, and said coil system including means for receiving said electromagnetic signal from said control unit;

said coil system including means for broadcasting an electromagnetic signal through space to the control unit, and the control unit including means for receiving said electromagnetic signal from the coil system;

said broadcasting and receiving means in the control unit and coil system enabling wireless electromagnetic communication therebetween; and

said coil system including means for combining selected MRI output signals;

and means for electrically connecting said coil system to an MRI system to transmit said combined signals to the MRI system.

5,666,056

MAGNETIC RESONANCE IMAGING APPARATUS

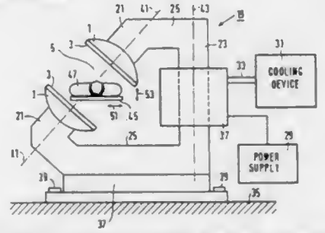
Johannes J. M. Cuppen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 284,967, Aug. 2, 1994, abandoned. This application Jun. 25, 1996, Ser. No. 670,038

Claims priority, application European Pat. Off., Aug. 2, 1993, 93202277

Int. Cl.[6] G01R *33/25*

U.S. Cl. 324—318 **4 Claims**



1. A magnetic resonance imaging apparatus including a main magnet comprising a frame connected between two magnetic elements having substantially parallel faces that face each other so as to define a gap between the magnetic elements, said magnetic

elements comprising magnetic poles of opposite polarities for generating a static magnetic field in the gap, a supporting member for supporting said frame in a predetermined position relative to a substantially horizontal floor, and patient supporting means for supporting a patient so that a part of the patient that is to be examined is located in the gap, wherein the supporting member is arranged so as to support the frame in such a position that the normals to the planes of the substantially parallel faces of the magnetic elements extend in a direction that encloses an angle between 30° and 60° with the vertical direction, and wherein with the frame supported in said position the patient supporting means is arranged for supporting a patient in a lying position such that the longitudinal direction of the patient is substantially horizontal.

5,666,057

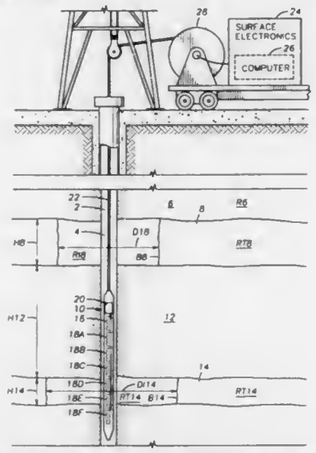
METHOD OF SKIN EFFECT CORRECTION AND DATA QUALITY VERIFICATION FOR A MULTI-FREQUENCY INDUCTION WELL LOGGING INSTRUMENT

David R. Beard, Houston, and Qiang Zhou, Missouri City, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Feb. 29, 1996, Ser. No. 608,731

Int. Cl.[6] G01V *3/18;3/10*

U.S. Cl. 324—339 **13 Claims**



1. A method of correcting receiver signals in an induction well logging instrument for skin effect, comprising:

determining a magnitude of said signals induced in said receiver at each one of a plurality of different frequencies;

determining a best fit curve of said magnitude of said signals with respect to frequency; and

calculating a skin effect corrected conductivity by determining a value of said best fit curve which would obtain when said frequency is equal to zero.

5,666,058

CORRECTION METHOD FOR AN ELECTROMAGNETIC INDUCTION-TYPE PROBE

Hideki Wakamatsu, Hyogo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 27, 1995, Ser. No. 579,181

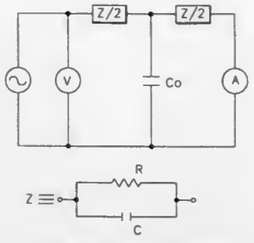
Claims priority, application Japan, Dec. 29, 1994, 6-338611

Int. Cl.[6] G01N *27/02;* **G01R** *27/00;35/00*

U.S. Cl. 324—445 **3 Claims**

1. A correction method comprising the steps of:

a. measuring electrical properties of a solution by employing an electromagnetic induction-type probe;



Z: LOOP IMPEDANCE OF SOLUTION

b. measuring electrical properties of a standard solution having a known permittivity by employing said electromagnetic induction-type probe;

c. approximating current pathways both inside and outside said probe through use of an electrical equivalent circuit, a value of at least one constituent element of said equivalent circuit obtained from results of said measurement of step (b) and a standard value of at least one parameter of said standard solution; and

d. correcting a measured value obtained in step (a) by use of said value of said at least one constituent element.

5,666,059

METHOD FOR CALIBRATING A NETWORK ANALYZER ACCORDING TO THE FIFTEEN-TERM PRINCIPLE

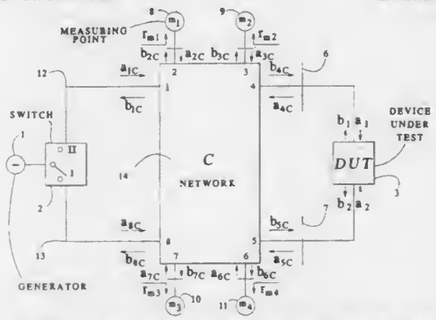
Holger Heuermann, Tittmoning, and Burkhard Schiek, Bochum, both of Germany, assignors to Rohde & Schwarz GmbH & Co. KG, Munich, and Rosengerger Hochfrequenztechnik GmbH & Co., Tittmoning, both of Germany

Filed Oct. 4, 1995, Ser. No. 539,086

Claims priority, application Germany, Oct. 5, 1994, 44 35 559.9

Int. Cl.[6] G01R *27/06*

U.S. Cl. 324—601 **19 Claims**



1. A method for calibrating a network analyzer having two test ports and at least four measuring locations, in which measurements of the transmission and reflection parameters at five calibration standards are performed successively, the five calibration standards being successively connected in arbitrary sequence between the two test ports according to a fifteen-term principle, comprising the steps of:

providing one of a one-port network, having known impedance, and an open circuit as a first calibration standard for the first calibration measurement;

successively connecting said one of a one-port network having known impedance and an open circuit to the two test ports to provide first measured values;

using second, third, fourth and fifth calibration standards for second, third, fourth and fifth calibration measurements,

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respectively, only eleven of a total of sixteen scatter parameters thereof being known, to provide second, third, fourth and fifth measured values; and

calculating the remaining five unknown scatter parameters of the sixteen scatter parameters from the first, second, third, fourth and fifth measured values;

wherein correction values that are taken into consideration in following subject measurements are calculated from the first, second, third, fourth and fifth measured values.

5,666,060

TEST METHOD AND APPARATUS FOR TESTING A PROTECTIVE RELAY SYSTEM

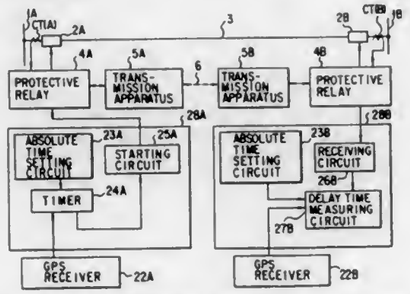
Yukio Sukegawa, and Tetsuo Matsushima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 382,764, Feb. 2, 1995, Pat. No. 5,576,625. This application Aug. 21, 1996, Ser. No. 700,875

Claims priority, application Japan, Feb. 7, 1994, 6-013288

Int. Cl.[6] H02H *7/26;* **G01R** *31/08*

U.S. Cl. 324—617 **5 Claims**



1. A method for measuring a transmission delay time in a transmission system for transmitting a signal between protective relays respectively connected to electric-supply stations includes first and second electric-supply station connected through electric transmission lines, the method comprising:

a transmitting step for generating a transmission signal to be transmitted through the transmission system in the first electric-supply station including a transmission side protective relay; and

a measuring step for measuring a the transmission delay time of the transmission signal transmitted through the transmission system in the second electric-supply station including a reception side protective relay,

the transmitting step including the sub-steps of:

a) analyzing time data included in a signal transmitted from a satellite and converting the time data to a time signal; and

b) generating a transmission signal when a time represented by the time signal coincides with a preset time and outputting the transmission signal to the transmission side protective relay,

the measuring step including the sub-steps of:

c) analyzing time data included in a signal transmitted from the satellite and converting the time data to a time signal;

d) detecting that the reception side protective relay has received the transmission signal transmitted through the transmission system from the transmission side protective relay; and

e) comparing a time represented by the time signal when the transmission signal is received with a preset test start time, thereby measuring the transmission delay time in the transmission system.

5,666,061

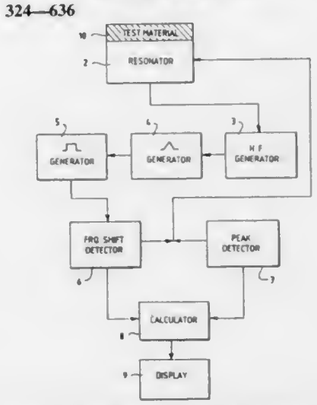
APPARATUS AND METHOD FOR MEASUREMENT OF MOISTURE CONCENTRATION IN GRANULAR MATERIALS

Jerald G. Assenheim, London, England, assignor to James Instruments Inc., Chicago, Ill.

Filed Nov. 9, 1994, Ser. No. 336,858

Int. Cl.[6] G01R *27/00*

U.S. Cl. 324—636 **11 Claims**



1. A device for the measurement of moisture in a granular material using high frequency waves, comprising the following:

a. A resonator, the field produced by which interacts with the material to be measured,

b. an electromagnetic field directed to pass through the material to be measured,

c. a square wave generator cooperatively connected to a triangle wave generator, which in turn emits waves which are generated by a high frequency generator,

d. said high frequency generator emitting waves in the range of about 0.5 to about 20 gigahertz,

e. means for determining the natural frequency of the resonator and frequency of the resonator in conjunction with the material being tested for moisture content,

f. a high frequency diode for measuring the amplitude of voltage output from the resonator with and without material within it, and

g. detection means for measuring the frequency shift and height of the peak voltage output of the resonator coupled to with the material being tested.

5,666,062

VOLTAGE MEASURING USING ELECTRO-OPTIC MATERIAL'S CHANGE IN REFRACTIVE INDEX

Hironori Takahashi; Kazuhiko Wakamori; Musubu Koishi, and Akira Takeshima, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Sep. 19, 1995, Ser. No. 531,542

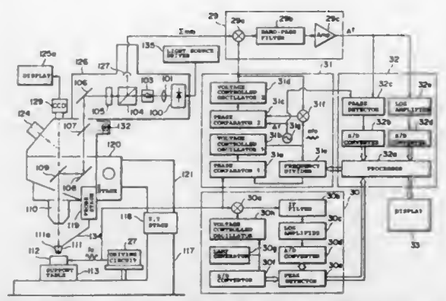
Claims priority, application Japan, Sep. 19, 1994, 6-223618; Sep. 29, 1994, 6-235162

Int. Cl.[6] G01R *23/00;23/16*

U.S. Cl. 324—753 **5 Claims**

5. An electro-optic probing system for measuring frequency characteristics of an electrical potential of an object, the potential being generated by applying a voltage having an AC voltage with a fundamental frequency f_0 to the object from a driving circuit, said system comprising:

(A) an electro-optic probe having refractive index changeable in accordance with an electric field generated around the object by application of a voltage to the object;



(B) a light source for introducing light into said electro-optic probe;

(C) a photodetector for detecting light reflected by said electro-optic probe;

(D) fundamental frequency extracting means for extracting the AC voltage of the fundamental frequency f_0 from the output voltage of a driving circuit;

(E) frequency multiplying means, connected to said fundamental frequency extracting means, for generating a frequency nf_0, n being an integer; and

(F) a narrow-band amplifier connected to said photodetector and said frequency multiplying means to amplify only an AC voltage signal having the frequency nf_0 output from said photodetector.

5,666,063

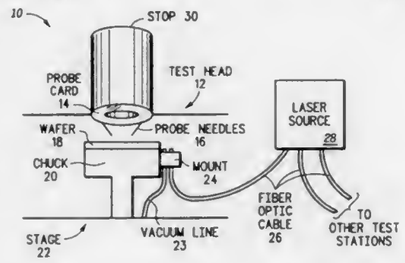
METHOD AND APPARATUS FOR TESTING AN INTEGRATED CIRCUIT

David A. Abercrombie, Cedar Park, and Whitson G. Waldo, Hutto, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 23, 1996, Ser. No. 735,472

Int. Cl.[6] G01R *31/00;1/06;* **H01R** *43/00*

U.S. Cl. 324—754 **49 Claims**



1. A method for testing integrated circuits comprising the steps of:

providing a first wafer having a first integrated circuit thereon;

providing a test head;

mounting a probe card to the test head, the probe card having a probe tip;

placing the probe tip in contact with a first test pad to test the first integrated circuit;

cleaning the probe tip using a laser to form a laser cleaned probe tip;

providing a second wafer having a second integrated circuit thereon; and

placing the laser cleaned probe tip in contact with a second test pad to test the second integrated circuit.

5,666,064

SEMICONDUCTOR DEVICE, CARRIER FOR CARRYING SEMICONDUCTOR DEVICE, AND METHOD OF TESTING AND PRODUCING SEMICONDUCTOR DEVICE

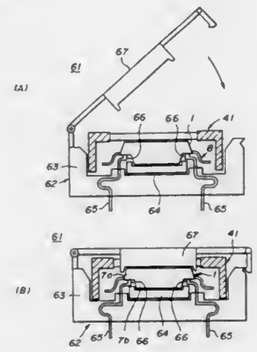
Junichi Kasai; Kazuto Tsuji; Norio Taniguchi; Takashi Mashiko; Masao Sakuma, all of Kawasaki; Yukio Saigo, Satsuma-gun; Yoshiyuki Yoneda, and Masashi Takenaka, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki; Kyushu Fujitsu Elecronics Limited, Satsuma-gun, and Fujitsu Automation Limited, Kawasaki, all of Japan

Division of Ser. No. 961,161, Oct. 16, 1992, Pat. No. 5,475,259. This application May 15, 1995, Ser. No. 441,462

Claims priority, application Japan, Oct. 17, 1991, 3-269645; Feb. 12, 1992, 4-025399; May 22, 1992, 4-130900; Jun. 12, 1992, 4-153842

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—755 **7 Claims**



1. A method of testing a semiconductor device which comprises a plurality of leads respectively made up of an inner lead and an outer lead, a semiconductor chip electrically connected to the inner leads, and a substantially rectangular package encapsulating at least the inner leads and the semiconductor chip, wherein the outer leads extend outwardly from the package, said package having an upper part and a lower part which have mutually different sizes such that a stepped part is formed between the upper and lower parts due to the different sizes, each of said outer leads having a part which is exposed at the stepped part of the package, said method comprising the steps of:

(a) placing the semiconductor device in a testing position on a socket, wherein probes of the socket make contact with the parts of corresponding ones of the outer leads which are exposed at the stepped part of the package of the semiconductor device, and the outer leads do not contact the socket other than through the probes; and

(b) checking performance of the semiconductor device by supplying signals from a testing equipment to the outer leads via the probes of the socket.

5,666,065

FAST ACTING FET TEST CIRCUIT FOR SIR DIAGNOSTICS

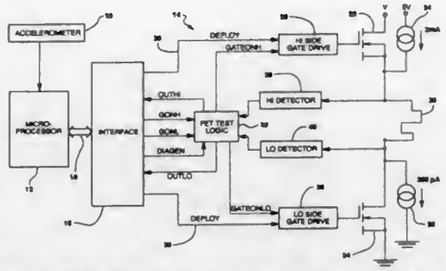
Richard Joseph Ravas, Kokomo; Terrell Anderson, Carmel, and Robert Keith Constable, Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed May 22, 1996, Ser. No. 651,073

Int. Cl.[6] G01R *31/28;* **B60Q** *1/00;* **G01M** *19/00*

U.S. Cl. 324—769 **7 Claims**

1. In an automotive supplemental inflatable restraint system having a firing circuit containing a squib between two FETs



serially coupled between a voltage source and ground for effecting inflation of a restraint, and a deployment circuit for controlling the firing circuit, a test circuit for FETs comprising:

a regulated voltage source applied to the squib;

detector means coupled to the firing circuit for detecting variance of the voltage on the squib beyond set thresholds above and below the regulated voltage;

gate means responsive to a test signal for turning on a selected FET whereby the voltage on the squib varies beyond one of the thresholds while the selected FET is on;

the gate means including a logic circuit responsive to the detector means for preventing conductance of the selected FET when the voltage breaches a threshold so that the selected FET, if turned on, is held on for only a short period, and

the logic circuit including means for producing an output signal indicative of FET operability.

5,666,066

OVERCURRENT DETECTING DEVICE FOR A DC MOTOR

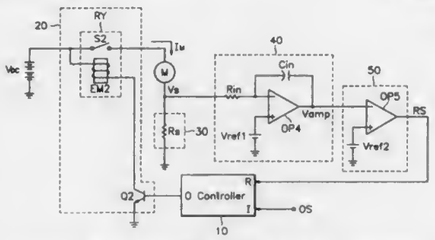
Hyun-min Jo, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,726

Claims priority, application Rep. of Korea, Nov. 29, 1994, 94-31744

Int. Cl.[6] H02P *5/40*

U.S. Cl. 324—772 **4 Claims**



1. An overcurrent-detecting device for a motor comprising;

a converter for changing a current signal in a motor to a voltage signal;

an integrator for comparing an input signal to said integrator from the converter, with a first reference voltage, and integrating a portion of said input signal exceeding said first reference voltage; and

a detector for comparing an input signal to said detector from the integrator, with a second reference voltage, sensing an overcurrent when the input signal to said detector is smaller than the second reference voltage, and outputting a resultant signal as an overcurrent-detection signal.

5,666,067

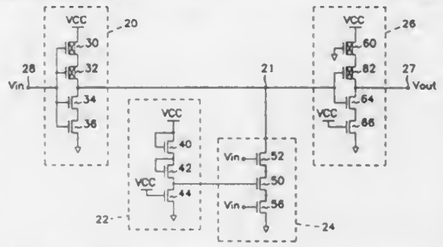
VOLTAGE COMPENSATING CMOS INPUT BUFFER CIRCUIT

Joseph C. Sher, and Manny K. F. Ma, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 518,546, Aug. 23, 1995, Pat. No. 5,578,941. This application Oct. 10, 1996, Ser. No. 731,148

Int. Cl.[6] H03K *19/0185;19/0948*

U.S. Cl. 326—34 **13 Claims**



1. A method of compensating for supply voltage variations in a CMOS input inverter buffer circuit having complimentary p-channel and n-channel transistors coupled in series between the supply voltage and a reference voltage, said transistors having a channel size ratio selected to provide TTL input trip points at a predetermined supply voltage and switching logic levels of an output based on the level of an input signal reaching said trip points, comprising the steps of:

receiving an input signal;

providing a supply voltage variable active load to at least one of the n-channel and p-channel transistors to stabilize the levels of input signals at which the input inverter switches its output levels when the supply voltage changes; and

controlling the flow of current through the active load by use of trip point centering transistors coupled to the input signal and based on the supply voltage.

5,666,068

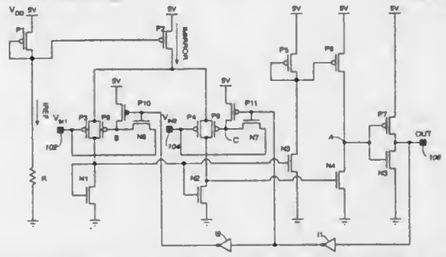
GTL INPUT RECEIVER WITH HYSTERESIS

Gregory E. Ehmann, Sleepy Hollow, Ill., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Nov. 3, 1995, Ser. No. 552,666

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—63 **15 Claims**



1. A GTL input receiver for receiving differential GTL signals and for generating a CMOS output at a single-ended output terminal comprising:

comparator means formed of a first primary current steering device and a second primary current steering device with said first primary current steering device receiving one of said differential GTL signals and with said second primary current steering device receiving the other one of said differential GTL signals;

current-to-voltage converting means responsive to said comparator means for generating a single-ended two-state output signal, said two-state output signal being in a first output state when said one of said differential GTL signals is lower than said other one of said differential GTL signals and being in a second output state when said other one of said differential GTL signals is lower than said one of said differential GTL signals;

inverting means responsive to said two-state output signal for generating said CMOS output having either a high or low logic level on said output terminal; and

auxiliary current steering means coupled to said first and second primary current steering devices for adding hysteresis by dynamically changing the ratio of the current flowing through said first and second primary current steering devices in response to said CMOS output thereby increasing the noise margin.

5,666,069

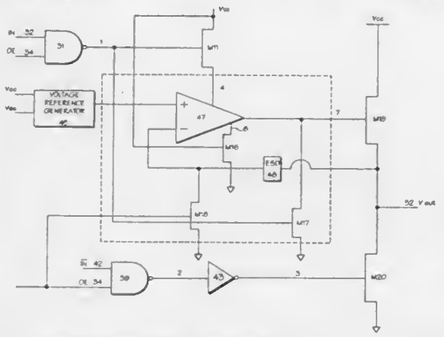
DATA OUTPUT STAGE INCORPORATING AN INVERTING OPERATIONAL AMPLIFIER

Gary Austin Gibbs, San Jose, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 22, 1995, Ser. No. 577,258

Int. Cl.[6] H03K *19/0185;19/0948*

U.S. Cl. 326—81 **14 Claims**



1. A voltage output clamp comprising:

a reference voltage generator circuit having a first input coupled to a first reference voltage, a second input coupled to a second reference voltage and an output;

a switched differential operational amplifier, having a first input coupled to the output of the reference voltage generator circuit, a second input, and an output;

an output driver circuit having a first input coupled to the output of the switched differential operational amplifier and an output coupled to the second input of the switched differential operational amplifier;

a first NAND gate having a first input receiving a first logical signal, a second input receiving an output enable signal, and an output; and

a first transistor arranged to provide an electrical path between the first reference voltage and the switched differential operational amplifier, and being coupled to the output of the first NAND gate.

5,666,070

LOW POWER, HIGH SPEED LEVEL SHIFTER

Todd A. Merritt, and Troy A. Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

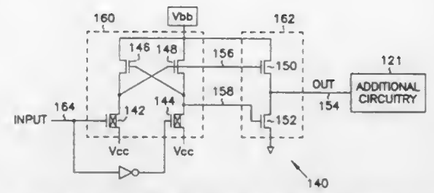
Continuation-in-part of Ser. No. 438,645, May 10, 1995, Pat. No. 5,528,173. This application Apr. 9, 1996, Ser. No. 629,503

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—81 **10 Claims**

1. A voltage level translator comprising:

an input connection receiving an input signal having a first upper voltage level and a first lower voltage level;



an input stage producing first and second intermediate outputs, the first intermediate output being at substantially the first upper voltage level when the input signal is at substantially the first lower voltage level, the second intermediate output being at the first upper voltage level when the input signal is at the first upper voltage level; and

an output stage producing an output signal in response to the input signal, the output signal being at a second lower voltage level when the first intermediate output is at substantially the first upper voltage level, and at the first lower voltage level when the second intermediate output is at substantially the first upper voltage level, the output stage comprising:

a first output transistor having its gate connected to the first intermediate output, its source electrically connected to the second lower voltage level, and its drain connected to a source of a second output transistor,

the second output transistor having its gate connected to the second intermediate output, and its drain electrically connected to the first lower voltage level, and

an output line connected to the drain of the first output transistor.

5,666,071

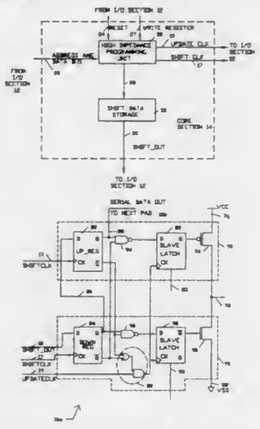
DEVICE AND METHOD FOR PROGRAMMING HIGH IMPEDANCE STATES UPON SELECT INPUT/OUTPUT PADS

Keith G. Hawkins, Dripping Springs; Harikumar B. Nair, and Shivachandra I. Javalagi, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1995, Ser. No. 565,684

Int. Cl.[6] H03K *19/0175;19/094*

U.S. Cl. 326—86 **32 Claims**



28. An apparatus for programming high impedance states, comprising:

a plurality of registers for storing a plurality of control bits;

a master register/slave latch coupled to store one of said plurality of control bits during a shift clock transition; and

a transistor having a gate terminal and a source-drain path, said gate terminal is coupled to receive an output of said master

register/slave latch, and said source-drain path is coupled between an input/output pad and a power supply.

5,666,072

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING BIPOLAR TRANSISTOR AND FIELD EFFECT TRANSISTOR

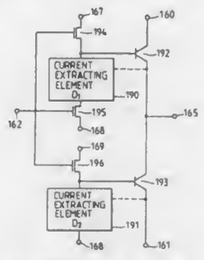
Fumio Murabayashi; Yoji Nishio, both of Hitachi; Shoichi Kotoku, Katsuta; Kozaburo Kurita, Hitachi, and Kazuo Kato, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 765,018, Sep. 24, 1991, Pat. No. 5,313,116, which is a division of Ser. No. 649,854, Feb. 1, 1991, Pat. No. 5,059,821, which is a division of Ser. No. 325,911, Mar. 20, 1989, Pat. No. 5,001,365. This application Apr. 5, 1994, Ser. No. 223,527

Claims priority, application Japan, Mar. 18, 1988, 63-63338

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—110 **5 Claims**



1. A semiconductor integrated circuit device comprising a plurality of logic circuits integrated on a semiconductor substrate, wherein at least one of said logic circuits includes:

first and second power source terminals having an absolute value of potential difference substantially less than 5 V;

at least one input terminal;

an output terminal;

a bipolar transistor having a base, and having a collector-emitter current path coupled between said first power source terminal and said output terminal;

at least one field effect transistor having a gate responsive to an input signal applied to said input terminal and a source-drain current path coupled between said first power source terminal and the base of said bipolar transistor;

a semiconductor switch means responsive to the input signal applied to said input terminal for performing ON/OFF operations complementary to ON/OFF operations of said bipolar transistor and having a pair of main terminals, wherein said semiconductor switch means includes a current path between said pair of main terminals which current path is coupled between said output terminal and said second power source terminal; and

a potential difference reducing element having a pair of main terminals wherein a current path between said pair of main terminals is coupled between said first power source terminal and said output terminal for reducing a potential difference which is present between said first power source terminal and said output terminal based on a base-emitter forward voltage of said bipolar transistor when said bipolar transistor is in an ON state,

wherein the potential difference reducing element has an ON-OFF operation complementary to the ON-OFF operation of the bipolar transistor in at least one state of operation of the semiconductor integrated circuit device, and

wherein said switch means comprises an NMOS circuit.

5,666,073

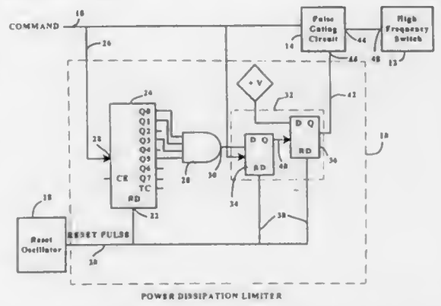
POWER DISSIPATION LIMITER FOR HIGH FREQUENCY SWITCH

Neils A. Kruse, 7415 Cove Dr., Cary, Ill. 60013

Filed Aug. 4, 1995, Ser. No. 511,269

Int. Cl.[6] G01R *23/02*

U.S. Cl. 327—48 **10 Claims**



1. A method for limiting power dissipation of a high frequency switch having a variable frequency command input, the method comprising:

counting pulses in each cycle of a command input signal;

periodically resetting the count to zero, at a constant frequency;

detecting the count at a preselected value, before resetting the count;

setting a latch upon the detection of the preselected value count;

generating a fault signal output from a set latch;

gating the fault signal and the command input signal together, to form a gated command input signal; and

connecting the resulting gated command input signal to the command input of the high frequency switch for inhibiting switch operation until the count is reset to zero.

5,666,074

SENSE AMPLIFIER POWER SUPPLY CIRCUIT

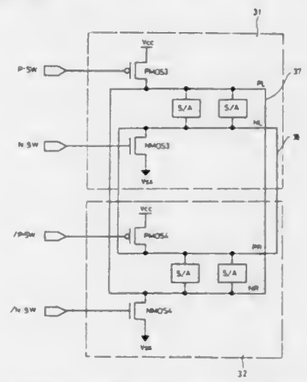
Jun-Hyun Chun, Cheongju-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed May 15, 1996, Ser. No. 648,276

Claims priority, application Rep. of Korea, Sep. 15, 1995, 95-30188

Int. Cl.[6] G01R *19/00*

U.S. Cl. 327—51 **5 Claims**



1. A sense amplifier power supply circuit, comprising:

a first power closed circuit for connecting a first power voltage line to a second ground voltage line, said first power voltage line supplying a power voltage to operate a first plurality of sense amplifiers connected to each cell of a first memory cell array, said second ground voltage line supplying a ground voltage to operate a second plurality of sense amplifiers connected to each cell of a second memory cell array;

a second power closed circuit for connecting a first ground voltage line to a second power voltage line, said first ground voltage line supplying said ground voltage to operate said first plurality of sense amplifiers connected to each cell of said first memory cell array, said second power voltage line supplying said power voltage to operate said second plurality of sense amplifiers connected to each cell of said second memory cell array;

a first switching transistor for supplying said power voltage to said first power closed circuit;

a second switching transistor for supplying said ground voltage to said second power closed circuit;

a third switching transistor for supplying said power voltage to said second power closed circuit; and

a fourth switching transistor for supplying said ground voltage to said first power closed circuit;

whereby a control signal is applied to each switching transistor so that said third and fourth switching transistors are turned off when said first and second switching transistors are turned on, and said first and second switching transistors are turned off when said third and fourth switching transistors are turned on.

5,666,075

ELECTRONIC CIRCUIT COMPRISING A COMPARATOR

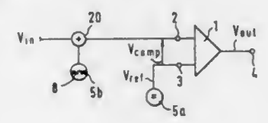
Peter Schinzel, Boeblingen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

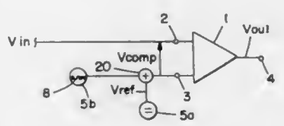
Filed Mar. 28, 1996, Ser. No. 623,437

Claims priority, application European Pat. Off., Apr. 13, 1995, 95105675; May 12, 1995, 95107236

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—77 **20 Claims**





1. An electronic circuit comprising:

a comparator with an input, an output and a reference input;

a first signal source for applying a constant voltage to said reference input as a reference voltage;

a second signal source for generating a time-dependent voltage;

an adder adding an input voltage and said time-dependent voltage to generate a time-dependent voltage for application to said input of said comparator.

5,666,076

NEGATIVE INPUT VOLTAGE COMPARATOR

Robert H. Fugere, North Providence, and James Alvernaz, West Greenwich, both of R.I., assignors to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed May 8, 1996, Ser. No. 655,871

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—77 **14 Claims**

1. A negative input voltage comparator comprising:

a supply means for receiving a power supply voltage;

a current comparator connected to said supply means and having a first leg and a second leg;

means for establishing an input current in the first leg of said current comparator using a positive voltage;

a first resistor connected to an end of the second leg of said current comparator;

an input port coupled to said first resistor opposite from the second leg of said current comparator to receive said negative input voltage; and

an output node located on the second leg of said current comparator such that output current flows out from said output unless an amount of current through the first resistor is at least as large as the input current multiplied by a predetermined factor.

5,666,077

METHOD AND APPARATUS FOR DETECTING AN OPERATING VOLTAGE LEVEL IN AN INTEGRATED CIRCUIT

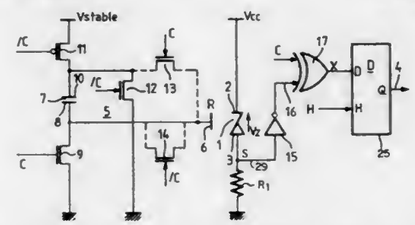
Richard Fournel, Le Fontanil, and Mathieu Lisart, Aix en Provence, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed Jun. 9, 1994, Ser. No. 257,086

Claims priority, application France, Jun. 11, 1993, 93 07095

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—80 **26 Claims**



1. A detection circuit for detecting a voltage level of an operating voltage in an integrated circuit, the detection circuit comprising:

a diode having

a semiconductor junction,

a control terminal, electrically coupled to the semiconductor junction, that receives a bias signal to control an avalanche voltage of the diode,

a cathode region of a first conductivity type, coupled to the operating voltage of the integrated circuit,

an anode region of a second conductivity type, adjacent the cathode region such that the semiconductor junction is formed between the anode region and the cathode region, and

an output, coupled to the anode region, having a voltage level that is a function of the operating voltage level and the avalanche voltage of the diode; and

a biasing circuit, coupled to the control terminal, that provides the diode with the bias signal having a bias voltage with at least one bias value.

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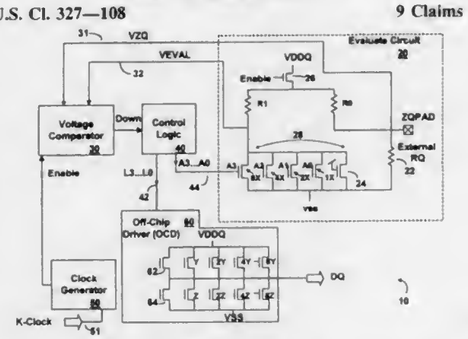
PROGRAMMABLE IMPEDANCE OUTPUT DRIVER

Steven H. Lamphier, St. Albans; Harold Pilo, Underhill, both of Vt.; Michael J. Schneiderwind, Castlerock, Colo., and Fred J. Towler, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1996, Ser. No. 597,655

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 327—108 **9 Claims**



1. An output driver circuit, comprising:

an external resistance device for programming a desired impedance into said output driver circuit;

a voltage comparative device, coupled to said extreme resistance device, for comparing a voltage of said desired impedance with an evaluate voltage and generating a signal indicating which of said voltages is higher;

a control logic device, coupled to said voltage comparative device, for receiving said signal and generating a first and second count from said signal, wherein said second count corresponds to a prior first count;

an evaluate device, coupled to said control logic device and said voltage comparative device, for receiving said first count and modifying said evaluate voltage with said first count to more closely resemble said voltage of said desired impedance;

a low select device, coupled to said control logic device, for receiving said first and second count, and selecting and outputting the lowest of said first and second count; and

an output device, coupled to said low select device, for receiving said output of said low select device and generating an output impedance corresponding to said output of said low select device.

5,666,079

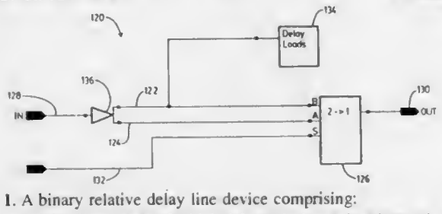
BINARY RELATIVE DELAY LINE

James Hsioh Cheng Ma, San Jose, Calif., assignor to PLX Technology, Inc., Sunnyvale, Calif.

Filed May 6, 1994, Ser. No. 239,044

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—276 **4 Claims**



1. A binary relative delay line device comprising:

two delay lines, each of which delays, during a time interval, an input signal having a frequency applied to its input by a substantially equal amount of time, each of the delay lines requiring a time to settle before it is selected during a next time interval;

a selection and delay determining circuit coupled to the two delay lines which selects one of the two delay lines to provide an output signal;

a clock coupled to the selection and delay determining circuit which provides a clock signal to operate the selection and delay determining circuit at a lower frequency than the frequency of the input signal, the lower frequency being chosen so that any selected delay line has settled before it is selected;

a memory which stores delay values for the two delay lines, each delay line including a multiplexer which selects the value of the delay for that line; and

a circuit which applies the stored delay values from the memory to the multiplexers to determine the delay values of the two delay lines.

5,666,080

COMPUTATIONAL CIRCUIT

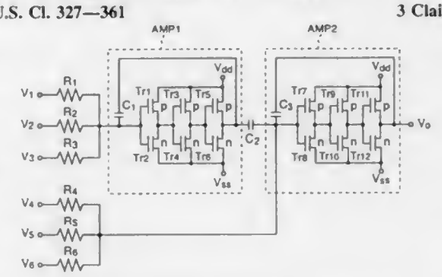
Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Jun. 17, 1994, Ser. No. 262,059

Claims priority, application Japan, Jun. 17, 1993, 5-171041; Jun. 18, 1993, 5-172551; Jun. 18, 1993, 5-172552; Jun. 22, 1993, 5-174713; Jun. 24, 1993, 5-177362; Jun. 30, 1993, 5-187215; Sep. 20, 1993, 5-256359; Sep. 20, 1993, 5-256367; Sep. 20, 1993, 5-256518; Sep. 20, 1993, 5-256557; Sep. 20, 1993, 5-256558; Sep. 30, 1993, 5-256355; Apr. 1, 1994, 6-087720

Int. Cl.[6] G06G *7/14;7/42;* **H03K** *17/62*

U.S. Cl. 327—361 **3 Claims**



1. A computational circuit comprising:

a first capacitive coupling having a plurality of first passive capacitor elements for receiving a plurality of first analog input voltages and for outputting at a first common output terminal a weighted addition result of said first analog input voltages;

a second capacitive coupling having a plurality of second passive capacitor elements for receiving a plurality of second analog input voltages and for outputting at a second common output terminal a weighted addition result of said second analog input voltages;

a pMOS transistor connected at a source to a high voltage, at a drain to an output terminal and at a gate to said first common output terminal of said first capacitive coupling; and

an nMOS transistor connected at a drain to said drain of said pMOS transistor, at a source to a low voltage and at a gate to said second common output terminal of said second capacitive coupling, wherein said first and said second analog input voltages define an entirety of signals provided to said computational circuit, and wherein said first and said second analog input voltages are provided to one of said pMOS and said nMOS transistor through one of said capacitors in one of said first and said second capacitive couplings.

5,666,081

ON-DELAY CIRCUIT

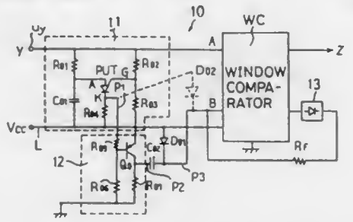
Masayoshi Sakai, and Koichi Futsuhara, both of Saitama-ken, Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00410, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/23496, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 31, 1993, Ser. No. 343,500

Int. Cl.[6] H03K *17/292*

U.S. Cl. 327—402 **5 Claims**



2. An on-delay circuit comprising:

a PUT oscillation circuit for generating an oscillating pulse from a cathode terminal of a PUT (programmable uni-junction transistor) after a predetermined time period from applying a signal to a signal input terminal of said PUT oscillation circuit,

a level conversion circuit for level converting a signal level of the oscillating pulse from the cathode terminal of said PUT oscillation circuit and providing a level converted output,

a two input window comparator for generating an output of logic value 1 when:

the signal input through the signal input terminal of said PUT oscillation circuit is applied to a first input terminal of said two input window comparator;

a rising differential signal of the level converted output from said level conversion circuit is applied to a second input terminal of said two input window comparator; and

signals of a level higher than a power source potential are input to said first and second input terminals of said two input window comparator, and

a self holding circuit which feeds back a rectified output of said two input window comparator to said second input terminal of said two input window comparator, to thereby maintain the output of said two input window comparator,

wherein said level conversion circuit has a fifth resistor and a sixth resistor for dividing a voltage of said oscillating pulse from the PUT oscillation circuit, and incorporates a PNP transistor, said PNP transistor having an emitter connected to a power supply line providing said power source potential of the two input window comparator, a collector connected through a seventh resistor to earth, and a base connected to an intermediate point between the fifth resistor and the sixth resistor, and said level converted output representing a signal generated at an intermediate point between the collector and the seventh resistor.

5,666,082

FAULT PROTECTION USING PARALLEL OUTPUT CMOS DEVICES FOR INTEGRATED CIRCUIT ANALOG SWITCHES

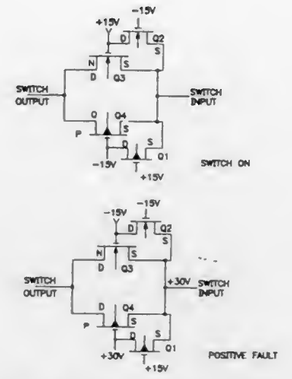
Richard Wilenken, Etna; Pirooz Parvarandeh, Los Altos, and Terry Martin, San Jose, all of Calif., assignors to Maxin Integrated Products, Inc., Sunnyvale, Calif.

Filed Dec. 29, 1995, Ser. No. 582,423

Int. Cl.[6] H03K *17/62*

U.S. Cl. 327—404 **23 Claims**

1. A method of providing fault protection in an analog switch having an analog input and an analog output operating from a first power supply voltage and a second power supply voltage lower than the first power supply voltage, comprising:



a first P-channel device and a first N-channel device, each having a source, a drain and a gate, and having their sources coupled together and their drains coupled together, the method including the steps of:

(a) when the analog input has a voltage between the first and the second power supply voltages;

coupling the gate of the first P-channel device to the second power supply voltage and the gate of the first N-channel device to the first power supply voltage when the switch is commanded on, and

coupling the gate of the first P-channel device to the first power supply voltage and the gate of the first N-channel device to the second power supply voltage when the switch is commanded off

(b) when the analog input has a voltage above the first power supply voltage, coupling the gate of the first P-channel device to the analog input voltage, and

(c) when the analog input has a voltage below the second power supply voltage, coupling the gate of the first N-channel device to the analog input voltage.

5,666,083

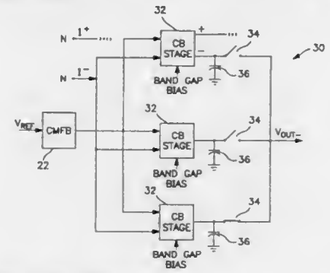
DISCRETE PROGRAMMING METHODOLOGY AND CIRCUIT FOR AN ACTIVE TRANSCONDUCTANCE-C FILTER

Brent A. Myers, and Scott G. Bardsley, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Nov. 17, 1995, Ser. No. 560,289

Int. Cl.[6] H03K *5/00;* **H03F** *3/45*

U.S. Cl. 327—553 **20 Claims**



1. A gm-C filter comprising:

a gm stage for receiving an input signal and for providing an output signal;

a common mode feedback circuit for providing a bias to maintain a DC component of an output voltage of said output signal from said gm stage at a reference level;

plural common base stages, each having a first input connected to said gm stage and a second input connected to said common mode feedback circuit; and

plural first switches, each connected to at least one of said plural common base stages for selectively connecting said at least one of said common base stages to an output of said gm-C filter to control a tuning range of the gm-C filter.

5,666,084

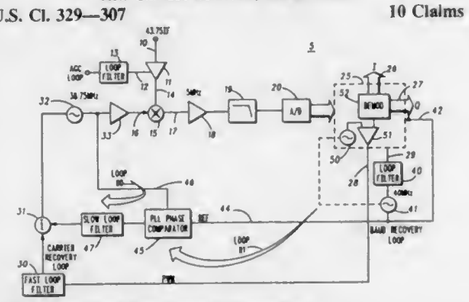
MULTI-LEVEL DEMODULATOR AND VCO CIRCUIT

Gary D. Schulz, and Richard J. Keniuk, both of Cary, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 1, 1995, Ser. No. 566,239

Int. Cl.[6] H04L *27/38*; H03L *7/087*

U.S. Cl. 329—307 **10 Claims**



1. A multi-level demodulator comprising:

a demodulator circuit;

a relatively long time-constant phase or frequency adjustment loop having a voltage controlled oscillator (VCO), a first reference frequency source, and a phase or frequency comparator having a first input coupled to the VCO and a second input coupled to the first reference frequency source and an output coupled to the VCO;

a second reference frequency source; and

a relatively short time-constant phase or frequency adjustment loop with a phase or frequency comparator having a first input coupled to the VCO via the demodulator circuit, a second input coupled to the second reference frequency source, and an output coupled to the VCO.

5,666,085

Patent Not Issued For This Number

5,666,086

FILTER CIRCUIT EMPLOYING A CURRENT AMPLIFIER HAVING A FULLY DIFFERENTIAL OUTPUT WITHOUT A D.C. BIAS

Hans W. Klein, Danville, Calif., assignor to IMP, Inc., San Jose, Calif.

Division of Ser. No. 355,082, Dec. 13, 1994, abandoned, which is a division of Ser. No. 248,383, May 24, 1994, Pat. No. 5,565,815, which is a continuation-in-part of Ser. No. 198,135, Feb. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 168,435, Dec. 17, 1993, Pat. No. 5,444,579. This application Jun. 7, 1995, Ser. No. 481,870

Int. Cl.[6] H03F *3/45*

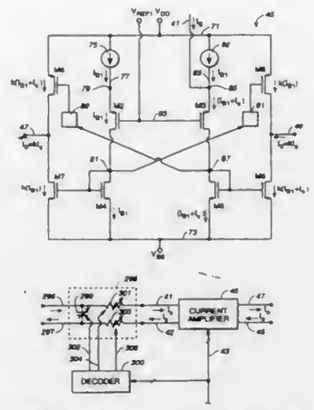
U.S. Cl. 330—253 **12 Claims**

3. A current signal filter having a current signal input at first and second terminals, comprising:

a current amplifier, including:

a current input node,

an output circuit having an output node,



a mirroring circuit connected to receive an input current signal through said input node and mirror said input current signal into said output circuit in a manner to provide a current output signal at said output node, means in addition to said mirroring circuit for maintaining said input node at a substantially constant voltage, and

a filter circuit connected between said first and second terminals and said current amplifier input node.

5,666,087

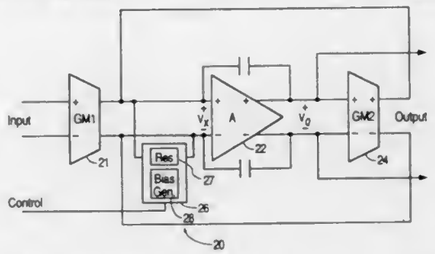
ACTIVE RESISTOR FOR STABILITY COMPENSATION

James L. Gorecki, Hillsboro, Oreg., assignor to Lattice Semiconductor Corp., Hillsboro, Oreg.

Division of Ser. No. 403,352, Mar. 14, 1995, which is a continuation-in-part of Ser. No. 396,994, Mar. 1, 1995. This application Apr. 25, 1996, Ser. No. 635,184

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—260 **16 Claims**



1. A circuit comprising

an amplifier, the amplifier including first and second amplifier input terminals and first and second amplifier output terminals, the first and second amplifier output terminals being coupled to the first and second amplifier input terminals to provide a virtual ground;

a feedback transconductor, the feedback transconductor including first and second feedback transconductor input terminals and first and second feedback transconductor output terminals, the first and second feedback transconductor input terminals being coupled to the first and second amplifier output terminals and the first and second feedback transconductor output terminals being coupled to the first and second amplifier input terminals, the feedback transconductor input terminals having a high input impedance and the feedback transconductor output terminal having a high output impedance, the feedback transconductor having a feedback transconductance;

a resistor circuit having a resistor circuit resistance and including first and second resistor circuit terminals, the first and second resistor circuit terminals being coupled to the first and second amplifier input terminals so as to reduce the loop gain of the circuit.

5,666,088

WIDE FREQUENCY RANGE VCO WITH LOW JITTER

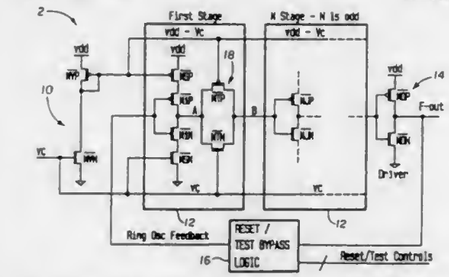
Luigi Penza, Vimercate, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Mar. 6, 1996, Ser. No. 611,290

Claims priority, application European Pat. Off., Mar. 7, 1995, 95830081

Int. Cl.[6] H03B *5/04*; H03L *7/099*

U.S. Cl. 331—34 **23 Claims**



22. A method for reducing short-term instability of the output frequency produced by a voltage controlled ring oscillator due to noise coming from the supply rails and from the control voltage line, characterized by:

making the frequency produced by the oscillator linearly proportional to the control voltage and inversely proportional to the square root of the supply voltage.

5,666,089

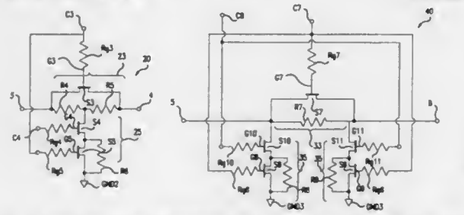
MONOLITHIC STEP ATTENUATOR HAVING INTERNAL FREQUENCY COMPENSATION

Eric R. Ehlers, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 12, 1996, Ser. No. 631,522

Int. Cl.[6] H03H *7/24*

U.S. Cl. 333—81 R **13 Claims**



1. A monolithic step attenuator having an input and an output and a ground and a defined frequency range, the monolithic step attenuator controlling the amplitude of an electrical signal applied to the input according to a first attenuation state and a second attenuation state within the defined frequency range, the monolithic step attenuator comprising:

a pair of resistors coupled in series between the input and the output;

a first electronic switch coupled between the input and the output in parallel with the pair of resistors;

a second electronic switch having a first terminal and a second terminal, the first terminal coupled to the pair of resistors;

a third resistor coupled between the second terminal of the second electronic switch and a conductive path to the ground, the conductive path having a parasitic inductance;

a FET switch having a conducting state and a nonconducting state and having a drain-to-source capacitance, coupled in shunt with the third resistor; and

wherein the second attenuation state is enabled when the first electronic switch is closed and the second electronic switch is open, and wherein the first attenuation state is enabled when the first electronic switch is open and the second electronic switch is closed and the FET switch is in the nonconducting state.

5,666,090

HIGH-FREQUENCY COUPLER

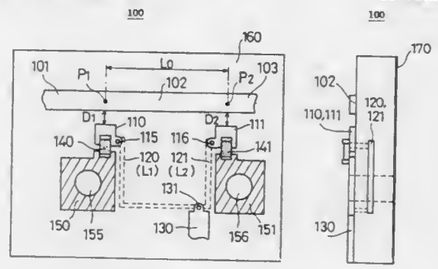
Yoshiyasu Tsuruoka, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 519,967, Aug. 28, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 747,935

Claims priority, application Japan, Dec. 7, 1994, 6-303925

Int. Cl.[6] H01P *5/18*

U.S. Cl. 333—116 **11 Claims**



1. A high-frequency coupler comprising:

a dielectric base;

a main transmission line having a microstrip line arranged on said dielectric base;

a first and second coupling pattern arranged on said dielectric base close to said main transmission line so as to couple power from said main transmission line to said coupling patterns; and

conductive pattern means provided within said dielectric base and connected to said coupling patterns through a throughhole to prevent influence from external electromagnetic waves;

wherein the power coupled from said main transmission line to said coupling patterns is transmitted externally of the coupler through said conductive pattern means provided within said dielectric base.

5,666,091

STRUCTURE OF SURFACE ACOUSTIC WAVE FILTER

Mitsutaka Hikita, Hachioji; Kazuyuki Sakiyama, Chigasaki, and Nobuhiko Shibagaki, Kodaira, all of Japan, assignors to Hitachi Media Electronics Co., Ltd., Iwate, Japan

Filed Mar. 19, 1996, Ser. No. 618,118

Claims priority, application Japan, Mar. 20, 1995, 7-060306

Int. Cl.[6] H03H *9/04*

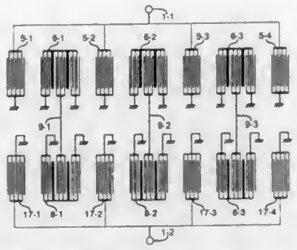
U.S. Cl. 333—193 **17 Claims**

1. A surface acoustic wave exciting or receiving transducer, comprising:

a piezoelectric substrate having an electromechanical coupling coefficient k^2;

at least first, second and third interdigital transducers each having electrode finger pairs, and the number of said pairs being N1, N2 and N3, respectively, for propagating a surface acoustic wave in a direction of propagation in order of the first, second, and third interdigital transducers;

said first interdigital transducer being electrically connected to said third interdigital transducer in parallel;



said second interdigital transducer being electrically connected in series with each of said first and third interdigital transducers; and

said numbers of electrode finger pairs N1, N2 and N3 of said first, second and third interdigital transducers being related so that $N2<(N1+N3)<3\times N2$, and so that $2/k^2 \geqq (N1+N2+N3) \geqq 0.8/k^2$.

5,666,092

BANDPASS FILTER HAVING AT LEAST TWO SAW RESONATOR FILTERS COUPLED IN PARALLEL

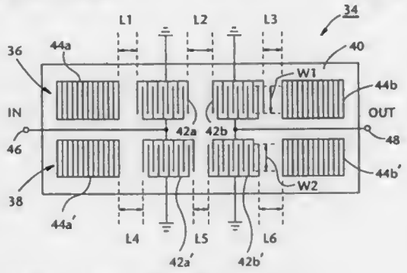
Yasushi Yamamoto, and Ryuuji Kajihara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 246,194, May 19, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 669,819

Claims priority, application Japan, May 19, 1993, 5-139958

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—194 **10 Claims**



1. A bandpass filter comprising:

a first surface acoustic wave (SAW) resonator bandpass filter comprising first and second grating reflectors and first and second interdigital transducers (IDTs); and

a second SAW resonator bandpass filter which is coupled in parallel to said first SAW resonator bandpass filter and comprises third and fourth grating reflectors and third and fourth IDTs, wherein:

a first distance between said first grating reflector and said first IDT is different from a third distance between said third grating reflector and said third IDT, and a second distance between said second grating reflector and said second IDT is different from a fourth distance between said fourth grating reflector and said fourth IDT, and at least one of the following conditions are met:

said first distance is different from said second distance; and

said third distance is different from said fourth distance,

said first through fourth distances setting frequency responses of said first and second SAW resonator bandpass filters to cause a waveform representing a pass band of said bandpass filter to have, at a high frequency end thereof, a slope whose value is different than a value of a slope of said passband at a low frequency end thereof.

5,666,093

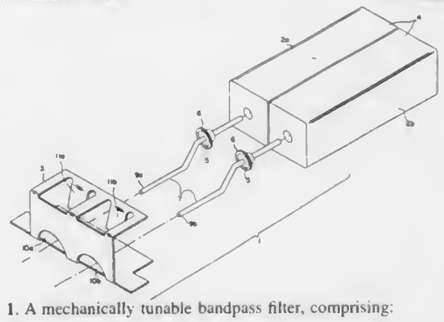
MECHANICALLY TUNABLE CERAMIC BANDPASS FILTER HAVING MOVEABLE TABS

James Phillip D'Ostilio, 1110 Fidler La., Apartment 602, Silver Spring, Md. 20910

Filed Aug. 11, 1995, Ser. No. 514,376

Int. Cl.[6] H01P *1/202;7/04*

U.S. Cl. 333—207 **15 Claims**



1. A mechanically tunable bandpass filter, comprising:

a resonator;

a grounding element electrically connected to said resonator; and

a mechanically deformable tuning tab proximate said resonator and said grounding element, said tuning tab forming a variable capacitor connected parallel to said resonator;

wherein the resonator comprises a resonator body, a spacer flange electrically connected to said resonator body, a capacitive element electrically connected to said spacer flange and an electrode pin electrically connected to said capacitive element and electrically isolated from said resonator body and spacer flange by said capacitive element.

5,666,094

METHOD OF FABRICATING NRD GUIDE CIRCUIT AND NRD GUIDE CIRCUIT

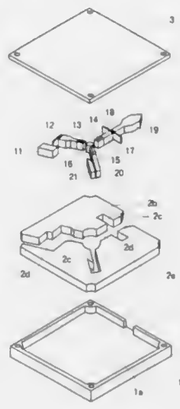
Shigeki Kato; Hiroshi Uematsu, and Ken-Ichi Ogawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,376

Claims priority, application Japan, Oct. 25, 1994, 6-260710; Jul. 26, 1995, 7-190878

Int. Cl.[6] H01P *1/00*

U.S. Cl. 333—248 **22 Claims**



1. A method of fabricating an NRD guide circuit, comprising the steps of:

arranging on a lower conductive plate, at least one dielectric positioning member having a dielectric constant smaller than a dielectric constant of a dielectric strip;

positioning said dielectric strip at a predetermined position defined by said dielectric positioning member, a high-frequency circuit formed by said dielectric strip of the NRD guide circuit being entirely positioned on the lower conductive plate by the positioning member; and

attaching an upper conductive plate on said dielectric member.

5,666,095

HIGH POWER WAVEGUIDE VALVE

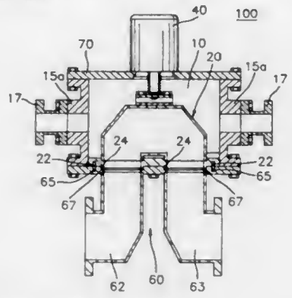
Won Namkung; Joo-Sik Park; Seung-Hwan Kim; Hee-Seob Kim, and Yong-Jung Park, all of Pohang-shi, Kyongsangbuk-do, Rep. of Korea, assignors to Postech Foundation, Kyungsangbuk, Rep. of Korea

Filed Mar. 26, 1996, Ser. No. 622,647

Claims priority, application Rep. of Korea, Oct. 14, 1995, 95-35456

Int. Cl.[6] H01P *1/12*

U.S. Cl. 333—259 **8 Claims**



1. A waveguide valve comprising:

an L-shaped vacuum chamber;

a plate for covering the top of the L-shaped vacuum chamber;

a first linear motion driver provided on the covering plate;

a U-shaped waveguide being provided in the L-shaped vacuum chamber in such a way that it is allowed to vertically slide by the first linear motion driver and having a connection plate provided with a pair of rectangular holes;

a dual H-corners assembly having a connection plate provided with a pair of rectangular holes, each of the rectangular holes having an upper and a lower step edges, and a pair of waveguides for inputting and outputting radio frequency, each of the waveguides being joined to each of the lower step edges so as to be integrally formed with the dual H-corners assembly connection plate, the dual H-corners assembly connection plate covering the bottom of the L-shaped vacuum chamber in such a way that its rectangular holes are aligned with the corresponding U-shaped waveguide rectangular holes;

a sealing plate for selectively sealing the L-shaped radio frequency input and output waveguides, the sealing plate being mounted on the dual H-corners assembly connection plate in such a way that it is allowed to horizontally slide; and

a second linear motion driver being provided with the L-shape vacuum chamber so as to horizontally slide the sealing plate.

5,666,096

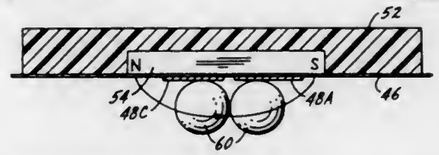
SWITCH WITH MAGNETICALLY-COUPLED ARMATURE

Anthony J. Van Zeeland, 2140 S. Rogers, Mesa, Ariz. 85202

Continuation-in-part of Ser. No. 458,989, Jun. 2, 1995, Pat. No. 5,523,730. This application May 7, 1996, Ser. No. 646,083

Int. Cl.[6] H01H *53/00*

U.S. Cl. 335—4 **10 Claims**



1. An electrical switch, comprising:

a carrier having first and second surfaces;

a set of electrodes disposed on one of said carrier surfaces and defining at least one pair of spaced switch contacts;

an actuator for selectively opening or closing the switch contacts, the actuator comprising at least two electrically conductive balls made of magnetic material and disposed on said one of the carrier surfaces, and a magnet movably mounted on the other of the carrier surfaces, with the poles of the magnet located directly opposite the balls such that the balls are normally held in sliding engagement with said one surface of the carrier by the magnetic attraction between the balls and magnet, movement of the magnet causing corresponding movement of the balls into and out of Shorting relation with the switch contacts.

5,666,097

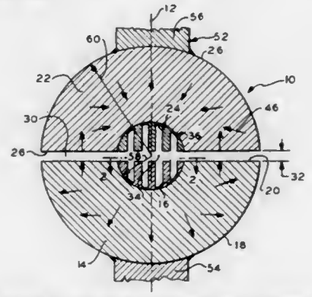
PERIODIC MAGNETIZER

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 14, 1996, Ser. No. 664,366

Int. Cl.[6] H01F *7/02*

U.S. Cl. 335—302 **11 Claims**



1. A magnetizer for use in forming periodic magnetic fields in a workpiece comprising:

a first magnet portion having an axis and having an inner surface and an outer surface and an equatorial surface;

a second magnet portion coaxially mounted together with the first magnet portion and having an inner surface and an outer surface and an equatorial surface;

said inner surfaces forming a cavity;

said equatorial surfaces forming a gap therebetween of selective gap thickness;

a first stage core removably disposed in said cavity for a first stage magnetization sequence, said first stage core having a first lower core portion having a first lower bearing surface having a plurality of alternate grooves and ridges;

said first stage core having a first upper core portion having a first upper bearing surface having a plurality of matching oppositely-facing alternate grooves and ridges;

said first lower bearing surface and said first upper bearing surface forming a slit therebetween with a selective slit thickness;

a second stage core removably disposed in said cavity for a second stage magnetization sequence, said second stage core having a second lower core portion having a second lower bearing surface having a plurality of alternate grooves and ridges which are offset from the grooves and ridges of said first lower core portion of said first stage core;

said second stage core having a second upper core portion having a second bearing surface having a plurality of oppositely-facing alternate grooves and ridges in matching relationship to the grooves and ridges of said second lower core portion;

said second lower bearing surface and said second upper bearing surface forming a second slit therebetween with a selective slit thickness; and

said first magnet portion and said second magnet portion, which when combined, have a pathway of flux lines which passes axially through the first stage core or through the replacement second stage core, when disposed in said cavity.

5,666,098

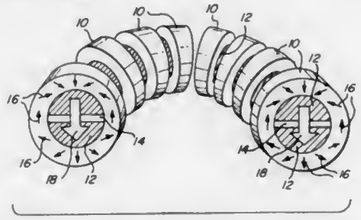
PERMANENT MAGNET TOROIDAL WIGGLER AND UNDULATOR

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 28, 1996, Ser. No. 653,785

Int. Cl.[6] H01F *7/02*

U.S. Cl. 335—306 **13 Claims**



1. A toroidal permanent magnet structure comprising:

a plurality of permanent magnet toroidal sections, each of said plurality of permanent magnet toroidal sections having a magnetic orientation creating a substantially transverse magnetic field, said plurality of permanent magnet toroidal sections arranged in a toroidal shape creating a modulating transverse magnetic field and having an average magnetic field greater than zero; and

a core wherein said plurality of permanent magnet toroidal sections are spaced around said core and wherein said core is made of a ferromagnetic material,

whereby an electron beam capable of being introduced into the toroidal shape is contained and the repetitive motion of electrons in the electron beam generate electromagnetic radiation.

5,666,099

COMPONENT WITH A RIDGID AND A FLEXIBLE ELECTRICAL TERMINATION

Fred E. Ostrem, 3463 RFD, Long Grove, Ill. 60047

Filed Mar. 1, 1996, Ser. No. 609,190

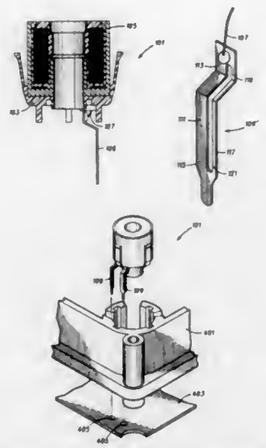
Int. Cl.[6] H01F *27/29*

U.S. Cl. 336—192 **10 Claims**

1. A component comprising:

a body portion;

an elongated first member connected to the body portion, the elongated first member extending away from the body portion and terminating at a first outer end; and



an elongated electrically conductive member, electrically connected to the body portion, the elongated electrically conductive member extending away from the body portion and terminating at a second outer end, wherein the second outer end is coupled to the first outer end, and wherein the elongated electrically conductive member has a cross-section smaller than a cross-section of the elongated first member.

5,666,100

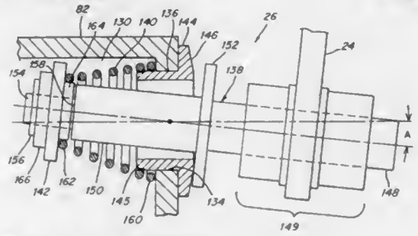
LINEAR POTENTIOMETER WITH A FLOATING PIN JOINT

Scott A. MacDonald, Framingham, Mass., assignor to Data Instruments, Inc., Acton, Mass.

Filed Sep. 15, 1995, Ser. No. 529,054

Int. Cl.[6] H01C *1/12*

U.S. Cl. 338—202 **38 Claims**



29. An apparatus, comprising:

a linear potentiometer for measuring relative movement between first and second component part, the potentiometer having a wall, and

a floating pin joint mounted to the potentiometer for coupling one of the component parts to the potentiometer, the floating pin joint comprising:

a bearing surface disposed on the wall of the potentiometer and having a hole therethrough;

an actuator rod including a flange affixed thereto, a first portion protruding from one side of the flange to be attached to the one of the component parts, and a second portion protruding from the opposite side of the flange, the actuator rod extending through the hole in the bearing surface and being movably supported with the flange in contact with the bearing surface and

a spring attached to the second portion of the actuator rod to urge and maintain the flange in contact with the bearing surface when the actuator rod moves relative to the bearing surface.

5,666,101

HIGH-EFFICIENCY APPARATUS FOR MEASURING OPERATIONAL PARAMETERS AND TIMES OF VEHICLES RUNNING AROUND A RACETRACK

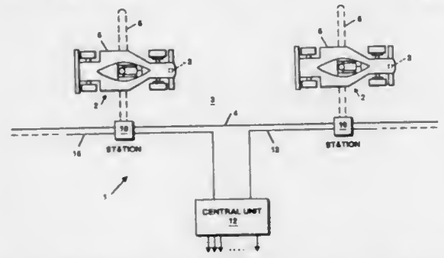
Umberto Cazzani, Via G. Rossini, 41, I-20040 Monticello Brianza, and Massimo Pagetti, Via S. Fedele 8713, 27020 - Sommo (Pavia), both of Italy

Continuation of Ser. No. 50,491, May 13, 1993, abandoned. This application Nov. 22, 1995, Ser. No. 562,243

Claims priority, application Italy, Dec. 14, 1990, 22388/90; Dec. 14, 1990, 22389/90; Dec. 14, 1990, 22390/90

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—323 R **15 Claims**



1. A high-efficiency apparatus (**1**) for real time measuring parameters and operational times of vehicles (**2**) running around a racetrack, said apparatus comprising:

a plurality of detecting stations (**10**) arranged at selected locations along said racetrack and being set up to both receive and transmit radio frequency (RF) signals both to and from a transceiver unit (**5**) mounted on each said vehicle (**2**),

said transceiver unit operative to both receive and transmit information both to and from each said station (**10**), said transmitting from said transceiver unit being in response to said transmitting from said detecting station, said station being provided with electronic radio frequency-converter means (**16**,**20**) for transmitting and modulating the received signals over a wide band coaxial cable (**15**);

said apparatus further comprising;

said wide band coaxial cable (**15**) forming a loop connection structure whereby said stations are interconnected with a central processing unit (**12**); and,

said apparatus further comprising;

each said station (**10**) comprises a transceiver antenna (**8**), an interface (**11**) associated with the antenna, a high frequency amplifier (**14**) connected downstream from the interface, a signal mixer (**16**) having one input connected to the amplifier (**14**) output and a second input to receive a signal generated by an oscillator (**17**), and a modulator (**20**) connected in said coaxial cable (**15**) and driven by the output from the mixer (**16**).

5,666,102

VEHICLE SIGNALS INCORPORATED INTO STEERING WHEEL RIM

John E. Lahiff, Farmington Hills, Mich., assignor to United Technologies Automotive Systems, Inc., Detroit, Mich.

Filed Jul. 24, 1996, Ser. No. 687,155

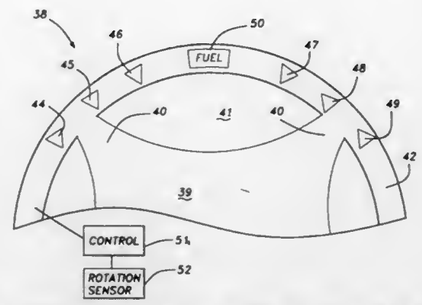
Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—461 **15 Claims**

1. A vehicle steering wheel comprising:

a hub and a rim surrounding said hub, at least one spoke connecting said hub and said rim;

a control receiving an indication of an upcoming turn; and



a display mounted on said rim, said display communicating with said control such that said display provides a turn signal on said rim.

5,666,103

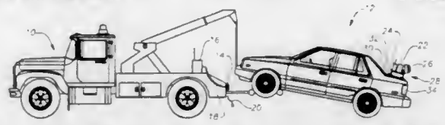
WIRELESS SAFETY INDICATOR CONTROL SYSTEM FOR TOWED VEHICLES

James Ferris Davis, Jr., 101 Manor Ct., Sanger, Tex. 76266

Filed Oct. 25, 1995, Ser. No. 547,945

Int. Cl.[6] B60Q *1/26;1/34*

U.S. Cl. 340—479 **1 Claim**



1. A safety indicator control system kit for controlling, from a towing vehicle, a safety indicator on a towed vehicle, said kit comprising:

sensing means, for installing on said towing vehicle, for sensing activation of a safety indicator on said towing vehicle and producing an indicator active signal in response to detection of said activation;

transmitter means, for installing on said towing vehicle and coupling to a transmitter power source on said towing vehicle and said indicator active signal, for transmitting a radio frequency control signal in response to said indicator active signal;

receiver means, for installing in said towed vehicle and for coupling to a receiver power source on said towed vehicle, for receiving said radio frequency control signal;

switching means, for coupling to said receiver power source, said receiver means, and said safety indicator on said towed vehicle, for automatically connecting power to said safety indicator on said towed vehicle in response to said receiver receiving said radio frequency control signal; and

wherein said switching means includes means for coupling to a manufacturer's original equipment safety indicator on said towed vehicle, for automatically connecting power to said manufacturer's original equipment safety indicator on said towed vehicle in response to said receiver receiving said radio frequency control signal.

5,666,104

BELT FOR DETECTING AN INCREASE IN GIRTH

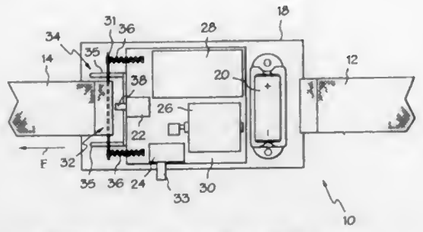
Stanley E. Pollack, 32100 Gates Mills Blvd., Pepper Pike, Ohio 44124; Scott C. Marlow, 12441 Bentbrook Dr., Chesterland, Ohio 44026, and Haans K. Petruschke, 9103 Chillicothe Rd. #103, Kirtland, Ohio 44094

Filed Sep. 7, 1995, Ser. No. 525,910

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **23 Claims**

1. A device for monitoring a volume of food consumed by an individual comprising:



a belt member shaped to fit about a waist of a user;

a sensor including a sensor housing, an alarm, and an activation switch;

said switch being operatively connected to said alarm such that activation of said switch, activates said alarm;

said belt member being operatively connected to said sensor such that a tensile force applied to said belt member greater than approximately 15 ounces activates said switch;

whereby when said belt member is worn about the waist of said user, a desired limit of increase in girth of said user at said waist, caused by a consumption of food by said user, applies a tensile force greater than approximately 15 ounces to said belt member, activating said switch, and in turn, activating said alarm.

5,666,105

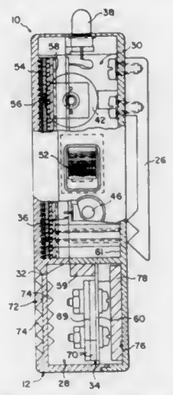
PERSONAL RADIATION HAZARD METER

Zdenek Adler, 513 Woodfield Rd., West Hempstead, N.Y. 11552, and Mitchell M. Tuckman, 29 Spinner La., Commack, N.Y. 11725

Continuation-in-part of Ser. No. 109,837, Aug. 20, 1993, Pat. No. 5,576,696. This application Mar. 7, 1996, Ser. No. 612,306

Int. Cl.[6] G08B *17/12*

U.S. Cl. 340—600 **20 Claims**



1. An electromagnetic radiation monitor for use in close proximity with a human body comprising:

an electromagnetic radiation sensor means having front and back sides;

shield means mounted in back of the radiation sensor means a selected distance such that when the radiation monitor is used in close proximity with a human body, the shield means defines a radiation barrier between the human body and the entire back side of the sensor means; and

means for preventing reflective interference from said shield means with said sensor means including a mosaic layer of at least two different areas of lossy materials having different radiation absorbency characteristics.

5,666,106

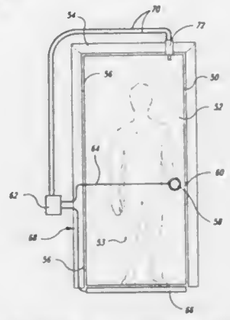
ACCESSWAY WITH GROUNDING SENSOR

James M. Nasman, Boise, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Filed Sep. 4, 1996, Ser. No. 706,294

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—649 **22 Claims**



1. A controlled accessway for a controlled area, comprising:

an entry limiting device movable from a closed position to an open position in response to contact from a person, the entry limiting device being positioned to provide access to the controlled area;

an electrically controllable locking mechanism configured to selectively control the movement of the entry limiting device between the closed position and the open position, the electrically controllable locking mechanism preventing the entry limiting device from moving from the closed position to the open position in response to an enter signal having a first state and allowing the entry limiting device to move from the closed position to the open position in response to the enter signal having a second state;

a touch pad associated with the entry limiting device and positioned and shaped for contact by the person;

a step plate positioned adjacent to the entry limiting device; and

a grounding sensor electrically coupled to the locking mechanism, the touch pad and the step plate, the grounding sensor being configured to generate the enter signal having the second state in response to the resistance between the touch pad and the step plate being lower than a predetermined value.

5,666,107

METHOD AND APPARATUS FOR EFFICIENT ROAMING AMONG COMMUNICATION SYSTEM

Robert Lockhart, Boynton Beach, and Eric Thomas Eaton, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1995, Ser. No. 531,362

Int. Cl.[6] H04B *3/38;1/00;* **G08B** *5/22;* **H04M** *11/00*

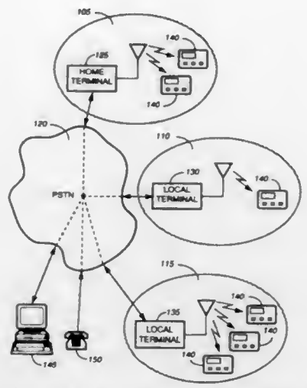
U.S. Cl. 340—827 **16 Claims**

1. A method for efficient roaming among at least a home communication sub-system and a local communication sub-system, wherein the home communication sub-system comprises a home terminal from which a portable communication device normally receives messages within a first geographic area, and wherein the local communication sub-system comprises a local terminal that transmits within a second geographic area, the method comprising, in the home communication sub-system, the steps of:

receiving a message for transmission to the portable communication device;

determining that the portable communication device is roaming within the local communication sub-system; and

automatically providing the message and a subscriber record associated with the portable communication device to the local communication sub-system without first receiving a request for the subscriber record from the local communication sub-system.



5,666,108

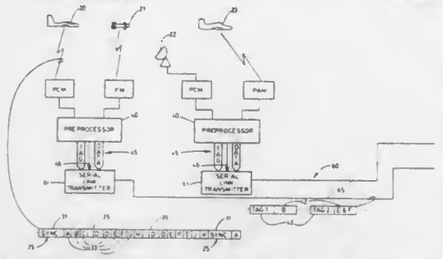
TELEMETRY DATA SELECTOR METHOD

Harold A. Duffy, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 20, 1991, Ser. No. 764,552

Int. Cl.[6] G08C *15/06*

U.S. Cl. 340—870.03 **6 Claims**



1. A telemetry data selection method for use with:

a test subject providing a succession of telemetered digital frames including telemetered words having data for a plurality of test parameters, said words and said data having a predetermined arrangement in said frames, and said data for each of said parameters being in a predetermined source binary format for the parameter;

a plurality of data destinations, each of said destinations being receptive to a destination input word having a predetermined destination binary format,

a plurality of telemetry projects wherein it is desired to select predetermined said destinations to receive destination data derived from said telemetered words and to select predetermined said parameters for each selected destination, different said destinations and said parameters being selectable for different said projects,

said method comprising:

generating from said frames a succession of broadcast digital data words having data for a predetermined plurality of broadcast parameter sets,

each of said broadcast parameter sets including data for a predetermined set of said test parameters,

each of said broadcast data words having data for one set of said broadcast parameter sets and having a plurality of broadcast bit positions, and

the data for each parameter of said one of said broadcast parameter sets being substantially in said source format and at predetermined broadcast bit positions in each of said broadcast data words having data for said one set of said broadcast parameter sets;

generating a succession of broadcast digital tag words, each tag word being generated substantially simultaneously with a corresponding one of said broadcast data words and containing one tag of a predetermined set of tags, each tag of said set of tags identifying one of said broadcast parameter sets;

broadcasting said broadcast data words and said broadcast tag words to a plurality of telemetry word selector and processor devices, each of said devices

corresponding to a predetermined set of said destinations,

receiving each of said broadcast data words and each of said tag words,

including a destination selection memory having a plurality of storage locations, each of said locations corresponding to one tag of said set of tags and being addressed by said one tag and storing an indicator corresponding to one destination of said set of destinations, said indicator having a first predetermined condition when said one destination is selected to receive said destination data and having a second predetermined condition when said one destination is not selected to receive destination data,

generating derived data in said destination format from data in said source format and at said broadcast bit positions, and

directing said derived data to said one destination when said one tag of a received broadcast tag word addresses one of said storage locations having said indicator in said first condition.

5,666,109

VEHICLE TO ROADSIDE COMMUNICATION SYSTEM FOR DETERMINING EQUIPMENT PROBLEMS

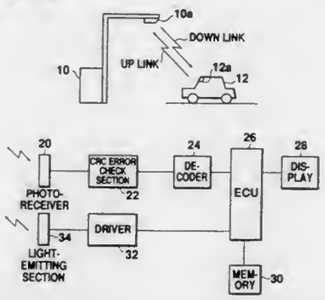
Mitsuhiro Fukui, Nagoya, and Fuminari Ishihara, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 30, 1995, Ser. No. 452,787

Claims priority, application Japan, Jul. 11, 1994, 6-158772

Int. Cl.[6] G08G *1/09*

U.S. Cl. 340—905 **12 Claims**



1. A vehicle to roadside communication system, for performing vehicle to roadside communication between a plurality of road side equipments arranged on a road and a plurality of on-vehicle equipments carried on a plurality of cars, comprising:

a down link system problem determining section carried on the car for determining the presence/absence of a down link problem in down link communication in the on-vehicle equipment, when the down link communication from the road side equipment to the on-vehicle equipment is performed,

a down link problem reporting section for reporting, to at least one of the road side equipments, the information regarding the down link problem for specifying the road side equipment by which the abnormal down link communication has been performed, in the case that the down link problem has been detected by the down link system problem determining section carried on the car, and

a road side down link problem determining section for determining the down link problem of the specific road side equipment, in the case that the information regarding the down link problem of the specific road side equipment is received plural times in one road side equipment,

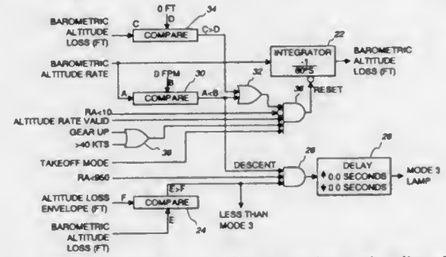
whereby the down link problem in the road side equipment is determined.

5,666,110

HELICOPTER ENHANCED DESCENT AFTER TAKE-OFF WARNING FOR GPWS

Noel S. Paterson, 17834 147th Pl., NE., Woodinville, Wash. 98072

Filed Mar. 9, 1995, Ser. No. 401,555
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—970 **11 Claims**



1. A warning system for providing a warning to the pilot of a rotary wing aircraft of excessive altitude loss during a take-off mode of operation, the warning system comprising:

means for receiving signals representative of the barometric altitude of the rotary wing aircraft;

means for receiving signals representative of the radio altitude of the rotary wing aircraft;

means for determining the barometric altitude loss of the rotary wing aircraft;

means for integrating only said radio altitude signal to generate a time altitude product signal representative of the area under the flight path curve after take-off or go-around after a missed approach; and

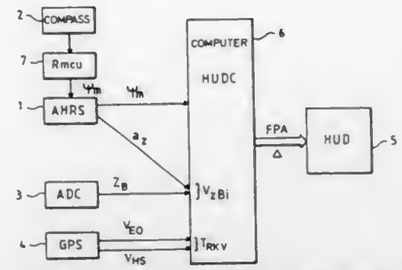
means for comparing the barometric altitude loss of the rotary wing aircraft with said time altitude product signal and generating a warning signal representative of excessive barometric altitude loss as a function of the time altitude product signal.

5,666,111

METHOD AND DEVICE FOR THE MONITORING AND GUIDANCE OF AN AIRCRAFT FOR PRECISION LANDING

Thierry Servat, Bordeaux, and Jean-Luc Sicre, Fontenay aux Roses, both of France, assignors to Sextant Avionique, Velizy Villacoublay, France

Filed Feb. 16, 1996, Ser. No. 603,084
Claims priority, application France, Feb. 17, 1995, 95 01826
Int. Cl.[6] G01C *21/00*
U.S. Cl. 340—980 **7 Claims**



1. A method of monitoring and guiding aircraft for precision landing applied to an aircraft provided with an attitude heading reference system AHRS that is equipped with a compass and delivers, inter alia, the magnetic heading Ψ_m and the vertical acceleration a_z, an air data computer ADC giving inter alia the pressure altitude Z_B, a global positioning system GPS receiver complying with a standard setting forth minimum required characteristics and delivering, in addition to the positional coordinates of latitude, longitude and altitude, the east-west and north-south horizontal speeds V_{EO} and V_{NS}, and a head-up display visor on which there is displayed an artificial skyline and the flight path vector FPV, said method consisting in locating the end of the flight path vector FPV on the head-up display visor by means of two angular coordinates, one of them being the vertical flight path angle FPA referenced with respect to the artificial skyline and derived from the relationship:

$$FPA = \text{Arc tan} \frac{V_{zBI}}{\sqrt{V_{EO}^2 + V_{NS}^2}}$$

where V_{zBI} is the baro-inertial vertical speed resulting from hybridization between the pressure altitude Z_B delivered by the air data computer ADC and the vertical acceleration a_z delivered by the attitude heading reference system AHRS,

the other angular coordinate being the horizontal course angle Δ referenced with respect to the vertical median of the screen of the head-up display visor symbolizing the longitudinal vertical plane of symmetry of the aircraft and derived from the relationship:

$$\Delta = -\Psi_m + \text{Arc tan} \frac{V_{EO}}{V_{NS}} - decl$$

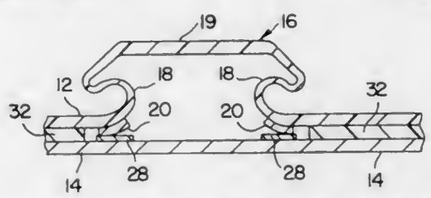
where decl is the magnetic declination.

5,666,112

KEY FOR FLEXIBLE KEYBOARD

Robert J. Crowley, 64 Puritan La., Sudbury, Mass. 01776, and Donald N. Halgren, 35 Central St., Manchester, Mass. 01944

Continuation of Ser. No. 98,851, Jul. 29, 1993, Pat. No. 5,459,461. This application Aug. 18, 1995, Ser. No. 447,116
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—22 **7 Claims**



1. A key arranged to permit the entering of data into a data entry panel, said key comprising:

a molded layer of flexible material formed to be distorted to provide a full keystroke when pressed;

a reduced wall thickness of said flexible material comprising the periphery of said key, to permit said distortion thereat;

said key having an upper keytop portion which is stiffer and relatively hard with respect to said walls thereof; and

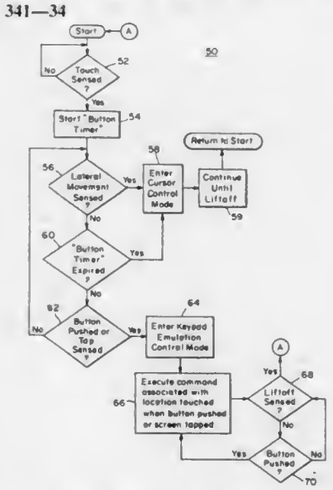
said key having a trace of conductive material disposed on said reduced thickness wall from which to create a signal in said data entry panel.

5,666,113

SYSTEM FOR USING A TOUCHPAD INPUT DEVICE FOR CURSOR CONTROL AND KEYBOARD EMULATION

James D. Logan, Windham, N.H., assignor to MicroTouch Systems, Inc., Methuen, Mass.

Continuation of Ser. No. 23,872, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 739,136, Jul. 31, 1991, abandoned. This application Sep. 5, 1995, Ser. No. 525,859
Int. Cl.[6] G09G *3/02*
U.S. Cl. 341—34 **2 Claims**



1. A system which automatically switches use of a touch-sensitive computer input touchpad between the functions of cursor control and keypad emulation, the system comprising:

touchpad means;

means for sensing a touch on the touchpad means;

means for timing the time period between a touch on and a lift off from said touchpad means;

mean for sensing lateral movement across the touchpad means after a touch and for determining the distance of said lateral movement;

means for entering cursor control upon a lateral movement across the touchpad means, after a touch, of more than a predetermined distance and for entering cursor control upon the expiration of a predetermined time period after a touch without a liftoff; and

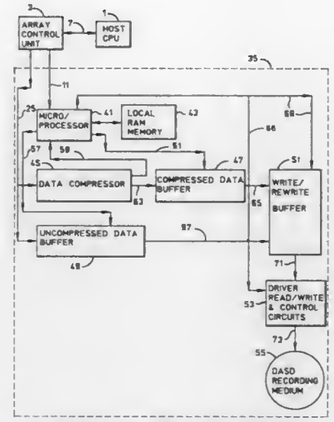
means for entering keypad emulation upon the sensing of a liftoff and a subsequent touch on the touchpad means within said preestablished time of and within said predetermined distance from a prior touch on said touchpad.

5,666,114

METHOD AND MEANS FOR MANAGING LINEAR MAPPED ADDRESS SPACES STORING COMPRESSED DATA AT THE STORAGE SUBSYSTEM CONTROL UNIT OR DEVICE LEVEL

Robert Bruce Brodie, San Jose; Joe-Ming Cheng, Cupertino; Lawrence John Garibay, San Jose; Jaishankar Moothedath Menon, San Jose; Chan Yiu Ng, San Jose, and Tram Thi Mai Nguyen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1994, Ser. No. 343,316
Int. Cl.[6] G11B *20/00*
U.S. Cl. 341—50 **10 Claims**



DASD DEVICE LEVEL WRITE AND REWRITE PATHS FOR RESIZING COMPRESSED LINEAR AND OVERFLOW SPACES

1. A method of preserving locality of referencing of strings in a system for update writing-in-place of compressed images of fixed length symbol strings in counterpart addresses in a bounded (constant sum) addressable storage medium, the method comprising the steps of:

(a) partitioning the bounded addressable storage medium into N1 segments in a linearly addressable space and N2 segments in a linked list addressable space, each segment in N1 being of a first length less than an estimated average uncompressed symbol string length, each segment in N2 being of a second length less than the estimated average uncompressed symbol string length;

(b) populating segments in N1 one-to-one and ONTO with compressed images of ones of the fixed length symbol strings;

(c) updating-in-place ones of the compressed images of the fixed length symbol strings stored among said N1 address segments including:

(1) writing portions of any compressed symbol string image exceeding the size of the segment in N1 to which it is addressed into one or more counterpart segments in N2, and

(2) embedding a token in the counterpart segment in N1 pointing to the segment or segments in N2; and

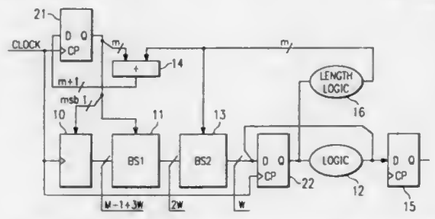
(d) recursively adjusting the size of all of the segments in N1 in a direction so that the number of segments in N2 lie within a predetermined percentage range of the current number of segments in N2.

5,666,115

SHIFTER STAGE FOR VARIABLE-LENGTH DIGITAL CODE DECODER

Oswald Colavin, Voreppe, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Feb. 6, 1995, Ser. No. 384,560
Claims priority, application France, Feb. 4, 1994, 94 01301
Int. Cl.[6] H03M *7/42*
U.S. Cl. 341—67 **21 Claims**



1. Shifter stage for variable-length digital codes decoding one code per clock cycle which

reads input data originating from a memory, supplies a decoding logical unit on each cycle with a word having the size of the longest variable length code to be decoded,

receives from the logical unit the number of bits of the code decoded on the preceding clock cycle, and

performs a shift in the read data equal to the cumulative total of the lengths of codes already decoded since the last read of the input data,

wherein it comprises a first barrel shift register which reads the input data and performs a shift in the data read equal to the cumulative total of the lengths of codes decoded between the preceding cycle and the start of the last read, and

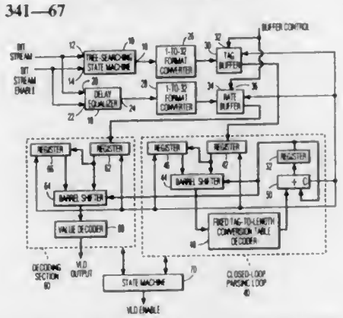
a second barrel shift register which receives data arriving from the first register and directly receives from the logical unit the length of the code decoded on the preceding cycle and performs a shift equal to the length of the code decoded at the time of the preceding cycle.

5,666,116

HIGH SPEED VARIABLE-LENGTH DECODER ARRANGEMENT

Michael Bakhmutsky, Spring Valley, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1995, Ser. No. 565,773
Int. Cl.[6] H03M 7/40
U.S. Cl. 341—67 **7 Claims**



1. A variable-length decoder arrangement for decoding an input bit stream of variable-length codewords comprising:

a tree-searching state machine having a data input for receiving the input bit stream and an enable input for receiving an enable signal, said tree-searching state machine executing a decoding protocol and tagging the end of every codeword;

a delay equalizer having a data input for receiving the input bit stream and an enable input for receiving the enable signal, said delay equalizer compensating for a delay of the tree-searching state machine;

a first format converter having an input coupled to an output of said tree-searching state machine, and a second format converter having an input coupled to an output of said delay equalizer, said first and second format converters each bussing an applied data stream to a predetermined width for accommodating the longest codeword in a selected protocol;

a tag buffer having an input coupled to an output of the first format converter;

a rate buffer having an input coupled to an output of the second format converter; and

a variable-length decoder having first input means coupled to an output of the tag buffer, and second input means coupled to an output of the rate buffer, the variable-length decoder comprising:

a closed-loop parsing loop having an input coupled to the first input means of the variable-length decoder, said closed-loop parsing loop comprising:

first register means having input means coupled to the input of said closed-loop parsing loop;

a first barrel shifter having data input means coupled to output means of said first register means, and a shift-control input;

a fixed-tag-to-length conversion table decoder having an input coupled to an output of said first barrel shifter for receiving an input for said fixed tag-to-length conversion table decoder;

an adder having a first input coupled to an output of said fixed tag-to-length conversion table decoder; and

second register means having an input coupled to an output of said adder, said second register having an output coupled to a second input of said adder, to the shift-control input of said first barrel shifter, and to an output of said closed-loop parsing loop;

a decoding section having a first input coupled to the second input means of said variable-length decoder, and a second input coupled to the output of said closed-loop parsing loop, said decoding section comprising:

third register means having input means coupled to said first input of said decoding section;

a second barrel shifter having data input means coupled to an output of said register means, and a shift-control input coupled to said second input of said decoding section; and

a value decoder having an input coupled to an output of said second barrel shifter, said value decoder interpreting a bit stream at the output of the second barrel shifter and converting the bit stream into actual data values, said value decoder having an output coupled to an output of the decoding section which constitutes an output of the variable-length decoder arrangement; and

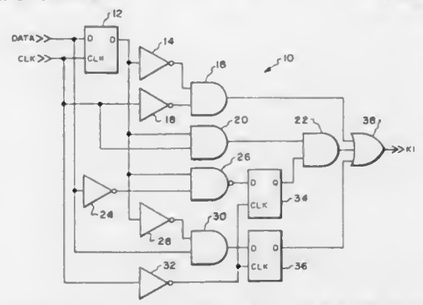
a state machine coupled to the decoding section and the closed-loop parsing loop for executing the decoding protocol based on the bit stream contents, the state machine controlling the value decoder by selecting appropriate decoding value tables for the value decoder and interrupting the data requests from the tag buffer and the rate buffer when a picture represented by the input bit stream is decoded.

5,666,117

NON-RETURN TO ZERO LEVEL TO BI-PHASE SIGNAL CONVERTER

Christian L. Houlberg, Ventura, and Lawrence N. Jue, Moorpark, both of Calif., assignors to The United State of American as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1995, Ser. No. 528,623
Int. Cl.[6] H03M 5/12
U.S. Cl. 341—70 **10 Claims**



1. A signal conversion circuit for converting a first data stream to a second data stream and eliminating voltage spikes from said second data stream, said signal conversion circuit comprising:

first latching means for receiving an external clock signal, said first latching means having a data input for receiving said first data stream, said first latching means storing one data bit of a plurality of data bits of said first data stream therein for one clock cycle of said external clock signal;

detecting means coupled to said first latching means for comparing the one data bit stored in said first latching means with another data bit being received next sequentially at the data input of said first latching means;

said detecting means generating a change of state logic signal whenever the one data bit stored in said first latching means has a different logic state from the another data bit being received at the data input of said first latching means;

inverting means for inverting said external clock signal to provide an inverted clock signal;

second latching means coupled to said inverting means and said detecting means, said second latching means responsive to said inverted clock signal storing therein said change of state logic signal; and

EXCLUSIVE-NOR circuit means for receiving said external clock signal, said EXCLUSIVE-NOR circuit means being coupled to said first latching means, said second latching means and said detecting means;

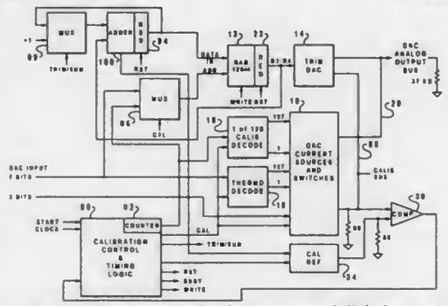
said EXCLUSIVE-NOR circuit means converting said first data stream to said second data stream and imbedding said external clock signal into said second data stream, said EXCLUSIVE-NOR circuit means responsive to said change of state signal, eliminating said voltage spikes from said second data stream.

5,666,118

SELF CALIBRATION SEGMENTED DIGITAL-TO-ANALOG CONVERTER

John Edwin Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 399,269, Mar. 6, 1995. This application Jul. 30, 1996, Ser. No. 688,452
Int. Cl.[6] H03M 1/10
U.S. Cl. 341—120 **2 Claims**



1. A method of self calibration for a segmented digital-to-analog converter, wherein the segmented digital-to-analog converter converts a digital input code to an analog output equal to the sum of an analog output and an analog calibration factor, further wherein the digital input code has an associated segment, and wherein a particular digital input code received by the segmented digital to analog converter produces an equivalent analog output, the method comprising the steps of:

determining a trim value for each segment of a segmented digital to analog converter by comparing each segment to the same reference value and using the difference between the reference value and a given segment to determine the trim value for the given segment;

storing the trim values in memory;

summing a plurality of trim values to produce a digital calibration factor associated with each given digital input signal, wherein the plurality of trim values are the trim values for a plurality of segments preselected to be enabled by the given digital input signal; and

storing each digital calibration factor in memory at an address corresponding to the digital input signal.

5,666,119

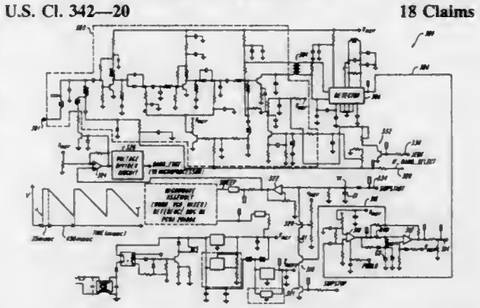
Patent Not Issued For This Number

5,666,120

DETECTOR APPARATUS

Chris R. Kline, Pepperell, Mass.; Bruce A. Ricker, Penacook, N.H.; Hans A. Kvinlaug, Bradford, Mass.; Craig R. Autio, Orange, Mass.; Subhash C. Sakar, Amhurst, N.H., and Leonard J. Umina, Marlboro, Mass., assignors to Whistler Acquisition Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 231,400, Apr. 22, 1994, abandoned. This application May 12, 1994, Ser. No. 241,593
Int. Cl.[6] G01S 7/40
U.S. Cl. 342—20 **18 Claims**



1. A method of operating a radar detector having a swept VCO to detect the presence of a receiver circuit, the method including the steps of:

stopping the sweep of the VCO at a predetermined time;

tuning the VCO to emit a signal at a single fixed frequency for a predetermined time period;

detecting a signal having a changing frequency;

determining if said detected signal has a predetermined signal characteristic; and

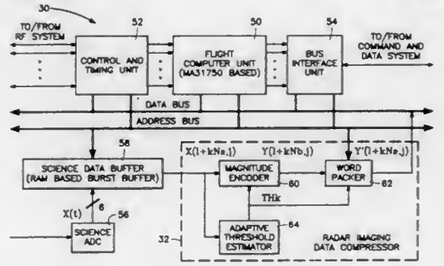
in response to said determining step, if the detected signal has the predetermined signal characteristic then operating the VCO such that the VCO does not emit a signal which is detectable by the receiver circuit.

5,666,121

VLSI PROCESSOR DESIGN OF REAL-TIME DATA COMPRESSION FOR HIGH RESOLUTION IMAGING RADAR

Wai-Chi Fang, San Marino, and William T. K. Johnson, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 19, 1995, Ser. No. 530,514
Int. Cl.[6] G01S 13/90
U.S. Cl. 342—25 **21 Claims**



1. An image data compression system, comprising:

means for collecting a plurality of intermittent bursts of image data;

a block adaptive quantizer receiving said plurality of intermittent bursts of image data having means for generating a current quantizer control for each burst of image data and means for encoding each of said burst of image data in real-time by

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using said respective current quantizer control so that said image data is compressed in real-time;

wherein said means for encoding has a plurality of selectable pre-programmed compression ratios;

means for selectively activating at least one of said plurality of pre-programmed compression ratios; and

a decoder for reconstructing said encoded image data into its original form.

5,666,122

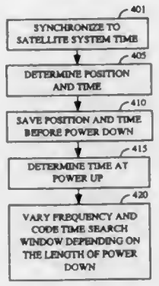
METHOD FOR RAPID SIGNAL ACQUISITION IN A SATELLITE COMMUNICATIONS SYSTEM

Stephen S. Carter, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Jul. 11, 1994, Ser. No. 272,485

Int. Cl.[6] G01S *5/02;* **H04B** *7/185*

U.S. Cl. 342—357 **20 Claims**



1. A method for a radio to acquire a communication signal having a predetermined signal carrier frequency, which is received from at least one communications satellite or a constellation of satellites, the radio having a clock and an ephemeris of the at least one satellite, comprising the steps of:

determining a first spatial position for the radio at a first point in time as indicated by the clock;

saving the first spatial position with an associated first time;

determining, at a current time, an amount of time that has passed since the first time;

estimating a second spatial position said radio could move to from said first spatial position during said amount of time that has passed since the first spatial position was determined;

searching a frequency band for the communication signal determined by .the estimated second spatial position, current time, and ephemeris data, within a frequency bandwidth based on said amount of time that has passed.

5,666,123

BASE STATION ANTENNA ARRANGEMENT

Peter John Chrystie, Galmpton, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 441,755, May 16, 1995, abandoned, which is a division of Ser. No. 289,920, Aug. 12, 1994, Pat. No. 5,596,329. This application Jan. 30, 1997, Ser. No. 791,835

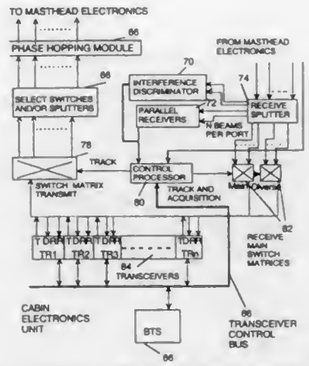
Claims priority, application United Kingdom, Aug. 12, 1993, 9316831

Int. Cl.[6] H01Q *3/22*

U.S. Cl. 342—373 **5 Claims**

1. A telecommunications base station antenna arrangement comprising:

a plurality of layered antenna arrays having beam forming means for forming a multiplicity of separate overlapping narrow beams in azimuth, the plurality of arrays being positioned such that the beams from each array provide a coverage of azimuth wider than each array;



means for exchanging with a base station network information relating to the position and movement of a mobile station within an area of coverage of the antenna arrangement;

characterized in that the antenna includes:

differentiating means to differentiate between signals of different signal strength;

selecting means for selecting, in a receive mode, for a given call, the best receive signal and other receive signals from the multiplicity of narrow overlapping beams; and

means for combining the signals selected by the selecting means to form a single receive signal input for the r.f. transceiver for the given call.

5,666,124

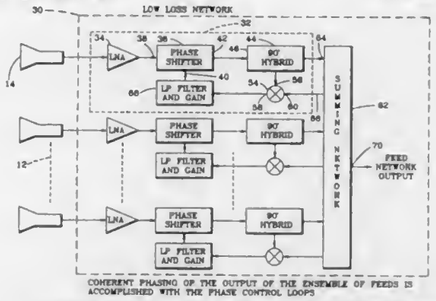
HIGH GAIN ARRAY ANTENNA SYSTEM

Frank Chethik, Palo Alto, and Bryan S. Costello, Cupertino, both of Calif., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,763

Int. Cl.[6] G01S *3/16;3/28*

U.S. Cl. 342—383 **13 Claims**



1. A method for increasing the gain of a receiving antenna, comprising the steps of:

receiving an RF signal with a receiving antenna having at least one surface for directing the RF signal to an entrance aperture of the receiving antenna, the entrance aperture being divided into a plurality of sub-apertures, each of the plurality of sub-apertures including a respective feed array element which receives a respective portion of the RF signal;

amplifying the received portions of the RF signal to produce individual amplified signals;

summing the individual amplified signals to produce a summation signal;

determining a phase difference between the summation signal and each individual one of the individual amplified signals;

adjusting a phase of each individual amplified signal by an amount proportional to the determined phase difference to produce individual phase shifted signals, wherein a phase of each individual amplified signal is adjusted to be substantially in phase with the summation signal, thereby increasing the gain of the receiving antenna relative to a gain of a comparably sized antenna having only a single entrance aperture; and

summing each of the individual phase shifted signals and providing a substantially coherent summation signal to an output.

5,666,125

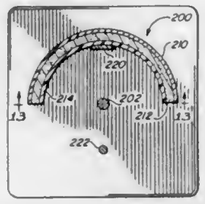
RADIATION SHIELDING AND RANGE EXTENDING ANTENNA ASSEMBLY

Norval N. Luxon, 8462 Traminer Ct., San Jose, Calif. 95135; Kevin A. Luxon, 30041 Tessier St., Suite 282, Laguna Niguel, Calif. 92677, and R. Joseph Milelli, 5132 Mt. Tam Cir., Pleasanton, Calif. 94588

Continuation-in-part of Ser. No. 404,435, Mar. 15, 1995, which is a continuation-in-part of Ser. No. 283,526, Aug. 1, 1994, Pat. No. 5,507,012, which is a continuation-in-part of Ser. No. 33,569, Mar. 17, 1993, abandoned. This application Jun. 8, 1995, Ser. No. 480,905

Int. Cl.[6] H01Q *1/24;* **H04B** *1/38*

U.S. Cl. 343—702 **20 Claims**



1. An antenna assembly for use with a radio signal transmitting device, comprising: an antenna for transmitting a radio signal from a radio signal transmitting device, the radio signal being transmitted at a transmission side of the antenna assembly and being block from transmission through a shielding side of the antenna assembly; a radiation absorber member disposed at the shielding side and disposed during use between the antenna and a user of the radio signal transmitting device; at least one of a first parasitic element disposed during use between the antenna and the user, and a second parasitic element disposed at the transmission side and disposed during use so that the antenna is between the second parasitic element and the user, at least one of the first and the second parasitic element being disposed from the antenna at a gap distance effective to direct a portion of the radio signal toward the transmission side; and a metal shell member disposed at the shielding side and disposed during use between the radiation absorber member and the user; whereby the radio signal transmitted from the antenna is blocked at the shielding side to prevent exposure of the user to the radio signal and is transmitted at the transmitting side for effective communication with a remote receiver.

5,666,126

MULTI-STAGED ANTENNA OPTIMIZED FOR RECEPTION WITHIN MULTIPLE FREQUENCY BANDS

Mark Lange, Oxnard, Calif., assignor to California Amplifier, Camarillo, Calif.

Filed Sep. 18, 1995, Ser. No. 529,539

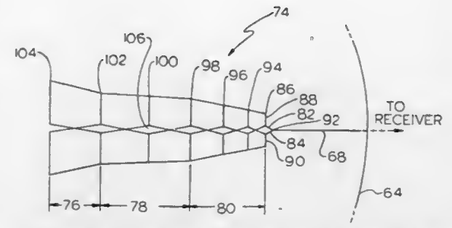
Int. Cl.[6] H01Q *13/00;11/10*

U.S. Cl. 343—781 R **14 Claims**

1. A microwave antenna comprising:

first and second feed lines oriented essentially parallel to each other, each having a remote end and a feed end;

a primary antenna stage positioned proximate to said feed line remote ends for receiving microwave signals within a primary frequency band, said primary antenna stage comprised of a plurality of primary dipoles coupled along said feed lines and



wherein each said dipole is comprised of a pair of dipole halves having inner and outer ends and wherein said inner end of a first dipole half is coupled essentially perpendicularly to said first feed line extending in a first direction therefrom and said inner end of a second dipole half is coupled essentially perpendicularly to said second feed line extending in a direction opposite to said first direction;

said plurality of primary dipoles including dipoles of different lengths each substantially equal to a half wavelength in said primary frequency band, said primary dipoles being arranged along said feed lines such that the outer ends thereof define a first taper angle;

a coupling antenna stage positioned proximate to said feed line feed ends comprised of a plurality of coupling dipoles coupled along said feed lines wherein each said dipole is comprised of a pair of dipole halves having inner and outer ends and wherein said inner end of a first dipole half is coupled essentially perpendicularly to said first feed line extending in a first direction therefrom and said inner end of a second dipole half is coupled essentially perpendicularly to said second feed line extending in a direction opposite to said first direction;

said plurality of coupling dipoles including dipoles of different lengths each shorter than a half wavelength in said primary frequency band, said coupling dipoles being arranged along said feed lines such that said outer ends define a second taper angle greater than said first taper angle;

a reflector for focusing microwave signals to a focal point in front of said reflector; and

wherein said primary antenna stage has an essentially fixed phase center positioned essentially coincident with said focal point.

5,666,127

SUBARRAY PANEL FOR SOLAR ENERGY TRANSMISSION

Jiro Kochiyama, Koshigaya; Nobuyuki Kaya, Kobe; Teruo Fujiwara, Hoya; Hidemi Yasui, Musashino, and Hiroyuki Yashiro, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, and Nobuyuki Kaya, Hyogo Prefecture, both of Japan

Continuation of Ser. No. 201,502, Feb. 24, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 580,775

Claims priority, application Japan, Feb. 25, 1993, 5-036628

Int. Cl.[6] H01Q *21/00*

U.S. Cl. 343—853 **5 Claims**

1. In a system for transmitting microwave energy derived from solar energy to a remote receiving apparatus which transmits a pilot signal:

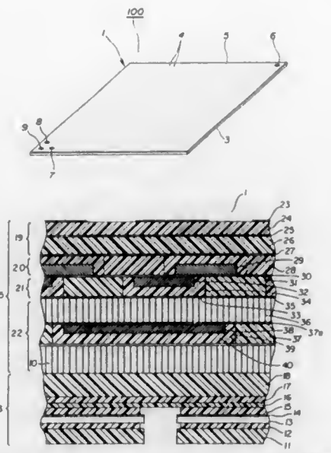
a subarray panel having one side and another side opposite to the one side, comprising:

a solar energy collection layer including a plurality of solar battery panels;

a solar energy transmission layer disposed on said solar energy collection layer;

said solar energy collection layer defining the one side of the subarray panel and said solar energy transmission layer defining the other side of the subarray panel;

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a first pilot signal receiving antenna arranged on a first portion of said solar energy transmission layer in the another side of the subarray panel;

a plurality of second mutually spaced pilot signal receiving antennas arranged in mutually spaced relation on a second portion of said solar energy transmission layer in the another side of the subarray panel,

said second portion being spaced from said first portion; and

a plurality of microwave transmitting antennas arranged on a third portion of said solar energy transmission layer in the another side of the subarray panel.

5,666,128

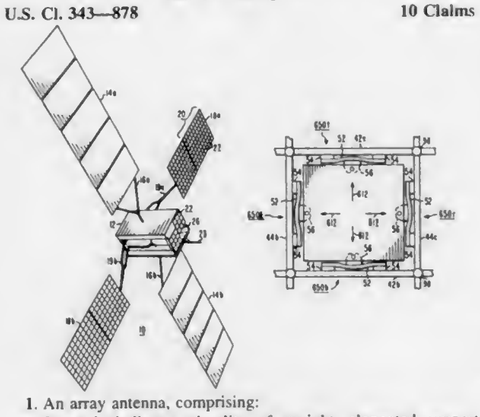
MODULAR SUPERTILE ARRAY ANTENNA

Bronson Murray, Freehold, N.J.; James Paul Foley, Yardley, Pa.; Thomas MacKenzie Stuart, East Windsor, and Fred Manfred Weiss, Moorestown, both of N.J., assignors to Lockheed Martin Corp., East Windsor, N.J.

Filed Mar. 26, 1996, Ser. No. 622,725

Int. Cl.[6] H01Q *1/12*

U.S. Cl. 343—878 **10 Claims**



1. An array antenna, comprising:

a frame including a plurality of straight, elongated support beams, interconnected in two mutually orthogonal sets so as to, together, define a rectangular two-dimensional array of a first plurality of mutually identical rectangular openings, said frame being subject to distortion in response to forces acting on said frame parallel to said support beams;

a second plurality, which is no greater than said first plurality, of rectangular, electromagnetically radiating tiles, each of said radiating tiles having length and width dimensions selected to fit within said openings, and having a thickness dimension much less than either of said length and width dimensions;

mounting means affixed to each of said tiles and to the associated ones of said openings in said frame, for holding each tile in an associated opening of said frame, each of said mounting means including four mounts, each of said mounts being affixed to the center of one of the sides of the associated one of said radiating tiles and to the center of one of said support beams defining an edge of said associated one of said openings, each of said mounts including (a) an elongated flex beam defining a thickness dimension, a width dimension greater than said thickness dimension, and a length dimension greater than said width dimension, (b) spacing means coupled to said flex beam and to said associated one of said support beams, whereby the center of said flex beam may deflect toward and away from the center of said associated one of said support beams, and (c) further connection means connecting the associated side of said radiating tile to said flex beam, whereby expansion and contraction of said radiating tile cause said center of said flex beams to deflect toward and away from, respectively, their associated support beams, whereby each of said radiating tiles remains centered in its associated opening, and whereby the combination of said four mounts, and the longitudinal stiffness provided by said flex beam, together with the stiffness of said radiating tile along its diagonals, provides triangle-like support of said rectangular opening, to enhance the structural strength of said frame against forces directed parallel with said support beams.

5,666,129

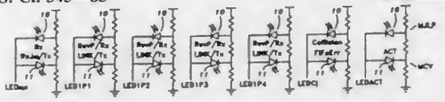
ELECTRICAL DISPLAY ELEMENTS FOR DISPLAYING MULTIPLE DIFFERENT CONDITIONS

Stefan Wurster, Livermore; Haim Shafir, Sacramento, and Ralph Andersson, Grass Valley, all of Calif., assignors to Level One Communications, Inc., Sacramento, Calif.

Filed Jul. 6, 1994, Ser. No. 271,111

Int. Cl.[6] G08B *5/38*

U.S. Cl. 345—83 **36 Claims**



1. A circuit for operating a pair of electrical display elements comprising:

a driver circuit having an output connected to the pair of display elements, and

means for applying an oscillating signal from the output of the driver circuit to the pair of display elements, the oscillating signal oscillating between a selected two of three different voltage levels at a selected one of two predetermined frequencies wherein the pair of electrical display elements collectively are operable to exhibit at least five different display conditions.

5,666,130

POINT ADDRESSABLE DISPLAY ASSEMBLY, METHOD OF OPERATING SAME, AND METHOD OF FABRICATING SAME

Ronald L. Williams, San Marcos, and Ronald M. Finnila, Carlsbad, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 10, 1994, Ser. No. 288,375

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—90 **5 Claims**

1. A display assembly comprising:

a layer of liquid crystal material; and

a plurality of liquid crystal drive circuits individual ones of which are electrically coupled to at least one region of said liquid crystal material, each of said regions being a display pixel having an associated pixel capacitance, each of said plurality of liquid crystal drive circuits comprising,

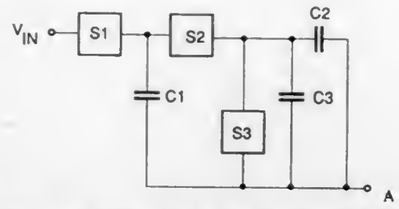
at least one storage capacitance having a first node and a second node that is coupled to a first common potential;

first switch means coupled to the first node for selectively charging said at least one storage capacitance;

second switch means having an input node coupled to the first node and an output node coupled to one of said display pixels for selectively coupling said at least one storage capacitance to said pixel; and

third switch means coupled from said output node to a second common potential for selectively discharging said at least one storage capacitance and said pixel capacitance

wherein said second common potential differs from said first common potential and is selected so as to accelerate the discharging of said storage capacitance and said pixel capacitance.



5,666,131

ACTIVE MATRIX LIQUID-CRYSTAL DISPLAY DEVICE WITH TWO-TERMINAL SWITCHING ELEMENTS AND METHOD OF DRIVING THE SAME

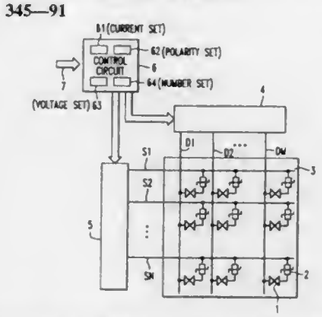
Seigo Togashi, Sakado, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 193,130, Feb. 18, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,443

Claims priority, application Japan, Jun. 19, 1992, 4-184778

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—91 **13 Claims**



1. A method of driving a two-terminal type active matrix liquid-crystal display device which has a plurality of data lines and scanning lines, and liquid-crystal pixels provided for the intersecting points of said data lines and said scanning lines, said liquid-crystal pixels having a two-terminal type switching element and a liquid crystal element and being driven by a scanning signal applied to the scanning lines and by a data signal applied to the data lines, wherein said two-terminal type switching element has bipolar characteristics and can both charge and discharge the liquid-crystal element, the method comprising:

controlling said scanning signal to write during select periods, an electric charge for storage in said liquid-crystal elements charged by said bipolar two-terminal type switching elements,

applying a current to said bipolar two-terminal type switching elements and discharging the stored charge in said liquid-crystal elements by said same bipolar two-terminal type switching elements during current application periods preceding said select periods, and

holding the electric charge of said liquid-crystal elements during holding periods succeeding said select periods.

5,666,132

LIQUID CRYSTAL DISPLAY

Isao Ochi, Tokorozawa, and Takashi Akiyama, Sayama, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

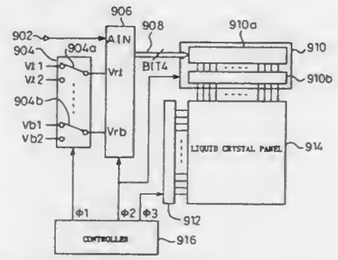
PCT No. PCT/JP95/00080, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO95/20209, PCT Pub. Date Jul. 27, 1995

PCT Filed Jan. 24, 1995, Ser. No. 525,624

Claims priority, application Japan, Jan. 24, 1994, 6-005877

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—96 **4 Claims**



1. A liquid crystal display, comprising,

an analog-to-digital converter;

a liquid crystal panel having signal and scanning electrodes;

means for switching at least two reference voltages from one to another at first intervals for input to the analog-to-digital converter to quantize an analog image signal into display data according to a dithering technique;

means for using the display data to prepare signals applied to the signal electrodes of the panel;

means for applying a select signal to the scanning electrodes, the signals applied to the signal and scanning electrodes of the panel having alternate polarities to display on the panel an image with gradations,;

said at least two reference voltages being divided into two groups, each of said two groups being alternately synchronized with one of the polarities of the select signal applied to one of the scanning electrodes at second intervals, each of said second intervals being two times longer than each of the first intervals at which the at least two reference voltages are switched from one to another.

5,666,133

METHOD FOR DRIVING LIQUID CRYSTAL DISPLAY UNIT

Shigeki Matsuo, and Seiichi Nagata, both of Yohkaichi, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 253,584, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 976,559, Nov. 16, 1992, abandoned. This application Apr. 10, 1996, Ser. No. 630,565

Claims priority, application Japan, Dec. 13, 1991, 3-330592

Int. Cl.[6] G09G *3/36*

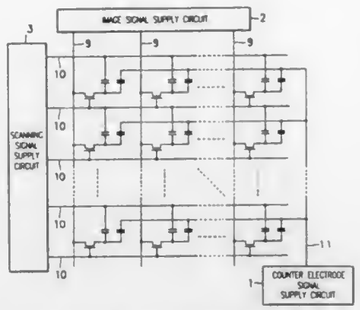
U.S. Cl. 345—100 **6 Claims**

1. A method for driving an active matrix liquid crystal display unit comprising:

interposing a liquid crystal material between a plurality of pixel electrodes and an electrode, the liquid crystal material exhibiting dielectric anisotropy;

connecting a switching transistor to each of the plurality of pixel electrodes;

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supplying a scanning signal for turning on and off the switching transistor from a scanning signal supply circuit to the switching transistor via a scanning signal line;

supplying an image signal from an image signal supply circuit to each of the pixel electrodes via an image signal line and the switching transistor, the image signal comprising two kinds of voltage level signals;

supplying a counter electrode signal to the electrode, the counter electrode signal comprising two kinds of voltage level signals;

inputting to the scanning signal supply circuit a plurality of scanning signal power voltages having levels that vary in synchronization with an inversion in polarity of the image signal; and

combining the plurality of scanning signal power voltages to serve as the scanning signal for turning on and off the switching transistor connected to each of the plurality of pixel electrodes,

whereby variance of the application voltage attributable to the dielectric anisotropy of the liquid crystal material is eliminated and whereby the image signal and the counter electrode signal form an alternating voltage and are impressed on the liquid crystal material.

5,666,134

ELECTROMAGNETIC SHUTTER

John Browne, Oakville, Canada, assignor to Mark IV Industries Limited, Ontario, Canada

Continuation-in-part of Ser. No. 855,063, Mar. 20, 1992, Pat. No. 5,337,077. This application May 12, 1994, Ser. No. 241,697

The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.

Int. Cl.[6] G09G *3/16*

U.S. Cl. 345—109 **19 Claims**

1. Strip module extending in a longitudinal direction, in combination with a plurality of optic fibre emission shutter elements comprising:

a housing extending in said longitudinal direction including means for mounting at least two rotatable shutter elements,

said housing mounting, for each shutter element, an optic fibre, having an end, thereby defining a viewing direction, and a cone of light about said viewing direction, diverging in said viewing direction,

said viewing direction for respective optic fibres being substantially parallel,

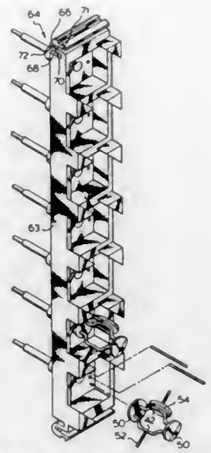
said optic fibre ends being substantially aligned in said longitudinal direction,

means, corresponding to each of said optic fibres, for mounting a rotary shutter element on a pivotal axis transverse to said viewing direction,

means for selectively driving each said rotary shutter element between ON and OFF positions,

said shutter, in the ON position, allowing the passage of light in said cone, and

said shutter having a panel, movable therewith, positioned to be located between and substantially in alignment with said



pivotal axis and said fibre end, in the OFF position, said panel being dimensioned to occlude said cone, in the viewing direction when said panel is in said OFF position.

5,666,135

ELECTRONIC EQUIPMENT HAVING DISPLAY DEVICE IN WHICH A SHARED MEMORY IS ACCESSED BY BOTH THE SYSTEM AND DISPLAY CONTROLLERS VIA A DATA BUS

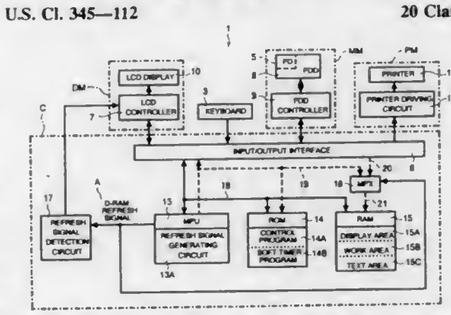
Ryoji Taki, Konan, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 22, 1995, Ser. No. 392,185

Claims priority, application Japan, Feb. 25, 1994, 6-028260

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—112 **20 Claims**



1. A piece of electronic equipment having a display device, including:

control means for executing various processing;

display means for displaying characters or symbols;

data storing means for temporarily storing operation data used by said control means and display data of characters or symbols which are displayed on said display means;

a data bus for connecting said control means and said data storing means to perform the write-in and read-out operation of the data stored in said data storing means;

detection means for detecting that said control means sets the data bus to a high impedance state; and

display control means which is connected through said data bus to said data storing means and reads out the display data stored in said data storing means in response to the detection of the high-impedance state of said data bus by said detection means, thereby controlling the display of the data on said display means.

5,666,136

AUDIO EQUIPMENT AND METHOD OF DISPLAYING OPERATION THEREOF

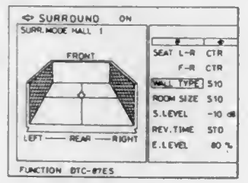
Kaneaki Fujishita; Osamu Sakurai, both of Kanagawa, and Junichi Nagahara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

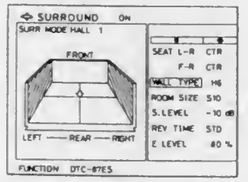
Division of Ser. No. 107,681, Aug. 17, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,531

Claims priority, application Japan, Dec. 17, 1991, 3-333668; Dec. 18, 1991, 3-335147; Dec. 19, 1991, 3-336950; Dec. 19, 1991, 3-337215; Dec. 19, 1991, 3-337231; Dec. 20, 1991, 3-338714

Int. Cl.[6] H03G *3/00*

U.S. Cl. 345—146 **2 Claims**





1. A method of displaying operation of an audio equipment in a room in which an user is situated, comprising the steps of:

producing an image signal to display an image indicative of a sound field;

detecting a setting of a parameter of a material of a wall surface around the sound field, the parameter of the material of the wall surface around the sound field being desirably set according to an actual material of a wall surface in the room; and

varying a portion of the image corresponding to the wall surface around the sound field in accordance with the setting of the parameter of the material of the wall surface around the sound field,

wherein the setting of the parameter of the material of the wall surface around the sound field is visually confirmed by the corresponding varying portion of the image.

5,666,137

PACKED YUV9 FORMAT FOR INTERLEAVED STORAGE AND EFFICIENT PROCESSING OF DIGITAL VIDEO DATA

Rohan G.F. Coelho, Hillsboro, and Brandon H. Lee, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 103,399, Aug. 6, 1993, Pat. No. 5,552,803. This application Sep. 14, 1994, Ser. No. 306,196

Int. Cl.[6] H04N *7/01;11/20;* **G09G** *5/04;5/00*

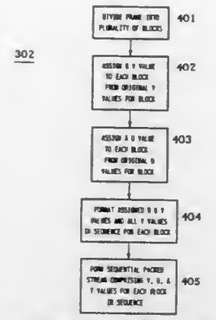
U.S. Cl. 345—155 **20 Claims**

1. A computer-implemented method for subsampling and formatting a frame of original YUV digital video data for transmission, comprising the steps of:

(A) dividing said frame into a plurality of blocks of pixels;

(B) assigning each block of said plurality of blocks of pixels a V value equal to one of the original V values in the corresponding block of said frame of original YUV digital video data;

(C) assigning each block of said plurality of blocks of pixels a U value equal to one of the original U values in the corresponding block of said frame of original YUV digital video data;



(D) formatting said V and U values assigned in steps (B) and (C) for each respective block in sequence with all of the Y values corresponding to each respective block in block-by-block fashion; and

(E) forming a sequential packed digital video data stream comprising the V, U, and Y values for each of said blocks from step (D) in sequence.

5,666,138

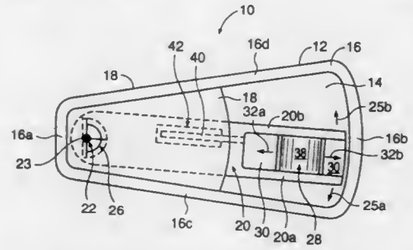
INTERFACE CONTROL

Craig F. Culver, 201 Ware Rd., Woodside, Calif. 94062

Filed Nov. 22, 1994, Ser. No. 343,300

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—161 **23 Claims**



1. An apparatus for generating at least two control signals, said apparatus comprising:

a support;

an arm member disposed within said support, said arm member being moveable in an arcuate path within said support;

a contact member slidably mounted on said arm member, said contact member being slidable along said arm member;

a first sensor coupled to said arm member for sensing movement of said arm member along said arcuate path; and

a second sensor coupled to said contact member for sensing linear movement of said contact member along said arm member.

5,666,139

PEN-BASED COMPUTER COPY EDITING APPARATUS AND METHOD FOR MANUSCRIPTS

John B. Thielens, Wayne; Mitchell Farbstein, Phoenixville, both of Pa.; Robert Tebbenhoff, Ramsey, N.J.; Clifford L. Martin, Haworth, N.J., and Francis A. Landau, Jr., Long Valley, N.J., assignors to Advanced Pen Technologies, Inc., Upper Saddle River, N.J.

Continuation of Ser. No. 961,616, Oct. 15, 1992, abandoned. This application Mar. 3, 1995, Ser. No. 398,387

Int. Cl.[6] G09G *5/00;* **G06K** *9/00*

U.S. Cl. 345—173 **14 Claims**

1. A pen-based computer copy editing apparatus comprising:

features of test theory and test construction, as well as more specifically in the development and utilization of the MMPI and MMPI-A. Therefore, the test user should have completed graduate-level courses in psychological testing and reviewed texts such as the MMPI handbooks

The older versions MMPX and MMPY are no longer valid

screen means for displaying original text thereon in a typewritten font;

pen means for writing on said screen means in an inkless manner by moving along said screen means; and

central processing means for:

identifying:

handwriting,

first gestures corresponding to insertions of text at a designated location in said original text in response to movement of said pen means along said screen means, and

second gestures corresponding to deletions of text in said original text in response to movement of said pen means along said screen means, and

controlling said screen means in response:

substantially only to said handwriting and said first gestures to display the inserted text corresponding to said handwriting only in a predetermined, fixed handwritten font different from the typewritten font already displayed on the screen means, at said designated location in said original text, wherein the inserted text is discernable from text on the screen means in the typewritten font, and

to said second gestures by said pen means to:

delete said second gestures which are displayed on said screen,

display the original deleted text, and

display a strike-out across the original deleted text for providing a visual difference of the original deleted text from remaining portions of the original text which are not deleted.

5,666,140

INK JET PRINT HEAD

Masao Mitani; Kenji Yamada, and Osamu Machida, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 228,897

Claims priority, application Japan, Apr. 16, 1993, 5-090123; Sep. 17, 1993, 5-231913; Dec. 17, 1993, 5-318272

Int. Cl.[6] B41J *2/05;2/14*

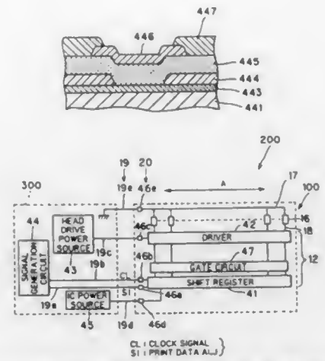
U.S. Cl. 347—12 **20 Claims**

1. An ink jet print head, for ejecting ink droplets, comprising:

a monolithic silicon substrate including a top surface;

a plurality of ink chambers on the top surface of the silicon substrate, said plurality of ink chambers each comprising chamber walls, the plurality of ink chambers being aligned in a predetermined direction parallel to the top surface of the silicon substrate, each of the plurality of ink chambers being filled with ink, each chamber wall of said chamber walls including a nozzle portion, each nozzle portion including a nozzle and being located so that each nozzle is in fluid communication with a respective ink chamber of said plurality of ink chambers, a plurality of said nozzles being aligned in the predetermined direction;

an integrated circuit provided on the top surface of the silicon substrate and located adjacent to the plurality of ink chambers for outputting pulsed electric current; and



a plurality of thermal resistors provided on the top surface of the silicon substrate, each of said plurality of thermal resistors being located in a corresponding ink chamber of the plurality of ink chambers, each of the plurality of thermal resistors including a thin-film conductor connected to the integrated circuit for receiving the pulsed electric current from the integrated circuit and a thin-film resistor connected to the thin-film conductor for receiving the pulsed electric current from the thin-film conductor and for generating pulsed heat in response to the pulsed electric current,

the thin-film resistor including a surface portion exposed to the ink contained in the corresponding ink chamber for directly heating the ink with the pulsed heat so as to eject an ink droplet from the corresponding ink chamber through the nozzle,

the thin-film resistor being made of a material selected from a group consisting of Ta—Si—SiO alloy and CrSi-SiO alloy, the thin-film conductor being made of a material selected from a group consisting of tungsten and nickel,

wherein each of the plurality of thermal resistors directly heats the ink with the pulsed heat so as to eject an ink droplet from a corresponding nozzle of said plurality of nozzles at in ejection speed of V in a nozzle extending direction so that the ink droplet has a length of L in the nozzle extending direction, and

wherein the integrated circuit includes driving means for selectively driving the plurality of thermal resistors serially and consecutively with a phase difference T between consecutive drives of the thermal resistors, the phase difference T satisfying an inequality T>L/V.

5,666,141

INK JET HEAD AND A METHOD OF MANUFACTURING THEREOF

Hirotsugu Matoba, Sakurai; Susumu Hirata, Ikoma; Yorishige Ishii, Yamatotakada; Tetsuya Inui, Nara; Kenji Ohta, Kitakatsuragi; Shingo Abe, Tenri, and Zenjiro Yamashita, Yamato-koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 8, 1994, Ser. No. 272,447

Claims priority, application Japan, Jul. 13, 1993, 5-173421; Nov. 8, 1993, 5-278271

Int. Cl.[6] B41J *2/045*

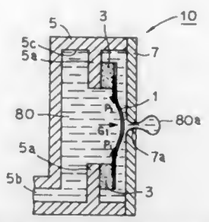
U.S. Cl. 347—54 **13 Claims**

5. An ink jet head applying pressure to ink liquid filled in the interior for discharging said ink liquid outwards from said interior, comprising:

a nozzle plate including a nozzle orifice,

a vessel including an ink flow path communicating with said nozzle orifice,

a buckling structure body having a center portion located between said nozzle orifice and said ink flow path, a surface facing said nozzle orifice, a back face at a rear side of said



surface, and opposing ends, said opposing ends supported to said vessel at said back face, and

compression means applying a compressive stress inwards of said buckling structure body,

wherein said buckling structure body is buckled by a compressive stress applied by said compression means to have said center portion deformed towards said nozzle orifice.

5,666,142

INK JET RECORDING SYSTEM HAVING IMPROVED FUNCTIONAL DEVICES FOR DRIVING ENERGY GENERATING MEMBERS

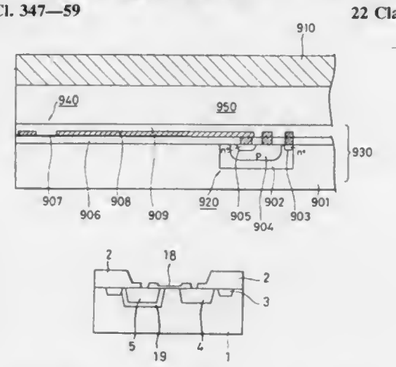
Kei Fujita, Tokyo; Asao Saito, Yokohama, and Shigeyuki Matsumoto, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 106,164, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 646,290, Jan. 28, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,899

Claims priority, application Japan, Jan. 31, 1990, 2-19320

Int. Cl.[6] B41V *2/05*

U.S. Cl. 347—59 **22 Claims**



1. A substrate for an ink jet recording head, comprising:

a substrate plate, said substrate plate having a first conduction type semiconductor of a low impurity concentration;

a plurality of electrothermal transducers for generating energies to be applied to an ink, each of said plurality of electrothermal transducer having a pair of wiring electrodes electrically connected to that said electrothermal transducer;

a plurality of functional devices, each said functional device being electrically connected to a one of said electrothermal transducers to drive that said one electrothermal transducer, said one electrothermal transducer and said functional device being formed commonly on or in said substrate plate, each of said plurality of functional devices including:

a pair of major electrode regions arranged to be separated from each other in said substrate plate, said pair of major electrode regions being composed of a second conduction type semiconductor and having a lower-side;

a control electrode region so arranged to surround a lower-side of one of said pair of major electrode regions, and said control electrode being composed of a first conduction type semiconductor of a higher impurity concentration than the impurity concentration of said substrate plate;

a first insulating layer arranged on said control electrode region and having a film thickness of 100 Å to 1000 Å; and

a second insulating layer arranged on a region other than said region on which said first insulating layer is arranged and having a film thickness of at least 5000 Å,

wherein said one of said major electrode regions is electrically connected to one of said pairs of said wiring electrodes, the other major electrode region being used for a high voltage as compared with said one of said major electrode regions, said plurality of electrothermal transducers being driven by electric signals that flow between said pairs of major electrode regions.

5,666,143

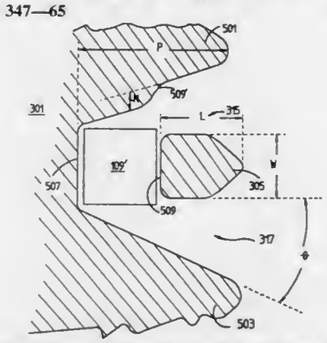
INKJET PRINTHEAD WITH TUNED FIRING CHAMBERS AND MULTIPLE INLETS

Peter M. Burke, Corvallis, and Timothy L. Weber, Shedd, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 29, 1994, Ser. No. 282,243

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—65 **15 Claims**



1. An inkjet printer printhead coupled to an ink source and having a plurality of ink firing chambers dimensionally bounded by a barrier layer disposed between a substrate and an orifice plate, comprising:

at least two ink feed channels coupled to one of the plurality of ink firing chamber and dimensionally defined, in part, by first and second walls of the barrier layer, at least a first one of said ink feed channels having said first wall of said at least two walls disposed non-parallel to said second wall to provide a wide dimension inlet at the ink source and a narrow dimension outlet at said one of the plurality of ink firing chambers; and

an island of the barrier layer separating said first ink feed channel and a second ink feed channel of said at least two ink feed channels, said island having an essentially flat wall surface disposed toward the ink firing chamber.

5,666,144

INK DROPLET JET DEVICE HAVING SEGMENTED PIEZOELECTRIC INK CHAMBERS WITH DIFFERENT POLARIZATION

Qiming Zhang, Beverly, Mass., assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 19, 1994, Ser. No. 246,268

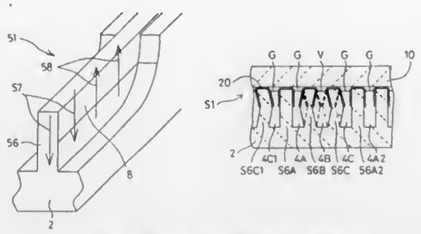
Claims priority, application Japan, May 26, 1993, 5-123862

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—69 **17 Claims**

1. An ink droplet jet device, comprising:

a first plate having a plurality of grooves formed therein, said grooves being separated by partitions having a longitudinal



axis, at least a part of said partitions made of polarized piezoelectric elements, wherein each of said partitions has at least two segments having different directions of polarization of said pizoelectric elements sequentially along the longitudinal axis of said partitions and each partition has an upper surface;

a second plate attached to said first plate at the upper surface of each said partition of the partitions to enclose the grooves to form ink chambers of the enclosed grooves; and

a nozzle plate having nozzles formed therein so as to correspond to said ink chambers, wherein said partitions have electrodes formed thereon, said electrodes extending along the longitudinal axis of said partitions and being used to cause said partitions to deform in opposite directions at adjacent segments such that pressure waves generated in ink within the ink chambers at different segments of the partitions combined phases near the nozzles.

5,666,145

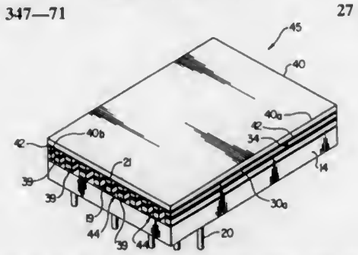
SINGLE SIDE DRIVE SYSTEM INTERCONNECTABLE INK JET PRINTHEAD

Donald J. Hayes, Plano, and James L. Stortz, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 66,396, May 20, 1993, Pat. No. 5,435,060. This application Apr. 13, 1995, Ser. No. 421,198

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—71 **27 Claims**



1. A channel array for an ink jet printhead interconnectable from a single side thereof, comprising:

a lower body portion having a top side surface and a bottom side surface;

a plurality of sections of conductive material mounted to said top side of said lower body portion;

a corresponding plurality of conductive pins projecting from said bottom side of said lower body portion;

means for electrically connecting each of said plurality of conductive sections to a corresponding one of said plurality of conductive pins;

a plurality of generally parallel, longitudinally extending first intermediate body portions, each of said first intermediate body portions formed of an active piezoelectric material poled in a first direction parallel to said top side surface of said lower body portion and having a bottom side surface conductively mounted to a portion of said top side surface of said lower body portion having one of said conductive sections mounted thereto;

a plurality of generally parallel, longitudinally extending second intermediate body portions, each of said second intermediate body portions formed of an active piezoelectric material poled in a second direction, opposite to said first direction, parallel to said top side surface of said lower body portion and having a bottom side surface conductively mounted to a top side surface of one of said first intermediate body portions; and

an upper body portion formed of an insulative material and having a bottom side surface conductively mounted to a top side surface of each of said plurality of second intermediate body portions.

5,666,146

INK CARTRIDGE FOR INK JET RECORDING APPARATUS

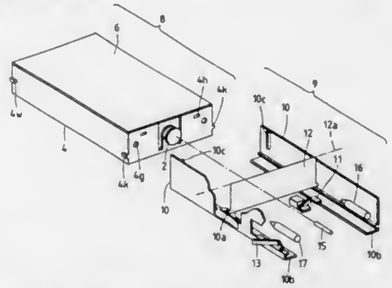
Seiji Mochizuki; Kazuhisa Kawakami, and Masahiro Isono, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 888,369, May 26, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 295,040

Claims priority, application Japan, May 27, 1991, 3-121136; Jul. 8, 1991, 3-166854; Jul. 8, 1991, 3-166855; Jul. 8, 1991, 3-166856

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **20 Claims**



1. An ink cartridge assembly for an ink jet recording apparatus, comprising:

a case having a front plate, at least one position determining hole being formed in said front plate;

an ink bag containing a supply of ink, said ink bag being received in said case, said position determining hole allowing the insertion of a position determining shaft projecting from the innermost end of a cartridge holder through said position determining hole to guide and properly locate said ink cartridge relative to said cartridge holder in both an upward/downward direction and a leftward/rightward direction without establishing communication between said ink bag and said position determining shaft; and

an ink outlet piece having an ink flow path therein communicating with said ink bag so that an ink feeding needle disposed at an innermost end of said cartridge holder and slightly behind said position determining shaft is capable of piercing through said ink outlet piece to reach the interior of said ink bag, said ink outlet piece being positioned to contact said ink feeding needle after said ink cartridge has been properly located relative to said cartridge holder by said position determining hole and position determining shaft.

5,666,147

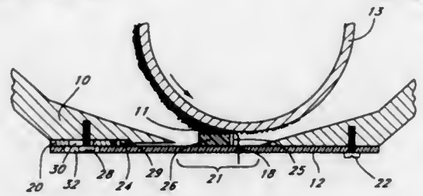
METHOD FOR DYNAMICALLY POSITIONING A CONTROL ELECTRODE ARRAY IN A DIRECT ELECTROSTATIC PRINTING DEVICE

Ove Larson, Hagen-Langedrag, Sweden, assignor to Array Printers AB, Vastra Frolunda, Sweden

Filed Mar. 8, 1994, Ser. No. 209,420

Int. Cl.[6] B41J *2/41;2/06;* **G11B** *3/00*

U.S. Cl. 347—112 **12 Claims**



1. A direct electrostatic printing apparatus comprising:

a rotating source of charged particles;

an image receiving substrate spaced from the particle source;

an electrode array positioned between the image receiving substrate and the particle source for effecting transfer of charged particles from said source to said substrate to form an image configuration on the substrate; and

a scraper blade extending from the electrode array to the particle source to space the array from the particle source.

5,666,148

IMAGE FORMING APPARATUS WITH AN ELECTRODE UNIT HAVING PLURAL ELECTRODES

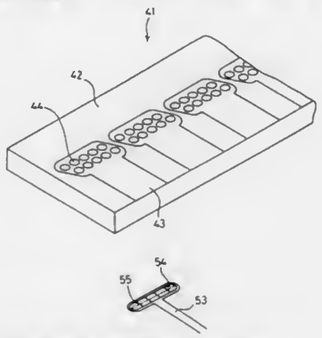
Tetsuya Kitamura, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 24, 1994, Ser. No. 264,943

Claims priority, application Japan, Jul. 28, 1993, 5-186111

Int. Cl.[6] B41J *2/385;* **G03G** *9/08*

U.S. Cl. 347—158 **15 Claims**



1. An image forming apparatus, comprising:

a supporter feeding assembly that feeds an image supporter in a feeding direction and defines a feed path;

a toner supply located adjacent to the feed path that supplies charged toner particles to form an image on the supporter;

a back electrode located adjacent to the feed path, facing and spaced from the toner supply, that attracts the charged toner particles from the toner supply so that an image supporter can be positioned between the toner supply and the back electrode to receive charged toner particles to form an image thereon; and

a toner controller disposed adjacent to the toner supply and between the toner supply and the back electrode that controls a flow of toner particles from the toner supply to the back electrode by an application of voltage the toner controller comprising an aperture electrode member including a plurality of individual control electrodes adapted to be coupled to a voltage source, wherein each individual control electrode has a plurality of apertures therein, wherein the plurality of apertures comprises an array of aligned apertures extending in a direction transverse to the feeding direction.

5,666,149

END-CONTACT TYPE THERMAL RECORDING HEAD HAVING HEAT-GENERATING PORTION ON THIN-WALLED END PORTION OF CERAMIC SUBSTRATE

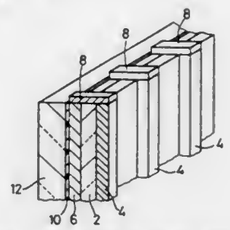
Yukihisa Takeuchi, Aichi-ken, and Toshikazu Hirota, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 399,371, Mar. 6, 1995, abandoned, which is a continuation of Ser. No. 822,944, Jan. 21, 1994, Pat. No. 5,422,661. This application Dec. 10, 1996, Ser. No. 762,957

Claims priority, application Japan, Jan. 22, 1991, 3-21595; Sep. 28, 1991, 3-276662; Sep. 28, 1991, 3-276663; Oct. 3, 1991, 3-283495; Oct. 3, 1991, 3-283496

Int. Cl.[6] B41J *2/335*

U.S. Cl. 347—201 **16 Claims**



1. An end-contact type thermal recording head adapted to contact a recording medium, comprising:

a ceramic substrate having a thick-walled proximal portion and a thin-walled end portion extending from said thick-walled proximal portion, said thin-walled end portion having a thickness smaller than said thick-walled proximal portion;

an electrically resistive heat-generating portion covering at least an end face of said thin-walled end portion of said ceramic substrate;

a plurality of recording electrodes formed on one of opposite major surfaces of said substrate;

at least one return-circuit electrode formed on the other major surface of the substrate, said recording and return-circuit electrodes being electrically connected to said electrically resistive heat-generating portion to energize said electrically resistive heat-generating portion; and

a reinforcing member disposed on at least one of opposite sides of said substrate which correspond to the opposite major surfaces of the substrate, such that a portion of said reinforcing member is located at said thin-walled end portion of said ceramic substrate, wherein the reinforcing member is positioned such that the heat-generating portion projects a small distance therefrom and the material of the reinforcing member has a lower wear resistance than that of the heat-generating portion such that projection of the heat-generating portion is maintained to ensure sliding contact of the heat-generating portion with a recording medium.

5,666,150

NON-UNIFORMITY CORRECTION FOR LED PRINTHEAD IN ELECTROPHOTOGRAPHIC GRAY SCALE PRINTING

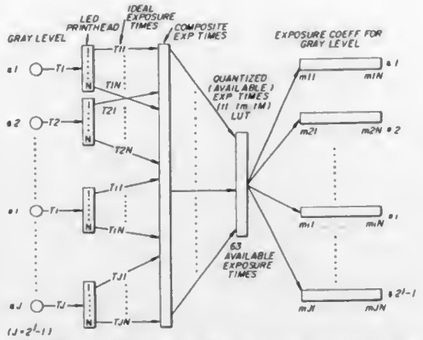
Isaac I. Ajewole, Greece, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1993, Ser. No. 175,079

Int. Cl.[6] B41J *2/47;2/435*

U.S. Cl. 347—240 **6 Claims**

1. A method for calibrating a gray level recording printhead having a plurality of recording elements, the method comprising the steps of:



(a) measuring a parameter of each recording element the parameter relating to a recording characteristic of the element;

(b); in response to measuring the parameter of each recording element, defining a set of cells of time periods having time boundaries that are substantially about a value u from a calculated exposure time b(n) for each cell;

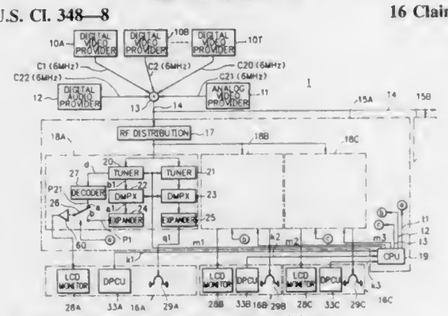
(c) repeating step (b) for at least some of said cells if a number of calculated exposure times b(n) is other than N, a number of available exposure times to the printhead; and

(d) storing a set of values representing b(n) in a memory associated with the printhead when the number of calculated times b(n) is N.

5,666,151
MULTIPLE AUDIO AND VIDEO SIGNAL PROVIDING APPARATUS

Yoshiyuki Kondo, Saitama; Koichi Tagawa, and Tetsu Shigetomi, both of Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 378,002, Jan. 25, 1995, Pat. No. 5,600,365. This application Sep. 9, 1996, Ser. No. 709,881
Claims priority, application Japan, Jan. 28, 1994, 6-008862
Int. Cl.[6] H04N *7/10*
U.S. Cl. 348—8 **16 Claims**



1. A signal providing apparatus comprising:

analog video signal providing means for providing an RF-modulated analog video signal having a bandwidth;

at least one digital video signal providing means providing an RF-modulated digital video signal having a bandwidth comprising;

time-division multiplexing means for multiplexing a plurality of compressed digital video signals by time division, and

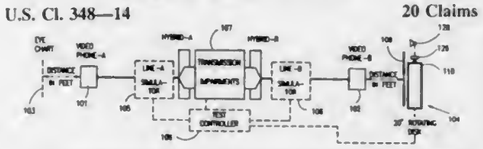
RF-modulating means for modulating a carrier signal with an output signal from the time-division multiplexing means, wherein a bandwidth of the carrier signal used by said RF-modulating means is equal to the bandwidth of the RF-modulated analog video signal; and

frequency-division multiplexing means for multiplexing by frequency-division the RF-modulated analog video signal from the analog video signal providing means and the RF-modulated digital video signal or signals from the at least one digital video signal providing means.

5,666,152
ROTATING VISUAL DISPLAY FOR VIDEO TESTING

Edward J. Stoker, Plano, Tex., assignor to MCI Corporation, Washington, D.C.

Filed Sep. 20, 1995, Ser. No. 530,635
Int. Cl.[6] H04N *7/14;17/00*
U.S. Cl. 348—14 **20 Claims**



1. A method for testing the operation of a videophone, comprising:

placing a rotating body within the visual field of said videophone, said rotating body having a visual pattern comprising a plurality of contrasting visual shapes;

connecting said videophone to a communication path;

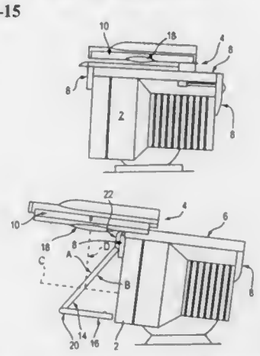
connecting said communication path to a display apparatus; and,

varying at least one of the rotational speed of said rotating body and the characteristics of the communication path while observing an image of said rotating body on said display apparatus.

5,666,153
RETRACTABLE TELECONFERENCING APPARATUS

David J. Copeland, Minneapolis, Minn., assignor to Virtual Shopping, Inc., Houston, Tex.

Filed Oct. 3, 1995, Ser. No. 538,792
Int. Cl.[6] H04M *11/00*
U.S. Cl. 348—15 **21 Claims**



1. A retractable video teleconferencing apparatus for a video monitor, the video monitor comprising a display having an optical axis, the retractable video teleconferencing apparatus comprising:

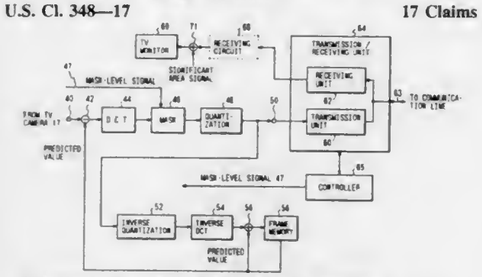
a) a beamsplitter mounted to the display and movable between a first position in which the beamsplitter is positioned across the optical axis at an angle relative thereto, whereby optical images directed toward the display along the optical axis are at least partially reflected by the beamsplitter, and a second position in which the beamsplitter is not positioned across the optical axis; and

b) a video camera positioned relative to the beamsplitter for receiving the partially reflected images and for generating a video signal corresponding to the partially reflected images.

5,666,154
IMAGE COMMUNICATION APPARATUS AND METHOD THEREFOR

Yasuji Hirabayashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 102,997, Jul. 28, 1993, abandoned. This application Oct. 27, 1995, Ser. No. 549,023
Claims priority, application Japan, Jul. 31, 1992, 4-2047665
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—17 **17 Claims**



1. An image communication apparatus comprising:

image pickup means for receiving, from an external receiver, designation information indicative of a desired area of image data to be transmitted back to the external receiver;

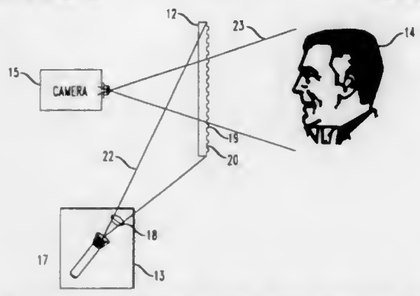
coding means for coding the image data to be transmitted; and

controlling means for causing said coding means to code the image data of the desired area indicated by the designation information and image data of an area which is not the desired area with different respective compression ratios.

5,666,155
EYE CONTACT VIDEO TELEPHONY

Keith Owen Mersereau, Northampton, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 24, 1994, Ser. No. 265,366
Int. Cl.[6] H04N *7/14*
U.S. Cl. 348—20 **25 Claims**



1. A video display and image sensing system comprising: means for displaying video images that can be seen by a first viewer when the first viewer's eyes lie on a first optical path; image sensing means for generating a video signal representative of an image of the first viewer; the image sensing means being located on a second optical path that includes a part of the first optical path including the eyes of the first viewer so as to give to a second viewer viewing an image of the first viewer an illusion of eye contact; wherein the improvement is characterized in that:

the display means comprises an array of lenses defining part of the first optical path, and an array of regions defining part of the second optical path;

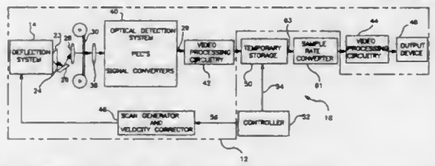
the array of regions are distributed among the array of lenses; and

the array of regions and the array of lenses each have a length and a width of less than three hundred microns, whereby the array of regions and the array of lenses are so small as to be substantially unresolvable by the first or second viewers when viewing displayed video images.

5,666,156
SYSTEM AND METHOD TO IMPROVE THE QUALITY OF REPRODUCED IMAGES ON A FILM TO VIDEO TRANSFER DEVICE

Steven Spears, P.O. Box 579, San Dimas, Calif. 91773, and David Walker, 731 Puma Canyon La., Glendora, Calif. 91740

Filed Apr. 7, 1995, Ser. No. 418,371
Int. Cl.[6] H04N *3/38;5/253;9/11*
U.S. Cl. 348—103 **12 Claims**



1. A film to video transfer system comprising:

a) a telecine machine including i) a scan generator and velocity corrector which generates a control signal used by a electron beam deflection system to produce a film scanning beam and ii) a detection system adapted to convert the film scanning beam to a digitized signal representing each film frame which has been scanned, said digitized signal representing a plurality of scan lines corresponding to each said film frame wherein the number of said scan lines is greater than the number of scan lines required by an output device;

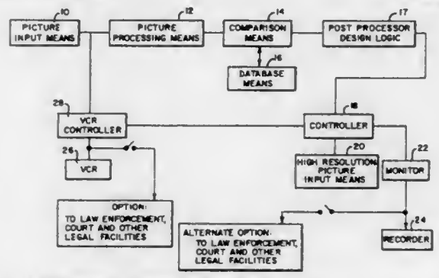
b) sample rate converter means coupled to said detection system for performing vertical sample rate reduction on each of said frames of digitized film frame information;

c) means for storing said frames of digitized film frame information which have been vertical sample rate reduced for use by said output device.

5,666,157
ABNORMALITY DETECTION AND SURVEILLANCE SYSTEM

David G. Aviv, New York, N.Y., assignor to ARC Incorporated, New York, N.Y.

Filed Jan. 3, 1995, Ser. No. 367,712
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—152 **4 Claims**



1. A surveillance system, comprising:

a) a video camera for translating real images of an area into electronic video signals;

b) means for sampling movements of an individual located within the area from said electronic video signals of said video camera;

c) means for electronically comparing said sampled movements with predetermined characteristics of movements;

d) means for predicting future movements of said individual based on said electronic comparing means of said sampled movements; and

e) means for generating a signal responsive to predetermined predicted future movements.

5,666,158

IMAGE PICK-UP APPARATUS HAVING VIBRATION CORRECTING CIRCUITRY

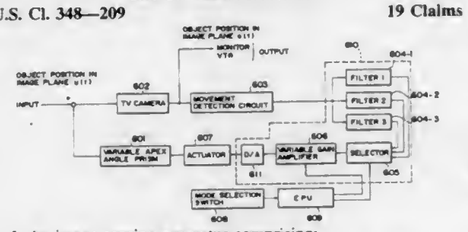
Masayoshi Sekine, Tokyo; Jun Tokumitsu, Sagamihara; Toshiaki Kondo, Atsugi; Koji Takahashi, Yokohama; Isao Harigaya, Yokohama, and Naoki Kawamata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,329, Jun. 30, 1993, abandoned, Continuation of Ser. No. 691,784, Apr. 26, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,539

Claims priority, application Japan, Apr. 29, 1990, 2-112661; Apr. 29, 1990, 2-112662

Int. Cl.[6] H04N 3/16;5/257

U.S. Cl. 348—209 19 Claims



1. An image sensing apparatus comprising:

(A) detection means for detecting movement of an image;

(B) correction means for correcting the movement of the image; and

(C) control means having a filter having a predetermined filter characteristic, for controlling said correction means by generating a control signal in response to detection of movement by said detection means and according to said predetermined filter characteristic, said predetermined filter characteristic being predetermined according to (i) a relationship between frequencies filtered by said filter and (ii) a transfer function determined by a closed feedback loop formed by said detection means, said correction means, and said control means.

5,666,159

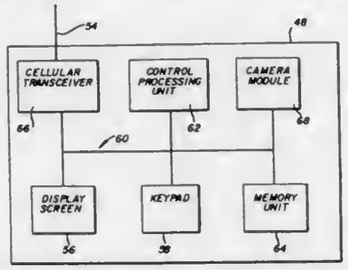
ELECTRONIC CAMERA SYSTEM WITH PROGRAMMABLE TRANSMISSION CAPABILITY

Kenneth A. Parulski, Rochester, and James R. Schueckler, Leroy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1995, Ser. No. 426,993

Int. Cl.[6] H04N 5/232

U.S. Cl. 348—211 10 Claims



1. An electronic camera system for selectively transmitting digital image data to a plurality of base receiver units, said electronic camera system comprising:

imaging means for imaging a scene and generating digital image data representative of the imaged scene;

storage means for storing the digital image data;

display means for displaying the digital image data generated by the imaging means;

selection means for selecting at least one of the plurality of base receiver units to receive the digital image data;

radio-frequency receiver means for receiving a mode signal from the base receiver unit selected by the selection means indicating the type of transmission that can be received by the selected base receiver unit;

means responsive to the mode signal for converting the digital image data to standardized digital image data corresponding to the type of transmission that can be received by the selected base receiver unit; and

radio-frequency transmission means for transmitting the standardized digital image data to the base receiver unit selected by the selection means to receive the digital image data.

5,666,160

DIGITAL ZOOMING SYSTEM OF HIGH RESOLUTION AND METHOD THEREFOR

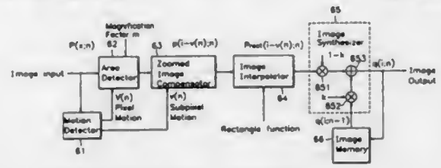
Jung-Hyun Hwang, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 3, 1996, Ser. No. 656,808

Claims priority, application Rep. of Korea, Nov. 15, 1995, 95-41540

Int. Cl.[6] H04N 5/262;9/74

U.S. Cl. 348—240 19 Claims



1. A digital zooming system, comprising:

a motion detector which detects a pixel motion component and a subpixel motion component in a pixel image;

an area detector which detects a zoom area in said pixel image according to said pixel motion component;

a zoomed image compensator which samples said pixel image at a pixel sample interval within said zoom area detected by said area detector and forms a zoomed image signal having a phase value with respect to said pixel sample interval according to said subpixel motion component;

an image interpolator which interpolates subpixel image information from said zoomed image signal to form a current subpixel image; and

an image synthesizer which weights said current subpixel image and a stored subpixel image and combines said weighted images to form a resultant subpixel image.

5,666,161

METHOD AND APPARATUS FOR CREATING LESS AMOUNT OF COMPRESSD IMAGE DATA FROM COMPRESSED STILL IMAGE DATA AND SYSTEM FOR TRANSMITTING COMPRESSED IMAGE DATA THROUGH TRANSMISSION LINE

Tomohisa Kohiyama; Junji Nakata; Takeo Tomokane, all of Yokohama; Tetsuya Kawahara, Fujisawa; Masami Yamagishi, Zama; Taminori Tomita, Chigasaki; Takahiro Yamada, Yokohama, and Munekazu Kamo, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,702

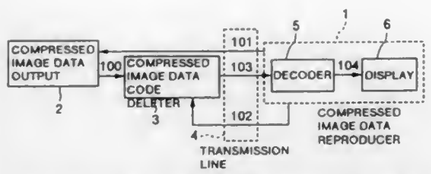
Claims priority, application Japan, Apr. 26, 1993, 5-099771; Jul. 14, 1993, 5-173971

Int. Cl.[6] H04N 7/30

U.S. Cl. 348—408 8 Claims

1. A method for creating compressed image data, said method comprising the steps of:

reading out compressed image data of a desired picture from a memory having compressed image data of a sequential format



stored therein, said image data of the sequential format having been compressed by using at least an orthagonal transform and Huffman coding;

examining a plurality of frequency components of said read-out compressed image data;

deleting part of said plurality of frequency components without altering the size of the coded image data; and

obtaining compressed image data of a quality lower than an original quality of said compressed image data.

5,666,162

MOVING IMAGE SIGNAL CODING APPARATUS AND MOVING IMAGE SIGNAL CODING CONTROL METHOD

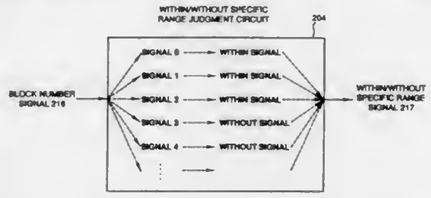
Yoshio Iizuka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 984,961, Dec. 3, 1992, Pat. No. 5,508,743. This application Oct. 30, 1995, Ser. No. 550,067

Claims priority, application Japan, Dec. 6, 1991, 3-322643

Int. Cl.[6] H04N 7/36

U.S. Cl. 348—415 17 Claims



1. A moving image signal coding apparatus which encodes a moving image signal, switching over inter-frame prediction coding and intra-frame prediction coding selectively, comprising:

specification means for specifying a fixed area in a frame of the moving image signal as an object of coding; and

coding control means for controlling the coding so that the moving image signal is encoded by inter-frame prediction coding in the specified fixed area.

5,666,163

ELECTRONIC IMAGE RESOLUTION ENHANCEMENT BY FREQUENCY-DOMAIN EXTRAPOLATION

Chuen-Chien Lee, Fremont, and Teruyosh Komuro, Santa Clara, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

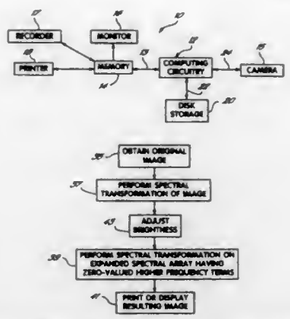
Filed Jul. 12, 1994, Ser. No. 273,869

Int. Cl.[6] H04N 5/14

U.S. Cl. 348—441 15 Claims

1. A method for increasing the spacial resolution of an image comprising an original pixel array, each pixel of said original pixel array characterized by luminance or color values, by transforming said original pixel array to a final pixel array having a greater number of pixels, comprising

transforming said original pixel array into a transformed spectral array, each entry of said transformed spectral array identifying spectral components of spacial variation of luminance or color values of pixels of said original pixel array,



inverse transforming said transformed spectral array to generate said final pixel array having a greater number of pixels than said original pixel array, the luminance or color values of pixels of said final pixel array having a distribution of spectral components of spacial variation similar to said original pixel array, and

multiplying each entry in one of said original pixel array, said final pixel array, or said transformed spectral array, by a factor equal to the square root of the ratio of the number of pixels in said final pixel array to the number of pixels in said original pixel array, to compensate for reductions in image brightness resulting from the increased number of pixels in said final pixel array.

5,666,164

IMAGE SIGNAL CONVERTING APPARATUS

Tetsujiro Kondo; Masashi Uchida, and Kunio Kawaguchi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

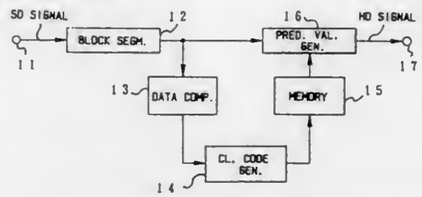
PCT No. PCT/JP93/01786, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO94/14278, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 9, 1993, Ser. No. 284,560

Claims priority, application Japan, Dec. 10, 1992, 4-330592; Jun. 14, 1993, 5-167518; Jun. 18, 1993, 5-172617

Int. Cl.[6] H04N 7/01;11/20

U.S. Cl. 348—441 11 Claims



1. A signal converting apparatus for converting a first digital image signal into a second digital image signal having higher resolution than the first digital image signal, comprising:

class categorizing means for categorizing a considered pixel of the second digital image signal as a class corresponding to a level distribution pattern in a plurality of reference pixels of the first digital image signal, the plurality of reference pixels of the first digital image signal being disposed spatially and/or chronologically adjacent the considered pixel;

memory means for storing predicted coefficients for each class and for outputting the predicted coefficients in response to class information received from said class categorizing means; and

predicted value generating means for calculating linear combination of values of pixels of the first digital image signal spatially and/or chronologically adjacent the considered pixel so as to generate a predicted value of the considered pixel.

5,666,165

VIDEO SIGNAL COMPRESSION APPARATUS FOR HORIZONTAL COMPRESSION OF A VIDEO SIGNAL

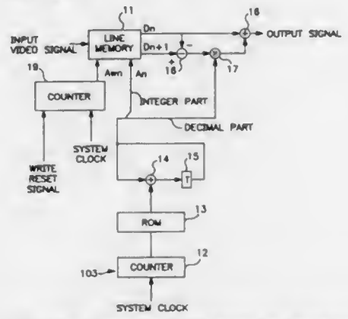
Yosuke Izawa, Ibaraki; Masahiro Tani, Daito; Naoji Okumura, Minou; Yutaka Nio, Osaka, and Toshiohika Sato, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 361,634

Claims priority, application Japan, Dec. 22, 1993, 5-324912; Jun. 20, 1994, 6-137075

Int. Cl.[6] H04N *7/01;5/262*

U.S. Cl. 348—445 **1 Claim**



1. A video signal compression apparatus for generating a compressed video signal, comprising:

line memory means for storing an input video signal and for outputting data value D_n for address A_n and data value D_{n+1} for address A_{n+1} when a read address A_n is given;

counter means for counting system clock pulses to provide a plurality of counter output values;

memory means for outputting a plurality of previously stored compression ratio values each corresponding to a respective one of said plurality of counter output values;

register means for storing and outputting a register value;

first adder means for adding any one of said plurality of previously stored compression ratio values output by said memory means with said register value output by said register means to generate an adder output value;

said register means for latching the adder output value, wherein an integer part of the adder output value is a read address A_n of said line memory means;

subtracter means for subtracting data value D_n from data value D_{n+1} and generating a subtraction output value;

multiplier means for multiplying the subtraction output value by a decimal part of the register value to generate a multiplier output value; and

second adder means for adding the data value D_n and the multiplier output value to generate said compressed video signal.

5,666,166

METHOD FOR CONVERTING PROGRESSIVE SCAN SIGNALS AND CONVERTER THEREOF

Akihiro Hori, Tokyo, Japan, assignor to Nippon Television Network Corporation, Tokyo, Japan

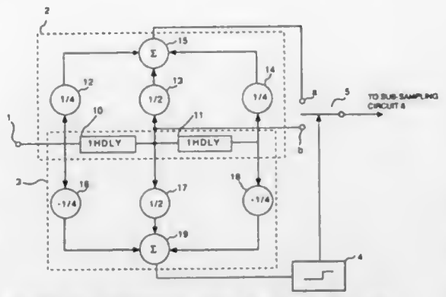
Filed Dec. 4, 1995, Ser. No. 577,905

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—453 **11 Claims**

1. A method for converting a progressive scan signal, wherein an 4:2:2P (4: luminance signal, 2: chrominance signal) format progressive scan signal is converted into an 4:2:0P (4: luminance signal; 2: chrominance signal) format progressive scan signal, said method comprising steps of:

receiving a chrominance signal of said 4:2:2P format progressive scan signal;



filtering said chrominance signal with a low pass filter;

filtering said chrominance signal with a high pass filter;

detecting a high frequency component level of said chrominance signal which has been filtered with said high pass filter; and

converting a chrominance signal which has been filtered with said low pass filter into a chrominance signal of said4:2:0P format progressive scan signal by sub-sampling said chrominance signal which has been filtered with said low pass filter when said detection means determines that said high frequency component level is not lower than a predetermined level, and converting a chrominance signal which has been filtered with said low pass filter into a chrominance signal of said 4:2:0P format progressive scan signal by sub-sampling said chrominance signal of said 4:2:2P format progressive scan signal when said high frequency component level is less than said predetermined level.

5,666,167

BIAS CONTROL APPARATUS FOR A DATA SLICER IN AN AUXILIARY VIDEO INFORMATION DECODER

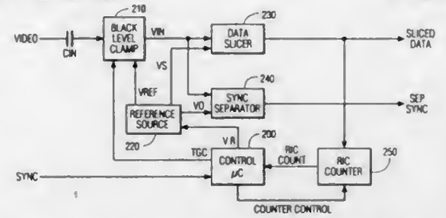
Juri Tults, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 374,774, Feb. 9, 1995. This application Oct. 25, 1996, Ser. No. 738,118

Claims priority, application United Kingdom, Sep. 15, 1992, 9219505

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—465 **23 Claims**



1. Apparatus for processing a video signal having a reference signal component included in a plurality of horizontal display intervals of said video signal, said apparatus comprising:

means responsive to said video signal for producing an output signal having signal transitions corresponding to respective signal transitions of said reference signal component that cross a reference level;

means for modifying said reference level in response to a control signal;

a counter responsive to said output signal for producing a count representative of a number of said signal transitions of said output signal that occur during each interval included in said plurality of horizontal display intervals; and

control means for determining after each interval included in said plurality of horizontal display intervals whether said count equals a predetermined value, for determining after said plurality of horizontal display intervals a frequency of occurrence of said count being equal to said predetermined value, and for generating said control signal to modify said reference level after said plurality of horizontal display intervals in response to said frequency of occurrence being less than a predetermined frequency of occurrence.

5,666,168

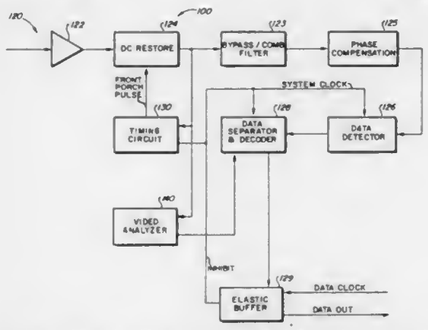
SYSTEM FOR TRANSMITTING FACSIMILE DATA IN THE UPPER VESTIGIAL CHROMINANCE SIDEBAND OF A VIDEO SIGNAL

Gerald D. Montgomery, and Jay B. Norrish, both of Mesa, Ariz., assignors to WavePhore, Inc., Tempe, Ariz.

Divisiom of Ser. No. 947,134, Sep. 18, 1992, Pat. No. 5,387,941, which is a continuation-in-part of Ser. No. 715,920, Jun. 14, 1991, Pat. No. 5,327,237. This application Apr. 8, 1994, Ser. No. 224,733

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—473 **33 Claims**



1. A facsimile machine for injecting an image into a video signal having a bandwidth and chrominance subcarrier, the facsimile machine comprising:

means for scanning an image to obtain a digital representation of that image;

means responsive to the scanning means for modulating a data carrier based upon the digital representation to provide a modulated signal; and

means for injecting the modulated signal into the video bandwidth at a frequency greater than the chrominance subcarrier.

5,666,169

PARALLEL PROCESSOR APPARATUS HAVING MEANS FOR PROCESSING SIGNALS OF DIFFERENT LENGTHS

Mitsuharu Ohki, Tokyo; Takao Yamazaki, Kanagawa; Masuyoshi Kurokawa, Kanagawa, and Akihiko Hashiguchi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1995, Ser. No. 519,719

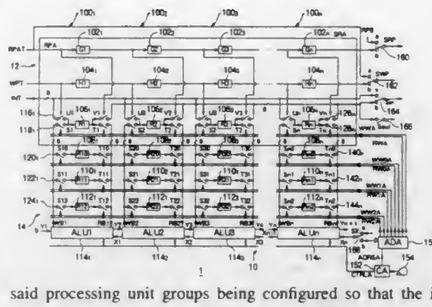
Claims priority, application Japan, Aug. 31, 1994, 6-207805

Int. Cl.[6] H04N *5/46;7/12*

U.S. Cl. 348—721 **8 Claims**

1. A parallel processor apparatus performing processing on periodic input signals comprised of data of different lengths per period, said parallel processor apparatus, comprising:

a plurality of individual processing unit groups, each of said individual processing unit groups being provided with a respective predetermined number of individual processing units operable to perform processing on data having different lengths per period;



said processing unit groups being configured so that the individual processing units of said plurality of processing unit groups are connected in series to enable processing of data having a first length per period by connecting in series said plurality of individual processing unit groups so that each of said plurality of individual processing units of said plurality of individual processing unit groups processes data of a period of said data having said first length per period; and

said processing unit groups being configured so that the individual processing units of a first of said processing unit groups processes data having a second length per period to produce first processed data, and the individual processing units of a second of said processing unit groups processes said first processed data to produce second processed data.

5,666,170

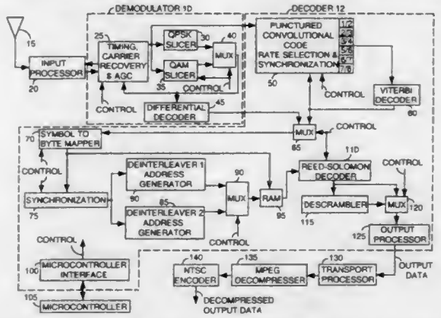
APPARATUS FOR DECODING VIDEO SIGNALS ENCODED IN DIFFERENT FORMATS

John S. Stewart, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 12, 1995, Ser. No. 501,334

Int. Cl.[6] H04N *5/455;7/26*

U.S. Cl. 348—726 **22 Claims**



1. In a system for receiving and adaptively processing a video signal encoded in one of a plurality of different formats suitable for satellite, terrestrial or cable transmission modes, apparatus comprising:

an adaptive decoder for providing a decoded output as a function of a code rate selected from a plurality of code rates, said decoded output being provided from an input signal encoded in different signal formats for different transmission modes;

an adaptive deinterleaver for deinterleaving said decoded output in accordance with a deinterleaving function selected from a plurality of deinterleaving functions, wherein

said adaptive deinterleaver is configured with said selected deinterleaving function; and

an output signal processor for processing deinterleaved output data.

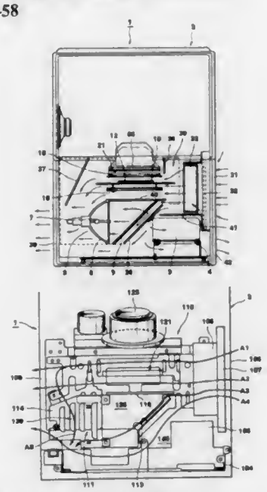
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5,666,171

LIQUID CRYSTAL IMAGE PROJECTOR

Hideki Nakamura, Ome, and Yukio Suzuki, Tachikawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 508,617
Claims priority, application Japan, Aug. 2, 1994, 6-201318; Aug. 26, 1994, 6-225975
Int. Cl.[6] G02F *1/1333;1/1335*
U.S. Cl. 349—58 **18 Claims**



18. An image projector comprising:
a liquid crystal display module for displaying an image;
a light source for radiating light to said liquid crystal display module;
a power source for supplying power to said light source;
a projecting unit for projecting the image displayed on said liquid crystal display module;
a housing having an inlet and an outlet for containing said liquid crystal display module, said power source and said light source, the inlet being arranged for allowing air to go outside the housing;
a first air flow channel provided within said housing, the first air flow channel running from the inlet of said housing through said liquid crystal display module and said light source to the outlet of said housing;
a second air flow channel provided within said housing, the second air flow channel running from the inlet of said housing through said light source to the outlet of said housing;
a fan provided inside said housing, for generating air flow through said first air flow channel and said second air flow channel; and
a wind control wall; and
wherein:
said liquid crystal display module comprises a liquid crystal display panel; and
said wind control wall is held at an incident side of said liquid crystal display panel of said liquid crystal display module and apart from said liquid crystal display panel.

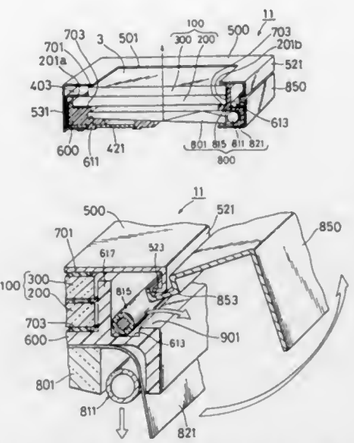
5,666,172

FLAT PANEL DISPLAY DEVICE

Kazushige Ida, and Tetsuya Murai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 22, 1996, Ser. No. 635,716
Claims priority, application Japan, Apr. 16, 1995, 8-094195; Apr. 20, 1995, 7-094089
Int. Cl.[6] G02F *1/1333;1/1335;* **G01D** *11/28*
U.S. Cl. 349—58 **14 Claims**

1. A flat panel display device comprising a flat display panel having a display area, a first frame for receiving the flat display



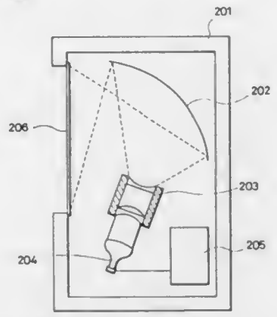
panel which exposes the display area of the flat display panel and has a side wall corresponding to a side part of the flat display panel, a surface iluminant light source comprising a light source and a light-transmitting plate for transmitting and selectively emerging light from the light source, a second frame for receiving the surface iluminant light source and holding the flat display panel between the first and second frames and a light source protecting member for holding the light source between the light source protecting member and the second frame, wherein:
an upper end portion of one side of the light source protecting member includes a first bent and a lower end portion of one side wall of the first frame includes a second bent and the first and second bent ends engage with each other.

5,666,173

ELECTRO-OPTICAL DEVICE

Akira Mase, Aichi, and Shunpei Yamazaki, Tokyo, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 821,573, Jan. 16, 1992, Pat. No. 5,337,171. This application Apr. 28, 1994, Ser. No. 233,983
Claims priority, application Japan, Jan. 17, 1991, 3-18487; Jan. 17, 1991, 3-18488; Jan. 17, 1991, 3-18489; Jan. 17, 1991, 3-24210; Feb. 15, 1991, 3-44235
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—61 **20 Claims**



1. An electro-optical device comprising:
a light source for emitting a light having a constant intensity,
a panel comprising an electro-optical modulating layer for modulating an intensity of the light emitted into said panel from said light source by applying an electric field to said electro-optical modulating layer; and
means for varying an intensity of the light transmitted by said panel in a repeating cycle,

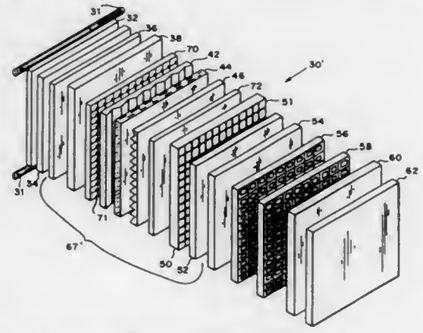
wherein said intensity of the light transmitted by said panel can be varied with time rotationally at a ratio of $2^0:2^1:2^2:\ldots:2^n$ where n is a natural number, and
wherein said panel comprises a pair of substrates sandwiching said electro-optical modulating layer therebetween, and one of said substrates has a single electrode provided thereon, and the other of said substrates has a parallel electrode part comprising at least two parallel electrodes provided on the other of said substrates.

5,666,174

EMISSIVE LIQUID CRYSTAL DISPLAY WITH LIQUID CRYSTAL BETWEEN RADIATION SOURCE AND PHOSPHOR LAYER

Anthony M. Cupolo, III, 3425 Woodrun Trail, Marietta, Ga. 30062

Filed Feb. 15, 1996, Ser. No. 602,048
Int. Cl.[6] G02F *1/1335;1/1333*
U.S. Cl. 349—64 **23 Claims**



1. An emissive liquid crystal display, comprising:
a source of radiation;
means for dispersing said radiation;
means for modulating said radiation at a plurality of pixel locations, said modulating means including a layer of liquid crystal material to control a passage of said radiation through said pixel locations;
a layer of emissive material positioned to receive modulated radiation from said modulating means and for converting said modulated radiation into visible light, said layer of emissive material producing at least red and green visible light;
wherein said modulating means is located between said layer of emissive material and said source of radiation whereby said layer of emissive material produces said modulated visible light directly from said modulated radiation, said layer of emissive material comprises a phosphor layer, and said phosphor layer comprises only red and green phosphors for producing red and green visible light, respectively.

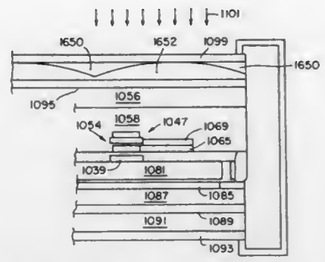
5,666,175

OPTICAL SYSTEMS FOR DISPLAYS

Mark B. Spitzer, Sharon; Stephen Offsey, Brookline, both of Mass., and Jeffrey Jacobsen, Hollister, Calif., assignors to Kopin Corporation, Taunton, Mass.

Continuation of Ser. No. 971,403, Nov. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 944,207, Sep. 11, 1992, Pat. No. 5,444,557, Ser. No. 823,858, Jan. 22, 1992, abandoned, and Ser. No. 872,297, Apr. 22, 1992, Pat. No. 5,317,436, which is a continuation-in-part of Ser. No. 839,241, Feb. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 636,602, Dec. 31, 1990, Pat. No. 5,206,749. This application Aug. 29, 1994, Ser. No. 298,355
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—95 **24 Claims**

1. A liquid crystal transmission display comprising:



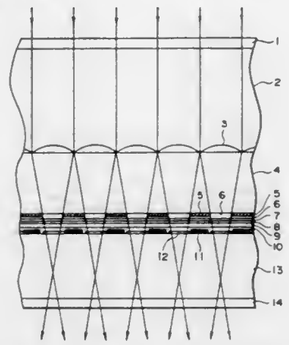
an optically transmissive substrate positioned to receive light incident from a light source;
an array of pixel electrodes bonded to the optically transmissive substrate with an adhesive layer, each electrode being connected to a pixel circuit;
a light transmitting liquid crystal material positioned in close proximity to the pixel electrodes such that an electric field generated by each pixel electrode alters a light transmitting property of the liquid crystal material;
an array of microlenses positioned to receive light incident from the light source, each microlens converges and delivers light through the adhesive layer and a corresponding pixel electrode; and
a light shield array positioned between the pixel circuits and the array of microlenses.

5,666,176

PROCESS FOR PRODUCING LIQUID CRYSTAL DISPLAY PANEL BY PHOTOLITHOGRAPHY USING MICROLENSES

Katsumi Kurematsu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 59,290, May 11, 1993, Pat. No. 5,473,453. This application Sep. 7, 1995, Ser. No. 528,650
Claims priority, application Japan, May 11, 1992, 4-143716
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—95 **4 Claims**



1. A process for producing a matrix-type liquid crystal display panel comprising a first substrate, a second substrate, a liquid crystal disposed between the first and second substrates so as to form a matrix of liquid crystal pixels, an array of micro-lenses formed on an outer surface of the first substrate so as to each correspond to one or a plurality of the matrix liquid crystal pixels, and a photomask disposed on an inner surface of the first substrate and comprising apertures aligned with the micro-lenses for defining said one or a plurality of the matrix liquid crystal pixels; said process comprising the steps of:
forming a layer of positive-type photosensitive resin on the inner surface of the first substrate,
exposing the positive-type photosensitive resin layer to light incident through the micro-lenses, and

developing the exposed photosensitive resin layer to form said photomask having apertures at exposed parts of the photosensitive resin layer on the first substrate.

5,666,177

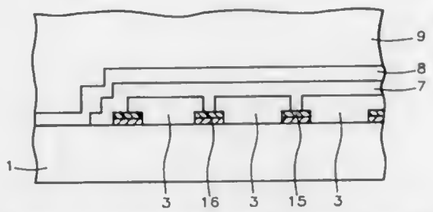
BLACK MATRIX FOR LIQUID CRYSTAL DISPLAY

Ting-Chiang Hsieh, Hsinchu, and Dong-Yuan Goang, Tao-Yuan, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 26, 1996, Ser. No. 606,954

Int. Cl.[6] G02F *1/1333;1/1335*

U.S. Cl. 349—111 **7 Claims**



1. A method for making a black matrix in a liquid crystal display comprising:
(a) providing a transparent insulating substrate having an upper surface;
(b) depositing a metallic layer on said upper surface;
(c) applying a layer of a photosensitive resin, in which has been dispersed a black pigment, on said metallic layer;
(d) exposing said photosensitive resin to an actinic radiation image of the black matrix;
(e) developing the exposed photosensitive resin;
(f) etching all parts of said metallic layer not covered by developed photosensitive resin, therby forming the black matrix;
(g) coating said substrate upper surface and said black matrix with a layer of a photosensitive resin in which a colored pigment has been dispersed;
(h) selectively exposing sub-pixel-sized regions of said photosensitive resin, in which a colored pigment has been dispersed, to actinic radiation and then developing said photosensitive resin;
(i) coating said upper surface, including any exposed resin, with a layer of photosensitive resin in which has been dispersed a pigment of a color different from any already present on said upper surface, and then repeating step (h);
(j) repeating step (i) one or more times;
(k) depositing an overcoat layer; and
(l) depositing a transparent, electrically conductive, layer.

5,666,178

LIQUID CRYSTAL DISPLAY APPARATUS HAVING PLURAL REGIONS OF DIFFERENT ALIGNING CONDITIONS AND METHOD FOR PRODUCING THE SAME

Mitsuaki Hirata, Tenri; Shigeaki Mizushima, Ikoma; Kazuyuki Aburazaki, Tenri; Noriko Watanabe, Nara; Hiroko Iwagoe, Yamatokoriyama; Seiji Makino, Tenri, and Tomoko Okamura, Funabashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

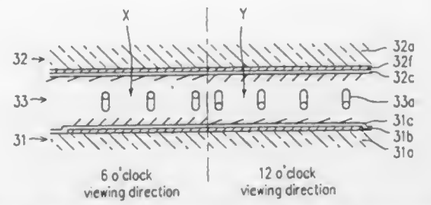
Filed Jul. 22, 1994, Ser. No. 278,950

Claims priority, application Japan, Jul. 30, 1993, 5-190499; Aug. 31, 1993, 5-216697; Aug. 31, 1993, 5-216698; Aug. 31, 1993, 5-216699

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 349—136 **34 Claims**

12. A liquid crystal display apparatus comprising a pair of substrates and a liquid crystal layer sandwiched between the pair of



substrates with alignment films formed at interfaces between the liquid crystal layer and the respective substrates, the alignment films regulating aligning conditions of liquid crystal in the liquid crystal layer,

wherein the liquid crystal layer includes two or more liquid crystal layer regions of different aligning conditions, and at least one of the alignment films has oxygen atom concentrations which are different from each other in surface regions thereof corresponding to the respective liquid crystal layer regions of different aligning conditions, and

wherein in the surface regions having a higher oxygen atom concentrating, a pretilt angle of liquid crystal is set to be small, and in the surface regions having a lower oxygen atom concentration, a pretilt angle of liquid crystal is set to be large.

5,666,179

LIQUID CRYSTAL DISPLAY DEVICE HAVING OPENING FORMED IN ELECTRODE

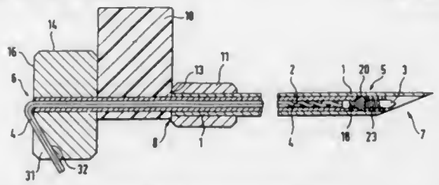
Norio Koma, Motosu-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 226,706, Apr. 12, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,287

Claims priority, application Japan, Apr. 12, 1993, 5-084696

Int. Cl.[6] G02F *1/1337;1/1343*

U.S. Cl. 349—143 **12 Claims**



1. A liquid crystal display device comprising:
a liquid crystal layer having first and second surfaces;
first and second substrates opposed to each other with the liquid crystal layer disposed therebetween;
a plurality of pixel electrodes disposed between said first surface of the liquid crystal layer and the first substrate;
an opposed electrode disposed between said second surface of the liquid crystal layer and the second substrate;
a plurality of pixels, each pixel including one of the plurality of pixel electrodes, the opposed electrode, and a respective portion of the liquid crystal layer disposed between said one of the plurality of pixel electrodes and said opposed electrode, wherein at least one of the plurality of pixels has an opening formed only at a substantial center of said at least one of the plurality of pixels so that an initial orientation of said liquid crystal layer substantially within said opening remains substantially stable when said liquid crystal layer is subjected to an electric field between a respective one of said plurality of pixel electrodes and said opposed electrode, and wherein said opening is formed in one of said opposed electrode and said respective one of said plurality of pixel electrodes.

5,666,180

LIQUID CRYSTAL DISPLAY WITH REDUCED PARASITIC CAPACITANCE BETWEEN PIXEL ELEMENTS AND MATRIX WIRING ELEMENTS

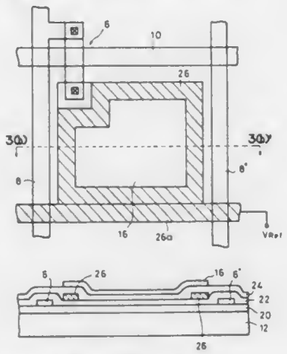
Akira Ishizaki, Atsugi; Mamoru Miyawaki, Isehara, and Shigeki Kondo, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 432,267, May 1, 1995, abandoned, which is a continuation of Ser. No. 325,641, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 10,630, Jan. 28, 1993, abandoned. This application May 14, 1996, Ser. No. 645,892

Claims priority, application Japan, Jan. 30, 1992, 4-038463; Jan. 31, 1992, 4-041948

Int. Cl.[6] G02F *1/1343;1/1333*

U.S. Cl. 351—58 **15 Claims**



1. A liquid crystal display comprising:
a plurality of sets of matrix wiring elements corresponding to a plurality of pixels;
a plurality of pixel electrodes individually provided for each of said plurality of pixels;
a plurality of active elements connected to respective sets of said matrix wiring elements and corresponding to respective ones of said plurality of pixels;
a liquid crystal layer provided at said pixel electrodes to form said pixels; and
a conductive layer selectively provided around each of said pixel electrodes, separate from said matrix wiring elements corresponding to each respective pixel, and maintained at a predetermined potential.

5,666,181

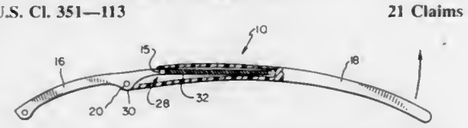
SPRING TEMPLE FOR EYEWEAR

Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 10, 1996, Ser. No. 631,769

Int. Cl.[6] G02C *5/16;5/14*

U.S. Cl. 351—113 **21 Claims**



10. A temple for an eyewear having a front frame, said temple comprising:
a) a first temple segment having opposite front and rear end portions, said front end portion being pivotally connected to said front frame and thereby defining a first pivot axis;
b) a second temple segment having opposite front and rear end portions, said front end portion of said second temple segment being pivotally connected to said first temple segment adjacent said rear end portion thereof and thereby defining a second pivot axis which is substantially parallel to said first pivot axis, said first and second temple segments being movable together about said first pivot axis between a normally closed position and a normally open position with respect to said front frame; and
c) spring means secured adjacent said rear end portion of said first temple segment, said spring means being operable to bias said second temple segment in a first direction upon application of a force to said second temple segment in a second direction opposite said first direction which moves said second temple segment beyond said normally open position.

5,666,182

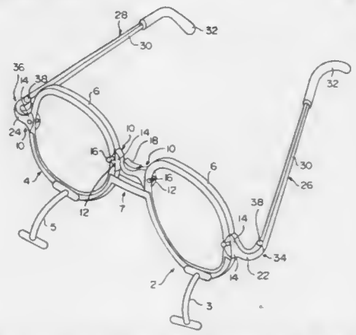
SPECTACLES WITH WEIGHT BEARING CHEEK REST USING FLEXIBLE FRAME ATTACHMENT WITH A GROOVE

Irah H. Donner, Silver Spring, Md., assignor to Donner, Inc., Silver Spring, Md.

Continuation-in-part of Ser. No. 115,545, Sep. 3, 1993, Pat. No. 5,506,638. This application Apr. 2, 1996, Ser. No. 626,404

Int. Cl.[6] G02C *3/00*

U.S. Cl. 351—155 **10 Claims**



1. A spectacle weight shift device transferring weight of spectacles supported by a user having a face and a nose, the spectacles having first and second lenses and a frame having a bridge, said spectacle weight shift device comprising:
a frame attachment;
first and second weight shift devices connected to said frame attachment, transferring some of the weight of the spectacles to an area of the face of the user in addition to the nose,
wherein said frame attachment is comprised of a flexible material and includes a stretchable groove, the stretchable groove is constructed to removably grip the spectacles, and the spectacles are inserted in the stretchable groove such that the spectacles do not require permanent modification for using the spectacle weight shift device.

5,666,183

Patent Not Issued For This Number

5,666,184

PROGRESSIVE POWER LENS

Toshiaki Umeda, Tokyo, and Fumio Takahashi, Ibaraki-ken, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

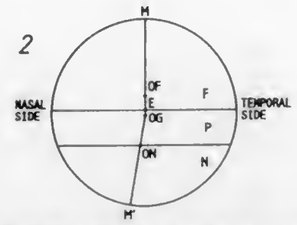
Filed Jun. 20, 1994, Ser. No. 262,486

Claims priority, application Japan, Jun. 29, 1993, 5-184411

Int. Cl.[6] G02C *7/06*

U.S. Cl. 351—169 **13 Claims**

1. An asymmetrical progressive power lens comprising, along a principal meridional curve dividing a lens refracting surface into a



nasal side region and a temporal side region: a portion for distant vision having a refracting power corresponding to a distant view; a portion for near vision having a refracting power corresponding to a near view; and an intermediate portion, located between said portion for distant vision and said portion for near vision, for continuously connecting the refracting powers of said portions for distant and near vision, wherein said principal meridional curve is displaced, with respect to a vertical direction in a worn state toward the nasal side in said intermediate portion and said portion for near vision, and an astigmatic difference distribution in a horizontal direction in the worn state is symmetrical with respect to said principal meridional curve in said intermediate portion and asymmetrical with respect to said principal meridional curve in said portion for near vision.

5,666,185

METHOD FOR RECORDING A DIGITAL AUDIO SIGNAL ON A MOTION PICTURE FILM

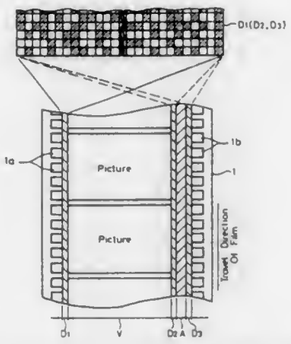
Kentaro Odaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 958,664, Oct. 8, 1992, Pat. No. 5,471,263. This application Jun. 6, 1995, Ser. No. 471,369

Claims priority, application Japan, Oct. 14, 1991, 3-265001

Int. Cl.[6] G03B *31/02;* **G11B** *7/007;20/12;20/18*

U.S. Cl. 352—27 **27 Claims**



1. A method for recording a digital audio signal including words on a motion picture film having a direction of travel, the motion picture film including two opposed edges, and a picture area, the picture area including two opposed edges parallel to the opposed edges of the motion picture film, the digital audio signal being recorded in addition to a conventional analog soundtrack formed in the direction of travel, the analog soundtrack having two opposed edges, the method comprising the steps of:

(a) adding error correction words to the digital audio signal, the words of the digital audio signal and the error correction code words collectively constituting words of a coded digital audio signal, the words of the coded digital audio signal each including bits;

(b) arraying the bits of each of the words of the coded digital audio signal in a rectangular array to provide rectangularly-arrayed words;

(c) sequentially arranging each rectangularly-arrayed word of the coded digital audio signal into two or more rows, each row including one or more bits of the word; and

(d) recording each rectangularly-arrayed word as a rectangular array of bits in a digital soundtrack located on the motion picture film in an area other than the picture area and the analog soundtrack, the bits of each row of the rectangularly-arrayed words being recorded in the digital soundtracks in a direction perpendicular to the direction of travel and successive ones of the two or more rows of the rectangularly-arrayed words being recorded in the direction of travel, such that the bits of each rectangularly-arrayed words are arrayed at least in the direction of travel, and successive ones of the rectangularly-arrayed words are recorded in the direction of travel.

5,666,186

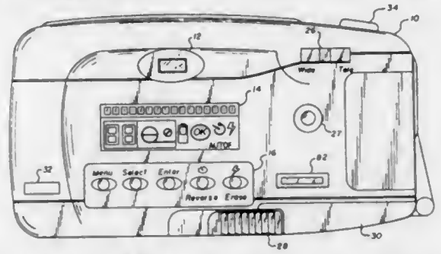
TEXT INTERFACE FOR STILL PHOTOGRAPHIC CAMERA WITH DATA RECORDING CAPABILITY

Daniel Timothy Meyerhoefer, Penfield; James Vergil Leavy, Churchville; J. David Cocca, Pittsford; Michael Timothy Malley, LeRoy; Gerald Julius Kosarko, Rochester, and Robert Gordon Hills, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1994, Ser. No. 277,866

Int. Cl.[6] G03B *17/00;17/24*

U.S. Cl. 396—281 **7 Claims**



1. A camera comprising:

a display unit; a display control interface for manually selecting text data including a roll title, selected once, and a plurality of separately entered print titles to be displayed on the display unit; text data recording means for recording the text data selected by the display control interface on photographic film; means for exposing a plurality of frames of the photographic film; and a control unit for controlling the operation of the display unit to display the text data selected by the display control interface, and for controlling the operation of the text data recording means to print the once selected roll title on each exposed frame of the photographic film and the separately entered plurality of print titles on corresponding exposed frames.

5,666,187

METHOD AND APPARATUS FOR CONTROLLING THE DRIVING OF AN OZONE EMISSION FAN IN AN IMAGE FORMING APPARATUS

Young-Ju Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 13, 1996, Ser. No. 696,134

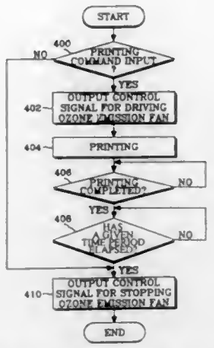
Claims priority, application Rep. of Korea, Aug. 18, 1995, 25481/1995

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—30 **6 Claims**

1. A method of controlling the driving of an ozone emission fan of an image forming apparatus, comprising the steps of:

when an external printing command is provided, outputting a control signal for driving the ozone emission fan;



outputting the control signal for driving the ozone emission fan, in correspondence with externally inputted image date; and

after an output of the externally inputted image data is completed, outputting another control signal for stopping the ozone emission fan.

5,666,188

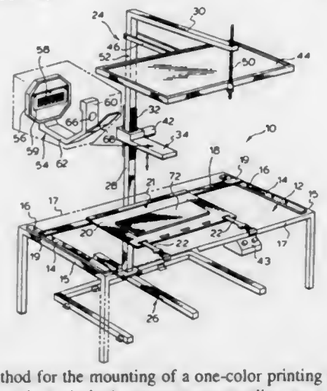
PRINTING PLATE MOUNTING DEVICE

Reinhold Chmielnik, Bolton, Canada, assignor to Napp Systems, Inc., San Marcos, Calif.

Continuation-in-part of Ser. No. 350,100, Nov. 29, 1994. This application May 30, 1995, Ser. No. 452,535

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—40 **14 Claims**



1. A method for the mounting of a one-color printing plate on a carrier sheet in a desired pattern corresponding to a one-color image desired to be printed on a recipient surface from the printing plate, which comprises:

providing a small-scale representation of a substrate and a complete image to be printed thereon,

providing printing plate elements for each color of said image to be printed on said substrate,

enlarging and projecting said small-scale representation onto a printing plate element recipient surface to provide a full-scale projected representation of the substrate on said recipient surface,

providing a template to determine which of said printing plate elements is intended to print which color on the printed substrate,

attaching to said recipient surface the individual printing plate elements for a first color in the location(s) shown by said projected full-scale representation and the template, and

repeating said attaching step to further recipient surfaces for the individual printing plate element(s) for each additional color of the image to be printed on the substrate,

thereby providing a plurality of recipient surfaces each bearing the printing plate elements for the specific color to be printed by such elements.

5,666,189

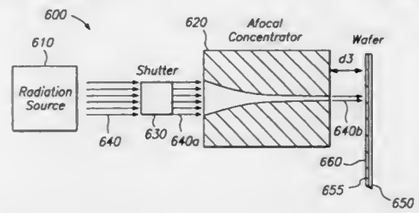
PROCESS FOR PERFORMING LOW WAVELENGTH PHOTOLITHOGRAPHY ON SEMICONDUCTOR WAFER USING AFOCAL CONCENTRATION

Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 56,553, Apr. 30, 1993. This application Aug. 28, 1995, Ser. No. 519,797

Int. Cl.[6] G03B *27/42*

U.S. Cl. 355—53 **10 Claims**



1. A process for semiconductor lithography, comprising:

a) providing a source of radiation emitting a beam along a path, said source of radiation selected from the group consisting of a source of gamma rays and a source of x-rays;

b) providing a semiconductor wafer having a first surface facing said source of radiation, and a layer of a radiation-sensitive resist material on said first surface of said wafer facing said source of radiation; and

c) providing an afocal concentrator disposed in the path of said beam between said source of radiation and said semiconductor wafer for concentrating and collimating said beam, said concentrator comprising:

i) a hollow, tapered section having a first bore, a broad mouth of a first diameter at a first end of said first bore for receiving said beam from said source, and having a relatively narrow opening of a second diameter at a second end of said first bore; and

ii) a hollow cylindrical section having a second bore with a diameter equal to said second diameter of said tapered section, one end of said second bore abutting and aligned with said narrow opening of said tapered section, and an opposite end of said second bore for outputting said beam to said layer of said radiation-sensitive resist material on said first surface of said semiconductor wafer.

5,666,190

METHOD OF PERFORMING LITHOGRAPHY USING CANTILEVER ARRAY

Calvin F. Quate, Stanford, Calif., and Stephen Charles Minne, Danville, Ill., assignors to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif.

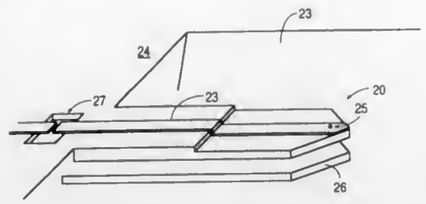
Continuation of Ser. No. 296,340, Aug. 25, 1994, abandoned, and a continuation-in-part of Ser. No. 226,784, Apr. 12, 1994, Pat. No. 5,517,280. This application Dec. 4, 1995, Ser. No. 566,621

Int. Cl.[6] G01P *15/125;* **H01J** *37/00;* **G01B** *5/28*

U.S. Cl. 355—71 **32 Claims**

1. A method of performing lithography on a substrate using a layer of resist, said method comprising the following steps:

providing an array of cantilevers, said cantilevers being formed in a first substrate, each of said cantilevers including a tip



located near a free end of said cantilever and a conductive path extending to said tip;

providing a second substrate, said second substrate being coated with a layer of resist;

bringing said first and second substrates together such that said tips of said cantilevers are adjacent a surface of said layer of resist;

scanning said cantilevers above said surface, said step of scanning comprising the step of causing one of said first and second substrates to oscillate back and forth along a first axis while causing the other of said first and second substrates to advance along a second axis generally perpendicular to said first axis; and

causing an electric current to flow between said tips and said layer of resist and then interrupting said electric current whereby said layer of resist is exposed in a plurality of selected lithographic patterns by said electric current.

5,666,191

SHEET PRINTD INFORMATION OBLITERATING DEVICE

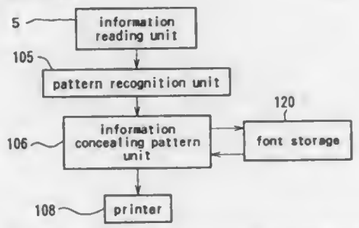
Takanori Hasegawa, and Noboru Inamine, both of Ninato-ku, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,764

Claims priority, application Japan, Mar. 5, 1992, 4-048814; Mar. 5, 1992, 4-048815

Int. Cl.[6] G03G *21/04*

U.S. Cl. 399—366 **13 Claims**



1. An apparatus for obliterating printed information on a surface of a sheet material comprising:

an information concealing printing device for printing an information concealing pattern over said surface of said sheet carrying said printed information;

an information reading device for reading information printed on said information carrying surface of said sheet before said information concealing printing device prints said information concealing pattern over said information carrying surface of said sheet;

an information storage device for retrievably storing data representing said information read by said information reading device;

a pattern recognition device for automatically recognizing a kind of said information printed on said information carrying surface of said sheet according to data obtained by said information reading device;

an information concealing pattern storage device for storing pattern data; and

an image forming device for generating said information concealing pattern according to pattern data and for supplying said information concealing pattern to said information concealing printing device;

wherein the information concealing pattern generated by said image forming device is automatically selected according to a result of said recognition process by said pattern recognition device.

5,666,192

CHARGING MEMBER AND IMAGE FORMING APPARATUS

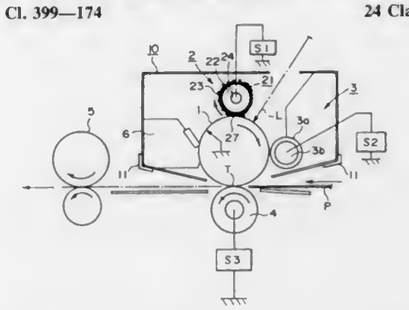
Seiji Mashimo, Tokyo; Yasushi Sato, Kawasaki; Harumi Ishiyama, Yokohama, and Tadashi Furuya, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 508,900

Claims priority, application Japan, Jul. 28, 1994, 6-195929

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—174 **24 Claims**



1. A charging member for charging a member to be charged, comprising:

a magnet member; and

a surface electroconductive layer for supporting electroconductive magnetic particles, said layer being supported by said magnet member and rotating together with said magnet member in a region supporting said magnetic particles.

5,666,193

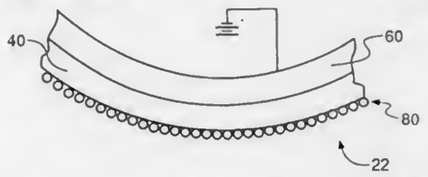
INTERMEDIATE TRANSFER OF SMALL TONER PARTICLES

Donald S. Rimai, Webster; Thomas N. Tombs, Brockport; Bruce R. Benwood, Churchville, and David J. Quesnel, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1996, Ser. No. 605,340

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—308 **24 Claims**



23. An intermediate transfer member for transferring a toner image from a primary image member in an electrophotographic apparatus, to a receiving sheet, comprising:

an elastomeric blanket; and

beads on said elastomeric blanket having a volume weighted average diameter of about 0.05 microns to 3.0 microns.

5,666,194

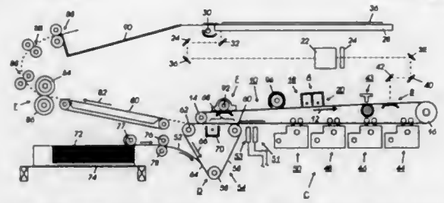
APPARATUS FOR DETECTING MARKING MATERIAL

Gary A. Denton, Lexington, Ky., assignor to Xerox Corporation, Stamford, Conn.

Filed May 30, 1996, Ser. No. 655,587

Int. Cl.[6] G01N *21/55*; G03G *21/00*

U.S. Cl. 356—72 **14 Claims**



2. An apparatus for detecting a mass of marking material developed on a surface, including:

a densitometer, in communication with the surface, for generating a first signal proportional to the specular component of the total reflectivity of the marking material developed on the surface;

a capacitor sensor, in communication with the surface, for generating a second signal proportional to the mass of marking material developed on the surface;

a controller, associated with said densitometer and said capacitor, for generating a first control signal as a function of the first signal in response to the mass of marking material being less than a preselected mass and a second control signal as a function of the second signal in response to the mass of marking material being greater than the preselected mass, said densitometer generates a third signal proportional to the defuse component of the total reflectivity of the marking material developed on the surface, said controller generating a third control signal for non-black marking material as a function of the third signal in response to the mass of marking material being greater than the preselected mass with the second control signal being for black marking material.

5,666,195

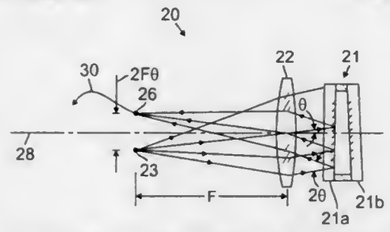
EFFICIENT FIBER COUPLING OF LIGHT TO INTERFEROMETRIC INSTRUMENTATION

Theodore S. Shultz, Larchmont, and George J. Lind, Dobbs Ferry, both of N.Y., assignors to Electro-Optical Sciences, Inc., Irvington, N.Y.

Filed May 1, 1995, Ser. No. 434,580

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—352 **24 Claims**



1. A method of processing light radiation at an interferometer, wherein the interferometer includes a wedged-spaced etalon, the method comprising the steps of:

collimating light supplied from a source;

impinging the collimated light onto the etalon at an incidence direction other than normal;

reflecting the impinging light from the etalon;

focussing the reflected light away from the source; and

collecting the focussed light.

5,666,196

OPTICAL DETECTION APPARATUS FOR DETECTING INFORMATION RELATING TO RELATIVE DISPLACEMENT OF AN OBJECT ON WHCH A DIFFRACTION GRATING IS FORMED

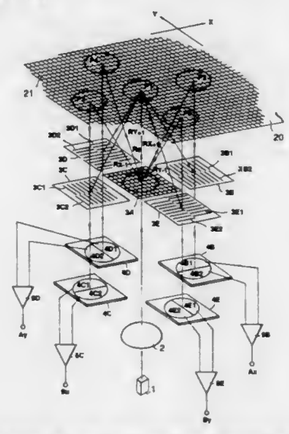
Satoshi Ishli, Tokyo; Ko Ishizuka, Ohmiya; Hiroshi Kondo, Yokohama, and Yasushi Kaneda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 249,276, May 25, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,511

Claims priority, application Japan, May 31, 1993, 5-152690

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—356 **19 Claims**



1. An apparatus for optically detecting information relating to a relative displacement of an object on which a diffraction grating, arranged in two axial directions with a predetermined pitch, is formed, said apparatus comprising:

a light-emitting device configured to emit a light beam;

a first optical element configured to divide the light beam emitted from said light-emitting device and impinging on one area of said first optical element into a plurality of light beams directed in each of the two axial directions to the diffraction grating on the object, which produces a plurality of diffracted light beams for each of the two axial directions;

a second optical element positioned and configured to receive and combine a plurality of diffracted light beams for each of the two axial directions from the diffraction grating on the object by diffracting at least one of the diffracted light beams; and

a plurality of detection units, each configured to receive and detect the combined plurality of diffracted light beams from one of the two axial directions, thereby detecting information relating to a relative displacement of the object in each of the two axial directions.

5,666,197

APPARATUS AND METHODS EMPLOYING PHASE CONTROL AND ANALYSIS OF EVANESCENT ILLUMINATION FOR IMAGING AND METROLOGY OF SUBWAVELENGTH LATERAL SURFACE TOPOGRAPHY

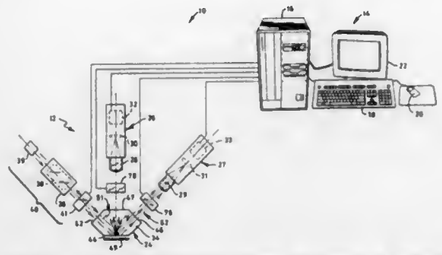
John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 21, 1996, Ser. No. 701,173

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—359 **37 Claims**

1. A phase controlled evanescent field imaging system for visualizing and measuring subwavelength topographic features of a sample, said system comprising:



lighting means for providing at least one beam of radiation having at least one predetermined wavelength and phase angle;

optical means for receiving said beam of radiation from said lighting means and creating at a surface a wavelength evanescent field having planes of equal intensity parallel to said surface and planes of equal phase substantially perpendicular to said surface so that light initially bound within said wavelength evanescent field may be converted into propagating light when the sample is brought proximate to said surface and such that, in the absence of a sample near said surface, or if a sample surface is distant from said surface, no evanescent light energy is converted into propagating light, the phase and intensity of said propagating light varying in correspondence with the topographic features of said surface and their local proximity to said evanescent field;

phase control means for selectively controlling said predetermined wavelength and phase angle of said beam of radiation such that the intensity of said evanescent light varies as a function of the phase of said beam of radiation and the lateral position of the local topographic features of the sample;

imaging means having at least one optical axis positioned to collect said propagating light and form images with it in which the topographic features of the surface are encoded as imagewise variations in image intensity in correspondence with the phase of said beam of radiation;

photodetector means for generating image signals having an amplitude that varies in accordance with the imagewise variation in intensity in said images; and

image processing means for receiving said image signals and generating a composite image signal from which the topographic features of the sample can be visually displayed or measured.

5,666,198

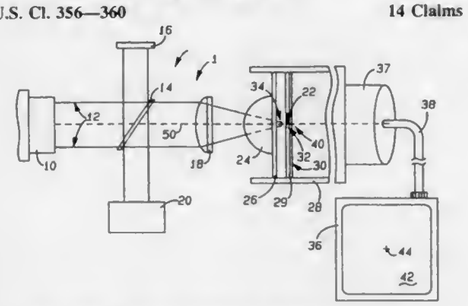
APPARATUS FOR ALIGNING A REFERENCE REFLECTOR WITH A FOCAL POINT OF AN OPTICAL INSTRUMENT

Conrad Stenton, Midland, Canada, assignor to Hughes Electronics, Los Angeles, Calif.

Filed Apr. 25, 1996, Ser. No. 637,989

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—360 **14 Claims**



1. A reference reflector alignment apparatus comprising:

a video camera having an image receiving surface;

a reference reflector having an optical center of curvature, said reference reflector being secured to said video camera such that a portion of said image receiving surface is located essentially at said optical center of curvature; and

a video monitor coupled to said camera; said video camera and said reference reflector being movable as a unit to position said optical center of curvature coincident with a focal point of an object to be tested.

5,666,199

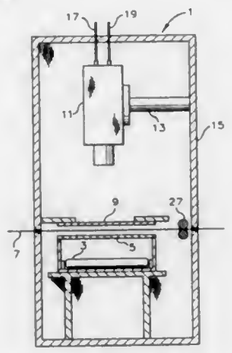
APPARATUS AND PROCESS FOR DETECTING THE PRESENCE OF GEL DEFECTS IN ORIENTED SHEETS OR FILMS BASED ON POLARIZATION DETECTION

Kevin J. Hess; Mark J. Drelling; Edwin Boudreaux, Jr., and Ashish M. Sukhadia, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 11, 1994, Ser. No. 273,087

Int. Cl.[6] G01J *4/00*; G01N *21/00*

U.S. Cl. 356—364 **7 Claims**



7. An apparatus for detecting gel defects in a polymeric sheet comprising:

a light source positioned on a first side of said sheet;

a video camera for receiving light from said light source to obtain a thus received light and generating a signal responsive to said thus received light, wherein said video camera is positioned on a second side of said sheet and opposing said light source;

means for digitizing said signal according to the number of pixels in the field of view of said video camera to produce a digitized signal;

at least one electronic filter for filtering said digitized signal electronically to increase the contrast between said gel defects and the rest of said sheet and to reduce any resulting background noise contained in said digitized signal to produce a filtered signal;

means for adjusting said filtered signal in comparison to a threshold value to create a binary signal and for calculating the number of said gel defects and the position of each said gel defect from said binary signal;

a first polarizing filter having a first transmission axis, wherein said first polarizing filter is interposed between said light source and said sheet;

a second polarizing filter having a second transmission axis, wherein there is an angle between said first transmission axis and said second transmission axis, said second polarizing filter is interposed between said sheet and said light detecting means and said first polarizing filter and said second polarizing filter are oriented so that the angle between said first transmission axis and said second transmission axis is from about 80° to about 100°;

means for moving said sheet through said apparatus such that different portions of said sheet become interposed between said first polarizer and said second polarizer; and

a shielding enclosure for enclosing said light source, said first polarizing filter, said second polarizing filter and at least a portion of said video camera so that only light from said light source is received by said video camera.

5,666,200

METHOD OF ELLIPSOMETRIC MEASUREMENT, AN ELLIPSOMETER AND DEVICE FOR CONTROLLING THE CARRYING OUT OF LAYERS USING SUCH METHOD AND APPARATUS

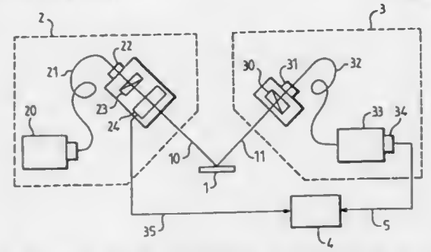
Bernard Drevillon, Meudon; Morten Kildemo, Palaiseau, and Ramdane Benferhat, Oncy Sur Ecole, all of France, assignors to Instruments S.A., Paris, France

Filed Feb. 27, 1996, Ser. No. 607,810

Claims priority, application France, Feb. 27, 1995, 95 02263

Int. Cl.[6] G01N *21/21*

U.S. Cl. 356—368 **10 Claims**



1. A method for the ellipsometric measurement of physical parameters representative of a sample in which:

an incident light beam is linearly polarised, said beam being defined by a polarisation vector,

the light incident beam of polarised light is modulated in such a way that a phase shift $\delta(t)$ is brought about between the perpendicular components of the polarisation vector, depending on the time t according to a periodic pulse variation ω, $\delta(t)$ being proportional to the first order to $\sin(\omega x)$,

the sample is illuminated with the light incident beam of modulated polarised light,

the polarisation vector of the light beam reflected by the sample is analysed,

a flux of the light beam is measured by means of at least one photodetector,

calculations are carried out on the flux measurements by an electronic processing unit connected to the photodetector

the detected flux having an intensity I(t) of the form:

$$I(t)=I_{com}+I_{sm}\sin\delta(t)+I_{cm}\cos\delta(t)$$

I_{com}, I_{sm} and I_{cm} being the values measured in the processing unit from the intensity I(t), and depending on said physical parameters,

wherein:

in a first step, initial theoretical values I_{st}/I_{ot} and I_{ct}/I_{ot} are produced from initial estimations of the physical parameters,

said theoretical values are used to determine, in a second step, subsequent estimations of physical parameters from which the subsequent theoretical values I_{st}/I_{ot} and I_{ct}/I_{ot} are deduced,

the second step being reiterated until the Nth estimation of the physical parameters, so as to minimise the difference between the theoretical values and those measured,

the physical parameters being evaluated from the values of I_{st}/I_{ot} and I_{ct}/I_{ot} found in the course of the Nth estimation.

5,666,201

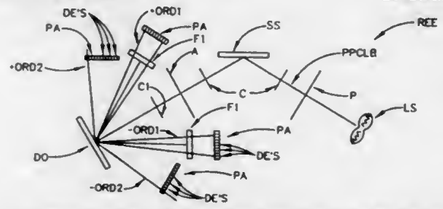
MULTIPLE ORDER DISPERSIVE OPTICS SYSTEM AND METHOD OF USE

Blaine D. Johs; Ping He; Steven E. Green; Shakil A. Pittal, and John A. Woollam, all of Lincoln, Nebr., assignors to J.A. Woollam Co. Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 265,325, Jun. 24, 1994, Pat. No. 5,521,706, and a continuation of Ser. No. 339,834, Nov. 14, 1994, Pat. No. 5,504,582, which is a continuation-in-part of Ser. No. 947,430, Sep. 18, 1992, Pat. No. 5,373,359. This application Sep. 20, 1995, Ser. No. 530,892

Int. Cl.[6] G01N *21/21*

U.S. Cl. 356—369 **20 Claims**



1. A multiple order producing dispersive optics system in combination with a system selected from the group consisting of a spectroscopic ellipsometer system and a spectroscopic polarimeter system, which multiple order producing dispersive optics system produces a plurality of orders, which orders are essentially spacially offset from one another, when a polychromatic beam of light is caused to impinge upon said dispersive optics system, each said produced order comprising an essentially continuous spectrum of spacially separated light beams of essentially single wavelengths, many of said essentially single wavelengths being present in two or more produced orders; such that in use first and second multiplicities of essentially single wavelength beams of light from first and second produced orders are simultaneously intercepted by, respectively, first and second photo detector arrays, thereby enabling the simultaneous accessing of a first multiplicity of essentially single wavelengths by said first photo detector array and a second multiplicity of essentially single wavelengths by said second photo detector array, each of which first and second multiplicities of essentially single wavelengths intercepted by said first and second photo detector arrays, respectively, includes specific first and second essentially single wavelength beams of light, said specific first and second essentially single wavelength beams of light being simultaneously intercepted by specific detector elements in said first and second photo detector arrays respectively, even where light beams of said specific first and second essentially single wavelengths are spacially situated to close to one another in a single produced order for separate photo detector array detector elements in a single photo detector array which intercepts said single order, to, simultaneously, access beams of light of both said specific first and second essentially single wavelengths, separately.

5,666,202

HIGH BANDWIDTH, DYNAMICALLY RIGID METROLOGY SYSTEM FOR THE MEASUREMENT AND CONTROL OF INTELLIGENT MANUFACTURING PROCESSES

Demos Kyrazis, 1028 Tramway La., NE., Albuquerque, N. Mex. 87122

Filed Aug. 22, 1995, Ser. No. 518,106

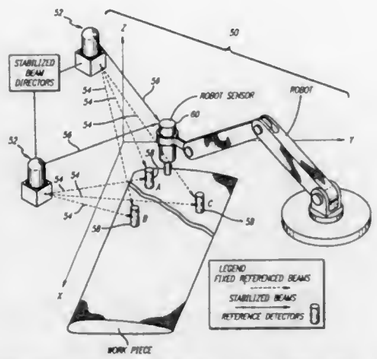
Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **20 Claims**

1. A high-bandwidth. dynamically rigid metrology system for providing real time control of an optical steering element, the system comprising:

a pair of stabilized laser beam directors (SLBD) each including a base, a beam pointing and stabilization apparatus mechanically coupled to said base, three reference beam lasers and a

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stabilized beam laser attached to said base and a metric structure mechanically coupled to said SLBD providing a locally rigid SLBD coordinate system, each beam pointing and stabilization apparatus including an optical steering element and an axis tilt detector, said optical steering element being optically coupled to said stabilized beam laser and steering said stabilized beam laser in response to an input signal, said optical steering element providing error signals associated with a position and an orientation of said optical steering element relative to said locally rigid SLBD coordinate system, said optical steering element further including a rotational axis, said axis tilt detector providing signals indicating an angle of tilt and a direction of said rotational axis relative to an initial position of said rotational axis;

a reference subsystem including three reference detectors fixedly positioned relative to a workpiece providing a locally rigid workpiece coordinate system, said three reference detectors respectively being in optical communication with said three reference beam lasers of each said SLBD, said reference detectors generating reference detector output signals in response to said reference beam lasers;

a tool sensor subsystem including at least one tool sensor detector positioned on a tool and in optical communication with said stabilized beam laser, said at least one tool sensor detector generating tool sensor detector output signals in response to said stabilized beam laser; and

at least one processor receiving and performing coordinate transforms on the reference detector output signals and the tool sensor detector output signals to track a position of the tool relative to the locally rigid workpiece coordinate system, said at least one processor receiving and processing the angle of tilt and direction signals from said axis tilt detector and the error signals from said optical steering element to generate said input signal thereby providing real time control of said optical steering element.

5,666,203

MEASUREMENT SYSTEM FOR DETECTING A GAP OF A ROLL PAIR

Manfred Hansen, Düsseldorf, Germany, assignor to Mannesmann Aktiengeselischaft, Düsseldorf, Germany

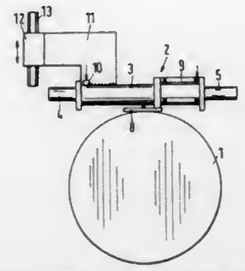
Filed Aug. 30, 1996, Ser. No. 708,032

Claims priority, application Germany, Aug. 31, 1995, 195 33 584.8

Int. Cl.[6] G01B *11/14;11/06;* G01N *21/00*

U.S. Cl. 356—375 **9 Claims**

1. A measurement system for detecting a roll gap of a roll pair in a roll stand by scanning a roll body on a side facing away from the roll gap, comprising: a support structure; a lever bar arranged on the support structure; height-adjustable optical scanning means arranged on the support structure, the scanning means including a housing, a laser transmitter arranged at one end of the housing, and a photoreceiver arranged at an opposite end of the housing; a position element arranged so as to be restable on a roll body and positionable in an optical beam path between the transmitter and the receiver of the scanning means so that a change in position is detectable by the scanning means; and an articulated lever connected between the housing and the position element so that the position element is vertically movable, the position element including a glide plate configured to be restable on the roll body and a position measurement plate mounted vertically on the glide plate so as to extend in a freely movable fashion through a slot in a wall of the housing into the optical beam path between the transmitter and the receiver, the position measurement plate having a sharp upper measurement edge configured to at least partially block the receiver.



5,666,204

METHOD AND APPARATUS FOR OPTICAL SHAPE MEASUREMENT OF OBLONG OBJECTS

Kimmo Koskenohl, Helsinki, Finland, assignor to Cimmon OY, Helsinki, Finland

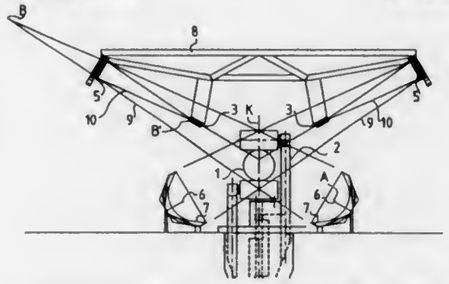
PCT No. PCT/FI94/00508, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO95/14211, PCT Pub. Date May 26, 1995

PCT Filed Nov. 10, 1994, Ser. No. 640,893

Claims priority, application Finland, Nov. 17, 1993, 935090

Int. Cl.[6] G01B *11/02*

U.S. Cl. 356—376 **14 Claims**



1. A method of optically measuring the shape of an elongated object, comprising:

placing the object on a measurement carrier defining a longitudinal axis,

illuminating the object with a luminaire including a light source,

reflecting an image-bearing beam from the object by means of a curved mirror spaced from the object, the mirror being curved in a manner such that the image of the object is contracted along said longitudinal axis relative to a lateral direction, and

receiving the reflected image-bearing beam with a camera having a lens, whereby image information is acquired by the camera,

wherein the light source is imaged at the lens of the camera.

5,666,205

MEASURING METHOD AND EXPOSURE APPARATUS

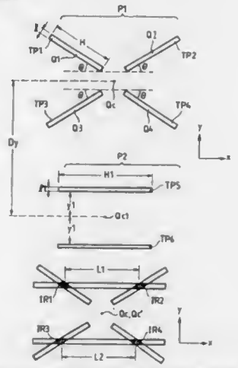
Hiroki Tateno, Kawasaki; Koji Kaise, Kumagaya; Kyoichi Suwa, Yokohama, and Yuji Imai, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 283,748, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 984,558, Dec. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 801,372, Dec. 2, 1991, abandoned. This application Nov. 27, 1995, Ser. No. 562,784

Claims priority, application Japan, Dec. 3, 1990, 2-400207; Dec. 6, 1991, 3-349562

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—401 **15 Claims**



1. A projection exposure apparatus for transferring a pattern at a predetermined position onto a substrate surface via a projection optical system, comprising:

a member having a surface disposed at said predetermined position and a test pattern formed on that surface, said test pattern including a pair of line segments which are arranged obliquely with respect to a predetermined measuring direction and which are not parallel to each other;

light-receiving means extending in a second direction substantially perpendicular to said measuring direction, and having a light-receiving surface arranged at or nearly at the same position along an optical axis of said projection optical system as said substrate surface, for detecting an interval in said second direction between parts of an image of said test pattern projected by said projection optical system that correspond to said line segments; and

arithmetic means for calculating an image deviation in said measurement direction based on the detected interval.

5,666,206

EXPOSURE SYSTEM AND EXPOSURE METHOD

Takayuki Uchiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,386

Claims priority, application Japan, Feb. 21, 1995, 7-032164

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—401 **14 Claims**

1. An exposure system, comprising:

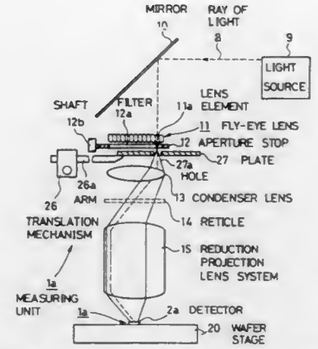
a light source for emitting a beam of exposing light;

a fly-eye lens for minimizing illumination variety of said beam within a cross section of said beam, said fly-eye lens having lens elements arranged in a plane;

an aperture stop for narrowing said beam penetrating through said fly-eye lens and for adjusting an intensity distribution of said beam;

a wafer stage for supporting a wafer thereon;

an illumination detector for detecting an illumination of a ray of said beam of exposing light penetrating through one of said lens elements of said fly-eye lens;



an aligner for aligning a position of said detector with said corresponding one of said lens elements; and

a ray-selecting member for selecting one of a plurality of rays of said exposing light penetrating through said lens elements of said fly-eye lens, said member having a penetrating hole and being placed between said aperture stop and said wafer stage,

said aligner for moving said ray selecting member along said plane of said fly-eye lens to allow said one of said rays of said exposing light to selectively pass through said hole.

5,666,207

IMAGE PROCESSING APPARATUS

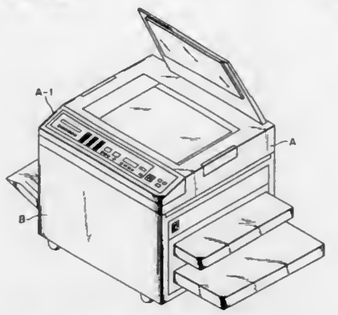
Hiroshi Ohmura, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 226,107, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 760,965, Sep. 17, 1991, abandoned. This application Apr. 25, 1995, Ser. No. 428,844

Claims priority, application Japan, Sep. 20, 1990, 2-248726

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—500 **21 Claims**



1. An image processing apparatus comprising:

setting means which permit setting, in correspondence with each of plural colors, at least one image processing function from among plural different image processing functions;

recognition means for recognizing a color of an input image; and

decision means for deciding on an image processing function for said input image on the basis of said recognized color and on the basis of an image processing function set in correspondence to said recognized color by said setting means;

wherein said setting means includes:

designating means for designating a position on an original;

reading means for reading the original image at the designated position; and

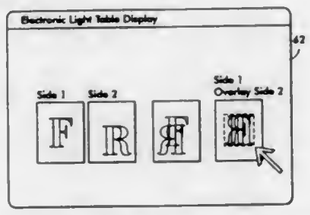
selecting means for selecting one image processing function to be applied to the color of the image read by said reading means.

5,666,208

PRINTING SYSTEM WITH ELECTRONIC LIGHT TABLE FUNCTIONALITY

Michael E. Farrell, Ontario, and Randall R. Hube, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,028
Int. Cl.[6] H04N *1/387*; G03G *21/00*
U.S. Cl. 358—296 18 Claims



1. In a printing machine including a duplex print producing subsystem for producing duplex prints, a memory for storing images, and a user interface with a screen display, the screen display being configured as an electronic light table for displaying multiple images in superposed relationship, a method for producing a duplex print having a first side with a first image disposed thereon and a second side with a second image disposed thereon, each of the first and second sides being represented, in memory, as a separate electronic page, comprising:

a) using the electronic light table configuration, displaying the first and second sides of the electronic page on the user interface screen display simultaneously with the first image being disposed in a first position and the second image being disposed in a second position with the first position being in a different location than the second position;

b) moving the second image, on the screen display, relative to the first image so that the second image is disposed in visual registration with respect to the first position and a selected aligned relationship exists between the first and second images, each of the separate electronic pages having a transparent background so that substantial portions of the second image are visible even when the first image is superposed with respect to the second image; and

c) producing a hardcopy duplex print, as controlled by the moving of said b), the hardcopy duplex prints including the first and second images with the first and second images respectively assuming the first position, as set in said b), so that the selected aligned relationship is obtained in the duplex print.

5,666,209

IMAGE SIGNAL PROCESSING DEVICE

Nobuaki Abe, Sapporo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

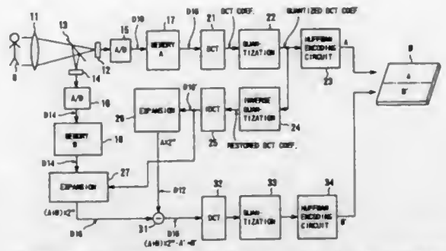
Filed Jul. 15, 1994, Ser. No. 275,355
Claims priority, application Japan, Jul. 15, 1993, 5-197993; Jun. 20, 1994, 6-160554
Int. Cl.[6] H04N *5/76*
U.S. Cl. 386—109 16 Claims

1. A device for processing an image signal, comprising:

first means for generating first image data based on an optical image, said first image data having a first resolution;

second means for generating second image data based on said optical image, said second image data being offset from said first image data by a predetermined amount on a spatial coordinate axis;

third means for generating third image data based on said first and second image data, said third image data having a second resolution higher than said first resolution;



means for transforming said first image data to an expanded image data having a number of pixels equal to a number of pixels of said third image data;

means for subtracting said expanded image data from said third image data to generate supplementary data;

means for applying data compression to said first image data and said supplementary data; and

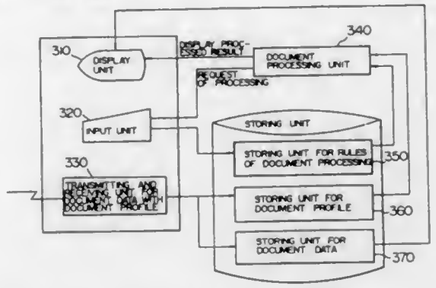
means for recording said first image data and said supplementary data compressed by said data compression means to a recording medium.

5,666,210

DOCUMENT COMMUNICATION APPARATUS AND DOCUMENT COMMUNICATION SYSTEM

Norifumi Yanai, Ibaraki-ken; Kouzou Nakamura, Hitachiota; Mariko Okude, and Shigemasa Shiota, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,258
Claims priority, application Japan, Jun. 3, 1993, 5-133372; Jun. 11, 1993, 5-140408
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—402 13 Claims



1. A document communication apparatus comprising:

input means for providing a a plurality of rules of document processing, each of which indicate a manner of document processing at another document communication apparatus;

communicating means for transmitting document information and a plurality of rules of document processing in an order in which said rules of document processing are to be executed at another document communication apparatus or for receiving document information and a plurality of rules of document processing transmitted from another document communication apparatus in an order in which the rules of document processing are to be executed; and

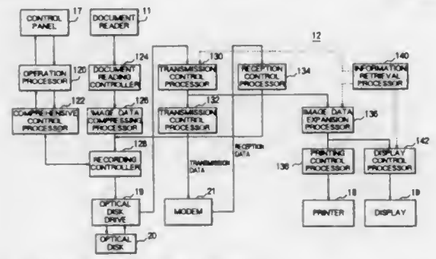
information processing means for processing received document information by executing said plurality of rules of document processing in an order received from said communicating means.

5,666,211

FACSIMILE APPARATUS HAVING MEANS FOR RECORDING AND REPRODUCING TO AND FROM AN OPTICAL DISK

Tomonori Tahara, and Akira Uchida, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 11, 1994, Ser. No. 240,611
Claims priority, application Japan, May 18, 1993, 5-116163
Int. Cl.[6] H04N *1/21*
U.S. Cl. 358—404 23 Claims



1. A facsimile apparatus comprising:

a document reading means for reading a document image and outputting image data;

an image compressing means for compressing the amount of data of the image data and obtaining image compressed data;

a transmission control information generating means for generating transmission control information relating to transmission of the image compressed data;

mode selection means for selecting a first transmission mode in which the image compressed data and the transmission control information are stored on an optical disk or a second transmission mode in which the image compressed data and the transmission control information are not stored on the optical disk;

an optical disk storage means for storing, when the first transmission mode is selected, the image compressed data and the transmission control information on the optical disk;

a transmitting means for transmitting the image compressed data; and

a control means for causing, when the first transmission mode is selected, the image compressed data stored on the optical disk to be supplied to the transmitting means in accordance with the transmission control information stored on the optical disk, and for causing, when the second transmission mode is selected, the image compressed data obtained by said image compressing means to be supplied to the transmitting means in accordance with the transmission control information generated by said transmission control information generating means.

5,666,212

METHOD OF CODING IMAGE SEGMENTS OF ANY SHAPE

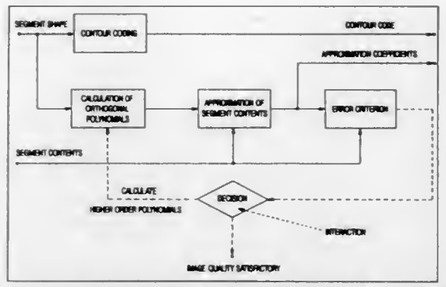
Michael Gilge, Berkeley, Calif., assignor to ANT Nachrichtentechnik GmbH, Backnang, Germany

Filed Oct. 9, 1990, Ser. No. 594,168
Claims priority, application Germany, Oct. 6, 1989, 39 33 346.9
Int. Cl.[6] H04N *1/415*
U.S. Cl. 358—432 15 Claims

1. A method of coding digital image data of an original video image, comprising the steps of:

(1) subdividing the original image into partial image regions of respective shapes whose contours differ;

(2) for each partial image region, determining sampled values of a set of initial two-dimensional, linearly independent basis functions of the image data in the partial image region, the basis functions being defined over an area including at least the whole area of the partial image region, the sampled values of the basis functions having a raster corresponding to the pixel raster of the original image;



(3) for each partial image region, orthogonalizing the sampled values of the basis functions disposed within the area defined by the partial image region in order to obtain a new set of orthogonal basis functions, with the new set including, at most, as many orthogonal basis functions as there are pixels within the partial image region; and

(4) for each partial image region, determining and coding respective coefficients of the new set of orthogonal basis functions, a sum of the orthogonal basis functions multiplied by the respective coefficients representing the gray scale values of the partial image region, the coded coefficients representing an approximation of the partial image region; and,

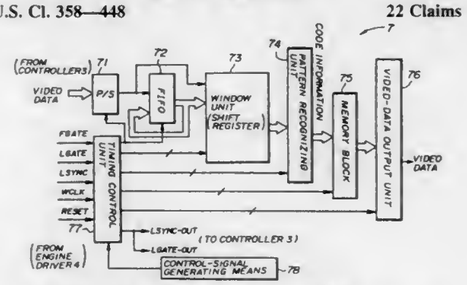
further comprising, in an initial build-up phase and at least one further build-up phase, the steps of transmitting the coded digital image data to a receiving location and reconstructing the transmitted image data at the receiving location, wherein for each partial image region a video image sequence is coded and transmitted in such a manner that at the receiving location a first reconstructed image is determined at the end of the initial image build-up phase from a first number of the orthogonal basis functions and a first number of the coefficients, the first number being substantially less than the number of pixels in the partial image region, and, at the end of a second image build-up phase, an improved reconstruction of the image is obtained from a second number of the orthogonal basis functions and a second number of the coefficients, the second number of the orthogonal basis functions being of a higher order than the order of the first number of orthogonal basis functions.

5,666,213

IMAGE DATA PROCESSING SYSTEM AND METHOD REALIZING FINE IMAGE WITH SIMPLE CONSTRUCTION/PROCEDURE

Masakazu Ohshita, Kawasaki, and Mutsuo Shimomae, Yokosuka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 980,964, Nov. 24, 1992, Pat. No. 5,327,260. This application Jun. 24, 1994, Ser. No. 265,143
Claims priority, application Japan, Jun. 30, 1993, 5-187058
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—448 22 Claims



1. An image data processing system comprising:

bit-map means for forming a bit map using given image data;

boundary recognizing means for recognizing characteristics of a boundary present between first type of pixels and second type of pixels constituting said bit map;

determining means for determining for a pixel whether correction is necessary so as to significantly make the image produced from the given image data finer, the determination using at least part of the boundary characteristics;

correction means for performing a correction on the image data for the pixel, the correction of which pixel has been determined to be necessary, said correction being performed in a manner determined depending on the boundary characteristics; and

data replicating means for replicating the given image data to be used in the correction to be performed by said correction means.

5,666,214

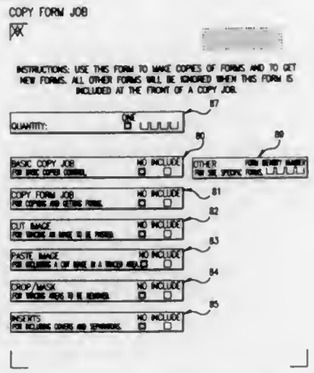
PAPER USER INTERFACE FOR IMAGE MANIPULATIONS SUCH AS CUT AND PASTE

Jock D. MacKinlay, Palo Alto, and Walter A. L. Johnson, Santa Clara, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 428,759, Apr. 25, 1995, Pat. No. 5,502,577. This application Mar. 26, 1996, Ser. No. 621,913

Int. Cl.[6] H04N *1/41*

U.S. Cl. 358—453 **8 Claims**



1. A reprographic method for making an output document having a desired image from an input document having an input image, comprising:

scanning an instruction page containing an image processing command;

decoding the image processing command contained on said instruction page;

scanning at least a portion of the input image;

producing the output document from the scanned at least a portion of the input image in accordance with the decoded image processing command;

wherein the instruction page is an overlay image.

5,666,215

SYSTEM AND METHOD FOR REMOTELY SELECTING PHOTOGRAPHIC IMAGES

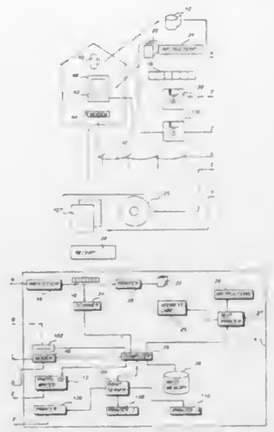
John Randall Fredlund, Rochester; David Lynn Patton, Webster; Roger R. A. Morton, Penfield, and Steven Bruce Paciocco, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 201,735, Feb. 25, 1994, abandoned. This application Aug. 3, 1995, Ser. No. 510,941

Int. Cl.[6] H04N *1/04;* **G03F** *3/10*

U.S. Cl. 358—487 **16 Claims**

1. A method for remotely selecting and ordering photographic prints from a customer's location that is remote from a photofinisher, comprising the steps of:



a) sending a photographic film bearing a plurality of latent negative images to a photofinisher;

b) developing the photographic film to produce negative images and scanning the negative images to create a digital image file at the photofinisher;

c) manipulating the digital image file in a digital computer to provide a display file for generating a positive display of the images in the image file along with an index number associated with each image;

d) transmitting the display file from the photofinisher to the customer's remote location;

e) selecting the desired size and quantity of prints;

f) displaying the display file on a display device in the customer's remote location;

g) selecting desired images for making photographic prints;

h) transmitting the frame numbers associated with the selected images from the customer's remote location to the photofinisher; and

i) making photographic prints of the selected images at the photofinisher and delivering the photographic prints to the customer's remote location.

5,666,216

IMAGE PROCESSING APPARATUS AND METHOD

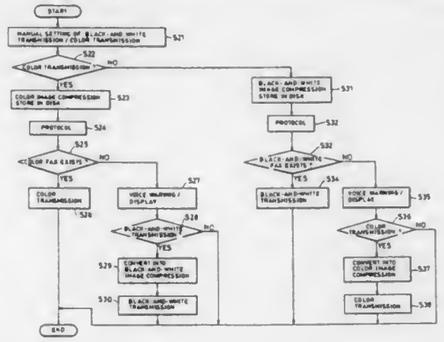
Susumu Sugiura, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 31,198, Mar. 12, 1993, Pat. No. 5,361,144, which is a division of Ser. No. 607,651, Oct. 31, 1990, Pat. No. 5,220,417. This application Aug. 16, 1994, Ser. No. 264,494

Claims priority, application Japan, Oct. 31, 1989, 1-285894

Int. Cl.[6] H04N *1/46;* **G03F** *3/08*

U.S. Cl. 358—500 **17 Claims**



1. An image processing method comprising steps of:

inputting image data consisting of a plurality of color components;

compressing the image data into color-image-compressed image data by using a color image compression method;

storing the color-image-compressed image data;

expanding the color-image-compressed image data based on a predetermined instruction;

generating monochromatic image data by which a color image, represented by the expanded color image data, is represented as a monochromatic image;

compressing the monochromatic image data into monochromatic-compressed image data by using a monochromatic image compression method; and

transmitting the monochromatic-compressed image data.

5,666,217

LIQUID CRYSTAL DEVICE

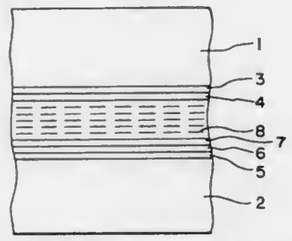
Shuzo Kaneko, Chigasaki; Ihachiro Gofuku, Atsugi; Etsurō Kishi, Sagamihara; Makoto Kojima, Atsugi, and Katsutoshi Nakamura, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,929

Claims priority, application Japan, Aug. 4, 1994, 6-183411; Jan. 20, 1995, 7-007390; Jan. 20, 1995, 7-007422; Jan. 23, 1995, 7-008188; Jan. 24, 1995, 7-008955

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—122 **57 Claims**



1. A liquid crystal device, comprising a pair of oppositely disposed substrates including a first substrate-having a uniaxial alignment characteristic and a second substrate having a non-uniaxial alignment characteristic and a liquid crystal disposed between the first and second substrates, wherein

said first and second substrates have surface potentials of an identical polarity and providing a difference therebetween of less than 50 mV in terms of an absolute value at their liquid crystal-contacting surfaces.

5,666,218

GENERALIZED CONNECTION NETWORK

Alan Michael Hill, Woodbridge, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB90/01717, § 371 Date May 29, 1992, § 102(e) Date May 29, 1992, PCT Pub. No. WO91/07854, PCT Pub. Date May 30, 1991

PCT Filed Nov. 8, 1990, Ser. No. 852,192

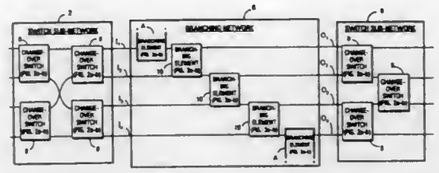
Claims priority, application United Kingdom, Nov. 10, 1989, 8925454

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—139 **7 Claims**

1. A generalised connection network comprising:

a first and a second interconnection sub-network interconnected by a branching network having N inputs and N outputs, N being an integer,



the branching network having N two-state branching elements interconnected so as to be able simultaneously to replicate a signal coupled to any one of the N inputs to each of up to N outputs.

5,666,219

ROTARY POLYGON MIRROR TYPE LIGHT DEFLECTING SYSTEM

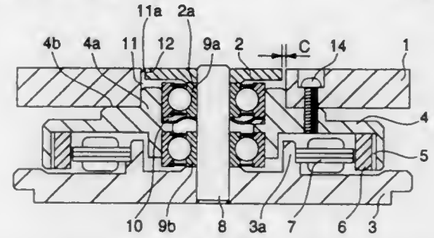
Yutaka Ishizuka, and Koichi Katakura, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Continuation of Ser. No. 520,737, Aug. 29, 1995, abandoned. This application Oct. 31, 1996, Ser. No. 739,672

Claims priority, application Japan, Aug. 29, 1994, 6-203872

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—200 **8 Claims**



1. A polygon mirror driving apparatus for a rotary polygon mirror type light deflecting system comprising:

a shaft;

ball bearings fitted to said shaft;

a hub rotatably supported by said ball bearings, said hub having a drive magnet;

a core including salient poles, said each salient pole having a coil wound and confronting said drive magnet;

a polygon mirror fixed to said hub so as to rotate integrally with said hub, said polygon mirror having a circular hole, in the center thereof said circular hole forming an inner circumferential surface of said polygon mirror and

means for foxing a labyrinth within a space between the inner circumferential surface of said polygon mirror and said shaft.

5,666,220

OPTICAL SCANNER AND POLYGON MIRROR

Nobuo Sakuma, Inagi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

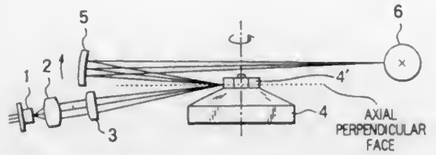
Continuation of Ser. No. 360,048, Dec. 20, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,210

Claims priority, application Japan, Jan. 26, 1994, 6-006991

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—208 **3 Claims**

1. An optical-scanner for an image forming apparatus in which a light beam from a light source device is incident to a deflecting reflecting face of an optical deflector and wherein the light beam provided by the light source device is formed as a linear image which is incident to the deflecting reflecting face, and the light beam reflected on the deflecting reflecting face is deflected by rotating or swinging the deflecting reflecting face and is incident to



a reflective image forming element and is converged as a light spot onto a scanned face by said reflective image forming element to perform an optical scanning operation, said light source device and said reflective image forming element being located on a same side with respect to said deflecting reflecting face;

said deflecting reflecting face being substantially parallel to a rotating or swinging axis thereof;

the light beam from the light source device being incident to said deflecting reflecting face in a state in which this light beam is inclined with respect to an axial perpendicular face perpendicular to said rotating or swinging axis; and

an optical axis of said reflective image forming element being inclined with respect to said axial perpendicular face such that this optical axis is inclined with respect to said axial perpendicular face in a direction toward the incident deflected light beam emitted from said deflecting reflecting face so as to correct a scanning line curve.

5,666,221

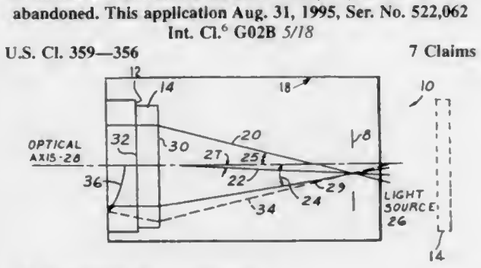
BINARY OPTIC IMAGING SYSTEM

John S. Anderson, Santa Monica, and Gary R. Noyes, Los Angeles, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 229,849, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 915,574, Jul. 20, 1992, abandoned. This application Aug. 31, 1995, Ser. No. 522,062

Int. Cl.[6] G02B *5/18*

U.S. Cl. 359—356 **7 Claims**



6. An imaging device comprising:

an infrared imaging array having a planer surface;

a dewar containing said imaging array said dewar further comprising an off axis cold aperture stop;

a binary optical assembly, located outside of said dewar, for focusing electromagnetic radiation on said imaging array; wherein said binary optical assembly further comprises

a thin, planar substrate having a surface with diffractive features, said substrate decreasing the angle of incidence at which said radiation impinges upon said planar array surface.

5,666,222

OPTICAL VIEWING DEVICE

Xiaohui Ning, Northboro, Mass., assignor to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 944,212, Sep. 11, 1992, Pat. No. 5,416,634. This application Feb. 16, 1995, Ser. No. 389,473

Int. Cl.[6] G02B *23/00;23/24*

U.S. Cl. 359—435 **12 Claims**

1. An optical viewing device comprising:

a tubular housing having opposed first and second ends with an eye piece section at said first end, an objective lens section at said second end and a relay lens section between said eye piece section and said objective lens section;

said relay lens section comprising a plurality of rod-less lens groupings separated from each other by an open space, each of said lens groupings including two sub-groupings of symmetrically arranged plastic and glass lenses with at least some of said lenses being separated by gaps, at least one of said plastic lenses of said relays lens section being a positive lens.

5,666,223

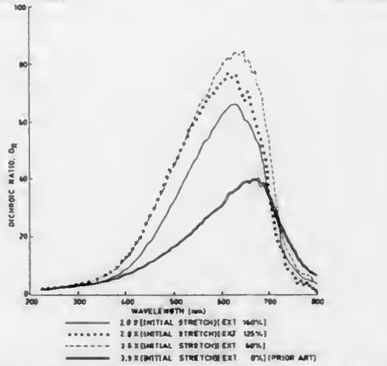
HIGH-EFFICIENCY K-SHEET POLARIZER

Stewart Bennett, Concord; John J. Cael, Mendon; Narendra S. Kadaba, Chestnut Hill, and Giorgio B. Trapani, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1995, Ser. No. 565,877

Int. Cl.[6] B29C *55/04;* **G02B** *1/00*

U.S. Cl. 359—490 **10 Claims**



1. A light polarizer comprising a molecularly oriented sheet of polyvinylalcohol/polyvinylene block copolymer material having the polyvinylene blocks thereof formed by molecular dehydration of a sheet of polyvinylalcohol;

said molecularly oriented sheet of polyvinylalcohol/polyvinylene block copolymer material comprising a substantially uniform distribution of light-polarizing molecules of polyvinylalcohol/polyvinylene block copolymer material varying in the length, n, of the conjugated repeating vinylene unit of the polyvinylene block of the copolymer throughout the range of from 2 to 24;

the degree of orientation of said light-polarizing molecules, as measured by the spectral dichroic ratio, R_D, of said blocks, increasing throughout said range with increasing length, n, of said polyvinylene blocks;

the concentration of each of said polyvinylene blocks, as determined by the absorption of wavelengths from 200 to 700 nm by said blocks, being such that said absorption-determined concentration of each of said polyvinylene blocks in the range of n=19 to 24 is not less than approximately 70% of the

absorption-determined concentration of any of said polyvinylene blocks in the range of n=14 or 15;

said light polarizer sheet exhibiting a photopic dichroic ratio, R_D, of at least approximately 45.

7. A method for making a polarizer from a polymeric sheet having a predetermined original length and comprising a hydroxylated linear high polymer, the method comprising the steps of:

(a) unidirectionally stretching the polymeric sheet from approximately 2.0 to approximately 5.0 times it original length;

(b) exposing the stretched sheet to fuming acidic vapors;

(c) heating the fumed oriented sheet at a temperature appropriate to effect dehydration of the fumed sheet and to thereby form light absorbing, vinylene block segments; and

(d) unidirectionally extending the dehydrated, fumed, and oriented sheet an additional 10 to 160% such that the overall degree of stretch is at least 4.8 times that of the predetermined original length.

5,666,224

OPTICAL GRATING AND METHOD OF FABRICATING AN OPTICAL GRATING

David Charles Wood; Stephen Anthony Cassidy; Mark Robert Wilkinson, all of Suffolk, and Paul Francis McKee, Essex, all of England, assignors to British Telecommunications public limited company, London, England

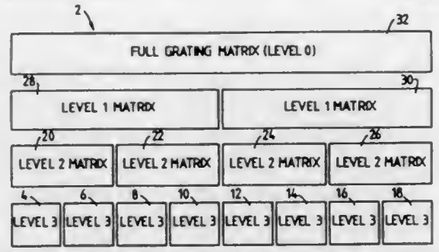
PCT No. PCT/GB93/00043, § 371 Date Jun. 15, 1994, § 102(e) Date Jun. 15, 1994, PCT Pub. No. WO93/14424, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 11, 1993, Ser. No. 244,873

Claims priority, application United Kingdom, Jan. 10, 1992, 9200616

Int. Cl.[6] G02B *5/18;* **H01S** *3/08;3/10*

U.S. Cl. 359—573 **26 Claims**



1. An optical grating including a sequence of grating lines, the sequence being characterized in that:

a) the position of each grating line in said sequence is centered at an integer multiple of a predetermined line spacing distance from a fixed point;

b) said sequence of grating lines being non-periodic; and

c) the sequence of grating lines being formed from a multiplicity of N concatenated subsequences of grating lines, each subsequence comprising a series of one or more instances of a predetermined pattern of grating lines;

in which $N=2^M$, where M is a whole number.

5,666,225

MULTI-PASS ETALON FILTER

Paul Colbourne, Nepean, Canada, assignor to JDS Fitel Inc., Nepean, Canada

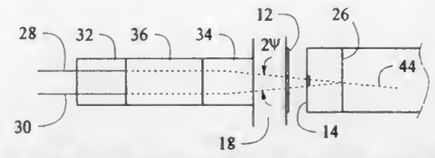
Filed Feb. 26, 1996, Ser. No. 607,105

Int. Cl.[6] G02B *5/28;6/24;6/42;* **H01S** *3/10*

U.S. Cl. 359—589 **11 Claims**

1. A multi-pass optical filter which comprises:

a Fabry-Perot cavity defined by a first partial reflector and a second partial reflector, said reflectors mounted in a parallel spaced-apart relationship to form a gap therebetween,



an input port optically coupled to said cavity for feeding an input light beam into said cavity in a manner to produce a filtered light beam,

a third reflector disposed adjacent said cavity and arranged to reflect most of said filtered light beam exiting from said cavity back into said cavity, and

an output port for porting out a light beam that has been reflected from said third reflector and has passed through said cavity more than once, wherein the input and the output ports are disposed at locations that ensure that the optical path length defined by a beam of light launched into the input port propagating to the third reflector at a target location is the same as the optical path length of that beam reflected from the target location to the output port.

5,666,226

OPTICAL APPARATUS

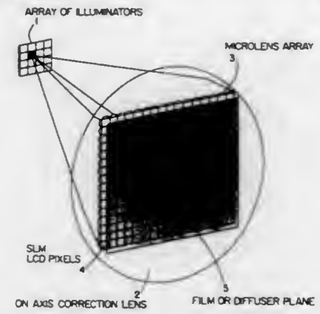
David Ezra; Graham J. Woodgate; Paul May; Michael G. Robinson, and Jonathan Harrold, all of Oxfordshire, United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1994, Ser. No. 248,151

Claims priority, application United Kingdom, May 25, 1993, 9310738

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—621 **43 Claims**



1. An optical apparatus comprising a first spatial light modulator having a plurality of individually controllable pixels, an array of imaging elements, a plurality of light sources, and an image surface, wherein each of the imaging elements of the array is arranged to form an image of each of the plurality of light sources through a corresponding pixel of the spatial light modulator at a respective position on the image surface, and optical paths of each of the images of the plurality of light sources are overlapping through the respective pixels.

5,666,227

PASSIVE PANORAMIC VIEWING SYSTEMS

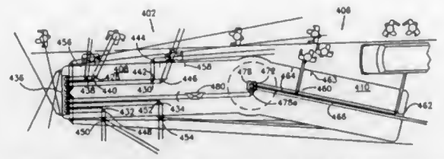
Yehoshua Ben-Ghiath, 9 Narkissim, Kiryat Bialik 27100, Israel

Filed May 2, 1994, Ser. No. 236,804

Int. Cl.[6] G02B *5/08;27/14;* **B60R** *1/00*

U.S. Cl. 359—630 **6 Claims**

1. A system for affording to a driver an image of a first area and a second area adjacent to a vehicle, the system comprising:



(a) first image projection means including a beam splitter, said first image projection means projecting a first image of the first area adjacent to the vehicle by transmission through said beam splitter and a second image, superimposed on said first image, of the second area adjacent to the vehicle by reflection from said beam splitter; and

(b) second image projection means in optical alignment with said first image projection means such that said images are visible from the driver's normal sitting position.

5,666,228

RETROFOCUS TYPE LENS

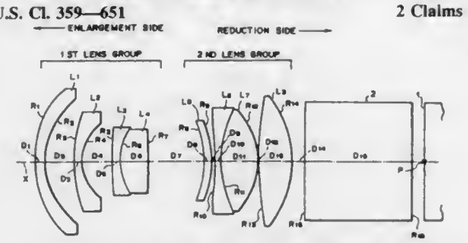
Chikara Yamamoto, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jul. 29, 1996, Ser. No. 687,965

Claims priority, application Japan, Sep. 28, 1995, 7-274868

Int. Cl.[6] G02B *9/00;13/18;9/04*

U.S. Cl. 359—651 **2 Claims**



1. A retrofocus type lens comprising, successively from an enlargement side, a first lens group which is negative as a whole and a second lens group which is positive as a whole;

wherein said first lens group comprises, successively from the enlargement side, a negative first lens made of a plastic having a concave surface directed onto a reduction side and an aspheric surface, a negative second lens having a concave surface directed onto the reduction side, a negative third lens, and a positive fourth lens;

wherein said second lens group comprises, successively from the enlargement side, a positive fifth lens made of a plastic having a convex surface directed onto the reduction side and an aspheric surface, a negative sixth lens, a positive seventh lens having a convex surface directed onto the reduction side, and a positive eighth lens having a convex surface directed onto the reduction side; and

wherein said retrofocus type lens is configured so as to satisfy the following conditional expressions (1) to (7):

$$-2.5<F_1/F_5<-0.3 \quad (1)$$

$$-2.8<FG_1/FG_2<-1.0 \quad (2)$$

$$0.2H/FG_2<0.75 \quad (3)$$

$$0.0<A(1) \quad (4)$$

$$0.0<A(2) \quad (5)$$

$$\nu_4<32 \quad (6)$$

$$58<\nu_7 \quad (7)$$

wherein:

F_1 is focal length of the first lens,

F_5 is focal length of the fifth lens,

FG_1 is focal length of the first lens group,

FG_2 is focal length of the second lens group,

H is principal point length of the second lens group on the enlargement side,

A(1) is aspheric surface coefficient of fourth order term for the surface of the first lens on the enlargement side,

A(2) is aspheric surface coefficient of fourth order term for the surface of the first lens on the reduction side,

ν_4 is Abbe number of the fourth lens, and

ν_7 is Abbe number of the seventh lens.

5,666,229

VARIABLE FOCAL LENGTH OPTICAL SYSTEM

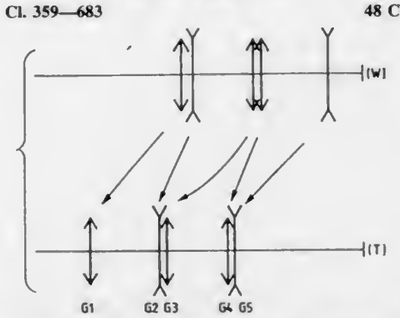
Motoyuki Ohtake, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 272,329, Jul. 8, 1994, abandoned. This application Jul. 17, 1995, Ser. No. 503,338

Claims priority, application Japan, Jul. 12, 1993, 5-171494; Jul. 22, 1993, 5-180533; Nov. 29, 1993, 5-323284; Nov. 29, 1993, 5-323285; Mar. 15, 1994, 6-70033; May 13, 1994, 6-124599; Jul. 29, 1994, 6-197233

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **48 Claims**



1. A variable focal length optical system comprising in order from an object side:

a first lens group having a positive refractive power;

a second lens group having a negative refractive power;

a third lens group having a positive refractive power;

a fourth lens group having a positive refractive power; and

a fifth lens group having a negative refractive power;

at least said first lens group and said fifth lens group being moved toward said object side when said lens groups are moved from a wide-angle end to a telephoto end;

whereby both an air gap along an optical axis between said first lens group and said second lens group and an air gap along an optical axis between said third lens group and said fourth lens group are increased, respectively;

whereby an air gap along an optical axis between said fourth lens group and said fifth lens group is decreased;

wherein the following expression is satisfied:

$$0.4<(Bft-Bfw)/(ft-fw)<0.8$$

where fw is an effective focal length of the optical system at said wide-angle end; ft is an effective focal length of said optical system at said telephoto end; Bfw is a back focus at said wide-angle end; and Bft is a back focus at said telephoto end.

5,666,230

ZOOM LENS

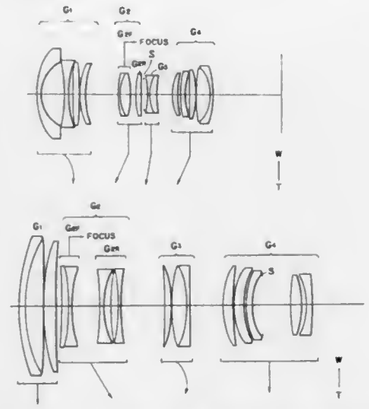
Wataru Tatsuno, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 995,414

Claims priority, application Japan, Dec. 25, 1991, 3-342607

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—684 **8 Claims**



1. A zoom lens comprising, in the following order from the object side:

a first lens group having negative refractive power;

a second lens group including a first sub-group having positive refractive power near to said first lens group and a second sub-group far from said first lens group, said first lens group and said first sub-group in said second lens group together forming a substantially afocal system in at least a portion of a zooming range;

a third lens group; and

a fourth lens group;

wherein said second lens group is moved along the optical axis during zooming and said first sub-group in said second lens group is moved along the optical axis to thereby effect focusing.

5,666,231

ZOOM LENS

Motoyuki Ohtake, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 363,339, Dec. 23, 1994, Pat. No. 5,606,460. This application Feb. 28, 1996, Ser. No. 608,505

Claims priority, application Japan, Dec. 28, 1993, 5-353454

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—686 **5 Claims**

1. A zoom lens comprising in the following order from the object side:

a first lens unit having positive refractive power and consisting of a cemented lens having a positive lens element and a negative lens element with a concave cemented surface facing the object side, the first lens unit being closer to the object side than any other lens unit of the zoom lens;

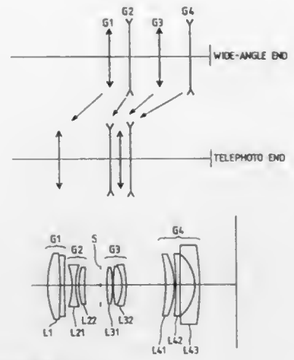
a second lens unit having negative refractive power;

a third lens unit having positive refractive power; and

a last lens unit having negative refractive power,

wherein, upon zooming from a wide angle end to a telephoto end, at least said first lens unit and said last lens unit move toward the object side so as to increase an air gap between said first lens unit and said second lens unit but to decrease both an air gap between said second lens unit and said third lens unit and an air gap between said third lens unit and said last lens unit,

said zoom lens satisfying the following condition:



$$0.7<f1/(fw\cdot ft)^{1/2}<1.4$$

where f1 is the focal length of said first lens unit, fw is the focal length of the entire lens system at the wide angle end, and ft is the focal length of the entire lens system at the telephoto end.

5,666,232

THREE-GROUP ZOOM LENS

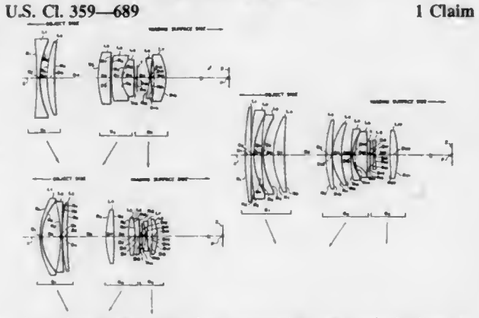
Nobuaki Toyama, Omiya, Japan, assignor to Fuji Photo Optical Co. Ltd., Omiya, Japan

Filed Jul. 29, 1996, Ser. No. 688,024

Claims priority, application Japan, Oct. 5, 1995, 7-284552

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **1 Claim**



1. A three-group zoom lens comprising, successively from an object side, a negative first lens group, a positive second lens group, and a negative third lens group;

wherein, during varying power, said third lens group is made stationary while said first lens group and said second lens group are moved;

wherein a stop is disposed in said third lens group; and

wherein the following conditional expressions (1) to (7) are satisfied:

(1) $-1.3<G_1/f_w<-1.0$

(2) $0.4<G_2/f_w<0.7$

(3) $-4.8<G_3/f_w<-1.0$

(4) $1.0<G_{1R}/f_w<3.0$

(5) $0.7<G_{2F}/f_w<1.9$

(6) $-8.5<R_{2R}/f_w<-2.7$

(7) $-1.2<R_{3F}/f_w<-0.3$

wherein

f_w is focal length at a wide angle end;

G_1 is focal length of the first lens group;

G_2 is focal length of the second lens group;

G_3 a is focal length of the third lens group;

G_{1R} is focal length of a lens closest to an imaging surface side in the first lens group;

G_{2F} is focal length of a lens closest to the object side in the second lens group,

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R_{2R} is radius of curvature, on the imaging surface side, of a lens closest to the imaging surface side in the second lens group; and

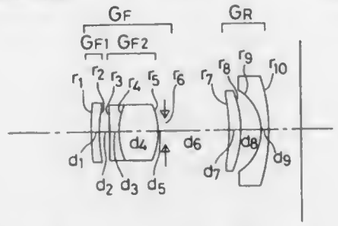
R_{3F} is radius of curvature, on the object side, of a lens closest to the object side in the third lens group.

5,666,233

TWO-UNIT ZOOM LENS SYSTEM HAVING A HIGH ZOOM RATIO

Yasuji Ogata, Akikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,781
Claims priority, application Japan, Dec. 24, 1993, 5-327940
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—692 **21 Claims**



1. A two-unit zoom lens system having a high zoom ratio comprising, in order from an object to an image side:

a front lens unit G_F having positive refractive power; and

a rear lens unit G_R having negative refractive power,

said rear lens unit being disposed laterally along an optic axis on said image side relative to said front lens unit G_F, reserving a space therebetween, wherein said space is varied for zooming said lens systems,

said front lens unit is comprised of a first lens component G_{F1} disposed on said object side of said front lens unit, wherein said first lens component is comprised of, in order from said object side to said image side, a first plastic lens element, wherein said first plastic lens element has at least one aspherical surface and a weak negative refracting power such that a focal length of the overall system at the wide-angle end, f_W, and a focal length of said first lens component, f_{F1}, substantially conform to the condition

$$0.2 \geq |f_W/f_{F1}|$$

said rear lens unit is comprised of a positive lens and a negative lens, wherein a refractive index of said negative lens, N_{NR}, conforms to the condition

$$1.65 < N_{RN}$$

wherein said front unit includes on the image side of said first lens component a second lens component G_{F2} having generally positive power, and wherein said second lens component includes a doublet of negative and positive lenses in order form the object side.

5,666,234

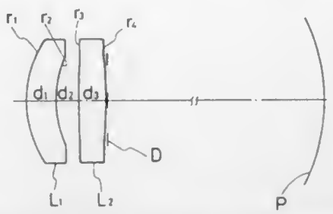
TWO-ELEMENT OPTICAL SYSTEM FOR PHOTOGRAPHIC CAMERAS

Kazunori Ohno, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 28, 1994, Ser. No. 202,462
Claims priority, application Japan, Mar. 5, 1993, 5-069176
Int. Cl.[6] G02B *9/06*
U.S. Cl. 359—794 **4 Claims**

1. A two lens element optical system in a photographic camera having an image field, comprising:

a first positive lens element having a convex surface disposed on a side of the object;



a second positive lens element having a convex surface disposed on the side of the image field, wherein there is no negative lens positioned between said first and second positive lenses; and

a postpositional aperture stop located behind said second lens element on the side of the image field, wherein there is no lens element positioned between said second positive lens element and said postpositional aperture stop;

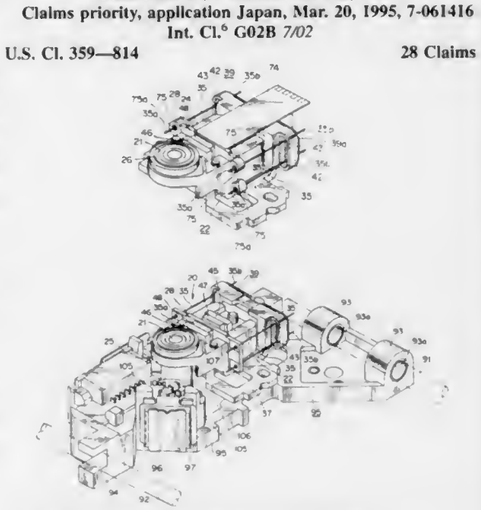
wherein at least one of said first lens element and said second lens element comprises a biconvex lens and wherein an image surface of said optical system is curved in a concave shape on the object side.

5,666,235

OBJECTIVE LENS DRIVING DEVICE AND OPTICAL PICKUP UNIT EMPLOYING THIS OBJECTIVE LENS DRIVING DEVICE

Takashi Izuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 618,497
Claims priority, application Japan, Mar. 20, 1995, 7-061416
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—814 **28 Claims**



1. An objective lens driving device, comprising:

an objective lens;

a bobbin on which said objective lens is mounted;

supporting means for supporting said bobbin in at least one of the first direction parallel to the optical axis of the objective lens and the second direction normal to the optical axis of said objective lens;

a coil mounting plate mounted on the bobbin;

at least one coil mounted on said coil mounting plate, said coil being mounted on said coil mounting plate so that at least one of the coil sides is parallel to at least one of the first and second directions; and

a magnetic circuit for moving said coil and said objective lens in said first direction or in said second direction, said magnetic circuit having a pair of magnets facing each other with a pre-set gap therebetween;

wherein said coil is arranged on substantially the centerline of said gap and the center of gravity of a movable portion at least including the objective lens and the bobbin is coincident with the point of operation of a driving force generated by the coil and the magnetic circuit.

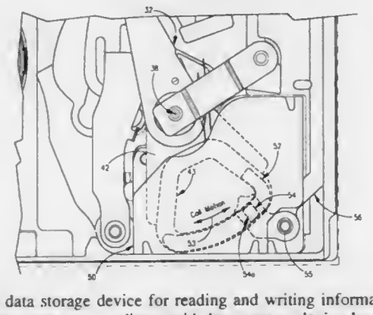
5,666,236

VELOCITY CONTROL FOR A DISK DRIVE ACTUATOR

Allen Thomas Bracken, Layton; Edward L. Rich; Harold Lin Woods, both of Ogden, and Hong Tan, Layton, all of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Aug. 22, 1995, Ser. No. 517,836
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **53 Claims**





1. A data storage device for reading and writing information to and from a storage medium, said data storage device having an actuator for moving a read/write head over a surface of the storage medium, said data storage device further comprising:

an optical sensor mounted on one of a surface of the data storage device and a surface of the actuator;

a gray-scale pattern provided on the other of said surface of the data storage device and said surface of the actuator opposite said optical sensor, said gray scale pattern providing an amount of reflected light at said optical sensor that varies with the position of the actuator, said optical sensor receiving said reflected light and generating therefrom an output signal indicative of the position of said actuator; and

a control system responsive to the position signal output from said optical sensor for controlling a velocity of said actuator.

5,666,237

METHOD FOR MAPPING THERMAL ASPERITIES OF A MAGNETIC RECORDING SURFACE IN DATA STORAGE DEVICE

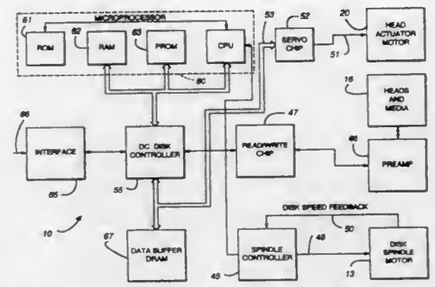
William D. Lewis, Northborough, Mass., assignor to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 444,533, May 19, 1995, Pat. No. 5,537,034. This application Jun. 28, 1996, Ser. No. 678,387
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **17 Claims**

1. A moving-media data storage device, comprising:

data storage media having a data pattern recorded thereon,

a flying data transducer associated in data transducing relation with said media,



an electric motor connected to move said media at a generally constant speed in accordance with an electrical energization parameter of said motor, first means for energizing said motor at a first energization parameter to facilitate data processing by said transducer, and second means for energizing said motor at a second energization parameter to reduce said motor speed and thereby stress the ability of said transducer to fly relative to said media, the moving-media data storage device further including circuit means connected to said transducer and responsive to a signal that is generated by said transducer when said motor is energized at said second parameter, said circuit means being constructed and arranged to respond to a signal indicative of at least a periodic inability of said transducer to fly relative to said media when said motor is energized at said second parameter, the circuit means comprising:

a clock

a divider circuit connected to receive said clock as an input and having an output,

a first divide-by command input to said divider circuit enabling said divider circuit to divide said clock by a first factor,

a second divide-by command input to said divider circuit enabling said divide circuit to divide said clock by a second factor which is higher than said first factor,

means connecting said output of said divider circuit in controlling relation to said circuit means,

said first divide-by factor enabling reading of said data pattern at a first RPM, and said second divide-by factor enabling reading of said data pattern at a second RPM.

5,666,238

DATA SECTOR CONTROL APPARATUS AND METHOD FOR DISK STORAGE SYSTEM

Fubito Igari; Toru Takemura; Satoshi Shibata, and Akio Mizuno, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 363,705, Dec. 23, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 617,433
Claims priority, application Japan, Dec. 28, 1993, 5-350192; Jul. 15, 1994, 6-164070; Aug. 24, 1994, 6-199706
Int. Cl.[6] G11B *5/596;5/09*
U.S. Cl. 360—77.08 **6 Claims**

1. A disk storage apparatus comprising:

a head for reproducing information;

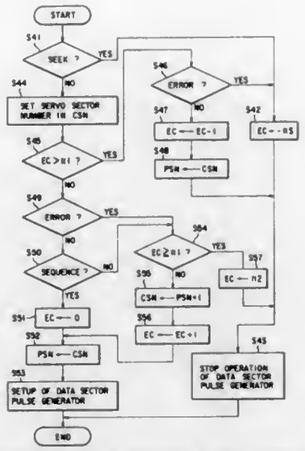
a disk having a plurality of tracks concentrically formed in a radial direction, each track having a plurality of servo sectors and a plurality of data areas which are alternately arranged,

each of said servo sectors having servo data and servo sector information which are recorded therein, the servo data being used to position said head to said each track, and the servo sector information being given with continuity from a predetermined reference servo sector to identify said each servo sector,

each of said plurality of data areas being divided into a plurality of data sectors;

extracting means for extracting servo sector information of said each servo sector;

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determining means for determining a start position of a data sector of at least one data area corresponding to said servo sector identified by the servo sector information on the basis of the servo sector information extracted by said extracting means;

detecting means for determining whether given servo sector information is correctly extracted every time the servo sector information is extracted from said extracting means, and detecting an extraction error of the given servo sector information;

estimating means for estimating correct servo sector information on the basis of preceding servo sector information detected previously when said detecting means detects the extraction error of the servo sector information, and using the estimated servo sector information in place of the given servo sector information detected by said detecting means so as to determine the start position of the data sector;

holding means for holding the servo sector information properly extracted by the extracting means when it is determined by the detecting means that the servo sector information is properly extracted, and holding the servo sector information estimated by the estimating means when the extraction error in the servo sector information is detected by the detecting means;

wherein the estimating means estimates proper servo sector information from the servo sector information held by the holding means; and

inhibiting means for counting the number of times that no extraction error is consecutively detected by the detecting means upon completion of a seek operation, and inhibiting determination of the start position of the data sector by the determining means until the number of times reaches a predetermined value.

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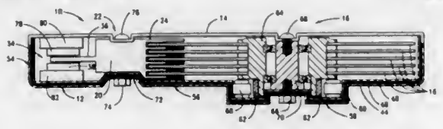
LAMINATED BASE DECK FOR A DISC DRIVE

Kenneth L. Pottebaum, Yukon, Okla., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 671,704, Jun. 28, 1996. This application Jun. 28, 1996, Ser. No. 671,703

Int. Cl.[6] G11B *33/08*

U.S. Cl. 360—97.03 **18 Claims**



1. In a disc drive of the type having a disc and an actuator assembly adjacent the disc, the actuator assembly including a head for selectively reading and writing data stored on the disc and a coil of a voice coil motor for selectively positioning the actuator assembly relative to the disc, the disc drive further having a spindle motor for controllably rotating the disc at a selected speed and a top cover, the improvement comprising:

a laminated base deck comprising a base portion and side walls extending from the base portion, the side walls engageable with the top cover to provide a sealed environment for the disc drive, the base portion supporting the spindle motor and the actuator assembly, the base portion and side walls deep drawn from a single piece of laminate and including an interior structural layer, an exterior structural layer and a core layer disposed between the interior and exterior structural layers, wherein the structural layers provide mechanical support for the disc drive and the core layer provides improved damping of vibrations generated by the operation of the spindle motor and the actuator assembly.

5,666,240

MAGNETIC HEAD ASSEMBLY FOR TEMPORARILY HOLDING MAGNETIC HEAD MEMBERS

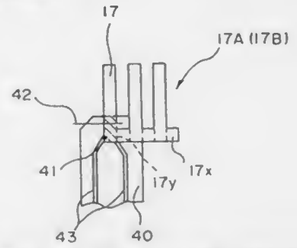
Masahiro Kozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 8,007, Jan. 22, 1993, Pat. No. 5,388,324. This application Jul. 7, 1994, Ser. No. 271,764

Claims priority, application Japan, Jan. 22, 1992, 4-008955

Int. Cl.[6] G11B *5/18*

U.S. Cl. 360—104 **10 Claims**



1. A thin-film magnetic head sub-assembly for attachment to one or more magnetic disk drive head arm assemblies, comprising:

a plurality of elongated thin film magnetic head members each extending in parallel in a common direction from respective head ends into a thin film magnetic base member, portions thereof respectively forming opposite base ends of the magnetic head members, each of said elongated magnetic head members integrally carrying a magnetic head at said head end, each magnetic head member having a length that substantially exceeds any of a width and a height of said magnetic head; and

said base member further including laterally extending portions connecting and disposed between said base ends of said plurality of elongated magnetic head members prior to attachment to one or more magnetic disk drives, said base ends of said plurality of elongated magnetic head members being separable from adjacent laterally extending portions of said base member so that each of said magnetic heads, including base ends thereof, is separable from each other for attachment to one or more magnetic disk drive head arm assemblies, wherein

spaces are disposed between said head members connected by said laterally extending portions, said spaces extend from said head ends to said laterally extending portions, and said spaces have a greater width than said head members.

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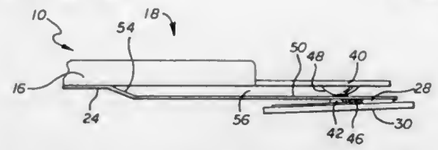
DOUBLE DIMPLE DISK DRIVE SUSPENSION

Robert N. Summers, La Habra, Calif., assignor to Magnecomp Corp., Temecula, Calif.

Filed Jul. 10, 1995, Ser. No. 500,284

Int. Cl.[6] G11B *5/48;21/16;5/54;21/22*

U.S. Cl. 360—104 **8 Claims**



1. A disk drive suspension comprising a load beam and flexure assembly for supporting a slider in predetermined operating proximity to a disk, said load beam having a load beam surface facing said flexure and a load beam dimple on said load beam surface, said load beam dimple having a circular cross section in a plane parallel to said load beam surface, said load beam dimple also having a protuberant surface extending toward said flexure, said flexure having a flexure surface facing said load beam and a flexure dimple on said flexure surface, said flexure dimple having a circular cross section in a plane parallel to said flexure surface, said flexure dimple also having a protuberant surface extending toward said load beam, said load beam dimple and said flexure dimple protuberant surfaces being opposed and mutually engageable in universal rotation contact to position said slider at said disk in said predetermined operating proximity not be either of said dimples individually but only by both of said dimples, said dimples being mutually engaged in a common locus of engagement placed at the apexes of said protuberant surfaces.

5,666,242

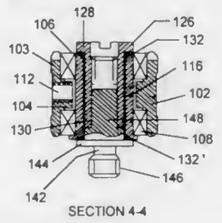
DISK DRIVE HAVING ELASTOMERIC INTERFACE IN PIVOT BEARING ASSEMBLY

John Robert Edwards, Mountain View, and Jon Matthew Garbarino, San Jose, both of Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Nov. 21, 1995, Ser. No. 561,344

Int. Cl.[6] G11B *5/55;* **F16C** *27/06*

U.S. Cl. 360—106 **16 Claims**



1. A disk drive comprising:

an enclosure comprising a base and a cover coupled to the base;

a disk, having a recording surface adapted for storage and retrieval for data thereon;

a spindle motor, mounted to the base and coupled to the disk;

a head stack assembly comprising a body portion having a bore, a head gimbal assembly attached to the body portion, and a coil attached to the body portion;

a pivot bearing assembly installed in the head stack assembly bore, having a sleeve member for rotatably supporting the head stack assembly and having a stationary structure affixed to the enclosure; and

means for defining an elastomeric interface that provides vibration isolation, the elastomeric interface being located between the sleeve member and the stationary structure such that any vibration of the sleeve member can couple to the stationary structure only through the elastomeric interface.

5,666,243

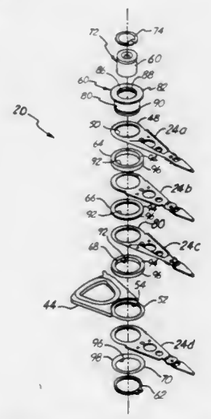
SPRING LOADED STACKED ACTUATOR ASSEMBLY

George I. Brent, Boulder, Colo., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Sep. 3, 1996, Ser. No. 707,121

Int. Cl.[6] G11B *5/55;21/08*

U.S. Cl. 360—106 **13 Claims**



1. A stacked actuator assembly comprising:

a hub having an axis of rotation;

a first member fixed in a first direction along the axis of the hub;

a second member fixed in a second opposite direction along the axis of the hub;

an actuator arm coupled about the hub between the first and second members; and

a spring coupled about the hub between the first and second members to axially clamp the actuator arm between the first and second members.

5,666,244

ROTARY ACTUATOR ASSEMBLY IN A DISK DRIVE HAVING A MAGNETIC ACTUATOR ARM LATCH

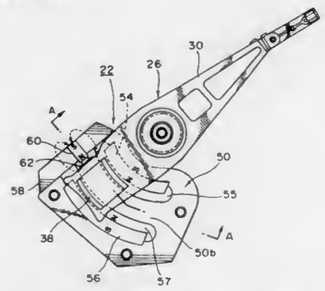
Yoshinori Ogawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 347,048, Nov. 30, 1994, abandoned. This application Sep. 6, 1996, Ser. No. 709,528

Claims priority, application Japan, Mar. 14, 1994, 6-042249

Int. Cl.[6] G11B *21/22*

U.S. Cl. 360—106 **20 Claims**



1. A rotary actuator assembly in a disk drive unit having a disk mounted therein, comprising:

a base;

an actuator arm subassembly rotatably mounted on said base, said subassembly having one end supporting a plurality of heads and another end supporting a moving coil;

a magnetic circuit fixed to said base, said magnetic circuit constituting a voice coil motor in combination with said moving coil, said magnetic circuit comprising an E-shaped main yoke having an inner yoke, a center yoke, and an outer yoke, an inner magnet mounted on a surface of said inner yoke opposed to said center yoke, an outer magnet mounted on a surface of said outer yoke opposed to said center yoke, and a side yoke attached to said main yoke by magnetic forces of said inner magnet and said outer magnet; and

a latch magnet fixed to one of said base and said magnetic circuit, for locking said actuator arm subassembly into an off-track position when the disk drive is not being operated and for improving flux density of the magnetic circuit near at least one of an inner and outer cylinder of the magnetic disk when the disk drive is executing on-track positioning, said latch magnet having a magnetic pole, said magnetic pole having the same polarity as that of surfaces of said inner magnet and said outer magnet opposed to said center yoke, said latch magnet being located at a position such that when said heads are disposed near one of the inner cylinder and an outer cylinder of a disk, said moving coil passes a magnetic flux directed from said latch magnet to said center yoke, to thereby strengthen a thrust of said voice coil motor.

5,666,245

HEAD DRUM ASSEMBLY PROVIDED WITH AN AMPLIFIER THEREIN

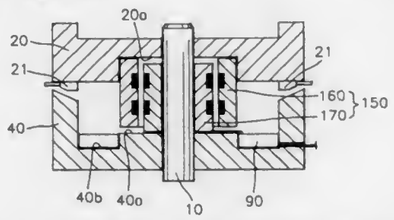
Bu-Hyun Cho, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 4, 1995, Ser. No. 566,630

Claims priority, application Rep. of Korea, Feb. 15, 1995, 95-2357

Int. Cl.[6] G11B *5/52*

U.S. Cl. 360—108 **3 Claims**



1. A head drum assembly for use in a video cassette recorder ("VCR") including a rotary drum having a bottom surface, a stationary drum, a rotary transformer including a rotor and a stator transformers having a plurality of first and second winding coils, respectively, and an amplifier, said head drum assembly being characterized in that:

the stationary drum is provided with an inner top surface and an inner bottom surface;

the rotor and the stator transformers are mounted on the bottom surface of the rotary drum and the inner top surface of the stationary drum, respectively; and

the amplifier is mounted onto the inner bottom surface of the stationary drum and is electrically connected to the second winding coils of the stator transformer.

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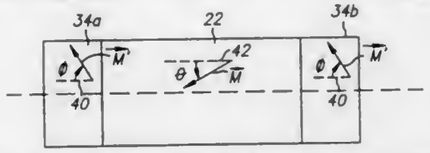
MAGNETIC STORAGE SYSTEM WITH CANTED HARDBIAS MAGNETORESISTIVE HEAD

Hardayal Singh Gill, Portola Valley, and David Eugene Helm, Redwood City, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 94,828, Jul. 19, 1993, abandoned. This application May 4, 1995, Ser. No. 435,008

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **10 Claims**



1. A shielded magnetoresistive (MR) transducer for sensing magnetized data from a data track on a magnetic storage medium, comprising:

an MR layer;

a shunt layer coextensive with the MR layer for generating a first magnetic bias field intercepting the MR layer;

a pair of spaced shields of magnetically permeable material, said MR layer being disposed between said pair of shields and positioned closer to one of the shields than to the other of the shields; and

strips of high coercivity magnetic material in contiguous contact with opposite data track-overlaying edges of said MR layer for providing a second magnetic bias field in said MR layer, each of said strips having its magnetization direction canted at an angle ϕ from a horizontal component of its magnetization, the angle ϕ being in a range of about 45° to 75°, said canted magnetic bias field provided by said strips cooperating with said first bias field generated by said shunt layer and said placement of the MR layer between the shields to magnetically bias the MR layer with its magnetic bias field at an angle Θ from a horizontal component of its bias field, the angle Θ being in a range of about 33° to 47°.

5,666,247

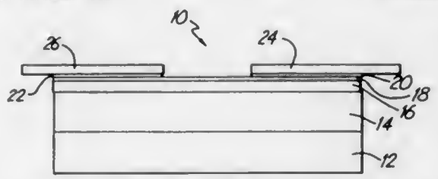
NO-FIELD, LOW POWER FEMN DEPOSITION GIVING HIGH EXCHANGE FILMS

Allan E. Schultz, St. Paul, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 191,621, Feb. 4, 1994, abandoned. This application May 9, 1995, Ser. No. 437,646

Int. Cl.[6] G11B *5/39*; C23C *14/34*

U.S. Cl. 360—113 **14 Claims**



1. A magnetoresistive read transducer with improved longitudinal bias due to high exchange coupling, the magnetoresistive read transducer comprising:

a layer of magnetoresistive ferromagnetic material, the layer of ferromagnetic material comprising an alloy of nickel and iron; and

a layer of antiferromagnetic material in direct contact with the layer of ferromagnetic material, the layer of antiferromagnetic material having a thickness uniformity of less than 2.7 percent over an area of at least 45 cm^2, the layer of ferromagnetic material and the layer of antiferromagnetic material magnetically interacting to produce an exchange field, the exchange field having a normalized value of at least 47 Oe for a normalized ferromagnetic material thickness of about 300 Angstroms.

5,666,248

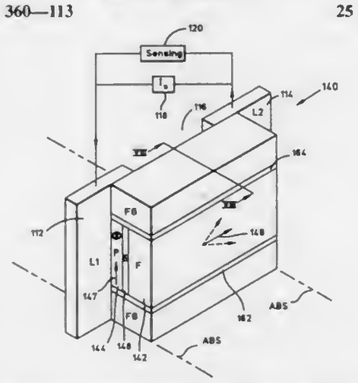
MAGNETIZATIONS OF PINNED AND FREE LAYERS OF A SPIN VALVE SENSOR SET BY SENSE CURRENT FIELDS

Hardayal Singh Gill, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1996, Ser. No. 713,623

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **25 Claims**



1. A self-biasing magnetoresistive (MR) spin valve sensor for use in a magnetic head having an air bearing surface (ABS), comprising:

first and second ferromagnetic layers and a non-magnetic conductive spacer layer, each of the first and second ferromagnetic layers and the spacer layer having first and second edges which are substantially parallel to said ABS and third and fourth edges which are substantially perpendicular to the ABS;

the spacer layer being sandwiched between the first and second ferromagnetic layers;

first and second leads electrically connected to the third and fourth edges respectively of the first and second ferromagnetic layers and the spacer layer for conducting a sense current therethrough;

the first and second ferromagnetic layers being magnetically coupled so that a ferromagnetic coupling field (H_{FC}) is produced in each of the first and second ferromagnetic layers;

the second ferromagnetic layer having a stray demagnetization field H_{DEMAG} which is induced into the first ferromagnetic layer;

first and second flux guides; and

the first flux guide being magnetically coupled to the first edges of the layers and the second flux guide being magnetically coupled to the second edges of the layers for reducing the induced stray demagnetization field H_{DEMAG} in the first ferromagnetic layer to such an extent that when the sense current is conducted a sense current field from the first ferromagnetic layer will supplement the ferromagnetic coupling field in the second ferromagnetic layer to pin its magnetization and a sense current field from the second ferromagnetic layer will oppose the ferromagnetic coupling in the first ferromagnetic layer to permit a magnetization of the first ferromagnetic layer to be free to rotate under the influence of an applied field.

5,666,249

MAGNETIC HEAD AND METHOD FOR MANUFACTURE THEREOF

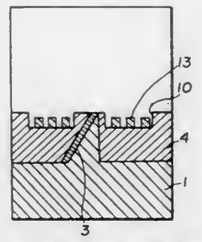
Hiroyuki Ohmori; Tetsuya Yamamoto, both of Kanagawa, and Yasunari Sugiyama, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 202,151, Feb. 25, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 640,987

Claims priority, application Japan, Mar. 2, 1993, 5-066155; Mar. 30, 1993, 5-072117

Int. Cl.[6] G11B *5/17*

U.S. Cl. 360—123 **19 Claims**



1. A maagnetic head in which a pair of magnetic core halves, each having a magnetic metal film formed in the vicinity of at least a substrate surface facing a magnetic recording medium are abutted to each other for defining a magnetic gap between the magnetic metal films, characterized in that said two metal films are arranged in approximately the same plan in edge-to-edge relationship, the width of a track recorded or reproduced by said magnetic head being defined approximately by the thickness of said magnetic metal film, and

a single recess for a coil formed in the abutting surface of one of the magnetic core halves with a layer of glass formed in said recess and said layer of glass having a single recess formed therein, and a coil formed by a thin film forming technique arranged coiled flat in a plan perpendicular to the track within said recess in said layer of glass.

5,666,250

THIN FILM MAGNETIC HEADS WITH THIN NICKEL UNDERLAYERS

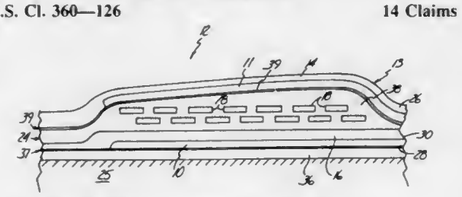
Frank E. Stageberg; Mark S. Miller, both of Edina, and Kenneth P. Ash, Chanhassen, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US93/11571, § 371 Date Feb. 1, 1994, § 102(e) Date Feb. 1, 1994, PCT Pub. No. WO95/14991, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 23, 1993, Ser. No. 190,090

Int. Cl.[6] G11B *5/147*

U.S. Cl. 360—126 **14 Claims**



1. A thin film head/slider assembly comprising:

a substrate;

a base coat deposited on the substrate;

a first seed layer of essentially pure nickel deposited on the base coat;

a bottom magnetic core piece positioned over and contacting the first seed layer;

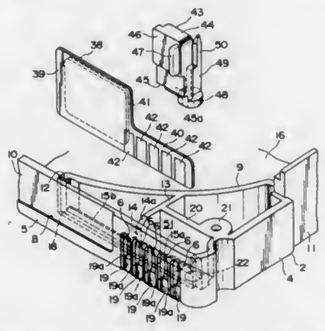
a second of essentially pure nickel seed layer;

a top magnetic core piece positioned over and contacting the second seed layer; and

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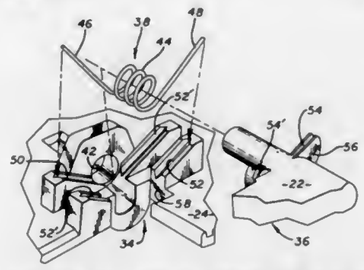
insulating material disposed between the bottom core piece and the second seed layer, wherein the insulating material contains coils.

5,666,251
CASSETTES HAVING A PLURALITY OF SIZES FOR STORING RECORDING MEDIUMS THEREIN
Hiroshi Fujii, Tokyo; Shuichi Ota, and Takashi Sawada, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 253,909, Jun. 3, 1994, abandoned.
This application Aug. 4, 1995, Ser. No. 513,670
Claims priority, application Japan, Jun. 7, 1993, 5-159936
Int. Cl.[6] G11B *5/008;23/087*
U.S. Cl. 360—132 **20 Claims**



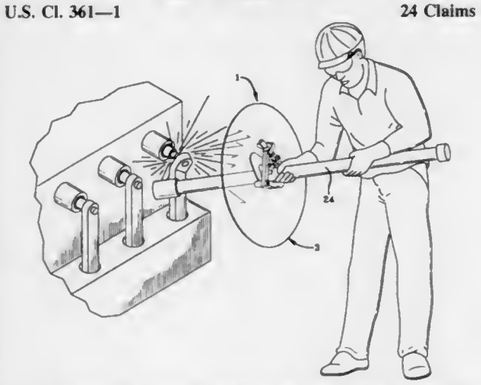
1. A first-size cassette having a shape substantially the same as a second-size cassette which is larger than said first-size cassette and in which said first-size and second-size cassettes are insertable into a common cassette recording/reproducing apparatus, said second-size cassette having a second reference hole, a second accidental erasure protection hole and second information means including a second plurality of electric terminals for providing information pertaining to said second-size cassette to said cassette recording/reproducing apparatus when said second-size cassette is inserted into said cassette recording/reproducing apparatus, said first-size cassette comprising:
a cassette case having a plurality of walls and holding a recording medium therein;
first information means for providing information pertaining to said first-size cassette to said cassette recording/reproducing apparatus when said first-size cassette is inserted into said cassette recording/reproducing apparatus, said first information means including electric terminal means having a first plurality of electric terminals each having a width associated therewith which is substantially identical to a width of each electric terminal of a second plurality of electric terminals of said second-size cassette and in which adjacent ones of said first plurality of electric terminals are arranged so as to have a first predetermined distance therebetween which is the same as in said second-size cassette, said first plurality of electric terminals being arranged so as to have a second predetermined distance between said first plurality of electric terminals and an edge of a side wall nearest to said first plurality of electric terminals which is the same as between said second plurality of electric terminals and a corresponding edge in said second-size cassette; and
a first reference hole for positioning said cassette case in said cassette recording/reproducing apparatus,
wherein said first information means and said first reference hole have the same distance therebetween as between said second information means and said second reference hole of said second-size cassette.

5,666,252
FRONT PANEL FOR A MAGAZINE-LOADING TAPE DRIVE ASSEMBLY
James Bjordahl, 270 W. Camino Real, Arcadia, Calif. 91007
Continuation of Ser. No. 953,639, Sep. 29, 1992, abandoned.
This application Jul. 22, 1994, Ser. No. 279,306
Int. Cl.[6] G11B *33/02*
U.S. Cl. 360—137 **5 Claims**



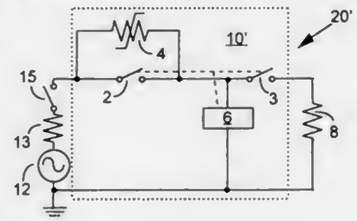
1. A front panel for a magazine-loading DAT drive assembly, having a tape cassette drive unit above a magazine receiving area, said panel comprising:
a first opening for manually loading and unloading a magazine containing a number of DAT cassettes to or from the magazine receiving area;
a second opening for manually loadinq and unloading a single DAT cassette to or from the tape cassette drive unit;
a first door pivotally mounted to said panel adjacent said first opening and having a closed position in which the door extends across its respective opening, a loading position in which the door is retracted into the DAT drive assembly in the direction of the magazine receiving area, and an unloading position in which the door extends out from the DAT drive assembly;
a second door pivotally mounted to said panel adjacent said second opening and having a closed position in which the door extends across its respective opening, a loading position in which the door is retracted into the DAT drive assembly in the direction of the tape cassette drive unit, and an unloading position in which the door extends out from the DAT drive assembly; and
a first and second bias means associated with each of the doors for normally holding the respective door in its closed position with sufficient torque such that it will remain closed regardless of the orientation of the panel, said first bias means biasing its associated door against movement towards said loading position and said second bias. means biasing said door against movement to said unloading position, the first bias means transmitting a torque to the door only when the door is between its closed position and its inner loading position and the second bias means transmitting a torque to the door only when the door is between its closed position and its outer unloading position, said first and second bias means each comprising:
a hairspring having a fixed leg and a moveable leg;
a primary fixed abutment fixed to said panel for holding said fixed leg in a fixed position relative to said panel;
a secondary fixed abutment also fixed to said panel for receiving torque from said moveable leg when said respective door is between said closed position and a respective one of said loading and unloading positions; and
a moveable abutment fixed to said respective door and radially aligned with said secondary fixed abutment and with said moveable leg when said door is in said closed position, for receiving said torque from said moveable leg when said door is between its closed position and the other of said loading and unloading positions,
whereby when a magazine or cassette is being manually inserted through the respective opening, themagazine or cassette pushes the door inward into the loading position and the door is biased to its closed position by torque transmitted to the moveable abutment of the first bias means by the hairspring of the first bias means and all torque from the hairspring of the second bias means is received only by the secondary fixed abutment of the second bias means, and
when the magazine or cassette is being ejected out of the opening, the magazine or cassette pushes the door outward into the unloading position and the door is biased to its closed position by torque transmitted to the moveable abutment of the second bias means by the hairspring of the second bias means and all torque from the hairspring of the first bias means is received only by the secondary fixed abutment of the first bias means.

5,666,253
PROTECTIVE SHIELD FOR ELECTRICAL HOT STICK
Gary L. Whited, Kirkersville; James R. Stillwagon, Worthington, and Randall A. Maxey, Westerville, all of Ohio, assignors to Gary Guard, Inc., Hilliard, Ohio
Filed Jul. 10, 1995, Ser. No. 500,347
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—1 **24 Claims**



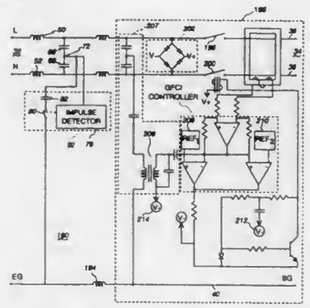
1. A protective shield for mounting on an electrical hot stick including:
a plate formed of a transparent dielectric flame retardant material;
an opening formed in the plate for receiving the hot stick therethrough; and
clamping means for removably mounting the plate to the hot stick.

5,666,254
VOLTAGE SENSING OVERCURRENT PROTECTION CIRCUIT
Brian Thomas, San Francisco, and Hugh Duffy, Cupertino, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Nov. 29, 1995, Ser. No. 564,457
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—8 **12 Claims**



1. An electrical system which can be connected between an electrical power supply and an electrical load to form an operating circuit, and which when so connected protects the circuit from overcurrents, which system comprises:
a. a circuit interruption element which, in the operating circuit, is connected in series between the electrical power supply and the electrical load, and which has
(1) a closed state which permits the flow of a normal current, I_{NORMAL}, through the circuit interruption element, and
(2) an open state which permits the flow of at most a reduced current, substantially less than I_{NORMAL}, through the circuit interruption element;
b. a control element which, in the operating circuit, is connected in parallel with the load, and which has
(1) (i) an on state, when the voltage across the control element is a normal voltage, V_{NORMAL}, and
(ii) is converted to an off state, when the voltage across the control element falls to a value V_{VAULT}, or less, and
(2) is functionally linked to the circuit interruption element so that when the control element is in the on state, the circuit interruption element is in the closed state, and when the control element is in the off state, the circuit interruption element is in the open state; and
c. a bypass element which
(1) is connected in parallel with the circuit interruption element, and
(2) has
(i) a start-up state such that, if the circuit interruption element is in the open state and a current I_{NORMAL} is passed through the bypass element, the voltage across the control element is greater than V_{FAULT}, and
(ii) a stopped state such that if the circuit interruption element is in the open state as a result of the voltage across the control element having fallen to a value V_{FAULT} or less, the current through the bypass element is such that the voltage across the control element remains at a value of V_{FAULT} or less.

5,666,255
TRANSFORMERLESS CONDITIONING OF A POWER DISTRIBUTION SYSTEM
Norman F. Muelleman, Cary, Ill., assignor to Powervar, Inc., Lake Forest, Ill.
Filed Jun. 5, 1995, Ser. No. 461,499
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—111 **23 Claims**



1. An electrically enhanced filter for suppressing transient impulses in a power distribution system having a power line and a neutral line referenced to ground, the filter comprising:
a normal mode filter having an inductor located on the power line and an inductor located on the neutral line between a line and a load of the power distribution system, and a pair of capacitors arranged in series and connected between the power and neutral lines, whereby a midpoint tap is formed between said pair of capacitors;

a common mode filter being formed by said inductor on the power line, said inductor on the neutral line, and an impulse capacitor connected at one end to said midpoint tap and at the other end to ground; and

an electronic trigger comprised of an impulse detector and a switch, said electronic trigger being located between said impulse capacitor and ground, whereby said switch being normally open and being configured to close upon detection of the transient impulse at said midpoint tap so as to attenuate said transient impulse and conduct it to ground.

5,666,256

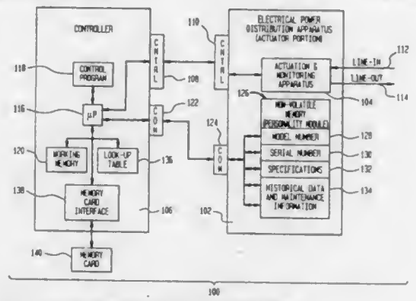
ELECTRICAL POWER DISTRIBUTION SYSTEM APPARATUS-RESIDENT PERSONALITY MEMORY MODULE

Wayne Mitchell Zavis, Cary; Jeffery Cullen Mizener, Raleigh, both of N.C.; James J. Honochick, Ridgeland; Michael Anthony Bellin, Brandon, both of Miss., and Carl J. Laplace, Raleigh, N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Division of Ser. No. 160,696, Dec. 1, 1993, Pat. No. 5,596,263. This application Oct. 4, 1996, Ser. No. 725,722

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—115 **8 Claims**



1. A circuit protection device, comprising:

(a) a power control apparatus including:

(i) a housing;

(ii) controllable connection means for selectively connecting and disconnecting power from an associated portion of an electrical distribution system, mounted in said housing;

(iii) an actuation means also mounted in said housing and operatively coupled to said controllable connection means, said actuation means being responsive to commands provided by an associated controller by way of a first control connection to connect and disconnect power from the associated portion of an electrical distribution system; and

(iv) an electrically reconfigurable memory device, also mounted in said housing, for storing therein operational information relating to said circuit protection device and for supplying said operational information to said associated controller by way of a second communication connection; and

(b) a controller adapted to be associated with said power control apparatus, said controller being:

(i) mounted external to said housing;

(ii) coupled to said actuation means by way of said control connection, for controlling said actuation means to connect and disconnect power from the associated portion of an electrical distribution system, and

(iii) coupled to said memory device by way of said communication connection, for reading and updating operational information stored in said memory device, and

said controller controlling said actuation means based at least in part upon said operational information read from said memory device.

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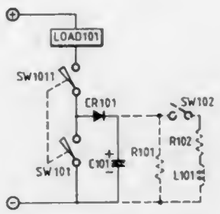
DC CIRCUIT BREAKING SPARK SUPPRESSOR CIRCUIT DEVICE

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Oct. 18, 1994, Ser. No. 324,668

Int. Cl.[6] H01H *9/30*

U.S. Cl. 361—139 **6 Claims**



1. In a DC circuit breaking spark suppressor device, including:

first and second main switch components having sequentially linked contacts for connecting a DC power supply to a main load;

a capacitor connected in parallel with the first switch component to store electricity when said first main switch component is opened, said second switch component being opened after opening of the first main switch component to disconnect the load from the power supply; and

a circuit which includes a discharge resistor for discharging said capacitor after said second switch component has opened,

the improvement wherein:

said discharge circuit includes a discharge switch separate from said main switch components for closing the discharge circuit following opening of said second main switch component, said discharge circuit being maintained in an open state during charging of said capacitor following opening of said first main switch component; and

said discharge circuit includes an inductive load connected in series with said discharge resistor.

5,666,258

MICROMECHANICAL RELAY HAVING A HYBRID DRIVE

Hans-Jürgen Gevatter; Lothar Kiesewetter; Joachim Schimkat, and Helmut Schlaak, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

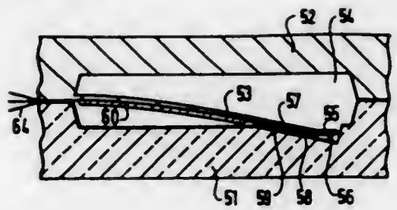
PCT No. PCT/DE94/00152, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/19819, PCT Pub. Date Aug. 1, 1994

PCT Filed Feb. 14, 1994, Ser. No. 505,312

Claims priority, application Germany, Feb. 18, 1993, 43 05 033.6

Int. Cl.[6] H01H *57/00;59/00*

U.S. Cl. 361—207 **7 Claims**



1. A micromechanical relay comprising:

a base substrate which is fitted with a flat base electrode and at least one stationary mating contact piece;

an armature substrate arranged on the base substrate, the armature substrate being composed of a selectively etchable material and from which at least one armature is etched free in the form of a tongue which is attached on one side, the armature being fitted with an armature electrode disposed opposite the base electrode, as well as an armature contact piece disposed opposite the mating contact piece, the armature having an elastically flexible region between its attachment to the armature substrate and the armature contact piece, in such a manner that the armature is attracted toward the base substrate when an electrical voltage is applied between the armature electrode and the base electrode;

a piezo-layer disposed on the armature at said flexible region; and

a plurality of electrical supply leads, the leads being respectively connected to the base substrate, the armature substrate, the electrodes, the contact pieces, and the piezo-layer;

wherein the piezo-layer which acts as a bending transducer providing a bending force, on excitation, which assists an electrostatic attraction force between the base electrode and the armature electrode.

5,666,259

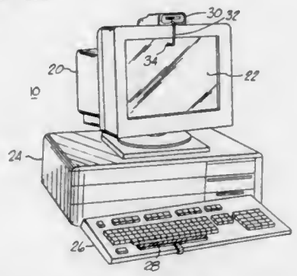
STATIC ELECTRICITY DISSIPATION DEVICE FOR COMPUTERS

Kevin L. Cooter, 4491 Bent Bros. Blvd., Colorado City, Colo. 81019, and Stephen R. Cooter, 42 Carlile Pl., Pueblo, Colo. 81005

Continuation of Ser. No. 419,802, Apr. 11, 1995, abandoned, which is a division of Ser. No. 105,373, Aug. 11, 1993, Pat. No. 5,406,443. This application Dec. 26, 1995, Ser. No. 578,384

Int. Cl.[6] H05F *3/00*

U.S. Cl. 361—212 **4 Claims**



1. A static electricity dissipating system for connection to apparatus comprising a cathode ray tube (CRT) screen for simultaneously, continuously draining electrostatic charge from the screen, from a housing therefor, from manual control means of the apparatus, and from a user of the apparatus, the static electricity dissipating system comprising:

a display/CRT antenna console for mounting on the housing, the display/CRT antenna console comprising an electrically conductive antenna in physical and electrical contact with the screen;

LCD display means for providing a visual indication each time an electrostatic charge on a user is dissipated, the LCD display means having first and second input terminals, the second input terminal being connected to earth, the display/CRT antenna console being electrically connected to the housing;

electrically conductive means provided on the manual control means and electrically connected to the first input terminal of said LCD display means; and

circuit means for electrically connecting the antenna, the display/CRT antenna console, and the housing to earth.

5,666,260

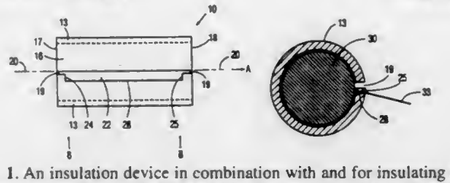
DEVICE AND METHOD FOR INSULATING AN ELECTRICAL COMPONENT

Yury Pasmanik, Glenview, and Bruce E. Blair, Elmhurst, both of Ill., assignors to Philips Electronics North America, New York, N.Y.

Filed Dec. 22, 1995, Ser. No. 575,800

Int. Cl.[6] H02B *1/00*

U.S. Cl. 361—600 **21 Claims**



1. An insulation device in combination with and for insulating a substantially cylindrical capacitive component having leads extending radially from a first end and a second end of the capacitive component, the insulation device comprising:

a cylindrical insulation exterior characterized by a major axis;

a cylindrical hollow interior for receiving and supporting the capacitive component, wherein the cylindrical hollow interior is of a diameter substantially equal to an outer diameter of the cylindrical capacitive component;

a first open end and a second open end; and

a passage disposed along the cylindrical exterior and in spatial communication with the hollow interior through which passageway the leads of the capacitive component extend, said passageway including a first end wall and a second end wall for limiting movement of the leads in directions parallel to the major axis.

5,666,261

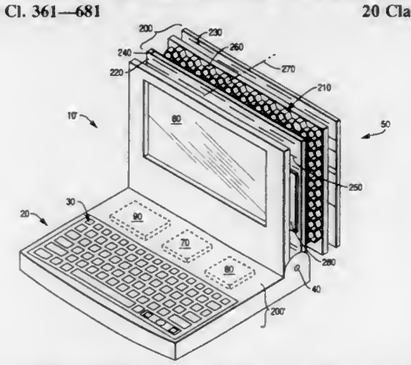
HONEYCOMB CELLED-SHEET LAYER COMPOSITE PANEL FOR MONITORING AN LCD TO A LAPTOP COMPUTER

Rafael E. Aguilera, Simpsonville, S.C., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Sep. 25, 1995, Ser. No. 533,476

Int. Cl.[6] G06F *1/16;* **H05K** *7/02;* **F28F** *7/00;* **B32B** *3/12*

U.S. Cl. 361—681 **20 Claims**



1. A laptop computer having a liquid crystal display (LCD), including:

a composite panel, comprising:

a layer of celled material having spaced-apart first and second surfaces, the second surface being joined to a rear-facing surface of said LCD, said layer defining a plurality of cells having axes substantially normal to said first and second surfaces;

a first sheet layer of substantially rigid material having first and second surfaces, the first surface of said first sheet layer being joined to said first surface of said layer of celled material; and

means for mounting said composite panel to said LCD.

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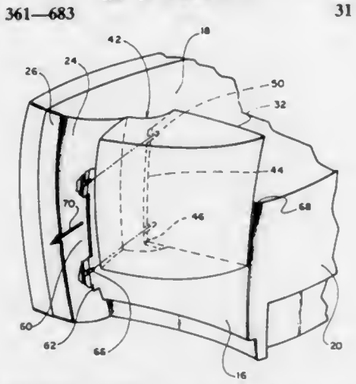
Patent Not Issued For This Number

5,666,263

ATTACHING A SPEAKER TO A COMPUTER COMPONENT

Kevin W. Mundt, Spring; George K. Korinsky, The Woodlands, and William R. Dorr, Houston, all of Tex., assignors to COMPAQ Computer Corporation, Houston, Tex.

Filed Aug. 11, 1995, Ser. No. 514,110
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—683 **31 Claims**



1. An apparatus, comprising:
a monitor including a housing having a bezel surrounding a face of said monitor and a smaller rear enclosure which meets a rear surface of said bezel along a vertical crease;
a speaker; and
a coupling located along said crease and having a projecting element on either said monitor or said speaker and a receiving element on the other of said monitor or said speaker, said projecting element and said receiving element being configured and disposed so that said speaker may be mounted on said monitor by mating said projecting element and said receiving element and lowering said speaker in a direction that is at an angle to vertical.

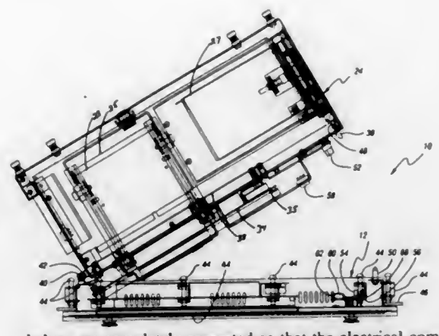
5,666,264

INDUSTRIAL COMPUTER WORKSTATION

Gregory J. Chandler, Saline; Kevin M. Stonebraker, Belleville, and Anthony B. Vink, Plymouth, all of Mich., assignors to Nematron Corporation, Ann Arbor, Mich.

Filed May 13, 1996, Ser. No. 645,234
Int. Cl.[6] G06F *1/16;* **H05K** *7/10*
U.S. Cl. 361—683 **12 Claims**

1. An industrial computer workstation which is relatively easy to maintain and service, the workstation including a front housing having a front display window, at least one input device supported at a front surface of the front housing, a rear housing, electrical components including a computer housed within the rear housing and a display supported within one of the housings, the improvement comprising:
a first connector half electrically connected to the at least one input device and housed within the front housing;
a second connector half coupled to the computer and housed within the rear housing; and
means for allowing relative movement of the front and rear housings between a closed position in which the connector halves electrically mate and the display is aligned with the window for the projection of images through the window and an open position in which the housings and the connector halves are completely separated so that the electrical components including the display are readily accessible for maintenance and service.

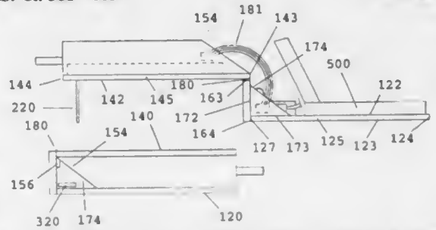


5,666,265

PORTABLE WORKSTATION HOUSING

Ron E Lutz, Box 237, Bragg Creek, Alberta, Canada, T0L 0K0, and Leonard D Healy, 4224-15 St. S.W., Calgary, Alberta, Canada, T2T 4A9

Filed Jun. 21, 1996, Ser. No. 667,409
Int. Cl.[6] H05K *5/00;7/16*
U.S. Cl. 361—683 **14 Claims**



1. A portable workstation housing, for use in storing and operating a portable computer, during travel and during operation, comprising:
(a) a planar base;
(b) a spine, attached at right angles to the base;
(c) a lid, hingably carried by the spine, having two opposed sidewalls and a top surface perpendicular to the sidewalls;
(d) frictional means for maintaining the position of the lid with respect to the base at any angle from 0 to 180 degrees;
(e) positioning means for holding the computer rigidly against the base;
(f) cable organizing means, carried by the housing, for constraining a folded cable to remain in a folded position.

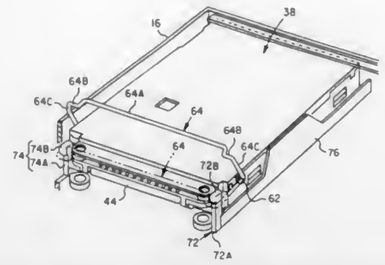
5,666,266

INSTALLATION/REMOVAL STRUCTURE FOR A DEVICE FOR AN INFORMATION PROCESSING APPARATUS

Katsutoshi Katoh, Tokyo-to; Takehiko Noguchi, Yokohama; Tetsuya Ohtani, Yokohama; Michio Suzuki, Yokohama, and Yoshiharu Uchiyama, Isehara, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1994, Ser. No. 277,926
Claims priority, application Japan, Jul. 21, 1993, 5-180396
Int. Cl.[6] G06F *1/16;* **H05K** *7/12*
U.S. Cl. 361—684 **3 Claims**

1. An installation/removal structure for use with a generally rectangular peripheral device which may be temporarily installed within a portable data processing system, said installation/removal structure comprising:



dimensioned to fit into a front portion of the hard drive bay of the system unit without intruding into the conventional space of the hard drive bay reserved to permit a hard drive to be installed into the conventional space of the hard drive bay; and
c) a besel having a plurality of cutouts for covering the audio I/O extension card, while exposing the audio ports at a front panel area of the system unit previously sealing the hard drive bay, the besel being dimensioned in a complementary manner to the audio I/O extension card.

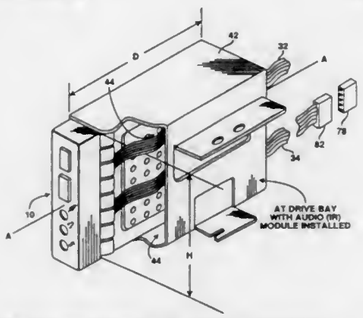
an engagement means provided within an interior portion of said portable data processing system;
an electrical connector disposed within said interior portion of said portable data processing system proximate to said engagement means for electrically engaging said generally rectangular peripheral device with said portable data processing; and
an elongate wire bail swingably mounted across one end of said generally rectangular peripheral device, said elongate wire bail for engaging with said engagement means by swinging to a first position such that said generally rectangular peripheral device is held in electrical engagement with said electrical connector and for disengaging from said engagement means in response to a swinging thereof such that said generally rectangular peripheral device may be removed from said interior portion of said portable data processing system.

5,666,267

FRONT PANEL AUDIO I/O APPARATUS FOR PERSONAL COMPUTER SYSTEMS

Bill W. Carter, Portland, and Scott L. Noble, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1994, Ser. No. 359,280
Int. Cl.[6] H05K *5/00*
U.S. Cl. 361—686 **18 Claims**



1. An audio input/output (I/O) module comprising:
a) an audio I/O extension card having a first audio I/O connector disposed at an inner edge of the audio I/O extension card for exchanging audio I/O signals with a conventional back portion located audio add-in/adapter card of a system unit, embedded circuitry for routing the audio I/O signals from the inner edge to the outer edge of the audio I/O extension card, a plurality of audio ports disposed at the outer edge of the audio I/O extension card for exchanging the audio I/O signals with audio devices external to the system unit, the audio I/O extension card being shaped and dimensioned to coexist with a hard drive in a hard drive bay of the system unit without intruding into a conventional space of the hard drive bay reserved to permit a hard drive to be installed into the conventional space of the hard drive bay;
b) a mounting bracket for mounting the audio I/O extension card to the hard drive bay, the mounting bracket being shaped and

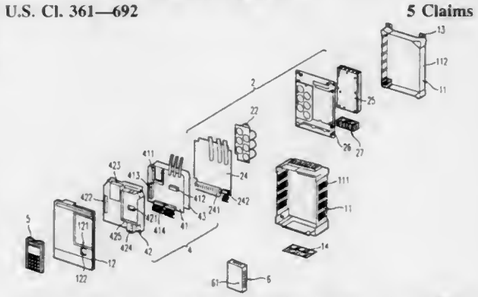
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5,666,268

ELECTRONIC VARIABLE SPEED DRIVE HAVING A PROTECTIVE COVER BETWEEN AN OPENING DOOR AND ELECTRONIC CONTROL AND POWER SYSTEMS

Philippe Rix, Paris; Ghislaine Mercier, Montesson; Jacques Cerri, Chapet, and Philippe Mansuy, Cergy, all of France, assignors to Schneider Electric S.A., Boulogne-Billancourt, France

Continuation of Ser. No. 361,588, Dec. 22, 1994, abandoned.
This application Aug. 13, 1996, Ser. No. 696,191
Claims priority, application France, Dec. 22, 1993, 93 15622
Int. Cl.[6] H02B *1/04*
U.S. Cl. 361—692 **5 Claims**



1. In an electronic variable speed drive including, in a cabinet having an opening door, a power system supplied with power from an AC line voltage and delivering a voltage under the control of solid state power switches and an electronic control system controlling said solid state switches, the improvement comprising:
a window located in said opening door and receiving a dialog box;
a protective cover located between said opening door and said electronic control system and power system and provided with means connecting said dialog box to said electronic system and with means holding said dialog box; and
wherein said protective cover includes window means for receiving a PCMCIA card.

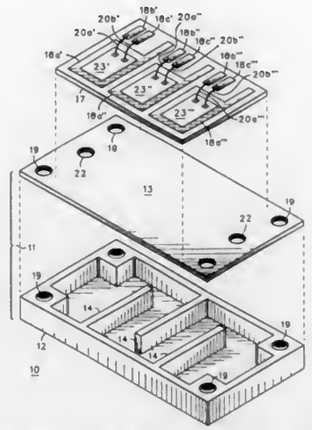
5,666,269

METAL MATRIX COMPOSITE POWER DISSIPATION APPARATUS

Guillermo L. Romero, Phoenix; Samuel J. Anderson, and Brent W. Pinder, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 513,315, Aug. 19, 1996, abandoned, which is a continuation of Ser. No. 176,598, Jan. 3, 1994, abandoned. This application Oct. 28, 1996, Ser. No. 741,576
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—699 **11 Claims**

1. A power dissipation apparatus comprising:
a metal matrix composite liquid cooled heatsink structure comprising a base and a lid;
an electrical isolation material positioned on and directly bonded to the metal matrix composite liquid cooled heatsink structure, the electrical isolation material having a first major surface, a second major surface, and a layer of conductive



material disposed on the first major surface, wherein the second major surface contacts the metal matrix composite liquid cooled heatsink structure, and wherein the electrical isolation material is integral with the metal matrix composite liquid cooled heatsink structure and non-solder boned to the metal matrix composite material via a metal of the metal matrix composite liquid cooled heatsink structure which metal infiltrates said heatsink structure; and

an electronic circuit positioned on the layer of conductive material disposed on the electrical isolation material.

5,666,270

BUMP ELECTRODE, SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING THE SAME, MULTI-CHIP MODULE HAVING THE SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES AND METHOD FOR PRODUCING SEMICONDUTCOR DEVICE HAVING THE BUMP ELECTRODE

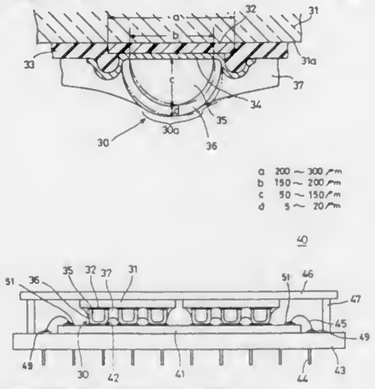
Tatsuharu Matsuda, and Masaharu Minamizawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1994, Ser. No. 280,327

Claims priority, application Japan, Oct. 18, 1993, 5-260057

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **20 Claims**



1. A semiconductor device, comprising:

at least one chip upon which a prior art bump electrode arrangement is formed;

an electrode pad on top of each said at least one chip;

an intermediate layer on top of each said electrode pad;

a bump electrode on top of each said intermediate layer;

a circuit board having electrode pads and electrodes, each electrode pad of said circuit board in contact with a respective bump electrode on top of each said intermediate layer;

a package base supporting said circuit board, said package base having pads and terminals, said terminals connected to respective pads of said package base; and

connecting members electrically connecting respective electrodes of said circuit board to respective pads of said package base,

each bump electrode on top of each said intermediate layer comprising:

a core portion comprising a resin having a Young's modulus less than that of solder having a first substantially flat mounting surface for connecting to said intermediate layer, and a second surface, integral with and protruding from the first surface;

an electrically conductive film covering said second surface and having a connection portion; and

a protection film, of an insulating material, which partially covers said electrically conductive film of each of said bump electrode with the connection portion of said electrically conductive film exposed, said connection portion for making contact with a respective electrode pad of said circuit board.

5,666,271

RACK FOR A COMMUNICATION SYSTEM

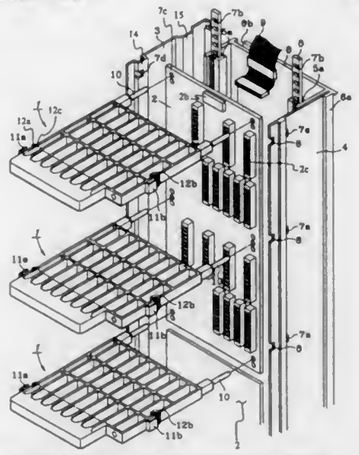
Tae-Ryong Kim; Yong-Sang Ahn, and Chel-Hee Lee, all of Gumi, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 19, 1996, Ser. No. 718,189

Claims priority, application Rep. of Korea, Sep. 19, 1995, 30736/1995

Int. Cl.[6] H05K *7/16;1/14*

U.S. Cl. 361—726 **20 Claims**



1. A rack for a communication system, comprising:

a backboard having a first side, a second side, and a connector connectable to an electrical communication cable, said backboard perforated with a plurality of aligned and spaced-apart guide apertures exhibiting a center-to-center spacing;

a first side panel having an open slot and a closed slot, said first side panel being spaced-apart from said first side of said backboard

a second side panel having a grooved slot, said second side panel being spaced-apart from said second side of said backboard;

a rear panel having a first flange detaining said first side panel, a second flange detaining said second side panel, and first and second longitudinal detaining units, first and second strips each bearing a column of discrete guide holes exhibiting said center-to-center spacing,

said first and second longitudinal detaining units located at sides of said rear panel, each of the strips being insertable into different ones of said detaining units; and

a plurality of guide plates, each of said guide plates having a rear and a plurality of guide pins projecting outwardly from said rear within planes defined by corresponding ones of said plates,

said guide plates being connected to said first side panel, said second side panel, said backboard, and said rear panel,

said guide pins passing through said guide apertures of said backboard and tightly fitting into said guide holes of corresponding ones of the strips, said strips being detained in corresponding ones of said longitudinal detaining units of said rear panel, attaching said rear panel to said backboard, and

said guide pins detaining said backboard while maintaining mutual separation among said guide plates.

5,666,272

DETACHABLE MODULE/BALL GRID ARRAY PACKAGE

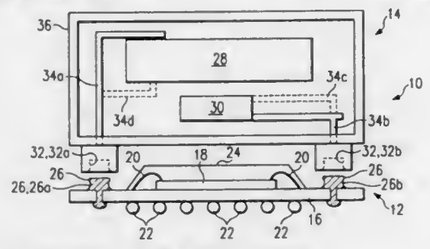
Dale Thomas Moore, Plano; Frank Sigmund, Coppell, and Fred Chevreton, Carrollton, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 346,411, Nov. 29, 1994, abandoned.

This application Jun. 3, 1996, Ser. No. 656,700

Int. Cl.[6] H05K *7/02;1/11;* **H01R** *9/09*

U.S. Cl. 361—735 **36 Claims**



1. An integrated circuit package comprising:

an upper module comprising:

a housing;

a data acquisition component disposed within said housing for acquiring environmental data; and

upper module connection circuitry for providing electrical connections to said data acquisition component; and

a lower module comprising:

a substrate;

an array of connectors on a surface of said substrate, to provide physical and electrical connections between said lower module and a circuit board when soldered to said circuit board;

a processing circuit coupled to said substrate; and

lower module connection circuitry electrically coupled to said processing circuit for providing detachable connections with said upper module connection circuitry, such that said processing circuitry can process the environmental data.

5,666,273

RECEPTACLE FOR PIVOTING A COMMUNICATION DEVICE

Robert Kurcbart, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 549,896

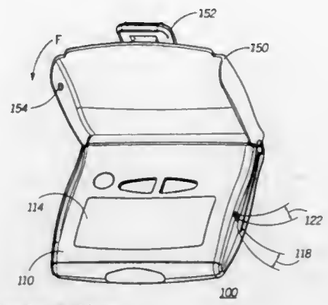
Int. Cl.[6] H04B *1/03*

U.S. Cl. 361—814 **11 Claims**

1. A communication device having a display and a receptacle, comprising in combination:

a clip for searing the receptacle to a user;

a breakaway lock;



a non-breakaway hinge;

a track having a first depth; and

a slidably coupling comprising the breakaway lock and the non-breakaway hinge coupled with the track for removing and replacing the communication device from the receptacle;

the breakaway lock comprising:

a tab; and

a groove having a second depth less than the first depth for disengaging the communication device from the receptacle at the breakaway lock;

the non-breakaway hinge forms a rotatable coupling for pivoting the communication device within the receptacle, the non-breakaway hinge, comprising:

a rail; and

a geometric groove terminating the track;

wherein the rail and the geometric groove allow the communication device to be pivoted at the non-breakaway hinge when the breakaway lock is disengaged while securing the communication device within the receptacle when the communication device is being pivoted and releasing the communication device to be slidably removed when the breakaway lock is engaged with the communication device.

5,666,274

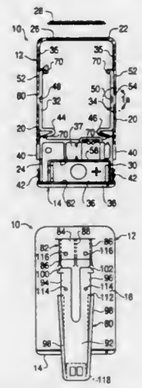
RAPID ASSEMBLY PORTABLE ELECTRONIC DEVICE AND CLIP

Steven J. Corso, Pompano Beach, Fla., assignor to JTECH Inc., Boca Raton, Fla.

Filed Feb. 8, 1996, Ser. No. 598,271

Int. Cl.[6] H04B *1/03*

U.S. Cl. 361—814 **21 Claims**



1. A portable electronic device comprising:

a housing defining an opening;

a chassis sized to fit in said housing and to pass through said opening;

means defined on said chassis for receiving a battery;

first means for releasably retaining said chassis in a first position in said housing, said battery receiving means being positioned in said housing in said first position,

second means for retaining said chassis in a second position, said battery receiving means being positioned outside said housing when said chassis is in said second position; and

electrical circuit means mounted on said chassis,

wherein said chassis is movable between said first and second positions.

5,666,275

CONTROL SYSTEM FOR POWER CONVERSION SYSTEM

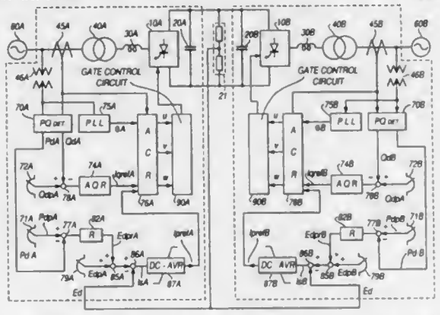
Haruhisa Inokuchi; Noriko Kawakami, both of Tokyo; Hirokazu Suzuki, Kanagawa; Ken-Ichi Suzuki, and Koji Sakamoto, both of Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Tokyo Electron Power Company Incorporated, Tokyo, both of Japan

Filed Aug. 23, 1996, Ser. No. 701,986

Claims priority, application Japan, Sep. 5, 1995, 7-227892

Int. Cl.[6] H02M *3/36;* **G05F** *1/70*

U.S. Cl. 363—35 **8 Claims**



1. A control system for a power conversion system composed of a plurality of power converters, each of which is composed of a plurality of semiconductor switching devices, converts AC power into DC power or DC power into AC power, is connected between one of a plurality of AC power systems and a DC line to exchange an electric power between one of said AC power systems and said DC line, respectively, said control system being composed of a plurality of control means, each of which is provided for one of said power converters, respectively, each of said control means comprising:

means for detecting an AC current flowing between said AC power system and said power converter;

means for detecting an AC voltage of said AC power system;

means for detecting a DC voltage of said power converter;

means for detecting an active power and a reactive power exchanged between said power converter and said AC power system based on said AC current and said AC voltage;

active power control means for generating an active current command so that said DC voltage drops with the increase of one of said active power and a DC current flowing between said DC line and said power converter;

means for setting a reactive power reference for exchanging between said power converter and said AC power system;

reactive power control means for comparing said reactive difference and for generating a reactive current command so as to bring said reactive power difference close to zero;

current control means for generating a plurality of output voltage commands so as to coincide said AC current to said active current command and reactive current command based on said AC current, said AC voltage, said active current command and said reactive current command; and

gate control means for switching said semiconductor switching devices in said power converter based on said output voltage commands.

5,666,276

POWER SUPPLY CIRCUIT FOR SELECTIVELY SUPPLYING NORMAL READ VOLTAGE AND HIGH VOLTAGE TO SEMICONDUCTOR MEMORY

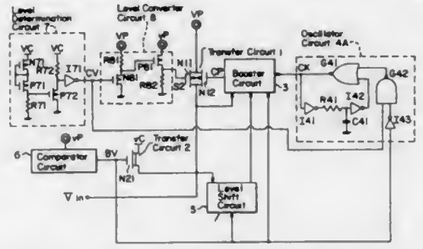
Masayoshi Hirata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,964

Claims priority, application Japan, Feb. 28, 1994, 6-030670

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—60 **9 Claims**



1. A power supply circuit comprising a first transfer circuit provided between a first power supply terminal and a supply voltage output terminal; a second transfer circuit provided between a second power supply terminal and said supply voltage output terminal, said second transfer circuit, when being activated, forming an electrical path between said second power supply terminal and said supply voltage output terminal to transfer a voltage at said second power supply terminal to said supply voltage output terminal and, when being deactivated, disconnecting said second power supply terminal from said supply voltage output terminal to prevent the voltage at said second power supply terminal from being transferred to said supply voltage output terminal; a first control means for making said first transfer circuit nonconductive when a first supply voltage is applied to said first power supply terminal and a second supply voltage higher than said first supply voltage is applied to said second power supply terminal; and a second control means for activating said second transfer circuit when said first and second supply voltages are applied respectively to said first and second power supply terminals and for deactivating said second transfer circuit when said first supply voltage is not applied to said first power supply terminal and second supply voltage is applied to said second power supply terminal.

5,666,277

SERIES-COMPENSATED CONVERTER STATION

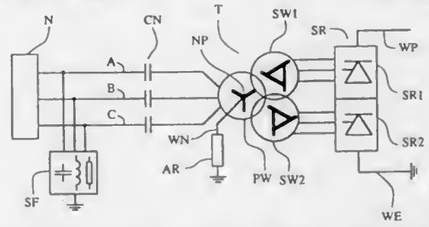
Per-Erik Björklund, Bjursås; Tommy Holmgren, Ludvika; Tomas Jonsson, Grängesberg, and Urban Åström, Saxdalen, all of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Filed Sep. 11, 1995, Ser. No. 526,652

Claims priority, application Sweden, Sep. 23, 1994, 9403209

Int. Cl.[6] H02M *7/02;* **G05F** *1/70*

U.S. Cl. 363—64 **12 Claims**



1. A series-compensated converter station in an installation for transmission of high-voltage direct current, for connection to an alternating-voltage network (N) with three phases (A, B, C, respectively), comprising at least two direct-voltage series-connected

six-pulse converter bridges (SR1, SR2, respectively), a three-phase transformer coupling with two secondary windings (SR1, SR2, respectively), and a star-connected primary winding (PW) with a neutral point (NP) connected to ground, a series capacitor unit (CN) for each one of the three phases, each one of the converter bridges being connected to a respective secondary winding, characterized in that the primary winding is connected to the alternating-voltage network via the series-capacitor units, that both of the secondary windings are connected in an extended delta connection and that the neutral point is connected to ground via a circuit element (AR) which exhibits a high impedance to zero-sequence currents through the primary winding of the transformer coupling.

5,666,278

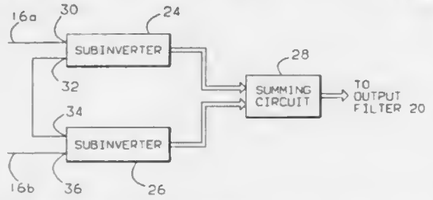
HIGH VOLTAGE INVERTER UTILIZING LOW VOLTAGE POWER SWITCHES

Chai-Nam Ng; P. John Dhyanchand, and Vietson M. Nguyen, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation-in-part of Ser. No. 981,043, Nov. 24, 1992, abandoned. This application Sep. 1, 1994, Ser. No. 299,730

Int. Cl.[6] H02M *7/00*

U.S. Cl. 363—71 **13 Claims**



1. An electrical system, comprising:

first and second subinverters each having inputs connected in series with the inputs of the other subinverter across a DC voltage and each further having a switch coupled to an output;

a summing transformer having a first primary winding connected in a wye configuration coupled to the output of the first subinverter, a second primary winding connected in a delta configuration coupled to the output of the second subinverter and a secondary winding, and a secondary winding having a plurality of phase outputs;

means coupled to the subinverters for operating the switches such that a summed AC waveform is produced at the secondary winding of the summing transformer and wherein each switch is subjected to a portion of the DC voltage; and

a load coupled between two of said secondary winding phase outputs.

5,666,279

VOLTAGE RESONANCE INVERTER CIRCUIT FOR DIMABLE COLD CATHODE TUBES

Takao Takehara, Iwata-gun, and Shingo Okada, Saijou, both of Japan, assignors to Minebea Co., Ltd., Kitasaku-gun, Japan

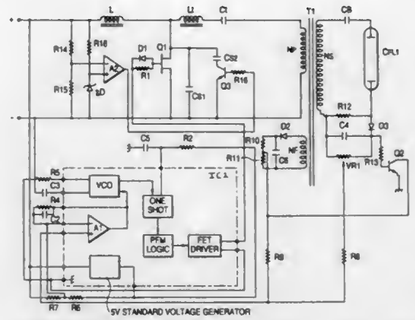
Filed Nov. 22, 1995, Ser. No. 562,178

Claims priority, application Japan, Nov. 24, 1994, 6-314156

Int. Cl.[6] H02M *7/539*

U.S. Cl. 363—95 **4 Claims**

1. A voltage resonance inverter circuit having a serial resonance circuit provided at a primary side of a booster transformer, a controller circuit for turning on and off the serial resonance circuit by conducting a switching element at the timing of phase advanced from the resonance frequency of the serial resonance circuit, and a load provided at a secondary side of the booster transformer, comprising:



a comparator for detecting an input voltage of the voltage resonance inverter circuit;

a switch circuit for switching the frequency of the resonance circuit; and

a controlling means for shifting a resonance frequency of the resonance circuit to a higher rate when the input voltage is higher.

5,666,280

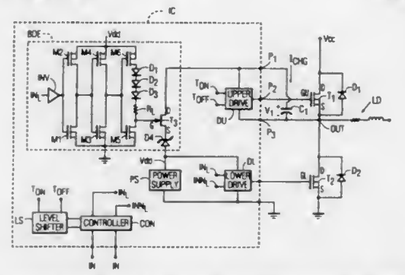
HIGH VOLTAGE INTEGRATED CIRCUIT DRIVER FOR HALF-BRIDGE CIRCUIT EMPLOYING A JET TO EMULATE A BOOTSTRAP DIODE

Anand Janaswamy, Sunnyvale; Rajsekhar Jayaraman, Rancho Palos Verdes, both of Calif.; Michael Amato, Albuquerque, N. Mex., and Paul R. Veldman, Oss, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 275,569, Jul. 15, 1994, Pat. No. 5,502,632, which is a continuation-in-part of Ser. No. 155,053, Nov. 19, 1993, Pat. No. 5,373,435, which is a continuation of Ser. No. 160,176, May 7, 1993, abandoned. This application Dec. 27, 1995, Ser. No. 579,654

Int. Cl.[6] H02M *3/24;3/335*

U.S. Cl. 363—98 **7 Claims**



1. A circuit for driving a half-bridge formed by lower and upper power transistors connected between an output terminal and respective lower and upper rails of a high voltage DC supply, and for charging a bootstrap capacitor having first and second ends, the first end being connected to said output terminal, said circuit comprising:

means for generating lower and upper drive command signals for commanding driving said respective lower and upper power transistors to non-contemporaneous conducting states;

power supply means for generating at a power supply output a relatively low control voltage with respect to said lower rail;

a lower drive module connected to the power supply output for being powered by said relatively low control voltage and comprising means for applying a lower drive control signal between a control electrode of the lower power transistor and the lower rail in response to said lower drive command signal;

an upper drive module adapted to be connected to the first end of the bootstrap capacitor for being powered by a bootstrap voltage across said bootstrap capacitor and comprising means for applying an upper transistor control signal between a control electrode of the upper power transistor and the output terminal in response to said upper drive input control signal; and

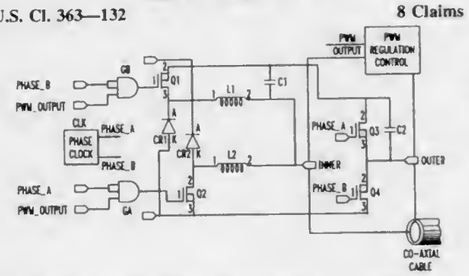
bootstrap diode emulator means for charging said bootstrap capacitor to said bootstrap voltage, said bootstrap diode emulator means comprising a JFET transistor having a source electrode coupled to said power supply output, a drain electrode adapted to be connected to the second end of the bootstrap capacitor, a gate electrode coupled to a further control signal derived from said lower drive command signal for driving said JFET transistor to a conducting state when the lower power transistor is driven to a conducting state.

5,666,281

BATTERY POLARITY SWITCH FOR APPLYING POWER TO A CO-AXIAL CABLE AND INCORPORATING REGULATION

Yehoshua Mandelcorn, Dallas, Tex., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 22, 1995, Ser. No. 493,398
Int. Cl.[6] H02M *7/537*
U.S. Cl. 363—132 **8 Claims**



8. A voltage polarity switch for converting a DC voltage to a low frequency AC voltage comprising:

an input having terminals for accepting positive and negative polarities of a DC voltage, respectively;

an inner and an outer output for coupling to an inner and an outer member of a co-axial cable, respectively;

a first, a second, a third and a fourth power switching device, wherein the first and the third switches each have a main conduction path connected to a first polarity of the DC voltage and the second and the fourth switches each have a main conduction path connected to a second polarity of the DC voltage, further wherein the first and the second power switching devices each have their main conduction path connected to the inner output and the third and the fourth power switching devices each have theirmain conduction path connected to the outer output;

a first clamping diode connected between the first power switching device and the negative polarity input terminal and a second clamping diode connected between the second power switching device and a positive polarity input terminal;

a first and a second inductor connected to the first and the second power switching devices, respectively, for preventing cross conduction therebetween; and

means for regulating a voltage difference between the inner and the outer member of the co-axial cable, including:

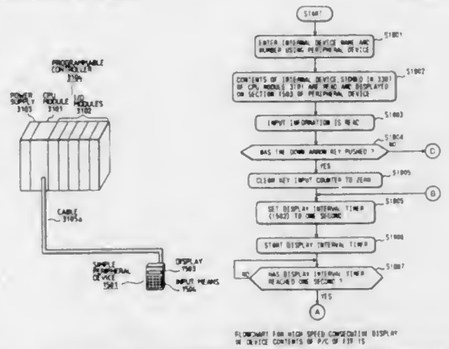
means for applying a PWM regulation signal to the second and the third power switching devices during a PHASE-A interval and to the first and the fourth power switching devices during a PHASE-B interval.

5,666,282

PROGRAMMABLE CONTROLLER AND METHODS OF SETTING AND DISPLAYING ITS INTERNAL INFORMATION

Shinzi Itami, and Takeshi Ando, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, and Mitsubishi Electric Engineering Co., Ltd., Nagoya, both of Japan

Continuation of Ser. No. 442,509, May 16, 1995, abandoned, which is a division of Ser. No. 200,010, Feb. 22, 1994, Pat. No. 5,471,380. This application Sep. 3, 1996, Ser. No. 707,911
Claims priority, application Japan, Mar. 31, 1993, 5-074196
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—146 **4 Claims**



1. A programmable controller including internal information storage means for storing predetermined internal information relating to a plurality of devices that each have an address, said programmable controller being equipped with a programmable controller unit and a peripheral device operating under the control of a sequence program, said programmable controller comprising:

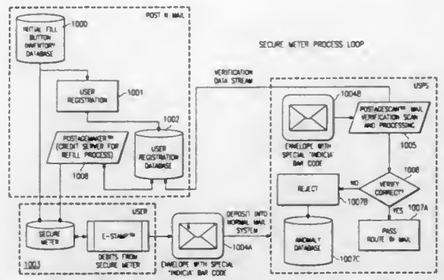
timing means;

input means; and

display means for reading and displaying sequentially and individually the information relating to said devices stored in said internal information storage means by sequentially changing read addresses that correspond to said devices at a first predetermined interval for a first predetermined number of read addresses and at a second predetermined interval for said read addresses following said first predetermined number of read addresses based on the timing output of said timing means according to a predetermined directive entered from said input means.

5,666,283

Patent Not Issued For This Number



therein to provide data communication between said coupled portable memory device and said processor-based system;

producing a data packet as a function of said other data and information stored in said coupled portable memory device; and

verifying the authenticity of said data packet by comparing data contained in said data packet to data stored in said data base with respect to said portable memory device coupled to said processor-based system when said data packet was produced, said verifying occurring when said data packet is separate from said portable memory and from said processor-based system.

5,666,285

Patent Not Issued For This Number

5,666,284

SYSTEM AND METHOD FOR STORING, RETRIEVING AND AUTOMATICALLY PRINTING POSTAGE ON MAIL

Salim G. Kara, Houston, Tex., assignor to E-Stamp Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 263,751, Jun. 22, 1994, Pat. No. 5,606,507, which is a continuation-in-part of Ser. No. 176,716, Jan. 3, 1994, Pat. No. 5,510,992. This application Jun. 7, 1995, Ser. No. 480,305
Int. Cl.[6] G07B *17/02*
U.S. Cl. 705—402 **15 Claims**

1. A method for authenticating a packet of data, said data being generated in part by interaction with a particular one of a plurality of portable memory devices and said data packet being used to grant a privilege to a user, said method comprising the steps of:

establishing a pool of said portable memory devices for use by any one of a number of said users, each said device having a unique identification number incorporated therein;

assigning a portable memory device to a particular user;

said assigning step including the step of recording in a data base separate from said device the unique identification number of said device assigned to said particular user;

coupling said portable memory device assigned to a particular user to a processor-based system having other data stored

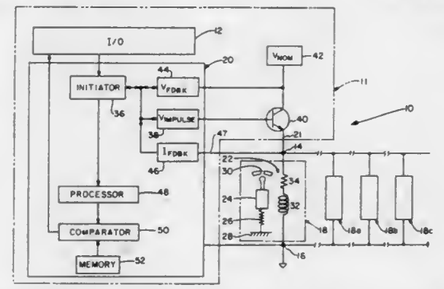
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5,666,286

DEVICE AND METHOD FOR IDENTIFYING A NUMBER OF INDUCTIVE LOADS IN PARALLEL

Geraldo Nojima, Duluth, and Timothy P. Near, Alpharetta, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Oct. 10, 1995, Ser. No. 541,609
Int. Cl.[6] H01F *7/18;* **G01R** *27/26*
U.S. Cl. 364—481 **16 Claims**



1. A device for determining the number of inductive loads connected thereto, comprising:

an input/output unit;

a first terminal and a second terminal adapted to receive any number of inductive loads therebetween, wherein a value of inductance for each inductive load is substantially equivalent; and

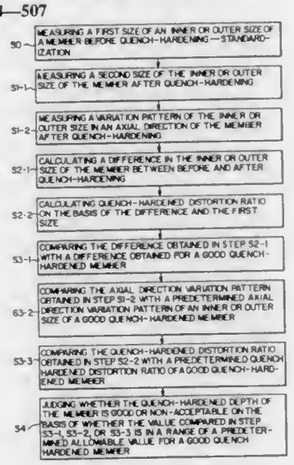
a computer connected to said input/output unit, wherein said computer determines the number of inductive loads connected between said first and second terminals by applying an initial current and comparing a response of the any number of inductive loads to predetermined responses associated with known numbers of inductive loads.

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5,666,287
QUENCH-HARDENING TESTING METHOD AND APPARATUS

Kyozaburo Furumura, and Masayuki Kobayashi, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 12,771, Feb. 3, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 370,812
Claims priority, application Japan, Feb. 7, 1992, 4-022757
Int. Cl.[6] C21D *1/55*
U.S. Cl. 364—507 **6 Claims**



3. A method of testing quench-hardening, comprising the steps of:

measuring a first size of an annular member before a quench-hardening treatment with respect to at least one of an inner and outer surface of said member;

measuring a second size of said member after a quench-hardening treatment of said at least one of an inner and outer surface of said member;

first calculating a difference between said first size and said second size;

second calculating a quench-hardened distortion ratio by dividing said difference by said first size of said member; and

judging the state of quench-hardening in said member by deciding whether the calculated distortion ratio of said member is within a predetermined range of a distortion ratio of a good quench-hardened member.

5,666,288
METHOD AND APPARATUS FOR DESIGNING AN INTEGRATED CIRCUIT

Larry G. Jones; David T. Blaauw; Robert L. Maziasz, and Mohan Guruswamy, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 21, 1995, Ser. No. 426,211
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **40 Claims**

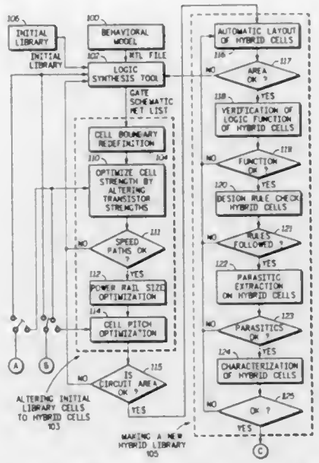
1. A method for generating an integrated circuit file, the method comprising the steps of:

providing a predetermined library containing a predetermined plurality of logic cells;

providing a behavior model which comprises a logical description of the functionality of the integrated circuit;

using the behavior model and the predetermined library to generate a gate schematic net list of the integrated circuit where the gate schematic net list contains various logic cells from the predetermined library;

altering the various logic cells in size to create hybrid logic gates in order to optimize the gate schematic net list; and

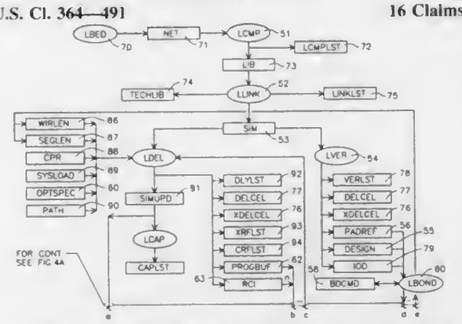


creating a new library of hybrid logic cells from the gate schematic net list and using these new hybrid logic cells to generate the integrated circuit file in accordance with the gate schematic net list.

5,666,289
FLEXIBLE DESIGN SYSTEM

Daniel R. Watkins, Los Altos, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 957,672, Oct. 7, 1992, abandoned. This application Nov. 23, 1992, Ser. No. 980,492
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **16 Claims**



9. An apparatus for designing an integrated circuit having at least two semiconductor dice, said apparatus comprising:

(a) computer means for designing an integrated circuit comprising at least two semiconductor dice, said at least two dice being comprised of a plurality of functional blocks;

(b) computer means for determining locations for the plurality of functional blocks upon the at least two dice;

(c) computer means for establishing available space for the plurality of functional blocks, a number of connections therebetween, and an area thereof;

(d) computer means for determining a routability percentage and a feasibility percentage for each of the plurality of functional blocks upon the at least two dice;

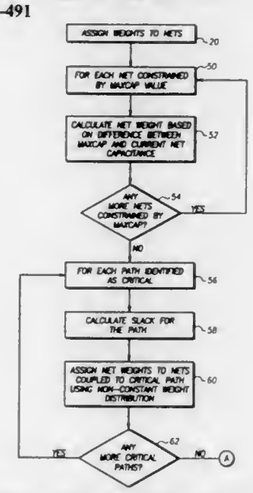
(e) computer means for redetermining a routability percentage and a feasibility percentage for each of the plurality of functional blocks if one of the plurality of functional blocks is moved from one of the at least two dice to another of the at least two dice; and

(f) means for providing design information for the at least two dice if the routability percentages and the feasibility percentages are acceptable.

5,666,290
INTERACTIVE TIME-DRIVEN METHOD OF COMPONENT PLACEMENT THAT MORE DIRECTLY CONSTRAINS CRITICAL PATHS USING NET-BASED CONSTRAINTS

Ying-Meng Li, and Sunil Ashtaputre, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 27, 1995, Ser. No. 579,381
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **22 Claims**



22. A method for optimizing the placement of components of an integrated circuit comprising the steps of:

identifying at least one path of segments including components coupled by nets on said integrated circuit as critical;

assigning weight values to the nets which form part of the segments of said critical path, wherein:

said weight values are non-constant;

said weight values are assigned based in part upon the location of the segment in the critical path of which each net is a part; and

applying a mincut method to find a placement of said components that minimizes the total weight of the nets that cross cut lines.

5,666,291
DEVICE FOR INTERFACING A CD-ROM PLAYER TO AN ENTERTAINMENT OR INFORMATION NETWORK AND A NETWORK INCLUDING SUCH DEVICE

Ed Scott, Anaheim Hills; Richard Sagey, Laguna Niguel; Marc Booth, La Habra, and Pierre Schuberth, Corona Del Mar, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.

Filed Jun. 2, 1994, Ser. No. 252,839
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—200.8 **5 Claims**

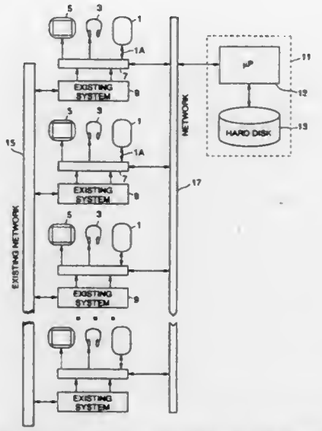
1. A communication system, including:

a local area network;

a file server connected along the local area network;

a first user station having a first interface means connected along the local area network, the first user station also including a first CD-ROM player connected to the first interface means, wherein the first interface means includes means for interfacing the first CD-ROM player with the local area network, thereby enabling communication over the local area network between the file server and said first CD-ROM player; and

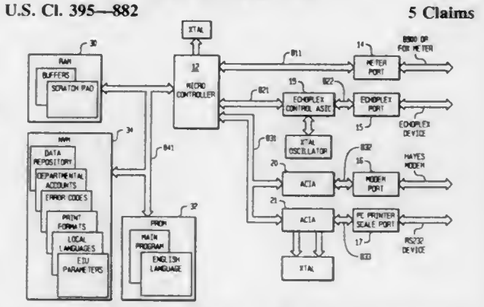
a second user station having a second interface means connected along the local area network, the second user station also including a second CD-ROM player connected to the second interface means, wherein the second interface means includes means for interfacing the second CD-ROM player with the local area network, thereby enabling communication over the local area network between the file server and said second CD-ROM player, wherein the local area network, the file server, the first user station, and the second user station are installed in a passenger vehicle.



5,666,292
EXTERNAL INTERFACE UNIT HAVING MESSAGE ROUTING AND PROTOCOL CONVERSION

Kevin D. Hunter, Stratford, and Perry A. Pierce, Darien, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 13, 1994, Ser. No. 357,174
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—882 **5 Claims**



1. An interface apparatus having a plurality of communication ports for providing a communication interface between a principal device and a plurality of second devices for the transfer of messages, the interface apparatus comprising:

a principal communications port connectable to said principal device;

a plurality of second communication ports, each of said second communication ports having means for receiving and transmitting messages in accordance with specific protocol signals designated for said respective port;

program means including a programmable microcontroller in bus communication with a random access memory, a non-volatile memory and a program memory, a first communica-

tion bus connecting said principal port to said microcontroller and a second communication bus connecting one or more of said second communication ports to said microcontroller;

said program means for establishing a communication link between one of said second communication ports and said principal port pursuant to a communication request signal from said principal port or one of said second communication ports, and for receiving said protocol signal inclusive of said messages from said second communication port and directing said messages to said principal device and conversely for receiving messages from said principal device and directing said messages in corresponding protocol to said one of said second communication ports;

said messages having a plurality of message frames and each of said message frames having a header, one of said headers being designated for messages frames which are intended to be directed to said interface apparatus,

said program means further having means for reviewing said header portion of said messages frame and stripping said messages frame from said messages having said designated message frame header, means for maintaining said communication link until a message having said designated message frame header is received, wherein said message frame instructs said program means to terminate communication, and means for interrupting said established communication link when said message having said designated message frame header is received, wherein said message frame instructs said program means to establish communication between said program means and said one of said second communication ports;

said message frames having said designated message frame header containing control instruction for said program means.

5,666,294

REPORT PROCESSING DEVICE

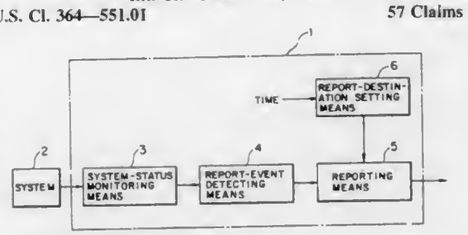
Kyoichi Takada, Kawasaki, and Kazuo Takeshima, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 22, 1994, Ser. No. 346,283

Claims priority, application Japan, Jan. 31, 1994, 6-009632

Int. Cl.[6] G06F *11/30;11/34*

U.S. Cl. 364—551.01 **57 Claims**



1. A report processing device comprising:

system status monitoring means for monitoring a status of a system;

report-event detecting means for detecting an occurrence of an event to be reported, according to the monitor information from said system status monitoring means;

reporting means for performing reporting to a predetermined report-destination according to the detection information from said report-event detecting means; and

report-destination setting means for selecting the predetermined report-destination in accordance with time and then for setting it to said reporting means.

5,666,295

APPARATUS AND METHOD FOR DYNAMIC WEIGHING OF LOADS IN HYDRAULICALLY OPERATED LIFTS

Robert W. Bruns, Sacramento, Calif., assignor to Sentek Products, Rancho Cordova, Calif.

Filed Jan. 5, 1996, Ser. No. 583,283

Int. Cl.[6] G01G *19/14*

U.S. Cl. 364—567 **29 Claims**

1. A lifting device, comprising:

a frame;

a load bearing member operationally connected to said frame for movement relative thereto;

a hollow cylinder housing a piston and hydraulic fluid, said piston operationally connected to said load bearing member,

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5,666,293

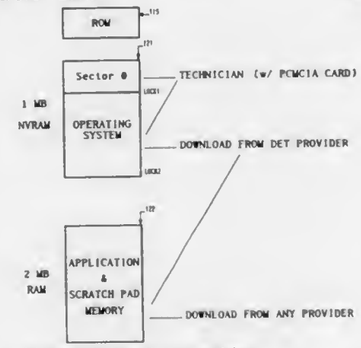
DOWNLOADING OPERATING SYSTEM SOFTWARE THROUGH A BROADCAST CHANNEL

Erik C. Metz, Bowie; Henry G. Hudson, Jr., Annapolis, both of Md., and John W. Darr, Jr., Great Falls, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 380,755, Jan. 31, 1995, and Ser. No. 250,791, May 27, 1994. This application Jul. 3, 1995, Ser. No. 498,265

Int. Cl.[6] H04H *1/00*

U.S. Cl. 395—200.5 **45 Claims**



1. A set-top terminal device comprising:

a network interface module adapted to couple the terminal to a communication network for receiving at least selected ones of a plurality of broadcast digital broadband channels at least one of which carries audio/video program information in compressed, digital form in packets of a standardized format and at least one of which carries cyclically repetitive transmissions of operating system software in packets of the standardized format, wherein said network interface module receives an Asynchronous Transfer Mode (ATM) cell stream and extracts packets of the standardized format from payloads of ATM cells; and

a digital entertainment terminal comprising:

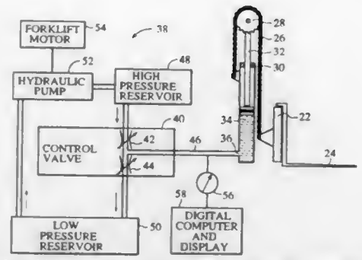
(a) an audio/video processor responsive to at least some of the packets extracted by the network interface module for processing the compressed, digital audio/video program information;

(b) a memory;

(c) means for receiving inputs from a user; and

(d) a control processor controlling operations of the set-top terminal;

wherein said control processor captures said operating system software from at least some of the packets extracted by the network interface module for one of the selected digital broadband channels within a transmission cycle, loads the captured operating system software into the memory and begins operation in accord with the operating system software loaded into the memory, said control processor controlling the network interface module and the audio/video processor in response to the user inputs in accord with the operating system software loaded in said memory.



with said hydraulic fluid disposed between said piston and one end of said housing, said piston imparting a force upon said fluid proportional to a weight associated with said load bearing member;

transducer means, in fluid communication with said hydraulic fluid, for measuring a pressure of said hydraulic fluid for a period of time and creating electrical signals corresponding thereto, defining a sequence of pressure measurements, with said pressure being related to said force;

accelerometer means, in data communication with said transducer means, for identifying from said sequence of pressure measurements, a point in said sequence at which an acceleration of said load bearing member has ceased, with the pressure measurements associated with said sequence and following said point defining a remaining sequence;

processing means, in data communication with said accelerometer means, for determining said weight from said remaining sequence; and

display means, in data communication with said processing means, for producing a visual representation of said weight.

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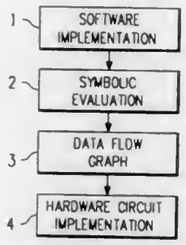
METHOD AND MEANS FOR TRANSLATING A DATA-DEPENDENT PROGRAM TO A DATA FLOW GRAPH WITH CONDITIONAL EXPRESSION

Neal M. Gafter, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1991, Ser. No. 815,442

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—578 **14 Claims**



1. A method for translating a computer program using a programmable digital computer to a data flow graph, said computer program having a plurality of statements manipulating the value of a plurality of variables, and further having at least one conditional branching statement depending on the value of a data-dependent condition, the method comprising the steps operating on said computer of:

converting said computer program into a control flow graph having a plurality of nodes including a start node and an end node, each node representing at least one of said plurality of statements, and including a conditional branch node for said data-dependent conditional branching statement;

computing a set of reverse dominators for each of said plurality of nodes;

deriving a meet point node for each conditional branch node in response to said reverse dominators;

constructing a shadow symbol table having symbolic values for said variables;

evaluating each node symbolically in succession according to control flow, and assigning a symbolic value to each said variables in said shadow symbol tables;

evaluating said conditional branch node, constructing a duplicate shadow symbol table for each possible value of said data-dependent condition in response to said conditional branch node, assuming each possible value of said data-dependent condition and assigning symbolic values to each said variables in said duplicate shadow symbol tables;

continue evaluating nodes contained in each branch of said conditional branching statement until said meet point node is reached;

merging said duplicate shadow symbol tables at each said meet point node;

complete evaluating all conditional branches and reaching said end node of said control flow graph; and

generating a data flow graph with a conditional expression that is no longer data-dependent for each data-dependent conditional branching statement.

5,666,297

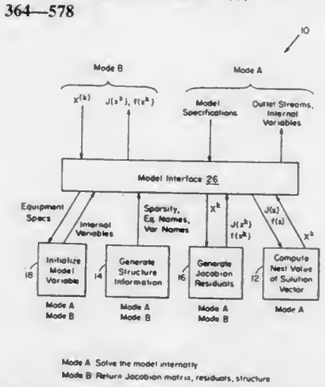
PLANT SIMULATION AND OPTIMIZATION SOFTWARE APPARATUS AND METHOD USING DUAL EXECUTION MODELS

Herbert I. Britt, Cambridge; Amol P. Joshi, Marlboro; Vladimir Mahalec, Sudbury; Peter C. Piela, Brighton, and Swaminathan Venkataraman, Waltham, all of Mass., assignors to Aspen Technology, Inc., Cambridge, Mass.

Filed May 13, 1994, Ser. No. 242,269

Int. Cl.[6] G06F *17/11*

U.S. Cl. 364—578 **12 Claims**



1. Apparatus for simulating and optimizing operation of a processing plant, the processing plant including a multiplicity of equipment and a multiplicity of operating parameters for the equipment, the apparatus comprising:

a digital processor having a working memory;

a plurality of dual mode equipment models for simulating each piece of equipment in the processing plant, the plurality of equipment models collectively forming a plant model of the processing plant, there being a different equipment model for different equipment of the desired processing plant, each equipment model being formed of a set of equations and each equipment model being executed in the working memory of the digital processor in one of two modes, for a given equipment model, execution in a first mode providing numerical definition of an output stream of the corresponding equipment, and execution in a second mode providing calculation data required for iterative simultaneous solution of a total set of equations describing the plant model;

a sequential simulation routine executed by the digital processor in the working memory for sequentially executing the equipment models in the first mode and obtaining therefrom

numerical definitions of output streams of each corresponding piece of equipment to simulate the desired processing plant, said simulation being an initial simulation of the processing plant and including a first set of values for operating parameters of the processing plant defining operating conditions of the plant;

an optimization and solver routine executed by the digital processor for executing the equipment models in the second mode and obtaining calculation data, the optimization and solver routine utilizing the first set of values for the operating parameters from the initial simulation and the calculation data to determine values of the operating parameters at which operating conditions of the processing plant are optimal; and

a shared data storage area common to the sequential simulation routine and the optimization and solver routine for holding both (i) the first set of values for the operating parameters of the initial simulation and (ii) a second set of values of the operating parameters at which operating conditions of the processing plant are optimized as determined by the optimization routine such that the shared data storage area is common to execution of the equipment models in the first and second modes and enables the equipment models to interchange results from the first and second modes of execution in subsequent executions of the equipment models in the first and second modes.

5,666,298

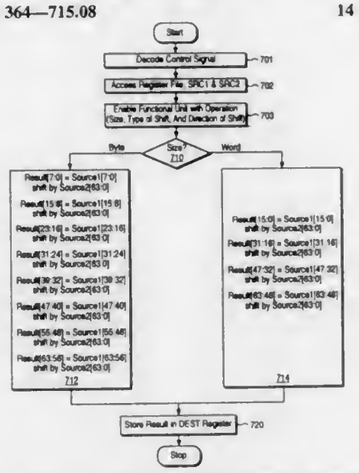
METHOD FOR PERFORMING SHIFT OPERATIONS ON PACKED DATA

Alexander Peleg, Carmella; Yaakov Yaari, Haifa, both of Israel; Millind Mittal, South San Francisco; Larry M. Mennemeler, Boulder Creek, both of Calif., and Benny Eitan, Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 349,730, Dec. 1, 1994, abandoned. This application Aug. 22, 1996, Ser. No. 701,564

Int. Cl.[6] G06F *5/01*

U.S. Cl. 364—715.08 **14 Claims**



1. A computer-implemented method for shifting packed data, the method comprising the steps of:

a) decoding a first instruction, the instruction specifying a shift operation to be performed on a first packed data sequence having a plurality of packed data elements, said first instruction further specifying a variable quantity of packed data elements included in said first packed data sequence and a variable size of each packed data element included in said packed data sequence; and

b) shifting said plurality of packed data elements simultaneously and independently.

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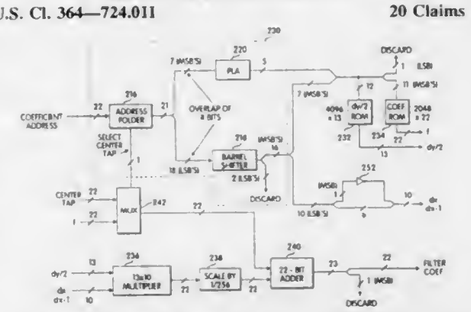
ASYNCHRONOUS DIGITAL SAMPLE RATE CONVERTER

Robert W. Adams, Acton, Mass.; Tom W. Kwan, Santa Clara, Calif., and Michael Coln, Lexington, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 234,177, Apr. 28, 1994, Pat. No. 5,471,411, which is a division of Ser. No. 954,149, Sep. 30, 1992, Pat. No. 5,475,628. This application May 19, 1995, Ser. No. 446,036

Int. Cl.[6] G06F *7/38;17/10;17/17*

U.S. Cl. 364—724.011 **20 Claims**



1. A method for generating a desired filter coefficient of a digital filter, wherein each filter coefficient has a corresponding coefficient address in an address space defined by a number of taps of the digital filter, the method using a memory in which a plurality of coefficient values, less than the number of taps of the digital filter, are stored, wherein each pair of adjacent coefficient values stored in the memory define boundaries of a region including a plurality of addresses in the address space, and wherein at least one region has a number of addresses different from other regions, the method comprising the steps of:

receiving a coefficient address in the address space and corresponding to the desired filter coefficient;

determining the region including the coefficient address;

selecting a stored coefficient value from the memory defining one boundary of the determined region;

generating a difference value indicating a difference between the selected coefficient value and an adjacent coefficient value stored in the memory and defining another boundary of the determined region;

generating a fractional value indicating a distance between the coefficient address and a coefficient address corresponding to the selected coefficient value; and

generating the desired filter coefficient as a function of the selected coefficient value, the difference value and the fractional value.

5,666,300

POWER REDUCTION IN A DATA PROCESSING SYSTEM USING PIPELINE REGISTERS AND METHOD THEREFOR

Judah L. Adelman, Jerusalem; David Galanti, Netanya, and Yoram Salant, Rosh-Haayin, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1994, Ser. No. 361,405

Int. Cl.[6] G06F *7/38;1/00*

U.S. Cl. 364—736.05 **14 Claims**

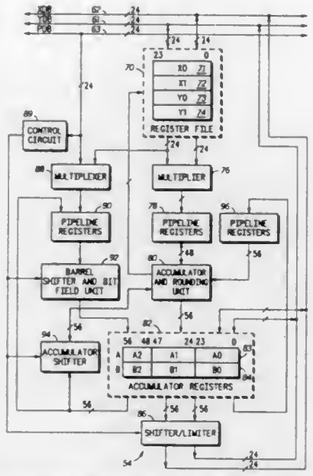
1. A data processing system having a pipelined arithmetic logic unit, the pipelined arithmetic logic unit comprising:

an input register;

a first execution unit, coupled to the input register, for performing a first arithmetic operation to obtain a first result;

a pipeline register, coupled to the first execution unit, for storing the first result;

an accumulator register storing a third operand;



a second execution unit, coupled to the pipeline register and the accumulator register, for performing a second arithmetic operation to obtain a second result; and

a control circuit for monitoring a series of instructions that are provided to the pipelined arithmetic logic unit, when the control circuit detects consecutive instructions of the series of instructions that require an identical destination for the second result, the control circuit causing the second result to be written to the pipeline register instead of to the identical destination required by the consecutive instructions;

whereby power consumption is reduced in the pipelined arithmetic logic unit.

5,666,301

MULTIPLIER CARRYING OUT NUMERIC CALCULATION AT HIGH SPEED

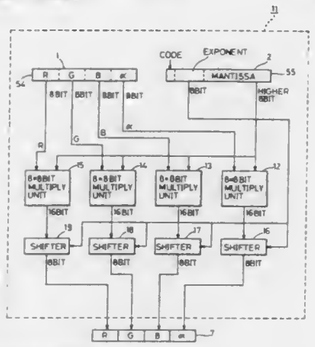
Hiroshi Makino, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 460,948

Claims priority, application Japan, May 29, 1994, 6-148008

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—254.01 **20 Claims**



1. A multiplier comprising:

first data input means for receiving first data representing luminance value data,

second data input means for receiving second data expressed by floating-point data,

operation means for carrying out operation of said first and second data directly with a hardware, and

means for providing an operation result of said operation means in a format identical to that of said input luminance value data.

5,666,302

SIMULTANEOUS BIDIRECTIONAL TRANSMISSION APPARATUS FOR TRANSMITTING AND RECEIVING DIFFERENTIAL SIGNALS

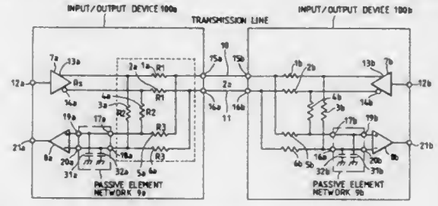
Akira Tanaka, Isehara; Kenichi Ishibashi, Kokubunji; Akira Yamagiwa, Oiso, and Takehisa Hayashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 496,195

Claims priority, application Japan, Jul. 6, 1994, 6-154379

Int. Cl.[6] G06G *7/02*

U.S. Cl. 364—825 **9 Claims**



1. An input/output device comprising:

an input/output device comprising:

a transmitting circuit having a first and a second output terminal through which differential signals are sent out;

a resistance circuit comprising a first, a second, a third, a fourth, a fifth and a sixth terminal, the first and the second terminal being connected to the first and the second output terminal of the transmitting circuit, respectively, the third and the fourth terminal being connected to a first and a second transmission line, respectively;

a passive element circuit that receive signals applied to the fifth and the sixth terminal of the resistance circuit, and forms either a low-pass filter or an equalizing filter together with the resistance circuit; and

a receiving circuit having a noninverting terminal and an inverting terminal connected to the first and the second output terminal, respectively, of the passive element circuit;

wherein the resistance circuit comprises a first resistor connected across the first and the third terminal; a second resistor connected across the second and the fourth terminal, a third resistor connected across the first and the sixth terminal, a fourth resistor and connected across the second and the fifth terminal, a fifth resistor connected across the third and the fifth terminal, and a sixth resistor connected across the fourth and the sixth terminal; said first to sixth resistors respectively having resistances R_1, R_1, R_2, R_2, R_3 and R_3; and the resistances R_1, R_2 and R_3 approximately meet the following expressions:

$$\Gamma_2=(2\Gamma_1+1)\Gamma_3+\Gamma_1 \quad (1)$$

$$\Gamma_3=\{\tfrac{1}{2}(\Gamma_1+1)\}\{(2\Gamma_s+\Gamma_1-\Gamma_s\Gamma_1)/(\Gamma_s+2\Gamma_1-1)-1\} \quad (2)$$

$$(1-\Gamma_s)/2<\Gamma_1\leqq 1 \quad (3)$$

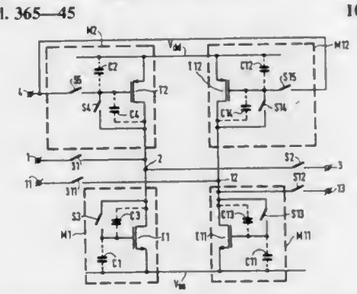
$$\Gamma_s=R_s/Z_0,\ \Gamma_1=R_1/Z_0,\ \Gamma_2=R_2/Z_0,\ \Gamma_3=R_3/Z_0 \quad (4)$$

where Z_0 is the characteristic impedance of the transmission lines, and Rs is the output resistance of the transmitting circuit.

5,666,303
CURRENT MEMORY

John B. Hughes, Hove, and Kenneth W. Moulding, Horley, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1996, Ser. No. 708,162
Claims priority, application United Kingdom, Aug. 31, 1995, 9517787
Int. Cl.[6] G11C *27/00*
U.S. Cl. 365—45 10 Claims



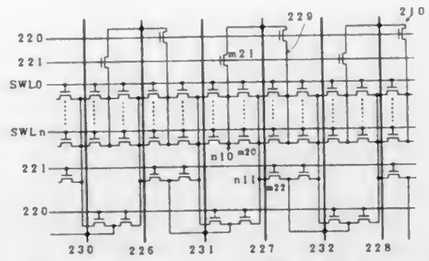
1. An analogue current memory for storing input signals in the form of sampled currents comprising: first and second inputs for receiving balanced current samples, first and second outputs for supplying stored balanced current samples, a first current memory cell having an input coupled to the first input of the current memory and an output coupled to the first output of the current memory, and a second current memory cell having an input coupled to the second input of the current memory and an output coupled to the second output of the current memory; wherein the first and second current memory cells each comprise a coarse memory cell and a fine memory cell, the coarse memory cell sampling the input current during a first part of a first portion of a clock cycle and the fine current memory cell sampling the input current and the current stored by the coarse memory cell during a second part of the first portion of the clock cycle, said first and second current memory cells producing a stored output current during a second portion of said clock cycle or during a subsequent clock cycle, said stored output current being the combined outputs of the coarse and fine memory cells, in which the coarse and fine memory cells each comprise a field effect transistor having a switch connected between its gate and drain electrodes, a stored output current being available when said switch is open, characterised in that the gate electrode of the field effect transistor in each coarse memory cell is connected to the drain electrode of the transistor in the other coarse memory cell via a capacitor having a capacitance equal to the drain gate capacitance of the transistors in the coarse memories and in that the gate electrode of the transistor in each fine current memory cell is connected to the drain electrode of the transistor in the other fine current memory cell via a capacitor having a capacitance equal to the drain-gate capacitance of the transistors in the fine memories.

5,666,304
SEMICONDUCTOR MEMORY DEVICE AND METHOD OF FABRICATING THE SAME

Tetsuo Hikawa; Akira Takata, and Takashi Sawada, all of Suita, Japan, assignors to Mega Chips Corporation, Suita, Japan

Division of Ser. No. 255,947, Jun. 7, 1994, Pat. No. 5,526,306. This application Feb. 28, 1996, Ser. No. 608,194
Claims priority, application Japan, Feb. 10, 1994, 6-16637P
Int. Cl.[6] G11C *17/00*
U.S. Cl. 365—104 1 Claim

1. A semiconductor memory device, wherein a plurality of main bit lines and a plurality of virtual GND lines are arranged in parallel with each other,



two current paths connecting one combination of an arbitrary main bit line and a virtual GND line out of all the combinations of main bit lines and virtual GND lines, and

each of said current paths comprising:

a power source side local bit line connected to said main bit line,

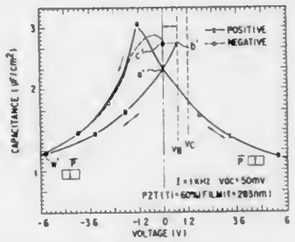
a ground side local bit line connected to said virtual GND line; and

a memory cell connected between said power side local bit line and said ground side local bit line.

5,666,305
METHOD OF DRIVING FERROELECTRIC GATE TRANSISTOR MEMORY CELL

Takashi Mihara, Iruma; Hiroshi Nakano, Hachioji; Hiroyuki Yoshimori, Kanagawa-ken, and Shuzo Hiraide, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 218,740, Mar. 28, 1994, abandoned. This application Mar. 14, 1995, Ser. No. 404,300
Claims priority, application Japan, Mar. 29, 1993, 5-069472; Sep. 20, 1994, 6-225415; Jan. 25, 1995, 7-009992
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 105 Claims



1. A ferroelectric memory device, comprising:

a ferroelectric memory having a ferroelectric thin film as a memory cell;

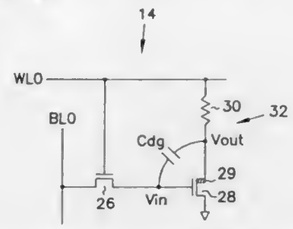
first pulse application means for applying a first pulse having a voltage higher than a coercive voltage of said ferroelectric thin film to said ferroelectric memory to perform poling to a first poled state, in a first direction, of two spontaneous poled states; and

second pulse application means for recording information by applying a second pulse having a second voltage with a polarity opposite to a polarity of the first pulse to form a partially poled state in which a domain having the poled state in the first direction and a domain having a second poled state in a second direction opposite to the first direction are mixed.

5,666,306
MULTIPLICATION OF STORAGE CAPACITANCE IN MEMORY CELLS BY USING THE MILLER EFFECT

Leonard Forbes, Corvallis, Oreg., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 6, 1996, Ser. No. 706,662
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—149 18 Claims



1. A memory cell fabricated in a semiconductor memory device, said memory cell comprising:

a word line region for receiving an address signal for addressing the memory cell;

a bit line region for receiving a write signal during a write operation for the memory cell and for receiving a read signal during a read operation for the memory cell;

an amplifier circuit including a storage capacitance, said amplifier circuit having an output coupled to said word line region and an input; and

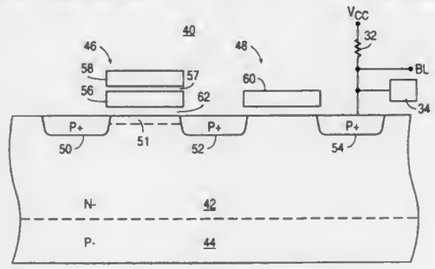
an access transistor interposed between said bit line region and said input of said amplifier circuit for coupling said amplifier circuit to said bit line region during write and read operations for said memory cell,

the effective capacitance reflected into the input of said amplifier circuit being proportional to the product of the value of said storage capacitance and one plus the gain of said amplifier circuit.

5,666,307
PMOS FLASH MEMORY CELL CAPABLE OF MULTI-LEVEL THRESHOLD VOLTAGE STORAGE

Shang-De Ted Chang, Fremont, Calif., assignor to Programmable Microelectronics Corporation, San Jose, Calif.

Filed Nov. 14, 1995, Ser. No. 557,514
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.03 14 Claims



1. A semiconductor memory cell comprising:

an N-type well region formed in a substrate, said N-type well region having formed therein a P+ source, a P+ drain, and a channel region extending between said P+ source and said P+ drain;

a first insulating layer overlying said well region;

a floating gate overlying said first insulating layer;

a second insulating layer overlying said floating gate;

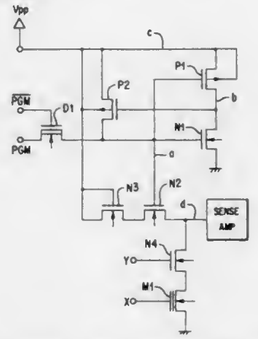
a control gate overlying said second insulating layer, said cell being programmed, in response to a program voltage applied to said control gate, by hot electron injection from a junction of said N-type well region and said P+ drain into said floating gate, the threshold voltage of said cell being programmable to any one of a plurality of program levels, said threshold voltage being determined by the magnitude of said program voltage; and

a select transistor formed in said N-type well region, said select transistor having a P+ drain coupled to a bit line, a P+ source coupled to said P+ drain of said cell, and a bit line select gate, wherein said cell is programmed by applying said program voltage to said control gate, applying a first voltage to said P+ source of said cell and to said N-type well region while grounding said bit line and said bit line select gate, said program voltage being between 5 and 15 volts depending upon to which of said plurality of program levels it is desired to program said threshold voltage, said first voltage being between approximately 5 and 15 volts.

5,666,308
WRITING CIRCUIT FOR NON-VOLATILE MEMORY

Kazunori Ota, Tochigi-ken, Japan, assignor to Nippon Precision Circuits Inc., Tokyo, Japan

Filed Jun. 24, 1996, Ser. No. 668,785
Claims priority, application Japan, Jun. 28, 1995, 7-162199
Int. Cl.[6] B11C *11/34*
U.S. Cl. 365—185.05 3 Claims



1. A writing circuit for non-volatile memory comprising:

a first NMOS transistor having a gate connected to a first node, a source connected to ground and a drain connected to a second node;

a first PMOS transistor having a gate connected to the first node, a source connected to a third node connected to a power source and a drain connected to the second node;

a second NMOS transistor having a gate connected to the first node, a source connected to a fourth node which serves as a write terminal to the non-volatile memory;

a second PMOS transistor having a gate connected to the second node, a source connected to the third node and a drain connected to the first node; and

a depression type MOS transistor having a source to which a control signal for controlling the output condition of the volatile memory write terminal is applied, a gate to which a signal obtained as a result of inverting said control signal is applied and a drain connected to the first node.

5,666,309

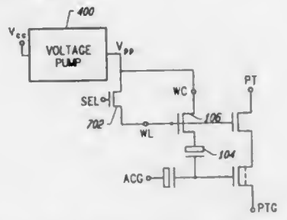
MEMORY CELL FOR A PROGRAMMABLE LOGIC DEVICE (PLD) AVOIDING PUMPING PROGRAMMING VOLTAGE ABOVE AN NMOS THRESHOLD

Jack Zezhong Peng, San Jose; Jonathan Lin, Milpitas, and Chris Schmidt, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 17, 1995, Ser. No. 560,038

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.08 **2 Claims**



2. A memory cell including art NMOS transistor having a floating gate; a first capacitor having a terminal coupled to the floating gate of the NMOS transistor; and a second capacitor having a first terminal, a second terminal coupled to the floating gate, and a tunneling oxide region utilized to add charge to and subtract charge from the floating gate, the memory cell further comprising:

an NMOS pass gate transistor having a source to drain path connected to the first terminal of the second capacitor, wherein no vt implant and no punch through implant are provided in a substrate between the source and drain of the NMOS pass gate transistor.

5,666,310

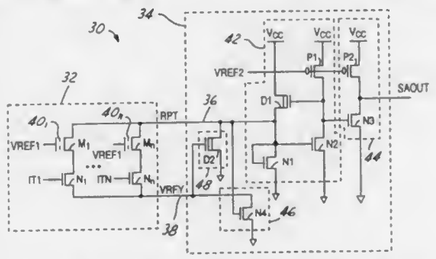
HIGH-SPEED SENSE AMPLIFIER HAVING VARIABLE CURRENT LEVEL TRIP POINT

Donald Yuen Yu, Fremont, Calif.; Jeffrey Scott Hunt, Ackerman, Miss.; Satish Chandra Saripella, and William Randolph Hiltpold, both of Starkville, Miss., assignors to Cypress Semiconductor, San Jose, Calif.

Filed Jan. 30, 1996, Ser. No. 593,974

Int. Cl.[6] G11C *11/34;7/00*

U.S. Cl. 365—185.21 **13 Claims**



1. A sense amplifier for use with a memory array having a plurality of programmable memory cells arranged in parallel and coupled to a product term line wherein each cell has non-conductive and conductive states, comprising:

means for biasing said product term line to a preselected voltage potential;

means coupled to said biasing means for sensing when a predetermined current is being drawn from said biasing means through said memory and generating an output signal indicating that at least one of the memory cells is in a conductive state; and,

means coupled to said product term line for modulating said predetermined current level in accordance with the number of memory cells in the conductive state.

5,666,311

METHOD OF MAKING SEMICONDUCTOR DEVICE HAVING ISOLATING TRENCHES

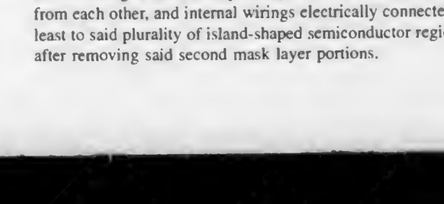
Seiichi Mori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 202,174, Feb. 25, 1994. This application Jun. 6, 1995, Ser. No. 467,834

Claims priority, application Japan, Feb. 26, 1993, 5-037757

Int. Cl.[6] G11C *11/34*

U.S. Cl. 438—257 **45 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

preparing a semiconductor body of a first conductivity type;

forming a first insulating film on said semiconductor body;

forming a first conductive film on said first insulating film;

patterning said first conductive film such that said first conductive film is divided into a plurality of conductive strips;

forming semiconductor regions of the first conductivity type having a higher impurity concentration than an impurity concentration of said semiconductor body, by implanting impurities of the first conductivity type into said semiconductor body using said plurality of conductive strips as a mask;

forming a second insulating film above said semiconductor body;

forming a second conductive film above said semiconductor body;

forming a third insulating film on said second conductive film;

patterning said third insulating film and second conductive film to form a plurality of linear stack structures extending in a direction which is perpendicular to said plurality of conductive strips;

forming first mask layer portions between alternate pairs of said linear stack structures;

etching said first insulating film to expose portions of said semiconductor body using said first mask layer portions, said conductive strips, and said linear stack structures as a mask;

removing said first mask layer portions;

etching said conductive strips and said exposed portions of said semiconductor body using said first insulating film and said linear stack structures as a mask, thereby forming a plurality of trenches in said semiconductor body;

forming second mask layer portions on each of said plurality of trenches;

forming a plurality of island-shaped semiconductor regions of a second conductivity type and a plurality of linear semiconductor regions of the second conductivity type by introducing impurities of the second conductivity type into said semiconductor body using said second mask layer portions and said plurality of linear stack structures as a mask; and

forming above said semiconductor body, an insulating material for insulating at least said plurality of linear stack structures from each other, and internal wirings electrically connected at least to said plurality of island-shaped semiconductor regions, after removing said second mask layer portions.

5,666,312

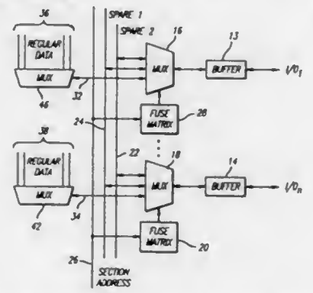
COLUMN REDUNDANCY SCHEME FOR A RANDOM ACCESS MEMORY INCORPORATING MULTIPLEXERS AND DEMULTIPLEXERS FOR REPLACING DEFECTIVE COLUMNS IN ANY MEMORY ARRAY

Peter D. Robertson, Fremont, Calif., assignor to Sony Corporation of Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation of Ser. No. 344,229, Nov. 23, 1994, abandoned. This application May 14, 1996, Ser. No. 648,539

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.02 **9 Claims**



1. An integrated circuit random access memory (RAM) comprising:

a plurality of arrays of columns;

at least two spare columns for replacing defective columns;

a plurality of first multiplexers, each first multiplexer corresponding to a different one of each of said plurality of arrays of columns, each first multiplexer having as inputs at least one column from a corresponding one of the plurality of arrays of columns and said at least two spare columns;

a column address line for a column address signal, and

a plurality of programmable elements, each such programmable dement associated with only one of said plurality of first multiplexers, each programmable dement having as an input the column address signal and as an output line a selector input to each said programmable dement's corresponding one of the plurality of first multiplexers, each programmable element being programmable to provide a selection signal over one of said selector inputs in response to the column address signal to address one of said at least one column or either of said at least two spare columns that are input to one of the first multiplexers.

5,666,313

SEMICONDUCTOR MEMORY DEVICE WITH COMPLETE INHIBITION OF BOOSTING OF WORD LINE DRIVE SIGNAL AND METHOD THEREOF

Tetsuichiro Ichiguchi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 921,168, Jul. 29, 1992, abandoned. This application Sep. 4, 1996, Ser. No. 707,364

Claims priority, application Japan, Nov. 29, 1991, 3-316978

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—195 **2 Claims**

1. A semiconductor memory device including a plurality of word lines each having a row of memory cells connected thereto, comprising:

word line drive signal generating means for generating a word line drive signal to be transferred onto a selected word line;

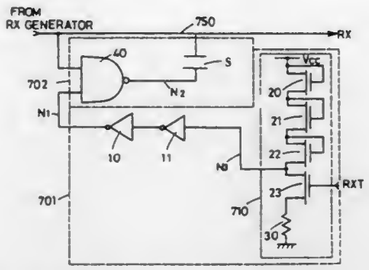
determination means responsive to a signal other than said word line drive signal for determining whether the word line drive signal should be completely inhibited from being boosted up; and

boosting means responsive to said determination means for selectively boosting up the word line drive signal, wherein

said determination means includes:

detecting means for detecting a level of potential supplied from an operating power supply of the semiconductor memory device, and

decision means responsive to said detecting means for completely inhibiting the boosting up by said boosting means when the potential level is detected to be above a predetermined level.



5,666,314

SEMICONDUCTOR MEMORY DEVICE FOR SELECTING AND DESELECTING BLOCKS OF WORD LINES

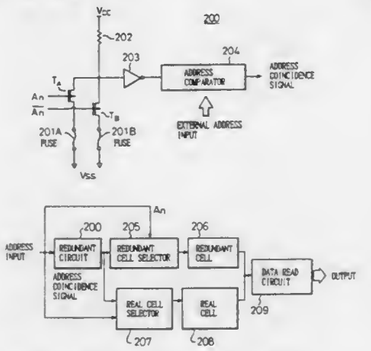
Takao Akaogi; Nobuaki Takashina; Yasushi Kasa; Kiyoshi Itano; Hiromi Kawashima, and Minoru Yamashita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 79,738, Jun. 22, 1993, Pat. No. 5,452,251. This application Jun. 6, 1995, Ser. No. 432,723

Claims priority, application Japan, Dec. 3, 1992, 4-324284; Dec. 28, 1992, 4-349481; Jan. 5, 1993, 5-000304

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **5 Claims**



1. A semiconductor memory device comprising:

a plurality of real memory cells divided into blocks;

a plurality of redundant memory cells for replacing defective ones of said real memory cells;

a plurality of defective address specifying means for specifying defective addresses of the respective blocks of said real memory cells;

an address comparing means commonly coupled to said plurality of defective address specifying means, for comparing said defective addresses with addresses in said blocks of said real memory cells, said plurality of defective address specifying means and said address comparing means comprising a redundant circuit;

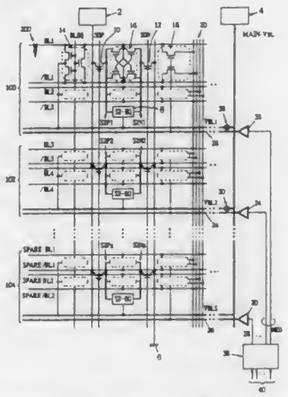
a real cell selecting means for receiving an output of said redundant circuit and a block address for specifying one of said real celi blocks, and controlling the selection and non-selection of said memory cells in said specified real cell block; and

5,666,315

SEMICONDUCTOR MEMORY DEVICE HAVING A REDUNDANCY FUNCTION SUPPRESSIBLE OF LEAKAGE CURRENT FROM A DEFECTIVE MEMORY CELL

Masaki Tsukude, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,351
Claims priority, application Japan, Dec. 28, 1994, 6-328151
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 15 Claims



1. A semiconductor memory device including a memory cell array of a plurality of memory cells from/to which reading/writing of information is carried out with a constant number of memory cell columns or a constant number of memory cell rows as a unit, wherein a plurality of said reading/writing units form a normal memory cell array in said memory cell array, and at least one of said reading/writing unit in said memory cell array forms a spare memory cell array replacing the relevant reading/writing unit when said normal memory cell includes a defective memory cell, said semiconductor memory device comprising:

a first power supply for providing a first potential corresponding to a first logic level of said information,

a second power supply for providing a second potential corresponding to a second logic level of said information,

a plurality of bit lines, each connected to at least one of said memory cells,

a plurality of sense amplifiers, each connected to said bit line for providing either one of the first potential and the second potential according to the stored information of said memory cell,

wherein said sense amplifier comprises

a first power supply input node to which the first potential is supplied, and

a second power supply input node to which the second potential is supplied,

said semiconductor memory device further comprising:

a third power supply for supplying a third potential,

a plurality of power supply interconnections supplying said third potential to each said reading/writing unit of said memory cell array,

a plurality of first switching means responsive to an external control signal for opening/closing connection of each said bit line and each of said first and second power supply input nodes of said sense amplifier to the third potential supplied from said plurality of power supply interconnections, and

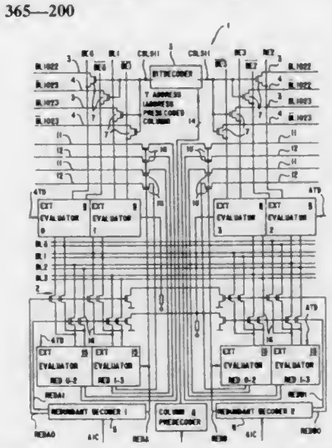
a plurality of second switching means that can set connection between said plurality of power supply interconnections and corresponding said plurality of reading/writing units individually and in a non-volatile manner.

5,666,316

INTEGRATED SEMINCONDUCTOR MEMORY

Johann Rieger, Zell, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 9, 1996, Ser. No. 694,534
Claims priority, application European Pat. Off., Aug. 9, 1995, 95112548
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—200 9 Claims



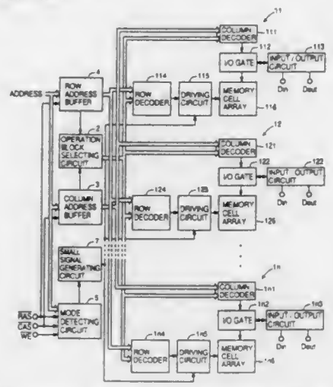
1. Integrated semiconductor memory having a redundant device with normal memory cells, which are arranged in a matrix at intersections of word lines and bit lines, word line decoders for selecting a word line as a function of word line address signals which are applicable to the semiconductor memory, bit line decoders for selecting a bit line as a function of bit line address signals which are applicable to the semiconductor memory, external reading and evaluator circuits associated with the bit lines of the normal memory cells and connected on an output side thereof with data lines at which data content to be read out of the normal memory cells is to be output, and redundant memory cells which, by means of at least one programmable redundant decoder, are addressable for replacing a defective memory cell, comprising external redundant reading and evaluator circuits triggerable by the at least one programmable redundant decoder and being associated with the redundant memory cells, said external redundant reading and evaluator circuits being connectible on the input side with the redundant memory cells and on the output side with the data lines, and a redundant control circuit associated with each of the external redundant reading and evaluator circuits triggerable by the at least one programmable redundant decoder, said redundant control circuit being connected to and between the respective associated external redundant reading and evaluator circuit and the data lines and, as a function of a redundant selection signal which is output by the redundant decoder, enabling the data content of a redundant memory cell, which is present at the output of an external redundant reading and evaluator circuit, to be transmitted to a selected data line.

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SEMICONDUCTOR MEMORY DEVICE

Susumu Tanida; Kazutoshi Hirayama; Tomio Suzuki, and Masanori Hayashikoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 408,252, Mar. 22, 1995, abandoned, which is a division of Ser. No. 304,028, Sep. 9, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 605,802
Claims priority, application Japan, Oct. 1, 1993, 5-246942; Apr. 22, 1994, 6-084622
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—201 3 Claims



1. A semiconductor memory device including a plurality of word lines, a plurality of bit lines crossing respective word lines, and a plurality of memory cell transistors each connected to one of said plurality of word lines and one of said plurality of bit lines, and incorporating a test circuit for determining in a disturb refresh test mode a memory cell transistor having a threshold voltage lower than a predetermined threshold voltage among said plurality of memory cell transistors, comprising:

test mode detecting means for detecting said disturb refresh test mode; and

small signal generating means responsive to detection of the disturb refresh test mode by said test mode detecting means for applying a small signal having a changing amplitude to non-selected word lines, for increasing the potential thereof.

5,666,318

SEMICONDUCTOR MEMORY DEVICE

Yasuhiro Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,712
Claims priority, application Japan, Aug. 24, 1994, 6-199185
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 10 Claims

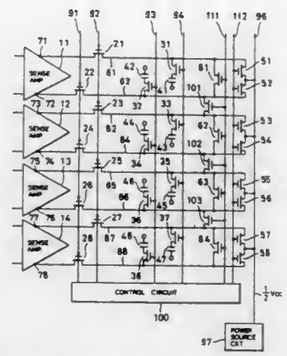
1. A semiconductor memory device comprising:

a plurality of memory cells;

a plurality of bit line pairs for reading out and writing in information with respect to said plurality of memory cells;

a plurality of sense amplifiers corresponding to said plurality of bit line pairs, respectively, each of the sense amplifiers performing detection and amplification of information with respect to a corresponding bit line pair, and each of the sense amplifiers having a pair of internal nodes;

a plurality of switching means, each switching means corresponding to a different bit line and to a different internal node for performing a connection control operation to connect each bit line to a different sense amplifier node;



balancing control means for setting each bit line of said plurality of bit line pairs at a common potential level upon resetting of said plurality of bit line pairs after said connection control operation by said switching means; and

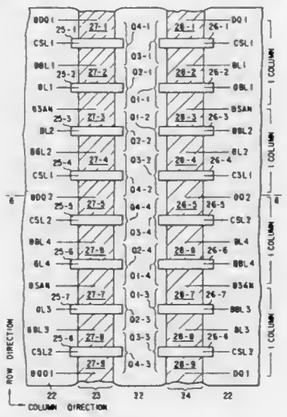
pre-charging control means for supplying a pre-charging potential for said plurality of bit line pairs after setting each of said bit lines at the common potential level by said balancing control means.

5,666,319

SENSE AMPLIFIER

Junichi Okamura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 305,716, Sep. 14, 1994, Pat. No. 5,528,542. This application Mar. 5, 1996, Ser. No. 611,372
Claims priority, application Japan, Sep. 9, 1994, 6-216264; Sep. 16, 1994, 5-229904
Int. Cl.[6] G11C *11/401*
U.S. Cl. 365—205 15 Claims



1. A sense amplifier comprising:

a column gate including a first MOS transistor; and

a sense circuit including a second MOS transistor, the width of a gate of said second MOS transistor being greater than the width of a gate of said first MOS transistor, and wherein said first and second MOS transistors are integrated together in the same pattern.

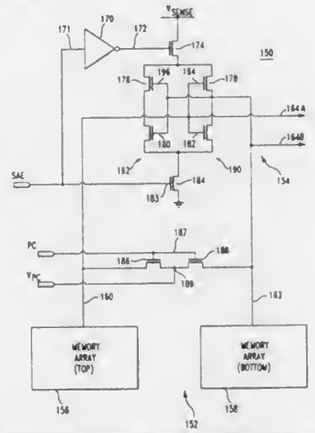
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5,666,320

STORAGE SYSTEM

Robert Chi-Foon Wong, Poughkeepsie; Taqi Nasser Buti, Millbrook, and Seiki Ogura, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,428
Int. Cl.[6] G11C *11/00;7/00*
U.S. Cl. 365—207 **3 Claims**



1. An improved differential sense amplifier for sensing differences in a predetermined parameter at a first node and a second node; said first node being coupled with a first storage array; said second node being coupled with a second storage array; said sensing being effected by a first sensing element coupled with said first node and a second sensing element coupled with said second node the improvement comprising:

the differential sense amplifier being configured for selective operation in at least two modes; a first mode of said at least two modes establishing said first storage array as a reference load and establishing said second storage array as a dynamic load; a second mode of said at least two modes establishing said second storage array as a reference load and establishing said first storage array as a dynamic load; the amplifier sensing changes in said predetermined parameter in said dynamic load with respect to said reference load.

5,666,321

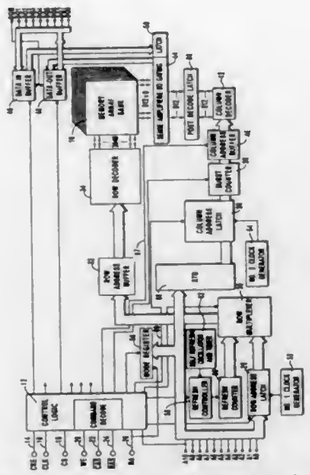
SYNCHRONOUS DRAM MEMORY WITH ASYNCHRONOUS COLUMN DECODE

Scott Schaefer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 1, 1995, Ser. No. 522,869
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—233.5 **19 Claims**

15. A method of addressing a memory cell array, the method comprising:

(a) providing address bus lines;
(b) providing a memory circuit including a memory array;
(c) providing an external logic control for placing a separate column and row-address in the address bus lines and for generating a RAS signal when the row-address is stable and a CAS signal when the column-address is stable;
(d) providing a synchronizing clock signal for synchronizing at least a significant portion of all operations conducted in response to the external logic control;
(e) providing a row-address decoding circuit for decoding the row-address in response to the RAS signal;
(f) providing a column-address decoding circuitry and a column-address latch previous to the column-address decoding circuitry for separating the column-address decoding circuitry



from the address bus lines, the column-address latch being set to a transparent state in response to the reception of the RAS signal;
(g) providing an address transition detection circuit for detecting when a new column-address appears on the address bus line, wherein the address transition detection circuit is in communication with the column-address latch for enabling the column-address latch when a new column-address is present on the bus lines;
(h) providing the row-address on the address bus lines and providing the RAS signal to notify that the column-address is stable;
(i) decoding the row-address;
(j) providing a column-address on the address bus lines;
(k) sensing the presence of the column-address on the address bus lines with the address transition detection circuit and passing the column-address to the column-address decoding circuitry;
(l) decoding the column-address with the column-address decoding circuitry;
(m) providing a CAS signal to the column-address decoding circuitry that the column-address is the desired column-address and is stable and should be passed into the memory array;
(n) latching the column-address and allowing no new column-address to be decoded by the column-address decoding circuitry until the occurrence of a subsequent RAS signal; and
(o) conducting a data communication operation by the memory cell array.

5,666,322

PHASE-LOCKED LOOP TIMING CONTROLLER IN AN INTEGRATED CIRCUIT MEMORY

Cecil W. Conkle, Palo Alto, Calif., assignor to NEC Electronics, Inc., Mountain View, Calif.

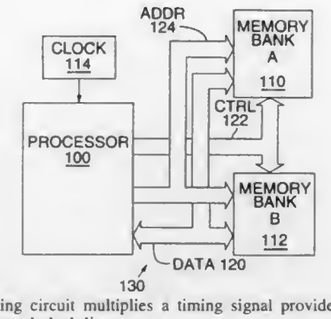
Filed Sep. 21, 1995, Ser. No. 531,744
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 **31 Claims**

1. An integrated circuit memory comprising:

memory array; and

a timing circuit coupled to the memory array via an internal clock line and coupled to an external signal clock line, the timing circuit including:

a clock multiplier and clock edge synchronizing circuit having an input terminal coupled to the external signal clock line and having an output terminal coupled to the internal clock line, wherein the clock multiplier and clock edge synchro-



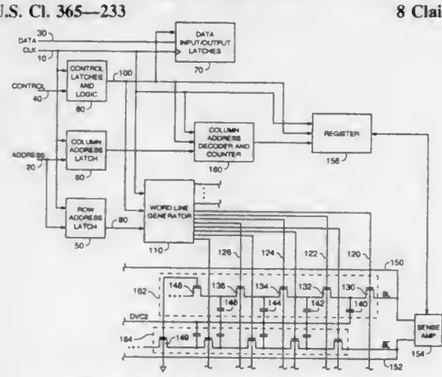
nizing circuit multiplies a timing signal provided on the external clock line.

5,666,323

SYNCHRONOUS NAND DRAM ARCHITECTURE

Paul S. Zagar, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 348,552, Dec. 1, 1994, Pat. No. 5,513,418. This application Mar. 11, 1996, Ser. No. 615,527
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 **8 Claims**



1. A synchronous memory device comprising:

a clock node for receiving a clock signal;

a plurality of NAND structured memory cells, each one of the plurality of NAND structured memory cells comprising:

a plurality of random access storage cells,

a plurality of access devices coupled in sequence, each one of the plurality of access devices electrically located between adjacent ones of the plurality of random access storage cells, each one of the plurality of access devices being connected to a word line for selective activation by a wordline generator circuit coupled to the clock node input, one of the plurality of access devices being coupled to a bit line for sequentially communicating data with the plurality of random access storage cells in synchronization with the clock signal.

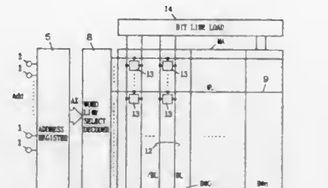
5,666,324

CLOCK SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE HAVING CURRENT CONSUMPTION REDUCED

Ryuichi Kosugi, and Shigeki Ohbayashi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,386
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 **15 Claims**

1. A semiconductor memory device incorporating external signals including an address signal in synchronization with a clock



signal applied periodically regardless of whether an access is made to said semiconductor memory device, comprising:

a memory array including a plurality of memory cells arranged in rows and columns;

accessing means responsive to an address signal and an operation mode designation signal generated internally in accordance with the external signals in synchronization with said clock signal for selecting a memory cell in said memory array and performing either data reading or data writing on the selected memory cell; and

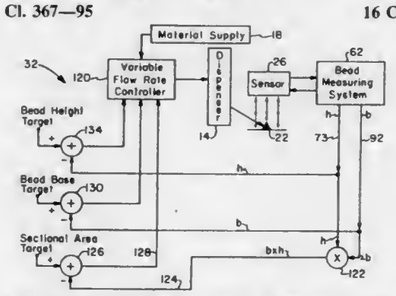
clock pulse generator for generating a plurality of clock pulses having different activation periods from each other in synchronization with a one-time transition at a common time of said clock signal, to apply the clock pulses to said accessing means for activation thereof.

5,666,325

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE DISPENSING OF MATERIALS ONTO A SUBSTRATE

Robert S. Belser, Bay Village, and Kamal Kumar, Lorain, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Jul. 31, 1995, Ser. No. 509,132
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—95 **16 Claims**



1. A dispensing system which controls the flow of material onto a substrate, comprising:

a nozzle for dispensing a substantially triangular bead of material onto a substrate;

an ultrasonic sensor that monitors predetermined characteristics of said substantially triangular bead of material by emitting sound waves normal to the substrate and receiving substantially normal reflected sound waves from only an apex of said substantially triangular bead and said substrate; and

a control circuit connected to said ultrasonic sensor for regulating the flow of material based upon said predetermined characteristics, wherein said ultrasonic sensor is carried by said

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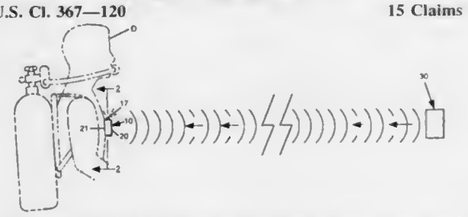
nozzle in such a manner that said control circuit generates and monitors a height value of an apex of said substantially triangular bead, a base value of said substantially triangular bead, and a corresponding area value of said substantially triangular bead wherein said control circuit is employed to control the height and base of said substantially triangular bead of material depending upon said base, height and area signals.

5,666,326

HOMING DEVICE FOR UNDERWATER DIVERS

Jack E. Holzschuh, 1327 Aalapapa Dr., Kailua, Hi. 96734

Filed Apr. 17, 1996, Ser. No. 633,569
Int. Cl.[6] G01S *3/801*
U.S. Cl. 367—120 **15 Claims**



1. An underwater acoustic homing device for a diver with scuba equipment comprising:

an omnidirectional pulsed underwater sound source;

an underwater sound receiver consisting of a single omnidirectional transducer, an amplifying means connected to said transducer, a band-pass filter connected to said amplifying means, and an amplitude detector means connected to the filter, said transducer being positioned in close proximity to the diver's torso and equipment whereby the acoustic discontinuity of the diver's torso and equipment causes the strength of the sound to be attenuated at the transducer when the diver's torso and equipment are in the sound path between the source and the transducer;

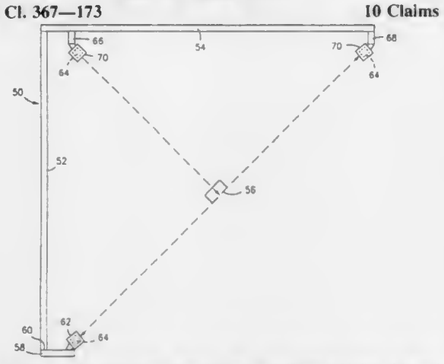
an indicating means connected to the receiver, whereby reception of the unattenuated sound is indicated.

5,666,327

PORTABLE ACOUSTIC TURBULENCE DETECTOR

Diane Medeiros, Tiverton; John Oeschger, Kingston, both of R.I., and Peter R. Hebda, Fall River, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1996, Ser. No. 605,233
Int. Cl.[6] H04B *11/00*
U.S. Cl. 367—173 **10 Claims**



1. A system for studying, identifying and characterizing thermal gradients in a volume of water, which system comprises:

a frame to be deployed within said volume of water, said frame including a first tubular section formed from polyvinylchloride, said first tubular section extending below a scattering volume;

a first connector element joined to said first tubular section;

a first acoustic transducer forming part of a means for studying, identifying and characterizing said thermal gradients housed within said first connector element;

said frame further including a second tubular section formed from polyvinylchloride attached perpendicularly to said first tubular section;

second and third connector elements joined to said second tubular section; and

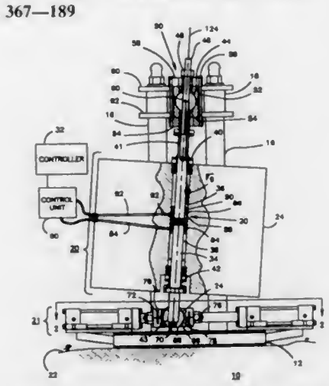
second and third acoustic transducers forming part of said means for studying, identifying and characterizing said thermal gradients housed within said second and third connector elements, said second and third connector elements and said second and third acoustic transducers being positioned above said scattering volume.

5,666,328

THREE AXIS SEISMIC VIBRATOR

John Mark Crowell, Friendswood; Rhys Michael Evans, Houston, and James Edward Teske, Santa Fe, all of Tex., assignors to I/O Exploration Products (U.S.A.), Inc., Stafford, Tex.

Filed Oct. 18, 1996, Ser. No. 733,495
Int. Cl.[6] H04R *11/00*; **G01V** *1/02*
U.S. Cl. 367—189 **12 Claims**



1. A seismic vibrator, which selectively imparts compressional and shear wave seismic vibrations into the Earth's surface, comprising:

a. an earth-contacting baseplate which transmits vibrational energy into the Earth's surface;

b. a support structure having a pivot assembly connected to it;

c. stilt legs rigidly connecting the baseplate and the support structure in a spaced relationship;

d. a vibrator assembly having a first and second end connected by a middle portion, the vibrator assembly being pivotally supported at its first end by the pivot assembly, and including a reaction mass centered on a vibrational axis;

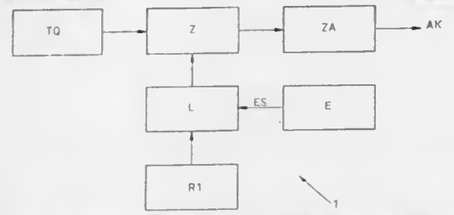
e. first and second control means, the first control means activating a reciprocal vibration of the reaction mass along the substantially vertical vibratory axis of the vibrator assembly when the seismic vibrator is in an operational position, and the second control means activating a first oscillatory vibration of the second end of the vibrator assembly, whereby vibrations are transferred to the baseplate and injected into the Earth's surface.

5,666,329

ELECTRONIC CONTROL DEVICE

Davide Buro; Frank-Thomas Eltrich, both of Reutlingen, and Michael Strugala, Remseck, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00981, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO95/07501, PCT Pub. Date Mar. 16, 1995
PCT Filed Aug. 25, 1994, Ser. No. 436,382
Claims priority, application Germany, Nov. 9, 1993, 43 30 906.2
Int. Cl.[6] G04F *8/00*; **F02B** *3/00*
U.S. Cl. 368—5 **33 Claims**



1. An electronic control device for controlling a fuel injection starting time and an injection duration in an internal combustion engine, said electronic control device comprising

an event device (E) including means for generating an event signal (ES) as a function of a prescribed occurrence of an event, said event device (E) including a second register (R2), a clock device (TE) and comparator (K), said comparator including means for comparing a stored register value in the second register (R2) with a value from the clock device (TE) and producing a comparator signal for generation of the event signal (ES) when the stored register value corresponds to the value from the clock device;

means for controlling the injection duration comprising a first register (R1), a loading device (L) and a counter (Z), a variable register value for the injection duration being stored in the first register (R1), said loading device (L) being connected to said event device (E) to receive said event signal (ES) at a loading device input;

means for inputting said variable register value in the first register (R1) into the counter (Z) as a starting value of said counter when the event signal (ES) is input into the loading device (L);

means for starting the counter (Z) and an injection process when the variable register value is input into the counter (Z); and

means for stopping said counter (Z) and an injection process when a count in the counter reaches a predetermined count value.

5,666,330

DISCIPLINED TIME SCALE GENERATOR FOR PRIMARY REFERENCE CLOCKS

George Philip Zampetti, Livermore, Calif., assignor to Telecom Solutions, Inc., San Jose, Calif.

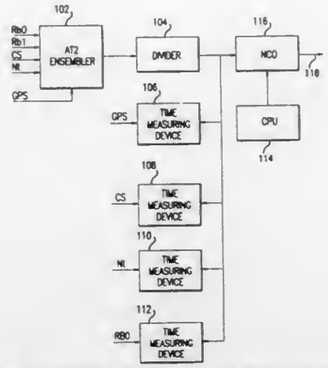
Filed Jul. 21, 1994, Ser. No. 278,423
Int. Cl.[6] G04C *11/02*
U.S. Cl. 368—47 **27 Claims**

1. A method of attaining syntonisation between a local clock and a universal time source, wherein the universal time is transmitted via a signal over a medium that is subject to adding linear and non-linear noise effects to the signal, the method comprising:

providing a plurality of constituent time clocks, each time clock providing a clock signal at the output;

ensembling the outputs of the time clocks to provide ensembled time clock information, wherein the ensembled time clock information is more stable than any of the constituent time clocks;

receiving the universal time clock signal



repeatedly determining the difference in frequency between the universal disciplining clock signal and the ensembled time clock information; and

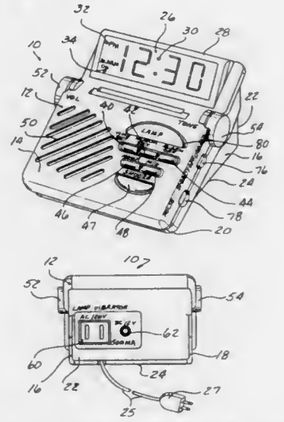
generating from a plurality of said frequency differences and at least one of the constituent time clocks and the ensembled time, a clock signal at the same frequency as the universal time clock signal.

5,666,331

ALARM CLOCK

Adam J. Kollin, Rochester Hills, Mich., assignor to RHK Technology, Inc., Rochester Hills, Mich.

Filed Sep. 20, 1994, Ser. No. 309,197
Int. Cl.[6] G04B *21/08*
U.S. Cl. 368—245 **19 Claims**



1. An alarm clock connectible to electrical A.C. power lines, the alarm clock comprising:

a housing;

display means, mounted in the housing, for displaying time of day and preset alarm time information;

clock means, mounted in the housing, for generating and supplying time of day information to the display means, and for generating an alarm signal when the time of day corresponds to a preset alarm time;

means, mounted on the housing and input to the clock means, for setting time of day and alarm time information and for de-energizing the alarm signal;

a first electrical outlet, mounted in the housing, for supplying electrical power to a first external electrically operated device electrically connectible to the first outlet;

receiver means, mounted in the housing, for receiving and detecting power line carrier signals transmitted on the electri-

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cal A.C. power lines to the alarm clock from a to more device in response to the occurrence of an input stimuli detected by the remote device; and

means, responsive to the clock means and the receiver means, for applying electrical power to the first outlet at one alternatingly on and off frequency in response to the generation of the alarm signal and at another distinct on and off sequence in response to the detection of the power line carrier signals by the receiver means.

5,666,332

MAGNETO-OPTICAL RECORDING MEDIUM PERMITTING AN INITIALIZING MAGNETIC FIELD SMALLER THAN A RECORDING MAGNETIC FIELD, AND METHOD OF RECORDING THERE ON

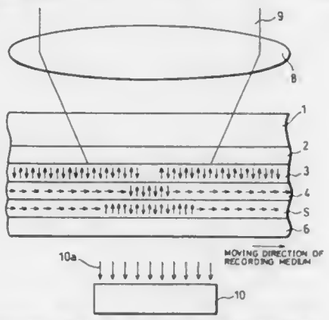
Junichiro Nakayama; Michinobu Mieda, both of Shiki-gun; Junji Hirokane, and Akira Takahashi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 23, 1996, Ser. No. 652,810

Claims priority, application Japan, Jun. 9, 1995, 7-143763

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **19 Claims**



1. A magneto-optical recording medium comprising:

a substrate;

a first magnetic layer made of a rare earth-transition metal alloy, said first magnetic layer being provided on said substrate;

a second magnetic layer made of a rare earth-transition metal alloy, said second magnetic layer being provided on said first magnetic layer; and

a third magnetic layer made of a rare earth-transition metal alloy, said third magnetic layer being provided on said second magnetic layer, wherein:

said first magnetic layer has a perpendicular magnetization in a temperature range between room temperature and its Curie temperature, and said first magnetic layer is provided so that information is read out in accordance with a direction of the perpendicular magnetization of said first magnetic layer to which a laser beam is projected;

said second magnetic layer has an in-plane magnetization at room temperature, while has a perpendicular magnetization at or above a temperature which falls within a range between room temperature and its Curie temperature, and said second magnetic layer is provided so as to control exchange-coupling force exerted between said third and first magnetic layers in accordance with temperature change due to the projected laser beam; and

said third magnetic layer has an in-plane magnetization at room temperature, and has a perpendicular magnetization at or above a temperature which falls within a range between room temperature and the temperature at which a transition occurs in said second magnetic layer from the in-plane magnetization to the perpendicular magnetization, and said third magnetic layer is provided so that the magnetization direction recorded as information is copied to said first magnetic layer through said second magnetic layer, the magnetization direction being recorded in accordance with temperature change due to the projected laser beam as well as in accordance with an external magnetic field.

5,666,333

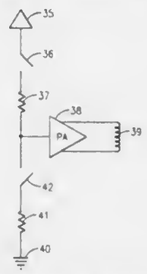
BIASING LEVEL CONTROLLER FOR MAGNETO-OPTICAL RECORDING DEVICE

David E. Lewis, Black Forest, Colo., assignor to Discovision Associates, Irvine, Calif.

Filed Apr. 7, 1995, Ser. No. 418,965

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **16 Claims**



1. An apparatus for controlling a magnitude of a magnetic field produced by a bias coil and compensating for a stray magnetic field, said apparatus comprising:

a means for receiving a positive voltage and a ground from a power supply, said means supplying said apparatus with said positive voltage and said ground;

a power amplifier having an input, an output, and a reference voltage, said reference voltage being positive and less than said positive voltage;

a first switch having a first switch input and a first switch output, said first switch further having a first open and a first closed position for selectively connecting said first switch input with said first switch output, said first switch input being electrically connected to said positive voltage;

a first resistor being connected between said first switch output and said input;

a second switch having a second switch input and a second switch output, said second switch further having a second switch open position and a second switch closed position for selectively connecting said second switch input with said second switch output, said second switch being in said second switch open position when said first switch is in said first switch closed position, said second switch being in said second switch closed position when said first switch is in said first switch open position, said second switch input being electrically connected to said input;

a second resistor being connected between said second switch output and said ground; and

a means for receiving a current from said amplifier output and supplying said current to said bias coil, said current producing a first magnetic field in said bias coil when said first switch is in said first closed position, said magnetic field having a first magnitude and a first polarity, said current further producing a second magnetic field in said bias coil when said second switch is in said second closed position, said second magnetic field having a second magnitude different than said first magnitude and a second polarity opposite from said first polarity, wherein said first magnitude and said second magnitude differ by an absolute value substantially equal to twice a magnitude of said stray magnetic field, a polarity of said stray magnetic field being substantially the same as said first polarity when said first magnitude is less than said second magnitude, said polarity being substantially the same as said second polarity when said second magnitude is less than said first magnitude.

5,666,334

STORAGE DEVICE CAPABLE OF USING BOTH OPTICAL AND MAGNETIC DISK UNITS FOR STORING INFORMATION DATA

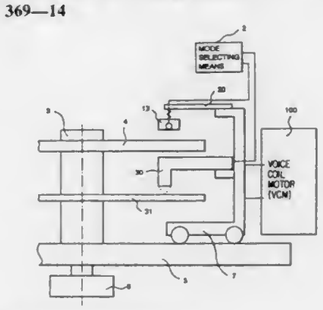
Mikio Tokuyama, Tsukuba; Yoshinori Takeuchi, Ishioka; Susumu Ebihara, Fujisawa; Kenji Mori, Hadano; Sadanori Nagaike, Odawara; Hiromu Hirai, Tsukuba, and Teruyoshi Higashiya, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,285

Claims priority, application Japan, Nov. 1, 1994, 6-268574

Int. Cl.[6] G11B *13/00;17/22*

U.S. Cl. 369—14 **3 Claims**



1. A storage system comprising:

a magnetic disk;

a magnetic disk unit provided with a magnetic head means for writing and reading information in/from said magnetic disk;

a host device;

an optical disk fixed at the same rotary axis as that of said magnetic disk;

an optical head means for writing and reading information in/from said optical disk; and

a recording mode selecting means provided between said magnetic disk unit and said host device;

wherein when said recording mode selecting means selects an optical disk mode, said optical head means is selected and when said recording mode selecting means selects a magnetic disk mode, said magnetic head means is selected.

5,666,335

APPARATUS AND METHOD FOR CORRECTING FOR DEFECTIVE SECTORS IN A RECORDING MEDIUM

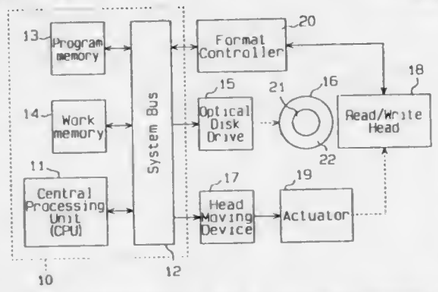
Koji Horibe, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VSLI Limited, Kasugai, both of Japan

Filed Aug. 29, 1994, Ser. No. 297,237

Claims priority, application Japan, Sep. 2, 1993, 5-218857

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **13 Claims**



1. An apparatus for writing data on a recording medium and reading data therefrom, the recording medium having a read-only memory area and writable memory area each including a plurality of sectors in which data is stored, the apparatus comprising:

determining means for reading data from a first sector in said read-only memory area and for determining whether or not said read data contains an error;

error correction means for performing error correction on data in said first sector using an error check and correction code when said read data is determined to contain an error;

restoring means for performing an exclusive OR operation on parity data previously stored on the recording medium and data in other sectors in an associated sector group to which said first sector having said erroneous data belongs, thereby restoring said erroneous data as correct data, when said error in said data in said first sector cannot be corrected by said error correction means; and

write means for writing said correctly restored data by said restoring means into the writable memory area on the recording medium, wherein said write means writes both data about a sector position in the writable memory area where the data restored by said restoring means is written and data about the sector number of the sector containing data in error, in a sector different from said sector in which said restored data is written,

wherein when erroneous data in a second sector in said associated sector group cannot be corrected by said error correction means, said restoring means restores said erroneous data in said second sector by using said correctly restored first sector data stored in the writable memory area.

5,666,336

REPRODUCTION APPARATUS FOR REPRODUCING FIRST AND SECOND DATA REGIONS ON A CD-ROM

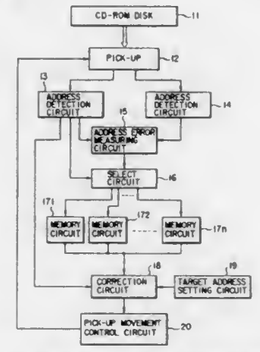
Takuji Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 633,517, Apr. 16, 1996, abandoned, which is a continuation of Ser. No. 361,156, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 133,172, Oct. 25, 1993, abandoned. This application Aug. 23, 1996, Ser. No. 701,881

Claims priority, application Japan, Feb. 27, 1992, 4-040891

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **10 Claims**



1. A disk reproducing apparatus for reproducing, via a pickup, information stored on a disk, the disk including a pair of first data regions and a second data region interposed between the pair of first data region, each first data region in the pair of first data regions storing a first kind of data, first address data representing a position of the first first kind of data, and second address data also representing a position of the first kind of data, and the second data region storing a second kind of data, the disk reproducing apparatus comprising:

recording means for detecting the first address data and the second address data stored in each of the first data regions, for measuring an error component between the first address data

and the second address data for each of the first data regions on the disk, and for recording the error component associated with each of the first data regions in an error component storage region of the address error measuring circuit; and

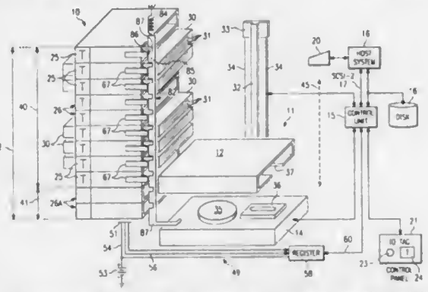
correction means, responsive to a search for a target position in one of the first data regions, for reading out from the error component storage region of the recording means, the error component associated with the first data region containing the target position to which the pickup is to be moved and for correcting a position at which the pickup is to be stopped based on the the error component retrieved by the correcting means.

5,666,337

DATA STORAGE APPARATUS HAVING A COLUMNAR ARRAY OF INPUT-OUTPUT STORAGE RECEPTACLES WITH PHYSICAL INTERLOCK MEANS

Chi-Hung Dang, and Chi-Thanh Dang, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1994, Ser. No. 334,976
Int. Cl.[6] G11B *15/68;17/22*
U.S. Cl. 369—36 **5 Claims**



1. Data storage apparatus for storing and using a plurality of disk cartridges, an improvement including, in combination:

a one-receptacle wide columnar array of disk-cartridge receptacles, each said receptacle for storing a disk cartridge, said receptacles respectively having outer openings for enabling manual access for inserting and removing a disk cartridge into and from said each receptacle, each said receptacle having an inner opening for enabling automatic access for inserting and removing a disk cartridge into and from said each receptacle;

a disk cartridge device disposed adjacent one end of said columnar array, said disk cartridge device having a spindle for rotatable supporting a disk medium in each of said disk cartridges and a transducer means for being in a transducing relationship with a disk medium supported on said spindle;

accessing means disposed adjacent to said columnar array and having a disk cartridge holder movably disposed with respect to said columnar array and said disk cartridge device for movements along said columnar array and to a play position in said disk cartridge device, said holder for removing from, carrying and inserting one of said disk cartridges at a time from and to said receptacles and for mounting a respective one of said disk media in said respective one of said disk cartridges on said spindle for rotation therewith in said play position on said disk cartridge device, said holder while mounting said respective one of said disk cartridges being disposed remote from all of said receptacles;

manual control means having an actuating button and a display;

automatic control means connected to said disk cartridge device, to said accessing means and to said manual control means for responding to said actuating button being actuated to move said holder to said play position in said disk cartridge device for facilitating manual insertion and removal of predetermined ones of said disk cartridges into and from said receptacles in said columnar array;

display control means in said automatic control means connected to said display and to said accessing means for responding to said accessing means moving said holder toward said play position in said disk cartridge device for supplying a signal to said display to indicate that cartridges may be manually removed from and inserted into said array;

physical interlock means in said array having cartridge locking means at each of said receptacles and being relatively movably disposed with respect to said receptacles between a locking position and an unlocking position such that in said locking position none of said cartridges are manually removable from said respective receptacles through said outer openings and while said physical interlock means is in said unlocking position any of said cartridges are removable from said receptacles through said outer openings;

return means connected to said interlock means yieldably urging said interlock means from said unlocking to said locking position;

lock control means connected to said interlock means for moving said interlock means between said locking and unlocking positions;

said disk cartridge holder moving into said play position of said disk cartridge device engaging said lock control means for moving said physical interlock means from said locking position to said unlocking position while said cartridge holder is disposed at said disk cartridge device whereby said cartridges can be manually inserted into or exited from said array through said outer openings only while said disk cartridge holder is at said play position;

a plurality of multi-cartridge carrying cassettes disposed in said receptacles, respectively;

each of said cassettes having a plurality of cartridge receiving slots for respectively removably receiving respective ones of said cartridges, each said slot having a opening through which said cartridges may be inserted into and removed from the slots;

each of said cassettes having a given number of detent receivers;

each one of said receptacles having a certain number of leaf-spring detents, said certain number being equal to said given number of said detent receivers, each said leaf spring detent having a detent end spring-urged inwardly to the respective receptacle for lockingly engaging said detent receivers such that during insertion or removal of said cassette through a respective one of said outer openings said leaf-spring detents are momentarily urged outwardly of said receptacles for outward movement to enable said detent ends to slide along a predetermined one of said cassettes being inserted or removed from the respective receptacle to and from a predetermined one of said detent receivers;

said interlock means being disposed adjacent to all of said leaf-spring detents for respectively engaging all of said leaf-spring detents while in said locking position for preventing said outward movement whereby none of said cassettes can be removed from said receptacles while said interlock means is in said locking position;

said physical interlock means having a slidable bar disposed along one lateral side of all of said receptacles in said columnar array;

said cartridge locking means in said physical interlock means comprising a plurality of spaced-apart locking teeth extending toward respective ones of said receptacles;

said given number being two, said two detent receivers respectively disposed on opposite side walls of each of said cassettes;

each one of said plurality of leaf spring detents having one end stationarily affixed respectively to said receptacles adjacent said inner openings, locking ends respectively on each of said leaf spring detents yieldably engaged in said detent receivers, respectively, such that insertion of a predetermined one of said cassettes pushes said leaf springs outwardly of said receptacles, respectively;

said physical interlock means being disposed adjacent said locking ends of said leaf spring detents such that while said physical interlock means is in said locking position said teeth are respectively disposed in a blocking relationship to said locking ends of said leaf spring detents for blocking said outwardly movement of all said detents whereby none of said cassettes in said respective receptacles can be removed nor inserted from nor into said receptacles and while said physical interlock means is in said unlocking position all of said locking teeth are displaced along the columnar array from said leaf spring detents, respectively;

said return means having spring means connected to one end of said bar for yieldably urging said bar away from said disk cartridge device toward said locking position; and

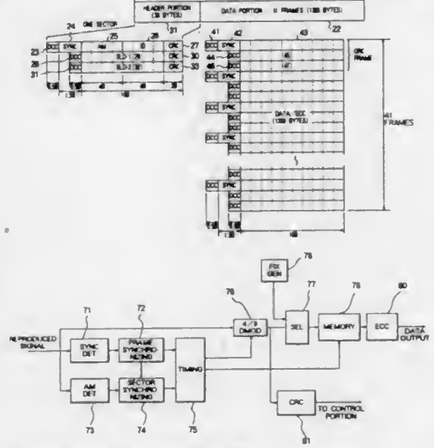
said lock control means on said physical interlock means being an arm extending into a path of travel of said cartridge holder for engagement by said cartridge holder as said cartridge holder is leaving said receptacles and approaching said disk cartridge device along said path of travel for urging said bar to move toward said media device for moving said bar from said locking position to said unlocking position while said cartridge holder is adjacent said disk cartridge device.

5,666,338

RECORDING MEDIUM FORMATTED FOR ERROR CORRECTION AND DENSITY RECORDING AND AN APPARATUS FOR RECORDING INFORMATION THEREON AND/OR RECORDING INFORMATION THEREFROM

Yoshiyuki Ishizawa, and Toshihiko Kaneshige, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1994, Ser. No. 363,320
Claims priority, application Japan, Mar. 16, 1994, 6-046007
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **3 Claims**



1. A recording medium comprising:

a recording area divided into sectors, each of which is composed of a plurality of frames with a predetermined bit length, at least one of the plurality of frames in an associated sector comprising:

a first synchronous pattern representing the period of the frame,

a second synchronous pattern composed of a predetermined signal pattern that is not present in a signal pattern of user data and representing a period of the associated sector,

identification data disposed at a predetermined position corresponding to the second synchronous pattern for identifying the associated sector, and

error detection data for detecting an error in the identification data; and

the other frames in the associated sector comprising:

the first synchronous pattern,

the user data,

predetermined fixed data with which the second synchronous pattern is substituted and that is present in a signal pattern of the user data,

the identification data,

the error detection data, and

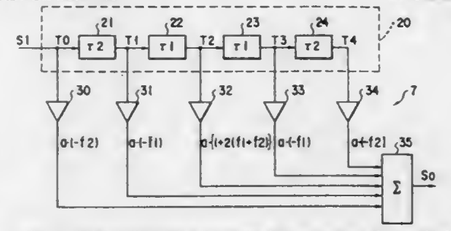
error correction data for correcting an error in the user data.

5,666,339

OPTICAL INFORMATION REPRODUCING APPARATUS USING TRANSVERSAL FILTER

Yoshinori Honguh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 503,613, Jul. 18, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 710,278
Claims priority, application Japan, Jul. 20, 1994, 6-168166
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **9 Claims**



1. An optical information reproducing apparatus for optically reproducing information from a recording medium on which the information is recorded as a mark string, comprising:

irradiation means for irradiating a light beam onto said recording medium through an object lens; and

signal processing means for detecting diffraction light from said recording medium as a reproducing signal, and processing the obtained reproducing signal to reproduce the information recorded on said recording medium,

wherein said signal processing means includes a transversal filter, whose characteristics are fixed, having delay means with a plurality of taps for receiving the reproducing signal, and means for performing weighted addition of output signals from the respective taps of said delay means with predetermined tap coefficients to form an output signal containing the reproduced information from said recording medium, said transversal filter having a delay time τ between the respective adjacent taps, the delay time τ set to one of

$$\tau=(0.37 \text{ to } 0.51)\times\lambda/(v\times NA)$$

and

$$\tau=Lmin/v$$

where λ is a wavelength of the light beam, NA is a numerical aperture of said object lens, Lmin is a minimum mark length of the mark string, and v is a speed of the recording medium relative to the light beam.

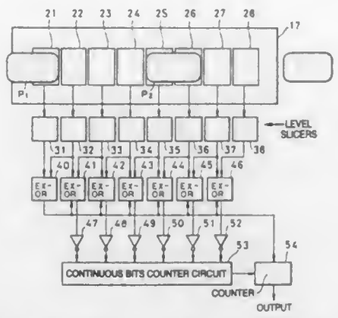
5,666,340

OPTICAL RECORDING MEDIUM INFORMATION REPRODUCING APPARATUS

Takanori Maeda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,382
Claims priority, application Japan, Jan. 6, 1995, 7-000552
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—58 **13 Claims**

1. An optical recording medium information reproducing apparatus for reproducing an information signal recorded on a record-



ing medium wherein the information signal is recorded as a change-of-length in a track direction of mark regions optically different from each other, a single sequence of the mark regions extending in the track direction on the recording medium comprising:

an irradiation optical system having a light source generating a light beam and irradiating the light beam onto mark regions moving in the track direction on the recording medium as a light spot covering a range longer than the largest length of the mark regions;

image formation means for forming a real image of the mark regions to make an image surface by receiving a reflected light from the light spot;

photodetection means for detecting the reflected light having a plurality of light receiving areas arranged in a direction corresponding to the track direction in the real image of the mark regions on the image surface, each of the light receiving areas generating an output signal in response to an amount of light detected; and

processing means for processing the output signals of the photodetection means to produce a signal representing a length of each mark region in the track direction.

5,666,341

DATA DETECTION APPARATUS

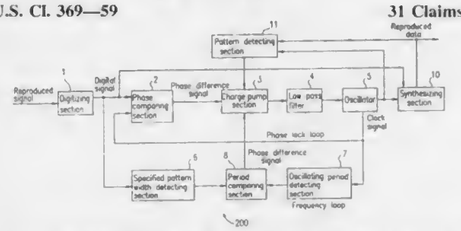
Ryusuke Horibe; Toshiyuki Shimada, both of Kobe; Hiromiti Ishibashi, Ibaraki, and Hiroyuki Miyachi, Nagaokakyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 13, 1996, Ser. No. 710,266

Claims priority, application Japan, Sep. 18, 1995, 7-238115

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—59 **31 Claims**



1. An apparatus for reproducing digital information which is subjected to modulation recording with a discrete record length, comprising:

a digitizing section for digitizing a reproduced signal at a predetermined level so as to output a digital signal;

an oscillator for outputting a clock signal having a frequency proportional to an input signal;

a phase comparing section for comparing the digital signal with the clock signal so as to output a first difference signal indicating a difference in phase between the digital signal and the clock signal;

a specified pattern width detecting section for detecting a time interval of a specified pattern included in the digital signal so as to output first information indicating either a reproduced period or a reproduced frequency;

an oscillating period detecting section for detecting a period of the clock signal so as to output second information indicating either an oscillating period or an oscillating frequency of the oscillator;

a period comparing section for comparing the first information with the second information so as to output a second difference signal indicating a difference between the first information and the second information;

an operating section for performing an operation in accordance with the first difference signal and the second difference signal; and

a filter for limiting a frequency band of the output from the operating section so as to output a resultant signal as an input signal for oscillator;

wherein the apparatus has: a phase lock loop operating so that the clock signal is phase-locked with an edge of the digital signal by the oscillator, the phase comparing section, the operating section and the filter; and a frequency loop operating so that a clock period and reproducing period become almost identical to each other by the oscillator, the specified pattern width detecting section, the oscillating period detecting section, the period comparing section, the operating section and the filter.

5,666,342

UNITED TAPE AND DISC RECORDING/REPRODUCING DEVICE HAVING A UNITED INSERTING PART

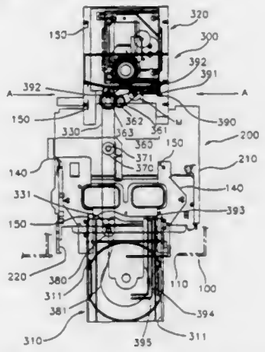
Ho-Geol Kim, Kyeonggi-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 14, 1995, Ser. No. 528,248

Claims priority, application Rep. of Korea, Sep. 19, 1994, 94-23112

Int. Cl.[6] G11B *33/02*

U.S. Cl. 369—75.2 **12 Claims**



1. A united tape and disc recording/reproducing device having a united inserting part comprising:

a body having an inserting part provided at a front side of said body for inserting a cassette tape and an optical disc;

a tape driving part having a tape recorder deck and holder, the tape recorder deck being provided with a running system having a head drum at an inside of said body and said holder being provided for placing the tape on said tape recorder deck; and,

a disc driving part having a disc tray, a disc deck, disc tray transferring means, and disc deck rotating means, said disc tray being provided for receiving the disc, said disc deck being provided for placing the disc transferred by said disc tray on said disc deck, said disc tray transferring means being provided with gear groups installed on said disc deck and said body and a rack formed at said disc tray to be engaged with said gear groups, and said disc deck rotating means being rotatably connected to a side of the interior of said body and being rotated simultaneously with transferring of said disc tray to transfer said disc deck to a loading position,

wherein said disc tray transferring means comprises a first gear group having a driving motor and a plurality of gears rotated by the driving motor; a second gear group installed on a path of the disc tray to be transferred, said second gear group in order to transfer said disc tray to an inside or outside of said body; a third gear group installed at spaced position with the second gear group on a path of the disc tray to be transferred, said third gear group belt pulley connected with the second gear group to be rotated by them; a rack formed on lower surface of said disc tray along a transferring direction of the disc tray to be engaged with said first, second, and third gear groups, whereby the disc tray transferring means transfers said disc tray to the inside or an outside of said body.

5,666,343

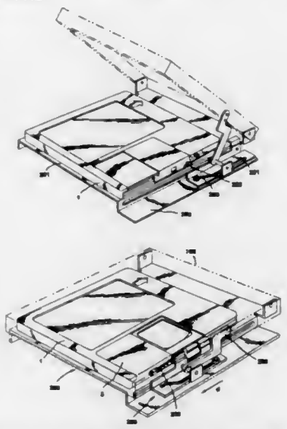
DISK PLAYER HAVING A SHUTTER OPENING STRUCTURE IN WHICH A SHUTTER OF THE DISK CARTRIDGE IS OPENED WITHOUT A CARTRIDGE HOLDER

Seung-joon Ahn, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,226

Int. Cl.[6] G11B *17/035*

U.S. Cl. 369—77.2 **4 Claims**



1. A disk player having a deck, a cover pivotally attached to said deck to be opened and closed and a shutter opening/closing means for opening and closing a shutter of a disk cartridge loaded on said deck, wherein said shutter opening/closing means comprises:

a shutter opening slide slidably mounted on said deck and having a shutter opening/closing portion for opening and closing said shutter, and a locking releasing portion for releasing a locking state of said shutter with respect to said disk cartridge when said shutter is closed; and

a link placed between said shutter opening slide and said cover, said link having one end pivotally connected to said shutter opening slide and another end pivotally connected to said cover,

whereby said shutter opening slide is slidably moved by said link as said cover is opened and closed, so that said shutter opening/closing portion opens and closes said shutter.

5,666,344

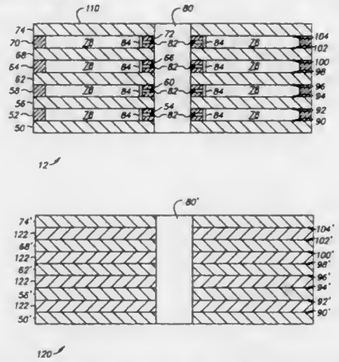
MULTIPLE DATA SURFACE OPTICAL DATA STORAGE SYSTEM

Wayne Isami Imaino, San Jose; Hal Jervis Rosen, Los Gatos; Kurt Allan Rubin, Santa Clara; Timothy Carl Strand, San Jose, and Wade Wai-Chung Tang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 167,606, Dec. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 79,483, Jun. 18, 1993, Pat. No. 5,381,401, which is a division of Ser. No. 710,226, Jun. 4, 1991, Pat. No. 5,255,562. This application Aug. 1, 1996, Ser. No. 695,179

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—94 **50 Claims**



1. A multiple data layer optical data storage disk for use in an optical disk drive of the type having a laser for generating a single wavelength laser light beam, a focusing lens for directing a spot of laser light from the beam to any one of a plurality of spaced apart data layers, and an optical reception device for receiving laser light reflected from any one of the data layers, the disk comprising:

a first member transmissive to the single wavelength laser light and having a first data layer for storing recorded data as marks formed in the first data layer, the first data layer having a layer of a semiconductor material deposited thereon;

a second member having a second data layer for storing recorded data as marks formed in the second data layer;

a support device for supporting the first and second data layers in a spaced apart relationship;

a medium transmissive to the single wavelength laser light and located between the first and second data layers; wherein the layer of semiconductor material on the first data layer has a predetermined thickness enabling transmission of a portion of the single wavelength laser light from the laser to said second data layer and reflection of light from said second data layer to said optical reception device when the focused spot is located on said second data layer; and said predetermined thickness enabling reflection of a portion of the single wavelength laser light from said first data layer to said optical reflection device when the focused spot is located on said first data layer.

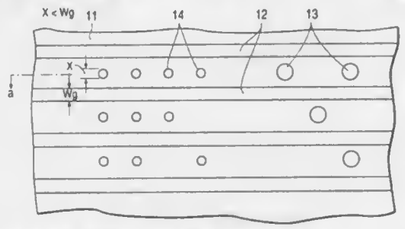
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5,666,345

OPTICAL MEMORY MEDIUM WITH PREDETERMINED GUIDE TRACKS AND PREPITS

Akira Takahashi; Tetsuya Inui, both of Nara; Kenji Ohta, Nara-ken; Toshihisa Deguchi, and Kazuo Van, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 740,670, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 239,755, Sep. 2, 1988, abandoned. This application Feb. 28, 1994, Ser. No. 203,619
Claims priority, application Japan, Sep. 2, 1987, 62-219708
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.1 **15 Claims**



1. An optical memory disk medium comprising:

a plurality of guide groove tracks arranged parallel to one another for controlling a position of a light beam, a width of a land region between the guide groove tracks being wider than a width of each of the guide groove tracks in the disc-radial direction;

prepits for providing addressing information for said guide groove tracks;

said prepits being formed on the land regions interposed between lateral edges, in the disc-radial direction of adjacent parallel guide groove tracks, each prepit having a width, said width of said prepits having a narrower dimension than the width of each guide groove track in the disc-radial direction;

recorded data pits located on said land regions; and

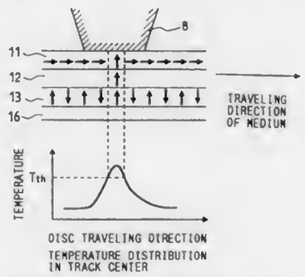
the guide groove tracks are free of data pits.

5,666,346

SUPER-RESOLUTION MAGNETOOPTICAL RECORDING MEDIUM USING MAGNETIC PHASE TRANSITION MATERIAL, AND METHOD FOR REPRODUCING INFORMATION FROM THE MEDIUM

Naoki Nishimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,223
Claims priority, application Japan, Aug. 24, 1994, 6-199802
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—275.2 **4 Claims**



1. A magnetooptical recording medium comprising:

a transparent substrate;

a first magnetic layer laid on said substrate, said first magnetic layer having in-plane magnetization at room temperature and vertical magnetization at an elevated temperature;

a second magnetic layer for storing information, said second magnetic layer being laid on said first magnetic layer and having vertical magnetization between the room temperature and a Curie temperature thereof; and

a third magnetic layer disposed between said first magnetic layer and said second magnetic layer and made of a magnetic phase transition material undergoing reversible transition from antiferromagnetism to ferromagnetism;

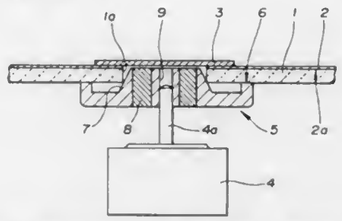
wherein the antiferromagnetism-ferromagnetism phase transition temperature of said third magnetic layer is near a temperature at which said first magnetic layer changes from in-plane magnetization to vertical magnetization.

5,666,347

OPTICAL DISK AND DISK CHUCKING MECHANISM

Tadao Yoshida, and Katsuaki Tsurushima, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 163,592, Dec. 7, 1993, which is a continuation of Ser. No. 809,764, Dec. 18, 1991, abandoned. This application Nov. 22, 1994, Ser. No. 343,362
Claims priority, application Japan, Dec. 28, 1990, 2-416338; Dec. 28, 1990, 2-416339
Int. Cl.[6] G11B *3/70;23/00*
U.S. Cl. 369—282 **7 Claims**



1. A disk table for positioning the center of rotation of a central opening of a disk and for transferring rotation to the disk, the disk having a top surface, a bottom surface and a magnetic portion, the table comprising:

a spindle;

an inner ring connected to the spindle;

a magnetic ring connected to the inner ring, the magnetic ring attracting the magnetic portion of the disk, allowing rotation of the spindle to be transferred to the disk; and

an outer ring unmovably connected to the magnetic ring, the outer ring having a tapered portion and a disk platen, the disk platen having a flat surface that contacts the bottom surface of the disk to set the height position of the disk when the disk is positioned on the disk table, the tapered portion downwardly extending into a region of the disk table,

when the table is inserted into the central opening, of the disk, the tapered portion contacts an inner side of the central opening, positioning the center of rotation of the central opening to be substantially coincident with the center of rotation of the spindle.

5,666,348

PACKET SWITCHED RADIO CHANNEL ADMISSION CONTROL IN A CELLULAR TELECOMMUNICATIONS SYSTEM

Carl Magnus Thornberg; Magnus Andersson, both of Stockholm, and Olle Erik Grimlund, Bromma, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson (publ.), Stockholm, Sweden

Filed Sep. 18, 1995, Ser. No. 529,569
Int. Cl.[6] H04Q *7/22;* **H04B** *7/212*
U.S. Cl. 370—230 **20 Claims**

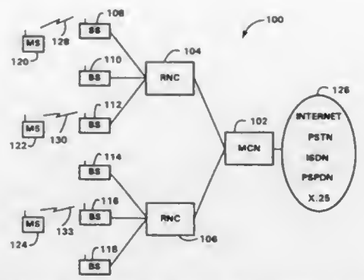
1. In a cellular telecommunications system comprising a plurality of transceiving stations each capable of transmitting and receiving data packets on at least one packet radio channel, a method of controlling admission to a packet switched radio channel, said method comprising the steps of:

(a) receiving, for a requested packet call, an admission request to a packet switched radio channel;

(b) determining whether estimated data traffic caused by other packet calls currently using said packet radio channel together with an estimated data traffic for said requested packet call are within a maximum tolerable traffic level for said packet radio channel;

(c) confirming that each of said other packet calls have a priority value at least as great as the priority value of said requested packet call; and

(d) determining from results of steps (b) and (c) whether said admission request is to be granted.

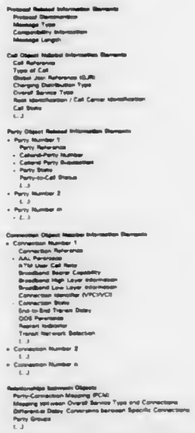


5,666,349

METHOD FOR CONTROLLING COMPONENTS OF A COMMUNICATION SYSTEM

Bernhard Petri, Munich, Germany, assignor to Siemens Aktiengeselischaft, Munich, Germany

Continuation of Ser. No. 350,675, Dec. 7, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,148
Claims priority, application Germany, Dec. 8, 1993, 43 41 888.0
Int. Cl.[6] H04T *3/12*
U.S. Cl. 370—360 **10 Claims**



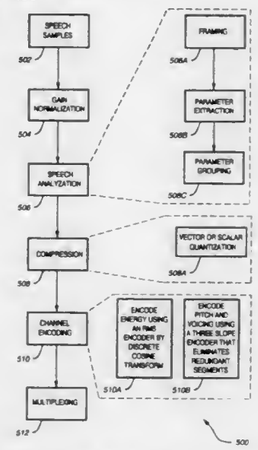
1. A method for controlling components having control units for controlling a call set up in a communication system composed of at least one network for the transmission of digital communication signals, the at least one network having at least one switching equipment and communication terminal equipment allocated to subscribers for multipoint-multiconnection call set up, the at least one switching equipment and communication terminal equipment being components of the communication system, comprising the steps of: controlling a first component via signaling in the form of messages communicated over a part of the network from a second component; providing in each of said messages at least one protocol and message identifier, attributes of object for a call, object for a subscriber and object for a connection having object identification numbers for each of individual objects permanently allocated at least locally to a call for the duration of the call; providing the attributes of objects contained in a message independently of a relationship between these objects and independently of their relationship to other objects; separately providing further information about relationships between different objects within each signalling message itself; and identifying via the control unit of the first component the relationships between the different objects dependent on said further information.

5,666,350

APPARATUS AND METHOD FOR CODING EXCITATION PARAMETERS IN A VERY LOW BIT RATE VOICE MESSAGING SYSTEM

Jian-Cheng Huang, Lake Worth; Xiaojun Li, Boynton Beach, and Floyd Simpson, Lantana, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 20, 1996, Ser. No. 603,677
Int. Cl.[6] H04J *3/17*
U.S. Cl. 370—435 **9 Claims**



1. A method for coding speech parameters generated from a voice message, comprising the steps of:

separating the speech parameters to produce a first group of energy parameters and a second group of pitch and voicing parameters;

compressing and encoding the first group of energy parameters using a non-uniform root-mean-square scalar process to create a first plurality of encoded data;

compressing, encoding, and combining the second group of pitch and voicing parameters into a single parameter using a three slope vector encoding process that creates a second plurality of encoded data; and

multiplexing the first and second plurality of encoded data to create a multiplexed signal for transmission, the multiplexed signal representing the voice message.

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METHOD FOR DISASSEMBLING AND ASSEMBLING FRAME STRUCTURES CONTAINING POINTERS

Toni Oksanen; Esa Viitanen, both of Espoo; Jari Patana, Vantaa, and Hannu Alatalo, Oulu, all of Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

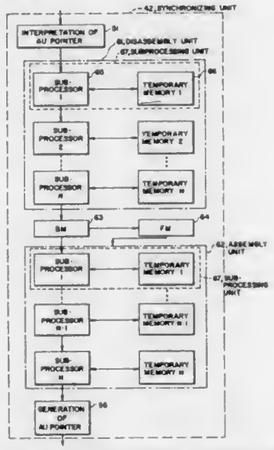
PCT No. PCT/F193/00237, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO93/25030, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 1, 1993, Ser. No. 362,414

Claims priority, application Finland, Jun. 3, 1992, 922568

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—474 4 Claims



1. A method for use when interpreting pointers when disassembling a frame structure specified in a synchronous digital data communication system, in which the frame structure includes a predetermined number of bytes of fixed length and including at least a first signal and a second signal at a same level of hierarchy, some of the bytes forming pointers indicating the phase of a corresponding payload signal within the frame structure, the method comprising the steps of:

receiving said first signal in a disassembly unit over a physical line;

subjecting said first signal to a pointer-interpretation process stage in said disassembly unit in a first segment of time;

receiving said second signal in said disassembly unit over said physical line; and

subjecting said second signal to said pointer interpretation process stage in said disassembly unit in a second segment of time which is later than said first segment of time.

5,666,352

CDMA MOBILE COMMUNICATION SYSTEM AND METHOD WITH IMPROVED PHASE CORRECTION FEATURES

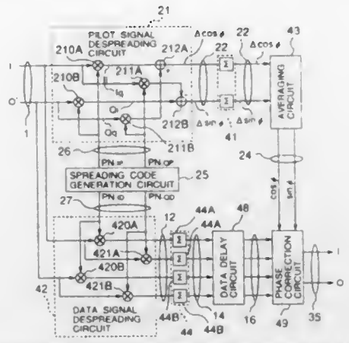
Yasuo Ohgoshi; Nohukazu Doi, both of Hachioji, and Takashi Yano, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,628

Claims priority, application Japan, Jul. 20, 1994, 6-167675

Int. Cl.[6] H04B *7/216;* H04J *13/02*

U.S. Cl. 370—206 6 Claims



1. A mobile station in a code division multiple access mobile communication system, wherein a base station, multiplexes through spectrum-spread, a pilot signal and a data signal having I and Q components using specific spreading signals, quadrature multiplexes the I and Q components of the pilot signal and the data signal, and then transmits the quadrature multiplexed I and Q components of the pilot signal and the data signal as a reception signal to be received by said mobile station, said mobile station comprising:

a quadrature detection circuit for separating the reception signal into an I component multiplexed signal and a Q component multiplexed signal;

a first despreading circuit for generating first and second phase error signals having values corresponding to phase shifts between the quadrature detection circuit and a quadrature multiplexer of the base station, by despreading the I component multiplexed signal and the Q component multiplexed signal using spreading codes for a pilot symbol specific to I and Q components;

a circuit for generating first and second phase correction signals having a symbol rate of a data signal, by processing the first and second phase error signals supplied from said first despreading circuit;

a second despreading circuit for outputting a data signal group, by despreading the I and Q component multiplexed signals using spreading codes specific to I and Q components of respective data reception channels;

a first rate conversion circuit for converting the transmission rate of the data signal group output from said second despreading circuit into the symbol rate of the data signal; and

a phase correction circuit for generating the I and Q component data signals not containing phase shifts, by correcting the value of each data signal of the data signal group of the converted symbol rate in accordance with the first and second phase correction signals.

5,666,353

FRAME BASED TRAFFIC POLICING FOR A DIGITAL SWITCH

Daniel E. Klausmeier, Sunnyvale; Charles M. Corbalis, Saratoga, and Kambiz Hooshmand, Santa Clara, all of Calif., assignors to Cisco Systems, Inc., San Jose, Calif.

Filed Mar. 21, 1995, Ser. No. 408,273

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—230 32 Claims

1. A method of regulating incoming traffic on a data communication link, the method comprising the steps of:

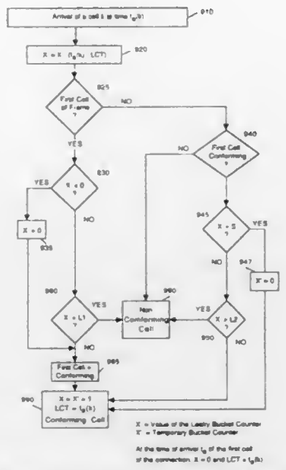
maintaining a counter for said communication link, said counter having a first limit;

receiving incoming cells on said data communication link, said incoming cells grouped into frames;

detecting if a received cell is a first cell in a frame,

treating the received cell as conforming if the received cell is a first cell of the frame and said counter is within said first limit;

treating the received cell as non-conforming if the received cell is a first cell of the frame and said counter is not within said first limit;



treating the received cell as conforming if the received cell is not a first cell of the frame and the first cell of the frame was conforming; and

treating the received cell as non-conforming if the received cell is not a first cell of the frame and the first cell of the frame was non-conforming.

5,666,354

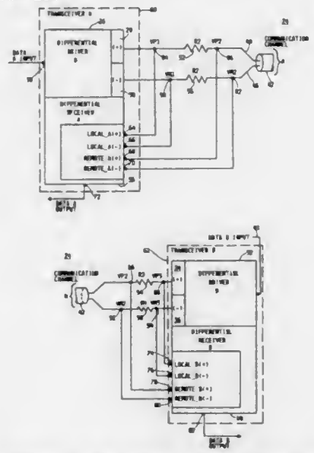
CMOS BI-DIRECTIONAL DIFFERENTIAL LINK

Delbert Raymond Cecchi; Curtis Walter Preuss, both of Rochester, and Donald Joseph Schulte, Eagan, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,827

Int. Cl.[6] H04B *1/56;* H04L *5/14*

U.S. Cl. 370—284 50 Claims



1. A full-duplex, bi-directional, differential link for transmitting differential data signals, the differential link comprising:

a transmission line, having a first terminal at one end, and a second terminal at the opposite end;

a first differential Complementary Metal-Oxide Semiconductor (CMOS) transceiver coupled to the first terminal, the first CMOS transceiver comprising a first differential CMOS driver having a first CMOS constant voltage source to drive the differential data signals, and a first differential CMOS receiver having a first self-biased differential amplifier; and

a second differential CMOS transceiver coupled to the second terminal, the second differential CMOS transceiver comprising a second differential CMOS driver having a second CMOS constant voltage source to drive the differential data signals, and a second differential CMOS receiver having a second self-biased differential amplifier.

5,666,355

POWER CONSUMPTION CONTROL METHOD AND APPARATUS FOR A COMMUNICATION SYSTEM SUBSCRIBER UNIT

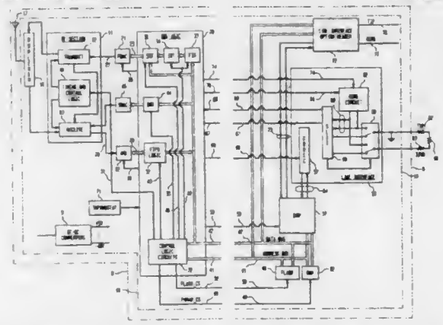
Jim J. Huah, Cherry Hill, N.J.; John Kaewell, Jamison, Pa.; Kevin Kinney, Holland, Pa.; Mark A. Lemmo, Huntington Valley, Pa.; Michael W. Regensburg, Marlton, N.J.; William T. Vanderslice, Jr., Norristown, Pa., and David Vessal, Villanova, Pa., assignors to InterDigital Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 278,471, Jul. 21, 1994, abandoned.

This application Mar. 26, 1996, Ser. No. 624,703

Int. Cl.[6] H04B *7/212;* H04J *3/16*

U.S. Cl. 370—311 35 Claims



1. A method for operating a TDMA radio subscriber unit to conserve power, said subscriber unit comprising a plurality of cooperatively connected circuit components, said subscriber unit (a) operating in different signal processing states at different times, and (b) operating within a plurality of time slots of a recurring time frame, said method comprising the steps of:

identifying for each of said states, respective ones of said circuit components not required to be powered at a first power consumption level for said TDMA radio subscriber unit to operate;

assigning to said respective ones of said circuit components a second power consumption level, lower than said first power consumption level, for said each of said states;

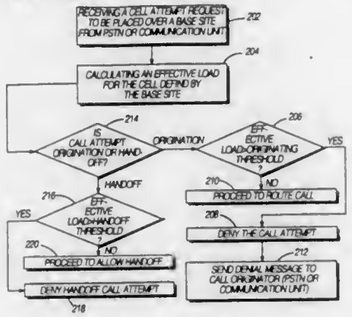
transitioning said subscriber unit between two of said signal processing states responsive to a transition between two of said plurality of time slots; and

operating each of said circuit components at one of said first power consumption level and said second power consumption level depending on whether said each of said circuit components has been assigned said second power level for any one of said states within said one of said time slots said subscriber unit is operating within.

5,666,356
METHOD AND APPARATUS FOR CONTROLLING CALLS IN A CODE DIVISION MULTIPLE ACCESS SYSTEM

Philip Joseph Fleming, Glen Ellyn, and Aleksandr Stolyar, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1995, Ser. No. 539,032
Int. Cl.[6] H04B *7/216;* **H04Q** *7/22*
U.S. Cl. 370—328 **7 Claims**



1. A method of controlling a call in a code division multiple access, CDMA, system comprising the steps of:

receiving a call attempt request to be placed over a target cell of the CDMA system;

calculating an effective load based on a measurement indicative of non-target cell interference or a number of calls in soft handoff with the target cell for the target cell;

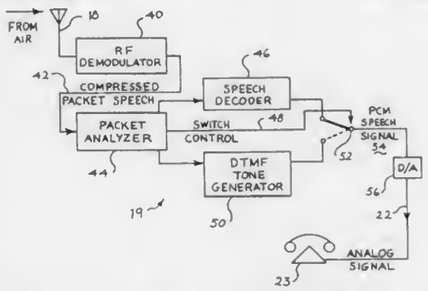
comparing the effective load to a threshold; and

denying the call attempt request by sending a denial message if the effective load exceeds the threshold.

5,666,357
DTMF TONE PASSER IN A VOICE COMMUNICATION SYSTEM

Shrirang Jangi, Germantown, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 408,805, Mar. 23, 1995, abandoned. This application Dec. 4, 1996, Ser. No. 764,654
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—345 **22 Claims**



19. A method of decoding a compressed digital signal comprising the steps of:

receiving a compressed digital signal including a plurality of tone and speech packets from a single subscriber, said tone packets being interleaved with at least one of said speech packets;

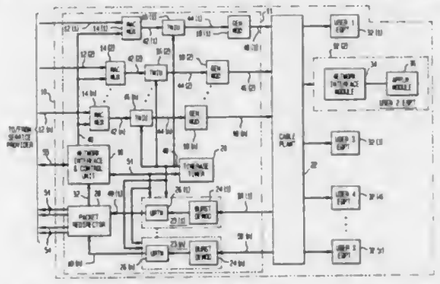
detecting the packet type for each of said plurality of packets; and

decoding each of said speech packets generating a digital speech signal.

5,666,358
METHOD AND APPARATUS FOR SUPPORTING TDMA OPERATING OVER HYBRID FIBER COAXIAL (HFC) OR OTHER CHANNELS

Bernardo Paratore, Doylestown; Robert Patrick Mullins, Eagleville, both of Pa.; Michael J. Gittings, Morrestown, N.J., and Dennis R. Clark, South Hampton, Pa., assignors to General Instrument Corporation of Delaware, Hatboro, Pa.

Filed Oct. 16, 1995, Ser. No. 543,702
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—347 **21 Claims**



1. A time division multiple access (TDMA) communication network comprising:

channel synchronizing means for synchronizing channels in a downstream direction towards users of the communication network comprising:

a timebase timer for generating time markers comprising modulo N-bit programmable cyclical reference counts that are incremented at a predetermined frequency and are reset to 0 when the reference counts reach a predefined value; and

at least one time marker insertion unit, each time marker insertion unit comprising a first input terminal for receiving a digital TDMA transport stream having a predetermined data rate and comprising data packets and Media Access Control (MAC) packets that are interspersed between the data packets at predetermined intervals, a second input terminal for receiving the time markers generated by the timebase timer and for inserting a currently received time marker count into a currently received MAC packet, and an output terminal for transmitting the received TDMA data stream with the inserted time marker counts in the MAC packets in a continuous output TDMA transport stream to remote user terminals where the time markers are independent of a data rate, a physical channel, and a channel protocol of the transport stream and are used for synchronizing the user terminals.

5,666,359
METHOD AND APPARATUS FOR DISPLAYING PORT INFORMATION

Arthur T. Bennett, and K. Arlan Harris, both of Coppell, Tex., assignors to Compaq Computer Corp., Houston, Tex.

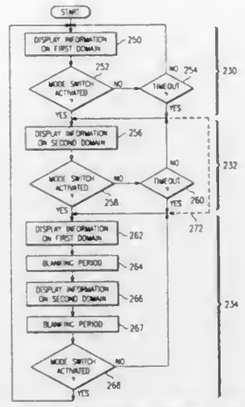
Continuation-in-part of Ser. No. 501,288, Jul. 12, 1995. This application Nov. 17, 1995, Ser. No. 560,531
Int. Cl.[6] H04J *3/22*
U.S. Cl. 370—358 **25 Claims**

1. A repeater for exchanging data among a plurality of data devices, comprising:

a plurality of ports positioned along a first line and operable to couple to the data devices, each port operable to exchange data with an associated data device in a selected one of a first associated data device in a selected one of a first domain and a second domain;

a plurality of port indicators positioned along a second line parallel to the first line, each port indicator associated with one of the ports, each port indicator operable to display information on its associated port; and

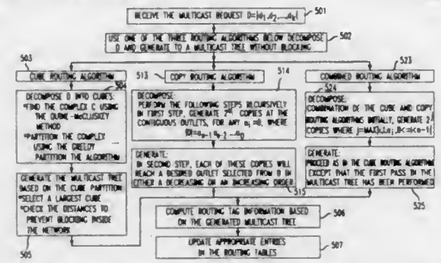
a mode indicator having a first mode and a second mode, the first mode signifying that the port indicators display information on ports operating in the first domain, the second mode indicating that the port indicators display information on ports operating in the second domain.



5,666,360
MULTICAST ROUTING IN SELF-ROUTING MULTISTAGE NETWORKS

Xiaoqiang Chen, Eatontown; Vijay P. Kumar, Freehold, both of N.J., and Cauligi S. Raghavendra, Pullman, Wash., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 254,089, Jun. 6, 1994. This application Jun. 16, 1995, Ser. No. 491,426
Int. Cl.[6] H04L *12/58*
U.S. Cl. 370—390 **13 Claims**



3. A method for multicasting an inlet data cell, received as part of an original multicast request, D, at a source, through a self-routing multistage network to a plurality of desired outlets, the method comprising the steps of

decomposing the original multicast request, D, defining a set of desired outlets,

copying from said source said inlet cell in a first pass to a number M consecutive outputs, wherein destinations of said set of consecutive outputs are used as inputs in a second pass,

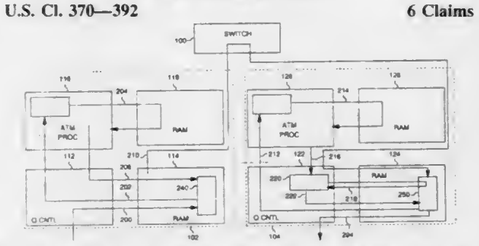
successively partitioning said inputs and outputs to find a mapping of input cubes to output cubes which has no conflicts in any window, and

routing from said M consecutive outputs to output cubes using said successively partitioned mapping, thereby completing said multicast routing in two passes.

5,666,361
ATM CELL FORWARDING AND LABEL SWAPPING METHOD AND APPARATUS

Ange Aznar, Saint Laurent du Var; Jean Calvignac, La Gaude; Jean-Luc Frenoy; Daniel Orsatti, both of Cagnes Sur Mer; Dominique Rigal, Nice; Luc Torres, Gattieres, and Fabrice Verplanken, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1995, Ser. No. 547,826
Claims priority, application European Pat. Off., Apr. 5, 1995, 95480040
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—392 **6 Claims**



1. In an ATM switch having one or more input adapters and one or more output adapters and a switching fabric for switching ATM cells received on ports on said input adapter to target ports on said output adapters, the improvement in such apparatus comprising:

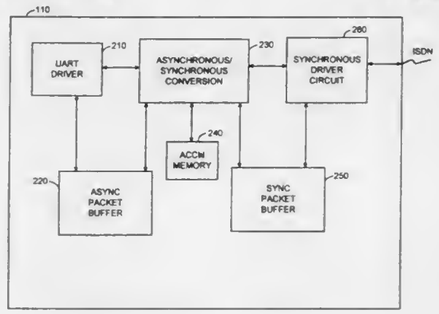
on each input adapter, an input adapter memory and an input ATM layer processor for reading the header of each ATM cell received by said input adapter and for performing an input table look-up operation based on said header in said adapter memory to retrieve at least part of the information required to allow the cell to be switched to the appropriate target port on an output target adapter and for adding the retrieved information to the cell for transmission through the switching fabric without removing the header of the cell; and

on each output adapter, an output adapter memory and an output ATM layer processor for retrieving at least part of the results of the input table look-up operation from a received cell and for using said results in performing an output table look-up operation in said output adapter memory to retrieve the remainder of the information required to complete the transfer of the cell to the appropriate target port and for generating a new header for the cell.

5,666,362
METHOD AND APPARATUS FOR ASYNCHRONOUS PPP AND SYNCHRONOUS PPP CONVERSION

Cheng T. Chen, Marlboro; Reginald P. Best, Somerset, and Daniel M. Brennan, Hillsdale, all of N.J., assignors to 3COM Corporation, Santa Clara, Calif.

Filed Jul. 25, 1995, Ser. No. 506,533
Int. Cl.[6] H04J *3/22*
U.S. Cl. 370—420 **18 Claims**



14. A converter for two-way communication between a first device using asynchronous communication (the asynchronous device) and a second device using synchronous communication (the synchronous device) comprising:

an asynchronous driver capable of two way asynchronous communication with said asynchronous device;

a synchronous driver capable of two way synchronous communication with said synchronous device;

an asynchronous/synchronous translator capable of translating between asynchronous and synchronous data formats, said translator capable of reading complete units of asynchronous data received from said asynchronous device, translating control fields and formatting to a form suitable for synchronous transmission, and directing complete units of synchronous data to said synchronous driver, said translator further capable of reading complete units of synchronous data received from said synchronous device, translating control fields and formatting to a form suitable for asynchronous transmission, and directing complete units of asynchronous data to said asynchronous driver; and

a converter memory for storing protocol control values received from said asynchronous device or said synchronous device, said memory connected to said translator and said translator reading data stored in said converter memory to facilitate in translation.

5,666,363

METHOD FOR TRANSMISSION, METHOD FOR RECEPTION, METHOD FOR COMMUNICATION AND BIDIRECTIONAL BUS SYSTEM

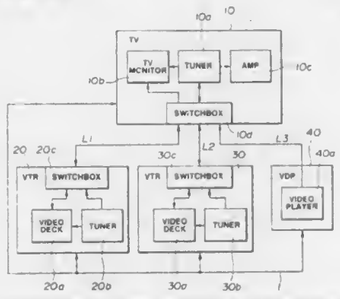
Yoshio Osakabe; Hiroshi Yamazaki, both of Kanagawa; Yasuo Kusagaya, Tokyo; Noriko Kotabe, Chiba; Koji Iwamoto; Yoko Souma, both of Nara; Toshihiro Imaura, and Shigeru Maki, both of Osaka, all of Japan, assignors to Sony Corporation, Tokyo, and Matsushita Electric Industrial Co., Osaka, both of Japan

Filed Oct. 26, 1994, Ser. No. 329,251

Claims priority, application Japan, Oct. 30, 1993, 5-294182

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—426 **10 Claims**



8. A communication system employing a bidirectional bus system in which a plurality of devices performing the communication of a command and a request are interconnected over a bidirectional bus, the communication system comprising:

a source device for providing a frame of a transmission signal on the bidirectional bus, the frame including an address field for designating addresses of communication devices and a data field for designating the command or the request to be transmitted, for inserting discrimination information at a pre-set position of the data field for discriminating between the command and the request for inserting at a pre-set position of the data field configuration information indicating one of communication from a sub-device within a first device to a device other than the first device, communication from a second device to a sub-device within a device other than the second device, and communication from a third device to a device other than the third device, excluding communication from a sub-device within a device to a sub-device within another device and for sending the transmission signal with the discrimination information and the configuration information inserted therein over the bidirectional bus; and

a destination device for receiving the transmission signal over the bidirectional bus, for detecting the discrimination information and the configuration information from the transmission signal and for recognizing whether the contents of the data field is the command or the request based upon the discrimination information and the configuration of the communication based on the configuration information.

5,666,364

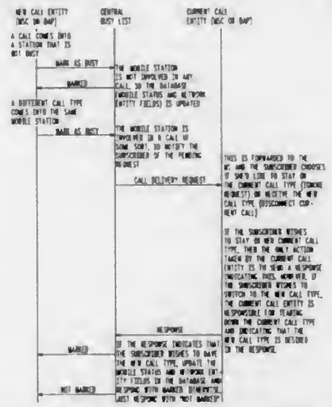
METHOD FOR PRIORITIZING SERVICES PROVIDED BY DIFFERENT NETWORK ENTITIES

Jennifer A. Pierce, Algonquin, and Kamala D. Urs, Bartlett, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1996, Ser. No. 609,672

Int. Cl.[6] H04M *3/20;* **H04Q** *7/38*

U.S. Cl. 370—455 **16 Claims**



1. In a multi-network communication system including at least a first and second communication networks, said first network servicing subscribers with a first set of call types of system serviceable call types and said second network servicing subscribers with a second set of call types of the system serviceable call types, a method for coordinating the receipt of incoming calls to a subscriber subscribing to the system serviceable call types of at least said first and second networks, comprising the steps of:

registering a current call associated with the first set of call types by a subscriber serviced by the first network;

receiving a request, from the second network, for interruption of the current call serviced by the first network to allow the subscriber to receive an incoming call associated with the second set of call types to be serviced by the second network;

sending a request to disconnect service to the current call to the first network when a priority of the subscriber to maintain access to the current call is lower than a priority of the subscriber to be given access to the incoming call; and

denying interruption of the current call by the incoming call when the priority to maintain access of the current call is higher than the priority to be given access to the incoming call,

wherein the first and second sets of call types are different system serviceable call types, and whereby said system serviceable call types comprise at least two of the following call types:

(a) telephone interconnect calls and circuit data calls serviced by a message switching center,

(b) dispach calls serviced by a dispatch application processor;

(c) packet data type call serviced by a packet data service system, and

(d) paging requests serviced by short message service switching system.

5,666,365

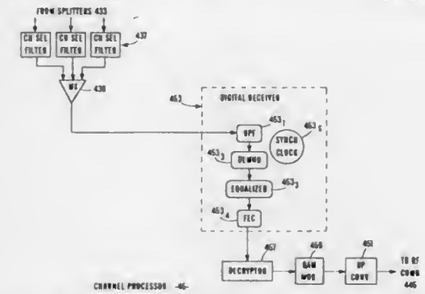
SIMULCAST TRANSMISSION OF DIGITAL PROGRAMS TO SHARED ANTENNA RECEIVING SYSTEMS

Bruce Kostreski, Wheaton, Md., assignor to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 409,574, Mar. 24, 1995, which is a continuation-in-part of Ser. No. 405,558, Mar. 16, 1995. This application Nov. 6, 1995, Ser. No. 554,014

Int. Cl.[6] H04N *7/08;5/21*

U.S. Cl. 370—486 **36 Claims**



7. A system serving a plurality of living units, comprising:

at least one antenna receiving multiple time delayed copies of a signal including multiplexed channels from a plurality of spaced apart transmitters which provide overlapping simultaneous broadcasts of the signal including multiplexed channels, each multiplexed channel containing digitized and compressed broadband information relating to a plurality of programs;

a plurality of channel selectors coupled to the at least one antenna, each channel selector selecting a respective one of the multiplexed channels;

a plurality of delay signal processing circuits each connected to one of the channel selectors for processing multiple time delayed copies within a predetermined delay processing window of signals in a respective one of the multiplexed channels, to acquire a single copy of a signal corresponding to the respective one of the multiplexed channels; and

a network for distributing information from the acquired single copies of the respective channels to the living units for presentation of selected broadband information.

5,666,366

INTER-BASE SYNCHRONIZATION TECHNIQUE FOR A TDMA COMMUNICATION SYSTEM

Charles J. Malek, Crystal Lake, Ill.; David L. Weigand; Dennis M. Rose, both of Sunnyvale, Calif., and Gerard G. Socci, Palo Alto, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 24, 1996, Ser. No. 655,576

Int. Cl.[6] H04J *3/07*

U.S. Cl. 370—505 **17 Claims**

1. A device for synchronization in a TDMA communication system, said system including a plurality of base stations for transmitting and receiving bursts of data within time slots, said slots including a guard field separating said slots, said device comprising:

a phase comparator having as one input a first synchronizing signal obtained from a remote base station, and having as a second input a second synchronizing signal generated within a local base station,

an output of said phase comparator controlling circuitry for adding or deleting at least one bit to or from said guard field in at least one of said slots to cause said first synchronizing signal and said second synchronizing signal to be synchronized with respect to one another.

5,666,367

METHOD FOR SIMULATING A CIRCUIT

Boris Troyanovsky, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 8, 1996, Ser. No. 745,976

Int. Cl.[6] S06F *11/00*

U.S. Cl. 371—22.1 **7 Claims**

1. A method for simulating the response of a circuit to one or more stimulating signals using a digital computer, said circuit being represented by N nodes, where N is an integer greater than 1, each said node being connected to one or more devices, each device corresponding to a computer routine that provides the current sourced by that device at each frequency, ω_h, when said nodes are held at a set of potentials represented by

$$x_n(t) = \sum_{h=-H}^{H} X_{n,h} e^{j\omega_h t},$$

where $X_{n,-h}=X^*_{n,h}$, n runs from 1 to N, and H is an integer greater than 0, said method determining the values of the $X_{n,h}$ values by iteratively computing a new estimate for $X=[X_{10}, \ldots, X_{1H}, X_{20}, \ldots, X_{2H}, \ldots, X_{N0}, \ldots X_{NH}]$ from a previous estimate for X based on F_{nh}, for n from 1 to N and h from 0 to H, where F_{nh} is the net current flowing into node n at frequency ω_h, each iteration comprising the steps of:

selecting a subset of frequencies for each of said nodes;

computing F_{nh}, for n from 1 to N and h from 0 to H;

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computing the partial derivatives of F_{np} with respect to X_{jk} where n,j run for 1 to N and p, k include those values of h for which ω_h is in said subset of frequencies at node n; and

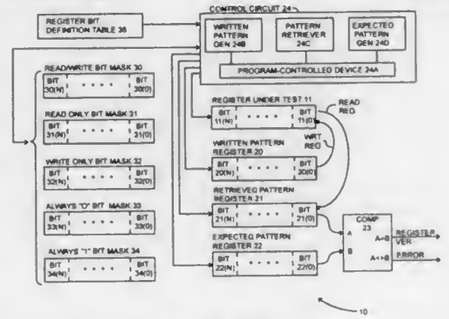
computing an updated value for each X_{np} for which ω_p is included in said subset of frequencies at node n.

5,666,368

SYSTEM AND METHOD FOR TESTING THE OPERATION OF REGISTERS IN DIGITAL ELECTRONIC SYSTEMS

Richard A. Proulx, Lexington, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 30, 1996, Ser. No. 593,582
Int. Cl.[6] G11C *7/00*
U.S. Cl. 371—27.1 **90 Claims**



1. A register test system for testing operational status of a register, the register test system comprising:

A. a written pattern generator for generating a written bit pattern and for storing the written bit pattern in the register;

B. a pattern retriever for, retrieving a bit pattern from the register;

C. an expected pattern generator for generating an expected bit pattern from the written bit pattern generated by the written pattern generator, the retrieved bit pattern retrieved by the pattern retriever, and a plurality of mask patterns each associated with one of a plurality of bit categories for the register, each register bit category being associated with a predetermined register bit characteristic;

D. a pattern comparator for comparing the retrieved bit pattern retrieved by the pattern retriever and the expected bit pattern generated by the expected pattern generator to assess operational status of the register.

73. A control subsystem for use with a program-controlled device to form a register test system, the control subsystem comprising:

A. a written pattern generator module for enabling the program-controlled device to generate a written bit pattern and store the written bit pattern in the register;

B. a pattern retriever code module for, after the written bit pattern has been stored in the register, enabling the program-controlled device to retrieve a bit pattern from the register;

C. an expected pattern generator module for enabling the program-controlled device to generate an expected bit pattern from the written bit pattern generated by the written pattern generator code devices, the retrieved bit pattern, and a plurality of mask patterns each associated with one of a plurality of bit categories for the register, each register bit category being associated with a predetermined register bit characteristic; and

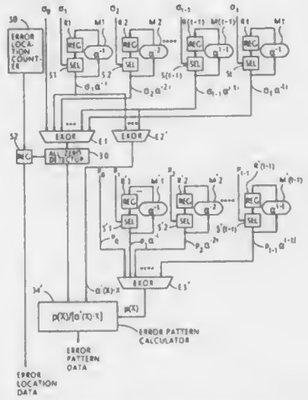
D. a pattern comparator module for enabling the program-controlled device to compare the retrieved bit pattern and the expected bit pattern to assess operation status of the register.

5,666,369

METHOD AND ARRANGEMENT OF DETERMINING ERROR LOCATIONS AND THE CORRESPONDING ERROR PATTERNS OF RECEIVED CODE WORDS

Masaru Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 238,751
Claims priority, application Japan, Apr. 28, 1993, 5-101677
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—37.07 **4 Claims**



1. A hardware arrangement for determining an error location and a corresponding error pattern of a code word in a Galois Field using a Chien search algorithm, comprising:

a first unit for receiving a plurality of coefficients of an error locator polynomial except for a lowest coefficient of said error location polynomial, said first unit outputting said plurality of coefficients at an initial stage of error detection, said first unit multiplying said plurality of coefficients by respective elements of the Galois Field previously stored in said first unit and outputting the multiplication results at each stage following said initial stage;

a detection unit for detecting, at each stage of said error detection, an all-zero state of said lowest coefficient and the outputs of said first unit;

a counter for counting up by one during each stage of said error detection;

a latch for latching the output of said counter if said all-zero state is detected, said output of said counter indicating the error location;

a first logic gate for implementing, at said initial stage, an exclusive-or operation on said lowest coefficient and odd coefficients among said coefficients applied to said first unit, and at each stage following said initial stage, an exclusive-or operation on said lowest coefficient and the multiplication results that include odd coefficients;

a second unit for receiving a plurality of coefficients of an error value polynomial except for a lowest coefficient of said error value polynomial, said second unit outputting said plurality of coefficients of said error value polynomial at said initial stage, said second unit multiplying said plurality of coefficients of said error value polynomial by respective elements of the Galois Field previously stored in said second unit and outputting the multiplication results at each stage following said initial stage;

a second logic gate for implementing, at each stage of said error detection, an exclusive-or operation on said lowest coefficient of said error value polynomial and the output of said second unit; and

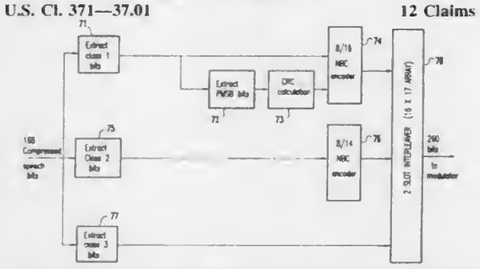
an error pattern calculator for calculating said error pattern using the outputs of said detection unit and said first and second logic gates.

5,666,370

HIGH PERFORMANCE ERROR CONTROL CODING IN CHANNEL ENCODERS AND DECODERS

Kalyan Ganesan, Germantown; Kumar Swaminathan, Gathersberg; Prabhat Gupta, Germantown, all of Md., and P. Vijay Kumar, Santa Monica, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 119,778, Sep. 10, 1993. This application Jan. 25, 1996, Ser. No. 591,127
Int. Cl.[6] G06F *11/08*
U.S. Cl. 371—37.01 **12 Claims**



1. A method of encoding a bitstream for transmission over a time division multiplexed radio channel, the radio channel being divided into a series of time slots and subject to fading, the method comprising the steps of:

classifying incoming bits from the bitstream into at least three classes, which include a Class 1, a Class 2 and a Class 3;

generating check bits using a nonlinear convolutional code for a subset of the incoming bits classified as Class 1 bits, the nonlinear convolutional code being a cyclic redundancy code;

encoding the Class 1 bits and the generated check bits using a first block encoder using a nonlinear block code (NBC);

encoding the Class 2 bits using a second block encoder using an NBC; and

interleaving the encoded and the nonencoded bits in an interleaving matrix over a plurality of time slots,

wherein the subset of incoming bits classified as Class 1 bits constitute 24 bits and the cyclic redundancy code is an 8 bit code.

5,666,371

METHOD AND APPARATUS FOR DETECTING ERRORS IN A SYSTEM THAT EMPLOYS MULTI-BIT WIDE MEMORY ELEMENTS

David M. Purdham, Brooklyn Park, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 24, 1995, Ser. No. 394,384
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—40.11 **17 Claims**

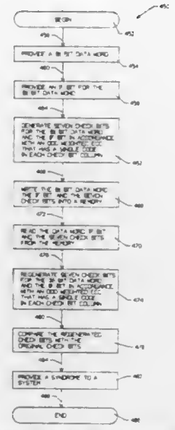
16. A method for performing error detection and correction within a system on a data word having a multiple of three bits, the data word being stored in eleven multiple bit wide memory elements, the method comprising the steps of:

a. generating a first set of seven check bits for the data word in accordance with an odd weighted error correction code having seven check bit columns wherein each of said seven check bit columns corresponds to one of said first set of seven check bits, the error correction code having a single code in each of the seven check bit columns;

b. grouping the bits of the data word and said first set of seven check bits into eleven predetermined clusters;

c. writing each of said eleven predetermined clusters into a different one of the eleven multiple bit wide memory elements;

d. reading each of said eleven predetermined clusters from a different one of the eleven multiple bit wide memory elements, thereby reading the data word and the first set of seven check bits;



e. regenerating a second set of seven check bits for the data word read in reading step (d) in accordance with the error correction code of step (a);

f. comparing the first set of seven check bits with the second set of seven check bits; and

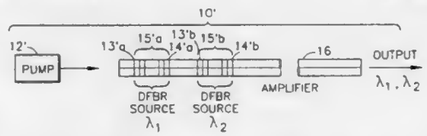
g. providing a seven bit syndrome to the system.

5,666,372

EMBEDDED BRAGG GRATING LASER MASTER-OSCILLATOR AND POWER-AMPLIFIER

Gary A. Ball, Simsbury, and William H. Glenn, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 732,552, Jul. 19, 1991, which is a continuation-in-part of Ser. No. 457,118, Dec. 26, 1989, abandoned. This application Feb. 1, 1993, Ser. No. 13,490
Int. Cl.[6] H01S *3/30*
U.S. Cl. 372—6 **9 Claims**



1. A Master-Oscillator and Power-Amplifier, comprising:

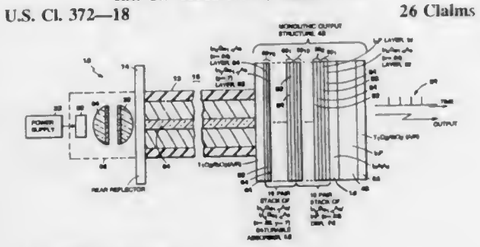
an optical waveguide which receives and propagates pump light of a predetermined wavelength launched into said optical waveguide;

a first master oscillator laser, disposed in said waveguide in the path of said pump light, said laser having a laser cavity disposed between a first pair of reflectors and having a first laser gain medium within said first laser cavity which emits first lasing light in response to said pump light, said first reflectors reflecting a predetermined amount of said first lasing light within said first laser cavity and passing a predetermined amount of said first lasing light as first output laser light from said first laser, said first reflectors passing said pump light through said first laser;

at least one of said first reflectors comprises a Bragg grating; and

an optical waveguide power amplifier, disposed in the path of said first output laser light and said pump light, and having a first amplifier gain medium therein which emits first amplified laser light in response to said pump light and said first output laser light.

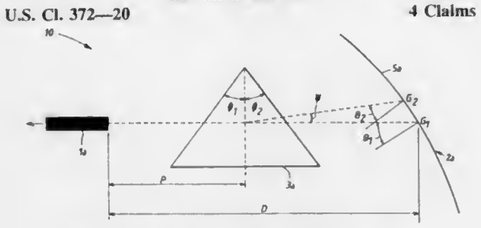
5,666,373
LASER HAVING A PASSIVE PULSE MODULATOR AND METHOD OF MAKING SAME
Richard C. Sharp, Wayland; Derek E. Spock, Watertown, and Noren Pan, Newton, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Feb. 6, 1996, Ser. No. 597,330
Int. Cl.[6] H01S *3/098*; H01L *21/70*
U.S. Cl. 372—18 26 Claims



1. A laser, comprising:
a pair of end reflectors;
a resonant cavity having a gain medium disposed therein between the pair of end reflectors;
one of such reflectors having a reflectivity lower than the reflectivity of the other one of the reflectors;
the reflectors being arranged to provide a single ended output for the cavity through the one of the reflectors having the lower reflectivity; and
a saturable absorber integrally formed on the one of the reflectors having the lower reflectivity. affixed to an end of the doped fiber gain medium.

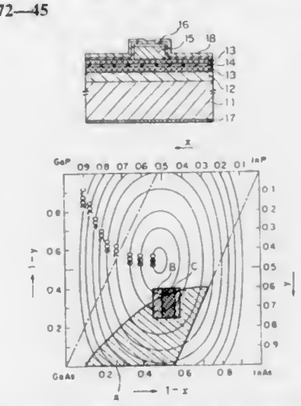
19. A method of forming an output structure and saturable absorber, comprising the steps of:
providing a semiconductor substrate;
epitaxially growing substrate a plurality of pairs of layers of material lattice matched to the substrate to provide a distributed Bragg reflector output structure;
epitaxially forming on the distributed Bragg reflector output structure a plurality of pairs of layers of material to form a saturable absorber integrally with the distributed Bragg reflector output structure.

5,666,374
TUNABLE OPTICAL ARRANGEMENT
Jean-Pierre Weber, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Jul. 1, 1994, Ser. No. 269,769
Claims priority, application Sweden, Jul. 2, 1993, 9302294
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—20 4 Claims



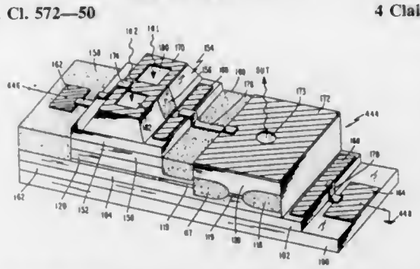
1. A tunable optical arrangement, comprising:
an input element for providing an input beam to be tuned;
an integrated grating arrangement for selecting a wavelength of the input beam; and
tuning means for controlling an angle of incidence of the input beam onto the grating arrangement, wherein the tuning means comprises a variable-refractive-index prism disposed between the input element and the grating arrangement and an index of refraction of a region of the variable-refractive-index prism is changed by a BRAQWET-structure.

5,666,375
SEMICONDUCTOR QUANTUM WELL LASER HAVING A LOW THRESHOLD CURRENT DENSITY
Noriyuki Yokouchi; Nobumitsu Yamanaka, both of Kanagawa, and Akihiko Kasukawa, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Chiyoda-ku, Japan
Filed Nov. 8, 1995, Ser. No. 555,472
Claims priority, application Japan, Nov. 8, 1994, 6-274079
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 4 Claims



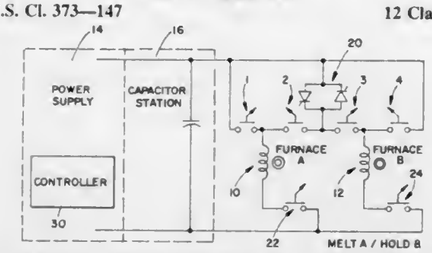
1. A semiconductor laser comprising an InP substrate and at least one InGaAsP quantum well laser active layer overlying said InP substrate, said laser active layer having a tensile strain between 1.0% and approximately 1.5%,
wherein said laser active layer is constituted substantially of $In_{1-x}Ga_xAs_yP_{1-y}$, given x: between 0.42 and 0.55, y: between 0.6 and 0.75.

5,666,376
ELECTRO-OPTICAL DEVICE
Julian Cheng, Albuquerque, N. Mex., assignor to University of New Mexico, Albuquerque, N. Mex.
Division of Ser. No. 416,606, Apr. 4, 1995, Pat. No. 5,550,856, which is a division of Ser. No. 789,172, Nov. 8, 1991, Pat. No. 5,404,323. This application May 9, 1996, Ser. No. 647,186
Int. Cl.[6] H01S *3/10*
U.S. Cl. 572—50 4 Claims



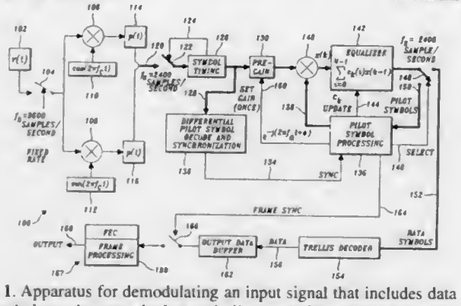
1. An electro-optical EXCLUSIVE OR gate responsive to first and second binary optical signals comprising first and second photodetectors respectively responsive to the first and second binary optical signals and connected to each other so that a node connected to the photodetectors is at first and second different voltages in response to the optical signals respectively having the same and differing values, and optical energy emitting means connected to said node so that optical energy emitted by said means has first and second states in response to the first and second voltages being at the node, respectively.

5,666,377
MULTIPLE FURNACE CONTROLLER
George Havas, Youngstown, and Arthur L. Vaughn, Niles, both of Ohio, assignors to Ajax Magnethermic Corporation, Warren, Ohio
Filed Nov. 16, 1994, Ser. No. 340,627
Int. Cl.[6] H05B *6/06*
U.S. Cl. 373—147 12 Claims



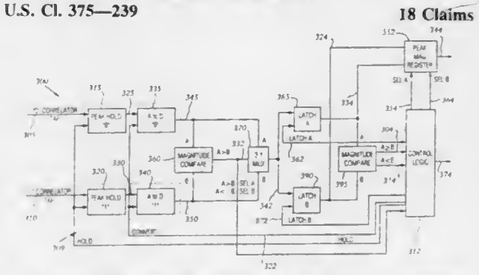
1. A furnace control system for delivering power for selectively melting or holding product contained in a plurality of furnaces of the system, comprising:
first and second furnaces;
a power supply for delivering power to the furnaces;
a capacitor station in parallel connection to the power supply and the furnaces and tuned to form a tank circuit therewith; and
switch means in operative association with the power supply and the capacitor station for selectively controlling the power delivered to the furnaces respectively, including means for controlling delivery of a first preselected portion of the power for holding molten product in the first furnace as a master control, and for controlling delivery of a remaining portion of the power for melting product in the second furnace, whereby the capacitor station serves as a reactive tank for both furnaces.

5,666,378
HIGH PERFORMANCE MODEM USING PILOT SYMBOLS FOR EQUALIZATION AND FRAME SYNCHRONIZATION
Robert F. Marchetto, Burnaby; Todd A. Stewart, West Vancouver, and Glenn S. Fawcett, Vancouver, all of Canada, assignors to Glenayre Electronics, Inc., Charlotte, N.C.
Filed Mar. 18, 1994, Ser. No. 215,129
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 6 Claims



1. Apparatus for demodulating an input signal that includes data symbols used to encode data and pilot symbols, said pilot symbols being a predetermined pseudo-random sequence of digital signals that are interspersed one at a time with said data symbols, so that each repeated sequence of said predetermined pseudo-random sequence of pilot symbols defines one data frame of a data message that is collectively established by said data symbols, said demodulator comprising:
(a) signal sampling means for periodically sampling the input signal to provide a sequence of digital signal samples which includes signal samples that correspond to pilot symbols of said input signal and includes signal samples that correspond to data symbols of said input signal;
(b) a quadrature converter for processing said sequence of digital signal samples to produce a complex baseband signal that corresponds to said sequence of digital signal samples;
(c) synchronization means, said synchronization means including means for processing the complex baseband signal to determine a symbol timing error signal, said synchronization means further including means responsive to said symbol timing error signal for adjusting symbol sampling time to produce a synchronized signal in which signal samples corresponding to input data symbols and signal samples corresponding to pilot symbols are synchronized relative to the corresponding data symbols of said input signal and the corresponding pilot symbols of said input signal;
(d) signal synchronization means for processing said synchronized signal to separate said signal samples representative of pilot symbols from signal samples representative of data symbols;
(e) frame synchronization means for receiving the signal samples that correspond to said input pilot symbols and for comparing said data symbols that correspond to said pilot symbols with a sequence of digital signals that represent said predetermined pseudo-random sequence of said pilot symbols, said frame synchronization means detecting the end of one data frame and the beginning of a next data frame by determining processing by said frame synchronization means of the signal sample that corresponds to the last pilot symbol of said predetermined pseudo-random sequence of pilot symbols or the signal sample that corresponds to the first pilot symbol of said predetermined pseudo-random sequence of pilot symbols, said frame synchronization means supplying a signal to indicate detection of the end of one data frame and the start of a next data frame, said frame synchronization means processing said signal samples that correspond to said pilot symbols to determine an autocorrelation value and supplying said signal to indicate detection of the end of one data frame and the start of a next data frame when said autocorrelation value exceeds a predetermined threshold value.
(f) decoding means for processing said signal samples that correspond to said data symbols, said decoding means supplying a digital signal representative of said data message.

5,666,379
BEST-OF-M PULSE POSITION MODULATION DETECTOR
David Ovard, Meridian, Id., and Ryan N. Jensen, Colorado Springs, Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.
Continuation-in-part of Ser. No. 146,490, Nov. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,802
Int. Cl.[6] H03K *7/04*
U.S. Cl. 375—239 18 Claims



1. A method of detecting a pulse in a pulse position modulated signal received by a receiving unit, comprising the steps of:
dividing a timing window into a plurality of pulse position windows;

for each of said pulse position windows, detecting a peak magnitude of the pulse position modulated signal received by said receiving unit;

comparing the peak magnitudes for said pulse position windows of the pulse modulated signal received by said receiving unit to identify a greatest peak magnitude and a one of said pulse position windows wherein said greatest peak magnitude was detected; and

generating a bit sequence associated with said one pulse position window.

5,666,380

DIGITAL COMMUNICATION SYSTEM AND METHOD OF COMPRESSING INFORMATION

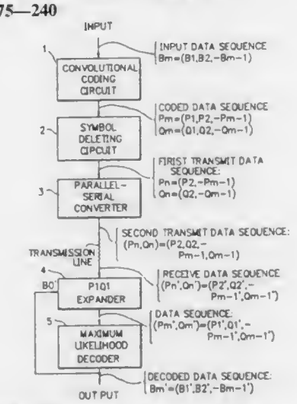
Noriyoshi Sonetaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 29, 1994, Ser. No. 268,030

Claims priority, application Japan, Jun. 30, 1993, 5-183347

Int. Cl.[6] H04B *1/66*

U.S. Cl. 375—240 **16 Claims**



1. A digital transmission system, comprising:

coding means for carrying out a convolutional coding of an input data sequence Bm (m=1, 2, 3, . . .) to produce a first coded data sequence Xm;

data compressing means for deleting first coded data X1 of the first coded data sequence Xm irrespective of a coding ratio in the convolutional coding to produce a second coded data sequence Xn (n=2, 3, 4, . . .), the first coded data X1 corresponding to first data B1 of the input data sequence Bm; and

transmitting means for transmitting the second coded data sequence Xn onto a transmission line.

5,666,381

COMMUNICATION SYSTEM USED IN SEMICONDUCTOR DEVICE MANUFACTURING EQUIPMENT

Shori Mokuo, Saga-ken, Japan, assignor to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed May 19, 1994, Ser. No. 246,266

Claims priority, application Japan, May 19, 1993, 5-140027; May 19, 1993, 5-140028

Int. Cl.[6] H04L *27/00*

U.S. Cl. 375—259 **6 Claims**

1. A communication system comprising:

a master side transmission unit having a master transmitting logic module and a master receiving logic module; and

at least one slave side transmission unit connected to said master side transmission unit for communication with said master side transmission unit and having a slave transmitting logic module and a slave receiving logic module;

wherein each of said master transmitting logic module and said slave transmitting logic module transmits data including a trigger pulse and data item following the trigger pulse for each bit cycle, and each of said master transmitting logic module and said slave transmitting logic module output the trigger pulse with a width of approximately ¼ of one bit cycle for each bit cycle of data to be transmitted and output the data item for approximately ½ of one bit cycle after the trigger pulse, and each of said master receiving logic module and said slave receiving logic module latches the data item for each bit cycle when a preset length of time corresponding to approximately ½ of one bit cycle has elapsed after the leading edge of the trigger pulse.

5,666,382

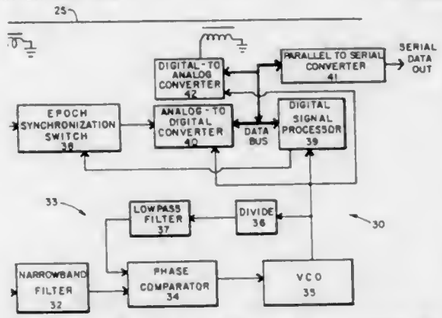
METHOD AND APPARATUS FOR COMMUNICATING IN THE PRESENCE OF POWER AND PROPULSION SYSTEM INTERFERENCE

Prashant B. Thakore, Pittsburgh, Pa., assignor to ABB Daimler-Benz Transportation (North America) Inc., Pittsburgh, Pa.

Filed Feb. 28, 1994, Ser. No. 202,759

Int. Cl.[6] H04K *1/10*

U.S. Cl. 375—260 **23 Claims**



1. A method for communicating between a wayside and a vehicle over a track circuit, the method comprising the steps of:

sampling a first time series signal on the track circuit, the first time series signal including a first communication signal and a first interference signal;

fast Fourier transforming the sampled first time series signal;

detecting first vector signals in a first plurality of sub-carrier frequencies related to the first communication signal, the first plurality of sub-carrier frequencies being unrelated to the first interference signal;

sampling a second interference signal on the track circuit between the sampling of the first time series signal and the sampling of a second time series signal;

fast Fourier transforming the sampled second interference signal;

detecting interference in at least one of the first plurality of sub-carrier frequencies;

sampling the second time series signal on the track circuit, the second time series signal including a second communication signal and the second interference signal;

fast Fourier transforming the sampled second time series signal; and

detecting second vector signals in a second plurality of sub-carrier frequencies related to the second communication signal wherein the second plurality of sub-carrier frequencies is unrelated to the second interference signal and wherein at least one sub-carrier frequency is different between the second plurality of sub-carrier frequencies and the first plurality of sub-carrier frequencies.

5,666,383

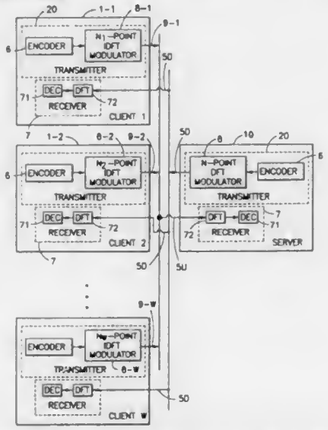
VARIABLE RATE DISCRETE MULTIPLE TONE BIDIRECTIONAL TRANSMISSION

Kung-Shiuh Huang, Irvine, Calif.; Steven Peter Monti, Raleigh, N.C., and Antonio Ruiz, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1996, Ser. No. 643,443

Int. Cl.[6] H04K *1/10;* **H04L** *27/28*

U.S. Cl. 375—260 **2 Claims**



1. A method of transmitting data between a server and plurality of clients in a network, said method comprising:

a. dividing the available bandwidth of a shared medium between said clients and said server into a total number of subchannels, each subchannel having a minimum basic bandwidth;

b. determining a number of subchannels required for each of said clients to transmit/receive a data sequence over said network;

c. applying a z-point IDFT to each subchannel of a data sequence from/to each of said clients, where z is a multiple of two and a function of the minimum basic bandwidth, where a plurality of first coefficients is obtained for each subchannel of said data sequence;

d. multiplying said first coefficients of the outputs of z-point IDFTs for all subchannels of said data sequence by corresponding second coefficients to obtain a product for each subchannel; and

e. summing the products for the subchannels to obtain a composite signal to transmit on said shared medium, wherein any of said clients may select a number of said subchannels as determined in step b from said composite signal by applying an appropriate DFT, wherein any said client receives said selected subchannels.

5,666,384

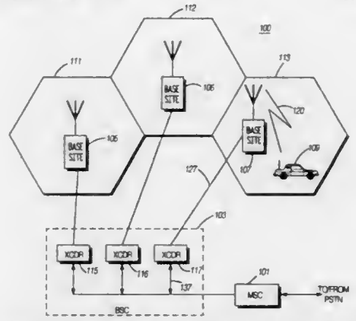
METHOD AND APPARATUS FOR MITIGATING NOISE IN AN OUTPUT SIGNAL OF AN AUDIO AUTOMATIC GAIN CONTROL CIRCUIT

Paul A. Kuban, Plainfield; Michael N. Kloos, Elgin, and Dien N. Nguyen, Cortland, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 26, 1995, Ser. No. 506,942

Int. Cl.[6] H04B *15/00*

U.S. Cl. 375—285 **19 Claims**



1. A method for mitigating noise in an output signal of an audio automatic gain control circuit, the method comprising the steps of:

determining whether audio information is present in an input signal to the audio automatic gain control circuit;

determining, by the audio automatic gain control circuit, whether a current gain being applied to the input signal is positive; and

when audio information is not present in the input signal and the current gain is positive, applying, by the audio automatic gain control circuit, a gain to the input signal that is less than the current gain to produce the output signal.

5,666,385

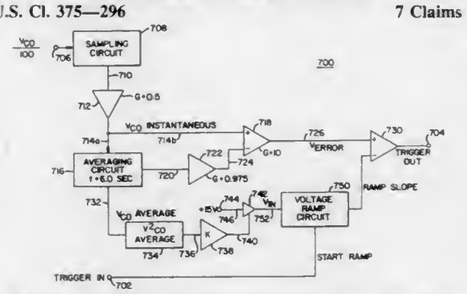
JITTER COMPENSATION CIRCUIT

James S. Sullivan, and Don G. Ball, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 15, 1994, Ser. No. 340,408

Int. Cl.[6] H04K *1/02;* **H04L** *25/03;25/49*

U.S. Cl. 375—296 **7 Claims**



6. A jitter compensation system for forming a trigger signal for a voltage-dependent magnetic modulator which is powered from an energy storage capacitor having a V_{co} voltage, said system comprising:

sampling means for sampling a signal representative of the V_{co} voltage and for providing sampled V_{co} signals;

averaging means for averaging the sampled V_{co} signal signals to provide an average V_{co} signal;

difference means for taking the difference between the average V_{co} signal and each of the sampled V_{co} signals and for providing a difference signal corresponding to each of the sampled V_{co} signals;

means for squaring the average V_{co} signal to provide a squared average V_{co} signal;

means for generating a voltage ramp signal proportional to a squared average V_{co} signal;

comparator means, having a first input terminal for receiving the difference signal and having a second input terminal for receiving the voltage ramp signal, for providing an output trigger pulse when the voltage ramp signal exceeds the difference signal.

5,666,386

DIGITAL DEMODULATING APPARATUS CAPABLE OF SELECTING PROPER SAMPLING CLOCK FOR DATA TRANSMISSION SPEED

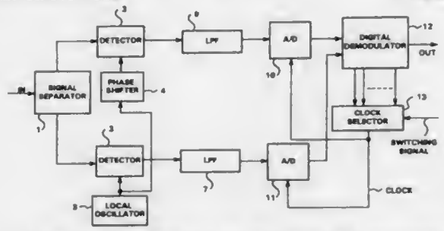
Mitsuru Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 348,196, Nov. 28, 1994, abandoned. This application Oct. 11, 1996, Ser. No. 729,392

Claims priority, application Japan, Nov. 26, 1993, 5-296385

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—328 **5 Claims**



1. A demodulating apparatus for demodulating a transmission signal which is modulated by digital information in a predetermined modulation manner, comprising:

detecting means for detecting said transmission signal;

low-frequency component passing means for causing a low-frequency component of the transmission signal detected by said detecting means to selectively pass therethrough;

analog-to-digital (A/D) converting means for A/D-converting the output from said low-frequency component passing means into a digital transmission signal;

demodulating means for demodulating the digital transmission signal from said A/D converting means, said demodulating means delivering sampling clocks in parallel, each of said sampling clocks having different respective frequencies in accordance with a number of samples for one symbol; and

switching means for selecting one of said sampling clocks thereby to supply a selected sampling clock to said A/D converting means in response to an external switching signal.

5,666,387

SIGNAL PROCESSING DEVICE HAVING PLL CIRCUITS

Masaya Tamamura, and Shinichi Shiotsu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 30, 1994, Ser. No. 297,835

Claims priority, application Japan, Dec. 24, 1993, 5-328881

Int. Cl.[6] H03D *3/24*; **H03L** *7/00*

U.S. Cl. 375—371 **29 Claims**

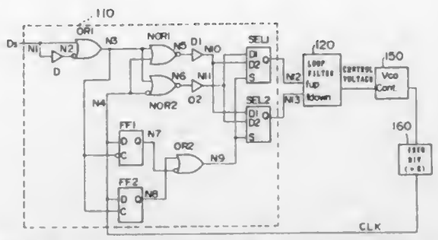
22. A signal processing device comprising:

phase comparing means for comparing a phase of a serial input data signal with a phase of a clock signal and generating a leading pulse signal and a lagging pulse signal dependent on a phase difference indicated by a result of a phase comparison;

loop filter means for integrating the leading pulse signal and the lagging pulse signal and for generating a control signal; and

oscillator means for generating the clock signal which has a frequency identical to that of the serial input data signal and is varied in accordance with the control signal, and

wherein said phase comparing means comprises:



first gate means for generating a phase compare window signal for each rising or falling edge of the serial input data signal;

second gate means for generating the leading pulse signal and the lagging pulse signal on the basis of the phase compare window signal and the clock signal; and

detection/selection means for detecting an edge of the clock signal within phase compare window indicated by said phase compare window signal, outputting the leading pulse signal and the lagging pulse signal to the loop filter means without any modification when a first predetermined one of the rising edge and falling edge of the clock signal is detected, and for outputting the leading pulse signal and the lagging pulse signal to the loop filter means when a second predetermined one of the rising edge and falling edge of the clock signal is detected.

5,666,388

CLOCK RECOVERY CIRCUIT WITH MATCHED OSCILLATORS

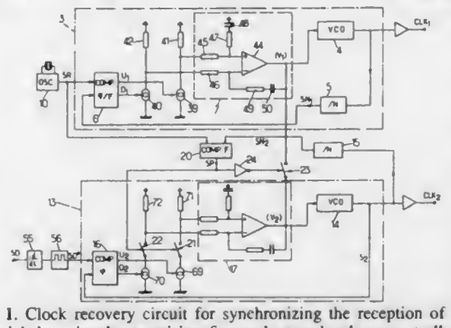
Christophe Neron, Nantes, France, assignor to Matra MHS, Nantes, France

Filed Nov. 22, 1994, Ser. No. 346,204

Claims priority, application France, Nov. 23, 1993, 93 14000

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **4 Claims**



1. Clock recovery circuit for synchronizing the reception of a serial data signal, comprising first and second voltage-controlled oscillators having substantially identical characteristics, wherein the first, voltage-controlled oscillator is incorporated into a frequency synthesis loop in such a way as to oscillate, in response to a first control voltage, at a predetermined frequency equal to a reference frequency provided by a reference oscillator multiplied by a number N, and the second voltage-controlled oscillator is incorporated into a phase tracking loop which, when it is activated, locks the oscillation phase of the second voltage-controlled oscillator relative to that of the received data signal, the output signal from the second voltage-controlled oscillator constituting a recovered clock signal, the clock recovery circuit further comprising comparison means for determining whether the oscillation frequency of the second voltage-controlled oscillator, divided by N, satisfies the condition of not deviating from the reference frequency by more than a predetermined limit value, and switching means controlled by the comparison means for activating the phase tracking loop only when said condition is satisfied, and for feeding the first control voltage to a control input of the second voltage-controlled oscillator only when said condition is not satisfied.

5,666,389

FUEL ASSEMBLY AND SPACER FOR A NUCLEAR REACTOR

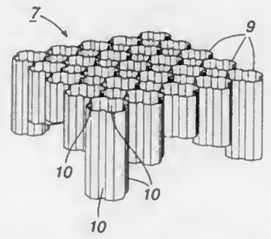
Ingmar Andersson; Mahdi Majed, both of Väster ås, Sweden; Clas-Göran Wiktor, Dietlikon, Switzerland, and Dietmar Wolfram, Eskilstuna, Sweden, assignors to ABB Atom AB, Västerås, Sweden

Filed Oct. 27, 1994, Ser. No. 329,410

Claims priority, application Sweden, Nov. 2, 1993, 9303583

Int. Cl.[6] G21C *3/34*

U.S. Cl. 376—462 **14 Claims**



1. A spacer for retaining, at a plurality of levels, elongated fuel rods in a boiling water nuclear reactor, the spacer comprising an orthogonal lattice of cells through which the fuel rods extend, the cells being tubular and defining flow channels therebetween, each of the cells being of zirconium alloy and internally provided with four fixed elongated supports extending parallel to the longitudinal axis of each of the cells and facing the center of the cells for presenting an elongated surface contact with the rods extending therethrough and for providing an all-sided positioning of the rods, the supports comprising elongated embossments formed in the wall surfaces of the cells.

5,666,390

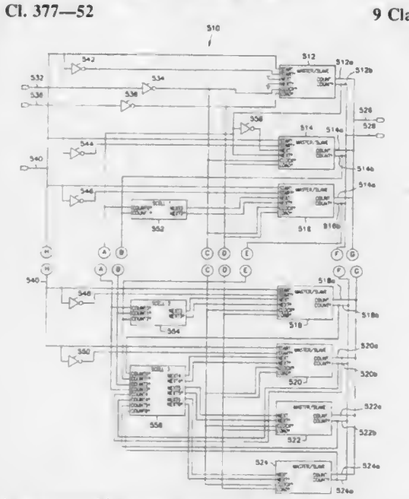
HIGH SPEED PROGRAMMABLE COUNTER

Christopher K. Morzano, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 28, 1995, Ser. No. 535,655

Int. Cl.[6] H03K *23/66*

U.S. Cl. 377—52 **9 Claims**



1. A programmable counter comprising:

multiple latches for providing a count output;

a first circuit for providing a start count value coupled to said latches;

a second circuit for providing a stop count value coupled to said latches;

a third circuit coupled to the latches for providing a maximum count value to said latches; and,

a compare circuit coupled to the second circuit and the latches for comparing the count with the stop count.

5,666,391

X-RAY EXAMINATION SYSTEM WITH IDENTIFICATION OF AND COMPENSATION FOR SUBJECT-PRODUCED SCATTERED RADIATION TO REDUCE IMAGE ARTIFACTS

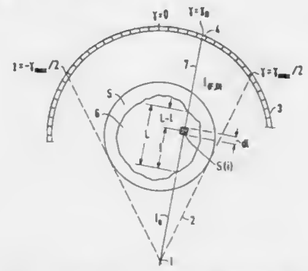
Bernd Ohnesorge; Ernstpeter Ruehrnschopf, both of Erlangen, and Klaus Klingenbeck-Regn, Nuernberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 25, 1996, Ser. No. 669,931

Claims priority, application Germany, Jun. 26, 1995, 195 23 090.6

Int. Cl.[6] H05G *1/60*

U.S. Cl. 378—7 **12 Claims**



1. In an x-ray examination apparatus having an x-ray source which emits x-rays with a primary radiation intensity and a detector array composed of a plurality of detector elements, each detector element generating an output signal representing an intensity distribution of all x-rays incident thereon, and a computer including calculating means for calculating an x-ray image of a subject disposed between said x-ray source and said detector array from said output signals, the improvement of said computer further including means for reducing artifacts arising in said x-ray image due to scattered radiation produced in said subject, comprising:

means for identifying a forward scatter intensity in each output signal, as a contribution to said intensity distribution, including means for windowing said measured intensity with a window function to obtain a windowed, measured intensity, for taking the natural logarithm of said intensity distribution, and for multiplying said natural logarithm of said intensity distribution with said windowed, measured intensity.

5,666,392

X-RAY DIAGNOSTIC INSTALLATION WITH A POSITIONING APPARATUS FOR A RADIATION EMITTER AND A RADIATION RECEIVER

Josef Ploetz, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 9, 1996, Ser. No. 711,023

Claims priority, application Germany, Sep. 12, 1995, 195 33 716.6

Int. Cl.[6] A61B *6/14*

U.S. Cl. 378—39 **7 Claims**

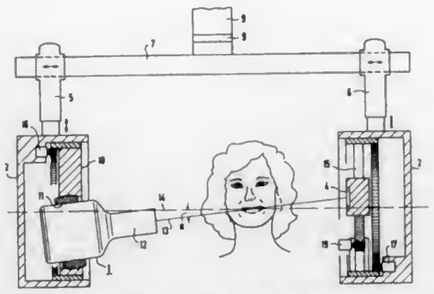
1. An X-ray diagnostic installation comprising:

a radiation emitter which emits an X-ray beam, said X-ray beam including a reference ray;

a radiation receiver on which X-rays from said radiation emitter are incident

a first positioning apparatus for said radiation emitter;

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a second positioning apparatus for said radiation receiver, said second positioning apparatus being disposed a distance from said first positioning apparatus and said first and second positioning apparatuses having a common reference axis;

means for coupling said radiation emitter to said first positioning apparatus for causing said reference ray of said X-ray beam to intersect said common reference axis at an acute angle and to strike said radiation receiver approximately at a center of said radiation receiver; and

said first and second positioning apparatuses comprising, in combination means for positioning said radiation emitter and said radiation receiver at respective positions along a circular arc centered on said common reference axis.

5,666,393

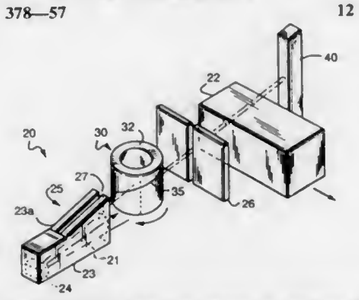
METHOD AND APPARATUS FOR REDUCING AFTERGLOW NOISE IN AN X-RAY INSPECTION SYSTEM

Martin Annis, 65 Banks St., Cambridge, Mass. 02138

Continuation of Ser. No. 197,632, Feb. 17, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 658,012

Int. Cl.[6] G01N *23/04*

U.S. Cl. 378—57 **12 Claims**



1. An improved X-ray inspection system for reducing afterglow noise during the inspection of an object, said improved system comprising:

a pulsed X-ray source for radiating a cone of X ray pulses that penetrate the object at a rate of at least about 2,000 pulses per second, said pulses being asserted for a duration period of time and adjacent of said pulses being separated by a separation period of time, said separation period being substantially longer than said duration period; and

a detector for intercepting said X-ray pulses penetrating the object and for transforming said X-ray pulses into image data, said detector comprising at least one scintillating screen optically coupled to a plurality of photoemissive detecting elements such that when said X-ray pulses are intercepted by said detector, outputs of said photoemissive detecting elements are sampled for a sampling period of time immediately followed by a quiescent period of time during which said photoemissive detecting elements are not sampled, said quiescent period being substantially longer than said sampling period so as to significantly reduce afterglow noise during inspection of the object.

5,666,394

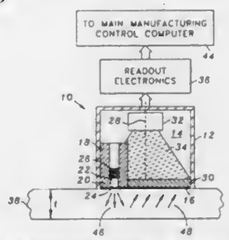
THICKNESS MEASUREMENT GAUGE

Frank R. Swanson, deceased, late of Freeport, N.Y., by Patricia Swanson, executor, assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 23, 1996, Ser. No. 636,282

Int. Cl.[6] G01B *15/02*

U.S. Cl. 378—89 **12 Claims**



1. A thickness measurement gauge comprising:

a) a closed housing having a radiation-permeable floor having a top surface within the housing and a bottom surface outside the housing;

b) a radiation shield disposed within the interior of the housing, the shield having a distal end and a collimation channel with an open distal end situated to substantially terminate at the top surface of the housing floor;

c) a radiation source disposed within the collimation channel of the housing and emitting gamma rays, said gamma rays exiting as a collimated beam thereof from the open distal end of the collimation channel;

d) a radiation detector disposed within the housing for detecting backscatter rays;

e) a light sensor disposed within the housing and optically coupled to the radiation detector through a reducing light guide disposed within the housing, the light sensor being able to convert light pulses produced by the radiation detector to electronic signals; and

f) an electronic readout device in communication with the light sensor and able to convert the electronic signals produced by the light sensor into a reportable radiation measurement correlated to a thickness of an object being measured.

5,666,395

X-RAY DIAGNOSTIC APPARATUS

Akira Tsukamoto; Masayuki Nishiki; Koichiro Nabuchi, all of Otawara; Shin-ichi Yamada, Kawachi-gun; Tohru Saisu, Otawara; Takayuki Tomisaki; Manabu Tanaka, both of Yokohama, and Seiichiro Nagai, Otawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 17, 1996, Ser. No. 715,086

Claims priority, application Japan, Sep. 18, 1995, 7-238322

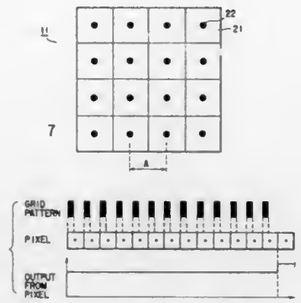
Int. Cl.[6] G21K *1/00*

U.S. Cl. 378—98.4 **8 Claims**

1. An X-ray diagnosis apparatus comprising:

means for irradiating an X-ray on a target object;

means, having pixels which are two-dimensionally arranged at a predetermined pitch, for sensing an X-ray image transmitted through said target object; and



a scattered X-ray shielding grid which has X-ray shielding members which are arranged at a pitch corresponding to an integer fraction of the predetermined pitch of said pixels.

5,666,396

X-RAY EXAMINATION APPARATUS COMPRISING A FILTER

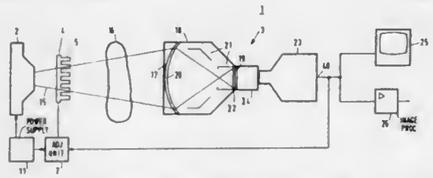
Petrus W. J. Linders, and Christianus G.L.M. Nederpelt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1996, Ser. No. 679,036

Claims priority, application European Pat. Off., Jul. 13, 1995, 95201925

Int. Cl.[6] G21K *3/00*

U.S. Cl. 378—156 **6 Claims**



1. An X-ray examination apparatus comprising an X-ray source, an X-ray detector, and an X-ray filter which is arranged between the X-ray source and the X-ray detector, which X-ray filter comprises

a plurality of filter elements (5) having an X-ray absorptivity which can be adjusted by controlling a quantity of X-ray absorbing liquid (6) within the individual filter elements,

characterized in that the X-ray examination apparatus comprises an adjusting unit for applying an electric voltage to the individual filter elements, which adjusting unit comprises a timer unit for controlling the period of time during which the electric voltage is applied to the filter elements.

5,666,397

INDIVIDUAL TELEPHONE LINE CALL EVENT BUFFERING SYSTEM

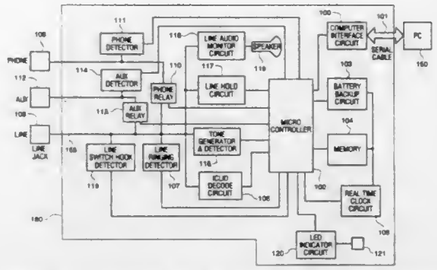
Scott Putnam Lamons; Jeffrey Don Emmel, and Frank Parrish, all of Fort Collins, Colo., assignors to Clearwave Communications, Inc., Fort Collins, Colo.

Filed Mar. 7, 1995, Ser. No. 399,626

Int. Cl.[6] H04M *3/22;15/00*

U.S. Cl. 379—34 **15 Claims**

15. An event buffering system in a telephone communications management system including a telephone management device having a processor communications interface accessible to a detachable processor, and an interconnect between at least one telephony device and a telephone line, said event buffering system comprising:



means for monitoring each incoming and outgoing telephony event occurring on said telephone line;

means, responsive to said means for monitoring, for generating a record of each of said incoming and outgoing telephony event occurring on said telephone line;

means for storing in said telephone management device, said record of each of said incoming and outgoing telephony event during a time when said detachable processor is in at least one state selected from a group consisting of: non-operational and communicatively disconnected from said telephone management device; and

means for transferring stored ones of said record of each of said incoming and outgoing telephony event, in addition to real time ones of said record of each of said incoming and outgoing telephony event, during a time when said detachable processor is operational and communicatively connected to said telephone management device.

5,666,398

SWITCHING EQUIPMENT AND METHOD FOR RADIOTELEPHONE SYSTEM OF THE LOCAL OR PRIVATE BRANCH EXCHANGE TYPE

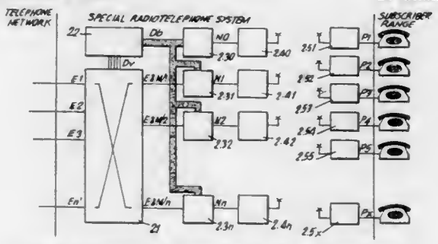
Reinhard Schiffel; Klaus Jäckel; Bruno Stadler; Holger Vogel; Andreas Hachenberger, and Detlef Herold, all of Berlin, Germany, assignors to Jenoptik Communications GmbH, Jena, Germany

PCT No. PCT/DE93/01100, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/13112, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 256,686

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 370—280 **20 Claims**



1. A local exchange and transmission system comprising:

a telephone switch having a plurality of inputs connectable to a telephone network and a plurality of outputs receptive of telephone transmission signals for connecting the inputs and outputs to transmit calls to and from the telephone network, wherein the plurality of outputs is a greater number than the plurality of inputs;

a duplex radio channel unit for each of the plurality of outputs forming an information channel for transmitting and receiving wireless telephone transmissions to a plurality of wireless subscriber radio connection devices usable by wireless subscribers to send and receive telephone transmissions, wherein the plurality of wireless subscriber radio connection devices is a greater number than the plurality of outputs;

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a channel controller connecting each duplex radio channel unit to one of the plurality of outputs;

at least one duplex radio organization channel including a channel controller and a duplex radio channel unit for constantly receiving information from the wireless subscriber radio connection devices; and

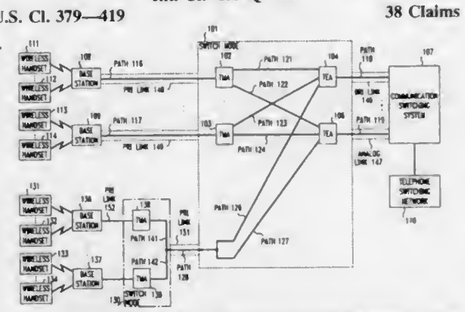
a radio communication controller connected to all of the channel controllers by a data bus for controlling the channel controllers to establish a direct connection between a wireless subscriber and the telephone network over an information channel with information received on the at least one organization channel and to simulate a wire subscriber connection for an incoming call until a direct connection is made between the connection device and the telephone network over an information channel.

5,666,399

SOFTWARE ARCHITECTURE FOR PROVIDING COMMUNICATION FEATURES TO DIFFERENT TYPES OF WIRELESS TELEPHONES VIA DIFFERENT COMMUNICATION SWITCHING SYSTEMS

Bruce Merrill Bales, Louisville; Craig Steven Chapel, Westminster; David Lee Chavez, Jr., Thornton; Robert Louis Crumpley, Westminster; Lisa P. Happel, Broomfield, and Sandra Sue North, Berthoud, all of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 31, 1995, Ser. No. 414,609
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 379—419 **38 Claims**



1. A method for providing telecommunication features to wireless telecommunication terminals interconnected to a mobility switch node that is connected to a telecommunication switching system via a plurality of telecommunication links and the mobility switch node is executing a plurality of first type of applications and plurality of second type of applications, the method comprising the steps of:

receiving a control message by one of the plurality of first type of applications in the mobility switch node from a wireless telecommunication terminal requesting execution of a telecommunication feature;

converting the control message by the one of the plurality of first type of applications to an internal protocol message to designate the execution of the telecommunication feature;

transmitting the internal protocol message requesting execution of the telecommunication feature by the one of the plurality of first type of applications to one of a plurality of second type of applications;

receiving the transmitted internal protocol message and converting the internal protocol message to a telecommunication link protocol message by one of the plurality of second type of applications to designate the execution of the telecommunication feature;

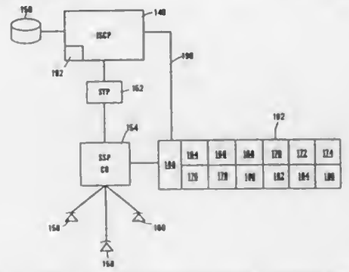
transmitting the telecommunication link protocol message via one of the plurality of telecommunication links individually assigned to the telecommunication terminal by the one of the plurality of second type of applications to the telecommunication switching system that performs the requested telecommunication feature as if a telecommunication terminal was connected to the telecommunication switching system via the one of the plurality of telecommunication links.

5,666,400

INTELLIGENT RECOGNITION

Alex McAllister, Wheaton, Md.; James Curry, Herndon, Va., and Frank Meador, Baltimore, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 271,885, Jul. 7, 1994, Pat. No. 5,553,119. This application Jul. 7, 1994, Ser. No. 271,887
Int. Cl.[6] G06K *9/00;* **G10L** *5/02*
U.S. Cl. 379—67 **29 Claims**



1. In a switching system for connecting a calling station to a called station a method of establishing completion of said connection comprising the steps of:

responsive to said calling station going off-hook, establishing the identity of said calling station and using information related to the established identity to address a data base;

responsive to the caller using the handset at said calling station sensing biometric information regarding the caller and using said biometric information to address a data base;

selecting from a plurality of speech recognition resources a resource indicated by at least one of said identity and biometric information;

establishing connection between said off-hook station and a voice platform;.

inputting a spoken command from a caller at said calling station to said voice platform;

outputting from said plurality of speech recognition resources an output signal representing said spoken command received by said voice platform for use in establishing completion of said connection;

responsive to said spoken command sensing additional biometric information regarding the caller and using said additional biometric information to address a data base; and

outputting from said plurality of speech recognition resources an output signal representing said spoken command;

wherein said output signal is produced by at least one of said selected resources based on an evaluation of at least all sensed biometric information.

5,666,401

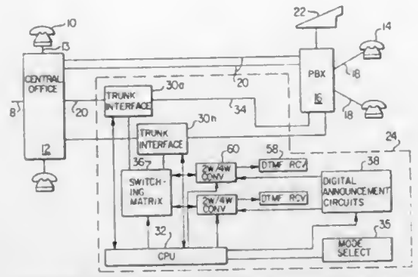
AUTOMATED ATTENDANT CALL PROCESSOR

Sanford J. Morgansteln, Elgin, Ill.; Edward F. Tuck, West Covina, Calif.; Bakulesh A. Mehta, Bolingbrook, and Herbert B. Krakau, Elmhurst, both of Ill., assignors to Syntellect Acquisition Corporation, Phoenix, Ariz.

Continuation of Ser. No. 225,538, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 945,122, Sep. 14, 1992, Pat. No. 5,303,298, which is a continuation of Ser. No. 616,652, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 99,388, Sep. 21, 1987, Pat. No. 4,975,941, which is a continuation of Ser. No. 593,526, Mar. 26, 1984, Pat. No. 4,696,028. This application Mar. 8, 1996, Ser. No. 612,610
Int. Cl.[6] H04M *3/50;7/14*
U.S. Cl. 379—67 **6 Claims**

4. An automated attendant for controlling the routing of incoming telephone calls by calling parties to respective internal destinations connected to a switching system, comprising:

input interfaces connected to plural incoming lines for receiving a plurality of incoming telephone calls via the incoming lines;



a transmitter for transmitting a verbal message to the incoming lines receiving the incoming telephone calls, via said input interfaces;

a switching subsystem for connecting said transmitter to the incoming lines for transmission thereon of the verbal message, the incoming lines carrying said verbal message by way of the switching subsystem and not by way of either an attendant trunk or an operator line;

a processor and a program memory for controlling routing of calls to respective destinations based on information input by the calling parties;

said processor responding to destination determining information if input on the incoming lines to cause a routing of the telephone calls to respective destinations determined by said destination determining information; and

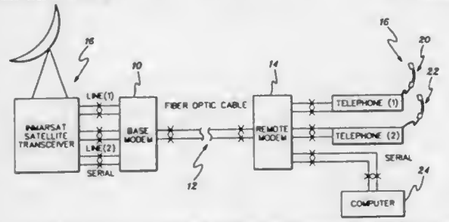
said processor responding to an absence of receipt of destination determining information on any one incoming line within a specified period of time and causing a connection to be made from said one incoming line to at least one of a set of predetermined destinations.

5,666,402

FIBER OPTIC TELEPHONE LINE EXTENSION SYSTEM

G. Scott Griffin, Annapolis, Md., assignor to Electro-Metrics, Inc., Johnstown, N.Y.

Filed Apr. 5, 1994, Ser. No. 222,806
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—56.2 **37 Claims**



1. An apparatus for providing telephone communication between a communication network and a remote station, said apparatus comprising:

a base modem for communicative connection to said communication network;

a remote modem for direct communicative connection to a first user instrument at said remote station; and

a fiber optic link connecting said base modem to said remote modem such that telephone communication between said communication network and said first user instrument is provided via said fiber optic link, said fiber optic link being transparent to said communication network and said first user instrument;

wherein said remote modem provides a first two-way communication path between said first user instrument and the fiber optic link, said remote modem including:

a first telephone interface for direct communicative connection to said first user instrument and for emulating the communication network to said first user instrument;

a fiber optic controller/driver for transmitting and receiving digitally modulated signals over said fiber optic link;

first audio processing means connected between said first telephone interface and said fiber optic controller/driver such that

a first audio signal received from said first user instrument by said first telephone interface is converted to a first digitally modulated signal by modulation means in said first audio processing means and transmitted to said fiber optic link by said fiber optic controller/driver, and

a second digitally modulated signal received from said fiber optic link by said fiber optic controller/driver is converted to a second user audio signal by demodulation means in said first audio processing means and transmitted to said first user instrument by said first telephone interface, the modulation means and demodulation means each receiving clock signals from said fiber optic controller/driver;

separate paths within said first two-way communication path for

a ring logic and an off-hook logic wherein said fiber optic controller/driver facilitates the transmission of said ring and off-hook logic in separate digital channels over the fiber optic link;

a ring generator for generating a ring signal to said first user instrument;

a relay for connecting said first user instrument to either said first telephone interface or said ring generator; and

a ring circuit for

responding to the ring logic from said fiber optic controller/driver by causing the relay to connect the first user instrument to said ring generator, and

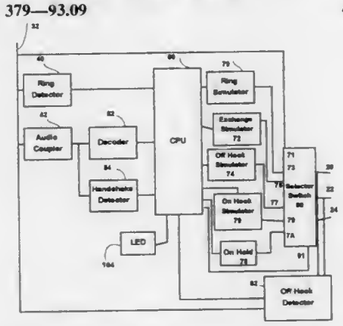
responding to an off-hook condition received from said first user instrument by causing the relay to connect the first user instrument to the first telephone interface and causing the off-hook logic to be transmitted to said fiber optic controller/driver.

5,666,403

METHOD AND APPARATUS FOR SHARING A SINGLE TELEPHONE LINE BETWEEN A FACSIMILE MACHINE, DATA MODEM, TELEPHONE ANSWERING DEVICE, AND A PERSON

Marius Telibasa, Woodside, N.Y., assignor to TT Systems Corporation, Yonkers, N.Y.

Filed Oct. 3, 1994, Ser. No. 317,932
Int. Cl.[6] H04M *1/64;11/00*
U.S. Cl. 379—93.09 **4 Claims**



1. A method for directing an incoming call from a single input telephone line to either a facsimile machine, a modem or a telephone having a connection to said telephone line, wherein said incoming call includes a "ring" signal followed by either facsimile data or modem data or voice data, depending on the intended destination, the steps of said method comprising:

detecting said "ring" signal of an incoming call;

electrically disconnecting said facsimile machine and said modem from said input telephone line without affecting the connection of the telephone to the telephone line, said step of electrically disconnecting being responsive to detection of

said "ring" signal, an incoming call on the telephone line causing said telephone to "ring" and providing an opportunity for a person to answer said incoming call by bringing said telephone to an off-hook state;

answering said incoming call by simulating an off-hook condition if said telephone is not brought to an off hook state within a predetermined delay period;

determining whether said incoming call, upon being answered, includes facsimile data by detecting handshake signals;

electrically reconnecting said facsimile machine to said input telephone line in response to detecting said handshake signals, said facsimile machine reconnecting step including: generating simulated "ring" signals to said facsimile machine, thereby activating said facsimile machine to answer said simulated "ring" signals and to receive said incoming facsimile data;

electrically reconnecting said modem said handshake signals are not detected and said incoming call was answered by simulating said off-hook connection, said modem reconnecting step including generating simulated "ring" signals to said modem, thereby activating said modem to answer said simulated "ring" signals and to receive incoming modem data.

5,666,404

DEVICE FOR TELEPHONE MONITORING OF PATIENTS HAVING PERIPHERAL ARTERIAL OCCLUSIVE DISEASE

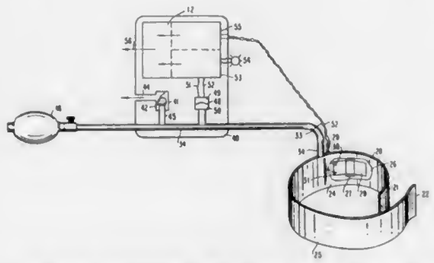
Ernest J. Ciccotelli, Norwich, Vt., and Edward A. Gilchrest, Jr., Southbury, Conn., assignors to Manfred Asrican, Greenwich, Conn.

Continuation of Ser. No. 925,744, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 738,263, Jul. 31, 1991, abandoned. This application Jun. 10, 1996, Ser. No. 660,929

Int. Cl.[6] **H04M** *11/00*

U.S. Cl. 379—106.02 **2 Claims**





1. A device for transmitting data from a first location to provide a reproducible arterial wave form by telephone line transmission comprising: an inflatable cuff element adapted to engage a part of the body of a user, said cuff element including means for inflating said cuff after body engagement to a predetermined pressure value; means for indicating to the user the attainment and maintenance of said pressure value; a piezo-electric member secured to said cuff on an inner surface thereof for generating an electrical analog signal, the voltage of which varies in accordance with pulsatile change of the user; means communicating said signal to a telephone modem for transmission over a telephone line to a subscriber circuit at a second location, said second location also including a modem for converting a received signal to analog form; charting means for graphically displaying said received signal; said means indicating the obtainment and maintenance of pressure value including a solenoid relief valve, and control circuitry for actuating said valve at a point above normal operating pressure, for disabling said valve at normal operating pressure, and for reactivating said valve at an intermediate value therebetween to prevent pressure fluctuation from causing erratic performance; said means also including means for interrupting transmission of information should the pressure fall below said predetermined pressure value.

5,666,405

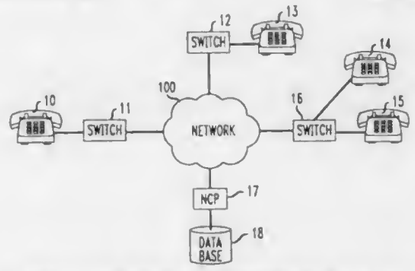
TRUE FAMILY TELECOMMUNICATION SERVICE

Roy Philip Weber, Bridgewater, N.J., assignor to AT&T, Middletown, N.J.

Filed Jul. 14, 1995, Ser. No. 502,783

Int. Cl.[6] **H04M** *11/00;15/06;17/00;3/00*

U.S. Cl. 379—127 **24 Claims**



1. A method for providing telecommunication service to a group of communication entities that are preselected by a sponsor to form a group, comprising the steps of:

in a database node, maintaining information about said communication entities that are members of said group;

based on information provided by one of said communication entities acting as a calling party, and through interaction with-to said database node, determining identity of another one of said communication entities with which the calling party wishes to communicate as a called party that is a member of said group;

effecting a connection between the calling party and the called party, and

charging said sponsor for said connection instead of the entity that would be charged were it not for the fact that both calling party and called party belong to said group.

5,666,406

HAZARD PREVENTION FOR TELEPHONE LINE INTERFACE CIRCUITS

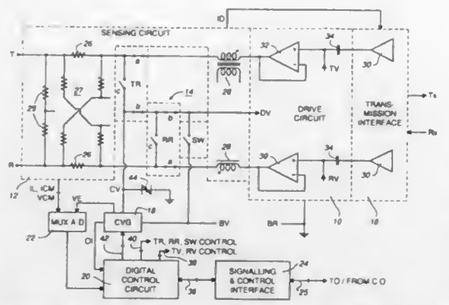
Brian A. F. S. Sutherland, Kanata; Stanley Daniel Rosenbaum, Nepean, and Paul Fong-Yan Hung, Stittsville, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 868,893, Apr. 16, 1992, and Ser. No. 862,478, Apr. 2, 1992, Pat. No. 5,323,461, which is a continuation-in-part of Ser. No. 648,776, Jan. 31, 1991, Pat. No. 5,103,387. This application Feb. 10, 1994, Ser. No. 200,081

Int. Cl.[6] **H04M** *1/00;3/00*

U.S. Cl. 379—399 **8 Claims**

1. A method of operating a telephone line interface circuit which includes a controlled voltage generator, a drive circuit, and a switching circuit, the line interface circuit having a first operating state in which the controlled voltage generator generates a relatively low voltage which is coupled by the switching circuit to the drive circuit, and a second operating state in which the controlled voltage generator generates a high voltage waveform which is coupled by the switching circuit from an output of the controlled voltage generator to a telephone line, the method comprising



switching from the first operating state to the second operating state by the steps of sequentially:

disabling the controlled voltage generator;

changing the state of the switching circuit; and

enabling the controlled voltage generator to generate the high voltage waveform.

5,666,407

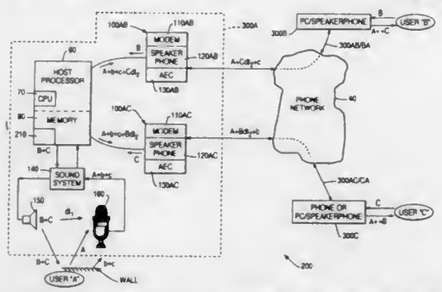
SOFTWARE-BASED BRIDGING SYSTEM FOR FULL DUPLEX AUDIO TELEPHONE CONFERENCING

Randy D. Pfeifer, Warrenville, Ill., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 5, 1995, Ser. No. 567,521

Int. Cl.[6] **H04M** *9/08;3/56*

U.S. Cl. 379—406 **17 Claims**



1. A method for implementing a bridge function in a duplex telephone system that includes at least a first, a second, and a third communication unit, said first unit including a microphone, and a loudspeaker, and being coupleable to said second unit and to said third unit for bilateral transfer of signals therebetween, the method comprising the following steps:

(i) determining an acoustic path time delay dt_1 for said first unit representing a time delay between a signal emanating from said loudspeaker and an acoustically delayed version of said signal detected by said microphone and coupled back to said first unit;

(ii) using said dt_1 determined in step (i) to generate a substantially equal delay time dt_2;

(iii) delaying any originally transmitted signal from a unit other than said first unit by said dt_2, and forming a separate summation signal to be sent from said first unit to each other said unit;

each said summation signal comprising audio originally generated by said first unit+an acoustically delayed version of any signal received from any other said unit+a dt_2-delayed version of an originally transmitted signal from a said unit to which a said summation signal is not to be coupled;

(iv) removing from each said summation signal formed at step (iii) any delayed signal originally produced by a said communication unit to which said summation signal is to be coupled, to form at least one transmittable signal;

(v) causing said first unit to couple to each other said unit a said transmittable signal having substantially no acoustically delayed signal component originally produced by a said unit receiving the said transmittable signal.

5,666,408

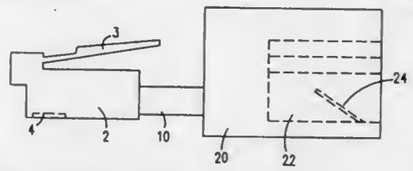
DUAL-LINE TELEPHONE JACK ADAPTER AND CABLE COUPLER

Kenneth Q. Lao, 650 Glen Ave., Westfield, N.J. 07090

Filed Nov. 13, 1995, Ser. No. 555,843

Int. Cl.[6] **H04M** *1/00*

U.S. Cl. 379—442 **16 Claims**



1. In a dual-line telephone system using connectors each comprising 4 pin positions arranged in a row for seating electrical contacts wherein the two inner pin positions are used for connecting line 1 while the two outer pin positions are used for connecting line 2, an adapter comprising:

a first plug having two first pins positioned to match the two outer pin positions of a 4-pin telephone jack; and a first receptacle having two first pins positioned to match the two inner pin positions of a 4-pin telephone plug;

wherein the first pins in said first plug are separately and electrically connected to the first pins in said first receptacle so as to connect line 2 of said telephone jack to line 1 of said telephone plug.

5,666,409

DEALING BOARD

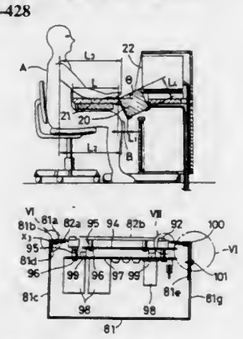
Junichi Tanji; Fumiyoshi Oono; Takuya Ishida; Toshimi Akimoto, all of Koriyama; Tomonobu Watanabe, Miharumachi; Katutoshi Yoshida, Koriyama; Ichiro Hoshi, Koriyama; Tatsuo Yamauchi, Koriyama, and Junichiro Imai, Koriyama, all of Japan, assignors to Hitachi Telecom Technologies, Ltd., Koriyama, Japan

Division of Ser. No. 138,185, Oct. 20, 1993, Pat. No. 5,418,850, which is a division of Ser. No. 655,293, Feb. 14, 1991, abandoned. This application Mar. 27, 1995, Ser. No. 411,144

Claims priority, application Japan, Feb. 15, 1990, 2-32454; Feb. 15, 1990, 2-32455; Feb. 15, 1990, 2-32456; Jun. 27, 1990, 2-166834; Jun. 27, 1990, 2-166835

Int. Cl.[6] **H04M** *1/00*

U.S. Cl. 379—428 **4 Claims**



1. A dealing board comprising:

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a dealing board main body having a substantially box-shape structure comprising a top plate, a bottom plate, a front face plate and a rear face plate, said top plate being forwardly slanted relative to a top of a desk on which said dealing board main body is placed, said top plate having at least one opening; and

at least one individual panel unit respectively arranged in the opening;

wherein the dealing board main body includes:

a bent portion formed at a top end of one of the front face plate and the rear face plate;

a receiving device secured to the one of the front face plate and the rear face plate, a first gap is created between the bent portion and the receiving device;

a screen plate attached to a top end of the other of the rear face plate and the front face plate, the screen plate has an unbent top end;

a fixing device removably attached to said screen plate by means of a set screw, the fixing device having a second bent portion formed at a top end thereof; and

a second receiving device secured to said fixing device so as to create a second gap between the second receiving device and the second bent portion;

wherein the individual panel unit has engagement pieces at a rear edge and a front edge of the individual panel unit; and

wherein the engagement pieces are engaged with the first gap and the second gap, respectively, and the fixing device is attached to the screen plate by means of the set screw so as to protrude a head of the set screw outside of the fixing device, so that the individual panel unit is installed in the opening of the top plate.

5,666,410

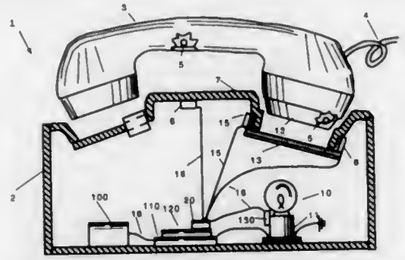
AUTOMATIC STERILIZER FOR TELEPHONES AND THE METHOD OF USE THEREFORE

Jerry McLane, 600 Donna Dr., Anchorage, Ak. 99504

Filed Dec. 5, 1995, Ser. No. 567,414

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—452 **14 Claims**



1. A sterilizer for a telephone comprising:

a) a base unit having a cradle;

b) a handset, removably attached to said base unit, said handset also including a mouthpiece, fixedly attached thereto;

c) a means for producing a sterilizing radiation, fixedly attached within said base unit, such that said sterilizing radiation is focused upon said mouthpiece of said handset when said handset is placed in the cradle of said base unit;

d) a pair of magnetic switching elements, each element having a magnetic activator and a switch, said pair of magnetic switching elements being fixedly installed in said telephone such that the magnetic activators are installed in said handset at some distance apart and the switches are placed in said cradle in such a position that when the handset is placed in the cradle, the magnetic activators align with and activate the switches;

e) a temperature sensing means for monitoring a rise in temperature of the means for producing sterilizing radiation, fixedly installed in said base unit;

f) a power supply means for providing operating energy to said means for producing sterilizing radiation; and

g) a means for controlling said means for producing sterilizing radiation, whereby said means for controlling monitors the temperature sensing means and controls said power supply means according to a predetermined temperature limit to achieve proper sterilization of the mouthpiece.

5,666,411

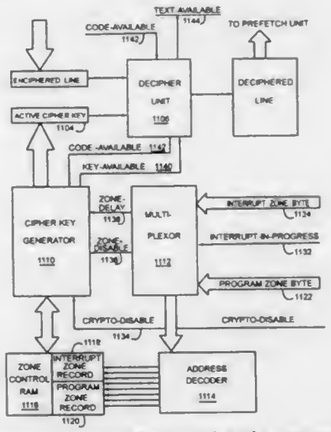
SYSTEM FOR COMPUTER SOFTWARE PROTECTION

Johnnie C. McCarty, 2304 Wright Clr., Round Rock, Tex. 78664

Filed Jan. 13, 1994, Ser. No. 180,602

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **12 Claims**



1. A system for restricting the execution of a computer program comprising:

means for re-enciphering the computer program from a first cipher forms stored on a distribution media to a second cipher form during initial installation of said program onto a predetermined storage means of an authorized computer system

wherein said second cipher form is unique to the authorized computer system;

means for loading the computer program in said second cipher form onto the computer system; and

means for executing the computer program on the authorized computer system.

5,666,412

SECURE ACCESS SYSTEMS AND METHODS UTILIZING TWO ACCESS CARDS

Doron Handelman, Givataim; Moshe Kranc; David Fink, both of Jerusalem; Arnold Zucker, Ramat Modiim; Perry Smith, Jerusalem, and Gerson Bar-On, Kohav Hashahar, all of Israel, assignors to News Datacom Ltd., London, England

Filed Jan. 20, 1995, Ser. No. 375,995

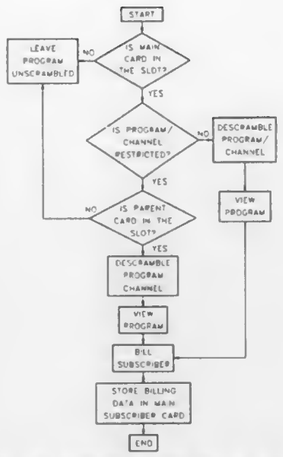
Claims priority, application Israel, Oct. 3, 1994, 111151

Int. Cl.[6] H04L *9/00;* **H04N** *7/167;* **G06F** *7/04*

U.S. Cl. 380—4 **34 Claims**

1. In a CATV system, wherein CATV programs are transmitted via a CATV network in encrypted form to a multiplicity of subscriber units each including a CATV decoder, and at least part of the CATV programs are rated for viewing under parental control, a CATV parental control system comprising:

a first IC card including at least one of decryption seeds, decryption keys and algorithms for decryption of programs which are not rated for viewing under parental control;



a second IC card including at least one of decryption seeds, decryption keys and algorithms for decryption of programs which are rated for viewing under parental control;

an IC card reader and writer coupled to said CATV decoder;

first and second IC card receptacles coupled to said IC card reader and writer, wherein said first and second IC cards communicate with said IC card reader and writer when inserted in the respected IC card receptacles; and

a decrypter for decrypting said programs which are not rated for viewing under parental control in response to receiving said at least one of decryption seeds, decryption keys and algorithms for decryption from said first IC card, and for decrypting said programs which are rated for viewing under parental control in response to receiving said at least one of decryption seeds, decryption keys and algorithms for decryption from said first IC card and said at least one of decryption seeds, decryption keys and algorithms for decryption from said second IC card.

5,666,413

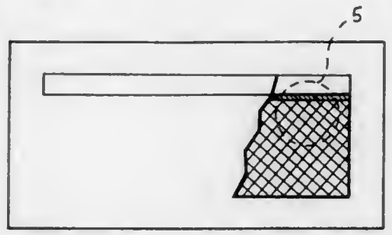
SCRAMBLER OF INFORMATION STORED ON MAGNETIC MEMORY MEDIA

Christopher J. Kempf, 7279 Woodale Dr. North, Carroll, Ohio 43112

Filed Oct. 25, 1995, Ser. No. 548,004

Int. Cl.[6] H01F *13/00;* **G11B** *3/66;5/02*

U.S. Cl. 380—4 **8 Claims**



1. A device for preventing access to the information stored on a magnetic memory storage medium for electronic information processing comprising

a container, and

magnetic material, said container containing said magnetic material, said magnetic material having a magnetic field said container having a passage of sufficient size to allow the magnetic memory storage medium to pass by said magnetic material and through its magnetic field, said magnetic material being located on only one side of said passing said passage of the magnetic memory storage medium by said magnetic material and through its magnetic field causing the information stored on the magnetic memory storage medium to not be thereafter accessed by a computer system.

5,666,414

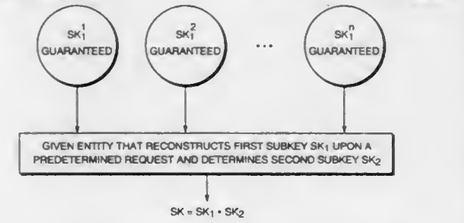
GUARANTEED PARTIAL KEY-ESCROW

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Filed Mar. 21, 1996, Ser. No. 620,080

Int. Cl.[6] H04L *9/00;* **H04K** *1/00*

U.S. Cl. 380—21 **23 Claims**



1. A method for escrowing secret decryption keys useful in decrypting ciphertexts, comprising the steps of:

providing a set of trustees a guarantee that a secret decryption key is the composition of a first subkey and a second subkey; and

providing each trustee of the set pieces of information enabling each trustee to verify that the piece of information includes a share of the first subkey.

5,666,415

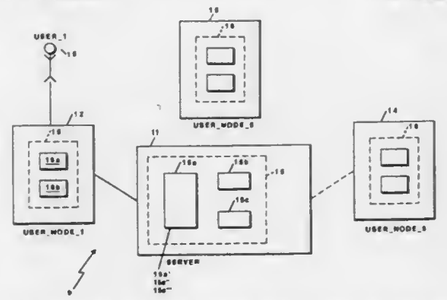
METHOD AND APPARATUS FOR CRYPTOGRAPHIC AUTHENTICATION

Charles William Kaufman, Northboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 28, 1995, Ser. No. 508,766

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—23 **20 Claims**



1. A method for providing authentication of a user including the steps of:

providing a first argument including a one-way cryptographic transformation of a password and a second argument including a one-way cryptographic transformation of a cryptographic combination of the password and a first nonce;

computing a first term using the first argument and computing a second term using the first nonce; and

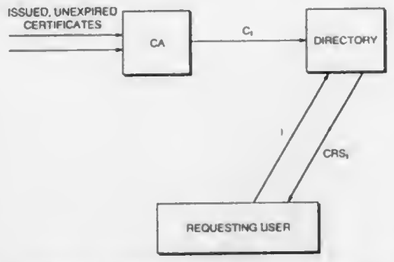
comparing the second term with the second argument.

5,666,416

CERTIFICATE REVOCATION SYSTEM

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Filed Nov. 16, 1995, Ser. No. 559,533
Int. Cl.[6] H04L 9/32;9/30;9/00
U.S. Cl. 380—23 34 Claims



16. A method of managing a plurality of certificates, comprising the steps of:

having a certifying authority provide a second party with authenticated information about certificates;

having a third party request information from the second party about an unissued certificate; and

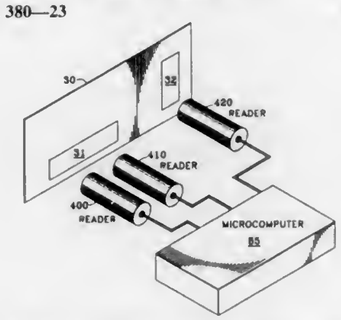
having the second party use the authenticated information to provide the third party with information authenticating that the given certificate was not issued.

5,666,417

FLUORESCENCE AUTHENTICATION READER WITH COAXIAL OPTICS

Louis H. Liang, Los Altos, Calif.; Daniel A. Marinello, Burlington, Ky.; William J. Ryan, Underhill, Vt., and Donald L. Wray, Sunrise, Fla., assignors to Angstrom Technologies, Inc., Florence, Ky.

Division of Ser. No. 575,729, Dec. 18, 1995, Pat. No. 5,574,790, which is a continuation-in-part of Ser. No. 383,785, Feb. 6, 1995, abandoned, which is a division of Ser. No. 127,250, Sep. 27, 1993, Pat. No. 5,418,855. This application Aug. 8, 1996, Ser. No. 694,032
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—23 9 Claims



1. An authentication system, comprising

a) a first reader adapted to read first indicia printed with a substance that fluoresces when illuminated with ultraviolet light, said first reader having a first output,

(b) a second reader adapted to read second indicia, said second reader having a second output, and

(c) a computer adapted by being programmed to receive said first and second outputs respectively from said first and second readers, to decode said first and second indicia, and to produce an authentication result depending on whether or not said indicia agree with predetermined indicia codes.

5,666,418

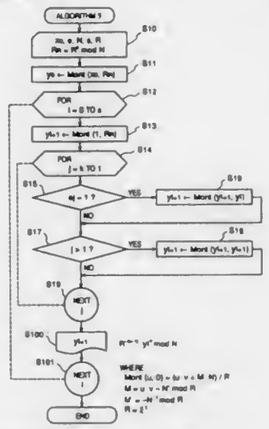
Patent Not Issued For This Number

5,666,419

ENCRYPTION DEVICE AND COMMUNICATION APPARATUS USING SAME

Takahisa Yamamoto, and Keiichi Iwamura, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,110
Claims priority, application Japan, Nov. 30, 1993, 5-299303; Dec. 27, 1993, 5-331241
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—28 18 Claims



3. A communication apparatus comprising:

generating means for generating a sequence of numbers X_i (i=1, 2, . . .) by the recurrence formula $X_{i+1}=R^{-(e-1)}\cdot X_i^e \bmod N$, the recurrence formula being obtained by the following recursive operation $Q=\{X_i^2+(X_i^2\cdot(-N^{-1} \bmod R) \bmod R)\cdot N\}/R$, on the basis of a prescribed initial value X_0, a prescribed odd number N and a prescribed number R which is a power of 2;

extracting means for extracting a prescribed portion from each number of the generated sequence of numbers to serve as a pseudorandom-number sequence; and

communication means for encrypting or decrypting communication data by processing the communication data on the basis of the pseudorandom-number sequence.

5,666,420

SIMULTANEOUS ELECTRONIC TRANSACTIONS

Silvio Micali, 459 Chestnut Hill Ave., Brookline, Mass. 02146

Continuation of Ser. No. 408,551, Mar. 21, 1995, abandoned. This application Nov. 18, 1996, Ser. No. 751,217
Int. Cl.[6] H04L 9/30
U.S. Cl. 380—30 57 Claims

39. An electronic communication method between a first and second party enabling an exchange of unpredictable values in which the second party receives a first value produced by the first party and unpredictable to the second party if and only if the first party receives a second value produced by the second party and unpredictable to the first party, comprising the steps of:

in a first set of communications between the first and second party wherein at least one of the first set of communications is carried out electronically, having the first party generate an encryption of a string from which the second party can compute the first value, wherein the encryption is decryptable with a secret key known to the third party; and

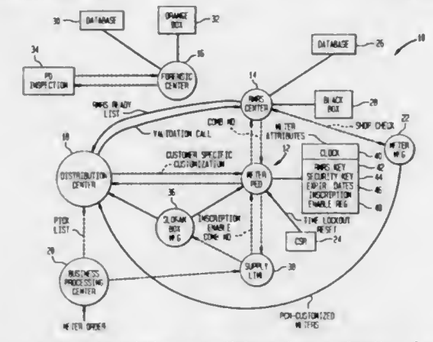
if the exchange of unpredictable values is not completed using the first set of communications, having the third party take action to complete the exchange, wherein the action includes decrypting the string from which the second party can compute the first value.

5,666,421

MAIL PROCESSING SYSTEM INCLUDING DATA CENTER VERIFICATION FOR MAILPIECES

Jose Pastor, Medinaceli, Spain; George M. Brookner, Norwalk, Conn.; Robert A. Cordery, Danbury, Conn., and Hyung-Kun (Paul) Kim, Wilton, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 133,427, Oct. 8, 1993, Pat. No. 5,390,251. This application Dec. 1, 1994, Ser. No. 348,026
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—51 17 Claims



1. A system for printing on mailpieces from a plurality of users of respective postage meters, the system comprising:

means for generating a first code inside each postage meter, said first code being an encrypted code representative of information uniquely determinative of the legitimacy of an amount of postage printed on a mailpiece, each of the first code generating means changing its code generation within predetermined intervals in each of the plurality of postage meters;

means for printing, the printing means printing the first code on the mailpiece;

a first security center including means for maintaining a first security code database and for generating first security codes in correspondence with the changes in the code generation for comparison with the first code printed on the mailpiece;

a second code, the printing means printing the second code on the mailpiece; and

a second security center including means for maintaining a second security code database and for generating second security codes for comparison with the second code printed on the mailpiece.

5,666,422

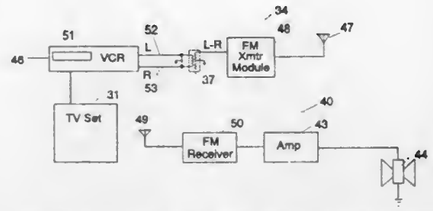
REMOTE SPEAKER FOR SURROUND-SOUND APPLICATIONS

Robert W. Harrison, 18 Westfield Park, Cortland, N.Y. 13045, and Alan Whitney, 227 Prospect Hill Rd., Horseheads, N.Y. 14845

Filed May 18, 1994, Ser. No. 245,624
Int. Cl.[6] H04R 5/00
U.S. Cl. 381—18 12 Claims

1. A remote wireless surround sound speaker for use with audio sources having left and right audio signals, comprising:

a) a difference signal transmitter unit comprising decoder means for generating a difference signal representing the difference between the right and left audio signals and transmitter means for transmitting the difference signal to a remote location,



wherein the decoder means of the difference signal transmitter unit is a transformer having a primary winding having inputs at each end of the winding and a secondary winding having an output at one end of the winding and a grounded center tap, wherein the left and right audio signals are connected to the inputs at the ends of the primary winding, and the difference signal is output from the output at the end of the secondary winding, and

b) a remote receiver unit comprising

i) receiver means for receiving and detecting the difference signal transmitted by the difference signal transmitter unit, having an input for accepting the signal from the transmitter unit, and a difference signal output comprising the received audio difference signal,

ii) amplifier means for amplifying an audio signal, having an input connected to the difference signal output of the receiver means, and an output for driving speakers with the difference signal, and

iii) speaker means connected to the output of the amplifier means, such that the speaker means reproduces a signal representing the difference between the left and right audio signals of the audio source.

5,666,423

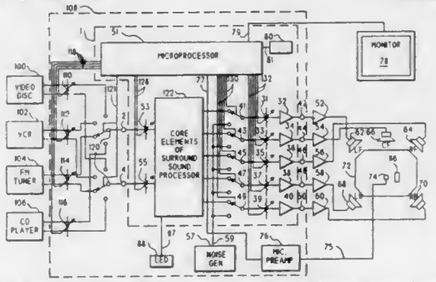
Patent Not Issued For This Number

5,666,424

SIX-AXIS SURROUND SOUND PROCESSOR WITH AUTOMATIC BALANCING AND CALIBRATION

James W. Fosgate, Heber City, and Samuel John Wolfe, Park City, both of Utah, assignors to Harman International Industries, Inc., Northridge, Calif.

Continuation-in-part of Ser. No. 624,907, Mar. 27, 1996, which is a continuation of Ser. No. 276,901, Jul. 18, 1994, Pat. No. 5,504,819, which is a continuation-in-part of Ser. No. 990,660, Dec. 14, 1992, Pat. No. 5,428,687, which is a continuation-in-part of Ser. No. 533,091, Jun. 8, 1990, Pat. No. 5,172,415. This application Apr. 24, 1996, Ser. No. 637,071
Int. Cl.[6] H04R 5/00
U.S. Cl. 381—18 13 Claims



1. A surround sound processor system including a control unit for multichannel redistribution of sound for reproduction by a plurality of loudspeakers surrounding a listener, comprising:

a plurality of stereo audio inputs for receiving stereo audio signals from one or more source units;
a selection means for selecting one of said plurality of stereo audio signals as a left and a right channel audio input signal;
a digitally controlled gain adjustment circuit in each of said left and right channels for controlling the amplitudes of said left and right audio input signals;
a surround sound processor for combining said left and right audio input signals in fixed and varying proportions according to the directional information contained therein as a result of the instantaneous relative magnitudes and phases of said left and right audio input signals which is detected by a direction detector circuit, said surround sound circuit comprising a a matrix circuit for combining said left and right audio input signals, said matrix circuit including voltage controlled amplifiers which are controlled by a multiplicity of control voltage signals derived from the output signals of said direction detector circuit after said control voltage signals have passed through a detector splitter and a servologic circuit for controlling the attack and decay time constants associated therewith, to provide at the outputs of said surround sound processor a plurality of loudspeaker drive signals;
a plurality of digitally controlled attenuator circuits equal to said plurality of loudspeaker drive signals for adjustment of the output signal level of each of said digitally controlled attenuator circuits;
a calibration signal source;
a microphone for placement at a point in the area surrounded by said plurality of loudspeakers;
a preamplifier and level detector circuit for receiving the input from said microphone and producing therefrom a direct voltage proportional to the sound intensity at the location of said microphone and converting said direct voltage to a digital signal; and
a microprocessor controller so configured in a calibration mode as to receive said digital signal from said microphone and to automatically adjust the gains of each of said plurality of digitally controlled attenuators when the output of said calibration signal is applied thereto so that the sound intensity due to each of said plurality of loudspeakers at the microphone position is the same.

5,666,425

PLURAL-CHANNEL SOUND PROCESSING

Alastair Sibbald, Maidenhead; Richard David Clemow, Gerrards Cross; Adam Philp, Ealing; Fawad Nackvi, Southall, and Adrian Miles Sandford, Hawley, all of England, assignors to Central Research Laboratories Limited, Hayes, England

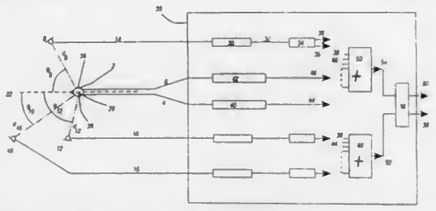
PCT No. PCT/GB94/00350, § 371 Date Mar. 20, 1996, § 102(e) Date Mar. 20, 1996, PCT Pub. No. WO94/22278, PCT Pub. Date Sep. 29, 1994

PCT Filed Feb. 23, 1994, Ser. No. 507,437

Claims priority, application United Kingdom, Mar. 18, 1993, 9305583; Apr. 23, 1993, 9308509

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—26 **15 Claims**



1. A plural-channel sound processing apparatus comprising:
an artificial head having microphones in each ear for providing a left channel signal and a right channel signal representative of sound received by the microphones;
at least one further microphone spaced from the artificial head for providing monophonic further signals representative of sound received thereby; and
a signal processing means for modifying the left channel signal and the right channel signal in accordance with air-to-ear transfer functions of the artificial head to produce respective left and right channel auxiliary signals; time-delaying the further signals from the at least one further microphone in dependence upon a displacement of the at least one further microphone from the artificial head; performing binaural synthesis on the time-delayed further signals to produce left channel further signals and right channel further signals; combining the left channel auxiliary signal with the left channel further signals and the right channel auxiliary signal with the right channel further signals; and transaural crosstalk compensating the respective combined signals to produce left and right channel processed signals.

5,666,426

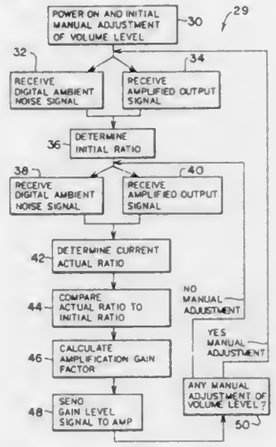
AUTOMATIC VOLUME CONTROL TO COMPENSATE FOR AMBIENT NOISE VARIATIONS

Frank P. Helms, Round Rock, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 17, 1996, Ser. No. 733,656

Int. Cl.[6] H03G *3/20*

U.S. Cl. 381—57 **4 Claims**



1. A device for automatically controlling a first volume level of an audio system, the audio system including an audio signal source, an audio amplifier, and a sound output mechanism, the audio system outputs a system sound of the first volume level into an environment of an environmental sound of a second volume level that includes the system sound and a varying external sound, comprising:
a microphone for receiving the system sound and the varying external sound;
processing circuitry connected to the microphone for varying the first volume level of the system sound in relation to variation in the second volume level of the environmental sound;
a microphone located to detect the second volume level of the environmental sound;
a first analog-to-digital converter connected to the microphone;
a digital signal processor connected to the first analog-to-digital converter;
wherein the digital signal processor controls the first volume level;
a gain level output of the digital signal processor delivered to the audio system;
a second analog-to-digital converter connected to the audio system;

an output of the second analog-to-digital converter provided to the digital signal processor;
wherein the microphone detects the environmental sound and the system sound and provides to the first analog-to-digital converter a cumulative volume level of the first volume level plus the second volume level;
wherein the first analog-to-digital converter provides to the digital signal processor the cumulative volume level;
wherein the digital signal processor divides the first volume level by the sum equal to the cumulative volume level minus the first volume level and evaluates the quotient of the division; and
wherein the gain level output varies the first volume level in proportion to the difference between the quotient of the division and a benchmark.

5,666,427

METHOD OF AND APPARATUS FOR CONTROLLING NOISE GENERATED IN CONFINED SPACES

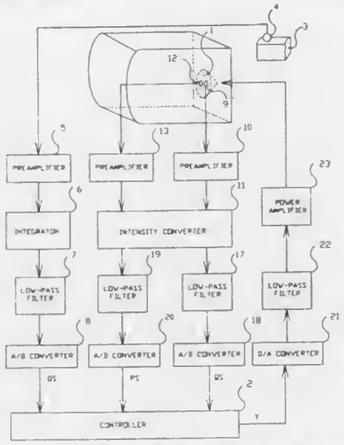
Won Young Kim, Changwon; Yang Han Kim, and Seong Woo Kang, both of Taejon, all of Rep. of Korea, assignors to Samsung Heavy Industries Co. Ltd., Seoul, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,827

Claims priority, application Rep. of Korea, Sep. 30, 1995, 95-33514; Sep. 30, 1995, 95-335516

Int. Cl.[6] A61F *11/06;* **H03B** *29/00*

U.S. Cl. 381—71.1 **5 Claims**



3. A method for controlling noise in a confined space to reduce a first acoustic power generated from at least one noise source, comprising the steps of:
measuring the first acoustic power generated from the noise source, generating, from an additional sound source, a second acoustic power having the same magnitude as the first acoustic power generated from the noise source while having a phase 180°-shifted from that of the noise source's first acoustic power, and determining an optimal position of the additional sound source so that the first and second acoustic powers can offset each other when they are mixed, wherein the step of measuring the optimal position of the additional sound source comprises:
calculating a vibration velocity and a sound pressure both generated from the noise source and a vibration velocity and a sound pressure both generated from the additional sound source;
deriving the following position determining function on the basis of the calculated vibration velocities and sound pressures; and
determining, as the optimal position, a position of the additional sound source where the position determining function approximates to 1; wherein

$$(N_{ps}^2(f))^2 = \frac{Re\,(H_{VsPp})^2}{Re(H_{VpPp}(f)) \times Re(H_{VsPs}(f))}$$

where,
$N_{ps}^2(f)$ is a position determining function;
$Re(H_{VpPp})$ is a real number part transfer function based on the vibration velocity Vp and sound pressure Pp from the engine **3**;
$Re(H_{VsPs})$ is a real number part transfer function based on the vibration velocity Vs and sound pressure Ps from the speaker **1**;
$Re(H_{VsPp})$ is a real number part transfer function based on the vibration velocity Vs from the speaker **1** and the sound pressure Pp from the engine **3**;
Vp and Vs are respective vibration velocities of the engine **3** and speaker **1**; and
Pp and Ps are respective sound pressures of the engine **3** and speaker **1**.

5,666,428

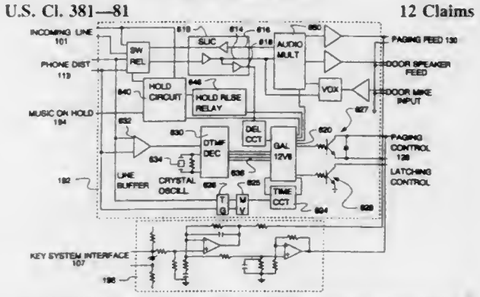
AUDIO DISTRIBUTION SYSTEM

Robert Farinelli; Thomas Patrick Carrin, both of Lexington, Ky.; H. Richard McCollister, Lincoln, Nebr., and Jason K. Donaway, Nashville, Tenn., assignors to Elan Home Systems, L.L.C., Lexington, Ky.

Continuation of Ser. No. 956,901, Oct. 2, 1992, which is a continuation-in-part of Ser. No. 818,664, Jan. 9, 1992, Pat. No. 5,363,434, which is a continuation-in-part of Ser. No. 639,507, Jan. 9, 1991, Pat. No. 5,131,048. This application Jun. 3, 1994, Ser. No. 253,833

Int. Cl.[6] H04B *3/00*

U.S. Cl. 381—81 **12 Claims**



1. An electronically controlled audio distribution system for use in a facility, the system having designated audio zones, including a first zone and a second zone, with each zone representing a separate and distinct facility area in which signals are broadcasted, comprising:
a plurality of signal generating devices including a first signal generating device including a music generator, located at a first facility location and a second signal generating device including a doorbell generator, located at a second facility location that is distally removed from the first facility location, each said signal generating device generating a signal for audio broadcast independently of the other signal generating devices;
a plurality of user-input controllers including a first user-input controller located in the first zone and a second user-input controller located in the second zone, each of the plurality of user input controllers including input circuitry for sending a plurality of command signals to control at least one of the plurality of signal generating devices; and
a master controller having a programming circuit with an input for receiving priority-command signals to program the master controller with a routing priority for each of said plurality of signals respectively generated by said signal generating devices, and including a signal routing circuit, responsive to the programming circuit, for routing a selected one of said

plurality of signals respectively by said signal generating devices with a highest priority in response to two or more of the signals being simultaneously presented for broadcast to the same zone and in accordance with the routing priority programmed in the master controller, the master controller thereby routing signals for broadcast in the designated audio zones and permitting at least one of the plurality of signal generating devices to be controlled from various facility areas via the plurality of user-input controllers.

5,666,429

ENERGY ESTIMATOR AND METHOD THEREFOR

Steven Adam Urbanski, Round Lake Beach, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 18, 1994, Ser. No. 276,736
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94.1 **4 Claims**



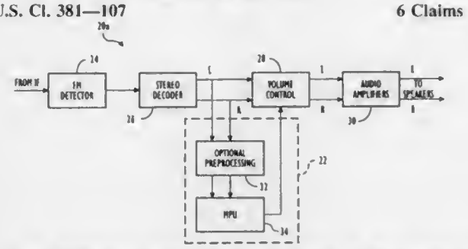
1. An energy estimator further comprising:
a full wave rectifier, operatively coupled to receive a signal, for rectifying the signal to produce a full wave rectified signal;
an averager, operatively coupled to the full wave rectifier, for averaging the full wave rectified signal over a predetermined time period to produce an averaged signal;
a logarithmic function determiner, operatively coupled to the averager, for producing a logarithmic signal responsive to applying a logarithmic function to the averaged signal; and
a filter, operatively coupled to the logarithmic function determiner, for filtering the logarithmic signal to produce an energy estimate of the signal.

5,666,430

METHOD AND APPARATUS FOR LEVELING AUDIO OUTPUT

Theodore S. Rzeszewski, Lombard, Ill., assignor to Matsushita Electric Corporation of America, Franklin Park, Ill.

Filed Jan. 9, 1995, Ser. No. 370,397
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—107 **6 Claims**



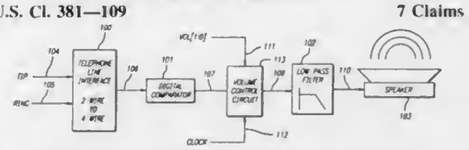
3. An apparatus for automatically controlling an audio output from a receiver, said apparatus comprising:
a detection circuit for calculating a power signal corresponding to the power of a detected audio input signal; and
a microcomputer
for determining whether said power signal is above or below a predetermined power value,
for generating a power control signal in response to whether said power signal is above or below said predetermined value,
for using said power control signal to automatically maintain a substantially constant audio output from the receiver, and
for scaling said power control signal to correspond to a volume setting of the receiver,
wherein said scaled power control signal comprises a first value for a first power signal and a first volume setting, and a second value for a second power signal and a second volume setting, and
wherein said first value is relatively smaller than said second value when said first power signal is substantially the same as said second power signal and said first volume setting is less than said second volume setting.

5,666,431

VOLUME CONTROL FOR A PERSONAL COMPUTER INTERNAL SPEAKER

Gregory S. Gillespie, and Thomas J. Glad, both of Nevada City, Calif., assignors to TDK U.S.A. Corporation, Port Washington, N.Y.

Filed May 10, 1994, Ser. No. 240,860
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—109 **7 Claims**



1. An apparatus for controlling signal power comprising:
interval partitioning means receiving a clock signal, said interval partitioning means generating at least one toggling signal for providing a plurality of phases;
first selection means coupled to said interval partitioning means and receiving an input signal, said first selection means selectively outputting said at least one toggling signal or said input signal depending upon a first select signal;
averaging means coupled to said first selection means, said averaging means providing an averaged output signal;
at least one additional selection means coupled to said interval partitioning means and receiving said input signal, said at least one additional selection means providing at least one additional selected signal, wherein said at least one additional selected signal comprises said input signal during a first phase of a second select signal, and wherein said at least one additional selected signal comprises said toggling signal during a second phase of said second select signal; and
controlling means coupled between said first selection means and said at least one additional selection means and said averaging means, said controlling means receiving a control signal, said controlling means providing a first selection means output to said averaging means when said control signal is a first value, said controlling means providing one of said at least one additional selected signals to said averaging means when said control signal is a second value.

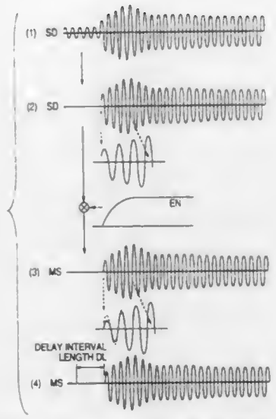
5,666,432

APPARATUS FOR AND METHOD OF SOUND RECORDING IN ELECTRONIC SOUND CONTROL SYSTEM

Gen Izumisawa, Hamamatsu, Japan, assignor to Kawai Musical Inst. Mfg. Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 929,571, Aug. 14, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,388
Claims priority, application Japan, Aug. 14, 1991, 3-204405
Int. Cl.[6] G10H *1/00*
U.S. Cl. 381—118 **18 Claims**

1. An apparatus for sound recording in an electronic sound control system comprising:
sampling means for sampling an input sound signal;
sound data recording means for recording entire sampled sound data from said sampling means;
clearing means for clearing a start portion of the entire sampled sound data recorded in said sound data recording means to produce a cleared portion and a discontinuous portion of the entire sampled sound data;
modifying data storage means for storing modifying data for gradually increasing a level of the discontinuous portion of the entire sampled sound data from level "0";
modifying data reading means for reading the modifying data from said modifying data storage means;
modifying means for modifying the discontinuous portion of the entire sampled sound data such that the level of the discontinuous portion increases from "0" to a level of a first sample of the entire sampled sound data immediately following the cleared portion, as modified according to the modifying data read out by said modifying data reading means, to produce a continuous portion; and
modified sound data storing means for storing the cleared portion, the continuous portion and a remainder of the entire sampled sound data, as modified sound data.

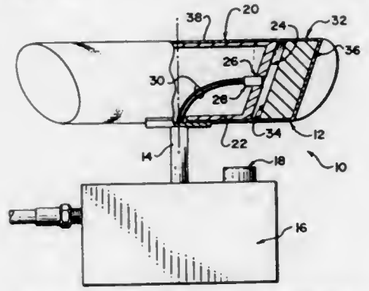


5,666,433

MICROPHONE & LOUDSPEAKER SYSTEM

Raymond Wehner, 241 Eveline St., Selkirk, Manitoba, Canada, R1A 1L7

PCT No. PCT/CA93/00327, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/05133, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 18, 1993, Ser. No. 387,740
Claims priority, application Canada, Aug. 18, 1992, 2076288
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—169 **20 Claims**



1. A microphone comprising a cylindrical transducer housing (**12**) with a lateral axis and having a hollow, cylindrical centre section (**20**) and two end sections (**32**), the centre section (**20**) having non-parallel, elliptical end walls (**24**) oriented mirror-symmetrically with respect to a plane perpendicular to the lateral axis, each end section (**32**) comprising a solid block, the end sections (**32**) having inner end faces (**34**) confronting and parallel to respective ones of the centre section end walls (**24**), the inner end faces (**34**) of the end sections (**32**) being imperforate, the end walls (**24**) of the centre section (**20**) being closed, and transducer means consisting of two microphone transducers (**26**) mounted centrally of the end walls (**24**) of the center section (**20**) to receive sound from beween the respective end sections and the centre section.

5,666,434

COMPUTER-AIDED METHOD FOR IMAGE FEATURE ANALYSIS AND DIAGNOSIS IN MAMMOGRAPHY

Robert M. Nishikawa, Chicago; Takehiro Ema, Westmont; Hiroyuki Yoshida, Westmont, and Kunio Doi, Willowbrook, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Division of Ser. No. 235,530, Apr. 29, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,794
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—128 **15 Claims**



1. A method for automated detection of an abnormal anatomic region, comprising:
obtaining a digital image of an object including said anatomic region;
subjecting said digital image to noise reduction filtering, comprising,
subjecting said digital image to separate morphological erosion and dilation operators using plural structuring elements to produce an eroded image and a dilated image,
determining a first absolute difference between said digital image and said eroded image and a second absolute difference between said digital image and said dilated image on a pixel by pixel basis,
substituting for values of pixels in the digital image with values of corresponding pixels in the eroded image when the first absolute difference is greater than the second absolute difference on a pixel by pixel basis, and
substituting for values of pixels in the digital image with values of corresponding pixels in the dilated image when the second absolute difference is greater than the first absolute difference on a pixel by pixel basis, said substituting steps producing a noise filtered image;
performing linear filtering on said noise filtered image; and
performing predetermined signal extraction and feature analysis routines on the linear filtered image to identify first locations of candidate abnormal regions.

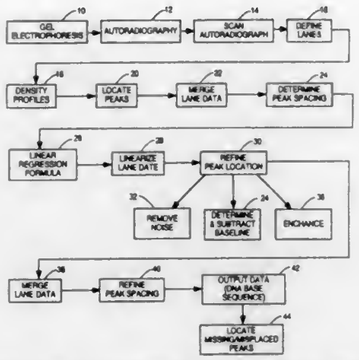
5,666,435

SYSTEM FOR ANALYSIS OF X-RAY FILMS OF NUCLEOTIDE SEQUENCES

Dean S. Burgi, Menlo Park; Daniel M. Bartell, Foster City; Donald D. Sleeter, San Leandro, and Lucina P. Mastro, San Francisco, all of Calif., assignors to Genomyx Corporation, Foster City, Calif.

Filed Dec. 9, 1994, Ser. No. 354,412
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—129 **21 Claims**

1. A method for identifying nucleotides in a sequence of nucleotides comprising a nucleic acid, said method comprising:



conducting gel electrophoresis on a plurality of radiolabeled single-stranded DNA fragments derived from said nucleic acid, said gel electrophoresis being conducted in a sequencing gel and including application of an air impingement system to control temperature during sequencing independent of voltage, and thereby to minimize temperature gradients in said sequencing gel;

generating an autoradiograph of said sequencing gel, said autoradiograph thereby bearing an analog image comprising a plurality of adjacent lanes extending from a bottom end of said autoradigraph to a top end of said autoradiograph;

scanning said autoradiograph to generate an input signal consisting of a set of input data indicative of said analog image;

electronically segregating said input data into lane data subsets corresponding to each of said adjacent lanes;

processing each of said land data subsets to generate respective density profile signals representative of density variations along each of said adjacent lanes from said bottom end of said autoradiograph to said top end of said autoradiograph;

electronically generating a peak location data subset for each of said lanes, responsive to each of said respective density profile signals, each said peak location data subset defining locations of density peaks along each of said lanes with reference to said bottom end of said autoradiograph;

merging together said peak location data subsets for each of said lanes so as to generate combined peak location signal representative of a combined set of peak location data;

generating, responsive to said combined peak location signal, a peak spacing signal representative of a set of peak spacing data defining peak spacing along said autoradiograph with reference to said bottom end of said autoradiograph;

electronically interpolating said peak spacing data so as to generate a linearization formula for spacing of peaks along said autoradiograph;

applying said linearization formula to each of said lane data subsets so as to generate linearized lane data signals corresponding to linearized peak spacing of density peaks in each of said lanes;

electronically generating a refined peak location data subset for each of said lanes, by subjecting each of said linearized lane data signals to method steps comprising:

removing noise;

determining and subtracting a baseline; and

emphasizing density peak shoulders;

merging together said refined peak location data subsets for each of said lanes so as to generate a combined refined peak location signal representative of a combined refined set of peak location data;

generating, responsive to said combined refined peak location signal, a refined peak spacing signal representative of a refined set of peak spacing data, defining peak spacing along said autoradiograph with reference to said bottom end of said autoradiograph;

electronically applying said linearization formula to said refined set of peak spacing data so as to determine locations of misplaced and missing peaks along said autoradiograph and to enable appropriate insertion of said misplaced and missing peaks; and

generating an output signal corresponding to said plurality of lanes bearing said linearized spacing of peaks, said peaks corresponding to bases in said DNA sequence.

5,666,436

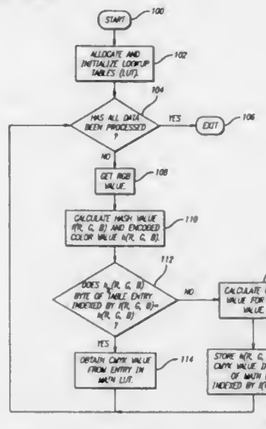
METHOD AND APPARATUS FOR TRANSFORMING A SOURCE IMAGE TO AN OUTPUT IMAGE

Andrew Eames, Mountain View, Calif., assignor to Electronics for Imaging, San Mateo, Calif.

Continuation of Ser. No. 136,975, Oct. 14, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 424,242

Int. Cl.[6] G03F *3/08*

U.S. Cl. 382—167 **92 Claims**



26. A method for transforming a source image to an output image, said method comprising the steps of:

obtaining a source image comprising a plurality of picture elements;

generating a first lookup table comprising a plurality of entries;

generating an index for each of a plurality of said source picture elements dependent on a first color of each source picture element of a plurality of said source picture elements; said index for referencing an entry of said plurality of entries in said first lookup table;

generating an encoded color for said each source picture element dependent on said first color of said each source picture element;

comparing said entry of said first lookup table referenced by said index and said encoded color to determine a match;

obtaining a second color of an output picture element corresponding to said each source printer element from said entry referenced by said index when a match occurs;

generating said second color of said output picture element dependent on said first color and storing said encoded color and said second color in said entry referenced by said index when a match does not occur;

outputting an output image comprising said output picture element.

5,666,437

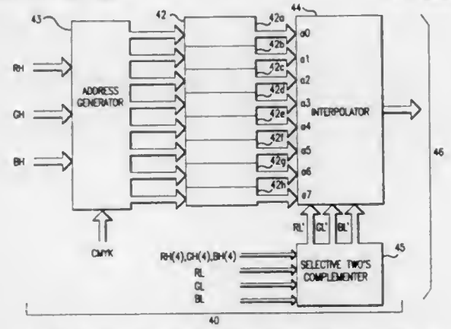
APPARATUS FOR ROUTING INTERPOLATOR INPUT DATA BY PERFORMING A SELECTIVE TWO'S COMPLEMENT BASED ON SETS OF LOWER AND HIGHER ORDER BITS OF INPUT DATA

Gary L. Vondran, Jr., Winchester, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 2, 1996, Ser. No. 691,786

Int. Cl.[6] H04N *1/60*

U.S. Cl. 382—167 **18 Claims**



I. An apparatus for routing interpolator input data used for a transformation of input data values each having n components to output data values each having i components, said n components represented by corresponding n sets of bits each partitioned to form n sets of higher order bits and n sets of lower order bits, said apparatus comprising:

a means for performing a selective two's complement arranged for receiving said n sets of lower order bits and a least significant bit from each of said n sets of higher order bits; and

at least one means for interpolating arranged for receiving said interpolator input data, each of said means for interpolating coupled to said means for performing a selective two's complement.

5,666,438

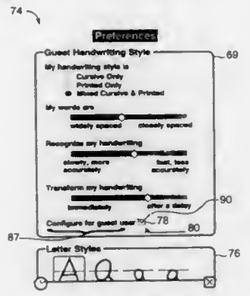
METHOD AND APPARATUS FOR RECOGNIZING HANDWRITING OF DIFFERENT USERS OF A PEN-BASED COMPUTER SYSTEM

Ernest H. Beernink, San Carlos, Calif.; Donna M. Auguste, Lyons, and John R. Meier, Longmont, both of Colo., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 29, 1994, Ser. No. 282,785

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—189 **40 Claims**



1. A method of recognizing the handwriting of one of several users of a pen-based computer comprising the steps of:

providing a pen-based computer having memory and a dual-function display assembly capable of receiving input and producing output;

providing user-specific handwriting data for a primary user and at least one guest user, said user-specific handwriting data including handwriting style data generically applicable to a corresponding user's handwriting, the handwriting style data including at least one handwriting style preference selected from the group consisting of printing, cursive, mixed printing and cursive, and at least one from the group consisting of recognition speed and word separation;

storing said user-specific handwriting data for said primary user and said at least one guest user in said memory;

displaying a handwriting preferences option on said dual-function display assembly;

directing a pointing device to said preferences option to communicate user interactive events to said pen-based computer, said user interactive events including user identification;

identifying the user of the pen-based computer; and

interpreting the handwriting of said user using said user-specific handwriting data appropriate for said user.

5,666,439

OUTLINE DISCRIMINATION AND PROCESSING

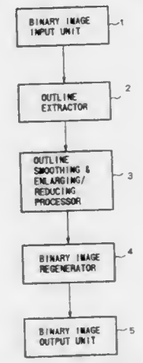
Yoshihiro Ishida, Kawasaki, and Akihiro Yoshitani, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1994, Ser. No. 249,170

Claims priority, application Japan, May 27, 1993, 5-126320

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—190 **22 Claims**



1. An image processing method for extracting outline vectors of a binary image including white pixels and black pixels and smoothing the extracted outline vectors, comprising:

an extraction step of extracting outline vectors at positions, along a border between a white pixel area and a black pixel area, and closer to the black pixel area from a central point between the areas;

a discrimination step of discriminating a form of black pixels, based on a direction and a length of a plurality of continuous outline vectors among the outline vectors extracted in said extraction step; and

an output step of outputting an outline point based on a discrimination result from said discrimination step,

wherein the outline vectors extracted in said extraction step are at positions between a white pixel area and a black pixel area, and closer to the black pixel area at a point ¼ the distance between both areas from the black area.

5,666,440

METHOD AND APPARATUS FOR EXTRACTING OUTLINE DATA FROM BI-LEVEL IMAGE DATA

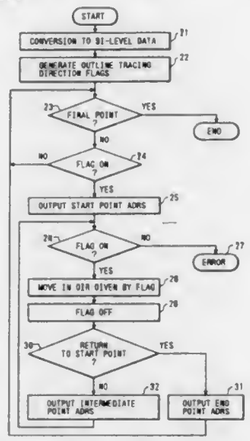
Yoshiko Hozumi, Zushi, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 300,109, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 921,167, Jul. 29, 1992, abandoned. This application Jan. 23, 1996, Ser. No. 589,072

Claims priority, application Japan, Jul. 31, 1991, 3-214715; Jul. 31, 1991, 3-214716

Int. Cl.[6] **G06K** *9/48*

U.S. Cl. 382—198 **18 Claims**



1. A method of extracting an outline of a first-level region from a bi-level image which is represented by an array of pixels, the method comprising the steps of:

generating 4-direction code words defined at points between the pixels respectively,

wherein each of the 4-direction code words is changeable among seven different states and represents presence and absence of an upward outline tracing direction, a downward outline tracing direction, a leftward outline tracing direction, and a rightward outline tracing direction, said seven different states including a first state representing presence of the upward outline tracing direction and absence of the other outline tracing directions, a second state representing presence of the downward outline tracing direction and absence of the other outline tracing directions, a third state representing presence of the leftward outline tracing direction and absence of the other outline tracing directions, a fourth state representing presence of the rightward outline tracing direction and absence of the other outline tracing directions, a fifth state representing absence of all the outline tracing directions, a sixth state representing presence of both the upward outline tracing direction and the downward outline tracing direction and absence of the other outline tracing directions, and a seventh state representing presence of both the leftward outline tracing direction and the rightward outline tracing direction and absence of the other outline tracing directions;

determining states of the 4-direction code words from among said seven different states in accordance with states of the four pixels surrounding and adjoining the related points respectively;

wherein a state of each of the 4-direction code words is determined to be one of the sixth state and the seventh state when a first pair of opposite pixels of the four pixels are in a first one of the bi-levels and a second pair of opposite pixels of the four pixels are in a second one of the bi-levels;

performing a movement from one of the points to a neighboring point thereof in accordance with the state of the 4-direction code word defined at said one of the points,

wherein:

said upward outline tracing direction and downward outline tracing direction start from a same point and are oppositely directed to each other, and said leftward outline tracing direction and rightward outline tracing direction start from a common point and are oppositely directed to each other;

said movement-performing step includes:

selecting one of the oppositely directed upward outline tracing direction and downward outline tracing direction from a same point when the state of the 4-direction code word is the sixth state,

performing a movement from one of the points being considered as said same point to a neighboring point thereof in accordance with said selected one of the oppositely directed upward outline tracing direction and downward outline tracing direction from said one of the points,

selecting one of the oppositely directed leftward outline tracing direction and rightward outline tracing direction from a common point when the state of the 4-direction code word is the seventh state, and

performing a movement from one of the points being considered as said common point to a neighboring point thereof in accordance with said selected one of the oppositely directed leftward outline tracing direction and rightward outline tracing direction from said one of the points;

repeating said movement-performing step to trace an outline of a region in the bi-level image; and

generating data representing said traced outline in accordance with addresses of the points along which said movements are performed.

5,666,441

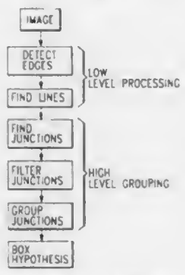
COMPUTER VISION SYSTEM TO DETECT 3-D RECTANGULAR OBJECTS

Kashi Rao, and Piyush Sarwal, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 214,930, Mar. 17, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 521,512

Int. Cl.[6] **G06K** *9/46*

U.S. Cl. 382—203 **10 Claims**



1. A method of rectangular solid detection comprising:

receiving a reference image of a scene;

receiving a new image of said scene;

differencing said new image of said scene from said reference image of said scene to produce a differenced image of said scene with a modified differencing technique; and

identifying a rectangular solid from said differenced image of said scene wherein said identifying said rectangular solid includes:

detecting edges from said differenced image of said scene;

finding lines from said edges and said differenced image of said scene;

finding fork junctions from lines and said differenced image of said scene;

filtering fork junctions and triplets of lines that meet a first set of certain criteria;

grouping said junctions and said triplets of lines that meet a second set of certain criteria; and

determining whether a rectangular solid exists in said image according to said grouping.

5,666,442

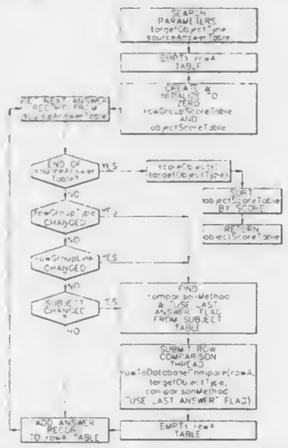
COMPARISON SYSTEM FOR IDENTIFYING THE DEGREE OF SIMILARITY BETWEEN OBJECTS BY RENDERING A NUMERIC MEASURE OF CLOSENESS, THE SYSTEM INCLUDING ALL AVAILABLE INFORMATION COMPLETE WITH ERRORS AND INACCURACIES

David Brian Wheeler, Austin, Tex., assignor to InfoGlide Corporation, Austin, Tex.

Continuation of Ser. No. 67,745, May 23, 1993, abandoned. This application Sep. 28, 1995, Ser. No. 535,783

Int. Cl.[6] **G06F** *17/30*

U.S. Cl. 382—209 **10 Claims**



1. A method of identifying an unidentified object by producing a list of known objects having attributes similar to the unidentified object, said method comprising the steps of:

(a) collecting information about at least one attribute of the unidentified object;

(b) converting the collected attribute information into a language independent format;

(c) arranging the collected information having a language independent format in a predetermined sequence;

(d) comparing the language independent collected attribute information with information related to a plurality of known objects, wherein the known objects may include a different number and/or type of attributes than the unidentified object;

(e) assigning a value to each one of the known objects indicating the degree of similarity each known object has to the unidentified object; and

(f) providing a list of the known objects most closely matching the observed object based on the assigned similarity values.

5,666,443

IMAGE PROCESSOR WITH EDGE EMPHASIS OF IMAGE DATA

Hideo Kumashiro, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 16, 1994, Ser. No. 291,113

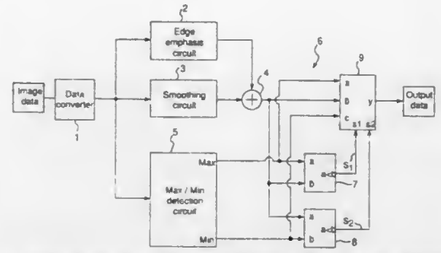
Claims priority, application Japan, Aug. 24, 1993, 5-209376

Int. Cl.[6] **G06T** *5/00;* **H04N** *1/409*

U.S. Cl. 382—266 **19 Claims**

1. An image processor comprising:

an edge emphasis circuit which performs edge emphasis on image data in a pixel unit of a prescribed pixel matrix; and



a suppression circuit which suppresses a width of an amplitude of the image data after the edge emphasis is performed by said edge emphasis circuit to become a width of the amplitude of the image data before the edge emphasis is performed by said edge emphasis circuit.

5. An image processor comprising:

an edge emphasis circuit which performs edge emphasis on image data in the pixel unit of a prescribed pixel matrix;

a detection circuit which detects a maximum of the image data; and

a limit circuit which limits image data levels below the maximum detected by said detection circuit after the edge emphasis is performed by said edge emphasis circuit.

10. An image processor comprising:

an edge emphasis circuit which performs edge emphasis on image data in a pixel unit of a prescribed pixel matrix;

a detection circuit which detects a minimum of the image data; and

a limit circuit which limits image data levels over the minimum detected by said detection circuit after performing edge emphasis on said image data.

14. An image processor comprising:

an edge emphasis circuit which performs edge emphasis on image data in a pixel unit of a prescribed pixel matrix;

a detection circuit which detects a maximum and a minimum of the image data; and

a limit circuit which limits image data levels within a range between the maximum and the minimum detected by said detection circuit after edge emphasis is performed by said edge emphasis circuit.

5,666,444

IMAGE PROCESSING APPARATUS

Naoto Kawamura, Tokyo, and Hidejiro Kadowaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 326,343, Oct. 20, 1994, which is a continuation of Ser. No. 833,649, Feb. 5, 1992, abandoned, which is a continuation of Ser. No. 152,024, Feb. 3, 1988, abandoned, which is a division of Ser. No. 881,492, Jul. 19, 1986, Pat. No. 4,783,837, which is a continuation of Ser. No. 480,823, Mar. 31, 1983, abandoned. This application Jun. 7, 1995, Ser. No. 476,683

Claims priority, application Japan, Apr. 6, 1982, 4-56964; Apr. 6, 1982, 4-56965

Int. Cl.[6] **G06K** *9/38*

U.S. Cl. 382—270 **9 Claims**

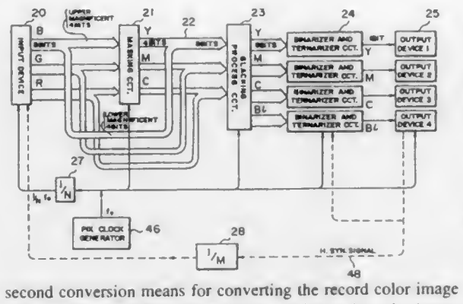
1. A color image recording apparatus comprising:

generating means for generating a color image signal;

record means for recording a color image;

supply means for supplying a control signal according to a variable magnification to said generating means, wherein said generating means generates a color image signal according to a variable magnification on the basis of the control signal supplied by said supply means;

first conversion means for converting the color image signal generated in accordance with a variable magnification by said generating means into a record color image signal adaptable for said record means; and



second conversion means for converting the record color image signal from said first conversion means into a dot color image signal according to a density level of the record color image signal to supply the dot color image signal to said record means,

wherein said record means records a color image on the basis of the dot color image signal supplied by said second conversion means, and

wherein said first and second conversion means perform a conversion operation in synchronism with a clock signal that is independent of a variable magnification, and in synchronism with a recording operation of said record means.

5,666,445

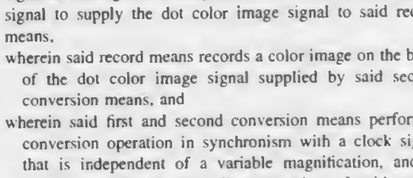
EASY OPENING FLEXIBLE PLASTIC BAG AND A METHOD OF MAKING SAME

Daniel J. Conrad, and Mark A. Roland, both of c/o Paramount Packaging Corporation, P.O. Box 902, 202 Oak Avenue, Chalfont, Pa. 18914

Continuation of Ser. No. 842,637, Feb. 27, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 261,241

Int. Cl.[6] B65D *30/20;33/10*

U.S. Cl. 383—207 **22 Claims**



1. An easy opening plastic bag comprising:

a front panel;

a rear panel;

left and right end panels coupled to the front and rear panels;

a gusset formed at a top of the bag and coupled to the front and rear panels; and

a first frangible line disposed near a top of the front panel;

a second frangible line disposed near a top of the rear panel;

a connecting frangible line connecting said first and second frangible lines, the first, second, and connecting frangible lines lying substantially in a plane and allowing a portion of the bag to rotate away from the remainder of the bag about an axis parallel to said plane; and

a third frangible line extending substantially perpendicular to said plane and intersecting at least one of said first, second, and connecting frangible lines.

5,666,446

METHOD FOR PRODUCING A COVER FOR AN INTEGRATED OPTICAL CIRCUIT AND COVER FOR AN INTEGRATED OPTICAL CIRCUIT

Hans Kragl, Ober-Ramstadt, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

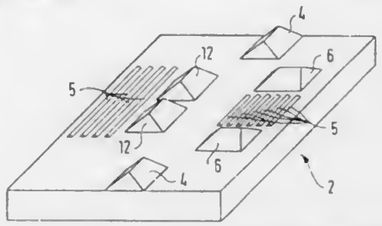
PCT No. PCT/DE93/01157, § 371 Date Aug. 8, 1994, § 102(e) Date Aug. 8, 1994, PCT Pub. No. WO94/14093, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 4, 1993, Ser. No. 284,509

Claims priority, application Germany, Dec. 7, 1992, 42 40 950.0

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **4 Claims**



1. An assembly for an integrated optical circuit comprising:

a) an optical component having at least one groove extending to an outside edge of the optical component;

b) a cover having at least one recess extending the groove of the optical component away from the outside edge of the optical component and a guide groove to hold light guides; and

c) an integrated optical circuit comprising a substrate that has at least two first grooves and an additional groove located between the at least two first grooves,

wherein the cover of the optical component is attached to the substrate by an optically transparent adhesive, wherein the optically transparent adhesive also fills the additional groove lying between the at least two first grooves, and

wherein the cover and the substrate are positioned laterally with respect to one another so that the guide grooves of the cover are arranged above the at least two first grooves of the substrate to form guide channels in which the light guides extending in the direction of the additional groove are received.

5,666,447

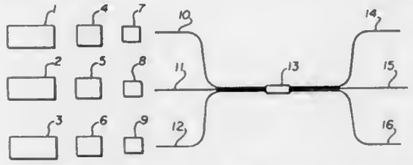
USING OPTICAL FIBER MULTIPLEXER TO COMBINE LIGHT BEAMS IN A LASER PRINTER

Chih-Li Chuang, and Sanwal Prasad Sarraf, both of Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,958

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—31 **19 Claims**



1. In a color printer using color laser beams that are combined using optical fiber multiplexers to combine the laser beams in different ratios, said printer comprising:

first, second and third laser light sources, each having a different wavelength;

a first optical fiber multiplexer having first and second input ports connected to said first and second laser light sources and further including a pair of output ports each having both first and second wavelengths of light; and

a second optical fiber multiplexer having a first input port connected to said second output of said first optical fiber multiplexer and its second input port connected to said third laser light source and a pair of output ports having first, second and third wavelengths of light.

5,666,448

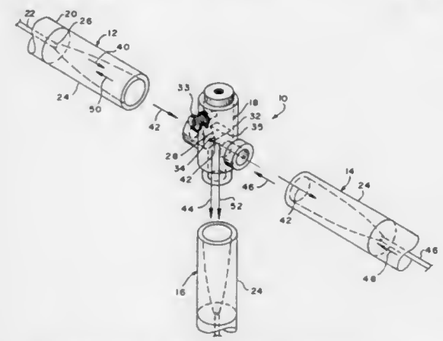
VARIABLE SPLITTING OPTICAL COUPLER

Jeffrey S. Schoenwald, Thousand Oaks; Stephen W. Clausi, and James L. Peck, Jr., both of Huntington Beach, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 22, 1995, Ser. No. 532,194

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—44 **16 Claims**



1. A variable splitting optical coupler, comprising:

a) a first port assembly for receiving a first optical signal, said first port assembly comprising a first lensing element;

b) a second port assembly for emitting a variable transmitted portion of said first optical signal, said second port assembly comprising a second lensing element;

c) a movable deflecting element assembly comprising a movable deflecting element positioned between said first and second port assemblies; and,

d) a third port assembly comprising a third lensing element,

said movable deflecting element being so positionable and said third port assembly being so positioned and arranged such that a deflected portion of said first optical signal is deflected from said deflecting element and directed through said third port assembly and said variable transmitted portion of said first optical signal is directed through said second port assembly without being deflected by said deflecting element, said transmitted and deflected portions of said first optical signal being expanded and collimated while passing through said optical coupler by appropriate positioning of said lensing elements to provide efficient and accurate control of said first optical signal,

wherein said movable deflecting element varies the relative splitting of said deflected and transmitted portions of said first optical signal.

5,666,449

OPTICAL WAVEGUIDE DEVICE

Shinya Sawae, Sapporo; Sadayuki Miyata, and Takashi Yamane, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

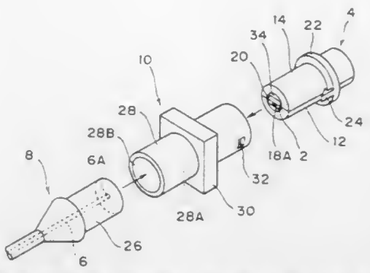
Filed Sep. 24, 1996, Ser. No. 717,817

Claims priority, application Japan, Feb. 19, 1996, 8-030498

Int. Cl.[6] G02B *6/30*

U.S. Cl. 385—49 **11 Claims**

1. An optical waveguide device comprising:



an optical waveguide chip having an optical waveguide structure having a connection end, said optical waveguide chip having an end surface flush with said connection end;

a first adapter fixed to said optical waveguide chip and having an outer surface set in predetermined positional relation with said connection end;

a second adapter having an inner surface including a first region and a second region, said second adapter being detachably mounted to said first adapter so that said outer surface of said first adapter comes to close contact with said first region; and

an optical fiber plug having an optical fiber having an excitation end and a ferrule in which said optical fiber is inserted and fixed, said optical fiber plug being detachably mounted to said second adapter so that an outer surface of said ferrule comes to close contact with said second region;

wherein when said second adapter is mounted to said first adapter, and said optical fiber plug is mounted to said second adapter, said connection end of said optical waveguide structure and said excitation end of said optical fiber are optically coupled.

5,666,450

OPTICAL-AXIS ALIGNMENT METHOD, OPTICAL-AXIS ALIGNMENT DEVICE, INSPECTION METHOD OF OPTICAL DEVICES, INSPECTION DEVICE OF OPTICAL DEVICES, METHOD OF PRODUCING OPTICAL MODULE, AND APPARATUS OF PRODUCING OPTICAL MODULE

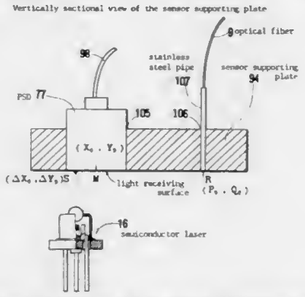
Yasushi Fujimura; Yoshiki Kuhara, and Naoyuki Yamabayashi, all of Osaka, Japan, assignors to Sumitomo Electric Industries,Ltd., Osaka, Japan

Filed Aug. 21, 1996, Ser. No. 697,248

Claims priority, application Japan, Aug. 22, 1995, 7-237745

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—93 **60 Claims**



1. A method of aligning a first optical device having an optical axis for generating light converging at a focus point with a second optical device having an optical axis provided with a narrow light receiving area comprising the steps of:

supporting the second optical device and a semiconductor position sensitive device having a wide light receiving surface by a supporting plate as the optical axis of the second optical device is in parallel with the optical axis of the semiconductor position sensitive device, and a light receiving area of the

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second optical device and the light receiving surface of the semiconductor position sensitive device are arranged to be nearly equal in height;

placing the first optical device and the semiconductor position sensitive device face to face;

focusing light emitted from the first optical device on the light receiving surface of the semiconductor position sensitive device;

sensing a focus point of the light from the first optical device by the semiconductor position sensitive device;

calculating two-dimensional differences in position between the focus point and the second optical device;

moving the second optical device and the semiconductor position sensitive device as a body relatively to the first optical device by the two-dimensional differences;

placing the second optical device as being opposite to the focus point of the first optical device; and

aligning the optical axis of the first optical device with the optical axis of the second optical device by finely moving the second optical device in direction of increasing light power relatively to the first optical device.

5,666,451

VIDEO COMPACT DISC HAVING CAPTION DATA RECORDED THEREON AND REPRODUCING METHOD AND APPARATUS THEREOF

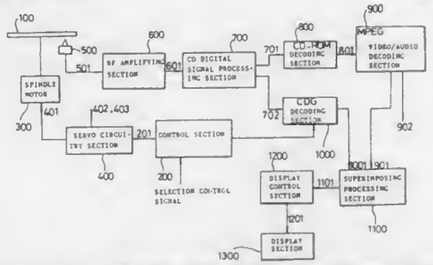
Jun-Sik Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,940

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39388

Int. Cl.[6] H04N *5/928;5/781;7/26*

U.S. Cl. 386—97 **7 Claims**



1. A video compact disc having caption data recorded thereon and including both a lead-in area having disc management information recorded thereon and a lead-out area for indicating a final section of a program area, said video compact disc comprising:

a program area having full motion picture video/audio information recorded thereon, and including a data area having a synchronizing signal, header data and MPEG-processed audio/video data respectively recorded thereon, a error correction code data area having error correction code data recorded thereon, and a control data area having compact disc graphics data recorded thereon,

said control data area including a subcode channel having a plurality of caption data recorded thereon prepared in different languages with respect to an identical picture signal, the plurality of caption data constituted in the unit of a pack read out by selecting one of the channels constituting said control data area, a plurality of said packs established in order to designate one of the languages by combining channels 0 and 1 in a data record field, said data record field having font data recorded therein a screen display position of which is designated by a column and a row.

5,666,452

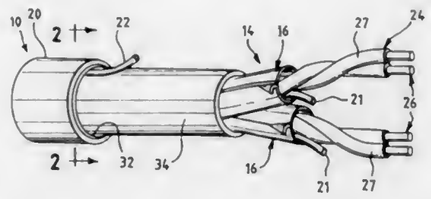
SHIELDING TAPE FOR PLENUM RATED CABLES

Gregory S. Deitz, Sr., and Timothy N. Berelsman, both of Richmond, Ind., assignors to Belden Wire & Cable Company, Richmond, Ind.

Filed May 20, 1994, Ser. No. 246,515

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 **13 Claims**



1. A plenum rated cable comprising:

a cylindrical jacket having an internal wall defining a core, a plurality of first shields and a second shield,

each of said first shields surrounding at least one pair of insulated conductors,

said second shield surrounding said first shields,

each of said first shields having a first layer of aluminum material and a second layer of low temperature smoke resistant cellulose or polypropylene material facing said conductors, and

said first and second layers being bonded together.

5,666,453

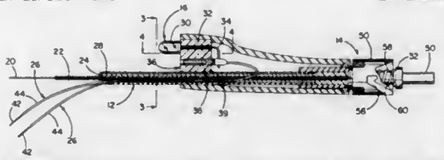
FIBER OPTIC JUMPER CABLES AND TRACING METHOD USING SAME

John E. Dannenmann, Portland, Oreg., assignor to Roy Witte, Inverness, Ill.

Filed Jul. 15, 1994, Ser. No. 275,973

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—101 **28 Claims**



1. A fiber optic jumper cable which includes at least one fiber optic light guide for conducting a light signal through said cable, a plurality of fiber optic connections spaced from one another along said cable for effecting light-signal transmissive interconnections between said light guide and other optic devices, an electrically activated telltale affixed to said cable at a first position adjacent at least one of said fiber optic connections for providing an identification signal when activated, an electric power control at a second position spaced from said first position, and said cable further including an electrical conductor extending between and operatively connected to at least said power control and said telltale device, whereby said telltale device may be activated by manipulation of said power control at said second position for identification of said cable at said first position by the identification signal provided by said telltale device thereat.

26. A method of tracing fiber optic jumper cables comprising the steps of providing a fiber optic cable with electrically activated telltales at spaced positions therealong and an electrical conductor interconnecting said telltales, selectively applying electrical power to said electrical conductor appropriate to activate said telltales, and observing said activated telltales to determine the location of the respective portions of said cable.

5,666,454

PREFORM FOR OPTICAL FIBER AND METHOD OF PRODUCING OPTICAL FIBER

Jun Terada; Hideaki Chiba; Mituhiro Kawasaki, and Tadashi Takahashi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

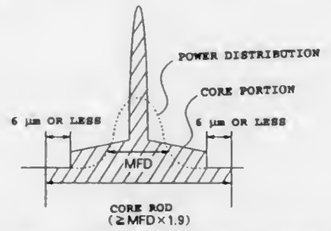
PCT No. PCT/JP95/00814, § 371 Date Apr. 16, 1996, § 102(e) Date Apr. 16, 1996, PCT Pub. No. WO95/29132, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 25, 1995, Ser. No. 569,163

Claims priority, application Japan, Apr. 25, 1994, 6-86419

Int. Cl.[6] G02B *6/02;* **C03B** *37/023*

U.S. Cl. 385—123 **9 Claims**



1. In a method of producing a silica glass optical fiber preform by dehydrating and making into a glass a porous glass body of a core rod for a dispersion-shifted single-mode optical fiber to prepare a core rod for the optical fiber, depositing a cladding layer substantially not containing a metal dopant on the circumference of said core rod for the optical fiber so as to give an outer diameter of a desired value, and then dehydrating and making into a glass the same,

a method of producing a preform for a dispersion-shifted single-mode optical fiber wherein an optical fiber preform is manufactured so that the diameter of a part corresponding to the core rod for the optical fiber is 1.9 times or more the mode field diameter when the optical fiber preform is processed and formed into a dispersion-shifted single-mode optical fiber and light having a wavelength of 1.55 μm is transmitted to this optical fiber and wherein the thickness of the cladding layer which exists in an outer layer portion of the core rod and substantially does not contain the metal dopant is within a range of from 0 to 6 μm with respect to an optical fiber having a diameter of 125 μm.

4. A dispersion-shifted single-mode optical fiber characterized in that it is formed so that the diameter of a part corresponding to the core rod is 1.9 times or more the mode field diameter when transmitting light having a wavelength of 1.55 μm and the thickness of the cladding layer existing in the outer layer portion of the core rod is within a range of from 0 to 6 μm with respect to an optical fiber having a diameter of 125 μm.

5,666,455

WAVEGUIDE DEVICE

Masahiro Aoki, Kokubunji; Tatemi Ido, Hachioji; Takayuki Tsutsui, Komoro; Kazuhisa Uomi, Hachioji; Tomonobu Tsuchiya, Kodaira; Makoto Okai, Tokorozawa, and Atsushi Nakamura, Komoro, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 380,571, Jan. 30, 1995, Pat. No. 5,572,616. This application Sep. 13, 1996, Ser. No. 713,867

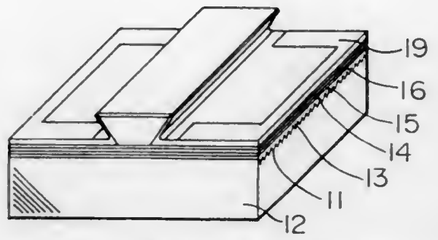
Claims priority, application Japan, Jan. 31, 1994, 6-009116; Mar. 10, 1994, 6-039442

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—131 **3 Claims**

1. An optical communication system, including

an erbium-doped fiber amplifier, wherein said erbium doped fiber amplifier is excited by light source, an oscillation threshold current and a slope efficiency of which under a room temperature and continuous operating condition are 25 to 32 mA and 0.40 to 0.43 W/A, respectively.



5,666,456

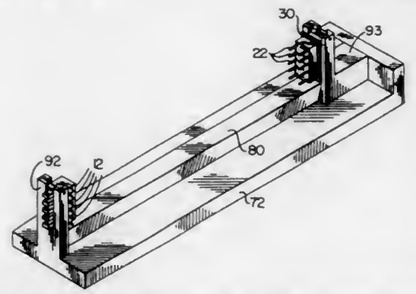
GUIDE TOOL AND METHOD FOR ACCURATELY MATING STACKS OF MULTI-FIBER OPTICAL CONNECTORS WITH GUIDE PINS

James R. Merriken, Hudson, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Jun. 5, 1996, Ser. No. 659,472

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—134 **11 Claims**



1. A guide tool for mating a first stack and a second stack of multi-fiber connectors to each other, the connectors having at least one guide pin bore for receiving a guide pin that aligns two connectors as they are mated, the guide tool comprising:

(a) a rail having a first end and a second end opposite thereto;

(b) a first mount and a second mount mounted on the rail, at least the second mount slidably mounted on the rail such that the second mount can be slid along the rail to close proximity with the first mount, the first and second mounts structured to receive the first and the second stacks of multi-fiber connectors, respectively, opposite each other so that the two stacks can be operatively mated by sliding the second mount along the rail toward the first mount.

5,666,457

OPTICAL SUBMARINE REPEATER

Shuji Ogiya; Michio Kondo, both of Kawasaki, and Yasusi Kaeriyama, Sapporo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 19, 1996, Ser. No. 699,527

Claims priority, application Japan, Feb. 14, 1996, 8-027052

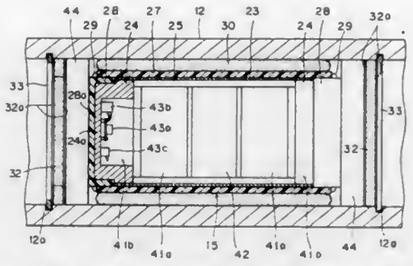
Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—139 **8 Claims**

1. An optical submarine repeater having a circuit unit, comprising:

a substantially cylindrical, pressure-resistant housing formed of metal;

a substantially cylindrical, first radiating/cushioning member formed of elastic metal, an outer circumferential surface of



said first radiating/cushioning member being kept in close contact with an inner circumferential surface of said pressure-resistant housing;

a substantially cylindrical, first insulating member formed of insulating resin, an outer circumferential surface of said first insulating member being kept in close contact with an inner circumferential surface of said first radiating/cushioning member;

a substantially cylindrical, first case member formed of metal, an outer circumferential surface of said first case member being kept in close contact with an inner circumferential surface of said first insulating member;

a second case member formed of metal, said second case member being fixed to said first case member at an end portion thereof in an axial direction of said housing, whereby a space for accommodating said circuit unit is defined by said first case member and said second case member;

a second insulating member formed of insulating resin, said second insulating member being fixed to said first insulating member at an end portion thereof in the axial direction of said housing, an inner surface of said second insulating member in the axial direction of said housing being kept in close contact with an outer surface of said second case member in the axial direction of said housing, whereby an insulated space is defined by said first insulating member and said second insulating member; and

a substantially circular radiating disk member, an inner surface of said radiating disk member in the axial direction of said housing being kept in close contact with an outer surface of said second insulating member in the axial direction of said housing, an outer circumferential surface of said radiating disk member being kept in close contact with the inner circumferential surface of said pressure-resistant housing.

5,666,458

REPRODUCTION ERROR CORRECTION CIRCUIT FOR A VIDEO REPRODUCTION SYSTEM, AND THE METHOD FOR OPERATING IT

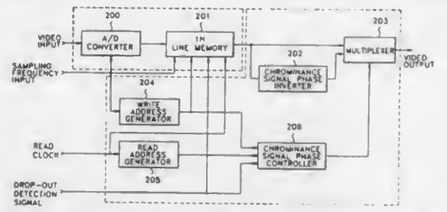
Byung-joon Moon, Kyungki-do; Sung-il Cho, Incheon, and Ki-ho Shin, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 280,770, Jul. 26, 1994, Pat. No. 5,587,804. This application Jun. 20, 1996, Ser. No. 667,169

Claims priority, application Rep. of Korea, Jul. 28, 1993, 93-14473

Int. Cl.[6] H04N *9/89;5/95;5/78;9/88*

U.S. Cl. 386—2 **6 Claims**



1. A reproduction error correction circuit for a video reproduction system; which system includes a write clock signal generator for generating a write clock signal that tracks any jitter in an input video signal but does not automatically change phase at scan line rate, a read clock generator for generating a stable read clock signal, and a drop-out detector for generating a drop-out detection signal whenever drop-out occurs in said input video signal; said reproduction error correction circuit for generating a time-base-corrected output video signal, which said output video signal is responsive to said input video signal except whenever a drop-out detection signal occurs and is then provided drop-out compensation; said reproduction error correction circuit comprising:

memory for storing image data of one horizontal scanning period, provided with an input port for receiving said input video signal as digitized in response to said write clock signal, operated for selectively writing current input video signal over previously stored input video signal at corresponding horizontal scan position, and provided with an output port for supplying an output video signal corresponding to portions of said input video signal stored in said memory, said memory being written only when said drop-out detector determines there is no drop-out in said current input video signal;

a write address generator for generating, in a prescribed sequence, write addresses for said memory at a rate responsive to said write clock signal;

a read address generator for generating, in said prescribed sequence, read addresses for said memory at a rate responsive to said read clock signal, said read addresses corresponding to write addresses generated a portion of a line scanning period earlier;

circuitry for separating the chrominance portion of composite video signal read from said memory via its output port from the luminance portion of said composite video signal;

circuitry for selectively changing, between first and second color subcarrier phases, the phase of the chrominance portion of the composite video signal read from said memory via its output port, thereby to generate a corrected-chrominance-phase signal;

circuitry for combining said corrected-chrominance-phase signal with the luminance portion of the composite video signal read from said memory via its output port, thereby to generate said time-base-corrected output video signal; and

a chrominance signal phase controller for controlling the selection of the phase of said corrected-chrominance-phase signal in accordance with the number of horizontal scanning periods a drop-out condition has continued at the horizontal scan position corresponding to that of the composite video signal read from said memory via its output port, said number of horizontal scanning periods a drop-out condition has continued being determined within said chrominance signal phase controller in response to said drop-out detecting signal, said read address signal and said write address signal.

5,666,459

PANORAMA IMAGE PRODUCING METHOD AND APPARATUS USING AT LEAST PORTIONS OF VARIABLE WIDTH IMAGES

Masashi Ohta, Tokyo; Hiroshi Kobayashi, Chiba; Tsuneo Sekiya; Toshimichi Hamada, both of Tokyo; Kyoko Fukuda, and Koji Iijima, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 395,753, Feb. 27, 1995, abandoned, which is a division of Ser. No. 133,377, Oct. 8, 1993, Pat. No. 5,548,409. This application Oct. 8, 1996, Ser. No. 729,778

Claims priority, application Japan, Oct. 9, 1992, 4-297771; Oct. 9, 1992, 4-297772; Oct. 9, 1992, 4-297773; Oct. 9, 1992, 4-297774; Oct. 23, 1992, 4-309451

Int. Cl.[6] H04N *5/225;5/76;5/91;7/00*

U.S. Cl. 386—46 **4 Claims**

1. In a method of producing a panorama image by joining at least portions of a plurality of images formed from an image signal produced by imaging a subject, the improvement wherein:

the position at and/or the width with which portions of each two adjacent images are joined with each other are variable, and the respective portion of each of said images joined to produce the panorama image corresponds to that portion in said panorama image in which the respective portion is located such that right-side portions of selected images are joined to produce a right-side portion of the panorama image, middle portions of selected images are joined to produce a middle portion of the panorama image, and left-side portions of selected images are joined to produce a left-side portion of the panorama image.

5,666,460

COMPRESSED PICTURE INFORMATION RECORDING APPARATUS PERFORMING IN REAL TIME

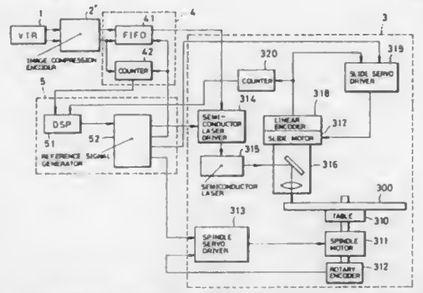
Minemasa Ohta, and Naoto Itoh, both of Yamanashi, Japan, assignors to Pioneer Video Corporation, Yamanashi, and Pioneer Electronic Corporation, Tokyo, both of Japan

Filed Jun. 14, 1995, Ser. No. 490,357

Claims priority, application Japan, Jun. 20, 1994, 6-137460

Int. Cl.[6] H04N *5/781*

U.S. Cl. 386—82 **3 Claims**



1. A compressed picture information recording apparatus for performing digital compression coding on a video signal and recording the coded video signal on a recording disk, continuously in real time, said apparatus comprising:

an image compression encoder sequentially outputting a modulated compressed video signal obtained by compressing and modulating said video signal;

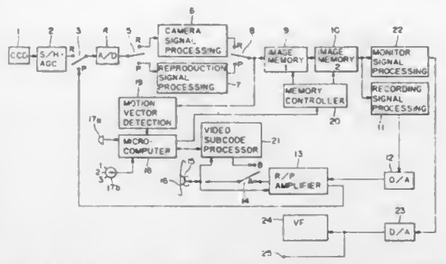
a memory;

write/read means for sequentially storing said modulated compressed video signal in said memory and reading said modulated compressed video signal from said memory in a storing order in accordance with a read clock signal;

recording means for recording said modulated compressed video signal, read from said memory, on said recording disk;

residual data amount detecting means for detecting an amount of residual data in said memory; and

a controller for reducing a frequency of said read clock signal when said amount of residual data is smaller than a predetermined value, increasing said frequency of said read clock signal when said amount of residual data is greater than said predetermined value, and adjusting a linear recording velocity of said recording means in accordance with adjustment of said frequency of said read clock signal.



5,666,461

HIGH EFFICIENCY ENCODING AND DECODING OF PICTURE SIGNALS AND RECORDING MEDIUM CONTAINING SAME

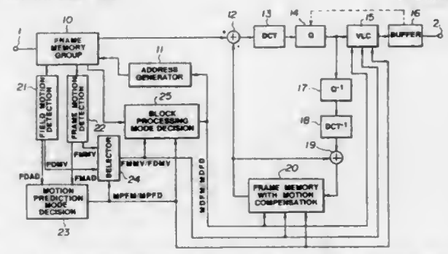
Katsuji Igarashi, Tokyo; Jun Yonemitsu, Kanagawa; Yoichi Yagasaki, Kanagawa; Yasushi Fujinami, Kanagawa; Tomoyuki Sato, Tokyo; Motoki Kato, Kanagawa, and Teruhiko Suzuki, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 84,642, Jun. 29, 1993, which is a continuation-in-part of Ser. No. 30,019, Apr. 21, 1993. This application May 30, 1995, Ser. No. 454,598

Claims priority, application Japan, Jun. 29, 1992, 4-170324; Jul. 28, 1992, 4-219633

Int. Cl.[6] H04N *5/92;5/76;5/917*

U.S. Cl. 386—95 **5 Claims**



1. A recording medium having data recorded thereon which represents: (i) an encoded picture signal having a plurality of macroblocks and including picture portions having been frame-based and/or field-based type predictively encoded and frame-based and/or field-based type orthogonally transformed processed in which each of said picture portions includes at least one of said macroblocks and in which said encoded picture signal represents a sequence of pictures such that said sequence of pictures provides a substantially continuous video image when reproduced from said recording medium, and (ii) header information which includes (a) information identifying the type of predictive encoding utilized for each respective picture portion, (b) information identifying the type of orthogonal transformation processing utilized for each respective picture portion, and (c) macroblock address information indicating the respective location of each macroblock, in which the type of predictive encoding utilized for each respective picture portion is selected from among the frame-based type predictive encoding and field-based type predictive encoding and in which the type of orthogonal transformation processing is selected from among the frame-based type orthogonal transformation processing and field-based orthogonal transformation processing so as to provide a relatively high efficient encoding.

5,666,462

MULTI-PLAYER VIDEO SONG ACCOMPANIMENT APPARATUS

Byoung-yup Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 10, 1996, Ser. No. 644,483

Claims priority, application Rep. of Korea, Aug. 21, 1995, 95-25687

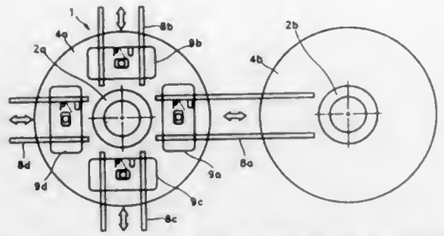
Int. Cl.[6] H04N *5/781;5/85;5/90;5/91*

U.S. Cl. 386—125 **8 Claims**

6. A multi-player video song accompaniment apparatus comprising:

a moving picture disc turntable for loading a video compact disc having stored thereon moving picture information;

two or more CD-OK turntables, arranged adjacent to and radially about the perimeter of said moving picture disc turntable,



each of said two or more CD-OK turntables loading a CD-OK disc having stored thereon accompaniment, text, and sub-title information;

reading means for reading information stored on said video compact disk and for reading information stored on each of said CD-OK discs; and

guiding means for guiding said reproducing means between said moving picture disc turntable for reading information on said video compact disc and said two or more CD-OK turntables for reproducing information stored on each of said CD-OK discs.

5,666,463

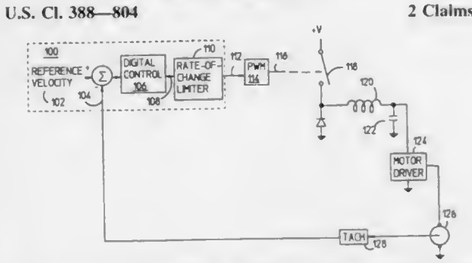
REDUCTION OF ELECTRIC MOTOR SURGE CURRENT BY NON-LINEAR LIMITING OF RATE OF CHANGE OF ANGULAR VELOCITY

Jeffrey D. Schwartz, Loveland, and Steve D. Schoenbauer, Longmont, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 510,575, Aug. 2, 1995, abandoned, which is a continuation of Ser. No. 146,559, Nov. 2, 1993, abandoned. This application Sep. 27, 1996, Ser. No. 721,929

Int. Cl.[6] **H02P** *7/06*

U.S. Cl. 388—804 **2 Claims**



1. In a microprocessor based closed loop velocity control system for a DC motor, the control system including a power supply for the motor, a pulse width modulator that applies a voltage from the power supply to the motor in variable width pulses, and an inductor-capacitor filter, with the inductor connected between the pulse width modulator and the motor, and the capacitor connected in parallel with the motor, a method for limiting current surge peaks from the power supply to the motor and to the capacitor, the method comprising the following steps:

(a) computing a rate of change of an output variable from the microprocessor that controls a duty cycle of the pulse width modulator; and

(b) clamping a magnitude of the rate of change of the output variable if the magnitude is greater than a predetermined limit, wherein clamping the rate of change of the output variable limits the current surge peaks to the motor and to the capacitor.

5,666,464

SPEECH PITCH CODING SYSTEM

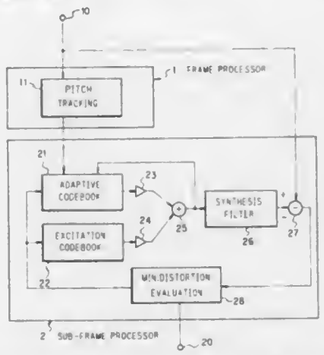
Masahiro Serizawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,419

Claims priority, application Japan, Aug. 26, 1993, 5-211269

Int. Cl.[6] **G10L** *3/02*

U.S. Cl. 104—207 **5 Claims**



1. A speech pitch coding system for coding an input speech signal by using characteristic parameters obtained for each frame of the input speech signal and characteristic parameters obtained for each of sub-frames as further divisions of each frame, and for synthesizing a processed speech signal to obtain a synthesized speech signal by a linear prediction synthesis filter in which excitation source signals of an adaptive codebook obtained by repeating a previous excitation signal at a pitch period and an excitation codebook which includes a preliminary produced signal are supplied, comprising:

a frame processor for pitch tracking by performing, with each frame of the input speech signal and the sub-frames as divisions of each frame, for selecting a pitch tracking path with one of a minimum waveform distribution and a maximum average pitch prediction gain from B^N combination of pitch tracking paths, where B is a number of bits of pitch coding in each sub-frame and N is a number of sub-frames in each frame;

a pitch candidate producer for producing a predetermined number of pitch candidates in a neighborhood of a pitch corresponding to each sub-frame of the pitch tracking path obtained in said frame processor;

a waveform distortion calculator for calculating a waveform distortion by using a difference between the input speech signal and the synthesized speech signal based upon adaptive codevectors in said adaptive codebook and excitation codevectors in said excitation codebook in each combination through said synthesis filter; and

a minimum distortion evaluator for selecting a minimum waveform distortion from combinations of the vectors corresponding to the pitch candidates among the adaptive codevectors accumulated in said adaptive codebook and the excitation codevectors accumulated in said excitation codebook, and supplying the selected combination to an output terminal.

5,666,465

SPEECH PARAMETER ENCODER

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

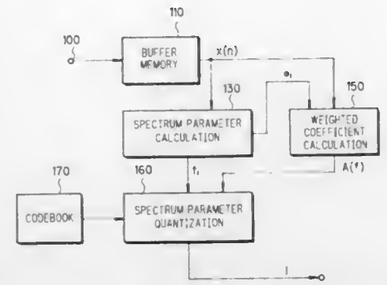
Filed Dec. 12, 1994, Ser. No. 355,295

Claims priority, application Japan, Dec. 10, 1993, 5-310524

Int. Cl.[6] **G10L** *3/02;9/00*

U.S. Cl. 704—222 **7 Claims**

6. A speech parameter encoder comprising:



a buffer memory configured to receive a digitized speech signal and to store one frame of the speech signal, the one frame corresponding to a predetermined time length;

a spectrum parameter calculation unit coupled to the buffer memory and configured to read the digitized speech signal in the one frame, to calculate linear prediction coefficients for a predetermined degree as parameters representing spectrum characteristics of the speech signal, and to perform a transform of the linear prediction coefficients into a spectrum parameter;

a weighted coefficient calculation unit coupled to the spectrum parameter calculation unit and the buffer memory, the weighted coefficient calculation unit configured to derive an auditory masking threshold value from the speech signal and to derive a weighted coefficient from the derived auditory masking threshold value;

a codebook for storing a plurality of code vectors; and

a spectrum parameter quantization unit coupled to the codebook, the weighted coefficient calculation unit and the spectrum parameter calculation unit, the spectrum parameter quantization unit configured to receive the spectrum parameter and the weighted coefficient and to quantize the spectrum parameter through search of the code vectors in the codebook so as to minimize a weighting distortion based on the weighted coefficient.

5,666,466

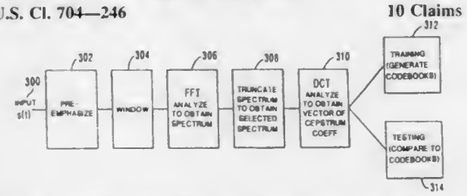
METHOD AND APPARATUS FOR SPEAKER RECOGNITION USING SELECTED SPECTRAL INFORMATION

Qiguang Lin, Highland Park; James L. Flanagan, Warren, and Ea-Ee Jan, Piscataway, all of N.J., assignors to Rutgers, The State University of New Jersey, Piscataway, N.J.

Filed Dec. 27, 1994, Ser. No. 365,598

Int. Cl.[6] **G10L** *7/08*

U.S. Cl. 704—246 **10 Claims**



1. In a method for speaker recognition, of the type wherein a speech sample is processed, the improvement comprising band-pass filtering the speech sample with a filter having a minimum frequency greater than 1 kHz and a maximum frequency between 5 and 10 kHz, wherein said band-pass filtering preserves spectral information in the speech sample for a range of frequencies between the minimum frequency and the maximum frequency, and excludes spectral information outside of the range.

5,666,467

NEURAL NETWORK USING INHOMOGENEITIES IN A MEDIUM AS NEURONS AND TRANSMITTING INPUT SIGNALS AS AN UNCHANNELLED WAVE PATTERN THROUGH THE MEDIUM

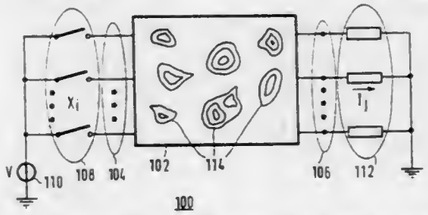
Sel B. Colak, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1994, Ser. No. 201,609

Claims priority, application European Pat. Off., Mar. 3, 1993, 93200603

Int. Cl.[6] **G06E** *1/00;3/00;* **G06F** *15/18;* **G06G** *7/00*

U.S. Cl. 395—24 **15 Claims**



1. An information processing system with a neural network processor, the processor comprising:

an input means for receiving a plurality of input signals;

an output means for providing at least one output signal;

an arrangement between the input means and the output means for implementing a neural transformation of the plurality of input signals for generating the output signal,

wherein the arrangement comprises:

a substantially continuous medium for propagating a response field as an unchanneled wave pattern throughout the medium in response to the plurality of input signals, the response field being non-linearly dependent on at least one of the input signals, and wherein

the medium has at least one inhomogeneity for affecting the wave pattern of the response field in the medium, the medium producing the output signal upon coupling at least a first response representative of the response field at a first location in the medium, to the output means.

5,666,468

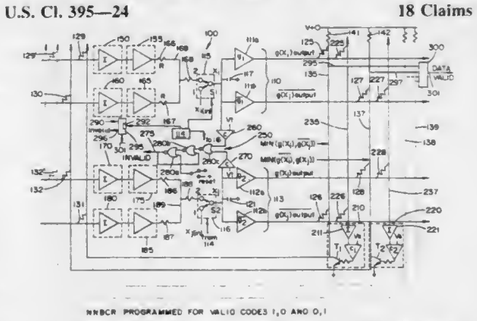
NEURAL NETWORK BINARY CODE RECOGNIZER

Stephen J. Engel, East Northport, N.Y., and Clark Jeffries, Clemson, S.C., assignors to Grumman Corporation, Los Angeles, Calif.

Filed Dec. 2, 1994, Ser. No. 348,564

Int. Cl.[6] **G06F** *15/18*

U.S. Cl. 395—24 **18 Claims**



NNBCR PROGRAMMED FOR VALID CODES 1,0 AND 0,1

1. A neural network binary code recognizer for decoding a corrupted n-bit binary code word, said binary code recognizer comprising:

means for inputting n input signals into said recognizer, each input signal representing a bit value of said corrupted n-bit binary code word;

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n amplifier means each having an input for receiving a respective input signal, each said amplifier means conditioning each said respective input signal to form a respective output signal at one or more outputs of each said amplifier means;

storing means connected at said one or more outputs of each said n amplifier means for storing one or more bit values of one or more corresponding predetermined valid n-bit binary code words;

means for generating an approximate image product for each said one or more predetermined valid n-bit binary code words, each said approximated image product comprising a product of each said output signal from each said amplifier means in accordance with a respective one of said predetermined valid n-bit binary code words; and

feedback means connecting each said approximated image product with one said input of each said amplifier means in accordance with a respective one of said one or more bit values of one or more of said predetermined valid n-bit binary code words, said feedback means enabling said output signal of a respective one of said amplifier means to dynamically approach each bit value of an n-bit binary code word.

5,666,469

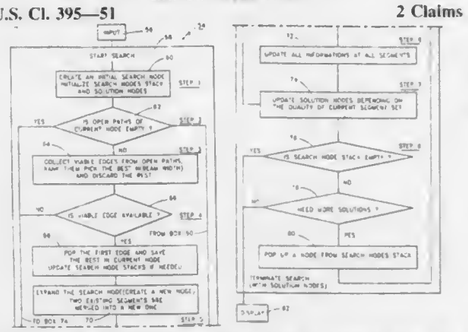
METHOD FOR GENERATING SOLUTIONS FOR SEQUENCING PROBLEMS

Ho Soo Lee, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1995, Ser. No. 384,979

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—51 **2 Claims**



1. A computer implemented method for scheduling items in a production sequence comprising the steps of:

(a) inputting data identifying items, each item having attributes and constraints;

(b) building a segment graph in which items are nodes of the segment graph;

(c) creating an initial search node as a current search node in a search tree in the segment graph and initialize a search nodes stack;

(d) finding open and closed paths of the current search node as multiple sets of subsequences wherein a subsequence comprises one or more nodes of the segment graph linked by an edge according to attributes of the linked items and so as not to violate any relevant constraints of the linked items;

(e) determining if there are any open paths in the current search node, if not, going to step (j), but otherwise continuing;

(f) from a set of segments in the open paths, collecting all edges and ranking them according to a merit that is evaluated by the segment graph structure as well as by a domain objective and from this ranking finding the best N edges where N is a beam width and saving the best N edges in sorted order in storage;

(g) determining if there are viable edges in the current search node and, if not, going to step (j), but otherwise popping the first best edge from storage and pushing it on a search nodes stack for future alternative search paths;

(h) expanding the search tree by creating a new search node in the segment graph, the selected edge concatenating two existing segments into one while creating a new segment in the segment graph;

(i) updating all existing and newly created segments by constraint propagation;

(j) getting aggregate sizes of open and closed paths and if smallest in the search, setting to a solution nodes file, but if same as previous smallest, then adding to the solution nodes file;

(k) determining if the search nodes stack is empty or there is a sufficient number of solutions and, if so, terminating the search and exiting to step (l), otherwise popping a node from the search nodes stack and returning to step (e); and

(l) displaying the search node file as a result of the search.

5,666,470

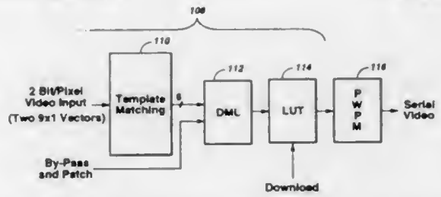
METHOD AND APPARATUS FOR APPEARANCE TUNING OF BITMAP IMAGES

James D. Parker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1995, Ser. No. 496,556

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—106 **14 Claims**



1. A method for selectively tuning the printed output of an electronic printing system capable of producing printed output from a print engine in response to a bitmap image, consisting of a plurality of input image signals, comprising the steps of:

selecting, in response to a user identified tuning characteristic, values for downloading to a programmable look-up table from a memory wherein the user identified tuning characteristic comprises a printer selected by the user for emulation by the electronic printing system;

transferring the selected values to the look-up table for processing of the bitmap image for printing;

storing, in memory, at least a portion of the input image signals forming the bitmap image;

identifying, using a template matching operation applied to the signals stored in the bitmap image memory, pixel values associated with pixel positions to be selectively tuned;

for those pixel positions identified to be selectively tuned, producing a pixel code and transmitting the pixel code to a programmable look-up table to generate a pulse-width position-modulated output signal that is supplied to the print engine; and

passing the pulse-width position-modulated output signal signals directly to the print engine.

5,666,471

IMAGE PROCESSING APPARATUS FOR DIVIDING IMAGES FOR PRINTING

Norihisa Fujii, Tokoname, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 11, 1993, Ser. No. 3,016

Claims priority, application Japan, Jan. 22, 1992, 4-009509

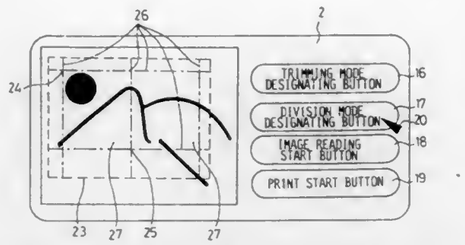
Int. Cl.[6] H04N *1/40*

U.S. Cl. 395—117 **12 Claims**

1. An image processing apparatus, comprising:

image reading means for providing image data, the image data being capable of being trimmed or divided;

designating means for designating a trimmed area wherein a periphery of the image data is trimmed, and for designating a divided area within the trimmed area which divides the image data into a plurality of parts for printing;



control means for controlling the designating means to permit a user to selectively determine the divided area by visual inspection;

display means having a display unit for simultaneously displaying the image data, the trimmed area, and the divided area, the trimmed area and the divided area being superimposed on the displayed image data; and

printing means for printing for printing processed image data as a plurality of segments based on the designated trimmed area and the divided area, wherein said control means automatically calculates a maximum expansion rate for printing a segment of the divided image data based on the divided area within a possible print size of said printing means.

5,666,472

IMAGE PROCESSING APPARATUS AND METHOD FOR GENERATING POLYGONS FOR USE IN RENDERING AN OBJECT

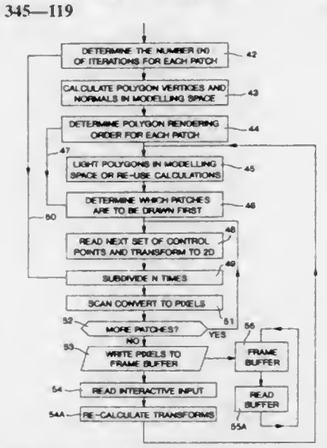
Richard Stirling Huddy, Surrey, United Kingdom, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 143,159, Oct. 29, 1993, abandoned. This application Sep. 6, 1996, Ser. No. 706,643

Claims priority, application United Kingdom, Nov. 6, 1992, 9223315

Int. Cl.[6] G06T *17/30*

U.S. Cl. 345—119 **60 Claims**



1. In a graphics apparatus having a processor for processing signals defining an object in a three-dimensional space, the object comprising a plurality of Bezier patches with each patch defined by a plurality of Bezier curves and each Bezier curve defined by a plurality of control points, a method of processing the signals to produce a plurality of polygons for use in rendering the object, said method comprising the steps of:

identifying some, but not all, of the control points defining a given Bezier patch as identified control points; and

connecting directly with straight lines the identified control points of the given Bezier patch so as to produce a representation of the given Bezier patch comprised of a plurality of polygons, wherein the identified control points connected in said connecting step comprise: (i) control points each of which is an end control point for two of the Bezier curves and (ii) control points each of which is a curvature control point for two of the Bezier curves, but no control point is included which is both an end control point for one of the Bezier curves and a curvature control point for one of the Bezier curves.

5,666,473

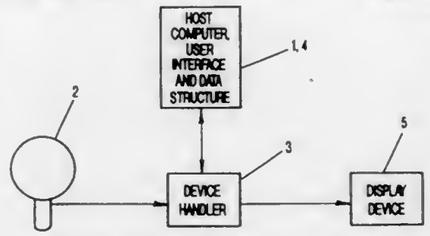
TACTILE COMPUTER AIDED SCULPTING DEVICE

Michael G. Wallace, Albuquerque, N. Mex., assignor to Science & Technology Corporation & Unm, Albuquerque, N. Mex.

Filed Oct. 8, 1992, Ser. No. 957,874

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—420 **16 Claims**



1. An apparatus for modeling and rendering three-dimensional objects, said apparatus comprising:

tactile input means comprising an essentially closed convex exterior surface comprising a plurality of tactile sensors attached thereto; and means for communicating signals from said tactile sensors to a computer equipped with three-dimensional graphic display means.

5,666,474

IMAGE PROCESSING

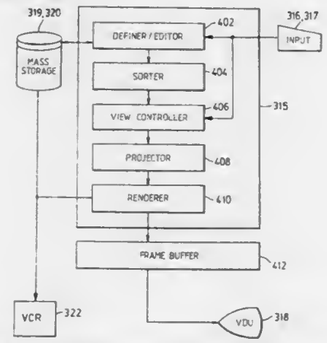
Gerhardt Paul Otto, Guildford, England, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,492

Claims priority, application United Kingdom, Feb. 15, 1993, 9303009; Jul. 1, 1993, 9313646

Int. Cl.[6] G06T *15/40*

U.S. Cl. 345—421 **28 Claims**



1. In a graphics system having a processor for processing signals defining an object in a three-dimensional space, the object having a surface defined by a plurality of surface primitives, a method of processing the signals to produce a plurality of rendering order lists, trees or directed graphs for use in rendering images of said

object as viewed from selected viewing directions, the method comprising the steps of:

defining a plurality of ranges of viewing directions;

defining for each of the ranges of viewing directions a rendering order list, tree or directed graph defining an order in which the surface primitives may be rendered to effect hidden surface removal;

identifying a viewing direction as a selected viewing direction;

selecting a rendering order list, tree or directed graph associated with the selected viewing direction as a selected list;

rendering the surface primitives according to the selected list to produce rendered image data: and processing the rendered image data in order to generate a display of an image of the object,

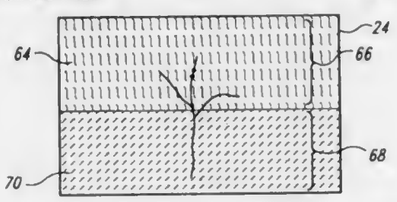
wherein adjacent ones of said ranges of viewing directions are defined with an overlap such that. for any selected viewing direction. there is a corresponding one of the ranges which includes not only the selected viewing direction but also all directions within a predetermined field-of-view centered on the selected viewing direction.

5,666,475

METHOD AND SYSTEM FOR EDITING MULTIRESOLUTION IMAGES AT FRACTIONAL-LEVELS OF RESOLUTION USING A WAVELET REPRESENTATION

David H. Salesin; Deborah F. Berman, and Jason T. Bartell, all of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Jan. 3, 1995, Ser. No. 368,216
Int. Cl.[6] G06T *11/80*
U.S. Cl. 345—428 **30 Claims**



1. A method in a computer system of editing a single image having multiple discrete levels of resolution, said method comprising the steps of:

inputting data representing the image having multiple discrete levels of resolution;

displaying from the data at least a portion of the image at a selected non-integer fractional-level resolution, the fractional-level resolution capable of ranging continuously from one of the integer levels of resolution of the image to another one of the integer levels of resolution of the image;

editing a selected area of the image at the selected non-integer fractional-level resolution;

updating the image to create an edited version of the image;

storing the edited version of the image; and

outputting the edited version of the image.

5,666,476

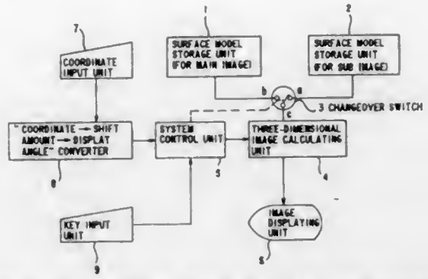
THREE-DIMENSIONAL IMAGE DISPLAY DEVICE

Tatsuo Kawanaka, Tokyo, Japan, assignor to GE Yokogawa Medical Systems, Limited, Tokyo, Japan

Continuation of Ser. No. 640,357, Jan. 15, 1991, abandoned.
This application Aug. 19, 1993, Ser. No. 108,925
Claims priority, application Japan, Jul. 29, 1988, 63-190132
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—437 **1 Claim**

1. A three dimensional image display device comprising:

first storage means for storing data of a main image;



second storage means for storing data of a sub-image representative of said main image, said sub-image being smaller in a display means than said main image and the data of said main image being substantially greater than the data of said sub-image;

view direction means for supplying data representing different view directions to a control means;

calculating means for calculating output display signals in the different view directions from data of said main image and from data of said sub-image. and for applying said output display signals of said main image and of said sub-image to said display means;

said display means for displaying in the different view directions said sub-image and said main image;

switching means for selectively connecting said first storage means and said second storage means to said calculating means; and

said control means comprising means for causing said switching means to connect said second storage means to said calculating means to cause said calculating means to perform calculations on the output data from said second storage means and to apply that calculated output data to said display means thereby to cause said sub-image to be displayed on said display means, means responsive to said view direction means for causing the view direction of said sub-image in said display means to be changed in real time until a desired view direction of the sub-image appears in the display means. and means under the control of an operator for causing said switching means to connect said-first storage means to said calculating means when the sub-image is displayed in a desired view direction in the display means so that said calculating means performs calculation on the output data of said main image from said first storage means in the desired view direction and applies that calculated output data of said main image to said display means thereby to cause said main image to be displayed in said display means in the desired view direction, so that by first observing a smaller sub-image in the display means in different view directions in real time, a desired view direction is selected and then the main image data is calculated in non-real time for the desired view direction and then displayed in the display means without the use of hardware dedicated for the for the purpose of conversion calculations.

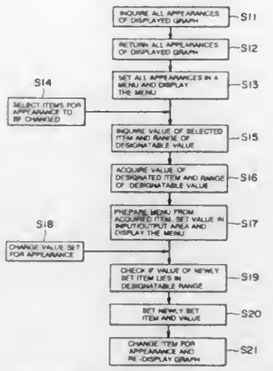
5,666,477

METHOD AND APPARATUS FOR SETTING GRAPH DEFINITION ITEMS IN GRAPH PROCESSING SYSTEM

Jun Maeda, Shizuoka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 320,212, Oct. 11, 1994, abandoned.
This application Sep. 24, 1996, Ser. No. 719,416
Claims priority, application Japan, Jan. 4, 1994, 6-000051
Int. Cl.[6] G06T *11/20*
U.S. Cl. 345—440 **15 Claims**

1. A method of setting graph definition items to define a graph in a graph processing system having a graph generating section for preparing and displaying graph data based on given data and an



information input section for allowing an operator to input information to said graph generating section in an interactive manner, said method comprising the steps of:

requesting the settable graph definition items from the graph generating section by a common menu preparation section used by the graph generating section for generating a menu when setting of the settable graph definition items to define a graph is requested by an inquiry through the information input section;

returning the settable graph definition items from the graph generating section in response to the inquiry; and

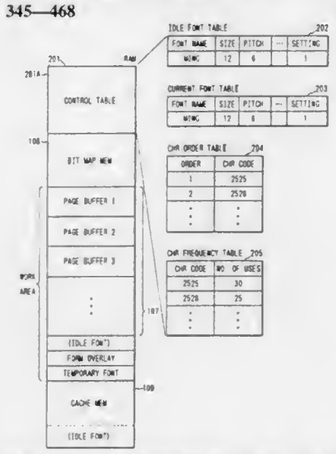
preparing a menu for setting the settable graph definition items by the common menu preparation section using the settable graph definition items returned from the graph generating section and common menu information.

5,666,478

METHOD AND APPARATUS FOR PROCESSING CHARACTERS BASED ON PREVIOUSLY- USED SCALABLE FONT DATA

Yoko Nishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 125,225, Sep. 23, 1993, abandoned.
This application Nov. 2, 1995, Ser. No. 551,960
Claims priority, application Japan, Sep. 24, 1992, 4-277772
Int. Cl.[6] G06K *15/00*
U.S. Cl. 345—468 **21 Claims**



1. A character processing apparatus which uses character pattern information generated from a previously-used scalable font when outputting image information for subsequent characters, said apparatus comprising:

memory means for storing attribute information of a font which was used in generating previous character pattern information; and

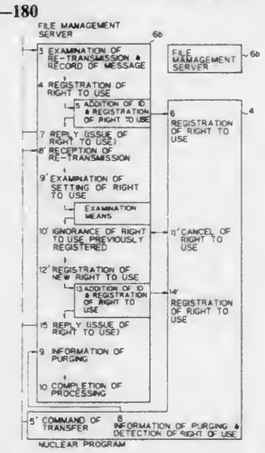
registration means for generating. when said apparatus is in an idle state. character pattern information for subsequent characters from a scalable font having attribute information of the previously-used scalable font based on the attribute information stored in said memory means. and for registering the generated character pattern information.

5,666,479

ISSUE PROCESSING SYSTEM AND METHOD FOR A RIGHT TO USE A DATA PROCESSSING SYSTEM RESOURCE

Shuji Kashimoto, Numazu, and Hirofumi Uchida, Mishima, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 707,767, May 30, 1991, abandoned.
This application Jul. 14, 1994, Ser. No. 274,153
Claims priority, application Japan, May 30, 1990, 2-140908; Jun. 12, 1990, 2-153340
Int. Cl.[6] H04L *12/00*; **G06F** *11/00*
U.S. Cl. 395—180 **6 Claims**



1. An issue processing system for a right to use a resource in a data processing system having a global service program based on a fault-tolerant method, and which system comprises a current processing server and a spare processing server corresponding to the current processing server, each of the processing servers performing a predetermined data processing function request by a client, the issue processing system comprising:

a nuclear program, in communication with the current processing server and the spare processing server, issuing a transfer command to transfer the predetermined data processing function to the spare processing server in response to a crash of the current processing server and issuing a right to use a resource to the processing servers; and

a current resource management server, in communication with said nuclear program, acquiring from said nuclear program the right to use the resource and issuing to the processing server a corresponding right to use the resource, and further comprising:

re-transmission examination means for examining a message comprising discriminator data, requesting usage of the resource, from the processing server and for determining whether the message is a re-transmitted message, based on the discriminator data and which discriminator data indicates the right to use the resource and comprises multi-request identification (ID) discriminator data and request count discriminator data, a value of said multi-request identification (ID) discriminator data indicating the current

processing server and the spare processing server corresponding to the current processing server, and a value of said request count discriminator data being updated for each request for the right to use the resource made by one of the current processing server and the spare processing server corresponding to the current processing server;

registration issue means, coupled to the re-transmission examination means, for acquiring the right to use the resource in response to the message, for registering the right to use the resource in the nuclear program, and for issuing the corresponding right to use the resource to the processing server;

discriminator addition means for adding the discriminator data, of the message requesting the right to use to be issued, to the right to use the resource when the right to use the resource is registered in the nuclear program; and

right to use examination means, coupled to said re-transmission examination means and to said discriminator addition means, for examining whether the right to use is already registered, based on a previous message, in the nuclear program by referring to the discriminator data added to the right to use when said re-transmission examination means determines that the message is the re-transmitted message,

wherein, if said right to use examination means judges that the right to use is already registered, the registered right to use is invalidated, and a new right to use is registered into the nuclear program by the registration issue means and a corresponding new right to use is issued to the processing server.

5,666,480

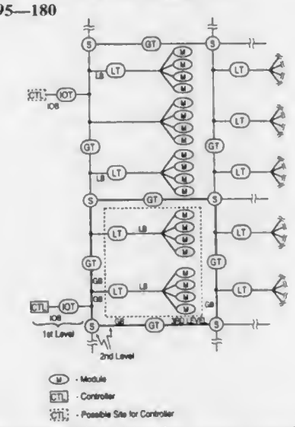
FAULT-TOLERANT HIERARCHICAL BUS SYSTEM AND METHOD OF OPERATING SAME

Wingyu Leung, Cupertino, and Fu-Chieh Hsu, Saratoga, both of Calif., assignors to Monolithic System Technology, Inc., Santa Clara County, Calif.

Division of Ser. No. 307,496, Sep. 14, 1994, Pat. No. 5,613,077, which is a continuation of Ser. No. 927,564, Aug. 10, 1992, which is a continuation-in-part of Ser. No. 865,410, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 787,984, Nov. 5, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 484,063

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—180 **19 Claims**



1. A fault-tolerant hierarchical bus system comprising:

a bus master adapted to be connected to a module-requesting device through a system bus of a digital system;

a root bus branch in a first level of the hierarchical bus system, the root bus branch being coupled to the bus master;

a first level transceiver connected to said root bus branch;

a plurality of bus segments in a second level of the hierarchical bus system, the bus segments being arranged in a grid, wherein the bus segments are coupled to the bus master through the root bus branch and the first level transceiver;

a plurality of second level transceivers and bus switches coupled to the bus segments;

a plurality of local bus interconnect segments in a third level of the hierarchical bus system, the local bus interconnect segments being coupled to the bus segments;

a plurality of third level transceivers, each being connected to a corresponding one of the local bus interconnect segments; and

a plurality of circuit modules coupled to each of said local bus interconnect segments.

5,666,481

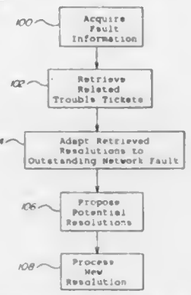
METHOD AND APPARATUS FOR RESOLVING FAULTS IN COMMUNICATIONS NETWORKS

Lundy Lewis, Mason, N.H., assignor to Cabletron Systems, Inc., Rochester, N.H.

Filed Feb. 26, 1993, Ser. No. 23,972

Int. Cl.[6] G06F *11/00;* **G01R** *31/28*

U.S. Cl. 395—182.02 **24 Claims**



1. A case-based method of resolving faults in a communications network, comprising the steps of:

(A) acquiring information about a current outstanding communications network fault;

(B) defining at least one determinator to identify at least one data field within the acquired information about the current outstanding communications network fault, the at least one identified data field to be Used to correlate the current outstanding communications network fault with a prior communications network fault;

(C) retrieving a previously stored set of data regarding a prior communications network fault and a resolution of the prior communications network fault from a database as a function of the at least one identified data field; and

(D) using at least a portion of the retrieved set of data to provide a resolution of the current outstanding communications network fault by adapting the resolution of the prior communications network fault to resolve the current outstanding communications network fault.

5,666,482

METHOD AND SYSTEM FOR BYPASSING A FAULTY LINE OF DATA OR ITS ASSOCIATED TAG OF A SET ASSOCIATIVE CACHE MEMORY

David Charles McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

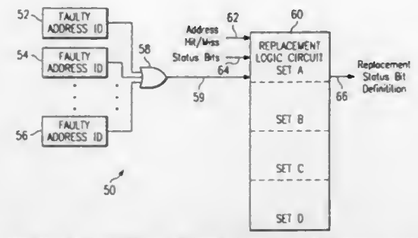
Continuation of Ser. No. 533,358, Sep. 25, 1995, abandoned, which is a continuation of Ser. No. 221,072, Mar. 31, 1994, abandoned. This application Sep. 25, 1996, Ser. No. 719,734

Int. Cl.[6] G06F *12/08;11/00*

U.S. Cl. 395—182.06 **31 Claims**

1. A method of bypassing a faulty line of data or its associated tag of a set associated cache memory, comprising the steps of:

identifying an address of a faulty line of data associated with a first set of a set associative cache memory;



generating a faulty line of data address signal corresponding to the address of the faulty line of data;

performing logic on the faulty line of data address signal, an address hit/miss signal, and a status bit signal to produce a logic state of a replacement status bit of the faulty line of data that flags the address of the faulty line of data, wherein the address hit/miss signal indicates whether there is a cache hit or a cache miss condition for the first set associative cache memory;

flagging the address of the faulty line of data using a replacement logic circuit so that when a replacement line of data having an address corresponding to the address of the faulty line of data, is to be written to the set associative cache memory, the replacement line of data is written to a second set of the set associative cache memory, as determined by the replacement logic circuit, effectively bypassing the faulty line of data of the first set.

5,666,483

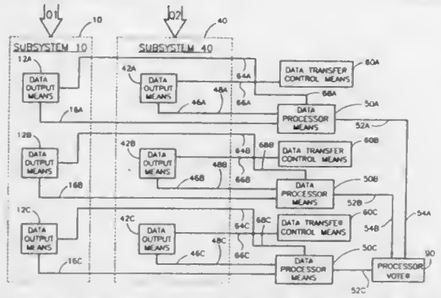
REDUNDANT PROCESSING SYSTEM ARCHITECTURE

Charles R. McClary, Spring Lake Park, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1995, Ser. No. 532,949

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.08 **13 Claims**



12. A data processing system architecture for a skewed axis redundant inertial reference system comprising:

a selected number of redundant data processor means, where each redundant data processor means

(i) is independent of each other,

(ii) includes an input means for receiving like-kind processor input data, and

(iii) is operative for deriving inertial reference output data as a function of said like-kind processor input data;

at least six gyro subsystems, each having an angular rotation sensor associated therewith, and in which each gyro subsystem is responsive to angular rotation along a selected sensing axis which is skewed relative to the sensing axis of any of the other remaining gyro subsystems, and where each of said at least six gyro subsystems are

(i) independent of each other, and

(ii) includes a set of gyro subsystem data output means where the number of said gyro subsystem data output means of the set is equal to said selected number of said plurality of data processor means, and where each gyro subsystem data output means of said set of gyro subsystem data output means (a) is independent of each other, and (b) provides gyro subsystem output data corresponding to the sensed angular rotation about the sensing axis associated therewith, and (c) provides said gyro subsystem output data which corresponds to a unique sample time;

at least six accelerometer subsystems, each having an angular rotation sensor associated therewith, and in which each accelerometer subsystem is responsive to angular rotation along a selected sensing axis which is skewed relative to the sensing axis of any of the other remaining accelerometer subsystems, and where each of said at least six accelerometer subsystems are

(i) independent of each other, and

(ii) includes a set of accelerometer subsystem data output means where the number of said accelerometer subsystem data output means of the set is equal to said selected number of said plurality of data processor means, and where each accelerometer subsystem data output means of said set of accelerometer subsystem data output means (a) is independent of each other, and (b) provides accelerometer subsystem output data corresponding to the sensed angular rotation about the sensing axis associated therewith, and (c) provides said accelerometer subsystem output data which corresponds to a unique sample time; and

data coupling means for selectively presenting (i) said gyro subsystem output data associated with said set of gyro subsystem data output means of each of said plurality of said at least six gyro subsystems to said plurality of data processor means, and (ii) said accelerometer subsystem output data associated with said set of accelerometer subsystem data output means of each of said plurality of said at least six accelerometer subsystems to said plurality of data processor means, such that (a) each data processor means uniquely receives said gyro subsystem output data and said accelerometer subsystem output data from one group of data output means, where said group of data output means consists of (i) only a unique one of said gyro subsystem data output means of the set of gyro subsystem data output means of each one of said plurality of gyro subsystems, and (ii) only a unique one of said accelerometer subsystems data output means of the set of accelerometer subsystem data output means of each one of said at least six accelerometer subsystems, and (c) each gyro subsystem data output means and accelerometer subsystem data output means of the group of data output means is presented as processor input data to only one of said plurality of data processor means, and in which the gyro subsystem output data of said group of said gyro subsystems data output means and the accelerometer subsystem output data of said group of accelerometer subsystem output data means corresponds to a common sample time.

5,666,484

CONTROL METHOD FOR DISTRIBUTED PROCESSING SYSTEM

Masayuki Orimo, Kawasaki; Kinji Mori, Yokohama; Yasuo Suzuki, Ebina; Katsumi Kawano, Kawasaki; Masuyuki Takeuchi, Fujisawa; Masayoshi Matsuura, Hitachi, and Yuko Teranishi, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 12, 1989, Ser. No. 406,234

Claims priority, application Japan, Sep. 14, 1988, 63-228667; Sep. 14, 1988, 63-228685

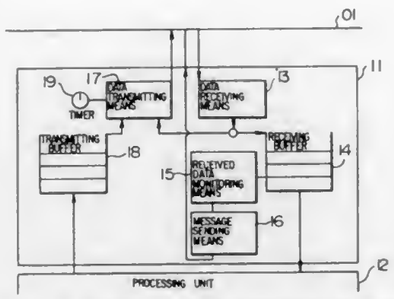
Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.16 **26 Claims**

23. In a distributed processor system including a plurality of processors connected via a transmission medium, each processor having a data transmitting and receiving apparatus comprising:

a receiving buffer for storing therein data items received from said transmission medium;

received data monitoring means for monitoring the number of data items stored in said receiving buffer, for comparing the



number of data items stored in said receiving buffer with a predetermined number, and for detecting when the number of data items stored in said receiving buffer exceeds said predetermined number;

message sending means for transmitting a transmission delay requesting message to said transmission medium for transmission to each of all other processors in said system when said received data monitoring means detects that the number of data items stored in said receiving buffer exceeds said predetermined number;

data receiving means for receiving data items, including a transmission delay requesting message transmitted by one of the other processors, from said transmission medium and for storing said data items in said receiving buffer;

a transmitting buffer for storing therein data to be transmitted to said transmission medium; and

data transmitting means for transmitting data items stored in said transmitting buffer to the transmission medium, said data transmitting means controlling data item transmission in response to said transmission delay requesting message received by said data receiving means from said transmission medium.

5,666,485

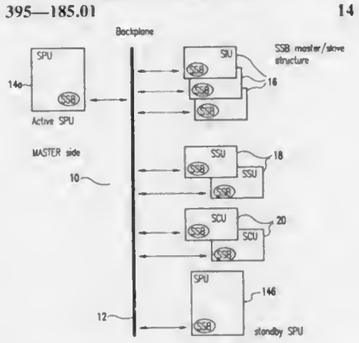
SOFTWARE DRIVER FOR A SYSTEM BUS

Gananathan Suresh, Potomac, Md.; Ki B. Kang, Centreville, Va., and Young Il Kim, Gaithersburg, Md., assignors to Samsung Electronics Inc., Ridgefield Park, N.J.

Filed Jun. 7, 1995, Ser. No. 474,174

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—185.01 **14 Claims**



1. In a system bus having a master-slave architecture, shared memory controlled by a plurality of registers, a master central processing unit, and a master bus controller, a process of writing data to the shared memory, the process comprising the steps of:

requesting access to said shared memory by said master central processing unit by writing a request bit on a first register;

reading an access bit on a second register to determine whether the access bit is set and access to shared memory is granted;

writing data to the shared memory by said master central processor; and

reading the access bit on the second register to determine whether the access bit is cleared and access to the shared memory is complete.

5,666,486

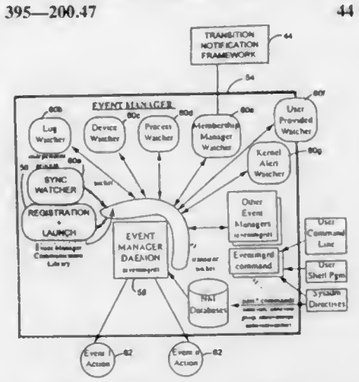
MULTIPROCESSOR CLUSTER MEMBERSHIP MANAGER FRAMEWORK

Robert A. Alfieri, Apex; James T. Compton, Durham, both of N.C.; Andrew R. Huber, Monroeville, Pa.; Paul T. McGrath, Raleigh, N.C.; Khaled S. Soufi, Durham, N.C.; Brian J. Thorstad, Cary, N.C., and Eric R. Vook, Chapel Hill, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Jun. 23, 1995, Ser. No. 493,550

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.47 **44 Claims**



1. In a multiprocessor system having multiple nodes, a shared resource accessible to all nodes and multiple interdependent levels of subsystems on each of said nodes, a method of combining particular ones of said nodes in a cluster so that it appears to users that the entire cluster is substantially a single node containing said shared resource, said method including notifying all levels of subsystems running on nodes presently in the cluster of transitions of nodes joining and leaving the cluster in order to provide a consistent view of active membership in the cluster.

5,666,487

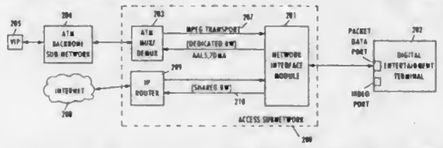
NETWORK PROVIDING SIGNALS OF DIFFERENT FORMATS TO A USER BY MULTPLEXING COMPRESSED BROADBAND DATA WITH DATA OF A DIFFERENT FORMAT INTO MPEG ENCODED DATA STREAM

William Goodman, Collegeville, Pa.; Kamran Sistanizadeh, Arlington, and Michael J. Black, Fairfax Station, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Jun. 28, 1995, Ser. No. 495,926

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.76 **25 Claims**



1. A network for transporting data signals of at least two different respective formats, at least one of said two different formats being any data and at least another of said two different formats being compressed broadband data, to at least one user, the network comprising:

a plurality of information providers, each one of said plurality of information providers providing one of said data signals of at least two different respective formats on a respectively different signal path,

an access subnetwork receiving said data signals from said digital signal paths and transporting said data signals to said at least one user, said access subnetwork comprising:

an ATM demultiplexer for receiving a plurality of ATM cell streams representing said data signals of at least two different respective formats from a first group of said digital signal paths and for adapting and multiplexing payload data from said ATM cell streams into a consolidated stream of MPEG encoded data on a channel of dedicated bandwidth, and

a network interface module (NIM) for receiving said consolidated stream of MPEG encoded data and recovering data from said consolidated stream of MPEG encoded data, said network interface module comprising a packet address processor for selectively outputting the recovered data as a plurality of data packet streams to said at least one user, each of said data packet streams being arranged on the basis of data packets having an assigned packet identifier address recognized by said packet address processor as identifying the format of respective packets contained in said recovered data; and

a digital entertainment terminal (DET), responsive to said plurality of packet data streams, for recovering and processing said compressed broadband data from one of said plurality of packet data streams and for processing any data contained in another one of said plurality of packet data streams.

5,666,488

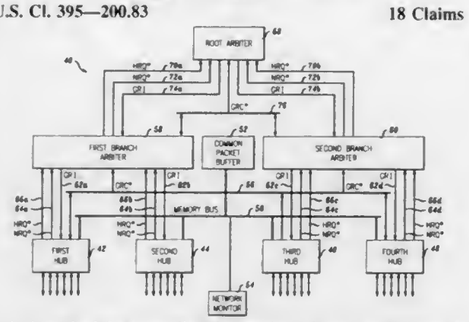
PORT EXPANSION NETWORK AND METHOD FOR LAN HUBS

Clarence Chulljoon Joh, Allentown, Pa., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1994, Ser. No. 343,286

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.83 **18 Claims**



1. A method for expanding the number of ports available to a local area hub network including a plurality of hubs connected along a memory bus, wherein said hubs must be granted controlling access to said memory bus before transmitting packets on said memory bus, comprising the steps of:

coupling a first branch arbiter to a first set of hubs, said first branch arbiter designates a hub, based upon internal protocols, temporary bus master hub by granting said temporary bus master hub controlling access to the common memory bus for transmission of a packet on said memory bus;

coupling a second branch arbiter to a second set of hubs, said second branch arbiter designates a hub, based upon internal protocols, temporary bus master hub by granting said temporary bus master hub controlling access to the common memory bus for transmission of a packet on said memory bus;

coupling a root arbiter to said first branch arbiter and said second branch arbiter, said root arbiter grants, based upon internal protocols, requests made by said first branch arbiter and said second branch arbiter for controlling access to said memory bus;

wherein said first branch arbiter may only grant a hub controlling access to said memory bus when said root arbiter has granted a request of said first branch arbiter for controlling access to said memory bus and said second branch arbiter may only grant a hub controlling access to said memory bus when said root arbiter has granted a request of said second branch arbiter for controlling access to said memory bus.

5,666,489

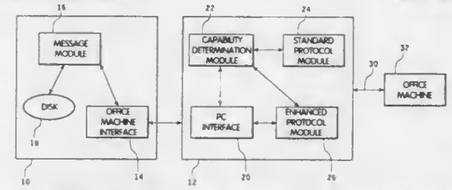
METHOD AND APPARATUS FOR ENHANCING CAPABILITIES OF OFFICE MACHINES

Franklin Fite, Jr., and Kurt D. DelBene, both of Bellevue, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 6, 1994, Ser. No. 271,011

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.5 **24 Claims**



13. An apparatus for enhancing capabilities of a stand-alone office machine comprising:

a computer coupled to a stand-alone office machine;

the computer being programmed to provide enhanced capabilities to the stand alone office machine; the computer having an office machine interface for transferring a message between the computer and the stand-alone office machine, and for sending an identification of the enhanced capabilities to the stand-alone office machine, and having a message module for processing the message using one or more of the enhanced capabilities; and

the stand-alone office machine having:

a) a computer interface in communication with the office machine interface of the computer for transferring the message between the computer and the stand-alone office machine;

b) a capabilities determination module in communication with the computer interface for determining whether the computer is available, and if the computer is available, for obtaining and storing the identification of the enhanced capabilities of the computer in a capabilities data store;

c) an enhanced protocol module in communication with the computer interface for sending the message to, or receiving the message from the computer, and for invoking the enhanced capabilities of the computer to process the message when the computer is available; and

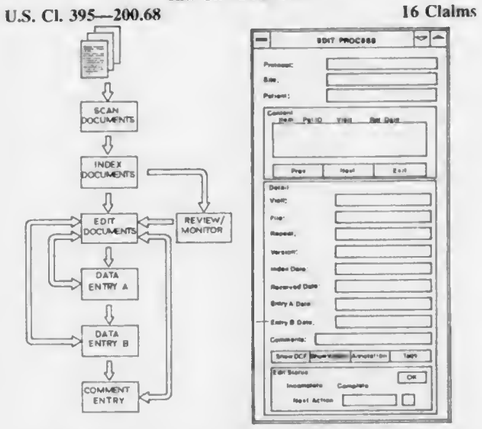
d) a standard protocol module in communication with the capabilities determination module for processing the message in the stand-alone office machine using only one or more standard capabilities of the stand-alone office machine

wherein the stand-alone office machine is in communication with a second office machine, and the enhanced protocol module is operable to control the transfer of an identification of the enhanced capabilities of the stand-alone office machine to the second office machine.

5,666,490
COMPUTER NETWORK SYSTEM AND METHOD FOR MANAGING DOCUMENTS

Dennis Gillings, 113 Waterford Pl., Chapel Hill, N.C. 27514; Joan Mary Lalor, 37 Greenfields, Rosbrien, Limerick, Ireland; Mark Boone Brown, 8325 Greywinds Dr., Raleigh, N.C. 27615, and Donna Ann Christiansen, 2821 Isabella Dr., Raleigh, N.C. 27603

Filed May 16, 1994, Ser. No. 243,385
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—200.68 **16 Claims**

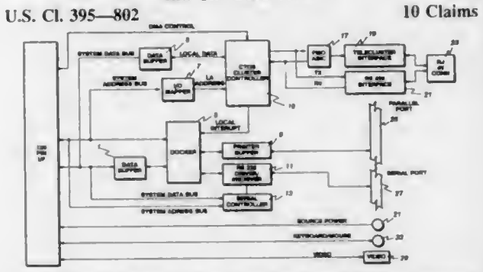


1. A method of handling, routing, and electronically managing clinical trial data contained in clinical case report forms in a computer network having a plurality of work nodes interconnected by a communications media, said method comprising the steps of:
(a) establishing a network of at least two work nodes for processing said case report forms, wherein one of the work nodes is a data entry work node;
(b) subdividing each clinical case report form into two or more subdivisions;
(c) assigning a subdivision type to each subdivision of said case form report;
(d) for each subdivision type defining a routing scheme through the network of work nodes which defines a sequence of nodes followed by that subdivision as it moves through the network of work nodes wherein each routing scheme includes at least one data entry node;
(e) storing the routing scheme for each subdivision in a computer connected to said network for, subsequent use in routing images through said network;
(f) after the case report form has been subdivided, scanning each subdivision and creating an electronic source image which corresponds to each subdivision of the case report form;
(g) indexing each image by assigning indexing information to the image that uniquely identifies each image wherein the index information includes the subdivision type of the corresponding subdivision;
(h) independently routing each image through the network in accordance with the routing scheme for its subdivision type, wherein at each work node along the routing scheme some action is performed on that image before it advances to a succeeding work node;
(i) at the data entry work node, entering data contained in the image into a database to create a database record;
(j) associating each record in the database with the source image that contains the data by linking a database record to its source image by assigning an identification to each image created that uniquely identifies the image and automatically storing the image identification in the database;
(k) establishing a protocol corresponding to a pharmaceutical clinical trial study that implements case report forms and defining a case report form packet for the protocol that describes each case report form page that is expected in connection with the protocol; and
(l) wherein the protocol includes the step of providing protocol summary information defining indexing and tracking fields for the protocol, defining content and structure of the case report form packet, defining investigator names and patient assignments, assigning users to the protocol and defining access rights of the users, and defining routing schemes for each subdivision type of the protocol.

5,666,491
PORTABLE NETWORK ADAPTER FOR PORTABLE COMPUTER

George W. Harris, Jr., 327 View St., Mountain View, Calif. 94041; Shari J. Nolan, 3470 Pinnacle Dr., San Jose, Calif. 95132, and James M. Dougherty, 225 E. Mt. Diablo Ave., Tracy, Calif. 95376

Continuation of Ser. No. 47,507, Apr. 12, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 620,739
Int. Cl.[6] G06F *13/60*
U.S. Cl. 395—802 **10 Claims**



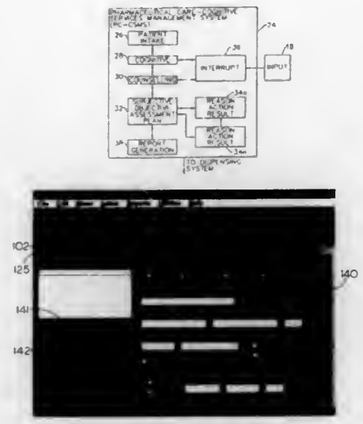
1. A portable adapter unit for coupling a small portable computer to a computer CTOS-type network comprising a network-coupling/signal processing stage including CTOS Cluster Controller means, along with CTOS I/O mapper means for address input to said Controller means; input connector means for one-step connection to such a computer and output connector means for connection at least to said network, this adapter unit being sufficiently small and light-weight to be transported with such a computer; and
wherein said processing stage also includes "twisted pair" output means and cable output means; said "twisted pair output means" including ASIC" means together with "Telecluster interface" means.

5,666,492
FLEXIBLE COMPUTER BASED PHARMACEUTICAL CARE COGNITIVE SERVICES MANAGEMENT SYSTEM AND METHOD

Keith Daniel Rhodes, Cary; Kenneth Wayne Dunn, Durham; Samir Ibrahim Abed, Durham; Donald Collins Mullen, Jr., Durham, and Jon Martin Schwartz, Carrboro, all of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Jan. 17, 1995, Ser. No. 373,105
Int. Cl.[6] G06F *15/02*
U.S. Cl. 705—3 **13 Claims**

1. A computer based pharmaceutical care cognitive services management method which executes on a computer system including processing means, data storage means, display means and input means, said computer based pharmaceutical care cognitive services management method comprising the steps of:
prompting on said display means for user entry via said input means, and for storing in said data storage means, of identity and history information corresponding to a patient;
prompting on said display means for user entry via said input means, and for storing in said data storage means, of subjective information relating to assessed characteristics of said patient and objective information relating to said patient's history of drug use;
prompting on said display means for user entry via said input means, and for storing in said data storage means, of an assessment of said patient based upon said subjective information and said objective information;



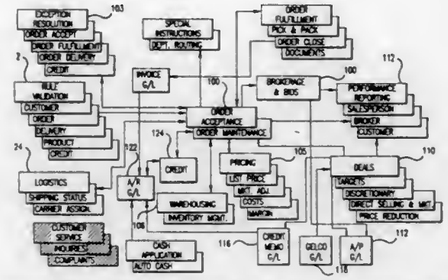
prompting on said display means for user entry via said input means, and for storing in said data storage means, of a plan to follow based on said assessment;
prompting on said display means for user entry via said input means, and for storing in said data storage means, of a first reason for the assessment and the plan, a first action in response to the assessment and the plan, and a first result based on the first action;
prompting on said display means for user entry via said input means, and for storing in said data storage means, of a second reason for the assessment and the plan, a second action in response to the assessment and the plan, and a second result based on the second action;
associating the stored first reason, first action and first result and the stored second reason, second action and second result with the stored subjective information, objective information, assessment and plan, such that a plurality of reasons, actions and results are associated with the stored subjective information, objective information, assessment and plan for a patient;
generating a first billing statement for said patient based on the stored first reason, first action and first result associated with the stored subjective information, objective information, assessment and plan for said patient; and
generating a second billing statement for said patient based on the stored second reason, second action and second result associated with the stored subjective information, objective information, assessment and plan for said patient;
such that two billing statements are generated for one patient based on the stored subjective information, objective information, assessment and plan.

5,666,493
SYSTEM FOR MANAGING CUSTOMER ORDERS AND METHOD OF IMPLEMENTATION

Casimir M. Wojcik, Tampa; Paul A. Pretto, Clearwater; Jim Courier, Dade City; Bob Morrow, Plant City; Joseph R. Wehry, Jr., Riverview; Paul Kuczynski, Tampa; Matt F. Edwards, Dade City; Mark A. Schnieder, Land O'Lakes; Thomas W. Loftus, Plant City; Brian Schnieders, Temple Terrace; Thomas C. Bernardi, Odessa; Craig Raymond Pellerin, Tampa; Ron D. Bushaw, Plant City; Michael Lewis Schebell, Lutz; Bill Hartley, Sring Hill; Sheila Cappel, Lutz; Kimberly Welsgarber, Webster; Henry Lee Vogler, Brandon, and Louis Duane Ferguson, Zephyrhills, all of Fla., assignors to Lykes Bros., Inc., Tampa, Fla.

Filed Aug. 24, 1993, Ser. No. 111,242
Int. Cl.[6] G06F *15/17*
U.S. Cl. 705—26 **2 Claims**

1. A system for processing customer orders in a computer-based data processing system having a plurality of data processing devices electrically connected to communicate with each other, comprising:



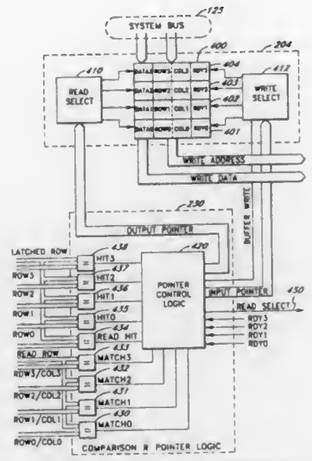
means for receiving customer orders, said customer order receiving means including a plurality of customer order input terminals;
means for processing customer orders connected to said customer order receiving means and including an interface module accessed through a customer order input terminal, said interface module for coordinating access to a plurality of database modules and for controlling interaction between a user and said plurality of database modules, said customer order processing means further including means for generating a customer order in response to data inputs from the user through said plurality of customer order input terminals and data from said plurality of database modules;
means for automatically checking inventory for availability of inventory in response to customer orders including a plurality of inventory control input terminals for inputting inventory data and an inventory database module for storing the inventory data, said inventory checking means being connected to be accessible through a customer order input terminal;
means communicatively connected to said customer order processing means, for controlling retrieval of goods from inventory to create loads including an inventory storage location database module providing data on inventory location, and a plurality of inventory data output terminals for outputting location data for retrieval of selected goods;
means communicatively connected to said customer order processing means, for building loads for shipment from the retrieved selected goods including means for determining placement of the retrieved selected goods in at least one load in response to data on the retrieved selected goods; and
means communicatively connected to said load building means for scheduling loads to customers, said load scheduling means having a shipment database module and means for determining shipment of loads based on data from said load building means and said shipment database module, wherein said plurality of database modules include said inventory database module, said inventory storage location database module, and said shipment database module.

5,666,494
QUEUE MANAGEMENT MECHANISM WHICH ALLOWS ENTRIES TO BE PROCESSED IN ANY ORDER

L. Randall Mote, Jr., Laguna Hills, Calif., assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 31, 1995, Ser. No. 414,948
Int. Cl.[6] G06F *13/14;12/00;* **G11C** *8/00*
U.S. Cl. 711—167 **2 Claims**

1. A buffer circuit which permits write access data to be received in a sequential order and stored in a plurality of locations in said buffer circuit and which permits said write access data to be output from said buffer circuit non-sequentially, wherein said write access data includes addresses which identify storage locations in a paged memory system, said buffer circuit comprising:
an input pointer which identifies a next empty one of said buffer circuit locations to receive a next data input;



an output pointer which identifies a next full one of said buffer circuit locations as a source of a next output; and

a pointer control circuit which controls said input pointer and said output pointer independently, said pointer control circuit including a priority scheduler responsive to a result of a comparison as to whether page address portions of said addresses of said write access data are identical to a page address portion of a currently accessed storage location in said paged memory system, to select a full one of a plurality of full ones of said buffer circuit locations as said source of said next output, before selecting a non-identified full one of said buffer circuit locations having a page address portion different from said page address portion of said currently accessed storage location, even if the write access data for said non-identified full one of said buffer circuit locations was received in said buffer circuit prior to the write access data for said selected full one of said buffer circuit locations.

5,666,495

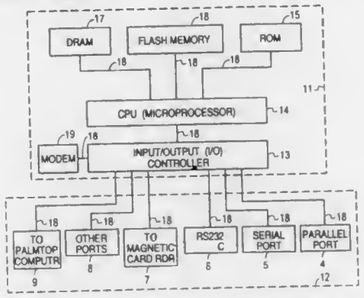
METHOD AND STRUCTURE FOR DATA TRANSFER BETWEEN A STANDARD PORT OF A HOST COMPUTER AND A CUSTOM PORT OF A PALMTOP COMPUTER USING A DOCKING STATION

Keming W. Yeh, 43765 Abeloe Ter., Fremont, Calif. 94539

Division of Ser. No. 975,375, Nov. 13, 1992, Pat. No. 5,528,758, which is a continuation-in-part of Ser. No. 786,483, Nov. 1, 1991, abandoned. This application Feb. 16, 1996, Ser. No. 602,405

Int. Cl.[6] G06F *3/00;13/00*

U.S. Cl. 395—281 **16 Claims**



9. A method for providing an information storage and transfer device, for effectuating data exchange between a palmtop computer and one or more host computers, said host computers each having a standardized port and running a standardized operating system, said customized port using signal levels different from signal levels in said standardized port, said method comprising the steps of:

providing a housing;

providing means, installed inside said housing, for transferring data bidirectionally between said information storage and transfer device and a removable storage medium, said removable storage medium storing data in a data format compatible with said operating system of said host computers;

providing a customized connector mounted on said housing for connecting to said customized port of said palmtop computer, said customized connector using signal levels compatible with said signal levels of said customized port of said palmtop computer;

providing a plurality of standardized ports mounted on said housing for interfacing with peripheral devices and said host computers; and

providing a controller, programmed to communicate with said palmtop computer using a customized protocol, and programmed to communicate with said host computers using industry standard protocols, for controlling said information storage and transfer device to effectuate, upon receiving a command from one of said host computers and said palmtop computer, bidirectional data transfer between (a) said palmtop computer, via said customized connector, using said customized protocol, and (b) alternatively (i) said removable storage medium, and (ii) one of said peripheral devices and host computers, via a corresponding one of said plurality of standardized ports using said industry standard protocols.

5,666,496

Patent Not Issued For This Number

5,666,497

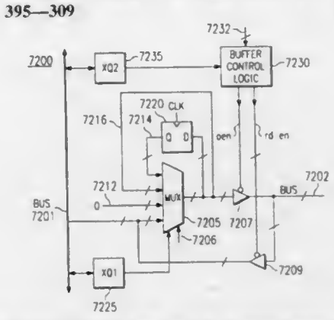
BUS QUIETING CIRCUITS, SYSTEMS AND METHODS

Robert W. Milhaupt, Houston, Tex.; Ling Cen, Beaverton, Oreg., and James Bridgwater, Lanark, Scotland, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 477,343, Jun. 7, 1995, abandoned, which is a division of Ser. No. 401,105, Mar. 8, 1995, abandoned. This application Oct. 3, 1996, Ser. No. 725,689

Int. Cl.[6] H05K *7/10;* **G06F** *1/16;17/00*

U.S. Cl. 395—309 **19 Claims**



1. An electronic wiring board article of manufacture comprising:

a printed wiring board having a substantially insulative planar board element, conductors in or on said board element; and

an integrated circuit mounted on said printed wiring board comprising:

a data source supplying data and successive valid data control signals, wherein transitions occur in the data during intervals between said valid data control signals;

a source of at least one quieting control signal independent of said valid data control signals;

a selector having a first input connected to said data source, and a second input, and an output;

a circuit connected to said output of said selector to receive data from said data source via said selector; and

a source of a quieting signal connected to said second input, and said selector responsive to said at least one quieting control signal to select said quieting signal during at least a portion of the interval between said valid data control signals, and to select said data source in response to at least some of said valid data control signals.

5,666,498

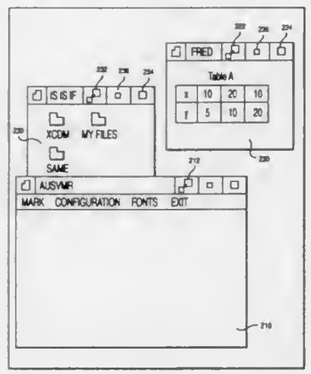
METHOD, MEMORY AND APPARATUS FOR AUTOMATICALLY RESIZING A WINDOW

Hatim Yousef Amro, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1996, Ser. No. 626,196

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—342 **2 Claims**



1. A method for directing a computer system, having at least a processor, user controls, and computer display, to automatically resize a first window of a certain size displayed on the computer display of a certain size, comprising the steps of:

in response to detecting a loss of focus from the first window, determining a number of windows displayed on the computer display;

dividing the square of the size of the first window by the size of the computer display to create a first resultant;

dividing one by a total number of windows displayed on the computer display and adding one thereto, creating a second resultant;

multiplying the first resultant by the second resultant to create a third resultant;

if the third resultant is greater than a first threshold percentage of the size of the first window and less than a second threshold percentage of the size of the first window, assigning the third resultant as the zoom out size;

if the third resultant is less than the first threshold percentage of the size of the first window, reducing the size of the first window by the second threshold percentage; and

if the third resultant is greater than the second threshold percentage of the dimensions of the first window, reducing the size of the first window by the first threshold percentage.

5,666,499

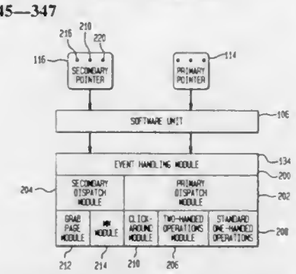
CLICKAROUND TOOL-BASED GRAPHICAL INTERFACE WITH TWO CURSORS

Thomas Baudel; William A. S. Buxton; George W. Fitzmaurice; Beverly L. Harrison; Gordon P. Kurtenbach, and Russell N. Owen, all of Toronto, Canada, assignors to Silicon Graphics, Inc., Mountainview, Calif.

Filed Aug. 4, 1995, Ser. No. 511,303

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—347 **20 Claims**



1. A system having a graphical user interface in which objects are displayed thereon, wherein a user interacts with the objects using a primary device to control a primary cursor and a secondary device to control a secondary cursor, the system comprising:

receiving means for receiving information from the primary device and secondary device, wherein said information includes event actuation data and cursor position data; and

clickaround tool means for displaying a tool palette having representative tool images in response to an actuation of the secondary device and activating an operation of a selected tool, wherein said clickaround tool means utilizes said cursor position data to display said tool palette with an offset position from the primary cursor and said event actuation data to display said tool palette only while the secondary device is actuated.

5,666,500

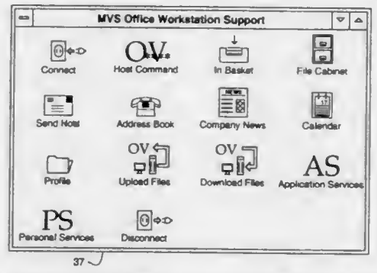
WORKSTATION USER INTERFACE FOR USE IN CONJUNCTION WITH A HOST DATA PROCESSING SYSTEM

Kenneth Wayne Roberson, Irving, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1992, Ser. No. 996,446

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—348 **8 Claims**



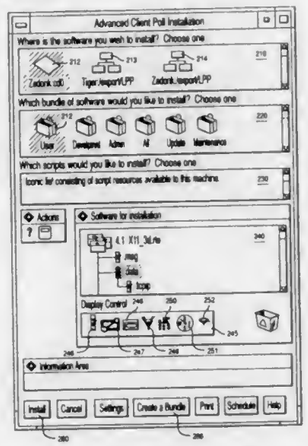
1. A method of programming an icon for display on a workstation that is in communication with a host data processing system, said host having plural types of functions, comprising the steps of:

a) determining a host function that is to be associated with an icon;

b) automatically determining the type of function said determined host function is;

c) automatically specifying parameters for said function, according to said determined function type, said parameters enabling the execution of said function by said host;
d) associating an icon with said function.

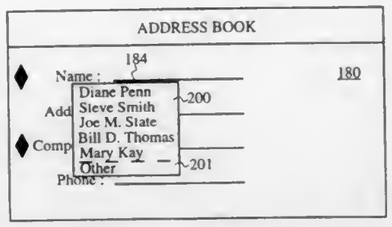
5,666,501
METHOD AND APPARATUS FOR INSTALLING SOFTWARE
Timothy Leonard Jones, and Paula Jean Moreland, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 30, 1995, Ser. No. 413,315
Int. Cl.[6] G06F *15/00;12/00;* **H01J** *13/00*
U.S. Cl. 345—348 **8 Claims**



5. A computer system for installing software embodied within a second machine on a first machine in a distributed computing network, the first machine having at least a display, processor, means for controlling the display, and user controls, comprising:
the display for displaying source objects of the second machine embodying first software items that are installable on the first machine;
in response to a selection by the user controls of at least one displayed source object, the display for displaying software bundle objects having second software items, each bundle object having at least one second software item in common with a first software item in the selected source object; and
in response to a selection of at least one software bundle object by the user controls, the processor for installing on the first machine an intersection of the first software items with the second software items.

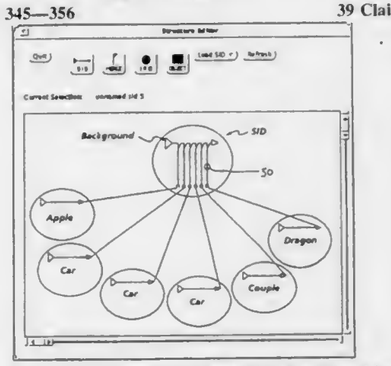
5,666,502
GRAPHICAL USER INTERFACE USING HISTORICAL LISTS WITH FIELD CLASSES
Stephen P. Capps, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Aug. 7, 1995, Ser. No. 511,904
Int. Cl.[6] G06F *3/00;15/00*
U.S. Cl. 345—352 **26 Claims**

1. A pen-based computer system, comprising:
an I/O display system including at least an input tablet and a display screen;
a memory system for storing program code and data;
a CPU for processing the program code in accordance with the data; and



a plurality of history tables maintained within said memory system, each of said history tables corresponding to a different field class,
wherein when inputting data via the input tablet into a field of a form being displayed on said display screen, a list of choices is produced from said history table for the field class corresponding to the field and displayed on said display screen.

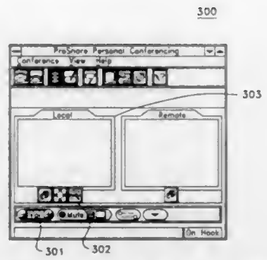
5,666,503
STRUCTURED IMAGE (SI) IMAGE EDITOR AND METHOD FOR EDITING STRUCTURED IMAGES
Michael R. Campanelli, Webster; William A. Fuss, and Dennis L. Venable, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 14, 1994, Ser. No. 338,856
Int. Cl.[6] G06F *3/14*
U.S. Cl. 345—356 **39 Claims**



1. A structured image (SI) editor for editing a structured image that includes multiple data types, including individual objects, and a pasteboard that represents a frame onto which the multiple data types are rendered, said editor comprising:
an SI structure editor operable to create a hierarchical representation of the structured image; and
an SI image editor, coupleable to said SI structure editor, and being operable to edit said multiple data types while associating the multiple data types with their respective high level representations.

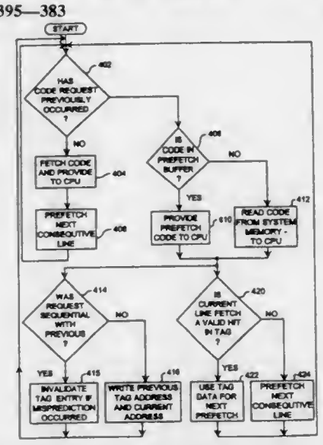
5,666,504
METHOD FOR DISPLAYING A GRAPHICAL ROCKER BUTTON CONTROL
Paul D. Crutcher, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Sep. 29, 1995, Ser. No. 537,213
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—355 **33 Claims**

1. A computer system for providing a control button for interfacing with a user of the computer system, the computer system comprising:



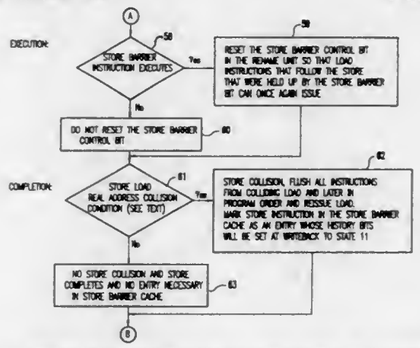
(a) display means for displaying the control button, the control button having a three-dimensional appearance and at least first and second regions;
(b) means for determining the region of the control button being pushed by a user input means;
(c) means for changing the appearance of the control button in accordance with the region being pushed so that the control button appears to be tilted toward the pushed region; and
(d) means for transmitting a message in accordance with the region being pushed.

5,666,505
HEURISTIC PREFETCH MECHANISM AND METHOD FOR COMPUTER SYSTEM
Joseph A. Bailey, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Mar. 11, 1994, Ser. No. 209,986
Int. Cl.[6] G06F *9/24*
U.S. Cl. 395—383 **18 Claims**



1. A prefetch unit for a computer system configured to prefetch instruction code from a system memory comprising:
a prefetch code buffer configured to store prefetched code;
a prefetch address latch for storing an address value of code to be fetched;
a memory fetch unit coupled to said prefetch code buffer and to said prefetch address latch, wherein said memory fetch unit is configured to fetch from said system memory code corresponding to said address value within said prefetch code address latch and configured to provide said code to said prefetch code buffer;
a non-sequential monitor configured to compare an address of current code with an address of previous code to thereby detect whether said address of current code is non-sequential with respect to said address of previous code;
a memory tag unit coupled to said non-sequential monitor and configured to store an address of code which said non-sequential monitor and configured to store an address of code which said non-sequential monitor has detected as being non-sequential; and
a comparator unit coupled to said memory tag unit and configured to determine whether an address of new code corresponds to an entry within said memory tag unit, wherein an address of a non-sequential code corresponding to said address of new code is provided to said prefetch address latch;
wherein an address of first code which said non-sequential monitor has detected as being non-sequential is stored as a first entry within said memory tag unit, said address of first code being provided to said prefetch address latch if said comparator unit indicates that said address of said new code corresponds to said first entry within said memory tag unit.

5,666,506
APPARATUS TO DYNAMICALLY CONTROL THE OUT-OF-ORDER EXECUTION OF LOAD/STORE INSTRUCTIONS IN A PROCESSOR CAPABLE OF DISPATCHNG, ISSUING AND EXECUTING MULTIPLE INSTRUCTIONS IN A SINGLE PROCESSOR CYCLE
James Henry Hesson; Jay LeBlanc, and Stephen J. Ciavaglia, all of Chittenden County, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 328,185, Oct. 24, 1994, abandoned. This application May 12, 1995, Ser. No. 440,025
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—392 **1 Claim**



1. A method of issuing and executing instructions out-of-order in a pipelined microprocessor in a single processor cycle comprising the steps of:
storing history bits in a store barrier cache to predict store load conflict;
issuing and dispatching a load and store instruction out of order;
marking a store instruction during a dispatch pipeline stage so that no loads in program order are permitted to execute ahead of the store that is predicted to be violated;
executing a dispatched load and store instruction; and
accessing the store barrier cache to dynamically predict whether or not a store violation condition is likely to occur and, if so, restricting the issue of instructions until the store instruction has been executed and it is once again safe to proceed with out-of-order execution.

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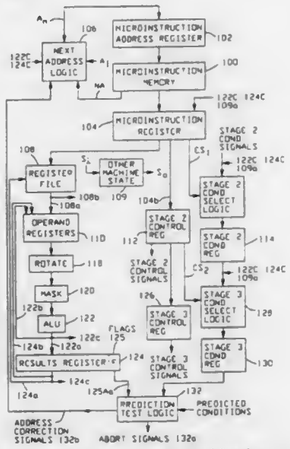
PIPELINED MICROINSTRUCTION APPARATUS AND METHODS WITH BRANCH PREDICTION AND SPECULATIVE STATE CHANGING

Laurence P. Flora, Valley Center, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 174,858, Dec. 29, 1993, abandoned. This application Dec. 26, 1995, Ser. No. 578,783

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—394 **7 Claims**



1. In a data processing system, the combination comprising:

An addressable memory for storing instructions, at least particular ones of said instruction in said memory being conditional instructions having a plurality of possible next instructions;

addressing means for selectively addressing said memory for reading out a selected instruction therefrom;

storage means for storing execution results and other machine state; and

executing means for executing an instruction read out from said memory and for changing said storage means in response thereto;

said executing means including multiple stages operating in a pipelined manner on instructions read out from said memory, wherein instructions by at least one of said stages provides a next instruction address for said addressing means which is a predicted next instruction for a conditional microinstruction;

said executing means providing for detecting and correcting an incorrect instruction prediction in the last of said multiple stages;

said executing means providing for said storage means to be speculatively changed during execution of a conditional instruction before detection of the correctness thereof by propagating a speculative change to next following stages;

said executing means including a restore storage means in each stage for storing a backup copy of changed machine state for use in said last stage for restoring machine state when said executing means detects an incorrect instruction prediction.

5,666,508

FOUR STATE TWO BIT RECODED ALIGNMENT FAULT STATE CIRCUIT FOR MICROPROCESSOR ADDRESS MISALIGNMENT FAULT GENERATION

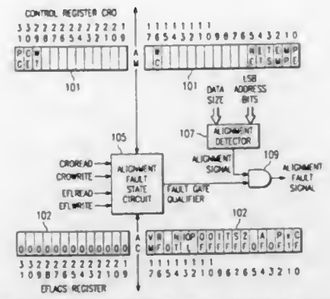
Robert D. Marshall, Jr., Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 483,660

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—201 **37 Claims**

19. An address alignment fault circuit comprising:



two latches, each latch holding either a first state or a second state, said two latches having either a first combined state, a second combined state, a third combined state or a fourth combined state;

a source of instructions including

an alignment check on instruction executing at an application program privilege level indicating the application program enables generation of an address alignment fault state signal,

an alignment check off instruction executing at said application program privilege level indicating the application program disables generation of an address alignment fault state signal,

an alignment mask permit instruction executing at an operating system privilege level indicating the operating system permits generation of an address alignment fault signal if said application program has enabled generation of an address alignment fault signal via said alignment check on instruction, and

an alignment mask prohibit instruction executing at said operating system privilege level indicating the operating system prohibits generation of an address alignment fault signal regardless or whether said application program has enabled generation of an address alignment fault signal via said alignment check on instruction;

an instruction responsive circuit connected to said two latches and said source of instructions, said instruction responsive circuit controlling said two latches such that said state of said two latches is determined by whether said instruction responsive circuit has last received said alignment check on instruction or said alignment check off instruction and whether said instruction responsive circuit has last received said alignment mask permit instruction or said alignment mask prohibit instruction, said two latches having a recoded set of states such that receipt of at least one of said alignment check on instruction, said alignment check off instruction, said alignment mask permit instruction or said alignment mask prohibit instruction causes the state of both of said two latches to change;

an output circuit connected to a predetermined one of said latches, said output circuit generating an alignment fault qualifier signal if said predetermined one of said latches has a predetermined one of said first, second, third or fourth combined state;

an address alignment detector receiving a set of least significant bits of address signal and a data size indicator, said address alignment detector generating an alignment signal if said address signal refers to an address misaligned to a data size corresponding to said data size indicator; and

an AND gate connected to said output circuit and said address alignment detector for generating an alignment fault signal if said output circuit generates said alignment fault qualifier signal and said address alignment detector generates said alignment signal.

5,666,509

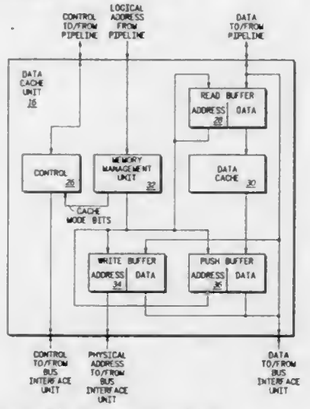
DATA PROCESSING SYSTEM FOR PERFORMING EITHER A PRECISE MEMORY ACCESS OR AN IMPRECISE MEMORY ACCESS BASED UPON A LOGICAL ADDRESS VALUE AND METHOD THEREOF

Daniel M. McCarthy; Joseph C. Circello, both of Phoenix; Richard Duerden; Gregory C. Edgington, both of Scottsdale, all of Ariz.; Cliff L. Parrott, and William B. Ledbetter, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 24, 1994, Ser. No. 216,998

Int. Cl.[6] G06F *12/10*

U.S. Cl. 711—206 **20 Claims**



1. A data processing system comprising:

a central processing unit (CPU); and

a memory management unit coupled to the CPU for translating logical addresses to physical addresses for accessing a plurality of memory pages, the memory management unit providing at least one cache mode bit which indicates whether a write operation is to be precise or imprecise depending upon which memory page is accessed, a precise memory access being a first memory access where no other memory access is started until the first memory access is guaranteed to complete without faults and an imprecise memory access being a second memory access wherein other memory accesses are allowed to begin before the end of the second memory access,

wherein the precise memory access is used to allow the data processing system to quickly identify, when a memory access fault has occurred, the first memory access as a faulting access, the first memory access being the faulting access since the first memory access is the only memory access occurring at the time when the memory fault access occurred; and

a push buffer for buffering cache writes to external memory wherein the cache writes are used to write multiple bytes from a cache to memory in a single write operation, where the cache is coupled to the CPU.

5,666,510

DATA PROCESSING DEVICE HAVING AN EXPANDABLE ADDRESS SPACE

Naoki Mitsuishi, Kodaira; Shiro Baba, Kokubunji; Hiromi Nagayama, Kodaira; Tsutomu Hayashi, Koganei, and Yukihide Hayakawa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

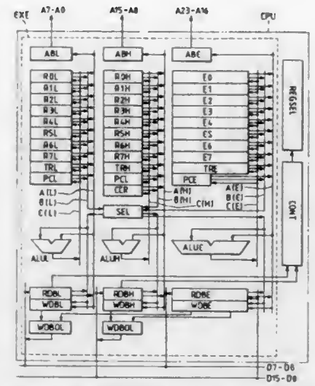
Continuation of Ser. No. 95,901, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,890, Apr. 28, 1992, abandoned. This application Jan. 11, 1996, Ser. No. 582,379

Claims priority, application Japan, May 8, 1991, 3-132042; Feb. 27, 1992, 4-076151; Aug. 3, 1992, 4-226447

Int. Cl.[6] G06F *7/20*

U.S. Cl. 711—220 **7 Claims**

1. A single chip data processing device having a first mode and a second mode, the single chip data processing device comprising:



general purpose registers (Ei+RiH+RiL, i=0 to 7, in FIG. **4** or FIG. **18**), each having a predetermined bit length (e.g., 32 bits) and each including a first portion (Ei, i=0 to 7, in FIG. **4** or FIG. **18**) and a second portion (Ri=RiH+RiL, i=0 to 7, in FIG. **4** or FIG. **18**);

a first arithmetic and logic operation unit (ALUE in FIG. **18**) coupled to the first portion of the general purpose registers;

a second arithmetic and logic operation unit (ALUL and ALUH in FIG. **18**) coupled to the second portion in the general purpose registers;

wherein the first mode enables the first and second arithmetic and logic operation units (ALUE, ALUL, and ALUH) to execute an address operation and a data operation; and

wherein the second mode enables the second arithmetic and logic operation unit (ALUL and ALUH) to execute an address operation and a data operation and enables the first arithmetic and logic unit to execute a data operation.

5,666,511

DEADLOCK SUPPRESSING SCHEMES IN A RAID SYSTEM

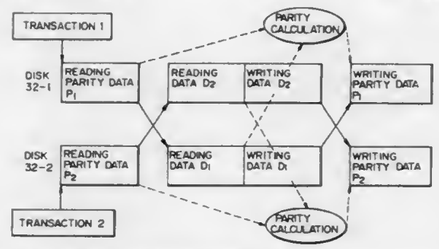
Tomoyuki Suganuma, and Suijin Takeda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 6, 1993, Ser. No. 133,441

Claims priority, application Japan, Oct. 8, 1992, 4-269822; Oct. 8, 1992, 4-269825; Oct. 8, 1992, 4-269827

Int. Cl.[6] G06F *12/02*

U.S. Cl. 711—114 **15 Claims**



1. A disk array system, comprising:

disk array means including a plurality of groups of disk units, wherein each of said groups are regarded as one array unit, for storing a plurality of data blocks to be processed in parallel and redundant data blocks for said plurality of data blocks;

at least two disk unit array control means, each of said control means being configured to store redundant data blocks in a different disk unit in said disk array means corresponding to

each data block storage location, to access said disk units individually through different paths, and to read and write data or redundant data blocks therein; and

deadlock suppressing means configured to suppress a deadlock occurring when said at least two disk array control means have issued a first processing request and a second processing request one after another, said first processing request is made to update a data block (D1) at a specific location in a first disk unit, said second processing request is made to update a redundant data block (P2) at a different location in said first disk unit, said first processing request is made to update a redundant data block (P1) at a specific location in a second disk unit, and said second processing request is made to update a data block (D2) at a different location in said second disk unit, whereby a component of said first processing request and a component of said second processing request both require access to a single port and another component of said first processing request and another component of said second processing request both require access to another single port;

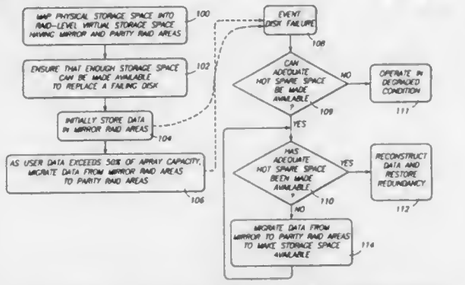
wherein said deadlock suppressing means releases said first disk unit or said second disk unit temporarily after a redundant data block (P1 or P2) has been read according to a processing request, so that a data block (D1 or D2) will be updated through reading and writing before a redundant data block is produced and written.

5,666,512

DISK ARRAY HAVING HOT SPARE RESOURCES AND METHODS FOR USING HOT SPARE RESOURCES TO STORE USER DATA

Marvin D. Nelson, Boise; Theresa A. Burkes, Meridian; Bryan M. Diamond, Boise; Michael B. Jacobson, Boise; Wade A. Dolphin, Boise, and Douglas L. Voigt, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 10, 1995, Ser. No. 386,574
Int. Cl.[6] G06F *12/16*
U.S. Cl. 711—114 **20 Claims**



1. A method for providing storage space in a hierarchic storage disk array for use in rebuilding in the event a storage disk fails, the disk array having a plurality of storage disks that define a physical storage space the physical storage space being mapped into a RAID-level virtual storage space that presents the physical storage space as multiple RAID areas including mirror and parity RAID areas, the method comprising the following steps:

prior to a disk failure, storing user data in both the mirror and parity RAID areas in a manner that the user data is distributed across all of the storage disks;

storing redundant data on at least one of the storage disks;

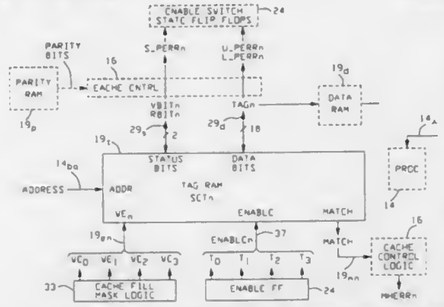
ensuring that a sufficient quantity of storage space can be made available for reconstructing the user data and restoring redundancy in the event one of the storage disks fails so that the user data is stored in both the mirror and parity RAID areas on all storage disks before and after the storage disk failure; and using the quantity of storage space to store both user and redundant data until the storage disk failure occurs.

5,666,513

AUTOMATIC RECONFIGURATION OF MULTIPLE-WAY CACHE SYSTEM ALLOWING UNINTERRUPTED CONTINUING PROCESSOR OPERATION

Bruce Ernest Whittaker, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 5, 1996, Ser. No. 583,327
Int. Cl.[6] G06F *12/08;13/00*
U.S. Cl. 711—118 **3 Claims**



1. A network having a cache system supporting a processor and connected to main memory and having multiple sets of tag and data RAMs which are concurrently adjustable by an associated maintenance subsystem means, to on-going operating conditions, by selecting which ones of said multiple sets of tag RAMs will be on-line and which off-line, comprising:

(a) N sets of tag RAMs for holding tag addresses of cache data words residing in each one of N associated sets of data RAMs each one of said addresses involving an upper byte and a lower byte;

(b) N sets of parity RAMs wherein each said set holds a parity bit for each upper by address and each lower byte address plus a status parity bit which indicates the parity of the combination of a valid bit (V) and a resource bit (R), said R bit indicating the presence of the same cache data word in another cache in the network;

(c) means to selectively place on-line or off-line each one of said N sets of tag RAMs, wherein said means to selectively place on-line or off-line includes:

(c1) switch unit means for receiving enable/disable signals from said maintenance subsystem means for determining which set of said N sets of tag RAMs will be on-line or off-line; wherein said switch unit means includes:

(i) means to detect a multiple-hit condition, signaled by said cache control means, which occurs on a single processor access request cycle to said N tag RAMs;

(ii) means to disable all N sets of said Tag RAMs when said multiple-hit condition is detected

(c2) said maintenance subsystem means including:

(i) means to generate enable/disable signals to said switch unit means for each set of N sets of tag RAMs;

(ii) means to sense and indicate the on-line/off-line condition of each individual set of said tag RAMs;

(C3) cache control means for checking said upper parity bit, said lower parity bit and said status parity bit including:

(i) means to signal said switch unit means to place off-line any tag RAM set which indicates a parity error in said upper, lower or status parity bit

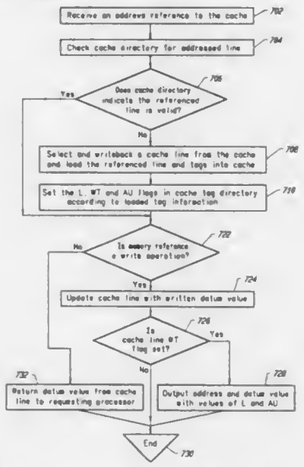
(ii) means to detect a parity error in any said upper address, lower address or status bits in any one set of said tag RAMs when an address is requested by said processor.

5,666,514

CACHE MEMORY CONTAINING EXTRA STATUS BITS TO INDICATE MEMORY REGIONS WHERE LOGGING OF DATA SHOULD OCCUR

David R. Cheriton, Palo Alto, Calif., assignor to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 1, 1994, Ser. No. 270,655
Int. Cl.[6] G06F *12/08*
U.S. Cl. 711—144 **10 Claims**



1. In a digital computing system of the type including one or more individual processor units each including instruction acquisition and instruction execution means, and one or more cache memory units for storing a predetermined number of blocks of information from at least one memory source, a method comprising the steps of:

referencing a portion of said memory source by one of said individual processor units;

selecting a cache line in a cache;

loading said referenced portion of said memory source and associated status bits into said cache, said status bits retrieved from said memory source or another cache supplying cache line data;

setting a selected indication in said cache based on said status bits; and

if one of said status bits is set, updating a modified portion of said data external to said memory source when said cache line data is updated.

5,666,515

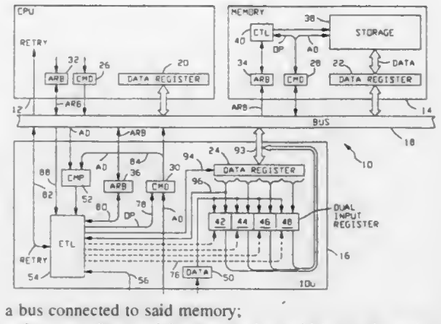
INFORMATION PROCESSING SYSTEM HAVING MULTIPLE MODULES AND A MEMORY ON A BUS, WHERE ANY MODULE CAN LOCK AN ADDRESSABLE PORTION OF THE MEMORY BY SENDING RETRY SIGNALS TO OTHER MODULES THAT TRY TO READ AT THE LOCKED ADDRESS

Theodore Curt White, Tustin; Jayesh Vrajlal Sheth, Mission Viejo; Kha Nguyen, Anaheim, and Dan Trong Tran, Laguna Niguel, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 563,137, Nov. 27, 1995, abandoned, which is a continuation of Ser. No. 19,004, Feb. 18, 1993, abandoned. This application Dec. 4, 1996, Ser. No. 759,996
Int. Cl.[6] G06F *12/14;13/18*
U.S. Cl. 711—152 **1 Claim**

1. An information processing system, comprising:

a memory having a plurality of individually addressable memory locations;



a bus connected to said memory;

at least one first module connected to said bus and capable of reading information from or writing information to said memory via said bus; and

a second module connected to said bus;

wherein said second module includes a circuit which executes a read-modify-write command by: a) sending a first read command with a particular address to said memory, b) subsequently and independently of any command from said first module, sending a first write command with said particular address to said memory, and c) sending a control signal to said first module, in response to said first module sending a second read command with said particular address to said memory between said commands from said second module, which directs said first module to retry only said second read command and permits said first module to send additional read commands, before said first write command, with any address that differs from said particular address;

wherein said first module includes a circuit which retries said second read command solely in response to just said control signal;

and wherein said memory includes a circuit which executes said first read command and said first write command from said second module without ever signaling said first module that said first module has accessed an address which is involved in said read-modify-write command.

5,666,516

PROTECTED PROGRAMMABLE MEMORY CARTRIDGE HAVING SELECTIVE ACCESS CIRCUITRY

James Lee Combs, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1993, Ser. No. 168,675
Int. Cl.[6] G06F *12/14;12/16;13/00;13/14*
U.S. Cl. 711—163 **17 Claims**

1. A memory cartridge for use in a computer system, the system having a central processing unit (CPU) with at least one bus associated therewith, and the bus having at least one bus line, the memory cartridge comprising:

(a) readable memory;

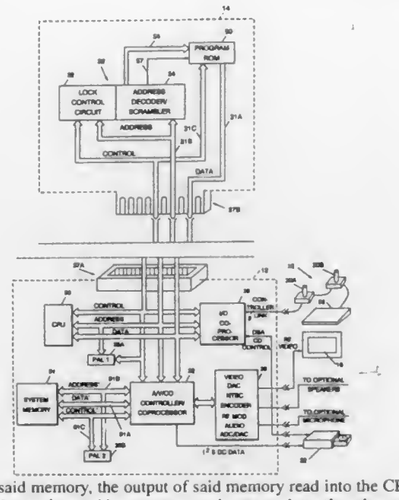
(b) a memory control circuit in circuit communication with said memory;

(c) lock control circuit in circuit communication with said memory control circuit; and

(d) a connector in circuit communication with said memory, said memory control circuit, and said lock control circuit for connecting said memory, said memory control circuit, and said lock control circuit in removable circuit communication with the CPU via the at least one bus;

(1) said memory control circuit having two states: an unlocked state characterized by an interaction with said memory such that when the CPU accesses said memory, the output of said memory read into the CPU for a given address corresponds to the value stored at that address in said memory, and a locked state characterized by an interaction with said memory such that when the CPU accesses

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said memory, the output of said memory read into the CPU for a given address corresponds to a value other than the value stored at that address in said memory;

(2) said memory control circuit configured to switch from said locked state to said unlocked state responsive to inputs from said lock control circuit; and

(3) said lock control circuit configured such that said lock control circuit causes said memory control circuit to enter said locked state before said memory is first accessed via said at least one bus and said lock control circuit further causes said memory control circuit to enter said locked state responsive to the occurrence of at least one event of a first set of preselected events; and said lock control circuit further configured such that said lock control circuit causes said memory control circuit to enter said unlocked state responsive to the occurrence of at least one event of a second set of preselected;

wherein said memory control circuit mirrors the at least one bus line onto at least one other bus line of the at least one bus and transmits the mirrored bus lines to said memory, responsive to the occurrence of the at least one event of the first set of preselected events.

5,666,517

MULTI-MEDIA SYSTEM FOR INTERACTIVE PRESENTATION HAVING APPARATUS WHICH CONVERTS MACHINE-TYPE GENERIC MULTI-INSTRUCTION TO MACHINE-TYPE SPECIFIC OBJECT CODE

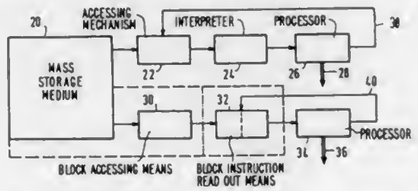
Alexander Augusteijn, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1994, Ser. No. 278,365

Claims priority, application European Pat. Off., Jul. 22, 1993, 93202151

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **9 Claims**



1. A multi-media system for interactive presentation of user information, comprising:

interface means for reversibly interfacing to mass storage means containing an interactive user program;

access means for selectively accessing said mass storage means;

processing means connected to said accessing means for processing said user program;

display means fed by said processing means for displaying processing results; and

user actuation means for, through selective user-actuation, controlling said accessing means and said processing means on an elementary user functionality level,

wherein said processing means includes:

converter-to-object-code means for blockwise converting machine-type generic multi-instruction blocks read from said storage means to machine-type specific object code blocks for subsequent local storing; and

secondary accessing means for selective accessing of said machine-type specific object code.

5,666,518

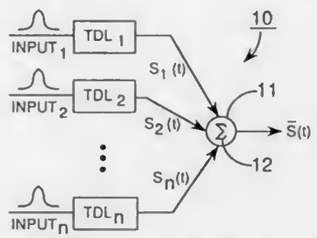
PATTERN RECOGNITION BY SIMULATED NEURAL-LIKE NETWORKS

Eric J. Jumper, Granger, Ind., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 26, 1995, Ser. No. 494,866

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—500 **20 Claims**



11. A neural simulation network comprising

a basic stimulus cell receiving inputs from feeder cells;

a plurality of synapses simulated by delay lines connected to said basic cell, each synapse representing the position at which a nerve impulse from a feeder neuron is transmitted to stimulate said basic cell;

means in said basic cell for summing the outputs of said delay lines;

wherein said inputs are pulses selected for their spreading characteristics, as well as ease of generation and manipulation and are described by their amplitudes and their temporal distances between pulse peaks and the center of said basic cell.

5,666,519

METHOD AND APPARATUS FOR DETECTING AND EXECUTING CROSS-DOMAIN CALLS IN A COMPUTER SYSTEM

Peter C. Hayden, Mont Vernon, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 523,917, Sep. 6, 1995, which is a continuation of Ser. No. 207,453, Mar. 8, 1994. This application Sep. 30, 1996, Ser. No. 721,842

Int. Cl.[6] G06F *9/00*

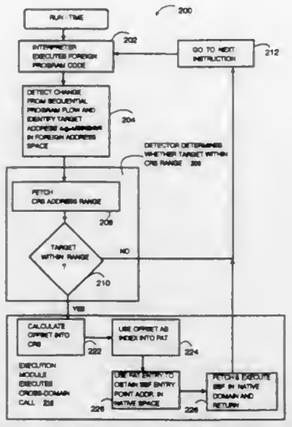
U.S. Cl. 395—500 **24 Claims**

1. A method executed in a computer system for detecting and executing a call from a first program associated with a first architectural domain to a second program associated with a second architectural domain, said first architectural domain being characterized by a first architecture including a first instruction set, said second architectural domain being characterized by a second, different architecture including a second instruction set, said first program being adapted for execution in said first architectural domain and including instructions from said first set of instructions, said second program being adapted for execution in said second architectural domain and including instructions from said second set of instructions, said method comprising the steps of:

detecting whether said call specifies a target address within a cross-domain reference address range in said first architectural domain, said cross-domain reference address range indicating a range of addresses of cross-domain calls;

responsive to the target address being within said cross-domain reference address range, determining a called address in said second architectural domain corresponding to said target address in said first domain using said target address; and

fetching and executing instructions of said second program specified by said called address in said second architectural domain, said computer system executing said first program within said first architectural domain, and detecting and executing said call and instructions included in said second program associated with said called address.



5,666,520

GRAPHICS DISPLAY SYSTEM INCLUDING GRAPHICS PROCESSOR HAVING A REGISTER STORING A SERIES OF VERTEX DATA RELATING TO A POLYGONAL LINE

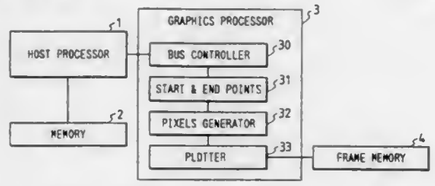
Ryo Fujita; Kazuhisa Takami; Mitsuru Soga, all of Hitachi; Koji Ozawa, Hitachioota; Takaharu Morishige, Tamamura-machi, and Kazuyoshi Koga, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Microcomputer System, Ltd., Kodaira, both of Japan

Filed Mar. 21, 1994, Ser. No. 215,244

Claims priority, application Japan, Mar. 29, 1993, 5-070105; Jun. 8, 1993, 5-137551

Int. Cl.[6] G06F *12/00*

U.S. Cl. 345—513 **1 Claim**



1. A graphics display system comprising:

a host processor providing in an order a series of vertex data of a polygonal line defined with a plurality of straight lines to generate an order for displaying the polygonal lines;

a graphic processor including a register storing the series of vertex data, a graphic pixel generator converting the vertex data to graphic pixel data of the straight line, and a plotter writing the graphic pixel data from the graphic pixel generator; and

a frame memory storing the graphic pixel data written by the plotter;

a display displaying the graphic pixel data from the frame memory;

wherein the register comprises a first start point register storing start point data corresponding to a first of the straight lines, a first end point register storing end point data corresponding to the first of the straight lines based on the vertex data, a second start point register storing start point data corresponding to a second of the straight lines which is connected to the first of the straight lines, and a second end point register storing end point data of said second of the straight lines, wherein said second start point data and said second end point data are converted to the graphic pixel data; and

wherein said first start point register stores the end point of the first end point register, said second start point register stores the start point of the first start point register, and said second end point register stores the end point of the first end point register when the host processor generates the order; and

wherein data stored in the first start point register and data stored in the first end point register are read out to be stored in a memory before the host processor processes an interrupting order, and said data stored in the memory is restored to the first start point register and the first end point register after the host processor has processed the interrupting order.

5,666,521

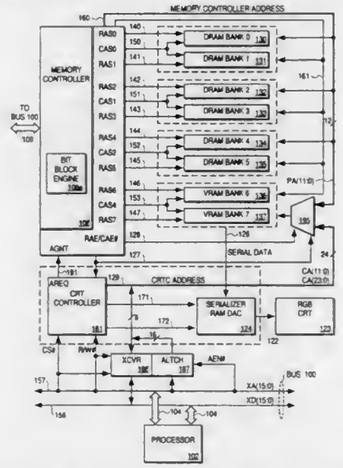
METHOD AND APPARATUS FOR PERFORMING BIT BLOCK TRANSFERS IN A COMPUTER SYSTEM

Suresh K. Marisetty, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 494,179, Jun. 23, 1995, abandoned, which is a continuation of Ser. No. 986,476, Dec. 7, 1992, abandoned. This application Nov. 20, 1996, Ser. No. 752,952

Int. Cl.[6] G06F *13/00;13/16*

U.S. Cl. 345—525 **22 Claims**



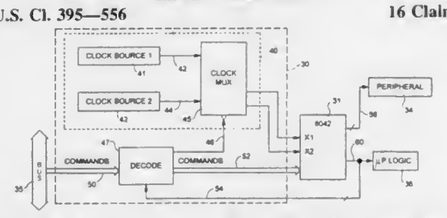
1. A method of transferring data between a first bank of a memory and a second bank of said memory, said first and second banks being coupled by a common data bus and a common address bus in a computer system, wherein one of said first or second banks comprises a video memory bank, and further wherein access to said first bank and said second bank is controlled by a single integrated controller, said method comprising the steps of:

said controller strobing a first memory row address of said first bank, such that a valid row address for said first bank appears on said common address bus;

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said controller activating a read data control signal for said first bank;
said controller activating a write data control signal for said second bank;
said controller strobing a first memory column address of said first bank, such that data corresponding to said first row address and said first column address of said first bank is driven onto said common data bus;
said controller strobing a second memory row address of said second bank while said read data control signal for said first bank is active, such that a valid row address for said second bank appears on said common address bus while said read data control signal is active;
said controller strobing a second memory column address of said second bank while said read data control signal for said first bank is active and while said write data control signal for said second bank is active, such that said data is written from said common data bus into said second bank.

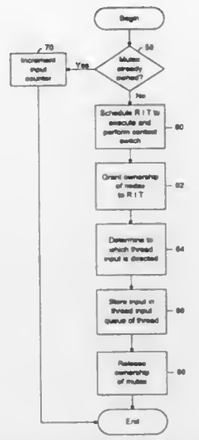
5,666,522
VARIABLE SPEED CONTROLLER
Dean A. Klein, Lake City, Minn., assignor to Micron Electronics, Inc., Nampa, Id.
Filed Jan. 28, 1994, Ser. No. 189,254
Int. Cl.[6] G06F *1/08*
U.S. Cl. 395—556 **16 Claims**



1. A variable-speed controller for controlling a peripheral device in a computer system having microprocessor logic that includes a microprocessor clocked by a first clock signal and a bus, said variable-speed controller comprising:
command inputs for receiving a plurality of commands from said bus, including a high-speed command;
processing logic for processing said commands;
control signal outputs for sending control signals to said peripheral device;
speed-adjusting logic for generating a second clock signal and clocking said processing logic with the second clock signal; and
control logic for controlling said speed-adjusting logic;
wherein the control logic receives said commands from said command inputs and controls said speed-adjusting logic so that said speed-adjusting logic generates said second clock signal at a first frequency in response to a high-speed command received by said control logic, and at a second, lower frequency in response to a command that is not a high-speed command received by said control logic.

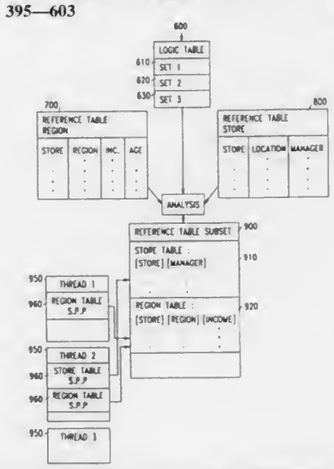
5,666,523
METHOD AND SYSTEM FOR DISTRIBUTING ASYNCHRONOUS INPUT FROM A SYSTEM INPUT QUEUE TO REDUCE CONTEXT SWITCHES
David D'Souza, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.
Continuation of Ser. No. 268,494, Jun. 30, 1994, abandoned.
This application Nov. 6, 1995, Ser. No. 553,824
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—570 **3 Claims**

1. In a computer system comprising a processor executing a multithreaded operating system, a memory in which a plurality of threads are loaded, and an input/output device for entering input directed to the threads, a system for reducing context switches when distributing the input to the threads, the system comprising:



a system input queue for storing input when it is received;
a thread input queue for each thread for storing input directed to the thread;
a system thread for executing code for distributing input from the system input queue to the thread input queue of the thread to which the input is directed;
a synchronization mechanism for the code for distributing input from the system input queue, wherein the system thread must determine whether the synchronization mechanism is already owned before the system thread can begin executing;
a selected thread that owns the synchronization mechanism; and
a mechanism for the selected thread to determine that input has been received in the system input queue and for, in response to input being received, calling the code for distributing input from the selected thread to avoid a context switch.

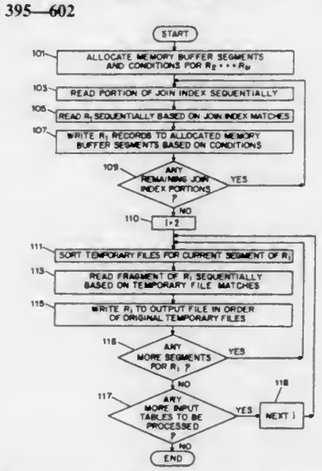
5,666,524
PARALLEL PROCESSING SYSTEM FOR TRAVERSING A TRANSACTIONAL DATABASE
Douglas F. Kunkel, Piedmont, Calif.; Richard K. Roth, Santa Fe, N. Mex., and Jay Robert Poulos, Salem, Oreg., assignors to Price Waterhouse LLP, Sacramento, Calif.
Filed Aug. 31, 1994, Ser. No. 299,225
Int. Cl.[6] G06F *17/30;15/16*
U.S. Cl. 395—603 **20 Claims**



1. In a system including two or more processors, a computer implemented method for traversing one or more logical files, the

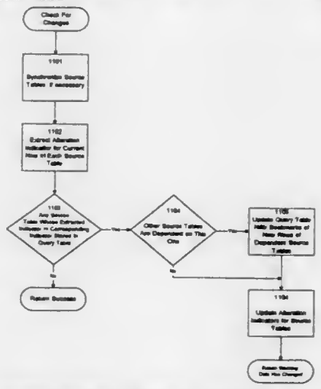
logical files including two or more physical files of a transactional database, the method comprising the steps of:
generating one or more sets of parameters for processing the two or more physical files of the transactional database;
assigning a respective thread to each of the two or more physical files of the transactional database, each respective thread including instructions for processing its respective one of the two or more files of the transactional database in accordance with preselected ones of the one or more sets of processing parameters;
sequentially traversing each of the two or more files of the transactional database once in accordance with its respective thread, at least two of the threads operating in parallel;
retrieving, in accordance with the instructions for each thread, information from the respective one of the two or more physical files of the transactional database associated with said thread based upon the preselected ones of the one or more sets of processing parameters associated with said thread;
storing the information retrieved by each thread in an output file.

5,666,525
SYSTEM AND METHOD FOR PERFORMING AN EFFICIENT JOIN OPERATION ON LARGE TABLES WITH A SMALL MAIN MEMORY
Kenneth A. Ross, New York, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.
Filed Sep. 21, 1995, Ser. No. 531,789
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 **35 Claims**



1. A method for joining a plurality of input tables comprised of records stored in a first memory in a database system which includes said first memory and a relatively high speed second memory having a storage capacity smaller than necessary to store at least one of said input tables, said method using a join index indicative of records to be joined and having an index entry for each record to be included in an output resulting from said join, and comprising the steps of:
(a) allocating an array of buffers in said second memory;
(b) reading a first table from said plurality of tables only once during said joining;
(c) separately processing said plurality of input tables other than said first table by reading said input tables into said second memory only once during said joining; and
(d) writing join results for each one of said input tables into separate output files only once during said joining.

5,666,526
METHOD AND SYSTEM FOR SUPPORTING SCROLLABLE, UPDATABLE DATABASE QUERIES
Allen Reiter, Haifa, Israel; Stephen Charles Hecht; Matthew Bellew, both of Seattle, Wash.; Stephen Albert Brandli, Bothell, and Adam Bosworth, Mercer Island, both of Wash., assignors to Microsoft Corp., Redmond, Wash.
Continuation of Ser. No. 116,258, Sep. 2, 1993, abandoned.
This application May 16, 1996, Ser. No. 649,910
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 **45 Claims**

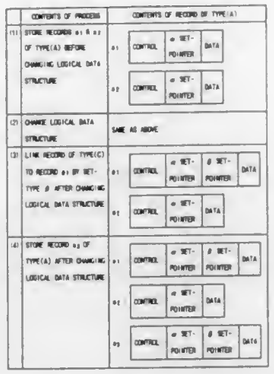


1. A computer-readable medium containing instructions for causing a computer system to retrieve data from a database having a source table, the source table having rows with data, by:
receiving a query request that identifies a subset of rows of the source table;
generating a query result table containing references to rows of the source table that are identified by the received query request;
receiving a retrieve request to retrieve data from a specified source table row identified by the received query request;
retrieving from the query result table the reference to the specified source table row; and
retrieving the data from the specified source table row using the retrieved reference to locate the specified source table row.

5,666,527
SYSTEM FOR DYNAMICALLY CHANGING LOGICAL DATA STRUCTURE OF DATABASE
Toshiharu Tatsumi, and Hisayuki Enbutsu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 128,147, Sep. 29, 1993, abandoned.
This application May 10, 1996, Ser. No. 644,121
Claims priority, application Japan, Dec. 28, 1992, 4-348404
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—612 **5 Claims**

1. A system for changing a logical data structure of a network type database, in said system owner records being linked to corresponding member records by set-information identifying positions of the member record, each of said owner records comprising a set-pointer portion storing the set-information, a control portion storing control data, and a data portion storing data, said system comprising:
first means for changing a definition of a logical data structure of said network type database; and
second means for adding the set-information of an added member record to said set-pointer portion of one of said owner records corresponding to said added member record if one of the member records to be linked to said one of said owner records is added to said network type database in accordance with a changed logical data structure obtained by said first means, and for erasing the set-information of an erased member record from said set-pointer portion of said one of said

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owner records if one of the member records linked to said one of said owner records is erased from said network type database in accordance with the changed logical data structure obtained by said first means, wherein an area of said set-pointer portion of said one of said owner records is changed in accordance with variable-length management of one of adding and erasing the set information while maintaining said set-pointer portion of other of said owner records.

5,666 528

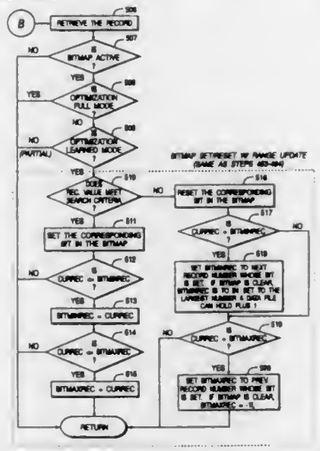
SYSTEM AND METHODS FOR OPTIMIZING DATABASE QUERIES

Lam H. Thai, San Jose, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 544,679, Oct. 18, 1995, Pat. No. 5,560,005, which is a continuation of Ser. No. 85,214, Jun. 30, 1993, abandoned. This application Jun. 13, 1996, Ser. No. 664,961

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **10 Claims**



1. In a system for storing information as a plurality of data records on a storage device and for reading into a memory data records which are of interest to a user, a method for providing access to particular data records which is of interest to the user, the method comprising:

(a) specifying at least one criterion for filtering out records which are not of interest to the user, wherein said at least one criterion includes a condition such that records satisfying said at least one criterion cannot be determined by the system from an existing index of the data records;

(b) learning on-the-fly which records satisfy said at least one criterion as each record is first read from said storage device by:

(i) providing a bitmask comprising a plurality of bits, each bit corresponding to a single record of the data records, and each bit having a first state for indicating that a record satisfies said at least one criterion and a second state for indicating that a record does not satisfy said at least one criterion;

(ii) setting all of the bits to said first state, wherein said system initially assumes that all records satisfy said at least one criterion so that none of the records are filtered out which have yet to be read into said memory;

(iii) receiving a request for a desired range of records from the data records;

(iv) reading each record of the desired range into said memory whose bit is set to the first state and applying said at least one criterion as each record Is read for determining whether the record being read actually satisfies said at least one criterion;

(v) for each record read in step (iv) which does not satisfy said at least one criterion, setting its corresponding bit to the second state for filtering out the record; and

(c) providing access to each record of the desired range which has not been filtered out as said each record of the desired range currently resides in said memory.

5,666,529

Patent Not Issued For This Number

5,666,530

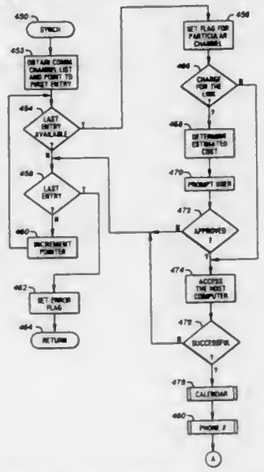
SYSTEM FOR AUTOMATIC SYNCHRONIZATION OF COMMON FILE BETWEEN PORTABLE COMPUTER AND HOST COMPUTER VIA COMMUNICATION CHANNEL SELECTED FROM A PLURALITY OF USABLE CHANNELS THERE BETWEEN

Ted H. Clark, Houston; Steven C. Malisewski, Cypress; Patrick R. Cooper, Houston; William Caldwell Crosswy, Spring, and Larry J. Crochet, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 2, 1992, Ser. No. 984,464

Int. Cl.[6] G06F *13/00;15/17*

U.S. Cl. 395—617 **14 Claims**



1. A portable computer for communication with a host computer, both the portable and host computers having a plurality of files including at least one common file, each computer having an independent copy of the common file, each computer capable of independently modifying its copy of the common file, the portable computer comprising:

means for automatically establishing a communications link with the host computer;

means for comparing the copies of the common file in the host computer and the portable computer when said communications link is established; and

means for resolving any differences in the copies and for storing identical copies of the resolved common file in the host computer and the portable computer,

wherein said means for automatically establishing a communications link includes a plurality of communication channels usable by the portable computer and means for scanning said plurality of communication channels to establish said communications link and

wherein said means for automatically establishing a communications link further includes means for receiving approval from a user to establish said communications link before incurring a charge if said communications channel to be used includes a charge.

5,666,531

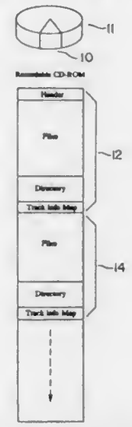
RECORDABLE CDROM ACCESSING SYSTEM

Raymond Martin, El Toro, Calif., assignor to Optima Technology Corp., Irvine, Calif.

Filed Apr. 7, 1995, Ser. No. 418,275

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—620 **8 Claims**



1. A method for entering new information on a recordable CDROM operatively connected an operating system of a computer system having an updatable memory comprising:

a) opening a directory in an updatable memory, said directory being identifiable with a directory on a CDROM, said directory in the updatable memory constituting a working directory,

b) storing the data on the CDROM and updating the working directory to reflect the data on the CDROM,

c) upon completion of the data entry, copying the working directory from the updatable memory to the track on the CDROM containing the last entered data, writing a track information map, and closing the track where the data is entered,

such that an operating system accessing data stored on the CDROM is routed by the working directory directly to the latest revision of such data on the CDROM, any previous versions of said data which are still present on the CDROM being transparent to the operating system.

5,666,532

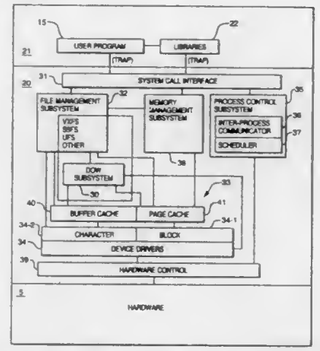
COMPUTER METHOD AND APPARATUS FOR ASYNCHRONOUS ORDERED OPERATIONS

Jonathan Haim Saks, Summit, and Kshitij Arun Doshi, Springfield, both of N.J., assignors to Novell, Inc., Orem, Utah

Continuation of Ser. No. 280,307, Jul. 26, 1994, abandoned. This application May 2, 1996, Ser. No. 648,304

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—621 **52 Claims**



1. An ordering subsystem for controlling the order of operations in a computer system, the computer system having a first unit and a second unit for files, having a file management subsystem for controlling operations for files, said file management subsystem specifying operations for files in response to new requests where a sequence of requests for said operations is represented by the requests R1, R2, . . . , Rr and where the requests for said operations in said sequence have order dependencies D1, D2, . . . , Dd where r and d are integers, said order dependencies constraining the order for carrying out said operations, said ordering subsystem including,

an ordering store for storing a plurality of entries, each of said entries containing an operation type identifying one of said operations for files, at least one of said entries at some time also containing a link which links said entry to another of said entries, said link specifying an order for carrying out said operations in said linked entries, said entries and said links defining a partially ordered acyclic graph,

add means for adding entries to the ordering store by processing said new requests to identify one or more common operations CO0, CO1, . . . , COco, each of said common operations identifying an operation requested by one or more of the requests R1, R2, . . . , Rr, where said common operations have common order dependencies CD0, CD1, . . . , CDcd that preserve the order dependencies D1, D2, . . . , Dd between the operations in the requests, and where co and cd are integers,

execution means for executing said one or more common operations CO0, CO1, . . . , COco responsive to the entries in the ordering store, and

delete means for deleting entries from the ordering store.

5,666,533

PROGRAM EXECUTION MANAGEMENT USING PROCESS ENCLAVES WHICH DEFINE THE SCOPE OF HIGH-LEVEL LANGUAGE SEMANTICS AND THREADS IMPROVING COOPERATION BETWEEN PROCESSES WRITTEN IN MULTIPLE LANGUAGES

Tsuneo Horiguchi; Stephen Sherman Miller, both of San Jose; Alfred William Shannon, Morgan Hill, and William David Wallace, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

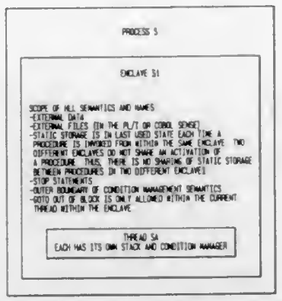
Continuation of Ser. No. 755,887, Sep. 6, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,728

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—670 **21 Claims**

1. A method, implemented in a computer system, of managing program execution, comprising the steps of:

(1) initializing an activation of a high level language application program including creating a process, an initial enclave within



the process and an initial thread of execution within the initial enclave, wherein said enclave is a logical run-time structure defining a scope of high level language semantics;

(2) executing one or more requests from the initial thread to create an additional thread for concurrent execution with the initial thread in the initial enclave;

(3) executing one or more requests from one of said threads to create an additional enclave in the process and to create a first thread of execution within said additional enclave; and

(4) executing global high level language statements, in one of the threads, that are within the scope of high level language semantics of the enclave containing said one of the threads.

5,666,534

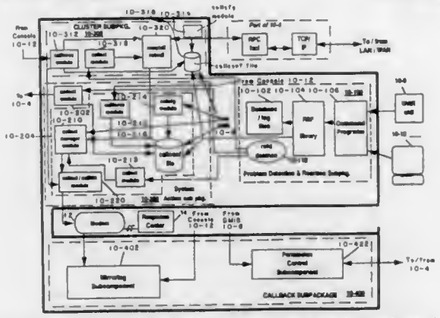
METHOD AND APPARTUS FOR USE BY A HOST SYSTEM FOR MECHANIZING HIGHLY CONFIGURABLE CAPABILITIES IN CARRYING OUT REMOTE SUPPORT FOR SUCH SYSTEM

Jeremy H. Gilbert, Billerica; David B. Hout, Wilmington; Michael P. Keohane, Brighton, all of Mass.; David K. Perlow, Merrimack, N.H.; Daniel G. Peters, Nashua, N.H., and Eric J. Storch, Nashua, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Jun. 29, 1993, Ser. No. 85,272

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—651 **52 Claims**



1. A method of organizing and operating a proactive and reactive remote services facility (RSF) unit installable within a host system which is operatively connected to communicate with a remote response center dedicated to performing remote support services for said host system involving diagnosis of host system problems reported to said center, said method comprising the steps of:

(a) constructing a number of independently operable software components, each component being constructed for performing one of a predetermined number of different basic functions required for performing said proactive and reactive support for said host system;

(b) including in each of said number of software components, configuration control means for preconfiguring each component by establishing predetermined parameters defining how said each component is to perform said one of said number of basic functions in carrying out remote support; and,

(c) integrating said number of software components together in a predetermined manner so that said components collectively perform said proactive and reactive remote support according to said predetermined parameters preconfigured in step (b).

5,666,535

MICROPROCESSOR AND DATA FLOW MICROPROCESSOR HAVING VECTOR OPERATION FUNCTION

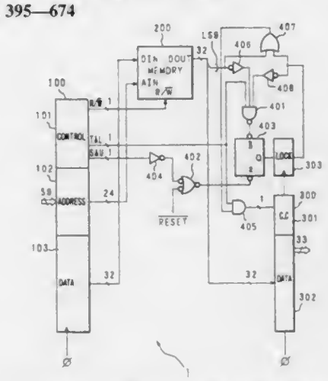
Shinji Komori; Hidehiro Takata; Toshiyuki Tamura; Fumiyasu Asai, and Hirono Tsubota, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 819,164, Jan. 2, 1992. This application Oct. 28, 1994, Ser. No. 330,880

Claims priority, application Japan, Jan. 9, 1991, 3-13959; Feb. 12, 1991, 3-40981; Apr. 24, 1991, 3-122338

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—674 **3 Claims**



1. A microprocessor, which executes a test and set instruction with a predetermined address, the execution of said test and set instruction resulting in at least first and second operations wherein other operations can be executed between said first and second operations, said first operation for selectively locking an addressing type memory, and a second operation for rewriting the content of said address of said memory and unlocking said memory, comprising:

means for storing first information or second information in the case where said memory is under unlock state or lock state respectively;

detecting means for detecting whether the value of data stored in said predetermined address of said memory is a first value or a second value;

means for writing said first information or said second information into said means for storing; and

control means for controlling so as to write predetermined data into said predetermined address of said memory;

wherein, by executing a first instruction, said first instruction including said predetermined address, said means for writing writes said second information into said means for storing, only in the case where (a) the value of data stored in said address is detected as said first value by said detecting means and (b) said means for storing stores said first information;

wherein, by executing a second instruction, said second instruction including said predetermined address, said test and set instruction is executed by setting the value of data stored in said address to said second value by said control means, and by writing said first information into said means for storing; and

wherein, by executing a write instruction, said write instruction including said predetermined address and write data, the value of data stored in said address is returned to said first value by writing said data in said address of said memory by said control means.

5,666,536

Patent Not Issued For This Number

5,666,537

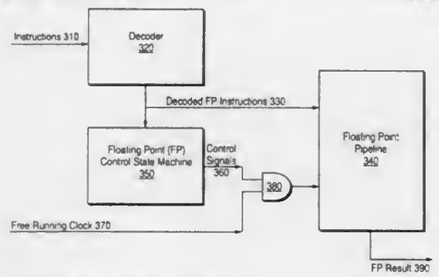
POWER DOWN SCHEME FOR IDLE PROCESSOR COMPONENTS

Kathakali Debnath, Beaverton; Anurag Sah, Aloha, both of Oreg., and Cong Quoc Khieu, San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 12, 1994, Ser. No. 289,928

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750.04 **11 Claims**



5. A computer system comprising:

a bus;

a main memory coupled to the bus;

at least one peripheral device coupled to the bus;

a processor coupled to the bus, the processor including

a bus unit coupled to the bus;

an interrupt controller coupled to the bus unit that controls interrupts from the at least one peripheral device;

a cache coupled to the bus unit;

an arithmetic logic unit (ALU) coupled to the bus unit that executes logic and integer instructions;

a floating point unit (FPU) coupled to the bus unit that executes floating point instructions;

a power down circuit that controls power to the FPU, the cache, and the interrupt controller, comprising:

first control circuitry that enables a clock signal to the FPU when an instruction received by the processor is a floating point instruction;

second control circuitry that predicts when a cache access may occur and enables a clock signal to the cache in response thereto, the second control circuitry comprising

a prediction circuit having first inputs that indicate a cache cycle request and second inputs that indicate that a cache cycle may not occur, the prediction circuit outputting a prediction signal when the first and second inputs indicate that a cache access may occur;

a timer circuit coupled to the prediction circuit that generates a cache control signal in response to the predict signal;

a clock buffer circuit coupled to the prediction circuit that generates a latching signal in response to the predict signal, the latching signal latching an incoming address to the cache; and

third control circuitry that determines an active state of an interrupt controller and enables a clock signal to the interrupt controller in response thereto.

5,666,538

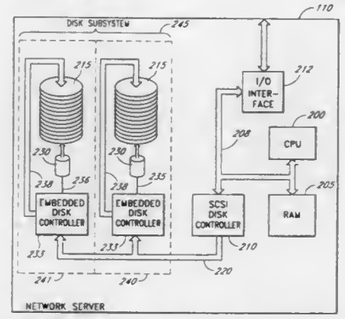
DISK POWER MANAGER FOR NETWORK SERVERS

Richard M. DeNicola, Walnut, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Jun. 7, 1995, Ser. No. 475,567

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750.03 **13 Claims**



5. A network server which provides for increased power efficiency during selected time intervals, said network server comprising:

a processor which executes commands contained in a network operating system and an application module; and

a plurality of data storage disk drives in communication with said processor, one or more of said disk drives being independently spun-down to conserve power for predetermined intervals in response to commands issued by said application module in response to commands issued by said network operating system executed by said processor, said predetermined intervals being chosen to correspond to time intervals when said one or more of said disk drives have a reduced probability of being accessed, thereby minimizing the impact on the operation of said network server.

5,666,539

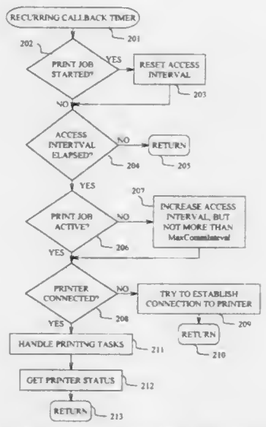
REDUCING I/O ACTIVITY TO ALLOW A HOST BASED PRINTING SYSTEM TO ACTIVATE POWER MANAGEMENT FUNCTIONS

Vincent J. Kenkel, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 20, 1995, Ser. No. 531,264

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750.03 **7 Claims**



4. A method for allowing a computer including a power management system to enter a power save mode, said computer being

connected to a printer, said computer including a timer that is indicative of an amount of time elapsed from a previous communication between said computer and said printer, said method comprising the steps of:

invoking a host based printing system;

defining a maximum interval where said maximum interval is greater than an interval of communications between said computer and said printer that allows activation of said power save mode;

storing said maximum interval;

retrieving said maximum interval;

setting an access interval to a first value;

resetting said access interval to said first value if said computer has information to send to said printer and allowing said computer to send said information;

preventing said computer from retrieving information from said printer if said timer is less than said access interval;

permitting said computer to access said printer if said timer is greater than said access interval; and

incrementing said access interval if said access interval is less than said maximum interval and said computer has no information to said to said printer, thereby forcing upon said computer periods of inactivity which will allow said power management system to cause said computer to enter said power save mode.

5,666,540

INFORMATION PROCESSING SYSTEM

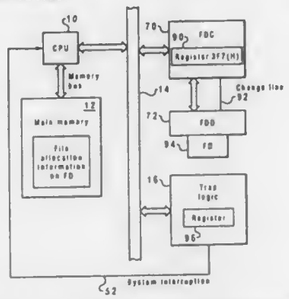
Mikio Hagiwara, Sagamihara, and Susumu Shimotono, Hadano, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 279,967, Jul. 25, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,322

Claims priority, application Japan, Jul. 26, 1993, 5-183980

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750.05 **18 Claims**



3. An information processing system including a CPU, a volatile main memory, a non-volatile external storage device and supporting a hibernation function by which, upon the occurrence of predetermined conditions, a task is suspended and the contents of said main memory is saved to said external storage device to power off said memory, characterized in that said external storage device is removable and said system includes a means for saving all configuration information of said system which is saved to a predetermined location within said external storage device, which allows said external storage device to be placed in a second information processing system and allow a restore operation in said second information processing system to occur utilizing only said configuration information in response to an automatic access of said predetermined location within said external storage device which occurs as a result of application of power to said second information processing system as if said external storage device had been returned to said information processing system.

5,666,541

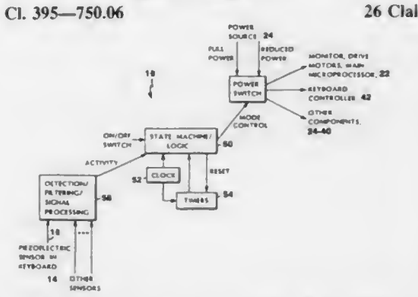
REDUCING POWER USAGE IN A PERSONAL COMPUTER

Charles A. Sellers, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 450,375, May 25, 1995, abandoned, which is a continuation of Ser. No. 301,664, Sep. 7, 1994, abandoned. This application Oct. 15, 1996, Ser. No. 729,312

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750.06 **26 Claims**



1. An apparatus for reducing power usage in a personal computer, comprising:

control circuitry connected to reduce power delivery to a component of the computer based on a period of time required for the component to return to a fully operational state from a less fully powered mode; and

a person sensing device which issues a wake-up signal to the control circuitry when a user begins interacting with the computer, the control circuitry responding to the wake-up signal by switching the component to a more fully powered mode only as long as the user is interacting with the computer, and thereafter switching the component to the less fully powered mode.

5,666,542

MULTIMEDIA INFORMATION ADD-ON SYSTEM

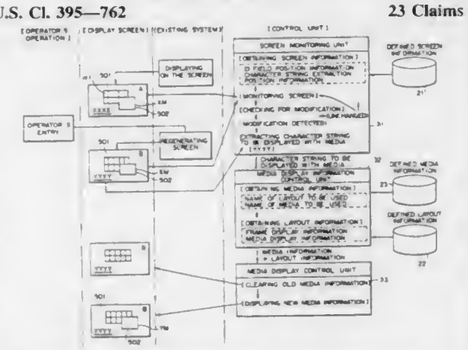
Yoshiyuki Katai; Toshifumi Kogure; Toshio Watanabe, and Mitsuyoshi Yamazaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1994, Ser. No. 216,964

Claims priority, application Japan, Sep. 30, 1993, 5-245791

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—762 **23 Claims**



1. A multimedia information add-on system comprising:

screen monitoring means for detecting that an object character string is displayed on a display device by a character displaying system;

defined information means for storing a plurality of character strings and plural pieces of multimedia associated with each of the plurality of character strings; and

multimedia information outputting means for retrieving from said defined information means multimedia information which corresponds to the object character string detected by said screen monitoring means, and for displaying the retrieved multimedia information at a predetermined position on the display device, wherein said multimedia information add-on system is different from the character displaying system, and is added to the character displaying system.

5,666,543

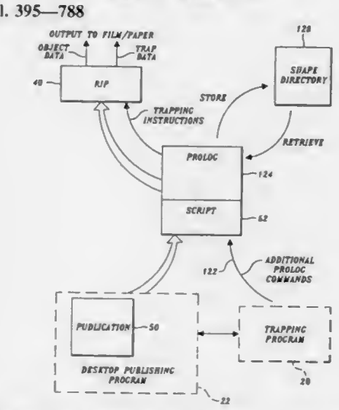
METHOD OF TRAPPING GRAPHICAL OBJECTS IN A DESKTOP PUBLISHING PROGRAM

Richard A. Gartland, Bothell, Wash., assignor to Adobe Systems Incorporated, Mountain View, Calif.

Filed Mar. 23, 1994, Ser. No. 216,729

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—788 **7 Claims**



1. A method in a raster image processor to trap page objects, comprising:

receiving a page prolog, comprising page description language (PDL) instructions executable by a raster image processor (RIP) to trap page objects;

receiving a page script, comprising PDL instructions describing a plurality of page objects and executable by the RIP; and

executing the prolog PDL instructions to trap an object described by the script PDL instructions.

5,666,544

METHOD AND SYSTEM FOR COMMUNICATING DATA BETWEEN INDEPENDENT CONTROLLERS

Masashi Matsumoto; Yasushi Saito; Takao Ichihashi, and Shuji Yamada, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka-fu, Japan

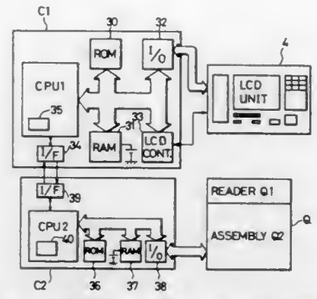
Filed Apr. 28, 1994, Ser. No. 234,776

Claims priority, application Japan, May 10, 1993, 5-108581; May 10, 1993, 5-108585

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800.01 **4 Claims**

1. A data communication system for communicating data between a first control unit for controlling a first operation and a second control unit for controlling a second operation, the first and second control units being provided in an image forming apparatus, the first control unit having a first memory for storing a first operative data necessary to execute its own control independently of the second control unit, the second control unit having a second memory for storing a second operative data necessary to execute its own control independently of the first control unit, the data communication system comprising:



address data means provided in the first control unit for storing address data for each of the items constituting the second operative data stored in the second memory;

item data generating means provided in the first control unit for generating new data for a selected item of the second operative data;

transmission data generating means connected with the address data means and the item data generating means for combining the new item data and the address data corresponding to the selected item to generate transmission data;

data transmitting means connected with the transmission data generating means for transmitting the transmission data to the second control unit;

data receiving means provided in the second control unit for receiving the transmission data;

writing means connected with the data receiving means for writing the new item data on the second memory at the address specified in the transmission data;

the second control unit being further provided with input and output port means having an output bit selectively driven by a bit of one of said new item data at a specified address of the second memory and in direct connection with a specified one of a plurality of actuators for executing the second operation;

the first control unit being adapted for controlling an input and output operation of information necessary for image forming, the second control unit being adapted for controlling an operation of reading a document image and forming an image on a copy item.

5,666,545

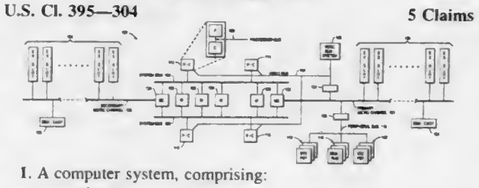
DIRECT ACCESS VIDEO BUS COMPUTER SYSTEM AND METHOD FOR TRANSFERRING VIDEO INFORMATION USING A DEDICATED VIDEO BUS

Jay A. Marshall, Taylors; Thomas F. Heil, Easley, and Donald H. Parsons, Jr., Liberty, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 761,586, Sep. 18, 1991. This application May 11, 1994, Ser. No. 240,953

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—304 **5 Claims**



1. A computer system, comprising:

a system bus;

a video bus which handles video cycle information;

a video subsystem coupled to said video bus;

a processor having a first port and a second port, said processor coupled via the first port to said video bus and via the second port to said system bus;

means for causing said processor to perform a first video cycle via the first port over said video bus so as to cause data to be transferred between said processor and said video subsystem over said video bus in accordance with the first video cycle while concurrently performing a memory cycle via the second port over said system bus so as to cause data to be transferred over said system bus in accordance with the memory cycle;

means for disabling said video bus; and

means for causing said processor to perform a second video cycle via the second port over said system bus if said video bus is disabled.

5,666,546

METHOD OF MANAGING CONCURRENT ACCESSES TO A MEMORY BY A PLURALITY OF USERS USING ATOMIC INSTRUCTIONS TO PREVENT READ/WRITE ERRORS

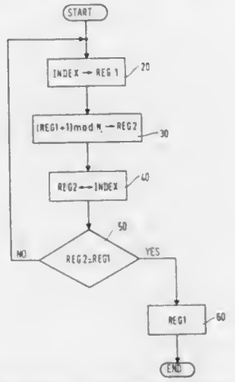
Gary Donnan, Oysonville, France, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris Cedex, France

Filed Jun. 15, 1994, Ser. No. 260,734

Claims priority, application France, Jun. 17, 1993, 93 07315

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—472 **3 Claims**



1. A method of managing concurrent accesses to a memory by a plurality of users sharing the processing time of a data processor so that each of them can cause a sequence of instructions to be performed by said processor for the purpose of reading or writing data in memory zones of said memory on the basis of an index whose value identifies a memory zone in said memory, wherein the following sequence of operations is implemented in order in said sequence of instructions:

a) the value of the index is recorded in a first memory register;

b) the contents of the first memory register is summed with an increment value;

c) the result of the summing operation is recorded in a second memory register;

d) the index value is interchanged atomically with the contents of the second memory register;

e) if the contents of the second memory register is identical to the old value of the index, then the content of the first memory register is taken as the current value of the index, otherwise operations a), b), c), d), and e) are performed again.

5,666,547

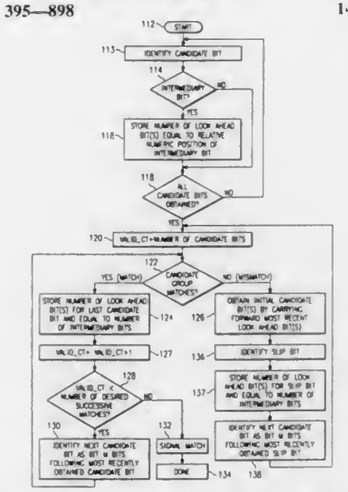
METHOD AND APPARATUS FOR FRAMING A SERIAL DATA STREAM

Gary Lloyd James, Richardson, and Jeremy David Omas, Irving, both of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Sep. 23, 1994, Ser. No. 311,574

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—898 **14 Claims**



11. A method of identifying at least a portion of a framing pattern in a data stream comprising a plurality of sequential bits, the method comprising the steps of:

identifying a set of successive candidate bits, wherein the identified candidate bits are spaced apart from one another and comprise:

a first candidate bit;

a last candidate bit; and

an integer I of intermediary bits between said first candidate bit and said last candidate bit, wherein each of said intermediary bits has a numeric relative bit position between said first candidate bit and said last candidate bit;

identifying a group of look ahead bits corresponding to each of said intermediary bits, wherein each of said groups comprises a number of look ahead bits, wherein for each of said groups corresponding to an intermediary bit, said number of look ahead bits equals in magnitude said numeric relative bit position for the intermediary bit corresponding to said group;

determining whether said first candidate bit, said last candidate bit, and said intermediary bits match at least said portion of the framing pattern; and

wherein said set comprises a first set and, further comprising the steps of:

in response to determining a mismatch in said determining step, further comprising the steps of:

identifying a second set of candidate bits, wherein each of the candidate bits of the second set are spaced apart from one another by a fixed number and comprise:

at least one of said look ahead bits;

a slip bit immediately following said last candidate bit; and

an additional candidate bit following said slip bit by said fixed number; and

determining whether said second set of candidate bits match at least said portion of the framing pattern; and

in response to determining a match in said determining step, further comprising the steps of:

identifying a number of additional look ahead bits corresponding to said last candidate bit, wherein said number of additional look ahead bits equals the predetermined number of intermediary bits;

identifying an additional candidate bit spaced apart from said last candidate bit; and

determining whether said intermediary bits, said last candidate bit, and said additional candidate bit match at least said portion of the framing pattern.

5,666,548

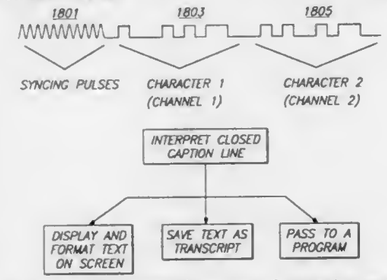
PROCESS OF EXTRACTING AND PROCESSING INFORMATION IN A VERTICAL INTERVAL OF A VIDEO SIGNAL TRANSMITTED OVER A PERSONAL COMPUTER BUS

Dennis L. Grimm, Fremont; Erik A. Gutfeldt, Palo Alto; Gregory M. Millar, Pleasanton, and Terence E. Worley, Fremont, all of Calif., assignors to Radius Inc., Sunnyvale, Calif.

Continuation of Ser. No. 71,390, Jun. 1, 1993, abandoned, which is a division of Ser. No. 537,051, Jun. 12, 1990, abandoned. This application Dec. 20, 1994, Ser. No. 359,946

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—800.01 **3 Claims**



1. A computer-implemented process of extracting and using information contained in a vertical interval of a video signal comprising a plurality of video lines, the video signal being coupled to a data bus of a computer including a computer display, the vertical interval corresponding to a subset of the plurality of video lines, the process commencing during the vertical interval and comprising:

selecting a color calibration portion of said vertical interval associated with a preselected one of said subset of the plurality of video lines;

detecting color calibration information in the color calibration portion;

placing the detected color calibration information on the data bus of the computer; and

adjusting computer display parameters responsive to the color calibration information.

5,666,549

METHOD AND SYSTEM FOR PROCESSING A DOCUMENT TRANSMITTED VIA FACSIMILE IN AN INITIALLY INPUT FORM STORED IN A KNOWLEDGE BASE

Masayuki Tsuchiya, Hiratsuka; Hiroshi Fujise, Yokohama, and Masato Teramoto, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering Co., Ltd., Yokohama, both of Japan

Continuation of Ser. No. 29,061, Mar. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 885,775, May 20, 1992. This application Feb. 9, 1995, Ser. No. 386,182

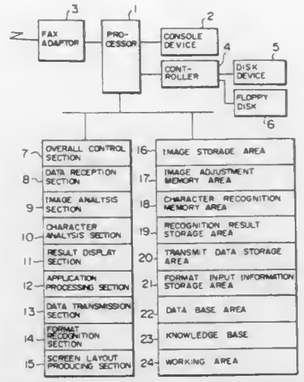
Claims priority, application Japan, Mar. 10, 1992, 4-051310

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—761 **20 Claims**

1. A document processing system connected by a communication line for processing facsimile machine transmitted document form data as image information, by using a computer, comprising:

read means for initially reading form information of a first form which includes a format having a plurality of vertical and horizontal lines;



recognition and storage means, responsive to said read means, for recognizing positions of border patterns in the format of the first form, based on a knowledge base, generating information defining character input areas on which data is to be recorded and storing the recognized positions of border patterns and the generated information,

wherein said recognition and storage means includes:

means for selecting either one of a vertical ruled line and a horizontal ruled line which are outermost in image information of the format of the first form are not crossed with another ruled line and registering information regarding the position of the selected ruled line;

comparing means for comparing the positions of border patterns and the character input areas stored in said recognition and store means with image information of a second form having the same format as the first form and input from a facsimile machine, said second form having data recorded thereon, and outputting a comparison result indicating relative positions of border patterns and character inputs areas of said first form and said second form,

wherein said comparing means includes:

means for determining whether coordinates information for the first form stored in said recognition and storage means exists in the second form,

means responsive to a mismatch of the coordinates information by said determining means for reversing the image information of the second form, and

means for correcting offsets and skews of image information between the first form and the second form by performing parallel translation vertically and horizontally based on information set as a reference line;

character recognition means responsive to said comparison result for recognizing character data in character input areas at positions identified on said second form; and

conversion means for converting the character data recognized by said character recognition means into a code data.

5,666,550

BUS OPERATION CIRCUIT USING CMOS RATIO LOGIC CIRCUITS

Timothy Jon Sulzbach, Chittenden County, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

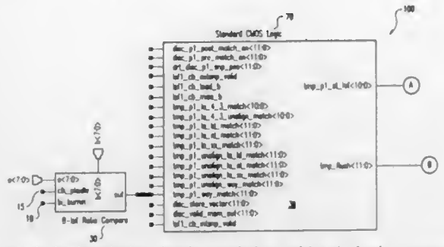
Filed Jun. 7, 1995, Ser. No. 477,680

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.23 **8 Claims**

1. A match bus operation circuit in a superscalar microprocessor capable of out-of-order execution of instructions having first and second busses, comprising:

a ratio logic compare circuit for checking stored instructions and a current instruction for possible conflicts and generating a match bus data indicating matches between said first and second busses;



a ratio logic priority circuit coupled to said ratio logic compare circuit for receiving said match bus data and for generating a priority bus output indicating a first match of said match bus data;

a ratio logic mask circuit coupled to said ratio logic compare circuit for receiving said match bus and generating a mask bus output that flags all instructions after said first match for discarding; and

a ratio logic multiple hit circuit coupled to said ratio logic compare circuit for indicating whether more than one instruction has matched;

wherein said ratio logic compare circuit comprises a logic controller for each bit of said first and second busses, wherein each bit of said first bus is individually compared with each bit of said second bus in the ratio logic compare circuit by the logic controller;

wherein the ratio logic compare circuit is composed of CMOS transistor components, and wherein a CMOS pull-up transistor is compatible with a CMOS pull-down transistor for producing logical 1 and logical 0 states, respectively indicating bus matches and bus mismatches.

5,666,551

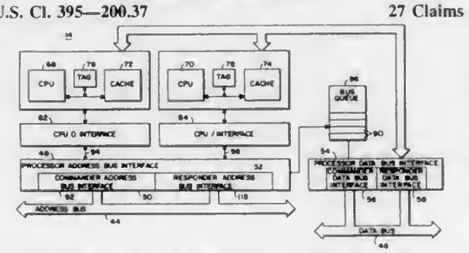
DISTRIBUTED DATA BUS SEQUENCING FOR A SYSTEM BUS WITH SEPARATE ADDRESS AND DATA BUS PROTOCOLS

David M. Fenwick, Chelmsford; Denis J. Foley; Stephen R. Van Doren, both of Shrewsbury; David W. Hartwell, Bocton; Elbert Bloom, Marlboro, and Ricky C. Hetherington, Westboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 270,297, Jun. 30, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,802

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.37 **27 Claims**



27. A bus interface for a node, said node adapted for coupling to a system bus in a computer system, said system bus comprising an address bus and a data bus, said bus interface comprising:

a responder address bus interface comprising:

means for tracking address and command transactions occurring on said address bus, said means for tracking producing a sequence number tag corresponding to each address and command transaction occurring on said address bus;

means for recognizing ones of said tracked address and command transactions for which data transactions are to be initiated by said node;

means for storing said sequence number tags corresponding to said recognized ones of said tracked address and command transactions;

a commander data bus interface comprising:

means for counting the number of data transactions occurring on a data bus;

means for comparing said counted number of data transactions to said stored sequence number tags;

means responsive to said means for comparing for initiating a data transaction on said data bus;

means for driving the sequence number tag corresponding to said recognized address and command transaction for which said data transaction was initiated onto said data bus;

a responder data bus interface comprising:

means for counting data transactions occurring on a data bus;

means for comparing said counted data transactions to sequence number tags driven on said data bus by said commander data bus interface; and

means for indicating an error condition in response to said comparison and in response to the initiation of a data transaction on said data bus by said means for initiating; and

means responsive to said means for initiating for transferring data bus.

5,666,552

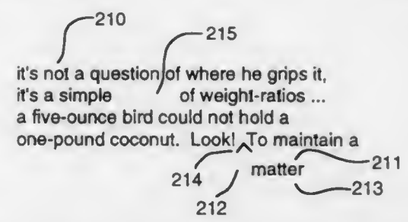
METHOD AND APPARATUS FOR THE MANIPULATION OF TEXT ON A COMPUTER DISPLAY SCREEN

Ann M. Greyson, Sunnyvale; Jeffrey D. Hokit, Mountain View; Marjory Kaptanoglu, San Carlos; Annette M. Wagner, La Honda, and Stephen P. Capps, Redwood City, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 137,375, Oct. 14, 1993, Pat. No. 5,442,742, which is a continuation of Ser. No. 632,318, Dec. 21, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 457,053

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—802 **23 Claims**



1. In an interactive computer-controlled display system having a processor, a memory means, a display device coupled to said processor for visibly displaying text, a cursor control device coupled to said processor for interactively positioning a cursor on said display device, and a signal generation device for signaling an active and an inactive control state, a process for directly manipulating a portion of text available for display on said display device, said process comprising the steps of:

selecting a block of text from a set of available text, at least a portion of the available text displayed on said display device;

dragging said selected block of text from a previous position to a new position relative to said available text, at least a portion of said selected block of text being visible as said selected block of text is dragged, said movement of said selected block of text being responsive to movement of said cursor control device;

displaying an insertion marker on said display device, said insertion marker specifying the new position in said available text where said selected block of text is inserted in an inserting step; and

said step of inserting, inserting said selected block of text into said available text, said selected block of text being inserted at said new position pointed to by the insertion marker and reformatting at least a part of said available text such that the at least one part of the available text is unobscured by the insertion of the selected block of text and to provide continuity between said available text and said selected block of text.

5,666,553

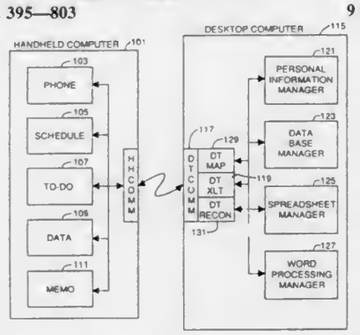
METHOD FOR MAPPING, TRANSLATING, AND DYNAMICALLY RECONCILING DATA BETWEEN DISPARATE COMPUTER PLATFORMS

Keith Crozier, Acton, Mass., assignor to Puma Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 867,167, Apr. 10, 1992, Pat. No. 5,392,390. This application Jul. 22, 1994, Ser. No. 279,201

Int. Cl.[6] G06F *17/00;17/30*

U.S. Cl. 395—803 **9 Claims**



1. A method for a user of a computer to interactively reconcile records of a first and a second database, wherein the record structures of the first and second database are different, the method comprising:

translating records of at least the first database to assist in comparing records of the first and second databases;

choosing corresponding records, one from the first database and one from the second database, based on a comparison of the content of at least one selected field from each record;

comparing the content of at least one additional field from each record to detect differences in content between the records;

using the detected differences in content to decide whether a conflict exists between records;

displaying information representative of the detected differences in content; and

allowing the user to decide between alternatives for resolving the conflict.

5,666,554

MULTI MEDIA PRESENTATION SYSTEM

Eiichiro Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 292,285

Claims priority, application Japan, Aug. 18, 1993, 5-203791

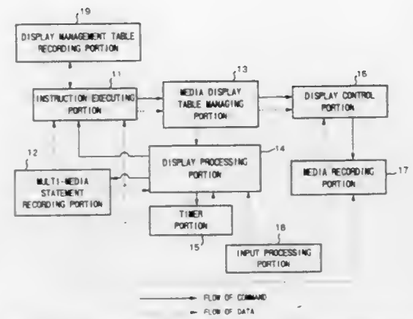
Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—806 **17 Claims**

1. A multi media presentation system comprising;

storage means for storing a multi media statement including a scenario which specifies when an instruction for controlling display of media data in a display region and for controlling variation of display condition of the displayed media data is to be executed by designating a predetermined start condition for said instruction, and at least one of media data to be displayed and storage position information of the media data;

media display table managing means for storing, as a media display table, information relating to the display region of said media data and information relating to the display condition;



instruction executing means for executing said instruction and updating said media display table;

display control means for displaying said media data and varying the display condition of the displayed media data on the basis of the media display table stored in the media display table managing means; and

display processing means for reading said scenario and issuing a command to execute said instruction to said instruction executing means upon occurrence of the predetermined start condition in said scenario,

wherein said scenario specifies as said predetermined start condition at least one of instruction execution timing, a specific user input through an input means, and specific display condition of the media data.

5,666,555

AUDIO OUTPUT METHOD AND APPARATUS IN MULTI-WINDOW SYSTEM

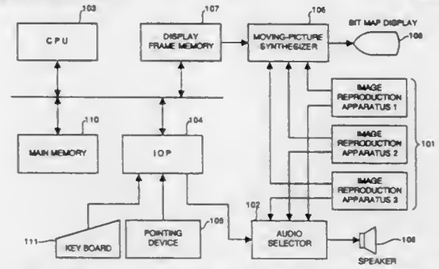
Hiroshi Okazaki, and Tomoaki Kawai, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,736

Claims priority, application Japan, Oct. 22, 1991, 3-273773

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—807 **14 Claims**



1. An audio output apparatus in a multi-window system comprising:

input means for inputting simultaneously a plurality of image information and a plurality of audio information wherein each of the audio information corresponds to each of the image information;

display means for displaying simultaneously a plurality of images based on the plurality of image information input by said input means in different windows respectively on a display screen;

designation means for designating one of the windows on the display screen; and

audio output means for, while the plurality of images are being displayed on the display screen, selecting audio information corresponding to the image information of the window which is designated by said designation means out of the plurality of audio information which are input by said input means and outputting audio based on the selected audio information.

5,666,556

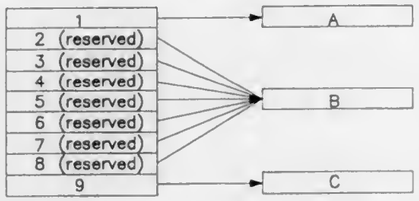
METHOD AND APPARATUS FOR REDIRECTING REGISTER ACCESS REQUESTS WHEREIN THE REGISTER SET IS SEPARATE FROM A CENTRAL PROCESSING UNIT

Narendra Khandekar, and Jasmin Ajanovic, both of Folsom, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 177,094, Dec. 30, 1993. This application Sep. 19, 1996, Ser. No. 710,572

Int. Cl.[6] G06F *12/06*

U.S. Cl. 373—822 5 Claims



1. A method of controlling access requests in a register address space comprising the steps of:

(a) defining an address space containing a plurality of register addresses;

(b) providing a physical register set having a plurality of members, said plurality of members of the register set being fewer than the plurality of register addresses, wherein the physical register set is in a peripheral unit separate from a central processing unit;

(c) associating, on a one-to-one basis, a first subset of register addresses with a corresponding first subset of the register set such that an access request to any one of the first subset of register addresses is directed to the corresponding associated register;

(d) associating a second subset of register addresses with a single member of the register set which is not a member of the first subset of the register set such that an access request to any one of the second subset of register addresses is directed to said single member of the register set.

5,666,557

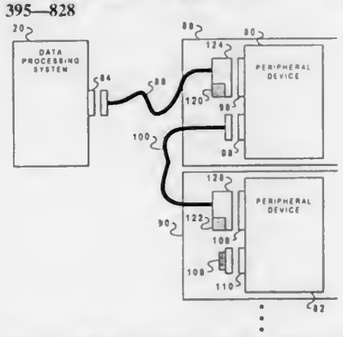
METHOD AND APPARATUS FOR AUTOMATICALLY ASSIGNING DEVICE IDENTIFIERS ON A PARALLEL DATA BUS

Bruce Michael Cassidy, 898 Ponce DeLeon Dr., Boca Raton, Fla. 33432, and S. M. Rezaul Islam, 3380 Jaywood Ter., Apt. 226, Boca Raton, Fla. 33431

Continuation of Ser. No. 260,640, Jun. 16, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 711,711

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—828 6 Claims



1. A method in a data processing system capable of connecting to peripheral devices for automatically assigning a device identifier to said connected peripheral devices, said method comprising the steps of:

providing a plurality of physical locations for receiving peripheral devices;

providing connectors at each of said plurality of physical locations for coupling said peripheral devices to said data processing system;

associating one of a plurality of connector identifiers with each of said connectors;

associating each of said plurality of physical locations with one of said plurality of connector identifiers;

connecting each of said peripheral devices to one of said connectors, wherein said peripheral devices are coupled to said data processing system;

within each of said peripheral devices, reading one of said plurality of connector identifiers associated with said one of said connectors from said one of said connectors connected to each of said peripheral devices; and

automatically setting said device identifier within each of said peripheral devices in response to reading said one of said plurality of connector identifiers, said device identifier being associated with said one of said plurality of connector identifiers associated with said one of said plurality of connectors, wherein said device identifier is associated with said physical location for each of said peripheral devices.

5,666,558

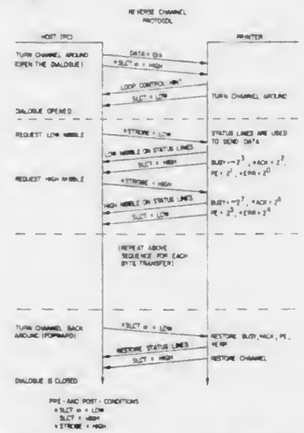
BIDIRECTIONAL PARALLEL PROTOCOL HAVING COMPUTER INDICATES TO THE PRINTER THE ACCEPTABLE DATA FORMAT FOR DATA TRANSFER

Jeff D. Pipkins, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 338,885, Nov. 14, 1994, Pat. No. 5,507,003, which is a continuation of Ser. No. 750,625, Aug. 27, 1991, abandoned. This application Jan. 3, 1996, Ser. No. 582,524

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—851 9 Claims



1. A method of providing a reverse channel communication capability between a computer and a printer over a parallel interface, said method comprising the steps of:

a) providing, by said computer to said printer, a communication mode signal, said communication mode signal is for placing said printer in a communication mode;

b) providing, by said computer to said printer, a first signal indicating said communication mode signal is ready to be read;

c) providing, by said printer to said computer, a second signal indicating that said printer will provide a computer data in the communication mode indicated in step a);

d) providing, by said printer to said computer, a ready signal indicating that said second signal is ready to be read;

e) providing, by said computer to said printer, a third signal indicating that said computer is ready to receive a first data from said printer;

f) providing, by said printer to said computer, said first data;

g) providing, by said printer to said computer, a fourth signal indicating that said first data is ready to be read;

h) providing, by said computer to said printer, a fifth signal indicating that said computer is ready to receive more data;

i) providing, by said printer to said computer, a second data;

j) providing, by said printer to said computer, a sixth signal indicating that said second data is ready to be read.

5,666,559

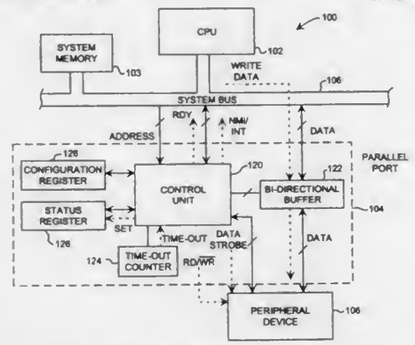
FAIL-SAFE COMMUNICATION ABORT MECHANISM FOR PARALLEL PORTS WITH SELECTABLE NMI OR PARALLEL PORT INTERRUPT

Michael T. Wisor, and Scott C. Johnson, both of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Continuation of Ser. No. 223,643, Apr. 6, 1994, abandoned. This application Oct. 9, 1996, Ser. No. 727,287

Int. Cl.[6] G06F *11/00;13/00;13/42*

U.S. Cl. 395—852 12 Claims



1. A computer system comprising:

a processing unit;

a local bus coupled to said processing unit;

a peripheral bus;

a peripheral bus bridge coupled to said local bus and said peripheral bus;

a peripheral device; and

a parallel port circuit coupled to said peripheral bus and coupled to said peripheral device, wherein said parallel port circuit includes:

a data buffer configured to receive write data from said peripheral bus of said computer system;

a control unit coupled to said data buffer and configured to cause said write data to be latched within said data buffer in response to a write cycle to said parallel port executed by said processing unit, wherein said control unit is further configured to generate a handshake signal to said peripheral device to indicate that said write data is contained by said data buffer;

a time-out counter coupled to said control unit and configured to count a predetermined time period following said assertion of said handshake signal;

a status register coupled to said control unit and including an error bit, wherein said control unit is configured to set said error bit if said peripheral device fails to assert an acknowledge signal indicating receipt of said write data before an expiration of said predetermined time period; and

a configuration register coupled to said control unit, wherein said configuration register is configured to store a configuration value to control whether a non-maskable interrupt signal or a parallel port interrupt signal is asserted in response to said expiration of said predetermined time period;

wherein, in a first mode of operation set by said configuration value stored in said configuration register, if said peripheral device fails to assert said acknowledge signal indicating receipt of said write data within said predetermined time period, said control unit initiates an abort cycle on said peripheral bus and asserts said non-maskable interrupt signal; and

wherein, in a second mode of operation set by said configuration value in said configuration register, if said peripheral device fails to assert said acknowledge signal indicating receipt of said write data within said predetermined time period, said control unit releases said processing unit from said write cycle and asserts said parallel port interrupt signal.

5,666,560

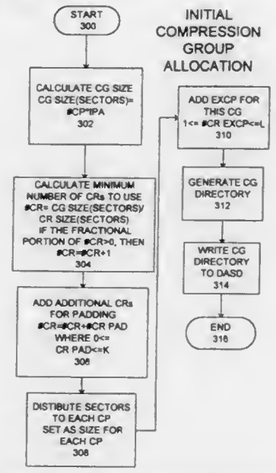
STORAGE METHOD AND HIERARCHICAL PADDING STRUCTURE FOR DIRECT ACCESS STORAGE DEVICE (DASD) DATA COMPRESSION

Daniel Frank Moertl; John Douglas Stevens; Gene Steven Van Grinsven, and Bruce Marshall Walk, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1995, Ser. No. 510,804

Int. Cl.[6] G06F *12/02;12/08*

U.S. Cl. 395—888 24 Claims



1. A data compression hierarchical padding structure for a computer readable direct access storage device (DASD) using fixed block architecture (FBA) comprising:

storage, wherein said storage contains at least one compression group;

each compression group having a fixed logical size including a selected number of compressed data pages with an initial page allocation of a number of sectors;

each compression group having a selected minimum page allocation defining a minimum number of sectors allocated for each logical compressed data page; and

each compression group having a selected number of additional padding sectors; said padding sectors being distributed to said selected number of compressed data pages.

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5,666,561

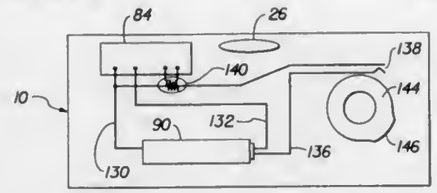
ONE-TIME-USE CAMERA WITH HEAT DISABLING MECHANISM

Stanley Ward Stephenson, III, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 419,335, Apr. 10, 1995, Pat. No. 5,563,669. This application May 17, 1996, Ser. No. 650,872

Int. Cl.[6] G03B *17/00;17/36*

U.S. Cl. 396—6 I Claim



1. A one-time-use camera comprising means for rendering a critical component of the camera ineffective after the last available frame of a filmstrip in the camera has been exposed in order to prevent the camera from being reused without replacement of the critical component, is characterized in that:

said critical component includes a battery;

a frame counter determines that the last available frame has been exposed; and

said means drains said battery to prevent its reuse after said frame counter determines that the last available frame has been exposed.

5,666,562

AUTOMATIC FOCUSING SYSTEM

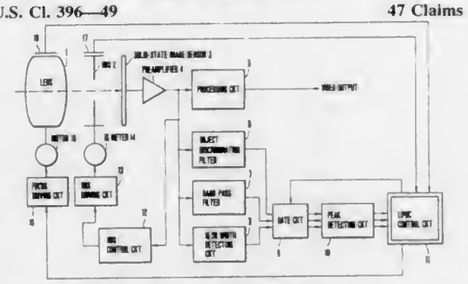
Kitahiro Kaneda, and Naoya Kaneda, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 269,639, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 147,900, Nov. 4, 1993, abandoned, which is a continuation of Ser. No. 47,880, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 967,966, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 580,195, Sep. 10, 1990, abandoned. This application Nov. 27, 1995, Ser. No. 562,782

Claims priority, application Japan, Sep. 20, 1989, 1-245596

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—49 47 Claims



1. An automatic focusing system comprising:

a) detecting means for detecting a plurality of information including information which varies with the state of focus;

b) computing means, using a fuzzy inference, arranged to substitute said plurality of detected information output from said detecting means and information different from said information output from said detecting means for a predetermined input membership function and to compute information relative to a degree to which said plurality of detected information conform with said predetermined input membership function and to substitute said information relative to the degree for a predetermined output membership function according to a predetermined rule to output control information for controlling the state of focus;

c) setting changing means for changing the setting of said input or output membership function on the basis of the state of focus; and

d) focus adjusting means for adjusting focus on the basis of said control information output from said computing means.

5,666,563

CAMERA HAVING HAND TREMOR CORRECTION MECHANISM

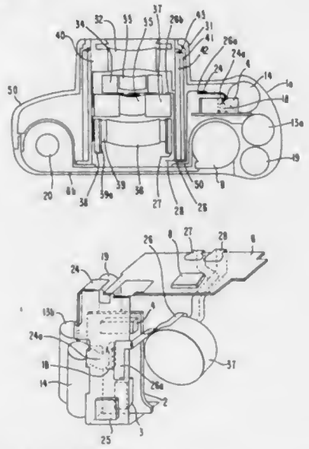
Shuji Iijima, Yokohama; Hidenori Miyamoto, Urayasu; Isao Soshi, Tokyo; Minoru Kato; Junichi Omi, both of Kawasaki, and Hiroshi Wakabayashi, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 12, 1994, Ser. No. 273,838

Claims priority, application Japan, Jul. 12, 1993, 5-171851; Aug. 26, 1993, 5-234150

Int. Cl.[6] G03B *5/00*

U.S. Cl. 396—53 11 Claims



1. A camera comprising:

a photographic lens which has an external periphery and moves along the optical axis of the camera;

a flexible printed circuit board;

a vibration detection unit which detects camera vibration and produces a corresponding output signal;

a vibration correction mechanism, coupled to the external periphery of the photographic lens and electrically connected to the vibration detection unit via the flexible printed circuit board, which receives the output signal of the vibration detection unit via the flexible printed circuit board and compensates for the vibration detected by the vibration detection unit.

5,666,564

ZOOM FLASH WITH WAVE-LENS

Richard Edmund Albrecht, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1996, Ser. No. 612,990

Int. Cl.[6] G03B *15/02;15/06*

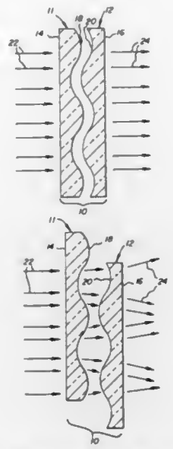
U.S. Cl. 396—62 7 Claims

1. A photographic flash apparatus, comprising:

a) a flash robe for producing a flash of light;

b) a reflector associated with the flash tube for concentrating the light produced by the flash tube into a beam having a particular scene coverage angle; and

c) an adjustable wave-lens device positioned in the beam to adjust the scene coverage angle of the beam, the adjustable wave-lens device including first and second wave-lens elements having wave pattern surfaces such that in one relative position the power of the first wave lens element is roughly canceled out by the power of the second wave lens element and in a second relative position displaced from the first position in a direction perpendicular to the beam, the optical power of the two wave pattern surfaces is added together, and means for displacing one of the wave-lens elements with respect to the other to vary the optical power of the adjustable wave-lens device, thereby adjusting the scene coverage angle of the beam.



5,666,565

FOCAL LENGTH VARYING DEVICE WHICH AVOIDS ERRORS DUE TO MOLD PARTING LINES

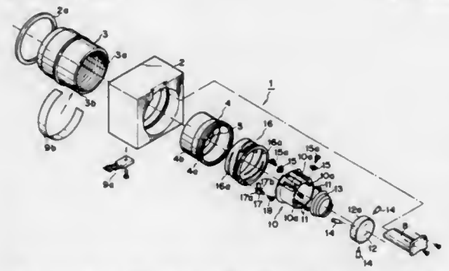
Hiroshi Wakabayashi, Yokohama, and Minoru Kato, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 302,478, Sep. 12, 1994, abandoned, which is a continuation of Ser. No. 918,693, Jul. 27, 1992, abandoned. This application Apr. 2, 1996, Ser. No. 626,691

Claims priority, application Japan, Jul. 30, 1991, 3-212618

Int. Cl.[6] G02B *15/14*

U.S. Cl. 396—79 14 Claims



10. A device for varying the focal length of a phototaking optical system, comprising:

a cam member having a cam portion;

a molded plastic guide member having a guide portion with a parting line;

a driven member provided in a part of said phototaking optical system and maintained in contact with said cam portion and said guide portion, said driven member being moved in response to relative movement of said cam member and said guide member;

a drive unit which causes said relative movement of said cam member and said guide member, thereby continuously varying the focal length of said phototaking optical system between a telephoto end position and a wide angle end position;

and

a control unit which energizes and de-energizes said drive unit and which controls said drive unit so as to prevent said driven member from stopping in contact with said parting line.

5,666,566

CAMERA HAVING AN AUTOMATIC FOCUS SYSTEM

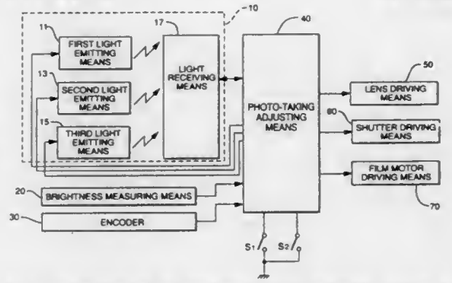
Bon-jeng Gu, and Jin-ki Lee, both of Kyeongsangnam-do, Rep. of Korea, assignors to Samsung Aerospace Industries, Ltd., Kyeongsangnam, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 477,516

Claims priority, application Rep. of Korea, Jun. 10, 1994, 94-13110

Int. Cl.[6] G03B *17/00;3/10*

U.S. Cl. 396—80 10 Claims



8. A camera having an automatic focus adjusting system for focusing a lens on an object to be photographed, comprising:

means for measuring at least three discrete distances between the object and the camera;

means for calculating the differences between each measured distance;

means for calculating a focus step for each measured distance, each focus step being dependant upon the measured distance and the focal length of the lens; and

means for determining a focus position of the lens based upon the measured distances, the calculated differences, and the calculated focus steps.

5,666,567

IMAGE SENSOR WITH ACCUMULATION TIME OF ELECTRIC CHARGES DETERMINED BY SUBJECT IMAGE SIGNALS

Yosuke Kusaka, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,260

Claims priority, application Japan, Jun. 18, 1993, 5-147195

Int. Cl.[6] G03B *3/00;13/18*

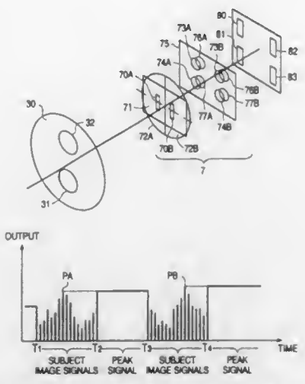
U.S. Cl. 396—96 17 Claims

1. A focus detection device which detects a focus condition of a main optical system, comprising:

a charge coupled type light receiving unit which includes a light receiving element that accumulates electric charges over an electric charge accumulation time, the light receiving unit outputting a charge signal having a characteristic value and corresponding to the accumulated electric charges;

a characteristic value detection unit which receives the charge signal from the light receiving unit, detects the characteristic

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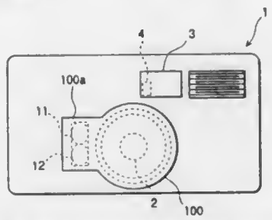


value of the charge signal and outputs a characteristic signal corresponding to the characteristic value;

a computational unit which alternately receives the charge signal and the characteristic signal for computing the focus condition of the main optical system based on the charge signal and the characteristic signal without continuously receiving the charge signal; and

an accumulation control unit which controls the electric charge accumulation time of the light receiving element based on the characteristic signal.

5,666,568
CAMERA
Tatsuo Saito, and Shigenori Goto, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan
Filed Oct. 8, 1996, Ser. No. 727,005
Claims priority, application Japan, Oct. 13, 1995, 7-265739
Int. Cl.[6] G03B *13/36;17/00*
U.S. Cl. 396—100 **5 Claims**



1. A camera having a photographing optical system and a finder optical system for indicating a range of a picture plane, comprising:

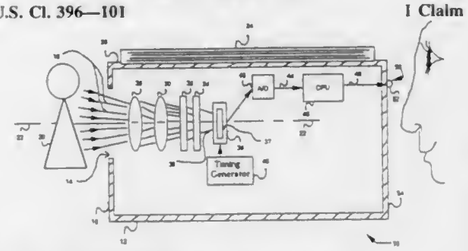
distance measuring means of a passive method, having a first light receiving portion provided with a photosensor array, for measuring a distance to a subject, based on a phase difference between two optical images obtained by the first light receiving portion;

photometry means, having a second light receiving portion for detecting light incident thereto, for determining a luminance of the external field, based on a detection result of the second light receiving portion;

comparing means for comparing a luminance level obtained from a detection result by said first light receiving portion with a luminance level obtained by said second light receiving portion; and

determining means for determining that a lens cap is mounted on a taking lens when a result of comparison by said comparing means is that a difference between said two luminance levels is greater than a predetermined level.

5,666,569
SYSTEM AND METHOD FOR DETECTING AND INDICATING PROPER FOCAL DISTANCE IN A FIXED LENS CAMERA
Scott F. Fullam, Santa Clara, and Eric C. Anderson, San Jose, both of Calif., assignors to Flashpoint Technology, Inc., San Jose, Calif.
Filed Aug. 25, 1994, Ser. No. 296,354
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—101 **1 Claim**



1. A camera comprising:

a fixed focus lens disposed along an optical axis;

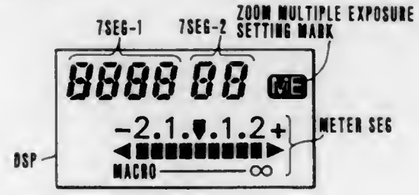
an image sensor optically coupled to the lens for receiving image data;

a processor coupled to the image sensor for analyzing the received image data to determine a relative focus of the received image data based on frequency components of the image data;

an infrared filter disposed between the lens and the image sensor, coaxial with the optical axis, for blocking infrared light from passing from the lens to the image sensor; and

a low pass filter disposed between the infrared filter and the image sensor, coaxial with the optical axis.

5,666,570
CAMERA
Toshifumi Ohsawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 286,802, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 27,289, Mar. 4, 1993, abandoned. This application Oct. 10, 1996, Ser. No. 729,075
Claims priority, application Japan, Mar. 6, 1992, 4-082986
Int. Cl.[6] G03B *17/18*
U.S. Cl. 396—147 **12 Claims**



1. A camera comprising:

a lens optical system including a focusing lens;

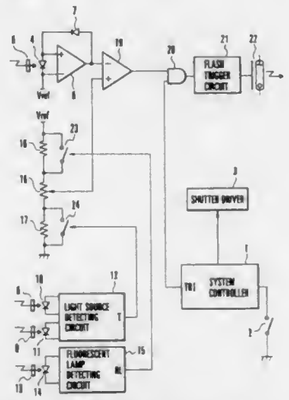
position detecting means for detecting a position of said focusing lens;

computing means for calculating a depth relative to a focal plane from an aperture value which is determined;

converting means for converting said depth relative to said focal plane into a depth-of-field expressed as an absolute value, on the basis of information indicative of said position of said focusing lens detected by said position detecting means and a focal length relative to said lens optical system; and

electrical display means for displaying said depth-of-field, said electrical display means displaying an absolute value of a closest-distance end to said depth-of-field and an absolute value of an infinity end of said depth-of-field, wherein said electrical display means displays said information by commonly using display segments for displaying information changing exposure value.

5,666,571
AUTOMATIC EMISSION DEVICE SUITABLE FOR USE AS LIGHT SOURCE, SUCH AS FLASH UNIT
Koichi Matsumura, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 20, 1994, Ser. No. 230,493
Claims priority, application Japan, Apr. 22, 1993, 5-117636
Int. Cl.[6] G03B *7/00*
U.S. Cl. 396—165 **46 Claims**



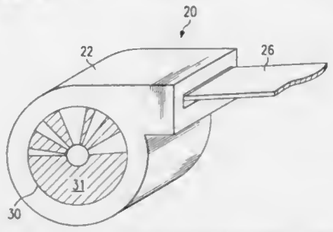
1. An automatic emission device comprising:

a) light-source discriminating means for discriminating a kind of an artificial light source by examining an ambient light;

b) a control circuit for detecting a characteristic value of the ambient light and, if the detected characteristic value is a predetermined value, enabling operation of an emission light source; and

c) setting means for adjusting the predetermined value on the basis of which said control means enables the operation of the emission light source, in accordance with a kind of the artificial light source discriminated by said light-source discriminating means.

5,666,572
CAMERA
Kenji Tsuji, Kashiwara; Yasuaki Serita, Sakai; Toshihito Kido, Matsubara, and Hiroyuki Okada, Sakai, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Aug. 4, 1995, Ser. No. 511,523
Claims priority, application Japan, Aug. 9, 1994, 6-187085
Int. Cl.[6] G03B *7/00;7/26*
U.S. Cl. 396—207 **5 Claims**



1. A camera, which uses a film cartridge including a film wound around a spool equipped with a bar code disk that rotates with the spool as a single unit and constructed so that an exposure status of the film is indicated by an angle of the spool relative to a prescribed position when the rotation stops, said camera comprising:

a drive mechanism that drives said spool of the film cartridge mounted in the camera;

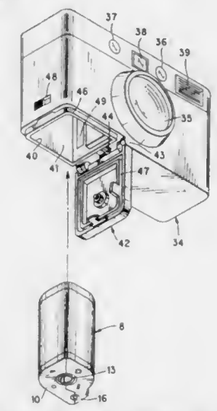
a detector that detects a pattern of said bar code disk while said spool is rotating;

a determination circuit that determines the exposure status of the film based on the pattern information detected by said detector;

a memory that holds in memory the fact that the process of determining the exposure status of the film mounted in the camera is underway; and

a setting device that, when the fact of said determining process being underway is held in said memory upon installation of a battery, sets the spool to the position which indicates the film is exposed.

5,666,573
CAMERA WITH REWRITABLE MEMORY
Kiyotaka Kobayashi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, and Fuji Photo Optical Co., Ltd., Saitama, both of Japan
Filed Oct. 7, 1996, Ser. No. 729,688
Claims priority, application Japan, Oct. 9, 1995, 7-261777
Int. Cl.[6] G03B *7/24*
U.S. Cl. 396—207 **6 Claims**



1. A camera with a cassette chamber for accommodating a photographic film cassette, the photographic film cassette having a cassette shell, a spool rotatively housed in the cassette shell, a photographic film wound about the spool, a bar code disk mounted on one end of the spool, and a window formed in a first end wall for exposing a bar code on the bar code disk, and the cassette chamber having an entrance via which the photographic film cassette is inserted in the axial direction of the spool and a first wall facing the first end wall, the photographic film being advanced by rotation of the spool outside of the cassette, the camera comprising:

a circuit board disposed at the outside of the first wall;

a photosensor mounted on said circuit board for optically reading the bar code via the window;

a memory storing plural sets of photographing data;

a plurality of contacts formed on said circuit board, said contacts to which an external apparatus for data read/write of said memory is connected; and

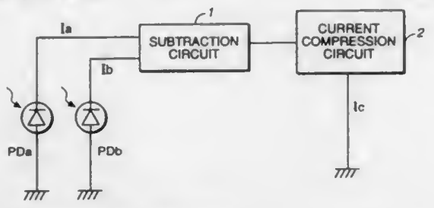
at least one opening formed in said first wall for exposing said photosensor and said plurality of contacts in the cassette chamber.

5,666,574

PHOTO-DETECTION METHODS AND APPARATUS

Tadayoshi Ogawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Japan

Filed Jul. 10, 1996, Ser. No. 678,641
Claims priority, application Japan, Jul. 31, 1995, 7-194801
Int. Cl.[6] G01J *1/42*; G03B *7/08*
U.S. Cl. 396—233 5 Claims



3. A photo-detector comprising:

a pair of photo-sensors consisting of a first photo-sensor and a second photo-sensor, said first photo-sensor having higher spectroscopic sensitivity than said second photo-sensor within a specified range of wavelength, said second photo-sensor having spectroscopic sensitivity over a wider range of wavelength than said specified range, photo-sensitivity characteristics of said first and second photo-sensors being approximately the same against external background light;

a subtraction circuit for outputting a difference current equal to the difference between currents generated by said pair of photo-sensors; and

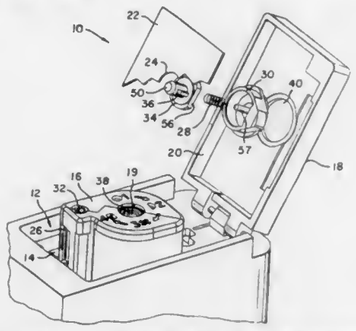
a compression circuit for compressing said difference current by a specified ratio to obtain a compressed current and outputting said compressed current.

5,666,575

CARTRIDGE STATUS INDICATOR

Stanley Ward Stephenson, III, Spencerport, and Tom Michael Seamans, Corfu, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1996, Ser. No. 608,426
Int. Cl.[6] G03B *17/36;17/26*
U.S. Cl. 396—284 22 Claims



1. A camera, for use with a photographic film cartridge, said camera comprising:

a chamber for containing said film cartridge, said chamber having an interior recess sized for receiving said film cartridge;

a door for lighttightly sealing said chamber when said door is closed;

means for advancing and rewinding said photographic film; and

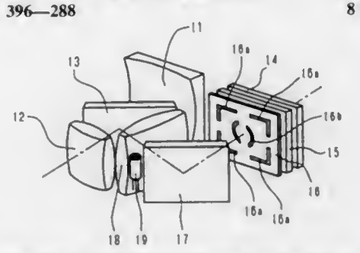
a status indicator operatively connected to said film cartridge contained within said chamber, said status indicator being mounted for rotation relative to said door, said status indicator having a display portion visible when said door is closed.

5,666,576

BRIGHT FRAME VIEW-FINDER OF NATURAL LIGHTING TYPE ADDITIONALLY PROVIDED WITH LIGHT SOURCE FOR SECONDARY DIFFUSING SURFACES

Katsuhiro Ohtake, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Aug. 24, 1994, Ser. No. 295,262
Claims priority, application Japan, Aug. 26, 1993, 5-234179
Int. Cl.[6] G03B *13/02*
U.S. Cl. 396—288 8 Claims



1. A bright frame view-finder of natural lighting type, comprising:

a view-finder optical system;

a field frame plate formed with a field frame, said field frame plate having a light incident surface being lighted by outdoor daylight or ambient light so that light images of said field frame may be introduced into said view-finder optical system so as to be laid upon an object image to be photographed;

diffusing means provided adjacent said light incident surface of said field frame plate, said diffusing means being transmissive; and

lighting means provided so as to emit lighting rays onto said diffusing means;

wherein said diffusing means is lighted by said lighting means so as to introduce the light image of the field frame into said view-finder optical system when the outdoor daylight or ambient light is not sufficiently intense; and

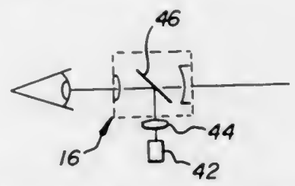
wherein said diffusing means is formed with a reflection-type hologram and said light means is disposed so as to illuminate said reflection-type hologram with light passing through said field frame plate.

5,666,577

SYSTEM FOR SWITCHING POINTING INDICES IN LASER AIMED CAMERAS

Dale Frederick McIntyre, Honeoye Falls, N.Y., and Richard Edmund Albrecht, Durham, N.C., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 20, 1996, Ser. No. 603,822
Int. Cl.[6] G03B *29/00;13/02*
U.S. Cl. 396—296 5 Claims



1. In a camera having, a viewfinder, a microcontroller, and a laser pointer incorporated therein for providing an externally visible pointer for aiding in the pointing of the camera the improvement comprising:

means internal to the camera for forming an internal image of the visible pointer, viewable only in the viewfinder; and

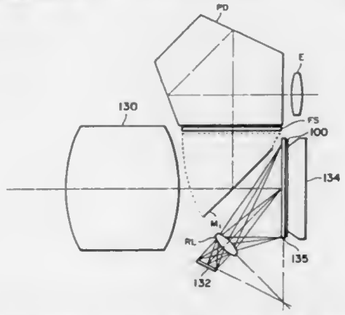
means for controlling the presence of the internal image in the viewfinder as a function of ambient light level.

5,666,578

CAMERA AND PRINT INFORMATION CONTROL APPARATUS

Yoshiro Oikawa, Tokyo; Masaaki Kusano, Kawasaki; Hideaki Shimomura; Naotaka Shimamura, both of Yokohama, and Kiyoshi Numazaki, Kawasaki, all of Japan, assignors to Nikon Corporation, Japan

Continuation of Ser. No. 504,720, Jul. 20, 1995, abandoned, which is a division of Ser. No. 234,524, Apr. 28, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,697
Claims priority, application Japan, Apr. 28, 1993, 5-102126; Oct. 1, 1993, 5-247166; Oct. 12, 1993, 5-254556; Nov. 8, 1993, 5-278348
Int. Cl.[6] G03B *17/24;29/00*
U.S. Cl. 396—319 5 Claims



1. A camera which records a subject image as an optical image in a silver salt medium layer provided on one surface of a photographic film strip and which also records the subject image as magnetic information in a magnetic layer provided on the other surface of the photographic film strip, comprising:

a first reflector set in an optical path between a taking lens and said photographic film strip to be exposed, for reflecting sad subject image incident thereinto through said taking lens out of the optical path, said first reflector being displaced to move out of the optical path upon exposure;

an optical system for guiding said subject image reflected by said first reflector to a finder;

a shutter curtain set in the optical path between said taking lens and said photographic film strip to be exposed, having a slit for letting part of said subject image incident through said taking lens pass, and being displaced across said optical path, said shutter curtain having a second reflector thereon, and said second reflector reflecting said subject image out of the optical path and moving with movement of the slit during the exposure;

an image pickup element having an image pickup surface for receiving said subject image reflected by said second reflector, for converting said subject image focused on the image pickup surface into electric image data;

feed means for feeding said photographic film strip; and

a magnetic head set to face a feed path of said photographic film strip, for writing said image data converted by said image pickup element as the magnetic information in said magnetic layer on said photographic film strip;

wherein said first reflector is located in said optical path until immediately before exposure, while reflecting said subject image toward said optical system;

wherein said first reflector is displaced out of said optical path upon exposure to let said subject image pass, and said second reflector being displaced together with said shutter curtain reflects said subject image toward the image pickup surface of said image pickup element; and

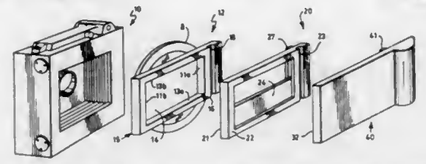
wherein said magnetic head writes said image data obtained by said image pickup element in said magnetic layer on the photographic film strip while said feed means is feeding said photographic film strip.

5,666,579

CAMERA BACK WHICH ALLOWS TWO DISCRETE IMAGES TO BE SEQUENTIALLY EXPOSED ONTO SINGLE FILM UNIT

Paul A. Camello, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1996, Ser. No. 638,503
Int. Cl.[6] G03B *1/42*
U.S. Cl. 396—323 3 Claims



3. A camera back for allowing sequential exposure in a camera of two images onto a single sheet of film, said camera back comprising:

a rotating back having a rotating ring and a frame connected thereto and connectably rotatable about said rotating ring, said frame having a frame opening defined by a first surface, a second surface, a third surface and a fourth surface, said frame having a front surface including a frame slot;

an adapter plate having an adapter plate opening corresponding to said frame opening and defined by a bottom surface, a top surface, and two side surfaces each said side surface having a separate guiding slot positioned parallel to a direction of the force of gravity for captively guiding a dark slide driven by the force of gravity to a first image taking position adjacent to said bottom surface when said camera back is in an initial position and to a second image taking position adjacent to said top surface when said camera back is rotated 180° from the initial position, said dark slide blocking light from passing through a lower half of the adapter plate opening in both the first and image taking second positions, said adapter plate having a first surface including an adapter plate rib engageable with said frame slot for connecting said adapter plate and said frame, and a second surface having an adapter plate slot; and

a film back having a forward surface including a film back rib engageable with said adapter plate slot for connecting said film back and said adapter plate, said film back containing said single sheet of film to be exposed by light passing through the corresponding frame and adapter plate openings.

5,666,580

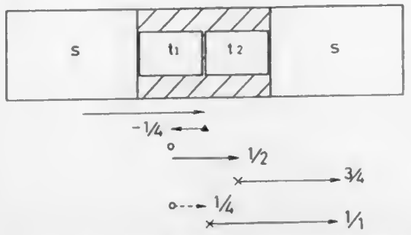
PSEUDO TELEPHOTOGRAPHIC CAMERA AND CAMERA HAVING PSEUDO TELEPHOTOGRAPHIC MODE

Takayuki Ito; Yukio Takaoka, and Kazuki Yazawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,450
Claims priority, application Japan, Sep. 30, 1994, 6-237524; Feb. 2, 1995, 7-015783
Int. Cl.[6] G03B *35/00;1/00*
U.S. Cl. 396—335 20 Claims

1. A pseudo telephotographic camera comprising:

means for defining two pseudo telephotographic frames which together substantially define a panoramic size frame, one of said two pseudo telephotographic frames being formed on a right half of the panoramic size frame, and another of said two pseudo telephotographic frames being formed on a left side of the panoramic size frame, the standard size frame being a



reference sized frame and having predetermined major and minor dimensions, the panoramic size frame having major dimensions equal to the major dimensions of the standard size frame and minor dimensions smaller than the minor dimensions of the standard size frame, the telephotographic frames formed on the right and left halves of the panoramic size frame spaced along the major dimension of the panoramic size frame; and

means for photographing pictures in each of said two pseudo telephotographic frames independently.

5,666,581

FILM INITIAL-ADVANCE APPARATUS FOR CAMERA

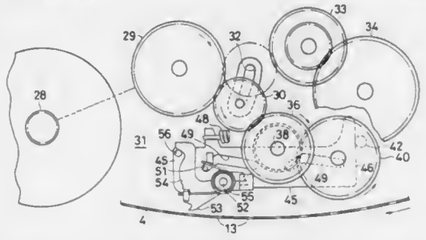
Takashi Kamoda, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Mar. 25, 1996, Ser. No. 620,817

Claims priority, application Japan, Jun. 8, 1995, 7-166850

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—415 **3 Claims**



1. A film initial-advance apparatus for a camera comprising:

a feeding claw which engages a perforation of a film for the initial advance thereof;

a reciprocating driving member for holding said feeding claw and reciprocating said feeding claw in the direction of film feeding;

a gear train provided on a supporting member so as to feed said film;

a driving gear connected to said gear train so as to drive said reciprocating driving member;

a transducing mechanism for transducing the rotational driving force of said driving gear to the reciprocating movement of said reciprocating driving member;

an "L" shaped cam groove formed in said reciprocating driving member;

a pin provided on said supporting member so as to engage said cam groove; and

wherein said feeding claw is advanced toward and withdrawn from a perforation of said film at the time of said reciprocating movement of said reciprocating driving member.

5,666,582

CAMERA CASING STRUCTURE

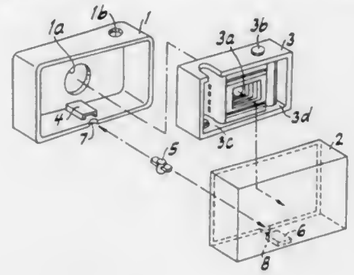
Koji Nakai, Kamiina-gun; Hiroyuki Sakayauchi, Ina, and Hiromi Ito, Kamiina-gun, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 630,809

Claims priority, application Japan, May 12, 1995, 7-114940

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—419 **22 Claims**



1. A camera comprising:

a first structural member;

a second structural member, the second structural member forming a camera casing in combination with the first structural member; and

a tripod connecting member being separate from the first and second structural members and having a tripod connecting screw portion,

wherein the first and second structural members comprise a connecting structure for nipping the tripod connecting member with the first and second structural members.

5,666,583

CAMERA HAVING AN AUTOMATICALLY EJECTABLE CARTRIDGE

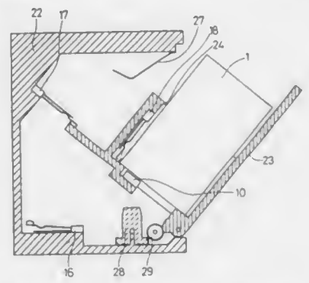
Nobuharu Murashima, Nara, and Takuya Ueno, Hashimoto, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 29, 1994, Ser. No. 296,889

Claims priority, application Japan, Aug. 30, 1993, 5-213804

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—439 **14 Claims**



1. An apparatus using a film cartridge, comprising:

a space provided in a body of the apparatus for housing the film cartridge;

an ejector which ejects the film cartridge from the film cartridge housing space to a position outside of the film cartridge housing space;

a film rewinder which rewinds a film into the film cartridge; and

a controller which activates the ejector in response to a completion of rewinding performed by the film rewinder.

5,666,584

INFORMATION OUTPUT APPARATUS AND METHOD UTILIZING MULTI-FUNCTION MODE INDICATOR

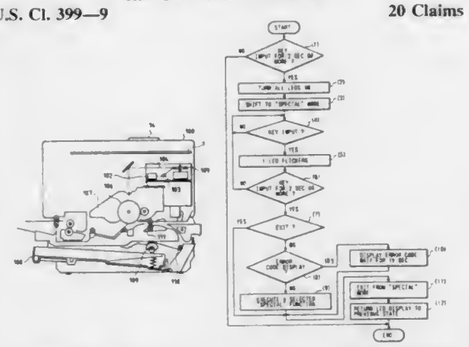
Masamichi Akashi, Yokohama; Satoshi Nagata, Tama; Yutaka Murakami; Yoichi Toyokura, both of Yokohama; Yukio Kanakubo, Kasukabe; Hiroharu Takahashi, Yokohama, and Masami Kashiwazaki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1994, Ser. No. 224,665

Claims priority, application Japan, Apr. 7, 1993, 5-103707; Jun. 25, 1993, 5-177620; Dec. 27, 1993, 5-333511; Apr. 4, 1994, 6-066047

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—9 **20 Claims**



1. An operation panel provided on a data processing apparatus, said operation panel comprising:

informing means, including a plurality of light emitting means, for informing a plurality of different states of operation of the data processing apparatus by emitting light, with the different states being distinguished from each other by different combinations of light emitted by said plurality of light emitting means;

designating means for designating one of a plurality of operation modes; and

control means for allocating a plurality of types of functions to said informing means on the basis of the one mode designated by said designating means.

5,666,585

MAINTENANCE SUPERVISING SYSTEM FOR AN IMAGE-REPRODUCING SYSTEM

Jiro Nagira; Yuji Yamashita; Yasuhiro Hashimoto, and Fumio Aizawa, all of Osaka, Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Nov. 27, 1995, Ser. No. 563,251

Claims priority, application Japan, Nov. 28, 1994, 6-293378

Int. Cl.[6] G03G *21/00*

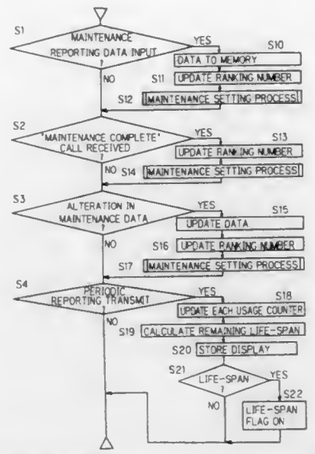
U.S. Cl. 399—10 **9 Claims**

7. An image-reproducing system maintenance supervising system, comprising:

a controller, said controller having a microprocessor, an input device, a data storage means, and an output device all connected to said microprocessor, said controller connected to at least one image-reproducing device;

said data storage means configured to store a list of routine maintenance jobs for each one of a plurality of serviceable components of said image-reproducing device, said list of routine maintenance jobs arranged according to a ranking number list, each ranking number in said ranking number list corresponding to one of a plurality of maintenance intervals in which routine maintenance is to occur on each of said components or said image-reproducing device;

said data storage means further configured to store maintenance reporting data on performed routine and non-routine maintenance conducted on corresponding ones of said components of said image-reproducing device, said maintenance reporting data including information on type of maintenance performed and job content, said maintenance reporting data input via said input device;



said microprocessor being configured to determine said ranking numbers in said ranking number list in response to input to said maintenance reporting data and further determine said maintenance to be carried out at each of said maintenance intervals in response to data in said faulting number list and said maintenance reporting data, said microprocessor also configured to correspondingly update said list of routine maintenance jobs;

said output means being configured to output portions of said list of maintenance items corresponding to said maintenance to be carried out at at least one of said maintenance intervals.

5,666,586

APPARATUS FOR INSTALLING A TONER CARTRIDGE

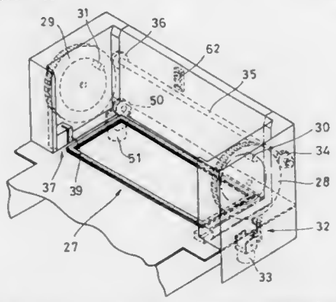
Toshinori Nishimura, and Yukio Hashimoto, both of Osaka, Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Jul. 23, 1996, Ser. No. 681,440

Claims priority, application Japan, Jul. 31, 1995, 7-195077

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—13 **14 Claims**



1. An apparatus for installing a toner cartridge in an image forming device, comprising:

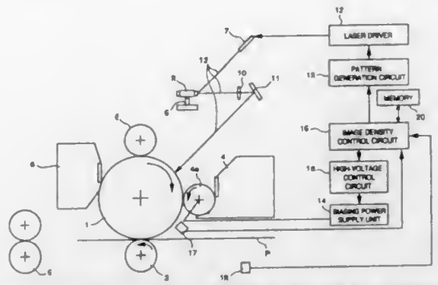
a toner cartridge installing means, for moving a toner cartridge from a mount/dismount position in an image forming device into an installed position in said image forming device;

a determination means for determining whether said toner cartridge is properly installed in said image forming device; and

a toner cartridge discharging means for returning said toner cartridge back to said mount/dismount position in response to said determination means determining that said toner cartridge is not properly installed in said image forming device.

5,666,587

Patent Not Issued For This Number



measurement means for measuring densities of the plurality of images formed on said recording medium;

judging means for judging whether or not a target density value is somewhere between a maximum value and a minimum value of the density measured by said measurement means; and

control means for determining a processing condition for obtaining said target density value in accordance with two measured density values that are closest to said target density value and are inclusive of said target density value therebetween, if said target density value is somewhere between said maximum and minimum values of the density, and for determining a processing condition for obtaining said target density value in accordance with two measured density values that are closest to said target density value, if said target density value is outside the range from said maximum value to said minimum value of the density.

5,666,588

IMAGE FORMING APPARATUS FOR PERFORMING IMAGE DENSITY CONTROL

Akihiko Uchiyama; Haruo Fujii; Hiroshi Sasame, all of Yokohama; Tatsuya Kobayashi, Soka; Tetsuya Kobayashi, Kawasaki; Naoki Enomoto; Yoshiro Saito, both of Yokohama; Yoichiro Maebashi, Kawasaki, and Takaaki Tsuruya, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1996, Ser. No. 629,750

Claims priority, application Japan, Apr. 11, 1995, 7-085358

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—44 **29 Claims**

1. An image forming apparatus comprising:

forming means for forming a plurality of images for measurement on a recording medium in different processing conditions;

5,666,589

ELECTROPHOTOGRAPHIC APPARATUS AND IMAGE FORMING METHOD USING A PHOTOSENSITIVE MEMBER WITH EXPOSURE CHARACTERISTICS RESPONSIVE TO FIELD INTENSITY

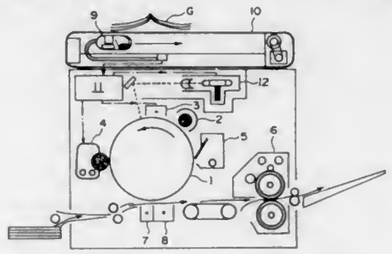
Kazuo Yoshinaga, Kawasaki; Yukio Nagase, Tokyo; Hajime Miyazaki; Teigo Sakakibara, both of Yokohama; Yuichi Hashimoto, Tokyo; Yoshio Kashizaki, Yokohama; Masato Tanaka, Kawasaki, and Mamoru Tanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,420

Claims priority, application Japan, Jun. 30, 1994, 6-148837

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—48 **32 Claims**



1. An electrophotographic apparatus, comprising: an electrophotographic photosensitive member, charging means for charging the photosensitive member to a potential, and exposure means for illuminating the charged photosensitive member with a light beam to form an electrostatic image thereon;

wherein

said electrophotographic photosensitive member has a potential-exposure energy characteristic providing an induction energy and a gamma value varying depending on an electric field intensity induced by the charged potential, and

said apparatus further includes control means for controlling the charged potential on the photosensitive member corresponding to resolution and gradation data of an original.

5,666,590

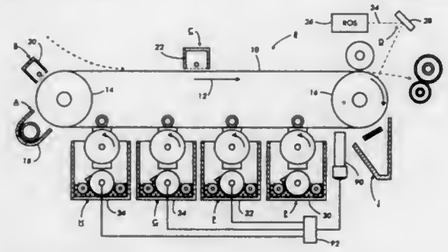
DEVELOPER SET UP USING RESIDUAL TONER VOLTAGE READING

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1995, Ser. No. 538,660

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—49 **11 Claims**



1. A printing machine, comprising:

a photoreceptor;

a first development station for depositing a first toner patch on said photoreceptor;

a charging station for charging the first toner patch and a first untoned section of said photoreceptor;

an exposure station for creating a latent image of a second toner patch on said first toner patch and on said first untoned section of said photoreceptor; and

a correction network for producing a correction signal which is a function of a residual toner voltage between said second toner patch latent image on said first toner patch and said second toner patch latent image on said first untoned section of said photoreceptor.

5,666,591

IMAGE FORMING APPARATUS UTILIZING DISCHARGE CURRENT OF CHARGER

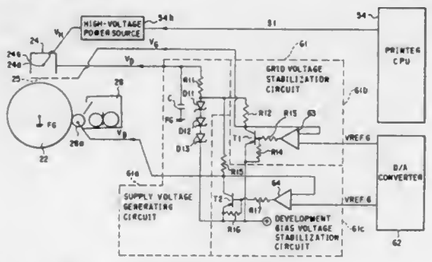
Yoichi Taya, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jun. 30, 1995, Ser. No. 497,685

Claims priority, application Japan, Jul. 14, 1994, 6-162320

Int. Cl.[6] G03G *15/02;15/06*

U.S. Cl. 399—50 **9 Claims**



1. An image forming apparatus comprising:

means for charging a surface of an image carrier at a uniform electrostatic charge corresponding to a first voltage, the image carrier rotating in a predetermined direction;

means for forming an electrostatic latent image by applying light onto the electrostatic charge on the image carrier;

means for forming a developer image on the image carrier by applying a developer to the electrostatic latent image while, to the developer image forming means, is applied a second voltage;

means for applying the first voltage to the charging means;

means for generating the second voltage to be applied to the developer image forming means, upon reception of a third voltage generated by a discharge from the charging means, on the basis of the third voltage; and

means for supplying the second voltage to the developer image forming means when an area of the image carrier charged by the charging means faces the developer image forming means.

5,666,592

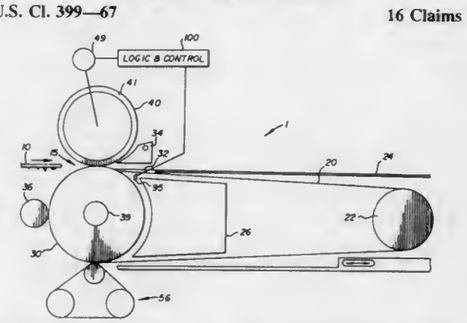
VARIABLE GLOSS FUSER

Muhammad Aslam, Rochester, and Robert D. Bobo, Ontario, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1996, Ser. No. 631,335

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—67 **16 Claims**



15. A method for selectively providing different types of finishes to toner images carried on image sides of receiving sheets, said method comprising:

moving receiving sheets having toner images between a pressure member and a fusing roller positioned to form a first fusing nip with the pressure member to form a first type of finish to the toner images;

moving other receiving sheets having toner images between the pressure member and a fusing belt positioned to form a second fusing nip with the pressure roller, said second fusing nip providing a different type of finish to a fused toner image than the first type; said belt moving through an endless path and said belt having an opening through which the fusing roller is accessible to the pressure member to form the first fusing nip when said belt is moved to a predetermined position in its endless path; and

selectively applying one of said first and second fusing nips to a receiving sheet to selectively finish the toner image.

5,666,593

RESISTANCE TEMPERATURE DETECTOR (RTD) SENSOR FOR A HEAT AND PRESSURE FUSER

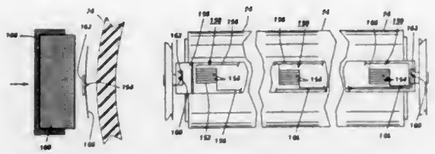
Mark S. Amico, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,026

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—69 **14 Claims**

1. A heat and pressure roll fuser for fusing color toner images, said fuser comprising:



a heated fuser roll;

a pressure roll supported for pressure engagement with said heated fuser

a temperature sensor supported for contact with a surface of one of said rolls, said temperature sensor having a configuration permitting distribution of a load applied thereto over a relatively large area of said surface; and

means for effecting loading of said temperature sensor over an extended period of time without causing uneven wear of said surface.

5,666,594

Patent Not Issued For This Number

5,666,595

IMAGE FORMING APPARATUS WITH LOCKING MECHANISM FOR DETACHABLE FEEDER UNIT

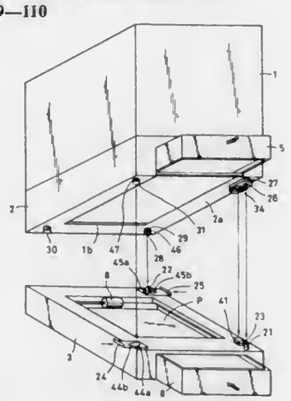
Takao Sameshima, Yokosuka; Yutaka Kikuchi, and Kazuaki Takahashi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,511

Claims priority, application Japan, Oct. 3, 1994, 6-238812; May 22, 1995, 7-122321

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—110 **14 Claims**



9. An image forming apparatus comprising:

an apparatus body, said body including image forming means for forming an image on a sheet and having leg sections on a bottom surface thereof;

a feeder unit detachably mounted under said apparatus body and storing sheets for supply to said image forming means;

locking means for connecting said apparatus body and said feeder unit, said locking means comprising through holes passing through said leg sections, protrusive members provided on said feeder unit and securing pins insertable into said through holes for connecting said apparatus body to said feeder unit; and

rotation-preventing means for preventing said securing pins from rotating in said through holes.

5,666,596

PROCESS CARTRIDGE OF AN IMAGE FORMING DEVICE

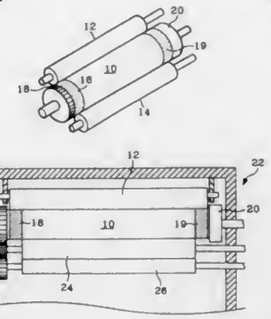
Yong-Baek Yoo, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 16, 1996, Ser. No. 694,389

Claims priority, application Rep. of Korea, Sep. 19, 1995, 30757/1995

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—111 **20 Claims**



1. A process cartridge of an image forming device, comprising:

a photosensitive drum having a central latent image forming portion and two friction end portions; and

a charging roller which is in contact with said photosensitive drum so as to be rotated by said two friction end portions of said photosensitive drum when said photosensitive drum is rotated during an image forming operation.

5,666,597

IMAGE FORMING APPARATUS WITH DELAYED DISCHARGE BY DISCHARGE MEANS

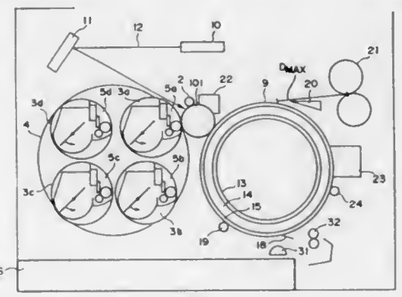
Hiroshi Sasame; Haruo Fujii, both of Yokohama; Tatsuhiko Hayakawa, Tokyo; Tatsuya Kobayashi, Sohka; Tetsuya Kobayashi, Kawasaki; Naoki Enomoto, Yokohama; Akihiko Uchiyama, Yokohama; Yoshiro Saito, Yokohama, and Youichirou Maebashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 322,568, Oct. 13, 1994, abandoned. This application Oct. 8, 1996, Ser. No. 727,316

Claims priority, application Japan, Oct. 14, 1993, 5-280478; Oct. 14, 1993, 5/280480

Int. Cl.[6] G03G *21/00;21/06;21/08*

U.S. Cl. 399—128 **42 Claims**



17. An image forming apparatus comprising:

an image bearing member for bearing an image, said image bearing member being rotatable at a first speed and a second speed which is different from said first speed, wherein during image formation on said image bearing member, said first speed is selected, and after completion of image formation on said image bearing member, said first speed and said second speed are selectable;

discharging means for electrically discharging said image bearing member at a discharging position, wherein said discharging means electrically discharges said image bearing member after a speed is switched from said second speed to said first speed after completion of image formation of said image bearing member.

5,666,598

IMAGE FORMING METHOD AND APPARATUS USING ENERGY BEAM IMPINGEMENT ON IMAGE FORMING PARTICLES TO MOVE THE SAME

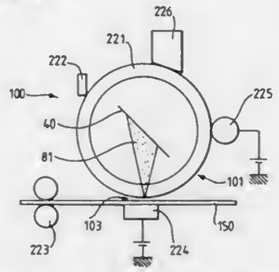
Tatsuya Sugita, Hitachi; Akira Arimoto, Kodaira; Teruaki Mitsuya, Naka-machi; Nobuyoshi Hoshi, Hitachinaka; Mamoru Okano; Atsushi Onose, both of Hitachi; Yoshito Tsunoda, Tokyo; Shinya Kobayashi, Mito; Seiji Maruo, and Yasuo Takuma, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,891

Claims priority, application Japan, Mar. 18, 1994, 6-048236; Apr. 20, 1994, 6-081271

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—136 **32 Claims**



17. A method of producing an image on a recording medium, including the steps of:

(i) fixing selected particles of a mass of toner onto said recording medium by direct irradiation by an energy beam modulated by image information, followed by

(ii) removing from said recording medium any unfixed particles of said mass of toner carried thereon.

5,666,599

COLOR ELECTRO-PHOTOGRAPHIC PRINTING APPARATUS

Toru Miyasaka; Masashi Yamamoto, both of Hitachi; Nobuyoshi Hoshi, Hitachinaka, and Seiji Maruo, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

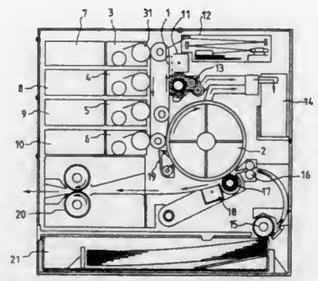
Filed Mar. 28, 1995, Ser. No. 412,122

Claims priority, application Japan, Apr. 6, 1994, 6-068295; Sep. 5, 1994, 6-210931

Int. Cl.[6] G03G *5/00;15/01;15/14*

U.S. Cl. 399—162 **25 Claims**

20. A small-size color electro-photographic apparatus having a loop shaped photosensitive belt which is vertically oriented, a plurality of developing units stacked beside one side surface of said photosensitive belt; an intermediate transfer drum placed diagonally below the other side of said photosensitive belt; a fixing unit placed above said intermediate transfer drum; and a paper cassette placed under said photosensitive belt.



5,666,600

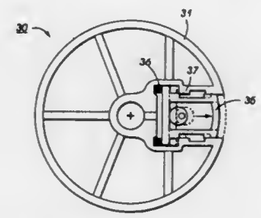
MANDREL WITH A RETRACTABLE SEGMENT FOR MOUNTING A BELT PHOTORECEPTOR ON THE MANDREL

David R. Kamprath, Webster, and William Brant, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 586,475

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—165 **4 Claims**



1. A photoreceptor apparatus, comprising:

a flexible photoreceptor belt;

a cylindrical mandrel on which photoreceptor belt is to be mounted, said mandrel including a retractable segment, and wherein said retractable segment is adapted to be moved to a retracted position when said photoreceptor belt is placed onto and removed from said mandrel and moved to a non-retracted position to provide interference fit between said mandrel and said photoreceptor while said photoreceptor is mounted on said mandrel, said mandrel and said retractable segment being machined as an assembly; and

wherein said retractable segment includes a rotatable cam member, and wherein rotation of said cam member in a first direction relieves said interference fit between said mandrel and photoreceptor belt and rotation of said cam member in a second direction provides said interference fit between said mandrel and photoreceptor belt.

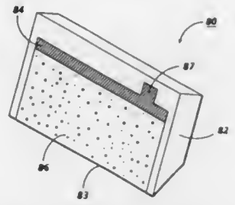
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5,666,601

RESISTIVE ION SOURCE CHARGING DEVICE

Frank C. Genovese, Fairport, and Richard F. Bergen, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1991, Ser. No. 738,980
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—168 22 Claims



1. A device for generating ions, comprising:
an insulative support substrate defined by a planar member;
a highly resistive material coating layer uniformly disposed on said support substrate to form a singular continuous resistive material region extending along a single edge of said support substrate;
a power supply; and
means for connecting said resistive material layer to said power supply for providing a voltage potential across said resistive material region to emit ions therefrom along said single edge.

5,666,602

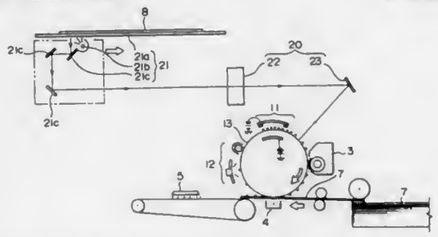
Patent Not Issued For This Number

5,666,603

IMAGE-FORMING APPARATUS USING X-RAY FOR CHARGING AND CLEANING A PHOTOSENSITIVE MEMBER

Masayoshi Kato; Yasuhiro Tomita, and Masayoshi Ishikawa, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jan. 26, 1996, Ser. No. 592,713
Claims priority, application Japan, Jan. 26, 1995, 7-011015
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—168 9 Claims



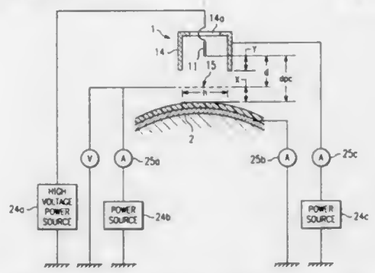
1. An image-forming apparatus for forming an image on a recording medium, comprising:
an insulator having a photosensitive layer formed on a surface thereof;
charge means for electrically charging a surface of said photosensitive layer, said charge means having charging X-ray generation means, which electrolytically dissociates air on the surface of said photosensitive layer by irradiation of an X-ray, and electric-field application means which guides, by means of an electric field, a gaseous ion formed by the electrolytic dissociation to the surface of said photosensitive layer;
exposure means for exposing the charged surface of said photosensitive layer with light to form an electrostatic latent image corresponding to said image to be formed;
developing means for attaching a coloring fine particle to an area of said electrostatic latent image;
transfer means for transferring said coloring fine particle attached to the area of said electrostatic latent image to said recording medium;
fixing means for fixing said coloring fine particle transferred to said recording medium; and
cleaning means for cleaning said coloring fine particle remaining on the surface of said photosensitive layer, said cleaning means having erasure X-ray generation means which ionizes air on the surface of said photosensitive layer, in which said coloring fine particle remains, by irradiation of an X-ray, and generates a carrier within said photosensitive layer.

5,666,604

IMAGE FORMING APPARATUS WITH CHARGING DEVICE HAVING PROJECTING ZIP DISCHARGE ELECTRODE AND IMPROVED PARAMETERS

Yasuhiro Nakagami; Noboru Yonekawa, and Kouji Matsushita, all of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 30, 1995, Ser. No. 565,216
Claims priority, application Japan, Dec. 1, 1994, 6-298553; Dec. 19, 1994, 6-315220
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—171 16 Claims



7. A charging device for charging a surface of an image carrier, comprising:
an electric discharge electrode positionable in opposition to said surface of said image carrier for discharging said surface at a discharging point; and
a grid electrode having an effective width h and confronting said discharging point of said electric discharge electrode at a fixed distance d, wherein said effective width h and said distance d satisfy the following relationship:

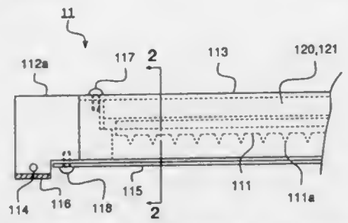
$$1 \leqq h/d \leqq 1.5.$$

5,666,605

CHARGING UNIT

Hiroyuki Tokimatsu, and Satoshi Haneda, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Oct. 6, 1995, Ser. No. 539,863
Claims priority, application Japan, Oct. 11, 1994, 6-245419; Oct. 18, 1994, 6-252342; Nov. 2, 1994, 6-269718; Jan. 11, 1995, 7-002634; Jan. 24, 1995, 7-008999
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—173 18 Claims



1. A corona-discharging type charging device for charging a photoreceptor in an image forming apparatus, comprising:
an electrode plate having a plurality of saw tooth-shaped electrodes facing the photoreceptor;
side plates provided on both sides of the electrode plate approximately in parallel with the electrode plate, the side plates applied with a DC bias voltage Vs; and
a control grid provided between the plurality of saw tooth-shaped electrodes and the photoreceptor, the control grid applied with a DC bias voltage Vg, the DC bias Voltage Vs and the DC bias voltage Vg satisfy the following inequality:

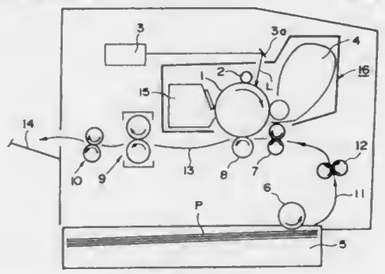
$$0.5 \leqq Vs/Vg \leqq 1.5.$$

5,666,606

IMAGE FORMING APPARATUS COMPRISING CONTACT TYPE CHARGING MEMBER

Keiji Okano, Tokyo; Takahiro Inoue, Yokohama; Kazushige Sakurai, Kawasaki; Tadashi Onimura, Tokyo; Kouichi Suwa, Yokohama; Masaki Ojima, Inagi; Hiroshi Sato, Tokyo; Seiji Yamaguchi, Tokyo, and Hideki Matsumoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 658,530
Claims priority, application Japan, Jun. 8, 1995, 7-166924
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—174 10 Claims



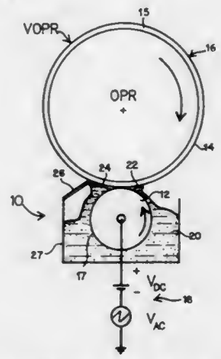
1. An image forming apparatus, comprising:
a image bearing member comprising a photosensitive layer, a surface protection layer which comprises fluorine resin material;
a charging member contactable to said image bearing member to electrically charge said image bearing member, said charging member is being supplied with an oscillation voltage, and wherein a peak-to-peak voltage of the oscillating voltage applied across a gap between a surface of said charging member and the surface of said image bearing member, is not less than twice a charge starting voltage of said image bearing member in the gap and not more than 1600 volt.

5,666,607

WET CONTACT CHARGING FOR ELECTROPHOTOGRAPHY

Thomas Camis, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1996, Ser. No. 587,351
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—176 14 Claims



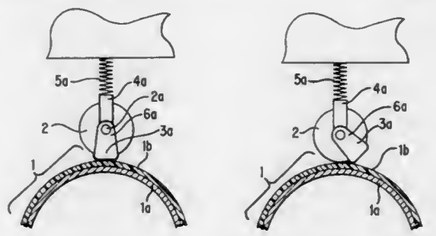
10. A method of improving release property stability of a photoconductor release layer comprising charging a photoconductor having an outer release layer with a wet charging member.

5,666,608

CHARGING MEMBER AND IMAGE FORMING MEMBER SPACER APPARATUS

K. Trent Christensen, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 2, 1996, Ser. No. 642,150
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—176 20 Claims



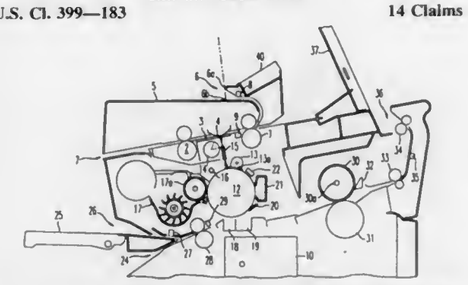
1. In an electrophotographic image forming system, including an image forming member and a charging member, a spacer apparatus comprising:
a spacer disposed in a first position between said charging member and said image forming member; and
a means for moving said spacer from said first position to a second position responsive to rotation of said image forming member, said means for moving coupled to said spacer.

5,666,609

COPYING MACHINE AND METHOD FOR COPYING A DESIGNATED AREA OF AN ORIGINAL DOCUMENT

Minoru Aoki, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1996, Ser. No. 670,572
Claims priority, application Japan, Jun. 26, 1995, 7-159073
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—183 14 Claims



1. A copying machine configured to copy a designated area of an original document, comprising:
an exposure position;
an original document scanning feed through system comprising, means for transporting the original document through the exposure position;
means for prescribing a partial copying mode to copy a designated area of at least one surface of the original document, said designated area comprising a copying start position and a copying end position;
means for enabling an operator to designate the copying start position while the original document is transported by said original document transport means and when said original document reaches a first predetermined position;
means for enabling an operator to designate the copying end position while the original document is transported by said original document transport means and when the original document reaches a second predetermined position; and
means for controlling a partial copy operation including controlling when to start and stop copying a first image from the first original document to a second medium in accordance with a timing sequence corresponding to when the copying start position was designated and when the copying end position was designated, so that the designated area of original document is copied to the second medium.

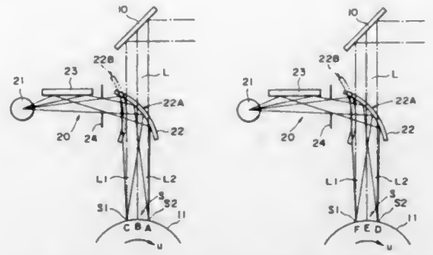
5,666,610

IMAGE FORMING APPARATUS WITH BLANK EXPOSURE MEANS

Makoto Tanaka, Tokyo, and Jun Koide, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 921,978, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 572,302, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 181,113, Apr. 13, 1988, abandoned. This application Feb. 28, 1994, Ser. No. 203,500
Claims priority, application Japan, Apr. 22, 1987, 62-99541; May 27, 1987, 62-130922
Int. Cl.[6] G03G *15/04*
U.S. Cl. 399—187 4 Claims

1. An image forming apparatus, comprising:
a movable photosensitive member;
slit exposure means for imagewise exposure of said photosensitive member;
blank exposure means having reflecting member for forming a non-image area before and after an image area formed by said slit exposure means on said photosensitive member by light from said reflecting member;
wherein the light from said reflecting member is condensed on a slit exposure area having a width in a direction of movement



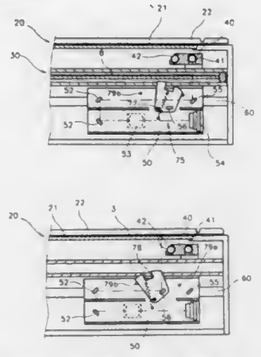
of said photosensitive member, and during a blank exposure operation by said blank exposure means, said reflecting member is fixed at a predetermined one position; and
wherein the light from said reflecting member is substantially condensed simultaneously both on an upstream end of the slit exposure area and on a downstream end of the slit exposure area with respect to the movement direction of said photosensitive member.

5,666,611

IMAGE SCANNER WITH ONE LIGHTING UNIT AND ONE DRIVE SYSTEM FOR SCANNING EITHER REFLECTIVE OR TRANSPARENT OBJECTS

Tsia Shui Chuan, No. 3, Alley 80, Lane 108, Sec. 1, Kuang-fu Road, Hsin-Chu, Taipei, Taiwan

Filed Sep. 29, 1995, Ser. No. 606,024
Int. Cl.[6] G03G *15/04*
U.S. Cl. 399—203 5 Claims



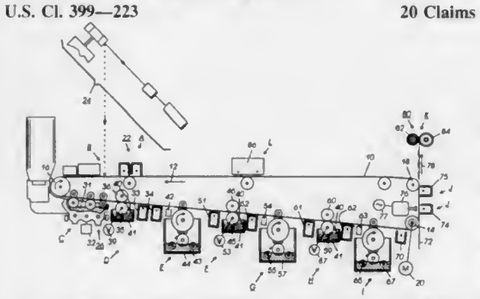
1. An image scanner with one lighting unit and one drive system for scanning both reflective objects and transparent objects comprising:
an image sensing unit to scan an image of said reflective object and an image of said transparent object,
a reflective object support to hold said reflective object to permit said image sensing unit to scan said image thereof,
a transparent object holder support to hold said transparent object to permit said image sensing unit to scan said image thereof,
said lighting unit is located between said reflective object support and said transparent object holder support and provides said image sensing unit light necessary to scan reflective objects and transparent objects,
a change-over unit to drive a mirror to reflect said scanned images, said change-over unit comprises a carriage to mount a mirror and a driver to move said mirror back and forth between a first reflecting position and a second reflecting position, said driver includes a lead screw for driving said carriage, and a motor for driving said lead screw, said change-over unit drives said mirror to said first reflecting position during scanning of reflective objects and to said second reflecting position during scanning of transparent objects; and wherein
to scan said reflective object, light from said lighting unit is projected to a surface of said reflective object, and
to scan a transparent object, light of said lighting unit is transmitted to said image sensing unit directly through said transparent object.

5,666,612

ROLLER TO PRESS THE IMAGE TONER ON THE PHOTORECEPTOR

James R. Beachner, Webster, and Henry R. Till, East Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 19, 1996, Ser. No. 699,290
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—223 20 Claims



1. A method of creating multiple powder images, said method including the steps of:
using powder marking particles, forming a first powder image on a charge retentive surface;
conditioning said first powder image for minimizing the disturbance thereof as it passes through a development housing, said step of conditioning comprising compacting of powder marking particles forming said first powder image; and
forming a second powder image.

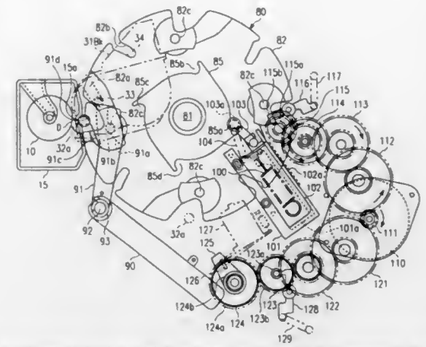
5,666,613

SEQUENTIALLY MOVING INDIVIDUAL DEVELOPING UNITS TO DEVELOPING LOCATION AT WHICH RESPECTIVE DEVELOPING UNIT IS SWITCHED BETWEEN OPERATIVE AND INOPERATIVE POSITIONS

Toshihiko Kumon, Aichi-Ken, and Akinori Kaneko, Fujisawa, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 13, 1995, Ser. No. 555,886
Claims priority, application Japan, Nov. 11, 1994, 6-277530; Jun. 15, 1995, 7-147967
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—227 22 Claims

1. A developing apparatus for developing an electrostatic latent image formed on a photoconductive member, comprising:
a plurality of developer units which develop the electrostatic latent image formed on the photoconductive member;
a supporting device which supports said plurality of developer units and which is capable of rotating while supporting said plurality of developer units;
an elastic member which provides energy for rotating said supporting device through a predetermined angle;
an accumulating device which causes an accumulation of energy in said elastic member; and



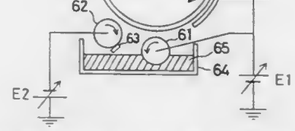
a releasing device which releases the energy accumulated in said elastic member to effect the rotation of said supporting device.

5,666,614

LIQUID DEVELOPMENT APPARATUS FOR ELECTROSTATIC LATENT IMAGE USING A PLURALITY OF ELECTRODES

Satoru Kuramochi, and Masayuki Iijima, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 84,518. Jun. 29, 1993, Pat. No. 5,477,313. This application Jun. 1, 1995, Ser. No. 457,628
Claims priority, application Japan, Jun. 30, 1992, 4-173031; Jun. 30, 1992, 4-173032; Jun. 30, 1992, 4-173033; Jun. 30, 1992, 4-173034
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—233 3 Claims



1. A liquid development apparatus for electrostatic latent image, comprising an electrostatic latent image carrier where an electrostatic latent image having an unchanging polarity is formed and a plurality of development electrodes are arranged face-to-face to the electrostatic latent image carrier, wherein bias voltage with opposite polarity to the electrostatic latent image is applied on at least one of said plurality of development electrodes, and bias voltage with the same polarity as the electrostatic latent image is applied on the other development electrodes, wherein at least one of said plurality of development electrodes is a dish type development electrode, and bias voltage with opposite polarity to the electrostatic latent image is applied on at least one of the dish type development electrodes.

5,666,615

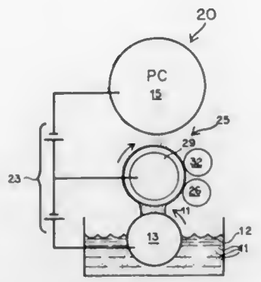
MINIMAL LIQUID CARRIER TRANSFER IN AN IMAGE FORMATION PROCESS

Khe C. Nguyen, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 3, 1995, Ser. No. 383,288
Int. Cl.[6] G03G *13/10;15/10*
U.S. Cl. 399—240 19 Claims

1. A method in an image formation process, for minimizing excess liquid carrier of a liquid developer transferred from a toner

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bath wherein the developer is composed of charged toner particles with a known electrical polarity and liquid carrier comprising:

a. applying an electrical bias with the same polarity as the toner particles between a conductive substrate and a squeeze mechanism;

b. electrically depositing the charged toner particles from the liquid developer onto the conductive substrate;

c. applying the squeeze mechanism to the conductive substrate to remove excess liquid carrier from the conductive substrate before transferring the charged toner particles from the conductive substrate to an electrostatic latent image bearing substrate;

d. transferring the charged toner particles from the conductive substrate to the electrostatic latent image bearing substrate wherein the electrostatic latent image bearing substrate is selected from the group consisting of a charged photoconductor and an insulator available for an ion depositing process; and

e. returning the removed excess liquid carrier to the toner bath.

5,666,616

WET-TYPE IMAGE FORMING APPARATUS FOR FORMING A CONDENSED TONER IMAGE

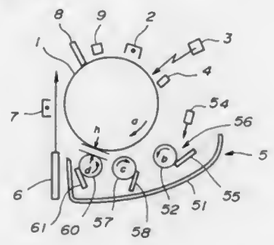
Mie Yoshino, Kawasaki; Makoto Obu; Takeo Tsukamoto, both of Yokohama; Seiichi Miyakawa, Nagareyama; Yusuke Takeda, and Masami Hiramatsu, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,724

Claims priority, application Japan, Oct. 24, 1994, 6-284423; May 31, 1995, 7-158558

Int. Cl.[6] G03G *15/10*

U.S. Cl. 399—240 **24 Claims**



1. A wet-type image forming apparatus comprising:

a latent image carrier carrying a latent image formed thereon;

developing means for developing the latent image formed on said latent image carrier, a toner image being formed by developing the latent image by using a developing liquid including a liquid carrier and toner dispersed in the liquid carrier;

excessive liquid removing means for removing an excessive amount of the liquid carrier on said latent image carrier after formation of the toner image on said latent image carrier;

electric field generating means for generating an electric field so as to cause a current to flow between said electric field generating means and said latent image carrier, an air gap being formed between the liquid carrier on said latent image carrier and said electric field generating means so that the current flows through said gap, the liquid carrier and the toner image;

wherein said electric field is formed so that an absolute value of a potential of a surface of said latent image carrier is decreased, the toner image being formed on said surface of said latent image carrier; and

transferring means for transferring the toner image on said latent image carrier to a transfer material after the toner image has passed an area in which said electric field is generated.

5,666,617

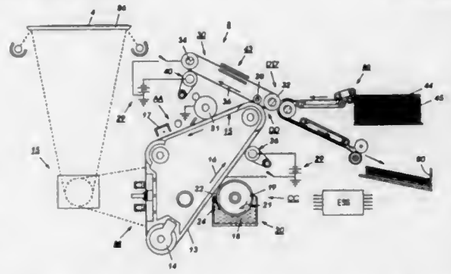
LID MACHINE HAVING A DIFFERENTIAL AIR PRESSURE ASSISTED BLOTTING DEVICE

Nancy B. Goodman, Webster; John F. Knapp, Fairport, and Shu Chang, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1996, Ser. No. 625,386

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—250 **9 Claims**



1. A differential air pressure assisted blotting device for conditioning, on an image bearing member, liquid developer images consisting of charged toner particles and carrier liquid, the differential air pressure blotting device comprising:

(a) a movable porous blotter belt forming an endless loop and having an outer surface for contacting and blotting carrier liquid from an image being conditioned on the image bearing member;

(b) a backup roller positioned at a first location within said endless loop so as to contact a first portion of said blotter belt for urging said blotter belt into blotting contact with the image being conditioned; and

(c) a differential air pressure assembly including a porous liquid pick-off roller mounted into contact with said blotter belt at a second location spaced from the image being conditioned in order to prevent damage to the image, and spaced from the first location so as to contact a second portion of said blotter belt said differential air pressure assembly including a vacuum seal mounted for sealing said pick-off roller against said blotter belt so as to concentrate vacuum air flow through said blotter belt into said pick-off roller for applying air pressure to such second portion to force carrier liquid out of second portion of said blotter belt.

5,666,618

DEVELOPING DEVICE WITH AGITATION MEMBER AND ELASTIC MEMBER

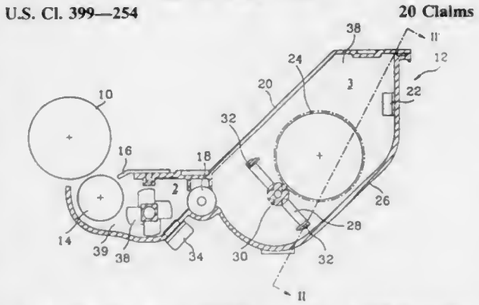
Su-In Lee, Seoul, and Young-Taek Lym, Kangnam-gu, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 28, 1996, Ser. No. 672,632

Claims priority, application Rep. of Korea, Jun. 30, 1995, 18985/1995

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—254 **20 Claims**



1. A developing device disposed adjacent to a rotating electrostatic latent image carrying member in an image forming apparatus, said developing device comprising:

a developing chamber disposed adjacent to a rotating electrostatic latent image carrying member;

a toner supply chamber for containing new toner;

a developing roller disposed in said developing chamber, for developing an electrostatic latent image formed on said rotating electrostatic latent image carrying member during operation of said image forming apparatus;

an agitating roller disposed in said developing chamber and adjacent to said developing roller, for charging said new toner as supplied from said toner supply chamber;

a toner supply roller arranged at a toner supply outlet of said toner supply chamber, for supplying said new toner from said toner supply chamber to said developing chamber during operation of said image forming apparatus;

an agitation member disposed in said toner supply chamber, for rotating and agitating said new toner contained said toner supply chamber to feed said new toner to said toner supply roller at said toner supply outlet of said toner supply chamber;

a contact wing installed at opposite ends of said agitation member;

an elastic member of a predetermined size freely disposed in said toner supply chamber, for preventing stagnation of said new toner contained in said toner supply chamber upon rotation of said agitation member; and

a rib member attached in an interior surface of said toner supply chamber, for regulating the movement of said elastic member upon rotation of said agitation member.

5,666,619

ELECTRODE WIRE SUPPORT FOR SCAVENGELESS DEVELOPMENT

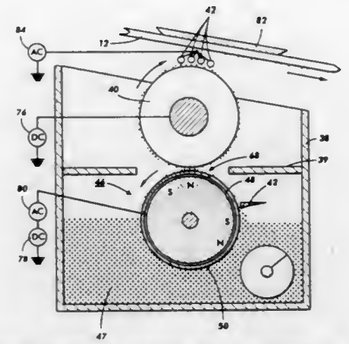
Steven C. Hart; Thomas J. Behe, both of Webster; Mark J. Hirsch, Fairport; Alexander J. Fioravanti, Penfield, and Thomas W. Pike, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 568,108

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—266 **16 Claims**

1. An apparatus for developing a latent image recorded on a surface, including:



a housing defining a chamber storing a supply of developer material therein;

a donor roll spaced from the surface and adapted to transport the developer material to a development zone adjacent the surface;

a donor roll shaft on which said donor roll is mounted;

a donor roll support, said donor roll shaft being rotatably mounted in said donor roll support;

an electrode wire positioned in the space between the surface and said donor roll, said electrode wire being electrically biased to detach the developer material from said donor roll to form a cloud of developer material in the space between said electrode wire and the surface with the developer material developing the latent image;

a wire module providing means for attaching the ends of the wire and tensioning the electrode wire; and

means for supporting the electrode wire along the length of the wire, said supporting means being rotatably mounted with respect to the donor roll and located along the donor roll shaft between each end of the donor roll and the donor roll support and having a wire support surface which supports the wire in the vertical direction when the electrode wire is positioned in the space between the surface and said donor roll, wherein said support means bas two support legs separated by an open section, the open section allowing said support means to fit over the donor roll shaft, the two legs of the support means are attached to the housing.

5,666,620

DEVELOPING DEVICE FOR PEELING TONER USING PEELING ROTARY MEMBER

Yoshiaki Kobayashi, Soka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,730, Dec. 20, 1994, abandoned. This application Jun. 25, 1996, Ser. No. 670,107

Claims priority, application Japan, Dec. 22, 1993, 5-345553; Dec. 24, 1993, 5-347982

Int. Cl.[6] G03G *15/09*

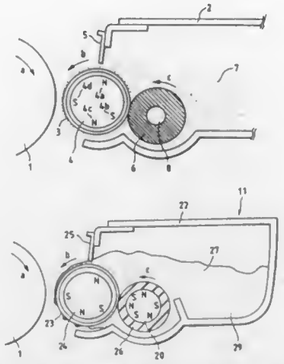
U.S. Cl. 399—273 **28 Claims**

1. A developing device comprising:

a developing container for containing a toner and an additive;

a toner carrier disposed in an opening portion of said developing container and rotatable for carrying the toner; and

a peeling member disposed in sliding contact with said toner carrier for peeling toner off of said toner carrier,



wherein a triboelectric charge potential difference between the surface of said peeling member and the additive is substantially zero.

5,666,621

SHEET SEPARATION DEVICE, SHEET SEPARATION METHOD, IMAGE FORMING APPARATUS AND IMAGE FORMING METHOD

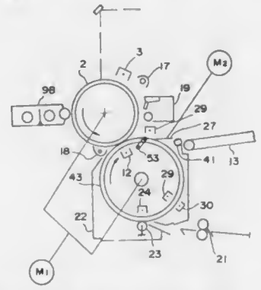
Kazunobu Maekawa, and Masato Yasui, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 26, 1996, Ser. No. 670,428

Claims priority, application Japan, Jun. 30, 1995, 7-187764

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—303 **17 Claims**



5. An image forming apparatus comprising:

means for forming a toner image onto a toner image carrier;

a sheet carrying member which is capable of holding a sheet thereon;

first positioning means for positioning a sheet on the surface of the sheet carrying member;

means for transferring the toner image from the toner image carrier to the surface of the sheet held on the sheet carrying member;

means for separating the held sheet from the sheet carrying member by a first sheet separating power, said separating means being capable of changing the sheet separating power;

second positioning means for positioning the separated sheet on the surface of the sheet carrying member, the toner image being contact with the surface of the sheet carrying member; and

means for changing the sheet separating power so that the sheet, which is positioned by the second positioning means, is separated from the sheet carrying member by a second separating power which is larger than the first separating power.

5,666,622

IMAGE TRANSFERRING DEVICE AND MEDIUM SEPARATING DEVICE FOR AN IMAGE FORMING APPARATUS

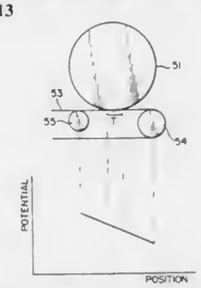
Yuko Harasawa, Hayama-machi; Itaru Matsuda, Yokohama; Satoshi Takano; Hideo Yu, both of Tokyo; Yasunori Kawaishi, Narashino; Hideki Kamiyama, Yokohama; Toshiaki Motohashi; Mitsuru Takahashi, both of Tokyo, and Takashi Bisaiji, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 44,032, Apr. 8, 1993, Pat. No. 5,461,461, which is a continuation-in-part of Ser. No. 6,521, Jan. 21, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,422

Claims priority, application Japan, Jan. 22, 1992, 4-9125; Mar. 30, 1992, 4-74366; Apr. 9, 1992, 4-88916; Apr. 10, 1992, 4-90701; Nov. 30, 1992, 4-320937; Jan. 25, 1993, 5-10159

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—313 **35 Claims**



1. An image forming apparatus comprising:

an image bearing member for carrying a toner image thereon;

a transfer member movable in contact with said image bearing member over a predetermined nip width of a nip portion between said image bearing member and said transfer member to allow the toner image to be transferred from said image bearing member to said transfer member, said transfer member being made of a material having a volume resistivity of 10^6 to 10^{12} Ωcm;

first electrode means contacting said transfer member at a position downstream of said nip portion with respect to an intended direction of movement of said transfer member and applying a predetermined bias to said transfer member;

second electrode means contacting said transfer member at a position upstream of said nip portion with respect to an intended direction of movement of said transfer member;

a power source for applying a first predetermined transfer potential to said first electrode means; and

potential gradient generating means for providing a potential distribution on said transfer member with a linear gradient in a region where said image bearing member and said transfer member contact, wherein said potential gradient generating means forms a potential distribution in which said linear gradient extends from a location upstream of said nip portion, through said nip portion, and to a location downstream of said nip portion; and

wherein a potential on said transfer member contacting said first electrode means is higher than a potential on said transfer member contacting said second electrode means.

5,666,623

FUSING BELT TYPE HEAT FUSING DEVICE

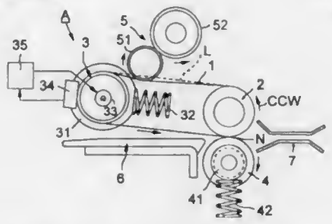
Tetsuya Yamada; Mitsuru Isogai; Takashi Yamada, all of Aichi-Ken, and Satoru Yoneda, Toyohashi, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed May 29, 1996, Ser. No. 654,889

Claims priority, application Japan, Jun. 6, 1995, 7-138966

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—320 **40 Claims**



1. A belt transporting device, comprising:

a first roller;

a second roller which is substantially parallel to said first roller;

an endless belt which extends around said first roller and said second roller along with a belt path, said belt being connected to said second roller so that said second roller is driven by rotating of said belt;

means for rotating said belt in a belt rotating direction; and

a member which is in contact with said belt at a first position between said first roller and said second roller, a distance between said first position and said second roller is shorter than a distance between said first position and said first roller, said first position is upstream of said second roller along the belt path in the belt rotating direction, wherein said member contacts said belt so as to induce a predetermined tension in said belt.

5,666,624

IMAGE FIXING DEVICE

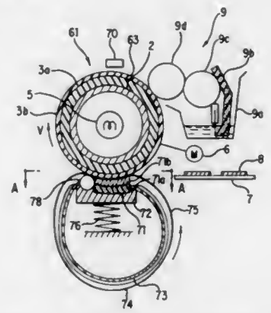
Yoshio Kanesawa, and Yasuhiro Uehara, both of Nakai-machi, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 14, 1996, Ser. No. 645,565

Claims priority, application Japan, May 16, 1995, 7-117402; Apr. 12, 1996, 8-115668

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—329 **20 Claims**



1. An image fixing device for heating and applying pressure to a toner image on a recording medium to melt and press the toner image on the recording medium, comprising:

a heating and fixing roll for heating said recording medium;

rotating and driving means for rotating and driving said heating and fixing roll;

an endless belt arranged with respect to said recording medium on the side opposite to said heating and fixing roll; and

a pressure applying member in contact with the inner surface of said endless belt and being provided with a pressing surface for pressing said endless belt against said heating and fixing roll along the surface of said heating and fixing roll;

wherein a pressure exerting a force on the pressing surface of said pressure applying member is set to a value equal to or greater than a pressure for suppressing a volume expansion of air between said heating and fixing roll and said endless belt caused by a rise in temperature of said air.

5,666,625

DEVICE FOR ELECTROSTATICALLY DEVELOPING A LATENT IMAGE ON AN IMAGE CARRIER

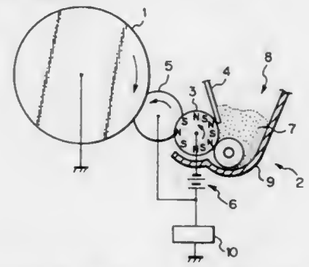
Satoru Komatsubara, Atsugi; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiro Uno, Isehara; Hiroshi Saitoh, Ayase; Eiji Takenaka, Isehara; Toshihiro Sugiyama, Atsugi; Tetsuo Yamanaka, Tokyo, and Eisaku Murakami, Hiratsuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 20, 1995, Ser. No. 560,977

Claims priority, application Japan, Nov. 23, 1994, 6-314090

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—281 **4 Claims**



1. A device for developing a latent image electrostatically formed on an image carrier, comprising:

a first developer carrier for depositing a developer thereon;

a regulating member for regulating the amount of developer deposited on said-first developer carrier; and

a second developer carrier having an elastic surface, and contacting said first developer carrier, while biting into said first developer carrier to a predetermined extent;

wherein the developer deposited on said first developer carrier and regulated by said regulating member is transferred to said second developer carrier and fed from said second developer carrier to the image carrier for thereby developing the latent image, and wherein the developer contains coarse particles of a size of at least 12 μm in an amount of not greater than 10 vol % of the developer, said developer having a silica content of not greater than 2 wt % and a zinc stearate content of not greater than 2 wt %, said first developer carrier having a surface roughness Rz of not greater than 10 μm in terms of a 10-point mean value as prescribed by JIS (Japanese Industrial Standards), and said first and second carriers biting into each other by 0.1 mm to 0.5 mm.

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5,666,626

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGES USING DEVELOPING ROLLER HAVING SPECIFIC IONIZATION POTENTIAL

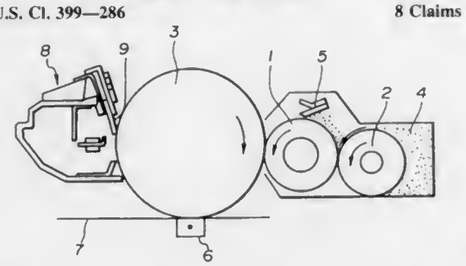
Yoshio Takizawa, Futsusa; Koji Takagi; Hiroshi Kaneda, both of Kodaira, and Takahiro Kawagoe, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 5, 1996, Ser. No. 611,164

Claims priority, application Japan, Mar. 10, 1995, 7-079687; Nov. 7, 1995, 7-313510

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—286 **8 Claims**



1. An apparatus for developing an electrostatic latent image comprising

a developing roller having a conductive layer formed around a highly conductive shaft and

a rotating drum bearing an electrostatic latent image on its surface, the roller and the drum being rotatable in mutual contact or closely spaced relationship,

means for causing the developing roller to carry a positive chargeable developer to form a thin layer of the developer,

means for electrically charging the developer positive, and

means for rotating the developer-carrying developing roller and the latent image-bearing drum, thereby feeding the positive charged developer to the surface of the drum to visualize the electrostatic latent image on the drum surface,

the developing roller on its surface having an ionization potential and the developer on its surface having an ionization potential, the roller's ionization potential being adjusted to be not lower than the developer's ionization potential.

5,666,627

FIXING DEVICE WHICH UTILIZES HEAT GENERATED BY ELECTROMAGNETIC INDUCTION

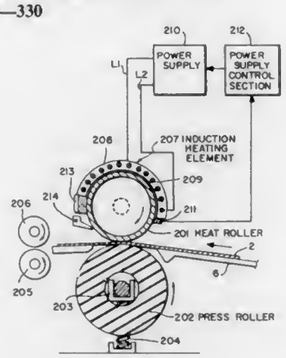
Chiseki Yamaguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,342

Claims priority, application Japan, Apr. 25, 1994, 6-107417

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—330 **13 Claims**



1. A fixing device for fixing an ink material on a recording medium by heating and pressing the recording material with said ink material applied thereon, which comprises:

a heat roller constructed from a material which generates heat by eddy currents;

an induction heating element which causes said heat roller to generate said eddy currents in said heat roller by electromagnetic induction; and

pressing means for pressing said recording medium against said heat roller,

wherein said induction heating element comprises:

an insulating support having a curved surface which curves in accordance with a shape of said heating roller and faces closely to a surface of said heating roller; and a spiral conductive line which is secured to an entire area of said curved surface of said insulating support in a generally spiral arrangement over an entire width of said insulating support, said conductive line being provided with a current which causes said electromagnetic induction.

5,666,628

METHOD OF FIXING TONER APPLYING WET MEDIUM

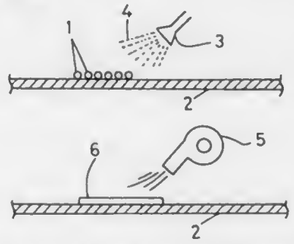
Hisayo Fukai, Tokyo, Japan, assignor to Qyentos Corporation, and Unico Co., Ltd., both of Osaka, Japan

Filed Jul. 28, 1994, Ser. No. 281,652

Claims priority, application Japan, Jul. 29, 1993, 5-187851

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—340 **14 Claims**



1. A method of fixing a toner to an objective surface by applying a wet medium to the surface thereof comprising:

half-dissolving or swelling the toner by spraying or dripping a fixing agent on a first objective surface containing an unfused toner at a predetermined position, said fixing agent containing an organic compound capable of half-dissolving or swelling the toner and being insoluble or hardly soluble in water in a state in which it is mixed and dispersed in water;

pressing the half-dissolved or swollen toner on said first objective surface against a second objective surface to cause the half-dissolved or swollen toner to be transferred onto the second objective surface; and

drying the second objective surface containing the fixing agent to affix the toner thereto.

5,666,629

MULTIMODE PRINTER HAVING SIDEWAY PAGE INVERTER

Osamu Kazoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

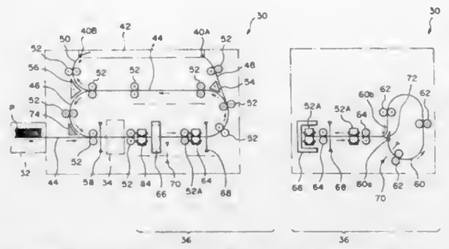
Filed Dec. 21, 1995, Ser. No. 576,577

Claims priority, application Japan, Dec. 22, 1994, 6-320380

Int. Cl.[6] G03G *15/00;* **B65H** *29/00*

U.S. Cl. 399—401 **15 Claims**

7. A printer operable in a duplex mode for printing images on both sides of a paper conveyed lengthwise from a feeder to a printer by way of a transport path, comprising:



a feeding section for feeding the paper to a transport path;

a printing section for printing an image on the paper;

a turning section for turning the paper upside down; and

a conveyor arranged along said transport path;

wherein said printing and turning sections are located along said transport path and said turning section includes a turning mechanism having an initial position;

and said turning mechanism turns the paper upside down in the widthwise direction and returns the paper substantially to said initial position.

5,666,630

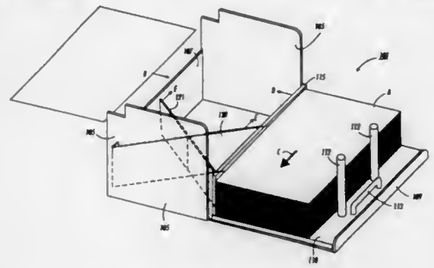
UNLOAD WHILE RUN APPARATUS FOR A COPIER/PRINTER

John D. Zoltner, Rochester, and Gary A. Kelpin, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1996, Ser. No. 656,816

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—405 **21 Claims**



1. In a copier/printer wherein a viewable image is formed on copy sheets that are forwarded to a catch tray for receiving the copy sheets as they exit the copier/printer, the improvement that enables removal of a stack of copy sheets from the catch tray while other sheets are entering the catch tray, comprising:

a main copy sheet receiving tray adapted for movement from a first copy sheet receiving position to a second and non-copy sheet receiving position for unloading a stack of copy sheets therefrom; and

a temporary storage tray adapted to receive copy sheets for stacking when said main copy sheet receiving tray is moved to said second position and while said main copy sheet receiving tray is being unloaded.

5,666,631

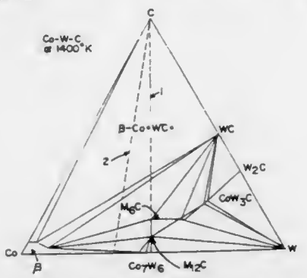
METAL ARTICLE AND METHOD FOR PRODUCING THE SAME

Richard S. Polizzotti, Milford; Larry E. McCandlish, Highland Park, both of N.J., and Edwin L. Kugler, Morgantown, W. Va., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 405,631, Mar. 17, 1995, Pat. No. 5,490,968, which is a division of Ser. No. 128,182, Sep. 29, 1993, Pat. No. 5,441,553, which is a continuation-in-part of Ser. No. 735,212, Jul. 24, 1991, Pat. No. 5,338,330, which is a continuation-in-part of Ser. No. 377,653, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 53,267, May 22, 1987, Pat. No. 4,851,041. This application Nov. 17, 1995, Ser. No. 560,126

Int. Cl.[6] B22F *1/02*

U.S. Cl. 419—2 **10 Claims**



1. A method for producing an article having a metal-containing phase, said method comprising providing a precursor compound containing at least one metal and a coordinating ligand, heating said compound to remove said coordinating ligand therefrom and increase the surface area thereof, and thereafter reacting at least one of said metals to form a metal-containing compound.

5,666,632

VALVE SEAT INSERT OF TWO LAYERS OF SAME COMPACT DENSITY

Paritosh Maulik, Coventry, United Kingdom, assignor to Brico Engineering Limited, Coventry, England

PCT No. PCT/GB94/01044, § 371 Date Jun. 12, 1996, § 102(e) Date Jun. 12, 1996, PCT Pub. No. WO94/27767, PCT Pub. Date Dec. 8, 1994

PCT Filed May 16, 1994, Ser. No. 553,333

Claims priority, application United Kingdom, May 28, 1993, 9311051

Int. Cl.[6] B22F *5/00;7/02*

U.S. Cl. 419—6 **16 Claims**

1. A method of making a two layer valve seat insert having a valve seat face layer and a base layer, the method comprising the steps of preparing two powder mixtures; a first powder mixture for forming the valve seat face layer; a second powder mixture for forming the valve seat base layer; sequentially introducing a predetermined quantity of each of said first and said second powder mixtures into a powder compacting die and having an interface therebetween substantially perpendicular to the axis of said die; simultaneously compacting said first and said second powder mixtures to form a green compact having two layers and sintering said green compact, characterised in that said valve seat face layer and said valve seat base layer have substantially the same green density after compaction and in that said two layers have substantially equal size change on sintering;said size change on sintering being controlled by a step selected from the group comprising the addition of up to 6 wt % copper to at least one of said powder mixtures;and;the addition of carbon powder in the range from 0.6 to 1.2 wt % to the base layer powder mixture.

16. A two-layer valve seat insert characterised by being made by the method of any one of claims **1** to **15**.

5,666,633

METHOD OF PRODUCING INTERLOCKING METAL PARTS

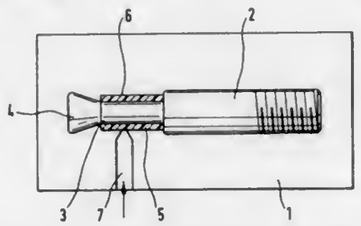
Norbert Arnold, Waldachtal; Bernd Hein, Freudenstadt; Guenter Seibold, Pfalzengrafenweiler; Manfred Haage, Dornstetten, and Bernd Plocher, Rottenburg, all of Germany, assignors to fischerwerke, Artur Fischer, GmbH & Co. KG., Waldachtal, Germany

Filed Aug. 25, 1995, Ser. No. 519,665

Claims priority, application Germany, Aug. 25, 1994, 44 30 130.8

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—10 7 Claims



1. A method of manufacturing interlocking metal parts sliding under pressure on one another, comprising the steps of making at least one metal part by powder injection molding; and mixing to a powdered metal of the at least one metal part a non-metallic substance which has a structural arrangement of molecules, is inert toward a metal of the art least one metal part and has a thermal stability of at least 900°, said non-metallic substance admixed with the powdered metal being a C_{60} filler.

5,666,634

ALLOY STEEL POWDERS FOR SINTERED BODIES HAVING HIGH STRENGTH, HIGH FATIGUE STRENGTH AND HIGH TOUGHNESS, SINTERED BODIES, AND METHOD FOR MANUFACTURING SUCH SINTERED BODIES

Shigeru Unami, and Osamu Furukimi, both of Chiba, Japan, assignors to Kawasaki Steel Corporation jpx

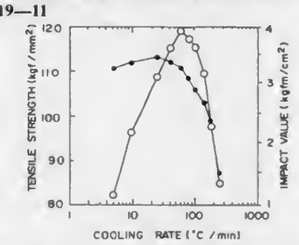
PCT No. PCT/JP93/01141, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/27764, PCT Pub. Date Dec. 8, 1994

PCT Filed Aug. 12, 1993, Ser. No. 360,762

Claims priority, application Japan, Jun. 2, 1993, 5-131536

Int. Cl.[6] B22F *3/12;5/08;* C22C *1/04;33/02*

U.S. Cl. 419—11 30 Claims



1. An alloy steel powder for sintered bodies having high strength, high fatigue strength and high toughness, which is characterized by comprising, by wt %, not larger than 0.1% of C, not larger than 0.08% of Mn, 0.5–3% of Cr, 0.1–2% of Mo, not larger than 0.01% of S, not larger than 0.01% of P, not larger than 0.2% of O, and the balance being inevitable impurities and Fe.

15. A method for manufacturing a sintered body having high strength, high fatigue strength and high toughness, comprising mixing 0.3–1.2% of graphite powder and a lubricant with an alloy steel powder for sintered bodies containing, by wt %, not larger than 0.1% of C, not larger than 0.08% of Mn, 0.5–3% of Cr, 0.1–2% of Mo, not larger than 0.01% of S, not larger than 0.01% of P, not larger than 0.2% of O, and the balance being inevitable impurities and Fe, and subjecting the mixture to compacting and sintering.

5,666,635

FABRICATION METHODS FOR R-FE-B PERMANENT MAGNETS

Yuji Kaneko, Uji, and Naoyuki Ishigaki, Ootsu, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Sep. 6, 1995, Ser. No. 523,928

Claims priority, application Japan, Oct. 7, 1994, 6-270618; Oct. 7, 1994, 6-270619; Dec. 9, 1994, 6-331698; Dec. 9, 1994, 6-331699

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—12 21 Claims

1. A fabrication method for R—Fe—B permanent magnets, whereby R—Fe—B magnet fine powders with an average particle size of 1.0–10 μm are packed into a mold, and orientated by application of a repeatedly inverted pulsed magnetic field, and whereby this is followed by cold isostatic pressing, sintering and aging treatments.

5,666,636

PROCESS FOR PREPARING SINTERED TITANIUM NITRIDE CERMETS

Jong Ku Park, and Sung Tae Park, both of Kyonggi-do, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Mar. 22, 1996, Ser. No. 621,099

Claims priority, application Rep. of Korea, Sep. 23, 1995, 95-31529

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—13 4 Claims

1. A process for preparing sintered titanium nitride cermets having no residual pores and consisting of TiN solid solution particles and Ni solid solution matrix, comprising the steps of:

(a) providing a granulated powder of the following composition:

$$TiN\text{-}pMo_2C\text{-}qC\text{-}rNi\text{-}sMeC$$

wherein:

p is 5 to 20 wt %;

q is 0 to 1.5 wt %;

r is 15 to 30 wt %;

s is 0 to 5 wt %;

MeC is one or more carbides selected from VC, WC, TaC and NbC;

with the proviso that q and s are not 0 wt % simultaneously;

(b) compacting the granulated powder; and

(c) sintering the powder compacts.

5,666,637

METHOD OF MANUFACTURING CONNECTING ROD

Akira Fujiki, and Hideaki Kuratomi, both of Kanagawa-ken, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 29, 1996, Ser. No. 739,458

Claims priority, application Japan, Nov. 9, 1995, 7-291411

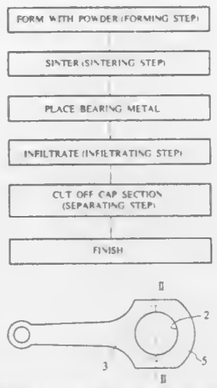
Int. Cl.[6] B22F *3/26;5/00*

U.S. Cl. 419—27 8 Claims

1. A method of manufacturing a connecting rod, comprising the steps of:

forming a formed body of a connecting rod integrated with a cap section by compressing metal powder for the connecting rod;

sintering said formed body thereby to form a sintered body;



infiltrating a bearing metal in a bearing section by heating said sintered body with the bearing metal set in the bearing section on the large-end side of the sintered body; and

separating said cap section.

5,666,638

PROCESS FOR PRODUCING SPONGE IRON BRIQUETTES FROM FINE ORE

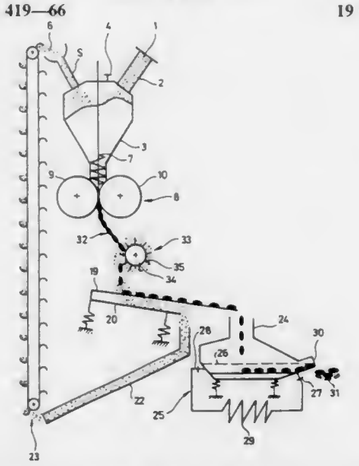
Hans Georg Bergendahl, Bochum, Germany, assignor to Maschinenfabrik Koppern GmbH & Co. KG, Germany

PCT No. PCT/EP93/02682, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO95/09080, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 30, 1993, Ser. No. 446,705

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—66 19 Claims



1. A method for making sponge iron briquettes (**17**) from fine ore (**1**) with a maximum grain size of less than 2 mm, preferably less than 0.5 mm, wherein hot fine ore (**1**) is fed to a roller press (**8**) comprising two press rolls (**9**, **10**) and is briquetted by opposite briquette pockets (**11**) of said press rolls (**8**) in a nip to form sponge iron briquettes (**17**),

characterized in

that one of said press rolls (**10**) is operated as a loose roll which is substantially movable in a direction transverse to the roller axis against a supporting force, said nip adapting to the amount of material supplied to said press rolls (**9**, **10**) and said nip having substantially such a mean width that a briquette strip (**32**) is produced.

5,666,639

CRISLA PROCESS AND APPARATUS

Jozef W. Eerkens, Pacific Palisades, Calif.; Dennis G. Garratt; Brian C. Olson, both of Cobourg, Canada; Ken J. Falk, and John H. Wang, both of Saskatoon, Canada, assignors to ITI Group LLC, Rocheport, Mo.

Filed Jun. 7, 1994, Ser. No. 255,331

Int. Cl.[6] B01J *19/08*

U.S. Cl. 422—186 57 Claims

1. A system for the separation of isotopic molecules having at least two isotopes of the same atom therein, including:

a source of the isotopic molecules in gaseous form at at least a first pressure;

a source of carrier gas at at least said first pressure;

a supersonic nozzle structure connected to said sources and having:

a nozzle throat through which the gaseous isotopic molecules and carrier gas introduced up stream thereof at said at least first pressure flow sonically; and

an expansion chamber positioned downstream from said nozzle throat shaped so that the gaseous isotopic molecules and carrier gas become supersonic and supercooled thereat, said expansion chamber including:

means to selectively excite, from a first energy level to at least a second energy level, first isotopic molecules having a desired isotope therein with photons of at least a first wavelength while the first isotopic molecules are in said expansion chamber;

means to mix at least one reactant gas with excited isotopic molecules so that said at least one reactant gas chemically reacts with excited isotopic molecules to form a compound;

collection chamber means positioned downstream from said expansion chamber, said expansion chamber and said collection chamber means having:

walls generally parallel to flow through said nozzle throat; and

means to gaseously shield the excited isotopic molecules from said walls.

5,666,640

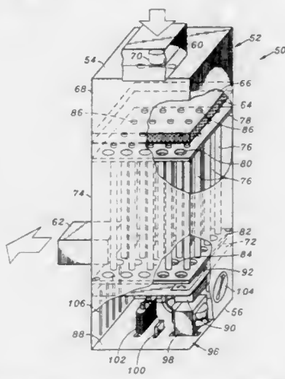
MICROWAVE POWERED OZONE PRODUCING SYSTEM

Vladimir A. Daniylchev, 4501 Pinyon Tree La., Irvine, Calif. 92715

Filed Apr. 2, 1996, Ser. No. 626,470

Int. Cl.[6] B01J *19/12*

U.S. Cl. 432—186.1 34 Claims



1. A microwave powered ozone producing system, comprising:

a housing defining a microwave cavity having a volume Vo, and inlet and exhaust ports which communicate with the microwave cavity;

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a number N of ozone producing lamps disposed within the microwave cavity and uniformly distributed therewithin, each of said lamps having a diameter D, a length L, and a nominal power p;

a microwave magnetron generator in communication with the microwave cavity, said generator having a microwave power P and producing microwaves having a wavelength λ; and

a power supply electrically connected to the generator;

the optimal operating condition for the system to maximize the ultraviolet output and longevity of the lamps and minimize system power consumption being governed by the relationships:

$Vo \geqq V$ min 1 wherein V min $1 = 8\pi\lambda^3/3$;

$Vo \geqq V$ min 2 wherein V min $2 = \pi(D+1)^2$ N L/4; and

$$P = k N p \sqrt{1 + Vo/V \min}$$

wherein V min is the larger of V min 1 and V min 2, k is a constant with a value in the range of $0.3 \leqq k \leqq 3$, and $\pi = 3.14$.

5,666,641

PREPARATION AND USE OF POLYMERIC MATERIALS CONTAINING HYDROPHOBIC ANIONS AND PLASTICIZERS FOR SEPARATION OF CESIUM AND STRONTIUM

Kent D. Abney, 30 San Juan St.; Scott A. Kinkead, 70 Canada Clr.; Caroline F. V. Mason, 148 Piedra Loop, all of Los Alamos, N. Mex. 87544, and Jiri Rais, Fr. Krizka 11, 17000 Praha 7, Czech Rep.

Filed Apr. 7, 1995, Ser. No. 418,712

Int. Cl.[6] C01F *13/00;* **C08K** *5/06*

U.S. Cl. 423—2 **17 Claims**

1. A method for removing cesium and strontium from aqueous solution, which comprises the steps of:

a. contacting the aqueous solution with a matrix which comprises a polymer, a plasticizer soluble in the polymer, and a hydrophobic anion soluble in the plasticizer which is capable of attracting Cs and Sr, thereby permitting the Cs and Sr present to be attracted into the matrix by the hydrophobic anion; and

b. separating the aqueous solution from the matrix.

5,666,642

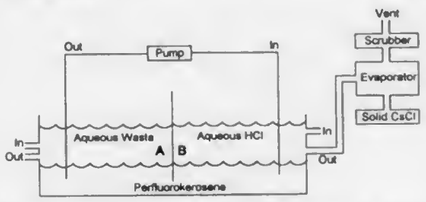
EXTRACTION OF CESIUM AND STRONTIUM IONS FROM NUCLEAR WASTE

M. Frederick Hawthorne, Encino, and Gary B. Dunks, Upland, both of Calif., assignors to Coremetals Research, Inc., Encino, Calif.

Filed Apr. 21, 1995, Ser. No. 427,077

Int. Cl.[6] C01F *13/00;* **C07H** *15/00*

U.S. Cl. 423—2 **42 Claims**



15. A method for selectively extracting cesium ions from an aqueous phase, comprising:

forming an aqueous-nonaqueous liquid combination by contacting a pregnant aqueous phase containing cesium ions with a first nonaqueous phase comprising at least one extraction agent, wherein the extraction agent is a substituted dicarbollide; and

separating the liquid combination into a stripped aqueous phase and a pregnant nonaqueous phase, wherein the pregnant nonaqueous phase contains cesium ions extracted from the pregnant aqueous phase;

wherein the substituted dicarbollide comprises:

a) a metal dicarbollide ion of the formula:

$$M(B_9C_2H_{10-a}R_{a+1})2^-; \text{ or}$$

b) a metal dicarbollide ion-substituted organosiloxane of the formula:

$$(R')_3Si\text{-}O\{[Si(R')_2\text{-}O\text{-}]_b[SiR'R''\text{-}O\text{-}]_c[Si(R')_2\text{-}O\text{-}]_d\text{-}[SiR''')(R')\text{-}O\text{-}]_e\text{-}[Si(R')_2\text{-}O\text{-}]_f[SiR'R''\text{-}O\text{-}]_g[Si(R')_2\text{-}O\text{-}]_h\}_iSi(R')_3$$

wherein M is a transition metal capable of forming a trivalent oxidation state;

R' is methyl or trifluoromethyl;

R'' is phenyl or fluoro- substituted phenyl;

R''' is a metal dicarbollide ion moiety of the formula:

$$\text{-}W\text{-}[M(B_9C_2H_{10-a}R_aZ)_2]$$

where W is oxygen or alkylene having from 2 to about 10 carbon atoms, and each Z is independently selected from hydrogen, alkyl having from about 1 to about 10 carbon atoms; fluoro- substituted alkyl having from 1 to about 10 carbon atoms; phenyl or substituted phenyl of the formula:

$$\text{-}C_5H_{5-j}Y_j$$

where j is 1 to 5, and Y is fluorine, phenyl or fluoro- substituted phenyl; a is 0 to 3; b, d, f, and h are 0 to 10; c and g are 0 or 1; and e and i are 1 to 10; and each R is independently selected from R_1 or R_2, where

R_1 is alkyl having from about 7 to about 10 carbon atoms; fluoro- substituted alkyl having from 2 to about 10 carbon atoms; substituted phenyl of the formula:

$$\text{-}C_5H_{5-j}Y_j$$

where j is 1 to 5, and Y is fluorine, phenyl or fluoro- substituted phenyl, with the proviso that R_1 cannot be 1-m-fluorophenyl or 1-p-fluorophenyl; or R_1 is an organosiloxane of the formula:

$$\text{-}W\text{-}\{[Si(R')_2\text{-}O\text{-}]_b[SiR'R''\text{-}O\text{-}]_c[Si(R')_2\text{-}O\text{-}]d\}_kE$$

where E is $\text{-}Si(R')_3$, $Si(R')_2(C_2H_5)$ or R''', k is 1 to 10, and R', R'', R''', b, c and d are defined as above; and R_2 is selected form the group consisting of chlorine, bromine, methyl and trifluoromethyl;

provided that at least one R must be R_1.

5,666,643

HIGH TEMPERATURE BRAZE MATERIAL

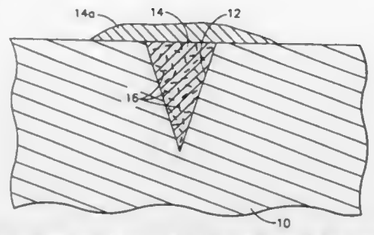
Richard P. Chesnes, Owasso, Okla.; Stephen J. Ferrigno, Cincinnati; David E. Budinger, Milford, both of Ohio, and Melvin R. Jackson, Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 392,565, Feb. 23, 1995, abandoned. This application May 15, 1996, Ser. No. 655,276

Int. Cl.[6] B22F *7/00*

U.S. Cl. 428—549 **8 Claims**

1. A superalloy article in which a crack or void has been repaired with a braze material, the article having a microstructure that is selected from the group consisting of single crystal and directionally solidified, the braze material comprising a nickel or cobalt-base braze alloy and fibers randomly distributed within the braze alloy, the braze material having an isotropic matrix formed by the braze alloy, which constitutes a majority of the braze material, the fibers having an aspect ratio of at least 4:1 and anisotropic microstructures chosen from the group consisting of single crystal, directionally solidified or equiaxed microstructures so as to impart sufficient localized anisotropy in the isotropic matrix of the braze material to blunt propagation of cracks and voids in the superalloy article, the fibers being formed from a material selected from the group consisting of superalloys, tantala, hafnia, silicon carbide and mixtures thereof.



5,666,644

MULTILAYERED END BEARING

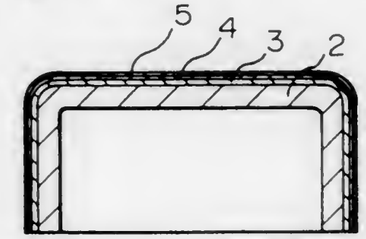
Tadashi Tanaka; Masaaki Sakamoto; Koichi Yamamoto; Tsukimitsu Higuchi, and Kouki Ozaki, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Nov. 23, 1994, Ser. No. 347,079

Claims priority, application Japan, Dec. 28, 1993, 5-336530

Int. Cl.[6] B22F *7/00; 7/04;* **F16C** *33/12*

U.S. Cl. 428—553 **2 Claims**



1. A multilayered end bearing for use in an automatic transmission gear having a one-way clutch mechanism, consisting essentially of:

a backing plate of steel having an upper surface;

a copper alloy, layer comprising a sintered composite of metal powders, and bonded to said upper surface of said backing plate, said copper alloy layer having a composition consisting essentially of 3 to 15 wt % Sn, 0.01 to 1.0 wt % P, the balance Cu and incidental impurities;

a Cu-Sn intermetallic compound layer formed during heat treatment at 150° to 300° C. and bonded to said copper alloy layer, said intermetallic compound layer having a thickness of from 0.5 to 4 μm and a Microrickets hardness of from 400 to 700; and

a tin layer bonded to said Cu-Sn intermetallic compound layer, said tin layer having a thickness of from 0.5 to 4 μm, said tin layer constituting a sliding surface of said end bearing.

5,666,645

DATA MANAGEMENT AND DISTRIBUTION SYSTEM AND METHOD FOR AN ELECTRONIC TELEVISION PROGRAM GUIDE

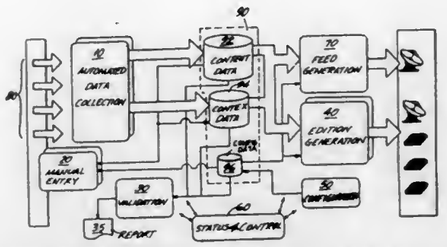
William Thomas, Highlands Ranch; David W. Gustafson, Golden; Dennis Tenney, Louisville, and Paul Darata, Littleton, all of Colo., assignors to News America Publications, Inc., New York, N.Y.

Filed Apr. 26, 1995, Ser. No. 430,327

Int. Cl.[6] H04H *1/02;* **H04N** *7/10; 5/38;* **H01J** *13/00*

U.S. Cl. 455—6.1 **37 Claims**

1. A process for the management and distribution of data for an electronic television program schedule guide wherein program schedule information is distributed to a plurality of target devices, said process comprising:



receiving television program schedule data from one or more sources and using said received data to update a database of television program schedule data;

manually accessing said database and making changes and corrections thereto;

validating a portion of the data in said database;

extracting a portion of said validated data in said database and generating a data set in accordance with configuration data for one or more of said target devices;

maintaining said configuration data in said database; and

monitoring and controlling the operation of one or more of said receiving process, accessing process, validation process, extracting process, and configuration maintenance process.

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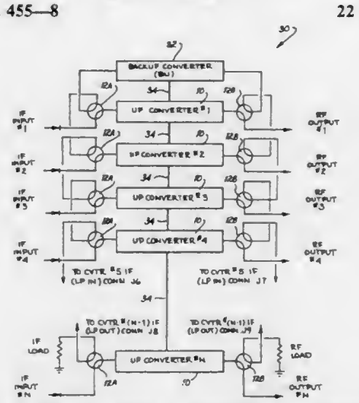
RADIO FREQUENCY (RF) CONVERTER SYSTEM WITH DISTRIBUTED PROTECTION SWITCHING AND METHOD THEREFOR

Robert McCollum, Chandler, and Phillip Wayne Blackwell, Phoenix, both of Ariz., assignors to Comtech, Tempe, Ariz.

Filed Apr. 10, 1995, Ser. No. 419,436

Int. Cl.[6] H04B *3/36*

U.S. Cl. 455—8 **22 Claims**



3. An RF converter system for transmission of communication signals and which provides reliable backup protection through a distributed protection switching scheme that prevents disruption in communication due to an RF converter failure comprising, in combination:

a plurality of RF converter means for modulating an inputted IF to each of said plurality of RF converter means and outputting a desired RF from each of said plurality of RF converter means wherein each of said plurality of RF converter means has means for monitoring and controlling modulation of said inputted IF and for providing communication interface with a backup RF converter;

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backup RF converter means coupled to a first of said plurality of RF converter means for performing fault detection and for assuming a frequency and an attenuation of any of said plurality of RF converter means where a fault occurs, said backup RF converter means having means for performing fault detection, self reconfiguration, and logical switching functions;

each of said plurality of RF converter means and said backup RF converter means having switching means for switching said inputted IF and said desired RF of any of said plurality of RF converter means to said backup RF converter means when said fault occurs and from said backup RF converter means back to one of said plurality of RF converter means from which said fault is cleared;

each of said plurality of RF converter means and said backup RF converter means further having input/output module means for looping said inputted IF and said desired RF between each of said plurality of RF converter means and said backup RF converter means; and

high speed bus means for looping each of said plurality of RF converter means to a successive RF converter means of said plurality of RF converter means and for providing an interface between each of said plurality of RF converter means and said backup RF converter means so said backup converter means can monitor configuration changes in each of said plurality of RF converter means.

5,666,647

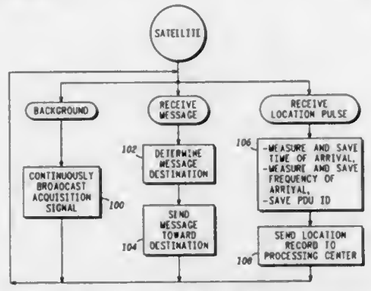
REMOTE POSITION DETERMINATION

Kristine Patricia Maine, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 395,528, Feb. 28, 1995, abandoned, which is a continuation of Ser. No. 923,755, Aug. 3, 1992, abandoned. This application Jul. 18, 1996, Ser. No. 683,184

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—12.1 **21 Claims**



1. A method for operating a mobile position determining unit (PDU) in cooperation with a communication system having an orbiting satellite projecting a plurality of communication cells and a monitoring office, said method comprising the steps of:

from one of said plurality of communications cells, receiving an acquisition signal originating from said orbiting satellite, wherein said orbiting satellite projects at least said one of said plurality of communication cells toward the PDU and said acquisition signal includes cell location information which enables determination of at least one cell location of said one of said plurality of communication cells;

cooperatively communicating with said orbiting satellite to exchange at least one location pulse to determine a position of said PDU, wherein said communicating step uses said cell location information to resolve data describing said position; and

transmitting from said PDU to said communication system via said orbiting satellite, said data describing said position of said PDU for immediate delivery to said monitoring office for evaluation of said position.

5,666,648

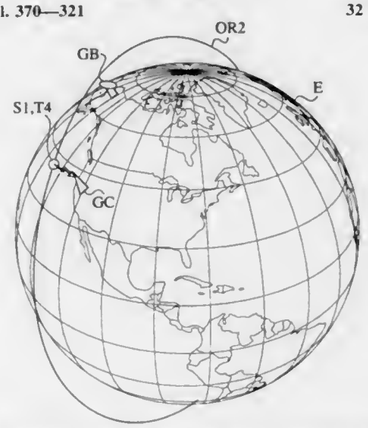
POLAR RELAY SYSTEM FOR SATELLITE COMMUNICATION

James R. Stuart, Louisville, Colo., assignor to Leo One IP, L.L.C., St. Louis, Mo.

Continuation-in-part of Ser. No. 149,574, Nov. 9, 1993, abandoned, Ser. No. 216,820, Mar. 28, 1994, abandoned, and Ser. No. 319,819, Oct. 12, 1994. This application Apr. 18, 1995, Ser. No. 423,673

Int. Cl.[6] H04B *7/19*

U.S. Cl. 370—321 **32 Claims**



21. A method of satellite communications comprising the steps of:

operating a plurality of satellites (S) in a plurality of low Earth orbits (OR); providing a plurality of relay stations (GB);

providing a plurality of user terminals (G) and distributing said user terminals (G) primarily in portions of the Earth (E) which are inhabited;

locating each one of said plurality of relay stations (GB) at a latitude on Earth (E) to enable communicating between each one of said relay stations (GB) and each one of said plurality of satellites (S) as each one of said plurality of satellites (S) independently passes over a pole of the Earth (E);

communicating between each one of said plurality of satellites (S) and at least one of said plurality of relay stations (GB);

receiving and storing on board one of said plurality of satellites (S), a message from at least one of said plurality of terminals (G);

transmitting said stored message from one of said plurality of satellites (S) to one of said plurality of relay stations (GB) where it is stored;

re-transmitting said stored message from said relay station (GB) to a second one of said satellites (S2) for forwarding said stored message to a second one of said plurality of terminals (G);

transmitting said message from said second satellite (S2) to a second one of said plurality of terminals (G); and

tracking, telemetering, operating and controlling a system including said plurality of satellites (S); said plurality of user terminals (G) and said plurality of relay stations (GB) with at least one of said plurality of relay stations (GB).

5,666,649

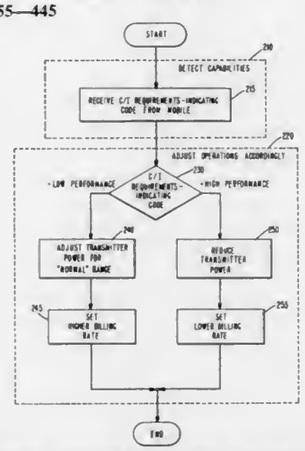
COMMUNICATIONS SYSTEM HAVING VARIABLE SYSTEM PERFORMANCE CAPABILITY

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Sep. 1, 1994, Ser. No. 299,420

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—445 **13 Claims**



1. In a cellular communications system including a base station and a mobile unit, a method for operating the base station, comprising the steps of:

detecting whether the mobile unit has a particular capability to receive signals at a lower signal-to-interference ratio; and

adjusting operation of the base station to improve system performance in response to detection that the mobile unit has the particular capability, wherein improving system performance includes reducing consumption of spectral resources consumed in the cellular communications system.

5,666,650

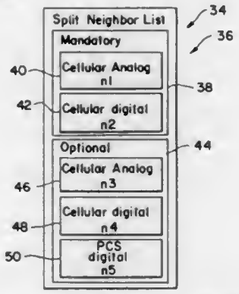
SPLIT NEIGHBOR LISTS FOR MULTIPLE HYPERBAND CAPABLE CELLULAR COMMUNICATIONS SYSTEMS

Eric Turcotte, Verdun, and Richard Brunner, Montreal, both of Canada, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 19, 1995, Ser. No. 426,675

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 370—329 **25 Claims**



9. A method for transmitting channel information to mobile stations operating in a cellular communications system including a plurality of hyperbands, each hyperband having a plurality of available communications channels, the method comprising the steps of:

transmitting a neighbor list to mobile stations identifying available channels for communication, the neighbor list being split, to include:

a first data set identifying available first channels for mobile station communication in a first one of the plurality of hyperbands, the number of first channels not exceeding a predetermined maximum number of channels; and

a second data set identifying available second channels for mobile station communication in the first one of the plurality of hyperbands and available third channels in a second one of the plurality of hyperbands, the sum of the second and third channels not exceeding the predetermined maximum number of channels;

receiving, by first hyperband only capable ones of the mobile stations, said transmitted neighbor list being split;

receiving, by multiple hyperband capable ones of the mobile stations, said transmitted split neighbor list;

processing said received neighbor list being split, by the first hyperband only capable mobile stations to choose for communications among first channels identified in the first data set; and

processing said received neighbor list being split, by the multiple hyperband capable mobile stations to choose for communications among the second and third channels identified in the second data set.

5,666,651

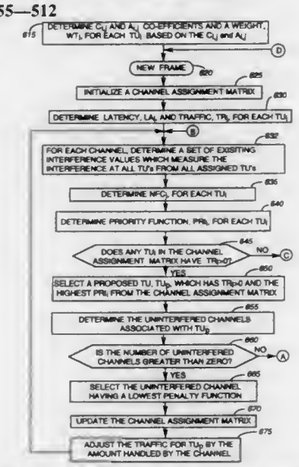
METHOD AND APPARATUS FOR SCHEDULING MESSAGE TRAFFIC IN A MULTICELL RADIO COMMUNICATION SYSTEM

Zhonghe Wang, Lake Worth, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1995, Ser. No. 476,771

Int. Cl.[6] H04B *15/00*

U.S. Cl. 455—512 **27 Claims**



1. A method used in a system controller for scheduling message traffic for transmission to a plurality of selective call radios in a radio communication system, wherein the radio communication system comprises a set of transmission units, said method comprising the steps of:

determining a set of interference coefficients, wherein an interference coefficient is a measure of transmission interference at a first transmission unit of a pair of transmission units from a second transmission unit of the pair of transmission units; and

modifying a set of transmission unit assignments to establish an assignment of a proposed transmission unit, wherein the assignment is determined from the set of interference coefficients, wherein, in said step of determining, the interference coefficient is determined as a binary value, and wherein a first

binary value represents a low likelihood of interference from the first transmission unit to the second transmission unit.

5,666,652

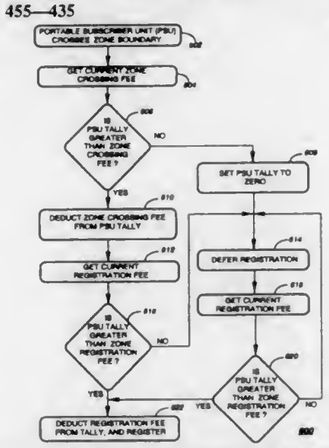
METHOD AND APPARATUS FOR CONTROLLING ZONE REGISTRATIONS IN A RADIO COMMUNICATION SYSTEM

Jyh-Han Lin, Keller; Jheroen Pieter Dorenbosch, Waxahachie; Robert Gary Goodman, Denton, and James Alan Starkweather, Grapevine, all of Tex., assignors to Motorola, Inc.

Continuation-in-part of Ser. No. 502,996, Jul. 17, 1995. This application Feb. 26, 1996, Ser. No. 606,901

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 455—435 **43 Claims**



1. A method of controlling zone registrations in a radio communication system providing radio coverage to a portable subscriber unit within a plurality of zones, the method comprising in a fixed portion of the radio communication system the steps of:

granting to the portable subscriber unit a predetermined amount of a movement credit in response to an occurrence of a predetermined communication activity associated with the portable subscriber unit; and

accepting a limited number of the zone registrations from the portable subscriber unit, the limited number determined by a tally of the movement credit granted to the portable subscriber unit, diminished by movement fees deducted in response to a zonal movement of the portable subscriber unit.

5,666,653

WIDE AREA RADIO COMMUNICATION SYSTEM AND METHOD FOR COMMUNICATING IN A WIDE AREA THROUGH A WIDE AREA RADIO COMMUNICATION SYSTEM

Karl-Axel Ahl, Malmo, Sweden, assignor to Inventahl AB, Malmo, Sweden

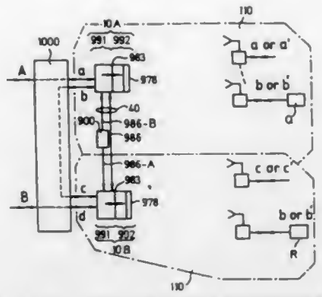
Continuation of Ser. No. 387,004, Jan. 19, 1995, abandoned, which is a continuation of Ser. No. 30,141, Mar. 4, 1993, abandoned. This application Jul. 1, 1996, Ser. No. 674,195

Claims priority, application Sweden, Aug. 7, 1990, 9002582; Apr. 26, 1991, 9101271

Int. Cl.[6] H04Q *07/30*

U.S. Cl. 455—330 **28 Claims**

1. A method for communicating in a wide area through a wide area radio communication system, said system comprising at least two central stations receiving and transmitting user information and control information as digital signals, each of said central stations being associated with at least one peripheral station and covering a service area which at least in part is common to said two central stations, said central stations and said peripheral stations comprising transmission timing means, the method comprising the steps of:



connecting operatively at least one peripheral station to at least two central stations;

receiving and transmitting digital signals in a low frequency unit of one of the central stations;

arranging at least said two central stations at a common physical site to cover common parts of a service area,

operating said central and peripheral stations to transmit and receive digital signals by utilizing radio signals at at least one common frequency;

transferring said digital signals between said low frequency unit and a high frequency unit of said central station, said high frequency unit transmitting and receiving said radio signals to and from associated central and peripheral stations; and

redirecting, in response to control means of said low frequency unit, digital signals received by said low frequency unit of a first central station of at least two central stations to the low frequency unit of a second central station of at least two central station to by-pass the high frequency unit of said first central station upon the occurrence of a predetermined condition in order to accomplish transmission redundancy in said common parts of said service area.

5,666,654

METHOD OF CHANNEL ALLOCATION IN A MOBILE TELEPHONE SYSTEM

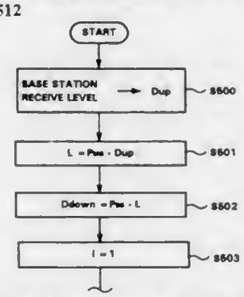
Toshihito Kanai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 18, 1994, Ser. No. 245,484

Claims priority, application Japan, May 18, 1993, 5-115466

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—512 **38 Claims**



1. A channel allocation method in a mobile communications system in which a plurality of base stations are disposed in a service area and radio communication is performed between one of said base stations and a mobile station, said method handled by each base station comprising the steps of:

setting the control range of the transmission power control amount for each radio channel;

selecting, upon communication of each of said base stations with the mobile station, one of radio channels which has a control range corresponding to the necessary transmission power control amount, and allocating the selected radio channel for communication with the mobile station;

setting a selection priority degree and a first threshold value to each of the radio channels such that the first threshold value is set at least equal to or higher for the channel having higher priority degree than the lower priority channel; and

allocating of one radio channel having the first threshold value when the transmission power control amount for the communication with the mobile station exceeds the first threshold value.

5,666,655

MOBILE COMMUNICATION SYSTEM WITH AUTONOMOUS DISTRIBUTED TYPE DYNAMIC CHANNEL ALLOCATION SCHEME

Yoshihiro Ishikawa, and Narumi Umeda, both of Yokohamashi, Japan, assignors to NTT Mobile Communication Network Inc., Tokyo, Japan

Filed Feb. 2, 1995, Ser. No. 382,586

Claims priority, application Japan, Feb. 4, 1994, 6-012636; May 20, 1994, 6-106957; Jun. 16, 1994, 6-134188; Jun. 20, 1994, 6-137611

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—512 **40 Claims**

CHANNEL ID	USED / UNUSED FLAG	PRIORITY LEVEL TABLE		
		#1	---	#N
ch_1	0	$P_{1,1}$	---	$P_{N,1}$
ch_2	1	$P_{1,2}$	---	$P_{N,2}$
⋮	⋮		⋮	⋮
ch_{M-1}	0	$P_{1,M-1}$	---	$P_{N,M-1}$
ch_M	0	$P_{1,M}$	---	$P_{N,M}$

PRIORITY LEVEL TABLE NUMBER	DISTANCE THRESHOLD	MOVING DIRECTION THRESHOLD	MOVING SPEED THRESHOLD
#1	TL_1	TD_1	TV_1
#2	TL_2	TD_2	TV_2
	⋮	⋮	⋮
#N-1	TL_{N-1}	TD_{N-1}	TV_{N-1}
#N	TL_N	TD_N	TV_N

8. A method of allocating radio channels to communications between base stations and mobile stations in a mobile communication system, comprising the steps of:

(a) grouping the mobile stations into N groups according to states of the mobile stations at each base station, where N is an integer;

(b) managing N sets of allocation priority levels for each radio channel available in the mobile Communication system in correspondence to said N groups at each base station;

(c) for each mobile station, sequentially selecting each radio channel which is currently unused in an order of one of said N sets of the allocation priority levels managed at the step (b) which corresponds to one of said N groups grouped at the step (a) to which said each mobile station belongs to, and sequentially making an allocation accept/reject judgement concerning whether each selected radio channel is usable or not, at said each base station; and

(d) allocating one radio channel which is judged as usable at the step (c) to a communication between said each base station and said each mobile station.

5,666,656

SELECTING WHICH MAIN BASE STATION FOR AN INFILL BASE STATION TO MONITOR IN A MOBILE RADIO SYSTEM

Markku Rautiola, Tampere, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

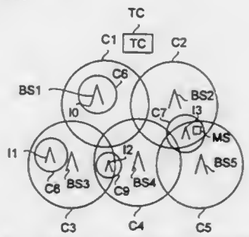
PCT No. PCT/FI94/00389, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO95/07011, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 2, 1994, Ser. No. 448,356

Claims priority, application Finland, Sep. 3, 1993, 933864

Int. Cl.[6] H04Q *7/00;9/00*

U.S. Cl. 455—513 **11 Claims**



1. A method for selecting a channel in a mobile radio system, the geographical coverage area of which is divided into a plurality of radio cells, each radio cell comprising a main base station indicated by an identifier, at least one said radio cell further comprising at least one infill base station, said method comprising the steps of:

(a) signalling by each said main base station with subscriber stations on a respective control channel having a respective downlink frequency for signalling from the respective base stations to subscriber stations and a respective uplink frequency for signalling from each respective subscriber station to a respective said base stations,

(b) monitoring by a said infill base station respective of the subscriber stations at the uplink frequency of the control channel of a respective said main base station,

(c) measuring by the respective infill base station the quality of the downlink control channels of predetermined ones of said main base stations, and

(d) selecting by the respective infill base station on the basis of the quality of the downlink frequencies of said downlink control channels, a one of said main base stations the uplink frequency of the control channel of which main base station the respective infill base station begins to monitor in continuation of or in place of the one being monitored in step (b).

5,666,657

METHOD IN A SELECTIVE CALL RECEIVER FOR APPLYING CONDITIONAL PARTIAL ADDRESS CORRELATION TO A MESSAGE

Frederick L. Kampe, Boynton Beach, Fla., and John K. Gleeson, Beijing, China, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1996, Ser. No. 646,736

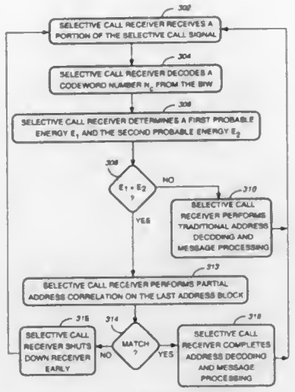
Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—38.3 **14 Claims**

1. In a selective call receiver that uses partial address correlation to decode a portion of a selective call signal transmitted by a radio communication system, a method of implementing partial address correlation so as to reduce energy consumption, comprising:

receiving the portion of the selective call signal from the radio communication system;

determining a first probable energy E_1 that would be dissipated by the selective call receiver if it were to use partial address correlation; and



using partial address correlation when E_1 is less than a second probable energy E_2 that would be dissipated by the selective call receiver if it did not use partial address correlation.

5,666,658

WIRELESS SIGNAL TRANSMISSION SYSTEM, METHOD AND APPARATUS

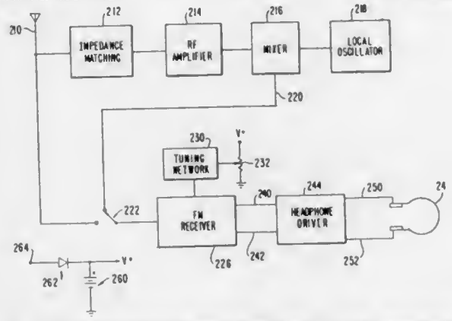
Robert L. Borchardt, New York; William T. McGreevy, Babylon; Ashok Nawarange, Astoria, and Efrain L. Rodriguez, Brooklyn, all of N.Y., assignors to Recoton Corporation, New York, N.Y.

Continuation of Ser. No. 259,339, Jun. 13, 1994, Pat. No. 5,410,735, which is a continuation of Ser. No. 822,598, Jan. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,772, Mar. 7, 1991, Pat. No. 5,272,525. This application Apr. 24, 1995, Ser. No. 427,450

The portion of the term of this patent subsequent to Apr. 25, 2012, has been disclaimed.

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—42 **21 Claims**



1. A local area wireless stand alone audio signal transmission and receiver system, comprising:

a transmitter transmitting stereo multiplexed FM audio signals within a first, relatively high frequency band at least as high as approximately 900 MHZ; and

a receiver located within said local area, said receiver comprising:

an antenna to receive the transmitted FM audio signals;

a first downconverter connected to said antenna to reduce the frequency of the transmitted stereo multiplexed FM audio signals to a second frequency band lower than the first, relatively high approximately 900 MHZ frequency band,

a standard FM audio receiver wired to said first downconverter to detect and restore said audio signals from said transmitted FM audio signals within said second frequency band; said standard FM audio receiver comprising a second downconverter to downconvert from said second frequency band to a lower frequency used to generate audio signals,

at least one of said first or second downconverters being tunable,

wherein the frequency of said FM audio signal in said second frequency is capable of being received by said standard FM radio receiver;

a tuning network connected to said standard FM radio receiver to detect said FM audio signal in said second frequency band,

at least one electroacoustical transducer to which said audio signals detected and restored by said FM audio receiver is supplied;

wherein said receiver is capable of being easily moved by an individual within said local area while still receiving said transmitted FM audio signals; and

wherein said second frequency band is outside the commercial FM band of 88 to 108 MHZ.

5,666,659

METHOD OF AND STRUCTURE FOR INCREASING SIGNAL POWER OVER CELLULAR LINK

Kent Kernahan, 10581 Madera, Cupertino, Calif. 94016, and Gavin Grant, 1405 McDaniel Ave., San Jose, Calif. 95126

Filed Mar. 13, 1995, Ser. No. 404,622

Int. Cl.[6] H04B *1/40; 1/02*

U.S. Cl. 455—43 **9 Claims**



1. In combination;

means for providing a signal capable of carrying data or voice, said signal occupying the voice band frequency range;

a de-emphasis circuit for attenuating the frequency components of said signal above a first selected corner frequency;

a first amplifier for selectively attenuating selected frequency components of said signal;

a pre-emphasis circuit for selectively amplifying selected frequency components of said signal above a second selected corner frequency; and

a second amplifier for increasing the amplitude of selected signal components in said signal;

thereby to provide a signal to a modulator having increased signal power compared to prior art signals.

5,666,660

SYSTEM FOR RECEIVING A RADIO SIGNAL INCLUDING MULTIPLE RECEIVING UNITS

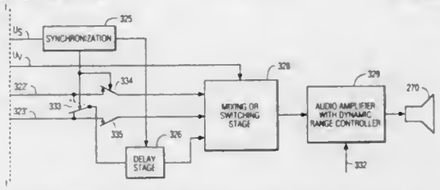
Robert Elnsel; Klaus Göken, both of Celle, and Hans-Jörg Gessler, Villingen-Schwenningen, all of Germany, assignors to Telefunken, Hanover, Germany

Continuation of Ser. No. 154,426, Nov. 19, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,293

Claims priority, application Germany, May 31, 1991, 41 17 787.8

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—45 **8 Claims**



1. A system for receiving, a radio signal representing a radio program comprising:

first and second radio receiver units for receiving radio signals at respective first and second different frequencies for producing respective first and second radio program signals, each of said first and second radio program signals representing said radio program;

means responsive to control information included in said radio signals and correlated to said radio program for adjusting an original dynamic in the received radio program signals and for synchronizing said first and second radio program signals in time to produce respective first and second synchronized radio program signals; and

means for combining said first and second synchronized radio program signals to produce a resultant signal representative of said radio program.

5,666,661

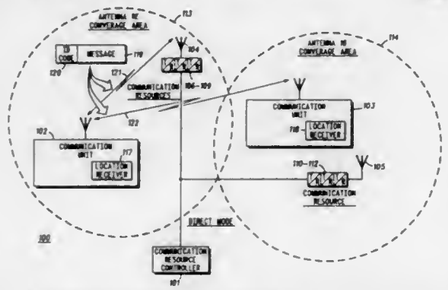
METHOD FOR AUTOMATICALLY BYPASSING THE USE OF A COMMUNICATION SYSTEM INFRASTRUCTURE

Gary W. Grube, Palatine; Marc C. Naddell, Schaumburg, and Mark L. Shaughnessy, Algonquin, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 209,029, Mar. 10, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 562,940

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—509 **5 Claims**



1. A method for changing communication modes, the method comprising the steps of:

a) determining, by a communication resource controller, the geographic locations of communication units engaged in a communication using a system communication resource;

b) determining, by the communication resource controller, a distance relationship between the communication units, based on the geographic locations of the communication units;

c) determining, by the communication resource controller, whether the distance relationship is favorable with respect to a predetermined threshold;

d) when the distance relationship is favorable, transmitting, by the communication resource controller, a mode change message; and

e) upon receiving the mode change message, performing, by the communication units, an action identified in the mode change message, including relinquishing the system communication resource, and affiliating with a direct mode communication resource, wherein the direct mode communication resource is not the system communication resource.

5,666,662

METHOD FOR DETECTING THE LOCATION OF A MOBILE TERMINAL

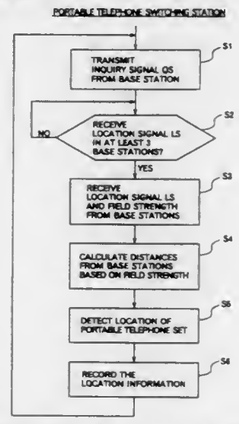
Toshiyuki Shibuya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 21, 1994, Ser. No. 278,516

Claims priority, application Japan, Jul. 23, 1993, 5-202077

Int. Cl.[6] H04B *7/26;* **G01S** *3/06*

U.S. Cl. 455—456 **8 Claims**



1. A method for detecting the location of a mobile terminal in a mobile radio communication system including a plurality of base stations and a plurality of mobile terminals, the method comprising the steps of:

emitting a location inquiry signal from at least one of the base stations through a control channel which is used to transmit the location inquiry signal;

emitting a location signal from each of the mobile terminals receiving the location inquiry signal from the at least one base station, the location signal including identification information of each of the mobile terminals;

receiving the location signal from each of the mobile terminals in at least three base stations neighboring each of the mobile terminals;

calculating the respective distances from the base stations receiving the location signal of a specified mobile terminal, based on the respective field strength values detected from the received location signal, the specified mobile terminal being identified by the identification information included in the location signal; and

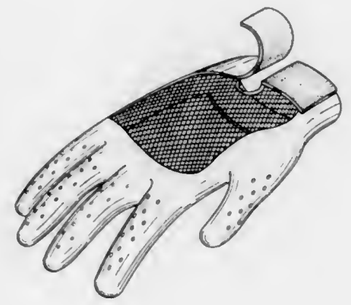
calculating the location of the specified mobile terminal among the base stations receiving the location signal of the specified mobile terminal, based on the respective distances from the base stations receiving the location signal to the specified mobile terminal.

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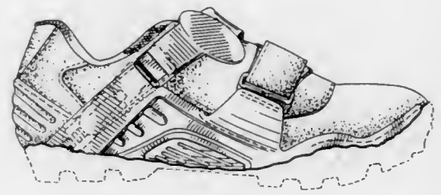
DESIGNS

SEPTEMBER 9, 1997

383,285
MESH AND LEATHER GLOVE
Patricia Mondragon, P.O. Box 35, 218 Estes Rd., Ranchos de Taos, N. Mex. 87557-0035
Filed Sep. 25, 1995, Ser. No. 44,474
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D2—619



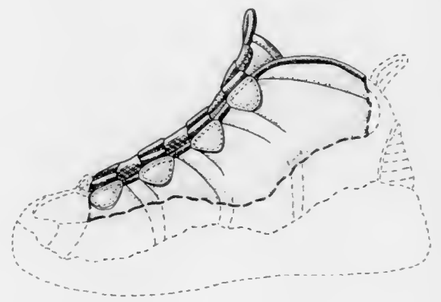
383,287
SHOE UPPER
Allen W. Van Noy, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 7, 1996, Ser. No. 51,457
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



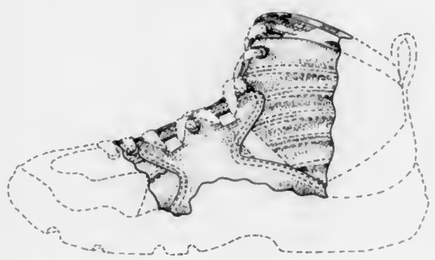
383,286
SWEATER HAVING AN INSIDE POCKET WITH A DOLL IN THE POCKET
Evelyn M. Finnegan, 392 Hatherly Rd., North Scituate, Mass. 02066
Filed Aug. 28, 1995, Ser. No. 43,182
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—753



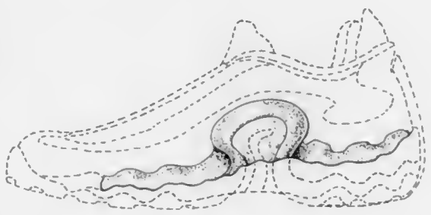
383,288
ELEMENT OF A SHOE UPPER
Eric P. Avar, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 45,321, Oct. 17, 1995, Pat. No. Des. 370,994. This application Feb. 1, 1996, Ser. No. 49,857
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—970



383,289
ELEMENT OF A SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 30, 1996, Ser. No. 55,119
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



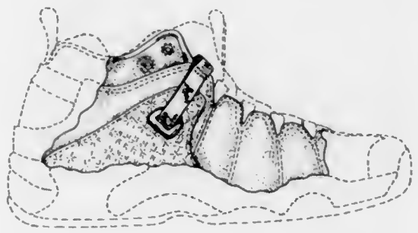
383,290
ELEMENT OF A SHOE
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 5, 1996, Ser. No. 55,413
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



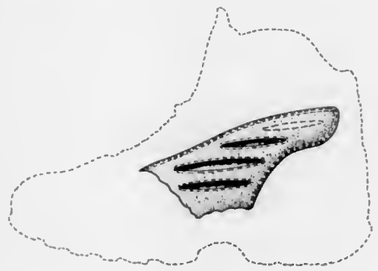
383,291
SIDE ELEMENT OF A SHOE UPPER
Peter M. Fogg, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 8, 1996, Ser. No. 60,814
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



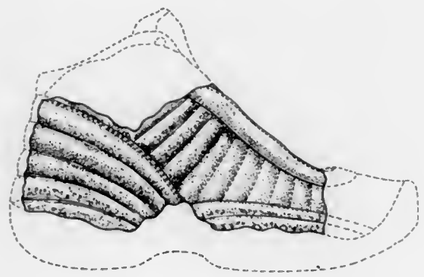
383,292
SIDE ELEMENT OF A SHOE UPPER
Wilson W. Smith, III, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 15, 1996, Ser. No. 61,004
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



383,293
SIDE ELEMENT OF A SHOE UPPER
James K. Tong, Tigard, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 18, 1996, Ser. No. 61,247
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



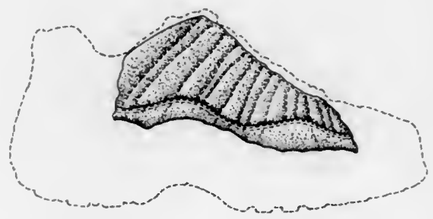
383,294
SIDE ELEMENT OF A SHOE
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 24, 1996, Ser. No. 61,447
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



383,295
ELEMENT OF SHOE UPPER
Matthew N. Rask, Boring, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 24, 1996, Ser. No. 61,448
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972

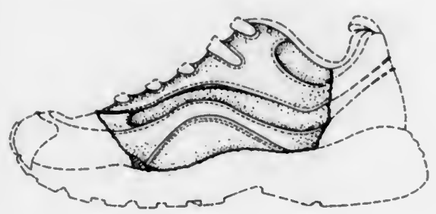


383,296
SIDE ELEMENT OF A SHOE UPPER
Matthew N. Rask, Boring, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 24, 1996, Ser. No. 61,449
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972

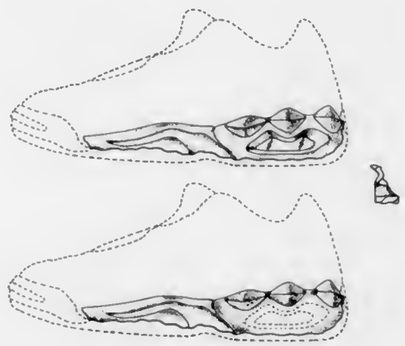


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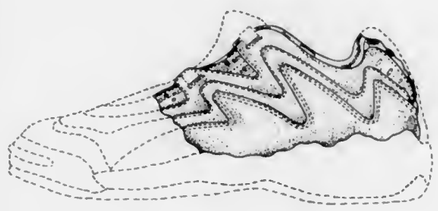
383,297
SIDE ELEMENT OF A SHOE UPPER
Thomas J. Gray, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 30, 1996, Ser. No. 61,744
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



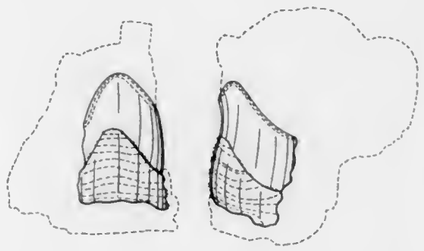
383,299
ELEMENT OF A SHOE SOLE
Ben S. Yun, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 6, 1996, Ser. No. 62,044
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



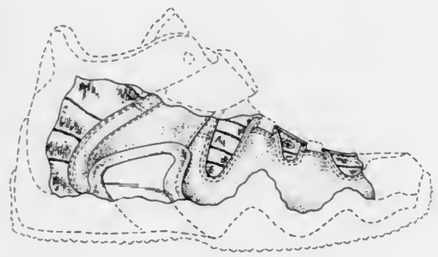
383,298
ELEMENT OF A SHOE UPPER
Ben S. Yun, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 30, 1996, Ser. No. 61,750
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



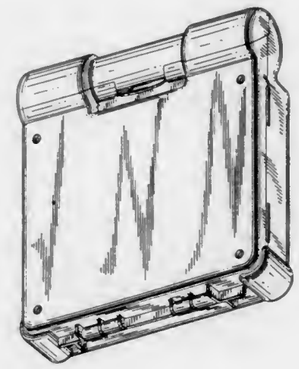
383,300
ELEMENT OF A SHOE
Tracy L. Teague, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 12, 1996, Ser. No. 62,202
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



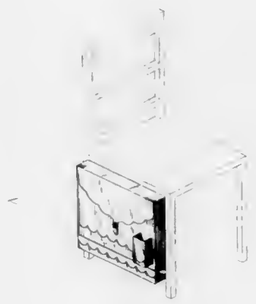
383,301
SIDE ELEMENT OF A SHOE UPPER
Tracy L. Teague, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 12, 1996, Ser. No. 62,203
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



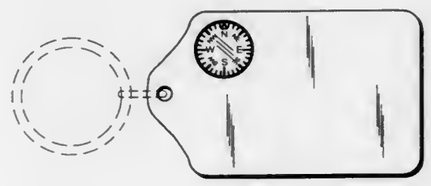
383,303
SCHOOL BOX
Kent W. Murphy, Wooster, Ohio, assignor to Berol Corporation, Brentwood, Tenn.
Filed Dec. 14, 1995, Ser. No. 47,892
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—206



383,302
CHAIR POUCH
Re Allen Broussard, 105 Kingswood Dr., Lafayette, La. 70501
Filed May 22, 1996, Ser. No. 54,797
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—201



383,304
KEYCHAIN
Fernst Van Osch, Drunen, Netherlands, assignor to Lase-It, Inc., Searingtown, N.Y.
Filed Aug. 19, 1996, Ser. No. 58,556
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208



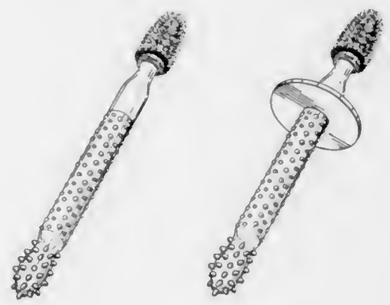
383,305
PET CARRIER
Kami L. Holstrom, 8532 Stone Ave. N., Seattle, Wash. 98103
Filed Sep. 18, 1996, Ser. No. 59,945
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—216



383,306
FIRST AID KIT CONTAINER
Raymond P. Pennoyer, 97 Sturbridge La., Trumbull, Conn. 06610
Filed Jan. 22, 1996, Ser. No. 49,220
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—294



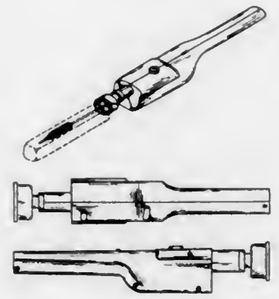
383,307
INFANT TOOTHBRUSH AND TEETHING OBJECT UNIT
Eric S. Klein, and Jamie S. Klein, both of 11 Bittersweet Trail, Rowayton, Conn. 06853
Filed Nov. 14, 1995, Ser. No. 46,426
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—105



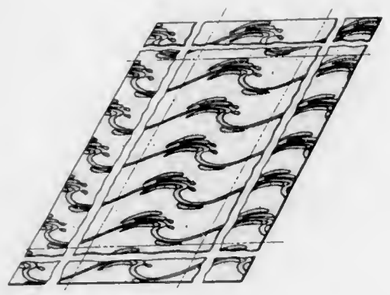
383,308
TOOTHBRUSH
Franz Alban Stützer, Offenbach am Mein, Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Germany
Filed May 10, 1995, Ser. No. 38,685
Claims priority, application Germany, Nov. 14, 1994, M 94 08 829.2
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—111



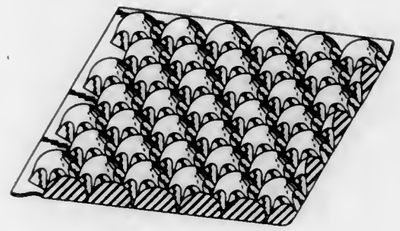
383,309
MASCARA APPLICATOR HANDLE
Jennifer Cline, Lot 18 Arkansas F.V., Great Lakes, Ill. 60088
Filed Jun. 10, 1994, Ser. No. 24,253
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D28—7



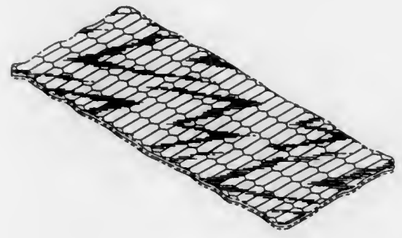
383,310
EMBOSSED WIPE
Gary Charles Springer, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 27, 1995, Ser. No. 36,771
Term of patent 14 years
LOC (6) Cl. 05 - *06*
U.S. Cl. D5—53



383,311
SHEET MEMBER WITH A PLURALITY OF PROTECTIVE BUMPERS
Robert J. Engberg, Fairmont, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 12, 1995, Ser. No. 47,731
Term of patent 14 years
LOC (6) Cl. 05 - *99*
U.S. Cl. D5—61



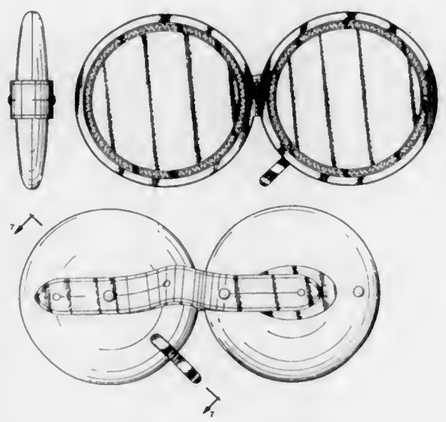
383,312
SEAL PATTERN ON RETROREFLECTIVE SHEETING
Susan K. Nestegard, Woodbury, and James E. Lasch, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 19, 1996, Ser. No. 49,207
Term of patent 14 years
LOC (6) Cl. 05 - *06*
U.S. Cl. D5—61



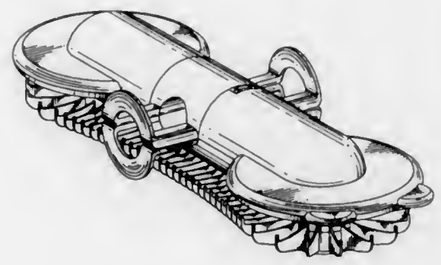
383,313
SHOWER MIRROR
Jackson G. Dorr, and Linda D. Dorr, both of P.O. Box 61082, Sunnyvale, Calif. 94088-1082
Filed Jan. 31, 1996, Ser. No. 49,789
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—300



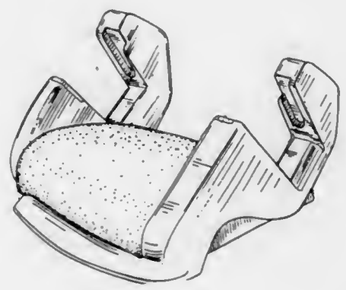
383,314
PICTURE FRAME
David L. Morgan, London, United Kingdom, assignor to Grants of Dalvey Limited, Ross-Shire, Scotland
Filed Dec. 1, 1995, Ser. No. 47,351
Claims priority, application United Kingdom, Jun. 6, 1995, 2047990
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—309



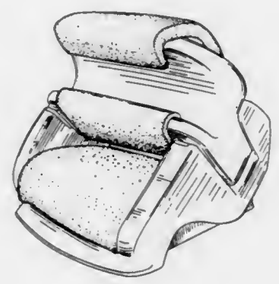
383,315
CLOSET ORGANIZER
Cooper C. Woodring, Topeka, Kans., assignor to Barbara D. Arner, Oxnard, Calif.
Filed Feb. 6, 1996, Ser. No. 49,995
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—315



383,316
BOOSTER SEAT
James M. Kain, Tipp City, Ohio, assignor to Cosco, Inc., Columbus, Ind.
Division of Ser. No. 44,524, Sep. 26, 1995, Pat. No. Des. 376,917. This application Aug. 30, 1996, Ser. No. 58,987
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—333



383,317
BOOSTER SEAT
James M. Kain, Tipp City, Ohio, assignor to Cosco, Inc., Columbus, Ind.
Division of Ser. No. 44,524, Sep. 26, 1995, Pat. No. Des. 376,917. This application Aug. 30, 1996, Ser. No. 59,032
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—333



383,318
CHAIR
David Paul Chandler, Jamestown, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Jan. 22, 1996, Ser. No. 49,293
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



383,319
ROCKING CHAIR
Levy Montes de Oca, 330 E. 9 St., Suite H, Hialeah, Fla. 33010
Filed Dec. 15, 1995, Ser. No. 47,959
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—348



383,320
SEAT
Mark A. Gilbertson, Sauk City, Wis., assignor to Sears Manufacturing Company, Davenport, Iowa
Filed Feb. 6, 1996, Ser. No. 49,947
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—356

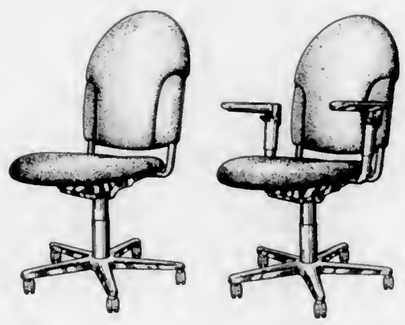


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383,321
SEAT
Bennie Dale Honeycutt, Sr., 20569 Coontail Rd., Aberdeen, Miss. 39730
Filed May 10, 1996, Ser. No. 47,960
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—358



383,322
SEATING UNIT
Arnold B. Dammermann, and Michael L. Deimen, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Feb. 17, 1995, Ser. No. 35,048
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



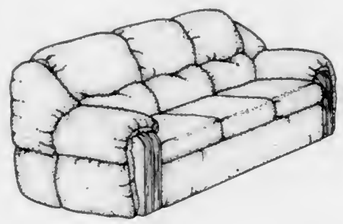
383,323
SEATING UNIT
Arnold B. Dammermann, and Michael L. Deimen, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Feb. 17, 1995, Ser. No. 35,345
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



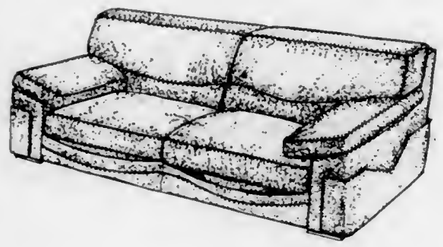
383,324
CHAIR
Pascal Mourgue, Paris, France, assignor to Fermob, Thoissey, France
Filed Oct. 4, 1995, Ser. No. 44,958
Claims priority, application France, Apr. 5, 1995, 952103
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—374



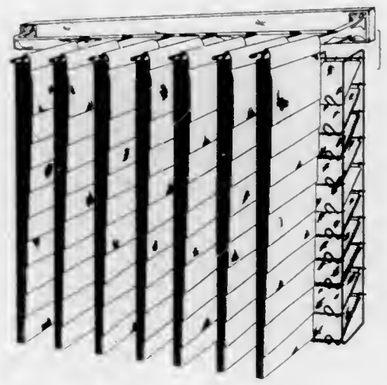
383,325
SEAT
Frank A. Warren, Denville, N.J., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Division of Ser. No. 18,910, Feb. 17, 1994, Pat. No. Des. 365,215. This application Jan. 11, 1995, Ser. No. 33,394
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



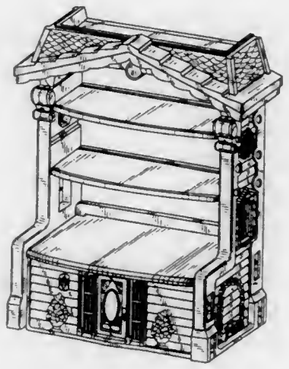
383,326
COUCH
Hans Hopfer, Paris, France, assignor to Lenzburg Design A.G., Lenzburg, Switzerland
Filed Apr. 16, 1996, Ser. No. 53,073
Claims priority, application European Pat. Off., Oct. 19, 1995, DMA/003103
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



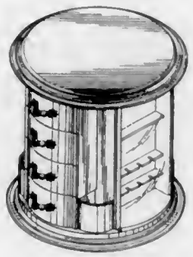
383,327
COMBINATION OF SAMPLED GOODS, DISPLAY HANGER, AND DISPLAY RACK
Gary W. Loflin, 722-2A Salem St., Thomasville, N.C. 27360
Filed Jan. 31, 1996, Ser. No. 49,816
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—410



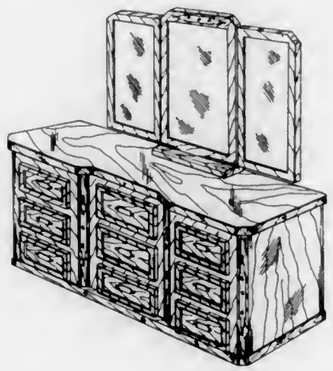
383,328
DOLL HOUSE BOOKCASE
Jay M. Bro, Plano; Melinda Gaddie, Denton; Richard P. Machos, Coppell, and Tony R. Maness, Lewisville, all of Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 8, 1996, Ser. No. 50,109
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D6—434



383,329
JEWELRY CASE
Chen-Yuan Wang, No. 50, Sec. 5, An-Ho Rd., An-Nan Dist., Tainan City, Taiwan
Filed Dec. 27, 1995, Ser. No. 48,357
The portion of the term of this patent subsequent to Dec. 17, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—441



383,330
SOUTHWESTERN DRESSER
Ronald A. Lowery, 3139 S. Dodge Blvd., Tucson, Ariz. 85713
Filed Mar. 4, 1996, Ser. No. 51,155
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—444



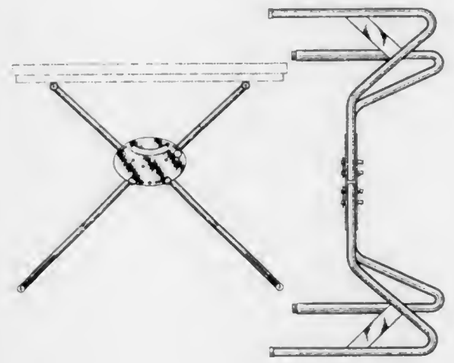
383,331
CHEST
Christopher S. Bergelin, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 1, 1996, Ser. No. 49,853
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



383,332
BOAT-SHAPED SHELF
Marshall Schneider, 617 S. Raymond St., Marinette, Wis. 54143
Filed Jul. 11, 1996, Ser. No. 56,906
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—450



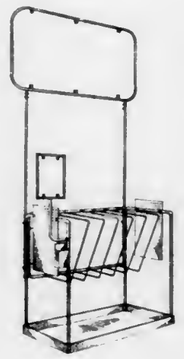
383,333
STAND FOR MUSICAL INSTRUMENT
Larry J. Mechem, Jr., Anderson, Ind., assignor to Standtastic, Anderson, Ind.
Filed Feb. 27, 1996, Ser. No. 50,819
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—462



383,334
ACCESSORIES TREE FOR USE ON DRESSERS AND IN CLOSETS
Mildred Barden, 5125 New Hope Rd., #B1, Raleigh, N.C. 27604
Filed Nov. 20, 1995, Ser. No. 46,909
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—463



383,335
LADDER RACK
David M. Shanahan, Plantation, and J. Dennis Gordon, Cooper City, both of Fla., assignors to Keller Ladders, Inc., Fort Lauderdale, Fla.
Filed Feb. 23, 1996, Ser. No. 50,700
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—468

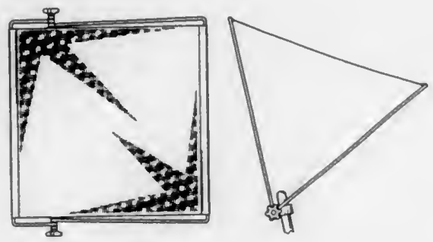


383,336
MOBILE SHELVING UNIT
Willem Jacobus Van Der Merwe, and Johannes Abraham Burger, both of P.O. Box 12723, Clubview, 0014, South Africa
Filed Apr. 23, 1996, Ser. No. 53,470
Claims priority, application South Africa, Oct. 30, 1995, A95/1048
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—474

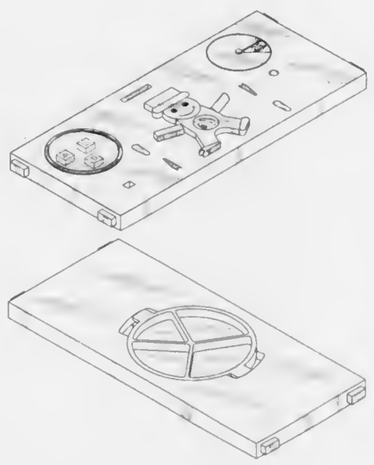


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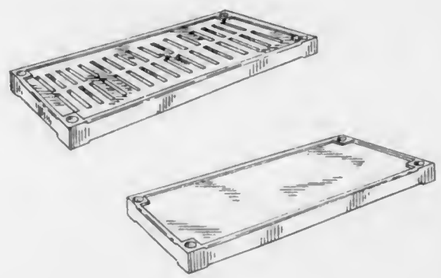
383,337
CHAIR SHADE
Reuben Lerner, 11 Nordaw, 63112 Tel Aviv, Israel
Filed Sep. 14, 1995, Ser. No. 43,895
Claims priority, application Israel, Mar. 15, 1995, 24122
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



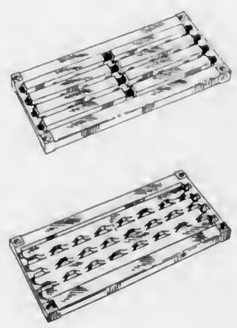
383,338
COMBINATION DINNER TRAY/ENTERTAINMENT DEVICE FOR A HIGH CHAIR
Laura M. Gibbs, 2223 Burns Ave., Overland, Mo. 63114-3613
Filed Jan. 22, 1996, Ser. No. 49,255
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



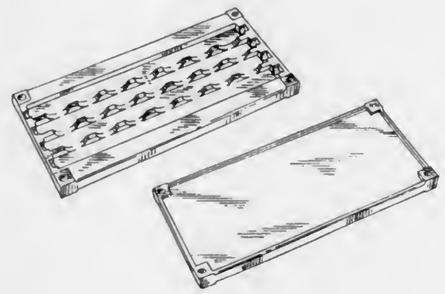
383,339
REVERSIBLE SHELF
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed May 10, 1996, Ser. No. 53,514
Claims priority, application WIPO, Nov. 10, 1995, DMA/003138
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



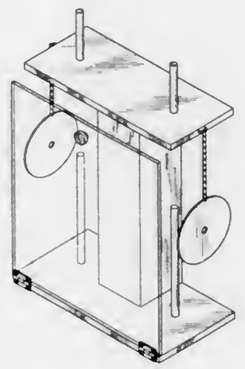
383,340
COMBINATION SHELF AND POST STORAGE UNIT
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex, Sarl, Oyonnax, France
Filed May 10, 1996, Ser. No. 54,214
Claims priority, application WIPO, Nov. 10, 1995, DMA/003138
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



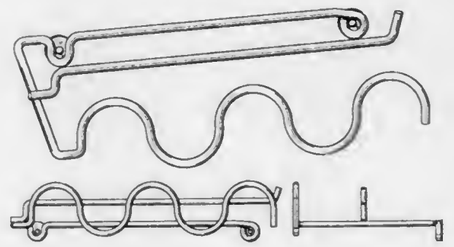
383,341
REVERSIBLE BOTTLE SUPPORT SHELF
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed May 10, 1996, Ser. No. 54,215
Claims priority, application WIPO, Nov. 10, 1995, DMA/003138
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—511



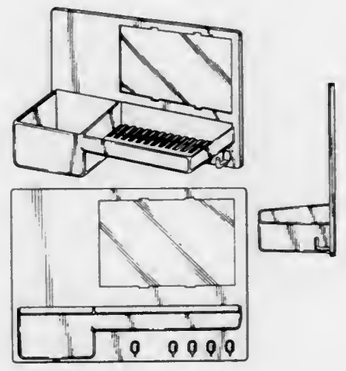
383,342
DECORATIVE HOLDER AND STORAGE DEVICE FOR MULTIPLE ROLLS OF TOILET PAPER
Rena C. Duncan, 8207 N. Bronco La., Sherwood, Ark. 72116-3940
Filed Nov. 17, 1995, Ser. No. 48,753
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—520



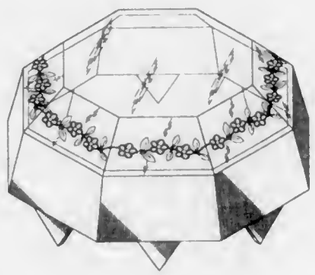
383,343
PAPER TOWEL HOLDER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139
Filed Jan. 16, 1996, Ser. No. 48,742
Term of patent 14 years
LOC (6) Cl. 06 - *99*
U.S. Cl. D6—522



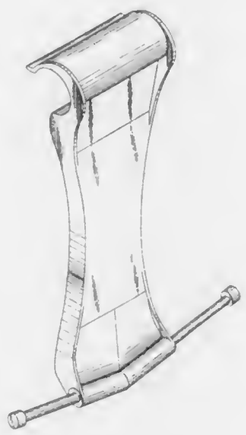
383,344
SHOWER AND SHAVING SUPPLY CARRIER
Leonard C. Andrus, Plymouth, Mich., assignor to Brass-Craft Manufacturing Company, Novi, Mich.
Filed Apr. 2, 1996, Ser. No. 52,314
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—525



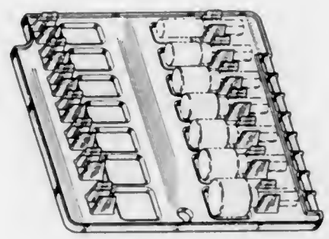
383,345
SOAP HOLDER WITH GRIPS FOR HOLDING A BAR OF SOAP
Francois G. Khalil, 40 High Park Avenue, # 180, Toronto, Ontario, Canada, M6P 2S1
Filed Mar. 4, 1996, Ser. No. 51,085
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D6—536



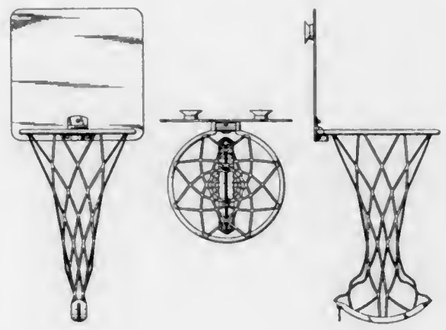
383,346
SKATE HOOK
Stephen P. Whitehead, Elgin, and Michael G. Uffner, Naperville, both of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Mar. 5, 1996, Ser. No. 51,175
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—552



383,347
TOOL HOLDING MEMBER
Victor Cheung, Chicago; Steven P. Belletire, Wheaton, both of Ill., and Nancy G. McCarthy, Baltimore, Md., assignors to Black & Decker Inc., Newark, Del.
Filed Feb. 2, 1996, Ser. No. 49,881
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—553



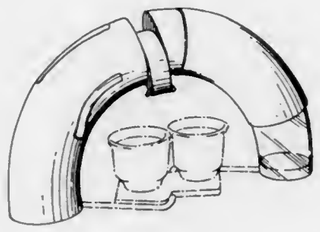
383,348
BATHTUB TOY HOLDER
Gail B. Frankel, Dallas, Tex., assignor to Kel-Gar, Inc., Dallas, Tex.
Filed Feb. 29, 1996, Ser. No. 50,970
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—563



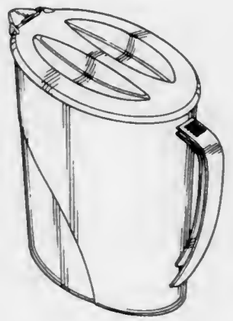
383,349
CUSHION PAD
Bob A. Steelman, Bowling Green, Ky., and Robert J. Rose, Chesterfield, Va., assignors to Carpenter Company, Richmond, Va.
Filed Jul. 12, 1996, Ser. No. 56,966
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



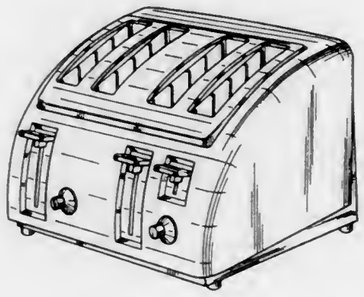
383,350
COFFEE MAKER
Ariel Leibovic, Rachmilovich St. 100/4, Pisgat Zeev Jerusalem, Israel
Filed Dec. 27, 1995, Ser. No. 48,356
Claims priority, application Israel, Jun. 28, 1995, 24670
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



383,351
PITCHER
Anthony DeMore, Copley, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 18, 1996, Ser. No. 57,181
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—319

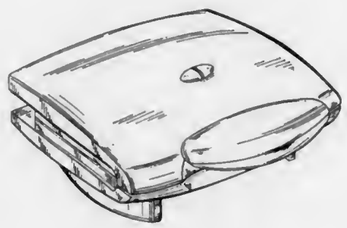


383,352
TOASTER
Dick Powel, London, England, assignor to SEB, Selongey, France
Filed Jul. 22, 1996, Ser. No. 57,288
Claims priority, application France, Jan. 22, 1996, 96 04 16
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—330

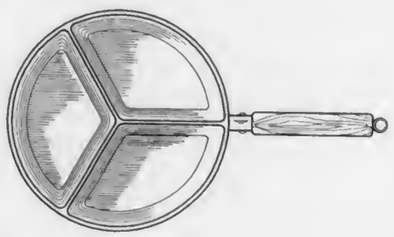


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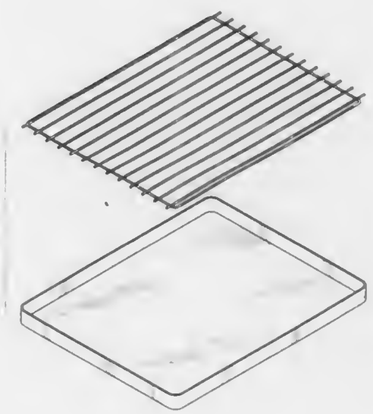
383,353
ELECTRIC GRILL
Philippe Piret, Ifs, France, assignor to Moulinex S.A., Paris, France
Filed May 13, 1996, Ser. No. 54,371
Claims priority, application France, Nov. 17, 1995, 95/6298
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—352



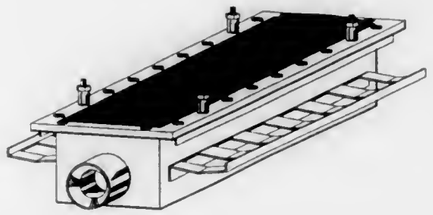
383,354
THREE COMPARTMENT FRY PAN
Jacqueline S. Nassar, 30699 State St., Perdido Beach, Ala. 36530
Filed Jan. 22, 1996, Ser. No. 49,274
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—357



383,355
FOOD GRILL AND CATCH PAN FOR USE IN CONVENTIONAL OVENS
Donavon S. Uter, 13 N. Bleeker St., Apt. 9, Mount Vernon, N.Y. 10550
Filed Jan. 29, 1996, Ser. No. 49,536
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—359



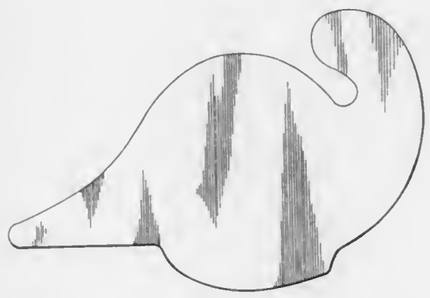
383,356
GAS-FIRED BURNER WITH CHARCOAL BRIQUETTE SUPPORT
Robert M. Stuck, 17 Old Stage Trail, Lake Wylie, S.C. 29710
Filed Nov. 20, 1995, Ser. No. 46,876
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D7—407



383,357
UTILITY LIGHTER
Daniel A. Ferrara, Jr., Bantam, Conn., assignor to BIC Corporation, Milford, Conn.
Filed Apr. 23, 1996, Ser. No. 53,483
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—416



383,358
DINOSAUR SHAPED PIZZA TRAY
Abdo Al Hassen, West Covina, Calif., assignor to Dinosaur-Us Family Entertainment Centers, Inc., Glendora, Calif.
Filed Feb. 2, 1996, Ser. No. 49,897
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—551



383,359
GOBLET
William G. Goodman, 200 E. Jeanine, Tempe, Ariz. 85284
Filed Mar. 18, 1996, Ser. No. 51,802
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—524

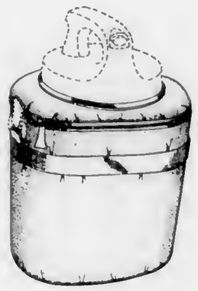


383,360
LUNCH BAG COOLER
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed May 3, 1996, Ser. No. 53,997
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—607

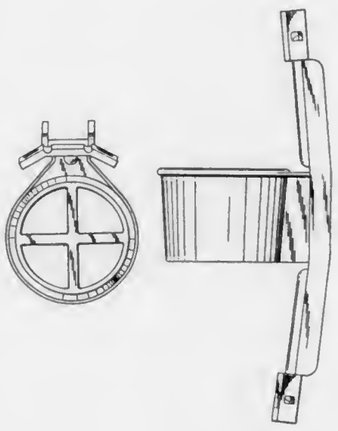


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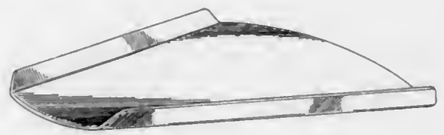
383,361
INSULATED VESSEL
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Jul. 22, 1996, Ser. No. 57,249
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—607



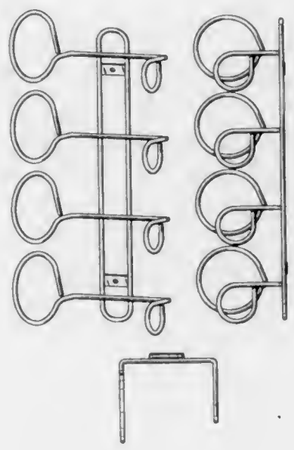
383,362
CUPHOLDER WITH ELONGATED SUPPORT FOR ATTACHMENT TO FURNITURE
John Ayotte, Eagan, and Peter W. A. Bergin, Hopkins, both of Minn., assignors to MTS Northwest Sound, Inc., Minneapolis, Minn.
Division of Ser. No. 26,729, Aug. 4, 1994, Pat. No. Des. 367,997, which is a continuation-in-part of Ser. No. 5,318, Feb. 26, 1993, abandoned. This application Dec. 29, 1995, Ser. No. 48,487
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—620



383,363
CUTTING BOARD
John K. Norton, P.O. Box 444, Hudson, Ohio 44296
Filed Sep. 23, 1996, Ser. No. 60,127
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—698



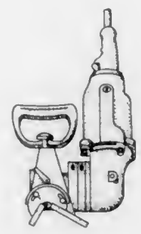
383,364
WALLMOUNTED BOTTLE HOLDER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139
Filed Jan. 16, 1996, Ser. No. 48,738
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—704



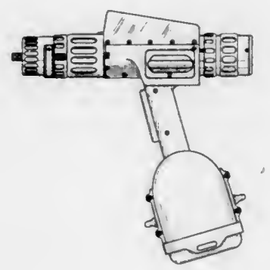
383,365
WRENCH
Grace Lee, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jul. 28, 1995, Ser. No. 41,969
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—25



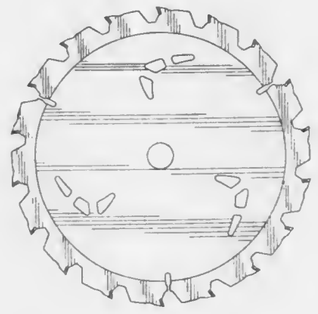
383,366
CHAMFER CUTTING TOOL
Philip Heck, P.O. Box 425, 1480 Old U.S. 23 South, Hartland, Mich. 48353
Filed Dec. 26, 1995, Ser. No. 48,352
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—67



383,367
PISTOL GRIP TORQUE-MEASURING POWER TOOL
Paul W. Richards, Annapolis, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 15, 1996, Ser. No. 50,364
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—68

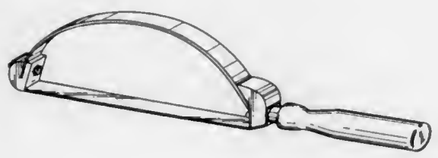


383,368
SAW BLADE WITH VENTS
Nicholas E. Achterberg, Phoenix; David A. Williams, Bel Air, both of Md., and John R. Curtsinger, Shelbyville, Ky., assignors to Black & Decker Inc., Newark, Del.
Filed Mar. 15, 1996, Ser. No. 51,681
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—74



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383,369
SANDING TOOL
Carlos Galindo, 513 Fifth St. SE., Mason City, Iowa 50401
Filed Dec. 1, 1995, Ser. No. 47,374
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—90



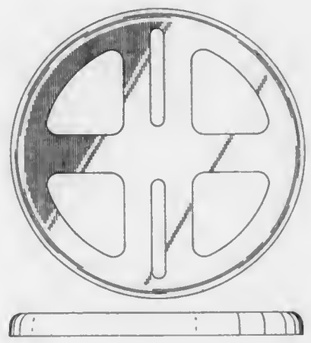
383,370
KNIFE HANDLE WITH BLADE GUARD
Paul Chen, Taipei, Taiwan, and Yi Frenchie Jin, Dalian, China, assignors to Fiskars Inc., Madison, Wis.
Filed Mar. 5, 1996, Ser. No. 51,305
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—107



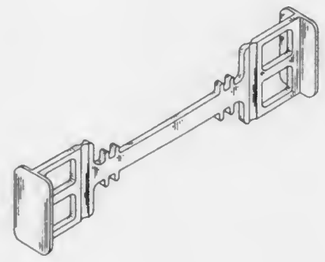
383,371
KNOB
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Division of Ser. No. 34,939, Jan. 25, 1995, Pat. No. Des. 372,185. This application Feb. 14, 1996, Ser. No. 50,296
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—310



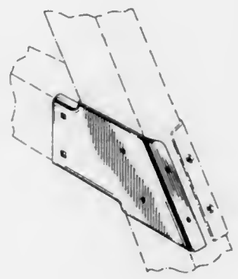
383,372
STEERING WHEEL GUARD
Kevin D. Winner, Hermitage, Pa., assignor to Winner International Royalty Corporation, Sharon, Pa.
Division of Ser. No. 43,381, Aug. 28, 1995, Pat. No. Des. 372,418. This application Apr. 10, 1996, Ser. No. 52,865
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



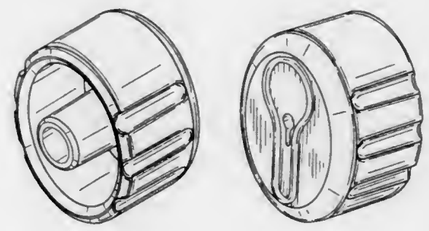
383,373
TIE FOR CONCRETE FORMING SYSTEM
Patrick E. Boeshart, P.O. Box 774, Sioux City, Iowa 51102
Filed Mar. 14, 1996, Ser. No. 51,587
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



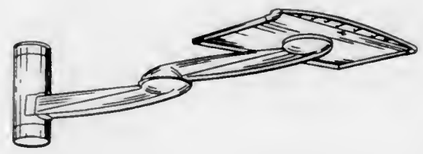
383,374
ANGLE BRACKET
Charles C. Sammann, P.O. Box 845, Canyon, Tex. 79015
Filed Jul. 15, 1996, Ser. No. 57,043
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



383,375
GUIDEWIRE RETENTION DEVICE
Timothy J. Erskine; Glade H. Howell, and Kenneth C. Musgrave, all of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Feb. 29, 1996, Ser. No. 50,883
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—356

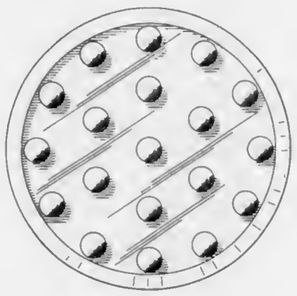


383,376
SUPPORT FOR A TELEVISION AND AUDIO/VIDEO EQUIPMENT
Henricus Hyacintus Vogels, Hondsruglaan, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Division of Ser. No. 48,116, Dec. 20, 1995. This application Jun. 27, 1996, Ser. No. 56,392
Claims priority, application WIPO, Jun. 23, 1995, DMA/002976
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D8—363

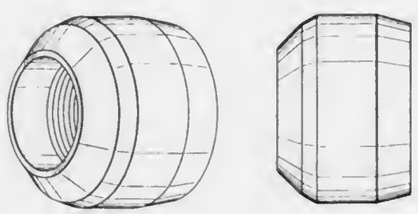


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383,377
CUSHIONED FURNITURE PROTECTOR
Kathleen R. Sellers, 228 East Boca Raton Blvd., Boca Raton, Fla. 33432
Filed May 3, 1996, Ser. No. 55,825
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—374



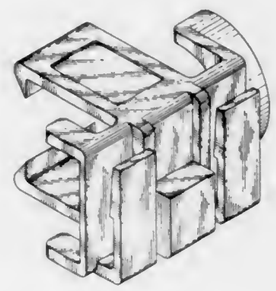
383,378
TAPERED THREADED COUPLING
Robert S. Schrader, Dallas; James L. Snyder, Houston; James Phillip Ellenberger, Spring; James W. Magee, Houston; Peter J. Badley, Houston; Joe A. Escobedo, Houston; Daniel T. Gutierrez, Houston, and Williams E. Goussen, Houston, all of Tex., assignors to WFI International, Inc., Houston, Tex.
Filed Feb. 9, 1994, Ser. No. 18,529
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



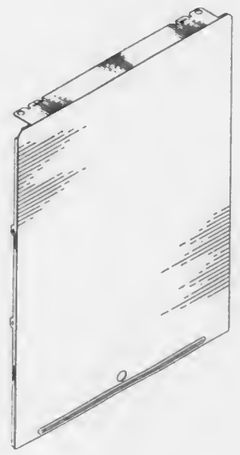
383,379
ELECTRICAL SECURING CORD
Jonathan D. Keegan, 422 Manor St., Hanover, Pa. 17331
Filed Dec. 11, 1995, Ser. No. 50,766
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—394



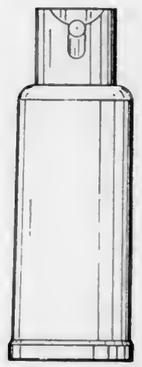
383,380
DUPLEX CLIP AND HOLDER
Andrew Kempf, Horseheads, N.Y., and Thomas E. Simmons, Jr., Milford, N.H., assignors to Augat Inc., Mansfield, Mass.
Filed Feb. 5, 1996, Ser. No. 49,938
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



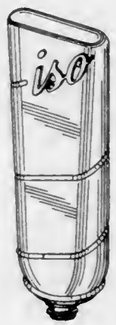
383,381
DOOR COVERING
Richard N. Philippi, Garden Grove, Calif., assignor to Couch & Philippi, Stanton, Calif.
Filed Dec. 21, 1995, Ser. No. 48,792
Term of patent 14 years
LOC (6) Cl. 08 - *09*
U.S. Cl. D8—400



383,382
DISPENSER
Philip Meshberg, 2770 S. Ocean Blvd. Apt. 602, Palm Beach, Fla. 33480
Filed Oct. 23, 1995, Ser. No. 45,523
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—300



383,383
BOTTLE
Jeannette Prestia, Melrose Park; Laura S. Elliott, Chicago; Lawrence Laske, Highland Park, and Caroline Marchionna, Naperville, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.
Filed Mar. 18, 1996, Ser. No. 51,792
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—302

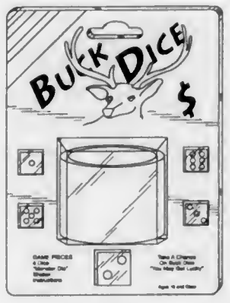


383,384
COMBINED SPRAY BOTTLE AND HULL
Jean Paul Gaultier, Paris, France, assignor to Beaute Prestige International, Paris, France
Filed Aug. 28, 1995, Ser. No. 43,383
Claims priority, application WIPO, Feb. 27, 1995, DMA002800
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—311

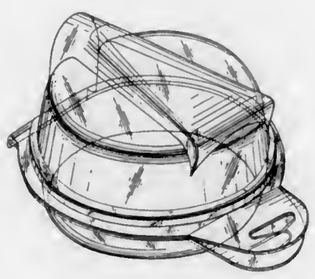


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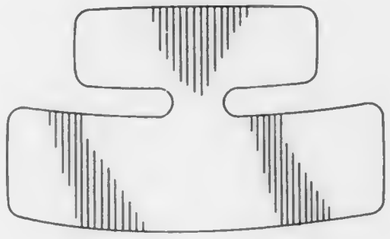
383,385
COMBINED PACKAGE AND DICE GAME
Scott Hayduk, and Tom Parry, both of Apt. 3, 24 Granville Ave., Danbury, Conn. 06810
Filed Mar. 8, 1995, Ser. No. 35,872
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



383,386
PACKAGE
David Scott Loubach, New York, N.Y., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Dec. 28, 1995, Ser. No. 48,410
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



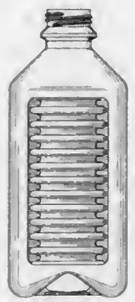
383,387
SHORT LAUNDERED SHIRT STABILIZER
Stephen E. Berglund, 5128 N. Palm Ave., Fresno, Calif. 93704
Filed May 17, 1996, Ser. No. 54,605
The portion of the term of this patent subsequent to Jun. 24, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—457



383,388
CONTAINER FOR A FOOD PRODUCT
Takeshi Meiji, 4-23, Nishi 12-chome, Minami 18-Jou, Chuo-ku, Sapporo-shi, Hokkaido, Japan
Filed Mar. 25, 1996, Ser. No. 52,116
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—504



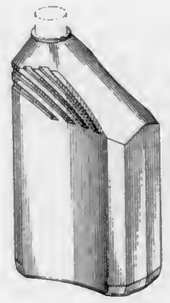
383,389
BOTTLE FOR A NUTRITIONAL PRODUCT
Patrick Edward McCallister, Columbus, and Joseph Michael Lippian, Worthington, both of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation-in-part of Ser. No. 26,130, Jul. 20, 1994, Pat. No. Des. 372,091. This application Dec. 21, 1995, Ser. No. 48,182
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



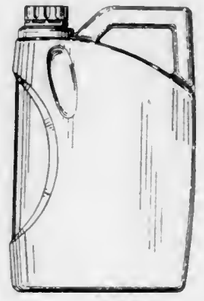
383,390
CONTAINER
Mel Abfier, Stamford, Conn., and Matthew Scott Okin, Cresskill, N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Feb. 7, 1996, Ser. No. 50,054
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—520



383,391
EXTERIOR SURFACE OF A CONTAINER SIDEWALL
Ted L. Beaver, Roselle, Ill., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Dec. 21, 1995, Ser. No. 48,124
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—523



383,392
GRANULE DISPENSER
Iain Douglas Quayle, Merseyside, and Neil Andrew Clark, Cheshire, both of Great Britain, assignors to Levington Horticulture Limited, United Kingdom
Filed Dec. 11, 1995, Ser. No. 47,716
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—528



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Patent Not Issued For This Number

383,395

PROGRAMMABLE WEDDING CLOCK WITH DISPLAYS FOR YEARS MONTHS DAYS AND HOURS OF MARRIAGE

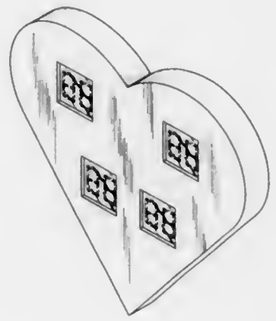
Allen F. Giesbrecht, 4170 Kacey Cir. NE., Salem, Oreg. 97305-4506

Filed Mar. 5, 1996, Ser. No. 51,200

Term of patent 14 years

LOC (6) Cl. 10 - *01*

U.S. Cl. D10—6



383,394

COMBINED BOTTLE AND CAP

Brian T. Davis, Waterford, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 8, 1996, Ser. No. 56,735

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—539



383,396

CASE FOR A WATCH

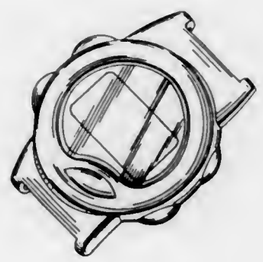
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Mar. 27, 1996, Ser. No. 53,008

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



383,397

WATCH CASE

Takayuki Takahashi, Sagamihara, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 53,153

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



383,398

CASING FOR AN ANALOG WATCH

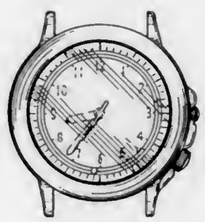
M. Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Jul. 2, 1996, Ser. No. 56,551

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



383,399

MEASURING WHEEL

David John Cragie, Oadby, and Stephen Reginald Thompson, Anstey, both of Great Britain, assignors to Invicta Plastics Limited, Leicester, England

Filed Mar. 5, 1996, Ser. No. 51,304

Claims priority, application United Kingdom, Sep. 18, 1995, 2050465

Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—70



383,400

NAVIGATIONAL LOCATION SYSTEM

Joh Wada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

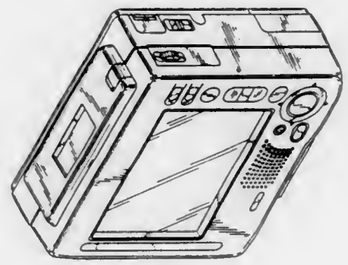
Filed Nov. 27, 1995, Ser. No. 47,044

Claims priority, application Japan, Jul. 27, 1995, 7-21623

Term of patent 14 years

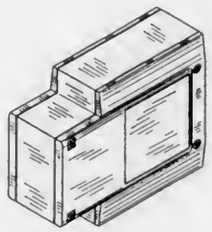
LOC (6) Cl. 10 - *04*

U.S. Cl. D10—65

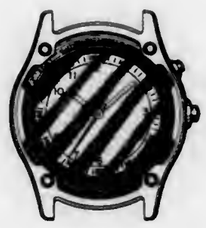


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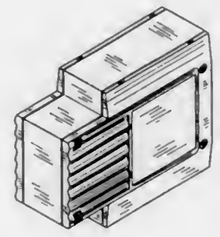
383,401
HOUSING FOR ELECTRICAL MEASURING, MONITORING, REGULATING AND CONTROLLING INSTRUMENTS
Hans Kehlbeck, Bremen, Germany, assignor to Gestra Aktiengesellschaft, Bremen, Germany
Filed Feb. 22, 1996, Ser. No. 51,028
Claims priority, application WIPO, Oct. 27, 1995, DM/034498
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—75



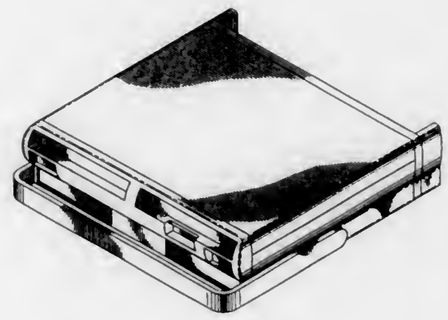
383,402
WRIST WATCH
Takashi Takeichi, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 24, 1996, Ser. No. 56,113
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—39



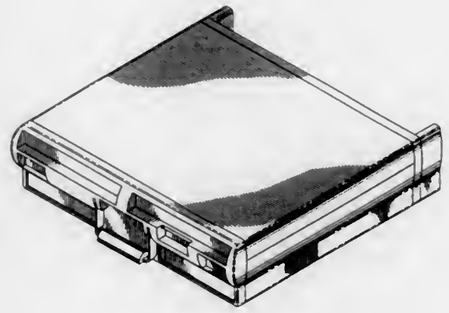
383,403
HOUSING FOR ELECTRICAL MEASURING, MONITORING, REGULATING AND CONTROLLING INSTRUMENTS
Hans Kehlbeck, Bremen, Germany, assignor to Gestra Aktiengesellschaft, Bremen, Germany
Filed Feb. 22, 1996, Ser. No. 51,029
Claims priority, application WIPO, Oct. 27, 1995, DM/034498
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—75



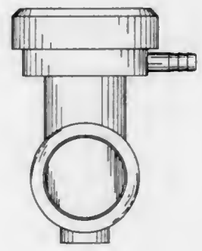
383,404
COMPACT LOW PROFILE COMMUNICATION ANALYZER FOR RECEIVING INSERTABLE SMART MODULES
Michael Stan Horn, Gilbert; Thomas James Hussey, Mesa, both of Ariz.; Kenneth Warren Larson, Elmhurst, Ill.; Robert Joseph Skalka, Tempe, Ariz.; Frank Allen Smith, Mesa, Ariz.; Kenneth Allan Johnson, Mesa, Ariz., and William Eric Rau, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 22, 1996, Ser. No. 52,104
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—76



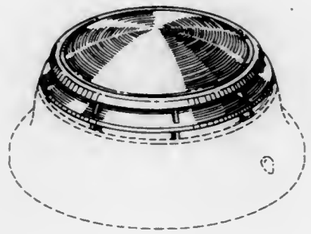
383,405
COMPACT LOW PROFILE COMMUNICATION ANALYZER FOR RECEIVING INSERTABLE SMART MODULES
Michael Stan Horn, Gilbert; Thomas James Hussey, Mesa, both of Ariz.; Kenneth Warren Larson, Elmhurst, Ill.; Robert Joseph Skalka, Tempe, Ariz.; Frank Allen Smith, Mesa, Ariz.; Kenneth Allan Johnson, Mesa, Ariz., and William Eric Rau, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 22, 1996, Ser. No. 52,105
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—76



383,406
INSTRUMENT CALIBRATING DEMAND FLOW REGULATOR
George D. Baker, Cambridge, Md., assignor to Air Liquide America Corporation, Houston, Tex.
Filed Mar. 1, 1996, Ser. No. 50,989
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—96



383,407
GRILLE FOR A SMOKE DETECTOR
Timothy C. Repp, New Hartford, Conn.; Wayne Nelson, Maynard, Mass.; Lawrence G. Stanley, Templeton, Mass., and Charles Winterble, Princeton, Mass., assignors to Simplex Time Recorder Company, Gardner, Mass.
Filed Dec. 22, 1995, Ser. No. 48,281
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106

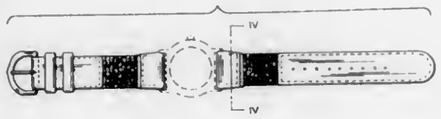


383,408
BICYCLE HORN
William R. Collins, 12 Laurie Ct., Novato, Calif. 94947
Filed Dec. 28, 1995, Ser. No. 48,413
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—120



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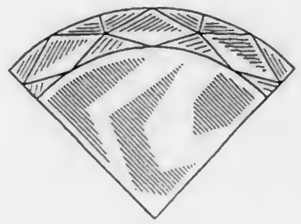
383,409
WRISTWATCH STRAP
Judith R. Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jul. 8, 1996, Ser. No. 56,694
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—3



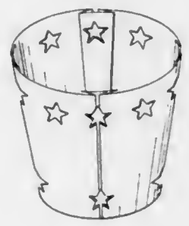
383,410
WEDDING BAND
Thomas Bruce Roemer, 1163 First Capitol Dr., St. Charles, Mo. 63301
Filed Dec. 21, 1995, Ser. No. 48,184
The portion of the term of this patent subsequent to Dec. 5, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—26



383,411
GEMSTONE
Tsvi Spitzer, Ramat Gan, Israel, assignor to Tsvi Spitzer Diamonds Ltd., Ramat Gan, Israel
Filed Feb. 16, 1996, Ser. No. 50,657
Term of patent 14 years
LOC (6) Cl. 11 - *90*
U.S. Cl. D11—90



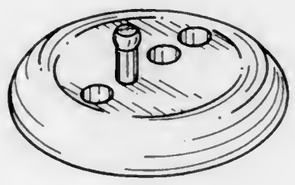
383,412
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of the Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc., trustee
Division of Ser. No. 808,554, Dec. 16, 1991, Pat. No. Des. 362,825, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 2, 1995, Ser. No. 44,852
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



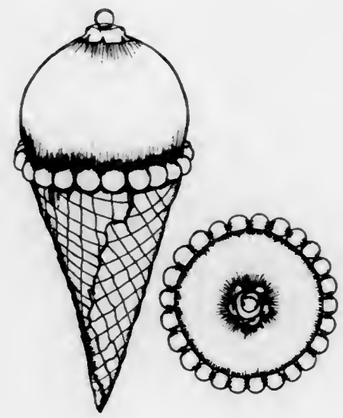
383,413
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 4,960, Jan. 6, 1993, Pat. No. Des. 369,326, which is a continuation-in-part of Ser. No. 807,904, Dec. 16, 1991, Pat. No. Des. 366,227, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 30, 1996, Ser. No. 49,762
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



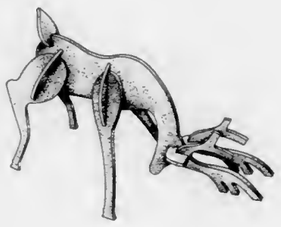
383,414
SNAP DEVICE FOR TEMPORARILY FASTENING PAIRS OF ARTICLES
Patricia A. McDonough, 7 Morris Blvd., Conklin, N.Y. 13848
Filed Sep. 18, 1995, Ser. No. 46,783
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—220



383,415
CHRISTMAS CONE
Julie Carrier Atkinson, 4832 Highlands Way, Antioch, Calif. 94509
Filed Feb. 14, 1996, Ser. No. 50,328
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D11—125

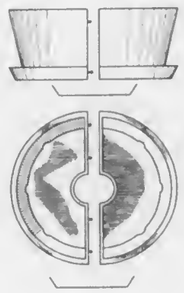


383,416
ORNAMENTAL REINDEER
Sudhir K. Lal, 629 S. York Rd., Apt. #10, Bensenville, Ill. 60106, and Kulwant S. Hundal, 362 N. Kramer, Lombard, Ill. 60148
Filed May 30, 1996, Ser. No. 55,043
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D11—127

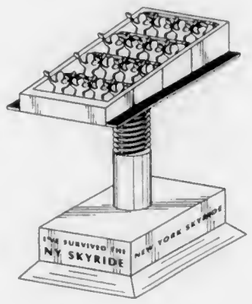


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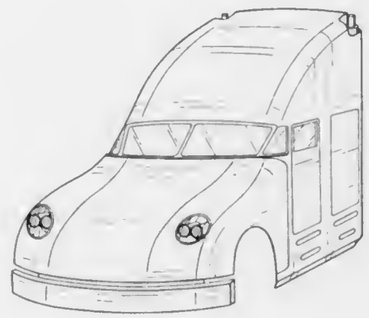
383,417
PATIO TABLE PLANTER WITH SEPARABLE HALVES
Maurice D. Davis, 23320 Lake Ravines Dr., Southfield, Mich. 48034
Filed Jun. 5, 1996, Ser. No. 56,083
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—152



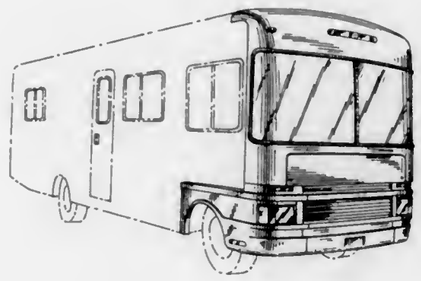
383,418
TROPHIY SOUVENIR
Ernest Saltares, 1410 Park Ave., Apt. 4G, New York, N.Y. 10029
Filed May 7, 1996, Ser. No. 54,133
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—157



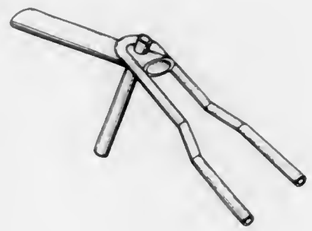
383,419
TRUCK CAB
Richard E. Muraski, and Charlene Spellins, both of 1105 Terminal Way, #202, Reno, Nev. 89502
Filed Apr. 22, 1996, Ser. No. 53,450
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—96



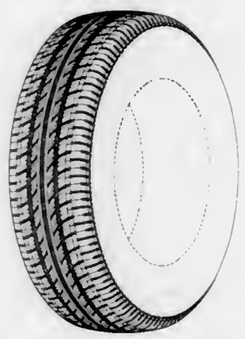
383,420
FRONT CAP
Hamid Fahmian, Riverside, Calif., assignor to Fleewood Enterprises, Riverside, Calif.
Filed Jul. 12, 1996, Ser. No. 56,969
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—100



383,421
CIRCULAR TUBE, SEAT TUBE AND ONE-PIECE SEAT STAY COMBINATION
Michael Stotsky, Chicago, Ill., assignor to Santa's Best, Northfield, Ill.
Filed Feb. 13, 1996, Ser. No. 50,288
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—117



383,422
TIRE TREAD
Andrew Arpad Kunos, Stow; Jerold Robert Buenger, Hartville; Karl Eric Sundkvist, Akron, all of Ohio, and Donald Earl Douds, Freeport, Ill., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 17, 1996, Ser. No. 49,641
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



383,423
TIRE TREAD
Richard Louis Galante, Akron, and Jay Kevin Lawrence, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 15, 1996, Ser. No. 50,332
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



383,424
TIRE TREAD
Warren Lee Croyle, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 15, 1996, Ser. No. 53,122
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147

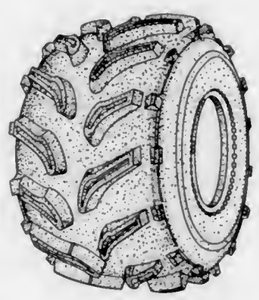


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383,425
AUTOMOBILE TIRE
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed May 29, 1996, Ser. No. 55,106
Claims priority, application Japan, Nov. 30, 1995, 7-36198
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



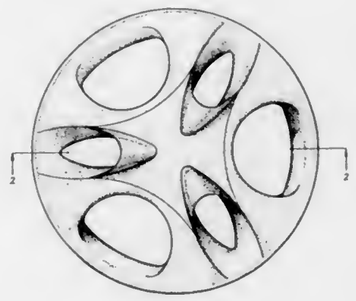
383,426
TIRE
Warren L. Guidry, P.O. Box 486, Rayne, La. 70578-0486
Filed Jun. 7, 1995, Ser. No. 39,960
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



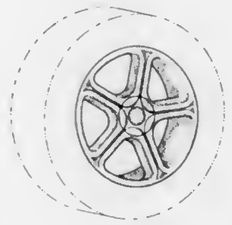
383,427
TRACTOR TIRE
Mark Leonard Bonko, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1996, Ser. No. 51,485
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



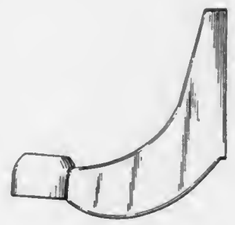
383,428
CUSTOM WHEEL
Larry P. Brown, 274 W. Los Flores Dr., Altadena, Calif. 91001, and Frederick D. Brown, 3732 S. Dalton Ave., Los Angeles, Calif. 90018
Filed Mar. 4, 1996, Ser. No. 51,167
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



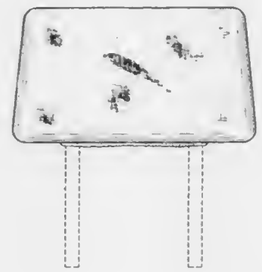
383,429
FRONT FACE OF A VEHICLE WHEEL
Marco Muzzarelli, Milan, and Giuseppe Amati, Varese, both of Italy, assignors to Claus Ettensberger Corporation, Gardena, Calif.
Filed May 24, 1996, Ser. No. 54,944
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—211



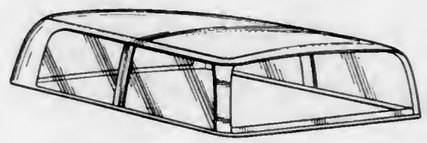
383,430
HEAD LIGHT SUPPORTING ARM
Jerry Jeffries, 23358 Los Pocitos, Laguna Hills, Calif. 92653
Filed Dec. 6, 1995, Ser. No. 47,505
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—223



383,431
AUTOMOTIVE HEAD REST COVER
Holly Fennell, 189 Beech St., Hackensack, N.J. 07601-3424
Filed Apr. 5, 1996, Ser. No. 52,774
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—400

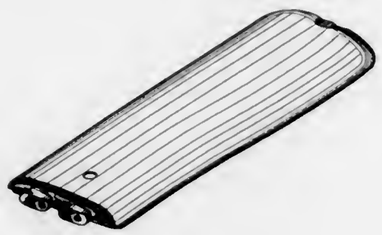


383,432
TRUCK BOX CAP EXTERIOR SURFACE
John R. Starr, Woodhaven, and Joseph A. Papai, Bloomfield Township, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Nov. 20, 1995, Ser. No. 46,887
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—404

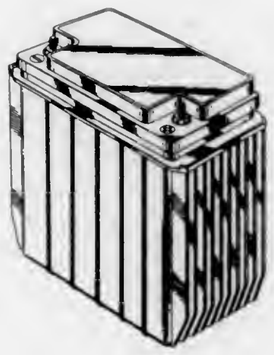


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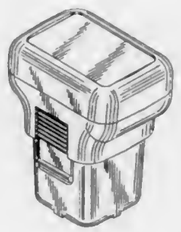
383,433
BATTERY ELIMINATOR HOUSING FOR A PORTABLE RADIO
Scott H. Richards, Plantation; Richard A. Ceraldi, Ft. Lauderdale; Robert Leon, Miami, all of Fla.; Krishna R. Devineni, Barrington, Ill.; Stanley J. Zydek, Hoffman Estates, Ill., and Michelle S. Ciochon, Crystal Lake, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 13,875, Oct. 5, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 43,533
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



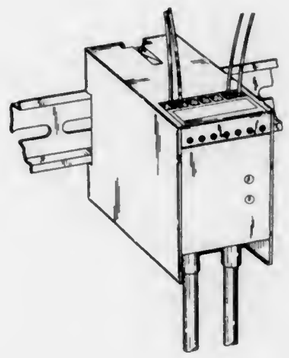
383,434
STRESS RESISTANT BATTERY
John W. Hooke, Warrensburg; Greg G. Green, Oak Grove, and Mary Jo F. Washeck, Warrensburg, all of Mo., assignors to Hawker Energy Products, Inc., Warrensburg, Mo.
Filed Oct. 18, 1995, Ser. No. 45,408
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



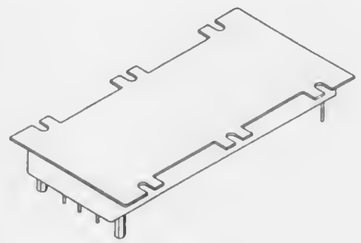
383,435
BATTERY PACK
Kenneth N. Svetlik, Schaumburg, Ill., assignor to S-B Power Tool Company, Chicago, Ill.
Filed Dec. 19, 1995, Ser. No. 48,068
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



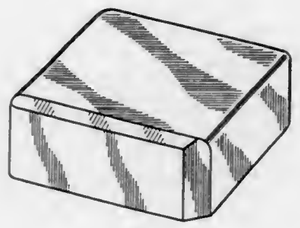
383,436
POWER MODULE FOR FIBER-OPTIC INTERFACE SYSTEM
Gerald R. Cucci, Minneapolis, and Peter Stasz, St. Paul, both of Minn., assignors to NT International Inc., Minneapolis, Minn.
Filed Jul. 31, 1995, Ser. No. 43,233
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



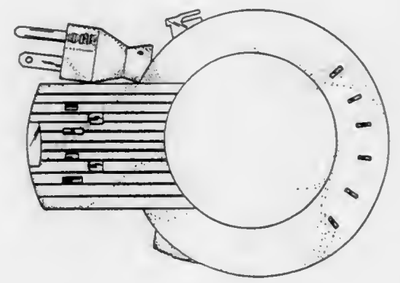
383,437
POWER CONVERTER
Dawari Datubo Dan-Harry, 185 Grove St., Apt. 15, West Roxbury, Mass. 02143
Filed Feb. 26, 1996, Ser. No. 50,940
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



383,438
POWER MODULE COVER
Mark A. Gerber, Plano, and Michael K. Strittmatter, Carrollton, both of Tex., assignors to Dallas Semiconductor Corp., Dallas, Tex.
Filed Mar. 6, 1996, Ser. No. 51,306
Term of patent 14 years
LOC (6) Cl. 13 - *99*
U.S. Cl. D13—118



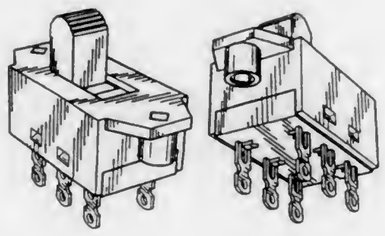
383,439
RETRACTABLE CORD SURGE PROTECTOR
Richard J. Tremmel, Secaucus, N.J.; Robert Roca, Los Angeles, Calif., and Edward L. Hames, Peterborough, N.H., assignors to Curtis Computer Products, Inc., Muscatine, Iowa
Filed Nov. 28, 1995, Ser. No. 47,202
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—142



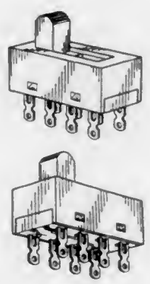
383,440
ELECTRICAL CONNECTOR
Kazunori Ichikawa, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Apr. 25, 1996, Ser. No. 53,570
Claims priority, application Japan, Dec. 5, 1995, 7-36586
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



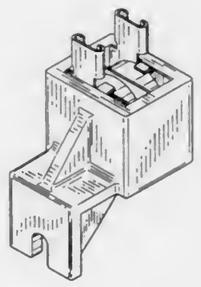
383,441
ELECTRICAL SWITCH
Bun Wong, 19th Floor, A-8 Wah Kai Industrial Centre, 221 Texaco Road, Tsuen Wan, New Territories, Hong Kong
Filed Dec. 29, 1995, Ser. No. 48,501
Claims priority, application United Kingdom, Jul. 3, 1995, 2048573
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—170



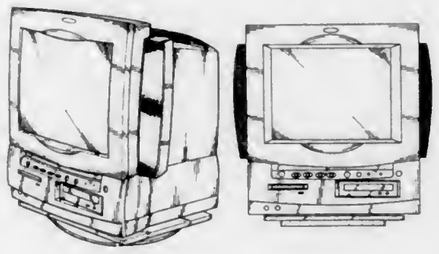
383,442
ELECTRICAL SWITCH
Bun Wong, 19th Floor, A-8 Wah Kai Industrial Centre, 221 Texaco Road, Tsuen Wan, New Territories, Hong Kong
Filed Dec. 29, 1995, Ser. No. 48,502
Claims priority, application United Kingdom, Jul. 3, 1995, 2048574
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—170



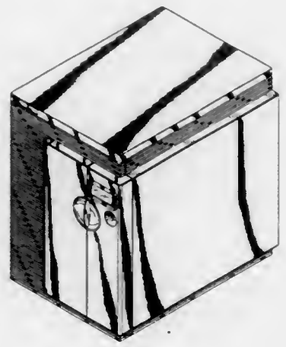
383,443
ELECTRONIC COMPONENT MOUNT
Edward I. Nelson, Plantation, Fla., assignor to Watsco Components, Inc., Hialeah, Fla.
Filed Nov. 14, 1995, Ser. No. 46,449
Term of patent 14 years
LOC (6) Cl. 13 - *99*
U.S. Cl. D13—184



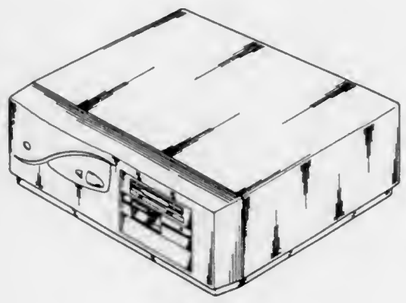
383,444
COMPUTER UNIT
Seung-Hyun Han, Seoul, Rep. of Korea, assignor to Daewoo Telecom Ltd., Seoul, Rep. of Korea
Filed Dec. 21, 1995, Ser. No. 48,119
Claims priority, application Rep. of Korea, Jun. 22, 1995, 95-11878
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



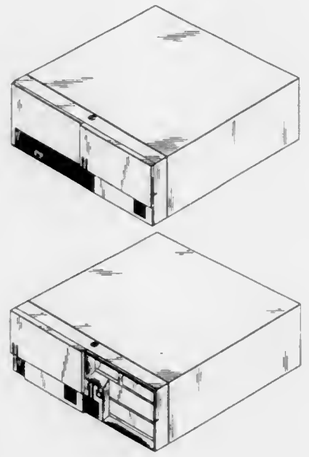
383,445
MIDRANGE MINI COMPUTER
Badir M. Mousa, Auburn, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jan. 30, 1996, Ser. No. 49,751
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



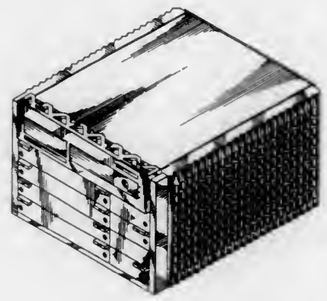
383,446
PERSONAL COMPUTER
In-Seok Han, Seoul, Rep. of Korea, assignor to Daewoo Telecom Ltd., Seoul, Rep. of Korea
Filed Mar. 25, 1996, Ser. No. 52,457
Claims priority, application Rep. of Korea, Sep. 30, 1995, 9518445
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



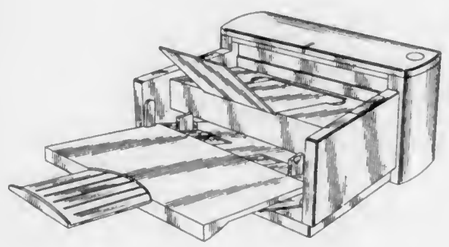
383,447
COMPUTER CASE
Tristan Alfonso Merino, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 15, 1996, Ser. No. 53,126
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



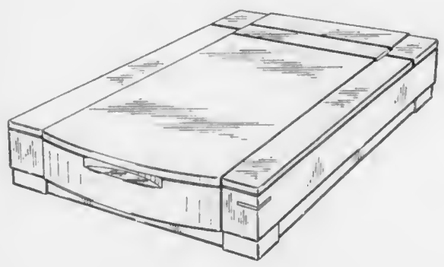
383,448
COMPUTER SYSTEM ENCLOSURE
Adam Richardson, Menlo Park, and Philip Yurkonis, Campbell, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Apr. 16, 1996, Ser. No. 53,089
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—102



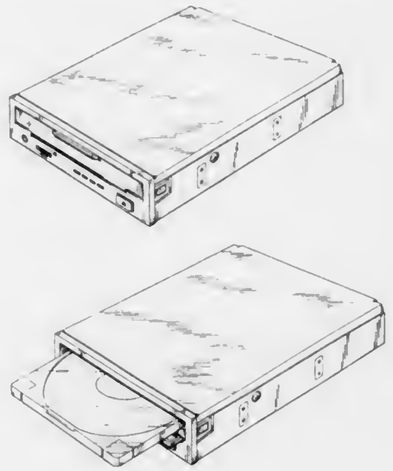
383,449
IMAGE INPUTTING DEVICE
Masayuki Iimura, Kunitachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1996, Ser. No. 53,102
Claims priority, application Japan, Oct. 18, 1995, 7-31200
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



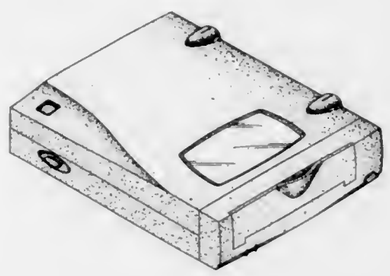
383,450
IMAGE INPUTTING DEVICE
Masayuki Iimura, Kunitachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 2, 1996, Ser. No. 53,922
Claims priority, application Japan, Nov. 8, 1995, 7-33643
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



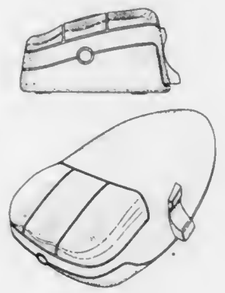
383,451
DISC DRIVE
Shinji Tsuyuki; Kazutomo Imi; Ken'ichi Furukawa, all of Kanagawa, and Atsushi Kirii, Yamagata, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan
Filed Jan. 11, 1996, Ser. No. 48,690
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—109



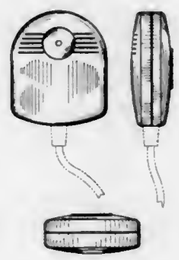
383,452
REMOVABLE CARTRIDGE DISK DRIVE
Herbert E. Thompson; Bin-Lun Ho, both of Los Gatos; Albert J. Guerini, Gilroy, and Teong-Hoe Kay, San Jose, all of Calif., assignors to Syquest Technology, Inc., Fremont, Calif.
Filed Mar. 13, 1996, Ser. No. 51,568
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—109



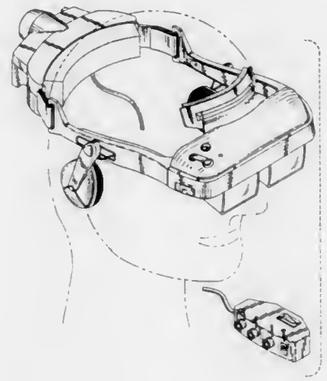
383,453
ERGONOMIC HOUSING FOR A COMPUTER MOUSE
Leslie Scenna, Amherst, N.H., and Steven Wang, Andover, Mass., assignors to Contour Design, Inc., Lowell, Mass.
Continuation-in-part of Ser. No. 520,866, Aug. 28, 1995. This application Feb. 23, 1996, Ser. No. 50,715
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



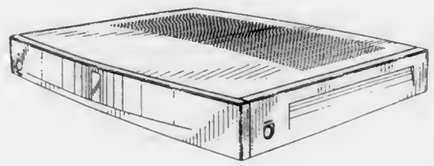
383,454
COMPUTER ACCESSORY FOR DATA TRANSFER
Robert Osit, Shelton, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Mar. 26, 1996, Ser. No. 52,212
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



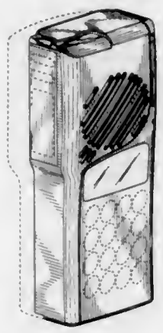
383,455
HEAD MOUNTED DISPLAY WITH HEADTRACKER
Scott MacInnes, Issaquah, Wash., and Christopher D. Wiegel, San Diego, Calif., assignors to Virtual I/O, Inc., Seattle, Wash.
Filed Aug. 31, 1995, Ser. No. 43,936
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D14—124



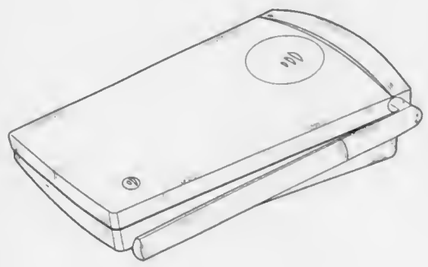
383,456
TELEVISION SET TOP CONVERTER BOX FOR INTERACTIVE TELEVISION
Susanne M. Pierce, and Daniele G. De Iuliis, both of San Francisco, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 35,372, Feb. 24, 1995, abandoned. This application Dec. 22, 1995, Ser. No. 48,209
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—125



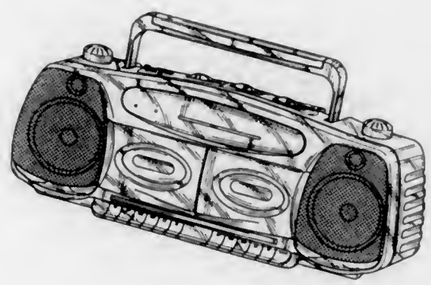
383,457
PORTABLE RADIO HOUSING
Ahmad Zaini B. Yahaya, Penang, Malaysia, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 4, 1996, Ser. No. 51,149
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



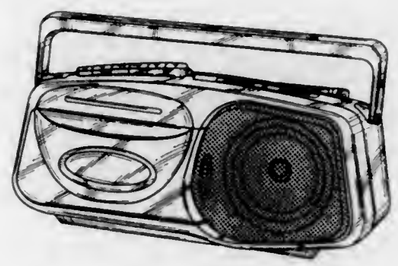
383,458
TELEPHONE MODULE
Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley; Christopher A. Robinette, Woodside, all of Calif., and John Henry Schaffeld, New Vernon, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 30, 1994, Ser. No. 32,900
The portion of the term of this patent subsequent to Sep. 2, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



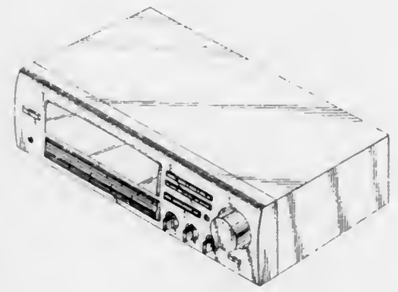
383,459
COMBINED RADIO AND CASSETTE PLAYER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Jun. 26, 1996, Ser. No. 56,292
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—163



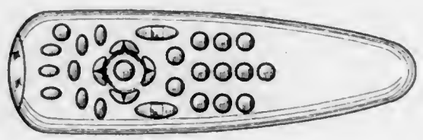
383,460
COMBINED RADIO AND CASSETTE PLAYER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Jun. 26, 1996, Ser. No. 56,291
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—163



383,461
COMBINED AMPLIFIER AND RADIO TUNER
Masafumi Ito; Minoru Sube; Hiroyuki Watanabe, and Yukio Iikura, all of Musashino, Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Jun. 26, 1996, Ser. Nn. 56,321
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—188



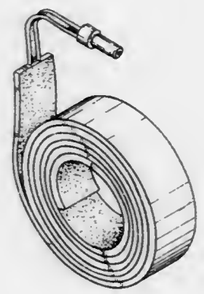
383,462
REMOTE CONTROL DEVICE
Ellen Martz, Gaithersburg; T. Paul Gaske, Rockville, both of Md., and Andrew Zoolakis, La Costa, Calif., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Feb. 29, 1996, Ser. No. 50,905
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



383,463
ANTENNA
Alan MacDonald, Bellevue, Wash., and Jake Rasweiler, Paramus, N.J., assignors to AT&T Wireless Services, Inc., Kirkland, Wash.
Filed Jun. 7, 1995, Ser. No. 41,775
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—230

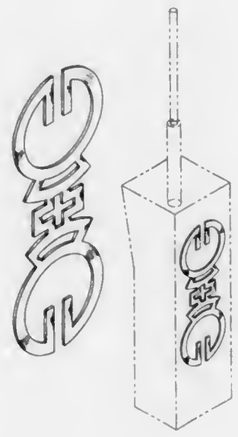


383,464
ANTENNA TAPE
Stephen D. Myers, 606 N. Sivils St., Crossett, Ak. 71635
Filed Sep. 12, 1995, Ser. No. 43,796
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—230

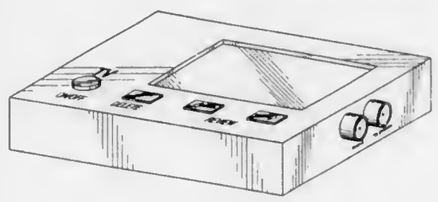


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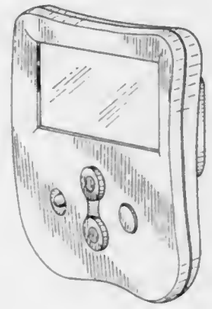
383,465
AUXILIARY ANTENNA FOR CELLULAR PHONE
Chin Hui Chen, Taipei, Taiwan, assignor to Hideki Okuchi, Nagoya, Japan
Filed Nov. 30, 1995, Ser. No. 47,247
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—230



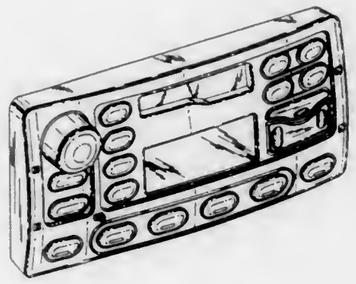
383,466
CALLER IDENTIFICATION DISPLAY WITH TELEVISION ADAPTER
Joseph Burrell, and Henry Burrell, both of 29 W. 407 Greenbriar La., Warrenville, Ill. 60555
Filed Jun. 4, 1996, Ser. No. 55,368
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—240



383,467
DISPLAY SCREEN FOR TELEPHONE
Pernilla Maria Cecilia Johansson, Tilburg, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 10, 1996, Ser. No. 56,870
Claims priority, application WIPO, Jan. 24, 1996, DM/035292
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—240



383,468
CONTROL PANEL FOR AN AUTOMOTIVE RADIO/CASSETTE
Thomas John Buckingham, Allen Park, Mich.; Gary Arthur Goodman, Clayhall, and Clifford Thomas Pickering, Stock, both of England, assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 12, 1996, Ser. No. 50,242
Term of patent 14 years
LOC (6) Cl. 19 - *03*
U.S. Cl. D14—258



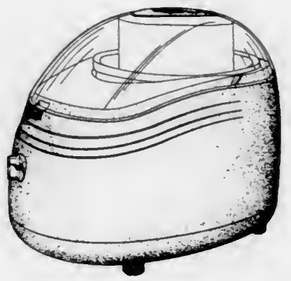
383,469
BACKHOE
Masahiro Ishizaki; Akira Takashima; Tadashi Kusunoki, and Masahiko Kobayashi, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Nov. 21, 1995, Ser. No. 47,085
Claims priority, application Japan, May 23, 1995, 7-14583
Term of patent 14 years
LOC (6) Cl. 15 - *04*
U.S. Cl. D15—25



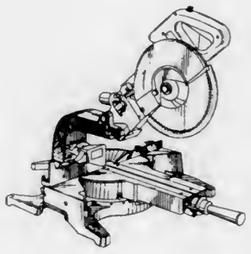
383,470
OUTER SURFACE OF VEHICLE HOOD
David Anthony Westimayer, Horicon, Wis.; William Edward Crookes, Waldwick, and Daniel Robert Nickles, Hewitt, both of N.J., assignors to Deere & Company, Moline, Ill.
Filed Mar. 15, 1996, Ser. No. 51,657
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D15—31



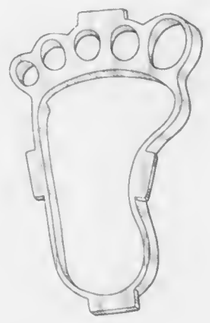
383,471
ICE CREAM MAKER
Tony Hsu, Yung Kang, Taiwan, assignor to Lundar Electric Industrial Co., Ltd., Tainan Hsien, Taiwan
Filed Jan. 30, 1996, Ser. No. 49,746
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—82



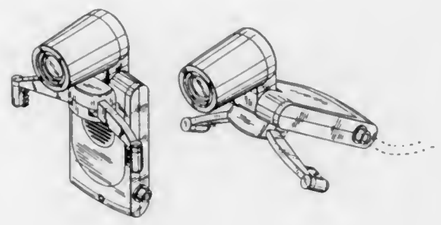
383,472
MITER SAW
Hisashi Higuchi, and Kouji Matsubara, both of Anjo, Japan, assignors to Makita Corporation, Aichi-ken, Japan
Filed Jun. 27, 1996, Ser. No. 56,348
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



383,473
WALKWAY MOLD
Raleigh Seaman Wood, 3837 S. Inca, Englewood, Colo. 80110
Filed Oct. 20, 1995, Ser. No. 45,454
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—136



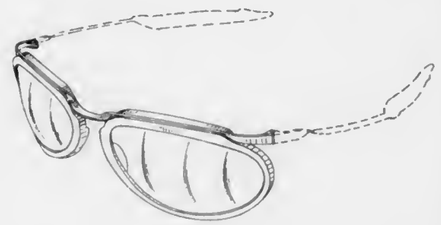
383,475
VIDEO CAMERA
Toshiyuki Yamauchi, and Yoshiki Miyamoto, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 47,488
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



383,474
BINOCULARS
Nobuo Hashimoto, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Feb. 5, 1996, Ser. No. 49,922
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—133



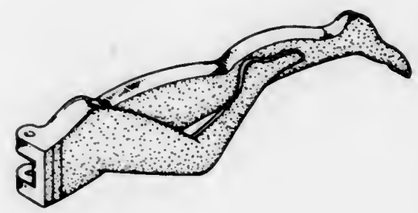
383,476
EYEWEAR FRONT
Aaron M. Markovitz; Jeffrey K. Raub, both of Rochester, N.Y., and Henri Brune, Lentilly, France, assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 20, 1995, Ser. No. 45,477
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



383,477
SUNGLASSES
Luciano Simloni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy
Filed Oct. 23, 1995, Ser. No. 45,549
Claims priority, application Italy, Apr. 28, 1995, TV95O0021
The portion of the term of this patent subsequent to Sep. 2, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



383,479
EYEGLASS TEMPLE
Jin-Shoei Guo, No. 19, Alley 2, Lane 279 Chung Cheng Road, Yung Kang, Tainan, Taiwan
Filed Mar. 14, 1996, Ser. No. 51,600
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—335



383,478
SUNGLASSES
Ken Wilson, 540 Linda Vista Rd., San Diego, Calif. 92110
Filed Nov. 20, 1995, Ser. No. 46,871
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



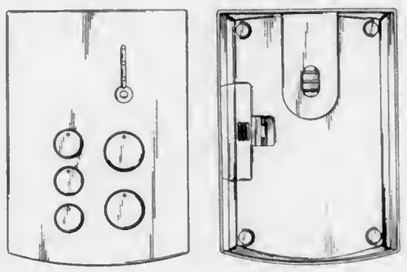
383,480
SMALL BODIED UPRIGHT BASS
Gary E. Bartig, 430 4th St. NE., Minneapolis, Minn. 55413, assignor to Gary E. Bartig, Minneapolis, Minn.
Filed Feb. 20, 1996, Ser. No. 50,426
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20



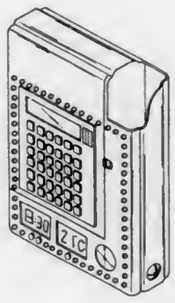
383,481
MANDOLIN
Peter E. Langdell, R.R. #2 Box 5810, Jeffersonville, Vt. 05464
Filed Feb. 10, 1995, Ser. No. 34,709
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—14



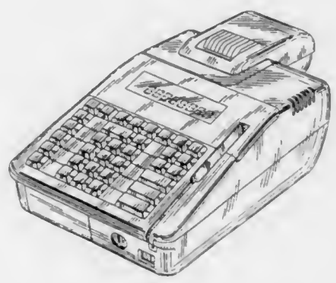
383,482
APPARATUS FOR CONSTITUTING MUSICAL SOUND SIGNAL
Yoshihiro Katsumata, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Jan. 16, 1996, Ser. No. 48,965
Claims priority, application Japan, Jul. 20, 1995, 7-21038
Term of patent 14 years
LOC (6) Cl. 17 - *99*
U.S. Cl. D17—99



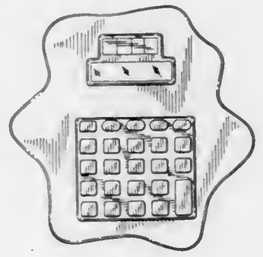
383,483
MULTI-PURPOSE CARRY-ON BOX
Ying-Chen Ho, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Dec. 5, 1995, Ser. No. 47,477
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—2



383,484
DATA INPUT/OUTPUT MACHINE FOR A CASH REGISTER
Mahina Yamaguchi, Yotsukaidou, Japan, assignor to Kabushiki Kaisha TEC, Japan
Filed May 17, 1996, Ser. No. 54,647
Claims priority, application Japan, Nov. 22, 1995, 7-35110
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—4



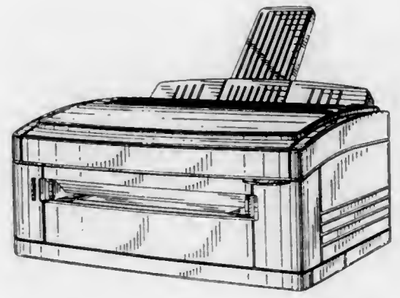
383,485
CALCULATOR
Marc H. Segan, New York; Gary Strauss, Mamaroneck, both of N.Y., and Gerald W. Cummings, Marlton, N.J., assignors to Long Hall Technologies, L.L.C., New York, N.Y.
Filed Jul. 25, 1996, Ser. No. 57,459
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—7



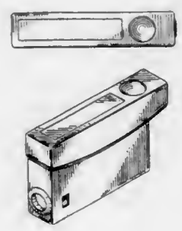
383,486
LABEL PRINTER
Jonathan Peter Tremlett, Tooting, United Kingdom, assignor to Esselte N.V., Sint-Niklass, Belgium
Filed Dec. 14, 1995, Ser. No. 47,878
Claims priority, application United Kingdom, Jun. 15, 1995, 9512148
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—19



383,487
PRINTER FOR COMPUTER
Shigeo Mochihara, and Hideki Enomoto, both of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan
Filed Jan. 22, 1996, Ser. No. 49,304
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—55

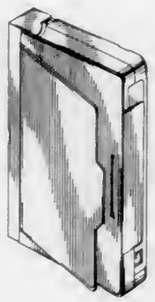


383,488
INK CARTRIDGE FOR INK JET PRINTER
Toyonori Sasaki, Anjo, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 22, 1995, Ser. No. 44,359
Claims priority, application Japan, Mar. 30, 1995, 7-9070
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



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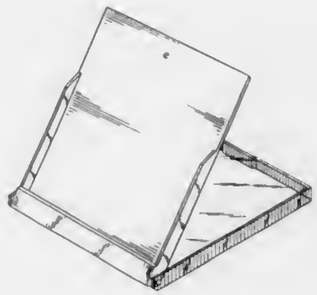
383,489
COMBINED GREETING CARD AND VIDEO CASSETTE
Salvatore Gurrieri, 1238 E. St. John Rd., Phoenix, Ariz. 85022
Filed Sep. 3, 1996, Ser. No. 59,070
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—2



383,490
COMBINED GREETING CARD AND AUDIO-VIDEO CASSETTE
Salvatore Gurrieri, 1238 E. St. John Rd., Phoenix, Ariz. 85022
Filed Sep. 3, 1996, Ser. No. 59,071
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—2



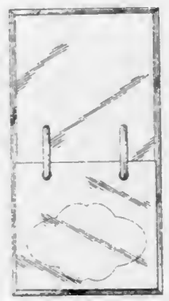
383,491
COMBINED PICTURE AND CALENDAR HOLDER
Anny Hsiang-Chi Chang, 380 E. Bonita Ave., Pomona, Calif. 91767
Filed May 13, 1994, Ser. No. 22,846
Term of patent 14 years
LOC (6) Cl. 19 - *03*
U.S. Cl. D19—20



383,492
BOOK COVER
Robert G. Siemon, Newport Coast, and Francois Nolot, Santa Ana, both of Calif., assignors to Bob Siemon Designs, Inc., Fountain Valley, Calif.
Filed Jul. 11, 1996, Ser. No. 57,041
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—26



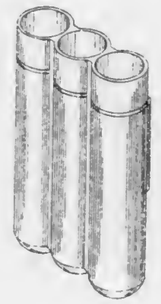
383,493
PHOTO RING BINDER
Oscar R. Sales, 1040 NW. 185th Ter., Miami, Fla. 33169
Filed Jun. 19, 1996, Ser. No. 55,983
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—27



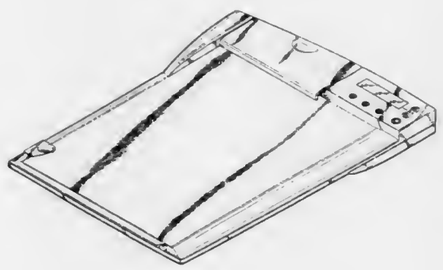
383,494
WRITING INSTRUMENT
Myron Polenberg, New York, N.Y., assignor to Swiss Army Brand, Ltd., Shelton, Conn.
Filed Apr. 4, 1996, Ser. No. 52,648
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—48



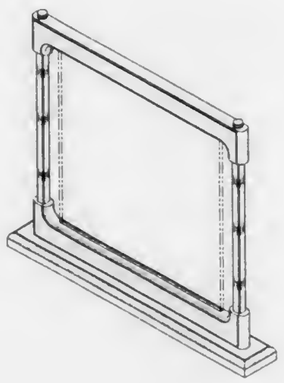
383,495
CASING FOR BALLPOINT PENS
Paul Mollet, Rue Laurent Vandenhoven 59, 1040 Bruxelles, Belgium
Filed Feb. 16, 1996, Ser. No. 50,414
Claims priority, application Hague Agreement, Aug. 16, 1995, DM/033-851
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—85



383,496
HANDHELD CLIPBOARD
Polly S. K. Siegel, Los Altos; Eric A. Jensen, Saratoga; Rick H. Kojima, Campbell; Thomas Overthun, San Francisco; Vae E. Sun, Palo Alto, all of Calif., and Margaret L. Hetfield, East Northport, N.Y., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 23, 1996, Ser. No. 53,810
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—88



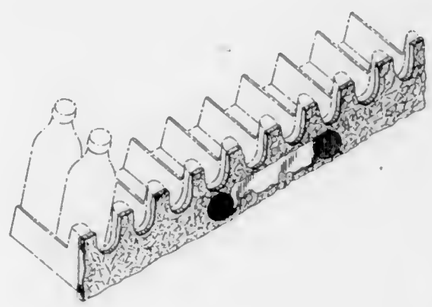
383,497
DISPLAY DEVICE
Mary N. Robertson, P.O. Box 337, Lenoir City, Tenn. 37771
Filed Mar. 18, 1996, Ser. No. 51,738
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—10



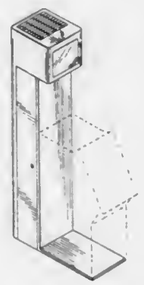
383,498
DECORATIVE DRAWING FOR THE SURFACE OF AN ARTICLE
Gino Ferruzzi, Greve in Chianti, Italy, assignor to Gino Ferruzzi S.n.c., Florence, Italy
Filed Aug. 4, 1995, Ser. No. 42,256
Claims priority, application Italy, Feb. 8, 1995, FI 95 0 000005
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—10



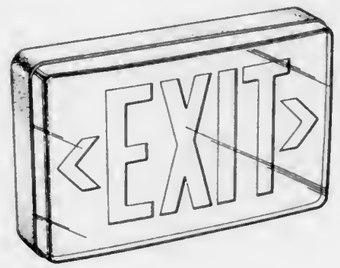
383,499
ADVERTISING PRESENTATION FOR A SHELF DISPLAY
Richard Markson, Goshen, N.Y., assignor to Markson Rosenthal & Company, Englewood Cliffs, N.J.
Filed Oct. 10, 1995, Ser. No. 45,109
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—37



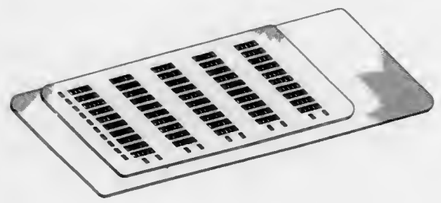
383,500
DESIGN FOR A DISPLAY APPARTUS
Ernest R. Dallman, 9200 Fanchon Dr., Zionsville, Ind. 46077
Filed Feb. 20, 1996, Ser. No. 50,625
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



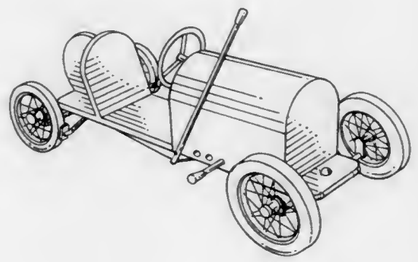
383,501
EXIT LIGHT
Gary Stephen Andre, Conyers, and Richard Born, Grayston, both of Ga., assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Feb. 29, 1996, Ser. No. 50,923
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—42



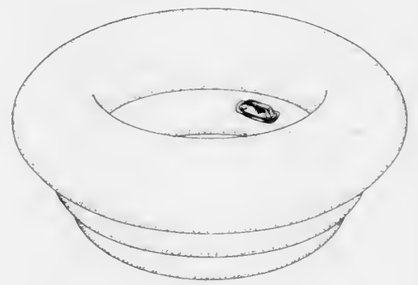
383,502
LOTTO MARKING GUIDE
Robert August Schmidt, Jr., 1004 Ardmore St., San Angelo, Tex. 76905, and James David Weeks, 3420 Millbrook, San Angelo, Tex. 76904
Filed Feb. 5, 1996, Ser. No. 49,956
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—37



383,503
BOX CAR RACER
Donald L. Pierce, Honolulu, Hi., assignor to American Box Car, Inc., Honolulu, Hi.
Filed Jul. 24, 1996, Ser. No. 57,416
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—78

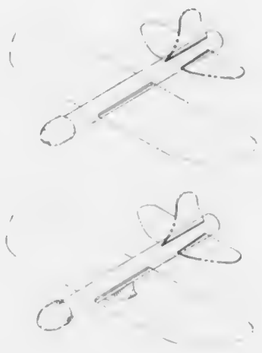


383,504
INFLATABLE TOY
Charles J. Millington, Lakeville, Mass., and Melissa M. Morgan, Little Compton, R.I., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Jun. 14, 1996, Ser. No. 55,866
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—84



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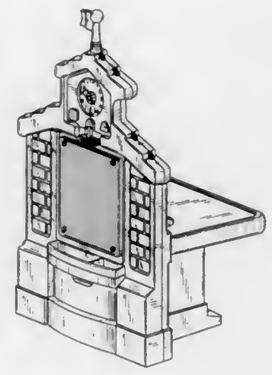
383,505
FUSELAGE FOR TOY GLIDER
Todd W. Wise, Barrington, and Stephen M. Frolich, Smithfield, both of R.I., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed May 31, 1996, Ser. No. 55,208
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—91



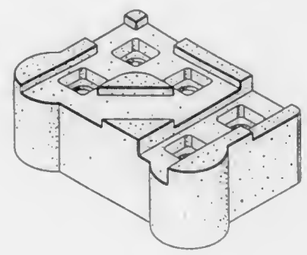
383,506
RESPLENDENT QUETZAL JIGSAW PUZZLE SCULPTURE
Ofer Nissim, Pound Ridge, N.Y., and Suzanne Simpson, Greenwich, Conn., assignors to Knox Security Engineering Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 50,552, Dec. 19, 1995. This application May 9, 1996, Ser. No. 54,283
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



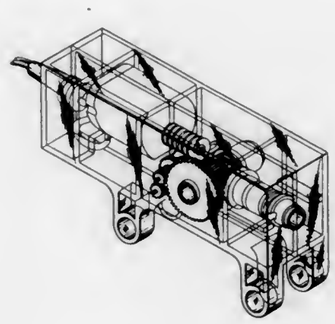
383,507
CHILD'S PLAY CENTER
Jay M. Bro, Plano; Scott Duplantis, Dallas, both of Tex.; Pete Hill, Lancaster, N.Y., and Tony R. Maness, Lewisville, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 8, 1996, Ser. No. 50,108
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—121



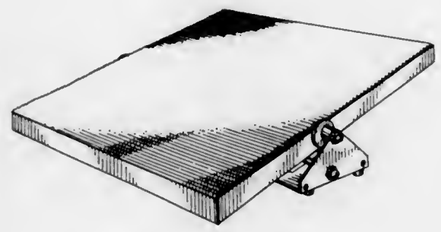
383,508
TOY WORKBENCH
Jean-Jacques Urvoy, Paris, France, assignor to Meccano, S.A., Calais, France
Filed Mar. 1, 1996, Ser. No. 51,015
Claims priority, application Hague Agreement, Oct. 2, 1995, D12220
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—121



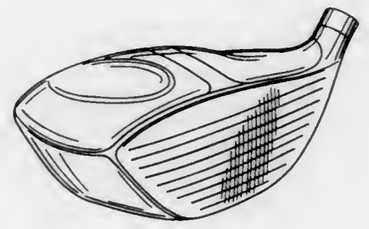
383,509
MOTOR DRIVE FOR CONSTRUCTION TOY
Hideyasu Karasaw, Apt. 703, 3-1-6 Minami-Nagareyama, Nagareyama-Shi, Chiba Prefecture 270-01, Japan, and Joel Glickman, 1777 Oak Hill Dr., Huntington Valley, Pa. 19006
Filed Jan. 18, 1996, Ser. No. 49,118
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—125



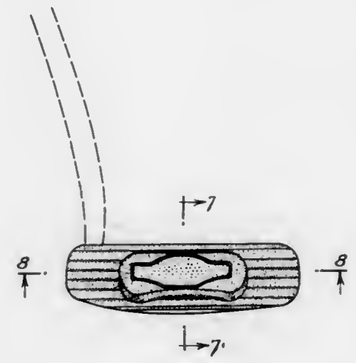
383,510
PIVOT BOARD EXERCISE DEVICE
Peter S. Bernardson, 339 Berger St., Emmaus, Pa. 18049
Continuation-in-part of Ser. No. 509,206, Jul. 31, 1995. This application Feb. 13, 1996, Ser. No. 50,601
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—193



383,511
GOLF CLUB HEAD
Kun-Nan Lo; Wu-Hsiang Chuog, and Hsueh-Cheng Liao, all of Taichung Hsien, Taiwan, assignors to Pro-Kennex, Inc., San Diego, Calif.
Filed Jan. 29, 1996, Ser. No. 49,687
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



383,512
GOLF PUTTER HEAD WITH UNDERCUT CAVITY BACK
Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Continuation-in-part of Ser. No. 16,187, Dec. 9, 1993. This application Jun. 20, 1994, Ser. No. 24,688
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



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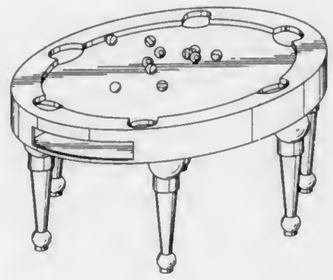
383,513
HEEL WEDGE DESIGN FOR A SKATE
Craig Ryan, Montreal, and Andrew Haber, Beaconfield, both of Canada, assignors to Sport Maska, Inc., Quebec, Canada
Filed Dec. 26, 1995, Ser. No. 48,339
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—225



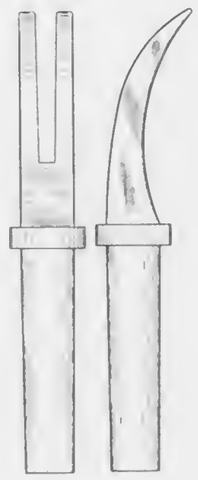
383,514
IN-LINE ROLLER SKATE
Massimo Cavasin, Montebelluna, Italy, assignor to Roces S.R.L., Montebelluna, Italy
Filed Dec. 8, 1995, Ser. No. 47,821
Claims priority, application Hague Agreement, Jul. 19, 1995, DM033571
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—226



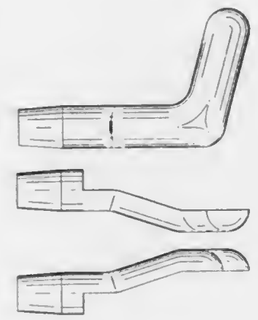
383,515
POOL TABLE
Lynne Wiebe, 43 Stevens Ave., Lockport, MB, Canada, R1A 3M6, and Ken Wiebe, 43 Stevens Ave., General Delivery, Lockport, MB, Canada, R1A 3M6
Filed Mar. 12, 1996, Ser. No. 51,531
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—232



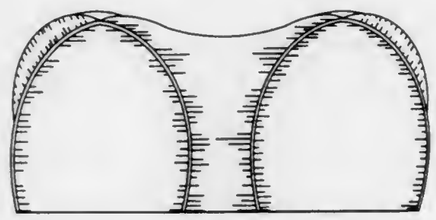
383,516
GOLF BALL MARK REPAIRER DEVICE ATTACHABLE TO THE GRIP END OF A PUTTER
Robert W. Stevens, 1706 Lehigh Cir., Sun City Center, Fla. 33570
Filed Feb. 2, 1996, Ser. No. 49,911
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



383,517
FINGER DEVICE FOR SPINNING HANDHELD OBJECTS
David Davlin, McKinney, and Clarence Zierhut, Garland, both of Tex., assignors to Dave Davlin, McKinney, Tex.
Filed Apr. 29, 1996, Ser. No. 53,735
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—240



383,518
TENT
Shane Eric Bohart, 74 Vaquero Dr., Boulder, Colo. 80303
Filed Feb. 1, 1996, Ser. No. 49,867
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



383,519
KNIFE
George Albert Lainhart, Fairburn, Ga., assignor to United Cutlery Corporation, Sevierville, Tenn.
Filed Jun. 25, 1996, Ser. No. 56,177
Term of patent 14 years
LOC (6) Cl. 22 - *02*
U.S. Cl. D22—118



383,520
ELECTRIC FUMIGATOR
John J. Gatzemeyer, Racine, and Scott W. Demarest, Caledonia, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Apr. 16, 1996, Ser. No. 53,096
Term of patent 14 years
LOC (6) Cl. 22 - *06*
U.S. Cl. D22—123



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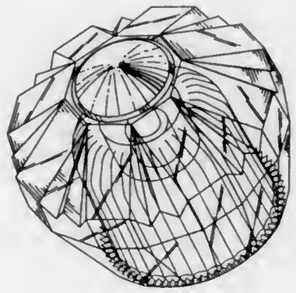
383,521
SPOOL ROLLER FOR FISHING REELS
Rupert Kuntze, Gräfensteinberg, Germany, assignor to D.A.M. Deutsche Angelgeräte Manufaktur Hellmuth Kuntze GmbH & Co. KG, Gunzenhausen, Germany
Division of Ser. No. 19,593, Mar. 2, 1994, Pat. No. Des. 369,847. This application Jun. 16, 1995, Ser. No. 40,402
Claims priority, application Germany, Sep. 2, 1993, M 93 06 892.1
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—137



383,522
SPRAY GUN
Wen-Li Guo, No. 10, Fang Dong Road, Wen Gin Tsuen, Fang Yuan Hsiang, Chang HuaHsien, Taiwan
Filed May 28, 1996, Ser. No. 54,982
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—226

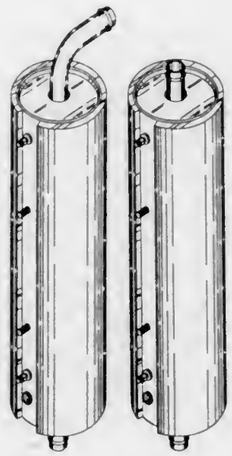


383,523
HANDLE
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Sep. 22, 1995, Ser. No. 44,300
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—250

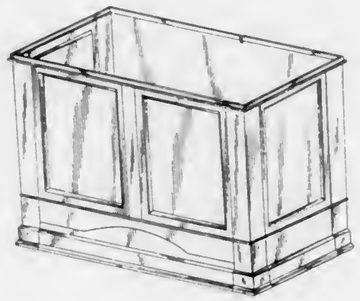


383,524
Patent Not Issued For This Number

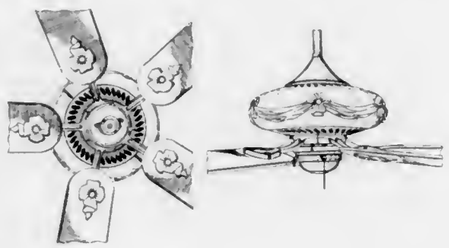
383,525
INSULATED WATER HEATER FOR HYDROTHERAPY BATHS, SPAS, AND SKID PACKS
Steven J. Purcell, Sundance Spas 13951 Monte Vista Ave., Chino, Calif. 91710
Filed Nov. 21, 1995, Ser. No. 46,939
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—315



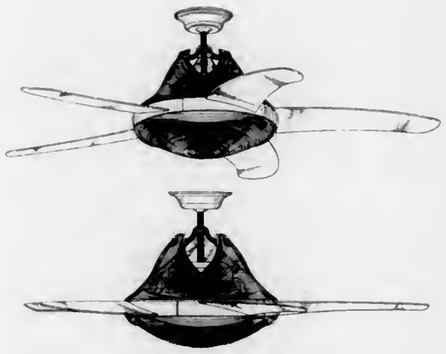
383,526
CONSOLE HUMIDIFIER TANK ENCLOSURE
Peter D. Spaine, Wakefield, R.I., assignor to Duracraft Corp., Southborough, Mass.
Filed Jun. 20, 1994, Ser. No. 24,737
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—358



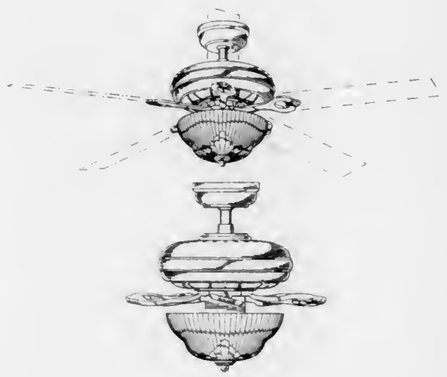
383,527
CEILING FAN
Jan Jaspers-Fayer, Idyllwild, and Dean Dal Ponte, Los Angeles, both of Calif., assignors to Minka Lighting Inc., Corona, Calif.
Continuation of Ser. No. 37,666, Apr. 18, 1995, abandoned, which is a division of Ser. No. 17,922, Jan. 25, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 51,661
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377



383,528
COMBINED CEILING FAN AND LIGHT FIXTURE
Teddy P. Collmar, 369 N. Meyer Cir., Corona, Calif. 91719
Filed Jun. 13, 1996, Ser. No. 55,770
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377

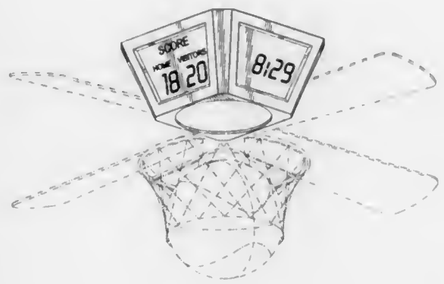


383,529
COMBINED CEILING FAN MOUNTING CANOPY, MOTOR HOUSING, BLADE IRONS, AND LIGHT FIXTURE UNIT
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Feb. 8, 1996, Ser. No. 50,122
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411

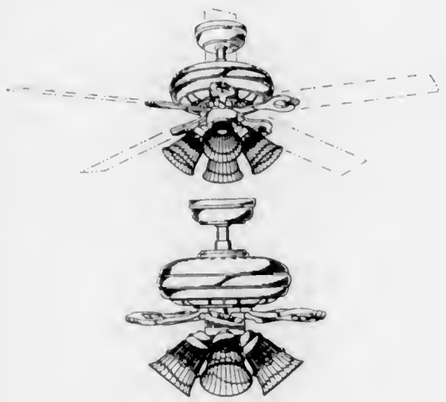


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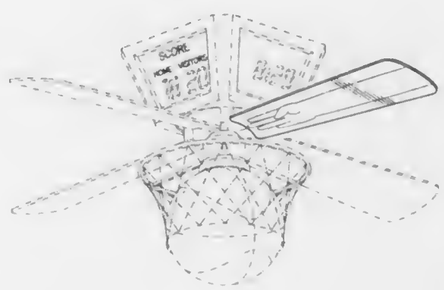
383,530
MOTOR HOUSING FOR A CEILING FAN
Richard A. Pearce; Jack Warren Gee, II, both of Memphis, and Gary J. Feder, Germantown, all of Tenn., assignors to Hunter Fan Company, Memphis, Tenn.
Filed Feb. 8, 1996, Ser. No. 50,123
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



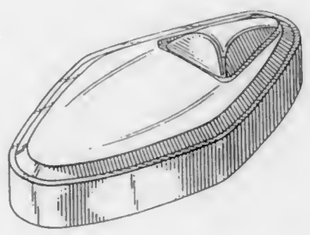
383,531
COMBINED CEILING FAN, MOUNTING CANOPY, MOTOR HOUSING, BLADE IRONS AND LIGHT KIT UNIT
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Feb. 8, 1996, Ser. No. 50,124
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



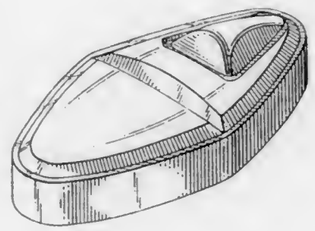
383,532
CEILING FAN BLADE
Richard A. Pearce; Jack Warren Gee, II, both of Memphis, and Gary J. Feder, Germantown, all of Tenn., assignors to Hunter Fan Company, Memphis, Tenn.
Filed Feb. 8, 1996, Ser. No. 50,125
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—413



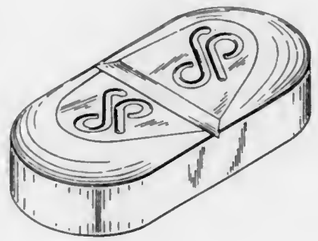
383,533
PHARMACEUTICAL TABLET
John Michael Jushchyshyn, Lansdowne, and Ricky Holland, Norristown, both of Pa., assignors to SmithKline Beecham Corporation, King of Prussia, Pa.
Filed Mar. 12, 1996, Ser. No. 51,524
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—103



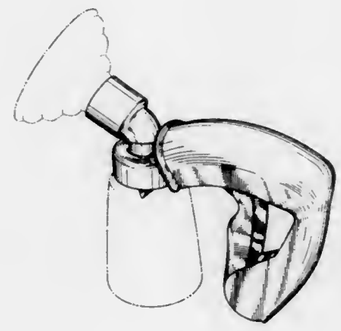
383,534
PHARMACEUTICAL TABLET
John Michael Jushchyshyn, Lansdowne, and Ricky Holland, Norristown, both of Pa., assignors to SmithKline Beecham Corporation, King of Prussia, Pa.
Filed Mar. 12, 1996, Ser. No. 51,883
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—103



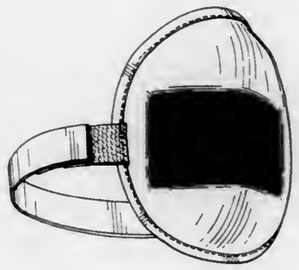
383,535
TABLET
Jones W. Bryan, Jr., Wilmington, N.C., and Robert T. Benz, Lebanon, N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Apr. 24, 1996, Ser. No. 55,725
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—103



383,536
MANUAL BREAST PUMP
Rebecca J. Bachman, 13847 Maple Island Rd., Fremont, Mich. 49412; Karen L. Celata, 516 Obio Ave., Grand Haven, Mich. 49417; Mark A. Gilbertson, 7220 Birchwood Dr., Sauk City, Wis. 53583; Edward A. Raleigh, 400 Fairbrook Ct., Waunakee, Wis. 53597; Jeffrey R. Staszak, 50 Dixon St., Madison, Wis. 53704, and John W. Grosz, 310 S. Ludington St., Columbus, Wis. 53925
Filed Apr. 8, 1996, Ser. No. 52,906
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—109

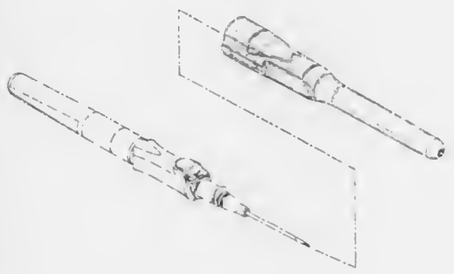


383,537
BREATHING MASK
Jorma Lundén, Helsinki, Finland, assignor to Suomen Jonas Oy, Helsinki, Finland
Filed Sep. 27, 1995, Ser. No. 44,599
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D24—110.1

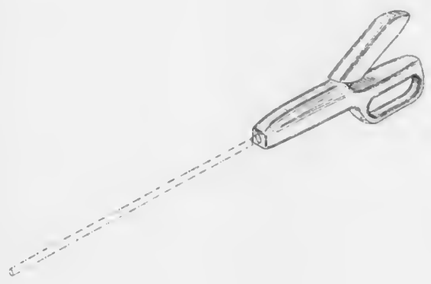


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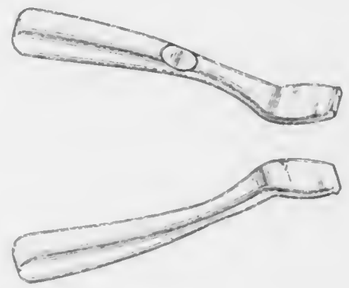
383,538
CATHETER COVER
Timothy J. Erskine, and Glade H. Howell, both of Sandy, Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Dec. 7, 1995, Ser. No. 47,559
The portion of the term of this patent subsequent to Jul. 22, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—130



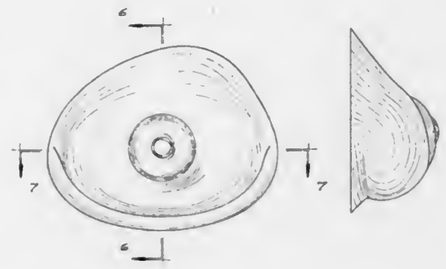
383,539
HANDLE FOR A SURGICAL INSTRUMENT
Curt D. Croley, Cincinnati, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Filed Feb. 1, 1996, Ser. No. 49,828
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—143



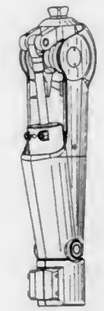
383,540
ORAL SCRAPER
Bosco F. Woo, 8620 Sorensen Ave., Suite 8, Santa Fe Spring, Calif. 90670
Filed Jun. 3, 1996, Ser. No. 55,305
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—147



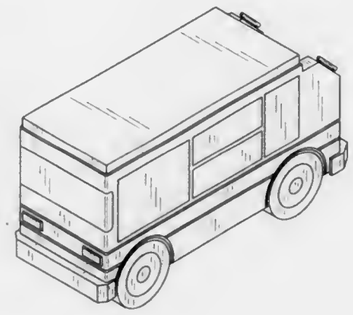
383,541
BREAST FORM
Robert I. Strain, P.O. Box 516, Simi Valley, Calif. 93062
Filed Nov. 8, 1994, Ser. No. 30,790
Term of patent 14 years
U.S. Cl. D24—155



383,542
PROSTHETIC KNEE JOINT
Ulf Wellershaus, and Helmut Wagner, both of Duderstadt, Germany, assignors to Otto Bock Orthopadishe Industrie Besitz-und VerWaltungs-Kommanditgesellschaft, Duderstadt, Germany
Filed Aug. 9, 1995, Ser. No. 42,738
Claims priority, application Germany, Feb. 13, 1995, M 95 01 198.6
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—155



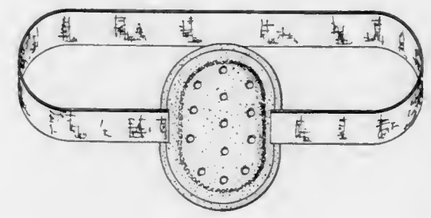
383,543
PEDIATRIC EXAMINATION TABLE
James R. Kemp, 3710 N. Racine, Chicago, Ill. 60613
Filed Jul. 24, 1996, Ser. No. 57,423
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—183



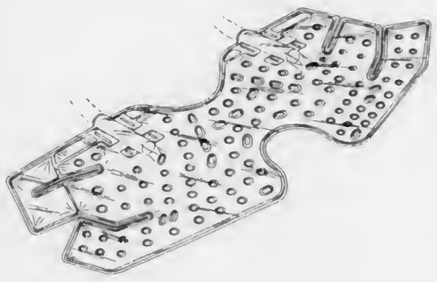
383,544
FINGERTIP STERILE PAD
Wallace T. Heckathorn, R.D. 3. Box 228, Graham Rd., Rayland, Ohio 43943
Filed Sep. 27, 1996, Ser. No. 60,401
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—189



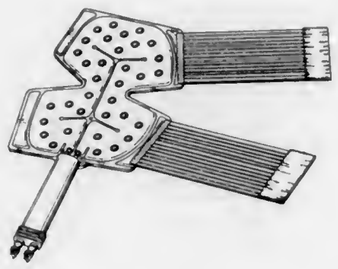
383,545
EXTERNAL EAR DRESSING
Donald E. Doyle, 4105 Hospital Rd. #102-A, Pascagoula, Miss. 39581
Filed Aug. 1, 1996, Ser. No. 57,805
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



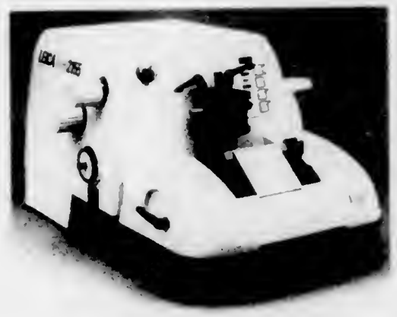
383,546
LIQUID THERAPY PAD
James A. Amis, Cincinnati; Charles A. Neer, Milford, and Robert J. Ziemba, Cincinnati, all of Ohio, assignors to Bristol-Myers Squibb Company, New York, N.Y., by Said Charles A. Neer and Robert J. Ziemba
Filed May 30, 1996, Ser. No. 55,131
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—206



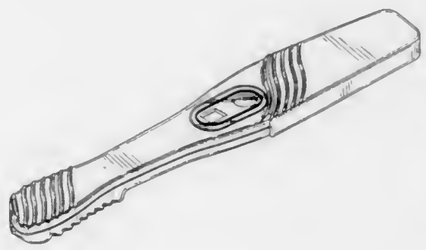
383,547
COLD THERAPY PAD WITH MOUNTING STRAPS
Bradley R. Mason, Olivenhain; Jeffrey T. Mason, Escondido, and Suechyi J. Kuan, Laguna Hills, all of Calif., assignors to Breg, Inc., Vista, Calif.
Filed Jun. 4, 1996, Ser. No. 55,432
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—206



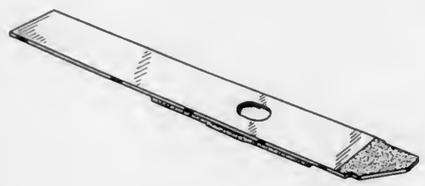
383,548
ROTATIONAL MICROTOME
Werner Hoelbl, Vienna, Austria, assignor to Leica Instruments GmbH, Nussloch, Germany
Filed Mar. 23, 1995, Ser. No. 36,649
Claims priority, application Germany, Sep. 23, 1994, M 94 07 390.2
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—216



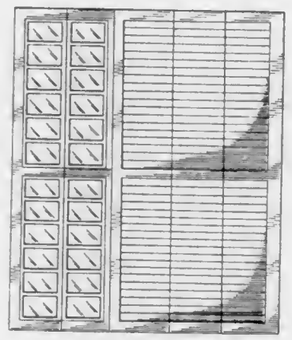
383,549
PREGNANCY TESTER
Marylou Arnett, Lebanon, and Dorothy A. Robinson, Paterson, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 1, 1996, Ser. No. 52,504
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—223



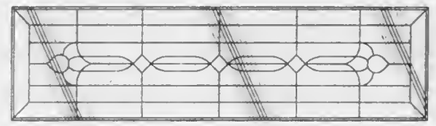
383,550
REAGENT TEST STRIP
Loren Robert Larson; Harshad Ishwarbhai Patel; Gregory Lewis Bennett, all of Fremont; John Timothy Lemke, Pleasanton; Lorin Philip Olson, Scotts Valley, and David P. Matzinger, Menlo Park, all of Calif., assignors to LifeScan, Inc., Milpitas, Calif.
Continuation of Ser. No. 32,328, Dec. 16, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 50,127
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—225



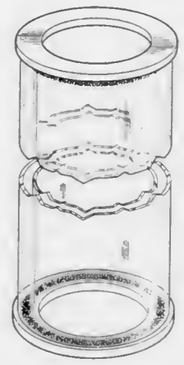
383,551
DOOR
Kent H. Forsland, 275 Market Sq., Suite 147, Minneapolis, Minn. 55405
Division of Ser. No. 40,278, Jun. 14, 1995. This application Jun. 10, 1996, Ser. No. 55,651
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—48



383,552
DOORWAY TRANSOM
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to American Architectural Products, Inc., Cleveland, Ohio
Filed Sep. 14, 1995, Ser. No. 43,893
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—103

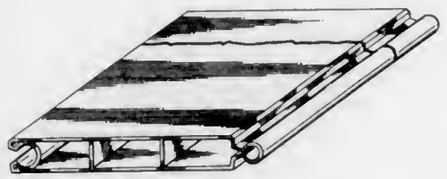


383,553
DOUBLE WALLED HOLLOW COLUMN
H. William Snyders, 461 Golden Oak Drive, Oakville, Ontario, Canada, L6H 3Y3
Filed Dec. 8, 1995, Ser. No. 47,599
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—126



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383,554
INTERLOCKING PANEL
Keith Hart, Newmarket, Canada, assignor to Majestic Plastics Ltd., Weston
Filed Dec. 27, 1995, Ser. No. 50,534
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—138



383,555
LANTERN CANDLE HOLDER
Christopher Hardy, Springfield, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
Filed Jan. 5, 1996, Ser. No. 47,312
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—9



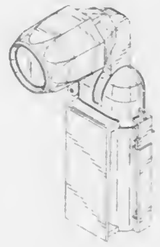
383,556
DECORATIVE LIGHT SET
Jungkuei Wang, No. 2, Lane 60, Kaung Hua 1st Street, Hsin-chu, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,646
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—25



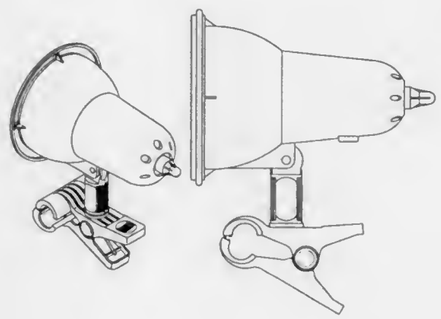
383,557
ELECTROLUMINESCENT NIGHT LIGHT
Arthur Schifrin, 163 Third Ave., New York, N.Y. 10003
Filed Feb. 12, 1996, Ser. No. 50,774
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26



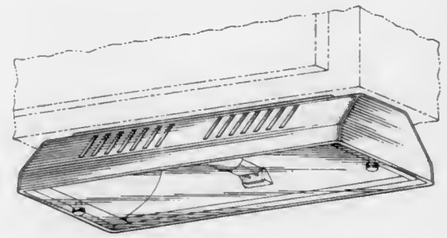
383,558
FLASHLIGHT
David H. Parker, Torrance, Calif., assignor to Pelican Products, Inc., Torrance, Calif.
Filed Aug. 22, 1996, Ser. No. 58,750
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—44



383,559
CLAMP-ON LAMP
Kam-Hoi Chan, Shatin, Hong Kong, assignor to Go-Gro Industries Ltd, Kowloon Bay, Hong Kong
Filed Jan. 24, 1996, Ser. No. 49,392
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—60



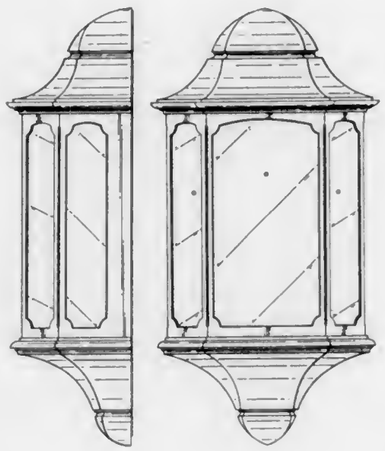
383,560
HALOGEN LAMP
Terrance L. Palmer, Glenview, Ill., assignor to Aura Lamp & Lighting, Inc., Glenview, Ill.
Filed Jan. 25, 1996, Ser. No. 49,448
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—72



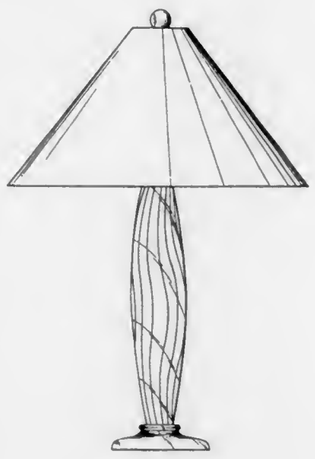
383,561
SIDE ELEMENT OF A SHOE UPPER
Christian J. Tresser, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 21, 1996, Ser. No. 62,697
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



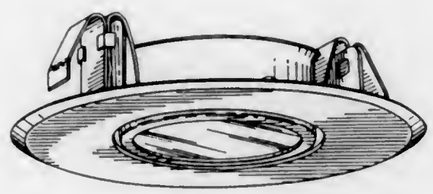
383,562
WALL LANTERN HOUSING
Hans G. Heiberg, Gråkamvelen, 0389 Oslo, Norway, and Paolo Pelucchi, Nova Milanese, Italy, assignors to Pelucchi spa, Milan, Italy, and Hans G. Heiberg, Oslo, Norway
Filed Apr. 1, 1996, Ser. No. 52,616
Claims priority, application Norway, Oct. 10, 1995, 950768
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



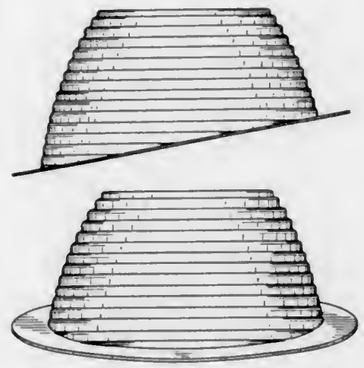
383,563
TABLE LAMP
John Hutton, New York, N.Y., assignor to Donghia Furniture Company, Ltd., New York, N.Y.
Filed Mar. 28, 1996, Ser. No. 52,387
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



383,564
TRIM FOR EMBEDDED LIGHT FIXTURE
Michel Lecluze, 1009, rue du Parc Industriel, St-Jean Chrysostome, Québec, Canada, G6Z IC5
Filed Dec. 4, 1995, Ser. No. 47,452
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



383,565
ONE-PIECE SLOPED CEILING REFLECTOR WITH BAFFLES
Robert J. Demshki, Jr., Riner, and Gerry F. Thornton, Christiansburg, both of Va., assignors to Hubbell Incorporated, Orange, Conn.
Filed May 29, 1996, Ser. No. 55,086
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—131



383,566
DRY SHAVER
Martin Bone, Groningen, Netherlands, assignor to Philips Electronics North America Corporation, New York, N.Y.
Filed Nov. 13, 1995, Ser. No. 46,266
Claims priority, application Hague Agreement, Jun. 29, 1995, DMA/002 981
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—50



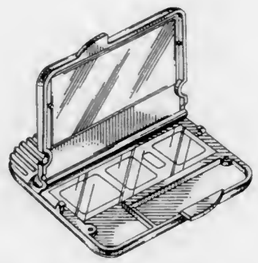
383,567
HANDLE FOR A NAIL FILE
Michael Megna, Sacramento, Calif., assignor to Backscratchers, Inc., Sacramento, Calif.
Filed Jul. 27, 1995, Ser. No. 41,928
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—59



383,568
HAIR COLORING EASEL
Dennis Giedd, 395 S. Topanga Canyon Blvd., Topanga, Calif. 90290
Division of Ser. No. 32,596, Dec. 21, 1994, Pat. No. Des. 375,580. This application Apr. 1, 1996, Ser. No. 52,615
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—73



383,569
MINIATURE COSMETIC KIT
Laura Arbree, 420 Palm Cir., Naples, Fla. 33940
Filed Apr. 8, 1996, Ser. No. 52,902
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—77

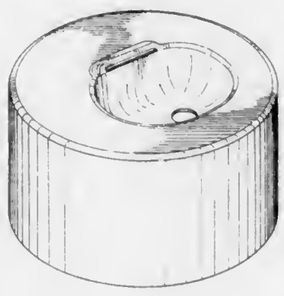


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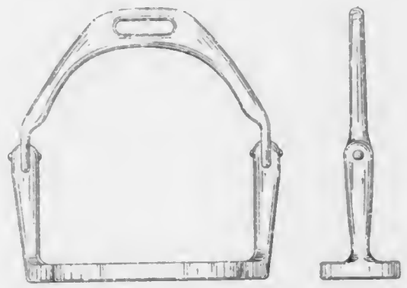
383,570
AQUARIUM
Chung-kuei Lin, 6F-4, No. 1, Wuchuan 1st Rd., Wuku Industrial Dist., Hsinchuang City, Taipei Hsien, Taiwan
Filed Aug. 5, 1996, Ser. No. 57,957
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—102



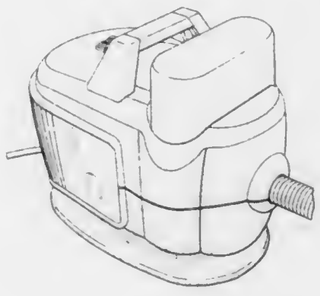
383,571
LIVESTOCK DRINKING FOUNTAIN
Frank Frodsham, 230 E. 1700 South, Farmington, Utah 84025
Filed Oct. 13, 1995, Ser. No. 45,219
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—132



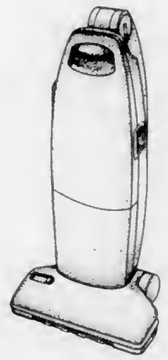
383,572
STIRRUP
Philip Leslie Rea, London, Great Britain, assignor to Precision Riding Limited, Cheshire, United Kingdom
Filed Jan. 11, 1996, Ser. No. 48,719
Claims priority, application United Kingdom, Jul. 11, 1995, 2048733
Term of patent 14 years
LOC (6) Cl. 30 - *04*
U.S. Cl. D30—142



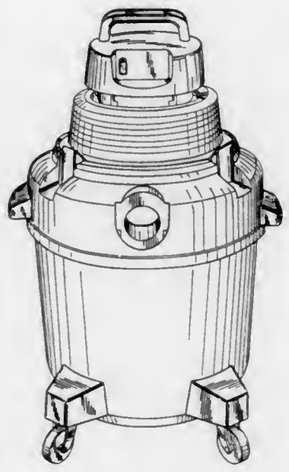
383,573
MINIATURE SPOT CLEANER
William J. Saunders, Lithonia, Ga., assignor to Bissell Inc., Grand Rapids, Mich.
Filed Feb. 2, 1996, Ser. No. 49,879
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—21



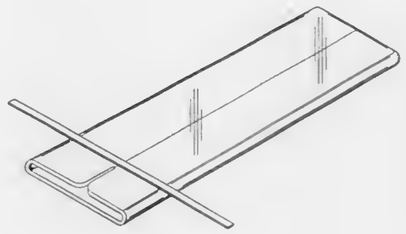
383,574
VACUUM CLEANER
Tadahiko Saimen, Nara-ken, and Mika Nakajima, Soraku-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 20, 1996, Ser. No. 50,417
Claims priority, application Japan, Aug. 30, 1995, 7-25439
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—22



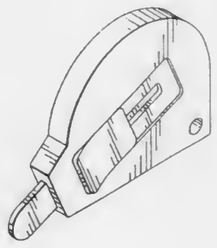
383,575
COMBINED WET AND DRY VACUUM CLEANER
John Griffin, Phoenix, Ariz., assignor to Shop Vac Corporation, Williamsport, Pa.
Continuation of Ser. No. 21,564, Apr. 20, 1994, abandoned. This application Mar. 8, 1996, Ser. No. 51,275
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—23



383,576
FRUIT CLEANER
James W. Jimison, 360 Fulton St., Palo Alto, Calif. 94301
Continuation-in-part of Ser. No. 80,660, Jun. 18, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 37,144
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D32—35

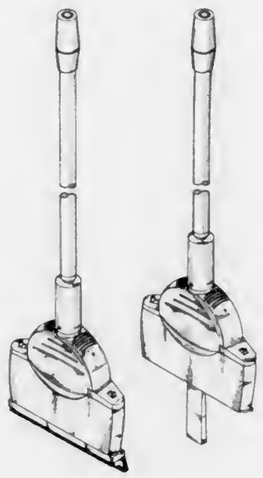


383,577
LOTTERY TICKET SCRATCHER
Michael E. Lyons, 805 NE. Prescott, Portland, Oreg. 97211
Filed Jun. 19, 1996, Ser. No. 55,986
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—46

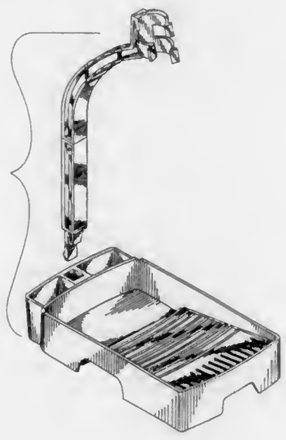


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383,578
COMBINED ELECTRIC BROOM AND VACUUM CLEANER
Jen-hsin Ho, No. 18-3, Sec. 2, Hoping E. Rd., Taipei, Taiwan
Filed Jul. 29, 1996, Ser. No. 57,663
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D32—51



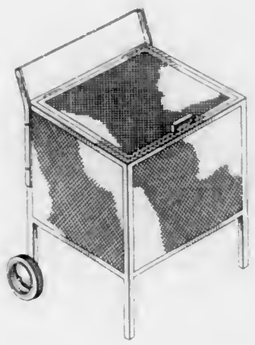
383,579
PAINT TRAY WITH A REMOVEABLE HANDLE
Guy Samson, 630, Murray Ave, #809, Québec, Québec, Canada, G1S 4W9
Filed Oct. 30, 1995, Ser. No. 46,735
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—53.1



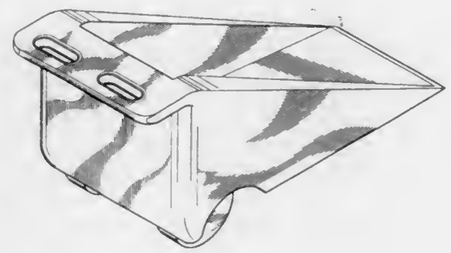
383,580
MOP BUCKET ACCESSORY HANDLE
Dennis W. Bolster, 15235 Garnet St. NW., Ramsey, Minn. 55303, and Dean Westad, 918 N. 2nd St., Stillwater, Minn. 55082
Filed Aug. 31, 1995, Ser. No. 43,306
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D32—54



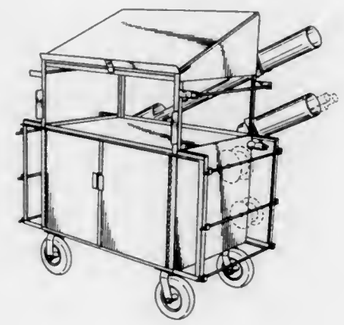
383,581
TRASH RECEPTACLE
Carlos G. Ordonez, 11870 SW. 97 Terrace, Miami, Fla. 33186
Filed May 23, 1996, Ser. No. 54,831
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—5



383,582
SNOW REMOVAL DEVICE
Sylvester Sinclair, Jr., 6405 Killarney St., Clinton, Md. 20735
Filed Sep. 5, 1996, Ser. No. 59,212
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—18



383,583
ELECTRICIAN'S CART
William J. Ashinhurst, 1222 Yew St., Bellingham, Wash. 98225
Filed Jun. 19, 1996, Ser. No. 55,992
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—21



383,584
BOOM REST
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Feb. 2, 1996, Ser. No. 49,904
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—28



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Baldwin, Gene R. Double shield mouth-to-mouth resuscitator mask with barrier for contaminated fingers. 5,664,559, Cl. 128-203.110.

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Gerst, Peter; Banholzer, Karlheinz; and Maier, Winfried, 5,665,921, Cl. 73-715.000.

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Handelman, Doron; Kranc, Moshe; Fink, David; Zucker, Arnold; Smith, Perry; and Bar-On, Gerson, 5,666,412, Cl. 380-4.000.

Barr, John M.: *See*—
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Barr, Kathryn A.: *See*—
Hagenson, Mary Jane; Barr, Kathryn A.; Stroman, David W.; Gaertner, Frank H.; Harpold, Michael M.; and Klein, Ronald D., 5,665,600, Cl. 435-320.100.

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Greaves, Gerald G.; Van Sloun, Jeffrey J.; Barron, Catherine A.; and Weir, Charles R. J., 5,665,447, Cl. 428-68.000.

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Burgi, Dean S.; Bartell, Daniel M.; Sleeter, Donald D.; and Mastro, Lucina P., 5,666,435, Cl. 382-129.000.

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Bartha, Johann W.; Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased (by Regine Nonnenmacher, legal representative); and Weiss, Helga, to International Business Machines Corporation. Calibration standard for 2-D and 3-D profilometry in the sub-nanometer range and method of producing it. 5,665,905, Cl. 73-105.000.

Bartholomew, Paul F., to PFB Company. Roof anchor and hanging scaffold system. 5,664,391, Cl. 52-714.000.

Bartoli, Filbert J., Jr.: *See*—
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Barton, Kenneth A., II. Microfinishing and roller burnishing machine. 5,664,991, Cl. 451-65.000.

Barton, Roger W.: *See*—
Bergeron, David L.; Macaulay, John M.; Barton, Roger W.; and Morse, Jeffrey D., 5,665,421, Cl. 427-64.000.

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Bartoo, Robin L. Holder apparatus for releasably supporting an electrically operated device. 5,664,293, Cl. 24-3.120.

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Kroner, Matthias; Schornick, Gunnar; Baur, Richard; Kud, Alexander; and Schwendemann, Volker, 5,665,693, Cl. 510-476.000.

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Johnson, Ann S.; Kilpatrick, John A.; Davis, Lewis W., Jr.; Ledford, David B.; Henderson, Larry D.; and Wilson, Phillip E., 5,664,455, Cl. 73-160.000.
Karageorgiou, Theodore G.; Hanwell, Gary W.; Caldwell, David L.; Purvis, Jewell D.; Walker, Jerry M.; Banks, Freddie L.; Eatmon, Charles E.; Ilg, Otto M.; Carnes, Eugene; Hucks, James A.; Coker, James F.; Holzer, Carl R.; Emery, John E., II; Pendley, David M.; Pomeroy, Dennis W.; Arnold, Richard; Osborne, Billy K.; Earley, Philip T.; Temples, John M.; Blackston, Larry D.; and Toney, Thomas M., 5,665,293, Cl. 264-103.000.
Moussa, Youssef; and Kaleem, Kareem K., 5,665,433, Cl. 427-377.000.
Narayan, Thirumurti; and Hicks, Steven, 5,665,288, Cl. 264-53.000.

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Bassetti, Robert P. Method of packaging and microwaving sweet potato. 5,665,411, Cl. 426-234.000.

Bassi, Sukh; Maningat, Clodualdo C.; Chinnaswamy, Rangaswamy; and Nie, Li, to Midwest Grain Products. Biodegradable grain protein-based solid articles and forming methods. 5,665,152, Cl. 106-145.100.

Bassuk, Glenn. See-through refrigerator/freezer. 5,664,435, Cl. 62-381.000.

Bates, Ian Richard Joseph: *See*—
Stasik, Anthony; Chan, Kwok Wah; Bates, Ian Richard Joseph; and Stainton, John Ernest, 5,664,458, Cl. 74-336.00R.

Bates, James I. Connectors. 5,664,809, Cl. 285-48.000.

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Batra, Shubneesh: *See*—
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Sandhu, Gurtej S.; Batra, Shubneesh; and Fazan, Pierre C., 5,665,611, Cl. 438-162.000.

Battle, John R. Refillable liquid dispenser. 5,664,700, Cl. 222-105.000.

Baudel, Thomas; Buxton, William A. S.; Fitzmaurice, George W.; Harrison, Beverly L.; Kurtenbach, Gordon P.; and Owen, Russell N., to Silicon Graphics, Inc. Clickaround tool-based graphical interface with two cursors. 5,666,499, Cl. 345-347.000.

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Baur, Richard: *See*—
Kroner, Matthias; Schornick, Gunnar; Baur, Richard; Kud, Alexander; and Schwendemann, Volker, 5,665,693, Cl. 510-476.000.

Bausch & Lomb Incorporated: *See*—
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Magerstedt, Herbert; and Paul, Friedemann, 5,665,832, Cl. 525-437.000.
Meier, Heinrich; Hartwig, Wolfgang; Junge, Bodo; Schohe-Loop, Rudolf; Gao, Zhan; Schmidt, Bernard; de Jonge, Maarten; and Schuurman, Teunis, 5,665,740, Cl. 514-556.000.
Urbahns, Klaus; Behner, Otto; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wehinger, Egbert; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and de Vry, Jean-Marie-Viktor, 5,665,741, Cl. 514-356.000.

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Werner, Joachim; Kane, Scott A.; Doerge, Herman P.; and Boonstra, Eric F., 5,665,788, Cl. 521-114.000.

Bayer, Craig E., to ABB Air Preheater, Inc. Regenerative thermal oxidizer. 5,664,942, Cl. 431-7.000.

Bayer, Michael, to Bayerische Motoren Werke AG. Device for generating a synthetic signal for testing knock control functions. 5,665,906, Cl. 73-118.100.

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Bartha, Johann W.; Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased; and Weiss, Helga, 5,665,905, Cl. 73-105.000.

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Baylor College of Medicine: *See*—
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Beabealashvili, Robert Shavlovich: *See*—
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Beachner, James R.; and Till, Henry R., to Xerox Corporation. Roller to press the image toner on the photoreceptor. 5,666,612, Cl. 399-223.000.

Beall, John Ninian. Portable cartridge brass collector. 5,664,727, Cl. 232-1.00R.

Bear, Dee; Cleveland, Richard; Fetcho, Michael R.; Graft, John T.; Redding, Thomas; and Ward, Timothy, to Dana Corporation. Cast tube-yoke bracket assembly. 5,664,847, Cl. 301-137.000.

Beard, David R.; and Zhou, Qiang, to Western Atlas International, Inc. Method of skin effect correction and data quality verification for a multi-frequency induction well logging instrument. 5,666,057, Cl. 324-339.000.

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Beasom, James D., to Harris Corporation. Method of increasing maximum terminal voltage of a semiconductor device. 5,665,634, Cl. 438-404.000.

Beauchamp, Christopher E. Foot operated beer keg pressurizer. 5,664,702, Cl. 222-179.000.

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Bechtel, Jon H.; Schmidt, David J.; and Knapp, Robert C., to Gentex Corporation. Automobile headlamp and running light control system. 5,666,028, Cl. 315-82.000.

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Becker, Daniel G.; Gross, Charles W.; and Glowa, Michael P., to Linvatec Corporation. Endoscopic or open lipectomy instrument. 5,665,101, Cl. 606-180.000.

Becker, Gerhard: *See*—
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Becker, Rex A.: *See*—
Li, Alfred C.; Becker, Rex A.; and Busker, Leroy H., 5,665,163, Cl. 118-413.000.

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Beckler, Gregory S., to Promega Corporation. Coupled transcription and translation in eukaryotic cell-free extract. 5,665,563, Cl. 435-68.100.

Beckman Instruments, Inc.: *See*—
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Beckman, Sue. Method and apparatus for illuminating artwork by a neon tube arrangement of selected configuration. 5,664,352, Cl. 40-545.000.

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Maret, S. Melissa; Feindt, Hans H.; Hahn, Gerald DeWayne; and Uithoven, Keith, 5,665,552, Cl. 435-7.220.
Mussi, Edward F., 5,665,596, Cl. 435-373.000.

Bedi, Raman, to University of Birmingham, The. Wedge. 5,664,946, Cl. 433-140.000.

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Hart, Steven C.; Behe, Thomas J.; Hirsch, Mark J.; Fioravanti, Alexander J.; and Pike, Thomas W., 5,666,619, Cl. 399-266.000.

Behie, Leo A.: *See*—
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Behner, Otto: *See*—
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Behringwerke Aktiengesellschaft: *See*—
Höpfl, Reinhard; Jochmus-Kudielka, Ingrid; and Gissmann, Lutz, 5,665,533, Cl. 435-5.000.

Beiersdorf AG: *See*—
Eichner, Wolfram; Achterberg, Volker; Dörschner, Albrecht; Meyer-Ingold, Wolfgang; Mielke, Heiko; Dirks, Wilhem; Wirth, Manfred; and Hauser, Hansjörg, 5,665,567, Cl. 435-69.400.

Beimesch, Wayne Edward: *See*—
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Bejot, Philippe; Monteillet, Jean Claude; Boluda, Jose Manuel Vila; and Busquets, J. Ruiz. Disc brake, especially for vehicles. 5,664,646, Cl. 188-71.900.

Bekker, Paul Andre: *See*—
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Belden Wire & Cable Company: *See*—
Deitz, Gregory S., Sr.; and Berelsman, Timothy N., 5,666,452, Cl. 385-100.000.
Milliman, James A.; and Thuot, Gary G., 5,665,161, Cl. 118-405.000.

Bell & Howell Phillipsburg Company: *See*—
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Bell Atlantic Network Services, Inc.: *See*—
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Kostreski, Bruce, 5,666,365, Cl. 370-486.000.
McAllister, Alex; Curry, James; and Meador, Frank, 5,666,400, Cl. 379-67.000.
Metz, Erik C.; Hudson, Henry G., Jr.; and Darr, John W., Jr., 5,666,293, Cl. 395-200.500.

Bell, Glenn B.; and Hicks, Ronald B., to Kinetic Concepts, Inc. Patient interface system. 5,664,270, Cl. 5-600.000.

Bellas, Robert E.: *See*—
Sonenshein, Gail E.; Lawrence, Roger; and Bellas, Robert E., 5,665,591, Cl. 435-375.000.

Bellavance, Joseph M. Support pillow assembly. 5,664,271, Cl. 5-632.000.

Bellew, Matthew: *See*—
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Bellin, Michael Anthony: *See*—
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Belliveau, Richard S.; and Lane, John W., II. Lighting system with multiple beam shapes. 5,665,305, Cl. 362-268.000.

Beloit Technologies, Inc.: *See*—
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Bourbeau, Frank. Networked battery monitor and control system and charging method. 5,666,040, Cl. 320-6.000.

Bourdon, Guy, to Pierre Medical S.A. Breathing aid device. 5,664,562, Cl. 128-204.230.

Bourne, Richard C.; and Johnson, Joel R., to Davis Energy Group, Inc. Indirect and direct evaporative cooling system. 5,664,433, Cl. 62-314.000.

Boursnell, Michael Edward Griffith: *See—*
Inglis, Stephen Charles; Boursnell, Michael Edward Griffith; and Minson, Anthony Charles, 5,665,362, Cl. 424-205.100.

Boyd, Freddy D.: *See—*
Clonch, David M.; Boyd, Freddy D.; and Cook, Michael J., 5,664,932, Cl. 414-680.000.

Boyd, Harper, to Boyd's Bit Service, Inc. Method and apparatus for protecting a steel riser from chemical cutters. 5,664,627, Cl. 166-298.000.

Boyd, Raymond J.: *See—*
La, Chay; and Boyd, Raymond J., 5,665,956, Cl. 235-472.000.

Boyd, Victoria L.; Bozzini, MeriLisa; and DeFranco, Robert J., to Perkin-Elmer Corporation, The. Thiohydantoin formation and selective modification of the carboxy terminus of an aspartic acid- and/or glutamic acid-containing protein. 5,665,603, Cl. 436-90.000.

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Boyd, Harper, 5,664,627, Cl. 166-298.000.

Bozzini, MeriLisa: *See—*
Boyd, Victoria L.; Bozzini, MeriLisa; and DeFranco, Robert J., 5,665,603, Cl. 436-90.000.

Bracco International B.V.: *See—*
Ramalingam, Kondareddiar; and Raju, Natarajan, 5,665,329, Cl. 424-1.650.

Bracken, Allen Thomas; Rich, Edward L.; Woods, Harold Lin; and Tan, Hong, to Iomega Corporation. Velocity control for a disk drive actuator. 5,666,236, Cl. 360-75.000.

Bradford, Peter Francis, to Lucas Industries Public Limited Company. Fuel filter. 5,665,230, Cl. 210-305.000.

Bradley University: *See—*
Xu, Wayne; and Doane, William M., 5,665,786, Cl. 521-84.100.

Brady, Brian K.: *See—*
Savage, Dennis J.; Schell, Brian A ; and Brady, Brian K., 5,665,498, Cl. 430-41.000.

Brakebusch, Cord: *See—*
Wallach, David; Brakebusch, Cord; Varfolomeev, Eugene; and Batkin, Michael, 5,665,859, Cl. 530-328.000.

Brandli, Stephen Albert: *See—*
Reiter, Allen; Hecht, Stephen Charles; Bellew, Matthew; Brandli, Stephen Albert; and Bosworth, Adam, 5,666,526, Cl. 395-602.000.

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Branham, Larry E.: *See—*
Meadows, David L.; Kurjan, Katherine C.; and Branham, Larry E., 5,664,704, Cl. 222-209.000.

Branner, Sven: *See—*
Aaslyng, Durrit; Branner, Sven; Hastrup, Sven; Nørskov-Lauritsen, Leif; Olsen, Ole Hvilsted; Simonsen, Merete; Casteleijn, Eric; Egmond, Maarten Robert; Haverkamp, Johan; Marugg, John David; and Mooren, Arnoldus Theodorus Anthonius, 5,665,587, Cl. 435-221.000.

Brant, William: *See—*
Kamprath, David R.; and Brant, William, 5,666,600, Cl. 399-165.000.

Brantly, Thomas, to Nashua Corporation. Electrophotographic carrier compositions having improved life. 5,665,509, Cl. 430-108.000.

Brauer, Bernd; and Schlüter, Michael, to M A N Systemelektronik GmbH. Method and arrangement for optically representing information. 5,664,353, Cl. 40-560.000.

Braun, Eugene R., to Eaton Corporation. Synchronizer with self-energizing. 5,664,654, Cl. 192-48.910.

Bräutigam, Matthias: *See—*
Kirsch, Gerald; Neef, Günter; Schwarz, Katicia; Bräutigam, Matthias; Thieroff-Ekerdt, Ruth; and Rach, Petra, 5,665,716, Cl. 514-167.000.

Break-A-Beam, Inc.: *See—*
Matzka, Mark C., 5,665,961, Cl. 250-221.000.

Breaux, Lawrence Wayne. Exerciser. 5,665,042, Cl. 482-142.000.

Breeden, Gray. Personal watercraft carrying apparatus and mthod for trailerable boats. 5,664,516, Cl. 114-259.000.

Breeze, Robert W. Adjustable socket. 5,664,467, Cl. 81-114.000.

Bremer & Leguil GmbH: *See—*
Froeschmann, Erasmus, 5,665,683, Cl. 508-271.000.

Brennan, Daniel M.: *See—*
Chen, Cheng T.; Best, Reginald P.; and Brennan, Daniel M., 5,666,362, Cl. 370-420.000.

Brent, George I., to Seagate Technology, Inc. Spring loaded stacked actuator assembly. 5,666,243, Cl. 360-106.000.

Bresser, Joel: *See—*
Cubbage, Michael Lee; Ju, Shyh-Chen; Bresser, Joel; and Jurtshuk, Rebecca, 5,665,546, Cl. 435-6.000.

Bricker, Anthony. Baseball player field position and batting order tracking apparatus. 5,664,780, Cl. 273-239.000.

Brico Engineering Limited: *See—*
Maulik, Paritosh, 5,666,632, Cl. 419-6.000.

Bridges, Jack E.; Sresty, Guggilam C.; and Dev, Harsh, to IIT Research Institute. Method and apparatus for in situ decontamination of a site contaminated with a volatile material. 5,664,911, Cl. 405-128.000.

Bridgestone Corporation: *See—*
Hall, James E., 5,665,827, Cl. 525-280.000.
Takizawa, Yoshio; Takagi, Koji; Kaneda, Hiroshi; and Kawagoe, Takahiro, 5,666,626, Cl. 399-286.000.

Bridgwater, James: *See—*
Milhaupt, Robert W.; Cen, Ling; and Bridgwater, James, 5,666,497, Cl. 395-309.000.

Brigano, Frank A.: *See—*
Katzakian, Arthur, Jr.; McGehee, Donald C.; Grix, Charles E.; and Brigano, Frank A., 5,665,239, Cl. 210-656.000.

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Anderson, Deborah J.; Johnson, Peter M.; and Jack, Richard M., 5,665,556, Cl. 435-7.210.

Brignola, Edward L.; Fleck, Alvin A.; LaCroix, Price W.; Willis, Edward K.; Zimmerman, Leon H., deceased (by Patricia B. Zimmerman, legal representative), to Reemay Inc. Production of spun-bonded web. 5,665,300, Cl. 264-555.000.

Brimhall, Owen D., to Technical Research Associates, Inc. Multiple function centrifuge apparatus with index plate and method. 5,665,047, Cl. 494-16.000.

Brinen, Jeffrey Lawrence; Speca, Anthony Nicholas; Tormaschy, Kelly; and Russell, Kathryn Ann, to Exxon Chemical Patents, Inc.; and Hoechst. Method for making supported catalyst systems and catalyst systems therefrom. 5,665,665, Cl. 502-9.000.

Brinker, Joseph R.: *See—*
Beranek, Terry L.; Brinker, Joseph R.; and Lawrence, Stephen, 5,664,537, Cl. 123-195.00C.

Bristol-Myers Squibb Company: *See—*
Canetta, Renzo Mauro; Eisenhauer, Elizabeth; and Rozenzweig, Marcel, 5,665,761, Cl. 514-449.000.
Wolfram, Leszek, 5,665,336, Cl. 424-70.600.

Britcher, Susan F.: *See—*

Young, Steven D.; Britcher, Susan F.; Payne, Linda S.; Tran, Lekhanh O.; and Lumma, William C., Jr., 5,665,720, Cl. 514-230.500.

British Technolog Group Limited: *See—*
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,665,297, Cl. 264-292.000.

British Telecommunications public limited company: *See—*
Hill, Alan Michael, 5,666,218, Cl. 359-139.000.
Wood, David Charles; Cassidy, Stephen Anthony; Wilkinson, Mark Robert; and McKee, Paul Francis, 5,666,224, Cl. 359-573.000.

Britt, Herbert I.; Joshi, Amol P.; Mahalec, Vladimir; Piela, Peter C.; and Venkataraman, Swaminathan, to Aspen Technology, Inc. Plant simulation and optimization software apparatus and method using dual execution models. 5,666,297, Cl. 364-578.000.

Broadhead, Bret N.: *See—*
Lux, Andreas M.; Daines, Michael J.; Halford, Rick L.; and Broadhead, Bret N., 5,664,800, Cl. 280-728.200.

Broder, Donna. Foldable blanket for revealing different patterns. 5,664,269, Cl. 5-486.000.

Broderick, Kevin B.: *See—*
Reed, Michael A.; Richey, Lindell C.; Hook, Jeffrey S.; Yatka, Robert J.; Tyrpin, Henry T.; Broderick, Kevin B.; and Meyers, Marc A., 5,665,406, Cl. 426-5.000.

Brodhead, James E.: *See—*
Banks, David P.; Brodhead, James E.; Buttrick, James N., Jr.; Ffield, Paul E.; Jones, Darrell D.; Murphy, James C.; Richards, John F.; Wiseman, Melvin R.; Schooff, John W.; and Van Swearingen, Steven C., 5,664,311, Cl. 29-407.040.

Brodie, Alan D.: *See—*
Meisburger, Dan; Brodie, Alan D.; Chen, Zhong-Wei; Jau, Jack Y.; and Grenon, Brian J., 5,665,968, Cl. 250-310.000.

Brodie, James L.: *See—*
Fisher, Daniel J.; Lovell, Marc A.; and Brodie, James L., 5,665,397, Cl. 425-116.000.

Brodie, Robert Bruce; Cheng, Joe-Ming; Garibay, Lawrence John; Menon, Jaishankar Moothedath; Ng, Chan Yiu; and Nguyen, Tram Thi Mai, to International Business Machines Corporation. Method and means for managing linear mapped address spaces storing compressed data at the storage subsystem control unit or device level. 5,666,114, Cl. 341-50.000.

Brody, Harvey, to Norvey, Inc. Packaging system. 5,664,683, Cl. 206-768.000.

Bromley, Bob: *See—*
Mitchell, David N.; and Bromley, Bob, 5,664,794, Cl. 280-11.200.

Bronicki, Lucien Y.; Doron, Benjamin; and Sinai, Joseph, to Ormat Industries Ltd. Method of and apparatus for generating power. 5,664,414, Cl. 60-39.182.

Bronson, Robert: *See—*
Klearman, Jeffrey D.; Bronson, Robert; and Roth, Jerry M., 5,665,059, Cl. 602-27.000.

Brookner, George M.: *See—*
Pastor, Jose; Brookner, George M.; Cordery, Robert A.; and Kim, Hyung-Kun (Paul), 5,666,421, Cl. 380-51.000.

Brooks Automation, Inc.: *See—*
Muka, Richard S.; Pippins, Michael W.; and Drew, Mitchell A., 5,664,925, Cl. 414-217.000.

Brophy, Mark E., to ABB Air Preheater, Inc. Pre-stressed membrane basket cover assembly. 5,664,621, Cl. 165-8.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Fujii, Norihisa, 5,666,471, Cl. 395-117.000.
Kitamura, Tetsuya, 5,666,148, Cl. 347-158.000.
Taki, Ryoji, 5,666,135, Cl. 345-112.000.
Zhang, Qiming, 5,666,144, Cl. 347-69.000.

Brown, Clay A. Ultravoilet, antibacterial, antifungal dryerlight. 5,664,340, Cl. 34-275.000.

Brown, Dale G.: *See—*
Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., 5,665,374, Cl. 424-435.000.

Brown, Jeffrey Bernard: *See—*
Abboud, Samir Elias; Apuzzo, Nickolas Christopher; Brown, Jeffrey Bernard; Cunningham, Earl Albert; Hannon, David Malcolm; Mallette, Raymond Patrick; Tyler, Paul Sheldon; Voss, Steven Harry; and Wallash, Albert John, 5,664,319, Cl. 29-603.080.

Brown, Kris K.: *See—*
Sandhu, Gurtej S.; and Brown, Kris K., 5,665,625, Cl. 438-396.000.

Brown, Mark Boone: *See—*
Gillings, Dennis; Lalor, Joan Mary; Brown, Mark Boone; and Christiansen, Donna Ann, 5,666,490, Cl. 395-200.680.

Brown, Patrick: *See—*
Nottingham, John; Spirk, John; Tamulewicz, Paul; Brown, Patrick; and Gall, Douglas, 5,664,698, Cl. 222-2.000.

Brown, Scott William; Johnstone, Alexander; and Sanderson, William Ronald, to Solvay Interox Limited. Oxidation of ketones. 5,665,891, Cl. 549-272.000.

Brown, Stephen; and Sandhu, Gurdial Singh, to Sanofi Winthrop, Inc. Lyophilized thioxanthenone antitumor agents. 5,665,760, Cl. 514-437.000.

Browne, John, to Mark IV Industries Limited. Electromagnetic shutter. 5,666,134, Cl. 345-109.000.

Broze, Guy: *See—*
DeGuertechin, Louis Oldenhove; and Broze, Guy, 5,665,268, Cl. 510-214.000.

Brucker, George J.: *See—*
Kronenberg, Stanley; and Brucker, George J., 5,665,970, Cl. 250-374.000.

Brucker, Robert J., to Seal-Spout Corporation. Ninety degree pouring spout. 5,665,045, Cl. 493-87.000.

Brugger, Hans, to Daimler Benz AG. Metal-semiconductor diode and process for preparing metal-semiconductor diodes. 5,665,999, Cl. 257-472.000.

Brugger, Jerome M.; and Greenwell, Joseph Daniel, to R. A. Jones & Co., Inc. Edge lifting end effector. 5,664,931, Cl. 414-416.000.

Bruker Analytische Messtechnik GmbH: *See—*
Westphal, Michael, 5,666,054, Cl. 324-318.000.

Bruneau, Jean Michel: *See—*
Van Assche, Charles; Lando, Danielle; Bruneau, Jean Michel; Voelker, Toni Alois; and Gervais, Monica, 5,665,892, Cl. 800-205.000.

Brunn, Horst: *See—*
Oehlert, Wolfgang; Burow, Wilfried; Brunn, Horst; and Kunstmann, Herbert, 5,665,157, Cl. 106-456.000.

Brunner, Richard: *See—*
Turcotte, Eric; and Brunner, Richard, 5,666,650, Cl. 370-329.000.

Brunninger, Manfred: *See—*
Theurer, Josef; and Brunninger, Manfred, 5,664,498, Cl. 104-6.000.

Bruns, Robert W., to Sentek Products. Apparatus and method for dynamic weighing of loads in hydraulically operated lifts. 5,666,295, Cl. 364-567.000.

Brunswick Corporation: *See—*
Bigsby, Bryan D., 5,664,536, Cl. 123-193.400.
Logan, Andrew K.; Jaeger, Matthew W.; Axton, Terry D.; Hughes, William E.; and Gruenwald, David J., 5,664,526, Cl. 123-41.140.

Brydel, Paul S.; Johanek, William; and Emery, Dennis V., to Jered Brown Brothers Inc. Pontoon system and pontoon connecting system and process therefor. 5,664,517, Cl. 114-266.000.

Brzoska, Henry G., to Lemaks Industries, Inc. Apparatus for opening clogged and slow drains. 5,664,284, Cl. 15-330.000.

Buchholz, Klaus; Noll-Borchers, Martina; and Pietsch, Martina, to Verein der Zuckerindustrie. 3-(aminoacyl-amino)-saccharides and processes for their preparation. 5,665,876, Cl. 536-29.100.

Buchi Labortechnik AG: *See—*
Caviezel, Rafael, 5,665,602, Cl. 436-71.000.

Buchsenschuss, Meta, to Prodomo S.A. Insole with flexible massaging knobs. 5,664,342, Cl. 36-43.000.

Buck, Helmut: *See—*
Klak, Roland; Eller, Martin; and Buck, Helmut, 5,664,547, Cl. 123-549.000.

Budd, Hilliard. Shirt with attached head garment. 5,664,259, Cl. 2-115.000.

Budinger, David E.: *See—*
Chesnes, Richard P.; Ferrigno, Stephen J.; Budinger, David E.; and Jackson, Melvin R., 5,666,643, Cl. 428-549.000.

Budowski, Allan; and Lambert, Jeff. Foldable returnable shipping container. 5,664,678, Cl. 206-600.000.

Bujalski, Duane Ray: *See—*
Barnard, Thomas Duncan; Bujalski, Duane Ray; and Zank, Gregg Alan, 5,665,848, Cl. 528-24.000.

Bull HN Information Systems Inc.: *See—*
Gilbert, Jeremy H.; Hout, David B.; Keohane, Michael P.; Perlow, David K.; Peters, Daniel G.; and Storch, Eric J., 5,666,534, Cl. 395-651.000.

Bullard, James Roger. Multifunctional intubating guide stylet and laryngoscope. 5,665,052, Cl. 600-194.000.

Bulow, Christi; and Keller, Sharon. Protective sheath and securement apparatus and method for surgical conduits. 5,665,073, Cl. 604-263.000.

Bunn, Julian W., III. Golf club head. 5,665,012, Cl. 473-328.000.

Buntin, Roy E.; Tribble, Gerald D.; and Jarvie, Bruce J., to H.O. Trerice Company. Electronic industrial thermometer. 5,664,885, Cl. 374-183.000.

Burberry, Mitchell Stewart; Campbell, Bruce Crinean; Harrison, Daniel Jude; and Patton, Elizabeth Vandyke, to Eastman Kodak Company. Recording element for direct thermosensitive printing. 5,665,670, Cl. 503-201.000.

Burdick, Bruce E.: *See—*
Bilsbury, Stephen J.; and Burdick, Bruce E., 5,665,808, Cl. 524-439.000.

Burgdorf, Jochen; Dinkel, Dieter; and Volz, Peter, to ITT Automotive Europe GmbH. Hydraulic brake system with slip control. 5,664,849, Cl. 303-116.100.

Burger, Allan Robert; Granger, Stewart Paton; and Scott, Ian Richard, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Skin care compositions containing naringenin and/or quercetin and a retinoid. 5,665,367, Cl. 424-401.000.

Burgi, Dean S.; Bartell, Daniel M.; Sleeter, Donald D.; and Mastro, Lucina P., to Genomyx Corporation. System for analysis of x-ray films of nucleotide sequences. 5,666,435, Cl. 382-129.000.

Burgstahler, Karl F. Crutch holder. 5,664,713, Cl. 224-250.000.

Burke, Cathie J.; Hawkins, William G.; Hermanson, Herman A.; Ferringer, Michael C.; Fisher, Almon P.; and Atkinson, Diane, to Xerox Corporation. Micro-electromechanical die module with planarized thick film layer. 5,665,249, Cl. 216-2.000.

Burke, Peter M.; and Weber, Timothy L., to Hewlett-Packard Company. Inkjet printhead with tuned firing chambers and multiple inlets. 5,666,143, Cl. 347-65.000.

Burkes, Theresa A.: *See—*
Nelson, Marvin D.; Burkes, Theresa A.; Diamond, Bryan M.; Jacobson, Michael B.; Dolphin, Wade A.; and Voigt, Douglas L., 5,666,512, Cl. 711-114.000.

Burkey, Lee: *See—*
Burkey, Ronald L.; and Burkey, Lee, 5,665,908, Cl. 73-146.800.

Burkey, Ronald L.; and Burkey, Lee. Manual tire deflating and pressure indicating device. 5,665,908, Cl. 73-146.800.

Burnett, Hollis, to Nash, Leonard. Basketball training device. 5,665,016, Cl. 473-448.000.

Burnier, John: *See*—
Lowe, David; Cunningham, Brian C.; Oare, David; McDowell, Robert S.; and Burnier, John, 5,665,704, Cl. 514-12.000.

Buro, Davide; Eitrich, Frank-Thomas; and Strugala, Michael, to Robert Bosch GmbH. Electronic control device. 5,666,329, Cl. 368-5.000.

Burow, Wilfried: *See*—
Oehlert, Wolfgang; Burow, Wilfried; Brunn, Horst; and Kunstmann, Herbert, 5,665,157, Cl. 106-456.000.

Burrell, Gary L.; and Burrell, Jonathan C., to Garmin Corporation. Ergonomic hand-held electronic device with keypad input and display screen. 5,665,000, Cl. 463-46.000.

Burrell, Jonathan C.: *See*—
Burrell, Gary L.; and Burrell, Jonathan C., 5,665,000, Cl. 463-46.000.

Burtner, Lee W.: *See*—
Junker, Warren R.; Burtner, Lee W.; Peck, Michael G.; Makar, Richard J.; and Chizmar, David A., 5,666,051, Cl. 324-209.000.

Buschhaus, Michael C.; and Hawkes, Richard B., to Heidelberg Finishing Systems, Inc. Apparatus and method for use in handling sheet material articles. 5,664,786, Cl. 271-10.090.

Bushaw, Ron D.: *See*—
Wojcik, Casimir M.; Pretto, Paul A.; Courier, Jim; Morrow, Bob; Wehry, Joseph R., Jr.; Kuczynski, Paul; Edwards, Matt F.; Schnieder, Mark A.; Loftus, Thomas W.; Schnieders, Brian; Bernardi, Thomas C.; Pellerin, Craig Raymond; Bushaw, Ron D.; Schebell, Michael Lewis; Hartley, Bill; Cappel, Sheila; Weisgarber, Kimberly; Vogler, Henry Lee; and Ferguson, Louis Duane, 5,666,493, Cl. 705-26.000.

Busker, Leroy H.: *See*—
Li, Alfred C.; Becker, Rex A.; and Busker, Leroy H., 5,665,163, Cl. 118-413.000.

Busquets, J. Ruiz: *See*—
Bejot, Philippe; Monteillet, Jean Claude; Boluda, Jose Manuel Vila; and Busquets, J. Ruiz, 5,664,646, Cl. 188-71.900.

Bussmann, Stephan A.; Ruggiero, Joseph E.; and Trippel, Christine G., to Bayer Corporation. Method and apparatus for making predetermined events with a biosensor. 5,665,215, Cl. 204-403.000.

Busuttil, Peter L., to Progressive Tool & Industries Company. Laser welding apparatus and method for high temperature gradient cooling alloys. 5,665,255, Cl. 219-121.630.

Buti, Taqi Nasser: *See*—
Wong, Robert Chi-Foon; Buti, Taqi Nasser; and Ogura, Seiki, 5,666,320, Cl. 365-207.000.

Butler, James E.: *See*—
Doverspike, Kathleen; and Butler, James E., 5,665,430, Cl. 427-249.000.

Butler, Jerry F.: *See*—
Warren, Craig B.; Marin, Anna B.; and Butler, Jerry F., 5,665,781, Cl. 514-703.000.

Butler, William Owen: *See*—
Fitzmaurice, Leona C.; Mirkov, T. Erik; Elliott, Kathryn J.; Butler, William Owen; Konno, Yoshihiro; and Dickinson, Craig Duane, 5,665,579, Cl. 435-172.300.

Buttrick, James N., Jr.: *See*—
Banks, David P.; Brodhead, James E.; Buttrick, James N., Jr.; Fhield, Paul E.; Jones, Darrell D.; Murphy, James C.; Richards, John F.; Wiseman, Melvin R.; Schooff, John W.; and Van Swearingen, Steven C., 5,664,311, Cl. 29-407.040.

Buxton, William A. S.: *See*—
Baudel, Thomas; Buxton, William A. S.; Fitzmaurice, George W.; Harrison, Beverly L.; Kurtenbach, Gordon P.; and Owen, Russell N., 5,666,499, Cl. 345-347.000.

Byers, Thomas L. Fireplace reflector. 5,664,556, Cl. 126-553.000.

BYK Gulden Lomberg Chemische Fabrik GmbH: *See*—
Senn-Bilfinger, Jörg; Grundler, Gerhard; and Rainer, Georg, 5,665,730, Cl. 514-300.000.

Byram, Michael M.: *See*—
Greff, Richard J.; Tighe, Patrick J.; Byram, Michael M.; and Barley, Leonard V., 5,665,817, Cl. 524-776.000.

Byrne, Richard, to Rockport Company, Inc., The. Shoe having a waterproof liner. 5,664,343, Cl. 36-55.000.

Byrne, William; and Rynne, Andrew, to Cal International Limited. Ester of an organic nitrate and a salicylate. 5,665,766, Cl. 514-470.000.

Byun, Jeong Soo, to LG Semicon Co., Ltd. Method for forming refractory metal nitride film. 5,665,209, Cl. 204-192.170.

C E P E M: *See*—
Gaspard, Jean-Yves, 5,665,263, Cl. 219-625.000.

C.S.P. Diffusion, société anonyme: *See*—
Potut, Christian, 5,664,591, Cl. 132-277.000.

C. Uyemura & Co., Ltd.: *See*—
Izawa, Teruyoshi; Kudo, Kazunori; Kani, Yoshihiro; Araki, Ken; Kato, Tamotsu; and Furui, Takashi, 5,665,324, Cl. 423-308.000.

Cabletron Systems, Inc.: *See*—
Lewis, Lundy, 5,666,481, Cl. 395-182.020.

Cael, John J.: *See*—
Bennett, Stewart; Cael, John J.; Kadaba, Narendra S.; and Trapani, Giorgio B., 5,666,223, Cl. 359-490.000.

Caillouette, James C. pH measurement of body fluid. 5,664,579, Cl. 128-759.000.

Cal International Limited: *See*—
Byrne, William; and Rynne, Andrew, 5,665,766, Cl. 514-470.000.

Caldarise, Salvatore: *See*—
LaSalle, David L.; Flynn, Timothy M.; Caldarise, Salvatore; and Manginelli, Richard P., 5,665,118, Cl. 623-16.000.

Caldwell, David L.: *See*—
Karageorgiou, Theodore G.; Hanwell, Gary W.; Caldwell, David L.; Purvis, Jewell D.; Walker, Jerry M.; Banks, Freddie L.; Eatmon, Charles E.; Ilg, Otto M.; Carnes, Eugene; Hucks, James A.; Coker, James F.; Holzer, Carl R.; Emery, John E., II; Pendley, David M.; Pomeroy, Dennis W.; Arnold, Richard; Osborne, Billy K.; Earley, Philip T.; Temples, John M.; Blackston, Larry D.; and Toney, Thomas M., 5,665,293, Cl. 264-103.000.

Calgene, Inc.: *See*—
Van Assche, Charles; Lando, Danielle; Bruneau, Jean Michel; Voelker, Toni Alois; and Gervais, Monica, 5,665,892, Cl. 800-205.000.

California Amplifier: *See*—
Lange, Mark, 5,666,126, Cl. 343-781.00R.

California Institute of Technology: *See*—
Fang, Wai-Chi; and Johnson, William T. K., 5,666,121, Cl. 342-25.000.

California Pellet Mill Company: *See*—
Thom, Kelsey C., Jr., 5,664,338, Cl. 34-62.000.

Calvignac, Jean: *See*—
Aznar, Ange; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Rigal, Dominique; Torres, Luc; and Verplanken, Fabrice, 5,666,361, Cl. 370-392.000.

Camden, James Berger, to Procter & Gamble Company. Pharmaceutical composition for inhibiting the growth of viruses and cancers. 5,665,713, Cl. 514-76.000.

Camden, James Berger, to Procter & Gamble Company, The. Pharmaceutical composition for inhibiting the growth of cancers. 5,665,751, Cl. 514-383.000.

Camello, Paul A., to Polaroid Corporation. Camera back which allows two discrete images to be sequentially exposed onto single film unit. 5,666,579, Cl. 396-323.000.

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Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,664,358, Cl. 42-70.110.

Foster, Robert F.; Hillman, Joseph T.; and LeBlanc, Rene E., to Sony Corporation; and Materials Research Corp. Method for producing titanium-containing thin films by low temperature plasma-enhanced chemical vapor deposition using a rotating susceptor reactor. 5,665,640, Cl. 438-680.000.

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Acevedo, Margarita; Fradet, Alain; and Judas, Didier, 5,665,855, Cl. 528-353.000.

Frame, Thomas H.; Hatcher, David E.; and Moulds, John J., to Gamma Biologicals, Inc. Method and apparatus useful for detecting bloodgroup antigens and antibodies. 5,665,558, Cl. 435-7.250.

France, Paul Amatt; Genskow, Larry Rudolph; and Beimesch, Wayne Edward, to Procter & Gamble Company, The. Process for making a low density detergent composition by agglomeration with a hydrated salt. 5,665,691, Cl. 510-444.000.

Franco, Robert: *See—*
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Puster, Richard L.; and Franke, John M., 5,665,916, Cl. 73-590.000.

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Theurer, Josef; and Brunninger, Manfred, 5,664,498, Cl. 104-6.000.
Theurer, Josef; and Wörgötter, Herbert, 5,664,633, Cl. 171-16.000.

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Paltauf, Friedrich; Hermetter, Albin; and Franzmair, Rudolf, 5,665,714, Cl. 514-94.000.

Frasier, Michael E., to Orthman Manufacturing, Inc. Quick hitch guidance device. 5,664,632, Cl. 172-6.000.

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Lambelet, Lawrence E., Jr.; and Frazier, Thomas A., 5,664,697, Cl. 221-5.000.

Fredlund, John Randall; Patton, David Lynn; Morton, Roger R. A.; and Paciocco, Steven Bruce, to Eastman Kodak Company. System and method for remotely selecting photographic images. 5,666,215, Cl. 358-487.000.

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Shutske, Gregory M.; Freed, Brian S.; Tomer, John D., IV; and Hamer, R. Richard L., 5,665,756, Cl. 514-399.000.

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Pantuso, Corey N.; and Dunnigan, Donn L., 5,664,356, Cl. 42-65.000.

Freelin, Robert G.: *See—*
Bitler, Steven P.; Stewart, Ray F.; Kamp, David A.; Freelin, Robert G.; and Yoon, Valentine Y., 5,665,822, Cl. 525-92.00C.

Freidinger, Roger M.: *See—*
Bock, Mark G.; Evans, Ben E.; Williams, Peter D.; Freidinger, Roger M.; Pettibone, Douglas J.; Hobbs, Doug W.; and Anderson, Paul S., 5,665,719, Cl. 514-227.800.

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Fresenius AG: *See—*
Kirschner, Ulrich; and Pohl, Thomas, 5,665,307, Cl. 422-28.000.

Fresh King LLC: *See—*
Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., 5,664,490, Cl. 99-541.000.

Friary, Richard; Piwinski, John J.; and Wong, Jesse K., to Schering Corporation. Unbridged bis-aryl carbinol derivatives compositions and methods of use. 5,665,735, Cl. 514-318.000.

Friesen, James W. Sliding display drawer. 5,664,690, Cl. 211-88.010.

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Nigro, Daniel N., Jr.; and Fritsch, Theodore J., 5,664,816, Cl. 292-336.300.

Fritsche, Thilo: *See—*
Schaede, Johannes Georg; and Fritsche, Thilo, 5,664,934, Cl. 414-799.000.

Fritz, Janice A.: *See—*
Adams, William A.; Fritz, Janice A.; and Thurman, Terry L., 5,665,272, Cl. 252-305.000.

Froeschmann, Erasmus, to Bremer & Leguil GmbH. Lubricant and lubricant concentrate. 5,665,683, Cl. 508-271.000.

Froissant, Jacques: *See—*
Sevrin, Mireille; Marabout, Benoit; Froissant, Jacques; and Guinot, Catherine, 5,665,733, Cl. 514-309.000.

Frommann, Klaus; Ottersbach, Walter; Haupt, Werner; Paramonov, Vladimir A.; Tychinin, Anatolij I.; Moroz, Anatolij I.; Birger, Boris L.; and Foliforow, Vladimir M., to Mannesmann Aktiengesellschaft. Process and device for coating the surface of strip material. 5,665,437, Cl. 427-591.000.

Frommelt, Markus; and Heeb, Norbert, to Hilti Aktiengesellschaft. Explosive powder charge operating setting tool. 5,664,361, Cl. 42-106.000.

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Langlois, Michel; and Frossard, Robert, 5,666,018, Cl. 313-278.000.

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Fournel, Richard Pierre; Fruhauf, Serge; and Tailliet, François, 5,665,627, Cl. 438-467.000.

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Fuerhoff, Robert H., to MEMC Electronic Materials, Inc. System for controlling growth of a silicon crystal. 5,665,159, Cl. 117-201.000.

Fugere, Robert H.; and Alvernaz, James, to Cherry Semiconductor Corporation. Negative input voltage comparator. 5,666,076, Cl. 327-77.000.

Fuji Electric Co., Ltd.: *See—*
Huang, Qin, 5,665,988, Cl. 257-133.000.
Kobayashi, Mitsuo; and Ueyanagi, Katsumichi, 5,665,915, Cl. 73-514.320.

Fuji Photo Film Co., Ltd.: *See—*
Arakawa, Satoshi, 5,665,976, Cl. 250-588.000.
Dan, Shigeyuki; and Nakayama, Takao, 5,665,499, Cl. 430-49.000.
Kimura, Toshihito, 5,665,962, Cl. 250-226.000.
Kobayashi, Kiyotaka, 5,666,573, Cl. 396-207.000.
Mutoh, Kunio; and Kojima, Akira, 5,665,531, Cl. 430-569.000.
Ohkawa, Atsuhiro; Mikoshiba, Hisashi; Tsukase, Masaaki; Ishiwata, Yasuhiro; and Naruse, Hideaki, 5,665,529, Cl. 430-562.000.
Oya, Toyohisa, 5,665,887, Cl. 548-178.000.
Oyamada, Takayoshi; Shiozawa, Takekimi; and Yamashita, Seiji, 5,665,530, Cl. 430-567.000.
Takagi, Yoshihiro, 5,665,521, Cl. 430-272.100.
Tomiyama, Hideki; and Kabutomori, Masuo, 5,665,491, Cl. 429-194.000.
Wariishi, Koji; Matsumoto, Keisuke; and Suzuki, Keiichi, 5,665,528, Cl. 430-516.000.

Fuji Photo Optical Co., Ltd.: *See—*
Kamoda, Takashi, 5,666,581, Cl. 396-415.000.
Kobayashi, Kiyotaka, 5,666,573, Cl. 396-207.000.
Ohno, Kazunori, 5,666,234, Cl. 359-794.000.
Ohtake, Katsuhiro, 5,666,576, Cl. 396-288.000.
Saito, Tatsuo; and Goto, Shigenori, 5,666,568, Cl. 396-100.000.
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Yamamoto, Chikara, 5,666,228, Cl. 359-651.000.

Fuji Seal, Inc.: *See—*
Hata, Tetsuo; Kyogane, Takeshi; Hirayama, Masakazu; and Fujita, Hiroyuki, 5,665,443, Cl. 428-34.900.

Fuji Xerox Co., Ltd.: *See—*
Imai, Takashi; Inoue, Satoshi; Ichimura, Masanori; Sugizaki, Yutaka; Saito, Susumu; Miura, Masaru; Take, Michio; Yamamoto, Yasuo; Fukushima, Koji; and Serizawa, Manabu, 5,665,511, Cl. 430-110.000.
Kanesawa, Yoshio; and Uehara, Yasuhiro, 5,666,624, Cl. 399-329.000.
Takagi, Masahiro; Shinoki, Masahito; and Aoki, Takayoshi, 5,665,507, Cl. 430-108.000.

Fujii, Haruo: *See—*
Sasame, Hiroshi; Fujii, Haruo; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; Saito, Yoshiro; and Maebashi, Youichirou, 5,666,597, Cl. 399-128.000.
Uchiyama, Akihiko; Fujii, Haruo; Sasame, Hiroshi; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Saito, Yoshiro; Maebashi, Yoichiro; and Tsuruya, Takaaki, 5,666,588, Cl. 399-44.000.

Fujii, Hirofumi: *See—*
Omote, Toshihiko; and Fujii, Hirofumi, 5,665,523, Cl. 430-282.100.

Fujii, Hiroshi; Ota, Shuichi; and Sawada, Takashi, to Sony Corporation. Cassettes having a plurality of sizes for storing recording mediums therein. 5,666,251, Cl. 360-132.000.

Fujii, Norihisa, to Brother Kogyo Kabushiki Kaisha. Image processing apparatus for dividing images for printing. 5,666,471, Cl. 395-117.000.

Fujii, Yutaka; Akao, Fuminori; and Omelchuk, John, to Kitagawa Seiki Kabushiki Kaisha. Plywood lay-up system. 5,665,197, Cl. 156-558.000.

Fujikawa, Takao: *See—*
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,665,291, Cl. 264-666.000.

Fujiki, Akira; and Kuratomi, Hideaki, to Nissan Motor Co., Ltd. Method of manufacturing connecting rod. 5,666,637, Cl. 419-27.000.

Fujikura Ltd.: *See—*
Okamura, Osamu; Kume, Atsushi; and Shiohara, Yuh, 5,665,682, Cl. 505-446.000.

Fujimoto, Akihiro; Takekuma, Takashi; and Sonobe, Kiyomi, to Tokyo Electron Limited; Tokyo Electron Kyushu Limited; and Iwaki Co., Ltd. Substrate processing method and substrate processing apparatus. 5,665,200, Cl. 438-694.000.

Fujimura, Yasushi; Kuhara, Yoshiki; and Yamabayashi, Naoyuki, to Sumitomo Electric Industries,Ltd. Optical-axis alignment method, optical-axis alignment device, inspection method of optical devices, inspection device of optical devices, method of producing optical module, and apparatus of producing optical module. 5,666,450, Cl. 385-93.000.

Fujinami, Yasushi: *See—*
Igarashi, Katsuji; Yonemitsu, Jun; Yagasaki, Yoichi; Fujinami, Yasushi; Sato, Tomoyuki; Kato, Motoki; and Suzuki, Teruhiko, 5,666,461, Cl. 386-95.000.

Fujise, Hiroshi: *See—*
Tsuchiya, Masayuki; Fujise, Hiroshi; and Teramoto, Masato, 5,666,549, Cl. 395-761.000.

Fujishiro, Kinya; and Uwajima, Takayuki, to Kyowa Hakko Kogyo Co., Ltd. Cholesterol oxidase. 5,665,560, Cl. 435-11.000.

Fujishita, Kaneaki; Sakurai, Osamu; and Nagahara, Junichi, to Sony Corporation. Audio equipment and method of displaying operation thereof. 5,666,136, Cl. 345-146.000.

Fujita, Hiroyuki: *See—*
Hata, Tetsuo; Kyogane, Takeshi; Hirayama, Masakazu; and Fujita, Hiroyuki, 5,665,443, Cl. 428-34.900.

Fujita, Kei; Saito, Asao; and Matsumoto, Shigeyuki, to Canon Kabushiki Kaisha. Ink jet recording system having improved functional devices for driving energy generating members. 5,666,142, Cl. 347-59.000.

Fujita, Nobuhiro: *See—*
Yamanaka, Mikio; Fukaya, Masuhiro; Fujita, Nobuhiro; Ishikawa, Yasushi; Nakagawa, Toshikazu; Yashiro, Masao; and Ohta, Hitoshi, 5,665,669, Cl. 502-527.000.

Fujita, Ryo; Takami, Kazuhisa; Soga, Mitsuru; Ozawa, Koji; Morishige, Takaharu; and Koga, Kazuyoshi, to Hitachi, Ltd.; and Hitachi Microcomputer System, Ltd. Graphics display system including graphics processor having a register storing a series of vertex data relating to a polygonal line. 5,666,520, Cl. 345-513.000.

Fujitsu Automation Limited: *See—*
Kasai, Junichi; Tsuji, Kazuto; Taniguchi, Norio; Mashiko, Takashi; Sakuma, Masao; Saigo, Yukio; Yoneda, Yoshiyuki; and Takenaka, Masashi, 5,666,064, Cl. 324-755.000.

Fujitsu Limited: *See—*
Akaogi, Takao; Takashina, Nobuaki; Kasa, Yasushi; Itano, Kiyoshi; Kawashima, Hiromi; and Yamashita, Minoru, 5,666,314, Cl. 365-200.000.
Horibe, Koji, 5,666,335, Cl. 369-32.000.

Kasai, Junichi; Tsuji, Kazuto; Taniguchi, Norio; Mashiko, Takashi; Sakuma, Masao; Saigo, Yukio; Yoneda, Yoshiyuki; and Takenaka, Masashi, 5,666,064, Cl. 324-755.000.
Kashimoto, Shuji; and Uchida, Hirofumi, 5,666,479, Cl. 395-180.000.
Katai, Yoshiyuki; Kogure, Toshifumi; Watanabe, Toshio; and Yamazaki, Mitsuyoshi, 5,666,542, Cl. 395-762.000.
Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji, 5,664,778, Cl. 273-148.00B.
Kitanaka, Takeshi; Masuda, Atsushi; and Utsugi, Yoshio, 5,664,688, Cl. 211-26.000.
Kozaki, Masahiro, 5,666,240, Cl. 360-104.000.
Maeda, Jun, 5,666,477, Cl. 345-440.000.
Matsuda, Tatsuharu; and Minamizawa, Masaharu, 5,666,270, Cl. 361-704.000.
Ogawa, Yoshinori, 5,666,244, Cl. 360-106.000.
Ogiya, Shuji; Kondo, Michio; and Kaeriyama, Yasusi, 5,666,457, Cl. 385-139.000.
Sawae, Shinya; Miyata, Sadayuki; and Yamane, Takashi, 5,666,449, Cl. 385-49.000.
Shin, Daeshik, 5,665,643, Cl. 438-763.000.
Suganuma, Tomoyuki; and Takeda, Suijin, 5,666,511, Cl. 711-114.000.
Takada, Kyoichi; and Takeshima, Kazuo, 5,666,294, Cl. 364-551.010.
Takeuchi, Mitsuo, 5,664,927, Cl. 414-225.000.
Tamamura, Masaya; and Shiotsu, Shinichi, 5,666,387, Cl. 375-371.000.
Tatsumi, Toshiharu; and Enbutsu, Hisayuki, 5,666,527, Cl. 395-612.000.
Tsuruoka, Yoshiyasu, 5,666,090, Cl. 333-116.000.

Fujitsu VSLI Limited: *See*—
Horibe, Koji, 5,666,335, Cl. 369-32.000.

Fujiura, Yoji: *See*—
Ochi, Kengo; Kimura, Noriyuki; Zenitani, Yukio; Koike, Masami; and Fujiura, Yoji, 5,664,523, Cl. 119-173.000.

Fujiwara, Akira: *See*—
Takahashi, Yasuo; Nagase, Masao; and Fujiwara, Akira, 5,665,979, Cl. 257-30.000.

Fujiwara, Atsushi: *See*—
Yamada, Toshio; Fujiwara, Atsushi; Inoue, Michihiro; and Matsuyama, Kazuhiro, 5,666,049, Cl. 324-158.100.

Fujiwara, Teruo: *See*—
Kochiyama, Jiro; Kaya, Nobuyuki; Fujiwara, Teruo; Yasui, Hidemi; and Yashiro, Hiroyuki, 5,666,127, Cl. 343-853.000.

Fujiwara, Yoshio: *See*—
Nakamura, Yoshinori; Sam, Huy; Fujiwara, Yoshio; Nagura, Toshikazu; Hayasi, Shigeo; and Kusaka, Yukio, 5,665,676, Cl. 503-227.000.

Fukai, Hisayo, to Qyentos Corporation; and Unico Co., Ltd. Method of fixing toner applying wet medium. 5,666,628, Cl. 399-340.000.

Fukatsu, Akira: *See*—
Oba, Hidehiro; Fukumura, Kagenori; Hojo, Yasuo; Tabata, Atsushi; Kimura, Hiromichi; Kaigawa, Masato; Ando, Masahiko; Fukatsu, Akira; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; and Tsukamoto, Kazumasa, 5,665,027, Cl. 477-109.000.

Fukatsu, Katsuaki: *See*—
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Fukaya, Makoto: *See*—
Ohtsuka, Torao; Fukaya, Makoto; Tagai, Hideo; Niwa, Shigeo; Sawai, Kazuhiko; and Ohta, Hajime, 5,665,120, Cl. 623-16.000.

Fukaya, Masashi: *See*—
Fukuta, Junzo; Fukaya, Masashi; and Araki, Hideaki, 5,665,459, Cl. 428-209.000.

Fukaya, Masuhiro: *See*—
Yamanaka, Mikio; Fukaya, Masuhiro; Fujita, Nobuhiro; Ishikawa, Yasushi; Nakagawa, Toshikazu; Yashiro, Masao; and Ohta, Hitoshi, 5,665,669, Cl. 502-527.000.

Fukuda, Hiroyuki: *See*—
Tsutsui, Chikara; Fukuda, Hiroyuki; and Machida, Junju, 5,665,512, Cl. 430-110.000.

Fukuda, Kyoko: *See*—
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, 5,666,459, Cl. 386-46.000.

Fukuda, Tatsuya; Nishimura, Takao; and Yamawaki, Naokuni, to Asahi Medical Co., Ltd. Filter apparatus for selectively removing leukocytes. 5,665,233, Cl. 210-483.000.

Fukui, Mitsuhiro; and Ishihara, Fuminari, to Toyota Jidosha Kabushiki Kaisha. Vehicle to roadside communication system for determining equipment problems. 5,666,109, Cl. 340-905.000.

Fukumoto, Tetsuhiro, to Sumitomo Rubber Industries, Ltd. Heavy duty pneumatic tire. 5,665,184, Cl. 152-209.00R.

Fukumura, Kagenori: *See*—
Oba, Hidehiro; Fukumura, Kagenori; Hojo, Yasuo; Tabata, Atsushi; Kimura, Hiromichi; Kaigawa, Masato; Ando, Masahiko; Fukatsu, Akira; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; and Tsukamoto, Kazumasa, 5,665,027, Cl. 477-109.000.

Fukuno, Akira; Nakamura, Hideki; and Yoneyama, Tetsuhito, to TDK Corporation. Method for preparing permanent magnet material, chill roll, permanent magnet material, and permanent magnet material powder. 5,665,177, Cl. 148-101.000.

Fukushima, Hirotaka, to Yazaki Corporation. Power feed connector. 5,664,960, Cl. 439-310.000.

Fukushima, Koji: *See*—
Imai, Takashi; Inoue, Satoshi; Ichimura, Masanori; Sugizaki, Yutaka; Saito, Susumu; Miura, Masaru; Take, Michio; Yamamoto, Yasuo; Fukushima, Koji; and Serizawa, Manabu, 5,665,511, Cl. 430-110.000.

Fukushima, Masatoshi; and Saito, Shinichi, to Chisso Corporation. Optically active trifluorolactic acid derivative and liquid crystal composition. 5,665,270, Cl. 252-299.010.

Fukuta, Junzo; Fukaya, Masashi; and Araki, Hideaki, to Sumitomo Metal Ceramics Inc. Low-temperature fired ceramic circuit substrate and thick-film paste for use in fabrication thereof. 5,665,459, Cl. 428-209.000.

Fukutomi, Naoki; Nakayama, Hajime; Tsubomatsu, Yoshiaki; Kaitou, Kouichi; Yoshidomi, Yasunobu; and Takahashi, Yoshihiro, to Hitachi Chemical Co. Ltd. Fabrication process of wiring board. 5,664,325, Cl. 29-848.000.

Fullam, Scott F.; and Anderson, Eric C., to Flashpoint Technology, Inc. System and method for detecting and indicating proper focal distance in a fixed lens camera. 5,666,569, Cl. 396-101.000.

Fuller, Robert; and Pasek, David. Method for thawing frozen food. 5,665,412, Cl. 426-524.000.

Fuller, William D.: *See*—
Kurtz, Robert J.; and Fuller, William D., 5,665,755, Cl. 514-398.000.

Funk, David H.: *See*—
Sweeney, Bernard W.; Funk, David H.; and Standley, Laurel June, 5,665,555, Cl. 435-7.210.

Furnish, Gregory R.; and Hipps, W. Michael, to Snowden Pencer/Genzyme Corporation. Radially adjustable surgical instrument for heart surgery. 5,665,105, Cl. 606-205.000.

Furui, Takashi: *See*—
Izawa, Teruyoshi; Kudo, Kazunori; Kani, Yoshihiro; Araki, Ken; Kato, Tamotsu; and Furui, Takashi, 5,665,324, Cl. 423-308.000.

Furukawa, Andrew T.: *See*—
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Furukawa Denchi Kabushiki Kaisha: *See*—
Saito, Ken; Hinotsu, Naoyoshi; Sakamoto, Hikaru; and Hoshino, Koichi, 5,665,483, Cl. 429-53.000.

Furukawa Electric Co., Ltd., The: *See*—
Ashizawa, Koichi; Horie, Toshio; and Kato, Hitoshi, 5,665,218, Cl. 205-171.000.
Terada, Jun; Chiba, Hideaki; Kawasaki, Mituhiro; and Takahashi, Tadashi, 5,666,454, Cl. 385-123.000.
Yokouchi, Noriyuki; Yamanaka, Nobumitsu; and Kasukawa, Akihiko, 5,666,375, Cl. 372-45.000.

Furukawa, Nobuya: *See*—
Koga, Hisamitsu; Kumagai, Naotake; Ohwada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, 5,664,635, Cl. 180-65.300.

Furukimi, Osamu: *See*—
Unami, Shigeru; and Furukimi, Osamu, 5,666,634, Cl. 419-11.000.

Furumura, Kyozaburo; and Kobayashi, Masayuki, to NSK Ltd. Quench-hardening testing method and apparatus. 5,666,287, Cl. 364-507.000.

Furuya, Tadashi: *See*—
Mashimo, Seiji; Sato, Yasushi; Ishiyama, Harumi; and Furuya, Tadashi, 5,666,192, Cl. 399-174.000.

Fusco, Jose Mozart; Ramos, Jose Geraldo Furtado; Vieira, Valmor Neves; and Guerra, Eduardo Cardoso de Melo, to Petroleo Brasileiro S.A. - Petrobras. Catalytic cracking process for hydrocarbons. 5,665,949, Cl. 208-161.000.

Fuse, Toshihiko; and Okumachi, Eiji, to Nippon Pillar Packing Co., Ltd. Non-contacting shaft sealing device. 5,664,787, Cl. 277-96.100.

Fuss, William A.: *See*—
Campanelli, Michael R.; Fuss, William A.; and Venable, Dennis L., 5,666,503, Cl. 345-356.000.

Futsuhara, Koichi: *See*—
Sakai, Masayoshi; and Futsuhara, Koichi, 5,666,081, Cl. 327-402.000.

G. D. Searle & Co.: *See*—
Abood, Norman A.; and Nosal, Roger A., 5,665,598, Cl. 435-280.000.

G.D Societa' Per Azioni: *See*—
Draghetti, Fiorenzo, 5,664,584, Cl. 131-94.000.

G.E.W. Corporation Limited: *See*—
Yip, Kit Chuen, 5,664,483, Cl. 99-391.000.

Gaenslen, Gary, to Hilti Aktiengesellschaft. Hanging device. 5,664,754, Cl. 248-317.000.

Gaertner, Frank H.: *See*—
Hagenson, Mary Jane; Barr, Kathryn A.; Stroman, David W.; Gaertner, Frank H.; Harpold, Michael M.; and Klein, Ronald D., 5,665,600, Cl. 435-320.100.

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Taki, Masahide; and Manabe, Hajime, 5,665,927, Cl. 84-609.000.
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Merritt, Todd A.; and Manning, Troy A., 5,666,070, Cl. 326-81.000.
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Banjanin, Zoran B.; Kim, Jin; and Marquis, Steven R., 5,664,575, Cl. 128-661.090.
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Thielens, John B.; Farbstein, Mitchell; Tebbenhoff, Robert; Martin, Clifford L.; and Landau, Francis A., Jr., 5,666,139, Cl. 345-173.000.
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Martin, Lendell, Sr. Drain pan. 5,664,431, Cl. 62-286.000.
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Menchhofer, Paul, 5,665,440, Cl. 428-34.500.
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Hennings, Elsa J.; Herr, Michael D.; and Martin, William A., 5,664,897, Cl. 403-2.000.
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Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,665,744, Cl. 514-361.000.
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Jacobsen, Eric N.; Leighton, James L.; and Martinez, Luis E., 5,665,890, Cl. 549-230.000.
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Letrange, Frederic; and Martins, Carlos, 5,664,625, Cl. 165-173.000.
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Tsukada, Yoji; and Ohta, Yasuhiro, 5,665,574, Cl. 435-105.000.
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Miyasaka, Toru; Yamamoto, Masashi; Hoshi, Nobuyoshi; and Maruo, Seiji, 5,666,599, Cl. 399-162.000.
Sugita, Tatsuya; Arimoto, Akira; Mitsuya, Teruaki; Hoshi, Nobuyoshi; Okano, Mamoru; Onose, Atsushi; Tsunoda, Yoshito; Kobayashi, Shinya; Maruo, Seiji; and Takuma, Yasuo, 5,666,598, Cl. 399-136.000.
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Bergendahl, Hans Georg, 5,666,638, Cl. 419-66.000.
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Nishiuchi, Akira; Mase, Masahiro; Matsumura, Noboru; Kikuchi, Katsuaki; and Nagaoka, Takashi, 5,664,935, Cl. 415-90.000.
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Mashimo, Seiji; Sato, Yasushi; Ishiyama, Harumi; and Furuya, Tadashi, to Canon Kabushiki Kaisha. Charging member and image forming apparatus. 5,666,192, Cl. 399-174.000.
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Beusch, John U., 5,665,969, Cl. 250-370.090.
Chen, Min; and Bolozdynya, Alexander I., 5,665,971, Cl. 250-385.100.
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Burgi, Dean S.; Bartell, Daniel M.; Sleeter, Donald D.; and Mastro, Lucina P., 5,666,435, Cl. 382-129.000.
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Kitanaka, Takeshi; Masuda, Atsushi; and Utsugi, Yoshio, 5,664,688, Cl. 211-26.000.
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Andó, Jan, 5,664,442, Cl. 66-220.000.
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Foster, Robert F.; Hillman, Joseph T.; and LeBlanc, Rene E., 5,665,640, Cl. 438-680.000.
Mathieu, Chantal; Waer, Mark; and Bouillon, Roger, to K.U. Leuven Research & Development. Methods and compositions for primary and secondary prevention of autoimmune diabetes. 5,665,387, Cl. 424-464.000.
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Matlock, Roy L. Golf grip washing device. 5,664,277, Cl. 15-160.000.
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Neron, Christophe, 5,666,388, Cl. 375-376.000.
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Harasawa, Yuko; Matsuda, Itaru; Takano, Satoshi; Yu, Hideo; Kawaishi, Yasunori; Kamiyama, Hideki; Motohashi, Toshiaki; Takahashi, Mitsuru; and Bisaiji, Takashi, 5,666,622, Cl. 399-313.000.

Matsuda, Takashi: *See—*
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Matsuda, Tatsuharu; and Minamizawa, Masaharu, to Fujitsu Limited. Bump electrode, semiconductor integrated circuit device using the same, multi-chip module having the semiconductor integrated circuit devices and method for producing semiconductor device having the bump electrode. 5,666,270, Cl. 361-704.000.

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Suzuki, Hiroyuki; Shiroishi, Yoshihiro; Hishiyama, Sadao; Ohno, Tomoyuki; Yahisa, Yotsuo; Matsuda, Yoshibumi; Tsumita, Norikazu; Ohura, Masaki; Shirakura, Takaaki; Shige, Noriyuki; and Takagi, Kazumasa, 5,665,478, Cl. 428-611.000.

Matsue, Junji; Katouno, Ryouichi; and Ohtake, Masahisa, to Sanyo Electric Co., Ltd. Heat pump type air conditioner using circulating fluid branching passage. 5,664,421, Cl. 62-6.000.

Matsueda, Hisaharu: *See—*
Kobayashi, Tatsuo; Nakamura, Kiyotaka; Matsueda, Hisaharu; Makiki, Kayoko; Hamazaki, Isamu; and Watanabe, Kazuya, 5,664,665, Cl. 200-61.45M.

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Matsumae, Iwao: *See—*
Komatsubara, Satoru; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiro; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Murakami, Eisaku, 5,666,625, Cl. 399-281.000.

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Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.

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Matsumoto, Satoshi: *See—*
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Matsumoto, Shigeyuki: *See—*
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Matsumoto, Shuichi: *See—*
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Matsumoto, Yoshifumi: *See—*
Ishida, Yoshiki; Samekawa, Keiichi; Katayama, Kenichi; Matsumoto, Yoshifumi; Ishida, Hideo; and Kimura, Koichi, 5,664,323, Cl. 29-822.000.

Matsumura-Gumi Corporation: *See—*
Isono, Hideo; and Okabe, Takeshi, 5,665,254, Cl. 219-56.000.

Matsumura, Koichi, to Canon Kabushiki Kaisha. Automatic emission device suitable for use as light source, such as flash unit. 5,666,571, Cl. 396-165.000.

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Nishiuchi, Akira; Mase, Masahiro; Matsumura, Noboru; Kikuchi, Katsuaki; and Nagaoka, Takashi, 5,664,935, Cl. 415-90.000.

Matsuno, Hiromitsu; Hishinuma, Nobuyuki; Hirose, Kenichi; Kasagi, Kunio; Takemoto, Fumitoshi; Aiura, Yoshinori; and Igarashi, Tatsushi, to Ushiodenki Kabushiki Kaisha. Dielectric barrier discharge lamp. 5,666,026, Cl. 313-634.000.

Matsuo, Shigeki; and Nagata, Seiichi, to Kyocera Corporation. Method for driving liquid crystal display unit. 5,666,133, Cl. 345-100.000.

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Tsukada, Kouji; Nishigaki, Hidekazu; Ikeda, Yasuaki; Sakuma, Shigeru; Ishiyama, Shin-ichi; Matsuoka, Fumio; Kanno, Yoshihisa; and Hayashi, Shigeki, 5,665,922, Cl. 73-849.000.

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Matsushima, Tetsuo: *See—*
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Matsushita Electric Corporation of America: *See—*
Rzeszewski, Theodore S., 5,666,430, Cl. 381-107.000.

Matsushita Electric Industrial Co.: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Izawa, Yosuke; Tani, Masahiro; Okumura, Naoji; Nio, Yutaka; and Sato, Toshiohika, 5,666,165, Cl. 348-445.000.
Murakoshi, Toshiichi; and Kawazoe, Hiroshi, 5,664,736, Cl. 242-444.200.
Nakata, Yoshiro; Oki, Shinichi; Nagao, Koichi; Hatada, Kenzo; Mori, Shigeoki; Sato, Takashi; and Sano, Kunio, 5,665,610, Cl. 438-18.000.
Sotomura, Tadashi, 5,665,492, Cl. 429-213.000.
Sugita, Ryuji; Tohma, Kiyokazu; Ishida, Tatsuaki; and Yoshimoto, Kazunari, 5,665,460, Cl. 428-212.000.
Uenoyama, Takeshi; and Kumabuchi, Yasuhito, 5,665,978, Cl. 257-30.000.
Yamada, Toshio; Fujiwara, Atsushi; Inoue, Michihiro; and Matsuyama, Kazuhiro, 5,666,049, Cl. 324-158.100.
Yoshioka, Kazumi; Akiyama, Tetsuya; Ohta, Takeo; and Isomura, Hidemi, 5,665,520, Cl. 430-270.130.

Matsushita, Kouji: *See—*
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Matter, Sandro: *See—*
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Mattern, Charles C.: *See—*
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Matthews, Maura-Ann H.: *See—*
Ryland, James R.; Matthews, Maura-Ann H.; Ernst, Ulrich P.; Houk, Daniel E.; Traylor, David W.; and Williams, Lee R., 5,665,869, Cl. 530-412.000.

Matthies, Klaus E. Dowel joint system for connecting elements of a solid material. 5,664,900, Cl. 403-297.000.

Matthiessen, Lars; and Veiergang, Ole Jacob, to VM Acoustics ApS. Direction adjustable mounting fittings. 5,664,752, Cl. 248-299.100.

Matzka, Mark C., to Break-A-Beam, Inc. Photoelectric switch for use with a machine control circuit. 5,665,961, Cl. 250-221.000.

Maulik, Paritosh, to Brico Engineering Limited. Valve seat insert of two layers of same compact density. 5,666,632, Cl. 419-6.000.

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Honda, Kenji; Perry, Donald F.; and Maw, Taishih, 5,665,688, Cl. 510-178.000.

Mawer, Ian Michael: *See—*
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Max Co., Ltd.: *See—*
Murayama, Keijiro; and Ebisawa, Osamu, 5,664,468, Cl. 81-434.000.

Maxam Equipment, Inc.: *See—*
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Maxey, Randall A.: *See—*
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Maxin Integrated Products, Inc.: *See—*
Wilenken, Richard; Parvarandeh, Pirooz; and Martin, Terry, 5,666,082, Cl. 327-404.000.

Maxson, Myron Timothy; and Miller, Lee Walter, to Dow Corning Corporation. Method for controlling cure initiation and curing times of platinum group metal curing fluorosilicone compositions. 5,665,794, Cl. 523-209.000.

May, Paul: *See—*
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May, Timothy J., to Reynolds Consumer Products Inc. Closure arrangement having a reclosable seal. 5,664,296, Cl. 24-30.50R.

Maynard, William B.; and Riecke, George, to Mechanical Technology Incorporated. Pressurized wick burner. 5,664,945, Cl. 431-302.000.

Mayr, Franz-Paul, to Hilti Aktiengesellschaft. Expansion dowel. 5,664,901, Cl. 403-297.000.

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Ochi, Isao; and Akiyama, Takashi, to Citizen Watch Co., Ltd. Liquid crystal display. 5,666,132, Cl. 345-96.000.
Ochi, Kengo; Kimura, Noriyuki; Zenitani, Yukio; Koike, Masami; and Fujiura, Yoji, to Sanyo Chemical Industries, Ltd. Materials for the treatment of pet excretions. 5,664,523, Cl. 119-173.000.
Ochiai, Ikuo: *See—*
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,665,182, Cl. 148-595.000.
Ochiai, Keiko: *See—*
Mizukami, Tamio; Sakai, Yasushi; Yoshida, Tetsuo; Agatsuma, Tsutomu; Ochiai, Keiko; and Akinaga, Shiro, 5,665,703, Cl. 514-11.000.
O'Connor, Kenneth J., to Contec, Inc. of Spartanburg. Presaturated wiper assembly. 5,664,677, Cl. 206-494.000.
Odaka, Kentaro, to Sony Corporation. Method for recording a digital audio signal on a motion picture film. 5,666,185, Cl. 352-27.000.
Odaohara, Shigefumi; Naitoh, Arimasa; and Mito, Toshitsugu, to International Business Machines Corporation. Charge requesting battery pack and charge-request controlled charger. 5,666,039, Cl. 320-5.000.
O'Dea, John: *See—*
Merrick, Edwin B.; Gee, Glen N.; O'Mahony, John; and O'Dea, John, 5,664,560, Cl. 128-203.250.
Oehlert, Wolfgang; Burow, Wilfried; Brunn, Horst; and Kunstmann, Herbert, to Bayer AG. Clean color shade, yellow-tinged red iron oxide pigments, and a process for their manufacture, and their use. 5,665,157, Cl. 106-456.000.
Oeschger, John: *See—*
Medeiros, Diane; Oeschger, John; and Hebda, Peter R., 5,666,327, Cl. 367-173.000.
Oez, Buelent. Transfer paper and a process for transferring photocopies to textiles. 5,665,476, Cl. 428-488.400.
Offsey, Stephen: *See—*
Spitzer, Mark B.; Offsey, Stephen; and Jacobsen, Jeffrey, 5,666,175, Cl. 349-95.000.
Ogata, Yasuji, to Olympus Optical Co., Ltd. Two-unit zoom lens system having a high zoom ratio. 5,666,233, Cl. 359-692.000.
Ogawa, Kazuaki: *See—*
Caprio, John T.; Ogawa, Kazuaki; and Valentincic, Tine B., 5,664,362, Cl. 43-42.060.
Ogawa, Keiichi: *See—*
Tanaka, Konosuke; and Ogawa, Keiichi, 5,665,472, Cl. 428-402.000.
Ogawa, Ken-Ichi: *See—*
Kato, Shigeki; Uematsu, Hiroshi; and Ogawa, Ken-Ichi, 5,666,094, Cl. 333-248.000.
Ogawa, Tadayoshi, to Rohm Co., Ltd. Photo-detection methods and apparatus. 5,666,574, Cl. 396-233.000.
Ogawa, Yoshinori, to Fujitsu Limited. Rotary actuator assembly in a disk drive having a magnetic actuator arm latch. 5,666,244, Cl. 360-106.000.
Ogihara, Tsutomu; Shimizu, Takaaki; Kinsho, Takeshi; Kaneko, Tatsushi; Asakura, Kazuyuki; and Nakashima, Mutsuo, to Shin-Etsu Chemical Co., Ltd. Silacyclohexane compounds, preparation thereof, liquid crystal compositions comprising the same, and liquid crystal devices comprising the compositions. 5,665,271, Cl. 252-299.610.
Ogiya, Shuji; Kondo, Michio; and Kaeriyama, Yasusi, to Fujitsu Limited. Optical submarine repeater. 5,666,457, Cl. 385-139.000.
Ogoshi, Makoto. Decomposition method for halogenated compound and decomposition apparatus therefor. 5,665,320, Cl. 422-186.300.
Ogrinc, Hendrik J. A.: *See—*
Derks, Petrus J. M.; and Ogrinc, Hendrik J. A., 5,665,501, Cl. 430-59.000.
Ogura, Seiki: *See—*
Wong, Robert Chi-Foon; Buti, Taqi Nasser; and Ogura, Seiki, 5,666,320, Cl. 365-207.000.
Ogura, Shizuo: *See—*
Prass, Werner; Stehlin, Thomas; Liu, Yuan; Ogura, Shizuo; Yamamoto, Tetsu; Tokida, Akihiko; and Motosugi, Kenji, 5,665,844, Cl. 526-328.000.
Oguri, Yasuo: *See—*
Yamawaki, Hiroshi; Yoshino, Masahiko; Oguri, Yasuo; and Yamane, Masayuki, 5,665,660, Cl. 501-32.000.
Oh, Kyung-Ryong, to Samsung Heavy Industry Co., Ltd. Spline. 5,664,655, Cl. 192-70.200.
Ohashi, Kunio; Tokuyama, Mitsuru; Kinash,, Hiroshi; Nozomi, Mamoru; Umehara, Tadashi; and Asari, Toshiya, to Mitsubhishi Kasei Corporation; and Sharp Kabushiki Kaisha. Electrophotographic photoreceptor and method for producing the photoreceptor. 5,665,502, Cl. 430-62.000.
Ohbayashi, Shigeki: *See—*
Kosugi, Ryuichi; and Ohbayashi, Shigeki, 5,666,324, Cl. 365-233.000.
Ohfuji, Takeshi: *See—*
Maeda, Katsumi; Nakano, Kaichiro; Ohfuji, Takeshi; and Hasegawa, Etsuo, 5,665,518, Cl. 430-270.100.
Ohgoshi, Yasuo; Doi, Nobukazu; and Yano, Takashi, to Hitachi, Ltd. CDMA mobile communication system and method with improved phase correction features. 5,666,352, Cl. 370-206.000.
Ohio Associated Enterprises, Inc.: *See—*
Crofoot, Larry M.; and Roath, Alan L., 5,664,964, Cl. 439-495.000.
Ohishi, Shinji, to Canon Kabushiki Kaisha. Positioning table device including correction of energization electric current to selected coils of a permanent magnet of a drive device. 5,666,038, Cl. 318-625.000.
Ohkawa, Atsuhiro; Mikoshiba, Hisashi; Tsukase, Masaaki; Ishiwata, Yasuhiro; and Naruse, Hideaki, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic material. 5,665,529, Cl. 430-562.000.
Ohkawa, Nobuhisa: *See—*
Kato, Senji; Yasumura, Atsushi; Ohkawa, Nobuhisa; and Naganawa, Tadahisa, 5,664,528, Cl. 123-90.150.
Kato, Senji; Yasumura, Atsushi; Ohkawa, Nobuhisa; and Naganawa, Tadahisa, 5,664,529, Cl. 123-90.150.
Ohki, Mitsuharu; Yamazaki, Takao; Kurokawa, Masuyoshi; and Hashiguchi, Akihiko, to Sony Corporation. Parallel processor apparatus having means for processing signals of different lengths. 5,666,169, Cl. 348-721.000.
Öhlschläger, Hans: *See—*
Peters, Manfred; Kaluschke, Thomas; Öhlschläger, Hans; and Mücke, Bruno, 5,665,532, Cl. 430-571.000.
Ohmori, Hiroyuki; Yamamoto, Tetsuya; and Sugiyama, Yasunari, to Sony Corporation. Magnetic head and method for manufacture thereof. 5,666,249, Cl. 360-123.000.
Ohmura, Hiroshi, to Canon Kabushiki Kaisha. Image processing apparatus. 5,666,207, Cl. 358-500.000.
Ohnesorge, Bernd; Ruehrmschopf, Ernstpeter; and Klingenbeck-Regn, Klaus, to Siemens Aktiengesellschaft. X-ray examination system with identification of and compensation for subject-produced scattered radiation to reduce image artifacts. 5,666,391, Cl. 378-7.000.
Ohno, Kazunori, to Fuji Photo Optical Co., Ltd. Two-element optical system for photographic cameras. 5,666,234, Cl. 359-794.000.
Ohno, Tomoyuki: *See—*
Suzuki, Hiroyuki; Shiroishi, Yoshihiro; Hishiyama, Sadao; Ohno, Tomoyuki; Yahisa, Yotsuo; Matsuda, Yoshibumi; Tsumita, Norikazu; Ohura, Masaki; Shirakura, Takaaki; Shige, Noriyuki; and Takagi, Kazumasa, 5,665,478, Cl. 428-611.000.
Ohno, Tsuneya, to Nissin Shokuhin Kabushiki Kaisha. HIV immunotherapeutics. 5,665,569, Cl. 435-69.600.
Ohsawa, Hisato: *See—*
Taomo, Toshio; Ohsawa, Hisato; Yamami, Hirofumi; and Aiyama, Fumihiko, 5,664,543, Cl. 123-400.000.
Ohsawa, Toshifumi, to Canon Kabushiki Kaisha. Camera. 5,666,570, Cl. 396-147.000.
Ohshita, Masakazu; and Shimomae, Mutsuo, to Ricoh Company, Ltd. Image data processing system and method realizing fine image with simple construction/procedure. 5,666,213, Cl. 358-448.000.
Ohsumi, Hideki, to Yazaki Corporation. Method of manufacturing metal terminal. 5,664,326, Cl. 29-874.000.
Ohta, Hajime: *See—*
Ohtsuka, Torao; Fukaya, Makoto; Tagai, Hideo; Niwa, Shigeo; Sawai, Kazuhiko; and Ohta, Hajime, 5,665,120, Cl. 623-16.000.
Ohta, Hitoshi: *See—*
Yamanaka, Mikio; Fukaya, Masuhiro; Fujita, Nobuhiro; Ishikawa, Yasushi; Nakagawa, Toshikazu; Yashiro, Masao; and Ohta, Hitoshi, 5,665,669, Cl. 502-527.000.
Ohta, Kenji: *See—*
Matoba, Hirotsugu; Hirata, Susumu; Ishii, Yorishige; Inui, Tetsuya; Ohta, Kenji; Abe, Shingo; and Yamashita, Zenjiro, 5,666,141, Cl. 347-54.000.
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,665,467, Cl. 428-332.000.
Takahashi, Akira; Inui, Tetsuya; Ohta, Kenji; Deguchi, Toshihisa; and Van, Kazuo, 5,666,345, Cl. 369-275.100.
Ohta, Makoto; Akahane, Eiji; Hata, Seiichi; Kuroda, Kenzo; and Sato, Shosuke, to Shin Caterpillar Mitsubishi Ltd.; and Kansei Corporation. Operation breaking apparatus for construction equipment. 5,664,637, Cl. 180-286.000.
Ohta, Masashi; Kobayashi, Hiroshi; Sekiya, Tsuneo; Hamada, Toshimichi; Fukuda, Kyoko; and Iijima, Koji, to Sony Corporation. Panorama image producing method and apparatus using at least portions of variable width images. 5,666,459, Cl. 386-46.000.

Ohta, Minemasa; and Itoh, Naoto, to Pioneer Video Corporation; and Pioneer Electronic Corporation. Compressed picture information recording apparatus performing in real time. 5,666,460, Cl. 386-82.000.
Ohta, Takeo: *See—*
Yoshioka, Kazumi; Akiyama, Tetsuya; Ohta, Takeo; and Isomura, Hidemi, 5,665,520, Cl. 430-270.130.
Ohta, Yasuhiro: *See—*
Tsukada, Yoji; and Ohta, Yasuhiro, 5,665,574, Cl. 435-105.000.
Ohtake, Katsuhiro, to Fuji Photo Optical Co., Ltd. Bright frame view-finder of natural lighting type additionally provided with light source for secondary diffusing surfaces. 5,666,576, Cl. 396-288.000.
Ohtake, Masahisa: *See—*
Matsue, Junji; Katouno, Ryouichi; and Ohtake, Masahisa, 5,664,421, Cl. 62-6.000.
Ohtake, Motoyuki, to Nikon Corporation. Variable focal length optical system. 5,666,229, Cl. 359-683.000.
Ohtake, Motoyuki, to Nikon Corporation. Zoom lens. 5,666,231, Cl. 359-686.000.
Ohtani, Tetsuya: *See—*
Katoh, Katsutoshi; Noguchi, Takehiko; Ohtani, Tetsuya; Suzuki, Michio; and Uchiyama, Yoshiharu, 5,666,266, Cl. 361-684.000.
Ohtsubo, Yoshinobu: *See—*
Muraoka, Kimihiro; Ohtsubo, Yoshinobu; Higuchi, Toshio; Iguchi, Makoto; and Tamamushi, Takashige, 5,665,987, Cl. 257-133.000.
Ohtsuka, Torao; Fukaya, Makoto; Tagai, Hideo; Niwa, Shigeo; Sawai, Kazuhiko; and Ohta, Hajime, to Tohkai Ceramic Material Co., Ltd. Biomedical material including tube-like biodegradeable nety works filled with hydroxylapatite. 5,665,120, Cl. 623-16.000.
Ohura, Masaki: *See—*
Suzuki, Hiroyuki; Shiroishi, Yoshihiro; Hishiyama, Sadao; Ohno, Tomoyuki; Yahisa, Yotsuo; Matsuda, Yoshibumi; Tsumita, Norikazu; Ohura, Masaki; Shirakura, Takaaki; Shige, Noriyuki; and Takagi, Kazumasa, 5,665,478, Cl. 428-611.000.
Ohwada, Norihiko: *See—*
Nakashima, Sadao; Izumi, Katsutoshi; Ohwada, Norihiko; and Katayama, Tatsuhiko, 5,665,613, Cl. 438-151.000.
Ohwada, Tomiji: *See—*
Koga, Hisamitsu; Kumagai, Naotake; Ohwada, Tomiji; Furukawa, Nobuya; Kato, Masaaki; and Kawamura, Nobuyuki, 5,664,635, Cl. 180-65.300.
Ohzu, Hayao: *See—*
Ishizuka, Keiji; Kataoka, Yuzo; Ichise, Toshihiko; Takahashi, Hidekazu; and Ohzu, Hayao, 5,665,630, Cl. 438-620.000.
Oikawa, Takahiro, to Niles Parts Co., Ltd. Automobile knob switch. 5,665,948, Cl. 200-61.540.
Oikawa, Yoshiro; Kusano, Masaaki; Shimomura, Hideaki; Shimamura, Naotaka; and Numazaki, Kiyoshi, to Nikon Corporation. Camera and print information control apparatus. 5,666,578, Cl. 396-319.000.
Ojima, Heijiro: *See—*
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomoto, Mitsuru; and Ojima, Heijiro, 5,665,243, Cl. 210-698.000.
Ojima, Masaki: *See—*
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Oninura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.
Ojima, Satoshi: *See—*
Itoman, Moritoshi; and Ojima, Satoshi, 5,665,086, Cl. 606-64.000.
Oka, Masahisa: *See—*
Igari, Yasutaka; Saikawa, Akira; Okamoto, Kayoko; Kamei, Shigeru; Oka, Masahisa; and Sano, Atsunori, 5,665,394, Cl. 424-501.000.
Okabe, Takeshi: *See—*
Isono, Hideo; and Okabe, Takeshi, 5,665,254, Cl. 219-56.000.
Okada, Hideaki; and Nemoto, Shusuke, to Kanzaki Kokyukoki Mfg. Co., Ltd. Axle driving apparatus. 5,664,465, Cl. 74-606.00R.
Okada, Hiroshi: *See—*
Honma, Katuhiko; Tatsuno, Tsuneo; Okada, Hiroshi; Moritoki, Masato; and Fujikawa, Takao, 5,665,291, Cl. 264-666.000.
Okada, Hiroyuki: *See—*
Tsuji, Kenji; Serita, Yasuaki; Kido, Toshihito; and Okada, Hiroyuki, 5,666,572, Cl. 396-207.000.
Okada, Shingo: *See—*
Takehara, Takao; and Okada, Shingo, 5,666,279, Cl. 363-95.000.
Okai, Makoto: *See—*
Aoki, Masahiro; Ido, Tatemi; Tsutsui, Takayuki; Uomi, Kazuhisa; Tsuchiya, Tomonobu; Okai, Makoto; and Nakamura, Atsushi, 5,666,455, Cl. 385-131.000.
Okajima, Masahiro: *See—*
Kato, Masaaki; and Okajima, Masahiro, 5,664,545, Cl. 123-496.000.
Okamoto, Kayoko: *See—*
Igari, Yasutaka; Saikawa, Akira; Okamoto, Kayoko; Kamei, Shigeru; Oka, Masahisa; and Sano, Atsunori, 5,665,394, Cl. 424-501.000.
Okamura, Hidetoshi: *See—*
Takamoto, Hiromitsu; Okamura, Hidetoshi; and Aito, Yuzo, 5,665,295, Cl. 264-172.190.
Okamura, Junichi, to Kabushiki Kaisha Toshiba. Sense amplifier. 5,666,319, Cl. 365-205.000.
Okamura, Osamu; Kume, Atsushi; and Shiohara, Yuh, to International Superconductivity Technology Center; Kansai Electric Power Co., Inc., The; and Fujikura Ltd. Method of manufacturing an oxide superconductor with high critical current density. 5,665,682, Cl. 505-446.000.
Okamura, Tomoko: *See—*
Hirata, Mitsuaki; Mizushima, Shigeaki; Aburazaki, Kazuyuki; Watanabe, Noriko; Iwagoe, Hiroko; Makino, Seiji; and Okamura, Tomoko, 5,666,178, Cl. 349-136.000.
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, to Canon Kabushiki Kaisha. Image forming apparatus comprising contact type charging member. 5,666,606, Cl. 399-174.000.
Okano, Mamoru: *See—*
Sugita, Tatsuya; Arimoto, Akira; Mitsuya, Teruaki; Hoshi, Nobuyoshi; Okano, Mamoru; Onose, Atsushi; Tsunoda, Yoshito; Kobayashi, Shinya; Maruo, Seiji; and Takuma, Yasuo, 5,666,598, Cl. 399-136.000.
Okawa, Tatsuya: *See—*
Kuwayama, Tatsuo; Sekine, Isamu; Okawa, Tatsuya; Sato, Takeshi; and Takahashi, Ryuichi, 5,665,485, Cl. 429-100.000.
Okawa, Wataru: *See—*
Mori, Shinobu; Okawa, Wataru; and Yorozu, Hidenori, 5,665,742, Cl. 514-358.000.
Okayama, Minenobu; and Sato, Shuji, to Hisamitsu Pharmaceutical Co, Inc. Cholesterol-lowering drug. 5,665,348, Cl. 424-78.350.
Okazaki, Hiroshi; and Kawai, Tomoaki, to Canon Kabushiki Kaisha. Audio output method and apparatus in multi-window system. 5,666,555, Cl. 395-807.000.
Okazoe, Kiyoshi; Nakagawa, Toyoshi; and Takashina, Toru, to Mitsubishi Jukogyo Kabushiki Kaisha. Wet flue-gas dsulfurization system. 5,665,129, Cl. 55-257.100.
Okazoe, Takashi: *See—*
Inoue, Yoshihisa; Ehisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; and Yasuda, Arata, 5,665,881, Cl. 546-170.000.
O'Keefe, Kevin Michael, to O.K. Filters Company, Inc. Environmental enclosure apparatus with air flow control and balancing. 5,664,995, Cl. 454-58.000.
Oki Electric Industry Co. Ltd.: *See—*
Kobayashi, Tatsuo; Nakamura, Kiyotaka; Matsueda, Hisaharu; Makiki, Kayoko; Hamazaki, Isamu; and Watanabe, Kazuya, 5,664,665, Cl. 200-61.45M.
Oki, Katsuya: *See—*
Miyamoto, Tomohiko; Yoshii, Yasuo; Inada, Tooru; Tomuro, Jinichi; Hokari, Nobuyuki; and Oki, Katsuya, 5,664,505, Cl. 110-347.000.
Oki, Kazuhiro: *See—*
Kobayashi, Naoki; Shimura, Shoichi; and Oki, Kazuhiro, 5,665,275, Cl. 252-582.000.
Oki, Shinichi: *See—*
Nakata, Yoshiro; Oki, Shinichi; Nagao, Koichi; Hatada, Kenzo; Mori, Shigeoki; Sato, Takashi; and Sano, Kunio, 5,665,610, Cl. 438-18.000.
Okoshi, Hideki: *See—*
Okoshi, Tokio; Kato, Yuka; Okoshi, Hideki; Miyahara, Kenichiro; and Maeda, Masakatsu, 5,665,473, Cl. 428-457.000.
Okoshi, Tokio; Kato, Yuka; Okoshi, Hideki; Miyahara, Kenichiro; and Maeda, Masakatsu, to Tokuyama Corporation. Package for mounting a semiconductor device. 5,665,473, Cl. 428-457.000.
Oksanen, Toni; Viitanen, Esa; Patana, Jari; and Alatalo, Hannu, to Nokia Telecommunications Oy. Method for disassembling and assembling frame structures containing pointers. 5,666,351, Cl. 370-474.000.
Okude, Mariko: *See—*
Yanai, Norifumi; Nakamura, Kouzou; Okude, Mariko; and Shiota, Shigemasa, 5,666,210, Cl. 358-402.000.
Okumachi, Eiji: *See—*
Fuse, Toshihiko; and Okumachi, Eiji, 5,664,787, Cl. 277-96.100.
Okumura, Naoji: *See—*
Izawa, Yosuke; Tani, Masahiro; Okumura, Naoji; Nio, Yutaka; and Sato, Toshiohika, 5,666,165, Cl. 348-445.000.
Olds, Daniel L., to SPX Corporation. Refrigerant handling system and method with air purge and multiple refrigerant capabilities. 5,664,424, Cl. 62-85.000.
Olin Microelectronics Chemicals, Inc.: *See—*
Honda, Kenji; Perry, Donald F.; and Maw, Taishih, 5,665,688, Cl. 510-178.000.
Olin, Ray L. Bale accumulator. 5,664,923, Cl. 414-24.500.
Oliver, Manuel: *See—*
Gies, Paul J.; Oliver, Manuel; Eschbach, Florence O.; Reichert, Veronica R.; and Coalson, Christen E., 5,665,265, Cl. 252-62.200.
Olofsson Corporation, The: *See—*
Garnett, Donald W.; and Watson, John A., 5,664,470, Cl. 82-121.000.
Olsen, Ole Hvilsted: *See—*
Aaslyng, Dorrit; Branner, Sven; Hastrup, Sven; Norskov-Lauritsen, Leif; Olsen, Ole Hvilsted; Simonsen, Merete; Casteleijn, Eric; Egmond, Maarten Robert; Haverkamp, Johan; Marugg, John David; and Mooren, Arnoldus Theodorus Anthonius, 5,665,587, Cl. 435-221.000.
Olson, Brian C.: *See—*
Eerkens, Jozef W.; Garratt, Dennis G.; Olson, Brian C.; Falk, Ken J.; and Wang, John H., 5,666,639, Cl. 422-186.000.
Olson, John E.: *See—*
Dahl, David A.; Appelhans, Anthony D.; and Olson, John E., 5,665,966, Cl. 250-281.000.
Olympus Optical Co., Ltd.: *See—*
Mihara, Takashi; Nakano, Hiroshi; Yoshimori, Hiroyuki; and Hiraide, Shuzo, 5,666,305, Cl. 365-145.000.

Nakai, Koji; Sakayauchi, Hiroyuki; and Ito, Hiromi, 5,666,582, Cl. 396-419.000.
Ogata, Yasuji, 5,666,233, Cl. 359-692.000.
Olympus Winter & Ibe GmbH: *See—*
Benecke, Rainer, 5,665,050, Cl. 29-456.000.
O'Mahony, John: *See—*
Merrick, Edwin B.; Gee, Glen N.; O'Mahony, John; and O'Dea, John, 5,664,560, Cl. 128-203.250.
Omann, Lawrence F. Rock and material loading apparatus. 5,664,348, Cl. 37-405.000.
Omas, Jeremy David: *See—*
James, Gary Lloyd; and Omas, Jeremy David, 5,666,547, Cl. 395-898.000.
Omelchuk, John: *See—*
Fujii, Yutaka; Akao, Fuminori; and Omelchuk, John, 5,665,197, Cl. 156-558.000.
Omi, Junichi: *See—*
Iijima, Shuji; Miyamoto, Hidenori; Soshi, Isao; Kato, Minoru; Omi, Junichi; and Wakabayashi, Hiroshi, 5,666,563, Cl. 396-53.000.
Omika, Hiroyoshi; Otsuki, Yutaka; Yuasa, Hitoshi; Yoda, Eiji; Nakamura, Toru; Ando, Masayuki; Kuroki, Teruhisa; and Ono, Norikatsu, to Nippon Oil Co., Ltd.; and Dai Nippon Printing Co., Ltd. Method for producing color filter. 5,665,496, Cl. 430-7.000.
Omlor, Norbert: *See—*
Ilzig, Frank; and Omlor, Norbert, 5,665,901, Cl. 73-11.080.
Omnipoint Corporation: *See—*
Ovard, David; and Jensen, Ryan N., 5,666,379, Cl. 375-239.000.
Omote, Toshihiko; and Fujii, Hirofumi, to Nitto Denko Corporation. Heat-resistant negative photoresist composition, photosensitive substrate, and process for forming negative pattern. 5,665,523, Cl. 430-282.100.
Onaka, Hidemi: *See—*
Izutani, Takahide; Onaka, Hidemi; and Morita, Koji, 5,664,548, Cl. 123-571.000.
Oncogene Science, Inc.: *See—*
Foulkes, J. Gordon; Leichtfried, Franz; Pieler, Christian; Stephenson, John R.; and Franco, Robert, 5,665,543, Cl. 435-6.000.
Ondrla, Jeffrey M.: *See—*
Rockwood, Charles A.; Ondrla, Jeffrey M.; Susaraba, David A.; and Serbousek, Jon C., 5,665,090, Cl. 606-80.000.
O'Neill, James Anthony: *See—*
Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; and Wong, Justin Wai-Chow, 5,665,608, Cl. 438-7.000.
Onimura, Tadashi: *See—*
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.
Ono, Masahiko: *See—*
Endo, Yoshishige; Ono, Masahiko; Kawamura, Hiromitsu; and Kobara, Katsumi, 5,665,422, Cl. 427-71.000.
Ono, Norikatsu: *See—*
Omika, Hiroyoshi; Otsuki, Yutaka; Yuasa, Hitoshi; Yoda, Eiji; Nakamura, Toru; Ando, Masayuki; Kuroki, Teruhisa; and Ono, Norikatsu, 5,665,496, Cl. 430-7.000.
Onose, Atsushi: *See—*
Sugita, Tatsuya; Arimoto, Akira; Mitsuya, Teruaki; Hoshi, Nobuyoshi; Okano, Mamoru; Onose, Atsushi; Tsunoda, Yoshito; Kobayashi, Shinya; Maruo, Seiji; and Takuma, Yasuo, 5,666,598, Cl. 399-136.000.
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Grodevant, Scott R., 5,666,045, Cl. 323-282.000.
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Sakayauchi, Hiroyuki: *See—*
Nakai, Koji; Sakayauchi, Hiroyuki; and Ito, Hiromi, 5,666,582, Cl. 396-419.000.

Sakiyama, Kazuyuki: *See—*
Hikita, Mitsutaka; Sakiyama, Kazuyuki; and Shibagaki, Nobuhiko, 5,666,091, Cl. 333-193.000.

Sako, Mineyuki: *See—*
Inagaki, Sanji; Tsuge, Shoichi; Sako, Mineyuki; Toya, Kenzo; and Akazawa, Takashi, 5,665,508, Cl. 430-108.000.

Saks, Jonathan Haim; and Doshi, Kshitij Arun, to Novell, Inc. Computer method and apparatus for asynchronous ordered operations. 5,666,532, Cl. 395-621.000.

Sakuma, Masao: *See—*
Kasai, Junichi; Tsuji, Kazuto; Taniguchi, Norio; Mashiko, Takashi; Sakuma, Masao; Saigo, Yukio; Yoneda, Yoshiyuki; and Takenaka, Masashi, 5,666,064, Cl. 324-755.000.

Sakuma, Nobuo, to Ricoh Company, Ltd. Optical scanner and polygon mirror. 5,666,220, Cl. 359-208.000.

Sakuma, Shigeru: *See—*
Tsukada, Kouji; Nishigaki, Hidekazu; Ikeda, Yasuaki; Sakuma, Shigeru; Ishiyama, Shin-ichi; Matsuoka, Fumio; Kanno, Yoshihisa; and Hayashi, Shigeki, 5,665,922, Cl. 73-849.000.

Sakurai, Kazushige: *See—*
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.

Sakurai, Osamu: *See—*
Fujishita, Kaneaki; Sakurai, Osamu; and Nagahara, Junichi, 5,666,136, Cl. 345-146.000.

Salant, Yoram: *See—*
Adelman, Judah L.; Galanti, David; and Salant, Yoram, 5,666,300, Cl. 364-736.050.

Salazar, Refugio: *See—*
Thompson, Ronald E.; and Salazar, Refugio, 5,664,720, Cl. 224-625.000.

Saleem, Mohammad: *See—*
Meathrel, William G.; Saleem, Mohammad; and Binks, Shirley A., 5,665,477, Cl. 428-500.000.

Salerno, Jack P.; Gale, Ronald; and Spitzer, Mark B., to Kopin Corporation. Projection display docking system. 5,664,859, Cl. 353-119.000.

Salesin, David H.; Berman, Deborah F.; and Bartell, Jason T., to University of Washington. Method and system for editing multiresolution images at fractional-levels of resolution using a wavelet representation. 5,666,475, Cl. 345-428.000.

Salinas, Ofelia. Scalp and hair care product and process of preparing same. 5,665,342, Cl. 424-74.000.

Salk Institute Biotechnology/Industrial Associates, Inc., The: *See—*
Fitzmaurice, Leona C.; Mirkov, T. Erik; Elliott, Kathryn J.; Butler, William Owen; Konno, Yoshihiro; and Dickinson, Craig Duane, 5,665,579, Cl. 435-172.300.

Sallee, Verney L.: *See—*
Klimko, Peter G.; Bishop, John E.; Sallee, Verney L.; and Zinke, Paul W., 5,665,773, Cl. 514-530.000.

Salomon S.A.: *See—*
Chemello, Jean-Pierre, 5,664,345, Cl. 36-118.800.

Salonia, Tino; and Grunwald, Davor, to Geno$_2$X Corporation. Portable oxygen generator. 5,665,316, Cl. 422-113.000.

Sam, Huy: *See—*
Nakamura, Yoshinori; Sam, Huy; Fujiwara, Yoshio; Nagura, Toshikazu; Hayasi, Shigeo; and Kusaka, Yukio, 5,665,676, Cl. 503-227.000.

Samekawa, Keiichi: *See—*
Ishida, Yoshiki; Samekawa, Keiichi; Katayama, Kenichi; Matsumoto, Yoshifumi; Ishida, Hideo; and Kimura, Koichi, 5,664,323, Cl. 29-822.000.

Sameshima, Takao; Kikuchi, Yutaka; and Takahashi, Kazuaki, to Canon Kabushiki Kaisha. Image forming apparatus with locking mechanism for detachable feeder unit. 5,666,595, Cl. 399-110.000.

Sammy Industries, Co., Ltd.: *See—*
Kurihara, Satoru, 5,664,999, Cl. 463-20.000.

Samsung Aerospace Industries, Ltd.: *See—*
Gu, Bon-jeng; and Lee, Jin-ki, 5,666,566, Cl. 396-80.000.

Samsung Electronics Co., Ltd.: *See—*

Ahn, Seung-joon, 5,666,343, Cl. 369-77.200.
Hwang, Jung-Hyun, 5,666,160, Cl. 348-240.000.
Jo, Hyun-min, 5,666,066, Cl. 324-772.000.
Kim, Tae-Ryong; Ahn, Yong-Sang; and Lee, Chel-Hee, 5,666,271, Cl. 361-726.000.
Kim, Young-Ju, 5,666,187, Cl. 355-30.000.
Lee, Byoung-hun; Kang, Chi-jung; Lee, Kyung-wook; and Cha, Gi-ho, 5,665,631, Cl. 438-459.000.
Lee, Chul-woo; Shin, Dong-ho; Rim, Kyung-hwa; Chung, Chong-sam; Cho, Kun-ho; Seong, Pyong-yong; Yoo, Jang-hoon; and Lee, Yong-hoon, 5,665,957, Cl. 250-201.500.
Lee, Sang-in; Choi, Gil-heyun; and Jeon, Young-soo, 5,665,659, Cl. 438-646.000.
Lee, Su-In; and Lym, Young-Taek, 5,666,618, Cl. 399-254.000.
Moon, Byung-joon; Cho, Sung-il; and Shin, Ki-ho, 5,666,458, Cl. 386-2.000.
Mote, L. Randall, Jr., 5,666,494, Cl. 711-167.000.
Park, Byoung-yup, 5,666,462, Cl. 386-125.000.
Park, Seak Haeng; and Kim, Yong Myoung, 5,664,437, Cl. 62-407.000.
Seoung, Gan-soo; Kim, Young-hun; and Ha, In-jung, 5,666,034, Cl. 318-6.000.
Yoo, Yong-Baek, 5,666,596, Cl. 399-111.000.

Samsung Electronics Inc.: *See—*
Suresh, Gananathan; Kang, Ki B.; and Kim, Young Il, 5,666,485, Cl. 395-185.010.

Samsung Heavy Industries Co. Ltd.: *See—*
Kim, Won Young; Kim, Yang Han; and Kang, Seong Woo, 5,666,427, Cl. 381-71.100.

Samsung Heavy Industry Co., Ltd.: *See—*
Oh, Kyung-Ryong, 5,664,655, Cl. 192-70.200.

Samuelsson, Sven-Erik: *See—*
Lindgren, Jörgen; Samuelsson, Sven-Erik; and Thulin, Anders, 5,664,909, Cl. 404-122.000.

San-Apro Limited: *See—*
Nakasugi, Nobuyasu; and Sekine, Takayuki, 5,665,056, Cl. 602-8.000.

Sanderson, William Ronald: *See—*
Brown, Scott William; Johnstone, Alexander; and Sanderson, William Ronald, 5,665,891, Cl. 549-272.000.

Sandford, Adrian Miles: *See—*
Sibbald, Alastair; Clemow, Richard David; Philp, Adam; Nackvi, Fawad; and Sandford, Adrian Miles, 5,666,425, Cl. 381-26.000.

Sandford, Paul A.: *See—*
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,382, Cl. 424-450.000.
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,383, Cl. 424-450.000.

Sandhu, Gurdial Singh: *See—*
Brown, Stephen; and Sandhu, Gurdial Singh, 5,665,760, Cl. 514-437.000.

Sandhu, Gurtej S.; Batra, Shubneesh; and Fazan, Pierre C., to Micron Technology, Inc. Method of forming a thin film transistor using fluorine passivation. 5,665,611, Cl. 438-162.000.

Sandhu, Gurtej S.; and Brown, Kris K., to Micron Technology, Inc. Method of forming capacitors having an amorphous electrically conductive layer. 5,665,625, Cl. 438-396.000.

Sandhu, Gurtej S.; and Iyer, Ravi, to Micron Technology, Inc. Semiconductor processing method of forming electrically conductive interconnect lines and integrated circuitry. 5,665,644, Cl. 438-641.000.

Sandhu, Gurtej S.: *See—*
Stroupe, Hugh; Sharan, Sujit; and Sandhu, Gurtej S., 5,664,988, Cl. 451-41.000.

Sándor, Varga Szilárd, to Piacfejlesztesi Alapitvany. Process for the development of novel type of plants with nitrogen-fixing capacity also in their leaves. 5,664,368, Cl. 47-58.000.

Sandoz Ltd.: *See—*
Anderson, Richard J.; Cloudsdale, Ian S.; Lamoreaux, Robert J.; Schaefer, Kristine J.; and Harr, Jost, 5,665,674, Cl. 504-144.000.
Cottens, Sylvain; and Sedrani, Richard, 5,665,772, Cl. 514-514.000.
Grassberger, Maximilian; Meingassner, Josef Gottfried; Stütz, Anton; and Stütz, Peter, 5,665,727, Cl. 514-291.000.
Seckinger, Karl; Mohanty, Sasank Sekhar; Milzner, Karlheinz; and Kuhnen, Fred, 5,665,681, Cl. 504-246.000.

Sandvik, Arlan W.; Carr, Brian W.; Moore, Peter B.; Handorf, Donald F.; Alphs, Kevin J.; and Mathis, Mark D., to Gary W. Clem, Inc. Method and means for harvesting and packaging seeds. 5,664,402, Cl. 53-384.100.

Sanfilippo, Pauline J.; and Urbanski, Maud, to Ortho Pharmaceutical Corporation. Substituted pyrimidinylaminothiazole derivatives useful as platelet aggregation inhibitors. 5,665,724, Cl. 514-256.000.

Sanford, Robert A.; and Logue, Morris D. Metal golf club head and method of manufacture. 5,665,014, Cl. 473-345.000.

Sangret, Henry C., to TRW Inc. Filling a vehicle power steering system. 5,664,416, Cl. 60-327.000.

Sanko Sogyo Co., Ltd.: *See—*
Hattori, Kazuhide; Yamaji, Hiroyuki; Hatakeyama, Yoshikazu; Shida, Yoshiyuki; Tamura, Atsushi; Kitaoka, Takumi; and Kohama, Takashi, 5,665,285, Cl. 264-45.400.

Sankyo Company, Limited: *See—*
Terada, Atsusuke; Wachi, Kazuyuki; Miyazawa, Hachio; Iizuka, Yoshio; Hasegawa, Kazuo; and Tabata, Keiichi, 5,665,752, Cl. 514-393.000.

Sano, Atsunori: *See—*
Igari, Yasutaka; Saikawa, Akira; Okamoto, Kayoko; Kamei, Shigeru; Oka, Masahisa; and Sano, Atsunori, 5,665,394, Cl. 424-501.000.

Sano, Hiroaki; Tanaka, Satoshi; and Taguchi, Kinji, to Sumitomo Electric Industries, Ltd. Apparatus for blowing cable and method therefor. 5,664,763, Cl. 254-134.400.

Sano, Kunio: *See—*
Nakata, Yoshiro; Oki, Shinichi; Nagao, Koichi; Hatada, Kenzo; Mori, Shigeoki; Sato, Takashi; and Sano, Kunio, 5,665,610, Cl. 438-18.000.

Sano, Takeshi; Cantor, Charles R.; and Smith, Cassandra L., to University of California, The Regents of the. Immuno-polymerase chain reaction system for antigen detection. 5,665,539, Cl. 435-6.000.

Sanofi: *See—*
Chabert, Nathalie; Emonds-Alt, Xavier; Proietto, Vincenzo; and Van Broeck, Didier, 5,665,886, Cl. 546-300.000.

Sanofi, S.A.: *See—*
Aldous, David J.; Bailey, Thomas R.; Diana, Guy Dominic; and Nitz, Theodore J., 5,665,763, Cl. 514-461.000.

Sanofi Winthrop, Inc.: *See—*
Brown, Stephen; and Sandhu, Gurdial Singh, 5,665,760, Cl. 514-437.000.

Sansano Sanz, Agustin. Molded wooden panel for decorative coverings. 5,665,190, Cl. 156-154.000.

Sanshin Kogyo Kabushuki Kaisha: *See—*
Katoh, Masahiko, 5,665,025, Cl. 477-107.000.

Santini, Hugo Alberto Emilio: *See—*
Robertson, Neil Leslie; Santini, Hugo Alberto Emilio; and Snyder, Clinton David, 5,665,251, Cl. 216-22.000.

Sanyo Chemical Industries, Ltd.: *See—*
Ochi, Kengo; Kimura, Noriyuki; Zenitani, Yukio; Koike, Masami; and Fujiura, Yoji, 5,664,523, Cl. 119-173.000.
Takigawa, Shoji, 5,665,685, Cl. 508-421.000.

Sanyo Electric Co., Ltd.: *See—*
Koma, Norio, 5,666,179, Cl. 349-143.000.
Matsue, Junji; Katouno, Ryouichi; and Ohtake, Masahisa, 5,664,421, Cl. 62-6.000.
Uchibori, Masaharu; Igarashi, Keijiro; Kinoshita, Tomonori; Miyauchi, Takashi; and Arai, Kazuhiko, 5,666,015, Cl. 310-261.000.

Sara Lee Corporation: *See—*
Foster, Wayne G.; Everhart, John R.; and Thompson, Ken J., 5,664,512, Cl. 112-470.070.

Saripella, Satish Chandra: *See—*
Yu, Donald Yuen; Hunt, Jeffrey Scott; Saripella, Satish Chandra; and Hiltpold, William Randolph, 5,666,310, Cl. 365-185.210.

Sarma, Narayana V.: *See—*
Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; and Wong, Justin Wai-Chow, 5,665,608, Cl. 438-7.000.

Sarraf, Sanwal Prasad: *See—*
Chuang, Chih-Li; and Sarraf, Sanwal Prasad, 5,666,447, Cl. 385-31.000.

Sartech Systems, Inc.: *See—*
Dhanji, Shiraz, 5,665,487, Cl. 429-119.000.

Sarwal, Piyush: *See—*
Rao, Kashi; and Sarwal, Piyush, 5,666,441, Cl. 382-203.000.

Sasaki, Jun: *See—*
Inoue, Yoshihisa; Ebisu, Hajime; Ishida, Naomichi; Nakamura, Norifumi; Sasaki, Jun; Okazoe, Takashi; Morizawa, Yoshitomi; and Yasuda, Arata, 5,665,881, Cl. 546-170.000.

Sasaki, Katsuhiko; Kani, Toshiyuki; and Yamada, Yukihiko, to Makita Corporation. Method of detaching a driver bit from a screwdriver and a stop ring provided with a function of removing the driver bit appropriate for practicing the method. 5,664,312, Cl. 29-426.100.

Sasaki, Kazuo; and Hikichi, Toshio, to Sony Corporation. Coating device. 5,665,162, Cl. 118-410.000.

Sasaki, Yasushi: *See—*
Kanazawa, Hiroshi; Tajima, Fumio; Honda, Yasuhiko; Sasaki, Yasushi; Minegishi, Teruhiko; Hashimoto, Yoshikatu; Yoshida, Tatsuya; and Kadomukai, Yuzo, 5,664,542, Cl. 123-361.000.

Sasaki, Yasutaka: *See—*
Nakata, Rempei; Kaneko, Hisashi; Hayasaka, Nobuo; Nishioka, Takeshi; Tateyama, Yoshikuni; Nakano, Yutaka; and Sasaki, Yasutaka, 5,664,989, Cl. 451-41.000.

Sasame, Hiroshi; Fujii, Haruo; Hayakawa, Tatsuhiko; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Uchiyama, Akihiko; Saito, Yoshiro; and Maebashi, Youichirou, to Canon Kabushiki Kaisha. Image forming apparatus with delayed discharge by discharge means. 5,666,597, Cl. 399-128.000.

Sasame, Hiroshi: *See—*
Uchiyama, Akihiko; Fujii, Haruo; Sasame, Hiroshi; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Saito, Yoshiro; Maebashi, Yoichiro; and Tsuruya, Takaaki, 5,666,588, Cl. 399-44.000.

Sastri, Suri A. Brazing technology. 5,664,723, Cl. 228-124.100.

Sata, Kenichi, to Daikin Industries, Ltd. Magnetic sensor having a superconducting quantum interference device and a pickup coil wound on a tubular resinous bobbin with embedded high thermal conductivity material. 5,666,052, Cl. 324-248.000.

Sato, Akihiko: *See—*
Kawabata, Masami; Sato, Akihiko; and Sumiyoshi, Iwao, 5,665,494, Cl. 430-2.000.

Sato, Fumihiko: *See—*

Abo, Mitsuo; Tanaka, Yasuyuki; Kumazaki, Hidenori; Sato, Fumihiko; and Wakabayashi, Hiroyuki, 5,664,453, Cl. 72-269.000.

Sato, Hideharu; and Ishikawa, Makoto, to SMC Corporation. Power feeding system for solenoid valve assembly. 5,664,604, Cl. 137-884.000.

Sato, Hiroshi: *See—*
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.

Sato, Mitsukuni; Yamamoto, Kenji; Ishii, Koji; Ozawa, Koichi; Sera, Taizo; and Kubota, Jun, to Shinagawa Shirorenga Kabushiki Kaisha. Submerged nozzle mounting/dismounting apparatus. 5,665,264, Cl. 222-607.000.

Sato, Seiji; Ishida, Masayoshi; Senda, Kunihiro; Suzuki, Kazuhiro; and Komatubara, Michiro, to Kawasaki Steel Corporation. Low-iron-loss grain-oriented electromagnetic steel sheet and method of producing the same. 5,665,455, Cl. 428-167.000.

Sato, Shinichi; Koike, Noriyuki; Matsuda, Takashi; and Yamamoto, Yasushi, to Shin-Etsu Chemical Co., Ltd. Fluorinated amide compounds and curable compositions. 5,665,846, Cl. 528-15.000.

Sato, Shosuke: *See—*
Ohta, Makoto; Akahane, Eiji; Hata, Seiichi; Kuroda, Kenzo; and Sato, Shosuke, 5,664,637, Cl. 180-286.000.

Sato, Shuji: *See—*
Okayama, Minenobu; and Sato, Shuji, 5,665,348, Cl. 424-78.350.

Sato, Takashi: *See—*
Nakata, Yoshiro; Oki, Shinichi; Nagao, Koichi; Hatada, Kenzo; Mori, Shigeoki; Sato, Takashi; and Sano, Kunio, 5,665,610, Cl. 438-18.000.

Sato, Takeshi: *See—*
Kuwayama, Tatsuo; Sekine, Isamu; Okawa, Tatsuya; Sato, Takeshi; and Takahashi, Ryuichi, 5,665,485, Cl. 429-100.000.

Sato, Tohru; Yoshida, Yoshimi; and Watanabe, Fumio, to Toppan Printing Co., Ltd; and Toyo Ink Manufacturing Co. Ltd. Printed decorative paper having a three dimensional pattern and a process for the production thereof. 5,665,457, Cl. 428-195.000.

Sato, Tomoyuki: *See—*
Igarashi, Katsuji; Yonemitsu, Jun; Yagasaki, Yoichi; Fujinami, Yasushi; Sato, Tomoyuki; Kato, Motoki; and Suzuki, Teruhiko, 5,666,461, Cl. 386-95.000.

Sato, Toshiohika: *See—*
Izawa, Yosuke; Tani, Masahiro; Okumura, Naoji; Nio, Yutaka; and Sato, Toshiohika, 5,666,165, Cl. 348-445.000.

Sato, Yasushi: *See—*
Mashimo, Seiji; Sato, Yasushi; Ishiyama, Harumi; and Furuya, Tadashi, 5,666,192, Cl. 399-174.000.

Satoshi, Sumiya: *See—*
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Sattan, Susan Marie: *See—*
Bonaquist, Dante Patrick; and Sattan, Susan Marie, 5,664,438, Cl. 62-645.000.

Sauer, Joseph Peter: *See—*
Faulkner, Patrick Gerard; Fisher, Mark Warren; Sauer, Joseph Peter; and Hernandez, Carlos Roberto, 5,665,390, Cl. 424-465.000.

Sauerbier, Charles E.: *See—*
Lochtefeld, Thomas J.; and Sauerbier, Charles E., 5,664,910, Cl. 405-79.000.

Sauerman, Eric: *See—*
Phillips, Gerald; Sauerman, Eric; Gonzalez, Johnny Davila; and Goldman, Marvin, 5,664,525, Cl. 119-452.000.

Saunders, Jeffrey O.: *See—*
Armistead, David M.; Boger, Joshua S.; Meyers, Harold V.; Saunders, Jeffrey O.; and Tung, Roger D., 5,665,774, Cl. 514-533.000.

Sauter, Herbert; and Willim, Hans-Dieter, to Liebherr-Werk Ehingen GmbH. Mobile crane having a releasable coupling connecting the lower carriage with the upper carriage. 5,664,692, Cl. 212-181.000.

Savage, Dennis J.; Schell, Brian A.; and Brady, Brian K., to Eastman Kodak Company. Imaging element containing poly(3,4-ethylene dioxypyrrole/styrene sulfonate). 5,665,498, Cl. 430-41.000.

Saville, M. Wayne: *See—*
Yarchoan, Robert; Saville, M. Wayne; Tosato, Giovanna; and Taga, Kazuyuki, 5,665,345, Cl. 424-85.200.

Sawa, Kenji: *See—*
Kamada, Shinya; Yamamoto, Koichi; Sawazaki, Tomoo; Shinozuka, Hiroshi; Kurokawa, Kazushi; Teraoka, Takamichi; Hombo, Masakazu; Hirami, Naotaka; Kanda, Yasunori; Aoki, Akinobu; Iwasaki, Tatsuhiko; Kawa, Takeyoshi; and Sawa, Kenji, 5,665,020, Cl. 475-129.000.

Sawada, Takashi: *See—*
Fujii, Hiroshi; Ota, Shuichi; and Sawada, Takashi, 5,666,251, Cl. 360-132.000.
Hikawa, Tetsuo; Takata, Akira; and Sawada, Takashi, 5,666,304, Cl. 365-104.000.

Sawae, Shinya; Miyata, Sadayuki; and Yamane, Takashi, to Fujitsu Limited. Optical waveguide device. 5,666,449, Cl. 385-49.000.

Sawai, Akiyoshi: *See—*
Tomita, Yoshihiro; Sawai, Akiyoshi; and Asai, Katsunori, 5,666,008, Cl. 257-778.000.

Sawai, Kazuhiko: *See—*
Ohtsuka, Torao; Fukaya, Makoto; Tagai, Hideo; Niwa, Shigeo; Sawai, Kazuhiko; and Ohta, Hajime, 5,665,120, Cl. 623-16.000.

Sawamura, Naohito; and Kumazawa, Yoshihiro, to Sumitomo Wiring Systems, Ltd. Wire spacing device. 5,665,936, Cl. 174-32.000.

Sawazaki, Tomoo: *See—*
Kamada, Shinya; Yamamoto, Koichi; Sawazaki, Tomoo; Shinozuka, Hiroshi; Kurokawa, Kazushi; Teraoka, Takamichi; Hombo, Masakazu; Hirami, Naotaka; Kanda, Yasunori; Aoki, Akinobu; Iwasaki, Tatsuhiko; Kawa, Takeyoshi; and Sawa, Kenji, 5,665,020, Cl. 475-129.000.

Sawicki, Steven J.: *See—*
Noble, Philip C.; Hammer, Michael A.; Kashuba, Glen A.; Sawicki, Steven J.; Verhoog, Ben J.; and Eckrote, Richard G., 5,665,091, Cl. 606-85.000.

Saxena, Anil Kumar; and Suzuki, Toshio, to Dow Corning Corporation. Polyisobutylene polymers having acrylic functionality. 5,665,823, Cl. 525-106.000.

Sbalchiero, Federico; Lombardi, Massimo; and Tarchi, Mauro, to Axis USA, Inc. Methods and apparatus for tensioning wire in a winding machine. 5,664,735, Cl. 242-433.300.

SCA Mölnlycke AB: *See—*
Johansson, Dan; and Indrebø, Leidulf, 5,665,191, Cl. 156-161.000.

Scabar, Arnold Lloyd. Fencing wire retainer and a method of constructing wire fences. 5,664,768, Cl. 256-54.000.

Scaringe, Raymond P.: *See—*
Bagchi, Pranab; Scaringe, Raymond P.; and Bosch, H. William, 5,665,331, Cl. 424-9.450.

Schaan, Kerry R. Locking device for a helmet. 5,664,444, Cl. 70-14.000.

Schaede, Johannes Georg; and Fritsche, Thilo, to De La Rue Giori S.A. Stacking board for depositing a stack of sheets, and automatic handling apparatus for stacking boards of this type. 5,664,934, Cl. 414-799.000.

Schaefer, Dietmar: *See—*
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Schaefer, Kristine: *See—*
Anderson, Richard J.; Cloudsdale, Ian S.; Lamoreaux, Robert J.; Schaefer, Kristine; and Harr, Jost, 5,665,673, Cl. 504-130.000.

Schaefer, Kristine J.: *See—*
Anderson, Richard J.; Cloudsdale, Ian S.; Lamoreaux, Robert J.; Schaefer, Kristine J.; and Harr, Jost, 5,665,674, Cl. 504-144.000.

Schaefer, Scott, to Micron Technology, Inc. Synchronous DRAM memory with asynchronous column decode. 5,666,321, Cl. 365-233.500.

Schaeffer, William: *See—*
McGregor, Walter; McJames, William; Schaeffer, William; and Shcherv-insky, Semyon, 5,665,078, Cl. 604-272.000.

Schäfer, Burkhard: *See—*
Vortmeyer, Jens; Grams, Kay Uwe; and Schäfer, Burkhard, 5,664,806, Cl. 280-777.000.

Schaffer, Priscilla A.; and Hardwicke, Mary Ann, to Dana Farber Cancer Institute. Glucocorticoid response elements. 5,665,873, Cl. 536-24.100.

Schaus, John M.: *See—*
Booher, Richard N.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,665,743, Cl. 514-361.000.
Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,665,744, Cl. 514-361.000.
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Stemerick, David M., to Merrell Pharmaceuticals Inc. Farnesyl:protein transferase inhibitors as anticancer agents. 5,665,715, Cl. 514-125.000.

Stenton, Conrad, to Hughes Electronics. Apparatus for aligning a reference reflector with a focal point of an optical. instrument. 5,666,198, Cl. 356-360.000.

Stenzel, Wolfgang, to R. Schmidt GmbH. Headrest for motor-vehicle seat. 5,664,840, Cl. 297-391.000.

Stephens, Donald W.; and Lemmons, Patricia A. Flexible tarpaulin support device. 5,664,824, Cl. 296-100.000.

Stephenson, John R.: *See—*
Foulkes, J. Gordon; Leichtfried, Franz; Pieler, Christian; Stephenson, John R.; and Franco, Robert, 5,665,543, Cl. 435-6.000.

Stephenson, Stanley Ward, III, to Eastman Kodak Company. One-time-use camera with heat disabling mechanism. 5,666,561, Cl. 396-6.000.

Stephenson, Stanley Ward, III; and Seamans, Tom Michael, to Eastman Kodak Company. Cartridge status indicator. 5,666,575, Cl. 396-284.000.

Steur, Frans: *See—*
Szocs, Istvan, 5,664,631, Cl. 169-70.000.

Stevens, James C.: *See—*
Lai, Shih-Yaw; Wilson, John R.; Knight, George W.; and Stevens, James C., 5,665,800, Cl. 524-115.000.

Stevens, John Douglas: *See—*
Moertl, Daniel Frank; Stevens, John Douglas; Van Grinsven, Gene Steven; and Walk, Bruce Marshall, 5,666,560, Cl. 395-888.000.

Stevens, Kenneth V.; and Riley, Paula, to Prescient Partners, L.P. Semi-fitted single piece recliner cover. 5,664,832, Cl. 297-225.000.

Stevens, Rodney W.: *See—*
Kawai, Akiyoshi; and Stevens, Rodney W., 5,665,768, Cl. 514-471.000.

Stewart, John S., to Thomson Consumer Electronics, Inc. Apparatus for decoding video signals encoded in different formats. 5,666,170, Cl. 348-726.000.

Stewart, Malcolm John: *See—*
Shepherd, Neil; and Stewart, Malcolm John, 5,665,829, Cl. 525-332.300.

Stewart, Ray F.: *See—*
Bitler, Steven P.; Stewart, Ray F.; Kamp, David A.; Freelin, Robert G.; and Yoon, Valentine Y., 5,665,822, Cl. 525-92.00C.

Stewart, Todd A.: *See—*
Marchetto, Robert F.; Stewart, Todd A.; and Fawcett, Glenn S., 5,666,378, Cl. 375-222.000.

Stickler, George David: *See—*
Bigham, David Wynn; and Stickler, George David, 5,664,719, Cl. 224-577.000.

Stiebritz, John William, Jr.: *See—*
Lee, Young Hoon; Milkove, Keith Raymond; and Stiebritz, John William, Jr., 5,665,203, Cl. 438-585.000.

Stigall, J. Randall: *See—*
Reifenberger, John E.; Peterson, Robert J.; Stahley, Robert E.; Stigall, J. Randall; Webb, Michael D.; Otten, Geneva G.; and Schmitz, William Joseph, 5,664,703, Cl. 222-207.000.

Stillwagon, James R.: *See—*
Whited, Gary L.; Stillwagon, James R.; and Maxey, Randall A., 5,666,253, Cl. 361-1.000.

Stini, Harald: *See—*
Mühlfeld, Horst; Grimm, Hansjörg; Grynaeus, Peter; Dabisch, Thomas; and Stini, Harald, 5,665,148, Cl. 96-153.000.

Stitz, Albert; Berger, Hans Peter; and Enders, Ulrich, to Barmag AG. Draw process. 5,664,307, Cl. 28-241.000.

Stocchiero, Olimpio. Container for rapid charged storage batteries. 5,665,486, Cl. 429-100.000.

Stoffer, James O.: *See—*
Day, Delbert E.; Stoffer, James O.; and Barr, John M., 5,665,450, Cl. 428-114.000.

Stoker, Edward J., to MCI Corporation. Rotating visual display for video testing. 5,666,152, Cl. 348-14.000.

Stokes, Lewis: *See—*
Taylor, Robert W.; and Stokes, Lewis, 5,665,147, Cl. 96-72.000.

Stoler, Chester: *See—*
Stoler, Kathleen S.; and Stoler, Chester L., 5,664,268, Cl. 5-37.100.

Stoler, Chester L.: *See—*
Stoler, Kathleen S.; and Stoler, Chester L., 5,664,268, Cl. 5-37.100.

Stoler, Kathleen: *See—*
Stoler, Kathleen S.; and Stoler, Chester L., 5,664,268, Cl. 5-37.100.

Stoler, Kathleen S.; and Stoler, Chester L., to Stoler, Chester; and Stoler, Kathleen. Futon frame. 5,664,268, Cl. 5-37.100.

Stoller, Claude. Retainer and hanger for lens containing devices. 5,664,291, Cl. 24-3.300.

Stolper, Daniel. Sealed container for liquids particularly beverages. 5,664,705, Cl. 222-212.000.

Stolyar, Aleksandr: *See—*
Fleming, Philip Joseph; and Stolyar, Aleksandr, 5,666,356, Cl. 370-328.000.

Stonebraker, Kevin M.: *See—*
Chandler, Gregory J.; Stonebraker, Kevin M.; and Vink, Anthony B., 5,666,264, Cl. 361-683.000.

Stoner, Karla Leum; and Slife, Charles W., to Gillette Company, The. Combined two-part reducing agent/humectant shaving system for improved shaving comfort. 5,665,340, Cl. 424-73.000.

Storch, Eric J.: *See—*
Gilbert, Jeremy H.; Hout, David B.; Keohane, Michael P.; Perlow, David K.; Peters, Daniel G.; and Storch, Eric J., 5,666,534, Cl. 395-651.000.

Stortz, James L.: *See—*
Hayes, Donald J.; and Stortz, James L., 5,666,145, Cl. 347-71.000.

Stottsberry, James William: *See—*
Williams, Gregory Ernest; White, James Allen; Dragomir, Nicholas A.; and Stottsberry, James William, 5,664,372, Cl. 49-362.000.

Stoynoff, Richard P., Jr., to Livernois Research & Development Company. Self-dispersing facilitating fluid forming roll. 5,664,450, Cl. 72-44.000.

Straeter, William F.: *See—*
Weder, Donald E.; and Straeter, William F., 5,664,403, Cl. 53-397.000.

Strand, Timothy Carl: *See—*
Imaino, Wayne Isami; Rosen, Hal Jervis; Rubin, Kurt Allan; Strand, Timothy Carl; and Tang, Wade Wai-Chung, 5,666,344, Cl. 369-94.000.

Strat, Askold: *See—*
Bard, Simon; Strat, Askold; and Dvorkis, Paul, 5,665,954, Cl. 235-462.000.

Stratiotis, Gus. Safety system for machine tools. 5,666,010, Cl. 307-328.000.

Stratman, Randy G.: *See—*
McDonald, Thomas K.; Hannah, Gary R.; Stratman, Randy G.; and Jones, Gregory R., 5,664,566, Cl. 128-205.250.

Streeck, Rolf E.: *See—*
Orth, Gérard; Volpers, Christoph; and Streeck, Rolf E., 5,665,535, Cl. 435-5.000.

Strelle, Ilse: *See—*
Lösel, Walter; Roos, Otto; Arndts, Dietrich; Kuhn, Franz Josef; and Strelle, Ilse, 5,665,729, Cl. 514-292.000.

Stroman, David W.: *See—*
Hagenson, Mary Jane; Barr, Kathryn A.; Stroman, David W.; Gaertner, Frank H.; Harpold, Michael M.; and Klein, Ronald D., 5,665,600, Cl. 435-320.100.

Stromquist, Donald M.; and Wathen, Boyd J., to Dyno Nobel Inc. Cast primer and small diameter explosive composition. 5,665,935, Cl. 149-83.000.

Stroupe, Hugh; Sharan, Sujit; and Sandhu, Gurtej S., to Micron Technology, Inc. Process of polishing a semiconductor wafer having an orientation edge discontinuity shape. 5,664,988, Cl. 451-41.000.

Strugala, Michael: *See—*
Buro, Davide; Eitrich, Frank-Thomas; and Strugala, Michael, 5,666,329, Cl. 368-5.000.

Stuart, James R., to Leo One IP, L.L.C. Polar relay system for satellite communication. 5,666,648, Cl. 370-321.000.

Stuart, Thomas A.; and Ye, Zhong, to University of Toledo, The. Battery equalization circuit with ramp converter. 5,666,041, Cl. 320-15.000.

Stuart, Thomas MacKenzie: *See—*
Murray, Bronson; Foley, James Paul; Stuart, Thomas MacKenzie; and Weiss, Fred Manfred, 5,666,128, Cl. 343-878.000.

Stütz, Anton: *See—*
Grassberger, Maximilian; Meingassner, Josef Gottfried; Stütz, Anton; and Stütz, Peter, 5,665,727, Cl. 514-291.000.

Stütz, Peter: *See—*
Grassberger, Maximilian; Meingassner, Josef Gottfried; Stütz, Anton; and Stütz, Peter, 5,665,727, Cl. 514-291.000.

Stutzenberger, Heinz: *See—*
Rembold, Helmut; Dettling, Hubert; and Stutzenberger, Heinz, 5,665,318, Cl. 422-177.000.

Su, Kuan-Cheng: *See—*
Hsue, Chen-Chiu; Shev, Shing-Ren; Su, Kuan-Cheng; and Chung, Chen-Hui, 5,665,995, Cl. 257-390.000.

Subisak, Gregory J.; and Hammond, Douglas Scott, to Holophane Corporation. Internally illuminated sign. 5,664,878, Cl. 362-290.000.

Subramanian, Chitra K.; Perera, Asanga H.; Hayden, James D.; and Iyer, Subramoney V., to Motorola, Inc. Multi-step planarization process using polishing at two different pad pressures. 5,665,202, Cl. 438-692.000.

Sudarshan, Kumar: *See—*
Kumar, Sarkar Ajit; Sudarshan, Kumar; Harsh, Priyadarshi; Rattan, Khanna Sushil; and Ghansham, Dass, 5,665,392, Cl. 424-489.000.

Sugano, Takatoshi: *See—*
Matsuoka, Hiroshi; Kishishita, Keiji; Tsubonuma, Takahiro; and Sugano, Takatoshi, 5,664,540, Cl. 123-254.000.

Suganuma, Hiromitsu: *See—*
Kai, Masayoshi; Sakamoto, Kazuya; Suzuki, Atsushi; Hamazoe, Nobumasa; Mizutani, Hiroshi; and Suganuma, Hiromitsu, 5,664,618, Cl. 164-312.000.

Suganuma, Tomoyuki; and Takeda, Suijin, to Fujitsu Limited. Deadlock suppressing schemes in a raid system. 5,666,511, Cl. 711-114.000.

Suganuma, Yasuo: *See—*
Ikuma, Katsumi; Nagai, Sueji; Ito, Fumio; Miyata, Syoichiro; and Suganuma, Yasuo, 5,664,636, Cl. 180-206.000.

Sugie, Hiroyuki; and Watanabe, Noboru, to Hoshizaki Denki Kabushiki Kaisha. Auger and auger type ice making machine using the auger. 5,664,434, Cl. 62-354.000.

Sugihara, Kunio: *See—*
Hosogoshi, Yasunobu; Maruo, Toshio; Sakata, Yasuo; Morita, Katsumasa; Ibori, Takefumi; Kubota, Harumi; Douzono, Toshio; Nakagawa, Kanemitsu; Sugihara, Kunio; Yoshizawa, Yukio; Aridome, Yoshiaki; and Yamanaka, Shoji, 5,664,686, Cl. 209-405.000.

Sugimori, Masami: *See—*
Takano, Hironori; and Sugimori, Masami, 5,665,918, Cl. 73-662.000.

Sugita, Ryuji; Tohma, Kiyokazu; Ishida, Tatsuaki; and Yoshimoto, Kazunari, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium. 5,665,460, Cl. 428-212.000.

Sugita, Tatsuya; Arimoto, Akira; Mitsuya, Teruaki; Hoshi, Nobuyoshi; Okano, Mamoru; Onose, Atsushi; Tsunoda, Yoshito; Kobayashi, Shinya; Maruo, Seiji; and Takuma, Yasuo, to Hitachi, Ltd. Image forming method and apparatus using energy beam impingement on image forming particles to move the same. 5,666,598, Cl. 399-136.000.

Sugiura, Koichi: *See—*
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomoto, Mitsuru; and Ojima, Heijiro, 5,665,243, Cl. 210-698.000.

Sugiura, Noboru: *See—*
Ito, Takashi; Fukatsu, Katsuaki; Kobayashi, Ryoichi; and Sugiura, Noboru, 5,664,550, Cl. 123-630.000.

Sugiura, Souichi: *See—*
Yamamoto, Tadashi; and Sugiura, Souichi, 5,666,002, Cl. 257-621.000.

Sugiura, Susumu, to Canon Kabushiki Kaisha. Image processing apparatus and method. 5,666,216, Cl. 358-500.000.

Sugiyama, Akihiko; Ishii, Katsushi; Ashikawa, Hidenori; Uesugi, Michika; Ishikawa, Haruo; Wakatsuki, Hitoshi; and Ueda, Kimithuka, to Kabushiki Kaisha Toshiba. Indoor unit for an air-conditioning apparatus. 5,664,428, Cl. 62-259.100.

Sugiyama, Osamu: *See—*
Endo, Takayoshi; and Sugiyama, Osamu, 5,664,974, Cl. 439-884.000.

Sugiyama, Toshihiro: *See—*
Komatsubara, Satoru; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiro; Saitoh, Hiroshi; Takenaka, Eiji; Sugiyama, Toshihiro; Yamanaka, Tetsuo; and Murakami, Eisaku, 5,666,625, Cl. 399-281.000.

Sugiyama, Yasunari: *See—*
Ohmori, Hiroyuki; Yamamoto, Tetsuya; and Sugiyama, Yasunari, 5,666,249, Cl. 360-123.000.

Sugizaki, Yutaka: *See—*
Imai, Takashi; Inoue, Satoshi; Ichimura, Masanori; Sugizaki, Yutaka; Saito, Susumu; Miura, Masaru; Take, Michio; Yamamoto, Yasuo; Fukushima, Koji; and Serizawa, Manabu, 5,665,511, Cl. 430-110.000.

Suh, Jee-Hee: *See—*
Yoo, Sung-Eun; Yi, Kyu-Yang; Lee, Sang-Hee; Kim, Hye-Ryung; Suh, Jee-Hee; Kim, Nak-Jeong; Kim, Seon-Ju; Cha, Ok-Ja; Shin, Young-Ah; Shin, Wha-Sup; Lee, Sung-Hou; Jung, Yi-Sook; Lee, Byung-Ho; Seo, Ho-Won; and Lee, Hye-Suk, 5,665,738, Cl. 514-341.000.

Sukegawa, Yukio; and Matsushima, Tetsuo, to Kabushiki Kaisha Toshiba. Test method and apparatus for testing a protective relay system. 5,666,060, Cl. 324-617.000.

Sukhadia, Ashish M.: *See—*
Hess, Kevin J.; Dreiling, Mark J.; Boudreaux, Edwin, Jr.; and Sukhadia, Ashish M., 5,666,199, Cl. 356-364.000.

Sullivan, James S.; and Ball, Don G., to United States of America, Energy. Jitter compensation circuit. 5,666,385, Cl. 375-296.000.

Sulzbach, Hans-Michael; Steilen, Herbert; and Klahre, Horst, to Machinenfabrik Hennecke GmbH. Method for the continuous production of foam blocks or sheets. 5,665,286, Cl. 264-46.200.

Sulzbach, Timothy Jon, to International Business Machines Corporation. Bus operation circuit using CMOS ratio logic circuits. 5,666,550, Cl. 395-800.230.

Sulzer Medizinaltechnik AG: *See—*
Koller, Hansjörg, 5,665,119, Cl. 623-16.000.

Suman, Michael J.; and Geerlings, Steven L., to Prince Corporation. Vehicle compass circuit. 5,664,335, Cl. 33-356.000.

Sumitomo Chemical Company, Limited: *See—*
Inui, Naoki; Iyama, Hironobu; Tsuta, Kyoko; and Nagasaki, Hideo, 5,665,799, Cl. 524-87.000.
Mukaiyama, Hiroto; and Kihara, Hayato, 5,665,833, Cl. 526-88.000.
Nakaseko, Kimio; Shibata, Hideyuki; Ouchi, Seigo; and Nishikawa, Akira, 5,665,680, Cl. 504-239.000.

Sumitomo Electric Industries, Ltd.: *See—*
Miura, Yoshiki; Matsubara, Hideki; Matsushima, Masato; Seki, Hisashi; and Koukitu, Akinori, 5,665,986, Cl. 257-96.000.
Sano, Hiroaki; Tanaka, Satoshi; and Taguchi, Kinji, 5,664,763, Cl. 254-134.400.

Sumitomo Electric Industries,Ltd.: *See—*

Fujimura, Yasushi; Kuhara, Yoshiki; and Yamabayashi, Naoyuki, 5,666,450, Cl. 385-93.000.
Sumitomo Light Metal Industries, Ltd.: *See—*
Abo, Mitsuo; Tanaka, Yasuyuki; Kumazaki, Hidenori; Sato, Fumihiko; and Wakabayashi, Hiroyuki, 5,664,453, Cl. 72-269.000.
Sumitomo Metal Ceramics Inc.: *See—*
Fukuta, Junzo; Fukaya, Masashi; and Araki, Hideaki, 5,665,459, Cl. 428-209.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Fukumoto, Tetsuhiro, 5,665,184, Cl. 152-209.00R.
Sumitomo Special Metals Co., Ltd.: *See—*
Kaneko, Yuji; and Ishigaki, Naoyuki, 5,666,635, Cl. 419-12.000.
Sumitomo Wiring Systems, Ltd.: *See—*
Maegawa, Akihito; Tanaka, Nobuyoshi; Saka, Yukinori; and Ichida, Kiyofumi, 5,664,966, Cl. 439-595.000.
Sawamura, Naohito; and Kumazawa, Yoshihiro, 5,665,936, Cl. 174-32.000.
Sumiyoshi, Iwao: *See—*
Kawabata, Masami; Sato, Akihiko; and Sumiyoshi, Iwao, 5,665,494, Cl. 430-2.000.
Sumiyoshi, Masayuki: *See—*
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomoto, Mitsuru; and Ojima, Heijiro, 5,665,243, Cl. 210-698.000.
Summerfelt, Scott R., to Texas Instruments Incorporated. Method of forming conductive amorphous-nitride barrier layer for high-dielectric-constant material electrodes. 5,665,628, Cl. 438-3.000.
Summers, James B., Jr.: *See—*
Fesik, Stephen W.; Summers, James B., Jr.; Davidsen, Steven K.; Sheppard, George S.; Steinman, Douglas H.; Carrera, George M., Jr.; Florjancic, Alan; and Holms, James H., 5,665,777, Cl. 514-575.000.
Summers, Robert N., to Magnecomp Corp. Double dimple disk drive suspension. 5,666,241, Cl. 360-104.000.
Sun Microsystems, Inc.: *See—*
Proulx, Richard A., 5,666,368, Cl. 371-27.100.
Sunarrow Co., Ltd.: *See—*
Kenmochi, Yoshio, 5,664,667, Cl. 200-314.000.
Sundet, Douglas C., to Minnesota Mining and Manufacturing Company. Laminate for precise application of graphics to a substrate. 5,665,446, Cl. 428-40.100.
Sundstrand Corporation: *See—*
Ng, Chai-Nam; Dhyanchand, P. John; and Nguyen, Vietson M., 5,666,278, Cl. 363-71.000.
Sunkara, Sai Prasad, to Merrell Pharmaceuticals Inc. Reversal of multi-drug resistance by tetraarylethylenes. 5,665,780, Cl. 514-651.000.
Sunnoqrot, Wael F.: *See—*
Abu Seir, Husni H.; Sunnoqrot, Wael F.; Shuqair, Ma'an M.; and El-Wadi, Bassam M., 5,665,775, Cl. 514-546.000.
Sunx Kabushiki Kaisha: *See—*
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Suresh, Gananathan; Kang, Ki B.; and Kim, Young Il, to Samsung Electronics Inc. Software driver for a system bus. 5,666,485, Cl. 395-185.010.
Susaraba, David A.: *See—*
Rockwood, Charles A.; Ondrla, Jeffrey M.; Susaraba, David A.; and Serbousek, Jon C., 5,665,090, Cl. 606-80.000.
Suslick, Kenneth S.: *See—*
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,382, Cl. 424-450.000.
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,383, Cl. 424-450.000.
Sussman, Jay S. L.; Babbs, Daniel A.; and Shultz, Richard E., to Progressive System Technologies, Inc. Stage assembly for a substrate processing system. 5,664,926, Cl. 414-222.000.
Süssner, Hubert, to Leonhard Kurz GmbH & Co. Embossing foil, in particular a hot embossing foil, preferably for the production of motor vehicle licence plates. 5,665,475, Cl. 428-488.400.
Suter, Ulrich W.: *See—*
Neuenschwander, Peter; Uhlschmid, Georg K.; Suter, Ulrich W.; Ciardelli, Gianluca; Hirt, Thomas; Keiser, Olivier; Kojima, Kazushige; Lendlein, Andreas; and Matter, Sandro, 5,665,831, Cl. 525-415.000.
Sutherland, Brian A. F. S.; Rosenbaum, Stanley Daniel; and Hung, Paul Fong-Yan, to Northern Telecom Limited. Hazard prevention for telephone line interface circuits. 5,666,406, Cl. 379-399.000.
Sutherland, D. Robert: *See—*
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Suto, Fumitaka: *See—*
Hosokawa, Hidehiko; Maeshima, Junichi; and Suto, Fumitaka, 5,665,796, Cl. 523-322.000.
Sutton, Archie W.: *See—*
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Suwa, Kouichi: *See—*
Okano, Keiji; Inoue, Takahiro; Sakurai, Kazushige; Onimura, Tadashi; Suwa, Kouichi; Ojima, Masaki; Sato, Hiroshi; Yamaguchi, Seiji; and Matsumoto, Hideki, 5,666,606, Cl. 399-174.000.
Suwa, Kyoichi: *See—*
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Suzue, Hiroyasu; and Aizawa, Yuichi, to Daiwa Seiko, Inc. Hollow cylindrical member. 5,665,441, Cl. 428-34.700.
Suzuki, Atsushi: *See—*
Kai, Masayoshi; Sakamoto, Kazuya; Suzuki, Atsushi; Hamazne, Nobumasa; Mizutani, Hiroshi; and Suganuma, Hiromitsu, 5,664,618, Cl. 164-312.000.
Suzuki, Hirokazu: *See—*
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Suzuki, Hiroshi; Shinada, Hiroyuki; Kuroda, Katsuhiro, Yajima, Yusuke; Takahashi, Yoshio; Saito, Hideo; and Nakajima, Masato, to Hitachi, Ltd. Charged particle beam apparatus for measuring magnetic field. 5,666,053, Cl. 324-250.000.
Suzuki, Hiroyuki; Shiroishi, Yoshihiro; Hishiyama, Sadao; Ohno, Tomoyuki; Yahisa, Yotsuo; Matsuda, Yoshibumi; Tsumita, Norikazu; Ohura, Masaki; Shirakura, Takaaki; Shige, Noriyuki; and Takagi, Kazumasa, to Hitachi, Ltd. Magnetic recording media for longitudinal recording. 5,665,478, Cl. 428-611.000.
Suzuki Kabushiki Kaisha: *See—*
Mishima, Shuichi; Noda, Atsushi; Shimada, Hidetsugu; Takayanagi, Masashi; and Matsui, Fumio, 5,664,976, Cl. 440-52.000.
Suzuki, Kazuhiro: *See—*
Sato, Seiji; Ishida, Masayoshi; Senda, Kunihiro; Suzuki, Kazuhiro; and Komatubara, Michiro, 5,665,455, Cl. 428-167.000.
Suzuki, Kazuo: *See—*
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Suzuki, Keiichi: *See—*
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Suzuki, Ken-Ichi: *See—*
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Suzuki Metal Ind. Co., Ltd.: *See—*
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Suzuki, Michio: *See—*
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Suzuki, Satoru: *See—*
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Suzuki, Teruhiko: *See—*
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Suzuki, Tomio: *See—*
Tanida, Susumu; Hirayama, Kazutoshi; Suzuki, Tomio; and Hayashikoshi, Masanori, 5,666,317, Cl. 365-201.000.
Suzuki, Toshio: *See—*
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Suzuki, Yasuo, to Ricoh Company, Ltd. Electrophotographic photoconductor. 5,665,500, Cl. 430-59.000.
Suzuki, Yasuo: *See—*
Orimo, Masayuki; Mori, Kinji; Suzuki, Yasuo; Kawano, Katsumi; Takeuchi, Masuyuki; Matsuura, Masayoshi; and Teranishi, Yuko, 5,666,484, Cl. 395-182.160.
Suzuki, Yukio: *See—*
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Suzuki, Yuri: *See—*
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Takeuchi, Masataka; Tokita, Koji; Ueda, Miyuki; Noguchi, Jun; Yashima, Hideo; Tamura, Eri; and Ooga, Kazuhiko, 5,665,490, Cl. 429-192.000.

Tamura, Richard N.: *See*—
Quaranta, Vito; and Tamura, Richard N., 5,665,864, Cl. 530-387.100.

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Komori, Shinji; Takata, Hidehiro; Tamura, Toshiyuki; Asai, Fumiyasu; and Tsubota, Hirono, 5,666,535, Cl. 395-674.000.

Tan, Hong: *See*—
Bracken, Allen Thomas; Rich, Edward L.; Woods, Harold Lin; and Tan, Hong, 5,666,236, Cl. 360-75.000.

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Tsukamoto, Akira; Nishiki, Masayuki; Nabuchi, Koichiro; Yamada, Shin-ichi; Saisu, Tohru; Tomisaki, Takayuki; Tanaka, Manabu; and Nagai, Seiichiro, 5,666,395, Cl. 378-98.400.

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Yoshinaga, Kazuo; Nagase, Yukio; Miyazaki, Hajime; Sakakibara, Teigo; Hashimoto, Yuichi; Kashizaki, Yoshio; Tanaka, Masato; and Tanaka, Mamoru, 5,666,589, Cl. 399-48.000.

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Maegawa, Akihito; Tanaka, Nobuyoshi; Saka, Yukinori; and Ichida, Kiyofumi, 5,664,966, Cl. 439-595.000.

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Sano, Hiroaki; Tanaka, Satoshi; and Taguchi, Kinji, 5,664,763, Cl. 254-134.400.

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Oshima, Katsuhide; and Tanaka, Shigemi, 5,665,172, Cl. 134-40.000.

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Yoshida, Ryoichi; Kosugi, Noriyuki; Yanagi, Eiji; Tanaka, Yoshihiko; Kokeguchi, Akira; Atoh, Tadayuki; and Minami, Yoshihiko, 5,664,805, Cl. 280-743.100.

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Collins, Richard Edward; and Tang, Jian Zheng, 5,664,395, Cl. 52-786.130.

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Imaino, Wayne Isami; Rosen, Hal Jervis; Rubin, Kurt Allan; Strand, Timothy Carl; and Tang, Wade Wai-Chung, 5,666,344, Cl. 369-94.000.

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Izawa, Yosuke; Tani, Masahiro; Okumura, Naoji; Nio, Yutaka; and Sato, Toshiohika, 5,666,165, Cl. 348-445.000.

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Perego, Luciano, 5,664,405, Cl. 53-457.000.

Taraiya, Ajay Kumar: *See*—
Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, 5,665,297, Cl. 264-292.000.

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Gray, Roger M.; and Kockler, Barry C., 5,664,894, Cl. 400-134.000.
Groswith, Charles T., III; Duval, Eugene F.; Gray, Roger M.; Kockler, Barry C.; and Smith, Robert E., 5,665,193, Cl. 156-234.000.

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Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., 5,665,919, Cl. 73-665.000.

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Alderman, Robert J.; and Taylor, James E., 5,664,740, Cl. 242-592.000.

Taylor, Robert W.; and Stokes, Lewis, to BHA Group, Inc. Collector plate for electrostatic precipitator. 5,665,147, Cl. 96-72.000.

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Newman, Gary H.; and Tchen, Sumin, 5,665,951, Cl. 235-375.000.

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Lentini, Peter J.; and Tchinnis, Paul C., 5,665,368, Cl. 424-401.000.

TDK Corporation: *See*—
Fukuno, Akira; Nakamura, Hideki; and Yoneyama, Tetsuhito, 5,665,177, Cl. 148-101.000.

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Gillespie, Gregory S.; and Glad, Thomas J., 5,666,431, Cl. 381-109.000.

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Woyski, William B.; Tauscher, Robert C.; and Cappel, Klaus L., 5,665,919, Cl. 73-665.000.

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Thielens, John B.; Farbstein, Mitchell; Tebbenhoff, Robert; Martin, Clifford L.; and Landau, Francis A., Jr., 5,666,139, Cl. 345-173.000.

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Brimhall, Owen D., 5,665,047, Cl. 494-16.000.

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Dory, Jacques, 5,665,054, Cl. 601-3.000.

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Vallères, Jean-P.; and Vallères, Jean-Guy, 5,664,730, Cl. 237-78.00R.

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Van Den Berg, Zacharias Joseph, 5,665,236, Cl. 210-619.000.

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Nowak, Gregory P.; Tegeler, Alan F.; and Timmons, Tracy L., 5,665,787, Cl. 521-54.000.

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Efland, Taylor R.; Malhi, Satwinder; Smayling, Michael C.; Devore, Joseph A.; Teggatz, Ross E.; and Morton, Alec J., 5,665,991, Cl. 257-335.000.

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Hosoi, Masahiro; Hamano, Hisashi; Saeki, Yasuhiro; and Etchu, Masami, 5,665,454, Cl. 428-141.000.
Sekiya, Masahiko; Horiguchi, Tohru; and Chiba, Kiyoshi, 5,665,468, Cl. 428-332.000.
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Zampetti, George Philip, 5,666,330, Cl. 368-47.000.

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Reasoner, Michael, 5,664,462, Cl. 74-502.400.

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Weber, Jean-Pierre, 5,666,374, Cl. 372-20.000.

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Thornberg, Carl Magnus; Andersson, Magnus; and Grimlund, Olle Erik, 5,666,348, Cl. 370-230.000.

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Turcotte, Eric; and Brunner, Richard, 5,666,650, Cl. 370-329.000.

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Einsel, Robert; Göken, Klaus; and Gessler, Hans-Jörg, 5,666,660, Cl. 455-45.000.

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Gehret, Michael J.; and Chang, Frank N., 5,665,370, Cl. 424-413.000.

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Karageorgiou, Theodore G.; Hanwell, Gary W.; Caldwell, David L.; Purvis, Jewell D.; Walker, Jerry M.; Banks, Freddie L.; Eatmon, Charles E.; Ilg, Otto M.; Carnes, Eugene; Hucks, James A.; Coker, James F.; Holzer, Carl R.; Emery, John E., II; Pendley, David M.; Pomeroy, Dennis W.; Arnold, Richard; Osborne, Billy K.; Earley, Philip T.; Temples, John M.; Blackston, Larry D.; and Toney, Thomas M., 5,665,293, Cl. 264-103.000.

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Johnson, D. Lynn; Dravid, Vinayak P.; Teng, Mao-Hua; Host, Jonathon J.; Hwang, Jinha; and Elliott, Brian R., 5,665,277, Cl. 264-6.000.

Tenney, Dennis: *See—*
Thomas, William; Gustafson, David W.; Tenney, Dennis; and Darata, Paul, 5,666,645, Cl. 455-6.100.

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Terada, Atsusuke; Wachi, Kazuyuki; Miyazawa, Hachio; Iizuka, Yoshio; Hasegawa, Kazuo; and Tabata, Keiichi, to Sankyo Company, Limited. Use of imidazopyrazole derivatives as analgesics and anti-inflammatory agents. 5,665,752, Cl. 514-393.000.

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Kamada, Shinya; Yamamoto, Koichi; Sawazaki, Tomoo; Shinozuka, Hiroshi; Kurokawa, Kazushi; Teraoka, Takamichi; Hombo, Masakazu; Hirami, Naotaka; Kanda, Yasunori; Aoki, Akinobu; Iwasaki, Tatsuhiko; Kawa, Takeyoshi; and Sawa, Kenji, 5,665,020, Cl. 475-129.000.

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Tesny, Neal: *See—*
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Teva, Daniel: *See—*
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Texas Instruments Incorporated: *See—*
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Dreiske, Peter D.; Turner, Arthur M.; and Forehand, David I., 5,665,998, Cl. 257-446.000.
Efland, Taylor R.; Malhi, Satwinder; Smayling, Michael C.; Devore, Joseph A.; Teggatz, Ross E.; and Morton, Alec J., 5,665,991, Cl. 257-335.000.
Gafter, Neal M., 5,666,296, Cl. 364-578.000.
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Marshall, Robert D., Jr., 5,666,508, Cl. 711-201.000.
Milhaupt, Robert W.; Cen, Ling; and Bridgwater, James, 5,666,497, Cl. 395-309.000.
Rao, Kashi; and Sarwal, Piyush, 5,666,441, Cl. 382-203.000.
Summerfelt, Scott R., 5,665,628, Cl. 438-3.000.
Vickers, Kenneth G., 5,666,024, Cl. 313-494.000.
Weaver, Douglas J.; and Randall, John N., 5,665,997, Cl. 257-414.000.
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Teyssie, Philippe: *See—*
Vankan, Robert; Degee, Philippe; Jerome, Robert; and Teyssie, Philippe, 5,665,815, Cl. 524-600.000.

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Thai, Lam H., to Borland International, Inc. System and methods for optimizing database queries. 5,666,528, Cl. 395-613.000.

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Thal, Raymond. Knotless suture anchor assembly. 5,665,112, Cl. 606-232.000.

Thaman, Lauren Ann: *See—*
Carballada, Jose Antonio; and Thaman, Lauren Ann, 5,665,337, Cl. 424-70.120.

Thang, San Hoa: *See—*
Rizzardo, Ezio; Evans, Richard Alexander; Moad, Graeme; and Thang, San Hoa, 5,665,839, Cl. 526-257.000.

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Thermo Instrument Systems Inc.: *See—*
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Junker, Warren R.; Burtner, Lee W.; Peck, Michael G.; Makar, Richard J.; and Chizmar, David A., 5,666,051, Cl. 324-209.000.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track renewal machgine. 5,664,498, Cl. 104-6.000.

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Thierry, Alain: *See—*
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Prinssen, Alphons Arnoldus Johannes Antonius; and Thissen, Karel Antoon, 5,665,225, Cl. 210-141.000.

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Thomas, Brian; and Duffy, Hugh, to Raychem Corporation. Voltage sensing overcurrent protection circuit. 5,666,254, Cl. 361-8.000.

Thomas, Dennis A., to Procter & Gamble Company, The. Method for manufacturing refastenable fastening systems including a female loop fastening component and the products produced therefrom. 5,664,302, Cl. 24-452.000.

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Naumann, Hans J.; Robotta, Reinhard; Schröter, Gunter; and Thomas, Volker, 5,664,469, Cl. 82-111.000.

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Stewart, John S., 5,666,170, Cl. 348-726.000.
Tults, Juri, 5,666,167, Cl. 348-465.000.

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Tickleford Limited: *See—*
Simpson, Sydney William; and Clare, Alan, 5,664,521, Cl. 119-14.020.

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Togashi, Seigo, to Citizen Watch Co., Ltd. Active matrix liquid-crystal display device with two-terminal switching elements and method of driving the same. 5,666,131, Cl. 345-91.000.

Togo Seisakusho Corp.: *See—*
Izawa, Yoshinobu; Kondo, Satoru; and Yarita, Hiroshi, 5,665,179, Cl. 148-226.000.

Tohkai Ceramic Material Co., Ltd.: *See—*
Ohtsuka, Torao; Fukaya, Makoto; Tagai, Hideo; Niwa, Shigeo; Sawai, Kazuhiko; and Ohta, Hajime, 5,665,120, Cl. 623-16.000.

Tohma, Kiyokazu: *See—*
Sugita, Ryuji; Tohma, Kiyokazu; Ishida, Tatsuaki; and Yoshimoto, Kazunari, 5,665,460, Cl. 428-212.000.

Tokai Industrial Sewing Machine Co., Ltd.: *See—*
Tajima, Ikuo; Suzuki, Satoru; and Mizuguchi, Yoichi, 5,664,511, Cl. 112-292.000.

Tokai Rubber Industries, Ltd.: *See—*
Kawasaki, Minoru, 5,664,608, Cl. 138-139.000.

Tokida, Akihiko: *See—*
Prass, Werner; Stehlin, Thomas; Liu, Yuan; Ogura, Shizuo; Yamamoto, Tetsu; Tokida, Akihiko; and Motosugi, Kenji, 5,665,844, Cl. 526-328.000.

Tokimatsu, Hiroyuki; and Haneda, Satoshi, to Konica Corporation. Charging unit. 5,666,605, Cl. 399-173.000.

Tokita, Koji: *See—*
Takeuchi, Masataka; Tokita, Koji; Ueda, Miyuki; Noguchi, Jun; Yashima, Hideo; Tamura, Eri; and Ooga, Kazuhiko, 5,665,490, Cl. 429-192.000.

Tokumitsu, Jun: *See—*
Sekine, Masayoshi; Tokumitsu, Jun; Kondo, Toshiaki; Takahashi, Koji; Harigaya, Isao; and Kawamata, Naoki, 5,666,158, Cl. 348-209.000.

Tokura, Yoshinori: *See—*
Tomioka, Yasuhide; and Tokura, Yoshinori, 5,665,664, Cl. 501-152.000.

Tokuyama Corporation: *See—*
Okoshi, Tokio; Kato, Yuka; Okoshi, Hideki; Miyahara, Kenichiro; and Maeda, Masakatsu, 5,665,473, Cl. 428-457.000.

Tokuyama, Mikio; Takeuchi, Yoshinori; Ebihara, Susumu; Mori, Kenji; Nagaike, Sadanori; Hirai, Hiromu; and Higashiya, Teruyoshi, to Hitachi, Ltd. Storage device capable of using both optical and magnetic disk units for storing information data. 5,666,334, Cl. 369-14.000.

Tokuyama, Mitsuru: *See—*
Ohashi, Kunio; Tokuyama, Mitsuru; Kinashi, Hiroshi; Nozomi, Mamoru; Umehara, Tadashi; and Asari, Toshiya, 5,665,502, Cl. 430-62.000.

Tokyo Electoron Limited: *See—*
Kawada, Nobuo; Kano, Shoji; Hagiwara, Koji; Arai, Nobuo; Arami, Junichi; and Ishikawa, Kenji, 5,665,260, Cl. 219-464.000.

Tokyo Electron Kabushiki Kaisha: *See—*
Deguchi, Yoichi; Kawakami, Satoru; Koyama, Shiro; and Ishikawa, Kenji, 5,665,167, Cl. 118-728.000.

Tokyo Electron Kyushu Limited: *See—*
Fujimoto, Akihiro; Takekuma, Takashi; and Sonobe, Kiyomi, 5,665,200, Cl. 438-694.000.
Mokuo, Shori, 5,666,381, Cl. 375-259.000.

Tokyo Electron Limited: *See—*
Deguchi, Youichi; Kawakami, Satoru; Ueda, Yoichi; and Komino, Mitsuaki, 5,665,166, Cl. 118-723.00E.
Fujimoto, Akihiro; Takekuma, Takashi; and Sonobe, Kiyomi, 5,665,200, Cl. 438-694.000.
Mokuo, Shori, 5,666,381, Cl. 375-259.000.

Tokyo Electron Power Company Incorporated: *See—*
Inokuchi, Haruhisa; Kawakami, Noriko; Suzuki, Hirokazu; Suzuki, Ken-Ichi; and Sakamoto, Koji, 5,666,275, Cl. 363-35.000.

Tomajko, Leopold G.: *See—*
Johnson, Robert D.; and Tomajko, Leopold G., 5,664,880, Cl. 364-410.000.

Tomassini, Philip H., to Abbottstown Industries, Inc. Mixer with alternating sized flow passages. 5,664,883, Cl. 366-325.930.

Tomat, Ferruccio; and Canzutti, Roberto, to Danieli & C. Officine Meccaniche SpA. Rolling roll with rolling rings. 5,665,044, Cl. 492-47.000.

Tombs, Thomas N.: *See—*
Rimai, Donald S.; Tombs, Thomas N.; Benwood, Bruce R.; and Quesnel, David J., 5,666,193, Cl. 399-308.000.

Tomer, John D., IV: *See—*
Shutske, Gregory M.; Freed, Brian S.; Tomer, John D., IV; and Hamer, R. Richard L., 5,665,756, Cl. 514-399.000.

Tomioka, Yasuhide; and Tokura, Yoshinori, to Japan as represented by Director General of Agency of Industrial Science and Technology; and Angstrom Technology Partnership. Grain boundary-free crystalline body of manganese-based composite oxide and method for the preparation thereof. 5,665,664, Cl. 501-152.000.

Tomisaki, Takayuki: *See—*
Tsukamoto, Akira; Nishiki, Masayuki; Nabuchi, Koichiro; Yamada, Shin-ichi; Saisu, Tohru; Tomisaki, Takayuki; Tanaka, Manabu; and Nagai, Seiichiro, 5,666,395, Cl. 378-98.400.

Tomisawa, Naoki, to Unisia Jecs Corporation. Apparatus and method for control of an internal combustion engine. 5,664,544, Cl. 123-421.000.

Tomita, Taminori: *See—*
Kohiyama, Tomohisa; Nakata, Junji; Tomokane, Takeo; Kawahara, Tetsuya; Yamagishi, Masami; Tomita, Taminori; Yamada, Takahiro; and Kamo, Munekazu, 5,666,161, Cl. 348-408.000.

Tomita, Yasuhiro: *See—*
Kato, Masayoshi; Tomita, Yasuhiro; and Ishikawa, Masayoshi, 5,666,603, Cl. 399-168.000.

Tomita, Yoshihiro; Sawai, Akiyoshi; and Asai, Katsunori, to Mitsubishi Denki Kabushiki Kaisha; and Ryoden Semiconductor System Engineering Corporation. Flip chip semiconductor device. 5,666,008, Cl. 257-778.000.

Tomiya, Shigetaka: *See—*
Ishibashi, Akira; Matsumoto, Satoshi; Nagai, Masaharu; Ito, Satoshi; Tomiya, Shigetaka; Nakano, Kazushi; and Morita, Etsuo, 5,665,977, Cl. 257-17.000.

Tomiyama, Hideki; and Kabutomori, Masuo, to Fuji Photo Film Co., Ltd. Nonaqueous secondary battery. 5,665,491, Cl. 429-194.000.

Tomoegawa Paper Co., LTD.: *See—*
Hattori, Kazuyoshi, 5,665,510, Cl. 430-109.000.

Tomokane, Takeo: *See—*
Kohiyama, Tomohisa; Nakata, Junji; Tomokane, Takeo; Kawahara, Tetsuya; Yamagishi, Masami; Tomita, Taminori; Yamada, Takahiro; and Kamo, Munekazu, 5,666,161, Cl. 348-408.000.

Tomoto, Mitsuru: *See—*
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomoto, Mitsuru; and Ojima, Heijiro, 5,665,243, Cl. 210-698.000.

Tompkins, Mary B.: *See—*
Tompkins, Wayne A. F.; and Tompkins, Mary B., 5,665,592, Cl. 435-325.000.

Tompkins, Nicholas J.; Murphy, Tim T.; and Furukawa, Andrew T., to Fresh King LLC. Melon peeler apparatus. 5,664,490, Cl. 99-541.000.

Tompkins, Wayne A. F.; and Tompkins, Mary B., to North Carolina State University. Feline immunodeficiency virus isolate NCSU$_1$. 5,665,592, Cl. 435-325.000.

Tomuro, Jinichi: *See—*

Miyamoto, Tomohiko; Yoshii, Yasuo; Inada, Tooru; Tomuro, Jinichi; Hokari, Nobuyuki; and Oki, Katsuya, 5,664,505, Cl. 110-347.000.
Tonen Corporation: *See*—
Takayasu, Jun; Murakami, Kazuyuki; Tsushima, Eiki; and Izumi, Takayuki, 5,665,464, Cl. 428-312.200.
Toney, Thomas M.: *See*—
Karageorgiou, Theodore G.; Hanwell, Gary W.; Caldwell, David L.; Purvis, Jewell D.; Walker, Jerry M.; Banks, Freddie L.; Eatmon, Charles E.; Ilg, Otto M.; Carnes, Eugene; Hucks, James A.; Coker, James F.; Holzer, Carl R.; Emery, John E., II; Pendley, David M.; Pomeroy, Dennis W.; Arnold, Richard; Osborne, Billy K.; Earley, Philip T.; Temples, John M.; Blackston, Larry D.; and Toney, Thomas M., 5,665,293, Cl. 264-103.000.
Tonsager, Wayne. Adjustable cove trowel. 5,664,280, Cl. 15-235.700.
Toole, John M.: *See*—
Doherty, Kenneth W.; Toole, John M.; and Millard, Robert C., 5,665,909, Cl. 73-170.340.
Top Fortune Ltd.: *See*—
Cheng, Ying-Hsiung, 5,664,267, Cl. 5-99.100.
Toppan Printing Co., Ltd: *See*—
Sato, Tohru; Yoshida, Yoshimi; and Watanabe, Fumio, 5,665,457, Cl. 428-195.000.
Toray Industries, Inc.: *See*—
Kashio, Shigetora; Kosuga, Toju; and Takahashi, Kuniyuki, 5,665,524, Cl. 430-300.000.
Torcan Chemical Ltd.: *See*—
Lu, Yee-Fung; So, Raymond; Slemon, Clarke; Oudenes, Jan; and Ngooi, Teng-Ko, 5,665,884, Cl. 546-220.000.
Torii, Chieko: *See*—
Hatagishi, Yuji; and Torii, Chieko, 5,664,967, Cl. 439-596.000.
Torikai, Masahiro, to NEC Corporation. Semiconductor photo-device having oblique top surface of stem for eliminating stray light. 5,665,982, Cl. 257-81.000.
Torkkeli, Helena: *See*—
Torkkeli, Tuula; Joutsjoki, Vesa; Torkkeli, Helena; Vainio, Arja; Fagerström, Richard; Aho, Sirpa; Korhola, Matti; and Nevalainen, Helena, 5,665,585, Cl. 435-203.000.
Torkkeli, Tuula; Joutsjoki, Vesa; Torkkeli, Helena; Vainio, Arja; Fagerström, Richard; Aho, Sirpa; Korhola, Matti; and Nevalainen, Helena, to Alko-Yhiot Oy. Recombinant production of glucoamylase P in trichoderma. 5,665,585, Cl. 435-203.000.
Tormaschy, Kelly: *See*—
Brinen, Jeffrey Lawrence; Speca, Anthony Nicholas; Tormaschy, Kelly; and Russell, Kathryn Ann, 5,665,665, Cl. 502-9.000.
Toronto Hospital Research Institute, The: *See*—
Murray, Lesley; and Sutherland, D. Robert, 5,665,557, Cl. 435-7.240.
Torres, Luc: *See*—
Aznar, Ange; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Rigal, Dominique; Torres, Luc; and Verplanken, Fabrice, 5,666,361, Cl. 370-392.000.
Torti, Francesca: *See*—
Caruso, Marinella; Colombo, Anna Luisa; Garofano, Luisa; Torti, Francesca; and Zanella, Guiseppe, 5,665,564, Cl. 435-69.100.
Tosato, Giovanna: *See*—
Yarchoan, Robert; Saville, M. Wayne; Tosato, Giovanna; and Taga, Kazuyuki, 5,665,345, Cl. 424-85.200.
Tosoh Corporation: *See*—
Mori, Toshiyuki; Kuramochi, Hideto; and Yamamura, Hiroshi, 5,665,482, Cl. 429-33.000.
Orii, Koichi; Hara, Yukinobu; Akiyama, Tomoyuki; Tsukuma, Koji; and Kikuchi, Yoshikazu, 5,665,133, Cl. 65-17.600.
Tanaka, Toshihiko; and Minamide, Hiroshi, 5,665,836, Cl. 526-210.000.
Toth, Tibor E., to ESAB Group, Inc., The. Cutting or welding system having phase loss detector and method of detecting phase loss for same. 5,665,256, Cl. 219-130.210.
Towler, Fred J.: *See*—
Lamphier, Steven H.; Pilo, Harold; Schneiderwind, Michael J.; and Towler, Fred J., 5,666,078, Cl. 327-108.000.
Townsend Engineering Company: *See*—
Smith, David W., 5,664,488, Cl. 99-487.000.
Townsend, Leroy B.; and Drach, John C., to University of Michigan, The Regents of the. Polysubstituted benzimidazole nucleosides as antiviral agents. 5,665,709, Cl. 514-43.000.
Townsley, David B.; and Blanc, James J., to Apple Computer, Inc. Circuit offering sequential discharge and simultaneous charge for a multiple battery system and method for charging multiple batteries. 5,666,006, Cl. 307-66.000.
Toya, Kenzo: *See*—
Inagaki, Sanji; Tsuge, Shoichi; Sako, Mineyuki; Toya, Kenzo; and Akazawa, Takashi, 5,665,508, Cl. 430-108.000.
Toyama, Nobuaki, to Fuji Photo Optical Co. Ltd. Three-group zoom lens. 5,666,232, Cl. 359-689.000.
Toyo Denki Seizo Kabushiki Kaisha: *See*—
Muraoka, Kimihiro; Ohtsubo, Yoshinobu; Higuchi, Toshio; Iguchi, Makoto; and Tamamushi, Takashige, 5,665,987, Cl. 257-133.000.
Toyo Ink Manufacturing Co. Ltd.: *See*—
Sato, Tohru; Yoshida, Yoshimi; and Watanabe, Fumio, 5,665,457, Cl. 428-195.000.
Toyoda Boshoku Corporation: *See*—
Kume, Masato; and Oshima, Kiyoshi, 5,664,295, Cl. 24-20.00R.
Toyokura, Yoichi: *See*—
Akashi, Masamichi; Nagata, Satoshi; Murakami, Yutaka; Toyokura, Yoichi; Kanakubo, Yukio; Takahashi, Hiroharu; and Kashiwazaki, Masami, 5,666,584, Cl. 399-9.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Abe, Naoki; Mizuno, Koji; Sumiyoshi, Masayuki; Murakami, Katsuya; Murayama, Kojiro; Sugiura, Koichi; Kawahara, Fumio; Tomoto, Mitsuru; and Ojima, Heijiro, 5,665,243, Cl. 210-698.000.
Fukui, Mitsuhiro; and Ishihara, Fuminari, 5,666,109, Cl. 340-905.000.
Izutani, Takahide; Onaka, Hidemi; and Morita, Koji, 5,664,548, Cl. 123-571.000.
Kato, Senji; Yasumura, Atsushi; Ohkawa, Nobuhisa; and Naganawa, Tadahisa, 5,664,528, Cl. 123-90.150.
Kato, Senji; Yasumura, Atsushi; Ohkawa, Nobuhisa; and Naganawa, Tadahisa, 5,664,529, Cl. 123-90.150.
Oba, Hidehiro; Fukumura, Kagenori; Hojo, Yasuo; Tabata, Atsushi; Kimura, Hiromichi; Kaigawa, Masato; Ando, Masahiko; Fukatsu, Akira; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; and Tsukamoto, Kazumasa, 5,665,027, Cl. 477-109.000.
Tsukada, Kouji; Nishigaki, Hidekazu; Ikeda, Yasuaki; Sakuma, Shigeru; Ishiyama, Shin-ichi; Matsuoka, Fumio; Kanno, Yoshihisa; and Hayashi, Shigeki, 5,665,922, Cl. 73-849.000.
Tran, Dan Trong: *See*—
White, Theodore Curt; Sheth, Jayesh Vrajlal; Nguyen, Kha; and Tran, Dan Trong, 5,666,515, Cl. 711-152.000.
Tran, Lekhanh O.: *See*—
Young, Steven D.; Britcher, Susan F.; Payne, Linda S.; Tran, Lekhanh O.; and Lumma, William C., Jr., 5,665,720, Cl. 514-230.500.
Trapani, Giorgio B.: *See*—
Bennett, Stewart; Cael, John J.; Kadaba, Narendra S.; and Trapani, Giorgio B., 5,666,223, Cl. 359-490.000.
Traylor, David W.: *See*—
Ryland, James R.; Matthews, Maura-Ann H.; Ernst, Ulrich P.; Houk, Daniel E.; Traylor, David W.; and Williams, Lee R., 5,665,869, Cl. 530-412.000.
Tredegar Industries, Inc.: *See*—
Chang, Peter I.; and Ray, Carl D., 5,665,824, Cl. 525-185.000.
Tribble, Gerald D.: *See*—
Buntin, Roy E.; Tribble, Gerald D.; and Jarvie, Bruce J., 5,664,885, Cl. 374-183.000.
Tripac International, Inc.: *See*—
O'Brien, Stephen W., 5,664,432, Cl. 62-298.000.
Tripier, Bernard: *See*—
Gautier, Jean Pierre; Verbo, Ulysse; Perez Revilla, Miguel; and Tripier, Bernard, 5,664,475, Cl. 91-369.100.
Trippel, Christine G.: *See*—
Bussmann, Stephan A.; Ruggiero, Joseph E.; and Trippel, Christine G., 5,665,215, Cl. 204-403.000.
Trisnadi, Jahja I.: *See*—
Lee, Chung J.; and Trisnadi, Jahja I., 5,665,791, Cl. 522-25.000.
Tristrata Technology, Inc.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 5,665,776, Cl. 514-557.000.
Tropsha, Yelena G. Blood collection tube assembly. 5,665,280, Cl. 264-483.000.
Troyanovsky, Boris, to Hewlett-Packard Company. Method for simulating a circuit. 5,666,367, Cl. 371-22.100.
Truong, Tuong Kien, to Boeing Company, The. Self-monitoring optical encoder for wavelength division multiplexing optical sensors. 5,665,974, Cl. 250-555.000.
Trustees of Boston University: *See*—
Sonenshein, Gail E.; Lawrence, Roger; and Bellas, Robert E., 5,665,591, Cl. 435-375.000.
Trustees of Columbia University in the City of New York, The: *See*—
Ross, Kenneth A., 5,666,525, Cl. 395-602.000.
Trützschler GmbH & Co. KG: *See*—
Leifeld, Ferdinand, 5,664,398, Cl. 53-118.000.
TRW Inc.: *See*—
Sangret, Henry C., 5,664,416, Cl. 60-327.000.
TRW Occupant Restraint Systems GmbH: *See*—
Böhmler, Klaus, 5,664,807, Cl. 280-805.000.
TRW Vehicle Safety Systems Inc.: *See*—
Saccone, Paul T., 5,664,804, Cl. 280-737.000.
Tsai, Chin-Fu; and Chen, Kuo-Kun, to Tsai, Chin-Fu. Sloped wall type heat radiating member for chip. 5,664,624, Cl. 165-80.300.
Tsang, Ching Hwa: *See*—
Chen, Mao-Min; Fontana, Robert Edward; Krounbi, Mohamad Towfik; Kung, Kenneth Ting-Yuan; Lee, James Hsi-Tang; Lo, Jyh-Shiliey Jerry; Tsang, Ching Hwa; and Wang, Po-Kang, 5,664,316, Cl. 29-603.080.
Tseng, Chuen-Jong, to Shin Yeh Enterprise Co., Ltd. Height-adjustable armrest unit for a chair. 5,664,842, Cl. 297-411.360.
Tseng, Hans. Tool fixing mechanism. 5,664,792, Cl. 279-77.000.
Tseng, Hsien-Chang. Looper driving assembly for a sewing machine. 5,664,509, Cl. 112-200.000.
Tseng, Tsai-Wie: *See*—
Chang, Shinn-Jen; Sheen, Yuung-Ching; Chang, Rong-Shuh; Tseng, Tsai-Wie; and Lin, Jen-Lien, 5,665,801, Cl. 524-125.000.
Tsubomatsu, Yoshiaki: *See*—
Fukutomi, Naoki; Nakayama, Hajime; Tsubomatsu, Yoshiaki; Kaitou, Kouichi; Yoshidomi, Yasunobu; and Takahashi, Yoshihiro, 5,664,325, Cl. 29-848.000.
Tsubonuma, Takahiro: *See*—

Matsuoka, Hiroshi; Kishishita, Keiji; Tsubonuma, Takahiro; and Sugano, Takatoshi, 5,664,540, Cl. 123-254.000.
Tsubota, Hirono: *See*—
Komori, Shinji; Takata, Hidehiro; Tamura, Toshiyuki; Asai, Fumiyasu; and Tsubota, Hirono, 5,666,535, Cl. 395-674.000.
Tsuchikawa, Koji: *See*—
Teraguchi, Taiji; Tsuchikawa, Koji; and Ikuta, Yuzo, 5,665,419, Cl. 426-656.000.
Tsuchiya, Masayuki; Fujise, Hiroshi; and Teramoto, Masato, to Hitachi, Ltd.; and Hitachi Software Engineering Co., Ltd. Method and system for processing a document transmitted via facsimile in an initially input form stored in a knowledge base. 5,666,549, Cl. 395-761.000.
Tsuchiya, Tomonobu: *See*—
Aoki, Masahiro; Ido, Tatemi; Tsutsui, Takayuki; Uomi, Kazuhisa; Tsuchiya, Tomonobu; Okai, Makoto; and Nakamura, Atsushi, 5,666,455, Cl. 385-131.000.
Tsuda, Shigeo: *See*—
Tsunoda, Sei; Kobayashi, Toshio; Tsuda, Shigeo; Hayama, Kikuo; and Yamada, Hiromi, 5,665,503, Cl. 430-66.000.
Tsuge, Shoichi: *See*—
Inagaki, Sanji; Tsuge, Shoichi; Sako, Mineyuki; Toya, Kenzo; and Akazawa, Takashi, 5,665,508, Cl. 430-108.000.
Tsuji, Kazuto: *See*—
Kasai, Junichi; Tsuji, Kazuto; Taniguchi, Norio; Mashiko, Takashi; Sakuma, Masao; Saigo, Yukio; Yoneda, Yoshiyuki; and Takenaka, Masashi, 5,666,064, Cl. 324-755.000.
Tsuji, Kenji; Serita, Yasuaki; Kido, Toshihito; and Okada, Hiroyuki, to Minolta Co., Ltd. Camera. 5,666,572, Cl. 396-207.000.
Tsuji, Masanori; and Kashiyama, Motohisa, to Yazaki Corporation. Connector housing with lock. 5,664,961, Cl. 439-358.000.
Tsujii, Masahiko: *See*—
Urawa, Yoshio; Shimotani, Akihiko; Kanai, Takeo; and Tsujii, Masahiko, 5,665,888, Cl. 548-194.000.
Tsukada, Kouji; Nishigaki, Hidekazu; Ikeda, Yasuaki; Sakuma, Shigeru; Ishiyama, Shin-ichi; Matsuoka, Fumio; Kanno, Yoshihisa; and Hayashi, Shigeki, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Toyota Jidosha Kabushiki Kaisha. Bending strain measurement apparatus for an abdomen of an anthropomorphic dummy and abdominal injury presumption apparatus using the same. 5,665,922, Cl. 73-849.000.
Tsukada, Yoji; and Ohta, Yasuhiro, to Marukin Shoyu Co., Ltd. Method for preparing N-acetylneuraminic acid. 5,665,574, Cl. 435-105.000.
Tsukamoto, Akira; Nishiki, Masayuki; Nabuchi, Koichiro; Yamada, Shin-ichi; Saisu, Tohru; Tomisaki, Takayuki; Tanaka, Manabu; and Nagai, Seiichiro, to Kabushiki Kaisha Toshiba. X-ray diagnostic apparatus. 5,666,395, Cl. 378-98.400.
Tsukamoto, Hironori: *See*—
Uchida, Kihachiro; Tsukamoto, Hironori; and Nitta, Kazuto, 5,664,870, Cl. 362-61.000.
Tsukamoto, Kazumasa: *See*—
Oba, Hidehiro; Fukumura, Kagenori; Hojo, Yasuo; Tahata, Atsushi; Kimura, Hiromichi; Kaigawa, Masato; Ando, Masahiko; Fukatsu, Akira; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; and Tsukamoto, Kazumasa, 5,665,027, Cl. 477-109.000.
Tsukamoto, Takeo: *See*—
Yoshino, Mie; Obu, Makoto; Tsukamoto, Takeo; Miyakawa, Seiichi; Takeda, Yusuke; and Hiramatsu, Masami, 5,666,616, Cl. 399-240.000.
Tsukase, Masaaki: *See*—
Ohkawa, Atsuhiro; Mikoshiba, Hisashi; Tsukase, Masaaki; Ishiwata, Yasuhiro; and Naruse, Hideaki, 5,665,529, Cl. 430-562.000.
Tsukude, Masaki; and Arimoto, Kazutami, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having a redundancy function suppressible of leakage current from a defective memory cell. 5,666,315, Cl. 365-200.000.
Tsukuma, Koji: *See*—
Orii, Koichi; Hara, Yukinobu; Akiyama, Tomoyuki; Tsukuma, Koji; and Kikuchi, Yoshikazu, 5,665,133, Cl. 65-17.600.
Tsumita, Norikazu: *See*—
Suzuki, Hiroyuki; Shiroishi, Yoshihiro; Hishiyama, Sadao; Ohno, Tomoyuki; Yahisa, Yotsuo; Matsuda, Yoshibumi; Tsumita, Norikazu; Ohura, Masaki; Shirakura, Takaaki; Shige, Noriyuki; and Takagi, Kazumasa, 5,665,478, Cl. 428-611.000.
Tsunoda, Sei; Kobayashi, Toshio; Tsuda, Shigeo; Hayama, Kikuo; and Yamada, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Positive charge type organic photoconductive layer. 5,665,503, Cl. 430-66.000.
Tsunoda, Yoshito: *See*—
Sugita, Tatsuya; Arimoto, Akira; Mitsuya, Teruaki; Hoshi, Nobuyoshi; Okano, Mamoru; Onose, Atsushi; Tsunoda, Yoshito; Kobayashi, Shinya; Maruo, Seiji; and Takuma, Yasuo, 5,666,598, Cl. 399-136.000.
Tsuruoka, Yoshiyasu, to Fujitsu Limited. High-frequency coupler. 5,666,090, Cl. 333-116.000.
Tsurushima, Katsuaki: *See*—
Yoshida, Tadao; and Tsurushima, Katsuaki, 5,666,347, Cl. 369-282.000.
Tsuruya, Takaaki: *See*—
Uchiyama, Akihiko; Fujii, Haruo; Sasame, Hiroshi; Kobayashi, Tatsuya; Kobayashi, Tetsuya; Enomoto, Naoki; Saito, Yoshiro; Maebashi, Yoichiro; and Tsuruya, Takaaki, 5,666,588, Cl. 399-44.000.
Tsushima, Eiki: *See*—
Takayasu, Jun; Murakami, Kazuyuki; Tsushima, Eiki; and Izumi, Takayuki, 5,665,464, Cl. 428-312.200.
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Ward, Ian MacMillan; Craggs, Gordon; Selwood, Alan; and Taraiya, Ajay Kumar, to British Technolog Group Limited. Tubular materials. 5,665,297, Cl. 264-292.000.
Ward, John Frederick, to Canplas Industries, Ltd. Exterior building product device. 5,664,375, Cl. 52-97.000.
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Warner-Lambert Company: *See—*
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Hupe, Donald; Johnson, Linda Lea; Picard, Joseph Armand; White, Andrew David; and Ye, Qi-Zhuang, 5,665,764, Cl. 514-468.000.
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Warren, Craig B.; Marin, Anna B.; and Butler, Jerry F., to International Flavors & Fragrances Inc.; and University of Florida, The. Use of unsaturated aldehyde and alkanol derivatives for their mosquito repellency properties. 5,665,781, Cl. 514-703.000.
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Washington Biotech Corp.: *See—*
Wyrick, Ronald E., 5,665,071, Cl. 604-134.000.
Washiyama, Yutaka, to Kawai Musical Inst. Mfg. Co., Ltd. Apparatus for and method of generating musical tones. 5,665,931, Cl. 84-623.000.
Wasserman, Jack F.; Speckhart, Frank H.; Scott, Alan; and Siersma, Wil, to Hydroforce, Inc. Excercise and/or therapy apparatus having an impeller for use in a pool of liquid. 5,665,039, Cl. 482-111.000.
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Watanabe, Hiroki. Urine occult blood test apparatus. 5,665,308, Cl. 422-58.000.
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Watanabe, Kazuya: *See—*
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Watkins, Daniel R., to LSI Logic Corporation. Flexible design system. 5,666,289, Cl. 364-491.000.
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Watson, John D.; Edwards, William D.; and Kellie, Truman F., to Minnesota Mining and Manufacturing Company. Single pass electrophotographic system which coordinates the driving of a photoreceptor with a plurality of exposure locations. 5,666,587, Cl. 399-40.000.
Watt, Ronald. Dual-flow protein skimmer. 5,665,227, Cl. 210-169.000.
Watts, Eric. Inclination angle ruler. 5,664,334, Cl. 33-1.00N.
Watts, William F., III. Mechanical plug device. 5,664,626, Cl. 166-75.130.
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Weadock, Kevin; Lentz, David J.; and Zdrahala, Richard J., to Meadox Medicals, Inc. Tubular expanded polytetrafluoroethylene implantable prostheses. 5,665,114, Cl. 623-1.000.
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Weber, Roy Philip, to AT&T. True family telecommunication service. 5,666,405, Cl. 379-127.000.
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Weder, Donald E.; and Straeter, William F., to Southpac Trust International, Inc. Method for crimping a sleeve about a floral grouping. 5,664,403, Cl. 53-397.000.
Weder, Donald E., to Southpac Trust International, Inc. Wrapping material having a cold seal adhesive for wrapping floral groupings and methods. 5,664,675, Cl. 206-423.000.
Wedlock, David John; and De Lind Van Wijngaarden, Gerhard, to American Cyanamid Company. Fast-dispensing solid pvp-containing crop protection formulation and process therefor. 5,665,369, Cl. 424-408.000.
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Deckers, Jacobus A. J. M.; Weekers, Theodorus H.; Manenschijn, Albert; Snijkers, Franciscus M. M.; and Van Der Heide, Petrus A. M., 5,666,022, Cl. 313-346.0DC.
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Whatman Inc.: *See—*
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Whidden, Brian F.; and Whidden, Alexis. Ski and snowboard edge covering device. 5,664,808, Cl. 280-815.000.
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Millhimes, Wayne Leroy; and Copper, Charles Dudley, 5,664,970, Cl. 439-751.000.
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White, Cecil A.; Shaner, Susan; Dale, Gretchen F.; and Reiss, Clarence J., Jr., to Fieldcrest Cannon, Inc. Semi-fitted one-piece slipcover. 5,664,831, Cl. 297-225.000.
White, Eric Jeffrey, to International Business Machines Corporation. Process for producing crackstops on semiconductor devices and devices containing the crackstops. 5,665,655, Cl. 438-584.000.
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White, Mark E.; and Kealy, Glen R. Removable sole plate cover for fabric pressing irons. 5,664,349, Cl. 38-97.000.
White, Theodore Curt; Sheth, Jayesh Vrajlal; Nguyen, Kha; and Tran, Dan Trong, to Unisys Corporation. Information processing system having multiple modules and a memory on a bus, where any module can lock an addressable portion of the memory by sending retry signals to other modules that try to read at the locked address. 5,666,515, Cl. 711-152.000.
Whited, Gary L.; Stillwagon, James R.; and Maxey, Randall A., to Gary Guard, Inc. Protective shield for electrical hot stick. 5,666,253, Cl. 361-1.000.
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Whitson, Peggy A.; and Clift, Vaughan L., to United States of America, National Aeronautics and Space Administration. Method and apparatus for the collection storage and real time analysis of blood and other bodily fluids. 5,665,238, Cl. 210-649.000.
Whittaker, Bruce Ernest, to Unisys Corporation. Automatic reconfiguration of multiple-way cache system allowing uninterrupted continuing processor operation. 5,666,513, Cl. 711-118.000.
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Wilhelm, Didier; Blanc, Alain; and Floyd, William C., to Sequa Chemicals, Inc. Aminoplastic resins and their use as a crosslinking agent for cellulose. 5,665,851, Cl. 528-230.000.
Wilhelm Environmental Technologies, Inc.: *See—*
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Wilhelm, Pirmin: *See—*
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Wilke, Raud A.; Dornbach, David A.; and Pedersen, Leif, to HUSCO International, Inc. Control valve for prime mover speed control in hydraulic systems. 5,664,417, Cl. 60-327.000.
Wilkens, Arthur L. Reciprocating floor conveyor. 5,664,663, Cl. 198-750.200.
Wilkens, Arthur L. Light weight trailer walls with smooth surfaces. 5,664,826, Cl. 296-181.000.
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Williams, Bernard. Fire evacuation kit. 5,664,642, Cl. 182-70.000.
Williams Electronics Games, Inc.: *See*—
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Williams, Geoffrey Thomas: *See*—
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Williams, Glen; and Zidulka, Arnold, to McGill University. Combination patient transporter chair or commode. 5,664,266, Cl. 5-86.100.
Williams, Gregory Ernest; White, James Allen; Dragomir, Nicholas A.; and Stottsberry, James William, to GMI Holdings, Inc. Clutchless screw drive door operator. 5,664,372, Cl. 49-362.000.
Williams, Guy L.; Jenness, Timothy A.; and Wilson, Scott E., to Microfield Graphics, Inc. (Softboard, Inc.). Optical-scanning system employing laser and laser safety control. 5,665,942, Cl. 178-18.000.
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Williams, Richard K.; and Kasem, Mohammad, to Siliconix Incorporated. Vertical power mosfet having thick metal layer to reduce distributed resistance. 5,665,996, Cl. 257-401.000.
Williams, Robert V., Jr., to AbClean America, Inc. Apparatus and method for cleaning tubular members. 5,664,992, Cl. 451-76.000.
Williams, Roger O.; Cushing, Ira B.; Jurovich, Stephen J.; Jacobs, Curt M.; and Smith, Robert A., to Exclusive Design Company, Inc. Method and apparatus for texturizing disks. 5,664,985, Cl. 451-5.000.
Williams, Ronald L.; and Finnila, Ronald M., to Hughes Aircraft Company. Point addressable display assembly, method of operating same, and method of fabricating same. 5,666,130, Cl. 345-90.000.
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Wilson, Quentin Lynn; Witt, Marty Nelson; and Dawson, George Henry, III, to Simplimatic Engineering Company. Vacuum combiner. 5,664,662, Cl. 198-453.000.
Wilson, Richard C.; and Culpepper, Patrick M., to Abco, Inc. Corner post support member. 5,664,376, Cl. 52-287.100.
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Winneroski, Leonard L., II: *See*—
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Winter, Robert B. Print screen alignment system. 5,664,495, Cl. 101-114.000.
Winterer, Allen G. Barricade warning light. 5,664,874, Cl. 362-191.000.
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Wisor, Michael T.; and Johnson, Scott C., to Advanced Micro Devices. Fail-safe communication abort mechanism for parallel ports with selectable NMI or parallel port interrupt. 5,666,559, Cl. 395-852.000.
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Wilson, Quentin Lynn; Witt, Marty Nelson; and Dawson, George Henry, III, 5,664,662, Cl. 198-453.000.
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Wittes, James M., to AccTech, L.L.C. Method of making cleaning pads for tape transport cleaning devices. 5,665,294, Cl. 264-160.000.
Wittka, Reilinde: *See*—
Urbahns, Klaus; Behner, Otto; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wehinger, Egbert; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and de Vry, Jean-Marie-Viktor, 5,665,741, Cl. 514-356.000.
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Wojcik, Casimir M.; Pretto, Paul A.; Courier, Jim; Morrow, Bob; Wehry, Joseph R., Jr.; Kuczynski, Paul; Edwards, Matt F.; Schnieder, Mark A.; Loftus, Thomas W.; Schnieders, Brian; Bernardi, Thomas C.; Pellerin, Craig Raymond; Bushaw, Ron D.; Schebell, Michael Lewis; Hartley, Bill; Cappel, Sheila; Weisgarber, Kimberly; Vogler, Henry Lee; and Ferguson, Louis Duane, to Lykes Bros., Inc. System for managing customer orders and method of implementation. 5,666,493, Cl. 705-26.000.
Wójtowicz, Janusz, to Raychem Corporation. Extruded silicone gel profiles. 5,665,809, Cl. 524-439.000.
Woker, Gary M.: *See*—
Quick, Richard L.; Forkner, John F.; and Woker, Gary M., 5,665,051, Cl. 600-161.000.
Wolda, Tiete O.; and Lewkoski, Randolph Dale, to M & C Corporation. Hinge strap assembly with convoluted torque rod. 5,664,289, Cl. 16-298.000.
Wolfe, Samuel John: *See*—
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Wolff GmbH: *See*—
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Wolff, Joachim: *See*—
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Wolff, Peter: *See*—
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Wolff Walsrode Aktiengesellschaft: *See*—
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Wolfram, Dietmar: *See*—
Andersson, Ingmar; Majed, Mahdi; Wiktor, Clas-Göran; and Wolfram, Dietmar, 5,666,389, Cl. 376-462.000.
Wolfram, Leszek, to Bristol-Myers Squibb Company. Acidic post-treatment of hair dyed with dihydroxyindole. 5,665,336, Cl. 424-70.600.
Wolki, Peter; Edeline, Emmanuel; and Cretegny, Jean-Francois, to Societe Europeenne de Propulsion. Method of making tubes out of composite material having high tribiological and mechanical characteristics. 5,665,192, Cl. 156-188.000.
Wollweber, Hartmund: *See*—
Urbahns, Klaus; Behner, Otto; Goldmann, Siegfried; Heine, Hans-Georg; Junge, Bodo; Schohe-Loop, Rudolf; Wehinger, Egbert; Wollweber, Hartmund; Sommermeyer, Henning; Glaser, Thomas; Wittka, Reilinde; and de Vry, Jean-Marie-Viktor, 5,665,741, Cl. 514-356.000.
Wong, Jesse: *See*—
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Wong, Jesse K.: *See*—
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Wong, Justin Wai-Chow: *See*—
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Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,382, Cl. 424-450.000.
Grinstaff, Mark W.; Soon-Shiong, Patrick; Wong, Michael; Sandford, Paul A.; Suslick, Kenneth S.; and Desai, Neil P., 5,665,383, Cl. 424-450.000.
Wong, Raymond S.; and Mahoney, Clarence Lynn, to Dexter Corporation, The. Low moisture absorption syntactic foam. 5,665,461, Cl. 523-218.000.
Wong, Robert Chi-Foon; Buti, Taqi Nasser; and Ogura, Seiki, to International Business Machines Corporation. Storage system. 5,666,320, Cl. 365-207.000.
Wong, Sui-Ming, to Nano Systems LLC. Dual purposed diagnostic/therapeutic agent having a tri-iodinated benzoyl group linked to a coumarin. 5,665,330, Cl. 424-9.440.
Woo, Seong-Jae, to Daewoo Electronics Co., Inc. Method and apparatus for pre-compensating an asymmetrical picture in a projection system for displaying a picture. 5,664,858, Cl. 353-69.000.
Wood, David Charles; Cassidy, Stephen Anthony; Wilkinson, Mark Robert; and McKee, Paul Francis, to British Telecommunications public limited company. Optical grating and method of fabricating an optical grating. 5,666,224, Cl. 359-573.000.
Woodburn, Kathryn W.; Fan, Qing; and Young, Stuart W., to Pharmacyclics, Inc. Photodynamic therapy of pigment-related lesions. 5,664,583, Cl. 128-898.000.
Woodgate, Graham J.: *See*—
Ezra, David; Woodgate, Graham J.; May, Paul; Robinson, Michael G.; and Harrold, Jonathan, 5,666,226, Cl. 359-621.000.
Woods, Harold Lin: *See*—
Bracken, Allen Thomas; Rich, Edward L.; Woods, Harold Lin; and Tan, Hong, 5,666,236, Cl. 360-75.000.

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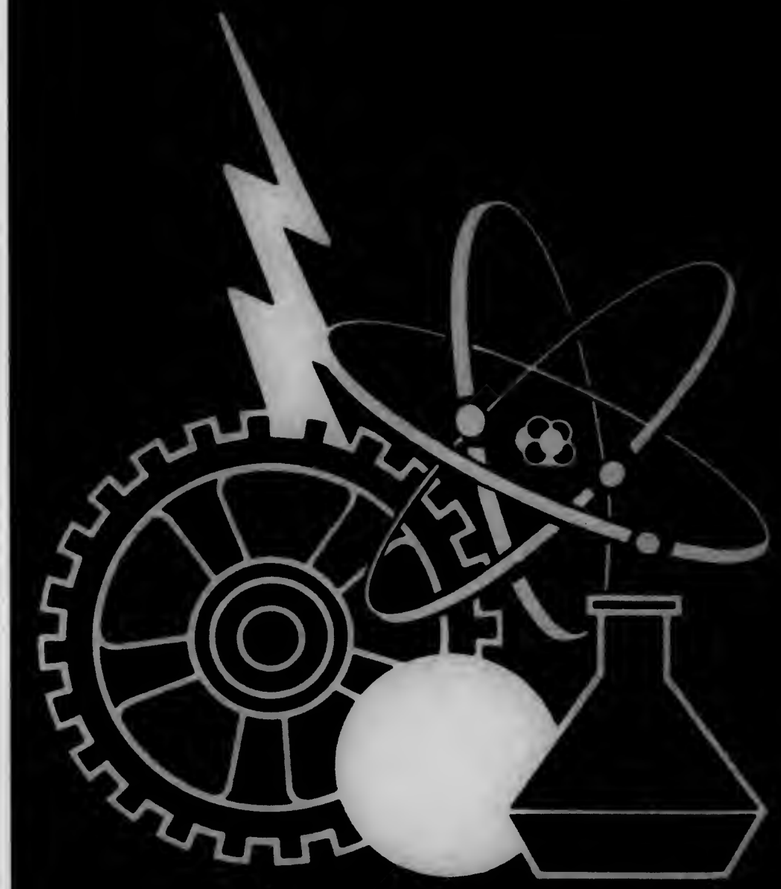
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 16, 1997



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
September 16, 1997 Volume 1202 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1200 O.G. 98, on July 29, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was decreased, effective July 1, 1997, and was announced in the *Official Gazette* at 1200 O.G. 97, on July 29, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective July 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1310.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

July 7, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the German mark, the dollar amount of the search fee charged by the European Patent Office for international applications filed in the United States Receiving Office will decrease to $1180.00, effective October 1, 1997.

August 21, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace

period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on September 13, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,345,608 through 5,347,654
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 11, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,955,087 through 4,956,877
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 9, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,610,034 through 4,611,352
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 9, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,109	07/724,597	10/20/92
(4,844,698)	(06/875,292)	(07/04/89)
4,527,293	06/495,698	07/09/85
4,527,295	06/616,127	07/09/85
4,527,303	06/532,601	07/09/85
4,527,304	06/509,461	07/09/85
4,527,310	06/516,329	07/09/85
4,527,317	06/456,587	07/09/85
4,527,323	06/540,806	07/09/85
4,527,326	06/554,676	07/09/85
4,527,327	06/481,196	07/09/85
4,527,331	06/465,873	07/09/85
4,527,332	06/554,499	07/09/85
4,527,336	06/507,833	07/09/85
4,527,355	06/469,522	07/09/85
4,527,359	06/602,920	07/09/85
4,527,360	06/555,326	07/09/85
4,527,368	06/453,339	07/09/85
4,527,377	06/395,303	07/09/85
4,527,380	06/530,010	07/09/85
4,527,382	06/519,571	07/09/85
4,527,385	06/575,319	07/09/85
4,527,394	06/571,536	07/09/85
4,527,397	06/517,929	07/09/85
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4,527,574	06/478,795	07/09/85
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4,527,597	06/392,083	07/09/85
4,527,601	06/531,117	07/09/85
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4,527,612	06/597,911	07/09/85
4,527,613	06/506,399	07/09/85
4,527,617	06/538,056	07/09/85
4,527,626	06/607,914	07/09/85
4,527,627	06/518,158	07/09/85
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4,528,062	06/431,888	07/09/85
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5,224,837	07/693,956	07/06/93
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5,224,847	07/829,278	07/06/93
5,224,850	07/766,654	07/06/93
5,224,852	07/920,991	07/06/93
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5,224,862	07/867,370	07/06/93
5,224,864	07/674,138	07/06/93
5,224,869	07/973,290	07/06/93
5,224,886	07/884,363	07/06/93
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5,224,892	07/769,333	07/06/93
5,224,893	07/981,879	07/06/93
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5,224,901	07/895,773	07/06/93
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5,224,924	07/749,873	07/06/93
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5,224,936	07/961,501	07/06/93
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5,224,982	07/846,377	07/06/93
5,224,983	07/905,129	07/06/93
5,224,984	07/736,831	07/06/93
5,224,988	07/870,296	07/06/93
5,224,989	07/793,454	07/06/93
5,224,992	07/908,202	07/06/93
5,224,995	07/819,646	07/06/93
5,225,004	07/694,002	07/06/93
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5,225,016	07/739,403	07/06/93
5,225,023	07/745,982	07/06/93
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5,225,032	07/742,801	07/06/93
5,225,043	07/803,714	07/06/93
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5,225,048	07/648,543	07/06/93
5,225,055	07/743,963	07/06/93
5,225,061	07/705,100	07/06/93
5,225,062	07/826,725	07/06/93
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5,225,078	07/845,690	07/06/93
5,225,094	07/809,907	07/06/93
5,225,097	07/854,927	07/06/93
5,225,098	07/854,931	07/06/93
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5,225,109	07/308,882	07/06/93
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5,225,123	07/538,077	07/06/93
5,225,129	07/732,415	07/06/93
5,225,132	07/743,230	07/06/93
5,225,139	07/730,127	07/06/93
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5,225,657	07/822,148	07/06/93
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5,225,715	07/879,310	07/06/93
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5,225,847	07/652,397	07/06/93
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5,225,898	07/692,465	07/06/93
5,225,909	07/690,217	07/06/93
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5,225,924	07/500,971	07/06/93
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5,225,931	07/829,809	07/06/93
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5,225,949	07/842,701	07/06/93
5,225,963	07/809,793	07/06/93
5,225,983	07/631,924	07/06/93
5,225,984	07/707,091	07/06/93
5,225,987	07/703,425	07/06/93
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5,226,021	07/944,286	07/06/93
5,226,043	07/634,632	07/06/93
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5,003,039	07/273,443	11/18/88	03/26/91	07/14/97
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4,502,653	06/452,037	12/22/82	03/05/85	07/22/97
4,535,259	06/389,819	06/18/82	08/13/85	07/21/97
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4,644,706	06/822,328	01/27/86	02/24/87	07/24/97
4,662,899	06/720,100	04/05/85	05/05/87	07/18/97
4,783,818	06/788,411	10/17/85	11/08/88	07/24/97
4,806,495	07/211,101	06/15/88	02/21/89	07/21/97
4,816,080	06/913,794	09/29/86	03/28/89	07/21/97
4,980,572	07/124,172	01/25/88	12/25/90	07/24/97
4,993,239	07/526,240	05/18/90	02/19/91	07/21/97
5,103,946	07/609,626	11/06/90	04/14/92	07/18/97
5,105,998	07/585,059	12/18/90	04/21/92	07/22/97
5,124,130	07/526,822	05/22/90	06/23/92	07/21/97
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5,162,469	07/740,591	08/05/91	11/10/92	07/21/97
5,189,671	07/812,171	12/20/91	02/23/93	07/21/97
5,197,940	07/471,498	01/29/90	03/30/93	07/24/97
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,918,322, Re. S.N. 08/653,916, May 28, 1996, Cl. 379/88, VOICE/DATA-FORMATTED TELEPHONE INFORMATION STORAGE AND RETRIEVAL SYSTEM, Walter W. Winter, et. al., Owner of Record: *Golden Enterprises Inc., Melbourne, Fla.*, Attorney or Agent: Charles E. Wands, Ex. Gp.: 2601

5,094,609, Re. S.N. 08/558,378, Nov. 16, 1995, Cl. 425, CHAMBER FOR HYDRATING CONTACT LENES, Ture Kindt-Larsen, et. al., Owner of Record: *Johnson And Johnson Vision Products, Inc., New Brunswick, N.J.*, Attorney or Agent: Audley A. Ciamporcero Jr., Ex. Gp.: 1305

5,387,996, Re. S.N. 08/798,374, Feb. 7, 1997, Cl. 359/218, METHOD OF OBTAINING A NARROW FIELD OF VIEW SCAN, David Fink, et. al., Owner of Record: *Hughes Aircraft Co., Los Angeles, Calif.*, Attorney or Agent: Georgann S. Grunebach, Ex. Gp.: 2507

5,409,810, Re. S.N. 08/839,016, April 23, 1997, Cl. 435/5, NUCLEIC ACID DERIVATIVES, Brendan A. Larder, et. al., Owner of Record: *The Wellcome Foundation Limited, London, England*, Attorney or Agent: Joe Liebeschuetz, Ex. Gp.: 1807

5,416,874, Re. S.N. 08/856,106, May 14, 1997, Cl. 385/100, OPTICAL RECEIVER STUB FITTING, Markus A. Giebel, et. al., Owner of Record: *Siecor Corp.*, Attorney or Agent: Michael L. Goldman, Ex. Gp.: 2501

5,479,722, Re. S.N. 08/855,884, May 12, 1997, Cl. 33/617, MOVABLE REGISTRATION PIN MECHANISM, W. Vernon Smith, et. al., Owner of Record: *Excellon Automation Co., Torrance, Calif.*, Attorney or Agent: Henry G. Kohlmann, Ex. Gp.: 3108

Requests for Reexamination Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 363,372, Reexam. No. 90/004,701, July 25, 1997, Cl. D02/977, ELEMENT FOR A SHOE SOLE, Tinker L. Hatfield, et. al., Owner of Record: *Nike, Inc., Beaverton, Oreg.*, Attorney or Agent: James A. Niegowski, Banner & Witcoff, Washington, D.C., Ex. Gp.: 2902, Requester: Owner

4,670,444, Reexam. No. 90/004,702, July 25, 1997, Cl. 514/300, 7-AMINO-1-CYCLOPROPYL-4-OXO-1,4-DIHYDRO-QUINOLINE-AND-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS AND ANTIBACTERIAL AGENTS CONTAINING THESE COMPOUNDS, Klaus Grohe, et. al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany*, Attorney or Agent: Brinks, Hofer, Gilson & Lione, Chicago, Ill., Ex. Gp.: 1205, Requester: Owner

5,103,459, Reexam. No. 90/004,705, July 18, 1997, Cl. 370/209, SYSTEM AND METHOD FOR GENERATING SIGNAL WAVEFORMS IN A CMDA CELLULAR TELEPHONE SYSTEM, Klein S. Gilhousen, et. al., Owner of Record: *Qualcomm, Inc., San Diego, Calif.*, Attorney or Agent: Russell B. Miller, San Diego, Calif., Ex. Gp.: 2603, Requester: Antonelli Terry Stout & Kraus, Arlington, Va.

5,295,632, Reexam. No. 90/004,703, July 25, 1997, Cl. 229/198, TOTE BOX WITH SELF LOCKING TOTE RAIL, Robert M. Zink, et. al., Owner of Record: *Bradford Co., Holland, Mich.*, Attorney or Agent: John D. Poffenberger, Wood, Herron & Evans, Cincinnati, Ohio, Ex. Gp.: 3207, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JUNE 23, 1997 DUE TO FAILURE TO RENEW

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112,636	71/088,323	09/19/1916
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1,047,968	73/077,900	09/14/1976
1,047,969	73/077,990	09/14/1976
1,047,970	73/077,999	09/14/1976
1,047,971	73/078,095	09/14/1976
1,047,976	73/078,701	09/14/1976
1,047,978	73/078,849	09/14/1976
1,047,980	73/078,968	09/14/1976
1,047,982	73/079,562	09/14/1976
1,047,987	73/082,113	09/14/1976
1,047,991	73/077,736	09/14/1976
1,047,994	73/078,086	09/14/1976
1,048,000	73/032,945	09/14/1976
1,048,002	73/046,974	09/14/1976
1,048,003	73/048,080	09/14/1976
1,048,005	73/050,741	09/14/1976
1,048,006	73/058,885	09/14/1976
1,048,007	73/064,517	09/14/1976
1,048,013	73/078,673	09/14/1976
1,048,017	73/079,208	09/14/1976
1,048,018	73/079,236	09/14/1976
1,048,022	73/080,748	09/14/1976
1,048,023	73/080,820	09/14/1976
1,048,028	73/081,775	09/14/1976
1,048,031	73/080,002	09/14/1976
1,048,033	73/007,340	09/14/1976
1,048,034	73/007,341	09/14/1976
1,048,038	73/035,337	09/14/1976
1,048,039	73/035,427	09/14/1976
1,048,040	73/042,519	09/14/1976
1,048,045	73/062,821	09/14/1976
1,048,050	73/075,678	09/14/1976
1,048,052	73/076,417	09/14/1976
1,048,053	73/077,156	09/14/1976
1,048,056	73/079,505	09/14/1976
1,048,057	73/081,866	09/14/1976
1,048,060	73/082,383	09/14/1976
1,048,063	73/074,457	09/14/1976
1,048,065	73/075,921	09/14/1976
1,048,066	73/080,326	09/14/1976
1,048,067	73/080,332	09/14/1976
1,048,069	73/080,433	09/14/1976
1,048,070	73/080,436	09/14/1976
1,048,071	73/080,437	09/14/1976
1,048,072	73/080,441	09/14/1976
1,048,073	73/080,442	09/14/1976
1,048,074	73/080,449	09/14/1976
1,048,075	73/080,464	09/14/1976
1,048,078	73/080,468	09/14/1976
1,048,079	73/080,471	09/14/1976
1,048,081	73/082,281	09/14/1976
1,048,084	73/054,026	09/14/1976
1,048,087	73/062,320	09/14/1976
1,048,089	73/073,430	09/14/1976
1,048,090	73/079,106	09/14/1976
1,048,092	73/081,491	09/14/1976
1,048,093	73/082,231	09/14/1976
1,048,095	73/077,200	09/14/1976
1,048,100	73/044,621	09/14/1976
1,048,106	73/066,762	09/14/1976
1,048,109	73/072,493	09/14/1976
1,048,111	73/075,501	09/14/1976
1,048,114	73/076,226	09/14/1976
1,048,116	73/079,154	09/14/1976
1,048,118	73/080,359	09/14/1976
1,048,119	73/080,518	09/14/1976
1,048,128	73/058,711	09/14/1976
1,048,129	73/075,258	09/14/1976
1,048,130	73/076,236	09/14/1976
1,048,136	73/079,085	09/14/1976
1,048,137	73/079,493	09/14/1976
1,048,142	73/080,070	09/14/1976
1,048,144	73/080,718	09/14/1976
1,048,145	73/081,249	09/14/1976
1,048,146	73/081,413	09/14/1976
1,048,147	73/076,741	09/14/1976
1,048,149	73/077,586	09/14/1976
1,048,151	73/080,893	09/14/1976
1,048,152	73/080,895	09/14/1976
1,048,154	73/040,771	09/14/1976
1,048,167	73/074,223	09/14/1976
1,048,169	73/074,359	09/14/1976
1,048,171	73/074,458	09/14/1976
1,048,174	73/074,891	09/14/1976
1,048,180	73/075,812	09/14/1976
1,048,184	73/076,101	09/14/1976
1,048,187	73/076,447	09/14/1976
1,048,188	73/076,513	09/14/1976
1,048,190	73/077,088	09/14/1976
1,048,193	73/057,967	09/14/1976
1,048,207	73/074,171	09/14/1976
1,048,208	73/074,610	09/14/1976
1,048,210	73/076,279	09/14/1976
1,048,222	73/040,498	09/14/1976
1,048,223	73/049,856	09/14/1976
1,048,227	73/078,110	09/14/1976
1,048,231	73/080,497	09/14/1976
1,048,232	73/081,344	09/14/1976
1,048,233	73/081,346	09/14/1976
1,048,234	73/081,347	09/14/1976
1,048,235	73/060,987	09/14/1976
1,048,237	73/066,913	09/14/1976
1,048,239	73/071,007	09/14/1976
1,048,241	73/072,724	09/14/1976
1,048,242	73/072,725	09/14/1976
1,048,244	73/076,223	09/14/1976
1,048,255	73/080,523	09/14/1976
1,048,257	73/064,431	09/14/1976
1,048,258	73/078,109	09/14/1976
1,048,259	73/079,357	09/14/1976
1,048,260	73/081,129	09/14/1976
1,048,262	73/017,988	09/14/1976
1,048,267	73/073,704	09/14/1976
1,048,273	73/076,575	09/14/1976
1,048,274	73/022,994	09/14/1976
1,048,275	73/064,133	09/14/1976
1,048,276	73/064,134	09/14/1976
1,048,280	73/074,627	09/14/1976
1,048,288	73/079,833	09/14/1976
1,048,289	73/049,908	09/14/1976
1,048,291	73/077,719	09/14/1976
1,048,293	73/074,063	09/14/1976
1,048,295	73/058,336	09/14/1976
1,048,297	73/070,056	09/14/1976
1,048,302	73/080,302	09/14/1976
1,048,303	73/063,821	09/14/1976
1,048,309	73/080,158	09/14/1976
1,048,314	73/058,877	09/14/1976
1,048,316	73/073,669	09/14/1976
1,048,317	73/074,873	09/14/1976
1,048,324	73/077,421	09/14/1976
1,048,327	73/081,136	09/14/1976
1,048,328	72/443,766	09/14/1976
1,048,329	72/425,773	09/14/1976
1,048,330	72/382,129	09/14/1976
1,048,333	73/058,581	09/14/1976
1,048,335	73/046,076	09/14/1976
1,048,338	73/015,605	09/14/1976
1,048,339	73/018,928	09/14/1976
1,048,340	73/084,908	09/14/1976
1,048,343	73/049,743	09/14/1976
1,048,344	73/046,760	09/14/1976
1,048,345	73/019,325	09/14/1976

Reg. Number	Serial Number	Reg. Date
1,048,346	73/061,140	09/14/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Process & Cryogenic Services, Inc., Santa Clara, Calif., Reg. No. 775,616, for the mark "X-50", Canc. No. 25,999.

Gladys I. Avard dba Sno-Hide Mfg., Co., Cardiff-By-The-Sea, Calif., Reg. No. 646,315, for the mark "SNO-HIDE ROOF SHIELD AND DESIGN", Canc. No. 25,997.

Arista Corp., Concord, Calif., Reg. No. 1,119,615, for the mark "PREP", Canc. No. 25,998.

Alcas Cutlery Corp., Houston, Tex., Reg. No. 349,157, for the mark "KENSINGTON K & DESIGN", Canc. No. 25,365.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before Oct. 24, 1997.

Chari, Santosh K., 2702-25 The Esplanade, Toronto, Ont., M5E 1W5, Canada

Chi, Anthony R., 725 International Blvd., #107, Houston, Tex. 77024

Choi, Kyle J., 28611 Franklin River Dr., #304, Southfield, Mich. 48034

Conrad, Joseph M., III, 14311 Briarwood Terrace, Rockville, Md. 20853

Datlow, Philip I., 8243 Cedar Land Court, Alexandria, Va. 22306

Daub, Sally J., 450 Castlefield Ave., Toronto, Ont., M5N 1L5, Canada

Filipek, Jeffrey R., 815 S. 18th St., #305, Arlington, Va. 22202

Gambino, Darius, 805 S. 21st St., Arlington, Va. 22202

Jennings, Derek S., 19449 Transchire Rd., Gaithersburgh, Md. 20879

Prior, Kimberly J., 1305 Marsh Trail Circle, Atlanta, Ga. 30328

Raab, Sara S., 2111 Jeff. Davis Hwy., #212, North, Arlington, Va. 22202

Raciti, Eric P., 50 Follen St., #102, Cambridge, Mass. 02138

Stoll, Kara F., 4615 S. 34th St., Arlington, Va. 22206

Vogel, Nancy T., 481 Cambridge Way, Martinez, Ga. 30907

Zuttarelli, Anthony P., 43219 16th St., #23, Lancaster, Calif. 93534

August 18, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Training for Public Users

Effective October 1, 1997, all public user training courses for automated systems will have a $25.00 fee. Affected courses include the Automated Patent Text system, the Automated Patent Image system, and the Automated Trademark Xsearch system.

Classes will be held at the PTO located in Arlington, Virginia. Class sessions vary from four to eight hours. Class assignments will be determined by date of received application and payment of fee.

The $25.00 fee is due with submission of the appropriate application form and can be made by check, money order, credit card, or deposit account. Cancellations made two weeks or more prior to the class date can be rescheduled for a later time. This fee is non-refundable.

If further information is required, please call the Public Search Services Division on 703-308-3040.

August 18, 1997 WESLEY H. GEWEHR
Administrator for Information
Dissemination Organizations

Certificates of Correction
For the Week of September 16, 1997

B1 5,022,961	5,374,585	5,524,263	5,565,757
B1 5,297,896	5,375,055	5,524,266	5,565,842
D. 349,400	5,377,139	5,526,263	5,566,143
D. 371,226	5,384,249	5,529,962	5,566,541
D. 377,868	5,400,388	5,529,996	5,566,973
D. 380,176	5,401,768	5,532,153	5,567,557
D. 380,408	5,414,121	5,532,381	5,568,377
P. 09,525	5,415,165	5,534,551	5,569,208
Re. 35,176	5,418,494	5,537,566	5,572,581
4,722,061	5,422,096	5,545,425	5,575,187
4,879,992	5,423,964	5,546,047	5,575,380
4,890,242	5,441,868	5,546,192	5,575,993
4,980,480	5,452,146	5,546,413	5,576,107
5,032,455	5,455,671	5,547,888	5,577,580
5,038,309	5,473,389	5,548,381	5,578,013
5,095,423	5,475,928	5,549,314	5,578,056
5,159,665	5,480,869	5,552,330	5,578,219
5,161,162	5,481,424	5,553,608	5,579,031
5,163,129	5,486,474	5,554,497	5,579,250
5,165,758	5,488,211	5,555,098	5,580,476
5,175,805	5,488,394	5,555,481	5,580,721
5,179,647	5,489,597	5,556,423	5,581,487
5,179,682	5,491,620	5,556,444	5,582,670
5,187,786	5,492,892	5,556,811	5,582,705
5,233,059	5,504,175	5,557,084	5,582,725
5,242,436	5,505,953	5,557,423	5,582,911
5,289,691	5,506,487	5,557,626	5,583,598
5,296,024	5,510,915	5,559,028	5,585,136
5,321,836	5,513,593	5,559,162	5,585,247
5,343,125	5,518,089	5,561,622	5,586,172
5,358,826	5,521,453	5,562,649	5,586,979
5,361,411	5,524,194	5,564,858	5,588,472
5,366,995	5,524,233	5,565,316	5,589,007

5,589,247	5,605,825	5,611,034	5,620,249	5,625,670	5,632,151	5,637,498	5,644,405
5,589,741	5,605,871	5,611,139	5,620,495	5,625,751	5,632,279	5,637,733	5,644,514
5,590,096	5,605,880	5,611,749	5,620,726	5,625,975	5,632,738	5,637,839	5,644,821
5,591,374	5,605,910	5,612,194	5,620,779	5,626,126	5,632,944	5,638,006	5,644,833
5,591,455	5,606,126	5,612,524	5,620,956	5,626,169	5,633,142	5,638,046	5,644,844
5,591,849	5,606,351	5,613,399	5,620,967	5,626,829	5,633,823	5,638,156	5,644,849
5,594,069	5,606,401	5,613,423	5,621,660	5,626,945	5,633,841	5,638,525	5,644,921
5,594,596	5,606,463	5,614,319	5,621,849	5,627,507	5,633,966	5,638,692	5,645,193
5,594,681	5,606,560	5,614,725	5,622,315	5,627,700	5,634,079	5,639,004	5,645,857
5,596,427	5,607,759	5,615,020	5,622,616	5,628,103	5,634,095	5,639,384	5,646,092
5,596,600	5,607,806	5,615,206	5,622,684	5,628,587	5,634,142	5,639,454	5,646,270
5,598,285	5,608,431	5,616,649	5,623,023	5,628,680	5,634,910	5,639,484	5,647,878
5,598,427	5,608,549	5,617,165	5,623,054	5,628,740	5,634,936	5,639,504	5,647,884
5,599,624	5,608,716	5,618,352	5,623,263	5,629,117	5,634,960	5,640,307	5,647,995
5,599,681	5,608,726	5,618,583	5,623,345	5,629,182	5,635,004	5,640,486	5,648,434
5,601,621	5,608,760	5,618,608	5,623,809	5,629,361	5,635,067	5,641,078	5,649,043
5,602,562	5,608,900	5,619,303	5,624,666	5,630,214	5,635,075	5,641,733	5,649,215
5,603,110	5,609,141	5,619,407	5,624,674	5,630,611	5,635,698	5,642,449	5,650,648
5,604,251	5,610,689	5,619,548	5,624,791	5,630,796	5,635,705	5,642,989	5,650,743
5,604,523	5,610,748	5,619,686	5,625,024	5,631,146	5,637,243	5,643,434	5,651,220
5,604,618	5,610,810	5,619,703	5,625,301	5,631,322	5,637,255	5,644,014	5,652,766
5,605,778	5,610,887	5,619,906	5,625,470	5,631,780	5,637,268	5,644,120	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
July 28-August 1, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-28	EX	74/324,490	Milliman & Robertson, Inc.	2(e)(1)	Refusal Affirmed		"HEALTH INSURANCE TREND MODEL" [periodical publications, consisting of reports, graphs, charts and data pertaining to health insurance trends; consulting services in the field of health insurance trends and health care cost containment; educational services, namely, conducting training classes in the field of health care costs containment and review]		No
7-28	EX	74/801,178	McCaw Cellular Communications, Inc.	whether the matter asserted for registration functions as a trademark for the goods recited in the application	Refusal Affirmed		"1-800-IMAGINE" [cellular telephones and parts therefor; pagers and parts therefor; facsimile machines and user manuals and instructional books sold as a unit therewith]		No
7-28	EX	74/590,808	John S. Fischer	2(e)(1)	Refusal Reversed		"AIR CONTROL SCIENCE" [conducting feasibility studies, evaluation, consultation, and engineering in the field of dust collection systems; construction, installation, and maintenance of dust collection systems]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION; (MR) = MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-28	EX	74/591,009	Universal Electronics Inc.	2(e)(1)	Refusal Affirmed		"KIDS CLICKER" [universal remote control units which are programmable to eliminate user access to select television channels and/or programs]		No
7-28	EX	74/612,608	Blue Cross & Blue Shield of Rhode Island	2(d)	Refusal Reversed		"OPUS 123" [computer program that allows doctor's offices to communicate electronically with the insurance provider, retrieving and submitting information and allowing doctors to make referrals to other doctors]	"1-2-3/G" [computer programs for spreadsheet applications containing a graphical user interface]; "1-2-3" and "123" (in stylized form) [pre-recorded computer programs recorded on magnetic disks]	No
7-30	OPP	94,196	Eric Asadoorian, et al., dba Wavelength v. Frederic J. Martin III and Konrad Matthaei	2(d)	Opposition Sustained	"WAVELENGTH" [musical entertainment services]	"WAVELENGTH" [prerecorded phonograph records, audio cassettes, compact discs, video cassettes and other musical sound recording, all featuring musical entertainment; entertainment in the nature of live performances]		No
7-30	EX	74/587,902	Millers Falls Tool Co.	2(d)	Refusal Affirmed		"MOHAWK-SHELBURNE" [hand-powered construction tools, namely, saws, saw frames, saw blades and drill bits]	"MOHAWK" [hand-operated tools, namely, spur gear drill, sander, floor jack, die grinder, impact wrench and ratchet]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-30	OPP	93,254	Success Partners and Success Holdings Co. L.L.C. v. Dynamic Pathways Co.	2(d)	Opposition Sustained	"SUCCESS" and "SUCCESS (and design) [magazines pertaining to all aspects of personal, professional, and financial achievement]; "SUCCESS!" (in stylized letters) [general interest magazines]	"SUCCESS INC" [computer software regarding business plan writing]		No
7-30	EX	74/405,232	Weider Sporting Goods, Inc.	2(e)(1)	Refusal Affirmed		"STEP N' CRUNCH" [sporting goods, namely, a combination aerobic step and crunch board]		No
7-31	EX	74/617,280	Heartland Corp.	2(d)	Refusal Affirmed		"PROGLAS" (in stylized lettering) [cleaning solution for glass surfaces]	"PRO" [cleaning preparations]	No
7-31	EX	74/421,648	Dataweld, Inc.	whether the specimens of record are sufficient evidence of trademark use of applicant's mark	Refusal Affirmed		"ACUTRAX" (in stylized letters) [computer software for tracking compressed gas cylinders]		No
7-31	EX	74/481,825	Inset Inc.	2(e)(1); requirement for amendment of classification of goods	Refusal Affirmed (on both grounds)		"THE FUEL STABILIZER" [emission reduction units, namely, fuel stabilizing devices for land vehicles]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-31	EX	74/602,744	Sunset Publishing Co.	Section 6 disclaimer requirement (of phrase "CREATIVE COOKING LIBRARY")	Refusal Affirmed (but appl. allowed time to submit disclaimer of COOKING LIBRARY; applicant need not disclaim word "CREATIVE")		"SUNSET CREATIVE COOKING LIBRARY" [series of recipe books]		No
7-31	EX	74/592,435	Roseway Transportation, Inc.	2(d)	Refusal Affirmed		"ROSE WAY" (and design) [freight transportation by truck and other intermodal means]	"ROSE TRANSPORT" (and design) [transportation of goods by truck]	No
7-31	EX	74/459,297	Tera Computer Co.	2(d)	Refusal Affirmed		"MTA" [general purpose parallel processing computers and computer software for use in operating such computers]	"MTA" [electronic equipment, namely, intelligent multi-port modules for use in interconnection of computer peripherals]	No
8-1	EX	74/612,941	Countrywide Funding Corp.	2(d)	Refusal Reversed		design mark incorporating graphic representations of a building and a dollar sign [financial services, namely, a home equity line of credit program]	design mark incorporating graphic representations of a building silhouette and a dollar sign [providing mortgages for the purchase of real estate, etc.]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MR)=MOTION TO REOPEN

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

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Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
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	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895

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New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/21/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	10/16/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/19/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/14/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	04/13/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/29/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/16/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/25/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/26/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/18/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/24/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/12/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/22/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/24/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/18/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/25/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	12/05/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term nf any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date nf patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of August 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	06/05/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/19/96	04/30/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/16/96	07/03/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installatioo, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/24/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/21/96	05/29/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	02/09/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/06/97	04/14/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/18/96	05/19/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/30/97	05/30/97
**Collective Marks—Class 200 **Certificatioo Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registratioo Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	06/19/97	—0—
Renewals (All Classes)	06/19/97	—0—
Section 12(c) Publications (All Classes)	06/15/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

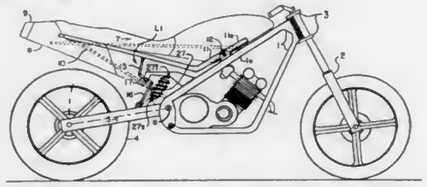
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

SEPTEMBER 16, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,765,432 (3323rd)
MOTORCYCLE HAVING A SUSPENSION COUPLED SEAT
H. Paul Odom, 1711 Forest Cove Dr., Mt. Prospect, Ill. 60056
Reexamination Request No. 90/004,308, Jul. 17, 1996.
Reexamination Certificate for Patent 4,765,432, issued Aug. 23, 1988, Ser. No. 52,837, May 21, 1987.
Int. Cl.[6] B62K *25/20*
U.S. Cl. 180—227



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–18** dependent on an amended claim, are determined to be patentable.

New claims **19–22** are added and determined to be patentable.

1. A motorcycle having a main frame, a rear wheel, a suspension system supporting the rear wheel relative to the frame, a rider's seat, means for supporting the seat to move relative to the frame, *a swing arm pivotally mounted to the frame,* and a means for moving the rider's seat responsive to movement of the rear wheel suspension system, operable to provide that upward movement of the rear wheel relative to the main frame causes a related downward displacement of the rider's seat relative to the main frame, and vice versa, *said means for moving the rider's seat including a mechanism permitting substantial free movement of the rear wheel relative to the frame and free movement of the rider's seat relative to the main frame without binding, and without bending movement of the swing arm.*

B1 4,778,286 (3324th)
BEARING ASSEMBLY
Satoshi Kadokawa, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Reexamination Request No. 90/004,189, Feb. 22, 1996.
Reexamination Certificate for Patent 4,778,286, issued Oct. 18, 1988, Ser. No. 94,450, Sep. 9, 1987.
Claims priority, application Japan, Oct. 9, 1986, 61-154407 U
Int. Cl.[6] F16C *19/08*
U.S. Cl. 384—446

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3** are cancelled.

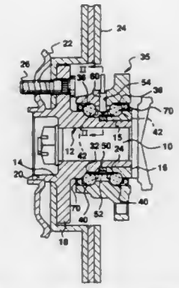
New claim **4** is added and determined to be patentable.

4. A bearing assembly including:

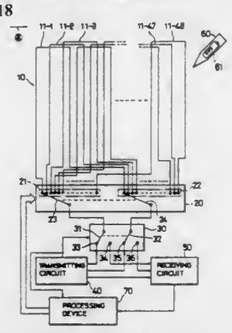
a bearing including a rotatable inner race having a mounting portion integral with a rotatable member and having an annular first groove for rolling members formed in the outer peripheral surface thereof, a unitary body of an outer race and a mounting flange, wherein the outer race is fixedly disposed outside and concentrically with the inner race and having a second groove for rolling members formed in the inner peripheral surface thereof in opposed relationship with the first groove for rolling members, the outer race having a through-hole, wherein the flange is adapted to mount the outer race to a fixed member, a plurality of rolling members interposed between the first and second grooves for rolling members, and a pair of seals disposed on the axially opposite outer sides of the rolling members for sealing a space formed between the inner and outer races;

a pulser gear formed on a portion on the outer peripheral surface of the inner race, which portion is positioned between the pair of seals, and having convex portions and concave portions alternately formed circumferentially on the outer peripheral surface thereof, forming a plurality of circumferentially spaced apart teeth on the outer peripheral surface thereof; and

a sensor mounted to the outer race, opposed to the pulser gear, with at least a portion of the sensor occupying at least a portion of the through-hole, the number of rotations of the rotatable member being detected by the pulser gear and the sensor, wherein the sensor extends exclusively in the outer race in the through-hole.



B1 4,878,553 (3325th)
POSITION DETECTING APPARATUS
Tsuguya Yamanami; Takahiko Funahashi; Toshiaki Senda, and Azuma Murakami, all of Saitama-ken, Japan, assignors to Wacom Co., Ltd., Saitama, Japan
Reexamination Request No. 90/004,140, Feb. 16, 1996.
Reexamination Certificate for Patent 4,878,553, issued Nov. 7, 1989, Ser. No. 95,702, Sep. 14, 1987.
Claims priority, application Japan, Sep. 12, 1986, 61-213970
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–7**, dependent on an amended claim, are determined to be patentable.

New claims **8–38** are added and determined to be patentable.

1. A position detection apparatus comprising:

[a**]** *an electronic writing* tablet;

a position pointer *for writing via said tablet*, at least one signal being transmitted and received between said position pointer and said *writing* tablet, and a position designated with said position pointer being detected;

a tuning circuit provided in said position pointer;

an electric wave generating means for sending an electric wave to said tuning circuit, said tuning circuit resonating with the electric wave from said electric wave generating means to generate another electric wave to be sent to an electric wave detecting means;

wherein coordinates values corresponding to said position designated with said pointer on said *writing* tablet are detected via said electric wave detecting means.

B1 5,000,991 (3326th)

PROCESS FOR PRODUCING POLYESTER RESIN FOAM AND POLYESTER RESIN FOAM SHEET

Motoshige Hayashi; Norio Amano; Takeshi Taki, and Takaaki Hirai, all of Nara, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

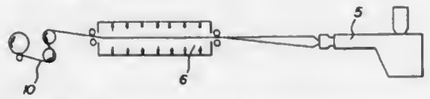
Reexamination Request Nos. 90/004,002, Oct. 26, 1995 and 90/004,143, Feb. 20, 1996.

Reexamination Certificate for Patent 5,000,991, issued Mar. 19, 1991, Ser. No. 443,416, Nov. 30, 1989.

Claims priority, application Japan, Dec. 1, 1988, 63-302233; Jan. 12, 1989, 61-3669; Apr. 6, 1989, 61-88633; Apr. 7, 1989, 61-88300; Sep. 25, 1989, 61-250049; Oct. 20, 1989, 61-273049

Int. Cl.[6] **B32B** *3/26*

U.S. Cl. 428—36.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **7**, **8**, and **10** is confirmed.

Claims **16** and **19** are cancelled.

Claims **1–6**, **9**, **11–15**, **18** and **21** are determined to be patentable as amended.

Claims **17** and **20**, dependent on an amended claim, are determined to be patentable.

New claims **22–40** are added and determined to be patentable.

1. A process for producing a thermoplastic polyester resin *crystalline* foam comprising melting a thermoplastic polyester resin, mixing the molten resin with a blowing agent and extruding the mixture into a low-pressure zone to carry out foaming, characterized in that *said extruded foam is subsequently cooled to bring its crystallinity to higher than 7% and that* a compound having two or more acid anhydride groups per molecule is added to the thermoplastic polyester resin.

B1 5,388,650 (3327th)

NON-CRYOGENIC PRODUCTION OF NITROGEN FOR ON-SITE INJECTION IN DOWNHOLE DRILLING

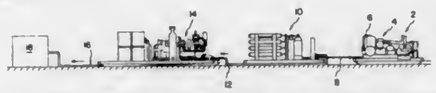
Keith Michael, Spring, Tex., assignor to MG Nitrogen Services, Inc., Malvern, Pa.

Reexamination Request No. 90/004,112, Jan. 22, 1996.

Reexamination Certificate for Patent 5,388,650, issued Feb. 14, 1995, Ser. No. 77,014, Jun. 14, 1993.

Int. Cl.[6] **E21B** *21/00*

U.S. Cl. 175—71



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–9**, dependent on an amended claim, are determined to be patentable.

New claims **10** and **11** are added and determined to be patentable.

1. A method for drilling for oil or gas or a geothermal well in which a compressed inert gas is delivered to a drilling region within a downhole, the improvement comprising:

(a) removing at least a substantial portion of the oxygen contained within a feed stream of air at the site of said drilling to produce an inert rich gas and an oxygen enriched waste gas; and

(b) delivering the inert rich gas *as a drilling fluid* to the drilling region within the downhole *with sufficient force and velocity to carry the drill cuttings upwards from the drilling region.*

B1 5,398,142 (3328th)

METHOD FOR ELIMINATING FILE FRAGMENTATION AND REDUCING AVERAGE SEEK TIMES IN A MAGNETIC DISK MEDIA ENVIRONMENT

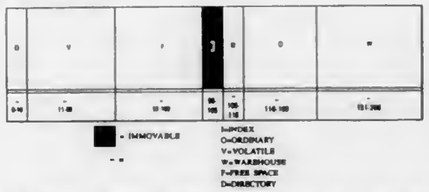
William Davy, Dublin, Ohio, assignor to Raxco, Inc.

Reexamination Request No. 90/004,134, Feb. 9, 1996.

Reexamination Certificate for Patent 5,398,142, issued Mar. 14, 1995, Ser. No. 359,316, May 31, 1989.

Int. Cl.[6] **G11B** *5/09*

U.S. Cl. 360—48



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are determined to be patentable as amended.

New claims **7** and **8** are added and determined to be patentable.

1. A method of organizing a magnetic storage medium so as to reduce seek time for reducing read and write accesses to said storage medium, said magnetic storage medium having free space and a plurality of files distributed thereon, said plurality of files including **[**warehouse**]** *a first group of* files, *said first group of files characterized by having been* last accessed within a first predetermined period of time and **[**volatile**]** *a second group of* files, *said second group of files characterized by having been* created within a second predetermined period of time, the method including the steps of:

substantially moving the **[**warehouse**]** files *of the first group* to one end of the magnetic storage medium;

substantially consolidating the free space distributed on said magnetic storage medium such that the free space is substantially centered in the space not occupied by the **[**warehouse**]** files *of the first group;* and

substantially positioning the **[**volatile**]** files *of the second group* contiguous to the consolidated free space.

B1 5,398,193 (3329th)

METHOD OF THREE-DIMENSIONAL RAPID PROTOTYPING THROUGH CONTROLLED LAYERWISE DEPOSITION/EXTRACTION AND APPARATUS THEREFOR

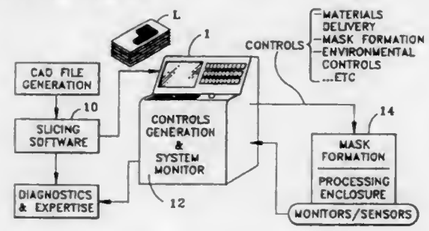
Alfredo O. deAngelis, 241 Freeman St. #1, Brookline, Mass. 02146

Reexamination Request No. 90/004,179, Mar. 12, 1996.

Reexamination Certificate for Patent 5,398,193, issued Mar. 14, 1995, Ser. No. 110,144, Aug. 20, 1993.

Int. Cl.[6] **G06F** *19/00;* **B29C** *35/08*

U.S. Cl. 364—468.26



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–35** and **36** is confirmed.

1. A method of automated layerwise fabrication of a three-dimensional part from a computer model, through controlled deposition and extraction of materials, that comprises, producing a three-dimensional computer model representation of the part and, by software, slicing the representation into a plurality of successive layers corresponding to layers of predetermined thickness(es) of the part; generating sequences of part and complementary support material(s) contours corresponding to each layer; depositing material(s) for one or more of said contours onto a work surface within a processing enclosure; material(s) processing said deposited contour(s) in order to achieve prespecified material properties for part and complementary contours; removing portions of said material(s) from said part and complementary contour(s) under the control of the computer model representation corresponding thereto; repeating the depositing, processing, and removing as necessary under the control of the computer model corresponding to the layer to complete an aggregate layer comprising part material contours within prespecified geometric and material property tolerances and complementary material(s) elsewhere on the aggregate layer; completing the computer model layer by further processing said aggregate layer to ensure thickness tolerances and selective binding to the next aggregate layer; repealing said controlled layer creation steps to build the entire part surrounded by the complementary material/s; and removing said complementary material/s to obtain the fabricated part.

B1 5,441,490 (3330th)

TRANSDERMAL PERFUSION OF FLUIDS

Pal Svedman, Ostanvag 85 B, S-216 Malmo, Sweden, 19, assignor to Pal Svedman, Malmo, Sweden

Reexamination Request No. 90/004,289, Jun. 27, 1996.

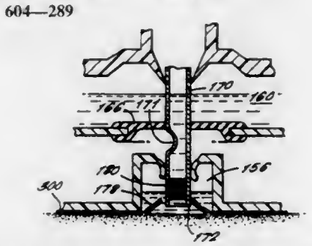
Reexamination Certificate for Patent 5,441,490, issued Aug. 15, 1995, Ser. No. 84,267, Nov. 23, 1993.

PCT No. PCT/EP92/00029, § 371 Date Nov. 23, 1993, § 102(e) Date Nov. 23, 1993, PCT Pub. No. WO92/11879, PCT Pub. Date Jul. 23, 1992

Claims priority, application Sweden, Jan. 9, 1991, 9100058; Apr. 8, 1991, 9101022

Int. Cl.[6] **A61M** *35/00*

U.S. Cl. 604—289



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **19–23** is confirmed.

Claims **1** and **12** are determined to be patentable as amended.

Claims **2–11**, **13–18**, **24** and **25**, dependent on an amended claim, are determined to be patentable.

1. Apparatus for use in transdermal perfusion of fluids through the skin of the human or animal body, the apparatus comprising a housing attachable to the body and having a contact surface which in use is held in contact with a portion of skin, the housing defining a chamber and the contact surface defining an aperture communicating with the chamber, and fluid supply means operable during a perfusion phase of operation of the apparatus to supply fluid to the chamber wherein the apparatus further comprises de-epithelializing means for **[**removing a**]** *delaminating an intact* portion of the skin's epidermis from the skin's underlying dermis, the de-epithelializing means being operable during a preparatory phase of operation of the apparatus to expose an area of dermis of the skin at a treatment site which is accessible via the aperture such that subsequently during the **[**pension**]** *perfusion* phase direct contact is made between fluid in the chamber and the dermis.

B1 5,579,669 (3331st)

MOTORIZED DISPENSER FOR CONTINUOUS STRIP FOOD PRODUCT AND METHOD OF DISPENSING THE PRODUCT

Michael Kind, Philadelphia; Alan Dorfman, Richboro, both of Pa., and Io N. Ku, Macau, Macau, assignors to Basic Fun, Inc., Southampton, Pa.

Reexamination Request No. 90/004,572, Jun. 2, 1997.

Reexamination Certificate for Patent 5,579,669, issued Dec. 3, 1996, Ser. No. 388,008, Feb. 13, 1995.

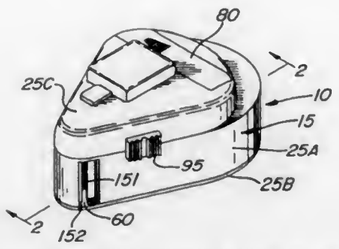
Int. Cl.[6] **B26D** *5/20;7/00*

U.S. Cl. 83—13

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A method for dispensing a strip of a food product in a desired length from a portable dispenser, said dispenser having a slotted housing, an outlet, severing means, motor means, and a manually actuated switch for causing said motor means and said severing means to operate, said switch being mounted in said slot of said



housing and being arranged to linearly slide into any one of three positions, said switch having a first position wherein said motor means is not energized, a second position wherein said motor means is energized, and a third position, said severing means being mounted on said switch such that movement of said switch from said second position to said third position causes said food product to be severed, said strip comprising an elongated web of an edible material, said method comprising disposing said strip within the dispenser so that said strip is coiled up in a compact configuration having a free end portion extending to said outlet, sliding said switch from said first position to said second position to advance a desired length of said free end portion of said strip out of said outlet, and sliding said switch from said second position to said third position to sever said desired length of said free end portion of said strip from the remaining portion of said strip to form a dispensed section of said strip which may be placed in a user's mouth, while the remaining portion of said strip remains within said dispenser.

REISSUES

SEPTEMBER 16, 1997

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,603

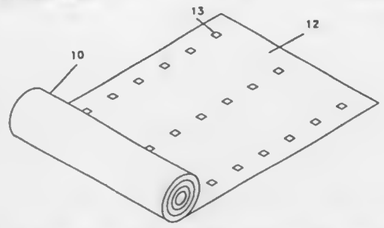
ROOFING MATERIAL WITH NAIL TABS

Robert F. Lassiter, 503 S. Barton La., Levelland, Tex. 79336

Original No. 5,365,709, dated Nov. 22, 1994, Ser. No. 133,989, Oct. 12, 1993. Application for reissue Oct. 18, 1995, Ser. No. 544,858

Int. Cl.[6] E04B *5/00*

U.S. Cl. 52—408 **27 Claims**



21. A roofing material of the type generally applied to roofs prior to the application of roofing shingles, comprising

a length of roofing material having two surfaces; and

a row of nail tabs adhered during manufacture along the length of surface of said roofing material.

Re. 35,604

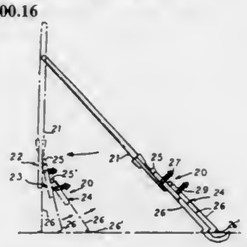
RAKE APPARATUS

John T. McDonough, Jr., 1121 27 St. NW., Fargo, N. Dak. 58102

Original No. 5,249,413, dated Oct. 5, 1993, Ser. No. 823,190, Jan. 21, 1992. Application for reissue Aug. 3, 1994, Ser. No. 285,222

Int. Cl.[6] A01D *7/06*

U.S. Cl. 56—400.16 **3 Claims**



3. A rake device comprising an elongated handle, a plurality of rake heads each having a plurality of resilient elongated rake tines mounted in the heads in a row at their one ends and having laterally bent other ends, one of said rake heads being fixed to the handle, another of said rake heads pivotally mounted to said one rake head, resilient means urging said another rake head pivotally into parallelism with said one rake head, stop means limiting the pivotal movement of said another rake head away with respect to the one rake head.

Re. 35,605

WORK POSITIONING DEVICE FOR ASSEMBLY LINE

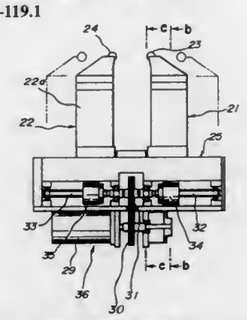
Minoru Nomaru, Yokohama, and Atsushi Takahama, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Original No. 4,976,484, dated Dec. 11, 1990, Ser. No. 282,158, Dec. 9, 1988. Application for reissue Jun. 22, 1992, Ser. No. 902,223

Claims priority, application Japan, Dec. 10, 1987, 62-187091

Int. Cl.[6] B25J *15/08*

U.S. Cl. 294—119.1 **4 Claims**



1. In a device for supporting a work piece,

first and second pincer members, said first and second pincer members being disposed on a base member in a manner to be slidably movable toward and away from each other, said first pincer being elongatable;

first and second work receiving members, said first and second work receiving members being disposed at the upper ends of said first and second pincer members;

first drive means associated with said first and second pincers for moving said first and second pincers toward and away from [one another] *each other*, said first drive means including a device which converts rotational motion into linear motion;

second drive means associated with said first pincer for selectively elongating [the same] *said first pincer*; and

a location [device] *means* comprising a probe mounted adjacent said first and second pincers and operatively connected [with] *to* a servo [device to enable the probe to be extended] *extension means for extending said probe* to engage [a location] *with an* aperture formed in [the] *a* work piece supported on said device.

Re. 35,606

LOW PROFILE TAPE DRIVE FOR DRIVING A MINI-DATA CARTRIDGE

Mark W. Perona, San Diego, Calif., assignor to Iomega Corporation, Roy, Utah

Original No. 5,210,664, dated May 11, 1993, Ser. No. 706,213, May 28, 1991. Application for reissue May 9, 1995, Ser. No. 437,840

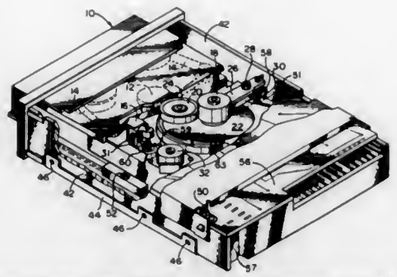
Int. Cl.[6] G11B *15/32;5/55;5/56*

U.S. Cl. 360—93 **9 Claims**

1. A magnetic tape drive for driving magnetic tape in a cartridge of the type in which a driven roller in said cartridge moves said tape past a read/write head in said [driven] *drive*, said drive comprising:

a motor,

a drive roller driven by said motor; an idle capstan engaged by said drive roller and engaging said driven roller through an opening in said cartridge when said cartridge is inserted into said drive to move said tape past said read/write head; and



a pivoted arm, said idler capstan being mounted on said arm, said arm being biased so that said idler capstan is biased into engagement with said driven roller when said cartridge is insertd into said drive.

Re. 35,607

DISTANCE MEASURING METHOD AND APPARATUS THEREFOR

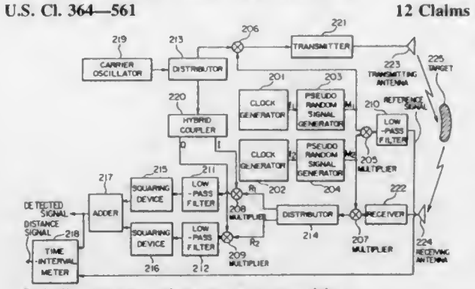
Akio Nagamune; Koichi Tezuka, both of Tokyo, and Yoshiyuki Kanao, Yokohama, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Original No. 5,075,863, dated Dec. 24, 1991, Ser. No. 307,891, Feb. 7, 1989. Application for reissue Jan. 24, 1994, Ser. No. 185,696

Claims priority, application Japan, Feb. 9, 1988, 63-26532; Oct. 6, 1988, 63-250784

Int. Cl.[6] **G01V** *3/08;* **G01S** *13/08*

U.S. Cl. 364—561 **12 Claims**



5. A distance measuring apparatus comprising:

means for generating a first pseudo random signal having a clock frequency f_1;

means for generating a second pseudo random signal which is the same in pattern as said first pseudo random signal but having a clock frequency f_2 which is slightly different from said clock frequency f_1;

a first multiplier for multiplying the output of said first pseudo random signal generating means by the output of said second pseudo random signal generating means and outputting the correlated code signal as the product of said multiplication;

carrier wave generating means for generating a reference carrier wave;

modulating means for modulating the output of said carrier wave generating means in coded phase by each code signal of said first pseudo random signal generating means;

transmitting means for transmitting the output of said modulating means toward the target as an electromagnetic wave signal;

receiving means for receiving a reflected signal from said target to obtain a received signal;

a second multiplier for multiplying an output of said receiving means by the output of said second pseudo random signal generating means and outputting the phase correlated carrier wave as the product of said multiplication**[**,**]** *;*

orthogonal signal detecting means for respectively multiplying said phase correlated carrier wave outputted from said second multiplier by an inphase component (I signal) and by a quadrature component (Q signal) which are extracted from said carrier wave generating means, their phases being mutually orthogonal, and outputting respective both products, the real part and the imaginary part of the orthogonal detected signal;

signal absolute value calculating means for respectively smoothing said real part and imaginary part of said orthogonal detected signal and calculating the signal absolute vale of a composed detection signal from said smoothed two component signals;

a first low pass filter for smoothing the correlated code signal outputted from said first multiplier and outputting smoothed the same signal; and

measuring and calculating means for measuring the time interval between the point when the output of said first low pass filter reaches to a maximum and the point when the output of said signal absolute value calculating means reaches to a maximun, multiplying one half of said time interval by the propagation velocity of said electromagnetic wave to make a first operation value as the product of said multiplication, dividing the frequency difference between said clock frequencies f_1 and f_2 to make a second operation value as the quotient of said division and

multiplying said first operation value by said second operation value to calculate the distance to said target as the product of said multiplication.

Re. 35,608

RECORDING AND/OR REPRODUCING APPARATUS FOR USING MAGNETO-OPTICAL DISC

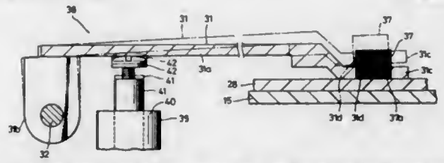
Wataru Yamatani, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Original No. 5,247,496, dated Sep. 21, 1993, Ser. No. 988,029, Dec. 9, 1992. Continuation of Ser. No. 690,597, Apr. 24, 1991, abandoned. Application for reissue Aug. 17, 1995, Ser. No. 516,462

Claims priority, application Japan, Apr. 28, 1990, 2-112557

Int. Cl.[6] **G11B** *11/00*

U.S. Cl. 369—13 **5 Claims**



1. A magneto-optical disc recording and reproducing apparatus comprising:

(a) an optical recording and reproducing head for recording and reproducing signals on a magneto-optical disc;

(b) external magnetic field generating means for supplying an external magnetic field to the magneto-optical *disc and used to record signals on the magneto-optical disc with the optical* recording and reproducing head **[**is recording signals on the magneto-optical disc**]**;

(c) a spacer **[**sheet disposed relative to the magneto-optical disc at its surface side opposing to the external magnetic field generating means**]** *means provided between the external magnetic field generating means and a surface of the magneto-optical disc opposing to the external magnetic field generating means*;

(d) wherein the external magnetic field generating means is movable and is positioned at a first position which is distant from the magneto-optical disc and the spacer **[**sheet**]** *means* when the optical recording and reproducing head is reproducing signals from the magneto-optical disc and at a second position at which the external magnetic field generating means comes in contact with the magneto-optical disc **[**via**]** *through* the spacer **[**sheet**]** *means* when the optical recording and reproducing head is recording signals on the magneto-optical disc; and

(e) moving means for moving the external magnetic field generating means between the first position and the second position and keeping the external magnetic field generating means distant from the magneto-optical disc and the spacer **[**sheet**]** *means* when the information signal recorded on the magneto-optical disc is reproduced.

Re. 35,609

PROCESS FOR PURIFYING 2', 3'-DIDEOXYNUCLEOSIDES

Masaru Otani, and Toshiya Tanabe, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Original No. 4,962,193, dated Oct. 9, 1990, Ser. No. 291,155, Dec. 28, 1988. Division of Ser. No. 191,370, May 9, 1988, Pat. No. 4,835,104. Application for reissue Feb. 9, 1995, Ser. No. 385,888

Claims priority, application Japan, Jun. 16, 1987, 62-149893; Oct. 12, 1987, 62-257002; Dec. 22, 1987, 62-324531; Dec. 22, 1987, 62-324882

Int. Cl.[6] **C07H** *19/06;19/16;19/20;17/00;* **B01D** *15/08*

U.S. Cl. 536—22.1 **16 Claims**

1. A process for the purification of a 2',3'-dideoxynucleoside from a solution obtained from a process requiring a microorganism or an enzyme, said solution containing, as impurities, other 2',3'-dideoxynucleosides or nucleic acid bases, said process comprising:

(i) contacting said solution with a porous, nonpolar resin to cause the adsorption of said 2',3'-dideoxynucleoside onto said porous nonpolar resin, wherein said 2',3'-dideoxynucleoside is 2',3'-dideoxyadenosine or 2',3'-dideoxyinosine;

(ii) separating said porous nonpolar resin from said solution; and

(iii) fractionally eluting said adsorbed 2',3'-dideoxynucleoside to obtain a purified 2',3'-dideoxynucleoside product.

Re. 35,610

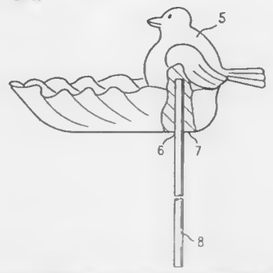
BIRD FEEDER DEVICE

William C. Yancy, 3741 Seabrook Island Rd., Johns Island, Charleston County, S.C. 29455

Original No. 5,134,968, dated Aug. 4, 1992, Ser. No. 721,983, Jun. 27, 1991. Application for reissue Aug. 3, 1994, Ser. No. 285,221

Int. Cl.[6] **A01K** *39/00*

U.S. Cl. 119—57.8 **11 Claims**



1. A landscape adornment, comprising a base**[**,**]** having a mounting section and a cupped section unitarily formed from an impervious or semi-impervious material, said mounting section having an upper side and **[**a**]** *an* under side, *a substantial portion of* **[**and**]** said cupped section extending laterally outward from a single side of the mounting section, said cupped section having a middle containment segment and an outer edge continuous around the middle containment segment from the mounting, any portion of the outer edge being less than about **[**six**]** *eight* inches from the mounting section, the cross section of the middle containment segment from the mounting section to the outer edge being less than about one inch in thickness, said cross section forming an upwardly inverted arc to form an open containment of less than about four fluid ounces; said mounting section being thicker than said cupped section and having opening in the **[**underside**]** *under side* with a support rod receivable therein; and said support rod being less than ½ inch in diameter and more than about 18 inches in length.

PLANT PATENTS

GRANTED SEPTEMBER 16, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,027

SWEET GUM TREE NAMED WARD

Earl Cully, Jacksonville, Ill., assignor to Heritage Trees, Inc., Jacksonville, Ill.

Filed Mar. 4, 1996, Ser. No. 608,013
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—51.1 **1 Claim**

1. A new and distinct cultivar of sweet gum tree named 'Ward', as illustrated and described.

10,028

PETUNIA PLANT NAMED 'SUNWINE'

Reinhard W. Rother, 56 Emerald Monbulk Road, Emerald, Victoria 3782, Australia

Filed Jul. 15, 1996, Ser. No. 679,895
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named 'Sunwine', as illustrated and described.

10,029

PETUNIA PLANT NAMED SUNSTRIKER

Reinhard W. Rother, 56 Emerald Monbulk Road, Emerald, Victoria 3782, Australia

Filed Jul. 15, 1996, Ser. No. 680,165
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Petunia plant named 'Sunstriker', as illustrated and described.

10,030

ALSTROEMERIA PLANT NAMED 'SWEET LAURA'

Mark P. Bridgen, Storrs, Conn.; Chunsheng Lu, Watsonville, Calif., and Michael Neuroth, Lumni, Wash., assignors to The University of Connecticut, Storrs, Conn., and Coast Alpine Nursery, Lummi, Wash.

Filed Dec. 15, 1995, Ser. No. 573,201
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.1 **1 Claim**

1. A new and distinctive Alstroemeria plant substantially as shown herein and described, distinguished by its sweet fragrance, unique flower color, strong and upright growth habit, long floral stems, narrow dark green leaves and continuous flowering habit.

10,031

KALANCHOE PLANT NAMED 'KERINCI'

Ike Vlielander, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Mar. 18, 1996, Ser. No. 618,044
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.15 **1 Claim**

1. A new and distinct cultivar of Kalanchoe plant named Kerinci, as illustrated and described.

10,032

IMPATIENS PLANT NAMED 'TIOGA PEACH'

Harlan B. Cosner, and Sue L. Cosner, both of P.O. Box 173, Broadbent, Oreg. 97414

Filed Sep. 18, 1995, Ser. No. 529,572
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct Impatiens plant named Tioga Peach, as illustrated and described.

10,033

DOUBLE IMPATIENS PLANT NAMED 'CHERRY VANILLA'

David Greinke, Palmetto, Fla., assignor to Ball Horticultural Company, West Chicago, Ill.

Filed May 16, 1996, Ser. No. 648,929
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct Double Impatiens plant named Cherry Vanilla, as illustrated and described.

10,034

ANTHURIUM PLANT NAMED KRYPTON

Ann E. Lamb, Sebring, and Robert D. Hartman, Lake Placid, both of Fla., assignors to Twyford International, Inc., Santa Paula, Calif.

Filed Apr. 9, 1996, Ser. No. 629,791
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium plant named 'Krypton' as illustrated and described.

PATENTS

GRANTED September 16, 1997

ERRATA

For CLASS	See PATENT NO.
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345–356 5,668,966
711–003 5,668,968
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711–206 5,668,970
711–111 5,668,971
711–136 5,668,972
711–152 5,668,973
711–157 5,668,974
711–169 5,668,975
345–509 5,668,979
345–523 5,668,980

PATENTS

GRANTED SEPTEMBER 16, 1997

GENERAL AND MECHANICAL

5,666,663

ADAPTER FOR PROTECTIVE MASK FOR A HELMET

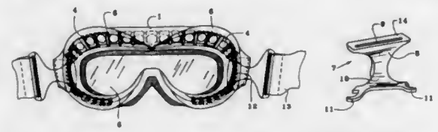
Maurice Bollé , Oyonnax, France, assignor to Etablissements Bolle, Oyonnax, France

Filed May 10, 1995, Ser. No. 438,680

Claims priority, application France, May 13, 1994, 94 05890

Int. Cl.[6] A61F *9/02;* **A42B** *3/00*

U.S. Cl. 2—10 **1 Claim**



1. An adapter in combination with a fastening strap and a protective mask for a helmet consisting of a rigid V-shaped angle piece, one end of which has a slit for securing the fastening strap for the mask and the other end of which has means of attaching to the side pieces of the mask, such that the fastening point of the fastening strap is offset towards the front of the mask, characterized by the fact that the angle piece (**7**) is dissymmetrical, and one leg (**10**) of it has two hooks (**11**) opening in opposite directions parallel to the slit (**9**) for the fastening strap, which is in a flange (**14**) on the other leg of the angle piece, and the hooks catch over small bars (**6**) which constitute bracing between the front and back of the mask.

5,666,664

FACE PROTECTOR SHADE

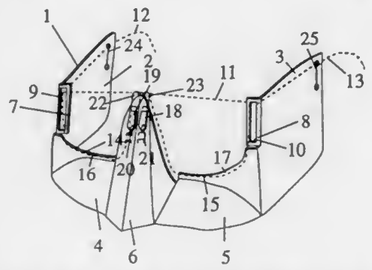
David Thomas Hamilton, 13 Baudin Place, Port Lincoln SA 5606, Australia

Filed Jan. 9, 1995, Ser. No. 370,438

Claims priority, application Australia, Jan. 10, 1994, PM3298

Int. Cl.[6] A61G *9/00*

U.S. Cl. 2—13 **15 Claims**



1. A face protector shade for use in combination with a pair of spectacles worn by a wearer, said spectacles having a frame portion adapted to be positioned over the nose of a wearer, said frame portion supporting a pair of lens on either side of the nose, and a pair of arms extending rearwardly of the face of the wearer from opposite sides of the frame portion and adapted to be positioned over the ears of the wearer, said face protector shade comprising a flat sheet of pliable material folded into a shape having a nose protecting portion for covering the nose of the wearer, two cheek protecting portions on either side of said nose protecting portion for covering the cheeks of the wearer, each cheek protecting portion comprising an upper cheek portion and a contiguous lower cheek portion, the upper cheek portion extending substantially vertically downward from a bottom part of a lens and the lower cheek portion outwardly from a lower edge of each upper cheek portion, said lower cheek portions being contiguous with the nose protecting portion, and two side portions contiguous with and extending rearwardly of the face of the wearer from an outer side of each upper cheek portion for protecting the temples of the wearer, each side portion having at least one aperture through which an arm of the spectacles can pass so that the spectacles when worn by a wearer support the face protector shade in position on the wearer's face.

5,666,665

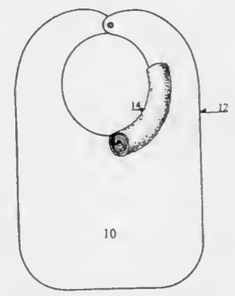
BABY BIB DRIBBLE ROLL

Julie Cooper Morgado, 917 18th Ave. NW., Birmingham, Ala. 35215

Filed Feb. 26, 1996, Ser. No. 606,576

Int. Cl.[6] A41B *13/10*

U.S. Cl. 2—49.1 **1 Claim**



1. An apparatus for keeping baby clothes drier during bottle-feeding, comprising:

a flat absorbent bib;

a square of absorbent material, that will be rolled up and snapped together, forming a roll;

3 sets of snaps attached to the absorbent square to secure it into a roll;

3 hook and loop fastener patches attached to the roll for securing the roll to the bib.

5,666,666

NECKWEAR

Barry Chaffen, and Gwen S. Chaffen, both of 5630 N. Sheridan #907, Chicago, Ill. 60660

Continuation-in-part of Ser. No. 474,318, Jun. 7, 1995, abandoned. This application Jan. 29, 1996, Ser. No. 593,079

Int. Cl.[6] A41D *25/00;25/02;25/16*

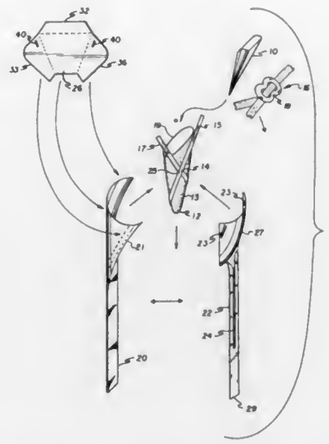
U.S. Cl. 2—148 **9 Claims**

1. A pretied necktie comprising:

a knot-shaped member having from side, a rear side, a top, and a bottom;

a front body member having a top portion adjacent the front side of said knot-shaped member and a bottom portion depending therefrom;

a rear body member having a top portion adjacent the rear side of said knot-shaped member and a bottom portion depending therefrom and terminating at a bottom end;



a neck band attached to said knot-shaped member; and

a cover encasing said knot-shaped member, the top portion of said front member, and the top portion of said rear member, said cover including slits, said neck band passing through said slits.

5,666,667

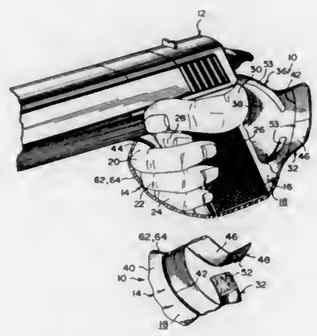
GRIP CONTROL GLOVE FOR A HANDGUN

Wilfred L. Hook, Jr., 2381 Haumana Pl., Honolulu, Hi. 96819

Filed Nov. 1, 1995, Ser. No. 551,706

Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—159 **20 Claims**



1. A grip control glove for a handgun comprising a) a covering for a hand of a person, said covering having a pocket therein so that a middle finger, ring finger and pinkie of the hand are bent back to grasp a handle of the handgun inserted into the pocket of said covering, while an index trigger finger and thumb of the hand will extend out of the pocket of said covering for freedom of movement to fire the handgun, and b) a stretchable sheath to receive the handle of the handgun, so as to provide for a better grip onto the handle by the middle finger, ring finger and pinkie of the hand of the person, when said handle of the handgun with said sheath is inserted into the pocket of the covering.

5,666,668

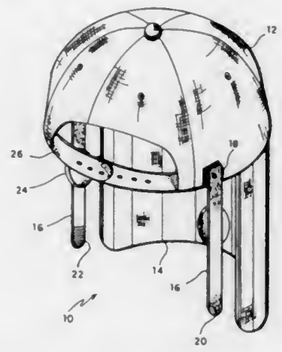
CAP WITH FRONT SIZE ADJUSTMENT AND REAR FLAP

Chad N. Ronquillo, 11801 Black Forest La. SE., Olalla, Wash. 98359

Filed May 4, 1995, Ser. No. 434,774

Int. Cl.[6] A42B *1/06*

U.S. Cl. 2—172 **6 Claims**



1. A visorless baseball-style cap comprising:

a crown portion dimensioned and configured to fit an individual's head, said crown portion having a front, rear, left side, right side, wherein said crown portion is substantially dome-shaped and includes an opening on said front;

a flexible material attached to said rear and a portion of said left side and said right side, said flexible material having indicia thereupon and extending substantially vertically from said crown portion; and

means for adjusting said cap to fit different size heads wherein said means for adjusting said cap are attached to the front of said crown portion bridging said opening of said crown portion.

5,666,669

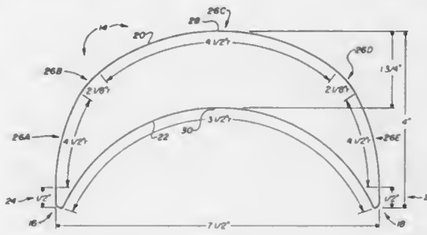
CAP WITH SHORTENED BILL

Louis Sewell, 736 Boxwood Dr., Pensacola, Fla. 32503

Filed Mar. 11, 1996, Ser. No. 613,543

Int. Cl.[6] A42B *1/04*

U.S. Cl. 2—195.1 **4 Claims**



1. A cap comprising:

a generally hemispherical shell to fit the head of a person;

an adjustment means for adjusting the circumference of the shell; and

a bill comprised of an outer edge, an inner edge having a radius of about 3½ inches a first straight section having a length of about ½ inches and a first curved section having a radius of about 4½ inches integral with the first straight section and a second curved section having a radius of about 2⅛ inches integral with the first curved section and a third curved section having a radius of about 4½ inches integral with the second curved section and a forth curved section having a radius of about 2⅛ inches integral with the third curved section and a fifth curved section having a radius of about 4½ inches integral with the fourth curved section and a second straight section having a length of about ½ inch integral with the fifth curved section, a first midpoint at the inner edge, a second midpoint located about 1¾ inches from the first midpoint, the bill being attached to the shell.

5,666,670

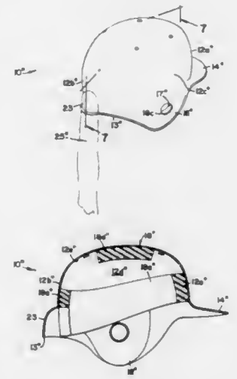
PROTECTIVE HELMET

Pamela S. Ryan, 842 Park Place Dr., Mendota Heights, Minn. 55118, and James B. Easley, Minneapolis, Minn., assignors to Pamela S. Ryan, St. Paul, Minn.

Continuation-in-part of Ser. No. 283,789, Aug. 1, 1994, Pat. No. 5,535,454. This application Feb. 9, 1995, Ser. No. 386,282

Int. Cl.[6] A42B *3/00*

U.S. Cl. 2—425 **12 Claims**



1. A protective helmet adapted to be worn on a human head and of a type used to protect the head against damaging impact from solid objects, comprising:

(a) an outer impact-resistant dome portion configured to fit on a human head, said dome portion being generally symmetrically shaped about a central axis extending between front and rear portions of the helmet and terminating at a lower edge to define an internal cavity;

(b) said dome portion defining an elongate hair-entraining passage within said internal cavity, extending along said central axis of said rear portion of the helmet, for entraining a bundled mass of a wearer's hair therealong and within said internal cavity; said hair entraining passage terminating at an exit port along said lower edge;

(c) liner means operatively connected to said dome portion within said internal cavity for snugly engaging a wearer's head and for providing an impact-absorbing cushion between said dome portion and the head; and

(d) whereby when said helmet is operatively positioned on a wearer's head, the wearer's bundled mass of hair is entrained along said hair-entraining passageway within said internal cavity and depends downwardly through said exit port along the wearer's neck.

5,666,671

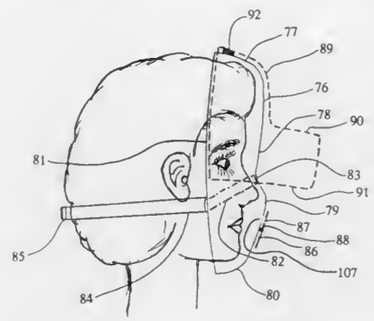
FACIAL MASK

Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167

Filed Dec. 7, 1994, Ser. No. 350,473

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—424 **21 Claims**



1. A facial mask comprising a mask body having a frontal body portion for frontally fully covering a face;

said frontal body portion having a vertical expanse extending vertically from, and including, a forehead, to, and including a chin, and a lateral expanse extending laterally from, and including, a right cheek, to, and including, a left cheek;

said frontal body portion comprising a transparent zone for allowing a user to see through said body;

a vapor barrier disposed on a posterior surface of said frontal body portion as a continuous band that extends laterally from a location below and outward of a right eye, beneath a right eye, across a bridge of a nose, beneath a left eye, to a location below and outward of a left eye;

said vapor barrier comprising a thickness that, when the mask is worn, provides for the vapor barrier to contact the face along its lateral extent to prevent nasally and orally exhaled air from transpassing the barrier;

and means for securing the mask to a user.

5,666,672

TOILET ATTACHMENT WITH EASILY DETACHABLE SEAT

Ayse Birsel; Noriko Hiraga; Junichi Tani; Kenichi Nagato; Koichi Watanabe, and Kuniaki Shinohara, all of Kita-Kyushu, Japan, assignors to Toto Ltd., Fukuoka, Japan

PCT No. PCT/JP95/00167, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO94/21970, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 8, 1995, Ser. No. 530,359

Claims priority, application Japan, Feb. 10, 1994, 6-036380

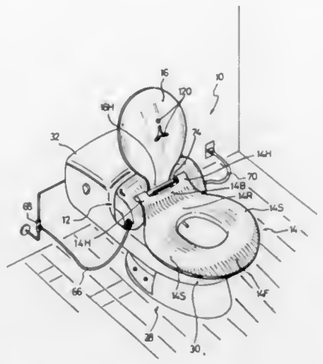
Int. Cl.[6] A47K *13/12*

U.S. Cl. 4—236 **22 Claims**

1. In a combined toilet seat and accessory assembly having a housing adapted to be mounted on an upper surface of a toilet bowl fixture between a bowl section thereof and a flushing water supply section located rearwardly of said bowl section, a toilet seat hinged for pivoting movement to said housing, and toilet accessory equipment disposed in said housing, the improvement comprising:

a pair of posts spaced apart, secured to said housing, and extending substantially upright from said housing; and

a horizontal hinge shaft supported by said posts and spaced upwardly away from an outer surface of said housing to a level higher than an upper surface of side portions of said seat, said posts being spaced apart a distance less than a width of the toilet seat, said seat comprising a hinge portion extending rearwardly and upwardly from a rear portion of said seat for engagement with said hinge shaft, said hinge portion of



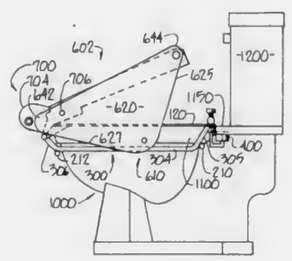
said seat being snap-fitted on said hinge shaft for detachment therefrom and for re-installation thereon by a single action of application of force.

5,666,673

TOILET SEAT

Francis J. Ammatelli, 1235 W. 57th Ter., Kansas City, Mo. 64113, and Edward L. McMullen, 10004 Walnut Dr., Kansas City, Mo. 64114

Filed Feb. 22, 1996, Ser. No. 605,349
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—254 **20 Claims**



1. A toilet accessory device for positioning a seated user in a functional position atop a toilet bowl with the upper legs of the seated user being drawn towards the user's torso comprising:

framework for placement atop the toilet bowl, the framework including an opening for passage of waste therethrough;

a seat structure for the user;

first and second rail assemblies extending along the lateral edges of said framework for extension along lateral sides of the toilet bowl;

cradle means atop said framework and engaging said rails for user movement of said seat between a first generally horizontal position relative to the toilet bowl and a second position wherein said seat is at an angled position relative to the toilet bowl;

a lift bar traversing a forward portion of said cradle assembly and in extension across a front of the toilet bowl;

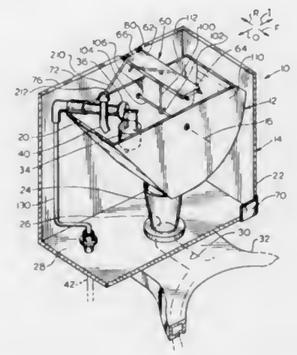
said cradle means further positioning said lift bar at a first position above the toilet bowl with said seat in said first position for drawing the legs of a user to a position adjacent the user's torso and a second position downwardly displaced from said first lift bar position upon movement of said seat to said second angled position.

5,666,674

DUMP BUCKET TOILET

Arnold Hennessy, 64 West Street, Apt. 107, Wellington, Ontario, Canada, K0K 3L0

Filed Mar. 24, 1995, Ser. No. 410,364
Int. Cl.[6] E03D *1/20*
U.S. Cl. 4—365 **14 Claims**



1. A dump bucket toilet which includes a toilet bowl, a tank having opposite tank walls and upper and lower portions, said opposite tank walls each having a top edge with a largely upwardly-facing surface and said tank having an outlet in said lower portion which is coupled to said toilet bowl to flow water thereto, a dump bucket which can pivot about a primarily horizontal pivot axis to tip and release water into said tank so the released water can flow out through said outlet, and an inlet valve positioned to refill said bucket, characterized by:

a bucket support that includes a mount portion having opposite ends each mounted on said tank upper portion at a location above said pivot axis, said bucket support having a support portion which extends downwardly from said mount portion and which supports said bucket in pivoting about said axis, with said support portion being stationary when said toilet is in use and said bucket pivots as well as when said toilet is not in use and said bucket does not pivot;

each of said mount portion ends rests on one of said tank top edges at one of said largely upwardly-facing surfaces thereat.

5,666,675

FLUSHING MEANS WITH A TOILET BOWL

Urs Rüegg, Rapperswil, Switzerland, assignor to Geberit Technik AG, Jona, Switzerland

Filed Jun. 7, 1995, Ser. No. 478,614
Int. Cl.[6] E03D *11/02*
U.S. Cl. 4—425 **16 Claims**

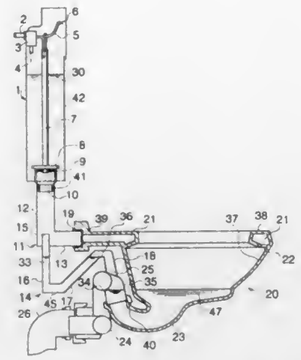
1. A flushing device with a toilet bowl, comprising:

a flushing channel provided at an upper edge of the toilet bowl;

a siphon trap provided at an outlet pipe, the siphon trap being connected to a suction siphon leading to a drain pipe;

a flushing means for releasing an amount of flushing water, said flushing channel being connected to said flushing means;

a connection pipe connected to said flushing means and connected to an outlet opening of the toilet bowl, said connection pipe having a continuously open connection in communication with said flushing channel; and



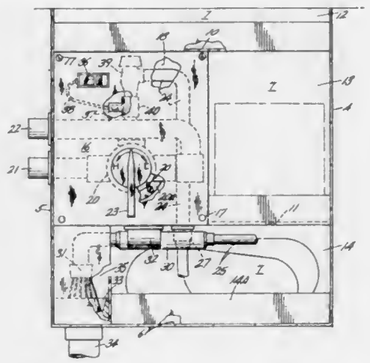
a hydraulic seal provided in said connection pipe for sealing said connection pipe against a vacuum at said outlet opening, during a suction process of flushing of the toilet bowl.

5,666,676

BATHROOM CABINET WITH PERSONAL HYGIENIC COMPONENTS

Arlen M. Roemen, 325 Dellwood Dr., Eugene, Oreg. 97405, and William F. Glenn, 1780 Bruer La., Eugene, Oreg. 97401

Filed Aug. 10, 1995, Ser. No. 513,459
Int. Cl.[6] A47K *3/22*
U.S. Cl. 4—443 **1 Claim**



1. In combination,

a bathroom cabinet,

a mixing valve for communication with hot and cold water inlets,

said valve mounted in place on said cabinet,

an outlet conduit in upstream communication with said valve,

a heat sensor in place on said outlet conduit and a thermometer having a visual display in place on said cabinet and responsive to a mixed flow of hot and cold water in said outlet conduit,

a hose normally housed in the cabinet served by said outlet conduit and having a hand grip and nozzle,

a fluid discharge chamber in said cabinet to receive water discharged from said nozzle,

a drain opening in said cabinet below said discharge chamber and drain pipe in communciation with said drain opening for reception of a water flow from said nozzle for discharge into the drain system of a bathroom, and

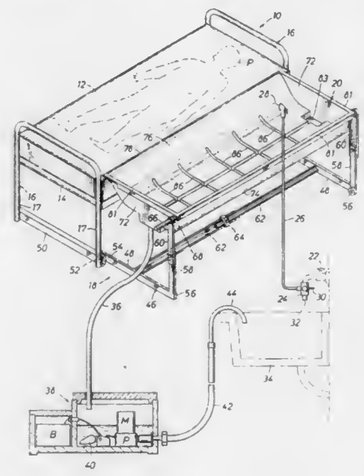
a holder in place in said cabinet for reception of the hand grip and positioning said hand grip and nozzle for water discharge into said chamber whereat the user may manually test water flow temperature prior to the water entering the drain opening and permitting removal of the hand grip and nozzle from the interior of the cabinet.

5,666,677

BATH TUB ASSEMBLY

Michael K. Crawford; Joseph M. Crawford, and James R. Crawford, all of Houston, Tex., assignors to Easy Lift Care Products, Inc., Houston, Tex.

Continuation of Ser. No. 429,072, Apr. 26, 1995, Pat. No. 5,598,590, which is a continuation-in-part of Ser. No. 241,619, May 12, 1994, abandoned. This application Jan. 4, 1996, Ser. No. 582,762
Int. Cl.[6] A47K *3/162*
U.S. Cl. 4—540 **23 Claims**



1. A bath tub comprising:

a generally rectangular tub structure characterized by a length and a width; said length being of a dimension selected to accommodate the entire height of a patient in a prostrate position for bathing;

a generally flat bottom disposed along the length of said tub and defining a patient support surface for bathing said patient in a prostrate position;

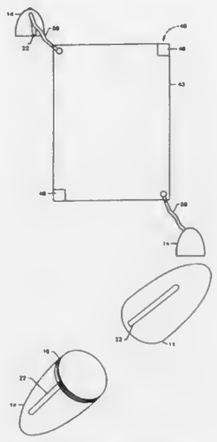
a pair of opposed ends carried upwardly from said bottom, said ends disposed in a direction generally transverse to said length;

a rear side placed between said pair of opposed ends and carried upwardly from said bottom; and

a front side placed between said pair of opposed ends and carried upwardly from said bottom, said front side curving gradually upwardly from said bottom in a transverse direction to said bottom to define a gradually sloping smooth surface along the entire front side, said sloping smooth surface permitting a sliding sidewise movement of said patient in a prostrate position into the bottom of the tub along said front side with said patient remaining in a prostrate position during the entire sliding movement;

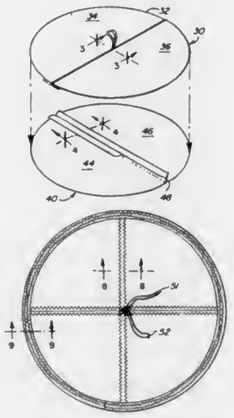
said rear side having an upper rear edge and a channel shaped flange extending downwardly from said upper rear edge, said channel shaped flange designed and arranged for removable placement on a horizontal support member extending beyond the ends of the tub for pivotal movement and support of said bath tub on said support member.

5,666,678
GROUND COVERING SYSTEM
Cameron Frank Wall, 2983 Emerald Chase, Tallahassee, Fla. 32308
Filed Mar. 11, 1996, Ser. No. 613,542
Int. Cl.[6] A47G *9/06*
U.S. Cl. 5—417 **13 Claims**



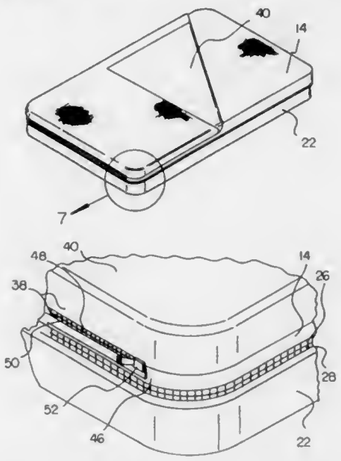
1. A ground covering system comprising:
a ground covering;
one or more weights attached to the ground covering;
a carrying case having a first half and a second half wherein the first half and second half are releasably securable to each other to contain the blanket;
a first strap connecting the first half to the ground covering at a first location; and
a second strap connecting the second half to the ground covering at a second location.

5,666,679
ROUND BLANKET STRUCTURE AND METHOD FOR MAKING THE SAME
Gaila O. Ruddy, 5 River Rd., Ste. 326, Wilton, Conn. 06897
Filed Jul. 26, 1995, Ser. No. 507,587
Int. Cl.[6] A47G *9/02*
U.S. Cl. 5—502 **20 Claims**



12. A round blanket structure comprising:
a first circular blanket layer having a round circumferential edge and a diameter passing through the center, said first circular blanket layer formed of two semicircular sections having at least one seam extending along or parallel to a first diameter of the blanket;
a second circular blanket layer overlying the first circular blanket layer and having a round circumferential edge and a diameter passing through the center, said second circular blanket layer formed of two semicircular sections having at least one seam extending along or parallel to a second diameter of the blanket, said second diameter being nonparallel to said first diameter;
means for forming a handle secured near the center of at least one of said seams in one of said circular blanket layers;
a strip of binding material sewn about and securing said first and second circular blanket layers into a round blanket having a unitary peripheral edge;
stitching parallel to each of said seams in said first and second blanket layers said stitching holding said layers together.

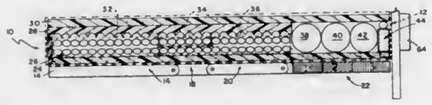
5,666,680
SHEET AND MATTRESS APPARATUS
Major Hackett, Jr., 3351 N. Guilford Ave.,, Indianapolis, Ind. 46205
Filed Feb. 23, 1996, Ser. No. 606,396
Int. Cl.[6] A47G *9/04*
U.S. Cl. 5—692 **3 Claims**



1. A sheet and mattress apparatus comprising:
a fitted sheet portion having a top, said fitted sheet portion further having an end side and an edge;
a first fastener strip attached to and substantially coextensive with said edge of said fitted sheet portion;
a mattress portion having sides;
a second fastener strip attached to said sides of said mattress portion, said second fastener strip being secured to said first fastener strip, said second fastener strip being substantially coextensive with said first fastener strip;
a cover sheet portion having an end side and a lower edge, said end side of said cover sheet portion extending directly upward from said lower edge of said cover sheet portion towards said top of said fitted sheet portion such that said end side of said cover sheet portion is positioned flatly against said end side of said fitted sheet portion;
a third fastener strip attached to said lower edge of said cover sheet portion, said third fastener strip comprising a zipper strip;

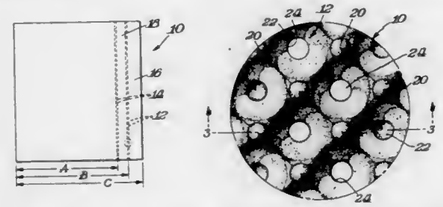
a fourth fastener strip attached to said end side of said fitted sheet portion of said fitted sheet assembly, said third fastener strip being secured to said fourth fastener strip, said fourth fastener strip being substantially coextensive with said third fastener strip, said fourth fastener strip comprising a zipper strip;
wherein said third fastener strip is coupled to said fourth fastener strip in such a manner that a pulling of said cover sheet relative to said fitted sheet will create a tension force between said third and fourth fastener strips and will not rotate said third fastener strip relative to said fourth fastener strip.

5,666,681
HEEL PRESSURE MANAGEMENT APPARATUS AND METHOD
Eric R. Meyer, Greensburg; Greg W. Branson, Batesville; Richard J. Schuman, Brookville, and David J. Ulrich, Sunman, all of Ind., assignors to Hill-Rom, Inc., Batesville, Ind.
Filed Jan. 3, 1995, Ser. No. 367,829
Int. Cl.[6] A47C *27/08;27/10*
U.S. Cl. 5—727 **20 Claims**



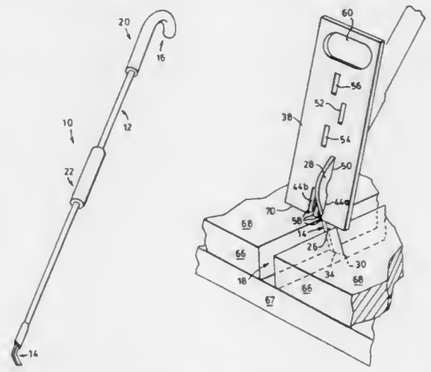
1. A sleep surface system comprising:
a mattress including at least two bladders located adjacent a foot end, the bladders each having a predetermined, adjustable internal pressure; and
a pressure controller configured to reduce the pressure in at least one selected bladder independently from the remaining bladders to provide pressure relief on heels of a patient lying on the mattress when the heels are located above the at least one selected bladder, the pressure controller including a pressure sensor and an air line coupled to each of the bladders and an air pump coupled to the air line to deflate the at least one selected bladder to a pressure of about zero psi, the pressure controller also including means for adjusting an air volume within the at least one selected bladder at a predetermined time interval to maintain the air volume within the at least one selected bladder at about 90% or greater of a total air volume of the at least one selected bladder.

5,666,682
MATTRESS PAD OF ADJUSTABLE SIZE
Vincenzo A. Bonaddio, and Jose DeJesus M. Contreras, both of 2060 N. Batavia St., Orange, Calif. 92665
Filed Sep. 30, 1994, Ser. No. 315,424
Int. Cl.[6] A47C *27/14*
U.S. Cl. 5—736 **11 Claims**



1. A method for forming a mattress pad of adjustable size, comprising:
convoluting a single slab of foam material by passing the slab without an auxiliary pad between convoluter rolls having a plurality of spaced apart projecting fingers with surfaces between the projecting fingers, each finger having a tip, where the fingers are positioned so that at least some of the fingers of one roll intermesh with the fingers of another roll and the tips of at least some fingers nearly contact the surface between the fingers of another roll to compress the foam; and
cutting the foam slab with a knife blade positioned adjacent to the convoluter rolls so that the foam slab forms two foam pads with each pad having peaks and troughs on at least one surface, and the foam material is removed from at least some of the troughs of one of the pads to form holes between the peaks of the pad, with said holes forming a guide for tearing or cutting to remove portions of the foam to decrease the width or length of the pad.

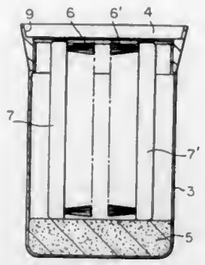
5,666,683
DECK CLEANING TOOL
James R. Gairdner, 77 Clarendon Avenue, Suite 501, Toronto, Ontario, Canada, M4V 1J2
Filed Jun. 25, 1996, Ser. No. 668,670
Int. Cl.[6] A47L *13/00*
U.S. Cl. 15—104.001 **16 Claims**



1. A tool for removing debris from a crevice, said tool comprising:
an elongated shaft;
a tine located at one end of said shaft for insertion into said crevice to engage said debris; and
a gauge member located on said tine, said gauge member having a body defining a transverse edge for limiting the maximum depth of insertion of said tine into said crevice, said body including adjustment means for adjusting the position of said transverse edge relative to said tine to facilitate one of various maximum depths of insertion to be selected.

5,666,684
GOLF CLUB CLEANER
Michael Cussen, 11 Rosalie Court, Pakenham, Victoria 3810, Australia
Filed Feb. 6, 1996, Ser. No. 597,646
Claims priority, application Australia, Feb. 14, 1995, PN1130; Dec. 12, 1995, 40354/95
Int. Cl.[6] A63B *57/00*
U.S. Cl. 15—104.92 **14 Claims**

1. A golf club cleaner comprising:
a receptacle having a closed bottom end, a longitudinal side wall and a top end provided with an opening for receiving a golf club head to be cleaned;
absorbent means adjacent the bottom end for receiving cleaning liquid; and



at least two brushes, each of the brushes including a brush head and a multiplicity of cleaning bristles extending from the brush head to free ends, the brush head being retained adjacent an interior of the longitudinal side wall with the cleaning bristles extending inwardly from one side of the brush head such that the free ends of the cleaning bristles of the respective brushes are opposed for contacting the golf club head when it is received through the opening and inserted into the receptacle between the brushes.

5,666,685

HAND-HELD IMPLEMENT FOR CLEANING SMOOTH SURFACES

Tassilo von Grolman, Oberursel; Bernhard Heise, Friedberg, and Uwe Dingert, Abtsteinach, all of Germany, assignors to Vileda GmbH, Weinheim, Germany

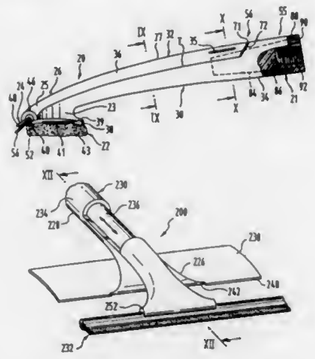
PCT No. PCT/EP94/02984, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO95/07044, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 7, 1994, Ser. No. 612,898

Claims priority, application Germany, Sep. 7, 1993, 43 30 271.8

Int. Cl.[6] A47L *1/06*

U.S. Cl. 15—121 **44 Claims**



1. A hand-held implement for cleaning smooth surfaces and for wiping washing liquid from the surfaces, the implement comprising a cleaning unit including a cleaning member, a carrier for the cleaning member, and a handle, which extends from the carrier for the cleaning member, the implement further comprising a squeegee unit including a squeegee member, a carrier for the squeegee member, and a handle, which extends from the carrier for the squeegee member and defines a longitudinal axis, the squeegee member being arranged at the front end of the handle of the squeegee member and extending transversely with respect to the longitudinal axis, the implement further comprising means for connecting the cleaning and squeegee units to one another in a releasable manner, at the handles of the cleaning and squeegee units and at the carriers of the cleaning and squeegee units, so that the cleaning and squeegee units are also capable of being used separately.

5,666,686

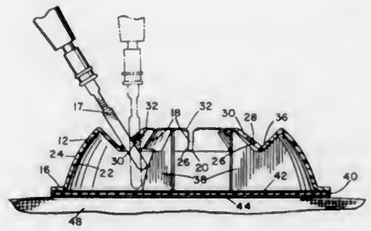
CAUTERIZER BLADE WIPING DEVICE

Leland H. Dao, Haleiwa, Hi., assignor to Graphic Controls Corporation, Buffalo, N.Y.

Continuation of Ser. No. 236,264, May 2, 1994, Pat. No. 5,471,705, which is a continuation-in-part of Ser. No. 11,173, Jan. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 908,412, Jul. 6, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,515

Int. Cl.[6] A47L *25/00*

U.S. Cl. 15—236.05 **14 Claims**



1. A cauterizer blade wiper, comprising;

a body having a generally annular wall including a first end, a second end, and a plurality of slots extending from the first end toward the second end, the wall being cantilevered on a bottom portion of the body; and

a double-sided adhesive sheet having first and second adhesive surfaces, the first adhesive surface attached to the bottom portion of the body, the second adhesive surface having a pressure-sensitive adhesive thereon and a peelable backing sheet covering the pressure-sensitive adhesive for selectively exposing the pressure-sensitive adhesive.

5,666,687

WIPER BLADE INCLUDING YOKE MOUNTED LATERAL WIND-DEFLECTING SURFACE

Cedric S.K. Charng, 3F-1, Lane 56, Wan-An St., Moozar, Taipei, Taiwan

Filed Jul. 13, 1995, Ser. No. 502,293

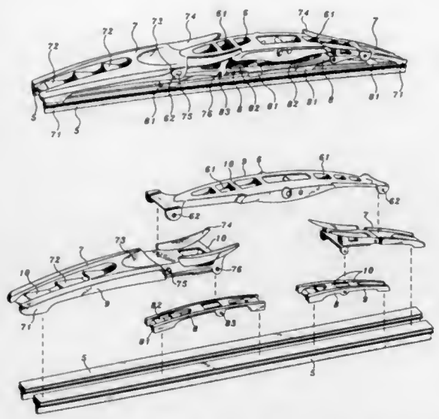
Int. Cl.[6] B60S *1/38;1/28*

U.S. Cl. 15—250.201 **4 Claims**

1. A superstructure for a wiper element, comprising:

a primary yoke structure including a first pair of co-extensive longitudinal elements which are connected one to the other by first transverse web elements, each end of said primary yoke structure including connection means to connect said primary yoke structure in pivotal relation to a pair of secondary yoke structures, said first co-extensive elements and first transverse web elements defining there between first hollowed out portions for directing airflow through said primary yoke structure,

each of said secondary yoke structures each including a pair of second co-extensive longitudinal elements which are connected one to the other by second transverse web elements, each of said pair of secondary yoke structure being connected to said ends of said primary yoke structure at a mid-portion of each of said secondary yoke structure, at an end of each said secondary yoke structure positioned nearest the central portion of said primary yoke structure, said second co-extensive elements and second connecting web elements of each of said secondary yoke structures defining second hollowed out portions for directing airflow through said secondary yoke structure and aligning with said first hollowed out portions in overlying portions of said primary yoke structure,



wing means for directing air flow mounted to each of said secondary yoke structures at a position proximate said connection between said primary and secondary yoke structures, said wing means being laterally disposed to and extending alongside said primary yoke structure and the aligned hollowed out portions, said wing means being shaped so as to direct air flow inwardly towards said first and second hollowed out portions.

5,666,688

CLEANER HAVING A SWITCH BUTTON FOR OPERATING A POWER ON/OFF SWITCH AND A CORD-WINDING UNIT

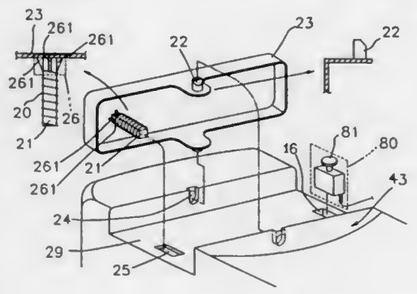
Suk-Gu Kim, Bucheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,014

Claims priority, application Rep. of Korea, Feb. 8, 1995, 95-1893

Int. Cl.[6] A47L *9/26*

U.S. Cl. 15—323 **4 Claims**



1. A cleaner including a body having a cord-winding unit with a cord-winding unit operation lever for controlling incoming and outgoing of a power cord thereinto and therefrom and a power on/off switch, the cleaner comprising:

a switch button for operating the power on/off switch and the cord-winding unit operation lever by performing seesaw movements of the switch button, wherein the switch button has first and second protrusions on middle portions of opposite sides of the switch button, the first and second protrusions are made of an elastic material respectively and the seesaw movements are performed about the first and second protrusions; and

a body having a switch button receiving recess for receiving the switch button therein, and having first and second protrusions receiving recesses for correspondingly receiving the first and second protrusions respectively in order for the switch button to enable the seesaw movements.

5,666,689

FLOOR CLEANING MACHINE

Ole Nygaard Andersen, Horsens, Denmark, assignor to Cleamatool A/S, Horsens, Denmark

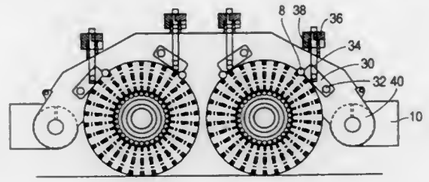
PCT No. PCT/DK93/00097, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/18699, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 18, 1993, Ser. No. 302,869

Claims priority, application Denmark, Mar. 18, 1992, 361/92

Int. Cl.[6] A47L *5/30*

U.S. Cl. 15—384 **13 Claims**



1. A machine for cleaning floors comprising:

a pair of driven, counterrotating cylindrical brushes having bristles with bristle ends for engaging the floor and picking up dirt therefrom, the brushes being rotated such that the bristles on both brushes are moved upwardly through an area between the brushes and away from each other over an upper half of the brushes;

a housing for said pair of driven counterrotating cylindrical brushes comprising side plates for rotatably supporting shafts respectively attached to the cylindrical brushes and a top shield for covering the brushes; and wherein

each brush has at least one fixed sweeper held by said housing and extending parallel to a longitudinal axis of the brush and located at least partly inside an outer periphery of the bristle ends thereof at a place along the upper half of the brush, each sweeper serving to locally and temporarily hold back the bristle ends and cause the bristle ends to flick forwardly in a direction of rotation of the brush when the bristle ends leave contact with the sweeper to cause floor dirt collected by the bristle ends to be thrown off outwardly and forwardly relative to rotary motion of the brush; and

said top shield guides the dirt thrown off the bristle ends further in a direction of rotation of the brushes towards dust collecting receivers arranged at respective opposite ends of the top shield.

5,666,690

CONDENSATION LINE PURGING DEVICE

Steven H. Domansky, 2915 Valley Ct., Loganville, Ga. 30249

Filed Aug. 8, 1995, Ser. No. 512,557

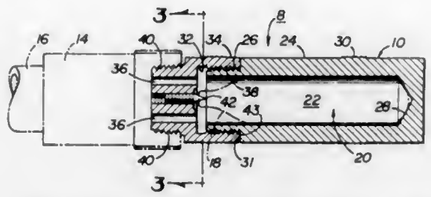
Int. Cl.[6] E03D *9/00*

U.S. Cl. 15—406 **12 Claims**

1. A device for purging condensation lines, comprising:

a. a body comprising inner and outer walls forming a cavity adapted to contain at least one gas cylinder and which contains a first threaded surface adapted to receive and cooperate with a nozzle; and

b. a nozzle, comprising inner and outer walls, a first threaded surface adapted to receive and correspond to the first threaded surface on the body in a substantially airtight manner; a second threaded surface adapted to receive and correspond to



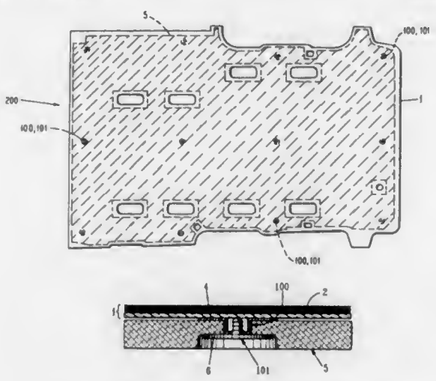
a threaded connector which is in turn adapted to be connected to a condensation line; at least one vent for venting from the cavity of the body to the condensation line; and a pin adapted to penetrate a portion of the gas cylinder in order to release gas from the cylinder in a controlled manner through the vent thereby to purge the condensation line by causing a controlled buildup of pressure in the line which effectively purges the line but does not breach seals or other discontinuities formed in the line.

5,666,691

METHOD OF ATTACHING INSULATION TO MOLDED AUTOMOTIVE FLOORS

Andrew A. Bealing, Hanover; Vinod Parekh, Mechanicsburg, and Kurt Grigg, Enola, all of Pa., assignors to Lear Corporation, Southfield, Mich.

Filed Sep. 20, 1995, Ser. No. 530,827
Int. Cl.[6] A47G *27/04*
U.S. Cl. 16—4 **13 Claims**



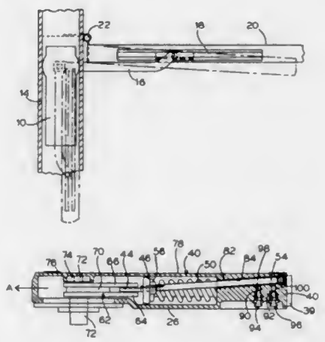
1. A method for securing an underpad to automotive and trunk coverings to form a composite comprising:
molding first thermoplastic fastening means to the underside of a thermoplastic backing layer that secures a fiber face layer, said layers forming a carpet composite;
contacting said thermoplastic backing layer with an underpad having substantially the same dimensions as said composite; having an upper surface and a lower surface; and having openings therethrough from said top surface to said lower surface;
positioning said composite and said underpad so that a portion of said opening at said upper surface of said underpad has a diameter sufficient to receive and contain said first thermoplastic fastening means;
inserting a second thermoplastic fastening means comprising a head and a shaft into said first thermoplastic fastening means through the lower surface of said opening, a portion of said opening at the lower surface having a diameter sufficient to receive and contain said head of said second thermoplastic fastening means, and a narrower diameter sufficient to allow said shaft to pass through and be received in locked engagement with said first thermoplastic fastening means, thereby securing said composite to said underpad.

5,666,692

ADJUSTABLE POWER CLOSURE

George F. Toledo, Fallbrook, Calif., assignor to Jackson Corporation, Los Angeles, Calif.

Filed Jan. 31, 1996, Ser. No. 594,231
Int. Cl.[6] E05F *1/08*
U.S. Cl. 16—80 **9 Claims**



1. A door closer comprising:
a housing having an enclosed interior for holding hydraulic oil;
a spindle extending from said housing;
a driven means for reciprocating within said housing;
a rotation means connected to said spindle for reciprocating said driven means upon rotation of said spindle;
first and second pistons;
cylinders formed in said housing for holding said first and second pistons;
a first rod and a second rod connected to said first and second pistons respectively and extending out from said cylinders, said first and second rods connected to said driven means;
a compression plate arranged between said pistons and said driven means;
first and second springs surrounding said first and second rods respectively and arranged between said compression plate and said pistons; and
an adjusting screw arranged parallel to and between said first and second rods and engaged to said compression plate and having a tool engageable formation accessible from an outside of said housing, rotation of said adjusting screw positioning said compression plate to add compression or relieve compression of said first and second springs.

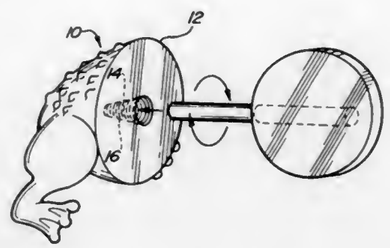
5,666,693

TOY HANDLE FOR ORAL DEVICE

Peggy Levay, Leesburg, Va., assignor to Cap Toys, Bedford Heights, Ohio

Filed Sep. 15, 1995, Ser. No. 528,773
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—114 R **10 Claims**

1. A handle adapted to receive a pre-existing handle of an oral device comprising:
a main body formed into a shape simulating a portion of a character or an object;
a receiving channel disposed within said main body, said receiving channel being generally frustoconical with the smaller frustoconical end at an interior end of said channel; and
securing means disposed within said receiving channel, said securing means comprises a threaded interior circumference



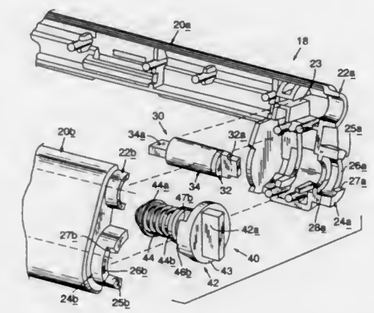
of said receiving channel to secure the pre-existing handle of the oral device in said receiving channel.

5,666,694

HINGE ARRANGEMENT

Wee Min Slow; Ting Yeow Hoong, and Beng Hong Kang, all of Singapore, Singapore, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1995, Ser. No. 535,724
Int. Cl.[6] E05D *15/00*
U.S. Cl. 16—368 **16 Claims**



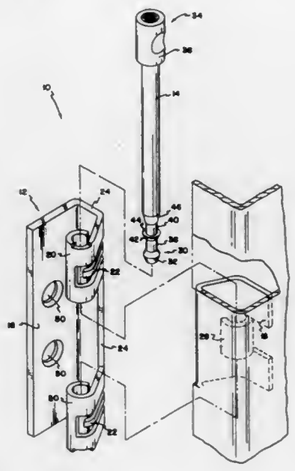
1. A hinge arrangement for use in pivoting a first structure relative to a second structure, said hinge arrangement comprising:
a first hinge which operatively couples the first structure with the second structure, said first hinge being operable under a first torque to pivot the first structure relative to the second structure through a first range of motion, beyond which operation of said first hinge is opposed by a restrictive force; and
a second hinge which operatively couples the first structure with the second structure, said second hinge including a pintle and a socket, said pintle having a cammed locking tab configured to frictionally engage a corresponding notch of said socket so as to releasably lock said pintle relative to said socket, said second hinge being operable upon application of a second torque which is greater than said first torque, but insufficient to overcome said restrictive force, so as to pivot said pintle to disengage said cammed locking tab from said notch and thereby to provide for pivot of the first structure relative to the second structure through a second range of motion via said second hinge.

5,666,695

HINGE SYSTEM

Viktor J. Jegers, Eden Prairie; Robert G. Lau, Anoka, and David A. Swan, Shoreview, all of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.

Continuation of Ser. No. 155,123, Nov. 19, 1993, abandoned. This application Nov. 16, 1995, Ser. No. 558,412
Int. Cl.[6] E05D *5/12*
U.S. Cl. 16—381 **7 Claims**



1. A hinge, comprising:
(a) a hinge body, including a base and a riser portion, the riser portion extending upward from the base portion and supporting a plurality of knuckles forming an aligned tubular opening, wherein each knuckle includes a biasing portion on an upper portion thereof extending partially into the tubular opening, and wherein the biasing portion and hinge body are monolithic; and,
(b) a pin configured to fit though the tubular openings including a first tapered end and a first annular groove formed in the pin proximate the tapered end, the first groove including tapered sides; and a second annular groove including a first straight side nearer the tapered end and a tapering side on an opposite side, wherein the biasing portions are configured to extend into the grooves.

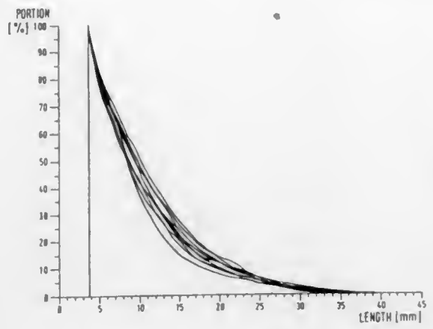
5,666,696

PROCESS FOR TREATING SCLERENCHYMA FIBERS, IN PARTICULAR FLAX

Herbert Costard, Neu Wulmsdorf, Germany, assignor to Windi Winderlich GmbH, Hamburg, Germany

PCT No. PCT/EP94/02022, § 371 Date Dec. 20, 1995, § 102(e) Date Dec. 20, 1995, PCT Pub. No. WO95/01468, PCT Pub. Date Jan. 12, 1995
PCT Filed Jun. 21, 1994, Ser. No. 564,300
Claims priority, application Germany, Jun. 3, 1993, 43 22 399.0
Int. Cl.[6] D01B *1/42;* D01G *21/00;13/00*
U.S. Cl. 19—7 **18 Claims**

1. A process for treating sclerenchyma fibers by mechanical treatment accompanied by formation of a fiber strip and alignment of the fibers essentially parallel to one another, comprising:
treating the fiber strip by a chemical or cooking treatment to free the fibers of wood constituents, greases, pectins and other impurities;
drying the treated fiber strip;
dividing the fiber strip into shorter sections;



pulling the sections at least partly apart to form fiber bundles; and

carding the fiber bundles, the fiber bundles having a set moisture content of at least 10%-wt., and combining the fiber bundles to form a fine fiber strip.

5,666,697

CARD OF THE TANDEM-CARD TYPE WITH FIXED CARDING UNITS BELOW A CARDING CYLINDER

Marcello Giuliani, Via Cellerese 33, 50013 Campi Bisenzio, Firenze, Italy

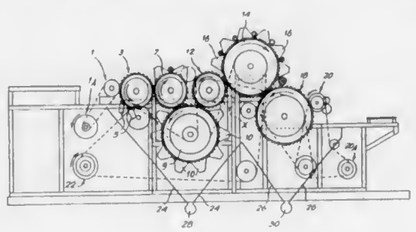
PCT No. PCT/IT94/00189, § 371 Date May 10, 1996, § 102(e) Date May 10, 1996, PCT Pub. No. WO95/13411, PCT Pub. Date May 18, 1995

PCT Filed Nov. 9, 1994, Ser. No. 640,916

Claims priority, application Italy, Nov. 11, 1993, FI93A0227

Int. Cl.[6] D01G *15/02;15/24*

U.S. Cl. 19—98 **5 Claims**



1. A card of the tandem-card type, comprising a feed assembly (**1**), a first taker-in (**3**), a conveying-carding roller (**7**), a first carding cylinder or main cylinder (**9**), a first doffer roller (**12**), said conveying-carding roller (**7**) and said first doffer roller (**12**) being arranged along an upper part of said first carding cylinder or main cylinder (**9**) a plurality of fixed carding and cleaning units (**10**) which cooperate with clothing of the first carding cylinder or main cylinder (**9**) and are arranged in a lower periphery thereof around an arc of approximately 270° of said main cylinder (**9**), a second carding cylinder (**14**), said first doffer roller (**12**) cooperating with the first carding cylinder (**9**) and also directly with said second carding cylinder (**14**) for transforming material therebetween, a second doffer roller (**18**) and a web removing assembly (**20**), said first and second doffer rollers (**12**, **18**) being arranged in a lower part of said second carding cylinder (**14**) and fixed carding units (**16**) being arranged in an upper periphery thereof.

5,666,698

AIR-ASSISTED INTRODUCTION OF FIBER SLIVER BEFORE THE NIP OF CALENDER DISKS

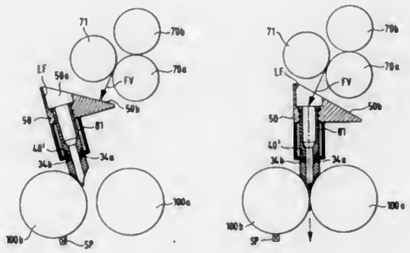
Alfred Nauthe, Böhmfeld, and Wolfgang Göhler, Lenting, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Apr. 4, 1996, Ser. No. 628,036

Claims priority, application Germany, Apr. 7, 1995, 296 06 107.3 U; Jul. 25, 1995, 295 11 992.6 U; Sep. 22, 1995, 195 35 300.5

Int. Cl.[6] D01H *5/72;13/04;* **D01G** *15/46*

U.S. Cl. 19—157 **16 Claims**



1. A process for introducing a fiber fleece into the nip of a pair of calendar devices of a textile machine, said process comprising pneumatically conveying the fiber fleece through a fiber sliver guiding system to a point directly in front of the nip of the calendar devices, the sliver guiding system including a sliver funnel having a tapered conical section which tapers into a substantially cylindrical segment adjacent the nip, said process further comprising swiveling at least a segment of the sliver guiding system and introducing pressurized air into the sliver guiding system substantially only in the cylindrical segment thereof, and allowing the pressurized air to escape from the sliver guiding system essentially only from a front end of the cylindrical segment adjacent the nip, wherein introduction of the pressurized air substantially only downstream of the conically tapered section of the sliver guiding system in a direction of conveyance of the fiber fleece draws the fiber fleece through the sliver guiding system without requiring lateral venting or expansion of the pressurized air.

5,666,699

CORD FASTENER

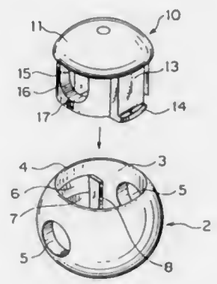
Yoshinobu Takahashi, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Jul. 9, 1996, Ser. No. 678,481

Claims priority, application Japan, Jul. 11, 1995, 7-207299

Int. Cl.[6] F16G *11/00*

U.S. Cl. 24—115 G **6 Claims**



1. A cord fastener comprising:

(a) a fastener body having a hollow and a pair of aligned first cord-insertion through-holes communicating with said hollow; and

(b) a slide to be slidably inserted in said hollow of said fastener body and having a pair of aligned second cord-insertion through-holes, said slide having a head, a pair of resilient legs extending downwardly from a lower surface of said head and a pair of supporting arms extending downwardly from said lower surface of said head, said second cord-inserting through-holes located on said supporting arms, each of said second cord-insertion through-holes located contiguous to said lower surface of said head, said first and second cord-insertion through-holes alignable against an urging of said resilient legs to thread a cord therethrough.

5,666,700

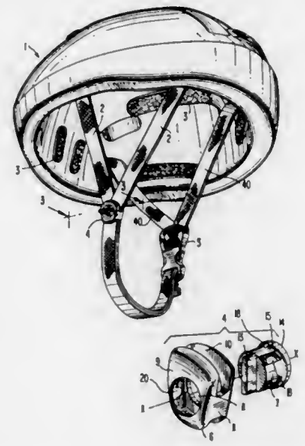
LOCKABLE STRAP SEPARATOR FOR USE WITH BICYCLE HELMETS AND THE LIKE

Joseph Anscher, Muttontown, N.Y., and Gary Fraze, Alta Loma, Calif., assignors to National Molding Corporation, Farmingdale, N.Y.

Filed Jul. 12, 1995, Ser. No. 501,594

Int. Cl.[6] A44B *11/25*

U.S. Cl. 24—163 R **17 Claims**



1. An apparatus for clamping a pair of straps, comprising:

a main body defining a passageway between-an-open entrance and an open exit end of the main body for receiving a pair of straps therethrough, the main body defining an aperture therein; and

a clamping member which is rotatable within said aperture between a first position in which it is adapted to clamp a pair of straps between a bottom surface or a peripheral side surface of the clamping member and the main body and a second position in which the clamping member is adapted to permit a pair of straps to be moved through said passageway, wherein the clamping member

is a cylindrical member having a cam around it, the cam having a ramped surface extending between at least one peak and at least one valley of the cam, and wherein the main body has an interior surface having a projection which engages the ramped surface of the cam, wherein the projection engages the peak of the cam in said first position and wherein the projection engages the valley of the cam in said second position.

5,666,701

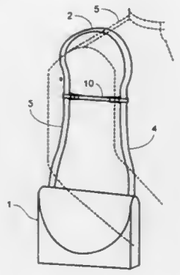
SHOULDER-STRAP RETAINER APPARATUS

Michaline M. Drummond, 2 Balsam La., Freeport, Me. 04032

Filed Mar. 20, 1995, Ser. No. 407,133

Int. Cl.[6] A45F *3/00;* **A41F** *19/00;* **A44B** *18/00*

U.S. Cl. 24—302 **7 Claims**



1. A shoulder strap retainer for preventing a shoulder strap from falling off a shoulder of a shoulder-strap wearer, said shoulder strap retainer being transferrable from one existing shoulder strap to another and being essentially independent of a width of said shoulder strap, said shoulder strap retainer comprising:

a) a main retainer body having a first end and a second end, wherein said main retainer body is structurally inelastic;

b) a contiguous element having a first securing means removably attached to said first end of said main retainer body and a second securing means removably attached to said second end, each of said first securing means and said second securing means located at opposite ends of said contiguous element, said contiguous element being centrally affixed to said main retainer body;

c) a first retainer end that is said first end of said main retainer body and said first securing means of said contiguous element, wherein said first retainer end is a buckle designed to form an adjustable loop removably placeable around a first leg of said shoulder strap; and

d) a second retainer end that is said second end of said main retainer body and said second securing means of said contiguous means, wherein said second retainer end is a buckle designed to form an adjustable loop removably placed around a second leg of said shoulder strap,

wherein when said first retainer end is placed on said first leg of said shoulder strap and said second retainer end is placed on said second leg of said shoulder strap, said first leg and said second leg are drawn toward one another under said shoulder of said shoulder-strap wearer.

5,666,702

HELICAL TORSION SPRING WITH AN ATTACHED CLIP

Chen Ming-Chieh, No. 25, Mingte st., Lin 2, P'u-Lun Li, Lu-Kang Town, Chang-Hua Hsien, Taiwan

Filed May 31, 1996, Ser. No. 657,693

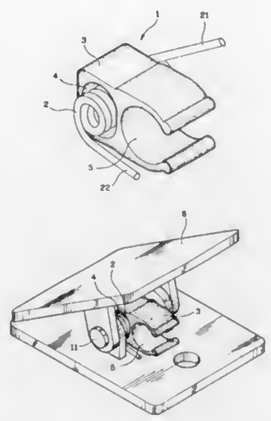
Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—510 **3 Claims**

1. A helical torsion spring with an attached clip, comprising:

a helical torsion spring having a coiled portion and front and end non-coiled portions;

a clip having a transverse opening for sleeving about said coiled portion of said helical torsion spring, and a concave slot for receiving a slim-bodied object;

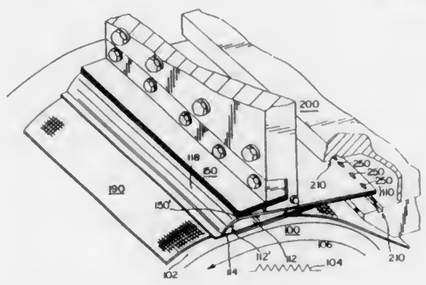


wherein said transverse opening of said clip has a section-section smaller than a length of either of said front or end non-coiled portion so as to retain said clip therebetween.

5,666,703
APPARATUS FOR COMPRESSIVELY TREATING FLEXIBLE SHEET MATERIALS

Richard C. Walton, 10 W. Hill Pl., Boston, Mass. 02114, and George E. Munchbach, Roslindale, Mass., assignors to Richard C. Walton, Boston, Mass.

PCT No. PCT/US94/01285, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/17991, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 4, 1994, Ser. No. 495,556
Int. Cl.[6] D06C *21/00;23/04*
U.S. Cl. 26—18.6 **28 Claims**

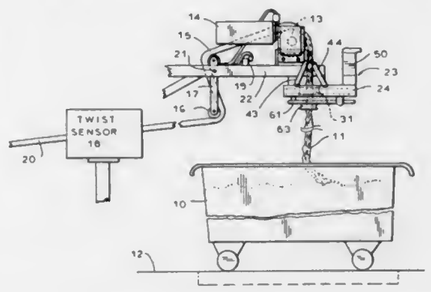


1. An apparatus for driving and longitudinally compressively treating a continuous web of material, the apparatus comprising:
- a cylindrical drive roll having a gripping surface for advancing the web in response to face-wise pressure of the web against the roll,
- a smooth-surfaced sheet-form primary member arranged over the drive roll to press the web face-wise into driven engagement with the drive roll,
- a generally-stationary retarder means downstream of said primary member to engage and retard the web, said retarder means comprising a sheet-form member, the primary member and said sheet-form retarder member comprising a sheet assembly of superposed sheet members extending across the width of said web on said drive roll, and
- a sheet holder for positioning said sheet assembly in operative position over said drive roll with said sheet assembly extending from said sheet holder in the direction of travel of said web so that said primary member presses said web face-wise against said drive roll,
- said sheet assembly having a transversely extending row of fasteners extending through holes through said sheet-form members at a held margin of said sheet assembly to form a sheet assembly unit, said fasteners having heads protruding from the surface of said sheet assembly,
- said sheet holder defining a channel transverse to the direction of travel of said web for engagement with said margin, said channel having a flared open end for endwise insertion of said sheet assembly into said sheet holder by sliding motion in said transverse direction,
- a top and bottom surface of said channel each having a groove transverse to the direction of travel of said web, at least one of said grooves configured to receive, retain, and position said fastener heads, and including a reference surface to engage said fastener heads to precisely position said sheet assembly unit in the longitudinal direction relative to said drive roll and retain said sheet assembly against movement in the direction away from said sheet holder.

5,666,704
DETWISTING MECHANISM FOR FABRIC PROCESSING LINE

Ellie E. Price, Charlotte; William C. Hardin, Jr., Lexington, and Chris Bostian, Kannapolis, all of N.C., assignors to Tubular Textile LLC, Lexington, N.C.

Filed Sep. 20, 1996, Ser. No. 716,940
Int. Cl.[6] D06C *3/06*
U.S. Cl. 26—74 **14 Claims**



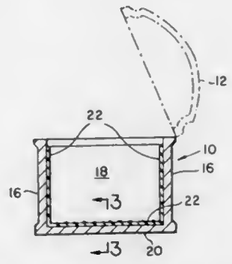
1. In a system for de-twisting tubular knitted fabric in preparation for further processing, the system including an open top container for holding said tubular knitted fabric in rope form, a lifting roller for lifting fabric from said container, twist sensing means located to receive fabric from said lifting roller, a controllably rotatable turntable supporting said container and responsive to said twist sensor for rotating said container in a direction to correct a twist condition, and an elevated de-twisting mechanism positioned between said container and said lifting roller and responsive to said twist sensor for rotating the elevated fabric in a direction to correct a twist condition, an improved elevated de-twisting mechanism which comprises,
- (a) a rigid support structure mounted directly above said turn table and closely adjacent to said lifting roller,
- (b) said support structure forming an opening for the upward passage of rope form fabric from said container,
- (c) a poteye carried in said support structure and having a generally circular central opening of a size to accommodate passage of said rope form fabric and defining an axis of said poteye,
- (d) said poteye having upper and lower radially outwardly extending flanges and an arcuate side wall joining said flanges and defining an outwardly concave outwardly opening annular groove and an inwardly convex inner guide surface for fabric conveyed upwardly by said lifting roller,

- (e) means supporting said poteye for rotation about an axis generally aligned with the rope fabric being lifted by said lifting roller,
- (f) a controllable, reversible drive motor mounted on said support structure and having an output pulley,
- (g) drive means connecting said pulley and said poteye, for controllably rotating said poteye in either direction, and
- (h) resiliently biased fabric engaging means mounted on said poteye for rotation therewith and having means for resiliently gripping fabric at a point between said poteye and said lifting roller and closely adjacent to the latter.

5,666,705
ABOVE GROUND ENTOMBMENT CASKET

Joseph R. Semon, Clarks Summit, Pa., assignor to Casket Shells, Incorporated, Eynon, Pa.

Filed Oct. 23, 1995, Ser. No. 546,670
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—19 **9 Claims**



1. A metal casket for an above ground entombment in which decomposition liquids and vapors are generated from decomposition of a deceased body comprising, a bottom and sides and ends connected thereto, and each having an inner surface, a barrier material adhered on the inner surface of the bottom for cooperating in preventing the decomposition liquids and vapors from contacting the inner surface of the bottom, and crystals of a coating material adhered to and embedded in the barrier material acting as a desiccant and encapsulator of the body decomposition liquids and vapors to convert these liquids and vapors into a gel on the casket bottom so that the liquids and vapors cannot migrate by gravity to the exterior of the casket, the crystals adhered to and embedded in the barrier material by applying the crystals to the barrier material before the barrier material is dry to touch.

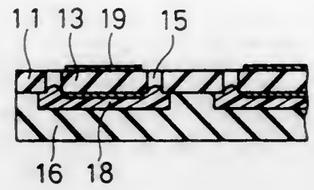
5,666,706
METHOD OF MANUFACTURING A PIEZOELECTRIC ACOUSTIC WAVE DEVICE

Yoshihiro Tomita; Akihiro Kanaboshi, both of Osaka; Yutaka Taguchi, Ibaragi, and Kazuo Eda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 255,743, Jun. 7, 1994, abandoned. This application May 11, 1995, Ser. No. 438,966
Claims priority, application Japan, Jun. 10, 1993, 5-138192
Int. Cl.[6] H01L *41/22*
U.S. Cl. 29—25.35 **9 Claims**

1. A method of manufacturing a frequency thickness resonant mode piezoelectric acoustic wave device, said device comprising a piezoelectric plate having a top surface and a bottom surface, a substrate having a top surface and a bottom surface, and exciting electrodes, said exciting electrodes contacting and exciting a resonating part of said piezoelectric plate, comprising:

digging into at least one of said substrate and said piezoelectric plate to form a depression having an area larger than the area of said resonating part of said piezoelectric plate;



bonding the top surface of said substrate and the bottom surface of said piezoelectric plate around said depression by chemical treatment without an adhesive with said resonating part overlying said depression;

introducing an intermediate support material into said depression to form an intermediate support layer which supports and fixes said resonating part of said piezoelectric plate relative to said substrate;

thinning at least said resonating part of said piezoelectric plate; and

removing said intermediate support material after said thinning step.

5,666,707
CONVENTIONAL OR CONTINUOUS ROLLING PROCESS

Robert L. Cryderman, and John C. Winkley, both of Pueblo, Colo., assignors to CF&I Steel, L.P., Portland, Oreg.

Division of Ser. No. 80,431, Jun. 18, 1993, Pat. No. 5,472,041, which is a continuation-in-part of Ser. No. 568,491, Oct. 15, 1990, Pat. No. 5,419,387, which is a division of Ser. No. 444,789, Dec. 1, 1989, Pat. No. 5,018,666. This application Jun. 30, 1995, Ser. No. 497,556
Int. Cl.[6] B22D *11/06*
U.S. Cl. 29—33 C **14 Claims**



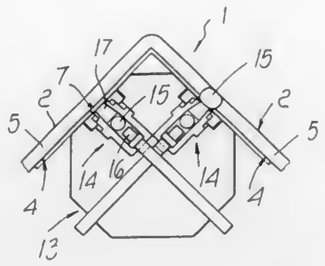
1. A system for producing a railroad rail, comprising a round bloom caster to produce a bloom having a cross-section with any corners at least 2 inches radius; a set of rollers for rolling the round bloom into a rail; and means for transporting the bloom from the caster to the rollers.

5,666,708
DEVICE FOR FILLING SPACER FRAMES FOR INSULATING GLASS WITH HYGROSCOPIC MATERIAL

Fortunato Vianello, Vallio di Roncade, Italy, assignor to For.El. Base di Vianello Fortunato & C. S.n.c., Vallio di Roncade, Italy

Filed Jul. 26, 1994, Ser. No. 279,900
Claims priority, application Italy, Aug. 2, 1993, TV93A0074
Int. Cl.[6] B23P *13/02*
U.S. Cl. 29—33 K **13 Claims**

1. Apparatus for filling a hollow spacer frame for insulating glass with hygroscopic material wherein said spacer frame is bent and joined to form a continuous closed piece, and wherein the spacer frame comprises: a pair of opposite wall portions to each of which is connectable a respective glass sheet of a pair of glass sheets such as to form an insulating glass chamber between the glass sheets and the continuous closed spacer frame; an inner wall portion extending between said opposite wall portions such as to delimit said chamber together with said pair of glass sheets when



said pair of glass sheets are connected to said pair of opposite wall portions; and an outer wall portion extending between said opposite wall portions such as to be arranged outside with respect to said chamber when said pair of glass sheets are connected to said pair of opposite wall portions; wherein the apparatus comprises:

a device for forming at least one opening at said inner wall portion of said bent and continuous closed spacer frame;

a device for inserting hygroscopic material inside said hollow spacer frame through said at least one opening; and

a device for sealing said at least one opening after hygroscopic material has been inserted therethrough.

5,666,709

BALLOON CLIP FASTENING DEVICE

Takahisa Suzuki, Funabashi, Japan, assignor to Suzuki Latex Industry Co., Ltd., Chiba, Japan

Filed Sep. 29, 1995, Ser. No. 537,093

Claims priority, application Japan, Nov. 18, 1994, 6-284721

Int. Cl.[6] B23P *11/00;19/00*

U.S. Cl. 29—243.56 **4 Claims**



1. A balloon clip fastening device comprising a stand assembly which has a V-shaped groove into which a V-shaped balloon clip clamping a stem portion of a balloon is inserted, said V-shaped groove being formed in an upper part of said stand assembly, and said stand assembly being provided with a clip receiving hole formed continuously to a bottom of said V-shaped groove, and wherein a guide projection is formed in a direction of depth of said groove of one edge part of each of two inside wall surfaces of said V-shaped groove with such two facing guides being formed on opposite-side edge parts of said wall surfaces.

5,666,710

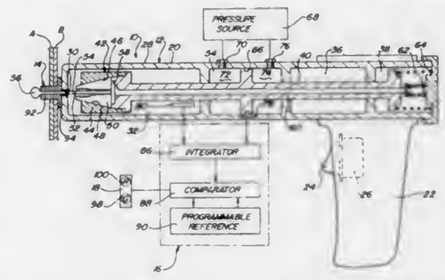
BLIND RIVET SETTING SYSTEM AND METHOD FOR SETTING A BLIND RIVET THEN VERIFYING THE CORRECTNESS OF THE SET

Richard G. Weber, Ridgefield; Jeffrey T. Blake, Milford; William E. O'Connor, Waterton, and Charles F. Smart, Brookfield, all of Conn., assignors to Emhart Inc., Newark, Del.

Filed Apr. 20, 1995, Ser. No. 425,079

Int. Cl.[6] B21J *15/28*

U.S. Cl. 29—243.523 **24 Claims**



1. A system for setting a blind rivet and evaluating the acceptability of the set, said rivet being of the type having a frangible tubular body and an elongated mandrel that includes an enlarged head and a stem extending rearwardly of the head and through said frangible tubular body, said system comprising:

a blind rivet setting tool, said tool including a body, said body having a long axis, said tool having a mandrel engaging mechanism for engaging said stem of said mandrel, said engaging mechanism being reciprocable in the axial direction along said long axis of said body, said tool further including force applying means for acting on said engaging mechanism to forcibly move said mechanism in said axial direction to cause the head of the mandrel to deform the tubular body and create a secondary head and to thereafter break the stem of the mandrel from the head and complete the rivet setting process;

a first transducer operatively associated with said tool for measuring the force applied by said force applying means to move said engaging mechanism and producing a force output signal related thereto;

a second transducer operatively associated with said tool for measuring the movement of said engaging mechanism in said axial direction and producing a displacement output signal related thereto; and

a control circuit for receiving said force output signal and said displacement output signal and determining therefrom the total energy used during the rivet setting process and comparing said determined total energy with a predetermined desired value.

5,666,711

PRESS TOOL

Heinrich Pfeiffer, Kaarst, Germany, assignor to Novopress GmbH Pressen und Presswerkzeuge & Co., Germany

PCT No. PCT/EP93/03050, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/12296, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 2, 1993, Ser. No. 448,436

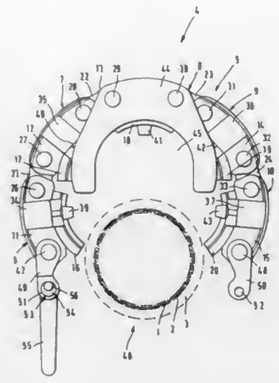
Claims priority, application Germany, Dec. 2, 1992, 42 40 427.4

Int. Cl.[6] B25B *27/14*

U.S. Cl. 29—272 **17 Claims**

1. Press tool for coaxially aligning and joining corresponding ends of workpieces, the press tool having a wraparound ring including hinged clamping components, in which the press tool is open at at least one closing point between two clamping components and has at least one member at that position for a closing device, by means of which the clamping components can be brought together to form a closed ring around at least one of the workpieces to be coaxially aligned and joined, characterized in that the press tool contains at least one coupling member (**49**, **50**) by means of which the clamping components (**6**, **10**) adjacent to the closing point(s) (**46**) can be temporarily connected, with the coupling member (**49**, **50**) being designed so as to be flexible in the coupled position in the closing direction during the coaxial aligning of the ends of the workpieces; and

wherein the coupling member contains a first coupling bracket (**49**) that is hinged to the clamping component (**6**), and a second coupling bracket (**50**) that is connected to the other clamping component (**10**), whereby the two coupling brackets (**49**, **59**) may be hinged to one another.



5,666,712

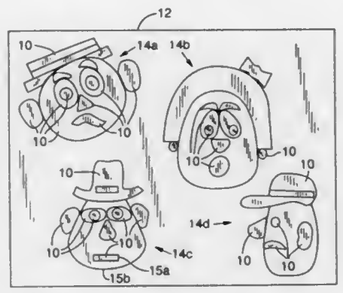
METHOD OF MAKING DESIGNS USING MAGNETIC MATERIALS

Nikolai E. Cvetkov, Beaverton, Oreg., assignor to Advanced Design & Research Corp., Beaverton, Oreg.

Filed Jul. 14, 1995, Ser. No. 502,373

Int. Cl.[6] B23P *25/00*

U.S. Cl. 29—458 **7 Claims**



1. A method of displaying two-dimensional and three-dimensional designs made from magnetic materials, comprising:

providing a magnetic surface;

selecting a plurality of magnetic parts from the group consisting of substantially two-dimensional precut geometric forms, substantially two-dimensional precut representational forms, and three-dimensional representational forms;

attaching the parts to the surface to create an individually expressive design;

taking a photograph of the design;

painting the surface of a wall with a magnetic paint;

providing a substantially two-dimensional frame of flexible magnetic material having interior dimensions less than the exterior dimensions of the photograph; and

temporarily attaching the photograph to the wall by placing the frame over the photograph and temporarily adhering the frame to the wall,

whereby the photograph is removably attached to the wall without the possibility of damaging the same.

5,666,713

CHASSIS COUPLING AND FIXING STRUCTURE AND METHOD OF ASSEMBLING THE CHASSIS

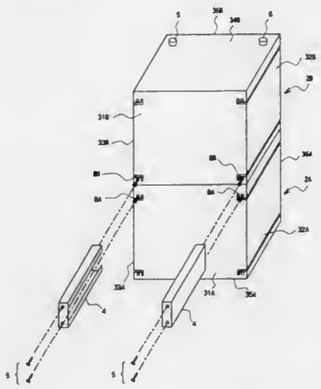
Yasuhiro Kubota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 22, 1995, Ser. No. 447,029

Claims priority, application Japan, May 26, 1994, 6-112496

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—525.01 **11 Claims**



1. A coupling and fixing structure incorporated in chassis, for assembling together a first chassis and a second chassis, comprising:

a positioning structure integral to said first chassis and complementing a positioning structure integral to said second chassis;

said first chassis having first elongated coupling grooves provided in upper portions of said first chassis and extending from a front wall along side walls, respectively said coupling grooves having an L-shaped cross-section;

said second chassis having second elongated coupling grooves provided in lower portions of said second chassis and extending from a front wall along side walls, respectively said coupling grooves having an L-shaped cross-section; and

elongated coupling members inserted into pairs of said first coupling groove and said second coupling groove and coupled and fixed to both of said first chassis and said second chassis said coupling members having extended portions which complement said L-shaped cross-sections of said coupling grooves, wherein each of said coupling members includes:

a plate portion extending in a longitudinal direction;

a fixing flange extending perpendicular to said plate portion from one of ends of longitudinal directions of the plate portion;

an upper coupling flange portion extending from a top edge of said plate portion along the longitudinal direction in an inner direction of said second chassis and having a first nail portion extending downward; and

a lower coupling flange portion extending from a bottom edge of said plate portion along the longitudinal direction in an inner direction of said first chassis and having a second nail portion extending upward, and

wherein said first and second coupling grooves having shapes corresponding to said lower and upper coupling flanges.

5,666,714

METHOD OF MANUFACTURING GALVANIZED OPEN OR CLOSED STEEL SECTIONS

Trevor Maxwell Height, New Lambton; Ross Herbert Sutton, Eleebana, and Gary Anthony Shester, Warners Bay, all of Australia, assignors to Tubemakers of Australia Limited, Sydney, Australia

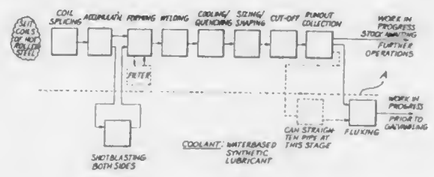
PCT No. PCT/AU93/00488, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/08064, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 22, 1993, Ser. No. 406,845

Claims priority, applicatinn Australia, Sep. 25, 1992, PL4948

Int. Cl.[6] B21B *1/42*

U.S. Cl. 29—527.4 **7 Claims**



1. A method of manufacturing galvanized open or closed steel sections, the method comprising a roll forming process followed by a hot dip galvanizing process,

the roll forming process comprising the steps of:

removing scale on both sides of a substantially flat steel strip by way of in-line shot blasting prior to forming the strip into an open section or hollow welded section,

after the roll forming process, immersing the formed section in a flux solution, and

the hot dip galvanizing process not including a pickling or subsequent rinsing step.

5,666,715

ELECTRICALLY OPERATED IMPACT TOOL GUN

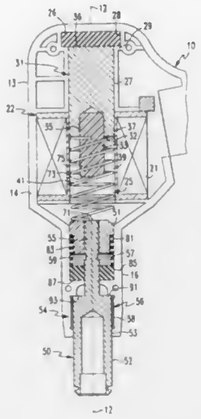
Edward J. Zoiss, Moorpark, and Theodore E. Chavannes, Thousand Oaks, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 5, 1995, Ser. No. 498,242

Int. Cl.[6] H01R *43/04;* **H05K** *13/04*

U.S. Cl. 29—566.4 **33 Claims**

1. An electrically operated impact tool for use with a utility device comprising a housing, which includes an impact mechanism support portion, and having a switch mechanism through which an operator causes a solenoid control circuit to operate a solenoid contained in said impact mechanism support portion, said solenoid having an axial passageway therethrough, which is sized to accommodate the translation of a solenoid plunger along a longitudinal axis of said axial passageway, a generally longitudinal solenoid plunger extension hammer attached to said solenoid plunger, an impact tool holder having a first end which is arranged to be struck by said solenoid plunger extension hammer by the operation of said solenoid, and a second end to which an impact tool element is attached, a first return spring supported within said axial passageway through said solenoid and normally urging said solenoid plunger away from said impact tool holder, said first return spring being acted upon by translation of said solenoid plunger in a direction that causes said solenoid plunger to strike said impact tool holder, and a second return spring supported within said impact mechanism support portion of said housing and normally urging said impact tool holder toward said solenoid, said second return spring being acted upon by translation of said impact tool



holder as a result of said solenoid plunger extension hammer striking said impact tool holder.

5,666,716

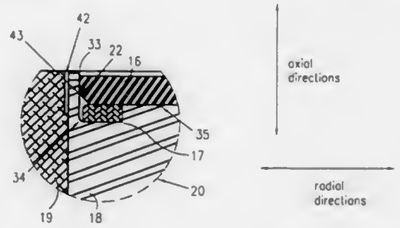
LOW DISTORTION INTERFERENCE FITS FOR SPINDLE MOTOR ASSEMBLY

Norbert Steven Parsoneault, Watsonville; Hans Leuthold; David John Jennings, both of Santa Cruz, and Samnathan Murthy, Campbell, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Mar. 2, 1995, Ser. No. 397,566

Int. Cl.[6] H02K *15/14*

U.S. Cl. 29—596 **5 Claims**



1. A method of assembly of a precision spindle motor, the method comprising the steps of:

providing a shaft assembled to a journal, a top portion of the shaft being made with an undercut for providing a first relief;

press fitting a thrust plate around the top portion of the shaft, the first relief shaped for reducing warpage of the thrust plate for maintaining a substantially uniform width for a first thrust gap between the journal and the thrust plate; and

press fitting a counter plate to the journal, the counter plate being made with a chamfer extending to the center of the counter plate, the chamfer providing a second relief, the second relief for reducing warpage of the counter plate by providing centerline contact between the journal and the counter plate.

5,666,717

METHOD FOR MANUFACTURING A MAGNETIC HEAD SUSPENSION

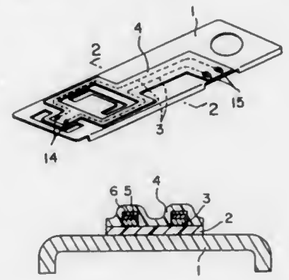
Hirofumi Matsumoto; Mitsunobu Shoumura; Norimasa Fujita; Masaichi Inaba, all of Ushiku, and Yasuyuki Tanaka, Tsuchiura, all of Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 465,756

Claims priority, application Japan, Jul. 27, 1994, 6-194945

Int. Cl.[6] G11B *5/127*

U.S. Cl. 29—603.12 **20 Claims**



1. A method of manufacturing a magnetic head suspension assembly comprising the steps of:

providing a metal member which is to form a resilient suspension for a magnetic head, said metal member having a pair of opposed surfaces;

forming a layer of a flexible insulating base material having a desired shape on selected portions of one surface of said metal member whereby a portion of said one surface of said metal member is exposed;

cladding an electrically conductive metal thin film on said exposed portion of said one surface of said metal member and on the surface of said flexible insulating base material layer;

forming a resist pattern on selected portions of the surface of said electrically conductive metal thin film, said resist pattern comprising areas where said surface of said conductive metal film is uncovered and areas where said surface of said conductive metal film is covered by the resist material, said uncovered areas defining a circuit wiring pattern;

plating said electrically conductive metal thin film with electrically conductive material in said uncovered areas to produce the conductors of the circuit wiring pattern;

removing said resist pattern and the unplated portions of said electrically conductive metal thin film;

forming a surface protecting layer on, at least, the surface of said conductors of said circuit wiring pattern; and

shaping said metal member to form a suspension element integrated with the circuit wiring pattern.

5,666,718

TERMINAL INSERTING APPARATUS

Hideo Onishi, and Kenichi Taniguchi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

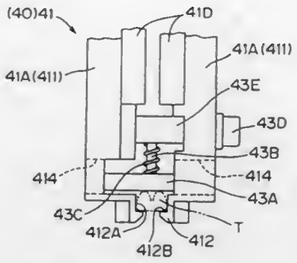
Filed Dec. 1, 1995, Ser. No. 565,919

Claims priority, application Japan, Dec. 8, 1994, 6-305034

Int. Cl.[6] H01R *43/20*

U.S. Cl. 29—748 **7 Claims**

1. A terminal inserting apparatus for inserting a wired terminal, formed by a terminal attached to an end of an electric wire, into a connector housing after receiving the wired terminal from a terminal positioning device capable of positioning the wired terminal by rotating the wired terminal around an axis of an electric wire forming the wired terminal, said terminal inserting apparatus comprising:



a terminal chuck for guidably holding a wired terminal carried by the terminal positioning device;

a wire chuck for holding an electric wire of the wired terminal carried by the terminal positioning device, and for inserting the wired terminal into a connector housing in association with said terminal chuck by which the wired terminal is being held; and

rotation regulating means disposed on said terminal chuck for regulating a displacement of the wired terminal held by said terminal chuck in a state where the wired terminal is only relatively movable with respect to said terminal chuck when said wire chuck acts an inserting operation.

5,666,719

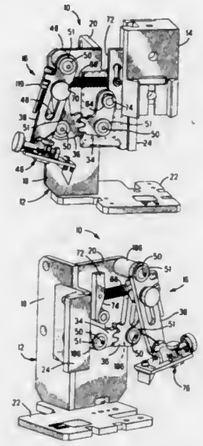
FEED MECHANISM FOR A TERMINAL APPLICATOR

William Herbert Bair, Mechanicsburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 1, 1996, Ser. No. 673,973

Int. Cl.[6] H01R *43/055;* **H05K** *13/02*

U.S. Cl. 29—753 **12 Claims**

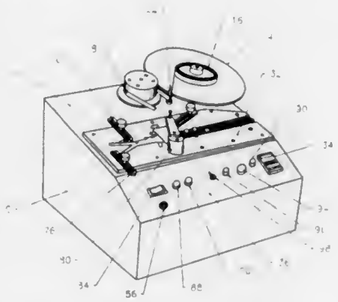


1. An applicator for attaching terminals to electrical conductors having a frame including a base, a ram coupled to said frame and arranged for reciprocating movement along an axis in a first direction toward said base and in a second opposite direction, and a feed mechanism arranged for feeding a strip of said terminals during operation of said applicator, said feed mechanism comprising:

(1) first, second, and third links pivotally attached to said frame and having mutually parallel first, second, and third pivot axes, respectively, said first link being coupled to said ram so that during motion of said ram in said first direction said first link is caused to pivot in a first rotational direction;

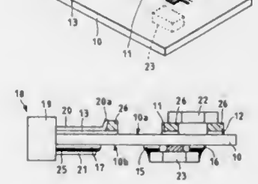
(2) coupling means coupling said first and second links together so that when said first link is pivoted in said first rotational direction said second link is caused to pivot in a second rotational direction opposite said first rotational direction;
(3) an adjustable stroke mechanism coupling said second and third links together so that when said second link is pivoted in said second rotational direction said third link is caused to pivot in said first rotational direction; and
(4) a feed finger assembly coupled to said third link having a feed finger arranged to engage said strip of terminals,
so that when said ram moves in said first direction said feed finger moves through a feed stroke thereby advancing said strip of terminals.

5,666,720
APPARATUS FOR STUFFING A SNAILED ENDLESS PRE-INKED RIBBON INTO A RIBBON CARTRIDGE
Larry Smith, 1705 8th Ave. East, Kalispell, Mont. 59901
Filed Jun. 26, 1995, Ser. No. 494,699
Int. Cl.[6] B23P *19/00*
U.S. Cl. 29—806 **7 Claims**



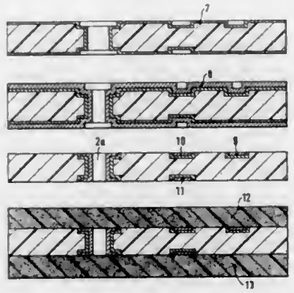
1. An apparatus for stuffing a snailed endless new pre-inked ribbon into a ribbon cartridge comprising:
a cabinet having a length, a width, a front side with an elevation, a right side with an elevation, a left side with an elevation, a rear side with an elevation, and a top plate mounted thereon;
a top plate mounted on the cabinet, said top plate having a working surface of a length and a width commensurate with the length and width of the cabinet and supporting a ribbon stock reel assembly on the top rear right side of the cabinet, an idler on the top rear right side of the cabinet between the ribbon stock reel assembly and a counting wheel, a counting wheel on the top rear center of the cabinet, a universal jig on the top at the middle center of the cabinet, and a control panel on an inclined face on the top front of the cabinet between the universal jig and the front elevation of the cabinet;
a ribbon stock reel assembly mounted on the top plate for supporting a new pre-inked ribbon supply reel containing a length of new pre-inked ribbon, said ribbon stock assembly having a spindle which rotates on the top plate and which supports the new pre-inked ribbon supply reel;
a ribbon stock reel brake mounted in the cabinet and attached to the ribbon stock reel assembly;
an idler for providing tension on the new pre-inked ribbon between the new pre-inked ribbon supply reel on the ribbon stock reel assembly and a counting wheel, said idler having an adjustable idler spindle with an adjustable collar;
a counting wheel having a sensing indicator which interacts with a proximity sensor for counting a length of new pre-inked ribbon;
a proximity sensor which interacts with the sensing indicator of the counting wheel to produce an electrical signal which is received by a programmed counter;
an electrical motor having a hex drive for pulling the new pre-inked ribbon from the ribbon stock reel assembly past the idler around the counting wheel and stuffing said new pre-inked ribbon into a ribbon cartridge;
a universal jig having ribbon cartridge securing means for holding the ribbon cartridge to be stuffed mounted on said top plate;
a programmed counter; and,
a control panel having a main power switch, main power indicator light, reset switch, motor speed control, motor power indicator light and motor direction switch, and a main power fuse and motor power fuse located in the cabinet along with the wiring necessary to interconnect the various electronic components.

5,666,721
METHOD OF SOLDERING AN ELECTRONIC CONNECTOR ON A PRINTED CIRCUIT BOARD
Shoji Sakemi, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 17, 1995, Ser. No. 373,785
Claims priority, application Japan, Jan. 18, 1994, 6-003470; Nov. 15, 1994, 6-280570
Int. Cl.[6] H01R *9/00*
U.S. Cl. 29—843 **15 Claims**



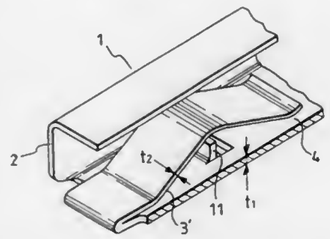
9. A method of soldering a connector on a printed circuit board, wherein said connector has a lead and a protrusion both extending from a main body of said connector in parallel to each other, and a connector electrode extends along a surface of the printed circuit board inwardly from an edge of the printed circuit board, said method comprising the steps of:
applying solder onto the connector electrode, being offset a predetermined distance inward from the edge of the printed circuit board;
applying solder onto surface mounting type electrodes, formed on the same surface as said connector electrode;
placing a surface mounting type electronic component on said solder applied on said surface mounting type electrodes;
engaging said connector with said printed circuit board by sliding said lead along the connector electrode inwardly from the edge of the printed circuit board, while sandwiching said printed circuit board between said lead and said protrusion of said connector, until a distal end of said lead is brought into contact with said solder on the connector electrode; and
melting both said solder on the connector electrode and said solder on the surface mounting type electrodes under a condition where the distal end of the lead is brought into contact with said solder on the connector electrode, thereby soldering both the connector and the surface mounting type electronic component on the printed circuit board.

5,666,722
METHOD OF MANUFACTURING PRINTED CIRCUIT BOARDS
Wilhelm Tamm, Aidlingen; Walter Olbrich, Magstadt; Siegfrid Dippon, Gechingen; Michael Weltmann, Holzgerlingen, all of Germany, and Si-Ty Lam, Pleasanton, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 15, 1995, Ser. No. 403,445
Claims priority, application European Pat. Off., Apr. 14, 1994, 94105764
Int. Cl.[6] H05K *3/02;3/10;3/42*
U.S. Cl. 29—847 **14 Claims**



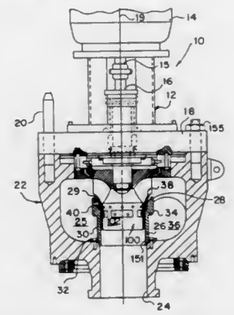
1. A method of manufacturing a printed circuit board having a desired pattern of conductor structures extending on at least one surface, comprising the following steps:
a) providing an electric insulating substrate having a predetermined thickness defined by opposed surfaces;
a1) producing recesses in said electric insulating substrate by laser ablation on at least one of said opposed surfaces, said recesses reaching to a controlled depth which is smaller than the thickness of said insulating substrate, and said recesses forming a pattern on the surface of said insulating substrate corresponding to said desired pattern of conductor structures.
b) then depositing conductive material on substantially an entire face of the substrate having said recesses formed therein, and
c) then removing conductive material from the surface of the substrate outside the desired pattern of conductor structures.

5,666,723
METHOD OF PRODUCING CONNECTOR TERMINAL
Kazuto Ohtaka, and Masakuni Samejima, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Apr. 21, 1995, Ser. No. 426,668
Claims priority, application Japan, Apr. 22, 1994, 6-084389
Int. Cl.[6] H01R *43/16*
U.S. Cl. 29—874 **4 Claims**



1. A method of producing a connector terminal having an enclosed receptive portion and a spring portion formed at a front portion of a base plate for engaging with a mating terminal, comprising the steps of:
blanking a thin metal sheet into a terminal blank including said spring portion and a pair of opposing side portions;
rolling only said spring portion into a thickness smaller than that of the remainder of said terminal blank;
bending said pair of opposing side portions to form said enclosed receptive portion; and
bending said spring portion such that said spring portion is disposed within said enclosed receptive portion.

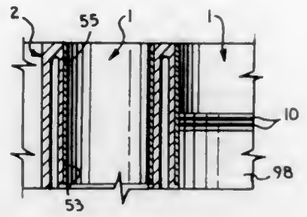
5,666,724
INSTALLATION AND ASSEMBLY DEVICE AND METHOD OF USING
George J. Kolsun, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 3, 1995, Ser. No. 433,286
Int. Cl.[6] B23P *11/00;19/00*
U.S. Cl. 29—888.02 **25 Claims**



22. A method for facilitating a fitup of a pump impeller within a mating inlet nozzle, comprising
inserting an alignment sleeve within an aperture formed in said pump impeller;
expanding a radial positioning assembly supported by said sleeve from a less expanded state to a more expanded state such that said sleeve is releasably secured to said pump impeller;
adjusting the radial positioning assembly to obtain a predetermined spacing between said sleeve and pump impeller about a periphery of said sleeve;
inserting the pump impeller and alignment sleeve into the mating inlet nozzle until a vertical positioning assembly supported by said sleeve contacts a support surface of said mating inlet nozzle;
retracting the vertical positioning assembly; and
withdrawing the alignment sleeve from the impeller and mating inlet nozzle.

5,666,725
ENGINE REMANUFACTURE BY ADHESIVELY RETAINED CYLINDER LINERS
Michael S. Ward, Liberty, Mo., assignor to Patent Master, Inc., North Kansas City, Mo.
Continuation-in-part of Ser. No. 251,351, May 31, 1994, Pat. No. 5,497,693. This application Mar. 15, 1995, Ser. No. 404,557
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.011 **4 Claims**

1. A method for remanufacturing a reciprocating engine having a cylinder bore formed in an engine block of said engine and comprising the steps of:
(a) providing a flangeless tubular cylindrical sleeve formed of cast iron and having a selected length and a selected outer



diameter, said sleeve being formed by a cylindrical wall having a relatively thin wall thickness between an inner cylindrical surface and an outer cylindrical surface, said sleeve individually having a wall thickness which is substantially less than required to withstand cylinder combustion pressure;

(b) machining said inner cylindrical surface of said sleeve to a selected radius and a selected radial uniformity;

(c) machining said outer cylindrical surface of said sleeve to a selected radial uniformity;

(d) machining a cylinder bore surface of said cylinder bore to a cylinder bore diameter which will achieve a non-interference fit with said sleeve outer diameter;

(e) applying an adhesive to said sleeve outer cylindrical surface and the machined cylinder bore surface;

(f) inserting said sleeve into the machined cylinder bore; and

(g) curing said adhesive to retain said sleeve within said machined cylinder bore exclusively by said adhesive.

5,666,726

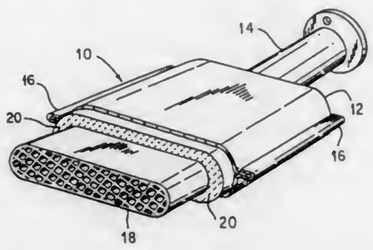
METHOD OF MAKING A MOUNTING MAT FOR FRAGILE STRUCTURES SUCH AS CATALYTIC CONVERTERS

John W. Robinson, Hampton, S.C.; Alan R. Lebold, Buffalo, and Mark Travers, Ransomville, both of N.Y., assignors to Unifrax Corporation, Niagara Falls, N.Y.

Division of Ser. No. 333,968, Nov. 3, 1994, Pat. No. 5,580,532, which is a continuation-in-part of Ser. No. 51,469, Apr. 22, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,995

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—890 **8 Claims**



1. A method of mounting a fragile structure having at least one inlet surface within a device having a housing to provide thermal insulation and mechanical shock resistance comprising the steps of:

a) wrapping a flexible mounting mat comprising an integral, substantially nonexpanding composite sheet of refractory ceramic fibers and a binder around the entire perimeter of at least a portion of the structure's surfaces adjacent to the inlet face, and

b) forming a housing around the wrapped structure, and radially compressing said mounting mat between said structure and said housing,

wherein said fibers are substantially shot free

and wherein said mat includes means to selectively exert substantially stable expansion pressure over an operating temperature range of about 20° C. to at least about 1200° C.

5,666,727

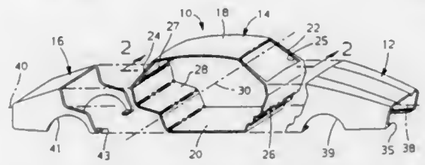
METHOD OF MANUFACTURING A PASSENGER COMPARTMENT FROM A CYLINDRICAL TUBE

Moinuddin Sirdar Rashid, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1995, Ser. No. 390,841

Int. Cl.[6] B23P *17/00*

U.S. Cl. 29—897.2 **5 Claims**



1. A method of making a passenger compartment structure for a motor vehicle, said passenger compartment structure having a first axis to be aligned with the fore/aft direction of motion of the vehicle and a second axis transverse to said first axis, said structure further comprising interconnected front, rear, top and floor portions that together define an enclosed cylindrical cross section, the axis of said cylindrical cross section being aligned with said second axis; said method comprising expanding an open-ended cylindrical tube against a die member so that the expanded tube takes the shape of said passenger compartment structure.

5,666,728

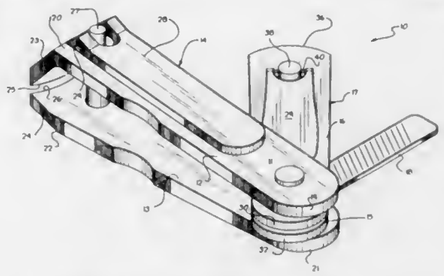
CUTICLE TRIMMER

Jose Belchior Silva, 55 Daniel St., Port Reading, N.J. 07064

Filed Feb. 13, 1995, Ser. No. 387,328

Int. Cl.[6] A45D *29/02*

U.S. Cl. 30—28 **3 Claims**



1. A cuticle trimmer, comprising:

a first cutter assembly, with the first cutter assembly including a first cutter plate and a second cutter plate, the first cutter plate including a first plate first end spaced from a first plate second end, the second cutter plate having a second plate first end spaced from a second plate second end, with a primary axle directed through the first cutter plate and the second cutter plate adjacent the first cutter plate first end and the second cutter plate first end, the first cutter plate including a first plate extension flange extending from the first plate second end, and a second plate extension flange extending from the second plate second end, with the first plate extension flange and the second plate extension flange terminating in a respective first concave cutter edge and a second concave cutter edge

arranged in a facing mirror image relationship, with a second cutter assembly mounted pivotally about the primary axle between the first cutter plate and the second cutter plate, wherein the second cutter assembly includes a third cutter plate and a fourth cutter plate, with the third cutter plate having a third cutter plate first end spaced from a third cutter plate second end, and a fourth cutter plate having a fourth cutter plate first end spaced from a fourth cutter plate second end with the primary axle directed through the third cutter plate and the fourth cutter plate adjacent to the third cutter plate first end and the fourth cutter plate first end, and a third plate extension flange extending integrally from the third cutter plate second end, and a fourth plate extension flange extending integrally from the fourth cutter plate second end, with the third plate extension flange and the fourth plate extension flange terminating in a respective first convex cutter edge and a second convex cutter edge arranged in a facing mirror image relationship relative to one other.

5,666,729

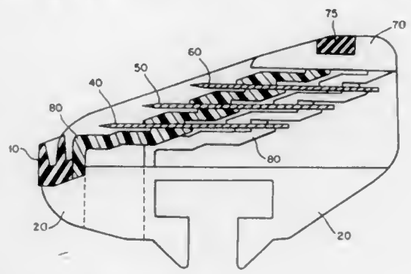
SUSPENDED BLADE SHAVING SYSTEM

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 10, 1995, Ser. No. 419,216

Int. Cl.[6] B26B *21/02*

U.S. Cl. 30—50 **39 Claims**



1. A razor head comprising:

a first support;

at least one resilient second support member connected to said first support;

a first skin-engaging element connected to and movably supported by said resilient support member;

a second skin-engaging element movably connected to said first skin-engaging element for movement relative to said first skin-engaging element; and

side walls extending upwardly from said first support;

wherein said side walls comprise at least one resilient material which yields in response to forces encountered during shaving.

5,666,730

POWER WORKING MACHINE

Fumihiko Aiyama, Musashimurayama, Japan, assignor to Kioritz Corporation, Tokyo, Japan

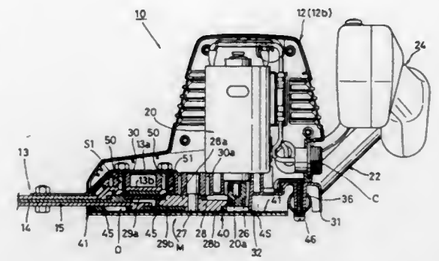
Filed Jan. 4, 1996, Ser. No. 582,888

Claims priority, application Japan, Jan. 5, 1995, 7-000168

Int. Cl.[6] B26B *19/02*

U.S. Cl. 30—220 **2 Claims**

1. In a power working machine, a prime mover (**20**) and a case (**12**) thereof are situated on an upper surface (**30***a*) of a mount base (**30**); the prime mover (**20**) and the case (**12**) thereof are fastened and fixed to the mount base (**30**) by prime mover fastening screws (**43**) and case fastening screws (**44**) which are inserted through a lower surface (**30***b*) of the mount base (**30**); and a transmission cover (**40**) for covering the lower surface (**30***b*) of the mount base (**30**) is fastened and fixed to the lower surface (**30***b*) through cover fastening screws (**45**), characterized in that: a gasket (**41**) is situated between said lower surface (**30***b*) of the mount base (**30**) and said transmission cover (**40**); and said gasket (**41**) is provided with through holes (**35***b*) for said cover fastening screws (**45**) and a transmission member assembling opening (**42**).



5,666,731

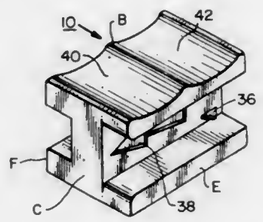
OPENING DEVICE FOR PLASTIC PACKAGES

Bret A. Rungren, Ventura, Calif., assignor to Mike B. Lynch, Ovideo, Fla., a part interest

Continuation of Ser. No. 363,756, Dec. 23, 1994, abandoned. This application May 23, 1996, Ser. No. 664,026

Int. Cl.[6] B26B *29/06*

U.S. Cl. 30—287 **6 Claims**



3. A hand held device for opening a selected one of two flat shrink-wrapped packages each of rectangular configuration and respectively different predetermined thicknesses, each package being characterized by a side wall having a longitudinal edge, an openable lid that closes against the longitudinal edge of the side wall, and a shrink wrapping enclosing the entire package, wherein the shrink wrapping includes a sheet member covering the juncture of the lid and the side wall edge, said device comprising:

a plastic block having elongated slots in two opposite sides which define a central wall portion therebetween, each slot having a bottom surface formed by the central wall portion and the bottom surface of each slot being essentially a flat plane, each slot having an open side opposite said bottom surface and an associated pair of side walls extending away from said central wall portion to a respective one of said opposite sides, said side walls being in a spaced parallel relationship;

each of said slots being of uniform width for slidably receiving a side of a respective one of said shrink-wrapped packages in close-fitting engagement therewith whereby the associated package may be slid longitudinally therethrough;

each of said slots having a respectively associated cutting blade secured in said bottom surface and extending parallel to the associated side walls of said slot for making a length-wise cut through the sheet member of the shrink wrapping; and

each of the cutting blades being in a laterally offset position in its associated slot and extending from said bottom surface to

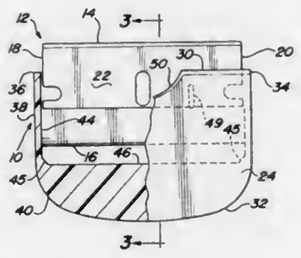
slightly enter the otherwise closed juncture of the lid and the longitudinal edge of the side wall of the selected package and thereby easily guide the blade to make an uninterrupted incision in the shrink wrapping through the entire length of the package.

5,666,732

HOLDER FOR USE WITH A RAZOR BLADE

Thomas M. Shea, 1407-C Allen Dr., Troy, Mich. 48083

Continuation of Ser. No. 314,350, Sep. 28, 1994. This application Feb. 12, 1996, Ser. No. 599,865
Int. Cl.[6] B26B *1/00*
U.S. Cl. 30—329 9 Claims



1. A holder for use with a standard sized razor blade, the razor blade being substantially rectangular in shape and having a scraping edge, an opposite and supporting edge separated from the scraping edge by first and second sides and a series of corners connecting the scraping and supporting edges with the sides, said holder comprising:

a one-piece body having a first face, a second face spaced a predetermined distance from said first face, a substantially straight edge and at least one additional edge connected to opposite sides of said straight edge so as to define an outline of said body and to provide said body with a pair of opposite and inwardly facing edges, said straight edge having an aperture formed therein and extending between said first face and said second face a predetermined distance to define a cavity within said body;

said cavity closely conforming to the outline of the razor blade so as to permit the razor blade to be directly inserted a predetermined distance within said body;

a friction fit being created between said pair of opposite and inwardly facing edges of said body and the sides of the razor blade upon insertion of the razor blade;

said cavity terminating in a bottom edge which extends between said pair of opposite and inwardly facing edges, a first diagonally shaped corner connecting said bottom edge to a first of said inwardly facing edges and a second diagonally shaped corner connecting said bottom edge to a second of said inwardly facing edges, the corresponding corners of the razor blade frictionally embedding within said diagonally shaped corners upon insertion of the razor blade within said cavity; and

a recess formed in said first face and said second face and extending from said straight edge in a direction toward said aperture;

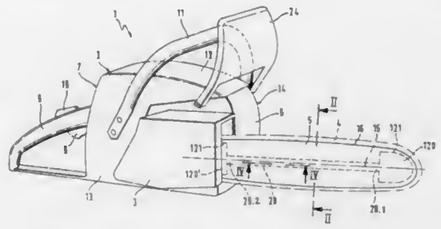
whereby said recess permits the application of force to the razor blade to enable the razor blade to be frictionally disengage from within the body and to be rotated from a first working position displaying the scraping edge to a second storage position displaying the opposite and supporting edge.

5,666,733

GUIDE BAR FOR A MOTOR CHAINSAW

Karl Nitschmann, Schorndorf, Germany, assignor to Andreas Stihl, Waiblingen, Germany

Filed Aug. 18, 1995, Ser. No. 516,759
Claims priority, application Germany, Aug. 18, 1994, 44 29 348.8
Int. Cl.[6] B23D *57/02*; B27B *17/02*
U.S. Cl. 30—387 19 Claims



1. A guide bar for a saw chain of a motor chain saw, said guide bar comprising:

two side plates having a longitudinal extension;

at least one longitudinal stay for fixedly connecting said side plates to one another such that said side plates are positioned substantially congruent and parallel to one another and define a peripheral guide groove therebetween;

said longitudinal stay extending in a direction of said longitudinal extension over most of said longitudinal extension of said side plates;

said longitudinal stay having contact surfaces;

said side plates having support surfaces extending perpendicular to a center plane of said guide bar extending parallel to said side plates; and

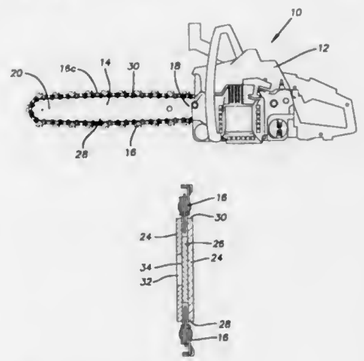
said contact surfaces resting on said support surfaces.

5,666,734

GUIDE BAR CODING SYSTEM

Robert L. Morrison, Shreveport, La., assignor to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Aug. 16, 1996, Ser. No. 699,889
Int. Cl.[6] B23D *59/00*; B27B *17/02*
U.S. Cl. 30—387 23 Claims



1. A chain saw, comprising:

a housing;

a guide bar extending from said housing, said guide bar including guide bar indicia indicative of characteristics of said guide bar; and,

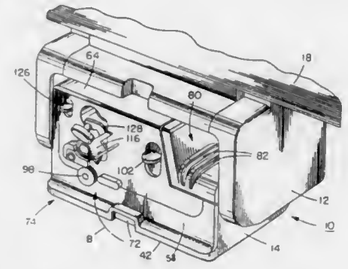
a saw chain extending around said guide bar, said saw chain including saw chain indicia indicative of characteristics of said saw chain, wherein said guide bar indicia and said saw chain indicia are identical to one another.

5,666,735

CAN OPENER WITH MOVING LID RETAINER

Richard B. Kosten, West Haven, and Robert A. St. John, Cheshire, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 155,678, Nov. 22, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,522
Int. Cl.[6] B67B *7/46*
U.S. Cl. 30—410 2 Claims



1. A can opener comprising:

a housing having a first face and a recess formed in said face;

a cutter assembly movably mounted on the first face of the housing and including a cutter blade and a blocker member;

a lid retainer having an arm movably connected to the housing and extending through the first face and a magnet connected to the arm, said blocker member of said cutter assembly engaging said extending arm of said lid retainer for maintaining the lid retainer in a retracted position;

a manually actuated control switch movably mounted on said housing;

actuator means connected to said control switch and movable in response to movement of said control switch for moving the cutter assembly upon the control switch being moved to a first predetermined position, to move said blocker member relative to said lid retainer to disengage said blocker member from said lid retainer for enabling the lid retainer to be gravity fed to an extended position, said actuator means placing said blocker member in engagement with said lid retainer arm to move said lid retainer to said retracted position upon the control switch being moved to a second predetermined position, said lid retainer arm being housed within said recess when in said retracted position.

5,666,736

SELF-ADJUSTING LEVEL FOR DETERMINING LEVELING BETWEEN TWO DISTANT POINTS

Cheng-Kan Wen, No. 35, Alley 304, Sec. 1., Kienkwo South Rd., Taipei, Taiwan

Filed Oct. 13, 1995, Ser. No. 542,694
Int. Cl.[6] G01C *5/02*
U.S. Cl. 33—291 1 Claim

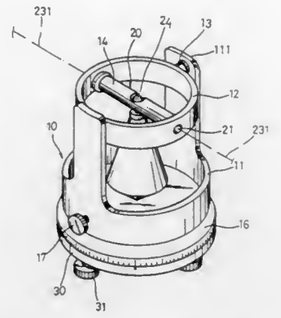
1. A self-adjusting level for determining the leveling between two distant points, comprising:

a main body and a light beam indicator,

said main body further including a frame having two oppositely disposed supporting arms, a disc-like base disposed below said main body, and a 360-degree rotatable graduated angle-measuring disc disposed between said base and said frame,

said light beam indicator including: (a) an outer ring rotatably connected to and between said two supporting arms of said frame of said main body via two outer ring shafts so that said outer ring is allowed to freely rotate about said outer ring shafts, (b) an inner shaft being rotatably connected at both ends thereof to said outer ring and extending along a diameter of said outer ring so as to rotate in a direction normal to a rotating direction of said outer ring, (c) at least one light beam generator disposed inside said inner shaft for generating at least one light beam which emits from at least one end of said inner shaft, and (d) a plummet hanging from a central recess formed on said inner shark,

wherein said plummet is provided with a battery means in an internal portion thereof to supply power to said light beam generator without affecting a motion of either of said inner shaft or said outer ring.

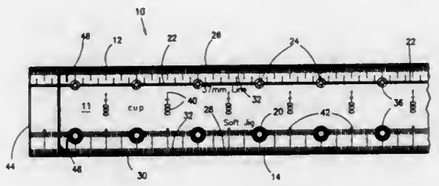


5,666,737

TEMPLATE FOR EUROPEAN STYLE CABINETRY

James C. Ryan, III, 182 Cobbs Hill Dr., Rochester, N.Y. 14610

Filed Dec. 19, 1995, Ser. No. 574,847
Int. Cl.[6] G01B *3/10*
U.S. Cl. 33—562 30 Claims



1. A flexible, measuring template tape for marking the locations of holes to be drilled in first and second non coplanar surfaces of an object having first and second edges and obverse and reverse surfaces, comprising:

a first indicia adapted to be placed in registration with a line of intersection of the first and second surfaces;

a second series of indicia uniformly spaced apart by a first distance extending from the first indicia in a first direction; and

a third set of indicia spaced a predetermined second distance from the first indicia in a second direction opposite from the first direction, the second distance being different than the first distance.

5,666,738

CALIBRATION AND MEASURING TOOL

Leif Nybro, PL 7690, S-450 73 Rabbalshede, Sweden

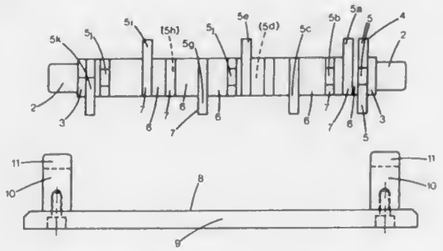
PCT No. PCT/SE94/00242, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/21982, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 18, 1994, Ser. No. 525,578

Claims priority, application Sweden, Mar. 19, 1993, 9300922

Int. Cl.[6] G01B *3/30*

U.S. Cl. 33—567 **11 Claims**



1. A calibration and measuring tool comprising:

a rod shaped supporting part having threaded opposite ends;

a first end nut screwed onto one end of the supporting part;

a first support spacer operatively engaging the supporting part and immediately adjacent the first end nut;

a first plate having an opening defined therethrough to be slid on the supporting part so that the first plate is immediately adjacent the first support spacer, the first plate having four projections attached thereto, the projections projecting radially outwardly in a first, second, third and fourth direction;

a first spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the first plate;

a second plate having an opening defined therethrough to be slid on the supporting part so that the second plate is immediately adjacent the first spacer sleeve, the second plate having one projection attached thereto, the projection projecting radially outwardly in the first direction;

a second spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the second plate;

a third plate having an opening defined therethrough to be slid on the supporting part so that the third plate is immediately adjacent the second spacer sleeve, the third plate having one projection attached thereto, the projection projecting radially outwardly in the second direction that is perpendicular to the first direction;

a third spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the third plate;

a fourth plate having an opening defined therethrough to be slid on the supporting part so that the fourth plate is immediately adjacent the third spacer sleeve, the fourth plate having one projection attached thereto, the projection projecting radially outwardly in a third direction that is perpendicular to the second direction;

a fourth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the fourth plate;

a fifth plate having an opening defined therethrough to be slid on the supporting part so that the fifth plate is immediately adjacent the fourth spacer sleeve, the fifth plate having one projection attached thereto, the projection projecting radially outwardly in a fourth direction that is perpendicular to the third direction;

a fifth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the fifth plate;

a sixth plate having an opening defined therethrough to be slid on the supporting part so that the sixth plate is immediately adjacent the fifth spacer sleeve, the sixth plate having one projection attached thereto, the projection projecting radially outwardly in a first direction that is parallel to the first direction of the projection of the second plate;

a sixth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the sixth plate;

a seventh plate having an opening defined therethrough to be slid on the supporting part so that the seventh plate is immediately adjacent the sixth spacer sleeve, the seventh plate having one projection attached thereto, the projection projecting radially outwardly in a second direction that is parallel to second direction of the projection of the third plate;

a seventh spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the seventh plate;

an eighth plate having an opening defined therethrough to be slid on the supporting part so that the eighth plate is immediately adjacent the seventh spacer sleeve, the eighth plate having one projection attached thereto, the projection projecting radially outwardly in a third direction that is parallel to the third direction of the projection of the fourth plate;

an eighth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the eighth plate;

a ninth plate having an opening defined therethrough to be slid on the supporting part so that the ninth plate is immediately adjacent the eighth spacer sleeve, the ninth plate having one projection attached thereto, the projection projecting radially outwardly in a fourth direction that is parallel to the fourth direction of the projection of the fifth plate;

a ninth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the ninth plate;

a tenth plate having an opening defined therethrough to be slid on the supporting part so that the tenth plate is immediately adjacent the ninth spacer sleeve, the tenth plate having one projection attached thereto, the projection projecting radially outwardly in an first direction that is parallel to first direction of the projection of the sixth plate;

a tenth spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the tenth plate;

an eleventh plate having an opening defined therethrough to be slid on the supporting part so that the eleventh plate is immediately adjacent the tenth spacer sleeve, the eleventh plate having one projection attached thereto, the projection projecting radially outwardly in an second direction that is parallel to the second direction of the projection of the seventh plate;

an eleventh spacer sleeve having an opening defined therethrough to be slid on the supporting part and immediately adjacent the eleventh plate;

a twelfth plate having an opening defined therethrough to be slid on the supporting part so that the twelfth plate is immediately adjacent the eleventh spacer sleeve, the twelfth plate having one projection attached thereto, the projection projecting radially outwardly in a third direction that is parallel to the third direction of the projection of the eighth plate;

a second support spacer operatively engaging the supporting part and immediately adjacent the twelfth plate;

a second end nut screwed onto the end of the supporting part that is opposite the end attached to the first end nut;

each projection having a precisely machined reference surface; and

a support bracket adapted to receive the first and second ends of the supporting part to rotatably support the supporting part.

5,666,739

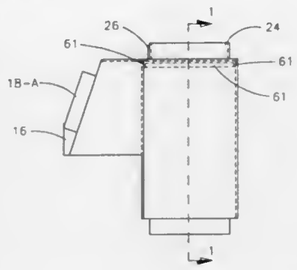
ENERGY CONSERVATION COUPLER

Waldemar Krueger, 75 Main St., Paris, Ontario, Canada, N3L 1E7

Filed Aug. 2, 1994, Ser. No. 284,937

Int. Cl.[6] F27B *7/36*

U.S. Cl. 34—86 **5 Claims**



1. An energy conservation coupler for use in combination with an electric clothes dryer, said coupler consisting of a box attached to said clothes dryer, said box including a top wall section having a first hot air inlet, a first exhaust outlet and a second exhaust outlet, a second bottom wall section, parallel to said first wall section, having a first exhaust inlet, an ambient air inlet and a dryer exhaust inlet, said box further including a flexible duct exhaust selector having two ends, a first end permanently connected to said first exhaust inlet and a second end positionable via a sliding plate which is attached to and surrounds said second end, into either a first position wherein the second end of the duct communicates with the first exhaust outlet or a second position wherein the second end communicates with the second exhaust outlet, said box further including a damper plate pivotable on a damper mounting shaft between two positions, a first damper position parallel to and between said top and bottom wall sections and a second damper position perpendicular to said wall sections, said damper lockable in said second damper position by an electromagnet mounted on a partition wall which is perpendicular to the top and bottom wall sections and which partially closes off air flow between the first hot air inlet and the first exhaust outlet, said second damper position stopping all air flow between the first hot air inlet and the first exhaust outlet while directing all air flow between said hot air inlet and said dryer exhaust inlet, said first damper position blocking air flow between said hot air inlet and said dryer exhaust inlet and allowing air flow from said dryer exhaust into said ambient air inlet.

5,666,740

HOOD FOR A WIRE PART AND FOR A PRESS SECTION

Antti Leinonen, Laukaa; Henrik Pettersson, Mynämäki; Risto Salminen, Kaarina; Hannu Niemikko, Nousiainen; Juha Kivimaa, Muurame; Pertti Heikkilä ; Tapio Lento, both of Raisio, and Erkki Kiilavuori, Jyväskylä , all of Finland, assignors to Valmet Corporation, Helsinki, Finland

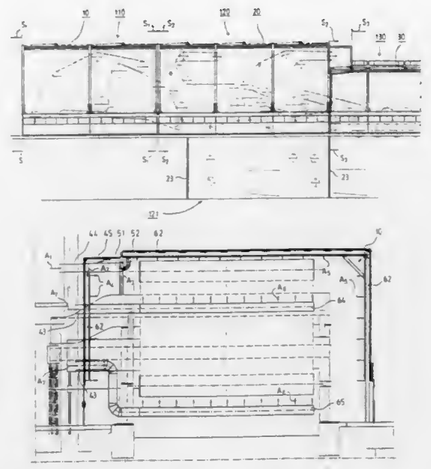
Filed Apr. 26, 1996, Ser. No. 638,442

Int. Cl.[6] F26B *11/02*

U.S. Cl. 34—114 **14 Claims**

1. A hood for a wire part, a press section or a press and wire section in a paper/board machine, comprising

enclosure means arranged around the wire part, a press section or a press and wire section for defining a closed interior of the hood, said enclosure means comprising at least one component having an outer wall and an opposed inner wall facing the interior of the hood, said outer wall being spaced from said inner wall to form an air duct therebetween, said inner wall having openings extending between said air duct and the interior of the hood,



first ventilation means extending into the interior of the hood through said enclosure means for ventilating the interior of the hood, and

second ventilation means for directing a replacement air flow into and through said air duct formed between said outer and inner walls such that the replacement air flows into the interior of the hood through said openings in said inner wall.

5,666,741

DRYING SECTION WITH ADDITIONAL PRESS NIP

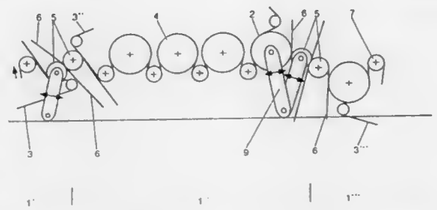
Alfred Bubik, Ravensburg; Frwin Brunmair, Graz; Harald Hess, Grünkraut; Herbert Holik, Ravensburg; Werner Leltenberger, Schlier-Wetzisreute; Thomas Merath, Oberteuringen; Johann Moser, Grünkraut; Helmet Stieb, Schlier, and Elmer Weisshuhn, Vogt, all of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Germany

Filed Mar. 4, 1996, Ser. No. 610,723

Claims priority, application Germany, Mar. 3, 1995, 195 07 374.6

Int. Cl.[6] F26B *11/02*

U.S. Cl. 34—117 **22 Claims**



22. A drying section of a paper making machine with additional web dewatering, the drying section comprising:

at least a first and a second drying group, each of the drying groups including

a plurality of heatable drying cylinders having a heatable surface,

each of the drying groups having an upstream end at which a paper web enters the drying group to move through the drying group in the downstream direction, and having a downstream end where the paper web leaves the drying group;

web guide means for guiding the paper web to be dried over the surface of the drying cylinders of the drying group and to be moved from the upstream to the downstream ends of the drying group;

at least one dryer wire in each drying group; wire guide means guiding the dryer wire to support the paper web against the heatable surfaces of the drying cylinders within the drying group and for the wire to move with the web through the drying group;

a press roll located in the drying section, the press roll being supported for pressing the web against one of the drying cylinders and for defining a press nip between the press roll and the one drying cylinder; the web guide means guiding the web through the press nip;

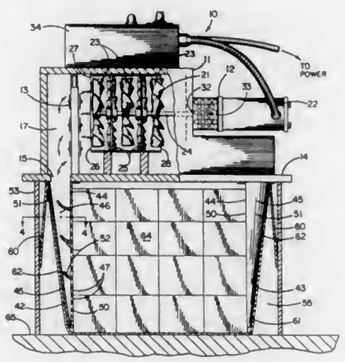
a web dewatering belt passing around the press roll and passing together with the paper web through the press nip between the press roll and the one drying cylinder such that the press roll presses on the dewatering belt and the web for additionally dewatering the web passing around the one drying cylinder.

5,666,742

TEMPERATURE MODIFICATION ASSEMBLIES

Christopher G. Greve, Covington, and Ronald M. O'Connor, Jefferson, both of La., assignors to The Laitram Corporation, Harahan, La.

Filed Dec. 10, 1993, Ser. No. 164,949
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—218 **29 Claims**



8. A temperature modification assembly comprising:

a housing;

a temperature modification element;

a jacket cooperatively arranged with the housing and having an interior and an open end, whereby the open end of the jacket can be positioned over one or more items and the jacket can be lowered over the one or more items;

a blower arranged to direct a flow of air past the temperature modification element and to circulate the air flow from the housing to the interior of the jacket and back to the housing; and

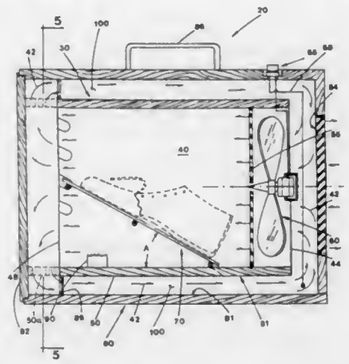
a controller coupled to the blower and arranged to recurrently reverse the direction of the air flow.

5,666,743

APPAREL DRYING AND DEODORIZING SYSTEM

Bonnie D. Dawson, 360 Sarratt School Rd., Gaffney, S.C. 29341

Filed Feb. 26, 1996, Ser. No. 606,556
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—219 **16 Claims**



1. An apparel conditioner system for drying an deodorizing apparel with a flow of ambient air comprising:

an apparel conditioning device having housing with an external surface, an inlet and an outlet;

an air flow passage defined within said housing between said inlet and said outlet in which a flow of unheated ambient air is established to condition said apparel within said housing;

a fan carried by said housing and positioned in said inlet of said housing for forcing said flow of ambient air through said air flow passage;

an adjustable apparel rack carried within said housing for supporting said apparel in a position to be conditioned;

an adjustable rack mount for adjusting the position of said adjustable apparel rack in said air flow passage to be at an angle with respect to said housing to provide said flow of unheated ambient air within said air flow passage so that said flow of unheated ambient air provides circulation of air to inside surfaces of said apparel and envelops outside surfaces of said apparel at the same time for rapid drying;

an outer enclosure having an inner surface forming a chamber for receiving and containing said apparel conditioning device within said outer enclosure; and

an air channel defined between said inner surface of said outer enclosure and said external surface of said housing so that said unheated ambient air is circulated within said air channel for providing said flow of unheated ambient air in a recirculating path defined by an internal air flow through said air passage and an external air flow through said air channel generally without being exhausted from said outer enclosure, whereby said apparel is conditioned within minimum amount of lapsed time without the use of a heating means.

5,666,744

INFRARED PAPER DRYING MACHINE AND METHOD FOR DRYING A PAPER WEB IN AN INFRARED PAPER DRYING MACHINE

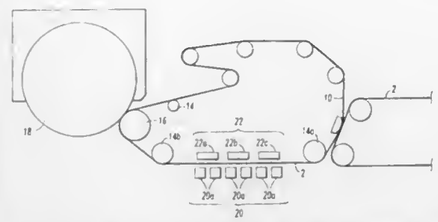
Benjamin A. Thorp, Richmond, Va., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Nov. 2, 1995, Ser. No. 552,123
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—267 **16 Claims**

1. A drying apparatus for a wet paper web comprising:

a substantially continuous fabric sheet for carrying a paper web;

an infra-red drying means positioned below said fabric sheet with respect to a plane formed by said paper web and said fabric sheet for delivering energy upwardly to said paper web,



said paper web being conveyed by said fabric sheet with said paper web positioned adjacent to said infra-red drying means; and

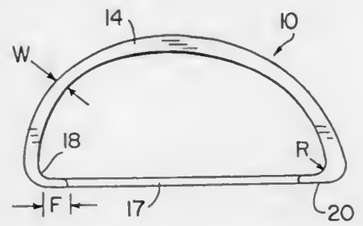
a vacuum means positioned above said fabric sheet with respect to said plane for drawing air through said paper web and said fabric sheet for drying said paper web while minimizing compacting of said paper web.

5,666,745

MOLDED PLASTIC TOE CAP FOR SHOES

John M. Harwood, 15140 Irene Ct., Elm Grove, Wis. 53122

Filed Nov. 6, 1995, Ser. No. 554,078
Int. Cl.[6] A43C *13/14*
U.S. Cl. 36—77 R **4 Claims**



1. An injection molded plastic resin toe cap for a protective shoe of the type having a rearwardly opening shoe toe-shaped body including a roof which blends smoothly into laterally opposite generally vertical side walls and a generally vertical front wall, an open rear end defined by a rear edge including the rear edges of the roof and side walls, and an open bottom defined by a continuous bottom flange forming the lower edges of the side walls and front wall, said toe cap comprising:

the side walls having a minimum thickness of 0.12 inch (3 mm);

a continuous curved surface defining an interior transition between the walls and the flange, said surface having a minimum radius of curvature of 0.15 inch (3.8 mm); and,

the bottom flange having a continuous flat lower surface defining a narrow uniplanar base, said base surface having a minimum width of 0.10 inch (2.5 mm).

5,666,746

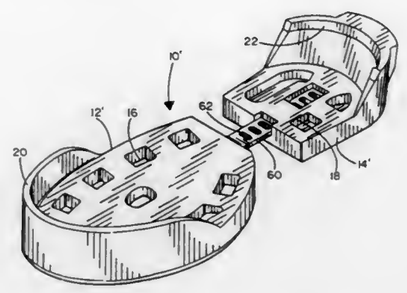
SPIKED SHOE PROTECTOR WITH ADJUSTABLE STRAP TO ACCOMMODATE DIFFERENT SHOE SIZES

Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083

Continuation-in-part of Ser. No. 172,176, Dec. 23, 1993, abandoned. This application Jun. 28, 1995, Ser. No. 496,055
Int. Cl.[6] A43B *3/12;3/26*
U.S. Cl. 36—135 **3 Claims**

1. An overlaying protector for covering a spiked shoe's spikes; the protector comprising:

a pair of separate cover portions having an upper surface with wells formed therein to receive the spiked shoe's spikes and forming a shoe support surfacer one said cover portion being



adapted to mate with and be releasably coupled to a front portion of the spiked shoe and the other said cover portion being adapted to mate with and be releasably coupled to a rear portion of the spiked shoe; and

an adjustment strap permanently affixed to one of said cover portions and adjustably affixed to the other of said cover portions for changing a spacing dimension between said cover portions for accommodating different shoe sizes, said adjustment strap having a plurality of serially arranged eyes formed therein, one of said cover portions including means for adjustably affixing said adjustment strap thereto, said means for adjustably affixing including a recess having a bottom surface thereof formed with a plurality of tabs extending therefrom for releasable coupling with selected ones of said plurality of eyes; and

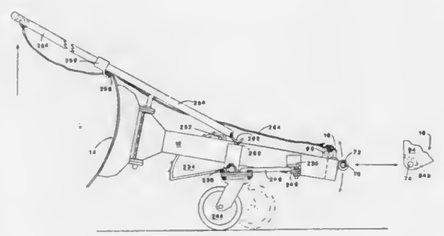
wherein said means for adjustably affixing further includes a plurality of additional recesses formed alternately in said upper surface and an opposing lower surface in spaced relationship with said recess having tabs formed on said bottom surface thereof, each of said recesses being in open communication with adjacent others of said recesses for threadedly receiving said adjustment strap therein.

5,666,747

LIGHTWEIGHT MODULAR SNOWPLOW FOR QUICK ATTACHMENT TO AND SIMPLE ECONOMICAL OPERATION FOR SMALL VEHICLE

James Patrick MacQueen, 32 Valley St., Keene, N.H. 03431

Continuation-in-part of Ser. No. 183,173, Jan. 18, 1994, Pat. No. 5,485,690. This application Jan. 17, 1996, Ser. No. 587,989
Int. Cl.[6] B62B *3/12;* **F01H** *5/04*
U.S. Cl. 37—273 **8 Claims**



1. Leverage handle means for facilitating the manual transport of an interconnected plow frame moldboard assembly comprised of at least one rigid arm which is angled as necessary for fit and connection, having at one first end a handle, and at a second opposite end, means for connection to a plow frame of said interconnected plow frame moldboard assembly;

wherein manual transport of said interconnected plow frame moldboard assembly is facilitated by mounting said leverage

handle means in a forward position on and in relation to said interconnected plow frame moldboard assembly;

wherein when said interconnected plow frame moldboard assembly is fitted with at least one castor wheel which selectively can be positioned fixedly beneath said plow frame in proximity to a rear convex shaped side of said moldboard so that a lowest part of said castor wheel extends beyond a plane formed by connecting, with an imaginary straight line, a bottom scraping edge of said moldboard and a bottom rear edge of a first double apex end of said plow frame;

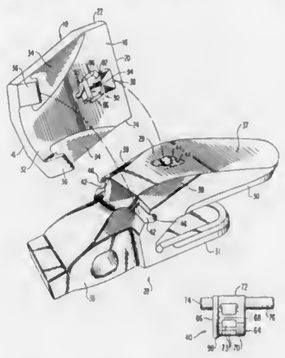
wherein when said leverage handle means is mounted in said forward position and connected at first and second points to said interconnected plow frame moldboard assembly, the first said connection point being at said second opposite end of said leverage handle means and between said first double apex end and a second opposite single apex end of said plow frame, and the second said connection point being on said leverage handle means between said first handle end and said second opposite end of said leverage handle means where said leverage handle means contacts the top edge of said moldboard of said interconnected plow frame moldboard assembly, said leverage handle means provides a way of manually transporting in any direction said interconnected plow frame moldboard assembly through a use of a pulling up motion on said first handle end of said leverage handle means, utilizing said at least one castor wheel as a fulcrum so that only said at least one castor wheel is in contact with the ground surface.

5,666,748

WEAR CAP AND COMPONENTS USEABLE THEREWITH

Robert K. Emrich, Tigard, Oreg., and Eric D. Anderson, Woodland, Wash., assignors to ESCO Corporation, Portland, Oreg.

Filed Dec. 11, 1995, Ser. No. 570,437
Int. Cl.[6] E02F *9/28*
U.S. Cl. 37—453 **47 Claims**



1. A wear assembly comprising:

a structural member having a wearable surface, said wearable surface including a plurality of recesses;

a wear cap to protect said wearable surface, said wear cap including a pair of opposite ends, a wear surface remote from the wearable surface, a mounting surface facing the wearable surface, a plurality of tabs projecting outward from said mounting surface and in the general direction of one of said ends to be received in said recesses defined in the wearable surface, at least one tab being spaced closer to one said end than at least one other said tab, an opening extending through said wear cap, and a bearing surface defined in said opening; and

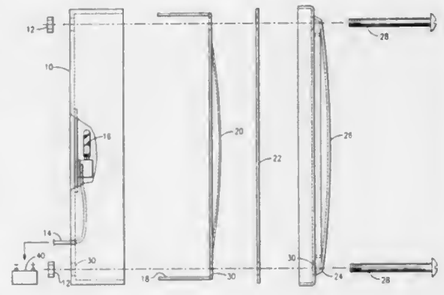
a lock received in said opening and in abutment with said structural member and said bearing surface for securing said wear cap to said structural member.

5,666,749

AUTOMOBILE PLATE PROTECTOR AND DISPLAY APPARATUS

Ronnie Waters, 604 Jake Brown Rd., Richmond Hill, Ga. 31324

Filed Sep. 14, 1995, Ser. No. 528,390
Int. Cl.[6] G09F *13/02*
U.S. Cl. 40—204 **10 Claims**



1. An automobile display plate protector and display assembly capable of being mounted on an automobile, the automobile having at least two pre-drilled threaded holes defined therein, the assembly comprising:

a rear mounting box having a first end and a second end, the first end having at least two holes defined therein, the at least two holes in alignment with the pre-drilled threaded holes on the automobile;

at least one illumination means mounted within the rear mounting box;

means for providing electrical power to the at least one illumination means;

an inner shield plate sized to fit inside the rear mounting box, the inner shield plate having a first side and a second side, the first side extending inside the rear mounting box, the second side extending inside the rear mounting box, the inner shield plate having at least two holes defined therein that align with the at least two holes in the rear mounting box, the inner shield plate having a convex central bulge defined therein, the first side and the second side extending inside the rear mounting box to establish a space between the illuminating means and the central bulge;

an outer shield plate sized to fit onto the second end of the rear mounting box, the outer shield plate enclosing the inner shield plate, the outer shield plate having a convex central bulge, the outer shield plate having at least two holes defined therein that align with the at least two holes in the inner shield plate;

a flexible display plate sized to fit between the inner shield plate and the outer shield plate and sized to be enclosed therein, the flexible display plate conforming to the shape of the convex central bulge on the inner shield plate and the convex central bulge on the outer shield plate, the flexible display plate having at least two holes defined therein that align with the at least two holes in the inner shield plate and the at least two holes in the outer shield plate; and

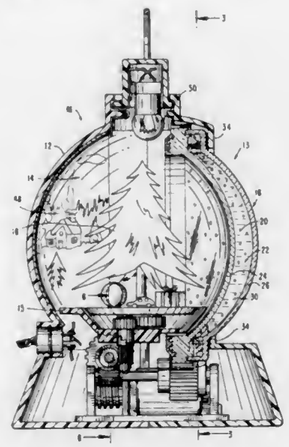
at least two bolts extending through the outer shield plate, the flexible display plate, the inner shield plate, and the rear mounting box, the at least two bolts being capable of engaging the at least two pre-drilled threaded holes.

5,666,750

DECORATIVE ARTICLE WITH FLAKE CIRCULATING MEANS

Marc H. Segan, New York, and Gary Strauss, Mamaroneck, both of N.Y., assignors to M.H. Segan Limited Partnership, Great Barrington, Mass.

Filed May 25, 1995, Ser. No. 450,422
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—410 **26 Claims**



1. A display device comprising:

a compartment including first and second opposed sidewalls defining a sealed interior cavity therebetween having an upper zone, a lower zone and a periphery, at least a portion of each of said sidewalls being transparent, with said transparent portions in visual alignment;

a substantially transparent liquid disposed within said interior cavity and having a plurality of flake-like particles dispersed therein;

recirculating means disposed at said periphery of said interior cavity and secured to said compartment for movement therewith;

rotating means for rotating said compartment and said recirculating means secured thereto for engaging and carrying said flake-like particles from said lower zone to said upper zone to thereby continuously recirculate said flake-like particles within said liquid; and

a shell having an opening receiving said compartment and defining an interior space viewable through said visually aligned transparent portions of said sidewalls.

5,666,751

MODULAR SIGN SYSTEM

Benjamin L. Garfinkle, 1120 Portal Ave., Piedmont, Calif. 94610

Continuation of Ser. No. 937,521, Aug. 27, 1992, abandoned. This application Nov. 17, 1995, Ser. No. 558,255
Int. Cl.[6] G09F *7/00*
U.S. Cl. 40—605 **3 Claims**

1. A sign system for accepting and displaying flexible signage, said sign system comprising:

a) flexible signage of substantially uniform vertical dimension;

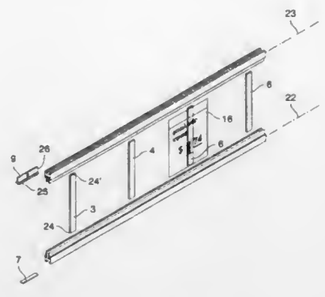
b) one or more separator panels;

c) connector means for connecting said sign system to support means; and

d) at least one pair of rail sections wherein each said rail section has:

1) An outer edge;

2) an inner edge;



3) substantially uniform cross section;

4) a longitudinal axis;

5) signage slot means at the inner edge for accepting and frictionally retaining said flexible signage;

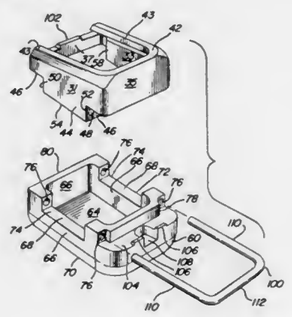
6) separator slot means at the inner edge for frictionally engaging said separator panels so that said one or more separator panels are positionable anywhere along said rail sections within said separator slot means and when installed together with said flexible signage reside behind said signage wherein only said one or more separator panels maintain said rail sections as parallel pairs; and wherein at least one of said rail sections is provided with an open region at its outer edge for accepting and retaining said connector means and wherein said one or more separator panels are provided with detent regions of reduced cross-section and said separator slot means are provided with barbs for frictionally engaging and retaining said one or more separator panels.

5,666,752

HAND GUN MAGAZINE EXTENSION ASSEMBLY

Beven Grams, 2435 Norse Ave., Costa Mesa, Calif. 92627

Filed Nov. 13, 1996, Ser. No. 748,684
Int. Cl.[6] F41A *9/71*
U.S. Cl. 42—49.02 **29 Claims**



1. A magazine extension assembly adapted to mount to a hand gun magazine tube comprising:

an adapter having attachment means for attaching to the lower edge of said magazine tube, said adapter further comprising a pair of heel members depending from first and second generally parallel lower longitudinal edges, each said heel member having a channel passing in a longitudinal direction from a front edge to a rear edge;

a base pad comprising a floor and a continuous wall along the perimeter thereof and a pair of open slots along opposite sides of said wall on an upper surface thereof sized to receive said heel members of said adapter channels extending from a front surface of said base pad to a rear surface of said base pad

from a continuous channel with said channels of said heel members when said base pad upper surface bears against a lower surface of said adapter; and

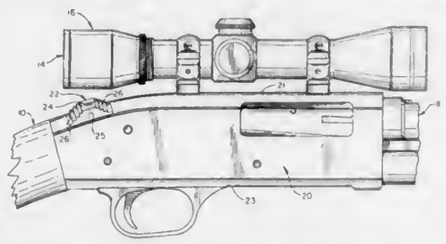
pin means insertable into said channels for releasably securing said base pad to said adapter.

5,666,753

SAFETY SWITCH FOR SHOTGUN EQUIPPED WITH SCOPE

Robert G. Kolling, Rochester, Minn., assignor to Rochester Gunsmiths, Inc., Rochester, Minn.

Filed Jun. 14, 1995, Ser. No. 490,133
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—70.01 **9 Claims**



1. A safety switch for a shotgun, the shotgun having a length, a longitudinally rearwardly disposed stock, a forwardly disposed barrel, and a body positioned between the stock and barrel, the body having a width and a top, the shotgun includes a scope, wherein the scope is attached to the top of the body, the safety switch comprising:

a base portion configured for slidable connection to the body of the shotgun at the top of the body;

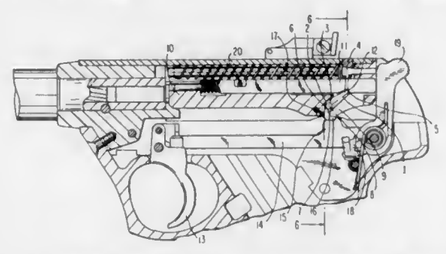
an exposed portion extending from the base, the exposed portion including a transverse extension accessible from one side of the shotgun, the extension extending transversely from the top of the shotgun at least one quarter of the width of the body, the switch having a forward end positioned towards the barrel, and a backward end positioned towards the stock, the switch when connected to the body being slidable between a first and a second position, the first position enabling a safety, the second position disabling the safety.

5,666,754

LOCKING SYSTEM FOR INTEGRATED HAMMER OF SEMI-AUTOMATIC PISTOL

Ezio Renato de Oliveira Masina, Porto Alegre, Brazil, assignor to Forjas Taurus S/A, Porto Alegre, Brazil

Filed Jul. 7, 1995, Ser. No. 499,542
Claims priority, application Brazil, Jul. 8, 1994, 9402252
Int. Cl.[6] F41A *17/24*
U.S. Cl. 42—70.08 **6 Claims**



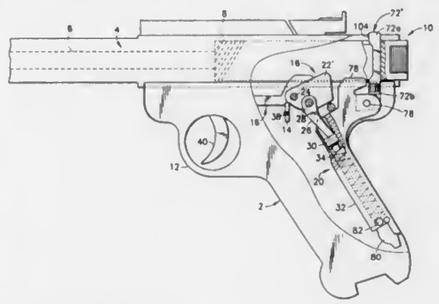
1. A locking system for a firing pin integrated into the firing mechanism of a semi-automatic pistol having a firing pin (**11**), a bolt (**10**), a trigger (**13**) and a trigger arm (**14**), said locking system comprising a lock (**1**) rotarably mounted in a slot (**9**) in a lower part of said bolt (**10**) about a shaft (**8**) that is perpendicular to a longitudinal axis of said pistol such that said lock (**1**) can turn freely about said shaft (**8**), said lock (**1**) having an upper contour formed by an arc of a circle (**2**) concentric with a hole (**3**) intended for passage of said shaft (**8**) therethrough, formed by a first straight line (**21**) tangent to said arc of the circle (**2**) on one end of said arc, and formed by a second straight line (**23**) tangent to said arc of the circle (**2**) on the opposite end of said arc, thus forming two convergent straight lines, which define the upper contour of an upper larger arm (**4**) of said lock (**1**) and a lower smaller arm (**6**) of said lock (**1**), respectively.

5,666,755

METHOD AND APPARATUS FOR FAST DISASSEMBLY OF BLOWBACK AUTOLOADING PISTOL

Dino C. Longueira, 827 Richmond Rd., Staten Island, N.Y. 10304

Filed Aug. 7, 1996, Ser. No. 694,630
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—75.02 **13 Claims**



1. In a pistol comprising:

a grip frame having a recess;

a receiver mounted on said grip frame and having a breech and a hold communicating with said breech;

a bolt assembly received in said breech of said receiver, said bolt assembly comprising a firing pin and a recoil spring guide assembly;

a hammer pivotably mounted to said grip frame, said hammer being configured to strike said firing pin when pivoted;

a main spring housing assembly arranged in said recess of said grip frame and comprising a housing having a channel, a main spring arranged in said channel and a plunger slidably arranged in said channel in contact with said main spring;

a strut pivotably coupled to said hammer; and

a bolt stop pivotably mounted to said main spring housing, said recoil spring guide assembly being in abutment with said bolt stop,

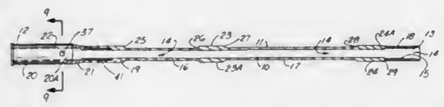
the improvement wherein said bolt stop comprises an upper pin part, a lower pin part and means for coupling said upper pin part to said lower pin part, said upper pin part penetrating said hole in said receiver and said lower pin part being pivotably mounted to said main spring housing and having a height which does not interfere with removal of said bolt assembly from said receiver when said upper pin part is uncoupled from said lower pin part and removed from said receiver.

5,666,756

SHOTGUN HAVING LIGHT WEIGHT INTERCHANGEABLE BARREL TUBES WITH IMPROVED FIT

Clifford Moller, Houston, Tex., assignor to Briley Manufacturing Co., Houston, Tex.

Filed Jun. 28, 1995, Ser. No. 495,937
Int. Cl.[6] F41A *21/00*
U.S. Cl. 42—77 **21 Claims**



1. An improved shotgun barrel tube sized and shaped to fit within a cylindrical shotgun barrel support having an inner supporting surface, the barrel tube including an enlarged diameter chamber portion for receiving a shotgun shell with a chamber outer surface and an elongated barrel portion with a cylindrical internal bore, the chamber and elongated barrel having outer surface portions that engage each end of the barrel support and at least one place along the length of the elongated portion which engages the barrel support, the improvement comprising:

a) a plug member that is affixed to the barrel tube at the chamber outer surface, extending therefrom along a radial line a short distance;

b) the plug member extending a partial distance circumferentially around the chamber portion outer surface: and

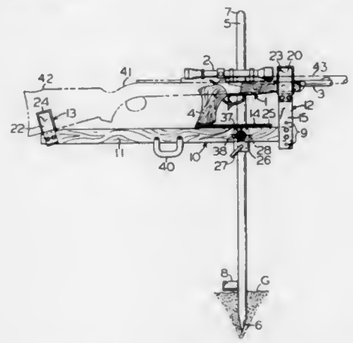
c) wherein the barrel tube outer surface directly engages, the barrel support at positions spaced away from the plug member.

5,666,757

COMBINATION OF PISTOL AND RIFLE SHOOTING REST

Glenn D. Helmstadter, 381 Niagra Dr., North Huntingdon, Pa. 15642

Filed Aug. 21, 1995, Ser. No. 517,217
Int. Cl.[6] F41A *35/00*
U.S. Cl. 42—94 **20 Claims**



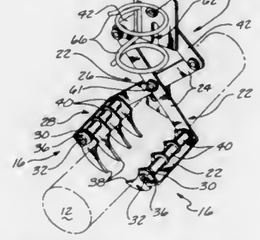
1. A combination of a pistol and rifle rest comprising, an elongated metallic unipod member having a sharpened end and having a step-on plate member for affixation into the ground, a gun supporting member including an apertured sleeve member freely movable along the length of the elongated metallic unipod member, a locking member also slidedly fits onto the metallic unipod member and co-acts with the sleeve member to vary the height of the gun supporting member, the locking member includes a threaded hole for receiving the threaded end of an L-shaped lock screw which engages the outer surface of the unipod member and acts as a stop for the sleeve member, the gun supporting member includes a long slender non-metallic body member which is pivotally connected to the apertured sleeve member by a threaded stud, a flat washer and a belleville spring washer that is situated on each side of a hole in the long slender non-metallic body member to provide frictional drag when a nut is screwed into the threaded stud and tightened to the proper torque, the gun supporting member includes a forward upstanding U-shaped cradle member for supporting the front barrel portion of the pistol and rifle and a rearward upstanding U-shaped cradle member for supporting the rear butt portion of the rifle, the innersides of the cradle members are covered by soft pliable material which protects the gun finish from being marred or scratched, the rear butt portion of a rifle sits into the rearward cradle member while the front barrel portion of the rifle fits into the forward cradle member, the two-point contact allows the rifle to sit steadily on the cradle members without the aid or assistance of the shooter, the gun supporting member also includes an intermediate flat plate-like member for supporting the handle of the pistol, the intermediate flat plate-like member is secured to the top of the gun supporting member and is covered with a soft pliable protective material, the pistol is permitted to stand freely by placing the front barrel portion into the forward cradle member and sitting the handle on the top of the first plate-like member, and the pivotal connection allows the shooter to freely change the elevation and angular position of the gun supporting member and, in turn, permits the shooter to quickly and accurately sight-in a target.

5,666,758

RETRIEVAL MECHANISM

George Louis Vaillier, deceased, late of North Bend, Wash. 98045, and by Francine Seung, 12704 SE. 398th, North Bend, Wash. 98045

Filed Jun. 7, 1995, Ser. No. 480,402
Int. Cl.[6] A01K *97/24*
U.S. Cl. 43—17.2 **14 Claims**



7. A device for retrieving articles, comprising:

(a) a scissor mechanism including a pair of cross members connected to one another and being rotatable relative to one another about an axis rotation, the cross members defining a first pair of ends and a second pair of ends opposite the first pair of ends, the ends of the first pair of ends being urged to a position spaced apart from one another when the ends of the second pair of ends are urged to a position spaced apart from one another, and the ends of the first pair of ends being urged to a position proximate one another when the ends of the second pair of ends are urged to a position proximate one another;

(b) a first jaw connected to one of the ends of the first pair of ends, and a second jaw opposing the first jaw connected to the other one of the ends of the first pair of ends, wherein the jaws each include a cantilevered supporting member having a plurality of teeth; and

(c) connection means connecting the ends of the second pair of ends to one another, the connection means being foldable to

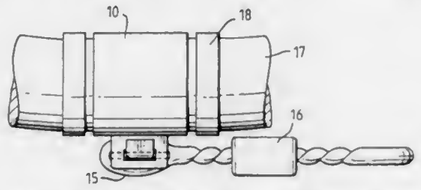
urge the ends of the second pair to a position proximate one another when tension is applied to the connection means.

5,666,759

SUSPENSION SLEEVE FOR SNOOD SWIVELS AND MATERIAL FOR SUCH A SUSPENSION SLEEVE

Tom Thormodsen, Gjøvik, and Per Borgund, Hunndalen, both of Norway, assignors to O. Mustad & Son A.S., Gjovik, Norway

PCT No. PCT/NO94/00010, § 371 Date Sep. 5, 1995, § 102(e) Date Sep. 5, 1995, PCT Pub. No. WO94/15455, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 11, 1994, Ser. No. 491,858
Claims priority, application Norway, Jan. 13, 1993, 93 0122
Int. Cl.[6] A01K *91/98*
U.S. Cl. 43—42.74 2 Claims



1. A suspension sleeve for snood swivels, comprising an annular rectangular metal plate, for rotating around the longitudinal axis of a fishing line said annular plate having two facing end areas, characterized in that,

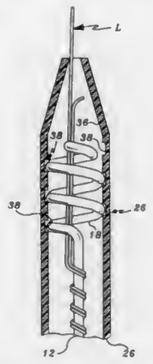
said end areas have respective first and second engagement sections which are firmly connected with each other, the first engagement section is a tongue composed of a root section and a tip section, the lateral width of said tip section is reduced in relation to the lateral width of said root section so that an intermediate shoulder is formed, and the second engagement section comprises an opening through which said tip section of said first engagement section is loosely fitted, until said shoulder abuts against said opening.

5,666,760

FISHING LINE LOCK

Ronald F. Bramblett, 4466 Valleyview Dr., Ashland, Ky. 41101, and Clinton W. Walker, III, 1653 Cypress Ridge Dr., Greenville, Miss. 38701

Filed Mar. 3, 1995, Ser. No. 397,921
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—44.83 9 Claims



1. A line attachment device comprising:

a straight shaft having a first end and a second end;

a coil member extending from said first end of said shaft, said coil member defining an axial aperture therethrough, said axial aperture adapted to receive a line;

an anchor member integrally connected to and extending from said second end of said shaft; and

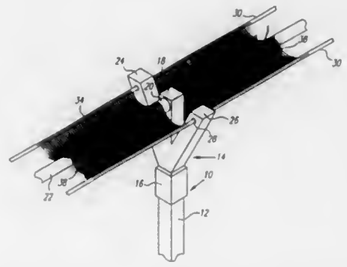
a sleeve disposed around said shaft and said coil member, said sleeve having a first sleeve end and a second sleeve end, said first sleeve end adjacent said coil, said second sleeve end adjacent said second end of said shaft, and said sleeve having an inner surface with a spiral groove threadedly engaging said coil member.

5,666,761

GRAPE DRYING SYSTEM

Robert K. Warkentin, 2834 S. Kent, Visalia, Calif. 93277

Filed May 8, 1995, Ser. No. 437,166
Int. Cl.[6] A01G *17/06;17/14*
U.S. Cl. 47—46 7 Claims



1. A system for drying grapes from a vineyard with grapevines extending in rows, comprising

at least one row of grapevines;

vertical supports extending from the ground to above the grapevines in at least one row of grapevines;

porous horizontal trays extending between the vertical supports above the at least one row of grapevines;

tensioned wires extending between the vertical supports along the at least one row of grapevines and being mutually spaced apart, the trays being mesh and extending between the wires;

poles extending between the supports above the at least one row of grapevines, the trays being supported by the poles, the wires being outwardly of and parallel to the poles, the mesh overlaying the poles.

5,666,762

RESPIRATION-LIMITED MANUFACTURED SEED

William C. Carlson, Olympia; Michael K. McKinnis, Chehalis, and Jeffrey E. Hartle, Federal Way, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 781,773, Oct. 23, 1991, Pat. No. 5,427,593, which is a continuation-in-part of Ser. No. 604,656, Oct. 26, 1990, Pat. No. 5,236,469. This application Jun. 7, 1995, Ser. No. 487,600
Int. Cl.[6] A01C *1/06;* A01H *1/00;5/00*
U.S. Cl. 47—57.6 18 Claims

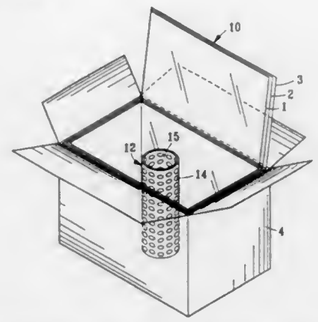
1. A manufactured seed comprising a unit of totipotent plant tissue and a hydrated gel disposed relative to the plant tissue so as to allow liquid transfer from the gel to the plant tissue, the hydrated gel comprising a concentration of a respiration-limiting gas effective to reduce respiration of the plant tissue to a level less than respiration of totipotent plant tissue in a control manufactured seed.

5,666,763

AGRICULTURAL PRODUCT PRESERVING DEVICE

Chih-Chuan Kao, No. 67, Kuang-Min St., Pan Chiao City, Taipei Hsien, Taiwan

Filed Oct. 31, 1995, Ser. No. 550,646
Int. Cl.[6] B65D *85/50*
U.S. Cl. 47—84 9 Claims



1. An agricultural product preserving device, comprising:

(a) an air-permeable package box;

(b) a composite bag, placed in said package box, for containing agricultural product to be preserved, said composite bag including:

(i) a one-way infiltrative layer capable of allowing moisture produced by the agricultural product to infiltrate from inside to outside while preventing moisture on the outside to penetrate therethrough to the inside;

(ii) an absorbent layer laying upon said one-way infiltrative layer, capable of holding moisture penetrating through said one-way infiltrative layer while allowing air to pass therethrough; and

(iii) an air-permeable waterproof layer laying upon said absorbent layer, capable of preventing moisture held in said absorbent layer from draining to the outside while allowing air to penetrate therethrough to the outside; and

(c) a heat-dissipating tube placed in said composite bag, said heat-dissipating tube having a hollowed inside for dissipating heat.

5,666,764

FIXED HINGE-DOOR REMOVAL/DOOR SEAL RESOLUTION

Scott M. Beatty; David Foss, and James L. Willis, all of Fort Smith, Ark., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 23, 1994, Ser. No. 344,444
Int. Cl.[6] E05D *7/00*
U.S. Cl. 49—397 8 Claims

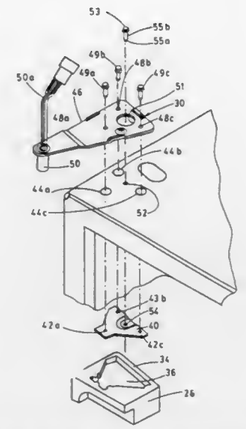
1. A hinge assembly for mounting an appliance door, wherein the appliance provides a mounting surface adjacent the door, comprising:

a tap plate located on an inside of said mounting surface and fixed in a factory adjusted position;

a hinge located on an outside of said mounting surface substantially aligned with said tap plate;

said tap plate providing a plurality of screw engaging holes, said hinge providing a plurality of screw receiving holes each substantially aligned with one of said screw engaging holes, and said mounting surface having enlarged holes in registry with said screw receiving holes;

a plurality of screws for inserting through said screw receiving holes, said enlarged holes, and engaging said screw engaging holes to clamp said mounting surface between said hinge and said tap plate and thereby fix the position of said hinge relative to the tap plate; and



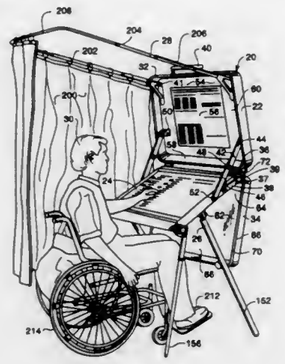
a means for fixing said tap plate in the factory adjusted position relative to said mounting surface independent of said plurality of screws fixing the position of said hinge relative to the tap plate and so that the screw engaging holes of the tap plate cannot move relative to said mounting surface even upon removal of the plurality of screws and the hinge.

5,666,765

SUITCASE VOTING BOOTH WITH ACCESS FOR HANDICAPPED PERSONS

Larry W. Sarner; Lee S. Smith, both of Loveland, and Kenneth B. Malpass, Boulder, all of Colo., assignors to Mark Voting Systems, Inc., Loveland, Colo.

Filed Jun. 20, 1995, Ser. No. 496,854
Int. Cl.[6] A47F *10/00*
U.S. Cl. 52—36.1 25 Claims



1. A portable voting booth accessible for use by a wheelchair-bound person comprising:

a bivalve case including an upper shell member and a lower shell member and having an open configuration when said booth is used by said person to cast a ballot and a closed configuration for transportation of said booth, said case enclosing an interior compartment within said upper shell and said lower shell when said case is in said closed configuration;

a voting panel coupled with said bivalve case and having dimensions corresponding to said compartment for receipt therein when said case is in said closed configuration, said voting panel presenting a frontal access position to access a ballot-casting surface on said voting panel; and

a support base including a plurality of legs that are vertically rising when said case is in said open configuration;

said support base including connecting and folding means for connecting said legs to said support base to permit passage of a front portion of a wheelchair between a pair of said legs for frontal access to said ballot-casting surface by said persona when casting a ballot at said voting panel when said case is in said open configuration, and for folding said pair of said legs to positions for being received within said compartment when said case is in said closed configuration.

5,666,766

BUILDING CONSTRUCTIONS

Dennis P. Markey, Franklin, Mich., assignor to Handy Home Products, Inc., Warren, Mich.

Filed Sep. 15, 1995, Ser. No. 529,132

Int. Cl.[6] E04B *7/00*

U.S. Cl. 52—94 **8 Claims**

1. A building construction comprising:

a floor assembly including side and end edges;

a plurality of inner frame members attached substantially along the side edges of said floor assembly;

first and second end walls being supported substantially along said end edges of said floor assembly, at least one of said first and second end walls being spaced from said inner frame members;

at least one outer frame member including an inner surface attached to an external surface of one of said respective end walls of the building for substantially supporting said end wall to the building;

at least one said panel extending between said first and second end walls and attached to said inner frame members and to at least one of said respective end walls and said outer frame member.

5,666,767

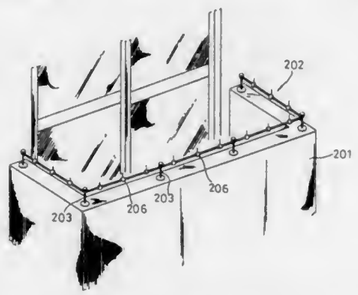
APPARATUS FOR INHIBITIVELY PREVENTING BIRDS FROM CROWDING

Tadao Ohba, Saitama-Ken, Japan, assignor to Ohba Building Maintenance Co., Ltd., Japan

Division of Ser. No. 263,132, Jun. 21, 1994, Pat. No. 5,649,394. This application Nov. 30, 1995, Ser. No. 565,392

Int. Cl.[6] F04B *1/72;* **A01M** *29/00*

U.S. Cl. 52—101 **8 Claims**



1. An apparatus for inhibitively preventing birds from crowding at the upper part of a building, comprising;

a plurality of support columns each adapted to be located upright from the upper part of the building, said support columns adapted to be arranged in a spaced relationship along the upper part of the building,

a wire-shaped member tightly spanned between two support columns located at opposite ends of said wire-shaped member in a horizontal direction,

a plurality of rotatable cylindrical hollow magnetic members each having said wire-shaped member inserted therethrough in the horizontal direction, and

a plurality of rotatable sleeves each having said wire-shaped member inserted therethrough in the horizontal direction and located adjacent to each cylindrical hollow magnetic member in such a manner as to allow said cylindrical hollow magnetic members and said sleeves to be alternately arranged along said wire-shaped member.

5,666,768

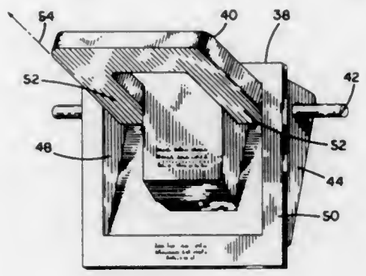
COLLAPSIBLE HANDLE ASSEMBLY FOR CONCRETE COVERS

Norman W. Gavin, 2545 Ridge Rd., North Haven, Conn. 06473

Continuation-in-part of Ser. No. 392,357, Feb. 17, 1995, Pat. No. 5,592,785. This application Dec. 29, 1995, Ser. No. 581,286

Int. Cl.[6] E02O *29/14;* **B25G** *1/00*

U.S. Cl. 52—125.4 **18 Claims**



1. A collapsible handle assembly for a concrete item, said assembly comprising in combination:

a housing having a top, a left side wall, a right side wall, and a bottom panel attached to said left side wall and said right side wall, said housing being in the shape of a container having an opening at said top and configured to exclude concrete from the container when said housing is cast in concrete,

a handle having a top, a bottom, and a pair of legs, each leg having a first end and a second end, the first ends of the legs being connected to the top of the handle, the second ends of the legs forming the bottom of the handle,

first pivot means in said container connected to said housing, said first leg comprising first bearing means at the bottom of the handle for rotating said handle on said first pivot means,

second pivot means in said container connected to said housing, said second leg comprising second bearing means at the bottom of the handle for rotating said handle on said second pivot means,

a pedestal mounted in said housing between said first and second legs in said container and having a first opening configured to deliver concrete into said pedestal between said legs when said housing is cast in concrete,

said housing comprising concrete anchor means mounted on said housing and configured so that said housing is anchored by said concrete anchor means in concrete when said housing is cast in concrete.

5,666,769

SUPPORTING ELEMENT

Lars-Olof Lundquist, Karlstad, Sweden, assignor to Nivell System Aktiebolag, Mariestad, Sweden

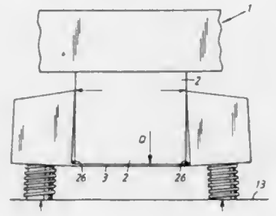
PCT No. PCT/SE94/00589, § 371 Date Dec. 8, 1995, § 102(e) Date Dec. 8, 1995, PCT Pub. No. WO95/00732, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 16, 1994, Ser. No. 556,971

Claims priority, application Sweden, Jun. 17, 1993, 9302090

Int. Cl.[6] E04C *3/04*

U.S. Cl. 52—126.1 **18 Claims**



1. A device for supporting a construction on a supporting surface, the construction including at least one form stable construction element having a lower side and two lateral surfaces facing away from each other and being a predetermined distance apart and capable of applying a construction element load, said device comprising:

a bearing part having an upper side, an inner section, and two outer, bending resistant sections, one positioned on each side of the inner section;

a spacer extending from a lower side of said bearing part in each outer section, said spacers being positioned to keep said bearing part at a distance from the supporting surface; and

upwardly directed, co-operating clamping members positioned on the upper side of said bearing part forming a stable unit therewith, said clamping members defining a space between them delimited by said inner section of said bearing part for receipt of the construction element;

said inner section being bendable by the influence of a construction element load; and

said clamping members extending within each outer section and comprising at least one rigid clamping plate for engaging a construction element disposed in said space by pressing, in free engagement, against two lateral surfaces of the construction element with clamping forces generated by the construction element load on said bendable inner section.

5,666,770

VIBRATION DAMPING EQUIPMENT

Kosuke Sato; Nobuyoshi Haniuda, and Fumihide Kozuma, all of Sagamihara, Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 423,259

Claims priority, application Japan, Apr. 22, 1994, 6-084908

Int. Cl.[6] E04H *9/02;* **F16F** *7/10*

U.S. Cl. 52—167.2 **8 Claims**

1. A vibration damping equipment for a structure, said structure being vibrated by an external force, comprising:

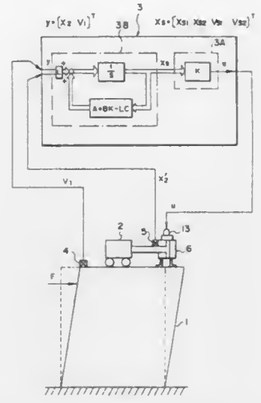
a mass supported on said structure such that it is free to move in a direction of the vibration of said structure;

an actuator for driving said mass in said direction;

means for detecting state variables relating to said vibration;

a Kalman filter for performing a predetermined calculation process on said state variables by comparison with a structure model included therein to estimate proper values of state variables;

means for calculating control input values from said proper values based on an optimal feedback gain matrix preset based on an optimal regulator theory; and



means for driving said actuator according to said control values.

5,666,771

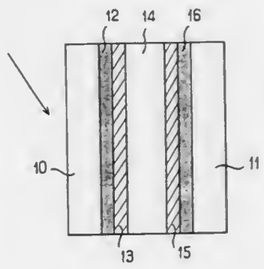
ELECTROCHROMIC GLAZING PANE

Philippe Macquart, Asnieres, and Xavier Ripoche, Paris, both of France, assignors to Saint-Gobain Vitrage, Aubervilliers Cedex, France

Filed Nov. 9, 1995, Ser. No. 556,399

Int. Cl.[6] E04D *13/18*

U.S. Cl. 52—171.3 **23 Claims**



23. An electrochromic pane comprising:

(i) a principle functional film comprising a material capable of reversibly inserting cations under the effect of an electric current and has different coloration for its inserted and deinserted states;

(ii) a counter-electrode comprising a material capable of reversibly inserting cations under the effect of an electric current;

(iii) a substrate;

(iv) a first transparent electrically conducting film; and

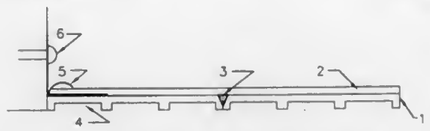
(v) a second transparent electrically conducting film;

wherein said principle functional film has a structure with growth axes of columns parallel to straight lines contained in a dihedron, the opening of said dihedron is less than 20°, and the bisector plain of said dihedron makes an acute angle of less than 40° with said substrate,

said pane, in at least its colored state, has anisotropic optical performances, and

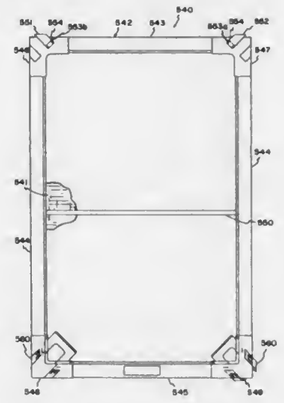
wherein said principle functional film and said counter-electrode are between said first and second transparent electrically conducting films.

5,666,772
PATIO/FLOOR ASSEMBLY
Paul L. Betty, 220 W. Longspur Dr., Wilmington, Del. 19808
Filed Nov. 4, 1994, Ser. No. 336,046
Int. Cl.[6] E04F *15/22*
U.S. Cl. 52—177 3 Claims



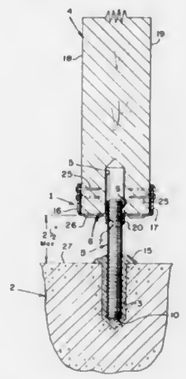
1. A patio floor assembly comprising a plurality of rectangular plastic tiles which are interconnected with a small clearance between each adjacent tiles, each tiles having and being supported on supports which have openings between said supports for channels so that when said openings are arranged, there are multiple channels for fluids to drain away from the underside of said tiles; each tile also having a lattice surface with multiple openings to allow fluid to easily access the channels below without being trapped on the top of said plastic tiles; a permeable carpeting of polypropylene or polyethylene adapted to lay on top of said tiles and be held in place by tacking means; each of said tacking means being attachable to said plastic tiles to hold the carpet in place.

5,666,773
METHOD AND APPARATUS FOR SECURING A SCREEN TO WINDOW FRAME
Charles J. Librande, Shell Lake; Brian A. Jensen, Rice Lake, both of Wis.; Todd W. Bruchu, Lake Elmo, and Jeffrey M. Lynn, Marine on St. Croix, both of Minn., assignors to Andersen Corporation, Bayport, Minn.
Filed Oct. 19, 1994, Ser. No. 325,686
Int. Cl.[6] E06B *3/04*; E05C *21/02*
U.S. Cl. 52—202 16 Claims



1. An insert of a type selectively supported within a framed opening defined by adjacent sides which join to form a perimeter thereof, comprising:
an insert material;
a frame disposed about and supporting said insert material in a configuration that substantially corresponds to the framed opening; and
a plurality of connectors, wherein at least one of said connectors slides linearly relative to said frame to move between a first position within a perimeter of said frame, and a second position projecting beyond said perimeter and into engagement with at least one of the adjacent sides, and each of the adjacent sides is engaged by at least one of said connectors, and at least one of said connectors includes a pair of slats that slide along parallel channels formed in said frame and into engagement with more than one of the adjacent sides.

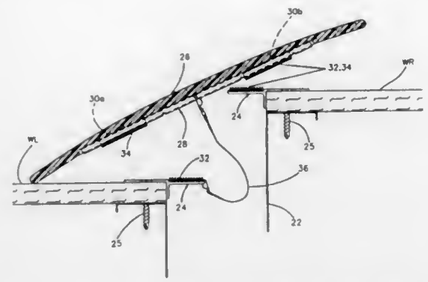
5,666,774
ADJUSTABLE SUPPORT SYSTEM
Alfred D. Commins, Danville, Calif., assignor to Simpson Strong-Tie Company, Inc., Pleasanton, Calif.
Filed Jun. 30, 1995, Ser. No. 497,258
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—298 6 Claims



1. An adjustable support assembly comprising:
a. a first structural member formed with an opening therein;
b. a second structural member spaced from said first structural member and formed with an opening therein in alignment with said opening in said first structural member;
c. a sheet metal base member positioned in engagement with said second structural member and formed with a drawn and threaded opening therethrough;
d. an elongated support member for adjusting the distance between said first and second structural members formed with threads at a first end threadably engaged with said threaded opening in said sheet metal base member and inserted into said opening in said second structural member and having a second end positioned in said opening in said first structural member;
e. securing means joining said elongated support member to said first structural member;
f. said securing means is an epoxy material;
g. said first structural member is formed from concrete; and
h. said second structural member is formed from wood.

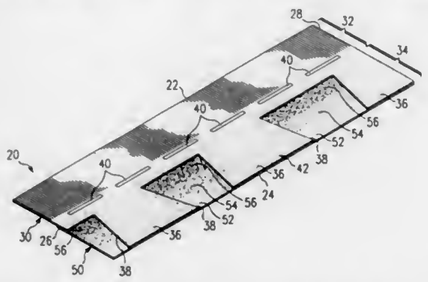
5,666,775
EXPANSION JOINT COVER
Thomas A. Shreiner, Picture Rocks, and Roger W. Barr, Williamsport, both of Pa., assignors to Construction Specialties, Inc., Cranford, N.J.
Continuation-in-part of Ser. No. 340,036, Nov. 14, 1994, Pat. No. 5,611,181. This application Dec. 6, 1995, Ser. No. 568,354
Int. Cl.[6] E04B *1/68*
U.S. Cl. 52—396.04 25 Claims

1. An expansion joint cover installation, comprising
first and second building members defining an expansion gap,
an elongated cover panel having a longitudinal axis, an internal face, an external face and side edges, the cover panel having a width transverse to the longitudinal axis such as to span and conceal the expansion gap and to overlie at least a portion of the building member on at least one side of the gap,



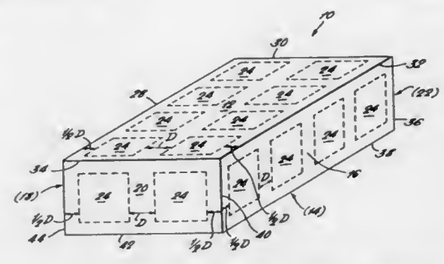
and releasable fastener means for attaching the cover panel to at least one of the building members and retaining the cover panel in a position concealing and covering the expansion gap, the releasable fastener means being the sole means for retaining the cover panel in said position and being releasable upon application of a force on the cover panel in a direction away from the building members.

5,666,776
LAMINATED ROOFING SHINGLE
Casimir Paul Weaver, Northport, Ala.; Matti Kiik, Richardson, Tex.; William J. Schultz, St. Charles, Ill., and Patrick T. Stapleton, Plymouth, Minn., assignors to Elk Corporation of Dallas, Dallas, Tex.
Continuation of Ser. No. 318,901, Oct. 5, 1994, abandoned, which is a continuation of Ser. No. 189,796, Feb. 1, 1994, Pat. No. 5,369,929, which is a continuation-in-part of Ser. No. 762,857, Sep. 18, 1991, Pat. No. Des. 344,144. This application Aug. 30, 1995, Ser. No. 521,235
Int. Cl.[6] E04D *1/28*
U.S. Cl. 52—557 5 Claims



1. A laminated roofing shingle for enhancing the appearance of depth of the shingle comprising:
a first shingle sheet providing a plurality of tabs extending from an edge thereof, said tabs spaced apart to define a plurality of openings between said tabs;
a layer of colored mineral granules disposed on said tabs;
the color of said mineral granules on said tabs being relatively uniform throughout each tab;
a second shingle sheet disposed beneath and attached to the underside of said first shingle sheet to form a two-ply laminated shingle, with a layer of colored mineral granules disposed on said second shingle sheet and portions of said second shingle sheet having said colored mineral granules being exposed through said openings between said tabs;
first, second and third horizontal rectangular striations of said colored mineral granules on said second shingle sheet providing a color gradation across said portions of said second sheet which are exposed through said openings between said tabs;
said first striation providing an elongated generally quadrilateral area occupying the top of said portions of said second sheet, said first striation having a color substantially uniform throughout said generally quadrilateral area;
said second striation providing an elongated generally quadrilateral area occupying the middle of said portions of said second sheet, said second striation having a color lighter than the color of said first striation and said lighter color being substantially uniform throughout said generally quadrilateral area;
said third striation providing an elongated generally quadrilateral area occupying the bottom of said portions of said second sheet, said third striation having a lighter color than the color of said second striation and said lighter color being substantially uniform throughout said generally quadrilateral area; and
said first, second and third horizontal stations providing a color gradation over each of said portions of said second shingle sheet which are exposed through said openings between said tabs, such that an appearance of shingle depth is created by the combined visual appearance of the color contrasts and gradations provided by said first and second shingle sheets.

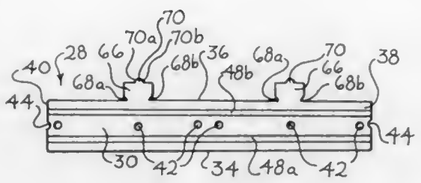
5,666,777
BUILDING BLOCK HAVING INTERLOCKING FORMATIONS
Ronald Patrick Murphy, 2 Shaftesbury Place, Binfield, Bracknell, Berkshire, United Kingdom, RG12 5BU
PCT No. PCT/GB93/01081, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/04767, PCT Pub. Date Mar. 3, 1994
PCT Filed May 26, 1993, Ser. No. 381,830
Claims priority, application United Kingdom, Aug. 12, 1992, 9217036
Int. Cl.[6] E04B *5/04*
U.S. Cl. 52—604 22 Claims



1. A building block for the construction industry comprising a rectangular parallelepiped having three pairs of opposing surfaces, each of a pair of opposing surfaces being provided with at least one of a respective one of a pair of interlocking formations such that the formations on any given surface are identical, each of said pair of interlocking formations being symmetrical about a rotation of 90°, whereby two such building blocks may be arranged with one of a pair of opposing surfaces of a first of the blocks in interlocking engagement with one of any of the three pairs of opposing surfaces of the other of the blocks.

5,666,778
SYSTEM FOR CONSTRUCTING A BUILDING
Donald J. Grattan, and Shannon Rose Grattan, both of 4828 N. Seeley, Chicago, Ill. 60625
Filed Jun. 21, 1995, Ser. No. 493,273
Int. Cl.[6] E04C *2/04*
U.S. Cl. 52—606 18 Claims

1. The system for constructing a building comprising, a plurality of unitary wall forming elements each of which has generally parallel stacking surfaces facilitating stacking of a plurality of said



wall forming elements one on the other in horizontally offset relation, said wall forming elements having longitudinally extending slot and key projections thereon for interfitting relation so as to provide a substantially weather-tight fit between the stacked elements, a plurality of corner forming elements having a pair of integral legs defining a predetermined angle therebetween, the corner forming elements including longitudinally extending slot and key projections formed thereon for interfitting relation with similar corner forming elements when in stacked relation therewith, each of said wall forming and corner forming elements further having a plurality of transverse openings therethrough at least one of which is positioned for axial alignment with an opening in at least one other wall forming and corner forming element when in stacked relation therewith, a plurality of retaining pegs for being snugly inserted into at least two axially aligned openings in a pair of stacked elements so as to prevent relative longitudinal movement therebetween, whereby stacking a plurality of said wall forming elements in interconnected relation define the walls of the building.

5,666,779

METHOD OF FORMING A PRESSURE FREE EXPANSION ANCHORAGE

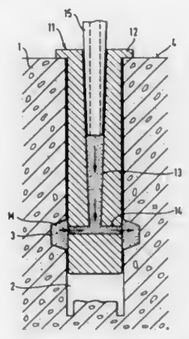
Werner Fuchs, Schwaikheim, and Antonius Winkeljann, Landsberg, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 24, 1996, Ser. No. 669,659

Claims priority, application Germany, Jun. 24, 1995, 195 23 039.6

Int. Cl.[6] F16B *39/02;* **E21D** *20/00*

U.S. Cl. 52—705 **3 Claims**



3. An undercut expansion dowel for providing a pressure-free expansion anchor in a substantially cylindrical borehole formed in an anchorage base material with an undercut at a specific depth within the borehole, comprising an axially extending threaded rod (**9**) having a leading end with an attached threaded expanding member, an axially extending sleeve (**6**) having a leading end with axially extending pivotable segments (**7**), said sleeve having at least one axially extending through hole with at least two regions of different internal diameters, said sleeve having a region (**61**) extending in the axial direction from a pivoting region of said segments to a trailing end of said sleeve and forming an annular gap having a larger internal diameter than an axially-extending part of said sleeve extending towards a leading end thereof from a region at which the segments (**7**) are pivoted.

5,666,780

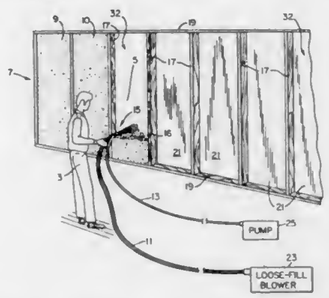
FIBERGLASS/DRY ADHESIVE MIXTURE AND METHOD OF APPLYING SAME IN A UNIFORM MANNER

Gary E. Romes, Cincinnati, Ohio; Mark H. Vagedes, Warrenville, Ill.; Joseph T. Church, Memphis, Tenn., and Charles Chenoweth, Coldwater, Mich., assignors to Guardian Industries Corp., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 572,626, Dec. 14, 1995. This application Jan. 22, 1996, Ser. No. 589,620

Int. Cl.[6] E04B *1/74*

U.S. Cl. 52—742.13 **13 Claims**



1. A method of spraying or blowing loose-fill fiberglass insulation into a vertically extending open cavity, the method comprising the steps of:

providing the vertically extending open cavity to be insulated;

providing loose-fill fiberglass;

mixing the loose-fill fiberglass together with a dry inorganic adhesive powder in order to make up a loose-fill insulation mixture; and

spraying or blowing the loose-fill insulation mixture together with an adhesive-activating liquid into the vertically extending open cavity so that the mixture is retained in the cavity in order to insulate the open cavity with insulation having an applied LOI percentage less than about 2.0% and a density less than or equal to about 2.5 lb./ft.^{3}.

5,666,781

METAL FASTENERS FOR WOOD CONSTRUCTION USE AND A METHOD OF CONSTRUCTING A HOUSE

Goro Egawa, Hyogo, and Yuzo Saito, Osaka, both of Japan, assignors to Daiichi Shoten Co., Ltd., Osaka, Japan

Filed Jan. 29, 1996, Ser. No. 591,974

Int. Cl.[6] E04C *3/18;3/29*

U.S. Cl. 52—747.1 **6 Claims**

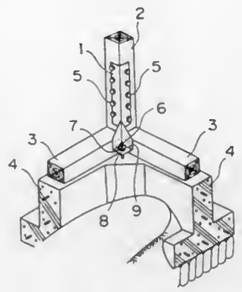
1. A method of constructing a wooden building which includes wooden architectural members comprising the steps of:

providing a metallic fastener having at least one attachment surface, the metallic fastener being completely covered with a copper containing layer so as to form a copper covered metallic fastener; and

joining of two of the wooden members with the copper covered metallic fastener, said joining step including the steps of

placing the attachment surface of the copper covered metallic fastener against a surface of a first wooden member,

fastening the attachment surface of the copper covered metallic fastener to the surface of the first wooden member using a first fastening element, and



fastening a portion of the copper covered metallic fastener adjacent to the attachment surface to a second wooden member using a second fastening element so that the first and second wooden members are thus joined to one another through the copper covered metallic fastener.

5,666,782

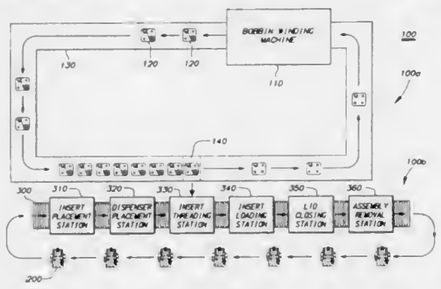
FIXTURE FOR ASSEMBLING DENTAL FLOSS DISPENSER PRODUCTS

Richard M. Prospero, Princeton; Erik Lunde, Morganville; Harry Swanson, Bloomfield, and Lee Adams, Flemington, all of N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.

Filed Jan. 31, 1995, Ser. No. 381,512

Int. Cl.[6] B65B *35/54*

U.S. Cl. 53—155 **7 Claims**



1. An apparatus for assembling a thread dispenser product formed of a bobbin of wound thread, a dispenser case, and a dispenser insert for rotatably supporting said bobbin of wound thread within said dispenser case, comprising:

(A) a singular assembly fixture having an insert loading area for holding said dispenser insert and a dispenser case loading area, separate from said insert loading area, for simultaneously holding said dispenser case, said insert loading area having a flat horizontal surface for mating with a bottom surface of said dispenser insert, said bottom surface of said dispenser insert having at least one opening;

(B) a moveable latching bar, pivotally coupled to said singular fixture assembly, for detachably securing said dispenser insert in said insert loading area, said moveable latching bar having a ridge for mating with said at least one opening in said bottom surface of said dispenser insert, said moveable latching bar being moveable between a locking position and a depressed position;

(C) second securing means, coupled to said singular assembly fixture, for detachably securing said dispenser case in said dispenser case loading area;

wherein said ridge in said moveable latching bar horizontally restrains said dispenser insert within said insert loading area when said moveable latching bar is in said locking position and said ridge is positioned within said at least one opening in said bottom of said dispenser insert, and said dispenser insert is free to move horizontally from said insert loading area toward said dispenser case loading area when said moveable latching bar is in said depressed position.

5,666,783

APPARATUS FOR PRODUCING PACKS MADE OF THIN PLASTIC FILM

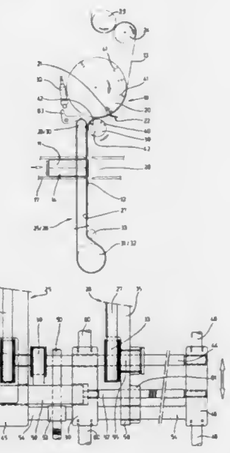
Heinz Focke, and Oskar Balmer, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Mar. 28, 1995, Ser. No. 413,032

Claims priority, application Germany, Mar. 31, 1994, 44 11 358.7

Int. Cl.[6] B65B *63/04*

U.S. Cl. 53—228 **9 Claims**



1. An apparatus for producing packages made from thin plastic film, wherein blanks (**12**) are successively severed from a moving continuous web (**13**) of thin plastic film material, are fed to a packaging station (**16**) in a vertical plane and, in a region of the packaging station (**16**), are folded around a group of individual packs in a U-shaped manner to form a bundle (**10**) of packs, the bundle being horizontally conveyed transversely relative to the vertical plane of the blank, said apparatus comprising:

a) a rotating knife roller (**20**) for severing the blanks (**12**) from the web (**13**) at a peripheral surface of said rotating knife roller (**20**) in a region of a stationary counter knife (**22**);

b) a plurality of movable vertical suction belts (**25, 26**) arranged at a distance from one another, and guided by upper deflection rollers (**29, 30**);

c) a transfer roller (**39**) for lifting the web (**13**), and the blanks (**12**) severed therefrom, off the peripheral surface of the knife roller (**20**), and for conveying the blanks until they bear against said suction belts (**25, 26**),

d) said suction belts laterally grasping the web (**13**) or the blanks (**12**) until a blank (**12**) is taken over by the bundle (**10**),

e) said knife roller (**20**) being arranged at a distance from said upper deflection rollers (**29, 30**) of the suction belts (**25, 26**), and the transfer roller (**39**) being positioned between the knife roller (**20**) and the suction belts (**25, 26**),

f) said transfer roller (**39**) being positioned between the suction belts (**25, 26**) and the peripheral surface of the knife roller (**20**), to form an angle, in such a manner that, for taking over and transferring the web (**13**) or the blanks (**12**) to the suction belts (**25, 26**), the peripheral surface of the transfer roller (**39**) is disposed immediately adjacent to the peripheral surface of the knife roller (**20**) and adjacent to the suction belts (**25, 26**);

g) a plurality of suction bores (**41**) on said knife roller (**20**) which open at the peripheral surface of said knife roller for

temporarily holding the web (**13**) and each blank (**12**) on the peripheral surface of said knife roller (**20**);

h) a plurality of suction bores (**42**) on said transfer roller (**39**) which open at the peripheral surface of said transfer roller (**39**), and which grasp and convey the web (**13**) or each blank (**12**);

i) at least one severing knife (**21**) which is located at the peripheral surface of the knife roller (**20**), and which slightly projects from the peripheral surface of said knife roller (**20**);

j) at least one depression (**40**) which is located on the peripheral surface of the transfer roller (**39**), and which is arranged in such a relative position that, when the knife roller (**20**) and the transfer roller (**39**) are rotating, the severing knife (**21**) enters into the depression (**40**) when the severing knife is in a position opposite the transfer roller (**39**);

k) means, in the packaging station (**16**), for transporting each bundle (**10**) on a horizontal bundle track (**17**) transversely relative to a blank (**12**) which is held ready by the suction belts (**25**, **26**), such that the blank (**12**) folds around the bundle (**10**) in a U-shaped manner;

l) the suction belts (**25**, **26**) having a first region extending above the bundle track (**17**), and a second region extending below the bundle track (**17**),

m) the suction belts (**25**, **26**) being guided on the upper deflection rollers (**29**, **30**), above the bundle track (**17**), and on lower drive rollers (**31**, **32**) below the bundle track (**17**),

n) the upper deflection rollers (**29**, **30**) of the suction belts (**25**, **26**) being positioned in a working position immediately adjacent to the transfer roller (**39**);

o) located above the bundle track (**17**), a plurality of replaceable folding members for folding the blanks (**12**), and which are replaceable by other folding members when there is a change of size of the bundle to be produced;

p) for replacing the replaceable folding members, means for downwardly moving the suction boils (**25**, **26**) as a unit such that the upper deflection rollers (**29**, **30**) of the suction belts (**25**, **26**) are situated in a lower final position below the bundle track (**17**) or below a path of movement of the replaceable folding members,

q) said upper deflect/on rollers (**29**, **30**) being mounted on upright supporting arms (**34**, **35**) of an actuating gear (**37**) which is movable up and down, and the lower drive rollers (**31**, **32**) forming a pan of the actuating gear (**37**); and

r) means for upwardly moving the suction belts (**25**, **26**) into the working position after the replaceable folding members have been replaced.

5,666,784

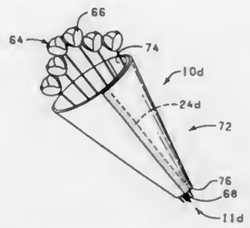
FLORAL WRAPPER UTILIZING A BREATHABLE PACKAGING MATERIAL

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles Codding, authorized Signatory for Southpac Trust International, Inc. trustee

Division of Ser. No. 325,747, Oct. 19, 1994, which is a continuation-in-part of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 325,747is a continuation-in-part of Ser. No. 253,648, Jun. 3, 1994, abandoned, which is a continuation of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, said Ser. No. 325,747is a continuation-in-part of Ser. No. 108,093, Aug. 17, 1993, Pat. No. 5,472,752, which is a continuation of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application May 23, 1995, Ser. No. 447,599

Int. Cl.[6] B65B *11/00*

U.S. Cl. 53—397 **8 Claims**



1. A method for packaging an item with a breathable packaging material, comprising the steps of:

providing an item having an outer periphery;

providing a breathable packaging material, comprising

a sheet of material having an upper surface, a lower surface and an outer periphery, the sheet of material having controlled atmosphere characteristics such that the sheet of material is permeable to some gases while impermeable to other gases, the sheet of material further comprising a desiccant, an antimicrobial agent, a non-fogging agent and a bonding material selected from the group consisting of an adhesive and a cohesive, said bonding material disposed on at least a portion of one surface of the sheet of material;

wrapping the sheet of material about the item; and sealing the item in the sheet of material, thereby forming a breathable package.

5,666,785

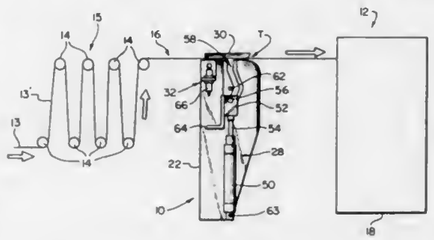
METHOD AND APPARATUS FOR IN-LINE PRINTING ON A WATER SOLUBLE FILM

Christian Jouffreau, Nemours, and Jean-Pierre Naude Flonniere, Veneux Les Sablons, both of France, assignors to Chris-Craft Industrial Products, Inc., South Holland, Ill.

Filed Mar. 28, 1995, Ser. Nn. 413,031

Int. Cl.[6] B65B *61/02*

U.S. Cl. 53—411 **19 Claims**



1. A method of producing printed water soluble film packages containing a quantity of a material, comprising:

transporting a web of water soluble film in a packaging machine from a roll of water soluble film to a filling stage of the packaging machine where the web is periodically formed, filled and sealed into a water soluble package and transversely divided while the web is stopped;

printing directly on the water soluble film with water soluble ink to form the printed mattes at a printing location between the film roll and the filling stage when the web is stopped for transverse division; and

thereafter forming the water soluble package from the web having the printed matter thereon;

filling the package with the material to form a filled package;

sealing the filled package; and

transversely dividing the web.

5,666,786

PROCESS AND APPARATUS FOR INTRODUCING COMPRESSIBLE PACKS INTO A CONTAINER

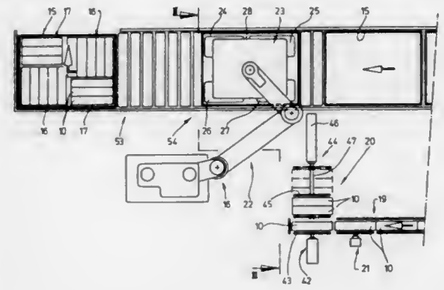
Heinz Focke, Verden, and Harald Freudenberg, Marklohe, both of Germany, assignors to Focke & Co. (GmbH & Co.), Germany

Filed Sep. 27, 1995, Ser. No. 534,396

Claims priority, application Germany, Sep. 29, 1994, 44 34 866.5

Int. Cl.[6] B65B *31/00*

U.S. Cl. 53—434 **13 Claims**



1. Process for introducing packs with pack contents made from compressible material into large containers comprising:

(a) providing each pack with a wrapping which completely surrounds the pack contents, each pack having an original volume;

(b) providing the wrapping with an air permeable closure seam in a top side of the pack;

(c) compressing the pack into a compressed shape by mechanical force acting laterally upon mutually opposite sides of the pack, such that air contained in the pack exits at least via the air-permeable closure seam;

(d) contacting the pack in the compressed shape by a lifting member with a suction head so as to subject the compressed pack to subatmospheric pressure;

(e) grasping the pack with the suction head at the top side of each pack, in the region of the closure seam;

(f) releasing the mechanical force after the pack has been grasped by the suction head, wherein the compressed shape of the pack is maintained by continuing to subject each pack at said closure seam to subatmospheric pressure;

(g) conveying the pack to a large container and depositing the pack therein by the lifting member with the pack held in the compressed shape exclusively by the subatmospheric pressure of the suction head without mechanical force compressing the pack and by continuously subjecting said top side to said subatmospheric pressure;

(h) releasing the suction head from the pack and withdrawing subatmospheric pressure from the pack after the pack has been deposited in the large container;

(i) wherein, after the suction head has been released from the pack and thus also after the subatmospheric pressure has been withdrawn, the pack substantially entirely regains said original volume by taking in air.

5,666,787

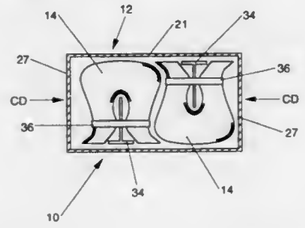
DISPENSING PACKAGE FOR DISCRETE STAGE COMPRESSED DIAPERS COMPRESSED DIAPERS THEREFOR, AND METHOD OF DISPENSING SUCH DIAPERS

Mark Douglas Young, West Chester; John Paul Erspamer, Cincinnati; Mark Edwin Forry, Hamilton, and Charles John Berg, Jr., Cincinnati, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 603,140, Feb. 20, 1996, which is a continuation of Ser. No. 458,958, Jun. 2, 1995, Pat. No. 5,507,130. This application Jul. 19, 1996, Ser. No. 684,165

Int. Cl.[6] B65B *1/24*

U.S. Cl. 53—438 **5 Claims**



1. A method of packaging diapers for later dispensing, said method comprising the steps of:

providing a plurality of diapers in a stack, said stack having a free height;

compressing said stack of diapers in a first stage of compression until a first stage compression height is attained, said first stage compression height being less than said free height;

restraining said diapers with a first stage restraint, so that said first stage of compression is maintained;

compressing said stack of diapers in a second stage of compression until a second stage compression height is attained, said second stage compression height being less than said first stage compression height; and

restraining said diapers with a second stage restraint, so that said second stage of compression is maintained;

each of said first stage of compression and second stage of compression being releasable independent of the other when said first stage restraint and second stage restraint are released respectively, each of said first stage restraint and second stage restraint also being releasable independent of the other;

releasing said second stage restraint, whereby said diapers rebound to a height greater than said second stage compression height;

releasing said first stage restraint; and

installing said plurality of diapers into a dispensing package.

5,666,788

METHOD FOR TRANSVERSE SEALING OF FILM WRAPPED AROUND A PRODUCT

Sidney S. Tolson, Scotland Neck, N.C., assignor to Ossid Corporation, Rocky Mount, N.C.

Filed Apr. 16, 1996, Ser. No. 633,175

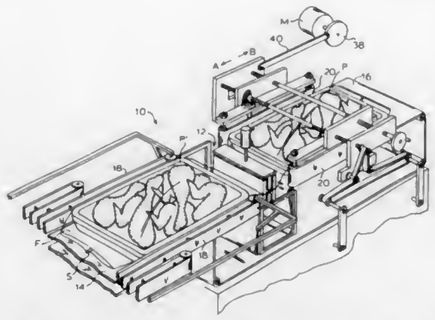
Int. Cl.[6] B65B *9/00;53/02*

U.S. Cl. 53—442 **7 Claims**

1. A method for sealing and parting longitudinally extending heat shrinkable film transversely between successive film wrapped products with a sealing mechanism, comprising the steps of:

(a) clamping said heat shrinkable film transversely at a position upstream and a position downstream of a transverse sealing position;

(b) substantially instantaneously after said clamping has been initiated contacting said heat shrinkable film at said sealing position with a transverse heated sealing bar at a first sufficient temperature and under sufficient pressure to cause said



film within a first period of milliseconds to seal and part so that a first of said successive products separates from a second such product;

(c) rapidly removing said sealing bar from said sealing position immediately following the expiration of said first period of milliseconds;

(d) allowing for a second period of milliseconds substantially greater than said first period of milliseconds said clamped heat shrinkable film upstream and downstream of said sealing position to shrink in a longitudinal direction away from said sealing position while restraining transverse shrinkage thereof; and

(e) after expiration of said second period of milliseconds unclamping said heat shrinkable film; and

(f) repeating said sequence of steps after a third period of milliseconds substantially equal to said second period of milliseconds.

5,666,789

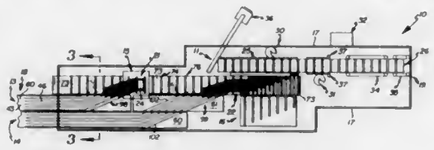
STACKED ARTICLE CARTONING APPARATUS

Kelly W. Ziegler, Crosby, Minn., assignor to Riverwood International Corporation, Atlanta, Ga.

Continuation of Ser. No. 343,836, Nov. 22, 1994, Pat. No. 5,456,058, which is a continuation of Ser. No. 22,661, Mar. 1, 1993, abandoned. This application Aug. 23, 1995, Ser. No. 518,582

Int. Cl.[6] B65B *5/06;35/50*

U.S. Cl. 53—447 **18 Claims**



1. A continuous motion cartoning apparatus for loading stacked article groups into cartons, comprising:

a) article infeed means supplying at least two streams of articles, each at a predetermined vertically distinct level and including a guide structure forming article lanes;

b) an article group selection anal transport mechanism intersecting said article lanes to form and transport a longitudinal stream of article groups of a predetermined stacked pattern, said article group selection and transport mechanism comprising a plurality of fixed, transversely oriented, longitudinally moving flight bars intersecting said article lanes at a predetermined angle and selecting articles therefrom to form a lower article subgroup at a first position thereon and an upper article subgroup at a second, downstream position thereon;

c) means, disposed between said first and second positions to deposit a divider structure on said lower article subgroup

d) carton supply and transport means disposed adjacent to and parallel with said article group selection and transport mechanism to provide a longitudinal stream of cartons with open ends facing and synchronized with the article groups; and

e) a side loading mechanism synchronized with and disposed adjacent said article group selection and transport mechanism and further synchronized with said carton supply and transport means to move the article groups into the cartons, said side loading mechanism comprising support means, moving in parallel synchronization with said article group selection and transport means, movable pushing means operative in a transverse direction, and activation means to move said pushing means at predetermined positions in a travel path.

5,666,790

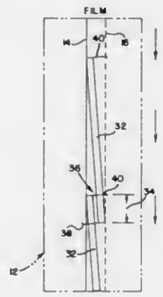
PLATEN SEAL FOR PACKAGING MACHINE

Douglas D. Dreger, 13542 Meggers Rd., Kiel, Wis. 53042

Filed Sep. 27, 1996, Ser. No. 718,816

Int. Cl.[6] B65B *9/00*

U.S. Cl. 53—450 **7 Claims**



1. A seal assembly for forming a longitudinal seal in a plastic film, the plastic film having opposite side edges which are overlapped for sealing, comprising

a. an elongated, heated platen which is periodically brought into sealing contact with the plastic film to heat seal together overlapping portions of the opposite longitudinal side edges of the plastic film, said platen extending at an oblique angle with respect to the longitudinal side edges during sealing thereof, and the plastic film being advanced past the platen so that the periodic sealing contact results in a series of sequential, non-overlapping heat seals, and

b. lateral seal members extending in opposite directions from opposite ends of said platen to form lateral seals joining said non-overlapping heat seals.

5,666,791

VEHICLE AIR CONDITIONER CONDENSER INSERT

Roland Burk, Stuttgart, Germany, assignor to Behr GmbH & Co., Germany

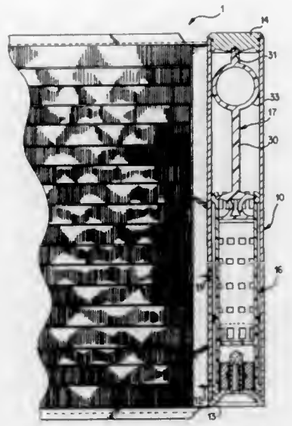
Filed Jun. 22, 1995, Ser. No. 493,459

Claims priority, application Germany, Jun. 22, 1994, 44 21 834.6

Int. Cl.[6] F25B *43/00*

U.S. Cl. 62—474 **15 Claims**

1. An insert for a condenser of a vehicle air conditioner, the insert being configured to be insertable in a tube-shaped collector of the condenser between a bottom and a detachable cover above the insert and containing a filter screen through which the refrigerant flows, comprising two parts, of which one part contains the filter screen and the other part is constructed as an extension part interconnected with the first part so as to bridge the distance from the first part to the detachable cover thereabove and thereby provide removability of the insert from the collector via gripping of the extension part.



5,666,792

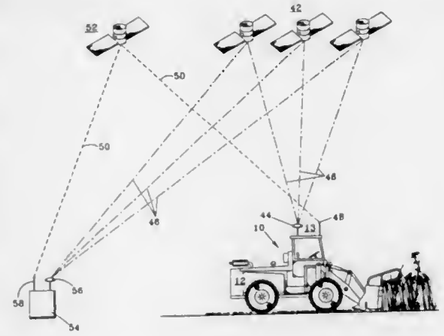
REMOTELY GUIDED BRUSH CUTTING, CHIPPING AND CLEARING APPARATUS AND METHOD

Donald B. Mullins, P.O. Box 683, Simonton, Tex. 77476

Filed Dec. 30, 1994, Ser. No. 366,626

Int. Cl.[6] A01D *41/00*

U.S. Cl. 56—10.2 A **21 Claims**



1. A remotely guided brush cutting, chipping and clearing apparatus, dependent upon remote positioning data and radio communication signals, comprising:

a wheeled vehicle;

a hydraulic support system and a rotational power supply mounted to said vehicle;

a cutting head for cutting, chipping and clearing brush and trees, said cutting head being mounted to said hydraulic support system and engaged to said rotational power supply;

an apparatus locator means mounted to said vehicle for receiving the remote positioning data and the radio communication signals; and

a guidance means in signal communication with said apparatus locator means, for continuously reading and processing the remote positioning data and the radio communication signals to determine an instantaneous location of the vehicle relative to the surface of the earth and, in response thereto, to guide the vehicle for movement in a desired direction and to assist the vehicle in maintaining travel in the desired direction and returning the vehicle to the desired direction.

5,666,793

COMBINE OPERATION WITH OPERATING DATA REGISTER

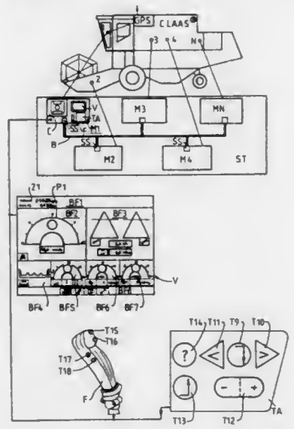
Stefan Bottinger, Steinhagen, Germany, assignor to Claas oHG Beschrankt haftende offene Handelsgesellschaft, Harsewinkel, Germany

Filed Sep. 5, 1995, Ser. No. 523,333

Claims priority, application Germany, Sep. 7, 1994, 44 31 824.3

Int. Cl.[6] A01D *41/12;* **A01F** *12/00*

U.S. Cl. 56—10.2 R **17 Claims**



1. A method for an operator to operate a combine to optimize harvesting output, comprising the steps of:

providing a control processor (ST) containing set-point and limit operating data;

providing means for continuous measuring and evaluation of actual operating data (VI, SBI, SHI);

continuously detecting location coordinates (X, Y) of the combine and assigning the location coordinates (X, Y) to respective area-specific yield measuring data (EM);

storing the area-specific yield measuring data in a yield data register (EK) to be used as a historical data register (HK);

prior to arrival of the combine at an actual location having actual location coordinates, providing the control processor (ST) of the combine with access to the historical data register (HK) and historical data (DH) stored therein, with the respective location coordinates (X, Y) of the combine, and with the actual operating data (VI, SBI, SHI); and

determining and specifying fresh set-point limit operating data (VS, SBS, SHS).

5,666,794

FLAIL MOWER ATTACHMENT FOR A SKID STEER VEHICLE

Michael Lee Vought, Grove City, and Harlan Arthur Palm, Paynesville, both of Minn., assignors to Palm Sales, Inc., Grove City, Minn.

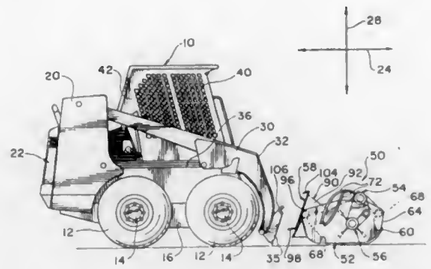
Filed Nov. 21, 1995, Ser. No. 561,394

Int. Cl.[6] A01D *34/42*

U.S. Cl. 56—15.2 **20 Claims**

1. A skid steer vehicle, comprising:

a main frame, the main frame defining a longitudinal direction, a lateral direction transverse to the longitudinal direction, and



an elevational direction transverse to the longitudinal direction and the lateral direction;

wheels operably coupled to the main frame to support the main frame for movement over the ground;

an operator's station supported by the main frame;

an engine compartment disposed rearwardly of the operator's station in the longitudinal direction;

an engine disposed within the engine compartment;

a hydraulic power supply driven off the engine;

a pair of spaced actuating arms operably coupled to the main frame and extending forwardly of the operator's station in the longitudinal direction;

a quick-attaching mount operably coupled to the pair of spaced actuating arms; and

a flail mower implement supportable on the pair of spaced actuating arms by the quick-attaching mount, the flail mower implement comprising:

a quick-attaching receiver readily connectable to and readily disconnectable from the quick-attaching mount;

a pair of side walls defining opposite outer sides of the flail mower implement;

a top wall extending between the side walls, one of the side walls defining a first bore therethrough disposed above the top wall;

a rear panel extending between the side walls;

a rear subpanel extending between the top wall and the rear panel, the quick-attaching receiver being disposed on the rear subpanel; and

a hydraulic motor having an output drive shaft for powering the flail mower implement via a drive arrangement, the output drive shaft extending through the first bore to avoid penetration of the top wall.

5,666,795

CITRUS HARVESTING MACHINE

Stephen Harold Wilkinson, 29 Lakeside Cir., Pahokee, Fla. 33476

Filed Oct. 19, 1995, Ser. No. 545,480

Int. Cl.[6] A01D *46/00*

U.S. Cl. 56—328.1 **18 Claims**

1. A machine to pick citrus fruit comprising:

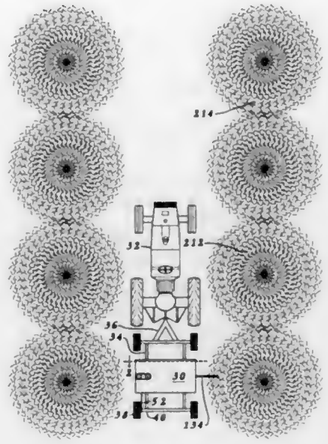
a) a plurality of picking arms arranged in spaced relationship and extending from the machine;

b) motion generation means to provide for a series of motions performed repetitively wherein each of the picking arms further comprise a terminal end and the series of motions of the motion generation means produces an elliptical pattern of motion to the terminal ends of the picking arms, the series of motions comprising:

1) an insertion motion to provide for moving the picking arms inward on one of the citrus trees of a row of trees;

2) an engaging motion to provide for moving the picking arms to engage branches of the citrus tree following the insertion motion;

3) a withdraw motion to provide for moving the picking arms outward on the citrus tree while engaging the branches following the engaging motion;



the series of motions of the motion generation means to provide for coverage of an elevational section of each of the trees by each of the picking arms;

c) a plurality of engaging members, one of the engaging members attached to each of the picking arms to provide for a slidable engagement of the branches of the tree and to firmly engage the citrus fruit attached to the branches to impart a picking pressure between the citrus fruit and the branch to disengage the citrus fruit from the branch during the withdraw motion;

whereby the plurality of spaced picking arms engage the branches following the engaging motion and during the withdraw motion bring citrus fruit into engagement by one of the engagement members to impart the picking pressure to disengage the citrus fruit from the branch.

5,666,796

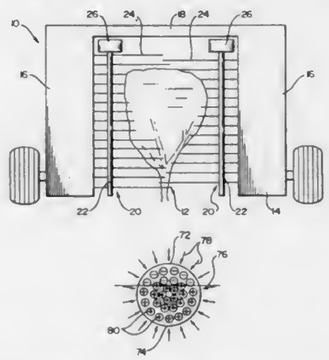
BEATER ROD ASSEMBLY AND METHOD FOR A MOBILE HARVESTING MACHINE

Donald L. Korthuis, Lynden, Wash., assignor to Korvan Industries, Inc., Lynden, Wash.

Filed Jun. 8, 1995, Ser. No. 488,973

Int. Cl.[6] A01D *46/00*

U.S. Cl. 56—330 **18 Claims**



1. A beater rod assembly for a harvesting machine, said assembly comprising:

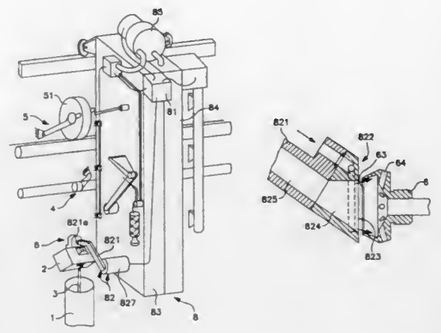
a. a central shaft means adapted to be positioned adjacent to a crop row;

b. a plurality of beater rods mounted to the shaft means to extend radially outwardly from the shaft means and extend into the crop row as a harvesting machine travels along the crop row, with the shaft means rotating so that the beater rods travel in a circular path into and out of the crop row;

c. each of said beater rods comprising;

i) an elongate fiberglass core having a lengthwise axis, said core comprising a plurality of fibers extending along the lengthwise axis and bonded to one another;

ii) a sheath surrounding and closely engaging the core in a manner to constrain outward movement of fibers of said fiberglass core, whereby said beater rods are able to come into engagement with objects in or adjacent to the crop row which would impose forces to tend to damage the beater rods, with said beater rods being able to better withstand the forces caused by said engagement to minimize such damage.



5,666,797

HEATING DEVICE WITH EXCHANGEABLE YARN GUIDES

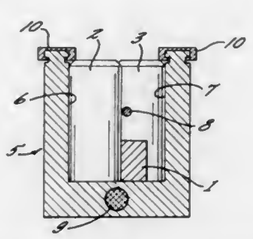
Johannes F. Bruske, Remscheid, and Siegfried Morhenne, Breckerfeld, both of Germany, assignors to Barmag AG, Remscheid, Germany

Filed Oct. 10, 1995, Ser. No. 541,919

Claims priority, application Germany, Oct. 7, 1994, 44 35 961.6; Feb. 16, 1995, 19 50 5169.6; Mar. 2, 1995, 19 50 7194.8; Jun. 14, 1995, 19 52 1650.4; Jul. 13, 1995, 19 52 5534.8

Int. Cl.[6] D01H *7/92;7/46*

U.S. Cl. 57—290 **18 Claims**



1. A heating device for heating an advancing synthetic filament yarn, the device comprising a body member which includes an elongate groove having substantially parallel side walls, means for heating the body member, and a structural unit positioned in the groove, said structural unit comprising an elongate carrier and a plurality of yarn guides fixed to the carrier, the yarn guides being configured as pins and so as to advance the yarn in the groove along a zigzag path, and the structural unit resting against the side walls of the groove, and wherein the carrier is a solid, heat conductive, metallic body, which is configured to be placed on the bottom of the groove, and which is configured to mount the yarn guides so as to extend in the groove upwardly therefrom.

5,666,798

POSITIVE AND NEGATIVE PRESSURE ROTOR CLEANING ASSEMBLY FOR A ROTOR SPINNING MACHINE

Vojtech Novotny, Dukelska, and Zdenek Spindler, B. Nemcove, both of Czech Rep., assignors to Rieter Deutschland GmbH, Ingolstadt, Germany

Filed Aug. 2, 1995, Ser. No. 510,292

Claims priority, application Czech Rep., Aug. 3, 1994, 1863-94

Int. Cl.[6] D01H *11/00;4/00*

U.S. Cl. 57—301 **17 Claims**

1. A textile machine, said machine comprising:

at least one rotor spinning machine including a rotor defining an inlet aperture to a spinning rotor interior; and

a rotor cleaning assembly, said rotor cleaning assembly including

a positive air pressure source;

a negative air pressure source;

a cleaning head configured to be positioned in an operating position proximate said spinning rotor inlet aperture;

a suction tube configured in said cleaning head in communication with said negative pressure source, said suction tube having an inlet aperture proximate said spinning rotor inlet aperture when said cleaning heads is in the operating position such that air is drawn from said spinning rotor interior through said suction tube inlet aperture; and

a plurality of air inlets disposed about the perimeter of said suction tube inlet aperture, each said air inlet in communication with said positive air pressure source and configured to introduce an air stream into said spinning rotor interior in a direction with respect to said spinning rotor such that the air streams of all of said plurality of air inlets create a resulting air stream circulating within said spinning rotor interior to loosen impurities therein, and

wherein said negative pressure source and said suction tube are configured to draw air from said spinning rotor interior to withdraw impurities loosened the resulting circulating air stream.

5,666,799

COOLING DEVICE IN AN OPEN-END SPINNING APPARATUS

Tek Tjin Phoa, Raeren, Belgium; Monika Lauber, Aachen, Germany; Dirk Hanuschik, Mönchengladbach, Germany, and Burkhard Wulfhorst, Aachen, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Apr. 7, 1995, Ser. No. 418,762

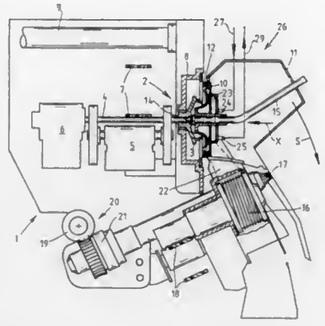
Claims priority, application Germany, Apr. 7, 1994, 44 11 972.0

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—417 **8 Claims**

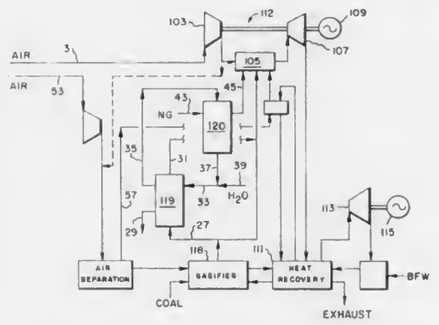
1. An open-end spinning apparatus, comprising a rotor housing, a spinning rotor revolving at high revolutions in the rotor housing, and a yarn draw-off device extending into the spinning rotor, and a cooling device for cooling said yarn draw-off device, said cooling device including

a channel plate for covering the rotor housing in an operating state, said channel plate having double walls defining a cooling chamber therebetween surrounding said yarn draw-off



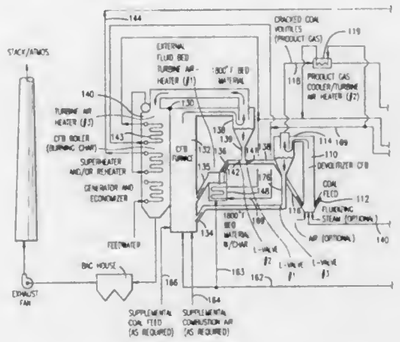
device, and a coolant loop communicating with said cooling chamber.

5,666,800
GASIFICATION COMBINED CYCLE POWER GENERATION PROCESS WITH HEAT-INTEGRATED CHEMICAL PRODUCTION
James Christian Sorensen, Allentown, and Eric William Scharpf, Perkasie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jun. 14, 1994, Ser. No. 259,649
Int. Cl.[6] F02G *3/00;* **F02C** *3/20*
U.S. Cl. 60—39.02 **2 Claims**



1. In the coproduction of electric power and one or more chemical or liquid fuel products from a synthesis gas feed containing hydrogen and carbon monoxide, wherein said electric power is produced in a generator driven by a combustion turbine system in which inlet air is compressed and combusted with fuel in a combustor to provide hot pressurized combustion gas which is expanded through an expansion turbine to drive said generator, the efficiency of producing said power and chemical or liquid fuel products is improved by a method which comprises reacting a first portion of said synthesis gas feed exothermically to produce said chemical or liquid fuel products, unreacted synthesis gas, and heat of reaction, recovering at least a portion of said heat of reaction by indirect heat exchange with water to yield a stream of heated water, heating and humidifying a stream of supplemental fuel gas by direct contact with a portion of said stream of heated water to yield hot humidified supplemental fuel gas, introducing said hot humidified supplemental fuel into said combustor, combining said unreacted synthesis gas with a second portion of said synthesis gas feed, and introducing the resulting combined synthesis gas stream as additional fuel into said combustor.

5,666,801
COMBINED CYCLE POWER PLANT WITH INTEGRATED CFB DEVOLATILIZER AND CFB BOILER
John W. Rohrer, 133 Pope Ave., South Portland, Me. 04106
Filed Sep. 1, 1995, Ser. No. 522,763
Int. Cl.[6] F02B *43/00*
U.S. Cl. 60—39.02 **47 Claims**

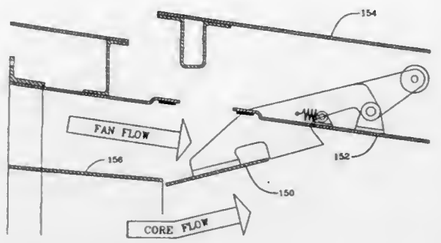


1. A process for generating power from a volatile containing carbonaceous feed, comprising:
a. providing first and second fully entrained flow circulating fluidized bed reaction zones through which a loop of heat-conveying materials continuously circulate and being fluidized by first and second fluidizing gases, respectively;
b. introducing a volatile-containing carbonaceous feed into said first fully entrained flow circulating fluidized bed reaction zone;
c. heating said volatile containing carbonaceous feed with said heat-conveying materials, for a time period sufficient to produce a product gas comprised of partially thermally cracked volatiles and substantially devolatilized feed, said heat-conveying material entering the first reaction zone at a first temperature between about 1000° F. and about 2400° F. and exiting at a second temperature lower than said first temperature because of the endothermic heat requirements of said first reaction zone;
d. separating said substantially devolatilized feed with said heat-conveying materials from said product gas;
e. introducing into said second fully entrained flow circulating fluidized bed reaction zone said substantially devolatilized feed together with said heat-conveying material from step d and, as said second fluidizing gas, an oxygen containing turbine exhaust gas;
f. exothermically reacting said substantially devolatilized feed in the presence of said oxygen-containing turbine exhaust gas at a temperature above the temperature of said first fully entrained flow circulating fluidized reaction zone for a time period sufficient to substantially combust said substantially devolatilized feed, produce a flue gas, preheat a compressed air feed for a gas turbine, generate high pressure steam conveyed to a steam turbine to provide power and elevate the temperature of said heat-conveying material from said second temperature to a temperature equal to or greater than said first temperature;
g. separating elevated temperature heat conveying material in step f and conveying a portion of said elevated temperature heat conveying material to said first reaction zone;
h. compressing a portion of said product gas from step d and forming a compressed product gas;
i. providing compressed air from a gas turbine compressor;
j. introducing said compressed product gas and said compressed air into a gas turbine combustor, combusting said compressed product gas and said compressed air in said gas turbine thereby providing power and an oxygen containing turbine exhaust having a temperature of at least 800° F. to about 1200° F.; and
k. recycling said oxygen containing turbine exhaust gas of step j to said second fully entrained flow circulating fluidized reaction zone as said second fluidizing gas.

35. A volatile containing carbonaceous fueled power system comprising:
a. a first fully entrained circulating fluidized bed reactor including a circulating bed of heat conveying material and being capable of producing substantially devolatilized carbonaceous feed and a product gas, said first fully entrained fluidized circulating fluidized bed including,
1. inlet means for introducing volatile containing carbonaceous feed to be devolatilized and thermally cracked;
2. separator means for separating substantially devolatilized feed and circulating heat conveying material from said product gas and, including outlet means for removing said product gas for heat recovery, said separated heat conveying material being at a first temperature;
3. first recycle means for returning some of said product gas for use as part of a fluidizing gas for said first fully entrained flow circulating fluidized bed reactor; and
4. a first heat recovery means connected to said outlet means for recovering heat value from said product gas;
b. a second fully entrained flow circulating fluidized bed reactor containing a furnace section, a boiler section and a separator section and containing continuously circulating heat conveying material and being capable of conducting an exothermic reaction between substantially devolatilized carbonaceous feed and an oxygen containing turbine exhaust gas to produce flue gas, high pressure steam, preheated compressed air and, reheated heat conveying material to a temperature above said first temperature;
c. first means in flow communication with said separator means for conveying one portion of said separated, substantially devolatilized carbonaceous feed and heat conveying material from said first fully entrained flow circulating fluidized bed reactor into said second fully entrained flow circulating fluidized bed reactor;
d. second means for conveying heat conveying material from said separator section of said second fully entrained flow circulating fluidized bed reactor into said first fully entrained flow circulating fluidized bed reactor;
e. third means for conveying said product gas from said first fully entrained flow circulating fluidized bed reactor to a scrubbing system to remove nitrogen and sulfur containing pollutants and particulates to produce a cleaned product gas;
f. fourth means for conveying a first portion of said cleaned product gas to said first fully entrained flow fluidized circulating bed reactor and a second portion to a compressor for producing compressed product gas for a gas turbine for providing power;
g. means for forming a compressed air feed for a gas turbine;
h. fifth conveying means for conveying said compressed air to a gas turbine; and
i. a gas turbine connected to said fourth and fifth conveying means for combusting said second portion of cleaned product gas with compressed air thereby providing a source of power and a reusable turbine exhaust, and including sixth means for introducing said turbine exhaust into said second fully entrained flow circulating fluidized bed reactor as a fluidizing gas.

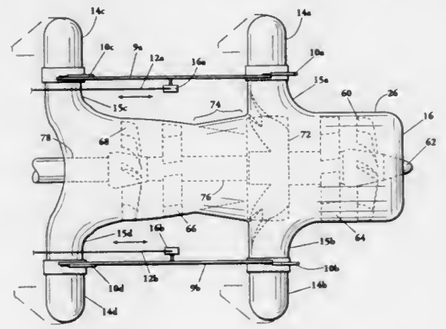
5,666,802
TURBINE ENGINE EQUIPPED WITH THRUST REVERSER
Jean-Pierre Lair, 127 Paddington Way, San Antonio, Tex. 78209
PCT No. PCT/US94/01575, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/18446, PCT Pub. Date Aug. 18, 1994
Continuatioo-in-part of Ser. No. 14,550, Feb. 8, 1993, Pat. No. 5,372,006. This PCT application Feb. 8, 1994, Ser. No. 501,116
Int. Cl.[6] F02K *3/06*
U.S. Cl. 60—226.2 **7 Claims**

1. A thrust reverser system for a turbine engine of the type having on a longitudinal axis a central hot gas generator nozzle conducting a relatively hot core flow and a fan duct conducting a relatively cold flow surrounding the hot flow, comprising a pair of



thrust reverser door members, each of said door members being pivotally mounted on a pivot axis which is substantially diametrically positioned with respect to the exhaust of the engine so as to pivot between a stowed position in which said door members are out of the direct path of exhaust from the engine and a deployed position in which said door members are in the path of the engine exhaust for deflecting the exhaust and creating a braking thrust, aerodynamic means in the outer wall of said fan duct for simultaneously decreasing the total pressure of said core flow and increasing the total pressure of said fan flow at the discharge end thereof.

5,666,803
VECTORED THRUST COMPRESSOR FOR REMOTE CONTROLLED AIRCRAFT
D. Anthony Windisch, 1438A S. St. Louis, Tulsa, Okla. 74120
Filed Aug. 14, 1995, Ser. No. 514,827
Int. Cl.[6] F02K *1/00*
U.S. Cl. 60—232 **10 Claims**



1. A vectored thrust compressor, comprising:
(a) a first ducted-fan;
(b) a first pair of adjustable directional thrust nozzles arranged opposingly behind said first ducted-fan;
(c) means for diverting a portion of an air flow through said first pair of thrust nozzles;
(d) a second ducted-fan;
(e) a second pair of adjustable directional thrust nozzles arranged opposingly behind said second ducted-fan;
(f) means for simultaneously rotating said thrust nozzles by remote control; and
(g) a drive shaft connected to said first and second ducted-fans.

5,666,804

SECONDARY AIR SUPPLYING APPARATUS FOR INTERNAL COMBUSTION ENGINE AND AIR HEATING APPARATUS THEREOF

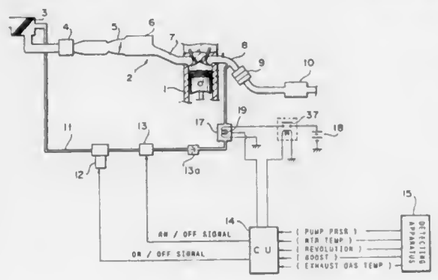
Mutuo Sekiya; Satoshi Asada; Takakazu Tochimoto, and Hidetoshi Okada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1994, Ser. No. 205,849

Claims priority, application Japan, Mar. 29, 1993, 5-069964; Jun. 29, 1993, 5-159701

Int. Cl.[6] F01N *3/30*

U.S. Cl. 60—284 **28 Claims**



1. A secondary air supplying apparatus for an internal combustion engine comprising:

an exhaust passage exhausting exhaust gas from said internal combustion engine;

a catalytic convertor, disposed in said exhaust passage, purifying said exhaust gas;

a secondary air supply passage, a first end of which is connected to said exhaust passage, supplying secondary air upstream of said catalytic convertor;

a heater heating said secondary air flowing in said secondary air supply passage; and

a controller controlling said heater based on a temperature of said heater.

5,666,805

EMISSION CONTROL SYSTEM FOR INTERNAL-COMBUSTION ENGINES

Juergen Bloedel-Pawlik, Gersthofen; Wolfgang Fanese; Rudolf Flierl, both of Munich; Enrique Santiago, Diedorf; Ernst Krieger, Aichach, and Bernhard Grescher, Fischach, all of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Germany

PCT No. PCT/EP95/00636, § 371 Date Jan. 23, 1996, § 102(e) Date Jan. 23, 1996, PCT Pub. No. WO95/24546, PCT Pub. Date Sep. 14, 1995

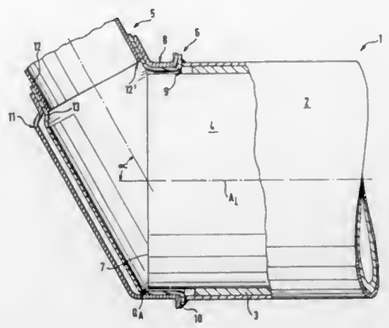
PCT Filed Feb. 22, 1995, Ser. No. 549,736

Claims priority, application Germany, Mar. 10, 1994, 44 08 130.8

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—299 **16 Claims**

1. An emission control system for an internal-combustion engine, comprising a purifying insert arranged in a housing via an intermediate layer, an exhaust gas inflow pipe arranged on one end of the housing at an oblique angle with respect to a longitudinal axis of the insert, and a housing connection area having a cross-section which corresponds to an inflow-side front side of the insert, wherein the exhaust gas inflow pipe has a section constituting a



boundary around the insert downstream of the front side and operative as a connection with the housing.

5,666,806

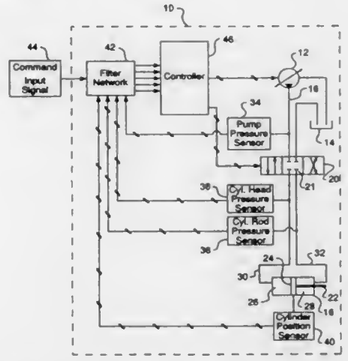
CONTROL SYSTEM FOR A HYDRAULIC CYLINDER AND METHOD

Hans P. Dietz, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 5, 1995, Ser. No. 498,558

Int. Cl.[6] F16D *31/02*; F15B *13/16*

U.S. Cl. 60—327 **12 Claims**



1. A method for controlling a hydraulic actuating system, the hydraulic actuating system including a hydraulic pump, a control valve, a hydraulic cylinder, and a microprocessor, the method comprising the steps of:

receiving an input command signal associated with the desired position for the hydraulic cylinder;

sensing a plurality of system conditions and producing a plurality of system condition signals according to said plurality of system conditions;

determining an initial pump displacement output value and an initial spool displacement output value as a function of said plurality of system condition signals, said initial pump displacement output value and said initial spool displacement output value being derived from a plurality of feedback linearization control laws; and

producing a pump displacement output signal and a spool displacement output signal as a function of said initial pump displacement output value, said initial spool displacement output value and said input command signal, said pump displacement output signal and said spool displacement output signal being derived from at least one linear control law.

6. A hydraulic control system, comprising:

a hydraulic cylinder;

a control valve adapted to regulate the flow of pressurized hydraulic fluid to said hydraulic cylinder;

a hydraulic pump adapted to provide pressurized hydraulic fluid through said control valve to said hydraulic cylinder;

a plurality of sensors for sensing a plurality of system conditions and producing a plurality of system condition signals;

a first control means for determining an initial pump displacement output value and an initial spool displacement output value as a function of said plurality of system conditions signals, said initial pump displacement output value and said initial spool displacement output value being derived from a plurality of feedback linearization control laws; and

a second control means for producing a pump displacement output signal for said hydraulic pump and a spool displacement output signal for said control valve as a function of said initial pump displacement output value, said initial spool displacement output value and an input command signal, said pump displacement output signal and said spool displacement output signal being derived from at least one linear control law.

5,666,807

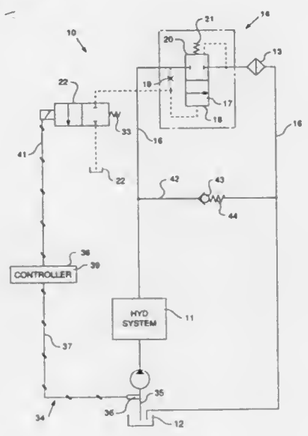
OIL PROCESSOR CIRCUIT

Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 13, 1995, Ser. No. 571,336

Int. Cl.[6] F15B *21/04*

U.S. Cl. 60—329 **3 Claims**



1. An oil processor circuit having an oil processor connected to a tank and a conduit connected to the oil processor, comprising:

a pilot operated valve disposed in the conduit and having open and closed positions, first and second ends, an orifice communicating pressurized fluid from the conduit upstream of the pilot operated valve to the first end, and a spring disposed at the second end biasing the valve to one of said positions;

a two position electromagnetic pilot valve connected to the first end of the pilot operated valve and being movable to an open position communicating the first end to the tank to establish said one position of the pilot operated valve in response to receiving an electrical control signal; and

means for sensing the temperature of the oil in the circuit and for outputting the electrical control signal to the electromagnetic pilot valve when the oil temperature is at or on one side of a predetermined temperature.

5,666,808

OPERATING VALVE ASSEMBLY WITH PRESSURE COMPENSATION VALVE

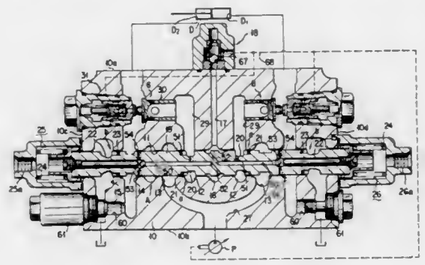
Koji Yamashita; Teruo Akiyama; Kouji Saito, and Shinichi Shinozaki, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 318,631, Oct. 7, 1994, Pat. No. 5,535,663. This application Sep. 6, 1995, Ser. No. 524,439

Claims priority, application Japan, Apr. 10, 1992, 4-030355

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—426 **10 Claims**



1. An operating valve assembly comprising:

a valve body;

a spool bore formed through a central portion of said valve body, to which a first hydraulic pressure passage introducing a supply pressure from a hydraulic pressure source, a second hydraulic pressure passage supplying a control pressure to a hydraulic load, a third hydraulic pressure passage selectively communicating said first and second hydraulic pressure passages, and a fourth hydraulic pressure passage connected to a low pressure side of said hydraulic pressure source for recirculating a working fluid to said hydraulic pressure source are opened;

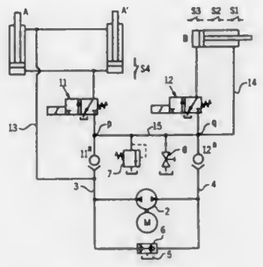
a spool slidably disposed within said spool bore for movement between a neutral position and at least one displaced position displaced axially from said neutral position, wherein said spool operates to establish communication between said first and third hydraulic pressure passages and between second and fourth hydraulic pressure passages when in said at least one displaced position, and wherein said spool operates to block communication between said first and third hydraulic pressure passages and between said second and fourth hydraulic pressure passages when in said neutral position;

a pressure compensation valve provided in parallel to a central axis of said spool bore at a position offset from the axis of said spool bore in a direction perpendicular to said axis, and establishing and blocking communication between said second and third hydraulic pressure passages for controlling the control pressure to be supplied to said hydraulic load depending upon a load pressure;

load pressure detecting means formed in said spool and communicated with said second hydraulic pressure passage for generating a detected load pressure corresponding to the load pressure of said hydraulic load; and

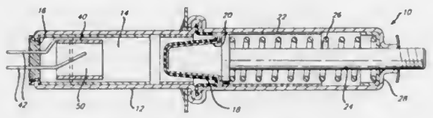
load pressure supply means for supplying detected load pressure to said pressure compensating means via said spool bore when said spool is in said neutral position, said load pressure supply means detecting highest pressure among detected load pressures detected by respective load pressure detecting means of a plurality of operating valve assemblies as the detected load pressure and supplying the highest load pressure to a respective pressure compensating valve of the plurality of operating valve assemblies.

5,666,809
HYDRAULIC CIRCUIT
Laurentius A.G. Mentink, Haaksbergen, Netherlands, assignor to Applied Power Inc., Butler, Wis.
Filed Jul. 13, 1995, Ser. No. 501,917
Claims priority, application Netherlands, Jul. 20, 1994, 9401190
Int. Cl.[6] F16D *31/02;* **B25B** *5/14*
U.S. Cl. 60—484 **2 Claims**



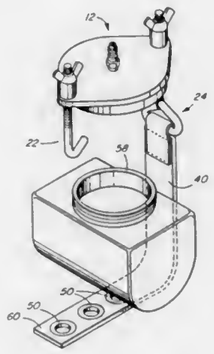
1. A hydraulic circuit, comprising at least two double acting piston cylinder devices for opening and closing a folding roof of a cabriolet type vehicle, a reservoir for hydraulic fluid, an electric motor driven hydraulic pump connected with said reservoir, and an electrically operated valve for each of said piston cylinder devices, said valve being connected to the space under the piston of the respective piston cylinder device so as to selectively connect said space either to the pump or to the reservoir, characterized in that the pump is of the type with which a reversal of the direction of rotation will effect a change of the pressure and suction sides, the suction/pressure connections of said pump being, on one hand, connected to the reservoir via a suction shuttle valve and, on the other hand, connected to the first and second piston cylinder devices respectively via the electrically operated valves associated with said piston cylinder devices and via check valves positioned on the pump side of said electrically operated valves, the space above the piston of each of the piston cylinder devices being connected with the same suction/pressure conduit of the pump with one piston cylinder device being connected at a location on the pump side of the respective check valve, and with the other piston cylinder device being connected at a location between the respective check valve and the associated electrically operated valve.

5,666,810
ELECTRO-THERMAL ACTUATOR SYSTEM
Frederick O. R. Miesterfeld, Troy, and Timothy A. Flickinger, Rochester Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Dec. 12, 1994, Ser. No. 353,864
Int. Cl.[6] F03C *5/00*
U.S. Cl. 60—530 **4 Claims**



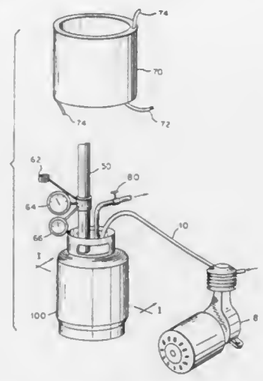
1. An electro-thermal actuator, comprising:
a housing containing a sealed fluid chamber with a moveable portion and a biasing device which biases the movable portion in a direction to reduce the volume of the chamber, said fluid chamber including a working fluid, a heater for heating the working fluid, and a temperature sensor that senses the temperature of the working fluid and produces a sensor signal related thereto,
an actuator rod connected to the movable portion, said actuator rod extending beyond the housing and being moved by the movable portion against the bias of the biasing device a distance related to the distance moved by the movable portion, and a heater control circuit which controls the heating of said working fluid by said heater such that the volume of the fluid expands and contracts depending on its temperature, said circuit causing the moveable portion to move a predetermined distance, said circuit including a comparator which compares a signal related to a desired movement of the actuator rod and a signal received from the sensor and producing pulses of current to the heater which have a width related to the comparison.

5,666,811
CLOSURE DEVICES FOR MOTOR VEHICLE MASTER CYLINDERS
Colin Elliott, 308 W. 8th Ave., New Westminster, B.C., Canada, V3L 1Y2
Filed Mar. 8, 1996, Ser. No. 611,615
Int. Cl.[6] F15B *7/00;* **F01B** *29/00*
U.S. Cl. 60—583 **2 Claims**



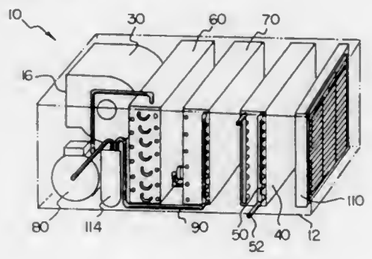
1. A closure device for use with a motor vehicle master cylinder, comprising:
a closure member; and
a retainer arrangement for securing said closure member on the master cylinder;
said retainer arrangement comprising an elongate retainer, said elongate retainer having first and second end portions, first and second anchor members for securing said first and second end portions of said elongate retainer relative to said closure member, with said elongate retainer extending beneath the master cylinder for retaining said closure member on said master cylinder;
said elongate retainer comprising a material which is sufficiently rigid to enable said second end portion to be self-supporting in a cantilever condition and in a substantially horizontal orientation when said elongate retainer is gripped beyond said second end portion, and being sufficiently flexible to wrap beneath the master cylinder when secured by said anchor members; and
said first and second anchor members each comprising a stem extending through said closure member, said stems each having threaded upper end and a lower end which is shaped for engagement with said elongate retainer, a pair of nuts in threaded engagement with said upper ends for tightening said elongate retainer relative to the master cylinder and a pair of stem supports on said closure member, said stem supports defining cylindrical openings slidably receiving respective ones of said stems for maintaining said stems in predetermined orientations relative to said closure member on tightening of said nuts.

5,666,812
APPARATUS AND PROCESS FOR RENEWING REFRIGERANTS
Joseph J. Packo, Isle of Vieques, Puerto Rico, assignor to IPG Corporation, Vieques, Puerto Rico
Filed Jun. 19, 1996, Ser. No. 666,992
Int. Cl.[6] F25B *47/00*
U.S. Cl. 62—85 **14 Claims**



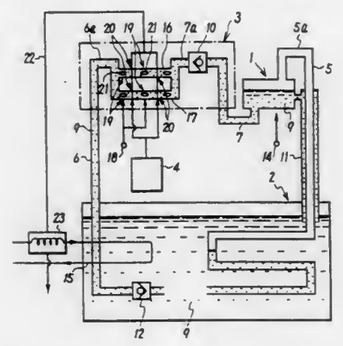
1. A method of decontaminating a fluid refrigerant containing an impurity, the refrigerant having a vaporization temperature, the method comprising:
providing a container;
providing a decontaminating liquid chemical within the container, the decontaminating liquid chemical having a vaporization temperature substantially higher than the vaporation temperature of the refrigerant and being chemically reactive with at least one of said impurities of the refrigerant to form a reaction product which has a vaporization temperature substantially higher than said refrigerant vaporization temperature;
introducing the refrigerant in liquid form into the decontaminating liquid chemical to form a liquid admixture in the container, whereby a reaction occurs between said at least one impurity in the refrigerant liquid and the decontaminating liquid chemical; and
drawing off refrigerant vapor from the container;
whereby the refrigerant vapor leaving the container is purified relative to the liquid refrigerant injected into the container.

5,666,813
AIR CONDITIONING SYSTEM WITH REHEATER
Paul C. Brune, 311 Greenbay Ct., NE., Palm Bay, Fla. 32907
Continuation of Ser. No. 977,556, Nov. 17, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,488
Int. Cl.[6] F25D *17/06;* **F25B** *1/00*
U.S. Cl. 62—90 **2 Claims**



2. A method for conditioning air fed to a space from a first stream and a second stream by lowering the temperature and by reducing the moisture within the second stream content comprising the steps of:
providing the second stream having a conduit having an input end for receiving air to be conditioned and an output end for dispensing condition air into a primary flow of conditioned air;
providing blower means to effect a flow of air to be conditioned from the input end to the output end of the conduit;
providing a cooling member within the conduit adjacent to the input end adapted to initially cool to a major extent the air flowing therepast to a temperature near saturation, the cooling member having, in association therewith, pipes in a closed first loop with means for circulating a first cooling fluid between the cooling member whereat thermal energy is added to the first cooling fluid and a remote location whereat thermal energy is removed from the first cooling fluid; and
providing a separate system consisting of a separate condenser within the conduit adjacent to the output end adapted to reheat the air flowing therepast, a separate evaporator within the conduit between and spaced from the cooling member and the separate condenser adapted to further cool to a further extent the air flowing therepast to the lower dew point at between about 37 and 46 degrees Fahrenheit for temperature reduction and moisture content reduction, a separate compressor, and separate piping coupling the separate evaporator, separate condenser and separate compressor in a closed second loop, independent of the closed first loop, for circulating a second cooling fluid between the separate evaporator whereat thermal energy is added to the second cooling fluid, (b) the separate condenser whereat thermal energy is removed from the second cooling fluid, and (c) the separate compressor whereat the cooling fluid is compressed.

5,666,814
HEAT TRANSFER SYSTEM
Tadashi Yamamoto, Tsukuba, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan
Filed Dec. 16, 1994, Ser. No. 357,409
Claims priority, application Japan, Dec. 17, 1993, 5-343859
Int. Cl.[6] F28D *15/00*
U.S. Cl. 62—118 **11 Claims**



1. A heat transfer system, comprising:
an evaporator for heating an operating fluid by a high temperature heat source;
a condenser installed at a position lower than the evaporator and used for condensing the operating fluid evaporated in the evaporator;
a heat driving pump for transferring the operating fluid from the condenser to the evaporator due to a pressure change generated in a pressure generating pipe, said pressure generating

pipe being installed along a flow passage for circulating the operating fluid to the evaporator and being alternately provided with a plurality of heating zones where the operating fluid is heated by a high temperature fluid and with a plurality of cooling zones where the operating fluid is cooled by a low temperature fluid, said pressure change being generated by generation of bubbles due to heating of the operating fluid in the pressure generating pipe and by extinction of bubbles caused by cooling; and

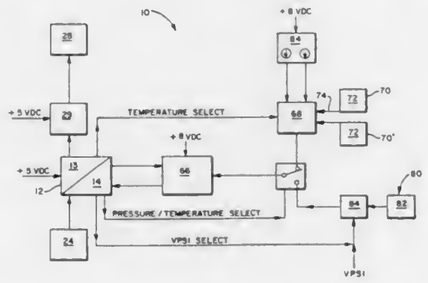
control means for controlling generation and condensation of the bubbles by controlling said high temperature fluid and said low temperature fluid supplied to the heat driving pump.

5,666,815

METHOD AND APPARATUS FOR CALCULATING SUPER HEAT IN AN AIR CONDITIONING SYSTEM

Arthur Aloise, Harwinton, Conn., assignor to Cooper Instrument Corporation, Middlefield, Conn.

Filed Nov. 18, 1994, Ser. No. 342,343
Int. Cl.[6] G01K *13/00*
U.S. Cl. 62—129 **18 Claims**



1. Apparatus for calculating the degree of super heat in an air conditioning system, the air conditioning system containing one of a plurality of refrigerants, the apparatus comprising:

first temperature sensing means for sensing the temperature of the refrigerant and transmitting a first temperature signal proportional to the sensed temperature;

pressure sensing means for sensing the pressure of the refrigerant and transmitting a pressure signal proportional to the sensed pressure;

a computer platform including data processor means for performing arithmetic and logic operations on digitized data, data storage means coupled to said data processor means, for storing digitized data including instruction data and operand data, first input means for supplying instruction data to said data processor means, second input means for receiving and digitizing said first temperature signal and said pressure signal, said second input means supplying said digitized first temperature signal and said digitized pressure signal to said data processor means, said data storage means containing a stored computer program including modelling means for modelling the vapor pressure of the refrigerant at a plurality of vapor temperature points, said modelling means comprising a plurality of models wherein each of said models defines the vapor pressure of one of the refrigerants at a plurality of vapor temperature points, comparison means for comparing said digitized pressure signal to said model wherein said digitized pressure signal and said model define a vapor temperature value, and computing means for computing and transmitting a super heat value wherein said super heat value is the difference between said digitized first temperature signal and the vapor temperature value; and

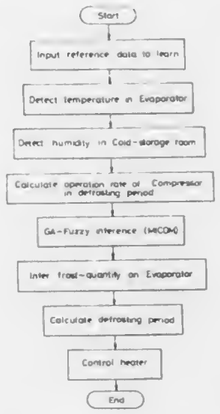
display means for receiving and displaying said super heat value.

5,666,816

DEFROSTING METHOD AND APPARATUS FOR REFRIGERATOR USING GA-FUZZY THEORY

Seong-wook Jeong, Suwon; Jae-In Kim, Seoul, and Yun-seok Kang, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 20, 1995, Ser. No. 531,086
Claims priority, application Rep. of Korea, Nov. 30, 1994, 94-32118
Int. Cl.[6] F25D *21/06*
U.S. Cl. 62—154 **6 Claims**



1. A defrosting method of a refrigerator using genetic algorithm (GA)-fuzzy theory comprising the steps of:

acquiring experimentally predetermined redetermined reference learning data of temperature of an evaporator, humidity in a cold-storage room, and operation rate of a compressor during said defrosting period;

storing said acquired reference learning data to a microcomputer;

measuring the actual environment data of temperature of an evaporator, humidity in a cold-storage room, and operation rate of a compressor during said defrosting period;

inputting said actual environment data to said microcomputer;

inferring a frost-quantity on the evaporator from said acquired reference learning data and said inputted actual environment data by said microcomputer by using the GA-fuzzy theory;

calculating a defrosting period from the inferred frost-quantity; and

controlling a defrosting heater depending on said calculated defrosting period.

5,666,817

ENERGY TRANSFER SYSTEM FOR REFRIGERATOR/FREEZER COMPONENTS

Edward R. Schulak, 567 Aspen, Birmingham, Mich. 48009, and J. Benjamin Horvay, Isle of Palms, S.C., assignors to Edward R. Schulak, Birmingham, Mich.

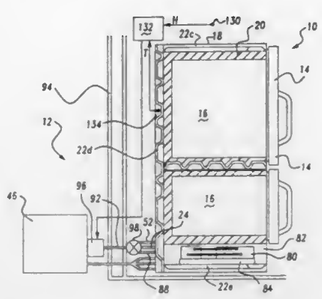
Filed Dec. 10, 1996, Ser. No. 761,329
Int. Cl.[6] F25D *17/02*
U.S. Cl. 62—185 **18 Claims**

1. A refrigeration or freezer appliance, comprising:

a housing surrounding a cooling storage compartment;

refrigeration means for cooling said cooling storage compartment, said refrigeration means having components including a compressor and a condenser;

at least one fluid passage disposed adjacent to said cooling storage compartment and having a first inlet and a first outlet for enabling ingress and egress of a cooling fluid;



a vessel disposed external of said housing for containing said cooling fluid, said first inlet and said first outlet being connected to said vessel; and

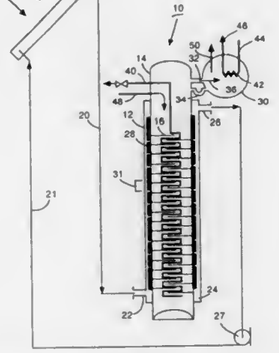
a pump for pumping said cooling fluid through said at least one fluid passage in order to aid in cooling said storage compartment in addition to cooling provided by the refrigeration means.

5,666,818

SOLAR DRIVEN AMMONIA-ABSORPTION COOLING MACHINE

José Angel Manrique-Valadez, Monterrey, Mexico, assignor to Instituto Tecnologico and de Estudios Superiores, de Monterrey, Mexico

Filed Dec. 26, 1995, Ser. No. 580,440
Int. Cl.[6] F25B *27/00;33/00*
U.S. Cl. 62—235.1 **12 Claims**



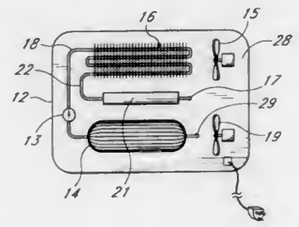
1. In an air cooled absorption cycle cooling machine adapted to use an aqueous solution of ammonia as the thermodynamic work fluid and having a generator device for separating ammonia vapor from the solution, the improvement in such generator so as to be capable of use with a solar heater or other source of heat of a relatively low temperature capable of heating water to temperatures between 120° C. and 150° C. and of delivering an energy rate above 7000 Watts per ton of refrigeration; comprising a generator core in the form of an elongated tank through which the circulation of ammonia solution is subject to separation of ammonia from solvent water when the solution temperature is raised through heat exchange relationship across a wall of said core with a circulating stream of hot water, a generator jacket coaxially disposed surrounding said core and defining an annular hot water axial-flow circulation chamber; a multitude of closely spaced substantially axially-aligned heat transfer fins having an axial length on the order of 50 mm or less and being mounted on the wall of said generator core, said fins protruding into and substantially filling said annular chamber, any given pair of circumferentially adjacent fins being oriented face-to-face with any such upstream pair being axially obstructed immediately downstream by another similarly-oriented fin being offset in a staggered relation to said pair.

5,666,819

RAPID SORPTION COOLING OR FREEZING APPLIANCE

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation of Ser. No. 328,847, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 149,453, Nov. 9, 1993, Pat. No. 5,396,775, which is a division of Ser. No. 794,501, Nov. 19, 1991, Pat. No. 5,271,239, which is a continuation-in-part of Ser. No. 732,652, Jul. 19, 1991, Pat. No. 5,186,020, which is a continuation-in-part of Ser. No. 644,833, Jan. 23, 1991, abandoned, and a continuation-in-part of Ser. No. 104,427, Aug. 9, 1993, Pat. No. 5,441,716, which is a continuation-in-part of Ser. No. 931,036, Aug. 14, 1992, Pat. No. 5,328,671, and a continuation-in-part of Ser. No. 975,973, Nov. 13, 1992, Pat. No. 5,298,231, which is a continuation of Ser. No. 320,562, Mar. 8, 1989, abandoned. This application Feb. 23, 1996, Ser. No. 604,762
Int. Cl.[6] F25B *17/08*
U.S. Cl. 62—480 **34 Claims**



1. An apparatus capable of providing rapid cooling and/or freezing comprising:

(a) a cabinet or container having a cooling chamber therein;

(b) one or more reactors each containing a complex compound formed by adsorbing a polar gas on a metal salt, and in which said polar gas is alternately adsorbed and desorbed on said complex compound, said metal salt comprising a halide, nitrate, nitrite, oxalate, perchlorate, sulfate or sulfite of an alkali metal, alkaline earth metal, transition metal, zinc, cadmium, tin or aluminum, or sodium borofluoride or a double metal chloride, or mixtures thereof, and wherein said complex compound in said one or more reactors is formed by restricting the volumetric expansion and controlling the density thereof during said adsorption of said polar gas on said metal salt, whereby said complex compound is capable of increased reaction rates in the number of moles of said polar gas adsorbed and/or desorbed per mole of said complex compound per hour at adsorption or desorption times of less than 60 minutes, respectively, as compared to a complex compound formed without restricting the volumetric expansion and controlling the density thereof, and wherein said complex compound in a desorbed condition is capable of adsorbing said polar gas at a rate sufficient to achieve rapid cooling or freezing in about 30 minutes or less;

(c) condenser means for condensing said polar gas and evaporator means thermally exposed to said cooling chamber for providing cooling therein, and conduits and one or more valves cooperating therewith for directing said polar gas from said one or more reactors to said condenser means, and from said evaporator means to said one or more reactors; and

(d) heating means cooperating with said one or more reactors for heating said complex compound therein.

5,666,820
CEILING COOLING

Karl Georg Homm, Marl/Polsum, and Michael Wittkaemper, Bochum, both of Germany, assignors to Hewing GmbH, Ochtrup, Germany

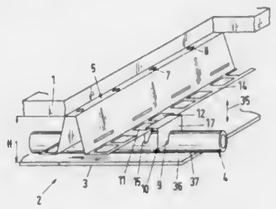
PCT No. PCT/EP93/03457, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/14010, PCT Pub. Date Jun. 23, 1994

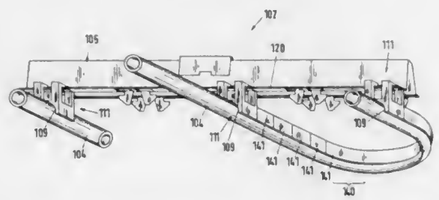
PCT Filed Dec. 8, 1993, Ser. No. 454,162

Claims priority, application Germany, Dec. 10, 1992, 9216792 U; Oct. 8, 1993, 9315216 U

Int. Cl.[6] F24D *3/16*; F16L *3/24*

U.S. Cl. 62—259.1 38 Claims





1. A cooling ceiling pipe support apparatus for air conditioning a room with a system of cooling pipes through which cooling water flows, the cooling ceiling pipe support apparatus supporting said cooling pipes between a ceiling of a building and ceiling elements spaced below the ceiling of the building, the cooling ceiling pipe support apparatus comprising:

a holding element connectable to the ceiling of the building; and

a plurality of connecting elements each having a bottom side defining a first shaped recess which accommodates a respectively assigned region of one of said cooling pipes therein while leaving a bottom surface of said one of said cooling pipes exposed from beneath, each of said connecting elements being positioned between the holding element and the respectively assigned region of the cooling pipe and being supported in a vertically adjustable manner relative to the holding element such that the bottom surfaces of said cooling pipes lie against the ceiling elements when in an installed position.

5,666,821
METHOD FOR PRODUCING PELLETS FOR USE IN A CRYOBLASTING PROCESS

Christopher A. Foster, Clinton, and Paul W. Fisher, Heiskell, both of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 55,691, Apr. 29, 1993, Pat. No. 5,472,369.

This application Apr. 21, 1995, Ser. No. 426,826

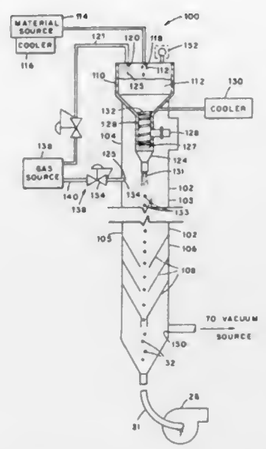
Int. Cl.[6] F25J *1/00*

U.S. Cl. 62—605 9 Claims

1. A system for producing cryogenic pellets from a liquid material having a relatively high triple point pressure, the system comprising:

means defining a chamber having an entrance end portion and an exit end portion;

means for introducing the liquid material, under moderate pressure, into the entrance end portion of the chamber as a liquid jet so that the jet disintegrates into droplets;



means for injecting a non-condensible gas into the chamber; and

control means associated with the chamber and the injecting means for maintaining the total pressure of chamber at a pressure which is at or slightly below the triple pressure of the droplet-forming liquid while maintaining a low partial pressure of the droplet-forming liquid so that the droplets freeze into solid bodies of relatively high density by controlling the rate of injection of the non-condensible gas into the chamber.

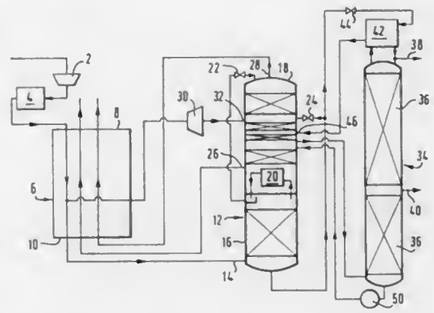
5,666,822
AIR SEPARATION

Stephen Roger Clare, Bognor Regis, and Robert Hartley, Fleet, both of England, assignors to The BOC Group plc, Windlesham, England

Filed Nov. 16, 1995, Ser. No. 559,110

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—646 6 Claims



1. A method of separating air comprising:

compressing, pre-purifying and cooling air;

subjecting said air to a first rectification in which the air is separated into a nitrogen-rich fraction and an oxygen-rich fraction;

withdrawing a further oxygen fraction enriched in argon from the first rectification; and

subjecting the further oxygen fraction to a second rectification in which argon is separated from oxygen and from which first and second argon product streams are withdrawn from said second rectification at different theoretical stages thereof so that said first and second argon product streams have different purities.

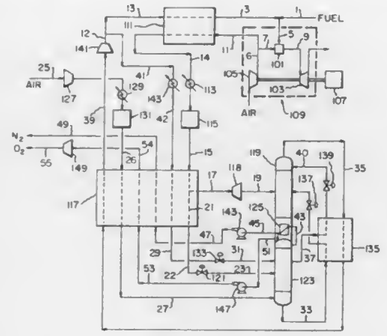
5,666,823
HIGH PRESSURE COMBUSTION TURBINE AND AIR SEPARATION SYSTEM INTEGRATION

Arthur Ramsden Smith, Telford, and Donald Winston Woodward, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 31, 1996, Ser. No. 595,015

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—646 24 Claims



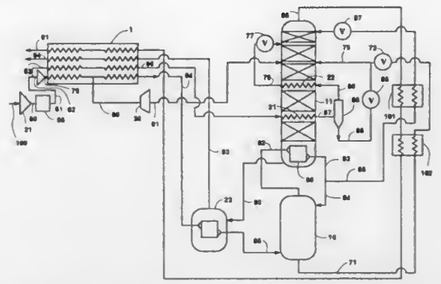
1. In an integrated combustion turbine/air separation process which includes compressing air in a combustion turbine air compressor (**105**), combusting a first portion (**7**) of the resulting compressed air (**6**) with a fuel (**1**) in a combustor (**101**) to form hot combustion products, expanding the hot combustion products (**9**) in a hot gas expander (**103**) which drives the combustion turbine air compressor (**105**) and optionally an electric generator (**107**), cooling a second portion (**11**) of the compressed air, removing impurities from the resulting cooled compressed air (**14**), and separating the resulting purified compressed air (**15**) into one or more products, the separation of the purified compressed air (**15**) is carried out by a method which comprises:

(a) cooling the purified compressed air (**15**), work expanding a first portion (**17**) of the resulting cooled air, and introducing the resulting cooled work-expanded air (**19**) into a lower pressure distillation column (**119**);

(b) further cooling a second portion (**21**) of the resulting cooled air, reducing the pressure of the further cooled air (**22**), and introducing the resulting reduced-pressure cooled air (**23**) into a higher pressure distillation column (**123**);

(c) withdrawing an oxygen-enriched liquid bottoms stream (**33**) from the higher pressure distillation column (**123**), cooling and reducing the pressure of the stream, and introducing the resulting cooled reduced-pressure stream into the lower pressure distillation column (**119**); and

(d) withdrawing a nitrogen-rich product (**35**) from the lower pressure distillation column (**119**).



(B) passing oxygen-enriched and nitrogen-enriched fluids from the higher pressure column into the lower pressure column;

(C) partially condensing a second portion of the feed air by indirect heat exchange with fluid within the lower pressure column to produce a first liquid air portion and a first vapor air portion;

(D) at least partially condensing the first vapor air portion by indirect heat exchange with fluid within the lower pressure column at a point above the point where step (C) is carried out to produce a second liquid air portion;

(E) passing the first liquid air portion and the second liquid air portion into the lower pressure column each at a point above the point where step (C) is carried out with the second liquid air portion passed into the lower pressure column above where the first liquid air portion is passed into the lower pressure column;

(F) separating the fluids passed into the lower pressure column by cryogenic rectification into nitrogen-rich fluid and oxygen-rich fluid; and

(G) recovering oxygen-rich fluid as product lower purity oxygen.

5,666,824
CRYOGENIC RECTIFICATION SYSTEM WITH STAGED FEED AIR CONDENSATION

Dante Patrick Bonaquist, Grand Island, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 19, 1996, Ser. No. 617,591

Int. Cl.[6] F25J *3/04*

U.S. Cl. 62—646 10 Claims

1. A method for producing lower purity oxygen by the cryogenic rectification of feed air in a double column having a higher pressure column and a lower pressure column comprising:

(A) passing a first portion of the feed air into the higher pressure column and separating the first feed air portion within the higher pressure column by cryogenic rectification into oxygen-enriched and nitrogen-enriched fluids;

5,666,825
PROCESS AND INSTALLATION FOR THE SEPARATION OF AIR

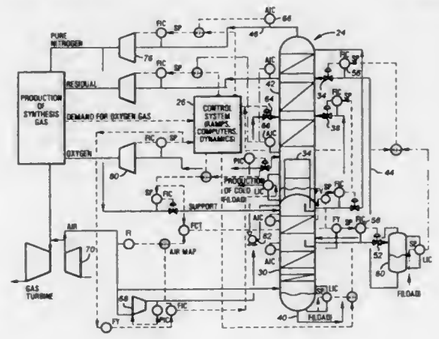
Bernard Darredeau, Sartrouville; Jean-Yves Lehman, Maisons-Alfort, and Jean-Marc Peyron, Creteil, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation Des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 509,137, Jul. 31, 1995, Pat. No. 5,592,834, which is a division of Ser. No. 230,521, Apr. 20, 1994, Pat. No. 5,437,160. This application Aug. 30, 1996, Ser. No. 708,013

Claims priority, application France, Apr. 29, 1993, 93 05062; Sep. 28, 1993, 93 11509

Int. Cl.[6] F25J *3/04*

U.S. Cl. 62—656 2 Claims



I. A process for the separation of air in a cryogenic distillation apparatus comprising a distillation column and in which air is separated to produce a fraction rich in oxygen and a fraction rich in nitrogen as products, comprising maintaining the purities of said product substantially constant during variations of the flow rate or of the pressure of the supply air by controlling the relative liquid to vapor interstage transfer rate within said distillation column in response to said variations of the flow rate or of the pressure of said supplied air, by increasing the relative liquid to vapor interstage transfer rate in said distillation column when the demand for the product or the flow rate of the supplied air increases, and decreasing the relative liquid to vapor interstage transfer rate in said distillation column when the demand for the product or the flow rate of the supplied air decreases by maintaining the liquid in the sump of the distillation column at a predetermined level by means of a sump level controller having a set point set at a predetermined level; and controlling said sump level solely in dependence on the flow rate of air to the column.

5,666,826

NEEDLE MOUNTING DEVICE FOR WARP KNITTING MACHINES

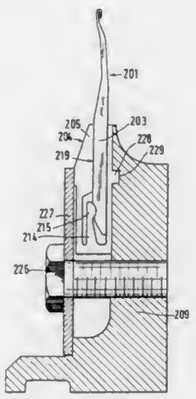
Kresimir Mista, Heusenstamm, Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany

Filed Jun. 15, 1995, Ser. No. 490,765

Claims priority, application Germany, Jun. 18, 1994, 44 21 388.3

Int. Cl.[6] D04B *27/06*

U.S. Cl. 66—114 **20 Claims**



1. A holding device for holding, with a plug-in type connection, at least one implement for a knitting machine, implements in the knitting machine including needles and guides, said holding device comprising:

a knitting implement having a shank with a longitudinal shank axis and a longitudinal flat surface, said knitting implement having an inside end with a lateral recess;

a carrier;

a holder mounted on the carrier and comprising:

(a) a guide section matching a profile of the shank, said guide section having an internal guide surface and a mouth for receiving said shank, and

(b) a locking device for holding the knitting implement in an operating position, said locking device having a sprung catch reciprocatable transversely to the longitudinal shank axis in a direction parallel to the flat surface, said catch being arranged to engage the recess pretensioned, said catch having a sprung tongue extending alongside the shank, said guide surface being located between said sprung tongue and said mouth, said guide section being operable to restrain displacement of the implement transverse to the longitudinal shank axis, independent of relative displacement between said shank and said sprung catch.

5,666,827

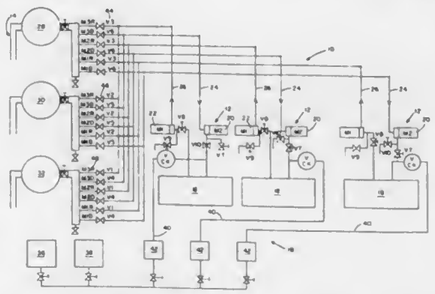
MULTI-STAGE FLUID AND CHEMICAL RECOVERY SYSTEM FOR A TEXTILE ARTICLE COMMERCIAL BLEACHING APPARATUS

Jonnie G. Gunter, and Grant A. Hurd, both of Pulaski, Va., assignors to Renfro Corporation, Mount Airy, N.C.

Filed Jun. 25, 1996, Ser. No. 670,398

Int. Cl.[6] D06B *21/02*

U.S. Cl. 68—27 **13 Claims**



1. A multi-stage fluid and chemical recovery system for a textile article commercial bleaching apparatus comprising: a plurality of bleaching tanks; a fluid and chemical supply system for preselectively providing a plurality of fluids and chemicals to the bleaching tanks; a recirculation system connected to the bleaching tanks for preselectively reclaiming the fluids and chemicals from the bleaching tanks after preselectively treating a quantity of textile articles and for preselectively recycling the reclaimed fluids and chemicals into successive pluralities of textile articles in the bleaching tanks; and a control system connected to the fluid supply system and the fluid recirculation system for controlling preselective introduction of new fluids and chemicals and reclaimed fluids and chemicals into the bleaching tanks, thereby forming fluid recovery cycles, the control system operable to cause the continuous and simultaneous operation of more than one recovery cycle.

5,666,828

CRYOGENIC HYBRID SYSTEM FOR PRODUCING LOW PURITY OXYGEN AND HIGH PURITY OXYGEN

Henry Edward Howard; Dante Patrick Bonaquist, both of Grand Island, and Paul Louis Just, Tonawanda, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 26, 1996, Ser. No. 672,463

Int. Cl.[6] F25J *3/04*

U.S. Cl. 62—644 **7 Claims**

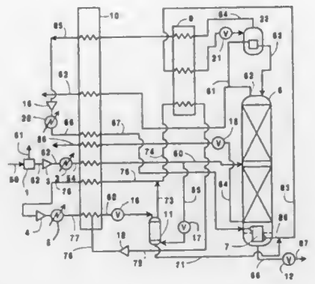
1. A method for producing low purity oxygen and high purity oxygen comprising:

(A) passing feed air through an adsorbent system comprising at least one adsorbent bed and adsorbing nitrogen from the feed air onto the adsorbent to produce first low purity oxygen;

(B) passing some of the first low purity oxygen into a column and separating the first low purity oxygen within the column by cryogenic rectification into second low purity oxygen and into high purity oxygen;

(C) recovering high purity oxygen from the lower portion of the column as product high purity oxygen;

(D) recovering at least some of the first low purity oxygen and the second low purity oxygen as product low purity oxygen; and



(E) returning some of the second low purity oxygen to the column.

5,666,829

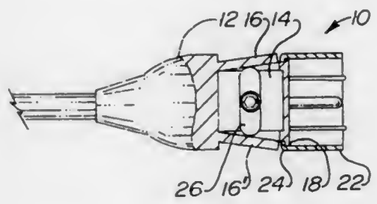
PLUG LOCK

Isaac Aikens, 2302 Overpass Rd., Campbellton. Fla. 32426

Filed Feb. 20, 1996, Ser. No. 603,469

Int. Cl.[6] E05B *65/00*

U.S. Cl. 70—57 **3 Claims**



1. A plug lock for preventing the prongs of a plug from being inserted into a receptacle comprising:

a base;

a shaft having a first flange on one end extending outwardly from the base;

a first cut portion, located along the length of the shaft and attached to the shaft at a first attachment point proximate the base, that pivots outwardly from the first attachment point;

a second cut portion, located along the length of the shaft opposite the first cut portion and attached to the shaft at a second attachment point, that pivots outwardly from the second attachment point;

a block cap, slidably connected to the shaft and moving between an unlocked position wherein the prongs are exposed to a locked position wherein the prongs are enshrouded by the block cap and, having a second flange on one end that engages the first flange to prevent the block cap from being expelled off of the shaft in the locked position;

a lock gear, having a first end and a second end such that when the lock gear is perpendicularly to the travel path of the block cap the first end engages and pushes the first cut portion outwardly and the second end engages and pushes the second cut portion outwardly thereby the first cut portion and the second cut portion each engage the second flange and retain the block cap in the locked position, rotatably disposed within the interior of the shaft; and

a drive means for engaging and controlling rotation of the lock gear.

5,666,830

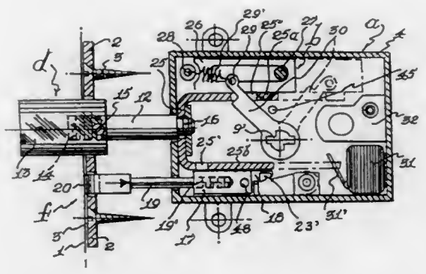
SECURITY LOCK, WITH FREE OPENING FROM INDOORS

Noel Litvin, GCG&Asoc.-San Martin 686-7º"72" , 1004 Buenos Aires, Argentina

Filed Jun. 23, 1994, Ser. No. 264,772

Int. Cl.[6] G05B *65/06*

U.S. Cl. 70—129 **16 Claims**



1. A security lock for a door comprising:

a housing attachable to a door,

a key cylinder operable by a key from outside the door to turn the key cylinder between locked and unlocked states,

a driving arm operatively coupled to said key cylinder for being turned therewith between said locked and unlocked states,

a main bolt operated by said driving arm for moving between locked and unlocked conditions of the door,

a turnable actuator accessible from an interior side of the door, said actuator being operatively connected to said main bolt via said driving arm to move the bolt between the locked and unlocked conditions of the door as the actuator is turned,

an armor plate covering said key cylinder outside said door, said armor plate having a key opening aligned with a further key opening provided in said key cylinder,

said bolt in said locked condition being in an outwardly projected state from said door and in said unlocked condition being in an inwardly retracted state in said door,

means for adjusting a length dimension of said bolt to vary its position in said projected and retracted states,

means connecting said bolt and said driving arm for operating the bolt by said driving arm comprising:

a U-shaped tail member connected to said bolt, said U-shaped tail member having upper and lower branches and a base connecting said branches, said bolt including a stem connected to said base,

said driving arm being engaged with said upper branch of said U-shaped tail member to displace said branch, and thereby said U-shaped tail member and the bolt connected thereto, upon turning of said key cylinder towards the unlocked state,

a first spring acting on said driving arm to bias said driving arm to said locked condition,

said lower branch of said U-shaped tail member having an opening therein,

a blocking arm pivotably connected to said housing and including a tooth engageable in said opening in said lower branch of said U-shaped tail member to lock said U-shaped tail member and said bolt in the unlocked condition of the door,

a second spring acting on said blocking arm to bias the blocking arm to engage said tooth in said opening,

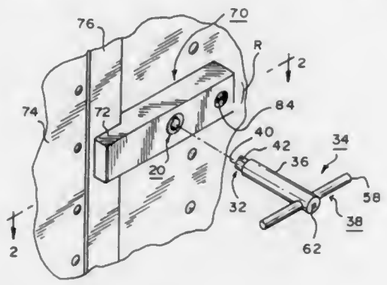
a latch displaceably mounted in said door and positioned for undergoing movement to a displaced location when said door is closed,

a plunger connected to said latch and movable therewith such that when the door is closed, said tooth is moved out of said opening in the lower branch of said U-shaped tail member by said plunger and said first spring returns the bolt to said locked condition, and

locking means accessible from said interior side of the door for preventing the bolt from being moved to its unlocked condi-

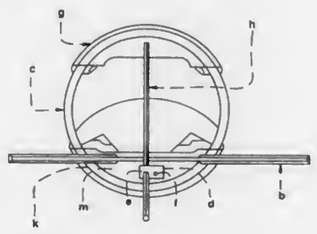
tion, thereby maintaining the door in locked condition, even when the key cylinder is attempted to be turned by the key.

5,666,831
ANTI-TAMPERING LOCKING SYSTEM
Elizabeth Doros, Lucas, Tex., assignor to MCI Corporation, Washington, D.C.
Filed May 26, 1995, Ser. No. 451,254
Int. Cl.[6] E05B *63/00*
U.S. Cl. 70—140 **21 Claims**



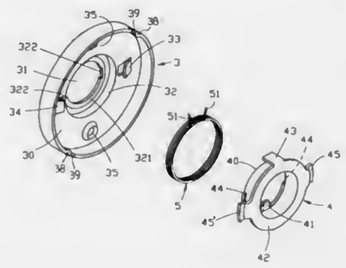
1. A locking system comprising:
a fastener having a socket at one end of a shaft, and means at the other end of the shaft for engaging a retaining means upon rotation of the fastener; and,
a key having a shank with a handle means at one end, and at the other end a bit receivable in said socket and adapted to engage a portion of said socket for rotating said fastener when said shank is rotated by said handle means, said bit comprising:
a bit body defining an axial channel and an axial slot communicating with said channel and having a width less than a maximum transverse dimension of said channel,
and a pin having a base axially receivable in said channel and a projecting part extending radially through and beyond said slot to form a tooth projecting laterally from the base of said pin,
the base of said pin having a transverse dimension substantially greater than the width of said slot and opposing edge portions of said slot providing opposing undercut lips which extend over opposite side portions of the base of said pin and thereby serve as stops for engaging the base of said pin to secure said pin against lateral movement away from said bit body during rotation of said fastener with said key.

5,666,832
GUARDS MAN
Sydney A. Cunningham, 1368 New York Ave., Brooklyn, N.Y. 11203
Filed May 12, 1995, Ser. No. 437,411
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 **5 Claims**



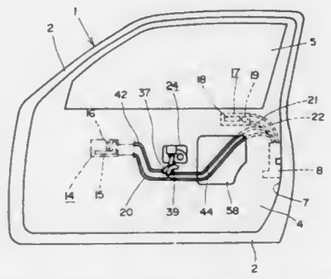
1. An automobile anti-theft device for use on an automobile steering wheel provided with at least two spaced apart spokes, comprising:
housing means for enveloping a portion of the steering wheel and the two spaced apart spokes therein;
said housing means being provided with an attached elongated housing bar extending outwardly from opposing sides thereof;
said housing means being disposed in a first plane, and said housing bar being disposed in a second plane parallel to said first plane, opposite ends of said housing bar extending outwardly in said second plane beyond said housing means so that when said housing means is secured on the steering wheel, said opposite ends of said housing bar extend outwardly beyond opposing sides of the steering wheel to obstruct any turning of the steering wheel;
a lock for securing said housing means to the steering wheel in a locked condition, said lock including bolt means for extending between the two spaced apart spokes in a perpendicular position thereto to prevent removal of said housing means from the steering wheel when said lock is in said locked condition;
sleeve means for enveloping an opposite portion of the steering wheel, said sleeve means being provided with an attached elongated sleeve bar extending transverse outwardly from a central portion of said sleeve means;
said lock including engagement means for engaging a free end portion of said sleeve bar to secure said sleeve means on the opposite portion of the steering wheel with said sleeve bar being secured in a transverse position relative to said housing bar; and
said sleeve bar being provided with disc means to prevent removal of an air bag mounted in the steering wheel, said disc means including a disc attached to said sleeve bar at a predetermined position in order to cover the air bag.

5,666,833
REINFORCING APPARATUS FOR A LEVER HANDLE OF A DOOR LOCK
Sheen-Youl Gao, Yun-Lin Hsien; Rong-Faa Wu, Chia-Yi Hsien; Ming-Shyang Chiao, Chia-Yi City; Cheng-Wen Lai, Chia-Yi Hsien; San-Yi Lin, Yun-Lin Hsien; Ching-Chuan Kuo, and Lan-Kun Don, both of Chia-Yi Hsien, all of Taiwan, assignors to Tong-Lung Metal Industry Co., Ltd., Taiwan
Continuation-in-part of Ser. No. 312,705, Sep. 27, 1994, abandoned. This application Dec. 21, 1994, Ser. No. 361,186
Int. Cl.[6] E05B *13/10*
U.S. Cl. 70—224 **15 Claims**



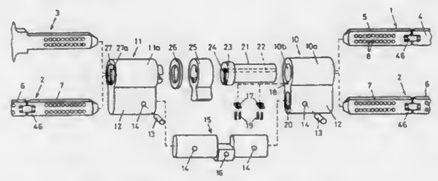
1. A lever handle of a door lock, which is reinforced to maintain a horizontal position comprising:
a driving shaft connected to said lever handle;
a housing provided around said driving shaft and having a wall transverse to said driving shaft, said wall having an outer side facing said lever handle and an inner side which is opposite to said outer side, said wall further having a tubular wall portion which projects axially from said wall and which defines a hole for passage of said driving shaft, said tubular wall portion having a distal end portion;
a rotary member mounted on said housing for rotating simultaneously with said driving shaft, said rotary member being received in said hole and surrounded by said tubular wall portion;
said rotary member having first means projecting radially and outwardly therefrom to bear against said wall so as to prevent an axial and outward releasing movement of said rotary member, said rotary member further having second means which projects radially and outwardly to engage said distal end portion for preventing an axial and inward releasing movement of said rotary member, said first and second means being one piece with said rotary member;
a coiled spring sleeved around said rotary member and having two ends in the form of legs;
said rotary member further having means for engaging one of said legs of said coiled spring, said engaging means projecting from and being one piece with said rotary member, said engaging means generating a stress on said coiled spring upon rotation of said rotary member; and
said housing further including a stopping means provided on said wall thereof so as to immobilize the other one of said legs of said coiled spring.

5,666,834
ANTI-THEFT MECHANISM FOR A VEHICLE DOOR LOCK DEVICE
Jiro Inoue, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 14, 1994, Ser. No. 358,559
Claims priority, application Japan, Dec. 24, 1993, 5-348186
Int. Cl.[6] B60R *25/00*
U.S. Cl. 70—237 **33 Claims**



1. A relay mechanism engaged to a latch mechanism on a vehicle door of a vehicle body, comprising:
a latch mechanism having a latch engaging with a striker of the vehicle body, an opening means for releasing the engagement of the latch and the striker, and a lock lever connected to a key cylinder of the vehicle door and changed between a locked position precluding operation of the opening means and an unlocked position permitting operation of the opening means; and
a relay mechanism having a sill knob lever connected to a sill knob of the vehicle door and changeable between a locked position and an unlocked position, an anti-theft member provided between the lock lever and the sill knob lever and arranged to be changeable between an anti-theft cancelled position in which the anti-theft member interconnects the lock lever and the sill knob lever and an anti-theft position in which the anti-theft member disconnects the lock lever and the sill knob lever, wherein an unlock operation of the sill knob lever is not transmitted to the lock lever,
an actuator for anti-theft operation for changing the anti-theft member between the anti-theft position and the anti-theft cancelled position;
said sill knob lever having a guide surface which is engageable by the anti-theft member and moves the sill knob lever to return to the locked position from the unlocked position by abutting and slidably engaging the anti-theft member when the anti-theft member is displaced from the anti-theft position to the anti-theft cancelled position.

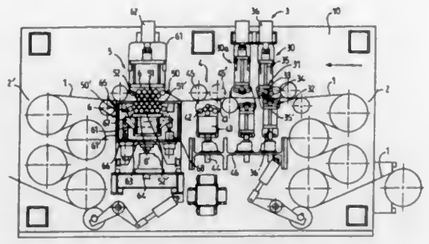
5,666,835
KEY AND INSTALLATION DOUBLE CYLINDER FOR A SECURITY LOCK
Ernst Keller, Untere Schwandenstrasse 22, CH-8805 Richterswil, Switzerland
Filed Feb. 15, 1995, Ser. No. 388,979
Claims priority, application Switzerland, Mar. 4, 1994, 654/94
Int. Cl.[6] E05B *19/02*
U.S. Cl. 70—397 **12 Claims**



1. A key and installation double cylinder for a security lock comprising:
a key having a bit;
a first cylinder half for positioning at an inner side of an access portal;
a second cylinder half for positioning at an outer side of said access portal;
a cylinder core and tumblers which are constructed as core pins and housing pins and can be brought into line by means of said key, said tumblers being located in said first cylinder half only, said second cylinder half being free of core pins and housing pins, said cylinder core including a rotor disposed in said second cylinder, said rotor being solid except for a keyway;
said key for being inserted into the keyway to release the cylinder core for rotation;
said key having, at its bit, a lengthening element by which the tumblers in an oppositely located cylinder half can be brought into line for free turning upon an insertion of said key from an outer side of the double cylinder, said key having a standard element which is disposed in said rotor upon insertion of said key from the outer side of the double cylinder, said lengthening element being connected by a swivel to said standard element.

5,666,836
PROCESS AND INSTALLATION FOR PLANISHING A THIN METAL STRIP
Marc Bonnefont, Saint-Chamond; Zalman Padwo; Jean-Baptiste Peyron, both of Saint-Etienne, and Paul Sabatier, Cellileu, all of France, assignors to CLECIM, Cergy-Pontoise, France
Filed Jan. 31, 1995, Ser. No. 381,680
Claims priority, application France, Feb. 1, 1994, 94 01090
Int. Cl.[6] B21D *1/05*
U.S. Cl. 72—7.2 **13 Claims**

1. Installation for planishing under traction a thin metal strip by processing said strip along a feed direction, said installation including a fraction-flexion planisher comprising at least one bending unit with two planishing sets offset in height and a multi-roller leveling assembly comprising upper and lower sets of rollers, each supporting a row of rollers parallel and offset longitudinally and in



height so as to determine, by imbrication of the rollers, an undulating path of the strip with reverse bend, means for adjusting the imbrication of the planishing sets, means for adjusting the relative heights of the two rows of rollers of the leveling assembly and two tension blocks placed in position respectively on the upside and on the downside of the installation on the path of the strip and associated with means for adjusting the through-speeds in said blocks so as to make it possible to apply tensile stress on the strip that can cause a prescribed elongation of said strip, wherein:

at least one of the two rows of rollers is supported by a crib mounted for swinging movement about a horizontal axis parallel to the axes of the rollers and associated with means for vertically displacing and swinging the crib in order to adjust the imbrications of the rollers of the two rows, by modifying the center-to-center distances at the input and at the output of the multi-roller assembly,

said means for adjusting the imbrications, respectively, of the planishing sets and multi-roller assembly, are associated, respectively, with positioning means controlled by a process control system comprising means for determining imbrications to impose on the different devices, taking account of all the parameters specific to the product and to the installation, and means for positioning the different devices according to the imbrication reference values generated by said determination means; and

wherein the process control system is associated with a mathematical model on which can be entered, via a console, the parameters specific to the machine and specific to the product to process as well as the prescribed elongation reference value, said mathematical model generating imbrication reference values for each of the positioning means, said positioning means each forming a regulation means on which is entered the real position of the considered device and which commands the imbrication adjustment means to adapt the measured position to the corresponding imbrication reference value.

5,666,837

ROLLING MILL AND METHOD OF USING THE SAME

Toshiyuki Kajiwara, Tokyo; Tokuji Sugiyama, Ibaraki-ken; Yoshio Takakura, Hitachi; Takao Sakanaka, Hitachi; Yasutsugu Yoshimura, Hitachi; Ken-ichi Yasuda, Katsuta, and Shinichi Kaga, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 224,017, Apr. 6, 1994, which is a continuation-in-part of Ser. No. 859,945, Mar. 30, 1992, abandoned. This application Nov. 1, 1994, Ser. No. 332,756

Claims priority, application Japan, Mar. 29, 1991, 3-066007; Feb. 6, 1992, 4-020956; Nov. 2, 1993, 5-274050

Int. Cl.[6] B21B *27/10*

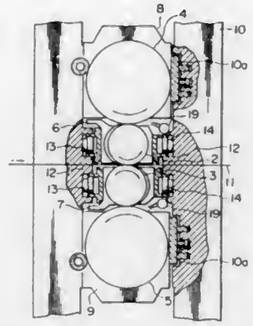
U.S. Cl. 72—14.4 **20 Claims**

1. A rolling mill comprising:

a pair of work rolls;

a pair of back-up rolls for backing up said work rolls, said back-up rolls being so arranged that their axes can be inclined within horizontal planes only to three or four specific angular positions;

means for allowing said work rolls to be inclined within horizontal planes with respect to said back-up rolls such that the



axes of said work rolls cross the axes of the associated back-up rolls and cross each other;

means for providing lubrication between each said work roll and the associated back-up roll so as to reduce axial thrust generated therebetween due to the crossing of the rolls; and

cross angle setting and controlling means for performing setting and control of the cross angle between said work rolls during rolling operation only when the roll peripheral speed or the rolling speed is above a predetermined minimum value.

5,666,838

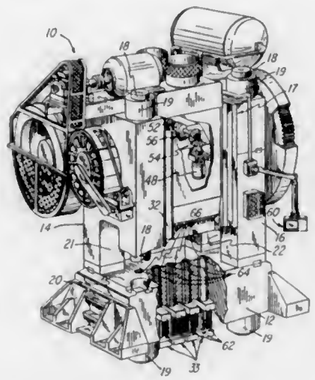
FORGING PRESS FOR USE WITH AUTOMATED MULTI-STATION TRANSPORT SYSTEM

George Michael Dudick, Northeast; Victor C. Chernauskas, Erie, and Allen J. Lawrence, Edinboro, all of Pa., assignors to EFCO, Incorporated, Erie, Pa.

Filed Jun. 5, 1995, Ser. No. 462,606

Int. Cl.[6] B21D *45/02*

U.S. Cl. 72—14.8 **19 Claims**



1. A forging press comprising:

a bed supporting a plurality of lower dies;

a ram supporting a plurality of upper dies;

a drive mechanism for driving said ram vertically toward and away from said bed;

a transfer system for moving workpieces through said press between said dies; and

a programmable controller connected to said transfer system for controlling said transfer system,

comprising a kickout system including kickout pins for pushing workpieces out of said dies, and said programmable controller is connected to said kickout system to control actuation of said kickout pins; and

wherein said programmable controller is programmable to adjust the stroke and speed of said kickout pins.

5,666,839

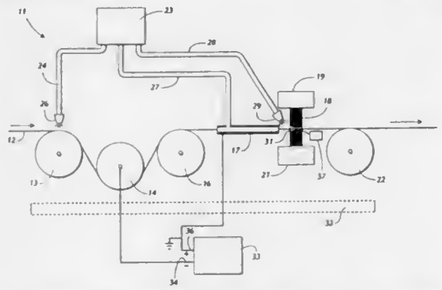
REDUCTION OF FRICTION DURING WIRE DRAWING

Yea-Yang Su, Marietta; Miroslav I. Marek, Atlanta, both of Ga., and Ming Chien Hung, Chungli, Taiwan, assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation of Ser. No. 199,850, Feb. 22, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 558,615

Int. Cl.[6] B21B *45/02*

U.S. Cl. 72—43 **4 Claims**



1. A method of reducing the friction and required pulling power in a metallic wire drawing apparatus wherein the wire is pulled through a reducing die and wherein the wire has an oxide film on the surface thereof, said method comprising the steps of:

applying a voltage of a first polarity directly to the wire;

deoxidizing the surface of the wire by passing the wire through an electrolytic bath contained in a metallic container having a voltage of opposite polarity to said first polarity applied thereto;

pulling the deoxidized material through the reducing die; and

determining the optimum voltage based upon the pulling force at the die.

5,666,840

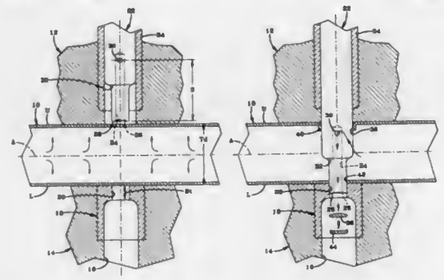
METHOD FOR PIERCING TWO ALIGNED HOLES IN A HYDROFORMED TUBE

Sanjay Mahasukhlal Shah, Rochester Hills; Michael Harry Lovell, Leonard, and Thomas James Malone, Shelby Township, Macomb County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 13, 1996, Ser. No. 664,058

Int. Cl.[6] B21D *28/28*

U.S. Cl. 72—55 **3 Claims**



1. A method for concurrently punching first and second aligned holes through opposed walls of a tube, comprising the steps of;

internally pressurizing said tube between a pair of dies,

providing said dies with a cross passage generally perpendicular to said tube through which a punch can be pushed,

providing one side of said cross passage with a female die button having an inner diameter equal to the second hole desired and having a predetermined axial thickness,

providing the end of a male punch having an outer diameter equal to said female die button inner edge with a central bore sufficiently large to leave a surrounding annular cutting edge that is sufficiently radially thin and sharp both to cleanly cut a slug of material equal in diameter to said cutting edge as well as allowing said slug to be deformed by the internal pressure within said tube up into said punch central bore and clear of said cutting edge,

forming a pressure feed orifice through the side of said punch and into said punch central bore that is axially spaced from said punch end by approximately said tube diameter plus a portion of said die button predetermined thickness,

clamping said tube between said dies and internally pressurizing it to said predetermined diameter,

pushing said punch through said cross passage and into said tube interior, thereby cutting a first slug equal in diameter to said cutting edge allowing said first slug to be deformed by said tube internal pressure into said punch cross bore sufficiently to cause said first slug to be wedged into said cross bore while leaving said punch cutting edge substantially clear,

pushing said punch end partially into said die button, thereby shearing a second slug equal in diameter to said die button which stacks closely against said first slug and is forced into said die button, and,

continuing to push said punch and stacked first and second slugs through said die button until said pressure feed orifice enters said tube interior, thereby allowing pressurized fluid from said tube interior to hit the back side of said first slug and thereby blow both slugs away out of and away from said punch end.

5,666,841

METHOD FOR WORK-HARDENING BY ROLLING A COMPONENT

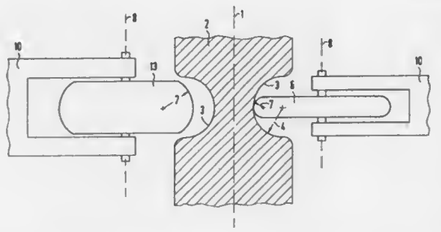
Horst Seeger; Dieter Thiele, both of Ruhr, and Hans Wagner, Moers, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 22, 1995, Ser. No. 532,167

Claims priority, application Germany, Mar. 22, 1993, 43 09 176.8

Int. Cl.[6] B21B *1/08*

U.S. Cl. 72—110 **13 Claims**



1. In a method for work-hardening a component to be loaded along a loading axis, which includes:

rolling in a notch extending approximately at right angles to the loading axis, work-hardening the notch by rolling along a plurality of mutually adjacent tracks along the loading axis being directed approximately at right angles to the loading axis, covering only a part of the notch with each track and generating compressive internal stresses in the component below the notch, the improvement which comprises:

work-hardening the adjacent tracks by rolling with the tracks overlapping one another, for generating the compressive internal stresses with axial components and tangential components

relative to the loading axis and with the axial components being substantially greater than the tangential components.

5,666,842

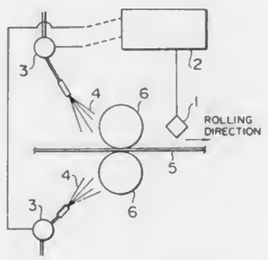
METHOD OF COLD ROLLING GRAIN-ORIENTED SILICON STEEL SHEET HAVING EXCELLENT AND UNIFORM MAGNETIC CHARACTERISTICS ALONG ROLLING DIRECTION OF COIL AND A ROLL COOLING CONTROLLER FOR COLD ROLLING MILL USING THE COLD ROLLING METHOD

Michiro Komatsubara; Yasuyuki Hayakawa; Humihiko Takeuchi, and Masataka Yamada, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Jan. 19, 1995, Ser. No. 375,558

Int. Cl.[6] B21B *27/06*

U.S. Cl. 72—200 **11 Claims**



6. A method of cold rolling grain-oriented silicon steel sheet having excellent and uniform magnetic characteristics along the rolling direction of a coil, said cold rolling being performed prior to a primary and a secondary recrystallization, comprising controlling the temperature of a steel sheet along said rolling direction of said coil immediately downstream of the outlet roll bites of one or more rolling paths by measuring a steel sheet temperature immediately downstream of the outlet roll bites of said rolling paths and controlling the flow rate of a coolant to one or more rolls of the rolls constituting a cold rolling mill based on said measured steel sheet temperature so that the steel sheet temperature immediately downstream of the outlet roll bites of the rolling paths is controlled to a range of about 7° C. or less, and controlling the temperature of one or more of said rolling paths between about 150° C. to about 350° C.

5,666,843

LIGHT SECTION ROLLING MILL PARTICULARLY WIRE ROLLING MILL

Alfred Müller, Krefeld, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Jul. 28, 1995, Ser. No. 508,917

Claims priority, application Germany, Jul. 29, 1994, 44 26 930.7

Int. Cl.[6] B21B *31/02*

U.S. Cl. 72—234 **3 Claims**

1. In a light section rolling mill including means for optimizing product quality and/or output of a finishing train, the improvement comprising the means of the finishing train comprising variably usable mill components in the form of standard two-stand roughing blocks, wherein each standard two-stand roughing block comprises a basic element in the form of a building block, and wherein a plurality of building blocks of identical construction are configured to be arranged in a sequence to form a multiple-stand unit with any selected numbers of stands of the finishing train.

5,666,844

FLOOR-TYPE CLUSTER MILL, PREFERABLY WITH DIRECT HYDRAULIC ADJUSTMENT

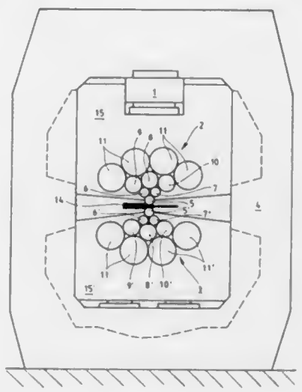
Hermann Bieber, Georgensgmuend, Germany, assignor to Josef Fröhling GmbH, Olpe/Biggesse, Germany

Filed Jan. 25, 1995, Ser. No. 377,374

Claims priority, application Germany, Jan. 27, 1994, 44 02 398.7

Int. Cl.[6] B21B *31/07*

U.S. Cl. 72—238 **6 Claims**



1. In a floor-type cluster mill for working a high strength material, said mill including a frame, an upper set of rolls rotatably mounted relative to said frame, one roll of said upper set of rolls being an upper working roll, a lower set of rolls rotatably mounted relative to said frame, one roll of said lower set of rolls being a lower working roll mounted in spaced relationship to said upper working roll, the space between said upper working roll and lower working roll being in a path for passage of said material, each roll of said upper set engaging another roll of said upper set, and each roll of said lower set engaging another roll of said lower set,

the improvement further comprising a first changeable subset of rolls removably mountable with respect to said frame, and a second changeable subset of rolls removably mountable with respect to said frame, at least one of said upper set and lower set comprising a permanent subset of rolls rotatably mounted with respect to said frame, and alternatively, either said first changeable subset of rolls or said second changeable subset of rolls,

said changeable subset having a first number of rolls including a working roll with a first diameter, said second changeable subset having a second number of rolls less than the first number of rolls, and including a working roll with a second diameter greater than said first diameter.

5,666,845

ROLLING MILL

John E. Thomas, Pittsburgh, Pa., assignor to Tippins Incorporated, Pittsburgh, Pa.

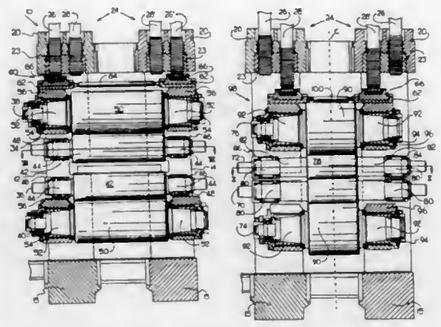
Filed Jan. 23, 1996, Ser. No. 589,913

Int. Cl.[6] B21B *31/07;31/24*

U.S. Cl. 72—238 **10 Claims**

1. A rolling mill, comprising:

a mill stand formed by two spaced apart housings, wherein said housings are configured to rotatably hold one of at least two sets of rolls having roll necks, wherein a length of the rolls of one of said at least two sets of rolls differs from the length of the rolls of the other of said at least two sets of rolls and wherein said at least two sets of rolls are interchangeable in said mill stand; and



a hold-down assembly coupled to said housings, wherein said hold-down assembly includes at least a first pair of hold-down elements and a second pair of hold-down elements,

wherein the distance between each hold-down element of said first pair of hold-down elements is less than the distance between said hold-down elements of said second pair of hold-down elements, and

wherein said first pair of hold-down elements is selectively adapted to substantially align with the roll necks of the rolls of one of said at least two sets of rolls and said second pair of hold-down elements is selectively adapted to substantially align with the roll necks of the rolls of the other of said at least two sets of rolls.

5,666,846

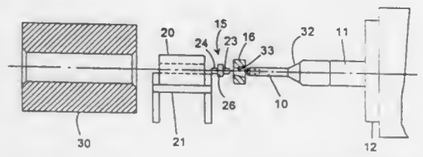
EXTRUSION APPARATUS FOR MAKING SEAMLESS TUBES FROM HOLLOW BILLETS

Chin-Fu Chen, Da-Li; Wen-Hwa Lu, Shoei, and Shan-Chang Chueh, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 275,175, Jul. 14, 1994, Pat. No. 5,533,375. This application Jul. 9, 1996, Ser. No. 679,361

Int. Cl.[6] B21C *23/00*

U.S. Cl. 72—254 **9 Claims**



1. An extrusion apparatus for manufacturing seamless tubes from a hollow billet, said hollow billet having an inner surface, and said apparatus comprising:

(a) a die, a billet container, and means for connecting said die to said billet container;

(b) an extrusion means which comprises a ram press, a piercer rod, and a ram stem, wherein said ram stem is connected to both said ram press and said piercer rod therebetween to effectuate simultaneous movement thereof, said extrusion means further comprises a moving means for moving said ram press;

(c) a ring-shaped piercer doughnut sleeved upon said piercer rod, said piercer doughnut has a greater overall dimension than said inner surface of said hollow billet;

(d) positioning means for placing said hollow billet between said extrusion means; and

(e) a de-oxide latch, which is a substantially circular latch disk with a rear side and a from side disposed in from of said piercer rod and being engageable therewith at said rear side of said latch disk, wherein said latch disk is diametrically larger than said inner surface of said hollow billet so as to cause an outer layer of said inner surface of said hollow billet to be sheared off when said de-oxide latch is pushed through said inner surface of said hollow billet by said piercer rod.

5,666,847

Patent Not Issued For This Number

5,666,848

DEVICE FOR CUTTING AND CRIMPING PIPES OR TUBES

Kevin John Burns, Cumbria, United Kingdom, assignor to British Nuclear Fuels plc, United Kingdom

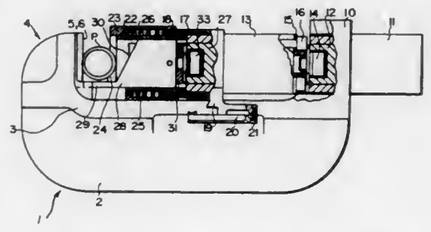
PCT No. PCT/GB94/02429, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO95/13160, PCT Pub. Date May 18, 1995

PCT Filed Nov. 4, 1994, Ser. No. 481,464

Claims priority, application United Kingdom, Nov. 10, 1993, 9323212

Int. Cl.[6] B21D *28/20*

U.S. Cl. 72—326 **9 Claims**



1. A device for crimping and cutting a tubular component, the device comprising:

a frame,

means defined by the frame to provide an anvil for locating said tubular component to be cut,

crimping means mounted on said frame, said crimping means having a passage formed therein and being movable towards said anvil to produce a compressed region in the tubular component, and

a cutting blade adapted for movement through said passage towards the anvil so as to cut through the tubular component at said compressed region wherein the crimping means is moved by operation of a first fluid-operated actuator and the cutting blade is moved by operation of a second fluid-operated actuator.

5,666,849

METHOD OF CORRECTING THE DIMENSION OF WORKPIECES

Yasushi Nakazawa; Masayoshi Ohashi, both of Utsunomiyashi; Yasushi Tashiro, Oyamashi; Tadashi Yasuoka, Oyamashi, and Akio Sugiura, Oyamashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Showa Aluminum Corporation, Osaka, both of Japan

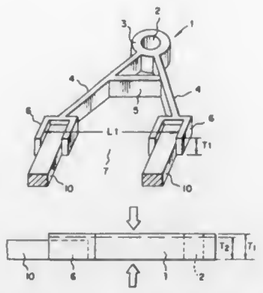
Filed Jun. 7, 1995, Ser. No. 476,372

Claims priority, application Japan, Feb. 2, 1995, 7-016206

Int. Cl.[6] B21J *5/06*

U.S. Cl. 72—377 **7 Claims**

1. A method of correcting a dimension of each of sliced workpieces of a desired thickness severed from a meal extrusion transversly thereof, the method comprising the step of:



restraining each workpiece at least in part at a regulated position such that the workpiece has the dimension temporarily corrected; and

thereafter pressing each restrained workpiece in a direction of a thickness thereof into a bent shape, wherein said pressing step includes the step of pressing said restrained workpiece to an extent such that a springback of said restrained workpiece, when said restrained workpiece is freed from restraint, is substantially decreased.

5,666,850

MOTOR-OPERATED PRESS MECHANISM

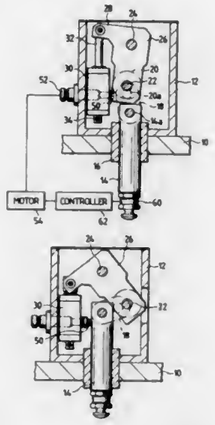
Kunikazu Yanagisawa, and Shin Ando, both of Nagano, Japan, assignors to APIC Yamada Corporation, Nagano, Japan

Filed Nov. 20, 1995, Ser. No. 560,687

Claims priority, application Japan, Nov. 29, 1994, 6-294753

Int. Cl.[6] B21J *9/18*

U.S. Cl. 72—450 **6 Claims**



1. A motor-operated press mechanism, comprising:

an electric motor;

a crank which is rotatably driven by said electric motor;

a press ram coupled to said crank so as to be reciprocated vertically;

a top plate;

a supporting shaft mounted on said top plate;

a rocking link rockingly supported by said supporting shaft;

a crank shaft supporting said crank and supported on one end portion of said rocking link; and

a drive section provided on another end portion of said rocking link;

wherein, in a press working operation, said drive section regulates the position of said rocking link so that said crank shaft, said supporting shaft and said press ram are substantially on a straight line, and in a resetting operation, said drive section swings said rocking link so that said press ram is moved to a retracting position above a position where said press ram is located in the press working operation.

5,666,851

FUEL SENDER COMPENSATION ARRANGEMENT

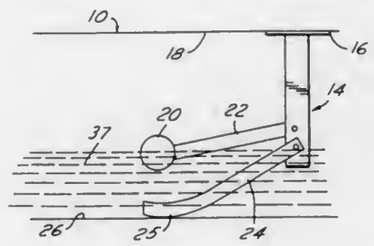
Donald R. Bacon, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 18, 1995, Ser. No. 516,764

Claims priority, application United Kingdom, Aug. 27, 1994, 9417331

Int. Cl.[6] G01F *23/32*

U.S. Cl. 73—317 **11 Claims**



1. A liquid level sender device for measuring a level of a liquid in a tank having a first wall and a bottom wall, comprising:

a bracket mounted to the first wall of the tank;

a first resistance track;

a float arm movably connected to said bracket and having a first contact cooperating with said first resistance track to generate a first variable resistance, said first variable resistance varying according to a relative position between said bracket and said float arm;

a float mounted on said float arm, said float being moveable in accordance with the level of the liquid in the tank and moving said float arm accordingly;

a second resistance track;

a compensation arm biased against the bottom wall and movably connected to said bracket, said compensation arm having a second contact cooperating with said second resistance track to generate a second variable resistance, said second variable resistance varying according to a relative position between said bracket and said compensation arm; and

combining means for combining the first variable resistance with the second variable resistance into an output resistance corresponding to the level of the liquid in the tank.

5,666,852

JOINTED WEIGHT FOR A VIBRATORY APPARATUS

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed Feb. 13, 1995, Ser. No. 387,349

Int. Cl.[6] F16H *33/14*

U.S. Cl. 74—87 **6 Claims**

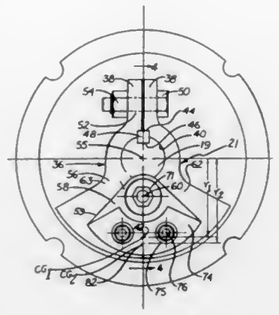
1. Apparatus for increasing the vibratory force generated by a rotating mass comprising:

a shaft having a longitudinal axis and mounted rotation and said axis;

means for rotating said shaft about said axis;

an eccentric weight mounted rigidly on the shaft and having a center of gravity to one side of said axis; and

a counterweight freely pivoted on the eccentric weight at a location on the same side of said axis as said center of gravity whereby at start up the counterweight reduces the eccentricity of the eccentric weight and at operating speeds the counterweight adds to the unbalance of the eccentric weight to increase the vibratory forces generated by the apparatus.



5,666,853

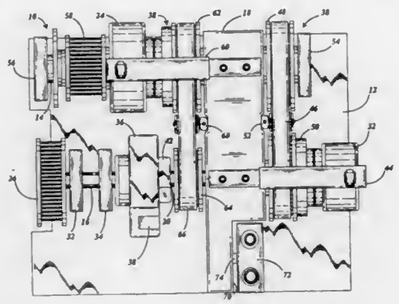
DUAL CONFIGURATION EPICYCLE DRIVE

Keenan W. Stahl, Glenwood City, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Sep. 11, 1995, Ser. No. 526,087

Int. Cl.[6] F16H *35/02*

U.S. Cl. 74—393 **19 Claims**



1. An epicycle drive apparatus for cut/seal heads on a product wrapping machine comprising:

(a) a subframe member adapted for attachment to a frame of the product wrapping machine;

(b) an input shaft journaled for rotation on said subframe member;

(c) an output shaft journaled for rotation on said subframe member in parallel spaced-apart relation to said input shaft;

(d) an epicycle rack pivotally mounted on said output shaft, said epicycle rack having a crankshaft journaled for rotation therein in parallel, spaced-apart relation relative to said output shaft;

(e) cam means including a cam follower and a cam, one of said cam follower and cam being connected to the input shaft and the other of said cam follower and cam being connected to said crankshaft for mutual engagement; and

(f) drive means exhibiting first and second speed ratios and including first and second clutch means for selectively coupling the crankshaft to the output shaft by way of said drive means.

5,666,854

GEAR WHEEL SUPPORT

Gerhard Buri, Markdorf-Riedheim, and Josef Bader, Friedrichshafen, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

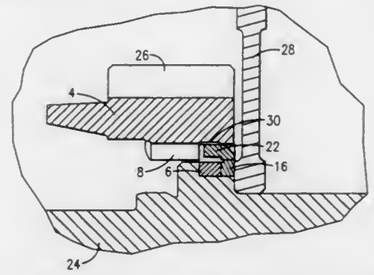
PCT No. PCT/EP94/01520, § 371 Date Nov. 7, 1995, § 102(e) Date Nov. 7, 1995, PCT Pub. No. WO94/27066, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 545,854

Claims priority, application Germany, May 14, 1993, 43 16 233.9

Int. Cl.[6] F16H *57/02*

U.S. Cl. 74—434 **7 Claims**



1. A gear support supporting a gear wheel having a plurality of internal teeth and a plurality of external teeth;

wherein said internal teeth (**8**) of said gear wheel (**4**) has at least one discontinuity provided therein;

said gear support comprises a first disc having a plurality of external teeth which correspond to said internal teeth (**8**) of said gear wheel (**4**), said first disc has at least one mating discontinuity formed in said plurality of external teeth which is located to coincide with said discontinuity of said internal teeth (**8**) of said gear wheel (**4**), said external teeth of said first disc are insertable through said internal teeth (**8**) of said gear wheel (**4**) into a groove (**30**) provided in said gear wheel (**4**), and said first disc is at least partially rotatable within said groove (**30**) whereby coincidence of said internal teeth (**8**) of said gear wheel (**4**) and said external teeth of said first disc and coincidence of said at least one discontinuity of said internal teeth (**8**) and said at least one mating discontinuity of said plurality of external teeth is obtainable; and

a locking mechanism of said gear support cooperates with said discontinuities, once said discontinuities coincide with one another, to lock the coincident position of said gear wheel (**4**) relative to said first disc.

5,666,855

VEHICLE SHIFTER WITH MECHANICALLY CONNECTABLE PIVOT

Scott M. Ebenstein, Rockford, Mich., and Lee N. Bowers, Fairborn, Ohio, assignors to Grand Haven Stamped Products, Grand Haven, Mich., and Honda Motors, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,522

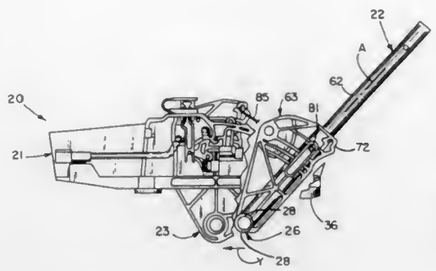
Int. Cl.[6] F16H *59/02*

U.S. Cl. 74—475 **38 Claims**

1. A shifter for a vehicle comprising:

a base for attachment to the vehicle, the base including a mount; and

a shift lever for shifting a vehicle transmission, the shift lever including a pivot member engageable with the mount for pivotally supporting the shift lever on the mount for movement about the axis of rotation between an assembly-permitting angular position and a plurality of gear positions, the pivot member being configured to slidably releasably engage the mount from a direction generally perpendicular to the axis when the shift lever is positioned in the assembly-permitting angular position and further being configured to



non-releasably pivotally engage the mount when the shift lever is in the gear shift positions, the mount including a continuous first bottom bearing surface and the pivot member including a mating second bottom bearing surface for stably engaging the first bottom bearing surface for long term wear.

5,666,856

Patent Not Issued For This Number

5,666,857

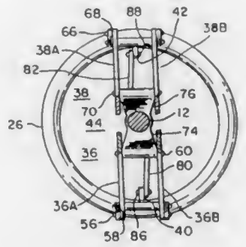
STEERING AND BRAKING CONTROL SYSTEM FOR A VEHICLE

Roy Sebazco, P.O. Box 2086, East Hampton, N.Y. 11937

Filed Oct. 18, 1995, Ser. No. 544,676

Int. Cl.[6] B60K *41/20;* **G05G** *11/00*

U.S. Cl. 74—481 **14 Claims**



1. A steering and braking control system for a vehicle with a steering column having a longitudinally extending axis confining a steering shaft that is connected to the steering mechanism of the vehicle, said vehicle also having a brake pedal connected to a braking mechanism of the vehicle, said control system comprising:

(a) a steering wheel;

(b) a pivotal mechanism having first and second ends with an intermediate portion therebetween, each end having connecting means, with the first end being connected to said steering wheel, means for connecting said intermediate portion to said steering column, said pivotal mechanism being arranged so as to draw said second end in the opposite direction of said first end when a substantially axial force is exerted on said steering wheel;

(c) a sleeve having a bore dimensioned to allow the passage of the steering shaft, said sleeve having first and second ends with the first end thereof connected to the connecting means of said second end of said pivotal mechanism; and

(d) a force translating mechanism having first and second ends each with means for connecting, said first end thereof having its connecting means connected to said second end of said sleeve, and said second end of said force translating mechanism having its connecting means connected to said brake pedal.

5,666,858

TWIST GRIP FOR ACTUATING GEARS OF A PEDAL CYCLE

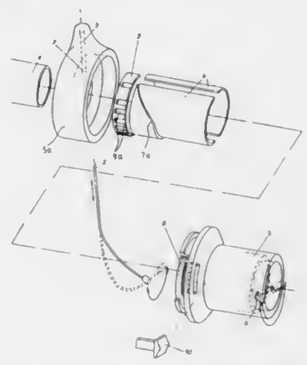
Ernst Von Der Osten-Sacken, Roetgen, and Arne Heymer, Erftstadt, both of Germany, assignors to Hans Helmig GmbH, Overath, Germany

Filed Jun. 2, 1995, Ser. No. 460,726

Claims priority, application Germany, Jun. 10, 1994, 44 20 273.3

Int. Cl.[6] G05G *11/00;* **F16C** *1/10*

U.S. Cl. 74—489 **7 Claims**



1. A selector device mounted on the handle bar (**1**) of a pedal cycle which actuates gears of the pedal cycle to select a predetermined number of speed ratios by converting rotary movement to longitudinal movement of a tension member (**2**) against a resilient biasing force, said device comprising:

a rotatable grip (**3**) adapted for rotational mounting on said handle bar (**1**) for rotary movement through a predetermined operating angle to select said predetermined number of speed ratios,

a longitudinal guide (**5**) rigidly securable to said handle bar (**1**) in axially abutting relation to said rotatable grip (**3**) and presenting an outlet opening (**7**) in axially confronting relation to said rotatable grip (**3**),

a sleeve (**4**) coaxially positioned within said rotatable grip (**3**) and having an outer cylindrical surface,

said tension member (**2**) extending through said longitudinal guide (**5**) and said outlet opening (**7**) and along said outer cylindrical surface of said sleeve (**4**) to an attachment point (**6**) at a point on said rotatable grip (**3**) remote from said outlet opening (**7**),

upon rotary actuation of said rotatable grip (**3**), said attachment point (**6**) of said tension member (**2**) to said rotatable grip (**3**) moves in a circular path coaxial with the rotational axis of said rotatable grip (**3**) thereby causing said tension member (**2**), between said outlet opening (**7**) of said longitudinal guide (**5**) and said attachment point (**6**), to be wrapped about said sleeve (**4**) and

a detent including

a detent pawl (**8**),

a detent segment (**9**) having a detent notch for each of said predetermined number of speed ratios,

a leaf spring biasing said detent segment (**9**) and

a movable stop (**10**) abutting an intermediate part of said leaf spring for varying the biasing effect of said leaf spring on said detent segment (**9**), said detent being operatively associated with said longitudinal guide (**5**) and said rotatable grip (**3**) whereby said detent segment (**9**) releasably retains said rotatable grip (**3**) in each of its rotated positions at which one of said predetermined number of speed ratios is selected.

5,666,859

LATCHING SHIFTER FOR A BICYCLE TRANSMISSION

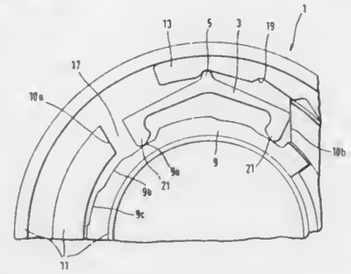
Markus Arbeiter, Würzburg, and Klaus Neumann, Niederwerrn, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 1, 1995, Ser. No. 566,284

Claims priority, application Germany, Dec. 2, 1994, 44 42 953.3; Apr. 29, 1995, 295 07 220.2

Int. Cl.[6] B62M *25/04*

U.S. Cl. 74—489 **11 Claims**



1. A bicycle gear shifting system comprising:

a rotatable shift actuator for operating gears of the bicycle;

said rotatable shift actuator comprising:

means for mounting said rotatable shift actuator on a bicycle handlebar generally coaxially with the handlebar;

a housing;

a latching spring;

said latching spring comprising at least one latching lug;

a latching element for receiving said at least one latching lug;

said latching element comprising a plurality of detent notches;

said latching element and said latching spring being rotatable with respect to each other;

said at least one latching lug being disposed toward said detent notches;

a slide;

said slide being disposed to make contact with said latching spring;

said slide comprising means for biasing said at least one latching lug of said latching spring against said detent notches;

said means for biasing comprising means for adjusting the bias of said at least one latching lug against said detent notches;

said adjusting means comprising a plurality of bias levels, disposed on said slide;

each of said plurality of bias levels being disposed to generate a different bias of said at least one latching lug against said detent notches;

said plurality of bias levels comprising a first biasing surface and a second biasing surface;

said latching spring comprising a first projection and a second projection;

said first and second projections being disposed opposite said latching lug;

said first projection being disposed against said first biasing surface;

said second projection being disposed against said second biasing surface;

a first stop surface;

a second stop surface;

said first and second stop surfaces being disposed on said housing;

a recess disposed between said first and second stop surfaces; and

said latching spring being disposed within said recess.

5,666,860

GAS PEDAL ARRANGEMENT FOR A MOTOR VEHICLE

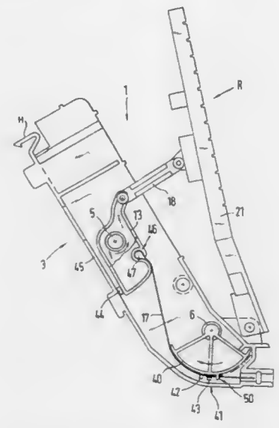
Hans-Uwe Baumann, Stuttgart, and Carsten-Joerg Mertens, Aidlingen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Continuation-in-part of Ser. No. 360,367, Dec. 21, 1994, Pat. No. 5,497,677. This application Jun. 1, 1995, Ser. No. 457,123

Claims priority, application Germany, Dec. 21, 1993, 43 43 681.1; Oct. 21, 1994, 44 37 659.6

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—513 **12 Claims**



2. Gas pedal arrangement for a motor vehicle comprising:

a gas pull,

a pedal plate swivellably disposed on a pedal holding device in the form of a housing, and

an adjusting device connected with the pedal plate and the gas pull,

wherein the pedal holding device comprises an oblong housing which is formed of two half shells having bearing points molded on for components of the adjusting device,

wherein the gas pull is connected in a suspended manner with a deflecting lever of the adjusting device with the gas pull being guided in a base of the pedal plate on a swivellable deflecting pulley having a circular-arc shaped segment,

wherein the deflecting lever has a receiving device for suspending a pin fastened on an end of the gas pull, and

wherein the gas pull rests on a curved guiding surface of the deflecting lever when the pedal plate is swivelled from an inoperative position into an operative position.

5,666,861

ARMREST ADJUSTING MECHANISM

David M. Fee, Groveland; Stephen A. Haytcher, Peoria, and John P. Mackoway, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 7, 1995, Ser. No. 524,594

Int. Cl.[6] B60K *20/02;* **B60N** *2/46*

U.S. Cl. 74—523 **4 Claims**

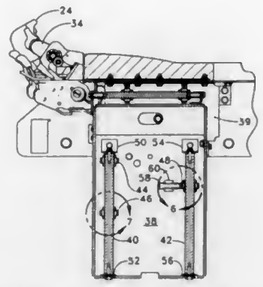
1. An apparatus for use in translating motion between a pair of members, comprising:

a base member;

a first working member adapted for translation relative to said base member;

a first linear member attached to said first working member;

a second linear member attached to said first working member, said second linear member being disposed generally parallel to said first linear member;



a first bearing member attached to said base member, said first bearing member slidingly receiving said first linear member therethrough;

a second bearing member attached to said base member, said second bearing member slidingly receiving said first linear member therethrough;

a third bearing member attached to said base member;

a third linear member slidingly received through said third bearing member; and

a fourth bearing member attached to said third linear member, said fourth bearing member slidingly receiving said second linear member therethrough.

5,666,862

TORSIONAL VIBRATION DAMPER

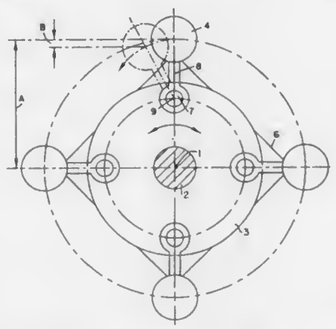
Hans-Gerd Eckel, Laudenbach; Anja Kunkel, Siedelsbrunn, and Michael Müller, Darmstadt, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Nov. 18, 1994, Ser. No. 341,820

Claims priority, application Germany, Nov. 26, 1993, 43 40 293.3

Int. Cl.[6] F16F *15/136*

U.S. Cl. 74—574 **26 Claims**



26. A torsional vibration damper for a shaft rotating about an axis, comprising:

a hub configured to be joined to the shaft for movement therewith about a longitudinally extending central axis;

a plurality of inertial masses;

at least one tension element fixedly connected to each said inertial mass, each said tension element having a pivotable connection to the hub about a pivot axis, wherein each said tension element is capable of supporting a tensile load, such that each said tension element provides a pivotable connection of the inertial mass about the pivot axis, the pivot axes of the tension elements extending parallel to the hub axis and being located between their respective inertial masses and the hub axis; and

at least one spring element in association with each said inertial mass, each said spring element being configured to maintain the inertial mass in a neutral position when the hub and the inertial masses are at rest, and providing a force circumferentially directed against the tension element to urge the inertial mass towards its neutral position when the inertial mass is displaced from its neutral position;

wherein the distance between the hub axis and the inertial masses varies in dependence upon the centripetal forces that arise when the torsional vibration damper rotates which are transferred to the inertial masses by way of the tension elements, acting in conjunction with the restorative force acting on the inertial masses that is supplied by the spring elements.

5,666,863

HYDRAULIC PRESSURE CONTROL SYSTEM FOR HYDRAULICALLY OPERATED VEHICLE TRANSMISSION

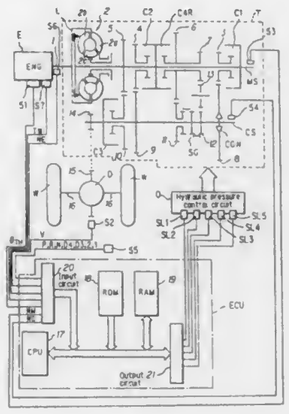
Satoru Sunada, and Masamitsu Fukuchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,382

Claims priority, application Japan, Dec. 28, 1994, 6-339952

Int. Cl.[6] F16H *61/06*

U.S. Cl. 74—731.1 **5 Claims**



1. A system for controlling hydraulic pressure for use in a hydraulically operated vehicle transmission, said system comprising:

a plurality of frictional engaging elements capable of being installed in the vehicle transmission;

a hydraulic pressure supplying circuit for discharging hydraulic pressure from one of said plurality of frictional engaging elements and for supplying hydraulic pressure to another one of said plurality of frictional engaging elements to bring said one and another one of said plurality of frictional engaging elements into operation such that gear shifting is effected in the vehicle transmission;

first shaft rotational speed detecting means for detecting a first rotational speed of a shaft input to said vehicle transmission which changes at a time of said gear shifting;

hydraulic pressure control means for controlling hydraulic pressure such that the rotational speed of the shaft changes following a desired rotational speed change rate; and

engagement state detecting means for detecting an engagement state of at least either of said one and another one of said plurality of frictional engaging elements.

wherein said engagement state detecting means includes:

second shaft rotational speed detecting means for detecting a second rotational speed of a shaft output from said vehicle transmission,

slip rate calculating means for calculating a slip rate of said one of said plurality of frictional engaging elements based on the detected first and second rotational speeds, and

comparing means for comparing the slip rate with a first reference value to define a first period in which said desired rotational speed change rate is set to be a first predetermined value when the slip rate does not exceed the first reference value, and a second period in which said desired rotational speed change rate is set to be a second predetermined value when the slip rate exceeds the first reference value.

5,666,864

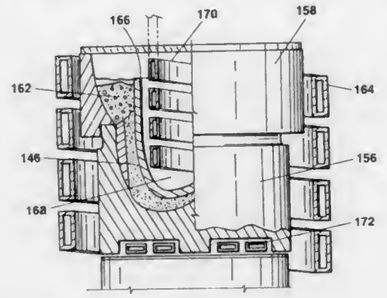
EARTH BORING DRILL BIT WITH SHELL SUPPORTING AN EXTERNAL DRILLING SURFACE

Gordon A. Tibbitts, 1378 Lakewood Cir., Salt Lake City, Utah 84117

Division of Ser. No. 173,679, Dec. 22, 1993, Pat. No. 5,441,121. This application Mar. 31, 1995, Ser. No. 414,624

Int. Cl.[6] B21K *5/02*; **E21B** *10/52*

U.S. Cl. 76—108.2 **55 Claims**



1. A method for making an earth boring drill bit comprising the:

forming an outer shell of said bit, said shell having an external surface adapted to carry cutting elements and an internal surface adapted for connection to a bit shank;

heating the outer shell in conjunction with mounting cutting elements on said external surface;

engaging the bit shank with the internal surface of said outer shell; and

cooling the shell thereby causing the same to contract into further engagement with said shank.

5,666,865

FUSE PULLER

Hirokazu Ito, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 24, 1995, Ser. No. 547,192

Claims priority, application Japan, Nov. 2, 1994, 6-269764; Nov. 2, 1994, 6-269767

Int. Cl.[6] B25B *27/14*

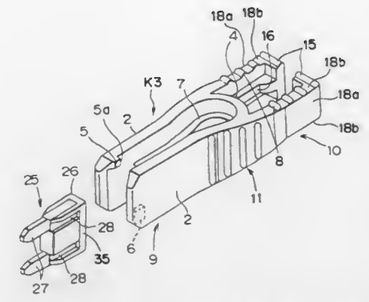
U.S. Cl. 81—3.8 **3 Claims**

1. A fuse puller for pulling a fuse out of a fuse mounting portion, which is integrally molded by resin and comprises:

a pair of elongated platelike arms;

an elastic coupling beam for coupling longitudinally intermediate portions of the arms with each other;

only a single claw which projects from one side of one end of an inner face of one of the arms so as to be brought into engagement with the fuse; and



only a single claw which projects from the other side of one end of an inner face of the other of the arms so as to be brought into engagement with the fuse such that the said only claw of said one side and said only claw of said other side are disposed diagonally to each other.

5,666,866

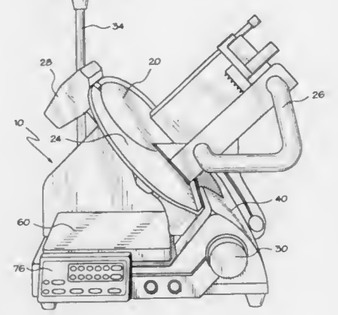
FOOD PRODUCT SLICING MACHINE INCORPORATING A SCALE

Joseph Chun-Chi Huang, Dayton; James Alan Shirk, Union, and James Franz Yoder, West Chester, all of Ohio, assignors to Premark FEG L.L.C., Wilmington, Del.

Filed Apr. 20, 1995, Ser. No. 425,919

Int. Cl.[6] B26D *7/30*

U.S. Cl. 83—77 **3 Claims**



1. A food product slicer comprising:

a housing having a top side, a bottom side, and a bilevel profile, the bilevel profile including a raised portion having a first aperture therein and a horizontal planar portion having a perimeter and a second aperture therein;

a slicing blade mounted for rotation on a drive shaft which extends through the first aperture;

a first compartment on the bottom side of the housing, the first compartment being defined by a first wall member surrounding the second aperture;

a scale including a platter supported by a post which extends through the second aperture, the platter having a center and a plurality of corners, and the post being centered with respect to the platter such that the scale measures the same weight for a food product portion deposited on any corner of the platter;

a subplatter having a top side, a bottom side and a center, wherein the platter is mounted on the top side of the subplatter and wherein the post is mounted to the center of the subplatter

a load cell mounted in the first compartment, the post engaged by the load cell;

an electronic control for operating the scale and slicer mounted on the bottom side of the housing outside of the first compartment;

a base mounted to the bottom side of the housing;

a gasket mounted on the base and positioned between the base and the first wall member, which seals the first wall member to the base and seals the first compartment from the electronic control such that food particles entering the first compartment through the second aperture are prevented from contacting the electronic control;

a second wall member extending between the housing and the base to define a second compartment, the second compartment surrounding the first compartment and housing the electronic control; and

a travel stop associated with the load cell and mounted in the first compartment to prevent damage to the load cell caused by excessive force on the scale;

wherein the base includes an aperture therein and the gasket surrounds the aperture in the base such that food particles entering the first compartment through the second aperture can exit the first compartment though the aperture in the base;

wherein the platter is located below the slicing blade such that food product sliced by the slicing blade is deposited on the platter; and

wherein the housing includes,

a lip at the perimeter of the horizontal portion having a cross sectional height, and

a raised annular ring, separately attached to the housing, having a cross sectional height greater than the cross sectional height of the lip, and encircling the second aperture to inhibit the flow of food product debris through the second aperture and into the first compartment.

5,666,867

Patent Not Issued For This Number

5,666,868

MACHINE FOR THE TREATMENT AND PROCESSING OF FOODS

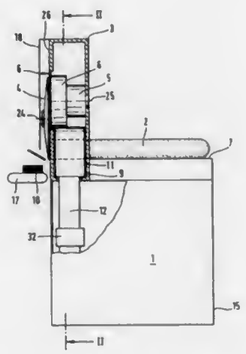
Gunter Diete, Obergünzburg, and Christoph Ullmann, Kempten, both of Germany, assignors to Dixie-Union Verpackungen GmbH, Kempten, Germany

Filed Aug. 30, 1994, Ser. No. 297,774

Claims priority, application Germany, Sep. 30, 1993, 9314838 U

Int. Cl.[6] B26D *7/08*

U.S. Cl. 83—168 **17 Claims**



1. A machine for treatment or processing of foodstuffs, the machine having a cutter blade, drive means for driving the cutter blade, a casing which encloses the drive means and a heater means associated with the casing for heating air contained within said casing to an elevated temperature in a range of 59° C. to 67° C. for attacking germ colonies within the casing without damaging the drive means.

5,666,869

TIP PAPER CUTTING APPARATUS FOR A FILTER CIGARETTE MANUFACTURING SYSTEM

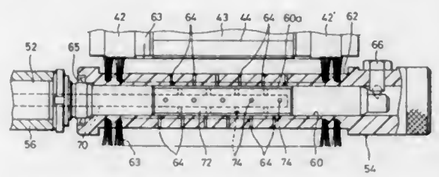
Hiroshi Sakamoto, and Takayuki Irikura, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 410,722

Claims priority, application Japan, Mar. 31, 1994, 6-063708

Int. Cl.[6] B26D *7/08*

U.S. Cl. 83—168 **17 Claims**



1. A tip paper cutting apparatus for a filter cigarette manufacturing system, in which tip paper fed in between a receiving drum and a bladed drum is cut into pieces by cutting blades arranged on an outer peripheral surface of the bladed drum, the tip paper cutting apparatus comprising brush roller means which include:

a brush roller rotatably arranged close to the bladed drum and having an outer peripheral surface and a longitudinal axis, the brush roller having a first axial hole formed therein extending along the longitudinal axis of the brush roller, a plurality of discharge holes being formed in the brush roller, each of the discharge holes having a discharge port opening in the outer peripheral surface of the brush roller, the discharge holes each having a discharge axis which is nonparallel to the longitudinal axis of the brush roller;

a brush mounted on the outer peripheral surface of the brush roller;

a roller shaft fitted into the first axial hole of the brush roller, the roller shaft having a longitudinal axis and having a second axial hole formed therein extending along the longitudinal axis of the roller shaft, the roller shaft having at least one communication hole having a discharge axis extending in a radial direction of the roller shaft;

the discharge axis of each of the discharge holes being non-aligned and offset from the discharge axis of the at least one communication hole;

an annular space formed between the brush roller and the roller shaft, the at least one communication hole and the discharge holes being in communication with the annular space, the annular space extending along the longitudinal axes of the brush roller; and

a passage formed in the brush roller means for receiving a paste repellent liquid, the passage including the plurality of discharge ports and discharge holes in the brush roller, the annular space, the at least one communication hole of the roller shaft and the second axial hole whereby paste repellent liquid can flow through the second axial hole of the roller shaft, through the at least one communication hole, through the annular space, through the plurality of discharge holes and then out of the discharge ports to the brush.

5,666,870

PRESS DIE SET AND PRESS MACHINE FOR DRIVING IT

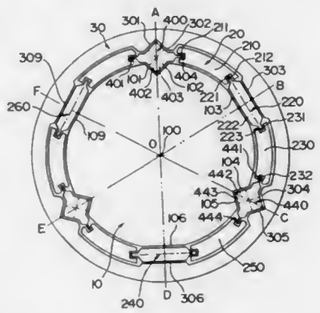
Nobuo Enomoto; Kazuo Yamada; Mitsuji Hosoda; Toshio Wada; Kazuyoshi Umeya, and Koki Okanda, all of Yamanashi-ken, Japan, assignors to Enomoto Co., Ltd., Yamanashi-ken, Japan

Filed Mar. 18, 1994, Ser. No. 214,617

Claims priority, application Japan, Mar. 26, 1993, 5-092373; Oct. 28, 1993, 5-062774 U; Nov. 15, 1993, 5-308629; Nov. 18, 1993, 5-066429 U

Int. Cl.[6] B26D *5/00*

U.S. Cl. 83—824 **7 Claims**



1. A press die set having a top side, a bottom side, a thick plate punch located at the top side, a thick plate die holder located at the bottom side, a hollow cylindrical guide bush mounted on the punch holder, a columnar guide post vertically mounted on the die holder, a cylindrical retainer having an outer surface which abuts an inner surface of the guide bush, the guide post being movable within a hollow interior of the retainer and within a hollow interior of the guide bush so that the guide bush, retainer and guide post guide smooth vertical movement of the punch holder parallel to the die holder, the press die set comprising first right angle grooves formed on an outer surface of the guide post parallel to a longitudinal axis of the guide post, the first right angle grooves including two planes which are at 90 degrees to one another, first planes formed on an outer surface of the guide post parallel to the longitudinal axis of the guide post and perpendicular to a radius of the guide post, second right angle grooves formed on the inner surface of the guide bush parallel to a longitudinal axis of the guide bush, the second right angle grooves including first and second planes which are at 90 degrees to one another, and second planes formed on the inner surface of the guide bush parallel to the longitudinal axis of the guide bush and perpendicular to a radius of the guide bush, wherein when the guide post moves within the hollow portion of the guide bush, the first right angle grooves are aligned with the second right angle grooves, the first planes are aligned with the second planes, cross roller bearings are positioned between the first right angle grooves and the second right angle grooves, and plain roller bearings are positioned between the first planes and the second planes.

5,666,871

SAW CHAIN CUTTER WITH BENT OVER DEPTH GAUGE

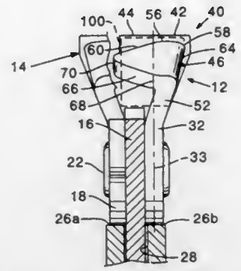
James O. Burrows, Milwaukie; Randall D. Jensen, Oregon Ctiy, and Kent L. Huntington, Molalla, all of Oreg., assignors to Blount, Inc., Montgomery, Ala.

Filed Nov. 14, 1994, Ser. No. 338,344

Int. Cl.[6] B27B *33/14*

U.S. Cl. 83—834 **25 Claims**

1. A cutting chain comprising a plurality of pivotally interconnnected links including cutter links, with a cutter link in said chain in an upright position comprising,



a body portion disposed in a substantially upright plane and having forward and rearward regions,

a cutter portion on the rearward region of the body portion having a forwardly facing cutting edge at a selected elevation above the body portion, and

a depth gauge portion on the forward region of the body portion, said depth gauge portion comprising a plate portion bent over at substantially a right angle relative to the plane of the body portion and having an upper surface inclined substantially continuously downwardly from a rearwardly facing rear edge of the plate portion which is disposed at an elevation adjacent but below the elevation of the cutting edge to a forwardly facing front edge of the plate portion which is disposed at a lower elevation, said depth gauge portion being substantially pentagonal with one side of said pentagonal configuration forming a front edge for the depth gauge, and said rear edge having a central portion nearest said cutting edge and a pair of side portions opposite said front edge which extend forwardly from said central portion and diverge from each other on extending forwardly.

5,666,872

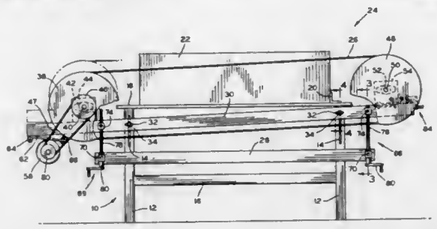
ROTARY FOAM CUTTER FOR TAPERING INSULATION

Kevin McDonald, 401 Fort St.; Douglas A. McDonald, 1729 Delaware Ct., both of Defiance, Ohio 43512, and Jerold C. Gardner, 4415 Sheratin Rd., Toledo, Ohio 43615-2269

Filed May 9, 1995, Ser. No. 437,950

Int. Cl.[6] B26F *3/12*

U.S. Cl. 83—871 **13 Claims**



1. A tapering apparatus mounted on a horizontal support platform for tapering sheets of foam insulation as the sheets are driven across said platform, said tapering apparatus comprising:

(a) a pair of rotatable sheaves positioned adjacent to opposing side edges of a horizontal support platform having an upper surface and a lower surface;

(b) a conductive wire forming an endless belt rotatably positioned on said sheaves and around the support platform such that a segment of said conductive wire extends in spaced-apart relationship across the upper surface and a second segment of said conductive wire extends in spaced-apart relationship across the lower surface of the horizontal support platform;

(c) adjustment means for positioning one of said pair of sheaves such that a slope of the conductive wire in relation to the upper surface of the horizontal suppo·t platform is adjustable;

(d) an adjustable power supply connected to said pair of rotatable sheaves for supplying a current through said wire, said adjustable power supply including a current control means for varying the current through said wire to uniformly heat said wire to a temperature above the melting temperature of the foam insulation; and

(e) an adjustable speed motor rotatably connected to one of said sheaves for rotating said wire about said sheaves, said adjustable speed motor including a speed control means for controlling the speed of the wire as it rotates about said pair of sheaves, whereby a sheet of insulation positioned on the upper surface of the horizontal platform is tapered as the heated wire rotatably engages the sheet of insulation being forced across the heated wire.

5,666,873

SWITCH ACTUATABLE OPERATING SYSTEM FOR FOLDING TOP HYDRAULIC DRIVE ELEMENTS

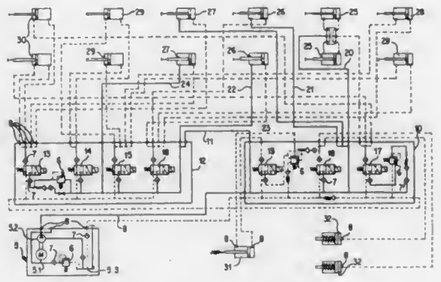
Martin Lindmayer, Sulz; Juergen Schrader, Weil im Schoenbuch, and Frank van de Poel, Boeblingen, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Mar. 8, 1995, Ser. No. 400,889

Claims priority, application Germany, Mar. 8, 1994, 44 07 739.4

Int. Cl.[6] F15B *11/00*

U.S. Cl. 91—511 **10 Claims**



1. An operating system for hydraulic drive elements of a convertible folding top system actuatable by switching devices, comprising drive elements feedable by a pressure source from a pressure medium reservoir via an inlet and connectable to a return to the pressure medium reservoir, switchable directional control valves for distributing pressure generated by the pressure source to the drive elements for moving various parts of the convertible folding top system and having an actuation of the directional control valves corresponding to a given sequence of movements thereof, limit switches configured for actuating the directional control valves, and being positively operated by driven parts, and a plurality of driven parts comprising closures adapted to be locked and unlocked by double-acting working cylinders and mechanically arrested in a release position thereof against locking by an associated working cylinder, wherein the pressure source has a feed line arranged to be constantly flow-connected via inlet lines to a rod side of the working cylinders interacting with the closures, as a result of which a pressurization of the pressure medium in the feed line results in an impingement of the working cylinders in a locking advancement direction thereof, and the working cylinders are configured to be differentially actuatable by assigned ones of the directional control valves so as to switch a drive element of another driven part.

5,666,874

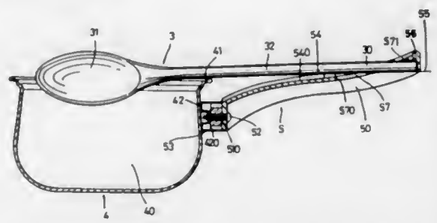
SAUCEPAN PERMITTING PLACING OF A STIRRING SPOON IN A STABLE MANNER THEREON

Chung-Che Wang, No. 235-100, Sec. 4, Chang-Ho St., Tainan City, Taiwan

Filed Dec. 13, 1996, Ser. No. 763,370

Int. Cl.[6] A47J *27/00;27/08;36/00;* **B01F** *7/00*

U.S. Cl. 99—348 **3 Claims**



1. A saucepan which permits placing of a stirring spoon in a stable manner thereon, the stirring spoon including an elongated straight handle and a concave stirring portion integrally formed with the handle, the saucepan including a pan with an annular top edge, and an elongated grip connected securely to the pan, the grip having an end portion with an opening formed therethrough for hanging of the saucepan on a hook when not in use, wherein the grip further has a peak portion between the pan and the opening, the peak portion of the grip and the top edge of the pan being generally located in the same horizontal plane so as to support the spoon on the peak portion of the grip and the top edge of the pan, in such a manner that the handle of the spoon can be inserted into the opening in the grip and that the handle of the spoon can be generally located in a horizontal position when the saucepan is in use.

5,666,875

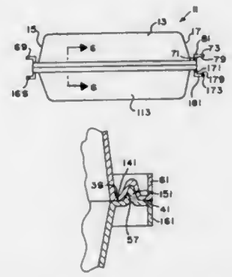
DOUBLE ROASTING PAN

Gerald M. Wener, Memphis, Tenn., assignor to W & C Investments, Memphis, Tenn.

Filed May 20, 1996, Ser. No. 650,860

Int. Cl.[6] A47J *37/10*

U.S. Cl. 99—422 **11 Claims**



1. A double roasting pan comprising a first pan half and a second pan half, said first pan half and said second pan half being identical in construction and fitted together to form the double roasting pan with one of said pan halves being used as the top pan of the roasting pan and the other being used as the bottom pan of the roasting pan and with the first and second pan halves being used interchangeably as the top pan or the bottom pan of the roasting pan, each of said pan halves comprising:

(a) a body portion having a first end and an opposite second end, and having a first side and a opposite second side, said body portion including:

i. a panel portion having an edge therearound,

ii. a skirt portion attached to said panel around the edge thereof, extending away from said panel and terminating in an open mouth portion;

(b) a rim attached to said body portion adjacent and around said mouth portion, said rim having oppositely facing first and second surfaces, having a first rim portion on said first side of said body portion, a second rim portion on said second side of said body portion, a third rim portion on said first end of said body portion, and a fourth rim portion on said second end of said body portion;

(c) a first protrusion attached to said first rim portion and extending outwardly from said second surface of said first rim portion;

(d) a second protrusion attached to said second rim portion extending outwardly from said second surface of said second rim portion;

(e) a first recess in said first rim portion extending outwardly from said second surface of said first rim portion;

(f) a second recess in said second rim portion extending outwardly from said second surface of said second rim portion;

said first and second protrusions being disposed diagonally from one another relative to said body portion; said first and second recesses being disposed diagonally from one another relative to said body portion; said first protrusion and said first recess being spaced apart, said second protrusion and said second recess being spaced apart substantially the same distance as the spacing between said rest protrusion and said first recess; said first recess said second protrusion said rest protrusion and said second recess being respectively space from both said first and second ends of said body portion, said first recess and said second protrusion being spaced substantially an equal distance from said first end of said body portion, said first protrusion and said second recess being spaced substantially an equal distance from said second end of said body portion; the distance of said first recess and said second protrusion from said first end of said body portion being substantially the same as the distance of said first protrusion and said second recess from said second end of said body portion; and said first and second pan halves of said double roasting pan having the respective second surfaces of the rims thereof engaging one another along a single straight flat plane.

5,666,876

COOKING APPARATUS

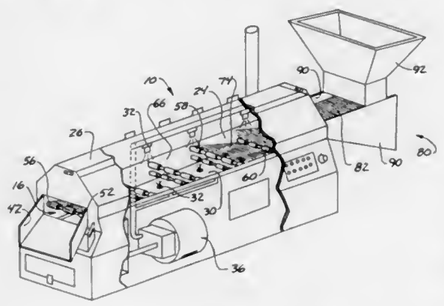
Peter Martin Vos, Malaga, Australia, assignor to Vos Industries Ltd., Malaga, Australia

Continuation of Ser. No. 244,969, Oct. 7, 1994, abandoned. This application Jun. 25, 1996, Ser. No. 670,138

Claims priority, application Australia, Dec. 20, 1991, PL0127; WIPO, Dec. 18, 1992, PCT/AU92/00669

Int. Cl.[6] A23L *1/01;* **A47J** *37/12*

U.S. Cl. 99—443 C **1 Claim**



1. A liquid spray cooking apparatus comprising:

a housing;

a cooking chamber located within said housing and having longitudinally spaced inlet and outlet ends;

a conveyor to convey food to be cooked through said cooking chamber, said conveyor being longitudinally disposed between said inlet and outlet ends, wherein the conveyor passes around end rollers revolving around a plurality of end spindles, and passes over and around successive pairs of guide rollers and tensioning rollers to create a number of dips in the path of the conveyor belt, and wherein the conveyor is driven from one of the end spindles and connected to a drive by a male and female coupling such that the conveyor can be easily disengaged from the drive mechanism;

loading means to load food into said cooking chamber without entrainment of said food in a liquid;

spray means to spray said food with a cooking liquid as said food passes through said cooking chamber to cook said food, the spray means being positioning both above and below the conveyor; and

wherein said conveyor is positioned wholly within said housing.

5,666,877

PEELING DEVICE

Erwin Schädle, Dorfenstrasse 24, 85454 Schwaig, Oberding, Germany

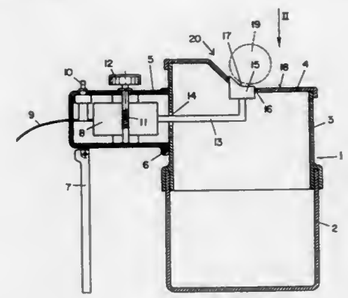
PCT No. PCT/EP95/00743, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO95/24850, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 1, 1995, Ser. No. 549,730

Claims priority, application Austria, Mar. 15, 1994, 557/94

Int. Cl.[6] A23N *7/00;* **A47J** *17/00*

U.S. Cl. 99—588 **16 Claims**



1. A peeling device for fruits comprising:

a support surface for supporting a fruit to be peeled, said support surface having a knife opening extending therethrough;

a peeling knife projecting through the knife opening, said peeling knife having a knife edge projecting above said support surface to be moved along a surface of the fruit to peel the fruit;

an oscillating arm disposed below said support surface and connected to said peeling knife; and

a drive unit connected to said oscillating arm for oscillating said oscillating arm.

5,666,878

WASTE DISPOSAL SYSTEM WHICH INCLUDES A VESSEL WITH AN OUTER COOLING JACKET

Todd Taricco, Zephyr Cove, Nev., assignor to Dover Corporation, New York, N.Y.

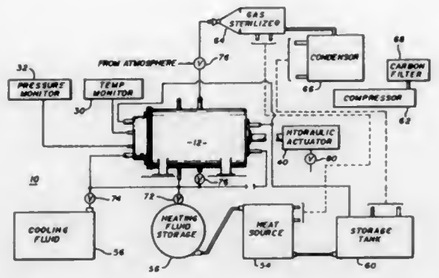
Continuation-in-part of Ser. No. 296,517, Aug. 26, 1994, abandoned. This application Mar. 1, 1995, Ser. No. 396,733

Int. Cl.[6] B30B *15/34*

U.S. Cl. 100—73 **25 Claims**

1. A system for the disposal of medical waste, comprising:

a vessel which has an inner chamber and an outer jacket;



a door that provides access to said inner chamber and allows medical waste to be placed into said inner chamber;

a heating system that heats the medical waste within said inner chamber, said heating system having a source of heating fluid that is in fluid communication with said outer jacket;

a piston which compacts the medical waste within said inner chamber; and,

a source of cooling fluid that is in fluid communication with said outer jacket so that a cooling fluid flows through said outer jacket and cools the compacted medical waste within said inner chamber.

5,666,879

STAMPLING MACHINE OR PRESS, PARTICULARLY MINTAGE OR COINING PRESS

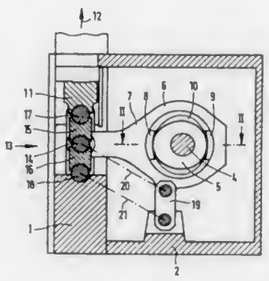
Hans-Werner Kutscher, Braunschweig; Heinz Groos, Netphen, and Christain Schultens, Niederfischbach, all of Germany, assignors to Gräbener Pressensysteme GmbH & Co. KG, Netphen, Germany

Filed Apr. 7, 1995, Ser. No. 418,535

Claims priority, application Germany, Apr. 7, 1994, 44 11 900.3

Int. Cl.[6] B44B *5/00*

U.S. Cl. 101—3.1 **4 Claims**



1. A coining or stamping press comprising a drive shaft, a cam plate mounted on the drive shaft, a coining slide member and a connecting rod, a toggle lever connecting the coining slide member and the connecting rod, sliding supports being mounted on the connecting rod on opposite sides of the cam plate, wherein the cam plate has two different cam surfaces in contact with the sliding supports, wherein the two cam surfaces define two curves which pass each other for forming a crankshaft-free drive of the coining slide member, further comprising a press housing and levers connecting the connecting rod and the press housing.

5,666,880

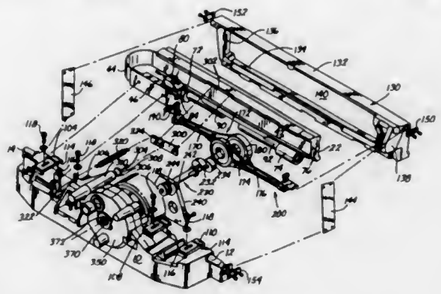
INTEGRALLY DRIVEN AND BALANCED LINE PRINTER

Gordon Brent Barrus, San Juan Capistrano, Calif., assignor to Printronix, Inc., Irvine, Calif.

Filed Aug. 8, 1995, Ser. No. 512,367

Int. Cl.[6] B41J *3/00*

U.S. Cl. 101—93.04 **26 Claims**



1. A dot matrix printer comprising:

a plurality of hammers forming in part a hammerbank;

means for driving said hammerbank and releasing said hammers for printing on a print media;

a counterbalance mechanically linked to said hammerbank in adjacent parallel relationship with said hammerbank;

a first crank arm connected to said hammerbank in adjacent lateral relationship thereto;

a second crank arm connected to said counterbalance in adjacent lateral relationship thereto; and,

means for rotating said crank arms 180° apart in substantially parallel relationship to each other.

5,666,881

MACHINE FOR MOUNTING FLEXIBLE PRINTING PLATES ON PLATE-HOLDER CYLINDERS OF FLEXOGRAPHIC PRINTING MACHINES AND FOR PRINTING PROOFS

Alberto Zanoli, Sala Bolognese, Italy, assignor to Bieffebi S.p.A., Di Granarolo Emilia, Italy

Filed May 11, 1995, Ser. No. 439,345

Claims priority, application European Pat. Off., Feb. 24, 1995, 95830052

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—477 **16 Claims**

1. A machine for mounting flexible printing plates on plate-holder cylinders of flexographic printing machines and for printing proofs with the cylinders thus prepared, said machine comprising:

a beam located at front region of the machine;

supports being positionable along said beam;

a plate-holder cylinder extending horizontally along a longitudinal axis thereof and being rotatably supported on said supports;

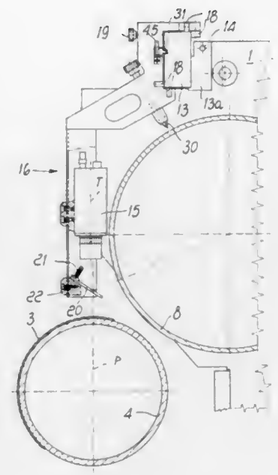
a counterpressure drum being rotatably supported at said front region of said machine, parallely to said plate-holder cylinder;

a sheet of paper having registration markings and covering said counterpressure drum, said beam and counterpressure drum being horizontally parallel and movable with respect to each other between a mounting position, for mounting flexible printing plates on said plate-holder cylinder, and a printing position;

a semitransparent mirror optical device provided at said front region of the machine for aligning directly-viewed points of said plate-holder cylinder in mounting position with reflected points of said sheet of paper;

a bar lying parallel to said counterpressure drum and said plate-holder cylinder;

at least two video cameras being positionable along said bar, said cameras being directed towards the plate-holder cylinder,



in the plate mounting position, along respective axes that intersect said optical device and are substantially at right angles to an axis of said plate-holder cylinder; and

front monitors connected to said respective video cameras.

5,666,882

TRANSPORT WAGON FOR TRANSPORTING TRACK PANELS

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

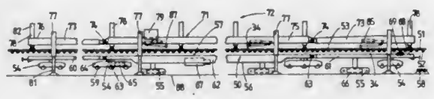
PCT No. PCT/AT95/00091, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/30797, PCT Pub. Date Nov. 16, 1995

PCT Filed May 9, 1995, Ser. No. 564,310

Claims priority, application Austria, May 10, 1994, 978/94

Int. Cl.[6] E01B *29/02*

U.S. Cl. 104—3 **10 Claims**



1. A transport wagon for transporting track panels, which comprises

(a) a wagon frame extending in a longitudinal direction and having a loading surface for supporting the track panel, the wagon frame being comprised of

(1) a main frame part having two opposite ends for supporting a substantial portion of said panels and

(2) at least one auxiliary frame part for supporting a remaining end portion of said panels,

(b) a universal joint connecting one end of the auxiliary frame part to one of the main frame part ends whereby the auxiliary frame part is guided by the main frame part,

(c) an on-track undercarriage and an off-track undercarriage selectively supporting the main frame part adjacent each main frame part end, and

(d) an on-track undercarriage and an off-track undercarriage selectively supporting an end of the auxiliary frame part remote from the universal joint.

5,666,883

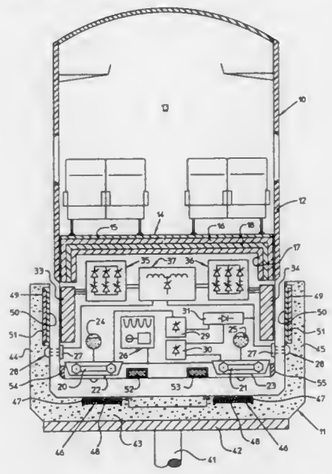
METHOD AND APPARATUS FOR USE OF ALTERNATING CURRENT IN PRIMARY SUSPENSION MAGNETS FOR ELECTRODYNAMIC GUIDANCE WITH SUPERCONDUCTING FIELDS

Stephen B. Kuznetsov, Pittsburgh, Pa., assignor to Power Superconductor Applications Co., Inc., Pittsburgh, Pa.

Filed May 24, 1994, Ser. No. 248,327

Int. Cl.[6] B60L *13/08*

U.S. Cl. 104—281 **53 Claims**



1. An electrodynamic suspension system including a moveable member for levitation relative to a foundation, said moveable member including at least one onboard superconducting electromagnetic coil forming a primary member overlying a secondary member on a foundation in a transverse flux orientation with respect to a of levitation of said moveable member above said secondary member on said foundation, said at least one superconducting coil being energized by a variable alternating current to produce an alternating field of magnetic flux, said foundation including passive electrically conductive means forming said secondary member responsive to said alternating field of magnetic flux which induces an alternating current in said secondary member to guide and levitate the moveable member by repulsive induction action to maintain a controllable spaced relation between the foundation and moveable member.

5,666,884

OVERHEAD VEHICLE HAVING SPRING-BIASED, RAIL-URGED LEVER-MOUNTED GUIDE WHEEL FOR ELECTRICALLY POWERED DRIVE WHEEL

Adelardo Lopez Alba, Poligono Industrial Sur, 08754 El Papiol (Barcelona), Spain, assignor to Adelardo Lopez Alba, Barcelona, Spain

Filed Feb. 16, 1996, Ser. No. 606,041

Claims priority, application Spain, Feb. 16, 1995, 9500436

Int. Cl.[6] B61C *11/00*

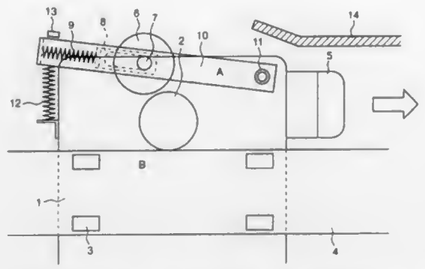
U.S. Cl. 105—30 **1 Claim**

1. A vehicle actuated by an electric motor, comprising:

a vehicle body,

a driving wheel journalled on a first shaft mounted to said vehicle body for travelling along a supporting rail and an auxiliary guide wheel associated with a cooperating guide rail, said driving wheel and auxiliary guide wheel having respective outer peripheral surfaces,

said auxiliary guide wheel being journalled on a second shaft which is movable relative to said first shaft of the driving wheel, said auxiliary guide wheel being mounted on one end



of a longitudinal lever articulated at an opposite end to said vehicle body in a floating arrangement, and acted upon by a spring,

said second shaft being movable longitudinally of said longitudinal lever along a slot formed in said longitudinal lever, said second shaft being constantly thrust upwards by a second spring tending to separate the outer peripheral surfaces of said wheels from one another,

angular rotation of said lever being limited by an upper stop secured to said vehicle body.

5,666,885

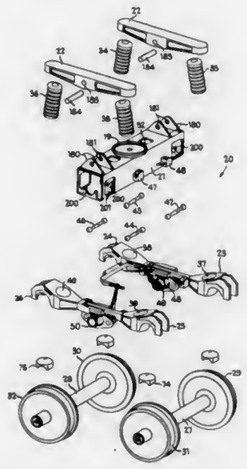
LINEAR STEERING TRUCK

Paul S. Wike, Los Gatos, Calif., assignor to Transportation Investors Service Corporation, Daytona, Fla.

Filed Nov. 20, 1995, Ser. No. 560,652

Int. Cl.[6] B61F *5/38*

U.S. Cl. 105—168 **19 Claims**



1. A steerable truck apparatus, for mounting upon a railroad car body, the steerable truck apparatus being of the kind having at least two transversely extending axles, and being pivotably mountable to the railroad car body, the steerable truck apparatus having a longitudinally extending axis in the direction of travel of the truck when the truck is travelling in a straight line, the steerable truck axis further having a transverse axis extending generally perpendicular to the longitudinal axis, the steerable truck apparatus comprising:

a bolster member, having two ends;

means for pivotable connecting the bolster member to the car body, such that when the railroad car is on straight tracks, the bolster member is disposed in a neutral position extending transversely to the tracks, the means for pivotably connecting the bolster being operably configured to enable the truck to pivot about a vertical axis which intersects the intersection of the longitudinal axis and the transverse axis, and is perpendicular to each of the longitudinal axis and the transverse axis;

two side frame members, disposed at the ends of the bolster member, in substantially fixed orientation to the bolster member, against movement in a plane extending perpendicular to the vertical axis, and extending substantially perpendicular to the bolster member;

a plurality of axle bearing support members, positioned in corresponding pairs on opposed sides of the truck, each axle bearing support member receiving an end of one of the at least two axles, corresponding ones of the corresponding pairs of axle bearing support members being positioned substantially below respective ones of the two side frame members,

the axle bearing support members being further operably arranged in cooperating pairs, each cooperating pair including a first axle bearing support member positioned on a first end of a first of the at least two axles, and a second axle bearing support member positioned on a first end of a second of the at least two axles, each cooperating pair of axle bearing support members being disposed on a common side of the truck, relative to the longitudinal axis;

means, operably associated with the axle bearing support members, for prompting the at least two axles to pivot, in a coordinated manner, about two respective axes, when the radius of curvature of the track upon which the railroad car is travelling changes;

the two respective axis being parallel to, and in longitudinally spaced relation to the vertical axis, such that the vertical axis is disposed at position midway between the two respective axes;

the prompting means being configured to pivot the at least two axles simultaneously in opposite directions about their respective two axes, toward prompting the orientation of the at least two axles into radial positions relative to the center of curvature of the track upon which the railroad car is travelling;

the prompting means being further operably configured to receive an input in response to changes in the curvature of the track upon which the railroad car is travelling, the prompting means being further operably configured to produce an output pivoting movement of the axles, the magnitude of which is a substantially linear function of the input;

a plurality of spring support members, each spring support member being interposed between a respective axle bearing support member and one of the side frame members, in a load-bearing relationship between the axle bearing support member and the respective side frame member,

the prompting means further comprising two torque members, operably supported for substantially free rotational movement about an axis disposed substantially parallel to the transversely extending axis and at substantially a midpoint along the longitudinal axis,

the two torque members being disposed upon laterally opposed portions of the truck apparatus, substantially coaxially with one another;

two pinion members, operably affixed to the respective laterally outer ends of the two torque members;

at least one idler gear member being rotatably supported adjacent and in driven engagement with a respective one of the two pinion members such that upon rotation of a pinion, the corresponding respective at least one idler gear is constrained to rotate in a direction opposite the direction of rotation of the pinion;

a pinion rack member, affixed to one axle bearing support member of each cooperating pair and extending from the axle bearing support member toward the transversely extending axis, and operably disposed in driven engagement with one of the respective pinon members;

an idler rack member, affixed to one axle bearing support member of each cooperating pair and extending from the axle bearing support member toward the transversely extending axis, and operably disposed in driven engagement with the at least one idler gear member corresponding to the respective pinion member,

such that upon rotation of the respective pinion members, the corresponding respective pinion rack member and idler rack member, and in turn the axle bearing support members of the respective cooperating pair, will be driven in substantially opposite directions.

5,666,886

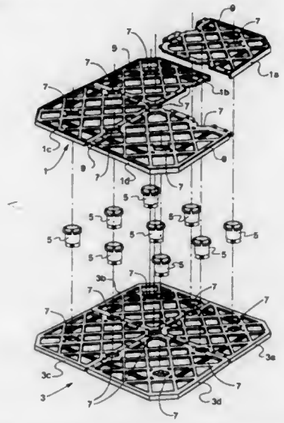
PALLETT ASSEMBLY

Samuel Ray Alexander; Sarah Rheagan Alexander, and Gaylord Allen Hiler, all of Diamondhead, Miss., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 276,577, Jul. 18, 1994, Pat. No. 5,492,069. This application Jun. 16, 1995, Ser. No. 490,924

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—56.3 **25 Claims**



1. A pallet assembly, which may be disassembled to smaller volume for shipping, reassembly and reuse comprising (1) a rigid substantially planar rectangular upper deck having an upper load surface and lower support surface, (2) a plurality of detachable hollow cupped feet having a symmetrical cross section, the open end of which feet depend from and are attached to the upper deck through openings in the deck assembly and the cupped feet are arranged in a centrally positioned symmetrical array of lines and columns, each line and column being comprised of at least three such feet in both the longitudinal and transverse directions of the array, the cupped end of each of the feet being linked both longitudinally and transversely by (3) a rigid substantially planar rectangular lower deck having an upper surface and a lower surface and a plurality of openings through which the cupped feet are connected to the lower deck at or near the cupped end of each of the feet, the open ends of the cupped feet being rotatably attached to the upper deck and the cupped end of the feet being rotatably attached to the lower deck by means of snap-fit connections which are co-rotatable with the upper deck connections of the cupped feet, the complementary components of which connections are molded into the periphery of the feet and the inside surface of the foot attachment openings in the upper and lower decks, the decks and cupped foot members all being formed by injection molding of a molten normally solid thermoplastic polymer.

5,666,887

DESK SYSTEM

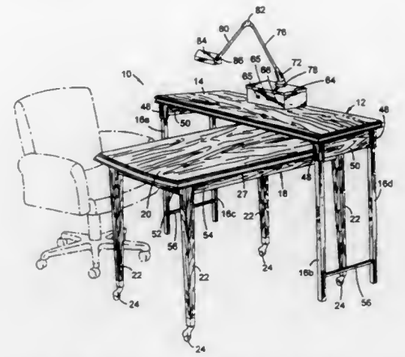
Daniel Grabowski, and John W. Millhouse, both of Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Aug. 3, 1995, Ser. No. 510,599

Int. Cl.[6] A47B *7/00*

U.S. Cl. 108—91 **21 Claims**

1. A nested table system comprising:



a stationary table having a rectangular worksurface with a rear edge, a front edge and opposing side edges, a pair of rear legs located substantially at the corners at which the rear edge intersects with the side edges of said rectangular worksurface, and a pair of front legs located substantially at the corners at which the front edge intersects with the side edges of said rectangular worksurface, said stationary table including a rearwall which extends downwardly from said rear edge of said worksurface of said stationary table; and

a movable table which is translatable independently of said stationary table and which is unconnected to said stationary table, said movable table having a substantially horizontal worksurface supported by a plurality of legs, each of which is supported on a caster;

said worksurface of said stationary table having an underside which is supported at a height which is greater than a height at which a top side of said worksurface of said movable table is supported, and said legs of said worksurface of said stationary table being sufficiently spaced apart to allow at least a portion of said worksurface of said movable table to be positioned underneath said worksurface of said stationary table;

said rearwall extending below the level of said worksurface of said movable table when said movable table is positioned underneath said stationary table, said worksurface of said movable table having substantially straight, parallel front and back edges and arcuate side edges at opposite ends of said worksurface, said arcuate edges having a radius of curvature which cooperates with said rearwall of said stationary table to prevent the corners at the intersection between said straight and said arcuate edges of said movable table from contacting said rear legs of said stationary table regardless of the relative position of said movable table underneath said worksurface of said stationary table;

said worksurface of said movable table including a bumper molding which projects outwardly from edges thereof, whereby damage to said edges can be avoided should said edges collide with said legs of said stationary table.

5,666,888

ADJUSTABLE WORK SURFACE

Paul G. Dame; David A. Immink, both of Holland, Mich.; Walter K. Klaiber, Hausen, and Konrad Merkt, Spaichingen, both of Germany, assignors to Herman Miller Inc., Zeeland, Mich.

Filed Oct. 19, 1994, Ser. No. 326,109

Int. Cl.[6] A47B *9/00*

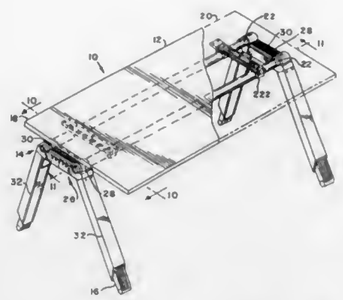
U.S. Cl. 108—144 **26 Claims**

1. A height-adjustable work surface assembly comprising:

a movable work surface;

a frame extending from beneath the work surface in order to provide support for the work surface, the frame having a support member directed downward from beneath the work surface;

a leg adjustably connected to the support member wherein a slot extends along a portion of a length of the leg;



a rack connected to one of the support member and the leg, the rack having a plurality of substantially horizontally extending teeth wherein a slot extends along a portion of a length of the rack;

an interlocking block positioned adjacent the rack and within a cavity formed between the rack and the leg, the interlocking block being movable into and out of engagement with the rack;

the cavity being formed in the leg between the rack and an outer wall of the leg, the cavity having a width greater than a width of the interlocking block and a width of one of the teeth; and

a first fastening mechanism connected to the interlocking block and passing through the slots in the rack and leg, the first fastening mechanism horizontally movable such that the interlocking block is secured against the rack in a locked position and completely disengaged from the rack in an unlocked position.

5,666,889

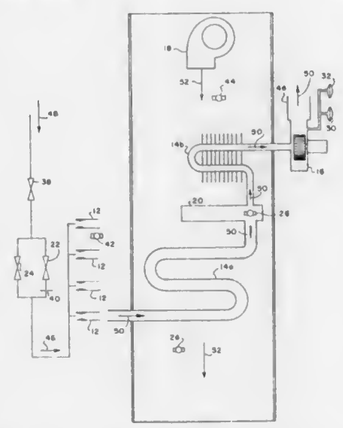
APPARATUS AND METHOD FOR FURNACE COMBUSTION CONTROL

Lance J. Evens, Carrollton, Tex., and Michael E. Rose, Chester, Mass., assignors to Lennox Industries Inc., Richardson, Tex.

Filed Mar. 27, 1995, Ser. No. 410,675

Int. Cl.[6] F23N *5/02*

U.S. Cl. 110—190 **16 Claims**



5. A furnace, comprising:

burner means for burning a combustible fuel-air mixture;

heat exchanger means in fluid communication with said burner means for receiving products of combustion;

fuel supply valve means having at least first and second combustion heat input settings for supplying fuel to said burner means, said second combustion heat input setting representing a higher rate of combustion than said first combustion heat input setting;

combustion air blower means for supplying combustion air to said burner means and for exhausting products of combustion from said furnace;

temperature sensing means located downstream of a zone of combustion in the furnace for sensing products of combustion temperature and for providing an indication of the sensed temperature, the zone of combustion being a region of the furnace in which combustion of the fuel-air mixture occurs; and

control means responsive to an external demand for heating and to the sensed temperature for controlling rate of combustion in said furnace, said control means being operable to control said fuel supply valve means to operate at said second combustion heat input setting in response to the sensed temperature indicating that a selected temperature condition has not been satisfied, said control means being responsive to the sensed temperature indicating that said selected temperature condition has been satisfied to control said fuel supply valve means to operate at said first combustion heat input setting when the external demand is for a first level of heating and to control said fuel supply valve means to operate at said second combustion heat input setting when the external demand is for a second level of heating, said second level of heating representing a greater demand for heating than said first level of heating.

5,666,890

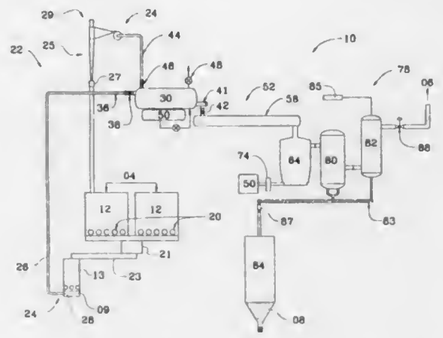
BIOMASS GASIFICATION SYSTEM AND METHOD

Joe D. Craig, P.O. Box 70, Tahoka, Tex. 79373

Continuation-in-part of Ser. No. 264,010, Jun. 22, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 477,356

Int. Cl.[6] F23G *5/12*

U.S. Cl. 110—229 **27 Claims**



25. A method for gasifying biomass into combustible gas in a biomass gasification system; said method comprising:

depositing biomass fuel into a high pressure feed tank pressurizable above atmospheric pressure;

increasing the pressure within said high pressure feed tank to a processing pressure required within the gasification system;

conveying said biomass fuel under pressure from the high pressure feed tank by a variable speed conveyance assembly;

depositing said biomass fuel from said variable speed conveyance assembly into a gas-blown fluidized bed reactor;

gasifying said biomass in said reactor; and

producing combustible gas from said biomass.

5,666,891

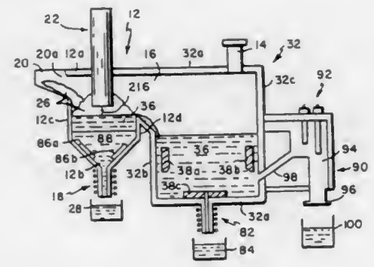
ARC PLASMA-MELTER ELECTRO CONVERSION SYSTEM FOR WASTE TREATMENT AND RESOURCE RECOVERY

Charles H. Titus, Newton Square, Pa.; Daniel R. Cohn, Chestnut Hill, Mass., and Jeffrey E. Surma, Kennewick, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Feb. 2, 1995, Ser. No. 382,730

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—250 **48 Claims**



1. A waste conversion unit, comprising:

an arc plasma furnace having at least one electrode in a predetermined position therein, the arc plasma furnace characterized in that at least a portion of waste material received therein forms a slag; and

a joule heated melter coupled to the arc plasma furnace, the joule heated melter configured to receive at least a portion of the slag from the arc plasma furnace,

wherein the arc plasma furnace portion of the unit is configured to provide a predominant source of heat for the waste material to be treated in the unit relative to heat provided by the joule heated melter.

5,666,892

COMBINED FARM MACHINE PERFORMING ALL OF THE SEEDING OPERATIONS IN ONE PASS

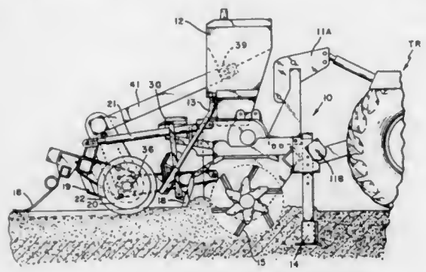
Michele Tortella, and Carlo Tortella, both of Ortona, Italy, assignors to Industria Meccanica F. 111 Tortella S.p.A., Ortona, Italy

Filed Feb. 22, 1996, Ser. No. 603,915

Claims priority, application Italy, Feb. 23, 1995, RM95A0111

Int. Cl.[6] A01B *49/06*

U.S. Cl. 111—52 **6 Claims**



1. A combined farm machine comprising:

a main frame (**10**) having a three-point attachment (**11A, 11B**) adapted for connection to a tractor (TR);

a hydraulic pump (**30**) mounted on main frame (**10**);

a plurality of soil rippers (**14**) supported by said main frame (**10**);

a roller (**15**) for the macro and microtillage of soil, said roller (**15**) being supported by main frame (**10**);

a mechanical hopper seeder (**12**) supported by said main frame (**10**) and having a plurality of rotating delivering devices (**39**);

a shaft (**38**) for rotating said delivering devices (**39**);

a plurality of tubular seeding members (**13**) projecting downwardly from said mechanical hopper seeder (**12**);

a plurality of spring harrows (**16**) supported by said main frame (**10**);

a leveling blade (**18**) attached to said main frame (**10**), said roller (**15**) and said leveling blade (**18**) being supported upstream of said tubular seeding members (**13**);

a frame (**43**) pivotally attached to said main frame (**10**); and

a ploughing roller (**20**) having a shaft (**36**) attached thereto, said roller (**20**) being supported by said frame (**43**) and located downstream of said tubular seeding members (**13**) to perform a differential tillage of the just seeded soil that is then worked by said harrows (**16**) which operate to cover the sown seeds.

5,666,893

CROP SPRAYER GUIDANCE SYSTEM

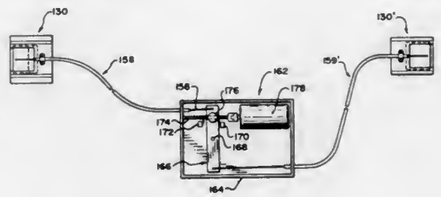
Raymond A. Bourgeois, Ste. 206—1697 Pembina Hwy., Winnipeg, Manitoba, Canada, R3T 2G6

Continuation-in-part of Ser. No. 105,114, Aug. 12, 1993, Pat. No. 5,429,061. This application Jul. 7, 1995, Ser. No. 499,445

Claims priority, application Canada, Aug. 18, 1992, 2076287

Int. Cl.[6] A01C *19/00*

U.S. Cl. 111—200 **17 Claims**



5,666,894

EMBROIDERY UNIT FOR SEWING MACHINE

Åke Jönsson, Jönköping, and Hans Grufman, Huskvarna, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

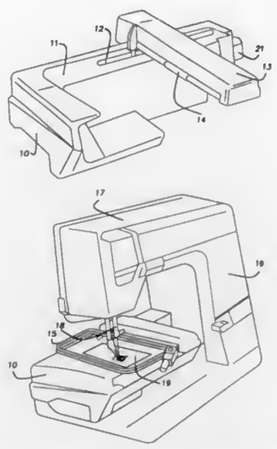
Filed Jun. 15, 1995, Ser. No. 490,646

Claims priority, application Sweden, Aug. 12, 1994, 9402710

Int. Cl.[6] D05C *9/04*

U.S. Cl. 112—103 **3 Claims**

1. A sewing machine and embroidery unit detachable therefrom, said sewing machine including a lower free arm provided with a cloth feed dog, a column having a drive unit, and a top arm having a needle bar mechanism, said embroidery unit comprising:



a housing releasably secured to said free arm of said sewing machine, wherein said housing has (i) a first leg oriented parallel to said free arm when said housing is secured to said free arm, said first leg having a first end and a second end, and (ii) a second leg transversely oriented to said first leg, said second leg having a first end and a second end, said first end of said second leg affixed to said first end of said first leg;

a first stationary arm disposed along said first leg of said housing;

a first slide disposed in said first stationary arm providing movement along said first arm in a direction parallel to said free arm of said sewing machine;

a second movable arm slidably affixed to said housing by affixment of an end of said second arm to said first slide, said second arm extending from said attached end in a direction perpendicular to said free arm of said sewing machine, wherein said second arm is slidably movable in said direction parallel to said free arm of said sewing machine between said feed dog and said column of said sewing machine;

a second slide in said second arm providing movement along said second arm in a direction perpendicular to said free arm of said sewing machine; and

a hoop affixed to said second slide, wherein said first and second slides enable said hoop to be movable in said direction parallel to said free arm and said direction perpendicular to said free arm of said sewing machine.

5,666,895

ADJUSTABLE CLAMP

Clint Edwin Gehres, Moraine; Anthony David Vigh, West Carrollton, and Kirk William Neer, Urbana, all of Ohio, assignors to MIM Industries, Inc., Miamisburg, Ohio

Continuation of Ser. No. 944,880, Sep. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 718,012, Jun. 20, 1991, Pat. No. 5,146,859. This application Jan. 20, 1995, Ser. No. 376,054

Int. Cl.[6] D05B *3/20;21/00*

U.S. Cl. 112—114 **35 Claims**

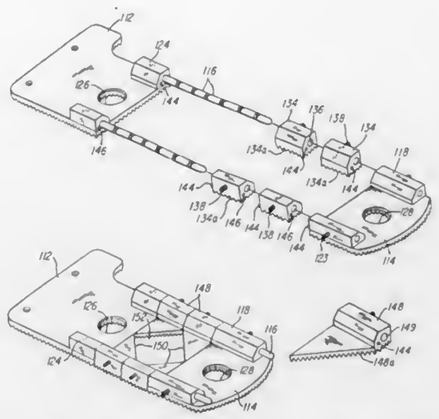
17. A sewing machine for sewing a plurality of predetermined stitch patterns on a workpiece, said sewing machine comprising:

a controller for controlling the operation of the sewing machine;

an adjustable clamp for forcing the workpiece against a clamping surface in the sewing machine;

a connector for detachably coupling said adjustable clamp to the sewing machine; and

drive means coupled to said controller and said connector for driving said adjustable clamp into engagement with the workpiece to secure the workpiece against the clamping surface,



said drive means also being capable of moving the clamped workpiece in accordance with a computer program in order to sew at least one of the predetermined stitch patterns on the workpiece;

said adjustable clamp comprising:

a clamp support;

a template clamp, said template clamp comprising a template which defines one entire pattern of the plurality of predetermined stitch patterns; and

adjustable support means for adjustably and detachably supporting said template clamp on said clamp support; and

wherein said adjustable support means comprises a plurality of spacer clamps.

5,666,896

NEEDLE, PARTICULARLY FOR EMBROIDERY MACHINES

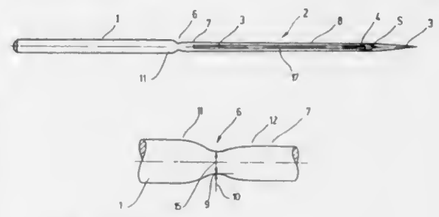
Harry Vornholt, Bitz, and Thomas Schmid, Balingen, both of Germany, assignors to Theodor Groz & Söhne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Germany

Filed Jan. 26, 1996, Ser. No. 592,630

Claims priority, application Germany, Feb. 1, 1995, 195-03-048.6

Int. Cl.[6] D05B *85/00*

U.S. Cl. 112—222 **7 Claims**



1. A needle comprising

(a) a shank

(b) a blade adjoining said shank; said blade including

(1) a conical length portion tapering in an direction away from said shank; and

(2) a cylindrical length portion adjoining said conical length portion; said conical length portion being situated between said shank and said cylindrical length portion;

(c) a pointed tapering end portion adjoining said cylindrical length portion;

(d) an eye provided in said blade;

(e) a longitudinally extending groove provided in said blade; and

(f) a circumferential, rounded constriction provided in said blade adjacent said shank; said constriction being located between said shank and said conical length portion and adjoining said conical length portion; the constriction constituting a predetermined breaking location.

5,666,897

SUBMARINE WEAPON-HANDLING AND DISCHARGE SYSTEM

Harold James Armstrong, Burton-on-Trent, United Kingdom, assignor to John Lindsay & Son (Decorators) Ltd., Glasgow, United Kingdom

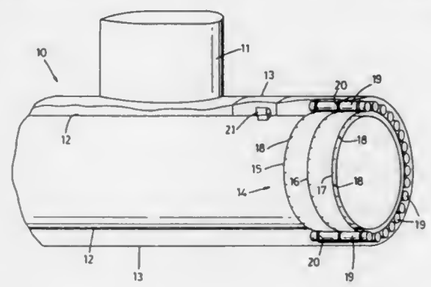
PCT No. PCT/GB95/01339, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO95/34466, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 8, 1995, Ser. No. 676,231

Claims priority, application United Kingdom, Jun. 10, 1994, 9411643

Int. Cl.[6] B63G *8/32*

U.S. Cl. 114—20.1 **34 Claims**



1. A weapons-handling and discharge system for a submarine having a pressure hull, which system comprises:

a rack for attachment around the exterior of the pressure hull of the submarine, said rack being rotatable around an axis extending the length of the pressure hull,

a plurality of canisters to contain weapons, said canisters having longitudinal axes parallel to the longitudinal axis of the pressure hull,

an exterior casing provided around the pressure hull, the canisters being located between the pressure hull and the exterior casing,

means to lock the canisters to the rack,

a plurality of forward or rearward facing apertures in the casing, and

means to discharge the weapons from the canisters and through the apertures.

5,666,898

EQUIPMENT FOR RAISING SUNKEN VESSELS

Wesley K. Bell, Box 538, Manahawkin, N.J. 08050

Filed Jul. 5, 1995, Ser. No. 498,354

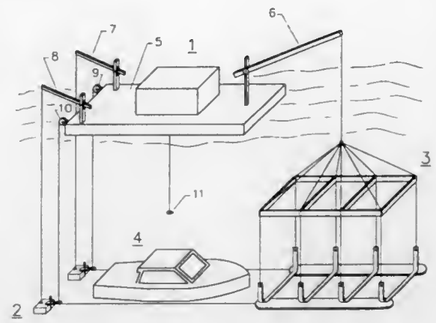
Int. Cl.[6] B63C *7/00*

U.S. Cl. 114—54 **4 Claims**

1. An apparatus for raising a submerged ship hull from a depth of water for refloatation on a water surface, comprising:

a. a surface lifting assembly, comprising a floating means having a first end and a second end, having mounted on said first end a large lifting mechanism and on said second end two smaller lifting mechanisms and two winches, and having operable from thereon underwater video equipment;

b. a submerged, aft-located sub-assembly, comprising:



i. two large anchor blocks each of said large anchor blocks being made from a large cube of dense material having six faces, having fastened to an upper face a lifting eye, and having fastened to an adjacent face a side-mounted, releasable block pulley, each of said releasable block pulleys comprising:

(1) a rectangular, split tongue, said split tongue having a cavity therein, said cavity longitudinally extending throughout and having a hole through said split tongue, said hole perpendicularly bisecting said cavity in said split tongue;

(2) a rectangular, flat sheave having a hole perpendicular to said sheave longitudinal axis, and having a smaller hole parallel disposed through one end, said sheave disposed within said cavity of said split tongue, said hole in said sheave being aligned with said hole in said split tongue;

(3) a disconnect pin, having at one end an eye, said disconnect pin disposed through aligned holes in said sheave hole and said split tongue such that said eye is parallel aligned with said lifting eye on said anchor block;

(4) a pulley wheel;

(5) a coupling ring fastened to said pulley wheel and disposed within said hole in said end of said sheave; and,

(6) a disconnect cable having a first end and a second end, said disconnect cable fastened at said first end to said eye in said disconnect pin, and fastened at said second end to said surface lifting assembly;

c. a submerged, forward-located sub-assembly, comprising:

i. a main life cable having a first end and a second end, said first end being fastened to said large lifting mechanism on said surface lifting assembly;

ii. a plurality of sling cables each having a first end and a second end, connected upon said main lift cable at a length from said second end of said main lift cable;

iii. a rectangular spreader cage suspended from said second end of said main lift cable, said spreader cage having a lining of heavy wire mesh, said spreader cage being disposed among and encompassed by said sling cables;

iv. an inflatable main lift air bag suspended from beneath said spreader cage among said plurality of sling cables, said main lift air bag being retained from upward floatation by said lining of heavy wire mesh and having a pressure relief valve settable to automatically relieve air pressure contained within at various settings and having an air hose connected to said main lift air bag whereby said main lift air bag is inflatable from said surface lifting assembly;

v. a plurality of slings numbering one half the number of sling cables, connected to pairs of said sling cables at said second ends of said sling cables such that each of said slings drapes ovally beneath said spreader cage, said slings being parallel aligned;

vi. a rectangular semi-rigid gridwork suspended from said slings and supporting said slings in aligned fashion, said semi-rigid gridwork having a smooth lower solid facing; and,

vii. a pair of stabilizing air bags, straddling said semi-rigid gridwork outside said slings, each of said stabilizing air

bags having an air hose connected whereby said stabilizing air bags are inflatable from said surface lifting assembly; and,

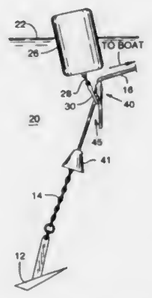
d. a pair of winching cables each having a first end and a second end, said first end of said winching cable being fastened to said winching means on said surface lifting assembly, said winching cable disposed around said pulley wheel on said releasable block pulley on said submerged aft located assembly and having its second end connected to said semi-rigid gridwork.

5,666,899

BOAT ANCHOR RETRIEVAL SYSTEM AND APPARATUS

Rick E. Andersen, 2713 Whitman Ave., Vancouver, Wash. 98662

Filed Jul. 3, 1995, Ser. No. 497,902
Int. Cl.[6] B63B *21/24*
U.S. Cl. 114—297 **17 Claims**



1. A float catch for a boat anchoring and anchor retrieval system in which a deployed anchor is attached to the boat by an anchor line and in which a float is slidably coupled to the anchor line to permit the anchor line to slide relative to the float as the anchor is retrieved, the float catch comprising:

a body including a head section and a tail section, the head section defining an anchor rope passageway, and the body including a rope diverter positioned external to the anchor rope passageway and to engage an anchor rope passing through the anchor rope passageway, the rope diverter being shaped so as to divert the engaged rope in a direction away from the tail section, whereby as the anchor is retrieved the rope and float catch slide relative to the float in one direction until the float is positioned between the float catch and the anchor, the tail section of the float catch thereafter preventing relative travel of the float past the float catch in the opposite direction during retrieval of the anchor.

5,666,900

METHOD AND APPARATUS FOR DEPLOYING AN EXPENDABLE AUTONOMOUS UNDERWATER VEHICLE FROM A SUBMARINE

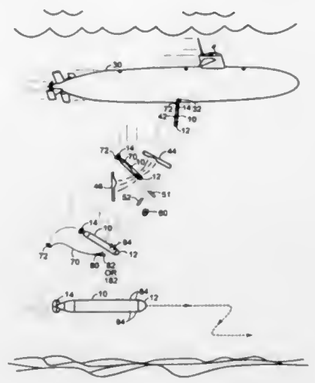
Alf L. Carroll, III, Wareham, Mass.; William D. Pattee, Santa Barbara, Calif.; Mark C. Manning, Portsmouth, R.I.; John E. Mather, Summerland, and Michael P. Wapner, Santa Barbara, both of Calif., assignors to Sippican, Inc., Marion, Mass., and Sonatech, Inc., Santa Barbara, Calif.

Filed Jun. 5, 1995, Ser. No. 461,744
Int. Cl.[6] B63G *8/00*
U.S. Cl. 114—316 **20 Claims**

1. A method of deploying a vehicle into a body of water from a submarine, comprising:

providing an expendable autonomous underwater vehicle;

providing one or more launch-aiding components;



inserting into a trash disposal unit of the submarine the vehicle and the launch-aiding components in an arrangement which keeps the vehicle in a predetermined orientation within the trash disposal unit and which protects the trash disposal unit from damage, aids the vehicle in descending into the body of water to a depth at which the vehicle begins autonomous operation, and allows the launch-aiding components to fall away from the vehicle in the body of water as the vehicle descends thereinto; and

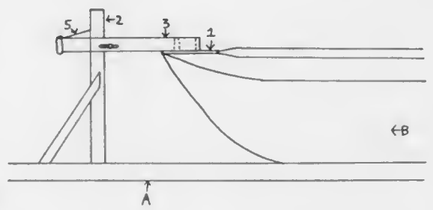
ejecting the vehicle and the launch-aiding components from the trash disposal unit into the body of water such that the launch-aiding components fall away from the vehicle in the body of water as the vehicle descends into the body of water to the depth at which the vehicle begins autonomous operation.

5,666,901

BOW MOUNTED BOAT LATCHING MECHANISM

Ernie Clebeart Jones, Route #10 Box 6960, Nacogdoches, Tex. 75961

Continuation-in-part of Ser. No. 113,195, Aug. 26, 1993, abandoned. This application Nov. 27, 1995, Ser. No. 564,892
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—343 **3 Claims**



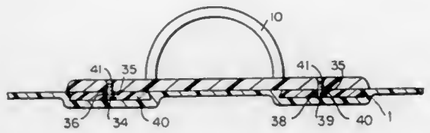
1. A boat and launching and retrieving device for automatically latching said boat to an upwardly extending bar of a boat trailer, comprising a flat metal plate attached to a top bow portion of said boat, a first slotted metal guide bar affixed to said plate and projecting forwardly of a forwardmost portion of said boat, a second slotted metal guide bar pivotally attached to said plate and projecting forwardly of the forwardmost portion of said boat, said first and second guide bars each supporting a metal jaw portion at the forward end thereof, said jaw portions being adapted to receive and latch onto said upwardly extending bar of said trailer upon the loading of said boat thereon.

5,666,902

MOULDED BOAT HULL WITH INTEGRALLY CONTAINED REINFORCED INSERTS

Mark S. White, Durham, and Dennis Kovach, Cary, both of N.C., assignors to Allied Logic Corporation

Filed Feb. 1, 1996, Ser. No. 595,292
Int. Cl.[6] B63B *5/24*
U.S. Cl. 114—357 **9 Claims**



1. In an integrally moulded plastic boat hull structure formed of a first plastic material, comprising:

opposed inner and outer shells which are integrally joined around peripheral portions thereof and which are also integrally joined at adjacent regions within said periphery by interior stiffening meaning including a plurality of spaced stiffening members integrally joined to and extending between said inner shell and outer shell, to form an integral unitary hull with hollow areas between said inner and outer shells, bounded by said spaced stiffening members;

each of said shells including interior and exterior surfaces;

a plurality of fastening locations for securing associated components to at least one of said shells;

at least some of said fastening locations including a threaded insert integrally moulded into said first plastic material of at least one of said shells, and including a threaded opening at the exterior surface of said shell;

a force dissipating member formed of a second plastic material integrally moulded into, and located between the interior and exterior surfaces of said shell at said fastening location;

said second plastic material being molecularly bonded to and having a higher structural strength than said first plastic material;

said threaded insert extending through an opening in said force dissipating member and secured thereto;

such that localized forces developed at said fastening location are transferred away from the moulded attachment of said threaded insert to said shell, with said force dissipating member reinforcing said fastening location.

5,666,903

EXAMINATION OF MILKING ANIMALS

Christine Roberta Bull; Diane Susan Spencer, both of Flitwick; Toby Trevor Fury Mottram, Chard; Michael John Street, Bedford, and Robin Deirdre Tillett, Flitwick, all of England, assignors to British Technology Group Limited, London, England

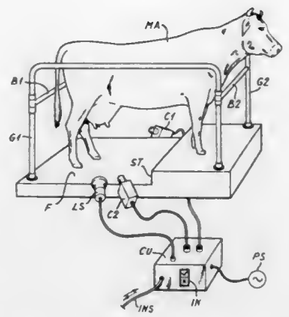
PCT No. PCT/GB93/02397, § 371 Date May 19, 1995, § 102(e) Date May 19, 1995, PCT Pub. No. WO94/12020, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 22, 1993, Ser. No. 428,215
Claims priority, application United Kingdom, Nov. 20, 1992, 9224406
Int. Cl.[6] A01J *7/00;* **A01K** *29/00*
U.S. Cl. 119—14.01 **24 Claims**

1. A method of examining a milking animal presenting for milking including the steps of:

preparing an image reference record of said animal;

examining said animal with an optical sensing device responsive to light in at least one of the ranges of infra red, visible, and ultraviolet, and also responsive to at least one characteristic significant in the acceptability of said animal for milking;

preparing a further image record of said animal based on said examining step;



assessing the response of said sensing device to determine the acceptability of said animal, including:

comparing said image reference record and said further image record,

determining differences from said the comparison step and deciding whether said animal is to be milked at said the presentation based on said differences; and

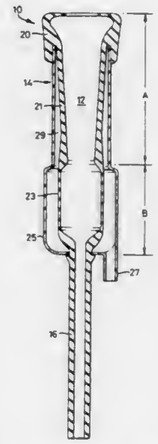
controlling the continuance of said presentation of said animal in dependence on said determining step.

5,666,904

AUTOMATIC MILKING APPARATUS

Robert Joseph Grindal, Reading, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB93/02378, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO94/12018, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 19, 1993, Ser. No. 432,166
Claims priority, application United Kingdom, Nov. 27, 1992, 9224890
Int. Cl.[6] A01J *5/06*
U.S. Cl. 119—14.02 **10 Claims**



1. A teat cup liner for use in a hydraulic milking apparatus, the teat cup liner comprising an upper section adapted to encircle a teat with at least a lower portion of said upper section sufficiently inflexible so as not to collapse on the teat end during milking, and a relatively flexible lower section located beneath and spaced from the teat end and adapted to open and close during a pulsation cycle but not to collapse on the teat end,

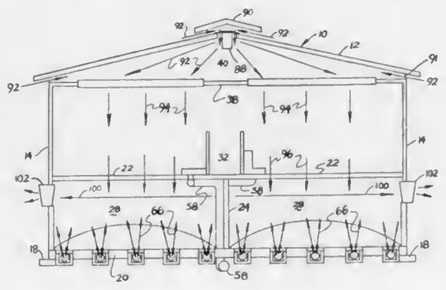
wherein the upper section of the liner defines a downwardly tapering bore which subtends an included cone angle of between 5° and 10°.

5,666,905

ANIMAL PRODUCTION BUILDING AND METHODS OF PRODUCING ANIMALS AND PROCESSING ANIMAL WASTE

Robert J. Mackin, Grabill, Ind., and Thomas A. Menke, Greenville, Ohio, assignors to EnviroLogic, Inc., Greenville, Ohio

Filed Jun. 8, 1995, Ser. No. 488,730
Int. Cl.[6] A01K *1/01*
U.S. Cl. 119—448 **29 Claims**



1. An animal production building comprising animal living quarters designed for optimal animal density, said quarters having at least a partially slatted floor, a manure deposition area directly beneath said slatted floor, said deposition area having a floor, a lower ventilation system in said deposition area floor facilitating the movement of air through the manure in said deposition area, said lower ventilation system having elongated pits in said floor of said manure deposition area, said pits being spaced apart and generally parallel to each other, aeration tile being positioned within said pits and operatively connected a source of air, and an air exhaust system in said deposition area by which air which has passed through said manure and has passed through said animal living quarters is exhausted from said building, whereby animal life can be enhanced and manure may be processed for further use.

5,666,906

ANIMAL DUSTING BAG

Gilbert A. Moore, and Denilda S. Moore, both of 1917 SW. Hartley Ave., Gresham, Oreg. 97080

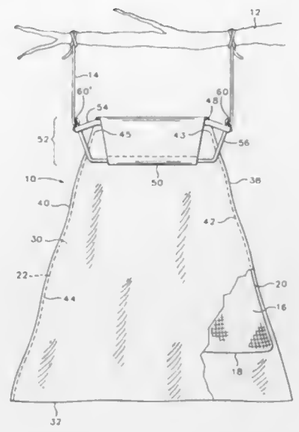
Filed Sep. 1, 1995, Ser. No. 523,499
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—672 **19 Claims**

1. A self-dusting livestock powdered insecticide applicator comprising:

an inner porous storing and dusting sack having front and back portions and side walls flaring outward and downward to a lower end, said inner sack having a horizontal opening at an upper end defined by opposing front and back edges for filling the sack;

an outer skirt made of waterproof material secured to the inner sack, said outer skirt extending over the inner sack to an outer skirt lower end located below the inner sack lower end thereby exposing the inner sack from below for adequate dispersal of material directly under the inner sack while preventing rain and foreign matter from touching the inner sack; and

closure means fixed to the outer skirt adjacent the upper end of the inner sack, wherein the closure means includes hook and loop fasteners fixed adjacent the opposing edges of the opening, said closure means extending in two dimensions.

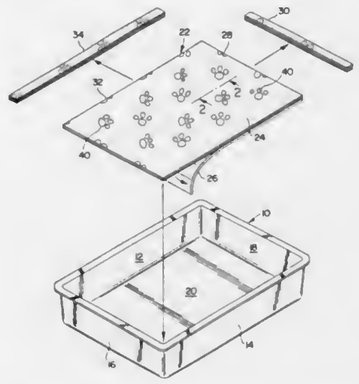


5,666,907

ABRASIVE SHEET MATERIAL FOR LITTER BOX

Alan D. Kacic, 6119 No. Black Bear Loop, Tucson, Ariz. 85715

Continuation of Ser. No. 374,324, Jan. 18, 1995, Pat. No. 5,564,365, which is a continuation-in-part of Ser. No. 209,955, Mar. 10, 1994, abandoned. This application Mar. 22, 1995, Ser. No. 408,345
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—706 **18 Claims**



1. Abrasive sheet material for attachment to the inside surfaces of a litter box, comprising:

a sheet of thin flexible substrate material having a first surface and a second surface;

adhesive material, for adhering said abrasive sheet material to the inside surfaces of the litter box, covering said first surface; and,

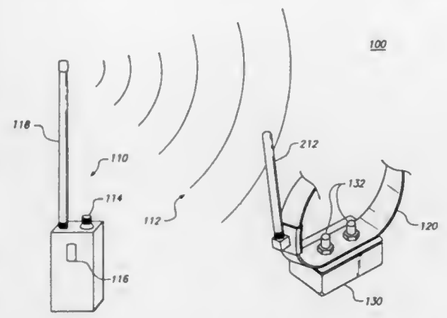
an abrasive material covering said second surface, whereby the claws of a cat or other animal using the litter box are dulled by movement across the abrasive material, wherein the grit size of the abrasive material is in the range of 240 to 320 grit.

5,666,908

ANIMAL TRAINING DEVICE

Ho Yun So, Kwangjang Apt. 8-1006, Yoido-dong, Youngdeungpo-ku, Seoul, Rep. of Korea

Filed Jul. 5, 1995, Ser. No. 498,340
Int. Cl.[6] A01K *15/02*
U.S. Cl. 119—720 **7 Claims**



1. A system for conditioning behavior in an animal using electrical stimulation, the system comprising:

a transmitter having a control switch for selecting a level of electrical stimulation and means for producing radio signals responsive to a power switch, the radio signals including an indication of the selected level of electrical stimulation;

a collar including electrodes arranged to be brought into proximity to the skin of an animal wearing the collar and a receiver unit coupled to the electrodes for generating electrical stimulation at the electrodes responsive to the radio signals, the receiver unit comprising:

radio signal detection means for detecting the radio signals and determining the indication of the selected level of electrical stimulation from the detected radio signals;

a processor coupled to the radio signal detection means and including a control program stored in an associated memory, the control program generating a first train of signal pulses, each pulse of the first pulse train having a pulse width determined by the indication of the selected level of electrical stimulation; and

a power amplifying circuit having an input coupled to receive the first train of signal pulses and outputs coupled to the collar electrodes, for producing a second pulse train of amplified signal pulses at the collar electrodes wherein each pulse of the second pulse train has a signal strength determined by the width of a corresponding pulse of the first pulse train.

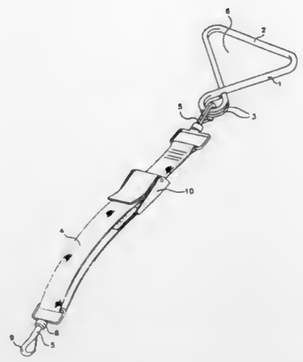
5,666,909

PET RESTRAINING DEVICE AND SHACKLE

A. J. Dupre, 6717 N.W. 53rd Ter., Gainesville, Fla. 32653

Filed Jun. 30, 1995, Ser. No. 497,348
Int. Cl.[6] A01K *1/06*
U.S. Cl. 119—797 **18 Claims**

1. A pet restraining device comprising a shackle, wherein said shackle comprises a central loop and two substantially overlapping end loops, and wherein said central loop and said end loops define substantially a single plane; a strap; shackle attachment means for attaching said strap to said end loops of said shackle; and pet attachment means for attaching said strap to a pet collar.

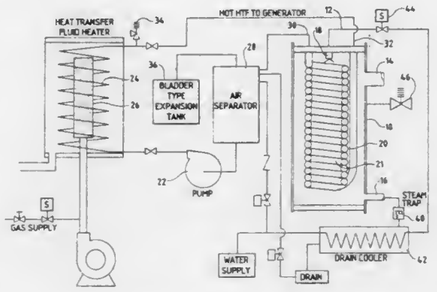


5,666,910

STEAM GENERATOR

Paul E. George, II, Powell; William Wilkinson, Columbus; Donald Anson, Worthington, all of Ohio; Kurt Creamer, Plymouth, N.C.; Douglas Dickson; Michael J. Grassi, both of Columbus, Ohio, and Steve Grimes, Westerville, Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 481,643
Int. Cl.[6] F22B *27/00*
U.S. Cl. 122—40 **11 Claims**



1. A steam generator apparatus comprising:

a vessel having walls defining an interior surface, said surface having a first opening adapted for exhausting steam generated within said vessel and a second opening adapted for draining residual water;

at least one substantially convoluted heating coil located within and substantially entirely spaced apart from and substantially only surrounded by said interior surface of said vessel, said heating coil comprising a series of runs, an inlet communicating through said vessel walls, and an outlet communicating through said vessel walls, said inlet and said outlet adapted to circulate a heat transfer fluid through said runs; and,

an injector for distributing a quantity of water to be vaporized substantially into contact with said runs.

5,666,911

COOLING SYSTEM FOR A LIQUID-COOLED INTERNAL COMBUSTION ENGINE

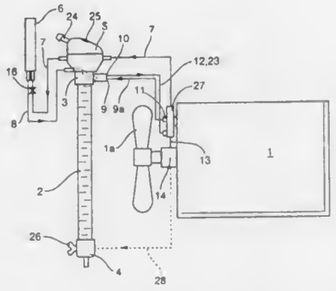
Hans-Dieter Gobl, Stuttgart, and Hans-Martin Haase, Neuhausen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 9, 1996, Ser. No. 728,341

Claims priority, application Germany, Oct. 13, 1995, 195 38 239.0

Int. Cl.[6] F01P *3/22*

U.S. Cl. 123—41.54 11 Claims



1. A cooling system for a liquid cooled internal combustion engine comprising a radiator with at least one water box, an inlet for receiving coolant heated in said engine, an outlet for returning coolant cooled in said radiator back to said engine, an expansion tank disposed in fluid communication with said radiator, a vehicle heater with a hot coolant supply line extending from said engine to said vehicle heater for supplying hot coolant thereto and a coolant return line for returning coolant from said heater to said engine, and a venting system for venting gases from said cooling system, said venting system utilizing said hot coolant supply line for venting gases from said engine and said hot coolant supply line having a vent opening in communication with at least one of said expansion tank and said water box for venting gases from said coolant supply line.

5,666,912

INTERNAL COMBUSTION ENGINE

Paul Anthony McLachlan, Christchurch, New Zealand, assignor to Pivotal Engineering Limited c/o Mace Engineering Ltd., Christchurch, New Zealand

PCT No. PCT/NZ94/00096, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/08055, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 16, 1994, Ser. No. 619,584

Claims priority, application New Zealand, Sep. 16, 1993, 248487

Int. Cl.[6] F02B *33/22*

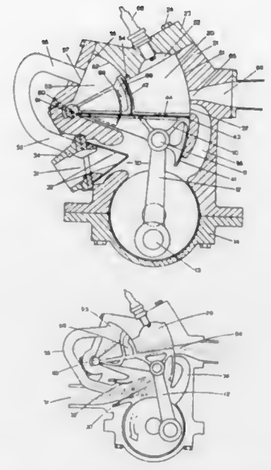
U.S. Cl. 123—65 R 28 Claims

1. An internal combustion engine unit having an engine block which includes a single combustion chamber and a single piston constrained to have rocking motion about a pivot axis within said engine block, wherein:

said piston has a first arcuate sealing surface and a second arcuate sealing surface radially offset from said first arcuate sealing surface with both said surfaces transcribing a circumferential path about said pivot axis, the piston including a floor extending substantially radially between said first arcuate sealing surface and said second arcuate sealing surface;

said combustion chamber has four walls;

one wall of the combustion chamber is of arcuate formation and describes a circumferential path from said pivot axis and against which said first arcuate sealing surface of the piston can seal;



and another wall of the combustion chamber is formed by said second arcuate sealing surface of said piston.

5,666,913

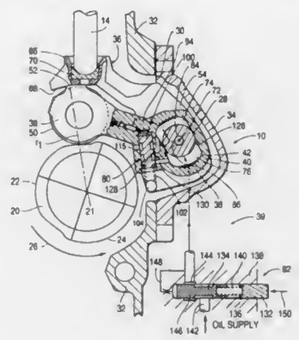
VARIABLE TIMING CAM FOLLOWER LEVER ASSEMBLY

Richard J. Gustafson, and Corydon E. Morris, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed May 29, 1996, Ser. No. 654,930

Int. Cl.[6] F01L *1/34*

U.S. Cl. 123—90.16 25 Claims



1. A cam follower lever mechanism for transmitting an actuating force from a cam, having an outer surface, to an engine component so as to move the engine component through an actuation stroke having a predetermined outer extension limit during each rotation of the cam while permitting variations in the timing of operation of the engine component, comprising:

a pivot support mounted adjacent the cam to define a pivot axis;

a follower lever means mounted on said pivot support for pivotal movement about said pivot axis, said follower lever means including a timing control lever mounted for nonpivotal movement relative to said pivot axis and including a first end pivotally connected to said pivot support and a second end positioned for abutment against the cam outer surface, said nonpivotal movement of said timing control lever causing said second end to move along the cam outer surface while maintaining said pivot axis stationary relative to the cam and

maintaining the predetermined outer extension limit of the actuation stroke substantially constant.

5,666,914

VANE TYPE ANGULAR PHASE ADJUSTING DEVICE

Masayasu Ushida, Okazaki, and Michio Adachi, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

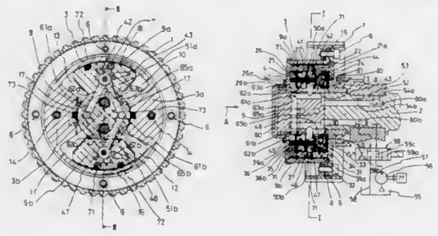
PCT No. PCT/JP95/00916, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/31633, PCT Pub. Date Nov. 23, 1995

PCT Filed May 12, 1995, Ser. No. 582,984

Claims priority, application Japan, May 13, 1994, 6-100114; Aug. 29, 1994, 6-203251

Int. Cl.[6] F01L *1/344*

U.S. Cl. 123—90.17 19 Claims



1. A vane-type angular-phase-adjusting device having an input shaft and an output shaft comprising:

a shoe housing having a circular space, and a fan-shaped space disposed radially outside said circular space formed inside said shoe housing and connected to one of said input and output shafts;

a vane rotor having a vane at an outer periphery and a rotating shaft, said vane projecting radially from said outer periphery and is disposed rotatably in said fan-shaped space to partition said space into an advancing chamber and a retarding chamber; and

a moving member, disposed inside said vane of said vane rotor, moving in response to oil pressure, said moving member comprising a member moving in a direction substantially in parallel with axes of said rotating shafts of said shoe housing and said vane rotor.

5,666,915

OIL PASSAGE STRUCTURE IN AN ENGINE

Fuminori Kawashima; Hideo Ueshima; Keiji Ohtsu; Yoshihito Tsuji, and Masayuki Takahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1995, Ser. No. 563,387

Claims priority, application Japan, Nov. 30, 1994, 6-296948; Oct. 23, 1995, 7-274109

Int. Cl.[6] F01L *9/02*

U.S. Cl. 123—196 R 5 Claims

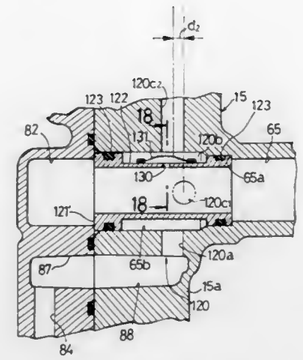
1. An oil passage structure in an engine, comprising:

a first oil passage having oil of a first hydraulic pressure;

a second oil passage having oil of a second hydraulic pressure which is different from said first hydraulic pressure, said first and second oil passages being provided in an engine body in an arrangement where they intersect each other when viewed in projection onto a plane parallel to an axis of the first oil passage;

a cylindrical partition member fitted into said first oil passage and provided on its outer surface at opposite ends thereof with annular seal members; and

an annular intermediate chamber defined between the outer surface of said partition member and an inner surface of said first oil passage, and said annular intermediate chamber sealed at opposite ends by said seal members, said second oil passage being provided in the engine body such that upstream and downstream passage portions of the second oil passage communicate with each other through said intermediate chamber.



5,666,916

APPARATUS FOR AND METHOD OF CONTROLLING INTERNAL COMBUSTION ENGINE

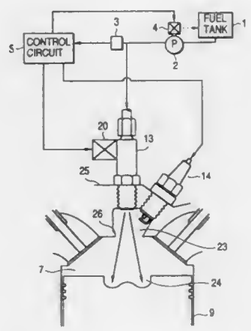
Mamoru Fujieda, Ibaraki-ken, Japan; Toshiharu Nogi, Novi, Mich.; Yoshishige Oyama, Hitachinaka, Japan; Minoru Ohsuga, Hitachinaka, Japan, and Takuya Shiraishi, Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,878

Claims priority, application Japan, Dec. 28, 1993, 5-334895; Dec. 28, 1993, 5-334928

Int. Cl.[6] F02P *15/08;* F02B *17/00;* F02D *41/38*

U.S. Cl. 123—295 14 Claims



1. Apparatus for controlling a spark-ignition internal combustion engine, comprising:

fuel injection means for injecting fuel directly into a combustion chamber of the spark-ignition engine;

ignition means for igniting a mixture in said combustion chamber;

torque detection means for detecting an output torque of the spark-ignition engine;

valve means for introducing an intake air into said combustion chamber;

fuel control means for controlling an amount of the fuel to be injected from said fuel injection means, and a timing of the injection of the fuel;

ignition timing control means for controlling an ignition timing of said ignition means; and

intake air amount control means for controlling an amount of the intake air into said combustion chamber;

wherein in order that a value of the output torque detected by said torque detection means can approach a predetermined value, said fuel control means changes the fuel amount, and said intake air amount control means changes the intake air amount, thereby changing an air/fuel ratio;

wherein said ignition means is provided in the vicinity of said fuel injection means;

wherein under a partial load, an air-fuel mixture is ignited after the fuel is injected, and a resulting flame is caused by a spray of the fuel to spread into a cylinder of the engine, thereby effecting combustion; and

wherein when a load is increased, so that soot is produced in a stratified combustion, the fuel injection is effected a plurality of times in a divided manner, and a premixture is produced within the cylinder by a front-half injection, and a flame, produced by a latter-half injection, is jetted into the cylinder to burn said premixture.

5,666,917

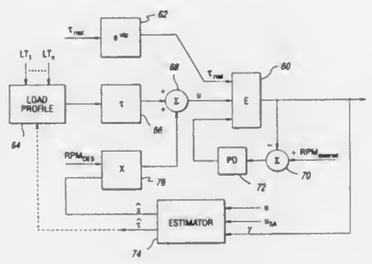
SYSTEM AND METHOD FOR IDLE SPEED CONTROL

Andrew Donald James Fraser, Ingatestone, England; John Stephen Mills, Novi, and Davorin David Hrovat, Dearborn, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jun. 6, 1995, Ser. No. 468,121

Int. Cl.[6] F02D *41/08;43/00*

U.S. Cl. 123—339.11 **17 Claims**



1. A method for controlling engine idle speed in a vehicle having an electronic control module in communication with an engine and at least one vehicle accessory powered by the engine such that operation of the at least one vehicle accessory causes a torque disturbance in operation of the engine, the method comprising:

storing an estimated torque disturbance profile representing disturbance torque as a function of time for each of the at least one vehicle accessory in the electronic control module;

detecting a request for operation of the at least one vehicle accessory;

generating a signal representing the estimated torque disturbance profile corresponding to operation of the at least one vehicle accessory; and

controlling the engine for a period prior to operation of the at least one vehicle accessory based on the generated signal so as to reduce engine idle speed variation.

5,666,918

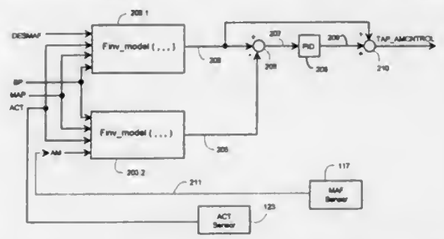
ENGINE AIRFLOW CONTROLLER WITH FEEDBACK LOOP COMPENSATION FOR CHANGES IN ENGINE OPERATING CONDITIONS

Tobias J. Pallett, Ypsilanti; Bradley J. Hieb, Dearborn, and Jerry D. Robichaux, Lincoln Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 11, 1995, Ser. No. 570,032

Int. Cl.[6] F02D *41/14;41/18*

U.S. Cl. 123—350 **11 Claims**



1. Apparatus for controlling the airflow rate past a throttle plate of an engine, positioned in an intake of the engine, the apparatus comprising:

means, responsive to an actual airflow value, indicative of the mass flow rate of air into said intake, and to a set of air intake values, indicative of a plurality of air intake characteristics, for generating an actual predicted throttle plate angle indicative of a first predicted position of said throttle plate;

means, responsive to a desired airflow value, indicative of a desired mass flow rate of air into said intake, and to said set of air intake values, for generating a desired predicted throttle plate angle indicative of a second predicted position of said throttle plate;

a controller, responsive to the difference between said actual predicted throttle plate angle and to said desired predicted throttle plate angle, for generating a throttle position change value;

means, responsive to said difference and to said desired predicted throttle plate angle, for generating a throttle angle control value indicative of a position of said throttle plate; and

means, for causing change of said throttle to a position which corresponds to said throttle angle control value.

5,666,919

ENGINE

Hiroki Ichinose, Fujinomiya; Keiso Takeda, Mishima; Susumu Kojima, and Shinji Sadakane, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

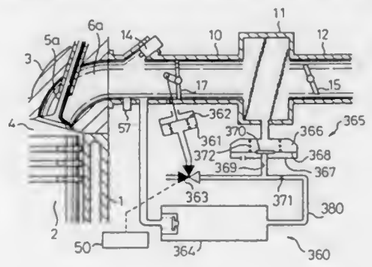
Division of Ser. No. 515,883, Aug. 16, 1995, Pat. No. 5,596,957. This application Oct. 21, 1996, Ser. No. 729,655

Claims priority, application Japan, Aug. 17, 1994, 6-193121; Apr. 7, 1995, 7-82857

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—399 **5 Claims**

1. An engine having an intake passage, a surge tank arranged in



the intake passage, a throttle valve arranged in the intake passage upstream of the surge tank, and a fuel injector arranged in the intake passage downstream of the surge tank for injecting fuel into the intake passage, the engine comprising:

an air-flow control valve arranged in the intake passage between the fuel injector and the surge tank;

valve control means for controlling a valve position of the air-flow control valve, the valve control means controlling the air-flow control valve to an intermediate open position which is between a closed position and a full open position thereof when an engine load is lower than a reference load depending on an engine speed, and to the full open position when the engine load is higher than the reference load;

a pressure sensor arranged in the intake passage between the surge tank and the air-flow control valve, for detecting a pressure in the intake passage; and

air-amount calculating means for calculating an amount of air fed into the engine based on outputs of the pressure sensor.

5,666,920

FUEL SUPPLY SYSTEM FOR USE WITH INTERNAL COMBUSTION ENGINE

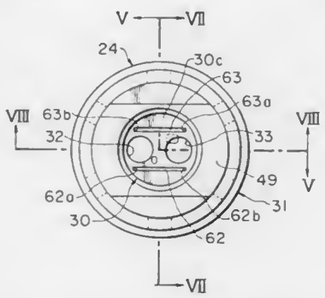
Yoshihiko Ito, Aichi-ken, and Yasuhide Tani, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 9, 1994, Ser. No. 193,852

Claims priority, application Japan, Feb. 12, 1993, 5-024189

Int. Cl.[6] F02M *69/04*

U.S. Cl. 123—432 **16 Claims**



1. A fuel supply system for internal combustion engines which supplies a fuel spray combustible in a combustion chamber of the internal combustion engine, said fuel supply system comprising:

fuel jet forming means for forming a first fuel jet flowing in a first direction and a second fuel jet flowing in a second direction; and

assist air supply means for supplying a first assist air jet in a first plane and a second assist air jet in a second plane substantially parallel to said first plane, said first fuel jet and said second fuel jet being disposed between said first plane and said second plane, said assist air supply means comprising a pair of slit-like assist air holes having slit-like openings such that said assist air jets atomize the fuel jets and confine the fuel jets between the assist air jets while maintaining two, separate fuel jet flows.

5,666,921

FUEL SUPPLY APPARATUS

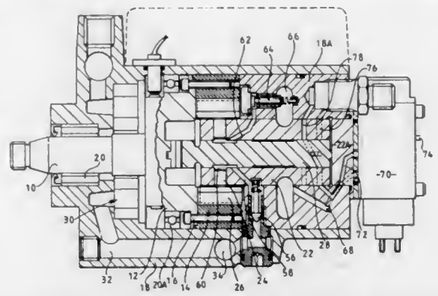
Peter Alban George Collingborn, Kent, United Kingdom, assignor to Lucas Industry Public Limited Company, England

Filed May 10, 1996, Ser. No. 644,516

Claims priority, application United Kingdom, May 12, 1995, 9509609

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—450 **11 Claims**



1. A distributor for use in a fuel supply apparatus, the distributor comprising a distributor member rotatable within a bore provided in a sleeve, the sleeve being provided with a plurality of delivery ports and a plurality of feed ports, the number of feed ports being smaller than the number of delivery ports, the distributor member being provided with a delivery passage registrable with the delivery ports, in turn, on rotation of the distributor member, and a plurality of feed passages registrable with the feed ports, in turn, on rotation of the distributor member, the delivery and feed passages communicating with one another and being arranged such that when the delivery passage registers with one of the delivery ports, at least one of the feed passages registers with a respective feed port.

5,666,922

FUEL LINE CONNECTOR

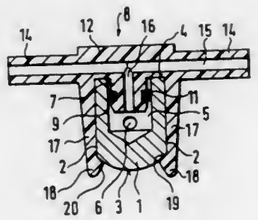
Erwin Krimmer, Pleuderhausen; Peter Jauernig, Tiefenbronn; Bruno Hezel, Stuttgart, and Andreas-Bernd Rosenbusch, Korb, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 30, 1995, Ser. No. 454,485

Claims priority, application Germany, Jun. 10, 1994, 94094276 U; Feb. 18, 1995, 195 055 74.8

Int. Cl.[6] F02M *55/02*

U.S. Cl. 123—470 **17 Claims**



1. A plastic fuel line connector having a connecting stub (7), which can be plugged into a connection bore (5) of a housing (1) and which produces a sealed communication by means of a seal (11) that surrounds the connecting stub together with the connection bore (5), a device for axially fixing the connecting stub (7) in the connection bore, the device for axial fixation of the connecting stub comprises a resiliently deflectable metal retaining arm that originates laterally from the connecting stub and has one end that

is embedded into the plastic fuel line connector, said arm extends in a plane longitudinally of an axis of the stub and extends resiliently along the housing (1) that receives the connection bore (5) when the connecting stub has reached its final plugged-in position.

5,666,923

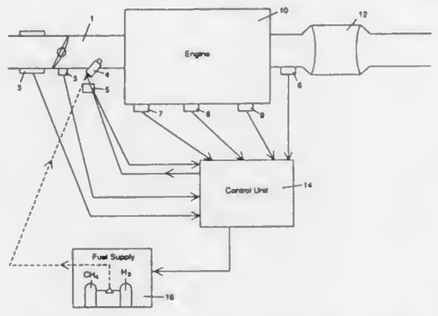
HYDROGEN ENRICHED NATURAL GAS AS A MOTOR FUEL WITH VARIABLE AIR FUEL RATIO AND FUEL MIXTURE RATIO CONTROL

Robert Kirk Collier, Jr., Merritt Island; Robert Louis Hockstra, Oviedo; David Neal Mulligan, Oakhill, and Douglas Edward Hahn, Melbourne, all of Fla., assignors to University of Central Florida, Orlando, Fla.

Continuation-in-part of Ser. No. 237,900, May 4, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 428,626

Int. Cl.[6] F02M *21/04*

U.S. Cl. 123—488 **11 Claims**



1. A method for producing lean burn (below stoichometric) and low NOx emission rates for an internal combustion engine of a mobile vehicle using an alternative hydrogen and natural gas mixed fuel to achieve a lean burn (below stoichometric) without regard to the burn and emission rates of gasoline, comprising the steps of:

feeding an alternative gaseous fuel mixture of greater than 21% up to approximately 50% hydrogen gas, and the remainder being natural gas to an internal combustion engine of a mobile vehicle; and operating the internal combustion engine at lean burn having an air and fuel equivalence ratio of approximately 0.6; and

emitting near zero NOx emissions below approximately 104 ppm (0.84 gm/hp hr), without misfiring the engine.

5,666,924

MALFUNCTION DIAGNOSIS DEVICE FOR FUEL-EVAPORATED-GAS PROCESSING DEVICE

Yoichi Kadota, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 499,148

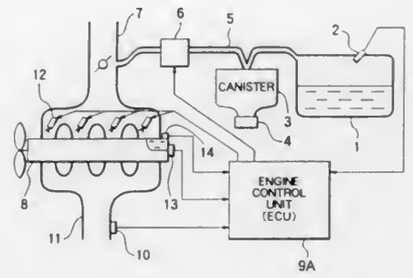
Claims priority, application Japan, Jul. 7, 1994, 6-156154

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **21 Claims**

1. A malfunction diagnosis device for a fuel-evaporated-gas processing device which absorbs a fuel evaporated gas in a fuel tank to an absorbing agent and supplies the fuel evaporated gas thus absorbed to an engine through a fuel-evaporated-gas passage with a valve disposed therein, said malfunction diagnosis device comprising:

malfunction determination means for determining a malfunction of said fuel-evaporated-gas processing device based on pressures in said fuel tank detected when said valve is opened and



closed or an amount of change in an air/fuel ratio of an air/fuel mixture supplied to said engine; and

determination processing means for prohibiting the determination of a malfunction of said fuel-evaporated-gas processing device while a malfunction of an exhaust gas-related-component other than said fuel-evaporated-gas processing device is checked, wherein when one of said exhaust-gas-related components other than said fuel-evaporated-gas processing device malfunction said determination processing means invalidates the result of a determination of malfunction of said fuel-evaporated-gas processing device which has been effected in the same malfunction checking cycle.

5,666,925

METHOD AND ARRANGEMENT FOR DIAGNOSING A TANK-VENTING SYSTEM

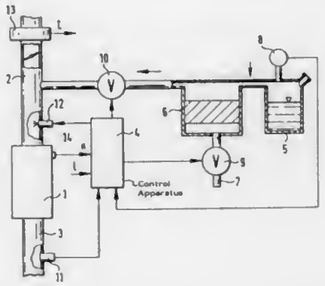
Helmut Denz, Stuttgart; Ernst Wild, Oberriexingen; Andreas Blumenstock, Ludwigshurg, and Georg Mallebrein, Singen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 15, 1996, Ser. No. 647,757

Claims priority, application Germany, May 18, 1995, 195 18 292.8

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **7 Claims**



1. A method for checking the tightness of a tank-venting system used with an internal combustion engine having an intake pipe, the tank-venting system including a fuel tank wherein fuel vapor forms, a storage device connected to the fuel tank, the storage device having a vent opening and a device for closing the vent opening, and a tank-venting valve interconnecting the intake pipe and said storage device whereby said fuel vapor is conducted from said tank to said intake pipe via said storage device and said tank-venting valve, the method comprising the steps of:

(a) during operation of the engine and while said venting opening is closed, carrying out one of the following:

(a1) opening said tank-venting valve and drawing a predetermined quantity of gaseous substance through said tank-venting valve, or

(a2) opening said tank-venting valve and drawing a gaseous substance through said tank-venting valve so long until a predetermined underpressure is reached in said tank-venting system,

so that a pressure fluctuation is produced in said tank-venting system with said pressure fluctuation being characterized by a plurality of characteristic variables;

(b) evaluating at least one of said characteristic variables to judge the tightness of said tank-venting system;

closing said tank-venting valve after carrying out each set of said steps (a) and (b) until the pressure reduction caused by said opening thereof is again compensated;

determining the mean closure time of said tank-venting valve over several periods of pressure compensation;

forming a criterion for the tightness of said tank-venting system from said mean closure time as a characteristic variable of said pressure fluctuation;

repeating said steps (a) and (b) after each elapse of a predetermined time span thereby averaging said characteristic variable; and,

evaluating said characteristic variable to judge the tightness of said tank-venting system.

5,666,926

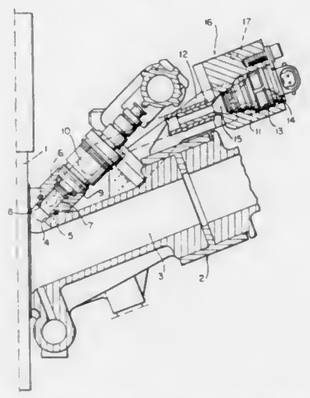
INTERNAL COMBUSTION ENGINE WITH METHANE INJECTION SYSTEM

Massimo Ferrera; Pietro Gianotti; Marco Mauro; Riccardo Gozzelino; Filippo Audisio, and Gianpiero Borello, all of Orbassano, Italy, assignors to Centro Ricerche Fiat Societa' Consortile per Azioni, Orebassano, Italy

Filed Mar. 5, 1996, Ser. No. 611,476

Int. Cl.[6] F02M *21/02*

U.S. Cl. 123—525 **9 Claims**



1. Internal combustion engine with a methane feed system having compression ignition, said system having a plurality of methane injection devices respectively associated with the various cylinders of the engine and mounted within respective seats communicating with a common distributing conduit or rail for feeding methane, and wherein the seats for the injection devices and said common distributing conduit are formed in an auxiliary body separate from the intake manifold and the head of the engine,

said engine further comprising an electronic control unit which provides for controlling the injection devices on the basis of signals indicative of the parameters of operation of the engine, so as to carry out the injection of methane into each cylinder, at least when the rotational speed of the engine is lower than a predetermined threshold, with the intake valve of said cylinder already opened, and

wherein said auxiliary body is interposed between the intake manifold and the engine head and conduits for passage of the air fed to the engine are formed through it, which communicate the cooperating conduits formed in the intake manifold and the engine head to each other, said auxiliary body further having a plurality of methane outlet holes which are aligned with said seats for the methane injection devices and respectively communicate with said conduit for passage of the air formed in the auxiliary body.

5,666,927

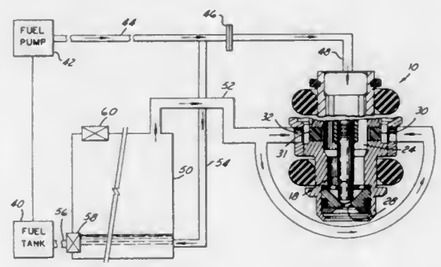
FUEL/AIR SUPPLY SYSTEM FOR A FUEL INJECTOR AND METHODS OF OPERATION

Jeffrey B. Pace, Newport News, and Vernon R. Warner, Wicomico, both of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Jul. 26, 1996, Ser. No. 686,937

Int. Cl.[6] F02M *23/00*

U.S. Cl. 123—533 **14 Claims**



1. A system for supplying a two-phase air/fuel dispersion to an engine comprising:

a fuel injector having an orifice, a fuel volume upstream of said orifice for containing fuel, a valve for opening and closing said orifice, and an air inlet to said fuel volume having a member for admitting air into said fuel volume to cause the formation of air bubbles in the fuel in said fuel volume;

a fuel supply line connected to said fuel injector for supplying fuel to said fuel volume;

a pressure reducer in said fuel supply line upstream of said fuel volume for supplying fuel to said fuel volume at a pressure lower than a fuel supply line pressure upstream of said pressure reducer;

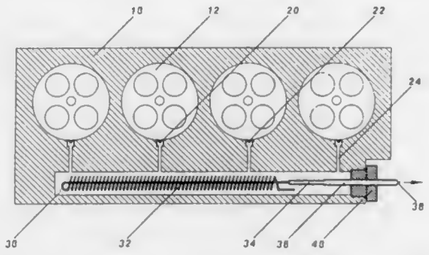
an air reservoir in communication with said air inlet for supplying air to said inlet at a pressure higher than the pressure of the fuel supplied to said fuel volume; and

a bypass line coupled between said air reservoir and said fuel supply line at a location upstream of said pressure reducer for supplying fuel to said air reservoir at a pressure corresponding to the supply line pressure upstream of said pressure reducer, thereby enabling flow of air to said air inlet at a higher pressure than the pressure of the fuel in said fuel volume and the formation of an air bubble/fuel dispersion in said fuel volume upstream of the fuel injector orifice.

5,666,928
COMPRESSED GAS SUPPLY

Thomas Tsoi-Hei Ma, Essex, United Kingdom, assignor to Ford Global Technologies, Inc., Dearborn, Mich.

PCT No. PCT/GB95/00366, § 371 Date Nov. 13, 1996, § 102(e) Date Nov. 13, 1996, PCT Pub. No. WO95/24553, PCT Pub. Date Sep. 14, 1995
PCT Filed Feb. 22, 1995, Ser. No. 714,073
Claims priority, application United Kingdom, Mar. 9, 1994, 9404497
Int. Cl.[6] F02M *23/00*
U.S. Cl. 123—534 **6 Claims**

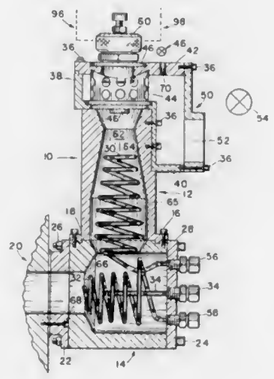


1. A compressed gas supply in an internal combustion engine, comprising a one-way valve (**20**) in at least one of the combustion chambers of the engine for bleeding a small proportion of the charge compressed in the combustion chamber into a plenum chamber (**30**) and a tube (**32**) communicating at one end with the plenum chamber (**30**) and having at its other end an outlet (**38**) from which gases can be supplied at a pressure substantially lower than the pressure within the plenum chamber, characterised in that the tube is a capillary tube (**32**) that acts as a temperature dependent flow regulator.

5,666,929
FUEL VAPORIZER FOR AN INTERNAL COMBUSTION ENGINE

James L. Knowlton, Whitehall, and Alan J. Workman, Muskegon, both of Mich., assignors to Tyma, Inc., Muskegon, Mich.

Filed Jun. 7, 1995, Ser. No. 482,219
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—546 **20 Claims**



1. A fuel vaporization device for an internal combustion engine comprising:

a housing defining a vaporization chamber;

a liquid fuel inlet to said chamber including a fuel distributor having the capacity to inject tiny fuel droplets into said chamber;

an ambient air inlet to said chamber to allow ambient air into said chamber to mix with said fuel droplets;

at least one turbulence generator in said chamber for creating ambient air turbulence for mixing fuel droplets and ambient air within said chamber into a fuel droplet ambient air mixture;

a second turbulence generator including means, positioned upstream of said vaporization chamber, for generating turbulence between said ambient air inlet and said vaporization chamber;

at least one heater in said chamber to convert the fuel droplet-ambient air mixture to a homogeneous gaseous air-fuel mix as said mixture passes through said chamber;

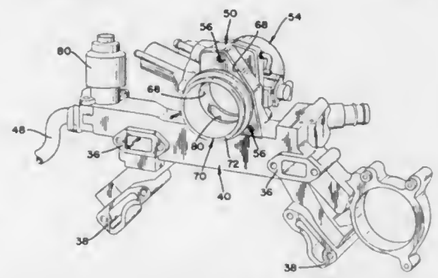
a heater controller operably associated with said heater and preset to regulate thermal output from said heater responsive to temperature of said gaseous air-fuel mix to prevent a temperature of said heater from exceeding that at which auto ignition would occur; and

an outlet conduit from said chamber for flow of said air-fuel mix to an internal combustion engine.

5,666,930
STRUCTURAL THROTTLE BODY MOUNT

Jack Edward Elder, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1996, Ser. No. 633,247
Int. Cl.[6] F02M *25/07*
U.S. Cl. 123—568 **3 Claims**

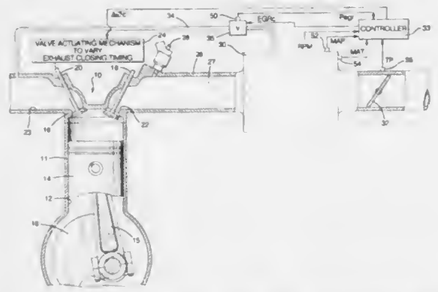


1. An intake system for conducting air to a v-configured, internal combustion engine, said engine comprising a cylinder block, first and second cylinder heads and an engine coolant crossover conduit extending between said cylinder heads, said engine coolant crossover conduit including coolant passages operable to conduct coolant from said first cylinder head to said second cylinder head and a throttle body mounting flange extending outwardly from said conduit and including a first, throttle body mounting surface surrounding an opening extending through said flange to a second, side of said flange, said intake system further comprising an intake manifold, mounted to said cylinder block and cylinder heads and having means for distributing intake air, introduced through an inlet, to said engine, and a throttle body for metering intake air through a throttle body bore, said throttle body mounted to said throttle body mounting surface of said throttle body mounting flange, said opening of said throttle body mounting flange operable with said throttle body bore to conduct inlet air from said throttle body and to a conduit extending between said second side of said throttle body mounting flange and said inlet opening of said intake manifold, said engine coolant crossover conduit further including an exhaust gas passage extending from an exhaust gas source to an outlet in said opening of said throttle body mounting flange, said exhaust gas passage associated with an exhaust gas metering valve to regulate the flow of exhaust gas through said exhaust gas passage and to said opening, wherein said exhaust gas is introduced into the intake air flow passing through said throttle body bore and said opening in said flange for delivery to said intake manifold, and said throttle body mounting flange operable as a sink for heat from said coolant passages in said engine coolant crossover to heat said throttle body.

5,666,931
INTEGRATED ENGINE DILUTION CONTROL

Ronald Jay Pierik, and Daniel Francis Kabasin, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1996, Ser. No. 634,500
Int. Cl.[6] F02M *25/07*
U.S. Cl. 123—568 **11 Claims**



1. An integrated dilution control method for controlling dilution of intake air passing through an intake manifold of an internal combustion engine having variable valve timing control means for controlling internal dilution by controlling the relative timing of engine cylinder intake and exhaust valve events and having exhaust gas recirculation (EGR) control means for controlling external dilution by controlling recirculation of engine cylinder exhaust gasses through an EGR conduit, the method comprising the steps of:

storing a calibrated model of a relationship between predetermined dilution control parameters;

sensing presence of a predetermined operating condition when dilution of the intake air is required;

controlling dilution when the predetermined operating condition is present, by:

(a) generating a desired dilution value;

(b) calculating a desired intake manifold air pressure as a predetermined function of the desired dilution value;

(c) generating a valve timing command as a function of the desired intake manifold air pressure as the valve timing command providing internal dilution sufficient to drive intake manifold air pressure toward the desired intake manifold air pressure; and

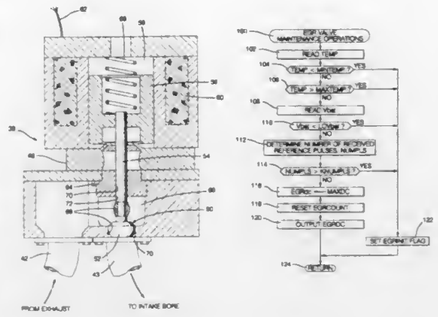
(d) controlling internal dilution by controlling relative timing of engine cylinder intake and exhaust valve events in accord with the valve timing command.

5,666,932
EGR VALVE MAINTENANCE METHOD

Paul Alan Bauerle, Dewitt; Robert Francis Semrau, Ovid, and John Norman Stockbridge, Lansing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 22, 1996, Ser. No. 636,081
Int. Cl.[6] F02M *25/07*
U.S. Cl. 123—571 **6 Claims**

1. In an internal combustion engine having an engine exhaust gas recirculation path with an electrically controlled recirculation valve therein for controlling the volume of exhaust gas recirculated through the recirculation path, a valve maintenance method comprising the steps of:



sensing an engine power-up condition;

referencing a predetermined valve drive command corresponding to a substantially fully open valve position upon sensing the engine power-up condition;

applying the predetermined valve drive command to the valve upon sensing the engine power-up condition;

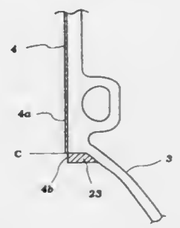
sensing a predetermined termination condition; and

reducing the predetermined valve drive command toward a predetermined minimum command upon sensing the predetermined termination condition.

5,666,933
SLEEVELESS CYLINDER BLOCK WITHOUT MARGINAL PLATING COATING

Masao Koriyama, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 20, 1995, Ser. No. 406,691
Claims priority, application Japan, Mar. 18, 1994, 6-074317
Int. Cl.[6] F02F *1/00*
U.S. Cl. 123—668 **6 Claims**



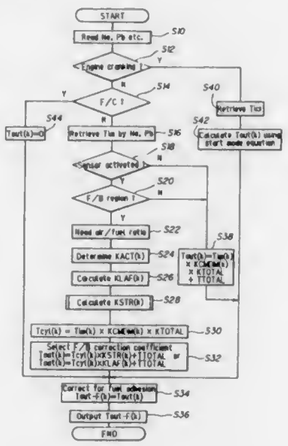
1. A sleeveless cylinder block formed from a material selected from the group of aluminum and aluminum alloys and having at least one cylinder bore, the inside surface of said cylinder bore swept by a piston through its stroke being plated by electroplating, wherein a marginal portion from the bottom end of the inside surface of said cylinder bore on the side of a cylinder skirt and the remaining part of the cylinder block lower than the portion of the cylinder bore swept by the piston are not plated, said portion having a width of 2–20 mm for permitting the formation of a liquid seal of said portion during the plating process.

5,666,934

FUEL METERING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hidetaka Maki; Shusuke Akazaki; Yusuke Hasegawa, and Yoichi Nishimura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,501
Claims priority, application Japan, Dec. 30, 1994, 6-340021; Feb. 25, 1995, 7-061651; Feb. 25, 1995, 7-061654
Int. Cl.[6] F02D 41/00
U.S. Cl. 123—679 82 Claims



1. A system for controlling fuel metering for a multi-cylinder internal combustion engine, said engine having an exhaust system, said system comprising:

(a) an air/fuel ratio sensor located in the exhaust system of the engine for detecting an air/fuel ratio;

(b) engine operating condition detecting means for detecting engine operating conditions including at least engine speed and engine load;

(c) fuel injection quantity determining means coupled to said engine operating condition detecting means, for determining a quantity of fuel injection for individual cylinders based on at least the detected engine operating conditions at a predetermined crank angle of the individual cylinders;

(d) fuel injector means coupled to said fuel injection quantity determining means, for injecting fuel into the individual cylinders of the engine based on the determined quantity of fuel injection; and

(e) feedback loop means having an adaptive controller means and an adaptation mechanism means coupled to an input of said adaptive controller means for estimating controller means parameters, said adaptive controller means correcting the quantity of fuel injection to bring a controlled variable obtained based on at least an output of said air/fuel ratio sensor, to a desired value,

wherein:

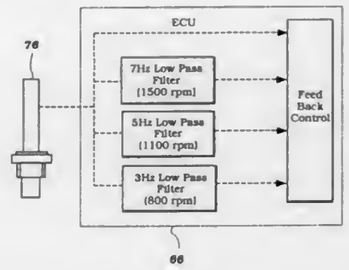
said adaptation mechanism means is operated in synchronism with the predetermined crank angle of at least one of the cylinders of the engine.

5,666,935

FUEL INJECTION CONTROL FOR ENGINE

Masahiko Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 19, 1995, Ser. No. 545,409
Claims priority, application Japan, Oct. 19, 1994, 6-253706
Int. Cl.[6] F02D 41/14
U.S. Cl. 123—687 16 Claims



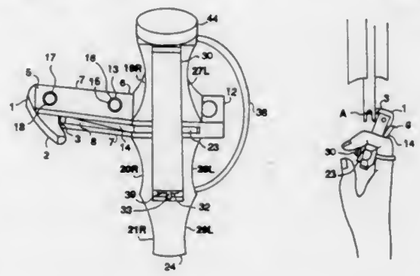
1. An internal combustion engine comprised of at least one combustion chamber, an induction system for delivering an air charge to said combustion chamber, a charge-forming system for delivering a fuel charge to said combustion chamber, the fuel-air charge in said combustion chamber being ignited therein, an exhaust system for discharging combustion products from said combustion chamber to the atmosphere, a nonlinear sensor for sensing when the fuel-air ratio changes between rich and lean, a feedback control for controlling at least one of said charge-forming and induction systems for maintaining the desired fuel-air ratio in response to the output of said sensor, and at least two fixed filters tuned for two different speeds for filtering the output from said sensor at at least some running conditions.

5,666,936

ERGONOMIC INERTIA BOWSTRING RELEASE

Felix M. Estrada, 2306 N. MacArthur #1032, Irving, Tex. 75062

Filed Nov. 16, 1995, Ser. No. 518,557
Int. Cl.[6] F41B 5/18
U.S. Cl. 124—35.2 9 Claims



1. A bowstring release comprising:

a base grip member, said base grip member being of a size and shape to be grasped by an archer's fingers and held generally vertically when in use,

said base grip member when held vertically including an upper section and a lower section,

a bore extending from said upper section and ending in a blind bore in said lower section,

a fastener insertable into said bore and extending from said upper section to said blind bore,

a generally horizontal slot or cavity formed through said base grip member intermediate said upper and lower sections, said fastener intersecting said cavity;

a tip grip member having a bottom section pivotally attached about a generally horizontal axis toward the lower section of the base grip member, such that the top section is able to move toward and away from the base grip member;

a body member, said body member being received in said cavity of the base grip member and including a rearward portion, and a forward portion extending horizontally from the base grip member,

said body member including at least one vertical hole toward the rearward portion through which said fastener passes to pivotally retain said body member in said cavity,

said body member comprising an upper and lower flange, a pawl lever pivotally attached between the upper and lower flange,

said pawl lever including a rearward branch extending toward the rearward portion of the body member and a forward branch extending toward the forward portion of the body member;

a bowstring support lever including a bowstring retaining hook pivotally attached between the upper and lower flange toward the forward portion of the body member,

the pawl lever and the bowstring support lever having complementary pawl surfaces to lock the bowstring support lever in a bowstring retaining position when the pawl lever is forcibly pivoted into engagement with the bowstring support lever, the force of a retained bowstring tending to disengage the pawl lever to allow the bowstring support lever to pivot to a disengaged position,

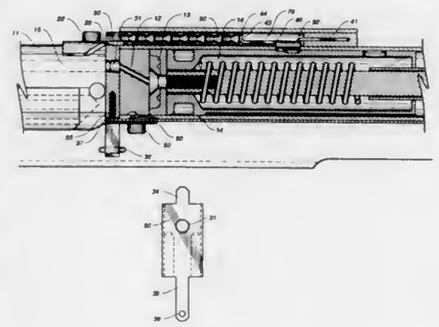
said tip grip member engageable with the rearward branch of the pawl lever such that when the archer grips the base grip member and tip grip member, the tip grip member urges the pawl member into engagement with the bowstring support lever to retain the bowstring; but when the archer relaxes the grip, the tip grip member is able to pivot out of engagement with the pawl lever, to allow the pawl lever to be disengaged to allow the bowstring to be released.

5,666,937

REPEAT-FIRE PELLET RIFLE AND IMPROVED PELLETS

Hector Mendoza-Orozco, Fuego 986, colonia Jardines del Pedregal, 01900 Alvaro Obregón, Federal District, Mexico

Filed Sep. 22, 1995, Ser. No. 532,146
Claims priority, application Mexico, Mar. 13, 1995, 951316
Int. Cl.[6] F41B 11/14
U.S. Cl. 124—67 5 Claims



1. A loading apparatus for fixing to a barrel of a pellet rifle for sport shooting comprising:

a rectangular curved upper plate having means thereon for fixing said upper plate to the barrel, said upper plate having a pair of fingers extending outwardly therefrom;

a rectangular curved lower plate having means thereon for fixing said lower plate to the barrel, said lower plate having adjustment grooves formed thereon so as to maintain said lower plate in a fixed position relative to the barrel, said lower plate having a pair of fingers extending outwardly therefrom;

a rectangular vertical loading plate having a central bore hole, said loading plate having an upper tongue and a lower tongue, said upper tongue being slidably received between said pair of fingers of said upper plate, said lower tongue being slidably received between said pair of fingers of said lower plate, said loading plate having a hole formed in said lower tongue through which a limiting bolt extends, said limiting bolt positioned below said lower plate, said loading plate having a plurality of bores formed therein, each of said plurality of bores receiving a spring therein, said spring contacting said lower plate so as to urge said loading plate upwardly;

a pellet loader having means thereon for fixing said pellet loader to the barrel, said pellet loader having an ammunition exit at one end, said upper tongue being positioned so as to cover said ammunition exit when said loading plate is in an upward position, said pellet loader having a window means formed at approximately half of a length of said pellet loader, said window means for allowing a pellet to be introduced into said pellet loader; and

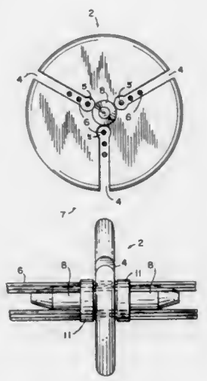
a puller means for feeding the pellet from said pellet loader into the barrel, said puller means comprising a pusher plate having a side leg extending outwardly therefrom, said pusher plate having a folded end extending into said pellet loader so as to push the pellets through the pellet loader, said pusher plate having a spring means affixed to an end opposite said folded end for urging said folded end toward said lower plate.

5,666,938

BOW STRING KISSER BUTTON

Gary L. Simonds, Gainesville, Fla., assignor to Bear Archery, Inc., Gainesville, Fla.

Filed Jul. 31, 1995, Ser. No. 509,224
Int. Cl.[6] F41B 5/14
U.S. Cl. 124—90 18 Claims



10. An improved bow string kisser button for being positioned on a bow string to assist the archer in achieving a constant draw location, said kisser button comprising at least two slots for receiving the strands of a bow string and including two solid hub portions extending therefrom.

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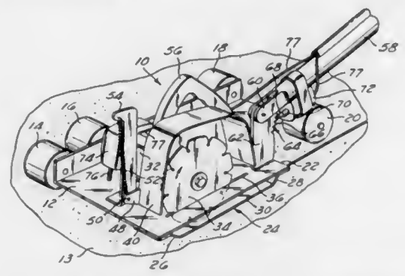
SOFT CONCRETE SAW

Edward Chiuminatta, and Alan Ray Chiuminatta, both of 6677 Columbus, Riverside, Calif. 92504

Continuation of Ser. No. 86,944, Jul. 2, 1993, Pat. No. 5,582,899, which is a continuation of Ser. No. 680,816, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 539,783, Jun. 18, 1990, abandoned, which is a division of Ser. No. 386,814, Jul. 27, 1989, Pat. No. 4,938,201, which is a division of Ser. No. 185,055, Apr. 22, 1988, Pat. No. 4,889,675, which is a continuation of Ser. No. 843,779, Mar. 25, 1986, Pat. No. 4,769,201. This application Jun. 7, 1995, Ser. No. 477,874

Int. Cl.[6] B28D *1/04*

U.S. Cl. 125—13.01 **39 Claims**



1. A concrete saw for cutting grooves in a concrete surface, the saw having a motor rotating a concrete cutting blade with a leading cutting edge, two sides and a trailing edge, the cutting blade being rotated in an upcut rotation by a motor, comprising:

at least one support surface mounted on the saw so that the support surface contacts the concrete surface within 3/16 inches of at least one side of the cutting blade at the location where the cutting edge exits from the concrete during cutting of the concrete; and

a wheel connected to the saw so as to support a portion of the saw's weight as the saw moves across the concrete surface during cutting.

5,666,940

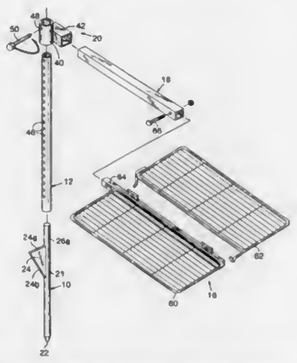
POST-SUPPORTED BARBECUE ASSEMBLY

James H. Kreiter, 18155 S. Abiqua Rd. NE., Silverton, Oreg. 97381, assignor to James H. Kreiter, Silverton, Oreg.

Filed Oct. 5, 1995, Ser. No. 539,378

Int. Cl.[6] A47J *37/00;* **F24B** *3/00*

U.S. Cl. 126—30 **3 Claims**



1. A post-supported barbecue assembly comprising:

an elongate ground penetrator having a lower ground-penetrating end and an upper end,

a knee secured to the ground penetrator intermediate the ends of the penetrator,

an elongate standard rotatably supported on and detachably mounted on the upper end of the ground penetrator,

a collar adjustably positionable along the length of said standard, and

a cooking instrumentality removably mounted on said collar.

5,666,941

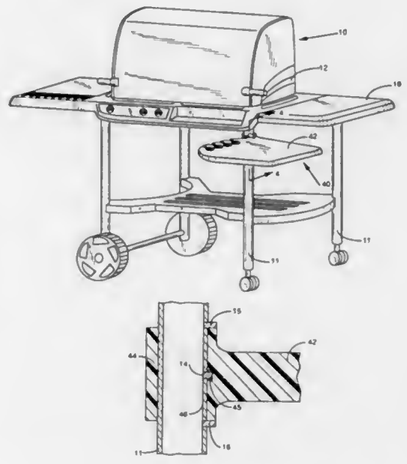
SWING-OUT SIDE TABLE FOR BARBECUE GRILL

Rainer B. Teufel, Colombus, Ohio; Michael Glebel, Joplin, Mo.; Steven Speck, and Michael Franks, both of Neosho, Mo., assignors to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Aug. 15, 1994, Ser. No. 290,424

Int. Cl.[6] A47J *37/00*

U.S. Cl. 126—41 R **14 Claims**



1. A side table for a barbecue grill, comprising: a table member defining at least one depression adjacent a first side of said table member, said at least one depression surrounding at least a portion of an open slot in said first side of said table member for receiving and supporting a cooking utensil and means for rotatably supporting said table member on a vertical leg of said barbecue grill such that said table member is rotatable in horizontal plane about said vertical leg.

5,666,942

FLUE INSERT TO CONTROL EXHAUST GASES

Gaius D. Kazen, 4304 172nd St., Stanwood, Wash. 98292

Filed Aug. 31, 1993, Ser. No. 115,309

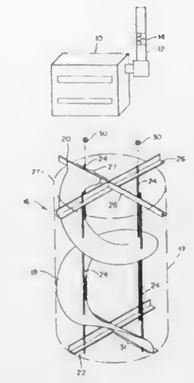
Int. Cl.[6] F23J *11/00*

U.S. Cl. 126—307 R **6 Claims**

1. Apparatus for control of the flow of exhaust gases through a furnace flue system, comprising:

a helical vane having a substantial open center axial area, the helical vane extending for at least 360°, wherein the width of the vane is approximately one-third the diameter of the flue, and wherein the vane rotates counterclockwise from a furnace end of an exhaust flue towards an atmospheric end thereof; and

means mounting the helical vane within the flue, wherein the counterclockwise rotation of the vane opposes the natural helical flow of the exhaust gases, resulting in a reduced air flow through the flue.



5,666,943

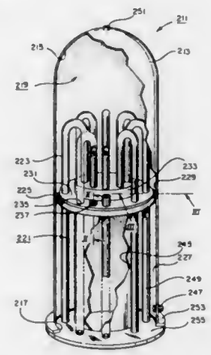
WATER HEATER OR BOILER WITH IMPROVED TANK DESIGN

Charles L. Adams, Fort Worth, Tex., assignor to PVI Industries, Inc., Fort Worth, Tex.

Filed Nov. 2, 1995, Ser. No. 552,007

Int. Cl.[6] F24H *1/20*

U.S. Cl. 126—360 R **16 Claims**



1. A water heater including a tank having external and internal sidewalls and an end opening, the internal sidewalls defining an open interior normally containing water under pressure, the improvement comprising:

a submergible, pressurized combustion chamber having at least one external heating surface, said combustion chamber being insertible through the end opening into the open interior whereby the external heating surface is submerged in the water under pressure;

combustion means for supplying the products of combustion to the submergible, pressurized combustion chamber;

resilient sealing means carried by the submergible, pressurized combustion chamber for forming a sliding seal with the tank internal sidewalls as the combustion chamber is inserted within the tank interior, whereby the initially open interior of the tank is divided into a primary and secondary heat exchange compartments;

a water inlet to a selected one of the heat exchange compartments and a water outlet from the other of the heat exchange compartments;

crossover means for allowing the controlled passage of water from a selected one of the heat exchange compartments to the other.

5,666,944

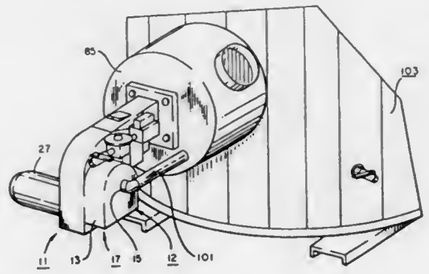
WATER HEATING APPARATUS WITH PASSIVE FLUE GAS RECIRCULATION

Mark A. Ferguson, Watauga, Tex., assignor to PVI Industries, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 79,156, Jun. 17, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 524,001

Int. Cl.[6] F23C *9/06*

U.S. Cl. 126—391 **4 Claims**



1. A water heating apparatus comprising:

a closed tank having an exterior, an interior and external walls having at least one opening therein;

a submerged, pressurized combustion chamber mounted within the tank opening by means of a mounting flange, the combustion chamber having multiple external heating surfaces which are submerged in water under pressure when the combustion chamber is mounted within the tank opening;

a flue collector mounted to the combustion chamber mounting flange on the tank exterior, the flue collector having a flue opening communicating with the combustion chamber and having an annular chamber surrounding the flue opening and separated therefrom which receives the products of combustion produced within the combustion chamber, the annular chamber having a flue exhaust outlet and a flue gas recirculation outlet;

an air-fed, forced draft burner having an air intake region for the intake of fresh air, a fuel/air mixing passage leading to a combustion region, a motor-driven impeller for forcing air from the intake region in the direction of the combustion region and a burner nozzle, the burner nozzle being mounted within the flue opening of the flue collector for producing controlled combustion within the combustion chamber;

an air intake box having a fresh air inlet, the air intake box being connected by means of an air intake passage with the air intake region of the forced draft burner;

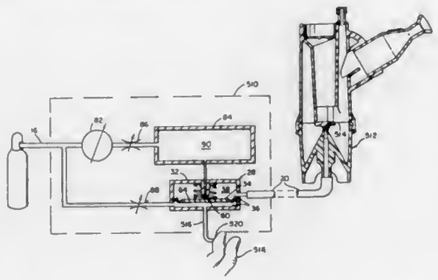
a primary flue gas recirculation conduit passively connecting the flue gas recirculation outlet with the air intake region of the burner upstream of the combustion region and burner nozzle, whereby fresh air and recirculated flue gas are mixed in the air intake region of the burner prior to entering the combustion region and burner nozzle; and

a secondary flue gas recirculation conduit connecting the flue gas recirculation outlet with the air intake box for providing recirculated flue gas to the forced draft burner during periods of low burner fire or pilot operations.

5,666,945
PNEUMATICALLY-OPERATED GAS DEMAND APPARATUS

James M. Davenport, Fallbrook, Calif., assignor to Salter Labs, Arvin, Calif.

Filed Jun. 7, 1995, Ser. No. 488,202
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 13 Claims



1. In combination with a nebulizer for producing a medicament-containing aerosol and a source of pressurized gas, an intermittent gas delivery device disposed between and in intermittent fluid communication with the nebulizer and the source of pressurized gas, comprising:

(a) a regulator mechanism in continuous fluid communication with and disposed downstream of the source of pressurized gas;

(b) a bolus chamber structure defining a bolus chamber therein and disposed downstream of and in fluid communication with said regulator mechanism;

(c) a supply orifice element having a supply orifice formed therethrough, said supply orifice element disposed between said regulator mechanism and said bolus chamber, said supply orifice providing fluid communication between said regulator mechanism and said bolus chamber; and

(d) a supply valve in downstream fluid communication with said supply orifice and operative to move between a flow-blocking position whereby the pressurized gas is prevented from flowing from the source to the nebulizer and a flow-supplying position whereby the pressurized gas flows from the source to the nebulizer such that a high flow pulse of pressurized gas first generates a fine-mist plume of the medicament-containing aerosol in the nebulizer and subsequently a steady state flow of pressurized gas continues to produce the fine-mist plume of the medicament-containing aerosol in the nebulizer until said supply valves moves to the flow-blocking position.

5,666,946
APPARATUS FOR DELIVERING DRUGS TO THE LUNGS

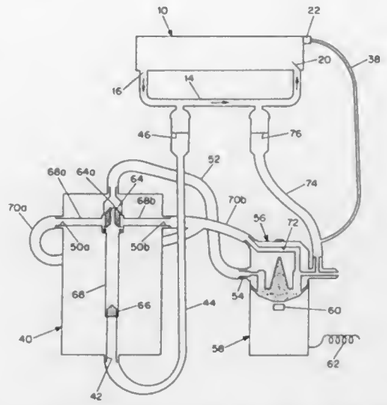
Edward G. Langenback, Bellport, N.Y., assignor to Respirogenics Corporation, Bellport, N.Y.

Continuation of Ser. No. 274,238, Jul. 13, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 632,964
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.16 32 Claims

1. Apparatus for delivering drugs to the lungs of a patient comprising

a ventilator having a gas delivery outlet and a gas return inlet, a series conduit leading from the ventilator outlet to the gas return inlet, a return gas outlet valve at the gas return inlet, and a pressure transducer in the ventilator that is adapted to operate the ventilator return gas outlet valve in response to a pressure;

a nebulizer having means for forming an aerosol from a solution of a drug in a liquid and having an inlet and an outlet;



a first conduit connected between the series conduit and the nebulizer inlet and having a one-way valve permitting gas to flow only from the series conduit to the nebulizer inlet;

a second conduit connected between the nebulizer outlet and the series conduit at a location downstream, with respect to the direction of gas flow through the series conduit from the ventilator delivery outlet, from the connection between the first conduit and the series conduit, the second conduit having a one-way valve permitting gas to flow only from the nebulizer to the series conduit;

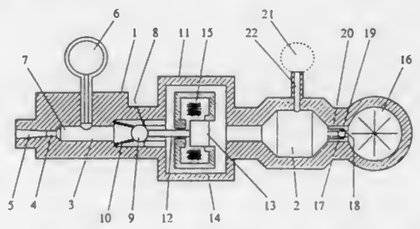
a pressure sensor conduit connected between the second conduit at a location upstream from the one-way valve in the second conduit, with respect of the direction of gas flow to the series conduit, and the pressure transducer so as to communicate the pressure at said location to the pressure transducer; and

an endotracheal tube connected to the nebulizer outlet and communicating with the second conduit upstream from the one-way valve in the second conduit, with respect of the direction of gas flow to the series conduit.

5,666,947
FORMATION AND DELIVERY OF AN ATOMIZED LIQUID

Michael Leonard McKay, Kardinya, Australia, assignor to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia

PCT No. PCT/AU94/00657, § 371 Date Mar. 27, 1996, § 102(e) Date Mar. 27, 1996, PCT Pub. No. WO95/11714, PCT Pub. Date May 4, 1995
PCT Filed Oct. 27, 1994, Ser. No. 615,287
Claims priority, application Australia, Oct. 28, 1993, PM2079
Int. Cl.[6] B65D *83/14*
U.S. Cl. 128—200.21 41 Claims

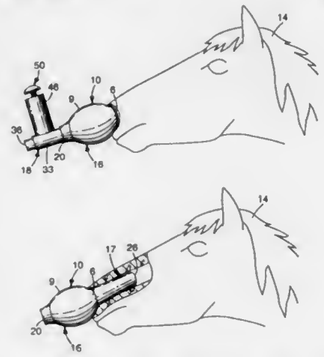


1. A method of delivering an atomised liquid including supplying a liquid to an admixing chamber, separately supplying a compressed gas to the admixing chamber, the compressed gas at least substantially completely evacuating the liquid held in the admixing chamber and delivering the liquid through an atomising means to atomise the liquid, wherein the quantity of the liquid and the compressed gas supplied to the admixing chamber is controlled to thereby maintain a predetermined mass ratio of the liquid and the supplied compressed gas.

5,666,948
ATTACHMENT FOR AEROSOL DEVICE FOR LARGE ANIMALS AND METHOD OF USE

Charles J. Matson, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 269,635, Jul. 1, 1994, abandoned, which is a continuation of Ser. No. 17,137, Feb. 12, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,177
Int. Cl.[6] A61M *11/00;15/00;16/10*
U.S. Cl. 128—200.23 40 Claims



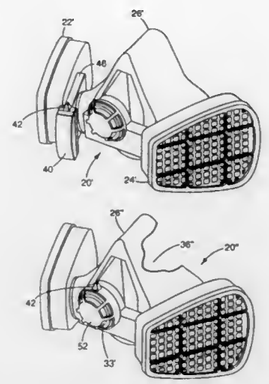
1. Apparatus adapted to be at least partially inserted into a nostril of a large animal such as a horse for administering an aerosol to the large animal, the large animal having a nasal passageway and a nasal-pharyngeal cavity, the apparatus being adapted for use with an aerosol generating device, the apparatus comprising:

a conduit having outer surfaces, a proximal end, a distal end having an outlet, and inner surfaces that are sized and shaped to afford passage of an aerosol through the conduit,

the inner surfaces defining a lumen extending between the proximal and distal ends and opening to said outer surfaces at said outlet, the lumen being sized and shaped to afford expansion of an aerosol during at least a portion of the passage through the conduit;

the conduit having a length which affords locating the outlet in the nasal passageway of the large animal without projecting into the nasal-pharyngeal cavity of the large animal; and

connecting surfaces for connecting the conduit to an aerosol generating device so that the outlet of the conduit may be placed in fluid communication with an aerosol generating device.



at least one sensor having at least one property responsive to a concentration of a target species; and

a processing device generating a concentration signal as a function of the at least one property, the processing device including a single signal indicator activated as a function of the concentration signal, the processing device further including driving means for continuously driving the indicator at one of a first signaling rate indicative of a readiness state of an exposure indicating apparatus operating within predefined design parameters, a second signaling rate discernible from the first signaling rate indicative of an exposure indicating apparatus operating outside of the predefined design parameters, a threshold exposure signaling rate indicative of the concentration attaining a predetermined threshold concentration, and a varying exposure signaling rate that varies as a function of the concentration signal after the predetermined threshold concentration is attained.

5,666,949
EXPOSURE INDICATOR WITH CONTINUOUS ALARM SIGNAL INDICATING MULTIPLE CONDITIONS

Mark K. Debe, Stillwater; Lowell R. Miller, White Bear Lake; Edward E. Parsonage, Minneapolis; Richard J. Poirier, White Bear Lake, all of Minn., and Gregory Yuschak, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 24, 1994, Ser. No. 328,106
Int. Cl.[6] A62B *9/04;7/00;18/08;* B01D *19/00*
U.S. Cl. 128—202.22 19 Claims

1. An exposure indicating apparatus comprising:

5,666,950
FILTER DEVICE FOR A TRACHEOSTOMA

Rory James Maxwell Smith, Skipton, Great Britain, assignor to Kapitex Healthcare Ltd., Wetherby, United Kingdom

PCT No. PCT/GB93/01428, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/01199, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 8, 1993, Ser. No. 362,603
Claims priority, application United Kingdom, Jul. 10, 1992, 9214716
Int. Cl.[6] A62B *19/00;* A61M *16/04*
U.S. Cl. 128—207.14 18 Claims



1. A filter device to filter air that is to be breathed through a tracheostoma, which comprises:

(a) a first zone for filtering matter filtered in a normal nasal cavity from air passing through the filter,

(b) a second zone which provides means of exchange of heat and moisture with the air, said first and second zones providing resistance to air flow through the zones of the device of at least about 0.2 kPa.s.l^{-1}, and

(c) sealing means for forming a seal between the device and the stoma substantially continuously around the periphery of the device so as substantially to prevent leakage of air around the sides of the device between the device and the stoma, and so that the device provides the resistance to air flow in breathing when in use on both inhalation and exhalation.

5,666,951

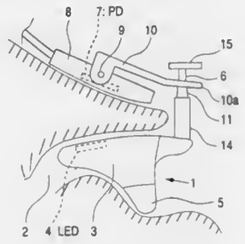
Patent Not Issued For This Number

5,666,952

TISSUE TRANSMITTED LIGHT SENSOR

Masayoshi Fuse, and Takuo Aoyagi, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed May 7, 1996, Ser. No. 643,944
Claims priority, application Japan, May 8, 1995, 7-109463
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **2 Claims**



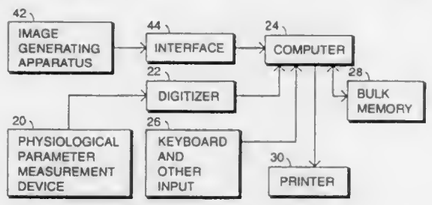
1. A tissue transmitted light sensor comprising:
an external auditory canal arm which holds one of a light emitting unit and a light receiving unit, said external auditory canal arm adapted to be inserted into an external auditory canal of an ear of a subject;
an attaching portion holding the other one of said light emitting unit and said light receiving unit, said attaching portion adapted to be attached on an outer face of a temporal artery in the vicinity of the ear;
a supporting shaft which is arranged proximate to one end of said external auditory canal arm;
a holding arm rotatably holding at one end said attaching portion and having a column at the other end, a through hole being formed in said column, said supporting shaft being inserted into said through hole so as to be slidable in an axial direction; and
a spring wound around said supporting shaft and connecting said external auditory canal arm with said holding arm.

5,666,953

SYSTEM AND ASSOCIATED METHOD FOR PROVIDING INFORMATION FOR USE IN FORMING MEDICAL DIAGNOSIS

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Division of Ser. No. 819,120, Jan. 10, 1993, Pat. No. 5,437,278.
This application Aug. 1, 1995, Ser. No. 510,104
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—653.1 **5 Claims**



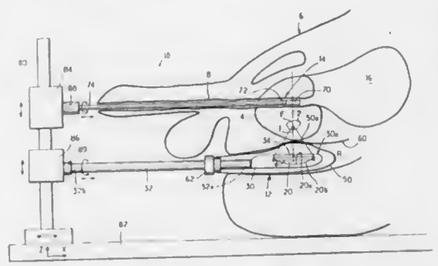
1. A system for providing information useful in forming a medical diagnosis, comprising:
a flexible web conformable to a patient;
at least one electroacoustic transducer attached to said web;
means for energizing said transducer with an electrical signal of a pre-established ultrasonic frequency;
a plurality of acoustoelectric transducers attached to said web in a predetermined array; and
analyzing means operatively connected to said acoustoelectric transducers for analyzing sounds detected thereby upon energization of said electroacoustic transducer, said means for analyzing including means for receiving signals from said acoustoelectric transducers in a predetermined sequence.

5,666,954

THERAPEUTIC ENDO-RECTAL PROBE, AND APPARATUS CONSTITUTING AN APPLICATION THEREOF FOR DESTROYING CANCER TISSUE, IN PARTICULAR OF THE PROSTATE, AND PREFERABLY IN COMBINATION WITH AN IMAGING ENDO-CAVITARY-PROBE

Jean-Yves Chapelon, Villeurbanne; Dominique Cathignol, Genas; Albert Gelet, Lyons, and Emmanuel Blanc, Saint Genis Laval, all of France, assignors to Technomed Medical Systems Inserm-Institut National de la Sante et de la Recherche Medicale, Paris Cedex, and Parc d'Activites la Poudrette Lamartine, Vaulx-en-Velin, both of France

Continuation of Ser. No. 200,877, Feb. 22, 1994, Pat. No. 5,474,071, which is a continuation of Ser. No. 795,197, Nov. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,738
Claims priority, application France, Mar. 5, 1991, 91 02620; Jul. 19, 1991, 91 09197
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—660.03 **53 Claims**



1. A probe for insertion in a body cavity having a maximum predetermined perimeter, comprising:
a probe support member having a proximal end and a distal end and defining a longitudinal axis; and
a piezoelectric transducer element mounted on said probe support member at the distal end thereof and operative to emit ultrasonic waves at a focus effective for therapeutic treatment of body tissue, said piezoelectric transducer element being substantially disk-shaped and having a substantially disk-shaped front face defining an emitting surface substantially parallel to said longitudinal axis for emitting said ultrasonic waves for effecting said therapeutic treatment at said focus;
said piezoelectric transducer element having a cross-section in a plane perpendicular to said longitudinal axis, said cross-section having a dimension parallel to said front face which is substantially greater than a dimension perpendicular to said front face for defining a substantially flat piezoelectric transducer element;
said distal end of said probe support member having a cross-section conforming closely to said cross-section of said piezoelectric transducer element and a maximum cross-sectional perimeter no greater than said maximum predetermined perimeter of said body cavity, whereby said distal end of said probe support member may be inserted into said body cavity

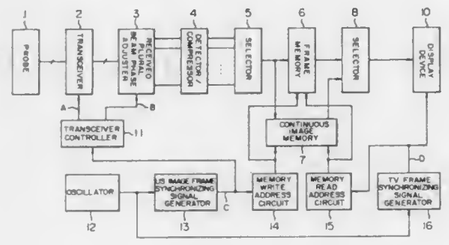
and the area of said emitting surface of said front face of said piezoelectric transducer element is maximized.

5,666,955

ULTRASONIC DIAGNOSTIC APPARATUS HAVING FRAME RATE HIGHER THAN TV FRAME RATE

Shinichi Kondo, Kashiwa; Akira Sasaki, Ichikawa; Hiroshi Kanda, Tokorozawa; Tsuyoshi Mitake, Noda, and Kazutaka Okada, Iwatsuki, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 422,222
Claims priority, application Japan, Apr. 22, 1994, 6-084397
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.04 **2 Claims**



1. An ultrasonic diagnostic apparatus comprising:
an ultrasonic beam transmission/reception circuit for transmitting a single ultrasonic beam and receiving a plurality of ultrasonic beams;
a phase adjusting circuit for adjusting the phases of said plurality of ultrasonic beams;
storage means for sequentially storing a plurality of phase adjusted beam outputs from said phase adjusting circuit;
means for reading an image signal from said storage means at a display frame rate of display means;
said display means for displaying said read image signal;
means for generating an ultrasonic image synchronizing frame rate signal at a frame rate higher than the display frame rate of said display means;
means for controlling said ultrasonic beam transmission/reception circuit and said phase adjusting circuit in accordance with said ultrasonic image synchronizing frame rate signal; and
means for controlling the image signal write operation for said storage means in accordance with said ultrasonic image synchronizing frame rate signal.

5,666,956

INSTRUMENT AND METHOD FOR NON-INVASIVE MONITORING OF HUMAN TISSUE ANALYTE BY MEASURING THE BODY'S INFRARED RADIATION

Janusz Michal Buchert, 180 Cabrini Blvd., #79, New York, N.Y. 10033

Filed May 20, 1996, Ser. No. 650,832
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—664 **9 Claims**

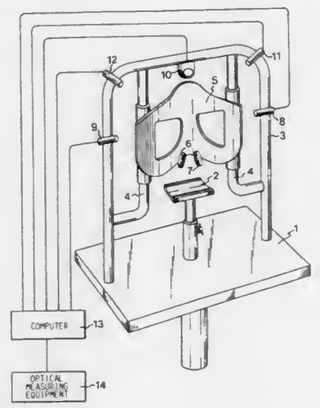
3. An instrument for determining a human body tissue analyte concentration by non-invasive measurement of emission spectral lines characteristic to a body tissue analyte in an infrared spectral region emitted naturally by a human body as heat, comprising:
a. a means for detecting said emission spectral lines at a predetermined infrared wavelength;
b. a means for detecting a spectral intensity of the emission spectral lines;
c. a means for correlating the intensity of emission spectral lines with the tissue analyte concentration.

5,666,957

METHOD AND DEVICE FOR RHINOSTEREOMETRIC MEASUREMENT

Jan-Erik Juto, Linnègatan 86, S-115 23 Stockholm, Sweden

PCT No. PCT/SE93/00670, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/04077, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 12, 1993, Ser. No. 382,050
Claims priority, application Sweden, Aug. 12, 1992, 9202333
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—665 **18 Claims**



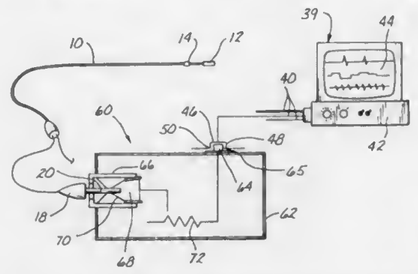
1. A method for rhinostereometric measurement, comprising the steps of:
determining a position of a face of a person in a coordinate system such that a reference position is defined;
determining coordinates of at least one point on a nasal mucosa of the person;
determining, simultaneously with the step of determining coordinates, the position of the face of the person in the coordinate system, such that a measuring position is defined;
transposing the measuring position in the coordinate system so as to coincide with the reference position in the coordinate system; and
transposing the coordinates of the point on the nasal mucosa in the coordinate system in a manner corresponding to the manner in which the measuring position is transposed.

5,666,958

INTERFACE MODULE FOR ELECTRICALLY CONNECTING MEDICAL EQUIPMENT

Peter M. Rothenberg, 8 Cobblestone Ct., Laguna Niguel, Calif. 92677, and Kent Melancon, 26205 Via de Gavilan, San Juan Capistrano, Calif. 92675

Filed Apr. 6, 1995, Ser. No. 418,663
Int. Cl.[6] A61B *5/0416*
U.S. Cl. 128—696 **17 Claims**



1. An interface module for direct electrical connection between an ICU monitor and a temporary transvenous pacing lead, the module comprising:

a housing;

a first electrical connector disposed on an exterior surface of said housing for mating with a respective electrical connector of a selected one of a plurality of sensing leads of the ICU monitor;

a second electrical connector for mating with an electrical connector of the temporary transvenous pacing lead, at least a portion of said second connector being disposed within said housing; and

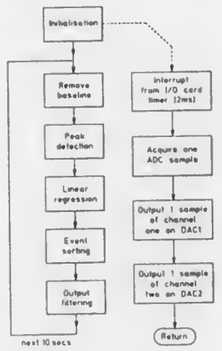
a coupling circuit electrically connected between the first and second electrical connectors.

5,666,959

FETAL HEART RATE MONITORING

Anne Catherine Deans, Woking; Eric Serge Gilles Genevier, London, and Philip James Steer, Surbiton, all of England, assignors to British Technology Group Limited, London, England

Filed Aug. 30, 1995, Ser. No. 520,774
Int. Cl.[6] A61B *5/0444*
U.S. Cl. 128—698 **16 Claims**



1. A method for deriving a sequence of pulses corresponding to a heart beat of a fetus from a composite ECG signal which may include signals produced by a second source heart beat in addition to desired fetal signals, said method comprising:

receiving a composite ECG signal having a repetitive fetal QRS complex signal component;

identifying apparent QRS complex signal components using a peak detection process to locate significant peaks in said composite ECG signal;

deriving from said identified apparent QRS complex signal components a template representing a fetal QRS complex signal component;

calculating a statistical correlation coefficient between all of said identified apparent QRS complex signal components and said template; and

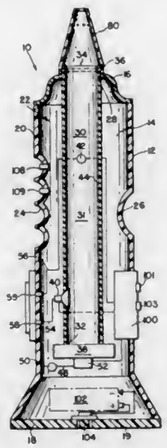
deriving a sequence of pulses corresponding to said heart beat of said fetus from those identified apparent QRS complex signal components which correlate with said template.

5,666,960

ACOUSTIC IMAGING

Jeffrey Fredberg, Sharon; Gary Glass, Boston; John Lehr, Newton, all of Mass., and Bruno Louis, Puteaux, France, assignors to Hood Laboratories, Pembroke, and Biomechanics Inc., Boston, both of Mass.

PCT No. PCT/US93/05819, § 371 Date Mar. 31, 1994, § 102(e) Date Mar. 31, 1994, PCT Pub. No. WO94/09700, PCT Pub. Date May 11, 1994
Continuation-in-part of Ser. No. 808,907, Dec. 17, 1991. This PCT application Jun. 16, 1993, Ser. No. 117,176
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **14 Claims**



1. In an assembly for acoustically imaging portions of the internal morphology of the respiratory tract of a mammal, including a human, the improvement which comprises a lightweight, easy to manipulate, hand-held acoustic imaging head which is rugged and entirely hand supportable and operable by an operator, throughout an imaging procedure, which head comprises;

A. a rugged hand-holdable housing having

1. an elongate body, defined by

(a) a top end;

(b) a base end;

(c) an outer wall extending between the top end and the base end; and

(d) an internal chamber;

2. an aperture through the housing top end, providing fluid communication between the internal chamber and the outside of the housing; and

3. a shape and configuration of the outer wall facilitating gripping of the housing with a human hand;

B. an acoustic pipe for transmitting acoustical energy and receiving the reflected acoustical energy, mounted in the aperture said pipe having a first end within the chamber and an open second end outside of the housing, said second end of the acoustic pipe being adapted for connection of the acoustic pipe to an orifice leading into the respiratory tract;

C. a launching transducer mounted in the chamber and coupled to the first end of the acoustic tube, for launching acoustical energy into the acoustic pipe, propagating an incident wave out of the open second end;

D. at least one acoustic pressure wave sensing transducer mounted on the acoustic pipe at a location between the first and second ends of the acoustic pipe for sensing reflections of the incident wave, received back in the acoustic tube through the open second end and generating a signal; and

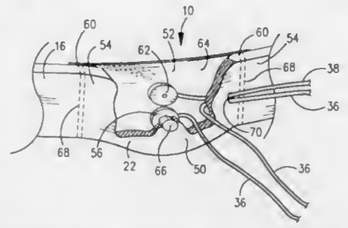
E. means at least partially within the chamber, connected to the acoustic wave sensing transducer, for transmission of echo signals transduced, to processor means for processing said echo signals into an acoustic image signal characteristic of the morphology of a site within the mammal's respiratory tract.

5,666,961

EXPANSION INDICATOR DEVICE

Bill E. McFarlin, Sr., Rte. 4, Box 71, Williston, N. Dak. 58801

Filed Jun. 20, 1995, Ser. No. 492,515
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—721 **14 Claims**



1. An expansion indicator device adapted for use around a waist of a user to indicate whether a threshold amount of stomach cavity expansion is achieved as the user breathes, comprising:

(a) a strap fabricated from a stiff yet flexible material, said strap sized and adapted to be secured around the waist of the user;

(b) a power source;

(c) a feedback indicator operative between an activation state whereby said power source is connected to said feedback indicator thereby energizing said feedback indicator and a deactivation state whereby said power source is disconnected from said feedback indicator thereby de-energizing said feedback indicator; and

(d) a switch assembly interconnected to said power source and said feedback indicator and operatively connected to said strap so that, as the user breathes, said switch assembly is operative to move between a closed condition whereby, when the threshold amount of stomach cavity expansion is reached, said feedback indicator becomes energized to the activation state and an open condition whereby, when the amount of stomach cavity expansion falls below the threshold amount, said feedback indicator becomes de-energized to the deactivation state;

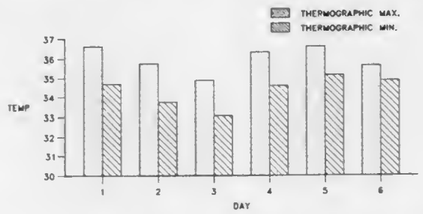
said switch assembly including a band of stiffyet flexible material having a pair of band ends disposed opposite one another and a first electrode fastened to said band and electrically connected to one of said power source and said feedback indicator and a strip of elastic material having a pair of strip ends disposed opposite one another and a second electrode fastened to said strip and electrically connected to a remaining one of said power source and said feedback indicator, said band and said strip connected to each other at respective ones of said band ends and strip ends so that, when said switch assembly is in the opened condition, said strip is in a relaxed state and said band is in a bowed state thereby separating said first and second electrodes in a spaced-apart, facially-opposing relationship from one another and, when said switch is in said closed condition, said strip is in a stretched state and said band is in a straightened state thereby causing said first and second electrodes to contact each other.

5,666,962

THERMOGRAPHY AS A METHOD OF MEASURING VIRAL ACTIVITY IN A HERPES LABIALIS INFECTION

Philip-John Lamey, Northern Ireland, United Kingdom, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 13, 1995, Ser. No. 421,172
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—736 **25 Claims**



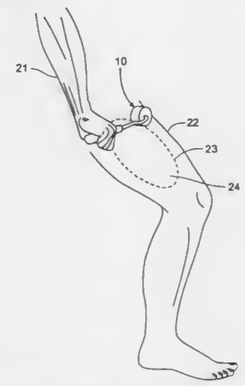
1. A non-invasive method of measuring the progress of viral activity in a mammalian herpes labialis episode, the method comprising the step of measuring an increase in the temperature of the symptomatic area of the herpes labialis episode in the range from about 1°–3° C. above background during one or more of the four stages of the episode.

5,666,963

MOVING-STIMULUS THERMAL SENSITIVITY TESTING DEVICE

Michael R. Swenson, and Robert Healey, both of San Diego, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 21, 1995, Ser. No. 426,386
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—742 **4 Claims**



1. A method for testing a patient's skin surface to detect regions of sensory loss, said method comprising:

(a) manually drawing across said skin surface a smooth-surfaced device whose surface is formed of a material having a thermal conductivity of at least about 0.200 g-cal/(sec)(cm^2)(°C./cm)

while maintaining continuous contact between said skin surface and said smooth-surfaced device; and

(b) differentiating sensate regions of said skin surface at which said skin experiences a cooling sensation upon contact with said smooth-surfaced device from relatively insensate regions at which substantially less of a cooling sensation is experienced, and thereby delineating the boundaries of said relatively insensate regions.

5,666,964

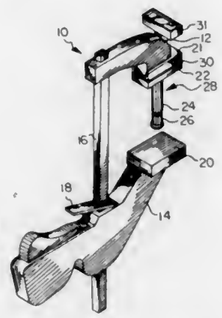
MUSCLE TREATMENT DEVICES

Algis A. Meilus, 340 N. Tessier Dr., St. Petersburg, Fla. 33706

Filed Jun. 6, 1995, Ser. No. 470,402

Int. Cl.[6] A61H *39/00*

U.S. Cl. 128—744 **6 Claims**



1. A therapy device for simulating muscular therapy given manually by therapists wherein increasing pressures of up to sixty pounds of pressure are applied to a patient's muscles until the pain threshold of the patient is reached and for obtaining simultaneous quantified measurements of muscle hardness as a function of the amount of contraction in the muscles to measure progress of therapy so provided, said device comprising;

a clamp having a pair of opposed first and second laws that are movably mounted with respect to one another so as to move toward and away from one another, said clamp configured and made of materials sufficiently strong to be able to apply up to sixty pounds of pressure to muscles;

pressure measuring means associated with said first jaw of said clamp which quantitatively measures muscle hardness as a function of muscle contraction;

said clamp including a quick release means for releasing pressure applied by said jaws to muscles positioned therebetween;

a flat, soft pad releasably attached to said second jaw, said pad being made from non-slip material to prevent slippage of said second jaw against soft tissue; and

a plurality of upstanding pointed probes for applying pressure perpendicular to the tissue being treated, said probes being releasably attached interchangeably to said first jaw in a position to perpendicularly oppose said second jaw, each of said probes having a rigid base, at least one of said probes having a distal free end configured to simulate muscular therapy performed by the pointed end of a human elbow, and at least one of said probes having a distal free end configured to simulate muscular therapy performed by single digit on a human hand so that pressures incrementally applied to a muscle positioned between said jaws as said jaws are converged toward one another stretches injured muscle tissue and promotes blood circulation and healing within the injured muscle tissue so that as it heals the injured muscle tissue can withstand increasingly more pressure without discomfort, and so that the mount of muscle hardness due to muscle contraction after each increment of said converting can be quantitatively measured by said pressure measuring means simultaneously during therapy to assess progress of said therapy.

5,666,965

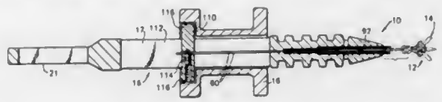
RADIAL JAW BIOPSY FORCEPS

Thomas O. Bales, Coral Gables; Charles R. Slater, Fort Lauderdale, and Kevin W. Smith, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 837,046, Feb. 18, 1992, Pat. No. 5,507,296, which is a continuation of Ser. No. 521,766, May 10, 1990, Pat. No. 5,133,727. This application Jun. 2, 1995, Ser. No. 458,215

Int. Cl.[6] A61B *10/00;17/00*

U.S. Cl. 128—749 **19 Claims**



1. An endoscopic instrument, comprising:

a) a flexible tube having a distal end and a proximal end;

b) opposed first and second jaws, said first jaw being rotatably disposed on said distal end of said flexible tube, and said first jaw including a proximal tang defining a first bore; and

c) actuation means for effecting rotation of said first jaw, said actuation means comprising a first pull wire having a first pair of angled bends at a distal end of said first pull wire, said first pull wire extending through said first bore at said first pair of angled bends, and terminating without forming a loop.

5,666,966

SUCTION-TYPE BLOOD SAMPLER

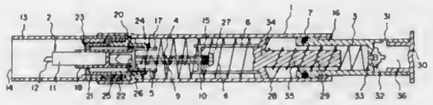
Masao Horie; Yoshikazu Kishigami, both of Ootsu; Hiroyuki Nakagami, and Masayuki Takatera, both of Kusatsu, all of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 459,962

Claims priority, application Japan, Jun. 24, 1994, 6-166125

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—760 **5 Claims**



1. A suction-type blood sampler comprising:

a housing, the housing having an open frontal end and an open rearward end;

a lancet unit accommodated in a front region of the housing, the lancet unit comprising a lancet body fixed to a lancet retainer, the lancet body having a needle extending forward toward the frontal end of the housing and the lancet retainer being in sliding contact with the inner peripheral surface of the housing;

a rod attached to and extending backward from the lancet unit toward the open rearward end of the housing;

a plunger provided in a rear region of the housing and having a seal attached to a forward end of the plunger, the seal being in sliding and airtight contact with an inner peripheral surface of the housing;

an inner cylindrical member which extends forward of the plunger;

a flange formed integral with a rear end of the rod;

a spring separator formed around the rod and integral with the inner cylindrical member;

a hookable member fitting in a rear recess of the lancet unit, the hookable member being engageable with a rearward rim extending radially and inwardly from the inner peripheral surface of the housing;

a first partition attached to and closing a rear open end of the inner cylindrical member;

a first spring, a second spring and a third spring all accommodated in the housing between the lancet unit and the plunger, wherein the second spring intervenes between the lancet unit and the spring separator and urges the lancet unit forward to move the needle outwardly of the frontal end of the housing, and the third spring is interposed between the spring separator and the flange and urges the lancet unit to be retracted behind the frontal end, when the plunger is pressed, and wherein the first spring is interposed between the lancet unit and the first partition and urges said plunger to move toward said open rearward end and to reduce the air pressure in the housing, when the plunger is released;

a fourth spring disposed partially in an internal cavity of the plunger and between the first partition and the rear region of said cavity; and

an air sealing means disposed in a rear region of an internal cavity of the plunger for exhausting air out of the housing, but inhibiting air from entering the housing through the internal cavity of said plunger.

5,666,967

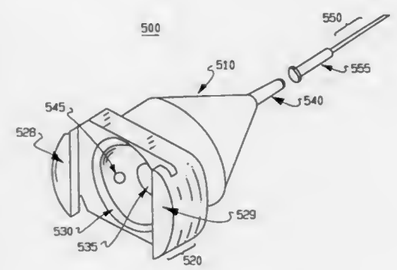
FLUID SAMPLE COLLECTION AND INTRODUCTION DEVICE

Imants R. Lauks, Rockliff Park, Canada, and Joseph W. Rogers, Doylestown, Pa., assignors to i-STAT Corporation, Princeton, N.J.

Division of Ser. No. 144,966, Oct. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 472,073

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—763 **2 Claims**



1. For facilitating collection of a fluid sample into a fluid sample collection device including a capillary tube having an introduction end, the capillary tube supported in an opening in a reservoir chamber housing, an adapter comprising:

a body having a through-bore having a first end and a second end and an inner surface and an outer surface, the outer surface at the second end of the through-bore formed to provide a male luer fitting, the inner surface adjacent the second end of the through-bore formed to complement the outer surface of the capillary tube adjacent the introduction end;

a port formed adjacent the first end of the through-bore, the port being sized to form an air-tight relation with the opening of the reservoir chamber housing; and

an air passage through the body separate from the through-bore adjacent the first end of the through-bore.

5,666,968

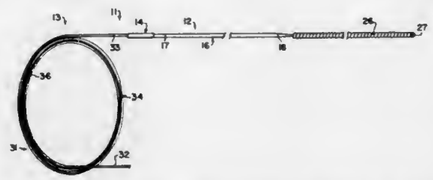
FLEXIBLE GUIDE WIRE WITH EXTENSION CAPABILITY AND GUIDE WIRE EXTENSION FOR USE THEREWITH

Mir A. Imran, Palo Alto; Dennis L. Brooks, Santa Clara, and Deepak R. Gandhi, San Jose, all of Calif., assignors to Intelliwire, Inc., Sunnyvale, Calif.

Filed Mar. 17, 1995, Ser. No. 405,882

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—772 **11 Claims**



1. A guide wire assembly with extension capability for use in a medical procedure in a body comprising a guide wire and guide wire extension, said guide wire comprising a flexible elongate member having proximal and distal extremities and a longitudinal axis, at least a portion of the distal extremity being formed of a material having high torquability and high pushability, said guide wire extension comprising a flexible elongate member formed of a shape memory material and having a major portion thereof having a shape memory in the form of a coil so that when it is outside the body will assume its shape of a shape memory coil and means for forming a junction between the proximal extremity of the guide wire and the distal extremity of the guide wire extension.

5,666,969

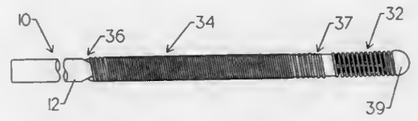
GUIDEWIRE HAVING MULTIPLE RADIOSCOPIC COILS

Michael J. Urick, Rogers; Thomas J. Bachinski, Lakeville; Richard R. Prather, Rogers, and Marian L. Larson, Buffalo, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 245,726, May 18, 1994, Pat. No. 5,497,783. This application Apr. 20, 1995, Ser. No. 425,933

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—772 **23 Claims**



1. An intraluminal guidewire comprising:

an elongate core wire having a longitudinal axis, a proximal end and a distal end;

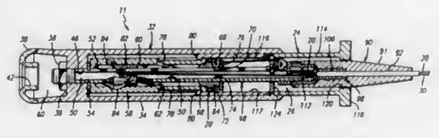
a distal helical coil having a proximal end and a distal end and having a first degree of radiopacity, the distal end of the distal coil being fixedly attached to the distal end of the core wire;

a proximal helical coil having a proximal end and a distal end and having a second degree of radiopacity different from the first degree of radiopacity, the proximal end of the proximal coil being fixedly attached to the core wire toward the distal end of the core wire, and the distal end of the proximal coil being proximally spaced from the proximal end of distal coil defining a longitudinal gap between the proximal and distal coils;

a flexible polymer sleeve placed around the core wire, in the gap, longitudinally between the proximal end of the distal coil and the distal end of the proximal coil; and

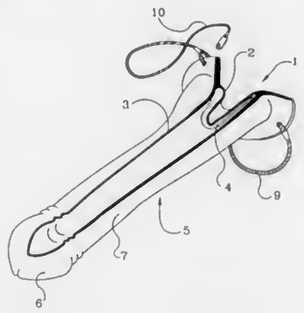
the sleeve having a third degree of radiopacity less than the first and second degrees of radiopacity.

5,666,970
LOCKING MECHANISM FOR CATHETERS
Iain S. R. Smith, Boulder, Colo., assignor to Heart Rhythm Technologies, Inc., Temecula, Calif.
Filed May 2, 1995, Ser. No. 433,228
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **23 Claims**



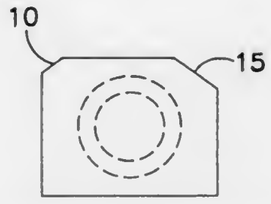
1. A catheter having a deflectable distal tip, the catheter comprising:
a resilient body member having a distal end and a proximal end, the body member having a resilient force tending to maintain and restore the distal end of the body member in a predetermined shape;
a manipulation handle attached to the proximal end of the body member having first and second elements slidably movable in longitudinal relation to each other;
a deflection control device mounted in the body member and connected at a proximal end to the first element of the handle and extending into the distal end of the body member wherein said sliding longitudinal movement of the first element in relation to the second element results in movement of the control device in the distal end, said movement of the control device in one direction causing deflection of the distal end from its predetermined shape against the restoring force, said restoring force also tending to cause sliding movement of the first element in relation to the second element;
a locking device having a contact member and a biasing member mounted on the first element with the contact member being continuously urged into contact with the second element by the biasing member, said biasing member comprising at least a partially compressed resilient member providing a force against said contact member that exceeds and directly opposes the restoring force provided by the body member so that the locking member holds the first and second elements in a selected position relative to one another and thereby maintains the control device at a selected position in the distal end.

5,666,971
DEVICE FOR IMPROVING ERECTION
Pomozov Pyotr Anatolievich, ul. Kavkazski Bulevard 35 kv. 329, 115516 Moscow, Russian Federation
Filed Oct. 25, 1993, Ser. No. 140,446
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **3 Claims**



1. A device for improving erection, comprising

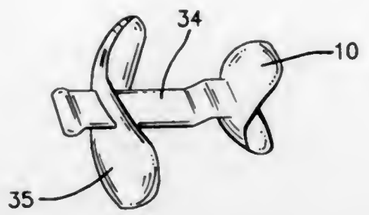
5,666,972
CONDOM AND PACKAGE
Henry Gifford, 230 Riverside Dr., #11C, New York, N.Y. 10025-6172
Filed Jun. 6, 1995, Ser. No. 437,558
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **3 Claims**



1. A package for containing a condom having a correct orientation for proper application onto a user, said package comprising at least two generally flat surfaces each of a predetermined circumferential shape indicative of the correct orientation for proper application of the condom, wherein the predetermined circumferential shape is a square with two clipped corners, one larger than the other, resulting in an asymmetrical six-sided polygon.

5,666,973
DEVICE TO REDUCE OR PREVENT NIGHT CLENCHING AND GRINDING OF TEETH AND SNORING
János Walter, 11, Kresz Géza utca, 1132 Budapest, Hungary
PCT No. PCT/HU91/00049, § 371 Date May 27, 1993, § 102(e) Date May 27, 1993, PCT Pub. No. WO92/09249, PCT Pub. Date Jun. 11, 1992
Continuation of Ser. No. 66,088, May 27, 1993, abandoned. This PCT application Nov. 27, 1991, Ser. No. 493,593
Claims priority, application Hungary, Nov. 28, 1990, 7672/90
Int. Cl.[6] A61F *5/56*
U.S. Cl. 128—848 **4 Claims**

1. A device to prevent or reduce night clenching and grinding of teeth, as well as to impede snoring, said device being adapted to be held in the mouth of the user, the device comprising a conchiform element (**10**) having a concave side and a convex side, a strip (**34**) secured to said convex side, and a concave member (**35**) having a concave side and a convex side, said concave member (**35**) being carried by said strip (**34**) in spaced relation to said conchiform element, said concave side of said concave member (**35**) facing in a same direction as said concave side of said conchiform element (**10**), said conchiform element (**10**) being elongated in a first direction and said concave member (**35**) being elongated in a second direction, said first and second directions being transverse to each other.

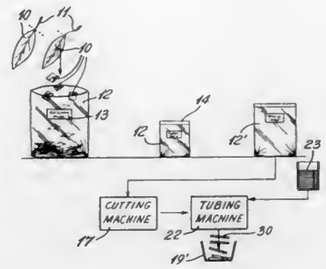


5,666,974
PROTOTYPE OF MOUTH PIECE
Takumitsu Hiro, 20-2-308, Higashiterao 5-chome, Tsurumi-ku, Yokohama-shi, Kamagawa-ken, and Akinori Watanabe, Tokyo, both of Japan, assignors to Okamoto Industries, Inc., Tokyo, and Takumitsu Hiro, Yokohama, both of Japan
Filed Apr. 30, 1996, Ser. No. 640,138
Int. Cl.[6] A61C *5/14*
U.S. Cl. 128—861 **8 Claims**

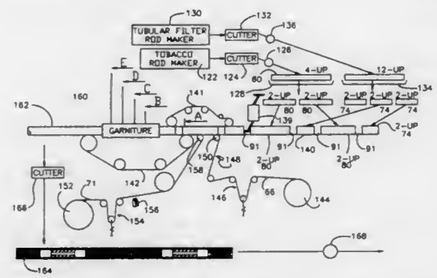
1. A protective mouthpiece formed in a dental arch and comprising an outer wall, an inner wall and an intermediate web member therebetween, said mouthpiece having an "H" shape cross section defining an upper groove capable of receiving maxillary teeth and a lower groove capable of receiving mandibular teeth, wherein the portions of said inner and outer walls defining said upper groove are substantially equal in height and the portion of said inner wall defining said lower groove is shorter than the portion of said outer wall defining said lower groove, whereby said mouthpiece provides protection for maxillary and mandibular teeth without stifling of oxygen intake.

5,666,975
METHOD OF FABRICATING CIGARETTES IN A DISPENSING-TYPE MACHINE OPERATED BY A USER PERSON
Gilbert Lord, 6555 Metropolitan Boulevard East, Suite Jardin 2, Montreal, Quebec, Canada, H1P 3H3
Filed Jun. 15, 1994, Ser. No. 260,973
Int. Cl.[6] A24C *5/42*
U.S. Cl. 131—70 **13 Claims**

1. A method of fabricating cigarettes through a dispensing-type machine and from a predetermined quantity of tobacco leaves of flakes selected by a user person from said dispensing machine, said method comprising the steps of:
(i) dispensing in a display case of said dispensing machine different types of tobacco leaves or flakes stored in hermetically sealed containment means to prevent said tobacco leaves from drying, and providing an identification means for selection of one or more of said containment means by a user person
(ii) selecting one or more of said predetermined quantities of tobacco leaves or flakes;
(iii) inserting said selected one or more predetermined quantities of tobacco leaves or flakes in a receiving opening of said machine;
(iv) cutting said tobacco leaves or flakes placed in said opening to produce a predetermined quantity of fine-cut tobacco;
(v) transferring said fine-cut tobacco to a tubing station where said fine-cut tobacco is automatically disposed in cigarette tubes to form cigarettes; and
(vi) dispensing said cigarettes for reception by said user.



5,666,976
CIGARETTE AND METHOD OF MANUFACTURING CIGARETTE FOR ELECTRICAL SMOKING SYSTEM
John M. Adams, Mechaniesville; Mikhail S. Braunshteyn; Mary Ellen Counts, both of Richmond; Gerald M. Dale, Glen Allen; Charles W. Harris, Chesterfield; Donald H. Jones, Chesterfield; Billy J. Keen, Jr., Chesterfield; Wesley G. Sanderson, Richmond; Barry S. Smith, Hopewell; Brett W. Stevenson, Richmond, and Susan E. Wrenn, Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 425,166, Apr. 20, 1995, which is a continuation-in-part of Ser. No. 380,718, Jan. 30, 1995, which is a continuation of Ser. No. 118,665, Sep. 10, 1993, Pat. No. 5,388,594, which is a continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,505,214. This application Jun. 7, 1995, Ser. No. 485,190
Int. Cl.[6] A24C *5/00*
U.S. Cl. 131—94 **12 Claims**



1. A method of manufacturing cigarettes having a tobacco rod portion and a filter tipping portion, said tobacco rod portion comprising a tobacco plug at one end and a tubular element at an opposite end and a void between said tobacco plug and tubular element, said method comprising the steps of:
forming a continuous tobacco rod by placing 2-up tobacco plugs and 2-up hollow plugs in spaced, alternating relation from one

another and wrapping a tobacco web and an overwrap about said spaced apart plugs;

severing said continuous rod at a mid-point of selected ones of consecutive tobacco plugs so as to form a plurality of 2-up tobacco rod portions;

establishing an associated pair of individual tobacco rod portions by severing at least one of said 2-up tobacco rod portions;

separating said associated pair of individual tobacco rod portions so as to define a space axially disposed between said separated singular tobacco rod portions;

establishing 2-up filter tipping plugs;

establishing 2-up cigarette rods by interposing said established 2-up filter tipping plugs between said separated, associated pair of individual tobacco rod portions, by bringing said individual tobacco rod portions and said interposed 2-up filter tipping plug into abutting relationship and by subsequently wrapping a tipping paper about said 2-up filter tipping plug and adjacent portions of said abutting, pair of individual tobacco rod portions; and

severing the 2-up cigarette rod into individual cigarettes.

5,666,977

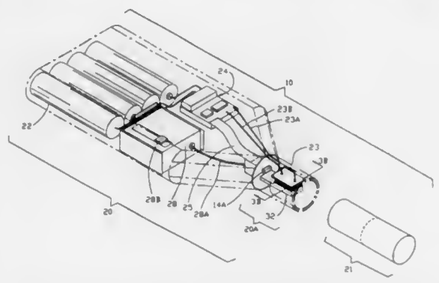
ELECTRICAL SMOKING ARTICLE USING LIQUID TOBACCO FLAVOR MEDIUM DELIVERY SYSTEM

Charles T. Higgins, Richmond; Wynn R. Raymond, Chesterfield, and Francis M. Sprinkel, Glen Allen, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 74,948, Jun. 10, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 378,881

Int. Cl.[6] A24F *47/00*

U.S. Cl. 131—194 **27 Claims**



1. An electrical smoking article for delivering to a smoker a tobacco flavor substance, said article comprising:

an electrical heater;

a tobacco flavor medium delivery system in a liquid transfer relationship with said heater, said delivery system comprising:

(a) inlet means for coupling to a supply of liquid tobacco flavor medium;

(b) outlet means having one or more openings for dispensing liquid tobacco flavor medium in droplet form onto said heater;

(c) means coupled between said inlet means and said outlet means, said coupled means for transferring a predetermined amount of liquid tobacco flavor medium from said supply of liquid tobacco flavor medium to said outlet;

a source of electrical energy;

control means for applying said electrical energy to said heater to generate heat and for activating said tobacco flavor medium delivery system such that upon activation of said delivery system, said delivery system dispenses said predetermined amount of liquid tobacco flavor medium in droplet form onto said heater, said dispensed tobacco flavor medium being heated sufficiently to release an aerosol therefrom which includes a predetermined quantity of tobacco flavor substance; and

means for drawing air together with said released aerosol from the electrical smoking article upon puffing action by a smoker;

wherein said control means applies sufficient energy to said heater to achieve a temperature in said heater in the range of about 300° C. to about 450° C. during a puff and

wherein said means for drawing air together with said released aerosol includes a disposable filter insert and air channels arranged to admit air into said electrical smoking article.

5,666,978

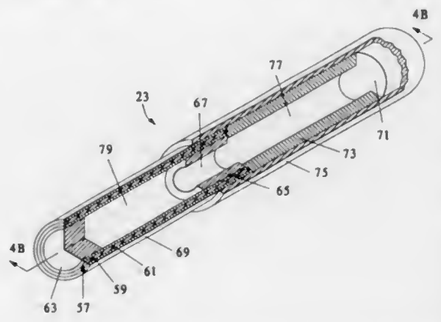
ELECTRICAL SMOKING SYSTEM FOR DELIVERING FLAVORS AND METHOD FOR MAKING SAME

Mary Ellen Counts, Richmond; Seetharama C. Deevi; Grier S. Fleischhauer, both of Midlothian; Mohammad R. Hajalogol, Richmond; Patrick H. Hayes, Chester; Charles T. Higgins; Willie G. Houck, Jr., both of Richmond; Billy J. Keen, Jr., Chesterfield; Bernard C. Laroy, Richmond; Peter J. Lipowicz; Donald E. Miser, both of Midlothian; Constance H. Nichols, Chesterfield; William H. Stevens; Mantharam Subbiah, both of Midlothian; Michael L. Watkins, Chester, and Susan E. Wrenn, Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 118,665, Sep. 10, 1993, Pat. No. 5,388,594, which is a continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,505,214. This application Jan. 30, 1995, Ser. No. 380,718

Int. Cl.[6] A24F *47/00*

U.S. Cl. 131—194 **16 Claims**



1. A cigarette operative with an electrical smoking system having at least one electrically operated heater, the cigarette comprising:

a tubular carrier including a coating of a tobacco material along an inside surface of said tubular carrier, said tobacco material adapted to release a flavored tobacco response upon heating, said tubular carrier having a first end portion and a second, opposite end portion, said first end portion of said tubular carrier being resistive to fluid-flow longitudinally through said first end portion;

a flow transmissive element disposed at said second, opposite end portion of said tubular carrier, said flow transmissive element including a first longitudinal passage therethrough;

said tubular carrier having a cavity at a location between said first end portion and said second end portion, said cavity in fluid communication with said first longitudinal passage of said flow transmissive element;

said tubular carrier adapted to transfer heat received at a location about said tubular carrier to an adjacent portion of said coating of tobacco material, whereupon tobacco flavored response is released into said cavity;

a filter tipping attached to said tubular carrier at said second end portion such that said filter tipping is in fluid communication with said cavity through said first longitudinal passage of said flow transmissive element, said filter tipping suitable for drawing upon said cigarette by a smoker, said filter tipping including a second longitudinal passage in communication with said first longitudinal passage of said flow transmissive element, said second longitudinal passage having an inside diameter greater than an inside diameter of said first longitudinal passage.

5,666,979

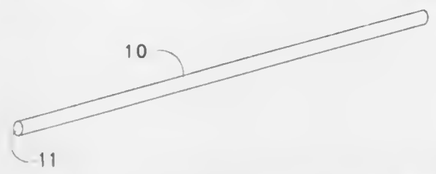
CIGAR SUBSTITUTE

Gene Chase, 2006 Delaware Ave., #2, Buffalo, N.Y. 14216-3528

Filed Sep. 29, 1994, Ser. No. 314,849

Int. Cl.[6] A24F *47/00*

U.S. Cl. 131—270 **2 Claims**



1. A cigar substitute, comprised of an elongate, inedible, flexible tube with one or more lumens, said tube having a length on the order of approximately 15.24 centimeters, so as to protrude from the mouth of the user, at least one said lumen containing a mixture known to reduce the desire for tobacco, said mixture being comprised of nicotine, or nicotine derivative, or nicotine substitute, or nicotine substitute derivative, or a mixture thereof, and an edible carrier substance, and a flavoring substance.

5,666,980

Patent Not Issued For This Number

5,666,981

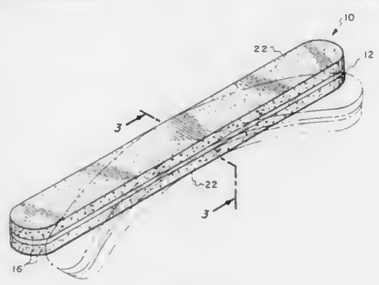
EMERY BOARD UTILIZING ACETONE BASED ADHESIVE

Dallas H. Stephens, 1117 Ayers Ave., Ojai, Calif. 93023

Continuation-in-part of Ser. No. 348,292, Dec. 2, 1994, abandoned. This application Jun. 12, 1995, Ser. No. 489,481

Int. Cl.[6] A45D *29/18*

U.S. Cl. 132—76.4 **4 Claims**



1. An emery board comprising:

a core including a thin sheet material first layer of foam, said first layer of foam having a first exterior surface; and

a first abrasive media layer being directly adhesively secured to said exterior surface by an adhesive, said first abrasive media layer being composed of a mass of small abrasive particles, whereby said emery board can be readily flexed without creating cracks in said abrasive layer, said adhesive being acetone based thereby permitting use of alcohol as a sanitizing solution by soaking of said emery board with said emery board remaining intact since said adhesive is not dissolved.

5,666,982

BARRETTE MOUNT

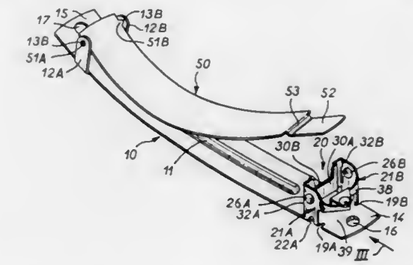
Guy Pignon, Vouneuil Sous Biard, France, assignor to Etablissements Delsol, Paris, France

Filed Dec. 16, 1994, Ser. No. 358,007

Claims priority, application France, Dec. 20, 1993, 93 15284

Int. Cl.[6] A45D *8/22;8/28*

U.S. Cl. 132—279 **17 Claims**



1. Barrette mount comprising a clamping member articulated to a main body and attachment means for locking said clamping member to said main body, said attachment means including a pair of lateral operating lugs projecting from said main body and each including a locking arm with a hook, said locking arms being directed towards each other and partially overlapping, said mount comprising a rear operating arm extending from a rear edge of one of said lateral operating lugs towards the other lateral operating lug.

5,666,983

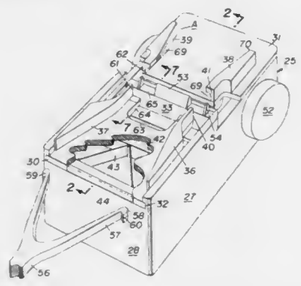
APPARATUS FOR USING BEADED DENTAL FLOSS

Edward E. McCullough, and Kevin W. McGaha, both of P.O. Box 46, Brigham City, Utah 84302

Filed Aug. 28, 1995, Ser. No. 519,204

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—323 **35 Claims**



1. Apparatus for loading dental-floss segments onto an applicator, wherein each segment has a bead fixed to each of its ends, the segments are mounted in a coilable structure perpendicular to the longitudinal axis thereof, and wherein the applicator is of the type having a handle fixed to a pair of resilient prongs and means at their ends for grasping a segment of floss and retaining the beads there of, comprising:

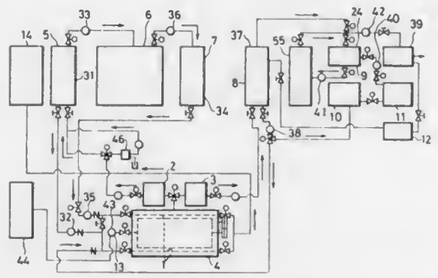
housing means for storing said coilable structure;
means for advancing the coilable structure, so that a floss segment thereon is positioned to be grasped by an applicator;
means for guiding and compressing the prongs of an applicator for grasping a floss segment therewith; and
means for controlling expansion of the prongs after a floss segment has been grasped, so that the beads thereon are retained by the prongs.

5,666,984

METHOD AND APPARATUS FOR DECONTAMINATING SUBSTANCES CONTAMINATED WITH RADIOACTIVITY

Kenji Horikawa, Kohshoku; Hiroshi Obinata, Nagano; Kazuo Omata, Iruma; Toshihiko Sato, Hohya; Yoshihiko Nakajima, Toguramachi, and Seigo Ichikawa, Kohshoku, all of Japan, assignors to Morikawa Industries Corporation, Kohshoku, Japan

Division of Ser. No. 412,310, Mar. 29, 1995, Pat. No. 5,570,468. This application Apr. 22, 1996, Ser. No. 635,683
Claims priority, application Japan, Sep. 13, 1994, 6-218756
Int. Cl.[6] B08B *3/06*
U.S. Cl. 134—95.2 5 Claims



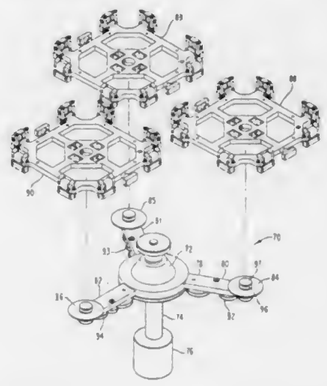
1. An apparatus for decontaminating substances contaminated with radioactivity, comprising: a washing device including a spray device for ejecting liquid, a solvent filtering device, and a chelate liquid filtering device; a solvent supply device communicating with said spray device and said solvent filtering device and provided in such a way as to allow circulation of liquid; a rinse solvent supply device connected to said solvent supply device through the intermediation of a solvent purifying device; said rinse solvent supply device communicating with said spray device; a chelate liquid supply device provided in such a way as to allow circulation successively through said spray device andsaid chelate liquid filtering device; an electrolytic processing device communicting with said chelate liquid supply device and adapted to electrolyze the chelate liquid; a precipitation device which supplies a precipitant to the chelate liquid which has been electrolyzed by said electrolytic device and lost its chelating property, to form flocs in the chelate liquid; a filtering device communicating with an ion exchange device and adapted to remove said flocs by filtering; a chelating agent supply device communicating with said ion exchange device and adapted to supply a chelating agent to water; and a hot air supply device and a gas recovery device which communicate with said washing device.

5,666,985

PROGRAMMABLE APPARATUS FOR CLEANING SEMICONDUCTOR ELEMENTS

William Charles Smith, Jr., Verbank, and Donn Allan Lord, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 171,953, Dec. 22, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 430,031
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—142 20 Claims



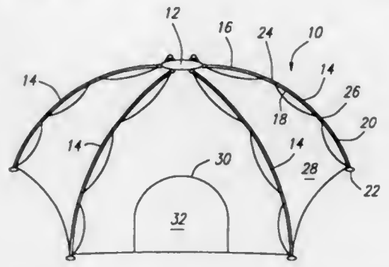
1. An apparatus for cleaning a plurality of semiconductor elements comprising:
a chamber, said chamber providing a sealed environment to perform said cleaning of said elements;
a rotation structure which rotates within said chamber, said rotation structure supporting said elements and spinning said elements around two spaced apart rotational axes;
at least one nozzle to spray liquids onto said elements;
at least one liquid supply to supply a liquid for immersing said elements in said chamber;
at least one drain to remove a liquid from said chamber;
at least one gas supply to supply a gas to said chamber to dry said elements;
at least one vent to vent gas and vapors from said chamber;
a motor connected to said rotation structure for turning said rotation structure within said chamber and for spinning said elements; and
a means for programming and controlling the operation of said apparatus;
said rotation structure further comprising a first means for providing rotation around a first rotational axis perpendicular to said rotation structure, said first rotational axis passing through the radial center of said rotation structure;
a second means for providing rotation around a second rotational axis perpendicular to said element surface and spaced from said first rotational axis;
a vertical shaft from said motor to said rotation structure for transferring said rotation around said first rotational axis from said motor through said vertical shaft;
a chuck located radially outward from said shaft for holding said elements during said spinning; and
a transfer means for transferring rotation around said first rotation axis to said second rotational axis, said rotation around said second rotational axis being opposite from said rotation around said first rotational axis.

5,666,986

TENT FRAME DEVICE

Clifford Royston Fox, Chelmsford, United Kingdom, assignor to Fox Design International Limited, Chelmsford, England

Filed May 23, 1995, Ser. No. 447,911
Claims priority, application United Kingdom, May 26, 1994, 9410539
Int. Cl.[6] E04H *15/36*
U.S. Cl. 135—135 15 Claims



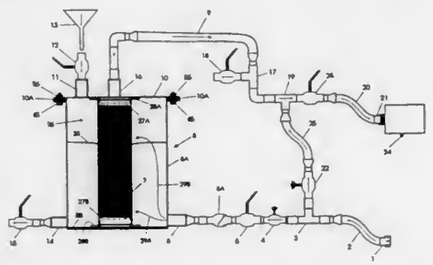
1. A tent frame device comprising a hub from which radiates a multiplicity of ribs when the device is in use, in which the hub is provided with a multiplicity of retaining portions which extend in a tangential direction and which are spaced apart around the hub, and a multiplicity of abutment portions positioned outwardly of the retaining portions respectfully, the device further comprising respective rib-end connectors provided with respective recesses which are open in an intended upward direction and which receive the retaining portions respectively when the device is in use, with the underside of the rib-end connectors abutting the abutment portions.

5,666,987

CHEMICAL DISPERSING APPARATUS

Glenn A. Combs, 1500 Glenmar Ave., Monroe, La. 71201

Filed Mar. 24, 1995, Ser. No. 409,408
Int. Cl.[6] B01D *11/02*
U.S. Cl. 137—1 33 Claims



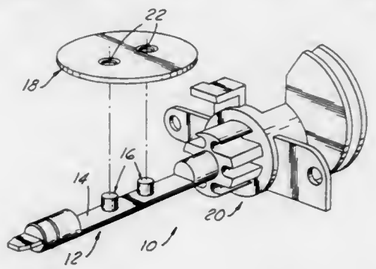
33. A method of selectively dispersing chemicals from a container having an inlet nozzle and an outlet nozzle and containing at least one cylindrical screen, said container and said screen defining an annular space surrounding said screen, said method comprising the steps of placing the chemicals in said annular space of said container, introducing a liquid into said container through said inlet nozzle at a selected flow rate and contacting said chemicals with the liquid in a radial and up-flow axial-radial flow pattern of the liquid to at least partially dissolve, admix or displace said chemicals in the liquid, whereby pressure within said container increases until it equalizes with the pressure of the liquid to define a pressurized liquid treatment stream; diverting the liquid and dissolving chemicals through said screen and into said outlet nozzle; and adjusting the flow of liquid from said outlet nozzle for permitting a selected rate of dispersement of said pressurized liquid treatment stream from said container and applying the pressurized liquid treatment stream to the treatment of living matter.

5,666,988

THROTTLE SHAFT AND PLATE CONSTRUCTION

Christine Cynthia Becker, Royal Oak, Mich., assignor to Siemens Electric Limited, Windsor, Canada

Filed Feb. 6, 1996, Ser. No. 596,017
Int. Cl.[6] F16K *1/22;1/48*
U.S. Cl. 137—15 2 Claims



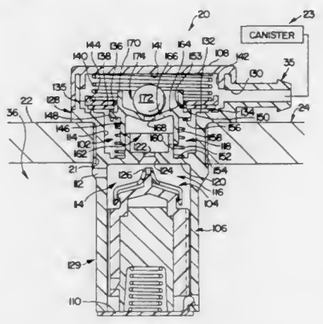
2. A method for assembling a throttle shaft and a throttle plate assembly comprising the steps of:
molding a throttle shaft component of a plastic composite material;
forming a flat surface on a portion of the throttle shaft;
providing a pair of molded of spaced apart bosses projecting from the flat surface and having a height lying within the circumferential surface of the throttle shaft portion;
providing a throttle plate disc of a plastic composite material;
said throttle plate disc having a pair of spaced apart holes in the disc adapted to overlie the pair of bosses on the flat surface;
chamfering the perimeter of each of the holes on one side of the disc;
positioning the disc with the other side abutting against the flat surface with the bosses projecting through the holes, and then
heat staking the bosses over the throttle plate and flowing some of the plastic composite material from the bosses into the chamfered surfaces to secure the disc to the throttle shaft.

5,666,989

TANK VENTING CONTROL ASSEMBLY

John J. Roetker, Connersville, Ind., assignor to Stant Manufacturing Inc., Connersville, Ind.

Filed Nov. 8, 1994, Ser. No. 336,184
Int. Cl.[6] F16K *17/36;17/18*
U.S. Cl. 137—43 31 Claims



1. A fuel vapor control valve for controlling the flow of fuel vapor and liquid fuel through an aperture in a fuel tank, the fuel vapor control valve comprising

a housing mounted in the aperture and formed to include an inlet in fluid communication with the fuel tank and an outlet,

a chamber disposed in the housing in fluid communication with the inlet and the outlet,

a pressure-relief valve disposed in the chamber,

a vacuum valve disposed in the chamber and formed for movement relative to the pressure-relief-valve, the vacuum valve being biased to relieve subatmospheric tank pressure below a predetermined minimum pressure and including a base mounted on the pressure-relief valve and arranged to define a venting aperture, and

a ball movably positioned in the chamber to selectively interrupt the flow of fuel vapor through the venting aperture.

5,666,990

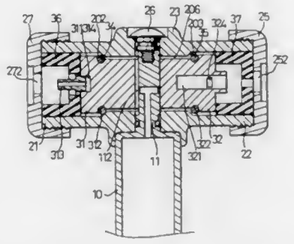
ATTACHMENT MEMBER FOR ENGAGING WITH DIFFERENT TIRE VALVES

Scott Wu, No. 2, Lane 296, Ming Sheng Road, Wu Feng Hsiang, Talchung Hslen, Taiwan

Filed Nov. 6, 1995, Ser. No. 553,854

Int. Cl.[6] F16K *11/044;31/528*

U.S. Cl. 137—223 **1 Claim**



1. An attachment member for a hand pump for engaging with different tire valves, said attachment member comprising:

a tube including a bore formed therein, and including a middle portion having an aperture formed therein and intersecting with said bore, said tube including two end portions and including a first and a second valve seats formed therein,

two caps secured to said end portions of said tube, said caps each including an mouth formed therein for engaging with the tire valves,

a cam shaft rotatably engaged in said aperture of said tube and including a passageway formed therein,

a pair of gaskets engaged in said end portions of said tube, and

a valve member slidably engaged in said tube so as to form an annular chamber between said valve member and said tube, said valve member being engaged between said gaskets, said valve member including two ends having a first and a second head portion formed thereon respectively for engaging with said first and said second valve seats of said tube respectively, said valve member including a middle portion having an orifice formed therein for engaging with said cam shaft, said passageway of said cam shaft being communicating with said orifice, said ends of said valve member including a first and a second valve opening formed therein respectively and including a first and a second passage formed therein for communicating said first and said second valve openings with said annular chamber,

said first head portion of said valve member being forced to engage with said first valve seat by said cam shaft when said cam shaft is rotated relative to said tube, so as to allow said second head portion to be disengaged from said second valve seat and so as to allow an air from said passageway to flow through said orifice and said annular chamber and said second valve seat and said second passage and to flow out of said mouth via said second valve opening, and

said second head portion of said valve member being forced to engage with said second valve seat by said cam shaft when said cam shaft is further rotated relative to said tube, so as to allow said first head portion to be disengaged from said first valve seat and so as to allow the air from said passageway to flow through said orifice and said annular chamber and said first valve seat and said first passage and to flow out of said mouth via said first valve opening.

5,666,991

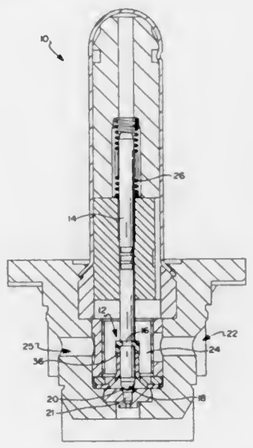
SHUT-OFF VALVE FOR EVACUATION AND FILL WITHOUT ENERGIZING VALVE

Julie A. Hartig, Bunde, Netherlands, assignor to ITT Automotive Inc., Auburn Hills, Mich.

Filed Dec. 5, 1995, Ser. No. 567,642

Int. Cl.[6] F16K *43/00*

U.S. Cl. 137—316 **4 Claims**



1. A shut-off valve for use in a pressure control system filled with a fluid, said valve being equipped with a shaft having a valve head biased towards a valve opening for closing said valve, comprising:

a collar member frictionally engaging the shaft such that the valve head is kept away from the valve opening until such time when said collar member is in contact with said fluid for a length of time sufficient to dissolve said collar member to release the shaft to allow the valve head to be received in the valve opening to thereby close said valve, wherein said shaft further includes a groove formed in an outer peripheral surface of the shaft for frictionally engaging said collar member.

5,666,992

AIR HOSE REEL

Terry K. Robins, Minneapolis, Kans., assignor to Lisle Corporation, Clarinda, Iowa

Filed Jan. 25, 1996, Ser. No. 590,390

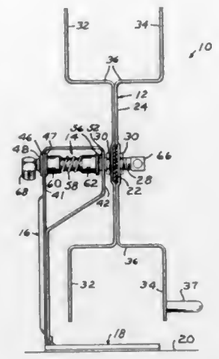
Int. Cl.[6] B65H *75/48*

U.S. Cl. 137—355.23 **5 Claims**

1. An air hose reel apparatus, comprising;

a base having a recess;

a L-shaped support having spaced-apart walls at one end portion and having a foot portion at its other end removably received by the base recess;



tubular axle means journaled by and projecting, at its respective ends, beyond said walls;

reel means including angularly spaced spokes secured to one end portion of said axle for angular rotation in a vertical plane when winding up or paying out an air hose;

a first clip secured to the end portion of said axle projecting beyond said wall opposite said reel means;

a second clip secured to an intermediate portion of said axle adjacent but spaced from the wall adjacent said reel means;

a pair of friction washers respectively surrounding said axle on opposite sides of said wall opposite said reel means;

tension spring means surrounding said axle between said second clip and the adjacent said friction washer of said pair of friction washers for axially biasing said axle in the direction of said reel means and each washer of said pair of friction washers against opposite sides of said wall opposite said reel means for constant frictional resistance to free wheeling angular rotation of said axle and said reel means as a unit; and,

coupling means secured to respective end portions of said axle for connection with a source of air under greater than atmospheric pressure.

5,666,993

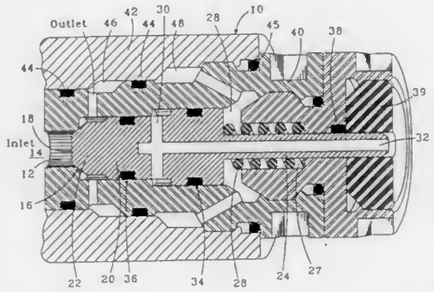
PRESSURE ISOLATED PILOT CHECK VALVE

Jacques Maissa, Roswell, N. Mex., and Lowell R. Milligan, Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed May 3, 1995, Ser. No. 433,726

Int. Cl.[6] F16K *17/04*

U.S. Cl. 137—494 **11 Claims**



1. A valve for interrupting fluid flow through the aperture of a valve seat in a housing, comprising:

a plunger having a first end surface for selectively closing the valve seat aperture, and having a second end surface larger than said first end surface;

a spring between said plunger and the housing for urging the first end of said plunger toward the valve seat, wherein said spring is compressible when the fluid exerts a force against the first end surface of said plunger;

a cavity between said plunger first end surface and said plunger second end surface;

a passage from said cavity to a position outside of the housing;

a first seal between the first end of said plunger and said cavity for preventing fluid leakage therebetween;

a second seal between said cavity and the second end of said plunger for preventing fluid leakage therebetween; and

a fluid pressure actuator for creating a force against the second end surface of said plunger to urge the first end surface of said plunger into contact with the valve seat.

5,666,994

VALVE ARRANGEMENT

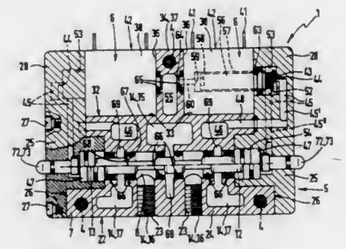
Kurt Stoll, and Manfred Rüdle, both of Esslingen, Germany, assignors to Festo KG, Esslingen, Germany

Filed Apr. 13, 1995, Ser. No. 423,002

Claims priority, application Germany, Apr. 20, 1994, 44 13 657.9

Int. Cl.[6] F15B *13/043;13/08*

U.S. Cl. 137—625.64 **16 Claims**



16. A valve arrangement comprising:

a housing for a valve unit, the valve housing including a valve receiving space and a valve unit positioned therein, the valve housing having a base portion including a central part and two terminal parts mounted on opposite end surfaces of the central part each terminal part providing an end cover for the valve receiving space and including a vertical extent which extends above the valve receiving space, the vertical extents defining therebetween an accommodation space for at least one control valve, wherein at least a portion of a control duct extends in the terminal parts and opens into the accommodation space, the central part of the base portion having a projection extending into the accommodation space the projection dividing the accommodation space into two receiving spaces, each receiving space being adapted for receiving at least an actuating unit of a control valve.

5,666,995

PILOT RELAY VALVE INCLUDING MEANS TO CONTROL FLOW THROUGH A BALANCE ORIFICE

Robert J. Herbst, Avon, and Duane R. Johnson, Wellington, both of Ohio, assignors to AlliedSignal Truck Brake Systems Co., Elyria, Ohio

Filed May 21, 1996, Ser. No. 651,067

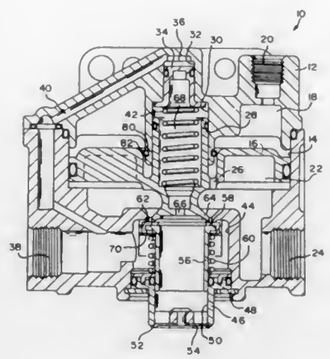
Int. Cl.[6] F15B *13/042*

U.S. Cl. 137—627.5 **7 Claims**

1. A pilot operated pneumatic relay valve comprising:

a housing having an inlet port, an outlet port, an exhaust port, and a control port;

valve means for controlling communication between said inlet port, said outlet port, and said exhaust port;



a relay piston slidably mounted in said housing and responsive to the pressure level at said control port for operating said valve means;

a balance orifice extending through said relay piston which permits free communication between said control port and said outlet port; and,

shutoff valve means disposed between said control port and said outlet port for shutting off for a short period of time communication through said balance orifice between said control port and said outlet port when the air signal applied to said control port is abruptly removed and said relay piston moves to a position permitting communication between said outlet port and said exhaust port.

5,666,996

FORCED AIR CLEANING SYSTEM FOR TEXTILE MACHINES

Walter Bollier, Adliswil, and Arnold Keller, Stallikon, both of Switzerland, assignors to Luwa AG, Zurich, Switzerland

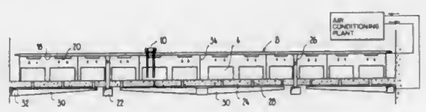
PCT No. PCT/CH94/00069, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/24350, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 6, 1994, Ser. No. 356,219

Claims priority, application Switzerland, Apr. 16, 1993, 01 169/93-7

Int. Cl.[6] **D03J** *1/00;* **D01H** *11/00;* **B08B** *5/00*

U.S. Cl. 139—1 C **21 Claims**



1. An apparatus for influencing ambient conditions of textile machines comprising:

a runway extending above the textile machines;

at least one travelling cleaner having means for moving on the runway;

an air channel extending parallel to the runway which, for each said textile machine, has at least one stationary downward-directed piston-flow outlet arranged at a predetermined distance above a work zone of each said textile machine,

said air channel being connected to an air-conditioning system; and

exhaust-air ports for each textile machine located in a floor below said textile machine and connected to a suction channel.

5,666,997

QUICK COUPLING SYSTEM FOR THE HEALD FRAMES OF A LOOM

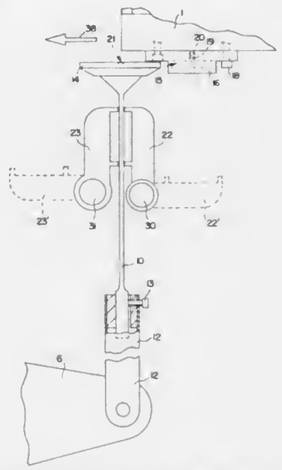
Costantino Vinciguerra, and Alessandro Galanti, both of Firenze, Italy, assignors to Nuovo Pignone S.p.A., Firenze, Italy

Filed Aug. 18, 1995, Ser. No. 516,812

Claims priority, application Italy, Aug. 30, 1994, MI94A1788

Int. Cl.[6] **D03C** *9/00*

U.S. Cl. 139—57 **3 Claims**



1. A system for rapid assembly and disassembly of heald frames to and from the drive bell cranks of a loom, comprising:

a plurality of flexible tie-rods having opposite ends, wherein one end of each of said tie-rods is hingedly connected to a bell crank and the other end has a head with a nitch therein,

a guide on the bottom side of the heald frames for coupling and uncoupling the heald frames to and from said tie-rod heads by movement therebetween, wherein said guide has a stop for engaging said tie-rod heads to limit the coupling movement,

a locking mechanism for said tie-rods having balls housed within said guide and springs within said guide, urging said balls from said guide until said tie-rods reach said stop during coupling, whereupon said balls engage said nitches in said tie-rods to interlock said tie-rods and the heald frames, and

a pair of moveable jaws located on opposite sides of said tie-rods normally spaced therefrom and wherein said jaws are caused to rotate by an actuation means are movable into contact with said tie-rods to maintain said tie-rods in a vertical position when coupling and uncoupling occurs between said guide and said tie-rods, to thereby allow for the rapid assembly and disassembly of the heald frames and said tie-rods.

5,666,998

CANTILEVERED SENSOR FOR THE THREAD TENSION DETECTOR

Godert De Jager, Volketswil; Frank Lehnert, Rüti, and Rolf Benz, Gachnang, all of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

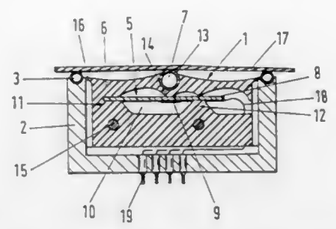
Filed Apr. 24, 1996, Ser. No. 638,897

Claims priority, application European Pat. Off., May 24, 1995, 95810349

Int. Cl.[6] **G01L** *5/04;5/10*

U.S. Cl. 139—194 **17 Claims**

1. A sensor for the detection of the stress profile of a thread that has moved, the sensor comprising a signal generator, at least one thread guiding member for guiding thread in a direction of travel substantially parallel with respect to the signal generator and a



body of resilient material, with the signal generator being arranged in the body, wherein the signal generator is mounted in a cantilevered manner in the body in order to compensate an influence caused by mechanical action and by heating and in order to thereby prevent the mechanical and electrical detuning of the signal generator.

5,666,999

SHEDDING SELECTION DEVICES WITH BIOMORF OR PIEZO ELECTRIC BENDING ELEMENTS

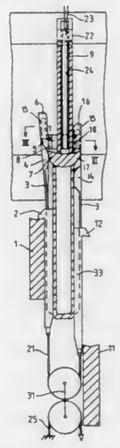
Andre Dewispelaere, Marke, and Carlos Derudder, Heule, both of Belgium, assignors to N.V. Michel Van De Wiele, Kortrijk-Marke, Belgium

Filed Jun. 22, 1995, Ser. No. 493,685

Claims priority, application Belgium, Jun. 22, 1994, 09400595; Sep. 22, 1994, 09400855

Int. Cl.[6] **D03C** *3/20*

U.S. Cl. 139—455 **13 Claims**



1. Shedding selection device in a Jacquard-type weaving and/or knitting machine comprising:

up- and downwardly complementary moving hooks (**2**,**12**.) interconnected by one and the same cord,

a bending element (**9**) which is adapted to be clamped on one end to a frame of the weaving and/or knitting machine, said bending element being provided with electrical terminals for connection to an electric power supply, said bending element having a free extremity which moves sideways between a locking position in which clamping of a complementary hook (**2**,**12**) by an upwardly moving knife (**1**,**11**) is prevented and a release position in which the clamping of a complementary hook (**2**,**12**) is possible because detention pin means (**8**,**18**) slides away from a track of a suspension hook (**6**,**16**) of the respective complementary hook (**2**,**12**),

wherein each suspension hook (**6**,**16**) is resiliently mounted by means of a resilient drawback spring (**3**,**13**) on said complementary up- and downwardly moving hooks.

5,667,000

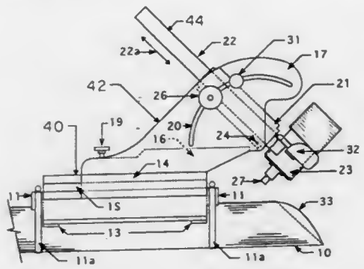
LOG COPING JIG

Bruce M. Bean, 5545 W. 4330 South, West Valley, Vt. 84120

Filed Mar. 8, 1996, Ser. No. 613,123

Int. Cl.[6] **B27C** *5/02*

U.S. Cl. 144—136.7 **4 Claims**



1. A machine for cutting the end of a log to provide an inwardly curved surface of a given radius that matches the curved side surface of another log of equal radius, said machine comprising:

a base member adapted to be secured to a longitudinal side of said log;

a support member attached to said base member;

a sleeve member having an elongate cylindrical opening extending therethrough;

means for pivotally mounting said sleeve member to said support member so that the sleeve member can pivot about one of its ends, whereby a central, longitudinal axis of said cylindrical opening lies in a plane through a longitudinal, center axis of said support member;

means for adjustably setting said sleeve member so that the central, longitudinal axis of said cylindrical opening can be set to make any desired, acute angle of up to 90 degrees with the longitudinal, center axis of said support member;

an elongate shaft extending longitudinally through said cylindrical opening in said sleeve member, said shaft being adapted to rotate about its longitudinal axis as well as to move longitudinally back and forth within said cylindrical opening;

a router; and

means for attaching said router to said elongate shaft at or near an end of said elongate shaft that extends toward the longitudinal, center axis of said support member when said sleeve is set so that said cylindrical axis of said sleeve makes an acute angle with the longitudinal center axis of said support member, said router being attached to said shaft so that a motor axis of said router is oriented perpendicular to the longitudinal axis of said elongate shaft.

5,667,001

COPING CUTTING APPARATUS

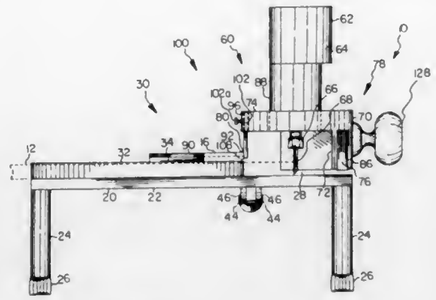
Wallace D. Sanger, 858 Gardenia St., Royal Palm Beach, Fla. 33411, and James Headberg, 15310 Take Off Place, West Palm Beach, Fla. 33414

Continuation-in-part of Ser. No. 504,186, Jul. 19, 1995. This application Dec. 22, 1995, Ser. No. 577,252

Int. Cl.[6] **B27G** *5/02*

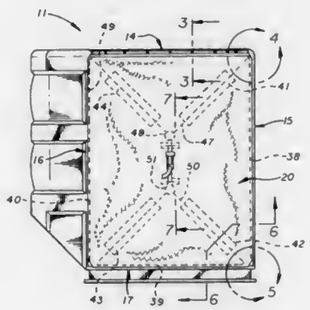
U.S. Cl. 144—144.1 **18 Claims**

1. An apparatus for cutting an end of a work piece having a work piece curved face along a curve which is substantially the mirror image of the cross-sectional curvature of said work piece curved face, comprising:



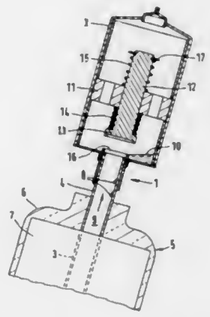
work piece support means;
work piece anchoring and positioning means for securing said work piece onto said support means in a position to be cut;
a cutting means carriage structure mounted to move toward and away from said end of said work piece;
work piece cutting means slidably mounted on said cutting means guide structure and including a work piece cutting member;
cutting member guide means comprising a guide template having a template guide surface with a guide surface contour;
and a guide surface following structure connected to said work piece cutting means for guiding said cutting member along a path substantially duplicating said guide surface contour;
wherein said work piece support means comprises a platform member resting on a plurality of platform member legs;
wherein said work piece cutting means guide structure comprises a rail arm including an elongate member pivotally connected to said apparatus to pivot toward and away from said work piece;
wherein said cutting means carriage is slidably mounted on said rail arm.

5,667,002
SINGLE-POINT TENSIONING DOOR SYSTEM FOR CONTAINERS
Ariel Neustadt, Torrance, Calif., assignor to Air Cargo Equipment Corporation, Rancho Dominguez, Calif.
Filed Oct. 17, 1996, Ser. No. 731,714
Int. Cl.[6] A47H *13/00*
U.S. Cl. 160—368.1 **5 Claims**



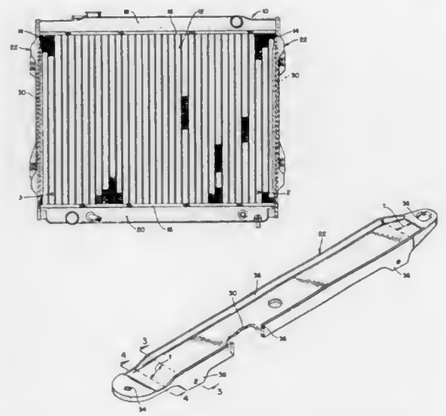
1. A door for a container having a door frame with top, sides and bottom, said door including in combination:
a flexible door panel having a top, sides and a bottom;
attachment means for attaching said door panel top to said door frame top;
an upper right pulley and means for attaching said upper right pulley to said door frame at the upper right corner;
an upper left pulley and means for attaching said upper left pulley to said door frame at the upper left corner;
a lower left pulley and means for attaching said lower left pulley to said door frame at the lower left corner;
a lower right pulley and means for attaching said lower right pulley to said door frame at the lower right corner;
upper and lower cable junction means for joining cables together;
a first cable carried by said door panel;
first means for anchoring one end of said first cable to said door frame at said lower right corner, with said first cable running over said upper right pulley to said upper cable junction means;
a second cable carried by said door panel;
second means for anchoring one end of said second cable to said door frame at said lower left corner, with said second cable running over said upper left pulley to said upper cable junction means;
a third cable having both ends joined to said lower cable junction means and running over said lower right pulley and said lower left pulley; and
a buckle having upper and lower ends connected to said upper and lower cable junction means, respectively, said buckle including means for tensioning said first, second and third cables by drawing said upper and lower cable junction means toward each other.

5,667,003
HEAT PIPE DEVICE
Faramarz Mahdjuri-Sabet, Thermomax Limited, Balloo Crescent, Bangor, Great Britain, BT19 2UP
Continuation of Ser. No. 133,131, Dec. 7, 1993, abandoned.
This application May 30, 1995, Ser. No. 453,675
Claims priority, application United Kingdom, Apr. 17, 1991, 9108229
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—274 **13 Claims**



1. A heat pipe containing a working fluid and comprising an evaporator, a condenser positioned above the evaporator and including a bottom wall, a tube means which extends from said evaporator through said bottom wall and said condenser to define an aperture in said condenser, and a regulating means for limiting the maximum temperature in the condenser to a predetermined temperature, said regulating means comprising a plug means operable by means of a temperature-sensitive member for movement between a first position in which the aperture is open and a second position wherein the plug means restricts said aperture to limit the flow of the working fluid from the condenser to the evaporator such that the working fluid collects in the condenser and such that the passage of the vaporized working fluid from the evaporator to the condenser through the restricted aperture further limits the flow of the working fluid from the condenser to the evaporator, but provides leakage of the working fluid back into the evaporator.

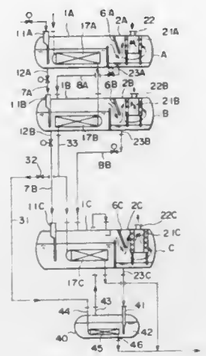
5,667,004
MOLDED PLASTIC HEAT EXCHANGER MOUNTING CHANNEL
Karl Paul Kroetsch, Williamsville, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 29, 1996, Ser. No. 639,885
Int. Cl.[6] F28F *9/00;1/32*
U.S. Cl. 165—41 **1 Claim**



1. In a vehicle having a generally four sided heat exchanger with a core having a predetermined thickness and a substantially planar configuration that is subject to warping forces in use, a channel for mounting one side of said core to said vehicle, comprising,
a generally flat, substantially rectangular, molded plastic central web having an inboard side and an outboard side and an end to end length and edge to edge width comparable to said core, with each end adapted to be fixed to said heat exchanger one side,
a pair of edge flanges molded integral with and substantially perpendicular to said web, said flanges being substantially symmetrical to both sides of said web and extending for less than the entire end to end length of said web, each edge flange further having a transition portion tapering down toward an end of said web and into said web in which the length of said transition portion is approximately 0.085 to 0.17 of the end to end length of said channel,
whereby said warping forces are efficiently resisted.

5,667,005
HEAT EXCHANGING UNIT AND HEAT EXCHANGING APPARATUS
Yuzuru Kakutani; Hitoshi Konishi, both of Yokohama; Kazuhiko Asada, Takasago, and Shinichiro Kashihara, Kobe, all of Japan, assignors to JGC Corporation, Tokyo, and Kobe Steel, Ltd., Hyogo, both of Japan
Filed Apr. 3, 1995, Ser. No. 415,519
Claims priority, application Japan, Apr. 4, 1994, 6-087198
Int. Cl.[6] F25B *39/02*
U.S. Cl. 165—114 **18 Claims**

1. A heat exchanging unit comprising:
a closed vessel separated by a vertical partition plate into a first compartment for cooling a fluid to be cooled with a liquid medium and a second compartment for receiving a mist separated from the liquid medium, said first compartment containing the liquid medium maintained at a predetermined liquid level height, said partition plate having a height higher than said predetermined liquid level height and lower than the height of said closed vessel to thereby define above said vertical partition plate a passage connecting said first and second compartments;



a cooling medium inlet pipe connected to said first compartment;
liquid medium inlet control means and liquid medium outlet control means for respectively controlling flows of the liquid medium into and out of the first compartment of the closed vessel and for collectively maintaining the predetermined liquid level height;
a through pipe through which the fluid to be cooled is passed, said through pipe being arranged to pass through said first compartment and including a heat exchange member disposed in said first compartment at a height lower than the top of said vertical partition plate;
a demister disposed in said second compartment;
a cooling medium gas outlet pipe connected to said demister; and
a cooling medium liquid outlet pipe connected to the lower portion of said second compartment.

12. A multistage heat exchanging apparatus comprising a series of heat exchanging units, each of said heat exchanging units comprising: a closed vessel separated by a vertical partition plate into a first compartment for cooling a fluid to be cooled with a liquid medium and a second compartment for receiving a mist separated from the liquid medium, said vertical partition plate having a height lower than the height of said closed vessel to thereby define above said vertical partition plate a passage connecting said first and second compartments; a cooling medium inlet pipe connected to said first compartment; liquid medium inlet control means and liquid medium outlet control means for respectively controlling flows of the liquid medium into and out of the first compartment of the closed vessel and for collectively maintaining the liquid medium in the first compartment at a predetermined liquid level height lower than said height of said vertical partition plate; a through pipe through which the fluid to be cooled is passed, said through pipe being arranged to pass through said first compartment and including a heat exchanging member disposed in said first compartment at a height lower than the top of said vertical partition plate; a demister disposed in said second compartment; a cooling medium gas outlet pipe connected to said demister; a cooling medium liquid outlet pipe connected to the lower portion of the second compartment; and a cooling medium liquid discharge pipe connected to the lower portion of said first compartment of at least each of said heat exchanging units, with the exception of a last said heat exchanging unit of said series;
wherein said cooling medium liquid discharge pipe of any heat exchanging unit is connected to said cooling medium inlet pipe of the succeeding heat exchanging unit via an expansion valve;
said cooling medium liquid outlet pipe of any heat exchanging unit is connected to said first compartment of a succeeding heat exchanging unit via an expansion valve; and
said outlet of said through pipe of any heat exchanging unit is connected to the inlet of said through pipe of a succeeding heat exchanging unit.

5,667,006

FIN TUBE HEAT EXCHANGER

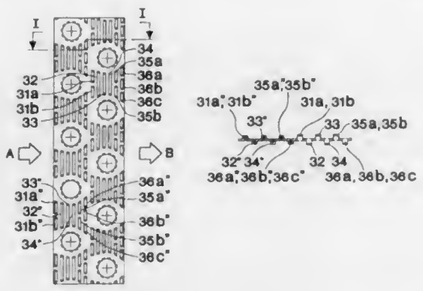
Tae Wook Kang, and Kam Gyu Lee, both of Busan, Rep. of Korea, assignors to LG Electronics, Inc., Seoul, Rep. of Korea

Filed Jan. 23, 1996, Ser. No. 590,319

Claims priority, application Rep. of Korea, Jan. 23, 1995, 1995-1076

Int. Cl.[6] F28F *1/32*

U.S. Cl. 165—151 **3 Claims**



1. A fin tube heat exchanger comprising:

a plurality of fin plates disposed in parallel with one another, spaced at regular intervals and adapted to allow air to flow therebetween; and

a plurality of refrigerant tubes disposed in at least two rows, inserted into the fin plates in a perpendicular direction and being adapted to allow a fluid medium to pass therein;

each of said fin plates having a plurality of raised strips which extend in a direction perpendicular to a direction of air flow, a plurality of normal raised strips being formed on both sides of said fin plates in at least one row on an air flow outlet side, and a plurality of non-piercing embossings being formed on at least one side of said fin plates in other rows, said embossings protruding from a surface of the fin plate without piercing the fin plate, the height of said embossings in said other rows being lower than the height of said normal raised strips in said at least one row.

5,667,007

LAMINATED HEAT EXCHANGER

Kunihiko Nishishita, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,935

Claims priority, application Japan, Mar. 30, 1995, 7-97790

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **15 Claims**

1. A laminated heat exchanger comprising:

a tube element assembly formed of a plurality of tube elements laminated alternately with fins over a plurality of levels, each of said tube elements including two formed plates bonded together to define a pair of tank portions and a passage portion providing fluid communication between said tank portions,

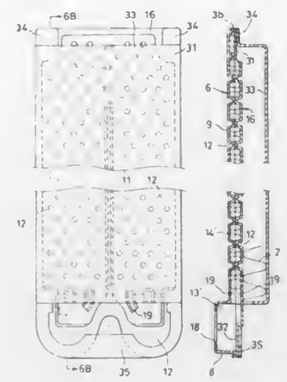
said tank portions of adjacent tube elements being fluidly connected so as to define first and second tank groups extending in the direction of lamination, said first tank group being partitioned into a first tank block and a second tank block;

a heat exchanging fluid intake portion communicating with said first tank block;

a heat exchanging fluid outlet portion communicating with said second tank block,

wherein one of said tube elements, of said plurality of tube elements, is located at an end of said tube element assembly and one of said formed plates of said one tube element is a flat formed plate which includes indentations and projections corresponding to indentations and projections of the other of said formed plates, and planar bonding areas are formed in said passage portion; and

an end plate, positioned at said end of said tube element assembly, having a stage portion projecting toward said end of said tube element assembly and terminating in bonding surfaces which are bonded to said planar bonding areas of said flat formed plate only in areas which do not include said indentations and projections.



5,667,008

SEAL ELECTRICAL CONDUCTOR ARRANGEMENT FOR USE WITH A WELL BORE IN HAZARDOUS AREAS

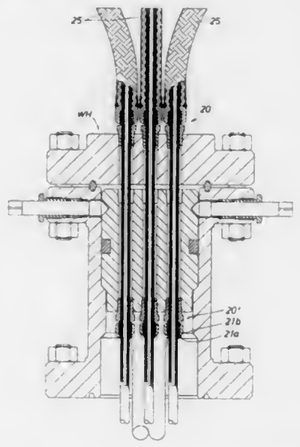
Boyd B. Moore, Houston, Tex., assignor to Quick Connectors, Inc., Houston, Tex.

PCT No. PCT/US93/04032, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/25726, PCT Pub. Date Nov. 10, 1994

Continuation-in-part of Ser. No. 651,633, Feb. 6, 1991, Pat. No. 5,289,882. This PCT application Apr. 29, 1993, Ser. No. 448,575

Int. Cl.[6] E21B *33/03*

U.S. Cl. 166—65.1 **9 Claims**



1. An apparatus for conducting alternating current through a well barrier made substantially entirely of ferromagnetic material, said apparatus comprising:

at least one non-ferromagnetic electrically conductive rigid tube extending through its own separate passageway in the well barrier; and

a single electrical conductor carrying the alternating current extending through the well barrier enclosed by each rigid tube, said electrical conductor including insulation electrically isolating said rigid tube from said conductor.

5,667,009

RUBBER BOOTS FOR ELECTRICAL CONNECTION FOR DOWN HOLE WELL

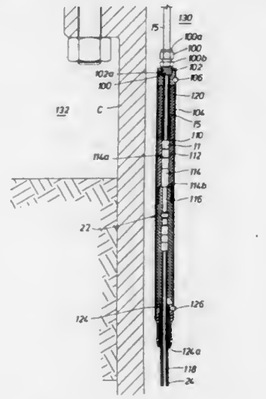
Boyd B. Moore, 427 Mignon, Houston, Tex. 77024

Division of Ser. No. 448,575, Aug. 7, 1995, which is a continuation-in-part of Ser. No. 651,633, Feb. 6, 1991, Pat. No. 5,289,882. This application Feb. 16, 1996, Ser. No. 602,986

Claims priority, application WIPO, Apr. 29, 1993, PCT/US93/04032

Int. Cl.[6] E21B *33/03*; H01R *4/00*

U.S. Cl. 166—65.1 **6 Claims**



1. An apparatus for keeping an electrical connection intact within a pressurized well bore, the electrical connection being made between a cable conductor extending from down hole of the well bore and a power conductor extending through and enclosed by a rigid tube extending through a wellhead barrier of the well, the electrical connection including a first connector terminating the power conductor and a second connector terminating the down hole cable conductor, wherein the second connector is mated with the first connector to complete the electrical connection, and wherein mated rubber boots surround the electrical connection, said apparatus comprising:

a tubular top stop for fixedly attaching to the rigid tube including a hole for receiving the rigid tube therethrough, said top stop engaging and confining an upper end of the rubber boots;

a rigid tubular outer sleeve for enclosing the rubber boots having an upper end engaging said top stop;

means for attaching said top stop to said outer sleeve;

a tubular bottom stop having a hole for receiving the down hole cable conductor therethrough, said bottom stop engaging and confining a lower end of the rubber boots;

means for attaching said outer sleeve to said bottom stop; and

wherein said top and bottom stops and said outer sleeve confine and prevent significant expansion of the rubber boots.

5,667,010

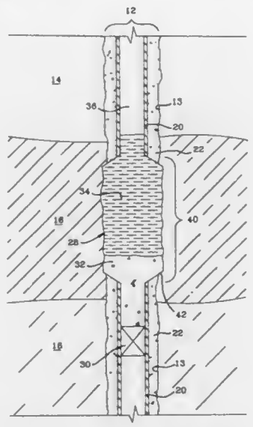
PROCESS AND PLUG FOR WELL ABANDONMENT

John Wesley Boyd; John Balslev Jorgensen, and Victor Freeman Maxwell, all of Calgary, Canada, assignors to Steelhead Reclamation Ltd., Calgary, Canada

Filed Mar. 21, 1995, Ser. No. 408,156

Int. Cl.[6] E21B *33/138*

U.S. Cl. 166—292 **20 Claims**



1. A process for sealing a borehole comprising:

placing a retaining means in the borehole; and,

placing an amount of a bituminous material into the borehole into contact with the borehole above the retaining means, such that the bituminous material is prevented from moving down the well bore by the retaining means and the bituminous material is positioned in the borehole such that it is adjacent to an impermeable rock layer through which the borehole passes, the bituminous material being selected to remain viscous over time in borehole conditions, to retain its ability to flow.

5,667,011

METHOD OF CREATING A CASING IN A BOREHOLE

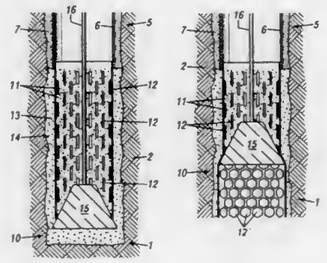
Daljit Singh Gill; Wilhelmus Christianus Maria Lohbeck; Robert Bruce Stewart, and Jacobus Petrus Maria Van Vliet, all of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 16, 1996, Ser. No. 599,427

Claims priority, application European Pat. Off., Jan. 16, 1995, 95200099

Int. Cl.[6] E21B *29/08;33/14*

U.S. Cl. 166—295 **13 Claims**



1. A method of creating a casing in a borehole formed in an underground formation, the method comprising the steps of:

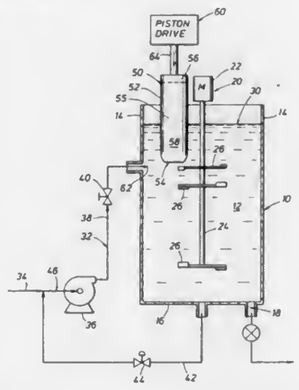
(a) installing a tubular liner in the borehole, the liner being radially expandable in the borehole whereby the liner during its radial expansion has a plurality of openings which are overlapping in the longitudinal direction of the liner;
(b) radially expanding the liner in the borehole; and
(c) either before or after step (b), installing a body of hardenable fluidic sealing material in the borehole so that the sealing material fills said openings and thereby substantially closes said openings, the sealing material being selected so as to harden in said openings and thereby increasing the compressive strength of the liner.

5,667,012

METHOD AND APPARATUS FOR THE ADDITION OF LOW-BULK-DENSITY FIBERS TO A FLUID

Mat Hoover, Richmond, and William Ray McIntire, Sugar Land, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 11, 1995, Ser. No. 540,997
Int. Cl.[6] E21B *43/267*
U.S. Cl. 166—308 **23 Claims**



1. A method of addition and dispersion of a fibrous material into a liquid comprising the steps of providing a liquid having a liquid-gas interface and injecting the fibrous material into the liquid adjacent to the liquid-gas interface, wherein the step of injecting comprises providing a container having a diameter which contains the fibrous material and positioning the container for the fibrous material below the liquid-gas interface.

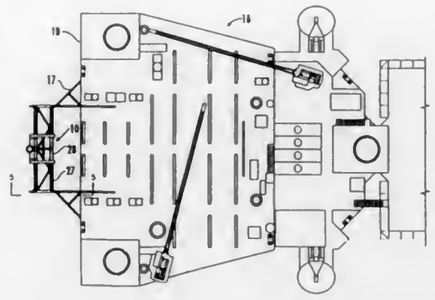
5,667,013

METHOD AND APPARATUS FOR SUPPORTING CASING STRING FROM MOBILE OFFSHORE PLATFORM

Billy Ray Bain, 12131 Broken Bough, Houston, Tex. 77024

Filed Dec. 13, 1995, Ser. No. 571,553
Int. Cl.[6] E02B *17/00*
U.S. Cl. 166—348 **11 Claims**

1. A well support structure for supporting a well conductor from an offshore production platform against wind and wave motion of the sea and of the platform comprising:
a clamp sized to surround an upper portion of the sidewall of the conductor wherein the clamp includes first and second mating elements to limit movement of said conductor portion;



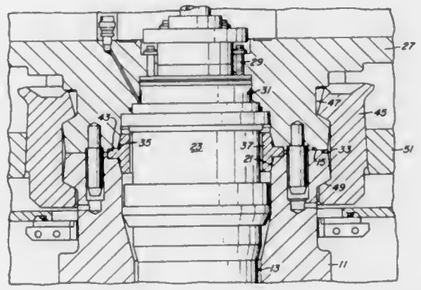
a carriage mounting the first mating element of the clamp for movement in at least two transverse directions relative to the conductor.

5,667,014

SELF-REMOVING CHOKE INSERT SYSTEM

Mark D. Slider, and Gary L. Galle, both of Houston, Tex., assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Nov. 24, 1995, Ser. No. 562,617
Int. Cl.[6] E21B *43/013*
U.S. Cl. 166—378 **16 Claims**



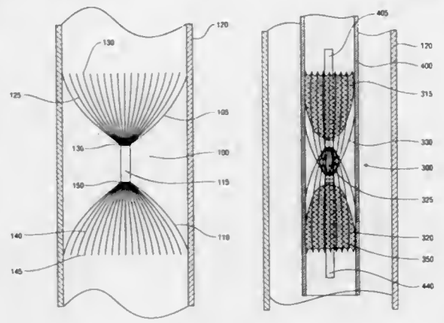
14. A method for installing and removing an insert member from a housing having a bore which terminates at an outer face, an annular inner seal surface in the bore, a counterbore of larger diameter than the inner seal surface, joining and located outward of the inner seal surface, an inner seal carried by the insert member which engages the inner seal surface, and a closure member, the method comprising:
providing a first annular closure seal surface at an intersection of the bore and the face of the housing and a second annular closure seal surface on the closure member, and tapering at least one of the closure seal surfaces;
providing a resilient metal closure seal having mating surfaces and a selected spring force;
securing the insert member to the closure member for axial movement therewith;
placing the insert member in the bore of the housing with the inner seal located in the counterbore and the mating surfaces of the closure seal in contact with the closure seal surfaces of the housing and the closure member, and securing the closure member to the housing, causing the insert member to advance into the bore, the inner seal to engage the inner seal surface, and one of the mating surfaces of the closure seal to preload against the closure seal surface which is tapered; then, to remove the insert member,
releasing the closure member from the housing, the selected spring force of the closure seal causing the closure member and insert member to move outward relative to the housing, moving the inner seal from the inner seal surface into the counterbore; then
retrieving the insert member from the bore of the housing.

5,667,015

WELL BARRIER

Kristian Harestad, Randaberg, and Thor-Peter Herigstad, Bryne, both of Norway, assignors to BJ Services Company, Houston, Tex.

Filed Jan. 16, 1996, Ser. No. 587,157
Claims priority, application Norway, Feb. 3, 1995, 950396
Int. Cl.[6] E21B *33/126;33/134;33/136*
U.S. Cl. 166—383 **8 Claims**



1. A well barrier for the separation of two liquids in a gas or oil well, comprising:
(1) a fixing device;
(2) a first set of laths coupled to said fixing device projecting slantingly away from said fixing device in a first direction; and
(3) a second set of laths coupled to said fixing device projecting slantingly away from said fixing device in a second direction;
wherein said first set of laths and said second set of laths are positioned in an overlapping relationship.

7. A method of placing a well barrier at a predetermined location within a well, comprising:
(1) placing a pipe within said well
(2) guiding said well barrier within said pipe to said predetermined location within said well by forcing said well barrier through said pipe using a plug; and
(3) placing said well barrier into intimate contact with said well at a plurality of discrete contact points at each of a plurality of discrete locations within said well.

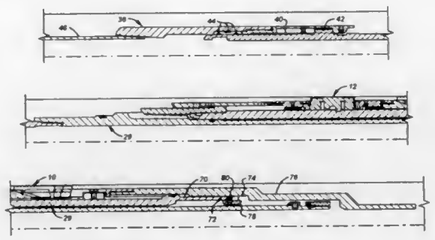
5,667,016

PACKER WITH BACK-UP RETRIEVING METHOD

William D. Henderson, League City, and Jeffrey J. Lembcke, Houston, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jan. 11, 1996, Ser. No. 585,214
Int. Cl.[6] E21B *23/06;33/129*
U.S. Cl. 166—387 **17 Claims**

1. A method of setting and releasing a packer downhole, comprising:
running in a packer to a desired depth;
setting at least one slip;
setting at least one sealing element;
locking the set of said sealing element with a locking assembly;
attaching production tubing to the packer;
moving a mandrel in the packer with said production tubing;
providing a first mode of release as a result of shifting said mandrel which unlocks said locking assembly;
removing said production tubing;
providing access to said locking assembly by said removal of said production tubing; and
defeating said locking assembly by alternate means as a second mode of release for the packer.

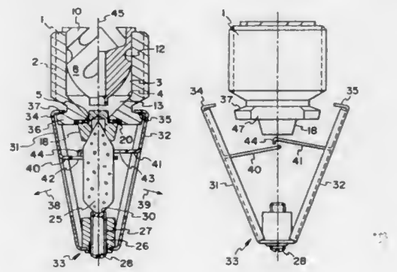


5,667,017

ATOMIZER FOR GENERATING WATER-MISTS IN FIRE-FIGHTING SYSTEMS

Rolf Hoffmann, and Jörg Mücke, both of Oschersleben, Germany, assignors to Awab Umformtechnik GmbH & Co. KG, Oschersleben, Germany

Filed Sep. 11, 1995, Ser. No. 526,450
Claims priority, application Germany, Sep. 17, 1994, 44 33 157.6
Int. Cl.[6] A62C *37/08*
U.S. Cl. 169—38 **18 Claims**



1. An atomizer for generating a water mist in fire-fighting systems, comprising a housing, a turbulence chamber mounted in the housing, and a nozzle aperture communicating with said turbulence chamber, and including:
a) a sealing unit (**18**, **20**) externally resting against the housing (**1**) and tightly sealing the said nozzle aperture (**5**);
b) a compressive element (**25**) pressing the sealing unit (**18**, **20**) against said nozzle aperture and giving way at a specified initiation temperature;
c) said compressive element having one end resting away from said sealing unit (**18**, **20**) against a part (**33**) connected with said housing (**1**);
d) said part including releasable spring means when connected to said housing (**1**) being compressed for connection to said housing (**1**); and
e) whereby when said compressive element gives way at a specified temperature, said sealing unit will be unseated from said nozzle aperture to permit said atomizer to generate water mist.

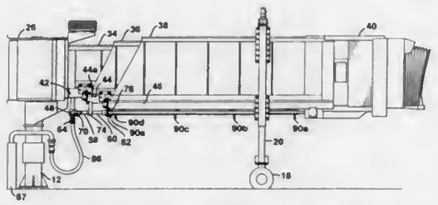
174–442 O.G.–97–6: QL3

5,667,018

FIRE CONTROL FOAM DISTRIBUTION SYSTEM FOR USE IN DISTRIBUTING FOAM BENEATH A PASSENGER BOARDING BRIDGE

George Dean Hone, Roy, and Gary Ronald Mitchell, Salt Lake City, both of Utah, assignors to FMC Corporation, Chicago, Ill.

Filed Jan. 2, 1996, Ser. No. 582,058
Int. Cl.[6] A62C *3/00*
U.S. Cl. 169—54 **10 Claims**



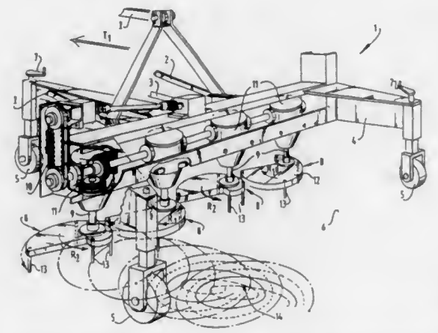
1. A system for delivery of fire suppression foam to an area beneath a passenger boarding bridge, said passenger boarding bridge having an inboard end, said system comprising:
fire suppression foam generator,
flexible connection and delivery conduit attached to said fire suppression foam generator,
telescopic foam delivery pipe having an inboard end and an outboard end connected to said flexible connection and delivery conduit, said telescopic foam delivery pipe being carried by said passenger boarding bridge,
foam delivery manifold communicating and connected to said telescopic foam delivery pipe and said foam delivery manifold being carried by said passenger boarding bridge, and
foam delivery discharge nozzles attached to said foam delivery manifold for the delivery of the foam to the area beneath said passenger boarding bridge.

5,667,019

SOIL TREATING DEVICE

Marinus Reincke, Leersum, Netherlands, assignor to Redeximm Handel- en Exploitatiemaatschappij B.V., Netherlands

Filed Aug. 10, 1995, Ser. No. 513,291
Claims priority, application Netherlands, Aug. 12, 1994, 9401311
Int. Cl.[6] A01B *45/02*
U.S. Cl. 172—49.5 **14 Claims**



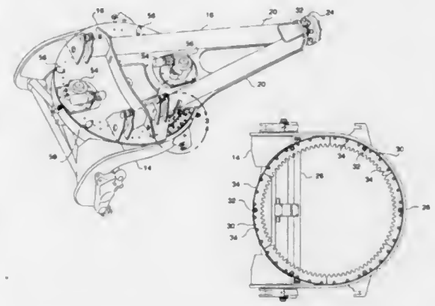
1. A soil treating device comprising at least one working element rotatably driven by a rotation shaft and a frame accommodating the working element and displaceable substantially parallel to the ground, the rotatable working element comprises a plurality of contact means intended for ground working and fixed in a holder, wherein at least a part of the contact means lies at different distances from the rotation shaft, and wherein the distance between the at least a part of the contact means and the rotation shaft gradually increases from a minimum distance to a maximum distance in progression through an angle of a maximum of 360° and thereafter the at least a part of the contact means terminates.

5,667,020

CIRCLE AND DRAWBAR ASSEMBLY FOR A MOTOR GRADER

Richard D. Palmer, Green Valley, Ariz., and Joseph A. Rapp, Morris, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 26, 1996, Ser. No. 592,105
Int. Cl.[6] E02F *3/12*
U.S. Cl. 172—781 **7 Claims**



1. A blade assembly of a motor grader, comprising:
a drawbar frame adapted for mounting to the motor grader;
a blade support frame having a circular portion and being adapted for mounting a blade thereto;
a number of shoe assemblies having a first shoe member defining a first bearing surface, a second shoe member, and a number of shims clamped between said first and second shoe members, said shoe assemblies being mounted to said drawbar frame in a circular array with the circular portion of the blade support frame slidably disposed between the first bearing surface and said drawbar;
a number of ring gear segments mounted to said circular portion in a circular array, each of said number of ring gear segments including gear teeth adapted for engaging drive means of said drawbar frame;
a number of fasteners for mounting said number of ring gear segments to said circular portion of said blade support frame.

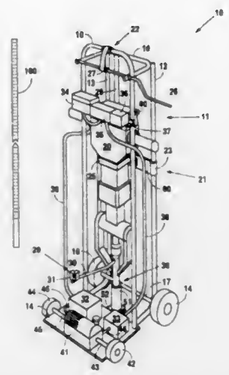
5,667,021

APPARATUS FOR DRIVING GRADE STAKES

Vance Allen Bailey; Monte Reeves Highsmith; Ray Allen Highsmith, all of Selma, and Stephen Joseph Bailey, Austin, all of Tex., assignors to L. Castaneda Construction, Inc.

Filed Oct. 12, 1995, Ser. No. 542,441
Int. Cl.[6] B25D *17/00*
U.S. Cl. 173—21 **13 Claims**

1. An apparatus for driving a grade stake, comprising:
a hammer including a hammer bit for driving the grade stake;



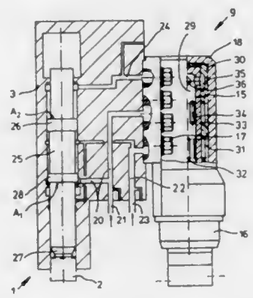
a frame for supporting said hammer and the grade stake under said hammer;
means for triggering the activation of said hammer; and
an elevation rod holder attached to said hammer bit, wherein the placement of an elevation rod in said elevation rod holder permits the driving of the grade stake to a desired elevation.

5,667,022

HYDRAULIC IMPACT DEVICE WITH CONTINUOUSLY CONTROLLABLE IMPACT RATE AND IMPACT FORCE

Dieter Güde, Essen, Germany, assignor to Deilman-Haniel GmbH, Dortmund, Germany

Filed Jun. 2, 1995, Ser. No. 460,219
Claims priority, application Germany, Jun. 3, 1994, 44 19 499.4
Int. Cl.[6] B25D *9/22*
U.S. Cl. 173—105 **14 Claims**



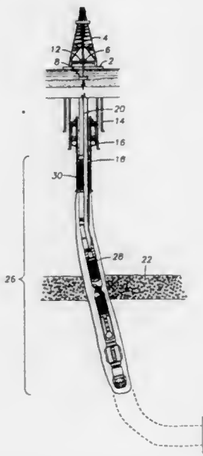
1. Hydraulic impact device comprising a housing having a cylinder, a tubing having an end connected to the cylinder, a turning gear connected to the tubing, a percussion piston connected to the cylinder and movably positioned in an inner boring, said piston acting upon the tubing while moving back and forth in the inner boring, a control system for controlling the movement of the piston, a rotary valve provided in the control system, a first rotary engine connected to the rotary valve for driving the rotary valve, wherein the rotary valve and the first rotary engine are mounted separately from the percussion piston on the housing and removable therefrom, a pump and a tank connected to the system, plural portings connecting the first rotary engine to the pump and the tank and to the piston.

5,667,023

METHOD AND APPARATUS FOR DRILLING AND COMPLETING WELLS

John W. Harrell; Michael H. Johnson; Daniel J. Turick, and Larry A. Watkins, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 528,574, Sep. 15, 1995, which is a continuation-in-part of Ser. No. 343,814, Nov. 22, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 666,150
Int. Cl.[6] E21B *7/04;43/04*
U.S. Cl. 175—45 **25 Claims**



1. An apparatus for both drilling and completing a well from the surface of the earth at a well site to a target subsurface reservoir, said apparatus comprising:
a tubular string extending from a source of pressurized drilling fluid at the surface of the well site, down within a well bore toward the subsurface reservoir, for conducting said drilling fluid from said fluid source to a lower end of said string, and for conducting reservoir fluid from the reservoir to the surface;
a drill bit carried by said string adjacent said lower end thereof for drilling the well bore;
a completion assembly carried by said string above said bit; and
at least one aperture in said completion assembly, said at least one aperture being capable of selective opening or closing to give said completion assembly two alternative modes of operation, with a first said mode comprising a drilling mode in which said at least one aperture is selectively closed so that said drilling fluid flows through said completion assembly to said drill bit without passing through said aperture to the well bore, and with a second said mode comprising a completion mode in which said at least one aperture is selectively opened to enable reservoir fluid to flow through said at least one aperture into said completion assembly and up said tubular string to the surface.

5,667,024

METHOD OF DRILLING UTILIZING BEES WINGS

James R. Wittliff, Lufkin, Tex., assignor to Bottom Line Industries, Inc., Lafayette, La.

Continuation of Ser. No. 335,087, Nov. 7, 1994, Pat. No. 5,431,237, which is a continuation of Ser. No. 57,111, May 4, 1993, Pat. No. 5,363,928, which is a continuation-in-part of Ser. No. 877,473, May 1, 1992, abandoned. This application Jul. 3, 1995, Ser. No. 497,825

Int. Cl.[6] E21B *33/138; C09K 7/02*

U.S. Cl. 175—72 **8 Claims**

1. A method of carrying out oil well drilling operations in a well being drilled in the ground comprising the step of:

circulating a drilling fluid comprising ground bees wings in said well while drilling operations are being carried out.

5,667,025

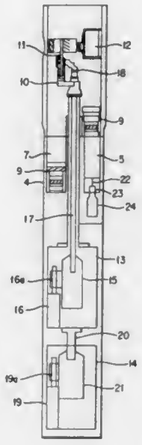
ARTICULATED BIT-SELECTOR CORING TOOL

John G. Haessly, Spring, and Duane F. LaDue, Sugar Land, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 29, 1995, Ser. No. 536,720

Int. Cl.[6] E21B *25/02*

U.S. Cl. 175—78 **52 Claims**



1. A multiple cutting bit tool for cutting sample cores of an earth formation from a borehole traversing said formation wherein a different bit is used to cut and hold each core sample and wherein multiple core samples can be taken in one borehole run comprising:

a plurality of cutting bits each having a cutting axis and cutting edge for cutting core samples from said earth formation;

a means for holding said plurality of cutting bits before taking core samples, said holding means comprising at least two chambers, said chambers being approximately parallel to said borehole;

a means for storing said plurality of cutting bits after taking a formation core sample, said storing means comprising at least one chamber being approximately parallel to said borehole; and

a drive means for engaging the cutting bit and causing the bit to cut a core sample.

5,667,026

POSITIONING APPARATUS FOR A POWER TONG

Jorg Lorenz, Burgwedel, and Joerg-Erich Schulze-Beckinghausen, Garbsen, both of Germany, assignors to Weatherford/Lamb, Inc., Houston, Tex.

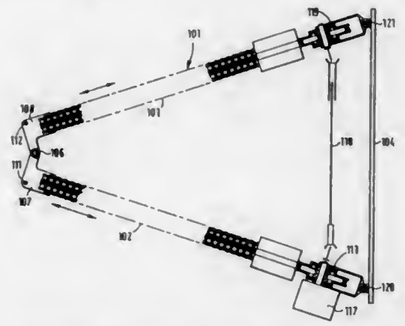
PCT No. PCT/GB94/02192, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO95/10686, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 7, 1994, Ser. No. 545,642

Claims priority, application Germany, Oct. 8, 1993, 43 34 378.3

Int. Cl.[6] E21B *19/14*

U.S. Cl. 175—162 **14 Claims**



1. A positioning apparatus for moving a power tong between an operative and an inoperative position in a drilling tower, said power tong driven by a motor, which positioning apparatus comprises a first arm and a second arm one end of said first arm being pivotally mounted to one end of said second arm and the other end of both said first arm and said second arm being pivotally mountable on said drilling tower with said first arm and said second arm converging towards one another, means for extending and retracting said first arm and said second arm.

5,667,027

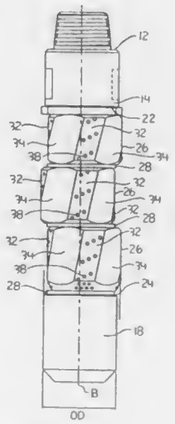
DRILL STABILIZER

Ken D. Poffenroth, Edmonton, Canada, assignor to Argus Machine Co. Ltd., Edmonton, Canada

Filed Oct. 5, 1995, Ser. No. 539,604

Int. Cl.[6] E21B *17/10*

U.S. Cl. 175—325.3 **13 Claims**



1. A drill stabilizer comprising:

a housing with a mandrel portion extending from the housing between a first shoulder and a second shoulder, the mandrel having a mandrel axis and an outer diameter adjacent the first shoulder;

at least three stabilizing rollers mounted sequentially along the mandrel between the first and second shoulders;

each stabilizing roller having an axis of rotation radially offset from the mandrel axis in an offset direction and distributed symmetrically around the mandrel axis;

the diameter of each stabilizing roller being such that each stabilizing roller has a perimeter that extends further radially outward than the outer diameter of the housing in the offset direction of the respective stabilizing roller and does not extend further radially outward than the outer diameter in the direction opposite to the offset direction; and

each stabilizing roller including at least one flute extending lengthwise along the stabilizing roller.

5,667,028

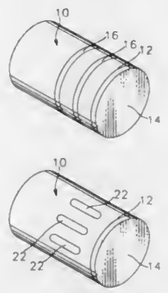
MULTIPLE DIAMOND LAYER POLYCRYSTALLINE DIAMOND COMPOSITE CUTTERS

David Truax, and Roger Brown, both of Houston, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Aug. 22, 1995, Ser. No. 518,036

Int. Cl.[6] E21B *10/46*

U.S. Cl. 175—428 **21 Claims**



1. A PDC cutter comprising:

a cylindrical body of cemented tungsten carbide;

a polycrystalline diamond composite layer on a first end face of the cylindrical body extending to a circumferential edge of the first end face;

a groove in the body spaced apart from the polycrystalline diamond composite layer; and polycrystalline diamond in the groove.

5,667,029

DRIVE SYSTEM FOR HYBRID ELECTRIC VEHICLE

Edward F. Urban, Glen Head, and George E. Mavroudis, Dix Hills, both of N.Y., assignors to New York Institute of Technology, Old Westbury, N.Y.

Filed May 31, 1995, Ser. No. 455,128

Int. Cl.[6] B60K *6/02*

U.S. Cl. 180—65.2 **8 Claims**

1. A hybrid electric drive system for a vehicle having at least two drive wheels, the system comprising:

a) an internal combustion engine having a first output shaft and a second output shaft;

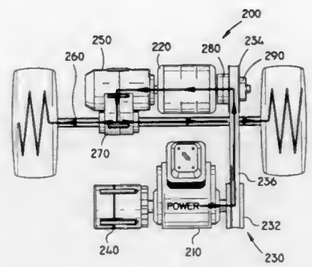
b) a first transmission assembly having an input shaft and an output shaft, the output shaft being operatively connected to a drive shaft, the drive shaft being connected to the drive wheels;

c) a second transmission assembly having an input and an output, the input being connected to the first output shaft of the internal combustion engine, the second transmission assembly being a continuously variable transmission;

d) a dynamotor operatively connected between the input shaft of the first transmission and the output of the second transmission;

e) a first clutch for selectively connecting the output of the second transmission to an input shaft of the dynamotor; and

f) a generator connected to the second output shaft of the internal combustion engine.



5,667,030

HEAT EXCHANGER FOR MOTOR VEHICLE COOLING SYSTEM

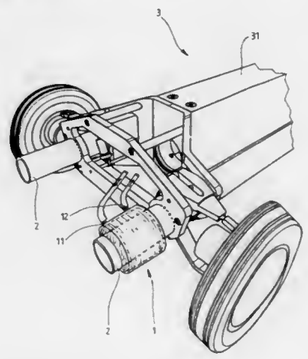
Jean-Luc Thuliez, La Neuveville, Switzerland; Tristan Chevrolet, Norwich, Great Britain, and Daniel Stoll, Neuchatel, Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Jun. 5, 1995, Ser. No. 465,361

Claims priority, application France, Jun. 6, 1994, 94 06897

Int. Cl.[6] B60K *11/04*

U.S. Cl. 180—68.4 **16 Claims**



1. A heat exchanger on a motor vehicle comprising a chassis and a liquid cooling system which is connected to an inlet and an outlet of said heat exchanger for circulation of cooling liquid through said heat exchanger, said chassis comprising at least one tubular chassis member made of a heat conducting material and hollow for circulation of air, wherein said heat exchanger comprises an outer sleeve hermetically mounted around said chassis member to form a hollow cylindrical cavity therebetween, said chassis member having an external surface which also forms an internal surface of said heat exchanger.

5,667,031

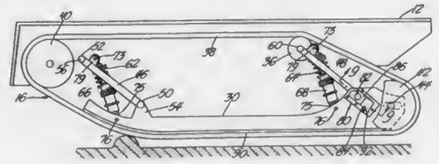
LONG TRAVEL SUSPENSION FOR TRACKED VEHICLE

Gerard John Karpik, Eveleth, Minn., assignor to Polaris Industries Partners L.P., Minneapolis, Minn.

Continuation of Ser. No. 325,662, Oct. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 110,879, Aug. 24, 1993, Pat. No. 5,370,198, which is a continuation-in-part of Ser. No. 951,152, Sep. 25, 1992, abandoned. This application Jun. 28, 1996, Ser. No. 671,103

Int. Cl.[6] B62M *27/02*

U.S. Cl. 180—193 **22 Claims**



1. A suspension assembly for suspending an endless track beneath a tracked vehicle chassis and for maintaining the track at a substantially uniform tension while the vehicle accelerates or traverses bumpy terrain, the assembly comprising an elongated slide rail having a forward end and a rearward end and a bottom track engaging portion extending rearwardly from the forward end, a front suspension arm having an upper end adapted for pivotal connection to the vehicle chassis and a lower end pivotally connected to the slide rail proximate the forward end, a rear suspension arm having an upper end for pivotal connection to the vehicle chassis and a lower end pivotally connected to the slide rail proximate the rearward end, biasing means for urging the slide rail away from the vehicle chassis, and a rear suspension arm regulating means for regulating the movement of the lower end of the rear suspension arm relative to the vehicle chassis and the lower end of the front suspension arm.

5,667,032

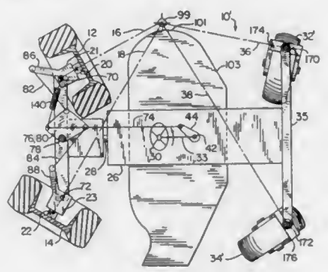
SELF PROPELLED MOWER WITH LOW RADIUS PIVOTED REAR WHEEL STEERING

Igor Kamlukin, 11506 N. Shorecliff La. 2W, Mequon, Wis. 53092

Filed Dec. 22, 1994, Ser. No. 361,412

Int. Cl.[6] B60K *17/30*

U.S. Cl. 180—256 **8 Claims**



1. In a power driven self-propelled lawn mower having a frame, ground engagement wheels at the front and rear of the frame, said ground engagement wheels including a pair of wheels at the rear of the frame which are spaced apart along a lateral axis which is orthogonal to a longitudinal axis of the frame and having a mowing deck supported by said frame between said front and rear wheels, the improvement wherein:

each rear wheel is mounted to said frame so as to be pivotable about a kingpin having a generally vertical axis;

steering gear is connected to each rear wheel so as to steer said wheels in unison about a locus of projections of axes of axles of said rear wheels; and

said locus is within four inches of an extreme lateral edge of said mowing deck when said rear wheels are in position so as to produce a minimum turning radius of said mower; wherein said steering gear includes a double arm mounted to be rotatable about a generally vertical axis, said double arm being connected to linkages for turning each rear wheel and to a linkage for being rotated by an operator of said mower, said axis perpendicularly intersecting a longitudinal axis of said tractor and being positioned within a distance equal to the diameter of the rear wheels fore or aft of a rear drive axis of said mower.

5,667,033

ELECTRIC POWER STEERING SYSTEM

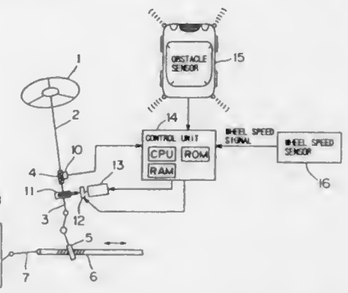
Yoshinobu Shimizu, Sakai, and Shiro Nakano, Osaka, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Dec. 8, 1995, Ser. No. 569,481

Claims priority, application Japan, Dec. 21, 1994, 6-318759

Int. Cl.[6] B60R *21/00;* **B62D** *5/04*

U.S. Cl. 180—272 **10 Claims**



1. An electric power steering system which is combined with a steering mechanism including a steering wheel and which has a motor for producing a steering assist force when a vehicle is steered by means of the steering wheel, comprising:

obstacle detecting means for detecting the presence of an obstacle in the periphery of the vehicle, and

warning control means for driving the motor to cause vibration in the steering wheel when an obstacle is detected by the obstacle detecting means.

5,667,034

POWER STEERING SYSTEM

Neil Jones, Palm City, and Mark D. Morris, Stuart, both of Fla., assignors to TRW Inc., Lyndhurst, Ohio

Filed Mar. 14, 1994, Ser. No. 212,242

Int. Cl.[6] B62D *5/06*

U.S. Cl. 180—422 **10 Claims**

1. An apparatus for steering a vehicle comprising:

a vehicle power steering motor;

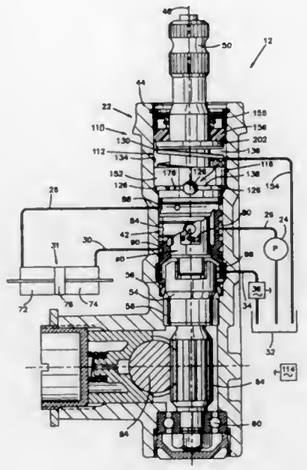
first and second valve members which are relatively rotatable to port fluid to said vehicle power steering motor;

a manually operated input member fixedly connected to said first valve member to rotate said first valve member relative to said second valve member;

means for sensing at least one vehicle operational characteristic;

means for providing an output signal derived from said means for sensing at least one vehicle operational characteristic which is proportionate to vehicle lateral acceleration; and

force transmitting means for resisting relative movement between said first and second valve members with a force



which varies as a function of the output signal proportionate to vehicle lateral acceleration, said force transmitting means including:

a force transmitting member connected with said first valve member and movable toward and away from said second valve member;

means for increasing the resistance to relative movement between said first and said second valve members as said force transmitting member moves toward said second valve member;

means for applying to said force transmitting member a force which urges said force transmitting member away from said second valve member to reduce the resistance to relative movement between said first and second valve members; and

means for decreasing said force applied to said force transmitting member as vehicle lateral acceleration increases to increase the resistance to relative movement between said first and second valve members.

5,667,035

OVERHEAD PLATFORM ELEVATION DEVICE

Douglas J. Hughes, 2936 W. Royal La. #1140, Irving, Tex. 75063

Filed Oct. 19, 1995, Ser. No. 545,287

Int. Cl.[6] E04G *3/00*

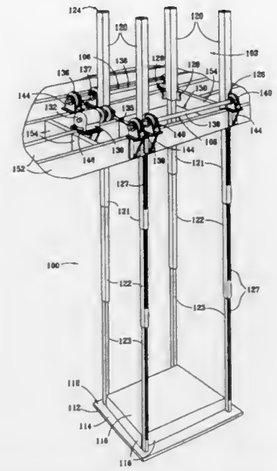
U.S. Cl. 182—142 **15 Claims**

1. A platform elevation device in combination with an overhead storage space with an access opening in the ceiling of a building structure for moving objects between a lower level of the building structure and a supporting surface of the storage space, comprising:

a rectangular platform having a base plate and a centrally disposed supporting surface;

a motor assembly having a dual direction motor and a drive shaft with two pulleys, wherein said motor assembly is mounted on the storage space supporting surface adjacent to a proximal side of said access opening;

opposed left and right pulley assemblies, each having three pulleys mounted on a pulley support rod extending along a longitudinal length of respective left and right sides of the access opening between the proximal side and opposing distal side, wherein two pulleys on each rod are spaced adjacent to a respective one of four corners of the access opening and the third pulley on each rod is located adjacent to the proximal side of the access opening in the same plane as a pulley on the motor drive shaft;



a plurality of platform adjustment cables, each cable having a first end attached to a respective pulley adjacent one of said corners and a second end attached to the platform; and

left and right drive cables, each cable having a first end attached to one drive shaft pulley and a second end attached to the third pulley on the respective left and right pulley assemblies;

wherein operation of said motor causes the drive cables to rotate the pulley assemblies for adjusting the position of the platform between the storage space access opening and lower level of the building.

5,667,036

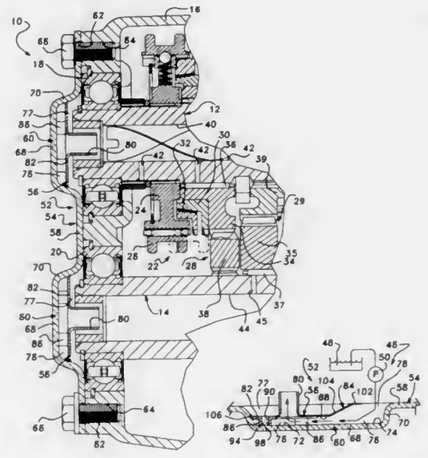
LUBRICATION SYSTEM FOR TRANSMISSIONS

Wayne E. Mueller, Milford; Jermanjit S. Dhillon, Rochester Hills; Raymond A. Howell, Birmingham; Brian C. Moriarty, Waterford, and Edward Perosky, Sterling Heights, all of Mich., assignors to New Venture Gear, Inc., Troy, Mich.

Filed May 21, 1996, Ser. No. 651,094

Int. Cl.[6] F01M *9/00*

U.S. Cl. 184—6.12 **13 Claims**



1. An oil distributing apparatus for use with a transmission having a shaft rotatably supported in a housing and a lubrication

system for communicating lubricating fluid from a reservoir within the housing to an axial bore in the shaft, said oil distributing apparatus comprising:

an end plate secured to the transmission housing and having an embossed segment; and

an oil dam secured in said embossed segment of said end plate so as to define an inlet trough and a sealed oil chamber therewith, said oil dam having a spacer leg extending into said oil chamber and engaging said end plate, and a spout extending into the axial bore in the shaft for establishing a flow pathway between said oil chamber and the axial bore, and wherein the lubrication system provides lubricating fluid from the reservoir to said inlet trough.

9. A method of assembling an oil directing apparatus for use in a transmission comprising the steps of:

providing an end plate having a recessed portion and a post;

providing an oil dam having a peripheral edge, a spacer leg, and a cylindrical spout, said spacer leg having a bore and a terminal end with an aperture formed therein, said bore and said aperture defining an opening extending through said spacer leg, said bore having a diameter, said aperture having a diameter smaller than the diameter of said axial bore thereby forming an annular lip;

placing said oil dam adjacent said end plate such that said end plate post is disposed within said spacer leg aperture and said peripheral edge of said oil dam is proximate to said recessed portion of said end plate, said oil dam and said recessed portion of said end plate defining an oil chamber having an inlet; and

deforming said end plate post into contact with said annular lip, whereby said terminal end of said spacer leg contacts said end plate and said peripheral edge of said oil dam contacts said recessed portion of said end plate for forcing said peripheral edge into a deflected position, thereby forming a seal between said end plate and said oil dam.

5,667,037

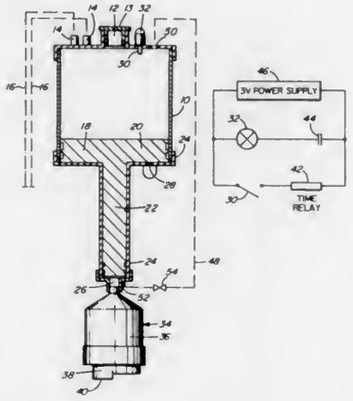
LUBRICATION SYSTEM

Anton Orlitzky, 343 Rosehill Wynd, Delta, B.C., Canada, V4M 3L8

Filed Nov. 6, 1995, Ser. No. 554,044

Int. Cl.[6] F16N *11/10*

U.S. Cl. 184—39 **7 Claims**



1. A lubrication system comprising:

an oil reservoir having a first inlet for oil and at least one outlet;

a piston in said reservoir to force oil from the reservoir;

a second inlet in said reservoir on a side of the piston remote from said at least one outlet;

means to exert pressure through said second inlet to urge said piston towards the reservoir to force oil from the at least one outlet;

a feed back line to feed oil from the reservoir, from the same side of the piston as the at least one outlet, to that side of the piston on the same side as the second inlet; and

a valve to open and close said feed back line.

5,667,038

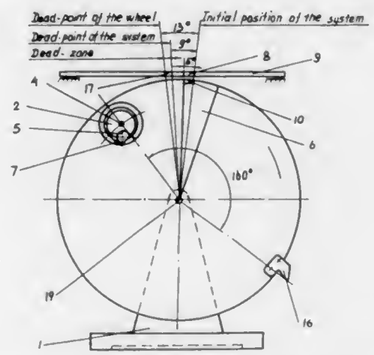
SYSTEM AND METHOD OF CONVERSION OF GRAVITATION IN THIS IMPULSE OF FORCE

Mikhail Tarnopolsky, 305 80th St. #c3, Brooklyn, N.Y. 11209

Filed Jun. 13, 1995, Ser. No. 489,784

Int. Cl.[6] F03G *3/00;* **B23B** *45/16*

U.S. Cl. 185—27 **4 Claims**



1. A system for conversion of gravitation in the impulse of force, comprising

a first rotatable element;

a second rotatable and element, said second element and first elements are placing one into another and having different masses and forms; and

a third element having a to disconnect said second and first rotatable elements from one another at any moment of movement; and so that during one portion of their free rotation from an initial position around a general axis, they rotate jointly and then in a moment when the second of said elements, which also rotates around itself and a third element's axle reaches a sloped outlet on its way and a whole rotated system reaches its dead-zone position at the same moment, said second element separates from said first element which continues the same way rotation, powered by an impulse of force, which generates in a moment of separation as a result of the conversion of gravitation in it.

5,667,039

ROLLERS FOR THE ROLLER GUIDE OF SLIDING ELEVATOR DOORS

Peter Spiess, Meggen, Switzerland, assignor to Inventio AG, Hergiswil NW, Switzerland

Filed May 5, 1995, Ser. No. 435,156

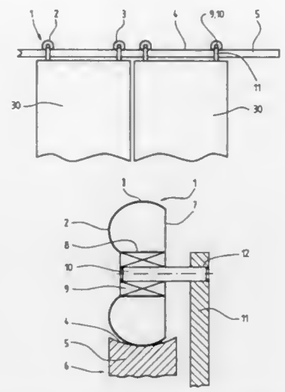
Claims priority, application European Pat. Off., May 11, 1994, 94107329

Int. Cl.[6] B66B *13/30;* **E05D** *15/06*

U.S. Cl. 187—334 **12 Claims**

1. Rollers in combination with a roller guide for a sliding elevator door, the rollers comprising:

roller bodies including resilient elements and actual running surfaces;



said resilient elements being of elastically yielding construction; and

the actual running surfaces having no spring effect in a direction of loading.

5,667,040

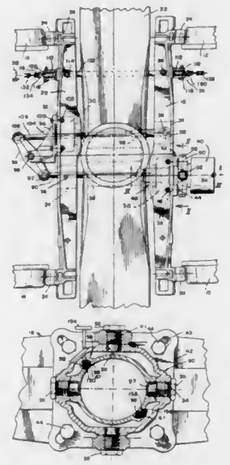
METHOD FOR CHANGING A PACKING CUP ON A BRAKE ACTUATION-SLACK ADJUSTER

Zdzislaw Samulak, Watertown, and Lyle Jantzi, Adams, both of N.Y., assignors to New York Air Brake Corporation, Watertown, N.Y.

Filed Dec. 12, 1995, Ser. No. 571,197

Int. Cl.[6] B61H *13/00;* **F16J** *9/00;* **B23P** *6/00*

U.S. Cl. 188—52 **21 Claims**



1. A method of changing a packing cup on a piston in a cylinder of an integral brake actuator-slack adjuster unit, a housing of the unit being mounted on a brake beam or truck, a brake force transmission element being connected to said piston by a slack adjuster and extending from said unit, the piston and force transmission element having a brake released position and a brake applied position, a first portion of the cylinder being removable from the housing, the method comprising the following steps performed with the unit mounted to the brake beam or truck:

moving said piston and said force transmission element to a locking position;

locking said piston and said force transmission element in said locking position;

removing said first cylinder portion from said housing;

replacing said packing cup;

replacing said first cylinder portion on said housing; and

unlocking said piston and said force transmission element.

5,667,041

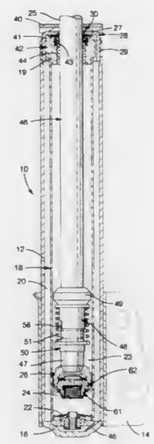
SUSPENSION STRUT WITH HYDRAULIC STOP

Eric Lee Jensen, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1995, Ser. No. 552,450

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—284 **6 Claims**



1. A suspension strut comprising:

a cylinder tube;

a piston having a flow passage and being slidably carried in the cylinder tube separating the cylinder tube into a compression chamber and a rebound chamber;

a piston rod fixedly engaging the piston having a longitudinal bore communicating with the flow passage and having a cross bore intersecting the longitudinal bore;

an annular spring seat fixedly engaging the piston rod between the piston and the cross bore;

an annular valve collar slidably carried on the piston rod having a longitudinal leg spaced away from the piston rod forming a flow opening therebetween; and

a spring extending between the annular spring seat and the annular valve collar wherein the spring normally holds the annular valve collar in a position wherein the cross bore is completely open to the rebound chamber, wherein the longitudinal leg of the annular valve collar includes a notch opening extending completely through the longitudinal leg to provide a reduced pressure rise rate when the annular valve collar initially slides on the piston rod to a position covering the cross bore.

5,667,042

TORQUE TRANSMITTING APPARATUS WITH HYDROKINETIC TORQUE CONVERTER

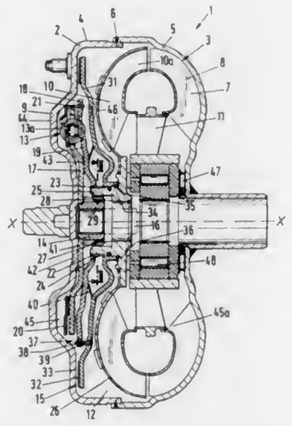
Steven Olsen, Bühl; Rudolf Hönemann, Ottersweier, both of Germany, and Wendy Boman, Wooster, Ohio, assignors to LuK Lamellen und Kupplungsbau GmbH, Buhl, Germany

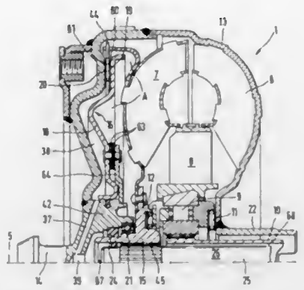
Filed Apr. 11, 1995, Ser. No. 420,238

Claims priority, application Germany, Apr. 26, 1994, 44 14 521.7

Int. Cl.[6] F16D *33/18*

U.S. Cl. 192—3.29 **64 Claims**





1. Apparatus for transmitting torque comprising a fluid-operated clutch, such as a hydrokinetic torque converter, including a housing connectable with a rotary output component of a prime mover, at least one pump receiving torque from said housing, a rotary output element connectable with a rotary input element of a driven unit, such as a variable-speed transmission, and a turbine interposed between said at least one pump and said output element; at least one torsional vibrations absorbing torque transmitting damper disposed in a power flow between said turbine and said output element and including an input member rotatable with said turbine, an output member connected with said output element and rotatable relative to said input member, and energy storing means arranged to oppose rotation of said members relative to each other; and a form-locking connection provided between and permitting at least limited angular movements of said turbine and said output element relative to each other.

a lockup clutch for coupling said turbine wheel to said converter housing;

said lockup clutch having an engaged position wherein said turbine wheel is coupled to said converter housing;

said lockup clutch having a disengaged position wherein said turbine wheel and said converter housing are uncoupled from one another;

said lockup clutch comprising a piston;

said piston being disposed between said converter housing and said turbine wheel, said piston and said converter housing defining a first chamber therebetween;

a second chamber having said pump wheel and said turbine wheel disposed therein;

at least one friction lining being disposed between a portion of said converter housing and a portion of said piston;

said at least one friction lining comprising a first portion;

said first portion of said friction lining being disposed to contact said converter housing in the engaged position of said lockup clutch;

said at least one friction lining comprising a second portion;

said second portion of said friction lining being disposed to contact said piston in said engaged position of said lockup clutch;

at least one first channel disposed substantially adjacent said first portion of said at least one friction lining for permitting flow of converter fluid from said second chamber into said first chamber in the engaged position of said lockup clutch;

at least one second channel disposed substantially adjacent said second portion of said at least one friction lining for permitting flow of converter fluid from said second chamber into said first chamber in the engaged position of said lockup clutch; and

said at least one first channel being dimensioned to permit a greater fluid flow than said at least one second channel.

5,667,043

HYDRODYNAMIC TORQUE CONVERTER WITH LOCKUP CLUTCH

Uwe Dehrmann, Würzburg; Peter Volland, Rannungen, and Hans-Wilhelm Wienholt, Dortmund, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 8, 1995, Ser. No. 436,108

Claims priority, application Germany, May 9, 1994, 44 16 153.0

Int. Cl.[6] F16D *33/00;35/00;37/00*

U.S. Cl. 192—3.29 **20 Claims**

1. A hydrokinetic lockup torque converter, said torque converter comprising:

a converter housing, said converter housing comprising an arrangement for being driven;

a turbine wheel being disposed within said converter housing;

said turbine wheel comprising an arrangement for being disposed on, and for driving, a shaft;

a pump wheel being disposed adjacent said turbine wheel, said pump wheel being fastened to said converter housing;

5,667,044

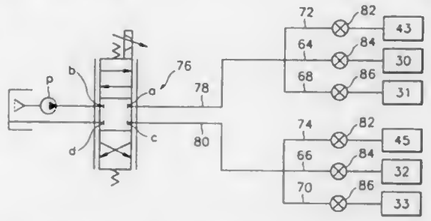
TRANSMISSION DEVICE FOR AUTOMOBILE

Manlim Choi, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 475,603

Int. Cl.[6] B60K *41/22*

U.S. Cl. 192—3.58 **9 Claims**



1. A transmission device for a vehicle, comprising:

a clutch for selectively transferring power from an engine to the transmission device;

at least two shift rails for causing said transmission device to achieve a plurality of transmission speed ratios;

shift rail actuating member for selectively engaging and actuating one of said shift rails;

a clutch actuator selectively actuating said clutch;

a select actuator actuating said shift rail actuating member to select one of said shift rails;

a shift actuator, independent of said select actuator, causing said shift rail actuating member to actuate said selected one of said shift rails;

a servo valve for controlling direction and flow of oil pressure from an oil pressure pump;

a first solenoid valve disposed between said servo valve and said clutch actuator;

a second solenoid valve disposed between said servo valve and said select actuator;

a third solenoid valve disposed between said servo valve and said shift actuator; and

said clutch actuator, select actuator and shift actuator functioning based on oil pressure received from said servo valve as regulated by said first, second and third solenoid valves, respectively.

5,667,045

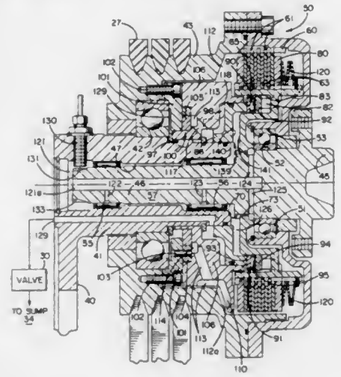
CONTINUOUSLY VARIABLE FAN DRIVE CLUTCH ARRANGEMENT

Gordon F. Cummings, III, Rockford, Ill., assignor to Rockford Powertrain, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 529,357, Sep. 18, 1995, abandoned. This application Sep. 19, 1995, Ser. No. 532,226

Int. Cl.[6] F16D *67/04;25/02;43/25*

U.S. Cl. 192—18 A **17 Claims**



1. A clutch arrangement for a cooling fan in a diesel driven vehicle, the clutch mechanism being of a size capable of fitting an envelope between a diesel engine and the cooling fan associated with a cooling radiator, the fan clutch arrangement comprising, in combination:

a compact housing having a belt drive input and an output connected to a fan hub;

a continuously variable wet clutch in the housing capable of a fully engaged position in which the input and hub are rotated at the same speed, a declutched position in which the output hub is stationary, and continuously variable positions therebetween in which the output hub is rotated at continuously variable speeds;

the housing having connections for an oil supply and an oil return connected in the path of engine oil flow from an oil pump to a sump;

a positive displacement booster pump in the housing having an inlet for receiving oil from the supply and for increasing the pressure of the oil in a pressure chamber in the housing located between the booster pump and the oil return, a piston in the housing adapted to be responsive to the pressure in the chamber for releasing and engaging the wet clutch between the fully engaged and declutched positions; and

an electrically operable valve connected to the oil return for restricting the flow of oil to the sump and thereby controlling the pressure in the pressure chamber and the position of the clutch between the fully engaged and declutched positions.

5,667,046

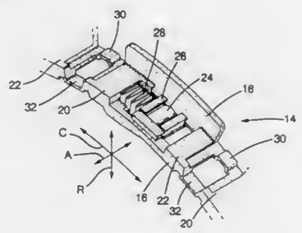
TEMPERATURE COMPENSATING ROLLER CLUTCH CAGE

Ellen Christine Stanton, Butler, and Albert David Johnston, Huron, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1996, Ser. No. 650,706

Int. Cl.[6] F16D *41/067*

U.S. Cl. 192—45 **3 Claims**



1. A unitary cage for a one way clutch that is adapted to be installed in the annular space between inner and outer coaxial clutch races, and which retains a complement of spring energized rollers in said annular space, and in which the material of said cage and said races have differing coefficients of thermal expansion and contraction, so that said cage tends to shrink more with falling temperature and be put into tension around said inner race, and to expand more with rising temperature and be put into compression against said outer race, said unitary cage comprising,

a plurality of evenly spaced, generally rectangular roller pockets arranged in a generally circular pattern about a central axis, each pair of adjacent pockets having a pair of circumferentially spaced, axially extending cross bars of sufficient circumferential width and radial thickness to provide load support between said races, whereby said cross bars are relatively inflexible, with adjacent cross bars defining an interstitial space therebetween with a nominal circumferential length, and,

at least one circumferentially flexible connecting member extending across each pair of adjacent cross bars of each pair of adjacent pockets, said flexible connecting member being curved so as to be capable of closing and narrowing when said cage is put into compression and opening and widening when said cage is put into tension, thereby allowing the nominal circumferential length of said interstitial space to shorten and lengthen respectively and thereby accommodate the differential in expansion and contraction between said cage and races despite the inflexibility of said cage cross bars.

5,667,047

TRANSMISSION OF AN INTERNAL COMBUSTION ENGINE WITH A CLUTCH WITH A TWO-MASS FLYWHEEL

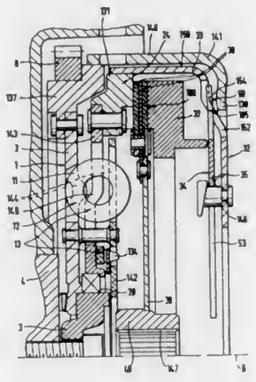
Michael Weiss, Dittelbrunn; Jörg Sudau, Niederwerrn; Bernhard Schierling, Kurnach; Thomas Wirth, Schwanfeld; Jürgen Kleifges, Schweinfurt; Reinhard Feldhaus, Ebenhausen; Andreas Orlamünder, Schweinfurt, and Eberhard Knaupp, Warneck, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jul. 14, 1995, Ser. No. 502,401

Claims priority, application Germany, Jul. 15, 1994, 44 25 065.7; May 26, 1995, 195 19 363.6

Int. Cl.[6] F16F *15/12;* **F16D** *13/60*

U.S. Cl. 192—55.61 **20 Claims**



1. A clutch comprising:

means for engaging and disengaging said clutch;

said clutch engaging and disengaging means comprising means for moving through a first range of motion, said first range of motion being for engaging and disengaging said clutch;

a first centrifugal mass for being connected to a driving mechanism;

a second centrifugal mass;

means for engaging said first centrifugal mass with said second centrifugal mass;

said centrifugal mass engaging means comprising a torsional vibration damper to permit said second centrifugal mass to move rotationally with respect to said first centrifugal mass;

a damping device to dampen rotational movement between said second centrifugal mass and said first centrifugal mass;

said damping device comprising a frictional damping device to establish a frictional connection between said first centrifugal mass and said second centrifugal mass to frictionally engage said first centrifugal mass and second frictional mass with one another;

said clutch engaging and disengaging means comprising means for moving through a second range of motion, said second range of motion being for actuating said frictional damping device to make a frictional connection between said first and second centrifugal masses, said second range of motion being outside of said first range of motion, said first range of motion engages and disengages said clutch;

said means for moving through a first range of motion and said means for moving through a second range of motion together comprising application means;

said frictional damping device comprising a damping element configured to extend from said second centrifugal mass;

said clutch comprising a housing connected to said second centrifugal mass;

said housing comprising at least one recess;

said frictional damping device comprising an element connected to said first centrifugal mass;

said damping element comprising at least one projection extending from said application means through said at least one housing recess to frictionally contact said element connected to said first centrifugal mass, upon said application means being positioned within the second range of motion.

5,667,048

CLUTCH DISENGAGING DEVICE

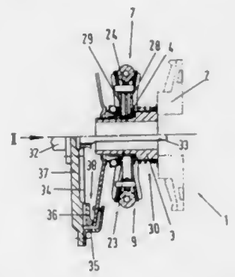
Edmund Maucher, Wooster, Ohio, assignor to LUK Lamell und Kupplungsbau, Bühl, Germany

Filed May 18, 1995, Ser. No. 443,705

Claims priority, application Germany, May 21, 1994, 44 18 002.0

Int. Cl.[6] F16D *13/38;13/75;23/14*

U.S. Cl. 192—70.25 **39 Claims**



1. Apparatus for changing the condition of an engageable and disengageable clutch, comprising a carrier non-rotatably connectable with a housing of a transmission; a bearing supported by and movable relative to said carrier longitudinally of a predetermined axis of the apparatus to thereby displace at least one mobile component of the clutch between a first position and a second position; a support provided on and non-rotatable connected with said carrier; a mobile actuator provided on said carrier between said support and said bearing; and means for displacing said actuator relative to said support, including at least one motion transmitting member movable substantially radially of said axis to thereby displace said actuator at least substantially in the direction of said axis.

5,667,049

PULLED-TYPE MEMBRANE SPRING CLUTCH WITH WEAR ADJUSTMENT MECHANISM

Reinhold Weidinger, Unterspiesheim, and Jörg Sudau, Niederwerrn, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 10, 1995, Ser. No. 541,829

Claims priority, application Germany, Oct. 10, 1994, 44 36 110.6

Int. Cl.[6] F16D *13/75*

U.S. Cl. 192—70.25 **8 Claims**

1. A friction clutch for a motor vehicle with automatic compensation for wear, said friction clutch comprising:

a clutch housing;

a clutch disc for being disposed on a transmission input shaft having a longitudinal axis, said clutch disc being axially movable along the transmission input shaft;

pressure plate means for engaging and disengaging said clutch disc with a flywheel, said pressure plate means being axially movable along the transmission input shaft;

said clutch disc comprising:

friction lining means disposed between said pressure plate means and the flywheel for contacting the flywheel and said pressure plate means upon engagement of said clutch disc;

membrane spring means disposed between said clutch housing and said pressure plate means for applying pressure to said pressure plate means and for biasing said pressure plate means towards the flywheel;

wear compensation means;

means for operatively connecting said wear compensation means to a first portion of said clutch housing;

means for supporting said membrane spring means on a second portion of said clutch housing;

said means for supporting said membrane spring means being disposed substantially between said membrane spring means and said second portion of said clutch housing;

said wear compensation means being disposed substantially between said membrane spring means and said means for operatively connecting said wear compensation means to said first portion of said clutch housing;

said longitudinal axis of said transmission output shaft defining a first axial direction and a second axial direction, said first axial direction and said second axial direction being parallel to said longitudinal axis;

said means for supporting said membrane spring means comprising a plate spring;

said plate spring comprising means for applying a force in said first axial direction, with respect to said clutch housing;

said plate spring comprising means for applying a force in said second axial direction with respect to said membrane spring means;

said membrane spring means comprising means for applying a force in said first axial direction, with respect to said plate spring;

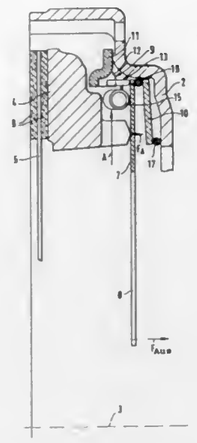
said membrane spring means comprising means for applying a force in said second axial directions with respect to said pressure plate means;

said means for applying a force in said first axial direction and said means for applying a force in said second axial direction of said plate spring, together with said means for applying a force in said first axial direction and said means for applying a force in said second axial direction of said membrane spring means, comprising means for prestressing said membrane spring means and said plate spring with respect to one another;

said means for prestressing said membrane spring and said plate spring with respect to one another being disposed at a first radial distance with respect to said longitudinal axis;

said wear compensation means being disposed at a second radial distance with respect to said longitudinal axis; and

said first radial distance of said prestressing means being substantially equal to said second radial distance of said wear compensation means.



5,667,050

ELECTROMAGNETIC COUPLING APPARATUS

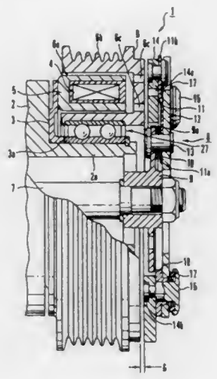
Tomoya Hasegawa, Gunma, Japan, assignor to Ogura Clutch Co., Ltd., Japan

Filed Jan. 23, 1996, Ser. No. 590,205

Claims priority, application Japan, Jan. 30, 1995, 7-032965; Aug. 24, 1995, 7-239174

Int. Cl.[6] F16D *27/112*

U.S. Cl. 192—84.961 **15 Claims**



1. An electromagnetic coupling apparatus comprising:

an armature hub fixed to a rotating shaft of a device, said armature hub having a flange unit formed with a through hole;

a leaf spring having a proximal end portion fixed to said flange unit of said armature hub;

an armature to which a free end portion of said leaf spring is fixed and which is biased in a decoupling direction;

a rubber stopper disposed between said flange unit of said armature hub and said armature;

a fixing member fixed to said armature, said fixing member having a trunk portion extending through the through hole formed in said flange unit of said armature hub and a head portion projecting from said flange unit of said armature hub to a side opposite said armature and formed with an annular projecting ridge portion on a peripheral portion thereof;

a rubber vibration insulator disposed between a side surface of said flange unit of said armature hub and said head portion of said fixing member, said rubber vibration insulator being constituted by a cylindrical portion which is sandwiched between said side surface of said flange unit of said armature hub and said head portion of said fixing member and which has an outer circumferential surface fitted with said projecting ridge portion of said fixing member, and a disk portion formed in said cylindrical portion to be integral therewith and having a through hole to fit on said trunk portion of said fixing member;

a rotor opposing said armature through a first gap of a predetermined size;

an electromagnetic coil for generating a magnetic flux in order to cause said rotor to magnetically attract said armature against a biasing force of said leaf spring; and

a field core fixed to said unit to accommodate said electromagnetic coil,

wherein a second gap larger than the first gap is formed between a distal end of said projecting ridge portion of said fixing member and said flange unit of said armature hub, and a third gap is formed between one side surface of said disk portion of said rubber vibration insulator and said side surface of said flange unit of said armature hub.

5,667,051

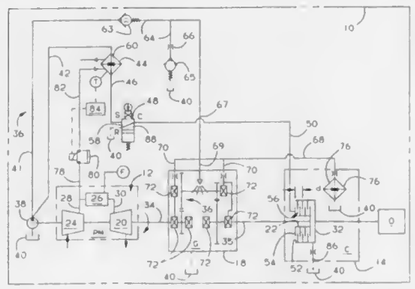
HYDRAULIC CONTROL AND LUBRICATION SYSTEM WITH COMPRESSED AIR PRE-HEAT CIRCUIT FOR RAPID RESPONSE AT LOW AMBIENT TEMPERATURES

Gary L. Goldberg, San Diego; Paul E. Hilgeman, Santee; James V. Rector, San Diego; Malcolm J. McArthur, Escondido; David E. Jeorling, Huntington Beach; Charles H. Dutart, LaJolla, and Mahendra P. Desai, San Diego, all of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 1, 1995, Ser. No. 397,703

Int. Cl.[6] F16D *25/12;25/10*

U.S. Cl. 192—85 R **13 Claims**



1. In an apparatus having a prime mover including means for providing both a supply of heated compressed air and shaft power selectively couplable through a hydraulically actuated clutch to a driven device, a clutch control system for providing rapid actuation and stable control of the clutch, said clutch control system comprising:

a) clutch actuator means operably connected to said hydraulically actuated clutch for selectively actuating said clutch to couple said prime mover to said driven device, said clutch actuator means defining a control volume of fluid therein; and

b) heat exchange means operably connected in a heat transfer relationship between said prime mover and said clutch actuator means for directing a flow of said heated compressed air from said prime mover to said actuator means for heating said control volume of fluid.

5,667,052

HYDRAULIC CONTROL SYSTEM FOR A SYNCHRONIZER

Michael Richardson, Hornchurch, Great Britain, assignor to New Holland North America, Inc., New Holland, Pa.

Filed Jan. 18, 1996, Ser. No. 588,188

Claims priority, application United Kingdom, Jan. 21, 1995, 95.01.194

Int. Cl.[6] F16D *25/08*

U.S. Cl. 192—85 R **4 Claims**

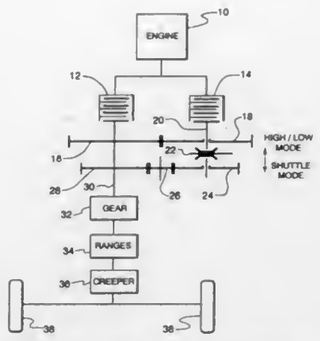
1. A hydraulic control system for displacing a synchronizer into engagement with a rotating gear in a gearbox, comprising:

a hydraulic piston/cylinder unit mechanically coupled to the synchronizer;

an electrically controllable pressure regulating valve for supplying hydraulic fluid to the piston/cylinder unit;

an electrical control circuit cooperatively associated with the pressure regulating valve to vary the pressure of the hydraulic fluid supplied to the piston/cylinder unit, wherein during each engagement movement of the synchronizer, the control circuit is operative to increase the pressure of the hydraulic fluid supplied to the piston/cylinder unit progressively; and

means for sensing the change in pressure in the piston/cylinder unit resulting from the movement of the synchronizer to determine when axial engagement between the synchronizer and the gear has been achieved, and for rapidly increasing the



hydraulic pressure thereafter to its maximum value to ensure full engagement of the synchronizer.

5,667,053

TORSIONAL DAMPER WITH A SEALED ANNULAR HOUSING, ESPECIALLY FOR A MOTOR VEHICLE

Dieter Rohrle, Montmorency, and Ciriaco Bonfilio, Clichy, both of France, assignors to Valeo, Cedex Paris, France

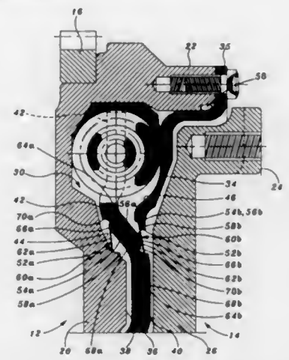
PCT No. PCT/FR94/01485, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO95/17617, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 19, 1994, Ser. No. 507,310

Claims priority, application France, Dec. 23, 1993, 93 15571

Int. Cl.[6] F16F *15/12*

U.S. Cl. 192—214.1 **7 Claims**



1. A torsion damper, comprising a first element (**12**) and a second element (**14**) coaxial with each other and defining between them a sealed annular housing (**30**), which receives, firstly, a circumferentially acting resilient damping means (**32**) interposed between the two rotating elements (**12**, **14**), and secondly, a lubricating agent for said resilient damping means, wherein the annular housing (**30**) is defined by at least two components (**20**, **34**) of the first of the rotating elements (**12**, **14**), while the second rotating element comprises a disc (**36**) which penetrates into the housing, and wherein sealing members (**52A**, **52B**– **152A**, **152B**–**252A**, **252B**) delimit the annular housing (**30**) radially inwardly, said sealing members (**52A**, **52B**) comprising two coaxial sealing rings (**52A**, **52B**–**152A**, **152B** . . .), disposed on either side of the disc (**36**) of the second rotating element (**14**), and each of which is in engagement through one of its surfaces (**64A**, **64B**) against a support surface (**66A**, **66B** . . .) associated with the disc (**36**) of the second rotating element, and through its other surface (**62A**, **62B**) against a support surface (**60A**, **60B**) associated with the first rotating element, wherein each sealing ring (**52A**, **52B**) is mounted

axially directly between its two support surfaces in such a way as to have the form of a frustum of a cone, and is arranged to bear sealingly, through one of its circular edges (**50A**, **54B** . . .), against a shoulder (**56A**, **56B** . . .) formed in facing relationship on one of the elements comprising the first rotating element (**12**) and the disc (**36**) of the second rotating element, and through its other edge on an annular ridge (**66A**, **66B** . . .) formed in facing relationship with the other one of the elements comprising the first rotating element (**12**) and the disc (**36**) of the second rotating element (**14**), in that each each annular ridge (**66A**, **66B** , . . .) is offset axially with respect to said shoulder (**56A**, **56B** . . .), and in that said sealing rings (**52A**, **52B**) are substantially parallel.

5,667,054

CONVEYOR

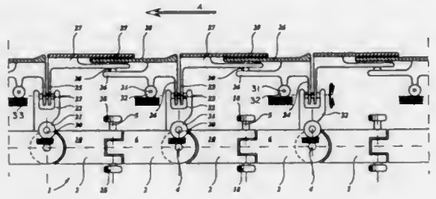
Jacobus M. van den Goor, SH Nuenen, Netherlands, assignor to Vanderlande Industries Nederland B.V., Veghel, Netherlands

Filed Jan. 11, 1996, Ser. No. 584,267

Claims priority, application Netherlands, Jan. 30, 1995, 9500161

Int. Cl.[6] B65G *47/38*

U.S. Cl. 198—370.04 **17 Claims**



1. A conveyor which comprises:

at least one flexible elongated transporter which is movable lengthwise by a first driving mechanism,

a plurality of overlapping platforms coupled to said transporter by supports supporting objects to be moved by the conveyor, wherein at least some of the supports connecting said platforms to said transporter are pivotable with respect to said transporter about pivot are extending at least substantially parallel to a longitudinal direction of said transporter,

a mechanism pivoting selected supports and the platforms connected thereto about associated pivot axes in at least one predetermined place wherein said supports are arranged in spaced-apart groups of two supports disposed in proximity with each other, such that the platforms connected to the supports of one group extend from respective supports in a direction away from each other, wherein the end of a platform connected to one support of a group which faces away from said support is overlapped by the end of a platform connected to one the supports of an adjacent group which faces away from the support of the adjacent group, and wherein screens are provided which extended from adjacent lateral ends of the platforms connected to the supports of a group in said longitudinal direction of the transporter, said screens extending substantially perpendicularly with respect to said pivot axes of said platforms and wherein upper end portions of the screens respectively connect with each of the platforms and extend across an entire width dimension of each of the platforms.

5,667,055

DEVICE FOR ALIGNING AND SPACING UP GROUPS OF OBJECTS, SUCH AS CANS, BOTTLES AND THE LIKE

Mario Gambetti, Crevalcore, Italy, assignor to Baumer S.R.L., Castelfranco Emilia, Italy

PCT No. PCT/IB95/00366, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/31390, PCT Pub. Date Nov. 23, 1995

PCT Filed May 16, 1995, Ser. No. 581,564

Claims priority, application Italy, May 16, 1994, BO94A0215

Int. Cl.[6] B65G *47/26*

U.S. Cl. 198—419.3 **14 Claims**



1. A device for aligning and/or for spacing out and for longitudinally accumulating ranks (**2***a*) of transversely arranged articles (**2**), particularly, suitable to be used in packaging lines for packaging cans, bottles and similar articles (**2**), characterized in that it comprises: first driven transversal thrust bars (**12***a*), fit to affect and push the transversal ranks (**2***ac*) located upstream of each group (**200**) of said articles (**2**) along a pushing path extending upstream to downstream in said device; second driven transversal thrust bars (**13***a*), fit to affect and push the remaining transversal ranks (**2***ab*, **2***aa*), towards the groups (**200**) ahead, along a first stretch of pushing path, located in the operating area of the path of said first bars (**12***a*); in that along said first stretch of pushing path the respective longitudinally spaced transversal ranks (**2***ac*, **2***ab*, **2***aa*) of each group (**200**) are pushed by means of said first and second transversal bars (**12***a*, **13***a*, **13***a*), and in that, after said first stretch of pushing path, said second thrust bars (**13***a*) are led to stop pushing the respective transversal ranks (**2***ab*, **2***aa*), in a way that said first thrust bars (**12***a*) push the upstream transversal ranks (**2***ac*) of each group (**200**) against the remaining transversal ranks (**2***ab*, **2***aa*), thus longitudinally accumulating said group (**200**).

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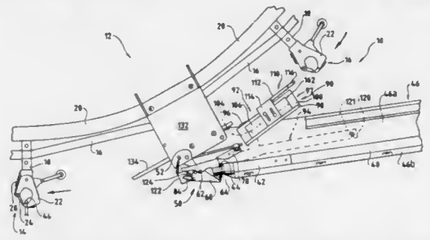
HANGER TRANSPORT SYSTEM

Gary S. Kimmet, Galloway, Ohio, assignor to Sears, Roebuck and Co., Hoffman Estates, Ill.

Filed Jun. 6, 1995, Ser. No. 480,044

Int. Cl.[6] B65G *47/34*

U.S. Cl. 198—463.5 **19 Claims**



1. A system for transporting a plurality of hangers on which a plurality of garments may be hung, said system comprising:

a hook transport system having at least a hook conveyor and a plurality of hooks disposed along said hook conveyor, said hooks being moved by said hook conveyor along a conveyance direction at a first rate;

a hanger supply member on which said plurality of hangers may be disposed; and

a hanger feed apparatus adapted to periodically feed one of said hangers from said hanger supply member to a hanger pickup

position, said hanger feed apparatus being adapted to cause a plurality of physical contacts to be made between said hook transport system and said hanger feed apparatus, said physical contacts occurring at a second rate substantially equal to said first rate, each of said physical contacts causing one of said hangers to be fed from said hanger supply member to said hanger pickup position, and being adapted to cause said hooks of said hook transport system to periodically pick up said hangers from said hanger pickup position, said hanger feed apparatus comprising:

a hanger holding member coupled to said hanger supply member, said hanger pickup position being located on said hanger holding member;

a feed member coupled to said hanger holding member; and

an actuator mechanically coupled to said feed member and disposed to periodically make contact with said hooks, said actuator causing said feed member to transfer one of said hangers from said hanger supply member to said hanger pickup position on said hanger holding member when one of said hooks makes contact with said actuator, said actuator comprising:

a contact member disposed to make physical contact with said hooks; and

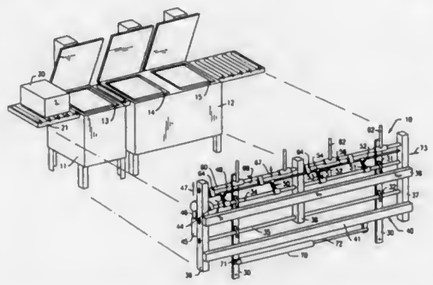
a rigid member coupled between said contact member and said feed member.

5,667,057

DEVICE AND METHODS FOR MOVING AN OBJECT BETWEEN MACHINES JOINED BY A COMMON CONVEYOR

Frederick Randall, Montclair, and Alfred J. Raven, III, Morganville, both of N.J., assignors to Randall Manufacturing Co., Hillside, N.J.

Filed May 1, 1995, Ser. No. 439,592
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—742 **14 Claims**



1. A device for moving an object along linear path and adapted to be carried by a plurality of machines, comprising:

a pair of mounting brackets adapted to be carried by at least one of the machines;

an elongated rod slideably and rotatably carried by the mounting brackets;

a frame structure carried by said elongated rod;

an actuator rod rotatably carried by the frame;

a plurality of elongated elements extending from the actuator rod;

means for selectively rotating the actuator rod across a predetermined range, wherein the elongated elements move from a first orientation capable of engaging the object on the linear path to a second orientation clear of the object on the linear path; and

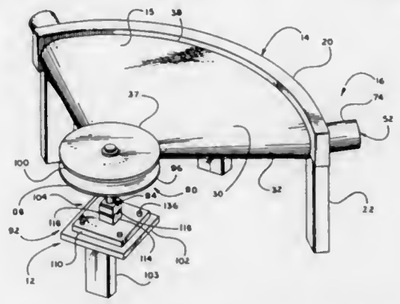
lateral movement means for selectively moving the actuator rod and the frame on a parallel path a predetermined distance from a first position to a second position, whereby at least one of the elongated elements in the first orientation is capable of contacting the object at the first position and pushing the object from the first position to the second position.

5,667,058

POWERED CONVEYOR BELT TURN

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Apr. 27, 1995, Ser. No. 429,821
Int. Cl.[6] B65G *15/02*
U.S. Cl. 198—831 **23 Claims**



1. In a conveyor system, including a feed conveyor and an exit conveyor, a powered belt turn comprising:

a frusto-conically shaped conveyor belt, said conveyor belt defining a central aperture and having an inner belt edge adjacent said central aperture and an outer peripheral edge, said conveyor belt providing an upper conveyor belt surface for supporting material placed on said powered belt turn;

opposed end rollers positioned within said frusto-conically shaped conveyor belt for supporting said conveyor belt for rotation through an arcuate path;

a belt drive assembly operative to drive said conveyor belt around said end rollers;

a plurality of elongate stays extending radially across said conveyor belt and engaged therewith to stiffen said conveyor belt, each said stay extending beyond said inner edge to an extending end of said stay, and a stay bearing at the extending end of each said stay; and

a conveyor belt retainer including a retaining track defining a generally oval groove, said stay bearings being received in said groove to hold said conveyor belt in engagement with said end rollers, while permitting relative movement between said retainer and said inner belt edge.

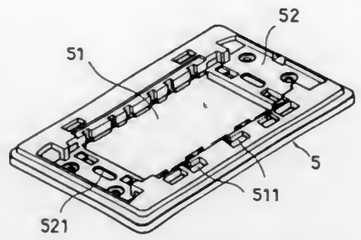
5,667,059

SWITCH MOUNT

Chiu-Shan Lee, No. 4, Alley 14, Lane 53, Hung-Tao St., Hsi-Chih Town, Taipei County, Taiwan

Filed Jun. 27, 1996, Ser. No. 671,338
Int. Cl.[6] H01H *9/02*
U.S. Cl. 200—296 **2 Claims**

1. A switch mount adapted for mounting switches, comprising a rectangular opening having two long sides and two short sides, a plurality of retainer members and a plurality of spring members alternatively arranged along one long side of said rectangular opening, a plurality of retaining notches and a plurality of retaining flanges alternatively arranged along the opposite long side of said rectangular opening symmetrical to said retainer members and said spring members, each of said retainer members comprising two lateral clamping walls at two opposite lateral sides, each of said spring members comprising a head, two shoulders at two opposite lateral sides, and an outwardly downward bottom slope, and a plurality of block respectively disposed in said retaining notches,



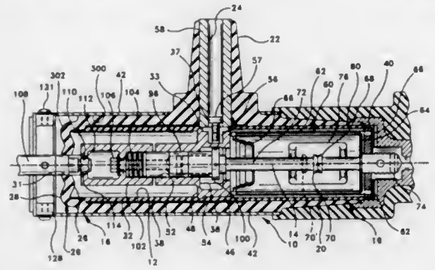
and two recessed planes at the two opposite short sides, each of said recessed planes having at least one mounting hole for mounting.

5,667,060

DIAPHRAGM SEAL FOR A HIGH VOLTAGE SWITCH ENVIRONMENT

Glenn J. Luzzi, Mt. Bethel, Pa., assignor to Amerace Corporation, Hackettstown, N.J.

Filed Dec. 26, 1995, Ser. No. 578,144
Int. Cl.[6] H01H *9/04*
U.S. Cl. 200—302.1 **46 Claims**



1. A mechanically operated high voltage electrical switch comprising:

a) a switch body having a first end and a second end and a central bore therethrough;

b) a first contact member adjacent said body first end for connecting a first high voltage electrical cable thereto;

c) a second contact member intermediate said body first and second ends for connecting a second high voltage electrical cable thereto;

d) a fixed first electrical contact in said central bore adjacent said body first end and coupled to said first contact member;

e) a moveable second electrical contact in said central bore intermediate said first and second ends and coupled to said second contact member, in linear alignment with said fixed first electrical contact, said first and said second contact members and said moveable second electrical contact capable of being moved between a first position engaging said fixed first electrical contact and a second position separated from said fixed first electrical contact;

f) an operating shaft having a first end and a second end, said shaft first end extending through said body second end and a portion of said central bore and coupled to said moveable second electrical contact for moving said movable second contact between said first and second positions;

g) sealing means composed of a material able to withstand the high voltages impressed on said fixed first electrical contact and said movable second electrical contact coupled to said operating shaft and at said sealing means outer periphery to the wall of said body defining said central bore to seal said second end of said body and prevent an arc between said first fixed electrical contact or said movable second electrical contact and said operating shaft second end; and

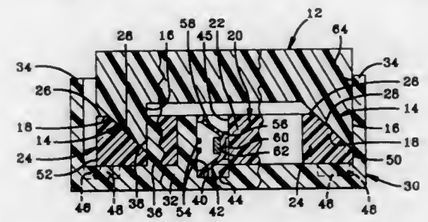
h) mechanical means coupled to said second end of said operating shaft to selectively and directly position said movable second electrical contact with respect to said fixed first electrical contact.

5,667,061

LINEAR CAM-ASSISTED PLUNGER SWITCH

James Sungioun Lee, Niles, Ohio, assignor to Packard Hughes Interconnect Company, Irvine, Calif.

Filed Jul. 1, 1996, Ser. No. 673,586
Int. Cl.[6] H01H *13/14*
U.S. Cl. 200—533 **4 Claims**



1. A linear cam-assisted plunger switch comprising:

a cam member having a body portion and at least three outwardly extending wedge-shaped arms, said wedge-shaped arms having a flat surface and a sloped surface formed at an angle with respect to the flat surface and converging in a direction of the flat surface;

a base constructed and arranged for slidably receiving said cam member, a support member connected to the base, said support member having spaced apart electrical contacts and an electrical circuit associated therewith, a non-metallic, flexible dome carried by said support member, said flexible dome having an electrically conductive element on an underside of the dome positioned for engagement with said spaced apart contacts and closing said circuit when said dome is collapsed;

a keycap having at least one downwardly extending wedge-shaped leg for each of the wedge-shaped arms on said cam member, said wedge-shaped leg having a flat surface and a sloped surface formed at an angle to said flat surface and converging thereon, said wedge-shaped leg being constructed and arranged for slidable movement of the sloped surface of the leg over the sloped surface of the arm of the cam;

said dome being positioned, when fully extended, to bias said cam in a first direction wherein said keycap is in an upwardmost position, and wherein said keycap is depressible to a second position wherein said cam is linearly displaced along said base to a second position causing said dome to be collapsed and said conductive element engaging said spaced apart electrical contacts to close said electrical circuit.

5,667,062

PUSH SWITCH

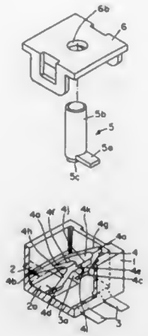
Kenji Yasufuku, Maizuru, and Yasuchika Kudo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1996, Ser. No. 651,975
Int. Cl.[6] H01H *1/36*
U.S. Cl. 200—536 **6 Claims**

1. A push switch comprising:

a case including a plurality of contact terminals placed on an inner bottom surface thereof;

a contact member including: a plurality of conductive protruding portions which come into contact with the plurality of contact



terminals at selected positions while sliding along the inner bottom surface of the case; a fulcrum portion supported in a rotatable state by an axis parallel to the inner bottom surface of the case; and an elastic bent portion for connecting the protruding portions with the fulcrum portion; and

a sliding body which is supported so as to move up and down along a direction vertical to the inner bottom surface of the case thereby pressing the contact member and sliding the conductive protruding portions in accordance with the vertical motion in order to switch the contact terminals between an electrical connection state and an electrical disconnection state;

wherein the contact member includes an opening through which at least a part of the sliding body passes and a portion for receiving a pressing force applied by the sliding body;

wherein the sliding body includes a suppressing portion for pressing the contact member on a side thereof at the portion for receiving a pressing force,

wherein in at least an unpressed state, a highest portion of the contact member is interposed between the portion for receiving the pressing force and a surface of the case through which the sliding body extends.

5,667,063

CONTAINER FOR RECORDING HEAD

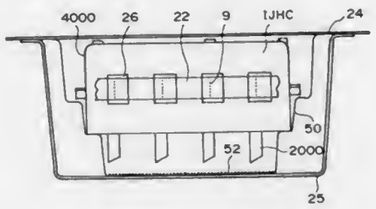
Tsutomu Abe, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 248,675, May 25, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 633,004

Claims priority, application Japan, May 25, 1993, 5-122617

Int. Cl.[6] B65D *81/26*

U.S. Cl. 206—204 **9 Claims**



1. A container for containing at least an ink jet head cartridge, said ink jet head cartridge having a plurality of sealed ink ejection outlets and an unsealed member defining an ink supply port, said container comprising:

a main body, having an opening, for containing an article including at least the ink jet head cartridge, said main body including a first supporting portion for supporting said ink jet head cartridge so as to prevent contact between said main body and the ejection outlet of said ink jet head cartridge, and a second supporting portion for supporting said unsealed member;

a covering member for covering the opening; and

an ink retaining portion disposed in said main body at a bottom of said container, for retaining, using capillary force, an ink or an other liquid which has leaked out from the article,

wherein said second supporting portion is disposed around said ink retaining portion, and said second supporting portion prevents contact between said unsealed member and said retaining portion.

5,667,064

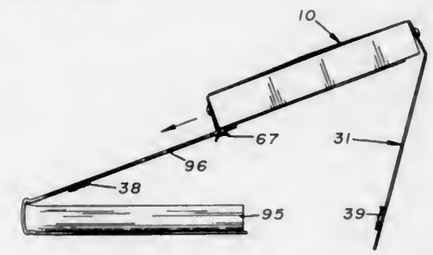
SKETCHBOOK ORGANIZER

Annette L. Bauman, 3609 W. Viewmont Way W., Seattle, Wash. 98199

Filed Jul. 23, 1996, Ser. No. 686,130

Int. Cl.[6] B65D *63/10*

U.S. Cl. 206—214 **6 Claims**



1. An organizer for a book having at least one leaf, said organizer comprising:

a. a container;

b. a closeable lid attached to said container;

c. a flap member attached to said container, said flap member capable of being inserted inside and adjacent to the leaf;

d. a flap member attachment means capable of selectively attaching said flap member to said leaf;

e. an inside support member attached to said container, said inside support member capable of being disposed between said container and said leaf; and,

f. a strap attached around said inside support member and said leaf to hold said container on said book.

5,667,065

STACKABLE PACKAGING UNIT

Otmar Fahrion, Durerstrasse 9, D-70806, Kornwestheim, Germany

PCT No. PCT/EP93/03576, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995, PCT Pub. No. WO94/14669, PCT Pub. Date Jul. 7, 1994

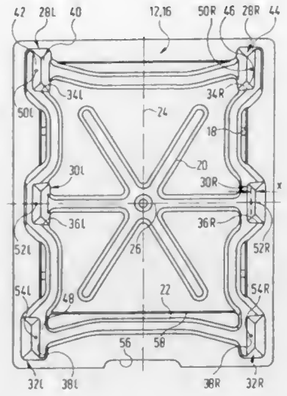
PCT Filed Dec. 16, 1993, Ser. No. 454,355

Claims priority, application Germany, Dec. 19, 1992, 92 17 413.2 U

Int. Cl.[6] B65D *19/02;21/032*

U.S. Cl. 206—599 **16 Claims**

1. A stackable packaging unit with a lower pallet, a marginal wall arrangement having an upper end and a lower end borne by the lower pallet and a cover part borne by the marginal wall arrangement, the lower pallet being a stackable moulded part which has downwards projecting feet and foot receptors formed in an upper side of the lower pallet, into which, when another lower pallet is superimposed on said lower pallet, the feet of said other lower pallet may be introduced, wherein the cover part is formed by an upper pallet, which has the same shape as the lower pallet, the lower pallet and the upper pallet thus being items of a stock of identical standard pallets, and which is placed on top of the marginal wall arrangement in such orientation that the feet of the upper pallet hang downwards; and wherein the feet of the upper and lower pallets and/or the foot receptors of the upper and lower pallets are formed asymmetrically with respect to a plane of symmetry of the upper and lower pallets, respectively, or with respect to a central axis of the upper and lower pallets being perpendicular to the plane of the upper and lower pallets such that in two different relative positions of two superimposed standard pallets the feet of the overlying one of these two superimposed standard pallets engage into the foot receptors of the underlying one of said two superimposed standard pallets by two different distances (Z1, Z2).



9. A stackable packaging unit, comprising:

a lower located standard pallet;

a marginal wall structure having an upper end and a lower end supported at an upper surface of the lower located standard pallet; and

an upper located standard pallet supported by an upper edge of the marginal wall structure,

wherein the lower located standard pallet and the upper located standard pallet are identical and each has the form of a stackable moulded part provided with a plurality of downwardly depending feet and a plurality of foot receptors formed in an upper surface into which the respective feet of another standard pallet may be located,

wherein the upper located standard pallet is placed on top of the marginal wall with its feet depending downward into a space defined by the marginal wall,

wherein one or both of the feet and the foot receptors of each of said standard pallets are formed to be disposed asymmetrically either with respect to a plane of symmetry of the standard pallet or with respect to a central axis perpendicular to a plane of the standard pallet,

whereby in respective first and second arrangements an overlying standard pallet may be supported by an underlying standard pallet with the feet of the overlying standard pallet fitted into corresponding receptors of the underlying standard pallet to provide respective first and second separation distances Z1 and Z2 between the overlying and underlying standard pallets.

5,667,066

COLLAPSIBLE LAUNDRY HAMPER ASSEMBLY WITH LATCHING FEATURE

Danny Simpson, Seymour, Ind., assignor to Seymour Housewares Corporation, Seymour, Ind.

Filed Aug. 3, 1995, Ser. No. 510,891

Int. Cl.[6] A45C *7/00*

U.S. Cl. 206—278 **15 Claims**

1. A collapsible and portable hamper assembly having a frame and a mating bag for storing and transporting articles, said bag having a first open position and a second closed position, said assembly comprising:

a first substantially rectangular frame section;

a second substantially rectangular frame section crossing said first section at spaced points to form said frame into a substantially X-shape;

coupling means for pivotally coupling said first and second frame sections together at their crossing points; and

a bag positioned inside said frame, said bag having at least two side panels, two end panels, a bottom panel and a stretch panel, said stretch panel affixed to the lower edges of said side panels adjacent said bottom panel, said stretch panel extending under said frame and said frame slidably cooperating with said stretch panel, said stretch panel having a length relative to the height of said frame sections so as to provide a latching function to assist in maintaining the hamper assembly in said first open position or said second closed position.

5,667,067

DISPOSABLE RECEPTACLE FOR REMOVING BLADES FROM A SCALPEL

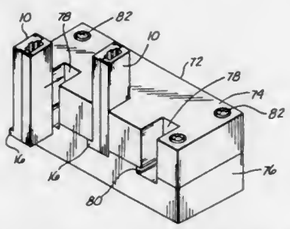
Rodney A. Gabriel, 6248 Damask Ave., Los Angeles, Calif. 90056

PCT No. PCT/US94/13168, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO96/14774, PCT Pub. Date May 23, 1996

PCT Filed Nov. 15, 1994, Ser. No. 564,179

Int. Cl.[6] B65D *83/10;* **B23P** *19/04*

U.S. Cl. 206—355 **4 Claims**



1. A device for removing a blade from the tang of a surgical scalpel, the scalpel including an elongated gripping section having a butt end and an oppositely extending tang end, the tang end being flattened with a first upper face and a second opposite lower face, the faces being joined in parallel register along their sides by edges normal to the faces, the first upper face having an elongated upwardly protruding boss coincident with the upper face and extending for a first predetermined distance, the boss having a forward end and an after end, and side edges, the side edges of the boss having slotting commencing at the forward end of the boss, the slotting initially being parallel to the upper face of the tang and angling rearwardly and upwardly to terminate at the after end of the boss; and a blade, the blade being configured for mounting on the first upper face of the tang to extend further axially beyond the tang and laterally from the side edges of the tang, the blade having an elongated opening comprising a forward section of a width to

accommodate the slotted forward end of the boss and a wider after section to accommodate the after section of the boss, whereby the after section in the opening in the blade may be placed over the boss on the tang and the blade mounted on the tang by sliding the blade rearwardly to cause the slotting in the side edges of the boss to receive the forward section of the blade opening and to seat the blade in the upwardly extending slotting terminating at the after end of the boss, said device comprising:

a rectangular receptacle at least partially vertically oriented, said receptacle being comprised of a first elongated half and a second elongated half secured to each other in register to form a unitary block with a rectangular forward end, each of said halves being recessed axially inwardly from said forward rectangular end,

the recess in the first half being configured for a second predetermined distance in a cross section closely conforming of the lower face of the tang and the blade mounted on the tang, and terminating in a wall beyond which wall a portion of the recess, as it extend further axially, is expanded to a rectangular configuration to receive a blade after detachment from the tang, said expanded portion of the recess having a centrally disposed ramp rising from a point a third predetermined distance from the wall and extending toward the bottom of the recess;

the recess in the second half of the receptacle being configured to provide an initial rectangular passage for said second predetermined distance at the end of which passage is provided a pair of parallel side ramps spaced apart from each other by the width of the tang, said ramps rising for the third predetermined distance from the end of the initial rectangular passage to the level of the upper edge of the second half of the receptacle, each of said ramps terminating in a vertical wall which wall a portion of the recess is fully expanded to the approximate cross section of its initial rectangular passage; said first and second receptacle halves, when secured to each other with their recesses in register, serving to remove the blade from the tang of the scalpel when the blade is inserted into the receptacle through the registering initial portions of the recesses of its first and second halves, and the blade mounted on the tang has been pushed as far as possible into the recesses, and the tang is withdrawn when the receptacle is held firmly in a position against axial or lateral movement, whereupon the blade is detached from the tang, so that upon withdrawing the scalpel tang from the receptacle, the blade is left deposited in the recesses in the two registering halves of the receptacle; and

means to removably secure the receptacle in an at least partially vertical orientation.

5,667,068

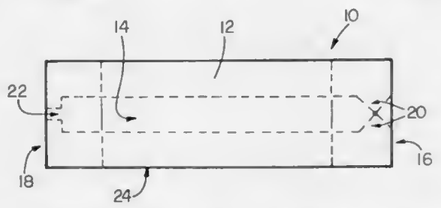
PROTECTIVE COVER FOR AN ENDOSCOPE

Stevie W. Weaver, 7514 Yorktown Rd., Louisville, Ky. 40214

Filed Jun. 13, 1995, Ser. No. 489,789

Int. Cl.[6] A61B *1/00*

U.S. Cl. 206—363 **9 Claims**



1. A protective cover for use in the storage of an endoscope comprising

(a) a tubular member with proximal and distal ends, containing a passageway running lengthwise through said member from said proximal to said distal end,

(b) a tapered holding means for holding said endoscope in place as it is inserted into the passageway,

(c) a narrowed portion of the passageway in said tubular member located near its distal end and

(d) a closing means for closing said distal end of the tubular member so as to prevent light from entering the passageway through the distal end when said closing means closes said distal end, wherein the closing means is a flap which prevents light from entering the passageway through the distal end.

5,667,069

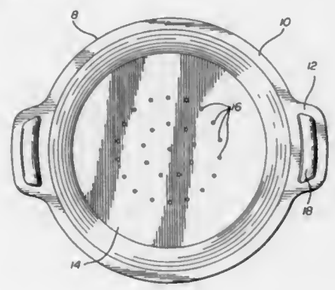
STRENGTHENED HANDLES IN MEMBRANOUS ARTICLES

James P. Williams, Jr., Thousand Oaks, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.

Continuation of Ser. No. 147,336, Nov. 3, 1993, Pat. No. 5,520,282. This application Mar. 28, 1996, Ser. No. 626,626

Int. Cl.[6] B65D *1/34*

U.S. Cl. 206—370 **2 Claims**



1. A storage device, comprising:

a storage portion composed of a thin, substantially flexible film and defining a storage area therewithin and an upper edge; and

at least one handle associated with the upper edge, the at least one handle being composed of the thin, substantially flexible film and including a pre-biased area defining a three-dimensional curvilinear shape which reduces any additional tendency to stretch the thin, substantially flexible film during the stress pattern engendered by lifting the storage device with a significant mass stored in the storage portion, the three-dimensional curvilinear shape including a first fixed boundary curve which lies wholly within a flattenable portion of the at least one handle and a second fixed boundary curve which defines the perimeter of a hole in the at least one handle, and wherein the three-dimensional curvilinear shape defines a shape which substantially minimizes the area defined by the first and second fixed boundary curves.

5,667,070

DEVICE FOR CARRYING CONTAINERS

Emili Requena Miret, Barcelona, Spain, assignor to Riverwood International Corporation, Atlanta, Ga.

PCT No. PCT/GB93/02059, § 371 Date May 15, 1995, § 102(e) Date May 15, 1995, PCT Pub. No. WO94/07760, PCT Pub. Date Apr. 14, 1994

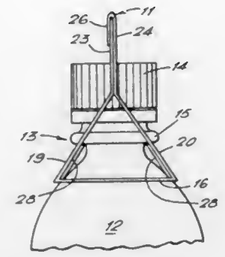
PCT Filed Oct. 4, 1993, Ser. No. 411,591

Claims priority, application United Kingdom, Oct. 7, 1992, 9221120

Int. Cl.[6] B65D *71/00*

U.S. Cl. 206—427 **14 Claims**

1. A carrier device for carrying at least two containers, each container having an annular shoulder projecting from a neck portion, a container cap on the neck portion, and an annular shoulder



formed on the neck portion and extending away therefrom, the annular shoulder having opposite side portions, said carrier device being formed from paperboard and comprising:

a base, said base having at least two apertures defined therein for receiving the respective neck portions of the containers therein;

two opposed side walls hingedly connected to said base, each said side wall being angled relative to the base and extending toward the other said side wall from opposite sides of the base;

a cut away portion defined in each said side wall for each respective container so that the opposite side portions of the annular shoulder of each one of the containers is held in a first snap fit between a cooperating pair of said cut-away portions defined in said opposed side walls;

each said aperture being defined at least in part by a pair of oppositely disposed flaps hingedly connected to said base adjacent each of said side walls, respectively, each said flap being folded adjacent each of said side walls, respectively, so that the annular shoulders of the respective containers are held in a second snap fit on each said pair of oppositely disposed flaps;

each of said side walls being hingedly connected to an upwardly projecting handle portion, each said handle portion including a handle means, wherein said cut-away portions extend into each said handle portion for receiving the container caps of the respective containers therein, said handle means being sized and shaped to be folded over and adjacent one of said side walls and to be held on said one side wall in a third snap fit below the annular shoulder of the neck of at least one of the containers.

5,667,071

PHOTOSENSITIVE MATERIAL PACKAGE AND PACKAGING APPARATUS FOR THE SAME

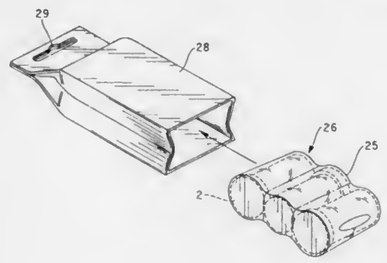
Isao Nakagoshi; Hiromi Shimura; Ikuo Katsumata, and Osamu Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1995, Ser. No. 518,836

Claims priority, application Japan, Aug. 31, 1994, 6-206216

Int. Cl.[6] B65D *71/08*

U.S. Cl. 206—455 **15 Claims**



1. A photosensitive material package, comprising:

N cassettes respectively for containing photosensitive material, wherein N is an integer that is greater than or equal to 1;

N cylindrical watertight cases respectively for containing said cassettes; and

heat shrinkable film being uniaxially stretched and, disposed around said N watertight cases, and shrunken by heat for collectively covering said N cassettes, said shrinkable film having a shrinkability from 40 to 63% when heated at 140° C. for 10 seconds and having thickness of from 35 to 50 μm.

5,667,072

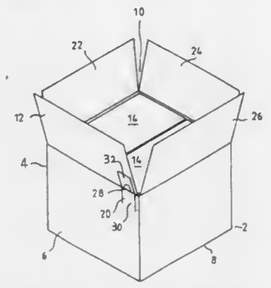
ELECTRIC DEVICE PACKAGING SET

Pi-Chun Chang, Taoyuan, Taiwan, assignor to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed Apr. 26, 1996, Ser. No. 639,863

Int. Cl.[6] B65D *81/02*

U.S. Cl. 206—523 **2 Claims**



1. A packaging set for packing an electric device comprising:

(1) a substantially rectangular cushion block for packing and protecting the electric device;

(2) a substantially rectangular carton having four vertical side panels, a sealed bottom end, and an opened top end tightly packed outside the cushion block for protecting the cushion block;

(3) four side flaps flexibly connected to the four vertical side panels of the carton for sealing the top end of the carton;

(4) one packing slot installed in the cushion block having a slot opening facing one side panel of the carton for packing accessories of the electric device; and

(5) an L-shaped side cover having an upper flap and a side board connected to the carton for sealing the slot opening of the packing slot, the side board of the side cover being created by perforating part of said side panel faced the slot opening of the packing slot and the upper flap of the side cover being created by perforating part of the side flap connected to said side panel;

wherein said side flap which comprises the upper flap of the side cover is folded under one adjacent side flap when the top end of the carton is sealed by the four side flaps.

5,667,073

CARRIER TAPE FOR STORAGE USE OF ELECTRONIC COMPONENTS

Tokujiro Okui, C-10-204 3-3, Shin-senri-minami-machi, Toyonaka-shi, Osaka, Japan

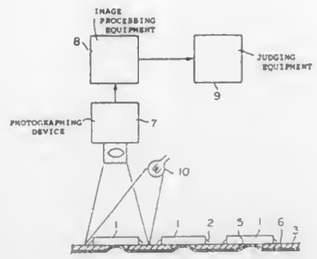
Continuation of Ser. No. 459,404, Jun. 2, 1995, abandoned. This application Aug. 23, 1996, Ser. No. 697,399

Claims priority, application Japan, Jun. 23, 1994, 6-164727; Apr. 12, 1995, 7-111201

Int. Cl.[6] B65D *85/90*

U.S. Cl. 206—713 **8 Claims**

1. The improved carrier tape inspection system for increasing speed and accuracy in inspecting a longitudinally disposed carrier



tape web carrying and storing a plurality of miniaturized electronic components along its length in spaced stations adapted to inspection of deformations in lead wires extending from the electronic components stored on the carrier tape by an external photoelectric inspection system photographically viewing the electric components on the carrier tape in response to illumination of the tape by an external light source which reflects light off the tape web in the vicinity of the lead wires, comprising in combination:

a plurality of said electric components having said lead wires extending therefrom located at said spaced stations,

said carrier tape comprising a longitudinal web of flexible material, said electronic components being affixed in place at said stations for inspection of said lead wires,

means providing a photographic inspection directed normally toward one surface of the carrier tape at said spaced stations along the carrier tape for inspection of deformations of said lead wires on said electronic components by said photoelectric system, and

light reflection reducing means disposed on said inspection side surface of the carrier tape web material to significantly reduce light reflection from the tape surface photographically interfering with images of the lead wires, whereby the inspection system more accurately and more quickly inspects the electronic components carried by the carrier tape with reduced interference from light reflected from the inspection side surface of the carrier tape.

5,667,074

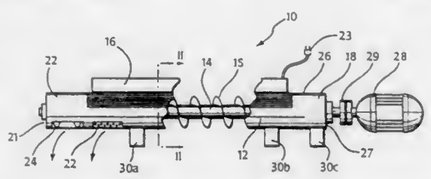
MAGNETIC SEPARATOR

Angelo Reali, Manhasset Hills, and Igor Reznik, Brooklyn, both of N.Y., assignors to Crumbrubber Technology Co., Inc., Jamaica, N.Y.

Continuation-in-part of Ser. No. 323,538, Oct. 14, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,262

Int. Cl.[6] B03C *1/00*

U.S. Cl. 209—224 **9 Claims**



1. An apparatus for separating material having magnetic properties from non-magnetic material comprising:

an elongated cylinder having a longitudinal axis centrally disposed therein, and including an outer surface, an input end and a distal output end, said distal output end comprising a second flange enclosing said cylinder at its output end, and first and second output openings disposed adjacent said distal output end of said elongated cylinder, said first output opening for discharging the non-magnetic material, said second output opening for discharging the separated magnetic material, and wherein the axis of said cylinder is disposed in a non-vertical orientation, said first and second output openings being axially adjacent to each other such that said second output opening is disposed between said first output opening and said second flange of said cylinder;

carrier means disposed within said cylinder for carrying the material from said input end to said output end, said carrier means comprising a helical screw extending from the input end to the output end of said elongated cylinder;

power means connected to said carrier means through one of said ends of said cylinder for driving said carrier means; and

magnetic separating means disposed on said cylinder for separating the material having magnetic properties from the material having non-magnetic properties.

5,667,075

CLASSIFYING WHEEL FOR CENTRIFUGAL-WHEEL CLASSIFIERS

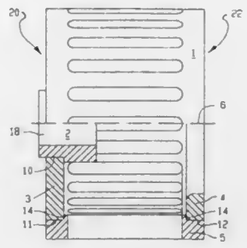
Georg Konetzka, Augsburg, Germany, assignor to Hosokawa Alpine Aktiengesellschaft, Augsburg, Germany

Filed Aug. 18, 1995, Ser. No. 516,565

Claims priority, application Germany, Apr. 7, 1995, 295 06 015.8

Int. Cl.[6] B07B *1/22*

U.S. Cl. 209—303 **18 Claims**



1. A classifying wheel of sintered material for an air classifier, through which the classifying air flows from outside to inside against the centrifugal action of the wheel (**1**), said wheel having a first (**20**) and second (**22**) axial end and defining a rotational axis (**6**), said classifying wheel comprising:

a cylindrical hub (**2**) having a bore (**18**) and a first (**20**) and a second (**22**) axial end extending along the rotational axis (**6**), said bore having a finished size enabling direct mounting of the classifying wheel onto a drive shaft;

a cylindrical pipe section (**5**) formed by a plurality of vanes (**8**) having first (**20**) and second (**22**) axial ends spaced circumferentially to define axially extending flow channels (**7**) therebetween formed by the surfaces of the vanes (**8**) which extend parallel to each other in the direction of the rotational axis (**6**), the axial ends (**20**, **22**) of the flow channels (**7**) being connected to each other by arch-like surfaces in the areas adjacent the first and second axial ends;

a circular disc (**3**) carrying the hub (**2**) coaxially and arranged between the first axial end (**20**) of the hub (**2**) and the first axial end (**20**) of the pipe section (**5**); and

an annular cover disc (**4**) arranged opposite the circular disk (**3**) adjacent the second axial end (**22**) of the pipe section (**5**),

wherein said hub **2**, circular disc **3**, cover disk **4** and pipe section **5** are joined together by a self-setting filler introduced into a plurality of gaps (**10**, **11**, **12**) formed therebetween.

5,667,076

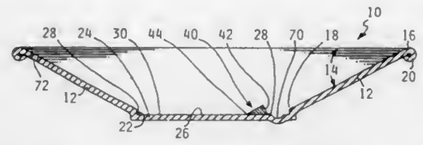
GOLD RETRIEVING PAN

Alexander Rosman, 1562 Darby Ave., Pomona, Calif. 91767

Filed Apr. 7, 1995, Ser. No. 418,669

Int. Cl.[6] B03B *5/52*

U.S. Cl. 209—447 **3 Claims**



1. An improved gold retrieving pan comprising:

a) an outer circular section having a downward slope and an outer perimeter rim, and an inner perimeter rim,

b) a center circular section having a substantial flat upper surface and an outer perimeter rim integral with the inner perimeter rim of said outer circular section, wherein the inner perimeter rim of said outer circular section tapers downward at the intersection with the outer perimeter rim of said center circular section wherein the downward taper, which typically ranges as measured from a horizontal plane from 30° to 90°, allows said center circular section to consist of substantially flat, shallow cavity, and

c) a gold trap structure having an outward facing opening and an inward perimeter edge, wherein said outward facing opening has a triangular shape with a centered apex from where the opening angles outward and downward, and an inward perimeter edge that tapers outward from the centered apex, wherein the inward perimeter edge is attached by an attachment means, to the upper surface of said center circular section, wherein when attached, the outward facing opening is positioned near the outer perimeter rim of said center circular section.

5,667,077

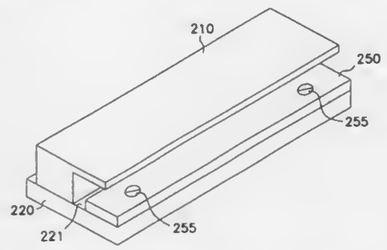
MODULE HANDLING APPARATUS AND METHOD WITH RAPID SWITCHOVER CAPABILITY

Fred Goins, III, Boise, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Filed Apr. 26, 1996, Ser. No. 639,354

Int. Cl.[6] B07C *5/344*

U.S. Cl. 209—573 **14 Claims**



1. An apparatus for handling assembled multiple chip modules (MCMs) comprising:

a bottom rail having a top surface;

a guide rail having a bottom surface in contact with the bottom rail top surface, an upwardly extending wall, and an outwardly extending flange which forms a first channel defined by the top surface, the extending wall and the flange, such that a first MCM of a first thickness can pass laterally through the channel, the first MCM being in contact with the top surface to position contact nodes provided on the first MCM at a predetermined vertical position with respect to the top surface; and

a removable justifying plate having an upper surface and a lower surface, both substantially parallel to the bottom rail top surface, removably attached in contact with the bottom rail top surface within the first channel, thereby forming a second channel defined by the upper surface, the extending wall and the flange, such that a second MCM of a second thickness which is less than the first thickness of the first MCM, can pass laterally through the channel, the second MCM being in contact with the upper surface of the removable justifying plate to position contact nodes provided on the second MCM at substantially the same predetermined position with respect to the top surface as the first MCM.

5,667,078

APPARATUS AND METHOD OF MAIL SORTING

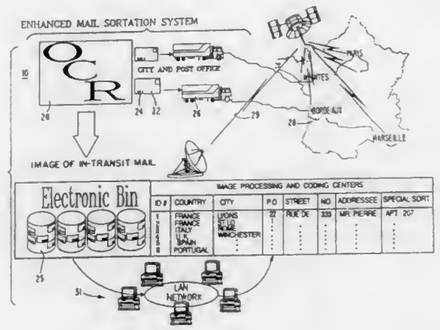
Eugene Walach, Kiryat Motzkin, Israel, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1995, Ser. No. 446,362

Claims priority, application United Kingdom, May 24, 1994, 9410372

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—584 **6 Claims**



1. A method for sorting a set of mail items, each mail item having an associated destination address, according to a predefined delivery sequence, the method comprising the steps of:

generating for each of a first subset of the mail items a first sequence number according to the position of their respective destination addresses in the delivery sequence;

sorting, using a sorting machine, the first subset into batches according to the first sequence number disregarding a number N of the most significant digits thereof;

characterized by associating with each of a second subset of the mail items, one of the first sequence numbers corresponding to the destination addresses of the mail items in the first subset between which their respective destination addresses lie in the delivery sequence;

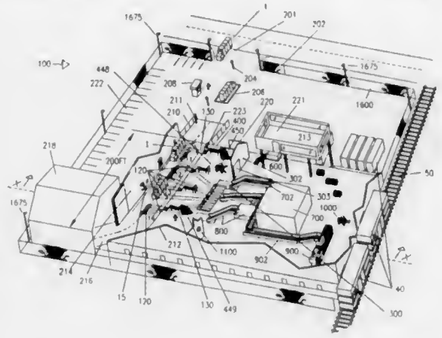
generating for each of the second subset, a second sequence number according to the position of their respective destination addresses in the delivery sequence among the destination addresses of mail items in the second subset associated with the same first sequence number;

sorting, using a sorting machine, the second subset into batches according to the second sequence number and the first sequence number disregarding N of the most significant digits of the first sequence number;

interleaving the batches of mail items from the first subset and from the second subset; and

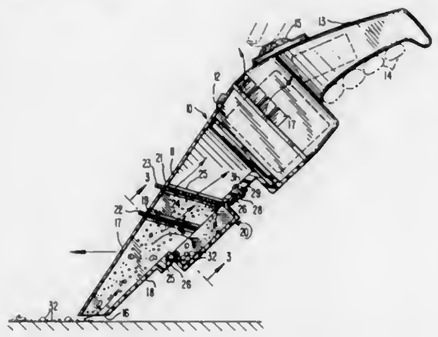
sorting the mail items according to the N most significant digits of the first sequence numbers.

5,667,079
AUTOMATED MULTI-GRADE WASTEPAPER RECYCLE CENTER SORTING SYSTEM
Kenneth W. Jongebloed, 1860 N. Atlantic Ave., B-407, Cocoa Beach, Fla. 32931
Filed Jul. 24, 1995, Ser. No. 506,384
Int. Cl.[6] B07C *5/346*
U.S. Cl. 209—589 **14 Claims**



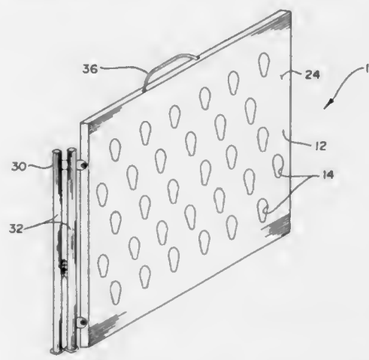
1. A method for the sorting and recycling multiple grade wastepaper comprising the steps of:
delivering collected multiple wastepaper into drop pits;
separating the collected wastepaper at each of the drop pits into a first and second load;
conveying the first load to a storage location;
conveying the second load to a main pit;
presorting the second load at the main pit into a third load and fourth load;
sorting the third load for a preselected grade of wastepaper;
sorting the fourth load the preselected grade of the wastepaper;
baling the preselected grade of the wastepaper; and
transporting the baled wastepaper to a second site.

5,667,080
JEWELERS VACUUM
Stanley Klein, 61-20 Grand Central Parkway, Forest Hills, N.Y. 11375
Filed Jul. 17, 1995, Ser. No. 503,182
Int. Cl.[6] B07C *7/04*
U.S. Cl. 209—614 **6 Claims**



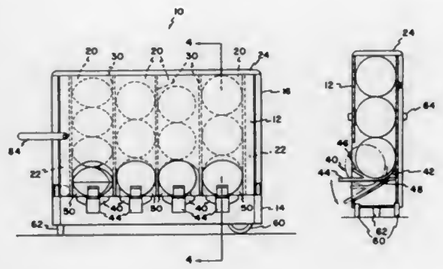
1. A jewelers vacuum for salvaging small stones and precious metal scraps comprises:
a hand held vacuum having a nozzle including an upper surface and a lower surface having an aperture at one end and a pair of inclined mounting slots at predetermined intervals on the upper surface of the nozzle and a handle and means for creating a vacuum at the aperture;
a first mesh screen mounted in one of the mounting slots and a second mesh screen mounted in the other mounting slot; and,
a detachable box mounted to the lower surface of the nozzle beneath the mesh screens to retrieve the precious metal scraps and stones which fail to pass through the filters.

5,667,081
ORGANIZING DEVICE FOR SORTING AND MATING SOCKS AND GARMENTS WHICH EXIST AS A PAIR OF MEMBERS
Kathleen Pund-Hogan, 11 Manor Knoll Ct., Baldwin, Md. 21013
Filed Jan. 11, 1996, Ser. No. 583,965
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—10 **17 Claims**



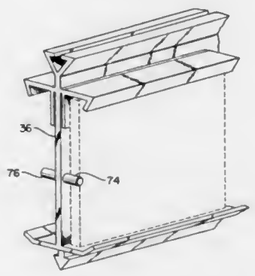
1. An organizing device for a user to manually sort and mate members of a plurality of members, the mated members forming a matched set, the device comprising:
a panel capable of holding the plurality of members, the panel having a front surface, a back surface and a plurality of spaced-apart openings formed therethrough,
each opening having a top, a bottom and an inner surface thereabout, the top and the bottom each having a width, the width of the top being greater than width of the bottom, the inner surface being in a substantially smooth continuous manner from the top to the bottom of the opening, in the shape of a tear drop,
whereby a portion of one member of the set is adapted to be manually inserted from the front of the panel into the top of the respective opening and pushed into said opening downwardly toward the bottom of the opening such that the portion of said member is removably retained in the respective opening, and another portion of said member of the set is adapted to hang downwardly from the bottom of the respective opening on the front of the panel, thereby adapted for displaying said member for mating with a second member of the set and further wherein a plurality of members of the sets may be inserted and retained in the corresponding plurality of openings.

5,667,082
BALL CADDY SYSTEM
Robert H. Hamilton, Edina, Minn., and Eric J. Armstrong, Spinnerstown, Pa., assignors to Core Group Marketing, Inc., Eden Prairie, Minn.
Filed May 5, 1995, Ser. No. 436,019
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—15 **16 Claims**



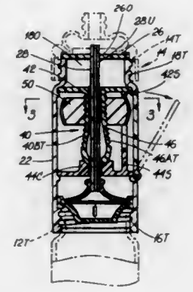
1. A ball storage apparatus, comprising:
an outer housing;
an adjustable divider extending vertically within the housing forming a plurality of storage compartments;
a plurality of tabs forming vertical slots configured for receiving and retaining a free end of the divider;
wherein each of the storage compartments comprises a pivoting bottom ball support.

5,667,083
DUAL MATRIX MEDIA STORAGE UNIT
Richard J. Schnoor, 17575 Bridle Ct., Jupiter, Fla. 33478, and John A. Schnoor, 275 E. Central Pkwy., Altamonte, Fla. 32701
Filed May 18, 1995, Ser. No. 444,007
Int. Cl.[6] A47G *19/08*
U.S. Cl. 211—41.12 **17 Claims**



1. A storage unit for storing recorded media, comprising:
a horizontal support beam having means for hanging the unit and means for interfitting an additional component vertically;
at least one storage row having means for storing the recorded media, the storage row having means for interfitting with the support beam so that the storage row interfits with and attaches to the support beam, the storage row also having means for interfitting additional components vertically so that additional storage rows may be attached vertically;
at least one lever adapted to positively retain the stored recorded media in the storage rows.

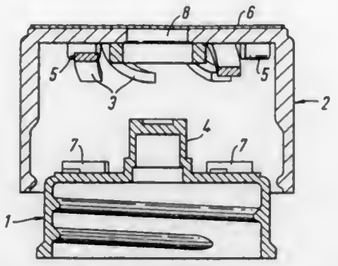
5,667,084
LIQUID FLOW CONTROLLING DEVICE
Gurpinder Duggal, and Rakeshwar Sachathamakul, both of Bangkok THX, assignors to Mother's Love Pte. Ltd., Bangkok THX
Division of Ser. No. 296,114, Aug. 25, 1994, Pat. No. 5,522,516. This application Sep. 27, 1995, Ser. No. 534,652
Int. Cl.[6] A61J *9/00*
U.S. Cl. 215—11.4 **21 Claims**



1. A liquid flow control for a baby nurser to control the flow of liquid contents contained in a baby nurser to a nipple dispenser adapted to be sucked on by an individual such as a baby, including
a self-contained unit having an entry end and an exit end, spaced axially from each other;
a pair of spaced locating members removably coupled with an inner wall of said self-contained member and each having a central opening;
a flexible tube extending from one end of said member to the other end thereof and passing through said central openings, said flexible tube having a longitudinal axis;
a liquid flow entrance mechanism associated with said entry end adapted to be received within the mouth of a baby nurser and having an opening for receiving one end of said flexible tube for applying liquid from said baby nurser to said nipple and providing an exit for the flow of gas bubbles in a direction opposite to the flow of the liquid;
a flexible tube constrictor associated with said flexible tube for varying the internal diameter thereof for controlling the flow of liquid through said flexible tube; and
a control member associated with said flexible tube constrictor movable along an axis substantially coaxially with said longitudinal axis.

5,667,085
CAP FOR A CONTAINER
Brian Leslie Ogden, and Peter Albert Whiting, both of Dartford, Great Britain, assignors to Warner Lambert Co., Morris Plains, N.J.
PCT No. PCT/GB94/01277, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO94/29185, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 14, 1994, Ser. No. 564,068
Claims priority, application United Kingdom, Jun. 15, 1993, 9312275.2
Int. Cl.[6] B65D *50/04*
U.S. Cl. 215—220 **8 Claims**

1. A cap for a container having a screw threaded opening comprising an inner part in the form of a screw threaded cap, an outer part, biased from the inner part in a first, locking position, by resilient biasing means located between the inner and outer parts, a projection located on the inner part and adapted to be received in an aperture formed in the outer part, the cap also comprising a tamper-evident member secured to the outer top surface of the outer part and having a portion that substantially covers the aperture, wherein on first removing the cap from the container the outer



part is moved into a second, unlocking position, against the resilient biasing means, the projection being received in the aperture and projecting therebeyond, such that at least a portion of the tamper-evident member is ruptured wherein the tamper-evident member is selected from the group consisting of a paper film and label secured on said outer top surface.

5,667,086

SEALING TOP FOR BOTTLES AND THE LIKE

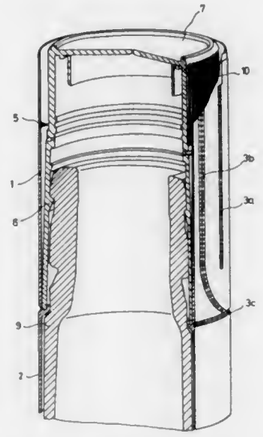
Joaquin Junqueras Guerre, Ripollet, Spain, assignor to Formas Tecnicas, S.A., Ripollet, Spain

Continuation of Ser. No. 248,429, May 24, 1994, abandoned. This application Aug. 21, 1996, Ser. No. 701,102

Claims priority, application Spain, May 31, 1993, 9301179

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—251 **20 Claims**



1. An arrangement for sealing a top of a bottle, comprising:

stopper means arranged in association with the bottle for closing the bottle; and

a substantially tubular sleeve including,

an open upper part surrounding at least part of said stopper means,

a lower part affixed to a part of the bottle,

first fixing means for detachably fixing said upper part of said sleeve to said lower part of said sleeve, and

second fixing means for detachably fixing said lower part of said sleeve in engagement with said stopper means such that when said upper part of said sleeve is removed from its position surrounding at least part of said stopper means and detached from said lower part of said sleeve, said lower part of said sleeve remains fixed to said stopper means by said second fixing means and when said stopper means is removed from engagement with said lower part of said sleeve, said lower part of said sleeve remains affixed to the bottle.

5,667,087

CLOSURE AND SECURITY RING FOR CONTAINERS

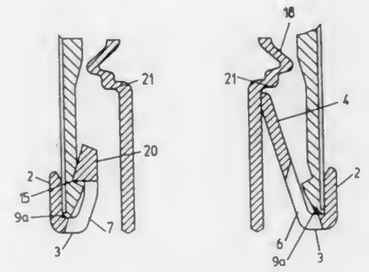
Michel Delatour, Voiteur, France, and Jean Servaux, La Tour-de-Peilz, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 24, 1994, Ser. No. 265,323

Claims priority, application European Pat. Off., Jul. 12, 1993, 93111110

Int. Cl.[6] B65D *55/08;41/34*

U.S. Cl. 215—252 **21 Claims**



1. In a container assembly having (i) a container outer surface having a round closure portion about a round container opening and having an outwardly extending flange portion positioned between the closure portion and a remainder of the container outer surface and wherein the closure portion has screw-thread ramps for engaging a screw-thread cover for providing for closing and opening the container and (ii) a cover having a first portion for covering the container opening and a round skirt portion which depends laterally from the first portion to a circular skirt edge to define, together with the first portion, a cover interior and wherein the skirt has screw-thread ramps positioned for engaging the container ramps for providing for closing and opening the container, the improvements comprising:

(i) a ring comprising a rim and two sets of spaced-apart lugs wherein the lug sets have differing shapes and wherein the lugs extend from the rim and (ii) a skirt interior portion which extends between the skirt edge and the cover screw-thread ramps and which contains a perimeter groove at a position displaced from the skirt edge and wherein the rim has a surface which abuts the skirt edge, wherein one lug set comprises two lugs which extend from the rim to the groove to lock the ring member to the skirt and wherein the second lug set comprises at least one lug which extends from the rim to the container and wherein the container and the cover and the second lug set are configured so that the flange is positioned between the cover screw-thread ramps and the edge, so that the interior skirt portion and the groove are spaced a distance away from the container remainder portion and so that upon turning the cover to open the container, the second lug set contacts the flange and establishes a tension for breaking the rim.

5,667,088

CONTAINER CLOSURES

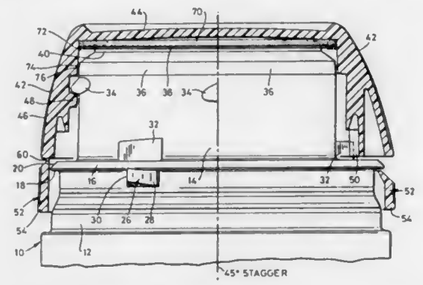
Roger Milner King, and Witney Milner King, both of Latimer Bucks, United Kingdom, assignors to Beeson and Sons Limited, Rickmansworth, United Kingdom

Filed Oct. 4, 1994, Ser. No. 317,999

Claims priority, application United Kingdom, Oct. 4, 1993, 9320389

Int. Cl.[6] B65D *41/34*

U.S. Cl. 215—252 **8 Claims**



1. A container closure assembly comprising:

a container neck provided with a radially projecting shoulder, wherein the shoulder has a generally circular shape;

a closure for said container neck; and

a tamper-evident ring releasably coupled to said closure and retained on said container neck when said closure is removed from said neck, wherein said tamper-evident ring comprising a generally non-circular and polygonal shape and having one or more inwardly projecting hooks located adjacent to the mid-point of one or more sides of said tamper-evident ring, wherein said hooks are located behind said radially projecting shoulder so that the hooks locate to retain the tamper evident ring on the neck.

5,667,089

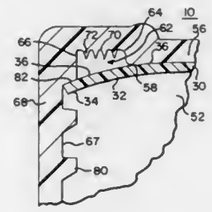
CLOSURE HAVING A WRAP-AROUND SEAL

David N. Moore, Plainfield, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Continuation of Ser. No. 508,404, Jul. 31, 1995, abandoned, which is a continuation of Ser. No. 217,479, Mar. 23, 1994, abandoned. This application May 8, 1996, Ser. No. 646,478

Int. Cl.[6] B65D *53/04*

U.S. Cl. 215—351 **4 Claims**



1. A plastic closure for use with a container having a neck with an annular lip at an uppermost end of the neck defining a mouth having a land surface, said closure comprising:

a top panel, an annular skin depending peripherally from said top panel and means for releasably engaging said neck of said container;

an inner retaining area defined by an inner ceiling surface of said top panel and an inner surface of said annular skirt, said retaining area receiving a pliant, oversized heat induction actuated closure liner, said liner circumferentially contacting said land surface of said container to completely cover said mouth of said container;

a well defined by an upper end of said inner surface of said annular skirt, said inner ceiling surface of said top panel, an upper surface, an inner wall and an outer wall, said well having a sufficient depth and a complementary dimension to receive said land surface upon application of said closure onto said container and thereby cause said liner to sealingly contact said land surface;

a plurality of symmetrical, substantially identical, continuous, annular, flexible tooth-like elements depending from, and extending inwardly of said upper surface of said well, said tooth-like elements defining a plurality of annular gaps between their respective adjacent tooth-like elements, each said gap defining a non-liner containing region when said liner is non-compressively positioned in said closure, said tooth-like elements and their respective adjacent gaps defining a plurality of successive liner compression and liner expansion regions adapted to permit said liner to expand within said gaps as it is compressed between said land surface and said compression regions during engagement of said closure with the container to permit penetration of said container neck into said well;

a first annular bead formation along said inner wall of said well providing a directional force down against said oversized liner to extend said oversized liner down and around an inner surface of said mouth of said container, effecting a localized, positive seal between said liner and said land surface; and

a second annular bead formation along said outer wall of said well providing directional force down against said oversized liner along an outer surface of said mouth, causing a complete wrap-around seal between said liner and said land surface.

5,667,090

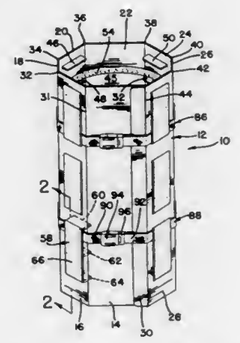
RETURNABLE SHIPPING CONTAINER

Robert Fred Langham, Jr.; William Techlin, both of Beavercreek; Robert Anthony Soehner, Vandalia, and Gary Lee Harakay, Union, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1995, Ser. No. 556,293

Int. Cl.[6] B65D *6/20*

U.S. Cl. 220—6 **5 Claims**



1. A returnable shipping container for manufactured articles, comprising:

a plurality of rectangular wall panels serially arranged side by side and having a hinge acting between each adjacent panel with the end most of the panels having a free side thereof;

a separable fastener effective to establish the free sides of the endmost panels in adjacent relationship so that fastening the fastening means causes the container to be maintained in a tubular configuration defining an interior storage cavity and separating the fastener allows the container to be opened;

a plurality of slots provided in spaced apart relation along at least two of the wall panels; and

a plurality of shelf member having a base wall adapted to lie against the slotted wall panels and having shelf arms which project through the slots and into the storage cavity to engage with and support the articles stored therein.

5,667,091

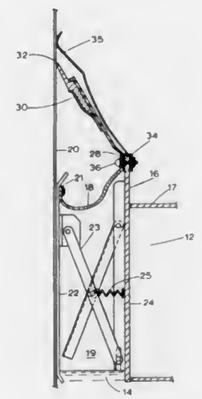
MOUNTING SYSTEM FOR FLOATING ROOF SEALS

Arthur W. Slaber, Jr., Naperville, and Terry A. Gallagher, Wheaton, both of Ill., assignors to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Filed Dec. 29, 1994, Ser. No. 365,777

Int. Cl.[6] B65D *88/46*

U.S. Cl. 220—224 **46 Claims**



1. An apparatus for sealing the space between a floating roof and a tank wall in a liquid storage tank, in which the floating roof includes a rim extending upwardly from the floating roof and the rim has an aperture therethrough; the apparatus comprising:

a primary seal having a first end in sealing arrangement with the tank wall, and a second end connectable to the rim, wherein the second end has an aperture therethrough aligned with the rim aperture;

a secondary seal having a first end in sealing contact with the tank wall, and a second end connectable to the rim, wherein the second end has an aperture therethrough aligned with the rim and primary seal apertures;

a bolt insertable through the apertures in the rim, the primary seal and the secondary seal;

a first gasket interposed between the rim and the primary seal, wherein the gasket comprises compressible foam tape; and

means for releasing the secondary seal from the rim while maintaining the primary seal connection to the rim, including,

a retainer connectable to the bolt for joining the primary seal to the rim, and

a nut connectable to the bolt for joining the secondary seal to the rim.

5,667,092

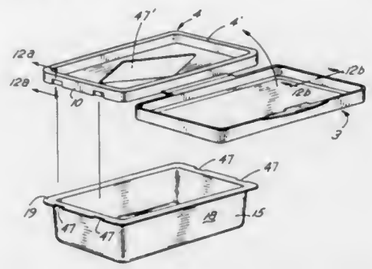
REUSABLE LID AND CONTAINER CONSTRUCTION

Robert P. Julius, Greenwich, Conn., and Robert McClain, Crossriver, N.Y., assignors to Nice Pák Products, Orangeburg, N.Y.

Division of Ser. No. 189,043, Jan. 31, 1994, Pat. No. 5,474,199. This application Jun. 5, 1995, Ser. No. 464,473

Int. Cl.[6] B65D *43/10;51/04*

U.S. Cl. 220—259 **2 Claims**



2. A reusable cover and a container construction comprising, in combination: a container having a bottom and side walls forming a receptacle, said walls defining a circumferential top edge, with a peripheral rim extending outwardly from the top edge, said rim having at least one slot formed therein, and a cover having a peripheral flange and a lid; said peripheral flange having an outside and inside wall to receive therebetween said rim, and at least one protrusion formed on said outside wall to engage said slot when said peripheral flange is placed on said rim;

said lid generally coextensive with the container rim and including a peripheral, downwardly depending member to fit over the flange to thereby seal the lid on the flange; and

a flexible, integral hinge along one side of the peripheral flange for connecting the flange and lid, said depending member of the lid disengageable from the flange to permit pivoted movement of the lid and access to the container.

5,667,093

LOCK CAP FOR A MOTOR VEHICLE FUEL FILLING PIPE

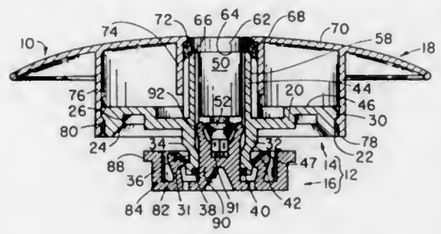
Jean-Pierre Lefevre, Chaumont-en-Vexin, France, assignor to Paul Journee S.A., Colombes, France

Filed Oct. 20, 1994, Ser. No. 326,462

Claims priority, application France, Oct. 26, 1993, 93 12765

Int. Cl.[6] B65D *41/06*

U.S. Cl. 220—293 **11 Claims**



1. A cap for closing a filling pipe of a fuel tank for a motor vehicle, said cap having a rotatable locking mechanism which cooperates with a complementary radial collar formed on an end of the pipe, wherein the cap includes a body comprising a first disk-shaped body part having a barrel therewithin, a first axial stop formed on said first body part and a second cup-shaped body part having a second axial stop formed on said second cup-shaped body part, said first and second body parts being assembled by elastic engagement, said respective first and second axial stops forming with said first and second body parts at least two axial stops spaced axially opposite one another between which a portion of the radial collar on the end of the pipe is directly received when the cap is in the closed position wherein the first body part has a locking plate and a depending skirt said skirt including a groove formed therein, one face of said locking plate bears selectively against a corresponding seat formed on an end of the pipe, a central guiding and centering core protruding from said second body part having an engaging member disposed therefrom, said engaging member being formed on the centering core for catching, by elastic axial engagement, a complementary engaging member on the barrel within the first body part, and at least one lug formed on the second body part for elastically engaging said locking plate groove.

5,667,094

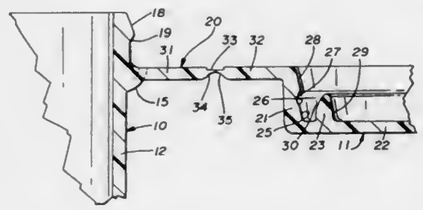
CONTAINER AND CLOSURE ASSEMBLY

Thomas P. Rapchak, and Michael Marino, both of New Castle, Pa., assignors to West Penn Plastics, New Castle, Pa.

Filed Apr. 29, 1996, Ser. No. 638,804

Int. Cl.[6] B65D *43/16;55/16*

U.S. Cl. 220—339 **7 Claims**



1. A container and cap assembly comprising;

a container and a closure that are integrally molded from plastic to one another, said container having an annular sidewall with a closed end and an open end surrounded by a locking rim with two tapered engagement surfaces, engagement tabs extending from said container and said closure respectively, said closure having a depending skirt and a sealing flange engageable on said rim by downwardly closure movement to secure said closure in a closed position on said container and prevent upward movement of said closure, said skirt having four angular plane engagement surfaces, wherein the first and second angular plane engagement surfaces having different vertical inclinations and engage one of said tapered engagement surfaces on said container adjacent said opening, the third angular plane engagement surface extends below said first and second angular plane engagement surfaces and engages on said remaining rim's tapered surface, and the fourth angular plane engagement surface extends from said third angular plane engagement surface in spaced relation to said annular sidewalls when closed, said hinge having a recessed portion and a contoured notch in spaced oppositely disposed relation to one another defining a flexible means therebetween.

5,667,095

CONTAINER FOR A CONTAINER DISPOSAL ARRANGEMENT

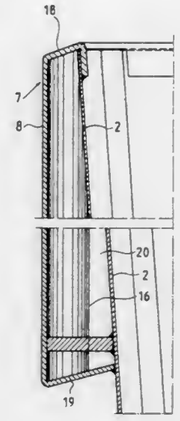
Norbert Riedel, Rheinberg, and Ludger Riedel, Xanten, both of Germany, assignors to Riedel und Söhne oHg, Kamp-Lintfort, Germany

Filed May 17, 1995, Ser. No. 443,321

Claims priority, application Germany, May 17, 1994, 44 17 156.0

Int. Cl.[6] B65D *1/42;6/34;8/08*

U.S. Cl. 220—640 **10 Claims**



1. A container for a container disposal assembly, said container having a rectangular shape as seen from above and including a rectangular floor; first and second pairs of side walls which taper towards one another as they extend from upper edges at an open top of said container downwardly to said floor; a collar which defines a first portion that is inclined downwardly and outwardly from the upper edge of each adjacent side wall, a second portion that extends downwardly from each first portion, said second portions of said collar adjacent opposing side walls extending in parallel with one another, and a third portion which is inclined upwardly from a lower edge of each second portion to the adjacent side wall, said collar including a plurality of reinforcing tubular members which extend between said first and third portions thereof; and a lifting element positioned between the second portion of said collar and an adjacent side wall for gripping and lifting of said container by a crane.

5,667,096

DRUG STORING APPARATUS FOR AUTOMATIC DRUG DISPENSING MACHINES

King-Sheng Wu, No. 712, Tu Cheng Rd., Ta Li City, Tai Chung Shignn, Taiwan

Filed Feb. 8, 1996, Ser. No. 598,723

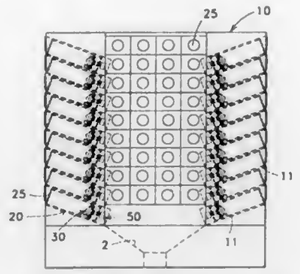
Int. Cl.[6] B65G *59/00*

U.S. Cl. 221—6 **8 Claims**

1. A drug storing apparatus for use in an automatic drug dispensing machine, comprising a frame for supporting a multiplicity of drug cases, each of said drug cases having an outlet and a feeding element disposed near said outlet for automatically feeding a fixed number of drugs, so that tablets or pills stored in each of said drug cases may, according to a command from a computer control center, be individually discharged via said outlet into a hopper located below a lower portion of said frame to be ready for packing, wherein

said frame has a multiplicity of inclined rails oriented towards a same direction;

each of said drug cases has an inner end and an outer end, said outer end being disposed at a position higher than that of said



inner end with an inclined plate connecting one bottom edge of said outer end and a bottom edge of said inner end, said inner end being provided with said outlet and said feeding element; and

a multiplicity of drive elements each having a drive box slidable along said inclined rails for fitting onto said frame are provided for feeding a fixed number of drugs, said drive box accommodating therein at least a motor and connecting to at least one of said drug cases for detachably fitting onto said inclined rails of said frame as a whole.

5,667,097

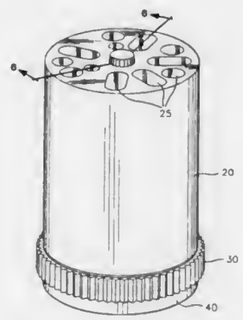
MULTIPLE PILL DISPENSING UNIT

Charles E. Joyce, 22586 Dunkenfield Cir., Lake Forest, Calif. 92630

Continuation-in-part of Ser. No. 331,053, Oct. 28, 1994, abandoned. This application Apr. 21, 1995, Ser. No. 426,282

Int. Cl.[6] B65H *3/44*

U.S. Cl. 221—93 **11 Claims**



1. A pill housing apparatus for dispensing a plurality of pills of differing shapes, comprising:

an upper, middle, and lower housing portions, and, extending vertically therethrough, a plurality of parallel, vertically disposed conduits in adjacent positions forming a preferred positional arrangement, each of the conduits providing an interior sidewall closely conforming to the shape of one of the pills so that the pills may be stacked one above the other therein, the conduits in the upper and middle housing portions accommodating a plurality and a singularity of the pills respectively therein, the upper and lower housing portions being mutually joined in fixed juxtaposition such that the conduits in the lower one of the portions are misaligned with the conduits in the upper one of the portions, the middle one of the housing portions being movably engaged with and sandwiched between the upper and the lower housing portions, the middle one of the portions being normally positioned so that the conduits in the upper and the middle portions are aligned, allowing one of the pills in each of the conduits in the upper one of the portions to move downwardly into the corresponding one of the conduits in the middle one of the portions, and further positionable so that the conduits in the middle one of the portions are aligned with the conduits of the lower one of the portions thereby allowing the pills in the middle one of the portions to drop through the corresponding conduits in the lower one of the portions for dispensing the pills the apparatus accommodates and dispenses the multiple pills with a single rotary motion without the need of springs or other external forces.

5,667,098

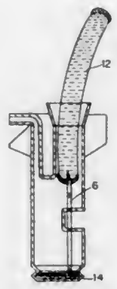
APPARATUS AND METHOD FOR REMOVING, DILUTING AND DISPENSING FLUID FROM A FLEXIBLE TUBE

Marshall S. Levine; Daniel S. Levine, and David E. Levine, all of Wayne, Pa., assignors to Alpha Scientific Corporaton, Malvern, Pa.

Filed Feb. 28, 1995, Ser. No. 395,903

Int. Cl.[6] B67D *7/00*

U.S. Cl. 222—1 **35 Claims**



21. A method of removing, diluting, and dispensing fluid stored in a flexible tube, the method comprising the steps of:

a) guiding the flexible tube into a container, the container having a sharp cannula disposed therein, the container having a bottom, the cannula having an opening spaced from the bottom, the guiding step being performed by pushing the tube through an opening in the container such that the tube becomes pierced by the cannula, and such that fluid flows out of the tube and collects at the bottom of the container,

b) injecting a diluent through the opening, and

c) dispensing diluted fluid from the container through a spout formed in the container, the spout being distinct from the opening,

wherein the guiding step is followed by the step of squeezing the tube so as to dispense fluid from the tube, and into the cannula, and

wherein the cannula extends substantially to the bottom of the container, and wherein the squeezing step is followed by the step of relaxing pressure on the tube so as to suck fluid back into the tube, so as to maintain a desired amount of fluid in the container.

5,667,099

METHOD AND APPARATUS FOR POWDER DISTRIBUTION

Shinichiro Yasuda, Osaka, and Keisaku Inoue, Wakayama, both of Japan, assignors to Kao Corporation, Tokyo, Japan

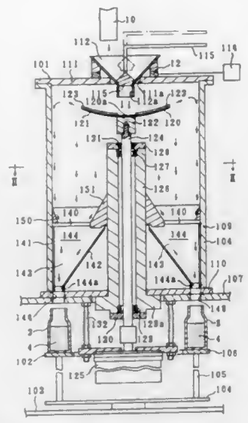
Filed Jun. 5, 1995, Ser. No. 462,887

Claims priority, application Japan, Jun. 24, 1994, 6-166376

Int. Cl.[6] B65D *88/54*

U.S. Cl. 222—1 **2 Claims**

1. A powder distribution method comprising the steps of:



radially scattering previously weighed powder, whose weight is obtained by multiplying a preset weight by an integer N greater than or equal to 2, by centrifugal force; and

introducing the scattered powder into a plurality of powder chambers via a plurality of powder inlets arranged along a circumferential direction;

wherein the centrifugal force is exerted by a rotary element rotating around a rotation axis along a vertical direction;

the plurality of powder inlets are arranged around the rotation axis of the rotary element;

dimensions of the plurality of powder inlets along the circumferential direction are mutually equalized on a circle centered on the rotation axis of the rotary element;

a total number of the plurality of power inlets is equal to the integer N;

an angle of repose of the powder is not more than 45 degrees;

a first ring-shaped guide is attached to an inner circumference of a housing, including the plurality of powder inlets and the plurality of powder chambers, so as to be positioned above the plurality of powder inlets;

an inner circumferential face of the first ring-shaped guide is an inclined face whose lower end extends radially inwardly;

a second ring-shaped guide is attached to an outer circumference of a support column supporting the rotary element so as to be positioned above the plurality of powder inlets; and

an outer circumferential face of the second ring-shaped guide is an inclined face whose lower ends extends radially outwardly.

5,667,100

Patent Not Issued For This Number

5,667,101

COLLAPSIBLE BOTTLE

Marshall Barrash, Atlanta, and William S. Credle, Jr., Stone Mountain, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed May 19, 1995, Ser. No. 444,730

Int. Cl.[6] B65D *35/00*

U.S. Cl. 222—92 **41 Claims**

1. A fluid dispensing container comprising:

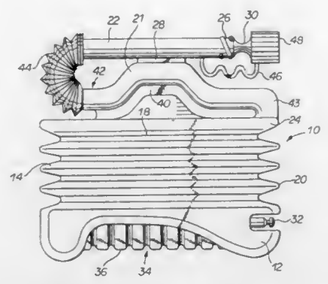
means for pumping fluid from the container, the means for pumping including a collapsible housing, said collapsible housing including first and second opposing end walls and collapsible side walls connecting the opposing end walls;

a flexible drinking tube provided on the collapsible housing, said flexible drinking tube including a first end connected to said collapsible housing and in liquid communication with the interior of said container and a second end opposite to the first end for dispensing the contents of said container;

means for removably sealing the second end of said flexible drinking tube;

means for removably securing the second end of said drinking tube to said collapsible housing; and

a liquid well formed in at least a portion of said drinking tube and including the first end thereof and a formed portion for assisting in the dispensing of the entire contents of the container.



5,667,102

CARTRIDGE WITH AN EXCHANGEABLE CONTENT PACKAGE

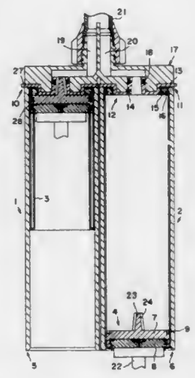
Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland

Filed Jul. 14, 1995, Ser. No. 502,669

Claims priority, application European Pat. Off., Jul. 18, 1994, 94810422

Int. Cl.[6] B65D *35/28*

U.S. Cl. 222—95 **23 Claims**



22. A cartridge system for dispensing a mix of components, comprising:

a plurality of cartridges each containing a different component, wherein said cartridges have relative sizes which correspond to a predetermined ratio of said components in said mix;

a content package disposed in each of said cartridges, each package having a liner which has an outlet end and an inlet end,

a plurality of outlet assemblies each of which is attached to one of said liners at said outlet end for outputting said components,

a front piece for receiving said plurality of outlet assemblies and providing means for mixing said components in said predetermined ratio,

a plurality of piston assemblies corresponding to said plurality of cartridges, each piston assembly having a piston body,

wherein, at said inlet end, each said liner is fastened to a rear portion of one of said piston bodies such that said piston body is disposed inside said liner.

5,667,103

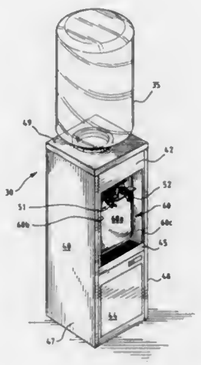
LIQUID DISPENSER WITH READILY REMOVABLE RESERVOIR AND ADAPTOR PERMITTING USE WITH VARIOUS DISPENSERS

Edward H. Donselman, and Lowell C. Burnham, both of Freeport, Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Filed Mar. 10, 1995, Ser. No. 403,254

Int. Cl.[6] B67D *5/56*

U.S. Cl. 222—129 **11 Claims**



1. An apparatus for dispensing liquid from a liquid container, comprising:

a housing assembly supporting the liquid container, the housing assembly including a generally vertical wall with a recessed portion forming an alcove, the alcove having an opening;

a reservoir containing the liquid located within the housing assembly and in fluid communication with the liquid container and with one or more liquid dispensing elements, the reservoir including a bottom surface and a raised bottom portion terminating in a port, wherein the reservoir, upon removal of the liquid container, is vertically removable from the housing assembly, and adapted to be readily dropped into or lifted out of the housing assembly;

the one or more liquid dispensing elements being positioned outside the reservoir and located to project into the alcove opening, the one or more liquid dispensing elements thereby being accessible to a user of the dispensing apparatus;

a baffle located within the reservoir and separating the reservoir into lower and upper regions containing the liquid, the baffle serving to minimize heat transfer between the liquid within the lower region and the warmer liquid within the upper region;

a cooling element operable to cool the liquid within the lower region of the reservoir, the bottom surface of the reservoir resting on and being in heat exchange relation with the cooling element; and

the port on the raised bottom portion of the reservoir being positioned above both the baffle and the one or more liquid dispensing elements.

5,667,104

DIRECTIONAL DISPENSER AND METHOD OF ITS USE

Philip Meshberg, 2770 S. Ocean Blvd., Apartment 602, Palm Beach, Fla. 33480

Continuation-in-part of Ser. No. 163,787, Dec. 9, 1993, and a continuation-in-part of Ser. No. 222,975, Apr. 5, 1994, Pat. No. 5,460,207, which is a division of Ser. No. 887,032, May 22, 1992, Pat. No. 5,305,810. This application Sep. 14, 1994, Ser. No. 305,637

Int. Cl.[6] B05B *11/00;* **G01F** *11/00*

U.S. Cl. 222—143 **40 Claims**

1. A dispensing package comprising:

an integrally formed container portion-comprising:

a lower portion, a dip tube structure and a retaining wall, the lower portion containing an open lower end, the retaining wall comprising a retaining opening, the dip tube structure being integrally molded with the retaining wall;

a pump structure, a circumferential outer surface of the pump structure being formed to be retained in the retaining opening and sealed to the retaining wall; and

a bottom portion, the bottom portion being formed separate from the container portion, the bottom portion being formed to be secured to the lower end and sealed to the lower end, whereby the bottom portion can be sealed to the lower end and the container portion can be filled with a liquid product, to seal the liquid product within the container portion.

5,667,105

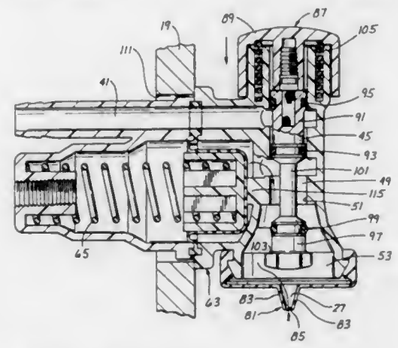
PORTION CONTROL VALVE AND SYSTEM AND METHOD UTILIZING THE SAME

E. Dale Hartley, Malibu; F. Scott Hartley, Camarillo; Gary F. McKee, Newport Beach, and Christopher J. Taylor-McCune, Mission Viejo, all of Calif., assignors to Shurflo Pump Manufacturing Co., Santa Ana, Calif.

Continuation-in-part of Ser. No. 242,017, May 12, 1994, abandoned. This application May 8, 1995, Ser. No. 432,359

Int. Cl.[6] B67D *1/08*

U.S. Cl. 222—148 **20 Claims**



11. A control valve comprising:

a valve body having an inlet, an outlet, a passage leading from the inlet to the outlet and a cavity communicable with the passage, said passage including a discharge chamber having a wall upstream of the outlet;

a movable wall in said cavity dividing the cavity into a portion chamber communicable with the passage and a secondary chamber;

a resilient element in the secondary chamber for biasing the movable wall in a direction to reduce the volume of the portion chamber whereby the portion chamber is made resiliently expandable;

a valve element movable in the valve body between a charging position in which the valve element allows flow of flowable material from the inlet through the passage to the portion chamber to resiliently expand the portion chamber against the biasing action of the resilient element and blocks flow of flowable material from the portion chamber through the passage to the outlet and a discharge position in which the valve element blocks flow of flowable material from the inlet through the passage to the portion chamber and allows flow of flowable material from the portion chamber through the passage to the outlet so that the resilient element can force the flowable material from the portion chamber toward the outlet; and

the valve element including a deflecting surface positioned so that with the valve element in the discharge position the flowable material from the portion chamber is directed toward the wall.

5,667,106

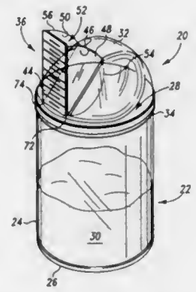
CONTAINER CAP WITH A MEASURING SPOUT

Edward S. Robbins, III, Florence, Ala., assignor to E. S. Robbins Corporation, Muscle Shoals, Ala.

Filed Jun. 7, 1995, Ser. No. 484,701

Int. Cl.[6] G01F *11/10*

U.S. Cl. 222—158 **18 Claims**



1. A cap having a dispensing spout for use on a container body, the container body including a perimetral edge defining an upper margin of the container body, the cap comprising a cap wall portion having a lower perimetral edge dimensioned to join the container body upper margin, the cap wall further including a second edge defining an opening receiving the dispensing spout, and pivot means coupling the dispensing spout axially and radially adjacent to the lower perimetral edge for pivoting the dispensing spout between a dispensing and a filling position, the dispensing spout having an outside wall for closing said opening when in the filling position and an inside wall defining a hopper, the cap wall being configured to maintain the pivotable spout inside wall at all times above a plane defined by the cap wall lower perimetral edge, the cap wall including opposed upwardly and inwardly tapered portions leading to the hopper to facilitate filling of the hopper.

5,667,107

COVER AND STAND FOR SQUEEZE CONTAINER WITH BOTTOM OUTLET FOR DISPENSING VISCOUS FLUIDS

William J. Lindsey, Rte. 3, Box 3280, Washburn, Wis. 54891

Continuation-in-part of Ser. No. 203,524, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 728,204, Jul. 10, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 297,707

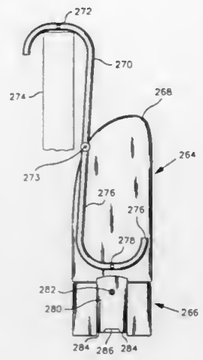
Int. Cl.[6] B67D *5/64*

U.S. Cl. 222—173 **48 Claims**

1. A fluid dispensing apparatus comprising:

a squeeze container having a container top and a container bottom;

an automatic nozzle coupled to said container bottom, said automatic nozzle for dispensing fluid when said container is squeezed and for preventing fluid flow and retaining fluid when said container is not squeezed;



a cover stand coupled to said container bottom;

said cover stand having a base panel movable from a closed first position to an open second position, said base panel covering said automatic nozzle in said closed first position, said base panel permitting operation of said automatic nozzle in, said open second position;

said cover stand having a base defining a horizontal plane for permitting said squeeze container to stand on a horizontal surface when said base panel is either in said closed first position or said open second position, said base panel movable in a direction away from said automatic nozzle when in said open second position;

whereby the contents of said container are in contact with said automatic nozzle when said container is standing on said horizontal surface.

5,667,108

SINGLE VALVE DISPENSING BALANCE

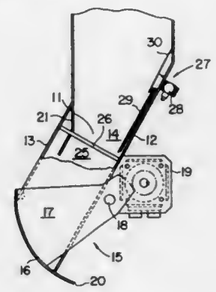
Thomas Braun, Schwaebisch Hall, and Werner Gwinner, Rosenqarten, both of Germany, assignors to OPTIMA-Maschinenfabrik Dr. Bühler GmbH & Co., Germany

Filed Apr. 13, 1995, Ser. No. 422,505

Claims priority, application Germany, Apr. 13, 1994, 44 12 660.3

Int. Cl.[6] B65D *47/00*

U.S. Cl. 222—181.1 **26 Claims**



1. Apparatus for supplying doses of a free-flowing material measured by at least one of volume and weight, comprising:

an enclosed shaft having a rear wall, the material to be supplied sliding downwardly over the rear wall;

one rotary valve for closing the shaft located at a lower end of the shaft and mounted for rotation about an axis located near the rear wall of the shaft; and,

a motor drive for moving the one rotary valve throughout a range between a maximum open position and a closed position, the one rotary valve being adjustable to any intermediate position in the range, including a coarse flow position and a fine flow position.

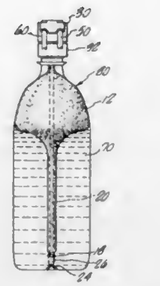
5,667,109
MILK POWDER CONTAINER
Tien Lin Yu-Mei, P.O. Box 82-144, Taipei, Taiwan
Filed Jan. 31, 1995, Ser. No. 381,225
Int. Cl.[6] G01F *11/26*
U.S. Cl. 222—456 **2 Claims**



1. A milk powder container comprising:
a cylindrical bottle formed with threads at a lower end and a threaded neck at an upper portion, said cylindrical bottle having a top end formed with a semi-circular opening and a first semi-circular groove under the top end;
a bottom cover threadedly engaged with a bottom of said cylindrical bottle;
a control knob having a second semi-circular opening, a protuberance at a bottom adapted to the first semi-circular groove, and a lug at an outer side;
an adjusting annular member formed with threads at an inner surface adapted to engage the threaded neck of said cylindrical bottle, a first groove at an upper portion of the inner surface, and a second groove at an outer surface;
a retainer ring engaged with the second groove of said adjusting annular member;
a cup formed at a lower edge with a flange adapted to fit into the first groove of said adjusting annular member, a longitudinal ear at an outer side with a corresponding slot at an opposite side adapted to receive the lug of said adjusting annular member, and a raised protrusion at an upper portion; and
a cap engageable with a top end of said cup.

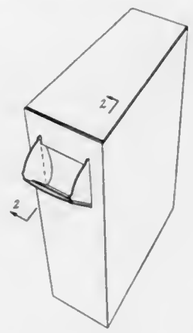
5,667,110
BEVERAGE DISPENSER FOR HOME OR OFFICE
Gerald P. McCann, 7000 Macapa Dr., Los Angeles, Calif. 90068, and Donald J. Verley, 43015 Lesina Dr., Lake Elizabeth, Calif. 93532
Continuation of Ser. No. 293,055, Aug. 19, 1994, Pat. No. 5,499,758. This application Dec. 26, 1995, Ser. No. 578,750
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—386.5 **20 Claims**

1. A liquid dispensing system for use with a container holding liquid and having a container aperture, said dispensing system comprising:



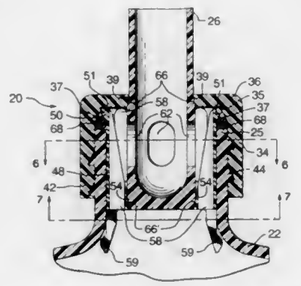
a) a fastener adapted to attach to said container such that said container aperture is sealed;
b) a liquid exit nozzle attached to said fastener, said exit nozzle including a controller adapted to selectively allow passage of liquid through said exit nozzle;
c) a liquid draw tube connected to said exit nozzle and adapted to be placed inside of said container when said fastener is attached to said container;
d) a pressure source capable of providing and sustaining pressure higher than the pressure inside said container;
e) a pressure nozzle connected to said pressure source, said pressure nozzle including a controller adapted to selectively communicate the pressure from said pressure source;
f) a bladder connected to said pressure nozzle, said bladder adapted to be placed along with said draw tube inside said container, said bladder further including means such that, upon the communication of pressure through said pressure nozzle, said bladder expands, said expansion occurring first in the upper portion of said container,
whereby attachment of said dispensing system to said container permits the selective release through said exit nozzle of liquid originally residing inside said container.

5,667,111
PLASTIC POUR-SPOUT AND CONTAINER
Walter G. Robinson, Charlotte, N.C., and David B. Dupes, York, S.C., assignors to Poly Pro, Division of Roberts Systems, Inc., Charlotte, N.C.
Filed Jun. 7, 1995, Ser. No. 480,835
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—508 **3 Claims**



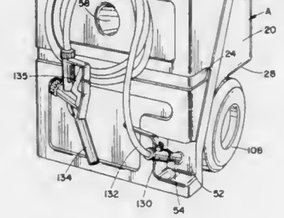
1. A plastic pour spout comprising:
a platform;
a first side panel hingedly connected to a first side of said platform, said first side panel having a substantially triangular shape with a base in communication with a first platform double hinge connection, said first side panel tapering to a first tip, said first side panel further defining an angular projection near said first tip; and
a second side panel hingedly connected to a second side of said platform, said second side panel having a substantially triangular shape with a base in communication with a second platform double hinge connection, said second side panel tapering to a second tip, said second side panel further defining an angular projection near said second tip;
wherein, said first and said second platform double hinge connectors permit said pour spout to be placed in an assembled, three-dimensional configuration by the passive folding of the pour spout as a carton carrying the pour spout is assembled.

5,667,112
SELF-STORING SPOUT ASSEMBLY FOR A CONTAINER
Anthonius Verbruggen, 545 Sulphur Springs Road, Ancaster, Ontario, Canada, L9H 5E3
Filed Nov. 24, 1995, Ser. No. 562,506
Int. Cl.[6] B67D *5/04*
U.S. Cl. 222—539 **20 Claims**



1. A self-storing spout assembly for use on a container having a threaded neck opening defining a circular rim portion centered about a main axis, the spout assembly comprising, in combination:
an annular cap ring having a circumferentially depending skirt portion and a substantially planar top portion defining a centrally disposed substantially circular portal, said skirt portion having complimentary screw threading on an interior surface thereof to operatively engage the threaded neck opening of said container to retain said cap ring over said neck opening with said portal in substantial axial alignment with said main axis;
a neck insert means comprising a substantially cylindrical main body portion, a first flange portion projecting radially outwardly from said main body portion adjacent an upper end of said main body portion and a second flange portion projecting radially inwardly from said main body portion adjacent a lower end thereof, said second flange portion defining a central orifice and one or more secondary apertures circumferentially arrayed around said second flange portion external to said central orifice, said first and second flange portions and said main body portion being sized and otherwise dimensioned for floating supported retention of said main body portion within said neck opening of said container with said central aperture in substantially axial alignment with said main axis when said first flange portion is positioned in overlying relation to said circular rim portion;
an annular resilient sealing means positionable upon the circular rim portion of the neck opening in underlying relation to said first flange portion and adapted to be compressed into sealing engagement between said circular rim portion and said first flange portion of said neck insert means when in said underlying relation;
a hollow spout member having an open pouring end, a closed base end, and a tubular body wall connecting said ends, said body wall having one or more radially directed flow passages positioned between said open pouring end and said closed base end in a region adjacent to said closed base end, an outer surface of said body wall in said region being of cylindrical cross section and being dimensioned to releasably, sealingly engage both of said portal in said cap ring and said central orifice of said neck insert means when said hollow spout member is inserted into said neck insert means in a pouring configuration in which said closed base end is positioned within said central orifice and said pouring open end is positioned external to said container with said cap ring operatively overlying and impinging in a downward direction upon said first flange portion, and when said hollow spout member is inserted into said neck insert means in a reversed closed configuration, in which closed configuration said closed base end is positioned in sealing relation within said portal and said pouring open end is positioned within the neck opening internal to said container with said cap ring operatively engaging the threaded neck of the container in overlying and downwardly impinging relation to said first flange portion.

5,667,113
WHEELED FUEL CONTAINER
John F. Clarke, Akron, and Ronald R. Eureka, Mantua, both of Ohio, assignors to Tempo Products Company, Cleveland, Ohio
Continuation of Ser. No. 376,824, Jan. 23, 1995, abandoned. This application Feb. 27, 1996, Ser. No. 607,803
Int. Cl.[6] B67D *5/37*
U.S. Cl. 222—608 **30 Claims**



10. A fuel tank made of a thermoplastic material for corrosion resistance and weight reduction, comprising:
an elongated substantially rectangular container comprising:
a bottom wall,
two side walls, each of one piece with said bottom wall and extending from a respective side thereof,
a front wall of one piece with said bottom wall and said side walls,
a back wall of one piece with said bottom wall and said side walls,
a top wall of one piece with said front and back walls and said two side walls, and
a hollow fuel holding interior defined by said walls;
a fill, spout disposed on one of said top wall and said front wall;
a first opening located on one of said walls for allowing an outflow of fuel;
a reenforcing chamber extending through said container from said front wall to said back wall for restricting an expansion of said container due to fuel vapor pressure and increasing its strength;

a first means for supporting said container in a substantially vertical upright position; and,

a second means for supporting said container in a substantially horizontal reclining position.

5,667,114

CARRYING APPARATUS FOR A PORTABLE COMPUTER

Richard A. Bourque, 15054 Downing Oak Ct., Los Gatos, Calif. 95032

Filed Jun. 27, 1995, Ser. No. 495,768

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—270 **21 Claims**



1. A carrying apparatus for a portable computer, the apparatus comprising:

a platform having first and second sides, a concave front edge, and a top surface for supporting the computer;

first and second rigid supporting members each having first and second ends, the first ends of the supporting members being pivotally connected to the platform, wherein the first end of the first supporting member is connected to the first side of the platform and the first end of the second supporting member is connected to the second side of the platform;

a carrying strap connected between the second ends of the supporting members;

a computer mount connected to the platform, the computer mount for securing the computer to the platform;

a wrist support member connected above and parallel to the front edge of the platform; and

a cover removably connected to the platform, the cover for enclosing the computer when the computer is mounted on the platform.

5,667,115

VEHICLE INTERIOR STORAGE CONTAINER

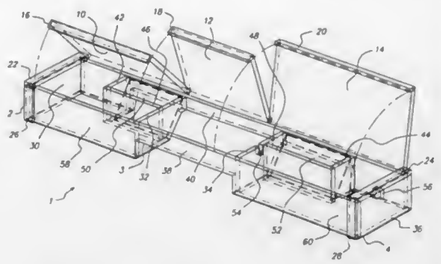
Martien Verhaeg, 2633 Wellington Ct., Concord, Calif. 94520

Continuation of Ser. No. 379,912, Jan. 30, 1995, abandoned. This application Jul. 11, 1996, Ser. No. 678,147

Int. Cl.[6] B60R *7/00*

U.S. Cl. 224—275 **17 Claims**

1. A mountable interior vehicle storage container of a size and dimension to fit underneath a seat of a vehicle for storing items within an interior of the vehicle, comprising a plurality of storage compartments each having an interior, an exterior and a substantially flat cover, wherein items may be stored within the interior of each storage compartment and maintained therein by the substantially flat covers and further wherein items may be stacked upon the substantially flat covers when they are in a closed position and further wherein at least two of the substantially flat covers are separately moving.



5,667,116

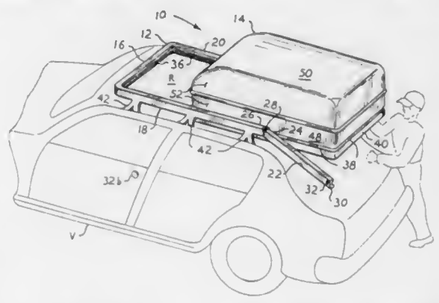
VEHICLE ROOFTOP STORAGE UNIT

Bambi L. Reinhart, and Robert A. Reinhart, both of 1306 Mt. Laurel Ave., Temple, Pa. 19560

Filed Mar. 18, 1996, Ser. No. 617,188

Int. Cl.[6] B60R *9/055*

U.S. Cl. 224—319 **20 Claims**



1. A rooftop storage unit for a powered passenger vehicle having a fixed roof, said storage unit comprising:

a rack and a container removably securable within said rack;

said rack having a generally rectangular configuration with an open center, with a front peripheral member, a first side peripheral member and an opposite second side peripheral member spaced apart therefrom, and a rear peripheral member defining a generally horizontal plane;

said rack being permanently secured to the roof of the vehicle by a plurality of supports, with said supports each having a height sufficient to place said plane of said rack at least slightly above the roof of the vehicle;

each said side member of said rack having a rearward end and said rear member of said rack having a first and an opposite second end respectively corresponding to said first and said second side member, with said first end of said rear member being hingedly attached to said first side member to swing arcuately in a path coplanar to said plane of said rack;

said second end of said rear member of said rack including locking means therein, and said rearward end of said second side member including cooperating latching means for said locking means of said rear member;

said rack further including an inner periphery having capture means for said container disposed therealong, and;

said container including a base having a lower periphery configured to fit closely within said rack and with rack engaging means disposed therearound, and a selectively openable upper lid, whereby;

said rear member of said rack is unlocked from said second side member and pivotally swung open, said container is secured within said rack by means of said rack engaging means of said container engaging said capture means of said rack, said rear member of said rack is closed and locked to said second member of said rack to capture said container within said rack, and said container is loaded as desired and closed to secure any articles stowed therein.

5,667,117

FASTENING DEVICE

Uwe Nutto, Boelkestrasse 19, D-79100 Freiburg, Germany

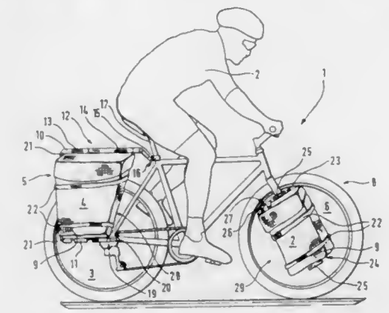
PCT No. PCT/DE93/01195, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/13526, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 13, 1993, Ser. No. 454,336

Claims priority, application Germany, Dec. 15, 1992, 42 42 211.6

Int. Cl.[6] B62J *9/00*

U.S. Cl. 224—417 **14 Claims**



1. A fastening system for fastening at least two bags (**4**, **5**, **7**, **8**) on a bicycle (**1**) in a first configuration and for fastening the at least two bags together to compose a knapsack (**81**, **84**) in a second configuration, each bag having an external bag surface adapted to face the bicycle characterized in that the at least two bags include rigid fittings (**10**, **10'**, **11**, **23**, **24**) secured on a rear wall reinforcement (**46**) located on each of the at least two bags (**4**, **5**, **7**, **8**), at least one fitting on one of said at least two bags including a hanging element (**25**) and at least one fitting on the other of said at least two bags including a reception device (**41**, **41'**) for receiving the hanging element (**25**), wherein the bags (**4**, **5**, **7**, **8**) are furnished in pairs, and complementary fittings are adapted to be positioned on the bicycle, the at least two bags being adapted to be removably positionable on the bicycle in the first configuration wherein the fittings on the at least two bags engage the complementary fittings on the bicycle and wherein the at least two bags are connected to each other to form the knapsack in the second configuration by the fittings on the at least first and second bags being releasably connected to each other such that the at least two bags are held closely together.

5,667,118

PANNIERS RACK

James P. Faasse, 1946 Martindale, Wyoming, Mich. 49509

Filed Jul. 23, 1996, Ser. No. 685,089

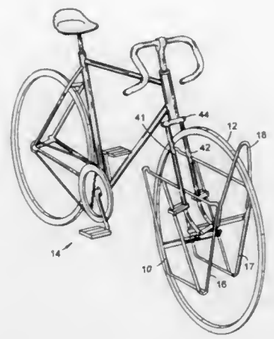
Int. Cl.[6] B62J *7/00;9/00;11/00*

U.S. Cl. 224—430 **9 Claims**

1. A bicycle rack for supporting panniers, comprising:

first and second laterally spaced apart frames connected to each other by a substantially U-shaped yoke;

each of the frames including a clamp configured to grip a bifurcation of a steering fork of a bicycle;



each frame further including a transverse member having a flange, an upper edge of the flange defining at least one notch for engaging an axle of the front wheel of the bicycle.

5,667,119

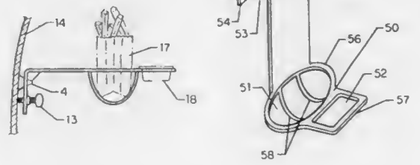
PACKAGED FAST FOOD AND CONDIMENT HOLDING APPARATUS

Patricia J. Florence, 7661 Dyke Rd., Fairhaven, Mich. 48023

Continuation-in-part of Ser. No. 182,436, Jan. 18, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,979

Int. Cl.[6] B60N *3/10*

U.S. Cl. 224—482 **7 Claims**



1. A portable storage container for use in an automotive vehicle to temporarily store packaged fast food and associated condiments in an upright position, said portable storage container comprising:

a rigid planar body having one end defining a contoured opening therein for receiving said packaged fast food, a frame portion surrounding said contoured opening and an extended portion defining an opposite end of said rigid planar body;

a rectangular hole located in said extended portion of said rigid planar body, said rectangular hole spaced adjacent to said contoured opening for receiving said condiments for said fast food;

at least one support strap having one end attached to said frame portion surrounding said contoured opening of said rigid planar body and an opposite end attached to said frame portion at a diametrically opposed location of said frame portion surrounding said contoured opening of said rigid planar body such that said at least one support strap spans across said contoured opening to support said packaged fast food; and

means for mounting said rigid planar body in said automotive vehicle.

5,667,120

DEVICE FOR THE VARIABLE DIVISION OF A MOTOR VEHICLE BOOT AND FOR SECURING THE LOADED CARGO

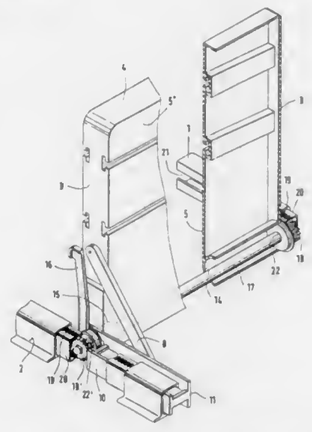
Torsten Bleck, Waldachtal; Manfred Haage, Dornstetten; Herbert Erath, Waldachtal, and Bernd Plocher, Rottenburg-Seebronn, all of Germany, assignors to fischerwerke,Artur Fisch GmbH & CO KG, Waldachtal, Germany

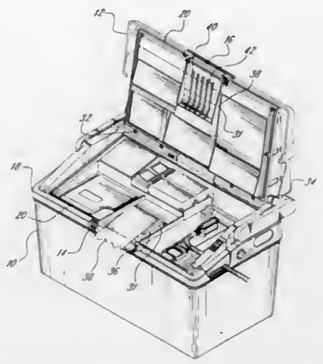
Filed May 15, 1996, Ser. No. 648,409

Claims priority, application Germany, May 19, 1995, 195 18 432.7

Int. Cl.[6] B60R *7/00;9/00;11/00*

U.S. Cl. 224—542 **9 Claims**





1. A device for a variable division of a motor vehicle boot and for securing a loaded cargo, the device comprising two guide rails arrangeable at a distance apart on a boot floor; at least one supporting panel arranged between said guide rails and displaceable at right angles to said guide rails; rolling devices by which said at least one supporting panel is displaceable to said guide rails and which are arranged in both said guide rails and joined to one another; a sliding block which guides said rolling devices in one of said guide rails, said support panel being rotatably mounted on said sliding guide block and being pivotable from a horizontal position lying on the boot floor into a supportable upright position.

5,667,121

ENVIRONMENTALLY INSENSITIVE PAPER GUIDE FOR STRIP CHART RECORDERS

Douglas J. Hill, Renton, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Continuation of Ser. No. 219,389, Mar. 29, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 626,644

Int. Cl.[6] B26F *3/02*

U.S. Cl. 225—43 **13 Claims**

6. A portable electronic device comprising:

a device body and a cover incorporating a paper guide for guiding a strip of strip-chart paper from an outlet of a printer in which the printer expels paper in a first direction, the guide directing the strip of strip-chart paper to an output aperture that is spaced apart from the printer outlet in a second direction that is substantially different from the first direction, the paper guide comprising an elongated upper guide that is longer than it is wide having a downwardly facing guide surface, and an elongated lower guide that is longer than it is wide having an upwardly facing guide surface, the downwardly facing guide surface generally conforming to, but being spaced apart from, the upwardly facing guide surface to form a passage therebetween, the passage having an outlet end positioned adjacent the output aperture and an inlet end positioned adjacent the printer outlet, the guide surfaces curving through an angle substantially conforming to the angle between the first and second directions so that the inlet end of the passage faces the printer outlet and an outlet end of the passage faces the output aperture, the strip-chart paper being conveyed from the printer outlet to the output aperture solely by the force of the printer pushing the strip-chart paper from the printer outlet; and

a latch mechanism rotatably mounted along one edge of the cover above the output aperture, the latch mechanism maintaining the cover in a closed position when the latch mechanism is rotated to a closed position, the latch mechanism including a cutting edge positioned above the output aperture for cutting the paper strip after it has been expelled from the output aperture.

5,667,122

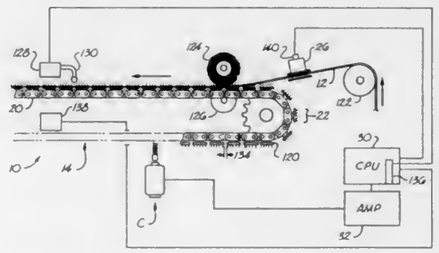
APPARATUS AND METHOD FOR CONTROLLING MOVING MATERIAL AND THE LIKE

William O. Young, Jr.; Michael R. Bell, and George Lark, all of Spartanburg, S.C., assignors to Young Engineering, Inc., Spartanburg, S.C.

Filed Oct. 16, 1995, Ser. No. 551,876

Int. Cl.[6] B65H *43/08;* **B23Q** *15/00;* **D06C** *3/02*

U.S. Cl. 226—20 **34 Claims**



1. A method for maintaining an edge of a moving web at a desired operating path, comprising the steps of:

securing said web by a frame member of a web handling apparatus at a position inward from said web edge;

monitoring, upstream from a longitudinal position with respect to said frame member at which said web is secured by said frame member, the transverse position of said web;

adjusting, responsively to said upstream monitoring, the relative transverse position of said frame member and said web edge;

monitoring, downstream from said longitudinal position, said inward position at which said web is secured by said frame member; and

automatically modifying said adjusting of said relative transverse position of said frame member and said web edge so that said frame member secures said web at a desired position proximate said web edge.

31. A web handling apparatus configured to carry a moving web of indeterminate length through a path of travel, said apparatus comprising:

a frame member configured to secure a web at a position inward from a longitudinal edge of said web and including spaced apart elements proximate a desired position of said web edge;

a detection device in operative association with said frame member and configured to sense for one of said spaced apart elements and gaps between said spaced apart elements from a detection position situated so that the transverse position of said edge with respect to said desired edge position at least in part determines whether said detection device senses said one of said spaced apart elements and said gaps; and

a web adjustment assembly in operative association with said detection device and configured to initiate adjustment of the relative position of said web edge and said frame member responsively to said detection device to achieve said desired position of said web edge.

5,667,123

APPARATUS FOR CORRECTING ZIGZAG MOTION OF AN ELONGATED TRAVELING WEB

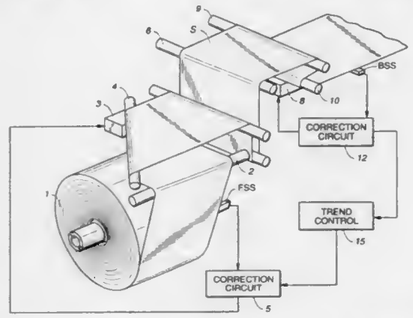
Masao Fukuda, Shiga, Japan, assignor to Ishida Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 155,971, Nov. 19, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,993

Claims priority, application Japan, Dec. 25, 1992, 4-359276

Int. Cl.[6] B65B *41/18;* **B65H** *23/32;43/08*

U.S. Cl. 226—21 **20 Claims**



1. An apparatus for correcting zigzag motion of an elongated web being transported longitudinally along a path, said apparatus comprising:

first correcting means, disposed on said path, for correcting lateral displacements of said web;

forward-signalling sensor means, disposed on said path on the upstream side of said first correcting means, for detecting and outputting signals indicative of lateral displacements of said web at said forward-signalling sensor means;

first control means for receiving signals from said forward-signalling sensor means and controlling operations of said first correcting means according to said signals received from said forward-signalling sensor means;

second correcting means, disposed on said path and on the downstream side of said first correcting means, for correcting lateral displacements of said web at said second correcting means;

backward-signalling sensor means, disposed on said path on the downstream side of said second correcting means, for detecting and outputting signals indicative of lateral displacements of said web at said backward-signalling sensor means;

second control means for receiving signals from said backward-signalling sensor means and controlling operations of said second correcting means according to said signals received from said backward-signalling sensor means; and

trend control means for receiving outputs from said backward-signalling sensor means through said second control means and controlling said first control means automatically without affecting preset parameters of said second control means by using said outputs in a preset algorithm.

5,667,124

V-SHAPED NOZZLES FOR GUIDING AND DRYING A WEB ON AN AIR CUSHION

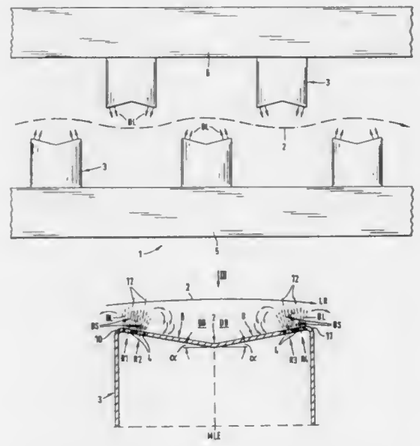
Udo Bannenberg, Bochum, Germany, assignor to Langbein & Engelbracht GmbH & Co. KG, Bochum, Germany

Filed Mar. 2, 1994, Ser. No. 206,094

Claims priority, application Germany, Mar. 3, 1993, 43 06 584.8

Int. Cl.[6] B65H *20/14;23/24*

U.S. Cl. 242—615.11 **6 Claims**



1. An arrangement for the levitated guidance of a material web traveling in a travel direction, the arrangement comprising a plurality of nozzle boxes arranged above and below the material web and at a distance between each other in travel direction of the material web, means for supplying blowing air to the nozzle boxes, each nozzle box having a nozzle plate facing the material web, each nozzle box having longitudinal edges extending transversely of the travel direction of the material web, the nozzle plate having two plane surface portions extending from the longitudinal edges and inclined relative to the horizontal to form a V-shape, two groups only of at least two rows of round blow nozzles for directing a blow jet against the material web, wherein both groups extend adjacent to and parallel with respective one of the longitudinal edges of each nozzle box, each nozzle box having a longitudinal vertical center plane, the round blow nozzles having axes extending perpendicularly to the plane surface portions, such that the direction of the blow jet is inclined relative to the vertical center plane of the nozzle box, wherein the round blow nozzles of one group of two rows adjacent each longitudinal edge are offset in longitudinal direction of the rows relative to the round blow nozzles of the other group of two rows, wherein each group of at least two rows of round blow nozzle includes a row located farthest away from the longitudinal edge, and wherein the row of round blow nozzles located farthest away from the longitudinal edge of the nozzle box is located closer to the longitudinal edge than to the vertical center plane of the nozzle box.

5,667,125

DEVICE FOR TRANSPORTING PRINTING MEDIA IN PRINTERS OR COPIERS

Rainer Köfferlein, and Joachim Hoffmann, both of München, Germany, assignors to Oce Printing Systems GmbH, Boing, Germany

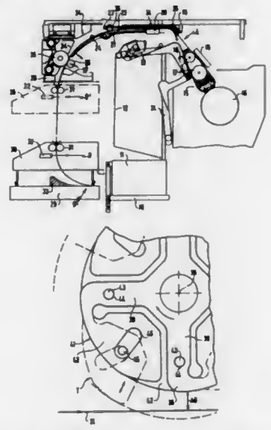
PCT No. PCT/DE94/00823, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/04308, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 18, 1994, Ser. No. 586,679

Claims priority, application Germany, Jul. 28, 1993, 43 25 357.1

Int. Cl.[6] B65H *20/00*

U.S. Cl. 226—191 **13 Claims**



8. A device for frictionally engaging and transporting printing media, the device comprising:

at least one transporting element which is unitarily formed from an elastic material, the transporting element being drivable to rotate on a fixed axis, wherein the transporting element includes a plurality of circumferential friction elements formed therein, each of the friction elements having a friction surface, the friction surfaces generally defining a circumference of the transporting element, each of the friction elements being deflectable radially outward from a rest position to an engaging position;

wherein rotation of the transporting element causes the friction elements to deflect to the engaging position for frictional driving engagement with a printing medium; and

wherein each of the friction elements is biased by the elastic material to move radially inward to the rest position when the transporting element is stationary.

5,667,126

TOOL FOR ACTUATING A PAIR OF FASTENER EJECTING GUNS

Robert V. Boucek, 9221-4 Olsmted Dr., Charlotte, N.C. 28262

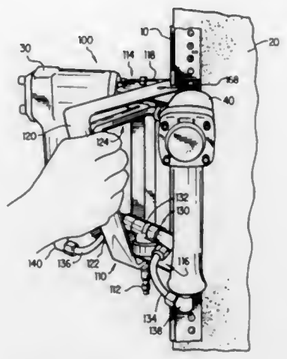
Filed Mar. 3, 1995, Ser. No. 398,493

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—109 **14 Claims**

1. A tool for actuating a pair of fastener ejecting guns substantially simultaneously, each of the pair of fastener ejecting guns having a longitudinal axis and an actuating member disposed adjacent one of a pair of opposing longitudinal ends thereof for triggering ejection of a fastener in a direction orthogonal to the longitudinal axis of the fastener ejecting gun to define a fastener ejection axis, comprising:

handle means coupled to each of the opposing longitudinal ends of each of the pair of fastener ejecting guns for supporting the pair of fastener ejecting guns with the longitudinal axis of



each of the pair of fastener ejecting guns and a longitudinal axis of said handle means being in substantially parallel relation and the fastener ejection axis of each of the pair of fastener ejecting guns being in a predetermined angular relationship, one with respect to the other, said handle means including (1) front support means for coupling to the pair of fastener ejecting guns, said front support means including a first support member having a bottom surface portion with a first notch formed therein, said first notch being defined by a first pair of inclined wall surfaces formed in said first support member, said first notch being bordered on opposing sides thereof by a pair of mounting portions for coupling to one of said opposing longitudinal ends of the pair of fastener ejecting guns, (2) rear support means coupled to the pair of fastener ejecting guns, said rear support means including a second support member, said second support member having a bottom surface portion with a second notch formed therein, said second notch being defined by a second pair of inclined wall surfaces formed in said second support member, said second support member being disposed in spaced parallel relation with respect to said first support member, said second support member being coupled to the other of said opposing longitudinal ends of the pair of fastener ejecting guns, said first and second notches together defining a guide for alignment of the pair of fastener ejecting guns with a workpiece, said rear support means further including air distribution means coupled in fluid communication with a respective air inlet port of each of said pair of fastener ejecting guns for delivering air thereto, and (3) a handle member extending between said first and second support members and having a longitudinal axis coincident with said longitudinal axis of said handle means; and,

trigger actuating means pivotally coupled and rotatably displaceable with respect to said handle means for substantially simultaneous displacement of said actuating member of each of said pair of fastener ejecting guns responsive to said rotative displacement of said trigger actuating means.

5,667,127

ADJUSTMENT MECHANISM FOR ADJUSTING DEPTH AT WHICH PNEUMATIC NAILING MACHINE DRIVES NAILS INTO WORKPIECE

Kaoru Ichikawa; Kunio Yamamoto, and Yoshitaka Akiba, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,466

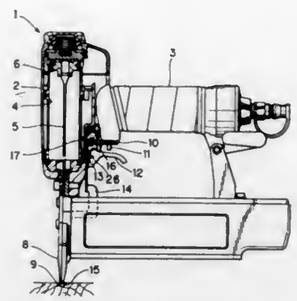
Claims priority, application Japan, Apr. 15, 1994, 6-077284

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—142 **10 Claims**

1. A pneumatic nailing machine for driving a nail into a workpiece, the pneumatic nailing machine including:

a main body;



a handle extending from the main body;

a nose provided to the main body, the nail being protrudable from the nose;

a trigger pivotally supported to the main body and positioned close to the handle for starting a nail driving operation;

a push lever vertically movably supported to the main body, the push lever having a lower tip portion positioned near the nose and an upper tip portion positioned near the trigger;

a driving rod supported in the main body and movable in an axial direction thereof, the driving rod being moved along the nose upon manipulation of the trigger;

a nail driving depth controlling mechanism for controlling a distance between a lower tip end of the nose and a lower tip end of the push lever when the push lever is pressed against the workpiece; and the improvement comprising;

the nail driving depth controlling mechanism having an adjustment means for defining an uppermost limit of movement of the push lever, the adjustment means being positioned near the handle and being positioned on an opposite side of the trigger from a side on which the lower tip end of the nose is located.

5,667,128

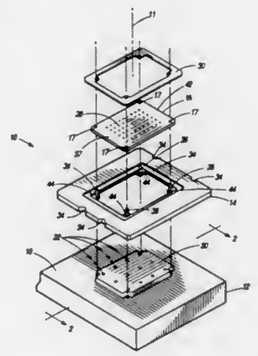
WORKSTATION FOR PROCESSING A FLEXIBLE MEMBRANE

Terry L. Rohde, Delray Beach, and Kenneth D. Kurtz, West Palm Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1995, Ser. No. 537,953

Int. Cl.[6] H01L *21/68*

U.S. Cl. 228—49.5 **10 Claims**



1. A workstation for processing a flexible membrane, comprising:

a frame for transporting a flexible membrane to and from the workstation, said frame comprising a lower face and defining an opening adapted to receive the flexible membrane and support the flexible membrane in a plane perpendicular to an axis and axially spaced apart from the lower face by a first distance; and

a platform for supporting and heating the flexible membrane during processing, said platform comprising a membrane-support surface and a frame-support surface about the membrane-support surface, the frame-support surface being axially spaced apart from the membrane-support surface by a second distance greater than the first distance, said platform further comprising vacuum means in communication with the membrane-support surface for urging a flexible membrane against the membrane-support surface and heating means for heating said platform to thereby heat a flexible membrane resting on the membrane-support surface and to Concurrently heat a frame resting on the frame-support surface.

5,667,129

IC COMPONENT MOUNTING METHOD AND APPARATUS

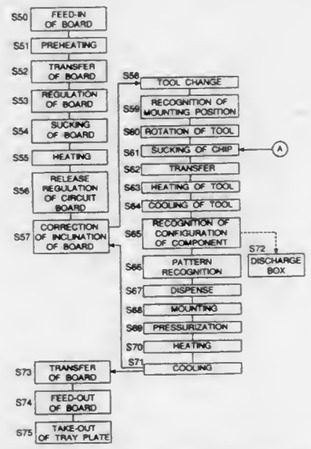
Koichi Morita, Osaka; Yoshihiko Misawa, Katano; Keiji Saeki, Kobe; Akira Kabeshita, Hirakata, and Nobuhisa Watanabe, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 1, 1995, Ser. No. 432,579

Claims priority, application Japan, May 6, 1994, 6-094556

Int. Cl.[6] H01L *21/58*

U.S. Cl. 228—102 **16 Claims**



1. An IC component mounting method comprising:

recognizing, at a supply position, an image of one of different types of IC components in order to detect a sucking position at which a sucking nozzle will not interfere with electrodes provided on a face of said IC component which is to be bonded to a circuit board;

detecting a height of said sucking position;

positioning said sucking nozzle at said sucking position while the position of said sucking nozzle in a vertical direction is controlled;

sucking said IC component with said sucking nozzle at said supply position;

transferring and discharging said IC component at a transfer position;

sucking said IC component by a mounting head;

recognizing a position of said IC component sucked by said mounting head, and recognizing a reference position of said circuit board or an IC component-mounting position thereof;

positioning said IC component at said IC component mounting position of said circuit board; and

mounting said IC component on said circuit board.

5,667,130

ULTRASONIC WIRE BONDING APPARATUS AND METHOD

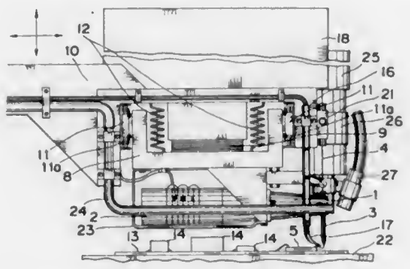
Makoto Morita, Neyagawa; Masaru Nagaike, Hirakata; Richard Gueler, Osaka; Makoto Imanishi, Hirakata, and Takahiro Yonezawa, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

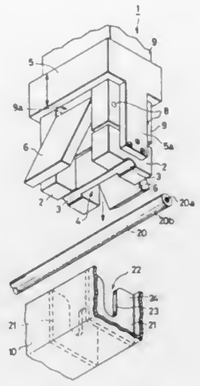
Filed Feb. 2, 1995, Ser. No. 382,527

Claims priority, application Japan, Feb. 3, 1994, 6-011541

Int. Cl.[6] B23K *20/10*

U.S. Cl. 228—110.1 **17 Claims**





1. An ultrasonic wire bonding apparatus comprising:

a bonding head;

a horn support unit;

at least one slide shaft mounted on said bonding head;

at least one linear slider coupled to said horn support unit and slidably engaged with said at least one slide shaft;

at least one spring having a first end connected to said bonding unit and a second end connected to said horn support unit;

a horn for applying ultrasonic vibrations, said horn being connected to said horn support unit and having a front end, wherein said horn has a length corresponding to ½ to 1 wavelength of a vibration wave propagating through horn material at a primary natural frequency along an axial direction of said horn;

a capillary for holding a wire, said capillary being supported at said front end of said horn for transmitting ultrasonic vibrations from said horn to a wire held by said capillary; and

an electrically driven linear actuator, mounted between said bonding head and said horn support unit, for moving said horn support unit.

5,667,131

METHOD AND APPARATUS FOR PRESSURE-WELDING AN ELECTRIC WIRE TO A PRESSURE TERMINAL

Osamu Sugiyama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 421,903, Apr. 14, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 669,822

Claims priority, application Japan, Apr. 14, 1994, 6-076054

Int. Cl.[6] H01R *43/00;43/02*

U.S. Cl. 228—173.5 **14 Claims**

1. A method of pressure-welding an electric wire including a conductor circumscribed by an insulation to a pressure terminal including a bottom wall, pair of side walls and a pressure cutter having a wire cutting slot defined by opposing cutting edges, said method comprising the following steps:

positioning the wire between a pressure-welding apparatus and the pressure terminal;

squeezing the wire with the pressure welding apparatus so as to reduce the lateral dimension thereof; and

forcing the wire with the pressure-welding apparatus into the cutting slot such that said cutting edges cut the insulation of the wire and electrically contact the conductor thereof.

5,667,132

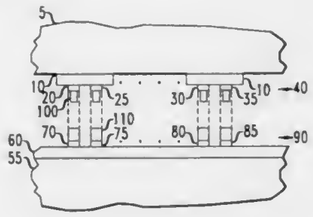
METHOD FOR SOLDER-BONDING CONTACT PAD ARRAYS

Leo Maria Freishyn Chirovsky, Bridgewater; Lucian Arthur D'Asaro, Madison; Donald William Dahringer, Glen Ridge; Sanghee Park Hui, New Providence, and Betty Jyue Tseng, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 19, 1996, Ser. No. 633,992

Int. Cl.[6] H05K *3/32*

U.S. Cl. 228—180.22 **15 Claims**



1. A method for solder bonding first and second arrays of contact pads to one another comprising the steps of:

providing contact structures on contact pads of said first array;

forming solder bumps on corresponding contact pads of said second array; and

bonding said contact structures to said solder bumps, said bonding step achieving a temperature and pressure where the respective solder bumps deform and envelop at least a portion of the respective contact structures, said temperature being below the melting point of the contact structures, wherein each contact structure portion has an average cross-sectional area in a plane parallel to said first array that is less than a corresponding average cross-sectional area of the respective solder bump such that the increase in the solder bump average cross-sectional area resulting from the formed contact structure-solder bump bond is less than 50% of the distance between adjacent bonds.

5,667,133

METHOD AND APPARATUS FOR FORMING AN OXIDE PASSIVATION FILM ON A WELD

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku Sendai-shi Miyagi-ken 980, and Masakazu Nakamura, Saitama-ken, both of Japan, assignors to Tadahiro Ohmi, and Osaka Sanso Kogyo Ltd., both of Japan

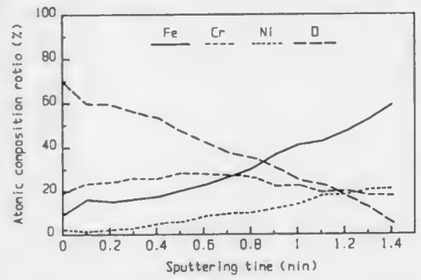
PCT No. PCT/JP93/00720, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24267, PCT Pub. Date Dec. 9, 1993

PCT Filed May 28, 1993, Ser. No. 343,429

Claims priority, application Japan, May 29, 1992, 4-164376; Nov. 13, 1992, 4-304142

Int. Cl.[6] B23K *9/16*

U.S. Cl. 228—219 **6 Claims**



1. A welding method for forming an oxide passivation film on a weld, comprising the step of:

flowing a back-shielding gas made of an inert gas containing 1 ppb to 50 ppm of oxygen gas through the welding process to form an oxide passivation film containing chromium oxide as the main component on the surface of said weld.

5,667,134

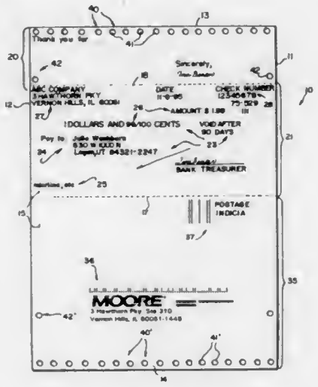
VARIABLY DUPLEX-IMAGED AND SEALED DOUBLE POSTCARD CHECK

James L. Olson, Chanhassen, Minn., and Elaine C. Ropson, Libertyville, Ill., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Aug. 16, 1996, Ser. No. 699,015

Int. Cl.[6] B65D *27/00*

U.S. Cl. 229—928 **21 Claims**



1. A mailer intermediate foldable into postcard size, comprising:

a quadrate sheet of cellulose based stock having first and second side edges, first and second end edges, and first and second faces;

a first line of weakness extending substantially transverse to said side edges and substantially bisecting them;

a second line of weakness extending substantially transverse to said side edges and between said first line of weakness and said first end edge, said second line of weakness closer to said first end edge than to said first line of weakness, and dividing said sheet into an outgoing address portion between said first end edge and said second line of weakness, and a negotiable instrument portion between said first and second lines of weakness;

said quadrate sheet dimensioned so that when folded about said first line of weakness to form a mailer, the mailer has postcard size dimensions; and

negotiable instrument indicia, including payee indicia, imaged on said first face negotiable instrument portion.

5,667,135

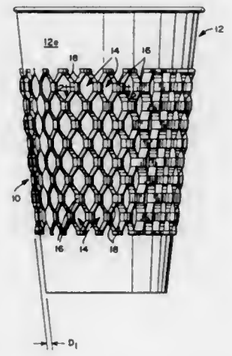
THERMAL INSULATING SLEEVE FOR DRINK CUPS

Robert J. Schaefer, Baltimore, Md., assignor to Sweetheart Cup Company, Inc., Owing Mills, Md.

Filed Apr. 17, 1996, Ser. No. 633,946

Int. Cl.[6] B65D *3/22;5/62*

U.S. Cl. 229—403 **5 Claims**



1. A beverage cup comprising:

a generally frustro-conically shaped side wall, and

a paper sleeve in surrounding contact with a circumferential portion of said side wall,

said sleeve being a honeycomb structure which includes a plurality of openings established by respective substantially planar side sections and interconnecting planar bridge sections, wherein;

said side sections are oriented in generally vertical planes which angularly intercept a tangent plane to the beverage cup side wall and define an inner edge which bears against the beverage cup side wall, and an outer edge which is radially spaced from the beverage cup side wall, and wherein;

said bridge sections respectively connect said side sections to one another and are oriented in a skewed relationship between vertical and horizontal.

5,667,136

OBJECT COLLECTOR

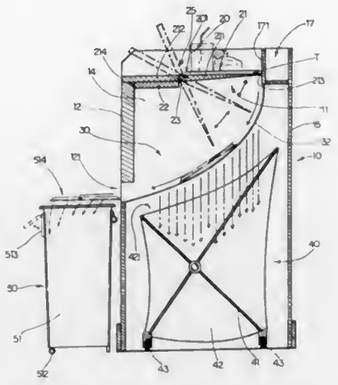
Walter Chen, Annadale, Va., assignor to Shirley Chen, Vienna, Va., and Therese Chen, Paris, France

Filed Oct. 10, 1995, Ser. No. 541,465

Int. Cl.[6] B65D *91/00*

U.S. Cl. 232—43.2 **13 Claims**

1. An object collector for collecting objects in a plurality of containers, comprising



a tank body having a top inlet opening, a front side wall, a back side wall, a right side wall, a left side wall, and a door installed to one of said side walls;

an inlet device, which comprises a swinging plate made of light material and a mounting device for pivotally mounting said swinging plate horizontally above said top inlet opening at an upper portion of said tank body, so that once a downward pushing force is applied to said swinging plate, said swinging plate is swung downwardly to open said inlet opening of said tank body, in which said swinging plate is composed of an entrance portion and a weight portion, said mounting device including two pivot pins protruding on a right and a left side of said swinging plate respectively and at an intersection position of said entrance portion and said weight portion, so that said swinging plate is installed to the top portion of said tank body by rotatably connecting said two pivot pins with two receiving sockets provided at two corresponding positions on said two opposing side walls respectively, so as to enable said swinging plate rotating about an axis between said two pivot pins, wherein said entrance portion has a length and a width at least equal to a length and a width of the containers, and an average thickness thinner than said weight portion, so that the weight of said entrance portion is equal to the weight of said weight portion;

a guiding device, which comprises at least two guide rails installed within said tank body without obstructing the swinging path of said swinging plate, wherein said two guide rails are downwardly extended from an upper portion of one side of said tank body toward a lower portion of the opposing side of said tank body below said swinging plate, and that the distance between said two guide rails is narrower than the width of the containers, two upper ends of said two guide rails being mounted beyond and adjacent to a down swinging edge of said swinging plate and two lower ends of said two guide rails being extended and mounted under another opposing edge of said swinging plate with a predetermined vertical distance; whereby, the container and the objects thereon, which are sliding down from said swinging plate due to gravity, may fall down to said guiding device gradually while said swinging plate is swinging down due to the weight of the container and the objects, in which said two guide rails of said guiding device guide the falling of the container to slide toward the lower ends thereof, and that when the container and the objects thereon leave said swinging plate, said swinging plate may swing up back to a normal horizontal position thereof and push the failing container to toss over, so that the objects within the container throw down by means of the gravity;

a receiving device, which is positioned under said guiding device in said tank body for receiving all the objects fallen down from the container; and

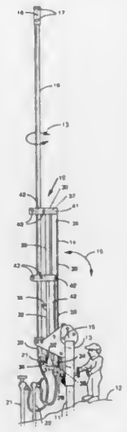
a collecting device, which is placed in a predetermined position adjacent to the lower ends of said two guide rails for receiving and collecting the containers fallen from said guiding device.

5,667,137

ICE AND SNOW-FREE SNOW MAKING TOWER STRUCTURE

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Filed Aug. 31, 1995, Ser. No. 521,946
Int. Cl.[6] F25C *3/04*
U.S. Cl. 239—14.2 **13 Claims**



1. A snow making tower structure free from ice and snow buildup comprising: a substantially vertical support pole having a bottom end anchored in a ground surface, a support arm connected to said pole, snow making nozzle means secured to and supported from said support arm for elevating said nozzle means above ground, air and water supply conduit means adapted for conveying water and air under pressure to said nozzle means for discharge into ambient atmosphere through said nozzle means for manufacturing snow in subfreezing conditions, the improvement including said support arm comprised of heat conducting tubing adapted for connection to a remote water supply and connected to said water supply conduit means for conveying water under pressure to said nozzle means such that the water under pressure from said remote source travels first through said support arm tubing for warming said support arm to prevent ice and snow buildup thereon prior to said water being conveyed to said nozzle means through said conduit means, said support arm pivotally connected to said pole adjacent the upper end thereof for pivotal movement substantially from horizontal to vertical for elevating said nozzle means, said support arm tubing configured in the form of an elongated inverted U having two legs with top and bottom ends and an upper cross conduit connection between said legs at the upper ends, the bottom end of one leg adapted for connection to said remote water source and a water outlet on the other of said legs for supplying water to said conduit means.

5,667,138

HAND HELD SPRAY DISPENSER SYSTEM

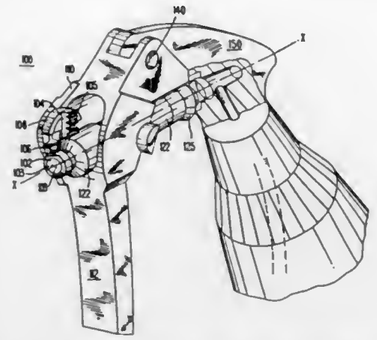
David C. Crampton, Westminster, Calif., assignor to Par-Way Group, St. Clair, Mo.

Continuation-in-part of Ser. No. 243,366, May 16, 1994, Pat. No. 5,492,275. This application May 12, 1995, Ser. No. 440,324
Int. Cl.[6] B05B *3/02;9/043*
U.S. Cl. 239—225.1 **38 Claims**

1. A spray dispenser wherein fluid is brought from a reservoir to the outlet of a delivery passageway comprising:

a nozzle having a nozzle inlet, nozzle outlet means and a nozzle center;

said nozzle inlet in fluid communication with said outlet of said delivery passageway;



said nozzle rotatably mounted to said spray dispenser for rotation of said nozzle from 90° to 360° about an axis X of rotation through the nozzle center;

a fluid dispensing actuator for selectively dispensing fluid to the atmosphere;

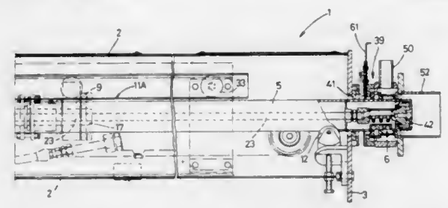
nozzle rotation means to rotate said nozzle simultaneously with the dispensing of the fluid to the atmosphere.

5,667,139

CLEANING APPARATUS FOR HEAT EXCHANGE SURFACES AND AN IMPROVED NOZZLE DEVICE THEREFOR

Douglas Grant Dickie, Glasgow, Great Britain, assignor to Clyde Forest Limited, Glasgow, Great Britain

PCT No. PCT/GB93/02322, § 371 Date Jun. 23, 1995, § 102(e) Date Jun. 23, 1995, PCT Pub. No. WO94/11694, PCT Pub. Date May 26, 1994
PCT Filed Nov. 11, 1993, Ser. No. 436,337
Claims priority, application United Kingdom, Nov. 12, 1992, 9223679
Int. Cl.[6] B05B *3/00*
U.S. Cl. 239—263.3 **23 Claims**



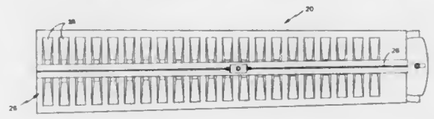
1. Cleaning apparatus for cleaning heat transfer surfaces in a heat exchanger and capable of handling several cleaning mediums of different characteristics, said cleaning apparatus comprising outlet means incorporating nozzle means for discharging cleaning mediums onto said heat transfer surfaces, conduit means for delivering cleaning mediums to said outlet means and inlet means for supplying cleaning mediums to the conduit means, said nozzle comprising two sets of discharge nozzles each of which sets is associated with a respective cleaning medium, a first one of said nozzle sets having nozzles for the discharge of relatively higher pressure medium, while the second nozzle set has nozzles of relatively larger throat diameter serving for the discharge of relatively lower pressure medium, said first and second nozzle sets being adapted for fluid communication with separate respective first and second conduit means, whereby each nozzle set receives its respective cleaning medium, said first conduit means being adapted to deliver high pressure water substantially without leakage, wherein said second nozzle set for the lower pressure medium is located downstream of said first nozzle set for the higher pressure medium, and wherein the nozzles of said second set are arranged coaxially with nozzles of said first set whereby cleaning medium discharge from the first nozzle set passes through the throats of the nozzles of the second nozzle set so enabling cleaning medium discharged selectively from both the nozzle sets to pass from the outlet means without substantial obstruction.

5,667,140

ENGINE EXHAUST NOZZLE SEAL

Steven B. Johnson; Curtis W. Berger, both of Stuart; Miguel A. Garrido, West Palm Beach, and William G. Hoop, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 2, 1994, Ser. No. 349,116
Int. Cl.[6] B64C *15/02*
U.S. Cl. 239—265.33 **8 Claims**



1. A seal for a gas turbine engine exhaust nozzle, comprising:

a body, having a length and a width, and a plurality of corrugations formed in said body extending across said width, and a first and a second channel, each channel having walls extending lengthwise along said body, wherein one of said channels is positioned on one side of said width, and the other said channel is positioned on the other side of said width;

a spine member, attached to one side of said body, extending along the length of said body; and

a plurality of face segments, each attached to said body on the side of said body opposite said side to which said spine member is attached, each said face segment having:

a first and a second end, each end having a thickness;

a midsection, having an inner and an outer surface, and a first edge and a second edge, said edges parallel with each other and substantially perpendicular with said ends;

a first flange, attached to said first edge of said midsection;

a second flange, attached to said second edge of said midsection, wherein said first and second flanges comprise mating geometries such that when face segments are positioned adjacent each other, said first flange of one face segment couples with said second flange of the adjacent face segment, said flanges separated by a predetermined gap along their geometries;

wherein said mating geometries of said first and second flanges substantially prevent gases passing along said outer surface of said face segments from passing between said face segments, and allow thermal growth of adjacent face segments;

wherein said ends of said face segments are freely received within said first and second channels such that said ends may translate within said channels.

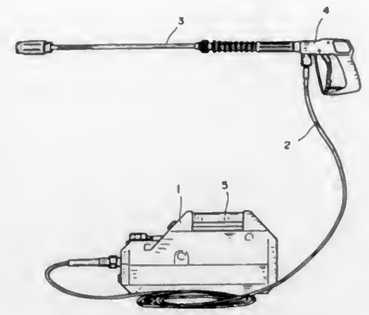
5,667,141

HIGH PRESSURE CLEANING MEANS

Wolfgang Suttner, Bielefeld, Germany, assignor to Elektra Beckum AG, Germany

Filed May 3, 1995, Ser. No. 433,556
Claims priority, application Germany, May 3, 1994, 44 15 573.5; Aug. 19, 1994, 44 30 591.5
Int. Cl.[6] B05B *9/04*
U.S. Cl. 239—332 **14 Claims**

1. High pressure cleaning means with a housing having a high pressure pump and having an electric motor drive means for the high pressure pump, said electric motor drive means comprising an electric drive motor having a drive shaft connected to the high pressure pump; wherein the drive means has at least a second



electric drive motor; and wherein all of the electric drive motors of the drive means are coupled to one another in a manner driving the high pressure pump jointly; further comprising a starting control for the electric motors, said starting control having time delay means for starting the electric motors in succession when the high pressure cleaning means is turned on.

5,667,142

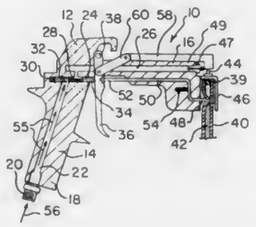
SPRAY GUN WITH REMOVABLE SUPPLY LINE

Ralph R. Newman, Englewood, Colo., assignor to Newstripe, Inc., Aurora, Colo.

Filed May 30, 1995, Ser. No. 453,872

Int. Cl.[6] B05B *7/32;1/30*

U.S. Cl. 239—346 **18 Claims**



1. A pneumatically operated, easily cleaned spray device for spraying fluid materials, said spray device being connected to a pressurized gas source and being connected to a source of material to be sprayed, said spray device including a housing having a gas inlet port for receiving pressurized gas and a coupled gas outlet port for passing the pressurized gas externally outwardly from said housing, and actuating means operatively attached to the device housing, wherein the improvement includes, in combination:

fluid outlet means carried by said device and locked external to said housing and downstream from said gas outlet port in a manner such that pressurized gas passing outwardly from said gas outlet port intersects with any fluid which is released from said external fluid outlet means to produce an external spray; and

means carried by said device, and external to said housing, for removably receiving and connecting a removable fluid supply line which is to be connected to an external supply of fluid to said fluid outlet means, said actuating means setting to selectively open and close such a fluid supply line.

5,667,143

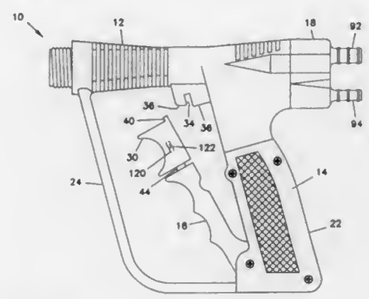
SPRAY GUN FOR SPRAYING TWO FLUIDS

Timothy L. Sebion, Lakeville; Frederick A. Powers, Maple Grove, and Calvin H. Pasvogel, Prior Lake, all of Minn., assignors to Wanner Engineering, Inc., Minneapolis, Minn.

Filed Jan. 17, 1995, Ser. No. 373,640

Int. Cl.[6] B05B *7/04*

U.S. Cl. 239—415 **14 Claims**



1. A spray gun, comprising:

valve means for controlling flow of two fluids;

valve actuation means for actuating the valve means between a first position without flow, a second position wherein a first fluid flows through the gun, a third position wherein a second fluid flows with the first fluid, and a fourth position wherein the valve means is locked with the first fluid flowing through the gun, wherein the valve actuation means comprises a lever pivoting at a lower end thereof and comprising a lock for locking the lever in the fourth position, wherein the lever includes a sliding end member having a tab extending therefrom and the lock includes a catch having an angled portion guiding the tab, wherein the catch engages and retains the tab when the lever is in the fourth position, and wherein the lock includes a ledge engaging the tab when the lever is in the second position, and wherein the tab clears the ledge when the lever is in the third position; and,

biasing means for biasing the lever toward the first position.

5,667,144

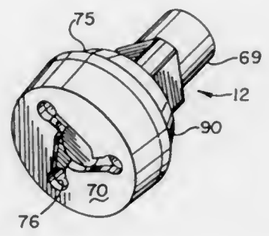
PAINT GUN WITH CO-MOLDED SWIRL VALVE

Mark E. Snetting, Eden Prairie, Minn., assignor to Wagner Sprqy Tech Corporation, Minneapolis, Minn.

Filed Apr. 27, 1995, Ser. No. 429,925

Int. Cl.[6] B05B *1/34*

U.S. Cl. 239—491 **12 Claims**



1. A swirl valve for mounting within a seat of a spray paint gun pump housing, comprising:

a valve body having a discharge side and an inlet side, and formed of a material characterized by a first hardness value;

one or more paint swirl apertures extending through the valve body between the discharge and inlet sides;

a beveled seat-engaging surface on the inlet side of the valve body; and

elastomeric material on the beveled surface of the valve body, the elastomeric material characterized by a second hardness value which is less than the first hardness value.

5,667,145

INJECTION NOZZLE

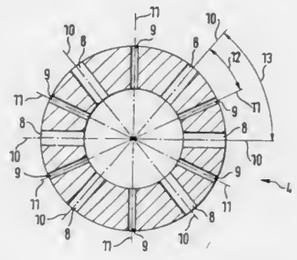
Ralph-Michael Schmidt, Langenargen; Christoph Teetz, and Martin Rauscher, both of Friedrichshafen, all of Germany, assignors to MTU-Motoren-Und Turbinen-Union, Friedrichshafen, Germany

Filed Dec. 22, 1994, Ser. No. 361,501

Claims priority, application Germany, Dec. 23, 1993, 43 44 026.6

Int. Cl.[6] F02M *61/18;61/14*

U.S. Cl. 239—533.12 **13 Claims**



1. Injection nozzle for diesel engines with a directional injection into combustion air in a combustion space displaced with a swirl, which injection nozzle is constructed as a hole-type nozzle with several groups of injection openings arranged at uniform distances and distributed along a circumferential arc of the nozzle, wherein between respective first size injection openings, another second smaller size injection opening is constructed, the mouths of all injection openings being situated on the common circumferential arc, said first and second size injection openings defining respective separate fuel injection flows into the combustion space.

5,667,146

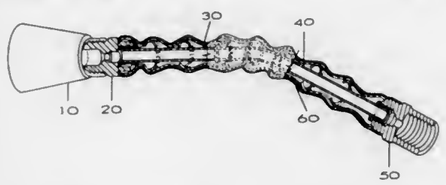
HIGH-PRESSURE, FLEXIBLE, SELF-SUPPORTIVE, PIPING ASSEMBLY FOR USE WITH A DIFFUSER/NOZZLE

Ralph Pimentel, P.O. Box 4172, Topeka, Kans. 66604, and Jerry Jones, 5423 SE. 2nd St., Tecumseh, Kans. 66542

Filed Feb. 28, 1996, Ser. No. 608,405

Int. Cl.[6] B05B *15/08*

U.S. Cl. 239—587.1 **1 Claim**



1. A high-pressure, flexible, self-supportive, piping assembly for use with a diffuser/nozzle comprising:

a diffuser/nozzle having a internally threaded end portion communicated to;

a first end connector having an exterior and interior surface and first and second end portions said first end portion having an annular externally threaded passage forming said interior surface, said passage is communicated axially through said first end connector to said second end portion, said exterior surface defining a socket engaging surface at said second end portion; a plurality of ball and socket elements having first and second end portions and a longitudinal axis extending in the direction from the first end to the second end portion, a body defining a passageway therethrough between the first and second end portion of said plurality of ball and socket elements the body including a socket engaging surface at the first end portion thereof, the body also including an internal socket receiving cavity at the second end portion thereof,

a second end connector having an exterior and interior surface and first and second end portions, said first end portion of second end connector having a annular internally threaded passage forming said interior surface, said passage is communicated axially through said second end connector to said second end portion thereof, said exterior surface of second end connector is defined by a socket engaging surface at said second end portion thereof, and a hexagonal body adapted for receiving a wrench during installation;

a hose disposed within said passageway and functionally communicated to said first end connector and said second end connector;

a sleeve is disposed around said plurality of ball and socket elements whereby said sleeve provides additional rigidity and support to the high-pressure, flexible, self-supportive, piping assembly.

5,667,147

PROCESS AND DEVICE FOR GRANULATING AND CRUSHING MOLTEN MATERIALS AND GRINDING STOCKS

Alfred Edlinger, Baden, Switzerland, assignor to Holderbank Financiere Glarus AG, Glarus, Switzerland

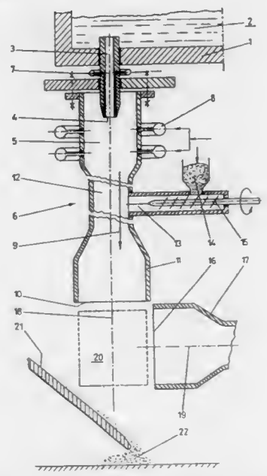
PCT No. PCT/AT94/00185, § 371 Date Aug. 31, 1995, § 102(e) Date Aug. 31, 1995, PCT Pub. No. WO95/15402, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 1, 1994, Ser. No. 495,650

Claims priority, application Austria, Dec. 3, 1993, 2458/93

Int. Cl.[6] C21B *3/08*

U.S. Cl. 241—1 **20 Claims**



1. A method for granulating and disintegrating a molten melt of slag and grinding material, comprising the steps of:

introducing the melt into a mixing chamber under pressure;

injecting into said mixing chamber a cooling and mixing agent comprising at least one of compressed air, compressed water

and a compressed air/water mixture to cool the melt and form a vapor and solidified particles;

passing the vapor and solidified particles from the mixing chamber through a diffuser to form a first discharge jet of vapor and particles; and

directing the jet discharged from the diffuser to means for disintegrating the particles, said disintegrating means being selected from a group including: (a) an additional diffuser discharging a further jet of vapor and particles in a path which intersects said first discharge jet whereby particles in the respective jets collide and disintegrate; and (b) a baffle plate positioned to be impinged by particles carried by at least said first jet.

5,667,148

APPARATUS AND METHOD FOR PEELING AND REMOVING A COATED FILMS ON RESIN PRODUCT

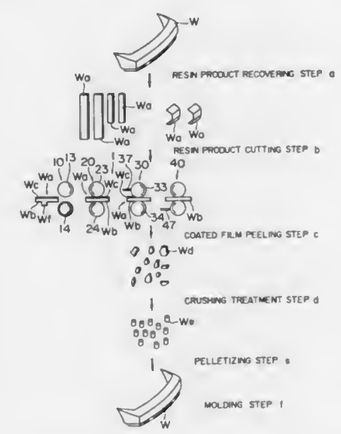
Hiroshi Yamamoto, Oota, and Kenichi Arai, Kumagaya, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,219

Claims priority, application Japan, Apr. 12, 1995, 7-087208

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—3 **9 Claims**



9. A recycling method of a resin product coated with a film, comprising the steps of:

removing a protruding portion from said resin product by crushing thereof between a first pair of rollers;

flattening said resin product by moving said resin product through a first plurality of pairs of rollers rotated at first different speeds with respect to each other in order to flatten said resin product;

making a trapezoidal cross-sectional shape of said resin product by passing said resin product through a second pair of rollers;

transferring said resin product to a next step by moving said resin product through second plurality of pairs of rollers; and

separating a film from said resin product by giving a sheer stress therebetween through a third pair of rollers rotated at second different speeds with respect to each other.

5,667,149

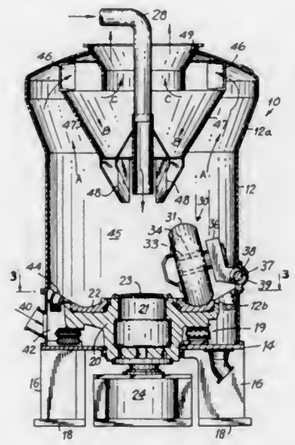
SOLIDS PULVERIZER MILL AND PROCESS UTILIZING INTERACTIVE AIR PORT NOZZLES

Frantisek L. Eisinger, Demarest, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jul. 3, 1995, Ser. No. 497,847

Int. Cl.[6] B02C *15/00*

U.S. Cl. 241—18 **17 Claims**



12. A process for pulverizing coarse particulate solid material in a pulverizer mill to produce fine sized solids, comprising the steps of:

(a) feeding a coarse solids material having a particle size of 0.25–2 inch downwardly onto a rotating table having a concave annular-shaped upper surface;

(b) passing compressed air upwardly through an annular ring having a plurality of nozzle passageways located concentrically around the rotating table, said passageways each having a central axis which is oriented upwardly at angle of 20°–90° relative to the table plane, so that the air stream exiting from adjacent nozzle passageways intersects and interacts strongly with an adjacent air stream at a point above the nozzle ring at an included angle of 20°–90°, so as to create flow turbulence sufficient to avoid acoustic resonance vibrations within the pulverizer mill; and

(c) withdrawing air and entrained fine sized pulverized solids material from the upper portion of the pulverizer mill.

5,667,150

PULVERIZING, FILTERING, AND TRANSPORTING APPARATUS

Stanley Dale Arasmith, P.O. Box 2458, Rome, Ga. 30164, and Jeffrey Scott Arasmith, 879 Texas Valley Rd., Rome, Ga. 30165

Filed Sep. 20, 1995, Ser. No. 532,512

Int. Cl.[6] B02C *7/12*

U.S. Cl. 241—18 **10 Claims**

1. An apparatus using air as a medium in the reducing, screening, and transporting of a material, said apparatus comprising:

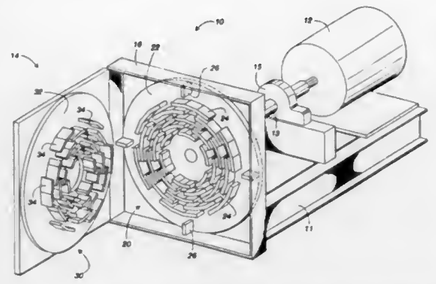
A) a frame;

B) a rotating disc assembly rotatably mounted about a first axis relative to said frame, said rotating disc assembly itself comprising:

1) a rotating disc having a first side;

2) a plurality of cutting elements mounted to said first side and grouped into at least one ring having spaces therebetween; and

3) a plurality of fan elements mounted on said first side and about the periphery of said rotating disc, said fan elements



having a radial dimension greater than their circumferential dimension and configured to blow air at least partially radially with respect to said first axis; and

C) a stationary cutting assembly fixed relative to said frame, said stationary cutting assembly itself comprising:

1) a support member having a first side; and

2) a plurality of cutting elements mounted to said first side of said stationary cutting member and grouped into at least one ring having spaces therebetween,

said rotating disc assembly and said stationary cutting assembly being movably mounted relative to each other such that the cutting elements of said rotating cutting disc assembly are in a concentric relationship with said cutting elements of said stationary cutting assembly in order to provide a reducing function along a material flow path transversing each of said cutting element rings and said fan elements provide said air blowing function to assist flow of the material along said material flow path by making it airborne at least somewhere along the path, and also provide said screening function.

5,667,151

PROCESS AND APPARATUS FOR COLLECTING WASTE PLASTICS AS SEPARATED

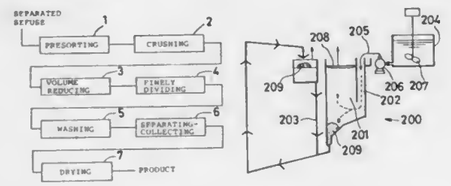
Yoshimasa Miura; Etsuo Ogino; Michio Ito, all of Maizuru, and Chitose Takakura, Uji, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Continuation of Ser. No. 341,973, Nov. 16, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 638,866

Claims priority, application Japan, Feb. 25, 1993, 6-028093; Nov. 17, 1993, 5-288408; Nov. 17, 1993, 5-288409

Int. Cl.[6] B02C *19/12;23/18*

U.S. Cl. 241—20 **4 Claims**



1. A process for collecting waste plastic as separated, comprising the steps of:

crushing waste plastic;

reducing the volume of expanded polystyrene included in the waste plastic by heating the waste plastic at a predetermined temperature and passing said waste plastic through a trough having a piping in the form of one of a shaftless helical ribbon and shaftless spiral;

finely dividing the waste; and

separating the finely divided waste in a liquid by utilizing the difference between the plastic in specific gravity and collecting the separated fractions of waste plastic.

5,667,152

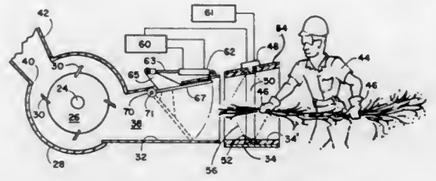
SAFETY SYSTEM FOR A WOOD CHIPPER

Jonathan E. Mooring, 9944 Bon Vue Dr., El Cajon, Calif. 92021

Filed May 30, 1995, Ser. No. 453,899

Int. Cl.[6] A01F *21/00*

U.S. Cl. 241—37.5 **10 Claims**



1. A safety system for a wood chipper comprising:

a mandrel drum mounted on a drive shaft for rotational motion, said mandrel drum having a circumferential surface having a plurality of blades directed outwardly therefrom; said drum being mounted in a housing; said housing having an inlet port and an outlet port;

an engine connected to the drive shaft of said mandrel drum;

an elongated material delivery chute having a front end, a rear end, a top wall, a bottom wall, a left side wall, and a right side wall that define a passageway for tree branches, limbs and tree trunks; the rear end of said wood material delivery chute being positioned adjacent the inlet port of said mandrel housing;

at least one glove made of metal impregnated material that would be worn by a person loading tree trunks, tree branches and tree limbs into the front end of said chute;

a metal sensor mounted in said chute intermediate its front and rear ends and being directed across said passageway to detect said metal impregnated glove or any other metal passing through the passageway of said chute; said metal sensor being directed toward a non-metallic panel in one of the walls of said chute;

a gate mounted inside said chute that is normally in an open position that allows tree branches and limbs to travel through the passageway of said chute; said gate being located at a position between said metal sensor and the rear end of said chute; and

means for closing said gate to block the passageway of said chute when said metal sensor detects said metal impregnated glove or any other metal passing by it and thereby preventing injury to a person feeding wood material into said chute.

5,667,153

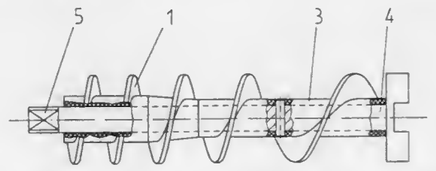
PRESSURE AND FEED SCREW FOR MEAT GRINDERS

Eberhard Haack, Halle, and Michael Mössmer, Betzweilerwälde, both of Germany, assignors to Maschinenfabrik Dornhan, Dornhan, Germany

Filed Dec. 27, 1994, Ser. No. 364,441

Int. Cl.[6] B02C *18/38*

U.S. Cl. 241—82.5 **17 Claims**



1. For use in a meat grinding apparatus of the kind comprising elongate barrel means of substantially circular cross-section and predetermined length and provided adjacent at least one of its ends with an axially disposed rotary bearing means and rotary cutter means and with feed hopper means adjacent its other end, a

pressure and feed screw means adapted to be rotatably received in said barrel means, said screw means comprising:

elongate body means of substantially cylindrical configuration provided with a bore extending substantially coaxially therethrough and comprising screw flight means integral with and uninterruptedly extending over said elongate body means in a substantially helical configuration of variable pitch;

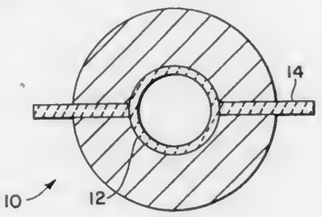
elongate drive shaft means rotatably journalled in said bearing means and extending through said bore and being releasably affixed to said screw means and said rotary cutter means, thereby separating torsional forces acting on said screw means and on said rotary cutter means.

5,667,154

CAST ABRASION RESISTANT HOLLOW BALLS

Bryan Hand, Norton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 16, 1996, Ser. No. 683,010
Int. Cl.[6] B02C *17/20*
U.S. Cl. 241—184 **4 Claims**



1. An article of manufacture, comprising:

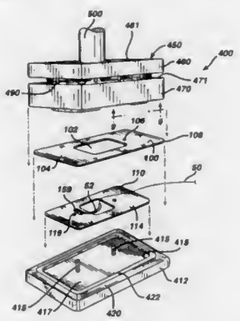
a metallic hollow cast ball having a hollow ceramic core situated therein, said hollow cast ball having at least one solid ceramic support situated therein extending outwardly from the hollow ceramic core to an exterior surface of said hollow cast ball.

5,667,155

SUTURE DISPENSER WINDING FIXTURE

Robert Cerwin, Pipersville, Pa.; Marvin Alpern, Glen Ridge, N.J., and Yufei Huang, Irving, Tex., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 221,678, Jun. 6, 1994, abandoned. This application Jul. 25, 1995, Ser. No. 507,651
Int. Cl.[6] B65H *54/68;75/28;* **B21C** *47/02*
U.S. Cl. 242—50 **4 Claims**



1. A suture winding fixture, comprising:

a base member having a top and an outer periphery;

a cavity extending into the top of the base member, the cavity having an outer perimeter;

a flat surface surrounding the perimeter of the cavity;

at least two locating pins extending upwardly from the bottom of the cavity;

a ramped surface connecting the outer periphery with the flat surface;

a lower plate aligned with the base member, said lower plate moveable up and down with respect to the base member, said lower plate having a longitudinal axis, a top and a bottom;

an arcuate member extending from the bottom of the lower plate;

a plurality of passages extending through the lower plate, said passages perpendicular to the longitudinal axis of the lower plate;

an upper plate having a top and a bottom;

a plurality of pins extending from the bottom of the upper plate and slidably engaged in the passages in the lower plate;

driving means mounted to the upper plate for moving the upper and lower plates toward the base member; and,

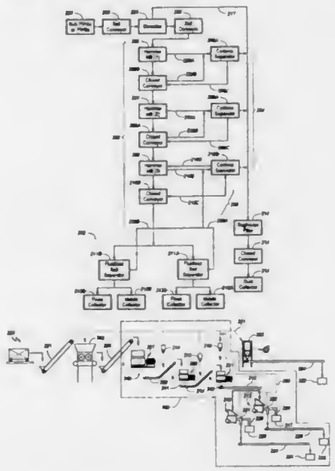
spring biasing means mounted to the upper and lower plates for biasing the lower plate against the upper plate.

5,667,156

PROCESS FOR THE SEPARATION AND ISOLATION OF PRECIOUS AND SEMI-PRECIOUS METALS FROM ELECTRONIC CIRCUIT BOARDS

Ray Chapman, Argyle, Tex., assignor to Resource Concepts, Inc., Dallas, Tex.

Filed Jan. 4, 1996, Ser. No. 582,784
Int. Cl.[6] B02C *19/00;19/12*
U.S. Cl. 241—24.13 **41 Claims**



33. A process to substantially separate and isolate precious and semi-precious metals from at least one electronic circuit board, comprising the following steps:

(a) providing said at least one electronic circuit board;

(b) crushing and reducing in size said at least one electronic circuit board to create at least one first crushed electronic circuit board with a first crushing and size reducing machine to ensure said at least one first crushed electronic circuit board conforms to a first size;

(c) transporting said at least one first crushed electronic circuit board from said first crushing and size reducing machine to a second crushing and size reducing machine in a first closed conveyor;

(d) crushing and reducing in size said at least one first crushed electronic circuit board to create at least one second crushed electronic circuit board with said second crushing and size reducing machine to ensure said at least one second crushed electronic circuit board conforms to a second size;

(e) transporting said at least one second crushed electronic circuit board from said second crushing and size reducing machine to a third crushing and size reducing machine in a second closed conveyor;

(f) crushing and reducing in size said at least one second crushed electronic circuit board to create at least one third crushed electronic circuit board with said third crushing and size reducing machine to ensure said at last one third crushed electronic circuit board conforms to a third size;

(g) transporting said at least one third crushed electronic circuit board from said third crushing and size reducing machine to a at least one separating apparatus in s third closed conveyor;

(h) separating said at least one third crushed electronic circuit board from said third crushing and size reducing machine with said at least one gravity-based separating machine into said metallic portions and said non-metallic portions;

(i) continuously removing from said first crushed electronic component at least one first light-weight non-metallic constituent component and at least one first light-weight metallic constituent component, continuously non-magnetically separating said at least one first light-weight non-metallic constituent component from said at least one first light-weight metallic constituent component, and continuously returning said at least one first light-weight metallic constituent component to said first closed conveyor;

(j) continuously removing from said second crushed electronic circuit board at least one second light-weight non-metallic constituent component and at least one second light-weight metallic constituent component, continuously non-magnetically separating said at least one second light-weight non-metallic constituent component from said at least one second light-weight metallic constituent component, and continuously returning said at least one second light-weight metallic constituent component of said second closed conveyor;

(k) continuously removing from said third crushed electronic circuit board at least one third light-weight non-metallic constituent component and at least one third light-weight metallic constituent component, continuously non-magnetically separating said at east one third light-weight non-metallic constituent component from said at least one third light-weight metallic constituent component, and continuously returning said at least one third light-weight metallic constituent component to said third crushing and size reducing machine; and

(l) continuously removing at least one fourth light-weight non-metallic constituent component and at least one fourth light-weight metallic constituent component from said at least one separating apparatus, continuously non-magnetically separating said at least one fourth light-weight non-metallic constituent component from said at least one fourth light-weight metallic constituent component, and continuously returning said at least one fourth light-weight metallic constituent component to said third crushing and size reducing apparatus.

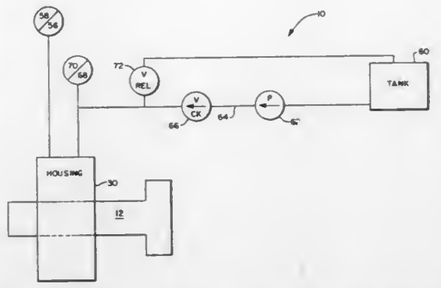
5,667,157

BEARING CLEARANCE ADJUSTMENT

Stanley R. Prew, Wiliamsport, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Flled Nov. I3, 1995, Ser. No. 556,268
Iot. Cl.[6] B02C *25/00*
U.S. Cl. 241—27 **I8 Claims**

18. A method for optimizing total bearing clearance on a comminution apparatus having a drive shaft which is rotatable about an axis for comminuting material, a housing disposed around at least a portion of said drive shaft and at least one bearing comprising first and second raceways and a plurality of bearings disposed intermediate said first and second raceways, wherein said first raceway and said bearings define a first clearance and said second raceway and said bearings define a second clearance, said first and second clearances defining a total bearing clearance, said bearing



means being disposed around said drive shaft and within said housing wherein said first raceway is adjacent a surface of said housing and said second raceway is adjacent said drive shaft, the comminution apparatus further having a temperature monitor for monitoring a temperature adjacent said bearing means, said temperature being commensurate with friction between said raceways and said bearings, a hydraulic pump for applying hydraulic pressure between said housing and said first raceway, a relief valve for venting said hydraulic pressure, and a pressure monitor for monitoring said hydraulic pressure, wherein said hydraulic pressure develops a hydraulic force which radially moves said first raceway, said pump being actuatable while said drive shaft is rotating, the method comprising the steps of:

A) setting said total bearing clearance at a maximum while said drive shaft is stationary;

B) rotating said drive shaft at a normal speed of rotation until said temperature stabilizes at a maximum temperature;

C) actuating said pump to radially move said first raceway to a position closer to said bearings;

D) monitoring a decreasing temperature and an increasing pressure as said first raceway is moved;

E) repeating steps C) and D) until said temperature stops decreasing and starts to increase;

F) stopping said pump; and

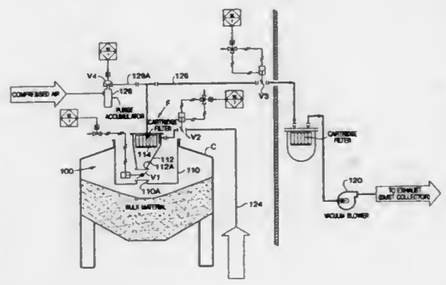
G) venting said hydraulic pressure to a value which correlates with a minimum temperature.

5,667,158

AUTOMATED BLEND RECLAIM SYSTEM FOR PHARMACEUTICAL TABLET COMPRESSION MACHINE

Brian C. Bullock, Wake Forest, and Steven R. Nowicki, Raleigh, both of N.C., assignors to Glaxo Wellcome Inc., RTP, N.C.

Filed May 23, 1995, Ser. No. 447,950
Int. Cl.[6] B02C *19/12;25/00*
U.S. Cl. 241—33 **28 Claims**



1. In combination with a pharmaceutical tablet compression machine having a bulk material container for the tablet blend

mounted thereon, an automated blend waste reclaim apparatus for reintroducing blend waste into the tablet compression machine comprising:

(a) a housing operatively connected to said bulk material container of said tablet compression machine and defining an aperture in the bottom portion thereof;

(b) filter means mounted in said housing and over said aperture;

(c) vacuum blower means located remote from said housing;

(d) first conduit means extending from said tablet compression machine to said filter means;

(e) second conduit means extending from said filter means to said vacuum blower means;

(f) compressed air source means fluidly connected to said second conduit means proximate to said filter means;

(g) a plurality of valve means including valve means provided between said filter means and said housing aperture, in said first conduit, in said second conduit, and operatively associated with said compressed air source means;

(h) control means adapted to cycle said automated blend reclaim apparatus through (1) an accumulation step wherein said vacuum blower means is actuated and said plurality of valve means are selectively actuated so as to collect blend on said filter means; (2) a purge step wherein said plurality of valve means are selectively actuated so that said compressed air source means is actuated and compressed air from said compressed air source means will remove blend from said filter means; and (3) a dump step wherein said plurality of valve means are selectively actuated so that the removed blend waste will be caused to drop from said filter means and through said housing aperture and into said bulk material container of said table compression machine.

5,667,159

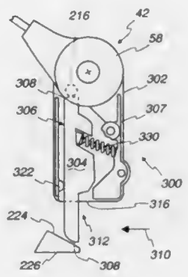
TRIP SYSTEM FOR A BAIL ASSEMBLY ON A FISHING REEL

Robert L. Carpenter, Tulsa, Okla.; John A. Zurcher, St. Charles, Mo.; John W. Puryear, Biloxi, Miss., and Hyunkyu Kim, Incheon, Rep. of Korea, assignors to Zebco Div. of Brunswick Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 914,260, Jul. 15, 1992. This application Nov. 9, 1994, Ser. No. 336,484

Int. Cl.[6] A01K *89/01*

U.S. Cl. 242—233 **20 Claims**



1. A fishing reel comprising:

a frame;

a rotor;

means for mounting the rotor to the frame for rotation about a first axis;

a line storage spool on the frame;

means on the rotor for directing line onto the line storage spool as an incident of the rotor being rotated about said first axis,

said line directing means including a bail assembly comprising at least one bail arm and means for mounting the at least one bail arm to the rotor for pivoting movement between a) a first position wherein the bail assembly is in a retrieve position and b) a second position wherein the bail assembly is in a cast position;

a trip link;

means for mounting the trip link to the rotor for movement relative to the rotor between third and fourth positions;

means cooperating between the bail assembly and trip link for moving the trip link from its third position into a fourth position as an incident of the bail assembly moving from its first position into its second position;

a trip link actuator on the reel frame and defining a shoulder that intercepts the trip link with the trip link in its fourth position and the rotor rotating in a first rotational direction about the first axis and urges the link from its fourth position towards its third position,

said means cooperating between the bail assembly and trip link including means for moving the bail assembly from its cast position towards its retrieve position as an incident of the trip link moving from its fourth position into its third position; and

means cooperating between the rotor and trip link for producing a force on the trip link to urge the trip link axially relative to the first axis from its fourth position towards its third position as an incident of the trip link actuator moving against the shoulder on the reel frame as the rotor rotates in the first rotational direction.

5,667,160

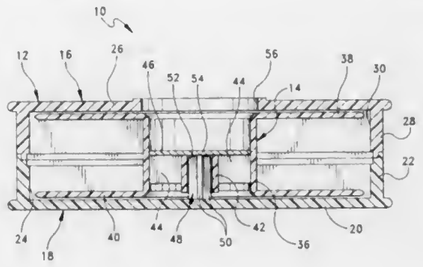
MICROFILM CARTRIDGE ASSEMBLY WITH INTEGRAL HUB SYSTEM

Carl G. Mattson, Foxborough, and Eric C. Carter, Norton, both of Mass., assignors to The Foxx Group, Inc., Topsfield, Mass.

Filed Dec. 1, 1995, Ser. No. 565,791

Int. Cl.[6] G11B *23/07*

U.S. Cl. 242—348 **15 Claims**



1. A microfilm cartridge assembly comprising:

a housing including from and rear walls maintained in generally parallel, spaced relation, and further including a centrally located post extending generally perpendicular inwardly into an interior portion of said housing from said rear wall, said post having a predetermined maximum height, said post having a star-shaped configuration defined by a plurality of rib portions radiating outwardly from a central axis of said post; and

a reel having a hub centered about an axis of rotation of said reel, said reel being received within said housing with said hub received on said post for rotation thereon.

5,667,161

BELT TENSIONER FOR SAFETY BELTS FOR MOTOR VEHICLES

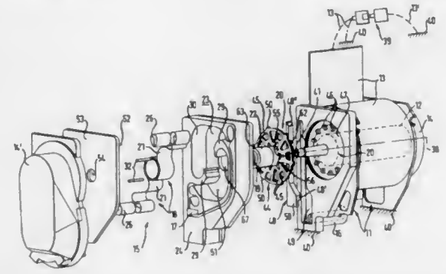
Jürgen Mitzkus, Eichingen, and Robert Kopetzky, Lonsee, both of Germany, assignors to Takata (Europe) Vehicle Safety Technology GmbH, Germany

Division of Ser. No. 381,777, Feb. 1, 1995, Pat. No. 5,553,803. This application Feb. 5, 1996, Ser. No. 596,569

Claims priority, application Germany, Sep. 13, 1994, 44 32 594.9

Int. Cl.[6] B60R *52/46*

U.S. Cl. 242—374 **6 Claims**



1. Belt tensioner for safety belt arrangements in motor vehicles having a holder (**11**) for securing to the vehicle chassis and on the holder a belt winding reel (**12**) with a safety belt (**13**) wound thereon, a retraction spring arrangement (**14**, **14'**) by means of which the safety belt (**13**) is continuously and lightly so pretensioned in the retraction direction that it only lies loosely on the vehicle occupant secured by it, a blocking arrangement between the belt winding reel (**12**) and the holder (**11**) of the vehicle chassis which blocks the safety belt (**13**) against being pulled out if suddenly pulled, and/or in the event of an acceleration resulting from an accident, and an additional drive (**15**) connected to the belt winding reel (**12**) via a clutch (**20**), wherein the additional drive (**15**) is normally separated drivewise from the belt winding reel (**12**) by the disengaged clutch (**20**), but is abruptly activated in the event of an acceleration resulting from an accident and is rotationally fixedly coupled with the belt winding reel (**12**) via the then engaged clutch (**20**) in order, before the vehicle occupant accelerates against the safety belt (**13**), to wind up such a length of the safety belt that the safety belt lies tightly on the vehicle occupant, with the additional drive (**15**) having a pressure source (**16**) which is triggered or ignited by the accident dependent response of an acceleration sensor and which, on being triggered, abruptly builds up a high pressure chamber (**17**), a torque generating device (**18**) which is energised by the pressure in the pressure chamber (**17**) and a drive shaft (**19**) connected to the torque generating device (**18**) which is rotationally fixedly connected with the belt winding reel (**12**) via the clutch (**20**), characterised in that the torque generating device (**18**) has at least one flexible tension band (**21**) which is secured at one end at a first mounting point (**25**) to the periphery of the drive shaft (**19**), or to the drive reel (**22**) which is concentrically mounted thereon, and is partially wound onto the drive shaft (**19**), or onto the drive reel (**22**), and is secured at the other end at a second mounting point (**26**) to the peripheral wall (**30**) of a band running chamber (**23**) which is arranged within a housing (**24**) around the drive shaft (**10**), or around the drive reel (**22**) and has a width corresponding to the width of the draw band (**21**) in such a way that the draw band (**21**) extends through the band running chamber (**23**) while subdividing the band running chamber (**23**) into two partial chambers (**23'**, **23"**) sealed off relative to one another; and in that the partial chamber (**23'**) which on being subjected to pressure brings about an unwinding of the tension band (**21**) from the rotating drive shaft (**19**) or drive reel (**22**) is connected to the pressure space (**17**) and with the other partial space (**23"**) is vented; and in that, for the pressure-wise decoupling of the partial chambers (**23'** and **23"**), at least one sealing wall (**29**) is provided which extends between the housing (**24**) and the periphery of the flexible draw band (**21**) which is wound onto the drive shaft (**19**), or onto the drive reel (**22**) concentrically mounted thereon.

5,667,162

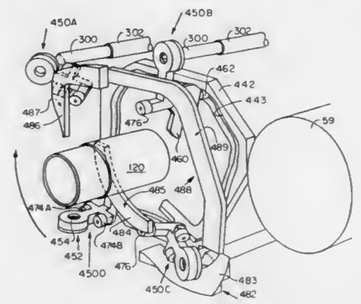
TURRET WINDER MANDREL CUPPING ASSEMBLY

Kevin Benson McNeil, Maineville, Ohio, and James Robert Johnson, Lawrenceburg, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 2, 1995, Ser. No. 460,016

Int. Cl.[6] B65H *19/28*

U.S. Cl. 242—533.4 **18 Claims**



1. A mandrel cupping assembly for releasably engaging the ends of a plurality of mandrels supported on a web winding turret assembly, the turret assembly comprising a plurality of mandrels extending parallel to a turret assembly central axis and driven in a closed mandrel path about the turret assembly central axis, the mandrel cupping assembly comprising:

a cupping arm associated with each mandrel, the cupping arm having a mandrel cup for releasably engaging the end of a mandrel; and

a rotating cupping arm support, each cupping arm carried in a path about the turret assembly central axis on the rotating cupping arm support, each cupping arm supported by the rotating cupping arm support to permit rotation of the cupping arm relative to the rotating cupping arm support about a cupping arm pivot axis from a first cupped position to a second uncupped position, and wherein the distance between the cupping arm pivot axis and the turret assembly central axis varies as a function of the position of the cupping arm about the turret assembly central axis.

5,667,163

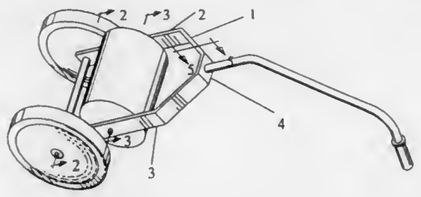
MOBILE WIRE DISPENSER

Blaine Sordahl, 6180 Sheridan Lake Rd., Rapid City, S. Dak. 57702

Filed Aug. 1, 1994, Ser. No. 283,629

Int. Cl.[6] B65H *49/00;75/40*

U.S. Cl. 242—557 **6 Claims**



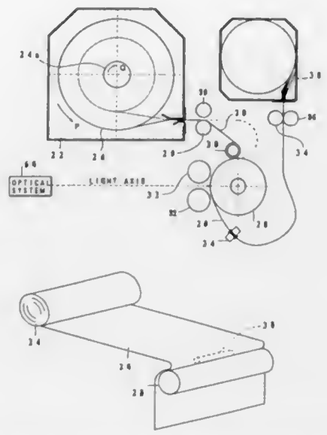
1. A mobile wire dispenser including:

(1) A frame of given length and width having a forward end and a rearward end and having the shape of a "U" with the opening of the "U" at the rearward end of the frame, the frame having two openings at the rearward end with one of the openings through each leg of the "U;"
(2) An axle having a length greater than the given width of said frame and a given diameter slightly less than said openings in said frame, the axle passing though the openings in said frame;
(3) Two wheels placed over either end of said axle and outside of said frame, the wheels rotating freely about said axle;
(4) Means for holding said wheels in place on said axle;
(5) A spindle of a given length and diameter, having a cylindrical shape and a length slightly shorter than the width of said frame, the spindle having given length and diameter such that a spool of wire may be placed upon the spindle;
(6) Fastening means for attaching said spindle to said frame parallel to said axle approximately halfway between the forward end and the rearward end of said frame, the means being capable of attaching said spindle and said spool of wire to said frame and of detaching said spindle and said spool of wire from said frame;
(7) A handle of given length and diameter and having a forward end and a rearward end, the rearward end of the handle being attached to the forward end of said frame, the handle being shaped such that the forward end of the handle is below the plane of said frame and such that when the bottom of said wheels is level with the forward end of the handle the lowest point on said spool of wire is above the bottom of said wheels and said forward end of the handle, the handle further being shaped such that when said frame is inverted and the forward end of the handle is above the plane of said frame and when the bottom of said wheels is level with the lowest point of said spool of wire the lowest point of said handle is above the bottom of said wheels and the lowest point of said spool of wire;

whereby a spool of wire may be placed upon the spindle and wire may be dispensed from the spool either by pulling on the handle and rolling the wire dispenser on the wheels or by placing the forward end of the handle on a surface and pulling wire off the spool and whereby the spool of wire may be loaded onto the spindle by inverting the frame and resting the spool of wire and the wheels on a surface.

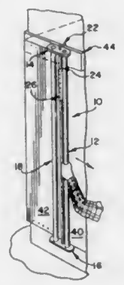
5,667,164
DEVICE AND METHOD FOR FEEDING A SHEET
Takaharu Yamamoto, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 364,032, Dec. 23, 1994, abandoned, which is a continuation of Ser. No. 32,584, Mar. 17, 1993, abandoned. This application Nov. 6, 1995, Ser. No. 553,944
Claims priority, application Japan, Mar. 30, 1992, 4-074702
Int. Cl.[6] B65H *20/02;20/20;* **G01D** *15/24;* **G03B** *27/58*
U.S. Cl. 242—564.4 **10 Claims**

1. A device for preventing sideways motion of a long sheet of film during feeding thereof from a roll of film, comprising:
a controllably driven main roller rotatably mounted for feeding the long sheet in a direction substantially perpendicular to a rotational axis of the main roller;
a subroller rotatably mounted so that a rotational axis of the subroller is substantially parallel to the rotational axis of the main roller to define a nip with the main roller so that the sheet is gripped in the nip between the subroller and the main roller at a predetermined pressure and positioned relative to a direction of feed of the long sheet from the roll for applying a force on the sheet to wrap the sheet arcuately around a portion of the surface of the subroller, the roller and subroller together solely drawing the sheet from the roll;
a tension means mounted for applying a tension to the sheet as the sheet is fed through the nip between the main roller and the subroller in a direction opposite to the feeding direction,



wherein the subroller has an axial length substantially shorter than the axial length of the main roller and also substantially shorter than a width of the film, and is located relative to a central portion of the main roller so that a nipping pressure is applied by the subroller at said central portion of the main roller, and
whereby the sheet nipped between the main roller and the subroller is drawn from the roll of film by rotation of the main roller and against the applied tension without sideways drift and is fed in a direction selected to cause the sheet to make surface-to-surface curved peripheral contact with an outer surface of the subroller as the sheet is fed from the roll of film between the main roller and the subroller.

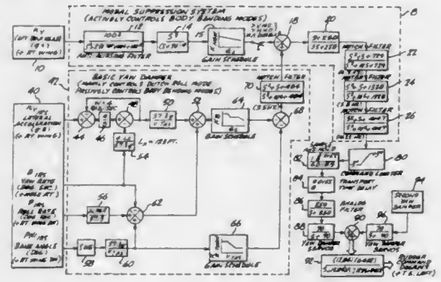
5,667,165
APPARATUS AND METHOD FOR APPLICATION OF FLEXIBLE SHEET STOCK
Gregory P. Gardner, 505 E. Exchange, Danvers, Ill. 61732
Filed Aug. 1, 1994, Ser. No. 283,852
Int. Cl.[6] B65H *75/18*
U.S. Cl. 242—588.2 **11 Claims**



1. An apparatus for dispensing flexible sheet material from an elongated roll having opposite ends comprising:
a first hub assembly;
a second hub assembly spaced from the first hub assembly, the first and second hub assembly being adapted to rotatably maintain the roll at opposite ends of the roll;
a handle extending between the first and second hub assemblies and having a first portion of the handle attached to the first hub assembly and a second portion of the handle being attached to the second hub assembly; and,

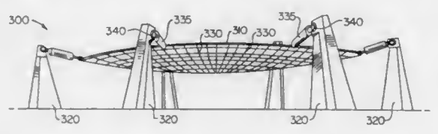
a guide extends a length beyond the top hub assembly away from said roll.

5,667,166
AIRCRAFT FREQUENCY ADAPTIVE MODAL SUPPRESSION SYSTEM
Chuong B. Tran, Lynnwood, and Stephen White, Bothell, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 371,717, Jan. 12, 1995. This application Feb. 13, 1996, Ser. No. 600,779
Int. Cl.[6] B64C *13/00;13/16*
U.S. Cl. 244—76 C **1 Claim**



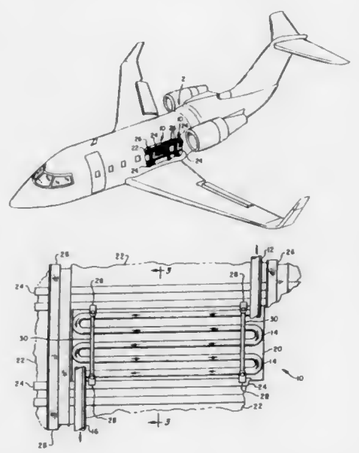
1. An aircraft having a frequency adaptive modal suppression system including a yaw damper control path, said yaw damper control path including a variable yaw damper notch filter for compensating for weight change of the aircraft, said variable yaw damper notch filter having a frequency range determined by sweeping the rudder of the aircraft at the aircraft's heaviest and lightest gross weights.

5,667,167
METHODS AND APPARATUS FOR REUSABLE LAUNCH PLATFORM AND REUSABLE SPACECRAFT
Walter Paul Kistler, Redmond, Wash., assignor to Kistler Aerospace Corporation, Kirkland, Wash.
Filed Sep. 2, 1994, Ser. No. 299,089
Int. Cl.[6] B64F *5/00;1/00*
U.S. Cl. 244—110 E **3 Claims**



1. A reusable spacecraft system comprising:
a reusable spacecraft having a rounded base, a rocket engine in said base, and a system to control said engine to provide a vertical, base-first landing; and a landing platform which includes
an open grid of intersecting cables and
a support structure, said support structure including footings located at the periphery of said grid wherein said footing are resiliently connected to hold said grid horizontally above the ground under the impact of said spacecraft into said grid.

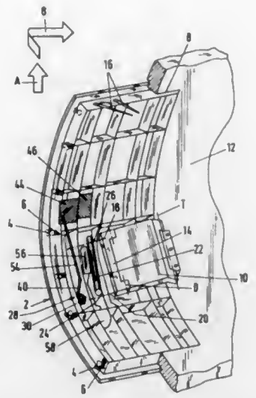
5,667,168
MODULAR LIQUID SKIN HEAT EXCHANGER
Kyle G. Fluegel, Greenville, Tex., assignor to E-Systems, Inc., Dallas, Tex.
Continuation of Ser. No. 52,704, Apr. 27, 1993, Pat. No. 5,423,498. This application Apr. 13, 1995, Ser. No. 421,262
Int. Cl.[6] B64D *33/08;* **B64C** *1/00;* **F28F** *1/32*
U.S. Cl. 244—117 A **7 Claims**



1. A liquid coolant heat exchange system comprising:
a heat sink having an inner surface;
forming members for supporting said heat sink;
a spreader plate having an outer surface;
a heat exchange tube in substantially abutting relationship with said spreader plate, said heat exchange tube providing a continuously downsloping path, thereby promoting thermosiphon action; and
means for attaching said spreader plate to said forming members, and for positioning the outer surface of said spreader plate in substantially abutting relationship with the inner surface of said heat sink for transferring heat from said heat exchange tube to said heat sink.

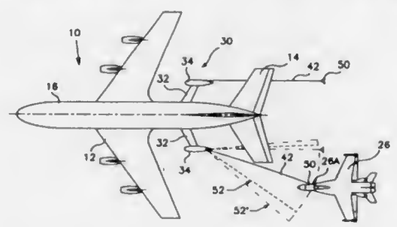
5,667,169
DOOR SYSTEM, PARTICULARLY FOR A PASSENGER PLANE
Hannes Erben, and Wolfgang Buchs, both of Donauwoerth, Germany, assignors to Eurocopter Deutschland GmbH, Munich, Germany
Filed Apr. 17, 1995, Ser. No. 423,508
Claims priority, application Germany, Apr. 16, 1994, 44 13 307.3
Int. Cl.[6] B64C *1/14*
U.S. Cl. 244—129.5 **20 Claims**

1. A door system for an aircraft having a bearing and guiding device acting between a door leaf and a door frame, and lifting kinematics arranged between the bearing and guiding device and the door leaf, said lifting kinematics moving the door leaf transversely to a moving path of the guiding device at an end of a closing movement into a form-locking engagement with door-frame-fixed receiving elements for a completely closed position, said lifting kinematics further moving the door leaf in an opposite lifting direction out of the form-locking engagement at a start of an opening operation, said lifting kinematics comprising:
an electric drive unit operatively coupled with the door leaf to provide a lifting device;



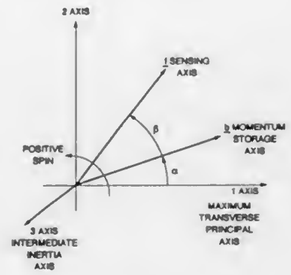
a mechanically actuated lift securing device, in combination with said electric drive unit, operable to be released in parallel with an electric activation of said electric drive unit, said lift securing device automatically locking the lifting kinematics in a door-leaf-fixed manner in a completely closed position.

5,667,170
POD MOUNTED REFUELING SYSTEM
William Gregory Moss, Centerville; Kenneth Dale Roberts, Xenia, and Charles Whitford Briggs, Waynesville, all of Ohio, assignors to Tracor Flight Systems, Inc., Austin, Tex.
Filed Dec. 7, 1994, Ser. No. 350,787
Int. Cl.[6] B64D *39/02;37/04;37/06;* B64C *39/08*
U.S. Cl. 244—135 A 26 Claims



1. A refueling system for an aircraft, the aircraft having a fuselage, a main wing extending from opposite sides of the fuselage, a stabilizer extending from opposite sides of the fuselage aft of the main wing, and a fuel source disposed within the aircraft, the refueling system comprising:
at least one pylon extending from a side of the fuselage at a position aft of the main wing and forward of the stabilizer;
said pylon having a refueling pod mounted thereon outboard of the fuselage;
a refueling hose disposed within and extendable from the at least one pod; and
means for transferring fuel from the fuel source to the refueling hose.

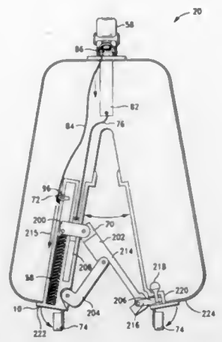
5,667,171
SATELLITE SPIN AXIS STABILIZATION USING A SINGLE DEGREE OF FREEDOM TRANSVERSE MOMENTUM STORAGE DEVICE
Richard A. Fowell, Culver City, and John F. Yocum, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 28, 1995, Ser. No. 430,636
Int. Cl.[6] B64G *1/28*
U.S. Cl. 244—165 23 Claims



12. A method of stabilizing the spin of a spinning satellite about an intermediate inertia axis, the method comprising the steps of:
sensing a first component of the angular velocity of the satellite about a first axis transverse to the intermediate inertia axis;
sensing a second component of the angular velocity of the satellite about a second axis transverse to the intermediate inertia axis, wherein the second axis is transverse to the first axis;
sensing the angular velocity of not more than one single degree of freedom momentum wheel, wherein the momentum wheel has a fixed transverse orientation with respect to the intermediate inertia axis, wherein the fixed transverse orientation of the momentum wheel is offset from a principal axis of the satellite by an angle between 0 and 90 degrees;
computing a commanded angular velocity for the momentum wheel in dependence upon the first component and the second component, wherein the commanded angular velocity is proportional to a transverse component of the angular velocity of the satellite, wherein the transverse component is in a direction based upon an eigenvector associated with an unstable eigenvalue of a linear dynamic model of the satellite;
forming a control signal representative of a control torque to be applied to the momentum wheel, wherein the control torque is proportional to a difference between the angular velocity of the momentum wheel and the commanded angular velocity; and
applying the control signal to the momentum wheel.

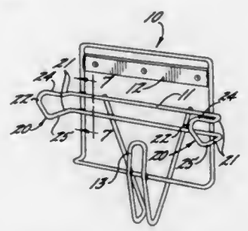
5,667,172
GARMENT BAG
Young S. Kim, Los Altos, Calif., assignor to Inno Design, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 212,002, Mar. 11, 1994, which is a continuation-in-part of Ser. No. 41,769, Apr. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 890,717, May 29, 1992, Pat. No. 5,330,141. This application Mar. 7, 1995, Ser. No. 399,736
Int. Cl.[6] A63B *55/08*
U.S. Cl. 248—98 13 Claims

1. A garment bag, comprising:
a garment bag being foldable between a tote configuration and a fully folded configuration;
a lifting mechanism moveably attached to the garment bag, the lifting mechanism being capable of lifting the garment bag and folding the garment bag from the tote configuration to the fully folded configuration; and



a linkage assembly having one end attached to the lifting mechanism and another end attached to the garment bag, wherein the linkage assembly includes a sliding member, a cable and a spring, the cable attaches the sliding member to the lifting mechanism, the spring attaches the sliding member to the garment bag to bias the garment bag in the tote configuration whereby, when the lifting mechanism lifts the garment bag, one end of the lifting mechanism actuates the linkage assembly to fold the garment bag from the tote configuration into the fully folded configuration.

5,667,173
COMPACT RACK CONSTRUCTION FOR MOUNTING T-SHIRT TYPE PLASTIC BAGS
Harry B. Wilfong, Jr., and Edwin W. Haenni, both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.
Filed Nov. 13, 1995, Ser. No. 558,963
Int. Cl.[6] B65B *67/04*
U.S. Cl. 248—100 16 Claims



1. A rack for mounting a pack of thermoplastic grocery or retail product bags of the T-shirt type having a pair of laterally-spaced handles extending upwardly from a body portion on either side of an open-mouth portion and having mounting apertures of a predetermined length through the handles, said rack comprising:
a frame;
a pair of generally horizontally and outwardly extending laterally-spaced support arms carried at one end by said frame and having a horizontal portion and an outer end portion for receiving the apertures in the handles of the bags in the pack at said outer end portion and for mounting the bag pack on said horizontal portion for consecutive opening and removal of the bags from the bag pack and from said rack; and
each of said support arms comprising an upper surface and a lower surface, each of said surfaces extending horizontally outwardly from said frame to define said support arm horizontal portion therebetween and then extending upwardly from horizontal at predetermined different angles and being joined at outer ends to each other by a loop surface formed with a smooth radius to define said support arm outer end portion therebetween, the upward extension of said lower surface being outwardly offset from the upward extension of said upper surface, whereby a resistance to free movement of the handles of the bags off said outer end portions of support arms is created.

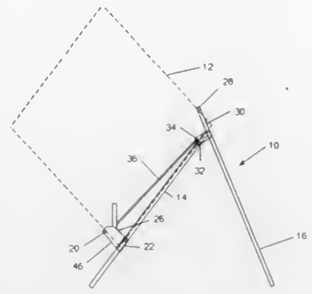
5,667,174
DECORATIVE LIGHT STAKE
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Jan. 13, 1995, Ser. No. 372,237
Int. Cl.[6] A45F *3/44*
U.S. Cl. 248—156 19 Claims



1. A light stake for holding decorative lights comprising:
a. a generally S-shaped light holder defining a left portion having a recess sized to receive a decorative light socket, and a right portion having a second recess sized to receive a second decorative light socket, each portion having an interior surface, an exterior surface, a proximate end and a distal end, the light holder made of resilient material such that the distal end and the proximate end can be sufficiently spread apart so that a decorative light socket can be inserted therebetween and the light holder will grasp the decorative light socket adjacent the interior surface; and
b. a stake having a proximate end attached to the generally S-shaped light holder and a distal end suitable for being inserted into a ground surface.

5,667,175
VERSATILE, WIND-RESISTANT SIGN STAND
J. Lee Brady, Huntsville, Ala., assignor to ADRA Corporation, Huntsville, Ala.
Filed Jun. 12, 1995, Ser. No. 488,170
Int. Cl.[6] G09F *15/00*
U.S. Cl. 248—166 18 Claims

1. A portable sign stand comprising: first, second, and third legs and a center support member, each having a top and a bottom;
said first leg having a bracket slidably mounted thereon;
the tops of said second and third legs and the bottom of said center support member connected to one another at a junction area;
said second and third legs and said center support member being aligned in a first common plane;
said bracket including a plate defining a second plane parallel to said first leg and perpendicular to the plane of said second and third legs;



said plate having attached thereto a first pair of spaced-apart buttons for receiving therebetween a corner or a side edge of a rigid sign;

a second pair of buttons disposed generally in said second plane, one button of the second pair carried by said first leg near to said junction area, and the second button of said second pair carried by said center support member, said buttons of said second pair being spaced apart vertically aligned with one another; and

a spring connected to said bracket and urging the same upward whereby a rigid sign located between said two pairs of buttons will be brought into a desired viewing position.

5,667,176

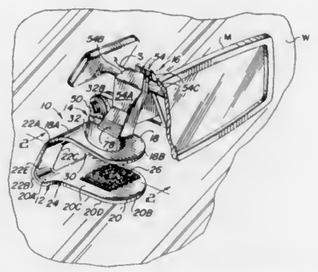
RADAR DETECTOR UNIT MOUNTING DEVICE FOR ATTACHMENT TO REARVIEW MIRROR

Michael P. Zamarripa, 1034 Jackson St., Great Bend, Kans. 67530, and Martin R. Mitchell, Rte. 2 Box 111, Ellinwood, Kans. 67526

Filed Dec. 4, 1995, Ser. No. 567,084

Int. Cl.[6] E04G *5/06*

U.S. Cl. 248—231.51 **20 Claims**



1. A radar detector unit mounting device for attachment to a vehicle rearview mirror, said device comprising:

(a) a mounting bracket having a pair of upper and lower leg portions vertically spaced apart from one another and a bight portion extending between and connected to a pair of adjacent ends of said upper and lower leg portions so as to define a slot in said mounting bracket for receiving and supporting a radar detector unit therein between said upper and lower leg portions;

(b) a connector attached to and extending upwardly from said upper leg portion of said mounting bracket; and

(c) a clip attached to said connector and spaced above said mounting bracket, said clip having means for releasably attaching to a support structure of a rearview mirror, said clip including

(i) a pair of clamping jaws for releasably attaching said clip to the support structure of the rearview mirror,

(ii) a hinge defining means for connecting said jaws together to undergo pivotal movement relative to one another between closed and opened positions,

(iii) a pair of spaced apart fingers attached to said jaws on opposite sides of said hinge defining means, and

(iv) means coupled to said fingers for biasing said fingers away from one another to a displaced position so as to force said jaws to assume said closed position, said biasing means being adapted to yield by squeezing said fingers toward one another to an adjacent position so as to force said jaws to assume said opened position.

5,667,177

SPRING SNAP CLIP

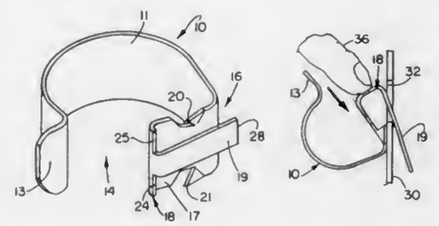
Martin Van Leeuwen, Tilburg, and Henk A.W.M. Schraven, Golrle, both of Netherlands, assignors to Erico International Corporation, Solon, Ohio

Filed Apr. 17, 1995, Ser. No. 423,530

Claims priority, application Netherlands, Apr. 18, 1994, 9407678

Int. Cl.[6] F16L *3/08*

U.S. Cl. 248—74.2 **10 Claims**



1. A small hole snap spring clip comprising a C-shape body forming an opening into which wiring, conduit, or cabling may be inserted and supported, one end of the body forming one edge of the opening, the other end of the body forming the other edge of the opening and said other end being folded to form a U-shape clasp with an interior leg and an exterior leg, the interior leg being the same width as the body while the exterior leg is more narrow than the interior leg and forms a finger, struck barbs on the edges of the interior leg struck toward the exterior leg and straddling the narrower exterior finger, whereby the finger may readily be inserted through a small hole in a structure wall to mount the clip thereon and to support such wiring, conduit or cabling therefrom, with the barbs biting into the structure offset from the hole, said U-shape other end including a flattened bulb fold whereby sufficient surface area is provided on top of the fold to install the clip without hammering, a transition between the interior leg and the more narrow finger near the center of the bulb fold, the more narrow finger extending generally parallel to and midway between the edges of the interior leg and thus the barbs, the transition to the more narrow finger forming shoulders on each side of the finger.

5,667,178

BRACKET ASSEMBLY FOR MOUNTING A SHADE

Nelson T. G. Yang, 111-E Corporate Blvd., South Plainfield, N.J. 07080

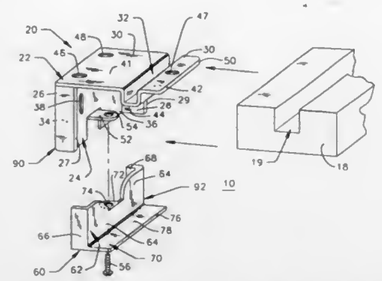
Filed Jul. 12, 1995, Ser. No. 501,545

Int. Cl.[6] A47H *1/10*

U.S. Cl. 248—262 **17 Claims**

1. A mounting bracket assembly for supporting shades, blinds, curtains, cornices and valances having a support rail, comprising:

a) an L-shaped mounting section having an integrally connected back member, interior side members and an extended top member, and said extended top member having a U-shaped channel formed therein for fitting into a U-shaped channel of the support rail;



b) an interior lip member having a hole and being integrally connected to said back member and formed at a 90° angle thereto;

c) an L-shaped holding section having an integrally connected rear member, exterior side members, and a bottom support member for supporting said support rail in place;

d) an exterior lip member having a hole and being integrally connected to said rear member and formed at a 90° angle thereto for alignment with said interior lip member;

e) connecting means for connecting said interior lip member of said mounting section with said exterior lip member of said holding section to join said mounting section and said holding section to form said mounting bracket assembly;

f) first mounting means for attaching said back member of said mounting section to a wall or window molding and for receipt of an attachment means into said first mounting means; and

g) second mounting means for attaching said top member of said mounting section to a window-frame or window sill and for receipt of said attachment means into said second mounting means.

5,667,179

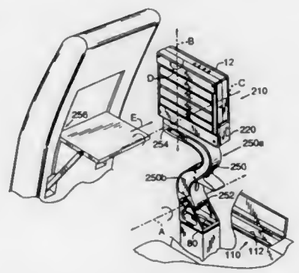
RATCHETING ARTICULABLE MONITOR SUPPORT AND PRESENTATION DEVICE

John B. Rosen, 87580 Cherry Ridge Rd., Eugene, Oreg. 97402

Continuation-in-part of Ser. No. 315,819, Sep. 30, 1994. This application Sep. 14, 1995, Ser. No. 527,962

Int. Cl.[6] E04G *3/00*

U.S. Cl. 248—278.1 **16 Claims**



1. For use in conjunction with adjacently-mounted seats, wherein such seats are mounted front-to-back and wherein at least one seat includes a back-mounted tray table usable by an occupant in a seat mounted immediately therebehind, an articulable monitor support system for accommodating storage and presentation of an associated monitor, and for permitting an occupant of a seat to simultaneously use the monitor and the back-mounted tray table mounted on the seat in front of them, the system being usable with a base and a monitor-mounting member to allow four degrees of movement, the system comprising:

an arm having a first end pivotally mounted on the base for movement between a stowed position and a presented position, such movement pivoting the arm about a first axis, and further wherein the arm has a second end spaced therealong from the first end, and wherein the arm includes intermediate the first and second ends, an arcuate portion for permitting a tray table to be used while the arm is in the presented position;

a monitor; and

a monitor-mounting member pivotally mounted on the arm adjacent the second end thereof and movable about a second axis which is different from the first axis, such member further providing a tiltable, slidable mount for the monitor, wherein the monitor is tiltable about a third axis which is different from the first and second axes, and slidable in a direction generally parallel to the third axis.

5,667,180

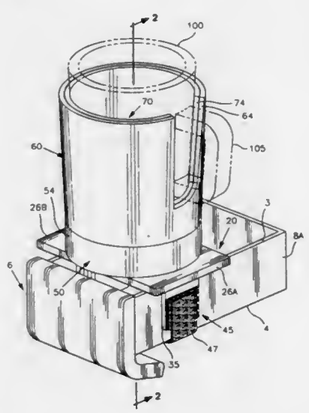
ADAPTABLE VEHICLE ASHTRAY SHELF BRACKET

David Lewis Duckworth, 914 Edgewood St., Inglewood, Calif. 90302

Filed Mar. 29, 1995, Ser. No. 412,915

Int. Cl.[6] A47K *1/08*

U.S. Cl. 248—311.2 **13 Claims**



1. A combination comprising:

a vehicle ashtray;

a rigid shelf having opposing surfaces, the shelf covering at least a portion of an opening in the vehicle ashtray with one of the opposing surfaces in contact therewith;

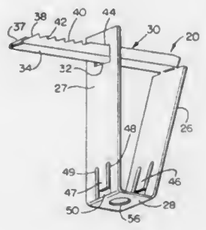
ashtray straddling means integral with the shelf, engaging opposing side walls of the vehicle ashtray, securing the shelf thereto;

a securing strap means extending around at least a portion of the ashtray, the ashtray being encircled by the shelf and the strap means;

a receptacle means, the receptacle means being fixed to the other of the opposing surfaces, and oriented to receive and retain items therein;

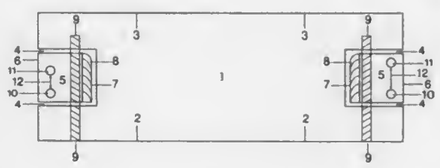
wherein the ashtray straddling means comprises, on each of the two opposing sides of the planar shelf, at least one pair of parallel stiff tabs, wherein the stiff tabs are capable of straddling opposing side walls in the vehicle ashtray with a secure tension fit.

5,667,181
HANGER
Martin van Leeuwen, Tilburg, and Geradus Emanual Cornelus Van Gijsel, Goirle, both of Netherlands, assignors to Erico International Corporation, Solon, Ohio
Filed Apr. 17, 1995, Ser. No. 423,524
Claims priority, application United Kingdom, Apr. 18, 1994, 9407653.6
Int. Cl.[6] F16L 3/12
U.S. Cl. 248—343 23 Claims



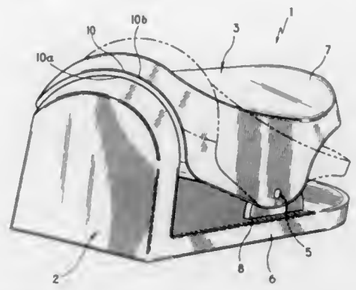
1. A construction hanger comprising a pair of upwardly diverging legs interconnected at their lower ends by a short bottom section from which a load is hung, one leg at its upper end including a generally horizontal arm extending toward the top of the other leg, a hole in the top of the other leg, and said arm being adapted to extend through said hole in the top of said other leg whereby both legs are supported by the arm when the arm is inserted through a fixed structure and into said hole at the top of said other leg.

5,667,182
DEVICE TO HOLD READING MATERIAL
David E. Kribs, 368 Peninsular Ct., Haines City, Fla. 33844
Filed Oct. 6, 1995, Ser. No. 539,841
Int. Cl.[6] A47B 97/04
U.S. Cl. 248—448 5 Claims



1. A device adapted to hold reading material in an upright position, comprising:
a base having a top surface, a bottom surface, a front side, a back side and two opposing ends;
a notch cut out of each of the ends of said base;
a swiveling member held in a respective one of said notch at each of the ends of said base, said swiveling member having support means to hold reading material in said upright position;
dowels extending through said front side of said base, into and through a respective one of said swiveling members, and into but not through the back side of said base; and
each of said swiveling members have beveled inside edges that allow said swiveling members to swing upward to an in use position and downward to a closed position.

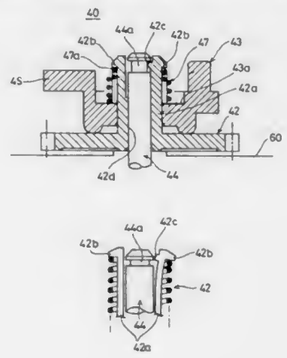
5,667,183
PAPER HOLDER
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Oct. 3, 1995, Ser. No. 538,235
Int. Cl.[6] A47B 97/04
U.S. Cl. 248—451 15 Claims



1. A paper holder, comprising
two holding members, a first holding member provided with a convex holding surface and a second holding member provided with a substantially complementary concave holding surface,
a base portion extending from a lower end of one of said first and second holding members,
two spindles provided on either said base portion or a wall portion of said one holding member and upon which the other of said first and second holding members is pivotally mounted, such that said other holding member can be separated from said one holding member by pushing an end portion of said other holding member with a finger, and
an elastic member arranged to bias said holding surfaces of said first and second holding members together under pressure, whereby paper situated between said two holding surfaces is retained in an erect and somewhat curved state.

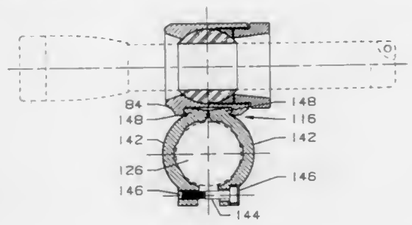
5,667,184
MOUNTING CONSTRUCTION OF AN ELASTICALLY PRESSING MEMBER HAVING AN ENGAGING PART TO BE FIXED TO A ROD-LIKE MEMBER
Ikuichiro Nawa, and Masafumi Ishizuki, both of Atsugi, Japan, assignors to Mitsumi Electric Co., Ltd., Atsugi, Japan
Filed Apr. 19, 1995, Ser. No. 425,142
Claims priority, application Japan, Apr. 20, 1994, 6-081956
Int. Cl.[6] A47B 97/00
U.S. Cl. 248—500 2 Claims

1. A mounting construction of an elastic member having a first



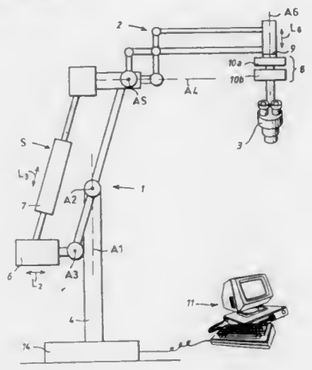
end and a second end opposite to said first end, said first end being fixed to a mounting member fixed to and extending from a first member, said second end of said elastic member being engaged with a second member so that said second member is pressed against said first member, said elastic member having substantially a through hole extending in a pressing direction in which said second member is pressed, said mounting construction comprising:
a first hook portion, formed on an end of said mounting member, said first hook portion being capable of being elastically deformed in a direction perpendicular to said pressing direction so that said through hole of said elastic member passes through said first hook portion while said first hook portion is elastically deformed in an inward direction; and
a first engaging portion, formed on said first end of said elastic member, being engaged with said first hook portion so that a movement of said first engaging portion in a direction reverse to said pressing direction is blocked.

5,667,185
HOLDER CLAMP ASSEMBLY
Anthony Maglica, Anaheim, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.
Division of Ser. No. 105,451, Aug. 11, 1993, Pat. No. 5,515,246, and a continuation-in-part of Ser. No. 14,622, Feb. 8, 1993, Pat. No. 5,270,911, and a continuation of Ser. No. 884,731, May 15, 1992, Pat. No. 5,184,884, Ser. No. 764,148, Sep. 20, 1991, Pat. No. 5,128,841, and Ser. No. 537,447, Jun. 13, 1990, Pat. No. 5,062,026, and a continuation-in-part of Ser. No. 285,734, Dec. 16, 1988, Pat. No. 4,980,805. This application Jun. 7, 1995, Ser. No. 480,226
Int. Cl.[6] F21L 15/04; F21V 33/00
U.S. Cl. 248—541 2 Claims



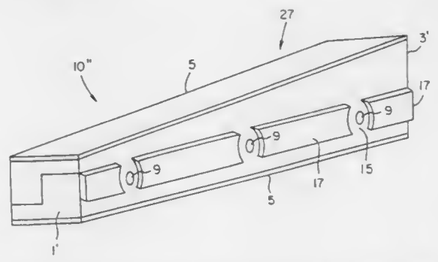
1. A double clamping mechanism comprising
a first clamping member defining approximately ½ cylinder, having a first end, said first end having a first protrusion, and a second end;
a second clamping member defining approximately ½ cylinder, having a third end, said third end having a second protrusion, and a fourth end;
said first protrusion and said second protrusion being opposed;
a third member having a cavity, said first and said second protrusions inserted into said cavity, said second end operatively attached to said fourth end.

5,667,186
STAND FOR MOUNTING VARIOUS LOADS
Joachim Luber, Essingen-Forst; Martin Pelzer, Heidenheim; Heinz Jakubowski, Oberkochen; Arvids Mackevics, Unterkochen; Annette Reiss, Heidenheim, and Jürgen Schweizer, Westerhofen, all of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
Filed Jun. 21, 1994, Ser. No. 263,355
Claims priority, application Germany, Jun. 21, 1993, 43 20 443.0; Oct. 6, 1993, 43 34 069.5
Int. Cl.[6] F16M 13/00
U.S. Cl. 248—550 32 Claims



1. A stand for mounting a diagnostic and/or therapeutic device defining a load, the stand comprising:
a base;
a plurality of interconnected elements mounted on said base and defining at least one axis about which said elements are movable relative to said base;
a balancing sensor assigned to said axis for detecting an unbalanced state relative to said axis and for supplying a sensor output signal indicative of said unbalanced state;
a motor-driven torque compensator for acting on said axis; and,
a balancing control circuit for acting on said motor-driven torque compensator in response to said sensor output signal until a state of equilibrium is obtained about said axis.

5,667,187
SECURITY DEVICE
Milton J. Doman, Mechanicsville; Paul Crismond, Ruckersville, and W. Edward White, Richmond, all of Va., assignors to CDW Industries, Inc., Mechanicsville, Va.
Filed Mar. 11, 1996, Ser. No. 613,557
Int. Cl.[6] F16M 13/00
U.S. Cl. 248—551 9 Claims



1. In a security device for deterring theft of a portable object having a first member formed with an adhesive means for attaching the first member to the portable object and a second member

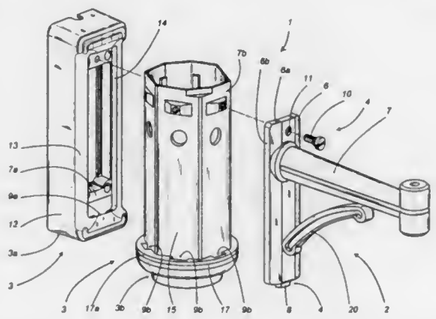
formed with an adhesive means for attaching the second member to a mounting surface, each of the first and second members being L-shaped in cross section so as to have a connecting arm and a leg extending perpendicularly therefrom, each connecting arm joined together by tamperproof fasteners to securely connect said portable object to the mounting surface, the improvement comprising a plurality of countersunk bores extending through said leg of said second member and a fastener for each countersunk bore, each said fastener sized to penetrate said mounting surface for attaching said leg of said second member thereto and wherein the connecting arm of the second member has a throughhole to receive each of the tamperproof fasteners, the throughhole of the connecting arm of the second member extending between an outer side face thereof and an inner face abutting the connecting arm of the first member, wherein the connecting arm of the first member has a throughhole for threadable attachment with each of the tamperproof fasteners, an outer side face of the second member having a recess surrounding each of the through holes to interfere with tampering of the tamperproof fasteners and wherein said first member has a surface for said adhesive means, said surface inclined with respect to a longitudinal axis of the first member.

5,667,188

MOUNTING STRUCTURE FOR LAMPS, STREET LAMPS AND SIMILAR DEVICES

Emidio Bettinsoli, Lodrino, Italy, assignor to Garden Light, S.R.L., Italy

Filed Dec. 5, 1994, Ser. No. 349,311
Claims priority, application Italy, May 31, 1994, M1940389 U
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—558 **5 Claims**



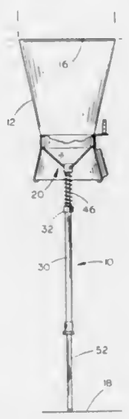
1. A mounting apparatus for lamps and street lamps comprising:
an arm for supporting one of said lamps, said supporting arm having a base portion, a first attachment device for fitting said arm to a wall and a second attachment device for connection of said arm to a columnar post
said attachment devices each having a resting and a connecting area, said base portion having a shape which matches at least partly that of said resting and connecting area,
means for removably engaging said arm and said attachment devices, said means for removably engaging having an end lug, said end lug adapted to be inserted in a corresponding hollow seat formed in said attachment devices, and at least one connecting element adapted to keep said base portion of said arm against said resting and connecting area of said attachment devices, in cooperation with said end lug, said connecting element being positioned in said base portion on the opposite side relative to said end lug,
said engagement means being adapted to make said arm integral with said first and second attachment devices;
said first attachment device for wall fitting comprises a box-shaped body exhibiting a main face provided with a recessed portion defining said resting and said connecting area and adapted to house said base portion of said supporting arm, so that the latter is substantially aligned with an outer surface of the main face itself, said recessed portion of said first attachment device having a rim surrounding in relief the area itself and terminating flush with said main face, the shape of said rim matching that of a perimetric band of said base portion of the arm, and wherein said hollow seat for said end lug is disposed in said rim,
said second attachment device for connection to a columnar post comprises a substantially tubular base body the shape of which matches at least partly that of a length of the corresponding columnar post, and an expansion which is integral with said base body, projects outwardly therefrom, and is substantially in the form of an annulus,
said base body and annulus-shaped expansion in cooperation with each other defining said resting and connecting area for said base portion of said supporting arm.

5,667,189

SELF-SUPPORTING FLOW HOOD

Michael H. Kester, 15909 Arbor Cir., Omaha, Nebr. 68130

Filed Apr. 13, 1995, Ser. No. 421,711
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—601 **5 Claims**



1. A self-supporting flow hood for measuring air flow through diffusers, registers, and grilles, comprising:
(a) a flow hood having a plurality of apertures formed therein;
(b) a mast tube, having an upper end and a lower end;
(c) a pressure shaft, having an upper end and a lower end, an extended position and a retracted position, said lower end telescopically received within the upper end of said mast tube, and having means for urging said pressure shaft to the extended position; and
(d) a coupling unit, affixed to the upper end of said pressure shaft, and having a plurality of hood support rods pivotally extending therefrom wherein the plurality of support rods are dimensioned to be received in said plurality of apertures in said flow hood.

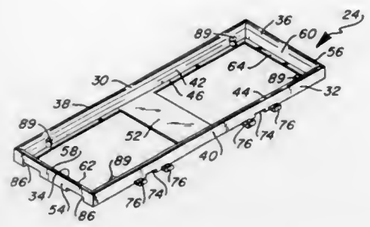
5,667,190

OBJECT BRACKET HOLDER FOR CONCRETE FORMS

Samuel C. Scott, and William C. Scott, III, both of 1788 Helena St., Aurora, Colo. 80011

Filed Aug. 1, 1995, Ser. No. 510,006
Int. Cl.[6] B22D *19/04;* **B44F** *7/00*
U.S. Cl. 249—16 **29 Claims**

1. A bracket for retaining an object in proper position on the inside surface of a form for a structure while a settable material is poured into the form to harden and embed the object with a face surface exposed in the surface of the finished structure, the face surface of said object having a perimeter edge configuration, the bracket comprising:
a) one or more side members;
b) one or more end members;
c) said side and end members being arranged in series to conform to at least the partial configuration of the perimeter edge of the face surface of the object and to form a recess therebetween for receiving said object, the cross-section of said side and end members having a flanged area for contacting and supporting the perimeter edge of the face surface of the object and an extended surface which extends from the flange area and joins a mating surface along the outer edge of said members; and
d) the extended surface being a mold shaped to form a joint line in the settable material between two objects when their corresponding brackets are positioned adjacent to each other.

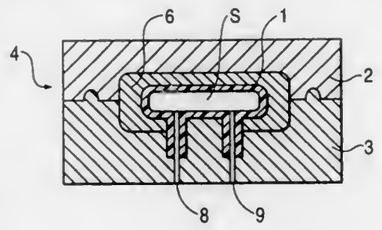


5,667,191

METHOD OF FABRICATING ARTICLE BY USING NON-SAND CORE AND ARTICLE PRODUCED THEREBY, AND CORE STRUCTURE

Masaru Nemoto, Gunma, Japan, assignor to Suguro Nemoto, Iseaki, Japan

Continuation of Ser. No. 102,974, Jul. 28, 1993. This application May 31, 1995, Ser. No. 455,482
Claims priority, application Japan, Jul. 30, 1992, 4-64213 U; Aug. 3, 1992, 4-248503; Nov. 26, 1992, 4-339735; Feb. 12, 1993, 5-47247; Feb. 12, 1993, 5-47248; Apr. 12, 1993, 5-108857
The portion of the term of this patent subsequent to Jul. 28, 2013, has been disclaimed.
Int. Cl.[6] B28B *7/34;7/30;* **B22D** *27/04*
U.S. Cl. 249—61 **9 Claims**



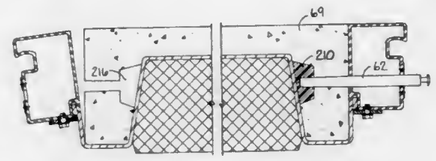
5. A core assembly in a fabrication mold for fabrication of an article from a flowable material which is flowable at a high temperature, the article having at least one of a hollow section and an undercut section, said core assembly comprising a core formed of a non-sand material and configured to define at least part of the at least one of the hollow section and the undercut section of the article, means defining a fluid flow passage formed in said core, and a continuously flowing fluid contained in said fluid flow passage and cooling said core during fabrication of the article, said non-sand material being directly contactable with said flowable material at a high temperature, wherein said non-sand material is plastic, and said plastic is one selected from the group consisting of a thermoplastic resin and a thermosetting resin.

5,667,192

CONCRETE PANEL CONSTRUCTION AND MOLD

David A. Van Doren, Hays, Kans., assignor to Waffle-Crete International, Inc., Hays, Kans.

Continuation-in-part of Ser. No. 247,060, May 20, 1994. This application Jan. 10, 1995, Ser. No. 370,868
Int. Cl.[6] B28B *7/00*
U.S. Cl. 249—82 **7 Claims**



1. A mold for forming precast panels, said mold comprising:
a mold body configured to impart a predetermined shape to a molded product formed therein, said body having a panel-forming component provided with a plurality of integral, flexible, elongated, partial side elements presenting the periphery of the body, each of said elements terminating at a longitudinal edge,
a plurality of elongated, rigid side rails on respective elements longitudinally coextensive therewith, each of said side rails projecting from said longitudinal edge of the corresponding element and cooperating therewith to provide a sidewall of the mold body complementing said panel-forming component and presenting a continuous inwardly facing molding surface for forming the molded product, at least certain of said side rails having openings therethrough communicating with the interior of the mold body,
a plurality of tapered holeformers received in corresponding openings of said side rails and extending into said mold body interior,
a plurality of tapered recess formers mounted on respective interior ends of said holeformers and each having a substantially greater diameter than the associated holeformer,
said sidewalls having end edges and the flexible elements thereof providing hinge means for swinging movement of the sidewalls on said component outwardly from normal, molding positions and away from a molded product within the mold body to permit said product to be withdrawn therefrom,
the end edges of adjacent sidewalls defining closed corners of the body when said sidewalls are in their normal positions and, upon said outward swinging movement of the sidewalls, said end edges separating to cause said corners to open, and
releasable means associated with said end edges for holding the corners closed to maintain the sidewalls in their normal positions during the molding process.

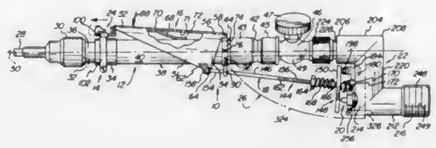
5,667,193

SAFETY SHUT-OFF DEVICE FOR GAS WELDING APPARATUS

Edward R. Chrzanowski, 36 B Gibbs St., Apt. 18, Worcester, Mass. 01607

Continuation-in-part of Ser. No. 294,932, Aug. 23, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,364
Int. Cl.[6] F16K *35/00*
U.S. Cl. 251—104 **2 Claims**

1. A safety shut-off device adapted for use with a gas welding apparatus, the apparatus having a torch handle and a supply of a pressurized combustion reagent, said safety shut-off device comprising:



(a) at least one plunger valve having a valve seat and a reciprocatable plunger member passing through said valve seat for movement along a line of travel which is parallel to the longitudinal axis of the handle, said plunger valve adapted to be positioned between the handle and the supply of pressurized combustion reagent, said plunger member having an end adapted to be adjacent the handle, and said plunger valve being actuatable between a first state, for operatively connecting the handle to the supply of pressurized combustion reagent, and a second state, for operatively disconnecting the handle from the supply of pressurized combustion reagent, said plunger valve being biased towards said second state and actuatable from said first state to said second state substantially instantaneously;

(b) a clamp adapted to circumscribe and to be releasably secured to the handle;

(c) an elongated trigger member having a pivotable end and a free end, said pivotable end being pivotably mounted on said clamp so that said trigger member overlays at least a portion of the handle and lies parallel to the longitudinal axis of the handle to allow said trigger member to be grasped by the user of the gas welding apparatus when the user grasps the handle, and to allow the trigger member to be moved toward said handle;

(d) a linkage rod having a trigger end portion and a valve end portion, said linkage rod being pivotably attached at its trigger end portion to said trigger member;

(e) a pressure plate operatively connected to the valve end portion of said linkage rod, and rotatable about an axis which is at a right angle to the longitudinal axis of the handle, said pressure plate overlying said end of said plunger member, wherein movement of said linkage rod, toward said valve, causes pivoting of said pressure plate so that the pressure plate engages the end of said plunger member, and moves said plunger member along said line of travel, said trigger member, said linkage rod and said pressure plate actuating said plunger valve from said second state to said first state only when the handle and said trigger member are grasped by the user and said trigger member pivoted about said clamp towards the handle; and

(f) a lock-out member adapted to be reciprocatably interposed between said trigger member and the handle to limit the pivoting of said trigger member about said clamp and prevent inadvertent actuation of said valving means.

5,667,194

ARMATURE NEEDLE VALVE ASSEMBLY HAVING PLASTIC CONNECTING MEANS

Richard Barron, Williamsburg, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Dec. 11, 1995, Ser. No. 569,951

Int. Cl.[6] F16K *31/02*

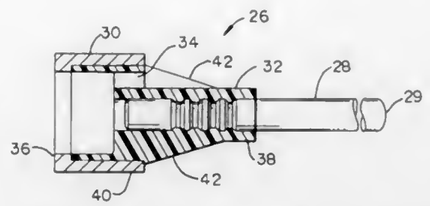
U.S. Cl. 251—129.01 **3 Claims**

1. An armature needle valve assembly for a solenoid operated fuel injector valve comprising:

a needle for contacting and separating from a valve seat;

an armature movable in a first direction and a second direction for causing said needle to contact and separate from the valve seat; and

a plastic connecting means comprising polyphenylene sulfide for securing the armature to the needle;



said plastic connecting means tapering in diameter from the armature to the needle.

5,667,195

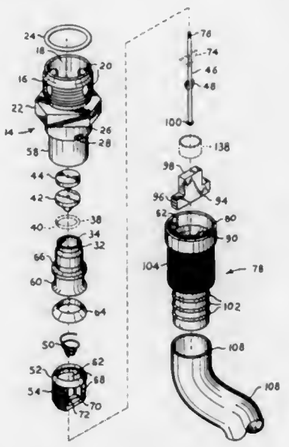
FLUID DRAIN APPARATUS

Matthew H. McCormick, Leesville, La., assignor to Matthew Howard McCormick, Austin, Tex.

Filed Nov. 13, 1995, Ser. No. 557,703

Int. Cl.[6] F16L *37/28*

U.S. Cl. 251—149.6 **20 Claims**



1. A fluid drain apparatus, comprising:

a quick drain valve assembly adapted for permanent installation to a fluid tank, and a connector assembly removably connectable to said quick drain valve assembly in coaxial alignment therewith, with said fluid drain apparatus defining an essentially straight path therethrough for the flow of fluid therethrough;

said quick drain valve assembly and said connector assembly each including mating means providing for the selective quick connection theretogether and disconnection thereapart of each said assembly to one another, with said mating means requiring no more than a partial revolution of said connector assembly relative to said drain valve assembly for connection and disconnection thereto, and with said connector assembly being positively retained upon said drain valve assembly when said drain valve assembly and said connector assembly are removably connected together, and;

said quick drain valve assembly further including an axial drain valve actuating stem installed therein communicating with an axially disposed poppet drain valve with said drain valve being held normally closed by a coaxially disposed valve closure compression spring biased against said valve stem, and said connector assembly including a drain valve stem lifter installed therein, so that said drain valve stem lifter contacts said drain valve actuating stem when said connector assembly is connected to said drain valve assembly and lifts said valve stem against said compression spring, thereby opening said drain valve to allow fluid to drain from the fluid tank to which said drain valve assembly is installed, through said fluid drain apparatus.

5,667,196

SLIDE VALVE TO CLOSE LARGE FLUID CONDUITS, IN PARTICULAR DOUBLE-DISK SLIDE VALVE

Franz-Josef Irnich, Hürtgenwal-Gey, Germany, assignor to Zimmermann & Jansen GmbH, Germany

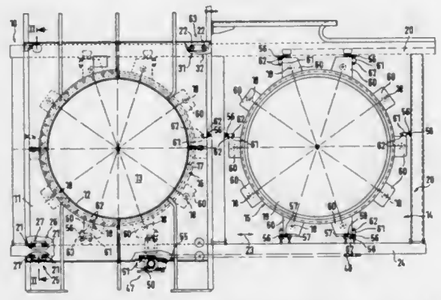
PCT No. PCT/EP95/00185, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/23306, PCT Pub. Date Aug. 31, 1995

PCT Filed Jan. 19, 1995, Ser. No. 535,148

Claims priority, application Germany, Feb. 23, 1994, 44 05 836.5

Int. Cl.[6] F16K *3/16*

U.S. Cl. 251—193 **16 Claims**



1. A slide valve apparatus for mounting adjacent a large fluid conduit having an open end, comprising a valve housing (**11**), a slide gate (**14**) mounted within the said valve housing (**11**) and adapted to move transversely of the open end of the large fluid conduit, said slide gate having a shut-off plate (**15**) on a first side and having a pipe bridge (**16**) on a second side thereof and forming together an appearance of spectacles and having a first position and a second position, a movable support for said slide gate for moving the slide gate in a path across the open end of the fluid conduit and between the first position with said shut-off plate (**15**) aligned and engaging the fluid conduit in a closed valve position and in a second position with said pipe bridge (**16**) aligned with and engaging said fluid conduit in an open conduit position, said movable support for said slide gate including a plurality of roller bearings (**21**, **22**) distributed about said slide gate (**14**) and radially supporting said slide gate with respect to the movement (**23**) along said path to selectively align said shut-off plate and said pipe bridge with said conduit, and said movable support including an elongated guide member (**24**) defining elongated guide surfaces for said rollers on the path across the fluid conduit, said bearing rollers being rotatably mounted in said valve housing (**11**) and located in rolling engagement with said guide surfaces, said bearing rollers (**21**) being arranged in an substantially star configuration about an axis parallel to the path of said slide gate.

5,667,197

VACUUM CHAMBER GATE VALVE AND METHOD FOR MAKING SAME

Trace L. Boyd, San Jose, and Martin F. Yeoman, San Ramon, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Jul. 9, 1996, Ser. No. 679,357

Int. Cl.[6] F16K *25/00*

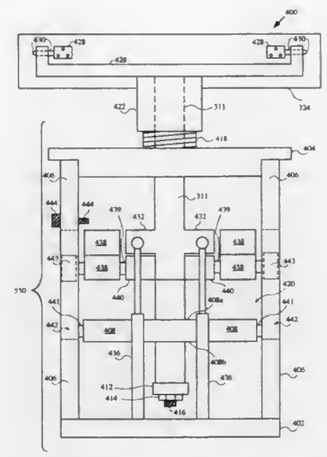
U.S. Cl. 251—193 **29 Claims**

1. A method for implementing a gate drive valve assembly used to isolate a transport chamber from interfacing chambers, the transport chamber being configured to interface with a preselected number of processing chambers, comprising:

providing a drive assembly having top surface for attaching to the transport chamber, the drive assembly being mounted to the transport chamber such that a shaft contained within the drive assembly translates from the drive assembly through said top surface and along a bore in a bottom plate of the transport chamber;

mounting the drive assembly under the transport chamber; and

attaching a gate plate to an end of the shaft when the shaft is at least partly within the chamber after translating along the bore.



5,667,198

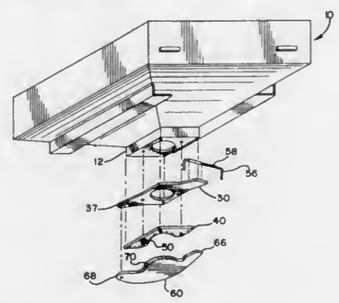
GATE VALVE FOR CONTROLLING THE FLOW OF VISCOUS LIQUIDS

Alexander Robert Sawicki, Pittstown, and Edward R. Webb, Metuchen, both of N.J., assignors to L. A. Dreyfus Company, Inc., Edison, N.J.

Filed Jun. 7, 1995, Ser. No. 477,988

Int. Cl.[6] F16K *1/16*

U.S. Cl. 251—300 **10 Claims**



1. A pivoting gate valve comprising:

a seat plate having an orifice therethrough;

a stop plate mounted on the seat plate, the stop plate having a bottom surface, a top surface and a seal edge that is substantially aligned with a portion of the seat plate orifice, the seal edge having a bevel; and

a valve gate pivotably mounted to said seat plate, said valve gate having a distal handle, a top surface, a bottom surface, and a seal edge between the top surface and bottom surface, the seal

edge has a shape that substantially corresponds to the seal edge of the stop plate with the valve gate seal edge having a bevel that complements the stop plate seal edge so as to mate therewith when the valve is in a closed position, the top surface is substantially parallel and adjacent to the seat plate, the bottom surface of the valve gate and the bottom surface of the stop plate form a substantially flush contiguous surface when the valve is in a closed position.

5,667,199

RAILING MADE OF PREFABRICATED STANDARD COMPONENTS

Wilfried Hamm, Im Wiesengrund 28, D-45481 Mühlheim/Ruhr, Germany

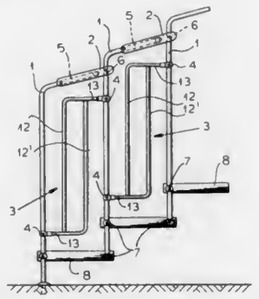
PCT No. PCT/EP93/02640, § 371 Date Mar. 24, 1995, § 102(e) Date Mar. 24, 1995, PCT Pub. No. WO94/08109, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 28, 1993, Ser. No. 406,957

Claims priority, application Germany, Sep. 30, 1992, 42 32 800.4

Int. Cl.[6] E04F *11/18*

U.S. Cl. 256—65 **9 Claims**



1. A railing mounted on a building structure, comprising:

a plurality of prefabricated standard substantially identical transversely spaced upright railing rods having relatively long shanks secured to said structure and bent relatively short upper ends on said shanks;

respective prefabricated standard and substantially identical connecting elements forming handrail segments each connecting one of said upper ends to the shank of a next railing rod, each of said handrail segments having a longitudinally extending blind bore opening at one extremity of the respective handrail segment and slidably receiving a respective short upper end, and a transverse throughgoing bore at an opposite extremity of each handrail segment slidably receiving a shank of the respective next railing rod; and

respective prefabricated standard connecting panels each received between two of said railing rods and connected to the shanks thereof, said handrail segments having lengths substantially corresponding to a width of said connecting panels and bridging a spacing between successive railing rods and corresponding to said width, each of said shanks being received in two annular holders threaded onto pins in a mounting plate affixed to said structure and each of said annular holders having a threaded bore receiving a screw locking the respective holder onto the respective shank.

5,667,200

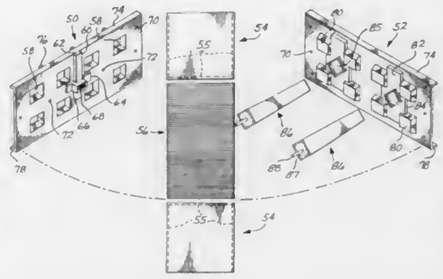
CONCRETE BUILDING BLOCK SYSTEM

Michael L. Kelley, Jr., 3120 Freeman Rd. E., Puyallup, Wash. 98371

Division of Ser. No. 929,726, Aug. 13, 1992, Pat. No. 5,402,609. This application Jan. 5, 1995, Ser. No. 369,118

Int. Cl.[6] B28B *1/14*

U.S. Cl. 264—219 **20 Claims**



1. A method of forming a concrete building block, comprising:

providing bottom, side and end walls of a form;

providing cavity forming projections and projection forming cavities;

providing an elongated slug having first and second ends;

supporting said walls to form a block forming cavity;

supporting the cavity forming projections and the projection forming cavities at opposed locations across the block forming cavity;

supporting the slug within the block forming cavity, to extend across the block forming cavity, with said first end of the slug adjacent the cavity forming projections and said second end of the slug adjacent the projection forming cavities;

filling said block forming cavity with concrete;

allowing said concrete to harden into a concrete block;

separating the walls from each other and from the concrete block;

separating the cavity forming projections and the projection forming cavities from the concrete block; and

removing said slug from said concrete block, to form an opening extending through the concrete block.

5,667,201

SMELT SPOUT FOR A RECOVERY FURANCE

Christopher J. Beveridge, Orleans, and Andrew K. Jones, Gloucester, both of Canada, assignors to Asea Brown Boveri Inc., Canada

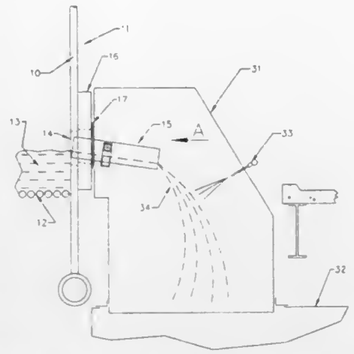
Filed Mar. 24, 1995, Ser. No. 410,221

Claims priority, application Canada, Mar. 25, 1994, 2119963

Int. Cl.[6] C21B *7/14*

U.S. Cl. 266—196 **8 Claims**

5. A chemical recovery furnace in combination with a smelt delivery system comprising at least one spout of U-shaped profile having a relatively thick curved lower section and thinner upwardly extending limbs, said spout having an inlet end that is mounted in an opening in a peripheral wall of the furnace to channel smelt passing through said opening, said spout comprising a casting formed of a refractory and corrosion-resistant metal alloy, said system including a cooling means adapted to deliver a flow of cooling air against the outer surface of said spout at least in a region adjacent the external side of said furnace wall.



5,667,202

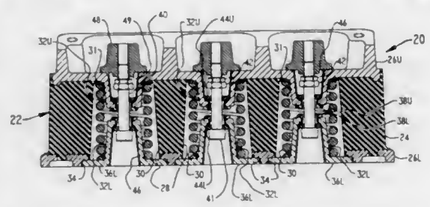
HYBRID ELASTOMER-AND-METAL SPRING ISOLATOR

James T. Gwinn, Erie, Pa., assignor to Lord Corporation

Filed Mar. 19, 1996, Ser. No. 618,148

Int. Cl.[6] F16F *3/10*

U.S. Cl. 267—33 **24 Claims**



1. A hybrid elastomer-and-metal spring vibration isolator of general utility and with specific utility for supporting a large internal combustion engine and isolating its low frequency vibrations, said isolator comprising:

a) an elastomeric sandwich mount including a large elastomer section positioned between a first lower metal plate and a second upper metal plate, said section having a first plurality of cored out metal-spring receiving pockets;

b) a second plurality of metal helical coil springs received in said cored out regions, said second plurality being equal to said first plurality;

c) means to preload said elastomer-and-metal spring isolator by an mount between 50% and 100% of a static load said isolator will experience when supporting said large internal combustion engine.

5,667,203

AIR-SPRING LEG

Matthias Römer, Weinstadt, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 13, 1996, Ser. No. 615,696

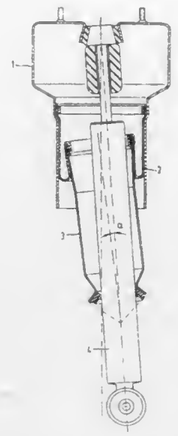
Claims priority, application Germany, Mar. 13, 1995, 195 08 980.4

Int. Cl.[6] B60G *11/30*; F16F *9/04*

U.S. Cl. 267—64.23 **11 Claims**

1. An air-spring leg comprising:

a telescopic element in the form of a shock absorber and which comprises a cylinder, a piston retractable therein, and an air chamber of variable volume which is combined with the telescopic element,



a first casing part connected to the piston and surrounding at least a portion of said piston,

a second casing part fastened to the cylinder,

a bellows arranged between the casing parts, and which substantially concentrically surrounds the telescopic element, at least over an axial portion,

wherein one of said casing parts has a diameter smaller than that of the other casing part and is axially retractable into the other casing part during inward spring strokes, and

wherein the second casing part is arranged by its end remote from the bellows for wobbling movement on the cylinder of the telescopic element.

5,667,204

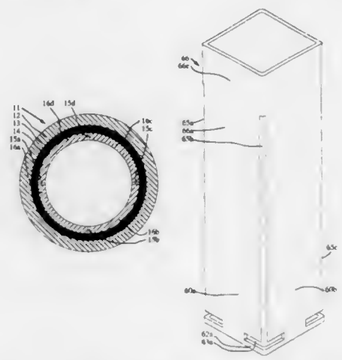
SLIT-TUBE REPLICATED IN-PLACE CONSTRAINED LAYER DAMPER AND METHOD

Alexander Henry Slocum, Concord, N.H., assignor to AESOP, Inc., Concord, N.H.

Filed Jun. 26, 1995, Ser. No. 494,943

Int. Cl.[6] F16F *1/14*

U.S. Cl. 267—136 **17 Claims**



1. An apparatus for internally damping a hollow longitudinally extending structural member, the hollow of which is defined by the inner surface of the member, that comprises, a separate constraining surface inserted within and extending co-extensively adjacent the inner surface of the structural member, the constraining surface being provided with a plurality of transversely spaced longitudinally extending slits co-extensive with said inner surface of the

structural member, the slit constraining surface being covered by a thin viscoelastic damping layer, and the damping-layer-covered constraining surface being replicated in place adjacent, along, and to said inner surface of the structural member by an interposed replicating material,

and in which the constraining surface is the outer surface of a tubular member of similar cross-sectional shape to that of the structural member and with the tubular member of slightly less cross-dimension than the hollow of the structural member,

and in which the slits extend along the tubular member but stop short of both ends of the tubular member, one end of the tubular member remaining unslit and the other provided with cross slits to form flexures.

5,667,205

FLUID-SEALED TYPE ANTI-VIBRATION RUBBER DEVICE

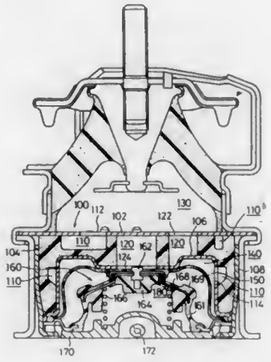
Yuji Mutoh, and Kazutoshi Satori, both of Saitama, Japan, assignors to Yamashita Rubber Kabushiki Kaisha, Saitama, Japan

Filed Nov. 30, 1995, Ser. No. 566,427

Claims priority, application Japan, Mar. 22, 1995, 7-063154; Nov. 16, 1995, 7-298103

Int. Cl.[6] F16F *13/00*

U.S. Cl. 267—140.13 **11 Claims**



1. A fluid-sealed type anti-vibration rubber device comprising,

a first connecting member mounted to one of a car body side or a vibration member side,

a second connecting member mounted to the other of the car body side or the vibration member side, and

a rubber block disposed between said first connecting member and said second connecting member, a closed space being formed by a portion of said rubber block, said closed space being partitioned into a plurality of liquid chambers by a partitioning member, said liquid chambers being communicated by a short idle orifice having a large passage section area and a long damping orifice having a small passage section area provided in the partitioning member, said idle orifice being open by a valve only during idling and said damping orifice being always open, wherein

said partitioning member includes a first side and a second side and has a passage member therebetween to partition said liquid chambers, said passage member having a predetermined thickness, said first side having an abutting surface upon which said valve seats,

said idle orifice has an outlet opening in said abutting surface forming a portion of said valve and an inlet opening in said second side, said idle orifice outlet opening and said idle orifice inlet opening not overlappingly aligned in the direction of thickness,

said passage member having a liquid passage communicating said inlet opening and said outlet opening of said idle orifice, said liquid passage including a groove which varies in depth in the direction of thickness so as to be deeper at said outlet opening than at said inlet opening such that fluid flowing through said liquid passage is provided with a flow inclined to said first side from said inlet opening to said outlet opening and a flow line of fluid flowing out from said outlet opening is inclined to said first side, and

wherein the outlet center of said idle orifice is shifted from the center of said valve toward a flowing direction of fluid flowing through said idle orifice such that when said valve opens, said valve inclines obliquely to said first side under the pressure force of fluid flowing from said outlet opening.

5,667,206

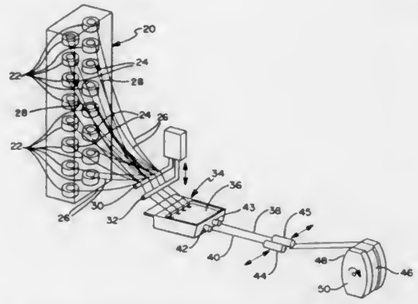
HYBRID COMPOSITE LEAF SPRINGS

Jemei Chang, Sugarland, Tex., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 184,548, Jan. 21, 1994, Pat. No. 5,425,829, which is a continuation-in-part of Ser. No. 24,894, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 712,288, Jun. 10, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 387,641

Int. Cl.[6] F16F *1/36*

U.S. Cl. 267—148 **5 Claims**



1. A molded resin-bonded hybrid composite automotive leaf spring comprising a plurality of parallel strands of fibers bonded in a resin matrix, said fibers comprising strands of glass fibers and strands of different modulus fibers grouped together in bundles which form a pattern that is replicated throughout the cross-section of the spring, all of said strands being distributed throughout the resin matrix to provide a homogeneous structure, said different modulus fibers being selected from the group consisting of polyethylene terephthalate and nylon fibers and having a lower modulus, greater ductility and better abrasion resistance than said glass fibers.

5,667,207

MULTI-PURPOSE WORK STATION ASSEMBLY

James M. Pistole, P.O. Box 144, US 41, Jasper, Fla. 32052-0144

Filed Jan. 5, 1995, Ser. No. 369,183

Int. Cl.[6] B66F *3/00*

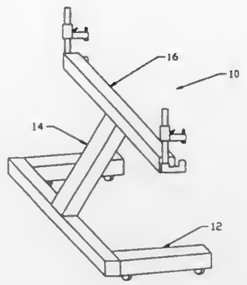
U.S. Cl. 269—17 **24 Claims**

1. A multi-purpose work station assembly comprising:

a base that is attached to a first end of an elongated body;

said clamping assembly includes at least one clamping device attached thereto;

said base is in a U-shape structure having a main portion and a first side portion perpendicular to said main portion and a second side portion perpendicular to said main portion and said first side portion is parallel to said second side portion;



said base further includes a top surface and a bottom surface and said body;

said body is attached to said top surface centrally on said main portion and a plurality of wheels are attached to said bottom surface;

said main portion of said base can be adjusted in width and said first side portion and said second side portions can be adjusted in width and said first side portion and said second side portions can be adjusted in length by a first adjusting means.

5,667,208

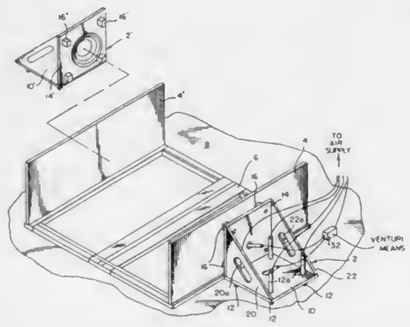
VACUUM CLAMPING SYSTEM FOR ASSEMBLING CABINETS

John M. Schroer, Arlington, and Gary E. Smith, Berryville, both of Va., assignors to American Woodmark Corporation, Winchester, Va.

Filed Dec. 20, 1995, Ser. No. 575,541

Int. Cl.[6] B25B *11/00*

U.S. Cl. 269—21 **15 Claims**



1. Clamping apparatus for clamping a planar member at a given angle relative to a workpiece arranged on a generally-horizontal assembly table, comprising:

(a) a frame;

(b) means supporting said frame for vertical displacement between a normal elevated transport position and a lowered clamping position relative to said assembly table, said frame supporting means normally supporting said frame, when in said elevated position, for sliding displacement on the assembly table toward an assembling position relative to said workpiece, said frame supporting means including normally-activated foot means for preventing displacement of said frame from said elevated position to said lowered position;

(c) means for deactivating said foot means;

(d) first suction cup means carried by said frame for connecting the panel to said frame; and

(e) second suction cup means operable when said foot means is deactivated for connecting said frame with the assembly table.

5,667,209

CLAMPING DEVICE FOR SECURELY CLAMPING A WORKPIECE ON A CLAMPING TABLE

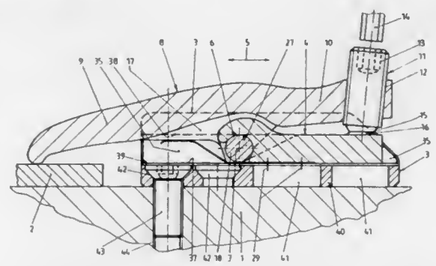
Thomas Lenzkes, Dublin, Ireland, assignor to Shanview Patents Limited, Dublin, Ireland

Filed Nov. 27, 1995, Ser. No. 565,302

Claims priority, application Germany, Dec. 1, 1994, 44 42 803.0

Int. Cl.[6] B23Q *3/02*

U.S. Cl. 269—93 **10 Claims**



1. A device for securely clamping a workpiece on a clamping table, the device comprising:

a guide shoe arranged and configured to be fastened on the clamping table, the guide shoe including a substantially longitudinal body, a substantially flat bottom surface arranged and configured to engage a top surface of the table, first and second side wails extending upward from the bottom surface, a central longitudinal space between the first and second side walls, a longitudinal slot disposed on each side wall adjacent the longitudinal space, wherein the side walls, longitudinal space and slots form an inverted T-shaped cross-section which extends over the length of the guide shoe:

a clamping claw including a first end, a second end and a center portion disposed between the first and second ends, the clamping claw arranged and configured to form a tilting lever pivotable about the center portion, the clamping claw including a clamping leg at the first end, a bracing leg disposed at the second end, and a bearing surface disposed in the center portion;

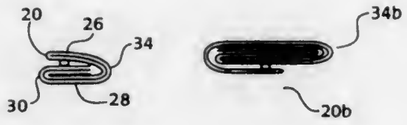
a clamping bolt arranged and configured to pass through the clamping leg and fix the bracing leg into a clamping position such that the bracing leg securely clamps the workpiece against the table;

a bearing plate disposed between the guide shoe and the clamping claw, the bearing plate including first and second longitudinal protrusions which are complementary in shape to the slots in the first and second side walls of the guide shoe, respectively, wherein the bearing plate is guided in a longitudinally sliding manner in the T-shaped cross-section, the bearing plate further including a bearing surface on a top portion thereof for pivotally receiving the bearing surface disposed on the center portion of the clamping claw such that the clamping claw pivots with respect to the bearing plate; and

wherein the clamping bolt is threadingly received through the second end of the clamping claw and adapted to engage the bearing plate to pivot the clamping claw about its bearing surface to pivot the bracing leg into the clamping position, to secure the workpiece against the table and stabilize the bearing plate with respect to the guide shoe;

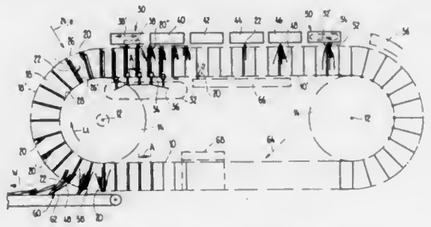
whereby disengagement of the clamping bolt from the bearing plate allows the bearing plate to longitudinally translate with respect to the guide shoe for repositioning the clamping leg inward from a border portion of the workpiece.

5,667,210
FOLDED LEAFLET AND METHOD AND APPARATUS FOR MAKING SAME
Stephen W. DeLise, Jr., West Islip, N.Y., assignor to Freeport Miniature Folding Company Inc.
Filed Apr. 7, 1995, Ser. No. 418,184
Int. Cl.[6] B41L *43/12;* **B42D** *3/18*
U.S. Cl. 270—37 **9 Claims**



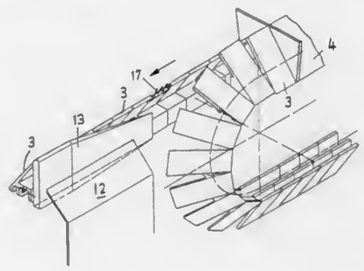
1. A folded closed leaflet formed from a printed sheet having a longitudinally extending edge, the leaflet comprising:
a plurality of parallel fold lines formed in the sheet dividing the sheet into overlapping strips, each parallel fold line extending between a first free end and a second spaced opposite free end;
a first cross fold perpendicular to said plurality of parallel fold lines forming substantially equal halves of said strips and positioning said second free end adjacent said first free end to form a combined free end; said combined free end bordering a first panel and said first cross fold bordering a second panel with a third panel disposed between said first and second panels;
a second cross fold superimposing said first panel onto said third panel;
a third cross fold folding said first and third panels in half to superimpose a first portion of said first and third panels onto a second portion of said first and third panels to form a stack with four panels;
a final cross fold superimposing said second panel onto said stack of four panels formed from said folded first and third panels; and
adhesive means interior of the leaflet joining said second panel to said third panel to form the closed leaflet.

5,667,211
APPARATUS FOR THE ADHESIVE BINDING OF PRINTED PRODUCTS
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Switzerland
Filed Mar. 23, 1995, Ser. No. 409,793
Claims priority, application Switzerland, Mar. 25, 1994, 00907/94
Int. Cl.[6] B65H *39/00;* **B42C** *11/00*
U.S. Cl. 270—52.16 **39 Claims**



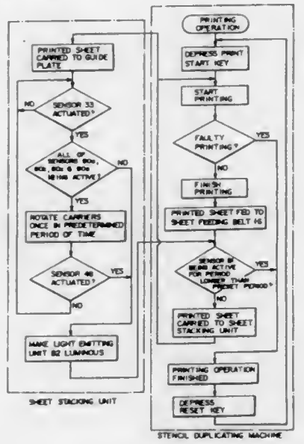
1. An apparatus for the adhesive binding of printed products comprising:
a plurality of receiving parts arranged one behind the other and continuously driven in a circulation direction along a continuous circulating path, each of the receiving parts having a rest element arranged transversely with respect to said continuous circulating path and a controllable clamping member which interacts with the rest element;
a feed station at which printed products are introduced into the receiving parts, between the rest element and the clamping member;
a plurality of machining stations which are arranged one behind the other and provided downstream of the feed station in the circulation direction, each of the machining stations including at least one machining tool which acts on each printed product which is transported past the respective machining station, and wherein the tools, in at least certain sections along the circulating path, run along with the printed products in the circulation direction and machine the printed products during the co-running operation;
a discharge station at which the finished products are discharged out of the receiving parts.

5,667,212
GATHERING AND WIRE-STITCHING MACHINE
Peter Merkli, Oftringen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland
Filed Apr. 24, 1995, Ser. No. 427,228
Claims priority, application Switzerland, Apr. 26, 1994, 01284/94
Int. Cl.[6] B65H *39/00*
U.S. Cl. 270—52.16 **21 Claims**



1. In a gathering and wire-stitching machine for printed sheets having a gathering section including at least one run of an endlessly circulating pulling means and supporting elements fastened to the pulling means and forming at least a part of a saddle-shaped support for the printed sheets which are successively deposited thereon in a straddled position, with the gathering section leading into an adjoining downstream stitching section for stitching the printed sheets which are deposited one on top of the other, the improvement wherein:
the saddle-shaped support extends over the gathering section and the stitching section;
said at least one run comprises parallel runs of two endlessly circulating pulling means, the two runs having effective conveying portions of different lengths; said supporting elements include two arrangements of side by side supporting elements, each arrangement fastened to a respective one of the endlessly circulating pulling means, each supporting element having one side with a sloping support surface that has a section above the respective endlessly circulating pulling means, said two arrangements of supporting elements forming two support surfaces facing away from each other.

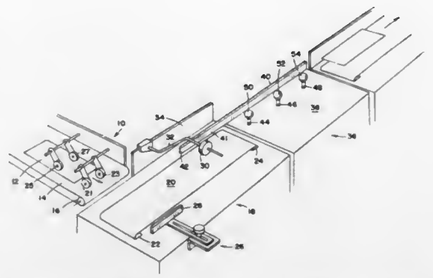
5,667,213
SMALL-SIZE-SHEET STACKING UNIT AND CLEANING SHEET THEREFOR
Hiroaki Chida; Mitsuo Sato, both of Shibata-machi, and Shigenobu Irokawa, Sendai, all of Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi, Japan
Filed Mar. 13, 1995, Ser. No. 402,605
Claims priority, application Japan, Jun. 15, 1994, 6-132856; Dec. 22, 1994, 6-320360
Int. Cl.[6] B65H *39/02*
U.S. Cl. 270—58.03 **13 Claims**



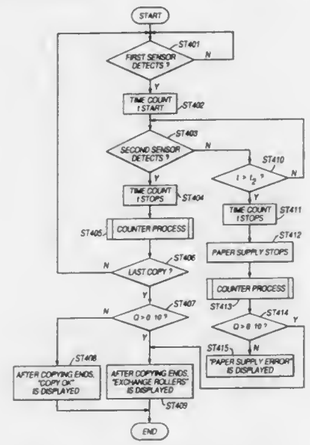
1. A small-size-sheet stacking unit capable of being disposed on a printed sheet tray of a printing machine, comprising:
(a) a guide plate for guiding a printed sheet discharged onto the printed sheet tray;
(b) a plurality of carriers for carrying the printed sheet guided by the guide plate, the carriers including holding portions for holding opposite side edges of the printed sheet, the holding portions being longitudinally arranged with a predetermined space therebetween;
(c) driving means for driving the carriers so that one actuation of the carriers carries the printed sheet held by a group of said holding portions by a distance equal to the space between adjacent holding portions; and
(d) a sheet receptacle for receiving the printed sheet carried by the carriers;
wherein the stacking unit is operationally associated with a control means for controlling the driving means, the control means controlling the driving means so as to rotate the carriers a number of times which is substantially equal to a number of the holding portions in response to a signal indicative of an end of the printing operation.

5,667,214
ENVELOPE TURNING AND ALIGNING APPARATUS
Eric A. Belec, Southbury, and Bryan L. Boggiano, Waterbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Sep. 15, 1995, Ser. No. 529,947
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—225 **7 Claims**

1. Apparatus for turning and aligning flat articles, comprising:
a first conveyor for transporting flat articles horizontally from an upstream to a downstream position;
a second conveyor oriented at a 90 degree angle relative to said first conveyor, said second conveyor having an upstream and a downstream end, wherein said upstream end of said second conveyor is situated adjacent said downstream end of said first conveyor, said second conveyor situated to receive said flat articles from said first conveyor;
a pivoting device located on one side of said second conveyor for engaging a side of said flat articles; and
a third conveyor having an upstream end located adjacent the downstream end of said second conveyor, said third conveyor having a flat deck, a first angled roller extending just above said flat deck, a registration wall on one side of said flat deck, and a normal force sphere mounted above said angled roller, wherein said angled roller and said sphere drive said flat articles downstream and against said registration wall and said registration wall extends along said second conveyor, and said pivoting device includes the upstream end of said registration wall.



5,667,215
PAPER CONVEYING DEVICE
Tsutomu Yoshino, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 7, 1995, Ser. No. 524,516
Claims priority, application Japan, Sep. 16, 1994, 6-221628
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—258.01 **9 Claims**



1. A paper conveying device comprising:
roller means for conveying paper;
first and second sensor means for sequentially detecting the paper conveyed through the roller means;
means for measuring a time required from the time when the first sensor means detects the paper until the second sensor means detects the paper;
first judging means for judging whether the time measured by the measuring means is in excess of a prescribed set value;

means for counting the number of times exceeding the prescribed set value as judged by the first judging means; and

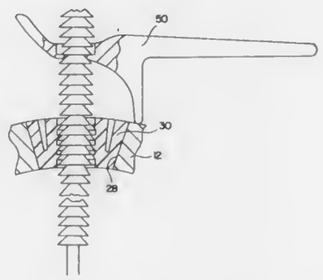
second judging means for judging the life of the roller means based on the number of times exceeding the prescribed set value as counted by the counting means.

5,667,216

STRING ASSEMBLY FOR A RACKET

Robert H. Gunn, P.O. Box 190, 8 Production Way, Avenel, N.J. 07001

Filed Jul. 29, 1996, Ser. No. 681,715
Int. Cl.[6] A63B *51/14*
U.S. Cl. 473—73 A **4 Claims**



1. A game racket assemby including a handle, which comprises:

a head frame having a plurality of sets of orifices for positioning string members, each set of said orifices having an orifice formed with a channel thereby forming a base surface and a receiving orifice;

an insert member positioned in said receiving orifice and having a planar base surface;

string members of preselect length formed with a cap portion and a serrated end portion, each of said string members being positioned through said cooperating orifices wherein said cap member is positioned on said base surface and said orifice having said channel, said serrated end portion of each of said string members positioned within said insert member, each of said string members being tensioned to a predetermined level whereby surfaces of said serrated end portion are captured on planar base surfaces of said insert member.

5,667,217

ROLL-DOWN ARCADE GAME

Matthew F. Kelly, San Ramon; Bryan M. Kelly, Almo; Phillip Yee, San Francisco, and Kevin A. Heyes, San Jose, all of Calif., assignors to RLT Acquisition, Inc., Pleasanton, Calif.

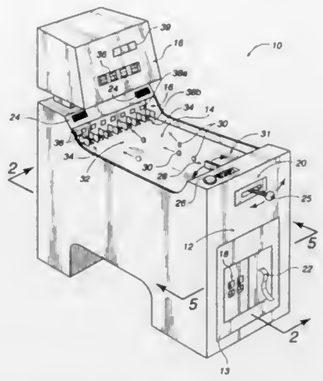
Filed Aug. 29, 1995, Ser. No. 520,695
Int. Cl.[6] A63F *7/00*
U.S. Cl. 273—126 R **49 Claims**

1. A game apparatus comprising:

a playing surface;

a playing piece guiding mechanism positioned at a player end of said playing surface and movable by a player of said game apparatus for directing playing pieces across said playing surface in a direction determined by said player;

an activation control, wherein when said activation control is activated once, a plurality of playing pieces are released onto said playing surface through said playing piece guiding mechanism; and



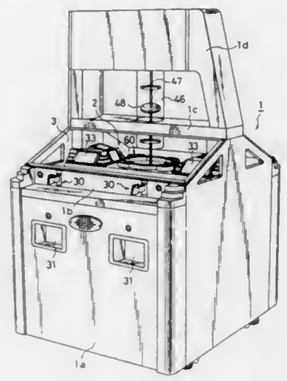
a target positioned near a target end of said playing surface for receiving at least one of said released playing pieces.

5,667,218

MEDAL GAME MACHINE

Takashi Kumabe, Suginami-ku; Takashi Hamano, Kawasaki; Isao Uehara, Zama, and Takuml Kikuya, Yokohama, all of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan

Filed Sep. 9, 1996, Ser. No. 709,956
Claims priority, application Japan, Sep. 12, 1995, 7-258291
Int. Cl.[6] A63F *7/02*
U.S. Cl. 273—138.3 **22 Claims**



1. A medal game machine comprising:

a fixed table for placing medals thereon;

a medal acquisition opening defined alongside of said fixed table and communicating with a medal outlet slot accessible by a player;

pusher means for pushing a medal on said fixed table toward said medal acquisition opening; and

supply means for supplying medals onto said fixed table;

said supply means comprising:

a turntable for placing medals thereon;

drive means for rotating said turntable;

medal supply means for supplying medals onto said turntable; and

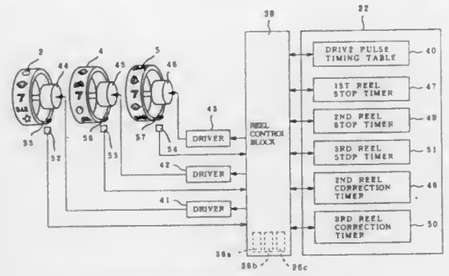
transfer means for transferring medals from said turntable onto said fixed table.

5,667,219

VARIABLE DISPLAY GAMING MACHINE

Kazuyoshi Ishibashi, Tokyo, Japan, assignor to Universal Sales Co., Inc. Ltd., Japan

Filed Dec. 22, 1994, Ser. No. 362,149
Claims priority, application Japan, Dec. 24, 1993, 5-328843
Int. Cl.[6] A63F *7/00; G07F 17/34*
U.S. Cl. 273—143 R **11 Claims**



1. A gaming machine comprising:

a variable display device for variably displaying symbols for each of a plurality of symbol columns by moving said each of said plurality of symbol columns separately in a predetermined direction, said each of said plurality of symbol columns being formed by a plurality of symbols arranged in said predetermined direction;

drive signal-generating means for generating drive signal for operating said variable display device, when predetermined gaming conditions are satisfied;

stop symbol-determining means responsive to said drive signal for determining a combination of stop symbols to be displayed when said symbol columns are stopped;

position-detecting means for detecting positions of said stop symbols separately for said symbol columns, respectively, and for generating position signals indicative of said positions of said stop symbols, respectively;

correction amount-determining means for determining correction amounts for correcting said positions of said stop symbols based on said position signals generated by said position-detecting means; and

control means responsive to said drive signal for controlling the movement and stop of said symbol columns displayed by said display means, such that the movement of said symbol columns is controlled at the start of movement thereof by the use of said correction amounts determined by said correction amount-determining means until the speed of movement of each of said symbols columns reaches a predetermined uniform speed.

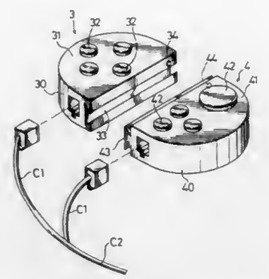
5,667,220

CONTROLLER FOR A VIDEO GAME CONSOLE

Chou Cheng, Miao-Li Hsien, Taiwan, assignor to Top Game & Cnmpany Ltd., Miao-Li Hsien, Taiwan

Filed Nov. 13, 1995, Ser. No. 556,508
Claims priority, application China, Nov. 15, 1994, 94243459.5
Int. Cl.[6] A63B *7/00*
U.S. Cl. 273—148 B **14 Claims**

1. A controller for a video game console, comprising first and second handheld control units, each of which has a housing with a finger operating surface and an engaging surface which is transverse to said finger operating surface, said finger operating surface being provided with a control button unit, means for transmitting signals to the video game console when said control button unit of each of said control units is operated and means for releasably interconnecting said housings of said handheld control units, said interconnecting means including at least one engaging projection extending from said engaging surface of onr of said housings, and



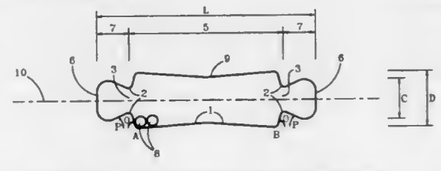
at least one engaging groove which is formed in said engaging surface of the other one of said housings for releasably engaging said engaging projection.

5,667,221

TUBULAR PUZZLE OR TOY WITH ROLLING MEMBERS

Martin René Lièvre, RR #3, Thedford, Ontario, Canada, N0M 2N0

Filed Jun. 14, 1995, Ser. No. 490,431
Int. Cl.[6] A63F *9/06*
U.S. Cl. 273—153 R **4 Claims**



1. A manually operable puzzle/toy device comprising:

a. a completely enclosed tubular transparent confinement capsule entirely symmetrically shaped about its longitudinal central axis;

b. a plurality of freely moving balls, each shaped similarly, contained within the confinement capsule;

c. a plurality of orifices, each shaped similarly, forming part of the capsule wall and positioned towards each end of the confinement capsule, thereby creating a trap for the balls;

d. said orifices specifically constructed such that the capsule wall leading into the trap is steeper or at a greater angle to the longitudinal axis than the capsule wall inside the trap, such that a ball inside the trap situated at one end of the capsule would escape the trap if the device were tilted in attempts to roll another ball into another trap situated at another end of the capsule;

e. said balls which can propagate in opposite directions simultaneously along a single plane that passes through the device's longitudinal central axis due to any single or plurality of spin direction(s) for the device;

f. said confinement capsule in which a single continuous enclosed capsule wall or shell serves a dual purpose by functioning as containment envelope and by providing a complex configuration in retarding or controlling the movement of said balls within.

5,667,222

AUTOMATIC GOLF BALL TEE SETTER

Juan F. Bunyi, 2603 Kelliwod Lakes Dr., Katy, Tex. 77450

Filed Oct. 5, 1994, Ser. No. 318,283
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—134 **12 Claims**

1. A golf station, comprising:

(a) a circular frame member;



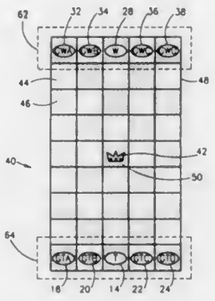
(b) a generally horizontal platform rotatably recessed within the frame member, the platform defining a golf ball passage;
(c) a ball elevating apparatus housed below the platform; and
(d) a delivery chute fixedly attached to the platform to rotate in concert with the platform, the delivery chute having a top portion adapted for mounting a detachable golf ball magazine.

5,667,223

STRATEGY BOARD GAME AND METHOD OF PLAY THEREOF

Avraham Yedid, 5 Karmon Street, Jerusalem 96308, Israel

Filed Aug. 22, 1996, Ser. No. 701,324
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—261 **12 Claims**



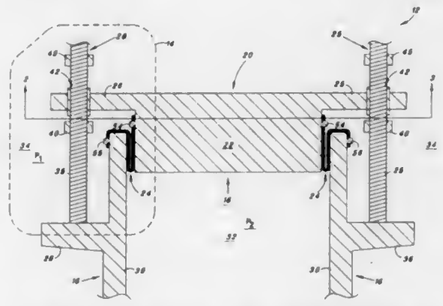
1. A board game playable by two players, comprising:
a game board having a checkerboard playing surface, said playing surface having a plurality of squares, said plurality of squares alternating light and dark in color and arranged in adjacent horizontal rows and vertical columns, said playing surface having a conquest square located in the center thereof, the number of horizontal rows being greater than the number of vertical columns, said game board having a first horizontal end row and a second horizontal end row;
a first set of playing pieces and a second set of playing pieces, each set of playing pieces including at least one primary playing piece and an even, as opposed to odd, number of secondary playing pieces, said secondary playing pieces visually distinguishable from said at least one primary playing piece;
wherein said first and said second set of playing pieces visually distinguishable from each other; and
wherein said first set of playing pieces initially located in said first horizontal end row, said second set of playing pieces initially located in said second horizontal end row.

5,667,224

ADJUSTABLE SEAL ASSEMBLY

Holger H. Streckert, San Diego, and Richard D. Kantner, La Jolla, both of Calif., assignors to General Atomics, San Diego, Calif.

Filed May 14, 1996, Ser. No. 649,947
Int. Cl.[6] F16J *15/50*
U.S. Cl. 277—3 **22 Claims**



1. An adjustable seal assembly for maintaining a fluidtight seal between (a) a vessel having an opening leading to chamber means therewithin and (b) closure means proportioned to close the opening except for a gap between said closure means and said vessel, said vessel and said closure means being adapted to function in a vacuum environment and being constructed to accommodate relative motion between said closure means and said vessel when a vacuum exists on one side of the seal assembly, which seal assembly comprises:
a thin flexible membrane for sealing the gap between said closure means and said vessel when a vacuum environment exists on one side of the seal assembly;
means for attaching a first end of said flexible membrane to a surface of said closure means along a perimeter thereof;
means for attaching an opposite end of said flexible membrane to a surface of said vessel; and
one or more guide mechanisms attached to said closure means and said vessel to guide the relative motion between said closure means and said vessel;
wherein said thin flexible membrane is designed so that a segment thereof generally forms a loop configuration in the region of said gap which permits the relative motion between said closure means and said vessel while maintaining the fluidtight seal.

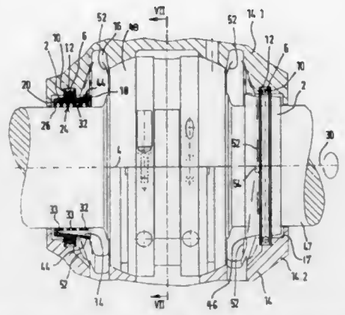
5,667,225

SELF-DRAINING SHAFT SEAL WITH WEDGE-SHAPED TROUGH

Angela Vollmer, Dortmund, and Joachim Meyer, Hannover, both of Germany, assignors to Renk Aktiengesellschaft, Augsburg, Germany

Filed Feb. 20, 1996, Ser. No. 603,135
Claims priority, application Germany, Feb. 17, 1995, 195 05 404.0; Feb. 17, 1995, 195 05 405.9
Int. Cl.[6] F16J *15/44*
U.S. Cl. 277—68 **22 Claims**

15. A self-draining seal for a rotating shaft, the seal comprising a generally cylindrical body having an axis, a radially outer periphery, a radially inner periphery, an axially inner front end wall and an axially outer rear end wall, means for seating the seal in an aperture of a housing, a plurality of axially spaced sealing rings on the inner periphery, each sealing ring being continuous and unbroken, the sealing rings contacting the rotating shaft and defining annular collection channels therebetween, one collection channel being adjacent the front axially inner end wall and another channel being adjacent the rear axially outer end wall, means forming a trough in the body, the trough extending axially within the body



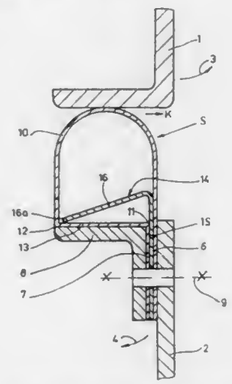
below the plurality of sealing rings, below the collection channels and radially spaced between each collection channel and the radially outer periphery of the seal, the trough including means forming a discharge orifice in the axially inner front end wall, means forming drain apertures at a bottom of each channel, the trough including a radially outer bottom wall and a radially inner top wall, each drain aperture extending through the radially inner top wall, the transverse cross section of the trough having a width to heighth ratio of at least two to one, whereby a flow path of adequate capacity for the draining of all collection channels is provided.

5,667,226

DEVICE FOR PROVIDING A SEAL BETWEEN TWO PARTS OF AN INSTALLATION

Hans-Jurgen Janich, Beckum, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

PCT No. PCT/EP94/02221, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO95/02136, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 7, 1994, Ser. No. 481,536
Claims priority, application Germany, Jul. 8, 1993, 43 22 806.2
Int. Cl.[6] F16J *15/05*
U.S. Cl. 277—189 **9 Claims**



1. A sealing device for effecting a seal between two relatively movable members, said device comprising a hollow body having a pair of substantially parallel, spaced apart side walls joined at corresponding ends by a domed top wall and having a flat bottom wall underlying said top wall and joined to one of said side walls at substantially a right angle, a pair of substantially parallel, spaced apart mounting legs, one of which is joined to the other of said side walls and the other of which is joined to said bottom wall; a reinforcing member having a first part interposed between said mounting legs and a second part extending into said body, said second part spanning said bottom wall and having a free end terminating adjacent the juncture of said bottom wall and said one of said side walls; and fastening means for securing said mounting legs and said first part of said reinforcing member together.

5,667,227

ULTRAVIOLET RADIATION CURED GASKET COATING

Brent R. Boldt, Rolling Meadows, Ill., assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 97,987, Jul. 27, 1993, Pat. No. 5,536,758, which is a continuation of Ser. No. 867,887, Apr. 13, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 402,661
Int. Cl.[6] B65D *53/00*; F02F *11/00*; F16J *15/00*; F16K *41/00*
U.S. Cl. 277—227 **13 Claims**

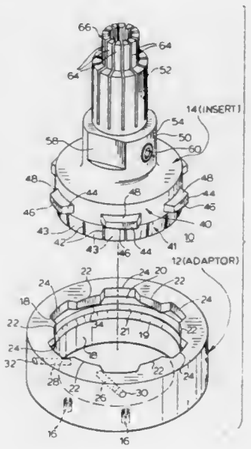
1. A gasket having a coating layer deposited thereon comprising:
a gasket body having a top and a bottom surface, and
a coating layer deposited on at least one of said top and bottom surfaces, said coating layer being formed by ultraviolet radiation curing a coating composition of between about 50 and about 100 parts by weight of an aromatic urethane acrylic oligomer, between about 30 and about 55 parts by weight of isobornyl acrylate monomer, between about 3 and about 10 parts by weight of a photoinitiator for catalyzing rapid polymerization of said coating composition, and between about 0.5 and about 2 parts by weight of a wetting agent to release air from said coating composition, wherein the total parts by weight is between about 146 and about 162 and wherein the total cure time of said coating composition required by ultraviolet radiation is less than 20 seconds.

5,667,228

QUICK CHANGE MANDREL FOR AN ENGINE LATHE ETC

Mario Fabris, 188 N. Service Rd., Grimsby, Ontario, Canada, L3M 4E8

Filed Jun. 20, 1995, Ser. No. 492,796
Int. Cl.[6] B23B *31/40*
U.S. Cl. 279—143 **15 Claims**



1. A mandrel for gripping and clamping a workpiece for rotation about a spin axis of a lathe comprising:
an adaptor for mounting on a suitable lathe spindle, said adaptor having a receptacle therein having female bayonet means therein.

an insert for mounting in said adaptor receptacle, said insert having suitable workpiece receiving means on one end thereof,

said insert having male bayonet means projecting from the opposite end thereof,

said adaptor and insert being coupled together by insertion of said male bayonet means into said female bayonet means.

5,667,229

TOBOGGAN WITH RUNNERS

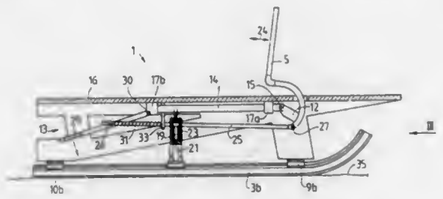
Peter Wenger, Baltschieder, Switzerland, assignor to Lemiteg Lebensmittel - und Freizeittechnik GmbH, Neuhausen, Germany

PCT No. PCT/CH93/00094, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/23983, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 8, 1993, Ser. No. 351,446

Int. Cl.[6] B62B *13/12;13/14*

U.S. Cl. 280—22 **6 Claims**



1. A steerable sled comprising a plurality of runners which are deformable by an adjusting means for steering the sled;

a user actuated steering member which acts on the adjusting means;

an automatic braking means which includes a braking member operatively connected to the steering member, the braking member being normally biased downwardly into a braking position for engagement with a runway for the sled and the braking member being movable to a raised non-braking position when the steering member is pulled by the user;

said adjusting means comprising a shaft upon which the steering member is mounted, lateral pivotal movement of the steering member by the user resulting in a rotary movement of the shaft, the shaft extending in the longitudinal direction of the sled and to which a first force-transmitting means is rigidly connected, which by means of a second force transmitting means, effects the lateral deformation of the two runners;

said second force-transmitting means further including a force-transmitting linkage which is connected to the runners and a resilient clamp by which the first force-transmitting means are resiliently clamped in such a manner that the first force-transmitting means can rotate in the clamp and will convert a rotary movement of the shaft to a linear movement of the force-transmitting linkage.

5,667,230

RACK LIFT ASSEMBLY

David M. Riley, Garland; Curtis W. Olson, Plano; Jeffrey S. Williamson, Carrollton; Brian M. Attard, Allen, and Michael K. Pratt, Plano, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

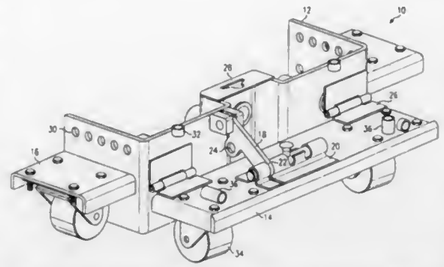
Filed Jun. 2, 1995, Ser. No. 459,659

Int. Cl.[6] B62B *3/10*

U.S. Cl. 280—79.11 **10 Claims**

1. A rack lift assembly for transporting telecommunication equipment, comprising:

a side mount plate operable to connect to an equipment rack holding the telecommunication equipment;



a caster plate removably and rotatably connected to said side mount plate, said side mount plate having a latch pin to secure said caster plate in an operating position, said caster plate having a deadbolt to secure said latch pin to said caster plate, said caster plate having a first wheel and a second wheel to provide movement of the telecommunication equipment.

5,667,231

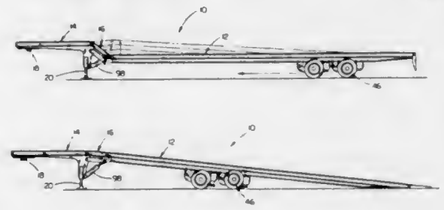
TRAILER

Dale J. Dierks; A. Dean Oehlerking; Ray E. Paradis, and Harry E. Voelzke, all of Mitchell, S. Dak., assignors to Dakota Mfg. Co., Inc., Mitchell, S. Dak.

Filed Sep. 14, 1995, Ser. No. 528,323

Int. Cl.[6] B62D *33/08;* **B60P** *1/04*

U.S. Cl. 280—149.2 **4 Claims**



3. A trailer, comprising:

a first longitudinally extending frame means having rearward and forward ends;

means at the forward end of said first frame means for connection to a prime mover;

said first frame means including at least first and second elongated and longitudinally extending frame members having rearward and forward ends;

at least one first suspension system longitudinally slidably mounted on said first frame member;

at least one second suspension system longitudinally slidably movably mounted on said second frame member;

at least one transversely extending, elongated axle member secured to and extending between said first and second suspension systems;

at least one ground engaging wheel member at each end of said axle member;

means for selectively slidably adjusting said first and second suspension systems with respect to said frame means;

a main deck supported on said first frame means and having rearward and forward ends;

an upper deck, having rearward and forward ends, positioned on said trailer forwardly and above said main deck;

said forward end of said main deck being pivotally secured to said rearward end of said upper deck;

means for pivotally moving said main deck with respect to said upper deck after said first and second suspension systems have been moved forwardly on said frame means;

and a deck ramp pivotally connecting the rearward end of said upper deck to the forward end of said main deck;

said deck ramp having rearward and forward ends and opposite sides;

the pivotal connection between said rear and main decks comprising at least a first pair of arms at one side of said deck ramp and at least a second pair of arms at the other side of said deck ramp;

each of said first and second pairs of arms including an upper arm and a lower arm having rearward and forward ends;

the forward ends of said arms being pivotally secured to said upper deck and the rearward ends of said arms being pivotally secured to said main deck.

5,667,232

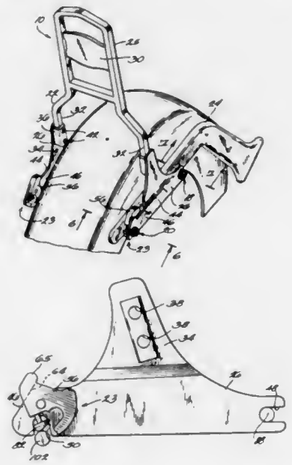
DETACHABLE SISSY BAR

Donald Michael Gogan, Brookfield; Stephen L. Galbraith, and Geoffrey Thomas Williams, both of Mequon, all of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jul. 20, 1995, Ser. No. 504,823

Int. Cl.[6] B62J *1/28*

U.S. Cl. 280—202 **20 Claims**



1. A sissy bar assembly adapted to be removably installed on a motorcycle, said sissy bar assembly comprising:

a first mounting member adapted to be connected to said motor cycle;

a second mounting member adapted to be connected to said motor cycle;

a backrest portion;

at least one pivot support connected to said backrest portion and adapted to detachably engage the first mounting member;

at least one latching support connected to said backrest portion and spaced from said pivot support and adapted to engage the second mounting member;

a latching member movably mounted on said latching support, and moveable between a latched position, where said latching support is secured to the second mounting member, and an unlatched position; and

a locking member moveable relative to said latching member, and moveable between a locked position and an unlocked position, wherein said latching member is prohibited from moving from said latched position to said unlatched position by said locking member in said locked position.

5,667,233

BICYCLE WITH A CHANGE-SPEED GEAR ARRANGEMENT

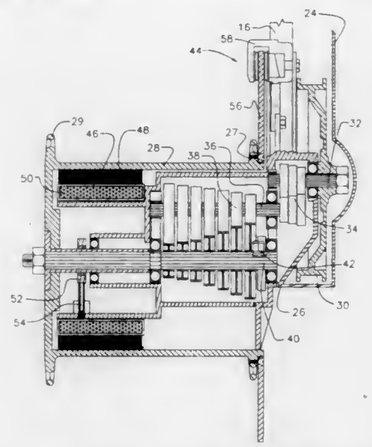
Arnold Metzinger, AM Hirthaus 1A, D-82239 Alling, Germany

Filed Oct. 26, 1994, Ser. No. 329,494

Claims priority, application Germany, Nov. 3, 1993, 9316748 U

Int. Cl.[6] B62M *11/06*

U.S. Cl. 280—238 **18 Claims**



1. A bicycle containing a pedal crank spindle and a rear wheel, said bicycle having a change-speed gear arrangement and wherein the transmission of power from the pedal crank spindle to the rear wheel is by way of a first direction-changing transmission assembly operatively associated with a drive shaft and a second multi-stage shiftable main transmission assembly operatively associated with the drive shaft, and wherein a common shaft serves as the drive shaft of the first transmission assembly and as the drive shaft of the main transmission assembly and wherein the main transmission assembly is in the form of a spur gear-draw key shift arrangement.

5,667,234

BICYCLE, A FRONT FORK AND A SHOCK ABSORBER MECHANISM FOR THE FRONT FORK OF A BICYCLE

Wolfgang Zirk, Dittelbrunn, and Gerald Bischof, Niederwerrn, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 22, 1995, Ser. No. 577,626

Claims priority, application Germany, Dec. 24, 1994, 44 46 756.7

Int. Cl.[6] B62K *25/08*

U.S. Cl. 280—276 **13 Claims**

1. A bicycle front fork structure comprising two legs and a bridge connecting said two legs;

said two legs comprising at least one tubular leg, said at least one tubular leg comprising:

an upper cylindrical housing connected to said bridge;

a lower cylindrical housing;

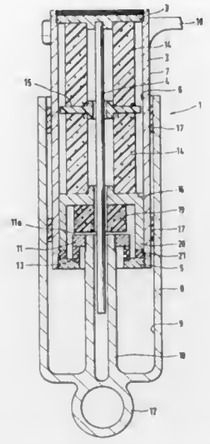
said upper cylindrical housing and said lower cylindrical housing being coaxially oriented with respect to one another to retract and extend one within the other;

spring means;

said spring means comprising upper spring means and lower spring means;

said lower spring means operatively connecting said upper cylindrical housing and said lower cylindrical housing;

said lower spring means being disposed to prevent said upper cylindrical housing and said lower cylindrical



housing from moving apart and extending from one another excessively on rebound;

said upper spring means comprising compression spring means being disposed in said upper cylindrical housing; an additional spring;

said additional spring being disposed between said upper spring means and said lower spring means;

an additional hollow cylindrically shaped member being disposed within at least one of said upper and said lower cylindrical housings;

said additional hollow cylindrical member being substantially closed upwardly;

said additional spring being wholly disposed within said additional hollow cylindrical member; and

said additional hollow cylindrical member being disposed to permit transfer of a first force between said upper spring means and said upper cylindrical member.

5,667,235

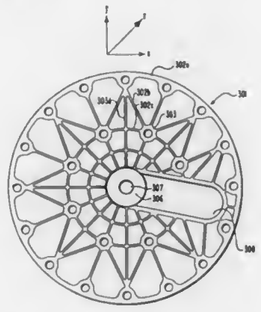
MULTI-ADJUSTABLE WHEELCHAIR

Tony M. Pearce, Alpine, and Terry V. Pearce, Sandy, both of Utah, assignors to TekSource, LC, Sandy, Utah

Continuation-in-part of Ser. No. 98,426, Jul. 27, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,986

Int. Cl.[6] A61G *5/02*

U.S. Cl. 280—304.1 **18 Claims**



1. A device for providing wheelchair axle position adjustment with respect to a wheelchair frame comprising:

an axle adjustment mechanism adapted for receiving a wheelchair axle lug, said axle adjustment mechanism comprising at least one receptacle and permitting adjustment of the lug within said at least one receptacle and permitting firm attachment of the lug within said mechanism, and

a rotational adjustment mechanism comprising a plurality of fastener holes for rotationally adjusting the device with respect to the wheelchair frame in increments of less than 90 degrees.

5,667,236

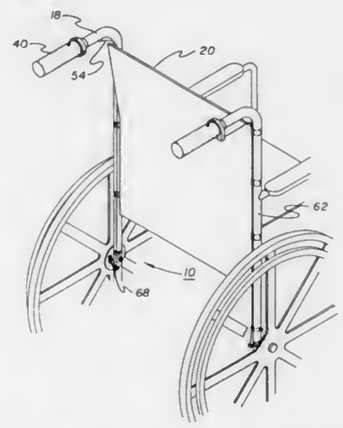
SAFETY CONTROL GRIP BRAKE FOR WHEELCHAIRS

Michael K. Murphy, 1001 E. Elizabeth, Olathe, Kans. 66061

Filed Aug. 4, 1995, Ser. No. 511,285

Int. Cl.[6] B60T *1/04*

U.S. Cl. 280—304.1 **5 Claims**



1. A safety control grip brake in combination with a wheelchair of the type having a frame and a handle and an axle with a plurality of wheels for providing a mechanical braking device for the wheelchair that gives a user better control comprising, in combination:

an internal steel sleeve having a first end and a second end, the internal steel sleeve being adapted for rotatable coupling with the handle of the wheelchair, the second end having a protrusion extending outwardly therefrom;

a steel spring coil having a first end, a second end, and an intermediate circular portion therebetween, the first end coupled with the protrusion of the internal steel sleeve, the steel spring coil applying a clockwise/counter clockwise tension on the internal steel sleeve;

an outer hand grip adapted for securement over the internal steel sleeve, the outer hand grip coupling with the second end of the steel spring coil;

a spring-biased push button locking mechanism secured to the outer hand grip, the spring-biased push button locking mechanism having an end portion extending inwardly through the outer hand grip to engage an aperture formed within the steel sleeve thereby allowing the user to lock the outer hand grip in place;

a flanged pulley adapted for rotatable coupling with the handle of the wheelchair, the flanged pulley being connected to the second end of the outer hand grip, the enter bearing of the flanged pulley being secured to the second end of the internal steel sleeve, the flanged pulley having an outer housing secured thereover to the first end of the internal steel sleeve, the outer housing having an aperture formed through a lower portion thereof;

a steel cable having a first end, a second end, and an intermediate extent therebetween, the first end being secured to the flanged pulley, the intermediate extent extending outwardly of the aperture in the outer housing and extending down the frame of the wheelchair and secured thereto by brackets;

a double arm adjustable brake having a first end, a second end, and an intermediate extent therebetween, the first end secured to the second end of the steel cable, the intermediate extent being pivotally secured to the frame of the wheelchair adjacent to one wheel and the axle thereof, the second end having a brake pad disposed thereon; and

a steel brake plate coupled with the axle of the wheelchair adjacent to the one wheel thereof, the steel brake plate biasing towards the wheel when pressured by the second end of the double arm adjustable brake to limit or stop the rotation of the wheel.

5,667,237

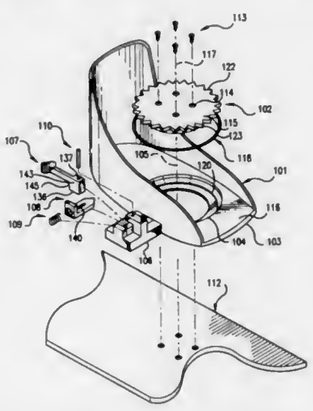
ROTARY LOCKING FEATURE FOR SNOWBOARD BINDING

Jonathan L. Lauer, 3 Wildwood Ter., Winchester, Mass. 01890

Filed Jun. 30, 1995, Ser. No. 496,963

Int. Cl.[6] A63C *9/081*

U.S. Cl. 280—607 **16 Claims**



1. A snowboard binding system for releasably attaching a snowboard to a user's foot and comprising:

a hold-down plate adapted to engage a snowboard said hold-down plate defining a pivot axis;

a binding including a base portion adapted for pivotal engagement to said snowboard by said hold-down plate about said pivot axis;

an angular position index comprised within said hold-down plate and radially disposed about said pivot axis;

an angular position lock comprised within said base portion and pivotably fixed thereto about sand pivot axis said angular position lock being disposed and adapted for engaging said angular position index end having a first state and a second state;

a movable lever engaging said angular position lock and said base portion and adapted for transferring said angular position lock between said first and second states;

a clutch to allow pivoting of said base portion relative to said hold-down plate during said first state when a rotational force between said base portion and said hold-down plate about said pivot axis exceeds a predetermined threshold;

wherein during said first state said angular position lock engages said angular position index and thereby denies free pivoting of said base portion relative to said hold-down plate; and

during said second state said angular position lock does not engage said angular position index and thereby allows pivoting of said base portion relative to said hold-down plate about said pivot axis;

and wherein said angular position index comprises a plurality of radially disposed features, said plurality of radially disposed features and said angular position lock are adapted for alignment at a plurality of predetermined angular positions of said base portion relative to said hold-down plate about said pivot axis, and said angular position lock is adapted for engaging one or more of said plurality of radially disposed features at said predetermined angular positions, and said first state exists only at said predetermined angular positions.

5,667,238

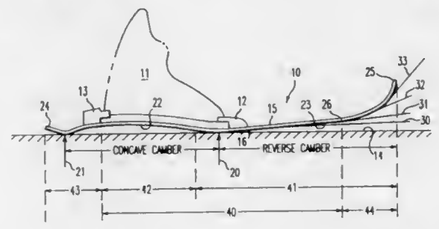
SKI HAVING COMPOUND CURVE UNDERSURFACE

John J. Sarver, 2827 Tabago Pl., Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 25,578, Mar. 3, 1993, Pat. No. 5,375,868. This application Dec. 27, 1994, Ser. No. 364,662

Int. Cl.[6] A63C *5/04*

U.S. Cl. 280—609 **11 Claims**



1. A snow ski for use by a skier on a snow covered surface having a tip portion, a rear end portion, and a lower running surface, comprising:

a first contact area of the lower running surface where the ski contacts the snow covered surface;

a second contact area of the lower running surface proximate the rear end portion where the ski contacts the snow covered surface;

a concave camber portion of the lower running surface which extends upwardly from the snow covered surface and is formed between the first and second contact areas;

a reverse camber convex portion extending forwardly from the first contact area to the tip portion of the ski; and

a boot mounting area extending so as to be formed above the first contact area, wherein the boot mounting area is positioned so that a toe area of a foot of the skier placed in a boot in the boot mounting area is positioned above the first contact area.

5,667,239

ADJUSTABLE BALANCING MECHANISM FOR FOLDABLE TELESCOPE GOLF CART

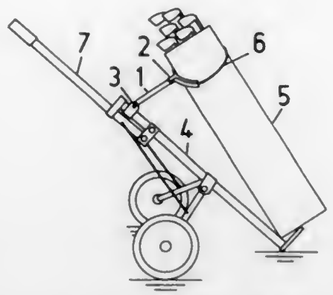
David Yang, 1020 Wickham Dr., Moraga, Calif. 94556, assignor to David Yang, Moraga, Calif.

Filed Aug. 15, 1996, Ser. No. 698,112

Int. Cl.[6] B62B *1/16*

U.S. Cl. 280—646 **8 Claims**

1. An adjustable balancing mechanism for a foldable telescope golf cart, capable of maintaining the golf cart in a balanced position during cart traveling by means of positioning the center gravity c.g. of a golf bag and golf cart assembly at a center line of a wheels, said balancing mechanism adjusting the c.g. location of the assembly by means of rotating a golf bag on the golf cart, enabling adjustment of an incline angle of the golf bag during cart traveling, which shifts the c.g. of the assembly to the front of the golf can by reducing said incline angle of the golf beg, and shifts the c.g. of the golf clubs to the back of the golf cart by increasing said incline angle of the golf beg, and thus controlling a horizontal



distance between the center line of the wheels and the c.g. of the assembly, making it possible to position the c.g. of the assembly at the center line of the wheels;

said adjustable balancing mechanism comprising:

a rotatable swing arm assembly consisting of a swing arm, a saddle, a strip, and a mounting bracket; said mounting bracket pivotably connecting one end of said swing arm to a cart frame, enabling said swing arm to rotate freely; said saddle connecting to the other end of said swing arm, supporting the golf bag in an incline position; said strip securing the golf bag to said saddle, locking said swing arm in position; said swing arm adjusting the incline angle of the golf bag by rotating at a pivot joint connecting said mounting bracket, having a sufficient length to create an angular displacement of the golf bag, which offsets the angular displacement of the c.g. of the assembly as the cart is rotated from an initial standing position to a traveling position, locating the c.g. of the cart assembly at the center line of the wheels during cart traveling.

5,667,240

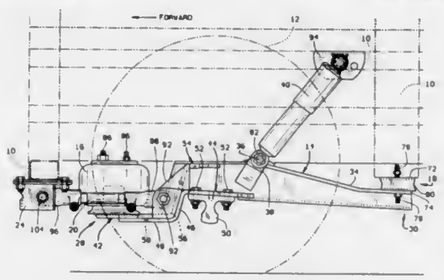
AIR SPRING SUSPENSION THAT REDUCES DYNAMIC BRAKING LOADS ON THE AIR SPRING

James L. Mitchell, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.

Filed Jun. 23, 1995, Ser. No. 494,182

Int. Cl.[6] B60G *11/26;11/46*

U.S. Cl. 280—712 **20 Claims**



1. A suspension system for a vehicle having a longitudinally extending chassis and at least one laterally extending axle with at least one wheel mounted thereon, the suspension system comprising:

a longitudinally extending beam with opposite forward and rearward ends, the axle is connected to the beam intermediate the beam forward and rearward ends, the rearward end of the beam is operatively connected to the chassis for limited vertical movement of the beam rearward end relative to the chassis;

a spring is connected between the forward end of the beam and the chassis where the spring is connected to the beam forward of the axle; and,

a radius rod having longitudinally opposite forward and rearward ends is connected between the beam and the chassis, with the radius rod rearward end connected by a pivoting connection to the beam forward end and the radius rod forward end connected by a pivoting connection to the chassis.

5,667,241

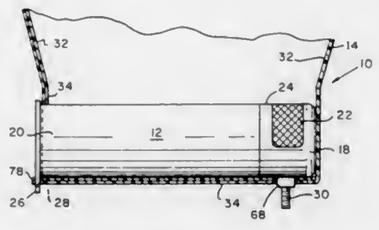
SEAT MOUNTED SIDE IMPACT AIRBAGS

S. Mark Bunker, Ogden; Daniel G. Minert, Clearfield; David J. Green, Brigham City; Davin G. Saderholm, Salt Lake City, and J. Kirk Storey, Farmington, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 17, 1995, Ser. No. 543,953

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.2 **29 Claims**



1. An airbag module, comprising:

an inflator assembly having an elongated body with from and rear ends and at least one gas exit port, said assembly including a mounting tab extending from said rear end, said tab including an aperture therein;

a cushion operatively associated with said inflator assembly, said cushion having a body and an extension, said extension including an opening to receive at least a portion of the inflator which includes said port, and at least said front end of said inflator being received within said extension and said rear end of said inflator extending outward of said opening, said extension being constructed and arranged to maintain said cushion operatively associated with said inflator during gas generation.

5,667,242

FRAME MEMBER FOR A SEAT MOUNTED VEHICLE SAFETY APPARATUS

Timothy D. Slack, Troy, and William R. Buchanan, Romeo, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 17, 1995, Ser. No. 544,015

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.2 **12 Claims**

1. Apparatus for protecting a vehicle occupant comprising:

a seat having a frame;

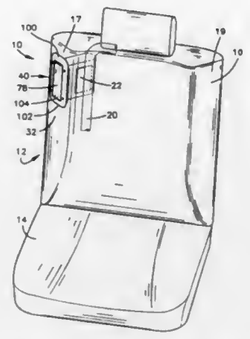
a cushion supported by said frame;

a chamber within said cushion;

a seat cover surrounding said cushion and having a first opening communicating with said chamber;

an air bag module disposed within said chamber and connected to said frame, said air bag module including an air bag which is inflatable through said first opening, said air bag module having a module deployment door covering said first opening; and

a frame member having a second opening, said frame member being fastened to said air bag module, said frame member clamping said seat cover and said module deployment door together, and said air bag when inflated being inflated through said second opening.



5,667,243

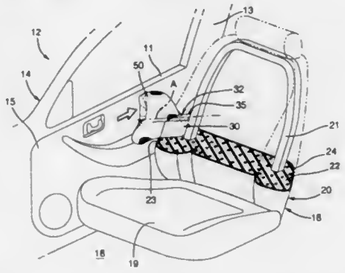
AIR BAG MODULE

Margaret Ann Fisher, and David Scott Weckesser, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 29, 1996, Ser. No. 609,069

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.2 **23 Claims**



1. An air bag module in a vehicle having a vertical vehicle axis and having a horizontal vehicle axis, the air bag module comprising:

an inflator having an elongated vertical inflator axis, the inflator for discharging inflator gas directed in a longitudinal direction perpendicular to the vertical inflator axis; and

an air bag having a main body portion having a shape that is angled with respect to the longitudinal direction.

5,667,244

METHOD AND APPARATUS FOR DETECTING AN IMPACT ON A VEHICLE

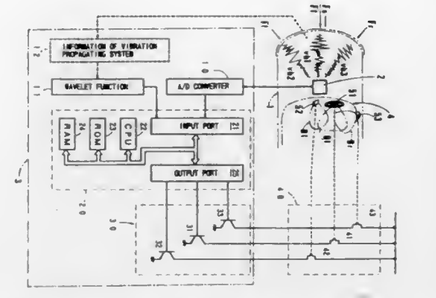
Koji Ito, Ama gun, and Taneichi Kawai, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 25, 1996, Ser. No. 621,249

Claims priority, application Japan, Mar. 27, 1995, 7-094456

Int. Cl.[6] B60R *21/32*

U.S. Cl. 280—735 **19 Claims**



6. An apparatus for detecting an impact on a vehicle, comprising:

means for sensing an acceleration of said vehicle;

means for transforming the acceleration into an electric signal indicative of the acceleration to output an acceleration signal;

means for transforming the acceleration signal by a wavelet function into a wavelet coefficient, said wavelet function being provided on the basis of a mother wavelet function localized in time, scaled in response to a scale parameter, and shifted in response to a shift parameter indicative of a time localization; and

means for determining a condition of the impact on the basis of the wavelet coefficient with respect to at least a predetermined reference scale parameter.

5,667,245

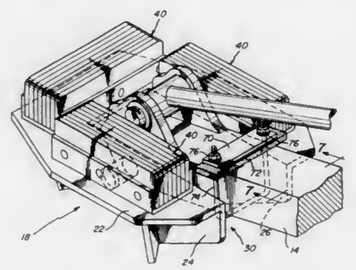
STABILIZER PAD FOR VEHICLES

Andry Lagsdin, 54 King Hill Rd., Hanover, Mass. 02339

Continuation-in-part of Ser. No. 398,866, Mar. 6, 1995, Pat. No. 5,547,220, which is a continuation-in-part of Ser. No. 283,247, Jul. 29, 1994, Pat. No. 5,466,004. This application Sep. 8, 1995, Ser. No. 525,865

Int. Cl.[6] B60S *9/02*

U.S. Cl. 280—763.1 **37 Claims**



1. A stabilizer pad for pivotally coupling to a stabilizer arm of a vehicle to be stabilized such that the stabilizer pad can rotate about said arm over a predetermined range of rotation to engage a ground surface, the stabilizer pad comprising:

a plate having a first ground contact face and a second ground contact face;

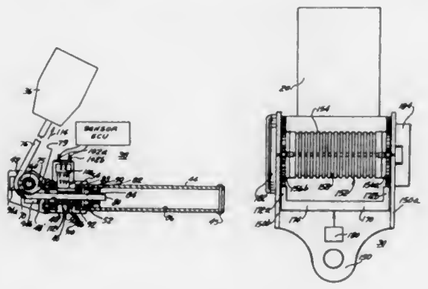
a resistance member coupled to the plate so as to engage the stabilizer arm over at least a portion of the predetermined range of rotation to provide a resistance to rotation of the stabilizer pad with respect to the arm.

5,667,246

METHOD AND APPARATUS FOR REDUCING OCCUPANT INJURY IN FRONTAL COLLISIONS

H. John Miller, III, Troy, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 502,345, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 286,069, Aug. 4, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,262
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—806 **9 Claims**



1. A safety restraint system comprising:
belt system means for restraining an occupant comprising:
a safety belt;
retractor means for protracting and retracting the safety belt;
shoulder belt support means for supporting the should belt portion of the safety belt;
pretensioner means for providing subsequent to activation, a residual preload force in the safety belt in excess of a first low limit value;
load limiting means for limiting the loads imparted by the shoulder belt portion to an occupant, operative after the preload acts on the shoulder belt portion, including first means for introducing a predetermined amount of slack in the shoulder belt when the belt tension is above a second low limit value and for preventing such slack introduction when belt tension is lower than such low limit value.

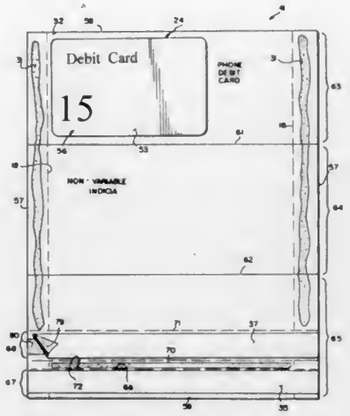
5,667,247

TELEPHONE DEBIT CARD PRODUCTION

E. Douglas Ramsburg, Thurmont, Md.; Stephen R. Nassoiy, Vienna, Va., and Dennis V. Zutant, Rockville, Md., assignors to Moore Business Formsk Inc., Grand Island, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,927
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—61 **20 Claims**

1. A card package assembly comprising:
a sheet of material having first and second side edges, first, second and third panels, said second panel immediately adjacent said first panel and said second panel at least as large as said first panel, and said sheet and each of said panels thereof having first and second faces;
said first panel having a cutout therein;
card-holding adhesive on said first panel second face adjacent said cutout;
a card of material stiffer than said sheet of material, and having first and second faces, with identifying indicia on said second face;
said card overlying said cutout and connected to said card-holding adhesive so that said identifying indicia is visible through said cutout; and
adhesive patterns disposed adjacent said first and second side edges for holding said first second and third panels together



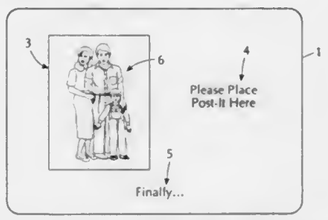
with said second panel covering said card first face, and said third panel covering said cutout.

5,667,248

GREETING CARD WITH DETACHABLE MESSAGE COVERS

Lisa Mayer, 37 Harvard Rd., Scarsdale, N.Y. 10583

Filed Aug. 22, 1995, Ser. No. 517,912
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—67 **27 Claims**



15. A method of communicating with a reader, comprising the steps of:
printing information on a substrate;
affixing a detachable covering to a first position on the substrate so as to conceal the information;
printing instructions that prompt the reader to remove the covering from the first position and to affix the covering to a second position on the substrate; and
allowing the reader to read the information after the covering has been removed.

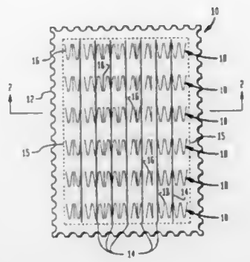
5,667,249

STAMP INCORPORATING ELECTRONIC ARTICLE SURVEILLANCE TECHNOLOGY

Michael J. Critelli, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 5, 1995, Ser. No. 523,572
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—70 **16 Claims**

1. A method for authenticating and canceling a stamp having a switch therein, the method comprising the steps of:
transporting a mailpiece having the stamp thereon into a first magnetic field thereby activating the switch to produce a signal in response to the first magnetic field;



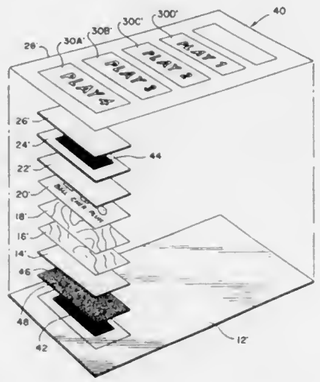
authenticating the stamp as being valid; and
canceling the authenticated stamp by applying a second magnetic field to the authenticated stamp thereby deactivating the switch and preventing detection of the signal.

5,667,250

GAME TICKET CONFUSION PATTERNS

William F. Behm, 2550 Rolland St., Marietta, Ga. 30062; Mark C. Tevis, 4285 Habersham Way, Cumming, Ga. 30130; Bradley W. Walton, 613 Mindy Way, San Jose, Calif. 95123, and Stanley Litman, 750 Lawrence Dr., Gilroy, Calif. 95020

Continuation-in-part of Ser. No. 4,157, Jan. 13, 1993, Pat. No. 5,346,258, which is a continuation-in-part of Ser. No. 879,827, May 7, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 289,708
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—102 **12 Claims**



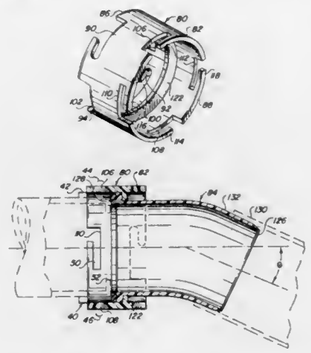
1. A game card comprising:
a card substrate having an upper surface and a lower surface;
a plurality of play indicia affixed to said upper surface of said card substram;
a removable coating secured to said upper surface of said card substrate over said play indicia; and
a removable confusion pattern interposed between said removable coating and said play indicia wherein said removable confusion pattern includes a rubber copolymer and wherein said removable confusion pattern is removed when said removable coating is removed.

5,667,251

UNIVERSAL WASTE WATER OUTLET COUPLING

J. David Prest, P.O. Box 23929, Tempe, Ariz. 85285

Filed Sep. 14, 1995, Ser. No. 528,440
Int. Cl.[6] F16L *25/06*
U.S. Cl. 285—12 **13 Claims**



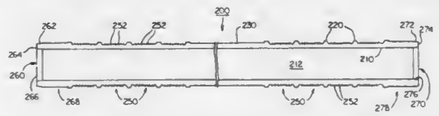
6. A coupling useable with either of a first conventional water discharge outlet or a second conventional water discharge outlet that may be used with a recreational vehicle to interconnect the discharge outlet with a discharge hose, said coupling comprising in combination:
(a) an hollow section having a first terminal end selectively engageable with one of the first and second water discharge outlets and a second terminal end selectively engageable with the other of the first and second water discharge outlets, said hollow section including an interior surface;
(b) a discharge tube having an inlet end and an outlet end extending from said hollow section to support the discharge hose for discharging waste water flowing into said hollow section and through said outlet end into the discharge tube, said discharge tube including a radial first flange disposed at said inlet end positionable in juxtaposed relationship with a second flange; and
(c) a retainer mechanism for retaining said inlet end of said discharge tube within said hollow section and for extending said outlet end of said discharge tube from said hollow section, said retainer mechanism including said second flange extending inwardly radially from said interior surface.

5,667,252

INTERNAL SLEEVE WITH A PLURALITY OF LANDS AND TEETH

Bruce William Schafer; Mark Aaron Sloman; Stanley Mark Gryder, all of Lynchburg, and Randal Ray Schaefer, Forest, all of Va., assignors to Framatome Technologies, Inc., Lynchburg, Va.

Continuation-in-part of Ser. No. 305,251, Sep. 13, 1994. This application Mar. 31, 1995, Ser. No. 414,797
Int. Cl.[6] F16L *13/14*
U.S. Cl. 285—15 **31 Claims**



1. A sleeve engagement surface for facilitating an interference fit between an elongated sleeve member having an outer wall and a parent tube having an interior surface, said engagement surface comprising a plurality of spaced apart expansion sections located along the length of said sleeve member, each of said expansion

sections having at least one engagement member extending radially from the outer wall of the sleeve member, wherein said engagement member includes a plurality of teeth: and further including a plurality of raised peripheral lands formed on said outer wall and disposed between each of said expansion sections.

5,667,253

DEVICE FOR CONNECTING A FEED OFF AND RETURN TUBE TO A CONTAINER FOR LIQUIDS

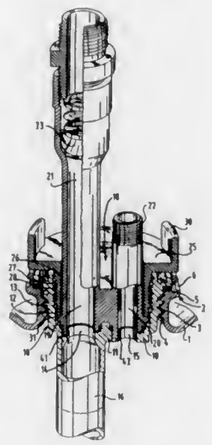
Cornelis Jacobus Jansen, Rijen; Stephanus Franciscus Schilthuizen, Berkel-Enschot, both of Netherlands; Peter Marriott, Chesterfield, United Kingdom, and Joachim Leifels, Gueron, France, assignors to Wlva Verpakkingen B.V., Netherlands, and Micro-Image Technology Ltd., United Kingdom

Filed Apr. 7, 1995, Ser. No. 417,594

Claims priority, application Netherlands, Apr. 8, 1994, 9400563

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—26 **10 Claims**



1. A device for connecting at least a feed off and return tube to a threaded bung-hole of a container having the threads at its inner periphery, said device comprising:

a cylindrical insert having threads at its outer periphery co-operating with the thread of the bung-hole, and a bottom part provided with at least two orifices;

a tube mounting having a lower surface to be placed on said bottom part of said insert and provided with ports being in communication with said orifices of the insert; and

a clamp means to clamp said tube mounting to said insert,

wherein said tube mounting and said insert are provided with lugs and co-operating recesses located according to a predetermined pattern wherein each said recess is provided in a wall portion of one of said orifices and debouching into said bottom part of said insert and said co-operating lugs extends axially out of said tube mounting.

5,667,254

DEVICE FOR CONNECTING A CONTAINER WALL WITH A PIPE

John Rolland, Moss, Norway, assignor to Kvaerner Moss Technology a.s., Lysaker, Norway

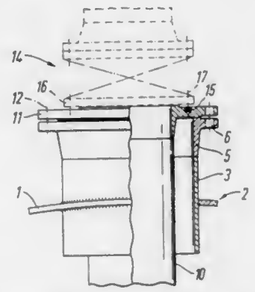
PCT No. PCT/NO94/00092, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO94/27074, PCT Pub. Date Nov. 24, 1994

PCT Filed May 11, 1994, Ser. No. 537,883

Claims priority, application Norway, May 14, 1993, 931776

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—123.14 **5 Claims**



1. A device for connecting a wall of a container for a liquid natural gas with a pipe which extends through the container wall, comprising a muff, which is provided coaxially with and on the outside of the pipe, having a first end section and a second end section, said first end section being fixedly connected with the container wall, a first ring flange fixedly connected with the second end section of the muff and disposed at a distance from the container wall, and a second ring flange fixedly connected with the pipe, wherein the first and second ring flanges are rigidly and abuttingly interconnected by connecting means.

5,667,255

JOINT STRUCTURE FOR JOINING A BRANCH MEMBER TO A HIGH PRESSURE FUEL RAIL

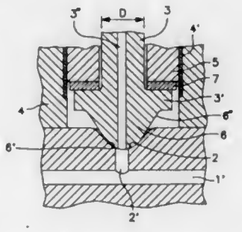
Nobuo Kato, Shunto-gun, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Jun. 27, 1995, Ser. No. 495,329

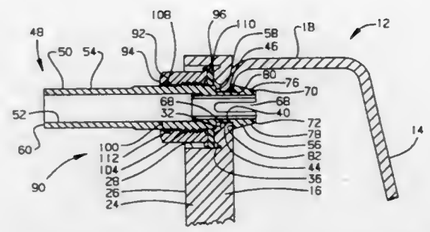
Claims priority, application Japan, Jun. 28, 1994, 6-168788

Int. Cl.[6] F16L *41/08*

U.S. Cl. 285—133.4 **5 Claims**



1. A joint structure for joining a branch member to a high pressure fuel rail, comprising a fuel rail with a peripheral wall having an axial passage through which a high pressure fuel flows, at least one through hole formed in the peripheral wall of said passage, said through hole being defined by an outwardly diverging bearing surface formed on the peripheral wall of said fuel rail, a branch member including a passage communicating with said passage of said fuel rail through said through hole, a spigot head formed at one end of said branch member and placed in abutting engagement with the bearing surface, and a nut mounted around said branch member, said branch member being secured to said fuel rail by tightening said nut, wherein said spigot head comprises a spherical spigot end surface, an annular flange axially spaced away from said spherical spigot end surface and in contact with said nut, and a conical surface having large and small diameter ends, said large diameter end being at said annular flange, said small diameter end of said conical surface being tangential to said spherical spigot end surface at an annular line of tangency, said annular line of tangency being urged into abutting engagement with said bearing surface, whereby said conical surface increases rigidity of said spigot head for preventing fatigue and deformation.



5,667,256

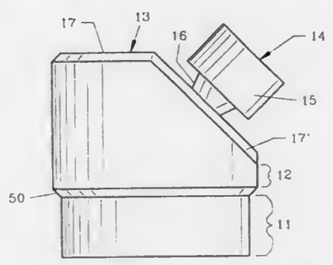
GRAY WATER LINE ADAPTOR

Donald R. Caine, Greensboro, N.C., assignor to Camco Manufacturing, Inc., Greensboro, N.C.

Filed May 1, 1995, Ser. No. 431,968

Int. Cl.[6] F16L *25/00*

U.S. Cl. 285—148.23 **7 Claims**



1. A gray water line adaptor for fluid connection to a water hose and to a sewer stub, said adaptor comprising: a first cylindrical section, said first cylindrical section for engagement with said sewer stub, a second cylindrical section, said second cylindrical section joined to said first cylindrical section, each section having a central axis, a water hose fitting, said water hose fitting attached to said second cylindrical section for draining gray water, said water hose fitting for connection to said water hose, said first cylindrical section having a diameter less than the diameter of said second cylindrical section, said second cylindrical section having a proximal and a distal end, said proximal end attached to said first cylindrical section, and a top, said top attached to said distal end to close said second cylindrical section, said top comprising a biased component, said biased component angularly disposed relative to the central axis of said second cylindrical section, said hose fitting attached to said biased component.

5,667,257

CONNECTOR ASSEMBLY

Brian H. Butler, Washington; Leslie E. Fehr, Bradford, and William J. McCasky, Sparland, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 1, 1994, Ser. No. 204,919

Int. Cl.[6] F16L *5/08*

U.S. Cl. 285—212 **7 Claims**

1. In combination:

a hollow tank portion having an inner surface, an outer surface, and an opening therein, said tank portion's outer surface includes an annular beaded seat disposed about said opening;

a fluid tight tubular member including a substantially cylindrical portion having a first end and a second end, an outer threaded portion in close proximity to the first end, and a bifurcated end portion extending from the first end and having a pair of outwardly facing parallel faces, the pair of faces each including a tab integrally formed thereon with each tab having an angularly disposed surface extending divergently from the face toward the first end and terminating at a shoulder perpendicular to the face and spaced a predetermined distance from the first end of the cylindrical portion;

means for securing the tubular member within the opening so that the shoulder of the tab is fitted against the inner surface of the tank portion when installed, said securing means including a nut having an outer surface, an inner surface, an inner bore, and an inner threaded portion threadably engaged with an outer threaded portion of said tubular member so that the inner surface is adjacent the outer surface of the tank portion and said second end extends beyond said nut's outer surface when installed; and

sealing means disposed between the inner surface of the nut and the outer surface of the tank portion for sealing therebetween, said beaded seat protruding toward and being engageable with said sealing means.

5,667,258

LATCH ASSEMBLY

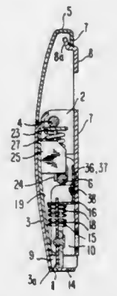
Kazuhide Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,342

Claims priority, application Japan, Oct. 24, 1994, 6-284359

Int. Cl.[6] E05C *5/00*

U.S. Cl. 292—113 **2 Claims**



1. A latch assembly, comprising:

a base-end portion of an operating lever (**3**) connected to a bearing-plate portion (**2**) of a base plate (**1**) through a first pivot (**4**), said bearing-plate portion (**2**) projecting from an end portion of said base plate (**1**);

a base-end portion of a latch arm (**5**) connected to an intermediate portion of said operating lever (**3**) through a second pivot (**6**);

in a latch locking condition in which a from-end hook portion (**7**) of said latch arm (**5**) engages with an engaging-end portion (**8***a*) of a catch member (**8**), both said first pivot (**4**) and said second pivot (**6**) are so arranged as to have said second pivot (**6**) disposed between a predetermined straight line and said base plate (**1**), said predetermined straight line passing through said engaging-end portion (**8***a*) of said catch member (**8**) and said first pivot (**4**);

a guide-plate portion (**10**), which projects upwardly from the other end of said base plate (**1**), is received in a rear-surface

side concave portion (**9**) of said operating lever (**3**), and provided with a slot (**13**) for slidably receiving an extension-plate portion (**12**) of a lock plate (**11**) therein, said slot (**13**) extending in a longitudinal direction of said base plate (**1**);

a base-end portion of a push plate (**14**) fixed to said lock plate (**11**) is disposed in the vicinity of a finger-engaging end portion (**3***a*) of said operating lever (**3**);

a first spring-support plate portion (**15**) of a front-end portion of said push plate (**14**) is slidably received in a through-hole (**17**) of a spring-support plate (**16**) projecting upwardly from an intermediate portion of said base plate (**1**);

a first coil spring (**18**), which is mounted on said first spring-support plate portion (**15**) in an insertion manner, is compressed between an end surface (**11***a*) of said lock plate (**11**) and said spring-support plate (**16**) to slidably urge said push plate (**14**) in a manner such that said extension-plate portion (**12**) of said lock plate (**11**) abuts on a far one surface (**13***a*) of opposite inner wall surfaces (**13***a*, **13***b*) of said slot (**13**), said far one surface (**13***a*) being more distant from said first pivot (**4**) relative to the other surface (**13***b*);

a socket plate (**19**) is fixedly mounted on said operating lever (**3**) and provided with a locking-plate portion (**20**) projecting downwardly into said rear-surface side concave portion (**9**) of said operating lever (**3**), said locking-plate portion (**20**) being provided with a locking notch (**21**) in its side-edge portion to have said locking notch (**21**) engaged with and disengaged from said extension plate portion (**12**) of said lock plate (**11**) in a latch locking condition;

an oblique cam surface portion (**22**) adjacent to said locking notch (**21**) is provided in a front-end portion of said locking-plate portion (**20**) so as to have said oblique cam surface (**22**) brought into a slidable contact with an edge surface (**12***a*) of said extension-plate portion (**12**) of said lock plate (**11**) so that said lock plate (**11**) is slidably moved in said slot (**13**) toward said other surface (**13***b*) of said opposite inner wall surfaces (**13***a*, **13***b*) of said slot (**13**);

a third spring-support plate portion (**24**) is provided in an end portion of said socket plate (**19**) in the vicinity of said first pivot (**4**) to extend perpendicularly to a second spring-support plate portion (**23**) of said end portion of said socket plate (**19**) toward said second pivot (**6**), said third spring-support plate portion (**24**) being slidably mounted in a through-hole (**26**) of a spring-support member (**25**) in an insertion manner, said spring-support member (**25**) adjacent to said second pivot (**6**) to assume a substantially U-shaped form in its longitudinal section with its rearward end in contact with the second pivot (**6**); and

a second coil spring (**27**) is mounted on said third spring-support plate portion (**24**) of said socket plate (**19**) in an insertion manner and compressed between said second spring-support plate portion (**23**) and said spring-support member (**25**) to slidably urge said spring-support member (**25**) in a manner such that said second pivot (**6**) abuts on a far one surface (**28***a*) of opposite inner wall surfaces (**28***a*, **28***b*) of an elongated pivot hole (**28**), said far one surface (**28***a*) being more distance from said first pivot (**4**) relative to the other surface (**28***b*) of said opposite inner wall surfaces (**28***a*, **28***b*); whereby said front end hook portion (**7**) of said latch arm (**5**) can be engaged with said engaging end portion (**8***a*) of said catch member (**8**) and latched to said base plate (**1**) by rotating said operating lever (**3**) about said first pivot (**4**) so as to engage said extension plate portion (**12**) in said locking notch (**21**) of said locking plate portion (**20**).

5,667,259

POWER ACTUATOR FOR CHILD-SAFETY MOTOR-VEHICLE DOOR LATCH

Thorsten Torkowski, Herne, Germany, assignor to Kiekert AG, Heiligenhaus, Germany

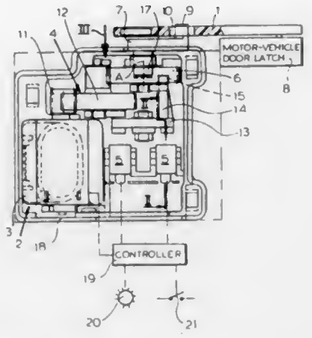
Filed Sep. 5, 1995, Ser. No. 523,747

Claims priority, application Germany, Sep. 15, 1994, 44 32 799.4

Int. Cl.[6] **E05C** *3/06*

U.S. Cl. 292—201 **3 Claims**

1. In combination with a motor-vehicle door latch having an operating lever and provided with a child-safety cutout device



movable between an enabled position in an on position of the operating lever and a disabled position in an angularly offset off position of the lever, an inside door handle of the latch being disabled in the enabled position of the device, a power actuator comprising:

a housing immediately adjacent the operating lever;

an electric motor on the housing;

a rotatable output wheel on the housing adjacent the operating lever;

a gear train on the housing connecting the motor to the wheel for rotation of the wheel by the motor;

a coupling lever fixed on and rotatable with the wheel and having a pin, the operating lever being formed with a slot receiving the pin, whereby rotation of the wheel pivots the lever between its positions;

a switching wheel in the housing coaxial with and adjacent the output wheel;

a lost-motion coupling between the output wheel and the switching wheel for rotating the switching wheel by means of the output wheel only after travel of the output wheel through a predetermined angular play; and

at least one switch in the housing operable by the switching wheel on rotation thereof.

5,667,260

MOTOR VEHICLE DOOR LOCK WITH A ROTARY CENTRAL INTERLOCK

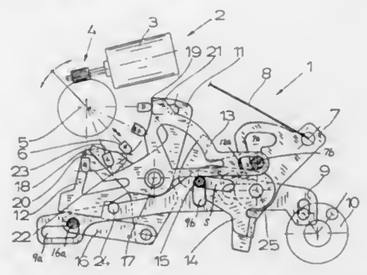
Bernd Weyerstall, Wuppertal, Germany, assignor to Robert Bosch GmbH, Germany

Filed Jan. 11, 1996, Ser. No. 584,009

Claims priority, application Germany, Jan. 10, 1995, 195 00 509.0

Int. Cl.[6] **E05C** *3/06*

U.S. Cl. 292—201 **11 Claims**



1. In a motor vehicle door lock with locking elements including a rotary latch and a detent pawl, a lock mechanism and a central interlock drive, in which the central interlock drive has a drive motor, a rotor rotatably driven by the drive motor and an actuating part arranged on the rotor which is displaceable into each of a release position, a locking position, an anti-theft locking position and a neutral position; wherein the locking mechanism has an inside opening lever, an outside opening lever as well as a central interlock lever which is displaceable by said actuating part; and wherein the actuating part on the rotor is radially displaceable relative to the rotor, is spring-loaded in a radially outward direction and is radially deflectable against the spring-loading when the central interlock drive is blocked in an intermediate position for allowing release of the detent pawl from engagement with the rotary latch to enable unlocking of the door lock.

5,667,261

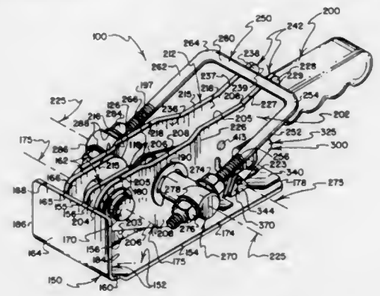
HANDLE OPERATED HEAVY DUTY DRAW LATCH WITH SAFETY CATCH

Lee S. Weinerman, Medina; Arthur J. Kuminski, Parma, and James L. Hollingsworth, Middleburg Heights, all of Ohio, assignors to The Eastern Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 65,283, May 21, 1993, abandoned, Ser. No. 8,629, May 21, 1993, abandoned, Ser. No. 278,008, Jul. 20, 1994, Pat. No. 5,445,422, and Ser. No. 26,147, Jul. 20, 1994, Pat. No. Des. 364,082, which is a continuation-in-part of Ser. No. 65,283, and Ser. No. 8,629, said Ser. No. 278,008is a continuation-in-part of Ser. No. 65,283, and Ser. No. 8,629. This application Jul. 26, 1994, Ser. No. 280,720

Int. Cl.[6] **E05C** *5/00*

U.S. Cl. 292—247 **31 Claims**



1. In a toggle type draw latch assembly having a base, having an elongate operating handle that is pivotally connected by means of a first pivot pin to the base near one end region of the handle for permitting movement of the handle relative to the base about a first pivot axis of the first pivot pin between a fully open position wherein a portion of the handle is extended relative to the base and a fully closed position wherein the handle portion is situated relatively near to the base, having a hand grip formed near the opposite end region thereof, having a drawbar pivotally connected to the handle at a location that is nearer to the one end region of the handle than to the hand grip, with the drawbar being pivotally movable relative to the handle about a second pivot axis between an extended position and a retracted position wherein a portion of the drawbar is situated relatively near to the hand grip, the improvement comprising:

a) the base being formed as an assembly of a substantially L-shaped member and a substantially U-shaped member;

b) the L-shaped member having a substantially flat mounting leg that is joined by a substantially right angle bend to a substantially flat end leg that has a length measured from the right angle bend that is less than is the length of the mounting leg measured from the right angle bend, with the mounting leg and the end leg each having front and rear portions that are located on opposite sides of a common imaginary center plane that intersects substantially at right angles the mounting leg and the end leg along imaginary center lines that extend substantially centrally with respect to the mounting leg and the end leg, respectively;

c) the U-shaped member having a pair of substantially flat, similarly configured, front and rear legs that are rigidly connected by substantially right angle bends to a substantially flat base leg, with the front and rear legs:

1) being oriented to extend in spaced, substantially parallel relationship so as to overlie each other;

2) having end surfaces that overlie each other and that extend substantially perpendicular to the substantially flat base leg;

3) having aligned holes formed therethrough that are of a size that will closely receive the first pivot pin;

d) first connecting means for rigidly connecting the U-shaped member to the L-shaped member 1) such that the front and rear legs of the U-shaped member are positioned to extend in substantially parallel planes on opposed front and rear sides of, and at substantially equal distances from said imaginary center plane, 2) such that the base leg of the U-shaped member engages a selected one of the mounting leg and the end leg of the L-shaped member, and 3) such that the overlying end surfaces of the front and rear legs of the U-shaped member engage the other of the mounting leg and the end leg of the L-shaped member;

e) the handle being formed as an assembly that includes:

1) a pair of elongate front and rear handle members that extend in overlying relationship from A) overlying first end regions of the front and rear handle members that have aligned holes formed therethrough that are of a size that will closely receive the first pivot pin, and B) overlying second end regions of the front and rear handle members are similarly configured and cooperate to define an elongate handgrip that is always located farther from the first pivot pin than is said portion of the drawbar that is situated relatively near to the hand grip regardless of the orientation of the drawbar relative to the handle; and,

2) stop formation means defined by overlying, similarly configured formations of the front and rear handle members for cooperatively defining a stop that engages a selected one of the mounting leg and the end leg of the L-shaped base member when the handle is in a selected one of its fully open and fully closed positions; and,

f) with the handle also defining a drawbar engaging surface 1) that is situated along the length of the handle at a chosen location which is between the first pivot pin and the handgrip, 2) that is configured to be engaged by the drawbar when the drawbar is in its retracted position, and 3) that is configured so as to ensure that, when the drawbar is in engagement with the drawbar engaging surface, the drawbar will be prevented from so closely approaching the handgrip as to come into contact with portions of a hand that is gripping the hand grip.

5,667,262

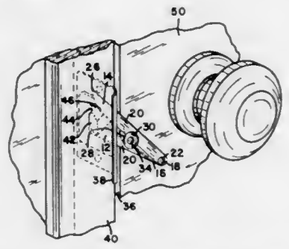
PORTABLE, ADJUSTABLE DOOR LOCK DEVICE AND METHOD OF USE

Paul O. Planchon, 2580 Melody La., Reno, Nev. 89512

Filed Jul. 8, 1996, Ser. No. 676,563

Int. Cl.[6] **E05C** *19/18*

U.S. Cl. 292—288 **5 Claims**



1. A portable, adjustable door lock device comprising: a first and a second blade member each having a first end a second end and a

central portion, said first end of said first member and said first end of said second member being pivotably pinned together, thus forming substantially a V-shaped member having substantially two pointed legs, said central portion of each blade member being slidably detachably positioned between a first and a second washer, said first and said second washer being pivotably pinned together, said legs each being insertable between the edge of a door and a striker plate affixed to a door frame, said door having therein a reciprocable bolt movable into and out of a hole through said striker plate into said door frame, and said legs having opposed inside cutting edges for engagement with said bolt,

whereby;

said edges of said legs may frictionally capture said bolt there between, thus, said bolt is held in a secure manner and said door cannot be opened.

5,667,263

POWER-ACTUATED MOTOR-VEHICLE DOOR LATCH

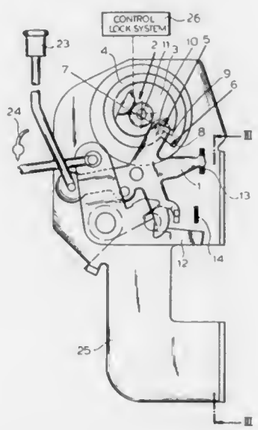
Frank Kleefeldt, Heiligenhaus; Peter Bartel, Hattingen; Horst Brackmann, and Theodor Menke, both of Velbert, all of Germany, assignors to Kiekert Aktiengesellshaft, Heiligenhaus, Germany

Filed Aug. 28, 1995, Ser. No. 520,534

Claims priority, application Germany, Sep. 1, 1994, 44 31 147.8; European Pat. Off., Mar. 4, 1995, 95103123

Int. Cl.[6] F05B *3/00*

U.S. Cl. 292—336.3 **3 Claims**



1. A motor-vehicle door latch comprising:

a housing;

a locking mechanism in the housing having an inside locking lever displaceable between a locked position in which the latch is locked and an unlocked position in which the latch is unlocked;

an output element rotatable about an axis and formed with a spiral main groove having a pair of ends and with a transverse connecting groove extending between the ends;

a pin mounted directly on the locking lever and riding directly in the spiral groove;

means including a reversible electric motor for rotating the output element so that the pin travels between the ends of the spiral groove for displacing the locking lever into the locked position when the pin engages one of the groove ends and for displacing the locking lever into the unlocked position when the pin engages the other of the groove ends; and

means including a locking element connected to the inside locking lever for displacing same manually between its positions with movement of the pin along the connecting groove between the spiral groove ends.

5,667,264

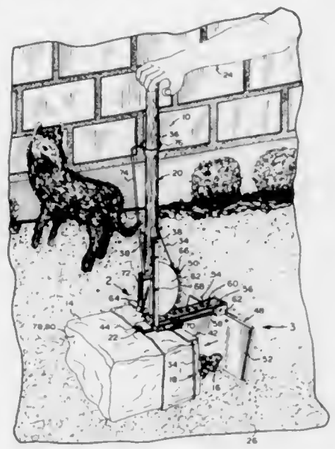
APPARATUS FOR ANIMAL WASTE COLLECTION

Steve F. Tanahara, 94-1192 Kahuahale St., Walpahu, Hi. 96797

Filed Nov. 13, 1995, Ser. No. 555,928

Int. Cl.[6] A01K *29/00;* **E01H** *1/12*

U.S. Cl. 294—1.4 **21 Claims**



1. An apparatus for animal waste collection comprising:

a) a frame member;

b) a disposable bag to receive animal waste therein;

c) means for connecting a folded over mouth portion of said disposable bag to said frame member in a removable manner;

d) an upright handle assembly including:

1) an elongated shaft;

2) a pair of L-shaped stanchion braces affixed on opposite sides and at a bottom end of said elongated shaft;

3) a main stand and stopper attached to bottom ends of said stanchion braces; and

4) a C-shaped channel connector secured to said main stand and stopper; and

e) means for coupling said frame member with said disposable bag to a bottom end of said upright handle assembly in a removable manner, whereby a person can grasp said upright handle assembly, position said frame member with said disposable bag adjacent animal waste deposited upon the ground, scoop the animal waste into said disposable bag, disengage said upright handle assembly from said frame member and separate said disposable bag from said frame member to get rid of said disposable bag with the animal waste.

5,667,265

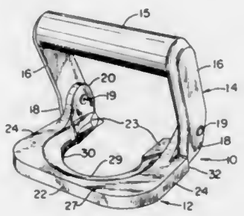
RELEASABLE CARRYING HANDLE FOR BOTTLES

Albert W. Gebhard, 2101 E. Alameda, Denver, Colo. 80209

Filed Apr. 25, 1996, Ser. No. 635,391

Int. Cl.[6] B65D *23/10;* **B65G** *7/12*

U.S. Cl. 294—27.1 **13 Claims**



1. A bottle carrier for carrying bottles of the type having an entrance therein, and an upper neck and an external shoulder portion around said entrance, said carrier comprising:

a neck-engaging cradle portion of generally U-shaped configuration comprising:

a closed end;

two sides extending from said closed end, wherein said closed end and said sides define a neck-receiving opening, and said sides are slidable transversely of said neck into snug-fitting, surrounding relation to said neck beneath said shoulder portion; and

stop members on said sides; and

a rigid handle portion having a hand grip and opposite side arm members extending from opposite ends of said hand grip, said arm members being pivotally connected to said cradle portion;

wherein said side arm members are abuttable with said stop members to limit upward pivotal movement of said handle portion to an attitude less than 90° with respect to said cradle portion.

5,667,266

DEVICE FOR CARRYING LOADS

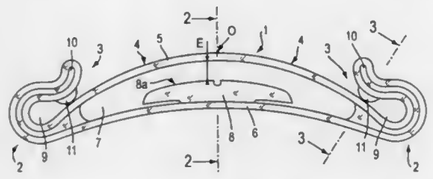
Xavier Glocanti, Les Romarins, Allée des Pins, 84 boulevard du Redon, Marseille F-13009, France

PCT No. PCT/FR93/01291, § 371 Date Jun. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO95/17114, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 22, 1993, Ser. No. 663,078

Int. Cl.[6] B65D *33/06*

U.S. Cl. 294—170 **7 Claims**



1. Grip for carrying bags having loop handles, or other loads, comprising:

an elongated central body having end portions shaped to constitute hooks for hanging said bags or other loads, said central body being made of a material having an elastic deformation capability;

wherein said central body includes two flexible portions or arms that are superposed, spaced apart, and separated by an elongated opening extending between the end portions constituting the hooks;

wherein at least one of the arms has an inner surface provided with an abutment arranged to project on said inner surface and oriented in a direction of an inner surface of the other arm; and

wherein a space separates, at rest, a free edge of the abutment and the inner surface of said other arm.

5,667,267

MOBILE FITNESS CENTER

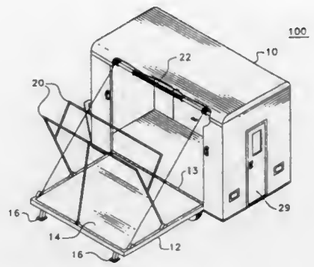
John K. Talucci, 127 Gallagherville Rd., Downingtown, Pa. 19335

Filed Feb. 15, 1996, Ser. No. 601,849

Int. Cl.[6] B62D *33/08*

U.S. Cl. 296—26 **18 Claims**

9. A mobile fitness center comprising a trailer having top and bottom portions, front and back portions and a pair of longitudinal sides, said longitudinal sides comprising at least one movable panel having a first position forming a portion of one of said longitudinal sides, and a second position which forms an extended floor surface for said trailer; said movable panel being connected to said trailer by a longitudinal hinge and comprising jack means for supporting said panel above a ground surface when in said second position said movable panel comprising a spring winding mechanism comprising a tension spring and cable.



5,667,268

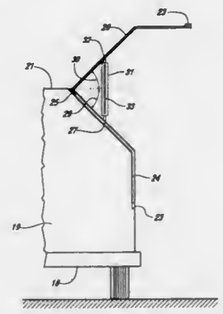
PROTECTIVE DOOR FOR SERVICE COMPARTMENT

Durwin L. Bump, 1544 18th St., Mitchell, Nebr. 69357

Filed Jun. 16, 1995, Ser. No. 491,177

Int. Cl.[6] B60P *7/02*

U.S. Cl. 296—100 **9 Claims**



1. A protective door system and its complementary box-type structurally-secure service compartment mounted on a firm base, which comprises:

a slanted roof as a modification of said service compartment wherein said slanted roof is between about 30 and 60 degrees below horizontal and represents no more than one-third of the total roof area, and wherein said slanted roof is positioned only on the side of said service compartment which contains said protective door;

a structurally-secure door opening as a modification of said service compartment wherein said opening extends from within two feet of the horizontal roof to a location along the vertical side wall of said service compartment;

a structurally-secure protective door fitting into said door opening matched with a weather-type seal, fastened with hinges overhead at its junction with the roof, and secured with a latch at its junction with the vertical wall, wherein said door was made with the same dimensions and slant angle as the slanted roof and vertical side openings; and

a brace attached in a structurally-secure manner between said protective door and said service compartment to allow multiple open door positions that are no more than about 60 degrees above the horizontal, wherein said brace has a length-changing connection with multiple locking positions.

5,667,269

THREE SECTION CONVERTIBLE TOP

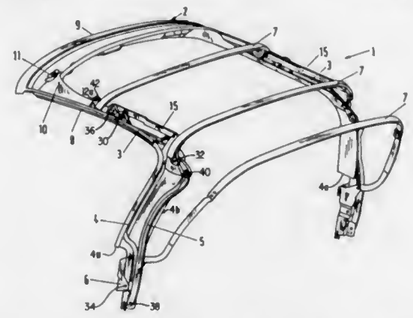
Rainer Prenger, Osnabrueck, and Uwe Nissen, Steinhagen, both of Germany, assignors to Wilhelm Karmann GmbH, Osnabrueck, Germany

Continuation of Ser. No. 321,705, Oct. 12, 1994, abandoned. This application Apr. 1, 1996, Ser. No. 625,927

Claims priority, application Germany, Oct. 15, 1993, 93 15 758.4 U

Int. Cl.[6] B60J *7/12*

U.S. Cl. 296—107 **31 Claims**



6. In a top for a convertible vehicle having a front, a rear and a longitudinal axis extending from front to rear, the combination comprising:

a molded, one-piece, U-shaped frame member lying against an upper transverse cross-tie of a windshield of the vehicle and directly connected to a roof arch, said frame member having a front section extending transversely of said longitudinal axis and two elongated spaced side sections extending rearwardly from said front section;

each of said side sections having a first connecting element;

a pair of side members; and

first pivot means pivotally connecting said first connecting element to said side members.

5,667,270

FOCUS DETECTING DEVICE

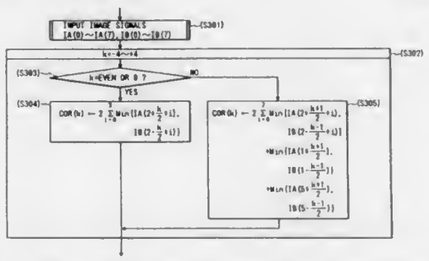
Akira Akashi, Yokohama, and Hiroshi Matsushima, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 270,660, Jul. 5, 1994, abandoned, which is a division of Ser. No. 914,580, Jul. 20, 1992, Pat. No. 5,381,206. This application Sep. 16, 1996, Ser. No. 714,470

Claims priority, application Japan, Jul. 22, 1991, 3-180978; Jul. 23, 1991, 3-182516

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—128 **4 Claims**



1. A detection device having a first sensor portion provided with a plurality of light receiving portions and a second sensor portion provided with a plurality of light receiving portions, and performing signal processing for focusing on the basis of outputs of said first and second sensor portions, said detection device comprising:

(a) a taking out circuit for taking out, in a first shift, (i) a first series of signals from a first plurality of light receiving portions of said first sensor portion, and (ii) a second series of signals from a first plurality of light receiving portions of said second sensor portion, and for taking out, in a second shift, (i) a third series of signals from a second plurality of light receiving portions of said first sensor portion, and (ii) a fourth series of signals from a second plurality of light receiving portions of said second sensor portion; and

(b) a calculation circuit for calculating a first correlation value from the first and second series of signals taken out by said taking out circuit for the first shift, and for calculating a second correlation value from the third and fourth series of signals taken out by said taking out circuit for the second shift and for calculating a further correlation value for each shift in which the correlation value for each shift is multiplied by a predetermined value, and for determining information for focusing on the basis of the further correlation value for each shift.

5,667,271

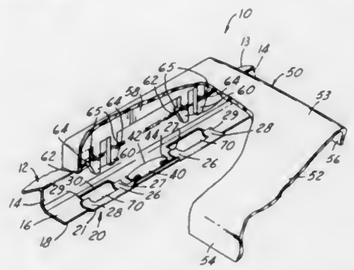
SNAP-IN ATTACHMENT CLIP FOR PLASTIC PANEL

Thomas C. Booth, Roseville, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 15, 1995, Ser. No. 404,848

Int. Cl.[6] B62D *25/08*

U.S. Cl. 296—192 **9 Claims**



1. In combination with a vehicle body having transversely spaced apart right and left side body panels, said body panels, said body panels terminating in defining a pair of longitudinally extending opposed flange edges, each said flange edge formed with longitudinally spaced fore and aft rectangular-shaped cutouts, a pair of press-on attachment clips adapted for securing respective right and left outboard ends of a plastic panel to an associated inboard extending horizontally disposed mirror image flange, the combination comprising:

each clip having a generally U-shape formed from resilient sheet material having a longitudinally elongate, generally bifurcated configuration with a transverse axis of symmetry and defining an upper contoured leg and a lower planar leg, said legs having inboard ends thereof joined by a bight wall;

said upper leg having an inner pair of outboard extending longitudinally spaced fore and aft tangs, defining a central gap therebetween which overlies a lower leg elongated central tab portion, said upper leg terminating at its fore and aft ends in an outer pair of outboard extending end tangs having parallel side edges, each said end tang overlying a lower leg end tab portion with said end tang side edges in matched relation to associated side edges of an associated lower leg and tab portion, whereby each said fore and aft inner tang and its associated fore and aft end tang of said upper leg defining therebetween a pair of upper leg end notches with their side edges in matched relation to a pair of lower leg end notches;

each clip end notch so sized and shaped such that upon said clip being mounted on an associated clip out end notch body panel flanged edge, each clip upper and lower leg outer pair of end notches are centered with one of said fore and aft cutouts, each said cutout defining a pair of opposed side edges spaced apart a predetermined longitudinal dimension greater than opposed side edges of each said clip end notch;

said plastic panel having each outboard end thereof formed with fore and aft integral pairs of mirror image depending resilient locking prongs, each said prong formed with a taper face terminating in a horizontal shouldered surface, whereby with each said attaching clip mounted on said attaching clip's associated flange edge said plastic panel having each end fore and aft pair of locking prongs vertically aligned with an associated clip pair of upper and lower leg end notches and a flange fore and aft cutout so as to be initially received therein, such that an installer pushing downwardly on the plastic panel causes each pair of prongs to deflect as each prong tapered edge face rides over said prong tapered edge face's respective end notch opposed side edges, such that each pair of locking prongs will spring back in a snap-in manner with their respective shoulder surfaces in locked contact with an undersurface of said locking prong's associated clip lower leg.

5,667,272

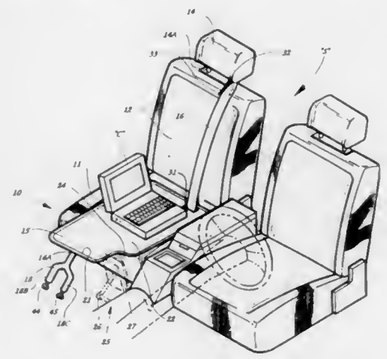
VEHICLE PLATFORM ASSEMBLY

Michael Sutton, 2811 Edwin Jones Dr., Charlotte, N.C. 28269

Filed Nov. 9, 1995, Ser. No. 556,139

Int. Cl.[6] A47B *83/02*

U.S. Cl. 297—140 **6 Claims**



1. In combination with a vehicle including a vehicle seat having a seat bottom, seat back, and a head rest, and a cellular telephone assembly including a mounting structure attached to a floor of the vehicle adjacent to the vehicle seat and a telephone supported thereon, a platform assembly supported by the seat to carry articles for ready access by an occupant of the vehicle, said platform assembly comprising:

(a) a platform defining a cut-out section therein to accommodate said mounting structure and telephone, and having a flat slip-resistant surface area for supporting articles thereon, and for preventing substantial shifting of the articles while the vehicle is in motion; and

(b) an adjustable attachment strap secured to a back end of said platform, and extending upwardly from said platform adjacent to the seat back for removable attachment to the headrest, said attachment strap permitting leveling adjustment of the platform, and unobstructed access by the vehicle occupant to the articles supported on the platform.

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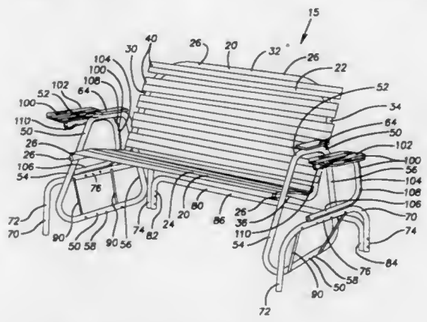
SIDE TABLE AND GLIDER ASSEMBLY

Ronald C. Noll, 20749 University Boulevard, Shaker Heights, Ohio 44122

Filed May 31, 1996, Ser. No. 658,880

Int. Cl.[6] A47B *83/02*

U.S. Cl. 297—171 **25 Claims**



1. A glider assembly comprising:

a stationary base having a front and a rear, said base consisting of two laterally disposed base members and a transversely extending frame member, said frame member disposed proximate to said rear of said stationary base;

two side frames, each movably affixed and suspended from said laterally disposed base members;

a bench having an upwardly extending back portion adjoined to a generally horizontal seat portion, said bench disposed between and affixed to said two side frames; and

at least one table assembly having an upwardly extending bracket having an upper portion, said bracket affixed to an uppermost region of one of said laterally disposed base members, and a table secured to said bracket wherein said upper portion of said bracket is vertically spaced above said uppermost region of said laterally disposed base member to which said bracket is affixed.

5,667,274

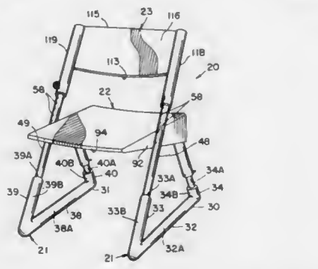
ADJUSTABLE CHAIR

Sanford Blackman, 2609 E. Maryland Dr., Tempe, Ariz. 85281-5006

Filed Nov. 1, 1995, Ser. No. 548,324

Int. Cl.[6] A47C *3/34*

U.S. Cl. 297—338 **4 Claims**



1. A chair for supporting the human body, and for adjusting to meet the unique ergonomic characteristics of individuals, said chair comprising:

a base member having a front portion and a rear portion;

a pair of spaced upwardly and rearwardly extending parallel back support members, each having first and second ends, with the first ends thereof attached to the front portion of said base member;

a pair of spaced upwardly and forwardly extending parallel seat support members, each having first and second ends, with the first ends thereof attached to the rear portion of said base member;

a seat having a front edge, a rear edge, first and second sides, and a seating surface therebetween upon which a user may sit, said seat adjustably mounted on said seat support members for movement toward and away from the second ends of said seat support members;

a back having first and second sides and a substantially upright back support surface for supporting the back of the user, said back adjustably mounted at the first and second sides thereof on said back support members for movement toward and away from the second ends of said back support members and located in a generally vertically elevated position above said seat and

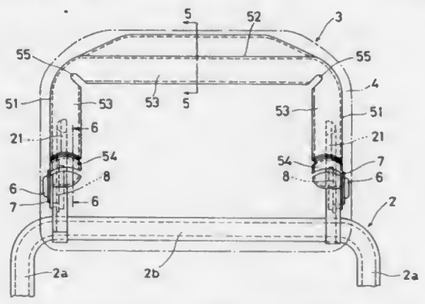
said seat and said back independently adjustable between first positions wherein said seat and said back are positioned proximate a first lowest sealing height and a first lowest back height, respectively, thereby providing a first seating area defined as the area from said front edge of said seat to a first point where a projection of said back onto said seat intersects said seating surface, and second positions wherein said seat and said back are positioned proximate a second higher seating height and a second higher back height, respectively, thereby providing a second seating area defined as the area from said front edge of said seat to a second point where a projection of said back onto said seat intersects said seating surface, said second seating area being greater than said first seating area, since said seat moves forward relative to said base and said back moves rearward relative to said base as said seat and said back are moved from the first positions thereof to the second positions thereof.

5,667,275

HEAD-REST APPARATUS

Nobuhiko Takeda, Aichi pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 19, 1995, Ser. No. 425,048
Claims priority, application Japan, Apr. 21, 1994, 6-083025
Int. Cl.[6] A47C *1/10*
U.S. Cl. 297—408 **16 Claims**



13. A head-rest apparatus mountable on a seat-back of a seat for providing a rest for a head of an occupant of a vehicle, comprising:

a stay for being mounted on the seat-back, said stay including a pair of spaced leg portions connected together by an intermediate portion, and first and second brackets extending from the intermediate portion; and

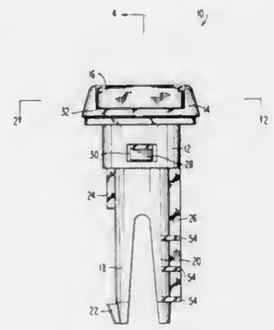
a main portion that includes a frame and a pad which encircles the frame, the frame including a pair of spaced apart first extension portions and a second extension portion extending between the first extension portions, one of the first extension portions being pivotally mounted on the first bracket and the other first extension portion being pivotally mounted on the second bracket for allowing the frame to pivot relative to the stay, and including friction producing means operatively associated with at least said first bracket and said one first extension portion for urging one of the first bracket and the one first extension portion into frictional engagement with the other of the first bracket and the one first extension portion so that the main portion is maintained in position relative to the stay through frictional engagement between the first bracket and the one first extension portion.

5,667,276

LOCKING HEADREST SUPPORT ASSEMBLY

John M. Connelly, Tinley Park, and Sven E. Carlson, New Lenox, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 29, 1995, Ser. No. 580,755
Int. Cl.[6] A47C *1/10*
U.S. Cl. 297—410 **12 Claims**



1. A locking headrest support assembly for the back of a vehicle seat, said assembly comprising;

a sleeve, said sleeve being lockable within the back of a vehicle seat and having a longitudinal bore;

a cap, said cap having an underside and a longitudinal bore and being connected to said sleeve, said longitudinal bore of said cap being aligned with said longitudinal bore of said sleeve, said cap further having a slot formed in said underside in a direction substantially transverse to said bore having a first side wall and a second side wall, a rear wall and a top and a bottom, said first and second side walls each having a notch defining a ledge, said ledges being sides of holes into said underside of said cap, said holes not being exposed to view when said locking headrest support assembly is installed on the back of a vehicle seat;

a spring disposed within said slot, said spring having a normal and a depressed position and being formed of an elongated base member, said elongated base member having a rearwardly bent leg on each of its ends, said legs extending a predetermined distance from said elongated base member so that, when said spring is in said normal position, said elongated base member crosses said bore a predetermined distance to engage a headrest rod within said bore and, when in said depressed position, does not cross said bore; and

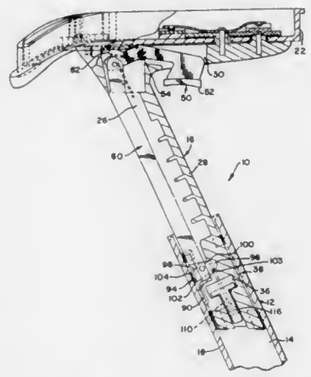
a button, said button being movably disposed within said slot in a drawer-like fashion, said button having prongs on opposite sides thereof, said prongs being engagable with said ledges in said slot, so that, once said button is disposed within said slot, said button may not be removed therefrom, said button engaging said elongated base member of said spring for compressing same against said rear wall of said slot to move it from said normal to said depressed position and for maintaining same in said normal position when not being pressed, when said prongs of said button engage with said ledges of said side walls of said slot against the biasing action of said spring.

5,667,277

HEIGHT ADJUSTABLE ARM REST ASSEMBLY

Douglas M. Van De Riet, Holland, Mich., assignor to Herman Miller Inc., Zeeland, Mich.

Filed Jun. 7, 1995, Ser. No. 476,846
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **30 Claims**



21. A height adjustable arm rest assembly for use on a chair, said assembly comprising:

a support member having a sleeve that extends upwardly from said chair, the support member further including a substantially continuous engagement surface on an inner surface of the sleeve;

an arm rest member including a downwardly extending stem which is slidably received within the sleeve;

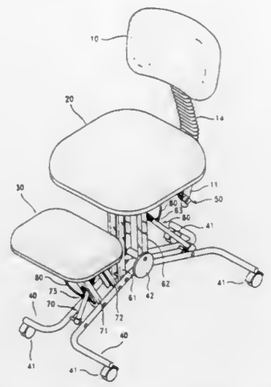
a locking mechanism attached to one of said support member and said arm rest member, said locking mechanism comprising:

an actuation member

a link connected to the actuation member;

a generally wedge-shaped recess in the stem which opens toward the engagement surface;

a cam received within the recess, said cam including a front, middle and rear portion, said middle portion being connected to said link, said cam being of a size and shape so as to allow the cam to pivot in response to movement of the actuation member, the cam pivotable within the recess about a generally horizontal axis through the rear portion of the cam between a locking position wherein the front portion of the cam engages the engagement surface in the sleeve and a release position wherein the cam disengages the engagement surface, and wherein the cam has a length great enough to prevent the cam from pivoting past the locking position.



a first linking member having a lower end pivotally connected with said base frame and an upper end pivotally connected with said fixed panel;

a second linking member having a lower end pivotally connected with said base frame and an upper end pivotally connected with said fixed panel and located at one side of said first linking member;

a first adjusting rod having a lower end pivotally connected with said base frame and an upper end pivotally connected with said first linking member;

a fixing member fixedly mounted on said fixed panel;

a supporting rod having an intermediate portion pivotally connected with said fixing member;

a backrest rigidly mounted on an upper end of said supporting rod;

a knee support fixedly mounted on a pair of fixed members;

a first connecting member having an upper end pivotally connected with fixed members and a lower end pivotally connected with said base frame;

a second connecting member having an upper end pivotally connected with fixed members and a lower end pivotally connected with said base frame and located at one side of said first connecting member;

a first adjusting rod having an end pivotally connected with a lower end of said supporting rod and another end pivotally connected with said fixing member;

a second adjusting rod having a lower end pivotally connected with said base frame and an upper end pivotally connected with said first linking member; and

a third adjusting rod having a lower end pivotally connected with said base frame and an upper end pivotally connected with said first connecting member.

5,667,278

COMBINATIONAL CHAIR, RECLINER AND TYPING STOOL

Chun Hsien Li, P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 27, 1995, Ser. No. 579,401
Int. Cl.[6] A47C *7/50*
U.S. Cl. 297—423.13 **2 Claims**

1. A combinational chair, recliner and typing stool comprising:

a base frame;

a seat fixedly mounted on a fixed panel;

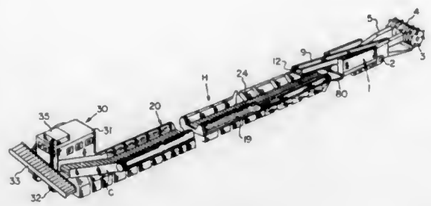
5,667,279

APPARATUS AND METHOD FOR CONTINUOUS MINING

David A. Christopher, Idamay, and Larry G. Offutt, Morgantown, both of W. Va., assignors to Arch Mineral Corporation, St. Louis, Mo.

Division of Ser. No. 530,748, Sep. 19, 1995, which is a continuation of Ser. No. 428,952, Apr. 26, 1995, abandoned. This application Nov. 6, 1996, Ser. No. 744,587
Int. Cl.[6] E21C *35/08*
U.S. Cl. 299—1.9 **3 Claims**

1. A power distribution system for a continuous mining system including a continuous miner, an articulated tramming conveyor operatively connected to and trailing said continuous miner, and a load-out vehicle operatively connected to and trailing said tramming conveyor, said tramming conveyor including a continuous conveyor chain, a plurality of electric drive motors distributed along the length of said tramming conveyor and driving said



conveyor chain, said power distribution system having a plurality of power buses spaced along the length of said tramming conveyor from said load-out vehicle to said continuous miner, each of said power buses connected to and supplying power to non-sequential drive motors spaced along the length of said tramming conveyor, and each of said drive motors in said tramming conveyor connected to one of said power buses.

5,667,280

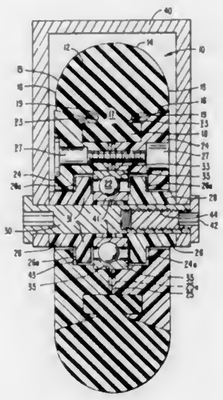
SKATE WHEEL

David W. Hansen, Salt Lake City, Utah, assignor to Mechatronics, Inc., Preston, Wash.

Continuation-in-part of Ser. No. 67,324, May 25, 1993, abandoned. This application May 30, 1995, Ser. No. 454,040

Int. Cl.[6] B60C *7/24*

U.S. Cl. 301—5.3 **18 Claims**



1. A skate wheel comprising:

a tire having sides, a central opening and a central axis;

a pair of hubs adapted to be coupled to said tire and to extend into said central tire opening from respective sides of said tire, each of said hubs having an annular recess to accommodate a bearing assembly and a spacer;

a bearing assembly within said annular hub recesses and having a central axis coincident with the central axis of said tire;

a pair of spacers on opposite axial sides of the bearing assembly, said spacers being retained adjacent to the bearing assembly and within said annular hub recesses; and

means to both couple said pair of hubs together and retain said spacers within said annular hub recesses.

5,667,281

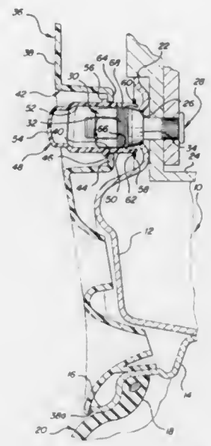
WHEEL COVER ASSEMBLY

Lawrence C. Ladouceur, Windsor, Canada, assignor to Textron Automotive Company Inc., Troy, Mich.

Filed Apr. 29, 1996, Ser. No. 641,166

Int. Cl.[6] B60B *7/14*

U.S. Cl. 301—37.37 **6 Claims**



1. A wheel cover assembly for covering the wheel of an automotive vehicle, comprising:

a decorative cover member having a plurality of openings to receive exteriorly threaded lug nuts of the wheel and mounting flanges with an axially inner surface on said cover member surrounding said openings;

a cap member provided in each of said openings having an axially inner end open to receive an associated one of the lug nuts threadably into the cap member by a forward rotation of said cap relative to said lug nut, an opposite axially outer end that is closed, and a mounting shoulder; and

a retainer member mounted on each of said cap members adjacent said axially inner end thereof having a retaining shoulder projecting radially outwardly of each of said cap members in axially spaced relation to said mounting shoulder of said cap members permitting both axial and rotational movement of each of said cap members relative to said cover member while preventing separation of said cap members from said cover member by engagement of said retaining shoulder with said axially inner surface of said cover member, and an anti-removal portion on said retainer member acting between said cap members and their respective lug nuts to releasably secure said cap members against reverse rotation relative to the lug nuts.

5,667,282

ELECTRONIC PARKING BRAKE DEVICE FOR VEHICLES AND CONTROL METHOD THEREFOR

Chong Hoon Kim, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

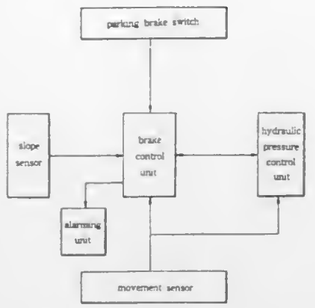
Filed Jul. 25, 1996, Ser. No. 672,847

Claims priority, application Rep. of Korea, Apr. 22, 1996, 1996-12187

Int. Cl.[6] B60T *13/74*; **F16D** *67/00*

U.S. Cl. 303—3 **1 Claim**

1. A method for controlling an electronic parking brake device including a parking brake switch adapted to supply power to desired elements of the parking brake device, a slope sensor adapted to sense the slope of a road on which the vehicle is parked, a parking brake control unit adapted to generate a control signal based on a sensing signal from the slope sensor, a hydraulic brake



unit adapted to generate a hydraulic brake force, and a hydraulic pressure control unit adapted to control hydraulic pressure applied to the hydraulic brake unit under a control of the parking brake control unit, a movement sensor adapted to sense a movement of the parked vehicle, and an alarming unit adapted to generate an alarm under control of the parking brake control unit, the method comprising the steps of:

switching on the parking brake switch to energize the slope sensor and the movement sensor;

determining whether or not the slope sensor has generated its sensing signal;

if the slope sensor has generated the sensing signal, automatically driving the parking brake control unit based on the sensing signal from the slope sensor, thereby generating a control signal for providing an appropriate driving condition of the hydraulic brake unit;

if the slope sensor has generated no sensing signal, the parking brake control unit causes the hydraulic pressure unit to generate the maximum braking force;

determining whether or not the movement sensor has generated its sensing signal; and if the movement sensor has generated its sensing signal, the operation of the brake device ends if no signal is sent from the movement sensor; and

sending the sensing signal from the movement sensor to the parking brake control unit so that the parking brake control unit can send a control signal to the alarming unit to generate an alarm.

5,667,283

VARIABLE SCREW-DRIVEN SYSTEM

David Bernard Drennen, Bellbrook, and Ryan Lovell Wright, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1996, Ser. No. 632,189

Int. Cl.[6] B60T *8/42*

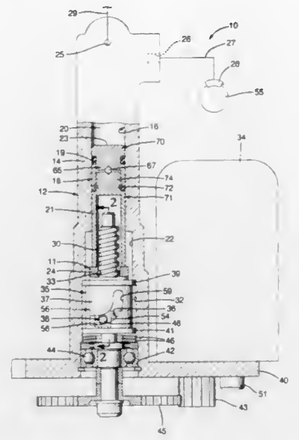
U.S. Cl. 303—115.2 **12 Claims**

1. A variable screw-driven system comprising:

a rotatable drive screw;

a nut disposed about the rotatable drive screw, interacting with the rotatable drive screw and linearly translatable in response to rotation of the drive screw;

a cam assembly including a cam follower carried to travel in concert with the nut, the cam assembly forming a cam track having a selected profile and within which the cam follower is disposed, wherein during rotation of the drive screw, linear translation of the nut effects tracking of the cam follower within the cam track such that rotation of the nut is effected simultaneously with rotation of the drive screw resulting in an effective variable pitch of the variable screw-driven system



wherein linear translation of the nut is effected by both rotation of the drive screw and rotation of the nut caused by the cam assembly.

5,667,284

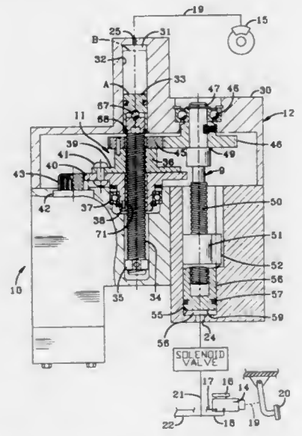
MANUALLY BACKDRIVABLE BALL SCREW ASSISTED BRAKING SYSTEM

David Bernard Drennen, Bellbrook, and Ryan Lovell Wright, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1996, Ser. No. 698,071

Int. Cl.[6] B60T *8/02*

U.S. Cl. 303—115.2 **8 Claims**



6. An actuator comprising:

a housing having a first variable chamber and a second variable chamber;

a first piston operated by a screw driven mechanism to automatically adjust the first variable chamber and a second piston operating an assist screw drive, the assist screw drive engaging the screw driven mechanism so that a first pressure selectively effected in the second variable chamber moves the assist screw drive to drive the screw driven mechanism generating a second pressure in the first variable chamber;

the screw driven mechanism including a rotatable nut with a first drive gear connected to the rotatable nut; and

the assist screw drive including a rotatable shaft with an assist drive gear fixed on the rotatable shaft and meshing with the drive gear.

5,667,285

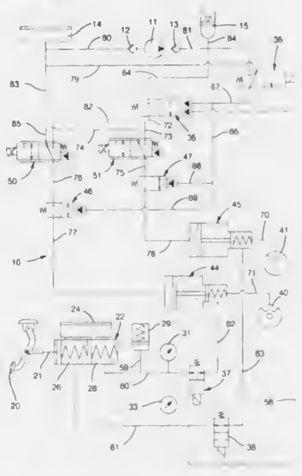
CENTRAL HYDRAULICS BRAKE SYSTEM

Viswanath Seetharaman, Anderson; Dale Lee Baldauf, Pendleton, both of Ind.; Donald Edward Schenk, Vandalia, Ohio, and William Vincent Jacob, Pittsburgh, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 28, 1995, Ser. No. 508,808

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—116.2 **14 Claims**



1. A braking system comprising:

a wheel brake;

a pump;

a hydraulic network connecting the pump to the wheel brake including an intensifier;

pressure regulator connected in the hydraulic network between the pump and the intensifier;

an enable valve being normally closed and connected in the hydraulic network between the pump and the pressure regulator;

and a means for actuating the enable valve wherein the means for actuating the enable valve includes a three way normally closed solenoid operated valve.

5,667,286

BRAKE CONTROL SYSTEM

John Francis Hoying, Centerville, Ohio; Richard Charles Swortzel, Ann Arbor, Mich.; Deron Craig Littlejohn, Kettering, Ohio; G. Donald Denney, Huber Heights, Ohio, and Bryan Peter Riddiford, Spring Valley, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 29, 1996, Ser. No. 654,982

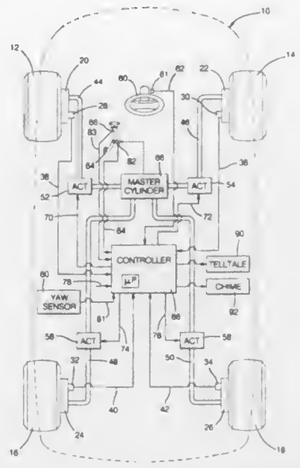
Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—140 **19 Claims**

1. A brake control system method for use in a vehicle according to the steps of:

determining, responsive to a sensor, a vehicle yaw rate;

determining, responsive to a vehicle speed signal and a steering wheel position, a desired yaw rate;



determining a yaw rate error equal to a difference between the vehicle yaw rate and the desired yaw rate;

determining a yaw force command responsive to the yaw rate error;

responsive to the yaw force command, determining a first brake command adjustment for a first wheel of the vehicle, wherein the first brake command adjustment represents a first minimum of (i) a total yaw force commanded by the yaw force command and (ii) a first available yaw force representative of a first yaw force output that the first wheel can impart on the vehicle;

first determining whether the first brake command adjustment represents the total yaw force commanded by the yaw force command; and

responsive to the first determination, determining a second brake command adjustment for a second wheel of the vehicle only if the first brake command adjustment does not achieve on a body of the vehicle the total yaw force commanded by the yaw force command.

5,667,287

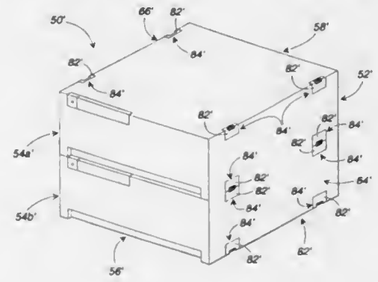
MULTI-MEDIA STORAGE SYSTEM HAVING A MULTI-COMPONENT INSERT ASSEMBLY

John D. Gunning, 55 Pharr Rd., Apt. D204, and Matthew B. Rexrode, 2660 Peachtree Rd., NW., Unit #39D, both of Atlanta, Ga. 30305

Filed Apr. 21, 1995, Ser. No. 426,939

Int. Cl.[6] A47B *47/06*

U.S. Cl. 312—108 **9 Claims**



1. A storage container, comprising:

an outer sleeve defining a cavity, said outer sleeve including

a top panel,

a bottom panel, and

a side panel joining said top and bottom panels, said side panel and said top panel defining a first edge therebetween, said side panel and said bottom panel defining a second edge therebetween,

wherein said top panel and said side panel define a first aperture which extends through said first edge within said top and side panels,

wherein said bottom panel and said side panel define a second aperture which extends through said second edge within said bottom and side panels, said first aperture opposing said second aperture;

a columnar support adjacent said side panel, said columnar support extending into said first aperture and extending into said second aperture;

a track adjacent to said side panel and coupled to said columnar support; and

an insert assembly removably inserted into said cavity of said outer sleeve, said insert assembly resting on said track and defining a reservoir in said cavity.

5,667,288

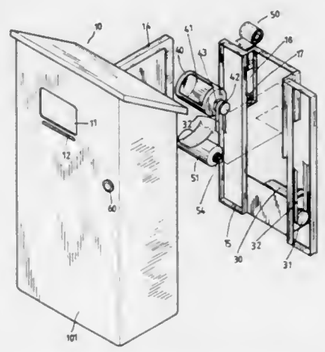
APPARATUS FOR COLLECTING ROLL FILM

Shih-Chang Kang, No. 125-1, Section 1, San Min Road, West District, Taichung, Taiwan

Filed Jun. 19, 1995, Ser. No. 492,183

Int. Cl.[6] A47G *29/00*

U.S. Cl. 312—211 **6 Claims**



1. An apparatus for collecting roll films comprising:

a housing including a front panel having an opening and a slit and including a hollow interior, said housing including a pair of channel means and including a roller having end portions slidably engaged in said channel means for moving along said channel means,

means for enclosing said opening, said enclosing means including a barrel having end portions slidably engaged in said channel means for moving along said channel means, said barrel being located above said roller, said enclosing means including a biasing means for biasing said roller to engage with said barrel, and

means for rotating said barrel of said enclosing means so as to open said opening and so as to collect the roll films via said opening.

5,667,289

BACKGROUND LIGHTING APPARATUS FOR LIQUID CRYSTAL DISPLAY

Fumiaki Akahane; Tooru Yagasaki, and Tatsuaki Funamoto, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

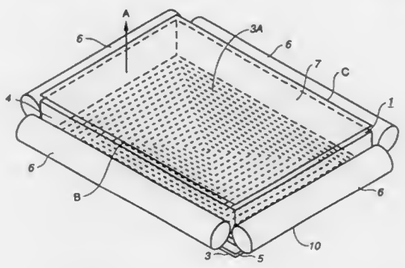
Continuation-in-part of Ser. No. 525,408, May 18, 1990, Pat. No. 5,130,898. This application Apr. 7, 1992, Ser. No. 864,772

Claims priority, application Japan, May 18, 1989, 1-57274; Sep. 29, 1989, 1-253863; Feb. 27, 1990, 2-46356; Apr. 8, 1991, 3-075093; Sep. 17, 1991, 3-236347

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[6] F21V *8/00*

U.S. Cl. 362—31 **20 Claims**



1. A background lighting apparatus for an adjoining LCD panel having enhanced luminance and thermal uniformity thereacross comprising:

a transparent plate having two major surfaces providing a high level of internal reflection for light below a critical angle,

a peripheral edge surface around a perimeter of said plate functioning as a light input to the interior of said plate,

one of said major surfaces functioning as a light output from said apparatus for light above said critical angle,

a distributed diffusion system formed relative to at least the other of said major surfaces to diffuse and reflect light entering the interior of said plate and permit light at or above said critical angle to output through said one major surface, and

a fluorescent-type light source configured to uniformly follow said peripheral edge and provide a continuous light input uniformly along said the entire peripheral edge of said plate so that for a required light level input, the amount of light flux is reduced due to the continuity of said light source along said edge permitting the utilization of smaller light source and, correspondingly, providing a reduction in the overall light source heat generated as well as provide even heat transfer distribution across said plate wherein electrical operating characteristics of said adjoining LCD panel are affected evenly thereacross.

5,667,290

MAGNETO-INDUCTIVELY ACTUATED SAFETY LIGHT

Joseph T. Cioletti, and Kathryn J. Cioletti, both of 684 Blue Ridge Dr., Pittsburgh, Pa. 15239

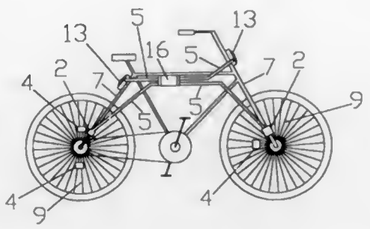
Filed Oct. 24, 1995, Ser. No. 547,413

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 362—72 **1 Claim**

1. A safety device for detecting and annunciating one of rotational and reciprocal motion using stationary magnetically actuated switches, said switches receiving magnetic signals produced by moving magnet members, said switches providing minuscule signals to a battery driven power control circuit capable of rapidly switching light emitting diodes or LED's, or incandescent lamps and comprising:

a.) one or more said moving magnet members attached to a support movable in one of rotational and reciprocal motion,



b.) one or more said magnetically actuated switches in communication with said magnet members,

c.) said magnetically actuated switches providing signals to said power control circuit,

d.) said minuscule signals comprise conducting currents that are considerably lower than current carrying capacity of said magnetically actuated switches insuring extremely long life,

e.) said power control circuit uses a capacitor and resistors to limit length of time said LED's are lit,

f.) said capacitor and resistors can be substituted with capacitor and resistors of different values to control on time and additional magnets attached to said support movable in one of rotational and reciprocal motion to create a unique user flashing pattern of said LED's for motion identification,

g.) said limiting of the on time of said LED's eliminating any need for disabling said power control circuit thereby extending battery life and ensuring said power control circuit is active at all times,

h.) said power control circuit including a solid state field effect device with high power and rapid response capabilities suitable for driving said LED's or said incandescent lamps.

5,667,291

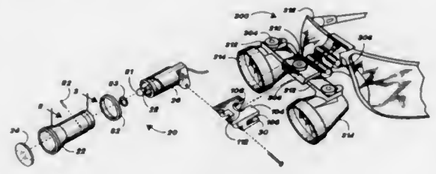
ILLUMINATION ASSEMBLY FOR DENTAL AND MEDICAL APPLICATIONS

Charles H. Caplan, and Frederick N. Bushroe, both of Tucson, Ariz., assignors to Surgical Acuity, Inc., Madison, Wis.

Filed May 23, 1995, Ser. No. 447,357

Int. Cl.[6] F21L *15/14*

U.S. Cl. 362—105 **20 Claims**



1. An illumination assembly comprising:

a. a light guide having an output end and an input end, the input end being adapted for connection to a remote illumination source;

b. a housing having a light guide opening and an illumination opening, the output end of the light guide extending within the housing and being aligned to illuminate the illumination opening;

c. an aspheric lens mounted within the illumination opening; and

d. attachment means for removably attaching the homing to headgear.

5,667,292

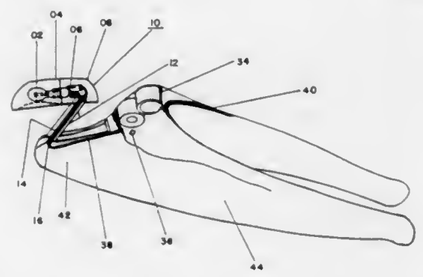
HAT LIGHT

Valentin C. Sabalvaro, Jr., 3070 Allenwood Dr., San Jose, Calif. 95148

Filed May 3, 1995, Ser. No. 433,152

Int. Cl.[6] F21L *15/14*

U.S. Cl. 362—106 **2 Claims**



1. A portable lighting device worn on a head of a user and directed to a line of sight of the user by virtue of head movement of the user, used primarily for reading, comprising of:

a) a topless hat defining a headband means engaging the head of the user above the user's eyes and extending at least partially around the head for holding said portable lighting device in place, and a projecting front brim extending outwardly from said headband means at an area where said projecting front brim is connected to and start extending outwardly from said headband means defining a base of said projecting front brim,

b) a bulb assembly housing unit attached to said projecting front brim of said topless hat by means to allow said bulb assembly housing unit to pivot up and down,

(c) a battery casing molded as part of said topless hat, where said battery casing is located at said base of said projecting front brim of said topless hat, wherein said battery casing includes batteries electrically connected to the bulb assembly housing unit for powering illumination thereof.

5,667,293

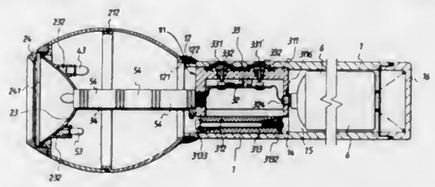
FLASHLIGHT WITH ILLUMINATION AND ALERTING EFFECT

James Own, 5 Fl., No. 12, Lane 240, Jien Shan Rd., Yin-ko Chen, Taipei Hsien, Taiwan

Filed Apr. 17, 1996, Ser. No. 633,320

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—184 **13 Claims**



1. A flashlight with illumination and alerting effect comprising:

a) a hollow tubular handle body including a front end and a rear end, an outer thread on the front end, a locking ring positioned and retained on the outer thread, a pair of push buttons on the handle body, and a battery chamber at the rear end;

b) a transparent lamp hood including a front end and a rear end, an outer thread on the front end, an outer thread on the rear end, and a convergent hood and a transparent plate disposed at the front end;

c) a control circuit secured within the handle body adjacent the front end thereof, the control circuit including a printed circuit board holder, a printed circuit board, an elastic push button, and a connecting element;

d) an illumination and alerting device disposed within the lamp hood and positioned behind the convergent hood, the device including an illumination lamp set and at least one alerting lamp set positioned behind the illumination lamp set;

e) the alerting lamp set including an alerting lamp holder having a front surface and a bottom surface, a connecting element having a front surface and a bottom surface, a bulb provided with a pair of pins extending from a bottom surface thereof and a color hood, wherein the lamp holder includes a cylindrical post extending from the front surface, a pair of L-shaped slots extending from the cylindrical post to the bottom surface of the lamp holder, a pair of L-shaped metal conductor strips disposed within the L-shaped slots, a plurality of pin holes formed in the front surface around the outer circumference of the cylindrical post, and a plurality of pins circumferentially spaced around and extending outwardly of the bottom surface;

f) the connecting element including a plurality of pin holes circumferentially spaced around the front surface thereof, the pin holes corresponding in number and location to the pins of the lamp holder, a cylindrical post at the center of and extending outwardly from the bottom surface of the connecting element, and a plurality of pins formed around the outer circumference of the cylindrical post;

g) the pair of pins extending from the bottom surface of the bulb being inserted within the L-shaped slots of the cylindrical post of the lamp holder, the color hood being transparent and including a front surface and a bottom surface, a plurality of pin holes formed in the front surface of the color hood and a plurality of pins extending outwardly from the bottom surface of the color hood; and

h) wherein at least one alerting lamp set being secured behind the illumination lamp set so that upon pushing of the elastic push button and actuation of the control circuit by a user, the illumination lamp set or the at least one alerting lamp set may be turned on for constant or intermittent lighting.

5,667,294

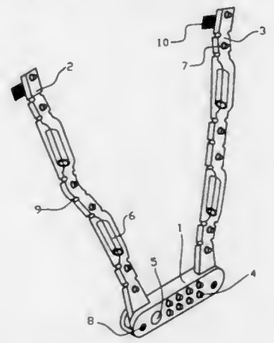
STRIP SPORT LIGHT

Robin Lo, 12309 Terrence Ave., Saratoga, Calif. 95070

Filed Aug. 12, 1994, Ser. No. 289,657

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—250 **4 Claims**



1. A strip sport light comprising:

a center strip body including an electronic printed circuit board, a switch, at least one light source, and two arm strip bodies, each said arm strip body including at least one electrical energy source and a plurality of light sources;

wherein said two arm strip bodies are connected to said center strip body such that said arm strip bodies rotate relative to said center strip body through an angle of between 90 to 180 degrees; and

wherein said printed circuit board electronically connects said energy sources with said switch and said at least one light source on said center strip body and said light sources on said arm strip bodies such that said switch is able to perform the following three functions:

(a) illumination—said light sources on said center strip body are turned on;

(b) blinking—multiple light sources on both arm strips start flashing on and off;

(c) shut off—all said light sources are turned off.

5,667,295

MODULAR HONEYCOMB LIGHT AND LIGHTBULB MODULE STRUCTURE

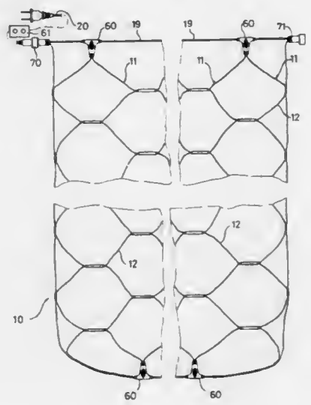
Pui-Hing Tsui, Aberdeen, Hong Kong, assignor to Neon King Limited, Aberdeen, Hong Kong

Filed Jan. 31, 1996, Ser. No. 594,772

Claims priority, application China, Sep. 26, 1995, 95 223332.0

Int. Cl.[6] F21P *1/02*

U.S. Cl. 362—252 **20 Claims**



1. A modular honeycomb light comprising:

(1) a plurality of substantially parallel light strings in electrically connection with each other, each of the light strings comprising:

a conducting wire; and

a plurality of miniature lightbulbs, substantially equally spaced along and in electrical connection with the conducting wire;

(2) an external connecting plug, mounted to an end terminal of the modular honeycomb light and in electrical connection with the modular honeycomb light;

(3) a plurality of housing tubes;

characterized in that:

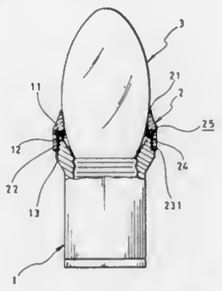
(4) the plurality of housing tubes are arranged to respectively enclose and secure together in pairs every other one of the lightbulbs of each of the light strings and a corresponding one of the lightbulbs of an adjacent one of the light strings located at one side thereof, and to enclose and secure together in pairs each of the remaining lightbulbs of said each light string and a corresponding one of the lightbulbs of an adjacent one of the light strings located at an opposite side thereof, so as to define as a whole a honeycomb net-like light assembly.

5,667,296

WATER-TIGHT CHRISTMAS TREE LIGHT

You-Jen Cheng, and Tzu-Ling Cheng, both of 2nd Fl., 18-9, Tienmu W. Road, Taipei City, Taiwan

Filed Dec. 22, 1995, Ser. No. 577,932
Int. Cl.[6] F21V *31/02*
U.S. Cl. 362—267 **2 Claims**



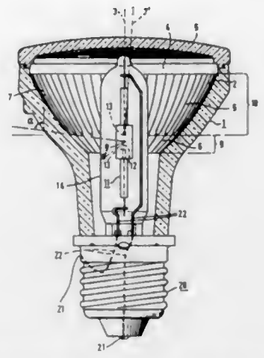
1. A water-tight Christmas tree light comprising:
a lamp socket having an outward flange around one end thereof, an outside annular surface defining a lamp socket periphery, an outer projecting wall raised around the lamp socket periphery, said outward flange and said outer projecting wall defining an outside annular groove therebetween;
a lamp bulb fastened to said lamp socket, said lamp bulb having a lamp bulb periphery; and
a rubber sealing cap having a tapered, hollow, cylindrical cap body mounted on said lamp socket around said lamp bulb to seal a gap between said lamp socket and said lamp bulb, a first cap end and a second cap end opposite said first cap end, an inward top flange on said first cap end pressed on said lamp bulb periphery, a chamfered bottom edge on said second cap end forced into the outside annular groove of said lamp socket, an inside annular flange disposed between said inward top flange and said chamfered bottom edge, and an inside projecting wall disposed between said inside annular flange and said chamfered bottom edge, said inside annular flange being stopped against and between said inside projecting wall and said lamp socket periphery, and an inside annular groove defined within said cap body and said inside projecting wall to snugly receive the outer projecting wall of said lamp socket.

5,667,297

ELECTRIC REFLECTOR LAMP

Egbertus J. P. Maassen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,154
Claims priority, application European Pat. Off., Aug. 29, 1994, 94202459; Mar. 8, 1995, 95200563
Int. Cl.[6] F21V *7/06;* **H01J** *5/02*
U.S. Cl. 362—297 **10 Claims**



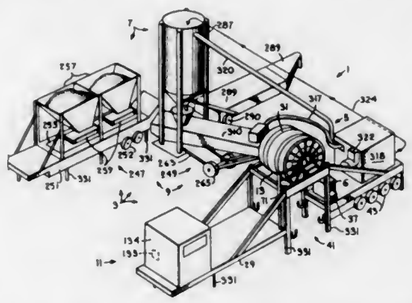
1. An electric reflector lamp comprising
a reflector body with a concave light-beam shaping surface having an optical axis, which reflector body has a light emission window which is closed off with a light-transmitting cover,
a light source on the optical axis, accommodated in a lamp vessel which is closed in a gaslight manner,
a lamp cap provided with contacts and connected to the reflector body,
current conductors which connect the light source to respective contacts of the lamp cap,
the light-beam shaping surface being subdivided into axial lanes, characterized in that
the light-beam shaping surface is a body of revolution around the optical,axis of a branch of a parabola which has been tilted towards the optical axis and whose focus lies on the optical axis inside the light source, the axial lanes being superimposed on said surface,
the axial lanes are planar transverse to the axial direction and give the light-beam shaping surface cross-sections transverse to the optical axis which are regular polygons,
a first zone remote from the light emission window has half the number of axial lanes which a second zone adjacent the light emission window has.

5,667,298

PORTABLE CONCRETE MIXER WITH WEIGH/SURGE SYSTEMS

Joseph E. Musil, Ely, and Douglas A. Wilson, Cedar Rapids, both of Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Jan. 16, 1996, Ser. No. 587,235
Int. Cl.[6] B28C *5/20;7/06;7/12;7/16*
U.S. Cl. 366—18 **20 Claims**



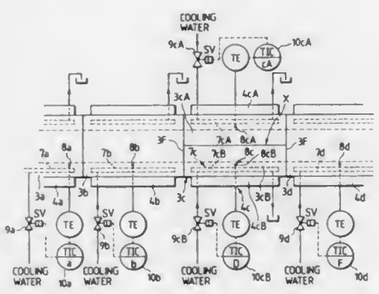
17. An apparatus for mixing wet pourable concrete material from a plurality of selected ingredients, comprising:
a) frame means including at least one chassis having at least one wheel and axle assembly;
b) mixing means for mixing the concrete material wherein said mixing means is mounted on said frame means such that said mixing means is self-erecting from and to a low-profile configuration for transporting purposes and an elevated configuration for mixing the concrete material such that the concrete material, after mixing, can be gravitationally loaded into a concrete truck; said mixing means including a mixing drum rotatable about a longitudinal axis wherein said mixing drum includes:
1) an input end having an input chute,
2) a discharge end having a discharge chute configured to be displaceable axially toward and away from said mixing drum such that concrete material is operatively and selectively dischargeable from said mixing drum, and
3) a mixing cavity having:
A) at least one spiral flight configured to operably urge the plurality of selected ingredients disposed in said mixing cavity from said input end toward said discharge end as said concrete material is being mixed from the plurality of selected ingredients, and
B) a plurality of lift flights configured to operably lift the concrete material and gravitationally deposit the concrete material into said discharge chute;
c) containing means for containing the plurality of selected ingredients;
d) control means for controlling transference of selected ones of the plurality of selected ingredients from said containing means; and
e) conveying means for receiving the plurality of selected ingredients from said containing means and for conveying the plurality of selected ingredients to said mixing means.

5,667,299

CYLINDER TEMPERATURE CONTROLLING DEVICE FOR CONTROLLING THE TEMPERATURE OF UPPER AND LOWER CYLINDER BLOCKS INDEPENDENTLY

Mitsuaki Mizoguchi; Nobuhisa Kobayashi; Masaharu Ishida, and Minoru Yoshida, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed May 23, 1995, Ser. No. 448,311
Int. Cl.[6] B01F *15/06;* **F28F** *21/06*
U.S. Cl. 366—145 **3 Claims**



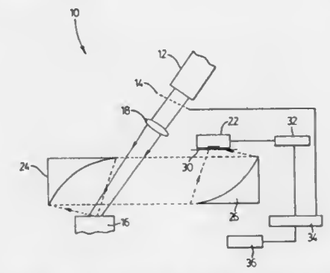
1. A cylinder temperature controlling device comprising:
a plurality of block cylinders arranged in a linear manner;
at least one of said plurality of block cylinders is split into an upper block and a respective lower block, said block cylinders arranged along an axis to form a cylinder;
heater units, for heating said upper block and said lower block, disposed on said upper block and said lower block, respectively;
cooling units, for cooling said upper block and said lower block, disposed on said upper block and said lower block, respectively; and
temperature detecting units for detecting a temperature of said upper block and a temperature of said lower block, disposed on said upper block and said lower block, respectively, said temperature detecting units comprising control means coupled to the heater units and the cooling units for independently controlling the temperature of said upper block and said lower block wherein said control means controls the temperature of said upper block and said lower block to be the same in a normal operation wherein the cylinder is assembled, and said control means controls the temperature of said upper block to be lower than a temperature of said lower block in a disassembling operation of said cylinder.

5,667,300

NON-CONTACT PHOTOTHERMAL METHOD FOR MEASURING THERMAL DIFFUSIVITY AND ELECTRONIC DEFECT PROPERTIES OF SOLIDS

Andreas Mandelis, 3 Scarborough Heights Blvd., Scarborough, Ontario, Canada, M1M 2V3, and Mahendra Munidasa, 152 Homestead Road Unit 25, Scarborough, Ontario, Canada, M1E 3S2

Filed Jun. 22, 1994, Ser. No. 264,164
Int. Cl.[6] G01N *25/20*
U.S. Cl. 374—43 **19 Claims**



1. A method of measurement of thermal diffusivity in a solid, comprising;
(a) providing a sample of the solid;
(b) irradiating the solid with an excitation pulse of repetition period T_0 and a pulse duration τ_p, wherein a photothermal signal is responsively emitted from said solid;
(c) detecting said emitted photothermal signal and inputting said photothermal signal into a signal detection means operable to measure a temporal fundamental Fourier component of said photothermal signal and to provide an output of said fundamental Fourier component; and
(d) fitting said output fundamental Fourier component to a theoretical model of the photothermal response of the repetitively irradiated solid to calculate the thermal diffusivity.

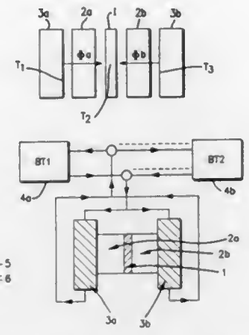
5,667,301

DEVICE FOR MEASURING THE HEAT CONDUCTIVITY OR HEAT CAPACITY OF AN INJECTABLE OR NON-INJECTABLE MATERIAL

Thomasz Jurkowski, Nantes; Yvon Jarny, Orvault, and Didier Delaunay, Nantes, all of France, assignors to Universite de Nantes, Laboratoire de Thermocinetique de l'Isitem, Nantes Cedex, France

PCT No. PCT/FR93/00868, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/05999, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 10, 1993, Ser. No. 397,089
Claims priority, application France, Sep. 10, 1992, 92 10805
Int. Cl.[6] G01N *25/20;25/18*
U.S. Cl. 374—43 **7 Claims**

1. Measuring device for measuring in a transitory manner at least one of the conductivity and the heat capacity of a material, which comprises:
two heat exchangers with flat walls disposed on opposite sides of a central separation plate having parallel walls sufficiently conductive to be considered isothermal without any fluid passing through said central plate, said flat walls delimiting with said plate two substantially identical chambers;
heating and cooling means for said heat exchangers;
two specimens of the material to be studied, of similar thickness, disposed in said chambers respectively between an external surface of the flat wall of the respective heat exchanger and one surface of the central separation plate so as to be traversed by a heat flow;
means for positioning and holding the heat exchangers substantially parallel to the central plate so as to ensure homogeneous



pressure contact between the walls of the heat exchangers, the external surfaces of the specimens, and the surfaces of the central separation plate;

insulation means closing remaining free edges of said chambers for providing unidirectional heat flow; and

at least two temperature sensors of which one T2, constituted by a thermocouple is integrated into the central separation plate, and of which the other T1, constituted also by a thermocouple is integrated into the external surface of the flat wall of one of the heat exchangers.

5,667,302

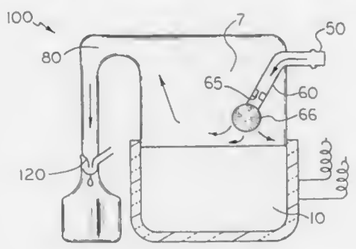
SELECTIVE VOLATILIZATION AND COLLECTION

Theodore W. Selby, Midland, and Brian J. Cluff, Bay City, both of Mich., assignors to Tannas Co., Midland, Mich.

Continuation-in-part of Ser. No. 517,429, Aug. 21, 1995, which is a continuation-in-part of Ser. No. 425,588, Apr. 20, 1995. This application Dec. 26, 1995, Ser. No. 577,964

Int. Cl.[6] G01N *25/56*

U.S. Cl. 374—54 **12 Claims**



1. A method for selective volatilization and collection of an oleaginous substance, which comprises providing an oleaginous substance in a coalsaced state, the coalesced, provided substance having a surface boundary in contact with matter provided in the gaseous state, said provided substance and matter being substantially contained in a system for at least a portion of time the same are provided; providing thermal energy to the system including to the coalsaced, provided substance, and providing a current within the matter in the gaseous state, the current having an origin external to the system, such that, substantially without boiling being observable by the naked eye in, and without substantially disturbing the surface boundary of, the coalesced, provided substance thereby, at least one component of the coalesced, provided substance becomes volatilized and crosses the surface boundary into the matter provided in the gaseous state; gently sweeping the volatilized substance component(s) in the matter in the gaseous state away from the boundary of remaining coalsaced, provided substance and the matter, without substantially disturbing the surface boundary of the remaining coalsaced, provided substance thereby; and collecting the volatilized substance component(s).

5,667,303

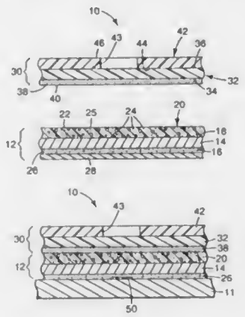
TIME-TEMPERATURE INTEGRATING INDICATOR DEVICE

Robert P. Arens, St. Paul; Russell D. Birkholz, Maplewood; Dee Lynn Johnson, Woodbury; Theodore P. Labuza, Arden Hills, all of Minn.; Curtis L. Larson, Hudson, Wis., and David J. Yarusso, Shoreview, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 10, 1995, Ser. No. 402,133

Int. Cl.[6] G01K *3/00*

U.S. Cl. 374—102 **78 Claims**



1. A time and temperature integrating device for providing a visually observable indication of cumulative thermal exposure, said device comprising:

a) a first substrate comprising a first side and a second side, said second side including a diffusely light-reflective porous matrix, wherein said porous matrix includes an exposed surface;

b) a first backing comprising a first surface and a second surface, wherein said first surface of said backing includes a viscoelastic material disposed thereon, and wherein said viscoelastic material includes an exposed surface; and

c) actuating means for selectively switching said device from an unactivated state to an activated state;

wherein when said device is in said unactivated state, said viscoelastic material is substantially out of contact with said porous matrix;

wherein when said device is in said activated state, said actuating means maintains said exposed surface of said viscoelastic material and said exposed surface of said porous matrix in substantial contact with one another such that said viscoelastic material progressively migrates into said porous matrix at a rate which increases with increasing temperature; and

wherein migration of said viscoelastic material into said porous matrix progressively increases the light transmissivity of said porous matrix to provide said visually observable indication of cumulative thermal exposure.

5,667,304

MESOSPHERIC TEMPERATURE SENSING LIDAR APPARATUS

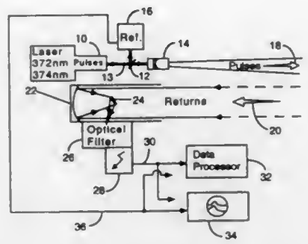
Jerry A. Gelbwachs, Hermosa Beach, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed Dec. 15, 1994, Ser. No. 356,931

Int. Cl.[6] G01K *11/32*

U.S. Cl. 374—137 **20 Claims**

1. A system for measuring temperatures at respective altitudes of a middle atmosphere, said system comprising,



Fe Boltzmann Lider System

a laser for generating two pulses at two respective wavelengths exciting material in said middle atmosphere respectively backscattering two returns,

an optical transmitter for transmitting said two pulses into said middle atmosphere,

an optical receiver for collecting said two returns being backscattered from said middle atmosphere,

an optical filter for passing said two returns and filtering background noise,

a photodetector for converting said two returns into electronic counts, and

a data processor implementing a Boltzmann technique for relating said electronic counts to said temperatures, said two returns respectively comprising two fluorescence resonance line returns of said material, and said Boltzmann technique relates ratios of said two fluorescence resonance line returns to said temperatures.

5,667,305

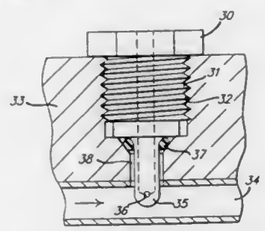
LOW FORCE HIGH PRESSURE PORT

James Thomas Walker, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 488,526

Int. Cl.[6] G01K *1/08;1/14;13/00*

U.S. Cl. 374—148 **4 Claims**



1. A combination of a plug and an opening for receiving said plug, said opening extending through a wall between a first region at a first pressure and a second region at a second pressure, said second pressure being less than said first pressure and the magnitude of said first and second pressures being substantially different;

said opening having a smaller cross sectional area adjacent said first region than said second region, and a larger cross sectional area adjacent said second region than said first region;

said plug having a smaller cross sectional area adjacent said first region than said second region, and a larger cross sectional area adjacent said second region than said first region;

said larger cross sectional area of said plug and said opening being configured for threaded engagement; and

a single sealing means adjacent said smaller cross sectional area of said plug and said opening, so that said sealing means is positioned on said first region side of said threaded engagement between said plug and said opening and there is an advantageously larger thread diameter holding a smaller sealing diameter port.

5,667,306

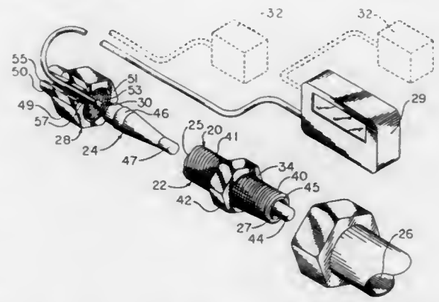
NUMERICAL TEMPERATURE READING APPARATUS FOR SPA, SWIMMING POOL AND WHIRLPOOL

Richard Montreuil, 3399, Rue Beauchamps, Ste-Foy, (Quebec), Canada, G1X 2C8, and Jean-Denis DuBois, 1065, Rue François-Lemire, Cap-Rouge, (Quebec), Canada, G1Y 1A9

Filed Apr. 27, 1995, Ser. No. 429,558

Int. Cl.[6] G01K *1/00*

U.S. Cl. 374—208 **11 Claims**



1. A fitting device for adapting a liquid temperature probe to a tub with a threaded outlet from outside to inside of said tub, said liquid temperature probe comprising a contact point for probing liquid temperature, an enveloping body and a cable for transmitting data, said fitting device comprising in combination:

an elongated hollow body with first and second ends and a central body (**34**) with a fore end and an aft end, said first end including a dome to be directed towards said outlet, and further including a ring shaped extension of said central body around said dome, the space between said ring shaped extension and said dome defining a liquid circulation channel,

said central body having, from the fore end to the aft end:

first male threads for mounting (**40**), on said fore end, for adapting to said outlet,

a central external portion comprising means for engaging said first male threads for mounting (**40**) into said outlet,

threads on the aft end, and

an internal chamber for receiving said enveloping body (**46**),

said first end of said elongated hollow body being a closed end (**27**) and said second end being an open end (**25**), said closed end (**27**) comprising said dome (**44**) with the convex part oriented opposite to said central part and being adapted for contact with said liquid, said dome (**44**) receiving said contact point (**47**) in its concave part,

a cap (**28**) comprising means for progressively engaging said threaded aft end, and simultaneously pushing against said enveloping body,

a slit (**57**) for permitting the passing through of said cable,

so that the passing of said cable through said slit and progressive engaging of said cap along said threaded aft end causes the pushing of said liquid temperature probe into intimate contact with said dome.

5,667,307

ARTICLE HOLDING BAG OF NON-WOVEN FABRIC AND A METHOD FOR MAKING THE SAME

Hua Tsung Chlu, Fl. 1, No. 8, Alley 21, Lane 239, Section 2, PA-TE Road, Pan-Chiao City Taipei Hsien, Taiwan

Filed Mar. 18, 1996, Ser. No. 617,442

Int. Cl.[6] B65H *69/08*

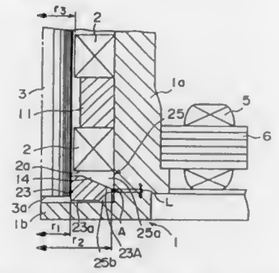
U.S. Cl. 383—107 **6 Claims**

1. A method of making an article holding bag of a non-woven fabric material, said method comprising the steps of:

(a) preparing an aqueous solution containing 25–80% by weight of water and 75–20% by weight of a resin mixture composed of polyacrylic acid and polyurethane in a weight ratio ranging between 2:1 and 1:4;

(b) impregnating a non-woven fabric material in said aqueous solution;
(c) removing the impregnated non-woven fabric material from said aqueous solution and then drying said impregnated non-woven fabric material by baking; and
(d) forming an article holding bag by high frequency plastic welding a two-layer laminate of the dried non-woven fabric material.

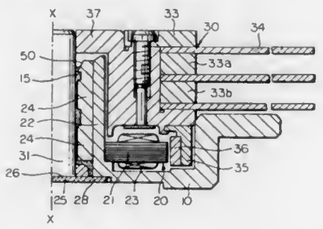
5,667,308
BEARING DEVICE FOR USE IN A MOTOR
Tamotsu Nose, and Hideki Kanebako, both of Shimosuwa-machi, Japan, assignors to Sanaky Seiki Mfg. Co., Ltd., Nagano-ken, Japan
Filed May 12, 1995, Ser. No. 440,314
Claims priority, application Japan, May 17, 1994, 6-126983; Jun. 21, 1994, 6-162670; Jun. 22, 1994, 6-163200
Int. Cl.[6] F16C *32/06*
U.S. Cl. 384—99 **27 Claims**



1. A dynamic pressure bearing device for use in a motor, the motor including a shaft and a frame, said bearing device comprising:
a first bearing being connected to one of said shaft and said frame;
a second bearing being connected to one of said shaft and said frame;
a noncompressible fluid filled in a region between said shaft and said frame; and
means for minimizing axial vibrational movement and minimizing a loss of torque in said motor.

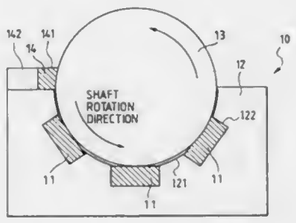
5,667,309
BEARING SEAL SYSTEM
Tamotsu Nose, Nagano, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan
Filed Nov. 14, 1995, Ser. No. 557,845
Claims priority, application Japan, Nov. 15, 1994, 6-305584; Nov. 29, 1994, 6-319194; Dec. 6, 1994, 6-330228; Dec. 9, 1994, 6-331748
Int. Cl.[6] F16C *32/06;33/72*
U.S. Cl. 384—132 **21 Claims**

1. A bearing seal system comprising:



a shaft formed either on a rotating member or a fixed member;
a cylindrical bag section formed on a non-shaft member, said shaft being inserted into said bag;
a pair of radial bearing sections formed in said cylindrical bag section, said rotating member and fixed member being relatively rotatably supported by said pair of radial bearing sections;
a tapering space section being positioned adjacent to at least one of said radial bearing sections formed in an outer shaft direction; and,
oil which is filled from said bag section to said tapering space section; wherein:
(1) a minimum space in said tapering space section is formed at an inner end of said tapering space section on said radial bearing section side and a maximum space in said tapering space section is formed at an outer end of said space tapering section which is on an opposite side of said radial bearing,
(2) a slope angle is defined between said tapering space section and said shaft, where said slope angle of the tapering space section, as viewed from the inner end of said tapering space section to the outer end of said tapering space section, is at least 0° or more;
(3) a space between the outer end of said tapering space section and said shaft is less than 0.8 mm and said slope angle of the tapering space section is 45 or less; and
(4) a capacity of said tapering space section is at least 5% of that of said bag section, at least 100% of that of said radial bearing section, and a distance between the outer end of said tapering space section and said shaft is at least twice that between the inner end of said tapering space section and said shaft.

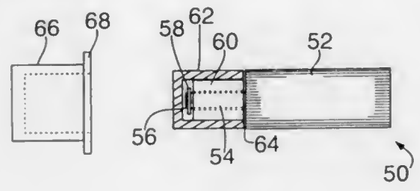
5,667,310
MOLTEN METAL IMMERSION SLIDING BEARING AND CONTINUOUS HOT-DIP PLATING APPARATUS
Tomohito Oyagi, Suita; Mitsuo Nakagawa, Mito; Junji Sakai, Minori-machi; Takahiko Okouchi, Hitachinaka, and Hitoshi Okoshi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 20, 1995, Ser. No. 531,346
Claims priority, application Japan, Sep. 20, 1994, 6-224748
Int. Cl.[6] F16C *33/74;* **B05C** *3/12*
U.S. Cl. 384—137 **13 Claims**



1. A sliding bearing to be immersed in a molten metal, comprising:
a shaft support portion for rotatably supporting a shaft, said shaft support portion circumferentially partially surrounding said shaft so that a part of said shaft is exposed to the molten metal;
a solid particle trap portion for preventing solid particles in the molten metal from penetrating between said shaft support portion and the sliding surface of said shaft, said solid particle trap portion being arranged circumferentially closely to a portion of said shaft support portion at which the sliding surface of said shaft starts to enter said shaft support portion, and being provided with a portion allowing said shaft to be exposed to the molten metal.

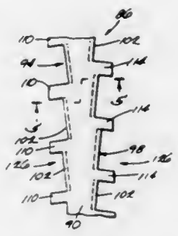
10. A continuous hot-dip plating apparatus, comprising a sliding bearing immersed in molten metal, said bearing having a sliding portion rotatably supporting a shaft and a solid particle trap portion for preventing solid particles in the molten metal from penetrating between said shaft and said sliding portion and for removing solid particles penetrated between said shaft and said sliding portion, said solid particle trap portion being in contact with or in adjacent relation with a sliding surface of said shaft, and a portion of said solid particle trap portion in contact with or in adjacent relation with said sliding surface of said shaft being of material having a fiber structure.

5,667,311
PIVOT SHAFT FOR A DAMPER ASSEMBLY
Walter Maers, 84 Fairview Ave., Islip Terrace, N.Y. 11752
Filed Mar. 27, 1995, Ser. No. 410,662
Int. Cl.[6] F16C *17/02*
U.S. Cl. 384—441 **7 Claims**



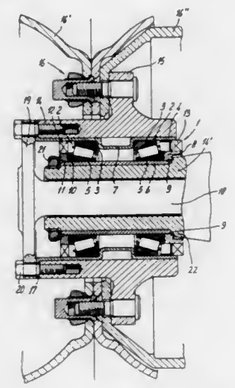
1. A pivot shaft for use in a ventilation damper assembly, comprising:
a) a first substantially elongated solid cylindrical member having a first reduced diameter end portion;
b) a first substantially cylindrical sleeve bearing rotatably mounted on said first reduced diameter end portion; and
c) a cup-shaped end cap having a bearing receiving end bore which is press fit over said first substantially cylindrical sleeve bearing, so that said first reduced diameter end portion is rotatable within said cup-shaped end cap.

5,667,312
ROLLER BEARING FOR USE IN OSCILLATORY APPLICATIONS
Mark R. Grunze, Naperville, and Robert B. Warrick, St. Charles, both of Ill., assignors to Rexnord Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 162,448, Dec. 3, 1993, Pat. No. 5,413,416. This application Dec. 7, 1994, Ser. No. 351,029
Int. Cl.[6] F16C *19/00;33/49*
U.S. Cl. 384—450 **19 Claims**



1. A roller bearing apparatus for use in an oscillatory application, the roller bearing apparatus comprising:
an inner ring member, the inner ring member including an inner race surface,
an outer ring member, the outer ring member including an outer race surface, and the inner and outer ring members defining therebetween an annular raceway space,
an annular guide member, the annular guide member including opposite radially extending sides, at least one of the radially extending sides including a plurality of roller seats,
a plurality of rollers in the raceway space and supported between the inner race surface and the outer race surface, each of the rollers including opposite inboard and outboard end faces, the inboard end face of each of the rollers being seated against a corresponding one of the roller seats, and
means on the inboard end faces of the rollers for imparting non-zero mean skew angles to the rollers when the roller bearing apparatus is used in an oscillatory application.

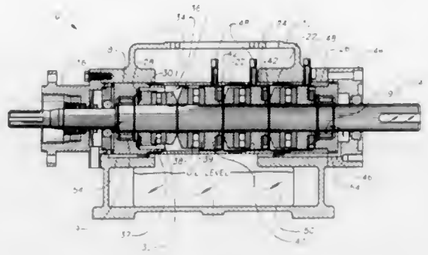
5,667,313
BEARING ASSEMBLY FOR A VEHICLE HUB
Hendrikus Jan Kapaan, Nieuwegein, Netherlands; Robert Santry Aman, Seoul, Rep. of Korea, and Alexander Jan Carel De Vries, Tiel, Netherlands, assignors to SKF Industrial Trading and Development Company B.V., Nieuwegein, Netherlands
Filed Jun. 14, 1995, Ser. No. 490,179
Claims priority, application Netherlands, Jun. 14, 1994, 9400971
Int. Cl.[6] F16C *33/58;19/38*
U.S. Cl. 384—544 **27 Claims**



1. Bearing assembly for a vehicle hub, comprising two coaxial rolling bearings (2) having inner races (5) and outer races (3), the outer races (3) being accommodated in a common outer bush (4; 24; 38; 63), which outer bush is provided with means (17, 14) for fixing a vehicle component thereto, the inner races (5) being accommodated on a common central element (6; 27; 33; 56; 64; 65, 66), said rolling bearings (2) being supported on the central element (6; 27; 33; 56; 64, 65, 66) and the outer bush (4; 24; 38; 63) under initial load in the axial direction.

5,667,314
HORIZONTAL THRUST BEARING ASSEMBLY
Wojciech A. Limanowka, Edmonton, and Robert C. Delong, Leduc, both of Canada, assignors to Baker Hughes Incorporated, Houston, Tex.
Filed Dec. 12, 1995, Ser. No. 571,318
Int. Cl.[6] F16C *19/30*
U.S. Cl. 384—619 **32 Claims**

1. A thrust chamber comprising:
a housing;
a rotatable shaft mounted within the housing;



a first downthrust bearing section connected to said shaft and to said housing;

a second downthrust bearing section, connected to said shaft and to said housing, wherein as a downthrust load is placed on said shaft, the first downthrust bearing section receives the load and engages the second downthrust bearing section so as to share the load substantially equally between the first downthrust bearing section and the second downthrust bearing section; wherein each of the downthrust bearing sections comprises:

a washer retainer connected to the shaft and rotatable therewith;

a shaft bearing having a rotatable first face and a stationary second face with the rotatable first face connected to the washer retainer;

a downthrust bearing washer retainer connected to the second face of the shaft bearing in a stationary position; and

a downthrust bearing spring having one point connected to the downthrust bearing washer retainer and a second point coupled to the housing for transferring the downthrust load from the shaft to the housing.

5,667,315

METHOD AND APPARATUS FOR DISPENSING MONEY ORDERS

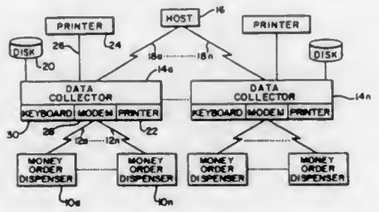
Lawrence G. Smith, Orlando, Fla., assignor to Travelers Express Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 466,415, Jun. 6, 1995, Pat. No. 5,570,960, which is a continuation of Ser. No. 404,134, Mar. 13, 1995, Pat. No. 5,492,423, which is a continuation of Ser. No. 151,060, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 933,869, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 814,039, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 494,665, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 406,979, Sep. 13, 1989, abandoned, which is a continuation of Ser. No. 121,074, Nov. 16, 1887, Pat. No. 4,870,596, which is a continuation of Ser. No. 60,762, Jun. 8, 1987, Pat. No. 4,812,986, which is a division of Ser. No. 877,539, Oct. 31, 1986, Pat. No. 4,699,532, which is a division of Ser. No. 596,291, Apr. 3, 1984, Pat. No. 4,625,275. This application Jul. 22, 1996, Ser. No. 685,975

Int. Cl.[6] B41J *5/00*

U.S. Cl. 400—78 **3 Claims**

1. A system for dispensing documents having monetary value at



at least one retail establishment, comprising:

a dispenser for dispensing documents having monetary value at a retail establishment;

a digital processor located at the dispenser location for controlling the operation of the dispenser;

a memory associated with the digital processor for storing the transaction data and control data;

a printer with a compartment for storing blank document forms and coupled to the dispenser for receiving a document form and printing alphanumeric indicia thereon;

a host computer remotely located from the retail establishment;

a data collector for collecting and storing information on multiple vendor/customer transactions; and

means for coupling the host computer to the dispenser located at the retail establishment at selectable predetermined times through a communications link for management and control of the dispenser.

5,667,316

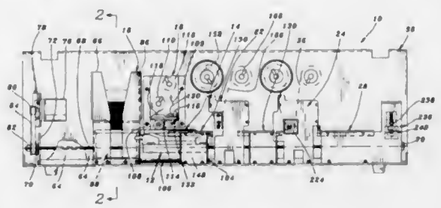
CARD PRINTING APPARATUS

Edward A. Nardone, Wakefield; Paul R. Caron, Tiverton; Christian S. Rothwell, North Kingstown, and Harold D. Schofield, Narragansett, all of R.I., assignors to Atlantek Inc., Wakefield, R.I.

Filed Mar. 13, 1995, Ser. No. 404,196

Int. Cl.[6] B41J *2/315*

U.S. Cl. 400—120.16 **1 Claim**



1. Card printing apparatus comprising:

a printhead for printing an image on a receptor surface of a receptor card;

printhead guide means for guiding vertical movement of said printhead between a lower printing position and an upper idle position;

means for normally maintaining said printhead in said idle position;

a carriage for receiving said receptor card with said receptor surface facing upwardly;

guide means for guiding said carriage beneath said printhead, said carriage including cam surfaces which engage with follower arms on said printhead during movement of said carriage, said cam surfaces moving said printhead between said upper idle position and said lower printing position during movement of said carriage along said guide means;

a threaded drive rod passing through a threaded opening in said carriage such that rotation of said drive rod causes movement of said carriage along said guide means; and

motor means for rotating said drive rod.

5,667,317

FLUORESCENT SECURITY SYSTEM FOR PRINTED TRANSACTION RECORDS

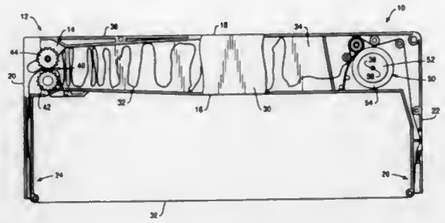
Yaoping Tan, Miamisburg, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 29, 1995, Ser. No. 520,457

Int. Cl.[6] B41J *27/12*

U.S. Cl. 400—197 **18 Claims**

1. A combination visible/fluorescent inked printing ribbon cassette for printing transaction records and other documents on



printing equipment, said combination visible/fluorescent inked printing ribbon cassette comprising:

a printing ribbon cassette base of generally rectangular configuration having a bottom portion, a front portion, a rear portion, an inlet side portion, an outlet side portion, a continuous or endless printing ribbon storage cavity and an upstanding pin;

a wall extending upwardly from said bottom portion of said printing ribbon cassette base along said front portion, said rear portion, said inlet portion and said outlet portion;

an inlet guide extending outwardly from said front portion along said inlet side portion of said printing ribbon cassette;

an outlet guide extending outwardly from said front portion along said outlet side portion of said printing ribbon cassette;

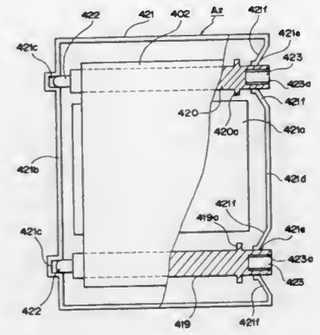
a continuous or endless visible/fluorescent inked printing ribbon exiting from said printing ribbon cassette through said outlet guide, extending between said outlet guide and said inlet guide, and entering into said printing ribbon cassette through said inlet guide;

a printing ribbon drive gear mechanism for moving said continuous or endless visible/fluorescent inked printing ribbon from said inlet guide into said printing ribbon storage cavity in said printing ribbon cassette base;

a reinking device rotatably mounted on said upstanding pin on said printing ribbon cassette base, said reinking device including an inner cylindrical ink roll saturated with a first ink and an outer cylindrical ink roll saturated with a second ink, said outer cylindrical ink roll concentrically positioned around said inner cylindrical ink roll;

said first ink is richer in fluorescent dye or pigments than in visible color dye or pigments and said second ink is richer in visible color dye or pigments than in fluorescent dye or pigments; and

said inner cylindrical ink roll and said outer cylindrical ink roll rotate in response to linear movement of said continuous or endless visible/fluorescent inked printing ribbon and said first and second inks are transferred from said outer cylindrical ink roll to said continuous or endless loop visible/fluorescent inked printing ribbon.



first and second reel members for winding an ink sheet, with said first reel member winding one end of the ink sheet and said second reel member winding a second end of the ink sheet;

a housing for rotatably containing said first and second reel members such that said reel members are displaceable in an axial direction;

a limit portion for engaging an outer periphery of said reel members at a contact point and pressing said reel members in a direction toward the axial direction, said limit portion preventing the rotation of said reel members at substantially the point of contact on said reel members regardless of the rotational position of said reel members; and

press means for applying a first pressing force to said reel members in the axial direction to contact said reel members against said limit portion, wherein

when said housing is mounted on said recording apparatus said reel members are displaced by a second pressing force which is greater than the first pressing force by said press means and in an opposite axial direction so that said reel members are released from contact with said limit portion and rotatable, and when said housing is removed from said recording apparatus said reel members are displaced by the first pressing force by said press means so that said reel members are in contact with said limit portion and prevented from rotating; and

biasing means provided on said mounting portion to apply to said housing of said ink sheet cassette a press force which exceeds the press force by said press means in an opposite direction.

5,667,318

CASETTE REEL HOLDING MECHANISM AND THE RECORDING APPARATUS USING THE AFORESAID CASSETTE

Koichi Tanno, and Toshiro Sugiyama, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 173,463, Dec. 27, 1993, abandoned, which is a continuation of Ser. No. 758,684, Sep. 12, 1991, abandoned. This application Apr. 26, 1995, Ser. No. 429,028

Claims priority, application Japan, Sep. 13, 1990, 2-241255; Nov. 26, 1990, 2-317747; Nov. 26, 1990, 2-317748; Dec. 27, 1990, 2-415314

Int. Cl.[6] B41J *32/00*

U.S. Cl. 400—208 **4 Claims**

1. A recording apparatus for recording by transferring ink from an ink sheet, said apparatus comprising:

a recording head for effecting heat to ink of the ink sheet;

a mounting portion;

an ink sheet cassette mountable on said mounting portion, said ink sheet cassette having

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5,667,319

SIMPLIFIED COMPUTER KEYBOARD

James Satioff, 470 W. End Ave., Apt. 5B, New York, N.Y. 10024

Continuation-in-part of Ser. No. 298,870, Aug. 31, 1994, abandoned. This application Mar. 17, 1995, Ser. No. 406,109

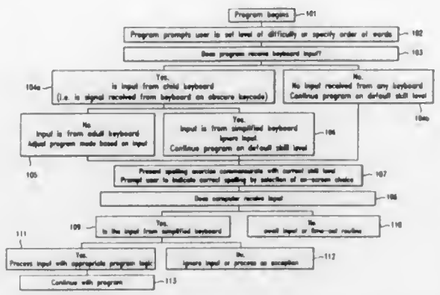
Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—472 **27 Claims**

1. A keyboard for use by a child in connection with a computer having a serial data keyboard port, the keyboard being adapted for manual entry of symbolic data, the serial data keyboard port receiving keyscan codes corresponding to a set of characters, the characters including a set of commonly used characters and a set of rarely used characters, the commonly used characters being represented by a single key depression on an adult-type computer keyboard, and the rarely used characters not being represented by a single key depression on an adult-type computer keyboard, comprising;

a keyboard housing having a top surface;

an arrangement of between four and twenty-five keys disposed on the top surface of said housing;



a keyscan system, within the keyboard housing, generating a keyscan code for each of said keys selected from the group consisting of keyscan code corresponding to rarely used characters;

an input for receiving serial data communicated by an adult-type computer keyboard; and

an output for communicating the received serial data from the adult-type computer keyboard and serial data relating to a keyscan code corresponding to a depression of one of said arrangement of keys to the serial data keyboard port of the computer.

5,667,320

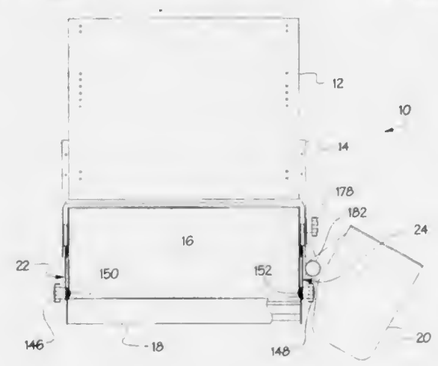
KEYBOARD, PALM REST, AND, MOUSE TRAY POSITIONING SYSTEM

Frederic C. Ambrose, 142 The Channel, Brewster, Mass. 02631, and David Hawley, 108 Chase Hill Rd., Sterling, Mass. 01564

Continuation of Ser. No. 315,098, Sep. 29, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,640

Int. Cl.[6] B41J *29/00*

U.S. Cl. 400—472 **4 Claims**



1. A device adapted to mount to a desk and for use with a computer keyboard and mouse, the device comprises:

(a) a stationary bracket attached to the desk;

(b) a main housing movably engageable with said stationary bracket, said main housing having a first side wall and a second side wall;

(c) a keyboard support tray movably supported by said main housing and adapted to support the keyboard;

(d) a palm rest; and

(e) a first engagement member engageable with said first sidewall and said keyboard support tray, said first engagement member also being engageable with said palm rest and being operable from a first position whereby said keyboard support tray is movable and whereby said palm rest is movable relative to said keyboard support tray to a second position whereby the position of said keyboard support tray and said palm rest are substantially fixed.

5,667,321

PAPER GUIDE APPARATUS FOR USE IN AN IMAGE FORMING APPARATUS

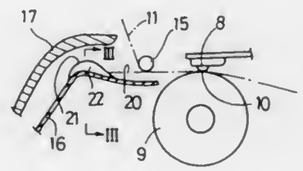
Akira Sago, Seto, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 16, 1996, Ser. No. 633,078

Claims priority, application Japan, May 9, 1995, 7-110783

Int. Cl.[6] B41J *13/10*

U.S. Cl. 400—642 **12 Claims**



6. A paper guide apparatus, comprising:

printing means for printing paper with an ink sheet;

a roller abutting against said printing means;

separating means for separating the printed paper from said ink sheet;

a pair of opposed guide plates for guiding said paper downstream from said printing means and said roller; and

guiding means provided on a surface of said pair of guide plates, said guiding means defining an angle of greater than zero as measured between a line along the feed direction of a leading edge of said paper approaching said surface and a straight line connecting the roller and said separating means,

wherein said guiding means comprises a pair of downstream guide plates arranged on upper and lower sides of said paper, a surface of one of the pair of guide plates that is arranged nearest said roller relative to a tangential line that is tangential at a point of contact of the printing means with said roller being formed with a device for imparting stiffness to the paper including a projecting portion for forcibly redirecting said paper approaching said surface to contact a surface of the other guide plate through the tangential line of said roller.

5,667,322

BINDER AND FOLDER COMBINATION

Cheryl Mucznik, Tel Aviv, Israel, assignor to Press Engineering (Proprietary) Limited, Johannesburg, South Africa

Filed Aug. 29, 1995, Ser. No. 520,759

Claims priority, application Australia, Aug. 30, 1994, PM7769

Int. Cl.[6] B42F *13/06;13/08*

U.S. Cl. 402—8 **6 Claims**

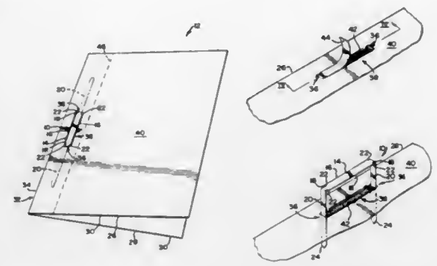
1. A folder for use with a metal binder having an elongate body portion and a prong extending from each end thereof, the folder comprising:

a front cover sheet;

a rear cover sheet having an inner side and an outer side, the rear cover sheet being pivotally connected to the front cover sheet and having a pair of spaced openings defined therein;

an adhesive layer on the outer side of the rear cover sheet and extending between the openings; and

a removable cover strip located on the adhesive layer to cover the adhesive layer;



wherein, when the removable cover strip is removed from the adhesive layer and each prong of the metal binder is inserted from the outer side of the rear cover sheet through one of the openings, the adhesive layer adheres the elongate body portion of the metal binder onto the outer side of the rear cover sheet between the spaced openings.

5,667,323

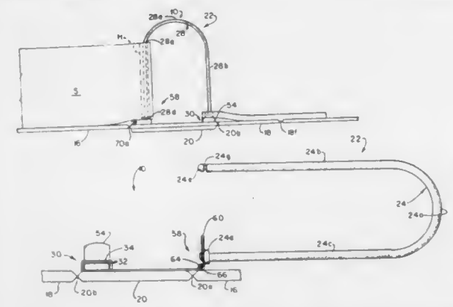
ARCH RING BINDER ASSEMBLY

Paul Whaley, Bonne Terre, Mo., assignor to U.S. Ring Binder Corp., New Bedford, Mass.

Filed Mar. 31, 1995, Ser. No. 414,207

Int. Cl.[6] B42F *13/36*

U.S. Cl. 402—26 **24 Claims**



1. A binder for use in storing sheets of paper having punched holes in them comprising:

first and second end leafs respectively forming outer covers of the binder;

a single-piece center plate positioned intermediate said respective end leafs for one side of each of said end leafs to be flexibly attached to opposite sides of said center plate for sheets of paper stored in said binder to be enclosed between said end leafs;

ring means carried on said center plate for holding sheets of paper, said ring means including a plurality of single piece binder rings, and being movable from a first and closed position to a second and open position, sheets of paper being inserted into said binder by placing the holes punched in the sheets of paper over an end of said ring means which is exposed when said ring means is moved to its open position;

locking means for locking said ring means in its closed position, said locking means being fixedly secured to one side of said center plate adjacent one of said end leafs, and said locking means securing the exposed end of said ring means in a locked position when said ring means is in its closed position; and,

moving means for moving said ring means from its closed to its open position, an end of said ring means opposite said exposed end of said ring means being fixedly secured to said moving means, and said moving means being located on the opposite side of said center plate from said locking means and adjacent the other of said end leafs, said moving means being pivotally movable in one direction with respect to said locking means to move the first said end of said ring means from its locked position to its exposed position when said binder is to be opened, and movable in the opposite direction when said binder is to be closed.

5,667,324

BINDERS

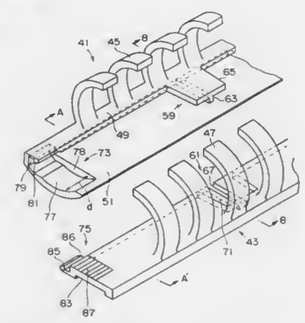
Yasuo Aoki, Tokyo, Japan, assignor to Motobiro Kurauchi, Kanagawa-Ken, Japan

Filed Aug. 26, 1994, Ser. No. 296,782

Claims priority, application Japan, Aug. 27, 1993, 5-051440

Int. Cl.[6] B42F *3/02*

U.S. Cl. 402—46 **31 Claims**



1. A loose-leaf binder comprising, in combination, a first back strip having a plurality of split ring halves formed upright at given intervals along the outer edge thereof and a second back strip having similar ring halves formed along the outer edge thereof opposite to that of the first strip and adapted to engage end to end with the halves of the first strip, said first and second back strips being formed as discrete members separable from the combined state and having, respectively, a first and a second sliding surfaces slidable relative to each other, a first and a second guides extending substantially at right angles to the longitudinal directions of the two strips and formed to shapes complementary to each other so as to guide the sliding surfaces, and a first and a second lock members in such manner that said lock members can engage with each other when the two strips are put together in the closed position.

5,667,325

JOINT FOR STORABLE TUBULAR EXTENDIBLE MEMBER

Julian W. F. Millard, Toronto, Canada; Keith William Edwards, Solvang, Calif.; Howard J. Tucker, Oakville, and Deepack Kaushal, Toronto, both of Canada, assignors to Spar Aerospace Limited, Brampton, Canada

Filed Jul. 21, 1995, Ser. No. 505,545

Int. Cl.[6] F16C *11/04*

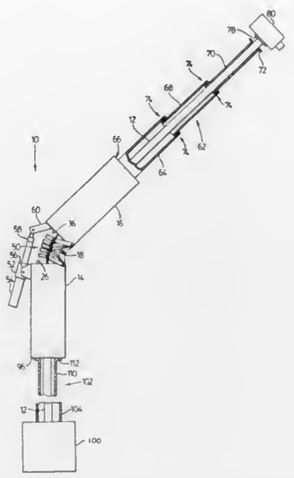
U.S. Cl. 403—119 **20 Claims**

1. A joint for a storable tubular extendable member, comprising:

an input section comprising means for progressively deforming said storable tubular extendable member from a tubular state to a flat state at an output end;

an output section comprising means for progressively allowing said storable tubular extendable member to recover from said flat state at an input end to said tubular state;

a pivot joint between said input section output end and said output section input end pivotally joining said input section and said output section;



a plurality of rollers extending between said input section output end and said output section input end for retaining said storable tubular extendable member in said flat state as said pivot joint pivots; and

a drive for pivoting said pivot joint.

5,667,326

FLEXIBLE TIE STRUT

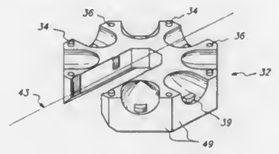
Thomas H. McGaffigan, 19089 Brookhaven Dr., Saratoga, Calif. 95070

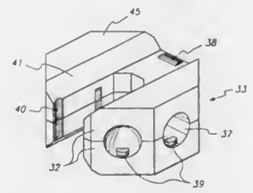
PCT No. PCT/US94/09992, § 371 Date Mar. 6, 1996, § 102(e) Date Mar. 6, 1996, PCT Pub. No. WO95/07416, PCT Pub. Date Mar. 16, 1995

Continuation-in-part of Ser. No. 118,492, Sep. 7, 1993, Pat. No. 5,433,549. This PCT application Sep. 6, 1994, Ser. No. 605,159

Int. Cl.[6] F16B *7/00;* A63H *33/00;* B60B *37/00*

U.S. Cl. 403—176 10 Claims





1. A coupler comprising a body of two identical pieces, each piece having a generally planar mating surface and having a perimeter and having an axis therethrough and being generally symmetrical about said axis, each piece having a portion of at least one partial cavity in the perimeter thereof and in the generally planar mating surface, said pieces being connected together by contact of said mating surfaces in mirror image and coplanar fashion joining said portions to form said body having a complete cavity in the periphery thereof to form a two-dimensional connector.

5,667,327

CONNECTING FITTING

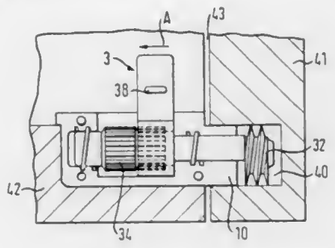
Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Noverdrate, Italy

Filed Oct. 18, 1995, Ser. No. 544,691

Claims priority, application Germany, Oct. 18, 1994, 44 37 273.6

Int. Cl.[6] F16B *12/16*

U.S. Cl. 403—231 16 Claims



1. A connection fitting for providing a releasable engagement between two furniture parts, said connection fitting comprising

a pot-like housing for insertion in a recess in a first furniture part, said housing including two spaced holes, said housing also including a peg-like tail for projecting past the first furniture part, said peg-like tail having a diameter dimensioned to be the same as a diameter of a hole in a second furniture part,

a pin rotatably mounted in the holes of said housing, a front end of said pin extending fully out of said housing and including an eccentric locking member, said eccentric locking member being adapted to be inserted into the hole in the second furniture part, said pin including a radially extending actuating lever for rotating said pin and thereby rotating said eccentric locking member to be fixed in the hole of the second furniture part.

5,667,328

ATTACHMENT MEMBER

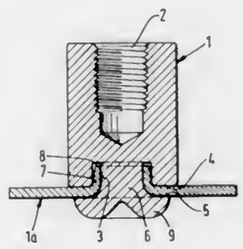
Siegfried Höfle, Götzis, Austria, assignor to Hi Hi Aktiengesellschaft

Filed Dec. 8, 1995, Ser. No. 569,931

Claims priority, application Germany, Dec. 16, 1994, 44 44 908.9

Int. Cl.[6] F16B *9/00*

U.S. Cl. 403—282 7 Claims



1. Attachment member comprises a deformed plate part (*1a, 11a, 21a, 31a*) and a connecting part (**1, 11, 21, 31**), said deformed plate part has an axially extending throughbore (**3, 13, 23, 33**) having an axis and arranged to receive said connecting part (**1, 11, 21, 31**), said connecting part (**1, 11, 21, 31**) having a planar first contact surface (**4, 14, 24, 34**) abutting a planar third contact surface on said deformed plate part and an attachment section (**6, 16, 26, 36**) extending through said throughbore (**3, 13, 23, 33**) and a second

contact surface (**5, 15, 25, 35**) on said connecting part located opposite said first contact surface, said deformed plate part having a circumferential collar (**7, 17, 27, 37**) encircling said throughbore and projecting perpendicularly from the third contact surface of said deformed plate part, said collar having a height (H) extending from said third contact surface generally parallel to the axis of said throughbore, and one of said first and second contact surfaces having an annularly shaped recess extending parallel to the axis of said throughbore and having a base extending transversely of the axis of said throughbore for receiving said collar, said recess having a depth (T) extending parallel to the axis of said throughbore between the one of said first and second contact surfaces and the base of said recess and the depth (T) corresponds at least to the height (H) of said collar.

5,667,329

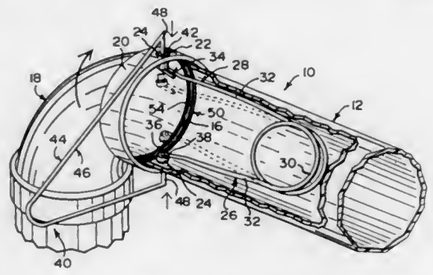
QUICK CHANGE PVC PIPE CONNECTION SYSTEM

James Herbert Yoder, Jr., 1111 Daniels Rd., Lincolnton, N.C. 28092

Filed May 28, 1996, Ser. No. 654,084

Int. Cl.[6] A47C *4/32;* F16B *12/20;21/12*

U.S. Cl. 403—327 17 Claims



1. A quick change PVC pipe connection system comprising:

a) a pipe having a pair of opposite spaced apertures extending through one end;

b) a fitting having a flange with a pair of opposite spaced orifices extending through said flange;

c) a pair of pins;

d) a torsion wire spring within said pipe for forcing each said pin through one said aperture in said pipe and into one said orifice in said flange of said fitting, when said end of said pipe is inserted into said flange of said fitting, so as to retain said pipe to said fitting; and

e) means for sealing the connection between said pipe and said fitting, so that a fluid can pass between said pipe and said fitting without a leakage therefrom.

5,667,330

QUICK-CONNECT MECHANISM FOR RELEASABLY RETAINING A POWER TAKE-OFF SHAFT WITHIN AN OUTPUT SHAFT HUB

Edmund R. Henkel, Naperville, and Donald E. Rieser, Riverside, both of Ill., assignors to Case Corporation, Racine, Wis.

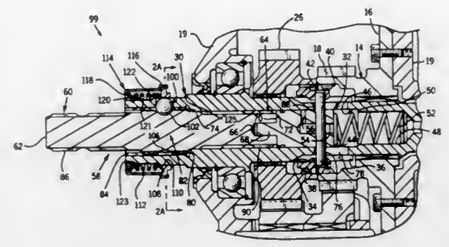
Filed Nov. 28, 1995, Ser. No. 563,468

Int. Cl.[6] A01B *71/06;* B60K *17/28*

U.S. Cl. 403—328 24 Claims

1. A power take-off unit of off-highway equipment such as a tractor, comprising:

an output shaft housed within the power take-off unit and adapted to be rotationally driven by gearing in said power take-off unit, said output shaft having a hollow, internally splined hub portion adapted to axially receive an externally splined power take-off shaft to prevent relative rotational movement between the power take-off and output shafts;



a locking member guided within a radial opening in the output shaft so as to be radially movable between an inner locking position, wherein said locking member is engageable with a recess formed in the power take-off shaft to prevent relative axial movement between the power take-off shaft and the output shaft, and an outer unlocking position, wherein said locking member is disengaged from said recess in the power take-off shaft to permit such relative axial movement; and

an actuator positioned about an exterior of the output shaft and being movable between a first position in which the actuator operably maintains the locking member in its locking position, thus preventing axial movement of the power take-off shaft relative to the output shaft, and a second position which permits radial movement of said locking member to its unlocking position, thus allowing the power take-off shaft to be removed from the output shaft.

5,667,331

SHAFT-HUB JOINT FOR TRANSMISSION OF TORQUE BETWEEN TWO EQUIAXIAL MACHINE PARTS

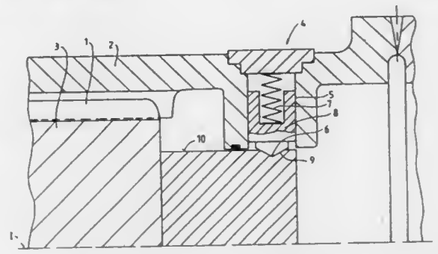
Hans Lindenthal, Heidenheim, Germany, assignor to J.M. Voith GmbH, Germany

Filed Aug. 10, 1994, Ser. No. 288,290

Claims priority, application Germany, Aug. 11, 1993, 43 26 861.7

Int. Cl.[6] F16D *1/02;7/02*

U.S. Cl. 403—359 3 Claims



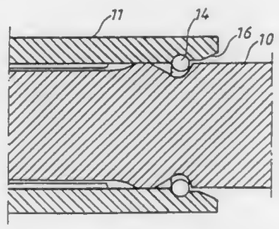
1. A shaft-hub joint between two equiaxial machine parts for transmission of high torques in a power train, a first said machine part being on a power input end and a second said machine part being on a power output end, wherein the two machine parts are joined to each other in a fashion movable relative to each other but rotationally fixed relative to each other, said joint comprising:

a positive-locking overload relief mechanism comprising at least one interlocking one element provided between said machine parts locking said machine parts against axial thrust up to a given adjustable limit value wherein positive locking is eliminated when the value is exceeded:

said interlocking element comprising a head having surfaces beveled in wedge fashion viewed in cross section, said interlocking element supported by said first machine part and pressed by a prestress force into a receiving recess in a surface of the second machine part, said receiving recess

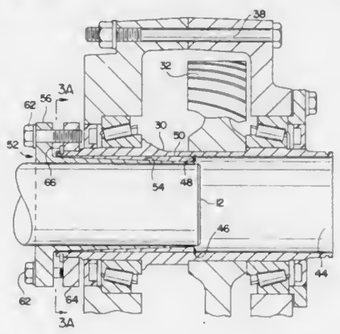
machined into a heat treated insert forming an assembly with the second machine part.

5,667,332
LOCKING DEVICE FOR A DRIVE SHAFT
Tage Lindholm, Norrköping, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Nov. 7, 1995, Ser. No. 554,742
Claims priority, application Germany, Jan. 25, 1995, 295 01 158.0
Int. Cl.[6] F16B *21/18;* **F16D** *1/06;* **B23P** *19/08*
U.S. Cl. 403—359 **5 Claims**



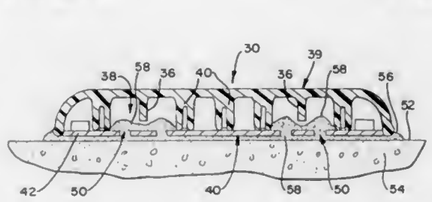
1. Locking device for interconnecting a drive shaft (**10**) and a coupling sleeve (**11**), said locking device comprising a resilient locking ring (**14**) engaging in grooves (**13**, **15**) provided in the shaft and sleeve respectively, said shaft and sleeve having splines (**12**) for transmitting a driving torque, wherein said groove (**13**) of the shaft is axially spaced apart from the splines and has a bevel at the side of the groove facing the splines, and said sleeve has an inner bevel (**16**) at an opening of the sleeve for compressing the locking ring during insertion of said shaft through said opening and into said sleeve.

5,667,333
SHAFT-CARRIED SPEED REDUCER HAVING ADAPTABLE MOUNTING ARRANGEMENT
Allyn E. Phillips, Simpsonville, S.C., assignor to Reliance Electric Industrial Company, Cleveland, Ohio
Filed Jun. 30, 1995, Ser. No. 491,359
Int. Cl.[6] F16D *1/08*
U.S. Cl. 403—369 **29 Claims**



13. An adaptable arrangement for securing an element including a hub defining a substantially cylindrical axial bore to a shaft for rotation therewith, said arrangement comprising:
at least one removable adapter having a substantially cylindrical axially extending outer surface and a tapered interior surface and defining an axial expansion slot, said adapter configured for insertion into said axial bore of said hub such that a lesser inner diameter end thereof, having an end surface substantially perpendicular to said outer surface, will be inserted farther therein than a greater inner diameter end thereof;
at least one sleeve member for receipt about said rotatable shaft, said sleeve member having a flange portion at one end thereof and an exterior tapered portion defining an axial contraction slot;
means for compressing said sleeve member and said removable adapter such that said exterior tapered portion of said sleeve member will engage said interior tapered surface of said removable adapter to effect securement of said element to said shaft; and
means, removably disposed in said bore, for contacting said greater inner diameter end surface of said adapter and for maintaining said adapter in a predetermined position as said sleeve member and said removable adapter are compressed by said means for compressing.

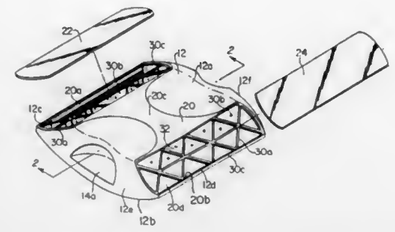
5,667,334
BASE FOR ROADWAY MARKER
Thomas P. Boyce, Palos Park, Ill., assignor to Stimsonite Corporation, Niles, Ill.
Filed Jun. 13, 1995, Ser. No. 487,250
Int. Cl.[6] E01F *9/06*
U.S. Cl. 404—9 **8 Claims**



1. A roadway marker comprising:
a shell having an upper exposed surface, a lower surface portion and a central opening defined in said lower surface portion;
a plurality of ribs formed internal to said shell, said ribs being arranged to form discrete chambers within said shell;
a base plate connected to said shell and covering said ribs and said opening, said plate having a generally planar lower surface and a generally planar upper surface internal to said shell; and
a plurality of apertures formed through said plate, each aperture communicating with a chamber defined by said ribs;
wherein adhesive flows through said apertures and mushrooms above said upper surface of said plate within said chambers when said marker is adhered to a roadway surface.

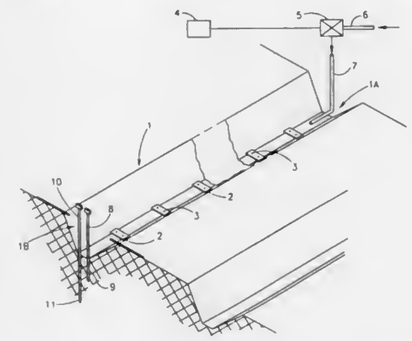
5,667,335
FIBER REINFORCED RAISED PAVEMENT MARKER AND METHOD OF MAKING
Sithya S. Khieu, Eden Prairie, Minn., and David C. May, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Commpany, St. Paul, Minn.
Filed May 19, 1995, Ser. No. 445,286
Int. Cl.[6] E01F *9/00*
U.S. Cl. 404—14 **28 Claims**

1. A fiber-reinforced pavement marker comprising a freestanding composite material that is configured in the form of a pavement marker and that comprises an isotropic mixture of a polymeric material, reinforcing fibers and a filler material, the fiber reinforced



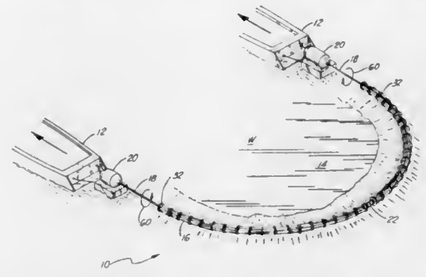
pavement marker having an apparent flexural modulus of at least 80,000 psi.

5,667,336
FURROW IRRIGATION
Benjamin Zur, Kiryat Tivon, Israel, assignor to Technion Research and Development Foundation, Haifa, Israel
Filed Jun. 19, 1995, Ser. No. 492,340
Claims priority, application Israel, Jun. 20, 1994, 110054
Int. Cl.[6] F02B *13/00*
U.S. Cl. 405—37 **7 Claims**



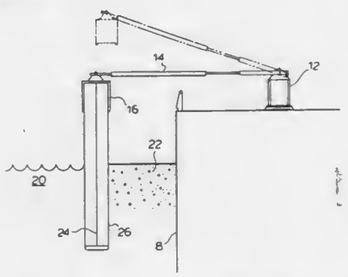
1. An automated furrow irrigation control method comprising the steps of
(a) initiating an irrigation flow into an upstream end of a furrow at an initial water discharge rate;
(b) continuously or periodically sensing progress of water flow along said furrow;
(c) continuously or periodically increasing the water discharge rate in response to sensed progress of said water flow so as to ensure a substantially continuous flow in said furrow at a flow rate which lies substantially between ±30% of a constant value;
(d) sensing arrival of said water flow at a downstream end of said furrow;
(e) reducing said water discharge rate in response to the sensed arrival of said water flow at the downstream end of said furrow;
(f) sensing percolation of said water flow at said downstream end down to a predetermined depth; and
(g) terminating said irrigation flow in response to said sensed percolation.

5,667,337
ROTATING CONTAINMENT AND REPELLING BOOM AND METHOD FOR CONFINING A MATERIAL FLOATABLE ON A LIQUID SURFACE
Richard J. Lazes, 804 First Ave., Harvey, La. 70058
Filed Sep. 15, 1995, Ser. No. 529,010
Int. Cl.[6] E02B *15/04;* **B01D** *43/00*
U.S. Cl. 405—63 **36 Claims**



1. A device for the containment or repelling of a material floatable on a liquid surface comprising:
a plurality of serially connected rotatable paddlewheels, each said paddlewheel having a central axis and, comprising:
a plurality of elongated paddle blades extending around said central axis, said paddle blades extending generally parallel to and spaced about said central axis; and,
means for supporting said paddle blades about said central axis; and,
means for providing buoyancy to said paddlewheels.

5,667,338
SPILL CONTAINMENT SYSTEM
Ronald Logan, Apt. #7, 270 Parkside Drive, Fredericton, New Brunswick, E3B 5V7, Canada
Filed Aug. 16, 1995, Ser. No. 515,673
Claims priority, application Canada, Aug. 25, 1994, 2130890
Int. Cl.[6] E02B *15/06*
U.S. Cl. 405—66 **8 Claims**



1. A spill containment system for vessels having a hull and a deck joined together to define a rail, comprising:
a containment curtain movable between a deployed position in which the curtain extends horizontally continuously around said vessel and hangs to extend vertically from a height above the waterline to a depth below the waterline and a stored position in which the curtain is in a folded configuration on said vessel;
a series of canisters capable of receiving the containment curtain in its folded configuration therein, said canisters located in the stored position within the hull of said vessel;
cable guide means associated with said curtain for raising said curtain from a deployed position to a folded configuration and

for lowering said curtain from a folded configuration to a deployed position to hang vertically;

a deployment mechanism having a movable arm connected to said canisters and operable to move said canisters containing said folded curtain from a storage position inboard of the hull of said vessel to a deployed position outboard of the hull of said vessel.

5,667,339

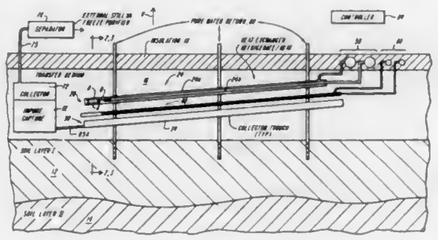
CRYOGENIC METHOD AND SYSTEM FOR REMEDIATING CONTAMINATAED EARTH

J. Gregory Dash, Seattle, Wash., assignor to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 236,459, May 2, 1994, Pat. No. 5,551,799, which is a continuation-in-part of Ser. No. 19,085, Feb. 18, 1993, Pat. No. 5,324,137. This application Jun. 7, 1995, Ser. No. 475,265

Int. Cl.[6] B09B *5/00;* E02D *3/115*

U.S. Cl. 405—130 35 Claims



1. A system for remediating contaminated earth in-situ, comprising:

A) a heat transfer assembly disposed in said earth and including means for advancing a freeze-front in a region of said earth adjacent to said assembly toward a collection zone in said region, said assembly being disposed in or adjacent said contaminated earth, at least a portion of said contaminated earth being disposed between said heat transfer assembly and said collection zone,

B) a collection means, for collecting contaminants, disposed in said collection zone, and

C) means for establishing a flow of liquid adjacent to said freeze-front and transverse to the direction of advancement of said freeze-front.

5,667,340

CEMENTITIOUS COMPOSITION FOR UNDERWATER USE AND A METHOD FOR PLACING THE COMPOSITION UNDERWATER

Jeffrey Bury, Macedonia, Ohio, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 5, 1995, Ser. No. 523,203

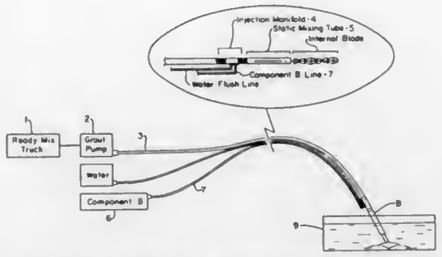
Int. Cl.[6] C04B *24/22;24/28;* E02D *15/06*

U.S. Cl. 405—223 9 Claims

1. A method of placing concrete underwater comprising the steps of

pumping through a delivery tube a flowing cementitious composition comprising cement and one of either a cellulosic polymer or a β-naphthalene sulfonate formaldehyde condensate to the end of the tube at the point of discharge,

introducing into the cementitious composition at the point of discharge the other of said cellulosic polymer or β-naphthalene sulfonate formaldehyde condensate, and, discharging the cementitious composition from the delivery tube at an underwater location,



said cellulosic polymer and β-naphthalene sulfonate formaldehyde condensate being used in a weight ratio of 1:0.5 to 1:10, respectively.

5,667,341

APPARATUS FOR SIGNAL AND DATA TRANSMISSION FOR CONTROLLING AND MONITORING UNDERWATER PILE DRIVERS, CUT-OFF EQUIPMENT AND SIMILAR WORK UNITS

Hans Kuehn, Tierparkallee 27, D-22527 Hamburg, Germany

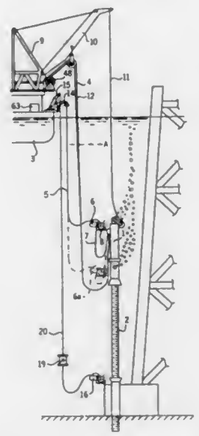
PCT No. PCT/DE94/00002, § 371 Date Jul. 3, 1995, § 102(e) Date Jul. 3, 1995, PCT Pub. No. WO94/16193, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 3, 1994, Ser. No. 481,270

Claims priority, application Germany, Jan. 5, 1993, 43 00 074.6

Int. Cl.[6] B63G *8/00;* E02D *7/06*

U.S. Cl. 405—228 17 Claims



1. Apparatus for transmitting signals and data to control and monitor underwater work units from a support ship to the underwater work units separately from apparatus for transmitting drive energy, comprising:

a first umbilical having signal and control lines for the transmission of signals and data from a control station on the support ship to an underwater work unit;

a second umbilical connecting the support ship to the work unit and supplying drive energy thereto; and

an intermediate relay situated underwater and connected to the first umbilical to relay the signals and data from the control station, through the intermediate relay and to the underwater work unit, wherein the underwater work unit is detachably connected to the intermediate relay, and wherein the intermediate relay comprises an independent communication system.

5,667,342

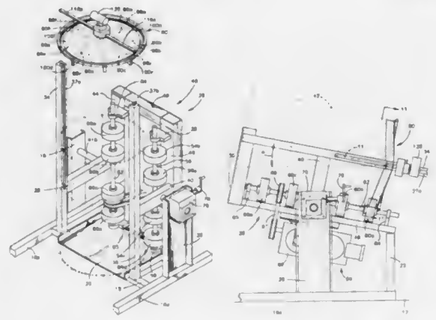
METHOD AND APPARATUS FOR UNLOADING POWDER COATING MATERIAL FROM A DRUM SHAPED CONTAINER

Jeffrey R. Shutic, Wakeman, and Kevin Lenhart, North Ridgeville, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Mar. 7, 1995, Ser. No. 399,441

Int. Cl.[6] B65G *53/36*

U.S. Cl. 406—122 15 Claims



1. An apparatus for unloading powder from a drum shaped container, said drum shaped container having a long axis, said apparatus comprising:

a drum unloader assembly for supporting said drum shaped container in an unloading position where a top end of said drum shaped container is lower than a bottom end of said drum shaped container;

a cover assembly secured to said top end of said drum shaped container;

a drum roller assembly for rolling said drum shaped container about said long axis; and

a powder transporting device connected to said cover assembly.

5,667,343

FACE MILLING CUTTER WITH RECESSES FOR ADJUSTABLE INSERT HOLDERS

Ingemar Hessman, Sandviken, and Åke Almersand, Årsunda, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

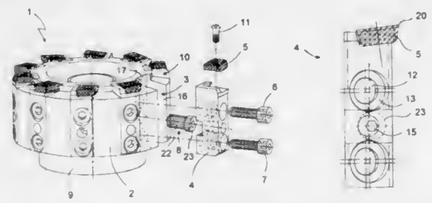
PCT No. PCT/SE94/00245, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/21411, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 18, 1994, Ser. No. 513,960

Claims priority, application Sweden, Mar. 18, 1993, 9300888

Int. Cl.[6] B23C *5/24*

U.S. Cl. 407—36 9 Claims



1. Milling cutter tool for chip-breaking machining comprising:

a milling cutter body which is rotatable in a direction of rotation and includes a plurality of grooves at a periphery of the milling cutter body;

a plurality of cutting insert-carrying cassettes, each cassette received in one of the plurality of grooves at the periphery of the milling cutter body and being fastened in the groove by two fastening screws, and each of the two fastening screws received in a through-hole in the cassette, which through-holes are elongate in a longitudinal direction of the cassette in order to make possible a certain axial displacement of the cassette in the groove;

a recess arranged between the two fastening screws on a side of the cassette that faces towards an axis of rotation of the milling cutter tool, which recess is substantially perpendicular to the axis of rotation of the milling cutter tool;

an eccentric tap is arranged with a head in said recess;

a further through-hole is arranged in the cassette, the further through-hole opening into said recess, facing the head of the eccentric tap, and each fastening screw is radially angled so that the cassette is pressed against a radially inner, trailing corner of the cassette groove in a direction of rotation.

5,667,344

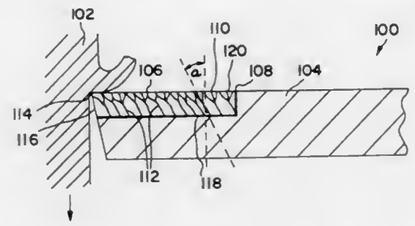
CVD DIAMOND CUTTING TOOLS WITH ORIENTED CRYSTAL GRAIN BOUNDARIES

Matthew A. Simpson, Sudbury; Robert A. Hay, Dudley, both of Mass., and Steven J. Brox, Ridgefield, Wash., assignors to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Continuation of Ser. No. 203,960, Mar. 1, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 718,648

Int. Cl.[6] B23B *27/20*

U.S. Cl. 407—118 22 Claims



1. A cutting tool comprising a polycrystalline diamond cutting member having a cutting edge and having a flank face and a rake face, the rake face being in a general plane extending from the cutting edge, the cutting member having crystal grain boundaries formed as deposited film columnar structures extending at least in a region near the cutting edge in a general direction which is non-normal to the general plane of the rake face.

5,667,345

OPTICAL DEVICE AND METHOD FOR OBTAINING REFERENCE PLANES, ESPECIALLY FOR HAND-HELD TOOLS

Ernst Sigurd Gustaf Folke Wiklund, Lindevaegen 40, Stockholm, Sweden, S-12048

PCT No. PCT/SE94/00286, § 371 Date Sep. 29, 1995, § 102(e) Date Sep. 29, 1995, PCT Pub. No. WO94/22624, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 29, 1994, Ser. No. 532,590

Claims priority, application Sweden, Mar. 30, 1993, 9301058

Int. Cl.[6] B23B *45/14*

U.S. Cl. 408—1 R 15 Claims

1. A method for providing direction control to a hand held tool which comprises:

establishing, independently of the tool, one or more reference lines parallel to an intended working direction of the tool;

establishing images of the reference line or lines and of the tool; and

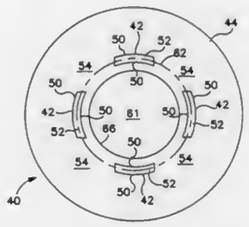
aligning the image of the tool to the images of the reference line or lines to provide direction control to the tool.

5,667,346

DIRECT TENSION INDICATOR WASHER

David L. Sharp, New York, N.Y., assignor to F. Jonathan M. Turner, Philadelphia, Pa.

Filed Feb. 6, 1996, Ser. No. 597,606
Int. Cl.[6] F16B *31/02*
U.S. Cl. 411—10 19 Claims



1. A pre-load indicating washer comprising an annular body and a plurality of protuberances integral with said annular body struck and partially sheared from said annular body to project from a first face of said annular body and leave a corresponding plurality of indentations in a second face of said annular body opposite from said first face, each of said protuberances being curved in outline and defined by:

(a) a pair of outer side walls extending away from said first face of said annular body, and

(b) an outer surface extending between said pair of outer side walls and between two spaced regions of said first face of said annular body, and

each of said indentations being curved in outline and defined by:

(a) a pair of inner side walls extending through said annular body from said second face of said annular body and from which a pair of outer side walls of one of said protuberances has been sheared, and

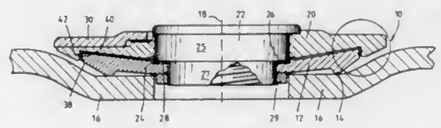
(b) an inner surface extending between said pair of inner side walls and between two spaced regions of said second face of said annular body.

5,667,347

FASTENER

Norman Leslie Matthews, Level RJ, 1 Havelock Street, West Perth, 6006, W.A., Australia

PCT No. PCT/AU93/00638, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO94/13964, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 10, 1993, Ser. No. 454,145
Claims priority, application Australia, Dec. 10, 1992, PL6278; Jun. 28, 1993, PL9824
Int. Cl.[6] F16B *39/24;43/00*
U.S. Cl. 411—150 11 Claims



1. An improved fastener, comprising:

first and second disk-shaped components assembled so as to be rotatable with respect to each other about a common axis, said first component having a pressure transmitting portion and a resilient flexing portion, said pressure transmitting portion being adapted to bear against an object to be fastened and being radially spaced from said common axis, said second component having a threaded portion adapted to apply an axially directed compressive force to said second component to press the pressure transmitting portion of said first component against said object when a torque is applied to thread said second component and wherein said flexing portion is adapted to allow the first component to flex when the pressure transmitting portion is pressed against said object so as to apply a clamping pressure to said object, said second component being provided with a recessed annulus within which said first component is rotatably received and wherein said recessed annulus is adapted to accommodate the flexing of the first component;

a solid dry lubricant material having a low coefficient of friction provided between said first and second components to reduce friction therebetween when one of the components is rotated relative to the other whereby, in use, said solid dry lubricant material can ensure that a significantly increased proportion of the torque applied to said second component to fasten said object can be converted to said compressive force transmitted to the object through said pressure transmitting portion; and

a containment means provided in connection with said first and second components for containing said solid dry lubricant material therein whereby, in use, said solid dry lubricant material is capable of withstanding substantial compressive loads without being forced from between the first and second components.

5,667,348

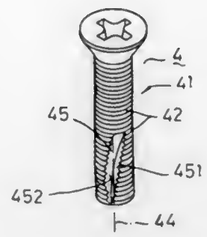
SCREW FOR FIBROUS BOARDS

Sen-Yang Chen, and Chao-Tai Cheng, both of No. 155, Hui-Min Rd., Nan-Tzu Dist., Kaohsiung City, Taiwan

Filed May 16, 1996, Ser. No. 649,078
Int. Cl.[6] F16B *25/00;35/04*
U.S. Cl. 411—420 3 Claims

1. A screw free of a drill bit portion and adapted for use with a fibrous board, comprising

a shank portion which has a surface that is formed with a screw thread throughout the length of said shank portion, and which has a lower section formed with a flute at said surface of said shank portion, said flute extending from a tip of said shank portion and having a longitudinal length which is inclined with respect to a longitudinal axis of said shank portion, said flute being defined by a planar side wall which is inclined relative to said longitudinal axis, and a curved bottom, said planar side wall having a surface with screw thread portions



that are disposed in a staggered arrangement in a direction receding from a direction of screw advancing rotation, said flute having a depth which decreases gradually from said tip of said shank portion, said flute having a maximum depth equal to radius of said shank portion, the longitudinal length of said flute forming an angle ranging from 12° to 32.5° with said longitudinal axis.

5,667,349

METHOD OF MAKING PULL TABS AND LUBRICANT THEREFOR

Henry Turchin, Loveland; Cindy S. Dinevski, Cincinnati, and Kevin H. Tucker, Blanchester, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 26, 1995, Ser. No. 427,932
Int. Cl.[6] C10M *137/04;141/10*
U.S. Cl. 413—25 21 Claims

1. In an improved metallic pull tab making process comprising the steps of feeding a strip of metal into a pull tab forming die and forming a metallic pull tab, the improvement comprising applying to said strip an aqueous based lubricant composition comprising:

a) water;

b) an alkaline pH producing substance selected from the group consisting of alkali metal hydroxides, water soluble or dispersible aliphatic amines and water soluble or dispersible hydroxyl substituted aliphatic amines;

c) an emulsifier;

d) a water soluble or dispersible alpha (p-nonylphenyl) omega hydroxypoly (oxyethylene) phosphate ester and

e) a water soluble or dispersible aliphatic diol.

5,667,350

BULK SHIP UNLOADER

Jürgen Arend, Saarbrücken, and Horst Steckel, St. Ingbert, both of Germany, assignors to PWH Anlagen + Systeme GmbH, St. Ingbert, Germany

Filed Apr. 29, 1996, Ser. No. 641,096
Claims priority, application Germany, May 5, 1995, 195 16 472.5; Mar. 15, 1996, 196 10 219.7
Int. Cl.[6] B65G *67/60*
U.S. Cl. 414—141.1 19 Claims

1. An apparatus for continuously unloading bulk material from a bulk container, the apparatus comprising:

a carriage displaceable in a longitudinal direction adjacent the bulk container;

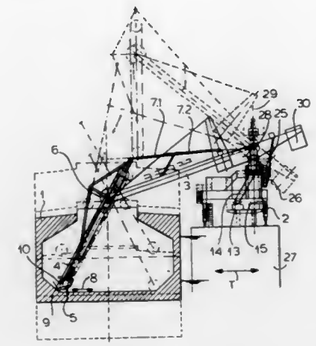
an outrigger having an inner end pivotable about longitudinal and vertical axes on the carriage and an outer end;

an outrigger conveyor extending between the ends of the outrigger;

an arm having an upper end pivoted about a horizontal axis on the outer outrigger end and a lower end engageable in the container;

a bucket conveyor in the arm;

a pair of augers of opposite hand mounted on the lower arm end and rotatable to draw in the bulk material and pass it to the bucket conveyor; and



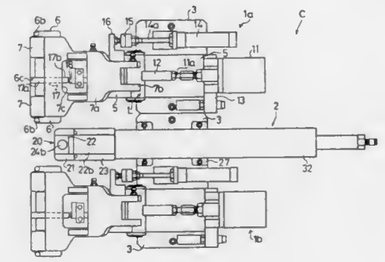
means including a pair of adjacent hydraulic cylinders braced between the outrigger and the upper end of the arm for pivoting the arm about the horizontal axis on the outer outrigger end.

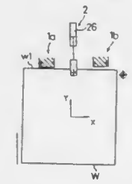
5,667,351

POSITIONING AND CLAMPING DEVICE OF A BOARD

Takeshi Tokairin, and Tatsuyuki Ishijima, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,731
Claims priority, application Japan, Jun. 6, 1994, 6-124068
Int. Cl.[6] H05K *3/00*
U.S. Cl. 414—225 13 Claims





1. A device for positioning and clamping a board, comprising:

a plurality of clamping means for clamping an edge portion of the board, each said clamping means including:

a pair of claws,

at least one positioning member for positioning the board with respect thereto and fixed relative to at least one said claw,

linkage means connected with at least one said claw for moving at least one said claw toward the other said claw so as to clamp the board therebetween and away from the other said claw so as to release clamping of the board, and

drive means connected with said linkage means for controlling movement of said linkage means; and

dragging means disposed between the plurality of clamping means for dragging the board into contact with said at least one positioning member, the dragging means including:

a board clamping portion for clamping the board, the board clamping portion including:

a pair of claw portions respectively provided with rotatable members at mutually opposed locations thereof such that the rotatable members are adapted to contact opposite surfaces of the board and clamp the board therebetween in a swivel manner, and

an open-close driving means for closing and opening the pair of claw portions to move said claw portions toward and away from each other, and

reciprocating means for reciprocating the board clamping portion.

5,667,352

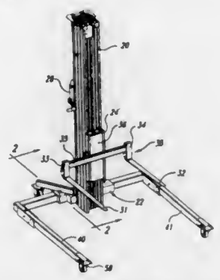
LOCKING SYSTEM FOR EXTENSION MEMBERS ON PORTABLE LIFTS

Richard M. Curtin, Redmond; Paul K. Smith, Kirkland, and Matthew G. Kraemer, Seattle, all of Wash., assignors to Genie Industries, Redmond, Wash.

Filed Apr. 18, 1994, Ser. No. 228,798

Int. Cl.[6] B66C *23/04*

U.S. Cl. 414—667 **5 Claims**



1. A locking system on a portable lift comprising:

a base for a mast comprising a generally horizontal elongated socket having an entry end, said base including a chamber exposed to said socket by a side opening adjacent said entry end, said chamber having a downwardly sloping wall facing toward said socket;

an extension member slidably mounted in said socket; and

a locking mechanism for said extension member including:

a wedge block in said chamber having a tapered face complementing and normally engaging said sloping wall, and having a jaw face facing toward said socket, said wedge block being confined against horizontal movement parallel to the length of said socket;

a spacer seated on said base above said chamber; and

an adjustment bolt having an enlarged head engaging said spacer to prevent downward travel of said bolt, said bolt extending downwardly from its said head through an opening in said base into a threaded hole in said block such that turning of said bolt raises or lowers said block and responsively moves said tapered face on said sloping wall so as to responsively move said jaw face toward said socket for selectively engaging and locking said extension member relative to said base, said side opening being large enough to permit movement of said jaw face into locking engagement with said extension member.

5,667,353

ROBOT SYSTEM

Steven R. Drake, Concord, Mass., assignor to Inspex Inc., Billerica, Mass.

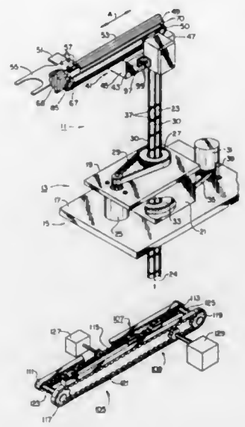
Filed Mar. 31, 1995, Ser. No. 414,363

Int. Cl.[6] B25J *9/00*

U.S. Cl. 414—744.3 **9 Claims**

1. A robot system comprising:

a. a base assembly,



b. a shaft extending upward from the base assembly and movable vertically and rotationally relative to the base assembly,

c. means for rotating the shaft relative to the base assembly,

d. means for moving the shaft up and down relative to the base assembly, and

e. a robot arm mounted on the shaft, the robot arm comprising:

i. a platform fixed to the shaft,

ii. a carriage movable back and forth on the platform,

iii. a shuttle movable back and forth on the carriage,

iv. a first belt and pulley system for moving the carriage back and forth along the platform, said first belt and pulley system including a belt and a first pulley,

v. a second belt and pulley system for moving the shuttle back and forth along the carriage, said second belt and pulley system including a belt and a first pulley,

vi. said first pulley on said first belt and pulley system and said first pulley on said second belt and pulley system being fixedly coupled relative to each other so that rotational movement of one of said first pulleys will cause the same amount of rotational movement of said other one of said first pulleys, whereby the ratio of the amount of movement of the carriage relative to the platform and the amount of movement of shuttle relative to the carriage will be in proportion to the diameters of the two first pulleys and the resulting movement of the shuttle relative to the platform will be the sum of the movement of the carriage relative to the platform and the shuttle relative to the carriage, and

vii. a motor for driving one of the belts, said motor including a drive shaft and a pulley fixedly mounted on said drive shaft, said pulley on said drive shaft engaging the belt in one of said first and second belt and pulley systems.

5,667,354

TWO-DIMENSIONAL MANIPULATING ROBOT

Touji Nakazawa, Sagamihara, Japan, assignor to Tescon Co., Ltd., Sagamihara, Japan

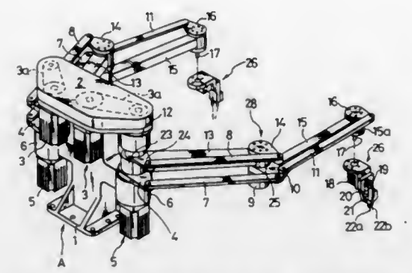
Filed Jan. 19, 1995, Ser. No. 375,367

Claims priority, application Japan, Feb. 10, 1994, 6-016252

Int. Cl.[6] B25J *7/00*

U.S. Cl. 414—744.5 **3 Claims**

1. A two-dimensional manipulating robot comprising a base stand having a pair of arm assemblies pivotally fixed thereto, each arm assembly being composed of an upper arm pivotally fixed to said base stand at its rear end, a first drive means connected to said upper arm for rotating said upper arm, a forearm pivotally connected to said upper arm at its rear end and having a manipulating hand at its fore-end, a second drive means connected to said forearm and fixed to said base stand for rotating said forearm, a control connected to the first drive means and second drive means



for controlling the angular rotation of each of said upper arm and said forearm for bringing said manipulating hand to a desired position, and rotation transmission means connected between the forearm and the second drive means to transmit the rotation of said second drive means to said forearm comprising rotatable levers having connection rods rotatably connected thereto, wherein each of said upper arm and forearm is a linked parallelogram structure comprising longitudinal and transverse levers, and wherein a proximal transverse lever of the upper arm is fixed and a distal transverse lever of the forearm supports the hand so that said upper arm and forearm are connected wherein a position of said manipulating hand remains independent of the rotational displacement of each of said upper arm and forearm.

5,667,355

DEVICE FOR DECOLLATING CARDS FROM A STACK OF CARDS

Rudolf Gamperling, Augsburg, Germany, assignor to Böwe Systec AG, Augsburg, Germany

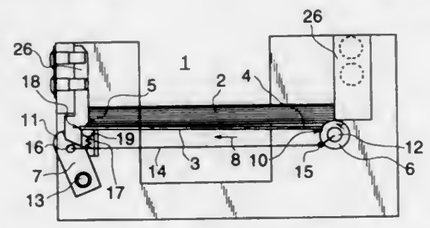
PCT No. PCT/EP94/02641, § 371 Date Feb. 7, 1996, § 102(e) Date Feb. 7, 1996, PCT Pub. No. WO95/05331, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 9, 1994, Ser. No. 596,268

Claims priority, application Germany, Aug. 12, 1993, 9312049 U

Int. Cl.[6] B65G *59/06*

U.S. Cl. 414—797.7 **10 Claims**



10. A device for removing a lowermost card of a stack of cards, the device comprising:

a shaft holding the stack of cards, the lowermost card of the stack held in said shaft occupying a plane;

a first push-off member mounted on a first side of said shaft, said first push-off member including a rotatably driven body of revolution with a flat support surface at a peripheral location of said rotatably driven body, said flat support surface engaging a first edge of the lowermost card in said shaft and generating in a first push off process a short lateral movement of the lowermost card in said plane of the lowermost card in said shaft, in a direction opposite to an actual push-off direction;

a second push-off member mounted on a second side of said shaft, said second push-off member including a rocker which evades a second edge of the lowermost card during said first push-off process, said second push-off member being moved during a second push-off process against said second card edge in said actual push-off direction, said first push-off member and said second push-off member being arranged in said plane of said lowermost card in said shaft, said lowermost card being released by said first push-off member for free-fall during said second push-off process;

a strip-shape support for supporting said second edge of the lowermost card, said strip-shape support being disposed adjacent to said second push-off member, a gap being formed adjacent to said strip-shape support defining a width adapted to a thickness of the card, said gap being provided in said plane of the lowermost card in said shaft;

a clamping member for holding said second card edge when said lowermost card is pushed in said actual push-off direction.

5,667,356

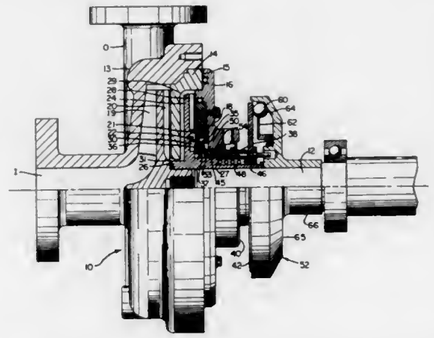
ACID/SLURRY GOVERNOR SEAL ASSEMBLY FOR CENTRIFUGAL PUMPS

John D. Whittier, Lakewood, and Douglas W. Drussel, Littleton, both of Colo., assignors to A. R. Wilfley & Sons, Inc., Denver, Colo.

Filed May 6, 1996, Ser. No. 646,686

Int. Cl.[6] F04D *29/08*

U.S. Cl. 415—34 **23 Claims**



1. In a seal assembly for a centrifugal pump wherein a pump casing includes a housing portion in outer spaced surrounding relation to a drive shaft, an impeller mounted on said drive shaft to discharge liquid introduced through an inlet, and an expeller between said impeller and said housing portion to resist liquid flow past said expeller into said housing portion when said pump is in operation, the improvement comprising:

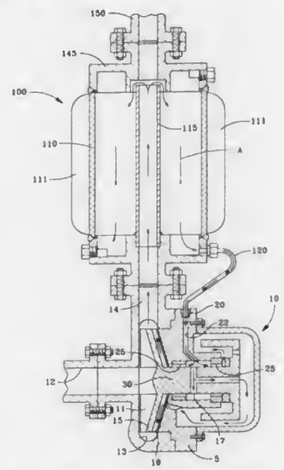
an actuator sleeve slidable axially with respect to said drive shaft;

a driver assembly at one end of said actuator sleeve, said driver assembly including centrifugal force-responsive means movable between a radially inward position when said drive shaft is at rest and a radially outward position when said drive shaft is rotated whereby to impart axial movement to said actuator sleeve, and a control portion operatively connected to said actuator sleeve;

an annular stationary seal in fixed relation to said pump casing; and

a movable seal member, including retaining means for retaining a movable seal at an opposite end of said actuator sleeve, wherein said retaining means is pressible against said stationary seal, and said retaining means is movable to increase and reduce the pressure on said stationary seal in response to movement of said centrifugal force-responsive means into and away from said radially inward and radially outward positions.

5,667,357
BEARING AND SEAL PERCOLATOR FOR A CENTRIFUGAL PUMP
Frederic W. Buse, Allentown, and Francis W. Thamarus, Palmerton, both of Pa., assignors to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.
Filed Feb. 27, 1996, Ser. No. 606,719
Int. Cl.[6] F04D *29/08*
U.S. Cl. 415—110 **4 Claims**



1. A percolator system for providing fluid flow to mechanical seals and to bearings supporting a drive shaft, on which is mounted an impeller having pumping vanes and at least a back shroud, disposed within a housing of a centrifugal pump, during intermittent dry running periods, said pump having a discharge nozzle, comprising:

a chamber having a lower end attached to said discharge nozzle and an upper end attached to a discharge pipe, said chamber having an inside diameter greater than an outside diameter of said discharge, and said chamber further having an internal percolator pipe at least equal in diameter to the discharge and extending from said discharge to a height less than the height of the chamber such that fluid coming from said nozzle discharge overflows into the chamber;

a fluid return port near the lower end of said chamber and having one end of a return tube attached thereto;

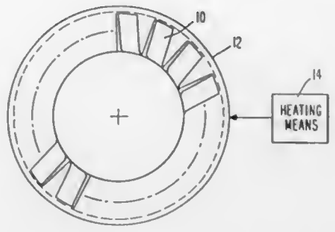
an external injection connection on the pump housing for receiving a second end of said return tube;

means within said housing for conducting fluid from said injection connection to said bearings and seals; and

means for pumping said fluid from said bearings and seals to a torus surrounding said impeller.

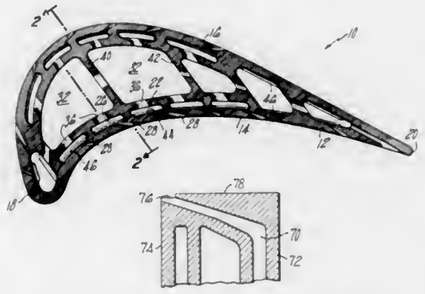
5,667,358
METHOD FOR REDUCING STEADY STATE ROTOR BLADE TIP CLEARANCE IN A LAND-BASED GAS TURBINE TO IMPROVE EFFICIENCY
Gregory R. Gaul, Orlando, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 30, 1995, Ser. No. 565,748
Int. Cl.[6] F01D *5/20*
U.S. Cl. 415—173.2 **15 Claims**

1. A method of improving the efficiency of a gas turbine during steady state operation, said turbine having at least one blade tip and a support member disposed in relation to said blade tip to define a blade tip clearance, comprising the steps of: (a) providing a predetermined minimum blade tip clearance between the at least one blade tip and the support member, (b) controlling said blade tip clearance during a transient, non-steady state period of operation of the turbine such that the predetermined minimum blade tip clearance is substantially maintained during a steady state period of operation of said turbine.



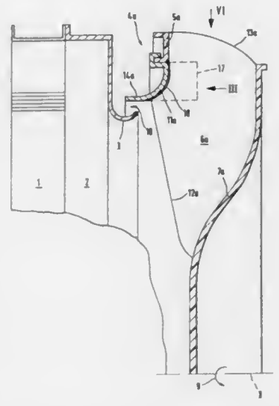
9. A gas turbine system comprising a gas turbine having at least one blade tip, a support member having an outside diameter disposed in relation to said blade tip to define a blade tip clearance, and means for controlling said blade tip clearance during a start-up period of operation of the turbine such that a minimum blade tip clearance is provided during a steady state operation of said turbine.

5,667,359
CLEARANCE CONTROL FOR THE TURBINE OF A GAS TURBINE ENGINE
Frank W. Huber, Palm Beach Gardens, and Douglas J. Dietrich, West Palm Beach, both of Fla., assignors to United Technologies Corp., Hartford, Conn.
Filed Aug. 24, 1988, Ser. No. 236,094
Int. Cl.[6] F01D *5/18;5/20*
U.S. Cl. 416—96 A **8 Claims**



1. An axial flow turbine for a gas turbine engine in combination with an annular shroud surrounding said turbine, said turbine including a plurality of internally air cooled turbine blades each having a tip section mounted adjacent said shroud and defining therewith a gap that is susceptible of leaking engine working medium, each of said internally cooled blades having an airfoil surface exposed to said engine working medium defining a pressure surface and a suction surface, means for minimizing said leakage by providing a buffer zone in said gap, said means including an orifice means located in said tip section adjacent said pressure surface and said orifice being skewed relative to the rotation axis of said blade for leading air from internally of said blade into said gap toward the pressure side of said blades whereby the stream of air discharging from said orifice means defines a buffer zone so as to minimize parasitic leakage of said engine working medium.

5,667,360
RADIAL IMPELLER FOR A COOLING SYSTEM OF A MOTOR VEHICLE
Kurt Hauser, Stuttgart, Germany, assignor to Behr Gmbh & Co., Germany
Filed Sep. 7, 1995, Ser. No. 524,789
Claims priority, application Germany, Sep. 7, 1994, 44 31 840.5
Int. Cl.[6] F01D *5/22*
U.S. Cl. 416—183 **19 Claims**



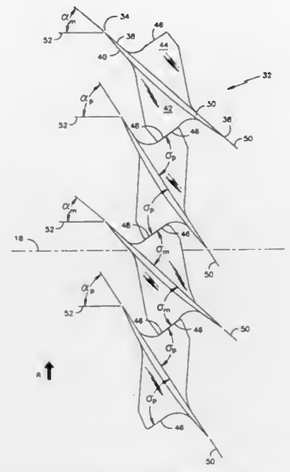
1. A radial impeller for a cooling system of a motor vehicle, said impeller being closed and having a plurality of radial vanes disposed between an impeller bottom and a cover disk, the radial vanes extending in a generally radial direction with respect to an axis of rotation of the impeller, an inner contour of the vanes being defined by leading edges of the vanes and an outer contour of the vanes being defined by trailing edges of the vanes, wherein each of an exterior diameter of the outer contour of the radial vanes and an interior diameter of the inner contour of the radial vanes decrease in a direction from the cover disk toward the impeller bottom, and wherein a plurality of auxiliary vanes are disposed around a circumferential area of a curved cover disk intake, and are arranged to project into the area of the radial vanes and extend over the radial length of the curved cover disk intake.

5,667,361
FLUTTER RESISTANT BLADES, VANES AND ARRAYS THEREOF FOR A TURBOMACHINE
Karl J. Yaeger, Coventry; Douglas E. Duke, Ellington; James A. Sunamoto, Glastonbury, and William Henry Greene, Jr., South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 14, 1995, Ser. No. 527,999
Int. Cl.[6] F01D *5/22*
U.S. Cl. 416—193 R **6 Claims**

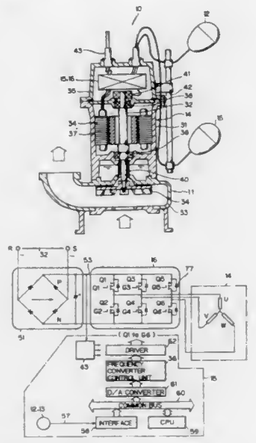
1. An array of flow directing elements for a turbine engine, each element in the array having an airfoil extending across a flowpath for a working medium, each airfoil having a suction surface shroud extending from the suction surface of the airfoil and a pressure surface shroud extending from the pressure surface of the airfoil so that during operation of the engine the suction surface shroud of each airfoil abuts the pressure surface shroud of the neighboring airfoil to establish the running chord angles of the airfoils, the array characterized in that:

the elements are of at least two classes, the elements of each class being distinguished from the elements of the other classes by a shroud angle unique to that class; and,

the elements are arranged in the array so that no more than a predetermined maximum number of elements of the same class are adjacent to each other, thereby detuning the array and precluding airfoil flutter.



5,667,362
PUMP SYSTEM AND METHOD FOR OPERATING THE SAME
Yukio Murai, and Seiichi Toguchi, both of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Mar. 23, 1994, Ser. No. 216,427
Claims priority, application Japan, Mar. 30, 1993, 5-095663
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—41 **24 Claims**



1. A pump system comprising:

a pump having a centrifugal impeller rotated by means of an electric motor;

a liquid level detector for detecting a liquid level;

control means for outputting a control signal on the basis of preset rotational speeds and a preset rotational speed increment rate, in response to an output signal from a liquid level detector, and

frequency converter means for initiating operation of said electric motor and for varying the rotational speed thereof on the basis of said control signal from said control means, wherein

said preset rotational speeds include at least speeds for low and high-speed operations of said pump and said rotational speed of said electric motor is varied in accordance with said preset rotational speed increment rate from said low-speed operation to said high-speed operation.

5,667,363

MAGNETICALLY SUPPORTED FRICTION PUMP

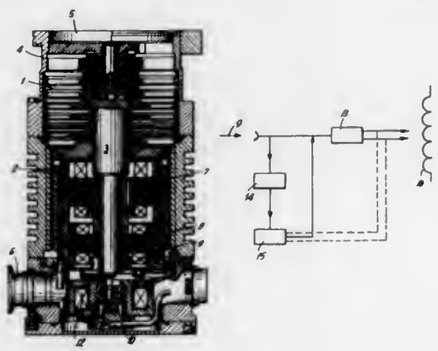
Helmut Bernhardt, Wetzlar, and René Larsonneur, Wallisellen, both of Germany, assignors to Balzers-Pfeiffer, GmbH, Ablar, Germany

Filed Jun. 5, 1995, Ser. No. 464,490

Claims priority, application Germany, Aug. 1, 1994, 44 27 154.9

Int. Cl.[6] F04B *49/06;17/00*

U.S. Cl. 417—44.1 4 Claims



1. A friction pump, comprising:

a housing;

at least one pumping stage for conveying gases, located in said housing and including:

a rotor;

a stator surrounding the rotor,

magnetic means for supporting the rotor and comprising at least one actively controlled magnetic radial bearing for supporting the rotor in a predetermined radial position relative to one of the housing and the stator, and a mechanical emergency bearing for supporting the rotor in case of failure of the magnetic means; and

means for determining a geometrical center of the mechanical emergency bearing and for retaining the rotor in the geometrical center of the emergency bearing, the determining and retaining means comprising:

means for consecutively displacing the rotor in two mutually perpendicular directions against the emergency bearing;

radial sensor means for sensing a position of the rotor obtained by displacement of the rotor and for generating a position signal, and

control means for computing the geometrical center of the emergency bearing and for controlling the magnetic radial bearing so that the predetermined radial position of the rotor corresponds to a position of the rotor in the geometrical center of the emergency bearing.

5,667,364

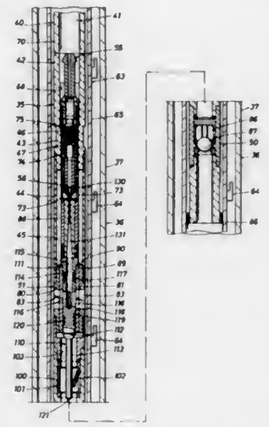
DOWNHOLE HYDRAULIC PUMP APPARATUS HAVING A "FREE" JET PUMP AND SAFETY VALVE ASSEMBLY AND METHOD

David P. O Mara, Canyon Country, Calif., and Arron C. Hinds, Webster, Tex., assignors to Trico Industries, Inc., San Marcos, Tex.

Continuation-in-part of Ser. No. 308,600, Sep. 19, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 362,242

Int. Cl.[6] F04F *5/00*

U.S. Cl. 417—151 14 Claims



1. A hydraulic pump apparatus for a well assembly including a rigid, elongated tubular casing extending into a formation producing production fluid, the hydraulic pump apparatus comprising:

an elongated tube;

a retrievable bottom-hole assembly mounted proximate a lower end of said elongated tube, said elongated tube and said bottom-hole assembly both being adapted for selective insertion into the tubular casing, said bottom-hole assembly comprising:

an upper bottom-hole assembly having an upper bore therethrough;

a middle bottom-hole assembly having a middle longitudinal bore therethrough, a fluid longitudinal port therethrough and a radial discharge port; and

a lower bottom-hole assembly having a lower bore and a safety valve therein, said safety valve having a closed position which blocks said lower bore below said safety valve from said middle longitudinal bore and said fluid longitudinal port,

wherein said lower bottom-hole assembly is connected to said middle bottom-hole assembly and said middle bottom-hole assembly is connected to said upper bottom-hole assembly; and

a free pump assembly formed for sliding receipt in said elongated tube, said free pump assembly comprising:

an upper pump body formed for sliding receipt in said upper bottom-hole assembly; and

a lower extension assembly connected to said upper pump body, said lower extension assembly having a first portion and a second portion, said first portion formed to open said safety valve upon seating of said free pump assembly in said bottom-hole assembly, and said second portion having an extension discharge port formed to be in fluid communication with said radial discharge port of said middle bottom-hole assembly upon seating of said free pump assembly in said bottom-hole assembly, said lower extension assembly further comprising:

a first seal below said extension discharge port; and

a second seal above said extension discharge port,

wherein said first and second seals form fluid tight seals between said lower extension assembly and said bottom-hole assembly when said free pump assembly is seated in said bottom-hole assembly.

5,667,365

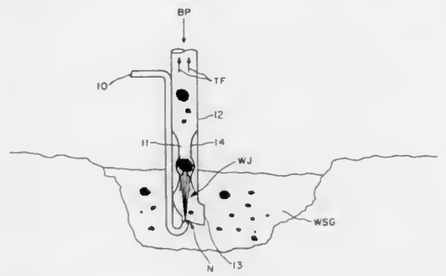
EXPANDABLE MIXING SECTION GRAVEL AND COBBLE EDUCTOR

Arthur L. Miller, Kenyon, and Kenneth I. Krawza, Lakeville, both of Minn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation of Ser. No. 344,590, Nov. 18, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,071

Int. Cl.[6] F04F *5/36*

U.S. Cl. 417—151 2 Claims



1. In a hydraulically powered pump for excavating and transporting slurries in which it is immersed, the improvement of a gravel and cobble eductor comprising: a tubular expandable mixing section having a center line in alignment with a nozzle capable of lifting cobbles larger than the diameter of the mixing section;

a primary flow conduit that terminates in a nozzle that creates a water jet internal to said tubular expandable mixing section of said pump when water pressure is applied from a primary supply flow;

said tubular expandable mixing section being enclosed by a flexible liner having a center line in alignment with said nozzle that creates a water jet;

an exit diffuser column that envelopes said flexible liner; and

a secondary inlet conduit that forms an opening at a base portion of said exit diffuser column and adjacent to said nozzle and water jet to receive water saturated gravel as a secondary flow that mixes with said primary flow inside of said mixing section to form a combined total flow that exits said mixing section and decelerates in said exit diffuser.

5,667,366

JET PUMP INCLUDING FLEXIBLE VENTURI

Martin J. Reef, Gronausestraat; Ronald H. Houpst, Boddenkampsingel, and Frank T. G. Mulder, Richterstraat, all of Netherlands, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Dec. 1, 1995, Ser. No. 566,046

Int. Cl.[6] F04F *5/44;5/48*

U.S. Cl. 417—198 18 Claims

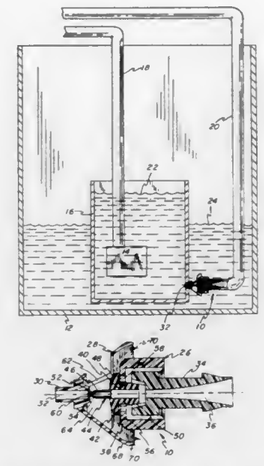
1. A jet pump comprising:

a fluid receiving structure including an inlet passage;

a primary fluid source directing a fluid flow in a first direction into said inlet passage;

a secondary fluid source in fluid communication with fluid flow from said primary fluid source wherein fluid flow from said primary fluid source causes fluid from said secondary fluid source to flow in said first direction into said inlet passage;

said primary fluid source including a flexible venturi providing a variable outlet area for fluid flow from said primary fluid source to said inlet passage; and



wherein said flexible venturi defines a check valve for preventing fluid flow in a second direction, opposite said first direction, into said primary fluid source.

5,667,367

AIR COMPRESSOR

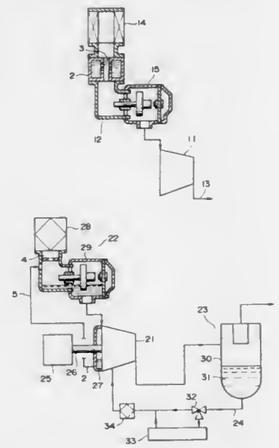
Kazuo Kubo, and Koji Akashi, both of Hyogo, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 5, 1995, Ser. No. 416,990

Claims priority, application Japan, Apr. 8, 1994, 6-070529; Apr. 8, 1994, 6-070532

Int. Cl.[6] F04B *49/02;39/02;53/20*

U.S. Cl. 417—313 2 Claims



1. An oil cooled air compressor comprising:

a compressor unit having a housing in which rotors are installed for rotation, and provided with an oil collector unit to collect oil leaking at the point where the shaft of one of said rotors passes through said housing to be connected to the drive shaft of a motor used to drive the rotation of said rotors;

an intake regulator valve connected to said compressor unit;

an intake filter connected to said intake regulator valve, wherein said intake filter is connected to said intake regulator valve by a passage having a section of reduced cross-sectional area:

an oil separator connected to said compressor unit;

an oil supply line connecting the lower part of said oil separator to various points inside said compressor unit, to direct oil thereto; and

an oil return line connecting said oil collector unit to said passage connecting said intake filter and said intake regulator valve wherein said oil return lines opens into said passage at a point higher than a level of oil in the intake regulator valve.

5,667,368

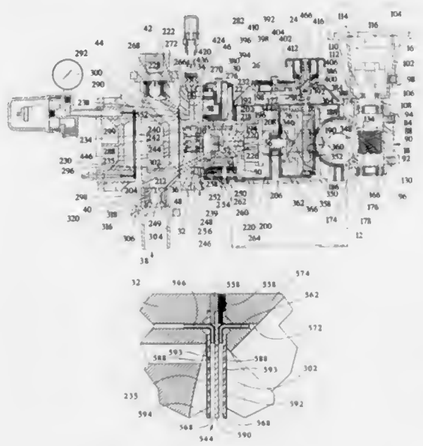
DIAPHRAGM METERING PUMP INCLUDING IMPROVED LEAK DETECTION DIAPHRAGM

Craig L. Augustyn, Spencerport, and Francis J. Snyder, Ontario, both of N.Y., assignors to Pulsafeeder, Inc., Rochester, N.Y.

Division of Ser. No. 565,903, Dec. 1, 1995. This application Apr. 30, 1996, Ser. No. 640,361

Int. Cl.[6] F04B *9/08*

U.S. Cl. 417—385 **10 Claims**



1. A diaphragm metering pump comprising:

a pumping section including a one-way product flow passageway having an inlet end with a one-way inlet valve and an outlet end with a one-way outlet valve, a diaphragm assembly disposed between an opening in the one-way product flow passageway and a hydraulic chamber filled with hydraulic fluid, and means for varying hydraulic pressure in the hydraulic chamber to cause pumping displacements of the diaphragm member, said diaphragm assembly comprising first and second spaced apart diaphragm layers with a sealed gap therebetween, said first and second diaphragm layers each including an inwardly facing major surface, at least one of said inwardly facing major surfaces having a spiral groove defined therein extending from a center portion of the inwardly facing major surface to a peripheral edge thereof, said diaphragm assembly further including means for monitoring fluid pressure disposed in fluid communication with the gap, whereby the gap may be evacuated to a reduced pressure and any increase in gap pressure caused by a leak in the diaphragm layers is detectable with the monitoring means.

5,667,369

VOLUMETRIC PUMP DRIVEN BY A CONTINUOUS TUBE

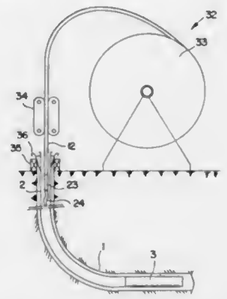
Henri Cholet, Le Pecq, France, assignor to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Nov. 27, 1995, Ser. No. 563,056

Claims priority, application France, Nov. 25, 1994, 94/14.263

Int. Cl.[6] F04B *47/00*

U.S. Cl. 417—448 **11 Claims**



1. A method of pumping an effluent that is produced by a well that is drilled into a geological formation, in which pumping means (3) that comprise a rotor (24) and a stator (27) are placed at the base of a column (2) that is submerged in said effluent, characterized in that it comprises the following stages:

winding a continuous tube (12) onto a drum (33) said tube having means of diffusion (23) and said rotor (24) attached to one end of said continuous tube (12),

lowering said means of diffusion and said rotor into the inner space of said column (2) by unwinding said tube (12) from drum (33),

said rotor is placed in the stator, with said means of diffusion being located in the vicinity of the output of the pump,

said tube is driven in rotation to activate the pump.

5,667,370

SCREW VACUUM PUMP HAVING A DECREASING PITCH FOR THE SCREW MEMBERS

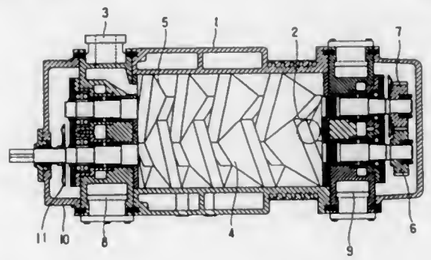
Kisu Im, Pusan, Rep. of Korea, assignor to Kowel Precision Co., Ltd., Pusan, Rep. of Korea

Filed Aug. 22, 1995, Ser. No. 517,631

Claims priority, application Rep. of Korea, Aug. 22, 1994, 94-20662

Int. Cl.[6] F04C *18/16;25/02*

U.S. Cl. 418—9 **2 Claims**



1. A screw vacuum pump comprising a body defining a chamber, at least one inlet at an inlet end and at least one outlet at an outlet end for the admission of fluid to and discharge of fluid from the chamber, and a pair of intermeshing screw members rotatably mounted within the chamber for transporting the fluid from the inlet end to the outlet end, wherein the pitch of the screw members varies from the inlet end thereof to the outlet end thereof according to the following relation:

Pitch at the outlet end/Pitch at the inlet end$<\pi_r/k$

where, $\pi_r=k^{k/(k-1)}$=pressure ratio calculated under the conditions that the operation is effected in an adiabatic process and the work done is constant, and k is gas constant, and wherein

said screw members include a plurality of teeth having a shape of an epitrochoid and archimedean curve, whereby to cause compression of the fluid being delivered.

5,667,371

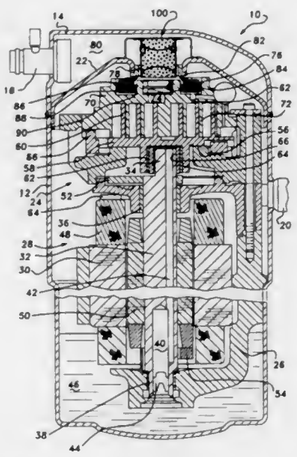
SCROLL MACHINE WITH MUFFLER ASSEMBLY

Werner H. Prenger, Coldwater, and Sunil S. Kulkarni, Vandalia, both of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Apr. 8, 1996, Ser. No. 628,050

Int. Cl.[6] F04C *18/04;29/06;* **F01N** *1/06*

U.S. Cl. 418—55.1 **14 Claims**



1. A scroll machine comprising:

a shell;

a first scroll member disposed in said shell and having a first spiral wrap;

a second scroll member disposed in said shell and having second spiral wrap, said spiral wraps being mutually intermeshed;

means for causing said scroll members to orbit with respect to one another, whereby said wraps create at least one enclosed space of progressively changing volume between suction port defined by said scroll members and centrally located discharge port defined by one of said first and second scroll members;

a partition defining a discharge chamber and a suction chamber within said shell, said discharge port being in communication with said discharge chamber through a central opening defined by said partition; and

a muffler assembly disposed between said discharge port and said discharge chamber, said muffler assembly comprising:

a generally cylindrical muffler defining a plurality of perforations, said muffler being aligned with said discharge port;

a top cap attached to said generally cylindrical member, said top cap including a solid wall for closing one end of said generally cylindrical muffler, said top cap being attached to another element of said scroll machine; and

a first end cap secured to a first end of said muffler, said first end cap defining a plurality of perforations extending through said first end cap.

5,667,372

ROLLING PISTON ROTARY COMPRESSOR FORMED WITH LUBRICATION GROOVES

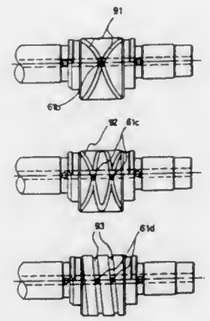
Seon-Woong Hwang, and Chang-Joo Shin, both of Kyungki-Do, Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed May 26, 1995, Ser. No. 451,510

Claims priority, application Rep. of Korea, Jun. 2, 1994, 12787/1994

Int. Cl.[6] F04C *18/356;29/02*

U.S. Cl. 418—63 **4 Claims**



1. In a rotary compressor including a cylinder having both a suction port and an exhaust port; a crankshaft rotating in said cylinder by rotational force transmitted thereto through a power transmission mechanism, said crankshaft having an eccentric sheave and a longitudinally extending oil conduit and a plurality of oil ports extending from the oil conduit to an outside of the crankshaft, said oil ports being radially formed in a middle portion of the crankshaft and in the crankshaft at a top and bottom of said sheave; a ring type rolling piston rotating and revolving in said cylinder by rotational force of the crankshaft, an inner surface of the rolling piston contacting with the outer surface of the eccentric sheave; a linear reciprocating vane having a tip, said vane being elastically biased in the cylinder by a spring placed in an outside of the cylinder, the tip of said vane contacting with an outer surface of said rolling piston; and a main bearing and a sub-bearing fitted over a lower section of said crankshaft, the improvement comprising:

at least two first lubricating grooves formed in an outer surface of said eccentric sheave and intersecting each other;

at least one hole formed at the intersection point of the first lubricating grooves and communicating with the oil conduit of the crankshaft and adapted for supplying of lubricating oil from the oil conduit to the outer surface of the sheave; and

second lubricating grooves formed on inner surfaces of said main and sub bearings and adapted for supplying oil to contacting parts between the crankshaft and the main and sub bearings during rotation of the crankshaft and for reducing contact between the crankshaft and the bearings.

4. In a rotary compressor including a cylinder having both a suction port and an exhaust port; a crankshaft rotating in said cylinder by rotational force transmitted thereto through a power transmission mechanism, said crankshaft having an eccentric sheave and a longitudinally extending oil conduit and a plurality of oil ports extending from the oil conduit to the outside of the crankshaft, said oil ports being radially formed in a middle portion of the crankshaft and in the crankshaft at the top and bottom of said sheave; a ring type rolling piston rotating and revolving in said cylinder by rotational force of the crankshaft, the inner surface of the rolling piston contacting with the outer surface of the eccentric sheave; a linear reciprocating vane elastically biased, in the cylinder, by a spring placed in the outside of the cylinder, the tip of said vane contracting with the outer surface of said rolling piston; and a main bearing and a sub-bearing fitted over a lower section of said crankshaft, the improvement comprising:

at least one first lubricating groove formed on the outer surface of said eccentric sheave;

at least one hole formed in the lubricating groove and communicating with the oil conduit of the crankshaft and adapted for supplying lubricating oil from the oil conduit to the outer surface of the sheave; and

second lubricating grooves formed on the inner surfaces of said main and sub bearings and adapted for facilitating oil supply to the contact part between the crankshaft and the bearings during rotation of the crankshaft and for reducing contact area between the crankshaft and the bearings,

wherein the at least one first lubricating groove is a lead screw type groove and at least two holes are formed in the groove and positioned in line, respectively therein, in the longitudinal direction of the crankshaft.

5,667,373

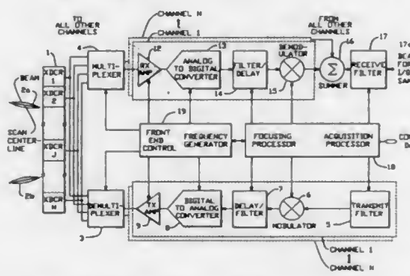
METHOD AND APPARATUS FOR COHERENT IMAGE FORMATION

J. Nelson Wright, Menlo Park; Samuel H. Maslak, Woodside; David J. Finger, San Jose, and Albert Gee, Los Altos, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Continuation of Ser. No. 286,510, Aug. 5, 1994, abandoned. This application Apr. 7, 1995, Ser. No. 418,640

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.07 **6 Claims**



1. A method for ultrasonic imaging of an object comprising the steps of:

acquiring coherent samples of signals representative of a signal from an object; and

using the coherent samples in order to generate synthetic samples on synthetic scan lines which are spatially distinct from receive scan lines on which a signal was reflected from the object.

5,667,374

PREMIX SINGLE STAGE LOW NOX BURNER

Peter B. Nutcher, Canonsburg, and Peter J. Waldern, Bethel Park, both of Pa., assignors to Process Combustion Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1992, Ser. No. 962,280

Int. Cl.[6] F23D *3/40*

U.S. Cl. 431—7 **17 Claims**

1. A single stage low NOx burner for producing a low temperature flame, comprising:

a mixing plenum;

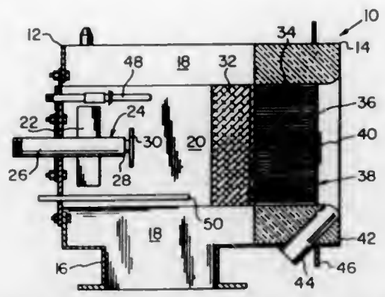
a mesh flametrap adjacent said mixing plenum;

a honeycomb downstream of and abutting said flametrap, said honeycomb having a plurality of axial passages therethrough, said honeycomb further defining a planar flame face at a downstream end of said burner, wherein said honeycomb is positioned between said planar flame face and said mesh flametrap;

wherein gaseous fuel and excess air, with or without flue gas, are introduced to said mixing plenum, pass through said mesh flametrap and exit the passages of said honeycomb at said flame face where they are ignited to produce a low temperature flame;

means for supplying air to said mixing plenum,

a mixing nozzle extending into said mixing plenum for introducing the gaseous fuel to and a bluff body mounted in front of said mixing nozzle for deflecting gaseous fuel laterally into said air.



5,667,375

GAS COMBUSTION APPARATUS AND METHOD FOR CONTROLLING THE SAME

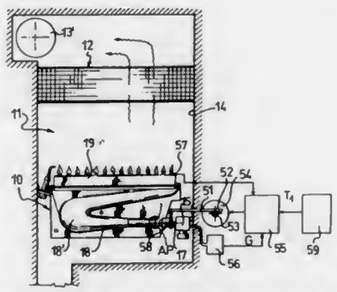
Enrico Sebastiani, Via S. Banfi, 13-20025 Legnano—Milan, Italy

Filed Feb. 22, 1994, Ser. No. 199,105

Claims priority, application European Pat. Off., Aug. 16, 1993, 93113075

Int. Cl.[6] F23N *5/02*

U.S. Cl. 431—12 **18 Claims**



1. A method for controlling air being supplied to a gas combustion apparatus having an atmospheric burner comprising:

a) introducing fuel gas in a class of fuel gases and a stream of primary air into a suction duct of a burner to form a fuel-gas air mixture;

b) introducing said mixture into a diffuser associated with said burner and forming a flame region above a surface of said burner in a combustion chamber of said combustion apparatus, said primary air being introduced into the suction duct in an amount responsive to at least one temperature detected at or within the flame region of said burner, and in steady-state operation, said amount of primary air varying between a value substantially equal to the amount required for stoichiometric combustion of the fuel gas and a value largely exceeding said amount required for stoichiometric combustion of the fuel as;

setting the burner to provide optimum combustion of said fuel gas, said optimum combustion corresponding to a desired temperature at or within said flame region of said burner; and

varying said amount of primary air admixed with said fuel gas to change the ratio of primary air fuel gas to cause said detected temperature to approach said desired temperature.

5,667,376

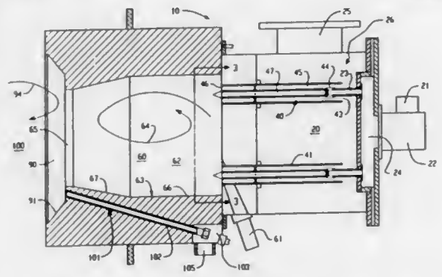
ULTRA LOW NOX BURNER

Thomas F. Robertson, Cleveland; Todd A. Miller, Garfield Heights, and Dennis E. Quinn, Hinckley, all of Ohio, assignors to North American Manufacturing Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 44,719, Apr. 12, 1993, Pat. No. 5,407,345. This application Sep. 20, 1994, Ser. No. 309,198

Int. Cl.[6] F23L *9/00*

U.S. Cl. 431—115 **17 Claims**



1. A burner system for safely combusting fuel with oxidant in order to control flashback, said burner system comprising:

a reaction chamber for substantially combusting a fuel and oxidant mixture, said reaction chamber further comprising:

a plurality of inlets for receiving the mixture;

a burner axis; and

an outlet for discharging the substantially combusted mixture into a furnace; said burner system further comprising:

a plurality of mixer elements for mixing fuel and oxidant in a predetermined proportion in order to produce the mixture, said mixer elements comprising:

a mixer inlet for each of the plurality of mixer elements wherein fuel and oxidant are admitted into each mixer inlet;

a mixer outlet for each of the plurality of mixer elements, wherein each mixer outlet is connected to a respective reaction chamber inlet, wherein combustion occurs substantially proximate to the mixer outlet, wherein each mixer outlet is located off-center a significant distance from the burner axis so as to provide a flow imbalance in the reaction chamber in order to recirculate part of the substantially combusted mixture within said reaction chamber toward each mixer outlet, wherein the remainder of said substantially combusted mixture is discharged out of the outlet of said reaction chamber; wherein said burner system further comprising:

at least one fuel plenum for commonly supplying fuel to each of the plurality of mixer inlets; and

at least one oxidant plenum for commonly supplying oxidant to each of the plurality of mixer inlets.

5,667,377

GAS TORCH

Arlo H. T. Lin, No. 5, Lane 25, Tatung Rd., Wu Fong Hsiang, Taichung Hsien, Taiwan

Filed Jul. 7, 1995, Ser. No. 499,755

Int. Cl.[6] F23Q *2/00*

U.S. Cl. 431—344 **5 Claims**

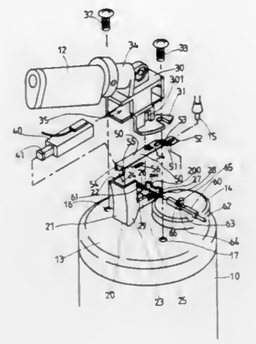
1. A gas torch comprising:

a fuel gas container with a flame adjustment wheel that controls a flow rate of fuel through a valve on said fuel gas container,

a gas lever that is raised to allow fuel to flow through a tubular portion of said lever to an oblique barrel and then to a flame tube connected to said barrel, said gas lever is lowered to stop fuel from flowing through said tubular portion, and

a holder frame;

said holder frame has two flanges on opposing sides thereof and is mounted on a top side of said fuel gas container via said flanges, and a flame tube mounted on said holder frame;



an electronic igniter with a control button mounted on said holder frame of said fuel gas container, said igniter is activated by a user depressing said control button,

said control button comprises a backward extension frame, said backward extension frame comprises a first hollow step, a second hollow step, an upright tail, a transverse rib disposed in said second hollow step and defining a first sliding way between said transverse rib and said upright tail, and a second sliding way between said transverse rib and said first hollow step;

an actuating strip mounted on said backward extension frame that actuates said gas lever to release fuel gas from said fuel gas container when said actuating strip is activated by a user depressing said control button, said control button moving said transverse control bar that is in communication with said actuating strip; and wherein

when said transverse control bar is pressed from an outward position by the user to an inward position and said control button is then depressed by the user from an at-rest position to a depressed position, said extension frame of said control button moves under said control bar such that said control bar is moved from a first position in said first sliding way of said extension frame to a second position in said second sliding way of said extension frame, said control bar is then returned to said outward position by a force exerted by a compression spring contained in one of said flanges of said holder frame, said control bar thereby locking said control button and said actuating strip in position so as to maintain a constant flow of said fuel gas from said fuel container, and wherein

said control button and said actuating strip are released by the user again depressing said control bar such that said control button returns to said at-rest position, thereby lowering said actuating strip to stop the flow of fuel gas.

5,667,378

LOW PROFILE KILN APPARATUS

James Bushman, Pittsburgh, Pa., assignor to Swindell Dressler International Company, Pittsburgh, Pa.

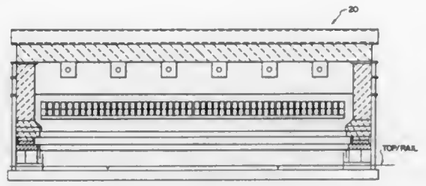
PCT No. PCT/US92/07648, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/07100, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 11, 1992, Ser. No. 403,743

Int. Cl.[6] F27D *3/12*

U.S. Cl. 432—241 **9 Claims**

1. An ultra low profile kiln for firing bricks stacked in a kiln car traveling continuously through the kiln without stopping, said kiln having an entrance end and an exit end and defining therebetween an ultra low profile tunnel through which a kiln car loaded with bricks is conveyed, said bricks having a maximum load height on said kiln car of 18 inches or less, said kiln comprising:



a preheat zone through which combustion gases are drawn to preheat the bricks;

a furnace zone disposed behind said preheat zone, said furnace zone having a plurality of burners for firing the bricks, said plurality of burners mounted so that none of said burners are below the load of the bricks on the kiln car, and

a cooling zone disposed behind said furnace zone and adjacent the exist end of said kiln for cooling the bricks.

5,667,379

CHARGING RACK FOR FIRING OBJECTS COMPOSED OF CERAMIC OF GLASS CERAMIC MATERIALS

Dieter Sporer, Tannheim, Austria, assignor to Schwarzkopf Technologies Corporation, New York, N.Y.

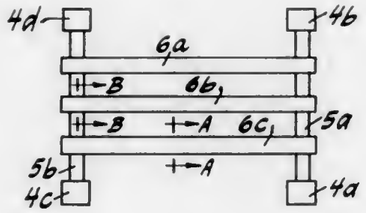
PCT No. PCT/EP94/03505, § 371 Date Oct. 13, 1995, § 102(e) Date Oct. 13, 1995, PCT Pub. No. WO95/12796, PCT Pub. Date May 11, 1995

PCT Filed Oct. 25, 1994, Ser. No. 464,719

Claims priority, application Germany, Oct. 30, 1993, 43 37 189.2

Int. Cl.[6] F27D *5/00*

U.S. Cl. 432—258 **8 Claims**



1. A charging rack for receiving shaped bodies made of ceramic and glass-ceramic materials which are baked in a furnace, the charging rack having the shape of a grid and comprising: a frame assembled from a plurality of frame members; and a plurality of supporting parts operatively connected to the frame, and whereby the frame members and supporting parts are manufactured from heat-resistant materials, wherein the members of the frame are produced from a dispersion-hardened iron- or nickel-based alloy, and the supporting parts are produced from the group consisting of the same dispersion-hardened iron- or nickel-based alloy as the frame member, silicon carbide, an oxide-ceramic material, a superalloy, or steel.

5,667,380

TENSIONING SYSTEM AND METHOD FOR AN ORTHODONTIC OUTER BRACE

Johan Anton Kooiman, Bodegraafsestraat 26, NL-2805 GR Gouda, Netherlands

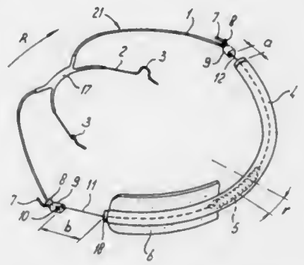
PCT No. PCT/NL95/00006, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO95/18580, PCT Pub. Date Jul. 13, 1995

PCT Filed Jan. 4, 1995, Ser. No. 464,895

Claims priority, application Netherlands, Jan. 5, 1994, 9400009

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—5 **15 Claims**



1. Tensioning system for an orthodontic outer brace, comprising:

a resilient element with outer ends;

coupling means for transmitting a tensile force exerted by said resilient element to the outer brace, said coupling means having first ends fixable to the outer brace and second ends coupled to said outer ends of said resilient element; and

an arc-shaped guide path along which said resilient element and said coupling means are freely movable together when a patient turns his or her head.

5,667,381

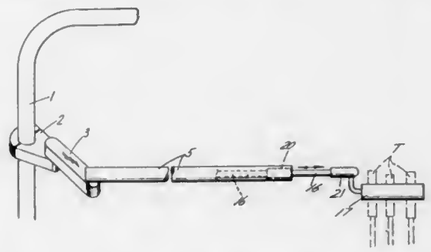
TELESCOPIC ARM ASSEMBLY FOR THE SUPPORT OF DENTAL TOOLS

Barry S. Young, Tualatin, Oreg., assignor to Dental Components, Inc., Newberg, Oreg.

Filed Nov. 13, 1995, Ser. No. 556,482

Int. Cl.[6] A61G *15/00*

U.S. Cl. 433—79 **4 Claims**



1. A telescopic arm assembly for the adjustable support of dental tools adjacent a dental chair, said arm assembly including,

a main arm of tubular construction and defining a slot at its proximal end,

an arm support disposed in said slot and including a pivot pin in engagement with said proximal end of the main arm and limit stop means acting on said main arm limiting upward arcuate movement of the main arm about said pivot pin,

a secondary arm slidably disposed in said first arm and having at its distal end a dental tool holder, and

guide means carried by said first arm and said second arm permitting rectilinear movement of said second arm without rotation of the second arm about its longitudinal axis, said guide means including followers extending from said second arm in a radial manner and rotationally offset from one another about said longitudinal axis, a guide in parallel with and extending lengthwise of the arm assembly and engaged by said followers to constrain the secondary arm for rectilinear travel without arm rotation.

5,667,382

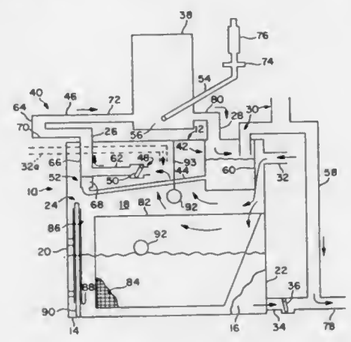
VACUUM PUMP SEAL-WATER RECYCLING AND WASTE DISPOSAL SYSTEM FOR DENTAL OPERATORIES

Robert S. Holland, 31 High Ridge Rd., Redding, Conn. 06896

Continuation-in-part of Ser. No. 250,025, May 27, 1994, Pat. No. 5,577,910, which is a continuation-in-part of Ser. No. 61,184, May 13, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,536

Int. Cl.[6] A61C *17/06*

U.S. Cl. 433—92 **5 Claims**



1. A water seal recirculating system used for evacuating oral cavity effluent from dental operatories comprising a collection tank, a reservoir tank, a vacuum pump having a water primed shaft seal, at least one tube extending from the collection tank to an operatory for conveying effluent to the collection tank, the vacuum pump having an air inlet line communicating with the collection tank for drawing air from the collection tank thereby creating a partial vacuum and establishing a vacuum pull for effluent from the operatory through the at least one conveying tube, a recirculating line which receives seal water from the seal water outlet of the vacuum pump and directs the seal water to the reservoir tank, a seal water inlet for drawing seal water from the reservoir for recirculation to the vacuum pump, means for regulating the volume of seal water entering the seal water inlet, means for directing the air from the collection tank in heat transfer relationship with seal water in the inlet to the vacuum pump, means for drawing seal water directly from the reservoir to the vacuum pump shaft seal, means responsive to the level of seal water in the reservoir tank for augmenting the volume of recirculating seal water with tap water, and means for periodically emptying effluent collected in the tank.

5,667,383

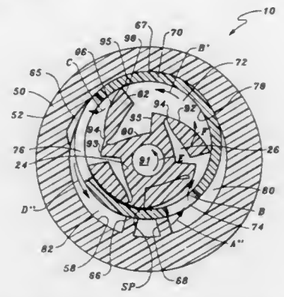
DISPOSABLE DENTAL PROPHYLAXIS HANDPIECE

José L. Mendoza, Rancho Cordova; Philip Theodore Lingman, Cotati, and William Richard Maclay, Sr., Los Gatos, all of Calif., assignors to Denticator International, Inc., Sacramento, Calif.

Filed Aug. 23, 1994, Ser. No. 294,736

Int. Cl.[6] A61C *1/05*

U.S. Cl. 433—132 **20 Claims**



1. A hand held disposable dental prophylaxis handpiece driven by a source of elevated pressure, compressible fluid, comprising in combination:

an elongated plastic housing dimensioned to be supported in one's hand much like a pen;

a plastic fluid reaction device receiving the fluid as input and having a rotating shaft as an output, said fluid reaction device including a plastic rotor having a substantially rigid plastic trunk integrally formed therewith, a plurality of plastic vanes integrally formed therewith, and a means to pivotably attach said vanes to said trunk,

a hollow cavity, said cavity including means to inlet fluid into said cavity, means to exhaust fluid out of said cavity, and means to rotatably support said trunk of said rotor within said cavity wherein said pivotable attachment means includes plastic hinges each integrally formed with and interposed between each said vane and said trunk, said hinge including means to apply a force causing said vane to be urged towards and contact a periphery of said hollow cavity;

a prophylaxis cup;

coupling means from said cup to said rotating shaft such that rotation of said shaft rotates said prophylaxis cup;

said rotating shaft output coupled to said rotor such that when fluid enters said cavity, said shaft is caused to rotate, and

each said vane having an integrally formed portion which is larger away from the hinge than adjacent the hinge so as to act as a governor and a flywheel, whereby the elevated pressure compressible fluid driving said vanes can be controlled to provide substantially constant speed and high torque.

5,667,384

DEVICE FOR FORMING A DENTAL PROSTHESIS AND METHOD OF MANUFACTURING SUCH A DEVICE

Franz Sutter, Niederdorf; Vincenzo Grande, Möhlin, and Francis J. Sutter, Hölstein, all of Switzerland, assignors to Institut Straumann AG, Waldenburg, Switzerland

Filed May 17, 1995, Ser. No. 442,944

Claims priority, application Switzerland, Jun. 3, 1994, 1746/94

Int. Cl.[6] A61C *8/00*

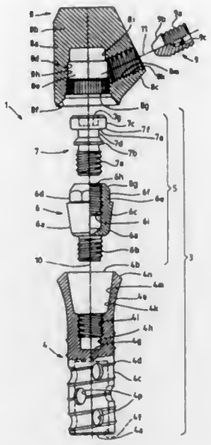
U.S. Cl. 433—172 **23 Claims**

1. A device for forming a dental prothesis comprising:

a cap defining an inner space;

a support for supporting the cap, the cap and the support having a common, first axis; and

a screw for fastening the cap on the support.



wherein the support has an inner end for being inserted in a jawbone of a dental prothesis user, and an outer part to be located outside of the jawbone for supporting the cap, the outer part having a bearing surface cooperating with a counter bearing surface of the cap in an assembled condition of the device,

wherein the cap has a threaded hole for receiving the fastening screw and opening into the inner space, the hole having a second axis extending at an angle to the first axis, and

wherein the screw has a tapering end section extending, at least partially, into the inner space and engaging a shoulder, which is provided on the outer part and faces the inner part, for generating a pressure force for pressing the counter bearing surface of the cap against the bearing surface of the outer part.

5,667,385

METHOD FOR THE PREPARATION OF IMPLANTS MADE OF TITANIUM OR ALLOYS THEREOF

Stig Hansson, Askim, Sweden, assignor to Astra Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 39,153, Apr. 23, 1993, Pat. No. 5,484,286.
This application May 19, 1995, Ser. No. 444,537
Claims priority, application Sweden, Oct. 8, 1990, 9003206
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—201.1 **6 Claims**

1. An implant having a contaminant-free surface produced by the process of blasting the surface with particles of titanium oxide, wherein the surface is free from any contaminants after it has been blasted.

5,667,386

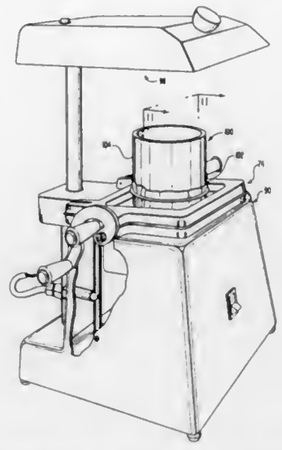
APPARATUS, SYSTEM, AND METHOD FOR READAPTING A DENTAL APPLIANCE

Sheldon L. Black; John H. Bailey, and Dan E. Fischer, all of Sandy, Utah, assignors to Ultradent Products, Inc., South Jordan, Utah

Filed Jun. 7, 1995, Ser. No. 483,336
Int. Cl.[6] A61C *11/00*
U.S. Cl. 433—213 **45 Claims**

1. An apparatus for use in readapting a previously formed dental appliance to closely conform to the contours and embrasures of a model representative of a patient's teeth, wherein the dental appliance has first been heated to attain a predetermined level of plasticity, the apparatus comprising:

a. a vacuum forming table, comprising means for generating a negative pressure: and



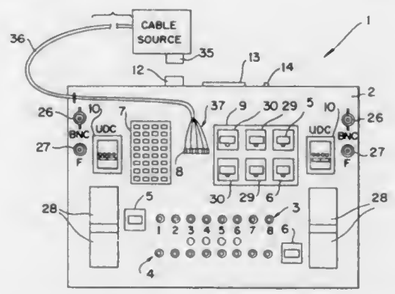
b. elastic membrane means responsive to the negative pressure for pressing the dental appliance against the model with sufficient force to cause the dental appliance to conform to the contours and embrasures of the model and for maintaining the dental appliance in close contact with the model until the dental appliance cools an amount sufficient to retain its shape and the negative pressure is released.

5,667,387

TELECOMMUNICATIONS CABLES EDUCATION AND TESTING APPARATUS

Jonathan R. Klemm, 62 Stonybrook Rd., Blairstown, N.J. 07825-9319

Filed Oct. 17, 1995, Ser. No. 543,895
Int. Cl.[6] G01B *7/00*
U.S. Cl. 434—224 **6 Claims**



1. A telecommunications cable and testing apparatus comprising:

a panel having a front side and a back side,

said front side having a plurality of connectors mounted thereon, said plurality of connectors being of different types,

means for connecting at least one battery attached to said panel for providing electrical power to said panel,

switch means for interrupting said electrical power,

wiring means on said back side of said panel for electrically interconnecting selected ones of said plurality of connectors,

a two part testing unit adapted to be connected to said selected ones of said plurality of connectors,

one of the units of said two part testing unit having indicator means for indicating whether said selected ones of said plurality of connectors have been properly electrically connected, and wherein

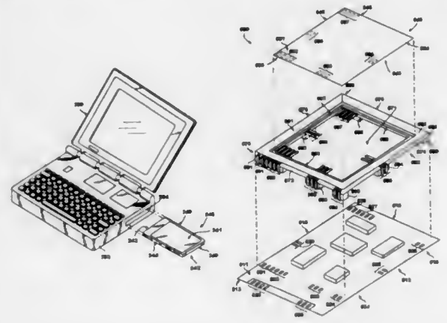
said one of the units of said two part testing unit has additional indicator means for indicating improper shield connections and improper split pair connections between selected ones of said plurality of connectors.

5,667,388

PRINTED CIRCUIT BOARD ADAPTER CARRIER FOR INPUT/OUTPUT CARDS

Stephen E. Cottrell, Pilot Hill, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 14, 1994, Ser. No. 339,459
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—74 **36 Claims**



1. A printed circuit board (PCB) adapter carrier for connecting a first printed circuit board (PCB) with a second printed circuit board (PCB) within a package for a PCMCIA compatible input/output (I/O) card, said card being insertable into a socket within a data processing system, the first PCB having circuitry and a surface with a first contact area, the second PCB having circuitry and a surface with a second contact area, the PCB adapter carrier comprising:

a support structure having a top for supporting the surface of the second PCB and having a bottom for connection to the surface of the first PCB; and

a lead coupled to the support structure for electrical connection between the first contact area of the first PCB and the second contact area of the second PCB.

5,667,389

AUTOMOTIVE VEHICLE MODULAR BUSS

Richard Louis Kidd, Stow; Daniel Griffith Mathey, Warren; Paul Di Liello, Cortland; David Glen Siegfried, Vienna, all of Ohio; Robert William Rimko, Transfer, Pa., and Anthony Joseph Corso, Struthers, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1995, Ser. No. 543,544
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—75 **12 Claims**

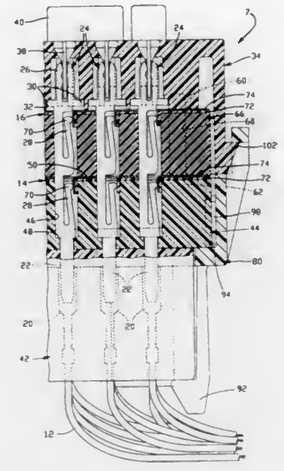
1. A modular buss center for an automotive vehicle comprising:

a first plug connector;

an intermediate terminal having a first male end and a second female end and at least one arm, the first end being electrically connected to the first plug connector;

a first template with a hole for receipt of the intermediate terminal;

at least one flex circuit, the flex circuit having at least one cut-out flag, the flag making contact with the intermediate terminal arm;



a second template separated from the first template by the flex circuit, the second template having a hole for receipt of the intermediate terminal second end; and

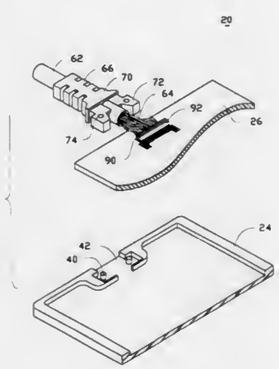
an electrical component positioned on the second template opposite the flex circuit, the electrical component being electrically connected to the intermediate terminal second end.

5,667,390

I/O CARD AND ITS ASSOCIATED CABLE HARNESS ASSEMBLY

Leon Keng, Taipei, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taiwan

Filed Mar. 6, 1995, Ser. No. 398,427
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—76.1 **8 Claims**



1. An I/O card and associated cable harness assembly comprising:

an I/O card section and a cable harness section;

said I/O card section including a frame snadwiched between a top cover and a bottom cover;

an internal PC board positioned in said I/O card section;

said cable harness section including a jacket portion enclosing a plurality of wires therein;

a strain relief means of said cable harness section cooperatively retained within the I/O card section for assembling said I/O card section and said cable harness section together as one unit for transportation or sale; wherein

the frame of said I/O card section includes a cavity for snug receipt of said strain relief means of said cable harness section, and said strain relief means comprises a pair of pier-like projections for compliance with a configuration of said cavity in the frame, and each of the pier-like projections further includes a hole to receive a corresponding post extending upward within the cavity.

5,667,391

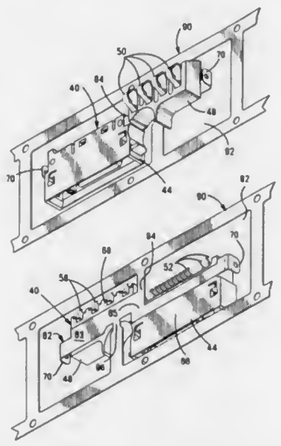
ELECTRICAL CONNECTOR HAVING A TWO PART ARTICULATED HOUSING

David Stanley Szczesny, 117 N. Thistledown Dr.; William V. Pauza, 840 Stauffers Church Rd., both of Palmyra, Pa. 17078, and James Ray Fetterolf, Sr., 302 Indian Creek Dr., Mechanicsburg, Pa. 17055

Filed Apr. 26, 1995, Ser. No. 429,372

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—79 **7 Claims**



1. A surface mountable electrical connector having a two part articulated housing comprising:

(a) a first housing part of insulating material containing a plurality of first electrical contacts therein for mating with contacts in a mating connector, said first electrical contacts having leads extending out of said first housing part and arranged to engage first solder pads on a curved mounting surface;

(b) a second housing part of insulating material containing a plurality of second electrical contacts therein for mating with contacts in said mating connector, said second electrical contacts having leads extending out of said second housing part and arranged to engage second solder pads on said curved mounting surface; and

(c) a flexible metal coupling strip interconnecting said first and second housing parts, having electrical terminals on opposite ends thereof and being arranged so that when said connector is placed upon said curved mounting surface with solder paste between said connector and in engagement with said curved mounting surface, said first and second housing parts mutually deflect so that said leads of said first and second electrical contacts engage and are embedded in said solder paste.

5,667,392

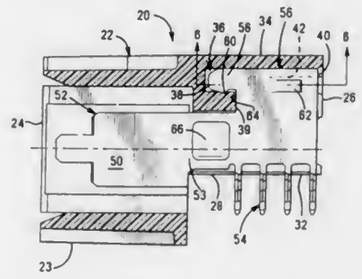
ELECTRICAL CONNECTOR WITH STABILIZED CONTACT

Timothy Lee Kocher, Camp Hill; William Edward Veith, and Randolph Lee Buchter, both of Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 412,177, Mar. 28, 1995, abandoned. This application Apr. 16, 1996, Ser. No. 632,692

Int. Cl.[6] H01R *13/40*

U.S. Cl. 439—79 **6 Claims**



1. A right angle electrical connector comprising:

a housing having a mating face adapted to mate with a complementary electrical connector, an assembly face adapted to receive at least one electrical contact therein, said assembly face being opposed from said mating face, a third face adapted for establishing electrical connection with a complementary electrical article, said third face being at right angles to said mating face, said housing including at least one contact-receiving passageway extending from said assembly face to said mating face, said passageway having a contact-receiving slot open to said third face and to said assembly face;

an electrical contact disposed in an associated one of said at least one housing passageway, each said contact having a first connecting portion exposed at said mating face for electrical engagement with said complementary connector and a second connecting portion extending from said third face and outwardly from said housing for electrical connection to said electrical article, said second connecting portion being at right angles to said first connecting portion, and a retention section remote from and opposite said second connecting portion and associated with a cooperable housing portion thereat;

said cooperable housing portion being opposite from said third face and defining a channel extending forwardly from said assembly face toward said mating face and in communication with said slot, said channel having a width corresponding generally with the thickness of said contact so that said channel is adapted to receive said retention section thereinto upon receiving said contact from said assembly face of said housing;

said contact retention section having a barb at a leading end thereof receivable in a forward end of said channel with said barb dimensioned to create an interference fit with said forward channel portion when said contact is assembled into said housing to resist rearward movement of said contact after full assembly of said contact into said housing.

5,667,393

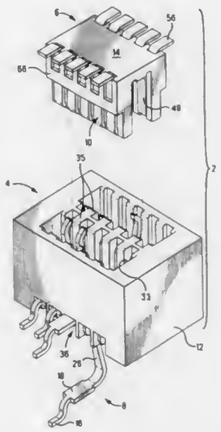
PRINTED CIRCUIT BOARD ELECTRICAL CONNECTOR WITH SEALED HOUSING CAVITY

Dimitry Grabbe, 2160 Rosedale Ave., Middletown, Pa. 17057, and Iosif Korsunsky, 4980 Farmington Rd., Harrisburg, Pa. 17112

Filed Jul. 14, 1995, Ser. No. 502,654

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—83 **34 Claims**



1. An electrical connector for use with a surface mount printed circuit board comprising:

a connector housing including at least one contact cavity with an insertion opening on the bottom of the cavity; and

at least one contact terminal including a mating portion and a solder tail, the mating portion being insertable through the insertion opening into the contact cavity, the contact terminal also including a sealing pad between the solder tail and the mating portion, the sealing pad being laterally offset from the solder tail, the sealing pad engaging the connector housing to seal the insertion opening so that fluids cannot enter the contact cavity from below.

5,667,394

ELECTRO-LUMINESCENT STRIP AND CONNECTOR SET THEREFOR

Tseng Lu Chien, 8F, No. 29, Alley 73, Lin-Shen Street, Shi-Chi Town, Taipei, Hseng, Taiwan

Filed Feb. 3, 1995, Ser. No. 383,404

Int. Cl.[6] H01R *9/07*

U.S. Cl. 439—86 **17 Claims**

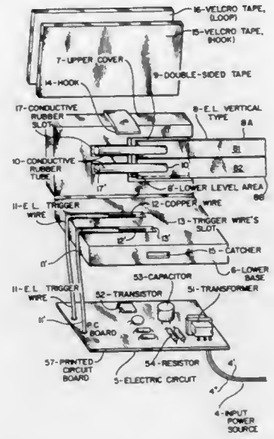
1. A connector set for an EL light strip, comprising:

means for positioning an EL strip;

means for positioning a pair of lead wires;

means for positioning a pair of compressible contacts relative to both the EL strip and the pair of lead wires; and

first and second housing members which form a means for compressing the contacts against conductive layers of the EL strip and against the lead wires to establish an electrical connection between the lead wires and the EL strip when the second housing member is attached to the first housing member.



5,667,395

COMMUNICATION CARD AND STRUCTURE OF JACK FOR USE IN THE SAME

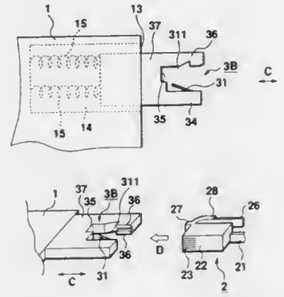
Masanobu Okada, and Katsuo Ito, both of Nagaokakyo, Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 29, 1995, Ser. No. 520,405

Claims priority, application Japan, Aug. 29, 1994, 6-227357; Feb. 20, 1995, 7-055166; Feb. 20, 1995, 7-055167

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—131 **21 Claims**



1. A card having two major planes and an end face providing a thickness of said card, an upper limit of said thickness being restricted, said card including an aperture formed in said end face and having a slot-like shape, said card further comprising:

a jack composed of a base plate having a top plane and a bottom plane parallel to said major planes and an end face providing a thickness of the plate, said thickness of the base plate being smaller than a width of said aperture; said base plate being inserted into said aperture in such a manner as to be accommodated in an interior of said card and to be removed from said card, said base plate including a notch provided so as to be directed outward when viewed from said card, said notch extending through said base plate in its thickness direction, said notch having an inner surface configured to be capable of receiving a plug having a substantially rectangular parallel piped shape and having edges,

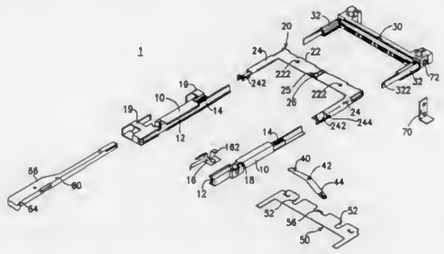
the plug being connected and electrically coupled to a cord which extends into the plug, wherein said notch is configured and oriented such that upon insertion and retention of the plug in said notch, the cord extends into the plug in a direction parallel to said major planes and such that the plug is inserted in said notch in a direction which is regulated by utilizing at least a part of said inner surface.

5,667,396

MEMORY CARD CONNECTOR WITH CARD EJECTION MECHANISM

H. T. Pan; Chu-Mei Chen, and Ming-Yow Hon, all of Taipei Hsien, Taiwan, assignors to Tongrand Limited, Queensway, Hong Kong

Filed Aug. 8, 1995, Ser. No. 512,336
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—160 **12 Claims**



1. An ejection mechanism for a memory card connector apparatus, said memory card connector apparatus including a pair of guide frames and a connector head, each of said guide frames having a guiding slot for slidingly receiving a corresponding edge of a memory card inserted into said memory card connector apparatus, and said connector head having a set of electrical connector means for providing electrical connection of electronic circuitry of said inserted memory card to a host system housing said memory card connector apparatus, said ejection mechanism comprising:

a longitudinal top cover plate having a pair of arms each extending from one end thereof for engaging a corresponding one of said pair of guide frames, said top cover plate having a pair of guide rings each located adjacent to one end thereof and a guide sliding space formed between said guide rings;

a substantially longitudinal rocker lever having a pivotal hole at substantially a center thereof, and a guide-containing opening at one end thereof;

a longitudinal push-out plate having a pair of sliding recessions and a pair of card pushing edges and a guide rod formed between said sliding recessions; and

a longitudinal push rod having a rocker lever engaging slot at one end thereof;

said pivotal hole of said rocker lever receiving one guide ring shaft formed by said guide rings, said guide-containing opening receiving said guide rod of said push-out plate, each of said pair of guide rings being slidably received in a corresponding one of said pair of sliding recessions of said push-out plate, said guide rod of said push-out plate being further received in said guide sliding space of said top cover plate, and a distal end of said rocker lever opposite the end thereof having said guide-containing opening being received in said rocker lever engaging slot of said push rod; wherein

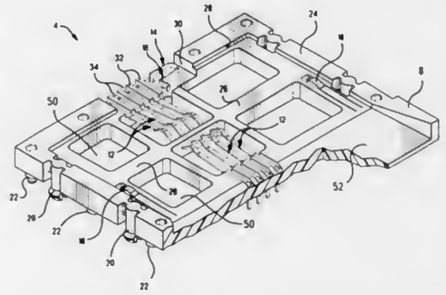
said guide sliding space of said top cover plate is a rectangular opening having a pair of guide rails each located at an edge of said rectangular opening, said guide rails being lowered below a surface of said top cover plate for receiving end extension portions of said guide rod of said push-out plate, thus allowing a restricted sliding motion of said guide rod inside said guide sliding space.

5,667,397

SMART CARD CONNECTOR

John L. Broschard, III, Hershey, and David S. Slupe, Camp Hill, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 1, 1994, Ser. No. 348,015
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **12 Claims**



1. A connector for use with a smart card, the connector comprising:

a housing having a front and a rear and including a base and a cover, the base and the cover defining a card slot between the base and the cover, the card slot being open at the front of the housing, the card slot extending into the housing toward the rear of the housing;

a plurality of contacts positioned in the base and extending into the slot for engagement with corresponding contacts of the smart card upon insertion of the smart card into the card slot;

a switch located at the rear of the card slot, the switch being activated when a smart card, fully inserted into the card slot, engages the switch, the switch comprising a stationary post and a spring member including a U-shaped deflectable section and a wiping section extending at an angle from an end of the deflectable section;

the spring member being formed through an obtuse angle at the other end of the U-shaped section toward a location at which the spring member is mounted to the housing, the spring member being then formed through an acute angle so that a distal end of the spring member extends away from the location at which the spring member is mounted to the housing, the switch post being located between the obtuse angle and the acute angle on a side of the spring member,

the post being located adjacent to the wiping section and in engagement with the wiping section when the spring member is in a closed position, the wiping section sliding along one side of the post as the spring member moves from an open position to a closed position with the post;

the deflectable section being positioned for engagement with a smart card as the card is inserted into the card slot;

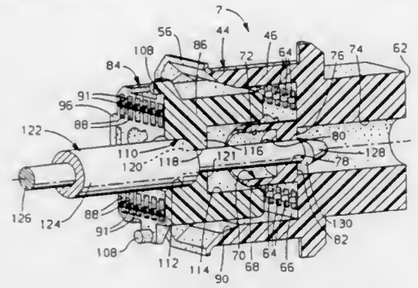
both the spring member and the post being mounted in the base and having contact sections for connection to circuitry on a printed circuit board when the connector is mounted on the printed circuit board, and the spring member and post are connected to a circuit for determining when a card is present in the connector, wherein the spring member is in the open position when the card is fully inserted into the card slot and wherein the spring member is in the closed position when the card is removed from the card slot.

5,667,398

MODULAR CONNECTION SYSTEM

Richard Louis Kidd, Stow; Paul Di Liello; Thomas Alan Lubert, both of Cortland, and Jeffrey Michael Hickox, Middlefield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 13, 1995, Ser. No. 527,396
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—248 **3 Claims**



1. A vehicle signal connection arrangement comprising:

a male member having a body with first and seconds ends, the body mounting a plurality of leads extending therethrough, the body having a multi-dimensional axial inner hole with a first end and a second end with a shoulder separating the first and second ends of the hole, the shoulder having a generally oblong passage extending therethrough;

a female member having a body with first and second ends for mounting a plurality of leads extending therethrough to make contact with the leads of the male member, the female body having a multi-dimensional generally axial inner hole with a first end and a second end and a shoulder separating the first and second ends of the hole, the shoulder having a generally oblong passage extending therethrough;

locking components on said male and female members to releasably lock the male and female members together;

a mounting member pivotally mounting the female member and wherein said male member and female member are both constructed and arranged to accommodate a connector tool having an outer cylinder and an inner shaft being translatable with respect to the outer cylinder, the connector tool shaft having an oblong head at one end to be inserted through the oblong passage of both the male and female member and upon rotation of the shaft the connector tool head engages the shoulder of the female member and the outer cylinder engages the shoulder of the male member and upon retraction of the shaft, the male and female members are brought together so that said locking components on said male and female members engage each other.

5,667,399

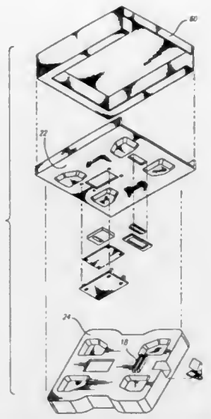
METHOD AND APPARATUS FOR MODULAR COMPONENT SYSTEM FOR EFFICIENT ADDITION OF PERIPHERAL COMPONENTS

Richard C. Jackson, San Jose; Raymond W. Riley, Santa Cruz; David Laituri, Palo Alto, and Bob Clary, Concord, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 13, 1995, Ser. No. 543,206
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—341 **18 Claims**

9. A primary component that may be added to a secondary component to create an integrated unit, said primary component comprising:

a housing, said housing further including a substantially planar surface, said planar surface including mounts for receiving a secondary component, said secondary component including a chassis;



a latch rotatably coupled to a rear part of said primary component, said latch for engaging a flange on said secondary component, said latch further comprising a lever portion for lifting said secondary component away from said primary component; and

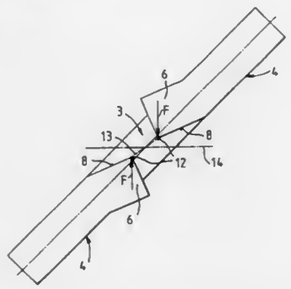
a coupler for electrically coupling said primary component to said chassis of said secondary component to provide a common electromagnetic shield for said primary and secondary components.

5,667,400

OBLIQUELY DISPOSED INSULATION DISPLACEMENT CONTACT

Andreas Janczak, and Dieter Gerke, both of Berlin, Germany, assignors to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Mar. 3, 1995, Ser. No. 398,114
Claims priority, application Germany, Mar. 29, 1994, 44 11 482.6
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—395 **15 Claims**



1. An insulation displacement contact disposed obliquely with respect to a direction of extension of a wire disposed in a contact position, for communication and data transfer, the insulation displacement contact comprising:

metal blade spring material including a base portion, a first contact leg connected to said base portion and a second contact leg connected to said base portion, said first contact leg and said second contact leg extending along a contact leg center line and being separated to define a contact slot, said first contact leg having a first leg angled portion and said second contact leg having a second leg angled portion, said first leg angled portion and said second leg angled portion

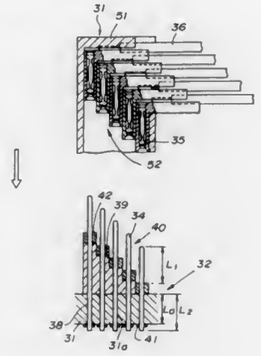
being angled outwardly away from said centerline with said first leg angled portion angled in one direction and said second leg angled portion angled in a direction opposite to said one direction, said first contact leg angled portion having a wire adjacent first contact leg outside face and having a first contact leg front face, said wire adjacent first contact leg outside face and said first contact leg front face cooperating to form a first linear contact edge defining a first contact zone on one side of said contact slot, said second contact leg angled portion having a wire adjacent second contact leg outside face and having a second contact leg front face, said wire adjacent second contact leg outside face and said second contact leg front face cooperating to form a second linear contact edge defining a second contact zone on another side of said contact slot.

5,667,401

CABLE CONNECTOR, CIRCUIT BOARD AND SYSTEM HAVING CIRCUIT BOARDS CONNECTED TOGETHER BY THE CABLE CONNECTOR

Kiyoshi Kuwabara; Tetsuro Yamada; Takeshi Nishiyama, and Masahiko Sakuraoka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1995, Ser. No. 455,532
Claims priority, application Japan, May 31, 1994, 6-118530
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—405 **19 Claims**



1. A cable connector comprising:
cables; and
jacks attached to ends of the cables,
the jacks having contacts connected to the cables, said contacts extending in a first direction substantially perpendicular to a second direction in which the cables extend from the jacks.

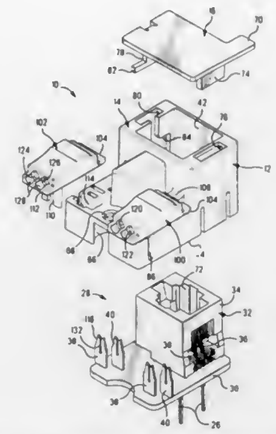
5,667,402

WIRE CARRIER FOR ELECTRICAL CONNECTOR MODULAR

Sam Denovich, 5310 A Manayunk Rd., Harrisburg, Pa. 17109, and Harry Milton Capper, 153 Kingswood Dr., Harrisburg, Pa. 17112

Filed Dec. 15, 1995, Ser. No. 573,175
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—409 **9 Claims**

1. A wire termination arrangement for a connector module of the type having terminals secured within a module housing, the arrangement comprising:
at least one wire carrier having at least one wire-receiving passageway thereinto from an exposed front face, a rearward end including a pivot section adapted to cooperate with a complementary pivot section of said module housing to move said wire carrier from a first or wire insertion position to a second or wire termination position, a depending projection proximate said front face disposed within a respective cavity of said module housing, cooperable with said module housing to limit pivoting movement of said wire carrier thus defining said first position, and at least one slot extending into a housing-adjacent face to receive thereinto a wire termination section of a corresponding at least one insulation displacement terminal as said wire carrier is moved from said first position to said second position, said slot intersecting said wire-receiving passageway,
whereby with an end of a conductor of the premise wiring inserted along a respective said wire-receiving passageway, said wire carrier is movable from said first position to said second position urging said wire into a wire-termination slot of said insulation displacement terminal thus terminating said conductor.

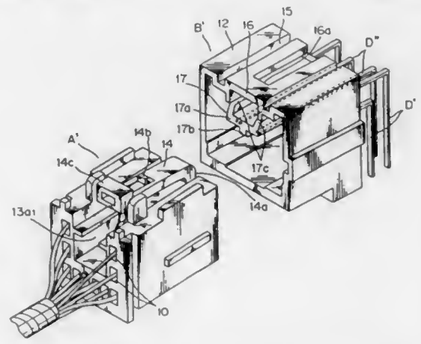


5,667,403

CONNECTOR ENGAGEMENT DETECTING APPARATUS

Masaru Fukuda; Eiji Fukuda, both of Shizuoka; Kazuyuki Shiraki, and Kouichi Shirouzu, both of Toyota, all of Japan, assignors to Yazaki Corporation, Tokyo, and Toyota Jidosha Kabushiki Kaisha, Aichi, both of Japan

Filed Dec. 21, 1994, Ser. No. 360,569
Claims priority, application Japan, Dec. 28, 1993, 5-337554
Int. Cl.[6] H01R *13/17*
U.S. Cl. 439—489 **10 Claims**



1. A connector engagement detecting apparatus comprising:

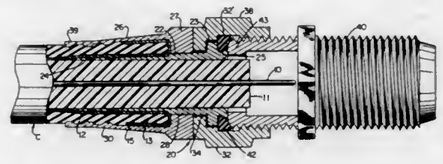
a first connector housing having a recess provided on an upper surface thereof to form a deflection space containing a bottom wall, a resilient lock arm disposed in said deflection space above said bottom wall, and a second connector housing having an engaging portion for receiving the resilient lock arm;
a short-circuit contact piece having a resilient body carried by the first connector housing, said short circuit contact piece containing at least one cantilevered elastic contact strip having an elastic short circuit contact portion positioned in the first connector housing,
said short-circuit contact portion of the elastic contact strip being spaced beneath the bottom wall of the deflection space,
a depressing portion of the short-circuit contact piece extending above the deflection space bottom wall in opposition to the resilient lock arm whereby the short circuit contact piece is engageable with said resilient lock arm and deflected in response to the deflection of the resilient lock arm,
a couple of terminal pins for detecting engagements provided on a supporting frame in the second connector housing and being disposed in opposition to the short-circuit contact piece, whereby, when the first and the second connector housings are completely engaged with each other, the short-circuit contact portion of said short-circuit contact piece makes contact with the couple of terminal pins for detecting engagement, and,
when the first and the second connector housings are incompletely engaged with each other, the resilient lock arm is deflected to displace the short-circuit contact piece to prevent said contact portion of said contact piece from making contact with the couple of terminal pins for detecting engagement.

5,667,405

COAXIAL CABLE CONNECTOR FOR CATV SYSTEMS

Randall A. Holliday, 10045 Mead Ct., Westminster, Colo. 80030

Continuation-in-part of Ser. No. 210,480, Mar. 21, 1994, Pat. No. 5,501,616. This application Jan. 29, 1996, Ser. No. 593,736
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—585 **15 Claims**



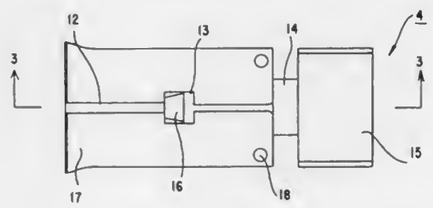
1. In a coaxial cable connector for connection to a terminal port wherein an annular connector sleeve assists in retaining an end of a coaxial cable, and a coupling member draws a first annular end of said sleeve into flush engagement with a correspondingly sized second annular end of said port, the improvement comprising:
said first annular end including a forwardly extending wall portion provided with a radially outwardly facing circumferential groove; and
an annular seal interposed between said groove and said coupling member, said seal being of a size greater than said groove and being partially compressed into said groove when said wall portion is drawn into flush engagement with said second annular end to establish an electrically conductive path therebetween.

5,667,404

CO-AXIAL CONNECTOR FOR HIGH-FREQUENCY CABLE

Tatsuo Kato, Tokyo, and Akihiko Ono, Kitaibaraki, both of Japan, assignors to SMK Corp., Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,934
Claims priority, application Japan, Aug. 4, 1994, 6-201535
Int. Cl.[6] H01R *9/05*
U.S. Cl. 439—578 **4 Claims**



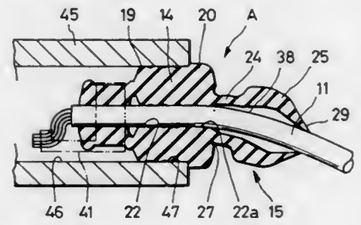
1. A co-axial connector for a high-frequency cable, comprising:
a center pin connected to a central conductor of a co-axial cable;
an insulating bushing supporting said center pin;
earth metal fittings having a cylindrical part which engages and supports said insulating bushing wherein said cylindrical part has an axial slit which is widened due to engagement with said insulating bushing supporting said center pin;
a barrel part connected to a rear portion of said earth metal fittings and securing an external conductor of said co-axial cable;
a molding cover located on said earth metal fittings' periphery; and
a shielding cylinder having a large diametric part and a small diametric part is located between said molding cover and said earth metal fittings such that said large diametric part covers the rear of said axial slit of said cylindrical part and fastens said cylindrical part centripetally and said small diametric part covers said barrel part.

5,667,406

WATERPROOF SEAL FOR CONNECTOR AND METHOD FOR FORMING SAME

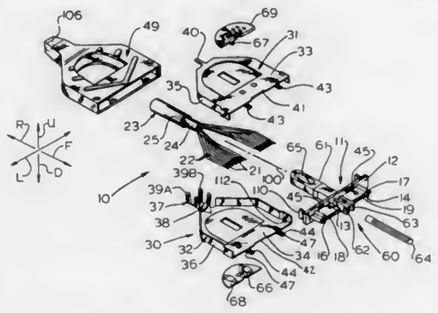
Masaaki Tabata, and Hiroyuki Hayashi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Jul. 10, 1995, Ser. No. 500,244
Claims priority, application Japan, Jul. 27, 1994, 6-195858; Aug. 22, 1994, 6-221031
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—587 **18 Claims**



1. A waterproof seal for sealing a cavity of a connector, comprising:
a main waterproof portion having an outer periphery contactable with an inner peripheral surface of the cavity; and
a wire embracing portion formed integrally with and extending from said main waterproof portion, said wire embracing portion shaped to embrace at least two axially spaced portions of an outer periphery of a wire, said wire embracing portion including a flexible tubular portion having a reduced thickness extending from said main waterproof portion and a thickened tubular portion extending from a distal end of said flexible tubular portion, said thickened tubular portion being bulged radially outwardly over a predetermined length to define a closed gap substantially between said two axially spaced portions.

5,667,407
SHIELDED CABLE PLUG
Juergen Frommer, Fellback; Manfred Illg, Weinstadt, and Manfred Schock, Dreieich, all of Germany, assignors to ITT Corporation, New York, N.Y.
Filed Jan. 11, 1996, Ser. No. 584,173
Int. Cl.[6] H01R *9/03*
U.S. Cl. 439—610 **9 Claims**



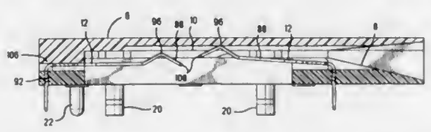
1. A shielded cable plug for attachment to a cable that has a cable shield, and for mating with the rear end of an IC card that has a laterally-extending width and that has a vertically-extending height which is less than half of said width, and that has a rear end with a central latch-receiving opening (**78**) and that has a pair of contact-receiving openings (**55**, **56**) lying on laterally opposite sides of said latch-receiving opening, and wherein said IC card has a sheet metal top cover portion (**130**), comprising:

a dielectric cable plug carrier (**11**) which has a laterally-extending plate portion (**12**), a latch portion that projects forward of said plate portion and that can project into said latch-receiving opening (**78**) of said card, and a pair of contact-holding plug parts (**13**, **14**) that project forward of said plate portion and can be inserted into said contact-receiving openings of said card;

a sheet metal shield case (**30**) which lies primarily rearward of said plate portion and that has a case rear portion that is electrically connectable to said cable shield;

said plate portion having a first slit (**45**), and said sheet metal case has a first tab (**43**) projecting forwardly through and forwardly beyond said slit to engage said card top cover portion.

5,667,408
SMART CARD CONNECTOR WITH PRELOADED DATA CONTACTS
John L. Broschard, III, Hershey; Edmund L. Jacobs, Harrisburg; Ronald E. Katzaman, Enola, and John T. Larkin, Jr., New Cumberland, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 348,019, Dec. 1, 1994. This application Apr. 28, 1995, Ser. No. 431,210
Int. Cl.[6] H01R *23/70*
U.S. Cl. 439—630 **18 Claims**



1. A connector for use with a smart card reader, comprising:

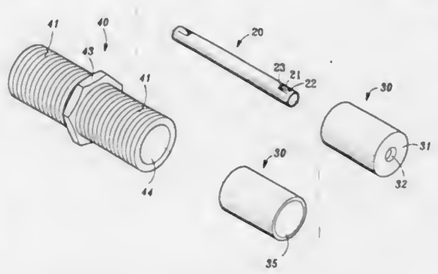
a housing including a base and a cover, said base including a plurality of spaced apart ribs defining channels therebetween;

a slot located between the base and the cover, and extending into the housing from one side and configured for insertion of a smart card into the slot;

data contacts positioned in the housing and protruding into the slot, the data contacts being positioned to engage a smart card upon insertion into the slot, each data contact comprising a resilient member having an upper portion extending to a free tip, the data contacts including at least one contact mounted at a rear of the housing with the free tip of the upper portion facing forwardly toward a card receiving mouth of said slot, said data contacts further including at least one contact mounted at a front of said housing with the free tip of the upper portion facing rearwardly toward said rear of said housing, at least one of the data contacts being preloaded by deflecting the at least one contact with a part of the housing such that the contact extends along a respective channel and a leading free tip of the contact is received in said channel such that each said preloaded data contact protrudes into the slot a first amount, and remaining data contacts protrude into the slot a second amount, the first amount being less than the second amount; and

said cover includes cover ribs for engaging forwardly racing data contacts to deflect the free tip of said at least one the forwardly facing contact into the channels, thereby preloading said at least one forwardly facing contact to prevent said free tip of said at least one contact from being engaged by a loading edge of said card as said card is received in said mouth of said slot and moved rearwardly into said slot.

5,667,409
STRUCTURE IMPROVEMENT FOR THE CONNECTOR OF COAXIAL CABLE
Shen-Chia Wong, and Cheng Sun Lan, both of No. 10, Lane 121, Li-Der Rd., Peito District, Taipei, Taiwan
Filed Dec. 28, 1995, Ser. No. 579,214
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—654 **4 Claims**



1. A connector for a coaxial cable comprising:

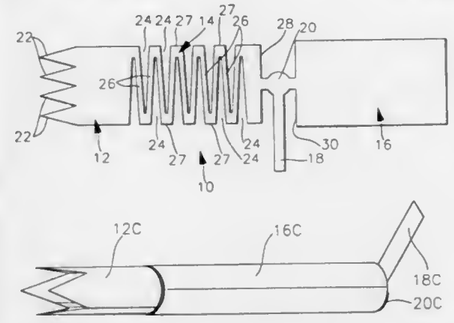
a connector body with a channel therein,

a pair of cylindrical insulation components that cover an interior of said connector body, each said insulation component includes a socket in an outer end thereof,

a tubular contact component with a plurality of holes punched inward such that one end of material punched inward remains connected to said contact component, thereby forming an inclined plane and a cambered surface; such that

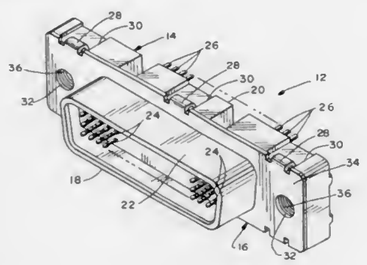
pairs of said inclined planes and said cambered surfaces form at least one partially closed opening to receive a central wire of the coaxial cable, said opening is circular in shape and provides a planar contact surface for said central wire.

5,667,410
ONE-PIECE COMPLIANT PROBE
Charles J. Johnston, Walnut, Calif., assignor to Everett Charles Technologies, Inc., Pomona, Calif.
Filed Nov. 21, 1995, Ser. No. 561,395
Int. Cl.[6] G01R *1/06*
U.S. Cl. 439—700 **25 Claims**



1. A one-piece contact probe comprising a plunger member and a compliant spring section contained in and guided for spring biased axial travel in a tubular outer barrel, in which the plunger member, spring section and barrel are jointly formed of a single integral spring metal piece.

5,667,411
ELECTRICAL CONNECTOR HAVING TERMINAL ALIGNMENT MEANS
Michael O'Sullivan, Willowbrook, and James A. Wetter, Hoffman Estates, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Sep. 8, 1995, Ser. No. 525,454
Int. Cl.[6] H01R *13/502*
U.S. Cl. 439—701 **7 Claims**



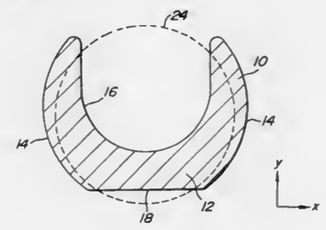
1. An electrical connector, comprising:

a dielectric housing having a cavity for receiving a plurality of terminal modules;

a plurality of terminal modules each including a dielectric insert receivable in said cavity to define a side-by-side array of modules, each insert being overmolded about a plurality of terminals to rigidly fix the terminals with male portions of the terminals projecting from the housing, the male portion of each terminal including an elongated blade, and the blade terminating in a distal contact end twisted out of the plane of the blade; and

auxiliary alignment means on the housing immediately adjacent the cavity for embracing and maintaining proper spacing and alignment of the male portions of the terminals, said auxiliary alignment means comprising apertures in the housing communicating with the cavity, said apertures having opposing side walls embracing and engaging opposite sides of the male portions of respective ones of the terminals and including an oblique portion intersecting said opposing side walls for passage therethrough of said twisted distal contact end of the blade of said terminals.

5,667,412
PRESS-IN CONTACT
Makoto Takahashi, and Yukio Saito, both of Tokyo, Japan, assignors to DDK Ltd., Japan
Filed Jul. 10, 1995, Ser. No. 499,970
Claims priority, application Japan, Jul. 15, 1994, 6-186273
Int. Cl.[6] H01R *13/41*
U.S. Cl. 439—751 **3 Claims**



1. A press-in contact composed of a connection portion to be connected to a cable or a circuit on a circuit board, a press-fitting portion to be press-fitted in and fixed to a cylindrical through-hole of the printed circuit board, and a contact portion to be brought into contact with a contact of a mating connector,

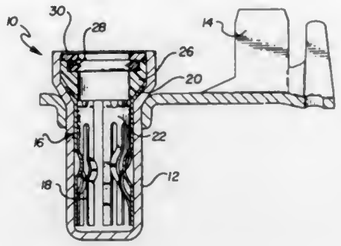
wherein the cross-section of said press-fitting portion of the press-in contact includes top ends, a narrowed substantially U-shaped inner edge having a circular bottom and substantially parallel, substantially straight sides, and an outer periphery consisting of two arc parts and a straight part therebetween, said arc parts each extending from said straight parts to the respective top end, said circular part of said U-shaped inner edge at its bottom and said two arc parts of said outer periphery being in eccentric relation, and wherein the thickness of the press-fitting portion reduces from the maximum thickness at the circular bottom toward the top ends with a progressively decreasing rate, and a circumferential surface of said arc parts of said outer periphery contacting the through-hole of said printed circuit board through its substantially whole length.

5,667,413
SOCKET-TYPE ELECTRICAL CONNECTOR
Michael L. Trafton, Dearborn, Mich., assignor to Alcoa Fujikura Ltd., Brentwood, Tenn.
Filed Nov. 13, 1995, Ser. No. 556,494
Int. Cl.[6] H01R *13/52;13/187*
U.S. Cl. 439—843 **16 Claims**

1. A female electrical connector comprising:

a housing having an open end, said housing defining an interior surface, a first portion of which encloses a generally cylindrical interior volume;

a contact cage disposed within, and in electrical communication with, said housing and including a contact portion, a base portion, and a support portion which is joined to said contact portion and said base portion, said contact portion comprising a cylindrical member, disposed within, and coaxially aligned with, said cylindrical interior volume, and including a plurality of resilient contact blades, each blade having a first end thereof which is joined to the support portion of said contact cage;



a retainer configured to fit into said housing and to urge the base portion of said contact cage into engagement with the interior surface of said housing so as to retain said contact cage therein; and

an elastomeric o-ring seal supported in said housing, in coaxial alignment with said cylindrical interior volume, by said retainer.

5,667,414

LOCKABLE FLAT PLUG SLEEVE FOR AN ELECTRICAL CONNECTOR

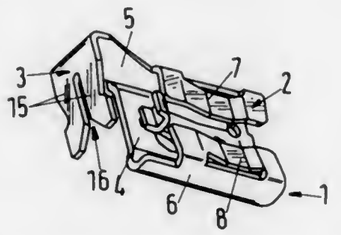
Sami Karacora, Wuppertal, Germany, assignor to Stocko Metallwarenfabriken Henkels & Sohn GmbH & Co., Wuppertal, Germany

Filed Sep. 29, 1995, Ser. No. 536,089

Claims priority, application Germany, Oct. 6, 1994, 9416056 U

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—849 **5 Claims**



1. A plug connector for contacting a device having a plurality of contacts and comprising flat plugs; said plug connector comprising:

a combination of a lockable flat plug sleeve and an insulation displacement contact;

a flat plug;

said lockable flat plug sleeve comprising a bottom plate and two upwardly extending sidewalls connected to opposite sides of said bottom plate and having a longitudinal extension parallel to said opposite sides of said bottom plate;

each one of said sidewalls having a free upper edge bent so as to extend toward one another;

said bottom plate, said sidewalls, and said free upper edges delimiting a compartment for receiving said flat plug;

said bottom plate comprising a locking member and said flat plug comprising a cutout;

said locking member engaging said cutout for locking said flat plug in said flat plug sleeve upon insertion of said flat plug into said flat plug sleeve;

said flat plug sleeve having a release device for releasing said locking member from engagement with said cutout;

one of said sidewalls having an elongated end projecting past said bottom plate in a direction of said longitudinal extension; said elongated end being bent so as to have a free end extending at a right angle to said sidewall, wherein said free end is said insulation displacement contact and has a forked spring with an insertion slot.

5,667,415

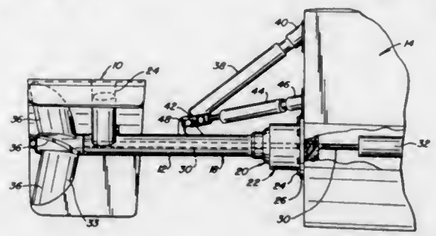
MARINE OUTDRIVE WITH SURFACE PIERCING PROPELLER AND STABILIZING SHROUD

Howard M. Arneson, 18 Sagebrush Ct., San Rafael, Calif. 94901

Filed Jun. 7, 1995, Ser. No. 482,532

Int. Cl.[6] B63H *1/28*

U.S. Cl. 440—66 **84 Claims**



1. In a marine outdrive for a boat having a transom and tubular propeller shaft mount and a shaft received in the mount, the shaft having a forward end and a rear end, the combination with said mount of:

a shroud;

a propeller adapted to be secured to the rear end of the shaft for rotation relative to the mount; and

a mount with the shroud at least partially surrounding the propeller when the propeller is mounted on the shaft and when the shaft is in the tubular propeller shaft mount, the shroud having an inner surface spaced outwardly from the rotational envelope of the ends of the propeller to form a channel with said inner surface, the shroud having a tangential portion substantially parallel to a tangent of said rotational envelope, said channel having an upstream end, a downstream end and an intermediate part, said channel progressively decreasing in width from said tangential portion of the shroud as said intermediate part of the channel is approached from said upstream end and said channel progressively increasing in width as the downstream end of the channel is approached from said intermediate part.

5,667,416

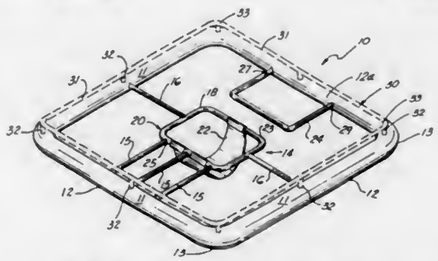
FLOTATION DEVICE AND SWIMMING AID

Terry D. Barth, 6720 East Bay Blvd., Navarre, Fla. 32566

Filed Jan. 31, 1996, Ser. No. 594,730

Int. Cl.[6] B63C *9/08*

U.S. Cl. 441—130 **10 Claims**



1. A flotation device for supporting a person upon a body of water comprising:

(a) outer buoyancy members interconnected to form a continuous outer enclosure for surrounding said person;

(b) a plurality of elongated braces each having one end secured to one of said outer buoyancy members and extending inwardly therefrom;

(c) a seat assembly secured to the opposite ends of said elongated braces and thereby surrounded by said outer enclosure, said seat assembly comprising a continuous inner enclosure with a seat secured thereto; and,

(d) rigid hand rest means spaced from said inner enclosure of said seat assembly and secured to at least one of said outer buoyancy members and extending inwardly thereof and generally planar with said inner enclosure.

5,667,417

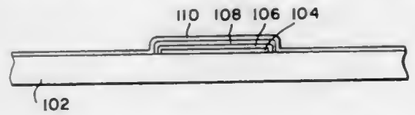
METHOD FOR MANUFACTURING AN ELECTROLUMINESCENT LAMP

William C. Stevenson, 5916 Las Virgines Rd., Sulte 687, Calabasas, Calif. 91302

Filed Feb. 22, 1995, Ser. No. 393,084

Int. Cl.[6] H05B *33/10*

U.S. Cl. 445—24 **18 Claims**



1. A method for manufacturing an electroluminescent lamp, said method comprising the steps of:

forming a capacitive electrode from an indium tin oxide plated conductive plastic film;

applying a layer of electroluminescent phosphor ink to said capacitive electrode, said electroluminescent phosphor ink for precisely defining an area of illumination;

applying a layer of conductive indium tin oxide ink to said layer of electroluminescent phosphor ink; and

applying an insulating coating to a surface of said conductive indium tin oxide ink.

5,667,418

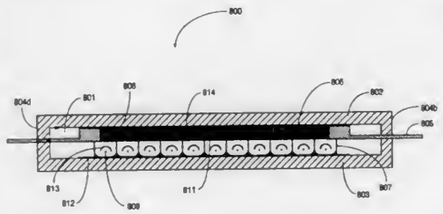
METHOD OF FABRICATING FLAT PANEL DEVICE HAVING INTERNAL SUPPORT STRUCTURE

Theodore S. Fahlen, San Jose; Robert M. Duboc, Jr., Menlo Park, and Paul A. Lovoi, Saratoga, all of Calif., assignors to Candescent Technologies Corporation, San Jose, Calif.

Division of Ser. No. 12,542, Feb. 1, 1993, Pat. No. 5,589,731, which is a continuation-in-part of Ser. No. 867,044, Apr. 10, 1992, Pat. No. 5,424,605. This application May 24, 1995, Ser. No. 449,036

Int. Cl.[6] H01J *9/26;9/18*

U.S. Cl. 445—25 **24 Claims**



1. A method comprising the following steps for fabricating a flat panel device:

forming a spacer as a laminate of a plurality of layers of at least one of ceramic, glass-ceramic, ceramic-reinforced glass, devitrified glass, and metal coated with electrically insulating material;

placing the spacer between a backplate structure and a faceplate structure; and

connecting the backplate structure to the faceplate structure to form an enclosure that encases the spacer such that the spacer supports the backplate and faceplate structures against forces acting in a direction towards the enclosure.

5,667,419

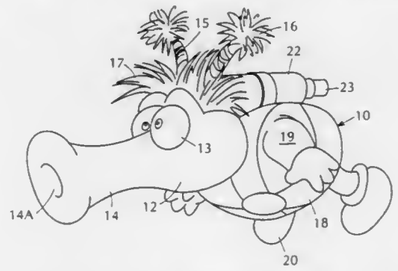
WATER-PISTOL AND ANIMAL FIGURE ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 554,259, Nov. 6, 1995, Pat. No. 5,605,485, which is a continuation-in-part of Ser. No. 431,834, May 1, 1995, Pat. No. 5,564,961. This application Feb. 26, 1996, Ser. No. 607,114

Int. Cl.[6] A63H *3/00;33/30;3/18;* **B05B** *1/00*

U.S. Cl. 446—72 **9 Claims**



1. A water-pistol and figure assembly comprising:

A. a figure having a head provided with an open mouth, a body joined to the head having an internal cavity communicating with the head and with an access opening in the body; and

B. a water pistol having a working mechanism concealed in the cavity of the figure, said pistol having a barrel that is socketed in the head and is provided with a nozzle in alignment with the open mouth, said pistol having a hand grip provided with a trigger which when the grip is grasped by a player's hand extended into the cavity through the access opening in the body, the figure then appears to be held by the player, and when the player pulls the trigger with a finger of his hand, water is then ejected from the nozzle and spit out of the open mouth of the figure, said pistol being provided with a water reservoir which is on the outside of the body of the figure and a pump which when the trigger is pulled, then draws water from the reservoir and pumps it into the barrel.

5,667,420

ROTATING VEHICLE TOY

Steven M. Menow, Langhorne, Pa.; Jonathan Adam Jaffe, Voorhees, N.J.; Patrick J. Sannito, West Deptford, N.J., and Warren E. Bosch, Florence, N.J., assignors to Tyco Industries, Inc., Mt. Laurel, N.J.

Filed Jan. 25, 1994, Ser. No. 186,715

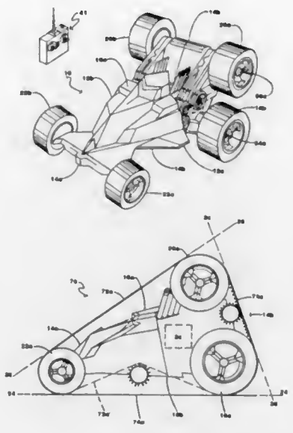
Int. Cl.[6] A63H *17/14;30/04*

U.S. Cl. 446—433 **25 Claims**

1. A vehicle toy comprising:

first and second lateral sides, front and rear ends, and an outer perimeter;

at least three pairs of wheels, each pair having a common rotational axis, the wheels of each wheel pair being opposed to one another on the first and second lateral sides, the wheels on each lateral side of the vehicle being arranged in a polygon



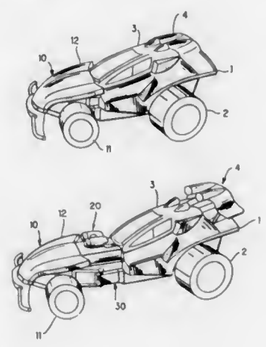
at the outer perimeter, such that adjoining pairs of the wheels define planes which are mutually transverse to one another and which entirely circumscribe the outer perimeter of the vehicle

wherein two wheel pairs are located proximal the rear end, and one wheel pair is located proximal the front end, such that the transverse planes form a triangle;

wherein the vehicle has a center of gravity located in front of the rear wheel pairs and proximal the rear end; and

wherein the vehicle can be accelerated sufficiently rapidly by the motor means and wheels to rotate the vehicle in a first direction from one of the planes to an adjacent one of the planes.

5,667,421
TOY VEHICLE
Tsugio Uetake, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1995, Ser. No. 579,341
Claims priority, application Japan, Dec. 28, 1994, 6-328534
Int. Cl.[6] A63H *17/26;17/39*
U.S. Cl. 446—470 **6 Claims**



1. A toy vehicle comprising:

a front frame;

a plurality of front tires rotatably attached to said front frame;

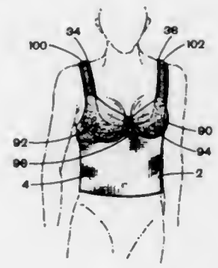
a rear frame retractably mounted to said front frame, wherein said retractable mounting allows contraction and expansion action of said toy vehicle;

a plurality of rear tires rotatably attached to said rear frame;

a tail spoiler,said tail spoiler being movably attached to said rear frame; and

means for moving said tail spoiler up and down with respect to said rear frame, comprising an elastic member, wherein said elastic member urges said tail spoiler away from said rear frame.

5,667,422
AN UNDERGARMENT TO BE WORN UNDERNEATH A BRASSIERE
Doris Diann Erwin, Houston, Tex., assignor to The Undrbra, Inc., Livingston, Tex.
Filed Apr. 17, 1995, Ser. No. 425,981
Int. Cl.[6] A41B *9/06;9/16*
U.S. Cl. 450—30 **4 Claims**



1. A method to provide relief from chafing, pinching, binding and squeezing when wearing a brassiere said method comprising

positioning an undergarment on an upper body of a wearer,

said undergarment being formed from a tubular fabric material defining a upper opening, a lower opening, a pair of arm holes defined by arm hole seams, and a pair of straps, each strap being positioned between said upper opening and one of said pair of armholes,

wherein a neck hole is the upper opening, said neck hole being defined by a neck hole seam having

a front seam portion positioned on a front side of the undergarment, and

a back seam portion positioned on a back side of the undergarment,

wherein the front seam portion is generally U shaped when said undergarment is worn and a lowermost portion of the front seam portion is positioned at least inches below the top of the sternum of the wearer; and

wherein the back seam portion is generally U shaped and when said undergarment is worn a lowermost portion of the back seam portion is positioned at least 10 inches below the seventh cervical vertebrae of the wearer;

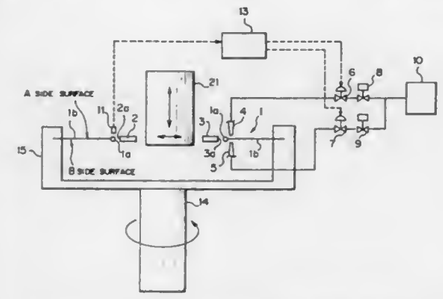
and wherein a lowermost portion of each arm hole seam is positioned at least about 3 inches below the arm pit when said undergarment is worn;

positioning a brassiere over an upper portion of the undergarment;

securing a front of the brassiere to said front side of said undergarment employing a hook positioned on said front side of said undergarment; and

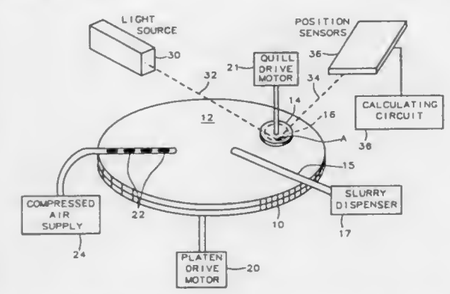
securing straps of said brassiere to an outerside of said straps of said undergarment by employing a securing means positioned on said outerside of said straps.

5,667,423
METHOD AND APPARATUS FOR SLICING WORKPIECE
Kirio Itoi, Urawa, Japan, assignor to Shin-Etsu Handotal Co., Ltd., Tokyo, Japan
Filed Mar. 21, 1996, Ser. No. 620,032
Claims priority, application Japan, Mar. 25, 1995, 7-091531
Int. Cl.[6] B28D *1/04*
U.S. Cl. 451—5 **10 Claims**



1. A method for slicing a workpiece in which the workpiece is sliced into thin plates by a saw blade having a cutting edge at a peripheral margin, while a coolant is supplied to both side surfaces of the blade comprising the following steps of: detecting deflection of the blade thereof and regulating a coolant film thickness on a first side surface of the blade, to which side the blade is deflected, so as to be thinner than that on a second side surface thereof, wherein the step of regulating includes blowing compressed air to the first side surface, a stream of said compressed air being directed to a spot on the cutting edge distant from an intersection of the cutting edge and the workpiece.

5,667,424
CHEMICAL MECHANICAL PLANARIZATION (CMP) END POINT DETECTION APPARATUS
Yang Pan, Singaporee, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore
Filed Sep. 25, 1996, Ser. No. 719,346
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—6 **18 Claims**



13. A method for performing the process of CMP polishing comprising the steps of:

a) mounting of a workpiece upon a workpiece carrier and rotating the workpiece;

b) rotating a polishing pad that is mounted upon a platen;

c) dispensing an abrasive slurry upon said polishing pad;

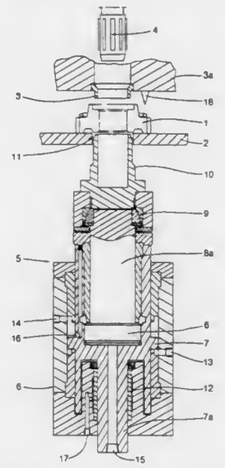
d) lowering the workpiece to the surface of the polishing pad;

e) directing a beam of light to the workpiece carrier;

f) detecting positional information of a reflected beam of light on a position sensor, wherein the position of the reflected beam of light will vary as the magnitude and frequency of a vibrating motion in the workpiece rotating on the polishing pad; and

g) calculating of a planarization end point by evaluating the change in the magnitude and frequency of the positional information and a predetermined relationship between the planarization end point and the vibrating motion of said workpiece.

5,667,425
DEVICE FOR CENTERING AND CLAMPING A COMPONENT WITH A VIEW TO LAPPING IT USING AN EXPANSION LAP
Jean Claude Pineau, Chailly en Bie, and Richard Bonachera, Vincennes, both of France, assignors to Societe Procedes Machines Speciales S.P.M.S., Evry Cedex, France
Filed Feb. 23, 1995, Ser. No. 393,537
Claims priority, application France, Feb. 28, 1994, 94 02256
Int. Cl.[6] B24B *19/11;1/00;51/00*
U.S. Cl. 451—27 **7 Claims**



1. A method of lapping workpieces of varying axial thicknesses with an expansion lap using a device having a fluid cylinder, a first piston mounted in said fluid cylinder having a first stroke including a first advanced position, a first retracted position and an intermediate position, first advancing means communicating with said first piston for advancing said first piston, a second piston concentrically mounted in said first piston having a second stroke including a second advanced position and a second retracted position and said second stroke being substantially shorter than said first stroke, second advancing means communicating with said second piston for advancing said second piston, a fixed stop, a workpiece rest for supporting a workpiece and positioned between said workpiece and said second cylinder, anti-rotation means in contact with said fixed stop for preventing angular movement of said workpiece, retraction means communicating with said first and said second pistons for retracting said first and said second pistons, blocking means for supporting said first piston when said retracting means is retracting said second piston into said position other than said second advanced position, and means for controlling said first advancing means, said second advancing means and said blocking means, the method comprising:

clamping said workpiece between said fixed stop and said workpiece rest by advancing said first piston to said intermediate position and advancing said second position to said second advanced position;

blocking said first piston relative to said fluid cylinder with said blocking means;

unclamping said workpiece by retracting said second piston to a position other than said second advanced position;

engaging said anti-rotation means with said workpiece to prevent angular movement of said workpiece;

centering said workpiece relative to said expansion lap; and

reclamping said workpiece, now centered relative to said expansion lap, between said fixed stop and said workpiece rest by advancing said second piston to said second advanced position.

5,667,426

METHOD OF POLISHING THE END FACE OF A FERRULE ON AN OPTICAL CONNECTOR

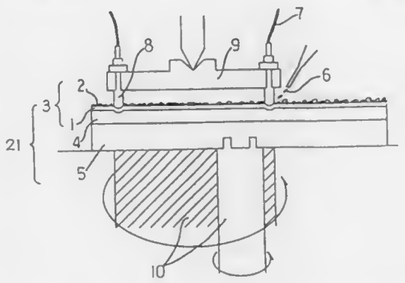
Kohji Minami; Hiroyuki Tokita; Keiichi Ishiyama, and Nobuo Suzuki, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Sep. 28, 1995, Ser. No. 535,906

Claims priority, application Japan, Sep. 28, 1994, 6-233879

Int. Cl.[6] B24B *451/57*

U.S. Cl. 451—41 **19 Claims**



1. A method of polishing the end face of a ferrule on an optical connector, comprising: polishing the end face of the ferrule including an optical fiber by sliding the end face of the ferrule on the surface of an abrasive sheet film comprised of a resin film having a layer of alumina type particles disposed thereon while supplying an abrasive comprised of colloidal particles of SiO_2 onto the surface of the abrasive sheet film.

5,667,427

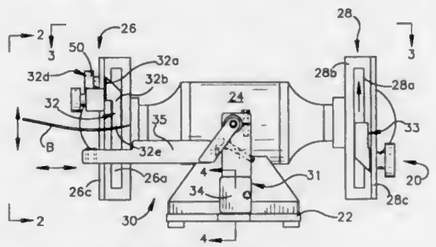
METHOD AND APPARATUS FOR SHARPENING CURVED BLADES

Forrest A. Airhart, Huron, and Jeffrey Alan Whited, Amherst, both of Ohio, assignors to Bettcher Industries, Inc., Birmingham, Ohio

Filed Sep. 20, 1995, Ser. No. 530,840

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—45 **11 Claims**



1. A sharpener for blades comprising:

a movable blade-sharpening surface,

a stationary blade guide supported adjacent the surface, and

a movable support for a blade, said support comprising pivotally interconnected first and second links and a blade holder,

the first link pivotably supported at a location fixed with respect to the blade guide,

the second link supporting the blade holder adjacent a distal end of the second link, the second link pivotally interconnected to the first link for movement in two different planes with respect to the first link, the two links together supporting the blade holder for movement in first directions toward and away from the blade-sharpening surface, in second directions transverse to the first directions, and in third directions transverse too the first and second directions, and

said blade holder being pivotably supported on the second link,

the links and pivots being located and arranged to support the blade holder adjacent the blade guide for movement in three substantially mutually perpendicular directions relative to the blade guide and blade-sharpening surface.

5,667,428

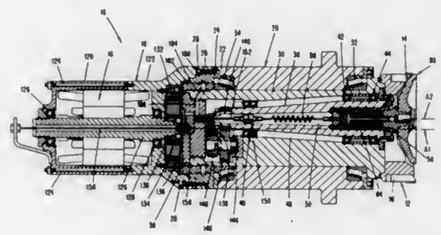
APPARATUS FOR CUTTING AND GRINDING A WORKPIECE

Garfield R. Lunn, 455 Dalhousie St., Amherstburg, Ontario, Canada, N9V 1X4

Filed Oct. 18, 1995, Ser. No. 544,868

Int. Cl.[6] B24B *5/00;55/02;* **B26D** *1/14;9/00*

U.S. Cl. 451—70 **14 Claims**



1. An apparatus for performing cutting and grinding operations on a workpiece, comprising:

a hollow outer spindle mounted to be rotatably driven about a first axis of rotation;

a cutting ring mounted on a front end of said outer spindle for carrying cutters rotatable about said first axis;

an inner spindle disposed within said outer spindle and mounted to be rotatably driven about a second axis extending parallel to said first axis and offset radially there from; and a grinding wheel mounted on a front end of said inner spindle, said grinding wheel including a front grinding surface rotatable about said second axis and orbitable about said first axis.

5,667,429

FLOOR SURFACE BLASTING APPARATUS

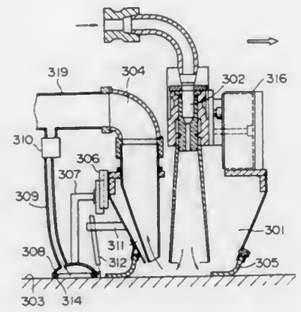
Kiyoshi Uchida; Yoshikazu Miyachi, both of Nagoya; Kengo Hamanaka; Yoichiro Ban, both of Tokyo; Nagio Minami, and Tadashi Nobushige, both of Hiroshima, all of Japan, assignors to Chubu Electric Power Company, Inc., Aichi-ken, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Division of Ser. No. 182,235, Jan. 18, 1994, Pat. No. 5,435,773, which is a division of Ser. No. 935,179, Aug. 26, 1992, Pat. No. 5,339,573. This application Mar. 31, 1995, Ser. No. 414,936

Claims priority, application Japan, Aug. 27, 1991, 3-068014; Aug. 27, 1991, 3-214908; Sep. 18, 1991, 3-267257; Sep. 18, 1991, 3-267258; Mar. 18, 1992, 4-014575

Int. Cl.[6] B24C *3/06*

U.S. Cl. 451—87 **20 Claims**



1. A floor surface blasting apparatus comprising:

a blast head which incorporates a suction nozzle for recovering blasting material and dust produced by blasting; and

at least one auxiliary suction nozzle which is installed at a periphery of said blast head for recovering and receiving therein the blasting material and dust leaking outside of a lower end of said blast head.

5,667,430

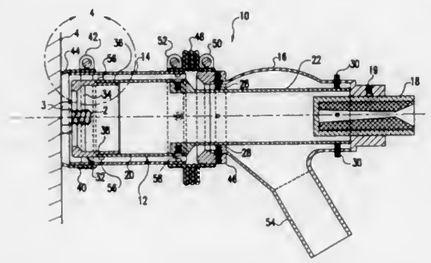
BOLT HEAD BLASTER

William S. McPhee, Arlington, and Anh Nguyen, Herndon, both of Va., assignors to LTC Americas Inc., Sterling, Va.

Filed Aug. 25, 1995, Ser. No. 519,163

Int. Cl.[6] B24C *1/00*

U.S. Cl. 451—87 **17 Claims**



1. A blast head for a vacuum-blasting machine cleaning sides of elements projecting from larger surfaces, comprising:

a vacuum jacket for engaging a surface from which an element projects, said vacuum jacket being connected to a vacuum source to conduct particles away from the surface;

a blast jacket positioned within said vacuum jacket, said blast jacket having an open end for receiving the projecting elements;

means for sending particles under pressure in predetermined directions through said blast jacket and into engagement with the projecting elements; and

means for directing particles under pressure against sides of the projecting elements lying at angles relative to a plane transverse to the direction in which particles are sent through the blast jacket.

5,667,431

DISHWASHER MACHINE

Bo S. Mortin, Malmö, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

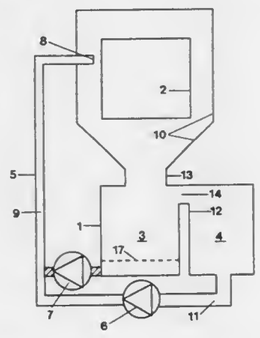
PCT No. PCT/SE93/00315, § 371 Date Dec. 7, 1994, § 102(e) Date Dec. 7, 1994, PCT Pub. No. WO93/20739, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 8, 1993, Ser. No. 313,320

Claims priority, application Sweden, Apr. 8, 1992, 9201117

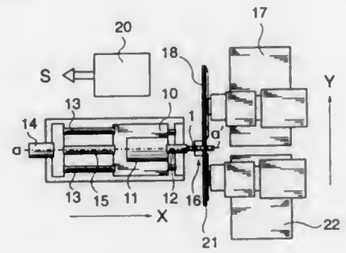
Int. Cl.[6] B24C *3/04*

U.S. Cl. 451—88 **21 Claims**



1. A dishwasher comprising a dishwashing tank with a compartment for receiving articles to be washed, and a magazine provided below said compartment for receiving washing liquid and blasting agent, the washing liquid and the blasting agent having different densities; and a conduit which extends between said magazine and said compartment, said conduit having an outlet end provided with a nozzle arrangement which is disposed in the compartment, a pump connected in said conduit for delivering washing liquid and blasting agent under elevated pressure to said nozzle arrangement so that washing liquid and blasting agent are discharged from the nozzle arrangement and impinge upon the articles to be washed, said compartment having an outlet through which the washing liquid and blasting agent subsequently drop into the magazine, a partition dividing the magazine into a first chamber situated straight below the outlet from said compartment and adapted to receive washing liquid and blasting agent, and a second chamber situated beside the outlet, a passage communicating the first chamber with the second chamber, said passage due to the different densities of the washing liquid and the blasting agent permitting only washing liquid to flow from the first chamber to the second chamber; said pump having a suction side connected to the second chamber; and a supply means operatively independent of the pump for supplying blasting agent between the first chamber and the conduit in order to supply blasting agent to the washing liquid, said supply means for supplying blasting agent being operable to force a mixture of blasting agent and washing liquid from the first chamber into the conduit.

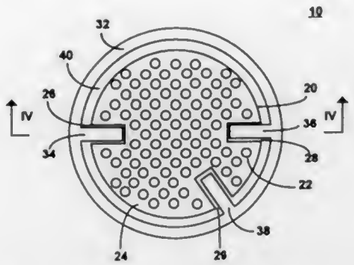
5,667,432
GRINDING MACHINE
Michel Rollier, Neuchatel, Switzerland, assignor to Rollomatic S.A., Le Landeron, Switzerland
Continuation of Ser. No. 293,096, Aug. 19, 1994, abandoned. This application May 22, 1996, Ser. No. 651,415
Claims priority, application Switzerland, Aug. 24, 1993, 2509/93-0
Int. Cl.[6] B24B *5/00;5/18*
U.S. Cl. 451—242 **4 Claims**



1. A grinding machine comprising:
a framework;
a head stock positioned on said framework, said head stock including a spindle means for holding a part to be machined, said spindle means also for rotating the part about a part rotation axis;
a support means positioned on said framework spaced from said headstock in a direction of said part rotation axis, said support means for supporting the part, said support means includes a sustaining foot connected to said framework, said sustaining foot defining a notch for receiving the part, said support means also including a pressure roller means positioned on substantially an opposite side of the part from said sustaining foot and for applying force to the part, said pressure roller means is rotatable about a pressure axis substantially parallel to said part rotation axis;
grinding means positioned on a grinding side of said support means substantially opposite said headstock along said part rotation axis, said grinding means for grinding a portion of the part extending from said support means in a direction of said part rotation axis, said grinding means includes a grinding stone rotatable about a grinding axis substantially parallel to said part rotation axis, a first line connecting said part rotation axis and said pressure axis is angularly spaced by approximately 135 degrees from a second line connecting said part rotation axis and said grinding axis;
headstock feed means for moving said headstock along said framework and along said part rotation axis to extend additional portions of the part from said support means.

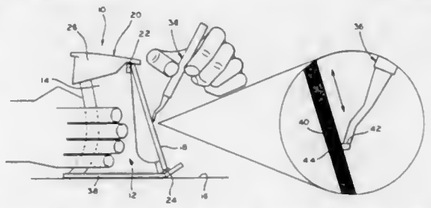
5,667,433
KEYED END EFFECTOR FOR CMP PAD CONDITIONER
Thomas G. Mallon, Santa Clara, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Filed Jun. 7, 1995, Ser. No. 481,799
Int. Cl.[6] B24B *5/00*
U.S. Cl. 451—287 **11 Claims**

1. A conditioner for being rotated relative to, and for being applied to, a polishing pad to condition the polishing pad for chemical mechanical polishing of a semiconductor wafer, comprising:
an abrasive conditioning implement having an abrasive front surface for being rotated in a rotation plane and applied to the polishing pad to condition the polishing pad, the abrasive conditioning implement having a back surface disposed in a spaced apart, oppositely facing, relationship with the abrasive front surface;



an abrasive conditioning implement holder system for receiving and holding the abrasive conditioning implement with the back surface oriented toward the abrasive conditioning implement holder system and exposing the front surface for conditioning the polishing pad, the abrasive conditioning implement holder system for rotating the abrasive conditioning implement in the rotation plane so that the front surface remains in the rotation plane during the rotation;
an interlock system for locking the abrasive conditioning implement to the abrasive conditioning implement holder system to prevent relative rotation between the abrasive conditioning implement and the abrasive conditioning implement holder system while the abrasive conditioning implement is being rotated, and
the abrasive conditioning implement holder system and the interlock system having;
a holder for holding the abrasive conditioning implement;
a key formed in the periphery of one of the abrasive conditioning implement and the abrasive conditioning implement holder system;
a key way formed in the periphery of the other of the abrasive conditioning implement and the abrasive conditioning implement holder system and being configured to matingly receive the key when the abrasive conditioning implement is being held by the abrasive conditioning implement holder system; and
a magnet disposed between the holder and the abrasive conditioning implement, and having a key way configured to matingly receive the key, for holding the abrasive conditioning implement to the holder.

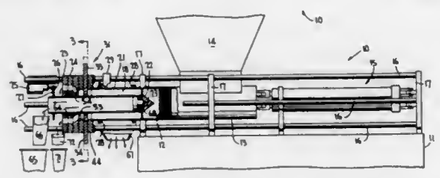
5,667,434
DENTAL INSTRUMENT SHARPENING DEVICE
John H. Prusaitis, 3214 Greenbriar Dr., Glenview, Ill. 60025, and Timothy J. Prusaitis, 7012 Church St., Morton Grove, Ill. 60053
Division of Ser. No. 299,250, Aug. 31, 1994, Pat. No. 5,487,693, which is a continuation of Ser. No. 6,137, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 826,139, Jan. 27, 1992, abandoned. This application Dec. 6, 1995, Ser. No. 567,890
Int. Cl.[6] B24D *15/06*
U.S. Cl. 451—552 **11 Claims**



1. A sharpening device for a dental instrument having a handle and a tip formed to have a cutting edge defined by a face and lateral side, comprising:

a base supporting a sharpening stone and having a generally planar support surface to be placed in a fixed position on a generally horizontal surface to cause said sharpening stone to be disposed in at least two distinct fixed angular positions relative to said generally planar support surface and also having a hand grip portion integral with and extending generally upwardly from said generally planar support surface;
said base including stone retention means for removably supporting and retaining said sharpening stone in either of said two distinct fixed angular positions relative to said generally planar support surface such that said hand grip portion can be held with one hand and said handle of said dental instrument can be held with the other hand while placing said lateral side of said tip of said dental instrument into direct contact with said sharpening stone with said tip of said dental instrument oriented such that said face is disposed parallel to said generally horizontal surface and in a horizontal plane without regard to the angle of said handle relative to said sharpening stone for thereafter imparting relative movement between said tip of said dental instrument and said sharpening stone to sharpen said dental instrument.

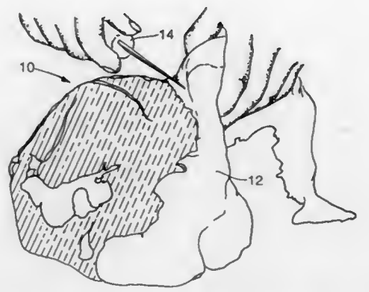
5,667,435
METHOD AND APPARATUS FOR SEPARATING MEAT FROM BONES
Dean E. Baughman, and Thomas C. Goldston, both of Lehi, Utah, assignors to Beehive, Inc., Sandy, Utah
Filed Apr. 16, 1996, Ser. No. 633,044
Int. Cl.[6] B02C *23/16;* **A22C** *17/00*
U.S. Cl. 452—138 **24 Claims**



1. A method for separating meat from bones by utilizing a press having an inner cylindrical perforated separation chamber surrounded by an outer cylindrical perforated separation chamber coaxially disposed and defining with said inner chamber an annular pressure chamber, the inner and outer chambers being rotatable about a common axis and each having openings extending through the walls thereof, and means for closing a discharge end of said pressure chamber, the method comprising:
introducing a combination of meat and bones to be separated into said annular pressure chamber through an inlet end thereof;
rotating said inner and outer separation chambers in opposite directions; and
applying pressure to the combination of meat and bones in the annular pressure chamber for separating the combination by forcing the meat through the openings inwardly of the inner chamber and outwardly of the outer chamber.

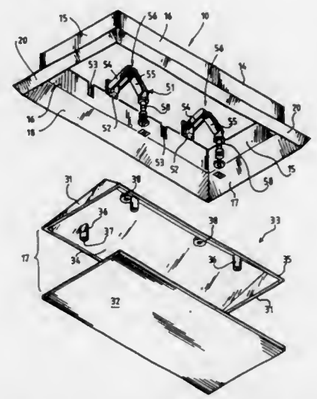
5,667,436
METHOD FOR CUTTING ANIMAL KNUCKLE
Eugene D. Gagliardi, Jr., Atglen, Pa., assignor to Visionary Design, Inc., Atglen, Pa.
Filed Oct. 29, 1996, Ser. No. 740,462
Int. Cl.[6] A22C *17/00*
U.S. Cl. 452—149 **16 Claims**

1. A method for cutting an animal knuckle which has previously had the kneecap and all bones removed therefrom to provide meat products having substantially enhanced value, the method comprising:



removing substantially all fat from the exterior surface of the knuckle;
locating and identifying the principal muscles of the knuckle;
cutting along one or more seams extending through the knuckle and around portions of the principal muscles to remove at least one principal muscle from the remainder of the knuckle;
denuding the removed muscle by removing substantially all cartilage, fat, connective tissue, membrane, and all other non-muscle material from each outer surface thereof to provide essentially a solid piece of meat;
cutting the denuded muscle into at least two generally solid meat products, each such meat product being very low in fat content and of relatively high economic value; and
tenderizing each such meat product.

5,667,437
AIR DIFFUSER
William James Donnelly, Ivanhoe, Australia, assignor to Talana Investments Limited, Tortola, Virgin Islands (Br.)
Filed Nov. 21, 1995, Ser. No. 561,608
Claims priority, application Australia, Nov. 23, 1994, PM 9628
Int. Cl.[6] F24F *13/062*
U.S. Cl. 454—302 **16 Claims**

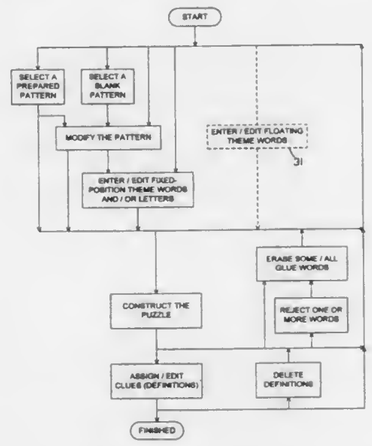


1. An air diffuser comprising a housing and a diffuser body mounted within said housing, said housing having a first, inlet end adapted for connection to an air duct, a second, open end forming an outlet for air, and at least one housing wall extending from said inlet end to said second, open end, wherein said diffuser body is mounted within said housing so as to form an air channel between said wall of said housing and said diffuser body which narrows towards said second, open end of the housing, said air diffuser further comprising at least one crane means for adjustably mounting said diffuser body within said housing, said crane means

having at least two arms connected by a pivotal joint and a support means fixed relative to said housing, one of said arms being pivotally connected to said support means and another of said arms being pivotally connected to said diffuser body.

5,667,438
METHOD OF CONSTRUCTING CROSSWORD PUZZLES BY COMPUTER

Peter H. Rehm, 14245 Les Palms Cir. #2, Tampa, Fla. 33613
Continuation of Ser. No. 51,985, Apr. 22, 1993, abandoned.
This application Dec. 19, 1994, Ser. No. 359,333
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—9 **7 Claims**



1. A method for constructing an unsolved crossword puzzle in an electronic computer having processor means, memory means for storing data, input means and output means, said method comprising:

(a) establishing in said memory means a crossword puzzle grid structure representing a two-dimensional array of cells, each of said cells being variables that contain data representing either a blocked state or an unblocked state of said cell, and each of said cells, when representing said unblocked state, additionally representing an unassigned state or an assigned state of said cell, and each of said cells, when representing an assigned state, also representing a letter of the alphabet;

(b) establishing in said crossword puzzle grid in said memory means a crossword puzzle pattern, said crossword puzzle pattern comprising a majority of unblocked cells, a minority of blocked cells, and a plurality of wordslots, each of said wordslots comprising an one-dimensional array of at least two mutually-adjacent unblocked cells, some of said wordslots oriented across and some of said wordslots oriented down in an intersecting network of wordslots, and wherein most to all unblocked cells are in intersecting wordslots;

(c) providing in said memory means a lexicon of words;

(d) said computer analyzing each wordslot that includes at least one unassigned cell in light of said assignments and said lexicon to determine, for each unassigned cell in said puzzle, a set of letters that are assignable to that unassigned cell, a letter being assignable to that unassigned cell if it does not rule out all the words in said lexicon from completing a wordslot that intersects at that unassigned cell;

(e) said computer attempting to fill said wordslots with words from said lexicon by following the steps comprising:

(1) said computer selecting an unassigned cell;

(2) said computer selecting a letter from the set of letters that are assignable to the cell selected in step (1);

(3) said computer assigning the letter selected in step (2) to the cell in step (1);

(4) said computer analyzing each wordslot that was altered by any of the steps (3), (5) and (6), to update for each unassigned cell in said wordslot, the set of letters that are assignable to that unassigned cell, a letter being assignable to that unassigned cell if it, together with any existing assignments, does not rule out all the words in said lexicon from completing a wordslot that intersects at that unassigned cell;

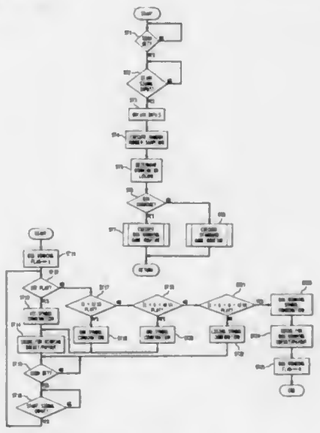
(5) whenever said computer updating a set of assignable letters results in an empty set of assignable letters, said computer reversing a sufficient number of assignments to restore the set of assignable letters to a non-empty condition;

(6) whenever said computer updating a set of assignable letters results in a set of assignable letters that contains only one letter, said computer forcing the assignment of that one letter and repeating step (4);

(7) said computer repeating steps (1), (2), (3), (4), (5) and (6) until all unassigned cells have become assigned cells or all selections have been attempted and the puzzle cannot be constructed.

5,667,439
GAMING MACHINE

Kazuo Okada, Tokyo, Japan, assignor to Universal Sales Co., Ltd., Tokyo, Japan
Filed Sep. 13, 1995, Ser. No. 527,549
Claims priority, application Japan, Sep. 16, 1994, 6-221480
Int. Cl.[6] G07F *17/34*
U.S. Cl. 463—20 **3 Claims**



1. A gaming .machine comprising:

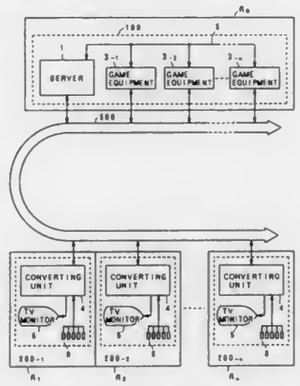
a variable display device for variably displaying a plurality of display patterns so as to give a predetermined play value according to display pattern at the time when variable displays stop; and

control means for driving said variable display device, executing a winning determination and controlling said variable displays of said variable display device to stop so as to be said display patterns of winning or losing according to a result of said determination, when a predetermined play condition is satisfied; which is characterized in that

said control means executes a winning game routine that comprises a predetermined winning, and controls said variable displays of said variable display device to stop said winning game routine comprising a plurality of predetermined display patterns and a winning pattern, said control means executing said winning game routine by driving and stopping said variable display device to display a predetermined display pattern recognizable by a player as one of said plurality of said predetermined display patterns, and said predetermined display pattern indicating to the player that said gaming machine is executing said winning game routine with the expectation that said winning pattern will soon occur, said control means continuing the execution of said winning game routine, by repeatedly driving and stopping said variable display device until all of said plurality of predetermined display patterns are displayed as results of said desired times of plays, then said control means controls said variable displays of said variable display device to stop such that said winning pattern which a player can distinguish as said particular winning is displayed.

5,667,440
BIDIRECTIONAL COMMUNICATION SYSTEM

Masafumi Sasaki; Takemi Yumoto; Kazuki Komatsu, and Noriyuki Shiragami, all of Tokyo-to, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan
Filed Dec. 20, 1994, Ser. No. 359,922
Claims priority, application Japan, Dec. 28, 1993, 5-337579
Int. Cl.[6] H04L *12/00;* **H04N** *7/173*
U.S. Cl. 463—29 **14 Claims**



1. A bidirectional communication system comprising a center unit and one or more terminal units connected to the center unit via a communication line, said center unit comprising:

a program executing unit for executing one or more programs utilizing operation data in response to a selection signal specifying one of the programs to be executed and for transmitting information associated with the execution of the programs to the terminal units via the communication line;

a control unit for controlling the program executing unit and the terminal units, the control unit permitting the program executing unit to execute the programs specified by the selection signals utilizing the operation data transmitted from one or more terminal units;

a receiving unit for receiving the operation data from the terminal units and for supplying the operation data to the program executing unit, said operation data being necessary for execution of the programs specified by the selection signals; and

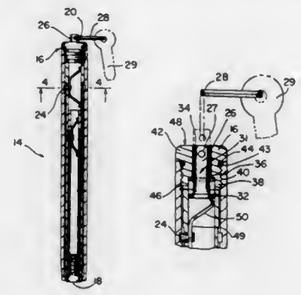
an inviting unit for sending invitations to select the programs to be specified by the selection signals to all of the terminal units at every predetermined times, each of said terminal units comprising:

a transmitting unit for transmitting the selection signal to the center unit via the communication line; and

an operation unit for generating the operation data in accordance with a user's instruction and for transmitting the operation data at data output timings designated to each terminal units by the control unit.

5,667,441
CONCEALABLE EXPANDABLE BATON WITH KEY RING

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.
Continuation of Ser. No. 385,180, Feb. 7, 1995, abandoned.
This application Feb. 13, 1996, Ser. No. 600,318
Int. Cl.[6] F41B *15/02*
U.S. Cl. 463—47.7 **13 Claims**



1. A concealable, expandable baton for use as an intermediate force weapon by undercover law enforcement personnel, the baton adapted to be carried and concealed inside and quickly withdrawn from a waistband of clothing, the baton comprising:

a. a hollow handle having an inner peripheral wall, a capped end, an open outer end and a low friction outer surface, said handle having a diameter and length which is sized to fit comfortably within the waistband of the clothing;

b. a swivel member rotatably mounted in the capped end of the baton, said member having a through hole and being movable between a raised position extending beyond the capped end and a retracted position whereby the swivel member rests in the baton and does not extend beyond the capped end of the baton;

c. a detachable element attached to the swivel mechanism, said element adapted to hang over the waistband thereby preventing the baton from falling into the clothing and allowing the baton to be retrieved by grasping the element;

d. at least two telescoping baton sections, said telescoping baton sections having an outer peripheral wall and being axially movable between a retracted and extended position, wherein said telescoping baton sections are housed within the handle when the baton sections are in the retracted position and are releasably outward from the open outer end of the handle and selectively locked in the extended position; and

e. a locking means for locking the telescoping sections in the extended position.

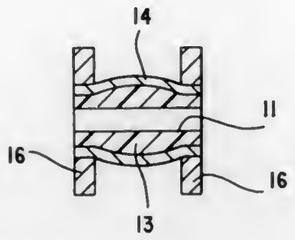
5,667,442
CHAIN LINK ASSEMBLY BODY

Koji Tanaka, Osaka, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan
Filed Jun. 28, 1995, Ser. No. 496,185
Claims priority, application Japan, Jun. 29, 1994, 6-168571
Int. Cl.[6] F16D *3/54;3/70*
U.S. Cl. 464—49 **4 Claims**

1. A chain link assembly body, comprising;

a molded resin sleeve having two ends, a cylindrical inner periphery and an outer periphery that is convexly contoured at a central portion of said sleeve and uniformly cylindrically shaped at the end portions of said sleeve, and

a convex bushing surrounding said sleeve wherein said bushing has two ends and an inner cross-sectional diameter that is at least equal to said convexly contoured outer periphery of said central portion of said sleeve;



first and second members wherein each of said members has a centrally located bushing press-fitting hole, wherein said first and second members are press-fitted around said ends of said bushing in order to conform said bushing to said outer periphery of said sleeve.

5,667,443

BOLT INCLUDING A CLEANING THREAD POINT TIP

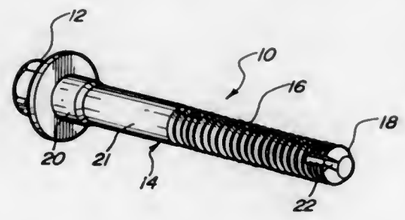
John Allen, Clarkston, Mich., assignor to Ring Screw Works, Madison Heights, Mich.

Continuation of Ser. No. 103,906, Aug. 10, 1993, Pat. No. 5,374,146. This application Nov. 7, 1994, Ser. No. 335,448

The portion of the term of this patent subsequent to Apr. 12, 2015, has been disclaimed.

Int. Cl.[6] B21H *3/02;* **B23G** *9/00;* **F16B** *25/00;35/04*

U.S. Cl. 470—12 **7 Claims**



1. A method of manufacturing a fastener comprising:

providing a blank having a head and an unthreaded shank;

positioning said blank into die means;

forming a tip and at least one recess in said tip and shank; and

forming threads on said shank adjacent said tip such that said at least one recess extends from said tip through at least a first full thread.

5,667,444

SPORTS FLOORING

Josep Lluis Mencheta Caballero, Avenida Peris y Valero, 162-B, E-46006, Valencia, Spain

PCT No. PCT/ES95/00076, § 371 Date Feb. 21, 1996, § 102(e) Date Feb. 21, 1996, PCT Pub. No. WO95/35423, PCT Pub. Date Dec. 28, 1995

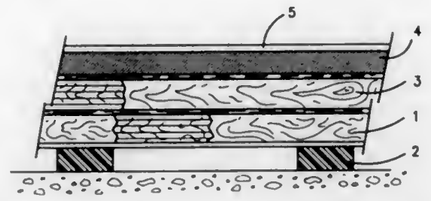
PCT Filed Jun. 20, 1995, Ser. No. 600,943

Claims priority, application Spain, Jun. 21, 1994, P9401355

Int. Cl.[6] A63C *19/04*

U.S. Cl. 472—92 **1 Claim**

1. In a sports flooring for practicing indoor sports in sports halls, such as basketball, football, volleyball, wherein the biomechanical characteristics of the flooring are important and the bouncing height of said flooring is higher than 90% with frictional coefficient suitable for playing said sports safely, and said flooring comprising:



A) first and second plywood panels joined to each with an offset angle of approximately 45 degrees, and said joined first and second plywood panels having an underside and an upperside,

B) a plurality of feet members mounted to said underside and said feet members being made out of rubber;

C) a cork panel having first and second surfaces, said first surface being mounted over said upperside and said cork panel having an approximate density of 550 Kg./m^3;

D) at least two layers of varnish applied to the other surface of said cork panel.

5,667,445

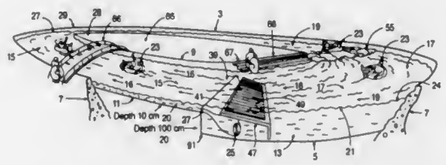
JET RIVER RAPIDS WATER ATTRACTION

Thomas J. Lochtefeld, La Jolla, Calif., assignor to Light Wave Ltd., Reno, Nev.

Continuation-in-part of Ser. No. 65,467, May 20, 1993, Pat. No. 5,421,782, which is a continuation of Ser. No. 836,100, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 568,278, Aug. 15, 1990, abandoned, said Ser. No. 463,264is a continuation-in-part of Ser. No. 398,158, Mar. 3, 1995, Pat. No. 5,628,584, which is a continuation of Ser. No. 866,073, Apr. 1, 1992, Pat. No. 5,401,117, which is a continuation of Ser. No. 722,980, Jun. 28, 1991, abandoned, said Ser. No. 463,264is a continuation-in-part of Ser. No. 393,071, Feb. 23, 1995, Pat. No. 5,564,859, which is a continuation of Ser. No. 74,300, Jun. 9, 1993, Pat. No. 5,393,170, which is a continuation of Ser. No. 577,741, Sep. 4, 1990, Pat. No. 5,236,280, which is a continuation-in-part of Ser. No. 286,964, Dec. 19, 1988, Pat. No. 4,954,014. This application Jun. 5, 1995, Ser. No. 463,264

Int. Cl.[6] A63G *21/18*

U.S. Cl. 472—117 **58 Claims**



1. A water ride attraction for use in amusement parks, water theme parks, and the like, comprising:

an endless channel loop having a predominantly unidirectional flowing body of water therein, said channel loop having at least one substantially shallow portion, followed in the direction of flow, by at least one substantially deep portion;

a means for injecting a supercritical sheet flow of water directly onto said shallow portion in said direction of flow, wherein the sheet flow of water flows from said shallow portion and into said deep portion, and through momentum transfer, causes said unidirectional flowing body of water in said deep portion to flow in said direction of flow; and

wherein a rider floating in said flowing body of water can ride on said sheet flow, and then be carried into said deep portion, and can then reenter said shallow portion from the deep portion, without having to exit said water ride.

5,667,446

Patent Not Issued For This Number

5,667,447

SWING AID AND METHOD

George James Perham, 207 Lord Street, Lockridge, Western Australia; Anthony John Aslett, 61 Comic Court Circle, Byford, Western Australia, and Nicholas Bootsma, Lynwood, all of Australia, assignors to George James Perham, Lockridge, and Anthony John Aslett, Byford, both of Australia

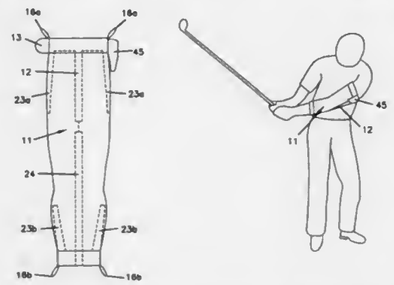
PCT No. PCT/AU93/00689, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO94/15681, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 31, 1993, Ser. No. 481,308

Claims priority, application Australia, Dec. 31, 1992, PL6623; May 18, 1993, PL8859

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—212 **40 Claims**



17. A movement sensing device for sensing angular movement of a limb relative to a body to which it is attached comprising:

support means for attachment to said limb proximate to the proximal end of the limb;

contact means mounted to said support means and disposed to contact the body whilst the limb is disposed at a prescribed angular position relative to the body;

sensing means for sensing the contact of said contact means with the body; and

transducer means for generating a signal in response to said sensing means sensing a prescribed loss of contact between said contact means and the body,

wherein said contact means is elongated and is adapted for positioning such that the longitudinal extent thereof is disposed transversely of the limb to maintain contact with the body throughout a range of angular movement of the limb adjacent to and across the body whilst maintaining the relative angular displacement between the limb and the body, and to mitigate contact with the body in response to the limb moving away from the body increasing the relative angular displacement between the limb and the body.

5,667,448

POWER TRAIN

Oswald Friedmann, Lichtenau, Germany, assignor to LuK Getriebe-Systeme GmbH, Bühl/Baden, Germany

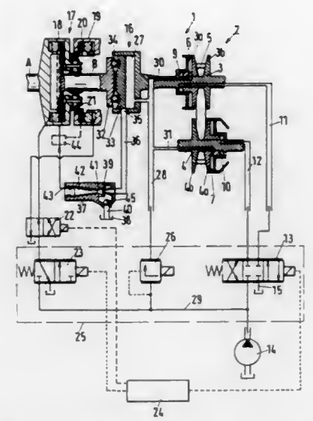
Filed Dec. 14, 1995, Ser. No. 572,538

Claims priority, application Germany, Dec. 15, 1994, 44 44 648.9; Dec. 21, 1994, 44 45 648.4

Int. Cl.[6] F16H *61/00*

U.S. Cl. 474—18 **11 Claims**

1. A power train comprising an infinitely variable transmission including a first adjustable rotary sheave arranged to receive torque from a prime mover, a second adjustable rotary sheave arranged to receive torque from said first sheave by way of at least one endless flexible element which is trained over said sheaves, and at least one adjusting unit for each of said sheaves, said units being regulatable to vary the magnitude of torque being transmitted between said at least one flexible element and the respective sheaves; a hydromechanical torque sensor conected between at least one of said sheaves and said prime mover and operative to transmit at least a portion of torque being transmitted by said prime mover, said sensor having a plenum chamber, means for connecting said chamber with a source of pressurized hydraulic fluid, an outlet for evacuation of fluid from said chamber and at least two valving elements disposed at said outlet and movable relative to each other to establish at said outlet at least one fluid pressure which is a function of the magnitude of transmitted torque and determines the regulation of torque by said units; and a jet pump having a first inlet connected with said outlet and a second inlet connected with a source of hydraulic fluid.



5,667,449

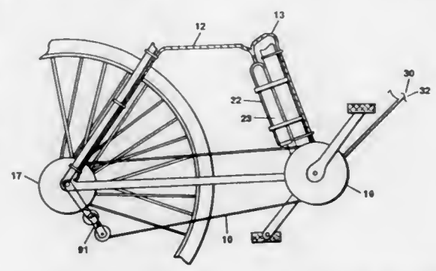
FLUID-CONTROLLED BICYCLE TRANSMISSION

Curtis E. Dalton, 3A Fletcher Way, Salem, Mass. 01970

Filed Sep. 13, 1995, Ser. No. 527,789

Int. Cl.[6] F16H *59/00*

U.S. Cl. 474—28 **9 Claims**



1. A variable-speed transmission for converting rotational energy about a first axis to rotational energy about a second axis, the transmission comprising:

a first rotational element which rotates about the first axis in response to the application of an external rotational energy source;

a second rotational element which rotates about the second axis, the second rotational element comprising an inflatable diaphragm having a diameter which increases with increasing fluid pressure within the diaphragm;

- a drive belt linking rotational motion of the first rotational element to rotational motion of the diaphragm and the second rotational element; and
- a variable pressure source in fluid communication with the inflatable diaphragm, the pressure source being controllable to change said fluid pressure within the diaphragm.

5,667,450

DRIVE SPROCKET DEVICE

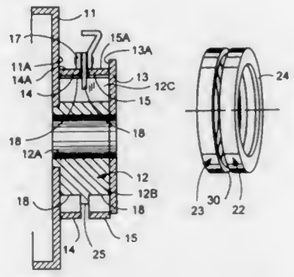
Arvo Leini, Edsbyn, Sweden, assignor to Sandvik AB, Sweden

Filed Jun. 12, 1995, Ser. No. 489,582

Claims priority, application Sweden, Jun. 13, 1994, 9402038-5

Int. Cl.[6] F16H *7/06*

U.S. Cl. 474—157 **4 Claims**



1. A drive apparatus for a chain saw, comprising:
- a drive sprocket rotatable about an axis of rotation and including an outer surface of a first diameter which includes circumferentially spaced recesses;
- a drive ring assembly comprising a pair of separate drive rings loosely mounted for rotation on said drive sprocket, each drive ring being circular and extending endlessly in a circumferential direction, said drive rings including respective circumferentially extending portions spaced apart by a first axial distance to form an annular space therebetween, each circumferentially extending portion having radially spaced outer and inner surfaces, said inner surface having a second diameter larger than said first diameter, whereby a center axis of each drive ring is offset from the axis of rotation of the drive sprocket;
- a saw chain extending around said outer surfaces of said drive rings and including drive links extending radially inwardly through said annular space; and
- first and second radial stop surfaces spaced apart in a direction parallel to said axis of rotation by a second axial distance to form an axial space in which said first and second drive rings are disposed, said stop surfaces being fixed in axially spaced relationship for limiting a maximum axial separation between said first and second drive rings to a distance slightly larger than a thickness of said drive links.

5,667,451

POWER TRAIN OF AUTOMATIC TRANSMISSION FOR VEHICLE

Dong-Hoon Park, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

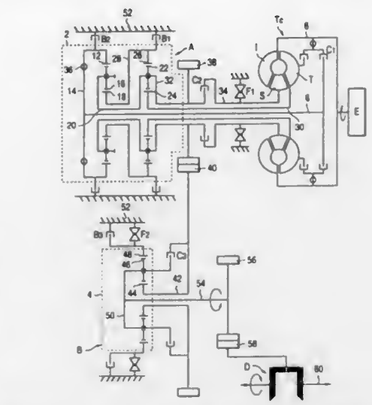
Filed Apr. 5, 1995, Ser. No. 417,024

Claims priority, application Rep. of Korea, Apr. 8, 1994, 94-7338

Int. Cl.[6] F16H *47/08*

U.S. Cl. 475—44 **18 Claims**

1. A power train of an automatic transmission, comprising:
a torque converter having an impeller, a turbine and a stator; and



first speed changing means for selectively converting an output speed of said torque converter according to at least one of a first and second speed ratio, said first speed changing means including a multiplanet gear device having planetary gear members, and a clutch selectively connecting said stator of said torque converter to one of said planetary gear members of said multiplanet gear device to continuously vary said converting of said output speed of said torque converter between said first and second speed ratios.

5,667,452

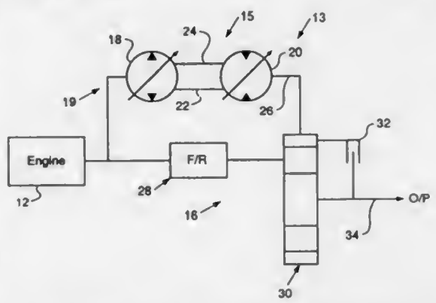
SPLIT TORQUE TRANSMISSION

Alan R. Coutant, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Apr. 6, 1995, Ser. No. 417,561

Int. Cl.[6] F16H *47/04;47/02*

U.S. Cl. 475—81 **7 Claims**



1. A split torque transmission for a machine having a source of power and an output, comprising:
- a hydrostatic transmission having a variable displacement pump drivingly connected to the source of power and a variable displacement motor having an output shaft and being fluidly connected to the variable displacement pump; and
- a mechanical transmission drivingly connected to the source of power and having a full range high forward and reverse mechanism connected to the source of power, a planetary arrangement having a carrier and planet gears connected to the full range high forward and reverse mechanism, a ring gear connected to the output shaft of the variable displacement motor and selectively connectable to the output, a sun gear connected to the output and selectively connectable to the ring and operative to sum the outputs from the full range high forward and reverse mechanism and the variable displacement motor.

5,667,453

HYDRAULIC CONTROL SYSTEM OF AN AUTOMATIC TRANSMISSION USED IN A VEHICLE

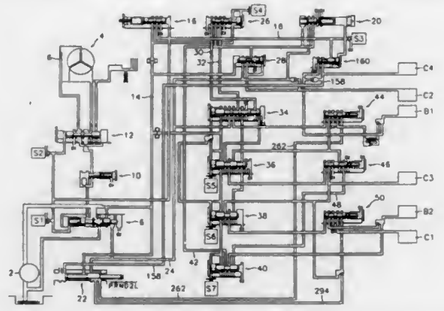
Jaeduk Jang, and Kibeen Lim, both of Yongin-kun, Rep. of Korea, assignors to Hyundai Motor Company, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 579,346

Claims priority, application Rep. of Korea, Dec. 28, 1994, 94-37992

Int. Cl.[6] F16H *61/06;61/08*

U.S. Cl. 475—129 **9 Claims**



1. A hydraulic control system of an automatic transmission used in a vehicle, comprising:
- a torque converter for transferring an engine power to an input shaft of the transmission;
- an oil pump for pumping oil by means of the engine power;
- a pressure regulation means for regulating a line pressure produced by said oil pump according to a running condition of the vehicle;
- a damper clutch working control means for changing a direction of the pressure delivered to said torque converter in order to increase a power transfer rate of said torque converter;
- a manual valve operatively linked with a shift lever for performing a port change to supply the transmission with a hydraulic pressure suitable to each shifting mode;
- an N-D control valve for supplying a torque pressure and a drive pressure to a first friction element to reduce shifting shocks during range changing from a neutral mode to a running mode;
- a torque control regulator valve for converting the drive pressure to a torque control valve according to a duty control;
- a control switch valve for alternately supplying the torque pressure of said torque control regulator valve to a first and a second torque pressure line according to an on/off operation of a solenoid valve;
- a first to second shift valve, a second to third shift valve, a third to fourth shift valve and a third to second shift valve for making a port change with a control port receiving/discharging a hydraulic pressure according to the on/off operation of the solenoid valve so as to selectively supply the torque pressure of the first and the second torque pressure line and the drive pressure of a manual valve to the friction element; and
- a low/reverse clutch valve, a third clutch valve, and a second to fourth brake valve for receiving or supplying the torque pressure or drive pressure from or to the shift valves.

5,667,454

POWER TRANSMISSION

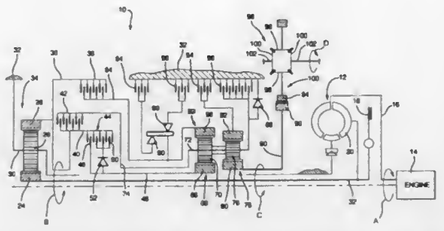
Edwin Thomas Grochowski, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1996, Ser. No. 618,410

Int. Cl.[6] F16H *3/64*

U.S. Cl. 475—205 **2 Claims**

1. A power transmission comprising:
a power input shaft rotating in a first direction;



a multi-speed planetary gear arrangement disposed coaxial with the power input shaft;
a power output shaft coaxial with said power input shaft;
a final drive assembly having a pair of output shafts;
selectively engageable friction means for establishing a plurality of forward drive ratios in the multi-speed planetary gear arrangement; and
planetary reversing means operatively drivingly connected with the multi-speed planetary gear arrangement and coaxially disposed between the input shaft and the output shaft for reversing the direction of rotation from the input shaft prior to delivery to the final drive assembly in all the forward drive ratios.

5,667,455

REDUCTION GEAR UNIT

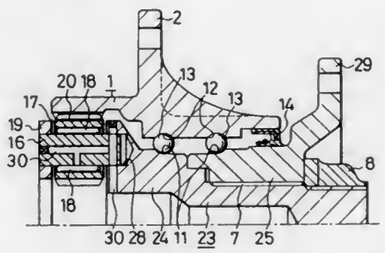
Hiroshi Suzuki, Yokohama, and Hayato Oumi, Chigasaki, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 144,286, Oct. 27, 1993. This application Nov. 22, 1995, Ser. No. 562,248

Claims priority, application Japan, Oct. 30, 1992, 4-314375; Nov. 18, 1992, 4-331252

Int. Cl.[6] F16H *57/08;* **F16C** *19/50*

U.S. Cl. 475—331 **4 Claims**



1. A bearing unit with a reduction gear, comprising:
- an outer ring having an inside circumferential surface provided with at least one outer ring raceway;
- an inner ring having an end face and comprising a first inner ring section and a second inner ring section so as to have an outside circumferential surface provided with at least one inner ring raceway opposed to the outer ring raceway;
- a plurality of rolling bodies provided between the outer ring raceway and the inner ring raceway;
- a plurality of support shafts provided parallel to the outer and inner rings and each having a base portion connected to the end face of the inner ring;
- a plurality of planetary gears located around each of the support shafts;
- a ring gear provided in an interlocking relationship with the planetary gears;
- wherein the first inner ring section has a larger diameter section having an outside circumferential surface formed with an inner ring raceway, and a smaller diameter section positioned axially adjacent to the larger diameter section, and wherein

the second inner ring section is fitted around the smaller diameter section of the first inner ring section in a spline-engagement relationship.

5,667,456

CONTINUOUSLY-VARIABLE-RATIO TRANSMISSION HAVING AN IMPROVED STARTING ARRANGEMENT

Thomas George Fellows, Headington, England, assignor to Torotrak (Development) Limited, London, England

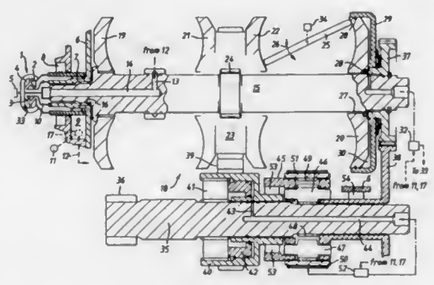
PCT No. PCT/GB93/01704, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/04849, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 374,548

Claims priority, application United Kingdom, Aug. 13, 1992, 9217219

Int. Cl.[6] F16H *37/02*

U.S. Cl. 476—42 **12 Claims**



1. A continuously-variable-ratio transmission ("CVT") having a rotatable input (**15**) for connection to a prime mover (**5**) and a rotatable output (**36**) for connection to a driven member, comprising:

a starting device (**1**), capable of slip, connected to the transmission input (**15**), being connected both to a variator and to a fixed ratio component (**37**, **38**); and

wherein a first one way clutch (**53**) connects the output of the fixed ratio component to the output of the variator, the outputs of the fixed ratio component and of the variator are both connected to the transmission output by a single hydraulic clutch (**41**), and the variator is controlled by hydraulic pressure, whereby in the absence of hydraulic pressure, due to the connection of the variator output to the fixed ratio component output by way of the first one way clutch, a) the variator seeks the same ratio as that of the fixed ratio component (**37**, **38**), and b) in forward drive the variator and the fixed ratio component, in combination with the first one-way clutch (**53**), alternately transmit power to the transmission output by way of the single hydraulic clutch (**41**).

5,667,457

HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION

Minoru Kuriyama, Higashi-Hiroshima, and Kazuo Sasaki, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 19, 1995, Ser. No. 375,013

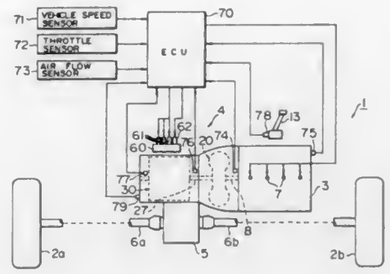
Claims priority, application Japan, Jan. 20, 1994, 6-021938; Mar. 31, 1994, 6-087879

Int. Cl.[6] F16H *61/26*

U.S. Cl. 477—156 **20 Claims**

1. A hydraulic control system for an automatic transmission comprising:

a shift speed mechanism,



a frictional element hydraulically controlled for switching a power transmitting path in the shift speed mechanism,

a calculator for calculating separately an input torque pressure corresponding to an input torque introduced to the shift speed mechanism, an inertia torque pressure corresponding to an inertia torque which is changed in accordance with a speed change of the shift speed mechanism, and a working pressure, applied to the frictional element, produced by adding the input torque pressure to the inertia torque pressure,

a working pressure controller for controlling an engaging force of the frictional element during a shift operation by adjusting said working pressure, and

a learning control compensator for compensating the inertia torque pressure by a learning control.

5,667,458

LOCK-UP CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION

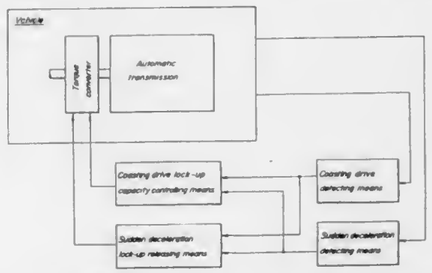
Yasushi Narita, Yokohama; Yasuhiro Niikura, Yokosuka; Noboru Hattori, Yokosuka; Shusaku Katakura, Yokosuka, and Hisaaki Tohjima, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 7, 1995, Ser. No. 499,258

Claims priority, application Japan, Jul. 8, 1994, 6-157325

Int. Cl.[6] B60K *41/02*

U.S. Cl. 477—169 **8 Claims**



1. A lock-up control apparatus for an automatic transmission, including a torque converter which can be turned into a lock-up state by a lock-up clutch so that input and output elements of the torque converter are directly connected with each other, comprising:

a coasting drive detecting means for detecting a coasting drive including a deceleration operation of a vehicle;

a sudden deceleration detecting means for detecting a large deceleration rate above a predetermined value of the vehicle; and

a coasting drive lock-up capacity controlling means for controlling an application capacity of the lock-up clutch to a minimum application capacity within such a range that a relative rotation is not generated between the input and output elements of the torque converter in a period when the deceleration rate of the vehicle is below the predetermined value during the coasting drive, in response to signals from both the detecting means,

wherein the coasting drive lock-up capacity controlling means comprises:

a reverse driving torque detecting means for detecting a reverse driving torque of an engine in a forward speed of the automatic transmission; and

a coasting drive lock-capacity operating means for calculating a minimum application capacity of the lock-up clutch within such a range that the relative rotation is not generated between the input and output elements of the torque converter from the reverse driving torque detected by the reverse driving torque detecting means, thereby controlling the application capacity of the lock-up clutch by a command value corresponding with the application capacity calculated by the coasting drive lock-up capacity operating means.

5,667,459

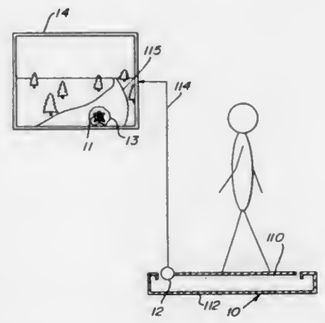
COMPUTERIZED EXERCISE GAME MACHINE

Li-ping Su, 405 Avonwood La., Wayne, Pa. 19087

Continuation-in-part of Ser. No. 336,938, Nov. 10, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 633,276

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—4 **14 Claims**



1. An exercise game machine, comprising:

means for generating an output signal indicative of the movement of a moveable component of an exercise device;

means for generating on a video display a course environment and a domain within said course environment which represent a varying exercise goal;

means for generating a video object on said video display and for controlling the position of said video object relative to said domain responsive to said output signal;

means responsive to the relative positions of said video object and said domain such that a prompt signal is provided to a user to prompt the user to adjust the speed of movement of the moveable components whenever the video object is displayed outside of said domain; whereby said user is stimulated to try to maintain said video object within said domain on said video display by increasing or decreasing the amount of movement of said moveable component.

5,667,460

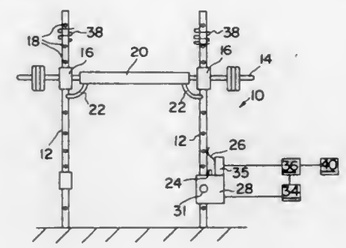
BALLISTIC FORCE EXERCISER

Robert Samuel Smith, 1263 Emory St., San Jose, Calif. 95126

Filed Mar. 20, 1996, Ser. No. 618,685

Int. Cl.[6] A63B *71/00*

U.S. Cl. 482—8 **10 Claims**



1. An exerciser for monitoring ballistic force, comprising:

a base means for supporting a user;

an active member movably mounted on said base means for movement by a user during exercise from a rest position in which the active member is at rest through a home position to an extended position;

a start switch for starting a timer when said active member is displaced from said rest position, said timer running for a timer period;

a counter switch connected in series with said start switch for incrementing a repetition counter when said active member passes through the home position toward the extended position;

means for adjusting the distance between the timer and counter switches; and

a display for displaying the number of repetitions performed during the timer period.

5,667,461

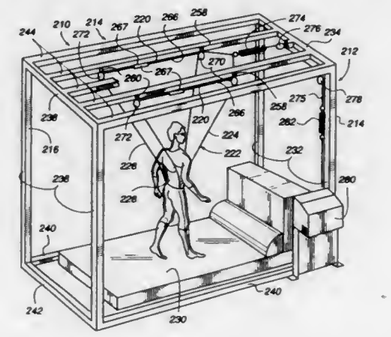
AMBULATORY TRACTION ASSEMBLY

Raymond F. Hall, 10780 Santa Monica Blvd., Suite 440, Los Angeles, Calif. 90025

Continuation-in-part of Ser. No. 271,363, Jul. 6, 1994. This application Jun. 7, 1995, Ser. No. 484,147

Int. Cl.[6] A61H *3/00*

U.S. Cl. 482—69 **19 Claims**



12. A traction system for use in assisting a patient comprising:

a frame having a front section and a rear section, said frame including at least two overhead horizontal beams longitudinally extending in parallel with each other between the front section and the rear section of said frame;

a front wheeled sliding assembly slidably engaging said two overhead horizontal beams for horizontal linear displacement along said horizontal beams, said front wheeled sliding assembly having a pair of laterally spaced front coupling devices;

a rear wheeled sliding assembly longitudinally spaced from said front wheeled sliding assembly and slidably engaging said two overhead horizontal beams for horizontal linear displacement along said horizontal beams, said rear wheeled sliding assembly having a pair of laterally spaced rear coupling devices;

a length adjusting assembly connecting said front wheeled sliding assembly and said rear wheeled sliding assembly for longitudinally adjusting the separation between said front wheeled sliding assembly and said rear wheeled sliding assembly;

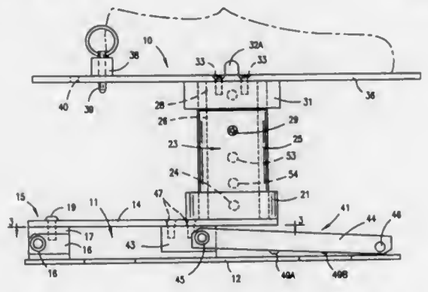
the length adjusting assembly including an elongated interior pipe and an elongated exterior pipe external to the interior pipe and slidably engaging the interior pipe and stopper means for stopping sliding movement of the interior pipe with respect to the exterior pipe and to provide the length adjusting assembly with a predetermined length;

a harness assembly suspended from said front and rear wheeled sliding assemblies, said harness assembly including a main body for releasable attachment to the body of the patient, a pair of front straps respectively connected to said pair of front coupling devices and a pair of rear straps respectively connected to said pair of rear coupling devices, wherein said pair of front straps and said rear straps diagonally angled with each other to define four sides of an inverted quadrangular pyramid and connect to said main body;

a length adjustment device provided in each of said straps for adjusting the length of each of said straps; and

a treadmill including means for changing speed, inclination and declination thereof, said treadmill being positioned below said harness assembly to allow the patient to use said treadmill while being suspended by said harness assembly.

5,667,462
EXERCISE AND THERAPY APPARATUS
James R. Gordon, Benton, Ill., assignor to Gordon Research & Development, Inc., Pinckneyville, Ill.
Continuation-in-part of Ser. No. 364,281, Dec. 27, 1994, Pat. No. 5,536,226. This application Nov. 13, 1995, Ser. No. 556,722
Int. Cl.[6] A63B *23/08*
U.S. Cl. 482—80 **21 Claims**



1. An exercise and physical therapy apparatus for use in the performance of bending exercises, twisting exercises, and combined bending and twisting exercises on a human anatomical part, the apparatus comprising:

a base plate;

a support;

mounting means for mounting the support on the base plate for movement over a predetermined range of positions displaced from the base plate;

latch means, connected to the support and to the base plate, for latching the support at a given position, within the predetermined range, relative to the base plate;

a resilient, twistable, bendable elastomer·torsion device having first and second opposite ends, the first end of the torsion device being mounted on the support so that the torsion device projects from the support; and

an engagement member, mounted on the second end of the torsion device, the engagement member including engagement means engageable with a human anatomical part;

in which the torsion device comprises:

a cylinder member;

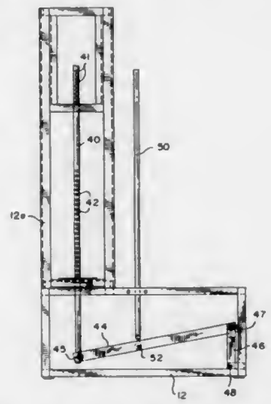
a resilient elastomer core member mounted coaxially in the cylinder member;

one of the core and cylinder members having an axial length greater than the length of the other of the core and cylinder members so that one of the core and cylinder members projects axially beyond the other, the one member being formed of a resilient elastomer;

alignment means, including at least one axially longitudinal spline interconnecting the exterior of the core member and the interior of the cylinder member to maintain the core and cylinder members in coaxial alignment despite displacement of the core member axially of the cylinder member over a displacement range smaller than the length of the shortest of the core and cylinder members; and

torsion locking means for locking the core member at a predetermined axial position relative to the cylinder member.

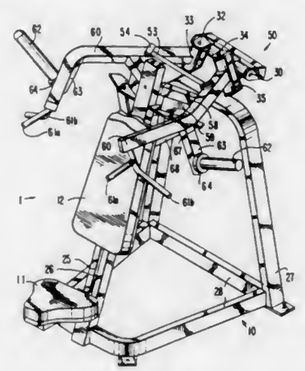
5,667,463
EXERCISE MACHINES AND METHODS
Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670
Continuation-in-part of Ser. No. 909,658, Jul. 7, 1992, Pat. No. 5,265,125. This application Sep. 15, 1992, Ser. No. 947,284
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—97 **12 Claims**



1. A machine for exercising the human body comprising in combination, a movement arm having a generally horizontal axis about which the movement arm moves upon exercising muscles of the body, a weight stack having a plurality of stacked weights connectable to said movement arm to oppose movement of said movement arm about said axis in one direction, said weight stack having a generally vertical pin movable in a generally vertical direction relative to said weights while being connectable to one of said weights, a lever located below the weight stack and pivotally connected to the pin and to the movement arm to raise the pin to lift the weight when the movement arm is rotated in said one direction, a generally vertical drive shaft connected to and between the lever and movement arm to transmit movement therebetween

and a link pivotally connected to the lever on a side of the drive shaft opposite the pin of the weight stack, said link being pivotally connected to said lever at an elevation below said weights, said link being pivotally connected to a stationary frame to pivotally mount the lever to the frame.

5,667,464
PLATE-LOADED SHOULDER PRESS EXERCISE MACHINE AND METHOD OF EXERCISE
Roy Simonson, Cybex Division of Lumex, Inc. 2840 Janitell Rd., Colorado Springs, Colo. 80906
Continuation-in-part of Ser. No. 396,670, Mar. 1, 1995. This application Mar. 10, 1995, Ser. No. 401,707
Int. Cl.[6] A63B *21/08;23/02*
U.S. Cl. 482—97 **44 Claims**



1. In an exercise machine having an input arm, a frame and a hinge mechanism for mounting the input arm to the frame, apparatus comprising:

a primary hinge rotatably mounted to the frame for rotation about a primary hinge axis;

a secondary hinge rotatably mounted to the primary hinge for rotation about a secondary hinge axis wherein the arm is mounted to the secondary hinge;

weight means mounted to the arm;

wherein the primary hinge axis and the secondary hinge axis are skew.

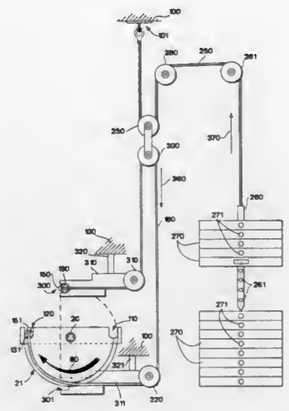
5,667,465
MULTIDIRECTIONAL CAM
Robert McCollum, Transfer; Gregory T. Telesz, Volant, and Jerry K. Liepheimer, Jamestown, all of Pa., assignors to Trotter, Inc., Medway, Mass.
Filed Feb. 7, 1995, Ser. No. 384,917
Int. Cl.[6] A63B *21/062*
U.S. Cl. 482—100 **18 Claims**

1. Apparatus for performing weight resistance exercise via manual rotation, the apparatus comprising:

a rotatable member mounted on an axle, the rotatable member being manually engageable for application of manual force to rotate the rotatable member around the axle;

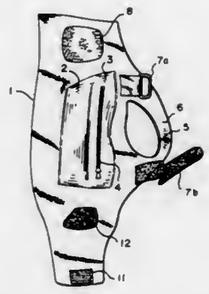
a pair of cable stop members each connected to an end of a respective cable means which is interconnected to a weight means, the weight means through the cable means holding the stop members within a respective mounting aperture;

the rotatable member having a pair of retaining members adapted to receive a respective stop member, one of the retaining members receiving and removing a respective stop member from its respective mounting aperture upon rotation of the rotatable member,



the cable means being interconnected to the weight means such that rotation of the rotatable member is resisted by the weight means through the cable means upon application of manual rotating force to the axle.

5,667,466
WRIST OR ANKLE EXERCISE WEIGHT
John L. Riley, Jr., 2056 W. 12th St., Jacksonville, Fla. 32209
Filed Jul. 25, 1995, Ser. No. 506,538
Int. Cl.[6] A63B *21/065*
U.S. Cl. 482—105 **13 Claims**



1. An interchangeable weighted exercise sleeve worn in a first configuration on the hand/wrist area and in a second configuration on the foot/ankle area of a user comprising:

a flexible sleeve member having a first and second end, said flexible sleeve member having an enlarged center section between said first and second ends;

an expansible opening integrally contained within said flexible sleeve member and located within a distal section of said enlarged center section;

a strap and buckle tensioning means attached to said distal section of said enlarged center section for adjusting the size of said expansible opening;

a plurality of securing means located on said flexible sleeve member for circumferentially securing said first end to said second end of said flexible sleeve member;

at least one weighted pocket located on said flexible sleeve, and

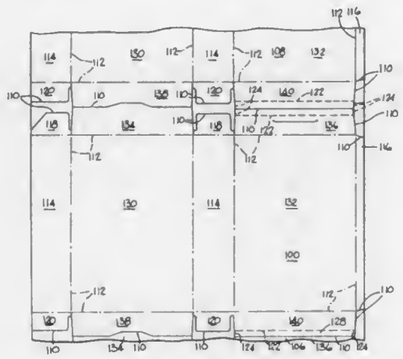
wherein in said first configuration, said expansible opening is adapted to receive fingers of said user and said circumferential securing is adapted to retain the hand/wrist area of the user and in a second configuration, said expansible opening is adapted to receive the toes of said user and said circumferential securing is adapted to retain the foot/ankle of the user.

5,667,467

METHOD FOR FORMING AN EFFECTIVE SEAL FOR A CARTON

Joseph Christopher Walsh, Longmont, and Kenneth E. Hawkins, Loveland, both of Colo., assignors to Graphic Packaging Corporation, Paoli, Pa.

Filed Aug. 10, 1995, Ser. No. 513,359
Int. Cl.[6] B31B *1/14*
U.S. Cl. 493—342 **6 Claims**



1. A method for forming a carton blank from a continuous laminate comprising at least a layer of a relatively flexible fluid impervious material secured to at least a layer of a relatively rigid material comprising:

dividing said continuous laminate to form individual carton blanks;

making conventional cut lines and fold lines in each of said individual carton blanks to form top front, back and sidewall panel portions and bottom front, back and sidewall panel portions, front, back and sidewall panel portions and a glue tab panel portion;

providing each of said top front and back panel portions and said bottom front and back panel portions with an outer edge portion;

making at least one additional cut line only in at least one of said top front and back panel portions and only in at least one of said bottom front and back panel portions and each of said at least one additional cut line being spaced from said outer edge portion thereof;

extending each of said at least one additional cut lines only completely through said relatively flexible fluid impervious material and not all the way through said relatively rigid material; and

removing said relatively flexible fluid impervious material between said at least one additional cut line and said outer edge portions to expose portions of said relatively rigid material of said at least one of said tog front and back panel portions and of said at least one of said bottom front and back panel portions to be used with superposed portions of said relatively rigid material of the other of said top front and back panel portions and the other of said bottom front and back panel portions in forming an effective seal.

5,667,468

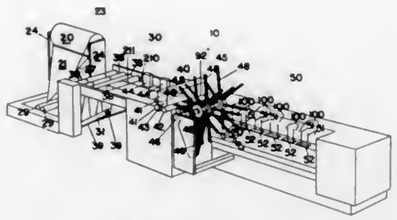
SCREW ADJUSTABLE WICKET PINS

Vitaly Bandura, Danvers, Mass., assignor to Battenfeld Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Nov. 10, 1994, Ser. No. 337,070
Int. Cl.[6] B31B *49/04*
U.S. Cl. 493—475 **12 Claims**

1. A transfer wicket pin adjustment and mounting assembly for use on wicket conveyors comprising:

a) a wicket base plate,



b) a threaded rod having a first threaded portion and a second threaded portion, said first threaded portion and said second threaded portion having threads of opposite hand,

c) Mounting blocks rotatably mounting both ends of said threaded rod to said wicket base plate,

d) A first transfer wicket pin base mounted on said first threaded portion,

e) A second transfer wicket pin base mounted on said second threaded portion,

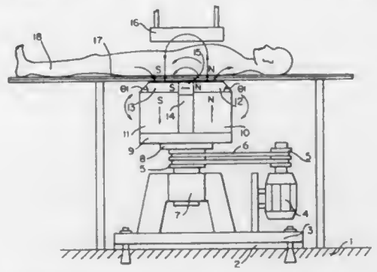
f) Both said first transfer wicket pin base and said second transfer wicket pin base having a largely vertical screw adjustment extending from said transfer wicket pin base to said wicket base plate for rotating said transfer wicket pin base about said threaded rod.

5,667,469

STRONG MAGNETISM THERAPEUTIC APPARATUS WITH PERMANENT-MAGNETS ROTATING AT LOW FREQUENCY

Xiaoyun Zhang, Suite 302, Duyue Bldg., Shenzhen University, Nanout District, Shenzhen, Guangdong 518060, China; Dali Zheng, Mid. Entr. 1 Suite 603, No. 22 Bldg. No. 76 Xueyuan nan Road, Beijing 100081, China, and Weide Zhang, Suite 302, Duyue Bldg., Shenzhen University, Nantou District, Shenzhen, Guangdong 518060, China

Filed Oct. 13, 1995, Ser. No. 599,402
Claims priority, application China, Oct. 8, 1993, 93 1 18017.1
Int. Cl.[6] A61B *17/52;* A61N *2/00*
U.S. Cl. 600—9 **10 Claims**



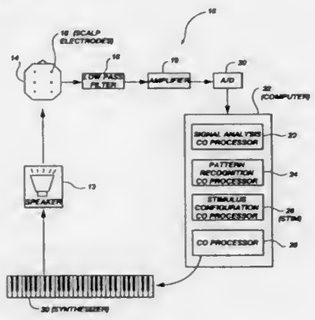
1. A magnetic therapeutic apparatus with a set of permanent-magnets rotating at low frequency, comprising: a base seat made of magnetic material fixed on a plate capable of rotating in both clockwise and counterclockwise directions, at least two permanent-magnets for producing a strong magnetic field secured to said base seat and separated by an isolating block made of non-magnetic material, upper surfaces of said two permanent-magnets being of opposite magnetic polarity, at least one pole head made of magnetic material secured respectively to the upper surface of each permanent-magnet, a permanent-magnet with high coercive force fixed between opposite magnetic poles of said two permanent-magnets, wherein the direction of the magnetic field produced by said high coercive force permanent-magnet is opposite to that of the magnetic field produced in a magnetic path constituted by said base seat, the two permanent-magnets, and the pole heads, and driving means connected to the plate for rotating said plate.

5,667,470

APPARATUS AND METHOD FOR USING LISTENER FEEDBACK TO DETERMINE THE NATURE OF SOUND STIMULI PRESENTED TO THE LISTENER

Petr Janata, Eugene, Oreg., assignor to Jiri Janata, Richland, Wash.

Filed Feb. 8, 1994, Ser. No. 193,224
Int. Cl.[6] A61M *21/00*
U.S. Cl. 600—28 **19 Claims**



PROPOSED

1. A method of adjusting musical stimuli presented to a music therapy patient in real time for achievement of a desired cognitive state comprising the steps of:

presenting a first musical stimulus to the patient during a first time period to cause a first pre-determined predicted degree of expectancy fulfillment;

detecting the brain-electrical activity generated by the patient during the first time period;

determining the values of certain pre-determined parameters in the brain waves and generating a pattern vector comprising those values;

comparing the pattern vector to a classification library of pattern vectors having corresponding degrees of expectancy fulfillment, finding the library pattern vector most similar to the pattern vector and thereby determining the actual degree of expectancy fulfillment;

comparing the actual degree of expectancy fulfillment to the first predicted degree of expectancy fulfillment and calculating a correction factor based on said comparison;

determining the configuration of a second musical stimulus based on a second predicted degree of expectancy fulfillment and the correction factor; and

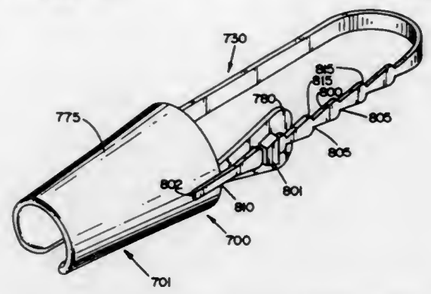
arranging the second musical stimulus according to the configuration and presenting it to the patient during a second time period.

5,667,471

PROSTHETIC DEVICE WITH A RETAINING STRAP

James M. Weller, Blaine, and John C. Field, St. Paul, both of Minn., assignors to Gain, Incorporated, St. Paul, Minn.

Filed Apr. 29, 1996, Ser. No. 638,730
Int. Cl.[6] A61F *5/00*
U.S. Cl. 600—39 **20 Claims**



1. A prosthesis for use by a human male in supporting the penis during intercourse; said prosthesis comprising:

(a) an elongate trough member sized to fit over a penis of a user at a location immediately in front of the pubic bone;

(i) said trough member having a C-shaped cross-section with longitudinal slot extending completely thereacross, on an underside thereof;

(ii) said trough member having an outer surface with first and second ends;

(b) a retaining construction for maintaining the trough member in operative association over the user's penis, during performance of intercourse; said retaining construction comprising: a retaining strap having first and second ends; and, a retaining tab;

(i) said retaining strap and retaining tab each being secured to said trough member second end;

(ii) said retaining strap being constructed and arranged for selective locking engagement with said retaining tab, in use;

(c) each of said retaining strap and said retaining tab being thinner than said second end of said trough member;

(i) said retaining strap and retaining tab each being secured to said trough member with a shoulder formed along said trough member second end, between each of said retaining strap and retaining tab, and an outer surface of said trough member; and,

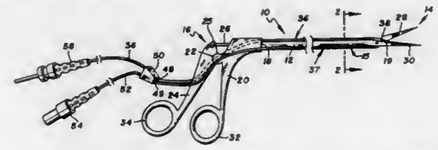
(d) said prosthesis comprising a unitary, molded, construction without any attachment seams.

5,667,472

SURGICAL INSTRUMENT AND METHOD FOR USE WITH A VIEWING SYSTEM

Miles A. Finn, Minneapolis; Thomas A. Poss, St. Louis Park; Craig L. Riedl, Long Lake, and John C. Vanden Hoek, Elk River, all of Minn., assignors to Clarus Medical Systems, Inc., Minneapolis, Minn.

Filed Mar. 18, 1994, Ser. No. 210,588
Int. Cl.[6] A61B *1/005;1/313*
U.S. Cl. 600—104 **50 Claims**



1. A surgical instrument for use with a viewing system, comprising:

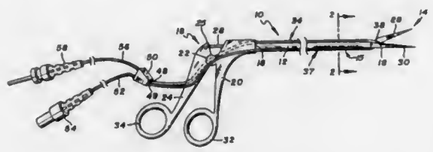
(a) an elongated shaft having a proximal end, a distal end and a distal operating portion;
(b) a handle member having a portion offset from the shaft and mounted on the proximal end of the shaft, the offset portion of the handle member adapted to be held by a user of the instrument;
(c) a working element disposed on the distal end of the shaft for manipulating tissue during the course of the surgical procedure;
(d) an elongated optical assembly including an image fiber having a proximal end and a distal end with an objective lens mounted on the distal end of the image fiber for defining a predetermined field-of-view, the assembly including coupling means associated with the proximal end of the image fiber for operably coupling the image fiber to the viewing system; and
(e) mounting means for mounting the optical assembly to the shaft and the offset portion of the handle member with the distal end of the image fiber positioned with a predetermined portion of the working element within the field-of-view of the optical assembly, the assembly extending along substantially the entire length of the shaft and onto the offset portion of the handle member to be coupled to the viewing system.

5,667,473

SURGICAL INSTRUMENT AND METHOD FOR USE WITH A VIEWING SYSTEM

Miles A. Finn, Minneapolis; Thomas A. Poss, St. Louis Park; Craig L. Riedl, Long Lake, and John C. Vanden Hoek, Elk River, all of Minn., assignors to Clarus Medical Systems, Inc., Minneapolis, Minn.

Division of Ser. No. 210,588, Mar. 18, 1994. This application Jun. 7, 1995, Ser. No. 472,187
Int. Cl.[6] A61B *1/005*
U.S. Cl. 600—104 **29 Claims**



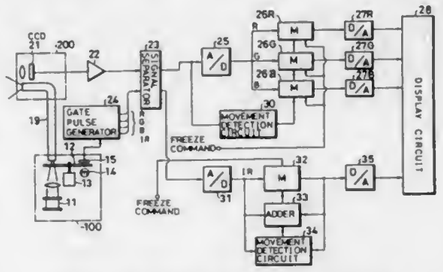
1. A surgical instrument for use with a viewing system, comprising:
(a) an elongated shaft having a proximal end, a distal end and a distal operating portion extending at least about one-third of the length of the shaft;
(b) a handle member mounted on the proximal end of the shaft;
(c) a working element disposed on the distal end of the shaft for manipulating tissue during the course of a surgical procedure;
(d) an elongated optical assembly including first and second bundles of image fibers, each bundle having a proximal end and a distal end with an objective lens mounted on the distal end of the image fiber bundle for defining a predetermined field-of-view, the objective lenses having different focal lengths and being laterally spaced apart from each other relative to the working element while having the same field-of-view to enhance depth perception, the assembly including coupling means associated with the proximal ends of the image fiber bundles for operably coupling the image fiber bundles to the viewing system; and
(e) mounting means for mounting the optical assembly to the shaft along substantially the entire length of the operating portion thereof with the distal ends of the image fiber bundles positioned with a predetermined portion of the working element within the field-of-view of the objective lenses of the optical assembly.

5,667,474

VISIBLE AND INFRARED IMAGING APPARATUS WITH MOVEMENT DETECTING CIRCUITS FOR AFFECTING FREEZE AND NOISE REDUCING OPERATIONS

Shigeru Nishimura, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Mar. 7, 1995, Ser. No. 399,461
Claims priority, application Japan, Mar. 9, 1994, 6-067626
Int. Cl.[6] A61B *1/045*
U.S. Cl. 600—109 **3 Claims**



1. A field sequential image pickup apparatus comprising:
a light source device provided with a color disk which has filters for visible light and a filter for infrared light;
a signal processing circuit for sequentially generating visible picture signals and infrared picture signals from a solid-state image sensor in synchronism with the rotation of each of said filters for visible light and said filter for infrared light;
a movement detection circuit for detecting a movement of an object of observation from visible picture signals supplied from said signal processing circuit;
a movement detection circuit for detecting a movement of an object of observation from infrared picture signals supplied from said signal processing circuit;
a freeze operation circuit for executing a freeze operation with respect to said visible picture signals in accordance with said movement of said object, said freeze operation circuit for said visible picture signals inhibiting said freeze operation when a movement of said object is detected by said movement detection circuit for visible picture signals, while executing said freeze operation when no movement is detected; and
a noise reducing circuit for executing a noise reducing operation with respect to said infrared picture signals;
and a freeze operation circuit for executing a freeze operation with respect to said infrared picture signal and which suppresses said noise reduction operation when movement of said object is detected by the movement detection circuit for the infrared picture signals for every turn of said color disk, and which fully executes said noise reduction operation when no movement is detected.

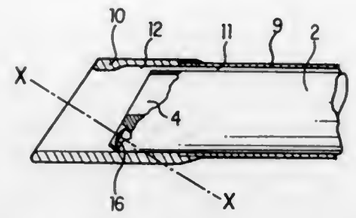
5,667,475

ENDOSCOPIC DEVICE

Helmut Laser, Berlin, and Gerald Hauer, Weilheim, both of Germany, assignors to ETB Endoskopische Technik GmbH Berlin, Berlin, Germany

PCT No. PCT/DE94/01401, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO95/14425, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 28, 1994, Ser. No. 495,492
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—127 **11 Claims**

4. An endoscopic apparatus comprising:
an endoscopic shaft having a proximate end near an operator thereof and a distal end for insertion into a patient;
said endoscopic shaft including an operating channel extending from said proximate to said distal end for receiving surgical instruments therein and introducing said surgical instruments



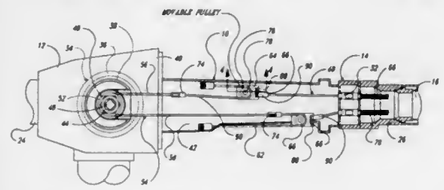
axially at said distal end to a surgical site, optical means for illuminating an area to be operated upon and transmitting an image to an image reproduction device;
said optical means including a front lens at said distal end of said endoscopic shaft;
a tube having a larger inner diameter than an outer diameter of said endoscopic shaft, said endoscopic shaft being eccentrically disposed within said tube and defining a suction channel between said tube and said endoscopic shaft;
said tube having a circumferential ring at a distal end thereof extending beyond said distal end of said endoscopic shaft to form an open-ended tubular cavity whereby an end opening of said operating channel and said front lens are recessed within said open-ended tubular cavity from a distal end of said circumferential ring;
said circumferential ring defining a channel on an inner surface thereof communicating said open-ended tubular cavity with said suction channel; and
first coupling means for connecting said suction channel to a suction source, and second coupling means for connecting said optical means to an illumination and image reproduction apparatus.

5,667,476

ENDOSCOPE ARTICULATION SYSTEM TO REDUCE EFFORT DURING ARTICULATION OF AN ENDOSCOPE

James J. Frassica, Chelmsford, and Robert E. Ailinger, Norwood, both of Mass., assignors to Vision-Sciences, Inc., Natick, Mass.

Filed Jun. 5, 1995, Ser. No. 464,260
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—149 **18 Claims**



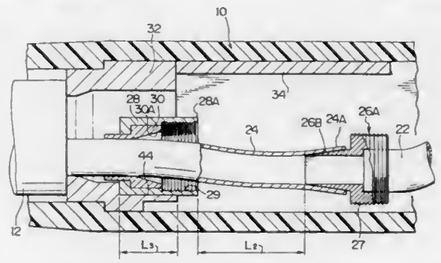
1. An endoscope, comprising:
a handle;
an insertion tube having a proximal section attached to said handle and having a distal section opposite said proximal section, said distal section being articulatable relative to said proximal section;
a control cable attached to said distal section of said insertion tube, said control cable being axially movable relative to said insertion tube, said distal section of said insertion tube being articulated upon axial movement of said control cable;
a control member attached to said handle and positioned for movement by a user relative to said handle; and
a mechanical advantage coupler connected to said control member and to said control cable, said mechanical advantage coupler having a component that is substantially linearly movable relative to said control member, said mechanical advantage coupler providing a mechanical advantage between said movement of said control member and axial movement of said control cable, said mechanical advantage coupler includes a pulley assembly connected to said control cable and coupled to said control member, said pulley assembly including a pulley wheel and cable portion extending around said pulley wheel, said cable portion being attached to said control member and being movable over said pulley wheel upon movement of said control member.

5,667,477

INNER STRUCTURE OF ENDOSCOPE

Youichi Segawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jan. 29, 1996, Ser. No. 593,681
Claims priority, application Japan, Feb. 14, 1995, 7-025484
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—153 **11 Claims**



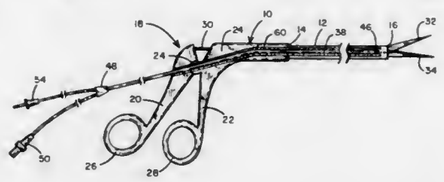
1. An inner structure for an endoscope for use with a medical treatment means, the structure comprising:
an operation section including an opening for inserting the medical treatment means;
a pipe, provided inside the operation section, for guiding the inserted medical treatment means into the operation section;
a tube, provided inside the operation section, for guiding the medical treatment means into an insertion part of the endoscope;
connecting means for connecting the tube to the pipe;
a joint member, provided inside the operation section, for jointing the insertion part to the operation section; and
a housing space, included inside the joint member, for housing the connecting means.

5,667,478

SURGICAL INSTRUMENT WITH STICK-ON FIBER-OPTIC VIEWING SYSTEM AND METHOD OF USING

Whitney A. McFarlin, Minneapolis; Thomas C. Barthel, Becker, and Miles A. Finn, Minneapolis, all of Minn., assignors to Clarus Medical Systems, Inc., Minneapolis, Minn.

PCT No. PCT/US92/09564, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/11771, PCT Pub. Date May 26, 1994
PCT Filed Nov. 6, 1992, Ser. No. 428,258
Int. Cl.[6] A61B *1/005*
U.S. Cl. 600—182 **13 Claims**



1. A viewing optics kit for use with any one of a variety of tools and instruments having an exterior surface, a length, a profile, and a working element, the kit comprising the combination of:

(a) a fiber-optic bundle including a plurality of elongated, flexible image fibers having first and second ends with an objective lens attached to said first end and a connector attached to said second end for mating with a viewing device, said plurality of image fibers being contained within a flexible sheath;

(b) a pressure-sensitive adhesive on said flexible sheath adapted to secure said fiber-optic bundle to the exterior surface of a selected one of said variety of tools and instruments with said fiber-optic bundle following and conforming to the profile of said selected one of said tools and instruments over substantially its entire length and with said objective lens positioned in viewing relation to said working element; and

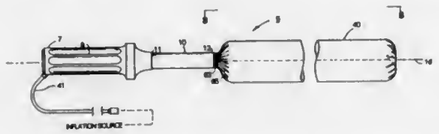
(c) an enclosure containing said fiber-optic bundles and a locating means adapted to fit said instrument for accurately fixing the position of said objective lens on said distal end of said fiber-optic bundle to ensure that said lens will be properly focused so as to include at least a portion of said instrument's working element in its field of view.

5,667,479

METHOD FOR RESECTION OF AN ANATOMIC STRUCTURE

Maciej J. Kieturakis, San Carlos, Calif., assignor to Archimedes Surgical, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 255,273, Jun. 1, 1994, Pat. No. 5,569,183. This application Sep. 30, 1994, Ser. No. 316,290
Int. Cl.[6] A61B *1/32*
U.S. Cl. 600—207 **29 Claims**



1. A method for facilitating the surgical resection of an anatomic structure with an inflatable enveloping member, comprising the steps of:

providing an instrument comprising an elongate body portion having a proximal end and a distal end and further comprising a collapsed inflatable enveloping member which is extendable from said distal end, said instrument having a lumen extending therethrough;

providing a positioning tool;

creating an incision in the body to provide access to the anatomic structure;

dividing the anatomic structure to provide a proximal end to the anatomic structure;

disposing the enveloping member proximate to the anatomic structure;

introducing said positioning tool into said lumen to secure a position of the proximal portion of the anatomic structure;

inflating the enveloping member so that the enveloping member unfolds around the anatomic structure, thereby isolating the anatomic structure in the lumen;

dividing the anatomic structure beyond a distal end of the enveloping member, thereby capturing the divided anatomic structure in the lumen; and

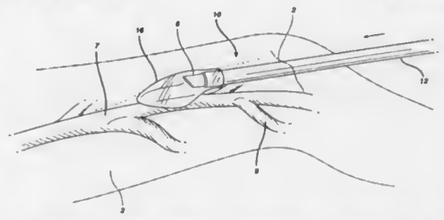
withdrawing the enveloping member proximally with the divided anatomic structure captured therein.

5,667,480

METHOD AND DEVICES FOR ENDOSCOPIC VESSEL HARVESTING

Gary W. Knight, West Chester, Ohio; Julia C. Taylor, Seattle, Wash.; Michael F. Clem, Maineville, Ohio; Felmont F. Eaves, III, Stone Mountain, and Alan B. Lumsden, Atlanta, both of Ga., assignors to Ethicon Endo-Surgery, Inc., and Emory University, both of Cincinnati, Ohio

Filed Oct. 20, 1995, Ser. No. 546,461
Int. Cl.[6] A61B *1/32*
U.S. Cl. 600—210 **9 Claims**



1. A method for removing a vessel from a patient's body comprising the steps of:

identifying a vessel to be removed;

providing an incision in the patient's body near the identified vessel;

inserting an optical dissector having a transparent concave head through the incision;

optically dissecting tissue away from a surface of the vessel with the transparent concave head of the optical dissector;

withdrawing the optical dissector from the body through the incision;

inserting an optical retractor through the incision;

optically retracting the dissected tissue away from the surface of the vessel with the optical retractor for providing space between the dissected vessel and the retracted tissue;

ligating and transecting at least a section of the vessel in the space; and

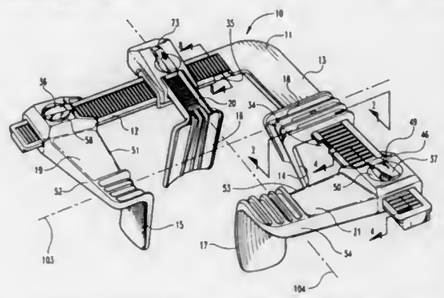
removing the transected section of the vessel from the body.

5,667,481

FOUR BLADE MEDICAL RETRACTOR

Josue J. Villalta, 11923 Discovery Clr., Indianapolis, Ind. 46236; Jean Robert Passemard, 8 Rue Dela Tour Aux Saints, Crecy la Chapelle, 77580, France; Jimmie E. Warthan, 3743 Whenner Dr., Indianapolis, Ind. 46226, and Jeffrey L. Beaver, 2094 Olivewood Dr., Indianapolis, Ind. 46219

Filed Feb. 1, 1995, Ser. No. 382,278
Int. Cl.[6] A61B *1/32*
U.S. Cl. 600—224 **16 Claims**



1. A medical retractor for holding open a body cavity comprising:

a frame having a first leg and a second leg fixedly joined together in an L-shaped configuration;

a first arm mounted to said first leg;

a first blade joined to said first arm and extending downwardly from said frame;

a second arm slidably mounted to second leg of said frame;

a second blade joined to said second arm and extending downwardly from said frame, said second blade spaced from said first blade a first distance along a straight first axis;

first locking means between said second arm and said second leg of said frame and having an unlocked condition whereat said second blade may be moved both to and from said first blade only along said first axis to allow insertion of said first blade and said second blade into a body cavity and having an unlocked condition whereat said second blade may be moved only along said first axis apart from said first blade and held positioning said first blade and said second blade along said first axis at opposite cavity extremes;

a third arm slidably mounted to said first leg of said frame;

a third blade joined to said third arm and extending downwardly from said frame;

a carrier slidably mounted to said second leg of said frame and movable along said second leg in a lengthwise direction of said second leg;

a fourth blade slidably and pivotably mounted to said carrier and movable in a direction perpendicular to said lengthwise direction and extending downwardly from said frame, said fourth blade spaced from said third blade a second distance along a straight second axis;

second locking means between said third arm and said first leg of said frame and having an unlocked condition whereat said third blade may be moved both to and from said fourth blade only along said second axis to allow insertion of said third blade and said fourth blade into a body cavity and having a locked condition whereat said third blade may be moved only along said second axis away from said fourth blade and held positioning said third blade and said fourth blade along said second axis at opposite cavity extremes; and,

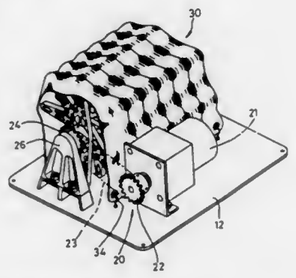
third locking means between said carrier and said fourth blade and having, an unlocked condition whereat said fourth blade may be moved along said second axis independent of movement of said third blade along said second axis and independent of movement of said carrier along said lengthwise direction of said second leg to allow insertion of said fourth blade into said cavity whereat said fourth blade may be moved away from said third blade.

5,667,482

SOLE MASSAGING DEVICE

Tien Tai Cheng, P.O. Box 82-144, Taipei, Taiwan

Filed Dec. 13, 1995, Ser. No. 571,778
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—112 **1 Claim**



1. A sole massaging device comprising:

a housing including a base and a cover adapted to be mounted on said base, said cover having a top with an elongated opening and two recesses extending from one side of said opening;

a driving mechanism including a motor, a driving gear, two brackets, a chain, a driven gear and an axle, said motor being arranged on a frame which is rigidly installed on said base, said driving gear being fixedly mounted on an output shaft of said motor, said brackets being fixedly mounted on two opposite sides of said base, said axle being supported between said brackets, said driven gear being fitted on said axle and connected with said driving gear via said chain;

a plurality of leaves fastened on said axle and each of said leaves being offset from an adjacent one of said leaves by an angle of 45 degrees; and

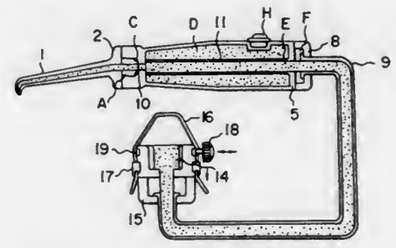
a rectangular fabric covered on said leaves and having four corners fastened on said base.

5,667,483

DENTAL DOUCHE

Vicente Laserna Santos, Virgen de Aranzazu 7-C1-1º A, Madrid, Spain, 28034

Filed Feb. 10, 1995, Ser. No. 386,923
Claims priority, application Spain, Feb. 12, 1994, 9401407-8; May 24, 1994, 9401431/0; Jul. 6, 1994, 9401882
Int. Cl.[6] A61G *17/02*
U.S. Cl. 601—162 **4 Claims**



1. An oral irrigating device comprising:

a jet having a convex end and a pourer tip at 90 degrees with said convex end, said jet having a shortened cone-shape tapering towards said convex end;

a back end of said jet having a washer acting as a stop for adjusting said back end relative to a stem, said back end of said jet linking said jet to an axially hollow and externally threaded cylinder, said stem having a top, a back end, and a screw plug, said stem top being threadedly fitted into said threaded cylinder;

said stem having a hollow cylinder therein forming an outer chamber and an inner chamber, said inner chamber having two holes, wherein the back end of said stem has an externally threaded stem cylinder to which an adaptor is screwed and which carries one end of a flexible tube, said tube having another end connected to a bowl, said bowl having a strap, two sides with two fasteners on said sides, and a button to tighten a circular flange that secures said bowl on a tap which supplies irrigating fluid to said device.

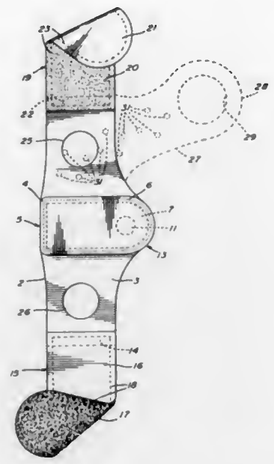
5,667,484

METHOD FOR CONTROLLING THE REFLEX RESPONSE OF THE MUSCLES OF A LIVING BODY JOINT

André Brossard, 4053 Barn Street, Rosemère, Québec, Canada, J7A 1Z4

Filed Apr. 21, 1995, Ser. No. 426,667
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—21 **2 Claims**

1. A method of facilitating the reflex response of a muscle or muscular group articulating a wrist joint of a living body, the living



body comprising skin mechano-receptors guiding a natural reflex mechanism of said muscle or muscular group, said method comprising the steps of:

mounting a pressure-applying member on the living body directly over the dorsal radiocarpal ligament; and

lightly applying the pressure-applying member to the living body directly over the dorsal radiocarpal ligament and maintaining the pressure-applying member lightly applied to said body to thereby apply to the skin mechano-receptors an external pressure having an intensity<200 mmHg for facilitating the reflex response of the muscle or muscular group.

2. A method of inhibiting the reflex response of a muscle or muscular group articulating a wrist joint of a living body, the living body comprising joint mechano-receptors guiding a natural reflex mechanism of said muscle or muscular group, said method comprising the steps of:

mounting a pressure-applying member on the living body directly over the dorsal radiocarpal ligament; and

firmly applying the pressure-applying member to the living body directly over the dorsal radiocarpal ligament and maintaining the pressure-applying member firmly applied to said body to thereby apply to the joint mechano-receptors an external pressure having an intensity≧400 mmHg for inhibiting the reflex response of the muscle or muscular group.

5,667,485

BLOOD RESERVOIR WITH VISIBLE INLET TUBE

Erin J. Lindsay, Manchester, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 1, 1995, Ser. No. 431,886

Int. Cl.[6] A61M *37/00*

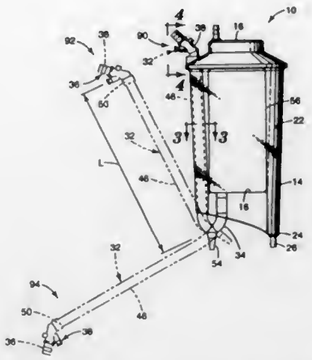
U.S. Cl. 604—4 **19 Claims**

1. A blood reservoir adapted for use in an extracorporeal circulatory support circuit, the blood reservoir comprising:

a housing having top, bottom and side walls defining a chamber inside the housing for holding fluid;

an outlet adjacent the bottom of the housing for draining fluid from the bottom of the chamber, the outlet having a connector for connecting tubing in fluid communication with the outlet;

an inlet tube connected to the housing outside the housing for supplying fluid to the chamber, the inlet tube comprising an elongate tube having a resiliently-flexible portion connecting the inlet tube in fluid communication with the chamber at or adjacent the bottom of the chamber and a free end opposite



the resiliently-flexible portion, the free end of the inlet tube having a connector for connecting tubing in fluid communication with the inlet tube; and

holding means for releasably holding the inlet tube in a first position, wherein the inlet tube is held in a generally vertical orientation generally adjacent the side wall of the housing, the inlet tube having a length that brings the connector of the inlet tube into generally close proximity with the top of the housing when the holding means holds the inlet tube in its first position, whereby the blood reservoir can be converted between top and bottom inlet configurations.

5,667,486

PROSTATIC STENT

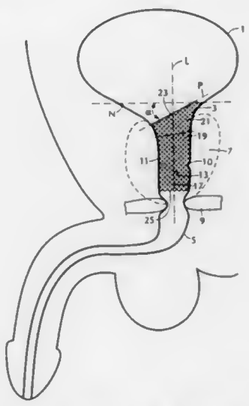
Michael A. Mikulich, La Conversion; Claude O. Clerc, Morges; Michael R. Jedwab, Pully; Adrian Furrer, Morges; Alain Mariller, Pompaples, all of Switzerland; John H. Burton, Minnentonka, and Claude Tihon, Eden Prairie, both of Minn., assignors to AMS MedInvent, S.A., Crissier, Switzerland

Filed Apr. 26, 1994, Ser. No. 233,660

Claims priority, application Sweden, Apr. 27, 1993, 9301415

Int. Cl.[6] A61M *5/00;* **A61F** *2/06;2/04*

U.S. Cl. 604—8 **13 Claims**



1. A prostatic stent comprising an elongate body having a proximal end, a distal end and a passageway extending therebetween and including a distal section, a mid-section and a proximal section, with said elongate body being of a length sufficient to extend from a urinary bladder neck defining a shape to a position

proximally of an external sphincter, said distal section having a distally directed flare adapted to conform to a surrounding urethral wall and to prevent proximal migration of the stent, said proximal section having a first terminus with said proximal end being the first terminus of said proximal section and extending in a plane sloping at an angle α of not more than about 50° to a normal to a central axis of said body, with the slope of said proximal end being such that the proximal end is configured to conform to said neck and adapted to be closely received within the entrance to the bladder and with said proximal section being elastic and being sized and configured and adapted to substantially conform to the shape of said neck.

5,667,487

IONOSONIC DRUG DELIVERY APPARATUS

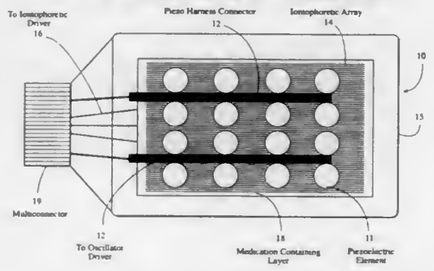
Julian L. Henley, 330 Orchard St., New Haven, Conn. 06511-4417

Continuation of Ser. No. 44,586, Apr. 7, 1993, abandoned. This application Oct. 3, 1994, Ser. No. 316,817

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **8 Claims**

WIDE FIELD IONOSONIC APPLICATOR



1. An ionosonic medicament applicator for use with a multichannel power source and adapted to be releasably attached to the skin of an organism for the transdermal delivery of medicament, comprising in combination:

(a) a skin-contacting medicament containing layer;

(b) a multichannel iontophoresis electrode comprising at least three individual electrically isolated electrode channels, said iontophoresis electrode overlying said medicament containing layer and each of said individual electrically isolated electrode channels being in electrical communication with said medicament container layer; and

(c) an ultrasonic electrode overlying said medicament containing layer and comprising at least one piezoelectric element in mechanical communication with said medicament containing layer, said at least one piezoelectric element being operable for producing ultrasonic mechanical vibrations in said skin-contacting medicament containing layer when energized by energizing means.

5,667,488

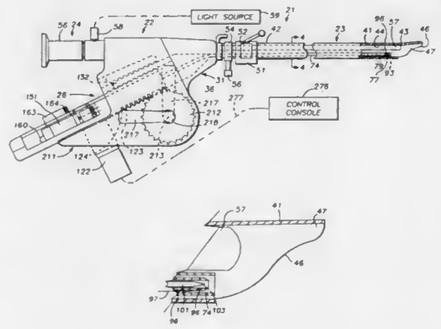
TRANSURETHRAL NEEDLE ABLATION DEVICE AND METHOD FOR THE TREATMENT OF THE PROSTATE

Ingemar H. Lundquist, Pebble Beach; Stuart D. Edwards, Los Altos; James A. Baker, Jr., Grass Valley; Christopher S. Jones, Palo Alto; Phillip R. Sommer, Newark, and Kee S. Lee, Daly City, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 191,258, Feb. 2, 1994, which is a continuation-in-part of Ser. No. 109,190, Aug. 19, 1993, Pat. No. 5,409,453, which is a continuation-in-part of Ser. No. 61,647, May 13, 1993, Pat. No. 5,421,819, and Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805, each which is a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, which is a continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 377,645

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **31 Claims**

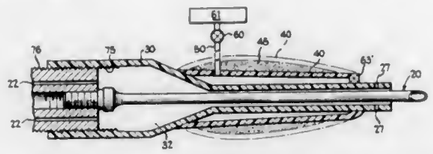


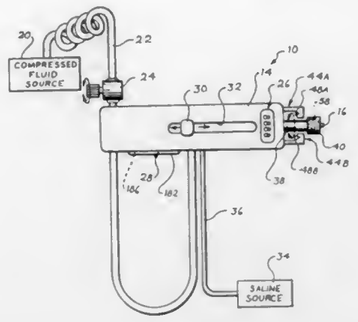
1. A transurethral needle ablation device for use with the human hand for radio frequency ablation of a target volume in the tissue of a prostate of a human male having a bladder with a base and a penis with a urethra therein formed by a urethral wall extending into the base of the bladder along a longitudinal axis with the tissue of the prostate surrounding the urethra near the base of the bladder, a bridge having proximal and distal extremities and having a passage therein extending from the proximal extremity to the distal extremity, a sheath having proximal and distal extremities and secured to the bridge and having a passageway therein in communication with the passage in the bridge, said sheath being sized so that it can enter the urethra and having a length so that when its distal extremity is in the vicinity of the prostate the proximal extremity is outside the urethra, a disposable needle assembly having proximal and distal extremities removably mounted in the passage in the bridge and extending through the passageway in the sheath, the needle assembly having proximal and distal extremities and including at least one needle electrode and an insulating sleeve coaxially disposed on the needle electrode, means carried by the bridge for causing the distal extremity of the needle assembly to be moved sideways at an angle with respect to the longitudinal axis, means carried by the proximal extremity of the needle assembly for causing advancement of the at least one needle electrode and the insulation sleeve thereon through the urethral wall and into the target volume in the tissue of the prostate with a portion of the at least one electrode being free of the insulation but with the insulation extending through the urethral wall.

5,667,489
EXPANSILE SURGICAL SLEEVE APPARATUS AND METHOD FOR USING SAME

Colman Ross Kraff, 1011 Saxony, Highland Park, Ill. 60035, and Manus Colman Kraff, 180 E. Pearson, Chicago, Ill. 60611

Filed Feb. 21, 1995, Ser. No. 391,343
Int. Cl.[6] A61B *17/20;17/22;* A61M *1/00;* A61F *9/00*
U.S. Cl. 604—22 24 Claims





1. A sleeve apparatus in combination with a surgical instrument, the combination comprising:

a surgical instrument, having a distal end for insertion through an incision in the patient's eye and bathing said distal end of said surgical instrument in irrigation fluid,

a sleeve apparatus having at least one fluid outlet proximate a distal end portion of said sleeve apparatus; and

a first sleeve member having an interior longitudinal bore communicating with said at least one fluid outlet, through which a distal end of said surgical instrument is insertable;

said interior longitudinal bore of said first sleeve member operably receiving said surgical instrument so as to create a first chamber therebetween for said irrigation fluid to pass along said surgical instrument to said fluid outlet;

said sleeve apparatus further including a second sleeve member being concentric to and operatively attached to an outer surface of said first sleeve member, so as to surround a portion of said first sleeve member and create a second chamber capable of receiving an expansion material therebetween;

said second sleeve member, having a circumference and capable of being expansile in circumference, upon introduction of an expansion material within said second chamber so as to enable the second sleeve member to conform to the shape of the incision and substantially seal the incision and reduce the loss of fluid from the patient's eye;

said combination further including delivery means operably connected to said second sleeve member for enabling the filling said second chamber with an expansion material; and

adjustment means operably associated with said delivery means for modifying said circumference of said second sleeve member; and,

attachment means for operably attaching said sleeve apparatus to said surgical instrument, said attachment means further including means for fixedly attaching said first sleeve member to a portion of said surgical instrument, to preclude longitudinal movement of said first sleeve member relative to said surgical instrument.

5,667,490
ABLATION DEVICE DRIVE ASSEMBLY INCLUDING CATHETER CONNECTOR

Peter T. Keith, Fridley; Robert E. Atkinson, St. Anthony; Thomas V. Ressemann, and Hans Mische, both of St. Cloud, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 212,319, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 960,531, Oct. 7, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 415,759
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22 6 Claims

1. A drive assembly of an ablation device connectable to a catheter assembly including a rotatable drive shaft, the drive assembly comprising:

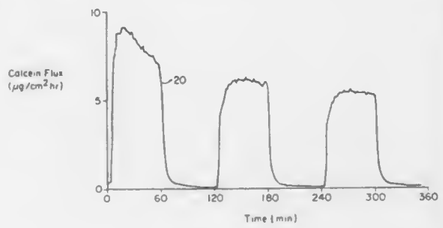
a housing; and

a connector including a first coupling rotatably connected to the housing about an axis of rotation, the first coupling including means for releasably connecting the drive shaft to the housing for rotating the drive shaft relative to the housing, and the first coupling including a fluid tight seal to allow fluid to flow between the housing and the catheter assembly; and the connector including a second coupling fixedly connected to the housing and including means for releasably connecting a portion of the catheter assembly to the housing, the second coupling retaining the portion of the catheter assembly from rotation relative to the housing while the first coupling rotates with the drive shaft.

5,667,491
METHOD FOR RAPID TEMPORAL CONTROL OF MOLECULAR TRANSPORT ACROSS TISSUE

Uwe Pliquett, Leipzig, Germany; Mark R. Prausnitz, Dorchester, Mass.; James C. Weaver, Sudbury, Mass., and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 96,512, Jul. 23, 1993, Pat. No. 5,547,467, which is a continuation-in-part of Ser. No. 705,778, May 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 331,263, Mar. 30, 1989, Pat. No. 5,019,034, which is a continuation-in-part of Ser. No. 146,343, Jan. 21, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 487,470
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—50 25 Claims



1. A method for transdermally treating an organism in response to an intrinsic condition, comprising the steps of:

a) applying a medication to epidermis of the organism;

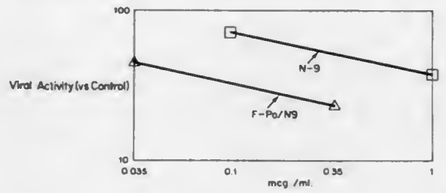
b) electroporating the epidermis at a first voltage pulse condition in response to said intrinsic condition to initiate delivery of the medication through the epidermis; and

c) electroporating said epidermis at a second voltage pulse condition, whereby the medication continues to pass through the epidermis at a rate sufficient to alter the intrinsic condition, thereby rapidly treating the organism.

5,667,492
USE AND COMPOSITION OF AN ANTI-SEXUALLY TRANSMITTED DISEASES FORMULATION

William J. Bologna, and Howard L. Levine, both of New York, N.Y., assignors to Columbia Laboratories, Inc., Coconut Grove, Fla.

Filed Oct. 7, 1994, Ser. No. 319,495
Int. Cl.[6] A61M *31/00;* A61F *6/06;* A61K *31/79*
U.S. Cl. 604—57 8 Claims

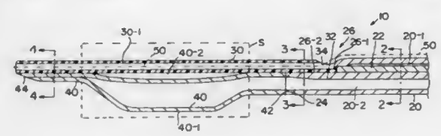


1. A method of delivering N-9 as an anti-HIV agent to a female subject comprising inserting a bioadhesive cross-linked polycarboxylic acid polymer formulation with N-9 into the vagina, wherein the formulation releases N-9 at a rate sufficient to demonstrate anti-HIV activity for at least about twenty-four hours without significant causation of irritation to the local epithelial tissue.

5,667,493
DILATION CATHETER

Jaroslav Janacek, 32350 Thompson Rd., Winchester, Calif. 92596

Filed Dec. 30, 1994, Ser. No. 366,968
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 19 Claims



1. A catheter comprising:

a catheter shaft having a distal end, a proximal end and an inflation lumen;

a guidewire tube defining a guidewire lumen configured to receive a guidewire and having a proximal end and a distal end, the guidewire tube extending forwardly of the distal end of the catheter shaft and defining an exit port for receiving a guidewire; and

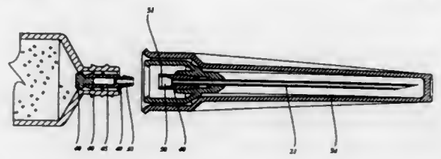
an inflatable dilation balloon in communication with the inflation lumen of the catheter shaft and including proximal and distal ends, the balloon being attached to the guidewire tube in substantially side-by-side relationship;

wherein the balloon is shaped such that the balloon contacts the guidewire tube when the balloon is inflated within a patient, but bows away from the guidewire tube when the balloon is inflated outside of a patient.

5,667,494
PREFILLED INJECTION SYRINGE ASSEMBLY

Abraham van den Haak, Eesergroen, Netherlands, assignor to A.P.I.S. Medical B.V., Eesergroen, Netherlands

Division of Ser. No. 288,110, Aug. 10, 1994, Pat. No. 5,584,817. This application Aug. 21, 1996, Ser. No. 700,892
Claims priority, application Netherlands, Jul. 15, 1994, 9401173
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—195 10 Claims

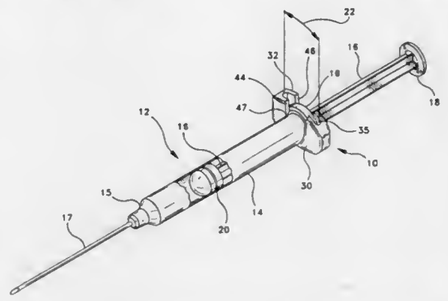


1. An injection syringe assembly, comprising at least a prefilled liquid container with an outflow opening, a piston displaceable in said liquid container with a piston rod and a piston head, an injection needle with a needle fitting which is or can be fixed in the outflow opening, and sealing means, wherein the needle fitting and the piston comprise coupling means which can be mutually coupled so as to allow the injection needle to be retracted into the liquid container after use of the assembly, and wherein the injection needle further comprises a protection cap with a passage for the needle, which cap is or can be permanently mounted on the outflow opening wherein the needle fitting consists of two sections, the section of the needle fitting comprising the coupling means being made in the form of an auxiliary coupling part which is situated in the outflow opening and comprising said coupling means and being adapted to be coupled with the other section of the needle fitting.

5,667,495
BACKSTOP DEVICE FOR A SYRINGE

Ralf V. Bitdinger, Herbeys, and Jean Pierre Grimard, Vif, both of France, assignors to Becton Dickinson France S.A., Le Ponte de Claix, France

Filed Apr. 21, 1995, Ser. No. 426,519
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—220 20 Claims



1. A device for preventing inadvertent removal of a stopper from a syringe, said syringe including a barrel having an open proximal end, and a flange provided adjacent said open proximal end, said barrel configured to receive a plunger rod through said open proximal end, comprising:

a backstop attachable to the flange, the backstop comprising a top plate and a bottom plate parallel to said top plate, the plates oriented to capture the flange therebetween;

said bottom plate defining an aperture therethrough adapted to engage the outside surface of said syringe barrel, said top

plate defining an aperture therethrough in communication with the open proximal end of the syringe barrel;

a ridge on said top plate adjacent the top plate aperture, said ridge adapted to engage a portion of the syringe barrel adjacent the open proximal end, said ridge dimensioned to prevent withdrawal of the stopper from the syringe barrel;

a lead opening formed in each of said top and bottom plates so that said backstop is attachable to the flange irrespective of the presence or absence of a plunger rod in said barrel, each of said lead openings connected to a respective aperture formed in the plates, said lead openings oriented to permit insertion of the flange between said plates.

5,667,496

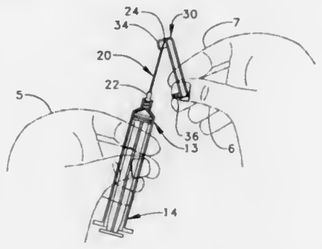
DUAL USE NEEDLE CAP FOR A SYRINGE

Roland B. Wilson, Jr., 284 N. Wabash St., Wabash, Ind. 46992

Filed Jul. 29, 1996, Ser. No. 681,852

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—263 **17 Claims**



1. A syringe with a dual use needle cap comprising:

a barrel with a neck;

a plunger with a portion mounted to move within said barrel;

a needle assembly having a base and a needle attached to and protruding away from said base, and said base being attached to said barrel; and

a dual use cap with a before use portion integrated with an after use portion, and said before use portion having an outer surface and an interior surface defining a sterile chamber sized to enclose said needle, and said after use portion including a living clamp and a hood attached to said outer surface adjacent opposite ends of said dual use cap, and said living clamp being sized to snap fit onto one of either said neck of said barrel or said base of said needle assembly, and said hood being sized to cover a tip of said needle.

5,667,497

Patent Not Issued For This Number

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Patent Not Issued For This Number

5,667,499

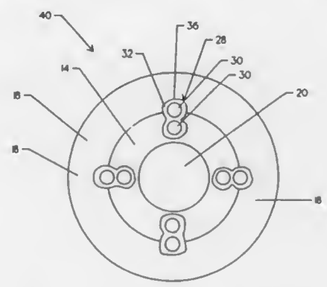
GUIDE CATHETER UNIBODY

Jeffrey M. Welch, New Hope; Todd A. Berg, Lino Lakes; Thomas J. Bachinski, Lakeville, and Kevin M. Klitz, Plymouth, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Oct. 4, 1994, Ser. No. 317,724

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **30 Claims**



1. A unibody catheter, the catheter being used for percutaneous transluminal angioplasty procedures, the catheter including:

a. a first layer; and

b. a second layer coupled to the first layer, the second layer including a plurality of strands wherein the strands cross at a plurality of points, and further wherein the strands include means for fixedly attaching the strands to each other at a substantial number of the points where they cross.

5,667,500

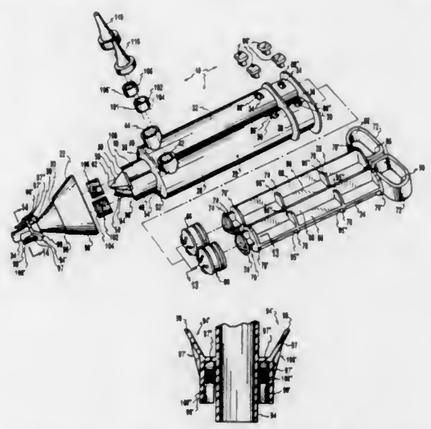
MEDICAL LAVAGE APPARATUS AND METHODS

Darrel Palmer, Sandy, and William R. Houghton, Midvale, both of Utah, assignors to Ballard Medical Products, Draper, Utah

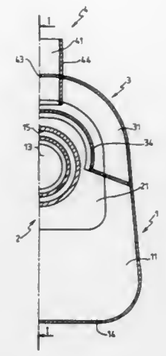
Division of Ser. No. 225,202, Apr. 8, 1994, abandoned, which is a division of Ser. No. 82,179, Jun. 24, 1993, Pat. No. 5,330,424, which is a division of Ser. No. 923,706, Jul. 31, 1992, Pat. No. 5,254,086. This application May 25, 1995, Ser. No. 453,539

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—283 **3 Claims**



1. A medical connector for releasibly connecting in telescopic relation an end of a medical tube and a medical fitting having a hollow male projection with proximal and distal ends, the connector comprising at least one clamping means, mounted to the male projection at a point of attachment intermediate the proximal and distal ends thereof, and manually operable between open and clamping positions to permit said medical tube to slide onto the male projection up to said point of attachment as the clamping means is manually held in the open position, and thereafter clamping said tube to the male projection when manually released to the clamping position, and said clamping means comprising a clamp member having a length which terminates short of whichever end of the male projection the medical tube is to slide onto and a plurality of teeth means along at least part of the length thereof for gripping the tube end, the clamp member accommodating telescopic placement of an end of the medical tubing over one of said ends of the male projection up to said point of attachment and releasible clamping of the tube end against the male projection along the entire length of the clamp member.



5,667,501

WOUND DRESSINGS

Michael Fowler, Nuneaton; Thomas Richard Burrow, Coventry; Terence Dudley Turner, Cardiff; Ryszard Jan Schmidt, Penarth, and Lip Yong Chung, Cathays Cardiff, all of United Kingdom, assignors to University College Cardiff Consultants Limited, Cardiff, United Kingdom

PCT No. PCT/GB93/02490, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/13333, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 3, 1993, Ser. No. 446,769

Int. Cl.[6] A61F *13/00*

U.S. Cl. 604—304 **6 Claims**

1. A wound dressing which comprises an addition polymer having hydroxyl, carbonyl or amide functional groups or a polysaccharide having hydroxy functional groups, said functional groups having been converted to derivatives which are persistent free radicals or precursors of persistent free radicals, which free radicals are reactive with molecular oxygen in a mammalian wound environment comprising macrophages and/or fibroblasts, said reaction being such as to form hydrogen peroxide in said environment; wherein said polymer stimulates activity of said macrophages or proliferation of said fibroblasts in said wound environment.

5,667,502

INFLATABLE COLLECTING BAG, IN PARTICULAR FOR AN ARTIFICIAL ANUS

Henri Holtermann, Saint-Jean-de-Luz, France, assignor to B. Braun Biotrol, Boulogne, France

Filed Feb. 28, 1996, Ser. No. 608,080

Claims priority, application France, Mar. 1, 1995, 95 02359

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—342 **15 Claims**

1. A collecting bag for collecting body excreta running from an artificial anus, said bag comprising:

a receptacle for receiving and storing said excreta, the receptacle comprising a front wall and a back wall that are welded together along a peripheral weld which defines the periphery of said receptacle, the back wall comprising an inlet opening for excreta and means for fixing the bag to the patient in such a manner that said inlet opening is in register with the artificial anus of said patient,

an inflatable cushion configured to prevent pressures exerted on the bag, once placed on the patient, from bearing against the artificial anus, the cushion extending radially from the periphery of the receptacle and situated at a sufficient distance from said inlet opening such that, once the bag is placed on the patient, said cushion transmits no pressure to the artificial anus of said patient, and

means for inflating said cushion, said means comprising a valve having a first end outside the cushion and a second end inside the cushion.

5,667,503

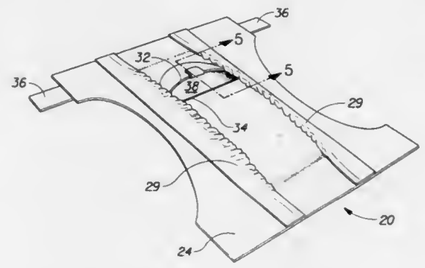
DIAPER HAVING EXPULSIVE SPACER

Donald Carroll Roe, West Chester, and Kimberly Ann Dreier, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 353,578, Dec. 9, 1994, Pat. No. 5,514,121. This application May 15, 1995, Ser. No. 441,269

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **3 Claims**



1. A diaper having a longitudinal centerline and a lateral centerline orthogonal thereto, said lateral centerline dividing said diaper into front and rear portions, said diaper comprising:

a chassis comprising:

a liquid impervious backsheet;

a liquid pervious topsheet having an inwardly oriented surface and an outwardly oriented surface;

an absorbent core intermediate said topsheet and said backsheet, said core facing said inwardly oriented surface of said topsheet; and

an arcuately shaped expulsive spacer adhesively releasably affixed to said topsheet and being disposed on said outwardly oriented surface of said topsheet and having a concave side and a convex side, said expulsive spacer being oriented such that said concave side faces towards said front portion of said diaper, and receivably collecting fecal material deposited on said outwardly oriented surface of said topsheet, whereby said spacer can expel at least a portion of the fecal material contained therein.

5,667,504

PROCESS FOR THE ADJUSTMENT OF A SWITCHABLE FLOW LIMITING APPARATUS, AND AN APPARATUS OPERATING ACCORDING TO THE PROCESS

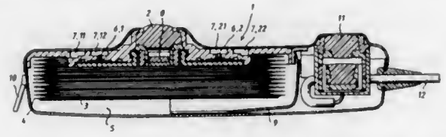
Hans Baumann, Bahnhofstrasse 12a, 24223 Raisdorf; Karl-Heinz Otto, AmHochbehalter 13, 24146 Kiel; Kal-Jurgen Hinrichs, Holtenauer Strasse 116, 24118 Kiel; Wolfgang Graczyk, Randersstrasse 2, 24109 Kiel, and Jorg-Roger Peters, Dorfstrasse 20, 24241 Schmalstede, all of Germany

Filed Oct. 11, 1994, Ser. No. 321,638

Claims priority, application Germany, Oct. 8, 1993, 43 34 247.7

Int. Cl.[6] A61K *9/22*

U.S. Cl. 604—891.1 **12 Claims**



1. Process for adjustment of a switchable, flow-limiting device inside a patient's body having at least three stable operating states for limited flow of liquids or gases by means of a service device outside said patient's body, said flow-limiting device and said service device being spatially separated with no bodily connection between said service device and said flow-limiting device comprising:

establishing different flow rates for said liquids or gases by means of different throttle paths arranged to follow said flow-limiting device in a device that includes said flow-limiting device, and,

transmitting energy needed for adjustment of said flow-limiting device from said service device into said device that includes said flow-limiting device,

thereby switching said flow-limiting device among said at least three stable operating states to switch said flow of said liquids or gases from one throttle path arrangement to another only during a duration of said energy transmission.

5,667,505

METHOD OF CARRYING OUT CRYOSURGICAL INTERVENTIONS AND DEVICE FOR THIS METHOD

Jaroslav Štraus, Prague, Czech Rep., assignor to SMT spol. s.r.o., Czech Rep.

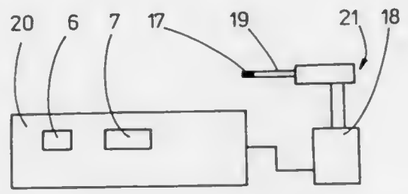
PCT No. PCT/CZ93/00004, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO93/18714, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 22, 1993, Ser. No. 307,666

Claims priority, application Czech Rep., Mar. 24, 1992, 885-92

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—24 **17 Claims**



1. A device for performing cryodestruction of tissue comprising:

an operating instrument including a heat exchanger having a first heater, a valve, and a first temperature sensor;

a pressurized container of cooling medium for delivering cooling medium to the operating instrument, the pressurized container including a second heater, a second temperature sensor, and a pressure sensor;

an outlet gas heating means including a third heater, and a third temperature sensor; and

a controlling microprocessor coupled to electronic switches of the valve, and the first, second, and third heaters, said controlling microprocessor being further connected to a measuring unit coupled to the first, second, and third temperature sensors, and the pressure sensor, the controlling microprocessor providing means for varying a rewarming rate during rewarming of the tissue.

5,667,506

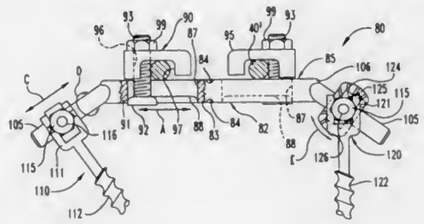
SPINAL ROD TRANSVERSE CONNECTOR FOR SUPPORTING VERTEBRAL FIXATION ELEMENTS

Chester E. Sutterlin, Gainesville, Fla., assignor to Danek Medical, Inc., Memphis, Tenn.

Continuation of Ser. No. 966,100, Oct. 22, 1992, abandoned. This application Mar. 14, 1995, Ser. No. 404,118

Int. Cl.[6] A61B *17/56;17/58*

U.S. Cl. 606—61 **37 Claims**



33. A transverse connector assembly for spanning between a plurality of spinal rods situated adjacent a patient's vertebrae, said assembly comprising:

at least one vertebral fixation element having a bone engagement portion;

a plate including;

an elongated central portion having two opposite ends;

a pair of rod engaging portions, one each integrally disposed at each of said opposite ends of said central portion, each of said rod engaging portions having a longitudinal axis and a plurality of locations adapted to receive a spinal rod, said locations spaced along the longitudinal axis of each of said rod engaging portions, each of said pair of rod engaging portions including an elongated body portion defining an elongated slot therethrough, said central portion having a width less than the width of said body portion of each of said pair of rod engaging portions; and

a pair of fixation element engagement portions configured for engaging said vertebral fixation element, one each of said fixation element engagement portions being affixed to a corresponding one of said pair of said rod engaging portions distal from said central portion; and rod engaging means for variably engaging said plate to at least one of the plurality of spinal rods at one of said plurality of locations along a corresponding one of said rod engaging portions between said central portion and a corresponding one of said pair of fixation element engagement portions, said rod engaging means including means extending through said slot for clamping said at least one of the plurality of rods against a surface of said body portion.

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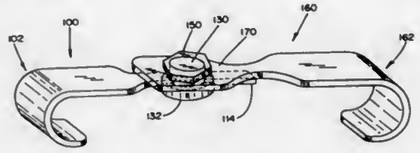
COMPRESSION LOCKING VARIABLE LENGTH CROSS-LINK DEVICE FOR USE WITH DUAL ROD APPARATUS

James D. Corin, Englewood, Colo.; Joseph P. Errico, Far Hills, and James D. Ralph, Oakland, both of N.J., assignors to Fastenetix, LLC, Summit, N.J.

Filed Dec. 4, 1995, Ser. No. 567,144

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **12 Claims**



1. A variable length cross-link device for use with orthopaedic rod apparatuses having a plurality of rods, comprising:

a first rod coupling element having first and second ends, said first end having means for coupling to a first rod, said second end comprising a narrow flat extending portion;

a second rod coupling element having first and second ends, said first end having means for coupling to a second rod, said second end comprising a wide flat extending portion;

top locking nut; and

a post, said poet having a wide base, an intermediate section having a passageway which is transverse to an elongate axis the post, and a threaded upper section, such that said narrow flat extending portion of said first element may be slidably inserted into said passageway, the threaded upper section of said post may be inserted through a through hole in said wide flat extending portion of said second element,

whereby the tightening of said top locking nut on said threaded upper section of said post causes a top surface of said narrow flat extending portion to be compression locked to a bottom surface of said wide flat extending portion.

5,667,508

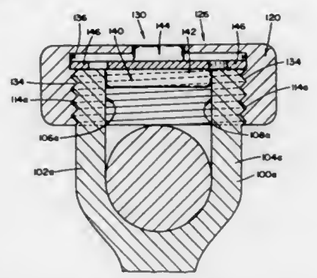
UNITARY LOCKING CAP FOR USE WITH A PEDICLE SCREW

Thomas J. Errico, Summit; James D. Ralph, Oakland, and Steven Tatar, Montville, all of N.J., assignors to Fastenetix, LLC, Summit, N.J.

Filed May 1, 1996, Ser. No. 641,504

Int. Cl.[6] A61B *17/86*

U.S. Cl. 606—73 **8 Claims**



1. A unitary locking cap for locking a rod in a rod receiving channel defined between a pair of upwardly extending members of an orthopaedic implant apparatus, said upwardly extending members each having mutually defined exterior and interior surfaces a threading on one of said exterior and interior surfaces, comprising:

a cylindrical body having a sidewall having inner and outer surfaces, said inner surface including an annular recess, a first end, which is open, and a second end, said body being mountable around the mutually defined exterior surfaces of said pair of upwardly extending members;

a post member which is positionable between said mutually defined interior surfaces of said pair of upwardly extending members, said post member including a plurality of deflecting arms extending radially therefrom which seat in the annular recess of said cylindrical body such that the post and the cylindrical body may rotate independently, but such that the post may not be removed;

a corresponding threading for engaging the threading on the upwardly extending members.

5,667,509

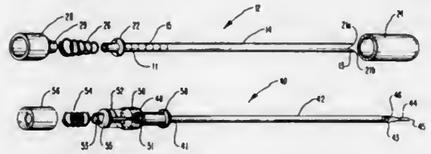
RETRACTABLE SHIELD APPARATUS AND METHOD FOR A BONE DRILL

Craig D. Westin, 1383 Arlington Dr., Salt Lake City, Utah 84103

Filed Mar. 2, 1995, Ser. No. 399,157

Int. Cl.[6] A61B *17/32;17/16*

U.S. Cl. 606—80 **20 Claims**



1. A bone drill comprising:

a shaft having a distal end and a proximal end;

a drill bit on said distal end of said shaft;

engagement means on said proximal end of said shaft for rotatably engaging said shaft and said drill bit;

a sheath for said shaft and said drill bit, said sheath having a proximal end and a distal end, said sheath comprising a hollow tubular body for telescopically enclosing said shaft and said drill bit;

retraction means on said sheath for telescopically retracting said sheath to cause said drill bit to become extended beyond said distal end of said sheath; and

a spring means on said proximal end of said sheath for resiliently urging said distal end of said sheath over said drill bit.

5,667,510

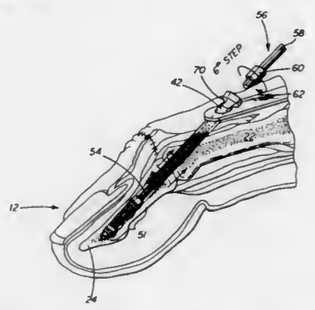
JOINT FIXATION SYSTEM AND METHOD

C. Robert Combs, 708 Turf Ct., Lexington, Ky. 40502

Filed Aug. 3, 1995, Ser. No. 510,721

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—86 **16 Claims**



1. A method of preparing and stabilizing a bone joint for fusion, adapted for the finger joints, comprising:

sawing a head of a first phalanx to form a first side of a miter joint;

drilling a guide bore through said first phalanx and longitudinally into a second phalanx;

smoothing an adjacent base of said second phalanx including use of the guide bore to form a second side of said miter joint for optimal knitting with said first side; and

providing a compressive force along the axis of said guide bore to compress said first and said second phalanxes together;

whereby said first and second phalanxes are stabilized in compressive engagement for optimal fusion.

5,667,511

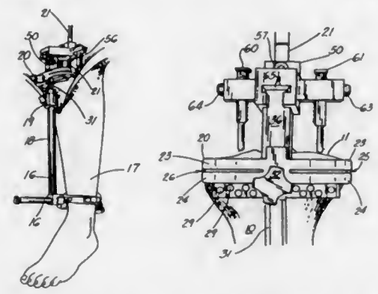
TIBIAL RESECTION INSTRUMENTATION AND SURGICAL METHOD

Tim Vendrely, Memphis, Tenn.; Leo A. Whiteside, Bridgeton, Mo.; Thomas A. Tommy Carls, Memphis, Tenn.; John Steele, Aurora, Colo., and Chris E. Johnson, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Continuation of Ser. No. 388,983, Feb. 15, 1995, Pat. No. 5,578,039. This application Jun. 7, 1995, Ser. No. 484,611

Int. Cl.[6] A61B *17/58*

U.S. Cl. 606—88 **24 Claims**



1. A tibial cutting guide instrument for resecting a patient's transversely cut proximal tibia to receive a tibial prosthesis comprising:

a) an instrument body having a primary cutting surface thereon for guiding a surgeon's cutting knife during a reshaping of a patient's proximal tibia to receive a tibial prosthesis member;

b) a blade portion for forming a connection between the instrument body and the patient's proximal tibia, the blade member having a sharp edge portion that can cut into the cancellous tissue of the patient's proximal tibia and a trailing edge that defined a secondary cutting guide surface;

c) a rod for tracking the patient's intramedullary canal, said rod being connectable to the instrument body so that the primary cutting guide surfaces are referenced to the patient's intramedullary canal; and

d) wherein the embedded blade member secondary cutting guide surface defines a plane with the primary cutting guide surface so that the cutting instrument abuts both the primary cutting guide surface and the secondary cutting guide surface during use.

5,667,512

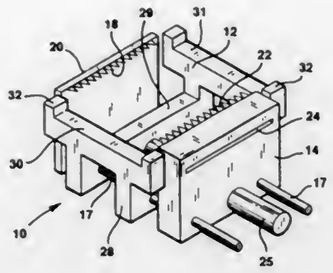
PATELLAR RESECTION GUIDE

Wesley Johnson, Chanbassen, Minn., assignor to Metagen, LLC, Menomonie, Wis.

Filed May 3, 1996, Ser. No. 642,696

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—88 **29 Claims**



1. A patella resection guide comprising a body, a pair of parallel cradle surfaces carried by the body and spaced in the superior-inferior direction so as to encounter and support respective posterior surfaces of the quadriceps tendon and the patella ligament of a patella received between the cradle surfaces, the cradle surfaces defining a reference plane, and means for resecting the patella at a desired orientation with respect to said reference plane.

5,667,513

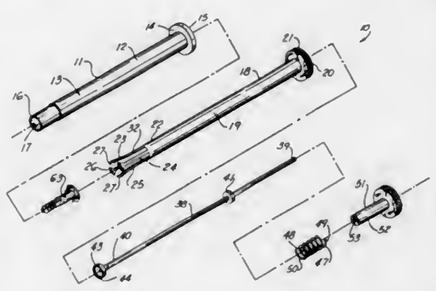
SOFT TISSUE ANCHOR DELIVERY APPARATUS

Paul A. Torrie, Marblehead, Mass., and Graham Smith, Plaistow, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Filed Jun. 7, 1995, Ser. No. 472,509

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—104 **29 Claims**



1. A soft tissue anchor delivery apparatus for inserting a soft tissue anchor that includes an elongated shank and an enlarged head, comprising:

a) an outer tube having an elongated bore and proximal and distal end portions;

b) an inner tube that fits the bore of the outer tube, said inner tube having a proximal end, a distal end, a handle and a longitudinal inner tube bore;

c) said inner tube having a plurality of fingers at the distal end portion thereof, said fingers being shaped to grip the soft tissue anchor member at the enlarged head portion thereof;

d) said plurality of fingers being biased to expand radially when moving from a position inside the bore of the larger tube to a position outside the bore of the larger tube;

e) a pushrod slidably disposed within the bore of the inner tube, said pushrod having proximal and distal end portions, said distal end portion having means for engaging said head of said soft tissue anchor, the pushrod being operable to drive the soft tissue anchor free of the fingers when the fingers exit the distal end of the outer tube; and

f) wherein the inner tube handle comprises a pair of interlocking members.

5,667,514

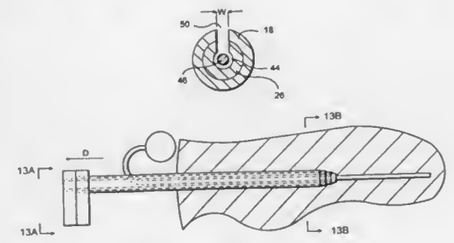
DEVICE AND METHOD FOR INSERTING A FLEXIBLE ELEMENT INTO SOFT TISSUE

James Heller, Englewood, Colo., assignor to Cochlear Ltd., Lane Cove, Australia

Filed Dec. 4, 1995, Ser. No. 534,510

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 **16 Claims**



1. A device for inserting a surgical instrument into a patient's body, said instrument including an elongated element, said elongated element having a preselected cross sectional dimension, said device comprising:

an outer member;

an inner member constructed and arranged to fit telescopically in said outer member;,

said inner and outer members having corresponding longitudinal slits of predetermined widths at least equal to said predetermined cross-sectional dimension; and

positioning members for positioning said inner and said other members selectively in a first position in which said inner and outer members define a closed longitudinal lumen for said element, and a second position in which said inner and outer members are aligned radially with said slits defining an opening for said longitudinal lumen, said opening having a dimension substantially equal to said predetermined cross sectional dimension thereby allowing the inner and outer members to be removed from said body after said element has been inserted into said body by withdrawing said inner and outer members, with said element passing through said opening.

5,667,515

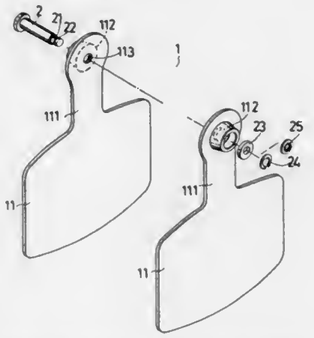
RELEASABLE EARMARK ASSEMBLY

Chun-Ta Chu, No. 38, Nung 155, Lane 482, Sec. 2, Ta Tung Road, Tainan, Taiwan

Filed Apr. 20, 1995, Ser. No. 425,486

Int. Cl.[6] G09F *3/00*

U.S. Cl. 606—116 **2 Claims**



1. An earmark tag assembly for detachably tagging an ear of an animal comprising:

(a) first and second earmark tags adapted to substantially overly, respectively, opposing sides of at least a portion of the animal's ear, each of said earmark tags having a substantially planar inner surface facing the animal's ear and an outer surface facing away from the animal's ear on opposing sides thereof and a through opening characterized by a predetermined diameter formed therein, said first and second earmark tags each having an annular protuberance formed on said outer surface thereof disposed in spaced concentric relationship with said through opening thereof, each said protuberance forming a recessed area around a respective one of said through openings and having an outer surface with a cone-shaped contour;

(b) a fastening member releasably coupled to said first and second earmark tags, said fastening member including an axially extending shaft portion having a diameter less than said predetermined diameter of said through openings of said first and second earmark tags, said shaft portion being adapted to pass reversibly through said recessed area of said annular protuberance and said through opening of said first earmark tag, an aperture in the animal's ear, said through opening of said second earmark tag, and into said recessed area of said annular protuberance of said second earmark tag to thereby removably attach said earmark tag assembly to said animal ear, said shaft having a first end disposed within said recessed area of said first earmark tag and a second end disposed in said recessed area of said second earmark tag, said second end of said tag having a groove formed therein; and,

(c) lock means releasably coupled to said groove of said second end of said fastening member shaft portion for releasably locking said coupling of said fastening member to said first and second earmark tags, said lock means being disposed within said recessed area of said second earmark tag.

5,667,516

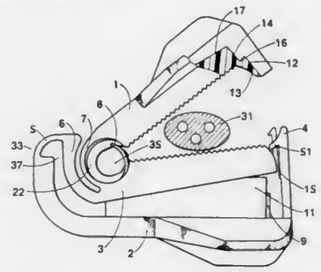
MECHANISM FOR CUTTING AN UMBILICAL CORD

Sean A. Allen, 142 Sheldon St., El Segundo, Calif. 90245

Filed May 1, 1995, Ser. No. 432,218

Int. Cl.[6] A61B *17/42*

U.S. Cl. 606—120 **8 Claims**



1. A mechanism for cutting an umbilical cord, comprising:

a housing (**33**) that includes first and second jaws (**1** and **2**) hingedly connected together for relative movement between an open condition and a closed condition gripping an umbilical cord;

a fetal cord clamp (**22**) removably disposed within said housing, said clamp having clamp surfaces adapted to grip an umbilical cord when said jaws are in the closed position, whereby an umbilical cord is gripped at two separate grip planes spaced along the umbilical cord;

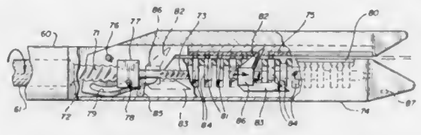
a blade holder (**2**) hingedly connected to said housing;

a cutter blade (**11**) carried by said holder for movement through an umbilical cord only after the umbilical cord is in the grip of said jaws and said clamp;

said housing (**33**) comprising a one piece plastic molding that includes said first and second jaws, and a first hinge wall (**7**) hingedly connecting said first and second jaws together;

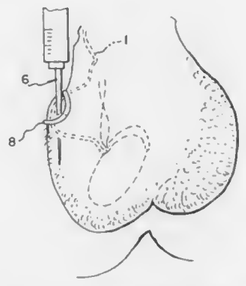
said blade holder comprising a plastic arm structure having a second hinge wall (5) connected to said housing, whereby said blade holder can be swung toward the housing when the two jaws are in the closed position;
said housing and said blade holder being a one piece unitary molded construction.

5,667,517
ENDOSCOPIC SURGICAL SYSTEM WITH SENSING MEANS
Michael Dawson Hooven, Cincinnati, Ohio, assignor to Ethicon, Inc., Somerville, N.J.
Division of Ser. No. 323,467, Oct. 14, 1994, which is a continuation of Ser. No. 991,619, Dec. 16, 1992, Pat. No. 5,383,880, which is a continuation-in-part of Ser. No. 822,478, Jan. 17, 1992, abandoned. This application May 26, 1995, Ser. No. 452,206
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—151 8 Claims



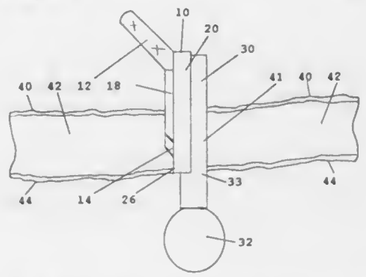
1. A system for use in an endoscopic procedure comprising:
(a) an instrument useful in conducting a step in the procedure;
(b) means for supplying electrical power connected to said instrument to operate the instrument and conduct said step in the procedure; and,
(c) sensing and control means attached to said instrument to monitor and control the operation of the instrument in conducting said step, and
(c) sensing and control means attached to said instrument to monitor and control the operation of the instrument in conducting said step, and
wherein the instrument contains a mechanism to apply staples to tissue held by the instrument during the step in the procedure, the means for supplying electrical power to the instrument is used to drive the staples into the tissue and the sensing means determines the presence or absence of staples in the instrument.

5,667,518
METHOD AND IMPLEMENTS FOR PERFORMING A VASECTOMY
William P. Pannell, 177 Wiley Acres Rd., Cordele, Ga. 31015
Filed Oct. 2, 1995, Ser. No. 538,045
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—151 9 Claims



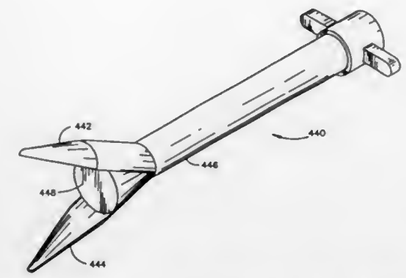
3. A medical device for administering a local anesthetic during the performance of a vasectomy, comprising:
an elongated needle smoothly tapered from a large diameter end to an acute, scrotal skin-puncturing point;
a fitting provided at the large diameter end of the needle for accepting a syringe containing liquid anesthetic;
a side-opening injection port formed in the needle at an intermediate location between the large diameter end and the point; and
a passage providing fluid communication through the needle from the large diameter end to the injection port, the passage terminating at a location intermediate the injection port and the point.

5,667,519
KNIFE FOR LAPAROSCOPIC SURGERY
Don E. Ramsey, Springfield, Ill., assignor to Ramsey Instruments Partnership, LLP, Columbia, Md.
Filed May 2, 1996, Ser. No. 640,614
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 6 Claims

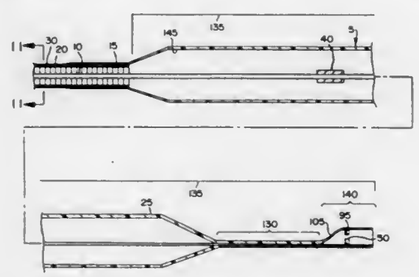


1. An incision knife for enlarging an incision into which a cannula has been inserted comprising:
a handle,
a rectangular wing having a first and a second long edges and a first and a second short edge,
said wing attached at said first short edge to said handle,
a blade,
said blade attached to said wing at said second short edge,
a guide for orienting said knife along a cannula with said guide in contact with at least a portion of the outer surface of said cannula,
said guide attached to said first long edge of said wing along a tangent to said guide, and
said guide having a ward which extends beyond said blade to protect an internal organ from said blade.

5,667,520
METHOD OF PERFORMING BALLOON DISSECTION
Peter M. Bonutti, Effingham, Ill., assignor to General Surgical Innovations, Inc., Palo Alto, Calif.
Division of Ser. No. 29,695, Mar. 11, 1993, Pat. No. 5,345,927, which is a division of Ser. No. 631,740, Dec. 18, 1990, Pat. No. 5,197,971, which is a continuation-in-part of Ser. No. 609,341, Nov. 5, 1990, abandoned, and Ser. No. 487,645, Mar. 2, 1990, Pat. No. 5,331,975. This application Aug. 29, 1994, Ser. No. 297,637
Int. Cl.[6] A61B *1/32*; A61M *29/02*
U.S. Cl. 606—190 8 Claims
1. A method of creating an anatomical space in body tissue by dissecting a first layer of tissue from a second layer of tissue along a natural tissue plane, said method comprising the steps of:
making an incision in the body which provides access to the natural tissue plane;
inserting a substantially rigid member having a bladder disposed on a distal portion thereof through said incision, said bladder being capable of exerting sufficient force when inflated to dissect the first layer of tissue from the second layer of tissue;
moving said member along the natural tissue plane to a location where it is desired to create the anatomical space between said first and second tissue layers;
inflating said bladder to dissect said first layer of tissue from said second layer of tissue along the natural tissue plane to create the anatomical space;
deflating said bladder;
moving said member to a new location between said tissue layers; and
inflating said bladder again to cause farther dissection of said first and second layers of tissue and to enlarge the anatomical space.

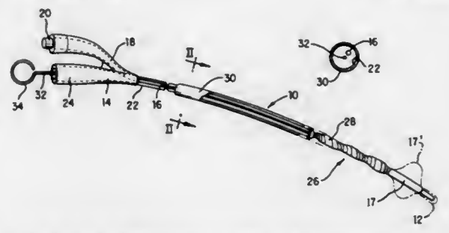


5,667,521
RAPID EXCHANGE CATHETER
Kenneth Keown, San Diego, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.
Continuation of Ser. No. 324,187, Oct. 4, 1994, abandoned, which is a continuation of Ser. No. 975,456, Nov. 12, 1992, Pat. No. 5,383,853. This application Jan. 19, 1996, Ser. No. 591,252
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 3 Claims



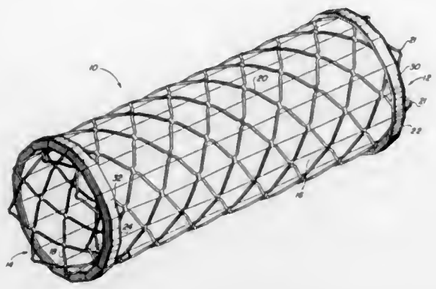
1. A catheter balloon and distal tip comprising:
a one piece tubular member having a proximal and distal end, the tubular member comprising a balloon, a distal end of reduced diameter and a distal tip of expanded diameter; the balloon is formed in the proximal end of the tubular member, the balloon having a proximal end and a distal end;
a core wire extending longitudinally through the balloon;
the balloon defining an inflation lumen;
the tubular member decreasing in diameter at the distal end of the balloon to form the distal end of reduced diameter, such that the tubular member makes contact with the core wire, the distal end of reduced diameter having a proximal end and a distal end, the balloon inflation lumen ending proximal to the proximal end of the distal end of reduced diameter;
the tubular member having the distal tip of expanded diameter distal to the distal end of reduced diameter, the distal tip is formed from the tubular member, the distal tip having a proximal end and a distal end, the distal end of the distal end of reduced diameter being contiguous with the proximal end of the distal tip, the distal tip defining a guidewire lumen; and
a skive being cut in the proximal end of the distal tip to form a proximal port for the guidewire lumen, the guidewire lumen being sized to receive a guidewire.

5,667,522
UROLOGICAL STENT AND DEPLOYMENT DEVICE THEREFOR
Josef Flomenblit, and Nathaly Budigina, both of Holon, Israel, assignors to Medinol Ltd., Tel Aviv, Israel
Filed Mar. 2, 1995, Ser. No. 397,674
Claims priority, application Israel, Mar. 3, 1994, 108832
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 6 Claims



1. A device for deployment of a stent in a predetermined part of the urethra, comprising:
a catheter having a front end adapted for insertion into the urethra and a rear end, and comprising at least one pressure tube and at least one liquid ducting tube; said pressure tube being connected to an expandable balloon which is proximal to the front end of the catheter and which is adapted for expansion within the bladder, said pressure tube being connectable at its rear end to a source of pressurized fluid; said liquid ducting tube having openings at a portion thereof rearward to and at a distance from said balloon and being connectable at its rear end to a liquid source; said portion holding a stent being a spiral band, which is made of a shape memory alloy having a first state in which said alloy is soft and substantially deformable and a second state in which said alloy has super-elastic properties and is substantially non-deformable, in which second state the stent assumes a diameter such that it can support the urethra's walls, the shape memory alloy being such that once it assumes said second state it remains in that state at physiological body temperature; said sent being coiled on said portion and is in its soft state and having windings in said first state which are at least partially overlapping whereby the total length of the stent does not change during transition from the first to the second state; the part of the urethra where said stent is being deployed being determined by said distance.

5,667,523
DUAL SUPPORTED INTRALUMINAL GRAFT
Anne Nina Bynon, Tolleson; Sandra M. Cundy, Mesa, and Rajagopal R. Kowligi, Phoenix, all of Ariz., assignors to Impra, Inc.
Filed Apr. 28, 1995, Ser. No. 430,970
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 22 Claims
1. A radially expandable dual supported intraluminal graft comprising:
a first radially expandable tubular support member;



a second radially expandable tubular support member having first and second opposing ends and concentrically positioned about the first radially expandable tubular support member; and

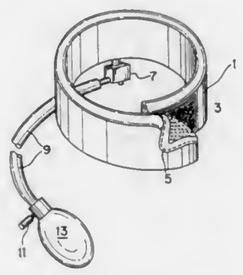
an expanded polytetrafluoroethylene tubular member, interdisposed between the first and second radially expandable tubular support members, having first and second opposing ends coupled to the first and second opposing ends of the second radially expandable tubular support member.

5,667,524

THE E-Z DRAW CUFF

Ronnie J. Bourgeois, Jr., and Harry A. Oliver, Jr., both of P.O. Box 2033, Reserve, La. 70084

Filed Jun. 11, 1996, Ser. No. 661,642
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—202 **5 Claims**



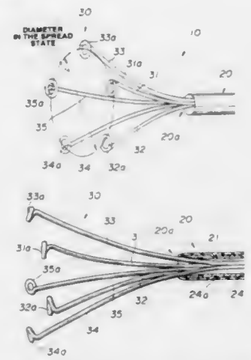
1. An inflatable medical cuff comprising in fluid communication:
an inflatable bladder mounted in a medical cuff and adapted to supply pressure to the limb of a user;
a pressurized source of fluid in fluid communication with said bladder and adapted to supply pressurized fluid to the bladder;
a fluid release valve interposed between said pressurized source of fluid and bladder,
said release valve being in fluid communication with said source and bladder; and
a safety valve to visually indicate that the supplied fluid pressure to said bladder has exceeded a predetermined pressure level,
said safety valve being in fluid communication with said pressurized source of fluid and said bladder.

5,667,525

GRASPING FORCEPS FOR ENDOSCOPE

Yayoi Ishibashi, deceased, late of Yokohama, Japan, by Kenshi Ishibashi, Hitomi Kato Ishibashi, heirs, assignor to Olympus Optical Co., Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,785
Claims priority, application Japan, Aug. 25, 1994, 6-200948
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—206 **7 Claims**



1. A grasping forceps for an endoscope including:
a flexible insertion section;
an operating wire adapted to pass through said insertion section and to be advanced and retreated in accordance with the operation of an operating section connected with a proximal side end portion thereof; and
at least four elastic grasping members having different lengths arranged at a leading end portion of said operating wire and being flexible such that leading end grasping portions formed at their leading end portions respectively spread outwardly from a central position of said insertion section;
wherein said at least four elastic grasping members are sequentially arranged in the order of increasing length to said leading end grasping portions with respect to a leading end face of said insertion section, and wherein other elastic grasping members are provided between and contiguous to both the longest elastic grasping member and the shortest elastic grasping member to said leading end grasping portions in the circularly spread state of said elastic grasping members.

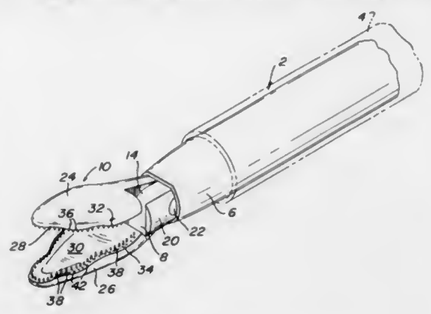
5,667,526

TISSUE RETAINING CLAMP

John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072

Filed Sep. 7, 1995, Ser. No. 524,496
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—207 **7 Claims**

1. A clamp for use in laparoscopic surgery comprising a rod, an



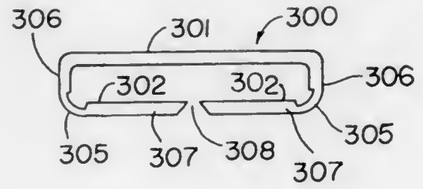
upper and a lower jaw, a pivot pin positioned in said rod and pivotably connecting said jaws to each other and to said rod, to open and close said jaws, said upper and lower jaws comprising a first and a second inner surface and a first and a second peripheral shelf, respectively, said peripheral shelves undulating in-and-out in a first plane, said upper and lower jaws further comprising a first and a second array of teeth set in said first and said second peripheral shelf, respectively, said first and second arrays of teeth having tips and undulating in-and-out in the first plane, in conformance with the undulation of the first and second peripheral shelves, said first and second arrays of teeth being offset with respect to each other, said first and second peripheral shelves further comprising a first and second array of indentations offset from each other, each of said indentations being positioned to accept said tip of an associated tooth of said arrays of teeth set in the shelf of the other jaw, when said jaws are closed and wherein said first and second inner surfaces are concave.

5,667,527

STAPLES

Melvin S. Cook, Hohokus, N.J., assignor to Holobeam, Inc., Wyckoff, N.J.

Continuation of Ser. No. 228,058, Apr. 15, 1994, Pat. No. 5,445,648, which is a continuation of Ser. No. 24,501, Mar. 2, 1993, Pat. No. 5,342,396. This application Aug. 9, 1995, Ser. No. 512,766
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—219 **10 Claims**



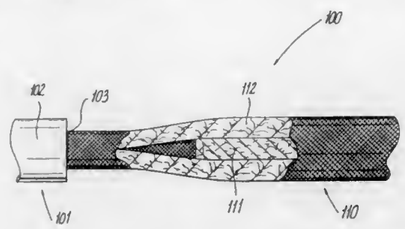
1. An apparatus for internal surgery comprising:
a staple having a crown and two legs, each of said legs being substantially perpendicular to said crown, each of said legs including a tip and having a length, each of said legs including an elongated deformation zone extending along part of the length of said leg, said elongated deformation zone including an elongated region less resistant to deformation than said leg adjacent said deformation zone, said resistance to said deformation of said elongated region being such that deformation is distributed along said elongated region when forces parallel to said crown and in the direction of a first of said legs are applied to the tip of the second of said legs said elongated deformation zone having a beginning and an end, said beginning and said end being sufficiently separated from each other such that when said elongated deformation zone is deformed to a substantially right angle, said beginning and said end do not touch;
staple pusher means for pushing against said crown and thereby pushing said tips of said legs into biological tissue; and
anvil means for exerting said forces on said tips of said legs when said tips are pushed through biological tissue and against said anvil means in order to deform said legs of said staple so that said staple encloses a portion of said biological tissue.

5,667,528

BRAIDED SUTURE SURGICAL INCISION MEMBER ATTACHMENT

Francis D. Colligan, New Haven, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 22, 1995, Ser. No. 561,646
Int. Cl.[6] A61B *17/06*
U.S. Cl. 606—224 **11 Claims**



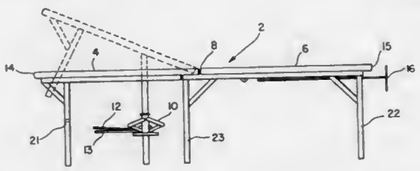
11. A surgical incision member-suture combination comprising:
a surgical incision member having a bore to receive a suture end portion;
a multifilament suture having a body portion having a sheath surrounding a suture core and a suture end portion having a sheath only;
the suture end portion being inserted into the bore and the surgical incision member being swaged to the end portion.

5,667,529

PATIENT CONTROLLED THERAPY TABLE

Tarry Adair Butner, 19 N. Ridge Rd., McHenry, Md. 21541

Filed Feb. 28, 1995, Ser. No. 395,904
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—33 **19 Claims**



1. I claim a patient operated treatment table comprising:
a treatment surface having two sides and an upper body section with a head end and a first connecting end and a lower body section with a second connecting end and a foot end wherein the first connecting end of the upper body section and the second connecting end of the lower body section are mutually rotatingly connected; and
patient manually operated mechanical means for rotating the head end of the upper body section upwardly toward the lower body section; wherein:
the head end of the upper body portion is a U-shape surface with a base and arms, and
the base of the U-shape is adapted to support a patient's chest, and
the arms of the U-shape are adapted to support a patient's shoulders and head, and
the width of the surface of the U-shaped head end is more narrow than the width of the lower body portion.

5,667,530
FROSTED TERRY CLOTH AND METHOD FOR PRODUCING SAME
Michel Benasra, 1405 Bluebird Ave., Los Angeles, Calif. 90069
Continuation of Ser. No. 264,636, Jun. 23, 1994, abandoned. This application Jul. 12, 1996, Ser. No. 679,669
Int. Cl.[6] D06L *3/02:3/16;3/14*
U.S. Cl. 8—102 **32 Claims**

1. A method of treating a dyed terry cloth to produce a frosted appearance which comprises the steps of:
(a) impregnating granules of an absorbent material with a solution comprising a bleaching agent; and
(b) contacting the terry cloth with the granules for a time sufficient to bleach at least a portion of the dye from the naps of the terry cloth.

5,667,531
DYE COMPOSITIONS CONTAINING PURIFIED POLYPORUS LACCASES AND NUCLEIC ACIDS ENCODING SAME
Debbie Sue Yaver, Davis; Feng Xu, Woodland, both of Calif.; Henrik Dalbøge, Virum, Denmark; Palle Schneider, Ballerup, Denmark, and Dorrit A. Aaslyng, Værloese, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Novo Nordisk Biotech, Inc., Davis, Calif.
Division of Ser. No. 441,147, May 15, 1995. This application Jun. 5, 1995, Ser. No. 462,484
Int. Cl.[6] C12N *9/02;15/31;15/52*
U.S. Cl. 8—401 **20 Claims**

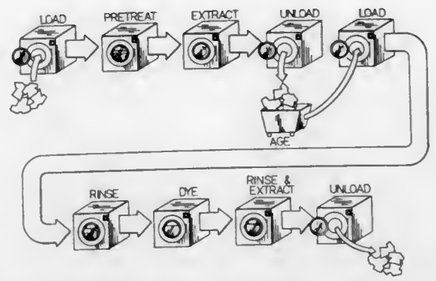
1. A dye composition comprising a *Polyporus pinsitus* laccase and at least one dye precursor capable of being oxidized by the laccase in the presence of a source of oxygen.

5,667,532
LIQUID ALKALI FOR REACTIVE DYEING OF TEXTILES
Samuel B. Moore, Burlington, N.C., assignor to Burlington Chemical Co., Inc., Burlington, N.C.
Continuation of Ser. No. 327,041, Oct. 21, 1994, abandoned, which is a division of Ser. No. 874,754, Apr. 27, 1992, Pat. No. 5,382,262. This application Feb. 21, 1996, Ser. No. 604,688
Int. Cl.[6] D06P *5/00*
U.S. Cl. 8—543 **2 Claims**

1. A clear, stable, supersaturated, phosphorous-free and silicate-free, liquid composition for reactive dyeing of cotton and cotton blended fabrics, said composition having an amount greater than equilibrium of potassium carbonate, said composition consisting essentially of:
(a) about 4 to 12 wt % potassium hydroxide;
(b) at least 39 wt % of potassium carbonate;
(c) between about 4 to 15 wt % of a salt of an organic acid selected from the group consisting of alkali metal citrates and alkali metal polyacrylates; and
(d) the balance water; wherein said composition has a 2% pH value of greater than about 12 and a difference between the values of Total and Active Alkalinities of about 11.

5,667,533
HEATHER DYED FABRIC AND METHOD OF PRODUCING SAME
Peter J. Hauser, Gastonia, N.C., and Stewart G. Helfrich, Hamburg, Pa., assignors to The Virkler Company, Charlotte, N.C.
Filed Feb. 7, 1996, Ser. No. 597,921
Int. Cl.[6] D06P *1/66;5/22*
U.S. Cl. 8—606 **18 Claims**

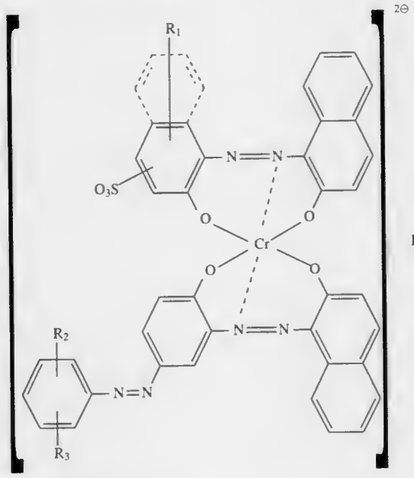
1. A process for dyeing textiles to achieve a heather-like appearance comprising:



impregnating a textile fabric with an aqueous pretreatment composition comprising a fiber reactive cationic compound;
aging the impregnated fabric in a moistened state for about 4 to 24 hours to allow the fiber reactive cationic compound to react with the fibers of the fabric;
rinsing the fabric to remove unreacted cationic compound;
immersing the fabric in an aqueous bath at a pH of less than 7 and gradually introducing dyestuffs to the bath over a period of at least 15 minutes; and
fully exhausting the dyestuffs onto the fabric.

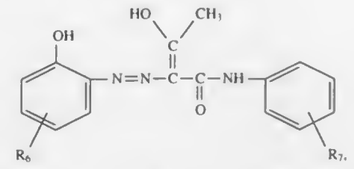
5,667,534
DYE MIXTURES COMPRISING 1:2 CHROMIUM COMPLEX DYES, AND 1:2 CHROMIUM COMPLEX DYES
Urs Lehmann, Basel, and Marcel Frick, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
Filed Dec. 20, 1995, Ser. No. 580,005
Claims priority, application Switzerland, Dec. 21, 1994, 3853/94
Int. Cl.[6] D06P *3/06;* **C09B** *45/00*
U.S. Cl. 8—641 **9 Claims**

1. A dye mixture which comprises at least one 1:2 chromium complex dye of the formula (1)

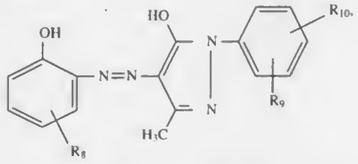


in which
R_1 is hydrogen or nitro,
Ka is a cation and
R_2 is hydrogen, C_1–C_4 alkyl or C_1–C_4alkoxy.
R_3 is C_2–C_4hydroxyalkoxy or a C_1–C_4alkoxy radical bonded in the 4-position, together with at least one 1:2 chromium or 1:2 cobalt complex dye of two identical or two different azo

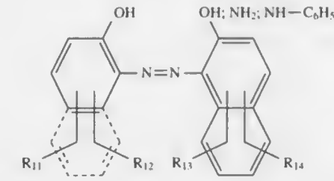
compounds from the group consisting of compounds of the formulae (2), (3) and (4)



(2)



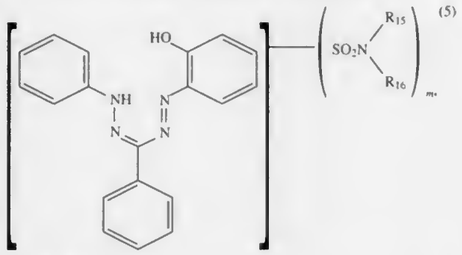
(3)



(4)

in which

R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13} and R_{14} independently of one another are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, halogen, sulfo, hydroxyl, nitro or sulfamoyl, or N—C_1–C_4alkylsulfamoyl which is unsubstituted or further substituted in the alkyl part by hydroxyl or C_1–C_4alkoxy, or together with at least one 1:2 cobalt complex dye of the formazan compound of the formula (5)



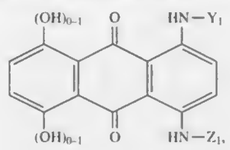
(5)

in which

R_{15} and R_{16} independently of one another are hydrogen or C_1–C_4alkyl which is unsubstituted or substituted by hydroxyl or C_1–C_4alkoxy,

m is the number 1,2 or 3 and the phenyl radicals of the compound of the formula (5) contain no further substituents or are further substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, C_1–C_4alkylsulfonyl, C_1–C_4hydroxyalkylsulfonyl, halogen, sulfo, hydroxyl, carboxyl or nitro,

or together with at least one anthraquinone dye of the formula (6)

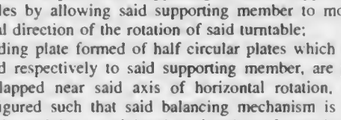


(6)

in which

Y_1 is C_1–C_8alkyl; phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or sulfo; phenyl-C_1–C_8alkyl, in which the phenyl radical contains no further substituents or is substituted by C_1–C_4alkyl, C_1–C_4alkoxy, halogen, sulfo, benzoylaminomethyl, chloroacetyl aminomethyl or acryloylaminomethyl; cyclohexyl which is unsubstituted or substituted by C_1–C_4alkyl or sulfobenzyl; or 1,2,3,4-tetrahydronaphthyl which is substituted by sulfo, and

Z_1 is defined as above for Y_1, or is a radical of the formula



in which

R_{17} is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy or halogen and

R_{18} is chloroacetylaminomethyl or acryloylaminomethyl.

5,667,535

WAFER DRYING APPARATUS WITH BALANCING MECHANISM FOR TURNTABLE THEREIN

Masayoshi Kasahara, Yamagata, Japan, assignor to NEC Corporation, Japan

Filed Dec. 8, 1995, Ser. No. 569,723

Claims priority, application Japan, Dec. 26, 1994, 6-322663

Int. Cl.[6] H01L *21/304*

U.S. Cl. 29—25.01 **3 Claims**

1. A wafer drying apparatus comprising:

a plurality of cradles each of which has a holding case for accommodating a plurality of wafers and which are allowed to swing vertically on a supporting member and which are disposed facing each other with the axis of horizontal rotation being positioned in the center;

a turntable over which said cradles are mounted through said supporting member and which rotates horizontally;

a drying chamber which surrounds said cradles;

a balancing mechanism which, for balancing the rotation of said turntable, adjusts said supporting member supporting said cradles by allowing said supporting member to move in a radial direction of the rotation of said turntable;

a shielding plate formed of half circular plates which are provided respectively to said supporting member, are partially overlapped near said axis of horizontal rotation, and are configured such that said balancing mechanism is covered thereby and that a peripheral portion thereof extends to a side wall of said drying chamber and is provided with a plurality of vanes; and

an isolating chamber which is partitioned by said shielding plate and has a partition plate which defines a vacant section surrounding said balancing mechanism and an exhaust opening from which the air in said drying chamber is drawn out by a pumping action of said vanes due to the rotation of said shielding plate and is exhausted to the outside through an external wall of said partition plate.

5,667,536

PROCESS FOR MAKING A TANTALUM CAPACITOR CHIP

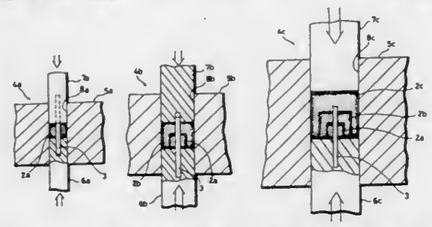
Miki Hasegawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Division of Ser. No. 159,386, Nov. 30, 1993, Pat. No. 5,486,977. This application Nov. 14, 1995, Ser. No. 557,483

Claims priority, application Japan, Dec. 8, 1992, 4-328154

Int. Cl.[6] H01G *9/15*

U.S. Cl. 29—25.03 **6 Claims**



1. A process for making a tantalum capacitor chip which includes a chip body as well as an anode wire partially inserted into and partially projecting from the chip body, the process comprising the steps of:

compacting an initial divided amount of tantalum powder, together with the anode wire, into an initial mass portion which is dimensionally smaller than the chip body, the anode wire completely penetrating through the initial mass portion to project from two opposite faces thereof; and

compacting at least one additional divided amount of tantalum powder with the initial mass portion into the chip body.

5,667,537

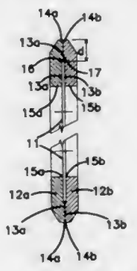
FORMING A LEAD ACID BIPOLAR BATTERY ELECTRODE HAVING A PERIPHERAL SEALING FRAME AND RELEVANT PRODUCT

Valter Richiardone, Milan; Furio Rossetti, Cuorgne; Marco Zampolli, Santena; Paolo Tosco, Turin; Francesco D'Oria, Milan; Mario Vitali, Cassina de'Pecchi; Aurelio Buscotti, Cerro Maggiore; Franco Mostarda, Bobbiate, and Luigi Borri, Legnano, all of Italy, assignors to Edison Termoelettrica, S.P.A., Trofarello, and CSI Ricera Applicata Montedison S.r.L., Bollate, both of Italy

Filed Dec. 27, 1995, Ser. No. 580,426

Int. Cl.[6] H01M *4/04;10/04*

U.S. Cl. 29—623.2 **6 Claims**



1. A method of forming a continuous peripheral frame integral with a plate of electrically conductive material constituting an electrode of a bipolar battery, in which the frame constitutes a modular peripheral member for joining to equal adjacent members, thereby hermetically sealing the cells of the battery, the method comprising the steps of:

a) providing two pro-formed complementary half-frames of a plastic material each having a flat face delimited by an outer closed line and an inner closed line, said inner and outer closed lines enclosing the perimeter of the plate;

b) placing a conductive plate within a pre-heated pressure forming mold, said conductive plate being interposed between the flat faces of the two half-frames to grip a perimeter of the conductive plate between the outer closed lanes and the inner closed lines;

c) closing the mold;

d) heating the mold to a temperature to cause the plastic material of the flat faces of the half-frames to fuse and adhere to the conductive plate along an entire perimeter of the conductive plane;

e) applying pressure to squeeze the half-frames together;

f) cooling the mold;

g) opening the mold and drawing a finished workpiece including an electrode with a peripheral frame.

5,667,538

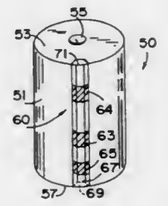
ELECTROCHROMIC THIN FILM STATE-OF-CHARGE DETECTOR FOR ON-THE-CELL APPLICATION

John C. Bailey, Columbia Station, Ohio, assignor to Eveready Battery Company, Inc., Westlake, Ohio

Division of Ser. No. 246,926, May 20, 1994, Pat. No. 5,458,992, which is a continuation of Ser. No. 648,080, Jan. 31, 1991, abandoned. This application Jun. 8, 1995, Ser. No. 482,467

Int. Cl.[6] H01M *10/48*

U.S. Cl. 29—623.5 **19 Claims**



1. A method of forming an electrochromic thin film, battery state-of-charge detector, said method comprising:

providing a substrate suitable for affixment to a battery;

depositing a first electrically conductive pattern on said substrate;

depositing an electrochromic layer and an electrolyte layer on said substrate;

depositing a second electrically conductive pattern on at least one of said electrochromic layer and said electrolyte layer, wherein at least one of said electrically conductive materials is a material through which said electrochromic material can be viewed.

5,667,539

OLEAGINOUS COMPOSITIONS

Graham Jackson, Reading; Rachel Evelyn Mary Kenward, Faringdon, and Barbara Catherine Brooke, Newbury, all of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

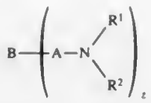
Continuation of Ser. No. 392,967, May 17, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 698,156

Claims priority, application United Kingdom, Oct. 5, 1992, 9220876

Int. Cl.[6] C10L *1/24;1/22*

U.S. Cl. 44—384 **9 Claims**

1. A composition comprising a middle distillate fuel oil containing 10 to 2000 ppm of an additive, effective to act as a wax crystal modifier and improve the filterability of the fuel, the additive consisting essentially of (i) a compound having the formula I, or a salt thereof:



wherein B represents a polycyclic aromatic system selected from the group of naphthalene, anthracene, phenanthrene, pyrene, azulene, indene, hydroindene, fluorene, diphenylene, diphenyl, quinoline, indole, 2:3-dihydroindole, benzofuran, benzothiophen, carbazole, thiophenylamine, bisphenol A and fluorescein, A represents a hydrocarbyl group, R^1 and R^2 are the same or are different and each independently is an aliphatic group having 12–24 carbon atoms and being alkyl, alkylene, monoalkoxyalkyl or polyalkoxyalkyl or aliphatic groups which contain heteroatoms selected from O, N or S provided that one of R^1 and R^2 may represent a hydrogen atom, z is at least 2 and wherein the aromatic system carries at least one substituent group being either an hydroxyl or $OC(O)CH_3$ group, and

(ii) one or more cold flow improvers comprising a polar N compound, a comb polymer, a polyoxyalkylene ester, ether, ester/ether, amide/ester, an ethylene-unsaturated ester copolymer, a hydrocarbon polymer or a sulphur carboxy compound, provided that additive componenet (ii) is different from additive component (i).

5,667,540

METHOD OF MAKING AN ABRASIVE ARTICLE

Jason A. Chesley, Hudson, Wis.; Donald R. Bell, White Bear Township, County of Ramsey, Minn.; Harold E. Rude, Roseville, Minn.; William F. Sheffield, Oakdale, Minn.; David F. Slama, Vadnais Heights, Minn., and Alan N. Stephens, Warwickshire, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 181,193, Jan. 13, 1994, Pat. No. 5,505,747. This application Mar. 13, 1996, Ser. No. 614,887

Int. Cl.[6] B24D *11/00*

U.S. Cl. 51—293 **33 Claims**

1. A method of making an abrasive article, comprising the steps of:

a) providing a substrate having first and second major surfaces, wherein the first major surface includes abrasive means for abrading a surface;

b) applying a plurality of hooking stems to the second major surface of the substrate, the hooking stems each including a proximate end adjoining the substrate and a distal end remote from the substrate; and

c) deforming the distal end of each hooking stem to thereby provide each stem with a hooking portion to enable each stem to releasably hook an opposed engaging structure.

5,667,541

COATABLE COMPOSITIONS ABRASIVE ARTICLES MADE THEREFROM, AND METHODS OF MAKING AND USING SAME

Thomas P. Klun, Lakeland Township, Washington County; Louis D. Hibbard, Eagan; Kathryn M. Spurgeon, River Falls, and Scott R. Culler, Burnsville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 597,683, Feb. 6, 1996, abandoned, which is a continuation of Ser. No. 444,966, May 19, 1995, abandoned, which is a continuation of Ser. No. 156,803, Nov. 22, 1993, abandoned. This application Nov. 21, 1996, Ser. No. 753,208

Int. Cl.[6] C09K *3/14*

U.S. Cl. 51—298 **40 Claims**

1. An abrasive article comprising a plurality of abrasive particles adhered together by a binder comprising a photoinitiated free radically polymerizable resin initiated by at least one photoinitiator cleavable via or α-cleavage and having a molecular absorptivity in a dilute methanol solution ranging from about 4 to about 400 liter/mole-cm in at least one portion of the UV/visible spectrum ranging from about 395 to about 500 nanometers.

5,667,542

ANTILOADING COMPONENTS FOR ABRASIVE ARTICLES

Kam W. Law, Woodbury, and Walter L. Harmer, Arden Hills, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 8, 1996, Ser. No. 646,667

Int. Cl.[6] B24D *3/34*

U.S. Cl. 51—308 **15 Claims**

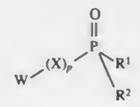
1. An abrasive article comprising

(a) a backing having a major surface;

(b) a plurality of abrasive particles;

(c) a binder which adheres the plurality of abrasive particles to the major surface of the backing; and

(d) a peripheral coating comprising an antiloading component of any of formulas 1 and 2 or mixtures thereof



1

wherein

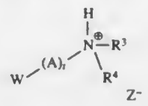
R^1 and R^2 are independently OH or OR,

R is an alkyl group;

X is O, S, NH, or a divalent aliphatic or aromatic linking group having 20 atoms or less and containing carbon and, optionally, nitrogen, oxygen, phosphorus, and/or sulfur in the aliphatic or aromatic group or as a substituent to the aliphatic or aromatic group;

p is 0 or 1; and

W is an alkyl group, or W is a fluorinated hydrocarbon having a formula $C_mH_aF_{2m+1-a}$ where a is 0 to 2m and m is 4 to 50, wherein the alkyl group or the fluorinated hydrocarbon may contain oxygen atoms in a backbone of the alkyl group or the fluorinated hydrocarbon, respectively, in an amount ranging from 1 to ½ a total number of carbon atoms present in the alkyl group or the hydrocarbon, respectively; and



2

wherein

R^3 and R^4 independently are H or an alkyl group;

Z^- is a monovalent anion;

A is a divalent aliphatic or aromatic linking group having 20 atoms or less and containing carbon and, optionally, nitrogen, oxygen, phosphorus, and/or sulfur in the aliphatic or aromatic group or as a substituent to the aliphatic or aromatic group, with the proviso that the linking group is connected by a carbon atom to N of formula 2;

t is 0 or 1; and

W is an alkyl group, or W is a fluorinated hydrocarbon having a formula $C_mH_aF_{2m+1-a}$ where a is 0 to 2m and m is 4 to 50, wherein the alkyl group or the fluorinated hydrocarbon may contain oxygen atoms in a backbone of the alkyl group or the fluorinated hydrocarbon, respectively, in an amount ranging from 1 to ½ a total number of carbon atoms present in the alkyl group or the hydrocarbon, respectively.

5,667,543

ROTATING PARTICLE SEPARATOR WITH NON-PARALLEL SEPARATING DUCTS, AND A SEPARATING UNIT

Jozef Johannes Hubertus Brouwers, Enschede, Netherlands, assignor to Romico Hold A.V.V., Netherlands

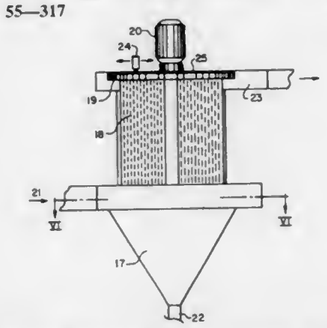
PCT No. PCT/NL94/00079, § 371 Date Feb. 22, 1996, § 102(e) Date Feb. 22, 1996, PCT Pub. No. WO94/23823, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 15, 1994, Ser. No. 553,471

Claims priority, application Netherlands, Apr. 16, 1993, 9300651

Int. Cl.[6] B01D *21/26;45/12*

U.S. Cl. 55—317 **14 Claims**



1. A rotatable separating body for separating solid or liquid particles of micron or sub-micron size from a fluid, comprising a plurality of separating ducts including singly connected walls over a substantial part of axial length of said body, wherein said walls of at least one of the separating ducts are not parallel to an axis of rotation of the separating body and that a tangent of an angle between tangent planes of the walls of the at least one separating duct and the axis of rotation designated with tan α, a radial width of the at least one separating duct designated with d, a length of the at least one separating duct designated with L and a rotation speed of the separating body designated with Ω are chosen in mutual dependence in a manner such that a dimensionless number (ΩLd tan α)/ν is located over the length L and the width d of the at least one separating duct in the range up to 192, wherein ν is kinematic viscosity of the fluid.

5,667,544

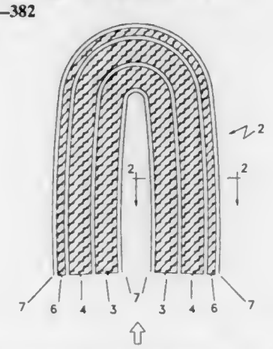
EXTENDED LIFE FILTER APPARATUS

Daniel R. Haas, Oldham, Ky., and Brian K. Baer, Washington, Ark., assignors to AAF International, Louisville, Ky.

Filed Apr. 29, 1996, Ser. No. 638,582

Int. Cl.[6] B01D *39/14;46/10*

U.S. Cl. 55—382 **14 Claims**



1. A filter apparatus for removing particulate matter from a fluid stream to be treated comprising:

at least one layer of porous filter medium of preselected thickness transversely disposable in said fluid stream to be treated so as to present upstream and downstream faces with a preselected thickness therebetween with the filter medium being of preselectively progressively increasing density between said upstream face and toward said downstream face; and,

at least one application of viscous adhesive material applied to said filter medium in planar sheet-like form at a preselected location and quantity between said upstream and downstream faces to provide an adhesive barrier extending transversely and uniformly across said filter medium to enhance further particulate collection from said fluid stream.

5,667,545

FILTER ELEMENT FOR AIR CLEANER AND METHOD OF MANUFACTURING THE SAME

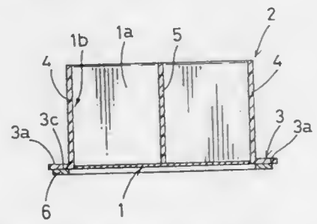
Minoru Hooda, Kariya, and Hideki Inaba, Gifu, both of Japan, assignors to Toyoda Boshoku Corporation, and Nippondenso Co., Ltd., both of Japan

Filed Jun. 26, 1996, Ser. No. 670,288

Claims priority, application Japan, Jul. 3, 1995, 7-167365

Int. Cl.[6] B01D *27/06;46/10*

U.S. Cl. 55—497 **7 Claims**



1. A filter element for an air cleaner, comprising:

a sheet-like filter medium for purifying air when the air is transferred from one side to the other side of said filter medium, said filter medium being folded in a sawtooth-shaped pattern and extending along a plane, said filter medium having a base contour contained in the plane and having a sawtooth-shaped peripheral edge section extending along a part of said base contour;

a frame member having a flange confining said filter medium and a side wall formed on said flange, said flange outwardly projecting from said frame, said side wall being airtightly bonded to said sawtooth-shaped peripheral edge section of said filter medium; and

a fibrous mat having cushioning effect, said mat continuously extending along said base contour and fixedly bonded to a surface of said flange facing the other side of said filter medium.

5,667,546

FITTING FOR CONVEYING GRANULAR MATERIAL

Douglas J. Boring, Franklin, Pa., assignor to The Conair Group, Inc., Pittsburgh, Pa.

Filed Mar. 4, 1996, Ser. No. 610,421

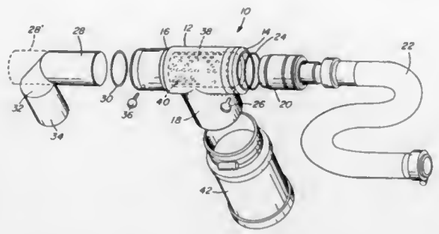
Int. Cl.[6] B01D *46/24*

U.S. Cl. 55—503 **11 Claims**

1. A three part fitting for providing a granular material inlet and an air and dust outlet to a granular material storage vessel comprising:

a cylindrical outer housing body having an entry end, an exit end, and an air and dust exit port between said entry end and said exit end;

a cylindrical material inlet tube sealingly and removably secured to said housing body entry end;



a cylindrical material outlet tube sealingly and removably secured to said housing body exit end and communicating with said granular material storage vessel;

a removable cylindrical filter screen tube positioned within said outer housing body in contact with said material inlet tube and said material outlet tube whereby granular material entrained in an air stream and being transported through said material inlet tube enters into the interior of said cylindrical filter screen tube from where said granular material is conveyed through said material outlet tube and air and dust that will pass through said filter screen tube leaves said outer housing body through said air and dust exit port and whereby said cylindrical filter screen tube may be removed and replaced for cleaning and repair.

5,667,547

METHOD FOR MANUFACTURE OF QUARTZ GLASS PLATES

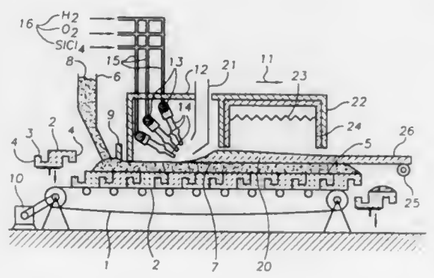
Uwe Christiansen, Gelnhausen, and Anton Steinkohl, Gründau, both of Germany, assignors to Heraeus Quartzglas GmbH, Hanau, Germany

Filed Mar. 24, 1995, Ser. No. 410,612

Claims priority, application Germany, May 26, 1994, 44 18 401.8

Int. Cl.[6] C03B *20/00*

U.S. Cl. 65—17.4 **9 Claims**



1. Process for the continuous production of plates of quartz glass comprising

providing a substrate of quartz glass grains,

depositing a layer of quartz glass soot on said substrate, said layer exhibiting a higher of sintering activity than said substrate,

passing said layer continuously through a heating zone where the soot is heated sufficiently to cause fusion of the soot without causing fusion of the substrate, whereby said soot emerges from said heating zone in the form of a vitrified glass strip, and

dividing said vitrified glass strip into plates.

5,667,548

PROCESS FOR PRODUCING CERAMIC GREEN COMPACTS BY DOUBLE LAYER COMPRESSION

Thomas Graule, Holzbrunnenstrasse 24; Ludwig J. Gauckler, Gemsgasse 11, both of CH-8200 Schaffhausen, and Felix Baader, Zurich, all of Switzerland, assignors to Thomas Graule, and Ludwig J. Gauckler, both of Schaffhausen, Switzerland

PCT No. PCT/CH94/00070, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/24064, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 7, 1994, Ser. No. 351,370

Claims priority, application Switzerland, Apr. 8, 1993, 1096/93

Int. Cl.[6] C03B *40/02*

U.S. Cl. 264—86 **14 Claims**

1. A process for the production of ceramic green bodies, comprising the steps of:

providing a viscous slip comprising at least one of oxidic ceramic charged powder particles and non-oxidic ceramic charged powder particles, said non-oxidic particles coated with an oxide layer; and

adding an active substance to the slip for decomposing the slip and forming ions for gradually altering the condition of the slip over time until the slip has solidified.

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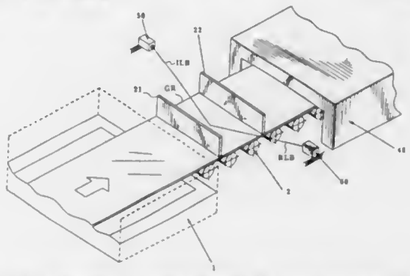
METHOD AND SYSTEM TO AUTOMATICALLY LIFT THE CURTAINS OF THE EXIT HOOD OF A MACHINE FOR THE PRODUCTION OF FLOAT FLAT GLASS

Manuel Alarcon-Lopez, Bondojito; Lenin Roman-Gomez, Ecatepéc; Rafael-Jorge Rojas-Cortes, Tlalnepantla, and Victor-Octavio Enciso-Aguilar, Morelos, all of Mexico, assignors to Vidrio Plano de Mexico, S.A. de C.V., San Juan Ixhuatepec, Mexico

Filed Jan. 25, 1996, Ser. No. 591,770

Int. Cl.[6] C03B *18/02*

U.S. Cl. 65—29.18 **5 Claims**



1. In a glass manufacturing machine for the production of float flat glass as a glass ribbon, which includes an exit hood for the glass ribbon, liftable curtains for the exit hood, and, a system to automatically lift the curtains of the exit hood, comprising:

light beam emission means placed over an edge of the glass ribbon, to provide a light beam incident on a surface of the glass ribbon to be reflected thereby as a reflected light beam;

light beam reception means placed over another edge of the glass ribbon, opposed to the emission means, to receive the reflected light beam and provide a signal representative of the absence or deviation of the reflected light beam because of a break in the glass ribbon;

control means for receiving the signal representative of the absence or deviation of the reflected light beam, and provide operating control signals including a first signal for actuating the system to automically lift the curtains of the exit hood in response to the absence or deviation of the reflected light beam.

4. In a float glass manufacturing machine for the production of float flat glass as a glass ribbon, which includes an exit hood for the float flat glass, with liftable curtains and actuators for lifting the curtains, a method to automatically lift the curtains of the exit hood of the machine comprising:

a) directing an incident light beam from a light emitter placed over an edge of the glass ribbon, on a surface of the glass ribbon to be reflected thereby as a reflected light beam;

b) receiving the reflected light beam with a light beam receiver;

c) deriving a signal from the receiver representative of an absence of the reflected light beam because of a break in the glass ribbon;

d) feeding the signal representative of an absence of the reflected light beam to a controller;

e) deriving a plurality of operating control signals in the controller in response to the signal representative of an absence of the reflected light beam; and

f) providing a first operating control signal of said plurality of operating control signals to the actuators for lifting the curtains.

5,667,550

Patent Not Issued For This Number

5,667,551

SECONDARY AIR HUMIDITY CONTROLLER FOR A GLASS MELTING FURNACE AND GLASS MELTING FURNACE WITH THE CONTROLLER

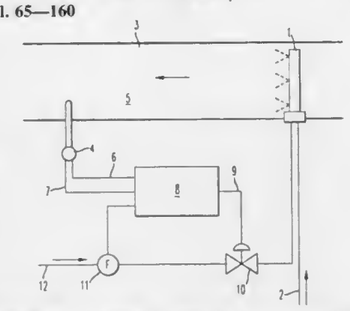
Hiroshi Todoriki, Yokohama, and Ichiro Terao, Funabashi, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Mar. 14, 1996, Ser. No. 615,952

Claims priority, application Japan, Mar. 30, 1995, 7-073629

Int. Cl.[6] C03B *5/24*

U.S. Cl. 65—160 **3 Claims**



1. A secondary air humidity controller in a glass melting furnace, comprising:

a humidity sensor which detects a humidity in a duct for secondary air for combustion in the glass melting furnace; and

a humidifier which is arranged upstream of the humidity sensor in the secondary air flow, and which supplies moisture to the secondary air so that an output from the humidity sensor reaches a predetermined value.

5,667,552

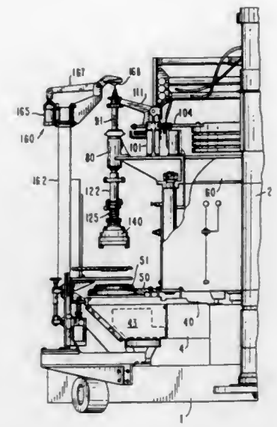
MACHINE TO CUT-OFF AN END OF A HOLLOW GLASSWARE ARTICLE

Armando Cabrera-Montante, Col. El Roble, Mexico, assignor to Vitrocrisa, S.A. De C.V., Nuevo Leon, Mexico

Filed Aug. 29, 1995, Ser. No. 520,380

Int. Cl.[6] C03B *9/46;21/00;23/26*

U.S. Cl. 65—174 **15 Claims**



1. A machine to automatically cutoff one end of a hollow glassware article, said machine comprising:

a support structure including a base and a vertical shaft having an upper end and a lower end centrally mounted on the base, and control means at the upper end of the vertical shaft to provide control and electrical energy to driving components of the machine;

intermittent driving means, rotary mounted on the vertical shaft providing a plurality of intermittent positions corresponding to article charging, cutoff, finishing and discharging positions;

a lower intermittent rotary table rotary mounted on the vertical shaft and coupled to the intermittent driving means to be driven thereby;

a plurality of one-piece cutoff burners, each equidistantly mounted on the periphery of said lower intermittent rotary table, to cutoff an excess piece of a lower end of said hollow glassware article and to finish the cut-off end thereof within a cutoff cycle;

an upper intermittent rotary table mounted on the vertical shaft and coupled to the lower intermittent rotary table to be driven thereby;

continuously rotary driving means mounted on the lower intermittent rotary table, including a motor mounted on the lower intermittent rotary table for imparting a continuous rotary movement, a shaft retained by a bearing sleeve mounted on the upper intermittent rotary table and coupled to the motor, a driving sprocket coupled to an upper end of said shaft, and a chain coupled to the sprocket to be continuously rotated by the sprocket;

a plurality of chuck driving means equidistantly mounted on the periphery of the upper intermittent rotary table, each chuck driving means comprising a bearing sleeve, a rotary sprocket mounted on the bearing sleeve which is coupled and continuously rotated by the chain, and a crown gear on the rotary sprocket;

a plurality of chuck actuating and gripping means equidistantly mounted proximate the periphery of the upper intermittent rotary table and comprising a shaft gripping sleeve having an annular gear at a lower end for engaging the crown gear of the chuck driving means, a central hollow shaft slide passing through and gripped by the shaft gripping sleeve, said slide gripping sleeve having coupling means at a lower end, and vertical reciprocate means operatively coupled to the shaft gripping sleeve to downwardly move the gripping sleeve to engage the annular gear with the crown gear and thereby transmit the continuous rotary movement to the hollow shaft and its coupling means, and lift said gripping sleeve to interrupt the rotary movement to said shaft gripping sleeve;

a plurality of chuck carrier and operating means, each comprising a central chuck operating bar slide passing through the hollow shaft of the chuck actuating and gripping means, a hollow spacer sleeve coupled to the coupling means of the hollow shaft, a chuck carrier coupled to the spacer sleeve, and a chuck operating means in the chuck carrier;

a plurality of chuck an inner hollow cod to a chuck carrier and having an inner hollow compartment including a plurality of joint pins around the inner periphery thereof, an actuating plate slide in the hollow compartment and centrally coupled to the lower end of the chuck operating bar, and having a plurality of gripping pins and a corresponding number of gripping fingers each finger having an oblique portion having a free end coupled to a gripping pin, a middle portion coupled to a joint pin and a vertical portion including a gripping pad at its lower end, so that when the plate is at an upper position, the gripping fingers are normally closed around the upper end of a hollow glassware article and when said chuck operating bar is pushed down by a chuck actuator, pushing down the plate of the chuck retaining mechanism, the gripping fingers are consequently opened; and

chuck actuator means operable at the charging position and at the discharging position, each including driving means and a vertical reciprocal member operably coupled to the driving means to momentarily open and close the gripping fingers to release a hollow glassware article while it is at a discharging position, or to grip a hollow glassware article at the charging position.

5,667,553

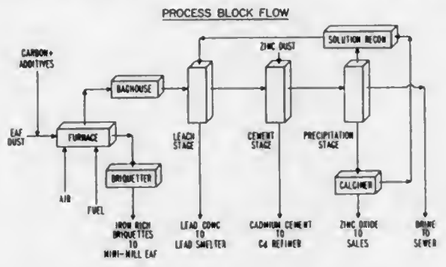
METHODS FOR RECYCLING ELECTRIC ARC FURNACE DUST

Joseph F. Keegel, Jr., Spring Lake, N.J., assignor to Complete Recovery Process, LLC, Spring Lake, N.J.

Continuation of Ser. No. 397,409, Mar. 2, 1995, Pat. No. 5,538,532. This application May 10, 1996, Ser. No. 644,836

Int. Cl.[6] C21B *11/10;* **C22B** *7/02*

U.S. Cl. 75—10.63 **2 Claims**



1. A method for the separation and recovery of metals selected from the group consisting of iron, cadmium, zinc, and lead, from raw material comprising a mixture of iron, cadmium, zinc and lead, said method comprising the steps of:

A. heating said raw material in the presence of carbon and an additive selected from the group consisting of limestone, silica, calcium chloride, and sulfates, to a temperature sufficient to substantially reduce and vaporize cadmium, zinc, and lead without substantially vaporizing iron,

thereby producing vapors containing cadmium, zinc, and lead, and an iron-containing-residual sinter mass;

B. contacting said vapors produced in Step (A) with preheated air to produce dust containing oxidized cadmium, zinc, and lead, and then separating said dust from said iron-containing-residual sinter mass by collecting said dust in a receptacle;

C. slurrying said dust in an aqueous solution of ammonia ammonium carbonate to produce substantially insoluble lead-containing-precipitates and a zinc/cadmium bearing leach liquor;

D. separating said zinc/cadmium bearing leach liquor from said substantially in.oluble lead-containing-precipitates by filtration;

E. adding metallic zinc to the zinc/cadmium bearing leach liquor to produce a cadmium-containing-cement;

F. separating said cement from said leach liquor; and

G. removing ammonia from said leach liquor to precipitate basic zinc carbonate.

5,667,554

PROCESS OF PRODUCING A LOW TCR SURGE RESISTOR USING A NICKEL CHROMIUM ALLOY

Charles C. Y. Kuo, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 148,798, Nov. 8, 1993, Pat. No. 5,518,521. This application Apr. 19, 1996, Ser. No. 635,112

The portion of the term of this patent subsequent to Nov. 8, 2013, has been disclaimed.

Int. Cl.[6] B22F *1/00*

U.S. Cl. 75—252 **7 Claims**

1. A thick film resistor composition for firing upon a substrate, said resistor composition comprising

a metal constituent, said metal constituent comprising 76% to 80% nickel powder, 16% to 20% fine chromium powder, and a balance metal fluxing means, said metal fluxing means simultaneously forming a low TCR alloy with said nickel powder and said chromium powder during said firing and also chemically bonding to said substrate.

a glass frit, and

a means for adjusting screening rheology.

5,667,555

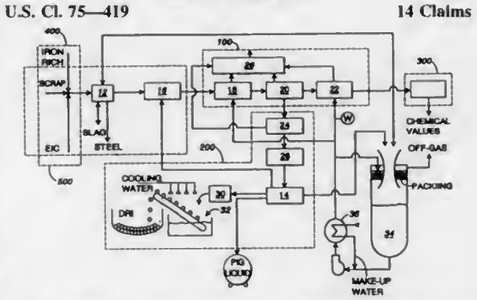
METHOD FOR THE REMOVAL OF CALCIUM BY PRODUCTS DURING THE PRODUCTION OF AN IRON FEEDSTOCK

Allan S. Myerson, Brooklyn, N.Y.; Charles A. Burrows, Atlanta, Ga.; Charles W. Sanzenbacher, Charlotte, N.C., and Paul R. DiBella, Ball Ground, Ga., assignors to Metals Recycling Technologies Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 380,950, Jan. 31, 1995, Pat. No. 5,582,631, which is a continuation-in-part of Ser. No. 360,394, Dec. 21, 1994, Pat. No. 5,571,306, which is a continuation-in-part of Ser. No. 348,446, Dec. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 238,250, May 4, 1994, Pat. No. 5,464,596, which is a continuation-in-part of Ser. No. 953,645, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 820,987, Jan. 15, 1992, Pat. No. 5,208,004. This application Feb. 21, 1996, Ser. No. 604,178

Int. Cl.[6] C22B *3/14*

U.S. Cl. 75—419 **14 Claims**



1. A method for the removal of calcium products during a process for the recovery of zinc and iron from waste streams comprising iron oxides, zinc compounds and calcium constituents, comprising the steps of:

a. preroasting said waste stream at an elevated temperature to produce a preroasted waste stream wherein at least a portion of the iron oxides are reduced to direct reduced iron;

b. treating said preroasted waste stream with an ammonium chloride solution at an elevated temperature to form a solution which comprises dissolved zinc components and dissolved calcium constituents and an undissolved precipitate which comprises direct reduced iron and iron oxide, whereby any direct reduced iron and iron oxide in said waste stream will be contained in said undissolved precipitate and will not go into solution;

c. treating said solution with a stoichiometrically suitable amount of a soluble ammonium salt in which the negative ion of the ammonium salt will form an insoluble compound with the calcium to form a product solution substantially free of calcium products and an undissolved calcium compound precipitate; and

d. separating said product solution from said undissolved precipitate and said undissolved calcium compound precipitate.

5,667,556

METHOD OF REPROCESSING ZINC- AND IRON OXIDE-CONTAINING RESIDUAL MATERIAL

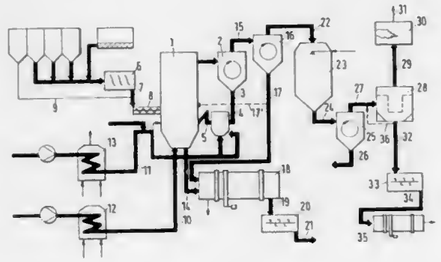
Andreas Orth, Friedrichsdorf; Peter Weber, Hammershach; Uwe Härter, Dinslaken, and Ernst Wallis, Eschborn, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 3, 1996, Ser. No. 643,463

Claims priority, application Germany, May 5, 1995, 195 16 558.6

Int. Cl.[6] C22B *7/00*

U.S. Cl. 75—450 **13 Claims**



1. A method of reprocessing zinc- and iron oxide-containing residual material, which comprises the steps of:

(a) granulating a zinc- and iron oxide-containing dust or sludge with water to form granules of the residual material;

(b) feeding the granules of the residual material formed according to step (a) and carbonaceous material to a first fluidized bed reactor of a circulating fluidized bed system comprising said first fluidized bed reactor, a cyclone and a second fluidized bed reactor connected to said cyclone and said first reactor, temperature in said first reactor being in the range of 950° to 1100° C., feeding a gas-solids suspension from said first fluidized bed reactor to said cyclone;

(c) feeding solids from said cyclone to said second fluidized bed reactor containing a fluidized bed of solids;

(d) discharging solids from the second fluidized bed reactor and recycling the solids to the first fluidized bed reactor of the circulating fluidized bed system;

(e) feeding as a fluidizing gas to the first fluidized bed reactor 50 to 75% by volume of the oxygen required to gasify the carbonaceous material in said first fluidized bed reactor;

(f) feeding as a fluidizing gas to the second fluidized bed reactor 25 to 50% by volume of the oxygen required to gasify the carbonaceous material in said second fluidized bed reactor; and

(g) discharging iron oxide-containing material from the bottom of the first fluidized bed reactor and withdrawing an exhaust gas containing a zinc-containing material from the first cyclone and feeding said exhaust gas to a gas-solids separator.

5,667,557

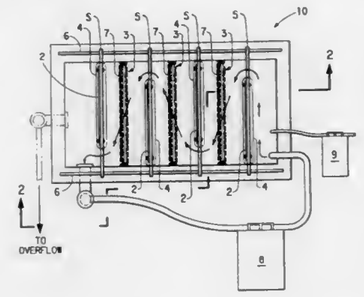
HYDROMETALLURGICAL EXTRACTION AND RECOVERY OF COPPER, GOLD, AND SILVER VIA CYANIDATION AND ELECTROWINNING

Christopher Andrew Fleming, Peterborough, Canada; Walther G. Grot, Chadds Ford, Pa., and John Anton Thorpe, Germanton, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 376,367, Jan. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 217,912, Mar. 25, 1994, Pat. No. 5,411,575. This application Sep. 26, 1995, Ser. No. 533,984

Int. Cl.[6] C22B *3/12;3/20;11/08;15/14*

U.S. Cl. 75—729 **11 Claims**



1. A hydrometallurgical extraction process for treating copper feed materials comprising the steps of:

(a) treating said feed materials with an aqueous cyanide solution having a molar ratio of CN:Cu of >3 thereby simultaneously leaching copper, gold and/or silver;

(b) optionally removing and recovering substantially all gold or silver, if present, from the pregnant leach solution; and

(c) removing and recovering copper from the solution resulting from step (b) by an electrowinning process in an electrowinning cell wherein high current efficiencies are achieved at high current densities and at low copper concentrations by

(i) passing the solution as the electrolyte (catholyte) through a compartment containing the cathode(s) with a high rate of flow of the catholyte, wherein the cathode has high surface area, and wherein the CN:Cu molar ratio of the catholyte is ≦4.5:1;

(ii) electrodepositing copper metal on the surface of the cathode(s) in the cell wherein oxidation of cyanide ions at the anode is diminished; and

(iii) recovering the copper from the cathode(s) by electrorefining or by smelting.

5,667,558

APPARATUS AND ASSOCIATED METHOD FOR REDUCING AN UNDESIRED CONSTITUENT OF GAS ASSOCIATED WITH WASTEWATER

Avron Bryan, Cocoa Beach, and Darrel Resch, Lake Mary, both of Fla., assignors to Adapco, Inc., Sanford, Fla.

Filed Jul. 13, 1995, Ser. No. 501,845

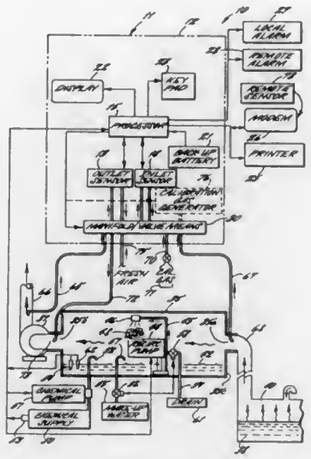
Int. Cl.[6] B01D *53/30*

U.S. Cl. 95—8 **49 Claims**

35. A method for controlling a scrubber apparatus for treating a gas associated with wastewater to reduce H_2S in the gas, the scrubber apparatus comprising a vessel, and a sump for containing scrubbing solution, the method comprising the steps of:

flowing gas to be treated from associated wastewater into and through the vessel for treatment, and exiting from the vessel after treatment;

spraying the scrubbing solution in contact with gas being treated within the vessel for reducing the undesired constituent in the gas, and returning the scrubbing solution to the sump;



providing a housing, positioning an inlet gas sensor within said housing, and positioning an outlet gas sensor within said housing;

sensing H_2S in gas entering the vessel before treatment by the inlet gas sensor;

sensing H_2S in gas exiting the vessel after treatment by the outlet gas sensor; and

controlling a level of treatment chemical in the scrubbing solution responsive to the sensed H_2S from said inlet and outlet sensors so as to enhance reduction of H_2S in the gas being treated, and while conserving consumption of treatment chemical.

5,667,559

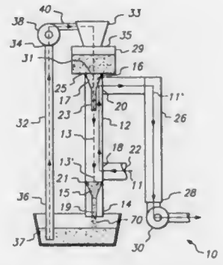
APPARATUS AND METHOD FOR REMOVING VOLATILE ORGANIC COMPOUNDS FROM AN AIR STREAM

Earl Vickery, San Jose, Calif., assignor to On-Demand Environmental Systems, Inc., San Jose, Calif.

Continuation of Ser. No. 415,250, Apr. 3, 1995, Pat. No. 5,538,541. This application May 10, 1996, Ser. No. 644,327

Int. Cl.[6] B01D *53/08*

U.S. Cl. 95—110 **21 Claims**



1. A method for removing volatile organic compounds from contaminated air using absorbent material, comprising the steps of:

(i) controlling a flow of contaminated air through a column, the column having a bottom end, a top end, an exhaust port near the top end, and an intake port near the bottom end;

(ii) releasing in the column, from a position below the exhaust port, adsorbent material into the flow of the contaminated air, whereby the adsorbent material is mixed with the contaminated air and suspended in the column; and

(iii) removing the adsorbent material which is saturated with volatile organic compounds from the bottom end of the main column.

5,667,560

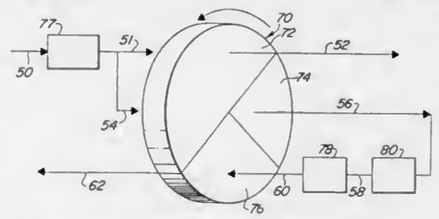
PROCESS AND APPARATUS FOR DEHUMIDIFICATION AND VOC ODOR REMEDIATION

Stephen R. Dunne, Algonquin, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 373,840, Jan. 17, 1995, Pat. No. 5,512,083, which is a continuation-in-part of Ser. No. 140,920, Oct. 25, 1993, abandoned. This application Apr. 18, 1996, Ser. No. 633,260

Int. Cl.[6] B01D *53/06*

U.S. Cl. 95—113 **23 Claims**



1. A process for dehumidification and VOC odor remediation of a cabin air stream withdrawn from a passenger compartment of a transportation vehicle comprising the following steps:

(a) continuously passing the cabin air stream to a first portion of a face area of an adsorbent wheel, said wheel supporting a solid adsorbent comprises a faujasite having a zeolite structure including β-cages with tri-valent cations located within the β-cages of said solid adsorbent being selective for the adsorption of water and VOCs to adsorb water and VOCs at an adsorption temperature and permitting the passage of said cabin air stream therethrough to provide a conditioned air stream;

(b) passing at least a portion of said conditioned air stream to a second portion of said adsorbent wheel in a direction countercurrent to the passing of said cabin air stream in step (a) to cool said second portion of said adsorbent wheel and provide an intermediate air stream;

(c) heating said intermediate air stream to a regeneration temperature to provide a heated intermediate air stream;

(d) passing said heated intermediate stream in a direction cocurrent to said air stream in step (a) to a third portion of said adsorbent wheel to desorb said water and VOCs, to form an exhaust stream, and exhausting said stream; and

(e) returning at least a portion of said conditioned air stream to the passenger compartment.

5,667,561

METHOD FOR SELECTIVE SEPARATION OF CARBON DIOXIDE FROM WASTE GAS OF COMBUSTION

Kenzi Suzuki, Aichi-ken, and Keiichi Inukai, Nagoya, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 586,275

Claims priority, application Japan, Jan. 26, 1995, 7-030106; Mar. 3, 1995, 7-070867

Int. Cl.[6] B01D *53/04*

U.S. Cl. 95—139 **2 Claims**

1. A method for the separation and recovery of gaseous components inclusive of carbon dioxide from a hot waste gas of combustion comprising the steps of:

contacting said hot waste gas to an adsorbent comprising europium oxide;

adsorbing said gaseous components onto said adsorbent; and

selectively separating and recovering adsorbed gaseous components by virtue of differences in retention times among said gaseous components on said adsorbent;

wherein the temperature of said hot waste gas is in the range of 1001° to 1000° C.

5,667,562

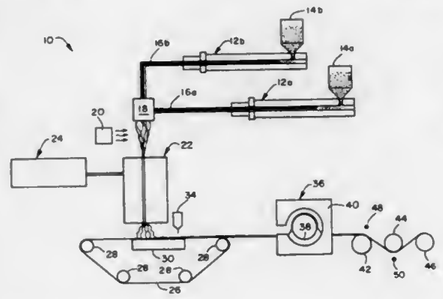
SPUNBOND VACUUM CLEANER WEBS

David Grant Midkiff, Alpharetta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Filed Apr. 19, 1996, Ser. No. 633,979

Int. Cl.[6] B03C *3/155*

U.S. Cl. 96—15 **8 Claims**



1. A filter for vacuum cleaners comprising a nonwoven web of spunbond conjugate fibers having a Frazier permeability of at least 250 CFM, an NaCl efficiency of at least 65 percent, a pressure drop of 0.5 or less mm H_2O, and a Gurley Stiffness of at least 20 mg, wherein said web has been subjected to hot air knife treatment.

5,667,563

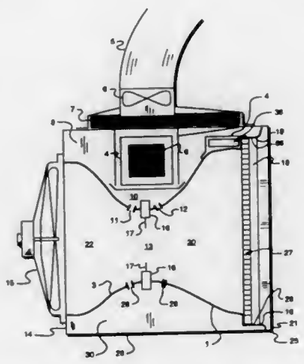
AIR IONIZATION SYSTEM

John C. Silva, Jr., 8 Putnam Rd., Apt. #4, Ipswich, Mass. 01938

Filed Jul. 13, 1995, Ser. No. 501,892

Int. Cl.[6] B03C *3/14*

U.S. Cl. 96—50 **19 Claims**



1. An air ionization system comprising:

a core,

an ionization unit mounted to said core for ionizing air passing through said core, said ionization unit providing positive and negative high voltage direct current output to a plurality of opposed pairs of ionization needle assemblies, said positive high voltage direct current output being connected to a first number of said opposed pairs of ionization needle assemblies, and said negative high voltage direct current output being connected to a second number of said opposed pairs of ionization needle assemblies;

an ozone generation unit mounted to said core for creating a high voltage output from an alternating current input; and

at least one ozone generation plate connected between said high voltage output and ground, said ozone generation plate creating ozone in said core from air passing by said ozone generation plate, said ozone being directed out of said core with said ionized air.

5,667,564

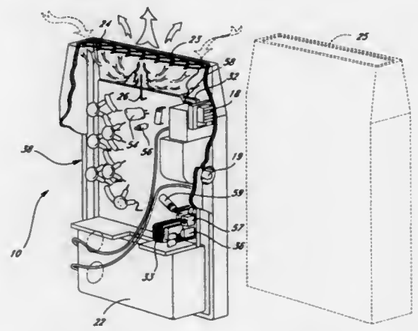
PORTABLE PERSONAL CORONA DISCHARGE DEVICE FOR DESTRUCTION OF AIRBORNE MICROBES AND CHEMICAL TOXINS

Stanley Weinberg, Los Angeles, Calif., assignor to Wein Products, Inc., Los Angeles, Calif.

Filed Aug. 14, 1996, Ser. No. 696,624

Int. Cl.[6] B03C *3/32*

U.S. Cl. 96—58 **22 Claims**



10. A wearable personal corona discharge air purifier comprising:

an electric power source;

a metallic grid electrically connected to the electric power source;

a high voltage supply connectable to the electric power source for producing a voltage of about 8 kV relative to the electric power source, the high voltage supply comprising:

a step-up power inverter for providing an alternating current with a greater peak to valley potential difference than a potential difference across the electric power source; and

a high voltage cascade multiplier connected to an output of the inverter to convert the alternating current into pulsating direct current at about negative 8 kV, relative to the electric power source, at an output of the cascade voltage multiplier; and

a needle emitter point connected to the output of the voltage multiplier and spaced apart from the metallic grid, the negative 8 kV creating a corona discharge around the emitter point, negative ions formed by the corona discharge being accelerated towards the metallic grid by a potential difference between the grid and the emitter point.

5,667,565

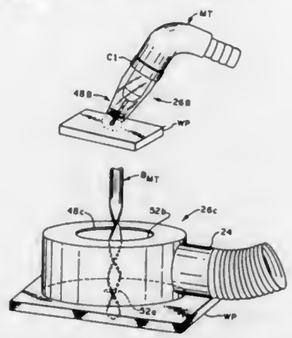
AERODYNAMIC-ELECTROSTATIC PARTICULATE COLLECTION SYSTEM

Robert K. Gondar, Monroe, Conn., assignor to Sikorsky Aircraft Corporation, Stratford, Conn.

Division of Ser. No. 407,748, Mar. 21, 1995. This application Dec. 11, 1996, Ser. No. 763,208

Int. Cl.[6] B03C *3/10*

U.S. Cl. 96—60 **2 Claims**



1. An aerodynamic-electrostatic particulate collection system for high-efficiency collection of particulate debris generated in a machining area during machining of a workpiece, comprising:

a vacuum subsystem for generating a localized, vacuum-induced aerodynamic fluid flow field in the machining area during operation of said aerodynamic-electrostatic particulate collection system, said vacuum subsystem including

a vacuum pump,

a hose fluidically connected to said vacuum pump, and

a nozzle fluidically connected to said hose distal said vacuum pump, said nozzle having a tapered configuration defining an attachment end and an inlet end and including means for removably attaching said nozzle by said attachment end in combination with a machine tool, and

said nozzle being positioned with respect to the workpiece wherein said tapered configuration of said nozzle develops the localized, vacuum-induced aerodynamic fluid flow field in the machining area; and

particulate charging, electric field generating means integrated in combination with the workpiece and said vacuum subsystem for charging particulate debris generated during machining of the workpiece and for creating an electric field between the workpiece and said nozzle that directs the charged particulate debris into the localized, vacuum-induced aerodynamic fluid flow field during operation of said aerodynamic-electrostatic particulate collection system, said particulate charging, electric field generating means including

a high voltage power supply,

a first conductive lead electrically interconnecting said high voltage power supply and the workpiece,

a collection electrode in the form of a spiral wire physically integrated in combination with said inlet end of said nozzle, and

a second conductive lead electrically interconnecting said high voltage power supply and said collection electrode;

the oppositely charged workpiece and said collection electrode in combination producing a corona discharge in the machining area that causes the particulate debris generated during machining of the workpiece to become charged;

the oppositely charged workpiece and said collection electrode in combination creating the electric field between the workpiece and said nozzle that is collinear with the localized, vacuum-induced aerodynamic fluid flow field.

2. An aerodynamic-electrostatic particulate collection system for high-efficiency collection of particulate debris generated in a machining area during machining of a workpiece, comprising:

a vacuum subsystem for generating a localized, vacuum-induced aerodynamic fluid flow field in the machining area during operation of said aerodynamic-electrostatic particulate collection system, said vacuum subsystem including

a vacuum pump,

a hose fluidically connected to said vacuum pump, and

a nozzle fluidically connected to said hose distal said vacuum pump, said nozzle having a closed-end cylindrical configuration wherein each closed-end has an aperture formed therethrough, and

said nozzle being positioned with respect to the workpiece wherein said closed-end cylindrical configuration of said nozzle develops the localized, vacuum-induced aerodynamic fluid flow field in the machining area; and

particulate charging, electric field generating means integrated in combination with the workpiece and said vacuum subsystem for charging particulate debris generated during machining of the workpiece and for creating an electric field between the workpiece and said nozzle that directs the charged particulate debris into the localized, vacuum-induced aerodynamic fluid flow field during operation of said aerodynamic-electrostatic particulate collection system, said particulate charging, electric field generating means including

a high voltage power supply,

a first conductive lead electrically interconnecting said high voltage power supply and the workpiece,

a collection electrode in the form of an annular conductive member bonded in combination with one said closed-end aperture of said nozzle, and

a second conductive lead electrically interconnecting said high voltage power supply and said collection electrode;

the oppositely charged workpiece and said collection electrode in combination producing a corona discharge in the machining area that causes the particulate debris generated during machining of the workpiece to become charged;

the oppositely charged workpiece and said collection electrode in combination creating the electric field between the workpiece and said nozzle that is collinear with the localized, vacuum-induced aerodynamic fluid flow field.

5,667,566

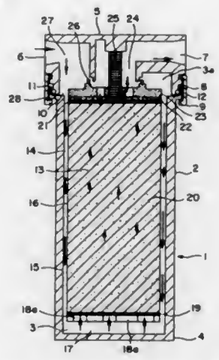
APPARATUS FOR WATER VAPOR REMOVAL FROM A COMPRESSED GAS

Paul E. Flynn, Wernersville, and Peter D. Wersant, Sinking Spring, both of Pa., assignors to Reading Technologies, Inc., Reading, Pa.

Continuation of Ser. No. 347,553, Nov. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 755,694, Sep. 6, 1991, Pat. No. 5,403,387. This application Mar. 12, 1996, Ser. No. 615,584

Int. Cl.[6] B01D *53/04;53/26*

U.S. Cl. 96—138 **13 Claims**



1. Apparatus for removing moisture from a gas comprising:

a connection head defining a gas inlet passage, a gas outlet passage and a closure surface, said inlet and outlet passages extending through the connection head and ports located on the closure surface with which said inlet and outlet passages respectively communicate;

an elongated housing having an annular wall defining an internal housing cavity, the housing having an open end and a closed end;

means for removably attaching the housing to the connection head including a sealing surface surrounding the ports on the closure surface, a sealing ring interengagable with the sealing surface and with the elongated housing at the open end thereof;

an elongated desiccant canister disposed within the housing cavity, the canister having gas impervious side walls extending substantially the length of the elongated housing, the side walls of the desiccant canister being spaced radially inwardly from the walls of the elongated housing and creating an annular channel for channeling a gas flow extending substantially exclusively vertically downwardly to the bottom of the cavity;

the canister having a first end defining an inlet near the bottom of the cavity and a second end including an end plate defining an outlet in communication with the gas outlet passage port;

canister attachment means for removably attaching the canister second end to said connection head, said canister attachment means comprising a spin-on threaded connector between the connection head and the end plate of the canister, said spin-on connector terminating in said end plate so as to maximize the interior space within the canister and a second sealing ring between the connection head and the canister end plate, said second sealing ring surrounding the outlet port, said second sealing ring being engaged with the connection head and the canister outlet for sealing the outlet port from the inlet port when the canister is attached;

the means for removably attaching the housing to the connection head further comprising a resilient clamping ring; and

a desiccant material disposed within the canister and substantially filling the canister between the first and second ends, whereby gas moves through said apparatus along a path through said gas inlet, through said annular channel, through said canister, through said desiccant material and through said gas outlet.

5,667,567

POLISHING AGENT USED FOR POLISHING SILICON WAFERS AND POLISHING METHOD USING THE SAME

Hisashi Masumura, and Kiyoshi Suzuki, both of Fukushimaken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 455,716, May 31, 1995, abandoned. This application Dec. 16, 1996, Ser. No. 755,802

Claims priority, application Japan, Jun. 2, 1994, 6-121250

Int. Cl.[6] C09G *1/02*

U.S. Cl. 106—3 **6 Claims**

1. A polishing agent composition for polishing a silicon wafer, comprising a colloidal silica polishing agent and ethyl silicate in an amount in the range of 0.1 to 10.0 percent by volume relative to the total amount of said polishing agent composition.

5,667,568

HOT MELT INK COMPOSITIONS

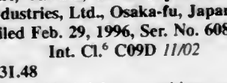
Guerino G. Sacripante, Oakville; Fatima M. Pontes, Mississauga; Stephan V. Drappel, Toronto; Anthony J. Paine, Mississauga, and Gregory J. Kovacs, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1996, Ser. No. 624,157

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **27 Claims**

1. An ink composition consisting essentially of a colorant and a bisamide with a viscosity of from about 1 centipoise to about 20 centipoise at a temperature of from about 125° C. to about 185° C., and which bisamide is of the formula



wherein R is alkyl with from 1 to about 25 carbon atoms, and R' is alkylene with from about 2 to about 25 carbon atoms.

5,667,569

WATER-BASED INK AND INK JET RECORDING METHOD USING SAME

Masaya Fujioka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 22, 1996, Ser. No. 635,598

Claims priority, application Japan, Jun. 29, 1995, 7-163609

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—31.58 **18 Claims**

1. A water-based ink, comprising:

at least one coloring agent;

at least one polyvalent alcohol in an amount ranging from 5–50% by weight based on the weight of the ink;

at least one polyvalent alcohol monoalkyl ether in an amount ranging from 5–15% by weight based on the weight of the ink; and

water.

5,667,570

EMULSION INK FOR STENCIL PRINTING

Sadanao Okuda, and Yoshihiro Hayashi, both of Amimachi, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Apr. 30, 1996, Ser. No. 640,192

Claims priority, application Japan, May 1, 1995, 7-107608

Int. Cl.[6] C09D *11/02;11/08*

U.S. Cl. 106—31.26 **10 Claims**

1. A water-in-oil emulsion ink for stencil printing, which comprises an oil phase and an aqueous phase, wherein an extender pigment, a coloring agent, a resin, a non-volatile solvent, a mineral oil solvent or a plant oil solvent and an emulsifying agent are contained in the oil phase of the emulsion ink.

5,667,571

SOLVENT-BASED BLACK INK COMPOSITION

Takashi Ono, Takatsuki; Tatsuya Yagyu, Neyagawa, and Yoshihiro Sawatari, Yawata, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka-fu, Japan

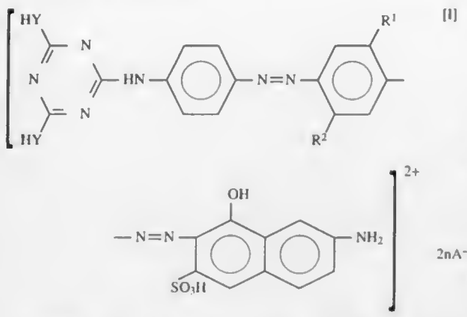
Filed Feb. 29, 1996, Ser. No. 608,852

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—31.48 **9 Claims**

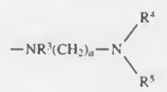
1. A solvent-based black ink composition containing:

(i) an acid added alcohol-soluble disazo basic dye salt represented by the formula:



[I]

wherein R^1 is —H, —CH_3, —OCH_3, —OC_2H_5, —OCH_2H_4OH, —$OC_2H_4OCH_3$, —$OC_2H_4OC_2H_5$, or —$OCH_2H_4OC_4H_9$; and R^2 is —H, —CH_3, —OCH_3, —OC_2H_5, —NHCOCH$_3$, or NHCOC$_2$H$_5$; Y is a basic group represented by the formula:



wherein R^3 is a hydrogen atom or a C_1-C_4 alkyl group; R^4 and R^5 are independently a C_1-C_4 alkyl group which may be substituted with a hydroxyl group, a halogen atom, a cyano group, or a C_1-C_4 alkoxy group; and a is an integer of 1 to 3; A^- is a counter anion consisting of an organic acid having 4 to 20 carbon atoms; and n is a numerical value of not more than 1; and (ii) an alcoholic organic solvent.

5,667,572

INK COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Makoto Taniguchi, and Noriko Oyama, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-To, Japan

Filed Dec. 27, 1995, Ser. No. 579,098

Claims priority, application Japan, Dec. 27, 1994, 6-325638; Jan. 12, 1995, 7-003605

Int. Cl.[6] C09D *11/14*

U.S. Cl. 106—31.36 **18 Claims**

1. An ink composition comprising:

a colorant which is either sparingly soluble or insoluble in water;

a water-soluble organic solvent capable of dissolving the colorant;

a saccharide and/or polyvinyl pyrrolidone; and water; said colorant being in a dispersed state in the ink composition and the ink composition being substantially free from any dispersant.

5,667,573

COATING COMPOSITION FOR PREPARING SOLID PREPARATIONS AND SOLID PREPARATIONS

Tsutomu Kondou, Kanagawa, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 12, 1996, Ser. No. 679,264

Claims priority, application Japan, Jul. 13, 1995, 7-199294

Int. Cl.[6] C09D *101/00;101/28*

U.S. Cl. 106—194.2 **12 Claims**

1. A coating composition, which comprises erythritol, a water-soluble cellulose, and an aqueous medium.

10. A solid preparation which comprises a center core of a medicine or a food and a surface coated layer comprising erythritol and a water-soluble cellulose.

5,667,574

STARCH-BASED COMPOSITION FOR PREPARING AN ENVIRONMENT DEGRADABLE α-OLEFINIC POLYMER MOLDING MATERIAL

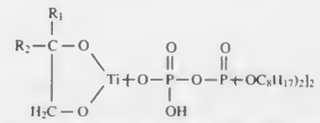
Yuan Qing Zhang, Chengdu, China, assignor to Chi May Co., Ltd., Taipei, Taiwan

Filed Nov. 6, 1996, Ser. No. 744,523

Int. Cl.[6] C08L *3/00*

U.S. Cl. 106—209.1 **12 Claims**

1. A starch-based composition for preparing an environment degradable α-olefinic polymer molding material, which comprises 95–99 wt % of starch, 0.2– 0.8 wt % of a titanate coupling agent having the following formula (I), 0–2 wt % of paraffin and 0–2 wt % of fatty acid:



(I)

wherein R_1 and R_2 are hydrogen, or R_1 and R_2 together are =O.

5,667,575

PROCESS FOR REDUCING THE COLOR OF AN EMULSION CONTAINING FUNCTIONALIZED POLYOLEFIN WAX

Paul Andrew Rundquist, Mt. Carmel; Ernest Phillip Smith, Blountville; Stephen Louis Poteat, Gray; Dante Joseph Rutstrom, Kingsport, all of Tenn., and Richard Kingsley Stuart, Jr., Longview, Tex., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Sep. 21, 1995, Ser. No. 531,989

Int. Cl.[6] C09D *191/06*

U.S. Cl. 106—271 **15 Claims**

1. A method of reducing the color of a wax emulsion, comprising treating a wax emulsion with a water soluble oxidizing agent at a temperature above the freezing point and below the boiling point of the emulsion and below the softening point of the wax, wherein said wax emulsion contains functionalized polyolefin wax, water and surfactant.

5,667,576

ASPHALT EMULSIONS

Roger K. Chatterjee, Westerville, and Charles R. Milburn, Delaware, both of Ohio, assignors to Witco Corporation, Greenwich, Conn.

Filed Mar. 24, 1995, Ser. No. 409,665

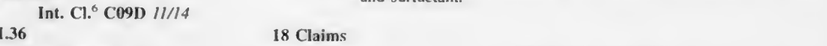
Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—277 **17 Claims**

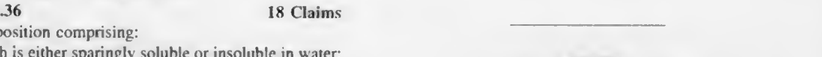
1. An oil-in-water asphalt emulsion, comprising

(A) water as the continuous phase;

(B) one or more emulsifiers selected from the group consisting of (i) compounds of the formula (Ia), (Ib)



(Ia)



(Ib)

and mixtures thereof, wherein R^1 contains 6 to 40 carbon atoms and is straight or branched aliphatic, aromatic, alkyl-aromatic, aromatic-alkyl, or alkyl-aromatic-alkyl, m is 1–10, X is hydrogen, sodium, potassium, lithium, calcium, ammonium, an amine of the formula —$N^+H(C_{1-20}$ alkyl)$_2$ or —$N^+H_2(C_{1-20}$ alkyl), and i is 1 or more and is the valence of X;

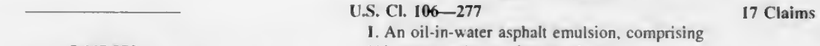
(ii) compounds of the formula (II)



(II)

wherein X is defined above, R^2 contains 6 to 40 carbon atoms and is straight or branched aliphatic, aromatic, alkyl-aromatic, aromatic-alkyl, or alkyl-aromatic-alkyl, each Alk is C_2H_4, C_3H_6 or C_4H_8, and c is 1–200; and

(iii) compounds of the formula (III)



(III)

wherein R^3 is straight or branched aliphatic, aromatic-alkyl, or alkyl-aromatic-alkyl, A is phenyl or naphthyl, k is 1, 2 or 3, and X and i are as defined above;

(c) asphalt, comprising a discontinuous phase uniformly dispersed in said emulsion; and

(d) finely divided particulate filler uniformly distributed throughout said emulsion.

5,667,577

FILLED ASPHALT EMULSIONS CONTAINING BETAINE EMULSIFIER

Roger K. Chatterjee, Westerville, and Charles R. Milburn, Delaware, both of Ohio, assignors to Witco Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 409,663, Mar. 24, 1995, Pat. No. 5,558,702. This application Jun. 5, 1996, Ser. No. 658,648

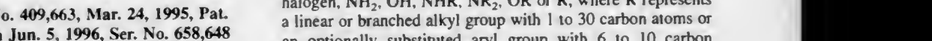
Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—277 **69 Claims**

1. A storage-stable filled oil-in-water asphalt emulsion which exhibits long-term phase stability comprising

(A) water as a continuous phase;

(B) one or more amphoteric emulsifiers having the formula



wherein X is —H, sodium, calcium, potassium, lithium, ammonium or an amine of the formula —$N^+H(C_{1-20}$ alkyl)$_2$ or —$N^+H_2(C_{1-20}$ alkyl), R^4 is straight or branched alkyl or alkylene or homocyclic or heterocyclic aromatic which is optionally substituted with alkyl and contains 4 to 40 carbon atoms and 0–5 carbon-carbon double bonds, Z^1 and Z^2 are independently of each other C_fH_{2f+1} or $C_fH_{2f}OH$, wherein f is 1 to 6, or one of Z^1 and Z^2 can be —ZCOOX, wherein Z is $(CH_2)_f$, $CH_2CH_2OCH_2CH_2$ or $CH_2CHOHCH_2$;

(C) asphalt, comprising a discontinuous phase uniformly dispersed in said emulsion; and

(D) particulate filler which does not react with (A), (B) and/or (C) uniformly distributed throughout said emulsion.

5,667,578

ADHESION PROMOTERS FOR ANIONIC BITUMINOUS EMULSIONS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 24, 1996, Ser. No. 719,035

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—277 **12 Claims**

1. An improved method for enhancing adhesion between asphalt and aggregate in anionic bituminous emulsions wherein the improvement comprises the addition to the emulsion of a composition comprising the polyamidoamine condensation reaction products of:

(A) 50–80 wt. % of a mixture comprising:

1) 80–1 wt. % of monomeric tall oil fatty acid, and

2) 20–99 wt. % of polymerized linoleic acid, with

(B) 50–20 wt. % of polyalkylene polyamine, and

(C) up to 10 wt. % of paraformaldehyde.

10. The method of claim **1** wherein no paraformaldehyde is included in the condensation reaction.

5,667,579

THERMALLY STABLE IRON OXIDE PIGMENTS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Wolfgang Oehlert, Krefeld; Friedrich Jonas, Aachen, and Gunter Buxbaum, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Continuation of Ser. No. 269,560, Jul. 1, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,311

Claims priority, application Germany, Jul. 9, 1993, 43 22 886.0

Int. Cl.[6] C09C *1/22*

U.S. Cl. 106—456 **14 Claims**

1. Iron oxide pigments with an Fe(II) content of at least 5 wt. %, calculated as FeO, which have at least one inorganic after-treatment layer and at least one organic after-treatment coating, wherein the inorganic after-treatment layer consists of oxygen and/or hydroxide compounds of boron, aluminum and/or silicon and the organic after-treatment coating consists of one or more compounds of the general formula (I)



(I)

wherein

Ar represents an aromatic grouping optionally substituted with halogen, NH_2, OH, NHR, NR_2, OR or R, where R represents a linear or branched alkyl group with 1 to 30 carbon atoms or an optionally substituted aryl group with 6 to 10 carbon atoms;

X represents H, an alkali metal, NR^1_4, where R^1=H, an alkyl or aryl group, ½ an alkaline earth metal, ⅓ Al or ⅓ Fe; and

n is an integer from 1 to 10.

5,667,580

PIGMENT COMPOSITIONS

Fridolin Bäbler, Hockessin, Del., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 305,549, Sep. 14, 1994, Pat. No. 5,584,922. This application Jun. 7, 1995, Ser. No. 475,163

Int. Cl.[6] C09C *1/04;* **C08K** *5/00*

U.S. Cl. 106—499 **29 Claims**

1. A pigment composition comprising a physical mixture of from 1 to 35 parts by weight of a filler and from 65 to 99 parts by weight of an organic pigment, wherein the filler has a mean particle size smaller than 10 μm, and a narrow particle size distribution wherein at least 75 percent of the filler particles are smaller than 15 μm; wherein the sum of the parts by weight of the filler and the organic pigment is 100, wherein said composition is capable of being uniformly dispersed in a high molecular weight organic material without a dispersion milling step.

5,667,581

QUICK-HARDENING HYDRAULIC BONDING AGENT

Joachim Unsin, Heidelberg; Hans Peter Braunbach, Rodenbach, and Manfred Tax, Sandhausen, all of Germany, assignors to Heidelberger Zement AG, Heidelberg, Germany

Continuation of Ser. No. 468,184, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 166,106, Dec. 14, 1993, abandoned. This application Jun. 10, 1996, Ser. No. 660,715

Claims priority, application Germany, Dec. 14, 1992, 42 42 107.1

Int. Cl.[6] C04B *22/10;24/04*

U.S. Cl. 106—724 **9 Claims**

1. A quick-hardening hydraulic bonding agent consisting of Portland cement as well as additives, comprising:

174–442 O.G.–97–12: QL3

94.70 to 99.79 weight % of Portland cement having a Blaine fineness between 2,500 and 20,000 cm^2/g,

0.1 to 2.0 weight % of an alkali carbonate,

0.1 to 3.0 weight % of at least one material selected from the group consisting of an alkali salt of lignosulfonic acid and an alkaline earth salt of lignosulfonic acid, and

0.01 to 0.30 weight % of at least one material selected from the group consisting of tartaric acid, citric acid, water-soluble salts of tartaric acid, water-soluble salts of citric acid, alkali salts of tartaric acid and alkali salts of citric acid,

the bonding agent being produced without the addition of calcium aluminate, such that any calcium aluminate present in the bonding agent is derived from the Portland cement.

5,667,582

METHOD FOR DRY DESULFURIZING FLUE GASES

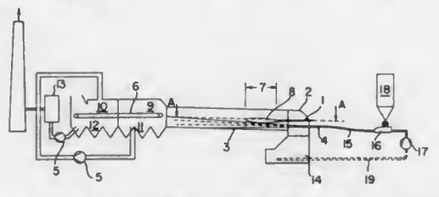
Jochen Ziegler, Schelklingen, and Helmut S. Erhard, Wiesloch, both of Germany, assignors to Heidelberger Zement Aktiengesellschaft, Heidelberg, Germany

Continuation-in-part of Ser. No. 524,014, Sep. 5, 1995, abandoned. This application Sep. 5, 1996, Ser. No. 708,912

Claims priority, application Germany, Mar. 31, 1995, 195 12 030.2

Int. Cl.[6] B01D *53/50*

U.S. Cl. 106—761 **8 Claims**



1. A method for dry desulfurizing flue gases from rotary cement kilns for the production of cement clinkers by adding to the kiln additives selected from the group consisting of quick lime, dry calcium hydroxide and a combination thereof for binding SO_2 comprising adding the additive into a flame region of a flue gas-carrying zone with a temperature of at least 1500° C. at the kiln head at an injection angle of 2° to 12° to the axis of the kiln and at an injection velocity of 20 to 80 m/sec.

5,667,583

METHOD OF PRODUCING A SINGLE CRYSTAL OF A RARE-EARTH SILICATE

Yasushi Kurata; Kazuhisa Kurashige, and Hiroyuki Ishibashi, all of Tsukuba, Japan, assignors to Hitachi Chemical Co. Ltd., Japan

Filed Mar. 30, 1995, Ser. No. 413,287

Claims priority, application Japan, Mar. 30, 1994, 6-059671; Mar. 30, 1994, 6-059672; Mar. 30, 1994, 6-059673

Int. Cl.[6] C30B *15/36*

U.S. Cl. 117—13 **3 Claims**



1. A method of growing a single crystal of a rare-earth silicate comprising heating raw materials in a crucible to thereby obtain a melt of the raw materials, contacting a lower end of a seed crystal with the melt and pulling the seed crystal to thereby grow a single crystal, wherein the pulling is conducted along an axis of pulling having a gradient of at least 30° from a b-axis ([010] axis) of the single crystal and a gradient of more than 25° from a c-axis ([001] axis) of the single crystal.

5,667,584

METHOD FOR THE PREPARATION OF A SINGLE CRYSTAL OF SILICON WITH DECREASED CRYSTAL DEFECTS

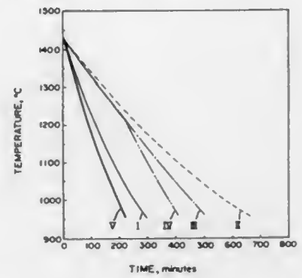
Kiyotaka Takano; Eiichi Iino, both of Gunma-ken; Masahiro Sakurada, Fukushima-ken, and Hirotoshi Yamagishi, Gunma-ken, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1995, Ser. No. 565,100

Claims priority, application Japan, Dec. 5, 1994, 6-300479

Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—13 **1 Claim**



1. In a process for the single crystal growth of semiconductor silicon in a Czochralski process by pulling up a single crystal rod of silicon from a melt of silicon in which the growing single crystal rod of silicon leaving the melt of silicon passes through a cooling zone of an upwardly decreasing temperature distribution to be at successively decreasing temperature, the improvement which comprises adjusting the upwardly decreasing temperature distribution in the cooling zone above the melt of silicon and the pulling rate of the growing single crystal rod in such a way that the length of time during which the growing single crystal of silicon is at a temperature in the range from the melting point of silicon to 1200° C. is shorter than 200 minutes and the length of time during which the growing single crystal of silicon is at a temperature in the range from 1200° C. to 1000° C. does not exceed 130 minutes.

5,667,585

METHOD FOR THE PREPARATION OF WIRE-FORMED SILICON CRYSTAL

Tsuguo Fukuda, Sendai; Susumu Sakaguchi, Kawasaki; Tadashi Kamioka, Kawasaki; Toru Yamada, Kawasaki, and Teruhiko Hirasawa, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,350

Claims priority, application Japan, Dec. 27, 1994, 6-325903; Dec. 27, 1994, 6-326012

Int. Cl.[6] C30B *28/08*

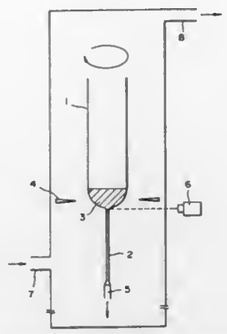
U.S. Cl. 117—49 **13 Claims**

1. A method for the preparation of a wire-formed crystal of silicon having a diameter not exceeding 1 mm which comprises the steps of:

(a) holding a rod of silicon in a vertical disposition;

(b) melting an end portion of the vertically held rod of silicon by heating with a high frequency induction;

(c) bringing a seed crystal of silicon into contact with the molten end portion of the vertically held rod of silicon to cause melt-bonding therebetween; and



(d) pulling apart the seed crystal and the vertically held rod of silicon in the vertical direction relative to each other so as to effect solidification and crystallization of the molten silicon as drawn by the seed crystal.

5,667,586

METHOD FOR FORMING A SINGLE CRYSTAL SEMICONDUCTOR ON A SUBSTRATE

Bruce Allen Ek, Pelham Manor; Stephen McConnell Gates, Ossining; Fernando Jose Guarin, Millbrook; Subramanian Srikanteswara Iyer, Yorktown Heights, all of N.Y., and Adrian Roger Powell, Brookfield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 380,782, Jan. 30, 1995, Pat. No. 5,563,428. This application Apr. 1, 1996, Ser. No. 626,115

Int. Cl.[6] C30B *25/02*

U.S. Cl. 117—84 **11 Claims**



1. A method of forming a single crystalline layer of a compound on a first substrate comprising the steps of:

bonding a major surface of a second single crystalline substrate of a first element to a major surface of said first substrate,

said second substrate having a thickness of about 100 to about 10,000 angstroms,

chemically reacting at least a second element with said first element of said second substrate to form a single crystalline layer of said compound.

5,667,587

APPARATUS FOR GROWING SILICON CARBIDE CRYSTALS

Robert C. Glass, Chapel Hill, N.C.; Walter E. Gaida, East Pittsburgh, Pa.; Ronald R. Ronallo, Pittsburgh, Pa., and Hudson McDonald Hobgood, Murrysville, Pa., assignors to Northrop Gruman Corporation, Los Angeles, Calif.

Filed Dec. 18, 1996, Ser. No. 769,090

Int. Cl.[6] C23C *14/00*; **C30B** *27/36*

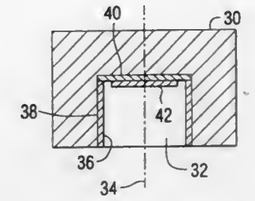
U.S. Cl. 117—200 **8 Claims**

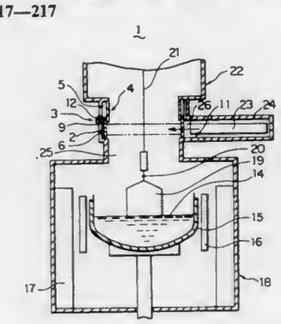
1. Apparatus for use in the growth of silicon carbide crystals, comprising:

(a) a crystal growth container for placement in a crystal growing furnace;

(b) said container having a crystal growing cavity which extends along a longitudinal axis; and

(c) a thermally anisotropic liner disposed within said cavity surrounding said longitudinal axis.





1. A single crystal pulling apparatus which comprises:

a lower chamber accommodating a crucible for containing a melting liquid and a heating means for heating of said crucible;

an upper chamber accommodating a wire for pulling a single crystal from said crucible via a seed crystal and a driving mechanism for said wire;

an isolation valve for closing and opening an upper opening portion of said lower chamber;

an isolation valve containing portion which is disposed between said lower and upper chambers which accommodates the isolation valve;

wherein a covering plate is disposed so as to cover an entrance of said isolation valve containing portion and;

wherein front and back surfaces of said covering plate are not exposed to the inside of the apparatus at least at a containing position where said entrance is opened.

5,667,589

APPARATUS FOR SUPPLYING A VARNISHING CYLINDER OF A VARNISHING MACHINE WITH A VARNISH FILM

Udo Mailänder, Bietigheim-Bissingen, Germany, assignor to LTG Lfttechnische GmbH, Stuttgart, Germany

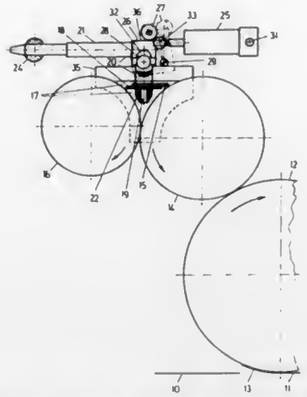
Filed Apr. 8, 1996, Ser. No. 629,243

Claims priority, application Germany, Apr. 7, 1995, 195 13 133.9; Apr. 29, 1995, 195 15 825.3

Int. Cl.[6] B05C *17/00*

U.S. Cl. 118—261 **8 Claims**

1. An apparatus for supplying a varnishing cylinder of a sheet varnishing machine with a varnishing film, the apparatus comprising:



a varnish feed roller for depositing the varnish film on the varnishing cylinder;

a pressure roller cooperating with the varnish feed roller for supplying the varnish film;

a varnish basin formed between the varnish feed roller and the pressure roller;

scrapper means comprising a first and second scrapper blades extending substantially horizontally and engaging the varnish feed roller and the pressure roller, respectively, the first and second scrapper blades being substantially submerged in the varnish basin; and

common means for holding the first and second scrapper blades.

5,667,590

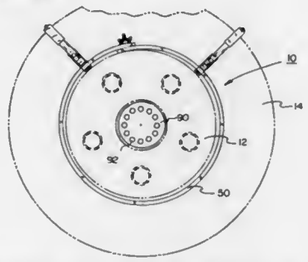
PAINTING MASK FOR USE WHEN PAINTING A RIM THAT IS SECURED TO A TIRE

Andrew E. Simons, Sr., 409 Governor Heyward Rd., Eastover, S.C. 29044

Filed Apr. 29, 1996, Ser. No. 638,726

Int. Cl.[6] B05C *21/00*

U.S. Cl. 118—504 **1 Claim**



1. A painting mask for use when painting a tire rim that is secured to a tire for confining painting operations to only the tire rim and thereby preventing the tire from being painted comprising, in combination:

an elongated and generally rectangular strip having a planar first surface, a planar second surface, a long planar edge perpendicularly interconnecting the surfaces on one side of the strip, a long beveled edge interconnecting the surfaces on the other side of the strip, and a pair of opposed short edges extended between the long edges, the strip further having a first linear arrangement of rectangular spaced apertures formed thereon at a location adjacent to the planar edge, a second linear arrangement of rectangular spaced apertures formed thereon at a location adjacent to the beveled edge, and a pair of free ends with one end having a pair of spaced and longitudinally positioned oblong slots formed thereon and the other end having a pair of fasteners coupled thereto, the strip being bendable in a generally circular shape to thus create a ring with each fastener disposed within one of the slots, the ring having a diameter sized to fit around a peripheral extent of the tire rim with either of the long edges positionable against the tire secured therearound with the fasteners having a loosened orientation for allowing the diameter of the ring to be adjusted to fit snugly around a peripheral extent of the tire rim and a tightened orientation for setting the diameter of the ring and with the ring serving to confine painting operations to only the tire rim; and

a pair of J-shaped brackets removably coupled to and extended outwards from the ring for securing the ring to the tire, each bracket formed of a straight inboard component having an outboard end and an inboard end with a T-shaped cross-section removably secured within one of the apertures, a L-shaped intermediate component having an outboard end and an inboard end adjustably coupled to the outboard end of the inboard component with a fastener, and a L-shaped outboard component having an inboard end adjustably coupled to the outboard end of the intermediate component with a fastener.

5,667,591

DEVICE FOR ADJUSTING PRESSURE APPLIED TO A VARNISHING CYLINDER OF A VARNISHING MACHINE

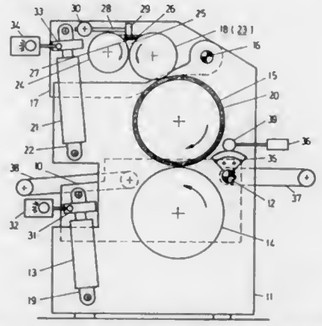
Udo Mailänder, Bietigheim-Bissingen, Germany, assignor to LTG Lufttechnische GmbH, Stuttgart, Germany

Filed Apr. 8, 1996, Ser. No. 629,242

Claims priority, application Germany, Apr. 7, 1995, 195 13 132.0; Apr. 29, 1995, 195 15 824.5

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—712 **5 Claims**



1. A device for adjusting pressure applied to a varnishing cylinder of a varnishing machine including a frame, a varnishing cylinder having two opposite supports, a pressure cylinder for applying pressure to a workpiece movable between the varnishing and pressure cylinders and likewise having two opposite supports, and a varnish feed roller, the pressure adjusting device comprising:

two auxiliary side members pivotally attachable to the frame for supporting the opposite supports of one of the varnishing cylinder and the pressure cylinder;

first means for adjusting pressure between the varnishing and pressure cylinders, the pressure adjusting means including two first tilting motor spindles for pivoting the two auxiliary side members and having respective one ends thereof attachable to the frame and respective another ends thereof attachable to the two auxiliary side members, respectively;

two spaced support flanges for supporting the varnish feed roller;

second means for adjusting pressure between the varnishing cylinder and the varnish feed roller, the second pressure adjusting means including two second tilting motor spindles for pivoting the two support flanges, respectively, and having respective one ends thereof attachable to one of the frame and an auxiliary side member, and respective another ends thereof attachable to respective support flanges;

pressure sensor means supported on the auxiliary side members for sensing axial pressure applied by each of the first and second motor spindles to respective auxiliary side members and support flanges; and

pressure regulator means connected with the pressure sensor means for controlling the axial pressure applied by a respective motor spindle to a predetermined constant value.

5,667,592

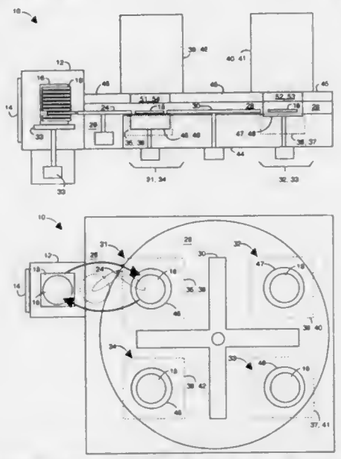
PROCESS CHAMBER SLEEVE WITII RING SEALS FOR ISOLATING INDIVIDUAL PROCESS MODULES IN A COMMON CLUSTER

Charles A. Boitnott, Half Moon Bay; James W. Caughran, Lodi, and Steve Egbert, Palo Alto, all of Calif., assignors to Gasonics International, San Jose, Calif.

Filed Apr. 16, 1996, Ser. No. 633,365

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **8 Claims**



1. A process chamber sleeve for isolating individual process modules in a common cluster, comprising:

a cylindrical body with top and bottom opposite edges and extendible within a process station;

a top ring seal disposed at said top edge for sealing against the inside surface of a lid attached to a wafer handling chamber; and

a bottom ring seal disposed at said bottom edge for sealing against the top inside surface of said wafer handling chamber;

wherein said process station is isolated from other process stations located in the same plane of the wafer processing chamber when the cylindrical body is extended to complete the seals of the top and bottom ring seals.

5,667,593

MODIFIED POLYDEXTROSE AND PROCESS THEREFOR

Donald B. Guzek, Stonington; Russell J. Hausman, East Lyme, both of Conn., and Bharat K. Shah, Terre Haute, Ind., assignors to Cultor Ltd., Helsinki, Finland

Continuation-in-part of Ser. No. 302,153, Jan. 26, 1989, abandoned. This application Aug. 29, 1990, Ser. No. 574,993

Int. Cl.[6] C13F *3/00;* A23L *1/236;* A23G *3/00;* C07H *1/00*

U.S. Cl. 127—30 **33 Claims**

1. An improved water-soluble highly-branched polydextrose wherein the linkage 1→6 predominates, having number average molecular weight between 1,500 and 18,000 and having been prepared by a process which comprises melting dextrose at a temperature below its decomposition point in the presence of 0.5 to 3.0 mol percent of citric acid, the improvement comprising a bound citric acid content of 0.3 mol percent or less in said improved polydextrose to decrease bitterness.

5,667,594

CLEANING METHOD WITH SOLVENT

Yukio Omure; Hirokazu Aoyama; Satoshi Ide, and Takahiro Matsuda, all of Settsu, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

PCT No. PCT/JP92/01402, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO93/09216, PCT Pub. Date May 13, 1993

PCT Filed Oct. 29, 1992, Ser. No. 196,214

Claims priority, application Japan, Oct. 31, 1991, 3-314144; Nov. 25, 1991, 3-335664; Nov. 25, 1991, 3-335665

Int. Cl.[6] B08B *3/00*

U.S. Cl. 134—26 **1 Claim**

1. A cleaning process, comprising

dipping an object to be cleaned into a cleaning solvent composition to remove dirty component wherein either aliphatic fluorohydrocarbon as expressed by the general formula

$$C_nF_mH_{2n+2-m}$$

wherein, n and m are positive integral numbers, being $4 \leqq n \leqq 6$, $2n-3 \leqq m < 2n+2$, respectively, or a mixture of the said aliphatic fluorohydrocarbon and alcohol having a carbon number of 1 to 4 is blended with at least one member selected from the group consisting of lactam being alkyl pyrrolidone or pyrrolidone derivatives having a carbon number of 5 or 6 and/or carboxylic acid amide being formamides or acetamides having a carbon number of 1 to 4, tertiary amines having a carbon number of 5 to 12, and alcohol having ether linkage and/or amino linkage within its molecules being furfuryl alcohol, tetrahydrofurfuryl alcohol, or ethylene, diethylene, triethylene, or dipropylene glycol alkyl or monophenyl or monobenzyl derivatives having a carbon number of 3 to 10 or alkyl amino alkanols having a carbon number of 4 to 7, at a blending proportion of 10 to 95% by weight;

thereafter rinsing the object with a rinsing agent composition which comprises a mixture of said aliphatic fluorocarbon and said alcohol having a carbon number of 1 to 4,

wherein the object, after being rinsed, is vapor cleaned with a composition comprising a mixture of said aliphatic fluorocarbon and the said alcohol having a carbon number of 1 to 4, the rinsing agent or vapor cleaning agent composition which is used for the above-mentioned rinsing and vapor cleaning processes is an azeotropic composition of $(CF_3)_2CFCH_2CF_2H$ (93.3%)/methanol (6.7%)/$(CF_3)_2CFCH_2CF_2H$ (95.4%)/ethanol (4.6%), $(CF_3)_2CFCH_2CF_2H$ (95.8%)/isopropanol (4.2%), $H(CF_2CF_2)_2H$ (96.3%)/methanol (3.7%), $H(CF_2CF_2)_2H$ (98.9%)/ethanol (1.1%), $(CF_3)_2CFCF_2CF_2H$ (96.7%)/methanol (3.3%), $(CF_3)_2CFCF_2CF_2H$ (97.9%)/ethanol (2.1%), $CF_3CF_2CH_2CF_2CF_3$ (95%)/methanol (5%), $CF_3CFHCFHCF_2CF_3$ (94.5%)/ethanol (5.5%), $CF_3CF_2CH_2CF_2CF_3$ (97%)/isopropanol (3%), $CF_3CFHCFHCF_2CF_3$ (92.3%)/methanol (7.7%), or $CF_3CFHCFHCF_2CF_3$ (95.9%)/isopropanol (4.1%).

5,667,595

PROCESS FOR MANUFACTURING A SOLAR MODULE AND THE SOLAR MODULE PREPARED THEREBY

Ingrid Vaverka; Udo Gelderie; Karin Broering; Guenter Mattes, all of Aachen, and Bernhard Reul, Herzogenrath, all of Germany, assignors to Saint-Gobain Vitrage, Courbevole, France

Filed Apr. 22, 1996, Ser. No. 635,582

Claims priority, application Germany, Apr. 22, 1995, 195 14 908.4

Int. Cl.[6] H01L *31/048*

U.S. Cl. 136—251 **20 Claims**

1. A solar module comprising a front plate and a rear support plate placed in parallel and having one or more solar cells placed therebetween, wherein remaining hollow space present between the front plate and the rear support plate is filled with a cast polyether-polyurethane resin.

5,667,596

PHOTOVOLTAIC DEVICE AND MANUFACTURING METHOD OF THE SAME

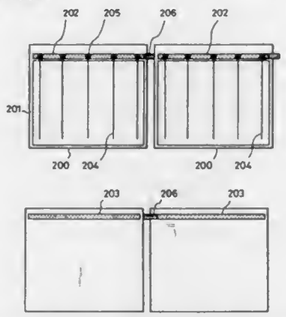
Koji Tsuzuki, Tsuzuki-gun; Katsuhiko Inoue, Nara; Takeshi Takada, and Yoshifumi Takeyama, both of Tsuzuki-gun, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 552,230, Nov. 2, 1995, abandoned. This application Jan. 28, 1997, Ser. No. 789,876

Claims priority, application Japan, Nov. 4, 1994, 6-271628

Int. Cl.[6] H01L *31/04;31/05;31/18*

U.S. Cl. 136—256 **17 Claims**



1. A photovoltaic device comprising at least a photoactive semiconductor layer formed on one major surface of a conductive base plate, wherein at least one conductive foil having a higher conductivity than said conductive base plate and being in electrical contact with said conductive base plate is formed along at least one side edge of the non-light receiving surface of said conductive base plate and not in contact with said photoactive semiconductor layer.

5,667,597

POLYCRYSTALLINE SILICON SEMICONDUCTOR HAVING AN AMORPHOUS SILICON BUFFER LAYER

Shunichi Ishihara, Ikoma, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

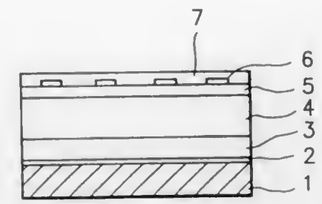
Filed Mar. 20, 1995, Ser. No. 406,486

Claims priority, application Japan, Mar. 22, 1994, 6-050845

Int. Cl.[6] H01L *31/06;31/0368;31/0392*

U.S. Cl. 136—258 **13 Claims**

1. A semiconductor device having a stacked layer structure on a substrate made of a material different from crystalline silicon, said stacked layer structure comprising an amorphous silicon layer having an n- or p-type conductivity on said substrate as a buffer layer and a polycrystalline silicon semiconductor active layer with a multilayered structure disposed on said amorphous silicon layer,



said multilayered structure having at least a first polycrystalline silicon layer in non-junction forming contact with said amorphous silicon layer and a second polycrystalline silicon layer having a conductivity type opposite to the conductivity type of said first polycrystalline silicon layer.

5,667,598

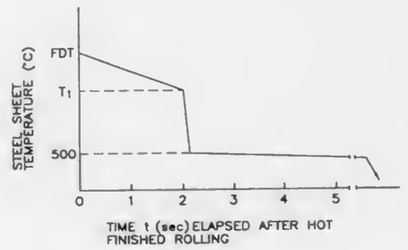
PRODUCTION METHOD FOR GRAIN ORIENTED SILICION STEEL SHEET HAVING EXCELLENT MAGNETIC CHARACTERISTICS

Yoshihiro Ozaki; Akio Fujita, and Mineo Muraki, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Mar. 27, 1996, Ser. No. 622,390

Int. Cl.[6] H01F *1/14*

U.S. Cl. 148—111 **4 Claims**



1. A method for producing a grain oriented silicon steel sheet having excellent magnetic characteristics, comprising heating a silicon steel slab containing about:

C : 0.01 to 0.10 wt %, Si: 2.5 to 4.5 wt %,

Mn: 0.02 to 0.12 wt %, Al: 0.005 to 0.10 wt %,

N : 0.004 to 0.015 wt %,

to about 1280° C. or higher and then subjecting it to hot rolling and cold rolling, and subjecting the cold-rolled steel sheet to decarburization annealing and finishing annealing, wherein the finishing rolling terminating temperature in the hot-rolling step is controlled to a range of about 900° to 1100° C., and wherein the rolled sheet is processed so that the steel sheet 1) temperature T(t) (° C.) after about 2–6 seconds following the termination of hot finishing rolling approximately satisfies the equation:

$$T(t) \leqq FDT-(FDT-700)/6\times t,$$

wherein FDT represents the hot finishing termination temperature (° C.), and t represents an elapsed time of about 2–6 seconds and 2) is cooled down to about 700° C. in about six seconds after termination of said hot finish rolling.

5,667,599

PROCESS FOR FORMING A BLACK OXIDE ON ALUMINUM ALLOYS AND A SOLUTION THEREFOR

Ravi Rungta, East Amherst; Robert Roy Ahrens, Angola, and Mingguang Zhu, Buffalo, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 605,405, Feb. 22, 1996, Pat. No. 5,601,663. This application Sep. 23, 1996, Ser. No. 724,044

Int. Cl.[6] C23C *22/50*

U.S. Cl. 148—259 **8 Claims**

1. A solution for forming a black oxide on a surface of an aluminum-containing metal, the solution comprising, per liter about 5 to about 12 grams of sodium phosphate dibasic, about 5 to about 12 grams of sodium benzoate, about 0.5 to about 1 gram of sodium molybdate dihydrate, distilled water, chloride, sulfate and bicarbonate sodium salts, and a substance for maintaining the pH of the solution at about 8.0 to about 9.0 at a temperature of about 80° C. to about 90° C.

5,667,600

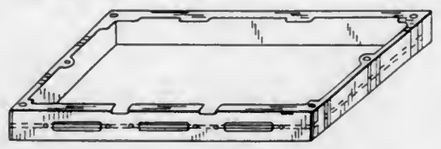
ALUMINUM ALLOYS CONTAINING BERYLLIUM AND INVESTMENT CASTING OF SUCH ALLOYS

Fritz C. Grensing, Perrysburg; James M. Marder, Shaker Heights, and Jere H. Brophy, Chagrin Falls, all of Ohio, assignors to Brush Wellman, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 156,356, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 770,187, Oct. 2, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 221,395

Int. Cl.[6] C22C *21/00;25/00;30/00*

U.S. Cl. 148—437 **3 Claims**



1. An investment cast net shape article made of an aluminum alloy consisting essentially of:

about 25 to about 70 weight percent aluminum,

about 30 to about 75 weight percent beryllium, up to about 5 weight percent silicon and silver,

about 0.25 to about 5 weight percent of an element selected from the group consisting of copper, cobalt and nickel, and

up to about 0.5 weight percent of an element selected from the group consisting of titanium, zirconium, boron, scandium, yttrium and the rare earth elements.

5,667,601

Patent Not Issued For This Number

5,667,602

ALLOY FOR CAST COMPONENTS

Que-Tsang Fang, Export; Steven A. Jones, Murrysville; James R. Van Wert, Irwin, all of Pa., and Roger C. Dickenson, Roanoke, Va., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 31, 1995, Ser. No. 414,985

Int. Cl.[6] C22F *1/04*

U.S. Cl. 148—549 **29 Claims**

11. The method of producing an improved cast aluminum alloy product comprising: providing an alloy consisting of essentially of about 2 to 5 wt. % magnesium, up to approximately 0.3 wt. % silicon, approximately 0.2 to 1.6 wt. % manganese, up to approximately 1 wt. % iron, and between about 0.1 to 0.3 wt. %, zirconium, the balance substantially aluminum and incidental elements and impurities; casting a body of said alloy; and aging said cast body at a temperature of between about 150 to 250 degrees centigrade for between about 1 to 8 hours.

5,667,603

HARDENING PROCESS AND APPARATUS FOR HOLED FLAT PARTS

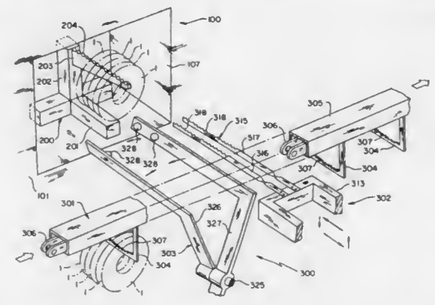
Masanori Ichikawa, Fukuroi; Tadayoshi Yoshioka, Shizuoka-ken; Katsumasa Toyoda, Ogaki, and Shinichi Takizawa, Nagoya, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Sep. 1, 1995, Ser. No. 523,091

Claims priority, application Japan, Sep. 5, 1994, 6-238388

Int. Cl.[6] C21D *9/40*

U.S. Cl. 148—589 **5 Claims**



1. A process for hardening a plurality of holed flat parts, comprising:

a) providing a plurality of flat parts having opposing sides and a hole therethrough;

b) providing a cantilevered hanger having a support surface;

c) inserting the cantilevered hanger through the holes of said plurality of flat parts so that inner surfaces of said holes rest on the support surface so that the opposing sides of each flat part are generally vertically aligned;

d) heating each flat part while each flat part rests on the support surface in a heating zone;

e) removing each said flat part from said support surface and said heating zone and repositioning each said flat part in a cooling section in a generally vertical alignment; and

f) cooling each said flat part by blowing a cooling gas in a vertically downward direction past each said flat part.

5,667,604

PROCESS FOR THE MANUFACTURE OF A SCRAPER OR BRUSH WIRE

Jörg Karch, Schacht-Audorf, Germany, assignor to RIWO-Drahtwerk GmbH, Rendsburg, Germany

Filed Mar. 12, 1996, Ser. No. 614,402

Claims priority, application Germany, Mar. 25, 1995, 195 11 057.9

Int. Cl.[6] C21D *8/06*

U.S. Cl. 148—598 **5 Claims**

1. A process for the manufacture of a scraper or brush wire, comprising the steps of:

bringing a rolled steel wire with a carbon content of approximately 0.6 to 0.7% and a diameter of approximately 6 mm or less to a final diameter by at least one drawing process;

patenting the wire prior to each drawing process:

heating the wire to its austenitizing temperature, thereby dissolving carbides within the wire; and

dispersing the carbides by cooling the wire into its martensitic stage and subsequently reheating the wire to its bainite stage, whereby fine carbide precipitation is achieved within a matrix,

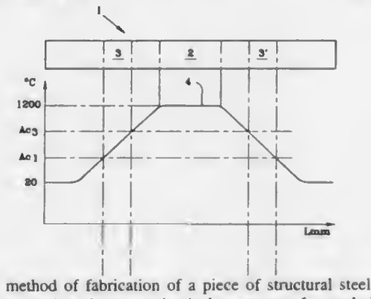
wherein a steel alloyed with chromium is used for said steel wire, the chromium content of which is 0.3% or less.

5,667,605

METHOD OF FABRICATION OF A PIECE OF STRUCTURAL STEEL, AND THE STEEL FABRICATED THEREBY

Jacques Bellus, Scy-Chazelles; Claude Pichard, Malancourt; Pierre Jolly, Saint Etienne; Daniel Forest, Talange, and Daniel Robat, Saint Julien les Metz, all of France, assignors to Ascometal, Puteaux, France

Filed Dec. 8, 1995, Ser. No. 569,348
Claims priority, application France, Dec. 13, 1994, 94 14941
Int. Cl.[6] C21D *9/00;* **C22C** *38/18*
U.S. Cl. 148—644 **11 Claims**



1. A method of fabrication of a piece of structural steel, comprising thermal or thermomechanical treatment of a workpiece of microalloy steel containing the following elements in the amounts indicated:

C	greater than 0.05 and up to 0.5 wt. %	Mo	0–0.5 wt. %
Mn	greater than 1.3 but less than 2.0 wt. %	V	0–0.30 wt. %
Si	0.05–1.5 wt. %	B	0–0.010 wt. %
Cr	0.1–1 wt. %	Ti	0–0.030 wt. %
Nb	0–0.1 wt. %		

wherein said piece has a bainitic structure; and in that said treatment comprises a heating stage wherein only a part of said piece is subjected to a temperature in the range 500°–900° C. as a consequence of a thermal treatment performed on another part of the piece, followed by a cooling stage in which at least said part of said piece is subjected to cooling at a rate greater than 500° C./hr.

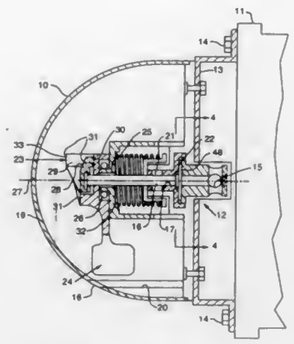
5,667,606

TIRE PRESSURIZING AND REGULATING APPARATUS

Grant J. Renier, Allison Park, Pa., assignor to Cyclold Company, Cranberry Township, Pa.

Filed Jul. 5, 1996, Ser. No. 675,916
Int. Cl.[6] B60C *23/12*
U.S. Cl. 152—421 **25 Claims**

1. An apparatus for pressurizing a pneumatic tire mounted on a wheel adapted for axial rotation, said apparatus comprising:
a displacement type air pump including a spring loaded piston and cylinder combination for generating air under pressure;
a housing for said air pump adapted for axial attachment to a wheel having a pneumatic tire mounted thereon;
an air pressure connection conduit adapted for introducing air under pressure generated from said pump into the pneumatic tire;



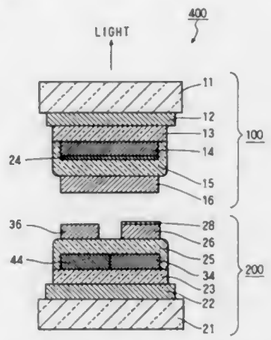
a cam mounted in said housing;
a cam follower mounted in said housing and engaging said cam for relative cam actuated movement therebetween which is connected for driving said air pump;
a pendulum mounted for free axial rotation relative to said housing;
said pendulum connected to one of said cam and cam follower and the other thereof secured to said housing for rotation therewith to provide said driving movement;
said piston and cylinder combination having an axis of piston reciprocation in said cylinder which is substantially aligned axially with the wheel axis of rotation.

5,667,607

PROCESS FOR FABRICATING ELECTROLUMINESCENT DEVICE

Kazuhiko Sugiura, Nagoya; Masayuki Katayama, Handa; Nobuei Ito, Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 1, 1995, Ser. No. 509,092
Claims priority, application Japan, Aug. 2, 1994, 6-201479; Jun. 15, 1995, 7-174324
Int. Cl.[6] C09K *11/00*
U.S. Cl. 156—67 **13 Claims**



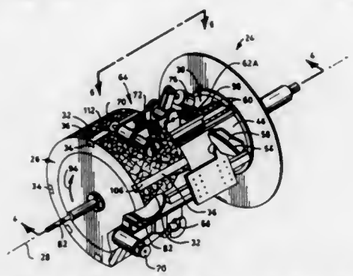
1. A process for fabricating an electroluminescent device having an optically transparent material at least at a light emitting side thereof, comprising the steps of:
forming a luminescent layer based on strontium sulfide and containing cerium at a concentration in a range of 0.01 atomic percent or higher but less than 0.3 atomic percent; and
applying heat treatment to said luminescent layer at a temperature in a range of 400° C. or higher but 550° C. or lower before forming any other layer on said luminescent layer.

5,667,608

ROTARY SEALING SYSTEM

Gregory John Rajala, Neenah; Steven Craig Gehling, Oshkosh, and Dean Edward Paszek, Wrightstown, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 381,679, Jan. 31, 1995. This application May 30, 1995, Ser. No. 453,035
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—73.1 **34 Claims**



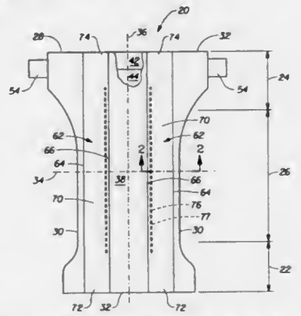
1. A method of applying energy to a workpiece, the method comprising the steps of:
(a) rotating a drum about a first axis of rotation in a given direction, the drum having a circumferential outer working surface, a first energy application device being mounted on the drum at the outer working surface and extending transverse to the direction of rotation of the drum;
(b) providing a second energy application device, mounted for rotation with the drum;
(c) while rotating the drum, moving the second energy application device in a direction transverse to the direction of rotation of the drum and thereby extending the second energy application device over the first energy application device and operating the first and second energy application devices in combination and thereby applying energy to the workpiece at a point moving progressively across the workpiece; and
(d) while rotating the drum, withdrawing the second energy application device from over the first energy application device.

5,667,609

METHOD FOR ATTACHING BARRIER CUFFS TO DISPOSABLE ABSORBENT ARTICLE

Vincent B. Llu, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 14, 1996, Ser. No. 601,483
Int. Cl.[6] A61F *13/15*
U.S. Cl. 156—73.1 **17 Claims**



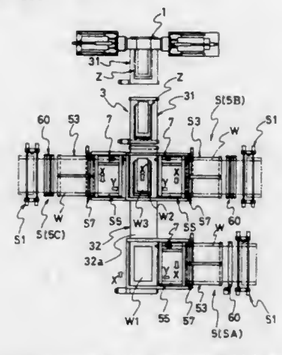
1. A method for attaching a barrier cuff to an absorbent article, said method comprising the steps of:
(a) providing an absorbent article having a longitudinal centerline and a transverse centerline perpendicular to said longitudinal centerline;
(b) providing a barrier cuff having a first edge and a second edge;
(c) maintaining at least one edge of said barrier cuff parallel to said longitudinal centerline of said absorbent article; and
(d) bonding said barrier cuff to said absorbent article along a juncture line that extends in a curved configuration with respect to said longitudinal centerline of said absorbent article.

5,667,610

METHOD OF SUPPLYING SHEET MATERIALS

Masaaki Yoshida, and Toru Aihara, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,019
Claims priority, application Japan, Nov. 30, 1994, 6-297000; Dec. 9, 1994, 6-306507
Int. Cl.[6] B29D *30/30*
U.S. Cl. 156—133 **7 Claims**



1. A method of supplying sheet materials which are tire constituent materials to be applied on a building drum, comprising:
supplying a first sheet material to a conveyor belt of an applying conveyor;
assembling at least a second sheet material onto the first sheet material on the conveyor belt by winding the second sheet material on a transfer drum, moving the transfer drum to a position over the first sheet material, and rotating the transfer drum so that the second sheet material is pressed and laminated onto the first sheet material sequentially from one of the end sides thereof to the other; and
after assembling and laminating of said sheet materials is completed, winding the resulting laminate body of said sheet materials on the building drum.

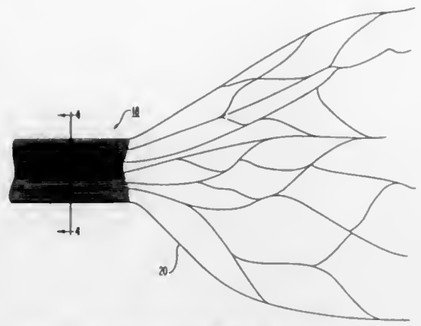
5,667,611

FABRIC OF COMMINGLED FIBERGLASS AND POLYTETRAFLUOROETHYLENE AND METHOD OF PRODUCING SAME

Robert L. Sassa, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 307,539, Sep. 16, 1994, Pat. No. 5,549,966, which is a division of Ser. No. 33,678, Mar. 16, 1993, abandoned. This application Apr. 3, 1996, Ser. No. 627,194
Int. Cl.[6] B01D *24/00*
U.S. Cl. 156—148 **7 Claims**

1. A method of producing an improved composite fabric, which comprises:
providing filaments of fiberglass;
providing filaments of polytetrafluoroethylene (PTFE);
commingling the filaments of fiberglass and PTFE by air-jet texturing the filaments so as to separate the filaments of PTFE and to fragment filaments of fiberglass to form a strand of composite fiber, wherein fragments of fiberglass filaments are interspersed within the filaments of PTFE; and



weaving multiple composite fibers into a fabric.

5,667,612

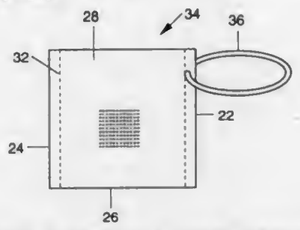
PERSONAL CLEANSING IMPLEMENT USING KNITTED TUBING AND METHOD OF CONSTRUCTION

W. Dennis Benge, Covington, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 381,263, Jan. 31, 1995, Pat. No. 5,594,970. This application Jul. 26, 1996, Ser. No. 686,832

Int. Cl.[6] B29C *53/08;53/36*

U.S. Cl. 156—148 **10 Claims**



1. A method of constructing a personal cleansing implement comprising the steps of:

a) knitting a piece of tubing on a knitting machine using extruded plastic monofilaments having circular cross-sections in the range of 0.003 inches to 0.015 inches diameter, said piece of tubing having a longitudinal axis;

b) inverting said piece of tubing on itself along said longitudinal axis to form a plurality of concentric layers of tubing, each of said layers having a similar length and substantially overlapping all other layers;

c) substantially flattening said piece of tubing perpendicular to said longitudinal axis to form a batt, thereby generating a top surface, a bottom surface, and two open ends of said batt;

d) bonding together said top and bottom surfaces of said batt at said two open ends by a bonding mans to maintain said batt substantially flattened.

5,667,613

METHOD FOR PRODUCING A REINFORCEMENT IN THE FORM OF A BLOCK FOR A COMPOSITE COMPONENT

Lucien Fantino, Merignac, and Georges Cahuzac, Le'Bouscat, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

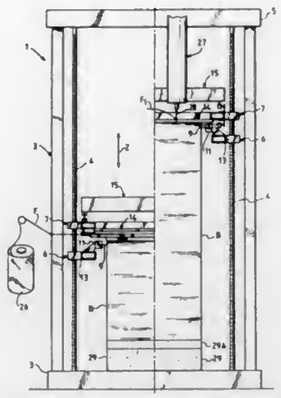
Filed Apr. 13, 1995, Ser. No. 421,558

Claims priority, application France, Apr. 18, 1994, 94 04583

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—182 **7 Claims**

1. A method for producing a reinforcement in the form of a block for a composite component, said method comprising the steps of:



(a) forming a first sheet comprising superposed plies of thread which are produced by arranging, for each ply of said first sheet, straight portions of thread at least substantially in a parallel fashion with respect to each other, the straight portions of thread of each ply of said first sheet extending in a direction which is either parallel or crossed with respect to the direction of the straight portions of thread of any other ply in said first sheet and consolidating thread which passes through a plurality of said plies of said first sheet;

(b) after said step (a), forming a second sheet comprising superposed plies of thread which are produced by arranging, for each ply of said second sheet, straight portions of thread at least substantially in a parallel fashion with respect to each other, the straight portions of thread of each ply of said second sheet extending in a direction which is either parallel or crossed with respect to the direction of the straight portions of thread of any other ply in said second sheet; and

(c) after said step (b), consolidating said first sheet and said second sheet with thread that passes through a plurality of said plies of said second sheet and a plurality of said plies of said first sheet.

5,667,614

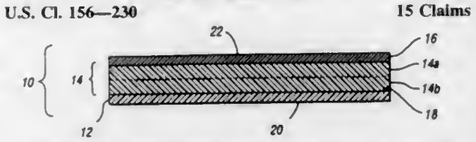
WEB FOR GRAPHICS TRANSFER TO GARMENT

Ted A. Stahl, Harrison Township, Mich., assignor to Stahls' Inc., St. Clair Shores, Mich.

Division of Ser. No. 489,847, Jun. 13, 1995, Pat. No. 5,573,834. This application May 16, 1996, Ser. No. 649,030

Int. Cl.[6] B44C *1/165*

U.S. Cl. 156—230 **15 Claims**



1. A method for transferring a graphic design to a fabric substrate, said graphic design having a selectable smooth or velvety appearance, said method comprising:

a) contacting a heat-activatable adhesive layer of an appearance selectable web with a fabric substrate, said appearance selectable web comprising in order, a release layer, a transfer layer, and an adhesive layer,

wherein said release layer maintains its integrity at an elevated temperature sufficient to bond said transfer layer to said fabric substrate;

wherein said transfer layer comprises pigmented PVC disposed superficial to said release layer, said transfer layer further comprising one or more heat-activated weakening agents, said heat-activated weakening agents effective to split said transfer layer into a release layer-adherent transfer layer portion and a fabric substrate-adherent transfer layer portion when said release layer is pulled away from said transfer layer while hot but which does not split into said release layer-adherent layer portion and said fabric substrate-adherent layer portion when said release layer is pulled away from said transfer layer after cooling; and

wherein said adhesive layer comprises one or more heat activatable adhesives;

b) heating said web and said fabric substrate to an elevated temperature and at a pressure sufficient to cause said transfer layer of said web to bond to said fabric substrate;

c) removing said release layer of said web from said transfer layer at a temperature selected from

i) a first, hot temperature such that said weakening agent causes said transfer layer to split into a release layer-adherent layer portion and a fabric substrate-adherent layer portion thereby forming a graphic having a velvety appearance on said fabric substrate; and

ii) a second temperature, cooler than said first temperature, such that said transfer layer does not split, thereby forming a graphic of glossy appearance on said fabric substrate; and

d) recovering a fabric substrate having a graphic design transferred thereto.

5,667,615

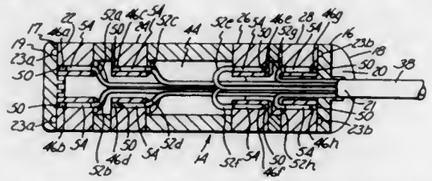
METHOD OF MAKING AN INCONTINENCE ELECTRODE

Donald D. Maurer, Anoka, and Alexander Kipnis, Minneapolis, both of Minn., assignors to Empi, Inc., St. Paul, Minn.

Continuation of Ser. No. 311,415, Sep. 23, 1994, Pat. No. 5,516,396, which is a continuation of Ser. No. 979,642, Jan. 4, 1993, Pat. No. 5,376,206, which is a division of Ser. No. 675,568, Mar. 26, 1991, Pat. No. 5,199,443. This application May 13, 1996, Ser. No. 647,261

Int. Cl.[6] B32B *31/06;* **A61N** *1/05*

U.S. Cl. 156—242 **12 Claims**



1. A method of making an electrode, the method comprising:

molding bands of conductive polymer such that each band of conductive polymer includes an interior surface and an exterior surface;

spacing four of the conductive polymer bands to achieve a spacing between each of the four bands in the range of 1/16 inch to ½ inch;

molding nonconductive polymer between the spaced conductive bands to form a resilient hollow cylindrical electrode body having a first end and a second end;

connecting the conductive polymer bands to electrical leads; and

sealing the first end and the second end of the electrode body.

5,667,616

DISC CARTRIDGE MOLDING METHOD AND APPARATUS

Takatsugu Funawatari, Miyagi, Japan, assignor to Sony Corporation

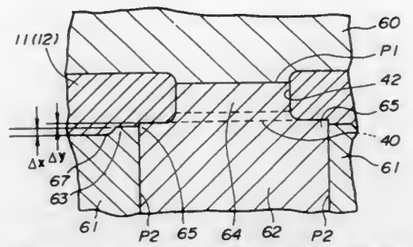
Filed Sep. 12, 1995, Ser. No. 527,040

Claims priority, application Japan, Sep. 19, 1994, 6-223752

Int. Cl.[6] B29C *47/00*

U.S. Cl. 156—245 **7 Claims**

1. A method of injection molding a disc cartridge having an upper cartridge part and a lower cartridge part and a disc-shaped recording medium rotatably housed within a space defined by the upper cartridge part and the lower cartridge part, at least one of the upper cartridge part and the lower cartridge part having a head-accessing aperture for exposing at least a portion of said disc-shaped recording medium to outside, said method comprising the steps of:



forming the upper cartridge part or the lower cartridge part having said head-accessing aperture using a molding apparatus having a first die having a first protrusion for forming said head-accessing aperture, said first die defining a cavity on an upper surface of the upper or lower cartridge part, a second die for forming a cavity on the inner surface of the upper or lower cartridge part, and an insert die formed separately from and united to the second die, said insert die having an extension for forming an end face on an inner surface of the upper or lower cartridge part and a second protrusion from said extension for abutting the first protrusion of said first die during die closure for forming said head-accessing aperture in said upper or lower cartridge part, said second die having an end portion thereof connected to said insert die, said end portion having a third protrusion extending towards said first die, said second die being connected to said insert die so that an end face of a first die side of said extension of said insert die is protruded further towards said first die than an end face of the third protrusion of said second die, whereby said first second and third protrusions cooperate during injection molding to prevent burrs being formed on the upper and lower cartridge parts; and

combining said upper cartridge part and said lower cartridge part with said disc-shaped recording medium in between, thereby forming said disc cartridge.

5,667,617

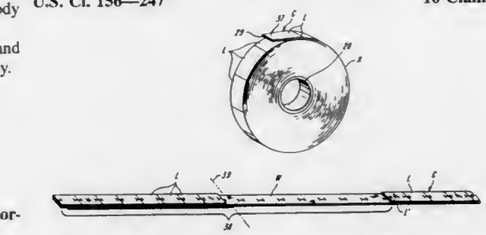
COMPOSITE WEB AND METHOD OF MAKING AND USING SAME INCLUDING A MEANS FOR SECURING THE TAIL OF THE WEB

Ronald L. Fogle, Springboro, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 5, 1996, Ser. No. 583,252

Int. Cl.[6] B65H *81/00;19/20*

U.S. Cl. 156—247 **16 Claims**



1. A composite web, comprising: a composite label web including a carrier web having a top side and an underside and a series of labels releasably adhered by pressure sensitive adhesive to the top side of the carrier web, the composite label web being wound into a roll having an outer free end portion including an outer wrap and an inner wrap adjacent the outer wrap, and adhesive adhering the underside of the carrier web of the entire outer wrap to all the

labels on the adjacent wrap so that removal of the outer wrap causes all of the labels of the inner wrap to be stripped from the inner wrap.

13. Method of using a composite web, comprising the steps of: providing a composite web including a carrier web having a top side and an underside and a series of labels releasably adhered by pressure sensitive adhesive to the top side of the carrier web, the composite label web including an outer wrap and being wound into a roll having an outer free end portion, the outer free end portion including an outer wrap and an inner wrap adjacent the outer wrap, and adhesive adhering the underside of the carrier web of the entire outer wrap to labels on the adjacent wrap, and removing the outer wrap from the roll to strip all the labels on the inner wrap from the carrier web of the inner wrap.

5,667,618

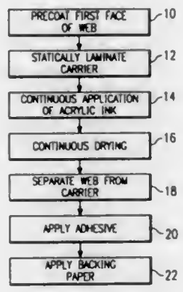
METHOD FOR MAKING TRANSLUCENT COLORED-BACKED FILMS AND CONTINUOUS LENGTH MADE THEREBY

Ronald W. Lowther, 3435 Ash Row Crescent, Mississauga, Ontario, Canada, L5L 1K3

Continuation of Ser. No. 135,946, Oct. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,489

Int. Cl.[6] B32B *31/12;7/12*

U.S. Cl. 156—249 **7 Claims**



1. A method for making a polyvinyl fluoride film with a translucent acrylic ink thereon, the film having a first face and a second face opposite the first face, said film having a carrier sheet temporarily adhered to the second face of the polyvinyl fluoride film, comprising the steps of:

(a) forming a custom-colored translucent acrylic ink by first dispersing at least first and second pigments in a clear varnish and then adding a solvent to the dispersion, the acrylic ink having a viscosity of approximately 500 centipoise;

(b) treating the first face to make the polyvinyl fluoride film receptive to translucent acrylic ink;

(c) continuously applying the custom-colored translucent acrylic ink onto the treated first face using a seamless metal rotary screen applicator that enables application of the translucent acrylic ink in a substantially uniform layer along an entire length of the polyvinyl fluoride film at a speed between approximately 10 and 12 meters per minute and wherein said ink layer is substantially devoid of visually discernible ink joins, such that when the inked film is supported on a substrate and backlit, substantially no color gradations are visible in the translucent ink; and

(d) drying the translucent ink coated polyvinyl fluoride film in an oven at a temperature range between approximately 170 and 185 degrees Fahrenheit.

5,667,619

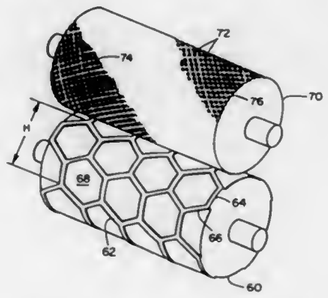
METHOD FOR MAKING A FIBROUS LAMINATED WEB

Mir Inayeth Alikhan, Marietta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Continuation of Ser. No. 287,697, Aug. 9, 1994, abandoned, which is a division of Ser. No. 973,146, Nov. 6, 1992, abandoned. This application Mar. 22, 1996, Ser. No. 620,865

Int. Cl.[6] B32B *31/04*

U.S. Cl. 156—253 **16 Claims**



1. A process for forming a laminated fibrous material comprising the steps of:

a. providing a first fibrous layer comprising a plurality of fibers or filaments of one or more thermoplastic polymeric materials;

b. providing a second fibrous layer comprising a plurality of fibers or filaments of two or more thermoplastic polymeric materials;

c. bonding said first and second layers at an interface between said layers in a spaced apart bonding pattern comprising compacted bonding regions having a first degree of bonding separated by second, lesser bonded fiber spans by passing said first and second layers between opposedly positioned first and second thermal bonding rolls and contacting an outer surface of each said bonding rolls with one of said first and second layers as said first and second layers pass therebetween;

said first and second bonding rolls having different raised bonding patterns on said outer surfaces thereof;

said first bonding roll having a space apart raised bonding pattern on the outer surface thereof and said second bonding roll having a plurality of raised bonding points on the outer surface thereof;

rotating said first bonding roll at a first rotational speed and rotating said second bonding roll at a second rotational speed, said first and second rotational speeds differing with a range of from about 4% to about 20%;

maintaining said first bonding roll at a first bonding temperature with the range of from about 260° F. to about 285° F. and maintaining said second bonding roll at a second bonding temperature within the range of from about 270° F. to about 320° F., said first and second bonding rolls being maintained at different bonding temperatures; and

forming apertures within said bonding regions simultaneously with said bonding of said layers as said first and second layers are passed between said first and second bonding rolls.

5,667,620

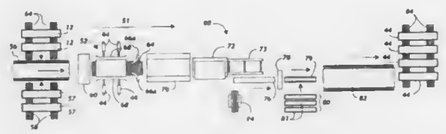
METHOD FOR MAKING A STRUCTUAL MEMBER

John M. Grigsby, Marietta; Jeffrey C. Banks, Austell, and John M. Grigsby, Jr., Atlanta, all of Ga., assignors to North American Container Corporation, Smyrna, Ga.

Division of Ser. No. 198,504, Feb. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 66,342, May 24, 1993, Pat. No. 5,520,982. This application Jun. 7, 1995, Ser. No. 474,709

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—254 **3 Claims**



1. A method of manufacturing a structural member, comprising the steps of:

(a) applying adhesive to at least one exterior surface of a low density corrugated paperboard sheet having corrugations, said corrugated paperboard sheet defined by a fluted sheet attached to at least a planar paperboard sheet;

(b) stacking a plurality of the adhesive-coated corrugated paperboard sheets together to form a stack;

(c) bonding the stack of adhesive-coated corrugated paperboard sheets together to form a billet;

(d) ripping the billet at a predetermined width to make an elongated core plank having exposed corrugations on two opposing lateral sides;

(e) laminating a pair of caps of high density fibreboard sheet on the two opposing lateral sides of the core plank to cover the exposed corrugations of the stacked corrugated paperboard sheets for forming a capped plank for use as a structural member by cutting to a selected length.

5,667,621

NON-AQUEOUS, ADHESIVE-FREE METHOD OF BONDING EXPANDED POLYMERIC PARTS

Thomas K. Dougherty, Playa Del Rey; Norman H. Harris, Newhall, and James R. Chow, San Gabriel, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 19, 1995, Ser. No. 444,638

Int. Cl.[6] B32B *31/24*

U.S. Cl. 156—275.7 **4 Claims**

1. A non-aqueous, adhesive-free method for bonding polymeric foam parts together, comprising:

(a) providing at least two polymeric foam parts to be bonded together;

(b) applying a coating to a surface of at least one of said polymeric foam parts, said coating comprising a non-aqueous, polar, high dielectric component comprising propylene carbonate in a non-aqueous vehicle comprising polyethylene glycol having an average molecular weight of 600;

(c) placing said coated surface in contact with at least one polymeric foam part to produce a mated assembly free from relative movement;

(d) irradiating said mated assembly with high frequency electromagnetic energy comprising microwave energy ranging in frequency from about 10^8 to 10^{12} Hz for a time sufficient to effect a bond between said at least two polymeric foam parts; and

(e) allowing said mated assembly to cool for sufficient time to set said bond.

5,667,622

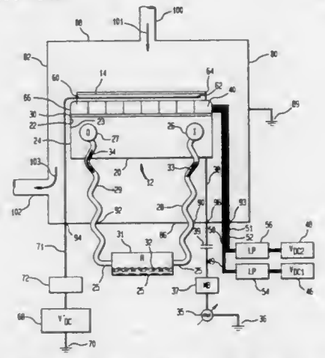
IN-SITU WAFER TEMPERATURE CONTROL APPARATUS FOR SINGLE WAFER TOOLS

Isahiro Hasegawa, Stormville; Karl Paul Muller, Wappingers Falls; Bernhard L. Poschenriedes, Poughkeepsie; Hans-Joerg Timme, Wappingers Falls, and Theodore Van Kessel, Millbrook, all of N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany; International Business Machines Corporation, Armonk, N.Y., and Kabushiki Kaisha Toshiba, Kanagawa-Ken, Japan

Filed Aug. 25, 1995, Ser. No. 519,373

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—345 **20 Claims**



1. In a temperature control apparatus for single wafer etching tool of the type having a cathode electrode and chuck means for holding a wafer, the chuck means being disposed on the cathode electrode, wherein the chuck means supports the wafer at a given temperature, the improvement comprising:

a thermoelectric layer including a plurality of thermoelectric elements, said thermoelectric layer disposed between the cathode electrode and the chuck means, said thermoelectric layer comprising a plurality of closed loops, each of said closed loops connecting an amount of said plurality of thermoelectric elements, wherein each of said closed loops being arranged to correspond to a specific area of said wafer; and

means coupled to each of said closed loops for providing a control voltage to each of said closed loops indicative of a given temperature;

wherein a temperature associated with each of said specific areas of said wafer being controlled by one of said closed loops.

5,667,623

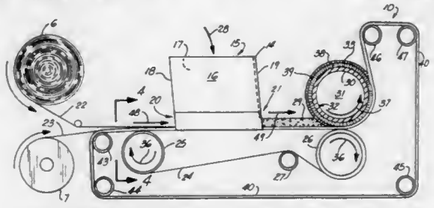
METHOD AND APPARATUS FOR WRAPPING A JOINT OF PIPE WITH A WEB OF CONCRETE MATERIAL

George Hanson, Belle Chasse, La., assignor to Bredero Price Company, Harvey, La.

Filed Sep. 14, 1995, Ser. No. 527,930

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—367 **9 Claims**



1. An apparatus for wrapping a joint of pipe with a web of reinforced concrete comprising:

a) a mixer for mixing aggregate and cement to produce a concrete mass to be formed into a web;

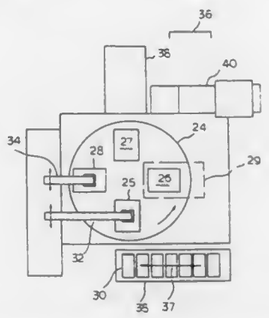
b) a mill for mixing water and the concrete mass, said mill having means for shaping the concrete into a continuous web;
c) a pipe conveyor for supporting, advancing, and rotating a joint of pipe;
d) an applicator for wrapping the joint of pipe with the web of concrete, said applicator including an endless belt and a pair of pulleys that support the endless belt;
e) a belt head for supporting the portion of the pipe joint that has been wrapped in concrete;
f) first and second motor drives for rotating the pipe at the pipe conveyor and at the belt head;
g) a third motor drive for turning the endless belt of the applicator;
h) a gear box that interfaces the endless belt of the applicator and one of the belt pulleys; and
i) a clutch for disengaging the gear box from a driven belt pulley after the first and second motor drives have reached a desired speed of rotation for the pipe joint, so that the driven pulley becomes an idler pulley when the clutch is disengaged.

5,667,624

POLARIZATION PLATE GLUING APPARATUS

Takashi Akimoto; Kiyomi Tagaya; Susumu Ojima, and Seiki Takeda, all of Noshiro, Japan, assignors to Ookubo Co., Ltd., Yamanashi-ken, Japan

Filed Jul. 31, 1995, Ser. No. 509,514
Claims priority, application Japan, Sep. 19, 1994, 6-248359
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—389 **6 Claims**



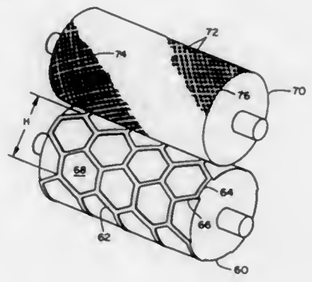
1. A polarization plate gluing apparatus empolying a cleaning mechanism for cleaning a surface of a liquid crystal cell, and a gluing mechanism for gluing a polarization plate to the surface of the liquid crystal cell, where the gluing mechanism comprises:
a feeding mechanism for feeding a predetermined length of strip-shaped material substantially overlapped by a polarization plate and a carrier tape;
a half-cutting mechanism for cutting only the polarization plate of the strip-shaped material;
a glue head for absorbing the polarization plate cut by the half-cutting mechanism to feed the same to the surface of the liquid crystal cell;
a retracting mechanism for retracting the strip-shaped material in a state where the polarization plate is absorbed and supported by the glue head; and
a winding mechanism for winding only the carrier tape after the polarization plate is removed.

5,667,625

APPARATUS FOR FORMING A FIBROUS LAMINATED MATERIAL

Mir Inayeth Alikhan, Marietta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Continuation of Ser. No. 353,581, Dec. 12, 1994, abandoned, which is a continuation of Ser. No. 973,146, Nov. 6, 1992, abandoned. This application Apr. 2, 1996, Ser. No. 626,575
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—553 **12 Claims**



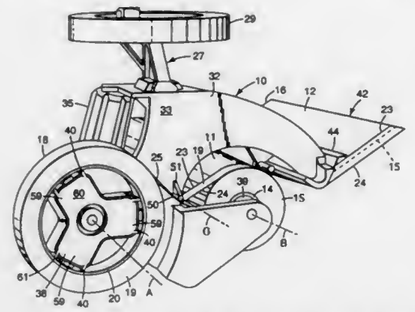
1. An apparatus for forming a laminated fibrous material comprising:
means for providing a fibrous layer comprising a plurality of fibers or filaments of one or more thermoplastic polymeric materials;
means for providing a second fibrous layer comprising a plurality of fibers or filaments of two or more thermoplastic polymeric materials;
means for bonding said first and second layers at an interface between said layers in a spaced apart bonding pattern comprising compacted bonding regions having a first degree of bonding separated by second, lesser bonded fiber spans;
said bonding means comprising a first thermal bonding roll and a second thermal bonding roll opposedly positioned relative to each other,
each of said bonding rolls having an outer surface in contact with one of said first and second layers of said first and second layers passing therebetween,
said first and second bonding rolls having different raised bonding patterns on said outer surfaces thereof,
said first bonding roll having a spaced apart raised bonding pattern on the outer surface thereof and said second bonding roll having a plurality of raised bonding points on the outer surface thereof;
means for operating said first bonding roll at a first rotational speed and means for operating said second bonding roll at a second rotational speed, said operating means ensuring that said first and second rotational speeds differ within a range of from about 4 percent to about 50 percent;
means for maintaining said first bonding roll at a first bonding temperature within the range of from about 260° F. to about 285° F. and means for maintaining said second bonding roll at a second bonding temperature within the range of from about 270° F. to about 320° F., said maintaining means maintaining said first and second bonding rolls at different bonding temperatures; and
said bonding rolls forming apertures within said bonding regions, said apertures being substantially free of fibers through the thickness of said laminated fibrous material.

5,667,626

MASKING DEVICE HUB PROVIDING TWO POSITION TAPE SUPPORT

James D. Cayford, Afton, Minn.; Philip V. Sadrakula, Hudson; Robert H. Heil, New Richmond, both of Wis., and Stanley W. Widmer, Fawn Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1996, Ser. No. 592,886
Int. Cl.[6] B32B *31/08;35/00*
U.S. Cl. 156—577 **7 Claims**



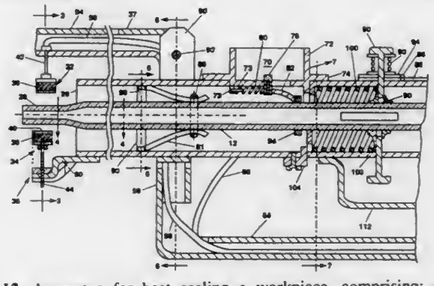
1. A portable device for use with a roll of masking material comprising a length of masking material helically wound around a masking material core and having opposite major surfaces and opposite first and second elongate edges, and a roll of tape comprising a length of tape helically wound around a tape core having a cylindrical inner surface, said tape comprising a backing having front and rear surfaces and opposite first and second elongate edges and a coating of pressure sensitive adhesive on said front surface, said portable device comprising:
a frame including a handle adapted for manual engagement to manipulate said device;
tape and masking material hubs mounted on said frame for rotation about spaced generally parallel axes, said tape hub including means for receiving the core of said roll of tape and for positioning the first edge of the length of tape at a predetermined tape edge position axially with respect to said first and second hubs, and said masking material hub including means for receiving the core of said roll of masking material and positioning the first edge of the length of masking material at a predetermined masking material edge position axially with respect to said tape and masking material hubs with the, width of said length of tape extending from the tape edge position past the masking material edge position and the width of the masking material extending from the masking material edge position past the tape edge position so that a portion of the length of tape along the first edge of the length of tape and a portion of the length of masking material along the first edge of the length of masking material are both positioned between said tape edge and masking material edge positions; and
path defining means defining a path for said length of tape from said roll of tape and a path for said length of masking material from said roll of masking material, said paths including a tape path portion for said tape from said roll of tape to the peripheral surface of said roll of masking material and a common path portion beginning at the peripheral surface of said roll of masking material where said portion of the length of tape along the first edge of the length of tape is adhered to said portion of the length of masking material along the first edge of the length of masking material to form a composite masking sheet having opposite edges defined by the second edges of the length of tape and the length of masking material and an exposed portion of the coating of pressure sensitive adhesive along the second edge of the length of tape along one major surface of the composite masking sheet so that the exposed portion of coating of adhesive can be adhered along a surface to be masked to attach the composite masking sheet thereto;
wherein said tape hub includes means for alternately locating the first edge of the length of tape at either of two different discrete tape edge positions to thereby afford changing the width axially of said hubs of the portion of the length of tape along the first edge of the length of tape and the portion of the length of masking material along the first edge of the length of masking material that are positioned between said tape edge and masking material edge positions.

5,667,627

HAND HELD VACUUM HEAT SEALER APPARATUS

Gus F. Plangetis, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1995, Ser. No. 520,970
Int. Cl.[6] B65B *31/06;31/20*
U.S. Cl. 156—579 **12 Claims**



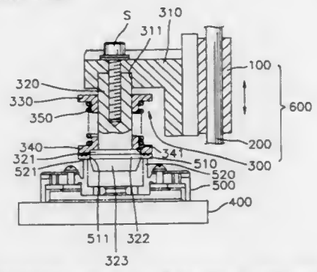
12. Apparatus for heat sealing a workpiece, comprising; an elongated nozzle tube having a flattened end portion; a pair of heating jaws; a housing on which said heating jaws are adjustably mounted; bearing means supporting the nozzle tube for slidable displacement within the housing between retracted and extended positions in which the jaws are electrically heated and the nozzle tube is connected to a vacuum source, respectively; and means for pivotally displacing the flattened end portion of the nozzle tube in the retracted position thereof between the heating jaws while disconnected from said vacuum source.

5,667,628

APPARATUS FOR FIXING A TRANSFORMER ON A DRUM FOR USE IN A VIDEO CASSETTE RECORDER

Eung-Ki Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed May 14, 1996, Ser. No. 645,944
Claims priority, application Rep. of Korea, May 18, 1995, 95-10503
Int. Cl.[6] B30B *15/00*
U.S. Cl. 156—581 **8 Claims**



1. An apparatus for fixedly attaching a transformer with an opening to a terminal surface of a protruding annular portion of a rotary drum, wherein the rotary drum is provided on a jig and its

terminal surface is applied with a bonding agent, the apparatus comprising a sliding member, means for driving the sliding member, a rod for guiding the movement of the sliding member and means for pressing the transformer toward the drum, wherein said pressing means includes:

a holder, which is an integral part of the sliding member;

a rod-shaped supporting member, whose one end is attached to the bottom of the holder, and the other end is removably provided with a portion having a larger diameter than that of the supporting member;

a cap movably fitting around the circumferential surface of the supporting member at the end proximal to the holder in such a way that its vertical position is allowed to be adjusted;

a ring provided with a groove for accommodating a part of the larger diameter portion of the supporting member, wherein the ring is used for applying a uniform pressure to the rotary transformer and fits around the circumferential surface of the supporting member at the end distal to the holder; and

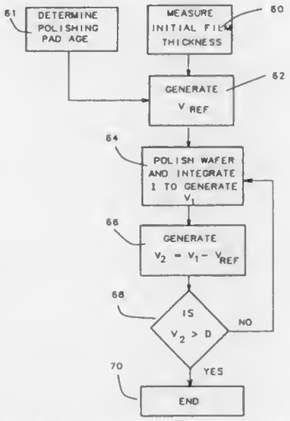
a resilient member for providing an elastic force to the ring located between the cap and the ring in such a way that the ring is allowed to apply a uniform pressure on the upper surface of the rotary transformer during the pressing operation thereof, thereby fixedly attaching the rotary transformer to the drum.

5,667,629

METHOD AND APPARATUS FOR DETERMINATION OF THE END POINT IN CHEMICAL MECHANICAL POLISHING

Yang Pan, Pine Grove, and Jiazhen Zheng, Whye Lane, both of Singapore, assignors to Chartered Semiconductor Manufactuing Pte, Ltd., Singapore, Singapore

Filed Jun. 21, 1996, Ser. No. 668,993
Int. Cl.[6] H01L *21/66;21/302*
U.S. Cl. 438—13 **2 Claims**



1. A method of end point determination for chemical mechanical polishing, comprising the steps of:

providing an integrated circuit wafer having a layer of dielectric material formed thereon wherein said layer of dielectric material has an initial thickness;

providing a means for holding said integrated circuit wafer;

providing a polishing mechanism having a polishing pad;

providing an electrical power source;

providing an electric motor having an input current and electrical connections to said electrical power source wherein said input current is proportional to the electrical power supplied by said electrical power source to said electric motor and said electric motor causes relative motion between said polishing pad and said layer of dielectric material formed on said integrated circuit wafer;

polishing said layer of dielectric material formed on said integrated circuit wafer by means of bringing together said integrated circuit wafer and said polishing mechanism so that said polishing pad contacts said layer of dielectric material whereby said polishing pad removes part of said layer of dielectric material formed on said integrated circuit wafer at a removal rate and said electric current is proportional to said removal rate;

providing a means for generating a first voltage wherein said first voltage is proportional to said current and thereby proportional to said removal rate;

providing an integrator circuit having an input and an output wherein the voltage at the output of said integrator circuit is the integral over time of the voltage at the input of said integrator circuit;

connecting said first voltage to said input of said integrator circuit whereby said voltage at said output of said integrator circuit is the integral over time of said first voltage and thereby proportional to the amount of said layer of dielectric material removed;

providing a comparator circuit having a first input, a second input, and an output wherein the voltage at said output of said comparator circuit is equal to the voltage at said second input of said comparator circuit subtracted from the voltage at said first input of said comparator circuit;

connecting the output of said integrator circuit to said first input of said comparator circuit;

determining said initial thickness of said layer of dielectric material;

determining the age of said polishing pad;

determining a second voltage level wherein said second voltage level is proportional to said initial thickness of said layer of dielectric material multiplied by a quantity related to said age of said polishing pad;

generating a reference voltage equal to said second voltage level;

connecting said reference voltage to said second input of said comparator circuit;

determining if said voltage at said output of said comparator circuit is positive, negative, or zero;

continuing said polishing of said dielectric material formed on said integrated circuit wafer if said voltage at said output of said comparator circuit is negative; and

stopping said polishing of said dielectric material formed on said integrated circuit wafer by means of separating said layer of dielectric material formed on said integrated circuit wafer and said polishing pad if said voltage at said output of said comparator circuit is zero or positive.

5,667,630

LOW CHARGE-UP REACTIVE ION METAL ETCH PROCESS

Jui-Cheng Lo, Hsin-Chu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Apr. 28, 1995, Ser. No. 430,468
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—653 **21 Claims**

1. A method for forming a residue free patterned metal layer for semiconductor device applications comprising:

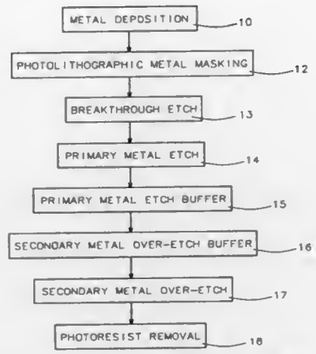
forming a metal layer upon a semiconductor substrate;

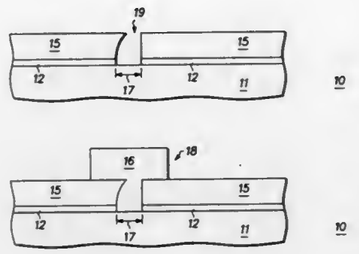
providing a patterned etch mask over the metal layer, which mask protects portions of the metal layer which are to remain on the semiconductor substrate;

providing a primary etching of the metal layer exposed through the etch mask through the use of a magnetically assisted reactive ion etch plasma, the primary etching being controlled by a first radio frequency power and a first magnetic field strength of the magnetically assisted reactive ion etch plasma;

providing a multiplicity of intermediate etching steps of the metal layer exposed through the etch mask by sequentially and independently lowering the first radio frequency power and the first magnetic field strength of the magnetically assisted reactive ion etch plasma to a second radio frequency power and a second magnetic field strength of the magnetically assisted reactive ion etch plasma; and

providing a secondary over-etching of the metal layer exposed through the etch mask at the second radio frequency power and the second magnetic field strength of the magnetically assisted reactive ion etch plasma.





providing a spacer having a width;

depositing a layer over the spacer; and

using the width of the spacer to define the line width by removing the spacer to form a hole in the layer, the hole having the line width.

5,667,631

DRY ETCHING OF TRANSPARENT ELECTRODES IN A LOW PRESSURE PLASMA REACTOR

John P. Holland, Santa Clara, and Alex T. Demos, San Francisco, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Jun. 28, 1996, Ser. No. 672,724
Int. Cl.[6] B01J *15/00;* **C23F** *1/02*
U.S. Cl. 216—13 **48 Claims**

PARAMETERS	POSSIBLE RANGES
ITO ETCH RATE (Å/min)	4000
SELECTIVITY OF ITO TO PHOTORESIST	3:1
SELECTIVITY OF ITO TO SILICON NITRIDE	10:1
SELECTIVITY OF ITO TO GLASS	10:1
ETCH RATE UNIFORMITY	5% WITHIN THE MEAN ETCH RATE
ETCH PROFILE	45-90° TAPER ANGLE

1. A method for dry etching an indium tin oxide (ITO) layer disposed above a substrate, said method comprising:

placing said substrate having said ITO layer into a low pressure plasma reactor;

introducing an etchant gas into said low pressure plasma reactor;

striking a plasma from said etchant gas in said low pressure plasma reactor; and

etching said ITO layer with said plasma with a pressure below about 100 milliTorr within said low pressure plasma reactor.

5,667,632

METHOD OF DEFINING A LINE WIDTH

Richard S. Burton, Tempe, and Gordon M. Grivna, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1995, Ser. No. 556,688
Int. Cl.[6] H01L *21/00;* **B44C** *1/22*
U.S. Cl. 438—570 **23 Claims**

1. A method of defining a line width, the method comprising the steps of:

5,667,633

METHOD OF PRODUCING WHITE LIQUOR STREAMS OF HIGH AND LOW SULPHIDITY

Bertil Pettersson; Bertil Granqvist, and Ingemar Eriksson, all of Gävle, Sweden, assignors to Korsnas AB, Sweden

PCT No. PCT/SE94/00537, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/29516, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 3, 1994, Ser. No. 549,770
Claims priority, application Sweden, Jun. 4, 1993, 9301921
Int. Cl.[6] D21C *11/04*
U.S. Cl. 162—30.11 **5 Claims**

1. A method of producing two types of white liquor in the recovery of chemicals in a sulphate pulp process, a first type having enhanced sulphidity and a second type having reduced sulphidity comprising the steps of

a) providing a calcium sulphide rich smelt of inorganic chemicals resulting from simultaneous combustion of black liquor and processing of lime sludge,

b) treating said calcium sulphide rich smelt with an aqueous solution to yield a mixture wherein the calcium sulphide is in solid form and the rest of the chemicals are in solution,

c) separating the solid calcium sulphide from the mixture to yield a solution,

d) processing the solution as green liquor by causticization according to the reaction formula

$$Ca(OH)_{2(S)}+[CO_3^{2-}]\rightarrow CaCO_{3(S)}+[2\ OH]$$

followed by separation of the solid $CaCO_{3(S)}$, the lime sludge, to yield said first type of white liquor having reduced sulphidity,

e) mixing the solid calcium sulphide (CaS) obtained in step c) with a required amount of white liquor to react the $[OH^-]$ of the white liquor with the CaS according to the reaction formula

$$CaS_{(S)}+[H_2O]+[2\ OH^-]\rightarrow Ca(OH)_{2(S)}+[HS^-]+[OH^-]$$

f) separating the solid $Ca(OH)_2$ from the mixture obtained in step e) to yield the second type of white liquor having enhanced sulphidity.

5,667,634

METHOD FOR CONTROLLING PITCH DEPOSITS IN PAPERMAKING PROCESS USING LIPASE AND POLYELECTROLYTE

Yuko Fujita, Tokyo; Haruo Awaji, Saitama-ken; Hidesato Shimoto, and Masaki Sharyou, both of Chiba-ken, all of Japan, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 122,435, Sep. 24, 1993, abandoned. This application Jul. 6, 1994, Ser. No. 271,274

Claims priority, application European Pat. Off., May 1, 1991, 91610037

Int. Cl.[6] D21C *9/08;* C12P *7/62*

U.S. Cl. 162—72 10 Claims

1. A method of controlling pitch deposits in a pulp and papermaking process comprising:

adding lipase and a cationic polymer to a triglyceride-containing papermaking cellulosic slurry, said cellulosic slurry having an aqueous phase, wherein said lipase is added in an amount effective to reduce the content of said triglyceride in said cellulosic slurry by hydrolysis of said triglyceride to glycerol and fatty acids, wherein said triglyceride content reduction diminishes pitch deposits from said cellulosic slurry in a pulp and/or paper mill, and said cationic polymer is added in an amount effective to enhance said diminishing of pitch deposits activity of said lipase at least in part by diminishing the concentration of said fatty acids in said aqueous phase of said cellulosic slurry.

5,667,635

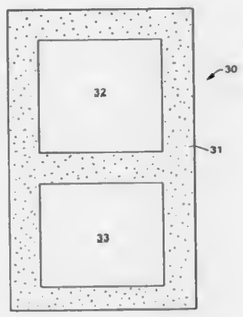
FLUSHABLE PREMOISTENED PERSONAL WIPE

Maug Hla Win, Neenah; Mark Alan Burazin, Appleton; Steven Alexander Engel, Neenah; Bernhardt Edward Kressner, Appleton; William Dee Lloyd, Appleton, and Walter Theodore Schultz, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Sep. 18, 1996, Ser. No. 715,666

Int. Cl.[6] D21H *11/00*

U.S. Cl. 162—109 10 Claims



1. A water-dispersible wet wipe comprising at least two uncreped through-air-dried tissue sheets of papermaking fibers containing a wet strength agent and mechanically attached together along their edges by embossments sufficient to maintain the integrity of the wet wipe during use, said wipe having one or more centrally-located unembossed regions having an area of from about 1 to about 30 square inches, a moisture content of at least about 200 weight percent based on the dry weight of fiber, a Wet Burst Strength of about 100 grams or greater in the centrally-located unembossed regions, and a Dispersibility of from about 10 to 100 percent.

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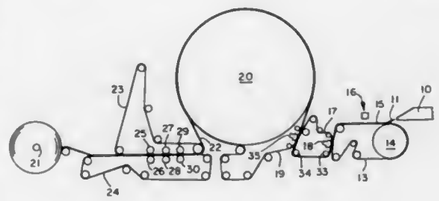
METHOD FOR MAKING SMOOTH UNCREPED THROUGHDRIED SHEETS

Steven Alexander Engel, Neeah; Michael John Rekoske; Theodore Edwin Farrington, Jr., both of Appleton, all of Wis.; Stephen John Sudall, Wales, United Kingdom; Paul Edward Williams, Chester, England, and David Arthur Hyland, Clwyd, United Kingdom, assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation-in-part of Ser. No. 36,649, Mar. 24, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 330,166

Int. Cl.[6] D21H *11/00*

U.S. Cl. 162—117 9 Claims



1. A method of making a cellulosic web comprising:

(a) depositing an aqueous suspension of papermaking fibers onto the surface of an endless traveling foraminous forming fabric to form a wet web having a consistency of from about 15 to about 25 percent;

(b) transferring the wet web from the forming fabric to a first transfer fabric having a void volume that is equal to or less than the void volume of the forming fabric, said transfer fabric traveling at a speed of from about 5 to about 75 percent slower than the forming fabric; and

(c) transferring the wet web from the first transfer fabric to a throughdrying fabric, wherein the web is throughdried.

5,667,637

PAPER AND PAPER-LIKE PRODUCTS INCLUDING WATER INSOLUBLE FIBROUS CARBOXYALKYL CELLULOSE

Richard A. Jewell, Bellevue, and David W. Park, Puyallup, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Filed Nov. 3, 1995, Ser. No. 552,419

Int. Cl.[6] D21H *11/20*

U.S. Cl. 162—146 10 Claims

1. A paper or paper-like product which comprises:

a fibrous, essentially water insoluble carboxyalkyl cellulose in which the alkyl group is at least two carbon atoms in length and the D.S. is in the range of 0.01–0.3 used in an amount of 2–100% of the dry weight of the fibers present;

unsubstituted cellulose fibers in an amount of 98–0% of the dry weight of the fibers present; and

a cationic additive selected from the group consisting of polyethyleneimine, cationic starch, and polyamide-epichlorohydrin resins, said additive being present in an amount of 0.1–4.0% based on total fiber.

5,667,638

METHOD OF ENHANCING THE OPACITY OF PRINTING PAPERS AND PAPER PRODUCED THEREOF

Louis Robert Dragner, and Bernard North, both of Rock Hill, S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

Continuation of Ser. No. 438,075, May 8, 1995, abandoned, which is a division of Ser. No. 213,045, Mar. 15, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 722,777

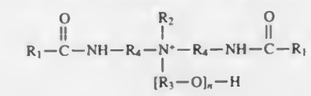
Int. Cl.[6] D21H *17/07;23/00*

U.S. Cl. 162—158 17 Claims

1. A method of producing printing paper with enhanced opaqueness consisting essentially of the steps of:

providing a pulp slurry of cellulose fibers;

adding to said slurry a composition in an amount effective to enhance opaqueness of the paper produced comprising the salt of a hydroxylated diamido amine having the general formula:



wherein each R_1 represents the same or different C_4–C_{22} alkyl, alkenyl or hydroxy alkyl group, wherein each R_4 represents the same or different C_2–C_6 alkylene group, wherein R_2 represents a C_1–C_4 alkyl or a benzyl group, wherein R_3 represents a C_2–C_4 alkylene group and wherein n is a number from 0 to 20;

forming said slurry into said paper; and

calendering the formed paper.

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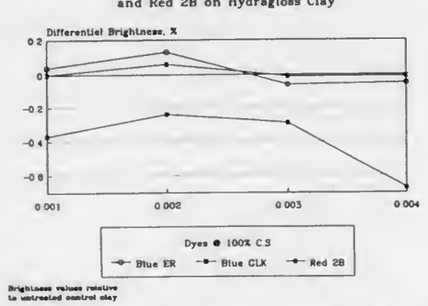
OPTICALLY WHITENED CLAY PIGMENTS

Carl J. Marshall, Jr., and Gary M. Freeman, both of Macon, Ga., assignors to J.M. Huber Corporation, Edison, N.J.

Division of Ser. No. 419,069, Apr. 6, 1995, Pat. No. 5,587,011, which is a continuation-in-part of Ser. No. 382,938, Feb. 1, 1995, abandoned, which is a continuation of Ser. No. 102,312, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 844,318, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 665,824, Mar. 7, 1991, abandoned, which is a division of Ser. No. 427,341, Oct. 27, 1989, abandoned. This application Oct. 8, 1996, Ser. No. 727,729

Int. Cl.[6] D21H *21/28*

U.S. Cl. 162—162 6 Claims



1. A paper composition containing therein an effective amount of an optically whitened wet-end filler pigment selected from a mineral clay pigment and a sodium aluminosilicate pigment, said inorganic pigment having undiminished brightness after being treated in an aqueous slurry with an aqueous solution in combination comprising (1) a blue cationic organic dye that is either bright blue or reddish-blue in hue with (2) a red cationic organic dye that is bluish-red in hue, the ratio of the (1) blue to the (2) red dye being from 99/1 to 60/40 at an effective combined concentration of 0.00002 to 0.008% by weight as based on active dyestuffs on dry pigment and vigorously mixing the resulting slurry to bond the dyes directly to the pigment whereby the pigment exhibits increased whiteness.

5,667,640

TWO-WIRE FORMER FOR PAPER-MAKING MACHINES

Wilhelm Wanke, Heidenheim, Germany, assignor to J.M. Voith GmbH, Germany

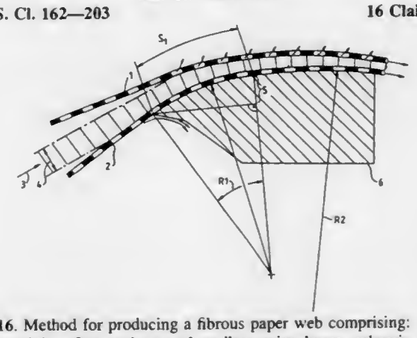
PCT No. PCT/EP94/03164, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO95/08669, PCT Pub. Date Sep. 22, 1994

PCT Filed Sep. 22, 1994, Ser. No. 436,388

Claims priority, application Germany, Sep. 22, 1993, 43 32 162.3

Int. Cl.[6] D21F *1/00*

U.S. Cl. 162—203 16 Claims



16. Method for producing a fibrous paper web comprising:

providing first and second endless wire loops, wherein the endless wire loops form an entrance gap;

injecting a stock suspension jet from a headbox into the entrance gap between the wire loops and impacting the second endless wire loop at a point of impingement;

dewatering the stock suspension contained between the first and second endless wire loops with at least one dewatering unit thereby forming a fiber web;

the dewatering unit comprising a dewatering element having a first wire-contacted surface with a convex curvature, said surface comprising a plurality of dewatering slats arranged successively;

rotating endless wire loops whereby said wire loops proceed curved and under tension across said first surface from the point of jet impingement, the first wire-contacted surface beginning a first edge adjacent the point of jet impingement, the first wire contacted surface at least two radii of curvature R_1 and R_2 forming said convex curvature, wherein first R_1 defines the first wire contacted surface immediately following the first edge and immediately precedes radius R_2 in a direction of travel of the first and second wire loops, first radius R_1 is smaller than the radius R_2, said radius R_1 has a chord height which is than or equals one-half the thickness of the suspension jet, and $R_1 \leqq 1000$ mm.

5,667,641

APPLICATION OF THERMAL BARRIER COATINGS TO PAPER MACHINE DRYING CYLINDERS TO PREVENT PAPER EDGE OVERDRYING

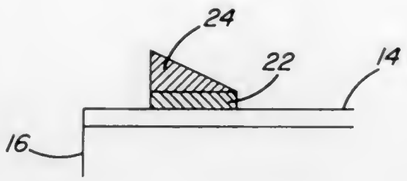
Nicole A. Poirier, Beaconsfield, and Peter G. Tsantrizos, Westmount, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, and Pyrogenesis Inc., Montreal, both of Canada

Filed Oct. 23, 1995, Ser. No. 546,953

Int. Cl.[6] D21F *5/02*

U.S. Cl. 162—207 33 Claims

1. A method of reducing or eliminating paper edge overdrying during a paper drying process on paper machine drying cylinders,



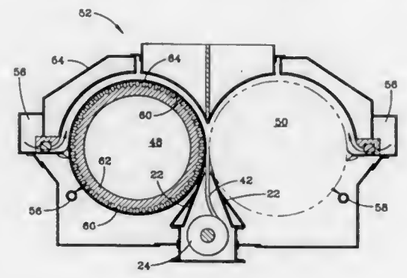
which comprises applying a thin ceramic coating onto the circumferential exterior surface of the cylinders only near the cylinder edges, thereby forming a thermal barrier coating at the edges, the thickness of said thermal barrier coating being graded in cross-direction of the cylinder so as to avoid a step change in said thickness and a significant gradient change in temperature across the cylinder, with the graded coating being thickest at outermost edges of the cylinder where overheating is greatest.

5,667,642

PULP SLURRY-HANDLING PRESS ROLL AND TWIN AND SINGLE ROLL SLURRY HANDLING PRESSES

Oscar Luthi, Nashua, N.H., assignor to Beloit Technologies, Inc., Wilmington, Del.

Continuation of Ser. No. 293,872, Aug. 22, 1994, abandoned.
This application Feb. 8, 1996, Ser. No. 598,410
Int. Cl.[6] D21F *2/60*; B30B *9/24*; B01D *33/06*
U.S. Cl. 162—358.1 **11 Claims**



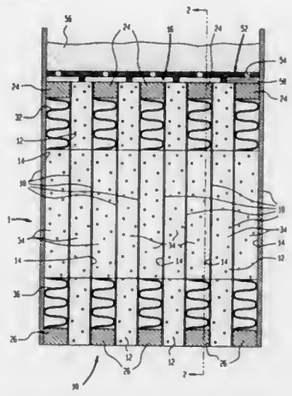
1. A twin roll, slurry-handling press, comprising:
a housing; and
a pair of coacting press rolls journalled in said housing; wherein said housing has means for admitting pulp slurry to said press rolls; and further including doctor means for extracting a pulp mat from said rolls; and wherein
each of said rolls comprises a drum having a longitudinal axis, an outer periphery, and a multiplicity of longitudinally extending grooves formed therein about said periphery; and
each of said rolls further comprises a cylindrical sheath which encloses said drum therewithin, wherein said cylindrical sheath seals off each one of said grooves from the other of said grooves thereof.

5,667,643

HEAT EXCHANGER AND DOUBLE DISTILLATION COLUMN

Donald Prentice Satchell, Jr., Summit; Venkat Natarajan, Scotch Plains, both of N.J., and Richard Henry Clarke, Abingdon, United Kingdom, assignors to The BOC Group, Inc., New Providence, N.J.

Filed Dec. 18, 1995, Ser. No. 573,737
Int. Cl.[6] B01D *3/02*
U.S. Cl. 202—154 **16 Claims**



1. A heat exchanger for indirectly exchanging heat between first and second fluids and for use with a sump, said heat exchanger comprising:
a plurality of first passages for receiving at least a liquid phase of a froth of a first fluid;
a plurality of second passages for receiving a second fluid;
said first and second passages alternating with one an other in a heat transfer relationship to allow said liquid phase of said froth to partially vaporize and thereby to form a vapor phase of said froth through indirect heat exchange with said second fluid;
said first passages being open at a bottom region of said heat exchanger to discharge at least a liquid resulting from a remaining part of said liquid phase, not vaporized through said indirect heat exchange, to said sump;
inlet and outlet means for introducing and discharging said second fluid to and from said second passages;
a reservoir located above said first and second passages for receiving said first fluid and for containing said froth; and
orifice means for providing flow communication between said reservoir and said first passage so that at least part of said vapor phase of said froth flows through said orifices to said reservoir and interacts with said first fluid to form said froth;
each of said orifices having a weep point at which said at least said liquid phase of said froth weeps into said second passages through said orifices, thereby to automatically replenish said first passages with said liquid phase of said froth.

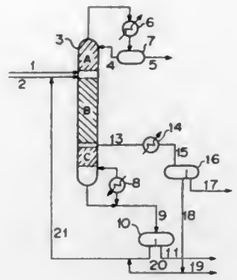
5,667,644

METHOD FOR PRODUCING A DIMERIZED ALDEHYDE

Tomoyuki Mori; Kouichi Fujita; Yuuji Kajita, and Masaki Takai, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Feb. 9, 1996, Ser. No. 599,242
Claims priority, application Japan, Feb. 13, 1995, 7-024083; Sep. 11, 1995, 7-232491; Nov. 7, 1995, 7-288461
Int. Cl.[6] C07C *45/82*
U.S. Cl. 203—17 **29 Claims**

1. A method for producing a dimerized aldehyde, which comprises subjecting a feed aldehyde to a condensation reaction and a dehydration reaction in the presence of a basic catalyst, wherein



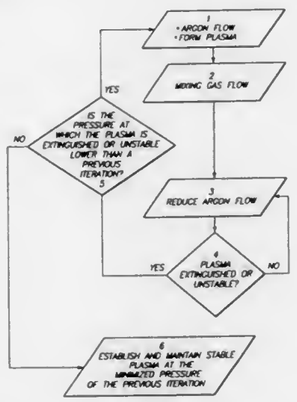
the feed aldehyde is the one having one or two hydrogen atoms at the α-position, an organic feed stream containing the feed aldehyde is supplied to a reactive distillation column, and the condensation reaction and the dehydration reaction are carried out simultaneously in the reactive distillation column.

5,667,645

METHOD OF SPUTTER DEPOSITION

Shane P. Leiphart, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 28, 1996, Ser. No. 672,979
Int. Cl.[6] C23C *14/54*
U.S. Cl. 204—192.13 **12 Claims**



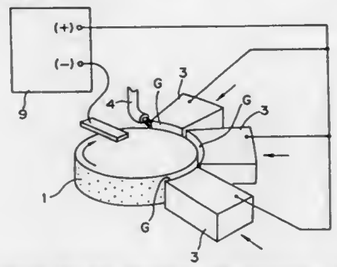
1. A method of sputter depositing a metal onto a substrate, comprising the following steps:
placing a substrate within a reaction chamber;
providing a metal target having an erodable surface within the reaction chamber;
providing a gaseous mixture comprising argon gas and at least one of helium gas and neon gas within the reaction chamber;
forming a plasma from said gaseous mixture within the reaction chamber, the plasma thereby comprising the plasma components of argon and at least one of helium and neon, the plasma having a threshold plasma pressure below which the plasma will not exist, a ratio of argon to other plasma components being selected to substantially minimize the threshold plasma pressure; and
contacting the plasma with the surface of the metal target to sputter deposit some of said metal onto said substrate.

5,667,646

DRESSING APPARATUS

Katsura Tomotaki, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Apr. 10, 1996, Ser. No. 631,312
Claims priority, application Japan, May 11, 1995, 7-112841
Int. Cl.[6] B23H *11/00;3/00*
U.S. Cl. 204—217 **17 Claims**



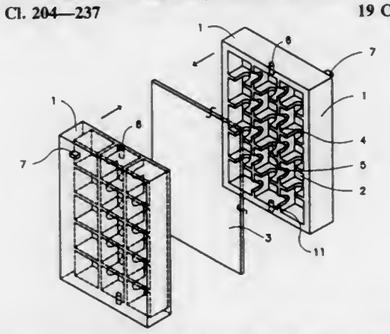
1. A dressing apparatus which performs electrolytic dressing on a circular grinding stone by applying electricity to a grinding fluid supplied between the grinding stone and an electrode having an arcuate inner surface to cause electrolysis which elutes the base material of the grinding stone, the dressing apparatus comprising:
two or more electrode pieces each having an arcuate inner surface and being arranged around a grinding stone to define a gap therebetween; and
gap adjusting means for adjusting the gap between the arcuate inner surface of each electrode piece and a surface of the grinding stone and for maintaining the gap between the arcuate inner surface of each electrode piece and a surface of the grinding stone equal to each other.

5,667,647

OXYGEN-HYDROGEN ELECTROLYTIC GAS GENERATION APPARATUS

Nagaichi Suga; Fujio Suga; Hiroshi Watanabe, and Koichi Taniguchi, all of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed May 1, 1996, Ser. No. 640,469
Claims priority, application Japan, Nov. 27, 1995, 7-307627
Int. Cl.[6] C25B *9/00;13/02;11/04;15/08*
U.S. Cl. 204—237 **19 Claims**



12. An oxygen-hydrogen gas generation apparatus comprising an electrolytic cell unit having a plurality of electrolytic cells, each said cell comprising:
an ion exchange film,
a pair of wall structures each having an internal framework, wherein said ion exchange film is interposed between said wall structures and is supported by said internal framework to form an oxygen chamber on one side of said ion exchange film and a hydrogen chamber on the other side of said ion exchange film,
an electrode connected to each wall structure,

a metal coating provided on internal surface areas defined by interior surfaces of said wall structures including said internal framework,

a gas discharge port provided in each of said wall structures; and

an electrolyte inlet port provided in each of said wall structures, wherein said plurality of electrolytic cells are positioned adjacent each other such that adjacent cells are integrally connected, and an electrical conductor is inserted through said integrally connected portions to short circuit the respective metal-coated surfaces of said wall structures;

a first conduit fluidly communicating with each of said oxygen chambers at said discharge ports and said inlet ports;

a second conduit fluidly communicating with each of said hydrogen chambers at said discharge ports and said inlet ports;

an oxygen gas-liquid separation tank connected in fluid communication with said first conduit, wherein said first conduit forms a first closed fluid circuit which includes said oxygen gas-liquid separation tank; and

a hydrogen gas-liquid separation tank connected in fluid communication with said second conduit, wherein said second conduit forms a second closed fluid circuit which includes said hydrogen gas-liquid separation tank.

17. The oxygen-hydrogen gas generation apparatus as claimed in claim 12, further comprising:

a first circulation pump connected in fluid communication in said first closed fluid circuit; and

a second circulation pump connected in fluid communication in said second closed fluid circuit.

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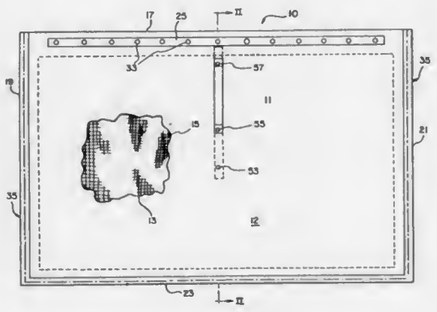
REMOVABLE CLOSURE FOR AN OPENING IN AN ALUMINUM REFINING POT

James Barrett McDonald, St. Albans, W. Va., assignor to Michael J. McDonald, and Ben N. McDonald

Filed Mar. 18, 1996, Ser. No. 617,155

Int. Cl.[6] C25C *3/08;7/00;* **A47H** *1/00;7/00*

U.S. Cl. 204—245 **15 Claims**



1. In a pot for conducting a process for deriving aluminum from alumina, including a chamber having an access opening, the improvement comprising a closure for said opening including:

a) attachment means for attaching said closure over said opening;

b) said closure having a flexible body made of heat resistant fabric and sized to overlie said opening;

c) said body having a bulbous peripheral seal sealing about a periphery of said opening, said seal comprising a peripheral portion of said fabric folded upon itself and fastened together to form a pocket and a rope seal within said pocket.

5,667,649

CORROSION-RESISTANT FERROUS ALLOYS FOR USE AS IMPRESSED CURRENT ANODES

James B. Bushman, 6395 Kennard Rd., Medina, Ohio 44256

Filed Jun. 29, 1995, Ser. No. 496,626

Int. Cl.[6] C25B *11/00*

U.S. Cl. 204—290 R **31 Claims**

1. An impressed current anode consisting essentially of a high alloy stainless steel material and a performance enhancing coating, the high alloy stainless steel material including about 45–70% iron.

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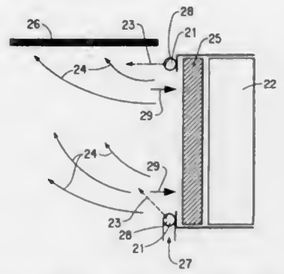
HIGH FLOW GAS MANIFOLD FOR HIGH RATE, OFF-AXIS SPUTTER DEPOSITION

Dean Willett Face, Wilmington, Del., and Kirsten Elizabeth Myers, Philadelphia, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 14, 1995, Ser. No. 389,704

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—298.07 **11 Claims**



1. An improved device for off-axis magnetron sputter deposition of inorganic oxide compounds of the type having a sputter gun, a target having a surface, a substrate, gas flow means and an enclosure chamber; wherein the improvement comprises a single hollow gas manifold positioned between the substrate and the target and closer to the target than to the substrate, said manifold having at least one gas inlet and at least one outlet opening on the manifold, said outlet opening positioned such that a mixture of inert gas and reactive gas flowing from said at least one opening directs sputtered material away from the target surface and in the direction of the substrate.

5,667,651

APPARATUS AND ASSOCIATED METHOD FOR REDUCING AN UNDESIRED CONSTITUENT OF GAS ASSOCIATED WITH WASTEWATER AND HAVING SENSOR FAULT DETECTION

Avron Bryan, 26 Country Club Rd., Cocoa Beach, Fla. 32931

Filed Jul. 13, 1995, Ser. No. 501,843

Int. Cl.[6] C02F *1/46*

U.S. Cl. 204—401 **32 Claims**

1. A scrubber apparatus for treating a gas associated with wastewater to reduce an undesired constituent in the gas, said scrubber apparatus comprising:

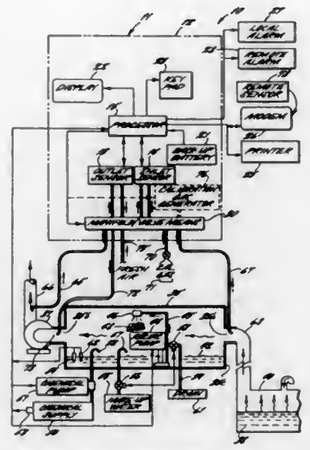
a vessel;

gas flow means for flowing gas to be treated from associated wastewater through said vessel for treatment;

treatment means for reducing the undesired constituent in the gas flowing through said vessel;

gas sensor means for sensing the undesired constituent; and

processor means operatively connected to said gas sensor means and said treatment means for controlling said treatment means responsive to the sensed undesired constituent so as to enhance reduction of the undesired constituent in the gas being treated, said processor means further comprising sensor fault testing means for determining a sensor fault of said gas sensor means.



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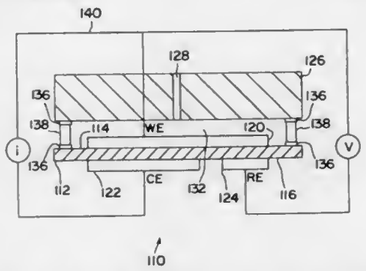
MULTI-FUNCTIONAL SENSOR FOR COMBUSTION SYSTEMS

Meilin Liu, Gwinnett, Colo., and Liang Jun Li, Salt Lake City, Utah, assignors to Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 164,143, Dec. 9, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 482,958

Int. Cl.[6] G01N *27/407;27/409*

U.S. Cl. 204—412 **15 Claims**



1. A multi-functional sensor for sensing gaseous components in an exhaust stream from a combustion system comprising:

a solid electrolyte membrane comprised of an ion-conductive oxide material and having a thickness for selectively conducting ions from a gaseous component through said thickness, and further having a first surface proximal said exhaust stream, and a second surface opposite said first surface and isolated from said exhaust stream;

a plurality of sensing electrodes associated with the first surface of said solid electrolyte membrane and in fluid communication with said exhaust stream, each of said sensing electrodes comprised of a substrate of finely divided conductive particles underneath a catalyst capable of catalyzing a first oxidation or reduction reaction of a specific gaseous component in the exhaust stream, each of said sensing electrodes having high selectivity for electrochemical reduction or oxidation of a particular component of said exhaust stream;

a counter-electrode associated with said second surface of said solid electrolyte membrane, said counter-electrode comprised of finely divided particles of an electrode material capable of catalyzing a reduction or oxidation reaction of the specific gaseous component, opposite to that of the oxidation or reduction reaction occurring at the sensing electrodes;

a circuit electrically connecting said sensing electrodes and counter-electrode for enabling application of an electrical potential across said sensing electrodes and counter-electrode, and for enabling a current flux to flow between the sensing and counter-electrodes; and

a meter for determining current flux between a sensing electrode and said counter-electrode.

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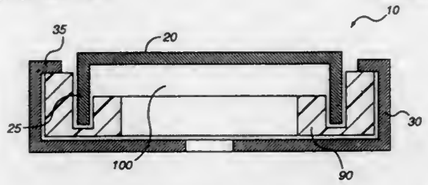
ELECTROCHEMICAL SENSOR

Alan A. Schneider, Exford; Towner B. Scheffler, and Brian K. Davis, both of Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Mar. 15, 1996, Ser. No. 616,689

Int. Cl.[6] G01N *27/28*

U.S. Cl. 204—431 **28 Claims**



1. An electrochemical sensor comprising: a metallic housing, the metallic housing including an inlet port therein to allow an analyte to enter the housing, the electrochemical sensor further comprising within the metallic housing at least a first electrode and a second electrode, electrical conductivity being maintained between the first electrode and the second electrode via an acidic electrolyte system having a pH less than approximately 3.0 present within the metallic housing and contacting at least a portion of the metallic housing, the first electrode comprising an electrochemically active material suitable to cause a reaction of the analyte to detect a concentration of the analyte, the electrochemical sensor further comprising circuitry adapted to measure an output signal resulting from reaction of the analyte at the first electrode during operation of the electrochemical sensor.

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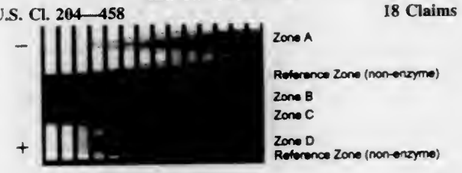
REAL TIME IN-GEL ASSAY

Erich A. Gombocz, Menlo Park; Eva V. Cortez, San Francisco, and David H. Rammler, Woodside, all of Calif., assignors to Labintelligence, Inc., Belmont, Calif.

Continuation of Ser. No. 202,059, Feb. 25, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,454

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—458 **18 Claims**



15. In a method of electrophoresis wherein sample components are moved through a gel under the influence of an applied electric field, the improvement comprising:

applying an alternating pulsed field to at least a portion of said gel during said electrophoresis, wherein said alternating pulsed field comprises rapidly reversed electric fields of equivalent magnitude and duration;

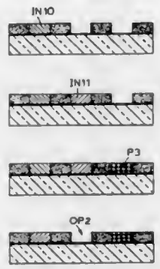
where a hold-mode is achieved while applying said alternating pulsed field.

5,667,655

METHOD OF MAKING COLOR SCREENS FOR FED AND OTHER CATHODOLUMINSCENT DISPLAYS

Philomena C. Libman, Arlington Heights, and Felix E. Tello, Tinley Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 15, 1996, Ser. No. 633,914
Int. Cl.[6] C25D *13/04;* **H01J** *29/32*
U.S. Cl. 204—485 **27 Claims**



17. A method for use in the construction of a color display screen using electrodeposition of a plurality of phosphor materials onto a conductive layer on a substrate bearing said screen, comprising the forming and electrodeposition operations a), b), c) and d), followed by operations e) and f):

a) forming on said conductive layer a matrix surrounding first, second and third patterns phosphor deposition sites,

b) photolithographically forming on said conductive layer on said first pattern of phosphor deposition sites a first material selectively strippable by a first agent,

c) photolithographically forming on said conductive layer on said second pattern of phosphor deposition sites a second material strippable by a second agent but not significantly attacked by said first agent,

d) electrodepositing a first phosphor material on said conductive layer on said third pattern of phosphor deposition sites,

e) performing a first stripping of one of said first and second materials with the associated one of said first and second agents to reveal one of said first and second patterns of phosphor deposition sites within said matrix and performing a second electrodepositing of a second phosphor material within said revealed deposition sites, and

f) stripping the other of said first and second materials with the other of said first and second agents to reveal the other of said first and second patterns of phospor deposition sites within said matrix and electrodepositing a third phosphor material within said other revealed deposition sites, whereby the said photolithographic forming operations are segregated from the phosphor material electrodepositing operations.

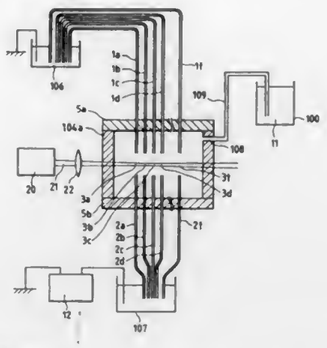
5,667,656

DNA DETECTOR AND DNA DETECTION METHOD

Hideki Kambara, Hachiouji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 372,136, Jan. 13, 1995, Pat. No. 5,516,409, which is a continuation-in-part of Ser. No. 337,412, Nov. 7, 1994, Pat. No. 5,529,679, which is a continuation of Ser. No. 51,324, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 26,592, Mar. 5, 1993, Pat. No. 5,314,602, which is a continuation of Ser. No. 843,232, Feb. 28, 1992, Pat. No. 5,268,080. This application May 14, 1996, Ser. No. 645,706
Claims priority, application Japan, Feb. 28, 1991, 3-34006; Apr. 24, 1992, 4-106966; Sep. 10, 1992, 4-241727; Jan. 14, 1994, 6-2804
Int. Cl.[6] C25D *13/00;* **C25B** *7/00;1/00;* **G21K** *5/00*
U.S. Cl. 204—603 **46 Claims**

1. An electrophoresis apparatus for detecting samples migrating in migration portions, the electrophoresis apparatus comprising:



an optical cell;

a plurality of electrophoretic separation portions separate from one another and having respective ends disposed along a straight line inside the optical cell;

means for forming inside the optical cell a plurality of migration portions equal in number to the electrophoretic separation portions and disposed along a straight line following respective ones of the electrophoretic separation portions;

a light source for generating light which passes through the migration portions, the light propagating along a straight line extending through all of the migration portions;

a plurality of optical fibers having respective first ends and respective second ends, the first ends of the optical fibers being disposed facing respective points where the light from the light source passes through respective ones of the migration portions, the optical fibers being equal in number to or greater in number than the migration portions; and

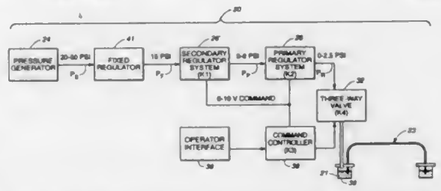
optical detecting means optically coupled to the second ends of the optical fibers for receiving light from the migration portions via the optical fibers.

5,667,657

PRESSURE INJECTION APPARATUS AND METHOD FOR INJECTING A SAMPLE INTO AN ELECTROPHORESIS CAPILLARY

Michael William Recknor, Oakland, and David A. Wolze, San Jose, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Sep. 28, 1995, Ser. No. 535,539
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—604 **79 Claims**



1. A capillary electrophoresis pressure injection apparatus comprising:

a container containing liquid sample therein;

a capillary device formed for receiving a quantitatively defined volume of liquid sample, coupled to said container;

a supply source of pressurized fluid at a supply pressure to urge said liquid sample into an input of said capillary device;

a fixed pressure regulator, coupled in series to an output of supply source, that regulates said fluid at said supply pressure to a generally constant pressure;

a servo pressure secondary regulator, coupled in series to an output of fixed pressure regulator, that precisely regulates said fluid from said generally constant pressure to a substantially constant preregulated pressure for a selected period of time;

a servo pressure primary regulator, coupled in series to an output of secondary regulator, to further precisely regulate said fluid from said substantially constant preregulated pressure to a substantially constant regulated pressure for said selected period of time; and

a distribution device, coupled to an output of said primary regulator, selectively distributing said fluid at said substantially constant and precisely regulated pressure to said container;

a primary accumulator, coupled in series between the output of said primary regulator and an input of said distribution device, having an internal reservoir at said substantially constant regulated pressure; and

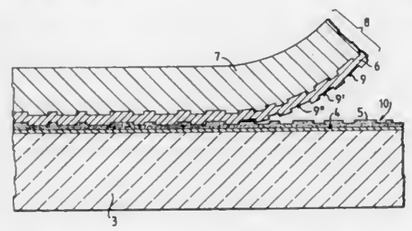
a secondary accumulator, coupled in series between the output of said secondary regulator and an input of said primary regulator, having an internal cavity at said substantially constant preregulated pressure.

5,667,658

MASTER FOR THE DUPLICATION OF SOUND RECORDINGS AND PROCESS FOR ITS PRODUCTION

Hermann Koop, Ronnenberg; Wolf-Eckhart Fritsche, Kleinostheim, and Bernd Hensel, Eschborn, all of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

Filed Mar. 15, 1996, Ser. No. 617,505
Claims priority, application Germany, Mar. 20, 1995, 195 10 096.4
Int. Cl.[6] C25D *1/10*
U.S. Cl. 205—50 **6 Claims**



4. Master for the duplication of sound recordings, said master comprising

a first layer consisting of an alloy of nickel and vanadium, said first layer having a surface provided with pits which provide information for the sound recording being duplicated, and

a protective layer of nickel covering said first layer on a surface opposite from said surface provided with pits.

5,667,659

LOW FRICTION SOLDER ELECTRODEPOSITS

Therese R. Souza, Cranston, and Allen E. Molvar, Barrington, both of R.I., assignors to Handy & Harman, North Attleboro, Mass.

Filed Apr. 4, 1996, Ser. No. 627,542
Int. Cl.[6] C25D *15/00*
U.S. Cl. 205—109 **3 Claims**

1. A method for providing a substrate with a deposit having a reduced coefficient of friction which comprises:.

immersing the substrate into a solution comprising an alkane sulfonic acid in an amount sufficient to impart a pH below about 2 to the solution; at least one of a solution soluble tin compound or solution soluble lead compound in an amount sufficient to deposit tin metal, lead metal or both; a substantially non-foaming, non-ionic surfactant in an amount sufficient to assist in depositing a smooth, adherent, uniform deposit; and fluorocarbon particles having a diameter of about 0.1 μm to less than 0.5 μm; and

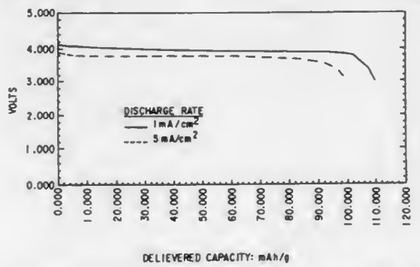
electroplating thereon a reduced-friction tin, lead or tin-lead alloy deposit having a contact resistance that does not exceed about 3.5 milliohms over at least about 4,000 cycles.

5,667,660

SYNTHESIS OF CHARGED Li_xCOO_2 (0<<1) FOR PRIMARY AND SECONDARY BATTERIES

Hsiu-Ping W. Lin, Princeton, N.J., and Kevin Burgess, Horsham, Pa., assignors to Alliant Techsystems Inc., Hopkins, Minn.

Filed Sep. 12, 1995, Ser. No. 527,208
Int. Cl.[6] H01M *4/04*
U.S. Cl. 205—59 **13 Claims**



1. A method of preparing a cathode incorporating heat stabilized charged Li_xCoO_2 as the cathode active material comprising the steps of:

(a) preparing the cathode active material by;

(1) providing a layer of particulate Li_xCoO_2 on a metallic current collector,

(2) subjecting the Li_xCoO_2 on said current collector to a charging current voltage to plate out Li and produce charged Li_xCoO_2 (0<x<1), and

(3) separating the charged particulate material from said current collector; and

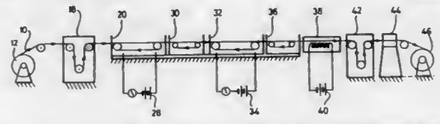
(b) incorporating said particulate cathode active material in the cathode.

5,667,661

WIRE PLATING

Andrew Hughes, Scotland, United Kingdom, assignor to United Wire Limited, Edinburgh, Scotland

PCT No. PCT/GB93/01933, § 371 Date Oct. 31, 1995, § 102(e) Date Oct. 31, 1995, PCT Pub. No. WO94/26435, PCT Pub. Date Nov. 24, 1994
PCT Filed Sep. 13, 1993, Ser. No. 545,655
Claims priority, application United Kingdom, May 8, 1995, 9309521
Int. Cl.[6] C25D *7/06;5/10;5/52;17/00*
U.S. Cl. 205—138 **15 Claims**



1. A method for the production of surface treated, metal alloy pins of a preselected overall cross-sectional size, which comprises continuously coating a conductive metal alloy substrate by the steps of:

a) drawing the metal alloy substrate through at least one die so as to produce a cross-sectional size which is greater than that desired for the pins;

b) stress relieving the drawn alloy;

c) electroplating the drawn, metal alloy substrate to a thickness not exceeding approximately 1 micron in a continuous manner as it passes through an electroplating bath;
d) drawing the plated, metal alloy substrate through a final die to reduce the cross-sectional area to the predetermined pin size; and
e) forming the pins.

5,667,662

ELECTROPLATING PROCESS AND COMPOSITION

Wade Sonnenberg, Upton; Patrick J. Houle, Framingham; Thong B. Luong, Springfield; James G. Shelnut, Northboro, and Gordon Fisher, Sudbury, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

Filed Apr. 1, 1996, Ser. No. 625,126
Int. Cl.[6] C25D *5/02;5/56;7/00;* **H01B** *1/00*
U.S. Cl. 205—162 **9 Claims**

1. A method for electroplating the surface of a nonconductor comprising the steps of contacting the nonconductor with an aqueous suspension of a conductive polymer to deposit a conductive polymer layer over the surface of said nonconductor and metal plating the surface of the nonconductor by passing a current between electrodes immersed in an electrolyte containing dissolved plating metal where one of said electrodes comprises said nonconductor to be plated, said aqueous suspension of the conductive polymer containing a stabilizing concentration of a polymeric stabilizer having the structural formula:

$$RO[(CH_mCH_{2m}O)_a(CH_mCH_{2m}O)]_bAR'M$$

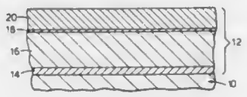
where R is a hydrocarbon group having from 1 to 40 carbon atoms, m and m'differ from each other and each is a whole integers of from 1 to 4, and a and b are whole integers varying between 0 and 1000 provided that a+b is at least 3, R' is an alkyl group having from 1 to 8 carbon atoms, A is an anion and M is a counteracting cation and a hydrophilic—lipophilic balance (HLB) in excess of 12.

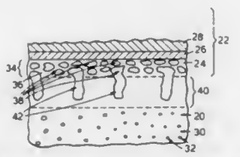
5,667,663

METHOD OF APPLYING A THERMAL BARRIER COATING TO A SUPERALLOY ARTICLE AND A THERMAL BARRIER COATING

David S. Rickerby, Derby; Stanley R. Bell, Herts, and Rodney G. Wing, Nottingham, all of England, assignors to Chromalloy United Kingdom Limited, Nottingham, and Rolls-Royce plc, London, both of England

Filed Dec. 19, 1995, Ser. No. 574,900
Claims priority, application United Kingdom, Dec. 24, 1994, 9426257; Aug. 10, 1995, 9516422
Int. Cl.[6] B05D *1/36;* **C23C** *8/80;* **C21D** *5/00;* **C25D** *5/10*
U.S. Cl. 205—170 **28 Claims**





1. A method of applying a multi-layer thermal barrier coating to a superalloy article comprising the steps of:
applying a layer of a platinum-group metal to the superalloy article,
heat treating the superalloy article to fully diffuse the platinum-group metal into the superalloy article to create a platinum-group metal enriched outerlayer on the superalloy article, the heat treatment being carried out at a temperature in the range 1100° C. to 1200° C. dependent upon the solution heat treatment temperature appropriate for the superalloy article and for a time sufficient to provide to the platinum-group metal enriched outerlayer of the superalloy article a stable platinum enriched gamma phase and a stable platinum enriched gamma prime phase,
creating an adherent layer of oxide on the platinum-group metal enriched outerlayer, and
applying a ceramic coating on the oxide layer.

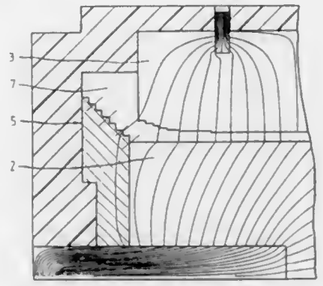
10. A method as claimed in claim 1 in which the platinum-group metal is applied by an electroplating process.

5,667,664

LEDGE-FREE ALUMINUM SMELTING CELL

Drago D. Juric, Camberwell; Raymond W. Shaw, Woodend; Geoffrey J. Houston, Ashburton, and Ian A. Coad, Kingsbury, all of Australia, assignors to Comalco Aluminum Limited, Melbourne, Australia

Continuation of Ser. No. 243,075, May 16, 1994, abandoned, which is a continuation of Ser. No. 969,849, Mar. 26, 1993, abandoned. This application Sep. 9, 1996, Ser. No. 709,629
Claims priority, application Australia, Aug. 20, 1990, PK1843
Int. Cl.[6] C25C *3/06*
U.S. Cl. 205—372 **3 Claims**



1. A method of operating an aluminum smelting cell wherein said cell comprises an anode, cathode side walls, a cathode floor, and means to supply an aluminum producing current to said cell, the method comprising the steps of:
(a) disposing a layer of aluminum wettable cathode material on at least a portion of said cathode side walls and said cathode floor;
(b) providing an aluminum producing electrolyte in said cell;
(c) disposing said anode proximate to said cathode side walls and said cathode floor to cause a current to be established between said anode and said cathode side walls while maintaining a current between said anode and said cathode floor;
(d) passing current through said anode and said cathode side walls and said cathode floor to produce molten aluminum at said cathode side walls and said cathode floor;
(e) forming a protective layer of molten aluminum on said cathode side walls to protect said cathode side walls against attack by electrolyte, said protective layer present at least when current densities at said cathode side walls and said cathode floor are apportioned to produce molten aluminum at said cathode side walls at about one quarter of the rate of the aluminum produced at said cathode floor;
(f) maintaining said cathode side walls substantially free of frozen electrolyte; and
(g) recovering said aluminum from said cell.

5,667,665

PROCESS OF PRODUCING HIGH PURITY COBALT

Yuichiro Shindo, and Tsuneo Suzuki, both of Toda, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 615,005
Claims priority, application Japan, Mar. 14, 1995, 7-080831
Int. Cl.[6] C25C *1/08*
U.S. Cl. 205—589 **11 Claims**

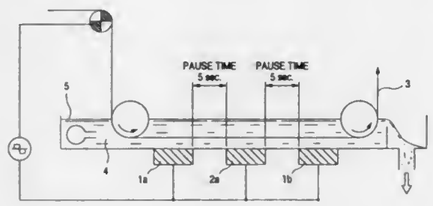
1. A process for producing a high purity cobalt comprising the steps of:
(a) preparing an aqueous solution of cobalt chloride having a hydrochloric acid concentration of 7 to 12N by dissolving a crude cobalt comprising Fe and Ni as impurities in an aqueous solution of hydrochloric acid at a temperature of 50° to 100° C.;
(b) contacting the prepared aqueous solution of cobalt chloride with an anion exchange resin so that cobalt is adsorbed on the anion exchange resin together with Fe;
(c) eluting the cobalt with hydrochloric acid as an eluting solution having a concentration of 1 to 6N to form an eluted cobalt solution while retaining Fe on the anion exchange resin;
(d) vaporizing and drying or otherwise concentrating the eluted cobalt solution to provide a purified aqueous solution of cobalt chloride having a pH of 0 to 6; and
(e) conducting electrolytic refining of cobalt in an electrolyte cell with said purified aqueous solution of cobalt chloride as an electrolyte and a crude cobalt as an anode to obtain electro-deposited cobalt.

5,667,666

PROCESS FOR ELECTROCHEMICALLY ROUGHENING A SURFACE OF A METAL WEB

Atsushi Matsuura, and Akio Uesugi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 30, 1996, Ser. No. 689,067
Claims priority, application Japan, Jul. 31, 1995, 7-194881
Int. Cl.[6] C25F *3/02*
U.S. Cl. 205—640 **6 Claims**



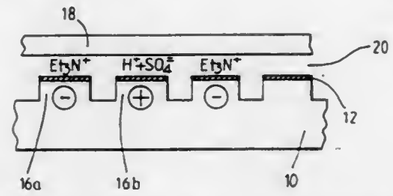
1. A process for roughening a surface of a metal web, comprising the steps of:
alternating applying, from one terminal of a power source, a positive current and a negative current to a plurality of electrodes, each of said electrodes being spaced apart from adjacent electrodes by a pause section;
subjecting the metal web to electrochemical processing in an electrolyte by an electric current formed between the metal web and the plurality of electrodes facing the metal web; and
pausing the electrochemical processing at the pause section between two of said electrodes for 1 to 30 seconds.

5,667,667

ELECTROCHEMICAL TREATMENT OF SURFACES

Edwin Southern, Oxford, United Kingdom, assignor to Isis Innovation Limited, Oxford, England

Continuation of Ser. No. 325,337, Dec. 9, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 660,946
Claims priority, application United Kingdom, Apr. 24, 1992, 9208921
Int. Cl.[6] C25F *1/00*
U.S. Cl. 205—687 **13 Claims**



1. A method of treating a region of a surface, which method comprises providing an electrolyte overlying the surface, and an array of electrodes adjacent the surface and in contact with the electrolyte, and altering the potential of one or more of the electrodes of the array so as to deposit or chemically modify a substance on the surface at the regions adjacent those electrodes, wherein one or more of the electrodes of the array are used as counter-electrodes, and the surface to be modified does not form either an electrode or a counter-electrode.

5,667,668

ELECTROLYSIS PROCESS FOR REMOVAL OF CAUSTIC IN HEMICELLULOSE CAUSTIC

Stephen W. Moran; John R. Jackson, both of Wilmington; Timothy J. Gallivan, Hampstead, all of N.C., and Richard E. Loftfield, Fruitcove, Fla., assignors to Huron Tech Corp, Jacksonville, Fla.

Filed Jul. 12, 1996, Ser. No. 680,323
Int. Cl.[6] C25F *1/00;* **C25B** *1/16*
U.S. Cl. 205—698 **10 Claims**

1. A process for recovering pulping chemicals and hemicellulose from an essentially lignin free starting solution comprising hemicellulose and caustic, said process comprising:
A) electrolyzing in an anolyte compartment of an electrolytic cell a hemicellulose starting solution containing about 2 to about 50 percent by weight of caustic to reduce the caustic content in said anolyte compartment to about 1 to about 2 percent by weight without precipitation of said hemicellulose, said cell comprising an anode in said anolyte compartment and a cathode in a catholyte compartment, and said anode and cathode separated by a cationic permselective membrane cell separator and
B) removing a caustic solution from the catholyte compartment of said cell having a concentration of up to about 35 percent by weight.

5,667,669

METHODS FOR INHIBITING FOAM

Paul R. Hart, The Woodlands, Tex., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Mar. 22, 1996, Ser. No. 620,647
Int. Cl.[6] C10G *9/14*
U.S. Cl. 208—131 **6 Claims**

1. A method for inhibiting the carryover of foam in a delayed coker unit processing a hydrocarbon liquid comprising the steps of:
adding an effective defoaming amount of a non-silicone defoamer compound to said hydrocarbon liquid;
measuring the height of said foam in said delayed coker unit;

comparing said height to a predetermined value wherein said predetermined value represents a height that said foam should not exceed;

when said height is greater than said predetermined value, stopping the addition of said non-silicone defoamer and adding an effective defoaming amount of a silicone defoamer compound to said hydrocarbon liquid.

5,667,670

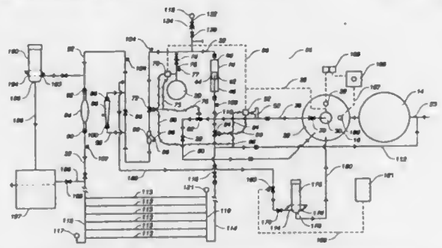
WASTEWATER EFFLUENT MANAGEMENT SYSTEM USING A SAND FILTER

T. Gig Drewery, P.O. Box 186, Kountze, Tex. 77625-0186

Division of Ser. No. 133,645, Oct. 8, 1993, Pat. No. 5,536,404. This application Apr. 22, 1996, Ser. No. 635,499

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—86 **17 Claims**



1. A system for controlling effluent discharge comprising:

an inlet for passing wastewater;

a filter means connected to said inlet, said filter means for removing solids from the wastewater;

a filtered water retaining means connected to an outlet of said filter means, said filtered water retaining means for accumulating a portion of the water passed from said filter means;

a filtered water outlet means connected to said outlet of said filter means, said filtered water outlet means for passing filtered water exterior of said system; and

control means connected to said filtered water retaining means so as to selectively pass a flow of the accumulated water into said filter means, said filtered water retaining means comprising:

a captive air tank in valved communication with said filter means and said filtered water outlet means, said captive air tank having an interior bladder, said control means connected to said captive air tank so as to cause said accumulated water to backflush said filter means.

5,667,671

SALT WATER AQUARIUM INTEGRATED FILTER

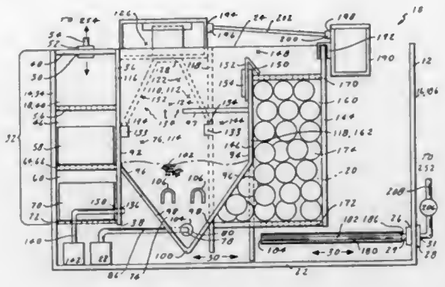
Paul B. Munsch, P.O. Box 675165, Rancho Santa Fe, Calif. 92067, and Shane E. Wrightson, 3501 E. 52 St., Mawood, Calif. 90270

Filed May 6, 1996, Ser. No. 642,970

Int. Cl.[6] A01K *63/04*

U.S. Cl. 210—151 **16 Claims**

1. A salt water aquarium integrated filter that filters water from an aquarium, wherein said aquarium includes a tank inlet fitting add a tank outlet fitting, wherein the tank inlet fitting is connected, via a conduit, to a filter outlet fitting located on an enclosure and the tank outlet fitting is connected, via a conduit, to a filter inlet fitting also located on said enclosure, where within said enclosure is located a sump containing water that flows through said integrated filter that is further comprised of a plurality of filtration means which are positioned and connected to provide optimal sequential filtering to maintain the purity, cleanliness and biological health of the aquarium water, wherein said plurality of filtration means comprises:



a) a fluidized biological bed filter which is supplied, via a first pump located within said sump, where said fluidized biological bed filter performs a primary nitrification process,

b) a venturi protein skimmer which is supplied, via a second pump located within said sump, oxygenated water that is forced upward through a venturi adapter wherein surfactants bond with oxygen molecules and exit said venturi protein skimmer and are deposited into a protein-skimmer catch cup, wherein said catch cup is removed at periodic intervals to dispose the collected organic waste product, and

c) a wet/dry filter that receives the filtered water from said fluidized biological bed filter and said venturi protein skimmer to provide secondary water nitrification and serves to reoxgenate the oxygen-depleted water, wherein from said wet/dry filter the filtered water is pumped by a primary water pump through the tank inlet fitting back into the aquarium.

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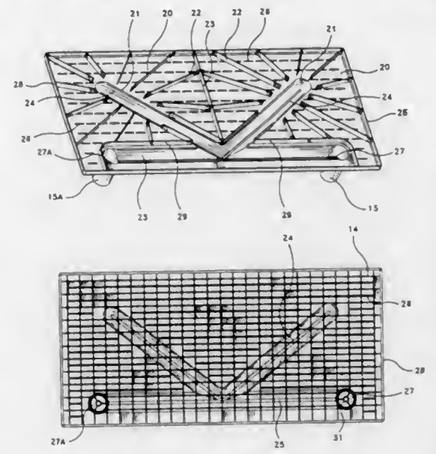
AQUARIUM UNDERGRAVEL FILTER

Steven Convertino, West Paterson, N.J., and Jonas Ivasauskas, West Nyack, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 5, 1996, Ser. No. 628,824

Int. Cl.[6] A01K *63/04*

U.S. Cl. 210—169 **19 Claims**



1. A filter for an aquarium comprising one or more plates, wherein each plate has a top, a bottom and openings to allow water to pass through the plate, and wherein the bottom side of the plates contains a flow channel having two ends and dividers which separate the bottom into separate chambers with each chamber having an opening adjacent to the flow channel wherein the flow channel is in the shape of an inverted "V" wherein the wide portion

of the "V" is located adjacent the bottom of the plate and the narrow portion of the "V" is located at a distance away from the bottom of the plate.

5,667,673

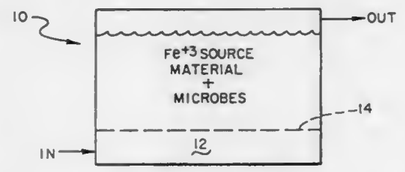
MICROBIAL MEDIATED WATER TREATMENT

Delman R. Hogen, 7813 Madison St., Spring Lake Park, Minn. 55432, and James R. Robin, 23420 Park St., Excelsior, Minn. 55331

Division of Ser. No. 356,879, Dec. 15, 1994, Pat. No. 5,543,049, which is a continuation-in-part of Ser. No. 362,509, Feb. 15, 1995, Pat. No. 5,620,893, which is a continuation-in-part of Ser. No. 915,334, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 650,059, Feb. 4, 1991, abandoned. This application Jun. 14, 1996, Ser. No. 662,253

Int. Cl.[6] C02F *3/34*

U.S. Cl. 210—170 **8 Claims**



1. An anaerobic chamber for generating soluble Fe^{+2} containing a flow-through media comprised of a quantity of Fe^{+3} source material, and a quantity of a microbe having the identifying characteristics of ATCC 55339 for converting Fe^{+3} to Fe^{+2}.

5,667,674

ADSORPTION MEDIUM AND METHOD OF PREPARING SAME

Douglas A. Hanggi, St. Paul; Gaddam N. Babu, and Terry L. Davis, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1996, Ser. No. 585,369

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **15 Claims**

1. An adsorption medium comprising a finely divided substrate provided on at least a portion of its surface with the polymerization product of a silane comprising (a) two or three olefinic groups having the formula $-(CH_2)_mCH{=}CH_2$, where m is between 0 and 3, inclusive, and (b) at least one ligand selected to interact with a substance brought into contact with said adsorption medium to adsorb at least a portion of said substance on the surface of said adsorption medium, wherein said polymerization product comprises a carbosilane backbone that is essentially free of siloxane linkages.

5,667,675

COLLAPSIBLE APPARATUS FOR COMPRESSING PACKING MATERIAL IN LIQUID CHROMATOGRAPHY COLUMNS AND METHODS OF USE

Richard G. Hatch, Berkeley, and Chiko Fan, Danville, both of Calif., assignors to Varian Associate, Inc., Palo Alto, Calif.

Filed Feb. 29, 1996, Ser. No. 609,967

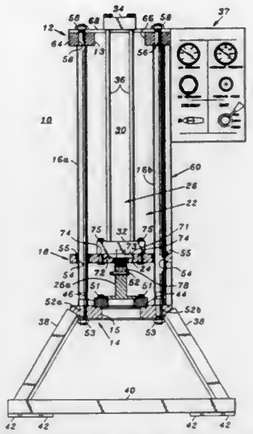
Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **8 Claims**

1. A longitudinally collapsible apparatus for compressing packing material in a liquid chromatography column, comprising:

a first support member;

a second support member;



guide members between the first and second support members;

a movable support member riding on the guide members;

means for releasably securing the movable support member to the second support member; and

a column packing compression mechanism secured to the movable support member for movement therewith to longitudinally collapse the apparatus when the movable support member is released from the second support member, the compression mechanism comprising

a longitudinally extending compression rod,

a compression piston at an end of the compression rod, and

a drive for moving the compression rod to longitudinally reciprocate the compression piston, the compression piston being sized to fit snugly into one end of a column tube supported on the first support member to compress a packing material within a second end of the column tube when the movable support member is secured to the second support member and the drive is actuated to drive the compression rod toward the column tube.

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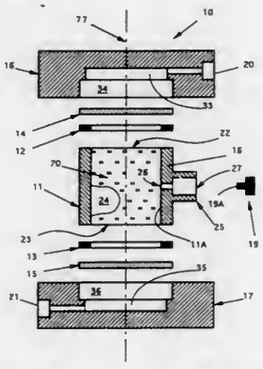
SIDE-PACKED CHROMATOGRAPHIC COLUMN

Andrew B. Alaska, 25330 SE. 36th Ct., Issaquah, Wash. 98029

Filed May 1, 1996, Ser. No. 641,522

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **13 Claims**



1. A vertical flow chromatography column comprising:

a. a column member having top and bottom openings and a longitudinal axis;

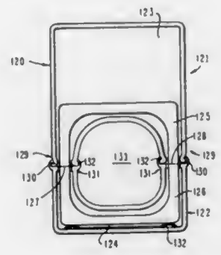
b. a pair of frits located over said top and bottom openings of said column member;
c. at least one packing port manufactured on said column member enabling sorbent to be packed and unpacked from said column member;
d. a removable plug attachable to said packing port capable of opening or closing said packing port;
e. a pair of upper and lower lids attached over said top and bottom openings of said column member and over said frits disposed thereon, said upper and lower lids capable of evenly distributing a liquid sample placed thereon;
f. at least one sealing member disposed between said upper and lower lids and said column member for sealing said top and bottom openings of said column member;
g. at least one inlet plumbing port located on said upper lid to enable a liquid sample to be placed inside said column member; and,
h. at least one outlet plumbing port located on said lower lid to remove a liquid sample from said column member, said outlet plumbing port being disposed on said lower lid so that said inlet plumbing port and said outlet plumbing port are on opposite sides of said longitudinal axis of said column member when said lids are attached to said column member.

5,667,677

METHOD AND APPARATUS FOR TREATING FLUID WITH RADIO FREQUENCY SIGNALS

Daniel Stefanini, 4 Ancaster Gardens, Wollaton, Nottingham NG8 1FR, United Kingdom

PCT No. PCT/GB94/02078, § 371 Date May 3, 1996, § 102(e) Date May 3, 1996, PCT Pub. No. WO95/08510, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 23, 1994, Ser. No. 619,543
Claims priority, application United Kingdom, Sep. 25, 1993, 9319859
Int. Cl.[6] C02F *1/48*
U.S. Cl. 210—222 **4 Claims**



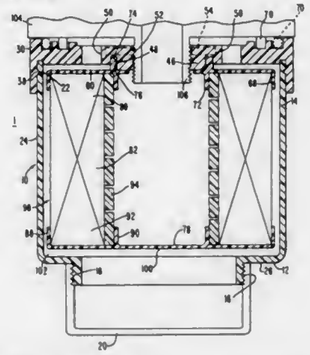
1. Apparatus for treating a fluid contained in a conduit extending along an axis, comprising:
a) a primary coil constituting a primary winding of electrical wire mounted exteriorly of the conduit;
b) means connected to the primary winding for energizing the primary coil to generate a succession of radio frequency signals;
c) means responsive to the generation of the radio frequency signals, for generating in the fluid to be treated an electromagnetic field having generally circular flux lines in generally co-axial relation with the axis of the conduit, and for propagating the field along the axis to treat the fluid upstream and downstream of the primary coil, said generating means including a core extending around the conduit and through the primary winding; and
d) a housing having respective parts each containing a core part, said housing parts being connectable together to embrace the conduit, and said core parts defining the core extending around the conduit.

5,667,678

PLASTIC FLUID FILTER AND METHOD FOR ASSEMBLING SAME

Richard Dye, Warren, N.J., and John Lowsky, Fayetteville, N.C., assignors to Advanced Performance Technology, Inc., Lugoff, S.C.

Filed Apr. 13, 1995, Ser. No. 426,748
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—232 **48 Claims**



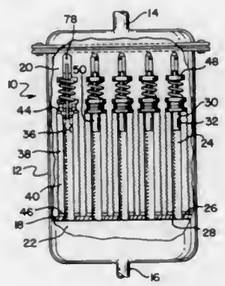
1. A fluid filter, comprising:
a one piece plastic cylindrical housing having a wall; a first end and a second open end;
a one piece plastic substantially planar end plate member having a wall;
a connector formed on the housing and the end plate member;
wherein the connector includes:
an annular recess formed in one of the wall of the second end of the housing and the wall of the end plate member in a plane parallel to the substantially planar end plate member, and an annular rib formed on the other of the wall of the housing and the wall of the end plate member in a plane parallel to the substantially planar end plate member; and
a cylindrical media element connected to the end plate member,
wherein the end plate member is attached to the second end of the housing via an interference fit of the rib being received co-planar by the recess, between the walls of the housing and the end plate member.

5,667,679

FILTER HAVING A FILTER ELEMENT QUICK-DISCONNECT MOUNT

Kurt Bozenmayer, West Milford, N.J., and Peter Sciandra, Elkton, Md., assignors to Graver Chemical Company, Glasgow, Del.

Filed Jun. 24, 1996, Ser. No. 669,180
Int. Cl.[6] B01D *29/17*
U.S. Cl. 210—232 **7 Claims**



1. A liquid filter comprising:
a pressurized vessel having an untreated liquid inlet and a treated liquid outlet;
a tube sheet spanning a portion of said vessel and defining an influent chamber communicating with said inlet and a filtrate chamber communicating with said outlet;
a plurality of elongated filter support cores extending into said influent chamber and connected at a first, fixed end to said tube sheet, each of said support cores having a barrel member positioned thereon at about a second, free end thereof distal most from said tube sheet, each of said barrel members defining a cylindrical annular opening therethrough and including at least a pair of retaining notches formed therein contiguous with the annular opening;
a plurality of elongated porous filter elements, each having a central opening therein for receipt of a respective support core therethrough; and
a quick-disconnect mounting assembly for releasably mounting said element to said tube sheet, comprising:
an elongated post having a generally cylindrical retaining body at a first end thereof, the retaining body having at least a pair of pin-like projections extending therefrom generally transverse to a longitudinal axis of said body, and being releasably connected to said barrel member by engagement of said pin-like projections with said retaining notches;
an inner seat plate positioned on said post adjacent to said retaining body for engaging said filter element at an end thereof distal most from the tube sheet,
a seal member positioned on said post adjacent to and abutting said inner seat plate to form a seal about said post;
a spring seat positioned on said post adjacent to said seal;
a spring element positioned on said post, adjacent to said spring seat;
an outer seat plate positioned on said post adjacent to said spring to retain said spring in place within said mounting assembly; and
at least one tensioning element, threadedly engaged with said post, abutting said outer seat plate, wherein said tensioning element is settable to apply a compressive load on said filter element to retain said filter element in engagement with said tube sheet and said mounting assembly, said mounting assembly being readily mountable to said core by applying a pressure thereto and rotating said mounting assembly to engage said pin-like projections with said retaining notches, and said mounting assembly being readily disengageable from said core by applying a pressure thereto and rotating said mounting assembly to disengage said pin-like projections from said retaining notches.

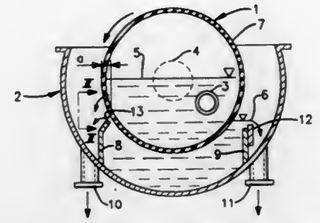
5,667,680

ARRANGEMENT IN LIQUID FILTERS IN WHICH THE FILTRATE IS DIVIDED IN TWO FRACTIONS

Roger Clarence Haeffner, Älta, Sweden, assignor to Nordic Water Products AB, Nynashamn, Sweden

PCT No. PCT/SE94/00369, § 371 Date Oct. 25, 1995, § 102(e) Date Oct. 25, 1995, PCT Pub. No. WO94/25139, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 26, 1994, Ser. No. 545,612
Claims priority, application Sweden, Apr. 28, 1993, 9301438
Int. Cl.[6] B01D *33/21*
U.S. Cl. 210—331 **5 Claims**

1. An apparatus for filtering liquids, comprising:
a horizontal filter rotor with a number of axially spaced, hollow vertical discs provided with filtering means on the sides thereof;
an inlet for supplying a liquid to be filtered into the interior of the hollow discs;
a container, in which the rotor is positioned, for receiving a filtrate passing through the filtering means;
means for keeping the surface of the filtrate in the container at a level which is lower than the surface of the liquid in the hollow discs;
a drive mechanism for rotating the filter rotor, whereby a pre-filtrate of said filtrate is developed in the container at the downwardly moving sides of the discs and a clear filtrate is developed in the container at the upwardly moving sides of the discs;
pre-filtrate discharge means having a wall in the container defining a discharge passage;
a pre-filtrate outlet connected to said discharge passage, said wall forming a number of openings positioned below said level and at the downwardly moving sides of the discs, whereby said pre-filtrate developing at the downwardly moving sides of the discs escapes through said openings into said discharge passage and through said pre-filtrate outlet; and
a clear filtrate outlet connected to the container for discharging said clear filtrate therefrom, said wall with said openings having wall portions extending into interspaces between adjacent discs, each said wall portion being provided with a number of said openings.

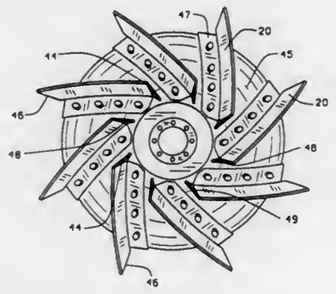


5,667,681

FLIGHT TIP EXTENSIONS FOR CENTRIFUGAL SEPARATOR

Thomas John Magrecki, St. Louis, Mo., and Jerry Dean Farmer, Eldorado, Ill., assignors to Elgin National Industries, Inc., Downers Grove, Ill.

Filed Apr. 3, 1996, Ser. No. 627,106
Int. Cl.[6] B01D *33/06*; B04B *7/12*
U.S. Cl. 210—374 **6 Claims**



1. A centrifugal separator comprising:
a drive mechanism including a drive shaft;
a flight assembly attached to the drive shaft and rotatably driven by it;
a screen assembly which includes a rotor and also is attached to the drive mechanism;
a flight assembly having a frusto-conical central body and a plurality of spaced apart individual blades or flights aligned longitudinally on the exterior of the central body;
an extension tip formed on each of the individual flights, the extension tips disposed to cause solid material to be propelled from the flights over a greater surface area of the screen so as to alter a wear pattern of the screen and increase screen life;
said extension tips being secured to one end of each of the individual flights, and said extension tips being unconnected to any other part of the flight assembly and screen assembly;

the extension tips of the flight assembly are positioned at an angle relative to the flight of approximately −5° to approximately +5°; and

said screen assembly being carded by the rotor and is positioned outwardly of the flight assembly.

5,667,682

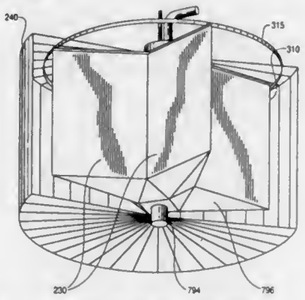
SELF-CLEANING FILTRATION APPARATUS

Kenneth Edward Laird, Hattisburg, Miss., assignor to Water Renewal Systems L.P., Hattisburg, Miss.

Filed Oct. 25, 1995, Ser. No. 547,875

Int. Cl.[6] B01D *29/70;29/72;29/74;33/52*

U.S. Cl. 210—407 **10 Claims**



1. A self-cleaning filter apparatus comprising

a housing;

an inlet operatively attached to said housing that supplies fluid to said housing;

a contaminant outlet operatively attached to said housing;

a clean outlet operatively attached to said housing and;

an elongated filter assembly having a cross section selected from the group consisting of oval shaped and star shaped, said filter assembly includes an inner upstream side, and an outer downstream side, and a central axis, said filtering assembly being disposed within said housing so that said fluid is introduced through said inlet to said inner upstream side of said filtering assembly, and said fluid is passed through said filtering assembly to said outer downstream side to provide clean, filtered fluid which is discharged through said clean outlet, while debris and other contaminants contained in said fluid are separated from said fluid and retained by said filtering assembly on the inner side of the filter assembly; and

an agitating means for agitating the filtering assembly and operatively connected to said filtering assembly, wherein the agitating means agitates the filtering assembly by rotating the filtering assembly in a first direction about the central axis, then rotating the filtering assembly in a second direction about the central axis to remove said debris and other contaminants retained by said filtering assembly.

5,667,683

BACKWASHABLE LIQUID FILTER SYSTEM USING ROTATING SPRAY

Robert Benian, West Bloomfield, Mich., assignor to Benian Filter Company, Inc., West Bloomfield, Mich.

Continuation-in-part of Ser. No. 179,184, Jan. 10, 1994, Pat. No. 5,510,029, which is a division of Ser. No. 11,507, Jan. 29, 1993, Pat. No. 5,301,880, which is a division of Ser. No. 900,003, Jun. 17, 1992, Pat. No. 5,203,998. This application Oct. 19, 1995, Ser. No. 545,429

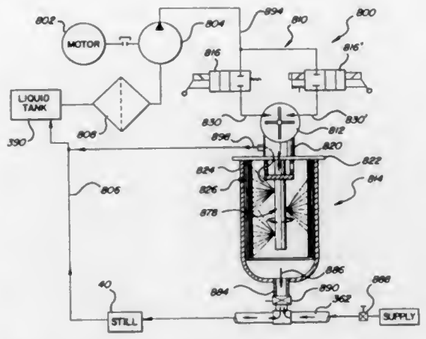
Int. Cl.[6] B01D *29/68*

U.S. Cl. 210—409 **19 Claims**

1. A fluid filter assembly comprising:

a head section having a central passageway and an outlet port;

a drive member connected to the head section;



a filter cover connected to the head section;

an elongated filter housing connected to the filter cover;

an elongated filter cartridge located within the filter housing, the cartridge including an inner surface and an outer surface for collecting particles thereon; and

an axially extending fluid delivery member fixed at one end to the drive member, the fluid delivery member extending through the head section and into the filter housing,

whereby the fluid delivery member rotates at a velocity in proportion to the velocity of the drive member.

5,667,684

MATERIAL FOR REMOVING HIV AND ITS RELATED SUBSTANCES

Tadahiro Motomura; Yuko Miyashita; Takashi Ohwada; Makoto Onishi, all of Kanagawa, and Naoki Yamamoto, Tokyo, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,101

Claims priority, application Japan, Apr. 28, 1994, 6-091793

Int. Cl.[6] B01D *71/26;71/34;71/78;71/82*

U.S. Cl. 210—506 **10 Claims**

1. A membrane for removing substances absorbed thereon comprising a porous substrate having a plurality of pores wherein

said pores have a polysulfuric compound loaded on their pore surface by an intervening hydrophilic graft chain having a reactive functional group which immobilizes the polysulfuric compound to the reactive functional group; wherein said sulfuric group of the sulfuric compound is substantially in the form of a salt; and further wherein said hydrophilic graft chain comprises at least one member selected from the group consisting of an acrylamide polymer, a polyether polymer, and a polyalkoxyalkylacrylate polymer.

5,667,685

FILTER FOR THE FILTRATION OF MOLTEN ALUMINUM

Tadahiro Yoshida, Narashino; Taro Kobayashi, Tamana; Nobuhiro Okuzono, Ohmuta, and Yukio Kai, Narashino, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1996, Ser. No. 677,086

Claims priority, application Japan, Jul. 19, 1995, 7-205211

Int. Cl.[6] B01D *24/00*

U.S. Cl. 210—510.1 **5 Claims**

1. A filter for the filtration of molten aluminum, said filter being obtained by binding 100 parts by weight of aggregate particles with 10 to 20 parts by weight of an inorganic binding material, said aggregate particles being composed of at least one alumina selected from the group consisting of fused alumina and sintered alumina and said inorganic binding material having a raw material

composition comprising 25 to 35 wt. % of SiO_2, 30 to 40 wt. % of B_2O_3, 20 to 35 wt. % of Al_2O_3 and the balance being MgO.

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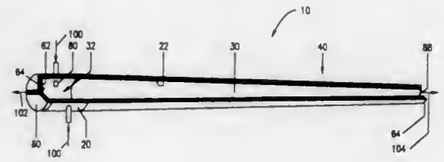
HYDROCYCLONE FOR LIQUID - LIQUID SEPARATION AND METHOD

Mark F. Schubert, Houston, Tex., assignor to United States Filter Corporation, Palm Desert, Calif.

Filed Oct. 24, 1995, Ser. No. 547,250

Int. Cl.[6] B01P *21/26*

U.S. Cl. 210—512.1 **19 Claims**



1. A high efficiency hydrocyclone for separation of a lower density liquid from a higher density liquid comprising:

a hydrocyclone body having a hydrocyclone body wall;

an elongated hydrocyclone cavity defined by said hydrocyclone body wall;

said hydrocyclone cavity having an overflow end, an underflow end, and a substantially centrally located axis extending between said underflow end and said overflow end;

said hydrocyclone cavity having a substantially circular cross section throughout its axial length;

said hydrocyclone cavity further having an inlet chamber portion proximal said overflow end and a separation portion extending from said inlet chamber portion to said underflow end;

at least one inlet orifice in said hydrocyclone body wall in flow communication with said inlet chamber portion of said hydrocyclone cavity;

said at least one inlet orifice positioned and constructed to communicate a liquid mixture into said inlet chamber portion in a direction that is tangential to said hydrocyclone body wall;

thereby said introduced liquid mixture creates a swirling vortex flow path in said hydrocyclone cavity;

said separation portion having a diameter that continuously decreases towards said underflow end;

the decrease of said diameter of said separation portion is linear;

whereby said separation portion is frustoconical;

said separation portion has an included taper angle between 1° and 2°;

so that said separation portion gradually decreases in diameter, thereby, increasing the centrifugal forces imparted on said liquid mixture in order to facilitate separation of a less dense liquid of said liquid mixture from a more dense liquid;

whereby the gradual decrease in said separation portion diameter further promotes conservation of fluid momentum and separation toward said underflow end;

an overflow orifice positioned and constructed to provide for evacuation of said less dense liquid;

at least one underflow orifice proximal said underflow end positioned and constructed to provide for evacuation of said more dense liquid;

said hydrocyclone cavity terminating at said underflow end; and

whereby no additional separation occurs within said hydrocyclone beyond said underflow end.

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CYCLONE

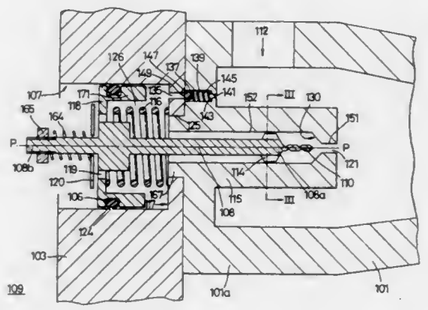
Neville E. Lange, Gloucester, England, assignor to Serck Baker Limited, Wimbourne, England

Filed Dec. 18, 1995, Ser. No. 574,018

Claims priority, application United Kingdom, Dec. 23, 1994, 9426149

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—512.2 **12 Claims**



1. A cyclone having a deblocking device and an orifice, the deblocking device comprising a rod and piston means attached to the rod, and a spring means for biasing the rod, the rod supported in normal operation of the cyclone in a position away from said orifice, the rod and the cyclone being movable relative to one another for movement into and away from said orifice to dislodge any solid matter in the orifice, in response to said spring bias and a change of pressure acting on the piston means.

5,667,688

PROCESS FOR THE PURIFICATION OF POLLUTED WATER

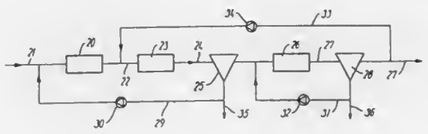
Jens Peter Kerrn-Jespersen, Hellerup, and Mogens Henze, Nærum, both of Denmark, assignors to T. Kruger Systems AS, Søborg, Denmark

Continuation of Ser. No. 244,949, Jun. 16, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 632,343

Claims priority, application Denmark, Dec. 23, 1991, 2062/91

Int. Cl.[6] C02F *3/30*

U.S. Cl. 210—605 **15 Claims**



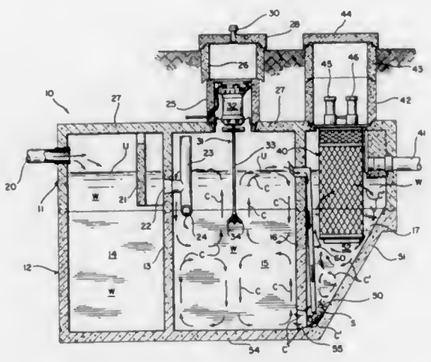
1. A process for the biological purification of polluted water comprising the steps of subjecting the polluted water to successive anaerobic, anoxic and aerobic treatments in the presence of first and second separate cultures of microorganisms, the treatment in the presence of the first culture of microorganisms being carried out solely under anaerobic and anoxic conditions and the treatment in the presence of the second culture of microorganisms being carried out under aerobic conditions.

5,667,689

METHOD OF AUGMENTING FLOW IN A WASTEWATER TREATMENT PLANT

Jan D. Graves, Norwalk, Ohio, assignor to Norwalk Wastewater Equipment Company, Norwalk, Ohio

Division of Ser. No. 399,935, Mar. 6, 1995, Pat. No. 5,569,376.
This application Apr. 3, 1996, Ser. No. 627,020
Int. Cl.[6] C02F *3/02;9/00*
U.S. Cl. 210—621 2 Claims



1. A method of treating wastewater comprising the steps of providing a first chamber adapted to receive wastewater, a second chamber also adapted to receive wastewater, a common wall between the first and second chambers, the second chamber including a lowermost chamber portion in which sludge is adapted to settle, a lowermost opening in a lowermost portion of the common wall being in immediate and direct fluid communication with a lowermost chamber portion of the first chamber and with the second chamber lowermost chamber portion; transferring sludge from the second chamber lowermost chamber portion into the first chamber lowermost chamber portion through the lowermost opening, conducting wastewater from an uppermost water portion of the wastewater in the first chamber into the second chamber adjacent an uppermost portion of the second chamber, and thereafter continuing conducting the wastewater from the second chamber uppermost portion downwardly into the second chamber lowermost chamber portion to create wastewater current flow augmenting the transfer of the sludge from the second chamber lowermost chamber portion into the first chamber lowermost chamber portion through the common wall lowermost opening by continuous recirculating flow.

5,667,690

PROCESS FOR REMOVING NOXIOUS COMPOUNDS

Harmannus Johannes Doddema, Delft; Arie Cornelis Besemer, Amerongen, and Marinus Pieter Harkes, Rotterdam, all of Netherlands, assignors to Nederlandse Organisatie voor Toegepast - Natuurwetenschappelijk, Netherlands

Filed Mar. 22, 1996, Ser. No. 620,214
Claims priority, application Netherlands, Mar. 22, 1995, 9500551
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—631 18 Claims

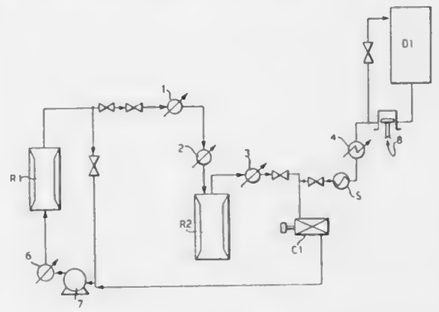
1. A process for removing noxious organic compounds from solids, water or gas containing at least one contaminant of the class of hydrocarbons, halogen-substituted hydrocarbons, nitro-substituted hydrocarbons and organic dyes, comprising the step of:
treating the solid, the water or the gas with a complex of a transition metal, a peroxide and an alkaline polyamine which is substantially free from acid functional groups.

5,667,691

PROCESS FOR EXTRACTING WATER AND ACETIC ACID FROM THE AQUEOUS PHASE OF CELLULOSE ACETATE

Hussain Al Ghatta, Fluggi, and Arianna Giovannini, Bologna, both of Italy, assignors to Sinco Engineering S.p.A., Italy

PCT No. PCT/EP92/01669, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO93/03064, PCT Pub. Date Feb. 10, 1993
Continuation of Ser. No. 30,071, Mar. 19, 1993, abandoned.
This PCT application Jul. 22, 1992, Ser. No. 641,202
Claims priority, application Italy, Jul. 29, 1991, MI91A2103
Int. Cl.[6] B01D *11/04;* C08B *1/02*
U.S. Cl. 210—634 8 Claims



1. A process for separating water and acetic acid from the aqueous phase contained in cellulose acetate flakes precipitated from esterification solutions of cellulose, comprising simultaneously extracting water and acetic acid from the aqueous phase with supercritical carbon dioxide until the content of water in the acetate flakes is reduced to approximately 1–2% by weight.

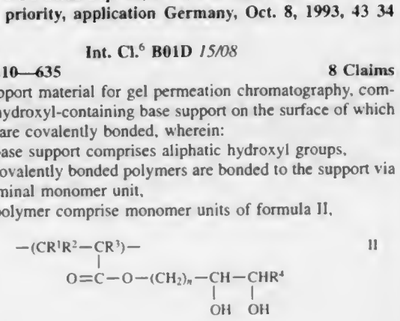
5,667,692

METHOD AND SUPPORTS FOR GEL PERMEATION CHROMATOGRAPHY

Egbert Müller, Erzhausen, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP94/03197, § 371 Date Jul. 16, 1996, § 102(e) Date Jul. 16, 1996, PCT Pub. No. WO95/10355, PCT Pub. Date Apr. 20, 1995
PCT Filed Sep. 24, 1994, Ser. No. 624,476
Claims priority, application Germany, Oct. 8, 1993, 43 34 353.8
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 8 Claims

1. A support material for gel permeation chromatography, comprising a hydroxyl-containing base support on the surface of which polymers are covalently bonded, wherein:
a) the base support comprises aliphatic hydroxyl groups,
b) the covalently bonded polymers are bonded to the support via a terminal monomer unit,
c) the polymer comprise monomer units of formula II,



II

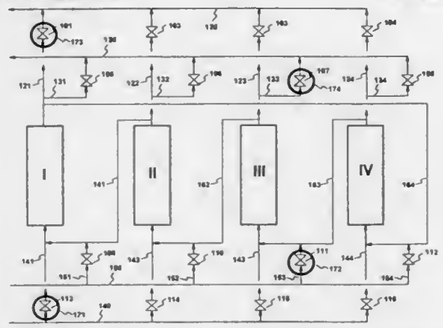
in which
R^1, R^2 and R^3 independently of one another are H or CH_3
R^4 is H or C_1–C_5-alkyl and
n is an integer between 1 and 5, and
d) the polymers are crosslinked by ether bridges.

5,667,693

EXCLUSION CHROMATOGRAPHIC SEPARATION OF IONIC FROM NONIONIC SOLUTES

Roger D. Hester, Hattiesburg, Miss., and George E. Farina, Killen, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala., and University of Southern Mississippi, Hattiesburg, Miss.

Division of Ser. No. 382,450, Feb. 2, 1995, Pat. No. 5,560,827.
This application Jun. 21, 1996, Ser. No. 667,752
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 14 Claims



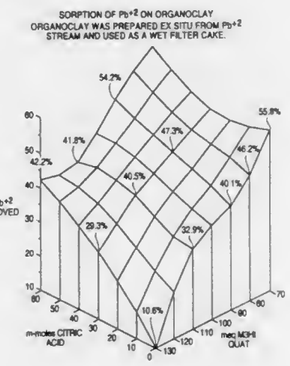
1. In an improved process for effecting separation of components in a solution comprising an ionic component and a nonionic component, the concentration of said ionic component ranging from about 1 weight percent to about 20 weight percent, and the concentration of said nonionic component ranging from about 1 weight percent to about 25 weight percent, said improved process comprising the steps of:
(1) maintaining three zones operatively connected to one another in hydraulic order, said hydraulic order comprising flow of later mentioned side streams from an outlet of the third zone to the inlet of the second zone, from the outlet of the second zone to the inlet of the first zone and from the outlet of the first zone to the inlet of the third zone, each of said zones containing a bed of ion exchange resin, said resin being in its hydrogen form;
(2) introducing a stream of said solution into said inlet of said first zone;
(3) simultaneously withdrawing from an outlet of said first zone, a stream of ionic component-enriched, nonionic component-depleted solution as product and introducing a side stream of same into an inlet of said third zone;
(4) simultaneously introducing aqueous media, which is both substantially ionic component-free and substantially nonionic component-free, into said inlet of said third zone and withdrawing from an outlet thereof a stream of relatively nonionic component-rich, substantially ionic component-depleted solution as product and introducing a side stream of same into an inlet of said second zone and withdrawing from an outlet of said second zone an ionic component-depleted and nonionic component-depleted solution and introducing a side stream of same into the inlet of said first zone;
(5) effecting a stepped change in the flow connections for introduction and withdrawal of solutions among said zones wherein the flow of said solutions is redirected such that:
(a) the solutions which were introduced into and withdrawn from the column, or columns which comprised said first zone are redirected to and from the column, or columns which comprised said third zone,
(b) the solutions which were introduced into and withdrawn from the column, or columns which comprised said third zone are redirected to and from the column, or columns which comprised said second zone, and
(c) maintaining the flow connections of said side streams, whereby, upon effecting said stepped change, the bed of resin which comprised said first zone becomes said second zone, the bed of resin which comprised said second zone becomes said third zone, and the bed of resin which comprised said third zone becomes said first zone and further whereby said stepped change simulates movement of said resin in a direction from said first zone through said second zone and then though said third zone; and
(6) thereafter intermittently effecting subsequent stepped changes in the flow connections among said zones to further simulate said movement of said zones.

5,667,694

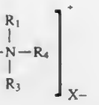
PROCESS FOR THE REMOVAL OF HEAVY METALS FROM AQUEOUS SYSTEMS USING ORGANOCLAYS

Charles A. Cody, Robbinsville, and Stephen J. Kemnetz, Trenton, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.

Filed Aug. 28, 1995, Ser. No. 520,317
Int. Cl.[6] C02F *1/28;1/42*
U.S. Cl. 210—679 18 Claims



1. A process for removing heavy metal contaminants from aqueous systems containing heavy metals dissolved in ionic form which comprises:
(a) contacting an aqueous system or washings thereof with an agent consisting of a mixture of one or more smectite clays and one or more quaternary ammonium salts having the formula:



wherein R_1 comprises a lineal or branched aliphatic hydrocarbon group having 1 to about 30 carbon atoms; R_2, R_3 and R_4 are independently selected from the group consisting of (a) lineal or branched aliphatic groups having from 1 to about 30 carbon atoms; (b) aromatic and substituted aromatic groups; and (c) hydrogen and X^- is chloride; to form an organically modified smectite clay in the system;
(b) sorbing heavy metal contaminants on to the organically modified smectite clay to form an organically modified smectite clay/heavy metal complex; and
(c) recovering the organically modified smectite clay/heavy metal sorbed complex from the aqueous system.

5,667,695

PROCESS FOR REMOVING CONTAMINANT METAL IONS FROM LIQUID STREAMS USING METALLO GERMANATE MOLECULAR SIEVES

Robert L. Bedard, McHenry; Lisa M. King, Crystal Lake, and John D. Sherman, Inverness, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 411,187, Mar. 27, 1995, Pat. No. 5,518,707, which is a continuation-in-part of Ser. No. 327,947, Oct. 24, 1994, abandoned. This application May 20, 1996, Ser. No. 650,566
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—681 10 Claims

1. A process for removing a metal ion contaminant from a liquid stream comprising contacting the stream with a molecular sieve for a time sufficient to adsorb the metal ion contaminant onto the molecular sieve, the molecular sieve characterized in that it has the crystal structure of pharmacosiderite and has a chemical composition represented by an empirical formula of:

$$A_{[(4+4x(4-m))/n]}[(Ge_{1-x}M_y^{+m}Ti_z^{+4})_4(Ge_{1-p}Si_p)_3O_{16}$$

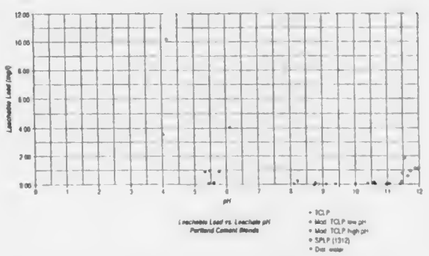
where A is an exchangeable cation having a valence of +n and selected from the group consisting of alkali metals, alkaline earth metals, hydronium ion, ammonium ion, and mixtures thereof, M is at least one metal which has octahedral coordination and has a valence m of +2, +3, +4, or +5, x has a value from about 0.01 to about 1.0, y has a value from 0 to about 1.0, x=y+z, z has a value of zero to about 1.0 and p has a value from 0 to about 0.99, and when z is zero, M is selected from the group consisting of Nb^{+5}, Ta^{+5}, Sb^{+5}, or Sn^{+4}.

5,667,696

METHOD FOR TREATMENT AND DISPOSAL OF LEAD BASED PAINT

Michael Kell Studer, Flower Mound, and Philip J. Pisani, Irving, both of Tex., assignors to Entact, Inc., Irving, Tex.

Filed Mar. 11, 1996, Ser. No. 614,960
Int. Cl.[6] C02F *1/62*
U.S. Cl. 210—702 8 Claims



1. A method of treating lead based paint waste, the method consisting essentially of the steps of mixing the lead based paint waste with at least one agent selected from the group consisting of phosphoric acid, monocalcium phosphate, monoammonium phosphate, and diammonium phosphate, in sufficient quantities such that the mixture will have an optimum pH range between 5.5 and 11.5 so that under both acidic and non-acidic leaching conditions the lead in the mixture will be converted to substantially non-leachable form.

5,667,697

COLLOIDAL SILICA/POLYELECTROLYTE BLENDS FOR NATURAL WATER CLARIFICATION

Kristine S. Salmen; Pek Lee Choo, both of Naperville; David A. Picco, Shorewood, and Michio Kobayashi, Aurora, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 535,430, Sep. 28, 1995, abandoned. This application Aug. 21, 1996, Ser. No. 701,224
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—727 12 Claims

1. A method for clarifying natural water containing turbidity-causing components which comprises:

a) adding to said water

(i) an effective turbidity reducing amount of an aqueous colloidal silica sol with an average particle size within the range from 1 to 150 nm and, subsequently

(ii) an effective turbidity-reducing amount of a water-soluble polymeric coagulant having a molecular weight within the range of from about 2,000 to about 2,000,000 wherein said coagulant is selected from the group consisting of poly(diallyl dimethyl ammonium chloride), poly(diallyl dimethyl ammonium chloride/acrylic acid), poly(epichlorohydrin/dimethylamine), poly(ethylene dichloride/ammonia) and cationized starch;

(b) mixing said colloidal silica, said coagulant and said water with a mechanical stirring device for sufficient time to allow flocculation of the turbidity causing components; and then,

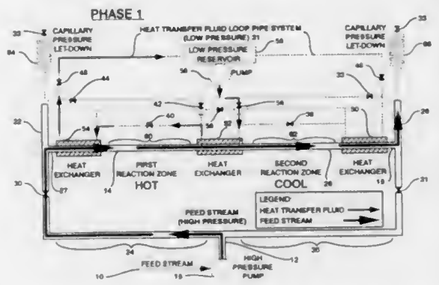
(c) separating the flocculated turbidity-causing components from the water to obtain clarified water.

5,667,698

REVERSIBLE FLOW SUPERCRITICAL REACTOR AND METHOD FOR OPERATING SAME

Philip Whiting, Milton, Canada, assignor to Abitibi-Price Inc., Mississauga, Canada

Division of Ser. No. 361,126, Dec. 21, 1994, Pat. No. 5,560,823. This application Jul. 26, 1996, Ser. No. 686,664
Int. Cl.[6] C02F *1/74*
U.S. Cl. 210—761 5 Claims



1. A method of supercritical oxidizing an aqueous feed stream containing organic compounds comprising:

a) supplying an aqueous feed stream containing organic compounds and an oxidant to a first reaction zone in a reactor having first and second reaction zones connected in series;

b) transferring heat using a self-contained heat exchange fluid system so as to maintain supercritical conditions in said first reaction zone and subcritical conditions in said second reaction zone to dissolve inorganic scale in said second reaction zone;

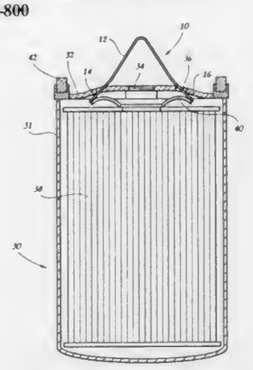
c) periodically reversing the flow of the feed stream through said reactor by supplying the feed stream to said second reaction zone and transferring heat using a self-contained heat exchange fluid system so as to maintain supercritical conditions in said second reaction zone and subcritical conditions in said first reaction zone to dissolve inorganic scale in said first reaction zone.

5,667,699

METHOD AND DEVICE FOR REMOVING WASTE OIL FROM OIL FILTERS

Larry Schlise, 986 S. Bank Dr., Rock Hill, S.C. 29732

Filed Jun. 17, 1996, Ser. No. 665,227
Int. Cl.[6] B01D *35/16*
U.S. Cl. 210—800 10 Claims



6. A method for removing waste oil from a cartridge-type oil filter having a cylindrical body and a cap with a plurality of openings formed therein in a predetermined pattern, an oil retention gasket disposed within the cylinder adjacent the openings, said method comprising the steps of:

providing a device for facilitating the removal of waste oil from the filter having an elongate central body formed of resilient, bendable material defining a central body formed with a predetermined lengthwise dimension sufficient to span a distance between two of the openings and two end portions formed integrally with said central body and projecting oppositely outwardly therefrom, said end portions being sized to fit within the openings and being of a sufficient lengthwise dimension to engage and displace at least a portion of the gasket to allow waste oil to be drained from the filter cartridge;

inserting an end portion into a first opening in the filter;

inserting a second end portion into a second opening in the filter;

pressing the end portions inwardly to displace at least a portion of the gasket; and

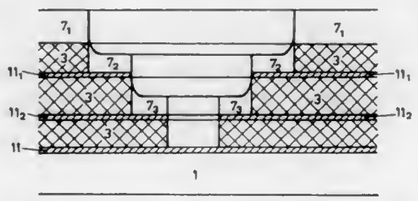
draining the waste oil from the filter.

5,667,700

PROCESS FOR THE FABRICATION OF A STRUCTURAL AND OPTICAL ELEMENT

Helmut Rudigier, Bad Ragaz, Switzerland, and Johannes Edlinger, Feldkirch, Austria, assignors to Balzers Aktiengesellschaft, Furstentum, Liechtenstein

Division of Ser. No. 970,080, Nov. 2, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 196,766
Claims priority, application Switzerland, Jul. 21, 1992, 2292/92
Int. Cl.[6] B05D *5/00*
U.S. Cl. 216—12 37 Claims



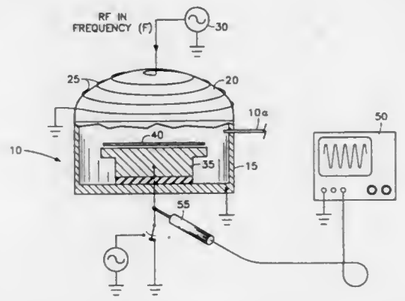
1. Process for controlling a reactive etching process of a stack of layers with at least one first layer of high refractive index material and, above it, a second layer of low refractive index material, the first layer being MeO_x Me being a metal whose atomic mass is at least 44, x being selected so that the coefficient of absorption k of the layer material at light of wavelength λ=308 nm is $k_{308} \leqq 0.01$, the second layer being SiO_2, the process comprising: etching the second layer using a gas without a chlorine fraction, the point at which the surface of the first layer is reached being detected and subsequent using another gas which has a chlorine fraction, for further etching.

5,667,701

METHOD OF MEASURING THE AMOUNT OF CAPACITIVE COUPLING OF RF POWER IN AN INDUCTIVELY COUPLED PLASMA

Arthur Sato, Santa Clara, and Xue-Yu Qian, Milpitas, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 7, 1995, Ser. No. 475,878
Int. Cl.[6] H01L *21/822*
U.S. Cl. 216—61 20 Claims



1. A plasma reactor having an inductive antenna adapted to be connected to an RF source of power operating at a desired frequency, a reactor chamber and a wafer support pedestal inside the chamber, said reactor comprising:

a frequency discriminator having as its input a signal representative of plasma current flow and capable of separating such a signal into a fundamental frequency component output and a second harmonic frequency component output;

whereby a measurement of the fundamental component output and the second harmonic output provides an indication of the apportionment of RF power between capacitive coupling and inductive coupling.

5,667,702

PROCESS AND GASEOUS MIXTURE FOR ARC WELDING OF ALUMINIUM COMPONENTS

Richard Soula, Vertou; Didier Marchand, Saint-Germain-en-Laye, and Henri Diot, Saint-Ouen-l'Aumone, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Sep. 4, 1996, Ser. No. 706,452
Claims priority, application France, Sep. 8, 1995, 95 10519
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—75 3 Claims

1. Process for alternating-current arc welding with a refractory electrode of components made of aluminium or of an aluminium alloy, employing, at the location of the weld, a gaseous protective mixture including at least 60% of helium and more than 1000 vpm of carbon dioxide, the remainder being argon.

5,667,703

PROCESS AND GASEOUS MIXTURE FOR ARC WELDING OF ALUMINIUM COMPONENTS

Richard Soula, Vertou; Didier Marchand, Saint-Germain-en-Laye, and Henri Diot, Saint-Ouen-L'Aumone, all of France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Sep. 5, 1996, Ser. No. 707,615
Claims priority, application France, Sep. 8, 1995, 95 10518
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—75 **5 Claims**

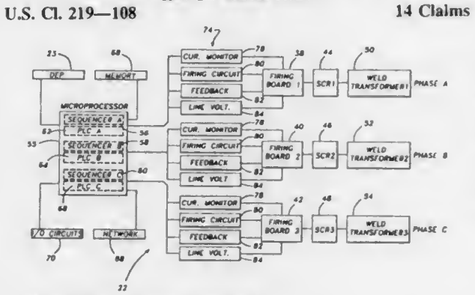
1. Process for alternating-current arc welding with a refractory electrode of components made of aluminium or of aluminium alloys, employing, at the location of the weld, a gaseous protective mixture including at least 50% of helium and at least 300 vpm of nitrogen, the remainder being argon.

5,667,704

MULTIPLE SEQUENCE WELDING CONTROLLER

Edward R. Kolodziej, Farmington Hills, Mich., assignor to Robotron, Southfield, Mich.

Filed Apr. 1, 1996, Ser. No. 627,781
Int. Cl.[6] B23K *11/24*
U.S. Cl. 219—108 **14 Claims**



10. A welding system, comprising:
three welding machines;
a circuit board;
a controller mounted on said circuit board, said controller having three welding sequence control modules for controlling said welding machines and three machine logic control modules for controlling machine programming and operation of said welding machines;
current control circuitry, mounted on said circuit board, for coupling said controller to said welding machines for controlling a supply of current to said welding machines;
a plurality of input/output ports mounted on said circuit board for interconnecting said controller and said welding machines; and
a three-phase mechanical switch coupled to said controller such that said controller selectively applies three-phase power to said welding machines and wherein one phase of said power is applied to each of said welding machines, respectively.

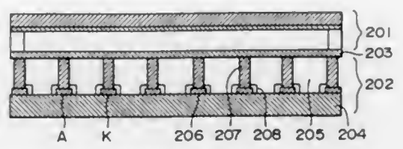
5,667,705

DISCHARGE CHAMBER AND METHOD OF MANUFACTURING THE SAME

Shigeki Miyazaki, and Atsushi Seki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 200,457, Feb. 23, 1994, abandoned. This application Jun. 24, 1996, Ser. No. 667,475
Claims priority, application Japan, Feb. 24, 1993, 5-059667
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.52 **9 Claims**

1. A method of manufacturing a discharge chamber for a plasma addressed display which comprises first and second substrates defining therebetween a space filled with an ionizable gas, comprising the steps of:



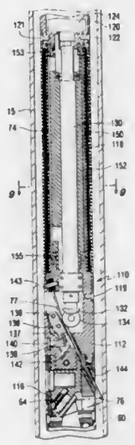
forming a plurality of discharge electrodes on a surface of a substrate by a printing procedure;
baking the discharge electrodes at a first baking temperature;
applying insulator paste for forming a plurality of barrier ribs;
baking the discharge electrodes and the barrier ribs at a second baking temperature which is higher than the first baking temperature;
purifying a surface of the discharge electrodes by removing impurities of electrically insulating material comprising metal oxides from the electrode surface; and
filling the space between the first and second substrates with the ionizable gas.

5,667,706

APPARATUS AND METHOD FOR LASER WELDING THE INNER SURFACE OF A TUBE

William E. Piri, Penn Twp.; Wesley G. Pope, Port Vue; William G. Cole, Greensburg; Rodney A. Lutz, Penn Township, and Frank X. Ponko, Youngwood, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1996, Ser. No. 643,223
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.64 **25 Claims**



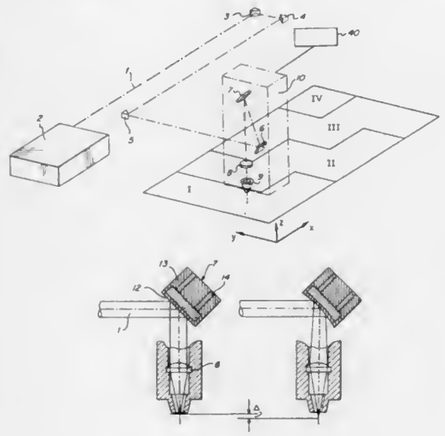
11. A method of welding an inner surface of a small-diameter tube comprising:
providing a laser weld head;
mounting a weld filler wire on the laser weld head prior to insertion of the laser weld head into a tube to be welded;
inserting the laser weld head and weld filler wire mounted on the laser weld head into the tube;
rotatingly projecting a laser beam from the laser weld head against the inner surface of the tube to form a weld zone; and
feeding the weld filler wire to the weld zone to form a weldment.

5,667,707

LASER CUTTING MACHINE WITH FOCUS MAINTAINING BEAM DELIVERY

Hans Klingel, Möglingen, and Juergen Michael Weick, Asperg, both of Germany, assignors to Trumpf GmbH & Co., Ditzingen, Germany

Filed May 2, 1995, Ser. No. 433,898
Claims priority, application Germany, May 2, 1994, 94 07 288.4 U
Int. Cl.[6] B23K *26/04*
U.S. Cl. 219—121.67 **5 Claims**



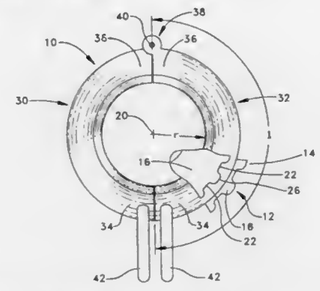
1. A laser cutting machine with:
(a) a laser generator for generating a laser beam;
(b) a laser cutting head having a nozzle with a tip;
(c) a laser beam path from said generator to said nozzle in said cutting head;
(d) drive means for moving said cutting head relative to said laser generator and relative to a workpiece to be cut in a plane essentially parallel to the associated workpiece to thereby vary the length of said laser beam path, said laser cutting head being movable within a range of motion relative to said laser generator;
(e) a numerical control for said drive means;
(f) a focussing lens for the laser beam in said cutting head; and
(g) an adjusting device for adjusting the focal position of the laser beam relative to said nozzle tip by shitting the focus of the laser beam from said focussing lens with respect to said nozzle tip and essentially perpendicularly to the workpiece, said adjusting device for adjusting the focal position including at least one surface mirror in said cutting head prior to said focussing lens, said mirror having a reflecting surface which is variable in curvature and being mounted in a holder providing a cavity behind said mirror in which fluid may act thereon, said adjusting device including means for varying the pressure of said fluid acting on said mirror to vary the curvature of its reflecting surface and thereby the geometry of the beam reflected thereby, said numerical control being operative to determine the position of said laser cutting head relative to said laser generator and thereby the length of said laser beam path to said cutting head, said numerical control having adjusting values corresponding to said determined position for adjusting the focal position associated with the nominal value for the pressure of said fluid and controlling said pressure varying means for adjusting to this nominal value, said numerical control being operable to maintain a constant focal position of said laser beam perpendicular to the workpiece by controlling said adjusting device to adjust the geometry of said reflected beam and its focal position in relation to the position of the laser cutting head relative to said laser generator in the plane of motion parallel to the workpiece.

5,667,708

LASER BEAM DEFLECTOR FOR PROTECTION OF UNDERLYING PORTIONS OF AN ITEM DURING LASER CUTTING OF OVERLAYING STOCK

Robert H. Glass, Peoria, and Gordon W. Kelly, Delavan, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 12, 1996, Ser. No. 614,232
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.67 **6 Claims**



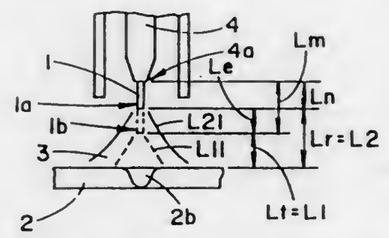
1. A laser beam deflector for protecting underlying portions of an item during laser cutting of overlaying stock, comprising:
a deflecting surface "ds" of an arcuate cross-sectional configuration, said deflector being defined by first and second portions each having first and second end portions and an arcuate length "l" of about 180 degrees, said first end portions being pivotally connected to one another, said deflector being positionable between said overlaying stock and underlying portions desired to be protected, and said deflecting surface "ds" being immediately adjacent said overlaying stock.

5,667,709

METHOD OF MAG ARC WELDING

Tomoyuki Ueyama, Toyonaka; Shoji Harada; Toshiaki Nakamata, both of Osaka; Masuo Shibata, Takarazuka; Toshimitsu Doi, Nishinomiya; Shunichi Ogawa, Takatsuki; Ichiro Matsumoto, Higashiosaka, and Hiroshi Nakai, Izumi, all of Japan, assignors to Daihen Corporation, Japan

Division of Ser. No. 778,845, Dec. 13, 1991, Pat. No. 5,508,493. This application Jun. 7, 1995, Ser. No. 486,891
Claims priority, application Japan, Apr. 17, 1990, 2-102102; Oct. 1, 1990, 2-264493; Oct. 1, 1990, 2-264494; Nov. 16, 1990, 2-311957; Dec. 28, 1990, 2-418489
Int. Cl.[6] B23K *9/09*
U.S. Cl. 219—137 PS **17 Claims**



1. A MAG arc welding method for achieving a molten metal transfer by changing an arc length while feeding a consumable wire at a predetermined wire feeding rate and suppressing a change in an arc force said method comprising the steps of:
(a) changing a consumable feed wire melting rate by switching between a first welding current having a value I1 and a second welding current having a value I2 which is larger than said first welding current value I1 at a switching frequency F maintained within a range from about 0.5 Hz to about 25 Hz;

(b) maintaining said arc length at a first arc length Lt having a value larger than 2 mm when said first welding current is supplied and at a second arc length Lr having a value larger than said first arc length Lt when said second welding current is supplied; and

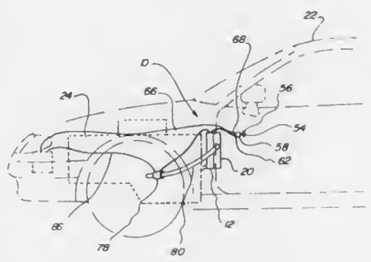
(c) maintaining a ratio between said second welding current value I2 and said first welding current value I1 to be from about 1.03 to about 1.20.

5,667,710

ELECTRICAL HEATER DEVICE FOR HEATING THE INTERIOR OF AN AUTOMOBILE

Steve Kraemer, P.O. Box 312, Oakwood, ON, Canada, K0M 2M0

Filed Mar. 26, 1996, Ser. No. 621,983
Int. Cl.[6] B60L *1/02*; B60H *1/02*
U.S. Cl. 219—202 **2 Claims**



2. The electrical heating device for heating the interior of an automobile comprising:

a housing mounted to an automobile heater core having a top plate with an interior surface, a bottom plate and a pair of side plates therebetween, the housing having a length being about 8 inches, a height being about 6 inches and a width being about ½ inch, the housing having a first electrical wire being positioned on the interior surface and being capable of extending along of one of the side plates, the housing having a second electrical wire being in a continuous series within the housing, the second wire being capable of coupling with the first wire at a housing wire end;

a plurality of heating coils being positioned along the second electrical wire, the plurality of heating coils being capable of emitting temperatures above 70 degrees Celsius when the second wire being contained within the housing and coupled to the housing wire end of the first wire;

a switch mechanism having a knob and a contact casing with a contact wire end of the first wire therein, the casing having a third electrical wire with a switching end and capable of coupling with a battery of the automobile, the knob allowing an electrical bridge to form and being capable of transmission of an electrical current to pass into the first wire for charging of the plurality of heating coils of the second wire; and

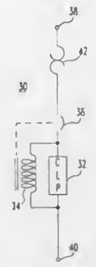
a temperature sensor for disruption of a contact relay, and having a sensor end of the second wire therein, and being capable of receiving a fourth electrical wire extending from the battery, the temperature sensor being cylindrical and positionable around a fluid line of the heater core assembly of the automobile, and the fourth electrical wire therein and the second electrical wire form a contact relay within the temperature sensor, the contact relay capable of being disrupted when the temperature sensor responding to the fluid line emitting a temperature of about 70 degrees Celsius, the contact relay being disrupted being capable of causing the heating coils to lose current causing the switch mechanism to disengage.

5,667,711

CIRCUIT BREAKER INCORPORATING TRIP COIL AS SHUNT RESISTOR IN PARALLEL WITH CURRENT LIMITING POLYMER

Hemant K. Mody, Brookfield, and William E. Grass, Sussex, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 20, 1996, Ser. No. 650,199
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—505 **7 Claims**



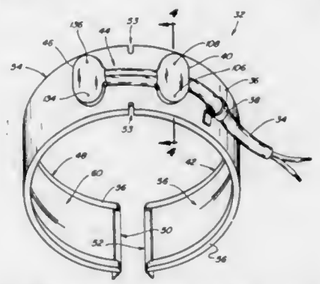
1. An electrical circuit breaker comprising contacts latched in a closed position and biased to an open position, current responsive trip means connected in circuit with said contacts operable for releasing said latched contacts in response to a current level through said contacts exceeding a predetermined threshold value, and a current limiting conductive polymer element connected in series with said contacts, said trip means comprising a solenoid connected directly in parallel with said conductive polymer element, said solenoid providing a shunt resistance for said conductive polymer element.

5,667,712

EXPANDABLE MULTI-SEGMENT BAND HEATER CONSTRUCTION WITH IMPROVED ELECTRICAL CONNECTION

Richard E. Sutorius, Florissant, and Steven M. Klump, St. Louis, both of Mo., assignors to Watlow Electric Manufacturing Company, St. Louis, Mo.

Filed Feb. 16, 1996, Ser. No. 602,926
Int. Cl.[6] H05B *3/58*; H01C *1/028*
U.S. Cl. 219—535 **21 Claims**



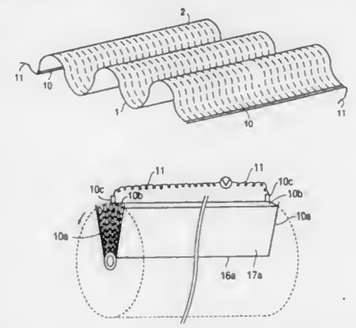
1. A band heater assembly having first and second heater segments, each heater segment including at least one resistive heating element having first and second end portions associated therewith, each of said resistive heating elements being located between an outer insulation layer and an inner insulation layer, each heater segment further including a first conductive plate member having the first end portion of said resistive heating element connected thereto and a second conductive plate member having the second end portion of said resistive heating element connected thereto, at least a portion of each of said first and second conductive plate members being located between said outer and inner insulation layers, each of said first and second plate members including terminal means associated therewith, at least a portion of each terminal means extending outwardly from its respective conductive plate member beyond said outer insulation layer, a circumferential housing member enclosing said heater segments and including an outer metal sheath forming an outer circumferential surface of said band heater assembly and at least one inner metal sheath forming an inner circumferential surface thereof, said outer metal sheath including first and second openings therethrough, said first sheath opening being circumferentially aligned with the terminal means of said first heater segment such that the outwardly extending portion of each terminal means of said first heater segment extend therethrough, said second sheath opening being circumferentially aligned with the terminal means of said second heater segment such that the outwardly extending portion of each terminal means of said second heater segment extend therethrough, and means for providing an electrical current path to each of said heater segments including a lead wire set having first and second conductors, said first conductor being electrically connected to one of the terminal means of said first heater segment and said second conductor being electrically connected to one of the terminal means of at least one of said heater segments, said means for providing an electrical current path further including at least one jumper connection extending between one terminal means of said first heater segment and one terminal means of said second heater segment such that when a voltage is applied to said lead wire set, a current flows through said jumper connection.

5,667,713

SORBING SHEETS AND LAMINATES HAVING REACTIVATING AND INVIGORATING FUNCTIONS

Toshimi Kuma, 25-8, 3-chome Maimatsubara, Higashi-ku Fukuoka-shi, Fukuoka-ken , Japan, assignor to Kabushiki Kaisha Seibu Giken, Kasuya-gun, and Toshimi Kuma, Fukuaki, Japan

Division of Ser. No. 67,622, May 28, 1993, Pat. No. 5,501,007. This application Jun. 7, 1995, Ser. No. 473,969
Claims priority, application Japan, Jun. 7, 1992, 4-189813
Int. Cl.[6] H05B *3/10:3/50*
U.S. Cl. 219—544 **6 Claims**



1. A honeycomb-shaped sorbing laminate providing reactivating and invigorating functions produced by laminating corrugated sorbing sheets to form a honeycomb structure, the corrugated sheets having resistor wires buried therein.

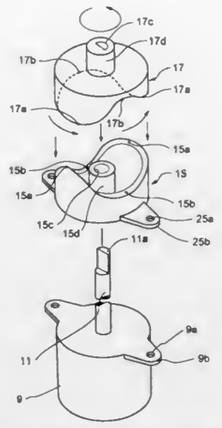
5,667,714

MICROWAVE OVEN HAVING VERTICALLY RECIPROCABLE TURN TABLE

Byung-Jae Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1996, Ser. No. 662,017
Claims priority, application Rep. of Korea, Jun. 12, 1995, 95-13164 U; May 4, 1996, 96-10833 U
Int. Cl.[6] H05B *6/78*
U.S. Cl. 219—753 **8 Claims**

1. A microwave oven comprising:



a body forming a cooking chamber; a turntable disposed above a floor of the cooking chamber and being mounted for rotation about a vertical axis and for up-and-down movement along the vertical axis; and

a drive mechanism disposed beneath the floor and including:

a motor having a drive shaft extending through the floor along the vertical axis, the drive shaft including an upper end connected to the turntable for rotating the turntable,

a first cam having a stationary first cam surface arranged annularly around the vertical axis, and

a second cam having a second cam surface engaging the first cam surface, the second cam surface being annularly arranged around the vertical axis;

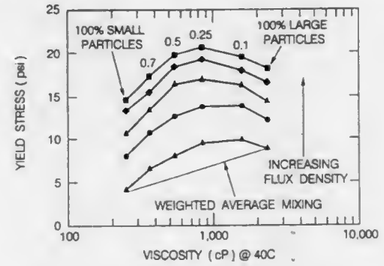
the turntable and second cam being operatively connected to the drive shaft to be rotated thereby, and being movable up-and-down relative to the drive shaft as the second cam surface rotates relative to the first cam surface.

5,667,715

MAGNETORHEOLOGICAL FLUIDS

Robert Thomas Foister, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1996, Ser. No. 629,249
Int. Cl.[6] H01F *1/28*
U.S. Cl. 252—62.52 **12 Claims**



1. A magnetorheological fluid comprising low coercivity, generally spherical magnetic particles dispersed in a liquid vehicle, said particles consisting essentially of

a first group of particles having a first range of diameter sizes with a first mean diameter having a standard deviation no greater than about two-thirds of the value of said first mean diameter and

a second group of particles with a second range of diameter sizes and a second mean diameter having a standard deviation no greater than about two-thirds of said second mean diameter,

such that the major portion of all particle sizes fall within the range of one to 100 microns and the weight ratio of each of said first group and said second group to the total weight of said magnetic particles is in the range of 0.1 to 0.9, and the ratio of said first mean diameter to said second mean diameter is five to ten.

5,667,716

HIGH MAGNETIZATION AQUEOUS FERROFLUIDS AND PROCESSES FOR PREPARATION AND USE THEREOF

Ronald F. Ziolo, Webster, N.Y.; Elizabeth C. Kroll, Clinton Township, Mich., and Rachel Pieczynski, Orchard Park, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1996, Ser. No. 674,306

Int. Cl.[6] H01F *1/28*

U.S. Cl. 252—62.52 **23 Claims**

1. A process for the preparation of a high magnetization aqueous ferrofluid composition comprising:

providing a low optical density magnetic composition comprising a nanocomposite of particles comprising Fe_2O_3 nanoparticles and an ionic exchange resin;

milling the low optical density magnetic composition;

adding liquid vehicle to the composition and thereafter milling the resulting mixture to form a colloidal suspension;

treating the colloidal suspension to form a supernatant and a residue, and thereafter separating the supernatant from the residue; and

exposing the residue to a magnetic field to generate a highly magnetic suspended component and a non- and low magnetic sludge components, wherein the highly magnetic component is an aqueous ferrofluid composition with a high magnetization moment of about 20 to about 40 emu/gram.

5,667,717

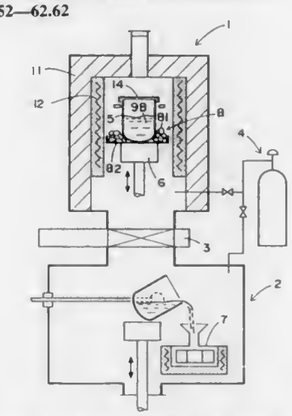
METHOD OF PRODUCING CAST MAGNETIC SOFT FERRITE

Mitsuo Sugimoto, Tokyo, and Akihiko Saito, Nagoya, both of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 17,987, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 902,495, Jun. 23, 1992, abandoned, which is a continuation of Ser. No. 763,692, Sep. 23, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 304,655

Int. Cl.[6] C04B *35/30;35/26;35/34*

U.S. Cl. 252—62.62 **3 Claims**



1. A method of producing magnetic soft ferrite expressed by the general formula: $M_xZn_{1-x}O\ Fe_2O_3$ wherein M represents one or more of the materials selected from Cu, Mn, Ni, Fe, Co and Mg; and X is in the composition range of 0.4–0.7, by melting and casting, comprising the processes of heating a material consisting of the compound with the above formula or a mixture of the component oxides corresponding to the above composition to a temperature of 1500°–1900° C. to melt; while disposing a Zn supply source consisting of Zn or a Zn compound around the above mentioned material to allow existence of a surrounding gas containing Zn so as to suppress evaporation of Zn in the molten material, the surrounding gas containing Zn being at a pressure of 1–3.1 kg/cm^2; and solidifying the melt by casting the melt into a mold having a desired shape preheated to a temperature of 200°–800° C. and cooling under a cooling rate of 300°–1800° C./hr.

5,667,718

LIGHTWEIGHT DUST SUPPRESSING AGGREGATE FOR ANTISKIDDING APPLICATIONS

Martin Allen Jones, Boulder; Edward Charles Rosar, Lakewood, and Maurice Glenn Pattengill, Golden, all of Colo., assignors to Western Aggregates, Inc., Boulder, Colo.

Continuation of Ser. No. 519,803, Aug. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 336,422, Nov. 9, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 668,505

Int. Cl.[6] C09K *3/18;* **B05D** *5/00*

U.S. Cl. 252—70 **2 Claims**

1. A traction aggregate composition, the composition adapted to be applied onto a surface consisting essentially of spreadable lightweight substrate particles selected from the group consisting of expanded shale and scoria, the substrate particles substantially impregnated with a liquid dust suppressant selected from the group consisting of calcium chloride and magnesium chloride, the substrate particles enveloped by an emulsified petroleum resin water sealant, and wherein a volume ratio of the liquid dust suppressant to emulsified petroleum resin water sealant is in the range of about 7:1 to about 14:1.

5,667,719

HIGH EXTINCTION POLARIZER FILMS COMPRISING LIQUID CRYSTAL POLYMERIC MOIETIES

Mohammad Mortazavi, Sunnyvale, Calif.; Hyun Nam Yoon, New Providence, and Chia-Chi Teng, Piscataway, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Jun. 2, 1995, Ser. No. 459,581

The portion of the term of this patent subsequent to Jun. 2, 2015, has been disclaimed.

Int. Cl.[6] C09K *19/52;19/56;* **F21V** *9/14;* **G02F** *1/1335*

U.S. Cl. 252—299.01 **24 Claims**

1. An all organic polarizing film comprising a blend of (a) at least one film-forming, wholly aromatic thermotropic liquid crystal polymer and (b) at least one organic dichroic dye, and possessing an initial polarizing efficiency of at least 70% and a dichroic ratio of at least 5, with said liquid crystal polymer being a polyester which comprises repeat units corresponding to the formula:

$$-[P^1]_m-[P^2]_n-[P^3]_q-$$

wherein P^1, P^2, and P^3 represent monomeric moieties with P^1 being an aromatic hydroxy carboxylic acid, P^2 being an aromatic dicarboxylic acid, and P^3 being a phenol, with m, n and q representing mole percent of the respective monomers ranging from 5–70 mole percent individually.

5,667,720

LIQUID CRYSTAL DISPLAY DEVICE AND A METHOD FOR PRODUCING THE SAME

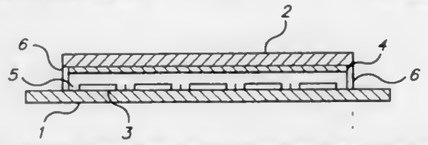
Noriaki Onishi, Osaka, and Shuichi Kohzaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Continuation of Ser. No. 179,963, Jan. 11, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 641,776

Claims priority, application Japan, Jan. 14, 1993, 5-005347

Int. Cl.[6] C09K *19/52;* **F21V** *9/00;* **G02F** *1/133*

U.S. Cl. 252—299.01 **16 Claims**



1. A liquid crystal display device comprising a pair of opposing substrates and polymer dispersed liquid crystal interposed between the pair of opposing substrates, the polymer dispersed liquid crystal including a polymer matrix and a plurality of liquid crystal droplets partitioned by the polymer matrix,

wherein the polymer matrix and the plurality of liquid crystal droplets are formed by applying radiation to a polymer dispersed liquid crystal precursor in which a polymer for forming the polymer matrix and liquid crystal molecules for forming the liquid crystal droplets are combined via a cleavable linking group said linking group selected from the group consisting of a silyl compound, a siloxane compound, an alcohol compound, an ester compound, an ether compound and an amide compound, the cleavable linking group being cleaved by the application of the radiation, the radiation being at least one of light and heat.

5,667,721

LIQUID CRYSTALLINE DI-1,3-DIOXANE DERIVATIVES

Richard Buchecker, Zurich, Switzerland; Guy Marck, Rixheim, France, and Alois Villiger, Basel, Switzerland, assignors to Rolic AG, Basel, Switzerland

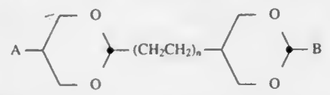
Filed Feb. 21, 1996, Ser. No. 604,630

Claims priority, application Switzerland, Mar. 16, 1995, 754/95

Int. Cl.[6] C09K *19/34;19/30;* **C07D** *407/04;407/06*

U.S. Cl. 252—299.61 **21 Claims**

20. A liquid crystalline mixture having at least 2 components, wherein at least one component is a compound of the formula



(I)

wherein

A and B each independently are cyclic or acyclic hydrophobic residues; and

n is 0, 1 or 2.

5,667,722

ANTIFERROELECTRIC LIQUID CRYSTAL COMPOUND AND ANTIFERROELECTRIC LIQUID CRYSTAL COMPOSITION CONTAINING THE SAME

Yukiharu Iwaya; Mamoru Yamada; Hitoshi Kondo, and Toshimitsu Hagiwara, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

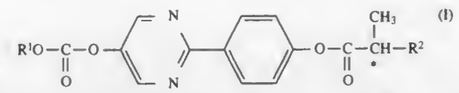
Filed May 23, 1996, Ser. No. 653,744

Claims priority, application Japan, May 29, 1995, 7-152753

Int. Cl.[6] C09K *19/34;* **C07D** *239/02*

U.S. Cl. 252—299.61 **8 Claims**

1. An antiferroelectric liquid crystal compound represented by the following general formula (I):



wherein R^1 represents an alkyl group having 6 to 16 carbon atoms; R^2 represents a straight chain alkyl group having 3 to 8 carbon atoms or a branched alkyl group having 4 to 10 carbon atoms; and * means an asymmetric carbon atom.

5,667,723

LUMINOPHORES COMPRISING DOPED TANTALATES OF YTTRIUM/LUTETIUM/GADOLINIUM

Denis Huguenin, Asnieres-Sur-Seine, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Jul. 3, 1995, Ser. No. 498,262

Claims priority, application France, Jul. 1, 1994, 94 08149

Int. Cl.[6] H01J *1/62*

U.S. Cl. 252—301.4 R **18 Claims**

1. In a low-voltage luminescing electronic device/apparatus, the improvement which comprises, as the luminophore therefor, luminophore particulates comprising a doped tantalate of yttrium, lutetium or gadolinium, the tantalum atoms of which having been partially replaced by a dopant amount of niobium atoms.

5,667,724

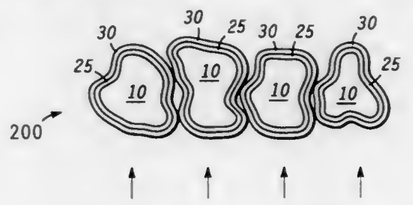
PHOSPHOR AND METHOD OF MAKING SAME

Ronald O. Petersen, Phoenix, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed May 13, 1996, Ser. No. 645,406

Int. Cl.[6] C09K *11/62;11/54;11/80*

U.S. Cl. 252—301.6 R **4 Claims**



1. An electron-excitable UV-emitting material having a general formula $ZnO.Ga_2O_3$:Gd having molar ratios of Ga_2O_3 to ZnO to Gd within the ranges of $1:(0.5–4):(5\times10^{-4}–0.3)$, respectively,

whereby the electron-excitable UV-emitting material emits ultraviolet radiation upon electron exaltation.

5,667,725

SOL AND FINE POWDER OF SODIUM MAGNESIUM FLUORIDE AND PROCESSES FOR THEIR PRODUCTION

Yoshitaae Watanabe; Keitaro Suzuki; Yoshinari Koyama, and Motoko Iijima, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 293,207, Aug. 19, 1994, Pat. No. 5,552,083. This application Mar. 20, 1996, Ser. No. 618,816

Claims priority, application Japan, Aug. 31, 1993, 5-216252

Int. Cl.[6] B01J *13/00;* **C01B** *9/08*

U.S. Cl. 252—309 **16 Claims**

1. A sol comprising colloidal particles, produced by a process comprising the following steps (a), (b) and (c):

(a) a step of mixing an aqueous sodium fluoride solution and an aqueous magnesium salt solution in a Na/Mg molar ratio of

3.0 to form a slurry of aggregates of colloidal particles of sodium magnesium fluoride,

(b) a step of removing by-product salts contained in the slurry of aggregates of colloidal particles of sodium magnesium fluoride obtained in the step (a), and

(c) a step of wet-pulverizing the slurry of aggregates of colloidal particles of sodium magnesium fluoride obtained in the step (b),

wherein the colloidal particles obtained in step (c) have an average particle size of from 10 to 100 nm.

5,667,726

HIGHLY LIGHT-TRANSMITTING DUST PROTECTIVE FILM, PROCESS FOR PREPARATION THEREOF AND DUST PROTECTIVE MEMBER

Tetsuya Miyazaki; Mayumi Kawasaki, and Takao Ohno, all of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 777,130, Oct. 16, 1991, abandoned. This application Jan. 25, 1994, Ser. No. 186,097

Claims priority, application Japan, Oct. 16, 1990, 2-277113

Int. Cl.[6] B01J *13/00;* **C09K** *3/22;* **G03F** *9/00*

U.S. Cl. 252—315.2 **16 Claims**

4. A light stable, pliable and high light-transmitting dust protective film formed from a transparent gel comprising at least one compound selected from the group consisting of organic group-containing oxide of polyvalent metal and organic group-containing hydroxide of polyvalent metal, wherein the organic group-containing oxide of polyvalent metal or organic group-containing hydroxide of polyvalent metal has at least one hydrocarbon group bonded directly to the atom of polyvalent metal or has at least one substituted hydrocarbon group substituted, at least, with one member selected from the group consisting of fluorine, chlorine, alkoxy group, perfluoroalkoxy group and perfluoroalkyl group and said substituted hydrocarbon group is bonded directly to polyvalent metal with a carbon to metal bond and the polyvalent metal is selected from the group consisting of silicon, aluminum, titanium and zirconium and wherein the film has a thickness of 0.2 to 10 μm and has an average light transmission of at least 85% of the light rays having a wavelength of 240 to 500 nm, and wherein said film is stable against irradiation with short-wavelength rays of light.

5,667,727

POLYMER COMPOSITIONS FOR DEMULSIFYING CRUDE OIL

Patrick J. Breen, and James W. Towner, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 26, 1995, Ser. No. 494,987

Int. Cl.[6] B01D *17/04;* **C08G** *59/22;65/22*

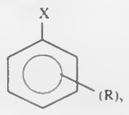
U.S. Cl. 252—331 **8 Claims**

1. A method of demulsifying emulsions of oil and water comprising:

adding a polymer to an emulsion, where the polymer comprises the reaction product of:

a polyol made by reacting alkylene oxide with sorbitol, where the alkylene oxide is selected from the group consisting of ethylene oxide, propylene oxide, and mixtures of the two; and

an aromatic hydrocarbon containing only one reactive functionality of the formula:



where X is a reactive functionality selected from the group consisting of an oxirane ring, and a glycidyl ether moiety; where y ranges from 0 to 5, and where R is a straight, branched or cyclic; aliphatic or aromatic hydrocarbon substituent containing 1 to 15 carbon atoms

where the molar equivalent ratio of aromatic hydrocarbon to hydroxyl groups on the polyol ranges from about 0.1 to about 1.2, and where the aromatic hydrocarbon terminates the polyol; and

permitting the emulsion to resolve into an oil phase and a water phase.

5,667,728

BLOWING AGENT, EXPANDABLE COMPOSITION, AND PROCESS FOR EXTRUDED THERMOPLASTIC FOAMS

Shau-Tarng Lee, Oakland, N.J., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Oct. 29, 1996, Ser. No. 739,704

Int. Cl.[6] C08J *9/14*

U.S. Cl. 252—350 **6 Claims**

1. A blowing agent for expanding an extrudable, expandable polyolefin foam product, said blowing agent comprising ethane and a different alkane selected from the group consisting of C_1, C_2, C_3, C_4, C_5, and C_6 hydrocarbons and mixtures thereof, said ethane being present in said blowing agent in an amount of at least about 40 percent by weight based upon the total weight of said blowing agent.

5,667,729

COATING MATERIAL FOR INNER COAT OF CATHODE-RAY TUBE

Hiroshi Shimbori, Tako, Japan, assignor to Hitachi Powdered Metals Co., Ltd., Japan

Filed Apr. 2, 1996, Ser. No. 627,681

Claims priority, application Japan, Apr. 4, 1995, 7-101587; Dec. 25, 1995, 7-350019

Int. Cl.[6] H01B *1/04;* **C09C** *1/46;* **C04B** *14/04*

U.S. Cl. 252—508 **18 Claims**

1. A coating material, comprising:

graphite particles;

filler particles, each of the filler particles comprising a core and a membrane which covers the core, the core comprising a component which is selected from the group consisting of metallic oxide compounds and metallic carbide compounds, and the membrane comprising a mixture of alumina and silica, in which the amount of the alumina is within a range of 20 to 60% by weight of the total weight of the membrane;

an aqueous medium in which the graphite particles and filler particles are dispersed;

a dispersively effective amount of a dispersant; and

water-glass for imparting adhesion to the coating material.

5,667,730

FLOAT BOWL ATTACHMENT FOR CARBURETOR

Melvin Russell Barfield, 7412 SW 29th St., Davie, Fla. 33314

Continuation-in-part of Ser. No. 527,537, Sep. 13, 1995, abandoned. This application Dec. 9, 1996, Ser. No. 762,413

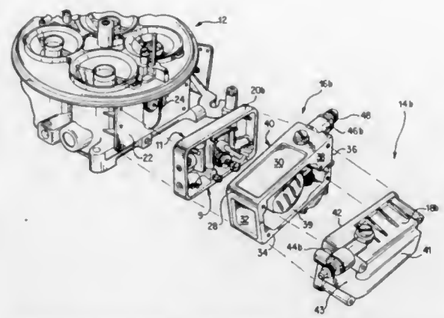
Int. Cl.[6] F02M *13/06*

U.S. Cl. 261—18.3 **27 Claims**

1. An attachment for a fuel system, the fuel system having a carburetor with a metering block having fuel passages therethrough and a float bowl, a fuel supply, and a throttle linkage, said attachment comprising:

an annular body having a metering block end, a float bowl end opposite said metering block end, and a peripheral wall, said peripheral wall and said ends defining therebetween an interior volume;

a fuel passage through said body and having an inlet end coupleable to the fuel supply and a discharge end communicating with said interior volume;



a valve disposed in said fuel passage to selectively close said fuel passage; and

a float disposed in said interior volume, operatively coupled to said valve, and mounted to said body for movement between a closed position in which said float closes said valve and an open position in which said valve is permitted to open said fuel passage,

said attachment being adapted for mounting between the metering block and the carburetor's float bowl with said metering block end of said body being configured for sealing engagement with the metering block, said float bowl end being configured for sealing engagement with the carburetor's float bowl, and said interior volume being configured to communicate with the carburetor's float bowl and the metering block's fuel passages.

5,667,731

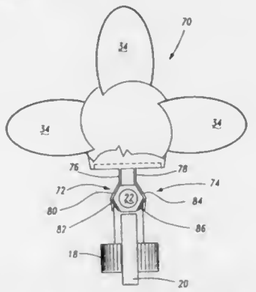
PORTABLE FAN DEVICE FOR USE WITH A SPRAY MISTING BOTTLE

Eric F. Junkel, Des Plaines, and Linda M. Usher, Chicago, both of Ill., assignors to Circulair, Inc., Niles, Ill.

Filed Sep. 1, 1995, Ser. No. 522,598

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—24 **8 Claims**



1. A portable fan device for use with a spray misting bottle, the spray misting bottle having a fluid carrying base and a spray applicating head portion, said fan device comprising:

a body;

a fan blade unit including a plurality of blades connecting to said body by a shaft and extending forwardly from said body;

said body housing a motor means for driving said shaft and an electrical power means for operating said motor means;

means for releasably securing said fan device to the spray applicating head portion so that a misting spray issued by the head portion is directed into a path of said fan blades and, upon contact with said blades, is cooled and distributed by said fan blades, said releasably securing means further comprising a plurality of contoured gripping tabs extending from an underside of said body, said plurality of gripping tabs further comprising;

a first contoured gripping tab having a connecting portion to said underside of said body, a first outwardly angled portion and a second reversed and inwardly angled portion;

a second contoured gripping tab arranged in opposing fashion relative to said first tab and having a connecting portion to said underside of said body, a first outwardly angled portion and a second reversed and inwardly angled portion; and

a third gripping tab extending downwardly from said body underside proximate a rear edge of said body, said third gripping tab terminating in a clip engaging portion;

said first and second gripping tabs engaging opposite sides of the spray applicating head and said clip portion of said third gripping tab engaging a rear side of the spray applicating head to secure said fan body in place.

5,667,732

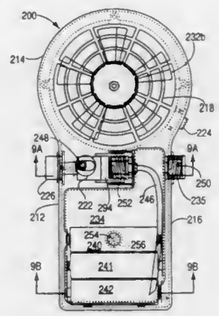
COMPACT PORTABLE MISTING FAN

Jeffrey H. Lederer, 56 Husted La., Greenwich, Conn. 06830

Filed Aug. 30, 1995, Ser. No. 521,311

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—28 **20 Claims**



1. A compact hand held portable misting fan operable by one hand of a user, said fan comprising:

a) a substantially flat housing dimensioned to be easily held in a human child or adult hand, said housing having a front side having a front air baffle and an opposite rear side having a rear air baffle, and opposite first and second lateral sides;

b) an electric fan mounted in said housing between said front air baffle and said opposite rear air baffle;

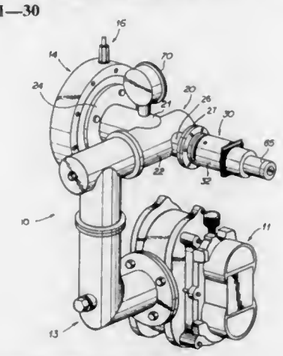
c) a fluid container mounted in said housing below said electric fan;

d) an electrical switch for supplying power to said electric fan, said electrical switch being mounted on said first lateral side of said housing; and

e) an atomizer coupled to said fluid container for pumping fluid from said fluid container and atomizing said fluid, said atomizer having a spray outlet and a push button, said spray outlet extending out of said housing from said front side and adjacent to said front air baffle, and said push button extending out said second lateral side of said housing located adjacent and below said front air baffle, wherein

when said fan is held in a human hand said switch can be easily activated by a thumb or finger and said push button can be easily pushed by a finger or thumb, respectively, of the same hand.

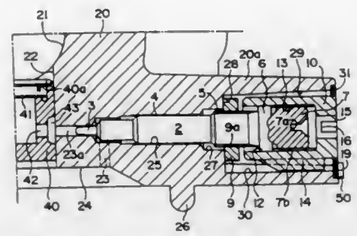
5,667,733
AEROSOL GENERATOR AND METHOD FOR EFFECTING THE SIZE OF DROPLETS DISPERSED THEREBY
David W. Waldron, Sr.,, Valdosta, Ga., assignor to Lowndes Engineering Co., Inc., Valdosta, Ga.
Continuation of Ser. No. 932,085, Aug. 19, 1992, abandoned.
This application Dec. 19, 1994, Ser. No. 359,030
Int. Cl.[6] B05B *7/02;7/12*
U.S. Cl. 261—30 9 Claims



1. An aerosol generator comprising:
(a) an air blower having an air discharge side;
(b) a nozzle defining a path of travel for an air stream from its air receiving side to its discharge side and thence, into the ambient air, said nozzle being adapted to entrain liquid into said air stream for producing droplets dispensed in said air as it is discharged from said nozzle;
(c) a robe for supplying liquid to said nozzle for being entrained in said air stream;
(d) a duct connected between the discharge side of said blower and said air receiving side of said nozzle for directing air discharged from said discharge side of said blower to said air receiving side of said nozzle;
(e) a valve communicating with said duct for diverting varying portions of the air passing through said duct from being delivered to said nozzle, depending upon the amount of opening of said valve;
(f) said valve being configured to be cycled progressively between a first condition wherein a first portion of the air passing through said duct is discharged to ambience and a second condition wherein a second portion of the air passing through said duct is discharged to ambience; and
(g) a motor for cycling said valve repeatedly between its first and second conditions.

5,667,734
CARBURETOR WITH REGULATING VALVE LIMITING DEVICE
Shinichi Ohgane, Sibatagun, Japan, assignor to Walbro Corporation, Cass City, Mich.
Filed May 20, 1996, Ser. No. 650,195
Claims priority, application Japan, May 19, 1995, 7-145677
Int. Cl.[6] F02M *3/08*
U.S. Cl. 261—71 5 Claims

1. In a carburetor for an engine which has at least one fuel regulating needle valve with a shank received in a threaded hole in the carburetor body with a needle potdon adjacent one end of the shank and a head adjacent the other end of the shank, a limiting device comprising a generally cylindrical cavity in the carburetor body having a diameter larger than that of the threaded hole in which the needle valve is received and opening to the exterior of the carburetor body, a threaded portion on the shank and adjacent the head having a larger diameter than the threaded hole in the carburetor body in which the needle valve is received, a stop ring in contact with a shoulder of the cylindrical cavity and threadably



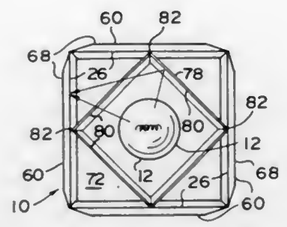
received on the larger diameter threaded portion of the needle valve, a cup-shaped cap secured with the head of the fuel regulating valve, an axial protrusion on the outer periphery of the cap, a generally axial groove in the cylindrical cavity in which the protrusion of the cap is received, and a retaining plate having an opening through which the cap can extend, said retaining plate being fixed to the carburetor body adjacent the outer end of the cylindrical cavity.

5,667,735
OPTHALMIC MOLD COATINGS
Young C. Bae, Seoul, Rep. of Korea; Thomas B. Ottoboni, Belmont, Calif.; Kwan Chan, San Francisco, Calif.; Thai Minh Nguyen, San Jose, Calif.; Fredric J. Lim, Fremont, Calif., and David S. Soane, Piedmont, Calif., assignors to 2C Optics, Inc., Hayward, Calif.
Continuation of Ser. No. 248,063, May 23, 1994, abandoned.
This application Apr. 16, 1996, Ser. No. 633,220
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.7 26 Claims

1. A method of providing an optically clear coating to at least one optical surface of an ophthalmic device comprising the steps of:
applying a film of a composition comprising ethylenically unsaturated groups to at least a first face of a mold used to manufacture said ophthalmic device, wherein said face imparts a desired optical configuration to a first optical surface of said ophthalmic device;
partially curing said composition to a degree that said film forms a tacky, wet non-abrasion-resistant film that is weakly adhered to said first face and is characterized by a degree of unsaturation of over 90% of the unsaturation it possessed prior to said reaction;
filling the cavity of said mold with an organic liquid capable of hardening to a solid, stable state; and hardening said organic liquid and said film to form said ophthalmic device, to bond said film to the hardened organic material, to render said film abrasion resistant, and to adhere said film to said hardened organic material more firmly than said film adheres to said face of said mold.

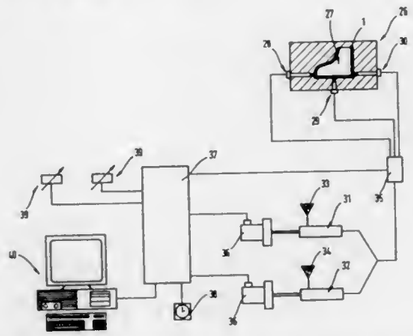
5,667,736
METHOD OF MAKING A LASER GENERATED LIGHTING FIXTURE
Tseng Lu Chien, 8F, No. 29, Alley 73, Lin-Shon Street, Shi-Chi Town, Taipei, Hseng, Taiwan
Filed Feb. 7, 1995, Ser. No. 385,122
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—2.5 10 Claims

1. A method of making decorative light fixture, the decorative light fixture including a light source and a translucent member and a grating element for spatially modulating light from the light source which passes through the translucent member to thereby form a diffraction pattern, said grating having a spacing of between approximately 0.5×10^{-2} m and approximately 100×10^{-6} m, comprising the steps of:
(a) forming a tooling plate having a grating pattern;



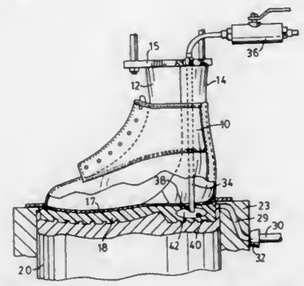
(b) providing a mold assembly which includes a main cavity member, a baking plate, and a tooling plate;
(c) clamping the tooling plate between the cavity member and the backing plate to define a mold for forming the translucent member by molding;
(d) forming the grating element by integrally molding the grating element into the translucent member; and
(e) positioning between the light source and the grating element a means for causing light passing from the light source to the grating pattern to form multiple light source images before through the grating pattern.

5,667,737
METHOD OF MANUFACTURING AN INJECTION MOLDED SHOE
Walter Wittmann, Köflach, Austria, assignor to Koflach Sport Gesellschaft m.b.H. & Co. KG, Wagrain, Austria
Continuation of Ser. No. 166,507, Dec. 13, 1993, abandoned, which is a division of Ser. No. 47,878, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 825,934, Jan. 27, 1992, abandoned. This application Mar. 12, 1996, Ser. No. 614,319
Claims priority, application Austria, Jan. 28, 1991, 183/91
Int. Cl.[6] B29C *45/13;45/16*
U.S. Cl. 264—40.1 5 Claims



1. A method for manufacturing an integrally-formed injection molded shoe article, comprising the steps of:
coupling a distributing valve to a first extruder and a second extruder;
connecting a control device comprising a microprocessor to said first extruder, said second extruder and said distributing valve;
coupling a plurality of sprues of a mold to a corresponding plurality of outlets of said distributing valve via respective supply conduits;
plasticizing a first synthetic resin material in the first extruder and a second different synthetic resin material in the second extruder;
controlling the length of time of actuation of each of said first and second extruders, with said control device, to produce different pressures in said extruders;
operating said distributing valve with said control device, to (i) select at least one outlet and corresponding supply conduit for successively receiving the first and second synthetic resin materials and (ii) control the length of time for said at least one selected outlet and corresponding supply conduit to successively receive the first and second synthetic resin materials;
injecting the first and second synthetic resin materials successively through the respective sprue into the mold cavity so that the molten first and second synthetic resin materials flow into each other;
wherein the different synthetic resin materials are injected into the mold cavity at different pressures;
wherein at least one of the different synthetic resin materials is injected into the mold cavity at a pressure which varies during the injection of the synthetic resin material;
permitting the injected synthetic resin materials to harden in the mold cavity and permanently bond together to form an integral injection molded shoe article; and
removing the shoe article from the mold cavity.

5,667,738
METHODS FOR THE PRODUCTION OF RESILIENT MOLDED HEELS FOR BOOTS AND SHOES
Dezi A. Krajcir, 330 Ramsey Drive, Dunnville, Ontario, Canada, N1A 2X1
Continuation of Ser. No. 260,243, Jun. 14, 1994, abandoned.
This application Apr. 29, 1996, Ser. No. 639,547
Int. Cl.[6] B29C *44/04;44/12*
U.S. Cl. 264—45.5 8 Claims



1. A method of molding a heel for boots and shoes comprising:
providing a heel mold having a mold cavity therein adapted to form a molded heel body;
the mold having material passage means with an inlet thereto and an outlet therefrom discharging to the mold cavity for the supply of foaming plastics molding material to the mold cavity;
the heel mold also having fluid passage means with an inlet thereto and an outlet therefrom discharging to the mold cavity at a location at which it is desired to form at least one enclosed hollow chamber within the molded heel;
injecting foaming plastics molding material through the material passage means into the mold cavity to form the molded heel body therein; and
after the foaming plastics molding material has completely filled the mold cavity and has contacted the inner walls of the mold cavity to form an outer skin of the molded heel against the cavity inner walls, injecting a pressurized gaseous fluid into the material through the fluid passage means outlet before the material has set to displace and compress the material around the fluid passage means outlet and form said at least one enclosed hollow chamber at the fluid passage means outlet with the centroid of each hollow chamber at the point of discharge of the fluid passage means outlet into the mold cavity;
the size and location of each thus formed hollow chamber being such that the heel is thereby provided with a selected degree

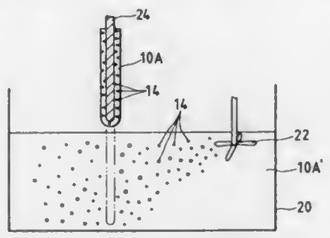
of resilience to heel strike forces acting through the heel at the location of the respective hollow chamber.

5,667,739

METHOD OF FORMING ARTIFICIAL BAIT

Seiji Kato, Saitama, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Division of Ser. No. 231,478, Apr. 22, 1994, abandoned. This application May 4, 1995, Ser. No. 434,771
Claims priority, application Japan, Apr. 28, 1993, 5-125125
Int. Cl.[6] B29C *44/06*
U.S. Cl. 264—50 11 Claims



1. A process of forming an artificial bait, comprising the steps of:
(1) providing an elastic material substantially in the form of paste, wherein said elastic material exhibits flexibility and light transmissible property after being solidified;
(2) positively mixing air bubbles into said elastic material in the form of paste so as to affect the light transmissible property of said artificial bait;
(3) forming from said elastic material a paste lump of a predetermined shape with air bubbles embedded therein;
(4) crushing air bubbles attached to an outer surface of said artificial bait to form recessed portions therealong
(5) and covering an outer periphery of said paste lump with a second elastic material in the form of paste to which no air bubbles is mixed and then solidifying said paste lump.

5,667,740

PROCESS FOR THE PRODUCTION OF PRODUCTS OF LIGHT CELLULAR PLASTIC WITH CLOSED CELLS

Steinar Spydevold, Høvik, Norway, assignor to Polynor Partners A/S, Oslo, Norway

PCT No. PCT/NO94/00153, § 371 Date Mar. 4, 1996, § 102(e) Date Mar. 4, 1996, PCT Pub. No. WO95/07812, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 14, 1994, Ser. No. 615,258
Claims priority, application Norway, Sep. 15, 1993, 933294
Int. Cl.[6] B29C *44/02*
U.S. Cl. 264—54 4 Claims

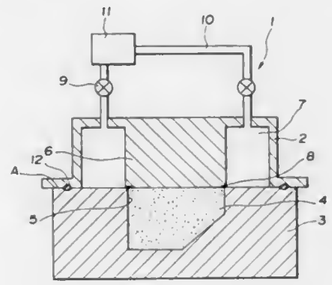
1. A process for the production of products of light cellular plastic with closed cells from a plastic composition containing chemical blowing agent and, optionally, other process-regulative substances and additives, where the plastic composition is processed mechanically in a plastic processing machine to a well homogenized, melted plastic compound, and transferred directly to a form cavity, the process comprising the steps of:
transferring the plastic compound to the form cavity at a temperature above the decomposition temperature of the blowing agent in combination with optional decomposition regulative additives and at a time when the compound has reached a temperature sufficient for the blowing agent in the plastic compound to decompose, and before a time when decomposition starts,
filling the form cavity fully with plastic compound and holding the temperature in the plastic compound in the form cavity higher than the decomposition temperature for the blowing agent in the plastic compound until a desired degree of decomposition of the blowing agent has been reached, holding the pressure in the form cavity sufficiently high to prevent the plastic compound from expanding when the blowing agent decomposes, and
reducing the pressure in the form cavity after the desired degree of decomposition has been obtained in order to allow the plastic compound to expand.

5,667,741

METHOD OF MANUFACTURING A MOLDING FOR ENERGY ABSORBENT PADS AND MOLD USED IN THE METHOD

Keiichiro Tabata, Chigasaki; Yoichi Nabeshima, Zama; Taikyu Fujita, Yokohama; Kazufumi Yokoyama, Yokosuka, and Torao Hashimoto, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 4, 1996, Ser. No. 628,233
Claims priority, application Japan, Dec. 20, 1995, 7-349134
Int. Cl.[6] B29C *44/10*
U.S. Cl. 264—54 9 Claims



1. A method of manufacturing a rigid polyurethane foam molding for energy absorption, comprising the steps of introducing a rigid polyurethane foam raw material composed primarily of a polyhydroxy compound and a polyisocyanate compound into a cavity in a mold, and blowing and reacting said rigid polyurethane foam raw material in said cavity, wherein a pack ratio of a core portion of said molding ranges from 0.5 to less than 1.2.

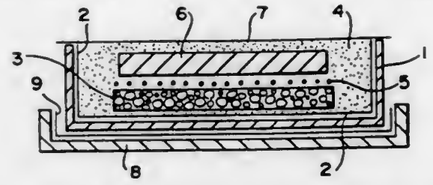
9. A mold for manufacturing a rigid polyurethane foam molding by introducing a rigid polyurethane foam raw material composed primarily of a polyhydroxy compound and a polyisocyanate compound into a cavity defined by separatably joining an upper die and a lower die, and blowing and reacting said rigid polyurethane foam raw material in said cavity, wherein:
said lower die has a lower die cavity for blowing said cavity when said upper die and said lower die are joined together;
a fine space is defined at an outer circumferential edge of an upper end of said lower die cavity so as to communicate with said lower die cavity;
said upper die has a hollow chamber so as to communicate with said cavity through said fine space; and
an air pipe is connected at one end thereof to said upper die so as to communicate with said hollow chamber and connected at the other end to an air suction device;
whereby said rigid polyurethane foam raw material is introduced into said cavity and said air suction device is operated to evacuate said cavity through said air pipe, said hollow chamber, and said fine space, to blow and react said raw material, thereby forming said rigid polyurethane foam molding with a core portion having a pack ratio ranging from 0.5 to less than 1.2.

5,667,742

METHODS FOR MAKING PREFORMS FOR COMPOSITE FORMATION PROCESSES

Ratnesh Kumar Dwivedi, Wilmington; Thomas James Henderson, Bear, both of Del., and David Francis Friel, Sewell, N.J., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 12,169, Feb. 2, 1993, abandoned.
This application Jun. 15, 1994, Ser. No. 260,510
Int. Cl.[6] C04B *35/64*
U.S. Cl. 264—658 32 Claims



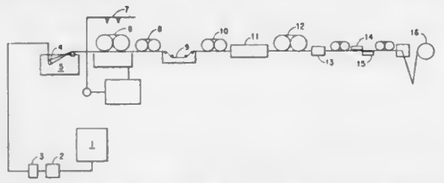
1. A method for making a preform for use in composite formation processes, comprising:
combining at least one low temperature organic binder and at least one high temperature binder and at least one filler to form a substantially homogeneous mixture with good flowability, wherein said at least one low temperature organic binder and said at least one high temperature binder have a combined weight of about 1–15% of the total weight of said substantially homogeneous mixture;
placing said substantially homogeneous mixture into a mold having a cavity therein which corresponds substantially in shape to a desired shape of the preform;
applying low pressure to said substantially homogeneous mixture to cause said substantially homogeneous mixture to at least partially fill said cavity of said mold;
causing said at least one low temperature organic binder to at least partially set to result in the mixture assuming the shape of said cavity, thereby forming a shaped mixture;
heating said shaped mixture to a temperature range to result in removal of said at least one low temperature organic binder and at least partial setting of said at least one high temperature binder;
further heating said shaped mixture to cause at least partial sintering of said filler to occur to result in at least partially sintered preform; and
providing said at least partially sintered preform for use in at least one composite formation process.

5,667,743

WET SPINNING PROCESS FOR ARAMID POLYMER CONTAINING SALTS

Tsung-Ming Tai, Chesterfield; David J. Rodini, Midlothian, both of Va.; James C. Masson, Mooresville, N.C., and Richard L. Leonard, Decatur, Ala., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1996, Ser. No. 651,174
Int. Cl.[6] D01D *5/06;* D01F *6/60*
U.S. Cl. 264—184 7 Claims



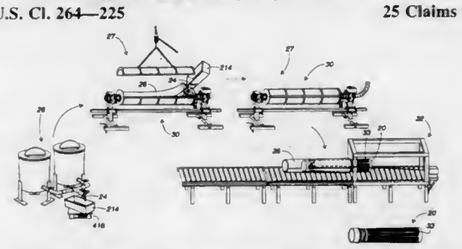
1. A process for wet spinning a meta-aramid polymer from a solvent spinning solution containing concentrations of polymer, solvent, water and at least 3% by weight salt comprising the steps of:
(a) coagulating the polymer into a fiber in an aqueous coagulation solution containing a mixture of salt and solvent such that the concentration of the solvent is from about 15 to 25% by weight of the coagulation solution and the concentration of the salt is from about 30% to 45% by weight of the coagulation solution and wherein the coagulation solution is maintained at a temperature from about 90° to 125° C.;
(b) removing the fiber from the coagulation solution and contacting it with an aqueous conditioning solution containing a mixture of solvent and salt such that the concentrations of solvent, salt and water are defined by the area shown in FIG. 1 as bounded by coordinates W, X, Y and Z and wherein the conditioning solution is maintained at a temperature of from about 20° to 60° C.;
(c) drawing the fiber in an aqueous drawing solution having a concentration of solvent of from 10 to 50% by weight of the drawing solution and a concentration of salt of from 1 to 15% by weight of the drawing solution;
(d) washing the fiber with water; and
(e) drying the fiber.

5,667,744

METHOD FOR FABRICATING COLUMNS

Jorge Del Valle, Lawrenceville; Fred L. Hicks, Mableton; Steven W. Spires, and Daniel J. Brown, both of Atlanta, all of Ga., assignors to Focal Point Products, Inc., Atlanta, Ga.

Continuation of Ser. No. 285,045, Aug. 3, 1994, abandoned, which is a continuation of Ser. No. 994,684, Dec. 22, 1992, abandoned. This application May 31, 1995, Ser. No. 443,889
Int. Cl.[6] B28B *1/20;7/36;7/38;13/06*
U.S. Cl. 264—225 25 Claims



1. A method of fabricating architectural building columns of the type used for support and ornamentation in building construction, the method comprising the steps of:
depositing uncured column material into an elongated, flexible unitary mold defining an elongated mold chamber;
spinning the mold chamber with the column material therein;
forming within the mold chamber an architectural building column having opposite ends and a mold formed exterior surface that is, intermediate of the ends of the column, absent of any parting lines; and
removing the architectural building column from the elongated mold chamber.

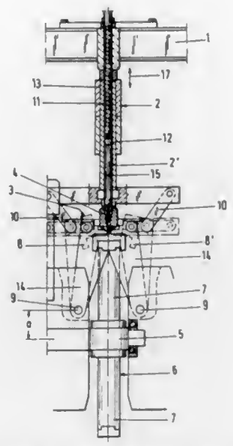
5,667,745

METHOD FOR THE INTEGRAL MOLDING OF A SYNTHETIC THERMOPLASTICS PART

Par Andersson, Lutry, Switzerland, assignor to Tetra Laval Holdings & Finance S.A., Pully, Germany

Continuation of Ser. No. 893,909, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 532,957, Jun. 4, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 146,942
Claims priority, application Switzerland, Jun. 13, 1989, 2226/89
Int. Cl.[6] B29C *45/04;45/10;45/14*
U.S. Cl. 264—275 1 Claim

1. A method of injection molding a thermoplastic member on an edge of a thin-walled body consisting of a member selected from



the group consisting of paper, cardboard, and synthetic plastic coated paper comprising the steps of:

a) providing a mandrel wheel having a plurality of adjacent mandrels projecting radially therefrom, said mandrels each comprising an inner mold part, the mandrel wheel being provided to rotate on a shaft about an axis;

b) providing a pair of outer mold parts which are swingably carried on arms which are disposed to pivot about axes which extend at right angles to said axis of said shaft of said mandrel wheel;

c) providing a thin-walled body on each of said adjacent mandrels;

d) providing an injection molding unit having an injection nozzle with injection means;

e) intermittently rotating said mandrel wheel to bring one of said adjacent mandrels having a thin walled body thereon into position under said injection nozzle;

f) forming a mold cavity by applying a clamping force and bringing together said outer mold parts with said inner mold part of said one of said adjacent mandrels to form a mold cavity;

g) maintaining said mold cavity at a first initial volume;

h) injecting into said mold cavity with said injection nozzle, a total amount of synthetic plasticized material necessary to form the thermoplastic member;

i) pressing the mold parts together by increasing the clamping force;

j) providing drive means connecting said outer mold parts with said injection molding unit;

k) wherein the step of forming a mold cavity includes the step of actuating the drive means and moving the nozzle of the injection molding unit in the direction of the mold cavity;

l) wherein the step of pressing the mold parts together includes the step of actuating the drive means and reducing the volume of the mold cavity so that synthetic plastics material present in the mold cavity fills the entire volume of the mold cavity.

5,667,746

METHOD FOR DENSIFYING A THERMOPLASTIC POLYMER

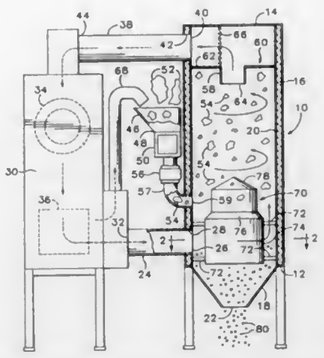
John Carl Goehner, Bedford, N.H., and Kenneth J. Goehner, Portland, Oreg., assignors to Limited Resources, Inc., Portland, Oreg.

Continuation of Ser. No. 405,587, Mar. 17, 1995, Pat. No. 5,565,164. This application Jul. 25, 1996, Ser. No. 687,190

Int. Cl.[6] B29C *67/20*

U.S. Cl. 264—321 **3 Claims**

1. A method of densifying an expanded thermoplastic polymer comprising:



(a) introducing particles of a thermoplastic polymer into a chamber proximate the bottom of said chamber;

(b) suspending said particles with a fluid flow in said chamber; and

(c) during step (b), heating said particles to form pieces of densified thermoplastic polymer which are too dense to remain suspended in said fluid flow.

5,667,747

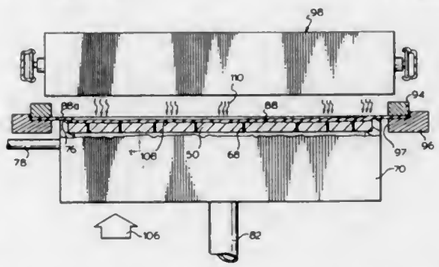
VACUUM FORMED THREE-DIMENSIONAL SURFACE ARTICLE

Glenn T. Harding, Agincourt; William D. Harding, Unionville, and William Liddle, Ajax, all of Canada, assignors to Harding Product Supply Ltd., Scarborough, Canada

Continuation of Ser. No. 408,900, Mar. 22, 1995, abandoned. This application Mar. 19, 1996, Ser. No. 618,401

Int. Cl.[6] B29C *51/10;51/42*

U.S. Cl. 264—510 **9 Claims**



1. A vacuum forming process for molding a thin sheet of a selected thermoformable plastic into an accurate three-dimensional relief reproduction of an original artwork, said sheet of plastic having printed on one side thereof a permanent image of said original artwork, said process comprising:

i) supporting said printed sheet of plastic proximate but not contacting a vacuum forming female mold with said printed side facing said mold, said female mold having a surface relief therein which is a reproduction of the surface relief of said original artwork, said image being in register with the surface relief of said mold, a multitude of vacuum forming holes being provided in said mold;

ii) heating said plastic sheet to a first temperature at which said plastic sheet is pliable and about to droop but without drooping, and which minimizes movement of said image relative to said female mold due to heating of said sheet;

iii) contacting said female mold with said sheet while said sheet is heated to the first temperature, immediately applying a vacuum to said holes in said mold to commence drawing said plastic sheet into said mold and fix thereby said sheet relative to said mold relief to further minimize image movement on said sheet relative to said mold;

iv) thereafter heating said plastic sheet to a second temperature that is higher than said first temperature and at which said plastic sheet will thermoform while maintaining vacuum on said holes in said female mold to complete forming of said three-dimensional relief in said sheet;

v) stop heating said plastic sheet once it has attained the second temperature while continuing to apply vacuum to said holes in said female mold, cooling said sheet after heating is stopped to cool said sheet below said first temperature to a third temperature to render permanent said three-dimensional relief formed in said sheet, and

vi) stop cooling said sheet and remove said sheet from said female mold.

5,667,748

PROCESS AND APPARATUS FOR MULTILAYER BLOW MOLDING AND ARTICLES BLOW-MOLDED THEREWITH

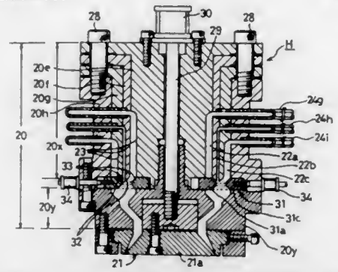
Akira Ohta; Kohsel Kushima, and Satoshi Furuki, all of Futtsu, Japan, assignors to Nippon Steel Chemical Co., Ltd., and Nippon Steel Corporation, both of Tokyo, Japan

Division of Ser. No. 995,261, Dec. 22, 1992, Pat. No. 5,460,772. This application May 15, 1995, Ser. No. 440,686

Claims priority, application Japan, Dec. 27, 1991, 3-359301; Dec. 27, 1991, 3-359302; Aug. 12, 1992, 4-214947; Aug. 18, 1992, 4-218977; Sep. 25, 1992, 4-255157; Sep. 25, 1992, 4-255158

Int. Cl.[6] B29C *49/22*

U.S. Cl. 264—515 **4 Claims**



1. A multilayer blow molding process, comprising extruding plural thermoplastic resins from a die head in a tubular form to create a multilayer parison having a substantially uniform wall thickness in every part, introducing said multilayer parison into a mold split into plural parts and open to receive said parison, clamping said mold and conducting blow molding, said multilayer parison having sections different from one another in respect to one or more of the kind of resins, number of layers, and thickness of layers in the circumferential direction of said parison in at least one of resins layers and varying the width of each section in the direction of the extrusion of parison by a passage width controller having tongue-shaped flapping nails which oscillate to change said width of each section of said parison.

5,667,749

METHOD FOR THE PRODUCTION OF FIBERS AND MATERIALS HAVING ENHANCED CHARACTERISTICS

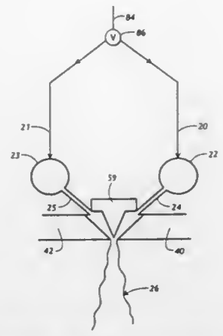
Jark Chong Lau, Roswell, and Bryan David Haynes, Alpharetta, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Irving, Tex.

Filed Aug. 2, 1995, Ser. No. 510,353

Int. Cl.[6] D01D *5/08*

U.S. Cl. 264—555 **32 Claims**

1. A method for forming artificial fibers from a liquified resin comprising the steps of:



generating a continuous fluid stream along a primary axis;

extruding the liquified resin through a first die located adjacent to the fluid stream;

injecting said liquified resin into said fluid stream to form fibers; and

selectivity perturbing the flow of fluid in the fluid stream by perturbation means for varying the fluid pressure on either side of the primary axis.

5,667,750

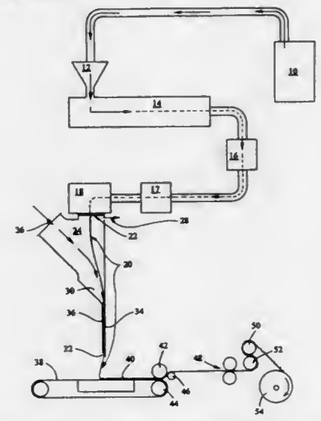
PROCESS OF MAKING A NONWOVEN WEB

Ronald Sinclair Nohr, Roswell; John Gavin MacDonald, Decatur, and Peter Michelovich Kobylivker, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 321,720, Oct. 12, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,458

Int. Cl.[6] D01D *5/098;* **D01F** *1/10*

U.S. Cl. 264—555 **7 Claims**



1. A method of forming a nonwoven web comprising the steps of:

compounding a melt-extrudable thermoplastic polypropylene composition having a melt flow rate in a range of from about 18 to about 30 g/10 minutes at a temperature of 190° C. and a load of 2.16 kg and comprising

a first thermoplastic polypropylene having a melt flow rate lower than 18 g/10 minutes at a temperature of 190° C. and a load of 2.16 kg; and

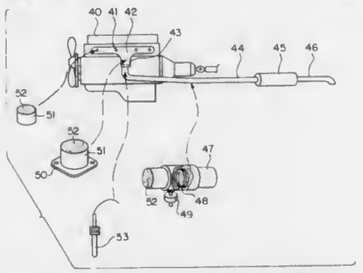
a second thermoplastic polypropylene having a melt flow rate higher than 18 g/10 minutes at a temperature of 190° C. and a load of 2.16 kg, wherein the weight ratio of the first polypropylene to the second polypropylene is in a range of from about 90:10 to about 10:90;

forming continuous fibers by extruding the compounded composition through a die;
quenching the continuous fibers to a solid state;
drawing the fibers; and
randomly depositing the fibers on a moving foraminous surface as a web of entangled fibers.

5,667,751
ALLOY MATERIAL WITH IMPROVED CATALYTIC PROPERTIES

Jack H. Taylor, Jr., 6250 Valley Wood Dr., Reno, Nev. 89523

Continuation of Ser. No. 536,198, Sep. 29, 1995, which is a division of Ser. No. 384,133, Feb. 6, 1995, Pat. No. 5,505,745, which is a continuation-in-part of Ser. No. 197,979, Feb. 17, 1994, Pat. No. 5,387,565, which is a continuation-in-part of Ser. No. 783,877, Oct. 29, 1991, Pat. No. 5,288,674. This application Jul. 17, 1996, Ser. No. 682,178
Int. Cl.[6] C22C *9/00;19/03;21/00;23/00*
U.S. Cl. 420—8 **14 Claims**

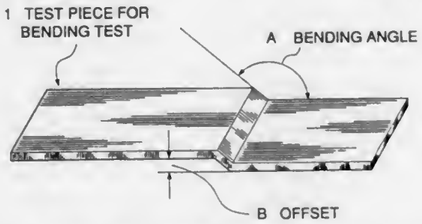


1. An alloy material comprising a mixture of a mineral component and a metal, said mineral component comprising plagioclase feldspar in an amount greater than 50 wt % based on the weight of the mineral component, said feldspar mainly comprising albite and anorthite minerals, said alloy material having increased tensile strength relative to said metal alone, and a higher melting point than said metal alone.

5,667,752
COPPER ALLOY SHEET FOR CONNECTORS AND CONNECTORS FORMED OF SAME

Takeshi Suzuki; Rensei Futatsuka; Manpei Kuwahara, all of Alzuwakamatsu, and Seiji Kumagai, Tokyo, all of Japan, assignors to Mitsubishi Shindoh Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1996, Ser. No. 618,829
Claims priority, application Japan, Dec. 1, 1995, 7-314029
Int. Cl.[6] C22C *9/00*
U.S. Cl. 420—494 **4 Claims**

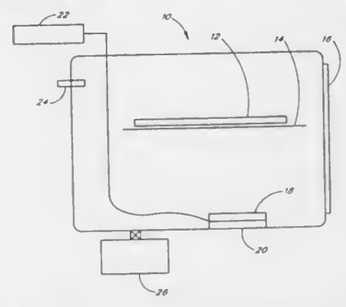


1. A copper alloy sheet for connectors, having a chemical composition consisting essentially of:
Mg: 0.3–2% by weight;
P: 0.001–0.02% by weight;
C: 0.0002–0.0013% by weight;
O: 0.0002–0.001% by weight; and
Cu and inevitable impurities: the balance;
said copper alloy sheet having a structure that fine particles of oxides including Mg oxide having a particle size of not more than 3 μm are evenly dispersed in a matrix of said copper alloy sheet.

5,667,753
VAPOR STERILIZATION USING INORGANIC HYDROGEN PEROXIDE COMPLEXES

Paul Taylor Jacobs, Canyon; Szu-Min Lin, Laguna Hills, and Xiaolan Chen, Irvine, all of Calif., assignors to Advanced Sterilization Products, Irvine, Calif.

Continuation-in-part of Ser. No. 369,786, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 234,738, Apr. 28, 1994, abandoned. This application Oct. 27, 1995, Ser. No. 549,425
Int. Cl.[6] A61L *9/00*
U.S. Cl. 422—29 **39 Claims**



1. An apparatus for hydrogen peroxide sterilization of an article, comprising:
a container for holding the article to be sterilized at a pressure of less than 50 torr; and
a source of hydrogen peroxide vapor in fluid communication with said container, said source comprising a non-aqueous inorganic hydrogen peroxide complex which does not decompose to release a hydrohalic acid, said complex being at a temperature greater than 86° C., said source configured so that said vapor can contact said article to effect sterilization.

5,667,754
DEVICE FOR CHLORIDE ION REMOVAL PRIOR TO CHEMICAL OXYGEN DEMAND ANALYSIS

Scott Vance Brayton, Ames, and Donald Gene Miller, Slater, both of Iowa, assignors to Hach Company, Ames, Iowa

Filed Sep. 25, 1995, Ser. No. 533,318
Int. Cl.[6] G01N *33/18*
U.S. Cl. 422—61 **6 Claims**

1. A kit for conducting a chemical oxygen demand measurement of a test sample comprising:
a cartridge unit for sample pre-treatment,
a collection vessel having an opening with a rim, and
a manganese III reagent for measuring the chemical oxygen demand of the sample,
wherein the cartridge unit comprises:
an inner and outer cartridge, said inner cartridge adapted to matingly fit within said outer cartridge to form the cartridge unit, each of said inner and outer cartridges having open upper ends and perforated lower ends,
said outer cartridge containing in solid form a source of treatment reagent through which the test sample is to move,
said inner cartridge containing a removable filter for collecting suspended particulates in the test sample for addition back to the test sample, said inner cartridge being inert to any chemical oxygen demand test reagent it may contact during use, and

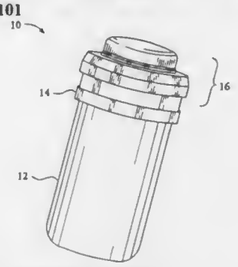


said outer cartridge being adapted to matingly fit within the rim of said collection vessel.

5,667,755
HYBRID COMPOSITE CENTRIFUGE CONTAINER WITH INTERWEAVING FIBER WINDINGS

Samuel Baum, Redwood City; Bradley D. Carstens, Mountain View, both of Calif., and Stephan J. Glen, Grants Pass, Oreg., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 10, 1995, Ser. No. 438,899
Int. Cl.[6] B04B *5/02*
U.S. Cl. 422—101 **7 Claims**

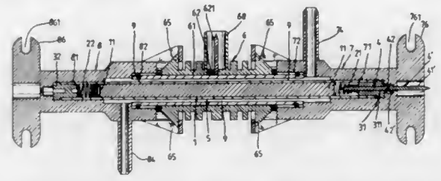


1. A centrifuge container comprising:
a plurality layers of fiber material wound helically and circumferentially about an axis, defining a receptacle capable of resisting deformation due to hydrodynamic pressures associated with centrifugation of liquids contained therein, said receptacle having a closed end, an open end and a cylindrical wall extending between said open and closed ends, said wall having inner and outer diameters;
a metal sleeve for distributing load forces about a circumference of said receptacle, said metal sleeve having two opposed ends, each defining an aperture with said open end of said receptacle fitting into and contained within one aperture, forming an interface between said metal sleeve and said cylindrical wall; and
means, permanently coupled to said base, for preventing uncoiling of said plurality of layers of fiber material during centrifugation, said means for preventing uncoiling including a layer of double-helically wound fiber defining a lane-change layer, a first portion of which is positioned between two layers of wound fiber, said first portion followed by a second portion positioned between one of said two layers of wound fiber and said metal sleeve so as to rest against said metal sleeve without spaces being present therebetween.

5,667,756
STRUCTURE OF OZONIZER

Hsi-Yin Ho, Taipei, Taiwan, assignor to Lin-Chang International Co., Ltd., Taipei Hsien, Taiwan

Filed Dec. 18, 1996, Ser. No. 769,481
Int. Cl.[6] B01J *19/12*
U.S. Cl. 422—186.18 **3 Claims**



1. An ozonizer connected to a high voltage generator and an air supply source, and controlled to discharge a high voltage for converting oxygen into ozone, the ozonizer comprising:
a hollow connecting member, said hollow connecting member comprising two stepped extension tubes longitudinally aligned at two opposite ends, a transverse coupling tube perpendicularly raised from the periphery and equally spaced between said stepped extension tubes, a metal contact pin suspending in said transverse coupling tube and connected to one terminal of said high voltage generator, two annular grooves respectively formed around the periphery of said stopped extension tubes, and two sets of projecting blocks respectively raised around said stepped extension tubes and axially spaced between said annular grooves and said transverse coupling tube;
an insulative glass tube inserted through said hollow connecting member;
an electrically conductive metal rod mounted inside said insulative glass tube;
two insulative stoppers respectively fastened to two opposite ends of said insulative glass tube to stop said electrically conductive metal rod inside said insulative glass tube;
a first metal spring and a second metal spring respectively mounted inside said insulative glass tube, and stopped between said electrically conductive metal rod and said insulative stoppers;
a first metal contact pin fastened to one of said insulative stoppers and having a tip disposed in contact with said first metal spring and a head disposed outside said insulative glass tube;
a first wind guide shell mounted around one stepped extension tube of said connecting member to hold one end of said insulative glass tube, said first wind guide shell comprisng a stepped axial center hole which receives one end of said insulative glass tube and one stepped extension tube of said connecting member, a plurality of locating grooves respectively forced into engagement with the projecting blocks of one stepped extension tube of said connecting member, and an air tube perpendicularly raised from the periphery in the middle and connected to said air supply source;
a second metal contact pin integrally made inside said first wind guide shell and connected on one terminal said high voltage generator and disposed in contact with the head of said first metal contact pin;
a second wind guide shell mounted around one stepped extension tube of said connecting member to hold one end of said insulative glass tube, said first wind guide shell comprising a stepped axial center hole which receives one end of said insulative glass tube and one stepped extension tube of said connecting member, a plurality of locating grooves respectively forced into engagement with the projecting blocks of one stepped extension tube of said connecting member, and an air tube perpendicularly raised from the periphery in the middle and connected to said air supply source;
an annular air tunnel defined within said connecting member around said insulative glass tube and adapted for guiding air from the air tube of said first wind guide shell to the air tube

of said second wind guide shell, permitting oxygen to be converted therein into ozone;

two O-rings respectively mounted around the annular grooves of the stepped extension tubes of said connecting member and sealed inside said first wind guide shell and said second wind guide shell; and

two insulative packing rings respectively mounted around the stepped extension tubes of said connecting member and sealed between said connecting member and the periphery of the stepped axial center holes of said first wind guide shell and said second wind guide shell.

5,667,757

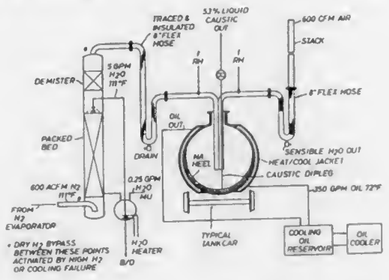
APPARATUS FOR SAFELY REACTING ACTIVE METALS

Frank B. Christiphine, Baton Rouge, La., assignor to Merrick Remediation Company, Inc., Baton Rouge, La.

Division of Ser. No. 179,434, Jan. 10, 1994, Pat. No. 5,505,930, which is a continuation of Ser. No. 749,200, Aug. 23, 1991, abandoned. This application Apr. 8, 1996, Ser. No. 629,264

Int. Cl.[6] F28D *7/00;* **C01D** *1/32*

U.S. Cl. 422—198 **10 Claims**



1. An apparatus for converting a reactive metal material into its respective metal hydroxide, by reacting the reactive metal material with water condensing from a humid carrier gas, the apparatus comprising:

(a) a container for holding a reactive metal material;

(b) a condensing surface inside of the container positioned to contact a circulating humid carrier gas, and condense water from the gas and into reactive contact with the reactive metal material to form a metal hydroxide, which metal hydroxide if allowed to accumulate will cover the surface of the reactive metal;

(c) a humid gas circulation system adapted to circulate the humid carrier gas into the container and into contact with the condensing surfaces to condense water from the humid carrier gas;

(d) a cooling system adapted to cool the condensing surface sufficiently to condense water from the humid carrier gas; and

(e) metal hydroxide recovery system suitable to remove the reactive metal hydroxide formed step (b) to allow for direct reaction of the reactive metal material with the condensed water.

5,667,758

PROCESSING VESSEL

Nobuo Matsugi, Toyo, and Haruyuki Nishimi, Niihama, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

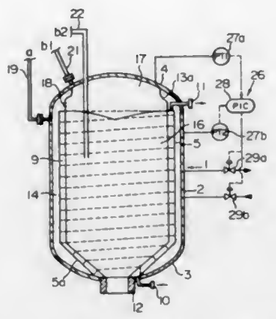
Continuation of Ser. No. 356,536, Dec. 15, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 720,072

Claims priority, application Japan, Dec. 27, 1993, 5-353856

Int. Cl.[6] F28D *7/00;* **B01J** *3/00*

U.S. Cl. 422—198 **9 Claims**

1. A processing vessel comprising:



a vessel body having an inner wall and a discharge orifice at its lower end;

a temperature control element disposed inside said vessel body comprising at least one flow passage through which a temperature control medium, for at least one of heating or cooling, is caused to flow, wherein said temperature control element defines an inner barrel in which a processing material is accommodated in heat exchange relation with said temperature control element;

means for spatially fixing said temperature control element in said vessel body proximate to and spaced from said inner wall thereby defining an unfilled chamber between the temperature control element and the inner wall of said vessel body;

closure means for enclosing said chamber between said vessel body and said temperature control element thereby creating a closed chamber;

means for substantially preventing said processing material from entering said closed chamber; and

means for openly communicating the interior of said inner barrel with said closed chamber, without communication with space exterior to said vessel, whereby the pressure in said inner barrel is substantially the same as the pressure in said closed chamber.

5,667,759

METHOD FOR MANUFACTURING ALKALI CHROMATES FROM CHROMIUM ORE

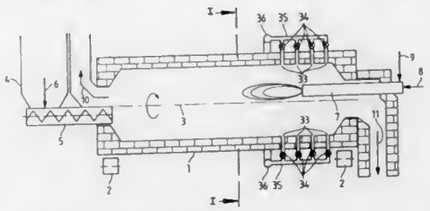
Rainer Bellinghausen, Köln; Heinrich Helker, Krefeld; Paul Strehlow, Leverkusen; Hans-Heinrich Moretto, Leverkusen; Bernhard Spreckelmeyer, Leverkusen; Norbert Lönhoff, Leverkusen; Michael Batz, Leichlingen; Rainer Weber, Odenthal; Hans Rinkes, Köln; Hans-Dieter Block, Leverkusen, all of Germany, and Uwe Arndt, Zarate/Buenos Aires, Argentina, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 310,467, Mar. 22, 1994, abandoned. This application Jul. 26, 1996, Ser. No. 690,420

Claims priority, application Germany, Sep. 30, 1993, 43 33 349.4

Int. Cl.[6] C01G *37/00*

U.S. Cl. 423—61 **1 Claim**



1. A method for manufacturing alkali chromates by the oxidative roasting of a mixture of chromium ore with alkali compounds,

optionally in the presence of leaning materials, in a directly heated revolving tube at temperatures of 850° to 1,150° C., wherein oxygen-containing gases are injected through the wall of the revolving tube and into said mixture.

5,667,760

METHODS FOR SWEETENING HYDROCARBONS

Charles T. Sweeney, 708 Mockingbird La., Kerrville, Tex. 78028

Filed Aug. 15, 1995, Ser. No. 515,391

Int. Cl.[6] B01D *53/52*

U.S. Cl. 423—224 **27 Claims**

1. A method for reducing the levels of H_2S and organic sulfide contaminants present in sour natural gas comprising:

contacting said sour natural gas with a sweetening composition comprising an aqueous solution of an approximately equimolar mixture of OCl^- and HO_2^-, at a pH where OCl^- and HO_2^- are both stable, for a time sufficient to oxidize said sulfides to an odorless form.

8. A method according to claim 1 in which:

said aqueous solution is produced electrochemically in a diaphragm cell having a bipolar electrode in the same compartment as the anode, collecting the effluent gas from the cell and absorbing said effluent gas into a dilute aqueous solution of NaOH at about pH 9.5–10.5.

5,667,761

SYNTHESIS OF GAMMA CALCIUM PYROPHOSPHATE

Cheryl M. Forster, Granville, Ohio, and Scott A. Meilicke, Seattle, Wash., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Sep. 20, 1996, Ser. No. 717,038

Int. Cl.[6] C01B *25/42*

U.S. Cl. 423—305 **14 Claims**



1. A process for the synthesis of gamma calcium pyrophosphate comprising:

dissolving dicalcium orthophosphate in a solution of nitric acid in water to form a dicalcium orthophosphate solution;

spray-drying said dicalcium orthophosphate solution to form a prefired calcium phosphate powder;

firing said prefired calcium phosphate powder in an oxidizing atmosphere, at a temperature and for a time sufficient to convert said prefired calcium phosphate powder to pure gamma calcium pyrophosphate.

13. A calcium pyrophosphate powder consisting essentially of gamma calcium pyrophosphate, wherein said powder is in the form of generally spherical particles.

5,667,762

METHOD FOR PREVENTING ADHESION OF THALLIUM 201 TO CONTAINER

Makoto Fukushima; Kazuhiro Kimura, both of Hyogo; Hirohiko Yamauchi; Kenichi Morishita, both of Chiba, and Keietsu Takahashi, Hyogo, all of Japan, assignors to Nibon Medi-Physics Co., Ltd., Hyogo, Japan

Division of Ser. No. 202,214, Feb. 25, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,531

Claims priority, application Japan, Mar. 5, 1993, 5-045104

Int. Cl.[6] A61K *51/12*

U.S. Cl. 424—1.11 **7 Claims**

1. A method of preventing thallium-201 in a composition comprising thallium-201 or salt or complex thereof from adhering to a container therefor comprising including in admixture with the thallium-201, salt or complex in the container a reducing substance in amount effective to decrease the amount of thallium-201 adhering to the container upon dispensing of the contents.

5,667,763

RADIOLABELLED AMINO ACID FORMULATIONS STORED IN AN UNFROZEN STATE

Roger Malcolm Price, Buckinghamshire; Christopher Charles May, Hertfordshire; Elizabeth Margaret Buckley, and Timothy Stone, both of Buckinghamshire, all of Great Britain, assignors to Amersham International plc, Buckinghamshire, United Kingdom

Division of Ser. No. 467,802, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 107,733, Aug. 23, 1993, Pat. No. 5,494,654. This application Jun. 19, 1996, Ser. No. 666,834

Claims priority, application European Pat. Off., Apr. 30, 1992, 92303905 1

Int. Cl.[6] A61K *51/00;* **G01N** *33/566;23/00;* **C09K** *11/04*

U.S. Cl. 424—1.11 **6 Claims**

1. A product consisting of a stabilized solution of an amino acid labelled with a β-emitting nuclide, said solution also containing a dye, and said solution contained in a unfrozen state and stable for at least seven days within a closed vessel which vessel is suitable for storage and shipment of the solution in an unfrozen state.

5,667,764

COMPOUNDS, COMPOSITIONS AND METHODS FOR BINDING BIO-AFFECTING SUBSTANCES TO SURFACE MEMBRANES OF BIO-PARTICLES

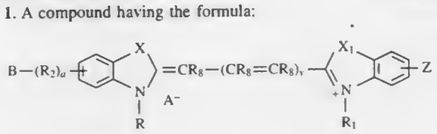
Gregory A. Kopia, Phoenixville; Paul K. Horan, Downingtown; Brian D. Gray, Ardmore; David E. Troutner, Phoenixville; Katharine A. Muirhead, West Chester; Kamleshkumar A. Sheth, Downington; Chia-En Lin, Norristown; Zhizhou Yu, Jeffersonville; Bruce D. Jensen, Collegeville, and Sue Ellen Slezak, Downingtown, all of Pa., assignors to Zynaxis, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 189,192, May 2, 1988, abandoned. This application May 15, 1992, Ser. No. 884,432

Int. Cl.[6] A61K *51/04;* **C07D** *209/02;263/62;513/04*

U.S. Cl. 424—1.45 **12 Claims**

1. A compound having the formula:



wherein B represents a chemotherapeutic substance; R and R_1 are substituents independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkaryl and aralkyl, the hydrocarbon chains of which having from 1 to about 30 carbon atoms, and being linear or branched, said substituents being unsubstituted

or substituted with one or more non-polar functional groups, one of R or R_1 having at least 12 linear carbon atoms, and the sum of the linear carbon atoms in R and R_1 being sufficient to impart a membrane binding stability of at least 30% to said compound;

R_2 represents a spacer moiety of the formula: $—(R_3)_p—Q—(R_4—Q')_q—(R_5—Q'')_r—(R_6—Q'')_s—(R_7Q''')_t—$

wherein R_3 represents an aliphatic hydrocarbon, R_4, R_5, R_6 and R_7 are independently selected from the group consisting of aliphatic, alicyclic or aromatic hydrocarbons, heterocycles, and $CH_2C(CO_2M)=CH$, Q and Q', Q", Q"' and Q"" are independently selected from the group of functional linkages consisting of amide, thiourea, hydrazone, acyl hydrazone, ketal, acetal, orthoester, ester, anhydride, disulfide, urea, carbamate, imine, amine, ether, carbonate, thioether, sulfonamide carbonyl and amidine linkages; Q', Q", Q"', Q"" may additionally independently represent a valence bond; said aliphatic hydrocarbons having from 1 to 12 linear carbon atoms; said aromatic hydrocarbons having from 6 to 12 carbon atoms; n, p, q, r, s, and t each may be either 0 or 1;

X and X_1 may be the same or different and represent O, S, $C(CH_3)_2$ or Se;

R_8 is independently selected from the group consisting of H, CE_3, CH_2CH_3, $CH_2CH_2CH_3$ and $CH(CH_3)_2$;

y may be from 0 to 3;

Z represents a substituent selected from the group consisting of H, alkyl, OH, —O—alkyl, COOH, $CONH_2$, SO_3H, SO_2NH_2, SH, S-alkyl, CONH-alkyl, CON-(alkyl)$_2$, NH-acyl, NH-alkyl, N(alkyl)$_2$, NO_2, halogen, Si(alkyl)$_3$, O-Si(alkyl)$_3$, Sn(alkyl)$_3$ and —Hg—halogen, the alkyl groups comprising said Z substituent having from 1 to 4 carbon and

A represents a pharmaceutically acceptable anion.

5,667,765

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING AT LEAST ONE SOLID ORGANIC SUNSCREEN COMPOUND AND SALICYLATE SOLVENTS THEREFOR

Isabelle Hansenne, and Victoria van Leeuwen, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Jun. 5, 1995, Ser. No. 461,015

Claims priority, application France, Jun. 3, 1994, 94 06830

Int. Cl.[6] A61K *7/42;31/60*

U.S. Cl. 424—59 **24 Claims**

1. A topically applicable sunscreen/cosmetic composition adopted for the photoprotection of human skin and/or hair, comprising (i) a photoprotecting effective amount of at least one of the sunscreen compounds 4-methylbenzylidenecamphor and/or 4-(tert-butyl)-4'-methoxydibenzoylmethane and (ii) at least one homomenthyl and/or octyl salicylate sunscreen solvent, wherein said solvent, by itself, is contained in an amount sufficient to substantially completely dissolve the total amount of said at least one sunscreen compound (i), in a cosmetically acceptable vehicle, diluent or carrier therefor.

5,667,766

NON-HUMAN ANIMAL MODEL OF A HUMAN AIRWAY, METHODS OF USE

James M. Wilson, and John F. Engelhardt, both of Ann Arbor, Mich., assignors to The Regents Of The University Of Michigan, Ann Arbor, Mich.

Division of Ser. No. 445,072, May 19, 1995, which is a continuation of Ser. No. 943,952, Sep. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,920

Int. Cl.[6] A61K *49/00;35/42;* **A01N** *1/02;* **C12N** *5/00*

U.S. Cl. 424—9.2 **8 Claims**

1. A method for assessing the effect of an agent or therapy on a human airway, the method comprising:

a) introducing the agent or the therapy into a non-human animal model of a human airway, wherein the non-human animal is an immunocompromised rodent and the airway has continuously open ends and supports a fully differentiated epithelium around its lumen; and

b) determining the effect of the agent or therapy on the human airway or the cells comprising the airway.

5,667,767

COMPOSITIONS FOR USE IN EMBOLIZING BLOOD VESSELS

Richard J. Greff, Yorba Linda; Michael L. Jones, Capistrano Beach, and Scott Evans, Santa Ana, all of Calif., assignors to Micro Therapeutics, Inc., San Clemente, Calif.

Filed Jul. 27, 1995, Ser. No. 507,863

Int. Cl.[6] C08J *3/00;* **C08K** *5/41;* **C08L** *29/04;* **A61K** *31/765*

U.S. Cl. 424—9.411 **15 Claims**

1. A composition comprising:

(a) from about 2.5 to about 8.0 weight percent of an ethylene vinyl alcohol copolymer;

(b) from about 10 to about 40 weight percent of a water insoluble contrast agent selected from the group consisting of tantalum, tantalum oxide and barium sulfate;

(c) from about 52 to about 87.5 weight percent of a biocompatible solvent

wherein the weight percent of each of the components is based on the total weight of the complete composition.

5,667,768

CARE COMPOSITION TO BE APPLIED TO THE NAILS

Roland Ramin, Itteville, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 421,742, Apr. 13, 1995, abandoned. This application Sep. 27, 1996, Ser. No. 718,693

Claims priority, application France, Apr. 15, 1994, 94-04543

Int. Cl.[6] A61K *7/04;7/043*

U.S. Cl. 424—61 **21 Claims**

1. A care composition for application to the nails, which comprises:

an organic solution or a dispersion in an organic medium,

said care composition containing a cosmetically effective amount of phytanetriol, wherein said care composition is substantially free of water, and further wherein said care composition is not an emulsion.

5,667,769

PROCESS AND ARRANGEMENT FOR TREATING HAIR AND THE SKINS OF THE HEAD AND/OR BODY WITH CO_2

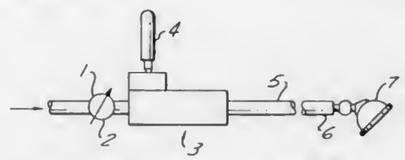
Alexander Kückens, Gross Sarau, and Horst Köhl, Bad Oldesloe, both of Germany, assignors to Technica Entwicklungsgesellschaft mbH & Co. KG, Ratzeburg, Germany

Continuation of Ser. No. 886,056, May 18, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 185,317

Claims priority, application Germany, May 24, 1991, 41 17 023.7; Jul. 25, 1991, 41 24 728.0; Jan. 10, 1992, 42 00 467.5

Int. Cl.[6] A61K *7/08*

U.S. Cl. 424—70.1 **13 Claims**



1. A method for hair care comprising the steps of:

performing a first hair care step such as washing, showering, dying, perming or conditioning, and

then performing a second hair care step by showering said hair with weakly acidified water prepared by:

providing a source of running water at a first water pressure and at a pH in the alkaline range,

providing pure CO_2 gas at a first gas pressure,

reducing said first water pressure to a second water pressure below said gas pressure while confining said water to flow in a confined stream,

finely impregnating said water in said confined stream at said reduced water pressure with CO_2 gas at said first gas pressure for direct free exchange with said water so that said CO_2 gas is bound over in said water in a stable manner as H_2CO_3 to weakly acidify said water at a predetermined pH value, and

maintaining said predetermined pH value of said weakly acidified water by varying the mount of CO_2 gas introduced into said confined stream as a function of said first water pressure to provide said weakly acidified water for showering in said second hair care step.

5,667,770

LONG WEARING LIPSTICK

John Anthony Szweda, River Vale, N.J., and Celeste Anne Lutrario, Hamden, Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 25, 1996, Ser. No. 622,503

Int. Cl.[6] A61K *7/04;7/025*

U.S. Cl. 424—64 **8 Claims**

1. A lipstick comprising:

(i) from 1 to 99% by weight of a wax; and

(ii) from 0.00001 to 1% by weight of N-oleoyl-phytosphingosine.

5,667,771

RINSE-OFF HAIR CARE COMPOSITIONS USING GRAFTED COPOLYMERS

Jose Antonio Carballada; Lauren Ann Thaman, and Mario Paul Clarizia, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 21, 1996, Ser. No. 621,740

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—70.12 **34 Claims**

1. A rinse-off hair care composition comprising:

A. from about 0.25% to about 70%, by weight of the rinse-off hair care composition, of a copolymer component comprising:

i. from about 1.5% to about 70%, by weight of said copolymer component, of a silicone-grafted adhesive hair styling copolymer having a weight average molecular weight from about 300,000 to about 5,000,000, which has a vinyl polymeric backbone having grafted to it monovalent siloxane polymeric moieties, said copolymer comprising monomers selected from the group consisting of A monomers, B monomers, C monomers and mixtures thereof,

wherein the weight percent of said copolymer in said rinse-off hair care composition is from about 0.1 to about 7%; and wherein said copolymer is prepared by the polymerization combination of the following relative weight percentages of said A monomers, said B monomers, and said C monomers:

a. from about 45% to about 85%, by weight of said copolymer, of a hydrophobic, vinyl A monomer, free radically copolymerizable with said B monomers and said C monomers;

b. from 0% to about 5%, by weight of said copolymer, of a hydrophilic, reinforcing B monomer, copolymerizable with said A monomer and said C monomer, said B monomer being selected from the group consisting of polar monomers and macromers and mixtures thereof; and

c. from about 25% to about 50%, by weight of said copolymer, of a polysiloxane-containing C monomer, copolymerizable with said A monomer and said B monomer, said C monomer having a weight average molecular weight of from about 5,000 to about 13,000; and having the general formula:

$$X(Y)_nSi(R)_{3-m}(Z)_m$$

wherein:

X is a vinyl group copolymerizable with said A monomers and said B monomers;

Y is a divalent linking group;

R is a hydrogen, lower alkyl, aryl or alkoxy;

Z is a monovalent siloxane polymeric moiety having a number average molecular weight of at least about 1500, is essentially unreactive under copolymerization conditions, and is pendant from said vinyl polymeric backbone after polymerization;

n is 0 or 1; and

m is an integer from 1 to 3; and

wherein said copolymer has an adhesive strength of less than about 30 kg/cm^2; a cohesive breaking stress of greater than about 20 kg/cm^2, a cohesive breaking strain of less than about 100%; and

wherein the ratio of the cohesive breaking stress to the adhesive strength of said copolymer is greater than or equal to about 1.0; and

ii. from about 30% to about 98.5%, by weight of said copolymer component, of a hydrophobic volatile solvent; and

B. from about 30% to about 99.75%, by weight of the rinse-off hair care composition, of a carrier suitable for application to hair.

5,667,772

PREPARATION CONTAINING A FLUOROCARBON EMULSION AND USABLE AS COSMETICS OR DERMATICS

Leonhard Zastrow, Wiesbaden; Klaus Stanzl, Waldesch, and Joachim Röding, Wiesbaden, all of Germany, assignors to Lancaster Group AG, Ludwigshafen, Germany

Continuation of Ser. No. 256,180, Jun. 28, 1994, abandoned. This application May 28, 1996, Ser. No. 654,026

Claims priority, application Germany, Oct. 29, 1992, 42 366 070

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—18.02 **3 Claims**

1. Carrier-based cosmetic preparation containing a fluorocarbon emulsion consisting of

a preparation selected from the group consisting of a powder, a lotion, a shampoo, a cream and a gel paste, containing an aqueous emulsion consisting of

(i) 1–8% by weight of an nonionic surfactant as the emulsifier, said nonionic surfactant selected from the group consisting of fluorinated iminobis (polyoxyalkylenes), polyoxyethylene/polyoxypropylene copolymers, ethoxylated fluorine surfactants and ethoxylated polypropylene glycols, and

(ii) an oxygen-loaded fluorocarbon or fluorocarbon mixture, having at least one fluorocarbon selected from the group consisting of perfluorodecaline, C_6–C_9-perfluoroalkanes, F-butyltetrahydrofuran, perfluorotributylamine, bis(fluorobutyl)ethene, perfluorooctyl bromide, tetrafluoroethylene, and mixtures thereof, and being capable of dissolving and transporting oxygen to epidermal regions with a topical application thereof;

the fluorocarbon content being in the range from 40% to 100% w/v (weight/volume); and

the content of the emulsion in the preparation is in the range of 1% to 50% by weight.

2. A carrier-based cosmetic preparation containing a fluorocarbon emulsion, being a cleansing milk consisting of

7.5% by weight of phosphoric ester/isopropyl palmitate (ratio 1:1);

8.5% by weight of polyglycerol ester/isopropyl palmitate (ratio 1:1);

5.0% by weight of glycerol;
2.0% by weight of panthenol;
0.5% by weight of benzoic acid;
0.5% by weight of perfume;
50% by weight of fluorocarbon emulsion; and
qs deionized water; and

wherein said fluorocarbon emulsion consists of 40% of a mixture, ⅔ of which is a mixture of 20% of tetrafluoroethylene and 80% of perfluorotripropylamine, whose boiling range is between 140° C. and 180° C., and ⅓ of which is the emulsifier polyoxyethylene/propylene copolymer of molecular weight 8000 to 9000, added to 60% of distilled water with flushing of pure oxygen (0.2 to 0.5 bar).

3. A carrier-based cosmetic preparation containing a fluorocarbon emulsion, being a face mask, consisting of

5.0% by weight of phosphoric ester/isopropyl palmitate (ratio 1:1);
8.5% by weight of polyoxyethylene sorbitan monolaurate;
0.5% by weight of vitamin E;
3.5% by weight of glycerol;
0.5% by weight of magnesium sulphate;
5.0% by weight of marigold extract;
0.5% by weight of perfume;
60.0% by weight of fluorocarbon emulsion; and qs water; and

wherein said fluorocarbon emulsion consists of 40% of a mixture, ⅔ of which is a mixture of 20% of tetrafluoroethylene and 80% of perfluorotripropylamine, whose boiling range is between 140° C. and 180° C., and ⅓ of which is the emulsifier polyoxyethylene/propylene copolymer of molecular weight 8000 to 9000, added to 60% of distilled water with flushing of pure oxygen (0.2 to 0.5 bar).

5,667,773

FILM-FORMING COMPOSITIONS OF ANTIHYPERALGESIC OPIATES AND METHOD OF TREATING HYPERALGESIC CONDITIONS THEREWITH

John J. Farrar, Chester Springs; Alan L. Maycock, Malvern; Virendra Kumar, Paoli, and Imre (Jim) Balogh, Perkasie, all of Pa., assignors to Adolor Corporation, Malvern, Pa.

Filed Mar. 12, 1996, Ser. No. 614,027
Int. Cl.[6] A61K *31/00;9/08;7/40*
U.S. Cl. 424—78.05 **5 Claims**

1. A topical anti-hyperalgesic film-forming composition for coating an injured/inflamed site on the mammalian patient to reduce hyperalgesia of said injured/inflamed site comprising:

a) of from about 1 to about 65% w/w of an anti-hyperalgesic compound selected from the group consisting of
2-[4-(4-hydroxy-4-phenylpiperidino)-2,2-diphenylbutyryl]-piperidine;
4-{4-[4-hydroxy-4-(3-trifluoromethylphenyl)piperidinol]-2,2-diphenylbutyryl}morpholine;
1-{4-[4-hydroxy-4-(3-trifluoromethylphenyl)-piperidino]-2,2-diphenylbutyl}piperidine;
4-(p-chlorophenyl)-4-hydroxy-N-N-,y-trimethyl-α,α-diphenylpiperidine-1-butyramide;
4-(p-chlorophenyl)-4-hydroxy-N-N-dimethyl-α,α-diphenylpiperidine-1-butyramide[loperamide];
4-(3,4-dichlorophenyl)-N-N-diethyl-4-hydroxy-α,α-diphenylpiperidine-1-butyramide;
4-(3,4-dichlorophenyl)-4-hydroxy-N-N-dimethyl-α,α-diphenylpiperidine-1-butyramide
4-(chloro-3-trifluoromethylphenyl)-4-hydroxy-N-N-dimethyl-α,α-diphenylpiperidine-1-butyramide;
4-(p-fluorophenyl)-4-hydroxy-N-N-,y-trimethyl-α,α-diphenylpiperidine-1-butyramide;
4-(p-bromophenyl)-4-hydroxy-N-N-dimethyl-α,α-diphenylpiperidine-1-butyramide;
1-{4-[4-(3,4-dichlorophenyl)-4-hydroxypiperidine]-2,2-diphenylbutyl}pyrrolidine;
4-(p-chlorophenyl)-N-ethyl-4-hydroxy-N-methyl-α,α-diphenylpiperidine-1-butyramide;
5-[1,1-diphenyl-3-(exo-5-hydroxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(exo-5-acetoxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(endo-5-acetoxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(endo-5-hydroxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(endo-6-acetoxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(endo-6-hydroxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(exo-6-acetoxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
5-[1,1-diphenyl-3-(exo-6-hydroxy-2-azabicyclo[2,2-2]oct-2-yl)-propyl]-2-methyl-1,3,4-oxadiazole;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinecarboxylic acid hydrochloride;
ethyl 1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinecarboxylate;
potassium 1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinecarboxylate;
sodium 1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinecarboxylate;
1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidinecarboxylic acid hydrochloride;
sodium 1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidinecarboxylate;
ethyl 1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidinecarboxylate;
potassium 1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidinecarboxylate;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinemethanol;
1-[3,3-diphenyl-3-(2-pyridyl)propyl-4-phenyl-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-acetoxymethyl-piperidine;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-methoxymethyl-piperidine;
1-(3,3,3-triphenylpropyl)-4-(4-chlorophenyl)-4-piperidinemethanol;
1-[3-(p-chlorophenyl)-3,3-diphenylpropyl]-4-(phenyl)-4-piperidinemethanol;
1-[3-(p-tolyl)-3,3-diphenylpropyl]-4-(phenyl)-4-piperidinemethanol;
1-[3-(p-bromophenyl)-3,3-diphenylpropyl]-4-(phenyl)-4-piperidinemethanol;
1-[3,3-diphenyl-3-(4-pyridyl)-propyl]-4-phenyl-4-piperidinemethanol;
1-[3,3-diphenyl-3-(3-pyridyl)propyl]-4-phenyl-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-hexoxymethyl-piperidine;
1-(3,3,3-triphenylpropyl)-4-(p-tolyl)-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-(p-trifluoromethyl)-4-piperidinemethanol;
1-(3,3,3-triphenylbutyl)-4-(phenyl)-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-(phenyl)-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-(phenyl)-4-methoxyethylpiperidine;
1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-methoxyethylpiperidine;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-piperidinemethanol;
1-[3,3-diphenyl-3-(2-pyridyl)propyl]-4-phenyl-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-acetoxymethylpiperidine;
1-(3,3,3-triphenylpropyl)-4-phenyl-4-methoxymethylpiperidine;
1-(3,3,3-triphenylpropyl)-4-(chlorophenyl)-4-piperidinemethanol;
1-(3,3,3-triphenylpropyl)-4-hydroxy-4-benzylpiperidine and 1-(3,3,3-triphenylpropyl)-4-hydroxy-4-benzylpiperidine; hydrochloride;

1-(3,3,3-triphenylpropyl)-4-hydroxy-4-p-chlorobenzylpiperidine;
1-(3,3,3-triphenylpropyl)-4-hydroxy-4-p-methylbenzylpiperidine;
1-[3,3,3-(2-pyridyl)propyl]-4-benzyl-4-hydroxypiperidine;
m-chlorophenylamidinourea;
p-chlorophenylamidinourea;
3,4-dichlorophenylamidinourea;
m-bromophenylamidinourea;
p-bromophenylamidinourea;
3,4-dibromo-phenylamidinourea;
3-chloro-4-bromophenylamidinourea;
3-bromo-4-chlorophenylamidinourea;
3-chloro-4-fluorophenylamidinourea;
3-bromo-4-fluorophenylamidinourea;
3-fluoro-4-chlorophenylamidinourea;
2,6-dimethylphenylamidinourea;
2,6-diethylphenylamidinourea;
2-methyl-6-ethylphenylamidinourea;
2-methyl-6-methoxyphenylamidinourea;
2-methyl-6-ethoxyphenylamidinourea;
2-ethyl-6-methoxyphenylamidinourea;
2-ethyl-6-ethoxyphenylamidinourea;
3,4-dimethoxyphenylamidinourea;
3,4-dihydroxyphenylamidinourea;
3,4,5-trimethoxyphenylamidinourea;
3,4,5-trihydroxyphenylamidinourea;
2-[(2-methyl-3-aminophenyl)amino]-1-pyrroline, dihydrochloride;
2-[(2-methyl-3-acetamidophenyl)amino]-1-pyrroline, hydrochloride;
2-[(2-methyl-3-(ethoxycarbonylamino)phenyl-)amino]-1-pyrroline, hydrochloride;
2-(2,2-diphenylpentyl)-1-azabicylo[2,2,2]octane;
2-(2,2-diphenylhexyl)-1-azabicylo[2,2,2]octane;
2-(2,2-diphenylpropyl)-1-azabicylo[2,2,2]octane;
2-(2,2-diphenyloctyl)-1-azabicylo[2,2,2]octane; and
2-(2,2-diphenylheptyl)-1-azabicylo[2,2,2]octane,

said anti-hyperalgesic compound incorporated in a film-forming material, said anti-hyperalgesic compound being devoid of central nervous system side effects when topically delivered to the mammalian patient;

b) said film-forming polymeric material being present in said composition of from about 1 to about 76% w/w and is capable of forming an essentially continuous film in the pH environment of about 5.5 to 8.5, said polymeric material having atoms contain polarizable electrons thereon, said atoms being selected from the group consisting of oxygen, nitrogen, sulfur, in combination with a divalent cation, said divalent cation selected from the group consisting of CA^{++}, MG^{++}, Zn^{++} and Ba^{++}, wherein the ratio of said atoms containing the polarizable electrons to said divalent catons is in the range of from about 7.7 to about 1, said film-forming material selected from the group consisting of
sodium ethylcellulose sulfate,
sodium cellulose acetate sulfate,
sodium carboxyethyl cellulose,
chondroitin sulfate,
dermatan sulfate,
keratosulfate,
lyaluronic acid,
heparin,
chitin,
polyinyl pyrrolidone,
polyvinyl alcohol,
polyethylene oxide; and

c) of from about 23 to about 34% w/w of an aqueous pharmaceutically acceptable carrier.

5,667,774

CROSSLINKED POLYMERIC AMMONIUM SALTS

Garret Daniel Figuly, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 381,876, Feb. 17, 1995, which is a continuation-in-part of Ser. No. 932,449, Aug. 20, 1992, abandoned. This application Nov. 7, 1996, Ser. No. 746,259
Int. Cl.[6] A61K *31/74*
U.S. Cl. 424—78.08 **16 Claims**

1. A method for lowering blood plasma cholesterol levels of mammals, comprising, orally administering a therapeutically effective amount of a crosslinked polymeric ammonium salt, wherein in said salt:

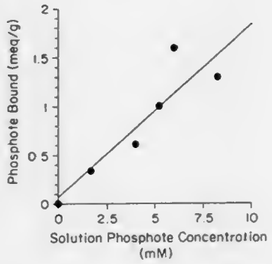
about 25% or more of the groups which link ammonium nitrogen atoms are group Y wherein Y is an n-alkylene group or alkyl substituted n-alkylene group, wherein said n-alkylene group has 7 to about 15 carbon atoms;
zero to about 75% of the groups which link ammonium nitrogen atoms are group Z, wherein Z is a hydrocarbylene radical containing 2 or more carbon atoms, said hydrocarbylene radical optionally containing one or more hydroxyl, ether, amino, thioether, keto, or silyl groups or heterocyclic rings; and
about 25% or more of the ammonium nitrogen atoms are secondary ammonium nitrogen atoms.

5,667,775

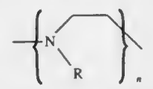
PHOSPHATE-BINDING POLYMERS FOR ORAL ADMINISTRATION

Stephen Randall Holmes-Farley, Arlington; W. Harry Mandeville, III, Lynnfield, and George M. Whitesides, Newton, all of Mass., assignors to GelTex Pharmaceuticals, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 238,458, May 5, 1994, Pat. No. 5,496,545, which is a continuation-in-part of Ser. No. 105,591, Aug. 11, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,747
Int. Cl.[6] A61K *31/785*
U.S. Cl. 424—78.11 **22 Claims**



1. A method for removing phosphate from a patient by ion exchange comprising orally administering to said patient a therapeutically effective amount of a composition comprising at least one polymer characterized by a repeat unit having the formula



(4)

or a copolymer thereof, wherein n is an integer, and each R, independently, is H, an unsubstituted alkyl, alkylamino, or aryl group, or a substituted alkyl, alkylamino or aryl group, wherein the substituents are selected from the group consisting of quaternary ammonium, amino, hydroxy, alkoxy, carboxamide, sulfonamide, halogen, alkyl, aryl, hydrazine, guanidine, urea and carboxylic acid ester.

5,667,776

TREATMENT FOR BIOLOGICAL DAMAGE USING TUMOR NECROSIS FACTOR AND A FREE-RADICAL SCAVENGER

Robert Zimmerman, Lafayette, and Benedict J. Marafino, Jr., San Francisco, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 289,844, Aug. 12, 1994, Pat. No. 5,508,031, which is a continuation of Ser. No. 49,070, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 626,975, Dec. 12, 1990, abandoned, which is a division of Ser. No. 399,386, Aug. 25, 1989, Pat. No. 4,985,241, which is a continuation of Ser. No. 113,643, Oct. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,475, Nov. 21, 1986, abandoned. This application Jun. 1, 1995, Ser. No. 456,947

Int. Cl.[6] C07K *14/525;* **A61K** *38/19*

U.S. Cl. 424—85.1 **30 Claims**

1. A method for the therapeutic or prophylactic treatment of biological damage to a mammalian host, said damage caused by free radical generation, which method comprises administering to the host in need of such treatment a therapeutically effective amount of a tumor necrosis factor from a mammalian species and a therapeutically effective amount of at least one free radical scavenger.

5,667,777

DELIVERY OF GENE PRODUCTS VIA MESANGIAL CELLS

Masanori Kitamura, London, United Kingdom, assignor to The Jikei University School of Medicine, Tokyo, Japan

Division of Ser. No. 153,769, Nov. 17, 1993, Pat. No. 5,580,558. This application Jun. 7, 1995, Ser. No. 480,301

Int. Cl.[6] A61K *48/00;31/12;* **C12N** *5/06;15/63*

U.S. Cl. 424—93.1 **6 Claims**

1. A method of introducing cultured mesangial cells into at least one of the two kidneys of a mammal, each said kidney having in situ mesangial cells in glomeruli and supplied by a renal artery, comprising the steps of:

(a) providing a plurality of cultured mesangial cells, said cells immunologically compatible with said mammal; and

(b) administering said cultured mesangial cells to at least one of said renal arteries under conditions wherein said cultured mesangial cells become entrapped in said glomeruli of said kidney supplied by said at least one renal artery.

5,667,778

INJECTABLE BLADDER MUSCLE CELLS-POLYMER SUSPENSION FOR TREATMENT OF VESICOURETERAL REFLUX AND INCONTINENCE

Anthony Atala, Newton, Mass., assignor to Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 56,140, Apr. 30, 1993. This application Apr. 18, 1994, Ser. No. 228,678

Int. Cl.[6] A61K *35/34*

U.S. Cl. 424—93.7 **19 Claims**

1. A method for treating conditions which require the reconstruction of an anatomical area selected from the group consisting of the thoracic region, gastrointestinal tract, urinary tract, and reproductive tract comprising injecting into a patient in need of treatment thereof at a site in the anatomical area a suspension of smooth muscle cells in a biodegradable non-proteinaceous polymer solution that forms an ionically crosslinked hydrogel having the cells dispersed therein when injected in vivo, which becomes a non-migratory, volume stable tissue mass.

5,667,779

FUNGAL INHIBITING COMPOSITION COMPRISING *BACILLUS SUBTILIS* FERM BP-3418

Kazuhiro Kubo, Maebashi, Japan, assignor to AHC Inc., Maebashi, Japan

Division of Ser. No. 299,649, Sep. 2, 1994, Pat. No. 5,549,890, which is a division of Ser. No. 906,460, Jun. 30, 1992, Pat. No. 5,364,788. This application Jun. 7, 1996, Ser. No. 660,235

Claims priority, application Japan, Jul. 1, 1991, 3-185880; Jan. 8, 1992, 4-018434

Int. Cl.[6] A01N *63/00;* **C12N** *1/20*

U.S. Cl. 424—93.462 **8 Claims**

1. A composition for inhibiting the growth of a fungus comprising, as an active ingredient, an effective amount of a biologically pure culture of *Bacillus subtilis* FERM BP-3418.

5,667,780

ANTIBODIES TO SMDF

Wei-Hsien Ho, Palo Alto, and Phyllis L. Osheroff, Woodside, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 339,517, Nov. 14, 1994. This application Apr. 25, 1995, Ser. No. 428,926

Int. Cl.[6] C07K *16/18;* **A61K** *39/395;* **C12N** *5/12*

U.S. Cl. 424—139.1 **12 Claims**

1. An isolated antibody that binds to the N-terminal domain of sensory and motor neuron derived factor (SMDF), wherein the SMDF is human SMDF as in SEQ ID NO: 2 or SMDF having the amino acid sequence of a native SMDF from a nonhuman mammal.

5,667,781

ENHANCED INHIBITION OF TUMOR CELL PROLIFERATION USING A COMBINATION OF TWO MONOCLONAL ANTIBODIES TO THE HUMAN TRANSFERRIN RECEPTOR

Ian S. Trowbridge, San Diego, Calif.; Raymond Taetle, Tucson, Ariz., and Suhaila N. White, Poway, Calif., assignors to The Salk Institute for Biological Studies, San Diego, and The Regents of the University of California, Oakland, both of Calif.

Continuation-in-part of Ser. No. 500,035, Mar. 27, 1990, abandoned. This application Sep. 30, 1991, Ser. No. 767,786

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—143.1 **24 Claims**

1. A therapeutic composition for inhibiting proliferation of transferrin-receptor-positive tumor cells expressing the transferrin receptor on their surfaces, said composition comprising a combination of a first and a second monoclonal antibody and a pharmaceutically acceptable carrier, wherein each of said antibodies is an anti-human-transferrin-receptor monoclonal antibody which binds to an epitope of the external domain of the human transferrin receptor glycoprotein and which first and second monoclonal antibodies simultaneously bind the transferrin receptor, wherein in vitro screening of the CCRF-CEM leukemic cell line with said first and second monoclonal antibodies individually and with said combination of said first and second monoclonal antibodies shows that said combination inhibits cell proliferation to a greater extent than either of said antibodies individually and also inhibits cell proliferation by at least about 80%, and wherein said combination of antibodies inhibits in vivo proliferation of cells expressing the transferrin receptor on their surfaces selected from the group consisting of human hematopoietic tumor cells and human melanoma cells by binding the transferrin receptor and thereby blocking transferrin receptor function.

5,667,782

MULTIPLE PARTICULATE ANTIGEN DELIVERY SYSTEM

Polly Roy, Oxford, England, assignor to Oxford University, Oxford, England

Continuation of Ser. No. 92,416, Jul. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 971,158, Nov. 4, 1992, abandoned. This application Jun. 30, 1995, Ser. No. 497,134

Claims priority, application United Kingdom, Jul. 16, 1992, 9215101

Int. Cl.[6] A61K *39/15;39/295;* **C12P** *21/02;15/62*

U.S. Cl. 424—192.1 **18 Claims**

1. A particulate antigen in the form of a virus-like particle (VLP) or core-like particle (CLP) comprising bluetongue virus VP3 protein and a chimeric VP7 protein, wherein the chimeric VP7 protein comprises a foreign epitope fused to the N-terminus of bluetongue virus VP7.

5. A particulate antigen in the form of a virus-like particle (VLP) or core-like particle (CLP) comprising bluetongue virus VP3 and VP7 proteins and a chimeric VP6 protein, wherein the chimeric VP6 protein comprises a foreign epitope fused to the C-terminus of bluetongue virus VP6.

5,667,783

METHOD OF TREATING HIV POSITIVE SUBJECTS

Stavros Papadakis, Chicago, Ill., assignor to Constantine Alen, and Polexene Alen, both of Chicago, Ill.

Filed Dec. 13, 1993, Ser. No. 165,270

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **14 Claims**

3. A method of treating an HIV positive subject having a P24 (HIV) antigen of more than 40 picograms/ml to lower the P24 (HIV) antigen to not more than 40 picograms/ml which comprises administering to said HIV positive subject, a composition comprising an aqueous extract of at least one plant of *Asphodelus tenuifolius* and a pharmaceutically acceptable carrier.

5,667,784

TOCOLS AS ADJUVANT IN VACCINE

Lammert Cornelius, and Eric Onno Rijke, both of Boxmeer, Netherlands, assignors to Akzo Nobel, N.V., Arnhem, Netherlands

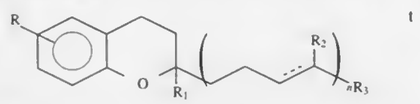
Division of Ser. No. 320,202, Oct. 7, 1994, which is a continuation of Ser. No. 7,400, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 474,434, Feb. 2, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 463,331

Claims priority, application Netherlands, Feb. 4, 1989, 89.00277

Int. Cl.[6] A61K *39/12;45/00*

U.S. Cl. 424—204.1 **9 Claims**

1. A method for immunizing an animal against a particular pathogen, comprising administering to said animal a vaccine comprising an immunogenic amount of antigen of said particular pathogen in an essentially mineral oil-free, stable oil-in-water emulsion comprising tocols, wherein the vaccine contains from 0.1 to 40% by weight tocols and the tocols have the formula:



wherein:

R may be H or one or more of identical or different substituents chosen from the group consisting of alkyl, alkoxy, acyloxy, hydroxy, a sulphate and a phosphate group;

R_1 and R_3 independently of one another are H or alkyl;

R_2 is H or alkyl and may be different in each unit;

the broken line indicates the presence or absence of an additional carbon-carbon bond in a unit; and

n has the value 1 to 10.

5,667,785

VACCINE FOR PROTECTION OF CATS AGAINST FELINE INFECTIOUS PERITONITIS

Jay Dean Gerber, and Jerald Dee Ingersoll, both of Lincoln, Nebr., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 84,778, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 852,880, Mar. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 428,796, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 758,540, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 103,144, Oct. 1, 1987, abandoned. This application Jul. 26, 1994, Ser. No. 280,405

Int. Cl.[6] A61K *39/215;39/38;* **C12N** *7/00;7/08*

U.S. Cl. 424—221.1 **22 Claims**

1. A method for protecting cats against infection by feline infectious peritonitis virus (FIP), which comprises intranasally administering an effective amount of an FIP Virus vaccine, said virus vaccine comprising a temperature-sensitive, attenuated FIP virus having a titer following propagation at 31° C. which is at least about 1×10^2 to about 1×10^5 $TCID_{50}$ greater than at 39° C.

5,667,786

METHOD FOR TREATING TUMORS WITH A TOXIN

Paul V. Lemley, Jr., Gettysburg, Pa., and Arthur E. Frankel, Charleston, S.C., assignors to Novavax, Inc., Columbia, Md.

Filed Jun. 7, 1995, Ser. No. 486,200

Int. Cl.[6] A61K *39/02;38/00*

U.S. Cl. 424—236.1 **6 Claims**

1. A method for treating a solid tumor, which comprises the steps of preliminarily immunizing a patient in need of antitumor treatment with a vaccine consisting essentially of a cytotoxic toxin, or a sub-unit, portion or toxoid of the toxin, in an amount which is effective to generate an immune response to the toxin in the patient, thereby providing systemic protection from the toxin to the patient, and after development of systemic protection, directly administering the toxin into the solid tumor of the patient in an amount which is effective to kill solid tumor cells.

5,667,787

PURIFICATION OF A PERTUSSIS OUTER MEMBRANE PROTEIN

Gail Jackson, Richmond Hill; Raafat Fahim; Larry Tan, both of Mississauga; Pele Chong, Thornhill; John Vose, Aurora, and Michel Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, North York, Canada

Continuation of Ser. No. 930,595, Nov. 6, 1992, Pat. No. 5,444,159. This application May 4, 1995, Ser. No. 433,644

Claims priority, application United Kingdom, Apr. 4, 1990, 9007657

Int. Cl.[6] A61K *39/10;* **A23J** *1/00;* **C08H** *1/00;* **C07K** *1/00*

U.S. Cl. 424—253.1 **11 Claims**

1. A component vaccine against disease caused by infection by Bordetella pertussis, which comprises immunoprotective, purified pertactin having no detectable adenylate cyclase activity, as an active component thereof, and a physiologically-acceptable carrier therefor.

5,667,788

Patent Not Issued For This Number

5,667,789

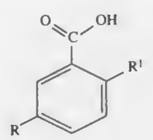
SALICYLIC ACID DERIVATIVE AS A STABILIZER FOR AN OIL-IN-WATER EMULSION

Nathalie Collin, Sceaux; Eric Quemin, Villepinte, and Didier Candau, Bievres, all of France, assignors to L'Oreal, Paris, France

Filed Nov. 3, 1995, Ser. No. 552,934
Claims priority, application France, Nov. 3, 1994, 94 13127
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **23 Claims**

1. A method of stabilizing a dispersion of an oily phase in an aqueous phase, comprising mixing said oily phase and said aqueous phase with a salicylic acid derivative salified with a base, without adding any emulsifying agent,

wherein said salicylic acid derivative has the following formula (I);



(I)

in which;

R represents a saturated, linear or branched aliphatic, alkoxy, alkanoyl, or alkyl carboxy group, each group having 2 to 22 carbon atoms and each optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms; or an unsaturated, linear or branched alkenyl, alkenyloxy, alkenoyloxy, alkenoyl, or alkenyl carboxy group having one or more conjugated or non-conjugated double bonds, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl esterified with an carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms;

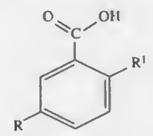
R' represents a hydroxyl group or an ester function of formula:



where R_1 is saturated or unsaturated aliphatic group having 1 to 18 carbon atoms.

6. A method of stabilizing a dispersion of an oily phase in an aqueous phase comprising mixing said oily phase and said aqueous phase with a salicylic acid derivative salified with a base, without adding any emulsifying agent;

wherein said base is an amino acid, and wherein said salicylic acid derivative has the following formula (I);

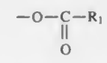


(I)

in which;

R represents a saturated, linear or branched aliphatic, alkoxy, alkanoyloxy, alkanoly, or alkyl carboxy group, each group having 2 to 22 carbon atoms and each groups optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms; or an unsaturated, linear or branches alkenyl, alkenyloxy, alkenoyloxy, alkenoyl, or alkenyl carboxy group having one or more conjugated or non-conjugated double bonds, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituted selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with an carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms;

R' represents a hydroxyl group or an ester function of formula:

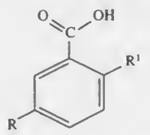


where R_1 is a saturated or unsaturated aliphatic group having 1 to 18 carbon atoms.

7. A of stabilizing a dispersion of an oily phase in an aqueous phase comprising mixing said oily phase and said aqueous phase with a salicylic acid derivative salified with a base, without adding any emulsifying agent; and

said base is selected from the group consisting of arginine and lysine, and

wherein said salicylic acid derivative has the following formula (I);



(I)

in which;

R represents a saturated, linear or branched aliphatic, alkoxy, alkanoyloxy, alkanoyl, or alkyl carboxy group, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms; or unsaturated, linear or branched alkenyl, alkenyloxy, alkenoyloxy, alkenoyl, or alkenyl carboxy group having one or more conjugated or non-conjugated double bonds, each group having 2 to 22 carbon atoms and each group optionally substituted with al least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl, esterified with an carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms;

R' represents a hydroxyl group or an ester function of formula:

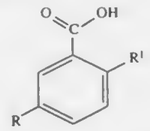
where R_1 is a saturated or unsaturated aliphatic group having 1 to 18 carbon atoms.

8. A cosmetic and/or dermatological emulsion, free of emulsifying agent comprising:

(a) an oil phase;

(b) an aqueous phase; and

(c) at least one salicylic acid derivative of formula (I) below, salified with a base:

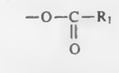


(I)

in which:

R represents a saturated linear or branched aliphatic, alkoxy, alkanoyloxy, alkanoyl, or alkyl carboxy group, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms; or an unsaturated, linear or branched alkenyl, alkenyloxy, alkenoyloxy, alkenoyl, or alkenyl carboxy group having one or more conjugated or non-conjugated double bonds, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms; or an unsaturated, linear or branched alkenyl, alkenyloxy, alkenoyloxy, alkenoyl, or alkenyl carboxy group having one or more conjugated or non-conjugated double bonds, each group having 2 to 22 carbon atoms and each group optionally substituted with at least one substituent selected from the group consisting of halogen, trifluoromethyl, hydroxyl, hydroxyl esterified with a carboxylic acid having 1 to 6 carbon atoms, carboxyl, and carboxyl esterified with a lower alcohol having 1 to 6 carbon atoms;

R' represents a hydroxyl group or an ester function of formula:



wherein R_1 is a saturated or unsaturated aliphatic group having 1 to 18 carbon atoms,

wherein at least a portion of said salicylic acid derivative is at the oil-water interface.

5,667,790

ALUMINUM CHLORHYDRATE AS A TREATMENT FOR ACNE AND ROSACEA

Billy B. Sellers, Jr., 734 Shoreline Dr., Alexander City, Ala. 35010-9077

Filed Aug. 14, 1995, Ser. No. 515,061
Int. Cl.[6] A61K *9/10;33/06*
U.S. Cl. 424—401 **19 Claims**

1. A method of treating skin affected by acne or rosacea, said method comprising the steps of:

providing a composition for the treatment of acne and rosacea which includes an active ingredient dispersed in at least 50% by weight non-toxic liquid carrier agent, said active agent consisting essentially of 0.1 to 50% by weight finely divided aluminum halide salt,

topically applying said composition to an area of skin affected by acne or rosacea

allowing said composition to remain on the affected area for a period of time exceeding ten minutes; and

washing off said composition from the affected area.

5,667,791

X-RAY INDUCED SKIN DAMAGE PROTECTIVE COMPOSITION

Theodore Hersh, Atlanta, and Michael A. Warshaw, Savannah, both of Ga., assignors to Thione INternational, Inc.

Filed May 31, 1996, Ser. No. 658,105
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **17 Claims**

1. A composition for protection from x-ray induced skin damage comprising L-selenomethionine and glutathione to reduce x-ray radiation induced skin damage in a suitable carrier for topical application wherein said L-selenomethionine is present in the carrier in a concentration of at least 0.01% by weight and said glutathione is present in the carrier in a concentration of at least 0.03% by weight based upon the weight of the composition.

11. A method of protecting skin from x-ray-induced skin damage comprising topically applying to the skin an amount of a composition of a L-selenomethionine and glutathione effective to provide protection from x-ray radiation-induced skin damage wherein said L-selenomethionine is present in the carrier in a concentration of at least 0.01% by weight and said glutathione is present in the carrier in a concentration of at least 0.03% by weight based upon the weight of the composition.

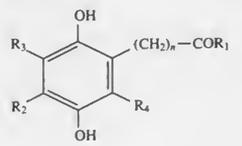
5,667,792

DERIVATIVES OF 2,5-DIHYDROXYPHENYLCARBOXYLIC ACIDS, AND THEIR UTILIZATION IN COSMETIC OR DERMATOLOGICAL COMPOSITIONS WITH A DEPIGMENTING ACTION

Alex Junino, Livry Gargan; Alain Lagrange, Chatoh; Quang Lan N'Guyen, Antony, and Marie-Alix Bourboulon, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 465,105, Jun. 5, 1995, Pat. No. 5,587,173, which is a division of Ser. No. 913,950, Jul. 17, 1972, Pat. No. 5,449,518. This application Jul. 19, 1996, Ser. No. 684,705
Claims priority, application France, Jul. 17, 1991, 91 09029
Int. Cl.[6] A61K *7/42*
U.S. Cl. 424—401 **10 Claims**

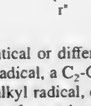
1. A cosmetic or dermatological composition with a depigmenting action comprising, in a suitable vehicle for topical application to the skin, 2,5 -dihydroxyphenylcarboxylic acid derivatives having the following formula:



(I)

wherein:

R_1 represents



r' and r", which are identical or different, represent a hydrogen atom, a C_1-C_{20} alkyl radical, a C_2-C_6 hydroxyalkyl radical, or a C_3-C_6 polyhydroxyalkyl radical, or r' and r" taken together, with the nitrogen atom, form a heterocycle selected from the group consisting of morpholino, pyrrolidino, piperidino, piperazino and piperazino substituted by a C_1-C_4 alkyl or a C_2-C_6 hydroxyalkyl;

the number of carbon atoms in the $-(CH_2)_n-COR_1$ chain is less than or equal to 21;

R_2 and R_3, which are identical or different, represent a hydrogen atom, a linear or branched C_1-C_4 alkyl radical, or a C_1-C_4 alkoxy;

R_4 represents a hydrogen atom or a linear or branched C_1-C_4 alkyl radical; and

n is an integer of from 0 to 20, provided that, when R_2 and R_3 represent a hydrogen atom, n is greater than or equal to 2.

5,667,793

SKIN CARE COMPOSITIONS FOR TREATING CELLULITE

Suk Hyung. Cho, Monroeville, Pa.; Norman Kramer Richardson, Rockaway Township, N.J.; Allan Robert Burger, Passaic, N.J.; Anita Marie Brinker, Midland Park, N.J., and Mark Edward Rerek, Scotch Plains, N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 2, 1996, Ser. No. 691,992
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **2 Claims**

1. A method of reducing the signs of cellulite, the method comprising applying onto the skin, the composition comprising:

(a) from about 0.0001 to about 5%, by weight of the composition, of a plant extract selected from the group consisting of a polar extract of *Polygala tenuifolia*, an extract of *Platycodon grandiflorum*, an extract of *Kochia scoparia*, and mixtures thereof; and

(b) a cosmetically acceptable vehicle.

2. The method of claim 1, the composition further comprising a xanthine.

5,667,794

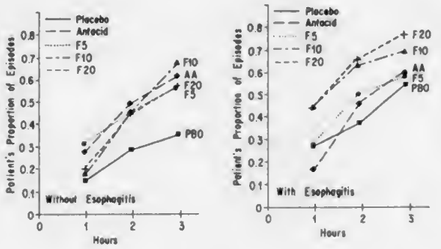
HEARTBURN TREATMENT

Thomas Simon, Berwyn, and Roger Berlin, Haverford, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 432,743, May 2, 1995, abandoned. This application Sep. 11, 1996, Ser. No. 710,078

Int. Cl.[6] A61K *33/00*

U.S. Cl. 424—401 3 Claims



1. A method for treating a human suffering from heartburn and having no substantial esophageal erosion, comprising administering to the patient a composition comprising an amount of famotidine between about 5 mg and 10 mg sufficient to treat heartburn, wherein the composition does not contain an antacid.

5,667,795

PESTICIDAL MICRONUTRIENT COMPOSITIONS CONTAINING ZINC OXIDE

Richard Wayne Fraley, Kingwood, Tex., and Paul Rogers, Greenwood, Ind., assignors to ISK Biosciences Corporation, Mentor, Ohio

Continuation of Ser. No. 192,852, Feb. 7, 1994. This application Jul. 15, 1996, Ser. No. 680,434

Int. Cl.[6] A01N *25/14*

U.S. Cl. 424—405 19 Claims

1. An aqueous pesticidal-micronutrient composition which is readily dilutable in water to provide an effective amount of pesticide-zinc nutrient for spray application to crops which, prior to dilution, comprises, by weight of the total composition:

(a) about 10 to 60% chlorothalonil having an average particle size of approximately 1 to 10 microns;

(b) about 1.0 to 10% of at least one nonionic surfactant;

(c) about 0.02 to 1.0% of a heteropolysaccharide gum;

(d) about 1.0 to 10% zinc oxide having an average particle size of 1 to 10 microns; and

the balance being water.

5,667,796

METHOD FOR PRODUCING CERAMIC IMPLANT MATERIALS, PREFERABLY CERAMIC IMPLANT MATERIALS INCLUDING HYDROXYL APATITE

Klaus Otten, Im Pfarrgarten 4a, D-64404 Bickenbach, Germany

Continuation of Ser. No. 346,464, Nov. 29, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,526

Claims priority, application Sweden, Nov. 30, 1993, 9303977

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—422 25 Claims

1. Method for production of ceramic implant material, preferably ceramic implant material including hydroxyl apatite, characterized by using for the production the spongy parts of joints from animals, preferably grown-up cattle, removing the organic constituents of the spongy parts of the joints by a quick burning, effecting one or more flushings of the remaining inorganic parts of the joints without chemical additives and sintering of said inorganic parts of the joints.

5,667,797

ANTI-VIRAL COMPOSITION AND KIT AND USE FOR TREATING ROTAVIRUS INFECTION AND DIARRHEA

Jerry A. Peterson, Lafayette, Calif.; David S. Newburg, Newtonville, Mass., and Robert H. Yolken, Baltimore, Md., assignors to Cancer Research Fund of Contra Costa; Senomed, Inc., both of Walnut Creek, Calif., and The Johns Hopkins University School of Medicine, Baltimore, Md.

Continuation of Ser. No. 378,865, Jan. 23, 1995, Pat. No. 5,505,955, which is a continuation of Ser. No. 969,949, Oct. 30, 1992, abandoned. This application Apr. 1, 1996, Ser. No. 626,057

Int. Cl.[6] A61K *45/00*

U.S. Cl. 424—439 63 Claims

1. An anti-viral composition comprising

an agent selected from the group consisting of defatted human milk fat globule, the haman milk macromolecular fraction, the human milk mucin-70 Kd apparent MW HMFG glycoprotein:46 Kd apparent MW HMFG glycoprotein complex, the 46 Kd apparent MW HMFG glycoprotein, a polypeptide comprising an amino acid sequence having the rotavirus-binding specificity of the 46 Kd apparent MW HMFG glycoprotein, deglycosylated proteins thereof, mixtures thereof, and mixtures thereof with human skim milk, curd, or whey; and

a therapeutic agent, or mixtures thereof.

5,667,798

TRANSDERMAL DRUG DELIVERY SYSTEM

Robert B. Royds, Plainsboro, N.J.; John Lim, Newtown, and Joel D. Rosen, Langhorne, both of Pa., assignors to Harrogate Holdings, Limited, Hamilton, Bermuda

Continuation of Ser. No. 176,396, Dec. 30, 1993, Pat. No. 5,466,465. This application Jun. 7, 1995, Ser. No. 477,914

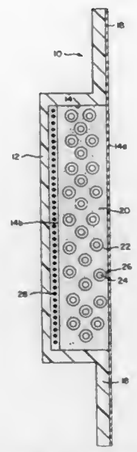
Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—449 16 Claims

1. A drug delivery system for the release and delivery of a drug across the skin of a user comprising:

a shell, said shell providing an occlusive covering on the skin of the user to enhance the hydration of the skin, said shell comprising a reservoir having a first face and a second face, said reservoir having therein a matrix adapted to absorb moisture from the skin and hydrate the skin to facilitate penetration of the skin by a drug, said reservoir further having therein a plurality of microcapsules, said microcapsules being dispersed within said matrix and having contained therein an effective concentration of a drug and a coating formulated to be susceptible to penetration by moisture;

means on said first face of said reservoir for adhering said shell to the skin; and



a visible indicator operatively associated with said second face of said reservoir, said indicator comprising a reagent formulated to visibly change in response to the presence of moisture, electrolytes or other secretions in said matrix, wherein said release of said drug and said visible indicator are activated by a common mechanism.

5,667,799

METHOD FOR TREATING HEADACHE PAIN WITH TOPICAL LOCAL ANESTHETIC COMPOSITIONS

Larry J. Caldwell, 4146 Cranford Cir., San Jose, Calif. 95124, and Bradley Stuart Galer, 7409 Woodlawn Ave. NE, Seattle, Wash. 98115

Filed Oct. 30, 1995, Ser. No. 558,598

Int. Cl.[6] A61L *15/44;* A61K *31/135*

U.S. Cl. 424—449 10 Claims

1. A method for treating a host suffering from headache pain by blocking conduction in occipital and supraorbital nerves associated with said headache pain, said method comprising:

applying at a keratinized skin site proximal to said target nerves in the supraorbital or occipital regions of the head of said host a topical local anesthetic composition comprising: an effective amount of local anesthetic wherein said local ansthetic is an amine linked through a connecting group to an aromatic group in combination with eucalyptol as a penetration enhancing agent;

whereby said local anesthetic rapidly penetrates the skin surface at said skin site to block conduction in said occipital or target nerves and said host experiences at least a partial subsidence in the intensity of said headache pain.

5,667,800

TOPICAL PREPARATION CONTAINING A SUSPENSION OF SOLID LIPID PARTICLES

Tom De Vringer, Zoetermeer, Netherlands, assignor to Yamanouchi Europe B.V., Netherlands

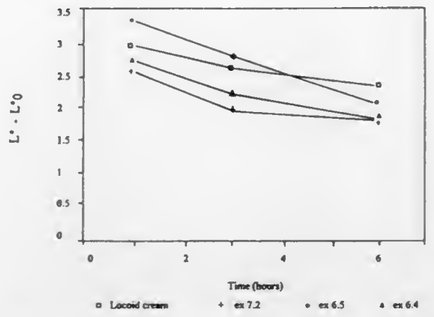
Division of Ser. No. 131,480, Oct. 4, 1993, abandoned, and a continuation of Ser. No. 857,467, Mar. 25, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,212

Claims priority, application European Pat. Off., Mar. 25, 1995, 91200664

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 3 Claims

1. A composition comprising a lotion, gel, cream or ointment for topical application to the skin, hair, and nails further comprising an aqueous suspension of solid lipoid non-vesicular nanoparticles having a mean particle size of between 50 and 1000 m, the nanoparticles being present in the suspension in a concentration of between 0.01 and 60 wt %, said nanoparticles comprising a mixture of at least one lipid and at least one emulsifier, wherein the lipid is a hard paraffin, wherein said lipid nanoparticles raise the occlusivity of a cream when added thereto.



5,667,801

SUSTAINED RELEASE HETERODISPERSE HYDROGEL SYSTEMS FOR INSOLUBLE DRUGS

Anand R. Baichwal, Wappingers Falls, N.Y., assignor to Edward Mendell Co., Inc., Patterson, N.Y.

Continuation of Ser. No. 447,236, May 22, 1995, Pat. No. 5,554,387, which is a division of Ser. No. 118,924, Sep. 9, 1993, Pat. No. 5,455,046. This application May 21, 1996, Ser. No. 651,901

Int. Cl.[6] A61K *9/22;9/54*

U.S. Cl. 424—457 25 Claims

1. A sustained release oral solid dosage form for absorption of a therapeutically active medicament in the gastrointestinal tract, comprising:

an effective amount of a medicament having a solubility of less than about 10 g/l to render a therapeutic effect;

a sustained release excipient comprising a gelling agent comprising a heteropolysaccheride gum and a homopolysaccharide gum capable of cross-linking said heteropolysaccharide gum when exposed to an environmental fluid, the ratio of said heteropolysaccharide gum to said homopolysaccharide gum being from about 1:3 to about 3:1, an inert pharmaceutical diluent, the ratio of said inert diluent to said gelling agent being from about 1:8 to about 8:1; and a pharmaceutically acceptable cationic cross-linking agent capable of cross-linking with said gelling agent and increasing the gel strength when the dosage form is exposed to an environmental fluid; the ratio of said medicament to said gelling agent being from about 1:3 to about 1:8; said dosage form providing a sustained release of said medicament when exposed to an environmental fluid.

5,667,802

ANTACID COMPOSITION

Georges Serge Grimberg, 127 rue de l'Université, Paris, France, 75007

Filed May 15, 1995, Ser. No. 441,294

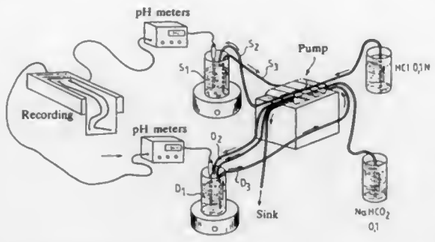
Claims priority, application France, May 17, 1994, 94 05990

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—464 7 Claims

1. A pharmaceutical antacid composition comprising:

(a) a pharmaceutically acceptable gum which forms a viscous suspension with water which suspension is viscous enough to adhere to the oesogastroduodenal lining; said gum being coated with simethicone;

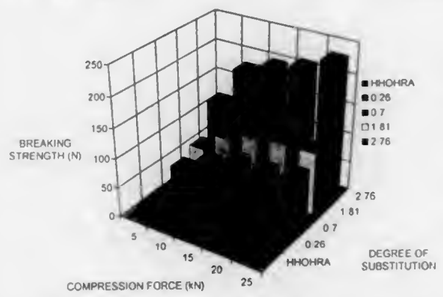


(b) an antacid salt.

5,667,803
STARCH ACETATE COMPOSITION WITH MODIFIABLE PROPERTIES, METHOD FOR PREPARATION AND USAGE THEREOF

Timo Petteri Paronen, Kuopio; Soili Hellevi Peltonen, Rajamaki; Arto Olavi Urtti, and Leena Johanna Nakari, both of Kuopio, all of Finland, assignors to Oy Polymer Corex Kuopio Ltd., Kuopio, Finland

Filed Jan. 19, 1995, Ser. No. 374,430
Claims priority, application Finland, Jun. 7, 1994, 942686
Int. Cl.[6] A61K *9/20;9/46;9/24;* **C08B** *31/02*
U.S. Cl. 424—465 **51 Claims**



1. A composition with modifiable excipient properties, comprising a compact, which in addition to at least one active ingredient comprises starch acetate, wherein the excipient properties of said composition are modifiable to be compatible with the intended excipient purpose by varying the substitution degree of starch acetate between 0.2–3.0, preferably 0.7–3.0 or/and changing the compressional force used in the manufacturing of the compact respectively.

5,667,804
BANDED PROLONGED RELEASE ACTIVE AGENT DOSAGE FORM

Patrick S.-L. Wong, Palo Alto; David Emil Edgren, El Granada; Liang C. Dong, Sunnyvale, and Vincent Joseph Ferrari, Foster City, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 394,074, Feb. 24, 1995, Pat. No. 5,534,263. This application Jun. 27, 1996, Ser. No. 671,226
Int. Cl.[6] A61K *9/24;9/44;9/22*
U.S. Cl. 424—472 **10 Claims**

1. An active agent dosage form for delivering an active agent formulation to a fluid environment of use over a prolonged period of time comprising:

a) an active agent formulation; and

b) an insoluble material for protecting a plurality of discrete portions of the surface of the active agent formulation; wherein the amount of surface area unprotected by the insoluble material is greater than the amount of surface area protected by the insoluble material.

5,667,805
MORPHINE THERAPY

Sonya Merrill, San Jose; Atul Devdatt Ayer, Palo Alto; Paul Hwang, Campbell, and Anthony L. Kuczynski, Mt. View, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 449,620, May 24, 1995, Pat. No. 5,593,695, which is a division of Ser. No. 266,075, Jun. 27, 1994, Pat. No. 5,460,826. This application Oct. 4, 1996, Ser. No. 726,107
Int. Cl.[6] A61K *9/20;9/22;9/24*
U.S. Cl. 424—473 **8 Claims**

1. A dosage in the form of a tablet comprising: a drug layer comprising 35 wt % morphine sulfate, 58.5 wt % polyethylene oxide possessing a 200,000 molecular weight, 6 wt % polyvinylpyrrolidone, 0.45 wt % magnesium stearate, and 0.05 wt % butylated hydroxytoluene which drug layer weighs 86 mg; a displacement-push layer comprising 93.67 wt % polyethylene oxide of 7,000,000 molecular weight, 5 wt % hydroxypropylmethylcellulose, 1 wt % ferric oxide, 0.25 wt % magnesium stearate, and 0.083 wt % butylated hydroxytoluene which displacement push layer weighs 55 mg; a semipermeable wall surrounding the layer; and a passageway on the semipermeable wall.

5,667,806
SPRAY DRYING METHOD AND APPARATUS

Martin L. Kantor, Mamaroneck, N.Y., assignor to Emisphere Technologies, Inc., Hawthorne, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,882
Int. Cl.[6] A61K *9/16;9/50*
U.S. Cl. 424—484 **38 Claims**

1. A method for preparing microspheres, said method comprising:

(A) nebulizing each of

(a) a carrier vehicle comprising a microsphere forming carrier; and

(b) a precipitator;

wherein said carrier vehicle (a) or said precipitator (b) optionally includes an active agent; and

(B) contacting said carrier vehicle and said precipitator.

5,667,807
THERMAL GRANULATION PROCESS

Ingrid Hürner, Düsseldorf; Peter Danz, Köln; Reinhard Walter, Leverkusen, all of Germany; Joachim Maasz, Granger, Ind., and Georg Frank, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 23, 1995, Ser. No. 447,674
Claims priority, application Germany, May 30, 1994, 44 18 837.4
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **8 Claims**

1. Process for the production of directly tablettable granules containing an active compound having a melting point between 40° and 150° C. and tablet auxiliaries, which comprises forming a mixture of said active compound and said auxiliaries, heating said mixture to a temperature of from 40° to 200° C. in a melt extruder to melt a part of said active compound and form a mixture of said active compound and said auxiliaries wherein a part of said active compound is in the form of a melt, and extruding said mixture in which said active compound is present partly in the form of a melt, to produce a homogeneous non-agglutinating extrudate, and then comminuting said extrudate to form granules.

5,667,808
COMPOSITION FOR SUSTAINED RELEASE OF HUMAN GROWTH HORMONE

OluFunmi Lily Johnson, Cambridge, Mass.; Medha M. Ganmukhi, Wexford, Pa.; Howard Bernstein, Cambridge; Henry Auer, Belmont, both of Mass., and M. Amin Khan, Dowington, Pa., assignors to Alkermes, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 984,323, Dec. 2, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,725
Int. Cl.[6] A61K *9/50;47/32;* **A61F** *2/02;* **B32B** *5/16*
U.S. Cl. 424—501 **5 Claims**

1. A method for forming a metal cation-complexed human growth hormone, comprising the steps of:

a) forming a solution containing human growth hormone;

b) dispersing a multivalent metal cation component with the human growth hormone solution under pH conditions suitable for complexing the multivalent metal cation with the human growth hormone, thereby forming a metal cation-complexed human growth hormone suspension wherein the molar ratio of metal cation component to hGH is between about 4:1 to about 100:1; and

c) drying said suspension to form the metal cation-complexed human growth hormone.

5,667,809
CONTINUOUS FLUOROCHEMICAL MICRODISPERSIONS FOR THE DELIVERY OF LIPOPHILIC PHARMACEUTICAL AGENTS

Leo A. Trevino, San Diego; Luis A. Dellamary, San Marcos; Thomas E. Tarara; Jeffry G. Weers, both of San Diego, and Helen M. Ranney, La Jolla, all of Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Filed Jun. 7, 1995, Ser. No. 482,176
Int. Cl.[6] A61K *9/50;9/48;* **A61F** *2/02;6/06*
U.S. Cl. 424—501 **63 Claims**

1. A method for preparing a pharmaceutical microdispersion exhibiting enhanced bioavailability, said method comprising the steps of:

providing a thermodynamically stable pharmaceutical composition comprising at least one lipophilic pharmaceutical agent incorporated in a physiologically acceptable liquid carrier, said liquid carrier comprising one or more lipophilic fluorochemicals and at least one nonfluorinated co-solvent; and

combining said stable pharmaceutical composition with an amount of at least one fluorochemical diluent less lipophilic than said one or more lipophilic fluorochemicals, said fluorochemical diluent present in an amount sufficient to initiate phase separation of said at least one lipophilic pharmaceutical agent from said pharmaceutical composition wherein a pharmaceutical microdispersion is formed.

5,667,810
METHOD OF ACCELERATING THE HEALING OF BONE AND CARTILAGE TISSUE WITH CYTOKINES

Robert H. Levin, 11127 Jardin Pl., Cincinnati, Obio 45241

Division of Ser. No. 703,917, May 22, 1991, Pat. No. 5,514,591, which is a division of Ser. No. 503,225, Apr. 2, 1990, Pat. No. 5,023,090, which is a continuation-in-part of Ser. No. 394,862, Aug. 16, 1989, Pat. No. 4,942,031, which is a continuation-in-part of Ser. No. 159,390, Feb. 23, 1988, abandoned. This application May 1, 1996, Ser. No. 640,565
Int. Cl.[6] A61K *35/72*
U.S. Cl. 424—520 **14 Claims**

1. A method for accelerating of the healing of hard tissue selected from the group consisting of bone and cartilage in warm blooded animals as an adjunct to orthopedic surgery, which comprises applying to the injured tissue of said warm blooded animals a composition comprising, in admixture with a pharmaceutically acceptable sterile carrier, one or more cytokine growth factors in an amount of from about one to about one hundred nanograms per ml., and about 5% by weight of said composition of Live Yeast Cell Derivative (LYCD).

5,667,811
NA-K-ATPASE INHIBITING NATRIURETIC SUBSTANCES

Harvey C. Gonick, Los Angeles; Elmar Weiler, Inglewood, and Farhad Khalil-Manesh, Los Angeles, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

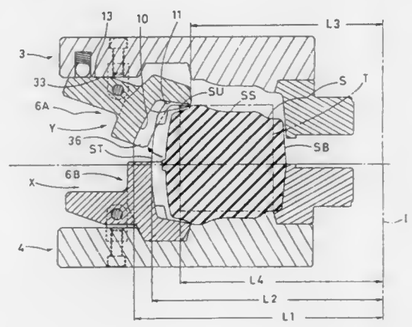
Continuation of Ser. No. 581,582, Sep. 11, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,617
Int. Cl.[6] A61K *35/16;35/14*
U.S. Cl. 424—530 **1 Claim**

1. A substantially pure isolated low molecular weight plasma inhibitor of Na-K-ATPase occurring in human plasma and characterized by having vasoconstrictive and natriuretic activity and displacing ouabain from its receptor and lacking reactivity with anti-digoxin antibody, said inhibitor having a molecular weight of less than 500 peptide.

5,667,812
TIRE VULCANIZING MOLD

Keiji Shimizu, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Jun. 4, 1996, Ser. No. 658,670
Claims priority, application Japan, Jun. 5, 1995, 7-138149
Int. Cl.[6] B29C *35/02*
U.S. Cl. 425—46 **4 Claims**



1. A tire vulcanizing mold which is divided into an upper-mold and a lower-mold in the tire axial direction by a split surface, each of said upper-mold and the lower-mold comprising a base part having a bead molding surface for a tire-bead and a sidewall molding surface for a tire-sidewall, and a tread ring part having a tread molding surface for a tire-tread and a buttress molding surface for a tire-buttress, wherein

said tread ring part is divided into a plurality of tread segments by radial split surfaces extending from the tire axis in the tire radial direction,

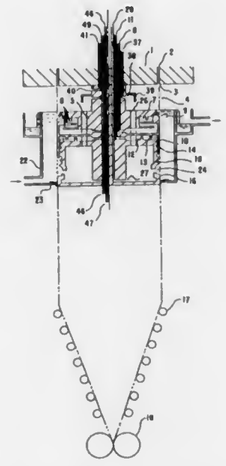
each of said tread segments has a stop surface contacting with the base part at a reference position where the radial split surfaces of the tread ring part contact to each other, and is supported on the base part tiltably around a center line in the tangential direction of a circle centered on the tire axis between the reference position and a releasing position where the radial split surfaces are separated to each other, and

a radial distance from the tire axis to the tread molding surface at the releasing position is larger than a radial distance from the tire axis to the tread molding surface at the reference position.

5,667,813
MANDREL FOR COOLING

Tomozi Mizutani; Katsuyuki Yokota; Masahobu Arita, and Hisashi Kojyou, all of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 307,586, Jan. 17, 1995, Pat. No. 5,593,703. This application Jul. 8, 1996, Ser. No. 676,510
Int. Cl.[6] B29C *47/88*
U.S. Cl. 425—71 **18 Claims**



1. For use with a die containing a downwardly directed circular slit for extruding a tubular thin thermoplastic resin film in a melted condition, apparatus for cooling said tubular thin film while setting the diameter thereof, said apparatus comprising:

a mandrel having a body of cylindrical shape connected to said die in spaced relation to a lower surface thereof and including:

an air injecting nozzle operative to inject compressed air into the space formed between said lower die surface and said mandrel body to maintain the shape of an upper bubble part of said thin film between said die and said mandrel;

a coolant injecting nozzle formed with at least one stage of annular slits and being operative to inject coolant obliquely upwardly or downwardly toward an inner surface of said thin film for cooling said film,

a ring for setting said diameter of said thin film, concentrically mounted on said body;

means in said mandrel body for conducting coolant for cooling an interior side of said film diameter setting ring;

an external coolant storage tank concentrically mounted on said mandrel body and disposed for interposing said tubular thin film between said tank and said mandrel body;

means for conducting coolant for cooling said film through said coolant storage tank;

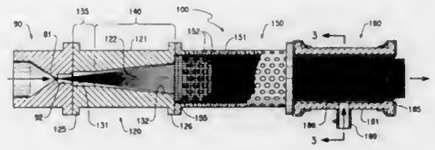
a coolant discharge opening in a side face of said mandrel operative for receiving coolant used to cool said film into said mandrel body; and

a seal ring on said mandrel body operative to prevent leakage of said coolant, said seal ring pressing said thin film while permitting passage thereof.

5,667,814
APPARATUS FOR MAKING AND COLLECTING CONTINUOUS FIBERS IN THE FORM OF A ROD-SHAPED BATT

Ashok Harakhlal Shah, Chesterfield, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 287,606, Aug. 9, 1994, Pat. No. 5,529,734. This application Nov. 21, 1995, Ser. No. 561,348
Int. Cl.[6] D01D *5/11;7/00*
U.S. Cl. 425—72.2 **14 Claims**



1. An apparatus for forming a rod-shaped batt of continuous backwindable fibers wherein the continuous fibers are provided within a relatively concentrated stream of high speed gases from a fiber spinning source, the apparatus comprising:

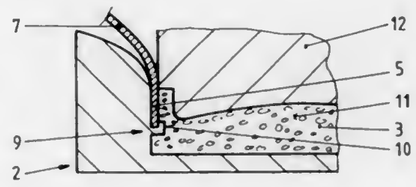
a nozzle section arranged to receive fibers and high speed gases and to allow the gases and fibers to gradually slow down, wherein said nozzle section comprises a tube having a diverging internal contour, a length of at least 1.5 times its diameter at its inlet, and a diverging half angle of less than or equal to about 20 degrees;

a collection tube arranged to receive the fibers and gases from said nozzle section and having means in the periphery thereof for discharging the gases therefrom and a central passage for collecting the continuous fibers into the rod-shaped batt.

5,667,815
HOLLOW MOLD FOR THE MANUFACTURE OF A SANDAL

Karl-Heinz Herber, Sinntal, and Karl-Ernst Kohlhepp, Schlüchtern, both of Germany, assignors to ALSA GmbH, Steinau, Germany

Filed Mar. 26, 1996, Ser. No. 621,877
Claims priority, application Germany, Mar. 31, 1995, 195 11 942.8
Int. Cl.[6] B29C *33/14*
U.S. Cl. 425—119 **1 Claim**



1. A hollow mold for the manufacture of a sandal having a shoe sole and strapping fastened thereon comprising a cavity forming the shoe sole, lateral pockets for receiving and fixing the strapping on both sides of the cavity, and means for fixing the ends of the strapping in the pockets so that plastic foaming up in the hollow mold will not reach the back of the strapping, wherein the pockets terminate at a short distance from the bottom of the hollow mold and have a holding frame for the strapping which reaches slightly over the contour of the strapping.

5,667,816
PEST-CONTROLLING COMPOSTION

James Iredell Moss, Gainesville, Fla., assignor to J.T. Eaton & Co., Inc., Ohio

Filed Sep. 29, 1995, Ser. No. 536,469
Int. Cl.[6] A01N *43/90;59/14*
U.S. Cl. 424—659 **8 Claims**

1. A composition for combating insects comprising synergistic effective amounts of:

boric acid; and

caffeine.

5,667,817
METHOD AND COMPOSITION FOR PREVENTION AND TREATMENT OF FEMALE LOWER GENITAL TRACT MICROBIAL INFECTIONS

Robert D. Kross, Bellmore, N.Y., assignor to Alcide Corporation, Redmond, Wash.

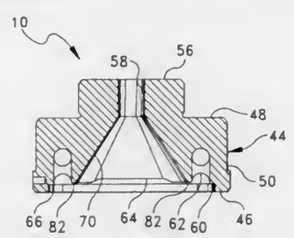
Continuation of Ser. No. 133,465, Oct. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 854,286, Mar. 20, 1992, Pat. No. 5,252,343. This application Aug. 28, 1996, Ser. No. 703,942
Int. Cl.[6] A61K *33/00;33/20*
U.S. Cl. 424—661 **20 Claims**

1. A method for treating or reducing susceptibility to a microbial infection in the lower genital tract of a female mammal comprising infusing into the lower genital tract of the mammal an effective amount of an aqueous composition comprising greater than about 125 ppm to about 1000 ppm chlorine dioxide and a pharmaceutically acceptable carrier, wherein the molar ratio of chlorine dioxide to chlorite in the composition is at least 5:1 and the pH is compatible with the tract.

5,667,818
EXTRUSION SYSTEM WITH BALANCED FLOW PASSAGE

A. Roger Guillemette, 10 Pike St., West Warwick, R.I. 02893

Continuation of Ser. No. 148,009, Nov. 5, 1993, abandoned. This application Mar. 29, 1996, Ser. No. 625,779
Int. Cl.[6] B29C *47/26*
U.S. Cl. 425—133.1 **14 Claims**



1. In an extrusion die assembly, used for extruding molten plastic, said die assembly consisting of an assembly of components, a passage constructed in the components of the die assembly, providing a balanced flow throughout the flow path of the die assembly comprising:

a component in which is housed the passage, said passage having upstream and downstream ends relative to the direction of plastic flow;

an inlet constructed in the component to form an opening in the component to provide access to the passage, said inlet communicating with a source of flowable plastic to receive said plastic therefrom;

at least one pair of first and second flow channels constructed in the component in communication with the inlet, said channels forming a joint at the inlet and extending downstream within the component;

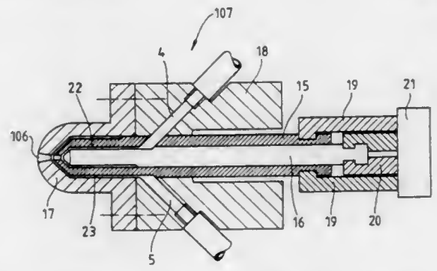
a distribution groove, constructed within the component generally transverse to the direction of plastic flow, said groove forming a chamber to receive flowing plastic, said groove having first and second inlets positioned symmetrically in the chamber and communicating with said first and second channels respectively to receive flowing plastic therefrom, said groove having a downstream edge communicating with an annular outlet to allow flowing plastic to escape therefrom, said groove further comprising a pair of blending means to direct the flow of plastic towards the downstream edge, said blending means positioned symmetrically in the chamber equidistant from the first and second groove inlets; and

a generally conical extrusion channel constructed in the component downstream of the distribution groove to receive flowing plastic escaping from the annular outlet of the groove.

5,667,819
APPARATUS FOR INJECTION MOLDING OF MULTI-LAYER OBJECTS

Helmut Eckardt, Meinerzhagen, Germany, assignor to Battenfeld GmbH, Meinerzhagen, Germany

Filed Nov. 4, 1994, Ser. No. 334,287
Claims priority, application Germany, Nov. 5, 1993, 43 37 829.3; Dec. 1, 1993, 43 40 990.3
Int. Cl.[6] B29C *45/13;45/16;45/20;45/46*
U.S. Cl. 425—130 **2 Claims**



1. An apparatus for injection molding of workpieces formed of at least two different layers, said apparatus comprising:

a mold;

injection molding means for forming melts of two different materials which form the at least two different layers;

an injection unit for injecting the melts of the two different materials into the mold; and

at least two channels for connecting the injection molding means with the injection unit for feeding the melts of the two different materials produced in the injection molding means to the injection unit,

wherein the injection unit comprises an injection nozzle having a nozzle body and a nozzle head portion releasably attachable to the nozzle body and defining a nozzle mouth, and outer and inner needles arranged concentrically with each other and extending through the nozzle body,

wherein a first channel for conducting the melt of one of the two different materials to the nozzle mouth is formed between the inner and outer needles, and a second channel for conducting the melt of another of the two different materials to the nozzle mouth is formed between the outer needle and the nozzle head portion, and

wherein shearing gaps are provided in at least one of the feeding channels.

2. An apparatus for injection molding of workpieces formed of at least two different layers, said apparatus comprising:

a mold;

injection molding means for forming melts of two different materials which form the at least two different layers;

an injection unit for injecting the melts of the two different materials into the mold; and

at least two channels for connecting the injection molding means with the injection unit for feeding the melts of the two different materials produced in the injection molding means to the injection unit,

wherein the injection unit comprises an injection nozzle having a nozzle body and a nozzle head portion releasably attachable to the nozzle body and defining a nozzle mouth, and outer and inner needles arranged concentrically with each other and extending through the nozzle body,

wherein a first channel for conducting the melt of one of the two different materials to the nozzle mouth is formed between the inner and outer needles, and a second channel for conducting the melt of another of the two different materials to the nozzle mouth is formed between the outer needle and the nozzle head portion, and

wherein shearing gaps are provided in at least one of the first and second channels.

5,667,820

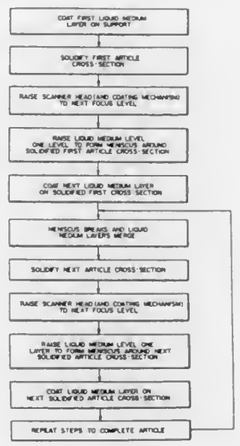
APPARATUS FOR MAKING A SOLID THREE-DIMENSIONAL ARTICLE FROM A LIQUID MEDIUM

Timmy B. Heller, Attleboro, Mass.; Ray M. Hill, Smithfield, R.I.; Michael R. Greenhalgh, Taunton, Mass., and Abdalla F. Saggal, Pawtucket, R.I., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 299,879, Sep. 1, 1994, abandoned, which is a continuation of Ser. No. 909,528, Jun. 30, 1992, Pat. No. 5,358,673, which is a continuation of Ser. No. 802,242, Dec. 9, 1991, abandoned, and a continuation-in-part of Ser. No. 655,948, Feb. 14, 1991, abandoned, said Ser. No. 802,242is a continuation-in-part of Ser. No. 655,948, which is a continuation-in-part of Ser. No. 479,702, Feb. 15, 1990, Pat. No. 5,071,337. This application Jun. 7, 1995, Ser. No. 475,715

Int. Cl.[6] B29C *35/08;41/02;41/52*

U.S. Cl. 425—135 **20 Claims**



1. Apparatus for forming a three-dimensional object from successively solidified layers of a liquid medium solidifiable by application of a prescribed energy, the apparatus comprising:

a container;

a dispenser movable over a surface of a last-solidified layer to dispense the liquid medium for forming a fresh layer of the liquid medium over the surface;

an optical scanner for selectively applying the prescribed energy to the fresh layer to form the next solidified layer in accordance with a defined pattern; and

a pump functionally connected to the container to withdraw a quantity of the liquid medium therefrom and functionally connected to the dispenser to feed a quantity of withdrawn liquid medium to the dispenser.

5,667,821

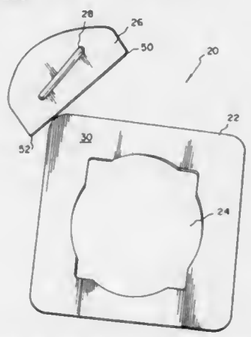
METHOD AND APPARATUS FOR MAKING TAMALES

Jesus M. Castaneda, 1131 Wilson, Odessa, Tex. 79763

Continuation of Ser. No. 190,376, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 851,627, Mar. 16, 1992, abandoned. This application Jul. 13, 1995, Ser. No. 502,126

Int. Cl.[6] A21C *9/00*

U.S. Cl. 425—218 **19 Claims**



1. An apparatus for making a food product comprising:

(a) a template for anchoring a food wrapper material said template having a substantially flat and smooth upper surface and a substantially flat and smooth lower surface and a thickness of about 1/16 to about 1/8 of an inch;

(b) an opening of a predetermined configuration connecting said substantially flat and smooth upper surface with said substantially flat and smooth lower surface;

(c) a taper in said opening extending downwardly and outwardly from said substantially flat and smooth upper surface to said substantially flat and smooth lower surface;

(d) a spreader tool having a substantially flat edge for pressing and spreading a dough material into said opening of said template while excess dough material is removed from said substantially flat and smooth upper surface of said template and is retained on said spreader tool, said spreader tool having said substantially flat edge of a width sufficient to span said opening and provide support for said substantially flat edge on said substantially flat and smooth upper surface of said template; and

(e) a coefficient of friction of less than 1 between said substantially flat edge of said spreader tool and said substantially flat and smooth upper surface of said template.

5,667,822

SHAPING MOLD FOR MAKING ULTRA-THIN SHAPED RUBBER ARTICLES

Tomoyuki Hayashi, Tokyo; Yoshiaki Tatsumi, and Kinya Miyashita, both of Kawasaki, all of Japan, assignors to Sohzohkagaku Co., Ltd., Kanagawa-ken, and Nisshinbo Industries, Inc., Tokyo, both of Japan

Division of Ser. No. 133,128, Oct. 20, 1993. This application May 31, 1996, Ser. No. 657,659

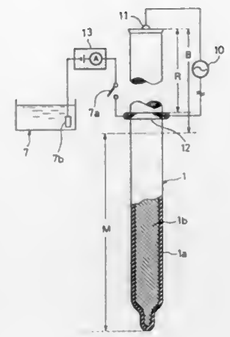
Claims priority, application Japan, Feb. 21, 1992, 4-21007; Oct. 14, 1992, 4-81880

Int. Cl.[6] B29C *41/14;41/40;41/46*

U.S. Cl. 425—275 **11 Claims**

1. A shaping mold for the production of ultra-thin shaped rubber articles, comprising

a main body having a surface for the adherence of liquid latex, said surface being made of an amorphous carbon; and



a bottom part that is in contact with said main body, said bottom part having electrodes fitted thereto, said electrodes defining a heating area which is made of a material that heats upon the application of electricity to the electrodes.

5,667,823

SUGARLESS CHEWING GUM CONTAINING APM

Thomas Joseph Carroll, Oak Ridge, N.J., and Gary Steven Kehoe, Briarcliff Manor, N.Y., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation of Ser. No. 204,041, Jun. 8, 1988, abandoned, which is a division of Ser. No. 840,299, Mar. 14, 1986, Pat. No. 4,774,094, which is a continuation-in-part of Ser. No. 717,630, Mar. 29, 1985, abandoned. This application Apr. 12, 1995, Ser. No. 420,412

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **7 Claims**

1. A sugarless chewing gum product having a moisture content of at least 2 weight %, and comprising

(a) 15 to 35 weight % of a gum base;

b 20 to 70 weight % of a bulking agent or sweetener other than a L-aspartic acid derivative;

c 10 to 30 weight % of a cooked aqueous syrup of hydrogenated starch hydrolysate, said cooked aqueous syrup having a moisture content of 4 to 16%; and

(d) 0.01 to 2 weight % of a L-aspartic acid derivative.

5,667,824

METHOD AND APPARATUS FOR FORMING MINIATURE SIZE CONFECTIONERY PRODUCTS

Ronald L. Ream, Plano; Christine Corriveau, Orland Park; Michael McHale, Aurora, and Sharon Van Horn, Naperville, all of Ill., assignors to The Wm. Wrigley Jr. Company, Chicago, Ill.

Division of Ser. No. 685,276, Jul. 23, 1996, which is a continuation of Ser. No. 208,459, Mar. 9, 1994. This application Aug. 22, 1996, Ser. No. 697,342

Int. Cl.[6] A23G *3/00*

U.S. Cl. 426—5 **11 Claims**

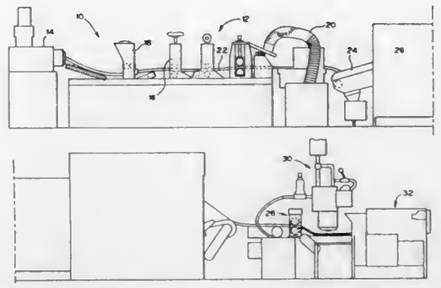
1. A method for forming miniature size confectionery products comprising the steps of:

providing a mass of confectionery product;

forming the mass of confectionery product into a sheet;

cooling the sheet;

forming the sheet into a webbed mat having a plurality of desired configurations thereon, the step of forming the sheet into a webbed mat occurring after the step of cooling the sheet; and



breaking apart the webbed mat to form a plurality of miniature size confectionery products.

5,667,825

READY-TO-EAT CEREAL PRODUCT FORTIFIED WITH FERRIC EDTA AND PROCESS OF MAKING

Robert D. Humbert; Leila Saldanha, both of Battle Creek, and John Kepplinger, Portage, all of Mich., assignors to Kellogg Company, Battle Creek, Mich.

Division of Ser. No. 430,110, Apr. 27, 1995, Pat. No. 5,534,275, which is a continuation of Ser. No. 203,143, Feb. 28, 1994, abandoned. This application May 20, 1996, Ser. No. 650,614

Int. Cl.[6] A23L *1/304*

U.S. Cl. 426—74 **18 Claims**

1. A process for preparing a cooked, cereal ingredient containing product, comprising:

(a) combining

(i) at least one cereal ingredient,

(ii) a ferric EDTA compound, and

(iii) moisture

(b) cooking (i), (ii) and (iii) to produce a cooked, cereal ingredient confining product, and

c) drying the cooked cereal ingredient containing product of (b) to contain less than 12% moisture.

5,667,826

METHOD FOR FORMING FLOWERS FROM A CONFECTIONERY MATERIAL

Judy Lasater, Rte. 1, Box 59L, Erwin, N.C. 28339

Filed May 6, 1996, Ser. No. 643,188

Int. Cl.[6] A23P *1/10;* **B29C** *41/02*

U.S. Cl. 426—104 **15 Claims**

1. A method of forming simulated flowers from a confectionery material, comprising the steps of:

a) constructing a male mold having an exterior surface that generally conforms to an interior surface of a flower model;

b) rolling a confectionery material into a thin sheet;

c) cutting the sheet of confectionery material to form a blank corresponding to the shape of at least one part of the flower model; and

d) forming the blank around the male mold and pressing the blank onto the exterior surface of the male mold, thereby creating a simulated flower formed from the confectionery material.

5,667,827

PROCESS OF PACKAGING FRESH MEAT

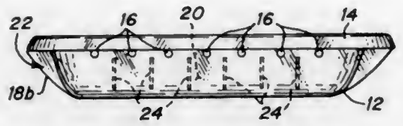
Dennis J. Breen, Pleasant Hill, and Lawrence Wilson, Dixon, both of Calif., assignors to Transhumance, Davis, Calif.

Filed Oct. 16, 1995, Ser. No. 543,886

Int. Cl.[6] B65D *85/00*

U.S. Cl. 426—129 **10 Claims**

6. A method of packaging fresh meat for retail case-ready display in a substantially oxygen-free atmosphere to provide pro-



longed shelf life and whereby the meat blooms to a desired red color when the meat is removed from the packaging, the method comprising the steps of:

a) forming a tray of a gas barrier material and having a base, opposed upstanding end walls, and opposed upstanding side walls and an outwardly projecting upper perimeter lip which extends in continuous fashion along upper free ends of said upstanding side and end walls, said side walls, end wails and base of said tray together defining an upwardly open hollow interior sized to receive a piece of meat of a specified cut there within;

b) placing a piece of fresh meat within said tray;

c) selectively perforating upper portions of said side and end walls of said tray to permit gas exchange therethrough without clogging due to run-off juices from the meat or shifting of the meat within the tray;

d) applying a flexible web of non-barrier clear plastic wrapping material around said tray and meat to provide an overwrapped tray having two enclosed regions, including:

i) a first enclosed region defined by a portion of said plastic wrapping material which spans across and covers said hollow interior of said tray; and

ii) a second enclosed region defined by a perimeter overwrap portion of said plastic wrapping material which extends from said outwardly projected perimeter lip to said base;

e) selectively perforating said perimeter overwrap portion of said plastic wrapping material to permit gas exchange between said first and second enclosed regions and a region outside of said overwrapped tray;

f) placing the overwrapped tray within a gas impermeable outer barrier bag;

g) applying a vacuum to said outer barrier bag to withdraw normal atmospheric gases from within said outer barrier bag and said first and second enclosed regions of said overwrapped tray;

h) flushing the interior of said outer barrier bag and said first and second enclosed regions of said overwrapped tray with a carbon dioxide gas; and

i) sealing the outer barrier bag.

5,667,828

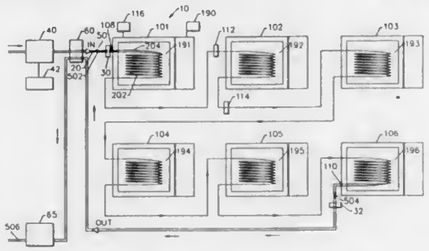
SYSTEM AND METHOD FOR PASTEURIZING CITRUS JUICE USING MICROWAVE ENERGY

Seifollah Nikdel, Winter Haven, Fla.; Paul E. Burgener, Mississauga, Canada, and Angelo C. Grillo, Boca Raton, Fla., assignors to Florida Dept. of Citrus, Lakeland, Fla.

Continuation of Ser. No. 322,828, Oct. 13, 1994, Pat. No. 5,514,389. This application May 3, 1996, Ser. No. 642,555

Int. Cl.[6] A23L *3/00;* **H05B** *6/00*

U.S. Cl. 426—231 **10 Claims**



1. A method for pasteurizing a liquid while retaining optimum flavor, the method comprising the steps of:

continuously flowing the liquid through microwave-transparent tubing, the tubing having a diameter sufficient to minimize a temperature gradient thereacross by maintaining a maximum depth of liquid from a wall of the tubing; and

exposing the liquid flowing through the tubing to microwave energy in a series of steps to sequentially heat the flowing liquid to a predetermined final temperature sufficiently high to pasteurize the liquid but insufficient to cause a detectable loss of flavor in the liquid.

5,667,829

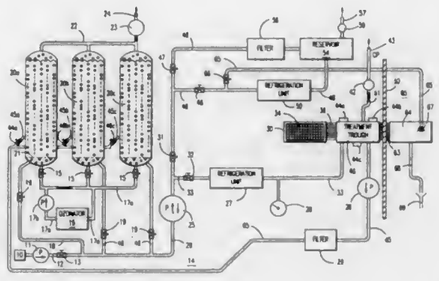
METHOD AND APPARATUS FOR TREATING MEAT PRODUCTS WITH ULTRASONIC ENERGY IN AN OZONATED WATER ENVIRONMENT

Richard K. Herlig, Kansas City, Mo., assignor to Medagri, Inc., Shreveport, La.

Filed May 1, 1996, Ser. No. 641,423

Int. Cl.[6] A22C *18/00;* **A23B** *4/00*

U.S. Cl. 426—238 **20 Claims**



1. A process for the eradication of pathogens from the surface of meat products, comprising the steps of:

mixing ozone with water to provide an ozonated water bath;

immersing the meat products in said ozonated water bath; and

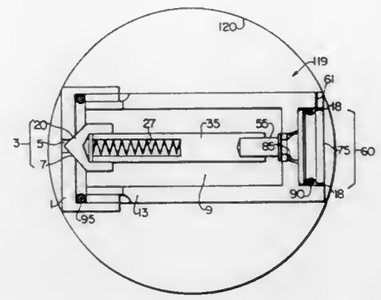
subjecting said ozonated water bath and the immersed meat products to an amount of ultrasonic vibration effective to dislodge pathogen containing particles from the surface of the meat products into said ozonated water bath, the dislodged pathogens being treated with an amount of the ozone in the ozonated water bath effective to render the pathogens harmless.

5,667,830

Patent Not Issued For This Number

5,667,831

Patent Not Issued For This Number



5,667,832

METHOD AND DEVICE FOR FOAM GENERATION BY DISPERSION OF BUBBLES

Keith Tromans, Sutton Coldfield, England, assignor to Scottish and Newcastle PLC, Edinburgh, United Kingdom

Continuation of Ser. No. 232,218, Sep. 27, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 658,018

Claims priority, application United Kingdom, Nov. 5, 1991, 9123451; Dec. 17, 1991, 9126702; Mar. 25, 1992, 9206483

Int. Cl.[6] B65B *25/00;31/00*

U.S. Cl. 426—394 **24 Claims**

13. A method of packaging a beverage having a gas dissolved therein in a sealed container for subsequent generation of a foaming dispersion of bubbles in said beverage upon said container being opened, wherein said method comprises the steps of:

providing a sealable beverage container which is initially open, the interior of which provides a primary chamber;

providing a device comprising:

a secondary chamber;

a first valve in fluid communication with said secondary chamber in a normally closed state, said first valve being responsive to the pressure of a fluid at the exterior of said device and changing from said closed state to an open state to admit an amount of the fluid from the exterior of said device through said first valve and in to said secondary chamber when the pressure of fluid at the exterior of said device exceeds the internal pressure of said secondary chamber by a first predetermined amount, thereby to establish a reserve of pressurized fluid within said secondary chamber; and

a second valve in fluid communication with said secondary chamber and said reserve of pressurized fluid within said secondary chamber, said second valve having an outlet including a flow-restricting portion and being in a normally closed state, said second valve being responsive to said internal pressure of said secondary chamber and changing from said closed state to an open state to release at least a portion of said reserve of pressurized fluid from said secondary chamber to pass outwardly into said liquid at the exterior of said device through said flow-restricting portion when said internal pressure of said secondary chamber exceeds the pressure of said liquid at the exterior of said device by a second predetermined amount;

placing said device in said primary chamber of said container;

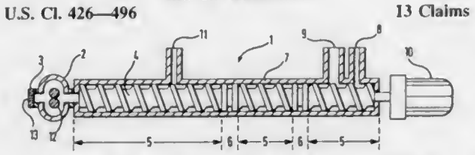
prior or subsequent to placing said device in said open container, introducing said beverage in to said primary chamber;

closing and sealing said container;

pressurizing the contents of said primary container above the internal pressure of said secondary chamber by at least said first predetermined amount, thereby causing an amount of fluid from said primary chamber to be admitted through said first valve of said device and into said secondary chamber to establish a reserve of pressurized fluid within said secondary chamber; and

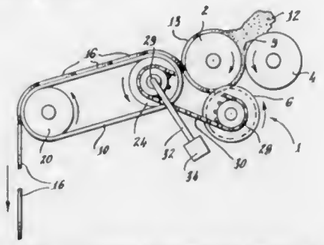
forcing out at least a portion of said reserve of pressurized fluid from said secondary chamber into said beverage in said primary chamber through said flow-restricting portion of said second valve to assist in the generation of a foaming dispersion of bubbles in said beverage, when said container is subsequently opened to depressurise the contents of said primary chamber to a pressure below the internal pressure of the secondary chamber by at least said second predetermined amount.

5,667,833
MANUFACTURE OF PASTA
Daniele Juengling, Vevey, Switzerland; Thomas Wilhelm Hauser, Eboll, Italy; Jürg Lechthaler, Wallisellen, Switzerland; Luca Rusconi, Winterthur, Switzerland; Armando Dos Santos Pousa, Winterthur, Switzerland, and Philipp Paul Meyer, Benglen, Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Filed Apr. 28, 1995, Ser. No. 430,550
Claims priority, application Switzerland, Apr. 28, 1994, 1324/94
Int. Cl.[6] A21D *6/00*
U.S. Cl. 426—496 13 Claims



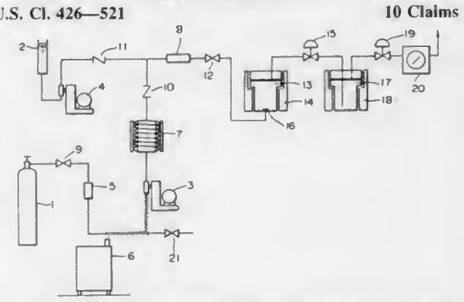
1. A process for the manufacture of pasta, which comprises:
preparing a mixture of water and flour wherein the water is present in the mixture in an amount of about 25 to 40% by weight;
kneading the mixture by passing the mixture at a pressure of less than or equal to 30 bar between two screws which mesh with each other and which are rotating in the same direction at a speed of between about 20 to 120 RPM to form a kneaded dough;
compressing the kneaded dough by passing it through a gear pump which includes toothed rotatable members which mesh with each other but which are designed to substantially avoid shearing of the dough and to form a compressed dough; and
extruding the compressed dough in the shape of a pasta.

5,667,834
TORTILLA MANUFACTURING METHODS
Manuel Jesus Rubio, Miami, Fla., and Ramiro Montelongo, Sector Guadalupe, Mexico, assignors to Roberto Gonzales Barrera, Delegacion Miguel Hidalgo, Mexico
Division of Ser. No. 377,213, Jan. 23, 1995, Pat. No. 5,565,220. This application Jun. 24, 1996, Ser. No. 669,109
Int. Cl.[6] A21D *8/00*
U.S. Cl. 426—503 4 Claims



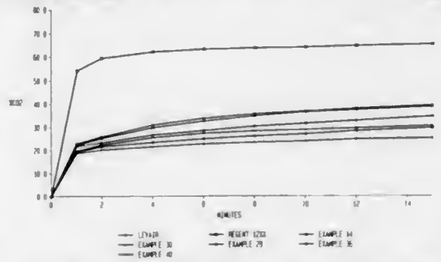
1. A method of cutting and removing articles of desired peripheral configuration and dimensions from a sheet of dough comprising the steps of
adhering a sheet of dough to a moveable carrier surface,
moving said carrier surface and thereby transporting said sheet along a path of travel,
cutting out articles of desired configuration and shape from said sheet as said sheet is being so transported by said carrier surface,
backing a gas transmissive conveyor belt with a suction roll and while and where so backed, bringing said belt into proximity to the exposed surface of said articles after they have been cut out of said sheet,
said suction roll having an internal vacuum and
including passageway means for exposing said vacuum to the outer surface of said suction roll in configurations and dimensions corresponding substantially to those of the leading portions of said articles as they are transported along said path of travel by said carrier surface, and registering said passageway means with the leading portions of articles which have been cut out of said sheet.

5,667,835
METHOD FOR INACTIVATING ENZYMES, MICROORGANISMS AND SPORES IN A LIQUID FOODSTUFF
Yutaka Osajima, Fukuoka; Mitsuya Shimoda, Fukuoka-ken, and Tamotsu Kawano, Ichikawa, all of Japan, assignors to Nippan Tansan Co., Ltd., Japan
Continuation-in-part of Ser. No. 291,484, Aug. 17, 1994, Pat. No. 5,520,943. This application Feb. 27, 1996, Ser. No. 607,888
Claims priority, application Japan, Oct. 27, 1993, 5-291230
Int. Cl.[6] A23L *3/00*
U.S. Cl. 426—521 10 Claims



1. A method for inactivating enzymes, microorganisms and spores in a liquid foodstuff comprising contacting the liquid foodstuff in a treating tank with carbon dioxide in a supercritical state supplied through a filter with a mesh size of not more than 120 μm average diameter at a carbon dioxide concentration in the liquid foodstuff of not less than 0.4 mole/liter for 10 seconds to 120 minutes, thereby inactivating enzymes, microorganisms and spores present in the liquid foodstuff wherein the carbon dioxide density in the liquid foodstuff is not less than 0.4 g/cm^3, and the pressure in the treating tank is not less than 15 MPa.

5,667,836
LEAVENING ACID COMPOSITION PRODUCED BY HEATING MONOCALCIUM PHOSPHATE AT ELEVATED TEMPERATURES
Frank H. Y. Chung, Langhorne, Pa., assignor to Rhone-Poulenc Inc., Monmouth Junction, N.J.
Division of Ser. No. 344,322, Nov. 22, 1994, Pat. No. 5,554,404. This application May 17, 1996, Ser. No. 649,397
Int. Cl.[6] A21D *2/02*
U.S. Cl. 426—563 17 Claims



1. A composition of matter comprising a monocalcium phosphate leavening acid having a neutralizing value of between about 44 and about 63 wherein the neutralizing value is the amount by weight of sodium bicarbonate needed to neutralize 100 parts by weight of said monocalcium phosphate leavening acid.

5,667,837
EDIBLE FAT PRODUCT
Rowena Allison Broomhead, Johannesburg, South Africa, and Hindrik Huizinga, Maassluis, Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.
Filed May 17, 1996, Ser. No. 649,562
Claims priority, application European Pat. Off., May 19, 1995, 95201315
Int. Cl.[6] A23D *7/00*
U.S. Cl. 426—603 9 Claims

1. Edible plastic fat product comprising a continuous fat phase and optionally a dispersed aqueous phase wherein the fat of the fat phase is a fat-composition comprising 20–65% liquid oil and 80–35% structuring fat and having N_{35} of 0–5 and N_{20} of 12–40, the difference between N_{20} and N_{35} being at least 12, which fat-composition comprises 0–10%, trans fatty acid residues, and which fat-composition comprises 10–50% not-interesterified lauric fat selected from the group consisting of
A a combination of unhydrogenated and fully hydrogenated lauric fat,
B partially hydrogenated lauric fat,
C a combination of A and B, and
D a combination of at least one of A, B and C with other lauric fat.

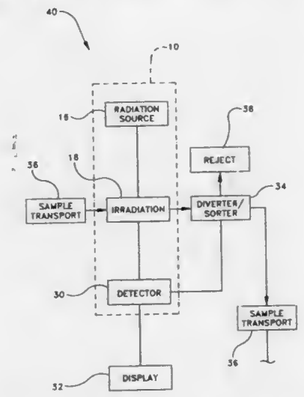
5,667,838
SEPARATELY MILLING NUT SOLIDS AND PARTICULATE WATER SOLUBLE SOLIDS TO REDUCE STICKINESS AND IMPROVE FLAVOR INTENSITY OF NUT SPREADS
Vincent York-Leung Wong, and Richard Joseph Sackenheim, both of Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 5, 1996, Ser. No. 706,587
Int. Cl.[6] A23L *1/38*
U.S. Cl. 426—633 9 Claims

1. A premix useful in making nut spreads, which comprises:
a. up to about 15% nut solids;
b. from about 5 to about 75% oil;
c. from about 5 to about 75% of a particulate water-soluble component having a mean particle size of about 20 microns or less and selected from the group consisting of flavorants, flavor enhancers, bulking agents and mixtures thereof.

5,667,839
HUMAN RECOMBINANT COLLAGEN IN THE MILK OF TRANSGENIC ANIMALS
Richard A. Berg, Sunnyvale, Calif., assignor to Collagen Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 11,643, Jan. 28, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 183,648
Int. Cl.[6] A23C *9/152;* A23J *1/20;* C07K *1/00;* C12N *15/06*
U.S. Cl. 426—657 2 Claims

1. Milk from a transgenic mouse, said mouse comprising a transgene which comprises a structural gene for a human α1(I) procollagen gene operably linked to a bovine αS1-casein promoter, said milk containing a recoverable amount of human trimeric α1(I) procollagen.

5,667,840
LUBRICANT SOLUBLE FLUORESCENT AGENT AND METHOD FOR ITS USE IN A SYSTEM FOR DETECTION OF LUBRICANT COATINGS
Kevin G. Tingey, So. Sandy, Utah; Victor A. Williamitis, Dayton; Charles W. Daugherty, Jamestown, both of Ohio; Jeanne E. Lambert, Conyers, Ga., and Steven H. Mersch, Germantown, Ohio, assignors to Becton Dickinson and Company, Franklin Lakes
Filed Feb. 27, 1996, Ser. No. 606,718
Int. Cl.[6] B05D *5/06;7/02;3/06*
U.S. Cl. 427—8 7 Claims



1. A method for visualization of the degree of coverage of polydimethylsiloxane lubricant on a surface of a medical device comprising:
dissolving a fluorescent agent into a polydimethylsiloxane lubricant at a concentration of between about 10^{-5}% to about 10^{-6}%;
applying said fluroscenated polydimethylsiloxane lubricant to a surface of a medical device;
irradiating the surface with an electromagnetic radiation to induce a fluorescent emission in said fluorescent agent; and
detecting said fluorescent emission in order to visualize the degree of coverage of the polydimethylsiloxane on the surface of the medical device.

5,667,841
METHODS OF LINING THE INTERNAL SURFACE OF A PIPE
Shigeru Toyoda, Saitama-ken; Shuichi Yagi, and Masaaki Itagaki, both of Kanagawa-ken, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan
Division of Ser. No. 560,928, Nov. 20, 1995. This application Nov. 6, 1996, Ser. No. 746,193
Claims priority, application Japan, Nov. 28, 1994, 6-293500; Nov. 28, 1994, 6-293501; Nov. 29, 1994, 6-294734; Nov. 29, 1994, 6-294735
Int. Cl.[6] B05D *7/22*
U.S. Cl. 427—235 2 Claims



2. A method of lining the internal surface of a pipe, said method comprising the steps of:
inserting a first lining pig into the pipe from an open end thereof;
introducing a first batch of a resin into the pipe from the open end subsequent to the insertion of the first lining pig;
inserting behind the first batch of the resin a second lining pig into the pipe;
introducing a second batch of the resin into the pipe subsequent to the insertion of the second lining pig;

inserting behind the second batch of the resin a resin transporting pig, a liquid absorbing material and a liquid blocking pig into the pipe;

injecting a necessary amount of pressurized liquid into the pipe subsequent to the insertion of the liquid blocking pig, thereby forcing the resin, the lining pigs, the resin transporting pig, the liquid absorbing material and the liquid blocking pig to move forwardly until the front end of the resin reaches an inner end of the pipe; and

sucking back the injected liquid such that the liquid blocking pig, the liquid absorbing material, the resin transporting pig, the resin and at least one lining pig are moved backwardly so as to line the internal surface of the pipe with the resin and obtain an even resin lining layer by means of the at least one lining pig.

5,667,842

ABRASIVE ARTICLES INCORPORATING ADDITION POLYMERIZABLE RESINS AND REACTIVE DILUENTS, AND METHODS OF MAKING SAID ABRASIVE ARTICLES

Eric G. Larson, Lake Elmo; Ernest L. Thurber, St. Paul; Alan R. Kirk, Cottage Grove; Gregg D. Dahlke, St. Paul; Elizabeth C. Edblom, Minneapolis, all of Minn., and Don H. Kincaid, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 144,199, Dec. 20, 1993, abandoned, which is a division of Ser. No. 334,817, Nov. 4, 1994, Pat. No. 5,523,152, which is a continuation-in-part of Ser. No. 143,824, Oct. 27, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,289

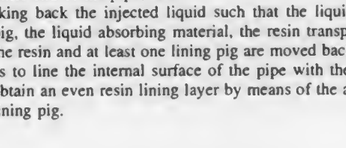
Int. Cl.[6] B05D *1/38*; **B24D** *3/00*; **C09K** *3/14*

U.S. Cl. 427—258 **15 Claims**



1. A coated abrasive article comprising a backing upon which an abrasive coating comprising a plurality of abrasive grains and a binder is attached, at least a portion of said binder formed from a coatable, addition polymerizable binder precursor composition comprising an organic compound selected from the group consisting of:

(a) compounds selected from the group consisting of compounds within general formula (I):



wherein:

R^1 is an organic radical devoid of reactive groups other than optional ethylenically-unsaturated groups and is selected from the group consisting of radicals having from 1 to 12 carbon atoms;

R^2 is selected from the group consisting of: i) organic radicals devoid of reactive groups other than optional ethylenically-unsaturated groups and selected from the group consisting of organic radicals having from 1 to 12 carbon atoms, and ii) moieties which do not substantially terminate polymerization of ethylenically-unsaturated groups;

R^3 is selected from the group consisting of —H and organic radicals devoid of reactive groups other than optional ethylenically-unsaturated groups and selected from the group consisting of organic radicals having from 1 to 12 carbon atoms;

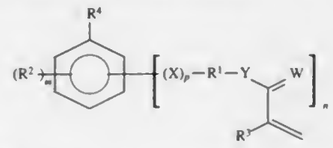
R^4 is selected from the group consisting of —H, —OH, —O—C(=O)—C(R^3)=CH_2, and —NR^3—C(=O)—C(R^3)=CH_2;

W, X and Y are independently selected from the group consisting of O, S, NR^3;

m is an integer ranging from 0 to 2, with the proviso that when m=2, R^2=adjacent substitutions which together form fused organic ring structures; and

n is either 1 or 2;

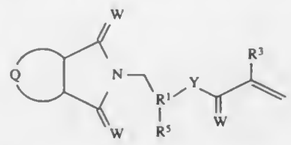
(b) aromatic compounds selected from the group consisting of compounds within general formula III):



wherein:

R^1, R^2, R^3, R^4, W, X, Y, m and n are as defined for general formula (I) and p is 0 or 1, with the proviso that when R^1 is —CH_2CH_2—, R^4 is H, and m is 0, when X, Y, and W cannot all be O, and with the proviso that when p is 0 and R^1 is —CH_2—, Y cannot be NR_3 or O;

(c) N-substituted succinimide derivatives selected from the group consisting of compounds within general formula (III):



wherein:

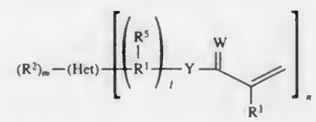
R^1, R^3, W and Y are as defined for general formula (I);

R^5 is selected from the group consisting of —H, —$(R^1)_t$—Y—C(=W)—CR_3=CH_2, and C_1-C_{12} (inclusive) organic radicals;

Q is selected from the group consisting of cycloaliphatic residues, bicycloaliphatic residues, and aromatic residues, wherein the residues may have optional ring substituents which do not substantially interfere with free radical polymerization of ethylenically unsaturated groups; and

t is 0 or 1;

(d) heterocyclic compounds selected from the group consisting of compounds within general formula (IV):



wherein:

R^1, R^2, R^3, W, Y, m, and n have the meaning set forth for general formula (I);

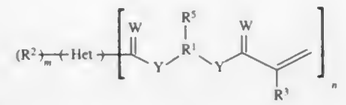
R^5 is selected from the group consisting of —H, —$(R^1)_t$—Y—C(=W)—CR_3=CH_2, and C_1-C_{12} (inclusive) organic radicals;

(Het) is a cyclic organic radical having at least one ring heteroatom;

l is 0 or 1; and

t is 0 or 1; and

(e) heterocyclic compounds selected from the group consisting of compounds within general formula (V):



wherein:

R^1, R^2, R^3, R^5, W, Y, m, and n have the meanings set forth in general formula (IV);

and mixtures thereof.

5,667,843

PRE-TREATING ZINCIFEROUS SURFACES BEFORE CONVENTIONAL CHROMATING TO IMPROVE RUST RESISTANCE

Noriaki Yoshitake; Kensuke Mizuno, and Takao Ogino, all of Kanagawa-ken, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Oct. 23, 1992, Ser. No. 965,643

Claims priority, application Japan, Oct. 24, 1991, 3-303857

Int. Cl.[6] B05D *3/04*; **C23C** *22/24*

U.S. Cl. 427—305 **8 Claims**

1. A process for treating a zinciferous surface, said process comprising steps of:

(A) coating the zinciferous surface with a film of an aqueous liquid pre-treatment composition consisting essentially of (i) water; (ii) cations selected from the group consisting of cobalt, nickel, and both cobalt and nickel; (iii) anions containing hexavalent chromium; and (iv) sufficient anions to balance the charge of the cations present and, optionally, (v) complexing agents for cobalt and nickel cations; and, optionally, (vi) divalent lead cations, trivalent iron cations, or both; said pre-treatment composition also being substantially free from chloride ions; and

(B) drying into place on the zinciferous surface the film of aqueous liquid coated thereon in step (A); and

(C) applying a chromate coating to the zinciferous surface as treated at the end of step (B), the amount of chromate coating thus applied being sufficient to inhibit the corrosion of the underlying zinciferous surface,

the total mass of cobalt and nickel added to the zinciferous surface during steps (A) and (B) being in the range from about 0.5 to about 100 mg/m^2 of the zinciferous surface treated.

5,667,844

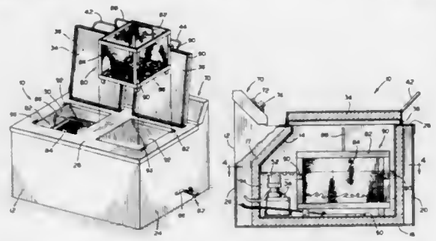
TOOL TREATING PROCESS

Morton R. Smith, Napoleon, and James L. Maassel, New Bavaria, both of Ohio, assignors to Macro Specialty Industries, Inc., Napoleon, Ohio

Filed Jul. 25, 1996, Ser. No. 684,882

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—318 **9 Claims**



1. A process for treating a cutting tool, comprising the steps of:

a) placing the tool to be treated into a first bath of solvent;

b) heating the bath of solvent to remove contaminant from the surfaces of the tool within the bath of solvent;

c) placing the tool in a second bath of a perfluoroethylene resin;

d) circulating the second bath of perfluoroethylene resin for a time sufficient to coat the surfaces of the tool with perfluoroethylene resin; and

e) removing the tool from the second bath to permit the tool to return to ambient temperature.

5,667,845

TREATMENT TO IMPROVE CORROSION RESISTANCE OF AUTODEPOSITED COATINGS ON METALLIC SURFACES

Oscar E. Roberto, Farmington Hills, and Shawn E. Dolan, Sterling Heights, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 316,437, Sep. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 102,660, Aug. 5, 1993, Pat. No. 5,372,853. This application May 14, 1996, Ser. No. 645,689

Int. Cl.[6] B05D *3/04*

U.S. Cl. 427—337 **21 Claims**

1. A process for providing a metal substrate surface with a protective coating containing an organic binder, said process comprising steps of:

(A) contacting a metal substrate surface with a liquid autodeposition composition containing dispersed organic binder for a sufficient time to form a wet adherent film on the surface of said metal substrate wherein said wet adherent film includes said organic binder deposited from the autodeposition composition;

(B) separating the substrate bearing the wet adherent film formed in step (A) from further contact with the autodeposition composition and contacting the wet adherent film with an aqueous liquid rinse solution comprising

(1)) water;

(2) anions wherein said anions consist of (i) at least four fluorine atoms and (ii) at least one atom of an element selected from the group consisting of titanium, zirconium, hafnium, silicon, and boron and, optionally, (iii) one or more oxygen atoms; and

(3) a stoichiometric amount of counterions for said anions;

said solution including only non-chromium-containing materials thereby raising no disposal problems created by the use of chromium-containing compounds; and

(C) separating the substrate bearing the wet adherent film as modified by the contacting of step (B) from the aqueous liquid rinse solution used in step (B) and subsequently drying the wet film into place on the substrate to produce a dry film.

5,667,846

ROLLER COATING TO MAKE POST-FORMABLE NON-STICK SMOOTH SUBSTRATES

Philippe Andre Fernand Germain Thomas, Helecine, Belgium, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Contiouation-in-part of Ser. No. 245,407, May 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 146,811, Nov. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,758, Dec. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 472,684

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—379 **2 Claims**

1. A process of coating to produce a coated substrate wherein the coating comprises a two-layer coating system including a primer applied to the substrate and a topcoat applied to the primer, said primer being the cured product of an aqueous coating composition comprising perfluorocarbon resin and a binder consisting essentially of polyamide imide and polyphenylene sulfide resin, wherein said perfluorocarbon resin comprises two different perfluorocarbon resins, the first being a polymer of polytetrafluoroethylene having a melt viscosity of at least 10^{10} Pa Sec the second being a copolymer of tetrafluoroethylene and hexafluoropropylene having, a melt viscosity in the range of 10^2 to 10^7 Pa Sec, the weight proportions

being in the range of 50 to 85% of the first such resin and 15–50% of the second such resin based on the total of said first and second resins the ratio of the polyamide imide to polyphenylene sulfide being in the range of 3:1 to 1:3, and wherein the weight ratio in the cured coating of fluoropolymer to binder is in the range of 2:1 to 1:1, and said topcoat comprising polytetrafluoroethylene and mica, said topcoat having been cured from a coating composition which also included a polymer which decomposed and left essentially no residue on curing of the coating, said process comprising: applying the coating layers by roller coating to the substrate in the form of a disc, which has an average surface roughness profile less than 1.3 microns RMS measured from a centerline, without completely drying one coating before applying the next, and then curing the coating system by heating to a temperature of at least 400° C., and then forming the disc by deep drawing with a draw ratio of depth to diameter of at least about 0.2:1.

5,667,847

PROCESS FOR THE PRODUCTION OF A MULTICOAT PROTECTIVE AND/OR DECORATIVE COATING AND WATER-DILUTABLE COATING COMPOSITIONS

Bodo Muller, and Eric Martin, both of Wurzburg, Germany, assignors to BASF Lacke+Farben Aktiengesellschaft, Munster, Germany

Continuation of Ser. No. 458,719, Mar. 23, 1990, abandoned. This application May 10, 1993, Ser. No. 58,818

Claims priority, application Germany, Jul. 31, 1987, 37 25 371.9

Int. Cl.[6] B05D *1/36;7/24;* **C09D** *5/38;105/00*

U.S. Cl. 427—385.5 **21 Claims**

1. A water-dilutable coating composition for the production of a basecoat of a two layer coating of the basecoat/clearcoat type comprising: a pseudoplastic or thixotropic water-dilutable basecoat composition comprising water, a water-dilutable binder, crosslinked polymeric microparticles with a diameter of 0.01 to 10 μm, pigment particles and a thickener, said composition containing 0.1 to 4.0% by weight based on the binder solids weight, of xanthan gum and 5 to 80% by weight based on the binder solids weight, of crosslinked polymeric microparticles, the crosslinked polymeric microparticles being obtained

(a) by dispersing a mixture of a component (A) and a component (B) in an aqueous medium, the component (A) comprising one or more polyester polyols containing at least two hydroxyl groups and the component (B) comprising one or more polyisocyanate compounds, the component (A) or (B) possessing a sufficient number of ionic groups to form a stable dispersion and at least a part of the components (A) or (B) containing more than two hydroxyl or isocyanate groups per molecule, and

(b) by subsequently heating the resultant dispersion to a temperature high enough for the components (A) and (B) to react with the formation of crosslinked polymeric microparticles.

5,667,848

USE OF AQUEOUS POLYMER DISPERSIONS AS TEXTILE AUXILIARIES FOR EASY-CARE FINISHING OF TEXTILES

Renate Wuestefeld, Schifferstadt, and Toni Simenc, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshaften, Germany

PCT No. PCT/EP93/02614, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/08085, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 25, 1993, Ser. No. 397,250

Claims priority, application Germany, Oct. 6, 1992, 42 33 497.7

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—389.9 **7 Claims**

1. A method for the easy-care finishing of textiles, which comprises impregnating the textile material with an aqueous bath which contains

(A) at least one aqueous polymer dispersion obtained by free-radical aqueous emulsion polymerization of a free-radically polymerizable unsaturated monomer or mixture of monomers in aqueous phase in the presence of a saccharide or of a mixture of saccharides,

(B) a reactive crosslinker with N-alkyl, N-methylol or N-methylol ether groups, and

(C) a crosslinking catalyst, and

drying the impregnated textile material at from 80° C. to 200° C.,

wherein the polymerizable unsaturated monomers consist essentially of, based on the unsaturated monomers, of

(a) from 90 to 99% by weight acrylic acid, methacrylic acid or a mixture thereof esterified with alkanols of from 1 to 8 carbon atoms, and from 1 to 10% by weight of acrylic acid, methacrylic acid or a mixture thereof, or

(b) from 90 to 99% by weight of at least one ester of an α,β-monoethylenically unsaturated mono- or dicarboxylic acid of from 3 to 6 carbon atoms with an alkanol of from 1 to 6 carbon atoms, from 1 to 10% by weight of at least one monomer selected from the group consisting of α,β-monoethylenically unsaturated carboxylic acids of from 3 to 6 carbon atoms, their amides and nitriles, and from 0 to 10% by weight of one or more monomers selected from the group consisting of N-alkylolamides of α,β-monoethylenically unsaturated carboxylic acids of from 3 to 6 carbon atoms having from 1 to 4 carbon atoms in the alkyl group and monomers of up to 25 carbon atoms containing two conjugated ethylenically unsaturated double bonds.

5,667,849

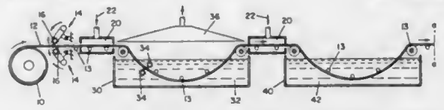
METHOD FOR COATING A METAL STRIP

Jay F. Carey, II, Follansbee, W. Va., and Mehrooz Zamanzadeh, Pittsburgh, Pa., assignors to The Louis Berkman Company, Steubenville, Ohio

Division of Ser. No. 551,456, Nov. 1, 1995, Pat. No. 5,616,424, which is a continuation of Ser. No. 402,925, Mar. 13, 1995, Pat. No. 5,491,036, which is a continuation-in-part of Ser. No. 380,372, Jan. 30, 1995, Pat. No. 5,480,731, which is a continuation of Ser. No. 153,026, Nov. 17, 1993, Pat. No. 5,395,703, which is a division of Ser. No. 858,662, Mar. 27, 1992, Pat. No. 5,314,758, which is a continuation-in-part of Ser. No. 175,523, Dec. 30, 1993, Pat. No. 5,401,586, which is a continuation-in-part of Ser. No. 154,376, Nov. 17, 1993, abandoned, which is a continuation of Ser. No. 042,649, Apr. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 165,085, Dec. 10, 1993, Pat. No. 5,397,652, which is a continuation-in-part of Ser. No. 000,101, Jan. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 858,662, Mar. 27, 1992, Pat. No. 5,314,758. This application Feb. 20, 1996, Ser. No. 604,074

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—431 **69 Claims**



1. A method of producing a coated metal strip having a corrosive-resistant alloy comprising the steps of:

a) selecting a metal strip formed of a given metal and having an exposed surface and a thickness of less than about 0.20 inch;

b) unrolling said metal strip from a coil of said metal strip;

c) hot dip coating said metal strip with corrosion-resistant alloy by continuously passing said strip in a longitudinal direction at a speed through a molten bath of said corrosion-resistant alloy, said molten bath having a temperature of at least about 449° F., said speed of said metal strip controlled such that said metal strip has a residence time in said molten bath is about 0.08 to about 10 minutes to deposit a substantially uninterrupted layer of said corrosion-resistant alloy having a substantially uniform thickness of about 0.001 to about 0.05 inch onto the exposed surface of said metal strip and forming an intermetallic interface comprising an interface alloy constituting a heat created mixture of said given metal and said corrosion-resistant alloy and having a thickness of about 1 to about 10 microns, said corrosion-resistant alloy comprising at least about 90 weight percent tin and up to about 0.1 weight percent lead.

5,667,850

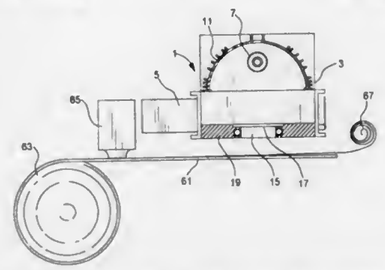
METHOD OF CURING WITH ULTRAVIOLET RADIATION ON SUBSTRATES REQUIRING LOW HEAT

Thomas J. Gaven, Summit, and Dario V. Bravar, Lodi, both of N.J., assignors to Gavenco, LLC, Newark, N.J.

Filed Oct. 4, 1996, Ser. No. 726,084

Int. Cl.[6] C08J *7/04*

U.S. Cl. 427—510 **10 Claims**



1. In a method of curing ultraviolet light-curable printings, and adhesives on heat sensitive substrates, wherein said substrates are applied and then passed under ultraviolet light, the improvement which comprises:

reducing the temperatures of said substrates while being passed under said ultraviolet light by providing a shield at a location between said ultraviolet light and said substrates, said shield being substantially infrared light reflective to prevent infrared light from reaching said substrates and also being substantially ultraviolet light transmissive permeable to permit ultraviolet light to reach said substrates.

5,667,851

PROCESS FOR PREPARING A METALLIZED POLYMIDE FILM CONTAINING A HYDROCARBYL TIN COMPOUND

James R. Edman, Circleville, Ohio, and Donald J. Coulman, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 236,793, Apr. 29, 1994, Pat. No. 5,543,222. This application May 30, 1996, Ser. No. 656,120

Int. Cl.[6] H05H *1/00;* **C23C** *14/00*

U.S. Cl. 205—95 **9 Claims**

1. A process for preparing a metallized polyimide film, comprising the steps of:

(a) incorporating a hydrocarbyl tin compound in oxidation states (II) or (IV) into a solution of a poly(amic acid) precursor of a polyimide film;

(b) forming a solidified self-supporting film of said poly (amic acid) precursor;

(c) heating said solidified poly(amic acid) film at a temperature greater than 350° C. to completely imidize said poly(amic acid) to form said polyimide film, wherein the concentration of tin in said completely imidized polyimide film ranges from 0.05 to 0.50% by weight;

(d) forming a vacuum deposited metal layer having a thickness of from 500 to 5000 angstroms by vacuum deposition of a metal on at least one side of said polyimide film; and

(e) applying an electroplated layer having a thickness of from 10 to 70 micrometers onto said vacuum deposited metal layer, wherein said polyimide base layer is directly bonded to said vacuum deposited metal layer without the use of an adhesive.

5,667,852

PLASMA JET CVD METHOD OF DEPOSITING DIAMOND OR DIAMOND-LIKE FILMS

Pavel P. Kulik; Vladimir V. Ivanov; Eugenia N. Zornia, all of Moscow, Russian Federation, and John A. Gay, Newmarket, Great Britain, assignors to Overseas Publishers Association, Amsterdam, Netherlands

PCT No. PCT/EP94/03160, § 371 Date Sep. 3, 1996, § 102(e) Date Sep. 3, 1996, PCT Pub. No. WO95/08657, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 21, 1994, Ser. No. 619,718

Claims priority, application United Kingdom, Sep. 23, 1993, 9319627

Int. Cl.[6] B05D *3/06;* **C23C** *16/26*

U.S. Cl. 427—577 **6 Claims**

1. A method of obtaining a diamond or diamond-like film from the gas phase comprising:

forming a plasma reaction zone, feeding a mixture of hydrocarbons and hydrogen to the zone, depositing the diamond or diamond-like film on a substrate, the reaction zone being formed by a plasma flux at atmospheric pressure and at a temperature T of about 10^{4o} K., said flux comprising at least three axially symmetrically arranged convergent jets, said diamond or diamond-like film being formed on the substrate by passing the substrate at a high velocity at least once through the plasma flux zone.

5,667,853

MULTILAYERED CONDUCTIVE FILM, AND TRANSPARENT ELECTRODE SUBSTRATE AND LIQUID CRYSTAL DEVICE USING THE SAME

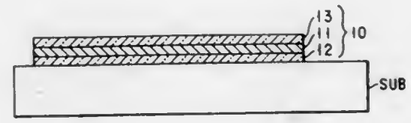
Kenzo Fukuyoshi; Yukihiro Kimura, both of Tamana; Koji Imayoshi, Kumamoto-ken; Osamu Koga, Tamana, and Katsunori Horachi, Yokaichi, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1996, Ser. No. 619,240

Claims priority, application Japan, Mar. 22, 1995, 7-088797; Mar. 22, 1995, 7-088798; Mar. 22, 1995, 7-088799; Aug. 31, 1995, 7-223403; Aug. 31, 1995, 7-223405

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 428—1 **16 Claims**



1. A multilayered conductive film comprising:

a silver-based layer formed of a silver-based metallic material and having first and second surfaces;

a first transparent oxide layer provided on said first surface of said silver-based layer; and

a second transparent oxide layer provided on said second surface of said silver-based layer;

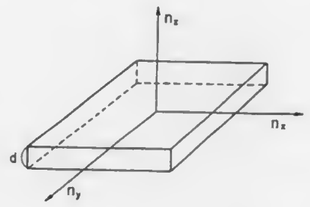
said first and second transparent oxide layers being independently formed of a compound oxide material of indium oxide with at least one secondary metal oxide whose metallic element has substantially no solid solubility in silver.

5,667,854

RECTANGULAR OPTICAL COMPENSATORY SHEET, PROCESS FOR PREPARATION OF THE SAME, AND LIQUID CRYSTAL DISPLAY

Tsukasa Yamada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 24, 1996, Ser. No. 685,686
Claims priority, application Japan, Jul. 24, 1995, 7-186949
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 428—1 11 Claims



1. A rectangular optical compensatory sheet having a shorter side of not less than 14 cm which comprises a transparent support, an orientation layer provided thereon and an optically anisotropic layer provided on the orientation layer, the optically anisotropic layer comprising a compound having one or more discotic structure units in its molecule, and whose variation of retardation in overall area is within X±5 nm wherein X is in the range of 0 to 100 nm, the retardation being represented by the formula:

(nx−ny)×d

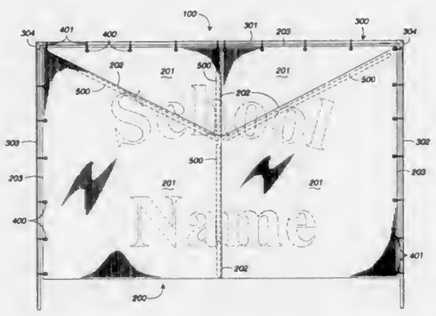
in which nx and ny are main refractive indices on the plane of the sheet and d is the thickness of the sheet in terms of nm.

5,667,855

REUSABLE TEAR THROUGH BANNER

Timothy W. Borden, Rte. 5, Box 606, and Daniel D. Yates, Rte. 5, Box 612, both of Jasper, Ala. 35501

Filed May 28, 1996, Ser. No. 654,253
Int. Cl.[6] G09F *17/00*
U.S. Cl. 428—8 3 Claims



1. A reusable, "tear-through" display banner comprising:

a flexible sheet having,

a plurality of sections,

each section having one or more inner edges and one or more outer edges wherein the inner edges of adjacent sections overlap, and,

releasable fastening means attached to the opposing overlapping inner edges of said sections whereby said sections may be releasably assembled into a unitary banner; and,

a frame bordering two or more sides of said sheet and attached to the outer edges of said sections of said sheet.

5,667,856

RADIATION CURABLE PIGMENTED COMPOSITIONS AND DECORATED SUBSTRATES

Melvin Edwin Kamen, Highlands, and Bhupendra Patel, Edison, both of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Division of Ser. No. 199,414, Feb. 22, 1994, Pat. No. 5,571,359, which is a continuation-in-part of Ser. No. 824,968, Jan. 24, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 348,406
Int. Cl.[6] B32B *27/40;* C09D *11/02*
U.S. Cl. 428—34.6 20 Claims

1. An ultraviolet radiation curable pigmented composition comprising:

a) an ultraviolet radiation curable component which, when applied directly to a substrate, is operable, when cured, to bond to the substrate, and

b) a pigment selected from the group consisting of pyrrolopyrrol, isoindolinone, and mixtures thereof.

5,667,857

TOE PUFF FOR SAFETY SHOE

Shoichi Watanabe; Hirokazu Inoguchi, both of Fukushima; Yoshihiro Kanzaka, Nyuzen-machi; Yoshiharu Tanaka, Nyuzen-machi; Hideji Ikehara, Nyuzen-machi; Ryuji Saiki, Kurobe; Nobukatsu Yamato, Asahi-machi; Tomohiro Mori, Kurobe, and Minoru Senna, Uozu, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Division of Ser. No. 127,452, Sep. 23, 1993, Pat. No. 5,560,985, which is a continuation of Ser. No. 860,789, Mar. 31, 1992, abandoned. This application Aug. 7, 1996, Ser. No. 692,244
Claims priority, application Japan, Apr. 3, 1991, 3-096025; Sep. 18, 1991, 3-267153; Oct. 3, 1991, 3-256586; Feb. 28, 1992, 4-079046
Int. Cl.[6] B29D *22/00*
U.S. Cl. 422—36.2 12 Claims

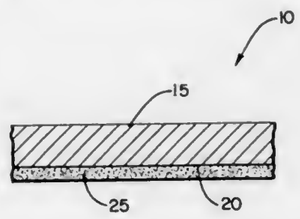
1. A toe puff for a safety shoe produced by subjecting a molding sheet material to heat molding under pressure, the molding sheet material having a sandwich structure consisting of a core layer of a fiber reinforced thermoplastic resin reinforced with a woven fabric or a knitted web of a reinforcing fiber and, joined to both sides of the core layer, skin layers of a fiber reinforced thermoplastic resin reinforced with a random mat of a reinforcing fiber.

5,667,858

PRESSURE SENSITIVE ADHESIVE COMPOSITION AND PRODUCTS

Richard J. Pokorny, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 183,056, Jan. 18, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 617,946
Int. Cl.[6] C09J *7/02;11/06*
U.S. Cl. 428—41.8 27 Claims



1. A pressure sensitive adhesive composition comprising:

(a) about 100 parts by weight of a crosslinkable polymerized elastomer;

(b) at least about 20 parts by weight of a tackifying resin;

(c) at least about 0.1 part by weight of a higher alkyl mercaptan;

(d) optionally up to about 30 parts by weight of a heat curable phenolic resin; and

(e) optionally up to about 10 parts by weight of a catalyst for said phenolic resin,

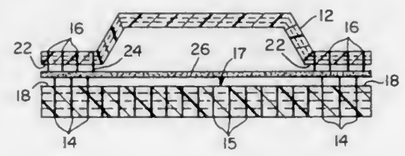
wherein after a tape comprising a film of said pressure sensitive adhesive composition is adhered to a substrate and removed, there is little or no adhesive transfer to the substrate.

5,667,859

REINFORCED JOINT FOR COMPOSITE STRUCTURES AND METHOD OF JOINING COMPOSITE PARTS

Joseph Santin Boyce, Hanover; Glenn Alexander Freitas, Foxboro, and Constance Lee Magee, Littleton, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Division of Ser. No. 56,029, Apr. 30, 1993. This application Feb. 3, 1995, Ser. No. 383,087
Int. Cl.[6] D04H *1/16;* B32B *5/22;* D02G *3/00*
U.S. Cl. 428—59 8 Claims



1. A joined composite part structure comprising:

a pair of composite members, each comprising layers of plies of fiber arrays in a resin matrix, and each including a plurality of discrete, extrinsic reinforcing fibers disposed transversely through the thickness thereof, at least a number of said reinforcing fibers extending from the joint surface of each said member;

a joint region between said composite members bounded by the joint surface of each said composite member and including said discrete transversely extending reinforcing fibers interstitially disposed therein; and

an adhesive disposed about said extending interstitially disposed reinforcing fibers between said joint surfaces within the joint region.

5,667,860

OPTICAL RECORDING ELEMENTS HAVING RECORDING LAYERS EXHIBITING REDUCED BUBBLE FORMATION

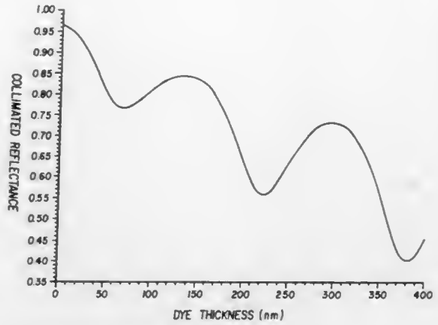
Elizabeth G. Burns, Rochester, and James C. Fleming, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,252
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 7 Claims

1. An optical recording element having, in the following order, a transparent substrate, a recording layer and a light reflecting layer wherein the recording layer

(A) has a real refractive index (N) at 780 nm not less than 1.8 and an imaginary part (k) is not greater than 0.15;

(B) comprises a polymeric cyanine dye that (i) has both a weight-average molecular weight greater than 50,000 and a glass transition temperature (Tg) of less than 150° C.; or (ii) has either (a) a weight-average molecular weight greater than 50,000 or (b) a glass transition temperature (Tg) of less than 150° C.; and



(C) a thickness greater than 200 nm.

5,667,861

MAGNETO-OPTICAL DISK

Klaus Harth, Altleiningen, and Hartmut Hibst, Schriesbeim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 4, 1991, Ser. No. 663,516
Claims priority, application Germany, Mar. 14, 1990, 40 080 75.7
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—64.3 7 Claims

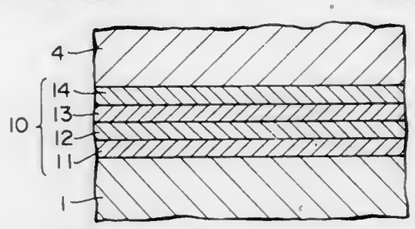
1. In a magneto-optical disk having a central opening; an inner edge; an outer edge; at least one optically transparent, dimensional stable substrate; at least one magneto-optical recording layer consisting of a chromium-containing lanthanide rare earth metal/transition metal alloy, which disk has a radial length extending from the center of the center opening to the outer edge, the improvement comprising the chromium concentration in the magneto-optical recording layer increases continuously radially from the inner edge to the outer edge.

5,667,862

MAGNETO-OPTICAL DISK

Yasuaki Nakane, Tokyo; Shuichi Igarashi, Kanagawa; Sakuya Tamada, Tokyo; Susumu Sakamoto, Chiba, and Teruo Chiba, Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 345,234, May 1, 1989, abandoned. This application Apr. 16, 1991, Ser. No. 686,287
Claims priority, application Japan, Mar. 15, 1989, 1-008286
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—64.3 8 Claims



1. A magneto-optical disk, comprising:

beginning at a light incident side of the disk for recording and reproducing, a transparent base plate, a first protective dielectric layer formed of nitride in abutting contact with the base plate, an amorphous recording magnetic layer having perpendicular magnetic anisotropy directly following and in abutting contact with the first protective layer, a second protective dielectric layer formed of a nitride directly following and in

abutting contact with the recording layer, and a reflective metal layer directly following and in abutting contact with the second layer and formed of a metal electro-chemically less noble than said recording magnetic layer;

said recording magnetic layer being a magnetic layer mainly comprising TbFeCo and having a film thickness of not less than 180 Å and not more than 280 Å and a Curie point of the magnetic layer being not lower than 170° C. and not higher than 220° C.;

said first protective dielectric layer having a product of a refractive index and a film thickness thereof of not less than 0.2 and not more than 0.35 times a wavelength of laser light being employed, the wavelength being the same for recording and reproducing;

said second protective dielectric layer having a product of a refractive index and a film thickness thereof of not less than 0.1 and not more than 0.15 times the wavelength of the laser light employed; and

said reflective metal layer having a film thickness of not less than 500 Å, and not more than 1000 Å and a reflectivity at a boundary with the second protective dielectric layer of not less than 70%.

5,667,863

OXYGEN-ABSORBING LABEL

John S. Cullen, Buffalo; Ronald C. Idol, Amherst, and Thomas H. Powers, Mayville, all of N.Y., assignors to Multisorb Technologies, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 638,494, Jan. 7, 1991, abandoned. This application Aug. 23, 1991, Ser. No. 748,760

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—68 35 Claims



1. An oxygen-absorbing label comprising a base sheet, a cover sheet secured to said base sheet to define a closed space therebetween, a first layer of oxygen-absorbing materials in particulate form in said closed space, and a second layer of moisture-sensitive material in said closed space, said first and second layers being confined in said closed space between said base sheet and said cover sheet.

5,667,864

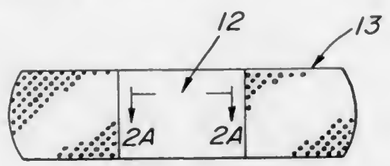
ABSORBANT LAMINATES AND METHOD OF MAKING SAME

Leo M. Landoll, 1 Ice Pond Trail, Hockessin, Del. 19707

Filed Jun. 7, 1995, Ser. No. 487,754

Int. Cl.[6] B32B *1/04*

U.S. Cl. 428—74 39 Claims



1. An absorbent laminate comprising an oriented, fluid-pervious plastic substrate having a melting point and a shrinking point, said plastic substrate being bonded to a nonwoven absorbent member, said nonwoven absorbent member including bi-component fibers having a heat-softenable outer skin, said heat-softenable outer skin being heat-softenable at a temperature lower than the melting point and the shrinking point of the oriented plastic substrate to provide a binder component for the laminate.

5,667,865

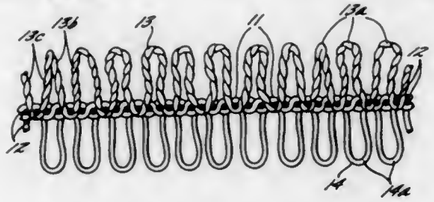
TERRY FABRIC WITH INCREASED RATE OF ABSORBENCY AND METHOD OF FORMING SAME

Timothy James Jackson, Kannapolis; Aaron Douglas Owens, Concord; Milledge Delonia Ford, China Grove; Richard Ward Rutland, Davidson, and Charles Henry Shuping, Salisbury, all of N.C., assignors to Fieldcrest Cannon, Inc., Kannapolis, N.C.

Filed Jun. 26, 1996, Ser. No. 672,053

Int. Cl.[6] B32B *3/02*; D06M *11/38*; D03D *27/08*

U.S. Cl. 428—92 18 Claims



1. A terry fabric for forming towels characterized by an increased rate of absorbency comprising:

a ground fabric formed of ground yarns,

terry yarns forming terry loops on opposite sides of said ground fabric, said terry yarns having a length greater than 4.25 inches per linear inch of said ground fabric to form extra long terry loops, said terry yarns on at least one side of said terry fabric comprising a plurality of singles yarns plied together with a ply twist of less than 7 turns per inch, each of said singles yarns having a twist multiple of less than 3.75, and

at least said terry yarns being partially mercerized, whereby said terry fabric has an increased rate of absorbency as compared to conventional terry fabric.

5,667,866

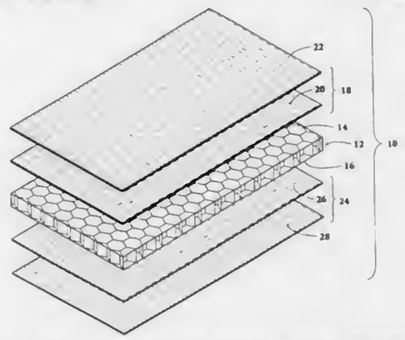
MULTI-LAYERED, UNBALANCED SANDWICH PANEL

Roy Jefferson Reese, Jr., Owasso, Okla., assignor to The Nordam Group, Inc., Tulsa, Okla.

Filed May 2, 1995, Ser. No. 432,891

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—116 17 Claims



1. A multi-layered, unbalanced, bonded sandwich panel having improved top load support capability per unit of weight, which comprises:

(a) a core;

(b) a multiple-ply top laminate for resisting compressive forces; and

(c) a multiple-ply bottom laminate for resisting tensile forces, said bottom laminate having the same number of plies as said top laminate;

wherein said multiple-plies of said top laminate and said bottom laminate comprise unidirectional fiber and resin layers of varied areal weights applied to said core such that the total areal weight of said top laminate is greater than the total areal weight of said bottom laminate.

5,667,867

COMPOSITE SHEET COMPRISING A CELLULAR CORE AND AT LEAST ONE OUTER LAYER

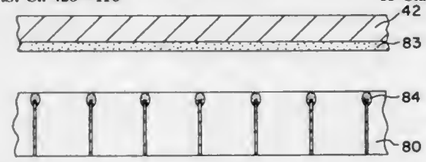
Johannes Meier, Neuhausen, and Urs Gabi, Würenlos, both of Switzerland, assignors to Alusuisse Technology & Management Ltd., Neuhausen Am Rheinfall, Switzerland

Continuation of Ser. No. 437,506, May 9, 1995, abandoned, which is a division of Ser. No. 339,637, Nov. 14, 1994, which is a continuation of Ser. No. 920,881, Jul. 28, 1992, abandoned. This application Jun. 10, 1996, Ser. No. 660,718

Claims priority, application Switzerland, Aug. 5, 1991, 2314/91

Int. Cl.[6] B32B *31/12*; B26F *1/26*

U.S. Cl. 428—116 11 Claims



1. A composite sheet comprising a cellular core having a plurality of cells having faces, a first thermoplastic adhesive applied in film form to said cellular core and thereafter converted to drops only on the faces of the cells of the cellular core, at least one outer layer having a second thermoplastic adhesive, said first thermoplastic adhesive in film form having a first thickness, said second thermoplastic adhesive having a second thickness which is different from said first thickness, and said core and said at least one outer layer being bonded together via contact between said first and second thermoplastic adhesives, said bonding being the result of the application of pressure and elevated temperature to said core, said at least one outer layer and said first and second thermoplastic adhesives.

5,667,868

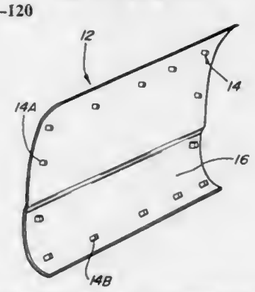
OUTER DOOR PANEL AND METHOD FOR MOLDING AND ATTACHING SAME

Richard Benjamin Freeman, Oxford, Mich., assignor to The Budd Company, Troy, Mich.

Division of Ser. No. 120,940, Sep. 14, 1993. This application Jun. 6, 1995, Ser. No. 467,752

Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—120 10 Claims



1. An exterior automotive outer body panel comprising:

(a) a compression molded outer body panel formed of sheet molding compound so as to provide a smooth outer surface;

(b) a plurality of integrally molded locating means extending generally perpendicular from and located along from the periphery of an inner surface of said outer body panel, said outer surface of said outer body panel which is opposite said integrally formed locating means being free of indentations;

(c) an inner support having receiving means defined therein such that said locating means engage said receiving means to maintain said outer panel in a fixed relationship with respect to said inner support;

(d) a plurality of retaining means engaging a portion of said locating means extending through said receiving means and

(e) an adhesive permanently bonding said outer panel to said inner support while being maintained in said fixed relationship.

5,667,869

PREDRAWN NET PARTICULARLY FOR GEOTECHNICAL USE

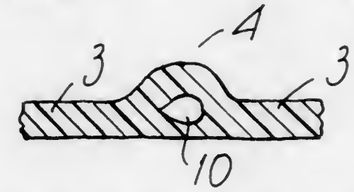
Mario Beretta, Sirtori, Italy, assignor to Tenax S.p.A., Viganò, Italy

Filed Apr. 10, 1995, Ser. No. 419,488

Claims priority, application Italy, Apr. 12, 1994, MI94A0682

Int. Cl.[6] B32B *3/24*; B29C *55/00*

U.S. Cl. 428—131 8 Claims



1. Predrawn net particularly for geotechnical use, comprising first and a second layers that are respectively constituted by a first set of mutually substantially parallel filaments and by a second set of mutually substantially parallel filaments that lie transversely with respect to the filaments of said first set, so as to form a plurality of mutual joints, said first and second layers being formed from an initial substantially undrawn component in which said filaments of said sets mutually interpenetrate in said joints over a thickness that is less than 50% of the thickness of any one of said layers of the initial substantially undrawn component, said initial substantially undrawn component being more than 8 mm thick, at least the filaments of one of said sets of the predrawn net being drawn in the direction defined by the respective set of filaments so that the stretching action passes through said joints in the direction of the stretching action, so that a substantial part of the material of the joint added to said joint by the filaments of the other one of said sets is not orientated, and wherein the net comprises, at said joints of the predrawn net, a cavity that contains a gas and is surrounded by the plastic material that forms said filaments.

5,667,870

PLASTIC ARTICLE WITH INTERRUPTED INTERIOR THREADS FOR SECURING A THREADED HEAT SINK TO A HEAT GENERATING MEMBER

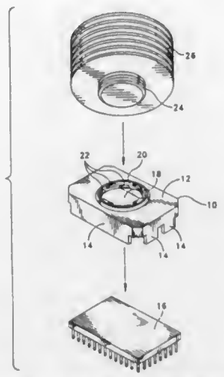
Kevin Albert McCullough, Warwick, R.I., assignor to Chip Coolers, Inc., Warwick, R.I.

Filed Jul. 24, 1995, Ser. No. 505,879

Int. Cl.[6] H01L *23/40*

U.S. Cl. 428—131 3 Claims

1. A molded article having interior threads, for securing a threaded heat sink having a bottom contact surface and a longitudinal axis perpendicular thereto, to a heat generating member having a top planar surface, comprising:



a molded article having an aperture therethrough; said aperture defined by a cylindrical inner wall having an inner wall surface and a central axis; said article being manufactured of plastic;

a plurality of thread segments disposed on said inner wall surface in a position substantially perpendicular to said central axis; said thread segments describing a helical thread pattern of greater than one turn; each of said thread segments being positioned at a height different from one another on said inner wall surface of said aperture; none of said thread segments vertically overlapping one another, in the direction of said central axis, about the periphery of said inner wall of said aperture;

means connected to said molded article for securing said molded article to said heat generating member; and

means for threadably receiving the threaded heat sink member through said aperture and into heat transfer communication with said heat generating member; said contact surface of said heat sink being flush with said top planar surface of said heat generating member; said longitudinal axis being perpendicular to said top planar surface of said heat generating member.

5,667,871

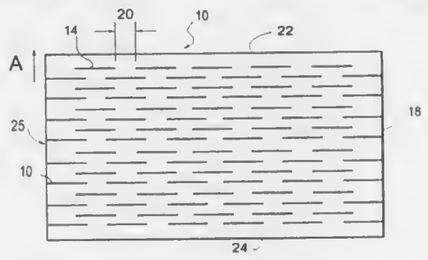
SLIT SHEET PACKING MATERIAL

David P. Goodrich, Newtown, and Michael C. Hurwitz, Wilton, both of Conn., assignors to Geopax Ltd., Sandy Hook, Conn.

Continuation-in-part of Ser. No. 962,944, Oct. 19, 1992, abandoned, and Ser. No. 936,608, Aug. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 851,911, Mar. 16, 1992, abandoned. This application Nov. 26, 1993, Ser. No. 157,277

Int. Cl.[6] B32B *3/24;* **B65D** *65/30*

U.S. Cl. 428—136 **15 Claims**



1. A method of protecting a object for shipping by wrapping and cushioning said object in an expanded sheet material, said expanded sheet material in expanded form being at least one sheet of extendible sheet material said at least one sheet of extendible sheet material being flexible, non-woven fibrous material, having a plurality of spaced parallel rows of individual slits in a slit pattern extending transversely from one end of the fibrous sheet material to the opposing end of said at least one sheet, each of said rows having interval spaces between consecutive slits, said slits in each row being positioned adjacent the interval space between consecutive slits in the adjacent parallel row of slits, comprising the steps of:

a) expanding a length of at least one sheet of an extendible sheet material by extending the opposing ends of said at least one sheet, to form at least one expanded sheet having an array of openings,

said flexible, non-woven fibrous sheet material and said slit pattern, in combination producing an extendible sheet characterized by

i) forming upon expansion, an array of hexagonal openings, said openings being bound by land areas and leg areas, and being generally similar in shape and size, in a consistent, uniformly repeating pattern, and

ii) said land areas being rotatable to an angle of at least about 45 degrees and less than 90 degrees from its unexpanded position,

b) wrapping said at least one expanded sheet around an object, and

c) placing the wrapped object in a package.

5,667,872

SYNTHETIC PAPER WITH MULTI-LAYER STRUCTURE AND EXCELLENT PRINTING PROPERTY

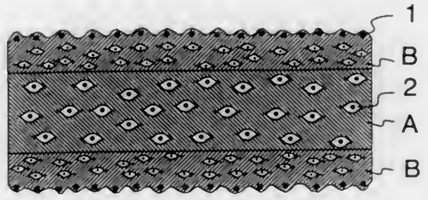
Akihiko Ohno; Atsushi Ishige; Hiroshi Koyama, and Koichi Asami, all of Ibaraki, Japan, assignors to Oji Yuka Goseishi Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,835

Claims priority, application Japan, May 30, 1994, 6-137817

Int. Cl.[6] B32B *27/32*

U.S. Cl. 428—141 **9 Claims**



1. A synthetic paper with a multi-layer structure comprising a biaxially stretched film of an olefinic polymer having a melting point from 130° C. to 210° C. as determined from the peak temperature of the Differential Scanning Calorimetry curve containing from 5 to 40% by weight inorganic fine powders having a mean particle size of from 0.01 to 10 μm as a base material layer (A) having adhered to at least one surface thereof a uniaxially stretched layer (B) having a surface roughness Ra of from 0.3 to 1.5 μm, with the uniaxially stretched layer (B) comprising an α-olefin propylene copolymer or a high-density polyethylene having a melting point, the peak temperature of the Differential Scanning Calorimetry curve, of from 120° C. to 160° C. which is at least 5° C. lower than the melting point of the olefinic polymer of the base material layer (A), and from 8 to 65% by weight inorganic fine powders having a mean particle size of from 0.01 to 5 μm, wherein the surfaces of the inorganic fine powders contained in the uniaxially stretched layer (B) are coated with the α-olefin propylene copolymer or the high-density polyethylene, and wherein the surface of the uniaxially stretched layer (B) has a gloss, measured at an angle of 75° of less than 20% and a Bekk Index smoothness of less than 500 seconds.

5,667,873

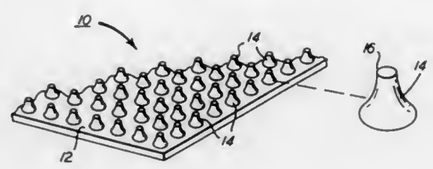
PROTECTIVE FLOOR MAT FOR CARPET AND THE LIKE

Martin J. Beckenbach, 181 W. Shore Blvd., Newark, N.Y. 14513

Filed Dec. 28, 1995, Ser. No. 579,968

Int. Cl.[6] D06H *7/04*

U.S. Cl. 428—141 **2 Claims**



1. A floor mat having an underside with a coarse matte finish and an array of depending truncated concave conoidal gripping protuberances for improved carpet penetration and improved resistance to movement on carpet.

5,667,874

EMBOSSED TAPE WITH OBLIQUE HOUSING PORTIONS FOR PACKAGING PARTS

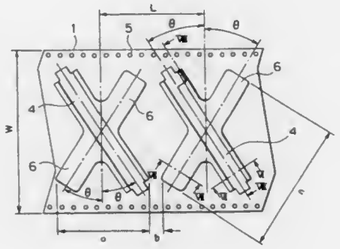
Keisuke Nakamura, and Tomohiko Tamada, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Ltd., Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,002

Claims priority, application Japan, Sep. 12, 1994, 6-217401

Int. Cl.[6] B32B *3/12;* **B65D** *85/66*

U.S. Cl. 428—178 **14 Claims**



1. A flexible, elongated packaging unit extending in a longitudinal direction for packaging parts carried by said packaging unit in an intermittent succession in said longitudinal direction, said packaging unit comprising:

a plurality of separate housing sections formed in said packaging unit and arranged in said longitudinal direction, each of said housing sections comprising a housing portion defining a slender housing space for housing each of said parts, said housing space extending in a particular direction which is slanted relative to said longitudinal direction of said packaging unit; and

a plurality of bendable sections in said packaging unit each of said bendable sections being positioned between adjacent ones of said housing sections to enable said packaging unit to be wound with each of said parts housed in said housing space.

5,667,875

EXHAUST GAS CLEANING METALLIC SUBSTRATE

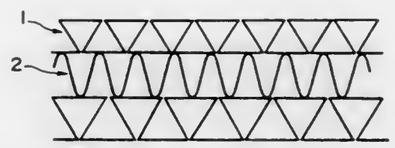
Masayoshi Usui, Shizuoka-ken, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Ltd., Shizuoka-ken, Japan

Filed Jul. 11, 1995, Ser. No. 500,734

Claims priority, application Japan, Jul. 11, 1994, 6-180494

Int. Cl.[6] B32B *3/28;* **B01D** *47/00*

U.S. Cl. 428—182 **4 Claims**



1. In an exhaust gas cleaning metallic honeycomb body for supporting thereon an exhaust gas cleaning catalyst, said body being of a honeycomb structure formed by alternately superposing two types of corrugated bands made of metal sheets one over the other in a contiguous relation and defining a number of network-patterned gas flow passages along a central axis thereof, the improvement wherein said two types of corrugated bands comprise:

(i) a first corrugated band having a triangular waveform of the structure that substantially-equilateral triangles are continuously connected in a lengthwise direction; and

(ii) a second corrugated band having a substantially sinusoidal waveform, said second corrugated band being superposed on the first corrugated band and in contiguous relationship therewith.

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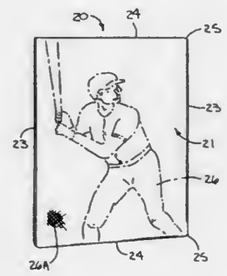
INFORMATIVE CARD MADE OF SHEET METAL

Andrew Radlicz, Loudon, Tenn., assignor to J.L. Clark, Inc., Rockford, Ill.

Filed May 15, 1996, Ser. No. 647,753

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—192 **16 Claims**



1. An informative card formed of thin metal sheet comprising:

a substantially flat and generally rectangular single-layer metal blank having first and second sides, four straight edges, four corners joining the straight edges and shaped to be free of discontinuous, and continuous peripheral burr of metal displaced in blanking and shaped in the form of an upstanding pointed ridge on the first side of the metal blank, at least one of the first and second sides carrying an indicia, the metal blank having no formed edges; and

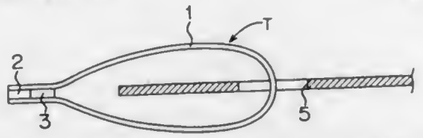
a protective film on the first side covering the peripheral burr and of sufficient thickness to shield the point of the burr.

5,667,877

LAUNDRY TAG, LAUNDRY TAG SHEET AND METHOD OF PRODUCTION OF THE SAME

Koumei Tajiri; Elzo Matsuki, and Kazuhide Yamakawa, all of Ehime-ken, Japan, assignors to Dalo Paper Corporation, Ehime-ken, Japan

Filed Jun. 1, 1995, Ser. No. 457,696
Claims priority, application Japan, Nov. 25, 1994, 6-291303; Feb. 28, 1995, 7-039957
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 7 Claims



1. A laundry tag including an elongated substrate and adhesive layers at opposite ends on one side thereof, which is threaded through part of a laundry item and then adhered at the adhesive layers so that it is looped and in which cleaning of the laundry item is conducted while the tag is attached to the laundry item, characterized

in that said adhesive layers each comprises a solvent-resistant adhesive and a water-resistant adhesive and

in that these adhesive layers are formed on one side of the substrate at different areas.

5,667,878

SURFACE TREATED APPLICATORS AND RELATED METHODS

Melvin E. Kamen, Highlands, N.J., assignor to Revlon Consumer Products Corporation, New York, N.Y.

Division of Ser. No. 52,328, Apr. 23, 1993, Pat. No. 5,526,546.
This application Feb. 29, 1996, Ser. No. 609,758
Int. Cl.[6] B32B *27/14;* A46B *15/00*
U.S. Cl. 428—198 11 Claims

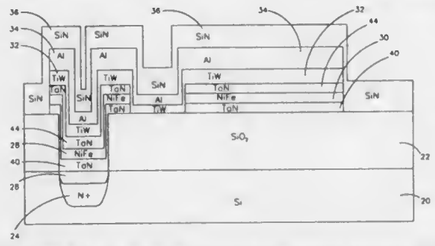
1. A sponge comprised of a synthetic material capable of bonding with ions generated by an ion-producing gas plasma, said sponge having a surface with a first surface area, said first surface area having chemically bonded thereto an etched layer of ions obtained from said ion-producing gas plasma, said etched layer of ions having a second surface area, wherein said second surface area is greater than said first surface area.

5,667,879

TAN/NIFE/TAN ANISOTROPIC MAGNETIC SENSOR ELEMENT

Michael J. Haji-Sheikh, Richardson, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 13, 1995, Ser. No. 527,471
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 14 Claims



1. Apparatus for providing electrical connection between components on a substrate, comprising:

a silicon substrate;

a conductive diffusion disposed in a surface of said silicon substrate;

a first conductive contact material disposed on said conductive diffusion;

a first refractory nitride material disposed on said first conductive contact material;

a first magnetically sensitive conductive material disposed on said first refractory nitride material, said first magnetically sensitive conductive material being a NiFe alloy;

a second refractory nitride material disposed on said first magnetically sensitive conductive material;

an electromigration resistant material disposed on said second refractory resistant material; and

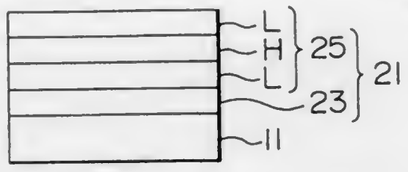
a metallic layer disposed on said electromigration resistant material.

5,667,880

ELECTROCONDUCTIVE ANTIREFLECTION FILM

Masayuki Okaniwa, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Continuation of Ser. No. 93,409, Jul. 19, 1993, abandoned. This application May 24, 1995, Ser. No. 449,804
Claims priority, application Japan, Jul. 20, 1992, 4-215422; Jul. 20, 1992, 4-215423
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—212 3 Claims



1. An electroconductive antireflection film having a laminated structure, comprising:

a substrate,

a transparent electroconductive layer comprising indium tin oxide disposed adjacent the substrate,

at least two first oxide layers having a refractive index within a first range,

at least two second oxide layers having a refractive index within a second range, the second range being lower than the first range,

the at least two first oxide layers and the at least two second oxide layers comprising oxide layers prepared by a sputtering method and being disposed in an alternating arrangement,

at least one of the two first oxide layers comprising titanium oxide disposed adjacent the transparent electron conductive layer,

at least one of the two second oxide layers comprising silicon oxide disposed adjacent the at least one of the two first oxide layers comprising titanium oxide, and

at least one of the at least two second oxide layers comprising a surface layer of the electroconductive antireflection film.

5,667,881

INTEGRAL THERMOSET/THERMOPLASTIC COMPOSITE JOINT

Perry A. D. Rasmussen, and Janis M. Brown, both of Tucson, Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 469,341
Int. Cl.[6] B32B *7/00*
U.S. Cl. 428—272 19 Claims

14. An integral component comprising at least one part comprising a thermoset resin joined to at least one part comprising a thermoplastic resin to form a conjoined article, said thermoset resin and said thermoplastic resin being mutually partially miscible, said conjoined article having an interface between said thermoset resin and said thermoplastic resin that evidences a gradient in resin composition.

5,667,882

TEXTILE REINFORCEMENT WHICH CAN BE USED FOR PRODUCING COMPOSITE MATERIALS

André Fourezon, and Thierry Klethi, both of Le Cheylard, France, assignors to Etablissements les Fils d'Auguste Chomarat et Cie, France

Filed May 29, 1996, Ser. No. 654,750
Claims priority, application France, Jun. 2, 1995, 95 06798
Int. Cl.[6] B32B *15/00*
U.S. Cl. 442—388 10 Claims

1. A fibrous structure, comprising:

a carded web of fibers that have high individual-fiber linear density and which exhibit a spring characteristic, wherein the carded web (1) is sprayed with glass fibers or continuous glass filaments that randomly spread out flat on the carded web, and (2) is subsequently needle-punched through a surface of the carded web to drive the glass fibers or glass filaments through the thickness of the carded web such that the glass fibers or glass filaments emerge through an opposite surface of the carded web.

5,667,883

Patent Not Issued For This Number

5,667,884

AREA BONDING CONDUCTIVE ADHESIVE PREFORMS

Justin C. Bolger, 27 Rolling La., Dover, Mass. 02030

Continuation-in-part of Ser. No. 47,141, Apr. 12, 1993, abandoned. This application Apr. 12, 1994, Ser. No. 226,715
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—323 14 Claims



1. An electrically conductive adhesive sheet material suitable for use in connecting electronic components together comprising a multiplicity of electrically conductive adhesive members each having a bottom surface and a top surface, each of said members being separated from each other by means of a non-conductive adhesive region disposed between said conductive adhesive members, each non-conductive member having a bottom surface and a top surface, said conductive adhesive members and said non-conductive adhesive region being joined together to form an integral sheet material having a planar bottom surface formed of the conductive and non-conductive adhesive members, with the top surface of each of the conductive adhesive members extending beyond the top surface of each of the non-conductive adhesive members, said conductive adhesive members comprising a first adhesive resin and an electrically conductive metal filler, and said non-conductive adhesive region comprising a second adhesive resin.

5,667,885

REINFORCED FILMS MADE FROM WATER SOLUBLE POLYMERS

Charles C. Nguyen; Verne J. Martin, both of Cedar Rapids; Edward P. Pauley, Jesup, all of Iowa; Henry L. Buccigross, Lexington, and Stephen Rudolph, Carlisle, both of Mass., assignors to Penford Products Company, Cedar Rapids, Iowa

Division of Ser. No. 458,451, Jun. 2, 1995, Pat. No. 5,565,509, which is a division of Ser. No. 409,878, Mar. 24, 1995, Pat. No. 5,527,544, which is a division of Ser. No. 810,646, Dec. 19, 1991, Pat. No. 5,416,181, which is a continuation-in-part of Ser. No. 650,965, Feb. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 472,632, Feb. 5, 1990, Pat. No. 5,003,022, which is a continuation-in-part of Ser. No. 309,248, Feb. 10, 1989, abandoned. This application May 14, 1996, Ser. No. 649,946
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—327 9 Claims



1. A coated paper comprising a substrate and a coating binder thereon wherein the coating binder comprises (a) a water insoluble component comprising noncoalesced coalescable polymer particles which have a T_g less than 55° C. and a majority of which have a particle size of less than 1 micron; and (b) a water soluble component comprising a water soluble polymer capable of inhibiting coalescence of said polymer particles, or a water soluble polymer and a component capable of inhibiting coalescence of said polymer

particles; wherein said coalescable water insoluble component comprises greater than 3% by weight of the binder solids and said water soluble component comprises greater than about 25% by weight of said binder solids.

5,667,886

COMPOSITE SHEET HAVING IMPROVED ADHESIVE PROPERTIES AND METHODS OF MAKING SAME

Thane Colin Gough, Middlesbrough; Pamela Moira Jeffels, Saltburn, and Anthony Garry Harrison, Middlesbrough, all of England, assignors to Imperial Chemical Industries PLC, United Kingdom

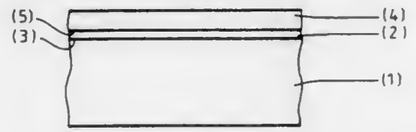
PCT No. PCT/GB94/00874, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/25511, PCT Pub. Date Nov. 11, 1994

PCT Filed Apr. 25, 1994, Ser. No. 525,680

Claims priority, application United Kingdom, Apr. 30, 1993, 9309024

Int. Cl.[6] C08J *7/04;7/06*

U.S. Cl. 428—331 **20 Claims**



1. A composite sheet comprising a substrate layer having on at least one surface thereof a coating layer comprising a layer mineral, the remote surface of said coating layer having thereon a flexible adherent layer having a percentage elongation to break of greater than 150% and a tensile modulus (1% secant modulus) of less than 2.0 MPa.

5,667,887

MAGNETO-OPTICAL MEDIA

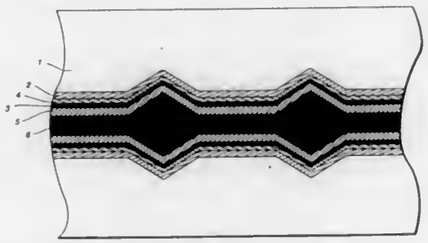
Hiromu Miyazawa; Shinya Ootsuki; Takeo Kawase, and Satoshi Nebashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 613,752, Nov. 27, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 85,474

Claims priority, application Japan, Mar. 28, 1989, 1-76117

Int. Cl.[6] G11B *5/66;* **B05D** *5/12*

U.S. Cl. 428—332 **18 Claims**



1. A magneto-optical media comprising a multi-layered film including a transparent substrate, a first protective layer, a recording layer, a second protective layer and a reflecting layer which are laminated in order; wherein the first protective layer has a thickness between 400 Å and 700 Å, the recording layer has a thickness between 150 Å and 300 Å, which is constituted of alloy of rear earth and transition metals, the second protective layer has a thickness between 150 Å and 250 Å, and the reflecting layer has a thickness between 400 Å and 800 Å.

5,667,888

COLOR FILTERS AND METHODS OF MANUFACTURING THE SAME

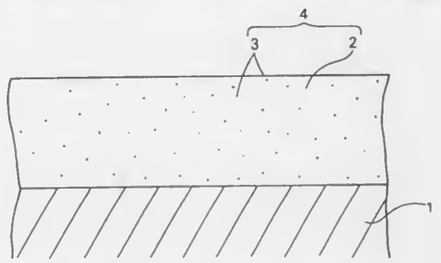
Akihiko Yoshida; Masaki Ikeda, both of Hirakata; Kunio Kimura, Kyoto; Atsushi Nishino, Neyagawa; Hiroyuki Nakazumi, Kawachinagano; Noboru Tohge, Yamatokoriyama, and Tsutomu Minami, Sayama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 375,135, Jan. 18, 1995, abandoned, which is a continuation of Ser. No. 46,114, Apr. 9, 1993, abandoned, which is a continuation of Ser. No. 686,063, Apr. 16, 1991, abandoned. This application Aug. 26, 1996, Ser. No. 697,476

Claims priority, application Japan, Apr. 18, 1990, 2-101936; Apr. 19, 1990, 2-103479

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—336 **14 Claims**



1. A color filter comprising a transparent substrate and a colored layer formed on the surface of said substrate, wherein

said colored layer consists essentially of a transparent layer and a coloring agent dispersed within said transparent layer and has a thickness of 10 μm or less so as to transmit light,

said transparent layer comprises a gel or glass material made from an alkoxysilane solution, and

said coloring agent contains at least one pigment having absorption peaks for visible light at selected wavelengths.

5,667,889

POLYMERIC FILM

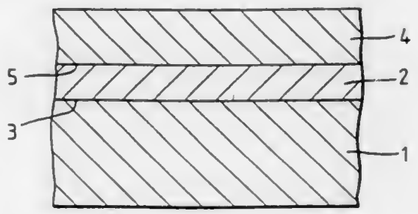
Naomi Katsura, Chiyoda-machi; Hikaru Takeuchi, Ushiku, and Yuka Watanabe, Hiroshima, all of Japan, assignors to Imperial Chemical Industries PLC, United Kingdom

Filed Nov. 21, 1995, Ser. No. 560,761

Claims priority, application United Kingdom, Nov. 21, 1995, 9523764

Int. Cl.[6] B32B *27/40;7/12;* **B29C** *33/68*

U.S. Cl. 428—353 **17 Claims**



1. A polymeric film comprising a substrate having on at least one surface thereof, a primer layer comprising a polyurethane resin which is the reaction product of, inter alia, an organic polyisocyanate, a polymeric polyl and an ethylenically unsaturated monomer.

5,667,890

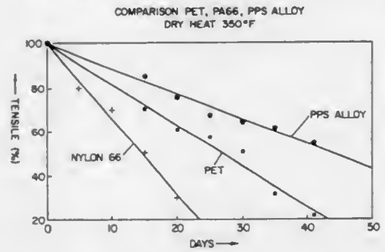
MONOFILAMENTS EXTRUDED FROM COMPATIBILIZED POLYMER BLENDS CONTAINING POLYPHENYLENE SULFIDE, AND FABRICS THEREOF

Larry E. Ballard, and Marc R. Savoy, both of Columbia, S.C., assignors to Shakespeare Company, Columbia, S.C.

Filed Apr. 2, 1996, Ser. No. 626,492

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **7 Claims**



1. An extruded monofilament formed by a compatibilized polymer blend comprising:

from about 25 to about 99 parts by weight of a polyphenylene sulfide;

from about 75 to about 1 parts by weight of at least one polyamide resin; and

from about 0.1 to about 10 parts by weight of a compatibilizer comprising a polyolefin grafted with a monomer selected from the group consisting of maleic anhydride and acrylic acid.

5,667,891

RANDOMLY PATTERNED COOKWARE

Kenneth Batzar, Cherry Hill, N.J., and Sharon Adolph McMenamin, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1996, Ser. No. 585,984

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—389 **6 Claims**

1. An article having a surface which comprises a multi-layer, non-stick coating, which is heat resistant by being stable at temperatures above 300° C., on a substrate wherein the multi-layer coating comprises (1) a primer adhered to the substrate, (2) a non-stick heat-resistant light-transmitting topcoat, and (3) optionally one or more intermediate coats, with the topcoat adhered to any intermediate coats which are adhered through (4) a discontinuous layer to the primer, or in the absence of intermediate coats, the topcoat being adhered directly to the primer, with the coating under the topcoat having a first color, wherein the discontinuous layer comprises globules and is present on and covers no more than about 80% of the area of the coating under the topcoat, said globules containing particles having at least two different colors, which are visibly different than said first color as seen through said topcoat and mix additively to form the visible color.

5,667,892

MULTICOLORED FLAKES

Robert Marillier, Hauteville-les-Dijon, France, assignor to Sarl Quadra Industries, Villejuip, France

Filed Apr. 18, 1995, Ser. No. 423,810

Claims priority, application France, Apr. 26, 1994, 94 05000

Int. Cl.[6] B32B *5/16;* **C09C** *1/62;* **C04B** *14/04*

U.S. Cl. 428—403 **11 Claims**

1. Multicolored flakes with two faces, having a thickness from approximately 60 μm to approximately 200 μm, in the form of a film of uniform color formed from a material selected from the group consisting of a polymer, a copolymer, a terpolymer, and mixtures thereof, said flakes having on at least part of one face only a decorative coating different from the uniform color.

5,667,893

SUBSTRATE COATED OR IMPREGNATED WITH FLEXIBLE EPOXY COMPOSITION

Kevin E. Kinzer, Woodbury; Lowell W. Holland, St. Paul Park, both of Minn.; Krishnamurthy Sridhar, Austin, Tex.; James N. Kellen, Austin, Tex., and Richard W. Pribnow, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 958,930, Oct. 9, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 191,601

Int. Cl.[6] C08G *59/14;* **B32B** *27/38*

U.S. Cl. 428—413 **7 Claims**

1. An article comprising a substrate which has coated thereon a photopolymerizable epoxy composition consisting essentially of:

a) at least one epoxide selected from the group consisting of cycloaliphatic epoxides, and at least one epoxide selected from the group consisting of acyclic aliphatic epoxides, and

b) from about 0.1 to about 2% by weight of at least one ionic salt of an organometallic cationic photoinitiator capable of initiating polymerization at wavelengths of from about 200 to about 600 nm,

wherein said photopolymerizable epoxy composition is cured to form a chip resistant coating or paint on said substrate.

5,667,894

CATHODIC ELECTROCOATING COMPOSITIONS CONTAINING METHANE SULFONIC ACID AS A NEUTRALIZING AGENT

Joseph Albert Antonelli, Riverton, N.J.; Christopher Scopazzi, Wilmington, Del., and William Bertus Vanderlinde, Cherry Hill, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 5, 1996, Ser. No. 659,691

Int. Cl.[6] B32B *27/38;* **C08L** *63/00;* **C08K** *5/36*

U.S. Cl. 428—413 **5 Claims**

1. An improved aqueous cathodic electrocoating composition comprising a binder of an epoxy-amine adduct of an epoxy resin that has been reacted with an amine, and a blocked polyisocyanate crosslinking agent; wherein the improvement consists of the use of methane sulfonic acid as the neutralizing agent for the epoxy amine adduct to provide an electrocoating composition having improved throw power.

5,667,895

SHOCK ATTENUATION DEVICE

Brian D. Jenkner, 22318 Carmack, Marengo, Ill. 60152

Continuation-in-part of Ser. No. 769,618, Oct. 1, 1991, abandoned. This application Feb. 18, 1994, Ser. No. 198,513

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—424.4 **7 Claims**

1. A shock absorption or load distribution device comprising:

a distortable or volume displaceable compartment for absorbing mechanical energy or distributing a load over an area and sealingly retaining a fluid therein; and

a compatible liquid absorbed by a super absorbent hydrophilic polymer forming a viscous colloidal fluid of a desired and controllable viscosity, wherein the desired and controllable viscosity is adjustable within a range of selectable viscosities by regulation of the ratio of the compatible liquid to the super absorbent hydrophilic polymer;

the compartment being filled with the viscous colloidal fluid to form the shock absorbing or load distribution device.

5,667,896
VEHICLE WINDOW ASSEMBLY FOR MOUNTING INTERIOR VEHICLE ACCESSORIES

John W. Carter, Holland; Jeffrey A. Lewno, Hudsonville; Daniel J. Fisher, Holland, and Joseph D. Rankin, III, Grand Haven, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

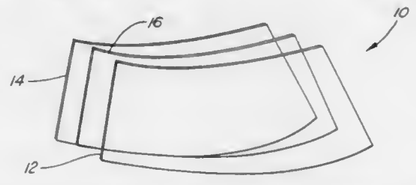
Continuation-in-part of Ser. No. 420,233, Apr. 11, 1995. This application Jun. 7, 1995, Ser. No. 482,029
Int. Cl.[6] B60R *1/00*
U.S. Cl. 428—425.6 **45 Claims**

1. A vehicle window panel assembly, comprising in combination:
a window panel having an inner surface and an outer surface, and of a geometric shape to fit within a window opening of a vehicle;
an opaque layer on said inner surface of said window panel;
a vehicle storage compartment attached to said inner surface of said window panel; and
an adhesive bonding said vehicle storage compartment to said inner surface of said window panel.

5,667,897
PLATE GLASS EDGE STRENGTH

Amin Hamid Hashemi, Farmington Hills, and David Norman Heilman, Monroe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 317,046, Oct. 3, 1994, Pat. No. 5,545,277. This application May 13, 1996, Ser. No. 645,318
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—426 **9 Claims**



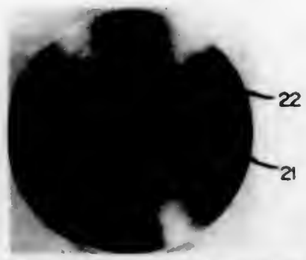
1. First and second plate glass templates each having a smooth major surface and a rough major surface, each of the major smooth surfaces only being peripherally bounded by a chamfer formed at the cut edge, said first and second templates being joined together with the rough surfaces in facing retention.

5,667,898
SELF-SUPPORTING ALUMINUM TITANATE COMPOSITES AND PRODUCTS RELATING THERETO

Edward MacNally Anderson, Roland, Ark.; Thomas Alfred Johnson; John Edward Garnier, both of Newark, Del.; Kenneth Scott Hatton, Wilmington, Del.; Dennis James Landini, and Aspi Nanabhai Patel, both of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 931,170, Aug. 17, 1992, Pat. No. 5,340,783, which is a continuation of Ser. No. 697,741, May 6, 1991, Pat. No. 5,139,979, which is a continuation of Ser. No. 320,114, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 303,832, Jan. 30, 1989, abandoned. This application Aug. 22, 1994, Ser. No. 293,995
Int. Cl.[6] B32B *15/00*
U.S. Cl. 428—469 **18 Claims**

1. A turbine engine shroud, comprising:
a non-rotating body of cylindrical cross-section comprising (1) a substrate comprising at least one material selected from the group consisting of a metal and a ceramic-metal composite material, and (2) a coating comprising aluminum titanate covering and adhered to at least a portion of at least one surface of said substrate, said coating being abradable by rotation of at least one turbine blade about a longitudinal axis of said body.

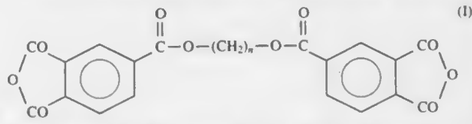


5,667,899
ELECTRICALLY CONDUCTIVE BONDING FILMS

Masami Yusa, Shimodate; Shinji Takeda; Takashi Masuko, both of Tsukuba; Yasuo Miyadera, Tsukuba, and Mitsuo Yamazaki, Takahagi, all of Japan, assignors to Hitachi Chemical Co. Ltd., Japan

Continuation-in-part of Ser. No. 122,868, Sep. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,516
Claims priority, application Japan, Sep. 16, 1992, 4-245395; Sep. 17, 1992, 4-247758; Aug. 4, 1993, 5-193452
Int. Cl.[6] B32B *27/18;* **C09J** *7/00*
U.S. Cl. 428—473.5 **7 Claims**

1. An electrically conductive bonding film consisting essentially of a self-supporting resin film, wherein the resin film is not sticky at room temperature, comprising:
(A) a polyimide resin obtained by reacting a tetracarboxylic dianhydride component, in which the content of a tetracarboxylic dianhydride represented by the following formula (1):



wherein n stands for an integer of 2–20 amounts to at least 70 mole %, with a diamine; and
(B) 1–8,000 parts by weight of an electrically conductive filler per 100 parts by weight of the polyimide resin.

5,667,900
ARAMID PAPER WITH HIGH SURFACE SMOOTHNESS

Ippei Kato; Yuji Kimura, both of Shizuoka, Japan, and Lee James Hesler, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del., and Mishima Paper Ltd., Fuiji, Japan

PCT No. PCT/JP93/01900, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/16142, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 27, 1993, Ser. No. 464,819
Claims priority, application Japan, Jan. 4, 1993, 5-014394
Int. Cl.[6] B32B *7/06;7/08*
U.S. Cl. 428—474.7 **10 Claims**

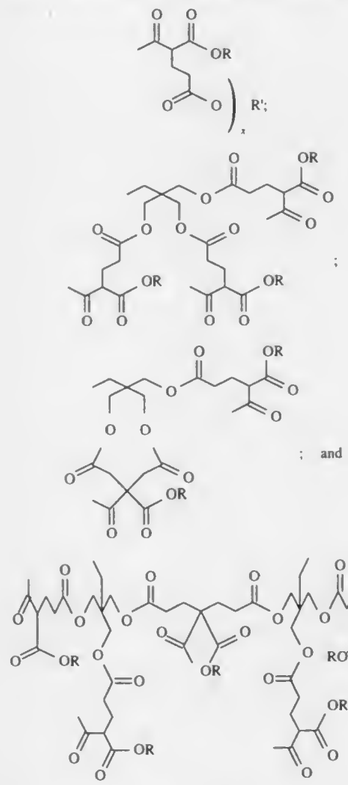
1. An aramid paper with high surface smoothness comprising a substrate layer having laminated on at least one side of the substrate layer a surface layer wherein the weight of the surface layer is less than 10 g/m^2 and wherein the surface layer consists of 100 wt % poly(metaphenylene isophthalamide) fibrids and has a coating ratio of 97% or higher and wherein the substrate layer consists of from 25 to 90 wt % poly(metaphenylene isophthalamide fibrids and from 10 to 75 wt % poly(metaphenylene isophthalamide) flock and wherein the surface layer has a surface smoothness of 40 see per 10 cc or higher and has 5 or fewer fuzz fibers of 1 mm in length or more that are generated and measured according to test method JIS-L 0823 per 25 cm^2 and wherein the coating ratio is measured by image analysis and is percent of surface area ratio to the field of view that is devoid of holes.

5,667,901
CROSSLINKERS BASED ON 2-ACETYLGLUTARATE ESTERS OF POLYOLS

Philip C. Heidt; Charles H. Foster, both of Kingsport, Tenn., and J. Stewart Witzeman, Den Haag, Netherlands, assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 468,456, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 139,662, Oct. 22, 1993, abandoned. This application Feb. 20, 1996, Ser. No. 603,489
Int. Cl.[6] B32B *27/06*
U.S. Cl. 428—482 **10 Claims**

1. A thermosetting coating composition comprising
(I) about 15 to 80 weight percent of a curable polymer;
(II) about 0 to 50 weight percent of a solvent; and
(III) about 10 to about 40 weight percent of a crosslinking compound selected from the group consisting of

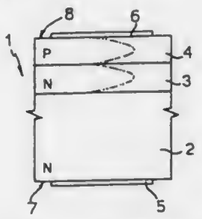

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layer comprised of nickel;
layer comprised of tin-nickel; and
a top layer comprised of zirconium compound or titanium compound.

5,667,905
ELECTRO-LUMINESCENT MATERIAL, SOLID STATE ELECTRO-LUMINESCENT DEVICE AND PROCESS FOR FABRICATION THEREOF

Salvatore Ugo Campisano; Salvatore Lombardo; Giuseppe Ferla, all of Catania, Italy; Albert Polman, Amsterdam, and Gerard Nicolaas Van Den Hoven, Ede, both of Netherlands, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Division of Ser. No. 316,045, Sep. 30, 1994, Pat. No. 5,580,663. This application Oct. 17, 1995, Ser. No. 544,328
Claims priority, application European Pat. Off., Oct. 20, 1993, 93830421
Int. Cl.[6] H05B *33/20;* **C09K** *11/59*
U.S. Cl. 428—690 **21 Claims**

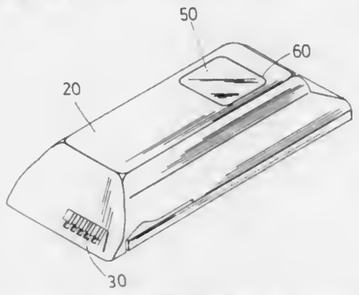


1. A solid state electro-luminescent device, characterized in that it comprises a PN junction formed by electro-luminescent material, including a first region including a mixed material including a mixture of silicon and silicon oxide, the mixed material in the first region being doped with rare earth ions and at least one second region of a mixed material formed by a mixture of silicon and silicon oxide, the mixed material in the second region being doped with dopant elements of the V or III column of the periodic table of elements wherein the oxygen content of said mixed material in the first region is in the range of 1 to 65 atomic %.

5,667,906
STORAGE BATTERY HOUSING ON A MOBILE PHONE

Tsung-Wei Huang, 4F., No.7, Sec 2, Jen-Ai Road, Taipei, Taiwan

Filed Aug. 5, 1996, Ser. No. 692,519
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—90 **3 Claims**

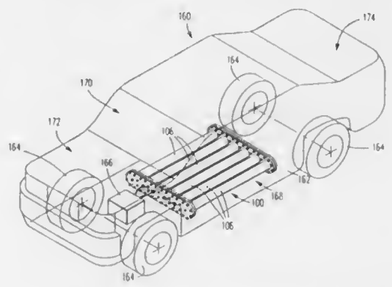


1. An improved storage battery housing for a mobile phone, comprises:
a base housing secured in a storage battery mounting station provided in said mobile phone,
a cover housing attached to said base housing to form a receiving space therebetween,
an electric circuit board disposed in said receiving space formed by said base housing and said cover housing,
at least one lithium battery also disposed in said receiving space formed by said base housing and said cover housing, wherein electric energy from said at least one lithium battery is supplied through said electric circuit board for operation of said mobile phone, and said at least one lithium battery is charged through said electric circuit board; and
a viewing window formed within an opening provided on one of said base housing and said cover housing to permit direct viewing of said at least one lithium battery through said viewing window to visually inspect the presence of said at least one lithium battery in said receiving space.

5,667,907
ELECTRICAL ENERGY STORAGE DEVICE FOR A MOTOR VEHICLE

Thomas E. Audit, and Jon K. West, both of Gainesville, Fla., assignors to EV Energy Systems, Ltd., Gainsville, Fla.

Division of Ser. No. 295,106, Aug. 24, 1994, Pat. No. 5,439,488, which is a division of Ser. No. 104,221, Aug. 11, 1993, Pat. No. 5,370,711, which is a continuation-in-part of Ser. No. 94,711, Jul. 21, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 420,691
Int. Cl.[6] H01M *10/36;* **B60K** *1/00*
U.S. Cl. 429—94 **12 Claims**

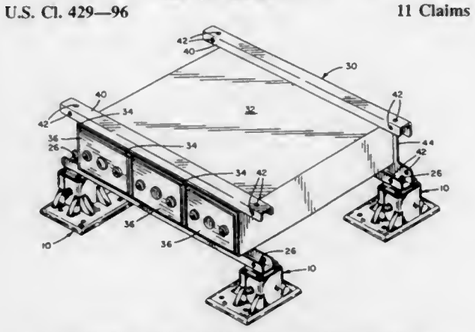


1. A motor vehicle for transporting loads in excess of 100 pounds, the vehicle comprising:
a frame;
a plurality of wheels rotatably mounted on the frame;
an electric motor for driving at least one of the wheels; and
an electrical energy storage device electrically connected to the motor for energizing the motor, the device including:
(a) a casing;
(b) a plurality of electrically connected coiled windings disposed within the casing, each winding including a cathode plate including a strip having a pair of elongated side edges, an anode plate including a strip having a pair of elongated side edges, and a separator located between the cathode and anode plates, the cathode plate and the anode plate being wound in an offset relationship so that one elongated side edge of the cathode plate extends beyond one elongated side edge of the anode plate at a first side of the winding, and the other elongated side edge of the anode plate extends beyond the other elongated side edge of the cathode plate at a second side of the winding opposite the first side;
(c) an electrolyte material located within each winding; and
(d) and a plurality of current collectors disposed within the casing, at least one of the current collectors being pressed against one of the first and second sides of each winding to electrically contact the corresponding winding side at a plurality of locations thereon.

5,667,908
PEDESTAL AND CELL TRAY ASSEMBLY FOR LEAD-ACID CELLS AND BATTERIES

Bradley W. Stone, Elgin, Ill., assignor to GNB Technologies, Inc., Lombard, Ill.

Continuation of Ser. No. 592,014, Jan. 26, 1996, abandoned. This application Aug. 7, 1996, Ser. No. 693,558
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—96 **11 Claims**

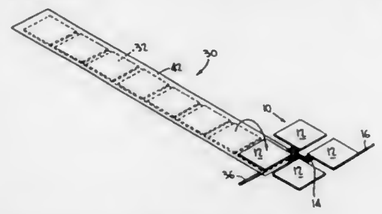


1. A pedestal and cell or battery tray assembly comprising:
at least one tray of an electrically conductive material housing a plurality of lead-acid cells or batteries, and
a plurality of composite pedestals supporting said tray and attached thereto, each of said pedestals comprising a bottom plate of an electrically nonconductive material, an upstanding member attached to, and spacing said tray from, said bottom plate, said upstanding member being at least partially of an electrically conductive material, and attachment means for attaching a pedestal to said tray, said pedestals electrically insulating the lead-acid cells or batteries from ground.

5,667,909
ELECTRODES CONFIGURED FOR HIGH ENERGY DENSITY GALVANIC CELLS

Pedro Rodriguez, Ossining, N.Y.; Dennis Biegger, Morris Plains, and Andrew Lenkiewicz, Hackensack, both of N.J., assignors to Power Conversion, Inc., Elmwood Park, N.J.

Filed Jun. 23, 1995, Ser. No. 481,037
Int. Cl.[6] H01M *2/26*
U.S. Cl. 429—127 **9 Claims**

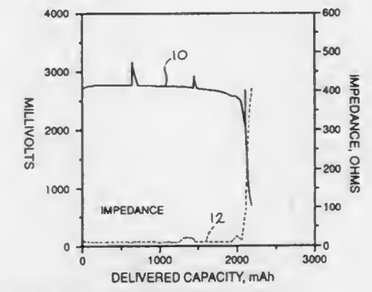


1. An electrochemical cell stack comprising:
(a) a segmented cathode material comprising four sections in the form of a rectangle, said four sections being connected together at their inner adjacent corners with a flexible current collector material;
(b) a strip of anode material including a current collector having flexibility sufficient to permit the strip to be folded over onto itself; and
(c) non-conductive porous separator means comprising an electrolyte positioned between said cathode material and anode strip to prevent electrical contact between said cathode material and anode strip, said anode strip and cathode material being folded over onto each other at right angles to each other to provide a cell stack.

5,667,910
ELECTROCHEMICAL CELL HAVING A CATHODE COMPRISING DIFFERING ACTIVE FORMULATIONS AND METHOD

Esther S. Takeuchi, East Amherst, and Sally Ann Smesko, North Tonawanda, both of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Apr. 3, 1996, Ser. No. 628,568
Int. Cl.[6] H01M *4/62*
U.S. Cl. 429—128 **43 Claims**

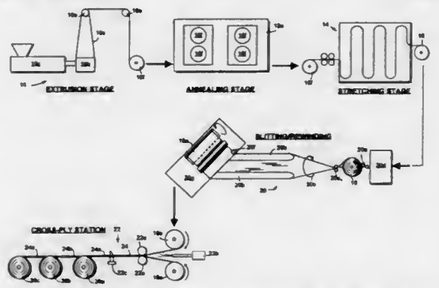


1. An electrochemical cell, which comprises:
(a) an anode;
(b) a cathode comprising:
i) a current collector;
ii) a first active mixture contacting the current collector and comprising a first percentage of a first discharge promoter component mixed with at least one first electrode active material; and
iii) a second active mixture contacting the first active mixture and comprising a second percentage of a second discharge promoter component mixed with at least one second electrode active material, wherein the first percentage of the first discharge promoter component is greater than the second percentage of the second discharge promoter component; and
(c) an electrolyte activating and operatively associating the anode and the cathode.

5,667,911
METHODS OF MAKING CROSS-PLY MICROPOROUS MEMBRANE BATTERY SEPARATOR, AND THE BATTERY SEPARATORS MADE THEREBY

Wei-Ching Yu, and Carlton F. Dwiggins, both of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 341,239, Nov. 17, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 362,048
Int. Cl.[6] H01M *2/18*
U.S. Cl. 429—144 **7 Claims**



1. An electrochemical battery comprising anode and cathode sheets, and a continuous cross-plied microporous battery separator interposed between said anode and cathode sheets, the battery

separator comprising; a continuous first ply of uniaxially oriented, microporous polymeric material; and a continuous second ply of uniaxially oriented, microporous polymeric material, wherein said first and second plies are adhered to one another in face-to-face contact such that the uniaxial orientation of said first ply is at an angle relative to the uniaxial orientation of said second ply so as to form an axially seamless continuous battery separator.

5,667,912

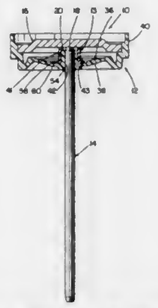
CURRENT COLLECTOR ASSEMBLY FOR AN ELECTROCHEMICAL CELL

Philip Georgopoulos, Westlake, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 102,179, Aug. 4, 1993, Pat. No. 5,422,201. This application Mar. 8, 1995, Ser. No. 401,106

Int. Cl.[6] H01M *2/06*

U.S. Cl. 429—170 **6 Claims**



1. A current collector assembly for sealing electrochemically active components within a cup-shaped container and for collecting current from the components, said assembly comprising:

a) a resilient and electrically nonconductive seal body having an upstanding wall defining an opening there through;

b) a collector inserted through the opening; and

c) a compression means contacting the upstanding wall, wherein the inside diameter of said seal body's opening after compression by said compression means and insertion of said collector is no greater than the inside diameter of said seal body's opening prior to compression by said compression means and insertion of said collector.

5,667,913

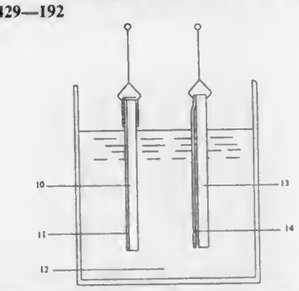
ELECTROCONDUCTIVE POLYMER COMPOSITES AS POSITIVE ELECTRODE ACTIVE MATERIALS IN SECONDARY BATTERIES

Show-An Chen, and Liang-Chang Liu, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Mar. 23, 1995, Ser. No. 410,434

Int. Cl.[6] H101M *6/16;6/14;4/58;4/42*

U.S. Cl. 429—192 **10 Claims**



1. An organic secondary battery, which comprises:

(a) a positive electrode prepared from an electroconductive polymer composite;

(b) a negative electrode made of an active metal selected from the group consisting of lithium, lithium alloy, zinc, aluminum, and lithium insertion compounds; and

(c) a non-aqueous electrolyte solution or solid polymeric electrolyte;

(d) wherein said electroconductive polymer composite comprises 10 to 99 weight percent of a conjugated electroconductive polymer and 90 to 1 weight percent of an ionized polymeric electrolyte;

(e) further wherein said ionized polymeric electrolyte comprises 10 to 90 weight percent of an ionic salt and 90 to 10 weight percent of an ionizable polymer, and said ionizable polymer and said conjugated electroconductive polymer are immiscible relative to each other such that said ionized polymeric electrolyte is dispersed in said conjugated electroconductive polymer.

5,667,914

PROCESS FOR PREPARING CARBONACEOUS MATERIAL FOR NEGATIVE ELECTRODE OF CELL AND NON-AQUEOUS ELECTROLYTE SECONDARY CELL USING SAME

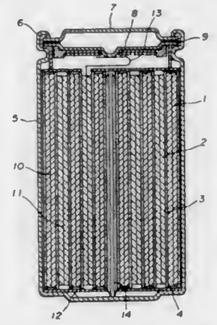
Masayuki Nagamine, Fukushima; Atsuo Omaru, Kanagawa, and Naoyuki Nakajima, Fukushima, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 15, 1996, Ser. No. 647,755

Claims priority, application Japan, May 17, 1995, 7-118625

Int. Cl.[6] H01M *10/40;* **C01B** *31/02*

U.S. Cl. 429—194 **4 Claims**



1. A process for preparing a material for a negative electrode of a cell, comprising the steps of:

carbonizing an organic compound to form a carbide thereof;

pulverizing said carbide to form a powder having an average particle size of 10 μm to 2 mm; and

sintering said powder of the carbide at a temperature of 2,000° C. or higher to produce a graphite.

5,667,915

ELECTRODE INCLUDING A METAL CONNECTION AND A CORE HAVING A FIBER OR FOAM-TYPE STRUCTURE FOR AN ELECTROCHEMICAL CELL

Marie-Thérèse Loustau; Roelof Verhoog, both of Bordeaux, and Claude Precigout, Lormont, all of France, assignors to Saft, Romainville, France

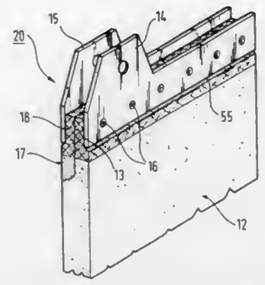
Division of Ser. No. 248,238, May 24, 1994, Pat. No. 5,558,681. This application Feb. 22, 1996, Ser. No. 604,925

Claims priority, application France, May 26, 1993, 93 06314

Int. Cl.[6] H01M *2/26*

U.S. Cl. 429—211 **14 Claims**

1. An electrode for an electrochemical cell, said electrode comprising:



a main core having one of a fiber and a foam structure;

a metal connection for securing said electrode in said electrochemical cell, said metal connection comprising at least one metal strip; and

a retaining core having substantially the same fiber or foam structure as said main core, but different dimensional characteristics, wherein

said metal connection is fixedly secured to respective edge portions of said main core and said retaining core.

5,667,916

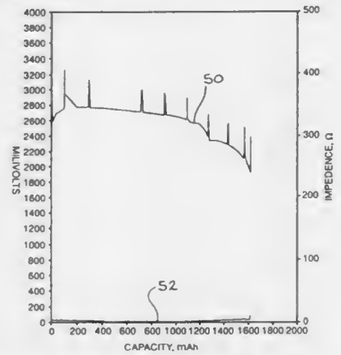
MIXED CATHODE FORMULATION FOR ACHIEVING END-OF-LIFE INDICATION

Steven J. Ebel, Clarence Center; Sally Ann Smesko, North Tonawanda, and Esther S. Takeuchi, East Amherst, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed May 10, 1996, Ser. No. 644,452

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—218 **37 Claims**



1. An electrochemical cell, which comprises:

(a) an anode;

(b) a cathode operatively associated with the anode, wherein the cathode includes a cathode active mixture comprising:

i) fluorinated carbon as a major portion of the cathode active mixture; and

ii) a second cathode active constituent as a minor portion of the cathode active mixture, wherein the second cathode active constituent is selected from the group consisting of bismuth dioxide (Bi_2O_3), bismuth lead oxide ($Bi_2Pb_2O_5$), copper sulfide (Cus), copper chloride ($CuCl_2$), copper oxide (CuO), iron sulfide (FeS), iron disulfide (FeS_2), molybdenum oxide (MoO_3), nickel sulfide (Ni_3S_2), silver oxide (Ag_2O), silver chloride (AgCl), copper vanadium oxide (CuV_2O_5), copper silver vanadium oxide ($Cu_xAg_yV_2O_z$) and mercury oxide (HgO), and mixtures thereof; and

(c) an electrolyte solution activating the anode and the cathode, wherein the fluorinated carbon provides the electrochemical cell dischargeable at a first voltage plateau and the second cathode active constituent provides the cell dischargeable at a second voltage plateau, less than the first voltage plateau, as an end-of-life indicator for the cell.

5,667,917

ELECTRODE WITH CONDUCTIVE FILERS

Dean B. Edwards, and Philip W. Appel, both of Moscow, Id., assignors to Idaho Research Foundation, Moscow, Id.

Continuation of Ser. No. 938,616, Sep. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,187, Sep. 10, 1991, abandoned. This application May 8, 1995, Ser. No. 436,903

Int. Cl.[6] H01M *4/56*

U.S. Cl. 429—228 **33 Claims**

1. An electrode for a lead-acid battery comprising a current collector and active material carried by said current collector, said active material having a filler selected from the group consisting of a conductive filler and a mixture of conductive and non-conductive fillers, said filler being included in said active material such that the utilization of active material in said electrode is greater than 35% at the one hour rate.

5,667,918

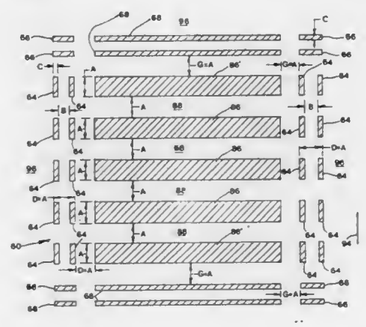
METHOD OF LITHOGRAPHY USING RETICLE PATTERN BLINDERS

Steve K. Brainerd, Tigard, Oreg., and J. Brett Rolfson, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 127,430, Sep. 27, 1993, abandoned. This application Jun. 27, 1995, Ser. No. 495,040

Int. Cl.[6] G03F *1/14*

U.S. Cl. 430—5 **24 Claims**



1. A lithographic method comprising:

providing a lithographic apparatus having partially coherent or off-axis illumination;

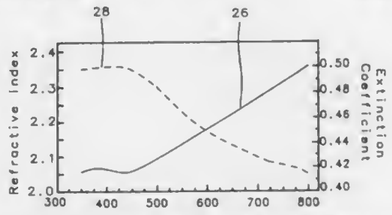
providing a reticle configured for use with the lithographic apparatus to project a pattern onto a target;

forming a blinder structure including at least two parallel spaced blinders in an area of the reticle adjacent to an edge of a protected feature of the pattern, said blinders having a thickness below a resolution limit of the lithographic apparatus, said blinder structure having an overall width equal to a width of the protected feature, said overall width inclusive of the thicknesses of the blinders and a spacing between the blinders.

5,667,919
ATTENUATED PHASE SHIFT MASK AND METHOD OF MANUFACTURE THEREOF

Chih-Chiang Tu, Tau-yen; Jon-Yiew Gan, Chushan; Tai-Bor Wu, Hsinchu, and Chin-Lung Lin, Kaohsiung, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jul. 17, 1996, Ser. No. 682,458
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 18 Claims



1. A method for forming an attenuated Phase Shift Mask (PSM) blank comprising:

providing a transparent substrate; and,

forming upon the transparent substrate a tantalum-silicon oxide blanket semi-transparent shifter layer, the tantalum-silicon oxide blanket semi-transparent shifter layer having a formula,

$Ta_xSi_yO_{1-x-y}$

wherein $0.10<x<0.3$ and $0.03<y<0.1$.

5,667,920
PROCESS FOR PREPARING A COLOR FILTER

Carl A. Chiulli, Randolph, Mass.; John E. MacLatchy, Dover, N.H., and Harris R. Miller, Boston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 11, 1996, Ser. No. 613,849
Int. Cl.[6] G02B *5/20;* G02F *1/1335;* G03F *7/00*
U.S. Cl. 430—7 25 Claims

1. In a process for forming a filter on a substrate, which process comprises:

forming a layer of a photoresist on the substrate;

exposing portions of the layer of photoresist to radiation effective to change the solubility of the exposed portions of the photoresist;

developing the exposed layer of photoresist by removing from the substrate one of the exposed and unexposed portions of the layer of photoresist,

thereby producing filter elements from the remaining portions of the layer of photoresist,

the improvement which comprises:

treating the substrate, after formation of the filter elements thereon, with a silylation compound having at least two functional groups, this silylation compound being capable of cross-linking the photoresist, and of promoting adhesion of the photoresist to the substrate.

5,667,921
BLACK MATRIX AND PROCESS FOR FORMING THE SAME

Takashi Takayanagi; Akihiko Takeda, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

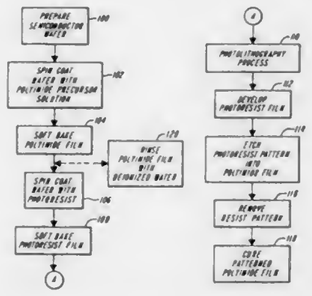
Filed Apr. 3, 1996, Ser. No. 626,927
Claims priority, application Japan, Apr. 4, 1995, 7-078684
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 430—7 17 Claims

1. A black matrix formed on a transparent substrate which comprises a pattern comprising a cured photosensitive aqueous resin composition containing at least one black pigment, physical development nuclei and a metal deposited on said physical development nuclei by physical development.

5,667,922
METHOD OF SEMICONDUCTOR FABRICATION UTILIZING RINSE OF POLYIMIDE FILM

Thomas J. Martiska, Boylston, and Stephen Darling, Worcester, both of Mass., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed Apr. 26, 1996, Ser. No. 639,340
Int. Cl.[6] G03F *7/00*
U.S. Cl. 430—9 12 Claims



1. A method of processing a semiconductor wafer, comprising:

coating said wafer with a polyimide precursor solution;

baking said polyimide precursor solution following said coating step in order to remove solvents from and to slightly cure said solution to form a partially cured polyimide film; and

rinsing said polyimide film following said baking step and prior to further processing.

12. A semiconductor wafer having a patterned polyimide film produced thereon, said patterned polyimide film produced by coating said wafer with a polyimide precursor solution, baking said polyimide precursor solution following said coating in order to remove solvents from and to slightly cure said solution to form a partially cured polyimide film, and rinsing said polyimide film with deionized water immediately following said baking step and prior to further processing.

5,667,923
CHARGED PARTICLE BEAM EXPOSURE COMPENSATING PROXIMITY EFFECT

Hiroyuki Kanata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 301,565, Sep. 7, 1994, abandoned.
This application Apr. 29, 1996, Ser. No. 638,864
Claims priority, application Japan, Sep. 8, 1993, 5-222916
Int. Cl.[6] G03F *7/20*
U.S. Cl. 430—30 4 Claims

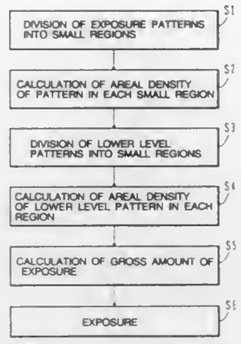
1. A charged particle beam exposure method for exposing a pattern with a charged particle beam, comprising the steps of:

dividing data of a pattern to be exposed on a surface layer of a substrate into small regions of a predetermined dimension;

calculating area density of the pattern within each divided small region;

dividing data of a pattern of a lower level structure into small regions of a predetermined dimension, the lower level pattern being formed within the substrate having the surface layer which is to be patterned;

calculating area density of the lower level pattern within each divided small region;



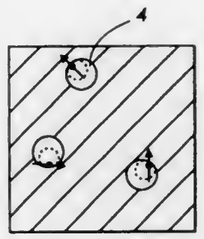
calculating a main exposure intensity for irradiating a pattern on the surface layer for each small region based on total scattering intensity depending on the area density of the pattern on the surface layer and the area density of the pattern on the lower level layer; and

exposing each small region of the surface layer with a charged particle beam based on the calculated main exposure intensity for the charged particle beam.

5,667,924
SUPERPARAMAGNETIC IMAGE CHARACTER RECOGNITION COMPOSITIONS AND PROCESSES OF MAKING AND USING

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 14, 1996, Ser. No. 600,642
Int. Cl.[6] G03G *13/06*
U.S. Cl. 430—39 23 Claims



1. An image character recognition printing process comprising:

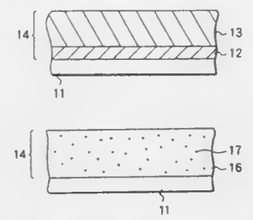
providing a superparamagnetic image character recognition composition comprising: a magnetic composition comprising nanocomposite particles comprising from about 0.001 to about 60 weight percent of magnetic nanocrystalline particles dispersed in from about 40 to about 99.999 weight percent of a discrete phase matrix; and a continuous phase matrix, wherein the discrete phase resides in interstices within the continuous phase matrix; and

forming a printed image with said superparamagnetic image character recognition marking composition on a receiver member, wherein the resulting printed image is superparamagnetic in a magnetic field.

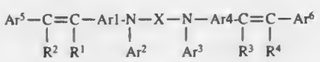
5,667,925
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE PRODUCT

Eriko Tsuruoka, and Akira Hirano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

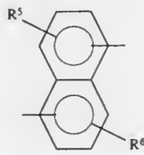
Filed May 13, 1996, Ser. No. 645,354
Claims priority, application Japan, May 12, 1995, 7-114192
Int. Cl.[6] G03G *5/047;5/09*
U.S. Cl. 430—59 10 Claims



1. An electrophotographic photosensitive product comprising on a photoconductive substrate a photosensitive layer comprising either a laminate of a charge generating layer and a charge transporting layer, or, a charge transporting layer with a charge generating substance disperse within, said charge transporting layer containing as a main component thereof a compound specified below:



wherein X is $—Ar^7—CH=CH—Ar^8—$ or a naphthylene group represented by the following formula:



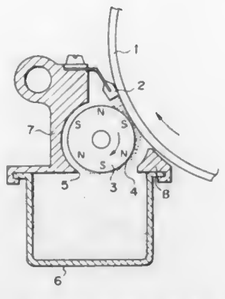
and wherein each of Ar^1, Ar^4, Ar^7, and Ar^8 is a substituted or unsubstituted arylene group, each of Ar^2, Ar^3, Ar^5, and Ar^6 is a substituted or unsubstituted aryl group, and each of R^1–R^6 is selected from the group consisting of H, a lower alkyl group that includes one to six carbon atoms and can bave a substituent, and a substituted or unsubstituted aryl group.

5,667,926
ELECTROPHOTOGRAPHIC APPARATUS AND IMAGE FORMING PROCESS

Akio Maruyama, Tokyo; Harumi Sako, Ichikawa; Kazushige Nakamura, Yokohama, and Shoji Amamiya, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 498,874
Claims priority, application Japan, Jul. 6, 1994, 6-154683
Int. Cl.[6] G03G *13/06*
U.S. Cl. 430—97 30 Claims

1. An electrophotographic apparatus comprising an electrophotographic photosensitive member, and a charging means for charging the photosensitive member, an exposure means for irradiating imagewise the charged photosensitive member to form an electrostatic latent image, a development means for developing the formed electrostatic latent image, an image-transfer means for transferring the developed image onto an image-receiving means, and a cleaning means for cleaning the surface of the photosensitive member after transferring the developed image arranged around the photosensitive member in this order;



the photosensitive member having a surface layer containing fluoroplastic particles; and

the electrophotographic apparatus further comprising a polishing means for polishing the surface of the photosensitive member after the transfer means and before the cleaning means.

5,667,927

TONER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR THE PRODUCTION THEREOF

Hideyuki Kubota, Shizuoka, and Eiichi Ozeki, Kyoto, both of Japan, assignors to Shimadu Corporation, Tokyo, and Tomoegawa Paper Co., Ltd., Kyoto, both of Japan

Continuation-in-part of Ser. No. 297,897, Aug. 30, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 605,962

Claims priority, application Japan, Aug. 30, 1993, 5-235939; Aug. 2, 1994, 6-200250

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 **8 Claims**

1. A toner for electrophotography, which contains, as a binder resin, a lactic acid-based resin of the formula (1),

$$H—[—O—CH(CH_3)—CO—]_n—OR \quad (1)$$

wherein R is an alkali metal or an alkaline earth metal, and n is an integer of 10 to 20,000.

5,667,928

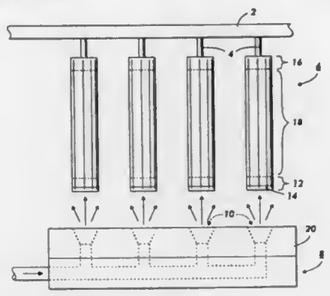
DIP COATING METHOD HAVING INTERMEDIATE BEAD DRYING STEP

Mark S. Thomas, Williamson; Ronald E. Fox, Penn Yan; Mark C. Petropoulos, Ontario, and Stanley J. Pietrzykowski, Jr., Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 6, 1996, Ser. No. 659,552

Int. Cl.[6] G03G *5/00*

U.S. Cl. 430—134 **12 Claims**



1. A coating method comprising:

(a) dip coating a batch of endless, hollow substrates, each substrate defining an open end region, a center region, and a top region, with a first coating solution including a solvent to deposit a first layer on the end region, the center region, and optionally on a part of the top region of each substrate, wherein the first layer includes a wet coating solution bead formed at the end region of each substrate, thereby resulting in a plurality of wet coating solution beads;

(b) directing a gas simultaneously at the entire plurality of the wet coating solution beads to remove a portion of the solvent in each bead, wherein the gas fails to disrupt the coating uniformity of the part of the first layer over the center region of each substrate, wherein (b) comprises positioning the batch of the substrates over a gas channelling structure and directing the gas through the structure simultaneously at the entire plurality of the wet coating solution beads, wherein the gas also enters into the substrate interior; and

(c) dip coating the batch of the substrates subsequent to (b) with a second coating solution to deposit a second layer over the first layer, wherein the portion of the solvent removed from each bead in (b) is sufficient to prevent contamination of the second coating solution by the first layer.

9. The coating method of claim 1, wherein the first coating solution or the second coating solution includes a charge generating material.

5,667,929

TONER COMBINATION

Roger N. Ciccarelli, Rochester; Jacques C. Bertrand, Ontario; Thomas R. Pickering, Webster, and Denise R. Bayley, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 542,232, Oct. 12, 1995, Pat. No. 5,591,552. This application Jul. 19, 1996, Ser. No. 684,070

Int. Cl.[6] G03G *9/09*

U.S. Cl. 430—106 **20 Claims**

1. Toners comprised of a mixture of a cyan toner, a magenta toner, a yellow toner, and an optional black toner, each of said toners being comprised of resin and pigment, and wherein the pigment for the cyan toner is a β type copper phthalocyanine, the pigment for the magenta toner is a quinacridone, the pigment for the yellow toner is a diazo benzidine, and the pigment for the black toner is carbon black, and wherein each of said cyan, magenta, and yellow pigments are dispersed by flushing said cyan, magenta or yellow pigment into said toner resin, wherein a cyan, magenta or yellow pigment water wet cake is mixed with toner resin and the water is removed to generate pigmented resin.

5,667,930

PHOTORESIST COMPOSITION CONTAINING 4,6-(BIS)CHLOROMETHYL-5-TRIAZINE INITIATOR

Bo Sung Kim; Soon Sik Kim, both of Seoul, and Dae Woo Ihm, Daegu-Si, all of Rep. of Korea, assignors to Cheil Synthetics Incorporation, Kyongsangbuk, Rep. of Korea

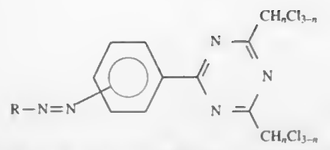
Filed May 20, 1996, Ser. No. 650,380

Claims priority, application Rep. of Korea, Aug. 31, 1995, 95-27854

Int. Cl.[6] G03F *7/021*

U.S. Cl. 430—176 **4 Claims**

1. A photoresist composition in which the photoresist composition includes a binder resin and a multifunction compound and a sensitizer and a photopolymerization initiator, the photopolymerization initiator comprising one or more 4,6-bis(chloromethyl)-s-triazine compounds containing a diazophenyl group, said initiator acting as a chromophore and being represented by the following general formula I:



(I)

wherein the position at which the diazo group bonds to phenyl group may be changed;

R is an aliphatic radical or an unsubstituted- or substituted aromatic radical; and

n is an integer of 0 to 2.

5,667,931

POSITIVE PHOTORESIST COMPOSITION CONTAINING QUINONE DIAZIDE 5-TRIAZINE ESTERIFICATION COMPOUND

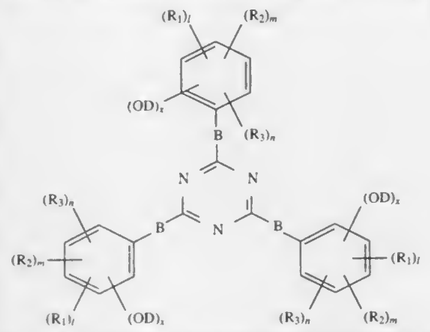
Dae-Youp Lee, Seoul; Ki-Dae Kim, Daejon-si; Ji Hong Kim, Daejon-si, and Seong-ju Kim, Daejeon-si, all of Rep. of Korea, assignors to Korea Kumho Petrochemical Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 379,188, Jan. 27, 1995, abandoned. This application Feb. 16, 1996, Ser. No. 603,527

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—191 **2 Claims**

1. A positive photoresist composition comprising an alkali soluble novolak resin and an esterification compound in an admixture wherein said esterification compound is represented by the following Formula II as a photosensitive agent and a solvent:



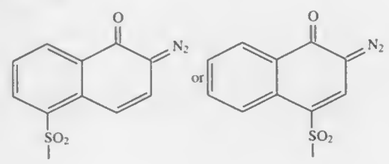
II

wherein R_1 through R_3 are independently selected from a group consisting of a hydrogen atom, an alkoxy group containing 1 to 4 carbon atoms, and an alkyl group containing 1 to 4 carbon atoms and wherein R_1 through R_3 are different from or the same as one another, and

x is 1 to 4, l+m+n+x totals 4 with l and m and n each selected from 0 through 3;

B is selected from a group consisting of oxygen, methyl oxygen and ethyl oxygen; and

D represents



5,667,932

POSITIVE PHOTORESIST COMPOSITION

Kenichiro Sato; Kunihiko Kodama, and Makoto Momota, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

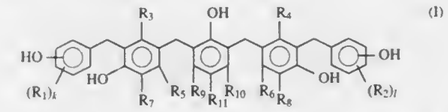
Filed May 21, 1996, Ser. No. 651,849

Claims priority, application Japan, May 24, 1995, 7-125194

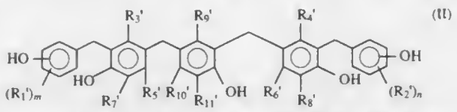
Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—192 **4 Claims**

1. A positive photoresist composition comprising an alkali-soluble resin and at least one of 1,2-naphthoquinonediazide-5-(and/or -4-)sulfonic esters of polyhydroxy compounds represented by formula (I) or (II):



(I)



(II)

wherein R_1, R_2, R_1', and R_2', which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an acyl group, or a cycloalkyl group; R_3, R_4, R_3', and R_4', which may be the same or different, each represents an alkyl group or a halogen atom; R_5, R_6, R_5', and R_6', which may be the same or different, each represents a hydrogen atom, an alkyl group, or an alkoxy group; R_7, R_8, R_7', and R_8', which may be the same or different, each represents an alkyl group, an alkoxy group, an alkenyl group, or a cycloalkyl group; R_9, R_{10}, R_9', and R_{10}', which may be the same or different, each represents a hydrogen atom or an alkyl group; R_{11} and R' each represents a cycloalkyl group; and k to n each represents an integer of from 0 to 3.

5,667,933

IMAGE-RECORDING ELEMENT

Gary E. Cargill, Millis, Mass.; Edward C. Taylor, Princeton, N.J.; Peter Viski, Lexington, Mass., and Christopher E. R. Orvig, Vancouver, Canada, assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 607,680, Feb. 26, 1996, abandoned. This application Nov. 20, 1996, Ser. No. 753,180

Int. Cl.[6] G03C *8/02;8/40*

U.S. Cl. 430—200 **33 Claims**

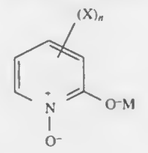
1. A heat-developable image-recording element comprising:

a first support and an optional second support and carried by said first support or confined between said first and said second supports;

a layer including a source of silver ions;

an image-receiving layer; and

an alkali-generating system comprising a ligand, represented by the following formula



wherein:

X is a hydrogen atom or a substituent selected from the group consisting of a halogen atom, cyano, nitro, hydroxyl, substituted or unsubstituted alkyl having from 1 to 6 carbon atoms,

cycloalkyl, aryl, alkenyl, alkynyl, alkoxy, aryl-oxy, acylamino, acyl, amino, heterocyclic radical, alkylsulfonyl, arylsulfonyl, and carbamoyl;

M is a photographically acceptable cation;

n is an integer from 0 to 4; and

a slightly water-soluble metal compound represented by the formula $D(W)_m$ wherein D represents a metal other than an alkali metal, W is a photographically acceptable counterion, and m is a positive integer selected so as to establish equilibrium between the valences of D and W.

5,667,934

THERMALLY STABLE PHOTOIMAGING COMPOSITION

Voya Rista Markovich, Endwell; Ashit Arvind Mehta, Vestal; Eugene Roman Skarvinko, Binghamton, and David Wei Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1990, Ser. No. 594,780

Int. Cl.[6] G03C *1/725*

U.S. Cl. 430—280.1 **23 Claims**

1. A photo-patternable solder mask thermally stable at 360° C., consisting essentially of a photosensitive cationic photoinitiator admixed with a cationic polymerizable epoxy resin, a solvent and a filler consisting essentially of an optically transparent silicon dioxide filler transparent to wavelength of 310 to 400 nanometers, said composition having a coefficient of thermal expansion of 28–40 ppm/°C., wherein said solder mask is both an encapsulant and a dielectric.

5,667,935

PROTECTIVE COATING FOR IMAGING ELEMENTS

Anchi Hou, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 186,342, Jan. 25, 1994, Pat. No. 5,437,959. This application May 4, 1995, Ser. No. 435,947

Int. Cl.[6] G03C *1/805*

U.S. Cl. 430—256 **7 Claims**

1. An element comprising in order from top to bottom:

(a) a transparent, nonphotosensitive, polymeric layer having a thickness of less than about 0.002 cm and a gloss of 45 to 70; said polymeric layer consisting essentially of a thermoplastic polymer or a compatible mixture of thermoplastic polymers having an elongation at break of greater than 30%, a glass transition temperature of 35° to 70° C.;

(b) a nonphotosensitive elastomeric layer; and

(c) a prepress color proof.

5,667,936

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kohzaburoh Yamada; Hiroshi Takeuchi; Takashi Hoshimiya; Toshiaki Kubo, and Shigeo Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1996, Ser. No. 627,998

Claims priority, application Japan, Apr. 6, 1995, 7-104624; Apr. 6, 1995, 7-104626; Apr. 6, 1995, 7-104648

Int. Cl.[6] G03C *1/295*

U.S. Cl. 430—264 **4 Claims**

1. A silver halide photographic material comprising at least one hydrazide compound represented by formula (1), (21) or (3):

$$X_1—(R_1)_{m1}—(L_2—R_2)_{m2}—L_1—A_1—NHNH—CO—R_1 \quad (1)$$

wherein R_1 represents an unsubstituted difluoromethyl group or an unsubstituted monofluoromethyl group;

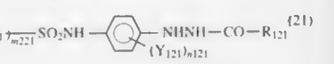
A_1 represents a divalent aromatic group;

X_1 represents a group accelerating adsorption to silver halide;

R_2 and R_1 each represents a divalent aliphatic or aromatic group;

L_1 and L_2 each represents a divalent linking group; and

m_2 and m_1 each represents 0 or 1.



(21)

wherein

X_{121} represents an alkylthio group, an arylthio group, a heterocyclic thio group, a quaternary ammonium group, a nitrogen-containing heterocyclic group containing a quaternarized nitrogen atom, an alkoxy group containing an ethyleneoxy or propyleneoxy unit, or a saturated heterocyclic group containing a sulfide or disulfide linkage;

R_{121} represents an unsubstituted difluoromethyl group or an unsubstituted monofluoromethyl group;

R_{221} and R_{321} each represents a divalent aliphatic or aromatic group;

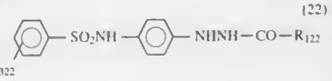
L_{221} represents a divalent linking group;

m_{221} and m_{321} each represents 0 or 1;

Y_{121} represents a substituent; and

n_{121} represents an integer of 0 to 4;

provided that the hydrazide compound represented by formula (21) is represented by the following formula (22) when X_{121} represents an alkylthio group,



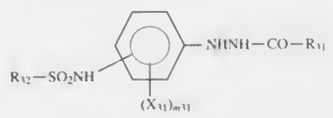
(22)

wherein

R_{122} represents an unsubstituted difluoromethyl group or an unsubstituted monofluoromethyl group;

R_{322} represents an alkylene group;

L_{322} represents a group linking to the benzene ring selected from the group consisting of an acylamino group, a carbamoyl group, a ureido group, an oxycarbonyl group and a sulfonamido group; when L_{322} represents an acylamino group, oxycarbonyl group or sulfonamido group, m_{422} represents 1; when L_{322} represents a carbamoyl group or a ureido group, m_{422} represents 1 or 2; when m_{422} represents 1, R_{522} represents an unsubstituted alkyl group having 7 or more carbon atoms, a substituted alkyl group having 1 to 18 carbon atoms in total or a cycloalkyl group having 3 or more carbon atoms in total; when m_{422} is 2, R_{522} represents a substituted or unsubstituted alkyl group having 1 to 18 carbon atoms in total or a cycloalkyl group having 3 or more carbon atoms in total;



(3)

wherein

R_{31} represents an unsubstituted difluoromethyl group or an unsubstituted monofluoromethyl group;

R_{32} represents an aliphatic group, an aromatic group or a heterocyclic group, provided that a substituted phenyl group which may be represented by R_{32} does not contain an aralkylamino group as a substituent, and provided that R_{32} does not contain a group accelerating adsorption to silver halide, an alkylthio group, an arylthio group, a heterocyclic thio group, a quaternary ammonium group, a nitrogen-containing heterocyclic group containing a quaternarized nitrogen atom, an alkoxy group containing an ethyleneoxy or propyleneoxy unit, or a saturated heterocyclic group containing a sulfide or disulfide linkage;

X_{31} represents a substituent; and

m_{31} represents an integer of 0 to 4.

5,667,937

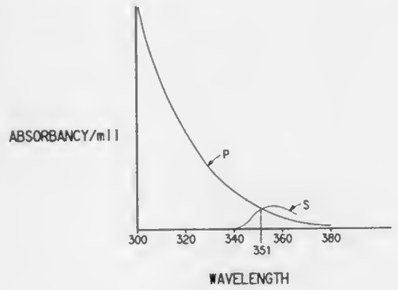
METHOD OF SOLID IMAGING A PHOTOHARDENABLE COMPOSITION UTILIZING ARGON LASER AT 351 NM AND 364 NM

John Alan Lawton, Landenberg, Pa., and Jonathan V. Caspar, Greenville, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 473,408, Jun. 7, 1995, abandoned. This application Jul. 2, 1996, Ser. No. 674,413

Int. Cl.[6] G03F *7/20*

U.S. Cl. 430—270.1 **2 Claims**



1. A method of solid imaging a photohardenable composition containing (a) an epoxy, (b) a photoacid precursor which is a triarylsulfonium salt and (c) a sensitizer selected from the group consisting of 1,12 benzoperylene, 1,6 diphenyl hexatriene and 1,8 diphenyl octratetraene by exposing said composition to an argon laser at wavelengths of both 351 nm and 364 nm

with the proviso that

(i) when the sensitizer is 1,12 benzoperylene its weight ratio to the salt is not greater than 0.041,

(ii) when the sensitizer is 1,6 diphenyl hexatriene its weight ratio to the salt is not greater than 0.005, and

(iii) when the sensitizer is 1,8 diphenyl octratetraene its weight ratio to the salt is not greater than 0.009.

5,667,938

ACID SCAVENGERS FOR USE IN CHEMICALLY AMPLIFIED PHOTORESISTS

Nageshwer Rao Bantu, Hopewell Junction; William Ross Brunsvold, Poughkeepsie; George Joseph Hefferon, Fishkill; Wu-Song Huang, Poughkeepsie; Ahmad D. Katnani, Poughkeepsie; Mahmoud M. Khojasteh, Poughkeepsie, all of N.Y.; Ratnam Sooriyakumaran, San Jose, Calif., and Dominic Changwon Yang, Mesa, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 466,568, Jun. 6, 1995, Pat. No. 5,609,989. This application Oct. 11, 1996, Ser. No. 731,224

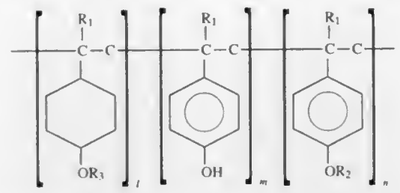
Int. Cl.[6] G03F *7/039*

U.S. Cl. 430—270.1 **6 Claims**

1. A method for improving chemically amplified photoresists, comprising the step of adding a base selected from the group consisting of berberine and proton sponge to a chemically amplified photoresist composition.

4. A method for improving chemically amplified photoresists, comprising the step of adding a base selected from the group consisting of berberine and proton sponge to a chemically amplified photoresist composition, wherein the resulting photoresist composition comprises:

1–99% by weight of a polymer having the chemical formula:



where l is zero, 1 or greater than 1, and m and n are both greater than 1, where R_1 is selected from the group consisting of hydrogen and a $C_{1\text{-}12}$ alkyl group, where R_2 is an acid labile functional group; and where R_3 is a hydrogen or acid labile functional group;

1–99% by weight of a solvent for said polymer;

0.01–20% by weight of an acid generating compound; and

0.01–10% by weight of said base.

5,667,939

METHOD FOR OBTAINING A LITHOGRAPHIC PRINTING PLATE UTILIZING A DIAZO-BASE IMAGING ELEMENT CONTAINING A DISPERSED WATER INSOLUBLE POLYMER

Joan Vermeersch, Deinze, and Dirk Kokkelenberg, St. Niklaas, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Apr. 8, 1996, Ser. No. 629,136

Claims priority, application Germany, May 16, 1995, 95201271.4

Int. Cl.[6] G03F *7/32;7/40*

U.S. Cl. 430—302 **10 Claims**

1. A method for obtaining a lithographic printing plate comprising the steps of (i) image-wise exposing an imaging element comprising on a hydrophilic surface of a support a light sensitive layer containing a diazo resin and a dispersed water-insoluble polymer or a diazonium salt and a dispersed water-insoluble polymer, said dispersed water-insoluble polymer having a melting point or glass transition temperature above 40° C. and capable of coagulation when heated at or above its melting point or glass transition temperature, and (ii) subsequently removing the light sensitive layer in the non-exposed or insufficiently exposed areas of said imaging element by means of rinsing or washing said imaging element with plain water, and thereafter said developed image-wise exposed imaging element being heat-treated at a temperature at least equal to the glass transition temperature or melting point of said dispersed water-insoluble polymer.

5,667,940

PROCESS FOR CREATING HIGH DENSITY INTEGRATED CIRCUITS UTILIZING DOUBLE COATING PHOTORESIST MASK

Chen-Chiu Hsue, and Gary Hong, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 241,336, May 11, 1994, abandoned. This application Nov. 6, 1996, Ser. No. 746,147

Int. Cl.[6] G03F *7/26*

U.S. Cl. 430—312 **20 Claims**

1. A method of forming a double coating photoresist mask to allow line spacing narrower than the photolithography resolution limit in the fabrication of an integrated circuit comprising:

providing a semiconductor substrate including a layer to be etched;

coating said layer to be etched with a first layer of photoresist;

exposing said first photoresist layer to light through a mask,

developing said first photoresist layer and removing parts of

said first photoresist layer to produce a first pattern from said first photoresist layer having first openings wider than said resolution limit, said first openings flee of photoresist from said first photoresist layer;

hardening said first patterned photoresist layer;

coating said layer to be etched with a second photoresist layer so that said second photoresist layer is within said first openings in said first patterned photoresist layer;

exposing said second photoresist layer to light through a mask, developing said second photoresist layer and removing parts of said second photoresist layer to produce a second pattern from said second photoresist layer having portions of said second pattern within said first openings,

said portions of said second pattern within said first openings having first and second edges on opposing sides of said portion, a first edge separated from said first patterned photoresist layer by a first region of the layer to be etched, and a second edge separated from said first patterned photoresist layer by a second region of the layer to be etched,

said first and second regions of the layer to be etched lying within said first opening; and

wherein at least some of said first and second regions are narrower than said resolution limit of said photolithography process.

5,667,941

PROCESS FOR FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE, AND EXPOSING SYSTEM AND MASK INSPECTING METHOD TO BE USED IN THE PROCESS

Yoshihiko Okamoto, Ohme, and Noboru Moriuchi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 219,726, Mar. 29, 1994, Pat. No. 5,455,144, which is a division of Ser. No. 26,200, Feb. 26, 1993, Pat. No. 5,298,365, which is a continuation of Ser. No. 699,703, May 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 610,422, Nov. 7, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 483,983

Claims priority, application Japan, Mar. 20, 1990, 2-71266; May 18, 1990, 2-126662; Sep. 19, 1990, 2-247100

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **23 Claims**

1. An integrated circuit device fabrication method, comprising:

(a) transferring a first pattern on a first transparent phase shift optical mask substrate, which first pattern has a first circuit pattern portion including a plurality of first opening regions having one or more first phase non-inverted openings and one or more first phase inverted openings and one or more first light shielding regions in which the area of the one or more first opening regions is not more than that of the first light shielding regions, onto a positive photosensitive resist film on a major surface of a wafer with a reduction projection exposure apparatus by illuminating the first pattern with monochromatic ultraviolet exposure light and projecting a first reduced real image of the first pattern onto the positive photosensitive resist film on the major surface of the wafer, and thereby forming a first patterned resist film on the major surface of the wafer;

(b) patterning a first underlying lower thin film on the wafer using the first patterned resist film as a first etching mask, thereby forming a first lower film pattern corresponding to at least one hole pattern or at least one through-hole pattern;

(c) after step (b), transferring a second pattern on a second transparent phase shift optical mask substrate, which second pattern has a second circuit pattern portion including a plurality of second opening regions having one or more second phase non-inverted openings and one or more second phase inverted openings and one or more second light shielding regions in which the area of the one or more second opening regions is not more than that of the second light shielding regions, onto a negative photosensitive resist film on the major surface of the wafer with a reduction projection exposure apparatus by illuminating the second pattern with monochromatic ultraviolet exposure light and projecting a second reduced real image of the second pattern onto the negative photosensitive resist film, and thereby forming a second patterned resist film on the major surface of the wafer; and then

(d) patterning a second underlying upper thin film on the wafer using the second patterned resist film as a second etching mask, thereby forming a second upper film pattern corresponding to a periodic arrangement of lines and spaces.

5,667,942

RESIST PATTERN FORMING METHOD

Yoshiyuki Nakao, and Minoru Hirose, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 319,222, Oct. 6, 1994, abandoned. This application Jul. 15, 1996, Ser. No. 683,525

Claims priority, application Japan, Dec. 28, 1993, 5-337433

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—327 **12 Claims**

1. A positive resist pattern forming method comprising:

applying a photoresist, containing groups which generate carboxylic acid upon irradiation thereof, onto a semiconductor substrate;

pre-baking the photoresist disposed on said semiconductor substrate, prior to exposing said photoresist to carboxylic acid generating irradiation, in an atmosphere containing water vapor, following the application step;

exposing said pre-baked photoresist to irradiation under conditions sufficient to form carboxylic acid groups in said photoresist;

heating the carboxylic acid containing photoresist following the exposure step; and

developing the photoresist to remove the irradiated portions thereof following the heating step;

wherein said step of pre-baking in said atmosphere containing water vapor is carried out under conditions sufficient to cause an increase in the amount of water in said pre-baked photoresist prior to said heating step, as compared to the amount of water which would have been in the same photoresist pre-baked under the same conditions but in the absence of said water vapor in said atmosphere during said pre-baking also prior to said heating step;

wherein said atmosphere during baking has sufficient water vapor content, and is contacted with said resist coated semiconductor during pre-baking thereof under such conditions, as to increase the amount of water in said resist during exposure to said radiation; and

wherein said increased amount of water in said pre-baked photoresist is sufficient to cause an increase in the speed of dissolution of a portion of said pre-baked photoresist which had been exposed to said irradiation.

5,667,943

PROCESS FOR THERMOCHEMICAL GENERATION OF ACID AND FOR THERMAL IMAGING, AND IMAGING MEDIUM FOR USE THEREIN

Roger A. Boggs, Wayland; Jurgen M. Grasshoff, Hudson; Mark R. Mischke, Arlington; Anthony J. Puttick, Arlington; Stephen J. Telfer, Arlington; David P. Waller, Lexington, and Kenneth C. Waterman, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 345,073, Nov. 28, 1994, Pat. No. 5,534,393, which is a division of Ser. No. 106,353, Aug. 13, 1993, Pat. No. 5,401,619, which is a division of Ser. No. 965,172, Oct. 23, 1992, Pat. No. 5,278,031. This application Apr. 8, 1996, Ser. No. 630,967

Int. Cl.[6] G03C *1/725;1/73;1/35*

U.S. Cl. 430—343 **11 Claims**

1. An imaging medium comprising an acid generator capable of undergoing thermal decomposition to produce an acid and an acid-sensitive material which undergoes an irreversible color change in the presence of the acid produced by thermal decomposition of the acid generator, such that subsequent neutralization of the acid does not reverse the color change.

5,667,944

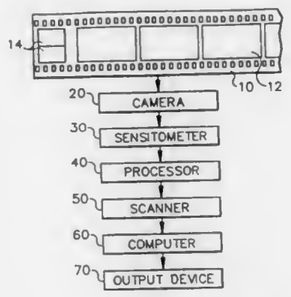
DIGITAL PROCESS SENSITIVITY CORRECTION

Richard Carroll Reem, Hilton, and James Edward Sutton, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1996, Ser. No. 636,076

Int. Cl.[6] G03C *7/18*

U.S. Cl. 430—359 **27 Claims**



1. A method for producing photographic images from a photographic film strip, of the type that uses density values of the photographic film strip to determine the density values of the produced photographic images, the improvement comprising the steps of:

a) forming at least two reference patches of differing exposure conditions onto an otherwise unexposed portion of the photographic film strip prior to photographic processing, each reference patch falling within the total scale of the photographic film strip;

b) photographically processing the photographic film strip to form densities corresponding to the photographic images and said reference patches;

c) scanning said processed photographic film strip to form density representative digital signals for the photographic images and said reference patches;

d) obtaining standard film density values representative of the photographic film strip;

e) calculating gamma correction values from said density representative digital signals corresponding to said reference patches and said standard film density values;

f) utilizing said calculated gamma correction values and said density representative digital signals corresponding to the photographic images to form corrected density representative digital signals; and

g) utilizing said corrected density representative digital signals to produce photographic images from the images recorded on the photographic film strip.

5,667,945

COLOR DEVELOPING AGENT, SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND IMAGE FORMING METHOD

Kiyoshi Takeuchi; Koki Nakamura; Toshiki Taguchi; Koichi Nakamura, and Toshiyuki Makuta, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawaken, Japan

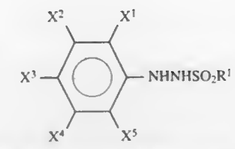
Filed Feb. 21, 1996, Ser. No. 604,239

Claims priority, application Japan, Feb. 21, 1995, 7-055204

Int. Cl.[6] G03C *5/00;7/407*

U.S. Cl. 430—380 **17 Claims**

1. A silver halide photographic light-sensitive material, comprising, a support and at least one hydrophilic colloid layer containing a light-sensitive silver halide emulsion, said silver halide photographic light-sensitive material containing a compound represented by formula (I):



formula (I)

wherein R^1 represents an alkyl group, an alkenyl group, an alkynyl group, an aryl group, or a heterocyclic group; X^1, X^3, and X^5 each represent a hydrogen atom, a nitro group, a cyano group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, a sulfamoyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyl group, a trifluoromethyl group, or a heterocyclic group; and X^2 and X^4 each represent a hydrogen atom, a nitro group, a cyano group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, a sulfamoyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyl group, a trifluoromethyl group, a halogen atom, an acyloxy group, an acylthio group, or a heterocyclic group; with the proviso that the sum of the Hammett σp values of X^1, X^3, and X^5 and the Hammett σm values of X^2 and X^4 is 1.50 or more but 3.80 or below.

5,667,946

PHOTOGRAPHIC MATERIAL CONTAINING MAGENTA DYE FORMING COUPLER

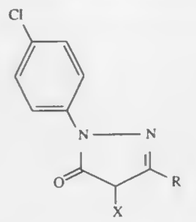
Jane Sarah Boff, St. Albans; Bernard Arthur Clark, Maidenhead; Paul Louis Stanley, Harrow; Christina Mary Watts, Harold Weald, all of United Kingdom, and Stephen Paul Singer, Spencerport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,026

Int. Cl.[6] G03C *7/384*

U.S. Cl. 430—386 **20 Claims**

1. A light sensitive photographic silver halide emulsion layer having associated therewith a magenta coupler having formula (I):



(I)

wherein:

R represents a ballasted monosubstituted amino group, wherein the amino group is an anilino group, which enables the coupler to form, upon development with 4-amino-3-methyl-N-ethyl-N-(2-hydroxyethyl)aniline sulfate developing agent, a magenta dye having a wavelength of maximum absorbance of 545 nm or greater; and

X represents hydrogen or a coupling-off group.

11. A method of forming an image comprising contacting the element of claim 1 with a color developing chemical after the element has been imagewise exposed to light.

5,667,947

PHOTOGRAPHIC DEVELOPER/AMPLIFIER COMPOSITIONS

Peter Jeffery Twist, Missenden, and Christopher John Winscom, Pinner, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1995, Ser. No. 557,784

Claims priority, application United Kingdom, Nov. 19, 1994, 9423381

Int. Cl.[6] G03C *7/413*

U.S. Cl. 430—414 **15 Claims**

1. An aqueous redox amplifier solution having a pH in the range 10.0 to 13.5 comprising:

a color developing agent and/or auxiliary developing agent,

hydrogen peroxide or a compound that provides hydrogen peroxide in a concentration equivalent to 0.1 to 50.0 ml/l of 30% w/w solution, and

a borate complexing compound capable of reversibly forming a complex with hydrogen peroxide, the borate complexing compound being in a concentration of from 1.0 to 100.0 g/l, and

wherein the molar ratio of borate complexing compound to hydrogen peroxide is at least 2:1, such as to buffer the hydrogen peroxide and thereby reduce the decline in the rate of redox amplification.

5,667,948

PROCESSING SILVER HALIDE FILMS WITH AN AQUEOUS PHOSPHOLIPID RINSE SOLUTION

Hugh Gerald McGuckin; John Stuart Badger, both of Rochester, and Edward Albert Kurz, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 632,985

Int. Cl.[6] G03C *5/39*

U.S. Cl. 430—463 **20 Claims**

1. A photographic processing method comprising rinsing an imagewise exposed and developed silver halide photographic film with a rinse solution comprising at least about 50 ppm of a phospholipid.

5,667,949

RAPID IMAGE FORMING PROCESS UTILIZING HIGH CHLORIDE TABULAR GRAIN SILVER HALIDE EMULSIONS WITH (111) CRYSTALLOGRAPHIC FACES

Richard Peter Szajewski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1996, Ser. No. 583,577

Int. Cl.[6] G03C *7/407*

U.S. Cl. 430—489 **16 Claims**

1. An image forming process comprising a developing step of contacting an imagewise exposed light-sensitive photographic element with a developing solution,

said element comprising a support having thereon a red light-sensitive color record comprised of a red sensitized silver halide emulsion, a green light-sensitive color record comprised of a green sensitized silver halide emulsion, and a blue light-sensitive color record comprised of a blue sensitized silver halide emulsion, wherein said element exhibits a photographic sensitivity of at least ISO-25, and a chemically and spectrally sensitized emulsion (A), characterized in that:

emulsion (A) comprises a tabular silver halide emulsion population comprised of at least 50 mole % chloride, based on silver, wherein at least 50% of the grain population projected area is accounted for by tabular grains bounded by {111} major faces, each having an aspect ratio of at least 2 and each being comprised of a core and a surrounding band containing a higher level of bromide or iodide ion than is present in said core, said band containing up to about 30% of the silver in the tabular grain,

wherein said emulsion (A) has been precipitated in the presence of an organic grain growth modifier or surface stabilizer and wherein said organic grain growth modifier or stabilizer has been substantially removed from said emulsion (A) after the formation of said band, and

wherein the contact time of said element with said developing solution is from about 10 to about 120 seconds, and

said developing solution being characterized in that:

(1) the solution temperature is between about 25° and 65° C.,

(2) the solution comprises bromide ion at a concentration of from about 3 to about 50 mmol/l,

(3) the solution comprises a color developing agent at a concentration from about 1 to about 200 mmol/l,

(4) the ratio of developing agent concentration to bromide ion concentration is from about 30:1 to about 1:1, and

(5) the solution pH is from about 9 to about 12.

5,667,950

HIGH-CONTRAST PHOTOGRAPHIC ELEMENTS PROTECTED AGAINST HALATION

Ronald James Schmidt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 557,213, Nov. 14, 1995, abandoned. This application Nov. 13, 1996, Ser. No. 748,963

Int. Cl.[6] G03C *1/815;1/825*

U.S. Cl. 430—510 **20 Claims**

1. A high-contrast room-light-handleable contact-exposed ultraviolet-sensitive black-and-white silver halide photographic element; said element comprising:

(1) a support;

(2) a silver halide emulsion layer; and

(3) an electrically-conductive layer, said electrically-conductive layer comprising electrically-conductive metal-containing particles, a film-forming polymer, and a separate ultraviolet-absorber in an amount sufficient to provide halation protection for said photographic element.

5,667,951

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING PHOTOGRAPHIC YELLOW DYE-FORMING COUPLER

Hiroo Takizawa; Takeshi Nakamine; Yasuhiro Yoshioka, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Mar. 5, 1996, Ser. No. 611,214

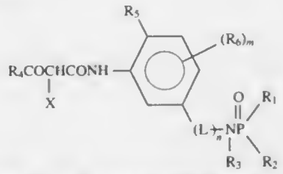
Claims priority, application Japan, Mar. 8, 1995, 7-074658

Int. Cl.[6] G03C *7/36;7/392;7/396*

U.S. Cl. 430—551 **7 Claims**

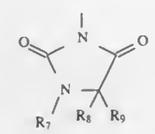
1. A silver halide color photographic material comprising a support having provided thereon at least one photographic layer containing at least one yellow dye-forming coupler represented by formula (II)

(II)

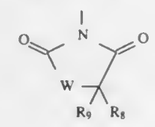


wherein R_1 and R_2 each independently represents an aliphatic oxy group, an aliphatic group, an aryloxy group, an aryl group, an aliphatic amino group, or an anilino group; R_3 represents a hydrogen atom, an aliphatic group, or an aryl group; and R_4 represents an alkyl group, a cycloalkyl group, an aryl group, an alkylamino group, an anilino group, or a heterocyclic group; R_5 represents a hydrogen atom, a halogen atom, an aliphatic oxy group, an aryloxy group, an aliphatic group, or an amino group; R_6 represents a substituent; L represents a divalent linkage group selected from $—N(R_{21})CO—A^*—$, $—N(R_{21})SO_2—A^*—$, $—CON(R_{21})—A^*—$, $—SO_2N(R_{21})—A^*—$ and $—COO—A^*—$ wherein A represents a C_{1-20} alkylene group or a C_{6-20} phenylene group; R_{21} represents a hydrogen atom, an aliphatic group, or an aryl group; and the mark * represents a bond to $—N(R_3)P(=O)R_1(R_2)$; m represents an integer of from 0 to 3; n represents 0 or 1; and X represents a heterocyclic group represented by formula (III-1), (III-2), or (III-3):

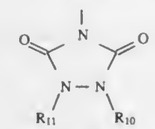
(III-1)



(III-2)



(III-3)



wherein R_8 and R_9 each independently represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, or a hydroxyl group; R_7, R_{10} and R_{11} each independently represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, or an acyl group; and wherein W represents an oxygen atom or a sulfur atom.

6. The silver halide color photographic material of claim 1, further comprising a compound represented by formula (IV), or an oligomer or polymer comprising a moiety of the compound represented by formula (IV)

$$R_{31}CON(R_{32})R_{33} \quad \text{(IV)}$$

wherein R_{31}, R_{32}, and R_{33} each independently represents a hydrogen atom, an aliphatic group, or an aryl group, provided that the sum of the carbon atom numbers of R_{31}, R_{32}, and R_{33} is from 9 to 80, or R_{31} and R_{32}, or R_{32} and R_{33} may combine with each other to form a ring.

5,667,952

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A BICYCLIC PYRAZOLO COUPLER

Ping Wah Tang, and Stanley W. Cowan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

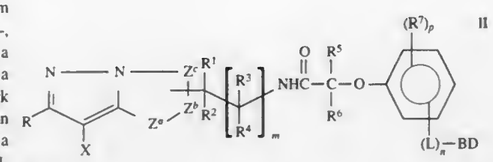
Continuation of Ser. No. 995,427, Dec. 18, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 661,294

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—558 **7 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and having associated therewith a dye-forming bicyclic pyrazolo-based coupler, wherein the coupler contains a ballast group which is linked to the bicyclic ring by a substituted carbon, the coupler being represented by Formula (II):

II



wherein:

R is selected from the group consisting of t-butyl, t-octyl, t-pentyl, and adamantyl;

X is hydrogen or halogen;

Z^a, Z^b and Z^c are independently selected from the group consisting of a substituted or unsubstituted methine group, =N—, =C— or —NH—, provided that one of either the Z^a–Z^b bond or the Z^b–Z^c bond is a double bond and the other is a single bond, and when the Z^b–Z^c bond is a carbon-carbon double bond, it may form part of an aromatic ring, and wherein at least one of Z^a, Z^b and Z^c represents a methine group connected with the ballast;

R^1 to R^6 are independently hydrogen or a substituent and R^7 is a substituent, with the proviso that R^1 and R^2 do not simultaneously represent hydrogen;

m is 0 to 5, n is 0 or 1, p is 0 to 4;

L is a divalent linking group connecting the BD group to the phenylene ring;

B is $—N(R^8)SO_2—$ where R^8 is a hydrogen atom or a substituent; and

D is a substituted or unsubstituted alkyl group.

5,667,953

SILVER HALIDE PHOTOGRAPHIC MATERIAL COMPRISING MERCAPTOTETRAZOLE COMPOUND(S)

Massimo Bertoldi, Fossano, Italy, and Mark P. Kirk, Bishop's Stortford, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

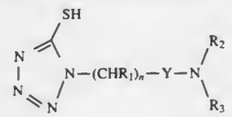
Filed Aug. 3, 1995, Ser. No. 511,072

Claims priority, application European Pat. Off., Sep. 13, 1994, 94114342

Int. Cl.[6] G03C *1/005;1/08*

U.S. Cl. 430—567 **12 Claims**

1. A light-sensitive silver halide photographic element comprising a support and silver halide emulsion layer or layers coated thereon, characterized in that at least one of said light-sensitive silver halide emulsion layers comprises an alkylaminomercaptotetrazole compound having the following formula:



wherein:

Y is a divalent group selected from the group consisting of $—SO_2—$ and

—P(O)OR—, R being hydrogen atom, alkyl group or aryl group,

R_1, R_2 and R_3, each equal or different, can be hydrogen atom, alkyl group or aryl group, and

n is an integer from 1 to 5.

5,667,954
PHOTOGRAPHIC EMULSIONS OF ENHANCED SENSITIVITY AND REDUCED CONTRAST
Mark Edward Irving, Rochester, and Donald Lee Black, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 28, 1996, Ser. No. 653,855
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **8 Claims**

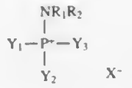
1. An emulsion of enhanced photographic sensitivity and reduced contrast comprised of
a dispersing medium and
tabular grains containing greater than 50 mole percent bromide, based on silver, and having a non-uniform iodide distribution, including
(a) a peripheral zone extending inwardly from edges and corners of the tabular grains and providing (i) a maximum iodide concentration along the edges and (ii) a lower iodide concentration at the corners than elsewhere along the edges,
(b) a central zone providing a minimum iodide concentration and accounting for at least 35 percent of total silver forming the tabular grains and,
(c) extending from the central zone to the peripheral zone, an intermediate zone (i) containing a higher iodide concentration than the central zone, ranging from greater than 2 to 10 mole percent, based on silver forming the intermediate zone, and (ii) accounting for from 5 to 35 percent of total silver forming the tabular grains.

5,667,955
HIGH BROMIDE ULTRATHIN TABULAR EMULSIONS IMPROVED BY PEPTIZER MODIFICATION
Joe Edward Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 574,489, Dec. 19, 1995, abandoned. This application Jun. 12, 1996, Ser. No. 662,904
Int. Cl.[6] G03C *1/00;1/047*
U.S. Cl. 430—567 **20 Claims**

1. A radiation-sensitive emulsion comprised of
silver halide grains including tabular grains
(a) having {111} major faces,
(b) containing greater than 50 mole percent bromide, based on silver,
(c) accounting for greater than 70 percent of total grain projected area,
(d) exhibiting an average equivalent circular diameter of at least 0.7 μm, and
(e) exhibiting an average thickness of less than 0.07 μm, and
a dispersing medium including a peptizer adsorbed to the silver halide grains,
wherein the peptizer is a water dispersible oxidized cationic starch.

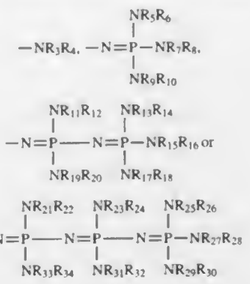
5,667,956
SILVER HALIDE RECORDING MATERIAL
Michael Missfeldt, Leichlingen; Johannes Willsau, Leverkusen; Ralf Büscher, Lohmar; Peter Bell, Köln, and Hans-Ulrich Borst, Elsdorf, all of Germany, assignors to Agfa, Germany
Filed Aug. 19, 1996, Ser. No. 699,466
Claims priority, application Germany, Aug. 29, 1995, 195 31 688.6
Int. Cl.[6] G03C *1/10;1/34*
U.S. Cl. 430—600 **6 Claims**

1. Photosensitive photographic recording material comprising at least one photosensitive silver halide layer and optionally a further layer or layers, and a compound of the formula I is in at least one of the layers



(I)

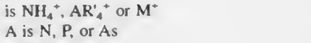
in which:
Y_1, Y_2, Y_3 each mean one of the following residues



R_1 to R_{34} are identical or different and mean H, alkyl or aryl; or two residues ($R_1$to R_{34}) located on the same N atom may complete a 5-, 6- or greater-membered ring containing at least one N atom and optionally further heteroatoms; or two residues (R_1 to R_{34}) located on two different N atoms may complete a ring involving both N atoms and at least one P atom; and
X^- means an anion required to balance the charge.

5,667,957
XANTHATE SALTS AS CHEMICAL SENSITIZERS FOR SILVER HALIDES
Kenneth James Lushington, and Henry James Gysling, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 23, 1996, Ser. No. 653,736
Int. Cl.[6] G03C *1/09*
U.S. Cl. 430—603 **16 Claims**

1. A method of sensitizing silver halide grains comprising providing a silver halide grain and bringing said grain into contact with a compound of Formula I,



Formula I

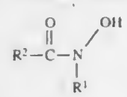
where
C is NH_4^+, $AR'_4{}^+$ or M^+
A is N, P, or As
R' is alkyl or aryl
M is Li, Na, or K, and
R is alkyl or aryl.

5,667,958
SILVER HALIDE PHOTOGRAPHIC MATERIAL
Takanori Hioki, and Tadashi Ikeda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 557,493, Nov. 14, 1995, Pat. No. 5,578,440. This application Jul. 8, 1996, Ser. No. 677,686
Claims priority, application Japan, Nov. 15, 1994, 6-305628; Dec. 27, 1994, 6-337014
Int. Cl.[6] G03C *1/09;1/12*
U.S. Cl. 430—604 **8 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, said silver halide photographic material containing at least one metallocene compound having a methine dye residue through a covalent bond.

5,667,959
SILVER HALIDE PHOTOGRAPHIC MATERIAL AND HYDROXAMIC ACID BASED COMPOUND USED THEREFOR
Hisashi Mikoshiba; Hiroo Takizawa; Junichiro Hosokawa; Yoshio Ishii; Keiji Mihayashi, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 24, 1995, Ser. No. 519,019
Claims priority, application Japan, Aug. 25, 1994, 6-222731; Mar. 10, 1995, 7-078443; Jun. 14, 1995, 7-170457
Int. Cl.[6] G03C *1/34*
U.S. Cl. 430—607 **13 Claims**

1. A silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein said silver halide photographic material contains at least one compound represented by the following formula (I):

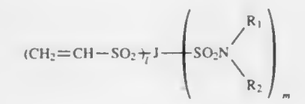


(I)

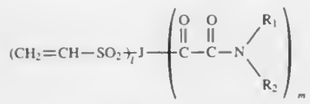
wherein R^1 represents a substituted or unsubstituted alkyl group having from 1 to 6 carbon atoms; and R^2 represents a branched alkyl group having 20 or more carbon atoms, a straight chain or branched alkenyl group having 17 or more carbon atoms, or a substituted alkyl or substituted alkenyl group substituted with at least one substituent selected from the group consisting of an alkoxycarbonyl group, an alkenoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkoxyl group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, and a heterocyclic group, said substituted alkyl or substituted alkenyl group having 12 or more carbon atoms in total.

5,667,960
METHOD FOR HARDENING GELATIN AND SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIALS EMPLOYING THE METHOD
Yasushi Usagawa, and Masato Nishizeki, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Jun. 27, 1996, Ser. No. 671,137
Claims priority, application Japan, Jul. 7, 1995, 7-172300
Int. Cl.[6] G03C *1/30*
U.S. Cl. 430—622 **10 Claims**

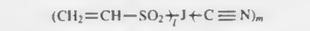
1. A method for hardening gelatin comprising mixing gelatin with a compound represented by the following formula (I), (II) or (III):



formula (I)



formula (II)



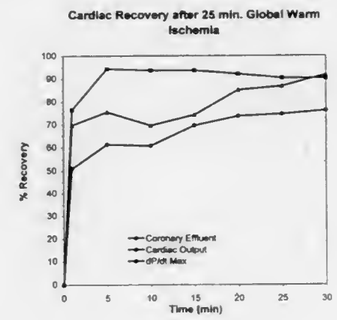
formula (III)

wherein R_1 and R_2 independently represent a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group or R_1 and R_2 combine with each other to form a nitrogen-containing heterocyclic ring; J represents an alkylene group, a phenylene group, a heterocyclic group or an alkylene group having, in the main chain of the alkylene group another organic divalent group selected from the group consisting of —O—, --S—, —(C=O)—, —SO_2—, —(C=O)NR— and —NR— in which R represents hydrogen or alkyl; l represents an integer of 2 to 5; and m represents an integer of 1 to 5.

5,667,961
SKIN SUBSTITUTE
Bruno Bernard, Antibes; Marie-Cécile Lenoir, Valbonne; Braham Shroot; Yves-Michel Darmon, both of Antibes, and Daniel Asselineau, Valbonne, all of France, assignors to Centre International De Recherches Dermatologigues Galderma (Cird Galderma), Valbohne, France
Continuation of Ser. No. 625,056, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 166,098, Mar. 9, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 471,359
Claims priority, application France, Mar. 26, 1987, 87 04205; Jun. 19, 1987, 87 08604
Int. Cl.[6] A01N *1/02;* C12N *5/06*
U.S. Cl. 435—1 **1 Claim**

1. A skin substitute composed of a dermis equivalent covered with an epidermis equivalent, said dermis equivalent being a matrix formed from a type I collagen gel containing fibroblasts arranged three-dimensionally in said matrix, wherein said epidermis equivalent contains:
(a) a basal membrane equivalent formed from the deposit of a layer of laminine, fibronectin and type IV collagen,
(b) cells of the basal layer in a palisade arrangement, attached to the membrane equivalent according to paragraph (a) by hemidesmosomes and showing polar distribution of the bullous pemphigoid antigen;
(c) cells of the suprabasal layers which, beginning with the first suprabasal layer, contain basic keratin with a value of 67 kDa, and acidic keratin with a value of 56.6 kDa;
(d) granular cells containing involucrine, transglutaminase, filaggrine, keratohyaline granules and membrane coating granules, and
(e) flat and keratinized cells arranged near the free surface, giving, after extraction using dodecyl sulfate and 2-mercaptoethanol, corneous envelopes characteristic of corneocytes, the cells of the different layers being attached with desmosomes.

5,667,962
PYRUVATE THIOLESTER FOR THE PREVENTION OF REPERFUSION INJURY
Henri Brunengraber, Shaker Heights, Ohio; Hermann Dugas, Montreal, Canada; Khadija Quinze, Villeurbanne, France, and Catherine Bomont, Cleveland, Ohio, assignors to Case Western Reserve University, Cleveland, Ohio
Filed Mar. 18, 1996, Ser. No. 617,285
Int. Cl.[6] C07C *229/30;* A01N *1/02*
U.S. Cl. 435—1.2 **14 Claims**



1. A process for preserving tissue deprived of oxygen comprising the step of treating said tissue with an effective amount of a pyruvate thiolester.

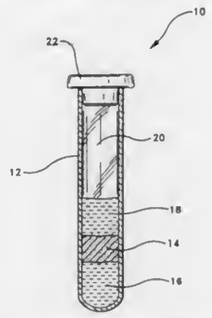
5,667,963
ANTICOAGULANT SOLUTION FOR USE IN BLOOD CHEMISTRY-RELATED TECHNIQUES AND APPARATUS

Ward C. Smith, Toms River, N.J., and Richard L. Carroll, Syracuse, N.Y., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 897,305, Jun. 11, 1992, Pat. No. 5,494,590. This application Feb. 21, 1996, Ser. No. 603,610

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—2 **17 Claims**



7. An assembly for centrifugally separating lymphocytes and monocytes from heavier phases of a sample of whole blood or a pretreated cell fraction thereof, said assembly comprising:

a container having an open end and a closed end;

a first layer of a thixotropic gel-like substance contained within the container at a first position;

an anticoagulant solution for preventing coagulation of said sample when said sample is introduced into said container, said solution located at a second position within said container in closer proximity to said open end of said container than said first layer, said solution having an effective concentration of sodium citrate of from about 0.05M to about 0.2M and suitable for preventing coagulation of said sample when said sample is added to said container, said solution having a pH from 6.5 to 8.5; and

a free space adjacent to said open end of said container, said free space being of sufficient volume to receive said sample and an added reagent where desired.

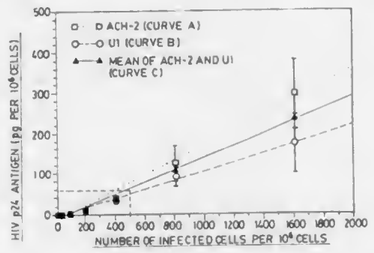
5,667,964
RAPID, DIRECT, AND QUALITATIVE METHOD FOR THE DETERMINATION OF THE NUMBER OF HIV-1-INFECTED PATIENT CELLS EMPLOYING REACTIVE OXYGEN INTERMEDIATE GENERATORS

John Lap Ho, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 28, 1994, Ser. No. 331,218

Int. Cl.[6] C12Q *1/70;1/00*

U.S. Cl. 435—5 **24 Claims**



1. A method for the determination of the approximate number of HIV-1-infected patient cells in a patient sample, wherein said patient cells are subjected to direct stimulation in the absence of co-culture with donor cells, comprising the following steps:

(a) obtaining patient cells from a subject who is or may be infected with the HIV-1 virus and suspending said cells in culture media;

(b) directly stimulating said patient cells to activate expression of any HIV-1 virus present and corresponding p24 antigen production, in the absence of donor cell co-cultivation, through the administration of one or more reactive oxygen intermediate generators;

(c) detecting any p24 antigen production in said patient cells and associated culture supernatants following said stimulating; and

(d) comparing the p24 antigen production of step (c) with standard values obtained from a culture comprising HIV-1 chronically infected cell lines of known proviral copy number directly stimulated as in step (b);

wherein said comparison results in the approximation of the number of HIV-1-infected patient cells in the sample.

5,667,965
PAPILLOMAVIRUS E2 TRANS-ACTIVATION REPRESSORS

Elliot J. Androphy, Natick, and James G. Barsoum, Lexington, both of Mass., assignors to Biogen, Inc., Cambridge, and New England Medical Center Hospitals, Inc., Boston, both of Mass.

Division of Ser. No. 94,128, Sep. 24, 1993, which is a continuation-in-part of Ser. No. 646,998, Jan. 28, 1991, Pat. No. 5,219,990. This application May 31, 1995, Ser. No. 455,972

Int. Cl.[6] C12P *21/06;* **C12Q** *1/70;* **C12N** *7/00;7/02*

U.S. Cl. 435—5 **1 Claim**

1. A method for isolating mutations yielding E2 homologous polypeptides that repress trans-activation by native E2 proteins comprising the steps of:

a) producing a population of mutant DNA fragments by mutagenizing a DNA fragment encoding the amino acids of the native minimal DNA binding domain of a papillomavirus E2 protein;

b) operatively linking said population of DNA fragments to expression control sequences;

c) inserting said population of DNA fragments operatively linked to expression control sequences into a vector;

d) transforming a unicellular host with said vector, said host comprising a full-length native E2 gene operatively linked to expression control sequences and a reporter gene whose transcription is activated by dimers comprising full-length native E2 proteins;

e) screening for clones of transformed hosts that do not display E2 trans-activation;

f) testing E2 homologous polypeptides from said clones for their ability to dimerize with themselves;

g) testing said E2 homologous polypeptides for their ability to bind to E2 DNA binding sites;

h) testing said E2 homologous polypeptides for their ability to repress transcriptional activation by full-length native E2 protein in a eukaryotic cell.

5,667,966
MOUSE MONOCLONAL ANTIBODIES TO HEPATITIS E VIRUS AND METHODS FOR USING SAME

Deborah A. Paul, Gurnee, and Mark F. Knigge, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 492,606, Jun. 20, 1995, abandoned, which is a continuation of Ser. No. 172,700, Dec. 22, 1993, abandoned. This application Aug. 22, 1996, Ser. No. 701,554

Int. Cl.[6] C12Q *1/70;* **G01N** *33/576;* **C07K** *16/08;* **C12N** *5/18*

U.S. Cl. 435—5 **7 Claims**

1. A monoclonal antibody or fragment thereof which specifically binds to hepatitis E virus (HEV) orf-3-encoded protein, wherein said monoclonal antibody is secreted by a cell line ATCC deposit number HB 11522.

5,667,967
T-CELL RECEPTOR VARIBLE TRANSCRIPTS AS DISEASE RELATED MARKERS

Lawrence Steinman; Jorge Oksenberg, both of Palo Alto, Calif., and Claude Bernard, North Baldwin, Australia, assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 877,444, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 517,245, May 1, 1990, abandoned. This application May 21, 1993, Ser. No. 66,325

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **6 Claims**

1. A method for determining the presence in a human host of T-cells associated with multiple sclerosis, said method comprising:

isolating T-cells from the brain or cerebrospinal fluid of a human host;

detecting in the T-cells of the brain or cerebrospinal fluid of said host the presence of a limited number of rearranged CDR3 regions of the T-cell receptor Valpha or Vbeta chain, wherein said rearrangement is associated with multiple sclerosis;

wherein the presence of T cells associated with said multiple sclerosis is determined.

5,667,968
PREVENTION OF RETINAL INJURY AND DEGENERATION BY SPECIFIC FACTORS

Matthew M. LaVail; Roy H. Steinberg, both of San Francisco, Calif., and George D. Yancopoulos, Briarcliff Manor, N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y., and Regents of the Univ. of California, Oakland, Calif.

Continuation of Ser. No. 836,090, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 691,612, Apr. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 570,657, Aug. 20, 1990, Pat. No. 5,229,500, which is a continuation-in-part of Ser. No. 400,591, Aug. 30, 1989, Pat. No. 5,180,820. This application Nov. 4, 1994, Ser. No. 334,859

Int. Cl.[6] A61K *38/18*

U.S. Cl. 514—12 **8 Claims**

1. A method of reducing the degeneration of photoreceptors in a patient exposed to an environmental condition or having a pathological condition which causes such degeneration comprising administering into the eye of said patient an effective amount of CNIF.

5,667,969
ALTERATION OF SEQUENCE OF A DELETERIOUS TARGET MOLECULE BY RIBOZYME CATALYZED TRANS-SPLICING

Bruce A. Sullenger, Westminster, and Thomas R. Cech, Boulder, both of Colo., assignors to University Research Corporation, Boulder, Colo.

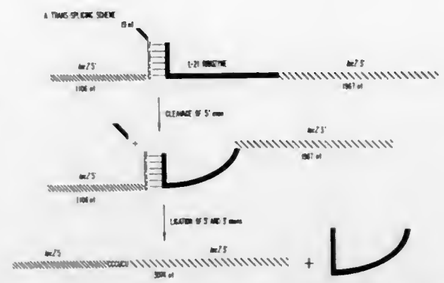
Filed Nov. 12, 1993, Ser. No. 152,450

Int. Cl.[6] C12Q *1/70;1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **7 Claims**

1. Method for splicing a non-viral target nucleic acid molecule within a cell in culture with a separate nucleic acid molecule, wherein said target molecule is deleterious to the cell in which it is located, and wherein said separate nucleic acid molecule is adapted to form a non-deleterious target molecule when spliced with at least a part of said target nucleic acid molecule, comprising the step of:

contacting said target nucleic acid molecule with a catalytic nucleic acid molecule comprising said separate nucleic acid molecule under conditions in which at least a portion of said separate nucleic acid molecule is spliced with at least a



portion of said target nucleic acid molecule to form said non-deleterious nucleic acid molecule.

5,667,970
METHOD OF MAPPING DNA FRAGMENTS

Peisen Zhang, New York, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed May 10, 1994, Ser. No. 240,864

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **12 Claims**

1. A method of preparing a map of a parent DNA molecule, said method comprising the following steps:

(i) cleaving more than one copy of the parent DNA molecule such that different copies are cleaved at different points to generate a plurality of fragments wherein at least some of the fragments overlap;

(ii) subcloning the fragments and arranging the subclones in pairs;

(iii) performing hybridization reactions with each pair of subclones to be considered, thereby generating binary overlap data which identifies the pairs of subclones that hybridize to each other, and forming the binary overlap data into a clone-hybridization matrix;

(iv) building a first conceptual tree of the subclones from the clone-hybridization matrix obtained in step (iii), starting with any subclone as the root vertex of the first tree, by

(a) identifying a first set of the subclones which overlap the root vertex of the first tree, thereby forming a first level of the first tree;

(b) forming the next level of the first tree by identifying a next set of the subclones which overlap at least one subclone of the previous level, but where no subclone is listed in more than one level; and

(c) repeating step (iv)(b) until no further subclones can be identified which overlap at least one subclone of the previous level and have not already been listed, so that the first tree is completed and the previous level of the first tree contains a set of one or more first boundary subclones;

(v) building a second conceptual tree of the subclones from the clone-hybridization matrix obtained in step (iii) using, as the root vertex of the second tree, a first boundary subclone identified in step (iv), by

(a) identifying a first set of the subclones which overlap the root vertex of the second tree, thereby forming a first level of the second tree;

(b) forming the next level of the second tree by identifying a next set of the subclones which overlap at least one subclone of the previous level, but where no subclone is listed in more than one level; and

(c) repeating step (v)(b) until no further subclones can be identified which overlap at least one subclone of the previous level and have not already been listed, so that the second tree is completed and the previous level of the second tree contains a set of one or more second boundary subclones;

(vi) attempting to form a spanning path, where said spanning path extends from a second boundary subclone identified in step (v), through a series of consecutive subclones from successive levels of the second tree, wherein each consecutive

subclone overlaps both the subclone which precedes it as well as the subclone that follows it in the series, to the first boundary subclone, and wherein the spanning path cannot thus be formed;

(vii) identifying the subclone in the second tree which cross-hybridizes to the greatest number of the other subclones in the second tree;

(viii) eliminating the subclone identified in step (vii) from the second tree;

(ix) attempting to form the spanning path, if the spanning path cannot be formed, then steps (vii) to (ix) are repeated until the spanning path can be formed; and

(x) forming the spanning path into a map of the parent DNA molecule.

5,667,971

METHOD FOR DETERMINING DNA SEQUENCES

Alan M. Hochberg, Hockessin, Del., assignor to Dade Chemistry Systems Inc., Deerfield, Ill.

Continuation of Ser. No. 961,212, Oct. 14, 1992, which is a continuation of Ser. No. 564,143, Aug. 7, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,383

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **9 Claims**

1. A method for sequencing DNA to ascertain the sequence of the four bases G, C, A, and T comprising the steps of:

1) producing a first set of reporter labelled DNA fragments for two of the four bases, each base having a different reporter;

2) producing a second set of reporter labelled DNA fragments for the remaining two of the four bases, each base having a different reporter;

3) separating the respective first and second sets by gel electrophoresis;

4) generating a first signal for each of the respective sets that varies in amplitude to form peaks in accordance with a characteristic of the reporter and the rate at which the labelled base moves through the gel;

5) generating a second signal for each of the respective sets that varies in amplitude to form peaks in accordance with a characteristic of the reporter and the rate at which the labelled base moves through the gel;

6) dividing each of the first and second sets into corresponding blocks of bases;

7) selecting the amount of shift between the corresponding blocks of the first and second sets which minimizes peak to peak variance, and;

8) interpolating the shifts between the corresponding blocks of the first and second sets to align the first and second sets into a single set of four signals corresponding to the four bases in the order of their movement through the gel.

5,667,972

METHOD OF SEQUENCING OF GENOMS BY HYBRIDIZATION OF OLIGONUCLEOTIDE PROBES

Radoje T. Drmanac, and Radomir B. Crkvenjakov, both of Beograd, Yugoslavia, assignors to Hyseq, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 45,912, Apr. 12, 1993, Pat. No. 5,492,806, which is a continuation of Ser. No. 723,712, Jun. 18, 1991, Pat. No. 5,202,231, which is a continuation of Ser. No. 175,088, Mar. 30, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 461,106

Claims priority, application Yugoslavia, Apr. 1, 1987, 570/87

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **7 Claims**

1. A method of determining the sequence of an ambiguous locus in a nucleic acid fragment in a sequencing by hybridization process, said method comprising:

(a) prehybridizing said nucleic acid fragment with an excess of unlabeled first oligonucleotide probe which is exactly complementary to one possible sequence at said ambiguous locus;

(b) competitively hybridizing said nucleic acid fragment with a labeled second oligonucleotide probe which is exactly complementary to a second possible sequence at said ambiguous locus;

(c) detecting whether the labeled second oligonucleotide probe hybridizes, thereby determining the sequence of said ambiguous locus in said nucleic acid fragment.

5,667,973

SYSTEM TO DETECT PROTEIN-PROTEIN INTERACTIONS

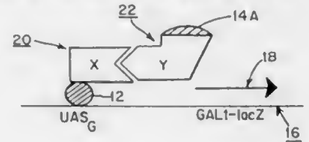
Stanley Fields, East Setauket, and Ok-Kyu Song, Stony Brook, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation of Ser. No. 189,910, Feb. 1, 1994, Pat. No. 5,468,614, which is a continuation of Ser. No. 469,285, Jan. 24, 1990, Pat. No. 5,283,173. This application Jun. 7, 1995, Ser. No. 474,363

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **11 Claims**

C Interaction Between Hybrids Reconstitutes GAL4 Activity



1. A method for detecting an interaction between a first test protein and a second test protein, the method comprising:

(a) providing a host cell containing a detectable gene wherein the detectable gene expresses a detectable protein when the detectable gene is activated by an amino acid sequence including a transcriptional activation domain when the transcriptional activation domain is in sufficient proximity to the detectable gene;

(b) providing a first chimeric gene that is capable of being expressed in the host cell, the first chimeric gene comprising a DNA sequence that encodes a first hybrid protein, the first hybrid protein comprising:

(i) a DNA-binding domain that recognizes a binding site on the detectable gene in the host cell; and

(ii) a first test protein or fragment thereof that is to be tested for interaction with at least one second test protein or fragment thereof;

(c) providing a second chimeric gene that is capable of being expressed in the host cell, the second chimeric gene comprising a DNA sequence that encodes a second hybrid protein, the second hybrid protein comprising:

(i) the transcriptional activation domain; and

(ii) a second test protein or fragment thereof that is to be tested for interaction with the first test protein or fragment thereof;

wherein interaction between the first test protein and the second test protein in the host cell causes the transcriptional activation domain to activate transcription of the detectable gene;

(d) introducing the first chimeric gene and the second chimeric gene into the host cell;

(e) subjecting the host cell to conditions under which the first hybrid protein and the second hybrid protein are expressed in sufficient quantity for the detectable gene to be activated; and

(f) determining whether the detectable gene has been expressed to a degree greater than expression in the absence of an interaction between the first test protein and the second test protein.

5,667,974

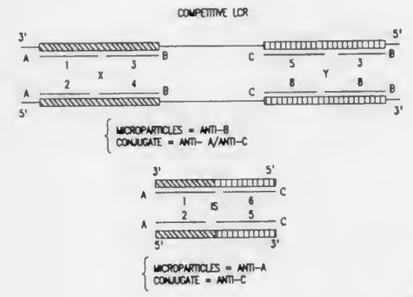
METHOD FOR DETECTING NUCLEIC ACID SEQUENCES USING COMPETITIVE AMPLIFICATION

Larry Birkenmeyer, Chicago, and Isa K. Mushahwar, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 7, 1995, Ser. No. 480,220

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **8 Claims**



1. A method for detecting the amount of at least one target nucleic acid sequence which may be present in a test sample, comprising the steps of:

(a) performing a nucleic acid amplication reaction with said test sample by contacting said test sample with:

(i) two target primer sets, wherein a first primer set represents a first target sequence and a second primer set represents a second target sequence within the genome of the target nucleic acid sequence, and wherein each primer set comprises four oligonucleotide primers of which two are sense primers and the other two are antisense primers,

(ii) an internal standard (IS) sequence, wherein the IS sequence comprises a chimeric molecule wherein said chimeric molecule comprises a sequence from either a first or second half of one of the target nucleic acid sequences and wherein the sequence of said chimeric molecule is colinear with a sequence from either the first or second half of the other target nucleic acid sequence such that a combination of the first target nucleic acid sequence and the second target nucleic acid sequence is formed,

(iii) an IS primer set, wherein the IS primer set comprises four oligonucleotide primers of which two are derived from the first target nucleic acid sequence and the other two are derived from the second target nucleic acid sequence, and

(iv) a set of dNTPs, under hybridizing conditions such that, for each pair of target oligonucleotide primer sequences or IS oligonucleotide primer sequences which hybridizes to each strand of said target nucleic acid sequences or said IS sequence or its complementary strand, a ligase chain reaction takes place whereby a nucleotide gap between the oligonucleotide primer sequences is filled by DNA polymerase in the presence of said dNTPs and in the presence of the target nucleic acid sequence, wherein each of the polymerase reactions require the same set of dNTPs, or a subset thereof, to fill the nucleotide gap resulting in juxtaposed 3' and 5' ends which are joined by DNA ligase, and

(b) determining the ratio of target amplification products to IS amplification products present in the test sample as a measure of the amount of target nucleic acid sequence present in the test sample.

5,667,975

METHOD OF FLUORESCENT DETECTION OF NUCLEIC ACIDS AND CYTOSKELETON ELEMENTS USING BIS-DICATIONIC ARYL FURANS

Christine C. Dykstra, Auburn, Ala.; Richard R. Tidwell, Chapel Hill, N.C.; David W. Boykin, and W. David Wilson, both of Atlanta, Ga., assignors to The University of North Carolina

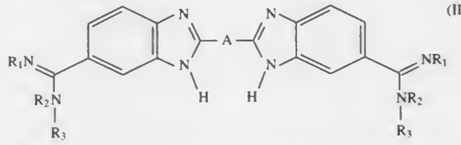
Continuation-in-part of Ser. No. 238,766, May 6, 1994. This application Jun. 7, 1995, Ser. No. 485,381

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **23 Claims**

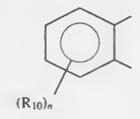
1. A method for the fluorescent detection of a nucleic acid comprising:

(a) contacting said nucleic acid with a compound according to Formula (II)



wherein:

R_1 and R_2 are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, or alkylaminoalkyl, or R_1 and R_2 together represent a C_2 to C_{10} alkyl, hydroxyalkyl, or alkylene or R_1 and R_2 together are:

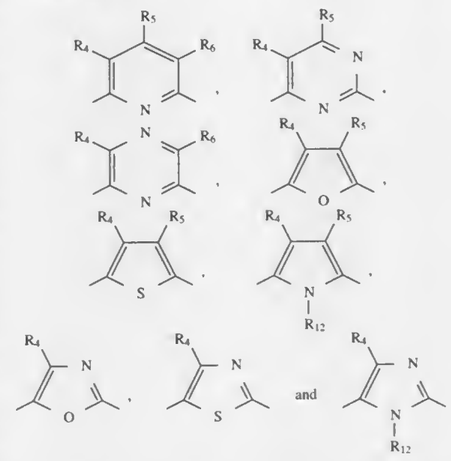


wherein

n is from 1 to 3 and R_{10} is H or —$CONHR_{11}NR_{15}R_{16}$, wherein R_{11} is lower alkyl, and R_{15} and R_{16} are each independently selected from the group consisting of H and lower alkyl;

R_3 is H, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl or alkylaminoalkyl;

A is a heterocyclic aromatic group selected from the group consisting of:



wherein R_4, R_5, and R_6 are each independently selected from the group consisting of H, lower alkyl, halogen, aryl, arylalkyl, aminoalkyl, aminoaryl, oxyalkyl, oxyaryl, or oxyarylalkyl;

R_{12} is hydrogen, lower alkyl, hydroxy, aminoalkyl or alkylaminoalkyl,

or a physiologically acceptable salt thereof; and

(b) exposing said nucleic acid to light to induce fluorescence of said compound of Formula (II); and

(c) thereby detecting said nucleic acid.

5,667,976

SOLID SUPPORTS FOR NUCLEIC ACID HYBRIDIZATION ASSAYS

Jeffrey Van Ness, Bothell; Charles R. Petrie, Woodinville; John C. Tabone, Bothell; Nicolaas M.J. Vermeulen, Woodinville, and Michael W. Reed, Seattle, all of Wash., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 341,465, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 907,931, Jun. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 522,442, May 11, 1990, abandoned. This application Feb. 14, 1996, Ser. No. 601,419

Int. Cl.[6] **C12Q** *1/68;1/70;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **19 Claims**

1. A composition comprising an oligonucleotide covalently attached to amine-containing polymer-coated solid support wherein the covalent attachment occurs between the amine of the polymer-coated solid support and an amine which is tethered to the oligonucleotide.

5,667,977

Patent Not Issued For This Number

5,667,978

ANTIBODY TO THE NEURAL CELL ADHESION MOLECULE AND METHODS OF USE

Duane David Bronson, Chapel Hill, and John Jacob Hemperly, Apex, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 405,598, Mar. 16, 1995, Pat. No. 5,591,432, which is a continuation-in-part of Ser. No. 18,664, Feb. 17, 1993, abandoned. This application May 3, 1996, Ser. No. 642,288

Int. Cl.[6] **A61K** *39/395;* **C07K** *16/28;* **A61B** *17/04;* **G01N** *33/53*

U.S. Cl. 435—7.1 **3 Claims**

1. A method for detecting N-CAM comprising contacting a cell or a cell extract containing N-CAM with monoclonal antibody NCAM16.2 and detecting the presence of the N-CAM by detecting binding of the monoclonal antibody NCAM16.2 to the N-CAM.

5,667,979

USE OF SPECIFIC PROPERTIES OF ALLERGENS, ALLERGENS FROM ANIMAL OR BOTANICAL SOURCES AND METHODS FOR THEIR ISOLATION

Lubertus Berrens, Utrecht, Netherlands, assignor to Laboratorios Leti S.A., Barcelona, Spain

Filed Jan. 5, 1990, Ser. No. 461,642

Claims priority, application European Pat. Off., Jan. 5, 1989, 89200027

Int. Cl.[6] **C12Q** *1/34;1/37;1/44;* **G01N** *33/573*

U.S. Cl. 435—7.4 **9 Claims**

1. A method of hydrolyzing amide and/or ester linkages in a substrate, comprising: contacting a substantially purified form of an atopic allergen having protease properties with a substrate having amide and/or ester linkages to thereby hydrolyze said linkages, wherein said allergen is isolated from mammalian and non-mammalian excrement sources, and is capable of hydrolyzing proteins and split substrates specific for enzyme active sites.

5,667,980

METHOD FOR ASSAYING FOR A SUBSTANCE THAT AFFECTS AN SH2 PHOSPHORYLATED LIGAND REGULATORY SYSTEM

Anthony Pawson, and Michael Reedijk, both of Toronto, Canada, assignors to Mount Sinai Hospital Corporation, Toronto, Canada

Continuation of Ser. No. 861,330, Mar. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 786,057, Oct. 31, 1991, Pat. No. 5,352,660. This application Mar. 28, 1994, Ser. No. 221,699

Int. Cl.[6] **C12Q** *1/48;* **G01N** *33/53;33/566;33/68*

U.S. Cl. 435—7.8 **10 Claims**

1. A method for assaying a medium for the presence of a substance that affects a Src homology region 2-phosphorylated ligand regulatory system comprising the steps of:

(a) providing a Src homology region 2, and a phosphorylated ligand, the Src homology region 2 and the phosphorylated ligand being selected so that they bind to form a Src homology region 2-phosphorylated ligand complex, the Src homology region 2 and/or the phosphorylated ligand being present in a known concentration;

(b) incubating said Src homology region 2 and said phosphorylated ligand with a test substance, under conditions which permit the formation of the Src homology region 2-phosphorylated ligand complex;

(c) assaying for the Src homology region 2-phosphorylated ligand complex, free Src homology region 2, or non-complexed phosphorylated ligand; and

(d) comparing to a control to determine the effect of the substance.

5,667,981

DIAGNOSTICS AND TREATMENTS FOR CANCERS EXPRESSING TYROSINE PHOSPHORYLATED CRKL PROTEIN

John H. Groffen; Nora C. Heisterkamp, and Johanna Ten Hoeve, all of Los Angeles, Calif., assignors to Childrens Hospital of Los Angeles, Los Angeles, Calif.

Filed May 13, 1994, Ser. No. 242,513

Int. Cl.[6] **G01N** *33/574;33/53*

U.S. Cl. 435—7.23 **20 Claims**

1. A method of diagnosing cancers arising from cells which express tyrosine phosphorylated CRKL protein, said method comprising

a) obtaining a sample of cells suspected of expressing tyrosine phosphorylated CRKL protein;

b) determining the percent increase in tyrosine phosphorylated CRKL protein relative to normal control cells wherein an increase in the expression of phosphorylated CRKL protein relative to controls is associated with the presence of cancer.

5,667,982

T CELL RECEPTOR LIGANDS AND METHODS OF USING SAME

Ronald N. Germain, Potomac, and Luigi Racioppi, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 15, 1993, Ser. No. 4,936

Int. Cl.[6] **C07K** *14/74;* **G01N** *33/50*

U.S. Cl. 435—7.24 **11 Claims**

1. An altered TCR ligand comprising an MHC molecule and a peptide, wherein the MHC molecule is altered by mutation or the peptide is altered by replacement of at least one residue; which altered TCR ligand substantially inhibits at least one T-cell effector response evoked by activating peptide-MHC molecule complexes available to responding T-cells when said TCR ligand is in the presence of said T-cells, wherein said ligand does not substantially inhibit at least one other T-cell effector response evoked by activating peptide-MHC molecule complexes available to responding T-cells.

5,667,983

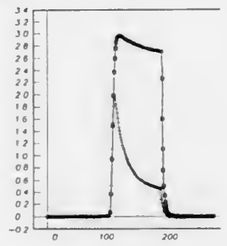
REAGENTS WITH ENHANCED PERFORMANCE IN CLINICAL DIAGNOSTIC SYSTEMS

Allison L. Abel, Randolph; Paul A. D'Orazio, Mendon; Bonnie C. Dalzell, Sherborn; Robert R. McCaffrey, Franklin, and Laura S. Uretsky, Milford, all of Mass., assignors to Chiron Diagnostics Corporation, Walpole, Mass.

Filed Oct. 24, 1994, Ser. No. 327,856

Int. Cl.[6] **C12Q** *1/54;1/00;1/26;1/48*

U.S. Cl. 435—14 **6 Claims**



1. A method of enhancing the antimicrobial activity in a clinical diagnostic reagent by including therein a buffer system consisting of imidazole or imidazole derivatives, wherein the antimicrobial products contained in said diagnostic reagents are (1) a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin- 3-one, said mixture being present at a concentration of approximately 1 to 25 ppm and (2) 5-bromo-5-nitro-1,3-dioxane, present at a concentration of approximately 30 to 250 ppm, and wherein said buffer system is present at a concentration of approximately 48 to 58 mmol/L.

5,667,984

SEQUENCING OF OLIGOSACCHARIDES

Rajesh B. Parekh, Oxford, and Sally B. Prime, Oxon, both of United Kingdom, assignors to Oxford Glycosystems Ltd., Abington, United Kingdom

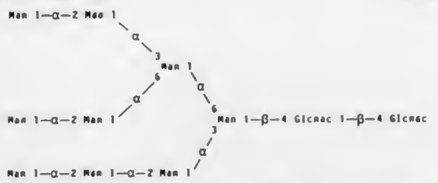
PCT No. PCT/GB92/00829, § 371 Date Dec. 8, 1993, § 102(e) Date Dec. 8, 1993, PCT Pub. No. WO92/19768, PCT Pub. Date Nov. 12, 1992

PCT Filed May 7, 1992, Ser. No. 140,144

Claims priority, application United Kingdom, May 7, 1991, 9109853; Oct. 29, 1991, 9122865

Int. Cl.[6] **C12Q** *1/34;1/40;1/54;1/26*

U.S. Cl. 435—18 **11 Claims**



1. A process for sequencing a primary oligosaccharide compound which is an oligosaccharide or has an oligosaccharide portion, which comprises:

(a) making a first analysis to determine a monosaccharide composition of said primary oligosaccharide compound; and

(b) selecting at least one first sequencing agent based on said first analysis; and then

(c) applying said at least one first selected sequencing agent to said primary oligosaccharide compound, to give products comprising a residual oligosaccharide compound and at least one monosaccharide released by said at least one first selected sequencing agent;

(d) making a second analysis of said at least one monosaccharide in relation to said monosaccharide composition and thereby selecting, based on said second analysis, at least one second sequencing agent for reaction with said residual oligosaccharide compound.

5,667,985

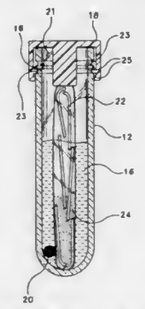
TISSUE BIOPSY CELL SUSPENDER FOR CELL ANALYSIS

Robert K. O'Leary, Lexington, Mass.; Timothy Stevens, Warwick, N.Y., and Richard L. Griffith, Allendale, N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 24, 1996, Ser. No. 718,850

Int. Cl.[6] **C12Q** *1/02;* **C12M** *3/00*

U.S. Cl. 435—29 **17 Claims**



17. A method for releasing intact cells for analysis from a tissue biopsy sample comprising:

providing a sample of tissue from a biopsy;

removing a resealable closure from an opening of a tissue cell suspender device having a receptacle, said receptacle containing a sufficient quantity of an aqueous medium to support an enzymatic dissociation of cells from a tissue biopsy sample wherein said closure has a first sealing position and a second sealing position, said receptacle having a frangible container having a sufficient quantity of an enzyme therein to dissociate cells from the tissue biopsy sample, said frangible container being covered with a permeable membrane, said membrane being permeable to water and to said enzyme, said frangible container being disposed within said receptacle so that said container is intact when said closure is in said first sealing position, said container being breached when said closure is in said second sealing position, thereby to release said enzyme to permeate into said medium;

introducing the tissue sample into said tissue cell suspender device;

replacing said closure thereby sealing said receptacle;

moving said closure to said second sealing position, thereby breaching said frangible container and releasing said enzyme into said medium; and

incubating said tissue sample container for a sufficient time to allow said enzyme to permeate into said medium and dissociate the cells from said tissue.

5,667,986

YEAST PROMOTER FOR EXPRESSING HETEROLOGOUS POLYPEPTIDES

Andrew R. Goodey; Darrell Sleep, both of Nottingham, and Dina Vakeria, London, all of England, assignors to Delta Biotechnology Limited, Nottingham, United Kingdom

Continuation-in-part of Ser. No. 925,286, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 597,687, Oct. 16, 1990, abandoned. This application Jul. 1, 1994, Ser. No. 270,076

Claims priority, application United Kingdom, Oct. 18, 1989, 8923521

Int. Cl.[6] **C12P** *21/06;* **C12N** *1/19;15/11;15/63*

U.S. Cl. 435—69.1 **12 Claims**

1. An isolated or synthetic promoter selected from the group consisting of the nucleic acid set forth as SEQ ID NO: 1 and a variant thereof, which variant:

(i) is at least 100 nucleotides long;
(ii) has at least 80% sequence identity with a fragment of SEQ ID NO: 1 which has the same length as the variant;
(iii) retains at least 10% of the transcription rate capacity of the nucleic acid set forth as SEQ ID NO: 1; and
(iv) is repressed by sucrose or glucose and derepressed by the absence of sucrose or glucose.

5,667,987

P53 RESPONSE GENES

Leonard Buckbinder, Doylestown, Pa.; Randy Talbott, Freehold, N.J.; Bernd R. Seizinger, Stockton, N.J., and Nikolai Kley, Princeton Junction, N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jul. 12, 1994, Ser. No. 274,318

Int. Cl.[6] C12P *21/02;* **C12N** *15/63;1/21;* **C07H** *21/04*

U.S. Cl. 435—69.1 **22 Claims**

1. An isolated nucleic acid molecule comprising a nucleic acid sequence coding for p53 response protein PIGI-1 shown in FIG. 7 (SEQ. ID NO:2).

5,667,988

METHODS FOR PRODUCING ANTIBODY LIBRARIES USING UNIVERSAL OR RANDOMIZED IMMUNOGLOBULIN LIGHT CHAINS

Carlos F. Barbas, San Diego; Dennis R. Burton, and Richard A. Lerner, both of La Jolla, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 174,674, Dec. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 12,566, Feb. 2, 1993, abandoned, Ser. No. 954,148, Sep. 30, 1992, abandoned, and Ser. No. 826,623, Jan. 27, 1992. This application Sep. 2, 1994, Ser. No. 300,386

Int. Cl.[6] C07K *16/00;* **C12N** *15/00*

U.S. Cl. 435—69.1 **3 Claims**

1. A method for producing a heterodimeric immunoglobulin molecule having immunoglobulin variable domain heavy and light chain polypeptides comprising the steps of:
a) combining an immunoglobulin variable domain light chain gene that includes a sequence having the sequence of the light chain shown in SEQ ID NO 2 with one or more immunoglobulin variable domain heavy chain genes to form a combinatorial immunoglobulin heavy and light chain gene library, said combining comprising operatively linking said light chain gene with one of said heavy chain genes in a vector capable of co-expression of said heavy and light chain genes;
b) expressing the combinatorial gene library to form a combinatorial antibody library of expressed heavy and light chain polypeptides; and
c) selecting species of said combinatorial antibody library for the ability to bind a preselected antigen.

5,667,989

FUNGAL CELL WALL PROTEIN CLY4

John E. McCullough, Whitehouse Station, and Judith Baymiller, Plainsboro, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Mar. 31, 1995, Ser. No. 414,685

Int. Cl.[6] C12P *21/02;* **C12N** *15/63;1/21;* **C07H** *21/04*

U.S. Cl. 435—69.1 **11 Claims**

1. An isolated nucleic acid molecule encoding the CLY4 protein comprising the amino acid sequence of SEQ. ID. NO.: 2.

5,667,990

ASPERGILLUS EXPRESSION SYSTEM

Randy Michael Berka, Davis; Wendy Yoder, Winters; Shinobu Takagi, and Karuppan Chettier Boominathan, both of Davis, all of Calif., assignors to Novo Nordisk Biotech, Inc., Davis, Calif.

Continuation of Ser. No. 161,675, Dec. 1, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 458,023

Int. Cl.[6] C12P *21/02;* **C12N** *15/11;1/15;* **C07H** *21/04*

U.S. Cl. 435—69.1 **28 Claims**

18. A method for producing a protein of interest which comprises culturing an *Aspergillus japonicus*-type host cell comprising a nucleic acid sequence encoding a heterologous protein operably linked to a promoter, under conditions which permit expression of the protein, and recovering the protein from culture.

5,667,991

RECOMBINANT MERSACIDIN AND A METHOD FOR PRODUCTION

Klaus-Peter Koller, Bad Soden; Hans Georg Sahl, and Gabriele Bierbaum, both of Bonn, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 8, 1995, Ser. No. 524,677

Claims priority, application European Pat. Off., Sep. 12, 1994, 94114298

Int. Cl.[6] C12P *21/06;* **C12N** *1/20;* **A61K** *38/00;* **C07H** *19/00*

U.S. Cl. 435—69.1 **13 Claims**

1. A DNA coding for premersacidin having the amino acid sequence in FIG. 2 from amino acid No. 1 through 68 (SEQ ID NO: 1).

5,667,992

MAMMALIAN EXPRESSION SYSTEMS FOR HCV PROTEINS

James M. Casey; Suzanne L. Bode, both of Zion; Billy J. Zeck, Gurnee; Julie Yamaguchi, Chicago; Donald E. Frail; Suresh M. Desai, both of Libertyville, and Sushil G. Devare, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 417,478, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 144,099, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 830,024, Jan. 31, 1992, abandoned. This application May 30, 1995, Ser. No. 453,552

Int. Cl.[6] C12P *21/00;* **C12Q** *1/70*

U.S. Cl. 435—69.3 **2 Claims**

1. Plasmid pHCV-162.

5,667,993

PRIMERS AND PROBES FOR THE IDENTIFICATION OF *BACILLUS THURINGIENSIS* GENES AND ISOLATES

Jerald S. Feitelson, and Kenneth E. Narva, both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Filed Oct. 6, 1995, Ser. No. 540,104

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—91.2 **2 Claims**

1. A method for the systematic identification and isolation of *Bacillus thuringiensis* endotoxin genes encoding toxins against nematodes or coleopterans, wherein said method comprises:
a) amplifying a portion of said gene from total cellular DNA of *Bacillus thuringiensis* by using a primer pair consisting of SEQ ID NO. 3 and SEQ ID NO. 5 wherein said amplification results in the generation of a 317 to 332 nucleotide-long polynucleotide; and
b) detecting the presence of said amplification product.

5,667,994

AMPLIFICATION AND DETECTION OF *MYCOBACTERIUM AVIUM* COMPLEX SPECIES

Karen Ann Dilly, Sparks; Silvia A. Bustos, Catonsville; Christine Ann Rostkowski, and Dolores M. Berger, both of Baltimore, all of Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Feb. 28, 1996, Ser. No. 608,584

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.2 **26 Claims**

1. An oligonucleotide consisting of a target binding sequence selected from the group consisting of the target binding sequences of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 and SEQ ID NO:7 and, optionally, a sequence required for an amplification reaction.

5,667,995

PROCESS FOR THE PREPARATION OF CYCLIC KETONES

Ian Michael Whitehead, Bernex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

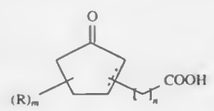
PCT No. PCT/IB94/00409, § 371 Date Jul. 31, 1996, § 102(e) Date Jul. 31, 1996, PCT Pub. No. WO96/18742, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 12, 1994, Ser. No. 682,762

Int. Cl.[6] C12P *7/40*

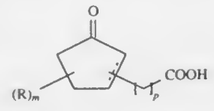
U.S. Cl. 435—135 **9 Claims**

1. Process for the preparation of cyclic ketones of formula



(I)

wherein the dotted line indicates the location of a single or double bond, m represents an integer from 0 to 3 and n an integer from 0 to 10, each of the symbols R, which can be identical or different, stands for hydrogen or for a saturated or unsaturated, linear or branched, hydrocarbon radical having 1 to 6 carbon atoms, and each of the substituent groups can be located in any available position of the ring, which process comprises adding a substrate containing one or several cyclic carboxylic derivatives of formula



(II)

wherein the dotted line and the symbols R and m have the meaning indicated in formula (I), p>n+2 and is defined as being an even integer when n is even and an odd number when n is odd, to a culture of a microorganism capable of β-oxidising the fatty acid chain of said derivatives, and contacting said substrate with said culture for an amount of time sufficient to form at least one of said ketones (I) which is then extracted from the reaction medium.

5,667,996

PROCESS FOR PRODUCTION OF BACTERIAL CELLS CONTAINING POLY-3-HYDROXY BUTYRIC ACID

Shunichiro Minagawa; Shigeki Imagawa; Iwao Terao, and Torakazu Tahara, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 298,428, Aug. 30, 1994, abandoned. This application Jul. 26, 1995, Ser. No. 507,576

Claims priority, application Japan, Sep. 10, 1993, 5-225899; Oct. 6, 1993, 5-250674; Oct. 6, 1993, 5-250675

Int. Cl.[6] C12P *7/44;7/42;7/02*

U.S. Cl. 435—146 **4 Claims**

1. A single stage continuous fermentation process for the production of bacterial cells containing a poly-3-hydroxy burytic acid comprising producing said bacterial cells under the following conditions:
a) using as said bacterial cells a methanol-assimilating bacterium selected from the group consisting of *Protomonas extorquens* K (FERM BP 3548), *Hyphomicrobium methylovorum* (IFO 14180), *Hyphomicrobium hollandism* (IFO 21611), *Paracoccus dentrificans* (DSM 1403), and mutants thereof having the ability to produce poly-3-hydroxy butyric acid under the continuous fermentation process conditions herein set forth;
b) using methanol as a source of carbon; and
c) undertaking the continuous fermentation at a retention time of more than 1 0 hours by limiting the provision of a source of nitrogen, phosphorous, or potassium.

5,667,997

C8 AND C10 MEDIUM-CHAIN THIOESTERASES IN PLANTS

Toni Alois Voelker; Huw Maelor Davies, both of Davis, and Deborah Knutzon, Granite Bay, all of Calif., assignors to Calgene, Inc., Davis, Calif.

PCT No. PCT/US93/10814, § 371 Date Jul. 5, 1995, § 102(e) Date Jul. 5, 1995, PCT Pub. No. WO94/10288, PCT Pub. Date May 11, 1994

Continuation-in-part of Ser. No. 968,971, Oct. 30, 1992, Pat. No. 5,455,167. This PCT application Oct. 29, 1993, Ser. No. 424,406

Int. Cl.[6] C12N *5/10;15/29;15/63*

U.S. Cl. 435—172.3 **20 Claims**

14. A method of producing C8 and C10 fatty acids in a plant host cell, wherein said method comprises:
growing a plant cell having integrated into its genome a DNA construct, said construct comprising in the 5' to 3' direction of transcription, a transcriptional regulatory region functional in said plant cell and a plant medium-chain preferring acyl-ACP thioesterase encoding sequence, under conditions which will permit the expression of said plant thioesterase, wherein said plant thioesterase has activity towards C8 and C10 fatty acyl-ACP substrates.

5,667,998

EFFICIENT GENE TRANSFER INTO PRIMARY LYMPHOCYTES OBVIATING THE NEED FOR DRUG SELECTION

Joseph Dougherty, Hampton, N.J.; Ming-Ling Kuo, Taipei, Taiwan; Natalie Sutkowski, Gloucester, Mass., and Yacov Ron, East Brunswick, N.J., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Continuation-in-part of Ser. No. 100,546, Jul. 30, 1993. This application Jun. 7, 1995, Ser. No. 477,363

Int. Cl.[6] C12N *5/10;15/64*

U.S. Cl. 435—172.3 **13 Claims**

1. A method for introducing an exogenous gene into primary lymphoid cells without drug selection, comprising the steps of:
a) stimulating a selected lymphoid subpopulation with growth factors that induce proliferation of the lymphoid subpopulation for a time sufficient to induce proliferation of the lymphoid subpopulation; and

b) co-culturing the stimulated lymphoid subpopulation with a virus-producing helper cell line harboring a retroviral vector, wherein the level of virus production of the helper cell line is in the range from 5×10^6 to 5×10^7 colony forming units/ml.

5,667,999

PROCESS FOR PREPARING A FERMENTATION PRODUCT HAVING SOD ACTIVITY USING A MICROORGANISM AND A BEVERAGE CONTAINING THE SAME

Kwang Jin Koh; Byoung Youl Jang; Jin Hee Lee; Kang Pyo Lee, and Un Young Kong, all of Seoul, Rep. of Korea, assignors to Cheil Jedang Corporation, Seoul, Rep. of Korea

Filed Jul. 3, 1996, Ser. No. 675,484

Claims priority, application Rep. of Korea, Apr. 23, 1996, 9612424

Int. Cl.[6] A61K *38/44;* **C12N** *9/02*

U.S. Cl. 435—189 **3 Claims**

1. A process for preparing fermentation product having SOD activity and capable of reducing blood alcohol level and eliminating foul alcohol breath, which comprises inoculating *Bacillus subtilis* strains CFC-1234 CKCCM-10082) into a medium having a suitable pH range, cultivating the inoculates with agitation and aeration; and recovering the fermentation product having the SOD activity from the fermented mixtures thus produced.

5,668,000

MITOCHONDRIAL P450

Megumi Akiyoshi; Yoshiyasu Yabusaki, both of Hyogo; Toshiyuki Sakaki, Osaka, and Hideo Ohkawa, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 420,799, Apr. 12, 1995, abandoned, which is a continuation of Ser. No. 97,922, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 765,941, Sep. 26, 1991, abandoned. This application Aug. 26, 1996, Ser. No. 702,795

Claims priority, application Japan, Sep. 26, 1990, 2-258262; May 24, 1991, 3-120123

Int. Cl.[6] C12N *9/02;15/81;1/19;15/00*

U.S. Cl. 435—189 **14 Claims**

1. A yeast expression plasmid comprising DNA encoding a mitochondrial P450 which is a chimeric cytochrome $P450_{17\alpha\text{-}c25}$ which consists of $P450_{c25}$ having its targeting signal substituted by DNA encoding the N-terminal 15 amino acids of bovine adrenal cytochrome $P450_{17\alpha}$, operably linked to a promoter and terminator that is operative in yeast.

5,668,001

3-HYDROXY-3-METHYL-GLUTARYL-COA SYNTHASE PREPARATION WITH IMPROVED STABILITY

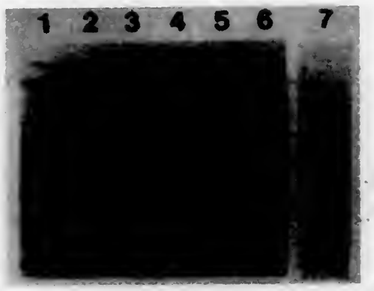
Henry M. Miziorko, Elm Grove, Wis., assignor to MCW Research Foundation, Inc., Milwaukee, Wis.

Continuation of Ser. No. 72,040, Jun. 2, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 305,505

Int. Cl.[6] C12N *9/88;15/60;15/70;* **C12Q** *1/527*

U.S. Cl. 435—232 **5 Claims**

1. A preparation of recombinant avian cytosolic 3-hydroxy-3-methylglutaryl-CoA synthase, wherein the synthase is recombinantly produced in a transformed *E. Coli* BL21(DE3) host cell by the inducible transcriptional activity of a bacteriophage T7 RNA polymerase, wherein the preparation has at least 0.24 units/mg specific activity, wherein at least 90% of the synthase molecules have not been substantially proteolytically cleaved, and wherein



the preparation retains 50% activity after storage at 4° C. for six months.

5,668,002

DNA AND POLYPEPTIDE FOR TUMOR-ASSOCIATED ANTIGEN CO-029

Alban J. Linnenbach, Philadelphia; Hilary Koprowski, Wynnewood, and Stanislaw Szala, Philadelphia, all of Pa., assignors to The Wistar Institute, Philadelphia, Pa.

Filed Aug. 31, 1990, Ser. No. 575,567

Int. Cl.[6] C10N *15/00;* **C07K** *14/00;* **C07H** *21/02;21/04*

U.S. Cl. 435—325 **20 Claims**

1. An intron-free DNA molecule which encodes a tumor-associated antigen, said antigen immunoreactive with monoclonal antibody CO-029.

5,668,003

NUCLEIC ACID ENCODING MONOCLONAL ANTIBODIES TO LEUKEMIA INHIBITORY FACTOR

Kyung Jin Kim, San Francisco, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 258,918, Jun. 13, 1994, which is a continuation of Ser. No. 56,966, Apr. 29, 1993, abandoned, which is a continuation of Ser. No. 880,400, May 8, 1992, abandoned. This application May 10, 1995, Ser. No. 438,455

Int. Cl.[6] C07H *21/04;* **C12N** *15/13;15/85;* **C07K** *16/18*

U.S. Cl. 435—335 **16 Claims**

1. An isolated nucleic acid encoding an anti-human Leukemia Inhibitory Factor monoclonal antibody capable of being competitively inhibited in its binding to human Leukemia Inhibitory Factor by a monoclonal antibody selected from the group consisting of mAb D3.14.1, mAb D4.16.9, mAb D25.1.4, and mAb D62.3.2 (American Type Culture Collection Accession Numbers ATCC HB 11076, ATCC HB 11077, ATCC HB 11074 and ATCC HB 11075, respectively).

5,668,004

DNA POLYMERASE III HOLOENZYME FROM *ESCHERICHIA COLI*

Michael E. O'Donnell, Hastings on Hudson, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 826,926, Jan. 24, 1992, abandoned. This application Jul. 22, 1994, Ser. No. 279,058

Int. Cl.[6] C12N *9/12;15/54*

U.S. Cl. 435—194 **76 Claims**

1. An isolated conformationally correct protein subunit of polymerase III holoenzyme from *Escherichia coli* selected from the subunit group consisting of θ and χ.

5,668,005

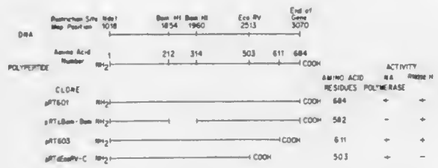
CLONED GENES ENCODING REVERSE TRANSCRIPTASE LACKING RNASE H ACTIVITY

Michael Leslie Kotewicz, Columbia, and Gary Floyd Gerard, Frederick, both of Md., assignors to Life Technologies, Inc., Rockville, Md.

Continuation of Ser. No. 404,907, Mar. 15, 1995, abandoned, which is a continuation of Ser. No. 825,260, Jan. 24, 1992, Pat. No. 5,405,776, which is a division of Ser. No. 671,156, Mar. 18, 1991, Pat. No. 5,244,797, which is a continuation of Ser. No. 143,396, Jan. 13, 1988, abandoned. This application Mar. 12, 1996, Ser. No. 614,260

Int. Cl.[6] C12N *9/12;15/00;15/54;15/70*

U.S. Cl. 435—194 **37 Claims**



1. An isolated DNA molecule comprising a nucleotide sequence encoding a polypeptide having DNA polymerase activity and substantially no RNaseH activity, wherein said nucleotide sequence is derived from a Moloney murine leukemia virus (M-MLV) nucleotide sequence.

5,668,006

SOMATOSTATIN RECEPTORS

John Richard Hadcock, Mt. Holly, N.J.; Bradley Alton Ozenberger, Yardley, Pa., and Mark Henry Pausch, Plainsboro, N.J., assignors to American Cyanamid Company, Madison, N.J.

Filed Jul. 17, 1992, Ser. No. 915,966

Int. Cl.[6] C07K *14/71;* **C07H** *21/02*

U.S. Cl. 435—252.3 **14 Claims**

1. An oligonucleotide selected from the group consisting of the oligonucleotides depicted in FIG. 2A [SEQ ID NOs:9–13].

5,668,007

RECOMBINANT 21 KD COCOA PROTEIN AND PRECURSOR

Margaret Elizabeth Spencer, Sheffield, and Rachel Hodge, Leicester, both of England, assignors to Mars UK Limited, Berkshire, England

PCT No. PCT/GB91/00913, § 371 Date Jan. 27, 1993, § 102(e) Date Dec. 11, 1992, PCT Pub. No. WO91/19800, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 7, 1991, Ser. No. 949,812

Claims priority, application United Kingdom, Jun. 11, 1990, 9013017

Int. Cl.[6] C07K *14/415;* **C12N** *15/29;1/21;1/19*

U.S. Cl. 435—252.3 **13 Claims**

1. A purified and isolated 23 kD protein of *Theobroma cacao*, having the amino acid sequence shown in FIG. 2 (SEQ ID NO: 2).

5,668,008

AVIRULENT GEOTRICHUM CANDIDUM FOR BIOLOGICAL CONTROL OF POSTHARVEST ROTS ON FRUIT

Cynthia G. Eayre, Weslaco, and Mani Skaria, McAllen, both of Tex., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C., and The Texas A&M University System, College Station, Tex.

Filed Jul. 28, 1995, Ser. No. 508,358

Int. Cl.[6] C12N *1/14*

U.S. Cl. 435—254.1 **6 Claims**

1. A strain of *Geotrichum candidum* having all the identifying characteristics of *Geotrichum candidum* strain NRRL 21488, which is avirulent and effective to inhibit growth of postharvest pathogens on fruit.

5,668,009

METHODS FOR TREATING COTTON-CONTAINING FABRICS WITH CBH I ENRICHED CELLULASE

Kathleen A. Clarkson, San Francisco; Kathy Collier, Hillsborough; Pushkaraj J. Lad, San Mateo, and Geoffrey L. Weiss, San Francisco, all of Calif., assignors to Genencor International, Inc., Palo Alto, Calif.

Continuation of Ser. No. 236,144, May 2, 1994, abandoned, which is a continuation of Ser. No. 878,950, May 1, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,126

Int. Cl.[6] D06M *16/00*

U.S. Cl. 435—263 **11 Claims**

1. In a method for enhancing the feel, appearance, for softening or for imparting color enhancement and/or a stoned-washed appearance to cotton-containing fabrics by treatment of the fabric with a composition comprising a naturally complete fungal cellulase composition which comprises CBH I type components and EG type components under conditions wherein the cellulase composition enhances the feel, appearance, for softening of the fabric or for imparting color enhancement and/or a stoned-washed appearance to the fabric wherein said improvement comprises modifying the fungal cellulase composition to comprise a protein weight ratio of CBH I type cellulase components to EG type components found in the modified cellulase composition to a ratio of from 10:1 to 400:1.

5,668,010

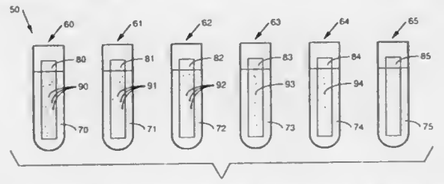
METHOD FOR DETERMINING THE ANTIMICROBIAL AGENT SENSITIVITY OF A NONPARAFFINOPHILIC MICROORGANISM USING VARIOUS MILIEUS AND AN ASSOCIATED APPARATUS

Mitchell S. Felder, Hermitage, and Robert- A. Ollar, Milford, both of Pa., assignors to Infectech, Inc., Sharon, Pa.

Division of Ser. No. 556,033, Nov. 9, 1995, Pat. No. 5,641,645. This application Mar. 21, 1996, Ser. No. 620,092

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—287.9 **13 Claims**



1. A method for determining the sensitivity of at least one nonparaffinophilic microorganism from a specimen obtained from a patient to different antimicrobial agents and predetermined quantities thereof, said method comprising:

a receptacle adapted to contain (i) an aqueous solution; (ii) an amount of antimicrobial agent to be tested; and (iii) said specimen;

means for adjusting said aqueous solution to mimic the in vivo clinical conditions of said patient; and

a slide coated with a carbon source, said slide being adapted to being placed in said receptacle, whereby observation of the growth of said nonparaffinophilic microorganism from said specimen on said slide can be used to determine the concentration of said antimicrobial agent necessary to resist said nonparaffinophilic microorganism growth on said slide.

5,668,011

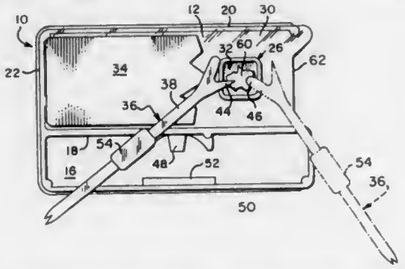
MOLDED PICK FOR HANDLING BIOPSY SPECIMENS

Frank W. Jackson, Mechanicsburg, Pa., assignor to Chek-Med Systems, Inc., Camp Hill, Pa.

Division of Ser. No. 392,670, Feb. 23, 1995, Pat. No. 5,593,851, which is a continuation of Ser. No. 221,311, Apr. 1, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,334

Int. Cl.[6] C12M *3/00*

U.S. Cl. 435—309.1 **2 Claims**



1. A molded pick for handling a biopsy specimen, comprising:
an elongated shaft having
a tapered blunt short barb at one end, and,
a forked device at the opposite end of said shaft,
said forked device having a blunt, spatula prong as one fork and a sharp tapered point as the other fork.

5,668,012

PLATELET ENDOTHELIAL CELL ADHESION MOLECULE-1 PROMOTERS AND USES THEREOF

Peter J. Newman, Bayside; Richard J. Gumina, and Nancy Kirshbaum, both of Milwaukee, all of Wis., assignors to The Blood Center Research Foundation, Inc., Milwaukee, Wis.

Filed Jul. 5, 1994, Ser. No. 270,985

Int. Cl.[6] C12N *15/63;* **C07H** *21/04*

U.S. Cl. 435—320.1 **4 Claims**

1. An isolated DNA molecule consisting of a nucleotide sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2, wherein said DNA molecule is a human platelet-endothelial cell adhesion molecule-1 (PECAM-1) promoter.

5,668,013

ANTIGEN RECOGNIZED BY PATIENTS WITH ANTIBODY ASSOCIATED PARANEOPLASTIC CEREBELLAR DEGENERATION, DNA ENCODING SAME AND USES THEREOF

Jerome B. Posner, and Henry M. Furneaux, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 646,292, Jan. 25, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 427,993

Int. Cl.[6] C12N *15/12;15/62;14/435;14/82;1/21*

U.S. Cl. 435—320.1 **8 Claims**

3. A vector which comprises an isolated nucleic acid encoding a polypeptide having the amino acid sequence set forth in Seq. ID No. 1.

5,668,014

DEVICE AND METHOD FOR ESTIMATING THREE NITROGEN-INCLUDING IONIC SUBSTANCES IN WATER

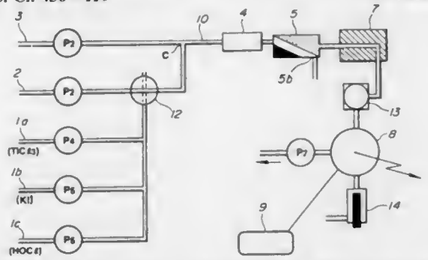
Toyoaki Aoki, Hirakata, and Hiroshi Tsugura, Tokyo, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 458,795

Claims priority, application Japan, Jun. 6, 1994, 6-122903; Apr. 28, 1995, 7-105115

Int. Cl.[6] G01N *33/00;33/18;35/08;21/76*

U.S. Cl. 436—110 **13 Claims**



1. A method for estimating ammonium ions, nitric acid ions and nitrous acid ions in a sample solution, comprising the steps of:
(a) feeding the sample solution to a carrier which is flowing in a pipe;
(b) selectively feeding a plurality of reagents to the flowing carrier;
(c) positively mixing the sample solution and the reagents one after another in a portion of the pipe thereby producing three types of reacted solutions in the portion of the pipe;
(d) leading the reacted solutions to a gas/liquid separator to separate a gaseous phase from each reacted solution;
(e) heating each gaseous phase to produce nitrogen monoxide; and
(f) estimating the ammonium ions, the nitric acid ions and the nitrous acid ions in the three types of nitrogen monoxides produced wherein at the step (c), hypochlorous acid or sodium hypochlorite is used as the reagent when the ions which are to be estimated are ammonium ions, in which titanium trichloride is used as the reagent when the ions which are to be estimated are nitric acid ions, and in which potassium iodide is used as the reagent when the ions which are to be estimated are nitrous acid ions.

5,668,015

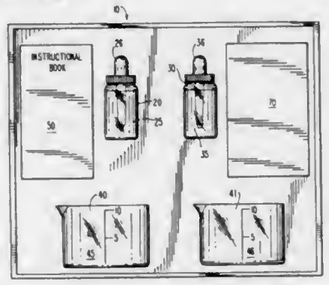
METHOD FOR MEASURING ORGANICS LEVELS IN AN AQUARIUM

Joseph E. Gargas, Apollo Beach, Fla., assignor to Wardley Corporation, Secaucus, N.J.

Filed Dec. 8, 1995, Ser. No. 569,892

Int. Cl.[6] G01N *33/18*

U.S. Cl. 436—146 **14 Claims**



1. A method of determining the relative level of organic material in an aquarium, comprising the steps of:

removing a test sample of aquarium water having a first volume from an aquarium;
adding dropwise a predetermined mount of potassium permanganate to the aquarium water test sample from a potassium permanganate source; said predetermined amount of potassium permanganate corresponding to a predetermined number of drops from the potassium permanganate source;
permitting the color of the test sample to substantially stabilize and observing whether the substantially stabilized color of the test sample is pink, said pink color being substantially the color resulting when about the predetermined amount of potassium permanganate is added to distilled water of about the same volume as the volume of the test sample;
and determining that there is an excess level of organic material in the aquarium when the color of the substantially stabilized test sample is not substantially pink and that there is an acceptable level of organic material in the aquarium when the color of the substantially stabilized test sample is substantially pink.

5,668,016

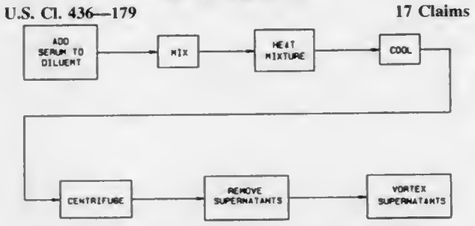
METHOD OF PREPARING AND ACTIVATING SAMPLES FOR RADIOIMMUNOASSAY AND OTHER TEST

Jose Alberto Fernandez-Pol, 437 Hunters Hill Dr., Chesterfield, Mo. 63017

Filed Dec. 29, 1995, Ser. No. 581,072

Int. Cl.[6] G01N *1/10*

U.S. Cl. 436—179 **17 Claims**



1. A method of activating a protein in a sample for diagnostic procedures comprising the steps of:
diluting a predetermined quantity of the sample with a predetermined quantity of a diluent, said diluent having no calcium and magnesium;
mixing the serum and diluent;
heating the serum and diluent to 100° C. for a predetermined time period;
cooling the serum and diluent;
centrifuging the serum and diluent;
removing a supernatant liquid; and
vortexing the remaining material; wherein the predetermined period of time for heating the sample and diluent is approximately 3 to 5 minutes; wherein the diluent is a phosphate buffer saline solution without calcium and magnesium.

5,668,017

RADIAL ABSORPTION DEVICE

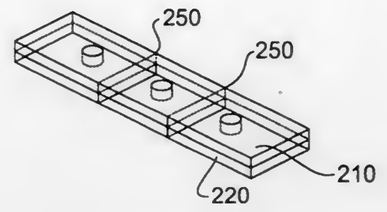
Ian Ellis Buchanan, Kirkland, and Milton Richard Tam, Seattle, both of Wash., assignors to Path, Seattle, Wash.

Filed Feb. 10, 1995, Ser. No. 386,650

Int. Cl.[6] G01N *21/00;31/22;33/53;33/543*

U.S. Cl. 436—518 **16 Claims**

1. A test strip apparatus for use in detection of an analyte in a fluid sample by immunoassay, including:
an upper strip of absorbent material, and
a lower strip of non-porous material, the upper strip being laminated to an upper surface of the lower strip,
the test strip including a plurality of wells for receiving a fluid sample, a well being a transverse hole piercing the absorbent material of the upper strip such that the upper surface of the lower strip forms a base of the well, wherein at least a portion of the base of the well is coated with anti-analyte moieties which specifically bind the analyte, such that a fluid sample placed into the well is in direct contact with the anti-analyte moieties and fluid flows into the absorbent material radially away from the anti-analyte moieties on the base of the well.



5,668,018

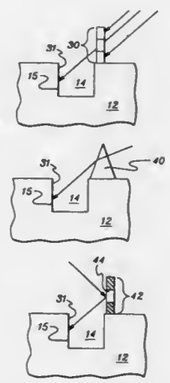
METHOD FOR DEFINING A REGION ON A WALL OF A SEMICONDUCTOR STRUCTURE

John Edward Cronin, Milton, and Joseph Edward Gortych, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 485,292

Int. Cl.[6] H01L *21/027;21/033*

U.S. Cl. 430—5 **10 Claims**



1. A method for selectively defining a region on a vertical wall of a semiconductor structure having a semiconductor substrate with an upper surface, said vertical wall being transverse to said upper surface, said method comprising the steps of:
(a) forming a vertical structure above said semiconductor structure and spaced parallel to said vertical wall such that said vertical structure is also transverse to said upper surface;
(b) providing within said vertical structure an area of one of transparence, reflection or refraction; and
(c) projecting light at a given angle to said vertical structure, wherein only a portion of said light passes via said area provided in said vertical structure to impinge upon said vertical wall of said semiconductor structure and thereby define said region on said vertical wall.

5,668,019

METHOD OF FABRICATING THIN FILM TRANSISTOR

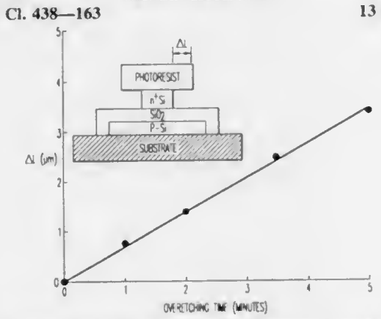
Kazuhiro Kobayashi; Hiroyuki Murai; Takao Sakamoto, and Yuichi Masutani, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 38,651, Mar. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,141, Jan. 26, 1993, abandoned. This application Jul. 23, 1993, Ser. No. 94,954

Claims priority, application Japan, Jan. 30, 1992, 4-14770; Oct. 30, 1992, 4-292692

Int. Cl.[6] H01L *21/84*

U.S. Cl. 438—163 13 Claims



1. A method of fabricating a thin film transistor, comprising the steps of:

preparing an insulating substrate;

forming a first Si film serving as a channel layer on said insulating substrate;

forming a gate insulating film made principally of SiO_2 on said first Si film;

forming a second Si film doped with an impurity on said gate insulating film;

patterning said second Si film by isotropic etching using a photoresist layer as a mask to form a gate electrode that is narrower than the photoresist layer;

patterning said gate insulating film by anisotropic etching using said photoresist layer as a mask into a configuration that is wider than said gate electrode to form a gate insulating film pattern; and

ion implanting said first Si film with an impurity using said gate insulating film pattern as a mask to form source/drain regions of an offset structure.

5,668,020

METHOD FOR FORMING IMPURITY JUNCTION REGIONS OF SEMICONDUCTOR DEVICE

Kil Ho Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed May 21, 1996, Ser. No. 651,856

Claims priority, application Rep. of Korea, May 22, 1995, 95-12740

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—303 20 Claims

1. A method for forming junction impurity regions of a semiconductor device, comprising the steps of:

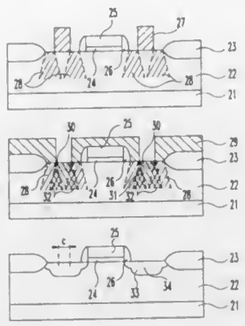
preparing a semiconductor substrate;

forming an element-isolating oxide film defining a field region and an active region in said semiconductor substrate;

forming a first photoresist film pattern on a portion of said semiconductor substrate corresponding to said active region;

implanting first impurity ions in active region portions of said semiconductor substrate exposed at both sides of said first photoresist film pattern under a condition that said first photoresist film pattern is used as a mask, thereby forming defecting regions;

removing said first photoresist film pattern, and then forming a second photoresist film pattern on the exposed semiconductor surface portions except for the portion which was covered with said first photoresist film pattern;



implanting second impurity ions in portions of said semiconductor substrate exposed after the formation of said second photoresist film pattern under a condition that said second photoresist film pattern is used as a mask, thereby forming amorphous regions; and

removing said second photoresist film pattern, and then implanting third impurity ions in the portion of said semiconductor substrate corresponding to said active region, thereby forming impurity junction regions.

5,668,021

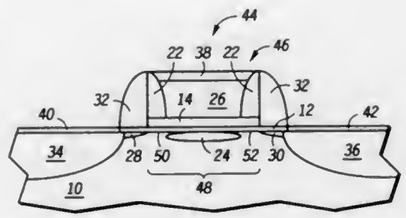
PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING A SEGMENTED CHANNEL REGION

Chitra K. Subramanian, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1996, Ser. No. 658,972

Int. Cl.[6] H01L *21/266*

U.S. Cl. 438—282 11 Claims



1. A process for fabricating a semiconductor device comprising the steps of:

providing a semiconductor substrate having a dielectric layer thereon;

forming a first polycrystalline silicon layer overlying the dielectric layer;

forming an insulating layer overlying a first portion and a second portion of the first polycrystalline silicon layer;

forming an opening in the insulating layer exposing the first portion of the first polycrystalline silicon layer, the opening having a wall surface;

forming a first sidewall spacer adjacent to the wall surface;

forming a buried junction region in the semiconductor substrate aligned to the first sidewall spacer;

filling the opening with a second polycrystalline silicon layer;

removing the insulating layer and the second portion of the first polycrystalline silicon layer;

forming a second sidewall spacer adjacent to the first sidewall spacer and overlying the dielectric layer; and

forming source and drain regions in the semiconductor substrate.

5,668,022

SILICON-SILICON-GERMANIUM HETEROJUNCTION BIPOLAR TRANSISTOR FABRICATION METHOD

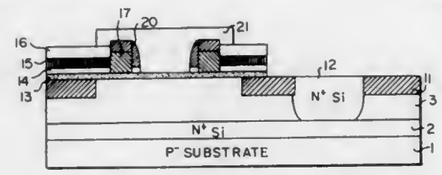
Deok-Ho Cho; Soo-Min Lee; Tae-Hyeon Han; Byung-Ryul Ryum, and Kwang-Eui Pyun, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Aug. 23, 1996, Ser. No. 700,930

Claims priority, application Rep. of Korea, Dec. 20, 1995, 95-52691

Int. Cl.[6] H01L *21/265*

U.S. Cl. 438—320 23 Claims



1. A silicon/silicon-germanium bipolar transistor fabrication method, comprising:

growing a silicon/silicon-germanium film on a semiconductor substrate wherein a first, second and third conductive layers are sequentially formed and a device isolation is achieved;

forming a first insulator film, a metallic silicide film and a second insulator film sequentially on said grown silicon/silicon-germanium film;

etching said second insulator film, said metallic silicide film and said first insulator film consecutively using a mask, and forming a fourth conductive layer so as to connect said metallic silicide film serving as a base electrode to said silicon/silicon-germanium film;

removing said second insulator film and said metallic silicide film provided on the emitter region and forming side wall polycrystalline silicon spacers;

insulating and emitter-base layer in accordance with forming an oxide film by selectively oxidizing said exposed fourth conductive layer and said side wall polycrystalline silicon spacers;

forming a fifth conductive layer after etching said first insulator film exposed on said emitter; and,

depositing an insulation film, forming a contact hole and performing metallic wiring process.

5,668,023

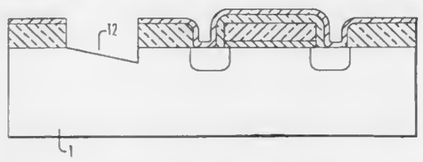
COMPOSITION FOR OFF-AXIS GROWTH SITES ON NON-POLAR SUBSTRATES

Keith Wayne Goossen, Aberdeen, and James A. Walker, Howell, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 408,460, Mar. 22, 1995, abandoned, which is a division of Ser. No. 146,511, Nov. 1, 1993, Pat. No. 5,443,685. This application Jul. 8, 1996, Ser. No. 676,989

Int. Cl.[6] H01L *21/265*

U.S. Cl. 148—33 20 Claims



1. A nonpolar substrate comprising a first region having a standard <100> surface and a second region having an off-axis surface suitably oriented for growing polar semiconductors, wherein polar semiconductors are grown on the off-axis surface and not on the standard <100> surface and the second region is completely surrounded by the first region.

5,668,024

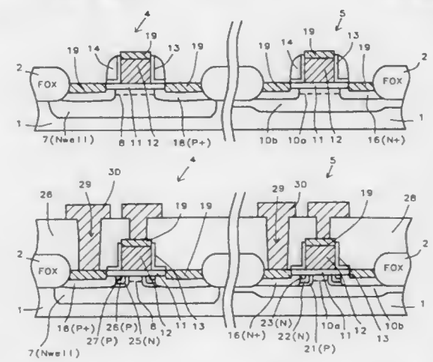
CMOS DEVICE STRUCTURE WITH REDUCED RISK OF SALICIDE BRIDGING AND REDUCED RESISTANCE VIA USE OF A ULTRA SHALLOW, JUNCTION EXTENSION, ION IMPLANTATION PROCESS

Chaochieh Tsai, Taichung, and Shun-Liang Hsu, Hsin-chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-Chu, Taiwan

Filed Jul. 17, 1996, Ser. No. 682,490

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—199 34 Claims



1. A method for fabricating a CMOS device, on a semiconductor substrate, comprising the steps of:

forming field oxide regions in said semiconductor substrate;

ion implanting a first conductivity imparting dopant into an area of said semiconductor substrate, to form an N well region, in an area of said semiconductor substrate that is used for a PFET region, of said CMOS device;

ion implanting a second conductivity imparting dopant into said PFET region, to adjust the threshold voltage of devices fabricated in said PFET region;

ion implanting a third conductivity imparting dopant into an area of said semiconductor substrate that is used for an NFET region, of said CMOS device, to form a channel stop and a P well region;

ion implanting a fourth conductivity imparting dopant into an area of said semiconductor substrate that is used for said NFET region of said CMOS device, to adjust the threshold voltage of devices fabricated in said NFET region;

growing a gate insulator layer on said semiconductor substrate;

depositing a polysilicon layer on said gate insulator layer and on said field oxide regions;

anisotropic etching of said polysilicon layer to form polysilicon gate structures on said gate insulator layer;

depositing a first sidewall insulator layer on said polysilicon gate structures, and on said gate insulator layer and field oxide regions, not covered by said polysilicon gate structures;

depositing a second sidewall insulator layer on said first sidewall insulator layer, forming a dual sidewall insulator layer;

anisotropic etching of said dual sidewall insulator layer to form a dual insulator spacer on sides of said polysilicon gate structures;

ion implanting a fifth conductivity imparting dopant into said NFET region, of said CMOS device, not covered by said polysilicon gate structure, and not covered by said dual insulator spacer to form N type, heavily doped source and drain regions;

ion implanting a sixth conductivity imparting dopant into said PFET region, of said CMOS device, not covered by said polysilicon gate structure, and not covered by said dual insulator spacer, to form P type, heavily doped source and drain regions;

first rapid thermal annealing to activate the dopants in said N type, heavily doped source and drain regions, and in said P type, heavily doped source and drain regions;

precleaning said NFET region, and said PFET region, using a dilute hydrofluoric acid solution;

depositing a metal layer thereon after said precleaning;

second rapid thermal annealing to convert said metal layer to a metal silicide layer, on the top surface of said polysilicon gate structures, on the top surface of said N type, heavily doped source and drain regions, and on the top surface of said P type, heavily doped source and drain regions, while leaving unreacted metal on the top surface of said dual insulator layer, and on the top surface of said field oxide region;

removing said unreacted metal from the top surface of said dual insulator layer, and from the top surface of said field oxide region;

removing of said second sidewall insulator layer, from said dual insulator layer, exposing a peripheral channel region, covered with said first insulator sidewall layer, with said peripheral channel region located between said polysilicon gate structures and said metal silicide, on said N type, heavily doped source and drain regions, for said NFET region, and located between said polysilicon gate structures and metal silicide, on said P type, heavily doped source and drain regions, for said PFET regions;

ion implanting a seventh conductivity imparting dopant into said peripheral channel region, in said NFET region, to create a P type, pocket ion implanted region;

ion implanting an eight conductivity imparting dopant into said peripheral channel region, in said NFET region, to create an N type, ultra lightly doped source and drain region;

ion implanting a ninth conductivity imparting dopant into said peripheral channel region, in said NFET region, to create an N type, ultra shallow junction extension;

ion implanting a tenth conductivity imparting dopant into said peripheral channel region, in said PFET region, to create a N type, pocket ion implanted region;

ion implanting an eleventh conductivity imparting dopant into said peripheral channel region, in said PFET region, to create a P type, ultra lightly doped source and drain region;

ion implanting a twelfth conductivity imparting dopant into said peripheral channel region, in said PFET region, to create a P type, ultra shallow junction extension;

third rapid thermal annealing, to activate the dopants in said P type, ultra shallow junction extension regions, and in said N type, ultra shallow junction extension regions;

depositing an interlevel insulator layer thereon after third annealing;

opening contact holes in said interlevel insulator layer to metal silicide layers on said N type, heavily doped source and drain regions, to said metal silicide layers on said P type, heavily doped source and drain regions, and to said metal silicide layers on said polysilicon gate structures;

depositing a interconnect metallization layer after forming said contact; and

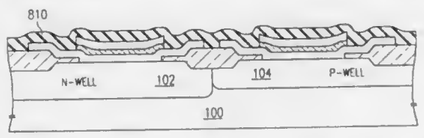
patterning of said interconnect metallization layer to form metal contact structures to said N type, heavily doped source and drain regions, to said P type, heavily doped source and drain regions, and to said polysilicon gate structures.

5,668,025

METHOD OF MAKING A FET WITH DIELECTRICALLY ISOLATED SOURCES AND DRAINS

Richard A. Blanchard, Los Altos, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Feb. 28, 1995, Ser. No. 397,654
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—207 **32 Claims**



1. A method for fabricating integrated circuit devices, comprising the steps of:

(a.) providing a substrate which includes at least one monolithic body of semiconductor material;

(b.) covering part of the surface of said monolithic body with a patterned dielectric layer, said patterned dielectric layer leaving said monolithic body exposed in transistor channel locations;

(c.) forming additional semiconductor material, as monocrystalline semiconductor material on said monolithic body in said transistor channel locations, and as polycrystalline semiconductor material elsewhere; said additional semiconductor material being formed to a thickness which is greater than the thickness of said patterned dielectric layer;

(d.) patterning said additional semiconductor material to form a patterned thin film layer, and forming a gate dielectric on said additional semiconductor material;

(e.) forming an additional patterned conductive thin film layer on said gate dielectric; and

(f.) implanting dopants of a desired conductivity type into said additional semiconductor material where exposed by said additional patterned conductive thin film layer;

said steps (e.) and (f.) forming a completed transistor wherein a monocrystalline portion of said additional semiconductor material beneath said additional patterned conductive thin film layer forms a transistor channel region,

said additional patterned conductive thin film layer provides an insulated gate which is coupled to said transistor channel region,

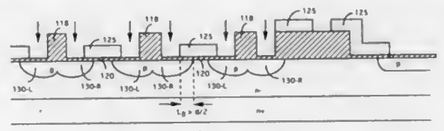
and said implanting step (f.) forms source and drain regions which lie entirely within polycrystalline portions of said additional semiconductor material.

5,668,026

DMOS FABRICATION PROCESS IMPLEMENTED WITH REDUCED NUMBER OF MASKS

True-Lon Lin, Cupertino; Fwu-Iuan Hshieh, Saratoga; Danny Chi Nim, San Jose; Koon Chong So, Santa Clara, and Yan Man Tsui, Union City, all of Calif., assignors to MegaMOS Corporation, San Jose, Calif.

Filed Mar. 6, 1996, Ser. No. 611,745
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—272 **7 Claims**



1. A method for fabricating a DMOS transistor supported on a substrate comprising steps of:

(a) growing an oxide layer on said substrate;

(b) applying a first mask for removing said oxide layer to define an active area and for selectively patterning said oxide layer for keeping a plurality of source implant blocking stumps near a plurality of source regions in said substrate wherein said blocking stumps being formed with width greater than twice a diffusion length of a source dopant;

(c) applying a second mask for forming a plurality of gates covering a portion of areas between said blocking stumps thus defining an implant window;

(d) implanting a body dopant through said implant window followed by a body diffusion for forming body regions underneath said blocking stumps wherein said blocking stumps are patterned with width less than twice a diffusion length of said body dopant whereby said body regions merge together in said body diffusion and become a single body region underneath said blocking stumps; and

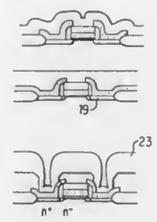
(e) implanting said source dopant through said implant window over said source implant blocking stumps following by a source diffusion for forming separate source regions underneath said blocking stumps.

5,668,027

METHOD OF MANUFACTURING A MOS TRANSISTOR SEMICONDUCTOR DEVICE

Masayuki Hashimoto, Tateyama, Japan, assignor to Nippon Steel Semiconductor Corporation, Tateyama, Japan

Division of Ser. No. 945,895, Sep. 17, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 268,325
Claims priority, application Japan, Oct. 16, 1991, 3-296306
Int. Cl.[6] H01L *21/336*
U.S. Cl. 438—305 **25 Claims**



1. A method of manufacturing a MOS transistor semiconductor device having a gate electrode portion, dopant-diffused regions, and circuit element-separating regions, the gate electrode portion having a spacer-insulating film, a gate polysilicon layer and a gate cap oxide film formed on the gate polysilicon layer, said method comprising the steps of:

forming the gate electrode portion of the MOS transistor semiconductor device and the circuit element-separating regions on a substrate surface of a silicon substrate, a separation region at the substrate surface separating the gate electrode portion and the circuit element-separating regions;

depositing a polysilicon layer and doping the polysilicon layer with dopants onto the gate electrode portion, the separation region, and the circuit element-separating regions, the polysilicon becoming part of the dopant-diffused regions at the separation region;

patterning and removing the polysilicon layer after doping the layer from portions of the gate electrode portion and the circuit element-separating regions, the polysilicon layer remaining in the dopant-diffused regions and spreading onto the gate electrode portion, onto an upper surface of the spacer-insulating film and onto a part of the gate cap oxide film and onto a part of the circuit element-separating region;

depositing an insulating film on the semiconductor device;

thermally treating the semiconductor device to diffuse the dopants into the substrate surface in contact with the polysilicon layer, the polysilicon layer being a diffusant source to form diffused regions at the substrate surface, the step of thermally treating planarizes the surface of the semiconductor device;

removing the insulating film on a part of the polysilicon layer to form connection holes; and

forming conductive interconnects in the connection holes.

5,668,028

METHOD OF DEPOSITING THIN NITRIDE LAYER ON GATE OXIDE DIELECTRIC

Frank Randolph Bryant, Denton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

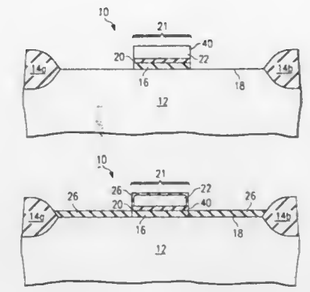
Division of Ser. No. 159,461, Nov. 30, 1993. This application Apr. 28, 1995, Ser. No. 431,336
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—287 **8 Claims**

1. A method for fabricating a portion of a semiconductor device comprising:

forming a gate oxide layer on and in contact with a surface of a substrate, wherein the gate oxide layer is less than 200 Å thick;

forming a nitride layer on the oxide gate layer;

forming a polysilicon layer on the nitride layer;



etching away the polysilicon and nitride layers in areas to form a gate structure; and

reoxidizing the gate structure to form a layer of oxide,

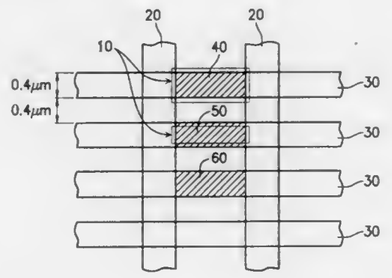
wherein a formation of asperities on an underside of the polysilicon layer is prevented.

5,668,029

PROCESS FOR FABRICATING MULTI-LEVEL READ-ONLY MEMORY DEVICE

Heng-Sheng Huang, Taipei, and Fong-Chun Lee, Hsinchu, both of Taiwan, assignors to United Microelectronics Corporation, Taiwan

Filed May 6, 1996, Ser. No. 642,941
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—278 **13 Claims**



1. A process for fabricating multi-level semiconductor read-only memory devices, each of the multi-level read-only memory devices comprising memory cells to be programmed into any of three possible conduction states including full-conduction, half-conduction and substantially no-conduction, the process comprising the steps of:

a. providing a semiconductor silicon substrate;

b. forming bit lines and word lines in the substrate and defining channel regions therein;

c. forming a photomask corresponding to a code desired to be programmed into the ROM device, the photomask being arranged to fully cover the entire channel region of memory cell transistors to be programmed for the full conduction, cover substantially half of the channel region of memory cell transistors to be programmed for half conduction, and to not cover at all channel regions of the memory cell transistors to be programmed for substantially no-conduction; and

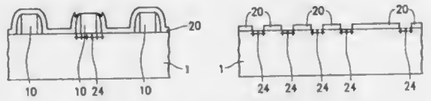
d. implanting ions into exposed areas of channel regions not covered by the photomask.

5,668,030

PROCESS FOR MAKING IDENTIFICATION ALPHANUMERIC CODE MARKINGS FOR MASK ROM DEVICES

Chen-Hui Chung, Hsinchu Hsien; Kuan-Cheng Su, Taipei, and Yi-Chung Sheng, Taichung, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,549
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 438—401 8 Claims



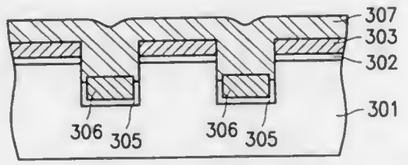
1. A process for fabricating identification alphanumeric code markings on a substrate of mask ROM devices comprising the steps of:
(a) forming a deposited layer on said substrate;
(b) forming a photoresist layer over said deposited layer;
(c) forming a photomask layer by forming a pattern in said photoresist layer revealing channel regions of memory cell transistors to be programmed and revealing a graphical pattern of said alphanumeric code marking;
(d) implementing an etching procedure using the photomask layer as a shielding mask to remove a portion of said deposited layer revealing said graphical pattern of said alphanumeric code markings; and
(e) removing said photomask layer.

5,668,031

METHOD OF FABRICATING HIGH DENSITY FLAT CELL MASK ROM

Chen-Chiu Hsue, Hsinchu; Cheng-Hui Chung, Hsinchu Hsien, and Yi-Chung Sheng, Taichung, all of Taiwan, assignors to United Microelectronics Corp., Taiwan, China

Filed Jun. 4, 1996, Ser. No. 658,673
Claims priority, application Taiwan, Apr. 13, 1996, 85104415
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—275 5 Claims



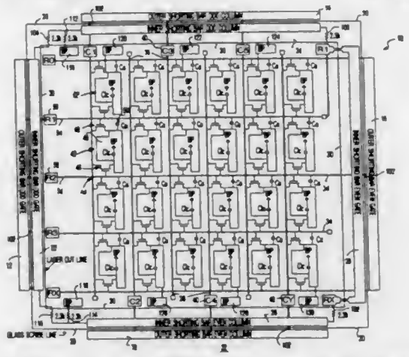
1. A method of fabricating a high density flat cell mask ROM device which is subsequently to be programmed, comprising the following steps:
(a) forming a plurality of trenches in a surface of a silicon substrate at predetermined source-drain electrode areas of the silicon substrate;
(b) forming a dielectric layer on at least surfaces of the trenches;
(c) forming a first polysilicon layer on at least a surface of the dielectric layer;
(d) removing portions of the first polysilicon layer to leave respective residual portions of the first polysilicon layer in the respective trenches;
(e) etching the dielectric layer from at least the surfaces of said trenches using the first polysilicon layer as an etch stop layer;
(f) forming a second polysilicon layer on the surface of the silicon substrate, the first polysilicon layer and the dielectric layer;
(g) etching the second polysilicon layer to substantially a height of the surface of the silicon substrate to form the source-drain electrode areas;
(h) forming a gate oxide layer and then a third polysilicon layer on the surface of the silicon substrate and the source-drain electrode areas; and
(i) defining the gate oxide layer and the third polysilicon layer to form gate electrodes.

5,668,032

ACTIVE MATRIX ESD PROTECTION AND TESTING SCHEME

Scott H. Holmberg, 9921 Longview La., Pleasanton, Calif. 94588, and Quy Vu, 46710 Crawford St., #32, Fremont, Calif. 94539

Filed Jul. 31, 1995, Ser. No. 497,372
Int. Cl.[6] H01L *21/786*; G02F *1/1343*
U.S. Cl. 438—144 16 Claims



1. A method of manufacturing active matrix displays, including a plurality of thin film transistors, each transistor coupling a pixel to a row line and a column line in the matrix displays, wherein the improvement comprises the steps of:
forming at least a first set of inner shorting bars adjacent to the display matrix on a first substrate, connecting in parallel a first one of said shorting bars to all the odd row lines, connecting in parallel a second one of said shorting bars to all the even row lines, connecting in parallel a third one of said shorting bars to all the odd column lines and connecting in parallel a fourth one of said shorting bars to all the even column lines; and
each said shorting bar having a first resistance and connecting said shorting bars to one another in series by resistors having a magnitude one hundred times greater than the first resistance.

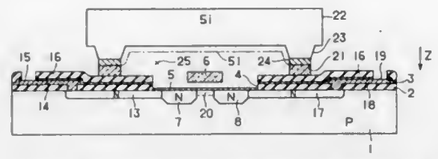
5,668,033

METHOD FOR MANUFACTURING A SEMICONDUCTOR ACCELERATION SENSOR DEVICE

Fumio Ohara, Okazaki; Shinji Yoshihara, Nagoya; Katuhiko Kanamori, Nukata-gun, and Takashi Kurahashi, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 17, 1996, Ser. No. 648,968
Claims priority, application Japan, May 18, 1995, 7-120138
Int. Cl.[6] H01L *21/304*
U.S. Cl. 438—113 20 Claims

1. A method for manufacturing a semiconductor device including a semiconductor wafer having a functional element formed on a surface thereof and a cap covering the functional element with a spatial portion being provided with respect to this functional element on the surface of the semiconductor wafer, comprising:
a functional element forming step of forming a plurality of functional elements on the semiconductor wafer for the formation of the functional elements and forming pads for making wire connection between each functional element and the outside, between the functional element and a predetermined position of the semiconductor wafer at which this semiconductor wafer is to be divided;



a bonding frame forming step of forming a bonding frame surrounding each functional element in a region around each functional element on the surface of the semiconductor wafer and on a side nearer to the functional element than to the pad;
a bonding step of bonding a cap forming wafer having a leg portion at a position corresponding to the bonding frame, onto the semiconductor wafer by making bondage between the leg portion and the bonding frame; and
a cutting step of cutting the semiconductor wafer at the predetermined position thereof at which this semiconductor wafer is to be divided and also cutting the cap forming wafer at a cutting position on a side nearer to the bonding frame than to the position of the cap forming wafer that opposes the pad.

5,668,034

PROCESS FOR FABRICATING A HIGH VOLTAGE MOS TRANSISTOR FOR FLASH EEPROM APPLICATIONS HAVING A UNI-SIDED LIGHTLY DOPED DRAIN

George E. Sery, San Francisco, and Jan A. Smudski, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 237,632, May 4, 1994, abandoned, which is a division of Ser. No. 86,140, Jul. 1, 1993, Pat. No. 5,580,807, which is a division of Ser. No. 804,093, Dec. 6, 1991, abandoned. This application May 14, 1996, Ser. No. 645,691
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 438—266 14 Claims



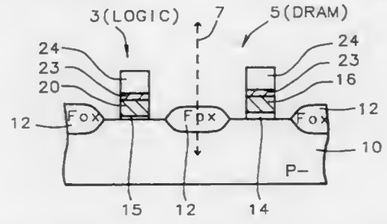
1. A process for fabricating a memory circuit, said circuit comprising high voltage transistors, array transistors and peripheral transistors, said process comprising:
a. forming a high voltage transistor in said process comprising the steps of:
forming a high voltage transistor active region of a first conductivity type on a silicon substrate;
forming a high voltage transistor gate insulator comprising a first oxide layer on said high voltage transistor active region;
forming a high voltage transistor control gate above said high voltage transistor gate insulator comprising a first conductive layer;
forming a first masking member above said high voltage transistor control gate;
performing a first implant of a second conductivity type, said first implant being aligned with said masking member to form a source, a drain, and a channel region there between;
forming a second masking member, said second masking member disposed above at least a portion of said first masking member and at least a portion of said drain; and,
performing a second implant of said second conductivity type of form a source subregion within said source and a drain subregion within said drain, of dopant than said source and said subregion having a greater concentration being aligned with said high voltage transistor control gate, said drain subregion spaced a distance from being aligned with said high voltage transistor control gate;
b. forming an array transistor in an array active region formed on said silicon substrate, said array transistor having an array transistor source, an array transistor drain and an array transistor gate; and
c. forming a peripheral transistor in a peripheral transistor active region formed on said silicon substrate, said peripheral transistor having a peripheral transistor source, a peripheral transistor drain and a peripheral transistor gate;
wherein said process contemporaneously forms said high voltage transistors, said array transistors, and said peripheral transistors.

5,668,035

METHOD FOR FABRICATING A DUAL-GATE DIELECTRIC MODULE FOR MEMORY WITH EMBEDDED LOGIC TECHNOLOGY

Chung Hsin Fang; Julie Huang; Chen-Jong Wang, and Mong-Song Liang, all of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-chu, Taiwan

Filed Jun. 10, 1996, Ser. No. 661,259
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—239 20 Claims



1. A method for fabricating a dual gate oxide on a semiconductor substrate for field effect transistor gate electrodes comprising the steps of:
forming field oxide areas on said semiconductor substrate surrounding and electrically isolating device areas, said device areas comprised of a first device area and a second device area;
forming a first gate oxide on said first and second device areas by thermal oxidation;
depositing a first polysilicon layer over said first gate oxide layer and elsewhere on said substrate;
patterning by photoresist masking and anisotropic plasma etching said first polysilicon layer leaving portions over said first device area and exposing said first gate oxide over said second device area;
removing said first gate oxide layer from said second device area using a wet oxide etch;
forming a second gate oxide layer by thermal oxidation on said second device area and concurrently forming a silicon oxide layer on said first polysilicon layer;
depositing a second polysilicon layer over said second gate oxide layer in said second device area and over said silicon oxide layer on said first polysilicon layer;
patterning said second polysilicon layer by photoresist masking and anisotropic plasma etching, leaving portions of said second polysilicon layer over said second device area and removing said second polysilicon layer to said silicon oxide layer on said first polysilicon layer over said first device area;
removing said silicon oxide layer on said first polysilicon layer using a wet etch;
depositing an insulating layer on said first and second polysilicon layers;
patterning by photoresist masking and anisotropic plasma etching said insulating layer and concurrently said first and second polysilicon layers, and thereby completing said field effect

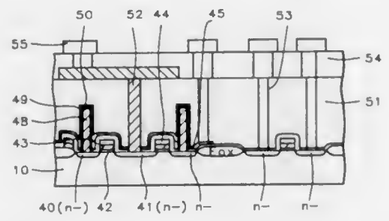
transistor gate electrodes having said first gate oxide layer over said first device areas and said second gate oxide layer over said second device areas.

5,668,036

FABRICATION METHOD OF THE POST STRUCTURE OF THE CELL FOR HIGH DENSITY DRAM

Ching-Tzong Sune, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jun. 21, 1996, Ser. No. 667,695
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—253 43 Claims



1. A method of forming multipurpose unitary post structures as storage nodes in dynamic random access memory (DRAM) cells comprising the steps of:

providing a semiconductor substrate over which are formed first polysilicon I gates on gate oxide;

depositing over said substrate a layer of silicon nitride (SIN);

depositing over said SiN a first layer of dielectric;

planarizing said first dielectric layer;

forming a mask over said first dielectric layer;

opening first set of contact holes through said first dielectric layer;

forming said storage node openings in said first dielectric layer for said unitary post structures;

etching native oxide formed in said contact holes;

depositing second polysilicon II over said substrate;

etching back said polysilicon II layer;

removing said first dielectric layer to form said unitary post structures;

removing said silicon nitride layer;

depositing dielectric film over said substrate;

depositing third polysilicon III layer over said dielectric film;

etching said polysilicon III layer to form outer node electrode;

depositing second dielectric layer over said substrate;

planarizing said second dielectric layer;

opening second set of contact holes through said second dielectric layer;

opening contact holes on the periphery of chip sites;

depositing fourth polysilicon IV over said substrate;

etching back said polysilicon IV layer;

depositing third dielectric layer over said substrate;

planarizing said third dielectric layer;

opening third set of contact holes through said third dielectric layer;

depositing metal layer over said substrate;

etching said metal layer to form patterns; and

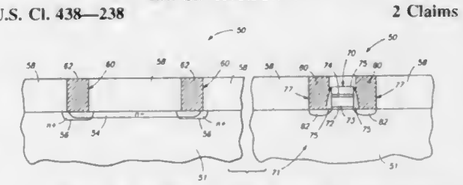
depositing a passivation layer over said substrate.

5,668,037

METHOD OF FORMING A RESISTOR AND INTEGRATED CIRCUITRY HAVING A RESISTOR CONSTRUCTION

Kirk Prall; Pierre C. Fazan; Aftab Ahmad; Howard E. Rhodes; Werner Juengling; Pai-Hung Pan, and Tyler Lowrey, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 539,876, Oct. 6, 1995. This application Jul. 11, 1996, Ser. No. 679,705
Int. Cl.[6] H01L *21/70*
U.S. Cl. 438—238 2 Claims



1. A method of forming a resistor within a semiconductive substrate from semiconductive material comprising the following steps:

doping a first region of the semiconductive substrate with a conductivity enhancing impurity of a first type and to a first electrically resistive dopant concentration;

forming a spaced pair of second diffusion regions of conductivity enhancing impurity of the first type within the semiconductive substrate to a second electrically conductive dopant concentration, the spaced second diffusion regions contacting the first region and having first region semiconductive material extending therebetween;

forming a transistor gate in a second region of the semiconductive substrate, the gate being encapsulated by an insulative material;

after forming the second diffusion regions and transistor gate, forming an insulating layer outwardly of the semiconductive substrate and over both the first region and the transistor gate;

forming a pair of first openings into the insulating layer to the semiconductive substrate, the respective first openings overlying the pair of second diffusion regions, the forming of the pair of first openings also comprising in the same step etching a pair of second openings through the insulating layer to the semiconductive substrate immediately adjacent the transistor gate in a manner substantially selective relative to the encapsulating insulative material, the etching exposing the substrate while etching the insulating layer selectively relative to the encapsulating insulative material, wherein a portion of said insulating layer covers all of the transistor gate after said etch; and

forming electrically conductive material within the pair of first openings.

5,668,038

ONE STEP SMOOTH CYLINDER SURFACE FORMATION PROCESS IN STACKED CYLINDRICAL DRAM PRODUCTS

Yuan-Chang Huang; Chen-Jong Wang, and Mong-Song Liang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

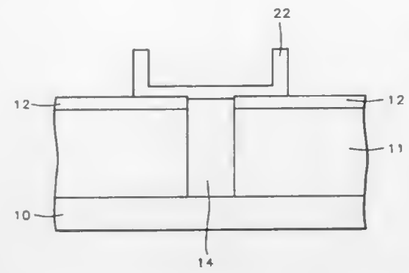
Filed Oct. 9, 1996, Ser. No. 728,021
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—396 21 Claims

1. A method of forming a polysilicon cylinder having a smooth top surface comprising;

a) providing a barrier layer over a first insulating layer on a semiconductor substrate, a polysilicon plug extending through said barrier layer and said insulating layer, a second insulating layer over portions of said barrier layer, said second insulating layer having an opening over said polysilicon plug and over portions of said barrier layer adjacent to said polysilicon plug, said opening defined by sidewalls of said second insulating layer, a polysilicon layer over said second insulating layer, over said sidewalls of said second insulating layer, over said portions of said barrier layer adjacent to said polysilicon plug and over said polysilicon plug, a gap filling third insulating layer over said polysilicon layer;

b) etching back portions of said gap filling third insulating layer and said polysilicon layer in a one step etch process to form a polysilicon cylinder; said one step etch process comprised of two stages: (1) an insulating layer etch stage and (2) a polysilicon etch stage, said insulating layer etch stage comprising a plasma enhanced etch using CHF_3, CF_4, and Argon gasses, and said polysilicon etch stage using CF_4, SF_6, and Argon gasses; and

c) removing said second insulating layer and said gap filling third insulating layer.

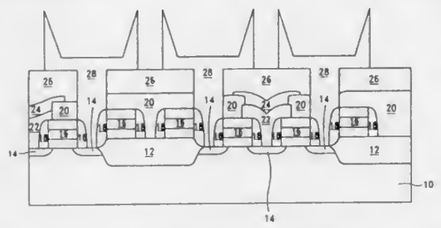


5,668,039

METHOD FOR FORMING CROWN-SHAPE CAPACITOR NODE WITH TAPERED ETCHING

Yeh-Sen Lin, Tao-Yuan, Taiwan, assignor to Vanguard International Semiconductor Corp., Hsinchu, Taiwan

Filed Dec. 5, 1996, Ser. No. 759,233
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—387 25 Claims



1. A method for forming an integrated circuit capacitor node on a semiconductor substrate, said semiconductor substrate having a first dielectric layer with a hole formed therein, said method comprising:

forming a first conductive layer over said semiconductor substrate, said first conductive layer filling said hole;

forming a mask layer over said first conductive layer;

removing portions of said first conductive layer not covered by said mask layer, wherein a tapered trench in said first conductive layer is formed;

removing said mask layer;

forming a second dielectric layer on said first conductive layer, said second dielectric layer filling said tapered trench;

removing portions of said first conductive layer not covered by said second dielectric layer; and

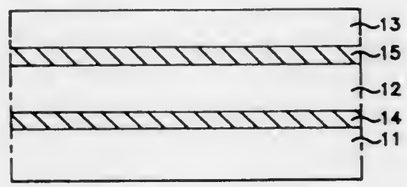
removing said second dielectric layer, wherein a residual portion of said first conductive layer has a tapered sidewall, said residual portion of said first conductive layer implementing said capacitor node.

5,668,040

METHOD FOR FORMING A SEMICONDUCTOR DEVICE ELECTRODE WHICH ALSO SERVES AS A DIFFUSION BARRIER

Jeong Soo Byun, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation of Ser. No. 437,228, May 8, 1995, abandoned. This application Feb. 14, 1996, Ser. No. 601,621
Int. Cl.[6] H01L *21/283*
U.S. Cl. 438—396 11 Claims



1. A method of forming a semiconductor device comprising the steps of:

depositing a first layer including a refractory metal transition element on a substrate;

depositing a second layer including a group VIII near noble metal transition element on said first layer;

subjecting said first and second layers to a heat treatment, said heat treatment including a pre-purge step;

exposing said first and second layers to an ammonia ambient at least during said pre-purge step of said heat treatment;

forming a third layer including a dielectric material on said second layer;

forming a fourth layer on said third layer, said fourth layer including a group VIII metal transition element,

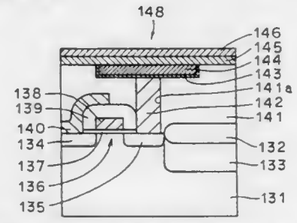
wherein during said heat treatment, a nitride film is formed between said first and second layers and a silicide film is formed between said first layer and said substrate.

5,668,041

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR

Tomonori Okudaira; Takeharu Kuroiwa; Nobuo Fujiwara, and Keiichiro Kashihara, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 442,925, May 17, 1995, Pat. No. 5,534,458, which is a division of Ser. No. 255,854, Jun. 7, 1994, Pat. No. 5,442,213. This application Apr. 15, 1996, Ser. No. 632,194
Claims priority, application Japan, Jun. 23, 1993, 5-152364
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—240 1 Claim



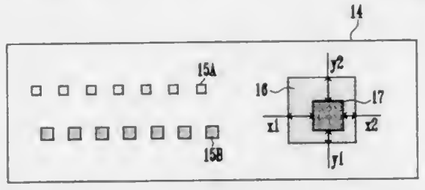
1. A method of manufacturing a semiconductor device comprising the steps of:

forming an impurity region on a main surface of semiconductor substrate,

forming an interlayer insulation film on the main surface of said semiconductor substrate to cover said impurity region, including a first contact hole of a first diameter and reaching said

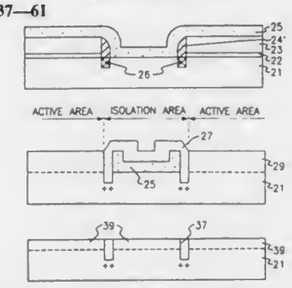
impurity region, and a second contact hole of a second diameter greater than said first diameter and provided above said first contact hole in communication therewith,
forming a buried conductive layer filling said first contact hole, and in contact with a part of the top face of said impurity region,
forming a lower electrode layer, filling said second contact hole, in contact with the surface of said buried conductive layer, and having a top face substantially flush with a top face of said interlayer insulation film,
forming a high dielectric film of a high dielectric constant material on said interlayer insulation film to come into contact with said lower electrode, and
forming an upper electrode on said high dielectric film.

5,668,042
METHOD FOR ALIGNING MICRO PATTERNS OF A SEMICONDUCTOR DEVICE
Sang Man Bae, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltr., Kyoungki-do, Rep. of Korea
Filed Sep. 26, 1996, Ser. No. 722,877
Claims priority, application Rep. of Korea, Sep. 29, 1995, 95-33160
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 438—18 **12 Claims**



1. A method for aligning micro patterns of a semiconductor device, comprising the steps of:
preparing a semiconductor wafer provided with a plurality of dies and selected mark portions of overlay measuring marks;
forming a first etchable layer serving to provide desired patterns, over the semiconductor wafer;
forming, on portions of the first etchable layer respectively disposed over selected portions of the dies, first photoresist film patterns serving as an etch mask for the patterns which will be provided by the first etchable layer;
selectively removing the first etchable layer by use of the first photoresist film patterns as a mask, thereby forming patterns of the first etchable layer which provide the remaining mark portions of the overlay measuring marks and alignment marks arranged on one side of the overlay measuring marks;
removing the first photoresist film patterns;
measuring the degree of misalignment for the selected dies by use of the overlay measuring marks which includes inner and outer marks provided by the selected and remaining mark portions;
forming a second etchable layer over the entire upper surface of the resulting structure obtained after the removal of the first photoresist film patterns;
forming second photoresist film patterns on portions of the second etchable layer disposed over normal portions of the dies other than the selected dies by use of the same light exposure mask as used in the formation of the first photoresist film patterns, under the condition in which a misalignment between the semiconductor wafer and the light exposure mask is corrected based on the measured degree of misalignment by a stepper stored with positions of the alignment marks in its working files; and
etching the second etchable layer by use of the second photoresist film patterns as a mask, thereby forming patterns of the second etchable layer.

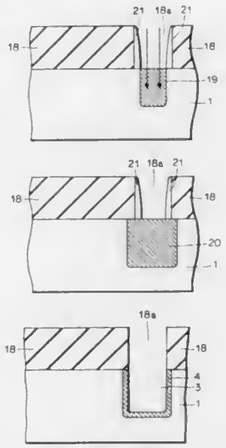
5,668,043
METHOD FOR FORMING ISOLATED REGIONS IN A SEMICONDUCTOR DEVICE
Sang Hoon Park, Kyoungkido, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea
Filed Feb. 22, 1996, Ser. No. 605,691
Claims priority, application Rep. of Korea, Feb. 24, 1995, 1995-3727
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—61 **16 Claims**



1. A method for isolating a semiconductor device, comprising the steps of:
forming a first insulating layer exposing a field region of a substrate;
forming a transition metal spacer on said substrate and on the sidewall of said first insulating layer;
forming a second insulating layer on the entire resultant structure;
diffusing ions of said transition metal spacer into said substrate by thermally treating said substrate;
polishing said second insulating layer until said transition metal spacer is exposed, a portion thereof remaining not to be removed;
forming a trench in said substrate by removing said transition metal spacer and ion-diffused substrate under said transition metal spacer;
forming a third insulating layer on the entire resultant structure, filling up the said trench;
forming a photoresist pattern on said third insulating layer and on said field region;
etching said third insulating layer using said photoresist pattern as an etching barrier;
exposing a portion of said substrate by removing said. photoresist pattern and said first insulating layer; and
forming epitaxial layers on said exposed substrate as active regions.

9. A method for isolating a semiconductor device, comprising the steps of:
forming a first insulating layer exposing a portion of a substrate;
forming a transition metal spacer on said substrate and on the sidewall of said first insulating layer;
forming a second insulating layer on the entire resultant structure;
diffusing ions of said transition metal spacer into said substrate by thermally treating said substrate;
polishing said second insulating layer such that said transition metal spacer is exposed, a portion thereof remaining not to be removed;
forming a trench in said substrate by removing said transition metal spacer and ion-diffused substrate under said transition metal spacer;
forming a third insulating layer on the entire resultant structure, filling up the said trench;
polishing the stacked layers until said transition metal spacer is overall exposed, performing the planarization process;
exposing a portion of said substrate by removing said second insulating layer and said first insulating layer, which remain not to be removed, such that said substrate is exposed; and
forming epitaxial layers on said exposed substrate as active regions.

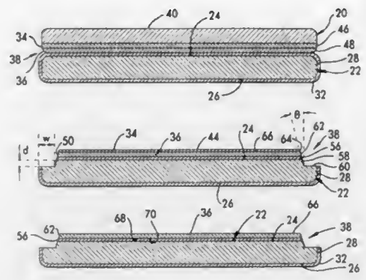
5,668,044
METHOD OF FORMING ELEMENT ISOLATING REGION IN A SEMICONDUCTOR DEVICE
Yoshikazu Ohno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 457,006, Jun. 1, 1995, abandoned. This application May 28, 1996, Ser. No. 653,982
Claims priority, application Japan, Dec. 28, 1994, 6-326970
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—433 **5 Claims**



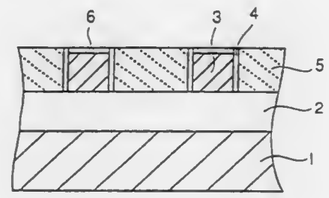
1. A method of forming an element isolating region in a semiconductor device, comprising the steps of:
forming a mask consisting of an insulating film having an opening on an element isolation forming region, on a main surface of a semiconductor substrate;
forming a side spacer consisting of an insulating film different from said mask, in contact with an inner wall surface of the opening of said mask;
introducing an impurity having same conductivity type as said semiconductor substrate from above said mask and said side spacer by ion implantation, for forming an ion-implanted impurity layer having a prescribed depth at the main surface of the semiconductor substrate exposed through said mask and said side spacer;
heat treating the semiconductor substrate in which said ion-implanted impurity layer is formed, and diffusing ions introduced to said ion-implanted impurity layer to form an impurity layer;
removing said side spacer, forming a trench by etching said impurity layer on which the opening of said mask is positioned, by using said mask, so that said impurity layer in contact with side and bottom surfaces of said trench serves as a channel stopper; and
filling said trench with an insulating material.

5,668,045
PROCESS FOR STRIPPING OUTER EDGE OF BESOI WAFERS
David I. Golland, Chesterfield; Robert A. Craven, Olivette, and Ronald D. Bartram, Webster Groves, all of Mo., assignors to SIBond, L.L.C., St. Peters, Mo.
Filed Nov. 30, 1994, Ser. No. 346,695
Int. Cl.[6] H01L *21/20;21/461*
U.S. Cl. 438—459 **17 Claims**

1. A process for stripping the outer edge of a bonded BESOI wafer comprising a handle wafer having a face, an oxide layer on the face of the handle wafer, a device layer bonded to the oxide layer, the device layer having an edge margin, and a p^+ layer on the device layer, the p^+ layer having an edge margin and an exposed face, the process comprising
masking the exposed face of the p^+ layer;
removing the edge margins of the p^+ layer and the device layer, and
removing the p^+ layer to expose the device layer.



5,668,046
METHOD OF PRODUCING A SEMICONDUCTOR ON INSULATING SUBSTRATE, AND A METHOD OF FORMING TRANSISTOR THEREON
Risho Koh, and Atsushi Ogura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Division of Ser. No. 857,943, Mar. 26, 1992, Pat. No. 5,427,976. This application Mar. 30, 1995, Ser. No. 413,613
Claims priority, application Japan, Mar. 27, 1991, 3-085893
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—481 **13 Claims**



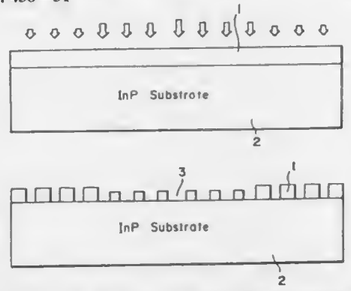
1. A method of producing a semiconductor on an insulating substrate (SOIS) with use of a lateral vapor phase epitaxial growth, comprising the steps of:
depositing a second material on a surface having protrusions and a depression, said surface formed at least in part of an insulator made of a first material formed on a semiconductor substrate so as to contact a part of the second material with a semiconductor monocrystal area formed in the insulator,
patterning the second material by etching to have protrusions and a depression vertical to a surface of insulator formed on the semiconductor substrate and for obtaining a longitudinally and uniformly extended section,
coating the second material with a cover made of an insulation film,
providing an opening apart from the semiconductor monocrystal area on a part of the cover,
removing the second material from the opening by the selective etching of the second material to form a slit, and
selectively and epitaxially growing a semiconductor in the slit with use of the semiconductor monocrystal area as a seed whereby to produce a monocrystal semiconductor with a uniform section extended to a length.

5,668,047

METHOD FOR FABRICATING INP DIFFRACTION GRATING AND DISTRIBUTED FEEDBACK LASER

Yoshiharu Muroya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,259
Claims priority, application Japan, May 31, 1993, 5-129185
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—31 **5 Claims**



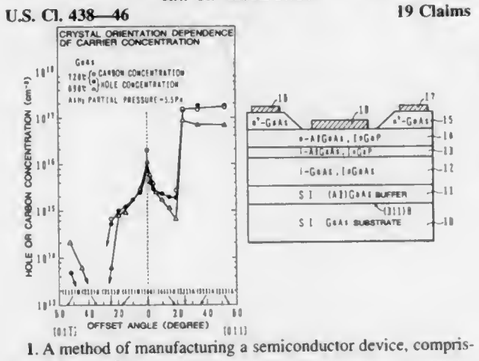
1. A method for fabricating an InP diffraction grating for a distributed feedback semiconductor laser, said method comprising the steps of:
applying an electron beam resist on an InP semiconductor substrate;
exposing said electron beam resist to an electron beam and controlling heights of resist patterns by using fixed electron beam diameters and by varying incident electron doses;
developing said electron beam resist; and
dry-etching said semiconductor substrate using said electron beam resist as a mask,
said electron beam exposure being such that said incident electron doses are made larger at a center portion than at peripheral portions of said diffraction grating.

5,668,048

METHOD OF MAKING A SEMICONDUCTOR DEVICE UTILIZING CRYSTAL ORIENTATION DEPENDENCE OF IMPURITY CONCENTRATION

Makoto Kondo; Chikashi Anayama, and Hajime Shoji, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 3, 1995, Ser. No. 398,506
Claims priority, application Japan, Mar. 4, 1994, 6-034883
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—46 **19 Claims**



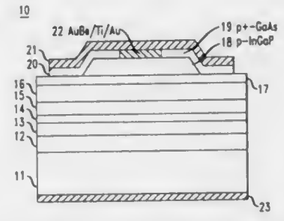
1. A method for manufacturing a semiconductor device, comprising the steps of:
preparing a substrate made of a group III–V compound semiconductor and having a flat surface exposing an (n 1 1)A plane, wherein n is a real number of about $1 \leqq n \leqq$ about 3;
epitaxially growing an n-type layer on said substrate;
epitaxially growing a p-type layer containing carbon as the p-type impurity on said n-type layer; and
epitaxially growing another n-type layer on said p-type layer, said another n-type layer being made of a material having a forbidden band width wider than an inhibited band width of said p-type layer.

5,668,049

METHOD OF MAKING A GAAS-BASED LASER COMPRISING A FACET COATING WITH GAS PHASE SULPHUR

Utpal Kumar Chakrabarti, Allentown, Pa.; William Scott Hobson, Summit, N.J.; Fan Ren, Warren, N.J., and Melinda Lamont Schnoes, South Amboy, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 31, 1996, Ser. No. 692,834
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—33 **6 Claims**



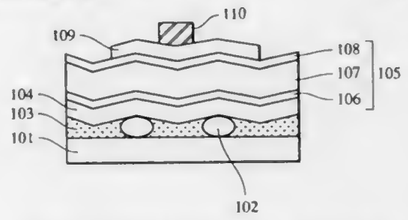
1. Method of making a GaAs-based semiconductor laser having a cleaved laser facet, the method comprising
a) providing a body comprising a GaAs substrate with a Ga- and As-containing multilayer semiconductor structure thereon;
b) cleaving the body into one or more laser bars, a given laser bar having a cleavage surface;
c) introducing the given laser bar into an evacuable deposition chamber and depositing a dielectric layer on said at least one cleavage surface; and
d) separating said laser bar into two or more laser chips;
CHARACTERIZED in that the method comprises
e) exposing, prior to depositing of the dielectric layer, the cleavage surface in the deposition chamber to a plasma of H_2S, and depositing the dielectric layer on the cleavage surface without exposing the laser bar to the ambient atmosphere.

5,668,050

SOLAR CELL MANUFACTURING METHOD

Yukiko Iwasaki, Nara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,050
Claims priority, application Japan, Apr. 28, 1994, 6-092758
Int. Cl.[6] H01L *31/06*
U.S. Cl. 438—69 **14 Claims**



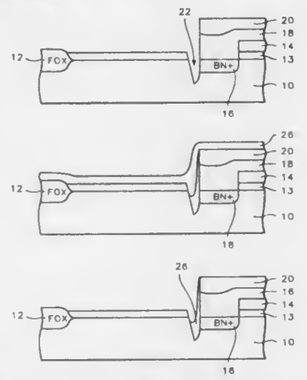
1. A method of manufacturing a solar cell comprising at least a metal layer, a semiconductor layer and a transparent electrode, said metal layer being comprised of cohered metal and metal, the method comprising the steps of:
(1) forming a first metal on a substrate;
(2) annealing said first metal to form a plurality of spots of cohered metal, wherein the interval between each spot is not less than 0.5 μm; and
(3) forming a second metal on and/or around said cohered metal, said cohered metal and said second metal thereby forming said metal layer.

5,668,051

METHOD OF FORMING POLY PLUG TO REDUCE BURIED CONTACT SERIES RESISTANCE

Chan Yuan Chen, and Shih Bin Peng, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Aug. 29, 1996, Ser. No. 705,453
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—558 **18 Claims**



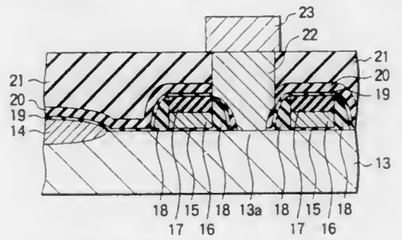
1. A method of forming a buried contact junction in the fabrication of an integrated circuit device comprising:
providing a layer of gate silicon oxide over the surface of a semiconductor substrate;
depositing a first layer of polysilicon overlying said gate silicon oxide layer;
etching away said first polysilicon and said gate oxide layer where they are not covered by a mask to provide an opening to said semiconductor substrate where planned said buried contact junction will be formed;
depositing a second polysilicon layer overlying said first polysilicon layer and said planned buried contact junction and doping said second polysilicon layer;
driving in dopant from said second polysilicon layer to form said buried contact junction;
depositing a polycide layer overlying said second polysilicon layer;
etching away said polycide and said second polysilicon layers where they are not covered by a mask to provide a polysilicon contact overlying said buried contact junction and providing an opening to said semiconductor substrate where a planned source/drain region will be formed wherein said planned source/drain region is adjacent to said buried contact junction and wherein a portion of said second polysilicon layer not at said polysilicon contact remains as residue;
etching away said residue wherein a trench is etched into said semiconductor substrate at the junction of said planned source/drain region and said buried contact junction;
depositing a doped third polysilicon layer overlying said polysilicon contact and within said trench;
etching away said doped third polysilicon layer leaving said doped third polysilicon layer only on the sidewall of said polysilicon contact and within said trench; and
implanting ions to form said planned source/drain region wherein a conduction channel between said source/drain region and said buried contact junction is provided by said doped third polysilicon layer within said trench completing said formation of said buried contact junction in the fabrication of said integrated circuit device.

5,668,052

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Junko Matsumoto, and Shigenori Sakamori, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1996, Ser. No. 678,538
Claims priority, application Japan, Nov. 7, 1995, 7-288546
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—624 **8 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:
forming a wiring on one major surface of a semiconductor substrate;
forming an insulating film covering the upper and side surfaces of said wiring;
forming an etching stopper film on the entire surface of said semiconductor substrate;
forming an insulating interlayer on said etching stopper film;
forming a reflection prevention film on said insulating interlayer;
forming a resist pattern having a pattern having the same shape as that of a contact hole on said reflection prevention film;
removing said reflection prevention film and said insulating interlayer located on a contact formation region by using said resist pattern as an etching mask;
removing said resist pattern and simultaneously removing said reflection prevention film and said etching stopper film on the contact formation region by etching to form a contact hole; and
exposing one major surface of said semiconductor substrate of the contact hole formation region and burying a conductive material in said contact hole to form a contact.

5,668,053

METHOD FOR FABRICATING MULTILAYER SEMICONDUCTOR DEVICE

Takeshi Akimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,316
Claims priority, application Japan, Dec. 28, 1993, 5-336648
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—625 **13 Claims**

1. A method for fabricating a multilayer semiconductor device, comprising the steps of:
providing a conductive layer on a substrate;
forming a barrier layer on the conductive layer;
forming an insulation layer on the barrier layer;
selectively etching the insulation layer using the barrier layer as an etch stop to form a through-hole; and

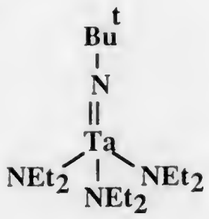
selectively removing the barrier layer at the bottom of the through-hole from the conductive layer.

5,668,054

PROCESS FOR FABRICATING TANTALUM NITRIDE DIFFUSION BARRIER FOR COPPER MATALLIZATION

Shi-Chung Sun; Hien-Tien Chiu, both of Taipei, and Ming-Hsing Tsai, Chiayi, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jan. 11, 1996, Ser. No. 584,749
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—653 **8 Claims**



1. A process for fabricating a metal nitride diffusion barrier for the metallization of semiconductor devices comprising the steps of:

preparing a semiconductor device fabricated over the surface of a silicon substrate having a component with a fabricated contact opening;

performing a metal-organic low-pressure chemical-vapor-deposition procedure depositing a layer of metal nitride film over the surface of said silicon substrate and covering said contact opening;

depositing a copper layer over the surface of said metal nitride film;

fabricating a photoresist layer for patterning said deposited copper layer and said metal nitride film; and

patterning said deposited copper layer and said metal nitride film to form said film as a metallization diffusion barrier;

wherein said metal-organic low-pressure chemical-vapor-deposition procedure includes depositing a layer of tantalum nitride utilizing a metal-organic precursor terbutylimidotris-diethylamido tantalum (TBTDET).

5,668,055

METHOD OF FILLING OF CONTACT OPENINGS AND VIAS BY SELF-EXTRUSION OF OVERLYING COMPRESSIVELY STRESSED MATAL LAYER

Zheng Xu, Foster City; Tse-Yong Yao; Hoa Kieu, both of Suonyvale, and Julio Aranovich, Palo Alto, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

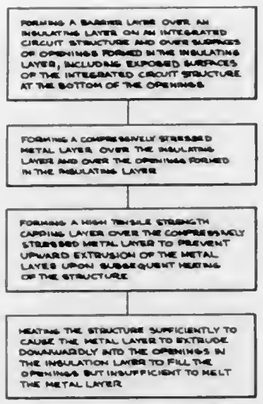
Filed May 5, 1995, Ser. No. 435,774
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—637 **21 Claims**

1. A process for filling openings in an insulating layer on an integrated circuit structure with metal to provide an electrical connection between one or more structures beneath the insulating layer and one or more contacts above the insulating layer which comprises:

(a) forming over an integrated circuit structure a layer of insulating material having one or more openings therein extending from an upper surface of said insulating layer to said integrated circuit structure underlying said insulating layer;

(b) forming over said insulating layer and over the top of said one or more openings therein a compressively stressed metal layer;

(c) then forming, over said compressively stressed metal layer previously formed, a capping layer of high tensile strength



material whereby compressive stress is formed in said compressively stressed metal layer prior to forming said capping layer;

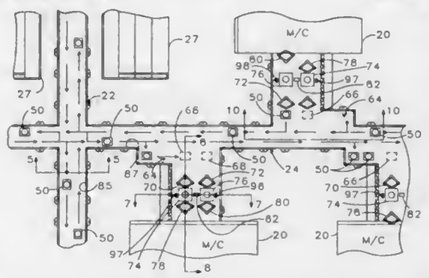
(d) then heating said structure to a temperature which will permit said compressively stressed metal layer to extrude into said one or more openings to completely fill said one or more openings in said insulating layer with metal from said compressively layer metal layer.

5,668,056

SINGLE SEMICONDUCTOR WAFER TRANSFER METHOD AND MANUFACTURING SYSTEM

Hong Jen Wu; Taylor Chen; Jack Lai, and I. I. Chen, all of Hsin chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-chu, Taiwan

Continuation-in-part of Ser. No. 628,437, Dec. 17, 1990, Pat. No. 5,399,531. This application Mar. 21, 1995, Ser. No. 407,702
Int. Cl.[6] H01L *21/68*
U.S. Cl. 438—106 **8 Claims**



1. A method of manufacturing semiconductor devices in a production line having (a) a plurality of semiconductor wafer processing stations, (b) a multilevel track system associated with the processing stations, (c) a plurality of guided transport vehicles adapted to operate independently on said multilevel tracks and each of which carries a wafer carrier between said processing stations, (d) a plurality of wafer carriers, each adapted to support and enclose a single wafer, and (e) a stocker station having a wafer carrier loading area where unprocessed wafers are introduced into the system, and a wafer carrier unloading area where processed wafers are removed from the system, each of said processing stations having (1) a transport vehicle buffer having a load zone and an unload zone, (2) a wafer carrier buffer, (3) a wafer carrier handling means adjusted to transfer wafer carriers between transport vehicles and said wafer carrier buffer, and (4) a wafer handling means to move wafers between the wafer carriers and a wafer

processing apparatus at each of said processing stations, the method comprising the steps of:

loading a process sequence into an information storage memory on each wafer carrier, and a wafer onto the wafer carrier;

loading the wafer carrier, at the stocker station wafer carrier loading area, onto a transport vehicle;

moving the transport vehicle along the multilevel track system to a designated processing station in response to the information contained in the process sequence stored in the information storage memory;

unloading the wafer carrier at the designated processing station;

performing a designated process at the designated processing station;

altering the process sequence of the wafer carrier, to indicate the designated process step performed at the designated processing station has been completed;

loading the wafer carrier onto one of the transport vehicles;

moving the one transport vehicle to a next processing station in response to the altered process sequence in the wafer carrier;

repeating the method steps contained in the process sequence until the process sequence steps in the wafer carrier are completed;

moving the wafer carriers along the multilevel track system to the stocker station; and

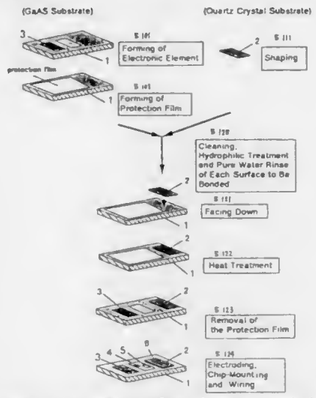
unloading the wafer carrier at the stocker station wafer carrier unloading area.

5,668,057

METHODS OF MANUFACTURE FOR ELECTRONIC COMPONENTS HAVING HIGH-FREQUENCY ELEMENTS

Kazuo Eda, Nara; Yutaka Taguchi, Osaka; Akihiro Kanaboshi, Neyagawa, and Tetsuyoshi Ogura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 182,561, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 131,375, Oct. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 849,609, Mar. 11, 1992, abandoned, and a continuation-in-part of Ser. No. 942,269, Sep. 9, 1992, abandoned, and a continuation-in-part of Ser. No. 81,805, Jun. 23, 1993, abandoned, and a continuation-in-part of Ser. No. 137,843, Oct. 15, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,932
Claims priority, application Japan, Mar. 13, 1991, 3-47872; Jun. 23, 1992, 4-164451; Jun. 23, 1992, 4-164452; Jul. 1, 1992, 4-174014; Jul. 3, 1992, 4-176605; Oct. 5, 1992, 4-266158; Oct. 13, 1992, 4-274002; Oct. 13, 1992, 4-274003; Oct. 20, 1992, 4-281473; Oct. 20, 1992, 4-281474
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—113 **26 Claims**



1. A manufacturing method of an electro-acoustic hybrid integrated circuit, comprising the steps of:

providing a semiconductor substrate having opposite first and second surfaces;

providing a piezoelectric plate having opposite first and second surfaces;

treating said first surface of said semiconductor substrate and said second surface of said piezoelectric plate to make them hydrophilic; and

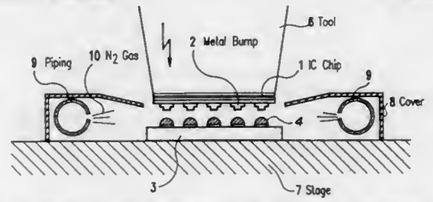
attaching said semiconductor substrate directly to said piezoelectric plate with said treated surfaces to form direct bonding.

5,668,058

METHOD OF PRODUCING A FLIP CHIP

Michinobu Tanioka, and Motoji Suzuki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 580,152
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—108 **24 Claims**



1. A method of producing a flip chip, comprising the steps of:

applying a flux to a circuit board to which solder is applied beforehand;

causing the flux to reflow;

rinsing the circuit board after the reflow;

mounting an integrated circuit (IC) chip having metal bumps on electrodes thereof to the circuit board;

melting the solder by heating the solder at a temperature higher than a melting point of the solder in an inactive atmosphere having an oxygen concentration; and

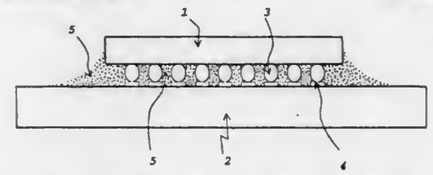
maintaining said IC chip and said circuit board at a pressure for a time period.

5,668,059

SOLDER INTERCONNECTION STRUCTURE AND PROCESS FOR MAKING

Frederick Richard Christie; Kostas I. Papathomas, both of Endicott, and David Wei Wang, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 59,003, May 6, 1993, and a continuation-in-part of Ser. No. 737,473, Jul. 30, 1991, Pat. No. 5,250,848, which is a division of Ser. No. 624,973, Dec. 10, 1990, Pat. No. 5,089,440, which is a division of Ser. No. 493,126, Mar. 14, 1990, Pat. No. 4,999,699. This application Jul. 12, 1996, Ser. No. 679,648
Int. Cl.[6] H01L *21/60*
U.S. Cl. 438—118 **24 Claims**



1. A method of increasing the fatigue life of solder interconnections between a semiconductor device and a supporting substrate comprising attaching said device to said substrate by a plurality of solder connections that extend from the supporting substrate to

electrodes on said semiconductor device to form a gap between said supporting substrate and said semiconductor device;

filling said gap with a composition that contains:

A. binder selected from the group of a cycloaliphatic epoxide, cyanate ester, prepolymer of cyanate ester and mixtures thereof, said binder having a viscosity at room temperature of no greater than about 5,000 centipoise;

B. filler chosen from the group consisting of aluminum oxide, aluminum nitride, silicon nitride, silicon carbide, beryllium oxide, boron nitride, and diamond powder, said filler having a maximum particle size of 31 microns; wherein the amount of A is about 60 to about 25 percent by weight of the total of A and B, and correspondingly the amount of B is about 40 to about 75 percent by weight based upon the amount of A and B; and

curing said composition.

5,668,060

OUTER LEAD FOR A SEMICONDUCTOR IC PACKAGE AND A METHOD OF FABRICATING THE SAME

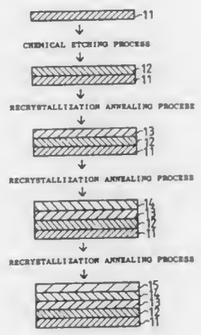
Kazuhisa Sato, and Kazuo Kimura, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Negoya, Japan

Divlsion of Ser. No. 236,195, May 4, 1994, abandoned. This application May 31, 1995, Ser. No. 454,726

Claims priority, application Japan, Sep. 3, 1993, 5-243833

Int. Cl.[6] H01L *21/60*

U.S. Cl. 438—123 **20 Claims**



1. A method of fabricating an outer lead for a semiconductor IC package, comprising:

providing a base plate having at least one surface;

forming a first plated base layer over the surface of the base plate by plating;

crystal-growing the grains of the first plated base layer by heat treatment;

forming a second plated base layer over the heat treated first plated base layer by plating;

crystal-growing the grains of the second plated base layer by heat treatment;

forming a third plated base layer over the heat treated second plated base layer by plating;

crystal-growing the grains of the third plated base layer by heat treatment; and

forming a surface layer over the heat treated third plated base layer by plating.

5,668,061

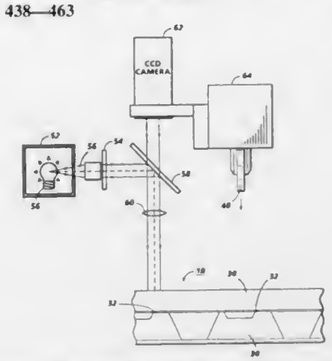
METHOD OF BACK CUTTING SILICON WAFERS DURING A DICING PROCEDURE

Lawrence H. Herko, Walworth; David J. Collins, Fairport, both of N.Y., and Kevin A. Lindamood, Pittsburgh, Pa., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 16, 1995, Ser. No. 515,629

Int. Cl.[6] H01L *21/302*

U.S. Cl. 438—463 **6 Claims**



1. A method of fabricating a plurality of printheads for use in an ink jet printing machine comprising the steps of:

aligning and bonding an upper silicon substrate defining a plurality of ink channel plates with a lower silicon substrate defining a plurality of heater plates, one side of the bonded substrate defining a front nozzle face, the plurality of bonded channel plates and heater plates comprising a plurality of printheads integrally formed on a silicon wafer,

forming opaque fiducial alignment marks within the wafer,

generating an infrared (IR) component of light,

directing the IR component of light through the wafer so that light from the fiducial marks is reflected back through the silicon wafer,

sensing the light reflected from the fiducial marks and generating signals which are stored corresponding to the coordinates of said fiducial marks,

aligning a dicing saw with the stored coordinates,

performing a series of back cut dicing operations using the detected alignment marks as a dicing saw reference and

separating the wafer into a plurality of printheads.

5,668,062

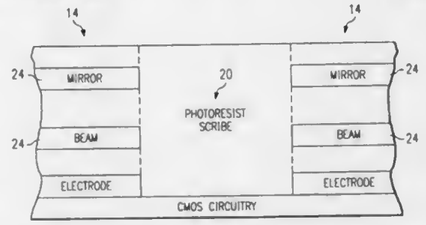
METHOD FOR PROCESSING SEMICONDUCTOR WAFER WITH REDUCED PARTICLE CONTAMINATION DURING SAW

Dae-Jin Hyun, Dallas, and James L. Connor, Rowlett, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 23, 1995, Ser. No. 518,434

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—462 **8 Claims**



1. A method of processing a semiconductor wafer, comprising the steps of:

a) defining primary circuit scribes in said wafer to define an active circuit processing area;

b) defining a semiconductor circuit in said active circuit processing area; and

c) defining at least one secondary scribe in said wafer being continuous with said primary circuit scribe and extending to proximate said wafer edge, said secondary scribe extending between non-active wafer portions of said semiconductor wafer.

5,668,063

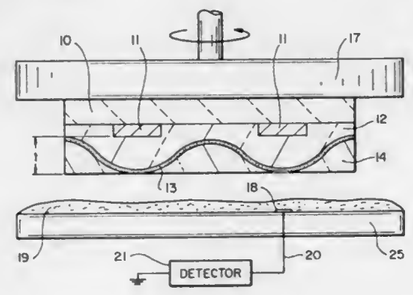
METHOD OF PLANARIZING A LAYER OF MATERIAL

Howard Wallace Fry, Scotts Valley, and Kurt James Lightfoot, Ben Lomond, both of Calif., assignors to Watkins Johnson Company, Palo Alto, Calif.

Filed May 23, 1995, Ser. No. 447,809

Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—5 **21 Claims**



1. A method of forming a planar layer having a predetermined thickness above a circuit feature of a semiconductor device comprising the steps of:

forming a first layer of a first material atop a surface of a semiconductor substrate and circuit feature with said predetermined thickness above said circuit feature;

forming in one fabrication step, a thin continuous trace layer of a doped silicon oxide material on the entire surface of said first layer;

forming a second layer of material on said trace layer;

planarizing said second layer by removing portions of said second layer;

detecting when the removal of said second layer reaches a portion of said trace layer; and

terminating planarization upon detection of said portion of said trace layer whereby the resulting layer is planar having said pre-determined thickness above said circuit features.

10. A method of forming a planar layer having a predetermined thickness above a circuit feature of a semiconductor device comprising the steps of:

(a) forming a first layer of a first material atop a surface of a semiconductor substrate and circuit feature with said predetermined thickness above said circuit feature;

(b) forming in one fabrication step, a thin continuous trace layer of a doped silicon oxide material on the entire surface of said first layer;

(c) forming a second layer of material on said trace layer;

(d) planarizing said second layer by removing portions of said second layer;

(e) detecting when the removal of said second layer reaches a portion of said trace layer;

(f) terminating planarization upon detection of said portion of said trace layer whereby the resulting layer is planar having said pre-determined thickness above said circuit features; and

(g) repeating steps (a), (b), (c), (d), (e), and (f) in sequence N times, where N is an integer and N is greater than, or equal to, 1.

5,668,064

METHOD OF FORMING A TUNGSTEN PLUG IN A SEMICONDUCTOR DEVICE

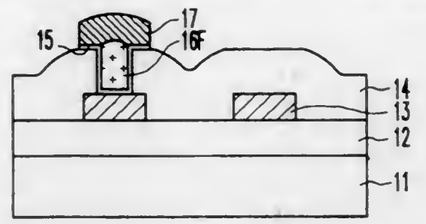
Sang Hoon Park, Kyungki-do; Dong Sauk Kim, Sungnam-shi, and Ju Il Lee, Kyungki-do, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 23, 1996, Ser. No. 606,305

Claims priority, application Rep. of Korea, Feb. 24, 1995, 95-3610

Int. Cl.[6] H01L *21/60*

U.S. Cl. 438—637 **10 Claims**



1. A method of forming a tungsten plug in a semiconductor device in which lower metal lines and upper metal lines are connected through a via hole which is formed by etching some portions of an insulating film in a semiconductor device, the method comprising:

A. sequentially forming a barrier metal layer and a tungsten layer on said insulating film including said via hole;

B. forming, on the tungsten layer in the upper side of the via hole, a photoresist pattern of which size is enough to cover said via hole;

C. firstly etching said tungsten layer by an isotropic etching process using said photoresist pattern as an etch mask;

D. secondly etching the firstly-etched tungsten layer by an anisotropic etching process using said photoresist pattern as an etch mask so that the barrier layer is exposed; and

E. after said photoresist mask is removed, removing the projections of said tungsten layer which are created on the upper portion of said via hole as a result of said isotropic etching process and said anisotropic etching process, whereby forming a tungsten plug within said via hole.

5,668,065

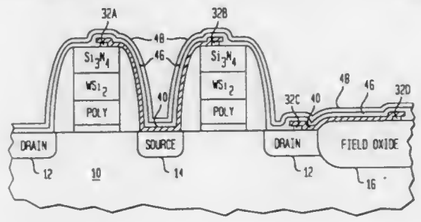
PROCESS FOR SIMULTANEOUS FORMATION OF SILICIDE-BASED SELF-ALIGNED CONTACTS AND LOCAL INTERCONNECTS

Chen-Hsi Lin, Cupertino, Calif., assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Aug. 1, 1996, Ser. No. 690,972

Int. Cl.[6] H01L *21/283;21/335*

U.S. Cl. 438—303 **18 Claims**



1. A process for forming a semiconductor device comprising the steps of:

depositing an oxide layer over a gate structure, a source region and a drain region formed on a substrate of the semiconductor device;

etching the oxide layer to define portions of the oxide layer which will form contact areas of a self-aligned contact and a local interconnect of the semiconductor device;

depositing a silicon layer over the etched oxide layer;

etching the silicon layer to remove remaining non-contact area portions of the oxide layer as well as portions of the silicon layer which will not be used to form part of the self-aligned contact and the local interconnect;

depositing a metal layer over the etched silicon layer; and

annealing the semiconductor device such that the etched silicon layer and the deposited metal layer react to form a silicide layer which comprises part of the self-aligned contact and local interconnect.

5,668,066

NEAR INFRARED ABSORPTION FILTER GLASS

Hironori Oguma, and Kazuo Tachiwana, both of Tokyo, Japan, assignors to Hoya Corporation, Japan

Filed Jul. 24, 1996, Ser. No. 685,572

Claims priority, application Japan, Jul. 24, 1995, 7-186886

Int. Cl.[6] C03C *3/16*

U.S. Cl. 501—45 **8 Claims**

1. A near infrared absorption filter glass comprising

P_2O_5	35–50%
Li_2O	0–5%
Na_2O	0–12%
K_2O	0–20%
Cs_2O	0–20%
R_2O (in which R is an alkali metal)	1.5–20%
ZnO	17–48%
MgO	0–7%
CaO	0–7%
SrO	0–7%
BaO	0–12%
R'O (in which R' is an alkaline earth metal)	0–15%
CuO	0.2–12%

in which % stands for % by weight.

5,668,067

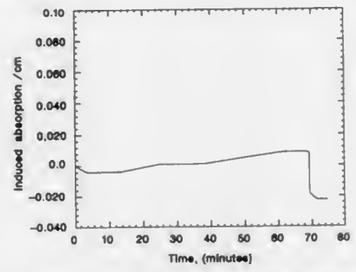
HIGH PURITY FUSED SILICA HAVING HIGH RESISTANCE TO OPTICAL DAMAGE

Roger J. Araujo, Horseheads; Nicholas F. Borrelli, Elmira; Christine L. Hoaglin, Campbell, and Charlene Smith, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 422,104, Apr. 14, 1995, Pat. No. 5,616,159. This application Aug. 19, 1996, Ser. No. 697,094

Int. Cl.[6] C03C *3/06*

U.S. Cl. 501—54 **3 Claims**



1. In a high purity fused silica glass member resistant to optical damage in ultraviolet radiation in the wavelength range between 190 and 300 nm, the glass member being characterized by an OH content no greater than 50 ppm, the improvement being that said glass member is resistant to optical damage up to 10^7 pulses (350 mJ/cm^2) at the laser wavelength of 248 nm.

5,668,068

SINTERED SILICON CARBIDE AND METHOD OF MAKING

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 538,148, Oct. 2, 1995, abandoned. This application Nov. 22, 1996, Ser. No. 754,911

Int. Cl.[6] C04B *35/56*

U.S. Cl. 501—88 **8 Claims**

1. A method for making refined silicon carbide powder comprising:

attrition milling silicon carbide material, having an average particle size before milling of greater than or equal to 1 micron, in a presence of a liquid medium and a milling media, said liquid medium is an organic solvent, water, or mixtures thereof and, said milling media selected from the group consisting of dense sintered silicon carbide beads of about 1–2 millimeter size, fused boron carbide grit–14+32mesh size, and mixtures thereof, for a sufficient amount of time to obtain refined silicon carbide particles with a surface area greater than 15 m^2/g and a median silicon carbide particle size less than 0.5 microns, and where less than 0.1 percent of the refined silicon carbide particles are greater than 1.5 microns.

5,668,069

CUTTING TOOL COMPOSED OF SILICON NITRIDE

Masahiro Sato, Kokubu; Yukiyasu Aoyama; Nobuoki Takagi, both of Sendai, and Shoji Kohsaka, Kokubu, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed May 30, 1996, Ser. No. 655,388

Claims priority, application Japan, May 31, 1995, 7-133549

Int. Cl.[6] C04B *35/587*

U.S. Cl. 501—97.2 **2 Claims**

1. A cutting tool composed of silicon nitride comprising chiefly a β-silicon nitride crystal phase and containing a grain boundary phase of rare earth elements, silicon, aluminum, oxygen and nitrogen, wherein the cutting surface is constituted by at least a fired surface or a surface formed by removing and polishing the fired surface by an amount of not larger than 10 μm, and has in the mirror surface thereof a micro-Vicker's hardness which is higher than that of the interior thereof and is not smaller than 16 Gpa, wherein the cutting tool contains 1 to 10 mole % of rare earth element calculated as an oxide, 1 to 10 mole % of aluminum calculated as an oxide, and 3 to 20 mole % of impurity oxygen calculated as SiO_2, the total amount of these calculated values being 5 to 25 mole %.

5,668,070

CERAMIC COMPOSITION FOR ABSORBING ELECTROMAGNETIC WAVE AND A METHOD FOR MANUFACTURING THE SAME

Sung-Yong Hong, 210-702, Hanbomido Apartment, 511 Daechi-Dong, Kangnam-Ku, Seoul, and Chang-Ho Ra, 152-18, Shimgok-2-Dong, Wonmi-Ku, Buchon-Shi, Kyeongki-Do, both of Rep. of Korea

Filed Oct. 21, 1996, Ser. No. 735,794

Int. Cl.[6] C04B *35/26*

U.S. Cl. 501—126 **11 Claims**

1. A ceramic composition for absorbing electromagnetic waves, comprising:

a raw powder comprising by weight between about 35% and about 65% Fe_2O_3, between about 1% and about 5% Al_2O_3, between about 0.5% and about 1.5% Zn, between about 0.5% and about 1.0% Cr, between about 3% and about 10% Cu, between about 3% and about 8% Mn, and between about 1% and about 4% Co; and

a mixture around said raw powder comprising by weight between about 30% and about 45% water, between about 1.5% and about 2.0% a dispersing agent, and between about 1.5% and about 2.0% a plasticizer.

5,668,071

PIEZOELECTRIC PORCELAIN

Toshikatsu Kashiwaya, Inazawa; Hirofumi Yamaguchi, Komaki, and Tadashi Otagiri, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Feb. 21, 1996, Ser. No. 604,712

Claims priority, application Japan, Feb. 22, 1995, 7-033467; Feb. 22, 1995, 7-033468; Mar. 2, 1995, 7-042967

Int. Cl.[6] C04B *35/472;35/499*

U.S. Cl. 501—136 **16 Claims**

1. A piezoelectric porcelain having a composition of $aPb\{Mg_{1/3}(Nb_{1-x}Ta_x)_{2/3}\}O_3$-$bpbTiO_3$-$cPbZrO_3$, coefficients a, b and c being mol % and a+b+c=100, wherein

$15 \leqq a \leqq 45$,

$32 \leqq b \leqq 45$,

$10 \leqq c \leqq 50$, and

$0.1 \leqq X \leqq 0.9$.

5,668,072

HIGH EMISSIVITY COATING

Cressie E. Holcombe, Jr., and Lloyd R. Chapman, both of Knoxville, Tenn., assignors to Equity Enterprises, Oak Ridge, Tenn.

Filed May 9, 1996, Ser. No. 647,133

Int. Cl.[6] C04B *35/50*

U.S. Cl. 501—152 **18 Claims**

1. A high emissivity coating composition for coating selected surfaces in a furnace wherein the furnace operates above 1000° C., said high emissivity coating composition comprising:

a high emissivity agent being based on a rare earth oxide wherein said rare earth is selected from the group consisting of cerium and terbium; and,

a binder agent for mixing with said high emissivity agent such that said high emissivity agent is adhereable to the selected surfaces in the furnace, said binder agent being comprised of about 40–70 weight percent aluminum phosphate solution, about 25–45 weight percent peptized aluminum oxide monohydrate, and about 5–15 weight percent ethyl alcohol.

5,668,073

DETERGENT COMPOUNDS WITH HIGH ACTIVITY CELLULASE AND QUATERNARY AMMONIUM COMPOUNDS

Andre Christian Convents, Diegem; Alfred Busch, Londerzeel, and Andre Cesar Baeck, Bonheiden, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 290,712, Nov. 17, 1994. This application Jun. 19, 1996, Ser. No. 666,147

Claims priority, application European Pat. Off., Nov. 6, 1991, 91202881

Int. Cl.[6] C11D *3/386;1/88*

U.S. Cl. 502—320 **18 Claims**

1. A detergent composition comprising:

(a) a quaternary ammonium compound of the formula

$$R_1R_2R_3R_4N^+X^-$$

wherein R_1 is C_8–C_{16} alkyl, each of R_2, R_3 and R_4 is independently C_1–C_4 alkyl or hydroxyl alkyl, benzyl, or $-(C_2H_4O)_xH$ where x has a value from 2 to 5, not more than one of R_2, R_3 or R_4 being benzyl and X^- is an anion, and

(b) a cellulase wherein said cellulase consists essentially of a homogeneous endoglucanase component which is immunoreactive with an antibody raised against a highly purified about 43 kD cellulase derived from *Humicola insolens*, DSM 1800.

5,668,074

PREPARATION OF CATALYSTS FOR ALKANE/CYCLOALKANE ISOMERIZATION

An-hsiang Wu, Bartlesville, and Charles A. Drake, Nowata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1995, Ser. No. 501,625

Int. Cl.[6] B01J *23/20;21/04;23/42;23/44*

U.S. Cl. 502—332 **20 Claims**

1. A method of preparing a composition of matter comprising the steps of:

(a) treating a starting material which comprises (i) at least one compound of at least one Group VIII noble metal selected from the group consisting of platinum and palladium and (ii) alumina as the support material with a reducing gas at a temperature of about 300°–600° C. for a time period of at least about 10 minutes;

(b) incorporating into the reduced material obtained in step (a) at least one compound of at least one Group VB metal selected from the group consisting of niobium and tantalum;

(c) heating the material obtained in step (b) in a non-reducing gas at a temperature of about 300°–500° C. for a time period of at least about 10 minutes; and

(d) treating the material obtained in step (c) with at least one halocarbon compound selected from the group consisting of fluoroalkanes and chlorofluoroalkanes at a temperature of about 200°–500° C. for a time period of at least about 10 minutes.

5,668,075

RESTRUCTURED IRON OXIDE FOR USE IN IRON OXIDE CATALYSTS

Stanley Nemec Milam, Spring, and Brent Howard Shanks, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 356,024, Dec. 14, 1994, abandoned. This application May 10, 1996, Ser. No. 644,694

Int. Cl.[6] B01J *23/70;* **C01G** *49/02*

U.S. Cl. 502—338 **8 Claims**

1. In a method of preparing iron oxide catalysts by mixing iron oxide particles with one or more promoters, forming a catalyst from the mixture, and calcining said catalyst, the improvement comprising restructuring the iron oxide particles prior to mixing the iron oxide particles with one or more promoters by a process comprising the steps of:

(a) contacting the iron oxide particles with a restructuring agent comprising a substance including an element selected from the group consisting of Mo, Cu, Ca, Zn, Mn, Sn, Ti, Bi, Co, Ce, W, Cr, Mg, and V, and

(b) heating the iron oxide particles in contact with said restructuring agent of step a at least until iron oxide particles are formed which are essentially equant and have BET surface areas less than about 1.9 m^2/gram, particle lengths of 0.3–3 μm and particle breadths of 0.2–2 μm.

5,668,076

PHOTOCATALYST AND METHOD FOR PREPARING THE SAME

Yasuhide Yamagushi; Masatoshi Yamazaki, both of Ageo; Akira Fujishima, and Kazuhito Hashimoto, both of Kanagawa, all of Japan, assignors to Mitsui Mining Smelting Co., Ltd. et al., Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,345

Claims priority, application Japan, Apr. 26, 1994, 6-088436; Jun. 21, 1994, 6-138430

Int. Cl.[6] B01J *23/06*

U.S. Cl. 502—343 **7 Claims**



2. A photocatalyst comprising a substrate, a zinc metal layer or a layer comprising zinc metal as a principal component formed on the surface of the substrate and a zinc oxide film which comprises zinc oxide fine particles formed, on the surface of the layer, by anodic oxidation of zinc and having a particle size of not more than 0.2 μm.

5,668,077

SILVER CATALYST FOR THE OXIDATION OF ETHYLENE OXIDE

Burkhard Klopries, Bottrop, Germany; Harald Metz, Greensboro, N.C.; Wilma Dibowski, Marl, Germany; Dietmar Kyewski, Haltern, Germany, and Jürgen Pospiech, Marl, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 224,526, Apr. 7, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 623,775

Claims priority, application Germany, Apr. 8, 1993, 43 11 608.6

Int. Cl.[6] B01J *23/48*

U.S. Cl. 502—347 **19 Claims**

1. A supported silver catalyst, comprising:

(a) a macroporous, nonacidic, heat resistant ceramic support having a number-average pore volume of greater than about 0.35 cm^3/g as determined by mercury porosimetry at a pressure rising to 2,000 bar, and having a number-average pore volume upper limit such that the lateral fracture strength of the finished catalyst is not less than 20N and wherein said macroporous ceramic support has a surface area of macropores of greater than about 0.8 m^2/g as determined by mercury porosimetry at a pressure rising to 2,000 bar;

(b) silver particles having number-average diameters as determined by scanning electron microscopy of from about 0.05 μm to about 0.4 μm,

wherein the average diameter of said silver particles is less than about 0.4 of the number-average macropore diameter of said macroporous support, said macropore diameter determined by mercury porosimetry at a pressure rising to 2,000 bar and being greater than or equal to about 1 μm; and

wherein said silver particles in the outer surface of the finished catalyst form essentially no silver bridges, such that the catalyst behaves likes an insulator with high electrical resistance.

5,668,078

WATER-ABSORBENT RESIN PARTICLES AND THE PRODUCTION THEREOF

Takashi Sumiya, Shiga-ken; Masanori Koike, Kyoto-fu, and Kenji Tanaka, Shiga-ken, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto-fu, Japan

Filed Jun. 7, 1995, Ser. No. 476,718

Claims priority, application Japan, Oct. 5, 1994, 6-268283

Int. Cl.[6] B01J *20/26*

U.S. Cl. 502—402 **12 Claims**

1. A process for producing water-absorbent resin particles comprising the step of reacting substantially water-insoluble water-absorbent resin particles with a modified silicone oil, the particles comprising crosslinked polymers of ethylenically unsaturated monomers that comprise acrylic acid and/or acrylic acid salt as an essential element and having an average particle size of 200–600 μm, said modified silicone oil having a functional group capable of reacting with a carboxyl group and/or a carboxylate group in the molecule and having a molecular weight of approximately 1,000–1,000,000 and a viscosity of 10–20,000 cst at 25° C.

5,668,079

CHEMICALLY ACTIVE CERAMIC COMPOSITIONS WITH AN HYDROXYQUINOLINE MOIETY

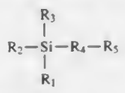
Lawrence L. Tavlarides, Fayetteville, and Nandu Deorkar, Syracuse, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Filed Sep. 27, 1994, Ser. No. 313,426

Int. Cl.[6] B01J *20/10;* **C02F** *1/42*

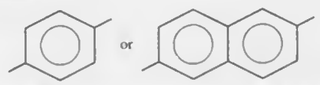
U.S. Cl. 502—407 **18 Claims**

1. A composite material suitable for removing heavy metal ions from liquid streams having the formula:



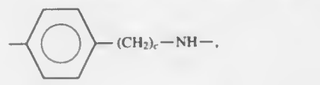
(I)

wherein R_4 is



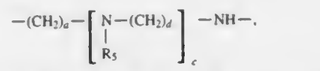
(1)

(2) $(CH_2)_a—NH—[(CH_2)_b—NH]_c—$, and a is an integer from 1–5, b is an integer from 1–10 and c is an integer from 0–10,



(3)

or



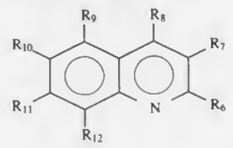
(4)

wherein d is an integer from 2–10;

at least one of R_1, R_2 and R_3 is SUPPORT-O-; and

other of R_1, R_2 and R_3 are the same or different and are unsubstituted or halosubstituted hydrocarbon chain having 1–5 carbon atoms; and

R_5 is a ligand having the formula:



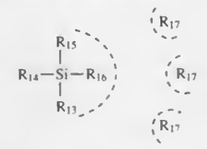
wherein R_6, R_7 and R_8 are the same or different and are —H, —CH_3 or —C_2H_5;

one of R_9 and R_{10} is —$(CH_2)_e$—, other of R_9 and R_{10} is —H, —CH_3 or —C_2H_5, and e is an integer from 1–25; and

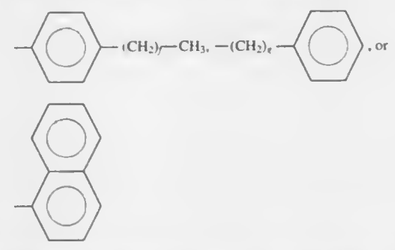
R_{11} is —H, —CH_3 or —C_2H_5 and R_{12} is a hydroxy group or R_{11} is a hydroxy group and R_{12} is —H; and

wherein said R_5 is linked to said R_4 at either said R_9 or R_{10} that is —$(CH_2)_e$— of said R_5.

11. A composite material suitable for removing heavy metal ions from waste streams having the formula:



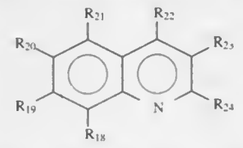
wherein at least one of R_{13}, R_{14} and R_{15} is SUPPORT-O- and R_{16} is unsubstituted or lower alkyl or lower aryl substituted hydrocarbon chain having 1–20 carbon atoms,



wherein f is an integer between 0–20 and g is an integer between 1–10; and

others of R_{13}, R_{14} and R_{15} are R_{16}; and

R_{17} is a ligand having the formula



one of R_{19}, R_{20} and R_{21} and R_{22} is unsubstituted or lower alkyl substituted hydrocarbon chain having 5–25 carbon atoms; and other of R_{19}, R_{20} and R_{21} and R_{22} are the same or different and are —H, —CH_3 or —C_2H_5; and

R_{23} and R_{24} are same or different and are —H, —CH_3, or —C_2H_5; and

R_{18} is an hydroxy group or R_{19} is an hydroxy group and R_{18} is —H; and

wherein said R_{17} is adsorbed on R_{16}.

5,668,080

THERMALLY-RESPONSIVE RECORD MATERIAL

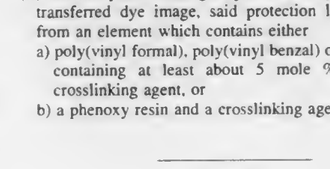
Michael Gerald Cove, Neenah, and Mary Ellen Schulz, Greenville, both of Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Dec. 3, 1996, Ser. No. 759,805

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—209 **9 Claims**

1. A thermally responsive record material comprising a support having provided thereon in substantially contiguous relationship an electron-donating dye precursor, an acidic developer material, a compound of the formula



and a suitable binder therefor.

5,668,081

THERMAL DYE TRANSFER DYE-DONOR ELEMENT WITH TRANSFERABLE PROTECTION OVERCOAT

William Henry Simpson, Pittsford; David P. Brust, Rochester; Jacob John Hastreiter, Jr., Spencerport, and Mary Catherine S. Oldfield, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1996, Ser. No. 684,899

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **17 Claims**

7. A process of forming a protection layer on top of a thermal dye transfer image comprising:

(I) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising an image dye in a binder, said dye-donor being in contact with a dye-receiving element, thereby transferring a dye image to said dye-receiving element to form said dye transfer image; and

(II) thermally transferring a protection layer on top of said transferred dye image, said protection layer being applied from an element which contains either

a) poly(vinyl formal), poly(vinyl benzal) or poly(vinyl acetal) containing at least about 5 mole % hydroxyl and a crosslinking agent, or

b) a phenoxy resin and a crosslinking agent.

5,668,082

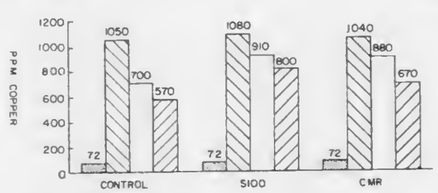
POLYOLEFINIC ADJUVANTS

Deborah L. Miller, and John C. Miller, both of Hawthorn Woods, Ill., assignors to Deerpoint Industries, Inc., Hawthorn Woods, Ill.

Continuation-in-part of Ser. No. 416,617, Apr. 5, 1995. This application Aug. 14, 1996, Ser. No. 696,732

Int. Cl.[6] A01N *25/24;25/30*

U.S. Cl. 504—113 **12 Claims**



1. The method of treating soil and vegetative surfaces which comprises coating these surfaces with an active material selected from the group consisting of insecticides, herbicides, fungicides, rodenticides, nutrients, plant growth regulators, pheromones and defoliants which active material is combined with an adjuvant composition which is an emulsion comprising an aqueous phase which contains a surfactant and a polymer consisting essentially of a methyl-substituted polyolefin having a molecular weight of about 300–30,000, whereby the active material is distributed more evenly over the soil and vegetative surfaces and is retained thereon for a longer period of time.

5,668,083

COMPOSITION CONTAINING 3-ISOTHIAZOLONE AND STABILIZER

Masahiro Matsumoto, Urawa, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.

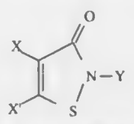
Continuation of Ser. No. 469,973, Jun. 6, 1995, abandoned. This application Jul. 18, 1996, Ser. No. 683,296

Int. Cl.[6] A01N *43/80*

U.S. Cl. 504—138 **8 Claims**

1. Composition comprising:

(a) at least one 3-isothiazolone biocide having the general formula:



(I)

wherein X and X' are independently selected from the group consisting of hydrogen or halogen; and Y is hydrogen or an alkyl group;

(b) hexamethylenetetramine;

(c) 5-bromo-5-nitro-1,3-dioxane; and

(d) solvent selected from the group consisting of a water miscible organic solvent and a mixture of water and said water miscible organic solvent;

wherein the ingredients (b) and (c) are present in an effective amount so that there is substantially no precipitate formation in said composition upon storage and wherein the composition is non-corrosive to metal storage containers.

5,668,084

POLYHEXAMETHYLENE BIGUANIDE AND SURFACTANT COMPOSITION AND METHOD FOR PREVENTING WATERLINE RESIDUE

Michael J. Unhoch, Wilmington, Del., and George D. Stratton, Oxford, Pa., assignors to Zeneca Inc., Wilmington, Del.

Filed Aug. 1, 1995, Ser. No. 509,908

Int. Cl.[6] A01N *25/32;33/12;47/44*

U.S. Cl. 504—158 **33 Claims**

1. A method for controlling the growth of algae, fungi and bacteria in water susceptible to formation of a waterline residue which comprises introducing into a turbulent water supply an antimicrobial-effective amount of a polyhexamethylene biguanide compound and a water-soluble or water-dispersible surfactant said surfactant being introduced in an amount sufficient to control formation of a residue at the waterline of the turbulent water supply.

5,668,085

GLYPHOSATE FORMULATIONS COMPRISING ALKOXYLATED AMINE SURFACTANTS

James Carnegie Forbes, Chesterfield, Mo.; Michel Maurice Henriet, Noirmont, Belgium; Samuel Hewitt, Chaumont-Gistoux, Belgium, and Robert William Mitchell, Overijse, Belgium, assignors to Monsanto Company, St. Louis, Mo.

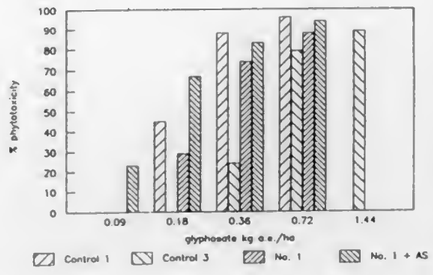
Continuation of Ser. No. 262,202, Jun. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 27,612, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 635,004, Apr. 15, 1991, abandoned, which is a continuation of Ser. No. 184,856, Apr. 22, 1988, abandoned. This application Jun. 2, 1995, Ser. No. 459,679

Int. Cl.[6] A01N *57/02;25/30*

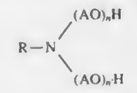
U.S. Cl. 504—206 **21 Claims**

1. A herbicidal composition which comprises a concentrated aqueous solution containing

(a) solubilized glyphosate in amount equivalent to at least 40 grams per liter of glyphosate acid,



(b) a surfactant which is (i) an amine having the formula



where R represents a straight- or branched-chain alkyl or alkenyl group having from about 8 to about 22 carbon atoms, A represents an alkylene group, and n and n' are integers such that n+n' has a value of from about 2 to about 8, (ii) a mixture of such amines having different groups R, the average number of carbon atoms in the groups R being from about 8 to about 22, or (iii) a mixture of such amines having different values of n and n', n and n' being integers such that in the mixture the average value of n+n' is from about 2 to about 8, R having a single value or an average value as in a mixture (ii);

and optionally (c) an agriculturally acceptable inorganic ammonium salt;

wherein the weight ratio of (a) expressed as glyphosate acid equivalent to (b) is from about 1:1.75 to about 6:1 and wherein the weight ratio of (c) to (a) expressed as glyphosate acid equivalent is at most about 3.6:1 said solution adapted for dilution and application to plants at a rate of from about 100 to about 400 liters per hectare.

5,668,086

HERBICIDE COMPOSITION

Suzuki Tadayuki; Hasabe Keiko; Kurita Kazuhiko, and Hioki Yulchi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP94/01853, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO95/31903, PCT Pub. Date Nov. 30, 1995

PCT Filed Nov. 18, 1994, Ser. No. 737,337

Claims priority, application Japan, May 20, 1994, 6-106391

Int. Cl.[6] A01N *43/60;43/40*

U.S. Cl. 504—235 **11 Claims**

1. A herbicide composition comprising the following components (a), (b) and (c):

(a) paraquat and/or diquat;

(b) an anionic surfactant; and

(c) a chelating agent,

wherein a molar ratio (c)/(a) of the component (c) to the component (a) is 0.1–3.

5,668,087

HERBICIDAL 1-ALKENYLTETRAZOLINONES

Toshio Goto; Yoshinori Kitagawa, both of Tochigi; Seishi Ito, Oyama; Katsuhiko Shibuya, Tochigi; Kazuhiro Ukawa, Tochigi; Yoshiko Kyo, Tochigi, and Natsuko Minegishi, Tochigi, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

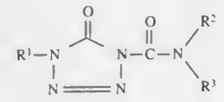
Filed Mar. 15, 1996, Ser. No. 616,674

Claims priority, application Japan, Mar. 20, 1995, 7-085937

Int. Cl.[6] A01N *43/713;* **C07D** *257/04*

U.S. Cl. 504—247 **11 Claims**

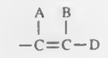
1. A 1-alkenyltetrazolinone of the formula:



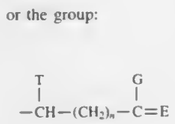
(I)

wherein

R^1 represents the group:



or the group:



wherein

A represents hydrogen, C_{1-4} alkyl, halogen or C_{1-2} haloalkyl,

B and D, independently of one another, represent hydrogen, C_{1-4} alkyl or halogen, or

B and D form, together with the C-atom to which they are bonded, C_{5-6} cycloalkylidene,

T represents hydrogen or C_{1-4} alkyl,

n represents 0, 1, 2 or 3,

E represents the group:



wherein

J and L, independently of one another, represent hydrogen, C_{1-4} alkyl or halogen, and

G represents hydrogen or C_{1-4}-alkyl, or

E and G form, together with the C-atom to which they are bonded, C_{5-6} cycloalken-1-yl,

R^2 and R^3, independently of one another, represent C_{1-6} alkyl, C_{3-7} cycloalkyl which is optionally substituted by methyl, C_{2-4} alkenyl, C_{2-5} alkynyl, optionally substituted phenyl or optionally substituted aralkyl wherein the optional substituents are halogen, C_{1-4} alkyl, C_{1-2} alkoxy, C_{1-2} haloalkyl, C_{1-2} haloalkoxy, C_{1-2} haloalkylthio, cavano, nitro, and acetyl,

R^2 and R^3 form, together with the N-atom to which they are bonded, form a heterocyclic ring which is optionally substituted wherein said heterocyclic rings are moieties selected from the group consisting of pyrrolidin-1-yl, piperidin-1-yl, indolin-1-yl, indol-1-yl, 1,2-dihydroquinolin-1-yl, and 1,2,3,4-tetrahydroquinolin-1-yl and the optional substituents are C_1–C_4-alkyl or halogen.

5,668,088

HERBICIDAL SUBSTITUTED 3-ARYL-PYRAZOLES

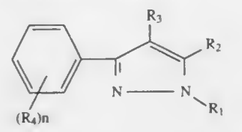
Bruce C. Hamper, Kirkwood, and Lisa L. Mc Dermott, Sullivan, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1995, Ser. No. 476,518

Int. Cl.[6] A01N *43/56;* **C07D** *231/12*

U.S. Cl. 504—280 **12 Claims**

1. A compound according to Formula I:



and agriculturally acceptable salts and hydrates thereof wherein

R_1 is independently C_{1-8} alkyl; C_{3-8} cycloalkyl, cycloalkenyl, cycloalkylalkyl, or cycloalkylalkyl; C_{2-8} alkenyl or alkynyl; benzyl; or said R_1 members substituted with halogen, amino, nitro, cyano, hydroxy, C_{1-8} alkoxy, C_{1-8} alkylthio, —C(=X)YR_8, —C(=X)R_9, YR_{10}, or $NR_{11}R_{12}$;

R_2 is C_{1-6} haloalkyl;

R_3 is C_{1-6} alkyl, C_{1-6} haloalkyl, CHO or CH_2OH;

R_4 members are independently an R_1 member, C_{1-8} thioalkyl, C_{1-8} polyalkoxyalkyl, carbamyl, halogen, amino, nitro, cyano, hydroxy, C_{6-2} aryl, aralkyl or alkaryl, —C(X)YR_{13}, —C(X)R_{14}, YR_{15}, or $NR_{16}R_{17}$ group; or two R_4 groups may be combined through a saturated and/or unsaturated carbon, or —(C=X)—, linkage to form a cyclic ring having up to 9 ring members which may be substituted with an R_1 member, halogen, amino, nitro, cyano, hydroxy, C_{6-12} aryl, aralkyl, alkaryl, —C(=X)YR_{13}, —C(=X)R_{14}, YR_{15} or $NR_{16}R_{17}$;

X is O, $S(O)_m$, NR_{19} or $CR_{20}R_{21}$;

Y is O, $S(O)_m$ or NR_{22}; wherein at least one R_4 member is a non-halogen;

R_{8-22} are hydrogen, C_{1-8} alkyl, C_{3-8} cycloalkyl, cycloalkenyl, cycloalkylalkyl, or cycloalkylalkyl, C_{2-8} alkenyl or alkynyl, benzyl, or said R_1 members substituted with halogen, amino, nitro, cyano, hydroxy, C_{1-8} alkoxy, C_{1-8} alkylthio, C_{6-2} aryl, aralkyl, alkaryl, carboxyl, alkoxy C_{1-8}-alkyl, C_{1-8} alkylamino, di-C_{1-8}-alkylamino, C_{1-8} alkoxy, or carbamyl;

m is 0–2 and

n is 1–5.

5,668,089

SELECTIVE CORN HERBICIDE

John M. Shribbs; Michael P. Ensminger, both of Petaluma, and Laddie L. Green, San Jose, all of Calif., assignors to Zeneca Limited, London, England

Filed Apr. 8, 1996, Ser. No. 629,282

Int. Cl.[6] A01N *35/00*

U.S. Cl. 504—348 **5 Claims**

1. A method of selectively controlling undesirable vegetation in corn comprising applying an herbicidally effective amount of 2-(2'-nitro-4'-trifluoromethylbenzoyl)-1,3-cyclohexanedione, or an agriculturally acceptable salt thereof, to the locus of such vegetation.

5,668,090

HIGH-TEMPERATURE AC SUPERCONDUCTING MAGNETS FOR A MAGNETIC LEVITATION SYSTEM

Swarn S. Kalsi, Salonga, N.Y., assignor to Grumman Aerospace Corporation, Los Angeles, Calif.

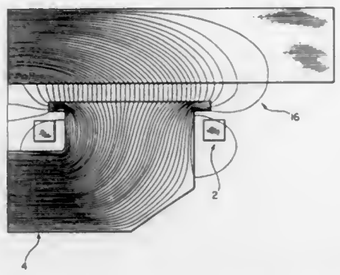
Filed Jul. 14, 1994, Ser. No. 274,170

Int. Cl.[6] B60L *13/10;* **H01F** *6/00*

U.S. Cl. 505—166 **18 Claims**

1. An electromagnet, comprising:

a magnetically-permeable core having a plurality of magnetic poles; and



a plurality of superconducting coils made of a material capable of operating in AC mode, each of said coils surrounding a different one of said poles for inducing a magnetic field in said poles when current is supplied to said coils,

wherein said superconducting coils operate in both AC and DC modes.

5,668,091

LUBRICANT FOR LUBRICATING A TIRE FOR ROTARY TRUNNION SUPPORTED EQUIPMENT

Terry Grinham, and Marc Salvador, both of North Lancaster, Canada, assignors to Christina Grinham, Quebec, Canada

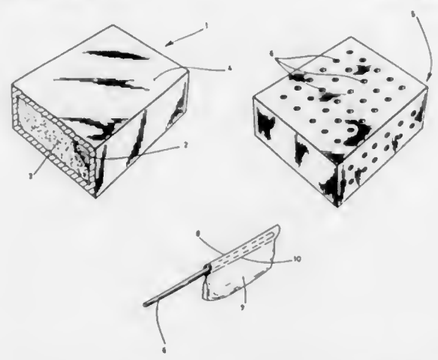
PCT No. PCT/CA94/00091, § 371 Date Nov. 11, 1995, § 102(e) Date Nov. 11, 1995, PCT Pub. No. WO94/26851, PCT Pub. Date Nov. 24, 1994

PCT Filed Feb. 21, 1994, Ser. No. 244,152

Claims priority, application Canada, May 11, 1993, 2095996

Int. Cl.[6] C10M *103/02;111/00*

U.S. Cl. 508—123 **18 Claims**



1. A method for lubricating trunnion supported rotary equipment comprising a shell on which are welded a plurality of pads each having an OD surface, and a tire slipped onto the pads, said tire having an ID surface adjacent said OD surfaces, said ID and OD surfaces being at a temperature of at least 100 ° F. when the equipment is operating, said method comprising the steps of:

providing a solid lubricant composition in the form of blocks sized to be inserted between the pads of the rotary equipment, said solid composition consisting essentially of a solid lubricant powder and a solid carrier for said solid lubricant, wherein said carrier melts and vaporizes at the temperature of said ID and OD surfaces when the equipment is operating; and

inserting said blocks in between the pads, causing the lubricant to be released from the blocks as the carrier is melting, thereby ensuring continuous lubrication of the ID surface of the tire and the OD surfaces of the pads while leaving very little harmful residue.

5,668,092

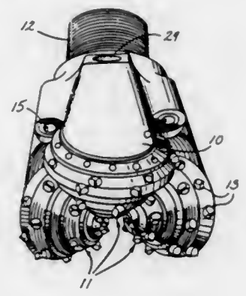
ROCK BIT GREASE COMPOSITION

Robert M. Denton, Friendswood, Tex., assignor to Smith International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 293,496, Aug. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 44,579, Apr. 7, 1993, abandoned. This application Apr. 8, 1996, Ser. No. 629,764

Int. Cl.[6] C10M *107/02;107/08;141/00;* **E21B** *10/16*

U.S. Cl. 508—146 **12 Claims**



1. A rock bit for drilling subterranean formations comprising:

a bit body including a plurality of journal pins, each having a bearing surface;

a cutter cone mounted on each journal pin and including a bearing surface;

a grease reservoir in communication with such bearing surfaces;

a solid metal free grease composition in the grease reservoir and adjacent the bearing surfaces, the grease composition having a viscosity index in the range of from 250 to 325 and comprising:

in the range of from about 55 to 95 percent by weight synthetic lubricant basestocks comprising:

in the range of from about 1 to 20 percent by weight polyisobutylene having a Flory molecular weight in the range of from 42,000 to 46,000;

in the range of from about 50 to 90 percent by weight ethylene-alphaolefin having a Flory molecular weight in the range of from 32,000 to 38,000; and up to about 40 percent by weight polyalphaolefin having a molecular weight in the range of from 800 to 2,000; and

lubricant additives comprising:

a 1,3,4-thiadiazole compound;

a sulfur-chloride-phosphorus compound;

an alkyl ester copolymer;

a silica gel compound: and

a propylene carbonate compound; and

a seal for retaining the grease in the bearing.

5,668,093

USE OF ALKENYLSUCCINIC ACID HALF-AMIDES

Gernot Kremer, Kelkheim, and Horst Lorke, Liederbach, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

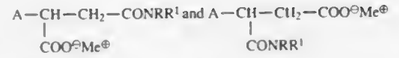
Continuation-in-part of Ser. No. 470,252, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 237,329, May 3, 1994, abandoned, which is a continuation of Ser. No. 839,940, Feb. 21, 1992, abandoned. This application May 3, 1996, Ser. No. 647,871

Claims priority, application Germany, Feb. 26, 1991, 41 05 899.2

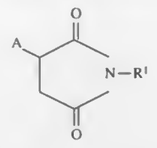
Int. Cl.[6] C10M *129/26*

U.S. Cl. 508—262 **20 Claims**

1. Metalworking aids comprising alkenysuccinic acid half-amides of at least one formula selected from the group consisting of



and, optionally, cyclic imides of the formula



in which formulae:

A is C_6–C_{30} alkenyl and is linear or branched,

R=H or R^1,

R^1=—R^2—O—$(CH_2CHR^3—O)_nH$, where R^2=C_1–C_{10} alkylene, R^2 being linear or branched, R^3=—H or CH_3 and n=0 to 50 and $Me^{\oplus}$ is a mixture of an alkali metal ion and an ammonium ion of the formula $HN^{\oplus}R^4R^5R^6$, R^4, R^5 and R^6, which are identical or different, being hydrogen, C_1–C_6 alkyl or hydroxy (C_1–C_6) alkyl.

5,668,094

FABRIC SOFTENING BAR COMPOSITIONS CONTAINING FABRIC SOFTENER AND ENDURING PERFUME

Dennis Ray Bacon, Milford; Alex Haejoon Chung, West Chester; Toan Trinh, Maineville; Frederick Anthony Hartman, and Robert Mermelstein, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 26, 1996, Ser. No. 605,478

Int. Cl.[6] D06M *13/46;13/00*

U.S. Cl. 510—101 **25 Claims**

1. A low sudsing, fabric softening bar composition comprising:

(A) from about 40% to about 90%, by weight of the composition, of a hydrophobic, fabric softening compound selected from the group consisting of quaternary ammonium compounds, carboxylic acid salts of tertiary amines, carboxylic acid salts of tertiary ester amines, sorbitan esters of fatty alcohols, glycerol and polyglycerol esters, fatty amines, fatty acids, alkyl or alkenyl succinic acids, and mixtures thereof;

(B) from about 0.01% to about 10% of an enduring perfume comprising at least 70% of enduring perfume ingredients selected from the group consisting of: ingredients having a boiling point of at least about 250° C. and a ClogP of at least about 3, wherein ClogP is the calculated octanol/water partitioning coefficient as the logarithm to the base 10, logP, said ingredients having a boiling point of at least about 250° C. and a cogP of at least about 3 being less than 70% by weight of said enduring perfume so that a perfume with only ingredients having a boiling point of at least about 250° C. and a cogP of at least about 3 will not be an enduring perfume; cis-jasmone; dimethyl benzyl carbinyl acetate; ethyl vanillin; geranyl acetate; alpha-ionone; beta-ionone; gamma-ionone; koavone; lauric aldehyde; methyl dihydrojasmonate; methyl nonyl acetaldehyde; gamma-nonalactone; phenoxy ethyl isobutyrate; phenyl ethyl dimethyl carbinol; phenyl ethyl dimethyl carbinyl acetate; alpha-methyl-4-(2-methylpropyl)-benzenepropanal; 6 -acetyl-1,1,3,4,4,6-hexamethyl tetrahydronaphthalene; undecylenic aldehyde; vanillin; 2,5,5-trimethyl-2-pentyl-cyclopentanone; 2-tert-butylcyclohexanol; verdox; para-tert-butylcyclohexyl acetate; and mixtures thereof;

(C) optionally, from about 5% to about 30%, by weight of the composition, of a nonionic surfactant;

(D) optionally, from about 5% to about 30%, by weight of the composition, water; and;

(E) optionally, cellulase, at a level equivalent to an activity from about 1 to about 100 Cellulase Equivalent Viscosity Units/gram of the composition;

wherein when (A) is a sorbitan ester of a fatty alcohol, glycerol ester, or a polyglycerol ester, then (C) cannot also be a sorbitan ester of a fatty alcohol, glycerol ester, or a polyglycerol ester.

5,668,095

DETERGENT COMPOSITION WITH SUDS SUPPRESSING SYSTEM

Athanasios Surutzidis, Wemmel, and Andrew Albon Fisk, Strombeek-Bever, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/09898, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO94/10275, PCT Pub. Date May 11, 1994

PCT Filed Oct. 15, 1993, Ser. No. 411,700

Claims priority, application European Pat. Off., Oct. 23, 1992, 92870174

Int. Cl.[6] E11D *3/08;3/18*

U.S. Cl. 510—221 **13 Claims**

1. A detergent composition comprising (a) from 5% to 60% by weight of the total composition surfactant and (b) from 0.06% to 5% by weight of the total composition of a suds suppressing system comprising at least one silicone oil and at least one 2-alkyl-alcanol wherein said 2-alkyl-alcanol is present in an amount of 0.05% to 4% by weight of the total composition.

5,668,096

CLEANING AND PASSIVATING TREATMENT FOR METALS

Edward A. Rodzewich, Flourtown, and Barry P. Gunagan, Hatboro, both of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 508,805, Jul. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 246,550, May 20, 1994, abandoned. This application Nov. 4, 1996, Ser. No. 743,118

Int. Cl.[6] C11D *1/88*

U.S. Cl. 510—265 **6 Claims**

1. A cleaning and passivating treatment solution for ferrous metal surface comprising an essentially amine, alkanol amine and phosphate free aqueous solution of (a) from about 0.05 to 5.0% by weight a caprylic acid derivative of imidazoline amphoteric surfactant, (b) a borate ion and (c) a molybdate ion wherein the ratio of imidazoline amphoteric surfactant to borate ion is from about 1:0.4 to 1:5 and the ratio of sodium molybdate to imidazoline amphoteric surfactant and borate ion is more than about 1:4.

5,668,097

UNCOMPLEXED CYCLODEXTRIN SOLUTIONS FOR ODOR CONTROL ON INANIMATE SURFACES

Toan Trinh, Maineville; Jerome Paul Cappel, Cincinnati; Philip Anthony Geis, West Chester; Mark Lee McCarty, Loveland; David Pilosof, Cincinnati, and Susan Schmaedecke Zwerdling, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 289,735, Aug. 12, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 596,781

Int. Cl.[6] C11D *17/00*

U.S. Cl. 510—293 **33 Claims**

1. An article of manufacture, which comprises:

A. a textile surface odor absorbing composition comprising from about 0.1% to about 5%, by weight of the composition, of solubilized, water-soluble, uncomplexed cyclodextrin; and from about 0.0001% to about 0.01% by weight of the composition of a solubilized, water-soluble antimicrobial preserva-

tive which has a water solubility greater than about 0.3% at room temperature, wherein said antimicrobial preservative is selected from the group consisting of organic sulfur compounds, halogenated compounds, cyclic organic nitrogen compounds, formaldehyde, glutaraldehyde, quaternary compounds, benzyl alcohol, 2-phenylethanol, phenoxy compounds, and mixtures thereof, and

B. a spray dispenser; and

wherein said composition is essentially free of any material that would soil or stain fabric, wherein said composition contains less than 3%, by weight of the composition, of low molecular weight, monohydric alcohol and has a pH of greater than about 3.

5,668,098

DETERGENT COMPOSITIONS CONTAINING ETHYLENE ASPARTATE CYSTEATE (EAC) SEQUESTRANTS

Eddie Nelson Gutierrez, Midland Park; Shang-Ren Wu, Mahwah, and Robert Charles Vermeer, Nutley, all of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Mar. 19, 1996, Ser. No. 618,482

Int. Cl.[6] C11D *1/86;1/10;1/12;1/83*

U.S. Cl. 510—350 **24 Claims**

1. A detergent composition comprising:

(a) from about 1% to about 75% by weight of a detergent surfactant selected from the group consisting of anionic surfactants, nonionic surfactants, zwitterionic surfactants, ampholytic surfactants, cationic surfactants, and mixture thereof;

(b) from about 0% to about 80% by weight of a detergency builder; and

(c) from about 0.1% to about 50% by weight ethylene aspartic cysteic acid, or the alkali metal, alkaline earth, ammonium or substituted ammonium salts thereof, or mixtures thereof.

5,668,099

PROCESS FOR MAKING A LOW DENSITY DETERGENT COMPOSITION BY AGGLOMERATION WITH AN INORGANIC DOUBLE SALT

Benjamin Edgar Chapman; Steven Barrett Rogers, both of Cincinnati; Paul Amaat France, West Chester, all of Ohio, and Wayne Edward Beimesch, Covington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 14, 1996, Ser. No. 601,638

Int. Cl.[6] C11D *11/00;11/04;3/10*

U.S. Cl. 510—444 **15 Claims**

1. A process for preparing a low density detergent composition comprising the steps of:

(a) spray drying an aqueous mixture of sodium sulfate, sodium carbonate and from about 0.1% to about 15% by weight of a surfactant so as to form spray dried granules containing an inorganic double salt having the formula $Na_2SO_4{\cdot}Na_2CO_3$ and said surfactant;

(b) agglomerating said spray dried granules with a detergent surfactant paste and a detergent builder selected from the group consisting of sodium carbonate, aluminosilicates, crystalline layered silicates, phosphates, and mixtures thereof in a high speed mixer to obtain detergent agglomerates; and

(c) drying said detergent agglomerates so as to form said detergent composition having a density of from about 300 g/l to below about 500 g/l.

5,668,100

DETERGENT MIXTURES AND DETERGENTS OR CLEANING FORMULATIONS WITH IMPROVED DISSOLVING PROPERTIES

Karl Schmid, Mettmann; Andreas Syldath, Duesseldorf; Ditmar Kischkel, Monheim; Thomas Krohnen, Duesseldorf; Michael Neuss, Cologne; Hubert Pawelczyk, Duesseldorf; Monika Boecker, Leichlingen, and Hermann-Josef Welling, Viersen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/03077, § 371 Date Mar. 25, 1996, § 102(e) Date Mar. 25, 1996, PCT Pub. No. WO95/08616, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 14, 1994, Ser. No. 619,493

Claims priority, application Germany, Sep. 23, 1993, 43 32 373.1; Feb. 3, 1994, 44 03 323.0

Int. Cl.[6] C11D *17/06*

U.S. Cl. 510—446 **20 Claims**

1. A substantially water-free detergent mixture compromising

a) alkyl or alkenyl sulfates corresponding to formula (I):

$$R_1OSO_3X \quad (I)$$

in which R_1 is a linear or branched aliphatic hydrocarbon radical containing 16 to 18 carbon atoms and X is an alkali metal or alkaline earth metal, ammonium, alkylammonium, alkanolammonium or glucammonium,

b) alkyl or alkenyl sulfates corresponding to formula (II):

$$R_2OSO_3X \quad (II)$$

in which R_2 is a linear or branched aliphatic hydrocarbon radical containing 12 to 14 carbon atoms and X is an alkali metal or alkaline earth metal, ammonium, alkylammonium, alkanolammonium or glucammonium, said components a) and b) being present in a ratio by weight of 90:10 to 70:30, and

c) a hydrophobic structure breaker corresponding to formula (III):

$$R_4O(CH_2CH_2O)_nH \quad (III)$$

in which R_4 is a linear or branched alkyl or alkenyl radical containing 12 to 18 carbon atoms and n is 0 or a number of 1 to 5.

5,668,101

PARTICULATE FOAM CONTROL AGENTS AND THEIR USE

Leonidas Kolaitis, Meise, and Bertrand Louis Julien Lenoble, Bois-de-Lessines, both of Belgium, assignors to Dow Corning S. A., Seneffe, Belgium

Filed Jul. 18, 1994, Ser. No. 282,841

Claims priority, application United Kingdom, Jul. 29, 1993, 9315671

Int. Cl.[6] C11D *3/08;3/60*

U.S. Cl. 510—466 **7 Claims**

1. A foam control agent comprising (A) from 1 to 30 parts by weight of a silicone antifoam which consists of (i) from 70 to 99% by weight of a polyorganosiloxane polymer, selected from the group consisting of (a) linear polydiorganosiloxane polymers having a viscosity of more than 12,500 mm^2/s at 25° C. and (b) branched polyorganosiloxanes and (ii) from 1 to 30% by weight of a filler material which has its surface made hydrophobic, (B) from 70 to 99 parts by weight of a zeolite and (C) an organopolysiloxane polyoxyalkylene copolymer in an amount which is from 5 to 70% by weight of antifoam (A).

5,668,102

BIODEGRADABLE FABRIC SOFTENER COMPOSITIONS WITH IMPROVED PERFUME LONGEVITY

John Cort Severns, West Chester; Mark Robert Sivik, Fairfield; Frederick Anthony Hartman, Cincinnati, all of Ohio; Hugo Robert Germain Denutte, Hofstade, Belgium; Jill Bonham Costa, Cincinnati, Ohio; Alex Haejoon Chung, West Chester, Ohio, and Rafael Ortiz, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 499,282, Jul. 7, 1995, Pat. No. 5,531,910. This application Jun. 28, 1996, Ser. No. 672,880

Int. Cl.[6] D06M *13/224;13/46*

U.S. Cl. 510—504 **15 Claims**

1. A rinse-added fabric softening composition selected from the group consisting of:

I. A solid particulate composition comprising:

(A) from about 50% to about 95% of biodegradable cationic quaternary ammonium fabric softening compound;

(B) from about 0,01% to about 15%, by weight of the composition, of nonionic or anionic compound that is an ester of non-allylic alcohol, having the formula:

$$E(F)_g$$

wherein E is a residue of a carboxylic acid selected from the group consisting of: malonic acid, glutaric acid, sebacic acid, acetone dicarboxylic acid, oxydisuccinic acid, tartaric acid, butanetetracarboxylic acid, phtalic acid, pyromellitic acid, mellitic acid, nicotinic acid, fumaric acid, pentadienoic acid, and itaconitic acid; wherein F is the residue of a non-allylic perfume alcohol selected from the group consisting of amyl alcohol, arbozol, beta gamma hexenol, brahmanol, butyl alcohol, cyclomethylene citronellol, dihydro floralol, dimethyl heptanol, dimethyl octanol, hawthanol, heptyl alcohol, hydratropic alcohol, isoamyl alcohol, isononyl alcohol, lavandulol, majantol, mayol, methyl benzene propanol, methyl lavender ketone, methyl pentenol, 3-methyl-1-pentanol, mugetanol, nopol, octyl alcohol, pamplefleur, cis-3-pentenol, phenyl acetaldehyde glycerine acetal, phenyl propyl alcohol, rhodinol 70, rosalva, rosaphen, silwanol, undecylenic alcohol, undecylic alcohol, acetoin, apricosal, camekol dh, cyclohexyl propyl alcohol, ethoxiff, geraminol, iso butyl benzyl carbinol, kohinool, lavinol, osyrol, phenyl ethyl methyl carbinol, polysantol, propyl benzyl carbinol, sandalore, timberol, norlimbanol, dihydro carveol, dimethyl cyclormol, iso pulegol, menthol, patchone, rootanol, roselea/apo patchone/folrosia, sandiff, santalex T, trans decahydro beta naphthol, trimethylcyclohexanol, verdol, aprol 161, ambrinol, cymenol, dihydro linalool, dihydro myrcenol, dihydro terpineol, dimethyl benzyl carbinol, dimethyl octanol-3, dimetol, hydrolene, hydroxycitronellal, hydroxycitronellal dimethyl acetal, linalool oxide, lymolene, lyral, methyl octanol, muguol, myrcenol, ocimenol, para-methyl dimethyl benzyl carbinol, phenyl ethyl dimethyl carbinol, phenyl ethyl methyl ethyl carbinol, alpha terpineol, terpinenol-4, tetrahydro linalool, tetrahydro muguol, tetrahydro myrcenol, plinol, dimyrcetol, ethyl hexane diol, hydroxycitronellol, pinacol, trimethyl pentane diol, and mixtures thereof; and wherein g is from 1 to about equal to the number of carboxylate groups present in E;

(C) optionally, from about 0% to about 30% of dispersibility modifier; and

(D) optionally, from about 0% to about 15% of pH modifier; and

II a liquid composition comprising:

(A) from about 0.5% to about 80% of biodegradable cationic quaternary ammonium fabric softening compound;

(B) from about 0.01% to about 15%, by weight of the composition, of nonionic or anionic compound that is an ester of non-allylic alcohol, having the formula:

$$E(F)_g$$

wherein E is a residue of a carboxylic acid selected from the group consisting of: malonic acid, glutaric acid, sebacic acid, citric acid, acetone dicarboxylic acid, oxydisuccinic acid, tartaric acid, butanetetracarboxylic acid, phthalic acid, pyromellitic acid, mellitic acid, nicotinic acid, fumaric acid, pentadienoic acid, and itaconitic acid; wherein F is the residue of a non-allylic perfume alcohol selected from the group consisting of amyl alcohol, arbozol, beta gamma hexenol, brahmanol, butyl alcohol, cyclomethylene citronellol, dihydro floralol, dimethyl heptanol, dimethyl octanol, hawthanol, beptyl alcohol hydratropic alcohol, isoamyl alcohol, isononyl alcohol, lavandulol, majantol, mayol, methyl benzene propanol, methyl lavender ketone, methyl pentenol, 3-methyl-1-pentanol, mugetanol, nopol, octyl alcohol, pamplefleur, cis-3-pentenol, phenyl acetaldehyde glycerine acetal, phenyl propyl alcohol, rhodinol 70, rosalva, rosaphen, silwanol, undecylenic alcohol, undecylic alcohol, acetoin, apricosal, camekol dh, cyclohexyl propyl alcohol, ethoxiff, geraminol, iso butyl benzyl carbinol, kohinool, lavinol, osyrol, phenyl ethyl methyl carbinol, polysantol, propyl benzyl carbinol, sandalore, timberol, norlimbanol, dihydro carveol, dimethyl cyclormol, iso pulegol, menthol, patchone, rootanol, roselea/apo patchone/folrosia, sandiff, santalex T, trans decahydro beta naphthol, trimethylcyclohexanol, verdol, aprol 161, ambrinol, cymenol, dihydro linalool, dihydro myrcenol, dihydro terpineol, dimethyl benzyl carbinol, dimethyl octanol-3, dimetol, hydrolene, hydroxycitronellal, hydroxycitronellal dimethyl acetal, linalool oxide, lymolene, lyral, methyl octanol, muguol, myrcenol, ocimenol, pare-methyl dimethyl benzyl carbinol, phenyl ethyl dimethyl carbinol, phenyl ethyl methyl ethyl carbinol, alpha terpineol, terpinenol-4, tetrahydro linalool, tetrahydro muguol, tetrahydro myrcenol, plinol, dimyrcetol, ethyl hexane diol, hydroxycitronellol, pinacol, trimethyl pentane diol, and mixtures thereof: and wherein g is from 1 to about equal to the number of carboxylate groups present in E;

(C) optionally, from about 0%, to about 30% of dispersibility modifier; and

(D) the balance comprising liquid carrier selected from the group consisting of: water, C_{1-4} monohydric alcohol; C_{2-6} polyhydric alcohol; propylene carbonate; liquid polyethylene glycols; and mixtures thereof.

5,668,103

AIR CLEANER COMPOSITION

Mark Mateson, 905 Berkeley Rd., Wilmington, Del. 19087

Continuation of Ser. No. 276,982, Jul. 19, 1994, abandoned. This application Sep. 26, 1995, Ser. No. 534,191

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—4 **2 Claims**

1. A composition having a fragranced material, comprising:

about 0.9 parts of a fragranced material and about 70 parts water formed into a solid material by add mixing about 7.5 parts of sodium stearate, about 8.6 parts of isopropanol, 4.5 parts of propylene glycol and about 0.34 parts of polyethylene oxide and about 0.45 parts of oleanthic ether, to produce a solid having at least seventy percent by weight water, based upon the total weight, and having a melting point of about 120° F., said composition having at least twenty percent by weight of solids after evaporation of said fragranced material and substantially all of said water.

5,668,104

HEMATOPOIETIC STEM CELL GROWTH-PROMOTING COMPOSITIONS CONTAINING A FIBROBLAST-DERIVED FRAGMENT OF FIBRONECTIN AND A GROWTH FACTOR, AND METHODS EMPLOYING THEM IN VITRO OR IN VIVO

Tatsutoshi Nakahata, Matsumoto; Genji Kawano; Tetsuo Sudo, both of Kamakura, and Katsuaki Kojima, Yokohama, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP93/00404, § 371 Date Apr. 26, 1994, § 102(e) Date Apr. 26, 1994, PCT Pub. No. WO93/20228, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1993, Ser. No. 142,449

Claims priority, application Japan, Mar. 31, 1992, 4-076894

Int. Cl.[6] C07K *14/47*; **A61K** *38/17;38/39*

U.S. Cl. 514—2 **11 Claims**

1. A therapeutic composition comprising:

an FDF-3 polypeptide having a molecular weight of 18±2 kDa as determined by SDS-PAGE and having an amino acid sequence which comprises residues 1–162 as set forth in SEQ ID NO: 14; and

a cytokine selected from the group consisting of IL-3, G-CSF, GM-CSF, and stem cell factor.

10. A method for promoting the growth and differentiation of hematopoietic progenitor cells, comprising the step of contacting a population of progenitor cells with a composition according to any one of claims **1**–**9**.

5,668,105

AZA CYCLOHEXAPEPTIDE COMPOUNDS

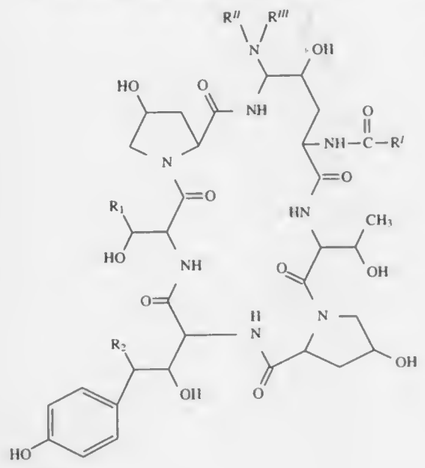
James M. Balkovec, North Plainfield; Frances A. Bouffard, Scotch Plains, and Milton L. Hammond, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 307,979, Sep. 16, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,452

Int. Cl.[6] A61K *38/12*; **C07K** *7/64*

U.S. Cl. 514—11 **3 Claims**

1. A compound of the formula (Seq. ID No. 1)



(I)

wherein

R^1 is $CH_2CH_2NH_2$;

R_2 is OH;

R^I is 9,11 -dimethyltridecyl;

R^{II} is $CH_2CH_2NH_2$; and

R^{III} is hydrogen; or

a pharmaceutically acceptable acid addition salt thereof.

2. An antibiotic composition comprising an effective amount of the compound as defined in claim **1** in a pharmaceutically acceptable carrier.

5,668,106

METHOD AND COMPOSITIONS FOR MAKING ACSF AND ACSF ANTAGONISTS

William I. Wood, San Mateo, Calif., and Thomas John Martin, Victoria, Australia, assignors to The University Of Melbourne, Victoria, Australia, and Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 975,960, Nov. 13, 1992, Pat. No. 5,312,810, which is a continuation of Ser. No. 713,021, Feb. 6, 1991, abandoned, which is a continuation of Ser. No. 252,013, Sep. 27, 1988, abandoned, which is a continuation of Ser. No. 52,637, May 20, 1987, abandoned. This application Jan. 4, 1994, Ser. No. 177,323

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—12 **7 Claims**

1. A composition comprising a biologically active Adenylate Cyclase Stimulating Factor (ACSF) polypeptide consisting of either the basic domain of ACSF from about residues **84** to **108** or the basic domain of ACSF and the C terminal domain of ACSF from about residues **109** to **141**.

5,668,107

COMPOSITIONS AND METHODS FOR INHIBITING ELASTASE

Edward J. Miller, Birmingham, Ala., assignor to The UAB Research Foundation, Birmingham, Ala.

Division of Ser. No. 919,992, Jul. 27, 1992, Pat. No. 5,420,110, which is a continuation of Ser. No. 687,372, Apr. 18, 1991, abandoned. This application May 8, 1995, Ser. No. 437,029

Int. Cl.[6] A61K *38/43;38/55*

U.S. Cl. 514—12 **16 Claims**

1. A compound comprising:

(a) an isolated polypeptide moiety having

(i) an amino acid sequence shown in SEQ ID NO:4,

(ii) an elastase binding activity; and

(b) an extracellular matrix protein bound to the polypeptide moiety.

5,668,108

PREPARATION OF FUNCTIONAL HUMAN FACTOR VIII AND PHARMACEUTICAL TREATMENT THEREWITH

Daniel J. Capon, San Mateo; Richard M. Lawn, San Francisco; Gordon A. Vehar, San Carlos, and William I. Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 570,096, Aug. 20, 1990, Pat. No. 5,618,788, which is a continuation of Ser. No. 83,758, Aug. 7, 1987, Pat. No. 4,965,199, which is a continuation of Ser. No. 602,312, Apr. 20, 1984, abandoned. This application May 23, 1995, Ser. No. 447,654

Int. Cl.[6] A61K *38/37*; **C07K** *14/755*; **C12N** *15/12*

U.S. Cl. 514—12 **2 Claims**

1. A pharmaceutical composition comprising a recombinant functional human factor VIII polypeptide solely from a single amino acid sequence as depicted in FIG. **10** having the capability of correcting human factor VIII deficiencies, together with a pharmaceutically acceptable carrier.

5,668,109

PEPTIDES FOR INHIBITING PEPSIN RELEASE

Monique Descroix-Vagne, St-Cyr-Au-Mont-D'Or; Danielle Pansu, Lons-le Saunier, and Thierry Tarrade, Gif sur Yvette, all of France, assignors to Societe de Conseils de Recherches et D'Applications Scientifiques (S.C.R.A.S.), France

Filed Mar. 15, 1995, Ser. No. 404,512

Claims priority, application United Kingdom, Mar. 16, 1994, 9405162

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—13 **25 Claims**

1. A peptide of the general formula I

$$A_1—A_2—A_3—X \qquad I$$

in which:

A_1 represents the residue L-Thr or D-Thr; or one of the following sequences in which at least one amino acid residue may be of D configuration:

Val-Thr,

Pro-Val-Thr,

Arg-Pro-Val-Thr,

Glu-Arg-Pro-Val-Thr,

His-Glu-Arg-Pro-Val-Thr,

Gln-His-Glu-Arg-Pro-Val-Thr,

Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Ser-Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Lys-Ser-Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Gly-Lys-Ser-Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr,

Pro-Gly-Lys-Ser-Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr or

Glu-Pro-Gly-Lys-Ser-Ser-Ile-Leu-Gln-His-Glu-Arg-Pro-Val-Thr;

A_2 represents the sequence Lys-Pro-Gln-Ala in which at least one amino acid residue may be of D configuration;

A_3 represents a covalent bond or the sequence Gly-A_4-A_5 in which each of A_4 and A_5 independently represents a basic amino acid residue; and

X represents a hydroxy, amino or alkylamino group; with the proviso that the peptide contains at least one D-amino acid residue.

5,668,110

PEPTIDES AND COMPOUNDS THAT BIND TO THE IL-5 RECEPTOR

Ronald W. Barrett, Saratoga; Bruce P. England, Fremont; Peter J. Schatz, Mountain View; Derek Sloan, Los Gatos, and Min-Jia Chen, San Francisco, all of Calif., assignors to Affymax Technologies N.V., Greenford, England

Filed Jun. 7, 1995, Ser. No. 485,302

Int. Cl.[6] A61K *38/00*; **C07K** *5/00*

U.S. Cl. 514—13 **18 Claims**

1. A method for treating a patient suffering from a disorder that is mediated by IL-5, comprising administering to the patient, a therapeutically effective dose of a compound comprising:

(1) a core sequence of amino acids:

$$CX_1RX_2X_7X_8X_3X_4X_5WX_6C$$

where X_1 is D, E, I, S, T, W, or Y; X_2 is D, F, G, I, L, S, V, W, or Y; X_3 is D, E, G, L, N, S, T, or W; X_4 is H or R; X_5 is A, K, R, S, T, V, or W; X_6 is D, E, F, L, M, P, Q, or V; X_7 is I or V; (SEQ ID NO:1), and dimers and oligomers thereof, having

(a) a molecular weight of less than about 5000 daltons, and

(b) a binding affinity to IL5-R as expressed by an IC_{50} of no more than about 100 μm,

wherein from zero to all of the —C(O)NH— linkages of the peptide have been replaced by a linkage selected from the group consisting of a —$CH_2OC(O)NR$— linkage; a phosphonate linkage; a —$CH_2S(O)_2NR$— linkage; a —CH_2NR— linkage; and a —$C(O)NR^6$— linkage; and a —NHC(O)NH— linkage where R is Hydrogen or lower alkyl and R^6 is lower alkyl,

further wherein the N-terminus of said peptide or peptide mimetic is selected from the group consisting of a —NRR^1 group; a —NRC(O)R group; a —NRC(O)OR group; a —$NRS(O)_2R$ group; a —NHC(O)NHR group; a succinimide group; a benzyloxycarbonyl-NH— group; and a benzyloxycarbonyl-NH— group having from 1 to 3 substituents on the phenyl ring selected from the group consisting of lower alkyl, lower alkoxy, chloro, and bromo, where R and R^1 are independently selected from the group consisting of hydrogen and lower alkyl,

and still further wherein the C-terminus of said peptide or peptide mimetic has the formula —$C(O)R^2$ where R^2 is selected from the group consisting of hydroxy, lower alkoxy, and —NR^3R^4 where R^3 and R^4 are independently selected from the group consisting of hydrogen and lower alkyl and where the nitrogen atom of the —NR^3R^4 group can optionally be amine group of the N-terminus of the peptide so as to form a cyclic peptide, or a physiologically acceptable salt thereof.

5,668,111

SUSTAINED-RELEASE PREPARATION

Shigeru Kamei, Takarazuka; Yasutaka Igari, Kobe, and Yasuaki Ogawa, Ohyamazaki-cho, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

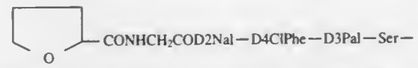
Division of Ser. No. 162,698, Dec. 7, 1993, Pat. No. 5,480,868. This application Jun. 6, 1995, Ser. No. 471,382

Claims priority, application Japan, Dec. 7, 1992, 4-327070; Feb. 5, 1993, 5-108978; Jun. 16, 1993, 5-145134

Int. Cl.[6] A61K *38/00*; **C08G** *63/08*

U.S. Cl. 514—15 **6 Claims**

1. A method for treating a luteinizing hormone-dependent disease or a follicle stimulating hormone-dependent disease in a mammal which comprises administering to a mammal in need thereof a therapeutically effective amount of a sustained-release preparation comprising a physiologically active peptide of the following formula:



$$\text{— CONHCH}_2\text{COD2Nal — D4ClPhe — D3Pal — Ser —}$$

$$\text{— NMeTyr — DLys(Nic) — Leu — Lys(Nisp) — Pro — DAlaNH}_2$$

or an acetate salt thereof, and a biodegradable polymer having a terminal carboxyl group.

5,668,112

HYDROPHOBIC PEPTIDE ESTERS AND AMIDES

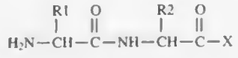
Peter E. Lipsky, Dallas, and Dwain L. Thiele, Coppell, both of Tex., assignors to Board of Regents, The University of Texas Sys., Austin, Tex.

Continuation of Ser. No. 123,430, Sep. 17, 1993, abandoned, which is a division of Ser. No. 684,010, Apr. 11, 1991, Pat. No. 5,304,474, which is a continuation of Ser. No. 324,151, Mar. 15, 1989, Pat. No. 5,068,223, which is a continuation-in-part of Ser. No. 168,177, Mar. 15, 1988, Pat. No. 5,047,041, which is a continuation-in-part of Ser. No. 774,051, Sep. 9, 1985, Pat. No. 4,752,602. This application Sep. 22, 1994, Ser. No. 310,677

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **6 Claims**

4. A method for inhibiting bone marrow graft-versus-host disease comprising the step of contacting bone marrow cells to be grafted with an aqueous solution comprising a compound which competitively inhibits lymphocyte uptake of Leu—Leu—OMe and forms a membranolytic product, wherein said compound has the structure:



wherein

R1 and R2 represent hydrophobic side chains of amino acids;

X represents —OR3 or —NHR4;

R3 is selected from the group consisting of aryl, aralkyl, and alkaryl; and

R4 is selected from the group consisting of alkyl, aryl, aralkyl and alkaryl.

5,668,113

METHOD OF USING 1,5-ANHYDROHEXITOL NUCLEOSIDE ANALOGUES TO TREAT VIRAL INFECTIONS

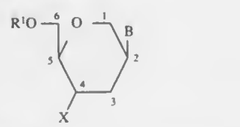
Erik Désiré Alice De Clercq, Lovenjoel; Piet André Maurits Herdewlin, Rotselaar, and Arthur Albert Edgard Van Aerschot, Heist o/d Berg, all of Belgium, assignors to Stichting Rega VZW, Belgium

Division of Ser. No. 170,117, Dec. 17, 1993, Pat. No. 5,607,922. This application Jun. 7, 1995, Ser. No. 482,823

Int. Cl.[6] A61K *31/70;* **C07H** *19/04*

U.S. Cl. 514—42 **9 Claims**

1. A method for the antiviral treatment of an animal or patient infected with a herpes virus or a pox virus comprising administering an effective amount, of a 1,5-anhydrohexitol nucleoside analogue, or a pharmaceutical salt or ester thereof, represented by the general formula I:



(I)

wherein:

B is a heterocyclic ring which is derived from the group which consists of pyrimidine and purine bases, and

X represents hydrogen, azido, F, Cl, Br, I, amino, $—NHR^2$, $—N(R^2)_2$, $—OR^2$, $—SR^2$ or CN;

wherein R^1 and R^2 are the same or different, and are hydrogen, acyl, phosphate, or a branched or straight chain, saturated or unsaturated, substituted or unsubstituted hydrocarbon radical with 1–20 carbon atoms or when

X is hydrogen, a double bond is situated between the 3- and 4-position of the 1,5-anhydro-hexitol ring, to an animal or patient for whom such therapeutic treatment is indicated and wherein said amount is effective to treat viral diseases caused by one of a herpes virus and a pox virus.

5,668,114

NADH AND NADPH PHARMACEUTICALS FOR TREATING HYPERTENSION

Joerg G. D. Birkmayer, Vienna, Austria, assignor to Birkmayer Pharmaceuticals, New York, N.Y.

Filed May 8, 1996, Ser. No. 646,898

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—52 **18 Claims**

1. A method of treating high blood pressure, comprising the step of orally administering to a patient suffering from hypertension an effective amount of NADH or NADPH, or a physiologically compatible salt of NADH or NADPH, said NADH or NADPH or salt being coated with an acid stable protective film.

5,668,115

METHODS FOR INHIBITING THE CHEMOTAXIS OF NEUTROPHILS

Ryoichi Osawa, Iruma; Isao Suda, Tokorozawa; Masaaki Numata, Kawagoe; Mamoru Sugimoto; Kenkichi Tomita, both of Tokyo; Nobuyuki Kibushi, Iruma; Takayuki Ishii, Tokyo; Naokazu Sugiyama, Houya; Makiko Kasano; Tae Yasunaga, both of Tokorozawa; Makoto Tanaka, Higashimurayama; Tomoya Ogawa, Musashino, and Mariko Ishii, Tokyo, all of Japan, assignors to MECT Corporation, Tokyo, Japan

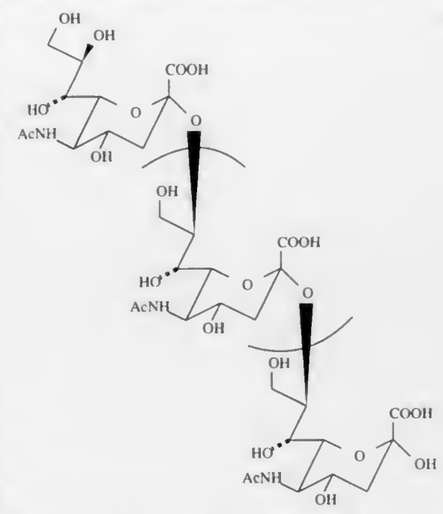
Division of Ser. No. 219,236, Mar. 28, 1994, Pat. No. 5,516,764, which is a continuation of Ser. No. 846,089, Mar. 5, 1992, abandoned. This application May 25, 1995, Ser. No. 450,699

Claims priority, application Japan, Mar. 7, 1991, 3-67966; Jul. 24, 1991, 3-208427; Aug. 12, 1991, 3-226578

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—54 **2 Claims**

1. A method for inhibiting the chemotaxis of neutrophils comprising administering to a patient in need of such treatment an amount effective to inhibit the chemotaxis of neutrophils of colominic acid or a compound represented by formula [I]



(I)

wherein n is an integer from 0 to 10, or a pharmaceutically acceptable salt thereof.

5,668,116

ANTI-INFLAMMATORY COMPOUNDS AND COMPOSITIONS

David Cullis-Hill, Bondi Junction, and Peter Ghosh, Fairlight, both of Australia, assignors to Anthropharm Pty. Limited, Bondi Junction, Australia

Continuation of Ser. No. 182,541, Jan. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 71,277, Jun. 4, 1993, abandoned, which is a division of Ser. No. 903,081, Jun. 10, 1992, Pat. No. 5,470,840, which is a division of Ser. No. 423,455, Sep. 19, 1989, Pat. No. 5,145,841. This application Mar. 11, 1996, Ser. No. 613,535

Claims priority, application Australia, Mar. 19, 1987, P10951; Jun. 15, 1987, P12478; Dec. 9, 1987, 915819

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—54 **6 Claims**

1. A method of treating an infection in a host infected by a virus selected from the group consisting of Friend Leukemia Virus, Herpes Simplex Type 1 and Herpes Simplex Type 2, comprising the step of administering to said host an effective amount of a pure divalent metal ion chelate of a polysulfate of xylan having glycosidically linked D-glucuronyl side chains with divalent metal ions chelated thereto wherein substantially all monovalent ions have been substituted by divalent metal ions being selected from the group consisting of Ca^{2+}, Mg^{2+}, Cu^{2+} and Zn^{2+}.

5,668,117

METHODS OF TREATING NEUROLOGICAL DISEASES AND ETIOLOGICALLY RELATED SYMPTOMOLOGY USING CARBONYL TRAPPING AGENTS IN COMBINATION WITH PREVIOUSLY KNOWN MEDICAMENTS

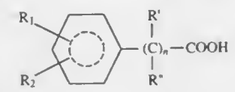
Howard K. Shapiro, 214 Price Ave. F32, Narberth, Pa. 19072

Continuation-in-part of Ser. No. 26,617, Feb. 23, 1993, abandoned, which is a continuation of Ser. No. 660,561, Feb. 22, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 62,201

Int. Cl.[6] A01N *43/04;61/00;* **C07H** *1/00;* **C08B** *37/08*

U.S. Cl. 514—55 **29 Claims**

1. A composition for treating a mammal suffering from a neurological disease characterized in part by covalent bond crosslinking between the mammal's nerve cells, other cellular structures and their intracellular and extracellular components with disease-induced carbonyl-containing aliphatic or aromatic hydrocarbons present in the mammal, said composition comprising a therapeutically effective amount of a dosage in the range of one gram/day to forty grams/day of at least one carbonyl trapping agent to compete with and covalently bind to said disease-induced carbonyl-containing aliphatic or aromatic hydrocarbons, said carbonyl trapping agent being a compound of the formula



wherein

R_1 is selected from the group consisting of $—NH_2$; -aminoalkyl having 1–10 carbons; $—NHC(=NH)NH_2$; $—(CH_2)_nNHC(=NH)NH_2$ wherein n is 1–10; $C(=NH)NH_2$; $—(CH_2)_n—CH=NH(=NH)NH_2$ wherein n is 1–10; $—NHC(=NH)NHNH_2$; $—(CH_2)_nNHC(=NH)NHNH_2$ wherein n is 1–10; $—(CH_2)_n—CH=NC(=NH)NHNH_2$ wherein n is 1–10; $—NHNHC(=NH)NH_2$; $—CH_2)_n—NHNHC(=NH)NH_2$ wherein n is 1–10; and $—(CH_2)_n—CH=N—NHC(=NH)NH_2$ wherein n is 1–10;

R_2 is selected from the group consisting of H; —OH; $—O—CH_3$; —OR' wherein R' is alkyl of 2–10 carbons; aminoalkyl wherein the alkyl group is 1–10 carbons; $—SO_3H$; $—CH_3$; and $—(CH_2)_nCH_3$ wherein n is 1–10; and

R' and R" are H, OH or CH_3; and n is 0 or 1.

5,668,118

METHOD OF SYNTHESIS OF 2-O-DESULFATED HEPARIN AND USE THEREOF FOR INHIBITION OF ELASTASE AND CATHEPSPIN G

Thomas P. Kennedy, Richmond, Va., assignor to Cavalier Pharmaceuticals, Richmond, Va.

Continuation-in-part of Ser. No. 185,069, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 919,309, Jul. 24, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,436

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—56 **11 Claims**

1. A method for inhibiting neutrophil elastase or cathepsin G in a mammal comprising administering to the mammal an inhibiting amount of partially desulfated heparin made by the process comprising alkalinizing a solution containing heparin to pH 13.

5,668,119

TOPICAL PHARMACEUTICAL CONTAINING HEPARIN AND METHOD OF TREATMENT

Rajko D. Medenica, 2252 Broadway, New York, N.Y. 10024

Filed Feb. 22, 1996, Ser. No. 603,861

Int. Cl.[6] A61K *31/725*

U.S. Cl. 514—56 **21 Claims**

1. A topical pharmaceutical composition effective for the treatment of thrombosis or hematomas comprising a therapeutically effective amount of each of heparin, allantoin, thymol, and mefenamic acid, dispersed in a pharmaceutically-acceptable carrier.

5,668,120

IONTOPHORETIC DELIVERY OF BISPHOSPHONATES TO THE ALVEOLAR BONE

Hisashi Shinoda, and Hiroshi Horiuchi, both of Sendai, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 228,982, Apr. 18, 1994. This application Jun. 27, 1995, Ser. No. 495,266

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—102 **19 Claims**

1. A method of inhibiting alveolar bone resorption or stabilize tooth movement during orthodontic procedures of a human or other animal comprising:

a) administering a reservoir to the gingival tissue of the oral cavity such that the reservoir is in contact with the exposed tissue nearest to the alveolar bone to be treated wherein the reservoir is a composition having a pH which maintains an active compound in a negatively charged state and comprises from about 0.002 mg to about 20 mg of the active compound having the structure:



wherein: n is an integer from 0 to 7; R^1 is hydrogen, chloro, amino, or hydroxy; X is —NH—, quaternary amine, oxygen, sulfur, or a single bond; R^2 is a 5- to 7-membered carbocycle, a 5- to 7-membered heterocycle having from 1 to 3 heteroatoms, $—NH_2$, amino substituted with one alkyl or two alkyl groups to give a secondary or tertiary amine, respectively, quaternary amino, or hydrogen; wherein if R^2 is a substituted 5- to 7-membered carbocycle or heterocycle, the substituent is one or more substituents selected from the group consisting of substituted and unsubstituted, saturated or unsaturated alkyl having from 1 to about 6 carbon atoms, substituted and unsubstituted aryl, substituted and unsubstituted benzyl, hydroxy, halogen, carbonyl, alkoxy, nitro, amido, amino, substituted amino, carboxylate, or combinations thereof; each R^3 is, independently, hydrogen, or substituted or unsubstituted alkyl saturated or unsaturated having from 1 to about 4 carbon atoms; or their pharmaceutically-acceptable salts and esters; and

b) passing a safe and effective amount of electrical current through two electrodes, one electrode being a negative electrode in contact with the reservoir, the second electrode being a positive electrode in contact with the human or other animal being treated;

wherein the composition has a maximum osmolarity of about 150 mM and the electrical current is passed from about 1 minute to about 24 hours and wherein the negatively charged active compound passes from the reservoir in contact with the tissue into the tissue therebeneath.

5,668,121

GLUTAMATE (NMDA) RECEPTOR ANTAGONISTS

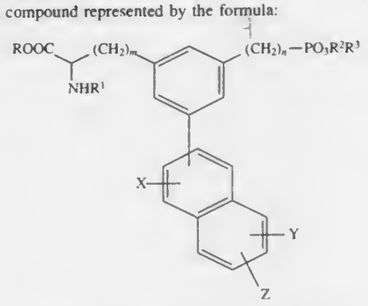
Christopher Franklin Bigge, and James Jia-He Li, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 271,961, Jul. 8, 1994, Pat. No. 5,489,717. This application Sep. 15, 1995, Ser. No. 534,079

Int. Cl.[6] A61K *31/66;* **C07F** *9/22;9/02;* **C07C** *229/00*

U.S. Cl. 514—114 **14 Claims**

1. A compound represented by the formula:



or a pharmaceutically acceptable acid addition, or base salt thereof wherein (a) m and n are independently an integer of 0 to 3; (b) R, R^2 and R^3 are independently hydrogen or a pharmaceutically acceptable labile ester or amide residue; (c) R^1 is hydrogen or a protective group; and (d) X, Y and Z are independently hydrogen, halogen, amino, hydroxy, hydroxyalkyl having 1 to 6 carbon atoms, haloalkyl having 1 to 6 carbon atoms, cyano, nitro, alkyl having 1 to 6 carbon atoms, cycloalkyl, aryl, aralkyl, aminoalkyl having 1 to 6 carbon atoms or alkoxy having 1 to 6 carbon atoms.

5,668,122

METHOD TO TREAT CANCER WITH TETRACYCLINES

Rose S. Fife, 5 Smith La., Zionsville, Ind. 46077, and George W. Sledge, 612 King Dr., Indianapolis, Ind. 46260

Continuation of Ser. No. 98,137, Jul. 28, 1993, abandoned. This application May 1, 1995, Ser. No. 431,751

Int. Cl.[6] A61K *31/65*

U.S. Cl. 514—152 **12 Claims**

1. A method to inhibit migration of TCN-sensitive cancer cells without curing the underlying tumor in a human who has identified cancer and is in need of cell migration inhibition, comprising administering to said human a cell migration-inhibiting amount of a tetracycline (TCN) or a pharmaceutically acceptable salt thereof.

5,668,123

METHOD OF MAINTAINING REMISSION FROM VENOUS ULCERS WITH SULPHASALAZINE AND ITS METABOLITE

Christopher Berry, Champigny sur Marne, France, assignor to Synthelabo, Le Plessis Robinson, France

Filed Aug. 30, 1996, Ser. No. 705,951

Claims priority, application France, Sep. 1, 1995, 95 10291

Int. Cl.[6] A61K *31/615*

U.S. Cl. 514—166 **3 Claims**

1. Method of treatment in order to maintain remission from venous ulcers which comprises administering to a patient in need thereof an effective amount of sulphasalazine or 5-aminosalicylic acid.

5,668,124

USE OF ALDOSTERONE ANTAGONISTS TO INHIBIT MYOCARDIAL FIBROSIS

Karl T. Weber, University of Missouri-Columbia, Columbia, Mo. 65212

Continuation of Ser. No. 160,236, Dec. 2, 1993, Pat. No. 5,529,992, which is a continuation-in-part of Ser. No. 871,390, Apr. 21, 1992, abandoned. This application Mar. 28, 1996, Ser. No. 579,237

Int. Cl.[6] A61K *31/71*

U.S. Cl. 514—175 **4 Claims**

1. A method of inhibiting aldosterone-mediated interstitial fibrosis comprising administering to a patient in need thereof an aldosterone antagonist which suppresses activity at aldosterone receptors in a mammalian body, wherein said aldosterone antagonist is administered in a quantity that is therapeutically effective in suppressing interstitial fibrosis without substantially increasing sodium excretion by the body.

5,668,125

USE OF ALDOSTERONE ANTAGONISTS TO INHIBIT MYOCARDIAL FIBROSIS

Karl T. Weber, University of Missouri-Columbia, Columbia, Mo. 65212

Continuation of Ser. No. 160,236, Dec. 2, 1993, Pat. No. 5,529,992, which is a continuation-in-part of Ser. No. 871,390, Apr. 21, 1992, abandoned. This application Dec. 28, 1995, Ser. No. 580,206

Int. Cl.[6] A61K *31/71*

U.S. Cl. 514—175 **4 Claims**

1. A method of inhibiting aldosterone-mediated myocardial fibrosis comprising administering to a patient in need thereof an aldosterone antagonist which suppresses activity at aldosterone receptors in a mammalian body, wherein said aldosterone antagonist is administered in a quantity that is therapeutically effective in suppressing aldosterone-mediated myocardial fibrosis without substantially increasing sodium excretion by the body.

5,668,126

BILE ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION, AND USE AS PHARMACEUTICALS

Werner Kramer, Mainz, and Günther Wess, Erlensee, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 208,192, Mar. 10, 1994, Pat. No. 5,462,933, which is a continuation of Ser. No. 806,799, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 581,390, Sep. 12, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,689

Claims priority, application Germany, Sep. 14, 1989, 39 30 696.8

The portion of the term of this patent subsequent to Oct. 31, 2012, has been disclaimed.

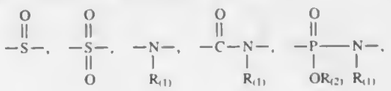
Int. Cl.[6] C07J *43/00;17/00;* **A61K** *31/58*

U.S. Cl. 514—176 **4 Claims**

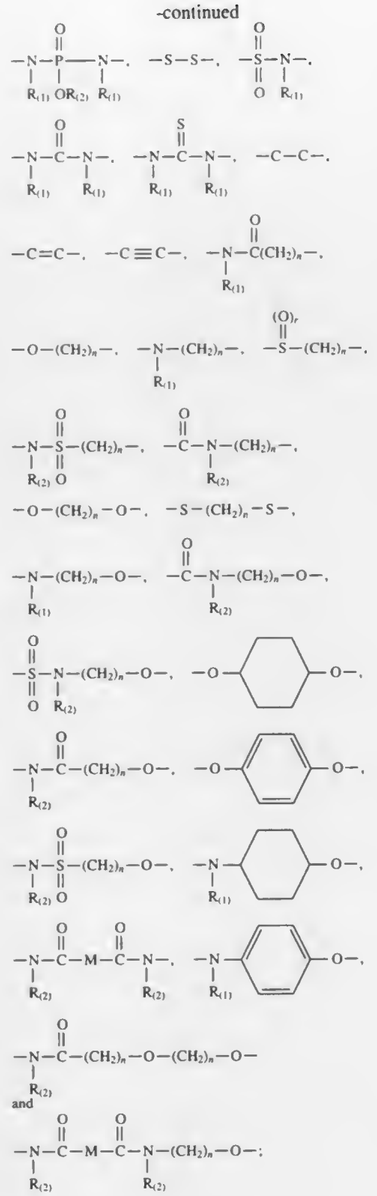
1. A bile acid conjugate compound of the formula I

W—X—G

wherein W is an HMG-CoA reductase inhibitor, G is a bile acid radical in the form of the free acid, an ester or amide or a salt or a form derivatized on the alcohol groups, and X is a connecting member selected from the following groups



-continued



and

in which

R(1)=H, $(C_1–C_8)$-alkyl, the group



a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy, or a benzyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy,

R(2)=H, $(C_1–C_8)$-alkyl, a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy, or a benzyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy,

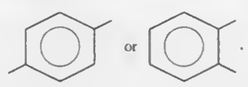
m=0–6,

n=1–16,

p=1, 2 or 3,

r=0–2 and

M=$—(CH_2)_m—$, $—(CH=CH)_p—$, $—C\equiv C—$,



5,668,127

NITROIMIDAZOLE ANTIBACTERIAL COMPOUNDS AND METHODS OF USE THEREOF

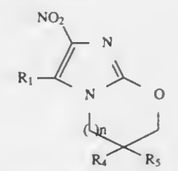
William R. Baker, Bellevue; Cai Shaopei, and Eric L. Keeler, both of Seattle, all of Wash., assignors to PathoGenesis Corporation, Seattle, Wash.

Filed Jun. 26, 1995, Ser. No. 496,850

Int. Cl.[6] C07D *265/12;267/12;267/22*

U.S. Cl. 514—183 **15 Claims**

1. A compound of the formula:

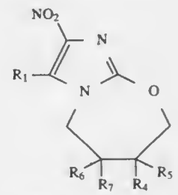


wherein R_1 is hydrogen, halogen, loweralkyl, haloloweralkyl, cycloalkyl, heterocycle, substituted heterocycle and heterocyclicalkyl;

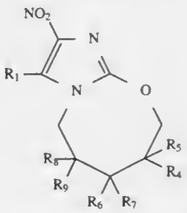
R_1 and R_5 are independently selected from hydrogen, loweralkyl, haloloweralkyl, aryl, alkylaryl, alkoxy, alkoxyalkyl, alkoxyaryl, haloalkoxyaryl, alkoxyalkoxyaryl, carbamate, carboxamide, alkylheterocycle, and alkoxyheterocycle;

n is 1, 2 or 3;

provided that when n is 2 or 3, the compounds of the invention can be additionally substituted as shown in the following formulas:



or



wherein R_6, R_7, R_8 and R_9 are independently selected from hydrogen, loweralkyl, aryl, alkylaryl, alkoxyalkyl, alkoxy-

alkylaryl, alkoxyalkylheterocycle, alkylarylalkylaryl, alkylarylaryl, alkylcycloalkyl, alkoxyaryl, alkylheterocycle, and alkoxyheterocycle; and the pharmaceutically acceptable salts thereof.

5,668,128

AZIRIDINE DERIVATIVES, THEIR PRODUCTION AND USE

Shigetoshi Tsubotani; Masayuki Takizawa; Mikio Shirasaki, all of Ibaraki; Junji Mizoguchi, Osaka, and Yoshiaki Shimizu, Ibaraki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP95/00718, § 371 Date Sep. 5, 1995, § 102(e) Date Sep. 5, 1995, PCT Pub. No. WO95/28416, PCT Pub. Date Oct. 26, 1995

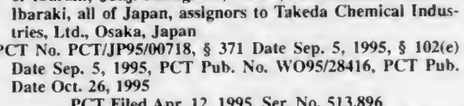
PCT Filed Apr. 12, 1995, Ser. No. 513,896

Claims priority, application Japan, Apr. 13, 1994, 6-074621; Nov. 1, 1994, 6-269175

Int. Cl.[6] **C07D** *203/16;413/00;* **A61K** *31/33;31/535*

U.S. Cl. 514—183 **37 Claims**

1. A compound of the formula:



[I]

wherein

R_1 and Q are independently a carboxyl group which may be esterified or amidated;

R_2 is hydrogen, an acyl group or a C_{1-20} hydrocarbon residue; and

X is a C_{1-20} divalent hydrocarbon residue;

or a salt thereof.

5,668,129

N-SUBSTITUTED AZAHETEROCYCLIC CARBOXYLIC ACIDS AND ESTERS THEREOF

Knud Erik Andersen, Smørum; Uffe Bang Olsen, Vallensbæk; Hans Petersen, Vanløse; Frederik Christian Grønvald, Vedbæk, all of Denmark; Ursula Sonnewald, Trondheim, Norway; Tine Krogh Jørgensen, Herlev, and Henrik Sune Andersen, København Ø, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

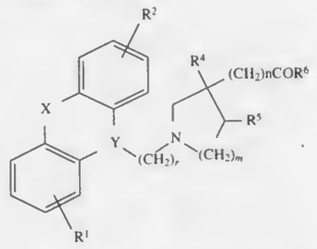
Division of Ser. No. 367,648, Jan. 3, 1995. This application Mar. 27, 1996, Ser. No. 626,745

Claims priority, application Denmark, Jan. 4, 1994, 0019/94; Nov. 9, 1994, 1290/94

Int. Cl.[6] **C07D** *401/06;403/06;417/06;* **A61K** *31/445*

U.S. Cl. 514—183 **15 Claims**

1. A compound of formula I



(I)

wherein

R^1 and R^2 independently are hydrogen, halogen, trifluoromethyl, C_{1-6}-alkyl or C_{1-6}-alkoxy;

Y is $>N—CH_2—$, wherein only the underscored atom participates in the ring system;

X is $—CH=CH—CH_2—$, $—CH_2—CH=CH—$ or $—CH_2CH_2CH_2—$;

r is 1, 2, or 3;

m is 1 or 2;

n is 1 when m is 1 and n is 0 when m is 2;

R^4 and R^5 are hydrogen when m is 1;

R^4 and R^5 are hydrogen or form a bond when m is 2; and

R^6 is OH or C_{1-8}-alkoxy; or

a pharmaceutically acceptable salt thereof.

5,668,130

MEDICAMENT FOR TREATING GASTROINTESTINAL DISORDERS

Andrew Alexander McColm, Greenford, Great Britain, assignor to Glaxo Group Limited, Great Britain

Continuation of Ser. No. 357,223, Dec. 12, 1994, abandoned, and Ser. No. 946,576, Sep. 18, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,583

Claims priority, application United Kingdom, Sep. 20, 1991, 9120131

Int. Cl.[6] **A61K** *31/555;31/43;31/415*

U.S. Cl. 514—184 **28 Claims**

1. A method for treating gastrointestinal disorders caused or mediated by *H. pylori* infections in humans or animals which comprises administering to a human or animal in need thereof an amount of ranitidine bismuth citrate effective against *H. pylori* in combination with a pharmaceutically acceptable carrier and an amount of amoxycillin effective against *H. pylori* in combination with a pharmaceutically acceptable carrier, said amoxycillin being administered in relative amounts such that the combination provides a greater than additive effect, said administration being concurrent or nonconcurrent.

5,668,131

SUBSTITUTED AMINOALKYLAMINOPYRIDINES

Jörg Senn-Bilfinger, Constance, Germany, assignor to BYK Gulden Lomberg Chemische Fabrik GmbH, Constance, Germany

PCT No. PCT/EP94/03911, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO95/15324, PCT Pub. Date Jun. 8, 1995

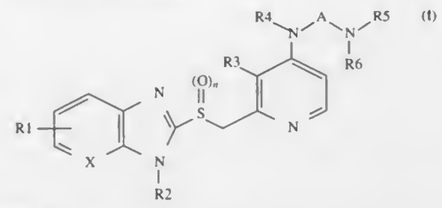
PCT Filed Nov. 26, 1994, Ser. No. 652,505

Claims priority, application Switzerland, Dec. 1, 1993, 3581/93

Int. Cl.[6] **C07D** *401/12;401/14;* **A61K** *31/415;31/44*

U.S. Cl. 514—234.5 **11 Claims**

1. A compound of formula I



(I)

in which

R1 is hydrogen, 1-4C-alkyl, 1-4C-alkoxy, halogen, trifluoromethyl, wholly or predominantly fluorine-substituted 1-4C-alkoxy, chlorodifluoromethoxy or 2-chloro-1,1,2-trifluoroethoxy,

R2 is hydrogen or 1-4C-alkyl,

R3 is halogen or 1-4C-alkyl,

R4 is 1-7C-alkyl,

A is 1-7C-alkylene,

X is N or CH, and

n is the number 0, 1 or 2,

and in which

R5 is 1-7C-alkyl, 3-8C-cycloalkyl or Ar-1-4C-alkyl and

R6 is 1-7C-alkyl, 3-8C-cycloalkyl or Ar-1-4C-alkyl,

where

Ar is phenyl, furyl, naphthyl, tetrahydronaphthyl, or phenyl which is substituted by R7, R8 and R9,

or in which

R5 and R6 together represent, with inclusion of the nitrogen atom to which both are bonded, an unsubstituted or substituted heterocyclic ring which is selected from the group consisting of pyrrolidine, piperidine, piperazine, morpholine, indoline, octahydro- 1H-indole, 1,2,3,4-tetrahydroquinoline, 1,2,3,4-tetrahydroisoquinoline, decahydroquinoline and decahydroisoquinoline,

where

a substituted pyrrolidino radical is substituted by one or two identical or different substituents selected from the group consisting of 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkyl, 1-4C-alkoxycarbonyl, 1-4C-alkylcarbonyloxy, hydroxy-1-4C-alkyl, hydroxyl and carboxyl,

a substituted piperidino radical is substituted by one, two or three identical or different substituents selected from the group consisting of 1-4C-alkyl, gem.-di-1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkoxy-1-4C-alkyl, 1-4C-alkoxycarbonyl, 1-4C-alkylcarbonyl, 1-4C-alkylcarbonyl-1-4C-alkyl, hydroxy-1-4C-alkyl, dihydroxy-1-4C-alkyl, di-1-4C-alkylamino, di-1-4C-alkylamino- 1-4C-alkyl, pyrrolidino, piperidino, pyrrolidinyl-1-4C-alkyl, piperidinyl-1-4C-alkyl, carbamoyl, di-1-4C-alkylaminocarbonyl, piperidinocarbonyl, morpholinocarbonyl, phenyl, phenyl substituted by R7, R8 and R9, phenyl-1 -4C-alkyl, benzoyl, benzoyl substituted by halogen, or formyl, carboxyl, cyano, hydroxyl, halogen and sulfo,

a substituted piperazino radical can be substituted in position 2, 3, 5 or 6 by a 1-4C-alkyl radical and is substituted in position 4 by a substituent selected from the group consisting of 1-4C-alkyl, 3-7C-cycloalkyl, 3-7C-cycloalkyl- 1-4C-alkyl, 1-4C-alkoxycarbonyl, 1-4C-alkoxycarbonyl-1-4C-alkyl, hydroxy-1-4C-alkyl, di-1-4C-alkylamino-1-4C-alkyl, halo-1 -4C-alkyl, carbamoyl, phenyl, phenyl substituted by R7, R8 and R9, phenyl-1-4C-alkyl, phenyl-1 -4C-alkyl substituted by R7, R8 and R9 in the phenyl radical, naphthyl, benzhydryl and benzhydryl substituted by halogen,

a substituted morpholino radical is substituted by one or two identical or different 1-4C-alkyl radicals,

a substituted 1-indolinyl radical can be substituted in position 2 and/or 3 by a carboxyl group or by one or two identical or different 1-4C-alkyl radicals, and can be substituted in the benzo moiety by one or two identical or different substituents selected from the group consisting of 1-4C-alkyl, halogen and nitro,

a substituted 1,2,3,4-tetrahydroquinoline radical is substituted by one or two identical or different substituents selected from the group consisting of 1-4C-alkyl and halogen,

a substituted 1,2,3,4-tetrahydroisoquinoline radical can be substituted on positions 1, 3 and/or 4 by one or two identical or different substituents selected from the group consisting of 1-4C-alkyl, carboxyl, phenyl, phenyl-1-4C-alkyl or phenyl which is substituted by R7, R8 and R9 in the phenyl radical, and can be substituted on the benzo moiety by one or two substituents selected from the group consisting of hydroxyl, 1-4C-alkoxy and di-1-4C-alkylamino,

and where

R7 is hydrogen, 1-4C-alkyl, 1-4C-alkoxy, 1-4C-alkylcarbonyl, halogen, 1-4C-alkylamino or nitro,

R8 is hydrogen, 1-4C-alkyl, 1-4C-alkoxy, halogen or nitro,

and

R9 is hydrogen or trifluoromethyl,

or a salt thereof.

5,668,132

HIV PROTEASE INHIBITORS USEFUL FOR THE TREATMENT OF AIDS

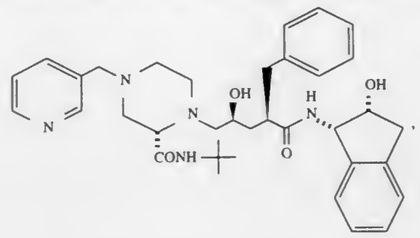
Joseph P. Vacca, Telford; Bruce D. Dorsey, Harleysville; James P. Guare, Quakertown; M. Katharine Holloway; Randall W. Hungate, both of Lansdale, and Rhonda B. Levin, Lafayette Hill, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 407,740, Mar. 21, 1995, Pat. No. 5,527,799, which is a division of Ser. No. 59,038, May 7, 1993, Pat. No. 5,413,999, which is a continuation-in-part of Ser. No. 40,729, Mar. 31, 1993, abandoned, which is a continuation-in-part of Ser. No. 883,825, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,508, Nov. 8, 1991, abandoned. This application May 2, 1996, Ser. No. 641,720

Int. Cl.[6] **A61K** *31/44*

U.S. Cl. 514—252 **6 Claims**

1. A composition comprising a compound of the structure



3-([4,7-dichloro-1,3-benzoxazol-2-yl)methyl]amino)-5-ethyl-6-methyl-pyridin-2(1H)-one, and, optionally, dideoxyinosine, or a pharmaceutically acceptable salt of any of the above.

5,668,133

OPHTHALMIC COMPOSITIONS COMPRISING EMEDASTINE AND METHODS FOR THEIR USE

John M. Yanni, Burleson; Stella M. Robertson, Arlington, both of Tex.; Shigetoshi Okumura, Nara, Japan; Hitoshi Tanaka, Nara-ken, Japan, and Tadayuki Saito, Osaka, Japan, assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 163,973, Dec. 8, 1993, Pat. No. 5,441,958. This application May 22, 1995, Ser. No. 445,850

Int. Cl.[6] **A61K** *31/50*

U.S. Cl. 514—253 **5 Claims**

1. A method for treating the pruritus and/or edema associated with giant papillary conjunctivitis and vernal conjunctivitis, comprising topically administering to an affected eye an antihistaminic effective amount of a compound selected from the group consisting of 1-(2-ethoxyethyl)-2-(4-methyl-1-homopiperazinyl)-benzimidazole and its ophthalmically acceptable acid addition salts.

5,668,134

METHOD FOR PREVENTING OR REDUCING PHOTOSENSITIVITY AND/OR PHOTOTOXICITY REACTIONS TO MEDICATIONS

Paul Dale Klimstra, Northbrook; Barbara Roniker, Chicago, and Edward Allen Swabb, Kenilworth, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 28, 1994, Ser. No. 188,296

Int. Cl.[6] **A61K** *31/395*

U.S. Cl. 514—254 **13 Claims**

1. A method for treating an infection in a patient in a manner which prevents or reduces a photosensitivity and/or phototoxicity reaction which method comprises orally administering to said

patient a once-a-day dose of about 25 mg to about 700 mg of lomefloxacin hydrochloride between the hours of about 4:00 p.m. and about 4:00 a.m.

5,668,135

Patent Not Issued For This Number

5,668,136

TRISUBSTITUTED BENZENE DERIVATIVES, COMPOSITION AND METHODS OF TREATMENT

Teiji Kimura; Nobuhisa Watanabe; Yasutaka Takase; Kenji Hayashi; Makoto Matsui; Hironori Ikuta; Youji Yamagishi; Kozo Akasaka; Hiroshi Tanaka; Issei Ohtsuka; Takao Saeki; Motoji Kogushi, all of Ibaraki, Japan; Tohru Fujimori, Tenafly, N.J., and Isao Saito, Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

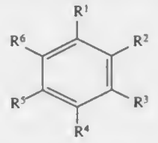
Filed Sep. 11, 1991, Ser. No. 757,908

Claims priority, application Japan, Sep. 25, 1990, 2-251897; Mar. 29, 1991, 3-091477

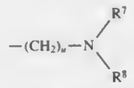
Int. Cl.[6] **A61K** *31/495;31/415;* **C07D** *241/04;233/54*

U.S. Cl. 514—255 **23 Claims**

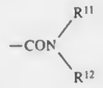
1. A benzene compound represented by the general formula (I):



wherein R^1 stands for a halogen atom, a lower alkyl, a lower alkoxy, a nitro or a cyano group, a group represented by the formula:



wherein R^7 and R^8 may be the same or different and each stands for a hydrogen atom, a lower alkyl or a lower alkylsulfonyl group, and u is 0 or an integer of 1 or 2 or alternatively, R^7 and R^8 may form a ring together with the nitrogen atom to which R^7 and R^8 are bonded, a group represented by the formula: $—CH_2OR^9$ wherein R^9 stands for a hydrogen atom or a lower alkyl group, a group represented by the formula: $—COOR^{10}$ wherein R^{10} stands for a hydrogen atom or a lower alkyl group, a group represented by the formula:

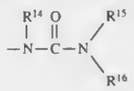


wherein R^{11} and R^{12} may be the same or different and each stands for a hydrogen atom or a lower alkyl group or a group represented by the formula:

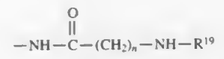


wherein t is 0 or an integer of 1 or 2; and R^{13} stands for a hydrogen atom or a lower alkyl group;

R^2 stands for a group represented by the formula:



wherein R^{14}, R^{15} and R^{16} may be the same or different and each stands for a hydrogen atom or an alkyl, cycloalkyl, alkenyl or alkyloxyalkyl group; alternatively, R^{15} and R^{16} may form a ring together with the nitrogen atom to which R^{15} and R^{16} are bonded, a group represented by the formula: $—NH—R^{18}$ wherein R^{18} stands for an alkyl group or a group represented by the formula:

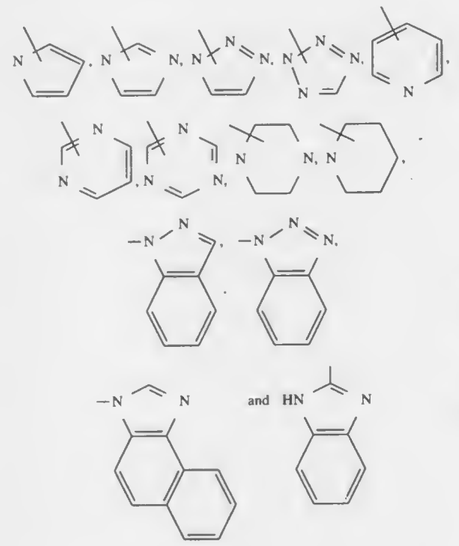


wherein R^{19} stands for an alkyl group and n is an integer of 1 to 3;

R^3 stands for a group represented by the formula: $—(CH_2)_p—X—(CH_2)_m—Y$ wherein X stands for a group represented by the formula: —O—, —S—,



$—SO_2—$, —NH—, $—CH_2—$ or —CH=CH—; p is 0 or 1; m is an integer of 1 to 6; Y is selected from the group consisting of



which may have a substituent (s), said substituent (s) for Y being a

(a) C_1–C_6 lower alkyl group,

(b) a C_1–C_6 lower alkoxy group, an aryl group or an aryl group substituted with a substituent(s) selected from a C_1–C_6 lower alkyl group, a C_1–C_6 lower alkoxy group, C_1–C6 lower alkylsulfonyl group, a halogen atom, a nitro group, a C_1–C_6 lower alkylsulfonylamino group, or a di (C_1–C_6 lower alkyl)sulfonylamino group,

(c) a group represented by the formula: $—(E)_a—COOR^{21}$ wherein E is a C_1–C_6 alkylene or C_1–C_6 alkenylene group, and R^{21} is an H atom, a lower alkyl group, or an amino group, and a is 0 or 1,

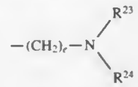
(d) a group represented by the formula: $—(CH_2)_v—OH$ wherein v is 0 or an integer of 1 to 6,

(e) a halogen atom,

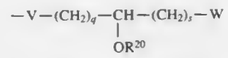
(f) a group represented by the formula: $—(CH_2)_b—NH—(CH_2)_c—CH_3$ wherein b is 0 or an integer of 1 to 4 and c is 0 or an integer of 1 to 5,

(g) a group represented by the formula: $—(CH_2)_d—SO_2\ R^{22}$ wherein d is 0 or an integer of 1 to 6 and R^{22} is a C_1–C_6 lower alkyl group, or

(h) a group represented by the formula:



wherein e is an integer of 1 to 6, and R^{23} and R^{24} may be the same or different and each stands for a hydrogen or a C_1–C_6 lower alkyl or Y is a C_1–C_6 lower alkoxy group or a group represented by the formula:



W wherein V stands for a group represented by the formula: —O—, —S—,



$—SO_2—$, —NH— or $—CH_2—$; q and s are each an integer of 1 to 6; R stands for a hydrogen atom or a lower alkyl group; W has the same definition as Y above;

R^6 stands for a hydrogen atom;

R^4 stands for a hydrogen;

R^5 stands for a hydrogen atom;

or a pharmacologically acceptable salt thereof.

5,668,137

N-HETEROCYCLIC SULFONAMIDES HAVING ENDOTHELIN RECEPTOR ACTIVITY

Paul John Phillips, Congleton; Peter Grahame Ballard, Stockport; Robert Hugh Bradbury, Wilmslow, and Roger James, Congleton, all of United Kingdom, assignors to Zeneca Ltd., London, England

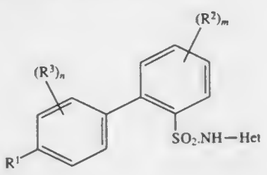
Filed Jun. 20, 1996, Ser. No. 667,131

Claims priority, application United Kingdom, Jun. 22, 1995, 9512697

Int. Cl.[6] **C07D** *241/00;* **A61K** *31/54*

U.S. Cl. 514—255 **9 Claims**

1. A compound of the formula I:



I

wherein

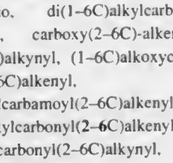
R^1 is (1–6C)alkyl, (2–6C)alkenyl, (2–6C)alkynyl, (1–6C)alkoxy or (1–6C)alkythio, each of which of the last five groups bear a substituent selected from carboxy, (1–6C)alkoxy-carbonyl, carbamoyl, N-(1–6C)alkylcarbamoyl and N,N-di(1–6C)alkylcarbamoyl;

R^2 is an optional substituent selected from halogeno, (1–6C)alkyl, (1–6C)alkoxy, carboxy, (1–6C)alkoxycarbonyl, carbamoyl, N-(1–6C)alkylcarbamoyl, N,N-di(1–6C)alkylcarbamoyl, cyano, amino, N-(1–6C)alkylamino and N,N-di(1–6C)alkylamino;

R^3 is an optional substituent selected from (1–6C)alkyl, amino(1–6C)alkyl, hydroxy(1–6C)-alkyl, N-[(1–4C)alkyl]amino(1–6C)aikyl, N,N-[di(1–4C)alkyl]amino(1–6C)alkyl, carboxy-(1–6C)alkyl, (1–6C)alkoxycarbonyl(1–6C)alkyl, carbamoyl(1–6C)alkyl, (1–6C)alkylcarbamoyl(1–6C)alkyl, di(1–6C)alkylcarbamoyl(1–6C)alkyl, carboxy(1–6C)alkoxy, carboxy(1–6C)alkylthio, (1–6C)alkoxycarbonyl(1–6C)alkoxy, (1–6C)alkoxycarbonyl(1–6C)alkylthio,

carbamoyl(1–6C)alkoxy,
(1–6C)alkylcarbamoyl(1–6C)alkoxy,
di(1–6C)alkylcarbamoyl(1–6C)alkoxy,
carbamoyl(1–6C)alkylthio, (1–6C)alkylcarbamoyl-(1–6C)alkylthio, di(1–6C)alkylcarbamoyl(1–6C)alkylthio, (2–6C)alkenyl, carboxy(2–6C)-alkenyl, (2–6C)alkynyl, carboxy(2–6C)alkynyl, (1–6C)alkoxycarbonyl(2–6C)alkenyl, carbamoyl(2–6C)alkenyl,
N-(1–6C)alkylcarbamoyl(2–6C)alkenyl, N,N-di(1–6C)alkylcarbonyl(2–6C)alkenyl,
(1–6C)alkoxycarbonyl(2–6C)alkynyl,
carbamoyl(2–6C)alkynyl,
N-(1–6C)alkylcarbamoyl(2–6C)alkynyl, N,N-di(1–6C)alkylcarbamoyl(2–6C)alkynyl,
halogeno(2–6C)alkyl, trifluoromethyl, trichloromethyl, tribromomethyl, (1–6C)alkoxy, dihalogeno(1–6C)alkoxy, trihalogeno(1–6C)alkoxy, (2–6C)alkenyloxy, (1–4C)alkoxy-(1–6C)alkyl, (1–4C)alkylthio(1–6C)alkyl, (1–4C)alkylsulphinyl(1–6C)alkyl, (1–4C)alkylsulphonyl(1–6C)alkyl, (1–4C)alkylenedioxy, (3–6C)cycloalkyl, (3–8C)cycloalkyl(1–6C)alkyl, phenyl, phenyl(1–6C)alkyl, phenoxy, phenyl(1–6C)alkoxy, halogeno, hydroxy, mercapto, cyano, nitro, carboxy, (1–6C)alkoxycarbonyl, (2–6C)alkenyloxycarbonyl, phenyloxy-carbonyl, phenyl(1–6C)alkoxycarbonyl, (1–6C)alkanoyl, benzoyl, (1–6C)alkylthio, (1–6C)alkylsulphinyl, (1–6C)alkylsulphonyl, phenylthio, phenylsulphinyl, phenylsulphonyl, (1–6C)alkanoylamino, trifluoroacetyl, trifluoroacetamido, N-[(1–4C)alkyl]-trifluoroacetamido, benzamido, N-[(1–4C)alkyl]benzamido, carbamoyl, (1–4C)alkyl-carbamoyl, di-(1–4C)alkylcarbamoyl, phenylcarbamoyl, sulphamoyl, N-(1–4C)alkyl-sulphamoyl, N,N-di(1–4C)alkylsulphamoyl, N-phenylsulphamoyl, (1–6C)alkane-sulphonamido, benzenesulphonamido, ureido, 3-(1–6C)alkylureido, 3-phenylureido, thioureido, 3-(1–6C)alkylthioureido, 3-phenylthioureido and a group —NRyRz in which Ry and Rz are independently selected from hydrogen, (1–6C)alkyl, phenyl(1–4C)alkyl and (1–6C)alkyl beating a carboxy, (1–6C)alkoxycarbonyl, carbamoyl, (1–6C)alkylcarbamoyl or di(1–6C)alkylcarbamoyl group, or the group —NRyRz taken together complete a 1-pyrrolidinyl, 2-oxo-1-pyrrolidinyl, 1-piperidinyl or 2-oxo-1-piperidinyl ring;

Het is a heterocyclic ring of formula IIa:



IIa

wherein Ra is selected from hydrogen, halogeno, (1–4C)alkyl, (1–4C)alkoxy and trifluoromethoxy; and Rb is selected from hydrogen, halogeno, (1–4C)alkyl, methoxy, ethoxy, trifluoromethyl and ethynyl;

m is zero, 1, 2 or 3;

n is zero, 1, 2 or 3;

and wherein any of said phenyl or benzene moieties of R may be unsubstituted or bear one or two substituents independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, cyano and trifluoromethyl; or a pharmaceutically-acceptable salt thereof.

5,668,138

PHENOYALKYLPIPERAZINE DERIVATIVES

Geneviéve Baziard-Mouysset; Sallouma Younes; Youssef Labssita, all of Toulouse; Marc Payard, Balma; Daniel-Henri Caignard, Paris; Pierre Renard, Versailles, and Marie-Claire Rettori, Courbervoie, all of France, assignors to Adir Et Compagnie, Courbevoie, France

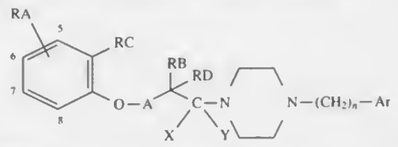
Division of Ser. No. 528,251, Sep. 14, 1995. This application Jul. 10, 1996, Ser. No. 677,795

Claims priority, application France, Sep. 15, 1994, 94 10987

Int. Cl.[6] A61K *31/495;* **C07D** *295/092;295/185;409/06*

U.S. Cl. 514—255 **4 Claims**

1. A compound selected from those of formula (I):



(I)

in which

Ar represents phenyl, naphthyl, but Ar is not trisubstituted phenyl when RB is methyl, substituted phenyl or substituted naphthyl,

n represents 1,

RB represents alkyl, A represents a single bond and RA and RC, which are identical or different, represent, independently of one another, hydrogen or a group chosen from halogen, alkyl, alkyl substituted by one or a number of halogens, and alkoxy,

it being understood that, except when otherwise mentioned,

the terms "alkyl" and "alkoxy" denote linear or branched saturated groups having 1 to 6 carbon atoms inclusive,

the term "substituted" concerning the phenyl and naphthyl substituents means that the latter can be substituted by one to three groups chosen from hydroxyl, alkyl, alkyl substituted by one or a number of halogens, alkoxy and halogen,

an optical isomer thereof in the pure form or in the form of a mixture, and an addition salt thereof with a pharmaceutically-acceptable acid or base.

5,668,139

A1 ADENOSINE RECEPTOR AGONISTS AND ANTAGONISTS

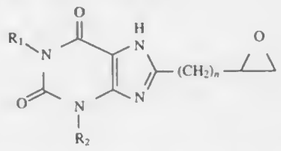
Luiz Belardinelli, Gainesville; Ray Olsson, Tampa; Stephen Baker, Gainesville, all of Fla.; Peter J. Scammells, Highton, Australia; Peter G. Milner, Los Altos, Calif.; Jürg R. Pfister, Los Altos, Calif., and George F. Schreiner, Los Altos, Calif., assignors to University of Flordia Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 330,640, Oct. 28, 1994, Pat. No. 5,631,260, which is a continuation-in-part of Ser. No. 144,459, Oct. 28, 1993, Pat. No. 5,446,046. This application Jun. 6, 1995, Ser. No. 470,113

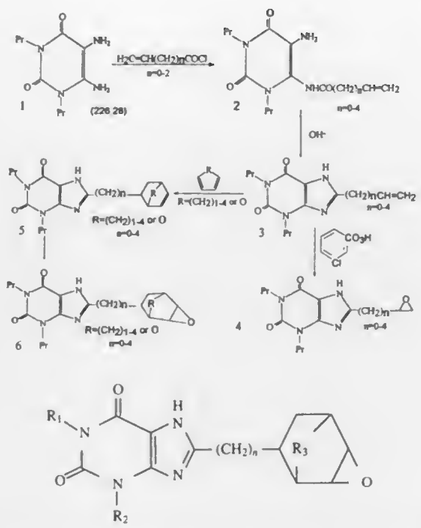
Int. Cl.[6] A61K *31/52;* **C07D** *473/08;473/06;473/34*

U.S. Cl. 514—263 **7 Claims**

1. A method for protecting renal tissue from damage by a nephrotoxic agent, said method comprising administering to a patient an effective amount of a compound having a structure selected from the group consisting of



wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, and n=0–4; and



wherein R_1 and R_2 are the same or different, and can be H or an alkyl group of 1–4 carbons, R_3 is either O or $(CH_2)_{1-4}$, and n=0–4.

5,668,140

SUBSTITUTED 4-AMINOPYRIMIDINES, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS PESTICIDES

Wolfgang Schaper, Diedorf; Gerhard Salbeck, Kriftel; Heinz Ehrhardt, Rehling; Peter Braun, Mainz; Werner Knauf, Eppstein/Taunus; Burghard Sachse, Kelkheim; Anna Waltersdorfer, Frankfurt am Main; Manfred Kern, Lörzweiler, and Peter Lümmen, Niedernhausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

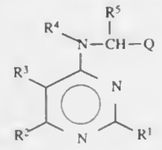
Continuation of Ser. No. 883,824, May 15, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,669

Claims priority, application Germany, May 17, 1991, 41 16 089.4

Int. Cl.[6] A61K *31/505;* **C07D** *239/34;239/42*

U.S. Cl. 514—269 **20 Claims**

1. Substituted 4-aminopyrimidines of the formula I



(I)

in which

R^1 is hydrogen, halogen, $(C_1–C_4)$alkyl or $(C_3–C_6)$ cycloalkyl,

R^2 is $(C_1–C_4)$alkoxy-$(C_1–C_4)$alkyl, or $(C_1–C_4)$alkylthio-$(C_1–C_4)$ alkyl,

R^3 is $(C_1–C_4)$alkoxy,

R^4 is hydrogen or a radical —C(O)-N-R^6R^7 in which R^6 or R^7 are identical or different and are in each case hydrogen, $(C_1–C_{14})$ alkyl, phenyl or phenyl-$(C_1–C_4)$alkyl, where the abovementioned two phenyl groups are unsubstituted or provided with one or two substituents, it being possible for these substituents in each case to be halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$ haloalkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$ -alkylthio or nitro, or R^6 and R^7 together with the nitrogen atom to which they are bonded form a saturated or unsaturated 5- or 6-membered ring selected from the group consisting of imidazole, pyrazole, 1,2,4-triazole, thiazole, piperazine, morpholine and thiomorpholine, which can be provided with one of two substituents, it being possible for these substituents in each case to be $(C_1–C_4)$alkyl, trifluoromethyl, halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio or nitro,

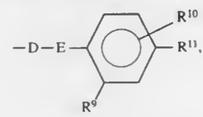
R^5 is hydrogen, $(C_1–C_8)$alkyl or $(C_3–C_6)$ cycloalkyl,

Q has the meaning of Q^1 and

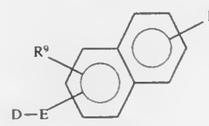
Q^1 is $(C_1–C_{15})$alkyl, optionally substituted by one, two or three halogen atoms, a $(C_1–C_{15})$alkoxy group, a $(C_4–C_8)$cycloalkylalkoxy group, a dioxolanyl group, a $(C_1–C_4)$ alkoxy-$(C_1–C_4)$alkoxy group, a hydroxyl group, a methoxycarbonyl group, a $(C_3–C_6)$cycloalkyl group, a 2-[2-((C 1–C4)alkoxy)ethoxy]ethoxy group, a pyranyloxy group, an imidazol-1-yl group, a triazol-1-yl group, a pyrazol-1-yl group or a group -A-B-R^8 in which A is oxygen, sulfur or imino, B is carbonyl, thiocarbonyl or sulfonyl and R^8 is $(C_1–C_4)$ alkyl, $(C_3–C_6)$ cycloalkyl, $(C_1–C_4)$ haloalkyl, $(C_1–C_4)$alkoxy, a substituted or unsubstituted phenoxy group, a substituted or unsubstituted phenyl group, a substituted or unsubstituted anilino group, a 2,6-dimethylmorpholin-4-yl, 4-methylpiperazin-1-yl, imidazol-1-yl, triazol-1-yl, pyrazol-1-yl group or a mono- or di-$(C_1–C_4)$alkylamino group, or

Q has the meaning of Q^2 and

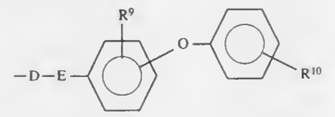
Q^2 is a group of the formulae II, II', II", II"' or II""



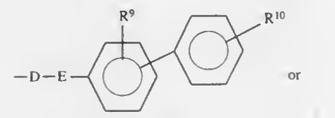
II



II'

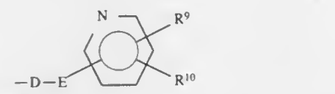


II"



or

II"'



II""

in which

D is a $(C_1–C_6)$alkylene group,

E is a direct bond, oxygen or methyleneoxy,

R^9 and R^{10} are identical or different and are in each case hydrogen, halogen, $(C_1–C_4)$alkyl, $(C_3–C_6)$ cycloalkyl, $(C_1–C_4)$haloalkyl, C_3- or C_4-alkenyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio or nitro,

R^{11} has the meanings given for R^9 and R^{10} and, provided that E is oxygen, R^{11} is a group of the formula X-Y-$(GO)_n$-R^{12} in which

X is a $(C_1–C_8)$alkylene group or a $(C_1–C_4)$alkyleneoxy-$(C_1–C_4)$alkylene group,

Y is oxygen, sulfur or an imino group,

G is a $(C_1–C_8)$alkylene group or a $(C_1–C_4)$alkyleneoxy-$(C_1–C_4)$alkylene group,

n is zero or 1,

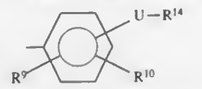
R^{12} is $(C_1–C_4)$alkyl, C_3- or C_4-alkenyl, $(C_4–C_6)$alkadienyl, C_3- or C_4-alkynyl, phenyl-$(C_1–C_3)$alkyl or a group of the formula CH_2—W in which

W is a group of the formula CH=N—OR^{13} in which

R^{13} is hydrogen, $(C_1–C_4)$alkyl, C_3- or C_4-alkenyl or phenyl-$(C_1–C_3)$alkyl,

Q has the meaning of Q^3

Q^3 is a group of the formula III



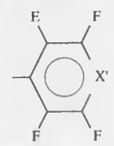
(III)

in which

R^9 and R^{10} have the meanings given above, and

U is a direct bond, oxygen, sulfur, $(C_1–C_3)$alkylene or $(C_1–C_3)$alkyleneoxy,

R^{14} is phenyl or a heterocycle selected from the group consisting of pyridine, pyrimidine, quinoxaline, pyrazine benzoxazole, benzothiazole and quinoline, it being possible for each of the abovementioned two radicals to be unsubstituted or provided with one or two substituents, where these substituents are identical or different and are in each case halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$ haloalkyl, nitro, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkoxy-$(C_1–C_4)$alkyl, phenyl, phenoxy, halophenoxy or $(C_1–C_4)$ alkylphenoxy, provided that U is oxygen, R^{14} is $(C_5–C_{10})$alkyl, allyl, geranyl, farnesyl, $(C_1–C_4)$ haloalkyl, $(C_3–C_6)$cycloalkylmethyl, an ethyl group which is substituted in the 2-position by $(C_1–C_4)$alkoxy, $(C_1–C_4)$ alkoxy-$(C_1–C_4)$alkyl, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfonyl or a phenoxy group which can optionally be substituted by one or two $(C_1–C_4)$alkyl groups, or glycidyl, acetonyl, halophenoxyethyldioxolanyl, 2,2-diethoxyethyl, 1-ethoxycarbonylmethyl, trimethylsilylmethyl, 1-pyridylethyl or a $(C_1–C_4)$alkyl group which is substituted by a $(C_1–C_4)$alkoxyimino or a benzyloxyimino group, a group of fomula IV



(IV)

in which

X' is nitrogen or a group CR^{15} in which

R^{15} is hydrogen, halogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$haloalkyl, $(C_1–C_4)$alkanoyl, nitro, cyano or 1,3-dioxolan-2-yl, and their salts and stereoisomers.

5,668,141

TRANS-2,6-,3,6-AND 4,6-DIAZA-5,6,6A,7,8,12B-HEXAHYDROBENZO[C]PHENANTHRENE COMPOUNDS AS DOPAMINE AGONISTS

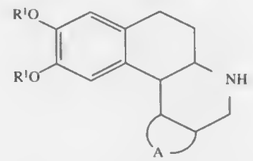
Kazumi Shiosaki, Libertyville; Yu Gui Gu, Grayslake, and Michael Michaelides, Highland Park, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 2, 1996, Ser. No. 626,654

Int. Cl.[6] A61K *31/445;* **C07D** *471/04*

U.S. Cl. 514—285 **24 Claims**

1. The compound having the formula:

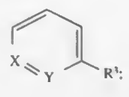


or a pharmaceutically-acceptable salt, ester, carbamate or prodrug thereof,

wherein:

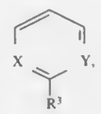
R^1 is hydrogen or a readily-cleavable group;

A and the atoms to which it is attached comprise a pyridine ring selected from the group consisting of:



(a)

and



wherein

one of X and Y is N and the other is CR^2, and

R^2 and R^3 are independently selected from the group consisting of

hydrogen, Cl, Br, F, $C_1–C_6$-alkyl, $C_1–C_6$-alkoxy or $C_1–C_6$-haloalkyl; or additionally, one of R^2 and R^3 may be $C_3–C_7$-cycloalkyl; or when on adjacent carbon atoms R^2 and R^3 may be taken together with the atoms to which they are attached to form a $C_5–C_7$-cycloalkene ring.

5,668,142

TETRACYCLIC PIPERIDINE AND 1,4-OXAZINE COMPOUNDS

Jean-Louis Peglion, Le Vesinet; Joel Vian, Chaville; Bertrand Goument, Viroflax; Mark Millan, Paris; Valérie Audinot, Croissy Sur Seine; Jean-Charles Schwartz, Paris, and Pierre Sokoloff, Le Plessis Bouchard, all of France, assignors to Adir et Compagnie, Courbevoie, France

Division of Ser. No. 456,504, Jun. 1, 1995, Pat. No. 5,593,989.

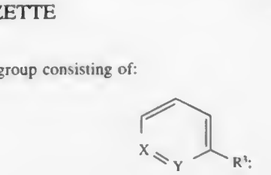
This application Jun. 6, 1996, Ser. No. 659,267

Claims priority, application France, Jun. 8, 1994, 94 06985

Int. Cl.[6] C07D *471/04;* **A61K** *31/445*

U.S. Cl. 514—285 **4 Claims**

1. A compound selected from those of formula I

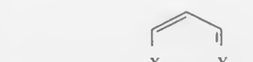


(I)

wherein:

X represents an oxygen atom or CH_2, and Y represents CH_2

A-B represents $—(CH_2)_2—$ or $—HC=CH—$ or



R represents a hydrogen atom or a $(C_1–C_{10})$alkyl, $(C_3–C_{10})$alkenyl, or $(C_3–C_{10})$alkynyl radical, each of which may be in straight or branched chain and each of which may optionally be substituted by a cycloalkyl radical having 3 to 8 carbon atoms, or by an aryl radical selected from the radicals phenyl, thienyl and pyridyl, each of which may optionally be substituted by one or more substituents selected from halogen atoms, hydroxy radicals, and alkyl and alkoxy radicals each having 1 to 6 carbon atoms in straight or in branched chain; and

n represents:

0 or 1 when X represents CH_2 and

1 only, when X represents an oxygen atom

their geometric isomer forms, cis and trans.—their racemic mixture or racemate, and their optical isomer or enantiomer forms,

and their salts with a pharmaceutically-acceptable acid.

5,668,143

HETEROCYCLIC BENZENESULFONYLIMINE DERIVATIVES AS INHIBITORS OF IL-1 ACTION

George Ku, Burlington, Mass.; Boyd L. Harrison, Cincinnati, and David M. Stemerick, Fairfield, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

PCT No. PCT/US94/12575, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/14670, PCT Pub. Date Jun. 1, 1995

Continuation of Ser. No. 158,661, Nov. 29, 1993, abandoned.

This PCT application Nov. 3, 1994, Ser. No. 648,150

Int. Cl.[6] A61K *31/44;31/38;31/35;31/16*

U.S. Cl. 514—299 **12 Claims**

1. The method of inhibiting IL-1 action in a patient in need thereof by administering to the patient a therapeutically effective amount of compounds of the structure

Formula I

wherein A is NH, O, or S;

Q_1 is —OR or $—NR_1R_2$; wherein R, R_1 and R_2 are each independently hydrogen or $C_1–C_6$ alkyl radical of branched, straight chained, or cyclic configuration, wherein in the case of a cyclic configuration is $C_3–C_6$ cycloalkyl;

Z is from 1 to 3 substituents chosen independently from the group: halogen, $C_1–C_4$ alkyl, and $C_1–C_4$ alkoxy;

Y is from 1 to 3 substituents chosen independently from the group: $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, and halogen.

5,668,144

1-AZABICYCLOPHEPTANE DERIVATIVES

Annmarie L. Sabb, Pennington, and Reinhardt P. Stein, Monmouth Junction, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Oct. 30, 1996, Ser. No. 742,425

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—305 **3 Claims**

1. A method for alleviating the symptoms of neurological illness attending acetylcholine deficiency which comprises administering to a patient in need thereof, parenterally or orally, (–)-(exo)-methylcarbamic acid 1-aza-bicyclo[2.2.1]hept-3-yl ester, or a pharmaceutically acceptable salt thereof.

5,668,145

AMINO-SUBSTITUTED PYRAZOLES HAVING CRF ANTAGONISTIC ACTIVITY

Gene Michael Bright, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

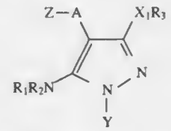
PCT No. PCT/US93/10716, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/13644, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 12, 1993, Ser. No. 448,534

Int. Cl.[6] C07D *403/06;401/06;* **A61K** *31/47;31/415*

U.S. Cl. 514—307 **21 Claims**

1. A compound of the formula



I

or a pharmaceutically acceptable acid addition salt thereof, wherein

A is CH_2;

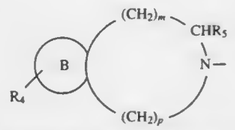
X_1 is a covalent bond, CH_2, NR, wherein R is hydrogen, linear $C_1–C_6$ alkyl or branched $C_3–C_8$ alkyl, O, or S;

R_1, R_2 and R_3 are each independently linear $C_1–C_6$ alkyl, branched $C_3–C_8$ alkyl, $C_3–C_8$ alkenyl wherein the double bond is not adjacent to the N or X_1 when X_1 is oxygen or sulfur, or $C_3–C_7$ cycloalkyl $(CH_2)_n$ wherein n is 0, 1, 2, 3 or 4; or R_1 and R_2 when taken together with the nitrogen form a saturated four, five or six membered ring optionally condensed with benzo; and R_3 may also be $(CH_2)_qQ_1R_{19}$ wherein q is 0, 1 or 2, Q_1 is O, S, NH, $N(C_1–C_6$ alkyl) or a covalent bond when X is not a covalent bond, and R_{19} is hydrogen, linear $C_1–C_6$ alkyl, branched $C_3–C_8$ alkyl, $C_3–C_8$ alkenyl, or $C_3–C_6$ cycloalkyl $(CH_2)_n$ wherein n is 0 to 4;

Y is phenyl, thienyl, benzothienyl, pyridyl, quinolyl, pyrazinolyl, pyrimidyl, imidazolyl, benzimidazolyl, furanyl, benzofuranyl, thiazolyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, isoxazolyl, benzisoxazolyl, triazolyl, pyrazolyl, pyrrolyl, indolyl, azaindolyl, oxazolyl, benzoxazolyl, pyrrolidinyl, thiazolidinyl, morpholinyl, or piperidinyl, each of which may be substituted by one to three of any one of fluoro, chloro, bromo, or methyl, or one of trifluoromethyl; with the proviso that Y is not unsubstituted phenyl; and

Z is

(a)



II

wherein the B ring is phenyl, naphthyl, pyridyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazilyl, pyrrolyl, pyrazolyl, imidazolyl, triazolyl, thienyl, or indolyl, each of which may be substituted by methyl, methoxy, fluoro, chloro, bromo or iodo; or a saturated 5- or 6-membered carbocyclic ring or a partially unsaturated ring having one or two double bonds;

R_4 is hydrogen, $C_1–C_6$ alkyl, $C_1–C_6$ alkoxy, or hydroxy, fluoro, chloro, bromo, iodo, or trifluoromethyl;

R_5 is hydrogen, linear $C_1–C_6$ alkyl, branched $C_3–C_8$ alkyl, $C_3–C_8$ alkenyl, or $(CH_2)_o—X_2—(CH_2)_r—Q_2—R_6$;

R_6 is hydrogen, linear $C_1–C_6$ alkyl, branched $C_3–C_8$ alkyl, or $C_3–C_8$ alkenyl;

X_2 and Q_2 are each independently O, S, NH, $N(C_1–C_6$ alkyl), or one of X_2 and Q may be a covalent bond;

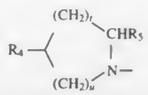
m is 0 or 1;

o is 1 or 2;

p is 1 or 2;

r is 0, 1, or 2;

(b)

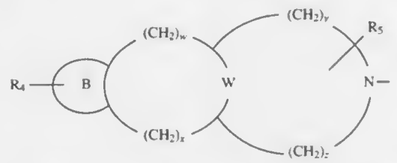


III

wherein R_4 and R_5 are as defined above, and t and u are each independently 1 or 2;

(c) $—NR_7R_8$ wherein R_7 and R_8 are each independently hydrogen, C_1–C_6 linear alkyl, branched C_3–C_8 alkyl, C_3–C_8 alkenyl, $(CH_2)_vCH_2OH$,$(CH_2)_vNR_9R_{10}$, wherein v is 0 to 3, and R_9 and R_{10} are each independently hydrogen, or linear C_1–C_6 alkyl; C_1–C_{12} cycloalkyl, (C_3–C_{12} cycloalkyl) $(CH_2)_n$, (C_6–C_{10} bicycloalkyl) $(CH_2)_n$, wherein n is 0 to 4, benzofused C_3–C_6 cycloalkyl, C_1–C_6 hydroxyalkyl, phenyl, phenyl (C_1–C_3 alkylene), each of which may be substituted by one or two of hydroxy, fluoro, chloro, bromo, C_1–C_5 alkyl, or C_1–C_5 alkoxy; or R_7 and R_8 may be taken together with the nitrogen to form a saturated or partially unsaturated 5- to 7-membered ring which may contain one of O, S, NH or N(C_1–C_6 alkyl) and which may be substituted by C_1–C_6 alkyl, hydroxy or phenyl wherein any double bond(s) are not adjacent to any heteroatoms;

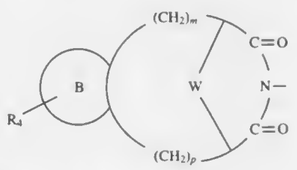
(d)



IV

wherein B, R_4 and R_5 are as defined above, w, x, y and z are each independently 1 or 2, and W is $(CH_2)_q$ wherein q is as defined above, N(C_1–C_6 alkyl), or oxygen;

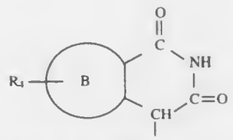
(e)



V

wherein B, R_4, m and p are as defined above;

(f)



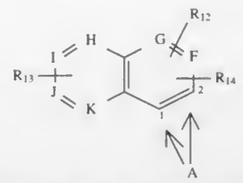
VI

wherein B and R_4 are as defined above;

(g) $O(CH_2)_vR_{11}$

wherein v is 0 to 3 and R_{11} is linear C_1–C_6 alkyl, branched C_3–C_8 alkyl, phenyl, naphthyl, 1,2,3,4-tetrahydronaphthyl, thienyl, benzothienyl, pyridyl, quinolyl, pyrazinolyl, pyrimidyl, imidazolyl, benzimidazolyl, furanyl, benzofuranyl, thiazolyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, isoxazolyl, benzisoxazolyl, triazolyl, pyrazolyl, pyrrolyl, indolyl, azaindolyl, oxazolyl, benzoxazolyl, pyrrolidinyl, thiazolidinyl, morpholinyl, piperidinyl, or thienyl, each of which may be substituted by one or two of any one of fluoro, chloro, bromo, methyl, or trifluoromethyl;

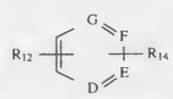
(h)



VII

wherein A is defined above and is linked to position 1 or 2 while R_{14} is attached to position 2 or 1, respectively; F, G, H, I, J and K are independently C or N, provided that not more than three of H, I, J and K are N with not more than two adjacent nitrogens; R_{12} and R_{13} each independently are hydrogen, linear C_1–C_6 alkyl, branched C_3–C_8 alkyl, C_3–C_8 alkenyl, fluoro, chloro, bromo, trifluoromethyl, hydroxy, thiol, C_1–C_{12} alkoxy, C_1– C_{12} thioalkanyl, C_3–C_{12} alkenoxy or C_3–C_{12} thioalkenyl wherein the double bond is not adjacent to the oxygen or sulfur, and R_{14} is hydroxy, C_1–C_{12} alkoxy, C_3–C_{12} alkenoxy wherein the double bond is not adjacent to the oxygen, or $—X_2—(CH_2)_rQ_2R_6$ wherein X_2, r, Q_2 and R_6 are as defined above in paragraph (a) except that Q_2 is not sulfur, or R_{14} is $NR_{15}R_{16}$ wherein R_{15} and R_{16} are each independently hydrogen, linear C_1–C_6 alkyl, branched C_3–C_8 alkyl, C_3–C_8 alkenyl wherein the double bond is not adjacent to the nitrogen, or C_3–C_7 cycloalkyl-$(CH_2)_n$ wherein n is as defined above, or R_{15} and R_{16} together with the nitrogen form a saturated five or six membered ring optionally condensed with benzo; or

(i)



XV

wherein D,E,F and G are independently C or N, provided that not more than two of D,E,F and G are N, and R_{12} and R_{14} are as defined in paragraph (h), A, defined above, is linked to a carbon in formula XV; and R_{14} is linked to a carbon located adjacent to the carbon to which A is linked.

5,668,146

SYMMETRICAL BIS-HETEROARYLMETHOXYPHENYLIMINOXYALKYL CARBOXYLATES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

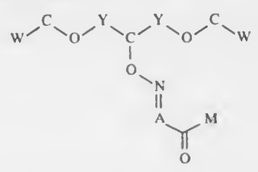
Clint D. W. Brooks; Pramila Bhatia, both of Libertyville, and Teodozyj Kolasa, Lake Villa, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 17, 1996, Ser. No. 703,442

Int. Cl.[6] A61K *31/47;31/44;* **C07D** *215/14;213/30*

U.S. Cl. 514—311 **12 Claims**

1. A compound having the formula:



or a pharmaceutically acceptable salt or a metabolically cleavable group thereof wherein W and Y, respectively, are the same at each occurence; and

W is selected from the group consisting of

(a) quinolyl;

(b) quinolyl substituted with a substituent selected from the group consisting of
halogen,

alkyl of one to six carbon atoms,
phenyl,
phenyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms,
pyridyl,
pyridyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms;

(c) pyridyl;

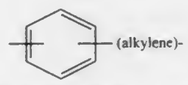
(d) pyridyl substituted with a substituent selected from the group consisting of
phenyl,
phenyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms,
pyridyl,
pyridyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms;

Y is selected from the group consisting of

(a) phenylene,

(b) phenylene substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms,

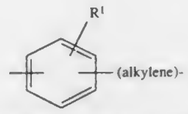
(c)



(c)

wherein the alkylene portion is of one to six carbon atoms, and

(d)



(d)

wherein the alkylene portion is of one to six carbon atoms, and R^1 is selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms;

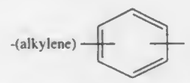
A is selected from the group consisting of

(a) alkylene of one to six carbon atoms,

(b) alkenylene of two to six carbon atoms,

(c) cycloalkylene of three to eight carbon atoms,

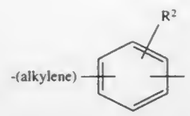
(d)



(d)

wherein the alkylene portion is of one to six carbon atoms, and

(e)



(e)

wherein the alkylene portion is of one to six carbon atoms, and R^2 is selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and
haloalkyl of one to six carbon atoms;

M is selected from the group consisting of

$—OR^3$ where R^3 is selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, and

$—NKR^4R^5$ where R^4 and R^5 are independently selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
hydroxy, and
alkoxy of one to six carbon atoms, or

R^4 and R^5 taken together define a five-membered ring, with the proviso that R^4 and R^5 may not both be hydroxyl.

5,668,147

QUINOLINECARBOXYLIC ACID DERIVATIVES AND SALTS THEREOF

Jun Nakano; Hideto Fukui; Tetsuo Shibata; Hisato Senda; Tetsuro Maejima; Yayoi Watanuki, and Tadashi Arika, all of Kyoto, Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01815, § 371 Date Apr. 25, 1996, § 102(e) Date Apr. 25, 1996, PCT Pub. No. WO95/11902, PCT Pub. Date May 4, 1995

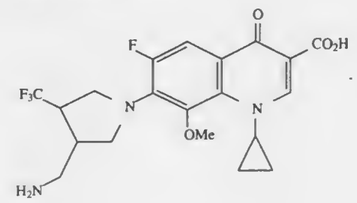
PCT Filed Oct. 27, 1994, Ser. No. 632,474

Claims priority, application Japan, Oct. 28, 1993, 5-292587; Dec. 28, 1993, 5-353780

Int. Cl.[6] C07D *215/233;* **A61K** *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A quinolinecarboxylic acid derivative or a salt thereof represented by the formula



5,668,148

ALPHALA ADRENERGIC RECEPTOR ANTAGONISTS

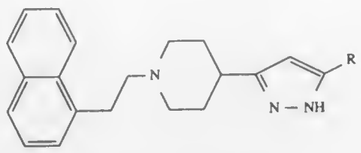
Linda S. Payne; Steven D. Young, both of Lansdale, Pa., and Mary Jo L. Zaborowski, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 20, 1995, Ser. No. 425,969

Int. Cl.[6] A61K *31/47;31/415;31/42;31/425;31/445;* **C07D** *401/04;409/04*

U.S. Cl. 514—314 **12 Claims**

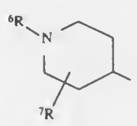
1. A method of treating benign prostatic hypertrophy in a subject in need thereof which comprises administering to the subject a therapeutically effective amount of a compound of formula I



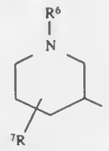
wherein the broken lines represent two non-adjacent double bonds in any position within the five-membered ring;

one of X and Y represents nitrogen, and the other of X and Y represents oxygen, sulphur or N—R^2;

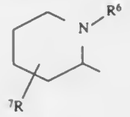
Q represents a substituted five- or six-membered monocyclic heteroaliphatic ring selected from Qa to Qe



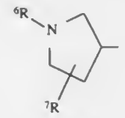
(Qa)



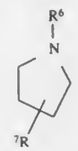
(Qb)



(Qc)



(Qd)



(Qe)

and is linked to the five-membered heteroatomic ring containing the moieties X and Y via a carbon atom;

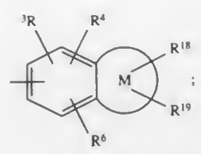
wherein R^6 is C_{0-6} alkyl substituted with a monocyclic or polycyclic aromatic or heteroaromatic group selected from: phenyl; 1-naphthyl; 2-naphthyl; benzothiophene; benzofuran; indole; quinoline; isoquinoline; indazole; benzisoxazole; benzimidazol(on)e; thiophene; furan; or pyridine; each of which may or may not be substituted with one or more of C_{1-6} alkyl; C_{1-6} alkoxy(C_{1-6})alkyl; C_{1-6} alkoxy; cyano; nitro; carboxamido; amidino; amino; halogen; sulfonamido; amidosulfonyl; or hydroxy;

R^7 represents hydrogen, hydrocarbon, an ether or a heterocyclic group;

R^1 represents hydrogen, halogen, C_{1-6} alkyl, hydroxy or C_{1-6} alkoxy;

R^2 represents hydrogen or C_{1-6} alkyl;

A represents a group of formula (iv):



(iv)

R^3, R^4 and R^5 are each independently selected from hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano trifluoromethyl, nitro, —OR^a, —SR^a, —SOR^a, —SO_2R^a, —$SO_2NR^aR^b$, —NR^aR^b, —NR^aCOR^b, —$NR^aCO_2R^b$, —COR^a, —CO_2R^a or —$CO_2NR^aR^b$;

R^a and R^b independently represent hydrogen, hydrocarbon or a heterocyclic group;

the ring M is optionally an additional ring or ring system such that the entire structure (iv) is dicyclic, or polycyclic aromatic or heteroaromatic ring system, selected from: benzodioxane; methylenedioxyphenyl; indane; 2,3-dihydrobenzofuran; 2,7-dihydroizobenzofuran; 1-naphthyl; 2-naphthyl; benzothiophene; benzofuran; indole; quinoline; isoquinoline; indazole; benzisoxazole; benzthiazole; or benzimidazol(on)e; each of which may be substituted with R^3, R^4 and R^5, as described above and, in addition, with R^{18}, and R^{19}, each of which may be independently:

C_{1-6} alkyl; C_{1-6} alkoxy-C_{1-6} alkyl; C_{1-6} alkoxy; cyano; nitro; carboxamido; amidino; amino; halo; sulfonamido; amidosulfonyl; hydrogen or hydroxy;

the heterocyclic group, at each occurrence, is independently selected from azetidinyl, pyrrolidyl, piperidyl, pyridyl, quinolyl, isoquinolyl, pyranyl, furyl, benzofuryl, dibenzofuryl, thienyl, benzothienyl, indolyl, imidazolyl, oxadiazolyl, thiadiazolyl, azetidinyl(C_{1-6})alkyl, pyrrolidyl(C_{1-6})alkyl, piperidyl(C_{1-6})alkyl, pyridyl(C_{1-6})alkyl, quinolyl(C_{1-6})alkyl, isoquinolyl(C_{1-6})alkyl, pyranyl(C_{1-6})alkyl, furyl(C_{1-6})alkyl, benzofuryl(C_{1-6})alkyl, dibenzofuryl(C_{1-6})alkyl, thienyl(C_{1-6})alkyl, benzothienyl(C_{1-6})alkyl, indolyl(C_{1-6})alkyl, imidazolyl(C_{1-6})alkyl, oxadiazolyl(C_{1-6})alkyl, or thiadiazolyl(C_{1-6})alkyl;

and the pharmaceutically acceptable salts thereof.

5,668,149

INHIBITION OF HUMAN IMMUNODEFICIENCY VIRUS-1 INFECTIVITY IN HUMAN CELLS

Stephen Oroszlan, Potomac; Wen-Po Tsai, Walkersville; Peter L. Nara, Frederick, and Hsiang-Fu Kung, Middletown, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 26, 1990, Ser. No. 470,692

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—313 **4 Claims**

1. A method of inhibiting HIV-1 infectivity in chronically infected human cells, the method comprising:

contacting HIV-1 infected human cells with an effective HIV-1 replication inhibiting amount of chloroquine or a pharmaceutically acceptable salt thereof.

5,668,150

NON-SYMMETRICAL BIS-HETEROARYLMETHOXYPHENYLALKYL CARBOXYLATES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

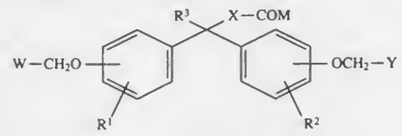
Clint D.W. Brooks, Libertyville; Teodozyj Kolasa, Lake Villa, both of Ill., and David E. Gunn, Hamden, Conn., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jul. 26, 1996, Ser. No. 686,841

Int. Cl.[6] A61K *31/47;31/475;* **C07D** *215/14;215/18*

U.S. Cl. 514—314 **8 Claims**

1. A compound of formula



or a pharmaceutically acceptable salt thereof wherein

one of W and Y is independently selected from the group consisting of

(a) quinolyl;

(b) quinolyl substituted with a substituent selected from the group consisting of

(b-1) halogen,

(b-2) alkyl of one to six carbon atoms,

(b-3) haloalkyl of one to six carbon atoms, and

(b-4) alkoxy of one to six carbon atoms;

and the other of W and Y is independently selected from the group consisting of

(a) quinolyl;

(b) quinolyl substituted with a substituent selected from the group consisting of

(b-1) halogen,

(b-2) alkyl of one to six carbon atoms,

(b-3) haloalkyl of one to six carbon atoms, and

(b-4) alkoxy of one to six carbon atoms;

(c) benzothiazolyl;

(d) benzothiazolyl substituted with a substituent selected from the group consisting of

(d-1) halogen,

(d-2) alkyl of one to six carbon atoms,

(d-3) haloalkyl of one to six carbon atoms, and

(d-4) alkoxy of one to six carbon atoms;

(e) benzoxazolyl;

(f) benzoxazolyl substituted with a substituent selected from the group consisting of

(f-1) halogen,

(f-2) alkyl of one to six carbon atoms,

(g) benzimidazolyl;

(h) benzimidazolyl substituted with a substituent selected from the group consisting of

(h-1) halogen,

(h-2) alkyl of one to six carbon atoms,

(i) quinoxalyl;

(j) quinoxalyl substituted with a substituent selected from the group consisting of

(j-1) halogen,

(j-2) alkyl of one to six carbon atoms,

(k) naphthyl;

(l) naphthyl substituted with a substituent selected from the group consisting of

(1-1) halogen,

(1-2) alkyl of one to six carbon atoms,

(1-3) alkoxy of one to six carbon atoms;

with the proviso that W and Y are not simultaneously the same substituent;

R^1 and R^2 are independently selected from the group consisting of

(a) hydrogen,

(b) alkyl of one to six carbon atoms,

(c) haloalkyl of one to six carbon atoms,

(d) alkoxy of one to six carbon atoms, and

(e) halogen;

R^3 is selected from the group consisting of

(a) hydrogen and

(b) alkyl of one to six carbon atoms;

X is absent or is selected from the group consisting of

(a) alkylene of one to six carbon atoms,

(b) alkenylene of one to six carbon atoms, and

(c) alkynylene of one to six carbon atoms; and

M is selected from the group consisting of

(a) a pharmaceutically acceptable metabolically cleavable group,

(b) —OR^4 where R^4 is selected from the group consisting of hydrogen and alkyl of one to six carbon atoms,

(c) —NR^5R^6 where R^5 and R^6 are independently selected from the group consisting of

hydrogen,

alkyl of one to six carbon atoms,

hydroxy, and

alkoxy of one to six carbon atoms.

5,668,151

DIHYDROPYRIDINE NPY ANTAGONISTS: PIPERIDINE DERIVATIVES

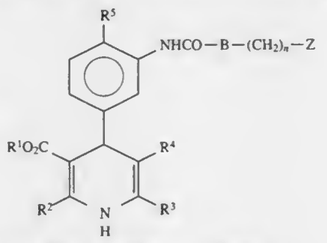
Graham S. Poindexter, Old Saybrook; Marc Bruce, Wallingford; Graham Johnson, Madison; Karen Leboulluec, and Charles P. Sloan, both of Wallingford, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 482,353, Jun. 7, 1995, abandoned. This application May 8, 1996, Ser. No. 639,968

Int. Cl.[6] A61K *31/445;* **C07V** *211/86*

U.S. Cl. 514—318 **15 Claims**

1. A compound of Formula I and its pharmaceutically acceptable



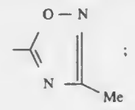
(I)

acid addition salts or hydrates thereof, wherein

R^1 is lower alkyl;

R^2 and R^3 are independently selected from cyano and lower alkyl;

R^4 is selected from —CO_2R^1, cyano and

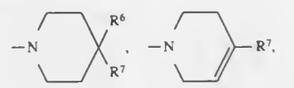


R^5 is selected from hydrogen, halogen, hydroxy, lower alkyl, lower alkenyloxy, and lower alkoxy;

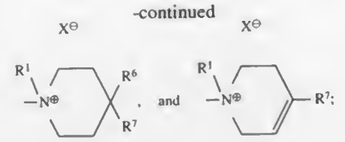
B is —NH—, —NR^1—, —O— or a covalent bond except when R^4 is cyano;

n is an integer selected from 2 to 5; and

Z is



-continued



and

R^6 is hydrogen, hydroxy or cyano; and
R^7 is C_{3-7} cycloalkyl,



with m being zero or an integer from 1 to 4; and
R^8 and R^9 being independently selected from hydrogen, lower alkyl, C_{3-7} cycloalkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, hydroxy, phenyl, phenoxy, NH_2, $NHCOR^1$, CO_2R^1, NO_2 and trifluoromethyl.

5,668,152

PROTEIN KINASE C INHIBITORS

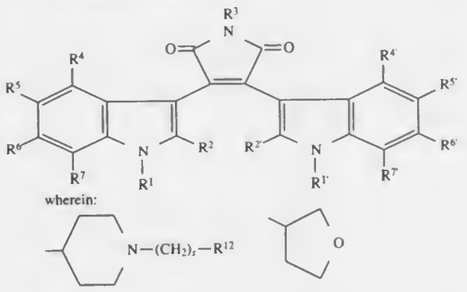
William F. Heath, Jr., Fishers; John H. McDonald, III, Carmel, both of Ind.; Gerd Rühter, Hamburg, and Theo Schotten, Vierhöfen, both of Germany, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 324,948, Oct. 18, 1994, Pat. No. 5,545,636, which is a continuation-in-part of Ser. No. 173,741, Dec. 23, 1993, abandoned. This application May 25, 1995, Ser. No. 452,617

Int. Cl.[6] A61K *31/445;* **C07D** *403/14*

U.S. Cl. 514—323 **15 Claims**

1. A compound of the formula



wherein:

R^1 is (d) or (f);
$R^{1'}$ is C_1–C_4 alkyl, aminoalkyl, monoalkylaminoalkyl, or dialkylaminoalkyl;
R^2 and $R^{2'}$ are independently hydrogen, alkyl, alkoxyalkyl, hydroxyalkyl, C_1–C_3 alkylthio, $S(O)C_1$–C_3 alkyl, CF_3;
R^3 is hydrogen or CH_3CO—;
R^4, $R^{4'}$, R^5, $R^{5'}$, R^6, $R^{6'}$, R^7 and $R^{7'}$ are independently hydrogen, halogen, alkyl, hydroxy, alkoxy, —$COO(C_1$–C_3 alkyl), CF_3, nitro, amino, acetylamino, monoalkylamino, dialkylamino, alkylthio, C_1–C_3 alkylthio, or $S(O)C_1$–C_3 alkyl;
R^{12} is hydrogen, alkyl, haloalkyl, cycloalkyl, acetyl, aryl, —$CH(aryl)_2$, amino, monoalkylamino, dialkylamino, guanidino, —C(=N(alkoxycarbonyl))NH(alkyoxycarbonyl), amidino, hydroxy, carboxy, alkoxycarbonyl or heterocyclyl;
p and q are independently 1, 2, 3, or 4;
s is 0, 1, 2 or 3;
t is 1 or 2; or
pharmaceutically acceptable salts or solvates thereof.

5,668,153

PIPERIDINE DERIVATIVES AND THEIR USE AS THERAPEUTIC AGENTS

Richard Thomas Lewis, Harlow, and Angus Murray MacLeod, Bishops Stortford, both of England, assignors to Merck Sharp & Dohme, Ltd., Hoddesdon, England

Filed Aug. 4, 1995, Ser. No. 511,205

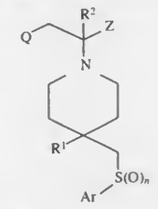
Claims priority, application United Kingdom, Aug. 8, 1994, 9415997

Int. Cl.[6] A61K *31/40;31/445;* **C07D** *401/10;409/10*

U.S. Cl. 514—323 **21 Claims**

1. A compound of the formula (I), or a pharmaceutically acceptable salt or prodrug thereof:

(I)



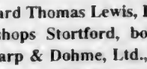
wherein

Q represents a phenyl group substituted by one or more halo, optionally substituted naphthyl, optionally substituted indolyl, optionally substituted benzthiophenyl, optionally substituted benzofuranyl, optionally substituted benzyl, or optionally substituted fluorenyl; wherein the optional substituents are selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, SO_2R^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a or $CONR^aR^b$, where R^a and R^b are as defined below; and where Q is optionally substituted indolyl, the nitrogen substituent is selected from C_{1-6}alkyl, optionally substituted phenyl(C_{1-4}alkyl), CO_2R^a or $CONR^aR^b$, where R^a and R^6 are as defined below;
R^1 represents H, OH, C_{1-6}alkoxy or phenyloxy;
R^2 represents H, C_{1-6}alkyl or C_{2-6}alkenyl;
Z represents a group selected from



(a)

or



(b)

where one of X and Y represents H and the other represents hydroxy or C_{1-6}alkoxy, or X and Y together form a group =O or =NOR^5 where R^5 is H or C_{1-6}alkyl;
R^3 represents phenyl optionally substituted by 1, 2 or 3 groups selected from C_{1-6}alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, OR^a, SR^a, SOR^a, NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, CO_2R^a or $CONR^aR^b$, where R^a and R^6 independently represent H, C_{1-6}alkyl, phenyl or trifluoromethyl;
R^4 represents H or C_{1-6}alkyl;
the dotted line represents an optional covalent bond;
Ar represents phenyl optionally substituted by 1 or 2 groups selected from C_{1-6}alkyl, C_{1-6}alkoxy, halo or tirfluoromethyl, and
n represents zero, 1 or 2.

5,668,154

PYRIDINIMINYL-1,2-BENZISOXAZOLES AND -BENZISOTHIAZOLES

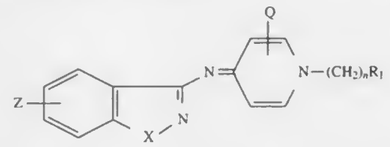
David M. Fink, Lebanon, N.J.; Barbara E. Kurys, Loveland, Ohio; Gregory M. Shutske, Pittstown, N.J., and John D. Tomer, IV, Perkasie, Pa., assignors to Hoechst Marion Roussel Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 466,021, Jun. 6, 1995, abandoned. This application May 2, 1996, Ser. No. 637,091

Int. Cl.[6] A61K *31/44;* **C07D** *401/12*

U.S. Cl. 514—338 **44 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, lowercycloalkyl, —C(=O)O-loweralkyl, 1,3-dioxolane, phenyl, cinnamyl, phenyl substituted by loweralkyl, loweralkoxy, halogen, hydroxyl, nitro or trifluoromethyl; Q is hydrogen, halogen, loweralkyl or nitro; X is oxygen; Z is hydrogen, loweralkyl, loweralkoxy, hydroxyl, halogen, nitro, or trifluoromethyl; n is 1 to 12; the geometric isomers, the optical isomers, or the pharmaceutically acceptable salts thereof.

5,668,155

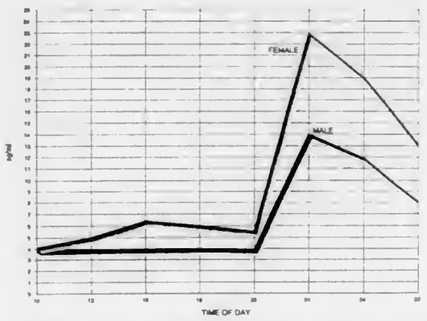
ADMINISTRATION OF PIRENZEPINE, METHYL SCOPOLAMINE AND OTHER MUSCARINIC RECEPTOR ANTAGONISTS FOR TREATMENT OF LIPID METABOLISM DISORDERS

Anthony H. Cincotta, Andover, Mass.; Albert H. Meier, Baton Rouge, La., and John M. Wilson, Charlestown, Mass., assignors to The General Hospital Corporation, Boston, Mass., and The Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation-in-part of Ser. No. 995,292, Dec. 22, 1992, Pat. No. 5,585,347, which is a continuation-in-part of Ser. No. 719,745, Jun. 24, 1991, Pat. No. 5,344,832, which is a continuation-in-part of Ser. No. 463,327, Jan. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 192,332, May 10, 1988, abandoned. This application Jun. 20, 1994, Ser. No. 263,607

Int. Cl.[6] A61K *31/435;31/495;* **C07D** *451/00*

U.S. Cl. 514—340 **15 Claims**



1. A method for altering lipid metabolism in a vertebrate subject in need of such treatment comprising administering to said subject an amount of a muscarinic receptor antagonist selective for the M1 muscarinic receptor, said administration taking place at a predetermined time during a 24-hour period, said time and said amount being effective to accomplish at least one of: decreasing hyperlipoproteinemia, decreasing triglycerides, reducing body fat stores, and increasing the ratio of high-density to low-density lipoproteins in said subject.

5,668,156

DI (AROMATIC) COMPOUNDS AND THEIR USE IN HUMAN AND VETERINARY MEDICINE AND IN COSMETICS

Jean-Michel Bernardon, Nice, and William Robert Pilgrim, Valbonne, both of France, assignors to Centre International de Recherches Dermatologiques Galderma (Cird Galderma), Valbonne, France

Division of Ser. No. 167,145, Dec. 16, 1993, Pat. No. 5,439,925, which is a division of Ser. No. 859,522, Aug. 4, 1992, Pat. No. 5,387,594. This application Apr. 28, 1995, Ser. No. 430,613

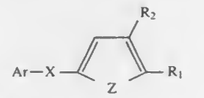
Claims priority, application Luxembourg, Oct. 12, 1990, 87 821

Int. Cl.[6] A61K *31/135;31/12;31/34;31/44*

U.S. Cl. 514—348 **22 Claims**

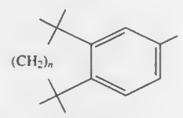
1. A di(aromatic) compound having the formula

(I)



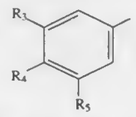
wherein
Ar represents

(II)



wherein n=1 or 2 or

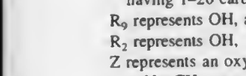
(III)



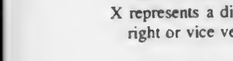
wherein
R_3 and R_5 represent hydrogen, OH, alkoxy having 1–6 carbon atoms, α-branched alkyl having from 3–12 carbon atoms, α,α-branched alkyl having from 4–12 carbon atoms, cycloalkyl having 3–12 carbon atoms, or mono- or polycyclic cycloalkyl having 5–12 carbon atoms in which the carbon having the free valence is trisubstituted,
R_4 represents hydrogen, OH, alkoxy having 1–6 carbon atoms, α-branched alkyl having 3–12 carbon atoms, α,α-branched alkyl having 4–12 carbon atoms, cycloalkyl having 3–12 carbon atoms, mono-or polycyclic cycloalkyl having 5–12 carbon atoms in which the carbon having the free valence is trisubstituted, monohydroxyalkyl, polyhydroxyalkyl, fluorine, chlorine, SH, SR_6, SOR_6, SO_2R_6, alkenyl having 2–6 carbon atoms or alkenyloxy having 2 to 6 carbon atoms,
R_6 represents lower alkyl,
R_1 represents hydrogen, OH, —CH_3, —CH_2OH, —COR_7, —$CH(OH)CH_3$, —CH_2OCOR_8, —SO_2R_9, —SOR_9 or —SR_9.
R_7 represents hydrogen, OH, —OR_{10}, —N(r'r"), lower alkyl, monohydroxyalkyl, polyhydroxyalkyl or a sugar residue,
R_{10} represents alkyl having 1–12 carbon atoms or alkenyl having 2–12 carbon atoms,
r' and r", each independently, represent hydrogen, lower alkyl, aryl, aralkyl, an amino acid residue, a sugar residue, an amino sugar residue or a heterocycle, or r' and r" taken together form a heterocycle.

R_8 represents a saturated or unsaturated, linear or branched alkyl having 1–20 carbon atoms or a sugar residue,
R_9 represents OH, alkyl or —N(r'r"),
R_2 represents OH,
Z represents an oxygen atom, a sulphur atom, —CH=CR_{11}—, —N=CH— or —N=CR_6—

wherein
R_6 has the meaning given above,
R_{11} represents hydrogen, OH, lower alkyl, alkoxy having 1–6 carbon atoms, fluorine, chlorine or CF_3,
X represents a divalent radical which can be read from left to right or vice versa and has the formula



wherein
R' represents hydrogen or $—CH_3$ and
W represents an oxygen atom, a sulfur atom or —NR' wherein R' has the meaning given above, and salts thereof of said compound, with the proviso that when X from left to right represents the formula:



wherein:
R' is hydrogen and W is an oxygen or a sulphur atom,
R_3 and R_4 do not simultaneously represent OH.

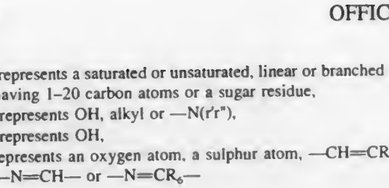
5,668,157

CYANOGUANIDINES AS K-CHANNEL BLOCKERS

Stephen J. Humphrey; Kaushik D. Meisheri; James H. Ludens, all of Kalamazoo, and Jackson B. Hester, Jr., Galesburg, all of Mich., assignors to Pharmacia & Upjohn Company, Kalamzoo, Mich.

PCT No. PCT/US95/00024, § 371 Date Jun. 25, 1996, § 102(e) Date Jun. 25, 1996, PCT Pub. No. WO95/20579, PCT Pub. Date Aug. 3, 1995
Continuation-in-part of Ser. No. 188,969, Jan. 8, 1994, abandoned. This PCT application Jan. 9, 1995, Ser. No. 666,502
Int. Cl.[6] A61K *31/44; 31/75*; **C07D** *213/75*
U.S. Cl. 514—353 **10 Claims**

1. A compound of Formula I and its pharmaceutically acceptable acid addition salts



wherein
R_1 is hydrogen or methyl;
R_2 is C_1–C_6alkyl, C_2–C_6alkenyl, C_2–C_6alkynyl, C_3–C_5cycloalkyl, C_3–C_5cycloalkenyl, hydroxymethyl, methoxy C_1–C_5alkyl, or R_1 and R_2 are combined to form a C_3–C_6-carbocyclic ring;
R_3 and R_4 are each independently selected to be hydrogen, C_1–C_4alkyl, F, Cl, Br, I or CF_3;
R_5 is hydrogen, F or Cl;
R_6 is hydrogen, NH_2, $NHCH_3$, NHC_2H_5, $NHCH(CH_3)_2$, $N(CH_3)_2$, $N(C_2H_5)_2$, $NH(CH_2)_mOC_1$–C_3alkyl, $NHC(O)C_1$–C_3alkyl, F, Cl, Br, C_1–C_3alkyl, $NH(CH_2)_mF$, 1-imidazolyl, $NHOC_1$–C_3alkyl, NHOH, $NHSO_2C_1$–C_3alkyl, SH, SC_1–C_3alkyl, $NHC(O)OC_1$–C_3alkyl, $NHC(O)NHC_1$–C_3alkyl, $NHSO_2NHC_1$–C_3alkyl, $NHSO_2N(C_1$–C_3alkyl$)_2$ or amino acid amide;
R_7 is C_1–C_7alkyl, NH_2, NHC_1–C_3alkyl, $N(C_1$–C_3alkyl$)_2$, CF_3, F, Cl, Br, I, OC_1–C_3alkyl, OH, COOH, $C(O)OC_1$–C_3alkyl, $C(O)NH_2$, $C(O)NHC_1$–C_3alkyl, $C(O)C_1$–C_3alkyl, $C(O)N(C_1$–C_3alkyl$)_2$, SO_2NH_2, SO_2NHC_1–C_3alkyl, CN, $SO_2N(C_1$–C_3alkyl$)_2$, $NHC(O)C_1$–C_3alkyl, $NHC(O)NHC_1$–C_3alkyl, $NHC(O)N(C_1$–C_3alkyl$)_2$, $NHSO_2NHC_1$–C_3alkyl, $NHSO_2N(C_1$–C_3alkyl$)_2$, SH, SC_1–C_3alkyl, NO_2, SO_2C_1–C_3alkyl, $NHC(O)OC_1$–C_3alkyl, amino acid amide or hydrogen;
R_8 is hydrogen, C_1–C_6alkyl, NH_2, NHC_1–C_3alkyl, $N(CH_3)_2$, $N(C_2H_5)_2$, F, Cl, Br, OC_1–C_3alkyl or OH;
and where m is 2 or 3 and n is 0 or 1;
(except for those compounds where R_8 is hydrogen and R_6 is hydrogen, NH_2, $NHCH_3$, NHC_2H_5, $NHCH(CH_3)_2$, $N(CH_3)_2$, $N(C_2H_5)_2$, $NH(CH_2)_mOC_1$–C_3alkyl, $NHC(O)C_1$–C_3alkyl, Cl or Br).

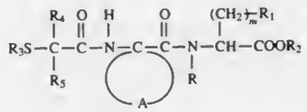
5,668,158

CYCLIC AMINO ACID DERIVATIVES

Cynthia Anne Fink, Lebanon, N.J., assignor to Novartis Corporation, Summit, N.J.

Division of Ser. No. 263,859, Jun. 22, 1994, Pat. No. 5,506,244, which is a continuation-in-part of Ser. No. 153,395, Nov. 16, 1993, Pat. No. 5,432,186. This application Feb. 14, 1996, Ser. No. 601,626
Int. Cl.[6] C07D *213/02*; **A61K** *31/44*
U.S. Cl. 514—354 **7 Claims**

1. A compound of the formula 1



(I)

wherein
R represents hydrogen, lower alkyl, carbocyclic or heterocyclic aryl-lower alkyl or cycloalkyl-lower alkyl;
R_1 represents heterocyclic aryl;
R_3 represents hydrogen or acyl;
R_4 and R_5 together with the carbon atom to which they are attached represent cycloalkylidene or benzo-fused cycloalkylidene;
A together with the carbon atom to which it is attached represents 3 to 10 membered cycloalkylidene or 5 to 10 membered cycloalkenylidene radical which may be substituted by lower alkyl or aryl-lower alkyl or may be fused to a saturated or unsaturated carbocyclic 5-7-membered ring; or A together with the carbon to which it is attached represents 5 or 6 membered oxacycloalkylidene, thiacycloalkylidene or azacycloalkylidene optionally substituted by lower alkyl or aryl-lower alkyl; or A together with the carbon atom to which it is attached represents 2,2-norbomylidene;
m is 0, 1, 2 or 3; and
$COOR_2$ represents carboxyl or carboxyl derivatized in form of a pharmaceutically acceptable ester;
a disulfide derivative derived from a said compound wherein R_3 is hydrogen; or a pharmaceutically acceptable salt thereof.

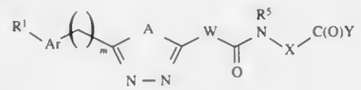
5,668,159

1,3,4-THIADIAZOLES AND 1,3,4-OXADIAZOLES AS IIB/IIIA ANTAGONISTS

Fuqiang Jin, Greenville, and Pasquale Nicholas Confalone, Wilmington, both of Del., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 8, 1996, Ser. No. 643,438
Int. Cl.[6] A01K *31/41*; **C07D** *285/12;271/10*
U.S. Cl. 514—363 **12 Claims**

2. A compound of the formula



wherein
R^1 is selected from $R^2NHC(=NR^2)$— or $R^2NHC(=NR^2)NH$—;
R^2 is selected from H, C_1–C_{10} alkoxycarbonyl, or C_1–C_4 alkyl;
R^5 is selected from H or C_1–C_4 alkyl
Ar is selected from -(phenyl)- substituted with 0–2 $R^{6\omega}$, or -(piperidinyl)- substituted with 0–2 $R^{6\omega}$;
$R^{6\omega}$ is selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, NO_2, or $NR^{12}R^{13}$;
A is selected from O or S;
W is selected from $—(CH_2)_n—$ or $—S(CH_2)_{n-1}—$;
X is selected from $—CH_2C(NHR^{12})H—$ or $—C(CH_2NHR^{12})H—$;
Y is selected from:
hydroxy;
C_1 to C_{10} alkoxy;
methylcarbonyloxymethoxy-;
ethylcarbonyloxymethoxy-;
t-butylcarbonyloxymethoxy-;
cyclohexylcarbonyloxymethoxy-;
1-(methylcarbonyloxy)ethoxy-;
1-(ethylcarbonyloxy)ethoxy-;
1-(t-butylcarbonyloxy)ethoxy-;
1-(cyclohexylcarbonyloxy)ethoxy-;
i-propyloxycarbonyloxymethoxy-;
t-butyloxycarbonyloxymethoxy-;
1-(i-propyloxycarbonyloxy)ethoxy-;
1-(cyclohexyloxycarbonyloxy)ethoxy-;
1-(t-butyloxycarbonyloxy)ethoxy-;
dimethylaminoethoxy-;
diethylaminoethoxy-;
(5-methyl-1,3-dioxacyclopenten-2-on-4-yl)methoxy-;
(5-(t-butyl)-1,3-dioxacyclopenten-2-on-4-yl)methoxy-;
(1,3-dioxa-5-phenyl-cyclopenten-2-on-4-yl)methoxy-;
1-(2-(2-methoxypropyl)carbonyloxy)ethoxy-;
m is 1 or 2;
n is 1 or 2;
R^{12} is selected from H; C_1–C_6 alkyl; C_1–C_4 alkoxycarbonyl; C_1–C_6 alkylcarbonyl; C_1–C_6 alkylsulfonyl; aryl, aryl(C_1–C_4 alkyl)sulfonyl, and arylsulfonyl wherein said aryls are substituted with 0–3 substituents selected from the group consisting of: C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, and NO_2; and heteroaryl(C_1–C_4 alkyl)sulfonyl, heteroarylsulfonyl, heteroarylcarbonyl or heteroarylmethylcarbonyl wherein said heteroaryls are substituted with 0–3 substituents selected from the group consisting of: C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, and NO_2; and
R^{13} is H; or
a pharmaceutically acceptable salt thereof.

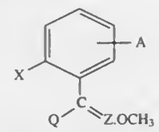
5,668,160

FUNGICIDAL OXAZOLYL AND OXADIAZOLYL DERIVATIVES

John Martin Clough, Marlow; Patrick Jeff Crowley, Crowthorne, and John Stephen Delaney, Maidenhead, all of England, assignors to Zeneca Limited, London, England

PCT No. PCT/GB94/00502, § 371 Date Oct. 3, 1995, § 102(e) Date Oct. 3, 1995, PCT Pub. No. WO94/22844, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 15, 1994, Ser. No. 532,733
Claims priority, application United Kingdom, Apr. 7, 1993, 9307247
Int. Cl.[6] C07D *271/06*; **A01N** *43/76*
U.S. Cl. 514—364 **9 Claims**

1. A compound of formula (I):



(I)

wherein Q is oxazol-2-yl, 1,3,4-oxadiazol-2-yl, 1,2,4-oxadiazol-3-yl or 1,2,4-oxadiazol-5-yl; Z is CH or N; A is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, cyano, nitro or trifluoromethyl; X is halogen, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-8}hydroxyalkyl, C_{1-8}alkoxy(C_{1-8}) alkyl, C_{1-8} haloalkoxy(C_{1-8})alkyl, aryl(C_{1-8})alkyl, aryloxy(C_{1-8}) alkyl, heteroaryl(C_{1-8}) alkyl, heteroaryloxy(C_{1-8}) alkyl, C_{3-6} cycloalkyl(C_{1-8})alkyl, arylthio(C_{1-8})alkyl, heteroarylthio(C_{1-8}) alkyl, R^1R^2C=NO(C_{1-8})alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{2-8} haloalkenyl, C_{2-8} haloalkynyl, aryl(C_{2-8})alkenyl, aryl(C_{2-8})alkynyl, aryloxy(C_{2-8})alkenyl, aryloxy(C_{2-8}) alkynyl, arylthio(C_{2-8})alkenyl, arylthio(C_{1-8})alkynyl, heteroaryl(C_{2-8})alkenyl, heteroaryl(C_{2-8}) alkynyl, heteroaryloxy(C_{2-8})alkenyl, heteroaryloxy(C_{2-8})alkynyl, heteroarylthio(C_{2-8})alkenyl, heteroarylthio(C_{2-8})alkynyl, aryl, heteroaryl, C_{3-6} cycloalkyl, OR^1, SR^1, SOR^1, SO_2R^1, COR^1, CO_2R^1, NR^1R^2 or $CONR^1R^2$; and R^1 and R^2 are, independently, hydrogen, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-8} hydroxyalkyl, C_{1-8} alkoxy(C_{1-8}) alkyl, C_{1-8} haloalkoxy(C_{1-8})alkyl, aryl(C_{1-8})alkyl, aryloxy(C_{1-8}) alkyl, heteroaryl(C_{1-8}) alkyl, heteroaryloxy(C_{1-8}) alkyl, C_{3-6} cycloalkyl(C_{1-8})alkyl, arylthio(C_{1-8})alkyl, heteroarylthio(C_{1-8}) alkyl, C_{2-8} alkenyl, C_{2-8}alkynyl, C_{2-8} haloalkenyl, C_{2-8} haloalkynyl, aryl(C_{2-8})alkenyl, aryl(C_{2-8})alkynyl, aryloxy(C_{2-8}) alkenyl, aryloxy(C_{2-8})alkynyl, arylthio(C_{2-8})alkenyl, arylthio(C_{1-8})alkynyl, heteroaryl(C_{2-8})alkenyl, heteroaryl(C_{2-8})alkynyl, heteroaryloxy(C_{2-8}) alkenyl, heteroaryloxy(C_{2-8})allynyl, heteroarylthio(C_{2-8}) alkenyl, heteroarylthio(C_{2-8})alkynyl, aryl, heteroaryl, or C_{3-6} cyclolkyl; $R^{1'}$ and $R^{2'}$ are, independently, hydrogen, C_{1-8} alkyl, C_{1-8} haloalkyl, C_{1-8} hydroxyalkyl, C_{1-8} alkoxy(C_{1-8})alkyl, C_{1-8} haloalkoxy(C_{1-8}) alkyl, aryl(C_{1-8})alkyl, aryloxy(C_{1-8})alkyl, heteroaryl(C_{1-8}) alkyl, heteroaryloxy(C_{1-8}) alkyl, C_{3-6} cycloalkyl(C_{1-8})alkyl, arylthio(C_{1-8})alkyl, heteroarylthio(C_{1-8}) alkyl, C_{2-8}) alkenyl, C_{2-8} alkynyl, C_{2-8} haloalkenyl, C_{2-8} haloalkynyl, aryl(C_{2-8})alkenyl, aryl(C_{2-8})alkynyl, aryloxy(C_{2-8}) alkenyl, aryloxy(C_{2-8})alkynyl, arylthio(C_{2-8})alkenyl, arylthio(C_{1-8}) alkynyl, heteroaryl(C_{2-8})alkenyl, heteroaryl(C_{2-8})alkynyl, heteroaryloxy(C_{2-8}) alkenyl, heteroaryloxy(C_{2-8})alkynyl, heteroarylthio(C_{2-8}) alkenyl, heteroarylthio(C_{2-8})alkynyl, aryl, heteroaryl, C_{3-6} cycloalkyl, C_{1-8} alkoxy, C_{1-8} haloalkoxy, aryloxy, heteroaryloxy, nitro, halogen, NR'R" or cyano, or $R^{1'}$ and $R^{2'}$ join to form either a C_{5-10} aliphatic, aromatic or mixed aliphatic/aromatic carbocyclic ring system or a 5- to 10-membered heterocyclic ring system; the foregoing aryl and heteroaryl rings are optionally substituted with:halogen, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4}) alkyl, methylenedioxy optionally substituted with fluorine or C_{1-4} alkyl, aryl, heteroaryl, heterocyclyl, aryloxy, heteroaryloxy, aryl(C_{1-4}) alkyl wherein the alkyl moiety is optionally substituted with hydroxy, heteroaryl(C_{1-4})alkyl, aryl(C_{2-4}) alkenyl, heteroaryl(C_{2-4}) alkenyl, aryl(C_{1-4})alkoxy, heteroaryl(C_{1-4})alkoxy, aryloxy(C_{1-4}) alkyl, heteroaryloxy(C_{1-4})alkyl, C_{1-4} alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR'R", —NHCOR', —NHCONR'R",

—CONR'R", —COOR', —OSO_2R', —SO_2R', —COR', —CR'=NR" or —N=CR'R", or two substituents, when they are in adjacent positions on the aryl or heteroaryl ring can join to form a fused aliphatic ring; substituents which may be present in the aryl or heteroaryl rings of any of the foregoing substituents include one or more of the following:halo, hydroxy, mercapto, C_{1-4}alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy (C_{1-4}) alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl (C_{1-4}) alkyl, alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR'R", —NHCOR', —NHCONR'R", —CONR'R", —COOR', —OSO_2R', —SO_2R', —COR', —CR'=NR" or —N=CR'R"; R' and R" are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4}) alkyl, phenyl or benzyl, the phenyl and benzyl groups being optionally substituted with halogen, C_{1-4} alkyl or C_{1-4} alkoxy; when R' and R" are in CONR'R" they can together form a 5- or 6-membered heterocyclic ring; aryl is phenyl or napthyl; heteroaryl is pyridinyl, pyrimidinyl, pyridazinyl, pyrazinyl, 1,2,3-, 1,2,4- or 1,3,5-triazinyl, furyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, 1,2,3- or 1,2,4-triazolyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, quinolinyl, isoquinolinyl, cinnolinyl, quinazolinyl, quinoxalinyl, indolinyl, isoindolinyl, 1- or 2-benzofuranyl, 1- or 2-benzothienyl, benzimidazolinyl, 1,2,4-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, benzisoxazolyl, benzisothiazolyl, benzpyrazolyl, benzoxazolyl, benzthiazolyl, tetrazolyl and thiazolo[5,4-b]pyrid-2-yl, or an N-oxide thereof.

5,668,161

SUBSTITUTED THIAZOLES FOR THE TREATMENT OF INFLAMMATION

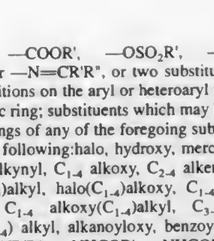
John J. Talley, Brentwood; Jeffery S. Carter, Chesterfield, both of Mo.; Paul W. Collins, Deerfield, Ill.; Steven W. Kramer, Des Plaines, Ill.; Thomas D. Penning, Elmhurst, Ill.; Donald J. Rogier, Jr., St. Louis, and Roland S. Rogers, Richmond Heights, both of Mo., assignors to G.D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 281,288, Jul. 27, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 679,462

Int. Cl.[6] C07D *277/26;* **A61K** *31/425*

U.S. Cl. 514—365 **34 Claims**

9. A compound of Formula II



II

wherein R^1 is selected from hydrido, C_1–C_{10} alkyl, C_1– C_{10} haloalkyl, C_1–C_{10} cyanoalkyl, C_1–C_{10} alkylamino, C_6–C_{12} aryl-C_1–C_{10}-alkyl, C_6–C_{12} arylamino, 5–10 membered heteroarylsulfonyl-C_1–C_{10}-alkyl, 5–10 membered heteroarylsulfonyl-C_1–C_{10}-haloalkyl, C_6–C_{12} aryl-C_1–C_{10}-alkylamino, C_6–C_{12} aryloxy-C_1–C_{10}-alkyl, C_1–C_{10} alkoxycarbonyl, C_6–C_{12} aryl optionally substituted at a substitutable position with one or more radicals selected from halo and C_1–C_{10} alkoxy, and 5–10 membered heterocyclic optionally substituted at a substitutable position with one or more radicals selected from halo and C_1–C_{10} alkyl;

wherein R^4 is selected from methyl and amino; and

wherein R^5 is selected from C_6–C_{12} aryl and 5–10 membered heteroaryl; wherein R^5 is optionally substituted at a substitutable position with one or more radicals selected from halo, C_1–C_{10} alkyl and C_1–C_{10} alkoxy;

or a pharmaceutically-acceptable salt thereof.

5,668,162

ISOTHIAZOLONES LOWER PLASMA LEVELS OF LIPOPROTEIN(A)

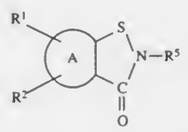
John Michael Domagala, 47693 Red Run, Canton, Mich. 48187; Helen Tsenwhei Lee, 3625 Fox Hunt; Randy Ranjee Ramharack, 2465 Antietam Dr., both of Ann Arbor, Mich. 48105; Bruce David Roth, 6089 White Swan La.; Tomi Sawyer, 5753 E. Silo Ridge, both of Ann Arbor, Mich. 48108, and Drago Robert Sliskovic, 3679 Hedgerow Dr., Saline, Mich. 48176

Continuation-in-part of Ser. No. 456,149, May 31, 1995. This application May 7, 1996, Ser. No. 646,188

Int. Cl.[6] A61K *31/41*

U.S. Cl. 514—373 **17 Claims**

1. A method for lowering plasma Lp(a) levels in a mammal comprising administering an Lp(a) lowering amount of a compound of Formula I



I

wherein:

A is a monocyclic ring having 5 or 6 ring atoms, or a bicyclic ring having from 9 to 12 ring atoms, the ring atoms being selected from carbon and optionally up to 3 heteroatoms selected from O, S, and N;

R^1 and R^2 independently are hydrogen, halo, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, Het(CR^6R^7)$_m$-, phenyl-(CR^6R^7)$_m$-, O-C_1-C_6 alkyl, hydroxy, nitro, cyano, NR^3R^4, NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, SO_3H, $S(O)_mNR^3R^4$, COR^3, or taken together are oxo (O=) or methylene dioxy (-O-CH_2-O-);

m is 0, 1, or 2;

R^3 and R^4 independently are hydrogen, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, Het(CR^6R^7)$_m$-, or phenyl-(CR^6R^7)$_m$-;

R^6 and R^7 independently are hydrogen, C_1-C_6 alkyl, CO_2R^3, hydroxy, $CONR^3R^4$, or cyano;

R^5 is hydrogen, C_1-C_6 alkyl, COC_1-C_6 alkyl, C_3-C_6 cycloalkyl, phenyl-(CR^6R^7)$_m$- , Het(CR^6R^7)$_m$-; and

wherein the foregoing alkyl, cycloalkyl, phenyl, and Het groups may optionally be substituted with from 1 to 3 groups selected from halo, hydroxy, nitro, NR^3R^4, NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, $S(O)_mNR^3R^4$, and COR^3, where m, R^3, and R^4 are as defined above;

and the pharmaceutically acceptable salts and solvates thereof.

5,668,163

FUNGICIDAL COMPOSITIONS

Heinz-Wilhelm Dehne, Monheim, and Winfried Lunkenheimer, Wuppertal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 552,332, Nov. 2, 1995, Pat. No. 5,585,393, which is a division of Ser. No. 397,502, Mar. 1, 1995, Pat. No. 5,504,100, which is a division of Ser. No. 263.297, Jun. 21, 1994, Pat. No. 5,420,148. This application Sep. 3, 1996, Ser. No. 711,726

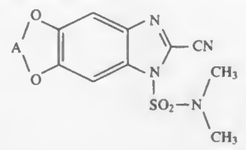
Claims priority, application Germany, Jun. 25, 1993, 43 21 206.9

Int. Cl.[6] A01N *43/38;43/50;43/52;43/76*

U.S. Cl. 514—376 **5 Claims**

1. A fungicidal composition comprising synergistic fungicidally effective amounts of a combination of

a compound of the formula

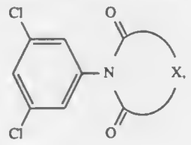


(I-1) A=—CF_2—

(I-2) A=—CF_2—CF_2—

and

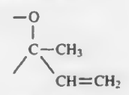
at least one compound of the formula



wherein

X = —CH_2—N—CO—NH—$CH(CH_3)_2$

(IPRODIONE),



(VINCLOZOLIN)

or



(PROCYMIDONE)

(VII-3)

wherein the weight ratio of a compound of the formula (I) to a compound selected from the group consisting of VII-1, VII-2, and VII-3 is between about 1:1 and 1:20.

5,668,164

PROCESS FOR SYNTHESIS OF CHIRAL CIS-AND TRANS-3-AMINO-4 SUBSTITUTED PYRROLIDINE COMPOUNDS

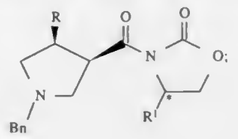
Zhenkun Ma; Curt S. Cooper; Anthony K. L. Fung, all of Gurnee, Ill., and Daniel T. Chu, Santa Clara, Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 679,043, Jul. 12, 1996, Pat. No. 5,618,949. This application Dec. 12, 1996, Ser. No. 764,418

Int. Cl.[6] C07D *413/06*

U.S. Cl. 514—376 **2 Claims**

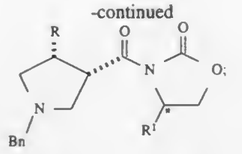
1. A compound selected from the group consisting of



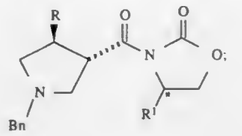
(a)

-continued

(b)



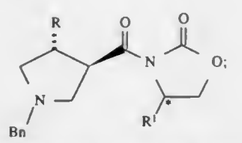
(c)



(VII)

and

(d)



(VII-1) wherein * represents a chiral center, Bn is benzyl, R is selected from the group consisting of C_1–C_6-alkyl, C_3–C_5-cycloalkyl, phenyl and phenyl-substituted-C_1– C_6-alkyl, and R^1 is selected from the group consisting of isopropyl, isobutyl, t-butyl, phenyl, benzyl, 1-phenylethyl, diphenylmethyl, naphthyl and adamantyl.

(VII-2)

5,668,165

SMALL MOLECULE INHIBITION OF RNA/LIGAND BINDING

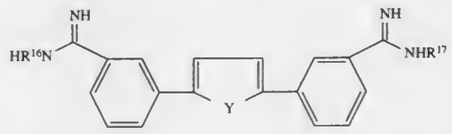
Mark A. Wuonola, Waltham, and Zhe Li, Malden, both of Mass., assignors to Scriptgen Pharmaceuticals, Inc., Medford, Mass.

Filed Jun. 7, 1995, Ser. No. 475,883

Int. Cl.[6] A61K *31/415;* **C07D** *233/64*

U.S. Cl. 514—397 **36 Claims**

1. A compound having the formula:



wherein Y is oxygen or sulfur;

wherein R^{16} and R^{17} are independently selected from the group consisting of hydrogen, C_2 to C_7 alkyl, and a heterocyclic ring having 3–10 ring atoms; wherein the heterocyclic ring is optionally substituted with C_1–C_6 alkyl groups;

wherein the hetero atoms are N, O, or S; and

wherein when R^{16} and R^{17} are alkyl groups, the alkyl groups are substituted with at least one radical selected from the group consisting of C_1 to C_6 dialkylamino, (C_1 to C_6 alkyl)(aryl) amino, di(C_1–C_6 alkyl)amino(C_1–C_3 alkyl)aryl, C_3–C_8 dicycloalkylamino, (C_1 to C_6 alkyl)(C_3–C_8 cycloalkyl)amino, and heterocyclic having 5 to about 7 ring atoms wherein the hetero atoms are N, O, or S; and

wherein $R^{16}$and R^{17} can be optionally interrupted by oxygen, nitrogen, sulfur, or any combination thereof; or

a pharmaceutically acceptable salt thereof.

5,668,166

METHODS OF INHIBITING *PNEUMOCYSTIS CARINII* PNEUMONIA AND COMPOUNDS USEFUL THEREFOR

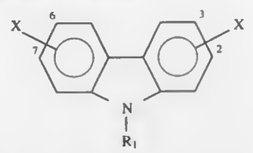
Richard R. Tidwell, Pittsboro; James E. Hall, Chapel Hill, both of N.C., and David W. Boykin, Atlanta, Ga., assignors to Georgia State University Research Foundation, Inc., Atlanta, Ga., and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Jun. 7, 1995, Ser. No. 474,440

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—411 **7 Claims**

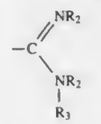
1. A method of treating *Pneumocystis carinii* pneumonia in a subject in need of such treatment, comprising administering to said subject a compound of Formula I:



(I)

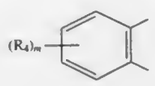
wherein:

x is located in the para or meta positions and is loweralkyl, loweralkoxy, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, alkylaryl, halogen, or



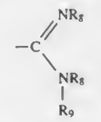
wherein:

each R_2 is independently selected from the group consisting of H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl or two R_2 groups together represent C_2–C_{10} alkylene, or two R_2 groups together represent



wherein

m is from 1–3 and R_4 is H,



or —$CONHR_5NR_6R_7$, wherein R_5 is loweralkyl, R_6 and R_7 are each independently selected from the group consisting of H and lower alkyl; each R_8 is independently selected from the group consisting of H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl, or two R_8 groups together represent C_2–C_{10} alkylene; R_9 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl;

R_3 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl; R_1 is H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, alkylaryl, or halogen;

or a pharmaceutically acceptable salt thereof, in an amount effective to treat *Pneumocystis carinii* pneumonia.

5,668,167

METHODS OF TREATING MICROBIAL INFECTIONS

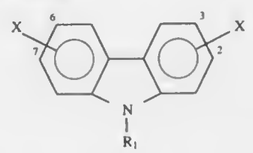
Richard R. Tidwell, Pittsboro; James E. Hall, Chapel Hill, both of N.C.; David W. Boykin, Atlanta, Ga.; Christine C. Dykstra, Chapel Hill; John Perfect, Durham, both of N.C., and Byron L. Blagburn, Auburn, Ala., assignors to Duke University, Durham, N.C.; Auburn University, Auburn, Ala.; Georgia State University, Atlanta, Ga., and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation of Ser. No. 474,440, Jun. 7, 1995, Pat. No. 5,668,166. This application Jun. 7, 1995, Ser. No. 477,876

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—411 **7 Claims**

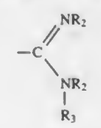
1. A method of treating *Cryptosporidium parvum* in a subject in need of such treatment, comprising administering to said subject a compound of Formula I:



(I)

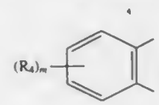
wherein:

X is located in the para or meta positions and is loweralkyl, loweralkoxy, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, alkylaryl, halogen, or

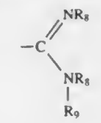


wherein:

each R_2 is independently selected from the group consisting of M, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl or two R_2 groups together represent C_2–C_{10} alkylene, or two R_2 groups together represent



wherein m is from 1–3 and R_4 is H,



or —$CONHR_5NR_6R_7$, wherein R_5 is loweralkyl, R_6 and R_7 are each independently selected from the group consisting of H and lower alkyl; each R_8 is independently selected from the group consisting of H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl, or two R_8 groups together represent C_2–C_{10} alkylene; R_9 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl;

R_3 is H, hydroxy, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, or alkylaryl;

R_1 is H, loweralkyl, alkoxyalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, cycloalkyl, aryl, alkylaryl, or halogen;

or a pharmaceutically acceptable salt thereof, in an amount effective to treat *Cryptosporidium parvum.*

5,668,168

1,2-DITHIIN ANTIINFECTIVE AGENTS

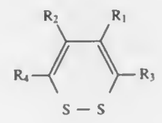
Thien V. Truong, Emeryville; Donald E. Bierer; Jeffrey M. Dener, both of Daly City; Richard Hector; Michael S. Tempesta, both of Moss Beach, all of Calif.; Bernard Loev, Scarsdale, N.Y.; Wu Yang, and Masato Koreeda, both of Ann Arbor, Mich., assignors to Shaman Pharmaceuticals, Inc., S. San Francisco, Calif., and The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 110,917, Aug. 24, 1993, Pat. No. 5,556,875. This application Jun. 6, 1995, Ser. No. 470,102

Int. Cl.[6] A61K *31/385*; C07C *321/06*; C07D *339/08*

U.S. Cl. 514—436 **12 Claims**

1. A method of treating a fungal infection comprising administering to a warm blooded animal having such an infection with a therapeutically effective amount of a dithiin compound of the formula:



where

R_1 and R_2 are hydrogen; and

R_3 and R_4 are independently hydrogen, an alkyl or alkene;

wherein

the alkyl or alkene optionally contains cyclic groups, and is unsubstituted or substituted with at least one functional moiety selected from the group consisting of hydroxyl, halo, oxy, ether, carbonyl, carboxyl, mercapto, carbalkoxy, cyano, nitro, acyloxy, sulfamyl, amino, acylamino, carbamyl, aryl and aralkyl;

the aryl and aralkyl groups are independently unsubstituted or substituted with at least one functional moiety selected from the group consisting of hydroxyl, halo, ether, cyano, nitro, carboxy, carbalkoxy and amino; and

R_4 and R_2, R_2 and R_1 or R_1 and R_3 are optionally linked together,

and pharmaceutically acceptable salts thereof,

wherein the dithiin or a pharmaceutically acceptable salt thereof is administered topically, intravenously, intraperitoneally, orally or by aerosol.

5,668,169

USE OF INHIBITORS OF CYCLOOXYGENASE IN THE TREATMENT OF NEURODEGENERATIVE DISEASES

Yves Ducharme, Montreal; Jacques Yves Gauthier, Laval; Petpiboon Prasit; Yves Leblanc, both of Kirkland; Zhaoyin Wang, Pierrefonds; Serge Leger, Dollard des Ormeaux; Michel Therien, Laval, all of Canada; Raymond George Hill, Royston, and Dalip Jaicaran Sastri Sirinathsinghji, Cambridge, both of England, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

Continuation-in-part of Ser. No. 461,783, Jun. 5, 1995, which is a continuation-in-part of Ser. No. 179,467, Jan. 10, 1994, Pat. No. 5,474,995, which is a continuation-in-part of Ser. No. 82,196, Jun. 24, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 539,930

Claims priority, application United Kingdom, Oct. 12, 1994, 9420616

Int. Cl.[6] A61K *31/38;31/34;31/27*

U.S. Cl. 514—438 **8 Claims**

1. A method of treating Alzheimers disease in a human which comprises administeration to said human an effective aamount of a non-steroidal COX-2 inhibitor, said inhibitor binding at least 100 times as well to COX-2 as to COX-1.

5,668,170

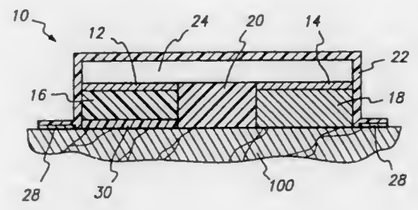
COMPOSITION AND METHOD ENHANCING TRANSDERMAL ELECTROTRANSPORT AGENT DELIVERY

J. Richard Gyory, San Jose, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 274,619, Jul. 13, 1994, abandoned. This application Mar. 7, 1996, Ser. No. 612,378

Int. Cl.[6] A01N *43/02*

U.S. Cl. 514—449 **16 Claims**



1. A composition for the transdermal electrotransport delivery of an agent comprising:

a) at least one agent for transdermal delivery; and

b) at least one transdermal electrotransport enhancer having a hydrophile-lipophile balance (HLB) number greater than about 6 and comprising a hydrophobic tail and a polar head of less than about 150 Dalton MW, the polar head group being uncharged or having a charge opposite the charge of the agent to be delivered if the agent is ionizable in solution; wherein the electrotransport enhancer is selected from the group consisting of saturated C_{10}–C_{12} aliphatic alcohols, amines, mono- and di-substituted amines, quaternary ammonium salts, sulfoxides, sulfates, amides, mono- and di-substituted amides, esters and salts thereof.

5,668,171

HALOGENATED MEVALONATE COMPOSITIONS AND USES THEREOF IN RAS-DEPENDENT CELL GROWTH

Jennifer A. Cuthbert, and Peter E. Lipsky, both of Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 8, 1993, Ser. No. 148,148

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—460 **16 Claims**

1. A method for inhibiting proliferation of Ras-transformed cells sensitive to fluoromevalonate comprising:

contacting cells that include Ras-transformed cells with an effective amount of fluoro mevalonate; and

inhibiting proliferation of the Ras-transformed cells

wherein cytoplasmic Ras of Ras-transformed cells is depleted and proliferation of Ras-transformed cells is selectively inhibited.

5,668,172

ANTHRAQUINONE PHARMACEUTICAL COMPOUNDS AND USES THEREFOR

Peter Thaddeus Gallagher, Camberley; William Martin Owton, Lightwater, and Andrew Caerwyn Williams, Camberly, all of United Kingdom, assignors to Lilly Industries Limited, Basingstoke, England

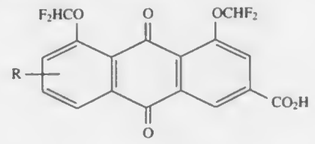
Filed Aug. 23, 1995, Ser. No. 518,447

Claims priority, application United Kingdom, Aug. 24, 1994, 9417102

Int. Cl.[6] A61K *31/19; G07C 50/18*

U.S. Cl. 514—557 **7 Claims**

1. A compound of the formula



in which R is hydrogen, halo or F_2HCO—; or a salt, amide or ester thereof.

5,668,173

METHOD OF INCREASING THE CONVERSION OF HOMOCYSTEINE TO METHIONINE AND USES THEREOF

Timothy A. Garrow, Champaign, Ill., assignor to The Board of Trustees of the University of Illinois Corp., Urbana, Ill.

Filed Feb. 23, 1996, Ser. No. 605,940

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **10 Claims**

1. A method of decreasing homocysteine levels in an animal in need of such treatment, comprising the step of administering to said animal a pharmacologically effective dose of a thetin.

5,668,174

METHOD OF TREATING HYPERPARATHYROIDISM

Fumikazu Kawagishi, Kawachinagano; Keiko Yamada, Osaka, and Hiroshi Iguchi, Katano, all of Japan, assignors to Kowa Tekuno Sachi Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/01729, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO95/17889, PCT Pub. Date Jul. 6, 1995

PCT Filed Oct. 14, 1994, Ser. No. 666,527

Claims priority, application Japan, Dec. 29, 1993, 5-355269

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—560 **2 Claims**

1. A method for treating hyperparathyroidism of patients suffering from hyperparathyroidism associated with renal disorder, comprising administering to said patients at least one ω-6 unsaturated fatty acid composition selected from the group consisting of γ-linolenic acid, dihomo-γ-linolenic acid and derivatives having ω-6 unsaturated fatty acid structures thereof in an amount sufficient for suppressing the hypersecretion of parathyroid hormone of said patients.

5,668,175

USE OF SELECTIVE LIGANDS FOR TREATMENT OF DISEASE STATES RESPONSIVE TO STEROID OR STEROID-LIKE RETINOIDS

Ronald M. Evans, La Jolla; Richard A. Heyman, Encinitas; Christina S. Berger, and Robert B. Stein, both of San Diego, all of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 193,146, Feb. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 748,767, Aug. 23, 1991, abandoned. This application Aug. 12, 1996, Ser. No. 695,743

Int. Cl.[6] A61K *31/19;31/165*

U.S. Cl. 514—569 **5 Claims**

1. A method for the treatment of a retinoid-responsive disease state in a subject, said method comprising administering to said subject an effective amount of a ligand which selectively interacts with the retinoid subtype associated with said retinoid-responsive disease state, to a significantly greater extent than with other retinoid subtypes.

5,668,176

PHENOXYPHENYLACETIC ACID DERIVATIVES

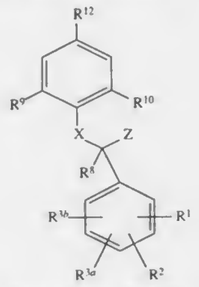
Scott W. Bagley, Groton, Conn.; Theodore P. Broten, Ambler, Pa.; Prasun K. Chakravarty, Edison, N.J.; Daljit S. Dhanoa, Secaucus, N.J.; Kenneth J. Fitch, Cranford, N.J.; William J. Greenlee, Teaneck, N.J.; Nancy Jo Kevin, Clifton, N.J.; Gerard R. Kleczykowski, Westfield, N.J.; Douglas J. Pettibone, Chalfont, Pa.; James R. Tata, Westfield, N.J.; Ralph A. Rivero, Tinton Falls, N.J.; Thomas F. Walsh, Westfield, N.J.; David L. Williams, Jr., Telford, Pa.; Jay M. Matthews, Fords, N.J., and Richard B. Toupence, Cranford, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation of Ser. No. 473,172, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 294,232, Aug. 22, 1994, Pat. No. 5,565,485, which is a continuation-in-part of Ser. No. 287,374, Aug. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 197,467, Feb. 24, 1994, abandoned, which is a continuation-in-part of Ser. No. 34,455, Mar. 19, 1993, abandoned. This application Oct. 18, 1996, Ser. No. 733,536

Int. Cl.[6] A61K *31/19;31/535;* **C07D** *265/30;* **C07C** *59/11*

U.S. Cl. 514—569 **14 Claims**

1. A compound of structural Formula IIa:



IIa

or a pharmaceutically acceptable salt thereof, wherein:

R^{3a} and R^{3b} are independently:

(a) H, except when either of the other of R^{3a} or R^{3b} is F, Cl, Br, I, or —OR^7, where R^7 is (C_1–C_6)-alkyl,

(b) F, Cl, Br, or I, except when either of the other of R^{3a} or R^{3b} is H, F, Cl, Br, I, or —OR^7, where R^7 is (C_1–C_6)-alkyl,

(c) —NO_2,

(d) —NH_2,

(e) —NH(C_1–C_4)-alkyl,

(f) —N[(C_1–C_4)-alkyl]$_2$,

(g) —SO_2NHR^7,

(h) —CF_3,

(i) (C_1–C_6)-alkyl,

(j) —OR^7, except when either of the other of R^{3a} or R^{3b} is H, F, Cl, Br, or I,

(k) —$S(O)_n$—(C_1–C_4)-alkyl,

(l) —NHCO—(C_1–C_4)-alkyl,

(m) —NHCO—O(C_1–C_4)-alkyl,

(n) —CH_2O—(C_1–C_4)-alkyl,

(o) —O—$(CH_2)_m$—OR^7,

(p) —$CONR^7R^{11}$,

(q) —$COOR^7$, or

(r) -phenyl;

R^1 and R^2 on adjacent carbon atoms join together to form a ring structure:



A represents: —$C(R^4)$=$C(R^5)$—$C(R^4)$=$C(R^5)$—;

n is: 0, 1 or 2;

m is: 2, 3 or 4;

s is: 1 or 2;

R^4 and R^5 are independently:

(a) H, except when one and only one of the R^4 or R^5 substituents is F, Cl, Br, I, or —O—(C_1–C_4)-alkyl,

(b) (C_1–C_6)-alkyl or (C_2–C_6)-alkenyl each of which is unsubstituted or substituted with one or two substituents selected from the group consisting of:

i) —OH,

ii) —O—(C_1–C_4)-alkyl,

iii) —$S(O)_n$—(C_1–C_4)-alkyl,

iv) —NR^7—(C_1–C_4)-alkyl,

v) —NHR^7,

vi) —$COOR^7$,

vii) —$CONHR^7$,

viii) —$OCOR^{11}$, or

ix) —$CONR^7R^{11}$,

(c) (C_3–C_7)-cycloalkyl,

(d) F, Cl, Br, I, except when one and only one of the R^4 or R^5 substituents is H, F, Cl, Br, I, or —O—(C_1–C_4)-alkyl,

(e) CF_3,

(f) —$COOR^7$,

(g) —$CONR^7R^{11}$,

(h) —NR^7R^{11},

(i) —$NR^7CONR^7R^{11}$,

(j) —NR^7COOR^{11},

(k) —$SO_2NR^7R^{11}$,

(l) —O—(C_1–C_4)-alkyl, except when one and only one of the R^4 or R^5 substituents is H, F, Cl, Br, or I,

(m) —$S(O)_n$—(C_1–C_4)-alkyl, or

(n) —$NHSO_2R^{11}$;

R^7 is:

(a) H,

(b) (C_1–C_6)-alkyl,

(c) phenyl,

(d) (C_1–C_6)-alkylphenyl,

(e) (C_3–C_7)-cycloalkyl, or

(f) R^7 and R^{11} on the same nitrogen atom they can join together to form a ring selected from the group consisting of: morpholinyl, piperazinyl, or pyrrolyl;

R^8 is:

(a) H,

(b) (C_1–C_6)-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of:

(i) -phenyl,

(ii) —(C_3–C_7)-cycloalkyl,

(iii) —NR^7R^{11},

(iv) -morpholin-4-yl,

(v) —OH,

(vi) —CO_2R^7, or

(vii) —$CON(R^7)_2$,

(c) phenyl, unsubstituted or substituted with a substituent selected from the group consisting of:

i) (C_1–C_4)-alkyl

ii) —O—(C_1–C_4)-alkyl

iii) —$CONR^7R^{11}$,

iv) F, Cl, Br or I, or

v) —$COOR^7$;

R^9 and R^{10} are independently:

(a) H, provided that one and only one of R^9 and R^{10} is H, when R12 is hydroxy(C_1–C_6)-alkyl,

(b) (C_2–C_6)-alkyl, unsubstituted or substituted with (C_3–C_7)-cycloalkyl or —CO_2R^7, provided that the other of R^9 or R^{10} is other than H,

(c) (C_2–C_6)-alkenyl,

(d) (C_2–C_6)-alkynyl,

(e) Cl, Br, F, I,

(f) (C_1–C_6)-alkoxy,

(g) perfluoro-(C_1–C_6)-alkyl,

(h) (C_3–C_7)-cycloalkyl, unsubstituted or substituted with (C_1–C_6)-alkyl,

(i) phenyl,

(j) (C_1–C_6)-alkyl-$S(O)_n$—$(CH_2)_n$—,

(k) —CF_3,

(l) —CO_2R^7,

(m) —NR^7R^{11},

(n) —[(C_1–C_6)-alkyl]NR^7R^{11},

(o) —NO_2,

(p) —$(CH_2)_n$—SO_2—$N(R^7)_2$,

(q) —NR^7CO—(C_1–C_4)-alkyl, or

(r) —$CON(R^7)_2$;

R^{11} is:

(a) (C_1–C_6)-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of:

i) —OR^7,

ii) —$N[R^7]_2$,

iii) —NH_2,

iv) —$COOR^7$,

v) —$N[CH_2CH_2]_2Q$,

vi) —CF_3, or

vii) —$CON(R^7)_2$;

(b) aryl, wherein aryl is defined as phenyl or naphthyl which is unsubstituted or substituted with one or two substituents selected from the group consisting of:

i) (C_1–C_4)-alkyl,

ii) —O—(C_1–C_4)-alkyl,

iii) —$CO[NR^7]_2$,

iv) F, Cl, Br or I,

v) —$COOR^7$,

vi) —NH_2,

vii) —NH[(C_1–C_4)-alkyl],

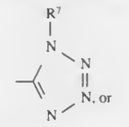
viii) —N[(C_1–C_4)-alkyl]$_2$, or

ix) —$CON[CH_2CH_2]_2Q$;

(c) —(C_1–C_4)-alkylaryl, wherein aryl is as defined above,

(d) (C_3–C_7)-cycloalkyl,

(e)



N, or

(f) CF_3;

Q is: O, S or —NR^7;

R^{12} is:

(a) (C_1–C_6)-alkyl, unsubstituted or substituted with one or two substituents selected from the group consisting of: p3 i) —OH, except when R^{12} represents hydroxy(C_1–C_6)-alkyl, then either of R^9 or R^{10} cannot be H, when the other of R^9 or R^{10} is H or (C_2–C_6)-alkyl,

ii) —O—(C_1–C_4)-alkyl,

iii) —O—(C_1–C_4)-cycloalkyl,

iv) —$S(O)_n$—(C_1–C_4)-alkyl,

v) —NR^7R^{11},

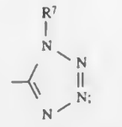
vi) —$COOR^7$,

vii) —$CONHR^7$,

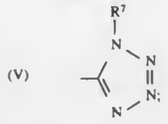
viii) —$OCOR^{11}$,

ix) —$CONR^7R^{11}$,

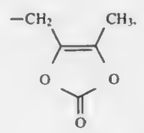
x) $—NR^7CONR^7R^{11}$,
xi) $—NR^7COOR^{11}$,
xii) $—C(R^6)(OH)—C(R^6)(R^7)(OH)$,
xiii) $—SO_2NR^7R^{11}$,
xiv) CN, or

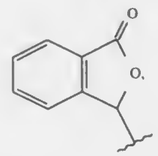
XV) 

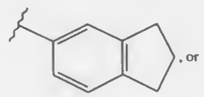
(b) $(C_3–C_7)$-cycloalkyl,
(c) $—OR^7$, R^7 is other than hydrogen,
(d) $—COOR^7$,
(e) $—CONH_2$,
(f) $—CONR^{16}OR^7$,
(g) $—CONR^7R^{11}$,
(h) $—CONR^7CO_2R^7$,
(i) $—NH_2$,
(j) $—NR^7R^{11}$,
(k) $—NR^7CONR^7R^{11}$,
(l) $—NR^7COOR^{11}$,
(m) $—C(R^6)(OH)—C(R^6)(R^7)(OH)$,
(n) $—SO_2NR^7R^{11}$,
(o) $—S(O)_2NR^7COR^{11}$,
(p) $—S(O)_2NR^7CO_2R^{11}$,
(q) $—S(O)_2NR^7CONR^7R^{11}$,
(r) $—NHSO_2R^{11}$,
(s) $—NR^7SO_2NR^7R^{11}$,
(t) $—CONHSO_2R^{11}$,
(u) —CO-amino acid, wherein amino acid is defined as an L- or D-amino acid selected from the group consisting of Ala, Ile, Phe, Asp, Pro and Val and which can be further substituted as a $(C_1–C_6)$-alkyl ester or an amide, or

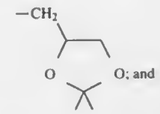
(V) 

X is:
(a) —O—,
(b) $—S(O)_n—$,
(c) $—NR^7—$,
(d) $—CH_2O—$,
(e) $—CH_2S(O)_n—$,
(f) $—CH_2NR^7—$,
(g) $—OCH_2—$,
(h) $—N(R^7)CH_2—$,
(i) $—S(O)_nCH_2—$, or
(j) -single bond;
Z is:
(a) $—CO_2H$,
(b) $—CO_2R^{13}$,
(c) —CONH-(tetrazol-5-yl),
(d) $—CONHSO_2OR^{11}$,
(e) $—CONHSO_2NR^7R^{11}$,
(f) $—CONHSO_2$-aryl, wherein aryl is defined as phenyl or naphthyl which is unsubstituted or substituted with one, two or three substituents selected from the group consisting of:
i) $(C_1–C_4)$-alkyl,
ii) $—O—(C_1–C_4)$-alkyl,
iii) $—CONR^7R^{11}$,
iv) F, Cl, Br or I,
v) $—COOR^7$,
vi) $—NH_2$,
vii) $—NH[(C_1–C_4)\text{-alkyl}]$,
viii) $—N[(C_1–C_4)\text{-alkyl}]_2$,
ix) -phenyl,
x) —OH,
xi) $—OCH_2CH_2OH$,
xii) $—CF_3$;
(g) $—CONHSO_2—(C_1–C_8)$-alkyl, wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(h) $—CONHSO_2—(C_1–C_4)$-perfluoroalkyl,
(i) -tetrazol-5-yl,
(j) $—CONHSO_2$-heteroaryl, wherein heteroaryl is defined as carbazolyl, furyl, thienyl, pyrrolyl, isothiazolyl, imidazolyl, isoxazolyl, thiazolyl, oxazolyl, pyrazolyl, pyrazinyl, pyridyl, pyrimidyl, purinyl or quinolinyl, which is unsubstituted or substituted with one, two or three substituents selected from the group consisting of:
i) $(C_1–C_4)$-alkyl,
ii) $—O—(C_1–C_4)$-alkyl,
iii) $—CONR^7R^{11}$,
iv) F, Cl, Br or I,
v) $—COOR^7$,
vi) $—NR^7CONR^7R^{11}$, and
vii) $—NR^7COOR^{11}$;
(k) $—SO_2NHCO$-aryl, wherein aryl is defined in Z(d) above,
(l) $—SO_2NHCO-(C_1–C_8)$-alkyl, wherein the alkyl group is unsubstituted or substituted as defined in R^4(b),
(m) $—SO_2NHCO—(C_1–C_4)$-perfluoroalkyl,
(n) $—SO_2NHCO$-heteroaryl, wherein heteroaryl is as defined in Z(g) above, or
(o) $—SO_2NHCON(R^{11})_2$ wherein the R^{11} groups are the same or different;
R^{13} is:
(a) $(C_1–C_4)$alkyl,
(b) $CHR^{14}—O—COR^{15}$,
(c) $CH_2CH_2—N[(C_1–C_2)\text{-alkyl}]_2$,
(d) $CH_2CH_2—N[CH_2CH_2]_2O$,
(e) $(CH_2CH_2O)_y—O—[(C_1–C_4)\text{-alkyl}]$, wherein y is 1 or 2,
(f) phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl, where phenyl or naphthyl is substituted or unsubstituted with $CO_2—(C_1–C_4)$-alkyl,

(g) 

(h) 

(i) 

(j) 

R^{14} and R^{15} independently are $(C_1–C_6)$-alkyl or phenyl; and
R^{16} is: H, $(C_1–C_6)$-alkyl or $(C_1–C_6)$-alkylphenyl.

5,668,177

METHOD OF TREATING WRINKLES USING TARTARIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 464,500

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—574 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle tartaric acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,668,178

ARYLTHIO COMPOUNDS

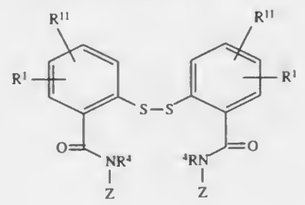
Edward Faith Elslager, Ann Arbor, and Rocco Dean Gogliotti, Pinckney, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 286,816, Aug. 5, 1994, Pat. No. 5,463,122. This application May 19, 1995, Ser. No. 444,974

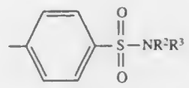
Int. Cl.[6] A01N *37/18;* **A61K** *31/165;31/18*

U.S. Cl. 514—618 **5 Claims**

1. A method of treating retroviral infections comprising administering to a subject in need of treatment an antivirally effective amount of a compound of the formula



wherein:
R^1 and R^{11} independently are hydrogen, halo, $C_1–C_6$ alkyl, hydroxy, $C_1–C_6$ alkoxy, carboxy, $C_1–C_6$ alkoxycarbonyl, or NR^2R^3, where R^2 is hydrogen or $C_1–C_6$ alkyl and R^3 is hydrogen, $C_1–C_6$ alkyl or $C_1–C_6$ alkanoyl;
R^4 is hydrogen or $C_1–C_6$ alkyl;
Z is $C_1–C_6$ alkyl or $C_3–C_6$ cycloalkyl, where said alkyl and cycloalkyl groups may have 1 or 2 substituents selected from hydroxy, halo, nitro, NR^2R^3, carboxy, and $C_1–C_6$ alkoxycarbonyl; or
Z is



where and as defined above;
and pharmaceutically acceptable salts and solvates thereof.

5,668,179

POTENT INDUCERS OF TERMINAL DIFFERENTIATION AND METHOD OF USE THEREOF

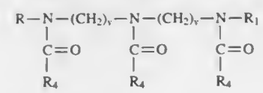
Ronald Breslow, Englewood, N.J.; Paul A. Marks, Bridgewater, Conn., and Richard A. Rifkind, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, and Sloan-Kettering Institute for Cancer Research, both of New York, N.Y.

Division of Ser. No. 164,639, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 701,323, May 6, 1991, abandoned, which is a continuation of Ser. No. 270,963, Nov. 14, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 485,619

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—629 **10 Claims**

1. A method of treating a patient having a tumor characterized by proliferation of neoplastic cells which comprises administering to the patient an amount of a compound effective to selectively induce terminal differentiation of such neoplastic cells and thereby inhibit their proliferation, the compound having the structure:



wherein each of R, R_1, and R_4 is a hydrogen atom or a methyl, ethyl or propyl group, R and R_1 are the same and R and R_4 are the same or different; and wherein y is 4, 5, 6 or 7.

5,668,180

ALKOXYARYL COMPOUNDS

Daniel Lesieur, Gondecourt; Patrick Depreux, Armentieres; Véronique Leclerc, Lille; Philippe Delagrange, Issy les Moulineaux, and Pierre Renard, Versailles, all of France, assignors to Adir Et Compagnie, Courbevoie, France

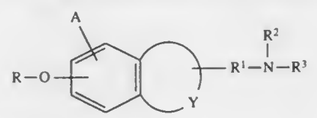
Filed May 30, 1996, Ser. No. 655,439

Claims priority, application France, May 31, 1995, 95 06434

Int. Cl.[6] A61K *31/16;* **C07C** *233/05*

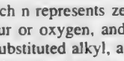
U.S. Cl. 514—630 **10 Claims**

1. A compound selected from those of formula (I):



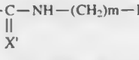
(I)

in which:
R^1 represents a $(C_1–C_4)$alkylene chain which is unsubstituted or substituted by a radical chosen from alkyl, hydroxyl, alkoxycarbonyl, and carboxyl;
R^2 represents hydrogen or alkyl;
R^3 represents: either a group of formula R^{31}



(R^{31})

in which n represents zero or an 1 to 3, inclusive, X represents sulfur or oxygen, and R^5 represents hydrogen, unsubstituted or substituted alkyl, alkenyl, alkynyl, unsubstituted or substituted cycloalkyl, or an unsubstituted or substituted dicycloalkylalkyl,
or a group of formula R^{32}:



(R^{32})

in which X' represents oxygen or sulfur, m represents zero or an 1 to 3, inclusive, and R^6 represents hydrogen, unsubstituted or substituted alkyl, alkenyl, or alkynyl, it being understood that

R^6 may also represent unsubstituted or substituted cycloalkyl or unsubstituted or substituted dicycloalkylalkyl when X' is oxygen;

A represents a radical chosen from alkyl of at least two carbon atoms and an A' group chosen from substituted alkyl, alkenyl, and alkynyl,

R represents a group chosen from unsubstituted or substituted alkyl, alkenyl, alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted cycloalkylalkyl, unsubstituted or substituted aryl, unsubstituted or substituted arylalkyl, unsubstituted or substituted diarylalkyl, cycloalkenyl, and cycloalkenylalkyl,

Y forms, with the benzo ring to which it is bonded, a y^1 group which

either represents a group chosen from naphthalene, benzofuran, benzothiophene, and indole, in the case where A represents an A' group,

or represents naphthalene, in the case where A represents alkyl, Y^1 optionally being partially hydrogenated,

it being understood that, unless otherwise indicated:

the expression "substituted" relating to the term "alkyl" means that this group is substituted by a radical chosen from halogen, hydroxyl, and alkoxy,

the expression "substituted" relating to the terms "cycloalkyl", "cycloalkylalkyl," and "dicycloalkylalkyl" means that these groups are substituted on the cycloalkyl part by a substituent chosen from halogen, alkyl, alkoxy, hydroxyl, and oxo,

the expression "substituted" relating to the terms "aryl", "arylalkyl", and "diarylalkyl" means that these groups are substituted on the aromatic ring by a radical chosen from halogen, alkyl, alkyl substituted by halogen, alkoxy, and hydroxyl,

the terms "alkyl" and "alkoxy" denote linear or branched radicals containing 1 to 6 carbon atoms, inclusive,

the terms "alkenyl" and "alkynyl" denote unsaturated linear or branched radicals containing 2 to 6 carbon atoms, inclusive,

the term "cycloalkyl" denotes a saturated cyclic group containing 3 to 8 carbon atoms, inclusive,

the term "cycloalkenyl" denotes an unsaturated cyclic group containing 3 to 8 carbon atoms, inclusive,

the term "aryl" denotes a phenyl or naphthyl group,

its enantiomers and diastereoisomers, and addition salt thereof with a pharmaceutically-acceptable base.

5,668,181

USE OF THE R-ENANTIOMERS OF N-PROPARGYL-1-AMINOINDAN COMPOUNDS FOR THE TREATMENT OF DEPRESSION

Moussa B. H. Youdim, Haifa; John P. M. Finberg, Tivon; Ruth Levy, Tel-Aviv; Jeffrey Sterling; David Lerner, both of Jerusalem; Tirtsah Berger-Paskin, Raanana, and Haim Yellin, Ramat-Gan, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem, and Techion Research and Development Foundation Ltd., Haifa, both of Israel

Division of Ser. No. 198,205, Feb. 17, 1994, Pat. No. 5,457,133, which is a continuation of Ser. No. 63,461, May 18, 1993, abandoned, which is a continuation of Ser. No. 632,184, Dec. 21, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,645

Claims priority, application Israel, Jan. 3, 1990, 92952

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—657 **7 Claims**

1. A method of treating a subject for depression, which comprises administering to the subject a pharmaceutical composition consisting essentially of R(+)-N-propargyl-1-aminoindan or a pharmaceutically acceptable salt thereof in an amount effective to treat the subject and a carrier.

5,668,182

METHOD OF CALMING OR SEDATING AN ANIMAL WITH A HYDROXY BENZALDEHYDE COMPOUND

Donald J. Abraham, Midlothian; Louis S. Harris; B. J. Meade, both of Richmond; Albert E. Munson, Midlothian; Paul S. Swerdlow, and Graham A. Patrick, both of Richmond, all of Va., assignors to Virginia Commonwealth University, Richmond, Va.

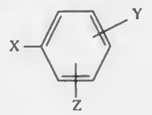
Filed Aug. 19, 1996, Ser. No. 699,640

Int. Cl.[6] A61K *31/11;31/235;31/19*

U.S. Cl. 514—699 **7 Claims**

1. A method of calming or sedating a host animal in need thereof, comprising the step of:

administering to said host animal by injection or intravenous infusion an effective dose of a compound of the formula:



wherein X is —CHO or $-(CH_2)_n-COOR_1$ where n is an integer value of 0 to 9 and R_1 is a 1C to 5C alkyl group, Y is —OH or $—OR_2$ where R_2 is a benzyloxyl or a carboxylbenzyloxyl group, and Z is $—OR_3$ where R_3 is a 1C to 5C alkyl group, —COOH, or $—O-(CH_2)_q—COOH$ where q is an integer value of 1 to 9.

5,668,183

WATER DISPERSIBLE COMPOSITIONS

Bruno Leuenberger, Basel, Switzerland, assignor to Roche Vitamins Inc., Paramus, N.J.

Continuation of Ser. No. 430,663, Apr. 28, 1995, abandoned, which is a continuation of Ser. No. 41,255, Apr. 1, 1993, abandoned. This application Aug. 8, 1996, Ser. No. 694,141

Claims priority, application Switzerland, Apr. 14, 1992, 1238/92; Jan. 22, 1993, 186/93

Int. Cl.[6] A61K *31/07;31/70;31/595;31/355*

U.S. Cl. 514—725 **4 Claims**

1. A dry pulverous composition prepared by drying an emulsion, comprising a fat soluble substance and a water dispersible lignin derivative in an amount effective to render said fat soluble substance dispersible in water, wherein said lignin derivative is a matrix component forming an enveloping film around the fat soluble substance and the fat soluble substance is selected from the group consisting of vitamins A, D, E and K; carotenoids; polyunsaturated fatty acids and mixtures thereof, wherein said emulsion has an internal particle size not larger than about 467 nm.

5,668,184

METHOD OF CONTROLLING SOIL AND PLANT PESTS WITH A NAPHTHALENE CONTAINING COMPOSITION

A. H. J. Rajamannan, 2120 Argonne Dr., Minneapolis, Minn. 55421

Filed Sep. 6, 1996, Ser. No. 709,362

Int. Cl.[6] A01N *27/00;25/08;25/28;25/34*

U.S. Cl. 514—765 **2 Claims**

1. A method of repelling pests comprising,

applying strips of carrier material to trees or plants, the carrier material having naphthalene flocculate capsules attached thereto, the flocculated naphthalene being encapsulated in a polymer material selected from the group consisting of methyl acrylate, starch, synthetic acrylates, and saran,

the carrier strips comprising plastic or paper material, nylon, or cotton, the naphthalene flocculate capsules slowly volatilizing to repel pests.

5,668,185

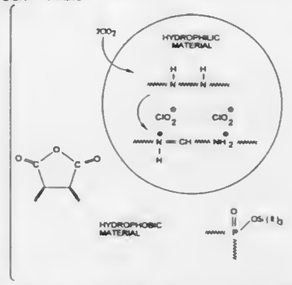
METHOD OF MAKING AN AMINE CONTAINING BIOCIDAL COMPOSITION

Stephen T. Wellinghoff, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of Ser. No. 192,499, Feb. 3, 1994, abandoned, Ser. No. 192,498, Feb. 3, 1994, abandoned, and Ser. No. 228,671, Apr. 18, 1994, abandoned, which is a division of Ser. No. 16,904, Feb. 12, 1993, abandoned, said Ser. No. 192,499is a division of Ser. No. 17,657, Feb. 12, 1993, Pat. No. 5,360,609, said Ser. No. 192,498is a continuation-in-part of Ser. No. 17,657. This application Jun. 5, 1995, Ser. No. 461,716

Int. Cl.[6] A61K *47/30;* **A01N** *25/04;* **C09K** *3/10*

U.S. Cl. 514—772.3 **24 Claims**



1. A process for preparing a composite comprising:

mixing a hydrophilic material containing an amine with a hydrophobic material containing an acid releasing agent, the hydrophilic and hydrophobic materials being substantially free of water, to form a mixture; and

exposing the mixture to chlorine dioxide that reacts with the amine to form iminium chlorite within the hydrophilic material, the hydrophilic material being capable of releasing chlorine dioxide upon hydrolysis of the acid releasing agent.

5,668,186

PROCESS FOR DEPOLYMERIZING POLYESTERS

Daniel Joseph Brunelle, Burnt Hills; Ganesh Kailasam, Schenectady; Judith Ann Serth-Guzzo, Slingerlands, and Paul Russell Wilson, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1996, Ser. No. 618,742

Int. Cl.[6] C08J *11/04;* **C08G** *63/00;* **C08L** *67/02*

U.S. Cl. 521—48 **27 Claims**

1. A process for depolymerizing polyester linears comprising the step of contacting in the presence of heat a mixture consisting essentially of:

(a) polyester linears;

(b) organic solvents which are substantially free of oxygen and water; and

(c) depolymerization catalysts selected from the group consisting of tin compounds and titanium compounds.

5,668,187

PROCESS FOR THE PREPARATION OF RIGID POLYURETHANE FOAM

Shinichi Asako, Yamato, and Hajime Uchida, Yokosuka, both of Japan, assignors to Air Products and Chemicals, Inc., Allentown, Pa., and Nippon Nyukazai Co. Ltd., Kawasaki, Japan

Continuation of Ser. No. 310,534, Sep. 22, 1994, abandoned. This application May 7, 1996, Ser. No. 646,432

Int. Cl.[6] C08G *18/30*

U.S. Cl. 521—137 **18 Claims**

1. In a process for the preparation of rigid polyurethane foam by reacting an organic polyisocyanate with a polyol in the presence of a urethane catalyst, a blowing agent and a silicone surfactant cell stabilizer, the improvement which comprises using as a blowing agent an aqueous polymer emulsion comprising a polymer of ethylenically unsaturated monomers selected from the group consisting of styrene, methyl methacrylate, butyl acrylate, 2-ethylhexyl acrylate, 2-hydroxyethyl acrylate or methacrylate, mono-acrylate or -methacrylate of polyethylene glycol, acrylic acid, methacrylic acid, and mixtures thereof, the aqueous polymer emulsion being used at 0.5 to 20 parts polymer/100 parts polyol.

5,668,188

PROCESS FOR PREPARING SILICON CARBIDE FOAM

LeRoy Louis Whinnery; Monte Carl Nichols, both of Livermore, Calif.; David Roger Wheeler, and Douglas Anson Loy, both of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Jan. 16, 1996, Ser. No. 586,453

Int. Cl.[6] C08J *9/28*

U.S. Cl. 423—345 **17 Claims**

1. A method of preparing monolithic SiC foams, comprising steps of:

a) dissolving an organosilicon polymer or copolymer in a solvent to form a solution;

b) cooling the solution to form a gel;

c) removing the solvent from the gel to form a polymer foam;

d) stabilizing the polymer foam by subjecting the foam to a plasma; and

e) pyrolyzing the stabilized foam in an inert gas at a temperature sufficient to decompose the stabilized polymer foam and thereby form a SiC foam.

5,668,189

FOAMED POLYMER AND PROCESS FOR PRODUCTION THEREOF

Paul V. Farkas, Willowdale, Canada, assignor to Woodbridge Foam Corporation, Mississauga, Canada

Division of Ser. No. 74,966, Jun. 11, 1993, Pat. No. 5,432,204, which is a continuation-in-part of Ser. No. 7,991, Jan. 22, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,627

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—137 **24 Claims**

1. A polyurethane foam consisting essentially of a cellular matrix having a plurality of Plateau borders, the foam containing a non-cellular polymeric filler material at the Plateau borders, the filler material located at the Plateau borders being present at a level greater than 30% by weight of the foam and having a specific gravity of less than about 1.5.

5,668,190

FOAMABLE SILICONE RUBBER COMPOSITION

Atsushi Yaginuma, Gunma-machi; Takeshi Miyao, Annaka, and Hironao Fujiki, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1996, Ser. No. 773,311

Claims priority, application Japan, Dec. 25, 1995, 7-351009

Int. Cl.[6] C08J *9/00*

U.S. Cl. 521—142 **10 Claims**

1. A foamable silicone rubber composition comprising;

(A) a polyolefin dispersion obtained by polymerizing monomers having a polymerizable aliphatic unsaturated double bond, dispersed in a dispersion medium of an organopolysiloxane having a viscosity of from 50 cSt to 1,000,000 cSt at 25° C. whose molecular chain both terminals are terminated with a silanol group, to form a polyolefin in said silanol group-containing organopolysiloxane;

(B) an organohydrogenpolysiloxane represented by the average compositional formula (1):

$$(R^1)_a(H)_bSiO_{(4-a-b)/2} \quad (1)$$

wherein R^1 represents a substituted or unsubstituted monovalent hydrocarbon group having no aliphatic unsaturated bond, a and b are positive numbers that satisfy $0<a<3$, $0.05 \leqq b<3$ and $0.8 \leqq a+b \leqq 3$; and having at least two hydrogen atoms bonded to silicone atoms in one molecule;

(C) at least one member selected from the group consisting of water, an alcohol, a silanol group-containing organosilane, and a silanol group-containing siloxane having a viscosity of less than 50 cSt at 25° C.; and

(D) a platinum family metal catalyst.

5,668,191

ONE-SHOT COLD MOLDED FLEXIBLE POLYURETHANE FOAM FROM LOW PRIMARY HYDROXYL POLYOLS AND PROCESS FOR THE PREPARATION THEREOF

Mark R. Kinkelaar, Cross Lanes; Frank E. Critchfield, South Charleston, and James L. Lambach, Charleston, all of W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Dec. 21, 1995, Ser. No. 576,429
Int. Cl.[6] C08G *18/32*
U.S. Cl. 521—174 **20 Claims**

1. A process for preparing cold-molded polyurethane flexible foam, comprising reacting:

a) one or more di- or polyisocyanates at an isocyanate index of from 70 to about 130; with

b) a low primary hydroxyl polyol component comprising in substantial part one or more polyoxypropylene/polyoxyethylene random copolymers having an unsaturation of less than about 0.02 meq/g, and a primary hydroxyl content of less than 50 mol percent; and

c) an effective amount of water as a blowing agent.

5,668,192

ONIUM BORATES/BORATES OF ORGANOMETALLIC COMPLEXES AND CATIONIC INITIATION OF POLYMERIZATION THEREWITH

Frederic Castellanos, Mulhouse; Jacques Cavezzan, Villeurbanne; Jean-Pierre Fouassier, Morschwiller-le-Bas, and Christian Priou, Villeurbanne, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Division of Ser. No. 400,970, Mar. 8, 1995, Pat. No. 5,550,265, which is a division of Ser. No. 35,838, Mar. 23, 1993, Pat. No. 5,468,902. This application Apr. 18, 1996, Ser. No. 634,228
Claims priority, application France, Mar. 23, 1992, 92 03440
Int. Cl.[6] C08F *2/46*; C07F *5/00;9/00;13/00*
U.S. Cl. 552—31 **6 Claims**

1. An onium borate, the cationic moiety of which comprising that of an oxoisothiochromanium salt; and the anionic borate moiety of which having the formula:

$$[BX_aR_b]^-$$

in which a and b are integers ranging from 0 to 4 and a+b= 4; the symbols X are each a halogen atom when a ranges up to 3 and an OH functional group when a ranges up to 2; and the symbols R, which may be identical or different, are each an aryl radical containing at least two aromatic ring members, or such aryl radical bearing at least one electron-withdrawing substituent.

5. In a process for the cationic initiation of polymerization or crosslinking of functional polymers or monomers via photochemical or electron beam activation, the improvement which comprises, as the cationic initiator therefor, an onium borate, the cationic moiety of which having the formula (I):

$$[(R^1)_n\text{—}A\text{—}(R^2)_m]^+ \quad (I)$$

in which A is an element of Groups 15 to 17 of the Periodic Table; R^1 is a C_6–C_{20} heterocyclic or carbocyclic aryl radical; R^2 is R^1 or a linear or branched C_1–C_{30} alkenyl or alkyl radical, or such alkenyl or alkyl radical bearing at least one C_1–C_{25} alkoxy, C_1–C_{25} alkyl, nitro, chloro, bromo, cyano, carboxyl, ester or mercapto substituent; n is an integer ranging from 1 to v+ 1, with v being the valence of A; and m is an integer ranging from 0 to v–1, with the proviso that n+m= v+ 1; and the anionic borate moiety of which having the formula:

$$[BX_aR_b]^-$$

in which a and b are integers ranging from 0 to 4 and a+b= 4; the symbols X are each a halogen atom when a ranges up to 3 and an OH functional group when a ranges up to 2; and the symbols R, which may be identical or different, are each a phenyl radical substituted by at least one electron-withdrawing substituent or by at least two halogen atoms, or an aryl radical containing at least two aromatic ring members, or such aryl radical bearing at least one electron-withdrawing substituent.

6. In a process for the cationic initiation of polymerization or crosslinking of functional polymers or monomers via photochemical or electron beam activation, the improvement which comprises, as the cationic initiator therefor, an onium borate, the cationic moiety of which having the formula (II):

$$(L^1L^2L^3M)^{q+} \quad (II)$$

in which M is a metal of Groups 4 to 10 of the Periodic Table; L^1 is a ligand associated with the metal M via π electrons and comprising an η^3-alkyl, η^5-cyclopentadienyl or η^7-cycloheptatrienyl ligand or an η^6-aromatic compound selected from among the optionally substituted η^6-benzene ligands and compounds having from 2 to 4 condensed ring members, each ring member contributing to the valence shell of the metal M via 3 to 8 π electrons; L^2 is a ligand associated with the metal M via π electrons and comprising an η^7-cycloheptatrienyl ligand or an η^6-aromatic compound selected from among the optionally substituted η^6-benzene ligands and compounds having from 2 to 4 condensed ring members, each ring member contributing to the valence shell of the metal M via 6 or 7 η electrons; and L^3 represents from 0 to 3 identical or different ligands associated with the metal M via σ electrons and comprising CO and NO_2^+ ligands, the total electron charge q of the complex to which L^1, L^2 and L^3 contribute and the ionic charge of the metal M being positive and equal to 1 or 2; and the anionic borate moiety of which having the formula:

$$[BX_aR_b]^-$$

in which a and b are integers ranging from 0 to 4 and a+b= 4; the symbols X are each a halogen atom when a ranges up to 3 and an OH functional group when a ranges up to 2; and the symbols R, which may be identical or different, are each a phenyl radical substituted by at least one element or electron-withdrawing substituent.

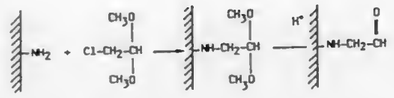
5,668,193

SOLID SUBSTRATE COATED WITH AN AMINOPOLYSACCHARIDE

Ibrahim Gouda, Sollentuna, and Olle Larm, Bromma, both of Sweden, assignors to Medicarb AB, Bromma, Sweden

PCT No. PCT/SE94/00022, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO94/16750, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 14, 1994, Ser. No. 491,889
Claims priority, application Sweden, Jan. 19, 1993, 9300140
Int. Cl.[6] A61L *33/00*; C08J *7/04*
U.S. Cl. 523—112 **13 Claims**

1. A process for the preparation of a solid substrate, the surface of which has been modified to introduce hydrophilic reactive groups thereon, such modification being effected using a primer which comprises a first polysaccharide which contains reactive amino and hydroxyl groups, said process comprising the following steps:



(a) providing a substrate, the surface of which is to be modified by the addition of hydrophilic reactive groups;

(b) preparing a solution which contains a first polysaccharide which first polysaccharide contains reactive amino and hydroxyl groups and further contains a second polysaccharide which comprises vicinal hydroxyl groups or which contains both amino and hydroxyl groups in a vicinal position, and wherein said second polysaccharide is subjected to periodate oxidation resulting in the production of at least two dialdehyde functional groups and further resulting in the stabilization of the first polysaccharide by cross-linking;

(c) coating said surface with the solution of step (b); and

(d) precipitating said crosslinked first polysaccharide from said solution thereby producing a substrate which has been modified by the introduction of reactive hydrophilic groups.

5,668,194

ROOM TEMPERATURE CURING COMPOSITION

Naotami Ando; Toshiyuki Masuda; Takanori Hatano, and Kazuya Nakayama, all of Hyogo, Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Continuation of Ser. No. 226,534, Apr. 12, 1994, abandoned. This application Dec. 14, 1995, Ser. No. 572,581
Claims priority, application Japan, Apr. 22, 1993, 5-095890
Int. Cl.[6] C08L *43/04*
U.S. Cl. 523—201 **8 Claims**

1. A room temperature curing composition comprising an emulsion obtained by a multi-stage polymerization of a plurality of monomers, said emulsion comprising emulsion particles, the core of which is formed by polymerization of 1–30 weight % of (A) a silyl group-containing vinyl monomer of the following general formula (I), 60–99 weight % of (B) at least one member selected from the class consisting of alkyl methacrylates whose alkyl moieties contain not fewer than 4 carbon atoms each and cycloalkyl methacrylates whose cycloalkyl moieties contain not fewer than 4 carbon atoms each, and 0–39 weight % of (C) a non-hydrophilic vinyl monomer other than (B) and the outer shell of which is formed by polymerization of 0.5–30 weight % of (D) at least one hydrophilic vinyl monomer selected from the class consisting of α,β-ethylenically unsaturated carboxylic acids, styrenesulfonic acid, vinylsulfonic acid, sodium styrenesulfonate, 2-sulfoethyl methacrylate sodium, 2-sulfoethyl methacrylate ammonium, acrylamide, methacrylamide, N-methylolacrylamide, N-methylolmethacrylamide, dialkylaminoalkyl methacrylates, dialkylaminoalkyl methacrylate hydrochlorides, 2-aminoethyl methacrylate hydrochloride, polyethoxylated vinyl monomers and polypropoxylated vinyl monomers, 0–30 weight % of (A) a silyl group-containing vinyl monomer of the following general formula (I), 60–99.5 weight % of (B) at least one member selected from the class consisting of alkyl methacrylates whose alkyl moieties contain not fewer than 4 carbon atoms each and cycloalkyl methacrylates whose cycloalkyl moieties contain not fewer than 4 carbon atoms each, and 0–39.5 weight % of (C) a non-hydrophilic vinyl monomer other than (B):

(I)

wherein R represents a monovalent hydrocarbon group selected from C_{1-10} alkyl, aryl and aralkyl groups; X represents a halogen atom or a group selected from the class consisting of alkoxy, hydroxy, acyloxy, aminooxy, phenoxy, thioalkoxy and amino; y represents a whole number of 0–2; where X and R, bound to Si, respectively represent more than one group, such groups may be the same or different groups.

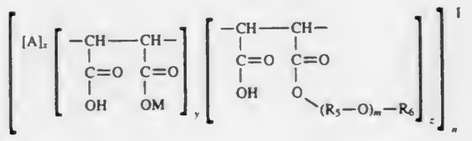
5,668,195

FLUIDIFYING AGENTS FOR CEMENTITIOUS COMPOSITIONS BASED RANDOM COPOLYMERS, COMPOSITIONS COMPRISING THE SAME, AND METHODS FOR THEIR USE

Bernhard Leikauf, Linn, Switzerland, assignor to MBT Holding AG, Zurich, Switzerland

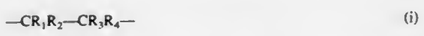
Division of Ser. No. 471,697, Jun. 6, 1995, which is a continuation of Ser. No. 360,160, Dec. 20, 1994, abandoned. This application Jul. 26, 1996, Ser. No. 690,289
Claims priority, application United Kingdom, Dec. 21, 1993, 9326005; Dec. 21, 1993, 9326046
Int. Cl.[6] C08K *3/00*
U.S. Cl. 524—5 **6 Claims**

1. A cementitious composition fluidifying agent comprising a random copolymer corresponding to Formula I in free acid or salt form having the following types and numbers of monomer units:



wherein:

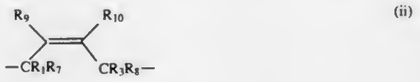
A is selected from the moieties (i) and (ii);



(i)

wherein:

R_1 and R_3 are selected from C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkylcarbonyl, C_{1-8} alkoxy, carboxyl and hydrogen, or R_1 and R_3 can together with R_2 and/or R_4 form a ring; and R_2 and R_4 are selected from hydrogen and C_{1-4} alkyl; and,



(ii)

wherein:

R_1 and R_3 are as for (i) and R_7, R_8, R_9 and R_{10} are individually selected from hydrogen and C_{1-6} alkyl, or R_1 and R_3 together with R_7 and/or R_8, R_9 and R_{10} from a continuous C_{2-8} hydrocarbon chain joining the carbon atoms to which they are attached, the hydrocarbon chain optionally comprising at least one hetero atom and the ring optionally having at least one anionic group;

M is selected from hydrogen and the residue of a hydrophobic polyalkylene glycol or a polysiloxane, with the proviso that when A is (ii) and M is the residue of a hydrophobic polyalkylene glycol, M must be different from the group $—(R_5O)_mR_6$

R_5 is a C_{2-8} alkylene radical;

R_6 is selected from C_{1-20} alkyl, C_{6-9} cycloalkyl and phenyl;

n, x and z are numbers from 1 to 100;

y is 0 to 100;

m is 2 to 100; and

the ratio of x to (y+z) is from 1:10 to 10:1 and the ratio of y:z is front 5:1 to 1:100.

5,668,196

3-AMIDO-TRIIODOPHENYL ESTERS AS X-RAY CONTRAST AGENTS

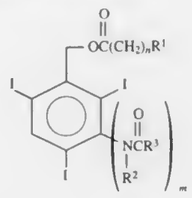
Shaugnessy Robinson, Westerly, R.I.; Edward R. Bacon, Audubon, and Kurt A. Josef, Wayne, both of Pa., assignors to NanoSystems LLC, Collegeville, Pa.

Filed Jul. 10, 1996, Ser. No. 677,709

Int. Cl.[6] A61K *49/00;* **G01N** *31/00;33/48*

U.S. Cl. 424—9.451 **13 Claims**

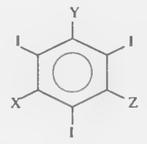
1. A compound having the structure:



wherein:

n is 0 to 12

m is 1 or 2; R^1 is



X and Z are independently H or NR^2COR^3

Y is CO_2, CH_2O, O or NH and

R^2 and R^3 are independently H, alkyl having from 1 to 12 carbon atoms or aryl having from 6 to 11 carbon atoms.

5,668,197

ANIONIC BITUMINOUS EMULSIONS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 12, 1996, Ser. No. 694,452

Int. Cl.[6] C08L *95/00*

U.S. Cl. 524—61 **12 Claims**

1. An improved method for enhancing adhesion between asphalt and aggregate in anionic bituminous emulsions wherein the improvement comprises the addition to the emulsion of a composition comprising the polyamidoamine condensation reaction products of:

(A) 20–80 wt. % of a copolymer, formed by reacting

(1) 1–99 wt. % of a member selected from the group consisting of α-methyl styrene, styrene, and combinations thereof, with

(2) 99–1 wt. % of a member selected from the group consisting of acrylic acid, metacrylic acid, alkyl esters of acrylic acid, alkyl esters of metacrylic acid, and combinations thereof; and

(B) 80–20 wt. % of a polyamine.

5,668,198

POLYMER STABILIZERS CONTAINING BOTH HINDERED AMINE AND HYDROXYLAMINE MOIETIES

Joseph Suhadolnik, Ossining; Ramanathan Ravichandran, Nanuet, both of N.Y.; Valerio Borzatta, and Graziano Vignali, both of Bologna, Italy, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 371,637, Jan. 12, 1995, Pat. No. 5,552,464, which is a division of Ser. No. 3,068, Jan. 11, 1993, Pat. No. 5,410,047, which is a division of Ser. No. 606,403, Oct. 31, 1990, Pat. No. 5,202,441. This application Jun. 6, 1995, Ser. No. 467,534

Claims priority, application Italy, Nov. 7, 1989, 22293A/89

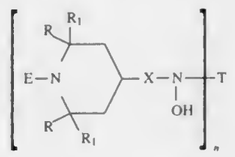
Int. Cl.[6] C08K *5/3435*

U.S. Cl. 524—99 **12 Claims**

1. A stabilized composition which comprises

(a) a polymer subject to the deleterious effects of actinic light or of heat, and

(b) an effective stabilizing amount of a compound of formula II



(I)

wherein

E is hydrogen, oxyl, hydroxyl, alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, hydroxylalkyl of 2 to 6 carbon atoms, alkoxyalkyl of 2 to 20 carbon atoms, alkanoyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, cycloalkoxy of 5 to 12 carbon atoms, aryloxy of 6 to 10 carbon atoms, hydroxyalkoxy of 2 to 6 carbon atoms, alkoxyalkoxy of 2 to 20 carbon atoms, aralkoxy of 7 to 15 carbon atoms or bicyclo or tricycloaliphatic oxy radical of 7 to 12 carbon atoms;

R and R_1 are independently alkyl of 1 to 4 carbon atoms or together R and R_1 are pentamethylene;

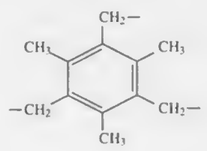
X is a direct bond,

n is 2–4,

when n is 2, T is alkylene of 2 to 12 carbon atoms, arylene of 6 to 10 carbon atoms, xylylene, $—CH_2CHOHCH_2—$, $—CH_2CHOHCH_2—O—G_1—O—CH_2CHOHCH_2—$, $—CH_2—$phenylene$—COO—G_1—OCO—$phenylene$—CH_2—$, $—CH_2CH_2—COO—G_1—OCO—CH_2CH_2—$ or $—CH_2—$phenylene$—CH_2—OCO—G_1—COO—CH_2—$phenylene$—CH_2—$,

G_1 is alkylene of 2 to 12 carbon atoms, arylene of 6 to 10 carbon atoms or cycloalkylene of 6 to 12 carbon atoms,

when n is 3, T is alkanetriyl of 3 to 6 carbon atoms, or is



and

when n is 4, T is alkanetetrayl of 4 to 6 carbon atoms.

5,668,199

POLYMER STABILIZERS CONTAINING BOTH HINDERED AMINE AND HYDROXYLAMINE MOIETIES

Joseph Suhadolnik, Ossining; Ramanathan Ravichandran, Naunet, both of N.Y.; Valerio Borzatta, and Graziano Vignali, both of Bologna, Italy, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 371,637, Jan. 12, 1995, Pat. No. 5,552,464, which is a division of Ser. No. 3,068, Jan. 11, 1993, Pat. No. 5,410,047, which is a division of Ser. No. 606,403, Oct. 31, 1990, Pat. No. 5,202,441. This application Jun. 6, 1995, Ser. No. 468,738

Claims priority, application Italy, Nov. 7, 1989, 22293A/89

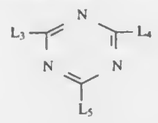
Int. Cl.[6] C08K *5/3435*

U.S. Cl. 524—99 **10 Claims**

1. A stabilized composition which comprises

(a) a polymer subject to the deleterious effects of actinic light or of heat, and

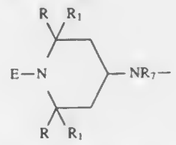
(b) an effective stabilizing mount of a compound of formula IV



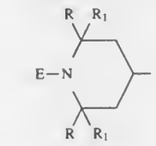
wherein

L_3, L_4 and L_5 are independently $—NR_3OH$, $—OR_4$, $—SR_4$ or $—NR_5R_6$ where R_4 is alkyl of 1 to 18 carbon atoms, and R_5 and R6 are independently hydrogen, alkyl of 1 to 18 carbon atoms, 2,2,6,6-tetramethyl-4-piperidyl, 1,2,2,6,6-pentamethyl-4-piperidyl, tetrahydrofurfuryl, C_2–C_4-alkyl which is substituted in the 2-, 3- or 4-position by OH, by C_1–C_8-alkoxy or by di(C_1–C_4-alkyl)amino, or $—NR_5R_6$ is pyrrolidyl, piperidyl, morpholinyl, N-methylpiperazinyl or hexahydroazepinyl, or

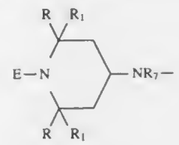
L_3, L_4 and L_5 are independently



where R_7 is hydrogen, hydroxyl, alkyl of 1 to 12 carbon atoms or



with the proviso that at least one of L_3, L_4 or L_5 is



where R_7 is hydroxyl; or is $—NR_5OH$;

E is hydrogen, oxyl, hydroxyl, alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 18 carbon atoms, aralkyl of 7 to 9 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, hydroxylalkyl of 2 to 6 carbon atoms, alkoxyalkyl of 2 to 20 carbon atoms, alkanoyl of 1 to 18 carbon atoms, alkoxy of 1 to 18 carbon atoms, cycloalkoxy of 5 to 12 carbon atoms, aryloxy of 6 to 10 carbon atoms, hydroxyalkoxy of 2 to 6 carbon atoms, alkoxyalkoxy of 2 to 20 carbon atoms, aralkoxy of 7 to 15 carbon atoms or bicyclo or tricycloaliphatic oxy radical of 7 to 12 carbon atoms; and

R and R_1 are independently alkyl of 1 to 4 carbon atoms or together R and R_1 are pentamethylene.

5,668,200

STABILIZER COMBINATION

Andreas Valet, Binzen, Germany; Gerhard Rytz, Bern, and Pascal Hayoz, Marly, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

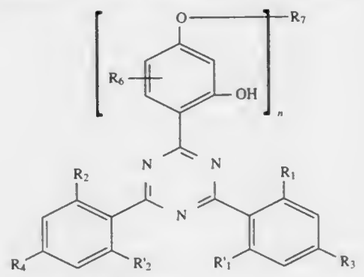
Filed Jan. 16, 1996, Ser. No. 586,267

Claims priority, application Switzerland, Jan. 18, 1995, 139/95

Int. Cl.[6] C08K *5/3492*

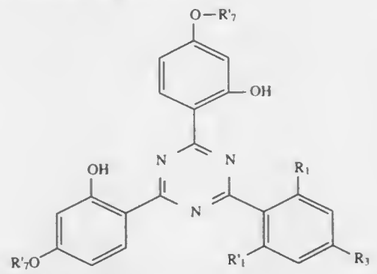
U.S. Cl. 524—100 **13 Claims**

1. A mixture comprising a compound of the formula I



I

and a compound of the formula II



II

in which n is 1 or 2;

R_1, R'_1, R_2 and R'_2, independently of one another, are H, C_1–C_{12}alkyl; C_2–C_6alkenyl; C_1–C_{12}alkoxy; C_2–C_{18}alkenoxy; halogen; trifluoromethyl; C_7–C_1phenylalkyl; phenyl; phenyl which is substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy or halogen; phenoxy; or phenoxy which is substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy or halogen;

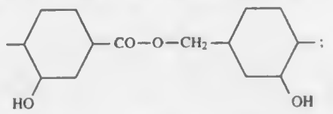
R_3 and R_4, independently of one another, are H, C_1–C_{12}alkyl; C_2–C_6alkenyl; C_1–C_{12}alkoxy; C_5–C_{12}cycloalkoxy; C_2–C_{18}alkenoxy; halogen; trifluoromethyl; C_7–C_{11}phenylalkyl; phenyl; phenyl which is substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy or halogen; phenoxy; or phenoxy which is substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy or halogen;

R_6 is hydrogen, C_1–C_{24}alkyl, C_5–C_{12}cycloalkyl or C_7–C_{15}phenylalkyl;

R_7, in the case where n=1, and R'_7, independently of one another, are hydrogen or C_1–C_{18}alkyl; or are C_1–C_{12}alkyl which is substituted by OH, C_1–C_{18}alkoxy, allyloxy, halogen, —COOH, $—COOR_8$, $—CONH_2$, $—CONHR_9$, $—CON(R_9)(R_{10})$, $—NH_2$, $—NHR_9$, $—N(R_9)(R_{10})$, $—NHCOR_{11}$, —CN, $—OCOR_{11}$, phenoxy and/or phenoxy which is substituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy or halogen; or R_7 is C_3–C_{50}alkyl which is interrupted by —O— and may be substituted by OH; or R_7 is C_3–C_6alkenyl; glycidyl; C_5–C_{12}cycloalkyl; cyclohexyl which is

substituted by OH, C_1–C_4alkyl or —$OCOR_{11}$; C_7–C_{11}phenylalkyl which is unsubstituted or substituted by OH, Cl or CH_3; —CO—R_{12} or —SO_2—R_{13};

R_7, in the case where n=2, is C_2–C_{16}alkylene, C_4–C_{12}alkenylene, xylylene, C_3–C_{20}alkylene which is interrupted by O and/or substituted by OH, or is a group of the formula —$CH_2CH(OH)CH_2O$—R_{20}—$OCH_2CH(OH)CH_2$—, —CO—R_{21}—CO—, —CO—NH—R_{22}—NH—CO— or —$(CH_2)_m$—COO—R_{23}—OOC—$(CH_2)_m$—, in which m is a number in the range from 1 to 3, or is



R_8 is C_1–C_{18}alkyl; C_2–C_{18}alkenyl; C_3–C_{50}alkyl which is interrupted by O, NH, NR_9 or S and/or is substituted by OH; C_1–C_4alkyl which is substituted by —$P(O)(OR_{14})_2$, —$N(R_9)(R_{10})$ or —$OCOR_{11}$ and/or OH; glycidyl; cyclohexyl; phenyl; C_7–C_{14}alkylphenyl or C_7–C_{11}phenylalkyl;

R_9 and R_{10}, independently of one another, are C_1–C_{12}alkyl; C_3–C_{12}alkoxyalkyl; C_4–C_{16}dialkylaminoalkyl or C_5–C_{12}cycloalkyl, or R_9 and R_{10} together are C_1–C_{18}alkylene or -oxaalkylene or -azaalkylene;

R_{11} is C_1–C_{18}alkyl; C_1–C_{18}alkenyl or phenyl; or is C_3–C_{50}alkyl which is interrupted by —O— and may be substituted by OH;

R_{12} is C_1–C_{18}alkyl; C_2–C_{18}alkenyl; phenyl; C_1–C_{18}alkoxy; C_3–C_{18}alkenyloxy; C_3–C_{50}alkoxy which is interrupted by O, NH, NR_9 or S and/or substituted by OH; cyclohexyloxy; C_7–C_{14}alkylphenoxy; C_7–C_{11}phenylalkoxy; phenoxy; C_1–C_{12}alkylamino; phenylamino; tolylamino or naphthylamino;

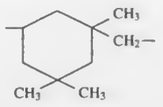
R_{13} is C_1–C_{12}alkyl; phenyl; naphthyl or C_7–C_{14}alkylphenyl;

R_{14} is C_1–C_{12}alkyl, methylphenyl or phenyl;

R_{20} is C_2–C_{10}alkylene; C_4–C_{50}alkylene which is interrupted by O, phenylene or a -phenylene-X-phenylene- group, in which X is —O—, —S—, —SO_2—, —CH_2— or —$C(CH_3)_2$—;

R_{21} is C_2–C_{10}alkylene, C_2–C_{10}oxaalkylene, C_2–C_{10}thiaalkylene, C_6–C_{12}arylene or C_2–C_6alkenylene;

R_{22} is C_2–C_{10}alkylene, phenylene, tolylene, diphenylenemethane or a



group; and

R_{23} is C_2–C_{10}alkylene or C_4–C_{20}alkylene which is interrupted by O.

5,668,201

FLAME RETARDANT GRAFT COPOLYMER COMPOSITION

Fuh-Sheng Fred Chen; Satish Gaggar, both of Parkersburg, W. Va., and Yasuyuki Hiromoto, Ube, Japan, assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 369,069, Jan. 5, 1995, abandoned. This application Oct. 10, 1996, Ser. No. 728,417

Int. Cl.[6] C08K *5/15;5/03;3/10*

U.S. Cl. 524—114 **15 Claims**

1. A thermoplastic resin composition comprising:

(a) a bulk graft copolymer comprising, based on the total weight of the bulk graft copolymer:

(i) from 5 to 25 percent by weight of rubber substrate particles; and

(ii) from 75 to 95 percent by weight of a superstrate derived from bulk polymerization of a vinyl aromatic monomer and a vinyl cyanide monomer in the presence of the rubber substrate particles, said bulk graft copolymer being present at a level of from 45 to 70 percent by weight based on the total weight of the thermoplastic composition;

(b) an emulsion graft copolymer comprising, based on the total weight of the emulsion graft copolymer:

(i) from 40 to 85 percent by weight rubber substrate particles; and

(ii) from 15 to 60 percent by weight of a superstrate derived from emulsion polymerization of a vinyl aromatic monomer and a vinyl cyanide monomer in the presence of the rubber substrate particles, said emulsion graft copolymer being present at a level of from 20 to 40 percent by weight based on the total weight of the thermoplastic composition and

(c) a flame retardant comprising a halogenated epoxy compound.

5,668,202

PROCESS FOR PRODUCTION OF STABILIZED POLYCARBONATE

Masumi Hirata; Wataru Funakoshi, and Katsushi Sasaki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 294,995, Aug. 24, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 665,817

Claims priority, application Japan, Aug. 26, 1993, 5-211367; Oct. 29, 1993, 5-272263; Dec. 16, 1993, 5-316646

Int. Cl.[6] C08K *5/50;5/41;5/42*

U.S. Cl. 524—154 **16 Claims**

1. A process for producing a stabilized polycarbonate which comprises:

melt-polycondensing an aromatic dihydroxy compound and a carbonic acid diester in the presence of a polycondensation catalyst to obtain a reaction mixture; and

after the reaction mixture has an intrinsic viscosity of at least 0.1, adding at least one stabilizer in an amount of 0.01 to 300 ppm of the polycarbonate to be formed, said stabilizer selected from the group consisting of compounds having the formula (I)

$$A^1—(Y^1—SO_3X^1)_m \quad (I)$$

wherein A^1 is a hydrocarbon group having a valence of m, which may be substituted,

Y^1 is a single bond or an oxygen atom,

X^l is a secondary alkyl group, a tertiary alkyl group, an ammonium cation having the formula (I-a)



(I-a)

wherein each of R^1, R^2, R^3 and R^4 is independently a hydrogen atom or a monovalent hydrocarbon group, or a phosphonium cation having the formula (I-b)



(I-b)

wherein each of R^5, R^6, R^7 and R^8 is independently a hydrogen atom or a monovalent hydrocarbon group, and

m is an integer of 1 to 4, to produce the stabilized polycarbonate.

5,668,203

ELASTOMERIC ARTICLES CONTAINING HALOCERAMER COMPOSITIONS

Santokh S. Badesha; Arnold W. Henry, and Donald A. Seanor, all of Pittsford, N.Y., assignors to Xerox Corporation, Stanford, Conn.

Filed Jun. 7, 1995, Ser. No. 480,973

Int. Cl.[6] C08K *5/24*

U.S. Cl. 524—265 **22 Claims**

1. A seal comprised of haloceramic material, said material comprising integral, interpenetrating networks of haloelastomer, metal oxide, and optionally polyorganosiloxane;

said integral, interpenetrating networks of haloelastomer, metal oxide and optionally polyorganosiloxane comprising haloelastomer, and metal oxide polymer strands that are intertwined and crosslinked with each other, and optionally comprising polyorganosiloxane polymer strands intertwined and crosslinked with said haloelastomer and metal oxide polymer strands.

5,668,204

STABILIZATION OF POLYCARBONATES HAVING HIGH HEAT DISTORTION TEMPERATURES

Helmut-Martin Meier, Ratingen; Uwe Westeppe, Mettmann; Rolf Dhein; Dieter Freitag, both of Krefeld, and Dieter Constant, Leverkusen, all of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany

Filed Mar. 19, 1992, Ser. No. 853,670

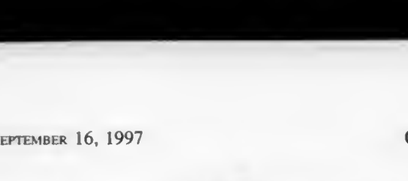
Claims priority, application Germany, Mar. 26, 1991, 41 09 810.2; Jun. 7, 1991, 41 18 705.9

Int. Cl.[6] C08J *5/10;* **C08K** *5/54;* **C08L** *69/00*

U.S. Cl. 524—267 **11 Claims**

1. A thermoplastic molding composition consisting of

(i) an aromatic polycarbonate resin having a weight average molecular weight of at least 10,000, containing bifunctional carbonate structural units corresponding to formula (Ia)



(Ia)

wherein

R^1 and R^2 denote, independently of one another hydrogen, halogen, C_1–C_8-alkyl, C_5–C_6-cycloalkyl, C_6–C_{10}-aryl or C_7–C_{12}-aralkyl,

m denotes an integer from 4 to 7, and

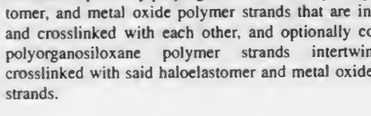
R^3 and R^4 are selected individually for each X and denote independently of one another hydrogen or C_1–C_6-alkyl, and

X denotes carbon,

with the condition that R^3 and R^4 both denote alkyl on at least one X atom, and

(ii) about 0.001 to 1% by weight of at least one siloxane selected from the group consisting of

(a) a siloxane corresponding to formula (II) wherein



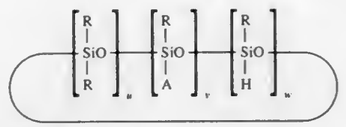
(II)

R is hydrogen, C_1–C_{20}-alkyl, C_6–C_{10}-aryl, C_1–C10-alkoxy,

B is R or A,

r, s and t independently denote an integer of zero to 200,

and (b) a siloxane corresponding to formula (III)



(III)

wherein

R denotes C_1–C_{20}-alkyl, C_6–C_{10}-aryl, C_1–C_{10}-alkoxy,

u is an integer from 1 to 20,

v and w denote an integer of from zero to 20, and

u+v+w≧3, and wherein

A denotes a C_1–C_2O-alkyl or a C_6–C_{10}-aryl group.

5,668,205

SILICONE RUBBER COMPOSITIONS FOR HIGH-VOLTAGE ELECTRICAL INSULATORS

Takeo Yoshida, and Azechi Shuuichi, both of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 451,155, May 26, 1995, abandoned. This application Jul. 3, 1996, Ser. No. 675,522

Claims priority, application Japan, May 27, 1994, 6-138184; May 27, 1994, 6-138185

Int. Cl.[6] C08K *9/06*

U.S. Cl. 524—268 **19 Claims**

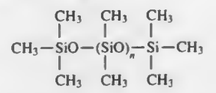
1. A silicone rubber composition for use as a high-voltage electrical insulator comprising

(A) 100 parts by weight of an organopolysiloxane having at least two aliphatic unsaturated hydrocarbon groups in a molecule,

(B) about 1 to about 100 parts by weight based on 100 parts by weight of component (A) of finely divided silica,

(C) about 50 to about 300 parts by weight based on 100 parts by weight of component (A) of aluminum hydroxide having the formula $Al_2O_3.3H_2O$ and a mean particle size of up to 10 μm,

(D) about 1 to about 20 parts by weight based on 100 parts by weight of component (A) of a liquid organopolysiloxane of the following formula:



wherein letter n is a number such that the organopolysiloxane has a viscosity of about 30 to about 100,000 centipoise at 25° C.,

(E) an organohydrogenpolysiloxane having at least three hydrogen atoms each attached to a silicon atom in a molecule, in a sufficient amount to provide about 0.5 to about 20 mol of the silicon atom-attached hydrogen atom per mol of the unsaturated hydrocarbon group in component (A), and

(F) a catalytic amount of a platinum group catalyst.

5,668,206

LIQUID ANTIOXIDANTS AS STABILIZERS

Paul Dubs, Marly; Roger Martin, Fribourg, and Samuel Evans, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 41,664, Apr. 1, 1993, Pat. No. 5,478,875. This application Jun. 6, 1995, Ser. No. 466,520

Claims priority, application Switzerland, Apr. 8, 1992, 1153/92

Int. Cl.[6] C08K *5/04;5/06;5/10*

U.S. Cl. 524—291 **15 Claims**

1. A composition comprising

α) an organic material subject to oxidative, thermal or light-induced degradation, and

β) an effective stabilizing amount of at least one product obtainable by reacting components a), b) and c)

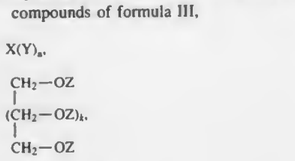
in a molar ratio of a), b) and c) which is 0.1:1:0.1 to 15:1:30, wherein

component a) is a compound of formula I or a mixture of compounds of formula I,

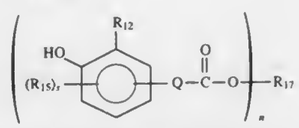
component b) is a compound of formula II or a mixture of compounds of formula II, and

component c) is a compound of formula III or a mixture of compounds of formula III,

$$X(Y)_a, \qquad (I)$$



(II)



(III)

in which, in the compound of formula I,

the radicals Y are OH,

a is the number 1, 2, 3, 4 or 6, where,

when Y is OH and a is 1,

X is C_1–C_{45}alkyl, C_3–C_{18}alkenyl or $—CH_2CH_2T_1(CH_2CH_2O)_bR_4$,

T_1 is oxygen or sulfur,

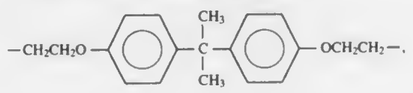
R_4 is C_1–C_{20}alkyl,

b is an integer ranging from 0 to 10,

when Y is OH and a is 2,

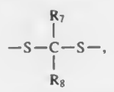
X is $—CH_2CH_2T_2(CH_2CH_2O)_bCH_2CH_2—$, in which b is as defined above,

$—C_cH_{2c}—$, $—CH_2—CH=CH—CH_2—$ or



in which

T_2 is oxygen, sulfur or



c is an integer ranging from 2 to 10,

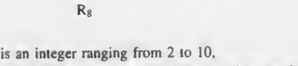
R_7 and R_8 independently of one another are hydrogen, C_1–C_{18}alkyl or phenyl, or R_7 and R_8 together with the C atom to which they are bonded form a C_5–C_{12}cycloalkyl ring, or

when a is 3,

X is C_3–C_{10}alkanetriyl or,

when Y is OH and a is 4,

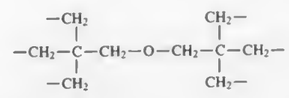
X is C_4–C_{10}alkanetetrayl,



or

when Y is OH and a is 6,

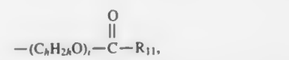
X is



or C_6–C_{10}alkanehexayl;

in the compound of the formula II,

the radicals Z are hydrogen or a group of the formula

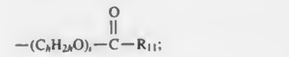


k is an integer ranging from 0 to 6, in which

h is 2 or 3,

i is an integer ranging from 0 to 12, and

R_{11} is C_1–C_{30}alkyl, C_8–C_{30}alkenyl, C_5–C_{12}cycloalkyl, phenyl or C_7–C_9phenylalkyl, with the proviso that the compound of the formula II has a group



and

in the compound of the formula III,

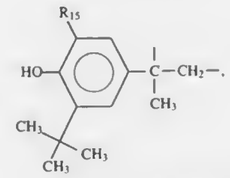
R_{12} is C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, phenyl or C_7–C_9phenylalkyl,

R_{15} is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl, phenyl or C_7–C_9phenylalkyl,

s is 0, 1 or 2,

Q is

$—C_mH_{2m}—$, $—CH_2—CH—$ or



in which R_{15} is as defined above,

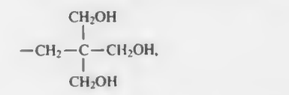
m is an integer ranging from 0 to 3,

R_{16} is C_1–C_8alkyl, and

n is an integer ranging from 1 to 6, where,

when n is 1,

R_{17} is hydrogen, C_1–C_{45}alkyl, C_5–C_{12}cycloalkyl, C_2–C_{18}alkenyl, a monovalent radical of a hexose, a monovalent radical of a hexitol,



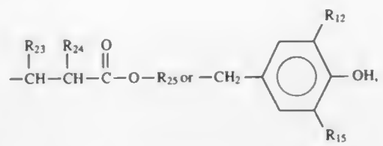
or furthermore R_{17} is $—CH_2CH_2—T_3—R_{19}$ or

$+(CH_2)_pO\frac{}{}_q(CH_2)_p—OR_{19}$,

in which

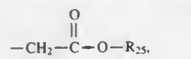
T_3 is oxygen or sulfur,

R_{19} is



in which R_{12} and R_{15} are as defined above, or

R_{19} is furthermore hydrogen, C_1–C_{24}alkyl, phenyl, C_5–C_{12}cycloalkyl or



in which

p is an integer ranging from 2 to 4,

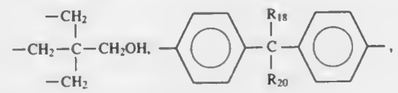
q is an integer ranging from 2 to 20,

R_{23} and R_{24} independently of one another are hydrogen or methyl, with the proviso that R_{23} and R_{24} are not simultaneously methyl;

R_{25} is hydrogen or C_1–C_{24}alkyl, or,

when n is 2,

R_{17} is a divalent radical of a hexose, a divalent radical of a hexitol,

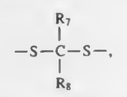


$—C_rH_{2r}—$, $+(CH_2)_pO\frac{}{}_q(CH_2)_p—$,

in which p and q are as defined above, $—CH_2CH_2—T_4—CH_2CH_2—$, $—CH_2—CH=CH—CH_2—$ or $—CH_2—C\equiv C—CH_2—$, in which R_{18} and R_{20} independently of one another are hydrogen or C_1–C_{12}alkyl or together are the radical $—CH_2CH_2CH_2CH_2—$,

r is an integer ranging from 2 to 10,

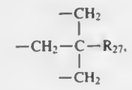
T_4 is sulfur or



in which R_7 and R_8 are as defined above, or

when n is 3

R_{17} is a trivalent radical of a hexose, a trivalent radical of a hexitol or



in which

R_{27} is hydrogen, CH_2OH or C_1–C_4alkyl, or

when n is 4,

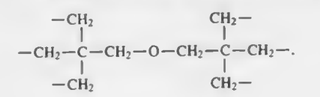
R_{17} is a tetravalent radical of a hexose, a tetravalent radical of a hexitol or C_4–C_{10}alkanetetrayl, or

when n is 5,

R_{17} is a pentavalent radical of a hexose or a pentavalent radical of a hexitol, or,

when n is 6,

R_{17} is a hexavalent radical of a hexitol or



5,668,207

STYRENIC RESIN COMPOSITION

Wen-Ping Huang, and Dong-Bi Shiueh, both of Tainan, Taiwan, assignors to Chi Mei Corporation, Tainan Hsien, Taiwan

Filed Aug. 6, 1996, Ser. No. 692,672
Int. Cl.[6] C08K *5/01*

U.S. Cl. 524—483 **7 Claims**

1. A rubber modified styrenic resin composition comprising

(1) 99.995–95.0 wt % of a rubber modified styrenic resin which is made from 5–100 wt % of graft copolymer (A) and 95–0 wt % of styrenic copolymer (B), wherein the graft copolymer (A) is prepared by grafting a copolymer, which is prepared from 50 to 90 wt % of vinyl aromatic monomers, 10 to 50 wt % of vinyl cyanide monomers and 0–40 wt % of copolymerizable monomers onto a dienic rubber polymer, and wherein the styrenic copolymer (B) comprises 50–90 wt % of vinyl aromatic monomers; and

(2) a deodorizing agent containing 0.005 to 5.0 wt % of sesquiterpene (C) having a formula of $C_{15}H_{24}$.

5,668,208

FUNCTIONALIZED RADIAL STYRENE-ISOPRENE COPOLYMERS

Gian Tommaso Viola, Cervia; Bruno Pedemonte, Binasco; Carla Parodi, Peschiera Borromeo, and Antonio Gurnari, Ravenna, all of Italy, assignors to Enichem Elastomeri S.r.l., Milan, Italy

Continuation of Ser. No. 259,196, Jun. 13, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,334
Claims priority, application Italy, Jun. 16, 1993, MI93A1296
Int. Cl.[6] C08L *53/00*

U.S. Cl. 524—505 **20 Claims**

1. An adhesive composition based on functionalized radial styrene-isoprene block copolymers, containing by weight of the total composition:

(a) from 20 to 50% by weight, of a functionalized three-arm radial block copolymer corresponding to the general formula (I):

$$(S\text{-}I)_3Si(OR)_nOH \qquad (I)$$

wherein:

each (S-I) independently indicates an arm constituted by a styrene-isoprene block copolymer,

"I" corresponds to the polyisoprene block,

"S" corresponds to the polystyrene block,

R is a divalent alkylene or oxyalkylene group having from 2 to 10 carbon atoms, and

n is either 0 or 1;

(b) from 30 to 70% by weight of at least one tackifier resin;

(c) from 1 to 30% by weight of at least one plasticizer oil.

5,668,209

PLASTISOL COMPOSITION

Klaus Ruch, Wiesloch, and Ingolf Scheffler, Rauenberg, both of Germany, assignors to Teroson GmbH, Heidelberg, Germany

Continuation of Ser. No. 384,633, Feb. 6, 1995, abandoned, which is a continuation of Ser. No. 50,134, Jun. 30, 1993, abandoned. This application Feb. 14, 1996, Ser. No. 601,542
Claims priority, application WIPO, Oct. 31, 1991, PCT/EP91/02070; Germany, Oct. 31, 1992, 40 34 725.7
Int. Cl.[6] C08L *25/08*

U.S. Cl. 524—555 **7 Claims**

1. A plastisol composition consisting essentially of a styrenic copolymer powder, said styrenic copolymer consisting of a styrene monomer selected from the group consisting of styrene, a-methyl styrene and p-methyl styrene, and from 3 to 20% by weight, based

on the weight of said styrenic copolymer, of a comonomer (b) selected from the group consisting of methacrylic acid, acrylic acid and itaconic acid, and optionally, up to 45% by weight, based on the weight of said styrenic copolymer, of a comonomer selected from the group consisting of butadiene, isoprene, and piperylene.

5,668,210

ADHESION PROMOTER AND SELF-PRIMING ARYLCYCLOBUTENE RESIN COMPOSITIONS

Robert F. Harris; Paul H. Townsend, III; Donald C. Frye, and Donald L. Schmidt, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 327,954, Oct. 24, 1994. This application Jun. 2, 1995, Ser. No. 459,055

Int. Cl.[6] C08L *83/00;* **H01L** *21/312*

U.S. Cl. 524—588 **17 Claims**

1. A composition comprising

a) a hydrolyzed or partially hydrolyzed alkoxysilane, wherein the alkoxysilane has been hydrolyzed with from about 10 percent of a stoichiometric amount to an amount of water required for complete hydrolysis,

b) a solvent consisting of an organic liquid or mixture of two or more organic liquids in which component a) and component c) are soluble, and

c) an arylcyclobutene in the form of an oligomer, prepolymer or polymerized or copolymerized resin.

5,668,211

TWO-COMPONENT POLYURETHANE ADHESIVE

Jeffrey F. Dormish, Hudson, Ohio, assignor to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1996, Ser. No. 769,193

Int. Cl.[6] C08G *18/66*

U.S. Cl. 524—590 **9 Claims**

1. A low-viscosity two-component filled polyurethane adhesive having a urethane content of from 7 to 20 percent by weight, based on the weight of nonfilled polyurethane polymer, comprising

(a) a low-viscosity isocyanate component in a quantity sufficient to provide an isocyanate index of about 100 to about 150 comprising an organic polyisocyanate wherein 0 to 10 equivalent percent of the isocyanate groups of said organic polyisocyanate have been modified by reaction with one or more isocyanate-reactive compounds; and

(b) a low-viscosity curative component that is resistant to phase separation comprising

(i) 5 to 50 equivalent percent, based on the total equivalents of amino and hydroxyl groups of component (b), of an isocyanate-reactive polyether having an equivalent weight greater than 500 selected from the group consisting of polyether polyols, polyethers terminated by aromatic amino groups, and mixtures thereof,

(ii) 30 to 95 equivalent percent, based on the total equivalents of amino and hydroxyl groups of component (b), of 2 -methyl-1,3-propanediol, and

(iii) 0 to 35 equivalent percent, based on the total equivalents of amino and hydroxyl groups of component (b), of one or more chain extenders and/or crosslinkers other than 2 -methyl-1,3-propanediol having a molecular weight in the range 32 to 400, with the proviso that the equivalent ratio of component (b)(iii) to component (b)(ii) is no more than about 0.6,

wherein at least one of components (a) or (b) contains at least one filler in a quantity of from about 10 to about 40 percent by weight based on the total quantity of filled polyurethane adhesive.

5,668,212

AQUEOUS ORGANOSILOXANE LIQUID COMPOSITION AND ITS USE

Hiroyuki Naito, Tokyo, Japan, assignor to Shizu Naito, Tokyo, Japan

Continuation of Ser. No. 138,421, Oct. 20, 1993, abandoned. This application Jul. 17, 1996, Ser. No. 680,702

Claims priority, application Japan, Oct. 6, 1992, 4-267544; Oct. 22, 1992, 4-284761

Int. Cl.[6] C08K *3/02*

U.S. Cl. 524—701 **14 Claims**

1. A curable homogeneous silicon-containing liquid composition comprising:

(A) a liquid organosilicon compound containing at least one polyether group and having water dissolved therein;

(B) a low molecular weight, liquid organopolysiloxane containing a SiX group, wherein X is hydrogen, a monovalent hydrocarbyl group or OR^1 wherein R^1 is hydrogen or a C_1–C_5 alkyl group;

(C) as a crosslinking agent, at least one organometallic compound of the formula

$$R^7_pB(OR^1)_{3-p} \text{ or } R^7_mSi(OR^1)_{4-m}$$

wherein R^7 is hydrogen, a monovalent hydrocarbyl group or OR^1; R^1 is hydrogen or a C_1–C_5 alkyl group; p is 0, 1 or 2; and m is 0, 1, 2 or 3;

(D) as a metal-containing curing catalyst, at least one zinc-, aluminum-, titanium-, zirconium- or tin- containing organic compound.

5,668,213

RESIN COMPOSITION AND MULTILAYERED STRUCTURE COMPRISING THE SAME

Taichi Negi; Kaoru Ikeda, and Hiromichi Nakano, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 5, 1995, Ser. No. 435,215

Claims priority, application Japan, May 12, 1994, 6-124183

Int. Cl.[6] C08L *77/00*

U.S. Cl. 525—57 **1 Claim**

1. A resin composition which comprises:

a polyolefin (A);

a saponified product (B) of an ethylene-vinyl ester copolymer having an ethylene content of from 10 to 70 mole %, a saponification degree of the vinyl ester component of not less than 80%, and a melting point of from 125° C. to 220° C.; and

an olefin-unsaturated dicarboxylic anhydride-unsaturated carboxylic ester or vinyl ester copolymer (C), with the proviso that (A) is not identical to (B) or (C), wherein the following formulas (I) and (II) are satisfied

$$1/99 \leqq \text{weight of (B)/weight of (A)} \leqq 40/60 \quad \text{(I)}$$

$$0.1/99.9 \leqq X \leqq 20/80 \quad \text{(II)}$$

wherein X=weight of (C)/total weight of (A) and (B).

5,668,214

POLYARYLENE SULFIDE RESIN COMPOSITION

Yasuhiro Suzuki, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1996, Ser. No. 643,432

Claims priority, application Japan, May 23, 1995, 7-146870; Mar. 27, 1996, 8-097555

Int. Cl.[6] C08G *63/48*

U.S. Cl. 525—64 **14 Claims**

1. A polyarylene sulfide resin composition, comprising 100 wt. parts of polyarylene sulfide and 1–20 wt. parts of a graft copolymer;

wherein said graft copolymer includes an olefin copolymer segment comprising α-olefin units and α, β-unsaturated acid glycidyl ester units, and a grafting polymer segment chemically bonded to the olefin copolymer segment; and

wherein said grafting polymer segment is in the form of a copolymer comprising 5–50 wt. % of α, β-unsaturated acid glycidyl ester units and 50–95 wt. % of units of a monoethylenically unsaturated monomer.

5,668,215

FUNCTIONAL GROUP-CONTAINING BUTADIENE BASED IMPACT MODIFIER

Cheng-Lung Chao; Juh-Shyong Lee, and Feng-Chih Chang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 496,126, Jun. 27, 1995, Pat. No. 5,576,394. This application Sep. 20, 1996, Ser. No. 725,204

Int. Cl.[6] C08L *69/00*

U.S. Cl. 525—67 **19 Claims**

1. A composition comprising a polycarbonate/polybutylene terephthalate (PC/PBT) alloy and a functional group-containing alkyl methacrylate-butadiene aromatic vinyl compound copolymer, wherein the functional group containing alkyl methacrylate-butadiene-aromatic vinyl compound copolymer is obtained from the following layers by emulsion graftlinking polymerization:

(a) an inner layer comprising polybutadiene;

(b) a middle layer comprising an aromatic vinyl compound and an alkyl methacrylate copolymer; and

(c) an outer layer comprising an alkyl methacrylate and a functional group containing vinyl compound copolymer.

5,668,216

CROSSLINKABEL DISPERSION POWDERS AS BINDERS FOR FIBERS

Johannes Kinkel, Emmerting, Germany; Gerhard Brink, Lyons, France; Walter Ernet; Joachim Schulze, both of Burghausen, Germany, and Konrad Wierer, Mehring, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

PCT No. PCT/EP94/00625, § 371 Date Aug. 29, 1995, § 102(e) Date Aug. 29, 1995, PCT Pub. No. WO94/20661, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 3, 1994, Ser. No. 507,290

Claims priority, application Germany, Mar. 4, 1993, 43 06 808.1

Int. Cl.[6] C08F *8/00;218/00*

U.S. Cl. 525—170 **6 Claims**

1. A process for binding fiber materials which comprises

(a) contacting said materials with from 5 to 50% by weight based on the weight of the fiber material, of a binder based on a vinyl ester copolymer dry powder or a (meth)acrylic acid ester copolymer powder, said vinyl ester copolymer comprising at least one monomer selected from the group consisting of vinyl esters of unbranched or branched alkyl carboxylic acids having 1 to 15 C atoms and the (meth)acrylic acid ester copolymer comprising at least one monomer selected from the group consisting of methacrylic acid esters of alcohols having 1 to 10 carbon atoms and the vinyl ester and (meth)acrylic acid ester copolymer, in each case comprising 0.1 to 10% by weight, based on the total weight of the copolymer of at least one ethylenically unsaturated comonomer having a crosslinking action;

(b) moistening the material with 5 to 60% by weight of water based on the total weight of dry mixture of fiber and binder before or after the binder has been contacted with the fiber material, and

(c) heating at 100° to 200° C. under a pressure of up to 100 bar to bind the fibers.

5,668,217

AMIDOAMINE MODIFICATION OF POLYPROPYLENE

Richard James Clark, Austin, Tex., assignor to Huntsman Petrochemical Corporation, Austin, Tex.

Filed May 16, 1996, Ser. No. 648,917

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—194 **29 Claims**

1. A composition useful for the preparation of molded articles comprising polypropylene and the reaction product of a functionalized polypropylene and an amidoamine, wherein the amidoamine has the formula:

$$A-(R^*O)_a-R''-NH-(C-(CH_2)_p-NH)_yH$$

wherein:

A=B or D, and

B=R—O—$(R'O)_x$—

$$D=H(HN-(CH_2)_p-C)_y-NH-R-O-(R'O)_x-$$

R is an alkyl of 1 carbon when A=B;

R' is an alkyl of 2 carbons when A=B;

R is a straight or branched alkyl of 0 to 3 carbon atoms when A=D;

R' is an alkyl group of 0 or 2 carbon atoms when A=D;

R* is a branched alkyl group of 3 carbon atoms;

R'' is a branched alkyl group of 3 carbon atoms;

a is independently 1 to 200;

x is independently 1 to 200

y is independently 1 to 300; and

p is independently 2 to 11.

5,668,218

ELASTIC-THERMOPLASTIC GRAFT POLYMERS WITH IMPROVED PROPERTIES

Herbert Eichenauer, Dormagen; Martin Bohnenpoll; Adolf Schmidt, both of Köln, and Heinrich Alberts, Odenthal, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed May 10, 1996, Ser. No. 644,133

Claims priority, application Germany, May 29, 1995, 195 19 622.8

Int. Cl.[6] C08F *279/02;4/34*

U.S. Cl. 525—265 **11 Claims**

1. Elastic-thermoplastic graft polymers manufactured by radical emulsion polymerisation of resin-forming vinyl monomers in the presence of rubber present in latex form with the use of a combination of a peroxide of formula (I)

$$X_n-A-C(=O)-O-O-R^1 \quad \text{(I)}$$

where

is an alkyl, cycloalkyl or aryl group with 4 to 20 carbon atoms,

X is a —COOH group or a —SO_3H group or their alkali, alkaline-earth or ammonium salts,

n is an integer in the range from 1 to 6,

A is an alkylene, cycloalkylene or arylene group with 6 to 40 carbon atoms

and a reducing agent as initiator system, wherein said reducing agent is a compound selected from the group consisting of salts of sulphinic acids, salts of sulphurous acid, sodium dithionite, sodium sulphite, sodium hyposulphite, sodiumhydrogen sulphite, ascorbic acid and its salts, sodium formaldehyde sulphoxate, mono- and dihydroxyacetone, sugar, iron(II) salts, tin(II) salts and titanium(III) salts.

5,668,219

CATIONIC BLOCK POLYMER AGGLOMERATION AGENTS FOR MINERAL BEARING ORES

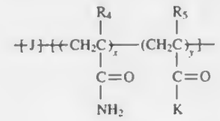
David M. Polizzotti, Yardley, Pa.; Wen P. Liao, Clifton Park, N.Y., and Donald C. Roe, Burlington, N.J., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 301,454, Sep. 6, 1994, Pat. No. 5,512,636. This application Mar. 22, 1996, Ser. No. 620,648

Int. Cl.[6] C22B *3/16;* C08F *293/00*

U.S. Cl. 525—294 4 Claims

1. In a process for percolation leaching of minerals from a mineral bearing ore wherein the ore is first agglomerated with an agglomeration agent, formed into a heap and then leached by percolating a leaching solution through the heap which extracts the minerals from the agglomerated ore for subsequent recovery at an acidic pH, the improvement in which the agglomerating agent comprises a cationic copolymer selected from the group consisting of block copolymers of the general structure:



wherein J is a polymeric segment obtained from the polymerization of ethylenically unsaturated hydrophobic monomers initiated by a difunctional initiator; R_4 and R_5 are H or a C_1 to C_3 alkyl group; K is a salt of an ammonium cation selected from the group consisting of $NHR_6N^+(R_{7,8,9})M^-$ or $OR_6N^+(R_{7,8,9})M^-$, wherein R_6 is a C_1 to C_4 linear or branched alkylene group, and R_7, R_8 and R_9 can be selected from the group consisting of hydrogen, C_1 to C_4 linear or branched alkyl, C_5 to C_8 cycloalkyl, aromatic and alkylaromatic group; and M^- is an anion, selected from the group consisting of chloride, bromide, methyl sulfate and hydrogen sulfate; and the molar percentage of x:y is from about 0:100 to 95:5, with the proviso that the total of x+y equals 100%.

5,668,220

CHLORINATED AND CHLOROSULFONATED ELASTIC SUBSTANTIALLY LINEAR OLEFIN POLYMERS

Lawrence J. Effler, Jr.; George D. Wright, and Mark T. Berard, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 450,432, May 25, 1995, Pat. No. 5,565,521, which is a division of Ser. No. 279,735, Jul. 25, 1994, Pat. No. 5,525,679. This application Jul. 19, 1996, Ser. No. 686,299

Int. Cl.[6] C08F *8/38*

U.S. Cl. 525—333.6 13 Claims

1. Chlorosulfonated polyolefin comprising the product produced by chlorosulfonating a substantially linear olefin polymer characterized as having:

a) a melt flow ratio, $I_{10}/I_2 \geqq 5.63$,

b) a molecular weight distribution, Mw/Mn defined by the equation: $Mw/Mn \leqq (I_{10}/I_2)-4.63$, and

c) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having about the same I_2 and Mw/Mn.

5,668,221

FLUORINE-CONTAINING ELASTOMER COMPOSITION

Satoru Saito, Kitaibaraki; Haruyoshi Tatsu, Hitachi, both of Japan; Sergei Rafailovich Sterlin; Yuril Vilovich Zeifman, both of Moscow, Russian Federation, and Sergei Anatol'evich Postovoi, Moscow region, Russian Federation, assignors to Nippon Mektron, Limited, Tokyo, Japan

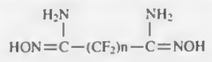
Filed Jul. 15, 1996, Ser. No. 680,171

Claims priority, application Japan, Jul. 19, 1995, 7-205178

Int. Cl.[6] C08F *8/30*

U.S. Cl. 525—359.3 4 Claims

1. A fluorine-containing elastomer composition, which comprises a fluorine-containing elastomer having a cyano group as a cross-linkable group and a bisamidoxime compound represented by the following general formula as a vulcanizing agent:



where n is an integer of 1 to 10.

5,668,222

THIXOTROPIC MOISTURE CURE URETHANE ADHESIVE

Andrew J. McKinley, and Pankaj Shah, both of Crystal Lake, Ill., assignors to Morton International, Inc., Chicago, Ill.

Filed May 20, 1996, Ser. No. 650,761

Int. Cl.[6] C08L *75/04;75/06;75/08*

U.S. Cl. 525—415 7 Claims

1. An adhesive composition comprising

A) between about 30 and about 99 wt % of a first urethane adhesive component which is a formed from a polyether polyol formed from C_2–C_4-alkylene oxide units, said polyether polyol having a weight average molecular weight of between about 400 and about 10000, said polyether polyol being a liquid at least down to about −40° C., said polyether polyol being end-capped with an isocyanate having an isocyanate functionality so as to provide said end-capped polyether polyol with isocyanate functionality beetween about 2.0 and about 3.0,

B) between about 1 and about 70 wt % of a second urethane adhesive component formed from a polyester diol or polyester diol mixture, said polyester diol or polyester diol mixture comprising

i) between about 40 and 100 wt % based on total weight of i)–iii) of a polyester formed of diols and dicarboxylic acids or anhydrides thereof, said polyester having a weight average molecular weight of between about 2000 and about 7000, and having a T_g of between about −80° C. and about −20° C.,

ii) up to about 60 wt % based on total weight of i)–iii) of a polyester formed of diols and dicarboxylic acids or anhydrides thereof, said polyester having a weight average molecular weight of between about 4000 and about 60,000, and a T_g of between about 10° C. and about 50° C.,

iii) up to about 40 wt % based on total weight of i)–iii) of a polycaprolactone having a weight average molecular weight of between about 1000 and about 3000,

said polyester or said polyesters of said polyester mixture having hydroxyl functionalities of at least about 2 and being end-capped with an isocyanate of isocyanate functionality so as to provide said second adhesive component B) with an isocyanate functionality of between about 2 and about 2.3, and

C) between about 1 and about 70 wt % of a third adhesive component which is unreacted isocyanate of isocyanate functionality of between about 2 and about 3,

said first, second, and third components being provided in amounts proportioned to provide a thixotropic adhesive composition having a Brookfield Viscometer viscosity of between about 150,000 and about 2,000,000 at 20° C., but which has a flowable viscosity under a minimum shear force of 10–30 psi (7.0×10^3–2.1×10^4 kg/m^2).

5,668,223

POLYURETHANE

Toshio Tadokoro, Yokkaichi; Shigeru Murata, Suzuka, and Shigeo Hosokawa, Yokkaichi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01126, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO96/09334, PCT Pub. Date Mar. 28, 1996

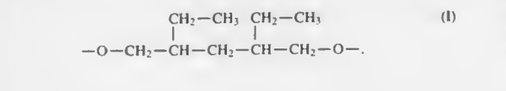
PCT Filed Jun. 7, 1995, Ser. No. 648,068

Claims priority, application Japan, Sep. 21, 1994, 6-226567

Int. Cl.[6] C08G *18/42*

U.S. Cl. 525—440 8 Claims

1. A polyurethane having a polyester polyol in the molecule, said polyester polyol having the structural unit represented by formula (I):



(I)

5,668,224

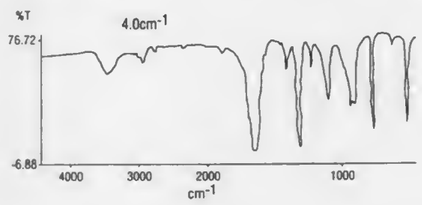
POLY(ALKYLENE DICARBOXYLATES) AND SYNTHESES THEREOF

A. G. Pinkus, Robinson, and Rajan Hariharan, Waco, both of Tex., assignors to Baylor University

Division of Ser. No. 123,368, Sep. 17, 1993, Pat. No. 5,451,643, which is a continuation-in-part of Ser. No. 27,134, Mar. 5, 1993, Pat. No. 5,371,171. This application Nov. 22, 1994, Ser. No. 343,374

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—444 33 Claims



1. A poly (alkylene1 dicarboxylate1-co-alkylene2 dicarboxylate2) having a tetraalkyl- or trialkylammonium end group

wherein alkylene1 and alkylene2 are independently selected from the group consisting of methylene, ethylene, 2-E-butene, m-xylene and p-xylene; and

wherein dicarboxylate1 and dicarboxylate2 are independently selected from the group consisting of oxalate, terephthalate, isophthalate, malonate, dimethylmalonate, fumarate and sebacate.

5,668,225

WATERPROOF SEEALER FOR CONNECTORS

Kiyotaka Okazaki; Sinichi Kogure; Masahiro Kanda, and Shiroh Kobayashi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 333,985, Nov. 2, 1994, abandoned. This application Dec. 30, 1996, Ser. No. 774,635

Claims priority, application Japan, Nov. 4, 1993, 5-275266

Int. Cl.[6] C08G *77/08*

U.S. Cl. 525—478 8 Claims

1. An oil-bleeding waterproof sealer for a connector comprising a vulcanized and molded article of a composition comprising:

(A) 100 parts by weight of a diorganopolysiloxane green rubber containing at least two alkenyl groups bonded to silicon atoms per molecule thereof,

(B) from 10 to 100 parts by weight per 100 parts by weight of component (A) of a reinforcing filler,

(C) from 0.1 to 10 parts by weight per 100 parts by weight of component (A) of an organohydrogenopolysiloxane having at least two hydrogen atoms bonded to silicon atoms per molecule thereof,

(D) from 1 to 30 parts by weight per 100 parts by weight of component (A) of a phenyl-containing diorganopolysiloxane having a viscosity of 1 to 3,000 cSt at 25° C., and

(E) a catalytic amount of a catalyst for hydrosilylation having a particle size of 0.01 to 20 μm which comprises a platinum catalyst and a polycarbonate resin obtained from 2,2-bis(4-hydroxyphenyl)propane and having a glass transition point of from 50° and 200° C., with the proportion of metallic platinum in said catalyst for hydrosilylation being 0.01 to 5% by weight.

5,668,226

2,4-DIAMINO-S-TRIAZINYL GROUP-CONTAINING POLYMER AND NEGATIVE RADIATION-SENSITIVE RESIST COMPOSITION CONTAINING THE SAME

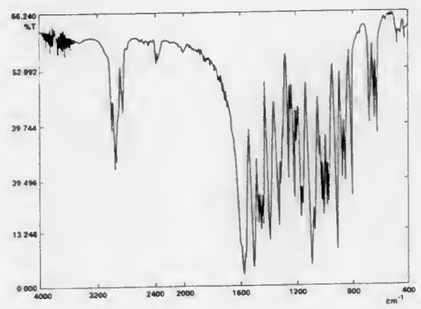
Tomoyoshi Furihata, and Motoyuki Yamada, both of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 561,625, Nov. 21, 1995, Pat. No. 5,618,892. This application Oct. 29, 1996, Ser. No. 741,202

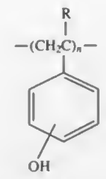
Claims priority, application Japan, Nov. 22, 1994, 6-312434; Nov. 22, 1994, 6-312435; Jul. 25, 1995, 7-209075

Int. Cl.[6] C08F *283/00;* C08G *8/28*

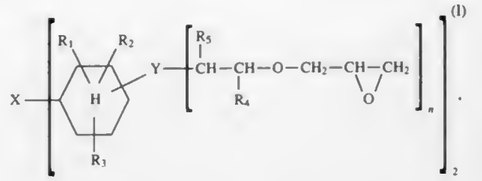
U.S. Cl. 525—484 3 Claims



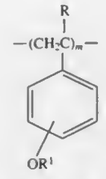
1. A negative radiation-sensitive resist composition comprising a 2,4-diamino-s-triazinyl group-containing polymer consisting of 99 to 50 mol % of a unit of the following structural formula (1a) and 1 to 50 mol % of the unit of the following structural formula (1b):



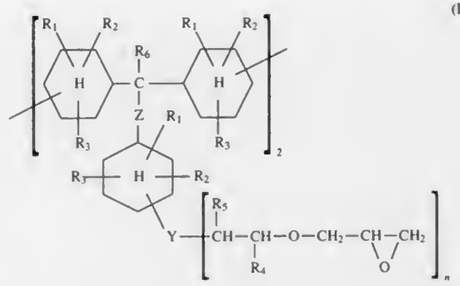
(1a)



(I)



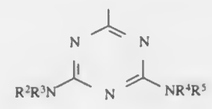
(1b)



(II)

wherein R is a hydrogen atom or methyl group, R^1 is a 2,4-diamino-s-triazinyl group of the following structural formula (2):

(2)



wherein at least one of R^2, R^3, R^5 and R^5 is an alkoxymethyl group of the structural formula: $—CH_2OR^6$, wherein R^6 is an alkyl group having 1 to 4 carbon atoms, and the remainder of R^2, R^3, R^5 and R^5 is a hydrogen atom, said polymer having a weight average molecular weight of 3,000 to 50,000.

5,668,227
CYCLOHEXYL-GROUP-CONTAINING GLYCIDYL ETHERS

Heinz Wolleb, Marly, and Andreas Kramer, Düdingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 385,382, Feb. 7, 1995, abandoned, which is a continuation of Ser. No. 147,656, Nov. 4, 1993, abandoned. This application Mar. 11, 1996, Ser. No. 613,393

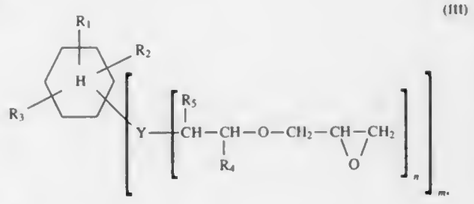
Claims priority, application Switzerland, Nov. 11, 1992, 3488/92

Int. Cl.[6] C08G *59/20*

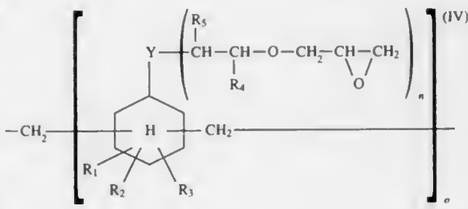
U.S. Cl. 525—507 **11 Claims**

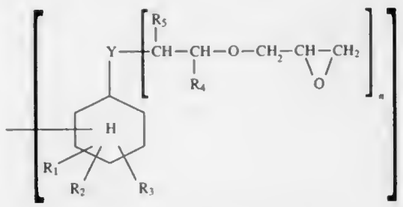
1. A cyclohexyl-group-containing glycidyl ether of formula I, II, III or IV having a chlorine content of less than 0.4% by weight and which is prepared from polyhydroxy compounds and epihalohydrin by adding an aqueous alkali hydroxide solution in the presence of a transfer catalyst selected from the group consisting of tetramethylammonium chloride, tetrabutylammonium bromide, N,N-dimethyl-pyrrolidinium chloride, N-ethyl-N-methylpyrrolidinium iodide, N-butyl-N-methylpyrrolidinium bromide, N-benzyl-N-methylpyrrolidinium chloride, N-ethyl-N-methylpyrrolidinium bromide, N-butyl-N-methyl-morpholinium bromide, N-butyl-N-methylmorpholinium iodide, N-ethyl-N-hydroxyethylmorpholinium iodide, N-allyl-N-methylmorpholinium bromide, N-methyl-N-benzylpiperidinium chloride, N-methyl-N-benzyl-piperidinium bromide, N,N-dimethylpiperidinium iodide, N-methyl-N-ethylpiperidinium acetate and N-methyl-N-ethylpiperidinium iodide:

(III)



(IV)





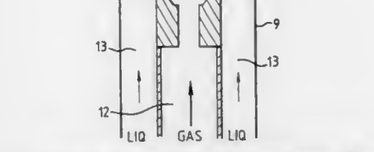
wherein the individual symbols are defined as follows:

R_1, R_2 and R_3 are each independently of the others hydrogen, a C_1–C_{10}alkyl radical or a hydrogenated aryl radical;

R_4 and R_5 are each independently of the other hydrogen or a C_1–C_{20}alkyl radical;

R_6 is hydrogen, a C_1–C_{10}alkyl radical or a hydrogenated aryl radical;

X is a bridge member of the formula $—CH_2—$, $—C(CH_3)_2—$, $—C(CF_3)_2—$, —CO—, —O—, —S—, $—SO_2—$,



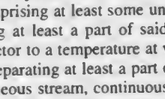
Y=O (when n=1) or N (when n=2);

m is the number 1, 2 or 3;

n=1 (when Y=O) or2 (when Y=N);

o is a number from 1 to 30; and

Z is a direct bond or a bridge member of the formula $—CH_2—$ or



5,668,228
POLYMERIZATION PROCESS

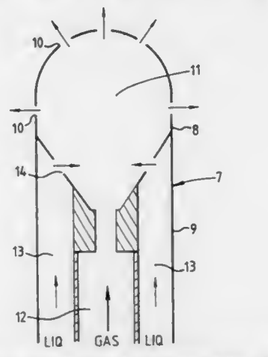
Jean-Claude Chinh; Michel C. H. Filippelli, both of Martigues, France; David Newton, Surrey, and Michael Bernard Power, London, both of England, assignors to BP Chemicals Limited, London, United Kingdom

Division of Ser. No. 256,052, Jun. 24, 1994, Pat. No. 5,541,270. This application Feb. 15, 1996, Ser. No. 602,014

Claims priority, application United Kingdom, May 20, 1993, 9310387; May 20, 1993, 9310388; May 20, 1993, 9310390

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—67 **23 Claims**



1. A continuous process for the polymerization of an olefin monomer selected from the group consisting of (a) ethylene, (b) propylene, (c) mixtures of ethylene and propylene, and (d) mixtures of (a), (b) or (c) with one or more other alpha-olefins, comprising passing a gaseous stream containing said olefin monomer through a fluidized bed in a reactor in the presence of a metallocene polymerization catalyst under reactive conditions to polymerize at least a portion of said monomer, withdrawing a gaseous stream comprising at least some unreacted monomer from said reactor, cooling at least a part of said gaseous stream withdrawn from the reactor to a temperature at which liquid condenses out of the stream, separating at least a part of the condensed liquid from the cooled gaseous stream, continuously recycling separated, cooled gas back to the reactor, pressurizing at least a part of the separated liquid, atomizing the pressurized liquid with an atomizing gas and injecting said atomized liquid directly into the fluidized bed at a rate of at least 0.3 cubic meters of liquid per hour per cubic meter of fluidized bed.

5,668,229
PROCESS FOR PREPARING HIGH-MOLECULAR WEIGHT ACRYLAMIDE POLYMER

Takashi Abe; Hiroshi Itob; Manabu Tsuruta; Shoko Oyanagi, and Kenichi Nakamura, all of Kanagawa-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 419,611, Apr. 10, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 747,269

Claims priority, application Japan, Apr. 14, 1994, 6-075633

Int. Cl.[6] C08F *4/40;22/38*

U.S. Cl. 526—93 **16 Claims**

1. A process for preparing a high-molecular weight acrylamide polymer in a short period of time which comprises the step of polymerizing (meth)acrylamide or copolymerizing (meth)acrylamide and one or more unsaturated monomers copolymerizable with (meth)acrylamide in the presence of an oxidation-reduction system polymerization initiator comprising a reducing agent and two or more kinds of oxidizing agents selected from the group consisting of persulfates, hydrogen peroxide, metal peroxides, hydroperoxides, dialkyl peroxides, diacyl peroxides, ketone peroxides, dialkylperoxy dicarbonates, peracids and peracid esters, without decreasing molecular weight of the polymer.

5,668,230
OLEFIN POLYMERIZATION

Peter Schertl, Neuhaus a. d. Pegnitz; Helmut G. Alt, Bayreuth, both of Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 192,223, Feb. 3, 1994, Pat. No. 5,571,880, and Ser. No. 352,936, Dec. 9, 1994, which is a division of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305. This application Jul. 11, 1996, Ser. No. 678,281

Int. Cl.[6] C08F *4/64;10/02*

U.S. Cl. 526—160 **18 Claims**

1. A process for polymerizing at least one olefin comprising contacting said at least one olefin with a catalyst system produced by combining a metallocene and a suitable cocatalyst, said metallocene being selected from bridged metallocenes of Group IVB metals having two fluorenyl components bonded at the 9-position to opposite ends of an ethylene bridge further characterized by the fact that at least one of the fluorenyl group is substituted by a substituent selected from the group consisting of (1) a substituent in the 4-position selected from the group consisting of alkyl, aryl, and aralkyl radicals having 1 to 10 carbon atoms; (2) aryl substituents at the 2- and 7-positions; (3) tertiary butyl substituents at the 2- and 7-positions; and (4) a 4,5-benzo substituent.

5,668,231
HEAT-RESISTANT MALEIMIDO POLYMERS/BLOCK COPOLYMERS

Sunil K. Varshney, Liege; Philippe Teyssie, Neuville en Condroz, and Roger Fayt, Neupre, all of Belgium, assignors to Atochem, Puteaux, France

Division of Ser. No. 167,032, Dec. 16, 1993, Pat. No. 5,591,816, which is a division of Ser. No. 804,674, Dec. 10, 1991, Pat. No. 5,294,674, which is a continuation of Ser. No. 618,637, Nov. 27, 1990, abandoned. This application Sep. 11, 1996, Ser. No. 712,489

Claims priority, application France, Nov. 27, 1989, 89 15581

Int. Cl.[6] C08F *4/46;222/40;267/10;271/02*

U.S. Cl. 526—173 **6 Claims**

1. A process for the preparation of an N-substituted maleimide homopolymer having a number-average molecular weight ranging

from 12,000 to 100,000, said process comprising anionically polymerizing an N-substituted maleimide monomer, in solvent phase, in the presence of at least one organometallic polymerization initiator which comprises sec-butyllithium, a sodium alcoholate, diphenylmethylpotassium, naphthalenelithium or naphthalenesodium.

5,668,232

PROCESS FOR THE PRODUCTION OF POLYISOOLEFINS

Gerhard Langstein, Kürten; Dieter Freitag, Krefeld; Michael Lanzendörfer, Pegnitz, and Karin Weiss, Bindlach, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Jul. 8, 1996, Ser. No. 677,638

Claims priority, application Germany, Jul. 10, 1995, 195 25 035.4

Int. Cl.[6] C09F *4/52;* **C08F** *10/10*

U.S. Cl. 526—189 **5 Claims**

1. Process for the production of polyisoolefins comprising polymerizing isoolefins of the formula $CH_2=CR^1.R^2$ where R^1 denotes methyl and R^2 denotes C_1–C_{10} alkyl or C_3–C_{10} cycloalkyl, optionally together with conjugated or unconjugated dienes with 4 to 20 carbon atoms and/or cationically polymerisable, mono- or polyunsaturated compounds with 4 to 20 carbon atoms at temperatures of −100° C. to +200° C. and pressures of 0.1 to 100 bar in solution, in suspension or in the gas phase in the presence of initiator systems consisting of:

a) mono- or polyfunctionalised hydrocarbons of the formula (I)



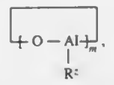
(I)

in which

X denotes halogen, SCN, CN, OH, OR^5, $OCOR^5$ or $COOR^5$, where R^5 denotes C_1–C_{10} alkyl or C_3–C_{10} cycloalkyl, and R^3, R^4, R^5 are identical or different and mean hydrogen, C_1–C_{10} alkyl, C_3–C_{10} cycloalkyl, C_6–C_{18} aryl, C_2–C_{10} alkynyl or C_3–C_{10} alkyne, optionally substituted by X, and

b) an open-chain and/or cyclic aluminoxane compound of the formula (II) or (III)

(II)



(III)

in which

R^x, R^y, R^z, R^w are C_1–C_{12} alkyl and

m represents an integer from 5 to 30.

5,668,233

FLUORINATED ION-EXCHANGE POLYMERS AND INTERMEDIATES THEREFOR

Andrew Edward Feiring, and Shlomo Rozen, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 534,525, Sep. 27, 1995, Pat. No. 5,536,754, which is a continuation-in-part of Ser. No. 388,789, Feb. 15, 1995, Pat. No. 5,475,143. This application May 23, 1996, Ser. No. 652,733

Int. Cl.[6] C08F *14/08;16/24;16/30*

U.S. Cl. 526—247 **7 Claims**

1. A process to make a partially fluorinated polymer, comprising:

reacting tetrafluoroethylene, carbon dioxide, and an alkali metal thioalkoxide to obtain the alkali metal salt of a thio-containing partially fluorinated alkali metal carboxylate, and reacting said carboxylate with a dialkyl sulfate to obtain an ester of a thio-containing partially fluorinated carboxylic acid; or

reacting tetrafluoroethylene, an alkali metal thioalkoxide and a dialkyl carbonate to obtain said ester;

reducing said ester with a suitable reducing agent to the corresponding thio-containing partially fluorinated alcohol;

reacting said alcohol with a base capable of forming an alkoxide anion from said alcohol, and tetrafluoroethylene, to form a monomer of the formula $CF_2=CFOCH_2CF_2SR^1$;

free radically polymerizing said monomer, optionally with tetrafluoroethylene comonomer, to form a thio-containing polymer;

reacting said thio-containing polymer with a sufficient amount of chlorine at a temperature of about 80° C. to about 140° C. for a period of time sufficient to form a sulfenyl chloride containing polymer; and

reacting said sulfenyl chloride containing polymer with a sufficient amount of chlorine and water, at a temperature of about 80° C. to about 140° C., for a period of time sufficient to form a sulfonyl chloride containing polymer; and

converting said sulfonyl chloride containing polymer to a sulfonic acid, alkali metal sulfonate, or ammonium sulfonate by reaction with water, an alkali metal base or an amine, respectively; and wherein R^1 is alkyl containing 1 to 10 carbon atoms.

5,668,234

REACTION INJECTION MOLDING (RIM) OF METHYL (METH)ACRYLATE AND RELATED MONOMERS USING GROUP-4 CATALYSTS

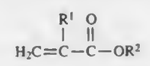
Larry Funderburk Rhodes, 3036 Vincent Rd., Silver Lake, Ohio 44224; Brian Leslie Goodall, 3959 Clover Hill Rd., Akron, Ohio 44333, and Scott Collins, Apt. 9, 586 Victoria St., Kitchener, Ontario, Canada, N2M 3B1

Filed Sep. 12, 1994, Ser. No. 304,720

Int. Cl.[6] C08F *20/14;4/643;* **C08G** *63/08*

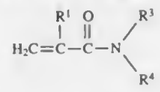
U.S. Cl. 526—329.7 **16 Claims**

10. A polymer composition comprising the reaction product resulting from the combination of at least two substantially diluent free reactant streams to form a reactive mixture then conveying said reaction mixture into a mold where polymerization takes place, one reactant stream of which comprises one or more neutral organo group-4 catalyst(s) and one or more monomer(s), and another of which comprises one or more activating cationic organo group-4 catalyst(s) or an organic Lewis acid and one or more monomer(s), said one or more of each monomer(s) of each reactant stream, independently, having the formula:



wherein R^1 is hydrogen or an alkyl group having from 1 to 4 carbon atoms and R^2 is an alkyl or a cycloalkyl group having from 1 to 10 carbon atoms, or wherein R^2 is R^5-silyl-R^6 or R^5-siloxane-R^7 where R^5 is non-existent, or an alkylene radical containing from 1 to 10 carbon atoms and where R^6 or R^7 is non-existent, hydrogen, or an alkyl group having from 1 to 10 carbon atoms, wherein the number of siloxane repeat groups is from about 1 to about 1000;

or a monomer having the formula:

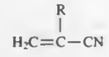


wherein R^1 is as defined in the formula above and R^3 and R^4, independently, represent hydrogen, or a hydrocarbyl group;

or a lactam monomer having from 3 to 9 carbon atoms in the ring, or a lactone monomer having from 3 to 9 carbon atoms in the ring, or wherein said lactam and said lactone monomers

are a substituted lactam or lactone, wherein said substituents are alkyl groups from 1 to 5 carbon atoms;

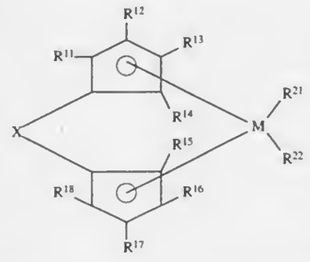
or an acrylonitrile monomer having the formula:



wherein R is hydrogen or an alkyl group having from 1 to 4 carbon atoms; or combinations of said monomers.

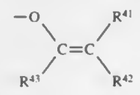
11. A polymer according to claim 10, wherein said neutral catalyst is

Formula II



wherein R^{11} through R^{18}, independently, is hydrogen, an alkyl from 1 to 10, a cycloalkyl having a total of 4 to 9 carbon atoms, an aryl or an alkyl substituted aryl having a total of from 6 to 15 carbon atoms, or wherein two adjacent hydrocarbon groups are connected to one another to form a hydrocarbon bridge between said two adjacent carbon atoms with said bridging carbon atoms being an alkylene having a total of from 2 to 8 carbon atoms, wherein X is a bridging linkage comprising CH_2, CMe_2, $SiMe_2$, CPh_2, $SiPh_2$, CH_2CH_2, or $CR^{31}R^{32}CR^{33}R^{34}$, wherein R^{31} R^{32}, R^{33}, and R^{34}, independently, is hydrogen, an alkyl or cycloalkyl having from 1 to 10 carbon atoms, or an aryl or an alkyl substituted aryl having a total of from 6 to 15 carbon atoms,

and wherein R^{21} and R^{22}, independently, is hydrogen, an alkyl or cycloalkyl having from 1 to 10 carbon atoms, an aryl or an alkyl substituted aryl having from 6 to 15 carbon atoms, or a hydrocarbyloxy, a hydrocarbylsulfide, or a dihydrocarbylamido wherein the hydrocarbyl group is an alkyl or cycloalkyl group having from 1 to 10 carbon atoms, an aromatic or an alkyl substituted aromatic or an aromatic substituted alkyl group having from 6 to 15 carbon atoms, or where R^{21} and R^{22} are joined to form a ring having from 4 to 8 carbon atoms and optionally contain Ge or Si therein or optionally contain a hydrocarbyl substituent having from 1 to 8 carbon atoms, or an enolate of the formula

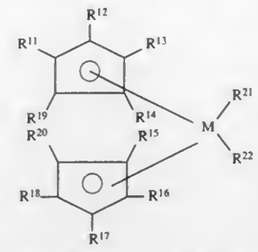


wherein R^{41} and R^{42}, independently, is an alkyl having from 1 to 10 carbon atoms, a cycloalkyl having from 4 to 8 carbon atoms, or an aryl or an alkyl substituted aryl having a total of from 6 to 15 carbon atoms, and wherein R^{43}, independently, is the same as R^{41} or is $Si(R^{44})_3$ where R^{44}, independently, is defined by R^{41}, and optionally where R^{41} and R^{42}, or R^{42} and R^{43}, are joined to form a ring, and optionally where R^{43} of each enolate can be joined together,

and wherein the metal is titanium, zirconium, or hafnium,

or wherein said neutral group-4 catalyst has the formula

Formula III



wherein R^{19} and R^{20}, independently, is defined by R^{11}.

5,668,235

POLYOLEFIN MOLDING COMPOSITIONS FOR MELT SPINNING

Andreas Winter, Glashütten/Ts.; Annette Vollmar, Frankfurt am Main; Friedrich Kloos, Mainz, and Bernd Bachmann, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 389,811, Feb. 10, 1995, which is a continuation of Ser. No. 159,905, Dec. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 472,076

Claims priority, application Germany, Dec. 2, 1992, 42 40 411.8

Int. Cl.[6] C08F *10/06;10/02*

U.S. Cl. 526—351 **2 Claims**

1. A method of using a polyolefin molding composition for producing fibers, filaments and webs by high speed melt spinning, wherein the polyolefin molding composition comprises a polyolefin produced by polymerizing or copolymerizing an olefin having at least 3 carbon atoms of the formula R^a— CH=CH—R^b, where R^a and R^b are hydrogen or a C_1–C_{15} alkyl, straight-chain or branched, and are identical or different, except that R^a and R^b cannot both be hydrogen, and from 0 to 10% by weight of ethylene or of a second olefin having the above-mentioned meaning as comonomer, characterized by a 230/2.16 MFI from 5 to 1000 g/10 min, a 230/5 MFI from 15 to 3000 g/10 min, a molecular weight (M_w) from 75,000 to 350,000 g/mol, a polydispersity (M_w/M_n) from 1.8 to 3.5, a viscosity number from 70 to 3000 cm3/g, a melting point from 120° to 165° C., an isotactic block length from 25 to 150, and ether extractables less than 2% weight, based on the total weight of the polymer.

5,668,236

HYDROPHILIC HIGHLY SWELLABLE HYDROGELS

Fritz Engelhardt; Ulrich Riegel, both of Frankfurt am Main; Uwe Stüven, Bad Soden; Helmut Klotzsche, Alzenau, and Gustav Remmel, Gelnhausen, all of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 396,612, Mar. 1, 1995, abandoned. This application Apr. 29, 1996, Ser. No. 639,510

Claims priority, application Germany, Mar. 12, 1994, 44 08 435.8

Int. Cl.[6] C08G *69/08;73/10*

U.S. Cl. 528—310 **18 Claims**

1. A hydrophilic highly swellable hydrogel which comprises polymers prepared by (co)polymerized hydrophilic monomers or graft (co)polymers, that are post-crosslinked with a polyamidoamine in an aqueous medium.

5,668,237

SILICON AND ZIRCONIUM BASED LACQUER, ITS USE AS A SUBSTRATE COATING AND SUBSTRATES THUS OBTAINED

Michael Popall, Wurzburg; Jochen Schulz; Birke Olsowski, both of Veitshochheim, and Monika Pilz, Kleinrinderfeld, all of Germany, assignors to E.I. DuPont de Nemours and Company, Del., and Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung, Munich, Germany

PCT No. PCT/EP93/01427, § 371 Date Feb. 15, 1995, § 102(e) Date Feb. 15, 1995, PCT Pub. No. WO93/25605, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 5, 1993, Ser. No. 347,472

Claims priority, application France, Jun. 10, 1992, 92 07007

Int. Cl.[6] C08G *79/00*

U.S. Cl. 528—9 **55 Claims**

1. A process for making a lacquer comprising the steps of:

(i) precondensing:

a) 1 to 10 mol % of at least one zirconium compound of the formula I:

$$ZrR_4 \quad (I)$$

wherein:

R is halogen, hydroxy, alkoxy, acyloxy or chelated ligand;

b) 20 to 94 mol% of at least one organic silane of the formula II:

$$R''_m(R'''Y)_nSiX_{(4-m-n)} \quad (II)$$

wherein:

R" is alkyl, alkenyl, aryl, alkylaryl, arylalkyl, alkenylaryl, or arylalkenyl;

R"' is alkylene, alkenylene, arylene, alkylarylene, arylalkylene, alkenyl-arylene, or arylalkenylene;

R" and R"' being optionally interrupted by oxygen, sulfur or —NH—;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, or $—NR'_2$ where R' is hydrogen or alkyl;

Y is a polymerizable group;

m is an integer from 0 to 3 and n is an integer from 1 to 3; m+n is from 1 to 3;and

c) 5 to 30 mol% of at least one organic silane of formula III:

$$R''_pSiX_{4-p} \quad (III)$$

wherein R" and X are defined in b), and p is 1, 2 or 3; and

d) 0 to 10 mol% of at least one low-volatility metal oxide, soluble in the precondensation reaction medium, of an element of groups Ia to Va or IVb or Vb of the Periodic Table of the Elements, or a compound of one of these elements, soluble in the reaction medium, forming a low-volatility oxide;

optionally in the presence of an organic solvent at a temperature of between 10 and 80° C. for a period of time ranging from between 0.5 and 72 hours; and

ii) condensation the precondensate of step (i) without water or with up to 50% of the stoichiometric amount of water, at a temperature of between 20 and 90° C. for a period of time from between 0.5 and 72 hours.

5,668,238

BLOCKED POLYISOCYANATES WITH IMPROVED THERMAL STABILITY

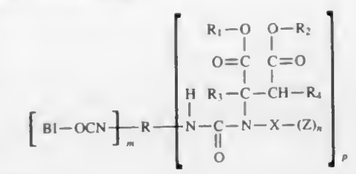
Kenneth P. Yonek, McMurray; Lyuba K. Gindin, Pittsburgh, and Douglas A. Wicks, Mt. Lebanon, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed May 23, 1995, Ser. No. 447,466

Int. Cl.[6] C08G *18/80*

U.S. Cl. 528—45 **9 Claims**

1. A blocked polyisocyanate containing at least one isocyanate group which is reversibly blocked with a monofunctional blocking agent for isocyanate groups and at least one isocyanate group in the form of a urea group, which may be converted to a thermally stable hydantoin group, wherein the blocked polyisocyanate corresponds to the formula



(I)

wherein

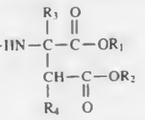
X represents an organic group which has a valency of n+1 and is inert towards isocyanate groups at a temperature of 100° C. or less,

R represents the residue obtained by removing the isocyanate groups from a polyisocyanate having a functionality of m+p,

R_1 and R_2 may be the same or different and represent optionally substituted hydrocarbon radicals,

R_3 and R_4 may be identical or different and represent hydrogen or organic groups which are inert towards isocyanate groups at a temperature of 100° C. or less,

Z represents —OH, —COOH, a polymer backbone or a group corresponding to the formula



B1 represents a reversible, monofunctional blocking agent for isocyanate groups,

m has a value of 1 to 5,

n has a value of 1 to 3,

p has a value of 1 to 5 and

m+p is 2 to 6.

5,668,239

HIGH MODULUS, IIIGH IMPACT POLYURETHANE/ POLYUREA RIM

Neil H. Nodelman, Pittsburgh; David D. Steppan, Gibsonia; Jan L. R. Clatty, Coraopolis, and A. Donald Meltzer, Pittsburgh, all of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Jun. 4, 1996, Ser. No. 657,512

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—60 **9 Claims**

1. A process for the production of a molded polyurethane/urea elastomer from a reaction mixture by a reaction injection molding process, wherein said reaction mixture comprises:

A) a methylenebis(cyclohexyl isocyanate) prepolymer having an isocyanate group content of from 12 to 27% by weight, an average isocyanate functionality of less than 2.3, having a monomer content of greater than about 25%, and containing urethane or urea groups, said prepolymer being prepared by reacting

A1) methylenebis(cyclohexyl isocyanate) with

A2) at least one compound selected from the group consisting of:

a) at least 6.5% by weight of one or more compounds containing at least two hydroxyl groups or at least two amine groups and having a molecular weight of less than 500, and

b) at least 10% by weight of a compound having a molecular weight of at least about 600, and containing polytetramethyleneoxy groups, polyethyleneoxy groups, or polyester groups;

and

B) an isocyanate-reactive blend comprising:

B1) from 35 to 55% by weight of one or more polyether polyols having a number average molecular-weights of at least about 2000 to about 10,000, and containing from 1.5 to 4 hydroxyl groups,

B2) from 45 to 65% by weight of one or more organic chain extenders having molecular weights of from about 60 to about 500, and being selected from the group consisting of diols, triols, primary amines, secondary amines, amino alcohols, and mixtures thereof,

wherein said isocyanate-reactive blend has an OH:NH equivalent ratio of from 1:1 to 15:1 and wherein the %'s by weight of components B1) and B2) totalling 100%,

and

C) from 0.1 to 10% by weight, based upon 100% by weight of component B), of one or more catalyst for catalyzing the reaction between the isocyanate groups and the isocyanate-reactive groups,

wherein the reaction mixture is processed via a one-shot process at an isocyanate index of from 80 to 130.

5,668,240

ENERGETIC NITRO POLYMER

G. William Lawrence, Silver Spring, and William H. Gilligan, Ft. Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

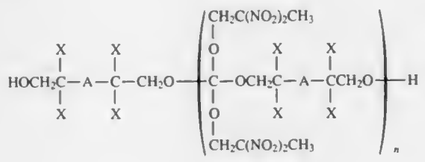
Division of Ser. No. 754,897, May 23, 1985, Pat. No. 5,574,125. This application Aug. 26, 1996, Ser. No. 704,028

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—66 **8 Claims**

1. An energetic polymer comprising the reaction product of

(1) a hydroxy-terminated poly(2,2-dinitropropyl)polynitroorthocarbonate prepolymer of the formula



wherein n>1, X is selected from the group consisting of F and NO_2, and wherein when X is F, —A— is selected from the group consisting of $—CF_2—$, $—CF_2CF_2—$, $—CF_2CF_2CF_2—$, and $—CF_2CF_2CF_2CF_2—$, but when X is NO_2, —A— is selected from the group consisting of $—CH_2CH_2—$, $—CH_2OCH_2—$, and $—CH_2OCH_2OCH_2—$,

(2) with a polyisocyanate selected from the group consisting of 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, p-phenylene diisocyanate, 1,5-naphthylene diisocyanate, 4,4'-biphenylene diisocyanate, p,p'-methylene diphenyl diisocyanate, 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, 1,4-cyclohexylene diisocyanate, 4,4'-methylene-bis-cyclohexyl isocyanate, 1,5tetrahydronaphthylene diisocyanate, polymethylenepolyphenylisocyanate, N,N',N"-trisisocyanatohexylbiuret, and mixtures thereof,

wherein the ratio of isocyanate functional groups to hydroxy functional groups is from 0.8:1 to 1.5:1.

5,668,241

ENERGETIC FLOURONITRO POLYMER

G. William Lawrence, Silver Spring, and William H. Gilligan, Ft. Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

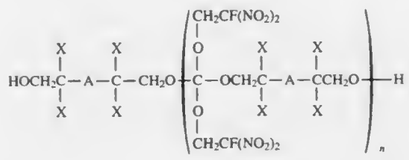
Division of Ser. No. 754,898, May 23, 1985, Pat. No. 5,574,126. This application Aug. 26, 1996, Ser. No. 704,029

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—66 **8 Claims**

1. An energetic polymer comprising the reaction product of

(1) a hydroxy-terminated poly(2-fluoro-2,2-dinitroethyl) polynitroorthocarbonate prepolymer of the formula



wherein n>1, X is selected from the group consisting of F and NO_2, and wherein when X is F, -A- is selected from the group consisting of $—CF_2—$, $—CF_2CF_2—$, $—CF_2CF_2CF_2—$, and $—CF_2CF_2CF_2CF_2—$, but when X is NO_2, -A- is selected from the group consisting of $—CH_2CH_2—$, $—CH_2OCH_2—$, and $—CH_2OCH_2OCH_2—$,

(2) with a polyisocyanate selected from the group consisting of 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, p-phenylene diisocyanate, 1,5-naphthylene diisocyanate, 4,4'-biphenylene diisocyanate, p,p'-methylene diphenyl diisocyanate, 1,4-tetramethylene diisocyanate, 1,6-hexamethylene diisocyanate, 1,10-decamethylene diisocyanate, 1,4-cyclohexylene diisocyanate, 4,4'-methylene-bis-cyclohexyl isocyanate, 1,5-tetrahydronaphthylene diisocyanate, polymethylenepolyphenylisocyanate, N,N',N"-trisisocyanatohexylbiuret, and mixtures thereof,

wherein the ratio of isocyanate functional groups to hydroxy functional groups is from 0.8:1 to 1.5:1.

5,668,242

POLYESTERS FOR THE BONDING OF TEXTILES

Ulrich Simon, Herne, and Siegfried Hahn, Hennef-Stossdorf, both of Germaoy, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Mar. 19, 1996, Ser. No. 617,594

Claims priority, application Germany, Mar. 22, 1995, 195 I0 314.9

Int. Cl.[6] C08G *63/02*

U.S. Cl. 528—272 **7 Claims**

1. A polyether ester for the adhesive bonding of textiles, obtained by reacting terephthalic acid, isophthalic acid, 1,4-butanediol and a polyethylene glycol, wherein the molar ratio of terephthalic acid to isophthalic acid is from 35 to 50 parts terephthalic acid:from 65 to 50 parts isophthalic acid, and the polyethylene glycol is employed in a proportion of from 10.5 to 25% by weight and with a molecular mass of from 0.4 to 6 kg/mol, based on the sum of all of the radicals present in the polyether ester.

5,668,243

POLYESTERS MODIFIED WITH 1,4-CYCLOHEXANEDIMETHANOL HAVING HIGH CLARITY PREPARED UTILIZING AN ANTIMONY CONTAINING CATALYST/STABILIZER SYSTEM

Cheuk Chung Yau, Kingsport, and Leslie Shane Moody, Johnson City, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 565,484, Nov. 30, 1995, Pat. No. 5,608,031. This application Oct. 15, 1996, Ser. No. 732,802

Int. Cl.[6] C08G *63/82*

U.S. Cl. 528—280 **16 Claims**

1. A polyester resin comprising organic and inorganic dyes,

wherein one or more dicarboxylic acid components are added to one or more glycol components;

wherein said one or more dicarboxylic acid components is selected from the group consisting of aliphatic dicarboxylic acids having a total of from 3 to 16 carbon atoms, alicyclic dicarboxylic acids having 7 to 12 carbon atoms, aromatic dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof; wherein said 0.5 mole % or more of said one or more glycol components is 1,4-cyclohexanedimethanol;

wherein the remaining 99.5 mole % or less of said one or more glycol components is selected from the group consisting of glycols other than 1,4-cyclohexanedimethanol having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combination thereof, the total mole percentages of said one or more glycol components equalling 100 mole %; and

wherein said polyester resin is prepared in the presence of a catalyst/stabilizer system consisting essentially of one or more antimony compounds and one or more phosphorous compounds and one or more compounds selected from the group consisting essentially of zinc compounds, gallium compounds, and silicon compounds.

5,668,244

LIQUID POLYESTERS FROM CYCLIC ACID ANHYDRIDES

Miki Kawashima; Takeo Yamaguchi; Kunio Horiuchi, and Hiromi Uchida, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

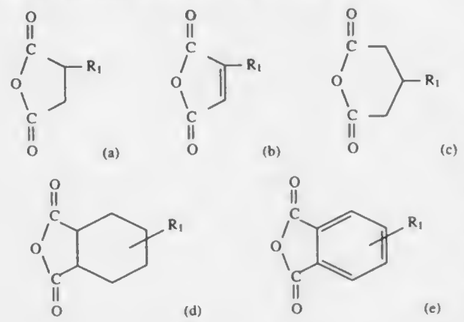
Filed Jun. 16, 1995, Ser. No. 491,366

Claims priority, application Japan, Jun. 17, 1994, 6-135517; Aug. 12, 1994, 6-190243

Int. Cl.[6] C08G *63/42*

U.S. Cl. 528—297 **13 Claims**

1. A liquid polyester obtained by reacting, in a one-step process, a cyclic acid anhydride (A) containing at least 10 mol % of at least one of cyclic acid anhydrides of the formulae (a) to (e),



wherein R_1 is a saturated or unsaturated aliphatic hydrocarbon group having 4 to 25 carbon atoms, with a monoepoxide (B) which contains 5 to 100 mol % of at least one compound selected from the group consisting of glycidyl methacrylate, glycidyl acrylate, acryl glycidyl ether and glycidyl cinnamate, in the presence of a hydroxyl group-containing compound (C) which is added in an amount of 0.001 to 0.2 equivalents per mole of the cyclic acid anhydride (A), the molar ratio of cyclic acid anhydride (A) to monoepoxide (B) being 10:8–10:12.

5,668,245

POLYMERS WITH HETEROCYCLIC SIDE GROUPS

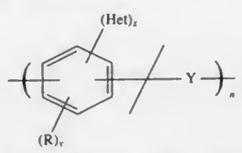
Matthew L. Marrocco, III, Santa Ana; Ying Wang, Diamond Bar, and Virgil J. Lee, La Verne, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Filed Nov. 2, 1995, Ser. No. 552,128

Int. Cl.[6] C08G *69/00;73/00;* **C08L** *79/04;79/08*

U.S. Cl. 528—327 **61 Claims**

1. A polymer of the formula:



wherein: up to three CH units in each aromatic ring may be replaced by nitrogen atoms;

Het is a heterocyclic group;

x is 1 or 2;

y is less than or equal to 4–x;

R is independently alkyl, aryl, alkoxy, aryloxy, ketone, aidehyde, amide, ester, sulfone, cyano, fluoro, and oligomeric or polymeric groups comprising polyalkeneoxy, polyaryleneoxy, polyarylenesulfate, polyarylene sulfone, polyphenoxyphenylketone, polystyrene, polyphenylene, polyamide and polyimide;

Y is selected from the group consisting of nil, —Ar—, —Z—, —Z—Ar—, and —AR—Z—Ar—, where Z is a divalent group selected from the group consisting of —O—, —S—, —NR'—, —O(CO)—, —(CO)NH(CO)—, —NR'(CO)—, phthalimide, pyromellitimide, —CO—, $—CH_2—$, $—CF_2—$ and —CR'R"—, wherein R' and R" are independently alkyl or aryl, and taken together may be bridging, and where Ar is selected from the group consisting of arylene, heteroarylene and arylene and heteroarylene substituted with at least one R group; and

n is greater than about 4.

5,668,246

SYNTHESIS OF HIGH SOLIDS-CONTENT WET-STRENGTH RESIN

William W. Maslanka, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 344,779, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 932,817, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 659,552, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 634,355, Dec. 31, 1990, abandoned. This application Aug. 9, 1996, Ser. No. 695,258

Int. Cl.[6] C08G *69/28*

U.S. Cl. 528—336 **6 Claims**

1. A method comprising reacting dicarboxylic acid and a polyalkylenepolyamine in the presence of an acid catalyst to form a polyaminoamide and reacting the polyaminoamide with epichlorohydrin in two stages to form a water-soluble, stable, cationic polyamino-epichlorohydrin wet strength resin, which does not gel when held at 90° F. for 90 days and has a total solids content of at least about 25%, wherein in the first stage the temperature is maintained at from about 30° C. to about 50° C., and in the second stage the temperature is maintained at from about 55° C. to about 75° C. such that the temperature in the second stage is different from the temperature in the first stage, the reaction being carried out in a manner such that the molar ratio of epichlorohydrin to the polyaminoamide is from about 1.7/1 to about 1.9/1.

5,668,247

THERMOPLASTIC POLYIMIDE, POLYAMIDE ACID, AND THERMALLY FUSIBLE LAMINATED FILM FOR COVERING CONDUCTIVE WIRES

Hiroyuki Furutani; Kazuhisa Danno; Yoshifumi Okamoto; Junya Ida; Yoshihide Oonari; Hitoshi Nojiri, and Hirosaku Nagano, all of Otsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

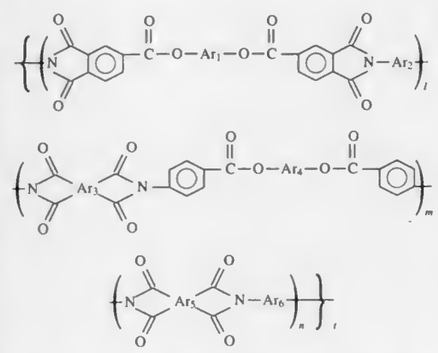
Filed Dec. 16, 1993, Ser. No. 167,024

Claims priority, application Japan, Dec. 16, 1992, 4-355005; Dec. 25, 1992, 4-358178; Jul. 27, 1993, 5-205885; Jul. 27, 1993, 5-205886

Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—353 **15 Claims**

1. Thermoplastic polyimide represented by following formula (1);



wherein Ar_1, Ar_2, Ar_4, and Ar_6 respectively designate divalent organic radical, Ar_3 and Ar_5 respectively designate quadrivalent organic radical, l, m, and n, respectively designate a positive integer of 0 or 1 or more than 1, the sum of l and m is equal to 1 or more than 1, and t designates a positive integer 1 or more than 1.

5,668,248

PHOTOSENSITIVE RESIN COMPOSITION

Hideo Hagiwara; Makoto Kaji, both of Hitachi; Hiroshi Nishizawa, Kitaibaraki; Kenji Suzuki, and Yasunori Kojima, both of Hitachi, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

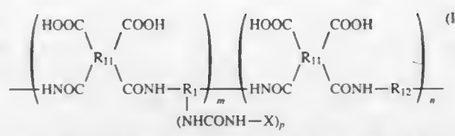
Division of Ser. No. 5,210, Jan. 15, 1993, Pat. No. 5,472,823. This application Aug. 22, 1995, Ser. No. 517,583

Claims priority, application Japan, Jan. 20, 1992, 4-007467; Nov. 9, 1992, 4-298560

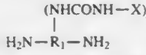
Int. Cl.[6] C08G *73/10;69/26*

U.S. Cl. 528—353 **9 Claims**

1. A poly(amic acid) ester resin obtained by esterifying carboxyl groups of a poly(amic acid) resin having recurring units represented by the formula:



wherein X is a monovalent photosensitive group; R_1 is a (2+p)-valent organic group; R_{11} is a tetravalent organic group; R_{12} is a divalent organic group; p is an integer of 1 to 12; and m and n are molar numbers of recurring units, and m/n is 1/99 to 100/0, with a compound having no vinyl group, or obtained by subjecting a diamino compound of the formula:



wherein X is a monovalent photosensitive group; R_1 is a (2+p)-valent organic group; and p is an integer of 1 to 12, another diamino compound, if used, and a tetravalent carboxylic acid diester to a condensation reaction.

5,668,249

PROCESS FOR THE COPOLYMERIZATION OF CARBON MONOXIDE WITH AN OLEFINICALLY UNSATURATED COMPOUND

Frank Baardman; Arleen Marie Bradford; Jayne Jubb; Pieter Scheerman; Rudolf Jacobus Wijngaarden; Erwin Paulus Petrus Bleeker, and Johannes Adrianus Maria Van Broekhoven, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 13, 1996, Ser. No. 615,649

Claims priority, application European Pat. Off., Mar. 22, 1995, 95200718

Int. Cl.[6] C08G *67/02*

U.S. Cl. 528—392 **12 Claims**

1. A process for the copolymerization of carbon monoxide with an olefinically unsaturated compound comprising: (a) contacting the monomers in the presence of a liquid diluent and a lower alcohol with a catalyst composition which comprises a source of a Group VIII metal, and a hydrocarbylborane, and (b) transmitting a stirring power to the polymerization mixture of at least 0.25 kW/m^3, wherein the rate of decay of polymerization is no more than 13% over the course of an hour.

5,668,250

POLYETHER COPREPOLYMERS FORMED FROM MONO-SUBSTITUTED FLUORINATED OXETANE MONOMERS AND TETRAHYDROFURAN

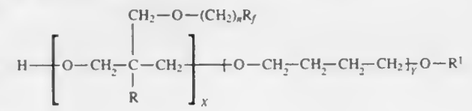
Aslam A. Malik, Cameron Park, Calif., assignor to Aerojet-General Corporation, Sacramento, Calif.

Division of Ser. No. 371,914, Jan. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 206,618, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 80,614, Jun. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 911,461, Jul. 10, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,219

Int. Cl.[6] C08G *65/22;* **C07C** *43/12;43/13*

U.S. Cl. 528—402 **4 Claims**

1. A random, hydroxy-terminated FOX/THF co-prepolymer having the structure:



where:
a) n is 1–3;
b) R is selected from the group consisting of methyl and ethyl;
C) R_f is selected from the group consisting of linear perfluorinated alkyl group having 1–20 carbons, branched perfluorinated alkyl group having 1–20 carbons and oxaperfhorinated polyethers having from about 4–60 carbons;
d) X is 1–100;
e) Y is 10–150; and
f) R^1 is selected from the group consisting of H and a hydroxyalkyl having from about 2 to 5 carbons and 1 to 3 hydroxy groups.

5,668,251

PREPARATION OF CO-PREPOLYMERS FROM MONO-SUBSTITUTED FLUORINATED MONOMERS AND TETRAHYDROFURAN

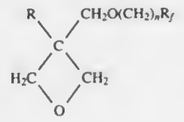
Aslam A. Malik, Cameron Park, and Roland P. Carlson, Davis, both of Calif., assignors to Aerojet-General Corporation, Sacramento, Calif.

Division of Ser. No. 371,914, Jan. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 206,618, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 80,614, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 911,461, Jul. 10, 1992, abandoned. This application Oct. 5, 1995, Ser. No. 539,405

Int. Cl.[6] C07C *41/01;* C08G *65/22*

U.S. Cl. 528—402 **17 Claims**

1. A method of using a mono-substituted fluorinated oxetane (FOX) monomer to make a FOX/THF co-prepolymer, said FOX monomer having the structure:



where n is 1 to 3, R is methyl or ethyl, and R_f is linear or branched chain perfluorinated alkyl or isoalkyl having from 1 to 20 carbons or an oxa-perfluorinated polyether, having from 4 to about 60 carbons, comprising the steps of:
a) providing neat tetrahydrofuran (THF) or forming a mixture of THF in an organic solvent;
b) maintaining said neat THF or THF mixture at a temperature in the range of from about −20° C. to about +60° C.;
c) contacting said neat THF or THF mixture with a Lewis acid catalyst and water or a polyhydroxy aliphatic compound as an initiator;
d) adding at least one FOX monomer(s) to said neat THF or THF mixture to form a reaction mixture; and
e) maintaining said reaction mixture at a temperature in range of from about −20° C. to about +60° C. for a time sufficient to produce said FOX/THF co-prepolymer.

5,668,252

DRYING PROCESS OF VISCOUS SOLUTION CONTAINING (METH)ACRYLIC ACID-BASED POLYMER

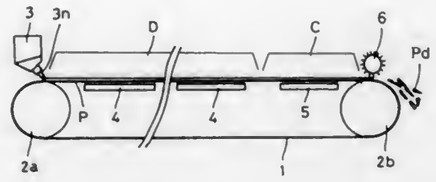
Tokihiro Yokoi, and Keishi Tsuboi, both of Hyogo, Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 11, 1995, Ser. No. 526,223

Int. Cl.[6] C08F *6/10*

U.S. Cl. 528—503 **14 Claims**

1. A method of drying a viscous solution containing a (meth) acrylic acid-based polymer comprising a homopolymer or a



copolymer containing (meth)acrylic acid and/or a salt thereof as a monomer unit, the degree of neutralization of the acid group contained in the polymer being not more than 50 mol %, wherein said method comprises subjecting said solution to, or passing said solution through, a drying zone, in the form of a line, so that the solvent in the solution is removed and wherein said viscous solution has a viscosity at 25° C. of 100–1,000,000 cps.

5,668,253

PEPTIDE HAVING ANTIGENIC PROPERTIES SIMILAR TO "A "DETERMINANT OF HEPATITIS B SURFACE ANTIGEN

Yasmin Thanavala; Arvind Thakur, both of Williamsville, N.Y.; Ivan Roitt, London, United Kingdom, and Michael Pride, Houston, Tex., assignors to Health Research, Inc., Buffalo, N.Y., and University College London, United Kingdom

Division of Ser. No. 167,336, Dec. 15, 1993, Pat. No. 5,531,990. This application Apr. 5, 1995, Ser. No. 416,962

Int. Cl.[6] C07K *7/04;7/06;14/005;14/02*

U.S. Cl. 530—326 **2 Claims**

1. A peptide having the amino acid sequence Ala Val Tyr Tyr Cys Thr Arg Gly Tyr His Gly Ser Ser Leu Tyr (SEQ ID NO.1) and permitted variants thereof, which has antigenic properties similar to the group specific "a" determinant of human Hepatitis B surface antigen, and wherein said sequence is partially homologous with said surface antigen.

5,668,254

D-2-ALKYL-TRYPTOPHAN AND PEPTIDES CONTAINING SAME

Romano Deghenghi, Chesaux-Dessus, 1264-St. Cergue, Switzerland, assignor to Romano Deghenghi, St. Cergue, Switzerland

Continuation-in-part of Ser. No. 672,300, Mar. 20, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 16,862

Claims priority, application Italy, May 11, 1990, 20273-A

Int. Cl.[6] A61K *38/04;* C07K *5/00;7/00;17/00*

U.S. Cl. 530—328 **12 Claims**

1. His-D-2-alkyl-Trp-Ala-Trp-D-Phe-Lys-NH_2, Ala-His-D-2-alkyl-Trp-Ala-Trp-D-Phe-Lys-NN_2, Pyro-Glu-His-Trp-Ser-Tyr-D-2-alkyl-Trp-Leu-Arg-Pro-$NHCH_2CH_3$, D-Pro-Gln-Gln-D-Trp-Phe-D-Trp-2-alkyl-Trp-Met-H_2, Arg-D-Trp-N-methyl-Phe-D-2-alkyl-Trp-Leu-Met-NH_2, D-Phe-Cys-Phe-D-2-alkyl-Trp-Lys-Thr-Cys-$NHCH(CH_2OH)CHOHCH_3$ or D-Phe-Cys-Tyr-D-2-alkyl-Trp-Lys-Val-Cys-Trp-NH_2 where alkyl designates a lower alkyl group.

5,668,255

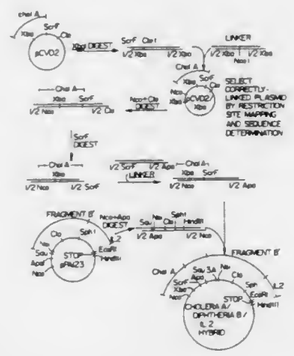
HYBRID MOLECULES HAVING TRANSLOCATION REGION AND CELL-BINDING REGION

John R. Murphy, Wayland, Mass., assignor to Seragen, Inc., Hopkinton, Mass.

Continuation of Ser. No. 722,484, Jun. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,276, Jun. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 456,095, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 742,554, Jun. 7, 1985, abandoned, which is a continuation-in-part of Ser. No. 726,808, Apr. 25, 1985, abandoned, which is a continuation of Ser. No. 618,199, Jun. 7, 1984, abandoned. This application Aug. 4, 1993, Ser. No. 102,387

Int. Cl.[6] C07K *14/00;* C12P *21/00*

U.S. Cl. 530—350 **21 Claims**



1. A hybrid molecule comprising a first part and a second part connected via a covalent bond,
(a) said first part comprising a portion of the binding domain of a cell binding ligand effective to cause said hybrid molecule to bind to a cell of an animal; and
(b) said second part comprising a portion of the translocation domain of a protein, provided that said hybrid molecule does not include an enzymatically active portion of said protein, and wherein said first part and said second part are not segments of the same naturally occurring protein.

5,668,256

CHIMERIC INTERLEUKIN 5-RECEPTOR/ IMMUNOGLOBULIN POLYPEPTIDES

Rene Devos, Oostende; Walter Fiers, Destelbergen; Jose van der Heyden, Munte; Geert Plaetinck, Destelbergen, and Jan Tavernier, Balegem, all of Belgium, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 947,130, Sep. 16, 1992, Pat. No. 5,455,337. This application Apr. 13, 1995, Ser. No. 421,822

Claims priority, application European Pat. Off., Sep. 18, 1991, 91810738

Int. Cl.[6] C07K *14/715;16/46*

U.S. Cl. 530—350 **1 Claim**

1. A recombinant polypeptide coded for by a DNA sequence, which DNA sequence comprises:
a) a first DNA subsequence encoding a soluble fragment of human interleukin-5 receptor alpha chain capable of binding human interleukin-5, and
b) a second DNA subsequence encoding a constant domain of a human immunoglobulin heavy chain or light chain.

5,668,257

PHENYLBORONIC ACID COMPLEXING REAGENTS DERIVED FROM AMINOLALICYLIC ACID

Mark L. Stolowitz, Long Beach, Calif., assignor to Prolinx, Inc., Bothell, Wash.

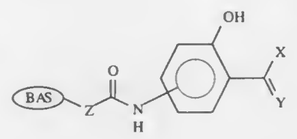
Division of Ser. No. 188,531, Jan. 28, 1994, Pat. No. 5,594,151. This application Jun. 7, 1995, Ser. No. 482,883

Int. Cl.[6] C07C *331/28;233/65*

U.S. Cl. 530—391.1 **4 Claims**

1. A semiconjugate having the General Formula III as follows

General Formula III



wherein group X is selected from the group consisting of H, OH, NH_2, $NHCH_3$, NHOH and $NHOCH_3$, wherein group Y is selected from O, S and NH, wherein group Z is a spacer selected from the around consisting of an alkyl chain of from 1 to 16 carbon equivalents in length and a polyethylene glycol chain, up to 12 carbon equivalents in length, wherein said alkyl chain may contain intermediate amide functionalities and wherein said Z group may contain a cleavable disulfide bond, and wherein BAS is a biologically active species.

5,668,258

PHENYLBORONIC ACID COMPLEXING REAGENTS DERIVED FROM AMINOSALICYLCIC ACID

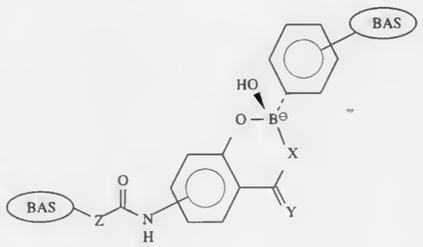
Mark L. Stolowitz, Long Beach, Calif., assignor to Prolinx, Inc., Bothell, Wash.

Division of Ser. No. 188,531, Jan. 28, 1994, Pat. No. 5,594,151. This application Jun. 7, 1995, Ser. No. 486,714

Int. Cl.[6] C07F *5/04*

U.S. Cl. 530—391.1 **5 Claims**

1. A bioconjugate having the general formula:



wherein group X is selected from O, NH, NCH_3, NOH, $NOCH_3$ wherein group Y is selected from O, S and NH, wherein group Z is a spacer selected from the group consisting of an alkyl chain of from 1 to 16 carbon equivalents in length and a polyethylene glycol chain, up to 12 carbon equivalents in length, wherein said alkyl chain may contain intermediate amide functionalities, and wherein said Z group may contain a cleavable disulfide bond, and wherein groups BAS and BAS* are biologically active species.

5,668,259

METALLIZABLE DISAZO COMPOUNDS HAVING 1, 3-DIHYDROXYBENZENE BIS-COUPLING COMPONENT RADICALS, IRON COMPLEXES THEREOF AND MIXTURES OF SUCH IRON COMPLEXES

Jordi Berenuger Barra, Barcelona, Spain; Herbert Holliger, Allschwil, Switzerland, and Jose Rocas Sorolla, Barcelona, Spain, assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

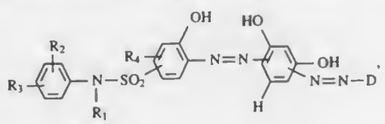
Continuation of Ser. No. 123,956, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 20,478, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 776,133, Oct. 15, 1991, abandoned. This application May 15, 1995, Ser. No. 443,492

Claims priority, application United Kingdom, Oct. 15, 1990, 9022355

Int. Cl.[6] C09B *45/32*

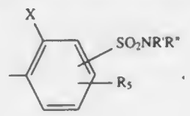
U.S. Cl. 534—684 **21 Claims**

1. An iron complex of a compound of the formula



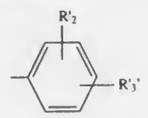
an iron complex of two compounds of said formula or a mixture of such iron complexes,

wherein D is a monocyclic or bicyclic aromatic diazo component radical of the benzene series containing one $—SO_3M$ group or is



wherein

R^1 is hydrogen, C_{1-4}alkyl, C_{2-4}hydroxyalkyl, methoxy-(C_{2-4}alkyl) or



wherein

R_2' is hydrogen, chloro, hydroxy, C_{1-2}alkyl, C_{1-2}alkoxy or $—SO_2NR_oR_o$, and

R_3' is hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, trifluoromethyl, —COOM or —NR"'R"", and

R" is hydrogen, C_{1-4}alkyl, C_{2-4}hydroxyalkyl or methoxy-(C_{2-4}alkyl), or

—NR'R" is a saturated nitrogen-containing 5- or 6-membered heterocyclic ring,

R_5 is hydrogen, chloro or C_{1-2}alkyl, and

X is hydrogen or hydroxy,

R_1 is hydrogen, methyl or ethyl,

R_2 is hydrogen, chloro, hydroxy, C_{1-2}alkyl, C_{1-2}alkoxy or $—SO_2NH_oR_o$,

R_3 is hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, —COOM, trifluoromethyl or —NR"'R"", and

R_4 is hydrogen, chloro or C_{1-2}alkyl,

wherein each R"' and R"" is independently C_{1-4}alkyl, C_{2-4}hydroxyalkyl, methoxy(C_{2-4}alkyl) or carbamoyl(C_{1-2}alkyl), or

—NR"'R"" is a saturated nitrogen-containing 5- or 6-membered heterocyclic ring,

each R_o is independently hydrogen, C_{1-4}alkyl, C_{2-4}hydroxyalkyl or methoxy(C_{2-4}alkyl), or

$—NR_oR_o$ is a saturated nitrogen-containing 5- or 6-membered heterocyclic ring, and

each M is hydrogen or a cation.

5,668,260

TETRAKISAZO COMPOUNDS, THE METHOD OF PREPARATION THEREOF AND THE PROCESS OF PYEING

Wolfgang Bauer, Maintal; Dieter Baumgart, Egelsbach, and Walter Zöller, Klingenberg, all of Germany, assignors to Hoecht Aktienge Sellschaft, Frankfurt, Germany

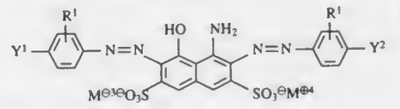
Filed Apr. 22, 1996, Ser. No. 637,322

Claims priority, application Germany, Apr. 22, 1995, 195 14 880.0

Int. Cl.[6] C09B *35/56;* **D06P** *1/06;1/39;3/06;3/60*

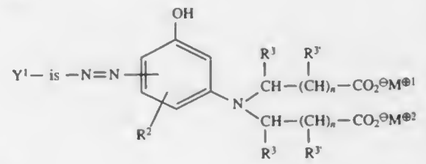
U.S. Cl. 534—806 **19 Claims**

1. A tetrakisazo compound of the formula 1

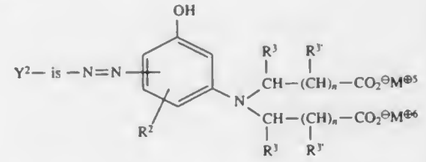


(1)

in which



and



and

R^1 is hydrogen or (C_1–C_4)-alkyl;

R^2 is hydrogen, (C_1–C_4)-alkyl or halogen;

R^3 and $R^{3'}$ independently of one another are hydrogen or (C_1–C_4)-alkyl;

$M^{\oplus 1}$, $M^{\oplus 2}$, $M^{\oplus 3}$, $M^{\oplus 4}$, $M^{\oplus 5}$ and $M^{\oplus 6}$ independently of one another are a cation; and

n is 0 or 1.

2. A tetrakisazo dye comprising the compound according to claim 1, disolved in a solvent.

17. A recording liquid containing in total from about 0.5 to about 15% by weight of one or more soluble dyes according to claim 2, from 0 to about 99% by weight of water and from about 0.5 to about 99.5% by weight of solvents or humectants or mixtures thereof.

5,668,261

PROCESS FOR PREPARING CARBOXYLATES OF ALKYLPOLYGLUCOSIDES

Parfait J. M. Likibi; Robert V. Casciani, and Gregory L. McCraw, all of Charlotte, N.C., assignors to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (U.S.)

Division of Ser. No. 268,743, Jun. 30, 1994, Pat. No. 5,504,246, which is a division of Ser. No. 675,220, Mar. 26, 1991, Pat. No. 5,334,756. This application Mar. 7, 1996, Ser. No. 612,146

Int. Cl.[6] C07H *15/00*

U.S. Cl. 536—18.5 **33 Claims**

1. A process for preparing an alkylpolyglucoside carboxylate comprising reacting a primary hydroxyl-group containing alkylpolyglucoside with at least an equimolar amount of either an inorganic or organic halo-containing oxidizing agent in the presence of a weak base and a catalytic amount of a hindered nitroxide.

5,668,262

METHOD OF TRITIUM LABELING OLIGONUCLEOTIDES

Weltian Tan, 1612 Worcester Rd., Framington, Mass. 01701; Radhakrishnan P. Iyer, 34 I Shrewsbury Green Dr., Shrewsbury, Mass. 01545; Zhiwei Jaing, 1 Brian Cir., Grafton, Mass. 01519; Dong Yu, 7 Lowden Ave., Apartment 1, Somerville, Mass. 02144, and Sudhir Agrawal, 61 Lamplighter Dr., Shrewsbury, Mass. 01545

Division of Ser. No. 447,203, May 22, 1995. This application Jun. 7, 1995, Ser. No. 485,112

Int. Cl.[6] C07H *19/00;21/00;21/02;21/04*

U.S. Cl. 536—22.1 **8 Claims**

1. A method of synthesizing tritium labeled oligonucleotides comprising:

a) contacting a nascent oligonucleotide having a 5' hydroxyl group with an oxidizing agent that will oxidize the hydroxyl group to an aldehyde; and

b) contacting the aldehyde with $[^3H]NaBH_4$ such that the oligonucleotide is labeled with tritium.

5,668,263

CONSERVED YEAST NUCLEIC ACID SEQUENCES

Lois L. Hoyer, Ames, Iowa; George P. Livi, Havertown, and Allan R. Shatzman, King of Prussia, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Dec. 16, 1994, Ser. No. 357,962

Int. Cl.[6] C07H *21/02*

U.S. Cl. 536—23.1 **5 Claims**

2. A nucleic acid probe capable of selectively hybridizing to *C. albicans* and *C. stellatoidea* nucleic acids, said probe consisting of a sequence selected from the group of sequences given herein as SEQ. ID. NO:1, SEQ. ID. NO:2, SEQ. ID. NO:3, SEQ. ID. NO:4 and SEQ. ID. NO:5. and fragments thereof which are capable of selectively hybridizing with *C. albicans* and *C. Stellatoidea* nucleic acids.

5,668,264

HIGH AFFINITY PDGF NUCLEIC ACID LIGANDS

Nebojsa Janjic, and Larry Gold, both of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, and a continuation-in-part of Ser. No. 931,473, Aug. 17, 1992, Pat. No. 5,270,163, and a continuation-in-part of Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938, and a continuation-in-part of Ser. No. 117,991, Sep. 8, 1993, abandoned, said Ser. No. 714,131is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 479,783

Int. Cl.[6] C07H *21/02;21/04;* **C12Q** *1/68;* **C12P** *19/34*

U.S. Cl. 536—23.1 **7 Claims**

1. A purified and isolated non-naturally occurring nucleic acid ligand to PDGF.

5,668,265

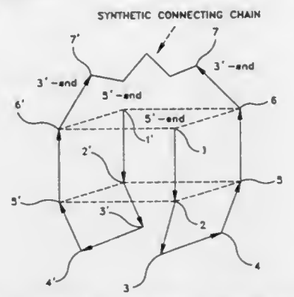
BI-DIRECTIONAL OLIGONUCLEOTIDES THAT BIND THROMBIN

James G. Nadeau, Chapel Hill, N.C.; Mary Lee Ciolkowski, Portage, Mich., and Erwin A. Vogler, Newhill, N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 252,071, May 31, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,447

Int. Cl.[6] C07H *21/04;* **C12Q** *1/68;* **A61K** *35/00*

U.S. Cl. 536—23.1 **17 Claims**



1. A bi-directionai nucleic acid ligand compound comprising at least two oligodeoxyribonucleotides each independently selected from the group consisting of SEQ ID NO: 1, SEQ ID NO:2 and SEQ ID NO:3, wherein the two oligodeoxyribonucleotides are linked either directly or by a connecting compound in a 5' to 5' or a 3' to 3' orientation.

5,668,266

SYNTHESIS OF SINGLE-STRANDED LABELLED OLIGONUCLEOTIDES OF PRESELECTED SEQUENCE

Jerry L. Ruth, San Diego, Calif., assignor to Syngene, Inc., San Diego, Calif.

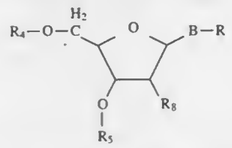
Continuation of Ser. No. 288,337, Aug. 10, 1994, abandoned, which is a division of Ser. No. 505,032, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 46,133, May 4, 1987, Pat. No. 4,948,882, which is a continuation-in-part of Ser. No. 617,094, Feb. 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 468,498, Feb. 22, 1983, abandoned. This application May 12, 1995, Ser. No. 439,860

Int. Cl.[6] C07H *21/00;21/02;21/04*

U.S. Cl. 536—25.3 **20 Claims**

1. A process for chemically synthesizing a modified single-stranded oligonucleotide comprising:

adding at a preselected position in said oligonucleotide a modified nucleotide compound having the structure:



wherein B is a pyrimidine or purine base and R is a linker arm including a blocked functional group, and provided that

when R_4 is a blocking group then

R_5 is a reactive phosphorous-containing group or is a hydrogen atom if the 5'-hydroxyl group of the 5'-terminal nucleotide of a growing oligonucleotide contains a reactive phosphorous-containing group; and

when R_5 is a blocking group then

R_4 is a reactive phosphorous-containing group or is a hydrogen atom if the 3'-hydroxyl group of the 3'-terminal nucleotide of a growing oligonucleotide contains a reactive phosphorous-containing group; and

R_8 is a hydrogen atom or a blocked hydroxyl group,

wherein said addition is carried out under conditions to effect coupling of the reactive phosphorous-containing groups of said modified nucleotide to a reactive 3'- or 5'-hydroxyl of the oligoncleotide while not impairing the reactivity of the protected reactive functionality on the linker arm R;

and, if required, subsequently removing the blocking group from R_4 or R5 and coupling one or more additional modified or unmodified nucleotide units until the synthesis of said oligonucleotide is complete.

5,668,267

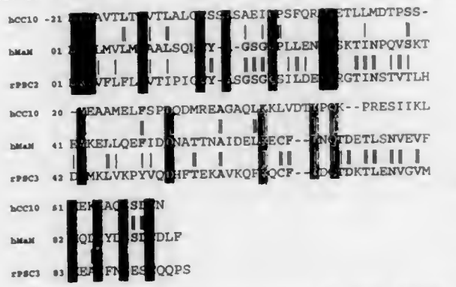
POLYNUCLEOTIDES ENCODING MAMMAGLOBIN, A MAMMARY-SPECIFIC BREAST CANCER PROTEIN

Mark A. Watson, and Timothy P. Fleming, both of St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Filed May 31, 1995, Ser. No. 455,896

Int. Cl.[6] C07H *21/02;21/04*

U.S. Cl. 536—23.5 **15 Claims**



1. An isolated and purified polynucleotide encoding mammaglobin, or a fragment of said polynucleotide that specifically hybridizes to the complement of SEQ ID NO:1.

5,668,268

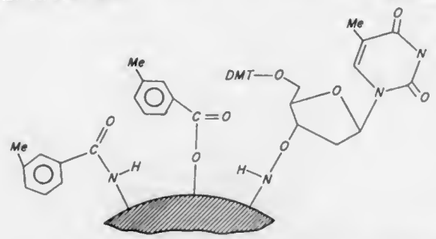
PASSIVATED POLYMER SUPPORTS FOR NUCLEIC ACID SYNTHESIS

Jin-Yan Tang, Shrewsbury, and Jimmy X. Tang, Framingham, both of Mass., assignors to Hybridon, Inc., Cambridge, Mass.

Filed Nov. 27, 1995, Ser. No. 562,841

Int. Cl.[6] C07H *21/04;* **C12Q** *1/68*

U.S. Cl. 536—25.3 **8 Claims**



1. An organic polymer support for solid phase synthesis of oligonucleotides, such support comprising a plurality of passivated organic polymer microscopic particles, wherein each particle has amino groups and/or hydroxyl groups covalently bound to the particle surface, wherein each particle further has nucleosides covalently bound to some of the amino and/or hydroxyl groups, and wherein at least some of the amino and/or hydroxyl groups that are not covalently bound to nucleosides are covalently bound to a hydrophobic passivating group, wherein the hydrophobic passivating group is an aroyl group.

5,668,269

3'-(2')-AMIMO- OR THIOL-MODIFIED, FLUORESCENT DYE-COUPLED NUCLEOSIDES, NUCLEOTIDES AND OLIGONUCLEOTIDES

Joachim Engels, Kronberg/Taunus; Mathias Herrlein, Frankfurt am Main; Renate Konrad, Sulzbach/Taunus, and Matthias Mag, Oberursel, all of Germany, assignors to Hoechst Aktiengeselischaft, Frankfurt am Main, Germany

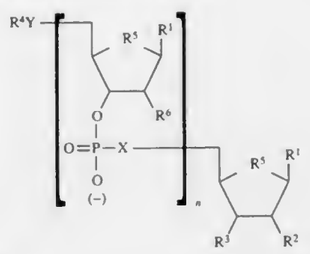
Division of Ser. No. 184,759, Jan. 18, 1994, which is a continuation of Ser. No. 803,953, Dec. 9, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 456,734

Claims priority, application Germany, Dec. 11, 1990, 40 39 488.3

Int. Cl.[6] C07H *19/06;19/16;21/00*

U.S. Cl. 536—25.32 **15 Claims**

1. A compound substance of formula I



(I)

in which

R^1 is a purine or pyrimidine base, wherein each R^1 is the same or different,

R^2 is hydrogen, a hydroxyl, a protected hydroxyl or methoxy group in the α or β-position,

R^3 is a fluorescent dye in the α or β-position bonded via an amino or thiol group,

n is a number greater than or equal to 0 and less than 3000,

R^4 is a 5' protective group or phosphate, pyrophosphate or triphosphate,

R^6 is hydroxyl or methoxy group or hydrogen in the α or β-position, wherein each R^6 is the same or different,

and X and Y are identical or different and am oxygen or sulfur.

5,668,270

PROCESS FOR THE PREPARATION OF FLUDARABINE OR FLUDARABINE PHOSPHATE FROM GUANOSINE

John G. Bauman, Alameda, and Randolph C. Wirsching, Livermore, both of Calif., assignors to Schering Aktiengesellschaft, Berlin, Germany

Division of Ser. No. 981,114, Nov. 25, 1992, Pat. No. 5,602,246. This application Jun. 6, 1995, Ser. No. 466,524

Int. Cl.[6] C07H *1/02;19/09*

U.S. Cl. 536—26.71 **13 Claims**

9. A process for the production of 9-β-D-arabinofuranosyl-2-fluoroadenine, comprising:

(a) subjecting guanosine to amination, whereby the 6-keto group is converted to a 6-amino group;

(b) subjecting the product of (a) to diazotization/fluorination whereby the 2-amino group is converted to 2-F, and subsequent acylation whereby 2',3',5'-hydroxy groups are converted to acyl-O groups wherein the acyl groups each have up to 12 C atoms;

(c) subjecting the product of (b) to selective deacylation wherein 2'-O-acyl is converted to 2'-hydroxyl;

(d) subjecting the product of (c) to sugar conversion whereby the ribofuranosyl moiety is converted to an arabinofuranosyl moiety, wherein

(1) the 2'-hydroxyl group of the ribofuranosyl moiety is converted to 2'-OSO_2R^2 by sulfonylation, wherein R^2 is C_{1-4}-perfluoroalkyl or perfluorophenyl; and

(2) the 2'-OSO_2R^2 group of the product of (d)(1) is subjected to nucleophilic displacement with a carboxylate to yield the arabinofuranosyl moiety with a 2'-O-acyl group, wherein said acyl group has up to 12 carbon atoms; and

(e) the product of (d)(2) is subjected to deacylation whereby acyl-O groups in the arabinofuranosyl moiety are converted to hydroxy groups.

5,668,271

INDOLOPYRROLOCARBAZOLE DERIVATIVES

Katsuhisa Kojiri; Hisao Kondo; Hiroharu Arakawa; Mitsuru Ohkubo, and Hiroyuki Suda, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

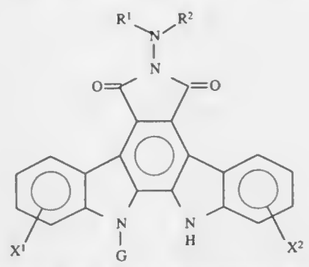
Division of Ser. No. 255,980, Jun. 8, 1994, Pat. No. 5,591,842, which is a continuation-in-part of Ser. No. 981,070, Nov. 24, 1992. This application Jun. 7, 1995, Ser. No. 474,659

Claims priority, application Japan, Nov. 29, 1991, 3-341916; Feb. 18, 1992, 4-069269; Sep. 1, 1992, 4-257306

Int. Cl.[6] C07H *19/23;* **C07D** *273/00*

U.S. Cl. 536—27.1 **3 Claims**

1. A process for the preparation of a compound of the formula (I)



(I)

wherein R^1 and R^2 each, independently, represent a hydrogen atom, C_1–C_8 alkyl group, C_3–C_6 alkenyl group, C_6–C_{12} aromatic hydrocarbon group, C_1–C_6 alkyl group substituted by C_6–C_{12} aromatic hydrocarbon group or 5- or 6-membered nonaromatic or aromatic heterocyclic group containing 1 to 4 hetero atoms selected from the group consisting of nitrogen atom, oxygen atom and sulfur atom, wherein the C_1–C_6 alkyl group, C_3–C_6 alkenyl group, C_3–C_6 alkynyl group, C_6–C_{12} aromatic hydrocarbon group, C_1–C_6 alkyl group substituted by C_6–C_{12} aromatic hydrocarbon group and heterocyclic group may be substituted by 1 to 5 substituents selected from the group consisting of carboxyl group, carbamoyl group, SO_3H, NH_2, cyano group, mono-(C_1–C_6 alkyl) amino group, di(C_1–C_6 alkyl)amino group, hydroxyl group, and halogen atom; or represent a group of the formula —Y—R^3, wherein Y represents a carbonyl group, thiocarbonyl group or sulfonyl group, and R^3 represents a hydrogen atom, C_1–C_6 alkyl group, C_3–C_6 cycloalkyl group, C_4–C_{10} cycloalkylalkyl group, C_6–C_{12} aromatic hydrocarbon group, C_1–C_6 alkyl group substituted by C_6–C_{12} aromatic hydrocarbon group, C_1–C_6 alkoxy group, $NHNH_2$, NH_2, amino group substituted by C_6–C_{12} aromatic hydrocarbon group, carbamoyl group or 5- or 6-membered nonaromatic or aromatic heterocyclic group containing 1 to 4 hetero atoms selected form the group consisting of nitrogen atom, oxygen atom and sulfur atom, wherein the C_1–C_6 alkyl group, C_3–C_6 cycloalkyl group, C_4–C_{10} cycloalkylalkyl group, C_6–C_{12} aromatic hydrocarbon group, C_1–C_6 alkyl group substituted by C_6–C_{12} aromatic hydrocarbon group and 5- or 6-membered nonaromatic or aromatic heterocyclic group may be substituted by 1 to 4 substituents selected from the group consisting of halogen atom, unprotected hydroxyl group, hydroxyl group protected by a protective group selected from the group consisting of C_2–C_6 alkanoyl group, C_2–C_7 alkoxycarbonyl group, benzoyl group, acetal-forming group, benzyl group and benzyl group substituted by C_1–C_6 alkoxy group, nitro group, NH_2, carboxyl group, carbamoyl group, cyano group or C_2–C_7 alkoxycarbonyl group, and the NH_2 and carbamoyl group are unsubstituted or mono- or di-substituted by unsubstituted C_1–C_6 alkyl group(s) or by C_1–C_6 alkyl group(s) substituted by substituent(s) selected from the group consisting of halogen atom, hydroxyl group, NH_2, carboxyl group, carbamoyl group and C_2–C_7 alkoxycarbamoyl group; or

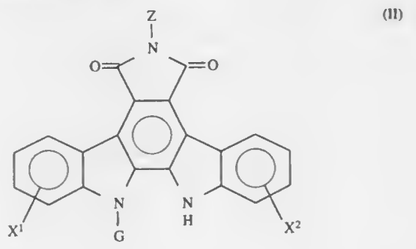
R^1 and R^2 combine to form an unsubstituted C_1–C_6 alkylidene group or a C_1–C_6 alkylidene group substituted by 1 to 4 substituents selected form the group consisting of NH_2, mono-(C_1–C_6 alkyl)amino group, di-(C_1–C_6 alkyl)amino group, hydroxyl group, carboxyl group and SO_3H; or

R^1 and R^2 combine together with the nitrogen atom to which they are bonded to form a 5- or 6-membered nonaromatic heterocyclic group containing 1 to 4 hetero atoms selected from the group consisting of nitrogen atom, oxygen atom and sulfur atom, and the heterocyclic group may be substituted on the ring by unsubstituted C_1–C_6 alkyl group(s) and by C_1–C_6 alkyl groups substituted by group(s) selected form the group consisting of NH_2, hydroxyl group, carboxyl group and SO_3H;

G represents pentose group or hexose group, and

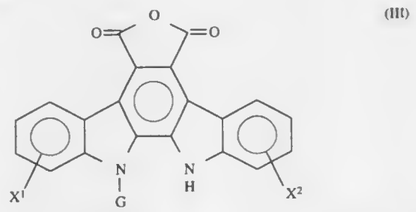
X^1 and X^2 each, independently, represent a hydrogen atom, halogen atom, NH_2, mono-(C_1–C_6 alkyl)amino group, di-(C_1–C_6 alkyl)amino group, hydroxyl group, C_1–C_6 alkoxy group, C_1–C_6 alkoxy group substituted by C_6 C_{12} aromatic hydrocarbon group, carboxyl group, C_2–C_7 alkoxycarbonyl group or C_1–C_6 alkyl group,

or a pharmaceutically acceptable salt thereof, which comprises reacting a compound represented by the following formula (II) or formula (III) wherein any functional group may be protected,



(II)

or

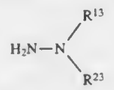


(III)

wherein

Z represents a hydrogen atom or substituted or unsubstituted lower alkyl group, and X^1, X^2 and G have the same meaning as defined above,

with a compound represented by the following formula (IV) or a derivative thereof wherein functional groups are protected,



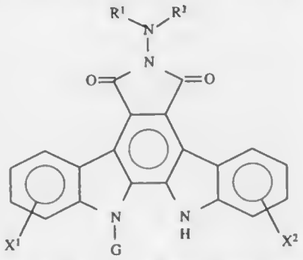
(IV)

wherein

R^{13} and R^{23} each independently represent a hydrogen atom, lower alkyl group, lower alkenyl group, lower alkynyl group, aryl group, aralkyl group or heterocyclic group, wherein the lower alkyl group, lower alkenyl group, lower alkynyl group, aryl group, alkyl group and heterocyclic group may have 1 to 5 substitutents selected from the group consisting of carboxyl groups, carbamoyl groups, sulfo groups, amino groups, cyano groups, mono-lower alkylamino group, di-lower alkylamino group, hydroxyl groups and balogen atoms, or a group of the formula —Y—R^3, wherein Y represents a carbonyl group,

thiocarbonyl group or sulfonyl group, and R^3 represents a hydrogen atom, lower alkyl group, cycloalkyl group, cycloalkylalkyl group, aryl group, aralkyl group, lower alkoxy group, hydrazino group, amino group, arylamino group, carbamoyl group or heterocyclic group, wherein the lower alkyl group, cycloalkyl group, cycloalkylalkyl group, aryl group, aralkyl group and heterocyclic group may each have 1 to 4 substituents selected from the group consisting of halogen atoms, optionally protected hydroxyl groups, amino groups, carboxyl groups, carbamoyl groups, cyano groups and lower alkoxycarbonyl groups, and the amino group and carbamoyl group may each be mono- or di-substituted by lower alkyl group(s) optionally substituted by group(s) selected from the group consisting of halogen atoms, hydroxyl groups, amino groups, carboxyl groups, carbamoyl groups and lower alkoxycarbonyl groups; or

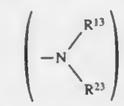
R^{13} and R^{23} combine together with the nitrogen atom to which they bind to form a heterocyclic group, wherein the heterocyclic group may have on the ring lower alkyl group(s) which may be substituted by groups selected from the group consisting of amino groups, hydroxyl groups, carboxyl groups and sulfo groups, wherein when R^{13} and/or R^{23} contain a functional group, each functional group is protected, optionally, removing protective group(s) existing in the product, to prepare a compound represented by formula (Ic)



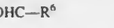
(Ic)

wherein R^{13}, R^{23}, X^1, X^2 and G have the same meanings as defined above;

or either formylating, alkylating, alkenylating, alkynylating, aralkylating, carbamoylating, thiocarbamoylating, alkanoylating or sulfonylating the amino group



of the compound of the above formula (Ic) wherein any functional groups may be protected when R^{13} and R^{23} represent a hydrogen atom, or condensing the above compound with a compound represented by the following formula (V) or a derivative thereof wherein a functional group is protected



(V)

wherein R^6 represents a hydrogen atom or carboxyl group, or a lower alkyl group which may have 1 to 4 substituents selected from the group consisting of amino groups, mono-lower alkylamino groups, di-lower alkylamino group, hydroxyl groups, carboxyl groups and sulfo groups,

and, if necessary, removing the protective groups existing in the product; or reducing the double bonds of the compound of the above formula (Ic) when R^{13} and/or R^{23} contain a double bond, or the compound prepared by condensing the compound of the formula (Ic) with the compound of the formula (V) or the derivative thereof wherein the functional groups are protected, and if necessary removing the protective group(s) existing in the product; and if necessary, converting the resulting compound of the formula (I) into a pharmaceutically acceptable salt.

5,668,272

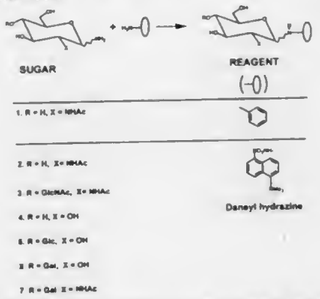
METHOD FOR PRODUCING SYNTHETIC N-LINKED GLYCOCONJUGATES

A. V. Krishna Prasad, Ottawa, and James C. Richards, Nepean, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Jun. 30, 1995, Ser. No. 496,975

Int. Cl.[6] C07H *5/04;5/06;* **C07K** *9/00*

U.S. Cl. 536—55.3 **23 Claims**



1. A method for the synthesis of an N-linked glycoconjugate comprising the single step of reacting a glycosyl-1-amine with a nucleophilic reagent, at conditions which favor nucleophilic substitution, to effect nucleophilic substitution of the 1-amino functional group of the glycosyl-1-amine.

5,668,273

CARBOXYALKYL CELLULOSE ESTERS

John Michael Allen; Alan Kent Wilson, both of Kingsport; Paul Lee Lucas, Gray, and Larry Gerald Curtis, Johnson City, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jan. 29, 1996, Ser. No. 593,781

Int. Cl.[6] C08B *13/00;* **C08L** *1/00*

U.S. Cl. 536—66 **31 Claims**

1. Carboxymethyl cellulose butyrate having a degree of substitution per anhydroglucose unit of carboxymethyl of 0.20 to 0.75, a degree of substitution per anhydroglucose unit of hydroxyl from about 0.10 to 0.70, and a degree of substitution per anhydroglucose unit of butyryl of about 1.50 to 2.70, and having an inherent viscosity of 0.20 to 0.70 dL/g, as measured in a 60/40 (wt./wt.) solution of phenol/tetrachloroethane at 25° C.

5,668,274

SULFATED GLYCOSAMINOGLYCANOID DERIVATIVES OF THE DERMATAN SULFATE AND CHONDROITIN SULFATE TYPE

Maurice Petitou, Paris, France, and Constant Adriaan Anton van Boeckel, Oss, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

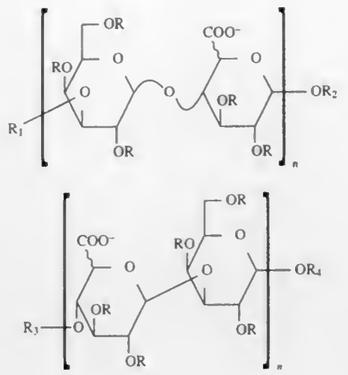
Continuation of Ser. No. 333,448, Nov. 2, 1994, Pat. No. 5,529,985, which is a division of Ser. No. 919,685, Jul. 27, 1992, Pat. No. 5,382,570, which is a continuation-in-part of Ser. No. 795,595, Nov. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 690,035, Apr. 23, 1991, abandoned. This application May 23, 1996, Ser. No. 652,188

Int. Cl.[6] C07H *1/00;13/12*

U.S. Cl. 536—124 **1 Claim**

1. A process for the preparation of a sulfated compound derived from a glycosaminoglycan, comprising coupling of protected monosaccharides to give protected disaccharides, which are optionally further coupled to tri- to hexasaccharides, after which the protective groups are partially or completely cleaved and free hydroxy groups are sulfated, after which, if present, the remaining protective groups are cleaved, and the compound obtained is optionally converted into a pharmaceutically acceptable salt,

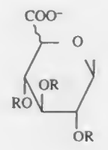
wherein said compound obtained by the foregoing process comprises a disaccharide unit having the formula I or II



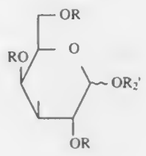
I

II

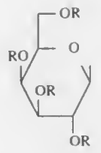
in which the twitched lines denote an α or β bond, n is the number 1 to 4, each of the groups R are independently selected from the group consisting of alkyl and sulfate; R_1 has the same meaning as R or is



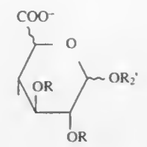
wherein the twitched line and R have the previously given meanings; R_2 is selected from the group consisting alkyl, aryl, aralkyl and β-



wherein the twitched line and R have the previously given meanings and R_2' is selected from the group alkyl, aryl and aralkyl; R_3 has the same meaning as R or is



wherein R has the previously given meaning, and R_4 is selected from the group consisting of alkyl, aryl aralkyl and β-



wherein the twitched lines, R, and R_2' have the previously given meanings; and the charged moieties are compensated by counterions.

5,668,275

PROCESS FOR BLEACHING ALKYL POLYGLYCOSIDES

Jürgen Grützke, Bochum, and Stefan Schmidt, Haltern, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 7, 1995, Ser. No. 525,345

Claims priority, application Germany, Sep. 7, 1994, 44 31 852.9

Int. Cl.[6] C07H *1/06;15/04*

U.S. Cl. 536—127 **8 Claims**

1. A process for bleaching alkyl polyglycosides having C_8- to C_{20}-alkyl groups in aqueous solution using a bleaching agent comprising bleaching in a tubular reactor, an alkyl polyglylcoside having C_{8-20} alkyl groups in an aqueous solution with a bleaching agent.

5,668,276

HYDROXYGALLIUM PHTHALOCYANINE PROCESSES

Cheng-Kuo Hsiao; Ah-Mee Hor, both of Mississauga; Sandra J. Gardner, Willowdale; Roger E. Gaynor, Oakville, and Jacques Poitras, L'Assomption, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 413,554, Mar. 30, 1995, Pat. No. 5,567,558. This application Jul. 29, 1996, Ser. No. 688,135

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—144 **22 Claims**

1. A process for the preparation of hydroxygallium phthalocyanines Type A, Type B, Type C, or Type D, which comprises contacting Type V hydroxygallium phthalocyanine with an alcohol.

5,668,277

DEPOLYMERIZATION OF POLYAMIDES

Jan A. J. Hendrix, Obbicht; Martin Booij, Munstergeleen, and Yvonne H. Frentzen, Venlo, all of Netherlands, assignors to DSM N.V., Netherlands

Filed Apr. 15, 1996, Ser. No. 632,082

Claims priority, application Belgium, Apr. 14, 1995, 09500347

Int. Cl.[6] C07D *201/12*

U.S. Cl. 540—540 **20 Claims**

1. A process comprising the step of heating at least one polyamide comprising nylon 6 in the presence of ammonia, an amine, or a mixture thereof at a temperature between about 200° C. and about 400° C. and at a pressure between about 0.5 atm and about 5 atm to effect at least partial depolymerization of said polyamide and yield monomeric components of said polyamide.

5,668,278

BICYCLIC PYRAZOLO COMPOUNDS

Uwe Hartfiel; Gabriele Dorfmeister; Helga Franke; Jens Geisler; Gerhard Johann, and Richard Rees, all of Berlin, Germany, assignors to Hoeschst Schering AgrEvo GmbH, Berlin, Germany

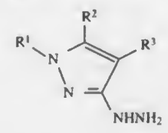
Division of Ser. No. 366,054, Dec. 29, 1994, Pat. No. 5,556,986, which is a continuation of Ser. No. 240,759, Jun. 13, 1994, Pat. No. 5,405,829. This application Jul. 31, 1996, Ser. No. 690,496

Claims priority, application Germany, Nov. 13, 1991, 41 37 872.5; Apr. 15, 1992, 42 12 919.2

Int. Cl.[6] C07D *487/04;498/04;513/04*

U.S. Cl. 544—48 **11 Claims**

1. Compounds of general formula II



(II)

in which

R^1 and R^2 together form the group $—(CH_2)_n—X—$, where X is bound at R^2;

R^3 is hydrogen, chloro, fluoro or iodo;

X is CH_2, O, $S(O)_m$ or NR^9;

R^9 is hydrogen or C_1–C_4-alkyl;

m is 0, 1 or 2; and

n is 2, 3 or 4.

5,668,279

SUBSTITUTED PHTHALAZINONES AS NEUROTENSIN ANTAGONISTS

Prasun K. Chakravarty, Edison; Elizabeth M. Naylor, Scotch Plains, and Anna Chen, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

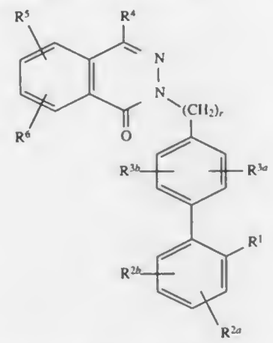
PCT No. PCT/US93/10386, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/10151, PCT Pub. Date May 11, 1994

Continuation of Ser. No. 970,358, Nov. 2, 1992, abandoned. This PCT application Oct. 28, 1993, Ser. No. 411,655

Int. Cl.[6] C07D *237/32;401/04;409/04;413/10*

U.S. Cl. 544—119 **6 Claims**

1. A compound of structural formula I:



or a pharmaceutically acceptable salt thereof, wherein:

R^1 is:

(a) $—NHSO_2NHCOR^9$,

(b) $—NHCONHSO_2R^9$,

(c) $—SO_2NHR^9$,

(d) $—SO_2NHCOR^9$,

(e) $—SO_2NHCONR^7R^9$, or

(f) $—SO_2NHCOOR^9$;

R^{2a} and R^{2b} are each independently:

(a) H,

(b) Cl, Br, I, F,

(c) CF_3,

(d) C_1–C_6-alkyl,

(e) C_1–C_6-alkoxy,

(f) C_1–C_6-alkyl-S—,

(g) C_2–C_6-alkenyl,

(h) C_2–C_6-alkynyl,

(i) C_3–C_7-cycloalkyl,

(j) aryl, where aryl is as defined in R^4 (c) below, or

(k) aryl-C_1–C_6-alkyl, where aryl is as defined in R^4 (c) below;

R^{3a} is:

(a) H,

(b) Cl, Br, I, F,

(c) C_1–C_6-alkyl,

(d) C_1–C_6-alkoxy, or

(e) C_1–C_6-alkoxyalkyl;

R^{3b} is:

(a) H,

(b) Cl, Br, I, F,

(c) C_1–C_6-alkyl,

(d) C_3–C_7-cycloalkyl,

(e) C_1–C_6-alkoxy,

(f) CF_3,

(g) C_2–C_6-alkenyl, or

(h) C_2–C_6-alkynyl;

R^4 is:

(a) H,

(b) (C_1–C_6)-alkyl, optionally substituted with a substituent selected from the group consisting of: C_1–C_4-alkoxy, aryl, where aryl is as defined in R^4 (c) below, heteroaryl, where heteroaryl is as defined below, $—CON(R^{10})_2$, $—N(R^{10})_2$, —O—COR^{10} and $—COR^{10}$ or

(c) aryl, wherein aryl is phenyl or naphthyl, either unsubstituted or substituted with one or two substituents selected from the group consisting of Cl, F, Br, I, $N(R^7)_2$, NR^7COOR^9, $NR^7CONR^7R^9$, CO_2R^7, $CONR^7R^9$, C_1–C_4-alkyl, $—(C_1$–$C_4)$alkyl-Y, NO_2, OH, CF_3, C_1–C_4-alkoxy, $—S(O)_x—(C_1$–$C_4)$alkyl, and $—(C_1$–$C_4)$alkyl-N-$(CH_2—CH_2)_2Q$,

(d) heteroaryl, wherein heteroaryl is defined as pyridyl, and wherein the heteroaryl is unsubstimted or substituted with one or two substituents selected from the group consisting of: —OH, —SH, $—C_1$–C_4-alkyl, $—C_1$–C_4-alkoxy, $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $—CO_2—(C_1$–C_4-alkyl), $—NH_2$, $—NH(C_1$–C_4-alkyl) and $—N(C_1$–C_4-alkyl)$_2$, NR^7COOR^9 and $NR^7CONR^7R^9$,

(e) C_3–C_7-cycloalkyl, or

(f) —COaryl, where aryl is as defined in R^4 (c) above;

Q is:

a single bond, $—CH_2—$, O, NR^7, or $S(O)_x$;

Y is:

$COOR^9$, CN, NR^7COOR^9 or $CONR^7R^9$;

R^5 and R^6 are independently:

(a) H,

(b) C_1–C_6-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of: —OH, -guanidino, C_1–C_4-alkoxy, $—N(R^7)_2$, $COOR^7$, $—CON(R^7)_2$, —O—COR^7, -aryl, where aryl is as defined in R^4 (c) above, -heteroaryl, where heteroaryl is as defined in R^4 (d) above, $—S(O)_x—R^9$, -tetrazol-5-yl, $—CONHSO_2R^9$,$—SO_2NH$-heteroaryl, where heteroaryl is as defined in R^4 (d) above, $—SO_2NHCOR^9$, $—PO(OR^7)_2$, $—PO(OR^8)R^7$, $—SO_2NH—CN$, $—NR^8COOR^9$, morpholino, N-(C_1–C_6-alkyl)-piperazinyl, and $—COR^7$,

(c) —CO-aryl, where aryl is as defined in R^4(c) above,

(d) $—C_3$–C_7-cycloalkyl,

(e) Cl, Br, I, F,

(f) —OH,

(g) $—OR^9$,

(h) $—C_1$–C_4-Perfluoroalkyl,

(i) $—S(O)_x—R^9$,

(j) $—COOR^7$,

(k) $—SO_3H$,

(l) $—NR^7R^9$,

(m) $—NR^7COR^9$,

(n) $—NR^7COOR^9$,

(o) $—SO_2NR^7R^8$,

(p) $—NO_2$,

(q) $—NR^7SO_2R^9$,

(r) $—NR^7CONR^7R^9$,

(s) $—OCONR^9R^7$,

(t) -aryl, where aryl is as defined in R^4(c) above,

(u) $—NHSO_2CF_3$,

(v) $—SO_2NH$-heteroaryl, where heteroaryl is as defined in R^4(d) above,

(w) $—SO_2NHCOR^9$,

(x) $—CONHSO_2R^9$,

(y) $—PO(OR^7)_2$,

(z) $—PO(OR^8)R^7$,

(aa) -tetrazol-5-yl,

(bb) —CONH(tetrazol -5-yl),

(cc) $—COR^7$,

(dd) $—SO_2NHCN$,

(ee) —CO-heteroaryl, where heteroaryl is as defined in R4(d) above,

(ff) $—NR^7SO_2NR^9R^7$,

(gg) $—N[CH_2CH_2]_2NR^{11}$,

(hh) $—N[CH_2CH_2]_2O$, or

(ii) -heteroaryl, where heteroaryl is as defined in R4(d) above;

x is:

0, 1, or 2,

$R^7$is:

H, C_1–C_5-alkyl, aryl, or $—CH_2$-aryl, where aryl is as defined in R^4(c) above;

R^8 is:

H, or C_1–C_4-alkyl;

R^9 is:

(a) aryl, where aryl is as defined in R^4(c) above,

(b) heteroaryl, where heteroaryl is as defined in R^4(d) above,

(c) C_3–C_7-cycloalkyl,

(d) C_1–C_8-alkyl, wherein alkyl is unsubstituted or substituted with one or two substituents selected from the group consisting of: aryl, where aryl is as defined in R^4(c) above, heteroaryl, where heteroaryl is as defined in R^4(d) above, —OH, —SH, C_1–C_4-alkyl, $—O(C_1$–C_4-alkyl), $—S(C_1$–C_4-alkyl), $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $—CO_2—C_1$–C_4-alkyl, $—NH_2$, $—NR^7CO_2R^{10}$, $—NH(C_1$–C_4-alkyl), $—N(C_1$–C_4-alkyl)$_2$, $—PO_3H_2$, $—PO(OH)(O—C_1$–C_4-alkyl), $—PO(OR^8)R^7$, $—NR^7COR^{10}$, $—CONR^7R^{10}$, $—OCONR^7R^{10}$, $—SO_2NR^7R^{10}$, $—NR^7SO_2R^{10}$, $—N(CH_2—CH_2)_2Q$ and $—CON(CH_2—CH_2)_2Q$ or

(e) perfluoro-C_1–C_4-alkyl;

R^{10} is:

(a) aryl, where aryl is as defined in R^4(c) above,

(b) heteroaryl, where heteroaryl is as defined in R^4(d) above,

(c) C_1–C_6-alkyl, wherein alkyl is unsubstimted or substituted with a substituent selected from the group consisting of: aryl, where aryl is as defined in R^4(c) above, heteroaryl, where heteroaryl is as defined in R^4(d) above, —OH,—NH_2, $—NH(C_1$–C_4-alkyl), $—N(C_1$–C_4-alkyl)$_2$, $—CO_2R^7$, Cl, Br, F, I, and $—CF_3$, or

(d) perfluoro-C_1–C_4-alkyl;

R^{11} is:

C_1–C_6-alkyl, C_3–C_7-cycloalkyl, $—CONR^7R^8$, heteroaryl, where heteroaryl is as defined in R^4(d) above, phenyl, —CO—C_3–C_7-cycloalkyl, or —CO—C_1–C_6-alkyl; and

r is:

1 or2.

5,668,280

CHEMICAL SYNTHESIS OF A CHIRAL OXAZINONE

Ramon John Alabaster, Puckeridge; Ian Frank Cottrell, Hertford; Andrew William Gibson, Welwyn Garden City, and Simon Adrian Johnson, Bishops Stortford, all of England, assignors to Merck Sharp & Dohme Limited, Hoddessdon, England

Filed May 23, 1996, Ser. No. 652,081

Claims priority, application United Kingdom, Jun. 1, 1995, 9511031

Int. Cl.[6] C07D *265/32*

U.S. Cl. 544—173 **11 Claims**

1. A process for the preparation of substantially pure N-benzyl-3-(S)-(4-fluorophenyl)-1,4-oxazin-2-one which comprises:

(i) contacting racemic N-benzyl-3-(4-fluorophenyl)-1,4-oxazin-2-one with (−)-3-bromocamphor-8-sulphonic acid (hereinafter referred to as (−)-3-BCS) in the presence of a racemising agent;

(ii) collecting the resultant crystalline (−)-3-BCS salt of N-benzyl- 3-(S)-(4-fluorophenyl)-1,4-oxazin-2-one; and

(iii) liberating the free base of N-benzyl-3-(S)-(4-fluorophenyl)-1,4-oxazin-2-one by treatment of the (−)-3-BCS salt collected in step (ii) with aqueous base.

5,668,281

PROCESS FOR PREPARING TERTIARY AMINE-N-OXIDE

Shinkichi Shimizu; Nanao Watanabe, and Hideki Kuranishi, all of Osaka, Japan, assignors to Koei Chemical Co., Ltd., Osaka, Japan

Filed Jan. 19, 1996, Ser. No. 588,881

Claims priority, application Japan, Jan. 23, 1995, 7-027488

Int. Cl.[6] C07D *241/00*

U.S. Cl. 544—336 **9 Claims**

1. A process for preparing a tertiary amine-N-oxide which comprises reacting a tertiary amine with a peroxide in the presence of a catalyst comprising a mixed oxide of silicon and titanium wherein the atomic ratio of silicon to titanium, Si/Ti, is from 10 to 200.

5,668,282

4,5-CYCLICIMIDAZO[1,5-A]QUINOXALINES

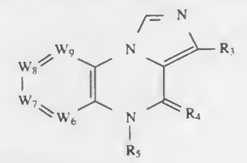
Ruth E. TenBrink, Richland, Mich., assignor to Pharmacia & Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 166,037, Dec. 13, 1993, Pat. No. 5,541,324, which is a continuation-in-part of Ser. No. 843,650, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 715,930, Jun. 14, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,719

Int. Cl.[6] C07D *241/36;471/06*

U.S. Cl. 544—343 **8 Claims**

1. Imidazo[1,5-a]quinoxalines of formula (I)



(I)

where R_3 is

(A) $—COOR_{3\text{-}1}$ where $R_{3\text{-}1}$ is

(1) —H,

(2) C_1–C_9 alkyl,

(3) C_3–C_7 cycloalkyl,

(4) $—(CH_2)_{n6}—O—R_{3\text{-}3}$ where n_6 is 2 thru 4 and $R_{3\text{-}3}$ is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,

(5) $—(CH_2)_{n6}—NR_{3\text{-}4}R_{3\text{-}5}$ where $R_{3\text{-}4}$ is —H, C_1–C_4 alkyl, C_3–C_7 cycloalkyl or —ϕ, $R_{3\text{-}5}$ is —H, C_1–C_6 alkyl or

C_3–C_7 cycloalkyl and where R_{3-4} and R_{3-5} are taken together with the attached nitrogen atom to fore a heterocyclic ring

$$—N^*—(CHR_{3-8})_{nA}—(CH_2)_{n1}—R_{3-6}—(CH_2)_{n2}—(C^*HR_{3-9})_{nB}—$$

$$—N^*—(CH_2)_{n1}—(CHR_{3-8})_{nA}—R_{3-6}—(CHR_{3-9})_{nB}—(C^*H_2)_{n2}—$$

where R_{3-8} is —H or C_1–C_3 alkyl, n_A is 1 or 2, n_1 is 0 thru 2, n_2 is 0 thru 2, R_{3-9} is —H or C_1–C_3 alkyl, n_B is 1 or 2, where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, with the proviso that the ring not contain more than 5 atom, and where R_{3-6} is

—O—,
—S—,
—CO—,
—$CR_{3-61}R_{3-62}$ where R_{3-61} and R_{3-62} are the same or different and are —H or C_1–C_3 alkyl,
—NR_{3-7} where R_{3-7} is
—H,
C_1–C_4 alkyl,
C_3–C_7 cycloalkyl,
—$(CH_2)_{n7}$—ϕ where n_7 is 0 thru 4 and ϕ is optionally substituted with 1, 2 or 3 R_{3-2} where R3-2 is selected from the group consisting of
—F,
—Cl,
—Br,
—I,
—CN,
—NO_2,
—O—CO—$R_{3,2a}$ where $R_{3,2a}$ is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,
—$(CH_2)_{n30}$—CF_3 where n_{30} is 0 thru 3,
—O—CF_3,
C_1—C_6 alkyl,
C_3–C_7 cycloalkyl,
—CH_2—(C_3–C_7 cycloalkyl),
—$CH_2CH(CF_3)CH_3$,
—$C(OH)(CH_2OH)(CH_2CH_3)$,
—$C(OH)(CH_2OH)CH_3$,
—$C(CH_3)(OH)(CH_2OH)$,
—$CH(OH)(CH_2OH)$,
—$CH(OH)(CH_3)$,
—CH_2CH_2OH,
—$C(CH_3)_2(CH_2OH)$,
—$CH(CH_2OH)_2$,
—$C(CH_2$—$OH)_3$,
—$C(CH_3)_2$—OH,
—$C(CH_3)_2$—F,
—NR_{3-2b}—CO—R_{3-2c} where R_{3-2b} is —H or C_1–C_4 alkyl, and where R_{3-2c} is
—H,
C_1–C_6 alkyl,
—ϕ,
—CH_2ϕ,
—$(CH_2)_{n8}$—OR_{3-2d} where n_8 is 0 thru 3 and R_{3-2d} is —H or C_1–C_4 alkyl,
—$(CH_2)_{n21}$—OH where n_{21} is 3 thru 4,
—$(CH_2)_{n22}$—ϕ where n_{22} is 0 thru 3 and where —ϕ is optionally substituted with —F, —Cl, —Br, —I or C_1–C_4 alkyl,
—$(CH_2)_{n8}$—$N(R_{3\,2d})_2$ where n_8 and R_{3-2d} are as defined above and where the two R_{3-2d}'s may be taken together with the attached nitrogen atom to form a ring selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 1-piperazinyl, 4-morpholinyl, and 1-(4-methyl)piperazinyl,
—S—R_{3-2d} where R_{3-2d} is as defined above,
—SO_2—$N(R_{3-2e})_2$ where R_{3-2e} is —H or C_1–C_4 alkyl,
—CO—$N(R_{3-2e})_2$ where R_{3-2e} is as defined above and where the two R_{3-2e}'s may be taken together with the attached nitrogen atom to from a ring selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 1-piperazinyl, 4-morpholinyl, and 1-(4-methyl)piperazinyl,
—$NR_{3-2f}R_{3-2g}$ where R_{3-2f} and R_{3-2g} are the same or different and are —H or C_1–C_4 alkyl and where R_{3-2f} and R_{3-2g} may be taken together with the attached nitrogen atom to form a ring, which may contain an additional heteroatom, selected from the group consisting of piperazine, morphine, pyrrolidine and piperidine,

with the proviso that when R_{3-6} is —O—, —S— or —NR_{3-7}—, n_1 and n_2 are 1 or 2,

(6) aryl, where aryl is
—ϕ optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1-naphthyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-naphthyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-imidazolyl optionally substituted with one or two R_{3-2} and R_{3-12} where R_{3-2} and R_{3-12} are as defined above,
4-imidazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above and where R_{3-12} is —H, C_1–C_4 alkyl or —CHO,
3-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
4-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
5-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
2-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
3-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
1,2,4-oxadiazol-3-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,
1,2,4-oxadiazol-5-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,
1,2,4-thiadiazol-3-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,
1,2,4-thiadiazol-5-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,
1,2,4-triazol-3-yl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
1,2,4-triazol-5-yl optionally substituted with one R_{3-2} where R_{3-12} and R_{3-2} are as defined above,
1,2,3,4-tetrazol-5-yl substituted with R_{3-12} where R_{3-12} is as defined above,
5-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

(B) —CO—$NR_{3-10}R_{3-11}$ where R_{3-10} and R_{3-11} are the same or different and are C_1–C_4 alkyl, C_3–C_7 cycloalkyl or —ϕ.
(C) —CN,
(D) aryl, where aryl is as defined above,
(E) —C≡C—R_{3-1} where R_{3-1} is as defined above,
(F) —CO—R_{3-1} where R_{3-1} is as defined above,
(G) —CS—R_{3-1} where R_{3-1} is as defined above,

(H) —CO—R_{3-13} where R_{3-13} is selected from the group consisting of
1-imidazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1,2,3-triazol-1-yl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1,2,4-triazol-1-yl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
1-tetrazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-thienyl optionally substituted with one or two or two R_{3-2} where R_{3-2} is as defined above,
3-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
2-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
3-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
4-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,
5-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above;

(I) —C^*=N—$C(R_{3-14})_2$—$[C(R_{3-15})_2]_{n23}$—R^*_{3-16} where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring,
where the R_{3-14}'s are the same or different and are —H or C_1–C_3 alkyl,
where n_{23} is 1 thru 3,
where the R_{3-15}'s are the same or different and are —H or C_1–C_3 alkyl,
where R_{3-16} is —O—, —S—, —$C(R_{3-14})_2$—, —NR_{3-12} where R_{3-12} and R_{3-14} are as defined above,
(J) —CH(OH)R_{3-1} where R_{3-1} is as defined above,
(K) —CH_2—O—R_{3-1} where R_{3-1} is as defined above,
(L) —CH_2—$NR_{3-4}R_{3-5}$ where R_{3-4} and R_{3-5} are as defined above;
where R_4 is α—R_{4-1}:β—R_{4-2} where one of R_{4-1} and R_{4-2} is —H and the other of R_{4-1} and R_{4-2} is taken together with R_5 to form a ring of the formula

(R_5 end)—CO—R_{45-1}—$(CH_2)_{n3}$—(R_4 end)

where n_3 is 0 thru 3 and R_{45-1} is
—O—,
—CO—,
—S—,
—CH=CH—,
—$C(R_{3-17})_2$— where the R_{3-17}'s are the same or different and are —H or C_1–C_4 alkyl,
—NR_{45-2} where R_{45-2} is
—H,
C_1–C_6 alkyl,
—$(CH_2)_{n9}$—ϕ where n_9 is 0 thru 4 and —ϕ is optionally substituted with —F, —Cl, —Br, —I or C_1–C_4 alkyl,
—$(CH_2)_{n10}$—$NR_{45-3}R_{45-4}$ where n_{10} is 2 thru 6, where R_{45-3} is
—H,
C_1–C_4 alkyl,
—ϕ and where R_{45-4} is —H or C_1–C_3 alkyl, and

where R_6 is —H,
—F,
—Cl,
—Br,
—I,
—CN,
—NO_2,
—O—CO—R_{6-1} where R_{6-1} is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,
—CF_3,
—O—CF_3,
C_1–C_6 alkyl,
C_3–C_7 cycloalkyl,
—CH_2CH_2OH,
—NR_{6-2}—CO—R_{6-3} where R_{6-2} is —H or C_1–C_4 alkyl, and where R_{6-3} is
—H,
C_1–C_6 alkyl,
—ϕ optionally substituted with —F, —Cl, —Br, —I or C_1–C_4 alkyl, —CH_2—ϕ,
—$(CH_2)_{n24}$—OR_{6-4} where n_{24} is 0 thru 3 and R_{6-4} is C_1–C_4 alkyl,
—$(CH_2)_{n25}$—OH where n_{25} is 2 thru 4,
—$(CH_2)_{n26}$—ϕ where n_{26} is 0 thru 3,
—$(CH_2)_{n24}$—$N(R_{6-4})_2$ where n_{24} and R_{6-4} are as defined above,
—S—R_{6-4} where R_{6-4} is as defined above,
—SO_2—$N(R_{6-5})_2$ where R_{6-5} is —H or C_1–C_4 alkyl,
—CO—$N(R_{6-5})_2$ where R_{6-5} is as defined above,
—CO_2—R_{6-4} where R_{6-4} is as defined above,
—$NR_{6-6}R_{6-7}$ where R_{6-6} and R_{6-7} are the same or different and are —H or C_1–C_4 alkyl and where R_{6-6} and R_{6-7} may be taken together with the attached nitrogen atom to form a ring, which may contain an additional heteroatom, selected from the group consisting of piperazine, morpholine, pyrrolidine and piperidine;
where W_6 is —CR_6= where R_6 is as defined above;
where W_7 is —CR_7= where R_7 is as defined for R_6, the R_6, R_7, R_8 and R_9 may be the same or different;
where W_8 is —CR_8= where R_8 is as defined for R_6, the R_6, R_7, R_8 and R_9 may be the same or different;
where W_9 is —CR_9= where R_9 is as defined for R_6, the R_6, R_7, R_8 and R_9 may be the same or different;
or a pharmaceutically acceptable salt thereof where such exist.

5,668,283

CERTAIN ARYL SUBSTITUTED PYRROLOPYRAZINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

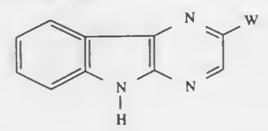
Charles Blum, Guilford, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation-in-part of Ser. No. 436,252, May 12, 1995, Pat. No. 5,606,059, which is a continuation-in-part of Ser. No. 975,409, Nov. 12, 1992, Pat. No. 5,286,860. This application Jun. 7, 1995, Ser. No. 486,595

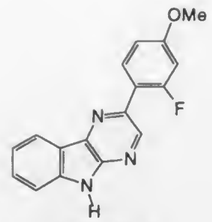
Int. Cl.[6] **C07D** *487/04;471/14;* **A61K** *31/495;31/50*

U.S. Cl. 544—345 **1 Claim**

1. A compound of the formula:



wherein
W is phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl; or



Compound 12

W is phenyl, 2- or 3-thienyl, or 2-, 3-, or 4-pyridyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, or mono- or dialkylamino where each alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms.

5,668,284

CEPHALOSPORIN DERIVATIVES

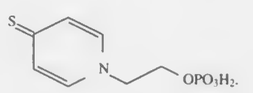
Choung U. Kim, San Carlos, Calif.; Peter F. Misco, Jr., Durham, Conn.; John A. Wichtowski, Deep River, Conn.; Yasutsugu Ueda, Clinton, Conn.; Thomas W. Hudyma, Durham, Conn.; John D. Matiskella, Wallingford, Conn.; Stanley V. D'Andrea, Middletown, Conn.; Shelley E. Hoeft, Middletown, Conn.; Raymond F. Miller, Killingworth, Conn.; Muzammil M. Mansuri, Lexington, Mass., and Joanne J. Bronson, Madison, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Division of Ser. No. 454,058, May 30, 1995, Pat. No. 5,567,698, which is a continuation-in-part of Ser. No. 388,940, Feb. 15, 1995, abandoned. This application May 8, 1996, Ser. No. 644,751

Int. Cl.[6] C07D *211/84;* **C07F** *9/58*

U.S. Cl. 546—24 **3 Claims**

1. A compound having the formula



5,668,285

TOTAL SYNTHESIS OF NORTHEBAINE, NORMOPHINE, NOROXYMORPHONE ENANTIOMERS AND DERIVATIVES VIA N-NOR INTERMEDIATES

Kenner C. Rice, Bethesda, and Amy H. Newman, Silver Spring, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

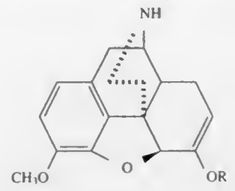
Continuation-in-part of Ser. No. 421,900, Oct. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 925,620, Oct. 31, 1986, abandoned. This application Mar. 12, 1992, Ser. No. 851,672

Int. Cl.[6] C07D *489/02*

U.S. Cl. 546—44 **20 Claims**

1. A method for producing 14-hydroxynorcodeinone of both the natural (–) and unnatural (+) series, wherein the method for producing the unnatural (+) series compound comprises the steps of:

(a) reacting (+)-nordihydrocodeinone with a trialkylorthoformate $CH(OR)_3$, alcohol ROH and phenolic sulfonic acid to produce a first mixture containing compounds of formula (10)



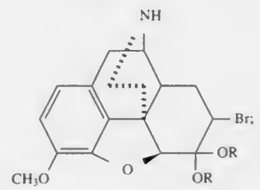
(10)

and its corresponding ketal;

(b) converting all of said corresponding ketal to said compounds of formula (10) by removing said alcohol ROH from said first mixture to form a second mixture;

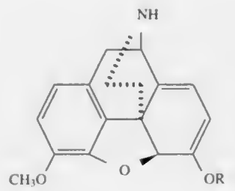
(c) converting said second mixture to a two phase system by adding to said second mixture at least an aqueous base to form a two phase system having an aqueous phase and an immisible organic solvent phase, said compounds of formula (10) dissolving in the organic phase for removal therefrom;

(d) reacting said compounds of formula (10) with a brominating agent to produce compounds of formula (11)



(11)

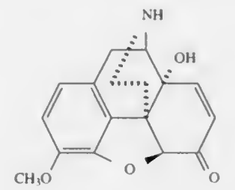
(e) reacting said compounds of formula (11) with a strong base in a polar aprotic solvent to produce compounds of formula (12)



(12)

; and

(f) reacting said compounds of formula (12) with an oxidizing agent to produce the compound of formula (13)



(13)

wherein R is a C_1–C_8 alkyl group.

5,668,286

OXAZOLIDINONE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hiroyoshi Yamada, Tsukuba; Kiyotaka Munesada, Shimotsuma, and Mikio Taniguchi, Tsukuba, all of Japan, assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

PCT No. PCT/US95/02972, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/25106, PCT Pub. Date Sep. 21, 1995

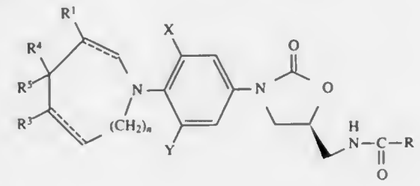
PCT Filed Mar. 14, 1995, Ser. No. 714,117

Claims priority, application Japan, Mar. 15, 1994, 6-043949; Jun. 28, 1994, 6-146565; Sep. 29, 1994, 6-235167

Int. Cl.[6] A61K *31/445;* **C07D** *211/46*

U.S. Cl. 546—209 **5 Claims**

1. An oxazolidinone derivative represented by the general formula:



wherein

R is

(a) hydrogen atom,
(b) C_1–C_8 alkyl,
(c) C_3–C_6 cycloalkyl,
(d) amino,
(e) C_1–C_8 alkylamino,
(f) C_1–C_8 dialkylamino,
(g) C_1–C_8 alkoxy, or
(h) C_1–C_8 halogenoalkyl;

R^1 and R^3 are each and independently

(a) hydrogen atom,
(b) halogen atom,
(c) C_1–C_8 alkyl,
(d) C_3–C_6 cycloalkyl,
(e) $—(CH_2)_m—OR^{11}$, or
(f) $—C(=O)—R^{41}$;

X and Y are each and independently

(a) hydrogen atom, or
(b) halogen atom;

R^4 and R^5 are each and independently

(a) hydrogen atom,
(b) C_1–C_8 alkyl,
(c) C_1–C_8 alkoxy,
(d) C_1–C_8 alkylthio,
(e) $—(CH_2)_m—OR^{51}$,
(f) $—O—(CH_2)_m—OR^{51}$,
(g) $—NR^{42}R^{52}$,
(h) $—N=CH—NR^{44}R^{55}$,
(i) $—C(=O)—NR^{42}R^{52}$, or
(j) $—(CH_2)_m—C(=A)—R^{41}$,

or they may combine together to form

(k) =O,
(l) $=NR^{43}$,
(m) =S,
(n) $=CR^{44}R^{54}$, or
(o) an optionally substituted, unsaturated or saturated 5- or 6-membered hetero ring having 1–3 hetero atoms selected from the group consisting of a nitrogen atom, an oxygen atom and a sulfur atom;

R^{11} and R^{12} are each and independently

(a) hydrogen atom,
(b) C_1–C_8 alkyl, or
(c) methoxymethyl;

R^{41} is

(a) hydrogen atom,
(b) $—(CH_2)_m—OH$,
(c) C_1–C_8 alkyl,
(d) C_1–C_8 alkoxy,
(e) $—O—CH_2—O—C(=O)—R^{11}$, or
(f) $—(CH_2)_m—C(=O)—OR^{11}$;

R^{42} and R^{52} are each and independently

(a) hydrogen atom,
(b) $—(CH_2)_m—OR^{11}$,
(c) C_1–C_8 alkyl,
(d) $—C(=O)—R^{41}$,
(e) $—C(=O)—NR^{11}R^{12}$,
(f) $—(CH_2)_p$-phenyl,
(g) thiazol-2-yl,

or they may combine together to form a pyrrolidino group, a piperidino group, a piperazino group, a morpholino group, or a thiomorpholino group, each of which may be substituted by C_1–C_8 alkyl or $—(CH_2)_m—OH$;

R^{43} is

(a) hydrogen atom,
(b) $—OR^{51}$,
(c) C_1–C_8 alkyl,
(d) C_1–C_8 alkoxy,
(e) $—(CH_2)_p$-phenyl,
(f) $—NR^{42}R^{52}$,
(g) $—NH—C(=NH)—NH_2$,
(h) [1,2,4]triazol-4-yl, or
(i) cyano;

R^{44} and R^{54} are each and independently

(a) hydrogen atom,
(b) C_1–C_8 alkyl,
(c) $—C(=O)—R^{41}$, or
(d) $—(CH_2)_p$-phenyl;

R^{51} is

(a) hydrogen atom,
(b) C_1–C_8 alkyl,
(c) C_1–C_8 alkyl substituted by one or more hydroxy,
(d) C_2–C_8 alkenyl,
(e) C_1–C_8 halogenoalkyl,
(f) $—(CH_2)_m—OR^{11}$,
(g) $—(CH_2)_m—C(=O)—R^{41}$,
(h) $—C(=O)—(CH_2)_m—OR^{44}$, or
(i) tosyl;

A is

(a) oxygen atom, or
(b) ethyleneketal;

⎓ is a double bond or a single bond;

m's are each and independently 0, 1 or 2;

n is 0 or 1;

p's are each and independently 1, 2, 3 or 4;

and C_1–C_8 alkyl, in each of the above definitions, may be each and independently substituted by one or more substituents selected from the group consisting of a halogen atom, a hydroxy group, C_1–C_8 alkoxy group, C_1–C_8 acyloxy group, an amino group, C_1–C_8 alkylamino group, C_1–C_8 dialkylamino group, —CN group and a carboxyl group,

or a pharmaceutically acceptable salt thereof.

5,668,287

METHOD FOR THE PREPARATION OF 3-AMINO-2-CHLORO-4-METHYLPYRIDINES

Karl G. Grozinger, Ridgefield; Karl D. Hargrave, Brookfield, and Julian Adams, Ridgefield, all of Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 308,042, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 187,574, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 714,549, Jun. 11, 1991, abandoned. This application Aug. 14, 1995, Ser. No. 514,648

Int. Cl.[6] C07D *213/02*

U.S. Cl. 546—250 **5 Claims**

1. A process for the preparation of 3-amino-2-chloro-4-methylpyridine, which comprises the steps of:

a) reacting ethyl acetoacetate with cyanoacetamide and a base, in the presence of an organic solvent, at a temperature of from

60° C. to 80° C., for 1 to 4 hours, to produce 3-cyano-2,6-dihydro-4-methylpyridine;

b) reacting the 3-cyano-2,6-dihydro-4-methylpyridine produced in a) with a chlorinating agent which is selected from the group consisting of phenylphosphonic dichloride and phosphorous oxychloride, at a temperature of 110° C. to 180° C., for 6 to 24 hours, to produce 3-cyano-2,6-dichloro-4-methylpyridine;

c) hydrogenating the 3-cyano-2,6-dichloro-4-methylpyridine produced in b) in the presence of an organic solvent, with an hydrogenation catalyst selected from the group consisting of palladium (II) chloride and 10% Pd/C, at 50 to 150 psi, at a temperature of from 20° C. to 100° C., for 6 to 24 hours, to produce 3-cyano-4-methylpyridine;

d) hydrolyzing the 3-cyano-4-methylpyridine produced in c), with a strongly anionic ion exchange resin or one equivalent of a base or an acid, at a temperature of 60° C. to 100° C., for 1 to 4 hours, to produce 4-methyl-3-pyridinecarboxamide;

e) reacting the 4-methyl-3-pyridinecarboxamide produced in d) with a strong base and a halide selected from bromine and chlorine (to produce the hypobromite or hypochlorite), at a temperature of from 0° C. to 85° C., for 1 to 4 hours, to produce 3-amino4-methylpyridine;

f) contacting the 3-amino-4-methylpyridine produced in e) with chlorine gas, at a pH of 0.01 to 2, at a temperature of 5° C. to 30° C. for 0.5 to 2 hours, to produce 3-amino-2-chloro-4-methylpyridine.

5,668,288

POLYESTER IONOMERS FOR IMPLANT FABRICATION

Robson F. Storey, Hattiesburg, Miss.; Z. David Deng, Carmel, Ind.; Todd P. Glancy, Fairmount, Ind., and Dale R. Peterson, Carmel, Ind., assignors to DePuy Orthopaedics, Inc., Warsaw, Ind.

Filed Apr. 16, 1996, Ser. No. 633,120
Int. Cl.[6] C07D *213/22*

U.S. Cl. 546—257 **20 Claims**

I. A non-toxic salt of a biodegradable carboxy-terminated polyester of the general formula RO~PE~COOH or HOOC~PE~COOH wherein R is hydrogen or C_1–C_4 alkyl and ~PE~ is a divalent residue of a polyester comprising a homopolymer, copolymer or terpolymer of biocompatible hydroxy acids or a copolymer of biocompatible dihydric alcohols and biocompatible dicarboxylic acids.

5,668,289

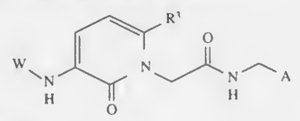
PYRIDINONE THROMBIN INHIBITORS

Philip E. Sanderson, Philadelphia; Adel M. Naylor-Olsen; Dona L. Dyer, both of Lansdale; Joseph P. Vacca, Telford; Richard C. A. Isaacs, Harleysville; Bruce D. Dorsey, Maple Glen, and Mark E. Fraley, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 24, 1996, Ser. No. 669,189
Int. Cl.[6] C07D *211/86;* **A61K** *31/44*

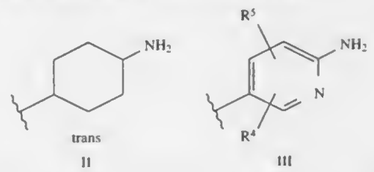
U.S. Cl. 546—293 **17 Claims**

I. A compound having the formula:



I

wherein
W is
R^1,
R^1OCO,
R^1CO,
R^1SO_2,
$(R^1)_m(CH_2)_nNHqCO$,
where n is 0–4, m is 1 or 2, and q is 0 or 1, with the proviso that where n is 1–4, q is 1 and m is 1, and where n is 0, m is 1 or 2, and q is 0 or 1, and where n is 0, m is 2 and q is 0, R^1 can be the same or different:
R^1 is
$R^2(CH_2)_p$, where n is 0–4,
$(R^2)(OR^2)CH(CH_2)_p$, where p is 1–4,
$(R^2)_2CH(CH_2)_n$, where n is 0–4 and R^2 can be the same or different, and wherein $(R^2)_2$ can also be a ring substituent on CH represented by C_{3-7} cycloalkyl, C_{7-12} bicyclic alkyl, and
$R^2O(CH_2)_p$, wherein p is 1–4;
R^2 is
hydrogen,
phenyl, unsubstituted or substituted with one or more of C_{1-4} linear or branched alkyl, C_{1-4} linear or branched alkoxy, halogen, trifluoromethyl, hydroxy, COOH, or $CONH_2$,
naphthyl,
biphenyl,
$COOR^6$,
C_{1-4} linear or branched alkyl, C_{3-7} cycloalkyl, or
C_{7-12} bicyclic alkyl;
R^3 is
hydrogen,
C_{1-4} linear or branched alkyl,
C_{3-7} cycloalkyl, or
trifluoromethyl;
A is chosen from one of the following Radicals:



trans

II III

wherein R^4 and R^5 are independently H, C_{1-4} linear or branched alkyl or alkoxy; C_3–C_7 cycloalkyl; halogen; or trifluoromethyl;
Y is
hydrogen,
hydroxy, or
CN;
R^6 is
hydrogen, or
C_{1-4} linear or branched alkyl.
and pharmaceutically acceptable salts thereof.

5,668,290

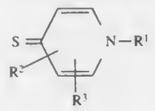
SUBSTITUTED 4-THIO PYRIDONES

Joanne J. Bronson, Madison; Stanley V. D'Andrea; Shelley E. Hoeft, both of Middletown; John D. Matiskella, Wallingford; Peter F. Misco, Jr., Durham; Bing Yu Luh, Killingworth; Dane M. Springer, Madison; Yasutsugu Ueda, Clinton, and John A. Wichtowski, Deep River, all of Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Division of Ser. No. 427,778, Apr. 25, 1995, Pat. No. 5,620,969. This application Aug. 23, 1996, Ser. No. 697,384
Int. Cl.[6] C07D *213/44*

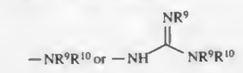
U.S. Cl. 546—298 **2 Claims**

I. A compound of the formula



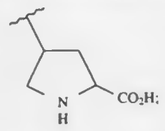
wherein R^1 is selected from the group consisting of

(a) a C_2–C_{10} alkyl group substituted by a carboxyl group and a group of the formula



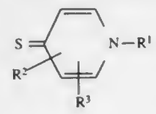
in which R^9 and R^{10} are each independently hydrogen or C_1–C_6 alkyl, said C_2–C_{10} alkyl group being optionally interrupted by one or more nitrogen atoms or carbonyl groups; and

(b) a heterocyclic amino acid group of the formula

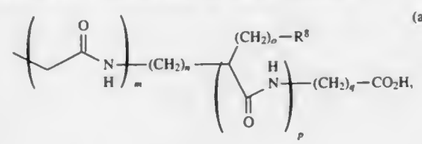


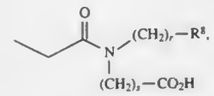
R^2 and R^3 are each independently hydrogen, C_1–C_6 alkyl or amino(C_1–C_6)alkyl; or a pharmaceutically acceptable salt thereof.

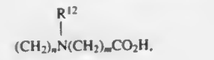
2. A compound of the formula

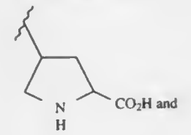


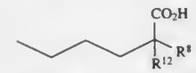
wherein R^1 is selected from the group consisting of

(a)


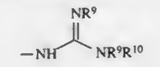
(b)


(c)


(d)


(e)


wherein R^8 is NR^9R^{10} or



in which R^9 and R^{10} are each independently hydrogen or C_1–C_6 alkyl; m is 0 or 1; n is as defined above; o is 0 or an integer of from 1 to 4; p is 0 or 1; q is 0 or 1, with the proviso that q is 0 only when p is 0; r and s each represent an integer of from 1 to 4; R^{12} is C_1–C_6 alkyl; and R^2 and R^3 are each independently hydrogen, C_1–C_6 alkyl or amino(C_1–C_6)alkyl; or a pharmaceutically acceptable salt thereof.

5,668,291

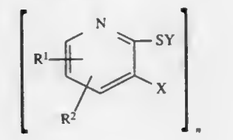
ARYLTHIO COMPOUNDS

John Michael Domagala, Canton; Edward Faith Elslager, Ann Arbor, and Rocco Dean Gogliotti, Pinckney, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

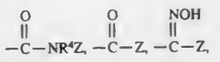
Division of Ser. No. 446,917, Jun. 1, 1995, which is a continuation-in-part of Ser. No. 286,816, Aug. 5, 1994, Pat. No. 5,463,122. This application Jun. 7, 1995, Ser. No. 474,875
Int. Cl.[6] C07D *213/56*

U.S. Cl. 546—316 **11 Claims**

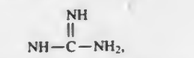
I. A compound of the formula



wherein:
n is 1 or 2;
X is



or SO_2NR^4Z;
Y is hydrogen or SZ when n is 1, and is a single bond when n is 2;
Z is hydrogen, halo, C_1–C_6 alkyl, COC_1–C_6 alkyl, C_3–C_6 cycloalkyl-$(CR^5R^6)_m$—, phenyl-$(CR^5R^6)_m$, or Het—$(CR^5R^6)_m$—;
R^1 and R^2 independently are hydrogen, halo, C_1–C_6 alkyl, O—C_1–C_6 alkyl, C_3–C_6 cycloalkyl, hydroxy, cyano, phenyl-$(CR^5R^6)_m$—, Het—$(CR^5R^6)_m$, NR^3R^4, NR^3COR^4, CO_2R^3, $CONR^3R^4$, $S(O)_mR^3$, $S(O)_mNR^3R^4$, COR^3, or taken together are oxo (O═) or methylene dioxy (—O—CH_2—O);
m is 0, 1, or 2;
R^3 and R^4 independently are hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl-$(CR^5R^6)_m$—, Het—$(CR^5R^6)_m$—;
R^5 and R^6 independently are hydrogen, C_1–C_6 alkyl, hydroxy, COOH, amino, or cyano;
wherein the foregoing alkyl, cycloalkyl, phenyl, and Het groups may optionally be substituted with from 1 to 3 groups selected from halo, C_1–C_6 alkyl, C_1–C_6 alkoxy, trifluoromethyl, hydroxy, cyano, nitro, NR^3R^4, NR^3COR^4, CO_2R^3,



$CONR^3R^4$, $PO_4(R^3)_3$, $S(O)_mNR^3R^4$, and COR^3, where m, R^3, and R^4 are as defined above;
and the pharmaceutically acceptable salts and solvates thereof.

5,668,292

USE OF PLANT FATTY ACYL HYDROXYLASES TO PRODUCE HYDROXYLATED FATTY ACIDS AND DERIVATIVES IN PLANTS

Chris Somerville, Portola Valley, Calif., and Frank van de Loo, Lexington, Ky., assignors to Carnegie Institution of Washington, Washington, D.C.

Filed Sep. 26, 1994, Ser. No. 314,596
Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82*

U.S. Cl. 800—205 **14 Claims**

I. A seed of a transgenic plant, wherein said transgenic plant has integrated in its genome a DNA construct encoding oleate-12 hydroxylase as shown in SEQ ID NO:40, and wherein said DNA construct encoding oleate-12 hydroxylase is transcribed and translated to produce an increased percentage of hydroxylated fatty

acids in said seed as compared to a seed of said plant not containing said DNA construct.

5,668,293

CATALYST AND A BENZENE HYDROGENATION PROCESS USING SAID CATALYST

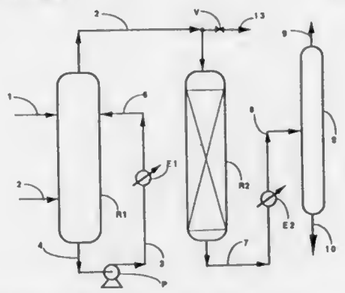
Alain Forestiere, Vernaison; Pierre Yout, Vienne, and Henri Delhomme, Sainte Foy les Lyrons, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Feb. 16, 1995, Ser. No. 392,359

Claims priority, application France, Feb. 17, 1994, 94 01916

Int. Cl.[6] C07C *5/10*

U.S. Cl. 585—269 **21 Claims**



1. A process for the production of cyclohexane by hydrogenation of benzene, comprising at least two steps, as follows:

a) gradually introducing the feed of benzene for hydrogenation and a hydrogen-rich gas into a reaction zone containing a cyclohexane-rich liquid phase and a nickel-based catalyst in suspension in said phase, said reaction zone being maintained at a temperature of about 100° C. to about 250° C., at an absolute pressure of about 0.5 MPa to about 10 MPa, and recovering a gaseous phase containing cyclohexane, hydrogen and benzene,

b) introducing the gaseous phase obtained from step a) into a reactor containing at least one fixed bed of a solid nickel-based hydrogenation catalyst, said reactor being maintained at a temperature of about 100° C. to about 300° C., at an absolute pressure of about 0.5 MPa to about 10 MPa, the hourly space velocity being between 1 h^{-1} and 10 h^{-1}, and recovering substantially pure cyclohexane after depressurizing and cooling,

said process being characterised in that the nickel-based catalyst in suspension used in step a) is produced using at least one trialkylaluminium with formula $AlR^1R^2R^3$ where R^1, R^2 and R^3 each independently represent a linear or branched alkyl group containing 1 to 12 carbon atoms, to reduce a solution, in a hydrocarbon or hydrocarbon mixture, of at least one nickel carboxylate with formula R^4COONi, where R^4 is a hydrocarbon residue containing 1 to 24 carbon atoms, and at least one sodium carboxylate with formula R^5COONa where R^5 is a hydrocarbon residue containing 1 to 24 carbon atoms, the Ni:Na molar ratio being between 2:1 and 1000:1.

5,668,294

METAL RESISTANCE SEQUENCES AND TRANSGENIC PLANTS

Richard B. Meagher, and Anne O. Summers, both of Athens, Ga., assignors to University of Georgia Research Foundation Inc., Athens, Ga.

Filed Apr. 21, 1995, Ser. No. 427,097

Int. Cl.[6] C12N *15/31;15/82;15/29;* **A01H** *5/00*

U.S. Cl. 800—205 **28 Claims**

21. A transgenic plant comprising a sequence encoding a metal resistance protein, said coding sequence being operably linked to transcriptional regulatory sequences functional in a plant, wherein said plant expresses said metal resistance coding sequence, said coding sequence being one of merApe9, merApe20, merApe29, merApe38, and merApe47 (SEQ ID NO: 15, 27, 29, 13, and 19, respectively).

5,668,295

PROTEIN INVOLVED IN NICOTINE SYNTHESIS, DNA ENCODING, AND USE OF SENSE AND ANTISENSE DNAS CORRESPONDING THERETO TO AFFECT NICOTINE CONTENT IN TRANSGENIC TOBACCO CELLS AND PLANTS

Samir Z. Wahab, and Vedpal S. Malik, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 76,681, Jun. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 613,160, Nov. 14, 1990, Pat. No. 5,260,205. This application Mar. 3, 1995, Ser. No. 400,275

Int. Cl.[6] A01H *5/00;* **C12N** *5/04;15/29;15/82*

U.S. Cl. 800—205 **18 Claims**

1. An isolated DNA molecule comprising:

the nucleotide sequence of (SEQ ID NO:17); or

a nucleotide sequence encoding an amino acid sequence identical to an amino acid sequence encoded by SEQ ID NO:17.

2. A vector comprising the isolated DNA molecule of claim 1 operably linked to sequences capable of directing the transcription of a mRNA encoded by said isolated DNA molecule.

7. A transgenic tobacco plant stably transformed with the vector of claim 2.

5,668,296

Patent Not Issued For This Number

5,668,297

DEACETYLASE GENES FOR THE PRODUCTION OF PHOSPHINOTHRICIN OR PHOSPHINOTHRICYL-ALANYL-ALANINE, PROCESS FOR THEIR ISOLATION, AND THEIR USE

Inge Broer; Doris Hillemann; Alfred Pühler; Wolfgang Wohlleben, all of Bielefeld; Günter Donn, Hofheim am Taunus; Hubert Müllner, Kelkheim, and Klaus Bartsch, Steinbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 279,705, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 146,803, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 926,498, Aug. 7, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,179

Claims priority, application Germany, Aug. 9, 1991, 41 26 414.2

Int. Cl.[6] A01H *4/00;* **C12N** *15/82*

U.S. Cl. 800—205 **6 Claims**

1. A process for the production of a transgenic plant with selectively destroyable tissue, which comprises the following steps:

a) transforming a plant cell so as to obtain a plant cell containing a gene conferring phosphinothricin resistance, a tissue-specific promoter and a deacetylase coding region wherein the tissue-specific promoter is 5' of and operably linked to the deacetylase coding region wherein the deacetylase is capable of deacetylating N-acetyl-PTC or N-acetyl-PTT,

b) regenerating from the cell a plant having tissue portions in which the deacetylase gene is expressed and wherein the gene conferring phosphinothricin resistance is expressed whereby phosphinothricin is inactivated and the plant has resistance to phosphinothricin, and

c) treating the plant with N-acetyl-PTC or N-acetyl-PTT to cause expression of the deacetylase gene, restoration of activity of N-acetyl-PTC or N-acetyl-PTT in the tissue portions and death of the tissue portions.

5,668,298

SELECTABLE MARKER FOR DEVELOPMENT OF VECTORS AND TRANSFORMATION SYSTEMS IN PLANTS

Clive Waldron, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 586,317, Sep. 19, 1990, which is a continuation of Ser. No. 169,560, Mar. 17, 1988, abandoned, which is a continuation of Ser. No. 685,824, Dec. 24, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 485,572

Int. Cl.[6] A01H *5/00;5/10;* **C12N** *15/31;15/84;5/04*

U.S. Cl. 800—205 **27 Claims**

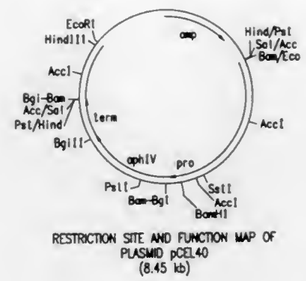
1. A chimeric gene functional in a plant cell, which chimeric gene comprises:

(a) at a position 5' to coding region (c), a plant-expressible promoter sequence;

(b) at a position 3' to coding region (c), a terminator signal sequence; and

(c) a coding region of an aphIV gene, which coding region: (i) encodes a functional hygromycin phosphotransferase enzyme; and (ii) is positioned between such plant-expressible promoter sequence (a) and such terminator signal sequence (b) so as to be expressible,

wherein expression of such coding region in a plant cell confers resistance to hygromycin B on such plant cell and wherein such resistance to hygromycin B is capable of providing a basis for selection of such plant cell.



RESTRICTION SITE AND FUNCTION MAP OF PLASMID pCEL40 (8.45 kb)

5,668,299

SEEDS, PLANTS AND OILS WITH ALTERED FATTY ACID PROFILES

Lorin Roger Debonte; Zhegong Fan, both of Delran, N.J., and Willie Hsiao-Tsu Loh, Philadelphia, Pa., assignors to Cargill, Inc., Wayzata, Minn.

Continuation of Ser. No. 170,886, Dec. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 739,965, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 575,542, Aug. 30, 1990, abandoned. This application Apr. 4, 1995, Ser. No. 416,497

Int. Cl.[6] A01H *1/06;5/10;1/00;* **C12N** *15/00*

U.S. Cl. 800—230 **23 Claims**

1. A canola seed designated A144.1 or M3094.4 and having ATCC accession number 40813 or 75023, respectively.

5,668,300

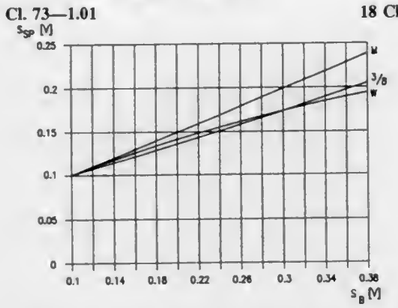
CALIBRATION PROCESS FOR SETTING THE SWITCHING POINT OF A SENSOR

Dieter Krökel, Meckenbeuren, and Rolf Fensterle, Kehlen, both of Germany, assignors to I F M Electronic GmbH, Essen, Germany

Filed Mar. 1, 1996, Ser. No. 609,432

Int. Cl.[6] G01L *27/00*

U.S. Cl. 73—1.01 18 Claims



1. Calibration process for setting a switching point of a sensor which produces an output signal depending on whether or not a sensor signal produced by a condition being sensed exceeds the switching point, comprising the steps of producing values of the sensor signal in an uninfluenced state and in an influenced state, and setting the switching point at a value at which an operating reserve of the sensor occurring in the uninfluenced state is approximately identical to an operating reserve occurring in the influenced state, at least for weak influences on the sensor.

5,668,301

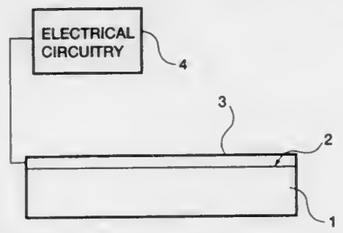
METHOD AND APPARATUS FOR THE DETECTION OF HYDROGEN USING A METAL ALLOY

Gary W. Hunter, Avon, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 366,645, Dec. 30, 1994, Pat. No. 5,520,753. This application Mar. 22, 1996, Ser. No. 621,028

Int. Cl.[6] H01L *29/66;* G01N *27/26*

U.S. Cl. 73—23.2 18 Claims



1. A hydrogen detector comprising:

a substrate;

a thin film of PdTi metal alloy deposited on said substrate, wherein said PdTi alloy contains between 50 and 99 atomic % Pd and between 1 and 50% Ti, and wherein the PdTi alloy experiences a change in electrical resistance when exposed to hydrogen; and

electrical circuitry connected to said PdTi thin film, wherein said change in resistance is detected by said electrical circuitry.

5,668,302

ELECTROCHEMICAL GAS SENSOR ASSEMBLY

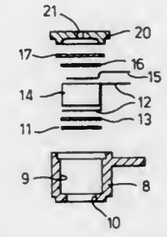
John Robert Finbow; Malcolm Robert Bulpitt, both of Hampshire, United Kingdom, and Steven Allan Wylie Dejaray, 5750 Seaview Road, West Vancouver, British Columbia, Canada, U7W 1P8, assignors to City Technology Limited, Portsmouth, United Kingdom, and Steven Allan Wylie Dejaray, Vancouver, Canada

Filed May 24, 1996, Ser. No. 653,414

Claims priority, application United Kingdom, May 24, 1995, 9510454

Int. Cl.[6] G01N *7/00*

U.S. Cl. 73—23.2 6 Claims



1. An electrochemical gas sensor assembly comprising an electrochemical gas sensor including sensing and counter electrodes, an intervening body of electrolyte contacting said electrodes, and means for controlling the diffusion of gas to said sensing electrode, wherein a test gas generator is connected to said sensor so as to supply a test gas directly to said sensing electrode by-passing said gas diffusion control means.

5,668,303

SENSOR HAVING A MEMBRANE AS PART OF AN ELECTROMECHANICAL RESONANCE CIRCUIT FORMING RECEIVER AND TRANSMITTER CONVERTER WITH INTERDIGITAL STRUCTURES SPACED APART FROM ONE ANOTHER

Thomas Giesler, Saarbruecken, and J.-Uwe Meyer, St. Ingbert-Hassel, both of Germany, assignors to Forschung e.V Fraunhofer-Gesellschaft zur Foerderung der angewandten, Munich, Germany

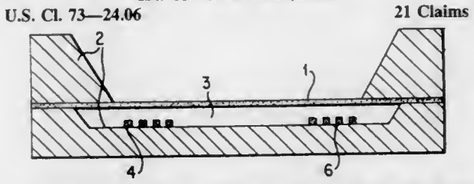
PCT No. PCT/EP93/00969, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO93/22669, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 21, 1993, Ser. No. 325,444

Claims priority, application Germany, Apr. 30, 1992, 42 14 451.5

Int. Cl.[6] G01N *29/24;29/02*

U.S. Cl. 73—24.06 21 Claims



1. Sensor having a thin membrane, capable of storing electrical charges, a surface of said membrane being in contact with chemical, biological, and/or other physical parameters to be measured, with the membrane being part of an electromechanical resonance circuit operating with propagating acoustic plate waves, comprising:

converters, provided opposite the membrane, equipped with interdigital structures to act as transmitter and receiver for said propagating acoustic plate waves, each of said converters being equipped with interdigital structures that act as narrow band filters, with the transmitter converter and receiver converter being arranged with a distance between them, and with a signal from the receiver converter being detected capacitively,

one of an electronic control and evaluation circuit and feedback being provided between an output signal of the receiver converter and the transmitter converter,

wherein a DC voltage is applied between the membrane on the one hand and the transmitter converter and the receiver converter on the other hand, said voltage having an alternating voltage superimposed on it in the transmitter converter,

wherein the generation of the propagating acoustic plate waves in said transmitter converter is produced solely on the basis of electrostatic attractive force or excitation between said interdigital structures of said transmitter converter and said membrane,

further wherein said output signal of said receiver converter is additionally decoupled in a capacitive manner in such fashion that a vibration amplitude of the propagating acoustic plate waves is measured in said receiver converter by a capacitor formed by said interdigital structures of said receiver converter and said membrane, and

wherein said membrane and said interdigital structures of said transmitter converter on the transmitter side and said membrane and said interdigital structures of said receiver converter on the receiver side are arranged spaced apart from one another by a spatial distance in the form of a gap, there being no mechanically solid connection with one another, and a dielectric in the form of narrow gap being formed such that movement of said membrane toward said interdigital structures occurs in the dielectric.

5,668,304

APPARATUS FOR MEASURING A STATE VARIABLE IN A GAS WITH AT LEAST ONE SEMICONDUCTIVE GAS SENSOR

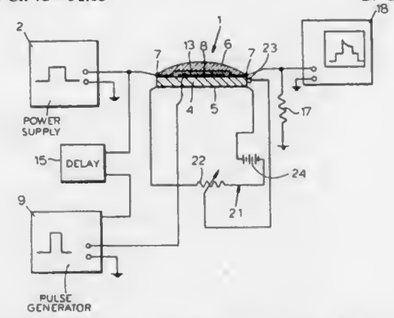
Jörg Kelleter; Claus-Dieter Kohl, both of Giessen, and Heinz Petig, Essen, all of Germany, assignors to RWE Energie Aktiengesellschaft, Essen, Germany

Continuation of Ser. No. 377,525, Jan. 20, 1995, abandoned. This application Nov. 6, 1996, Ser. No. 744,449

Claims priority, application Germany, Jan. 20, 1994, 44 01 570.4

Int. Cl.[6] G01N *7/00*

U.S. Cl. 73—31.05 **20 Claims**



1. An apparatus for measuring a state variable in a gas, comprising:

a semiconductive gas sensor disposed in a gas having a state variable to be monitored, said semiconductive gas sensor comprising:

an insulating layer,

a field electrode on said insulating layer,

an active semiconductor layer on said insulating layer and spaced by said insulating layer from said field electrode, and

two spaced apart further electrodes embedded in said semiconductor layer and isolated from said field electrode;

a power supply connected in circuit with said further electrodes;

a measurement-signal processor connected in circuit with said power supply and said further electrodes of said semiconductive gas sensor for detecting a signal across said semiconductive gas sensor representing conductivity of said semiconductive layer and said state variable;

a voltage-pulse generator connected across said field electrode and at least one of said further electrodes for applying time-spaced measurement pulses between said field electrode and said one of said further electrodes for autogenous control of sensor functioning by generating conductivity changes in said semiconductive layer as a function of time which are measured by said measurement-signal processor for each of said pulses; and

means responsive to the measurement pulses for superimposing upon each of said measurement pulses a respective second measurement signal which is modified by aging of the semiconductive layer.

5,668,305

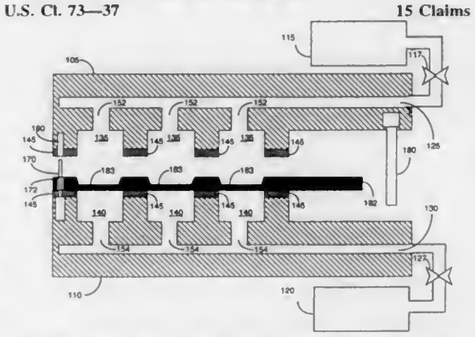
METHOD AND APPARATUS FOR OVER PRESSURE TESTING PRESSURE SENSITIVE DEVICES ON A WAFER

Soon Man Chi, and Sungh Kim, both of Seoul, Rep. of Korea, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1996, Ser. No. 625,653

Int. Cl.[6] G01M *3/02*

U.S. Cl. 73—37 **15 Claims**



12. An apparatus for over pressure testing individual pressure sensitive devices on a wafer, the apparatus comprising:

a plate having individual chambers coupled to an outlet thereon, wherein the plate includes an aligning means for aligning the wafer in a predetermined location on the plate to substantially align the individual pressure sensitive devices on the wafer with the individual chambers on the plate, and wherein the outlet is coupled to a vacuum generator for applying a predetermined vacuum on the individual pressure sensitive devices on the wafer for a predetermined duration, and when some of the individual pressure sensitive devices on the wafer disintegrate into fragments, the predetermined vacuum removing the disintegrated fragments from the plate to prevent contamination of the plate therewith.

5,668,306

SOIL ANALYSIS METHOD INCLUDING SEPARATE ANALYSES OF CORE SAMPLE STRATA

David L. Doherty, 3301 W. 91st St., Leawood, Kans. 66206

Division of Ser. No. 430,338, Apr. 28, 1995, abandoned. This application May 17, 1996, Ser. No. 649,792

Int. Cl.[6] G01N *15/08;15/10;33/24*

U.S. Cl. 73—38 **6 Claims**

1. A soil analysis method comprising the steps of:

obtaining a core sample of soil having an essentially undisturbed, naturally occurring compaction and stratification;

dividing said core sample into a plurality of vertically aligned strata; and

separately analyzing each of said strata for at least one of organic content, silt and clay content, and sand content.

5,668,307

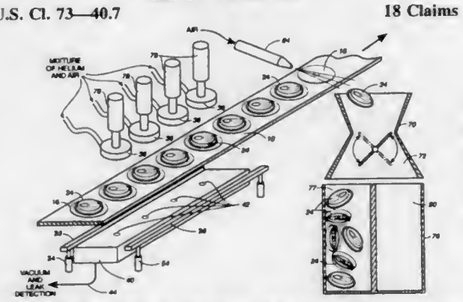
APPARATUS FOR TESTING CAN ENDS FOR LEAKS

James H. Wade, 19174 Madison Ave., Castro Valley, Calif. 94546

Filed May 7, 1996, Ser. No. 643,934

Int. Cl.[6] G01M *3/04*

U.S. Cl. 73—40.7 **18 Claims**



1. Apparatus for testing can lids or other discrete articles having opposed surfaces for leaks, said apparatus comprising, in combination:

a movable conveyor;

means for positioning a plurality of discrete articles having opposed article surfaces at locations on said conveyor with one article surface facing the conveyor and the other article surface facing away from the conveyor;

vacuum applicator means for substantially simultaneously applying a vacuum to each of the plurality of discrete articles on said conveyor at the article surface thereof facing the conveyor;

detector means for detecting the flow of a gaseous fluid through said plurality of discrete articles on said conveyor during application of vacuum thereto; and

article removal means responsive to the detecting of the flow of gaseous fluid through at least one of said plurality of discrete articles on said conveyor by said detector means to remove said plurality of discrete articles from said conveyor said conveyor comprising a conveyor belt having an outer conveyor belt surface and a plurality of grommets attached to said conveyor belt on said outer conveyor belt surface, each said grommet for supporting a discrete article of said plurality of articles, and said grommets and said conveyor belt having openings therein providing a plurality of gaseous fluid flow paths leading from the plurality of discrete articles positioned on said grommets to said detector means.

5,668,308

LEAKAGE DETECTION

Carl Denby, 51 Park Avenue, Normanton, United Kingdom, WF6 2DR

PCT No. PCT/GB94/02196, § 371 Date Apr. 4, 1996, § 102(e) Date Apr. 4, 1996, PCT Pub. No. WO95/10033, PCT Pub. Date Apr. 13, 1995

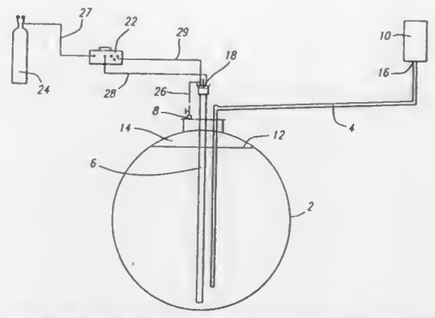
PCT Filed Oct. 7, 1994, Ser. No. 624,393

Claims priority, application United Kingdom, Oct. 7, 1993, 9320627

Int. Cl.[6] G01M *3/32*

U.S. Cl. 73—49.2 **20 Claims**

1. A method for the testing for fluid leakage from a storage tank normally containing a liquid pollutant, the test comprising the steps of fluidly sealing the tank, fluidly connecting a pressure sensitive means to the interior of the tank, and monitoring the pressure sensed over a period of time, the monitoring being carried out



whilst the tank is partially filled with its normal liquid contents and also partially filled with a gas, the tank comprising two gas-filled compartments located above and fluidly interconnected by the liquid contents, and wherein the test comprises one of admitting gas directly to, and extracting gas directly from, each of said compartments.

5,668,309

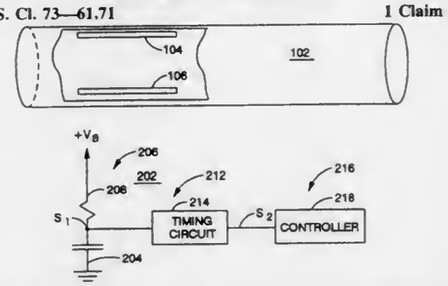
CAPACITIVE PARTICLE SENSOR

George Codina, North Hollywood, Calif.; Chandrasekar Ramamoorthy, Normal, and Donna J. Murr, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1995, Ser. No. 521,861

Int. Cl.[6] G01N *15/06;* **H04N** *5/21*

U.S. Cl. 73—61.71 **1 Claim**



1. An apparatus for detecting particles within a hydraulic system having a hydraulic line, comprising:

a pair of electrodes contained within the line and being oppositely spaced, forming a capacitor;

charging means, coupled to said capacitor, for producing a charging current of constant magnitude and charging said capacitor to a predetermined voltage;

timing means, connected to said capacitor, for detecting the time at which said charging means begins to produce said charging current and the time at which said capacitor has been charged to said predetermined voltage, and for producing a pulse width modulated signal, the magnitude of said pulse width modulated signal being indicative of the time between the start of said constant current and the time at which said capacitor has been charged to said predetermined voltage; and,

controlling means for receiving said pulse width modulated signal, for comparing each consecutive pulse with a reference pulse, and responsively detecting particles within the hydraulic line if N pulses out of M consecutive pulses of said pulse width modulated signal vary from said reference pulse by X%.

5,668,310

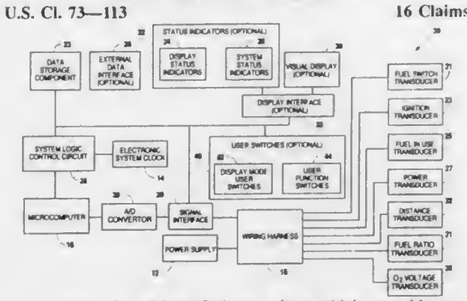
VEHICLE FUEL USAGE TRACKING DEVICE

Michael K. Parkman, San Antonio; John W. Whittaker, Seguin, and Curtis J. Donaldson, Georgetown, all of Tex., assignors to Alternative Fuel Technology Systems, Ltd. Co., San Antonio, Tex.

Continuation-in-part of Ser. No. 375,923, Jan. 20, 1995, Pat. No. 5,505,076. This application Apr. 8, 1996, Ser. No. 628,905

Int. Cl.[6] G01L *3/26;* G01M *15/00*

U.S. Cl. 73—113 16 Claims



1. A device for tracking fuel usage in a vehicle operable on a mixture of at least two types of fuel, said device capable of interfacing with the vehicle engine and the vehicle ignition system, the device comprising:

a power supply;

an electronic system clock;

a digital data storage component;

a first means for detecting a fuel ratio signal indicative of the mixture of fuel being burned by said vehicle;

a signal interface connected to said first detecting means for filtering and conditioning said signal;

a microcontroller connected to said electronic system clock, said signal interface and said data storage component, said microcontroller programmed to quantize said signal into digital fuel ratio data, to calculate time-averaged data from said fuel ratio data, and to coordinate storage of said fuel ratio and time-averaged data in said data storage component and to coordinate retrieval of said stored data from said data storage component; and

an external data interface connected to said microcontroller for communicating said data between said data storage component and an external source.

5,668,311

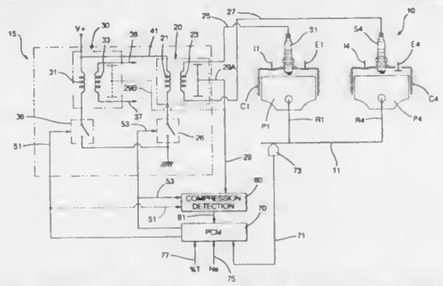
CYLINDER COMPRESSION DETECTION

Ronald J. Kiess, Decatur; Jeff Louis Courter, Freelandville, both of Ind., and Mark Albert Paul, Champaign, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1996, Ser. No. 646,855

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 7 Claims



1. An engine cylinder compression detection apparatus for a spark-ignited internal combustion engine having a pair of combustion cylinders operating in combustion sequence phase opposition and a distributorless ignition system including an ignition coil for providing phase opposed spark events across sparking means disposed in respective ones of said pair of combustion cylinders, comprising:

sensing means for providing a composite signal representing polarity and magnitude of spark events in said pair of combustion cylinders; and,

detection means responsive to said composite signal for providing a first diagnostic signal when said composite signal indicates a first relationship between polarity and magnitude of spark events and a second diagnostic signal when said composite signal indicates a second relationship between polarity and magnitude of spark events, wherein one of said first and second diagnostic signals indicates compression in one of said pair of combustion cylinders and the other of said first and second diagnostic signals indicates compression in the other one of said pair of combustion cylinders.

5,668,312

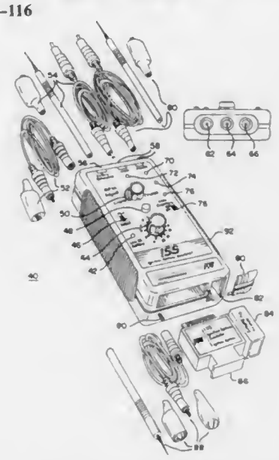
PORTABLE APPARATUS FOR TESTING ELECTRONIC ENGINE CONTROL SYSTEMS

Richard A. Kaman, Spring Grove, Ill., assignor to Products Research, Inc., Addison, Ill.

Continuation of Ser. No. 387,034, Feb. 10, 1995, abandoned. This application Jul. 23, 1996, Ser. No. 685,157

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 22 Claims



1. A portable apparatus for testing an electronic engine control system of a reciprocating engine comprising:

means for generating a first simulated waveform of a rotational position of a first rotating engine element of the reciprocating engine;

means for generating a second simulated waveform having a predetermined phase offset with respect to the first simulated waveform; and

connector means for operably coupling the first and second waveforms to the engine control system.

5,668,313

METHOD FOR CORRECTING THE OUTPUT SIGNAL OF AN AIR MASS METER

Hans Hecht, Korntal-Muenchingen; Dieter Tank, Eberdingen, and Uwe Konzelmann, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

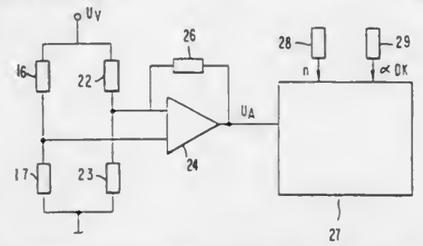
PCT No. PCT/DE95/00411, § 371 Date Nov. 10, 1995, § 102(e) Date Nov. 10, 1995, PCT Pub. No. WO95/26493, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 27, 1995, Ser. No. 553,469

Claims priority, application Germany, Mar. 28, 1994, 44 10 789.7

Int. Cl.[6] G01F *15/02;1/00;* G01D *3/02;* F02D *41/18*

U.S. Cl. 73—118.2 7 Claims



1. A method for correcting an output signal of an air mass meter for detecting an air mass aspirated by an internal combustion engine, comprising the steps of determining a characteristic of the air mass meter which represents a relationship between an output voltage of the air mass meter and a flowing air mass; correcting the determined characteristic in a return flow region in which the flowing air mass flows back in predetermined operational conditions of the internal combustion engine; performing the correcting so that error measurements occurring in the return flow region are minimized and the corrected characteristic is stored in a memory of a computing device; and calculating an actual determined flowing air mass by the computing device with consideration of the stored corrected characteristic.

5,668,314

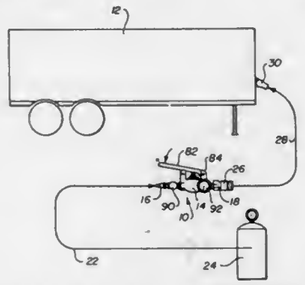
APPARATUS FOR TESTING VEHICLE AIR BRAKES

Robert Jones, 1913 Castle Dr., Garland, Tex. 75040

Filed Jul. 19, 1996, Ser. No. 684,924

Int. Cl.[6] G01L *5/28*

U.S. Cl. 73—129 14 Claims



1. A device for testing air brakes in a vehicle having a glad hand which operably interconnects said air brakes to a source of compressed air, said device comprising:

a) an elongated body having an inlet receiving end and an opposite outlet receiving end, a first longitudinal axis and an elongated cavity bored therein, said cavity extending between a floor and an opening formed through said body, and along a second longitudinal axis which lies essentially perpendicular to said first longitudinal axis, and said cavity further having first and second sections separated at a defined boundary;

b) an elongated inlet having proximal and distal ends, and a first longitudinal passage extending therethrough along a third longitudinal axis which is essentially parallel to said first longitudinal axis, said proximal end of said inlet attached to said inlet receiving end of said body with said first longitudinal passage being positioned in fluid communication with said first section of said cavity;

c) an elongated outlet having proximal and distal ends, and a second longitudinal passage extending therethrough along a fourth longitudinal axis which is essentially parallel to and in vertically spaced relation to said third longitudinal axis, said proximal end of said outlet being attached to said outlet receiving end of said body with said second longitudinal passage being positioned in fluid communication with said second section of said cavity;

d) a valve assembly operable between open and closed positions including:

i) first spring means extending axially along said second longitudinal axis and having a first end contacting said floor of said cavity, and an opposite second end;

ii) first plunger means having first and second opposite ends and mounted in co-linear relation to, and for axial movement along said second longitudinal axis with said first end being positioned in biased relation to said second end of said first spring means, and further including sealing means movable into and out of engagement with said defined boundary separating said first and second sections of said cavity;

iii) second spring means extending axially along said second longitudinal axis and having first and second opposite ends with said first end being positioned in biased relation to said sealing means;

iv) second plunger means having opposite first and second ends and mounted in co-linear relation to and for axial movement along said second longitudinal axis, said first end of said second plunger means being positioned in biased relation to said second end of said second spring means, and said second end of said second plunger means being movable into and out of said cavity;

v) lever means attached to said body for pivotal movement between first and second terminal positions, and having a surface contacting said second end of said second plunger means for effecting movement thereof into and out of said cavity in response to said lever means being moved from said first terminal position to said second terminal position, respectively; and

vi) means for compressively retaining said valve assembly within said cavity.

5,668,315

GRAVITY GRADIOMETER WITH FLEXURAL PIVOT BEARING

Frank Joachim Van Kann, and Michael Joslin Buckingham, both of Claremont, Australia, assignors to The University of Western Australia, Nedlands, Australia, and RTZ Mining and Exploration Ltd., London, England

Continuation of Ser. No. 115,677, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 688,528, Aug. 20, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 367,757

Claims priority, application Australia, Dec. 20, 1988, PJ2034/88

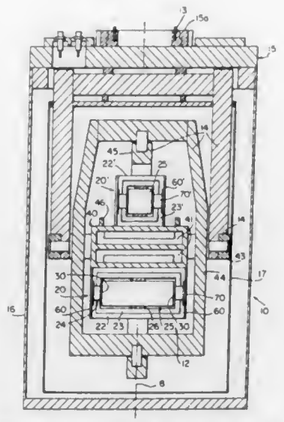
Int. Cl.[6] G01V *7/02*

U.S. Cl. 73—382 G 16 Claims

1. A gravity gradiometer for measuring off-diagonal components of a gravitational gradient tensor, comprising:

a housing including a pair of electromagnetic shield enclosures arranged one inside the other;

a body including superconducting material mounted within the inner of said enclosures for fine pivotal flexure about an axis passing substantially through the centre of mass of said body and



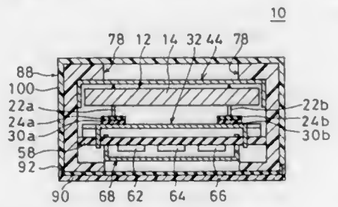
wherein said body is mounted by means of a flexural pivot bearing comprising a pair of members with opposed close-spaced faces, which faces are joined by a web of microscopic thickness, in a plane intersecting the faces, wherein said members and said web are comprised of an integral body of substantially uniform material, and said axis of flexure is aligned along said web; and

an array of superconducting coils supported by the outer of said enclosures and positioned in close proximity to said body for diamagnetically applying a rotational force to said body with respect to said axis of flexure and/or for responding by modulation of inductance to pivotal flexure of the body arising from a gravitational gradient across said body, wherein the array is arranged to apply said force in either rotational direction about said axis and to respond to flexure in either rotational direction about said axis.

5,668,316
VIBRATING GYROSCOPE

Kiyoshi Iwai; Jyunichi Hashimoto; Takeshi Nakamura; Yoshiaki Heinouchi; Akira Kumada; Yoshio Kawai; Tsuguji Kanbayashi, and Atushi Morikawa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-Fu, Japan

Continuation of Ser. No. 360,073, Dec. 20, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 699,693
Claims priority, application Japan, Dec. 21, 1993, 5-321843; Mar. 4, 1994, 6-060250
Int. Cl.[6] G01P *1/02*
U.S. Cl. 73—493 **18 Claims**

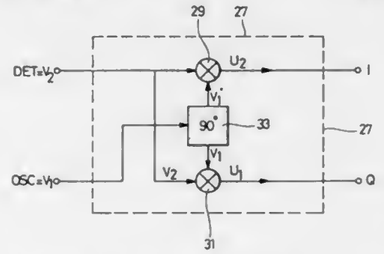


1. A vibrating gyroscope comprising:
a vibrating body;
a circuit board supporting said vibrating body;
a case containing said vibrating body and said circuit board therein; and
a cushion member, which acts as a cushion, provided between ends of said circuit board and an inside surface of said case, said cushion member formed with a recess and a groove extending outwardly from the recess wherein an end portion of said circuit board is inserted into said groove and an end portion of said work cover is inserted into said recess, wherein said circuit board does not touch said case.

5,668,317
DEVICE AND METHOD FOR MEASURING AN ANGULAR SPEED

Pierre-André Farine, Neuchâtel; Jean-Daniel Etienne, Les Geneveys-sur-Coffrane, and Silvio Dalla Piazza, St-Imier, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Jun. 14, 1996, Ser. No. 663,928
Claims priority, application France, Jun. 21, 1995, 95 07417
Int. Cl.[6] G01P *9/04*
U.S. Cl. 73—497 **15 Claims**



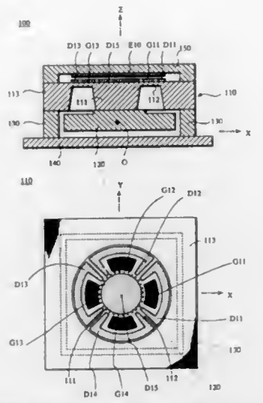
1. An angular speed measuring device for measuring angular speed, said device comprising:
means for generating a mechanical vibration of said transducer in response to an excitation signal, said mechanical vibration comprising a parasite component and at least one useful component having an amplitude which is representative of said angular speed;
means for producing an electric detection signal representative of said mechanical vibration and also comprising a parasite component and at least one useful component having an amplitude which is representative of said angular speed;
wherein the device further comprises analog processing means of the detection signal and of the excitation signal comprising:
two identical analog multipliers having a same temperature behavior;
a phase-shifting circuit of exactly 90°, said analog processing means providing at least one analog measurement signal which depends only on the useful component of the electric detection signal, thereby being practically independent of the operation temperature of the device.

5,668,318
ANGULAR VELOCITY SENSOR

Kazuhiro Okada, Ageo, Japan, assignor to Wacoh Corporation, Saitama, Japan

Filed Feb. 15, 1996, Ser. No. 601,794
Claims priority, application Japan, Feb. 21, 1995, 7-056690
Int. Cl.[6] G01C *19/00*
U.S. Cl. 73—504.11 **14 Claims**

1. An angular velocity sensor comprising:
a weight body having mass;
a sensor casing for accommodating the weight body therewithin;
supporting means for supporting the weight body so that the weight body can be moved with a predetermined degree of freedom with respect to the sensor casing;
driving means for allowing the weight body to carry out an orbital movement along a predetermined orbit within a range of said predetermined degree of freedom;
detecting means for detecting a Coriolis force applied to the weight body in a first axial direction perpendicular to a tangential direction of the orbital movement; and

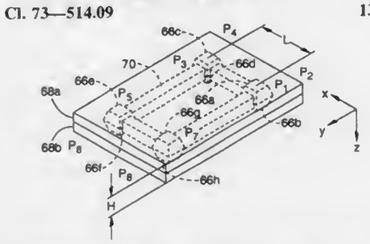


operation means for obtaining an angular velocity about a second axis perpendicular to both the tangential direction and the first axial direction on the basis of a tangential velocity of the weight body along said orbit and the detected Coriolis force;
wherein an XYZ three-dimensional coordinate system having an X-axis, a Y-axis and a Z-axis is defined and the weight body is positioned at an origin of the coordinate system;
wherein the driving means comprises a first force generator for applying a force to the weight body in a positive direction of the X-axis, a second force generator for applying a force to the weight body in a positive direction of the Y-axis, a third force generator for applying a force to the weight body in a negative direction of the X-axis, and a fourth generator for applying a force to the weight body in a negative direction of the Y-axis; and
wherein said first to fourth force generators are periodically operated so that the weight body carries out an orbital movement within an XY-plane.

5,668,319
MICROMACHINED ACCELEROMETER

Raffi Garabedian, San Leandro, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 193,487, Feb. 7, 1994, abandoned. This application Mar. 21, 1996, Ser. No. 621,202
Int. Cl.[6] G01P *15/08*
U.S. Cl. 73—514.09 **13 Claims**

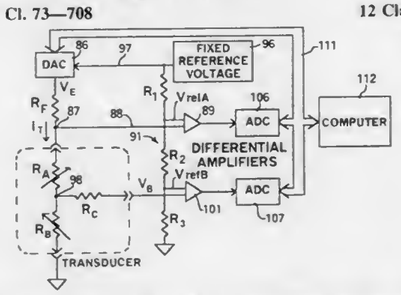


1. A multi-axis hydrostatic accelerometer, comprising:
(a) a substrate having first and second substantially planar outer surfaces;
(b) first, second, third, and fourth spaced-apart fluid coupled cavities positioned within said substrate between said first and second outer surfaces;
(c) first, second, third, fourth, fifth, sixth, seventh and eighth resilient membranes integrally formed in said substrate, said first, second, third and fourth membranes respectively positioned between said first, second, third and fourth cavities and said first outer surface of said substrate, said third, fourth, fifth and sixth membranes respectively positioned between said first, second, third and fourth cavities and said second outer surface of said substrate; and
(d) first, second, third, fourth, fifth, sixth, seventh and eighth pressure sensing means for respectively sensing pressure exerted on said first, second, third, fourth, fifth, sixth, seventh and eighth membranes by displacement of a fluid sealed within said cavities during acceleration of said substrate;
(e) wherein said membranes are deflected due to pressure exerted on said membranes by displacement of said fluid during axial acceleration of said substrate, said axial acceleration including translational acceleration and rotational acceleration;
(f) wherein said pressure sensing means provide electronic output signals for determining acceleration along at least three independent translational axes and at least two rotational axes.

5,668,320
PIEZORESISTIVE PRESSURE TRANSDUCER CIRCUITRY ACCOMMODATING TRANSDUCER VARIABILITY

Mark W. Cowan, Fremont, Calif., assignor to Cardiometrics, Inc., Mt. View, Calif.

Continuation-in-part of Ser. No. 707,299, Sep. 3, 1996, which is a continuation of Ser. No. 492,397, Jun. 19, 1995, Pat. No. 5,551,301. This application Jan. 8, 1997, Ser. No. 780,387
Int. Cl.[6] G01L *19/04*
U.S. Cl. 73—708 **12 Claims**



1. Pressure transducer circuitry accommodating pressure transducer variables for making pressure measurements in a living body comprising a microminiature piezoresistive pressure transducer having first and second variable resistive elements, the pressure transducer being characterized as having a pressure sensitivity ranging from 1.2 to 15 ohms per 1,000 ohms per 100 millimeters of mercury and a temperature characteristic, circuitry coupled to the first and second variable resistive elements of the transducer including a known fixed resistive element, means coupling the known fixed resistive element to the first and second variable resistive elements for supplying a transducer excitation voltage through the known fixed resistive element to the first and second variable resistive elements, first and second amplifiers each having an input and an output, means connecting the inputs of the first and second amplifiers to the first and second variable resistive elements to measure the voltage across the first and second variable resistive elements so that the first and second amplifiers have outputs which have a pressure component and a temperature component therein and computer means receiving the outputs of the first and second amplifiers for ascertaining the unknown resistances of the first and second variable resistive elements as independent variable resistive elements and solving a set of equations having said first and second variable resistive elements as unknowns and pressure and temperature as the remaining unknowns to provide a temperature compensated pressure value as measured by the microminiature pressure transducer.

5,668,321

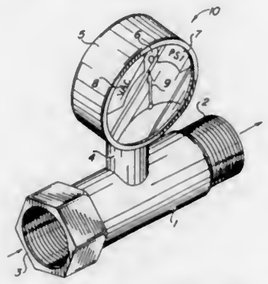
MARINE IMPELLER TESTER

Larry A. Barone, P.O. Box 344, Goodyear, Ariz. 85338

Division of Ser. No. 341,675, Nov. 17, 1994, Pat. No. 5,503,022, which is a continuation-in-part of Ser. No. 253,972, Jun. 3, 1994, Pat. No. 5,445,012, which is a continuation of Ser. No. 8,474, Jan. 25, 1993, abandoned. This application Mar. 15, 1996, Ser. No. 616,180

Int. Cl.[6] G08B *21/00*

U.S. Cl. 73—714 4 Claims



1. A method of testing the impeller of a marine engine comprising the steps of:

providing a cylinder having an input connector and an output connector;

connecting the output connector to the impeller of the marine engine;

providing a gauge;

connecting the gauge to the cylinder;

providing a rotatable dial in the gauge, the rotatable dial including a vacuum pressure indication, a positive pressure indication, and a zero pressure indication between the vacuum pressure indication and the positive pressure indication;

providing a flow of water to the input connector;

rotating the dial to the zero pressure indication prior to starting the marine engine, whereby movement of the pointer after the engine is started indicates the condition of the impeller.

5,668,322

APPARATUS FOR COUPLING A TRANSMITTER TO PROCESS FLUID HAVING A SENSOR EXTENSION SELECTIVELY POSITIONABLE AT A PLURALITY OF ANGLES

David A. Broden, Minnetrista, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jun. 13, 1996, Ser. No. 661,302

Int. Cl.[6] G01L *7/00;* E03B *11/00*

U.S. Cl. 73—756 24 Claims

1. A transmitter of the type used in the process control industry for sensing a process variable of a process fluid, the transmitter comprising:

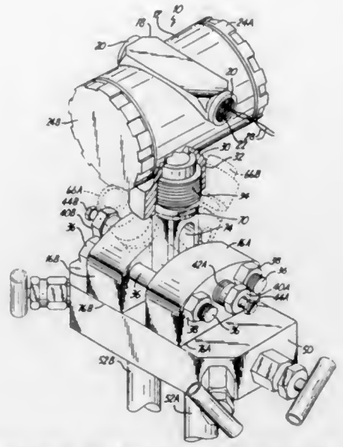
a transmitter body having a sensor coupling;

a sensor extension coupled to the sensor coupling, the sensor extension having a sensor coupling face and an opposing face opposite the sensor coupling face;

a first flange interface having a process face which connects to the process and a sensor coupling face which mates with the sensor, the first flange interface including a passageway which couples the process fluid to the sensor coupling face;

a second flange interface positioned adjacent the opposing face of the sensor extension whereby the sensor extension is positioned between the first and second flange interfaces; and

coupling means for coupling the first flange interface to the second flange interface whereby the sensor extension is held therebetween and completely secured between the first and



second flange interfaces by force applied by the coupling means, the sensor extension selectively positionable at a plurality of angles relative to the process face.

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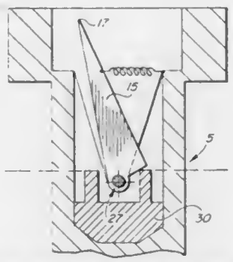
METHOD AND APPARATUS FOR INDICATING A LOAD

Cory S. Waxman, 325 E. Hayward, Phoenix, Ariz. 85020

Filed Jul. 12, 1996, Ser. No. 679,509

Int. Cl.[6] G01L *1/00*

U.S. Cl. 73—761 20 Claims



1. An apparatus for displaying ongoing clamp load comprising, a fastener having an internal bore, a nondeforming member having a pivot point and capable of responding to the elongation of the fastener for displaying the clamp load, wherein said nondeforming member with said pivot point is positioned substantially within said fastener bore.

5,668,324

STRAIN SENSORS HAVING ULTRA-HIGH DYNAMIC RANGE

Karl Friedrich Voss, 12716 87th Ct. NE., Kirkland, Wash. 98034, and Keith H. Wanser, 26202 Escala Dr., Mission Viejo, Calif. 92691

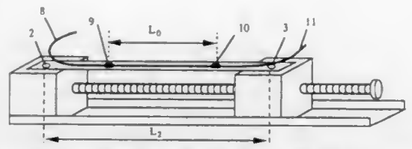
Filed Apr. 1, 1996, Ser. No. 625,204

Int. Cl.[6] G02B *6/02;* H01J *5/16*

U.S. Cl. 73—800 15 Claims

1. A strain sensor for measuring the strain between at least two points on an object; the sensor comprising:

a sensor device exhibiting at least one measuring characteristic responsive to the distance between two spaced points to which the sensor device is attached;



an elongated elastomeric substrate extendable in a selected direction between a relaxed condition and an extended condition;

said sensor device being affixed to said elastomeric substrate at two spaced attachment points for measuring the distance between said two attachment points irrespective of the extension of said substrate between said points on said object.

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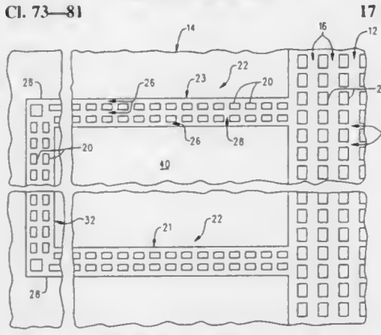
METHOD AND APPARATUS FOR DETERMINING COMPRESSIVE STRESS IN PILLARS

Wm. Mark Hart, Littleton, Colo.; Jinsheng S. Chen, and Syd S. Peng, both of Morgantown, W. Va., assignors to Cyprus Amax Coal Company, Englewood, Colo.

Filed Mar. 27, 1996, Ser. No. 622,816

Int. Cl.[6] G01N *3/08*

U.S. Cl. 73—81 17 Claims



1. A method of determining compressive stress in an in-situ roof support pillar in an underground excavation, the underground excavation including an entry set having a roof, a floor, and two opposed ribs, the roof support pillar extending between the roof and the floor of the entry set and located between the two opposed ribs of the entry set such that the entry set is divided into two entries, comprising the steps of:

measuring an amount of entry convergence in one of the two entries of the entry set at a point substantially between the roof support pillar and one of the two opposed ribs of the entry set;

determining a type of load on the pillar; and

calculating the compressive stress in the pillar based on the amount of entry convergence and based on the type of load on the pillar.

5,668,326

METHOD AND APPARATUS FOR DETECTING AND ALIGNING A SIGNAL

Alvin E. Brown, Santa Cruz, Calif., assignor to Dieterich Technology Holding Corp.

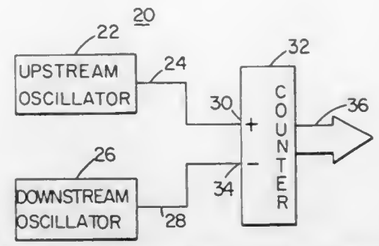
Filed Oct. 4, 1996, Ser. No. 720,790

Int. Cl.[6] G02F *2/66*

U.S. Cl. 73—861.28 19 Claims

1. A method of detecting and aligning a signal in an ultrasonic flow meter, comprising the steps of:

(a) generating an oscillator signal;



(b) generating a transmit sequence on a first predetermined trigger point of the oscillator signal;

(c) driving a transmit transducer with the transmit sequence to form a transmit waveform;

(d) receiving the transmit waveform at a receive transducer to form a received waveform;

(e) processing the received waveform to form a received sequence; and

(f) detecting the received sequence by sensing an anomaly.

5,668,327

FLOWMETER HAVING REVERSIBLE TRANSMITTER AND RECEIVER

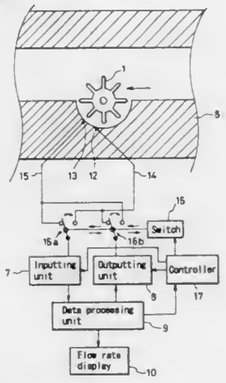
Masanori Amemori; Toshiyuki Hasegawa; Takeshi Miyamoto; Shinya Nozaki, and Takashi Kobayashi, all of Higashi-Matsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,680

Claims priority, application Japan, Jan. 26, 1995, 7-010974

Int. Cl.[6] G01F *1/06*

U.S. Cl. 73—861.77 6 Claims



1. A flowmeter comprising:

an impeller rotatably mounted in a recess formed in an interior wall of a flow channel structure, said impeller having a plurality of impeller blades;

a transmitter positioned to transmit signals in a direction such that the transmitted signals will intersect a rotational path of a tip of each of said plurality of impeller blades, wherein said transmitter can be changed so as to function as a receiver;

a receiver positioned to receive signals which have been transmitted from said transmitter and reflected by said tips of said impeller blades, wherein said receiver can be changed to function as a transmitter; and

a data processing unit, operably connected to said transmitter and said receiver, for calculating a rotational speed of said impeller by calculating a difference between the frequency of the reflected signals received by said receiver and the frequency of the signals transmitted by said transmitter.

wherein if the calculated difference is smaller than a preset value, said data processing unit causes said transmitter to function as a receiver and said receiver to function as a transmitter thereby reversing the detecting direction.

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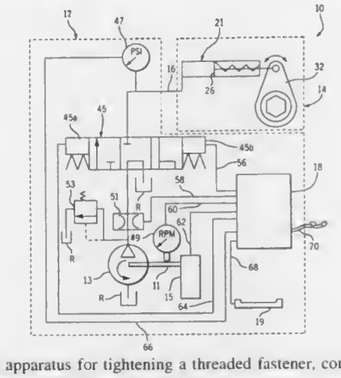
METHOD AND APPARATUS FOR HYDRAULICALLY TIGHTENING THREADED FASTENERS

George R. Steber, Mequon; Dale A. Knutson, Nashotah, and Douglas P. Miller, New Berlin, all of Wis., assignors to Applied Power Inc., Butler, Wis.

Filed Jul. 17, 1996, Ser. No. 682,209

Int. Cl.[6] B25B *21/00*

U.S. Cl. 73—862.23 **13 Claims**



1. An apparatus for tightening a threaded fastener, comprising:
a hydraulically powered wrench;
a source for supplying hydraulic fluid under pressure to drive said wrench;
a reservoir for receiving hydraulic fluid expelled from said wrench;
means for determining an angle parameter including an angular speed transducer for generating a speed signal representative of the angular speed of a pump which supplies said hydraulic fluid to said wrench and a controller for converting said speed signal into said angle parameter, said angle parameter being representative of an angle of rotation of said fastener by said wrench;
means for determining a torque parameter from a measurement of the pressure of hydraulic fluid supplied to said wrench, said torque parameter being representative of a torque applied by said wrench to said fastener; and
means for terminating tightening of said fastener based on said torque and angle parameters.

5,668,329

SPURIOUS MODE MAP FOR DETF FORCE TRANSDUCER

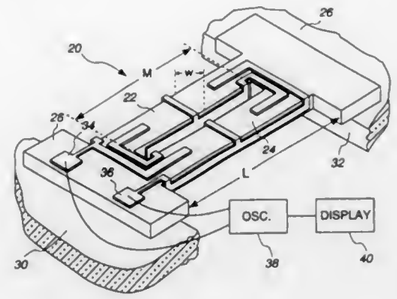
Fred Petri, Snohomish, Wash., assignor to Alliedsignal, Inc., Morristown, N.J.

Continuation of Ser. No. 241,099, May 11, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 678,452

Int. Cl.[6] G01L *1/00*

U.S. Cl. 73—862.59 **12 Claims**

1. A double ended tuning fork (DETF) comprising:
a pair of spaced apart vibrating beams, generally parallel and joined together at opposing ends, each beam having a thickness t, width w, length m, said DETF having a length L wherein the dimensions for t, w, m and L are selected using a finite element model to satisfy the following relationship:



$$f/f_{p1} = \left[\frac{B^2 * (1 + S)}{A * (1 + S(B^2/A^2))} \right] * K_{fffp1} \neq 1$$

where $K_{fffp1}(A,B) \neq 1$; A=t/w; B=L/m and S is the sensitivity of the DETF over a predetermined operating range, and the coefficient K(A,B) is selected using a polynomial curve fitting technique to fit the following equation over a predetermined dimensional range:

$$K_{fffmn} = b_0 + b_1 * B + b_2 * B^2 + b_3 * B^3 + a_1 * A$$

where K_{fffmn} are the fundamental to spurious mode ratios and the coefficients a and b are determined for each K_{fffmn} over the predetermined dimensional range.

5,668,330

AQUEOUS SAMPLE TESTING APPARATUS

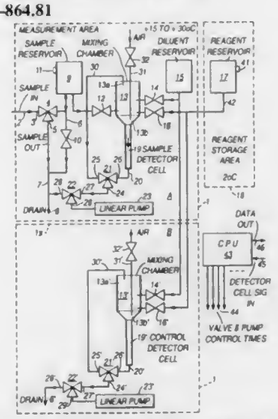
William Bartlett-Hooker, Wimborne; Sanath Ediriweera, Poole, and Stuart Ward, Bournemouth, all of England, assignors to Siemens, plc, Berkshire; Yorkshire Water plc, Leeds, both of England, and Microbics Corp., Carlsbad, Calif.

Filed Jul. 10, 1996, Ser. No. 679,759

Claims priority, application United Kingdom, Jul. 29, 1995, 9515635

Int. Cl.[6] G01N *1/00*

U.S. Cl. 73—864.81 **9 Claims**



1. Aqueous sample testing apparatus comprising a sample reservoir in which a sample to be tested is stored, a reagent reservoir, a diluent reservoir, a mixing chamber vented via a first valve to atmosphere through an air inlet tube which extends within the chamber towards a lower part thereof, second, third and fourth valves via which the sample, the reagent and the diluent respectively are fed selectively to the mixing chamber in accordance with the open/closed state of the said second, third or fourth valves, a detector cell fed with a mixture of the sample, the reagent and the diluent from the chamber, within which detector cell aqueous sample measurements are carried out, a linear pump and valve means, via which valve means the mixture is drawn through the detector cell from the chamber by the linear pump, or via which air in an upper part of the chamber is drawn from the chamber by the pump in accordance with the open/closed state of the said valve means, whereby for the purpose of mixing the sample, the reagent and the diluent, the said valve means is set so that air is drawn into the chamber via the inlet tube so as to bubble up through the mixture contained therein.

5,668,331

POSITION SENSOR

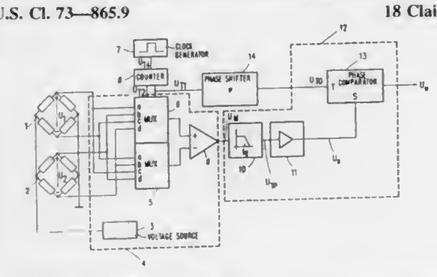
Peter Schintag, Gifhorn, and Thomas Suwald, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1996, Ser. No. 698,416

Claims priority, application Germany, Aug. 18, 1995, 195 30 386.5

Int. Cl.[6] G01D *5/16;5/20;5/26;* G01B *21/00*

U.S. Cl. 73—865.9 **18 Claims**



1. A position sensor including:
at least two sensor units (1, 2) which measure in a contactless manner and produce sensor signals which constitute similar, mutually phase-shifted functions of a position x to be measured relative to a movable element;
a phase detection unit for forming a position sensor signal which is a measure of the position x; and,
a combination circuit which is controlled by a clock signal and which generates from the sensor signals a measuring signal which corresponds to a cyclic order of the sensor signals with a polarity which changes after each cycle;
said phase detection unit forming the position sensor signal by measuring the phase difference between the clock signal and the measuring signal.

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CYMBAL POSITION CONTROL APPARATUS

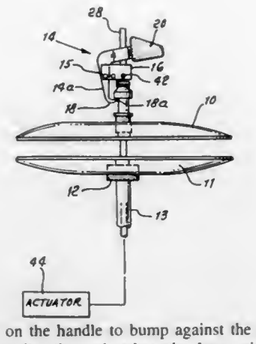
Donald G. Lombardi, 2118 E. Hillcrest Dr., Thousand Oaks, Calif. 91360

Filed Jun. 3, 1996, Ser. No. 656,834

Int. Cl.[6] G10D *13/02*

U.S. Cl. 84—422.3 **8 Claims**

1. In a cymbals position control apparatus, the combination comprising
a) mechanism including lever, a hook on the lever, and a handle on the lever to achieve release of the upper disc to drop toward a lower cymbals disc,
b) means including a vertically movable upright rod to support said mechanism, and



c) a bumper on the handle to bump against the rod before the hook can strike the rod, when the lever pivots following release of the upper disc.

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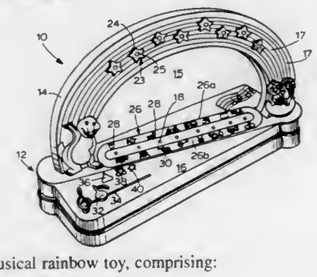
MUSICAL RAINBOW TOY

Gregory R. Horton, Manville, and Robert S. Winslow, Newport, both of R.I., assignors to Hasbro, Inc., Pawtucket, R.I.

Filed Jun. 5, 1996, Ser. No. 658,360

Int. Cl.[6] G09B *15/00*

U.S. Cl. 84—470 R **17 Claims**



1. A musical rainbow toy, comprising:
a base member;
a semi-circular rainbow member connected to said base member so as to form a substantially unobstructed semi-circular space between said rainbow member and said base member;
means for generating a plurality of radiation beams between said base member and said semi-circular rainbow member;
a plurality of photodetectors, each of said photodetectors positioned to receive a respective one of said radiation beams;
a plurality of visible light-emitting members, each of said visible light-emitting members being associated with a respective one of said radiation beams;
a plurality of musical instrument designators, each of said musical instrument designators being associated with a different one of said radiation beams and designating a respective one of a plurality of different types of musical instruments;
audio generation means for generating a plurality of sets of musical sounds, each of said musical sounds within said sets being associated with a respective one of said radiation beams and each of said sets of musical sounds being associated with a respective one of said different types of musical instruments designated by said musical instrument designators;
means for causing said audio generation means to generate musical sounds of one of said sets of musical sounds in response to an interruption of said radiation beam associated with said musical instrument designator which designates said type of musical instrument associated with said one set of musical sounds;
means for causing said audio generation means to generate one of said musical sounds in response to an interruption of said radiation beam associated with said one musical note; and

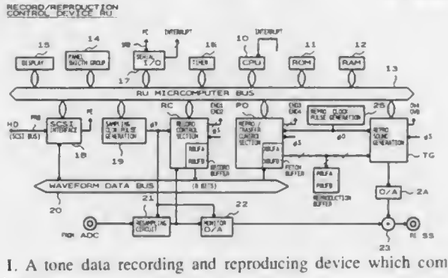
means for causing one of said visible light-emitting members to be illuminated in response to an interruption of said radiation beam associated with said one visible light-emitting member.

5,668,334

TONE DATA RECORDING AND REPRODUCING DEVICE

Hirotaka Kurihayashi; Hironal Kobayashi; Takashi Hirakata; Kazuhiro Gotoh, and Yoshio Fujita, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Division of Ser. No. 29,021, Mar. 10, 1993, Pat. No. 5,525,748. This application Jun. 6, 1995, Ser. No. 471,424
Claims priority, application Japan, Mar. 10, 1992, 4-87629
Int. Cl.[6] G10H *7/00;1/00*
U.S. Cl. 84—602 **8 Claims**



1. A tone data recording and reproducing device which comprises:

a storage device for storing tone sample data of a waveform;

a first buffer memory into which the tone sample data read out from said storage device is fetched;

a second buffer memory into which the tone sample data fetched into said first buffer memory is transferred;

transfer control means for controlling a transfer of the tone sample data from said first buffer memory to said second buffer memory; and

readout means for reading out the tone sample data stored in said second buffer memory, at a desired readout rate, wherein said transfer control means transfers the tone sample data from said first buffer memory to said second buffer memory when a predetermined empty area is produced in said second buffer memory as said readout means reads out the tone sample data from said second buffer memory, and said transfer control means replenishes said first buffer memory with tone sample data from said storage device when an empty area is produced in said first buffer memory as a result of transferring the tone sample data from said first buffer memory to said second buffer memory.

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Patent Not Issued For This Number

5,668,336

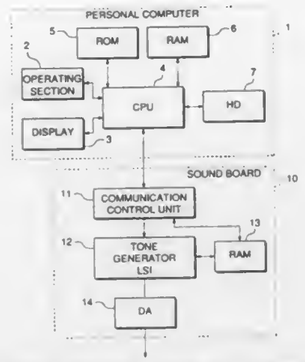
MUSIC SYSTEM, TONE GENERATOR AND MUSICAL TONE-SYNTHESIZING METHOD

Yasuhisa Miyano, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jun. 5, 1996, Ser. No. 659,171
Claims priority, application Japan, Jun. 7, 1995, 7-140814
Int. Cl.[6] G10H *7/04*
U.S. Cl. 84—605 **12 Claims**

1. A music system comprising:

a subsystem including first memory means having a memory capacity and being capable of having waveform data read therefrom and written thereinto in a parallel manner, and



musical tone-synthesizing means for sequentially reading waveform data from said first memory means in an order in which said waveform data have been written into said first memory means, and for synthesizing musical tones based on said read waveform data; and

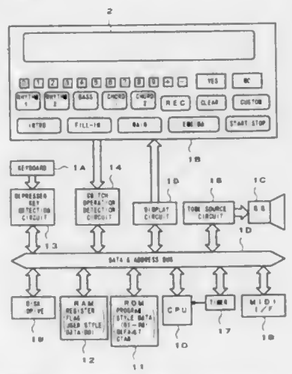
a main system including second memory means storing waveform data, said second memory means having a larger memory capacity than said memory capacity of said first memory means, packet-determining means for determining packets into which waveform data to be transferred from said second memory means to said first memory means for generation of musical tones is to be divided, based on a writing time period required for a unit data to be written into said first memory means and a reading time period required for said unit data to be read from said first memory means, and transfer means for sequentially reading waveform data from said second memory means in said packets determined by said packet-determining means, and for sequentially writing the read waveform data into said first memory means at areas thereof from which previously stored waveform data have been read.

5,668,337

AUTOMATIC PERFORMANCE DEVICE HAVING A NOTE CONVERSION FUNCTION

Masao Kondo; Shinichi Ito, and Hiroki Nakazono, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jan. 5, 1996, Ser. No. 583,450
Claims priority, application Japan, Jan. 9, 1995, 7-016349
Int. Cl.[6] G10H *1/00;1/36;1/38*
U.S. Cl. 84—609 **18 Claims**



1. An automatic performance device comprising:

first storage means for storing a plurality of first automatic performance data and a plurality of second automatic performance data, and also for storing first information relative to note conversion specific to said first automatic performance data;

second storage means for storing second information relative to note conversion and common to said second automatic performance data;

readout means for, in accordance with progression of an automatic performance, reading out said first and second automatic performance data and also reading out first information in correspondence with the read-out first automatic performance data and second information in correspondence with the read-out second automatic performance data, and

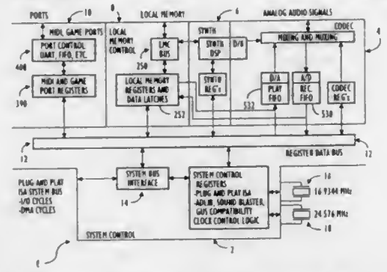
note conversion means for converting note data contained in said first automatic performance data on the basis of said first information and converting note data contained in said second automatic performance data on the basis of said second information.

5,668,338

WAVETABLE AUDIO SYNTHESIZER WITH LOW FREQUENCY OSCILLATORS FOR TREMOLO AND VIBRATO EFFECTS

Larry D. Hewitt; David N. Suggs, and David Norris, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Filed Nov. 2, 1994, Ser. No. 333,564
Int. Cl.[6] G10H *1/02;7/00*
U.S. Cl. 84—629 **30 Claims**



1. A low frequency oscillator (LFO) generator for a digital wavetable audio synthesizer, wherein said synthesizer; (i) is at least capable of generating a plurality of digital audio signals, each of said plurality of digital audio signals being generated from wavetable data addressed by said synthesizer; and (ii) includes an address generator which establishes a wavetable data addressing rate for each of said digital audio signals being generated; said LFO generator comprising:

(a) means for calculating a LFO variation value used by said address generator to modulate said wavetable addressing rate for at least one of said digital audio signals being generated;

(b) means for providing said LFO variation value to said address generator; and

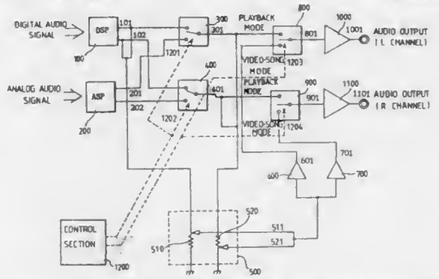
(c) means for periodically updating said LFO variation value.

5,668,339

APPARATUS FOR MULTIPLEXING AN AUDIO SIGNAL IN A VIDEO-SONG PLAYBACK SYSTEM

Jae-Sung Shin, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 26, 1995, Ser. No. 548,552
Claims priority, application Rep. of Korea, Oct. 26, 1994, 94-27347; Oct. 26, 1994, 94-27348
Int. Cl.[6] G10H *1/00;7/00*
U.S. Cl. 84—634 **5 Claims**



1. An apparatus for multiplexing an audio signal in a video-song playback system, which comprises:

a digital signal processing section for processing a first stereo accompaniment music read out from an L and an R channels included in digital audio channels of the video-song medium, into digital audio signals, to output a first and a second digital audio signals, the video-song medium having both the digital audio channels with the first stereo accompaniment music recorded therein and analog audio channels with a second stereo accompaniment music that includes a singer's singing voice;

an analog signal processing section for processing the second stereo accompaniment music read out from the L and the R channels, included in the analog audio channels of the video-song medium, into analog audio signals, to output the first and the second analog audio signals;

a first switching section for switching over between the first digital audio signal from the digital signal processing section and the first analog audio signal from the analog signal processing section, to output a first switched signal;

a second switching section for switching over between the second digital audio signal from the digital signal processing section and the second analog audio signal from the analog signal processing section, to output a second switched signal;

an audio multiplexing section for adjusting audio levels of the first and second digital audio signals from the digital signal processing section, of the first switched signal from the first switching section and of the second switched signal from the second switching section in an analog mode and a video-song mode, to output a first and a second multiplexed signals;

first and second amplifying sections for amplifying the first and the second multiplexed signals, to output a first and a second amplified signals;

a first mode switching section for switching between the first switched signal from the first switching section and the first amplified signal from the first amplifying section in order to switch between a normal playback mode and a video-song mode, to output a first mode switched signal;

a second mode switching section for switching between the second switched signal from the second switching section and the second amplified signal from the second amplifying section in order to switch between the normal playback mode and the video-song mode, to output a second mode switched signal;

a third amplifying section for amplifying the first mode switched signal from the first mode switching section, to output a third amplified signal;

a fourth amplifying section for amplifying the second mode switched signal from the second mode switching section, to output a fourth amplified signal; and

a control section for sensing whether a selected mode is the normal playback mode or the video-song mode, to control the first and the second switching sections and the first and the second mode switching sections.

5,668,340

WIND INSTRUMENTS WITH ELECTRONIC TUBING LENGTH CONTROL

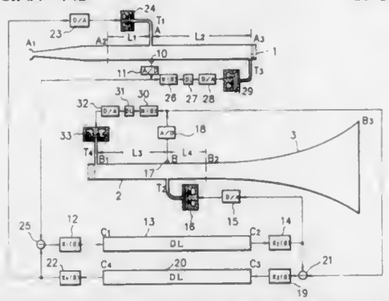
Hikaru Hashizume, and Yutaka Washiyama, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed Nov. 16, 1994, Ser. No. 340,210

Claims priority, application Japan, Nov. 22, 1993, 5-316008; Nov. 22, 1993, 5-316009

Int. Cl.[6] G01H *1/18;1/32;3/12;3/14*

U.S. Cl. 84—742 **21 Claims**



1. An electronic tubing length control apparatus for a wind instrument, comprising:

a first sensor, which is arranged at an entrance portion of a first straight pipe contiguous with a mouthpiece, and converts an acoustic wave traveling from the mouthpiece into an electrical signal;

a first actuator, which is arranged at the entrance portion of said first straight pipe, and converts an input electrical signal into an acoustic wave, and supplying the acoustic wave to the entrance portion of said first straight pipe;

a second sensor, which is arranged at an exit portion of a second straight pipe contiguous with a flare-bell portion, and converts a reflected wave from the exit into an electrical signal;

a second actuator, which is arranged at the exit portion of said second straight pipe, and converts an input electrical signal into an acoustic wave, and supplying the acoustic output to the exit portion of said second straight pipe; and

electronic delaying means for delaying the output from said first sensor by a predetermined period of time, and supplying the delayed output to said second actuator, and for delaying the output from said second sensor by a predetermined period of time, and supplying the delayed output to said first actuator.

5,668,341

SILENT MORTAR PROPULSION SYSTEM

George L. Reynolds, Rte. 1 Box 32A, Altona, Ill. 61414; John M. Miller, Rte. 3 Winters Dr., Marietta, Ohio 45750, and Charles M. Woods, 11395 State Rte. 127, West Manchester, Ohio 45382

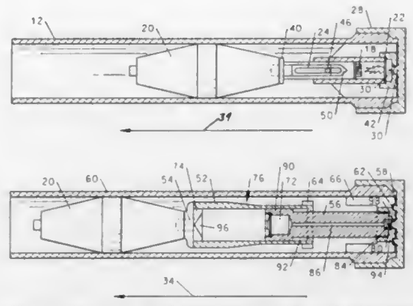
Filed Jun. 12, 1995, Ser. No. 489,672

Int. Cl.[6] F41F *1/06*

U.S. Cl. 89—1.35 **4 Claims**

1. A silent mortar propulsion system comprising in combination a mortar gun tube having a firing pin for contacting a mortar round dropped thereon,

a silent mortar round comprising a warhead and a propulsion unit connected thereto and adapted to be dropped onto said firing pin to detonate said propulsion unit,



said propulsion unit, upon detonation, driving said warhead from said gun tube,

said propulsion unit after a short dwell time following said warhead in its flight,

said propulsion unit having a power cylinder with a cylinder cap at the lower end thereof, said cylinder cap containing a striker and propellant charge with a rupture disc thereon,

a piston within said power cylinder having its upper end attached to said warhead,

guide fins extending outwardly from said power cylinder, and wherein said fins may be rotated to fit within grooves and notches on said cylinder to regulate the size of the volume within said cylinder and thus the range of mortar projection.

5,668,342

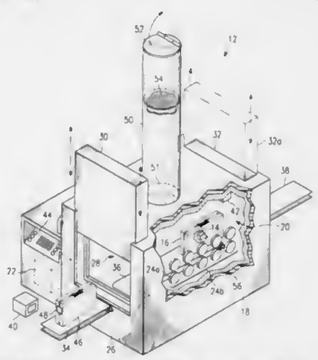
APPARATUS AND METHOD FOR DETECTION AND NEUTRALIZATION OF CONCEALED EXPLOSIVES

Stephen R. W. Discher, 202 Jones St., Navasota, Tex. 77868

Filed Dec. 7, 1995, Ser. No. 568,581

Int. Cl.[6] F42B *33/00*

U.S. Cl. 86—50 **17 Claims**



1. An apparatus for detecting and neutralizing an explosive device having a detonator including a pressure sensitive switch, said explosive device being concealed in cargo as a bomb, said apparatus comprising:

an isolation enclosure including a wall, a door, and an exhaust duct opening formed through said wall;

said wall defining a test chamber set apart from an external environment having an ambient pressure;

said door being movably attached to said wall and being selectively movable between an open position and a closed position wherein, when in said open position, said door uncovers a loading passageway formed in said wall between said test chamber and said external environment and, when in said closed position, said door blocks said loading passageway;

said exhaust duct opening connecting said test chamber to an exhaust duct routed in a pre-selected direction; and

a detonation-inducing system including a signal generator and an audio transducer;

said signal generator producing at an output an audio sweep signal having a frequency ranging across a frequency interval within the range from about 5 to 15,000 Hertz;

said output of said signal generator being operably connected to said audio transducer;

said audio transducer being positioned within said test chamber and emitting an acoustic signal into said test chamber;

said acoustic signal having a frequency equal to said frequency of said audio sweep signal and, when said explosive device is within said test chamber with said door in said closed position, inducing a mechanical vibration of said pressure sensitive switch causing said switch to activate repeatedly thereby activating said detonator of said explosive device;

whereby said explosive device is neutralized and any shrapnel produced therefrom is blocked from passing through said loading passageway by said door but can pass through said exhaust duct opening into said exhaust duct.

5,668,343

GATLING TYPE MULTI-BARREL WEAPON WITH SLIDING CHAMBERS

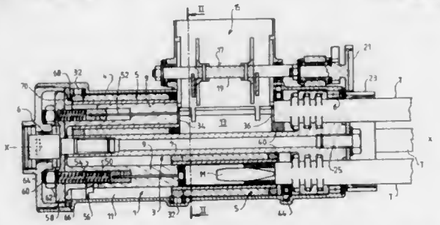
Georges Simon, Saint-Germain-Du-Puy, and Emmanuel Mornay, Bourges, both of France, assignors to CTA International, Versailles, France

Filed Mar. 22, 1996, Ser. No. 621,210

Claims priority, application France, Mar. 24, 1995, 95 03486

Int. Cl.[6] F41A *9/36*

U.S. Cl. 89—12 **18 Claims**



1. An improvement for a GATLING type multi-barrel weapon, notably designed to fire telescoped munitions, the weapon including a revolving assembly formed of a body housed in a frame extended by the barrels of the weapon and supporting in a slideable manner sliding chambers formed of tubular elements, each of the sliding chambers being axially aligned with one of the barrels of the weapon and being able to move between an opened and a closed position following a translational movement parallel to a rotational axis of the revolving assembly, the improvement comprising:

two munition retaining supports that, when a sliding chamber is in its open position such that a front end face of the sliding chamber is located at a distance from a rear end face of the associated barrel to enable a munition to be loaded between the sliding and the associated barrel, hold the munition in axial alignment with the sliding chamber and the associated barrel, and wherein each sliding chamber is slidably mounted on a sliding chamber support and guiding member and is rotationally fixed with respect to the support and guiding member.

5,668,344

BALLISTIC PANEL

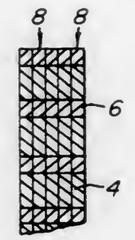
Avraham Bornstein, Arbel Street 8/2, Kfar Saba, Israel

Filed Jan. 24, 1995, Ser. No. 378,050

Claims priority, application Israel, Jan. 25, 1994, 108434

Int. Cl.[6] B32B *5/04;* **F41H** *5/04*

U.S. Cl. 89—36.02 **8 Claims**



1. A substantially rigid ballistic panel made of a composite material consisting of fibers embedded in at least one type of resin, characterized in that, with regard to mechanical properties across at least the surface of the panel, said panel is inhomogeneous, wherein the panel defines a plurality of layers with each layer defining a plurality of columns extending across the thickness of the panel, the material having a substantially equivalent weight percentage within each column; wherein each column is aligned with columns in adjacent layers.

5,668,345

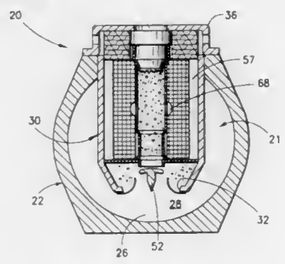
AIRBAG INFLATORS EMPLOYING COATED POROUS SUBSTRATES

David D. Schroeder, Ogden; Brett Hussey, Bountiful, and Walter A. Moore, Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 19, 1995, Ser. No. 545,516

Int. Cl.[6] C06D *5/06;* **C06B** *45/04*

U.S. Cl. 102—289 **20 Claims**

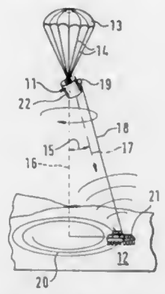


1. In a hybrid airbag inflator having a heat-producing, non gas-producing composition present for heating stored pressurized inflation gases in said inflator, the improvement comprising the heat-producing, essentially non gas-producing composition being present in the inflator as a coating on a porous substrate.

5,668,346
SUBMUNITION

Jürgen Kunz, Reichenschwand, and Max Rentzsch, Schnaittach, both of Germany, assignors to Diehl GmbH & Co., Nuremberg, Germany

Filed Apr. 10, 1996, Ser. No. 630,376
Claims priority, application Germany, May 8, 1995, 295 07 361.6
Int. Cl.[6] F42B *10/56*
U.S. Cl. 102—387 5 Claims



1. Submunition (**11**) which is attached to shroud lines of a rotational parachute so as to be suspended from a said parachute for the braked descent thereof into a target area (**12**) while at an aspect angle in the magnitude of about 30° from a vertical about which said submunition is rotated, said submunition including a fragment warhead (**22**) for deployment against semi-hard target objects (**21**) located in a protected position, said submunition (**11**) being equipped with a search-fuse sensor (**19**) for the acquisition of a target object (**21**) during the course of rotating descent into the target area (**12**), said sensor upon acquisition of a target object (**21**) initiating a first fragmentation effect through the formation of a fragment cone constituted of metal balls (**23**) in an operative direction (**17**) which is pivoted through said aspect angle (**15**) in the order of magnitude of about 30° relative to the vertical of the descent (**16**), a search direction (**18**) of the sensor (**19**) being oriented parallel to the operative direction (**17**), said fragment warhead (**22**) upon said submunition descending to a few meters above ground of the target area (**12**), in the absence of an acquisition of a target object (**21**) by said sensor, including means for pivoting said submunition from the aspect angle (**15**) into a vertical descent (**16**), and means for initiating a radial fan of fragments from a cylindrical wall of said fragmentation warhead triggering a second fragmentation effect which is slightly inclined downwardly relative to the horizontal.

5,668,347
KINETIC ENERGY PROJECTILE WITH FIN LEADING EDGE PROTECTION MECHANISMS

Ameer G. Mikhail, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

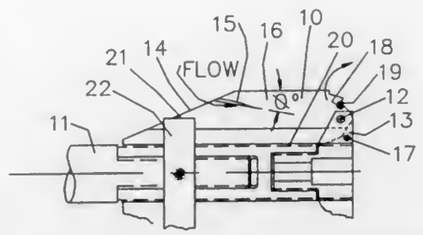
Filed Sep. 13, 1996, Ser. No. 716,678
Int. Cl.[6] F42B *14/06;10/14;* F16B *21/18*
U.S. Cl. 102—523 6 Claims

1. A kinetic energy projectile comprising:

a penetrator within a sabot;

a plurality of pivoting fins attached to said penetrator, said fins each having a first leading edge and a second leading edge;

means for restraining said fins such that only said first leading edge of said fins is exposed during launch of said projectile from a gun tube;



means to provide rotation to each said pivoting fins after said projectile exits from said gun tube, said means to provide rotation to each said pivoting fins comprising an aerodynamic lifting surface on each said fin;

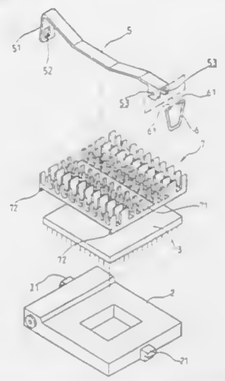
said aerodynamic lifting surface comprising a winglet; and

means to stop rotation of each said fin such that said second leading edge is exposed after said projectile exits from said gun tube.

5,668,348
CPU DISSIPATOR MOUNTING APPARATUS

Chun-Sheng Lin, No. 31, Sec. 1, Min Yi Road, Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Oct. 2, 1995, Ser. No. 537,364
Int. Cl.[6] H05K *7/20*
U.S. Cl. 174—16.3 1 Claim



1. A CPU dissipator mounting apparatus comprising:

a metal plate including two ends, the two ends including a first end and a second end, said ends stretching upward from said metal plate at an elastic tilt angle thereto, said first end including a first tilted portion and the second end including a second tilted portion, said first end including a downwardly-bent portion having a first opening, said second end including two pivot holes;

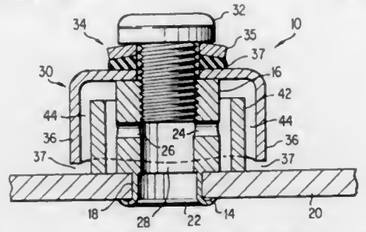
an inverted trapezoid metal snap ring having two upper ends extending horizontally and inwardly which are respectively engaged with the two pivot holes of said second end of said metal plate; and

a dissipator board including a non-finned area for accepting said metal plate.

5,668,349
HYDROGEN VENT FOR REMOTE TERMINAL CABINETS

James H. Durham, Reston; Wilfred L. Gleadall, Leesburg; Richard A. Carmichael, Manasass, and Ray E. Medcalf, Chantilly, all of Va., assignors to Hubbell Incorporated, Orange, Conn.

Filed Jan. 18, 1996, Ser. No. 588,198
Int. Cl.[6] H05K *5/02*
U.S. Cl. 174—17 VA 20 Claims



1. A vent for preventing the buildup of hydrogen gas in a remote terminal cabinet, comprising:

a generally cylindrical body portion adapted to be affixed to a roof of a cabinet, said body portion having a vent inlet for communicating with the interior of the cabinet through an aperture in the cabinet roof, a vent outlet located above said vent inlet and disposed on a cylindrical side surface of said body portion for communicating with the exterior of said cabinet at a point above the cabinet roof, and an internal air passage communicating between said vent inlet and said vent outlet;

an inverted cup-like cover portion affixed to an upper end of said body portion for covering said body portion and said vent outlet, said cover portion having downwardly extending, generally cylindrical side walls which extend around an outer periphery of said body portion with a gap therebetween; and

a splash guard received in said gap for shielding said vent outlet against the entry of water, said splash guard comprising an upstanding, generally cylindrical collar which surrounds said body portion and is movable laterally between said body portion and said cover portion when impinged upon by wind or water to cover said vent outlet.

5,668,350
ELECTRIC CONNECTION BOX

Takeshi Yanase, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 18, 1996, Ser. No. 735,064
Claims priority, application Japan, Oct. 20, 1995, 7-272851
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—50 2 Claims

1. An electric connection box comprising:

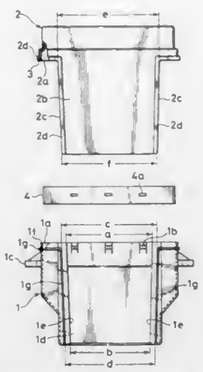
a lower cover in which a junction block is stored in an upper portion of an inner space opened upward;

an upper cover for closing an upper opening of said lower cover;

an opening cut out on a basal side wall of said lower cover from an upper edge to a bottom side, said opening being formed in a trapezoid shape so that an upper width is larger than a lower width;

a side wall for closing said opening when said upper cover is closed, said side wall being provided on said upper cover and being formed in a trapezoid shape so that an upper width is larger than a lower width;

fitting portions being provided respectively to said upper cover including said side wall and said lower cover including said opening, said fitting portions being provided to at least right and left inclined portions on said side wall and said opening, said fitting portions facing each other when said upper cover is closed; and

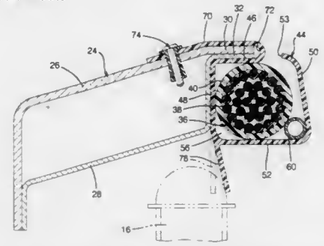


a waterproof packing sandwiched between said fitting portions when said lower cover is closed.

5,668,351
CONDUIT HOUSING FOR VEHICLE ENGINE COMPARTMENT HAVING A FLEXIBLE LIP THAT EXTENDS INTO AIRFLOW SEALING ENGAGEMENT WITH THE RADIATION

Michael Joseph Hanlon, Oakland Twp.; Dale Anthony Di Bartolomeo, and Harry J. Burke, both of Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1996, Ser. No. 599,229
Int. Cl.[6] H02G *3/00*
U.S. Cl. 174—68.3 3 Claims



1. In a motor vehicle engine compartment having a radiator and a beam extending transversely across the engine compartment above the radiator, a conduit for extending across the engine compartment, to carry an electrical harness, comprising:

a plastic conduit housing of tubular hollow cylindrical shape having a wall opening extending the full length thereof so that the electrical harness can be installed into the conduit housing for retention therein;

a mounting leg formed integrally with the conduit housing and extending into engagement with the beam to enable mounting of the conduit housing to the beam; and

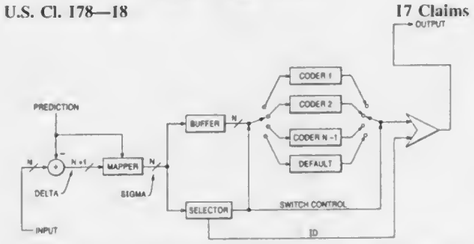
an integral seal lip formed integrally with the conduit housing and being flexible and extending into interfering engagement with the radiator so that upon mounting of the conduit housing on the beam, the seal lip is flexed into air-flow sealing engagement with the radiator.

5,668,352

DATA COMPRESSION IN DIGITIZING TABLET

Kevin G. Christian, Fort Collins; John S. Keck, and Steven K. Skoog, both of Colorado Springs, all of Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Dec. 21, 1994, Ser. No. 360,527
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 17 Claims



1. A method of operating a computer having a display, comprising the following steps:

deriving computed stylus positions from signals received from a stylus moving through different actual positions on the display;

deriving signals representing actual stylus positions from the computed positions, using one or more correction tables, stored in compressed form; and

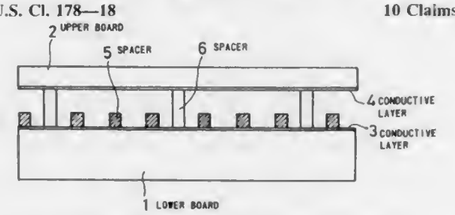
generating marks at the actual positions, based on the derived signals.

5,668,353

INPUT PANEL AVOIDING INTERFERENCE PATTERN AND METHOD OF FORMING THE SAME

Genichi Matsuda, and Toshiaki Tanaka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1995, Ser. No. 406,323
Claims priority, application Japan, Mar. 18, 1994, 6-049500
Int. Cl.[6] G08C *21/00;* G09G *3/02*
U.S. Cl. 178—18 10 Claims



1. An input panel of a resistance layer type comprising:

a first board having a first transparent conductive layer on one surface;

a second board having a second transparent conductive layer on one surface, said first board and said second board being arranged such that said first transparent conductive layer faces said second transparent conductive layer;

first spacers arranged between said first board and said second board, said first spacers being non-conductive and having a height no greater than 14 μm; and

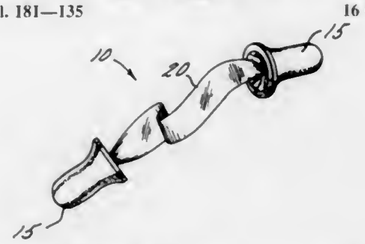
second spacers arranged between said first board and said second board among said first spacers, said second spacers being non-conductive and having a height no smaller than 15 μm.

5,668,354

EARPLUG ASSEMBLY AND EYEWEAR ASSEMBLY

Robert N. Falco, Indianapolis, Ind., assignor to Cabot Safety Intermediate Corporation, Southbridge, Mass.

Filed Nov. 2, 1995, Ser. No. 552,213
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—135 16 Claims



1. An earplug assembly comprising:

a pair of earplugs adapted for insertion in the ear canal of an individual; and

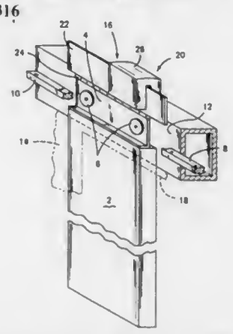
a single-cord extendable attachment member securely connected between each earplug, wherein said attachment member has a first predetermined length defining a first distance between each earplug, and upon extension to a second length retains its extended second length and defines a second, greater distance between each earplug, and further wherein such extension provides for customization of the second length of the attachment member.

5,668,355

ELEVATOR CAB DOOR DRIVE SYSTEM

Jerome F. Jaminet, South Windsor; Thomas M. Kowalczyk, Farmington; Edward E. Ahigian, West Hartford; Thomas M. McHugh, Farmington; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Richard E. Kulak, Bristol, and David W. Barrett, East Hartland, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 7, 1994, Ser. No. 224,441
Int. Cl.[6] B66B *13/14*
U.S. Cl. 187—316 3 Claims



1. An elevator cab door drive system comprising:

a) a track fixed to the cab above a cab entrance opening, said track providing guidance for a cab door during its opening and closing movement cycles;

b) a linear induction motor primary assembly, said primary assembly including a primary winding component which is fixed to the cab above said track;

c) a hanger panel forming a fixed upper portion of the door;

d) door guide rollers rotatably mounted on said hanger panel, said guide rollers being disposed for rolling movement over an upper surface of said track during opening and closing movement of the door;

e) a linear induction motor secondary member mounted on said hanger panel, said secondary member passing through a flux field created by said primary assembly whereby a thrust force will be applied to said secondary member to drive said door through its opening and closing cycles; and

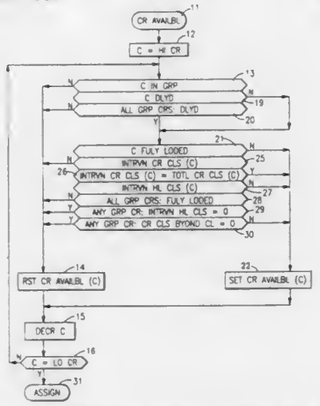
f) a flexible joint connecting said door with said secondary member so as to prevent through plane deflections of said door from causing misalignment of said secondary member and said primary winding component, said flexible joint is formed by a hinge.

5,668,356

ELEVATOR DISPATCHING EMPLOYING HALL CALL ASSIGNMENTS BASED ON FUZZY RESPONSE TIME LOGIC

Bruce A. Powell, Canton; Jannah Stanley, Cromwell, and David J. Sirag, Jr., South Windsor, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 264,652, Jun. 23, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 696,442
Int. Cl.[6] B66B *1/36*
U.S. Cl. 187—382 11 Claims



7. A method of dispatching a group of elevator cars in a building including assigning hall calls to available elevator cars for service thereto, comprising, for each specific hall call to be assigned:

determining if a given car is fully loaded, and if it is not, providing an available signal indicative of the fact that said given car is available to answer hall calls, but if it is fully loaded, determining whether said given car has registered any intervening car calls between the present position of said given car and said specific hall call, and if it has not, providing an unavailable signal indicative of said given car being unavailable to service hall calls;

characterized by the improvement comprising:

if the car is fully loaded and there are car calls which are not intervening car calls, determining if there are any intervening hall calls between the present position of said given car and said specific hall call, and if there are not, providing said available signal, but if there are intervening hall calls, providing said available signal unless another car in said group either has room for passengers, or may have room for passengers by the time it reaches said specific call;

assigning hall calls to cars related to said available signals; and

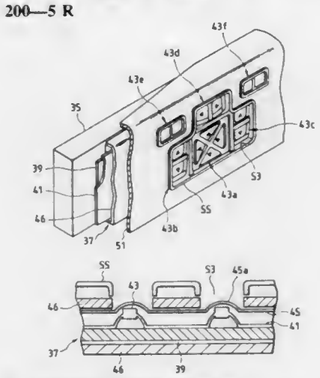
dispatching said cars to answer assigned hall calls.

5,668,357

SEAT COMBINATION SWITCH

Syuji Takiguchi; Hiroshi Ichikawa, and Keizo Nishitani, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 30, 1996, Ser. No. 655,189
Claims priority, application Japan, Jun. 7, 1995, 7-140846
Int. Cl.[6] H01H *9/26*
U.S. Cl. 200—5 R 6 Claims



1. A seat combination switch comprising:

a thin plate-like switch unit comprising a board having a plurality of contacts, and a sheet-like rubber contact member superposed on said board, said rubber contact member having convex switch portions for opening and closing said plurality of contacts, respectively;

a side cover covering said switch unit fixedly mounted on a side surface of a seat portion of a seat;

windows formed through said side cover, said switch portions being exposed through said windows; and

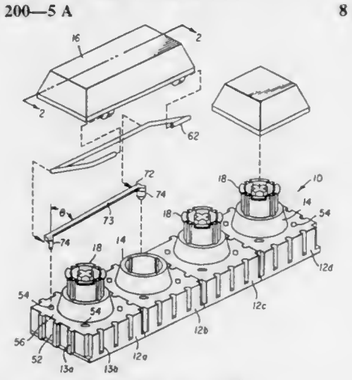
flanges formed at peripheral edge portions of said windows and projecting outwardly beyond said switch portions.

5,668,358

RECONFIGURABLE KEYBOARD

Paul Charles Wolf, Spencerport, and Raymond John Stein, Phelps, both of N.Y., assignors to Ultimate Technology Corporation, Victor, N.Y.

Continuation of Ser. No. 271,070, Jul. 5, 1994, abandoned. This application Jul. 15, 1996, Ser. No. 679,933
Int. Cl.[6] H01H *13/70*
U.S. Cl. 200—5 A 8 Claims



1. A reconfigurable keyboard, comprising:

at least two key switches each including a truncated conical plunger housing projecting from a top surface of each of the

key switches, and having a cylindrical inside wall and at least one groove in the wall; and

a key cap selectively engageable with the at least two key switches, having at least one dimension sufficient to span the at least two key switches, including one active switch post including a plunger having at least one rib for slidably engaging the groove, which is reciprocally movable in the plunger housing of a first key switch of the key switches for actuating the first key switch, and at least one passive switch post, which is reciprocally movable in the plunger housing of a second key switch of the key switches without actuating said second key switch;

a torsion key pivotally connected to the key cap;

a torsion bar retainer clip which is selectively engageable with the top surface of at least one of the key switches, for retaining the torsion bar body in movable proximity with the top surface of the at least one of the key switches; and

at least one opening in the top surface of the at least one of the key switches for selectively engaging the torsion bar retainer clip with the at least one of the key switches which opening is symmetric with respect to a diagonal line intersecting opposite corners of each of the key switch top surfaces so that the torsion bar can be oriented horizontally or vertically on the keyboard.

5,668,359

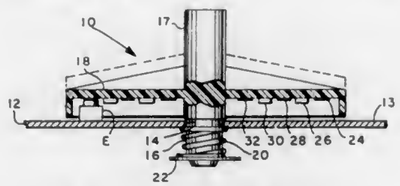
MULTIPLE SWITCH ASSEMBLY INCLUDING SPRING BIASED ROTARY CAM WITH CONCENTRIC CAM TRACKS FOR SELECTIVELY OPERATING SWITCHES

Robert J. Alvord, Elmwood Park; Jeffrey M. Huffington, Cary; Yoshio W. Kano, Barrington; Joseph S. Calabrese, Arlington Heights, all of Ill., and Kayvan K. Mirza, Annecy, France, assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 1, 1996, Ser. No. 609,204

Int. Cl.[6] H01H *19/60;21/80*

U.S. Cl. 200—6 B **9 Claims**



1. A rotary encoded switch assembly comprising:

(a) a housing defining a deck surface;

(b) a rotor mounted for rotation on said housing about an axis generally orthogonal or normal to said deck surface, said rotor defining a plurality of switch actuating surfaces radially and arcuately spaced about said axis in a predetermined arrangement;

(c) a plurality of individual switches disposed on said deck surface in a predetermined pattern each having a moveable actuator member, wherein one revolution of said rotor represents a plurality of functions of a desired program and wherein one revolution is subdivided into at least 16 increments of rotation with each said increment actuating selected ones of said switches to provide a discrete binary code for each incremental position of said rotor, said selected ones comprising at least two of said switches, and said plurality of switches comprises less than one-half the number of said increments.

5,668,360

CIRCUIT-BREAKER HAVING TWO INTERRUPTING CHAMBERS PER POLE WITH DRIVE MECHANISM AND DRIVE RODS ISOLATING INSERT CAPACITORS

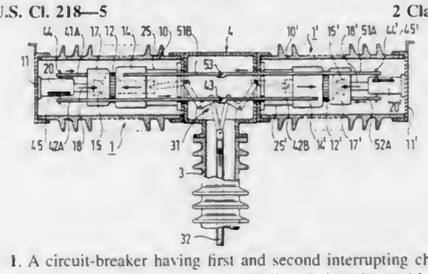
Michel Perret, Bourgoin-Jallieu; Denis Dufournet, Bron, and Joseph Martin, Meyzieu, all of France, assignors to GEC Alsthom T & D SA, Paris, France

Filed Jan. 5, 1996, Ser. No. 583,804

Claims priority, application France, Jan. 6, 1995, 95 00114; May 17, 1995, 95 05852

Int. Cl.[6] H01H *33/12;33/16*

U.S. Cl. 218—5 **2 Claims**



1. A circuit-breaker having first and second interrupting chambers per pole, said first and second chambers being disposed in a T configuration at the end of a column provided at its base with a control system for operating a drive rod, each of said first and second chambers containing a moving assembly with main and arcing contacts connected via a linkage to said drive rod, and each of said first and second chambers further containing a follower assembly with main and arcing contacts, said main contacts and said arcing contacts of said follower assembly in said first chamber operative to cooperate respectively with said main contacts and said arcing contacts of a corresponding said moving assembly in said first chamber, and said main contacts and said arcing contacts of said follower assembly in said second chamber operative to cooperate respectively with said main contacts and said arcing contacts of a corresponding said moving assembly in said second chamber,

wherein said follower assembly in said first chamber is connected to said moving assembly in said second chamber by insulating rods, and said follower assembly in said second chamber is connected to said moving assembly in said first chamber by further insulating rods, such that each follower assembly is constrained to move simultaneously at a velocity of equal magnitude and of opposite direction to the velocity of the corresponding said moving assembly located within the same chamber therewith.

2. The circuit-breaker according to claim 1, wherein each of said insulating rods comprises a tube enclosing capacitor elements disposed in series and constituting a capacitor whose ends are electrically connected to the follower assembly of said first chamber and to the moving assembly of said second chamber.

5,668,361

VACUUM-TYPE CIRCUIT BREAKER WITH CONNECTION TERMINALS

Hartmut Möncke, and Ibrahim Traore, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE93/00739, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/08347, PCT Pub. Date Apr. 14, 1994

PCT Filed Aug. 13, 1993, Ser. No. 406,961

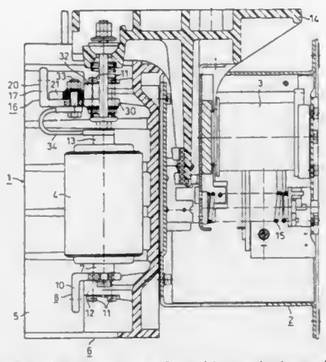
Claims priority, application Germany, Sep. 25, 1992, 9213143 U

Int. Cl.[6] H01H *33/66*

U.S. Cl. 218—118 **10 Claims**

1. A vacuum contactor comprising:

at least one vacuum interrupter;



a chamber being open on a first side, such that said vacuum interrupter is contained in an insulator body located in the first side of said chamber;

an upper connection terminal including a metal member;

a lower connection terminal;

each one of said upper and lower connection terminals being secured to wall parts of said insulator body, the wall parts being arranged on opposite sides of the vacuum interrupter, each one of said upper and lower connection terminals having a corresponding connector contact face for coupling to an external conductor such that each one of said upper and lower connection terminals is coupled between said vacuum interrupter and an external electric circuit, the connector contact face of at least the upper connection terminal being dimensioned as a function of a current to be carried in said vacuum contactor; and

a holder made of an insulating material for attaching to at least one of the wall parts of said insulator body, said holder securing said metal member in said insulator body.

5,668,362

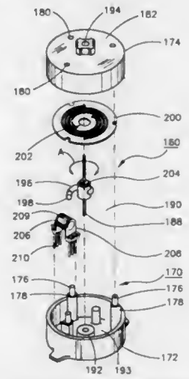
LIGHT BEAM SCANNER WITH OSCILLATORY SCAN ELEMENT

George A. Plesko, Media, Pa., assignor to GEO Labs, Inc., Media, Pa.

Continuation of Ser. No. 745,905, Aug. 16, 1991, Pat. No. 5,422,471. This application Jun. 6, 1995, Ser. No. 473,016

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467 **20 Claims**



1. A light beam scanning device comprising:

a housing;

a rotor mounted for angular oscillation with respect to said housing about an axis of rotation, said rotor including a mirror and a magnet, said mirror being disposed to receive a light beam and redirect the light beam as a scanning beam during angular oscillation of said rotor, said magnet being disposed so as to move in an arcuate path about said axis of rotation during angular oscillation of said rotor, said arcuate path comprising a portion of a circle centered on said axis of rotation;

at least one spring arm, said spring arm being generally elongated between a pair of ends, said spring arm being secured at an inner end to said rotor and secured at an outer end to said housing at a location radially outwardly from said inner end, said spring arm establishing an equilibrium angular position of said rotor with respect to said housing and imposing a restoring force, when said rotor is displaced from its equilibrium position, urging said rotor toward said equilibrium position; and

an electromagnetic motor including said magnet and a generally tubular coil having an opening extending along an axis of said coil, said coil being secured to said housing with said coil axis generally tangent to said circle.

5,668,363

OPTICAL READING APPARATUS FOR READING LATENT IMAGE MARK

Masato Nishida, Kyoto; Tomoaki Ishituka, Otokuni-gun, and Toshio Oshima, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

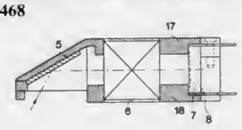
PCT No. PCT/JP94/00778, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/27242, PCT Pub. Date Nov. 24, 1994

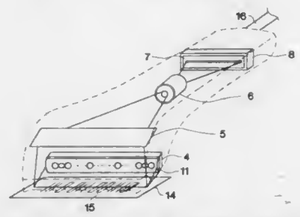
PCT Filed May 13, 1994, Ser. No. 367,355

Claims priority, application Japan, May 17, 1993, 5-114614

Int. Cl.[6] G06K *7/10;* **B42D** *15/00*

U.S. Cl. 235—468 **13 Claims**





1. An optical reading apparatus for reading a latent image mark, comprising:

a light-projecting member for projecting on a surface of the latent image mark light having a wavelength to excite a fluorescent substance contained in the latent image mark having desired information;

a light-receiving member for receiving fluorescence emitted from the surface of the latent image mark;

a mirror for reflecting the fluorescence emitted from the surface of the latent image mark onto the light-receiving member;

an image forming lens group for transmitting the fluorescence emitted from the surface of the latent image mark onto the light-receiving member;

an upper frame and a lower frame having said light-receiving member, said image forming lens group, and said mirror located therein such that said light-receiving member, said image forming lens group, and said mirror are spaced from each other by a fixed interval; and

an enclosure enclosing each of said light-protecting member, said upper frame and said lower frame,

wherein a range in which the latent image mark can be read is formed by setting a point at which an optical axis of the

light-projecting member and that of the light-receiving member intersect with each other as a reference; and an intersection angle between the two optical axes is in the range of from 10° to 40°.

5,668,364

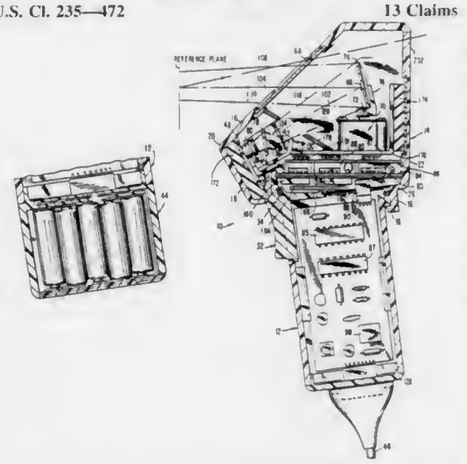
TARGET FINDER IN ELECTRO-OPTICAL SCANNERS

Jerome Swartz, Satauket; Howard M. Shepard, Great River, both of N.Y.; Eric F. Barkan, San Francisco, Calif.; Mark J. Krichever; Boris Metlitsky, both of Hauppauge, N.Y.; Edward Barkan, South Satauket, N.Y., and Alexander M. Adelson, Peckskill, N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of Ser. No. 353,682, Dec. 9, 1994, which is a division of Ser. No. 74,641, Jun. 11, 1993, Pat. No. 5,468,949, which is a continuation of Ser. No. 931,728, Aug. 18, 1992, Pat. No. 5,250,792, which is a division of Ser. No. 454,144, Dec. 21, 1989, Pat. No. 5,021,641, which is a division of Ser. No. 295,151, Jan. 9, 1989, Pat. No. 4,897,532, which is a continuation of Ser. No. 148,669, Jan. 26, 1988, Pat. No. 4,825,057, which is a division of Ser. No. 706,502, Feb. 28, 1985, abandoned. This application May 22, 1995, Ser. No. 447,074

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 13 Claims



1. In a system for electro-optically reading indicia having parts of different light reflectivity, a scanning head comprising:

a) a hand-held housing movable and aimable by a user relative to a target having an indicium to be read;

b) a light source supported by the housing, for directing a light beam away from the housing toward the target for reflection from the indicium;

c) a sensor supported by the housing, for detecting light of variable intensity reflected off the parts of the indicium over a field of view, and for generating an electric signal indicative of the indicium;

d) means for scanning at least one of said light beam and said field of view; and

e) means for finding the target, and for prompting the user that the housing is positioned relative to the target so that the indicium is ready to be scanned and read.

5,668,365

CARD UPSIDE-DOWN INSERTION PREVENTATIVE APPARATUS

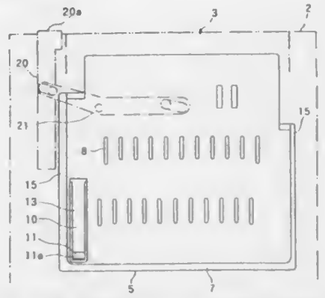
Toshiyasu Ito, Togane, and Shigeru Sato, Yotsukaido, both of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 659,162

Claims priority, application Japan, Jun. 19, 1995, 7-176722

Int. Cl.[6] G06K *13/04;13/00;13/06;7/00*

U.S. Cl. 235—486 3 Claims



1. A card upside-down insertion preventive apparatus comprising a truncated corner portion formed at one end of a leading edge portion of a square card, a card tray disposed in a card insertion chamber communicating with a card inlet port, said card tray having a front abutment member and capable of moving in accordance with insertion of said card, the leading edge of said card being brought into abutment with said front abutment portion when said card is inserted through said card inlet port, a lock claw formed on said card tray, said lock claw being capable of displacing upwardly and downwardly in a direction perpendicular to the card insertion direction, a pressure receiving portion formed on said claw so as to cooperate with a region within said truncated corner portion of said card when the card is in abutment with said front abutment member and inserted right side up, said pressure receiving portion causing said lock claw to displace downwardly by being pressed by a non-truncated corner portion formed at the other end of said front edge portion of said card when said card is inserted upside down, and an engagement portion formed at a location corresponding to a lower surface of said card tray and adapted to engage said lock claw when said lock claw has displaced downwardly so as to prevent movement of said card tray.

5,668,366

CONTROL DEVICE AND PROCESS FOR THE CONTACTLESS CONTROL OF A UNIT, ESPECIALLY A PLUMBING UNIT

Alex Mauerhofer, Vilters, Switzerland, assignor to Geberit Technik AG, Jona, Switzerland

Filed Mar. 1, 1995, Ser. No. 396,685

Claims priority, application Switzerland, Mar. 3, 1994, 630/94

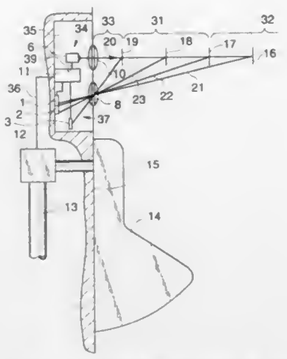
Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—221 9 Claims

1. An electronic control device for contactless control of a plumbing unit, comprising:

an actuating circuit connected to the unit; and

optical triangulation means including a transmitter for sending directed light signals and a receiving device for receiving signals reflected from a scanned object and for generating an actuation signal applied to said actuating circuit, said receiving device of said optical triangulation means including a background reflection portion receiving reflections predominantly from a background and a detection zone portion for receiving reflections predominantly from a predetermined



detection zone, and comparison means for comparing the intensities of reflections received by said background reflection portion and said detection zone portion whereby said reflections received from said detection zone are discernable from reflections received from said background.

5,668,367

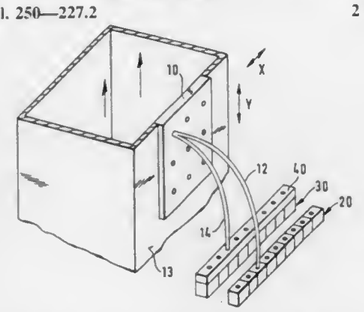
OPTICAL SPACE MONITORING APPARATUS COMPRISING LIGHT GUIDING FIBERS TRANSMITTING LIGHT THROUGH THE SPACE TO BE MONITORED

Franz Wintrich, and Hartmut Wintrich, both of Essen, Germany, assignors to BFI Entsorgungstechnologie GmbH, Ratingen, Germany

Filed Jun. 27, 1995, Ser. No. 496,846

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.2 2 Claims



1. An optical space monitoring apparatus comprising a first set of light guiding fibers and a second set of light guiding fibers, each light guiding fiber having a light inlet and a light outlet, the light inlets of said first and second sets of light guiding fibers being arranged in a common array, the light outlets of said first set of light guiding fibers being connected to a first light sensor row, and the light outlets of said second set of light guiding fibers being connected to a second light sensor row with an optical dispersion element being disposed between said second fiber light outlets and the associated light sensor row, and the sensors of said first and second light sensor rows being read out in parallel.

5,668,368

APPARATUS FOR SUPPRESSING ELECTRIFICATION OF SAMPLE IN CHARGED BEAM IRRADIATION APPARATUS

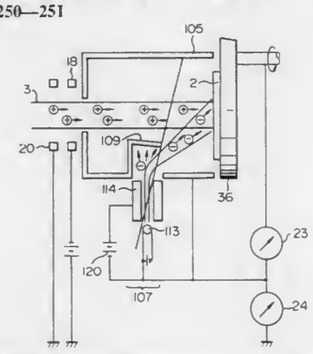
Katsuhiko Sakai, Mito; Osamu Nasu, Katsuta, and Yoichi Ose, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 411,150, Mar. 27, 1995, Pat. No. 5,576,538, which is a continuation of Ser. No. 20,802, Feb. 22, 1993, Pat. No. 5,466,929. This application May 2, 1996, Ser. No. 643,252

Claims priority, application Japan, Feb. 21, 1992, 4-033787; Jun. 8, 1992, 4-147195; Jul. 30, 1992, 4-202782

Int. Cl.[6] H01J *37/30;* H05H *3/00*

U.S. Cl. 250—251 19 Claims



1. An apparatus for enabling neutralization of a radiated ion beam comprising:

an apparatus for radiating electrons;

a first electrode disposed with respect to said electron radiating apparatus for enabling acceleration of said electrons therebetween and in a direction toward said ion beam;

a conductive member disposed at least with respect to said first electrode for enabling deceleration of said electrons therebetween and in a direction toward said ion beam; and

a capture cover member disposed with respect to said conductive member for substantially preventing contaminant substance moving toward the ion beam from impinging with the ion beam;

wherein said electrons radiated from electron radiating apparatus, accelerated by said first electrode and decelerated by said conductive member are combined with said ion beam so as to enable neutralization of said ion beam.

5,668,369

METHOD AND APPARATUS FOR LITHOLOGY-INDEPENDENT WELL LOG ANALYSIS OF FORMATION WATER SATURATION

Moustafa E. Oraby, Houston, Tex., assignor to Atlantic Richfield Company, Los Angetes, Calif.

Filed Jun. 28, 1996, Ser. No. 672,318

Int. Cl.[6] G01V *5/10*

U.S. Cl. 250—269.5 22 Claims

1. A method of determining the water saturation of a formation surrounding a wellbore, comprising:

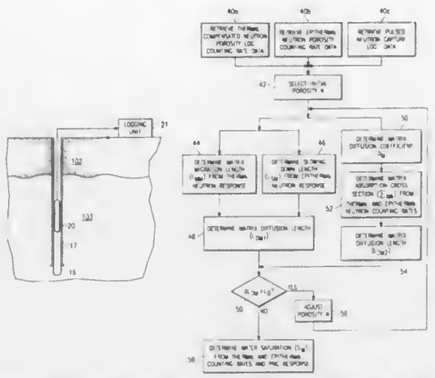
obtaining thermal and epithermal neutron counting rate measurements from the formation at a plurality of depths;

obtaining pulsed neutron capture log measurements from the formation at a plurality of depths;

storing the thermal and epithermal neutron counting rate measurements and the pulsed neutron capture log measurements in a computer memory;

retrieving the thermal and epithermal neutron counting rate measurements and the pulsed neutron capture log measurements for a first depth of the plurality of depths from the computer memory;

selecting an initial porosity value;



using the initial porosity value, determining a first matrix diffusion length value at the first depth from the retrieved thermal and epithermal neutron counting rate measurements;

using the initial porosity value, determining a second matrix diffusion length value at the first depth from the retrieved pulsed neutron log measurements;

comparing the first and second matrix diffusion lengths to one another to determine a difference;

responsive to the difference between the first and second diffusion lengths being below a limit, adjusting the initial porosity value and repeating the determining steps;

responsive to the first and second matrix diffusion lengths at least reaching the limit, storing the adjusted initial porosity value as an actual porosity value; and

determining the water saturation at the first depth by operating a computer to solve a system of equations corresponding to the actual porosity value, the retrieved thermal neutron counting rate measurements and the retrieved pulsed neutron capture measurements at the first depth.

5,668,370

AUTOMATIC IONIZATION MASS SPECTROMETER WITH A PLURALITY OF ATMOSPHERIC IONIZATION SOURCES

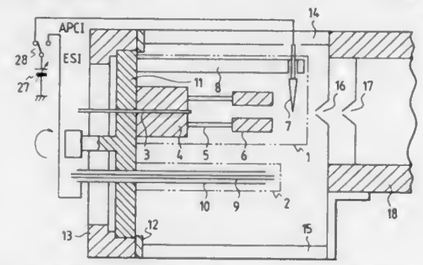
Masayoshi Yano; Tadao Mimura, both of Katsuta, and Yoshiaki Kato, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 262,090, Jun. 20, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,347

Claims priority, application Japan, Jun. 30, 1993, 5-160517

Int. Cl.[6] H01J *49/26*

U.S. Cl. 250—288 **11 Claims**



1. An atmospheric ionization mass spectrometer apparatus comprising:

a mass spectrometer having a mass spectrometric portion with an opening;

a liquid chromatographic apparatus separating substances for mass spectroscopy by said mass spectrometer;

first and second atmospheric ionization ion sources atomizing and ionizing the substances separated by the liquid chromatographic apparatus, wherein said first source is a different type of source than said second source; and

a selector switch selectively disposing one of said first source and said second source at a time at a fixed working position opposite said opening to said mass spectrometric portion.

5,668,371

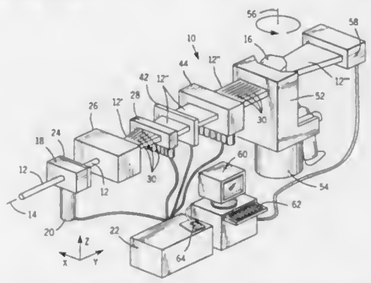
METHOD AND APPARATUS FOR PROTON THERAPY

Joseph O. Deasy, Louisville, Ky.; Thomas R. Mackie, and Paul M. DeLuca, Jr., both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 469,413, Jun. 6, 1995, abandoned. This application Oct. 1, 1996, Ser. No. 722,727

Int. Cl.[6] G01N *23/225;* **H01J** *37/147;37/30*

U.S. Cl. 250—306 **5 Claims**



1. In a proton therapy machine having a proton source for producing a proton beam directed toward a patient at a gantry angle, the beam including a plurality of adjacent rays dispersed within a beam plane, a modulator comprising:

an intensity control means for independently controlling the fluence of the protons along each of the rays; and

a range shifting means for independently controlling the distance the protons travel through the patient along each of the rays.

5,668,372

SCANNING ELECTRON MICROSCOPE AND ITS ANALOGOUS DEVICE

Yuko Iwahuchi, Mito; Mitsugu Sato, Hitachinaka, and Yoichi Ose, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 13, 1996, Ser. No. 615,650

Claims priority, application Japan, Mar. 17, 1995, 7-059376

Int. Cl.[6] H01J *37/244*

U.S. Cl. 250—310 **11 Claims**

1. A scanning electron microscope comprising:

an electron gun for generating an electron beam;

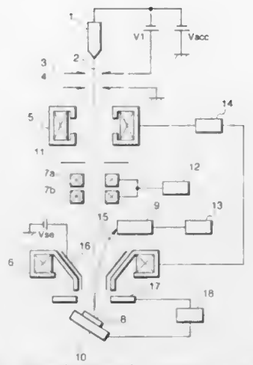
an objective lens for converging the electron beam to a sample so as to allow emission of the electron beam on the sample;

a deflector for deflecting the electron beam so as to allow the electron beam to scan the sample;

a detector for detecting an information signal, peculiar to the sample, generated from the sample by irradiation of the electron beam;

a means for tilting the sample with respect to the electron beam; and

a means for correcting a nonaxisymmetric property, due to the tilting of the sample, of an electric field applied to the electron beam to be emitted on the sample;



wherein the nonaxisymmetric property correcting means includes a deflecting electrode means to which a variable voltage is applied for generating an electric field having a component in the direction perpendicular to an optical axis of the electron beam.

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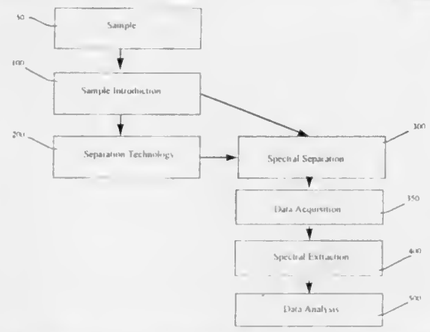
METHODS AND APPARATUS FOR ANALYSIS OF COMPLEX MIXTURES

Albert Robbat, Jr., Andover, and Yuriy V. Gankin, Needham, both of Mass., assignors to Trustees of Tufts College, Medford, Mass.

Filed Apr. 26, 1996, Ser. No. 639,183

Int. Cl.[6] G01J *3/28*

U.S. Cl. 250—339.12 **24 Claims**



16. A method for determining the presence or absence of a specific constituent in a mixture, said method comprising

(a) applying energy to the mixture to cause constituents in the mixture to produce characteristic patterns of spectral lines and detecting quantity values at said spectral lines, wherein a quantity value may represent a contribution of two or more constituents;

(b) comparing detected quantity values for a number N of spectral lines from a pattern of spectral lines characteristic of said specific constituent with known quantity values for said N spectral lines;

(c) determining whether the detected quantity values for said N spectral lines fall within a predetermined error range, and;

(d) determining the presence of said constituent in the mixture when detected quantity values of a number of spectral lines less than N fall within said predetermined error range.

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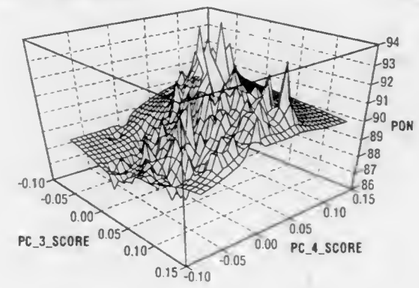
METHOD FOR STABILIZING NEAR-INFRARED MODELS AND DETERMINING THEIR APPLICABILITY

Rocco DiFoggio, Houston, Tex., and Martha L. Ranc, Robbinsville, N.J., assignors to Core Laboratories N.V., Amsterdam, Netherlands

Filed May 7, 1996, Ser. No. 646,082

Int. Cl.[6] G01J *3/28;3/42*

U.S. Cl. 250—339.12 **23 Claims**



1. A method for determining a property of interest of a test sample by utilizing a plurality of samples, each having a known value of the property of interest, comprising:

(a) subjecting each sample in the plurality of samples to a known light energy and collecting a corresponding spectrum for each such sample;

(b) grouping the samples in the plurality of samples into a plurality of subsets;

(c) determining a model for each such subset from the corresponding spectra of the samples in such subset;

(d) selecting a group of models from the models determined for the each of the subsets based on a predetermined criterion;

(e) retaining a subset of models from the group of models having residuals that are least correlated to one another; and

(f) determining a composite model from the retained models to determine the property of interest of the test sample.

21. A method for determining a property of interest of a test sample by utilizing a plurality of samples, each having a known value of the property, comprising:

(a) subjecting each sample in the plurality of samples to a known light energy and collecting a corresponding spectrum for each such sample;

(b) determining a composite model from the spectra of the plurality of samples;

(c) determining a spectrum of the test sample;

(d) determining the property of interest of the test sample by applying the composite model to the spectrum of the test sample;

(e) determining whether the property of interest of the test sample is an outlier; and

(f) determining an I-statistic for the parameter of interest of the test sample if the test sample is not an outlier, wherein the I-statistic is defined as a ratio of the variance of the subset models' estimates of the parameter of interest to the square of the average standard error of calibration of the subset models.

(g) predicting the test sample to be an inlier if the value of the I-statistic of the parameter of interest of the test sample is greater than about 1.

5,668,375

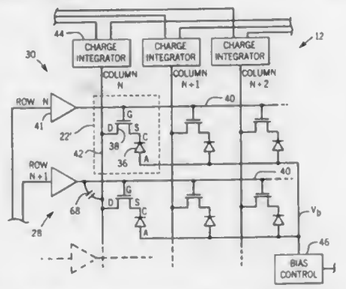
FAST SCAN RESET FOR A LARGE AREA X-RAY DETECTOR

Scott W. Petrick, Sussex; Larry R. Skrenes, Hartland, and Jean Claude Morvan, Milwaukee, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 26, 1996, Ser. No. 703,237

Int. Cl.[6] G01T *1/24*

U.S. Cl. 250—370.09 **12 Claims**



1. An area x-ray detector producing repeated image signals at a frame rate comprising:

(1) a plurality of electrically-chargeable solid state cells arranged in rows and columns;

(2) charge integrators attached to the cells of each column to provide a reading of total charge delivered to the cells of each column;

(3) acquisition control electronic circuitry programmed to:

(a) acquire an image signal during a scan of each of the rows of cells, one row at a time, at a row rate, the scanning of each row including (i) charging the cells of the row for a first predetermined time period; (ii) measuring the total charge delivered to each cell of the row by means of the charge integrators; and (iii) resetting the charge integrators; and

(b) restore the charge of cells of the detector during a scan of each of the rows of cells, one row at a time, at the row rate, the restoring of each row including charging the cells of the row for a second predetermined time period larger than the first predetermined time period.

5,668,376

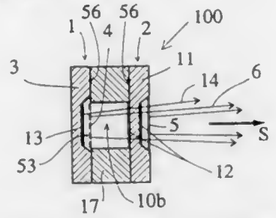
DOUBLE RADIATION SOURCE ASSEMBLY AND TRANSDUCER

Kurt Peter Weckström, Espoo; Pekka Tuomo Meriläinen, and Börje Tor Rantala, both of Helsinki, all of Finland, assignors to Instrumentarium Oy, Finland

Filed Feb. 23, 1996, Ser. No. 605,810

Int. Cl.[6] G01N *21/61*

U.S. Cl. 250—495.1 **24 Claims**



1. A radiation source assembly for optical transducers used for the absorption analysis of a material component present in a medium, whereby the radiation source assembly comprises:

first and second thermal radiation sources, the second radiation source being substantially transparent for radiation emitted by the first radiation source, the first radiation source being located, in relation to the second radiation source, in such a position that the first radiation source emits radiation through the second radiation source;

an absorption band filter located between the first and the second radiation sources, so that the radiation emitted by the first radiation source passes through the filter,

each of said first and second thermal radiation sources comprising; a substrate made of silicon, of a silicon mixture, or of a silicon compound, said substrate having an electrically insulated surface and having at least one recess in the surface; and micro-filaments, which are fastened at their ends to the insulated surface of the substrate to span said recess, the micro-filiaments having radiation emitting regions spaced at a distance from a bottom surface of the recess;

the absorption band of the filter substantially corresponding to the absorption distribution of the material component of the medium to be analyzed by the transducer; and

at least the second radiation source in the region of the recess being made of a solid material which is transparent for the radiation used in the radiation source assembly.

5,668,377

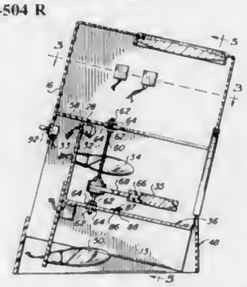
POINT OF SALE COUNTERFEIT DETECTION APPARATUS

Win Erickson, 5790 Marigold La., Duluth, Minn. 55810

Filed Mar. 27, 1996, Ser. No. 622,739

Int. Cl.[6] G01N *21/64*

U.S. Cl. 250—504 R **16 Claims**



1. A counterfeit detection apparatus for analyzing paper to detect counterfeits thereof, the apparatus comprising:

a structure;

a foot mounted below the structure;

a first lens mounted atop the structure;

means for mounting the paper in the bottom of the structure above the foot;

a ultraviolet light mounted on the structure between the first lens and the paper,

at least one top light mounted on the structure between the first lens and the paper,

a back light in the foot below the paper; and

a control circuit in electrical communication with the ultraviolet light, the at least one top light and the back light, the control circuit sequentially activating the ultraviolet light, the at least one top light and the back light.

5,668,378

POLYOL COMPOSITIONS AND THEIR USE IN THE PREPARATION OF HIGH RESILIENCE POLYURETHANE FOAMS

Jean-Paul Rene Treboux, Burdignin, France, and Philippe Martin Knaub, Lake Jackson, Tex., assignors to Polyol International B.V., Netherlands

PCT No. PCT/EP94/04018, § 371 Date Aug. 7, 1996, § 102(e) Date Aug. 7, 1996, PCT Pub. No. WO95/15990, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 2, 1994, Ser. No. 656,174

Claims priority, application United Kingdom, Dec. 7, 1993, 9325043

Int. Cl.[6] C08K *3/00;* **C08G** *18/32*

U.S. Cl. 252—182.27 **5 Claims**

1. A composition for use with high index isocyanate and low water content in the preparation of high resilience polyurethane foams comprising:

(1) a high functionality polyol or polyol blend not being ethylene diamine initiated and being polyoxyalkylene oxide or a blend thereof having an ethylene oxide content of between 8 and 25 percent and having an equivalent weight between 1000 and 4000 and an average nominal functionality between 3.2 and 6, present in an amount of from 50 to 98 weight percent based on the total weight of the polyol composition

(2) a subsidiary polyalkylene oxide having a maximum functionality of 8 and containing at least one hydroxyl group which subsidiary polyalkylene oxide has an equivalent weight between 300 and 6000 and a poly(oxyethylene) content greater than 30 percent by weight of alkylene oxide, present in an amount of from 0.2 to 0.6 weight present based on the total weight of the polyol composition, and

(3) a stably dispersed polymer within the high functionality polyol and/or the subsidiary polyalkylene oxide, wherein said polymer is present in an amount of from 2 to 50 weight percent based on the total weight of the polyol composition, or a polymer polyol or a blend of polymer polyols provides from 2 to 50 percent by weight of polymer based on the total weight of the polyol composition;

wherein the average nominal functionality of the mixture of (1) and (2) is between 3.2 and 6.

5,668,379

ACTIVE MATRIX CRYSTAL DISPLAY APPARATUS USING THIN FILM TRANSISTOR

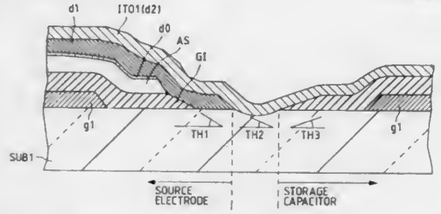
Kikuo Ono, Naka-machi; Makoto Tsumura, Hitachi; Kazuhiro Ogawa, Mobara; Hiroki Sakuta, Mobara; Masahiko Suzuki, Mobara; Toshiki Kaneko, Chiba; Yoshiaki Nakayoshi, Mobara; Kenichi Onisawa; Kenichi Hashimoto, both of Hitachinaka, and Tetsuro Minemura, Hitachioota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1995, Ser. No. 507,778

Claims priority, application Japan, Jul. 27, 1994, 6-175113; Aug. 24, 1994, 6-199388

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—59 **15 Claims**



1. A semiconductor device, comprising:

a substrate, and

a semiconductor switching element comprising:

a gate electrode on said substrate,

an insulating layer and a semiconductor layer, providing a laminate layer on the gate electrode, and

a source electrode and a drain electrode which are formed so as to cross over said gate electrode, wherein

said laminate layer has an end portion which is tapered, and said gate electrode has an end portion which is tapered, and

a taper angle θg of said end portion of said gate electrode is formed so as to be less than 90°, and also equal to or less than three times, of a taper angle θs of said end portion of said laminate layer.

5,668,380

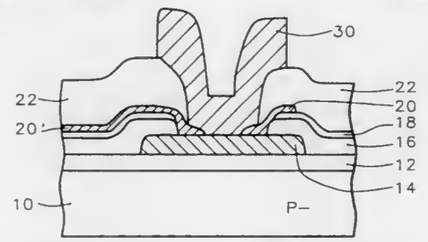
REDUCED AREA METAL CONTACT TO A THIN POLYSILICON LAYER CONTACT STRUCTURE HAVING LOW OHMIC RESISTANCE

Shou-Gwo Wuu; Mong-Song Liang; Chung-Hui Su, and Chen-Jong Wang, all of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin-chu, Taiwan

Division of Ser. No. 429,228, Apr. 27, 1995, Pat. No. 5,534,451. This application Mar. 7, 1996, Ser. No. 612,398

Int. Cl.[6] H01L *29/76;27/108;23/48;27/11*

U.S. Cl. 257—66 **3 Claims**



1. A reduced area self-aligned metal contact to a thin polysilicon layer contiguous with and forming a portion of a thin film transistor on a semiconductor substrate, comprising the steps of:

a semiconductor substrate having semiconductor devices formed from patterned first and second polysilicon layers and having a first insulating layer there between, and a separate portion of said second polysilicon layer forming also a buffer layer;

a second insulating layer on said buffer layer and on said substrate;

a patterned third polysilicon layer forming a gate electrode for said thin film transistor;

a third insulating layer on said patterned third polysilicon layer and forming a gate oxide on said gate electrode and said gate oxide extending over said buffer layer;

a patterned thin fourth polysilicon layer over said third insulating layer doped selectively to form source and drain area for said thin film transistor, and said patterned thin fourth polysilicon layer formed to provide doped electrically conducting stripe contiguous with one of said source and drain areas and extending over said buffer layer;

a fourth insulating layer over said patterned fourth polysilicon layer;

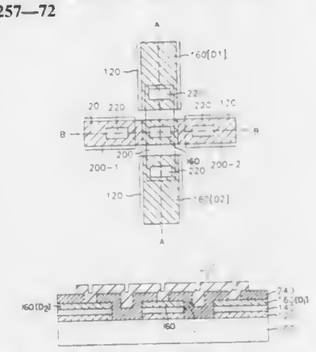
said fourth insulating layer having a contact opening to said buffer layer with portions of sidewall formed from said thin fourth polysilicon layer;

a patterned first metal layer over said fourth insulating layer and in said contact opening, and making low resistance ohmic contact to said fourth polysilicon layer, and thereby having a reduced area self-aligned metal contact to said thin fourth polysilicon layer contiguous with said one of said source and drain areas of said thin film transistor, said first metal layer connects to a power supply.

5,668,381
THIN FILM TRANSISTOR ARRAY PANEL FOR A LIQUID CRYSTAL DISPLAY

Byung Seong Bae, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 350,003, Nov. 29, 1994, abandoned.
This application Jun. 25, 1996, Ser. No. 670,031
Claims priority, application Rep. of Korea, Nov. 29, 1993, 93-25705
Int. Cl.[6] H01L *29/04;29/417*
U.S. Cl. 257—72 9 Claims



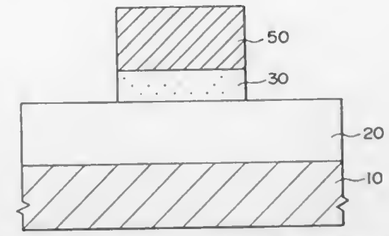
1. A thin film transistor array panel of a liquid crystal display having a plurality of transistors, comprising:
a transparent substrate;
a plurality of coplanar silicon regions formed over the substrate, each silicon region having a source and a drain region;
a first insulating layer formed over the silicon regions, said first insulating layer having a first thickness;
a plurality of gate electrodes, each gate electrode formed on the first insulating layer above each silicon region;
a plurality of gate line electrodes formed on the first insulating layer from the same conductive layer as the gate electrodes, the gate line electrodes having a first width, wherein each said gate electrode is positioned between two associated said gate line electrodes, and each said gate electrode is separated by a predetermined distance from each of said two associated gate line electrodes;
a second insulating layer having a second thickness, formed over the gate electrodes and the gate line electrodes, having a plurality of first contact holes to expose respective portions of the gate electrodes and the gate line electrodes; and
a plurality of metal lines formed over the second insulating layer, having a second width, wherein each metal line is ohmically connected to one of the gate electrodes and said two associated gate line electrodes through the first contact holes.

5,668,382
OHMIC ELECTRODE AND METHOD FOR FORMING IT

Naohiro Toda; Yoshiki Nishibayashi; Tadashi Tomikawa, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 303,110, Sep. 8, 1994, abandoned.
This application Jun. 28, 1996, Ser. No. 668,525
Claims priority, application Japan, Sep. 8, 1993, 5-223528
Int. Cl.[6] H01L *31/0312;23/48;23/52;29/40*
U.S. Cl. 257—77 18 Claims

1. An ohmic electrode comprising:
a contact electrode layer formed on a p-type diamond semiconductor layer formed on a substrate so as to have low contact resistance and high heat resistance and to be in ohmic contact with said p-type diamond semiconductor layer; and
a lead electrode layer directly formed on said contact electrode layer and made of Au so as to have low lead wire resistance and high heat resistance;

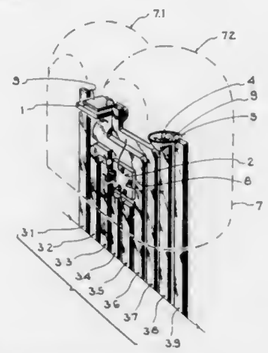


wherein said contact electrode layer is substantially made of either a carbide of at least one metal selected from a metal group consisting of Ti, Zr, and Hf, or a carbide of an alloy including at least one metal selected from said metal group, and wherein said metal or alloy remaining without forming said carbide is removed from said contact electrode layer.

5,668,383
SEMICONDUCTOR DEVICE FOR BIDIRECTIONAL NON-CONDUCTED OPTICAL DATA TRANSMISSION

Ralph-Jochen Krieger, Mosbach, Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Nov. 8, 1995, Ser. No. 554,239
Claims priority, application Germany, Nov. 10, 1994, 44 40 088.8
Int. Cl.[6] H01L *27/18;23/495*
U.S. Cl. 257—80 5 Claims

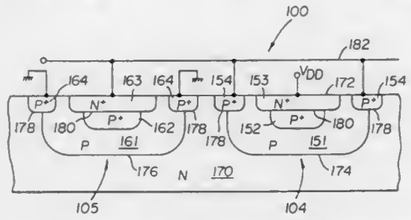


1. A semiconductor device comprising:
a receiver chip responding to radiation in the IR waveband by emitting a photo-electric current I_{PH},
an integrated circuit for amplifying the photoelectric current I_{PH} of the receiver chip,
a transmission chip emitting radiation within the IR wavebound, and
a lead frame configuration consisting of at least three leads onto which the receiver chip, the integrated circuit, and the transmission chip are mounted; and
wherein
the integrated circuit is located in a first plane parallel to the longitudinal direction of the lead frame configuration, and
the transmission chip, as well as the receiver chip, each are located in a second plane which is perpendicular to the first plane, at an end of the lead frame configuration.

5,668,384
INPUT PROTECTION DEVICE WITH ZENER DIODES FOR ELECTRONIC DEVICE

Koichi Murakami, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 162,544, Dec. 6, 1993, Pat. No. 5,483,093, which is a division of Ser. No. 911,689, Jul. 13, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,285
Claims priority, application Japan, Jul. 11, 1991, 3-197038
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—106 11 Claims

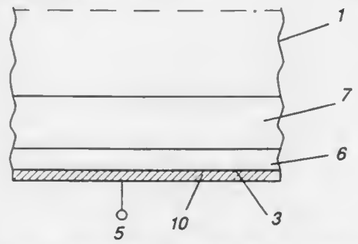


1. In an input protection device adapted to be connected between a plurality of independent switches and an electronic device and circuited between a power supply and ground, each of the independent switches being connected to the ground;
a circuit comprising:
a semiconductor substrate;
a plurality of pairs of first and second Zener diodes in said semiconductor substrate, said plurality of pairs being adapted for connection with the plurality of independent switches, respectively;
each of said plurality of pairs having an anode of said first Zener diode thereof adapted to be connected to one of said plurality of independent switches and a cathode of said first Zener diode thereof adapted to be connected to the power supply, and having an anode of said second Zener diode thereof adapted to be connected to the ground and a cathode of said second Zener diode thereof adapted to be connected to said one switch;
said first Zener diodes and said second Zener diodes of said plurality of pairs being arranged in an interleaved manner.

5,668,385
POWER SEMICONDUCTOR COMPONENT WITH TRANSPARENT EMITTER AND STOP LAYER

Friedhelm Bauer, Ittigen, and Klas Lilja, Fislisbach, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Continuation of Ser. No. 225,446, Apr. 7, 1994, abandoned.
This application May 30, 1995, Ser. No. 453,674
Claims priority, application Germany, Apr. 22, 1993, 43 13 170.0
Int. Cl.[6] H01L *29/74;31/111;29/76*
U.S. Cl. 257—139 23 Claims

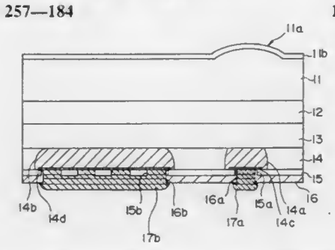


1. A power semiconductor component, in particular for high blocking voltages comprising:
a semiconductor substrate into which a number of layers of first and second conductivity types are diffused between a first main area and a second main area;
a cathode electrode formed on the first main area, and an anode electrode formed by a metallization covering the second main area;
a transparent emitter of said first conductivity type diffused in the substrate adjacent the anode electrode, an impurity concentration and a thickness of said transparent emitter being chosen such that at least 50% of a total current flowing through the transparent emitter is covered by minority carriers; and
a stop layer of said second conductivity type formed between the transparent emitter and the cathode electrode for reducing the thickness of the semiconductor substrate and for minimizing switching losses.

5,668,386
PLANAR PHOTODETECTION DEVICE SUITABLE FOR FLIP-CHIP PROCESS AND A FABRICATION PROCESS OF SUCH A PLANAR PHOTODETECTION DEVICE

Masao Makiuchi, and Naoki Yamamoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1995, Ser. No. 506,602
Claims priority, application Japan, Sep. 19, 1994, 6-223807
Int. Cl.[6] H01L *31/0328*
U.S. Cl. 257—184 16 Claims

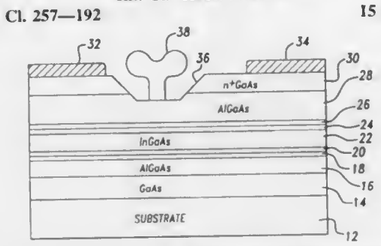


1. A semiconductor photodetection device, comprising:
a substrate;
a first semiconductor layer of a first conductivity type provided on said substrate;
a second semiconductor layer of said first conductivity type provided on said first semiconductor layer;
a first conductive region formed in said second semiconductor layer and having a second, opposite conductivity type;
a second conductive region formed in said second semiconductor layer with a separation from said first conductive region, said second conductive region having said second conductivity type and an area substantially larger than an area of said first conductive region;
a first metal bump provided on said second semiconductor layer in correspondence to said first conductive region, said first metal bump having a first area; and
a second metal bump provided on said second semiconductor layer in correspondence to said second conductive region, said second metal bump having a second area;
said first and second metal bumps projecting from said second semiconductor layer with a substantially identical distance;
wherein said second area is at least ten times as large as said first area.

5,668,387
RELAXED CHANNEL HIGH ELECTRON MOBILITY TRANSISTOR

Dwight C. Streit, Seal Beach, and Thomas R. Block, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 26, 1995, Ser. No. 548,715
Int. Cl.[6] H01L *31/0328*
U.S. Cl. 257—192 **15 Claims**

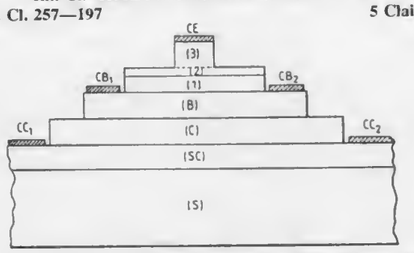


1. A semiconductor device including a plurality of semiconductor layers, said device comprising:
a substrate layer;
a first semiconductor layer being supported on the substrate layer;
a second semiconductor layer being supported on the substrate; and
a channel layer being supported on the substrate layer and being positioned between the first and second semiconductor layers, wherein a conduction band of the first and second semiconductor layers and a conduction band of the channel layer define a potential well in the channel layer for electron transport, said channel layer being a partially relaxed channel layer including crystal lattice dislocations formed substantially in a single direction.

5,668,388
BIPOLAR TRANSISTOR WITH OPTIMIZED STRUCTURE

Sylvain Delage, Bures Sur Yvette; Marie-Antoinette Poisson, Paris; Christian Brylinski, Neuilly Sur Seine, and Hervé Blanck, Arcueil, all of France, assignors to Thomson-CSF, Paris, France

Filed Jul. 5, 1996, Ser. No. 674,564
Claims priority, application France, Jul. 7, 1995, 95 08238
Int. Cl.[6] H01L *31/0328;31/0336;31/072;31/109*
U.S. Cl. 257—197 **5 Claims**



1. A heterojunction bipolar transistor including Group III-V semiconductor materials, said transistor comprising:
a substrate having a respectively superimposed collector, base and emitter, wherein the emitter has a double mesa structure comprising at least a first layer, a second layer and a third layer that are superimposed starting from the base, said first and said second layer having a greater section than a section of said third layer, the sections of the first, second and third layers being defined in parallel to the substrate, wherein said first layer and said third layer are made of a first semiconductor material and wherein said base and said second layer are made of a second semiconductor material with said first and second semiconductor materials exhibiting different behavior with different etching methods.

5,668,389
OPTIMIZED POWER BUS STRUCTURE

Michael Jassowski, Shingle Springs, and Keith Smith, Orangevale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

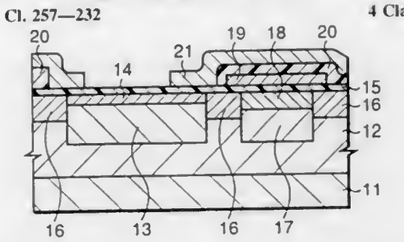
Filed Dec. 2, 1994, Ser. No. 348,570
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—207 **20 Claims**

1. A power bus for semiconductor cells comprising:
a plurality of parallel first and second metal 1 conductors defining positions of a plurality of rows of cells, the first and second metal 1 conductors in adjacent rows being at opposite edges of the cells;
a plurality of metal 3 conductors each positioned adjacent an edge of a row of cells next to a pair of adjacent first or second metal 1 conductors;
a plurality of metal 2 conductors each connecting a metal 3 conductor to each one of the pair of adjacent metal 1 power conductors; and
a plurality of evenly spaced metal 4 conductors, alternate ones of which connect to each metal 3 conductor joined by a metal 2 conductor to each first metal 1 conductor, and to each metal 3 conductor joined by a metal 2 conductor to each second metal 1 conductor, the metal 4 conductors each covering a pair of metal 2 conductors to which it is connected by a metal 3 conductor.

5,668,390
SOLID-STATE IMAGE SENSOR WITH ELEMENT ISOLATION REGION OF HIGH IMPURITY CONCENTRATION AND METHOD OF MANUFACTURING THE SAME

Michihiro Morimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 9, 1996, Ser. No. 629,531
Claims priority, application Japan, Apr. 20, 1995, 7-095088
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—232 **4 Claims**

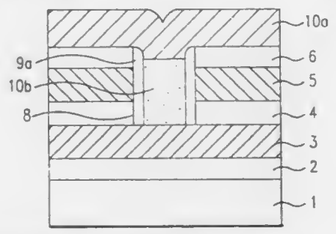


1. A solid-state image sensor having a plurality of photodiodes, comprising:
a P-type layer provided on a surface of a semiconductor substrate;
an N-type layer provided in said P-type layer;
a P^+-type region which is disposed on a surface of said N-type layer, said P^+-type region and said N-type layer together with said P-type layer constituting each of said photodiodes; and
a P^{++}-type region which is disposed in a region surrounding said photodiode excepting in a read region for reading out changes in said photodiode and which has a higher impurity concentration and a greater depth than said P^+-type region.

5,668,391
VERTICAL THIN FILM TRANSISTOR

Hyung Tae Kim, and Woun Suck Yang, both of Chungcheongbuk-do, Rep. of Korea, assignors to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 510,338, Aug. 2, 1995, abandoned.
This application Jan. 6, 1997, Ser. No. 779,116
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—328 **10 Claims**

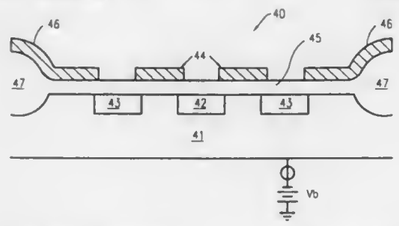


1. A vertical thin film transistor comprising:
a substrate;
a first conductive layer formed over the substrate;
a first insulating layer, a second conductive layer and a second insulating layer sequentially formed on said first conductive layer;
a contact hole formed in said first insulating layer, second conductive layer and second insulating layer;
a gate insulating layer formed along substantially all of the sidewall of said contact hole;
a semiconductor layer formed in said contact hole to define a channel region, said semiconductor layer extending at least one of above and below said second conductive layer such that said channel region has at least one offset region where said semiconductor layer extends beyond said second conductive layer; and
a third conductive layer selectively doped with an impurity, and formed on said second insulating layer, an edge of said gate insulating layer and partially into said contact hole.

5,668,392
LOW CAPACITANCE AND LOW V_T ANNULAR MOSFET DESIGN FOR PHASE LOCK LOOP APPLICATIONS

Chuck Huang, San Jose, and Chune-Sin Yeh, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 28, 1996, Ser. No. 738,538
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—340 **12 Claims**

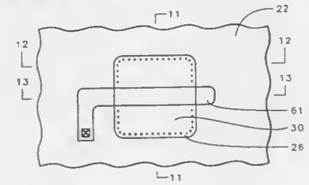


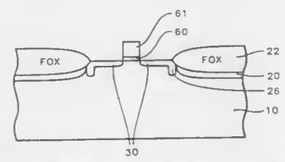
1. A MOSFET, comprising:
a source formed in a semiconductor substrate and having a perimeter;
a drain formed concentrically about said source in said substrate and having an annular shape to form a channel with said source;
a polysilicon gate electrode having an annular shape disposed peripherally about said source;
a polysilicon annulus for isolating said drain from field oxide, wherein an inner perimeter of said polysilicon annulus overlies an outer perimeter of said drain.

5,668,393
LOCOS TECHNOLOGY WITH REDUCED JUNCTION LEAKAGE

Water Lur, Taipei; Der Yuan Wu, Hsin-Chu City, and Jiunn Yuan Wu, Dou-Lio, all of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu City, Taiwan

Division of Ser. No. 276,612, Jul. 18, 1994, Pat. No. 5,529,948.
This application Mar. 4, 1996, Ser. No. 606,463
Int. Cl.[6] H01L *29/76;29/94;31/062*
U.S. Cl. 257—398 **7 Claims**





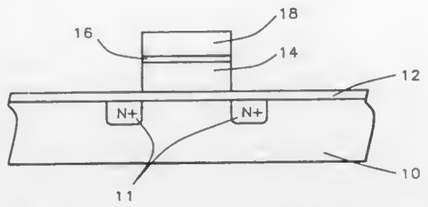
1. An integrated circuit device having reduced junction leakage comprising:
a substrate having a surface;
field oxide regions formed at the surface of the substrate and extending into the substrate a field oxide depth below the surface of the substrate, the field oxide regions defining an active device region therebetween;
a MOS transistor formed on the active device region including a gate electrode above the surface of the substrate;
inner source/drain regions within the substrate adjoining edges of the field oxide regions and extending on either side of the gate electrode to the edges of the field oxide regions; and
outer source/drain regions adjacent the edges of the field oxide regions, the outer source/drain regions extending to an outer source/drain depth deeper than the inner source/drain regions and deeper than the field oxide regions at the edges of the field oxide regions, portions of the outer source/drain regions being adjacent the gate electrode at a first and second end of the gate electrode and spaced away from the gate electrode over a middle region between the first and second ends of the gate electrode.

5,668,394
PREVENTION OF FLUORINE-INDUCED GATE OXIDE DEGRADATION IN WSI POLYCIDE STRUCTURE

Water Lur, Taipei, and Cheng-Han Huang, Hsin-chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 336,397, Nov. 9, 1994, abandoned, which is a division of Ser. No. 80,304, Jun. 24, 1993, Pat. No. 5,364,803. This application Jan. 3, 1996, Ser. No. 582,599
Int. Cl.[6] H01L *29/76*
U.S. Cl. 257—413 **7 Claims**

3. A polycide gate structure of an integrated circuit device comprising:
a gate silicon oxide layer on the surface of a semiconductor substrate;



a gate polysilicon layer overlying said gate silicon oxide layer;

a reactive sputtered thin conducting diffusion barrier layer comprising a material selected from the group consisting of titanium nitride, tantalum nitride, and titanium/tungsten having a thickness of between 150 to 1500 Angstroms overlying said gate polysilicon layer; and

a tungsten silicide layer containing fluorine atoms overlying said thin conducting diffusion barrier layer.

5,668,395

COMPOSITION FOR INSB AND GAAS THIN FILM ON SILICON SUBSTRATE FOR USE IN PHOTODETECTORS

Manijeh Razeghi, Wilmette, Ill., assignor to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 344,340, Nov. 22, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 680,277

Int. Cl.[6] H01L *31/00*

U.S. Cl. 257—441 **6 Claims**

1. A composite film for use in photodetectors, said film comprising sequential layers of InSb, said sequential layers being a first doped InSb layer adjacent and abutting a silicon substrate, an undoped InSb layer adjacent and abutting said first doped InSb layer and a second doped InSb layer adjacent and abutting said undoped InSb layer.

5,668,396

BIPOLAR TRANSISTOR HAVING THIN INTRINSIC BASE WITH LOW BASE RESISTANCE AND METHOD FOR FABRICATING THE SAME

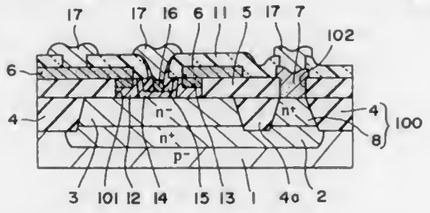
Fumihiko Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 158,585, Nov. 29, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,451

Claims priority, application Japan, Nov. 27, 1992, 4-341421

Int. Cl.[6] H01L *29/00;27/082;27/102;29/70*

U.S. Cl. 257—517 **11 Claims**



1. A semiconductor device comprising:

a first semiconductor region of a first conductivity type;

a first insulating film surrounding said first semiconductor region;

a second insulating film on said first insulating film and said first semiconductor region and having an opting on said first semiconductor region;

a second semiconductor region of a second conductivity type with a high impurity concentration covering a side periphery of the opening on said first semiconductor region and having a thickness substantially equal to that of said second insulating film;

an intrinsic base film of the second conductivity type, said intrinsic base film being formed of a single layer, being substantially U-shaped in cross section and covering said first semiconductor region and an inner periphery of said second semiconductor region, a bottom portion of said U-shaped intrinsic base film having a thickness thinner than that of said second insulating film, said intrinsic base film being disposed such that a bottom surface of said second semiconductor region and a bottom surface of said intrinsic base film are in contact with said first semiconductor region in substantially the same horizontal plane, and such that an inside upper surface of said intrinsic base film is located at a position lower than that of an upper surface of said second semiconductor region;

a sidewall insulating film covering an inner periphery of sidewalls of said intrinsic base film; and

an emitter region of the first conductivity type on said intrinsic base film and surrounded by said sidewall insulating film.

5,668,397

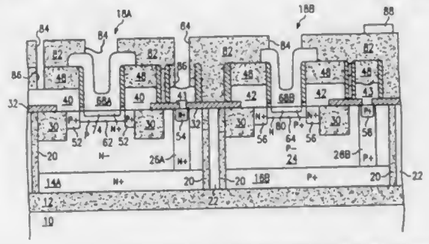
HIGH FREQUENCY ANALOG TRANSISTORS, METHOD OF FABRICATION AND CIRCUIT IMPLEMENTATION

Christopher K. Davis, Merritt Island; George Bajor; James D. Beasom, both of Melbourne; Thomas L. Crandell, Palm Bay; Taewon Jung, Palm Bay, and Anthony L. Rivoli, Palm Bay, all of Fla., assignors to Harris Corp., Melbourne, Fla.

Continuation of Ser. No. 766,201, Sep. 27, 1991, abandoned. This application Oct. 4, 1993, Ser. No. 131,369

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—520 **40 Claims**



1. An integrated circuit along a semiconductor surface comprising at least one NPN and one PNP bipolar transistors, each of said transistors having a collector having a more heavily doped layer therein, a base and an emitter with a polycrystalline silicon contact, where:

(a) the thickness of each base and the contiguous emitter and the doping profiles thereof cooperating to provide an Early Voltage of Ea for each of said transistors,

(i) the barrier provided by the polycrystalline silicon emitter contact and (ii) the thickness and doping profile of the emitter and the contiguous base cooperating to provide an emitter injection efficiency sufficient to produce a current gain of β for each of said transistors,

the product of Ea and β for each of said transistors being not less than about 800 volts;

(b) (i) the doping profile of said collector in the region immediately adjacent said base and (ii) the thickness and doping profile of said base cooperating to provide a collector-to-emitter breakdown voltage of not less than about 12 volts for each of said transistors; and

(c) (i) the thickness of the base and the doping profile thereof, (ii) the geometry and doping profile of the base underlying the contiguous emitter and (iii) the resistance of the base between the contiguous emitter and the contiguous polycrystalline silicon base contact cooperating to provide for each of said transistors a Ft of not less than about 3 GHz.

5,668,398

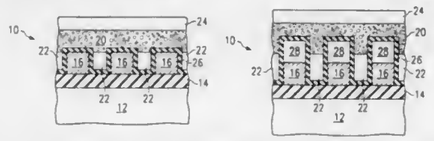
MULTILEVEL INTERCONNECT STRUCTURE WITH AIR GAPS FORMED BETWEEN METAL LEADS

Robert H. Havemann, Garland, and Shin-puu Jeng, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 428,814, Apr. 24, 1995, abandoned, which is a division of Ser. No. 250,063, May 27, 1994, Pat. No. 5,461,003. This application Apr. 12, 1996, Ser. No. 631,437

Int. Cl.[6] H01L *29/40*

U.S. Cl. 257—522 **8 Claims**



1. A semiconductor device with air gaps between metal leads, comprising:

metal leads formed in a pattern on a substrate, said metal leads having a height above said substrate, said metal leads having sides and tops;

air gaps fully extending between said sides of said metal leads, said air gaps having a height above said substrate, wherein said height of said air gaps is at least said height of said metal leads;

a single unpatterned porous dielectric layer residing on said tops of said metal leads and residing over said air gaps, said porous dielectric layer having a porosity of 10–50%; and

a non-porous dielectric layer on said porous dielectric layer, further comprising patterned oxide on said tops of said metal leads, said patterned oxide having the same pattern as said metal leads, said patterned oxide having a height of 50–100% said metal lead height.

5,668,399

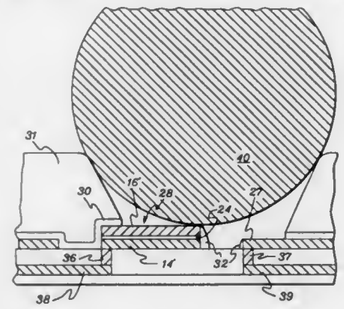
SEMICONDUCTOR DEVICE WITH INCREASED ON CHIP DECOUPLING CAPACITANCE

John Edward Cronin, Milton, and John Andrew Hiltebeitel, South Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 385,528, Feb. 8, 1995, abandoned. This application Aug. 2, 1996, Ser. No. 691,626

Int. Cl.[6] H01L *29/00;23/48*

U.S. Cl. 257—532 **10 Claims**



1. A decoupling capacitor of a semiconductor device, comprising:

a vertically-defined capacitor comprising a first layer of metallurgy separated by a dielectric layer;

said first layer of metallurgy being located above a surface of said semiconductor device

said dielectric layer being located on top of and aligned with said first layer of metallurgy, relative to said surface of said semiconductor device;

said second layer of metallurgy being located on top of and aligned with said dielectric layer, relative to said surface of said semiconductor device; and

wherein said vertically-defined capacitor is self-aligned about its perimeter with said first and second layers of metallurgy and of said dielectric layer being self-aligned and patterned together in one step.

5,668,400

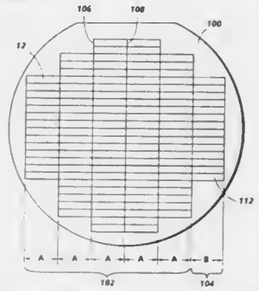
SEMICONDUCTOR WAFER DIVISIBLE INTO CHIPS FOR CREATING OR RECORDING IMAGES

Kraig A. Quinn, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 416,127, Apr. 3, 1995. This application Jan. 16, 1996, Ser. No. 587,058

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—618 **5 Claims**



1. A semiconductor wafer, defining a plurality of functionally identical chip circuit sets in discrete chip areas thereof, the chip areas being defined along at least two opposing borders thereof by an etched groove, comprising:

a first chip area, defined by two opposing etched grooves spaced by a first predetermined length, and including a plurality of repetitive structures arranged in a linear array extending between the two etched grooves;

a second chip area, defined by two opposing etched grooves spaced by a second predetermined length shorter than the first predetermined length and including a plurality of repetitive structures arranged in a linear array extending between the two etched grooves, the plurality of repetitive structures in the linear array of the second chip area being equal in number to the plurality of repetitive structures in the linear array of the first chip area.

5,668,401

CHESSBOARD PATTERN LAYOUT FOR SCRIBE LINES

Ying Chen Chao, and Chih-Heng Shen, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd, Hsinchu, Taiwan

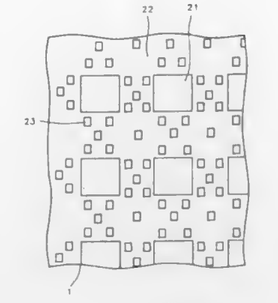
Division of Ser. No. 635,828, Apr. 22, 1996, Pat. No. 5,622,899. This application Aug. 27, 1996, Ser. No. 697,705

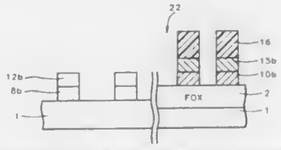
Int. Cl.[6] H01L *23/60;23/48*

U.S. Cl. 257—620 **1 Claim**

1. A scribe line structure, between semiconductor chips, on a semiconductor substrate, comprising:

a chessboard pattern of raised insulator mesas, on said semiconductor substrate, on a first region of said semiconductor substrate, with the height of said insulator mesas between about 5000 to 15000 Angstroms, and with the separation between said insulator mesas, on said semiconductor substrate, between about 5 to 15 μM;





a field oxide region, on a second region of said semiconductor substrate; and

a chessboard pattern of raised metal mesas, on said field oxide regions, with the height of said metal mesas between about 4000 to 14000 Angstroms, and with the separation between said metal mesas, on said field oxide region, between about 5 to 15 uM.

5,668,402

SEMICONDUCTOR DEVICE

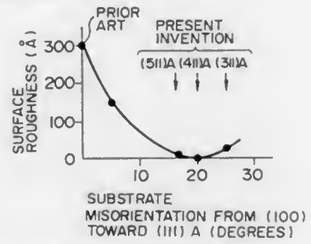
Kazuhiro Mochizuki, Kodaira; Shigeo Goto, Tsukuba; Chushirou Kusano, Tokorozawa; Masahiko Kawata; Hiroshi Masuda, both of Hachioji; Katsuhiko Mitani, Kodaira, and Susumu Takahashi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 675,075, Mar. 25, 1991, abandoned. This application May 24, 1993, Ser. No. 66,635

Claims priority, application Japan, Mar. 28, 1990, 2-076882

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—627 **19 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate of a first single crystalline semiconductor material; and

a first semiconductor layer of a second single crystalline semiconductor material doped with at least one element, said first semiconductor layer being formed on or above a surface of said semiconductor substrate;

wherein the surface of said semiconductor substrate is formed of a crystalline plane having a Miller index substantially equivalent to a Miller index of a facet plane formed on a surface of a semiconductor layer of said second single crystalline semiconductor material which is epitaxially grown on a {100} plane of said first single crystalline semiconductor material, and which is doped with said at least one element, and in which said at least one element is segregated by surface segregation phenomenon on the surface of said semiconductor layer which is epitaxially grown on the {100} plane.

5,668,403

SEMICONDUCTOR DEVICE WITH REDUCED LEAKAGE CURRENT

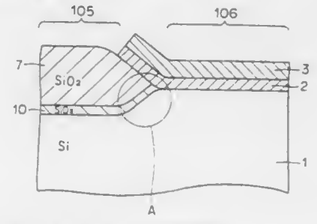
Tatsuya Kunikiyo, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 397,342, Mar. 2, 1995, abandoned. This application Sep. 3, 1996, Ser. No. 706,966

Claims priority, application Japan, Jul. 29, 1994, 6-178408

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—639 **7 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate;

an element isolation oxide film provided in a main surface of said semiconductor substrate for isolating an element region from the other element region;

said element isolation oxide film having a body section and a graded region which gradually decreases in thickness in a direction towards the active region;

a silicon oxide boundary layer including nitrogen atoms provided at a boundary between said graded region of said element isolation oxide film and said semiconductor substrate.

5,668,404

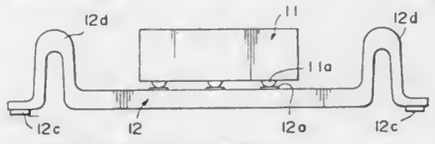
SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

Shunichi Abe, and Seizo Ohmae, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 252,777, Jun. 2, 1994. This application Aug. 28, 1995, Ser. No. 520,229

Int. Cl.[6] H01L *23/495;23/48*

U.S. Cl. 257—668 **1 Claim**



1. A semiconductor device comprising:

a semiconductor chip having opposed front and rear surfaces and a plurality of first electrodes disposed on the front surface of said semiconductor chip; and

an insulating tape having opposed front and rear surfaces and comprising a plurality of second electrodes on the front surface of said insulating tape at locations respectively corresponding to locations of said first electrodes on said semiconductor chip, a plurality of electrodes for external connection on the rear surface of said insulating tape, and interconnections electrically connecting said respective second electrodes to corresponding first electrodes for external connection wherein said semiconductor chip is attached to said insulating tape such that said respective first electrodes are in electrical contact with corresponding second electrodes and wherein said insulating tape extends beyond said semiconductor chip to two opposed ends, said insulating tape includes three bends proximate to each end of said insulating tape forming a protrusion on each of two opposed sides of said semiconductor chip between said semiconductor chip and the respective opposed ends of said insulating tape, and said plurality of electrodes for external connection are located on the rear surface of said insulating tape at the respective ends of said insulating tape.

5,668,405

SEMICONDUCTOR DEVICE WITH A FILM CARRIER TAPE

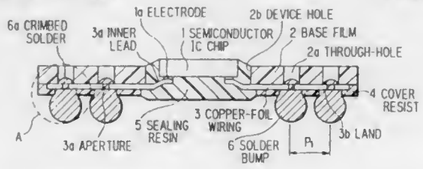
Chikara Yamashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,244

Claims priority, application Japan, Sep. 14, 1994, 6-244922

Int. Cl.[6] H01L *23/485;23/495;29/41*

U.S. Cl. 257—668 **8 Claims**



1. A semiconductor device, comprising:

a film carrier tape comprising a base film in which a device hole and through-hole are formed and a metal-foil wiring layer formed on said base film, wherein said metal-foil writing layer includes one coplanar end extending into said device hole to form an inner lead and the other coplanar end extending onto said through-hole to form a land;

a semiconductor integrated circuit chip which is provided with an electrode which is connected with said inner lead of said metal-foil wiring layer;

sealing resin for protecting said semiconductor integrated circuit chip; and

a bump which is formed on said land and is formed on a front or back surface of said base film, said bump being made of a conductor material;

wherein an aperture with dimensions smaller than said through-hole is formed in the center of said land of said metal-foil wiring layer, whereby the material of the bump contacts both the front and back surfaces of the land.

5,668,406

SEMICONDUCTOR DEVICE HAVING SHIELDING STRUCTURE MADE OF ELECTRICALLY CONDUCTIVE PASTE

Hidenori Egawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 455,997, May 31, 1995, abandoned. This application Dec. 17, 1996, Ser. No. 767,635

Claims priority, application Japan, May 31, 1994, 6-119114

Int. Cl.[6] H01L *23/48;23/552;23/22;* **H05K** *7/14*

U.S. Cl. 257—690 **12 Claims**

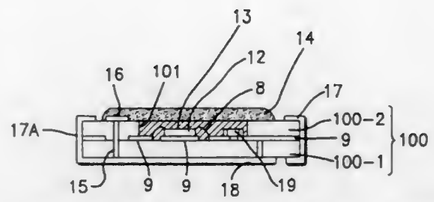
1. A semiconductor device comprising:

a wiring substrate having a recess formed on a first main surface of said wiring substrate;

a first conductive pattern formed on said first main surface, and having a fixed potential;

at least one element mounted on a bottom of said recess;

a sealing resin formed to cover said element and fill said recess; and



a conductive shielding pattern formed directly on and covering a surface area of said sealing resin covering said at least one element and electrically connected with said first conductive pattern.

5,668,407

INTEGRATED CIRCUIT CARRIER HAVING LEAD-SOCKET ARRAY WITH VARIOUS INNER DIMENSIONS

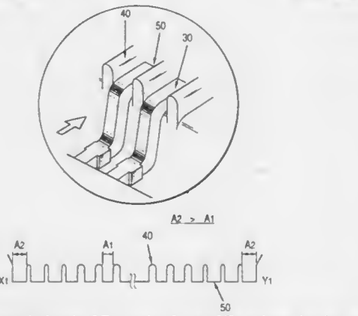
Kazuhiro Tashiro, and Tetsushi Wakabayashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 444,257, May 18, 1995, abandoned, which is a continuation of Ser. No. 220,037, Mar. 30, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,095

Claims priority, application Japan, Jul. 5, 1993, 5-164918

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—692 **21 Claims**



1. An integrated circuit (IC) carrier for an IC package having an array of leads comprising:

an array of socket means for mating with the array of leads, wherein selected one of said socket means differs in clearance between a width of each of said socket means and a width of each of the leads to be mated from the other ones in a cross section of an array.

5,668,408

PIN GRID ARRAY SOLUTION FOR MICROWAVE MULTI-CHIP MODULES

Dean B. Nicholson, Windsor, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 12, 1996, Ser. No. 629,949

Int. Cl.[6] H01L *23/04;23/12*

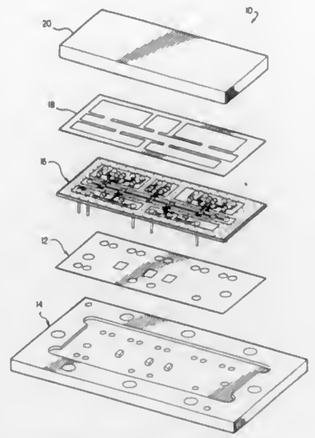
U.S. Cl. 257—699 **4 Claims**

1. A packaging assembly comprising:

a baseplate of electrical conductive material;

a circuit assembly having pins, having a top and a bottom ground plane that are electrically connected;

a baseplate preform of electrically conductive material, positioned between the baseplate and the circuit assembly, being operative to accommodate differential thermal expansion and electrically connect the baseplate and the bottom ground plane of the circuit assembly;



a lid of electrically conductive material; and

a lid preform of electrically conductive material, positioned between the circuit assembly and the lid, to accommodate differential thermal expansion and electrically connect the top ground plane of the circuit assembly to the lid.

5,668,409

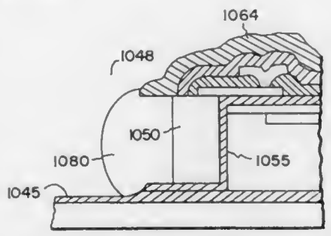
INTEGRATED CIRCUIT WITH EDGE CONNECTIONS AND METHOD

Stephen Joseph Gaul, Melbourne, Fla., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jun. 5, 1995, Ser. No. 463,388

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—723 **9 Claims**



1. An integrated circuit die with edge connectors comprising:

a die of semiconductor material with first and second surfaces, an integrated circuit formed in the first surface, said die having an edge region with one or more edge surfaces disposed transverse to the first and second surfaces of the die, said edge region enclosing said integrated circuit;

a plurality of edge leads, each edge lead comprising a conductive material, each edge lead having a controlled length extending in a first direction from the edge region toward the integrated circuit and having a controlled depth extending in a second direction along an edge surface and transverse to the first direction;

a dielectric layer disposed between each lead and the semiconductor material of the die;

a conductive layer connecting the integrated circuit to the leads on the edge of the die.

5,668,410

PROJECTING ELECTRODE STRUCTURE HAVING A DOUBLE-LAYER CONDUCTIVE LAYER

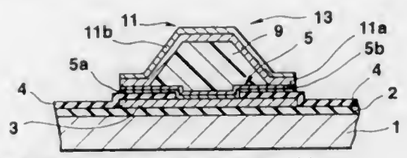
Mitsuhiko Yamamoto, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 378,742, Jan. 26, 1995, abandoned. This application Jul. 25, 1996, Ser. No. 686,325

Claims priority, application Japan, Jan. 31, 1994, 6-029088

Int. Cl.[6] H01L *29/43;23/50*

U.S. Cl. 257—737 **19 Claims**



14. A projecting electrode structure, comprising:

an electrode provided on a substrate;

a first conductive layer provided on said electrode;

an insulating projection provided at a center of an upper surface of said first conductive layer within a surface area range of said first conductive layer; and

a second conductive layer covering the surface of said insulating projection, said second conductive layer having a peripheral portion piled upon said first conductive layer in a direction of thickness of said peripheral portion of said second conductive layer so that said second conductive layer is electrically coupled to said first conductive layer, and said second conductive layer being plural-layered,

wherein a periphery of said second conductive layer coincides with a periphery of said first conductive layer.

5,668,411

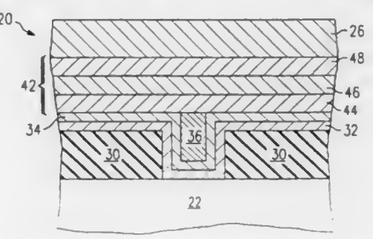
DIFFUSION BARRIER TRILAYER FOR MINIMIZING REACTION BETWEEN METALLIZATION LAYERS OF INTEGRATED CIRCUITS

Qi-Zhong Hong, Dallas; Shin-Puu Jeng, Plano, and Robert H. Havemann, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 474,286, Jun. 7, 1995, abandoned, which is a division of Ser. No. 412,473, Mar. 28, 1995, abandoned. This application Jul. 23, 1996, Ser. No. 685,159

Int. Cl.[6] H01L *21/44;29/43*

U.S. Cl. 257—751 **15 Claims**



1. A diffusion barrier trilayer for semiconductor wafers, comprising:

a bottom metal layer;

a seed metal layer adjacent said bottom layer and having a crystalline structure; and

a top metal layer adjacent said seed metal layer and having a crystalline structure;

wherein said crystalline structures of said top metal layer and said seed metal layer are single-crystal-like, and wherein said crystalline structure of said top metal layer is aligned to said crystalline structure of said seed metal layer,

wherein said bottom layer comprises TiN, said seed metal layer comprises Ti, and said top metal layer comprises TiN.

5,668,412

CAPACITOR OF A SEMICONDUCTOR DEVICE

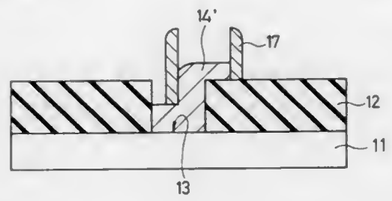
Dae Young Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Continuation of Ser. No. 438,402, May 10, 1995, abandoned. This application Nov. 4, 1996, Ser. No. 743,140

Claims priority, application Rep. of Korea, May 11, 1994, 94-10271

Int. Cl.[6] H01L *29/41*

U.S. Cl. 257—773 **5 Claims**



1. A semiconductor storage device for use with a second semiconductor device in a semiconductor substrate, comprising:

a lower insulating layer formed on the substrate with contact holes exposing selected portions of the substrate; and

a plurality of storage electrodes, each comprising a conductive layer pattern and a conductive spacer, said conductive layer pattern partially overlapping a corresponding contact hole, wherein said conductive spacer is formed at a side wall of the conductive layer pattern within said contact hole, but not in contact with a side wall of said contact hole, and extends over the conductive layer pattern.

5,668,413

SEMICONDUCTOR DEVICE INCLUDING VIA HOLE

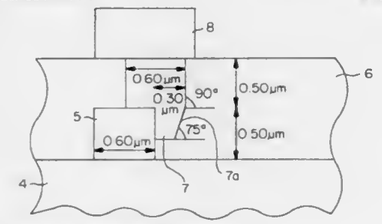
Takeshi Nanjo, Kakogawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 17, 1995, Ser. No. 390,135

Claims priority, application Japan, Feb. 18, 1994, 6-021102

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—774 **4 Claims**



1. A semiconductor device comprising:

a substrate formed of a semiconductor material;

a first insulating film formed on the substrate;

a first metallic wiring formed at least partially on the first insulating film;

a second insulating film formed on the first insulating film;

a second metallic wiring formed at least partially on the second insulating film; and

a via hole for electrically connecting the first metallic wiring and the second metallic wiring, the via hole having a lower portion which extends to a level below a top face of the first metallic wiring, the lower portion being tapered so as to suppress leakage or shorting between the via hole and the substrate, wherein an upper portion of the via hole above a top face of the first metallic wiring has substantially vertical walls.

5,668,414

SPRING DRIVEN ELECTRICITY GENERATOR WITH A CONTROL CIRCUIT TO REGULATE THE RELEASE OF ENERGY IN THE SPRING

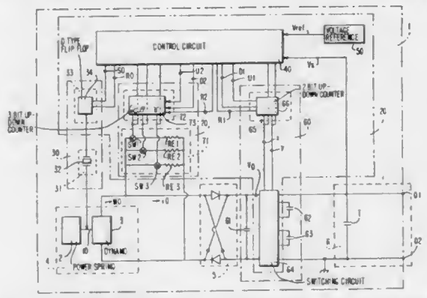
Osamu Takahashi; Yabe Hiroshi, both of Suwa, and Akira Takakura, Chiba, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,546

Claims priority, application Japan, Jul. 4, 1994, 6-152299

Int. Cl.[6] G04C *10/00;* **H02P** *9/04*

U.S. Cl. 290—1 E **12 Claims**



1. An electricity generating device capable of storing mechanical energy, comprising:

an electricity generating portion capable of transforming mechanical energy into electric energy and outputting electric power;

a supply portion, operatively coupled to said electricity generating portion, outputting a supply voltage and supplying the electric power outputted from the electricity generating portion to an external circuit; and

a mechanical energy release control, operatively coupled to the electricity generating portion, controlling the rate at which mechanical energy is converted to electrical energy by the electricity generating portion in accordance with the supply voltage supplied from the supply portion, said mechanical energy release control controlling the release of mechanical energy by controlling an output current of the electricity generating portion in accordance with the supply voltage supplied from the supply portion, the mechanical energy release control including:

a comparison portion, operatively coupled to the electricity generating portion, comparing the supply voltage with a reference voltage;

a voltage boosting portion having at least a system boosting capacity and operatively coupled to an output terminal of the electricity generating portion and operative to boost an output voltage of the electricity generating portion and supply the boosted output voltage to the supply portion; and

a control operation portion for performing at least one of a first control operation, in which a boost in the voltage boosted by the voltage boosting portion is decreased when the supply voltage becomes lower than the reference voltage, and a second control operation in which the boost in the voltage boosted by the voltage boosting portion is increased when the supply voltage becomes higher than the reference voltage.

5,668,415

ARRANGEMENT OF HARNESSES IN A VEHICLE

Masafumi Nagami, Omiya, Japan, assignor to Kansei Corporation, Omiya, Japan

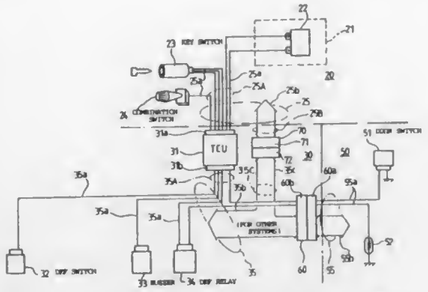
Filed Jul. 17, 1995, Ser. No. 503,085

Claims priority, application Japan, Jul. 18, 1994, 6-165340

Int. Cl.[6] H02B *1/20*

U.S. Cl. 307—9.1 **6 Claims**

1. An arrangement of harnesses in a vehicle, wherein the vehicle is divided into at least two sections defined as first and second sections, a plurality of electronic parts disposed in the first section



connected to a plurality of electronic parts disposed in the second section via a multiple connector, the plurality of electronic parts disposed in the second section including at least one control unit, said multiple connector having a construction in which a plurality of male connector terminals disposed in a male connector body are connected to a plurality of female connector terminals disposed in a female connector body such that the female connector body is fitted in a concave portion of the male connector body by a screw;

wherein a harness bundle consisting of a plurality of harnesses which connect to the plurality of electronic parts disposed in the first section is divided into at least two harness bundles defined as first and second harness bundles, said first harness bundle connected to said at least one control unit, said second harness bundle not connected to said at least one control unit;

said first harness bundle connecting directly to a unit connector connected to said at least one control unit; and

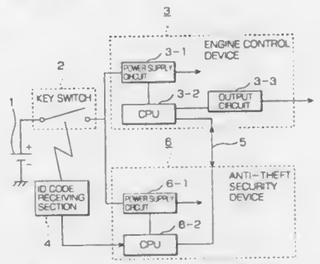
said second harness bundle connecting to said plurality of electronic parts disposed in the second section via said multiple connector so as to make said multiple connector small-sized.

5,668,416

ANTI-THEFT VEHICLE SECURITY SYSTEM HAVING AN ENGINE CONTROL DEVICE AND AN ANTI-THEFT SECURITY DEVICE WHICH CONFIRM SUCCESSFUL COMMUNICATION

Motohiko Watanabe, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1996, Ser. No. 645,867
Claims priority, application Japan, Nov. 24, 1995, 7-306012
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.5 **8 Claims**



1. An anti-theft device for a vehicle comprising:

first control means for determining allowance to start an engine based on an external signal, for providing a determination result, and for transmitting and receiving test data for establishing a data circuit;

second control means for performing control to allow or prohibit start of said engine based on the determination result by said first control means, and for transmitting and receiving test data for establishing a data circuit;

transmission data detection means for determining whether transmission data is properly transmitted before determination of allowance to start the engine;

data return means for returning data which causes one of said first and second control means to recognize that data is received by another of said first and second control means as the result of data transmission;

data circuit establishment detection means for detecting whether or not the returned data is correct and for determining establishment of a data circuit between said first and second control means if said returned data is correct;

data transmission repeat means for repeating data transmission which requests again the returned data again if said returned data is not correct; and

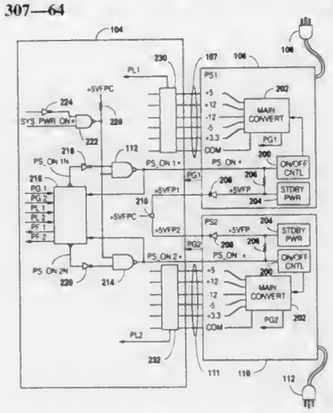
normal data communication means for starting communication of normal data between said first and second control means when said data circuit is detected to be established by said data circuit establishment detection means.

5,668,417

METHOD AND APPARATUS FOR DISTINGUISHING BETWEEN FAILURE OF A POWER SUPPLY VERSUS FAILURE OF ITS POWER SOURCE FROM THE SECONDARY OF THE POWER SUPPLY

Nathan Wiscombe, Cedar Park, and Ronald D. Shaw, Austin, both of Tex., assignors to Dell USA L.P., Austin, Tex.

Filed Nov. 14, 1995, Ser. No. 557,217
Int. Cl.[6] H02J *7/00*
U.S. Cl. 307—64 **20 Claims**



14. A redundant power supply system for providing power to an electronic device, comprising:

first and second power sources for providing first and second unregulated source signals;

first and second power supplies coupled to said first and second power sources, respectively, for converting said first and second unregulated source signals to regulated power on first and second power buses, respectively, each power supply comprising:

a main converter for converting received unregulated source power to regulated power and for providing said regulated power on a power bus;

an activation circuit coupled to said main converter and receiving an active low activation signal, wherein said activation circuit turns on said main converter when said activation signal is asserted low, but otherwise turns off said main converter;

a standby power circuit for providing secondary low power on a standby power signal whenever said received unregulated source power is available; and

a pullup device coupled between said standby power circuit and said activation circuit for pulling said activation signal to said standby power signal when said activation signal is not asserted low;

first and second detection circuits coupled to said first and second power supplies, respectively, for monitoring said first and second power status signal indicative of regulated power on said first and second power buses, respectively; and

a control circuit for asserting said first and second activation signals low to turn on said main converter of said first and second power supplies, respectively, for floating said first and second activation signals to turn off said main converter of said first and second power supplies, respectively, and for monitoring said first and second activation and power status signals, wherein if a power status signal indicates loss of regulated power on a respective power bus, said control circuit floats a corresponding one of said first and second activation signals to determine whether a corresponding standby power circuit is enabled;

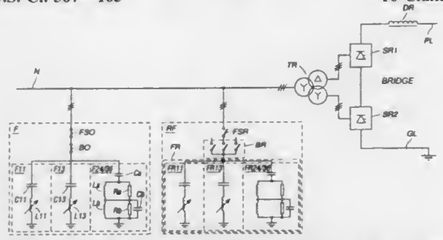
wherein if said corresponding one of said first and second activation signals remains low, then the corresponding power source has failed and if said corresponding activation signal goes high, the corresponding power supply has failed.

5,668,418

THREE-PHASE FILTER EQUIPMENT INCLUDING STANDBY FILTER BRANCH FOR SWITCHABLY REPLACING A REMOVED FILTER BRANCH FOR A PARTICULAR PHASE

Lennart Carlsson, and Tommy Holmgren, both of Ludvika, Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed Oct. 24, 1995, Ser. No. 547,229
Claims priority, application Sweden, Oct. 25, 1994, 9403649
Int. Cl.[6] H02J *1/02*
U.S. Cl. 307—105 **10 Claims**



1. Three-phase filter equipment for connection to a three-phase ac power network (N) for damping current harmonics generated by an installation, connected to the network, for power transmission by means for generating high-voltage direct current comprising:

a three-phase filter set (F) with three mutually substantially identical filter branches (FA, FB, FC), each of said branches being connected to a separate phase of the network via first switching members (BO), and

spare filter members (RF) for connection to the network via second switching member (BR),

the spare filter members comprising a spare filter branch (FR) to serve as a stand-by for the three filter branches (FA, FB, FC) of the filter set (F), and

said second switching members (BR) connecting the spare filter branch (FR) to an arbitrary phase of the network.

5,668,419

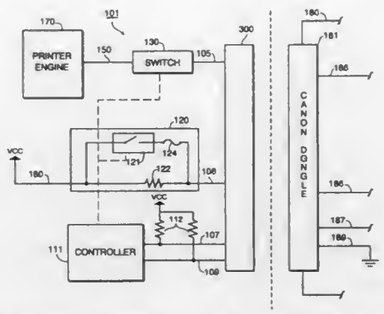
RECONFIGURABLE CONNECTOR

Osman Ozay Oktay, Irvine, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Jun. 30, 1995, Ser. No. 497,108
Int. Cl.[6] H01H *47/00*
U.S. Cl. 307—126 **14 Claims**

13. A printer connectable to an interfaced device that provides the printer with print data, the printer comprising:

a printer engine for generating images based on the print data received from the interfaced device;



a parallel port connector having a plurality of signal pins through which the print data is received from the interfaced device and provided to the printer engine, said parallel port connector further having a predefined signal pin which signals to the interfaced device that the printer is supplied with power or which provides power to the interfaced device, and at least two standard isolated ground pins which ground the parallel port connector with the interfaced device;

a controller connected to said at least two standard isolated ground pins for sensing a predetermined signal received by said least two standard isolated ground pins, which, in response to receipt of the predetermined signal, outputs a control signal to configure said predefined signal pin from a first standard configuration to a second configuration; and

a power switch which switches the predefined signal pin from the first standard configuration to the second configuration upon receiving the control signal from said controller,

wherein, when said predefined signal pin is in the first standard configuration, the predefined signal pin is configured to provide to the interfaced device a signal which indicates that the printer is supplied with power, and wherein, when said predefined signal pin is in the second configuration, the predefined signal pin is configured to supply power to the interfaced device; and

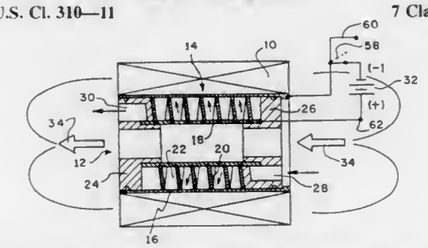
wherein, when the predefined signal pin is in the first standard configuration, the power switch is open so as to prevent power from passing through the predefined signal pin, and, when the predefined signal pin is in the second configuration, the power switch is closed so as to supply power from the printer to the interfaced device.

5,668,420

MAGNETOHYDRODYNAMIC APPARATUS

Thomas F. Lin, State College, and James B. Gilbert, II, Fleming, both of Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Apr. 6, 1995, Ser. No. 418,058
Int. Cl.[6] H02K *44/04*
U.S. Cl. 310—11 **7 Claims**



1. A magnetohydrodynamic (MHD) apparatus comprising:

coil means symmetrically positioned about a central axis and having an aperture aligned with said central axis;

means for causing said coil means to produce an intense magnetic field along said central axis and within said aperture;

first cylinder means having a first diameter, aligned with said central axis and positioned in said aperture;

second cylinder means having a second diameter that is less than said first diameter, aligned with said central axis and positioned within said first cylinder means;

helical channel means positioned between said first cylinder means and second cylinder means and including a helical insulating web which extends between said first cylinder means and said second cylinder means so as to provide a helical fluid flow channel between first and second ends of said first cylinder means and second cylinder means;

power supply means for applying a DC voltage between first said cylinder means and said second cylinder means; and

means for introducing a flow of salt water through said helical channel means, said salt water providing a conduction path between said first cylinder means and said second cylinder means, a current flow within said conduction path interacting with said intense magnetic field to exert an MHD force on said salt water.

5,668,421

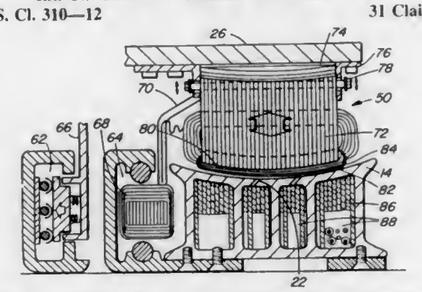
PRESSURIZED AIR-GAP GUIDED ACTIVE LINEAR MOTOR SUSPENSION SYSTEM

Herbert E. Gladish, Ottawa, Canada, assignor to E. B. Eddy Forest Products Ltd., Ottawa, Canada

Filed Apr. 6, 1995, Ser. No. 417,948

Int. Cl.[6] B60L *13/00*; H02K *41/00*; B65G *15/04*

U.S. Cl. 310—12 **31 Claims**



31. A rail section serving as a secondary for an active linear motor propulsion system wherein a primary for the system is included in a member to be supported and guided by the rail section, said section comprising: a hollow elongated member of an electrically conductive non-ferromagnetic material having a transversely concave operating surface; at least one internal passageway extending the length of said rail section for receiving pressurized fluid, said passageway communicating with the atmosphere by way of a plurality of longitudinally spaced small diameter nozzles extending through said rail section to open at said operating surface; and a plurality of ferromagnetic elements contained within said passageway in close proximity to said operating surface, said nozzles extending through or past said ferromagnetic elements.

5,668,422

SEALED CONNECTING DEVICE BETWEEN TWO HOUSING END FACES

Rolf Deynet, Würzburg, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

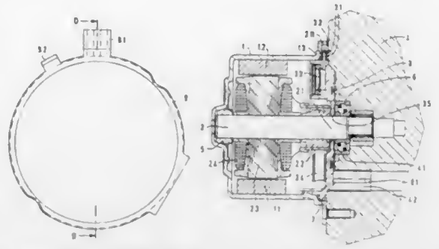
Filed Dec. 8, 1995, Ser. No. 569,434

Claims priority, application European Pat. Off., Dec. 9, 1994, 94119545

Int. Cl.[6] H02K *11/00*

U.S. Cl. 310—71 **23 Claims**

1. A sealed connecting device for connecting a motor housing to a pump housing, wherein the sealed connecting device is disposed between end faces of the motor housing and the pump housing, wherein the sealed connecting device comprises:



a plastic brush-holder plate;

a sealing ring member having in radial cross-section a U-shape mounted on the circumferential rim of the plastic brush-holder plate, wherein the U-shaped sealing ring member has premolded, radially aligned sealing tubes, the U-shaped sealing ring member being vulcanized rubber, wherein the plastic brush-holder plate having the mounted U-shaped sealing ring member is sealingly disposed between the end faces of the motor housing and the pump housing; and

connecting leads sealingly passing through the radially aligned tubes, the connecting leads being embedded free of compression in the plastic brush holder in the area where the end faces of the motor housing and pump housing are connected.

5,668,423

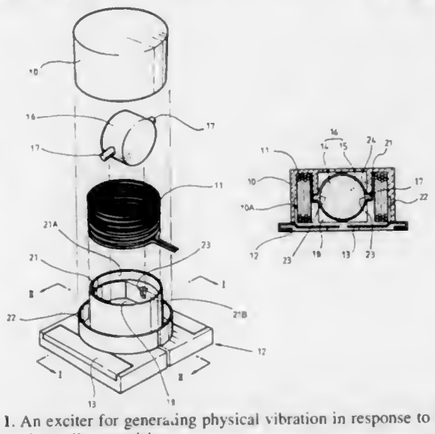
EXCITER FOR GENERATING VIBRATION IN A PAGER

Dong-Ok You, and Ok-Jung You, both of 23 Ashin 1-ri, Okcheon-myun, Yangpyung-gun, Kyunggi-do, Rep. of Korea

Filed Mar. 21, 1996, Ser. No. 619,397

Int. Cl.[6] H02K *7/065*; G08B *5/22*

U.S. Cl. 310—81 **16 Claims**



1. An exciter for generating physical vibration in response to an incoming call, comprising:

a lower housing having a base and a cylindrical inner guide which is vertically disposed on the base, the inner guide having an inner wall and an upper opening to form a predetermined space at a central portion;

a stator, attached to a periphery of the an inner guide of the lower housing, for generating an electromagnetic force which is converted in an upper or lower direction responsive to an AC signal from the outside;

a rotor having a rotation part disposed in an inner space of the inner guide, the rotation part comprising an axial guide having two ends, said ends being rotatably supported by the inner wall of the inner guide, for rotating responsive to the electromagnetic force; and

an upper housing having a pair of downwardly projecting portions engaged with the inner guide of the lower housing to rotatably support both said ends of the axial guide, and an outer cylindrical portion engaged with the lower housing to surround the stator, whereby the exciter generates vibration at the upper and lower housings responsive to a rotation movement of the rotation part.

5,668,424

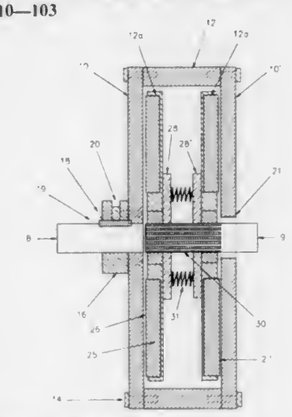
PERMANENT MAGNET COUPLING AND TRANSMISSION

Karl Jerome Lamb, Port Angeles, Wash., assignor to Magna Force, Inc., Port Angeles, Wash.

Continuation of Ser. No. 237,031, May 3, 1994, Pat. No. 5,477,094, which is a continuation-in-part of Ser. No. 65,867, May 21, 1993, Pat. No. 5,477,093. This application Oct. 20, 1995, Ser. No. 546,066

Int. Cl.[6] H02K *49/00*; H02P *15/00*

U.S. Cl. 310—103 **10 Claims**



1. A magnetic coupler comprising:

two shafts;

a group of two axially-spaced magnet rotors each containing a respective set of permanent magnets; and

a group of two axially-spaced conductor rotors each having a nonferrous electroconductive ring spaced by an air gap from a respective one of said sets of magnets;

the distance between the rotors of one of said groups being fixed, and such group being mounted on one of said shafts to rotate therewith; and

the rotors of the other one of said groups being interconnected and arranged to be moveable axially and simultaneously along the other one of said shafts and to rotate together with said shaft such that the width of said air gaps are equally varied by such axial movement.

5,668,425

STARTUP DEVICE FOR THE ROTOR OF A PERMANENT-MAGNET SYNCHRONOUS MOTOR

Elio Marioni, and Vittorio Cavalcante, both of Dueville, Italy, assignors to Askoll A.p.A., Dueville, Italy

Filed Jan. 5, 1996, Ser. No. 583,385

Claims priority, application Italy, Jan. 19, 1995, PD95A0013

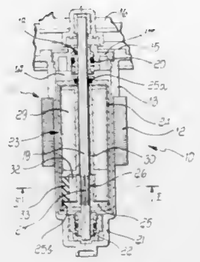
Int. Cl.[6] F04D *13/02*;*29/10*

U.S. Cl. 310—162 **23 Claims**

1. A startup device for a rotor of a permanent-magnet synchronous motor of the type having:

a stator unit with a pack of metal laminations and electrical windings supported by a body, said body forming between poles of the stator unit, a substantially cylindrical chamber;

a rotor unit, including a permanent-magnet rotor being accommodated in said chamber; and



a shaft which crosses axially said rotor unit;

said device comprising:

a cup-shaped cylindrical element being accommodated in said cylindrical chamber, said rotor unit being enclosed within said cup-shaped cylindrical element so as to freely rotate with respect to said shaft;

a lid for hermetically closing said cup-shaped element, said lid being rigidly coupled to said shaft, said cup-shaped element and said lid being jointly rotatable with said shaft;

motion transmission means being provided between said permanent-magnet rotor and said shaft, and said transmission means being enclosed inside the cup-shaped element;

wherein said transmission means causes rotation of said shaft after said permanent-magnet rotor, being activated by said stator, is turned without a load through a given rotation angle.

5,668,426

ROTATIONAL FREQUENCY SENSING DEVICE WITH PULSE GENERATING WHEEL HAVING TWO-AXIAL POSITION SUPPORTING SLEEVE

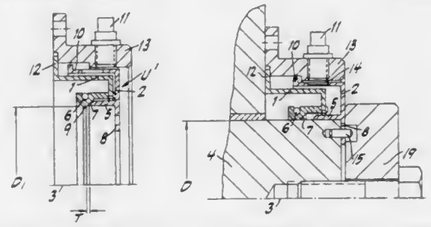
Berthold Lamert, Fürth; Wolfgang Schmitt, Viernheim, and Hans-Gerd Eckel, Laudenbach, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Jan. 23, 1995, Ser. No. 376,261

Claims priority, application Germany, Jan. 31, 1994, 44 02 854.7

Int. Cl.[6] G01P *3/44*

U.S. Cl. 310—168 **15 Claims**



1. A rotational frequency sensing device for a machine element rotatable about an axis, said device comprising a pulse generating wheel and a radial shaft sealing ring;

wherein the pulse generating wheel has a cylindrical sleeve that is slid onto the machine element;

wherein the radial shaft sealing ring is provided with a sealing lip made of polymer material, the sealing lip having a radially inwardly directed conical surface;

wherein the cylindrical sleeve has a first axial position and a second axial position;

wherein in the first axial position of the cylindrical sleeve, the conical surface is contacted by the cylindrical sleeve and is expanded in the radial direction; and

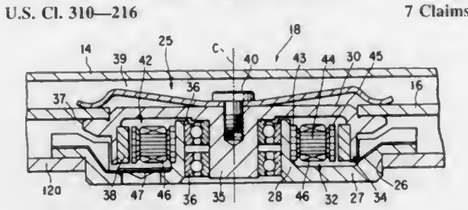
wherein in the second axial position of the cylindrical sleeve, the cylindrical sleeve is at an axial distance from the conical surface and the sealing lip is in direct contact with the machine element.

5,668,427

SPINDLE MOTOR HAVING RECESSED STATOR COILS

Isao Morita, c/o Intellectual Property Division, Kabushiki Kaisha Toshiba, 1-1 Shibaura 1-chome, Minato-ku, Tokyo 105, Japan

Filed Mar. 7, 1996, Ser. No. 612,085
Claims priority, application Japan, Jul. 26, 1995, 7-190659
Int. Cl.[6] H02K *1/06;1/14;1/12*
U.S. Cl. 310—216 **7 Claims**



1. A spindle motor comprising:

a rotor rotatable about a central axis and having an inner circumferential surface on which a magnet is provided; and

a stator arranged inside the inner circumferential surface to oppose the magnet;

said stator including:

a stator core formed by coaxially stacking a plurality of plate-shaped annular core forming members, each annular core forming member having an annular portion coaxial with the central axis, a winding portion projecting from the annular portion radially with respect to the central axis, and a pole portion formed on the extended end of the respective winding portion and opposing the magnet, said stator core formed by squeezing the entire winding portion of all stacked annular core forming members in a direction of the central axis by plastic formation such that a thickness thereof in the direction of the central axis is smaller than those of the annular portion and each of the pole portions, and

a coil wound entirely within the squeezed winding portion of all stacked members.

5,668,428

ELECTRIC MOTOR COMMUTATOR

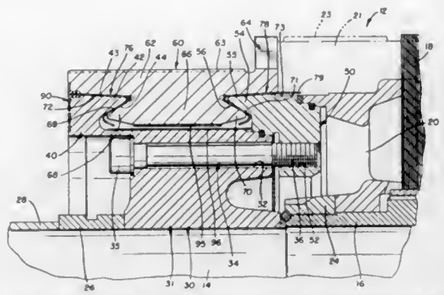
Predrag Stojkovich, Darien; Maureen Claire Werner, Bolingbrook, and Edward Joseph Gawel, Jr., Downers Grove, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1995, Ser. No. 577,091
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—233 **2 Claims**

1. A commutator adjacent one end of a rotor shaft of an electric motor, the commutator comprising, in combination,

a plurality of copper commutator bars axially aligned and circumferentially spaced around the rotor shaft, each of the commutator bars having a V-shaped groove at an axial end thereof adjacent an end of the rotor shaft;

an electrically conducting retaining ring adjacent the V-shaped grooves of the commutator bars;



means for exerting an axial force between the retaining ring and the commutator bars, whereby the commutator bars are retained thereby against radial movement during high speed rotation of the rotor;

each of the commutator bars having an axial end face radially outward of the V-shaped groove with a radially inwardly extending axial depression which joins an axially extending radial depression in a radially inner axial surface thereof adjacent the retaining ring;

the retaining ring having an axial end face aligned with the axial end faces of the commutator bars with a radially outwardly extending axial depression which joins an axially extending radial depression in a radially outer axial surface thereof adjacent the commutator bars;

an electrically insulating ring comprising a high density, calendared, polyamide paper disposed between the retaining ring and the first V-shaped grooves of the commutator bars to prevent physical and electrical contact therebetween and assist the structural stability of the commutator at high speed rotation in widely varying temperatures, the electrically insulating ring having an axial edge projecting into a groove formed by the axially extending radial depressions of the commutator bars and the retaining ring; and

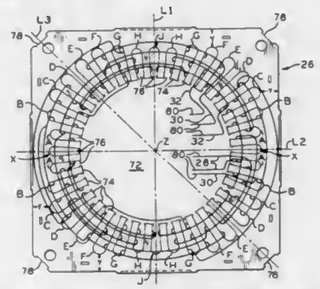
an arc resistant, hydrophobic, silicone polymer filling the axially extending radial depressions and radially extending axial depressions of the commutator bars and the retaining ring to form an insulating band sealingly engaging the axial edge of the electrically insulating ring.

5,668,429

DYNAMOELECTRIC MACHINE AND METHOD FOR MANUFACTURING SAME

John H. Boyd, Jr., Holland, Mich., and Daniel M. Saban, Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 139,578, Oct. 20, 1993. This application Jun. 7, 1995, Ser. No. 484,496
Int. Cl.[6] H02K *1/12*
U.S. Cl. 310—254 **23 Claims**



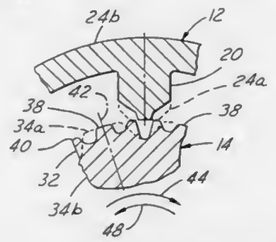
1. A stator for a two-speed dynamoelectric machine, the stator comprising a first winding having a first number of poles and a second winding having a second number of poles different from the first number of poles, said second number being an even number which is greater than two and not also a multiple of four, and a stator core comprising a plurality of stator laminations stacked one on top of the other, each stator lamination having an initial orientation as formed which is the same as the other stator laminations, each stator lamination comprising a sheet of highly magnetically permeable material having a generally circular central opening therein, and slots opening into the central opening and extending generally radially outwardly therefrom, the slots being disposed in an arrangement around the periphery of the central opening and receiving turns of wire from said two windings of the dynamoelectric machine with at least some of the slots receiving turns of wire from both of said two windings, said arrangement of slots on each stator lamination being symmetrical about a pair of perpendicular lines lying generally in the plane of the stator lamination and intersecting generally at the center of the central opening and about a diagonal line lying in the plane of the stator lamination, passing through the center of the central opening and making an angle of 45° with said perpendicular lines, each stator lamination in the stack being rotated 90° relative to the initial orientations of adjacent stator laminations in the stack about a longitudinal axis of a central rotor-receiving bore of the stator core formed by the central openings of the stator laminations in the stack thereby forming a more precisely cylindrical and straighter central bore.

5,668,430

DUAL-SECTIONED SWITCHED RELUCTANCE MOTOR

Sergei F. Kolomeitsev, Sylvania, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 17, 1996, Ser. No. 634,106
Int. Cl.[6] H02K *1/22;16/00;17/00*
U.S. Cl. 310—266 **24 Claims**



1. An electric machine comprising: an annular stator divided into a first stator section and a second stator section of respective cross-sectional shape and axially spaced, said first and said second stator sections each having a respective plurality of radially-inwardly-extending poles wherein the shape of the poles of the first stator section is different from the shape of the poles of the second stator section;

a rotor, supported for rotation within said stator, divided into a first rotor section and a second rotor section of respective cross-sectional shape and axially spaced, said first and said second rotor sections each having a respective plurality of radially-outwardly-extending poles wherein the shape of the poles of the first rotor section is different from the shape of the poles of second rotor section; and,

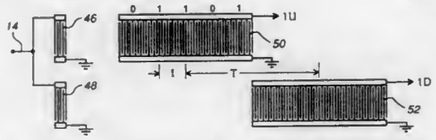
wherein the shape of each pole of the first rotor section is characterized by one radially-outwardly-projecting tooth and the shape of each pole of the second rotor section is characterized by three radially-outwardly-projecting teeth.

5,668,431

SURFACE WAVE DEVICES FOR DIFFERENTIAL COHERENT DETECTORS

John Choo-Beng Saw, Kanata; Harry Leib, Montreal, and George Alfred Kipens, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 7, 1996, Ser. No. 612,471
Int. Cl.[6] H03H *9/72*
U.S. Cl. 310—313 R **18 Claims**



1. A surface wave device, for use in a differential coherent detector of a communications system in which differentially encoded information is communicated using at least one predetermined codeword comprising a plurality of M bits, the surface wave device comprising:

at least one input IDT (inter-digital transducer), responsive to an input signal comprising information symbols having a predetermined symbol rate, for propagating a surface wave with a predetermined velocity, the predetermined symbol rate and velocity determining a surface wave propagation distance T corresponding to a duration of one information symbol;

a first coded output IDT responsive to the propagated surface wave and comprising M taps connected in parallel with one another, the taps having a center-to-center pitch t, in the direction of propagation of the surface wave, equal to T/M, and having phases corresponding to the respective bits of the predetermined codeword; and

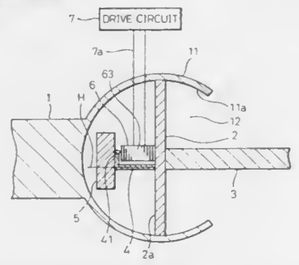
a second output IDT responsive to a propagated surface wave which is responsive to the input signal and has a propagation distance which is greater by T than a propagation distance of the surface wave propagated from said at least one input IDT to said first coded output IDT.

5,668,432

ARTICULATION DEVICE

Takayuki Tominaga, Kariya; Kouji Senda, Oobu; Takaharu Idogaki, Okazaki; Takashi Kaneko, and Hitoshi Kanayama, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 22, 1996, Ser. No. 620,210
Claims priority, application Japan, Mar. 24, 1995, 7-091584; May 19, 1995, 7-121365
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—328 **24 Claims**



1. An articulation device comprising:

an inertia body;

a stationary holder member defining a contacting surface of a predetermined profile;

a moving member which is rotatable with respect to the holder member and which is in a frictional contact with said contact-

ing surface of the stationary member, so that the moving member is slidably rotatable with respect to the holder member;

means for supporting the inertia body with respect to the moving member while allowing a relative movement to occur between the inertia body and moving member, and;

actuator means arranged between the moving member and the inertia body for generating said relative movement for causing the holder member and the moving member to be relatively rotated when a reaction force generated in the moving member by the inertia of the inertia body overcomes said frictional force.

5,668,433

ELECTRODELESS FLUORESCENT LAMP HAVING AN INSULATIVE HOUSING ARRANGEMENT

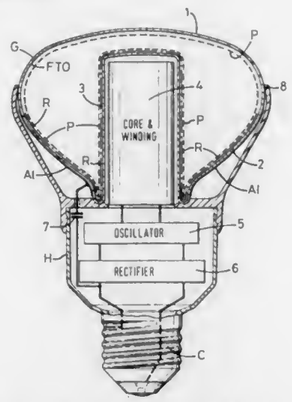
Steven J. Everest, Leicester, and Basil Antonis, London, both of United Kingdom, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,092

Claims priority, application United Kingdom, Dec. 22, 1993, 9326123

Int. Cl.[6] H01J *1/52;1/62;17/16*

U.S. Cl. 313—313 **13 Claims**



1. An electrodeless fluorescent lamp comprising:

a sealed lamp vessel containing a luminescent layer, a fill capable of sustaining a discharge when suitably excited, and a coating of electrically conductive light transmissive material on the internal surface of the vessel;

electrical energizing means for exciting the fill;

a first electrically insulative housing portion from which the lamp vessel extends and which houses part of the electrical energizing means;

a second electrically insulative housing portion extending from the lamp vessel and housing a portion of the lamp vessel;

a coating of electrically conductive material on the external surface of the portion of the lamp vessel housed by the second housing portion, the external coating being electrically isolated by the second housing portion and being capacitively coupled to the internal coating;

means coupling the external coating to an electrical ground point to reduce conducted interference; and,

wherein the vessel has a zone of maximum diameter and is arranged to emit light from at least a first portion of the vessel bounded by the said zone, the housing extending over a second portion of the vessel bounded by the said zone and the external coating extending over substantially the whole second portion of the vessel and being electrically isolated by the housing.

5,668,434

DIRECTLY HEATED CATHODE FOR CATHODE RAY TUBE

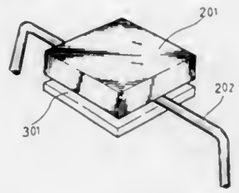
Chang-seob Kim, Suwon; Seok-bong Son, Kyungki-do; Bong-uk Jeong; Sang-kyun Kim, both of Seoul, and Sang-uk Shin, Suwon, all of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 6, 1995, Ser. No. 568,380

Claims priority, application Rep. of Korea, Dec. 7, 1994, 94-33109; Dec. 29, 1994, 94-38990

Int. Cl.[6] H01J *1/14;19/06;1/16;19/10*

U.S. Cl. 313—346 R **24 Claims**



12. A directly heated cathode structure comprising:

a porous pellet impregnated with a cathode material;

a filament connected to said porous pellet;

a support supporting said filament;

an insulation block supporting said support; and

an auxiliary member fixing said filament to said porous pellet and supporting said filament wherein said filament is disposed between said porous pellet and said auxiliary member.

5,668,435

COLOR DISPLAY SYSTEM WITH COLOR CATHODE RAY TUBE HAVING A HIGH BREAKDOWN VOLTAGE

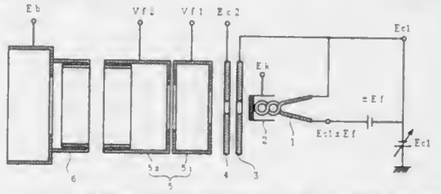
Go Uchida; Shoji Shirai; Takashi Kinami, all of Mobara, and Noboru Mizukami, Isumi-gun, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Electronics Devices Co., Ltd., Mobara, both of Japan

Filed Jul. 27, 1995, Ser. No. 507,991

Claims priority, application Japan, Aug. 1, 1994, 6-180237

Int. Cl.[6] H01J *29/50;29/46;31/00;* **G09G** *1/04*

U.S. Cl. 313—414 **4 Claims**



1. A color display system including a color cathode ray tube comprising:

an evacuated envelope including

a panel which carries a phosphor screen,

a glass neck which houses an electron gun mount assembly,

a funnel connecting said faceplate panel and said glass neck, and

a stem having a plurality of leads therethrough sealed to and closing said neck at an end thereof; and

an electron gun mount assembly,

said electron gun mount assembly being supported on said stem via said plurality of leads and comprising

a cathode for generating an electron beam and directing it toward said phosphor screen,

a beam control grid electrode,

an accelerating electrode,

a plurality of focusing electrodes, one of said plurality of focusing electrodes being adapted to be supplied with a voltage varying in accordance with an amount of deflection of said electron beam,

an anode electrode, and

a heater for heating said cathode;

one of two terminals of said heater and said beam control grid electrode being electrically connected to a common one of said plurality of leads for being supplied with a variable voltage for beam control; and

the other one of said two terminals of said heater being electrically connected to another one of said plurality of leads and adapted to be supplied with a sum of said variable voltage for beam control and a voltage for heating said cathode.

5,668,436

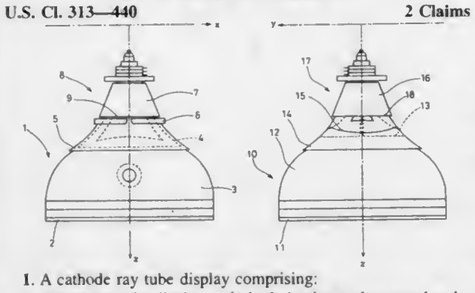
CATHODE RAY TUBE DISPLAYS HAVING SADDLE-TYPE DEFLECTING COILS

Masanobu Honda, and Toshio Ose, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Takatsuki, Japan

Filed Aug. 7, 1996, Ser. No. 692,231

Int. Cl.[6] H01J *29/70;* **H01F** *3/00*

U.S. Cl. 313—440 **2 Claims**



1. A cathode ray tube display comprising:

a cathode ray tube display main body having a glass panel and a glass funnel connected to the rear of the glass panel;

an electron gun attached to a rear section of said main body; and

a deflection yoke arranged in a rear periphery portion of said main body, which comprises a saddle-shaped horizontal deflection coil, and an insulating frame located outside said saddle-shaped horizontal deflection coil, a vertical deflection coil and ferrite core located outside said insulating frame, wherein a surface area of said saddle-shaped horizontal deflection coil exposed from a screen-side end face of said ferrite core is within a range of 100 to 298 cm^2.

5,668,437

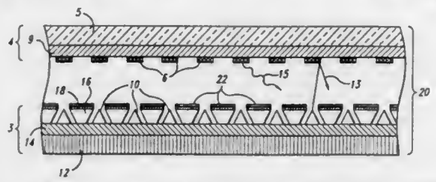
PRASEODYMIUM-MANGANESE OXIDE LAYER FOR USE IN FIELD EMISSION DISPLAYS

Surjit S. Chadha, Meridian, and Robert T. Rasmussen, Boise, both of Id., assignors to Micro Display Technology, Inc., Boise, Id.

Filed May 14, 1996, Ser. No. 645,615

Int. Cl.[6] H01J *1/62;63/04;1/02;1/16*

U.S. Cl. 313—495 **10 Claims**



6. A field emission display comprising a conductive and light-absorbing baseplate, wherein the baseplate has an interior surface to the field emission display, and wherein at least a portion of the interior surface is coated with a praseodymium-manganese oxide layer having a resistivity which does not exceed 1×10^5 Ω·cm.

5,668,438

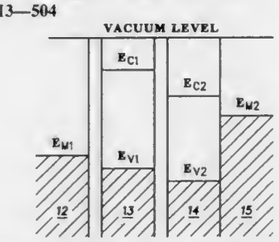
ORGANIC ELECTROLUMINESCENT DEVICE WITH EMISSION FROM HOLE TRANSPORTING LAYER

Song Q. Shi, Phoenix, Ariz.; Hsing-Chung Lee, Calabasas, Calif.; Thomas B. Harvey, III, Scottsdale, and Franky So, Tempe, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jun. 6, 1996, Ser. No. 660,014

Int. Cl.[6] H01J *1/62;63/04*

U.S. Cl. 313—504 **17 Claims**



1. An organic electroluminescent device comprising a cathode, an electron transporting layer, a hole transporting layer, and an anode positioned sequentially in overlying relationship, the electron and hole transporting layers being formed of organic electron and hole transporting materials, respectively, selected so that the following inequality holds:

$$(E_{C1}-E_{C2})<(E_{V1}-E_{V2})$$

where E_{C1} and E_{V1} respectively represent a conduction band level, and a valence band level of the material making up the hole transporting layer; and E_{C2} and E_{V2} respectively represent a conduction band level and a valence band level of the material making up the electron transporting layer, whereby light is emitted from the hole transporting layer in response to electron and hole recombinations therein.

5,668,439

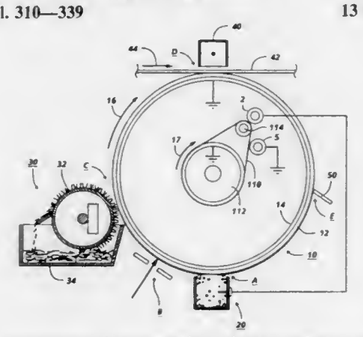
HIGH VOLTAGE POWER SUPPLY

Christopher R. Snelling, Penfield; John S. Facci; Michael J. Levy, both of Webster; Dale R. Mashtare, Macedon, and Michael S. Smith, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1995, Ser. No. 538,659

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—339 **13 Claims**



1. A power supply for transmitting voltage to a device, comprising:

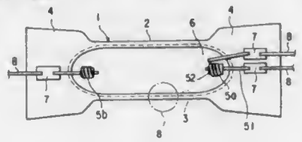
a web including a piezoelectric exterior layer for generating a voltage on the surface thereof in response to being deformed;
a member for deforming a portion said web;
means for transferring the voltage gencrated on the surface of said piezoelectric exterior layer to the device;
means for neutralizing the voltage on a portion of the surface of said web; and
a voltage control, operably associated with said transferring means and neutralizing means, for adjusting the voltage by a set factor to the device.

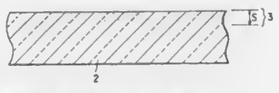
5,668,440

NITRIDE LAYER FOR DISCHARGE LAMPS

Shinji Inukai, Yokohama; Kazuo Takita; Makoto Nishizawa, both of Yokosuka; Akira Itoh, Yokohama; Kazuyoshi Okamura, Yokosuka; Kazuiki Uchida, Fujisawa; Takayuki Aoki, Yokosuka; Kazuhiko Yoshikawa, Yokohama; Akihiro Yonezawa, Yokosuka, and Hiroki Sasaki, Yokohama, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,157
Claims priority, application Japan, May 17, 1994, 6-102580
Int. Cl.[6] H01J *61/35*
U.S. Cl. 313—635 **11 Claims**





9. An illumination apparatus comprising:
a discharge lamp, said discharge lamp including a discharge tube assembly constituted by an envelope tube having a tube wall mainly consisting of an oxide material, and a discharge medium sealed in said envelope tube, and means for producing a discharge in said discharge tube assembly, comprising
a nitride layer containing a nitride and partly formed near at least an inner surface of said envelope tube, wherein said nitride layer exhibits a continuous and smooth reduction in nitride content in a direction of depth of the tube wall.

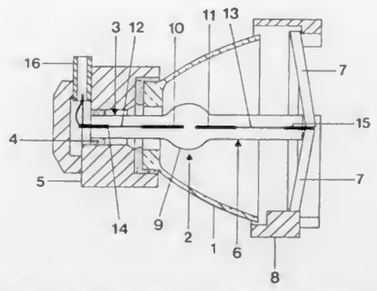
5,668,441

METAL HALIDE HIGH-PRESSURE DISCHARGE LAMP

Andreas Genz, Berlin, Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH

PCT No. PCT/DE94/00702, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO95/01648, PCT Pub. Date Jan. 12, 1995
PCT Filed Jun. 20, 1994, Ser. No. 557,045
Claims priority, application Germany, Jul. 2, 1993, 43 22 115.7
Int. Cl.[6] H01J *61/12;61/82*
U.S. Cl. 313—637 **8 Claims**

1. A metal halide high-pressure discharge lamp (2) having a mean arc power between 100 and 180 W per millimeter of arc length, in particular for incorporation into optical systems (1), having a discharge vessel (9) of high-temperature-proof light-transmissive material, two high-temperature-resistant electrodes (10, 11) and a filling of mercury, at least one noble gas, at least one halogen, and other metals that form metal halides, characterized in that to produce light with a color temperature between 4500 and



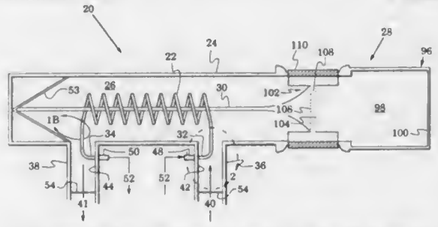
7000 K. and light densities between 25 and 75 kcd/cm^2, the fill contains dysprosium, hafnium, lithium and indium as halide-forming metals.

5,668,442

PLASMA-ASSISTED TUBE WITH HELICAL SLOW-WAVE STRUCTURE

Dan M. Goebel, Tarzana; Jennifer M. Butler, Pacific Palisades, and Robert L. Eisenhart, Woodland Hills, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed May 13, 1994, Ser. No. 242,570
Int. Cl.[6] H01J *23/27;25/61*
U.S. Cl. 315—39 **8 Claims**



1. A plasma-assisted, microwave source configured to amplify a microwave signal with the aid of an ionizable gas and without the aid of magnetic beam-focusing structures and to be cooled by a cooling liquid, said source comprising:
a source waveguide configured with a wall and having first and second ends;
a plasma-cathode, electron gun coupled to said source waveguide first end;
a collector coupled to said source waveguide second end;
first and second apertures defined by said source waveguide wall;
input and output waveguides which are joined to said source waveguide wall and arranged to physically communicate respectively through said first and second apertures with said source waveguide, each of said input and output waveguides having a respective wall;
a helix configured with a hollow interior and first and second ends, said helix positioned within said source waveguide;
first and second waveguide antennas comprising extensions of said first and second helix ends away from said helix, said extensions passing respectively through said first and second apertures and joining said first and second helix ends in an orthogonal relationship respectively with the walls of said input and output waveguides;
first and second liquid coupling ports comprising further extensions of said first and second helix ends through the walls of said input and output waveguides respectively, said first and second liquid coupling ports coupled to said hollow interior for communication of said cooling liquid into and out of said hollow interior; and
first and second pressure windows positioned respectively across said input and output waveguides, with said first and second

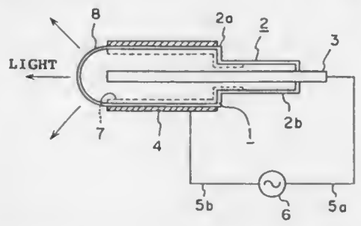
waveguide antennas between said source waveguide and said first and second pressure windows respectively;
wherein;
said source waveguide and said first and second pressure windows are configured to receive and contain said ionizable gas about said helix and said first and second waveguide antennas;
said electron gun is configured to inject an electron beam through said helix and through said ionizable gas to said collector, said electron beam thereby generating a plasma channel in said ionizable gas which assists in the confinement and transport of said electron beam to said collector;
said input waveguide and said first waveguide antenna receiving and coupling said microwave signal onto said helix so that said microwave signal interacts with and is amplified by said electron beam; and
said second waveguide antenna and said output waveguide coupling said amplified microwave signal from said helix.

5,668,443

DISPLAY FLUORESCENT LAMP AND DISPLAY DEVICE

Hironobu Kawaguchi; Noriyuki Tomimatsu; Kazuo Yoshioka, and Sadayuki Matsumoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 381,420, Jan. 31, 1995. This application Oct. 19, 1995, Ser. No. 545,274
Claims priority, application Japan, Jul. 21, 1994, 6-169718; Jun. 13, 1995, 7-146308
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.1 **20 Claims**



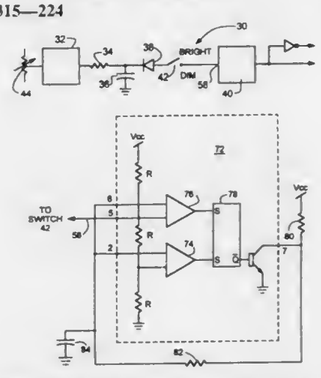
1. A display fluorescent lamp comprising;
a dielectric cylindrical container having a large-diameter portion in which rare gas is sealed and a small-diameter portion which is almost coaxially connected with said large-diameter portion at one end of said large-diameter portion, the outside diameter thereof being smaller than that of said large-diameter portion;
a light emitting portion which is formed at another end of said large-diameter portion and has light permeability;
an internal electrode which is inserted into said cylindrical container from the other end of said small-diameter portion which is not connected with said large-diameter portion, a fluorescent substance layer formed on the inside face excluding that in which said light emitting portion is formed, of the large-diameter portion of said cylindrical container; and
an external electrode formed on the outside face of said large-diameter portion excluding a portion in which said light emitting portion of said cylindrical container is formed,
wherein the length in the axial direction, of said small-diameter portion being set so as to be longer than an insulation distance required against a voltage to be applied between said internal electrode and said external electrode.

5,668,444

SOFT-TRANSITION FSK DIMMER FOR GASEOUS LUMINOUS TUBE LIGHTS

David R. Pacholok, Sleepy Hollow, Ill., assignor to Everbrite, Inc., Greenfield, Wis.

Filed Jun. 17, 1994, Ser. No. 261,405
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—224 **5 Claims**



1. A dimmer for a high frequency luminous tube power supply, the power supply having an output transformer operatively connected to the dimmer and an output for connection to a luminous tube load; the dimmer including a high frequency variable frequency oscillator having a frequency control input, the high frequency oscillator operating between first nominal and second higher frequencies corresponding to control input signal between first and second levels; a low frequency oscillator having an output operatively connected to the high frequency variable frequency oscillator control input, said low frequency oscillator alternately switching between first and second output signal levels corresponding generally to the first and second control input signal levels, respectively; low pass filtering means operatively associated with the power supply whereby the power supply provides output for full tube illumination when the supply is operated at the first nominal frequency and a substantially reduced output corresponding to low tube illumination when the supply is operated at the second higher frequency; duty-cycle control means operatively connected to the low frequency oscillator to selectively adjust the ratio of time that the output of the low frequency oscillator is in each of its two output signal levels whereby increased dimming may be achieved by increasing the percentage of time that the high frequency oscillator is operated at the second higher frequency; the output of the high frequency oscillator is a plurality of spaced pulses, means operatively associated with the high frequency oscillator frequency control input for narrowing the width of the spaced pulses as the frequency control input is advanced from first to second levels whereby the relative harmonic content of the high frequency oscillator output increases as the frequency thereof moves between first nominal and second higher frequencies whereby said increases in both oscillator frequency and harmonic content contribute to substantially reduce the output to low tube illumination.

5,668,445
ELECTRONIC FLASH APPARATUS WITH CONSTANT DURATION REPEATED FLASH

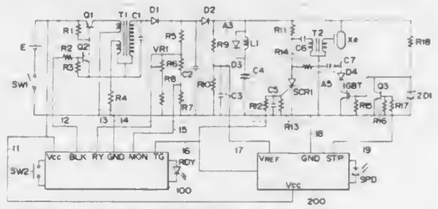
Hideki Matsui, Fujisawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 533,212, Sep. 22, 1995, abandoned, which is a continuation of Ser. No. 365,184, Dec. 28, 1994, abandoned, which is a continuation of Ser. No. 147,538, Nov. 5, 1993, abandoned. This application Oct. 24, 1996, Ser. No. 736,242

Claims priority, application Japan, Nov. 10, 1992, 4-077393 U

Int. Cl.[6] H05B *41/14*

U.S. Cl. 315—241 P **3 Claims**



1. An electronic flash apparatus comprising:

a capacitor;

a flash tube which is connected with said capacitor and flashes when electricity stored in said capacitor is discharged; and

a flash operation control device for performing drive control of said flash tube so that the flash tube flashes repeatedly when electricity stored in said capacitor is applied to the flash tube,

wherein said flash operation control device has: a reference voltage generator device for generating a value of the reference voltage from the value of the voltage accumulated in said capacitor; a light quantity integrating device for obtaining the integrated value of quantity of light of the flash emitted from said flash tube; and a comparison device for comparing the output value of said reference voltage generator device with the output value of said light quantity integrating device, and

wherein said flash operation control device adjusts the flash operation of said flash tube if the integrated value of the luminous amount of the flash emitted from the flash tube is judged to become greater than the value of the reference voltage generated from the value of the voltage accumulated in said capacitor.

5,668,446
ENERGY MANAGEMENT CONTROL SYSTEM FOR FLUORESCENT LIGHTING

James Allan Baker, Edmonton, Canada, assignor to Negawatt Technologies Inc., Edmonton, Canada

Continuation of Ser. No. 373,156, Jan. 17, 1995, abandoned. This application Sep. 23, 1996, Ser. No. 716,611

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—294 **26 Claims**

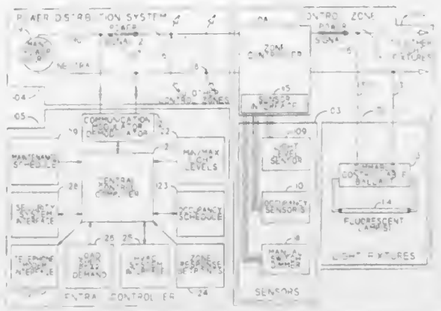
1. A lighting control system for a building having several zones and a power source, the system comprising:

plural zone controllers operatively connectable to the power source, each zone controller including a load side;

plural fluorescent light fixtures associated with each zone controller, each fluorescent light fixture being operatively connected via a power conductor to receive power from the load side of the zone controller;

control means associated with each zone controller to control the power used by the fluorescent light fixtures associated with the zone controller;

a modulator associated with each zone controller for modulating a control signal from the control means onto the power conductor; and



a control signal detector at each fluorescent light fixture, the control signal detector connected to receive control signals from the control means appearing on the power conductor connected to the fluorescent light fixture, each fluorescent light fixture associated with a particular zone controller being connected to receive the same control signals as other fluorescent light fixtures associated with that particular zone controller.

5,668,447
DEFLECTION YOKE AND CATHODE-RAY TUBE APPARATUS COMPRISING THE SAME

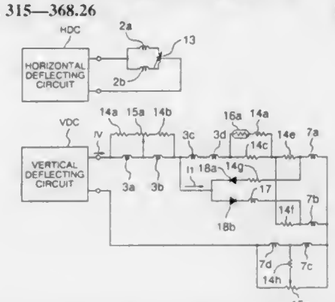
Nobutaka Okuyama; Soichi Sakurai; Kooji Fukuma, all of Yokohama; Hiroshi Yoshioka, Mobara; Masao Ohara, Yokohama; Naoki Ito, Kitakami; Atsushi Takeyama, Odawara, and Yoshio Satoh, Chosei-gun, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Media Electronics Co., Ltd., Mizusawa, both of Japan

Continuation of Ser. No. 533,994, Sep. 27, 1995, Pat. No. 5,548,190. This application Jul. 15, 1996, Ser. No. 683,541

Claims priority, application Japan, Sep. 28, 1994, 6-233328

Int. Cl.[6] H01J *29/51*; **G09G** *1/28*

U.S. Cl. 315—368.26 **18 Claims**



1. A deflection yoke for use in a color cathode-ray tube having an electron gun for generating a multiplicity of electron beams in an inline array, comprising:

horizontal and vertical deflection coils; and

a main core,

wherein the vertical deflection coil is made up of at least a pair of saddle shaped coil halves each divided into at least 2 first and second coil parts, the first coil parts of the coil halves and the second coil parts thereof are connected respectively in series or in parallel, a subcore having a vertical auxiliary deflection coil is provided on a side of the electron gun, the vertical auxiliary deflection coil includes a first correction coil for generating at least 4 polar magnetic field components and a second correction coil for generating 4 polar magnetic field components directed opposite to the 4 polar magnetic field, components of the first correction coil, a series circuit of a first resistor and the first correction coil is connected in parallel to a series circuit of a second resistor and the second correction coil to form a parallel circuit, the parallel circuit

is connected in series with the vertical deflection coil, and a shunt circuit is provided for shunting part of a vertical deflection current flowing through the second coil part of the coil halves when the vertical deflection current is equal to or higher than a constant value to cause a predetermined imbalance between currents flowing through the first and second correction coils according to the vertical deflection current.

5,668,448
PICTURE DISPLAY DEVICE PROVIDED WITH AN ELECTRON GUN, AND ELECTRON GUN FOR USE IN SUCH A DEVICE

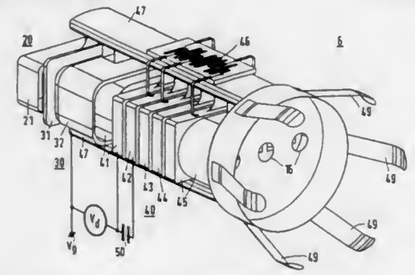
Edwin A. Montie; Alfred Ketting, and Ronald Van Der Wilk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 22, 1995, Ser. No. 518,060

Claims priority, application European Pat. Off., Aug. 25, 1994, 94202434

Int. Cl.[6] H01J *29/58*

U.S. Cl. 315—382.1 **6 Claims**



1. A picture display device comprising an envelope containing a luminescent screen and an electron gun for producing at least one deflectable electron beam for propagation to the screen, said electron gun including a main lens system for variably focusing said at least one electron beam as it is deflected across the screen, said main lens system including:

a. an arrangement of successive electrodes having respective apertures for passing the at least one electron beam, said electrodes including, in the direction of electron beam propagation:

(i) a first electrode;

(ii) at least one intermediate electrode, preceded by the first electrode;

(iii) a final electrode, subsequent to the at least one intermediate electrode;

b. voltage distribution means electrically connected to the arrangement of successive electrodes for, upon the application of a first voltage to the first electrode and a final voltage to the final electrode, effecting the application of an intermediate voltage to each of the at least one intermediate electrodes, each said intermediate voltage being intermediate and substantially different from said voltages applied to the immediately-preceding and the immediately-subsequent electrodes;

c. means for applying a dynamic potential to the first electrode;

d. a first coupling capacitor electrically connecting the first electrode and a first intermediate electrode.

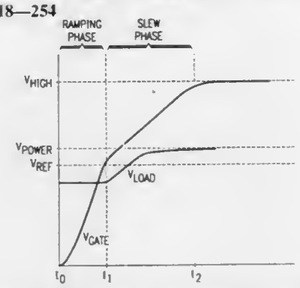
5,668,449
MOTOR WITH INPUT-CONTROLLED HIGH SIDE DRIVER

Francesco Carobolante, San Mateo, Calif., assignor to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 27, 1994, Ser. No. 331,368

Int. Cl.[6] H02P *1/18*

U.S. Cl. 318—254 **7 Claims**



1. A method of operating a polyphase DC motor having a plurality of coils, comprising the steps of:

selecting one of a plurality of power driving transistors, each of said power driving transistors coupled to a respective coil;

receiving a control signal which identifies either a first or a second mode of operation; and

in said first mode, providing a voltage signal to a gate of the selected driving transistor such that said voltage signal varies at a first rate until the voltage on the gate of the selected power driving transistor is near a point at which the selected driving transistor will conduct and varies at a second rate, which is less than said first rate, while the transistor is conducting current to the respective coil;

in said second mode, providing said voltage signal to the gate of the selected driving transistor such that said voltage signal varies at said first rate.

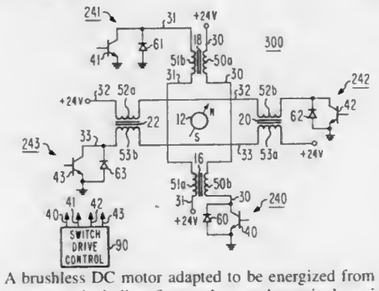
5,668,450
HALF-WAVE, BRUSHLESS, FOUR-PHASE DC MOTOR WITH BIFILAR WINDINGS

David Allan Glasier, Cheshire, and Joseph Frederick Rubin, Adams, both of Mass., assignors to Martin Marietta Corp., Pittsfield, Mass.

Filed Apr. 17, 1995, Ser. No. 423,255

Int. Cl.[6] H02K *23/00*

U.S. Cl. 318—254 **6 Claims**



1. A brushless DC motor adapted to be energized from a direct voltage source including first and second terminals, said motor comprising:

a rotor including a permanent magnet for producing a permanent magnetic field having at least one positive and one negative pole;

a first stator winding including a first terminal electrically connected to said first terminal of said voltage source, and also including a second terminal adapted to be electrically coupled to said second terminal of said voltage source during first

intervals, said first stator winding being physically located at a reference angular position about said rotor, such that, when current flows from said voltage source through said first stator winding during said first intervals, a magnetic field is generated at said reference angular position, which magnetic field is capable of interacting with said permanent magnetic field;

a second stator winding including a first terminal electrically connected to said first terminal of said voltage source, and also including a second terminal adapted to be electrically coupled to said second terminal of said voltage source during second intervals different from said first intervals, said second stator winding being bifilar wound with said first stator winding, such that, when current flows from said voltage source through said second stator winding during said second intervals, a magnetic field capable of interacting with said permanent magnetic field is generated by said second stator winding;

first controllable switching means coupled to said second terminal of said voltage source and to said second terminal of said first stator winding, for switching between a conductive state and a nonconductive state in response to first and second portions of a first control signal;

second controllable switching means coupled to said second terminal of said voltage source and to said second terminal of said second stator winding, for switching between a conductive state and a nonconductive state in response to first and second portions of a second control signal; and

control means coupled to said first and second switching means, for applying said first portion of said first control signal to said first switching means at times which alternate with the times at which said first portion of said second control signal are applied to said second switching means.

5,668,451

METHOD FOR MONITORING THE OPENING AND CLOSING PROCESS IN A SYSTEM HAVING AT LEAST ONE COMPONENT MOVED BY ELECTRIC MOTOR

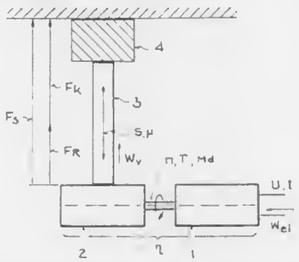
Dieter Driendl, Deggenhausertal; Wolfgang Schulter, Meersburg; Ulrich Joos, Nonnenhorn, and Manfred Fischer, Oberteuringen, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Nov. 22, 1995, Ser. No. 561,199

Claims priority, application Germany, Nov. 26, 1994, 44 42 171.0

Int. Cl.[6] H02F *3/00*

U.S. Cl. 318—466 **5 Claims**



1. Method for monitoring the opening and closing process in a system having at least one component (3) moved by electric motor, comprising the process steps:

during the movement of the components (3), all operating parameters of the motor (1) are captured continuously at time-equidistant measuring moments,

the energy balance developing during the movement is formed with the aid of the captured operating parameters of the motor (1),

the total force (F_S) resulting from the movement is determined from the energy balance and the design parameters of motor (1) and gear 2,

the trapping force (F_K) is determined from the total force (F_S) at each measuring moment (t_M) with the aid of a time window whose window width is selected as time difference between the respective measuring moment (t_M) and a respective reference moment (t_R) such that, at least at one reference moment (t_R), a trapping does not yet occur (F_K=0),

the course of the trapping force (F_K) as a function of time is evaluated and a trapping situation is detected when predetermined limit values or threshold values are exceeded,

specific reactions are initiated when a trapping situation is recognized.

5,668,452

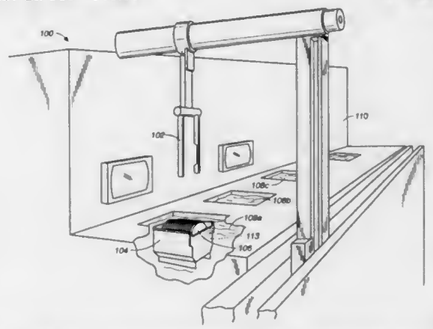
MAGNETIC SENSING ROBOTICS FOR AUTOMATED SEMICONDUCTOR WAFER PROCESSING SYSTEMS

Danine Villarreal, San Antonio, and Anthony Sayka, Austin, both of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed May 9, 1996, Ser. No. 644,115

Int. Cl.[6] B25J *5/00*; F26B *17/24*

U.S. Cl. 318—568.16 **16 Claims**



1. An automated system for processing of semiconductor wafers through a plurality of wafer fabrication processing stations for manufacturing integrated circuits, the plurality of processing stations including a first and a second processing station, said system comprising:

a portable housing device for holding and transporting a plurality of semiconductor wafers during processing of said wafers;

a robotic arm releasably engagable with said housing device for transporting said housing device and said wafers from a first processing station to a second processing station, said robotic arm including collision detection means for detecting the physical proximity of said housing device to said robotic arm and for detecting and avoiding imminent collisions of an obstacle with said housing device before physical contact is made between said housing device and said obstacle, wherein said collision detection means includes magnetic field monitoring means for monitoring a magnetic field surrounding said housing device and for providing a collision avoidance signal when predetermined changes in said magnetic field are detected; and

a programmable controller means in communication with said robotic arm for controlling physical movements and positions of said robot arm, said controller means including means responsive to said collision avoidance signal for suspending movement of said robotic arm in order to avoid said detected imminent collision of said housing device with said obstacle.

5,668,453

METHOD OF CALCULATING POINTS AND NORMAL LINES OF CONTACT AND APPARATUS THEREFOR

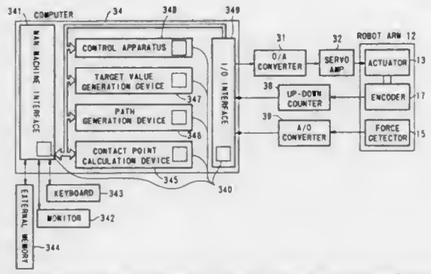
Shinyo Muto, and Ken-ichiro Shimokura, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 335,974, Nov. 4, 1994, abandoned. This application Jul. 19, 1996, Ser. No. 683,860

Claims priority, application Japan, Nov. 5, 1993, 5-277187; Nov. 11, 1993, 5-282693

Int. Cl.[6] B25J *9/06*

U.S. Cl. 318—568.17 **5 Claims**



1. A method of determining a contact point and a normal vector at the contact point between a tool or part attached at an end of a multi-jointed robot arm and a workpiece or object fixed on a table of a robot machine, the robot being capable of detecting and recording three-dimensional position, orientation, velocity, and angular velocity of said tool or part, the normal vector being normal to a surface of said tool or part at said contact point, the method comprising the steps of:

storing data related to geometrical configuration of said tool or part in a computer memory;

recording an opposing force applied to said tool or part, said opposing force being detected by a force detector on said robot arm;

inputting into the computer memory information related to three-dimensional positions and angular velocities of said tool or part and of joints on said robot arm, and information related to said recorded opposing force applied to said tool or part;

calculating a force application vector based on said opposing force;

calculating an intersection point of said force application vector with said tool or part surface from said geometrical configuration of said tool or part;

selecting multiple points on the surface of said tool or part in an area around said intersection point, calculating a normal vector at each of said multiple points normal to the surface of said tool or part, calculating a translation velocity vector for each of said multiple points from said angular velocities of said joints, and calculating a dot product of said normal vector and said translation velocity vector for each of said multiple points;

calculating for each of said multiple points a boundary distance, said boundary distance being a product of said normal vector and a distance from each of said multiple points to a point representing a boundary area;

calculating a distance of said force application vector, said distance of said force application vector being the distance between each of said multiple points and said intersection point;

calculating a determination function for each of said multiple points from said dot products, said boundary distance, and said distance of said force application vector;

calculating said contact point among said multiple points and determining the normal line at said point of contact between said tool or part and said workpiece, said contact point being calculated by choosing a point where said determination function and the corresponding normal vector at said contact point normal to said tool or part surface are minimized; and

outputting contact point and normal line information to a controller controlling the movement of said robot arm, such that said robot arm can position said tool or part.

5,668,454

Patent Not Issued For This Number

5,668,455

ANGLE ENCODER FOR ROTATING EQUIPMENT

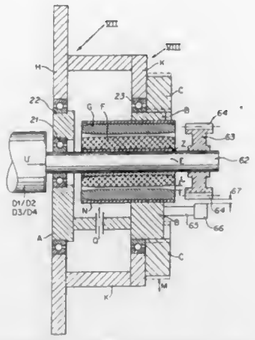
Fritz Rainer Gotz, Konrad-Adenauer-Str. 25, 90522 Oberasbach; Heinrich Marz, Bruckkanalstr. 31, and Harald Meis, Pfeifferhutterweg 24, DE-90559 Burgthann, all of Germany

Division of Ser. No. 307,871, Sep. 16, 1994, Pat. No. 5,610,491. This application Apr. 12, 1996, Ser. No. 631,479

Int. Cl.[6] G01D *5/12*

U.S. Cl. 318—602 **15 Claims**

1. A design of an angle encoder having one of a rotating and a tilting sensor rotor and associated stationary scanner including a hollow shaft encoder with pinion and associated scanning head, to determine an angular position of a pivoted, frame mounted machine component that is positioned in at least one of a longitudinal, oblique, transverse and diagonal position relative to an axis of the machine component, comprising: an angle encoder with the



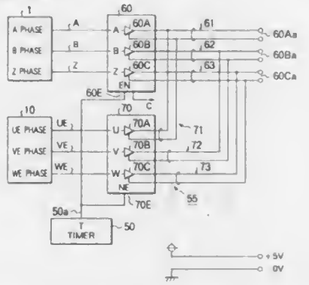
sensor rotor directly and rigidly connected to the component, and the scanning head supported by the frame, wherein the scanning head follows adjustments of the component and of the sensor rotor through a tracking device.

5,668,456

SERVO MOTOR ENCODER

Tomio Nakata, and Kenji Shiroshita, both of Iida, Japan, assignors to Tamagawa Seiki Kabushiki Kaisha, Nagano-Ken, Japan

Filed Apr. 24, 1996, Ser. No. 639,113
Int. Cl.[6] G05B *19/29*
U.S. Cl. 318—602 **4 Claims**



2. A servo motor encoder including an incremental signal generator for generating 3-phase incremental signals A, B, and Z and a servo motor magnetic pole position detection signal generator for generating 3-phase servo motor magnetic pole position detection signals UE, VE, and WE, said encoder being characterized in that said encoder further comprises:

a first line driver including three first line driver elements corresponding to said incremental signals A, B, and Z;

a second line driver including three second line driver elements corresponding to said servo motor magnetic pole position detection signals UE, VE, and WE;

pairs of output terminals, each said pair of output terminals being connected to the corresponding said first driver elements; and

a timer, said timer being connected to the enable a terminal of said first line driver and also to the not-enable terminal of said second line driver;

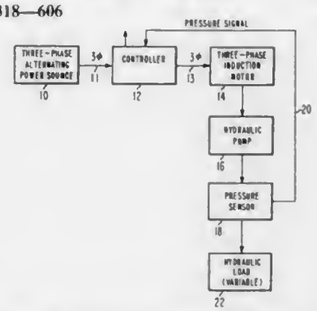
wherein each pair of output lines of each driver element of said second line driver are connected to the corresponding said pair of output terminals.

5,668,457

VARIABLE-FREQUENCY AC INDUCTION MOTOR CONTROLLER

Farzin Motamed, Binghamton, N.Y., assignor to Martin Marietta Corporation, Binghamton, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,493
Int. Cl.[6] G05B *1/02*
U.S. Cl. 318—606 **6 Claims**



1. A system for driving a hydraulic pump from a source of multiphase alternating current, said system comprising:

a hydraulic pump including mechanical drive means, which produces hydraulic pressure for application to a hydraulic load which may vary;

pressure sensing means coupled to said hydraulic pump, for producing pressure signals representative of said hydraulic pressure;

a multiphase alternating-current induction motor mechanically coupled to said mechanical drive means of said hydraulic pump, and including at least a plurality of windings associated with a predetermined number of poles, each winding being driven by a different phase of said alternating current, for driving said pump in response to electrical power applied to said plurality of windings;

rectifying means adapted to be coupled to said source of multiphase alternating current, for generating direct voltage;

controllable multiphase inverter means coupled to said rectifying means and to said plurality of windings of said motor, for converting said direct voltage into multiphase alternating voltages of controllable amplitude and frequency applied to said windings of said motor;

error signal generating means coupled to said pressure sensing means and to a source of signals representing a reference pressure, for generating a difference signal indicative of the load applied to the pump and of the pressure error;

motor speed signal generating means coupled to said error signal generating means, for converting said pressure error signal into signals representative of a desired motor speed for the current load condition;

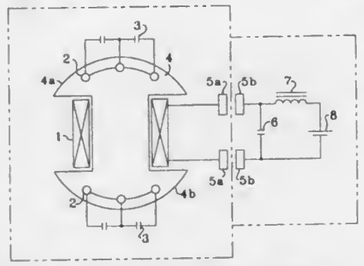
inverter gate drive means coupled to said motor speed signal generating means and to said inverter means, for converting said motor speed signal into alternating drive signals for said windings of said motor, said drive signals having a fundamental frequency and amplitude, said fundamental frequency being equal to said desired motor speed multiplied by a quantity, which quantity is equal to one-half the number of said poles of said motor, said amplitude being normalized by the ratio of said fundamental frequency to a reference frequency, said alternating drive signals including a component at the third harmonic of said fundamental frequency.

5,668,458

SYNCHRONOUS MACHINE WITH HARMONICS DAMPENING

Yoshisuke Ueda, Shiga; Fuyuto Takase, Kyoto; Kiyoshi Oku, Osaka; Takayuki Hira, and Atsushi Ashizawa, both of Kanagawa, all of Japan, assignors to Kansai Electric Power Co., Inc., Osaka, and Fuji Electric Co., Kawasaki, both of Japan

Filed Feb. 15, 1995, Ser. No. 389,692
Claims priority, application Japan, Feb. 15, 1994, 6-017708
Int. Cl.[6] H02P *13/00*
U.S. Cl. 318—716 **19 Claims**



1. A rotating field synchronous machine comprising;

magnetic poles;

a damper winding disposed on each of said magnetic poles and constituting by itself an independent closed circuit, said damper winding being divided into a predetermined number of winding divisions, each thereof having predetermined winding turns; and

a plurality of capacitors connected in parallel with said winding divisions;

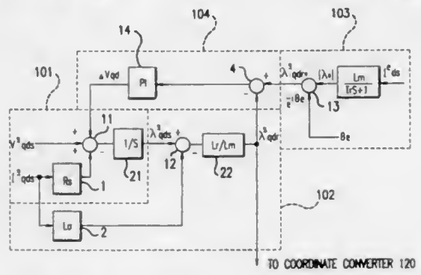
thereby enabling a series resonant circuit to include said capacitors and said damper winding, so that said series resonant circuit resonates at a specific resonant frequency.

5,668,459

APPARATUS FOR GENERATING MAGNETIC FLUX OF INDUCTION MOTOR

Ho Geun Kim, Anyang, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea

Filed May 6, 1996, Ser. No. 642,971
Int. Cl.[6] H02P *7/36*
U.S. Cl. 318—798 **5 Claims**



1. An apparatus for generating a magnetic flux of an induction motor, comprising:

stator magnetic flux generating means for outputting a stator magnetic flux by operating a current of an inputted static coordinate system, a voltage of the static coordinate system, and a compensation voltage;

rotor magnetic flux generating means for outputting a rotor magnetic flux by operating the current of the static coordinate system inputted to the stator magnetic flux generating means and the stator magnetic flux outputted from the stator magnetic flux generating means;

reference magnetic flux generating means for outputting a reference magnetic flux by operating a current of an inputted rotational coordinate system and a phase of the magnetic flux; and

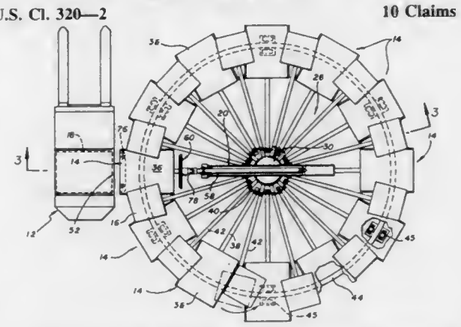
compensation voltage generating means for generating a compensation voltage so as to compensate a magnetic flux error value which is referred to a difference value between a reference magnetic flux outputted from the reference magnetic flux generating means and the rotator magnetic flux outputted from the rotor magnetic flux generating means, and then for outputting to the stator magnetic flux generating means.

5,668,460

BATTERY RECHARGER TURNTABLE

Curtiss N. Lashlee, and Ronald E. Starzl, both of Oxnard, Calif., assignors to Lashstar, Inc., Oxnard, Calif.

Filed Oct. 31, 1994, Ser. No. 331,983
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—2 **10 Claims**



1. Battery recharger apparatus for use in recharging batteries of a battery powered vehicle, said recharger apparatus comprising:

a movable frame including a plurality of charging stations each including a battery support platform and charger means for recharging a battery on said platform;

drive means for moving said frame to move said charging stations one at a time to a transfer position;

means for elevationally adjusting the platform of the charging station at said transfer position; and

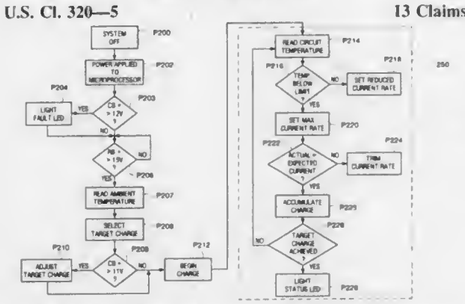
a transfer mechanism at said transfer position for slidably transferring a depleted battery within a battery powered vehicle parked at said transfer position from the vehicle and onto the platform of a charging station at said transfer position whereby said depleted battery can be connected to said charger means for recharging, said transfer mechanism being further operable for slidably transferring a recharged battery from the platform of the charging station at said transfer position to the vehicle parked at said transfer position;

said transfer mechanism including means for vacuum drawing a battery from the vehicle at said transfer position onto the platform of the charging station at said transfer position, and for pushing a battery from the platform at said transfer position onto the vehicle at said transfer position.

5,668,461
RESERVE BATTERY HAVING TEMPERTURE COMPENSATION

Keith Alan Hancock, Castle Rock, Colo.; Joseph Thomas Scopaz, Woodland Hills, Calif.; Gerald Lewis, Las Vegas, Nev., and Thomas Augusto Gutierrez, Laguna Niguel, Calif., assignors to Reserve Battery Cell, L.P., Englewood, Colo.

Filed Feb. 13, 1996, Ser. No. 600,551
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—5 **13 Claims**



1. In a battery charging system for recharging a discharged battery from a reserve battery, an apparatus for providing a charge from said reserve battery to said discharged battery as a function of an ambient temperature of said battery charging system, said apparatus comprising:

ambient temperature measurement means for determining an ambient temperature value representative of said ambient temperature,

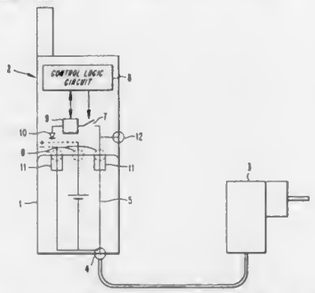
selection means, responsive to said ambient temperature value, for selecting a predetermined target charge value, said target charge value representing the amount of said charge to be delivered from said reserve battery to said discharged battery; and

control means for delivering said charge from said reserve battery to said discharged battery in an amount substantially equal to said target charge value.

5,668,462
METHOD AND APPARATUS FOR CONTROLLING A CHARGING CURRENT OF A BATTERY IN A PORTABLE CHARGEABLE ELECTRONIC UNIT

H. Magnus Hansson, Malmö , and Björn Martin Gunnar Lindquist, Bjärred, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 8, 1995, Ser. No. 436,831
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—12 **21 Claims**



1. A method of controlling a charging current of a battery in a portable chargeable electronic unit, including the steps of:

delivering a charging current from a battery charger to the battery in the portable chargeable electronic unit; and

directly controlling flow of the charging current using control logic in the portable chargeable electronic unit.

11. An apparatus for controlling a charging current of a battery in a portable chargeable electronic unit, comprising:

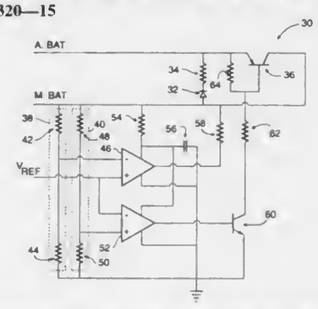
means for delivering a charging current from a battery charger to the battery in the portable chargeable electronic unit;

means, comprising a control logic circuit in the portable chargeable electronic unit, for directly controlling flow of the charging current.

5,668,463
AUXILIARY BATTERY CHARGE CONTROL CIRCUIT

Raymond S. Duley, Buda, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 22, 1994, Ser. No. 279,294
Int. Cl.[6] H02J *7/00;* **H01M** *10/46*
U.S. Cl. 320—15 **8 Claims**



1. A circuit for controlling charge upon an auxiliary battery comprising:

an auxiliary battery, a main battery and an ac-to-dc converter connected in parallel with each other and in parallel to a load device;

a main battery charge control circuit connected between said main battery and said ac-to-dc converter for providing a current from said ac-to-dc converter to said main battery;

an auxiliary battery charge control circuit connected between said auxiliary battery and said main battery for providing current from said main battery to said auxiliary battery and for modulating connectivity therebetween, said auxiliary battery charge control circuit comprises:

a pair of voltage dividers coupled between a ground potential and said main battery;

a pair of comparators, each comparator having an output connected to the other comparator output and a pair of inputs connected to a reference voltage and a respective one of said pair of voltage dividers, and wherein at least one of said pair of comparators comprises a power node coupled through a low pass filter to said main battery;

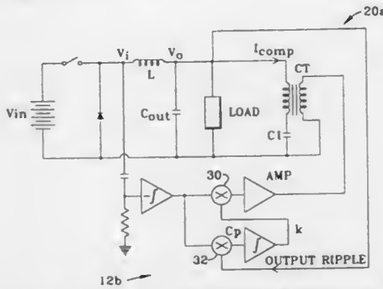
a switch transistor having a switch transistor base and a switch transistor conductive path, said switch transistor base is connected to said mutually coupled comparator outputs and said switch transistor conductive path is modulated by said switch transistor base and is connected between a current limiting resistor and said ground potential; and

a battery connect transistor having a battery connect transistor base and a battery connect conductive path, said battery connect transistor base is connected through said current limiting resistor to said switch transistor conductive path, and wherein said battery connect conductive path is connected between said auxiliary battery and said main battery, whereby changes in conductivity of said switch transistor conductive path correspondingly cause changes in connectivity between said auxiliary battery and said main battery.

5,668,464
FEEDFORWARD ACTIVE FILTER FOR OUTPUT RIPPLE CANCELLATION IN SWITCHING POWER CONVERTERS

Philip T. Krein, and Pallab Midya, both of Champaign, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Continuation of Ser. No. 329,448, Oct. 26, 1994, abandoned. This application Oct. 25, 1996, Ser. No. 736,787
Int. Cl.[6] G05F *1/24*
U.S. Cl. 323—259 **10 Claims**



1. A switching power converter usable to deliver an ideally constant electrical energy to a load comprising:

an input stage for receiving an input signal;

means for converting said input signal into an output signal for delivering electrical energy to the load;

a filter having an energy storage element to filter said output signal prior to delivery to the load;

a sensor circuit for detecting an AC ripple signal at said energy storage element;

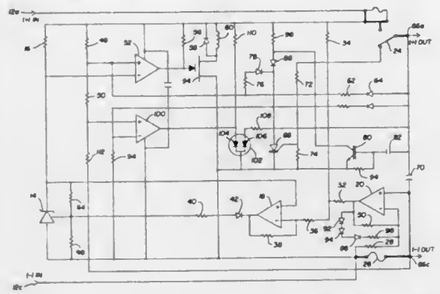
compensation signal generation means for determining a compensation signal based upon said AC ripple signal and a characteristic value of said energy storage element; and

an energy coupling element coupled to said compensation signal generation means for providing said compensation signal to the load to minimize AC ripple in said output signal.

5,668,465
BATTERY VOLTAGE MONITOR AND DISCONNECTION CIRCUIT

Vincent D. May, Plano, Tex., assignor to Operating Technical Electronics, Inc., Grand Prairie, Tex.

Filed Apr. 29, 1996, Ser. No. 639,476
Int. Cl.[6] H01M *10/46;10/48*
U.S. Cl. 320—39 **9 Claims**



1. A circuit for monitoring a voltage associated with a battery connected across a load and ensuring that the voltage does not fall below a predetermined minimum comprising:

a) a programmable reference voltage generator providing a reference voltage which can be varied to account for variations in the load;

b) a transfer function generator electrically connected to the programmable reference voltage generator which varies the reference voltage supplied by the programmable reference voltage generator with variations in current supplied by the battery;

c) a comparator electrically connected to the programmable voltage generator and the battery;

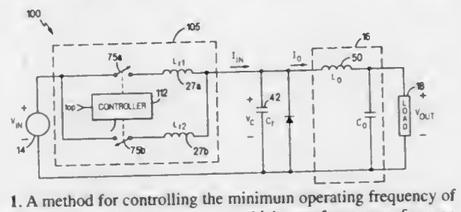
d) a relay electrically connected to the comparator such that the relay disconnects the battery from the load when the comparator determines that the reference voltage is greater than the voltage associated with the battery; and

e) a fault indicator which raises the voltage associated with the battery necessary to reconnect the load, thereby preventing chatter in the relay.

5,668,466
REVERSE ENERGY TRANSFER IN ZERO-CURRENT SWITCHING POWER CONVERSION

Patrizio Vinciarelli, Boston, and Jay Prager, Tyngsboro, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Division of Ser. No. 449,698, May 24, 1995. This application Jun. 2, 1995, Ser. No. 459,126
Int. Cl.[6] G05F *1/613*
U.S. Cl. 323—282 **6 Claims**



1. A method for controlling the minimum operating frequency of a zero-current switching converter which transfers power from an input source for delivery to a time-varying load by opening and closing a switch at times of zero current flow, comprising

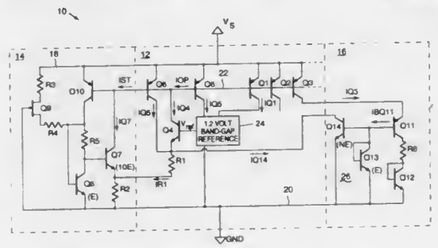
in a first portion of each of a series of converter operating cycles, controlling said switch to initiate forward energy transfer from said input source, and

in response to changes of said load, during each of some of the converter operating cycles and at times which are not contiguous with said first portion, controlling said switch to initiate reverse energy transfer to said input source.

5,668,467
CURRENT REGULATOR HAVING START-UP CIRCUITRY WHICH IS TURNED OFF AFTER START-UP

Robert Allen Pease, San Francisco, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 17, 1995, Ser. No. 390,093
Int. Cl.[6] G05F *3/30*
U.S. Cl. 323—315 **19 Claims**



1. A current regulator, comprising:

a regulation stage having a base bus and an output transistor having a base coupled to the base bus for generating a regulated current, the regulation stage having a current maintaining transistor coupled to the base bus for inducing and maintaining an operating current in the base bus in response to a start-up current first being induced in the base bus; and

a start-up stage having a start-up transistor which conducts a first current and which is coupled to the base bus for inducing the start-up current in the base bus before the current maintaining transistor is turned on;

a first conductor which couples the current maintaining transistor to the start-up transistor and which conducts a second current; and

a second conductor which couples the start-up transistor to ground and which conducts a third current which is substantially equal to a sum of the first and second currents;

wherein the regulation stage turns off the start-up transistor by gradually increasing the second current which gradually decreases the first current.

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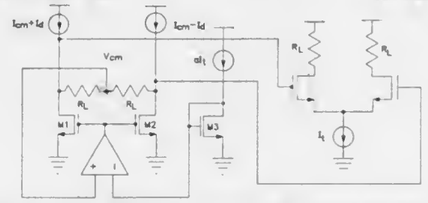
COMMON MODE STABILIZING CIRCUIT AND METHOD

Robert S. Cargill, Portland, Oreg., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 11, 1996, Ser. No. 584,366

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—316 **20 Claims**



1. A circuit for stabilizing a common mode voltage at a reference voltage, the circuit comprising:

two transistors with their control terminals connected;

two series-connected load resistors connecting first operating terminals of said two transistors, second operating terminals of said two transistors being connected to a voltage level; and

a connection for providing the reference voltage from between said two load resistors directly to said control terminals for controlling operation of said two transistors;

wherein each of said first operating terminals is for sensing an input current which varies from a known common mode current and for providing an output voltage which varies from a stable common mode voltage which is the reference voltage.

5,668,469

DIGITAL OSCILLOSCOPE USING COLOR PLANE DISPLAY DEVICE AND DATA DISPLAY METHOD THEREFORE

Kazuya Natori, Kodaira; Mitsunobu Iwabuchi, Musashino, and Shigenori Kawamura, Kokubunji, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

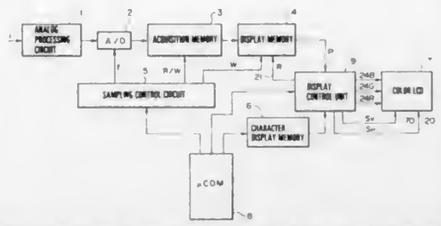
Filed Jun. 28, 1994, Ser. No. 266,694

Claims priority, application Japan, Jun. 28, 1993, 5-181948; Sep. 27, 1993, 5-239622

Int. Cl.[6] G01R *13/00;19/00*

U.S. Cl. 324--121 R **9 Claims**

1. A digital oscilloscope wherein a signal to be observed is sampled to produce a sampled signal, said sampled signal is converted into a corresponding digital signal by an analog-to-digital converter, said digital signal is stored into an acquisition memory as a data signal, said data signal is read from said acquisition memory and stored into a display memory, said data signal stored into said display memory is read at a timing con-



trolled by a display control means, said data signal read from said display memory under the control of said display control means is displayed on a display unit, said digital oscilloscope comprising:

said display control means, including:

a color control circuit for generating red, green and blue data signals at respective display timings for red, green and blue dots in accordance with said data signal read from said display memory, and

a sync signal generating circuit for supplying a timing signal for controlling timings for reading said data signal to said display memory, for supplying a sync signal synchronous with said timing signal to said display unit, and for supplying red, green and blue timing clock signals (RCLK, GCLK, BCLK) for generating said red, green and blue data signals for respective dots of red, green and blue to said color control circuit; and

said display unit being a color dot matrix plane display device formed by a liquid crystal display, said display unit including:

a phase locked loop circuit, in accordance with said sync signal synchronous with said timing signal, for generating a scan clock signal for determining scanning timings for lighting the respective dots independently as to respective dots of said display unit,

a dot scanning circuit for generating a dot scanning signal for lighting respective dots of red, green and blue in accordance with said scan clock signal from said phase locked loop circuit and said red, green and blue data signals from said color control circuit, and

a color liquid crystal display unit for displaying said data signal read from said display memory in accordance with said dot scanning signal from said dot scanning circuit.

5,668,470

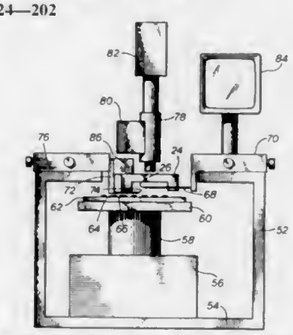
AUTOMATIC TESTING SYSTEM FOR MAGNETORESISTIVE HEADS

John Richard Shelor, San Diego, Calif., assignor to Phase Metrics, San Diego, Calif.

Continuation of Ser. No. 405,797, Mar. 16, 1995, Pat. No. 5,517,111. This application Mar. 1, 1996, Ser. No. 609,853

Int. Cl.[6] G01R *33/06*

U.S. Cl. 324—202 **11 Claims**



1. A tester that tests a magnetic recording head, comprising:

a magnetic core which has a pair of poles;

a coil coupled to said magnetic core;

a drive circuit which provides a current to said coil, wherein said current creates a magnetic field that excites the magnetic recording head;

a sensor that senses the magnetic field, said sensor and the magnetic recording head being located between said poles of said magnetic core; and, a pre-amp circuit that measures an output signal created by the excited magnetic recording head.

5,668,471

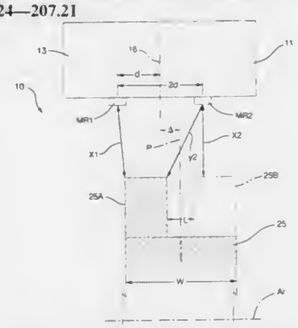
ROTATIONAL SENSOR WITH ROBUST AXIAL ALIGNMENT TOLERANCE

Bruno Patrice Bernard Lequesne, Troy, and Thaddeus Schroeder, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1995, Ser. No. 578,305

Int. Cl.[6] G01B *7/30;7/14;* **G01D** *5/12*

U.S. Cl. 324—207.21 **5 Claims**



1. An apparatus for sensing rotation of an internal combustion engine crankshaft comprising:

an engine crankshaft having an axis of rotation, said crankshaft characterized by a maximum axial displacement to either side of a net position within said engine,

first and second target wheels fixably coupled to said crankshaft in axially spaced adjacency, each target wheel having a respective axial center and side edges, said first and second target wheels separated by a distance greater than four times the maximum axial displacement less the distance between respective axially opposite side edges;

a dual-element magnetoresistive sensor having axially aligned first and second magnetoresistive elements separated by an axial distance corresponding substantially to the distance between said respective axial centers, said first magnetoresistive element corresponding to said first target wheel and substantially aligned therewith when said crankshaft is at said net position and said second magnetoresistive element corresponding to said second target wheel and substantially aligned therewith when said crankshaft is at said net position, each one of said first and second magnetoresistive elements having respective outputs which vary in accordance with magnetic flux density therethrough;

said maximum axial displacement being less than one-half of the axial distance separating the magnetoresistive elements;

said first and second target wheels characterized by alternating areas of high and low permeability as seen by the dual-element magnetoresistive sensor as the target wheels rotate with the crankshaft, each area of high permeability of said target wheel being substantially aligned with one of said areas of low permeability of said second target wheel, each area of low permeability of said target wheel being substantially aligned with one of said areas of high permeability of said second target wheel;

whereby for axial displacements of the crankshaft the first target wheel is closer to the first magnetoresistive element than to the second magnetoresistive element and the second target wheel is closer to the second magnetoresistive element than to the first magnetoresistive element.

5,668,472

MULTICHANNEL FLUX MEASURING APPARATUS HAVING FUNCTION FOR COMPENSATING INTERFERENCE DUE TO CROSSTALK

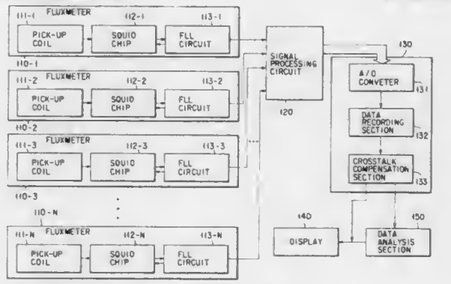
Shigeharu Ohyu, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 17, 1995, Ser. No. 503,337

Claims priority, application Japan, Jul. 18, 1994, 6-165166

Int. Cl.[6] G01R *33/035;33/02*

U.S. Cl. 324—248 **8 Claims**



1. A flux measuring apparatus comprising:

a plurality of measuring means, each of the measuring means having a pick-up coil and detection means which is formed of a superconductor quantum interference device, SQUID, and for measuring a magnetic flux linked with said pick-up coil; and

compensation means for compensating an interference due to a crosstalk between said pick-up coils of said plurality of measuring means included in a measured value from said plurality of measuring means, said compensation means comprises means for calculating a product $A\Phi'$, where the A is a compensation matrix and the Φ' is the measured value, to obtain a flux vector Φ which is free of the crosstalk interference, said compensation matrix A is based on a self inductance of each pick-up coil and a mutual inductance between pick-up coils of said plurality of measuring means, wherein said detection means includes an input coil connected to said pick-up coil, and said compensation means, when flux detected by said plurality of magnetic detection means is Φ_i', compensates the flux Φ_i' on the basis of the following equation:

$$\Phi_i = \Phi_i' + \sum_{j=1, j\neq i}^{N} \frac{M_{ij}}{L_{pi} + L_{si} + L_{ii}} \Phi_i'$$

and obtains flux Φ_i which is free from an interference due to crosstalk, where N represents the number of said plurality of measuring means, i and j each are an arbitrary numeral from 1 to N, Φ_i' represents flux detected by the i-number-th detection means, M_{ij} represents a mutual inductance between the i-number-th pick-up coil and the j-number-th pick-up coil, L_{pi} is a self inductance of the i-number-th pick-up coil, L_{si} represents a self inductance of the i-number-th input coil, and L_{ii} represents a self inductance of wiring of the i-number-th measuring means.

5,668,473

MAGNETORESISTIVE SENSOR INCLUDING SHORTENED MEASURING LAYERS

Hugo Van Den Berg, Herzogenaurach, Germany, assignor to Siemens, Aktiengesellschaft, Munich, Germany

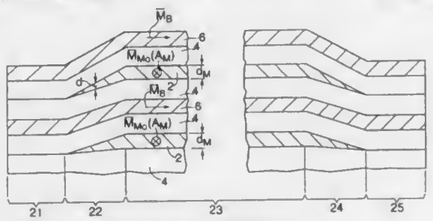
PCT No. PCT/DE93/01205, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO94/15224, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 16, 1993, Ser. No. 481,438

Claims priority, application Germany, Dec. 21, 1992, 42 43 357.6

Int. Cl.[6] G01R *33/06;33/09*

U.S. Cl. 324—252 18 Claims



1. A magnetoresistive sensor comprising:

a) a layer system comprising:

a1) at least one measuring layer which, in a plane of the at least one measuring layer, has a magnetization which at least in one direction depends inversely on an applied magnetic field and, if the applied magnetic field is absent, corresponds to a predefined ground state magnetization;

a2) a bias layer located on at least one side of the measuring layer, the bias layer having a magnetization in the plane of the bias layer, which magnetization is at least approximately constant in a measuring range of the applied magnetic field;

a3) an interlayer, wherein the bias layer is at least approximately magnetically exchange-decoupled from the measuring layer by the interlayer; and

b) measuring contacts for connecting a measuring device to the layer system to detect a resistance signal which is a measure for the applied magnetic field;

wherein a length of the bias layer in a direction parallel to the magnetization of the bias layer is greater than a length of the measuring layer in the same direction, so that the layer system includes boundary zones which do not have a measuring layer.

5,668,474

METHOD IN THE FORM OF A PULSE SEQUENCE FOR FAST NUCLEAR MAGNETIC RESONANCE IMAGING

Oliver Heid, Bern, Switzerland, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 1, 1996, Ser. No. 673,113

Claims priority, application Germany, Jul. 3, 1995, 195 24 184.3

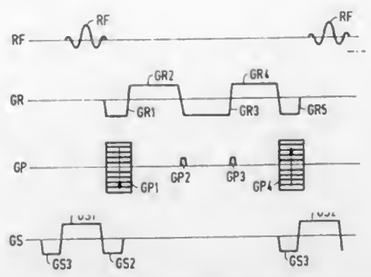
Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 6 Claims

1. A method for operating a nuclear magnetic resonance tomography apparatus for obtaining a tomographic image of an examination subject disposed in an examination volume, comprising the steps of:

(a) generating a uniform magnetic field in said examination volume for aligning nuclear spins in said examination subject to a predetermined direction;

(b) exciting said nuclear spins in said examination subject by generating successive radiofrequency pulses with a repetition time which is shorter than a spin grid relaxation time of said nuclear spins and said repetition time having a duration for maintaining a phase difference during a repetition time, arising between nuclear spins in said examination subject due to magnetic field inhomogeneities, smaller than 180°;



(c) generating at least a readout gradient, composed of a plurality of sub-pulses with alternating polarity, between two successive radiofrequency pulses, with a nuclear magnetic resonance signal in the form of a gradient echo arising under each sub-pulse, and reading out at least a portion of the nuclear magnetic resonance signals in respective readout intervals; and

(d) dimensioning any gradients generated between two successive radiofrequency pulses to have a gradient time integral of zero.

5,668,475

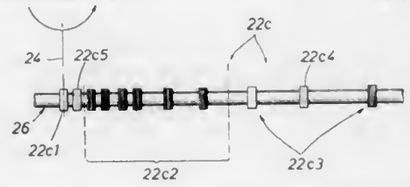
INDUCTION LOGGING SONDE INCLUDING A FOLDED ARRAY APPARATUS HAVING A PLURALITY OF RECEIVER COWOUND COILS AND BUCKING COILS

Andre E. Orban, Sugar Land, and Timothy Leslie Long, Alvin, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Dec. 1, 1995, Ser. No. 566,336

Int. Cl.[6] G01V *3/28*

U.S. Cl. 324—339 14 Claims



1. A logging tool adapted to be disposed in a borehole, comprising:

an array section, said array section including,

a transmitter coil, and

a plurality of cowound receiver coils and bucking coils disposed adjacent one end of said transmitter coil, each nf said plurality of cowound receiver coils and bucking coils including,

a bobbin, and

a receiver coil (N−1) and a bucking coil (N) cowound together on said bobbin,

said bucking coil (N) being associated with another receiver coil (N) and not with said receiver coil (N−1),

said bucking coit (N) being designed to balance a mutual coupling between the transmitter coil and said another receiver coil (N) and not between the transmitter coil and said receiver coil (N−1),

wherein said transmitter coil is not cowound.

5,668,476

METHOD OF DETECTING WHEN A MOVING COMPOMENT ATTAINS A FINAL POSITION

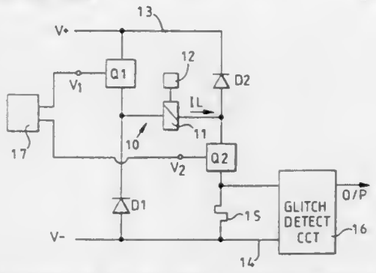
Michael Anthony Archer, Twickenham, England, assignor to Lucas Industries public limited company, West Midlands, England

Filed Mar. 25, 1996, Ser. No. 620,907

Claims priority, application United Kingdom, Apr. 8, 1995, 9507367

Int. Cl.[6] G01R *31/06*

U.S. Cl. 324—546 5 Claims



1. A method of detecting when a moving component of an electromagnetically operable device attains a final position after de-energizing a winding forming part of a device characterized in that the energizing current in said winding is allowed to fall to zero, and prior to said component reaching its final position, a sensing circuit through which current can flow is connected in parallel with said winding, the current in said sensing circuit increasing from the instant of connecting said sensing circuit in parallel with said winding and decreasing when said component reaches its final position, and detecting when said component reaches its final position by detecting the change from increasing current to decreasing current.

5,668,477

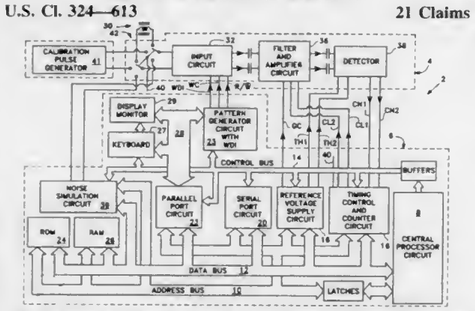
NOISE DETECTING APPARATUS FOR MAGNETIC HEADS

Mostafa Mahmoudian, San Carlos; Jagdeep S. Buttar, Union City; Oleg A. Gergel, Mountain View, and Neil Motiska, Danville, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Feb. 16, 1995, Ser. No. 389,301

Int. Cl.[6] G01B *27/36;* G01R *33/12*

U.S. Cl. 324—613 21 Claims



1. An apparatus for detecting noise in magnetic heads comprising:

a head receiving input means for receiving a magnetic head;

a detector circuit; and

an amplifier circuit having a digitally controlled gain input circuit including digital-to-analog converting means for allowing the presetting of the gain of said amplifier circuit prior to noise detection, said amplifier circuit being electrically disposed between said head receiving input means and said detector circuit;

wherein said detector circuit has a predetermined threshold level corresponding to an acceptable noise level in the magnetic head, such that when electrical noise in the magnetic head which passes through said amplifier circuit exceeds said predetermined threshold level, said detector circuit generates an output electrical signal as a noise event.

5,668,478

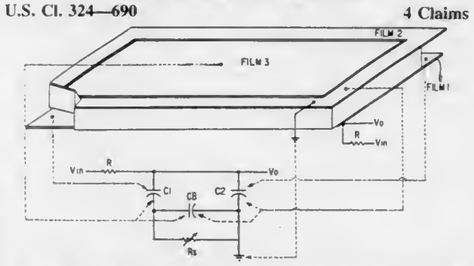
WINDSHIELD RAIN SENSOR

Jeffrey J. Buschur, Bellbrook, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed May 15, 1995, Ser. No. 440,910

Int. Cl.[6] G01R *27/26;* H01G *7/00*

U.S. Cl. 324—690 4 Claims



1. A rain sensor assembly for an automobile windshield having an exterior surface, comprising:

a) a first conductive film located on the exterior surface, and divided into a first exterior film part and a second exterior film part by a gap;

b) a second conductive film spaced apart from the first conductive film, wherein (1) said first exterior film part and said second conductive film form a first capacitor, and (2) said second exterior film part and said second conductive film form a second capacitor;

c) a circuit for detecting (1) a first impedance across the first capacitor when no rainwater is present in the gap, and (2) a second impedance across the first capacitor when rainwater is present in the gap, wherein said circuit includes said first capacitor and said second capacitor in parallel with each other when rainwater is present in the gap.

5,668,479

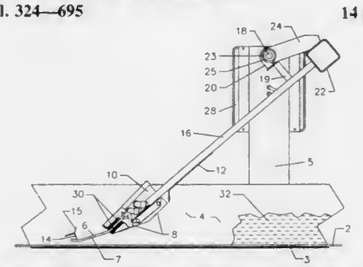
MULTIPURPOSE SENSOR FOR BELT CONVEYOR

Samuel G. Jackson; S. Chris Jackson; Martin L. Mehner; John C. Fabian; Sadaf Khalil, all of Lubbock, Tex., and Mitesh Shah, Piscataway, N.J., assignors to Jackson-Charter Limited Partnership, Lubbock, Tex.

Filed Sep. 12, 1995, Ser. No. 526,993

Int. Cl.[6] G01R *27/08*

U.S. Cl. 324—695 14 Claims



1. An apparatus for measuring the moisture content of a bulk material moving along a path of travel, the apparatus comprising:

a housing pivotally mounted over the path of travel of the moving bulk material;

a plurality of rigid conductive fingers carried by the pivotally mounted housing and exposed at least partially therefrom for contacting the bulk material, the rigid conductive fingers being disposed parallel to the direction of flow of the moving bulk material, whereby the fingers make sliding contact with the bulk material being moved;

displacement means for measuring the vertical displacement of the housing and rigid conductive fingers above the path of travel;

sensing means for detecting an electrical resistance of the rigid conductive fingers and for detecting an angular position of the displacement means, for converting the electrical resistance and the angular displacement electrical signals which are proportional to the moisture content and to the vertical displacement of the bulk material and for transmitting the electrical signals to a readout device.

5,668,480

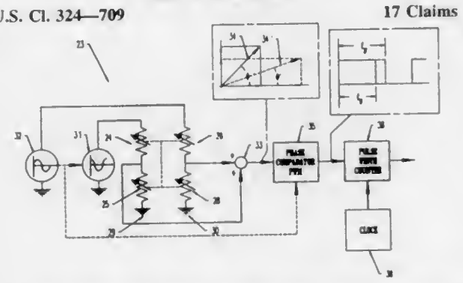
VARIABLE-PHASE RESISTIVE TRANSDUCER, AND METHOD OF OPERATING SAME

Arthur James Nintzel, Elma, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Jun. 20, 1996, Ser. No. 666,925

Int. Cl.[6] G01L *1/00*

U.S. Cl. 324—709 **17 Claims**



1. A transducer for producing a digital output signal proportional to a change in a sensed physical parameter, comprising:

a first pair of series-connected resistors;

a second pair of series-connected resistors;

the electrical resistance of at least one of said resistors being variable in response to a change in said sensed parameter;

first excitation means for applying a first exciting alternating voltage at a particular frequency across said first pair;

second excitation means for applying a second exciting alternating voltage at said frequency across said second pair;

said first and second exciting voltages having identical waveforms but being shifted relative to one another by a constant phase angle;

summing means for vector-summing the voltage existing at a point between the resistors of the first pair with the voltage existing at a point between the resistors of the second pair to provide a vector-summed output signal; and

a counter operatively arranged to count the time difference between the occurrence of a distinguishing waveform event of said vector-summed signal and the occurrence of a like distinguishing waveform event of the exciting voltage referred to;

whereby said time difference count will be a digital output signal proportional to the change in said sensed physical parameter.

5,668,481

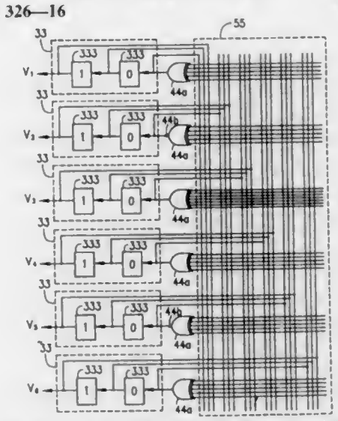
MULTIPLE PATTERN SEQUENCE GENERATION BASED ON INVERTING NON-LINEAR AUTONOMOUS MACHINE

Meng-Lieh Sheu, and Chung-Len Lee, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Feb. 23, 1995, Ser. No. 393,277

Int. Cl.[6] H03K *19/00;19/173*

U.S. Cl. 326—16 **6 Claims**



4. A sequence generator for generating multiple-pattern sequences utilizing an inverting non-linear autonomous machine based on the interdependency relationship between M deterministic patterns each having a width of N bits in said sequences, said autonomous machine comprising:

a plurality of flip-flop cascades each containing a plurality of flip-flops, said flip-flops in each of said cascades being connected with the output of one flip-flop connected to the input of the next flip-flop in said each cascade;

a plurality of XOR gates each feeding output thereof to the input of a corresponding one of said cascades of flip-flops; and

a switch means including a plurality of switches for receiving the output of each of said flip-flops in said cascades as feedbacks for outputting to the inputs of said plurality of XOR gates;

wherein each of said XOR gates being selectively added with an inverter for inverting output thereof before connecting to said corresponding one of said cascade of flip-flops, and each of said switches in said switch means being selectively programmed for connecting corresponding one of said feedbacks to the input of the corresponding one of said XOR gates.

5,668,482

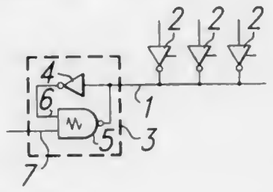
BUS MAINTENANCE CIRCUIT

Derek Roskell, Northants, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 15, 1996, Ser. No. 616,410

Int. Cl.[6] H03K *17/04*

U.S. Cl. 326—31 **14 Claims**



1. A circuit comprising,

a bus,

a tristate driver having its output connected to the bus, and

a keeper circuit comprising,

a first inverting logic gate means having an input connected to the bus, and

a second inverting logic gate means having an input connected to the output of the first inverting logic gate means and an output restricted in current relative to that of the tristate driver and connected directly to the bus,

wherein the keeper circuit has a control input for enabling or disabling positive feedback in the keeper circuit, and the circuit is such that when the positive feedback is disabled the keeper circuit acts as a pull-up or a pull-down circuit.

5,668,483

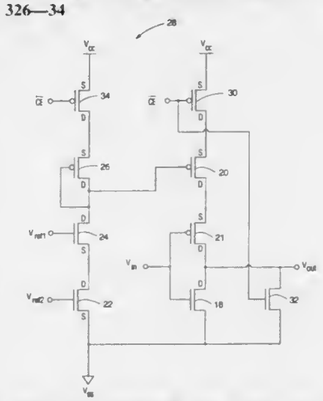
CMOS BUFFER HAVING STABLE THRESHOLD VOLTAGE

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jun. 21, 1995, Ser. No. 493,166

Int. Cl.[6] H03K *17/16;19/0948*

U.S. Cl. 326—34 **47 Claims**



39. A method of controlling the trip point voltage of a buffer circuit having a buffer circuit input and a buffer circuit output, with the buffer circuit comprising a first transistor of a first polarity and having a gate coupled to the buffer circuit input and a second transistor of a polarity opposite the first polarity which is connected in series with the first transistor and having a gate coupled to the buffer circuit input, with the trip point voltage being defined as the voltage of the buffer input when the buffer input and output voltages are of equal magnitude, the method comprising the following steps:

generating a reference current by applying a first biasing voltage across drain-source terminals of a reference transistor of the first polarity, with the first biasing voltage being substantially equal to the trip point voltage of the buffer circuit;

deriving a first current from the reference current; and

causing the first current to flow through the first transistor when the buffer circuit input is at the trip point voltage.

5,668,484

HIGH FREQUENCY CLOCK SIGNAL DISTRIBUTION CIRCUIT WITH REDUCED CLOCK SKEW

Masahiro Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

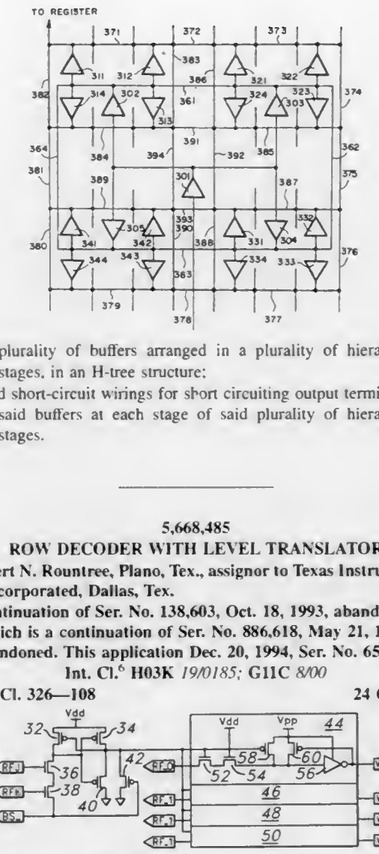
Filed Sep. 16, 1994, Ser. No. 306,981

Claims priority, application Japan, Sep. 24, 1993, 5-237079

Int. Cl.[6] H03K *19/01*

U.S. Cl. 326—93 **11 Claims**

1. A clock signal distribution circuit having an H-tree structure, said distribution circuit comprising:



a plurality of buffers arranged in a plurality of hierarchical stages, in an H-tree structure;

and short-circuit wirings for short circuiting output terminals of said buffers at each stage of said plurality of hierarchical stages.

5,668,485

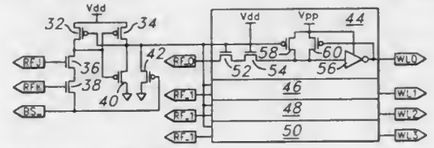
ROW DECODER WITH LEVEL TRANSLATOR

Robert N. Rountree, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 138,603, Oct. 18, 1993, abandoned, which is a continuation of Ser. No. 886,618, May 21, 1992, abandoned. This application Dec. 20, 1994, Ser. No. 652,232

Int. Cl.[6] H03K *19/0185;* **G11C** *8/00*

U.S. Cl. 326—108 **24 Claims**



18. A circuit, comprising:

a decoder having a plurality of inputs coupled to receive control signals of a first voltage range for producing a first output signal of a second voltage range without receiving a precharge signal from a source external to said decoder, said control signals comprising a first group of addressing signals;

a plurality of drive circuits coupled to receive the first output signal for producing at least one second output signal of the second voltage range, wherein each of said plurality of drive circuits is coupled to receive at least one of a second group of addressing signals and further comprises a select transistor for receiving at least one of said second group of addressing signals and the first output signal, the select transistor selecting a respective one of said plurality of drive circuits for producing said at least one second output signal at a respective second output terminal, each of said of said output terminals being coupled to a wordline of a memory array; and

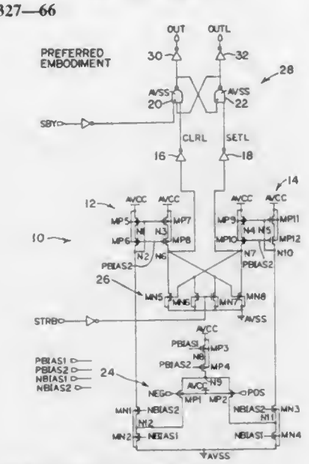
a plurality of drive circuits, each drive circuit having an input terminal and a third output terminal coupled to a wordline of a dynamic random access memory array, each input terminal coupled to receive at least one of a second group of addressing signals and the second output signal for selectively producing a third output signal at said third output terminal, each of said plurality of drive circuits further comprising a select transistor for receiving said second output signal and said at least one of said second group of addressing signals, the select transistor selecting a respective one of said plurality of drive circuits for producing said at least one second output signal at a respective said third output terminal.

5,668,486

STROBED COMPARATOR FOR A LARGE COMMON MODE RANGE

Geoffrey E. Brehmer, Rte. 1, Box 30BB, Lexington, Tex. 78947

Filed Jun. 21, 1996, Ser. No. 668,414
Int. Cl.[6] H03K 5/22
U.S. Cl. 327—66 6 Claims



1. A comparator circuit, comprising:

(a) a folded-cascode input stage circuit having differential outputs and differential inputs;

(b) strobed control stage circuit having an input and differential outputs;

(c) a first current mirror circuit, having an input connected to a differential output of said folded-cascode input stage circuit and an output connected to a differential output of said strobed control stage circuit;

(d) a second current mirror circuit, having an input connected to another differential output of said folded-cascode input stage circuit and an output connected to another differential output of said strobed control stage circuit; and

(e) an input strobe signal connected to said strobed control stage circuit input; wherein when said input strobe signal is at a first logic level said output of said first current mirror circuit and said output of said second current mirror circuit are pulled to ground potential, wherein said first and said second current mirror circuits provide an output for said comparator circuit.

5,668,487

CIRCUIT DETECTING ELECTRIC POTENTIAL OF SEMICONDUCTOR SUBSTRATE BY COMPENSATING FLUCTUATION IN TIJRESHOLD VOLTAGE OF TRANSISTOR

Toru Chonan, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

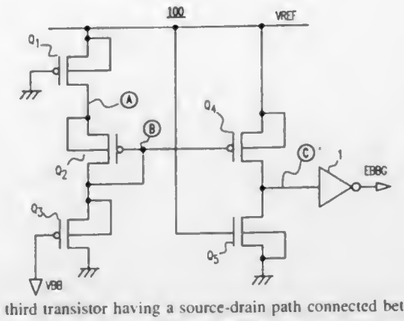
Filed Dec. 16, 1994, Ser. No. 358,105
Claims priority, application Japan, Dec. 17, 1993, 5-318690
Int. Cl.[6] H03K 5/22
U.S. Cl. 327—80 10 Claims

1. A detection circuit for detecting whether a bias potential is larger than a predetermined level, comprising:

first and second reference voltage lines;

a first transistor having a source-drain path connected between said first reference voltage line and a first node, and a gate connected to said second reference voltage line;

a second transistor having a gate receiving said bias potential and a source-drain path connected between said second reference voltage line and a second node;



a third transistor having a source-drain path connected between said first and second nodes and a gate connected to said second node;

a fourth drive transistor having a source-drain path connected between said first reference voltage line and an output node and a gate connected to said second node; and

a current source connected between said output node and said second reference voltage line,

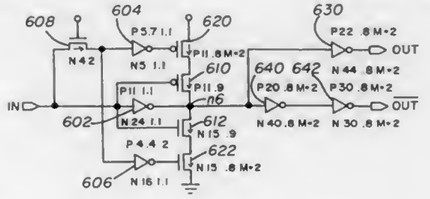
said third transistor having a same conductivity type as that of said fourth drive transistor to compensate for a variation in threshold level of said fourth drive transistor.

5,668,488

INPUT BUFFER FOR A HIGH DENSITY PROGRAMMABLE LOGIC DEVICE

Bradley A. Sharpe-Geisler, San Jose, and Fabiano Fontana, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 17, 1994, Ser. No. 341,636
Int. Cl.[6] H03K 19/084
U.S. Cl. 327—108 22 Claims



1. A buffer having an input and an output, the input receiving a second data signal from delay circuit which forms the second data signal by introducing an RC delay in a first data signal, the buffer comprising:

means for measuring a rate of change in voltage with respect to time (dV_f/dt) of the second data signal; and

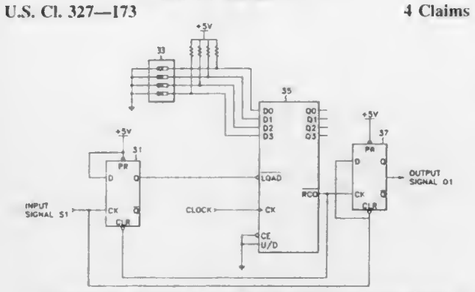
means for changing the threshold at the buffer input from a first threshold to a threshold having a value altered from the first threshold in proportion to a magnitude of the rate dV_f/dt when the second signal changes states, so that the buffer output transitions at time intervals corresponding to when the first data signal transitions through a predetermined value.

5,668,489

DEAD-TIME GENERATING CIRCUIT

Sang-hyun Jin, Seoul, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 581,911
Int. Cl.[6] H03K 3/017
U.S. Cl. 327—173 4 Claims



1. A circuit for stopping a normal response to an input signal by cutting-off said input signal for a predetermined time interval, said circuit comprising:

a first gate means for generating a gate signal corresponding to said predetermined time interval determined by a user in response to said input signal and a control signal corresponding to said predetermined time interval; and

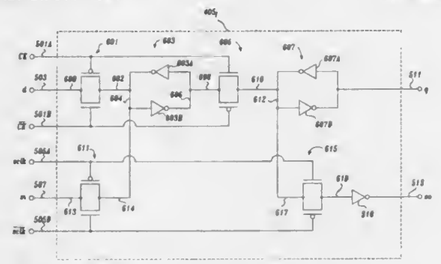
a second gate means coupled to said input signal for cutting off said input signal by said predetermined time interval in response to said gate signal and outputting the result.

5,668,490

FLIP-FLOP WITH FULL SCAN CAPABILITY

Sundari S. Mitra, Milpitas; David Greenhill, Portola Valley, and Philip A. Ferolito, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 1, 1996, Ser. No. 640,562
Int. Cl.[6] H03K 3/289
U.S. Cl. 327—203 34 Claims



1. A circuit comprising:

a first switch having a control lead, an input lead and an output lead, wherein said control lead of said first switch is adapted to receive a first clock signal, and said input lead of said first switch is adapted to receive a first data signal;

a master stage having an input lead and an output lead, said input lead of said first stage coupled to said output lead of said first switch, wherein said master stage is capable of storing a logic value dependent on a logic state of a master-in signal received at said input lead of said master stage and of outputting a master-out signal at said output lead of said master stage having a logic state dependent on said logic value stored in said master stage;

a second switch having a control lead, an input lead and an output lead, wherein said control lead of said second switch is adapted to receive a second clock signal, said input lead of said second switch is adapted to receive a second data signal, and said output lead of said second switch is coupled to said input lead of said master stage;

a third switch having a control lead, an input lead and an output lead, wherein said control lead of said third switch is adapted to receive said first clock signal, and said input lead of said third switch is coupled to said output lead of said master stage;

a slave stage having an input lead and an output lead, said input lead of said slave stage coupled to said output lead of said third switch, wherein said slave stage is capable of storing a logic value dependent on a logic state of said master-out signal provided by said master stage;

a fourth switch having a control lead, an input lead and an output lead, wherein said control lead of said fourth stage is adapted to receive said second clock signal, and said input lead of said fourth switch is coupled to said output lead of said third switch; and

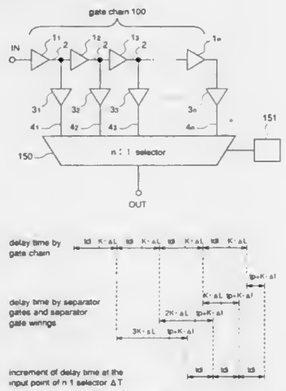
a first logic gate having an input lead coupled to said output lead of said fourth switch.

5,668,491

VARIABLE DELAY CIRCUIT

Norio Higashisaka, and Akira Ohta, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 585,436
Claims priority, application Japan, Jun. 6, 1995, 7-139122
Int. Cl.[6] H03K 5/13
U.S. Cl. 327—277 10 Claims



1. A variable delay circuit including:

a gate chain comprising first to n-th delay gates (n is an integer larger than 2) connected in series via delay gate wirings, each of the delay gate wirings having the same wiring length, said first delay gate receiving an input signal for delay;

first to n-th separator gates to which outputs of said first to n-th delay gates are input, respectively;

first to n-th separator gate wirings respectively connected to outputs of said first to n-th separates gates, each of the first to n-th separator gate wirings having a length, the separator gate wiring lengths becoming successively shorter from said first separator gate to n-th separator gate for removing variation in the gate delay times of said first to n-th delay gates; and

an n:1 selector, to which outputs of said first to n-th separator gates are connected by the separator gate wirings, for selecting one of the outputs of said first to n-th separator gates in accordance with a select signal.

5,668,492

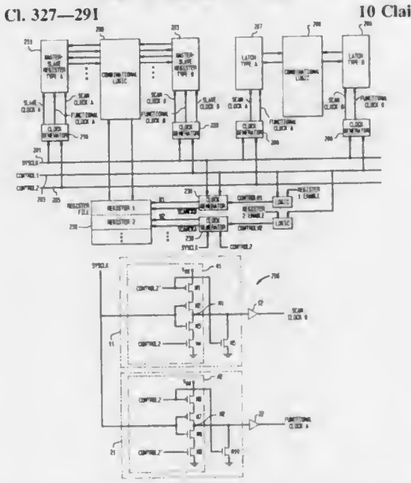
INTEGRATED CIRCUIT CLOCKING TECHNIQUE AND CIRCUIT THEREFOR

Mark Eric Pedersen, Burlington, and Peter Wohl, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 295,624, Aug. 24, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 617,968

Int. Cl.[6] H03K *5/13;3/289*

U.S. Cl. 327—291 10 Claims



1. A circuit for selectively generating and distributing from a single system clock, a plurality of local clocks for scan testing an integrated circuit having a plurality of types of sequential circuits through which a scan path is connected, comprising:

a first local clock generator located in close proximity to a first sequential circuit of a first type, for receiving and selectively gating the system clock responsive to a first control signal to provide to the first sequential circuit first scanning and functional clock signals; and

a second local clock generator located in close proximity to a second sequential circuit of a second type, for receiving and selectively gating the system clock responsive to a second control signal to provide to the second sequential circuit second functional and scanning clocks.

5,668,493

CIRCUITS AND METHODS FOR INCREASING SWITCH TURN-OFF SPEED IN HIGH-SPEED SWITCHING REGULATOR DRIVE CIRCUITS

Carl T. Nelson, San Jose, and Robert Essaff, Fremont, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

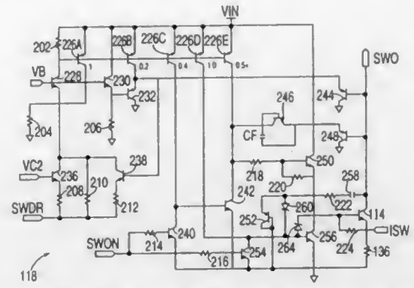
Continuation of Ser. No. 228,478, Apr. 15, 1994. This application Jun. 7, 1995, Ser. No. 488,071

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—309 18 Claims

1. A circuit for controlling the speed at which a switch transistor turns off by limiting the depth of saturation of the switch transistor, the switch transistor having a base, an emitter, a collector, and a collector-emitter voltage, the circuit comprising:

first means coupled to the switch transistor for providing a feedback circuit which places a lower limit upon the collector-emitter voltage of the switch transistor by shunting current away from the base of the switch transistor so that the switch transistor does not become more saturated than a threshold level of saturation; and



second means for reducing ringing in the first means, the ringing being caused by delays in the feedback circuit of the first means, the second means being coupled to the first means.

5,668,494

CIRCUIT AND METHOD FOR DRIVING ALTERNATIVELY ELECTRIC LOADS WITH LOW IMPEDANCE

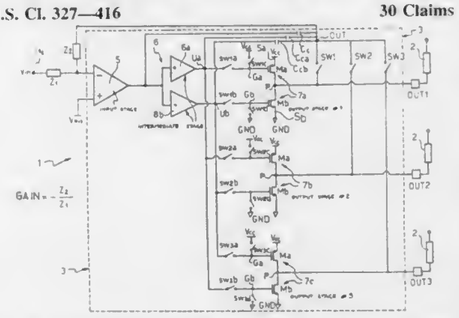
Germano Nicollini, Piacenza, and Sergio Pernici, Bergamo, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 451,030

Claims priority, application European Pat. Off., Jul. 29, 1994, 94830388

Int. Cl.[6] H03K *17/693;* H03F *3/18*

U.S. Cl. 327—416 30 Claims



1. An electronic driver circuit for low-impedance electric loads, comprising:

an input terminal whereto a voltage signal is applied, and

a plurality of output terminals, each said output terminal being connected to a corresponding electric load; and

an input amplifier, connected between the input terminal and the output terminals, having

a single input stage having a first input functionally connected to receive said voltage signal, and an output connected to vary in dependence on said first input; and

a plurality of output stages, one for each output terminal, each functionally connected to receive said output from said single input stage; said output stages being connected with switches so that a selected one of said output stages, and not the other ones of said output stages, is enabled to drive the respective one of said output terminals, and to provide a negative feedback signal to said first input of said single input stage.

5,668,495

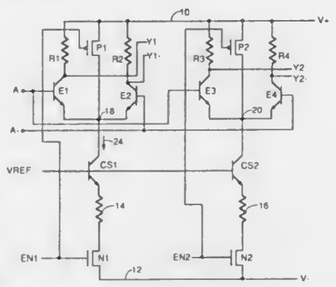
BICMOS REPROGRAMMABLE LOGIC

Madhukar B. Vora, Los Gatos, and Burnell G. West, Freemont, both of Calif., assignors to DynaChip Corporation, Sunnyvale, Calif.

Division of Ser. No. 375,303, Jan. 20, 1995, Pat. No. 5,570,059, which is a continuation of Ser. No. 274,817, Jul. 14, 1994, Pat. No. 5,406,133, which is a division of Ser. No. 2,172, Jan. 8, 1993, Pat. No. 5,355,035. This application Apr. 23, 1996, Ser. No. 639,272

Int. Cl.[6] H03K *17/60;17/62*

U.S. Cl. 327—432 9 Claims



2. A semiconductor integrated circuit, comprising:

a high reference conductor for coupling to a first voltage supply;

a low reference conductor for coupling to a second voltage supply, said second voltage being lower than said first voltage;

an enable input for receiving an enable signal;

a first bipolar transistor having a base, a collector and an emitter and a base-emitter junction, said collector for coupling to said high reference conductor;

a current source having a first terminal coupled to said emitter of said first bipolar transistor and having a second terminal;

a first MOS transistor means having source and drain terminals coupled to said low reference conductor and said second terminal of said current source, respectively, and having a gate terminal coupled to said enable input, for cutting off current flow between said second terminal of said current source and said low reference conductor thereby disabling said first bipolar transistor when said enable signal is in a first logical state and for allowing current to flow between said current source and said low reference conductor thereby enabling said first bipolar transistor when said enable signal is in a second logical state; and

a second MOS transistor means having a gate terminal coupled to said enable input, said second MOS transistor means having source and drain terminals coupled to said first bipolar transistor in such a way so as to be able to affect the voltage drop across said base-emitter junction, said second MOS transistor means for immediately forcing an alteration of the voltage drop across said base-emitter junction of said first bipolar transistor so as to cut off conduction between said collector and said emitter thereof thereby disabling said first bipolar transistor when said enable signal is placed in said first logical state, and, when said enable signal is in said second logical state, for ceasing to force an alteration of the voltage drop across said base-emitter junction of said first bipolar transistor so that said bipolar transistor is no longer disabled.

5,668,496

CIRCUIT ARRANGEMENT FOR LIMITING THE CURRENT TO BE SWITCHED OF AN ELECTRICAL LOAD

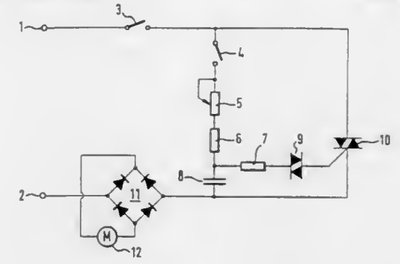
Antonin Rebordosa, Manresa, Spain, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed May 1, 1995, Ser. No. 432,965

Claims priority, application Germany, May 5, 1994, 44 15 794.0

Int. Cl.[6] H03K *17/725*

U.S. Cl. 327—457 4 Claims



1. A circuit for controlling the current supplied from a power supply to an electrical load, said circuit comprising

a Triac which controls a power input to the electrical load, said Triac including a gate terminal, said Triac being connected in series between the power supply and the electrical load,

a Diac connected to the gate terminal of the Triac,

a resistor network having a variable resistance value which controls a conducting state of the Triac, said resistor network connected in series between the power supply and the Diac,

a first switch which disconnects said Triac from the power supply, and

a second switch which disconnects the resistor network and the Diac from the power supply, said first and second switches implemented by three conductors arranged essentially parallel to each other, each of said conductors comprising a respective conducting portion and a respective non-conducting portion wherein the conducting portion of the first conductor is connected to a terminal of the power supply, the conducting portion of the second conductor is connected to the series arrangement comprised of the Triac and the electrical load, wherein the non-conducting portions of the first and the second conductor are positioned alongside each other and are of approximately equal length, with the conducting portion of the third conductor being connected to the resistor network and the Diac, the non-conducting portion of the third conductor being of a length greater than the non-conducting portions of the first and the second conductor, so that a section of the non-conducting portion of the third conductor is positioned alongside a section of the conducting portions of the first and the second conductor, and an operator-controlled device is provided which extends essentially transversely to and over the conductors and is slidable along said conductors, said operator-controlled device including respective lugs, each extending from said operator control device and each resiliently engaging a respective conductor, with the lugs making electrical contact with each other through the operator-controlled device.

5,668,497

DIRECT-CURRENT VOLTAGE GENERATING CIRCUIT INTERMITTENTLY ACTIVATED FOR REDUCING ELECTRIC POWER CONSUMPTION

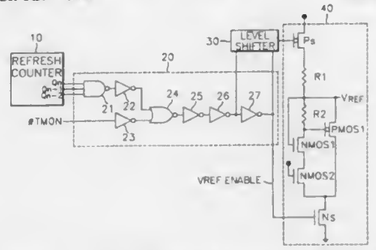
Bok-Moon Kang, and Seung-Moon Yoo, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 18, 1995, Ser. No. 574,021

Claims priority, application Rep. of Korea, Dec. 28, 1994, 38084/1994

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—544 16 Claims



1. A direct current (DC) voltage generating circuit for reducing an electric power consumption in a semiconductor memory device, comprising:

refresh counter for timing a refresh cycle;

a power source supply controller for logically combining a counting value supplied from said refresh counter and a self-refresh timer driving signal, thereby to generate a power source supply control signal in a cell refresh section;

a DC voltage generator for generating and supplying a DC voltage through an output terminal thereof under the control of said power source supply control signal supplied from said power source supply controller; and

a level converter for supplying the complement of said power source supply control signal to said DC voltage generator.

5,668,498

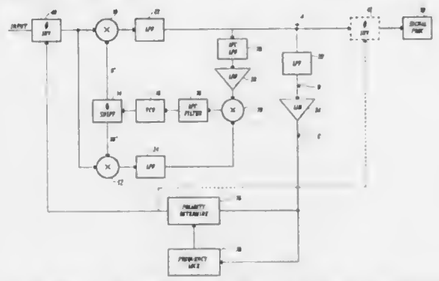
CONTROLLING FPLL POLARITY USING PILOT SIGNAL AND POLARITY INVERTER

Gary J. Sgrignoli, Mt. Prospect, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 13, 1996, Ser. No. 645,175

Int. Cl.[6] H03D *1/00;* H03L *7/087;* H04L *27/06*

U.S. Cl. 329—360 14 Claims



1. A method of demodulating a digital signal including an in-phase pilot, in the form of a DC offset voltage, comprising:

applying the digital signal to a biphase stable FPLL for demodulation;

recovering the DC pilot; and

supplying an output demodulated signal of predetermined polarity as determined by the polarity of the recovered pilot.

5,668,499

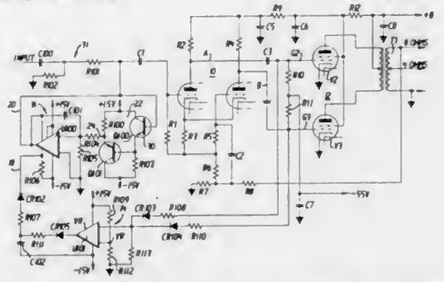
TUBE TYPE POWER AMPLIFIER WITH DISTORTION CONTROL

James Robert Albert, and Jack C. Sondermeyer, both of Meridian, Miss., assignors to Peavey Electronics Corporation, Meridian, Miss.

Filed Jan. 16, 1996, Ser. No. 586,596

Int. Cl.[6] H03F *3/28;* H23G *3/22*

U.S. Cl. 330—118 6 Claims



1. A circuit for reducing the gain of a push/pull tube power amplifier having grids for receiving an input signal, below a level sufficient to cause the amplifier to clip the output, comprising:

a detector having an input port, a reference port and an output, the input port adapted to be commonly coupled to the grids of the tubes for sensing the input signal, and the reference port being adapted to be coupled to a reference;

said detector producing an output when the input signal exceeds a level sufficient to cause clipping in the amplifier, said output having a duration proportional to the time the input exceeds said level; and

a distortion control circuit having an input responsive to the detector and an output adapted to be coupled to the input of the power amplifier for loading the input in response to the detector output.

5,668,500

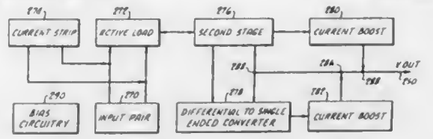
CMOS BUFFER AMPLIFIER

David LeFevre, Redondo Beach, Calif., assignor to Hughes Electronics

Filed Dec. 8, 1995, Ser. No. 569,637

Int. Cl.[6] H03F *3/45;* H01L *31/00*

U.S. Cl. 330—253 26 Claims



1. A CMOS voltage buffer amplifier comprising:

an input pair of field effect transistors, the field effect transistors defining a differential pair;

an active load connected with said transistors;

a current strip circuit connected with said input pair of transistors for providing a path for a major portion of current flowing through said input pair of transistors;

a second stage amplifier comprising a pair of field effect transistors, the second stage field effect transistors also defining a differential pair, where the biasing current of the second stage varies in accordance with the current flowing through the strip circuit; and

output means connected with said active load.

5,668,501

TRANSCONDUCTANCE AMPLIFIER HAVING A DIGITALLY VARIABLE TRANSCONDUCTANCE AS WELL AS A VARIABLE GAIN STAGE AND AN AUTOMATIC GAIN CONTROL CIRCUIT COMPRISING SUCH A VARIABLE GAIN STAGE

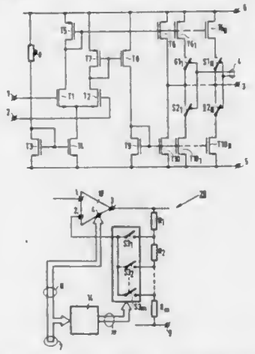
Arnoldus G. W. Venes, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1995, Ser. No. 522,039

Claims priority, application European Pat. Off., Sep. 1, 1994, 94202501

Int. Cl.[6] H03F *3/45;* H03G *3/30*

U.S. Cl. 330—254 6 Claims



1. A variable gain stage comprising: a transconductance operational amplifier having a non-inverting and an inverting input terminal, an output terminal and a gain control input, said gain stage comprising a resistive ladder coupled between said output terminal and a reference terminal, said inverting input terminal being selectively connectable to one of a plurality of taps of said resistive ladder in response to a binary gain control signal applied to said gain control input for digitally controlling the gain of said variable gain stage, wherein said transconductance operational amplifier comprises:

a differential stage having first and second inputs coupled to respective ones of said input terminals, a first differential output coupled to said output terminal via a first output branch of a first current mirror and a second differential output coupled to said output terminal via a second current mirror and a first output branch of a third current mirror, wherein said first and third current mirrors comprise further output branches, the further output branches being selectively coupled to said output terminal for selectively supplying output currents to said output terminal in response to a binary transconductance control signal applied to said gain control input, and wherein the transconductance of said transconductance amplifier is variable in accordance with a change in the gain of said variable gain stage.

5,668,502

AMPLIFIER STAGE HAVING A SWITCHABLE GAIN AND REDUCED DISTORTION

Johannes J. F. Rijns, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1996, Ser. No. 625,959

Claims priority, application European Pat. Off., Apr. 4, 1995, 95200848

Int. Cl.[6] H03F *3/45;* H03G *3/30*

U.S. Cl. 330—254 2 Claims

1. An amplifier stage comprising first and second transistors, each having a control electrode and a first and a second main electrode, the second main electrodes of said transistors being coupled to each other via a resistive ladder having a plurality of taps, a gain of said amplifier stage being switchable by selecting parts of said ladder, characterized in that said amplifier stage comprises first and second current source transistors, each having a control electrode and a first and a second main electrode, said first and second current source transistors having their control electrodes coupled to the first main electrodes of the first and second transistors, respectively, and further comprises a plurality of switches for coupling the first main electrodes of the first and second current source transistors to respective taps of the resistive ladder.

5,668,503

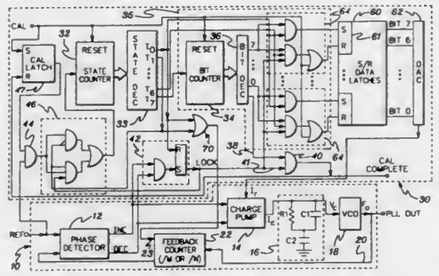
SYSTEM AND METHOD FOR CALIBRATING DAMPING FACTOR OR ANALOG PLL

John Edwin Gersbach, Burlington, and Masayuki Hayashi, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 542,103, Oct. 12, 1995, Pat. No. 5,563,552, which is a continuation of Ser. No. 189,394, Jan. 28, 1994, abandoned. This application May 13, 1996, Ser. No. 645,370

Int. Cl.[6] H03L *7/089*

U.S. Cl. 331—1 A 7 Claims



1. A calibration system for a phase-locked loop (PLL) circuit having a plurality of components, said components including a phase comparator connected to a charge pump which receives a reference current I_r and outputs therefrom proportionately to the reference current I_r charge current I_c to a filter which provides a control voltage V_c to a voltage controlled oscillator (VCO) that provides an output frequency F_O, the PLL circuit having a damping factor δ which is a function of the charge current I_c, said calibration system being responsive to a calibration enable signal 'CAL', at least one component of said plurality of components having a component value within a predefined tolerance, said calibration system comprising:

receiving means for receiving the calibration enable signal 'CAL';

sensing means for dynamically determining the damping factor δ; and

current generation means coupled to the receiving means, the sensing means and to the charge pump, said current generation means including means for automatically setting the reference current I_r in response to the calibration enable signal 'CAL' and the dynamically determined damping factor δ such that a pre-chosen damping factor δ value is dynamically

maintained notwithstanding variation of the component value of that least one component within its predefined tolerence due to process, temperature or power supply variation.

5,668,504

FREQUENCY SYNTHESIZER

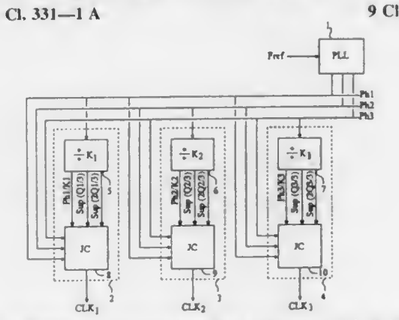
Rui Paulo Rodriques Ramalho, Grenoble, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Jul. 9, 1996, Ser. No. 678,486

Claims priority, application France, Jul. 13, 1995, 95 08760

Int. Cl.[6] H03L *7/06;7/099;* **H03K** *5/00*

U.S. Cl. 331—1 A **9 Claims**



1. A frequency synthesizer including a phase-locked loop having one oscillator which supplies an odd number n of phases with increasing delays of a fast clock signal synchronized on a reference frequency, wherein each of the said n phases is sent onto a same number m of programmable fractional dividers having their respective outputs sent onto m jitter compensators, each of which issues, based on said n phases, a clock signal synchronized on said reference frequency.

5,668,505

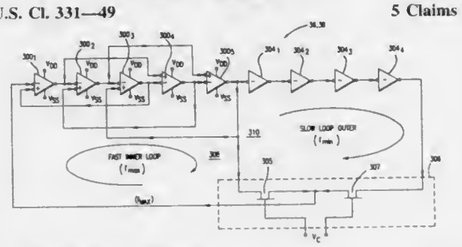
RING OSCILLATOR HAVING TWO RINGS WHOSE OUTPUTS ARE COMBINED

Hoal X. Vu, Stanton, Calif., and Toan Vu, Lake Grove, N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Mar. 13, 1996, Ser. No. 614,592

Int. Cl.[6] H03B *5/02*

U.S. Cl. 331—49 **5 Claims**



1. An oscillator comprising:

a plurality of cascade coupled inverters, each one of the inverters is a differential amplifier having p-input and an n-input, an output of each one of the amplifiers is connected to: the n-input of the next succeeding amplifier to provide a closed loop, or ring oscillator; and, the p-input of an amplifier positioned an even number of amplifier stages forward of such next succeeding amplifier.

5,668,506

TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

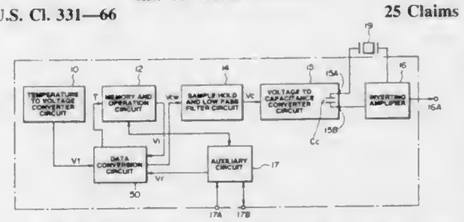
Takao Watanabe, Higashikurume; Mutsuo Hayashi; Kazunari Matsumoto, both of Yonezawa; Chikara Tsuchiya, Machida; Eiji Nishimori, Yokohama, and Takashi Matsui, Kasugai, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, and Fujitsu Limited, Kawasaki, both of Japan

Filed May 23, 1996, Ser. No. 653,748

Claims priority, application Japan, May 25, 1995, 7-126058; Aug. 18, 1995, 7-210333

Int. Cl.[6] H03B *5/04;5/36*

U.S. Cl. 331—66 **25 Claims**



1. A digital temperature compensated crystal oscillator system comprising:

a voltage controlled oscillator comprising a crystal unit;

a temperature to voltage converting circuit for sensing an ambient temperature of said crystal unit and outputting an analog temperature voltage signal representing a sensed ambient temperature;

a memory and operation circuit for storing a collection of temperature compensation data items, receiving a digital temperature data signal as an input signal, providing a selected data item identified by said digital temperature data signal, and producing a digital compensation data signal in accordance with said selected data item; and

a data conversion circuit for producing said digital temperature data signal in accordance with said analog temperature voltage signal from said temperature to voltage converting circuit, and for producing an analog compensation voltage signal in accordance with said digital compensation data signal from said memory and operation circuit, said data conversion circuit comprising a first section for receiving a digital input signal and producing an analog intermediate signal in response to said digital input signal, a second section for receiving said analog intermediate signal from said first section and said analog temperature voltage signal from said temperature to voltage converting circuit, and producing said digital temperature data signal by converting said analog temperature voltage signal in accordance with said analog intermediate signal and delivering said digital temperature data signal to said memory and operation circuit, and a third section for receiving said analog intermediate signal from said first section and producing said analog compensation voltage signal by converting said digital compensation data signal through said first section which receives said digital compensation data signal as said digital input signal from said memory and operation circuit, said third section delivering said analog compensation voltage signal to said voltage controlled oscillator.

5,668,507

NOISE GENERATOR FOR EVALUATING MIXED SIGNAL INTEGRATED CIRCUITS

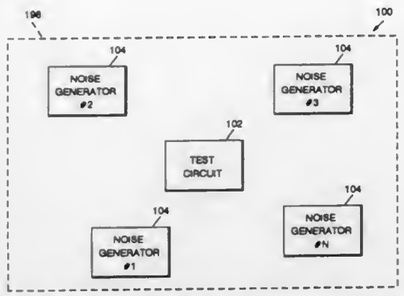
David William Boerstler, Round Rock, and Daniel Mark Dreps, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1996, Ser. No. 684,667

Int. Cl.[6] H03B *5/24;29/00*

U.S. Cl. 331—78 **20 Claims**

1. A circuit operable for generating noise to evaluate the susceptibility of circuitry to digital switching noise, comprising:



a substrate adaptable for fabricating a first circuit to be evaluated for susceptibility to digital switching noise; and

circuitry for generating noise representative of digital switching noise, the generating circuitry fabricated on the substrate.

5,668,508

OSCILLATOR CIRCUIT HAVING OSCILLATION FREQUENCY INDEPENDENT FROM THE SUPPLY VOLTAGE VALUE

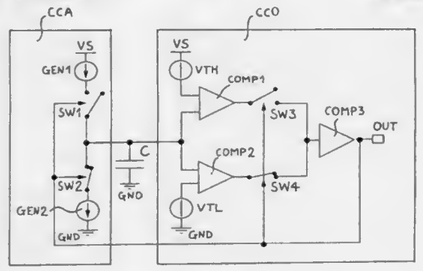
Francesco Pulvirenti, Acireale; Riccardo Ursino, Catania, and Roberto Gariboldi, Lacchiarella, all of Italy, assignors to Co.Ri.M.Me - Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, and SGS-Thomson Microelectronics S.r.l., Agrate Brianza, both of Italy

Filed Mar. 29, 1996, Ser. No. 623,613

Claims priority, application European Pat. Off., Mar. 31, 1995, 95830123

Int. Cl.[6] H03K *3/0231*

U.S. Cl. 331—111 **24 Claims**



1. An oscillating circuit comprising:

a capacitor;

a charge circuit including

a switch connected to the capacitor; and

first and second current generators connected to the switch and outputting respectively first and second current values, the switch being operable to alternately connect the first and second generators to the capacitor; and

a control circuit having a voltage input connected to the capacitor and an output connected to an input of the switch, the control circuit including a comparator having a lower threshold voltage value and an upper threshold voltage value wherein the difference between the upper and lower threshold voltage values is substantially proportional to the ratio of the product of the first and second current values to the sum of the first and second current values.

5,668,509

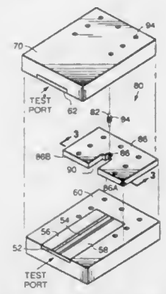
MODIFIED COAXIAL TO GCPW VERTICAL SOLDERLESS INTERCONNECTS FOR STACK MIC ASSEMBLIES

Richard M. Hoffmeister, Torrance, and Clifton Quan, Arcadia, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 25, 1996, Ser. No. 621,565

Int. Cl.[6] H01P *5/00*

U.S. Cl. 333—33 **21 Claims**



1. An RF right angle transition for Grounded Coplanar Waveguide (GCPW) transmission line, comprising:

a dielectric substrate with a GCPW line, wherein a center conductor strip and opposed finite ground conductor strips are formed on a first substrate surface and a conductive ground plane is formed on a second substrate surface; and

a modified coaxial connector structure, comprising a center conductor pin, a dielectric support element surrounding the pin, and outer conductive shielding surrounding a portion of a periphery of the dielectric support element, an area of said periphery being free of conductive shielding, said connector structure disposed transversely to said GCPW center conductor strip such that an end of said coaxial center pin is in contact with said center conductor strip, and said coaxial outer shielding is in contact with said first and second finite ground strips, wherein said shielding does not contact said center conductor strip due to said area of said periphery being free of shielding, said outer shielding is defined by a conductive plate member having an opening formed therein to receive said dielectric element and said in said opening having a generally cylindrical configuration with an area in which the plate member is further open adjacent the cylindrical configuration to define said area of said periphery being free of shielding, and

wherein said shielding provides a ground return between the coaxial connector structure and said GCPW line without shorting said GCPW center conductor strip.

5,668,510

FOUR WAY RF POWER SPLITTER/COMBINER

Melvin D. Humpherys, Spokane, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

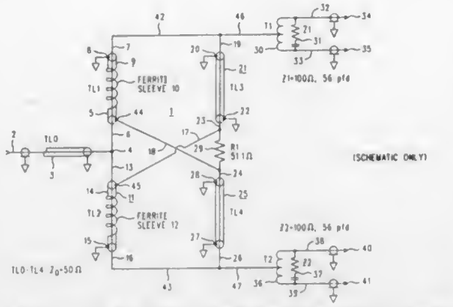
Filed Jul. 31, 1996, Ser. No. 688,978

Int. Cl.[6] H01P *5/12*

U.S. Cl. 333—127 **1 Claim**

1. A four way RF power splitter/combiner comprising:

a printed circuit board having a trace layer that includes individual traces interconnecting at interconnect pads the leads of components and having a ground plane layer that includes substantial expanses of an unremoved conductive foil, there being a prime pad on the trace layer at which a first incident power is split into two intermediate powers, each of which is subsequently split to produce a total of four delivered powers, and at which prime pad second through fifth incident powers are combined into a unitary delivered power;



a first slot in the printed circuit board, the first slot being generally centered about a longest first axis and having a first width;

a second slot in the printed circuit board, the second slot being generally centered about a longest second axis and having a second width;

the first and second axes being generally parallel;

the first and second slots being on opposite sides of the prime pad and disposed such that the width of each is substantially within the projection of the other, the first and second widths being wider than the respective outside diameters of the first and second inductors recited below;

a first interconnect pad on the trace layer, having two holes therethrough that on the ground plane layer are electrically separated from the ground plane, the first interconnect pad being disposed between the prime pad and a narrow end of the first slot closest to the prime pad;

a second interconnect pad on the trace layer, having two holes therethrough that on the ground plane layer are electrically separated from the ground plane, the second interconnect pad being disposed between the prime pad and a narrow end of the second slot closest to the prime pad;

a third interconnect pad on the trace layer, having two holes therethrough that electrically connect to the ground plane, the third interconnect pad being disposed proximate a narrow end of the first slot farthest from the prime pad;

a fourth interconnect pad on the trace layer, having two holes therethrough that electrically connect to the ground plane, the fourth interconnect pad being disposed proximate a narrow end of the second slot farthest from the prime pad;

a fifth interconnect pad on the trace layer, having a hole therethrough that on the ground plane layer is electrically separated from the ground plane, the fifth interconnect pad being disposed proximate the third interconnect pad;

a sixth interconnect pad on the trace layer, having a hole therethrough that on the ground plane layer is electrically separated from the ground plane, the sixth interconnect pad being disposed proximate the fourth interconnect pad;

a first coaxial transmission line having an inner conductor and an outer shield, the outer shield being of a straight and unbent length that spans the distance between the first and third interconnect pads, and the inner conductor being of a length that spans the distance from the prime pad to the fifth pad;

a first inductor including at least one ferrite toroid disposed around the outer shield of the first coaxial transmission line;

a second coaxial transmission line having an inner conductor and an outer shield, the outer shield being of a straight and unbent length that spans the distance between the second and fourth interconnect pads, and the inner conductor being of a length that spans the distance from the prime pad to the sixth pad;

a second inductor including at least one ferrite toroid disposed around the outer shield of the second coaxial transmission line;

the first coaxial transmission line and the first inductor being mounted to the trace layer by soldering one end of the center conductor of the first coaxial transmission line to the prime pad and the other end to the fifth interconnect pad, and by soldering one end of the outer shield of the first transmission line to the first interconnect pad and the other end to the third interconnect pad;

the second coaxial transmission line and the second inductor being mounted to the trace layer by soldering one end of the center conductor of the second coaxial transmission line to the prime pad and the other end to the sixth interconnect pad, and by soldering one end of the outer shield of the second transmission line to the second interconnect pad and the other end to the fourth interconnect pad;

a portion of the first inductor occupying the first slot and a portion of the second inductor occupying the second slot;

a first resistor mounted to the trace layer by soldering one end thereof to the first interconnect pad and the other end thereof to the second interconnect pad, the ohmic value of the first resistor being approximately the same as the characteristic impedance of the first and second coaxial transmissions lines;

a third coaxial transmission line having an inner conductor and an outer shield, the inner conductor being of a length that spans the distance between the hole in the fifth interconnect pad and an associated one of the holes in the second interconnect pad, and the outer shield of the third coaxial transmission line being straight and unbent;

the third coaxial transmission line being mounted to the ground plane side by soldering one end of the center conductor thereof to the hole in the fifth interconnect pad and the other end of the center conductor to its associated hole in the second interconnect pad, and by soldering each end of the outer shield of the third coaxial transmission line to the ground plane proximate the respective narrow ends of the first slot;

a fourth coaxial transmission line having an inner conductor and an outer shield, the inner conductor being of a length that spans the distance between the hole in the sixth interconnect pad and an associated one of the holes in the first interconnect pad, and the outer shield of the fourth coaxial transmission line being straight and unbent;

the fourth coaxial transmission line being mounted to the ground plane side by soldering one end of the center conductor thereof to the hole in the sixth interconnect pad and the other end of the center conductor to its associated hole in the first interconnect pad, and by soldering each end of the outer shield of the fourth coaxial transmission line to the ground plane proximate the respective narrow ends of the second slot;

the first, second, third and fourth coaxial transmission lines being generally parallel to one another;

seventh and eighth interconnect pads proximate the fifth interconnect pad;

a first center-tapped auto transformer, the center tap thereof being electrically connected to the fifth interconnect pad, one of the two extreme ends of the auto transformer's winding being electrically connected to the seventh interconnect pad and the other to the eighth interconnect pad;

ninth and tenth interconnect pads proximate the sixth interconnect pad;

a second center-tapped auto transformer, the center tap thereof being electrically connected to the sixth interconnect pad, one of the two extreme ends of the auto transformer's winding being electrically connected to the ninth interconnect pad and the other to the tenth interconnect pad;

a first compensatory impedance soldered between the seventh and eighth interconnect pads;

a second compensatory impedance soldered between the ninth and tenth interconnect pads; and

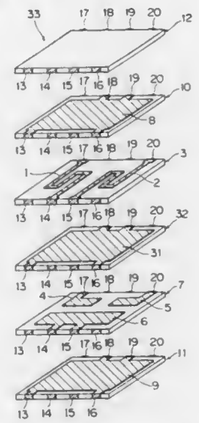
the seventh, eighth, ninth and tenth interconnect pads being the electrical sources of the four delivered powers and the electrical receptacles of the second through fifth incident powers.

5,668,511

LOW-PASS FILTER

Koji Furutani; Mitsuhide Kato, and Teruhisa Tsuru, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 408,377, Mar. 22, 1995, abandoned. This application Mar. 28, 1996, Ser. No. 623,512
Claims priority, application Japan, Mar. 29, 1994, 6-059085
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—204 **10 Claims**



1. A low-pass filter comprising:

a plurality of dielectric layers forming a multilayer structure, the multilayer structure comprising:

a first dielectric substrate having a microstripline on a first surface thereof;

a second dielectric substrate having at least one capacitor electrode on a first surface thereof;

a third dielectric substrate having a thin shielding electrode on a first surface thereof and being arranged between said first and second dielectric substrates

said shielding electrode being disposed such that said first dielectric substrate separates said shielding electrode from said microstrip line and said third dielectric substrate separating said capacitor electrode from said shielding electrode;

a dielectric sheet provided on a first surface of said multilayer structure; and

a fourth dielectric substrate having a ground electrode on a first surface thereof, the fourth dielectric substrate being disposed on a second surface of said multilayer structure opposite to said first surface of said multilayer structure;

said ground electrode of said fourth dielectric substrate being electrically connected with said shielding electrode of said second dielectric substrate.

5,668,512

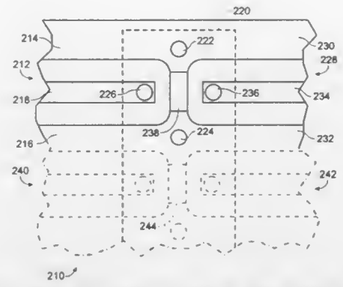
COPLANAR WAVEGUIDE-MOUNTED FLIP CHIP HAVING COUPLED GROUND CONDUCTORS

Clifford A. Mohwinkel, San Jose; Edwin F. Johnson, Sunnyvale, and Edward B. Stoneham, Los Altos, all of Calif., assignors to Endgate Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 478,375, Jun. 7, 1995, Pat. No. 5,528,203, which is a continuation of Ser. No. 313,927, Sep. 26, 1994, abandoned. This application Jun. 12, 1996, Ser. No. 662,693
Int. Cl.[6] H01P *5/00*
U.S. Cl. 333—247 **4 Claims**

1. A coplanar waveguide-based circuit structure comprising:

an electrically insulating substrate having a planar face with a connection region;



a first coplanar waveguide mounted on said substrate face and having first and second, spaced-apart coplanar ground conductors, and a first signal conductor coplanar with said ground conductors and positioned between and spaced from said first and second ground conductors, said signal conductor and said first and second ground conductors extending into said connection region, said first and second ground conductors being coupled together in said connection region; and

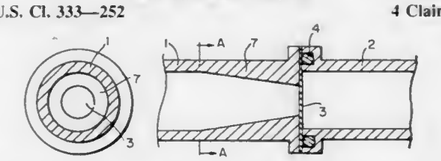
an integrated circuit flip mounted on said connection region of said substrate with a first terminal flip mounted to one of said ground conductors and a second terminal flip mounted to said signal conductor, said waveguide conducting electrical current relative to said integrated circuit.

5,668,513

HERMETICALLY SEALED STRUCTURE FOR JUNCTION OF TWO WAVEGUIDES

Keiichi Umezu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 29, 1996, Ser. No. 688,163
Claims priority, application Japan, Jul. 28, 1995, 7-192814
Int. Cl.[6] H01P *1/04; 1/08*
U.S. Cl. 333—252 **4 Claims**



1. A hermetically sealed structure for a junction of two circular waveguides, in which a hermetic seal is sandwiched between the ends of said two circular waveguides, comprising:

a first circular waveguide having an inside diameter gradually reduced continuously toward an end thereof which is to be joined to an end of a second circular waveguide;

a second circular waveguide having an end joined to said end of said first circular waveguide; and

said first circular waveguide and said second circular waveguide having different inside diameters at the ends which are to be joined through said hermetic seal.

5,668,514

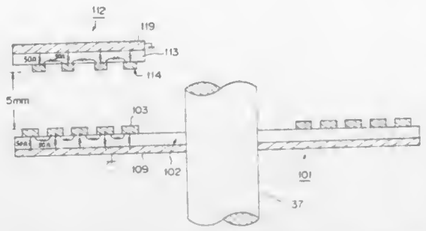
SIGNAL TRANSMISSION DEVICE

Masaru Hoshino, Tokyo-to; Toyokazu Sano, and Takeo Oe, both of Ishikari-gun, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Oct. 12, 1994, Ser. No. 321,990
Int. Cl.[6] H01P *1/06*
U.S. Cl. 333—261 **16 Claims**

1. A signal transmission device comprising:

a first body made of electromagnetic shielding material and fixed to a rotary shaft which passes through the first body, said



first body revolving together with the rotary shaft around an axis of the rotary shaft;

a second body made of electromagnetic shielding material and stationarily disposed around the rotary shaft;

a first conductive element spirally formed on a first substrate in a manner that peak magnitude points of traveling wave component of transmission signal generated on the element are positioned out of alignment with each other between at least neighboring turns of the spiral element in radial direction of the spirally formed element, said first element being disposed in one of the first body and the second body;

a second conductive element formed on a second substrate and having a first width long enough to cover the spirally formed first element in the radial direction and a second width in a direction perpendicular to the radial direction, said second element being disposed in the other one of the first body and the second body;

a third ring-shaped conductive element formed on a third substrate disposed in the first body; and

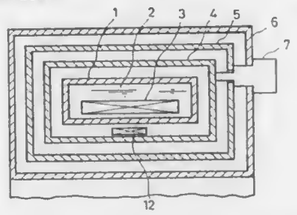
a fourth ring-shaped conductive element formed on a fourth substrate disposed in the second body, the third element and the fourth element being opposite to each other when the first body and the second body are coupled to each other.

5,668,515

SUPERCONDUCTIVE MAGNET APPARATUS

Akihiko Ariyoshi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 510,072
Claims priority, application Japan, Aug. 8, 1994, 6-186048
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 **10 Claims**



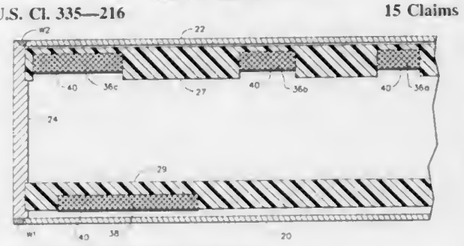
1. A superconductive magnet apparatus comprising a helium container in which liquid helium is stored, a superconductive coil which is immersed in the liquid helium and stored in the helium container, radiation heat shields which are arranged to enclose the helium container, and a vacuum container arranged to enclose the radiation heat shields, for storing the helium container and the radiation heat shields in a vacuum atmosphere, wherein the apparatus further comprises an induction coil which is magnetically coupled to the superconductive coil and thermally insulated from the helium container, and a switching element which forms a closed electrical circuit between both ends of the induction coil when said switching element is made active, said closed circuit having a resistance which dissipates energy of the superconductive coil when said switching element is made active.

5,668,516

SIMPLIFIED ACTIVE SHIELD SUPERCONDUCTING MAGNET ASSEMBLY FOR MAGNETIC RESONANCE IMAGING

Bu-Xin Xu, and Ronald F. Lochner, both of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 29, 1995, Ser. No. 581,100
Int. Cl.[6] H01H *1/00*
U.S. Cl. 335—216 **15 Claims**



1. A magnet assembly comprising:

a vessel comprising opposed first and second end flanges each having mutually concentric first and second annular grooves formed on an inner face thereof, an outer cylindrical wall having first and second ends respectively connected to said first and second end flanges, and an inner cylindrical wall having first and second ends respectively connected to said first and second end flanges, said inner cylindrical wall being surrounded by said outer cylindrical wall, and said first annular groove having a radius less than said second annular groove;

a circular cylindrical outer coil support contained in said vessel and having first and second ends inserted in said second annular grooves of said first and second end flanges respectively, said outer coil support having a first circumferential groove formed on its outer surface;

a circular cylindrical inner coil support contained in said vessel and having first and second ends inserted in said first annular grooves of said first and second end flanges respectively, said inner coil support having a first circumferential groove formed on its outer surface;

a first main magnet coil arranged in said first circumferential groove in said inner coil support; and

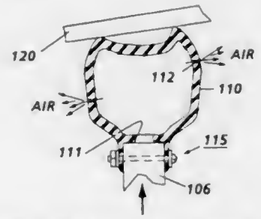
a first bucking magnet coil arranged in said first circumferential groove in said outer coil support.

5,668,517

SOLENOID IMPACT CONTROL DEVICE

Chee-Chiu J. Wong, Fairport, N.Y., assignor to Xerox Corporatinn, Stamford, Conn.

Filed Oct. 2, 1995, Ser. No. 537,017
Int. Cl.[6] H01F *3/00;7/08*
U.S. Cl. 335—257 **6 Claims**



1. In a solenoid actuation system including a solenoid for moving a work device, with the solenoid having a housing and a plunger adapted to move relative to the housing upon electrical actuation of the solenoid, the improvement in impact control, wherein:

said plunger is normally spaced from a work surface of said work device; and

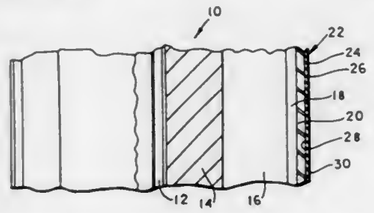
a resilient member connected between said plunger and the work surface and adapted to partially collapse between said plunger and work surface upon movement of said plunger toward said work surface to damp the impact of said plunger acting against said work surface and reduce noise resulting from contact of said resilient member against said work surface, said resilient member being adapted to restore to its original expanded shape upon removal of the solenoid force on said plunger, said resilient member comprising a hollow bulb with said hollow bulb including a predetermined number of orifices to enhance said partial collapse of said bulb, and wherein said predetermined number of orifices are of different sizes and spaced at different locations to reduce pneumatic noise from said partial collapse of said bulb.

5,668,518

WIRE WOUND DRUM

Marshall A. Carner, Fairview, Pa., assignor to Eriez Manufacturing Company, Erie, Pa.

Filed Nov. 26, 1996, Ser. No. 755,829
Int. Cl.[6] H01F *5/02;* B03C *1/00*
U.S. Cl. 335—296 **3 Claims**



1. A magnetic drum for use on a magnetic separator comprising;

a shaft;

a yoke supported on said shaft;

a magnetic element supported on said yoke;

a shell made of non-magnetic material supported in spaced relation to said magnetic element;

a matrix attached to said shell;

said matrix comprising a magnetic wire and a non-magnetic wire;

said wires being wound on the outer surface of said shell in bobbin fashion as a single layer;

said winding having said magnetic wire and said non-magnetic wire alternate across the width of said shell;

said wires being fixed to said shell by a bonding material as they are wrapped on said shell;

said outer diameter of said wires being machined down to the center line of said wires thereby producing a flat surface.

5,668,519

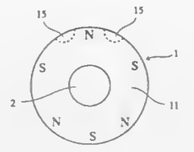
MAGNET ROLL AND METHOD OF PRODUCING SAME

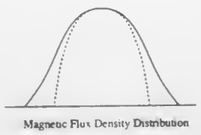
Keitaro Yamashita, Saitama-ken, Japan, assignor to Hitachi Metals Ltd., Tokyo, Japan

Continuation of Ser. No. 130,195, Oct. 1, 1993, Pat. No. 5,539,368. This application Apr. 2, 1996, Ser. No. 626,567
Claims priority, application Japan, Oct. 7, 1992, 4-267759
Int. Cl.[6] H01F *7/20;* G03G *15/09*
U.S. Cl. 335—302 **2 Claims**

1. A developing magnet roll comprising a shaft and a hollow, cylindrical permanent magnet member fixed to said shaft, said permanent magnet member having:

magnetic brush forming means comprising a plurality of magnetic poles extending axially and disposed at a certain interval circumferentially on a surface of said permanent magnet member; and





Magnetic Flux Density Distribution

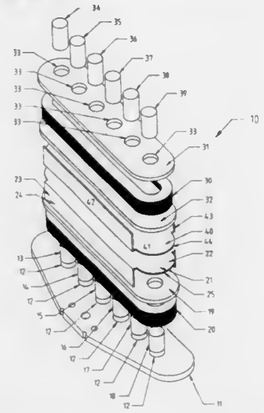
a thermally demagnetized portion being formed on at least one circumferential side of a developing magnetic pole such that said permanent magnet member generates a steep magnetic flux density distribution at a position of said developing magnetic pole.

5,668,520

TRANSDUCER FOR A STRINGED MUSICAL INSTRUMENT

Christopher Ian Kinman, Unit 3, 28 Baldock Street, Moorooka Queensland, 4105, Australia

Filed Mar. 15, 1996, Ser. No. 616,569
Int. Cl.[6] H01F *27/36;* G10H *3/14*
U.S. Cl. 336—84 R **18 Claims**



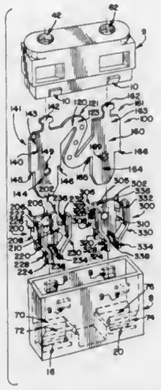
1. A transducer having a first coil, a second coil arranged with its axis coincident with the axis of the first coil and in use spaced below the first coil, a metallic shield made of magnetically permeable material arranged between the coils, the shield having one or more outwardly directed walls with the wall or walls of the shield extending over sides of the coils, at least one permanent magnet pole piece associated with the first coil and at least one metallic magnetically permeable pole piece associated with the second coil, whereby the coils are inductively and magnetically decoupled from one another by the shield.

5,668,521

THREE PIECE FEMALE BLADE FUSE ASSEMBLY HAVING FUSE LINK TERMINAL WITH A CLIP RECEIVING PORTION

Seibang Oh, Elk Grove Village, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Mar. 22, 1995, Ser. No. 408,473
Int. Cl.[6] H01H *85/02*
U.S. Cl. 337—186 19 Claims



1. A female fuse assembly for interrupting a current flowing through a circuit upon certain high current conditions, the circuit including male terminals each having opposed contact surfaces for conductively connecting the female fuse assembly to the rest of the circuit, the female fuse assembly comprising:

a fuse housing made of electrically insulating material and having a space therein;

a first and a second fuse-link terminal each having a first side and a second opposite side, each fuse-link terminal being secured in the housing space and including a clip-receiving portion, a first clip abutment, and a second clip abutment;

a fuse-link connected between the first fuse-link terminal and the second fuse-link terminal, the fuse link including a fuse blowing portion;

a first female clip for connecting the first fuse-link terminal to a male terminal, the first female clip including a clip body for confronting the first side of the first fuse-link terminal, a first and a second arm-connecting extension, and a first and a second arm in spaced confronting relation to the second side of the first fuse-link terminal to define a male terminal-receiving slot therebetween, the first and second arm-connecting extensions of the first clip being engaged with the respective first and second clip abutments of the first fuse-link terminal for holding the first clip in place, one end of each of the first and second arm-connecting extensions of the first clip being connected to the clip body of the first clip, and the other end of the first and second arm-connecting extensions of the first clip being connected to the respective first and second arms, the first and second arms of the first clip for resiliently engaging the contacting surface of the male terminal; and,

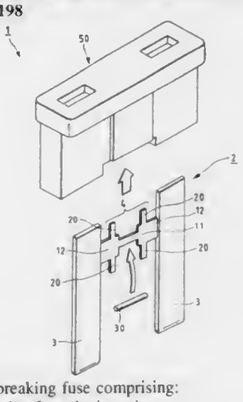
a second female clip for connecting the second fuse-link terminal to a male terminal, the second female clip including a clip body for confronting the first side of the second fuse-link terminal, a first and a second arm-connecting extension, and a first and a second arm in spaced confronting relation to the second side of the second fuse-link terminal to define a second male terminal-receiving slot therebetween, the first and second arm-connecting extensions of the second clip being engaged with the respective first and second clip abutments of the second fuse-link terminal for holding the second clip in place, one end of each of the first and second arm-connecting extensions of the second clip being connected to the clip body of the second clip, and the other end of the first and second arm-connecting extensions of the second clip being connected to the respective first and second arms, the first and second arms of the second clip for resiliently engaging the contacting surface of the male terminal.

5,668,522

SLOWLY-BREAKING FUSE AND METHOD OF PRODUCTION

Hiroki Kondo; Mitsuhiko Totsuka; Toshiharu Kudo, and Hisashi Hanazaki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,837
Claims priority, application Japan, Oct. 28, 1993, 5-291478
Int. Cl.[6] H01H *85/02;85/04;85/52;85/143*
U.S. Cl. 337—198 5 Claims



1. A slowly-breaking fuse comprising:

a housing made of synthetic resin;

a fuse element including:

a pair of terminal members for an electrical connection; and

a melting member mounted between the terminal members, the melting member being smaller in thickness than the terminal member, the melting member having a narrow elongated central portion and a pair of base portions between which the narrow elongated central portion is mounted; and

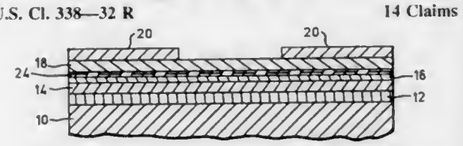
a cross-sectional area increased member provided on said base portions of the melting member so that the cross-sectional area of said base portions is greater than the cross-sectional area of said central portion.

5,668,523

MAGNETORESISTIVE SENSOR EMPLOYING AN EXCHANGE-BIAS ENHANCING LAYER

Mao-Min Chen; Kenneth Ting-Yuan Kung, both of San Jose, and Ching Hwa Tsang, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 174,748, Dec. 29, 1993, abandoned. This application May 23, 1995, Ser. No. 449,605
Int. Cl.[6] G11B *5/39*
U.S. Cl. 338—32 R 14 Claims



1. An exchange-biased magnetoresistive (MR) sensor comprising:

an antiferromagnetic layer;

a first MR ferromagnetic layer comprising an alloy of nickel and iron; and

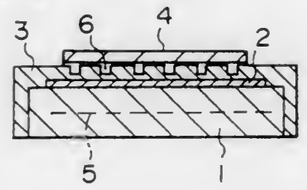
a second MR ferromagnetic layer comprising an alloy of nickel and iron and being interposed between the antiferromagnetic layer and the first MR ferromagnetic layer, the second MR ferromagnetic layer contacting both the antiferromagnetic layer and the first MR ferromagnetic layer and having an elevated percentage of iron with respect to iron percentage in the first MR ferromagnetic layer.

5,668,524

CERAMIC RESISTOR AND ELECTROSTATIC CHUCK HAVING AN ALUMINUM NITRIDE CRYSTAL PHASE

Hiroshi Aida; Kazuhiko Mikami, and Kenji Kitazawa, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Feb. 9, 1995, Ser. No. 385,774
Claims priority, application Japan, Feb. 9, 1994, 6-015200; Aug. 9, 1994, 6-187044; Aug. 11, 1994, 6-189217; Sep. 1, 1994, 6-208375; Sep. 30, 1994, 6-237115; Nov. 29, 1994, 6-294256; Nov. 30, 1994, 6-296386
Int. Cl.[6] H01C *1/012*
U.S. Cl. 338—308 9 Claims



1. A ceramic resistor comprising chiefly an aluminum nitride crystal phase the which is formed by chemical vapor-phase deposition method, wherein the ceramic resistor is doped with an atom of an element of Group 6b of the periodic table in an amount of from 0.005 to 20 atomic %, and the lattice constants in the aluminum nitride crystal phase are shifted from the lattice constant of the non-doped aluminum nitride single crystal phase by 0.003 to 0.015 angstroms on the a-axis and by 0.004 to 0.021 angstroms on the c-axis, and wherein the ceramic resistor exhibits a volume resistivity of not larger than 10^{14} Ω-cm at 25° C.

5,668,525

COMPARATOR CIRCUIT USING TWO BIT TO FOUR BIT ENCODER

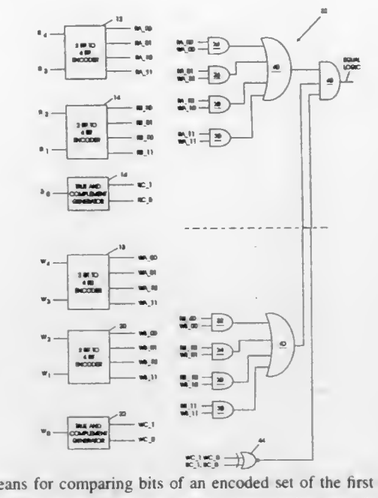
Tom Tien-Cheng Chiu; Donald George Mikan, Jr., and John Stephen Muhich, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1996, Ser. No. 710,443
Int. Cl.[6] G06F *7/02*
U.S. Cl. 340—146.2 27 Claims

1. A comparator circuit for comparing a first and second address wherein said addresses are represented by a number of binary logic bits, said circuit comprising:

means for grouping said bits of the first and second addresses into certain corresponding sets;

means for encoding a set into a corresponding encoded set wherein only one bit of said encoded set has a predefined logic state; and



means for comparing bits of an encoded set of the first address with corresponding bits of the corresponding encoded set of the second address.

5,668,526

INFANT MONITORING SYSTEM FOR AUTOMOBILES

Brenda M. Collins, 46 Wheelock Ave., Millbury, Mass. 01527

Filed Jun. 26, 1996, Ser. No. 668,349
Int. Cl.[6] G08B *27/00*
U.S. Cl. 340—326 7 Claims



1. An apparatus for monitoring an infant in a rear seat of an automobile, having a front mirror mounted in a driver's forward field of vision, a rear mirror observable in said front mirror, said rear mirror reflecting an image of an infant carrier in the rear seat, a rear mirror assembly including said rear mirror, wherein the improvement comprises:

said rear mirror assembly including visual and audible means to attract the infant so that the infant's face is oriented towards said rear mirror assembly,

a rear mirror assembly mounting bar releasably attached to a backrest of a back seat of the automobile,

said mounting bar having a foot, a top in the shape of an inverted J, and means for adjustably mounting said rear mirror assembly,

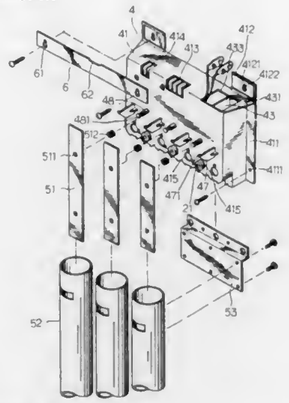
said mounting bar top to engage a top of a rear seat backrest, and

said mounting bar foot to engage a slit between said rear seat backrest and a rear seat bench.

5,668,527
DOORBELL BASE

Sheng-Hsiung Lin, 306, Wu Fu Road, Wu Feng Hsiang, Taichung, Taiwan

Filed Jun. 28, 1996, Ser. No. 673,316
Int. Cl.[6] G10K *1/26*
U.S. Cl. 340—396.1 1 Claim



1. A doorbell comprising:

a base including a receiving frame, said receiving frame including an L-shaped frame plate and including a plurality of locating protuberances each having a diminishing free end portion, said receiving frame including at least one receiving slot and including a plurality of locating pieces, said receiving frame including at least two protruded edges each having a fastening hole for engaging with a fastening member and for allowing the protruded edges to be fastened to a wall, said protruded edges each including a protruded block having a groove, and said receiving frame including a plurality of hanging plates each having a toothed portion formed on top;

a processor controller (PC) board fastened with said frame plate of said receiving frame of said base;

a plurality of striking devices fastened with said locating protuberances of said receiving frame of said base, said striking devices each including a midsegment, said midsegments each including two ends each having a tubular body extended outward, a first of said tubular bodies including a hollow construction for receiving a striking bar and a spring;

at least one battery located in said receiving slot of said receiving frame of said base for serving as a power source of said PC board;

a plurality of chiming devices fastened with said locating pieces of said receiving frame of said base for allowing said chiming devices to ring out when struck by said striking devices, said chiming devices each including a chiming tube secured to said locating piece and each including a plug engaged on said diminishing free end portion of said locating protuberance and each including a chiming plate secured to said plug and said locating protuberance, said chiming plates each including a bottom end received in said chiming tube,

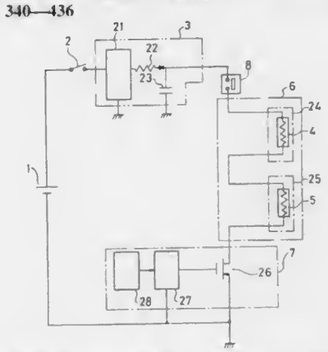
a bracing plate engaged in said grooves of said protruded blocks and secured to said protruded blocks for fastening said base to the wall;

said L-shaped frame plate and said locating protuberances and locating pieces and said protruded edges and said protruded blocks and said hanging plates of said receiving frame being made integrally for facilitating assembling of said doorbell.

5,668,528
APPARATUS FOR ACTUATING THE SAFETY DEVICES FOR VEHICLE OCCUPANTS

Shigetaka Kitao; Ayumu Kimura, both of Himeji; Yasuhiko Ootani, Kobe; Isamu Hitomi, Kobe, and Akihiko Kurolwa, Kobe, all of Japan, assignors to Sensor Technology Co. Ltd., Kobe, and Nippon Kayaku Kabushiki-Kaisha, Tokyo, both of Japan

PCT No. PCT/JP94/01028, § 371 Date Dec. 28, 1995, § 102(e) Date Dec. 28, 1995, PCT Pub. No. WO95/00369, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 27, 1994, Ser. No. 564,269
Claims priority, application Japan, Jun. 28, 1993, 5-216812
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—436 7 Claims



1. An apparatus for actuating a plurality of safety devices equipped in a vehicle for protecting occupants from an impact of a collision, comprising:

a plurality of squibs included in said plurality of safety devices respectively, which are connected in series with each other so as to form a series circuit, said series circuit having no bypass means in parallel to said squibs for supplying an igniting energy to said squibs, and ignited by a current flowing therethrough and conforming to one and the same standard with respect to each other,

a power source for supplying electrical energy to said series circuit, and

a collision detector for allowing a current to flow from the power source to said series circuit when detecting a collision; wherein

a required energy for igniting all of said squibs in said series circuit is supplied to said squibs from said power source before said series circuit opens electrically at any one squib of said plurality of squibs.

5,668,529
METHOD OF STATISTICALLY DETERMINING BRAKE LINING WEAR USING TEMPERATURE SENSING

Christos T. Kyrtsos, Southfield, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 5, 1996, Ser. No. 660,680
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—454 5 Claims

1. A method of estimating the thickness of a brake lining comprising:

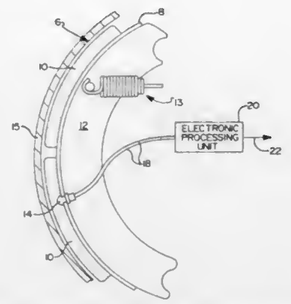
providing a temperature sensor disposed to measure an operating temperature of said brake lining;

providing an electronic processing unit electrically connected to said temperature sensor;

providing calibration information stored in said electronic processing unit representing the expected temperature histogram for selected thicknesses of said brake lining;

sensing the temperature of said brake lining;

generating a temperature signal based on the temperature of said brake lining;



transmitting said temperature signal to said electronic processing unit;

sampling said temperature signal in a periodic manner to assimilate temperature samples;

grouping said temperature samples into a plurality of temperature ranges thereby forming a temperature histogram;

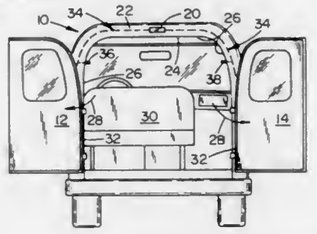
comparing said temperature histogram with said calibration information; then

outputting a brake wear signal.

5,668,530
VAN REAR THREE-LIGHT DISPLAY

Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Feb. 1, 1996, Ser. No. 593,140
Int. Cl.[6] B60Q *1/52*
U.S. Cl. 340—471 1 Claim

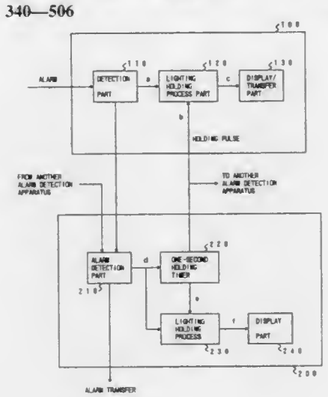


1. Improvements for a van of a type having left and right rear doors pivotally traversable between closed and open conditions and a known brake-operated three-light display of a triangular configuration in surrounding relation about said left and right doors consisting of two tail lights each laterally adjacent a cooperating one said left and right rear door and an elevated single tail light centrally located above said left and right doors, said improvements for said three-light display comprising a rear van wall means having edges bounding an opening for said pivotally traversing of said left and right doors between said closed and open conditions thereof in relation to said opening, said left and right doors each having peripheral edges cooperating with said wall means opening-bounding edges to form a rear closure for said van, an electrical circuit for said three-light display, and two electrical switches each having a door-depressing condition and a door-releasing condition operatively located in an interposed position between said wall means opening-bounding edges and said left and right door peripheral edges electrically connected to said electrical circuit to activate said three-light display only in said switch door-releasing condition, whereby during non-braking operation of said three-light display an opening of one said left and right rear door unavoidably obscuring a tail light adjacent thereto to an approaching motorist is effective to operate said three-light display in a modified display consisting of said single centrally located tail light and a visible tail light of a closed door and a non-visible tail light of an open door to thereby inform said approaching motorist of said open condition of said one door.

5,668,531
SYNCHRONIZED ALARM HOLDING SYSTEM

Kiyoshi Sukegawa, and Kunio Takada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 9, 1994, Ser. No. 303,449
Claims priority, application Japan, Mar. 16, 1994, 6-046195
Int. Cl.[6] G08B *29/00*
U.S. Cl. 340—506 17 Claims



1. A synchronized alarm holding system, wherein synchronizing means is provided in at least one of two apparatuses including an alarm detection apparatus for detecting an externally input alarm, and an alarm processing apparatus for displaying an alarm detection signal received from said alarm detection apparatus or another alarm detection apparatus, and for transferring said alarm detection signal to another apparatus, the synchronizing alarm holding system comprising:

said alarm detection apparatus having first alarm detection means for detecting alarm information issued externally when a failure has occurred, and for transferring a detected alarm to an external apparatus, first lighting holding means for holding the alarm information for a predetermined time required for the display thereof, when said alarm information is detected by said first alarm detection means, and first display/transfer means for displaying said alarm information, and for transferring the same to said external apparatus; and

said alarm processing apparatus having second alarm detection means for detecting externally issued alarm information, and for transferring the detected alarm information, holding time setting means for outputting a holding pulse for holding the alarm information for a predetermined time to said first lighting holding means a plurality of times, when the alarm information is transferred from said second alarm detection means, an alarm holding instruction means for instructing the holding of said alarm information when a response signal indicating the holding of an alarm is received from another apparatus, second lighting holding means for holding said alarm information for a predetermined time required for the display thereof, in response to the alarm holding instruction from said alarm holding instruction means, and second display/transfer means for displaying said alarm information, and for transferring the same to said external apparatus, wherein

upon receipt of holding pulses a plurality of times from said holding time setting means, said first lighting holding means returns a response signal indicating that the alarm information has been held on the basis of said holding pulse.

5,668,532
FAULT TOLERANT COOLING IN ELECTRICAL APPARATUS

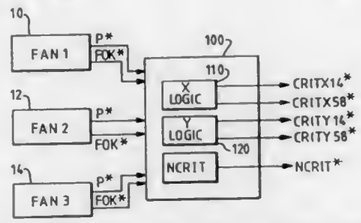
Reginald Beer, Eastleigh; Stanley John Cutts, Petersfield; Steven Brian Kew, Portsmouth; Neil Morris, Southsea, and David Newmarch, Romsey, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1995, Ser. No. 550,856

Claims priority, application United Kingdom, Nov. 14, 1994, 9422932

Int. Cl.[6] G08B *29/00*

U.S. Cl. 340—506 **21 Claims**



1. A cooling system for providing redundant cooling to electrical devices in an electrical apparatus, the cooling system comprising:

a plurality N+1 individual cooling means, N cooling means being required to provide cooling of said devices; and

monitor logic for monitoring the status of said plurality of cooling means, said logic being operable, in the event of a failure in said logic, to issue a non-critical warning to said electrical apparatus to thereby allow continued operation of said electrical apparatus.

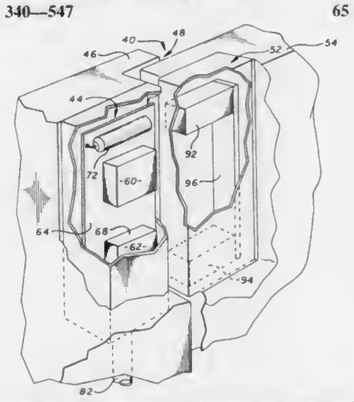
5,668,533
HIGH SECURITY BALANCED-TYPE, MAGNETICALLY-ACTUATED PROXIMITY SWITCH SYSTEM

John T. Jackson, Jr., Reno; Robert C. Cook, Sparks, and Robert C. Hunt, Reno, all of Nev., assignors to Securitron Magnalock Corporation, Sparks, Nev.

Filed Jun. 7, 1995, Ser. No. 474,098

Int. Cl.[6] G08B *13/08*

U.S. Cl. 340—547 **65 Claims**



1. A balanced-type, magnetically-actuated proximity switch system, comprising:

a magnetic switch assembly mountable to a first structure, said magnetic switch assembly including (1) first and second switch magnets fixed in relative position wherein they are axially aligned and wherein adjacent ends thereof have the same polarity, and (2) first and second reed switches positioned on opposite outside ends of respective said first and second switch magnets and generally perpendicular to an axial magnet alignment and both operatively connectable to ab electric circuit; and

an actuator magnet assembly mountable to a second structure which is movable between open and closed positions relative to the first structure;

wherein said first and second reed switches, when the second structure is in the open position, are in a first condition relative to the electrical circuit indicating the open position, due to the magnetic influence of said first and second switch magnets thereon; and

wherein said first and second reed switches, when the second structure is in the closed position, are in a second condition relative to the electrical circuit indicating the closed position, due to the magnetic influence of said actuator magnet assembly thereon.

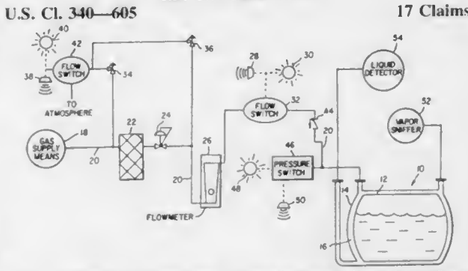
5,668,534
CONTAINMENT FAILURE DETECTION DEVICE AND METHOD

Mark Scott Haboian, Rochester, and Charles Edward Rudd, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 989,251, Dec. 11, 1992, abandoned. This application Oct. 18, 1994, Ser. No. 324,943

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—605 **17 Claims**



1. A method of detecting a containment failure in a fluid-containing system having a monitorable containment failure volume, comprising the steps of:

supplying a supply of gas to a containment failure volume;

maintaining a constant pressure of said gas supply in the containment failure volume;

monitoring for an increase in pressure in said containment failure volume as indicative of leakage into said containment failure volume from said fluid-containing system when said pressure of said containment failure volume is lower than a pressure within the fluid-containing system; and

monitoring for flow from said gas supply to said containment failure volume as indicative of leakage from said containment failure volume when said pressure of said containment failure volume is higher than the pressure within the fluid-containing system.

5,668,535
FILTER CONDITION SENSOR AND INDICATOR

George E. Hendrix, Florissant, and Karmen D. Cox, St. Peters, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 7, 1995, Ser. No. 568,813

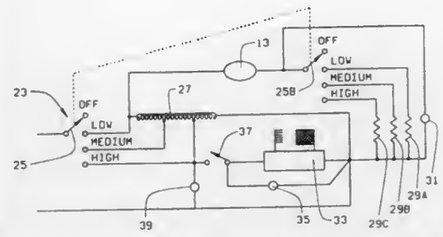
Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—607 **9 Claims**

1. A filter condition sensor and indicator for responding to the presence of a predetermined collection of material in a filter operatetively positioned in an output air flow path comprising:

a small by-pass air flow path connected to the output air flow path and separate from the filter;

a heated thermistor in the by-pass air flow path; and



an indicator light electrically connected in series in a circuit with the heated thermistor that illuminates when the resistance in the circuit is decreased due to predetermined cooling of the heated thermistor whereby a predetermined collection of material in the filter increases the flow of air in the small by-pass air flow path for cooling the heated thermistor and lowering resistance in the circuit to illuminate the indicator light; and a multi-speed fan in the output air flow path, said thermistor being electrically coupled to means for changing the voltage and current through the thermistor depending on the fan setting.

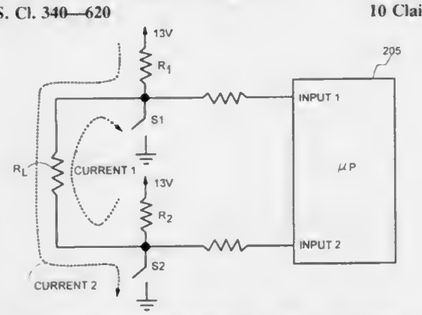
5,668,536
FLUID LEVEL SENSING APPARATUS

Paul C. Gottshall, Washington; Timothy A. Boston, Tremont, and Kevin D. Ehrenhardt, Eureka, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 16, 1996, Ser. No. 632,857

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—620 **10 Claims**



1. An apparatus for sensing the level of fluid, comprising:

a two prong electrode device being disposed in the fluid;

a microprocessor being connected to the two electrode device and delivering alternating current thereto, wherein the microprocessor reads the voltage across the device, compares the voltage to a predetermined voltage level, and produces a warning signal in response to the fluid level being below a predetermined fluid level; and

first and second switches being connected between a 13 volt energy source and around, the first switch being connected between one end of the two prong electrode device and a first microprocessor input channel, and the second switch being connected between the other end of the two prong electrode device and a second microprocessor input channel, the microprocessor alternately biasing the first and second switches ON and OFF to create the alternating current through the coolant level sensor.

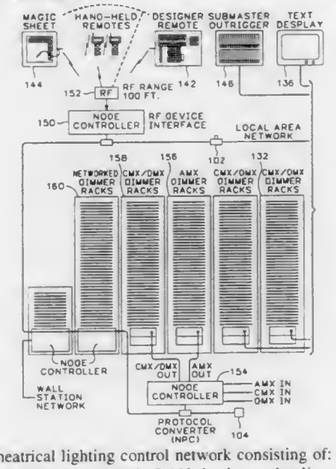
5,668,537
THEATRICAL LIGHTING CONTROL NETWORK

Leonard M. Chansky, 12001 Falcon Ridge Way, Northridge, Calif. 91326; John W. Fuller, 2266 Norwic Pl., Altadena, Calif. 91001; Ronald A. Land, 3913 Bayside Dr., Simi Valley, Calif. 93063, and Robert Whitten, 10600 Samoa Ave., Tujunga, Calif. 91042

Continuation of Ser. No. 152,489, Nov. 12, 1993, abandoned. This application Mar. 6, 1996, Ser. No. 611,496

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.06 **9 Claims**



1. A theatrical lighting control network consisting of:

a single local area network (LAN) having a plurality of connection points for a structure of control devices, peripheral devices and effect control elements, said structure comprising:

a control console having input controls for operation to define desired settings of a plurality of effect control elements, the console further having an interface means connected to the LAN for transmitting the settings to the LAN;

at least two node controllers connected to the LAN including

at least one first node controller connected as a peripheral node controller, said peripheral node controller having an interface for connection of a peripheral device remote from the control console, and,

at least one second node controller connected as a node protocol converter having a means for receiving settings transmitted through the LAN, at least one means for translating the settings to a control protocol, and means for transmitting the control protocol on an output; and

at least one rack of a plurality of effect control elements connected to the output of the at least one node protocol converter and receiving the control protocol for operation of the effect control elements.

5,668,538
MODULAR ELECTRICITY METER ARRANGEMENT HAVING REMOTELY CONTROLLABLE SWITCH

Ronald Warwick, Liverpool, England, assignor to Siemens Measurements Limited, Oldham, England

Filed Dec. 1, 1995, Ser. No. 566,289

Claims priority, application United Kingdom, Dec. 3, 1994, 9424461

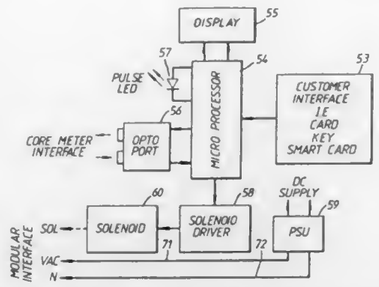
Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—870.02 **17 Claims**

1. An electricity meter comprising:

input terminals to which in use a mains electricity supply is connected,

output terminals via which in use electricity is fed to a consumer, and



a switch via which electricity is fed from the input terminals to the output terminals and metering means operative to provide an indication of the quantity of electricity fed via the switch to the consumer, the meter being adapted to receive a unit arranged in operative association with the switch so as to effect operation of a switch actuator to open the switch for the purpose of interrupting the supply of electricity to the consumer consequent upon receipt by the unit of a predetermined actuation signal,

wherein the switch actuator forms a part of the unit and is arranged to cooperate mechanically with a switch assembly in the meter of which the switch forms a part, so as to effect operation of the switch consequent upon receipt by the unit of said actuation signal.

5,668,539

THERMAL EMITTED RADIATION DETECTING DEVICE

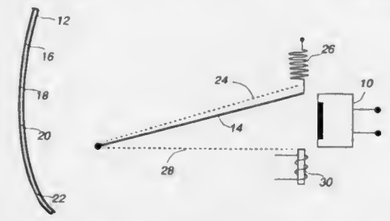
John W. Patchell, Carleton Place, Canada, assignor to 1138037 Ontario Ltd., Canada

Filed Feb. 16, 1996, Ser. No. 602,467

Claims priority, application Canada, Aug. 30, 1995, 2157237

Int. Cl.[6] G08G *1/16*

U.S. Cl. 340—903 **28 Claims**



1. A thermal emitted radiation detecting device for detecting objects in a blind spot comprising:

detector means for generating an output signal responsive to thermal emitted radiation;

means for defining first and second fields of view relative to the detector means;

means for switching the field of view detected to generate a combined output signal; and

means for deriving an indication of a proximate object from the combined output signal, whereby the first field of view comprises the blind spot and the second field of view comprises a reference field and switching between the first and second fields generates a difference in thermal emitted radiation at the detector means when the proximate object is in the first field of view.

5,668,540

DETECTION DEVICE FOR DATA RELATING TO THE PASSAGE OF VEHICLES ON A ROAD

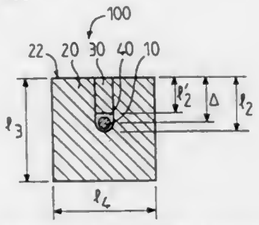
Gilles Bailleul, Carrieres-sur-Seine, and Francois Paris, Croissy-sur-Seine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1995, Ser. No. 413,748

Claims priority, application France, Mar. 30, 1994, 94 03774

Int. Cl.[6] G08G *1/01*

U.S. Cl. 340—933 **15 Claims**



1. A detection device for arrangement in a groove provided in an upper portion of a road to produce data relating to the passage of a vehicle, said detection device comprising:

a. an elongated substantially-rigid first body comprising an inorganic material and having a longitudinally-extending cavity with a predefined cross-sectional shape having predetermined dimensions;

b. a coaxial piezoelectric cable disposed at a predetermined position in the cavity; and

c. a preformed, elongated, substantially-rigid second body comprising an inorganic material and slidably fitted into the cavity, said second body being shaped and dimensioned such that it fills the cavity above the cable.

5,668,541

SYSTEM FOR DERIVING AN ANOMALY SIGNAL DURING THE TAKE-OFF OF AN AIRCRAFT

Laurent Coquin, Toulouse, and Christine Le Draoullec, Plaisance du Touch, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

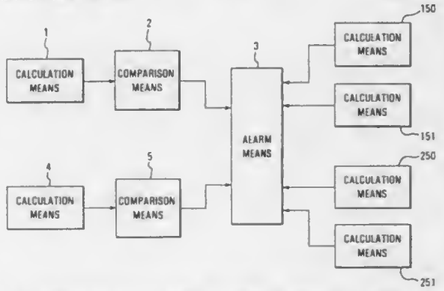
PCT No. PCT/FR95/01230, § 371 Date May 9, 1996, § 102(e) Date May 9, 1996, PCT Pub. No. WO96/10222, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 25, 1995, Ser. No. 635,977

Claims priority, application France, Sep. 28, 1994, 94 11574

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—959 **8 Claims**



1. A system for deriving an information, warning or alarm signal on board an aircraft in the event of an anomaly during take-off, before the aircraft reaches a critical rolling speed up to which the take-off process may be modified or interrupted and beyond which the take-off must be proceeded with, of the type including:

(i) first means (1) for calculating the expression:

$$D_1 = D_1 t + (Vat^2 - V_{11}t^2)/2\gamma_1 t$$

in which:

$\gamma_1 t$ is the actual acceleration of the aircraft at the instant t,

$V_{11}t$ is the actual speed of the aircraft at the instant t,

Vat is the theoretical speed of the aircraft at the instant t,

$D_1 t$ is the actual distance travelled by the aircraft at the instant t, and

D_1 is the anticipated actual distance travelled by the aircraft when $V_{11}t$ will be equal to Vat, as well as the ratio:

$$D_1/Dat$$

in which:

D_1 is as defined above, and

Dat is the theoretical distance travelled by the aircraft at the instant t;

(ii) (b) first means (2) for comparing the ratio D_1/Dat to a predetermined threshold S; and

(iii) information, warning or alarm means (3); characterized in that it furthermore comprises:

(iv) second means (4) for calculating the expression:

$$D_{stop} = D_1 t + V_{11}t(\Delta T1 + \Delta T2) - 1/\gamma P[\gamma ct/\gamma P(1n|\gamma ct| - 1) + V_{11}t1n|\gamma bt| - bu/\gamma P(1n|\gamma bt| - 1)]$$

in which, in addition to the parameters already defined hereinabove:

ΔT1 is the reaction time of the aircraft's pilot,

ΔT2 is the response time of the braking means,

γbt is the acceleration of the aircraft at the start of braking,

γct is the acceleration of the aircraft at the end of braking,

$\gamma P = (\gamma bt - \gamma ct)/V_{11}t$,

D_{stop} represents the position on the runway where the aircraft must stop if the pilot decides to interrupt the take-off procedure immediately, that is to say is representative of the stopping distance of the aircraft during the acceleration phase of the latter at take-off;

(v) second means (5) for comparing D_{stop} to the length of runway L available so as to determine whether an interruption of the take-off is still possible;

(vi) said information, warning or alarm means (3) being activated depending on the information supplied by said first (2) and second (5) comparison means in order to enable the pilot to decide whether he should continue the take-off procedure or not.

5,668,542

COLOR COCKPIT DISPLAY FOR AIRCRAFT SYSTEMS

David W. Wright, Franklin, Wis., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 3, 1995, Ser. No. 497,916

Int. Cl.[6] G01C *21/00*

U.S. Cl. 340—971 **14 Claims**

1. An instrument panel display system for showing the operating status of selected systems for an apparatus having more than one possible operating condition, comprising:

(a) a computer controlled video display;

(b) shown on the display, a plurality of display segments, each display segment corresponding to a selected system parameter for the apparatus, wherein each display segment includes:

(i) a numeric representation of a current quantitative value of the selected system parameter;

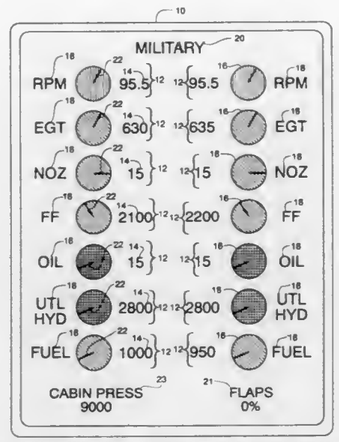
(ii) an analog dial representation of the trend qualitative value of the selected system parameter, the analog dial including a needle, wherein:

(1) clockwise movement of the needle indicates an increasing value for that parameter;

(2) counterclockwise movement of the needle indicates a decreasing value for that parameter;

(3) a first preselected position for the needle indicates a lower limit for that parameter; and,

(4) a second preselected position for the needle indicates an upper limit for that parameter;



(5) wherein the range of values for the selected system parameter for the apparatus between the first preselected needle position and the second preselected needle position is dynamically selected according to the then current operating condition of the apparatus; and,

(iii) a color corresponding to a dynamically selected category defined by a preselected range of operating status values for the selected system parameter, wherein the dynamically selected category is dynamically selected according to the then current operating condition of the apparatus; and,

(c) wherein the then current operating condition of the aircraft is automatically determined.

5,668,543

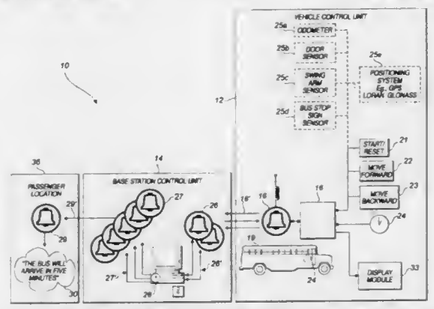
ADVANCE NOTIFICATION SYSTEM AND METHOD UTILIZING PASSENGER CALLING REPORT GENERATOR

Martin Kelly Jones, Dalton, Ga., assignor to Global Research Systems, Inc., Rome, Ga.

Continuation-in-part of Ser. No. 407,319, Mar. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 63,533, May 18, 1993, Pat. No. 5,400,020. This application May 2, 1995, Ser. No. 432,666

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—994 **80 Claims**



1. A method for an advance notification system that notifies a user of an impending arrival of a vehicle at a vehicle stop, the system comprising (a) a user telephone interface, (b) a system telephone interface, and (c) a system control for monitoring travel of said vehicle in relation to the vehicle step and for initiating a telephone call with said system telephone interface to the user telephone interface before the vehicle reaches the vehicle stop to

thereby indicate impending arrival of the vehicle at the vehicle stop, the method comprising the steps of:

(a) permitting said user telephone interface to solicit a report corresponding to a previous telephone call made by said system telephone interface to said user telephone interface including the following steps:

(1) permitting establishment of a telephone communication link between said user telephone interface and said system telephone interface;

(2) providing said report from said system control to said user telephone interface during said telephone communication link; and

(3) indicating in said report whether said user telephone interface was busy when said system telephone interface initiated said previous telephone call to said user telephone interface.

5,668,544

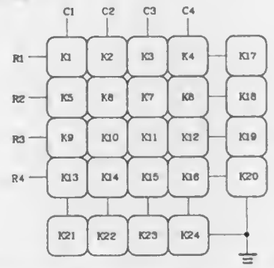
COMPOUND TYPE OF KEYBOARD DETECTOR

Herman Chang, and Yueh-Mei Hou, both of Hsinchu, Taiwan, assignors to Holtek Microelectronics, Inc., Hsinchu, Taiwan

Filed Feb. 26, 1996, Ser. No. 607,111

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—26 **1 Claim**



1. A compound type of keyboard detector comprising:

a time-sequencing generator comprising: means to an enabling signal and system clock inputs and means for generating first through fourth time-sequencing output signals during one complete cycle;

a keyboard scanner comprising: input terminals respectively connected to said said enabling signal and said second and fourth time-sequencing output signals from said time-sequencing generator, and means for outputting a column-scanning signal and a row-scanning signal;

a column input port comprising: input terminals respectively connected to a column key-in signal and said column-scanning signal from said keyboard scanner, and means for outputting a column output signal;

a row input port comprising input terminals respectively connected to a row key-in signal and said row-scanning signal from said keyboard scanner, and means for outputting a row output signal;

a column lock comprising input terminals respectively connected to said enabling signal, said third time-sequencing output signal from said time-sequencing generator, and output terminals of said column input port, means for locking said column input signals, and means for outputting column-locked output signals;

a row lock comprising input terminals respectively connected to said enabling signal, said first time-sequencing output signal from said time-sequencing generator, and output terminals of said row input port, means for locking said row input signals, and means for outputting row-locked output signals;

a keyboard-synchronization detector comprising input terminals respectively connected to said the enabling signal, said time-sequencing output signals from said time-sequencing generator for receiving an enabling signal and a time-sequencing signal, and output terminals of said column lock and said row lock, and means for outputting column synchronization signals and row synchronization signals;

a keyboard detector comprising input terminals respectively connected to said keyboard-synchronization detector for receiving said column synchronization signals and said row synchronization signals, and means for outputting a column detecting signal and a row detecting signal; and

a keyboard decoder comprising input terminals respectively connected to said keyboard detector and said keyboard-synchronization detector for receiving said column detecting signal, said row detecting signal, said column synchronization signals, and said row synchronization signals, and decoding means for generating means to indicate which key has been pressed.

5,668,545

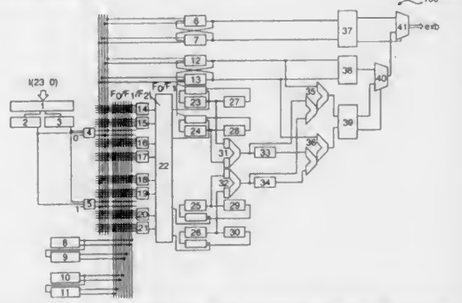
SIMPLIFIED ENCODING APPARATUS AND METHOD FOR PILOT TONE MODULATION IN AUTOMATIC-TRACK-FOLLOWING

Tian-Rein Chen, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Jun. 26, 1995, Ser. No. 494,821

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—50 **10 Claims**



1. A 24/25 modulation encoding device for generating a power spectrum of a binary sequence using spectrum peak and notch power monitoring (SPNPM) modulation, comprising:

means for generating digitized step functions for replacing sine and cosine functions required by said SPNPM modulation for reducing circuit complexity of said encoding device.

5,668,546

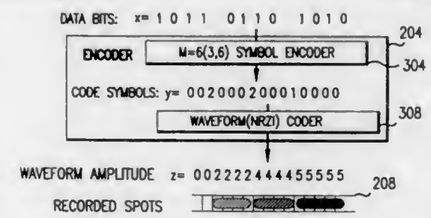
M=6 (3,6) RUNLENGTH LIMITED CODE FOR MULTI-LEVEL DATA

Steven W. McLaughlin, Rochester, N.Y., assignor to Optex Corporation, Rockville, Md.

Filed May 12, 1995, Ser. No. 440,964

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—59 **12 Claims**



1. A method for encoding a series of binary input data bits x into an M=6 run-length limited (3,6) code having a rate R=4/5, to produce a series of code symbols y, the method comprising the steps of receiving at a six-state encoder an input data bit set $x_i \ldots x_{i+3}$ to be encoded into the M=6 run-length limited (3,6) code, and generating in said encoder a code symbol set $y_i \ldots y_{i+4}$ based on said input data bit set $x_i \ldots x_{i+3}$ according to the following mapping table:

INPUT	OUTPUT	NEXT STATE
	STATE 0	
0	00000	3
1	00000	4
2	00000	5
3	00010	0
4	00020	0
5	00030	0
6	00040	0
7	00050	0
8	00010	1
9	00020	1
10	00030	1
11	00040	1
12	00050	1
13	00001	0
14	00003	0
15	00005	0
	STATE 1	
0	00100	1
1	00200	1
2	00300	1
3	00400	1
4	00500	1
5	00100	0
6	00200	0
7	00300	0
8	00400	0
9	00500	0
10	00100	2
11	00200	2
12	00300	2
13	00400	2
14	00500	2
15	00004	0
	STATE 2	
0	01000	3
1	02000	3
2	03000	3
3	04000	3
4	05000	3
5	01000	4
6	02000	4
7	03000	4
8	04000	4
9	05000	4
10	01000	5
11	02000	5
12	03000	5
13	04000	5
14	05000	5
15	00002	0
	STATE 3	
0	01000	3
1	02000	3
2	03000	3
3	04000	3
4	05000	3
5	01000	4
6	02000	4
7	03000	4
8	04000	4
9	05000	4
10	01000	5
11	02000	5
12	03000	5
13	04000	5
14	05000	5

-continued

INPUT	OUTPUT	NEXT STATE
15	30003	0
	STATE 4	
0	10000	3
1	20000	3
2	30000	3
3	40000	3
4	50000	3
5	10000	4
6	20000	4
7	30000	4
8	40000	4
9	50000	4
10	10000	5
11	20000	5
12	30000	5
13	40000	5
14	50000	5
15	30004	0
	STATE 5	
0	00100	1
1	00200	1
2	00300	1
3	00400	1
4	00500	1
5	00100	0
6	00200	0
7	00300	0
8	00400	0
9	00500	0
10	00100	2
11	00200	2
12	00300	2
13	00400	2
14	00500	2
15	40003	0

wherein said code symbol set $y_i \ldots y_{i+4}$ is generated based on the input data bit set $x_i \ldots x_{i+3}$ and the current state of said six-state encoder when said data bit set $x_i \ldots x_{i+3}$ is received.

5,668,547

RUNLENGTH CODING METHOD AND APPARATUS FOR USE IN A VIDEO SIGNAL ENCODING SYSTEM

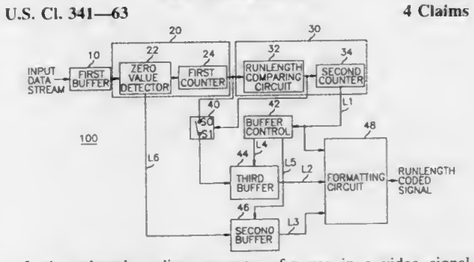
Sang-Il Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics, Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 19, 1995, Ser. No. 565,663

Claims priority, application Rep. of Korea, Dec. 19, 1994, 94-34887

Int. Cl.[6] H03M *7/46*

U.S. Cl. 341—63 **4 Claims**



1. A runlength coding apparatus, for use in a video signal encoding system, for encoding a stream of input data to provide a runlength coded signal, wherein the input data stream includes a plurality of zeros and non-zero values, which comprises:

first memory means for temporarily storing the zeros and the non-zero values included in the input data stream;

run-level detection means for defining a sequence of run-level pairs from the input data stream, wherein each of the run-level

pairs includes runlength data and level data, the runlength data representing the number of zeros in a run of continuous zeros preceding a non-zero value, and the level data indicating the magnitude of the non-zero value following the run of continuous zeros;

repetition index detection means for counting the number of runlength data, having an identical value, in the sequence of run-level pairs, and for generating a runlength repetition index representing the number of identical runlength data;

means for generating a first read signal and M number of second read signals based on the runlength repetition index, M being an integer identical to the runlength repetition index;

second memory means connected to the run-level detection means for sequentially storing level data and for generating the level data stored therein based on the M number of second read signals;

third memory means connected to the run-level detection means for sequentially storing runlength data and for generating the runlength data stored therein based on the first read signal; and

means for combining the runlength repetition index, the runlength data and the M number of level data to thereby generate the runlength coded signal.

5,668,548

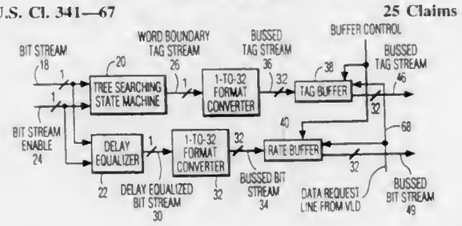
HIGH PERFORMANCE VARIABLE LENGTH DECODER WITH ENHANCED THROUGHPUT DUE TO TAGGING OF THE INPUT BIT STREAM AND PARALLEL PROCESSING OF CONTIGUOUS CODE WORDS

Michael Bakhmutsky, Spring Valley, N.Y., assignor to Philips Electronics North America Corp., New York, N.Y.

Filed Dec. 28, 1995, Ser. No. 580,405

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **25 Claims**



1. A variable length decoder with enhanced throughput due to pre-tagging an input bit stream which includes contiguous and singular code words, and parallel processing of contiguous code words in the input bit stream, comprising:

tagging means for receiving the input bit stream and outputting a tagged bit stream with marked code word boundaries and a bussed bit stream aligned in time with said tagged bit stream;

first input means for receiving said tagged bit stream and providing a first tag decoding window that includes a sequence of tag stream bits which include marked code word boundaries for one or more code words to be decoded at an output thereof;

second input means for receiving said bussed bit stream and providing a first bit stream decoding window that includes a sequence of bussed bit stream bits which include one or more code words to be decoded at an output thereof;

word length computation means for computing the combined length of said one or more code words in said first tag decoding window; and,

code word value decoding means for determining, in parallel, the values of one or more contiguous code words in said first bit stream decoding window, during a first clock cycle, and for determining the value of a singular code word in said first bit stream decoding window during a second clock cycle.

5,668,549

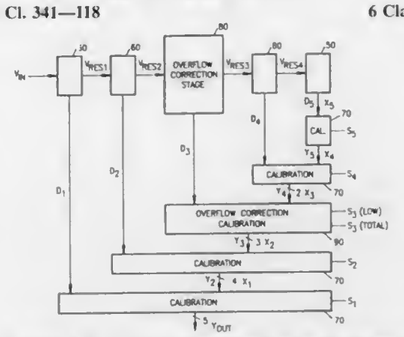
RADIX 2 ARCHITECTURE AND CALIBRATION TECHNIQUE FOR PIPELINED ANALOG TO DIGITAL CONVERTERS

Ion E. Opris, Stanford, and Laurence D. Lewicki, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 10, 1994, Ser. No. 337,253

Int. Cl.[6] H03M *1/38;1/06*

U.S. Cl. 341—118 **6 Claims**



1. A method for correcting raw digital output of an analog to digital converter having a plurality of single bit stages with two digital output states and at least one overflow reduction stage having three digital output states to produce a corrected output, the method comprising the steps of:

for each single bit stage, selectively either adding or not adding to the raw digital output one digital correction quantity which corresponds to that stage from a set of predetermined digital correction quantities, wherein the selective adding or not adding depends upon the digital output state of that stage; and

for each overflow reduction stage, selectively adding or not adding to the raw digital output one of two digital correction quantities which correspond to two of the output states of that stage from a set of predetermined digital correction quantities, wherein the selective adding or not adding depends upon the digital output state of that overflow reduction stage.

5,668,550

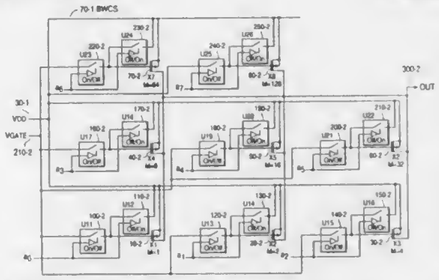
WEIGHTED CURRENT SOURCE FOR A DIGITAL-TO-ANALOG CONVERTER

Edward P. Coleman, Jr., Fairport, N.Y., assignor to PSC, Inc., Webster, N.Y.

Continuation of Ser. No. 366,566, Dec. 30, 1994, Pat. No. 5,594,441. This application Jan. 4, 1996, Ser. No. 582,946

Int. Cl.[6] H03M *1/06*

U.S. Cl. 341—119 **14 Claims**



1. A weighted current source, comprising:

n input ports, each port receiving a bit of an n-bit digital word to be converted to an analog signal, wherein n is an integer greater than one;

n on/off switches, each on/off switch having an on/off control port that receives a respective bit of said n-bit digital word, an input port for receiving a first fixed voltage, and an output port;

n off/on switches, each off/on switch having an on/off control port that receives a respective bit of said n-bit digital word, an input port for receiving a second fixed voltage, and an output port, wherein said first fixed voltage is different from said second fixed voltage;

n FETs each having a gate terminal respectively connected to an output port of a respective one of said n on/off switches and an output port of a respective one of said n off/on switches, each FET having a source terminal connected to receive said second fixed voltage, each FET having a drain terminal; and

an output port connected to a drain terminal of each of said n FETs.

5,668,551

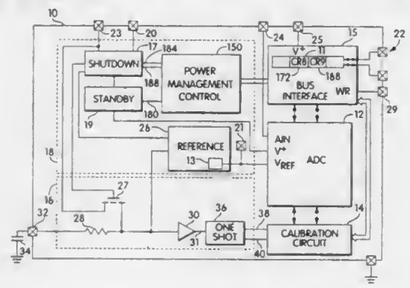
POWER-UP CALIBRATION OF CHARGE REDISTRIBUTION ANALOG-TO-DIGITAL CONVERTER

Patrick J. Garavan, Limerick, and Eanonn Byrne, Mallow, both of Ireland, assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jan. 18, 1995, Ser. No. 374,169

Int. Cl.[6] H03M *1/10*

U.S. Cl. 341—120 **41 Claims**



1. An analog/digital converter integrated circuit, comprising:

a power supply pin,

a monolithic circuit operatively connected to the power supply pin, comprising:

an analog/digital converter circuit implemented in the monolithic circuit and having a power supply input port operatively connected to the power supply pin of the integrated circuit, an analog signal port, and a digital data port,

a calibration circuit having a calibration initiation control input implemented in the monolithic circuit and being operatively connected to the analog/digital converter circuit, and

a power-up delay circuit implemented in the monolithic circuit and operatively connected to the power supply pin of the integrated circuit and operatively connected to the initiation control input of the calibration circuit.

5,668,552

ANALOGUE-TO-DIGITAL CONVERTERS

Andrew Mark Thurston, Chelmsford, United Kingdom, assignor to GEC-Marconi Limited, Middlesex, United Kingdom

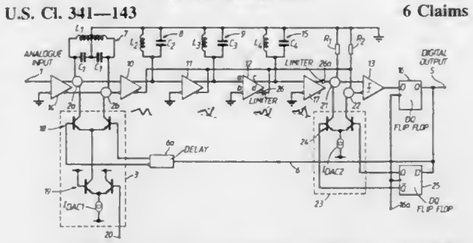
PCT No. PCT/GB93/00727, § 371 Date Dec. 28, 1994, § 102(e) Date Dec. 28, 1994, PCT Pub. No. WO93/21691, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 6, 1993, Ser. No. 313,316

Claims priority, application United Kingdom, Apr. 8, 1992, 9207626

Int. Cl.[6] H03M *3/02*

U.S. Cl. 341—143 **6 Claims**



1. An analogue-to-digital converter, comprising: an input for analogue signals, quantizing means for producing a digital output, a feedback loop for feeding a signal derived from the digital output to be combined in analogue form with the analogue input for input to a filter means, the filtered signal being fed to the quantizing means, the filter means comprising at least three filter stages, the filtered signal being derived using the output of at least one stage, other than the first, which is representative only of the response of the corresponding filter order and not of other filter orders, the output of the third stage being representative only of a third order response, and there is provided a limiter in the output of the third stage of the filter.

5,668,553

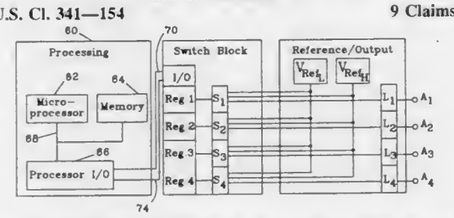
R2R DIGITAL TO ANALOG CONVERTER WITH COMMON SHUTDOWN MODE

James Ashe, Saratoga, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 27, 1995, Ser. No. 563,044

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—154 **9 Claims**



1. A digital to analog converter having a reduced power mode of operation, comprising:

a reference circuit which provides stable, accurate electrical references,

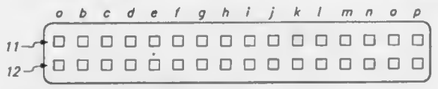
an output circuit having input nodes which provides an analog output signal,

a switch circuit which selectively connects said reference circuit to said output circuit nodes,

a control circuit which controls said connection of said reference and output circuits, said connection corresponding combinatorially to digital values stored within said control circuit, and

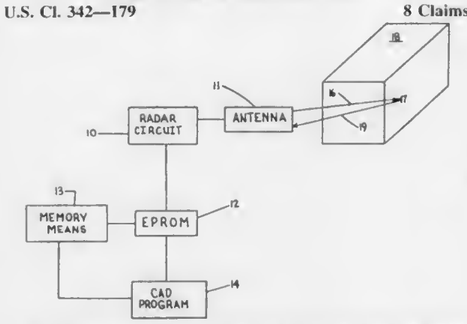
a power reduction input, said control circuit being responsive to activation of the power reduction input by entering a reduced power mode of operation effected by disconnecting the reference circuit from the output circuit, thereby eliminating drive to said output circuit and substantially reducing current flow from said electrical reference.

5,668,554
RADAR DETECTOR DISPLAY
Steven K. Orr, Loveland, Ohio, and Julie Roth, Highland Park, Ill., assignors to Cincinnati Microwave, Inc., Cincinnati, Ohio
Continuation of Ser. No. 371,833, Jan. 12, 1995, abandoned. This application Sep. 23, 1996, Ser. No. 710,839
Int. Cl.[6] G01S *7/40;7/26*
U.S. Cl. 342—20 9 Claims



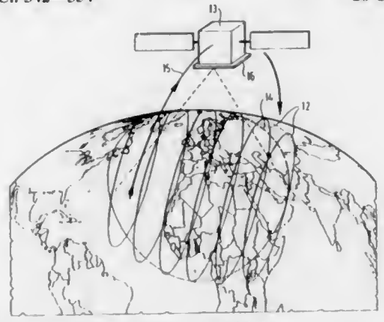
1. A radar detector, comprising:
a display screen including means for defining a plurality of character positions geometrically across the display screen including at least a first row having a first plurality of character positions arranged in a linear manner,
means for scaling the first row to correspond to at least one predefined microwave frequency band, wherein each of the first plurality of character positions is scaled to correspond to a contiguous segment of the predefined microwave frequency band,
means for detecting a microwave signal within the at least one predefined microwave frequency band,
means for identifying the contiguous segment of the predefined microwave frequency band in which the microwave signal is detected,
means for storing at least a first predefined character, and
means for driving the display screen to display the first predefined character in the character position in the first row which corresponds to the identified segment.

5,668,555
IMAGING SYSTEM AND APPARATUS
Jon E. Starr, 5623 Rush Ave., Columbus, Ohio 43214
Filed Sep. 1, 1995, Ser. No. 522,997
Int. Cl.[6] G01S *7/20;13/06;13/89*
U.S. Cl. 342—179 8 Claims



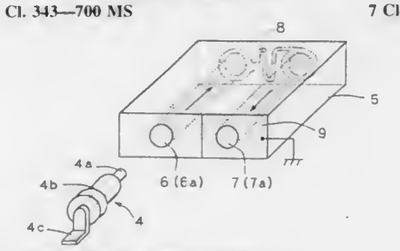
1. An imaging system for producing a three-dimensional image of an object, comprising:
a plurality of ultra-wideband rapid sampler radar circuits which transmit and receive electrical voltage pulses;
a programmable memory means operatively connected with the plurality of ultra-wideband rapid sampler radar circuits for receiving and translating the electrical voltage pulses into signals representing three dimensional coordinates of the object; and
a computer aided design means operatively connected to the programmable memory means for receiving and processing the signals representing three dimensional coordinates into a three-dimensional image of the object; wherein the plurality of ultra-wideband sampler radar circuits are arranged in rotational relationship with respect to one another and positioned a fixed distance from the object.

5,668,556
LOW-ORBIT SATELLITE COMMUNICATIONS SYSTEM FOR TERMINALS
Denis Rouffet, Boulogne Billancourt; Frédéric Berthault, Paris; Michel Mazzella, St. Germain en Laye, and Yannick Tanguy, Paris, all of France, assignors to Alcatel Espace, Courbevoie, France
Continuation of Ser. No. 66,147, May 27, 1993, abandoned. This application Jun. 11, 1996, Ser. No. 661,707
Claims priority, application France, Oct. 2, 1991, 91 12119
Int. Cl.[6] H04B *7/185;1/56*
U.S. Cl. 342—354 26 Claims



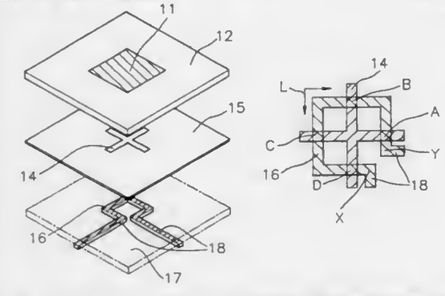
1. A communications system, comprising:
low-orbit satellites, each of said satellites providing ground coverage over respective service areas by using a plurality of radiation beams; and
a plurality of ground terminals, located within said service areas, and communicating with said satellites over respective links;
wherein the beams of each of said service areas are switched on in accordance with a beam-hopping technique;
wherein transmission and reception, for each of said plurality of ground terminals and each of said low-orbit satellites communicating over each of said respective links, are (1) synchronized and (2) separated in time;
wherein an identical frequency band is used for said transmission and said reception; and
wherein time-division duplex is utilized for each of said respective links.

5,668,557
SURFACE-MOUNT ANTENNA AND COMMUNICATION DEVICE USING SAME
Kazunari Kawahata, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed Feb. 5, 1996, Ser. No. 596,513
Claims priority, application Japan, Feb. 3, 1995, 7-017242
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS 7 Claims



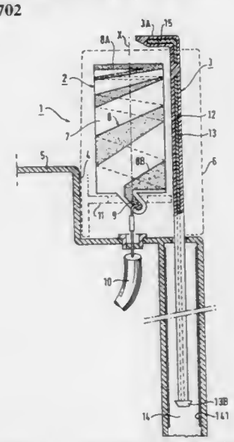
1. A surface-mount antenna comprising:
a dielectric base having two opposite end surfaces;
a plurality of holes extending through said dielectric base between said two opposite end surfaces;
radiating electrodes formed in said holes, respectively, and connected to each other by an electrode pattern at one of said two opposite end surfaces, at least one of said radiating electrodes being connected with a feeding terminal via a capacitor at the other of said two opposite end surfaces; and
a grounding electrode with which at least another of said radiating electrodes is connected, also at the other of said two opposite end surfaces.

5,668,558
APPARATUS CAPABLE OF RECEIVING CIRCULARLY POLARIZED SIGNALS
Seong-Hun Hong, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 19, 1996, Ser. No. 618,676
Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7345
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS 2 Claims



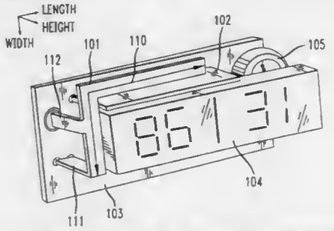
1. An apparatus capable of receiving right-handed and left-handed circularly polarized signals for use in a parabolic reflector antenna, wherein said right-handed and left-handed directions are defined on a plane perpendicular to a direction from which the polarized signals are incident, and wherein the parabolic reflector antenna includes a feedhorn, the apparatus comprising:
a first dielectric plate having a square shape;
a square patch antenna, prepared in a center of the first dielectric plate, capable of receiving the right-handed and left-handed circularly polarized signals, and provided with two sides oriented in a vertical direction and two sides oriented in a horizontal direction, each of its sides having a length of $\lambda/2$, wherein λ is a wavelength of the right-handed and left-handed circularly polarized signals;
a ground plate located under the first dielectric plate;
a cross slot prepared on the ground plate, directly underneath and completely covered by the square patch antenna, formed by an intersection of a vertical slot and a horizontal slot, each having a length of $\lambda/2$ and being parallel to different sides of the square patch antenna, respectively, such that only horizontally and vertically polarized signal components are allowed to pass through the cross slot, wherein the horizontal and vertical directions are defined by the orientation of the square patch antenna;
a second dielectric plate, located underneath the ground plate;
a signal reception feedline capable of converting the horizontally and vertically polarized signal components received through the cross slot into corresponding electrical signals, located on a bottom surface of the second dielectric plate and provided with two output ends, wherein the signal reception feedline is composed of two long sections and two short sections joined together to form an open-cornered square directly underneath the cross slot, with the unjoined ends of the two short sections forming the output ends, a center of the open-cornered square located directly beneath a center of the cross slot, the two long and short sections being parallel to the sides of the square patch antenna, and the two long sections having a length of $\lambda/4$ and the two short sections having a length longer than $\lambda/8$;
a set of two output feedlines located on the bottom surface of the second dielectric plate, each of the output feedlines connecting to one of the output ends of the signal reception feedline; and
a switching circuit for enabling the signal reception feedline to output the electrical signal corresponding to either the right-handed circularly polarized signal or the left-handed circularly polarized signal, electrically connecting the two output feedlines to a low noise block-down converter.

5,668,559
ANTENNA FOR PORTABLE RADIO DEVICES
José Baro, Taverny, France, assignor to Alcatel Mobile Communication France, Paris, France
Filed Oct. 13, 1994, Ser. No. 322,799
Claims priority, application France, Oct. 14, 1993, 93 12226
Int. Cl.[6] H01Q *1/24;1/36*
U.S. Cl. 343—702 20 Claims



1. An antenna for a portable radio device including a helical antenna coupled at its base to a transmitter/receiver, wherein the pitch of a conductive material helix constituting said helical antenna varies according to the height of the helix, decreasing from the base of said helical antenna to its top, and wherein the electrical length of said helix is substantially equal to one quarter-wavelength.

5,668,560
WIRELESS ELECTRONIC MODULE
James Gifford Evans, Colts Neck; Martin Victor Schneider, Holmdel, and Cuong Tran, Howell, all of N.J., assignors to NCR Corporation, Dayton, Ohio
Filed Jan. 30, 1995, Ser. No. 380,277
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 13 Claims



1. A wireless electronic module arranged to operate at a predetermined radio frequency, comprising:

a folded monopole antenna having a grounded end connected to a ground plane and an open end, wherein the folded monopole antenna is folded around a corner of the electronic module and is connected to a support strip isolated from the ground plane, the support strip forming an antenna port having a reactive antenna port impedance at the predetermined frequency; and

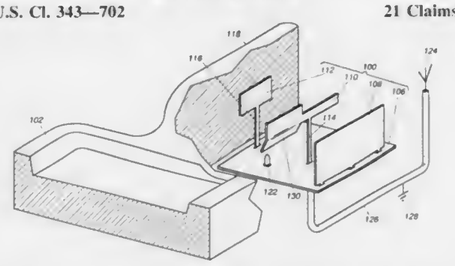
an electronic circuit connected to the antenna port, wherein the antenna port is positioned along the monopole antenna such that the electronic circuit has an impedance conjugately matching the reactive antenna port impedance at the predetermined frequency.

5,668,561

ANTENNA COUPLER

Alessandro Perrotta, Ft. Lauderdale, and David H. Minasi, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1995, Ser. No. 556,696
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **21 Claims**



1. An antenna coupler for coupling a portable radio having an attached antenna system to an external antenna, the attached antenna system including at least one radiator element, the antenna coupler comprising:

a substrate;

a radio frequency (RF) feed connected from the external antenna to the substrate;

a resonator patch electrically coupled to the RF feed on the substrate, said resonator patch dimensioned to substantially conform to a cross sectional area of the at least one radiator element;

a conductive shield connected to the substrate forming a side wall substantially parallel to the resonator patch, the conductive shield inhibiting radiation of the resonator patch;

an electromagnetic tuning element connected to the substrate through a grounded feed portion, the electromagnetic tuning element forming a second side wall substantially parallel to the resonator patch, said resonator patch and said second side wall receiving a portion of the portable radio including the at least one radiator element, said electromagnetic tuning element dimensioned to provide an optimum impedance between the attached antenna system and the resonator patch; and

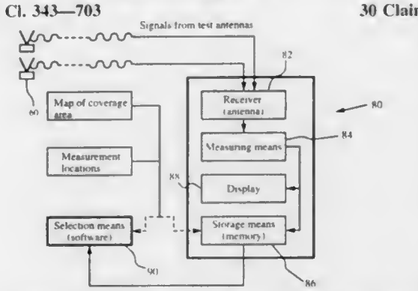
wherein the antenna coupler is non-pivotal.

5,668,562

MEASUREMENT-BASED METHOD OF OPTIMIZING THE PLACEMENT OF ANTENNAS IN A RF DISTRIBUTION SYSTEM

David M. Cutrer, Walnut Creek; John B. Georges, Berkeley, and Kam Y. Lau, Danville, all of Calif., assignors to LGC Wireless, Inc.

Filed Apr. 19, 1996, Ser. No. 635,300
Int. Cl.[6] G01R *29/10*
U.S. Cl. 343—703 **30 Claims**



1. A method of optimizing the placement of permanent antennas in a coverage area of a wireless communications distribution system, said method comprising the steps of:

a) placing a test antenna at a test antenna site within said coverage area, said test antenna site being chosen from a set of potential installation sites for said permanent antennas and a set of potential communication unit locations;

b) measuring a strength of a signal from said test antenna at a measurement location within said coverage area, said measurement location being chosen from said set of potential installation sites and said set of potential communication unit locations;

c) storing said strength; and

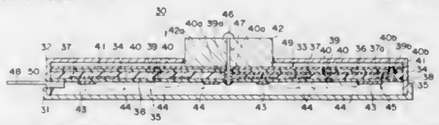
d) choosing from said see of potential installation sites an optimal subset of installation sites for installing said permanent antennas.

5,668,563

INTEGRAL TYPE FLAT ANTENNA PROVIDED WITH CONVERTER FUNCTION

Toshikazu Ogino; Hayato Shibano, and Eiki Hosaka, all of Kanagawa, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1996, Ser. No. 593,931
Claims priority, application Japan, Jan. 31, 1995, 7-014593
Int. Cl.[6] H01Q *1/32;1/38*
U.S. Cl. 343—713 **12 Claims**



1. An integral type flat antenna provided with a converter function comprising:

an antenna element having a feeding point; and

an integrally formed multilayered substrate for supporting said antenna element thereon, said multilayered substrate comprising:

a grounding plane layer for providing earth of said antenna element;

a first insulating layer provided below said grounding plane layer;

a second insulating layer provided having an end portion, said second insulating layer being positioned below said first insulating layer and provided with a frequency conversion circuit for carrying out a converter function on frequency of received signals, and said frequency conversion circuit having a signal input which is positioned at the end portion of said second insulating layer;

a third layer provided between said first and second layers; and

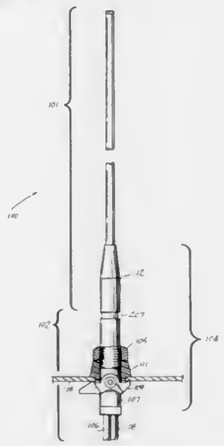
a flat plate-shaped conducting layer positioned between said first and third insulating layers for electrically connecting said feeding point of said antenna element to the signal input of said frequency conversion circuit.

5,668,564

COMBINED AM/FM/CELLULAR TELEPHONE ANTENNA SYSTEM

Glen J. Seward, Cincinnati, Ohio; Robert M. Lynas; Paul E. Miller, both of Spring Lake, Mich., and Robert B. Ennenga, Grand Haven, Mich., assignors to R.A. Miller Industries, Inc., Grand Haven, Mich.

Filed Feb. 20, 1996, Ser. No. 603,176
Int. Cl.[6] H01Q *9/16;1/32*
U.S. Cl. 343—791 **15 Claims**



1. A combined AM/FM/cellular telephone antenna system comprising:

a longitudinally extending coaxial cable comprising a center conductor and an outer conductor and having an upper end and a lower end;

an antenna connector attached to the lower end of the coaxial cable and having an upper conductive shell electrically connected to the outer conductor and a lower conductive shell electrically insulated from the upper conductive shell and an inner conductive section electrically connected to the center conductor;

an upper portion of the coaxial cable forming a cellular telephone dipole antenna section adjacent the upper end of the coaxial cable and comprising a portion of the center conductor extending above a dipole antenna feed point and an outer conductive sleeve extending over a portion of the outer conductor extending below the dipole antenna feed point and electrically connected to the outer conductor adjacent the feed point;

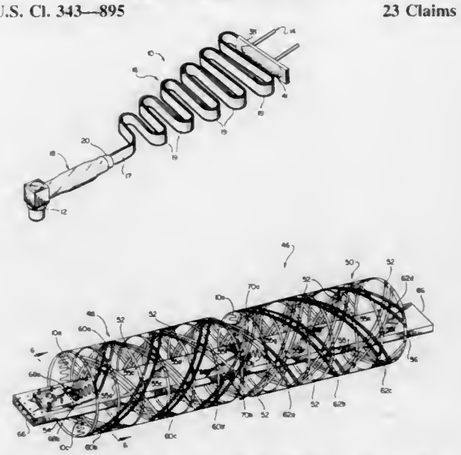
the outer conductor forming an AM/FM antenna section comprising a lower portion of the outer conductor below the dipole antenna feed point.

5,668,565

FLEXIBLE FEED LINE FOR AN ANTENNA SYSTEM

Anthony D. Robinson, Leesburg, Va., assignor to Orbital Science Corporation, Dulles, Va.

Filed Dec. 22, 1994, Ser. No. 362,047
Int. Cl.[6] H01Q *1/36;15/20*
U.S. Cl. 343—895 **23 Claims**



1. A flexible feed line for use with an antenna system having an alternatively stowable and redeployable antenna element, said feed line comprising:

first connection means for providing a signal connection with said feed line;

second connection means for establishing a signal connection with said antenna element; and

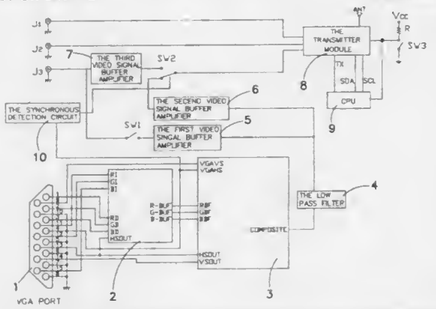
at least one expandable and resilient conductive section made of a non-ferrous material formed into a spring-like, zig-zag pattern of multiple folds connected between said first connection means and said second connection means, so that said resilient section resiliently alters its shape to a first orientation when said antenna element is stowed and resiliently alters its shape to a second orientation when said antenna element is subsequently deployed.

5,668,566

WIRELESS COMPUTER PICTURE TRANSMISSION DEVICE

Kerl Yen, No. 3, Tzu Chiang I Rd., Chung Li City, Tao Yuan Hsien, Taiwan

Filed Oct. 11, 1996, Ser. No. 729,580
Int. Cl.[6] G09G *5/12*
U.S. Cl. 345—2 **4 Claims**



1. A wireless computer picture transmission device comprising:

a VGA (video graphics array) port;

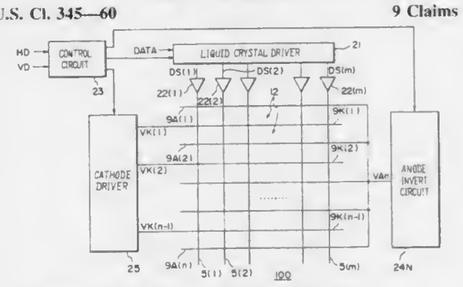
a VGA converter connected to said VGA port and adapted for converting computer picture, data signal received from said VGA port into corresponding R.G.B. signal;
a video compositor connected to said VGA converter and adapted for composing said R.G.B. signal in video signal;
a low pass filter having an input end connected to said video compositor and adapted for removing noise from said video signal, and an output end adapted for output of filtered video signal;
a first switch;
a second switch;
an electronic switch;
a first video signal buffer amplifier having an input end connected to the output end of said low pass filter, and an output end connected to an input end of a third video signal buffer amplifier through said first switch, the output end of said first video signal buffer amplifier being controlled by said first switch for signal output;
a second video signal buffer amplifier having an input end connected to the output end of said low pass filter, and an output end connected to an input terminal of said second switch, the output end of said second video signal buffer amplifier being controlled by said second switch for video signal output;
a third video signal buffer amplifier having an input end connected to said first video signal buffer amplifier through said first switch, and an output end connected to a transmitter module through said second switch for signal output;
a transmitter module having an input end connected to said second switch, and adapted for receiving audio signal from an audio equipment and video signal from said second switch then modulating received audio and video signals into a radio frequency signal, and then amplifying the modulated radio frequency signal, permitting it to be sent into the air through an antenna thereof by means of the control of said electronic switch;
a CPU (central processing unit) connected to said transmitter module, and adapted for controlling the selection of the frequency of radio frequency signal and the operation of said electronic switch; and
a synchronous detection circuit connected between said second switch, said VGA converter and said video signal compositor, and controlled by said electronic switch for permitting computer signal obtained through said VGA port to have the priority to be firstly sent out through said transmitter module.

5,668,567

ELECTRO-OPTICAL DISPLAY DEVICE

Jun Iwama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 560,406
Int. Cl.[6] G09G *3/18*
U.S. Cl. 345—60 **9 Claims**



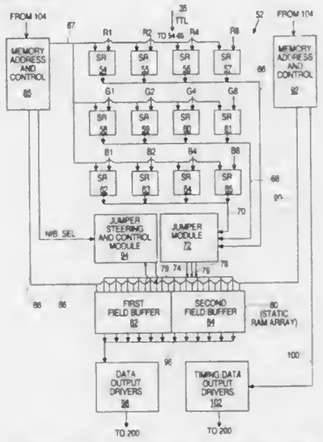
1. An electro-optical display device comprising:
a plurality of picture elements arranged in a matrix form each of said picture elements being composed of an electro-optical material layer and a switching element which is electrically connected to said material layer in series;
means for providing a data voltage on said electro-optical material layer via said switching element for a writing period;
means for applying a reference voltage to the other end of a connection to which said data voltage is applied, said reference voltage being inverted alternately together with said data voltage for each predetermined period, by which said electro-optical material layer is ac driven; and
control means for making the value of said data voltage coincide approximately with that of said reference voltage for the periods other than the writing period.

5,668,568

INTERFACE FOR LED MATRIX DISPLAY WITH BUFFERS WITH RANDOM ACCESS INPUT AND DIRECT MEMORY ACCESS OUTPUT

Charles J. Holloman, Fairfield, Conn., assignor to Trans-Lux Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 975,676, Nov. 13, 1992, abandoned. This application Jul. 6, 1994, Ser. No. 271,096
Int. Cl.[6] G09G *3/32*
U.S. Cl. 345—83 **1 Claim**



1. An apparatus for representing a video image on an LED matrix display having N lines and n pixels per line, N and n being sufficiently large to represent said video image, said image being derived from an analog video signal, the apparatus comprising:
means for receiving a digital video signal;
serial-to-parallel conversion means for converting said digital video signal into bytes of data;
memory means including a first and a second buffer for receiving said bytes;
logic means for inputting said data to said memory means in random access order so that a frame includes M groups of m consecutive lines, wherein like order data from each of said M groups is stored in M consecutive bytes in said memory means and further so that data is stored in an order which the data is to be output from said memory means, thereby implementing direct memory access of said memory means, said logic means further including means for outputting data from said memory means to output means, wherein like order data from each of said M groups is directed to said output means substantially simultaneously;
means for independently varying an intensity of each color component of each pixel stored as said data in said memory means;
said logic means alternately inputting data to said first buffer while outputting data from said second buffer and subsequently inputting data to said second buffer while outputting data from said first buffer, wherein said memory means performs both a data storage function and a refresh function;

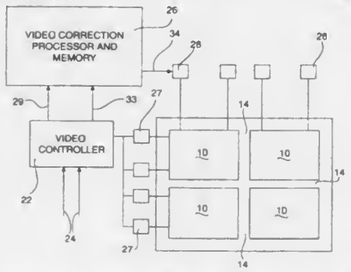
said means for receiving, said conversion means, said memory means and said logic means operating at speeds sufficient to sustain a video image on the LED matrix display;
wherein said means for receiving a digital video signal includes means for receiving components of an analog video signal, said components including color components and synchronization signals; and analog-to-digital conversion means for converting said color components into digital values;
wherein said first and second buffers exchange operations responsive to a flip-flop means in said logic means responsive to said vertical synchronization signal;
wherein said logic means is configurable to a plurality of output configurations, said logic means further including a row group counter means responsive to said horizontal synchronization signal, counter control means responsive to said row group counter means, and incremental counter means responsive to said counter control means; and
wherein said incremental counter means includes latching means and adder means, wherein said adder means are incremented by M in response to clock signals during receiving operations until a group of m lines is stored in said memory, then said latching means is cleared and said row group counter means is incremented by one, and wherein said latching means and said adder means are incremented by one in response to clock signals during transmitting operations and like order data from each of said M groups is transmitted from M consecutive bytes in said memory means.

5,668,569

TILED, FLAT-PANEL DISPLAYS WITH LUMINANCE-CORRECTING CAPABILITY

Raymond G. Greene, Ovid; Robert H. Katyl, Vestal; J. Peter Krusius, and Boris Yost, both of Ithaca, all of N.Y., assignors to Rainbow Displays Inc., Endicott, N.Y.

Filed Apr. 5, 1996, Ser. No. 628,308
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—103 **20 Claims**



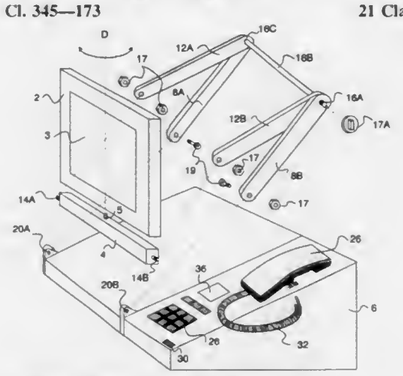
1. A system for controlling luminance of regions in a multi-tiled, substantially flat, video display, said display having a plurality of rows (control) and columns (data) of pixels, said system comprising:
a) graphics-controlling means for generating a digital video signal;
b) a display controller operatively connected to said graphics-controlling means for receiving said digital video signal and for generating an address signal;
c) memory means comprising predetermined coefficient data, and video processing means; said memory and video processing means being respectively and operatively connected to display controller for receiving said address signal and for generating a luminance-correction signal as a function of said coefficient data, said luminance-correction signal being used to create substantial uniformity of luminance across the tiles in a multi-tiled video display; and
d) column-driving means operatively connected to said memory means and said display controller, for receiving said signals therefrom and for driving columns of pixels on said video display.

5,668,570

DESKTOP COMPUTER WITH ADJUSTABLE FLAT PANEL SCREEN

Richard J. Ditzik, 3143 Carnegie Ct., San Diego, Calif. 92122

Continuation-in-part of Ser. No. 84,011, Jun. 29, 1993, abandoned. This application Aug. 10, 1994, Ser. No. 288,882
Int. Cl.[6] G09G *3/00*
U.S. Cl. 345—173 **21 Claims**



1. A desktop computer system comprising:
a. a flat display panel assembly defining a display screen and support structure with a first hinge pair at the bottom edge of the display panel assembly;
b. a first support arm pair physically connected to the display panel assembly via the first hinge pair, such that the display panel can be rotated in inclination angle by hand;
c. a second support arm pair connected to the other ends of the first support arm pair via a second hinge pair;
d. means for digital data computing, which is electrically connected to the display panel assembly and which controls the display panel assembly's operation;
e. means for housing main electronics having a third hinge pair located near the front corners of the unit, wherein the third hinge pair connects to the other ends of the second support arm pair, such that the display panel assembly, first support arm pair and second support arm pair can be rotated by hand though large angles independently or together for ergonomic human viewing;
f. said hinge pair means are such that they each have sufficient friction to physically support the display panel and support arms under gravity; and
g. the said main housing means being sufficiently large to enclose the computing means and associated power and control electronics.

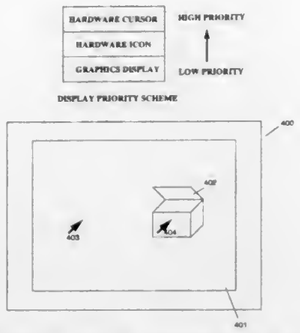
5,668,571

METHOD AND APPARATUS FOR GENERATING HARDWARE ICONS AND CURSORS

Prakash Pai, Loma Linda, and Vlad Bril, Campbell, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Sep. 30, 1994, Ser. No. 316,014
Int. Cl.[6] G09G *1/00*
U.S. Cl. 345—113 **32 Claims**

31. A method for implementing a display priority scheme to allow a hardware cursor to manipulate a hardware icon comprising the steps of:
incorporating said display priority scheme wherein hardware cursor graphics data has first priority followed by hardware icon graphics data and software-based graphics data; and
multiplexing said software-based graphics data, said hardware icon graphics data, and said hardware cursor graphics data based on said display priority scheme.



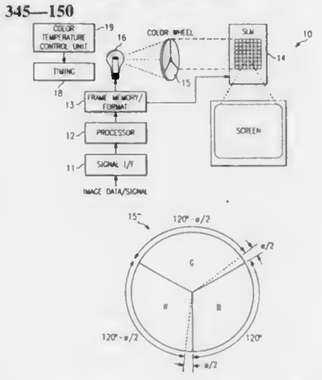
32. The method in claim **31** wherein said step of incorporating said display priority scheme further comprises the step of incorporating hardware icon attributes of transparency, color, blinking, or non-blinking as factors in said priority scheme.

5,668,572

COLOR TEMPERATURE COMPENSATION FOR DIGITAL DISPLAY SYSTEM WITH COLOR WHEEL

Richard C. Meyer, Plano; Gerhard P. Deffner; Austin L. Huang, both of Dallas, and Joseph K. Masters, Wylie, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1995, Ser. No. 451,387
Int. Cl.[6] H04N *9/31*
U.S. Cl. 345—150 **18 Claims**



7. A method of adjusting the color temperature of a display generated by light filtered through a color wheel and represented by sequential pixel data for each color, comprising the steps of:

selecting at least one color of said color wheel as a dominant color;

decreasing the display time for pixel data of a non-dominant color; and

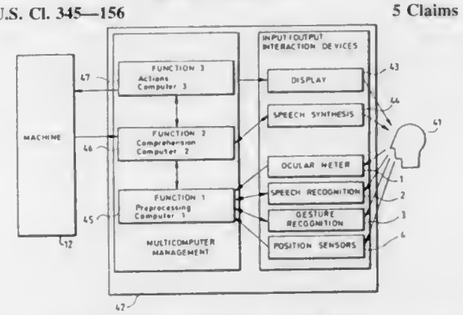
providing a black display period for an amount of time equal to the decrease in the display time of said non-dominant color, during the time that pixel data of said non-dominant color would otherwise be displayed.

5,668,573

MANAGEMENT METHOD FOR A MAN-MACHINE INTERACTION SYSTEM

Jean-Jacques Favot, Martignas en Jalles; Jean-Noël Perbet, Eysines; Bruno Barbier, Bouscat, and Patrick Lach, Bordeaux, all of France, assignors to Sextant Avionique, Meudon La Foret, France

Continuation of Ser. No. 125,856, Sep. 24, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,833
Claims priority, application France, Sep. 25, 1992, 92 11450
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—156 **5 Claims**



1. A man-machine interface apparatus, comprising:

at least two man-interaction devices each providing a respective data output;

data preprocessing means receiving said respective data output from said at least two man-interaction devices and outputting preprocessed data;

a comprehension function means receiving said preprocessed data and processing said received input and providing a processed output which provides for a comprehension of a function desired for said man in response to an interaction of said man and said interface; wherein said output of said man-interaction devices is in the form of a data sequence fed to said preprocessing means and wherein said preprocessing means and comprehension function means act in synchronism with each other on respective data of said data sequence;

a machine function interface means for receiving said processed output from said comprehension function means for converting said processed output to machine commands in correspondence with and in synchronism with said data sequence from said at least two man-interaction devices to provide machine commands containing a global message including normalized information delivered by all of said at least two man-interaction devices.

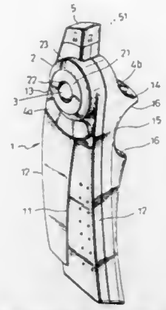
5,668,574

PALM-TOP WIRELESS TRACKBALL

Jarlance-Huang, Tau Yuan Hsien, Taiwan, assignor to Chung-Chin Chen, Alexandria, Va.

Filed Jun. 26, 1995, Ser. No. 494,352
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—158 **3 Claims**

1. A palm-top wireless trackball comprising a mainframe to hold a circuit board, said mainframe comprising a hand-hold portion having two smoothly curved opposite sides fitting palm and finger cushions of a user, an operation area in said hand-hold portion, a smoothly curved stop flange extending from a bottom side of said operation area, a transverse groove formed in a bottom side of said hand hold portion adjacent to said stop flange for resting a middle finger of a user, a transparent shade on a front end of said operation area to cover a transmitter, permitting said transmitter to be controlled by said circuit board, a circular ball holder extending from a top side of said operation area opposite to said stop flange, a



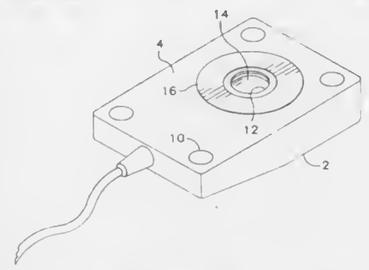
trackball rotatably located within said ball holder to control said circuit board in sending a corresponding radio signal through said transmitter, a drag key disposed on a front of said smoothly curved stop flange and connected to said circuit board for operation by the forefinger of a user, and an enter key mounted on said hand-hold portion adjacent to said ball holder and connected to said circuit board for operation by the thumb of a user.

5,668,575

DEVICE FOR SECURING A MOUSE BALL

Robert C. Perry, 5755 SW. Willow La., Lake Oswego, Oreg. 97035-5340

Continuation-in-part of Ser. No. 546,227, Oct. 20, 1995. This application Feb. 9, 1996, Ser. No. 599,043
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—163 **16 Claims**



1. A computer mouse comprising:

a housing having a bottom wall that defines an opening,

a retainer plate fitted in the opening and formed with a circular hole,

a mouse ball in the housing and projecting through the circular hole, and

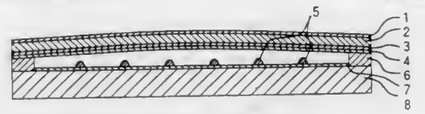
a seal that adheres removably to both the bottom wall of the housing and the retainer plate, whereby removal of the retainer plate from the opening is resisted, the seal comprising a sheet-form piece of self-adhesive film material, and wherein the seal is formed with at least one line of weakness and the adhesive is selected relative to tensile strength of the seal across the line of weakness such that the exceeds the tensile strength of the seal across the line of weakness, whereby the seal breaks into at least two fragments when force is applied tending to remove the seal from the retainer plate.

5,668,576

TRANSPARENT TOUCH PANEL WITH CONTRACTIBLE RESIN LAYER USED TO MAINTAIN VISIBILITY

Kenichirou Ikura, and Kazuhiro Nishikawa, both of Kyoto, Japan, assignors to Nissha Printing co., Ltd., Kyoto, Japan

PCT No. PCT/JP94/00719, § 371 Date Oct. 24, 1995, § 102(e) Date Oct. 24, 1995, PCT Pub. No. WO94/25916, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 28, 1994, Ser. No. 537,816
Claims priority, application Japan, Apr. 28, 1993, 5-124970
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—173 **8 Claims**



1. A transparent touch panel comprising:

a movable electrode film transparent and flexible;

a hard coating layer transparent and formed on an upper surface of the movable electrode film;

a movable electrode transparent and formed over a lower surface of the movable electrode film;

a contractible resin layer transparent and formed between the movable electrode film and the movable electrode;

a fixed electrode-supporting member disposed in opposition to the lower surface of the movable electrode film;

a fixed electrode formed on an upper surface of the fixed electrode-supporting member opposed to the lower surface of the movable electrode film; and

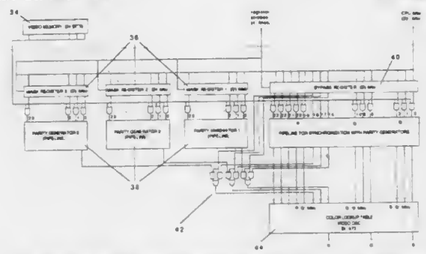
spacers formed between the lower surface of the movable electrode film where the movable electrode is formed and the upper surface of the fixed electrode-supporting member where the fixed electrode is formed.

5,668,577

VIDEO CIRCUIT FOR GENERATING SPECIAL FAST DYNAMIC DISPLAYS

Erich E. Sutter, 711 Palomar Dr., Redwood City, Calif. 94062

Filed Aug. 12, 1994, Ser. No. 289,645
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—197 **14 Claims**



1. A circuit for rapidly generating sequences of 2^n different video flames on a display having a predetermined number of pixels, comprising:

a video memory which is able to store k bits of video data for every pixel on said display, where k is an integer, and

a circuit for generating the parity of a specified subset of said k bits of video data, said circuit comprising:

a k-stage binary register mask register having k outputs, one for each stage of said register, where said outputs are arranged to supply a k-bit binary signal,

a circuit providing, for each pixel on said display, a bit-wise logic AND function between said k-bit binary signal and said k bits of video data,

a parity generator for deriving a parity signal from the result of said bit-wise logic AND function, and

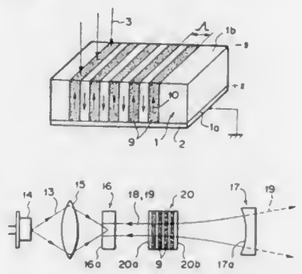
a pixel means for controlling said pixels of said display according to said parity signal.

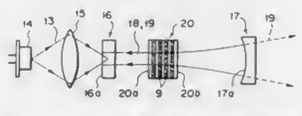
5,668,578

METHOD FOR FABRICATING FERROLELECTRIC DOMAIN REVERSALS, AND OPTICAL WAVELENGTH CONVERTER ELEMENT

Yasukazu Nihei, and Akinori Harada, both of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1994, Ser. No. 271,978
Claims priority, application Japan, Jul. 9, 1993, 5-170071
Int. Cl.[6] G01D 9/00
U.S. Cl. 346—74.3 4 Claims





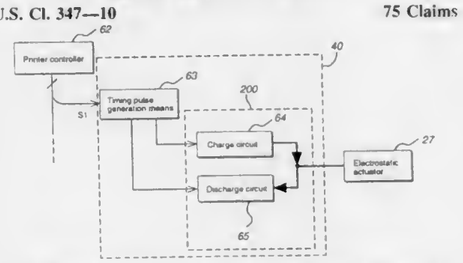
1. A method for creating ferroelectric domain reversals in a unipolarized ferroelectric substance with a non-linear optical effect comprising the steps of:
etching at least one surface of the ferroelectric substance;
forming an earth electrode on a first surface of the etched ferroelectric substance; and
irradiating high energy beams onto the ferroelectric substance, on a second surface thereof that is opposite to the first surface, to create domain reversals.

5,668,579

APPARATUS FOR AND A METHOD OF DRIVING AN INK JET HEAD HAVING AN ELECTROSTATIC ACTUATOR

Masahiro Fujii; Ikuhiro Miyashita; Shigeo Sugimura; Hiroshi Koeda; Naoki Kobayashi, and Asahiro Oguchi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 259,656
Claims priority, application Japan, Jun. 16, 1993, 5-145212; Jun. 16, 1993, 5-145213; Jul. 29, 1993, 5-187897
Int. Cl.[6] B41J 29/38;2/04;2/095
U.S. Cl. 347—10 75 Claims



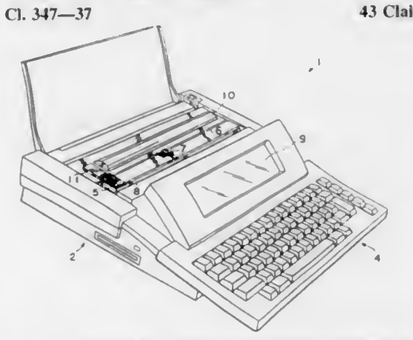
1. A method for recording on a sheet comprising the steps of:
providing a marking fluid jet head having a nozzle and formed in a semiconductor substrate, a pathway in communication with the nozzle, and an actuator comprising a diaphragm provided at one part of the pathway, a first electrode provided in opposition to the diaphragm and a second electrode provided on a portion of the diaphragm, the first and second electrodes forming a capacitor;
applying a first driving voltage signal with a first circuit to the first and second electrodes to electrostatically attract the diaphragm towards the first electrode in a first direction to fill the pathway with marking fluid; and
electrically coupling with a second circuit the first electrode to the second electrode causing the diaphragm to move in the opposite direction away from the first electrode to thereby eject the marking fluid from the nozzle.

5,668,580

DE-COUPLEABLE PRINT POSITION INDICATOR

Darrell K. Chan, Huntington Beach, and Chihsin S. Young, Irvine, both of Calif., assignors to Canon Business Machines, Inc., Costa Mesa, Calif.

Filed Jun. 8, 1994, Ser. No. 255,995
Int. Cl.[6] B41J 29/42
U.S. Cl. 347—37 43 Claims



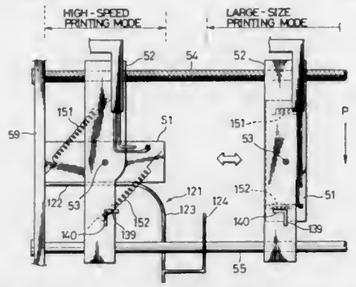
1. An ink jet printer for printing on a recording medium comprising:
a guide rail;
an ink jet print head slidably mounted on said guide rail for left-and-right movement adjacent the recording medium;
a motor configured and positioned to move said ink jet print head left and right on said guide rail;
a print position indicator slidably mounted on said guide rail, to the right of said ink jet print head, for left-and-right movement adjacent the recording medium, said print position indicator comprising a laterally extending array of a plurality of light emitting elements configured to illuminate a plurality of next print positions at which printing will next occur;
a keyboard configured to input characters into said ink jet printer; and
control means for controlling said ink jet printer so that said ink jet print head moves along said guide rail and prints characters input by said keyboard;
said control means controlling said ink jet printer to operate in a queue mode in which said control means controls said motor to refrain from moving said ink jet print head and controls said ink jet print head to refrain from printing during the input of characters by said keyboard until a predetermined number of characters have been input by said keyboard,
said control means sequentially illuminating said plurality of light emitting elements to indicate the next print positions during the input of the predetermined number of characters by said keyboard while said ink jet print head refrains from moving and printing, and
said control means controlling said motor to move said print head after the predetermined number of characters have been input by said keyboard and controlling said ink jet print head to print the input characters after the predetermined number of characters have been input by said keyboard.

5,668,581

INK JET PRINTING APPARATUS

Kikunosuke Tsuji; Takeshi Watanabe; Kohichi Baba; Kenichi Satake; Yoshiko Kawachi; Setsuo Hori, and Shigeo Koyama, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 24, 1994, Ser. No. 327,833
Claims priority, application Japan, Oct. 27, 1993, 5-268819; Nov. 15, 1993, 5-285162; Nov. 22, 1993, 5-292042
Int. Cl.[6] B41J 2/215
U.S. Cl. 347—37 56 Claims



1. An ink jet printing apparatus comprising:
a printing head operable to emit ink onto a printing sheet, the printing head being moveable along a first direction;
a sheet transporter operable to transport the printing sheet along a second direction perpendicular to the first direction;
a head moving mechanism operable to reciprocally move the printing head along the first direction; and
a controller which controls the sheet transporter and the head moving mechanism to execute a first printing mode of moving the printing head while holding the printing sheet in a stationary position and a second printing mode of moving the printing sheet while holding the printing head at a stationary position.

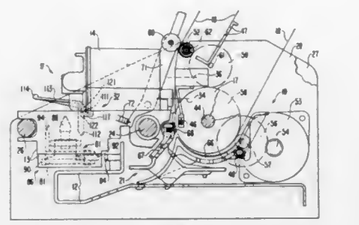
5,668,582

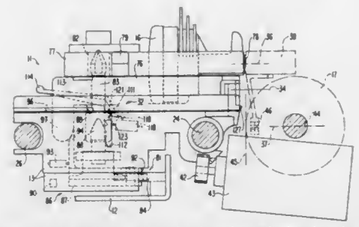
PRINTER WITH INTERCHANGEABLE PRINTING HEADS

Mario Manzone, Mazze' , and Piero Pace, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 4, 1994, Ser. No. 317,544
Claims priority, application Italy, Oct. 11, 1993, TO93A0734
Int. Cl.[6] B41J 2/14
U.S. Cl. 347—49 6 Claims

1. Printer with interchangeable printing heads for printing documents, comprising:
a carriage for interchangeably holding one of an ink jet printing head having a plurality of ink ejecting nozzles and a frame supporting a wire printing head having a plurality of printing needles and moving said ink jet printing head or said frame in a forward direction and in a backward direction along a print line;
a fixing device for removably fixing said ink jet printing head or said frame supporting said wire printing head to said carriage;
sensing means for sensing the presence on said carriage of said ink jet printing head and of said wire printing head; and,
a control device, responsive to said sensing means, for controlling the operation of said ink jet printing head and said wire printing head, said control device comprising activatable first driving means for driving said ink jet printing head and second driving means for driving said wire printing head, said first driving means being activated for supplying pulses of low current intensity to said ink jet printing head when said sensing means sense the presence on said carriage of said ink jet printing head, and said second driving means being activated for supplying pulses of medium current intensity to said ink jet printing head when said sensing means sense the presence on said carriage of said wire printing head, whereby single copy or multiple copies documents are printed;
wherein said frame also supports a removable cartridge for an ink ribbon, said ink ribbon being operatively associated with said plurality of printing needles in order to transfer ink from said ink ribbon to said documents, whereby the removal of said wire prim head from said carriage causes the simultaneous removal of said ink ribbon cartridge.



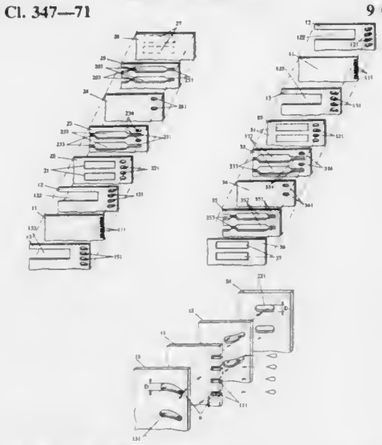


5,668,583

INK PRINTER HEAD COMPOSED OF INDIVIDUAL INK PRINTER MODULES

Wolfgang Thiel, and Junming Zhang, both of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Jun. 23, 1995, Ser. No. 494,072
Claims priority, application Germany, Jul. 5, 1994, 44 24 770.0
Int. Cl.[6] B41J 2/045
U.S. Cl. 347—71 9 Claims



1. An ink printer head comprising:
an edge shooter assembly having at least two mirror symmetric ink printer modules and a nozzle module disposed between said at least two mirror-symmetric ink printer modules, said assembly having a front side;
each ink printer module containing a plurality of open volumes respectively forming ink chambers therein and each ink cham-

ber having a piezoactuator associated therewith for forcing a quantity of ink out of the ink chamber associated therewith:

said nozzle module being composed of a nozzle plate and two adapter plates respectively disposed on opposite sides of said nozzle plate so that each adapter plate is adjacent one of said at least two ink printer modules, said nozzle plate having a comb-like edge exposed at said front side of said assembly, said comb-like edge having a plurality of gaps therein forming nozzle apertures, and each adapter plate having openings therein respectively in registration with outlets of the ink chambers in the ink printer module adjacent thereto and recesses therein for the piezoactuators of the adjacent ink printer module; and

said nozzle openings formed by said gaps in said comb-like edge of said nozzle plate being disposed equidistantly under one another in a column, and said openings in said adapter plates alternatingly connecting successive nozzle openings in said column to the respective ink chambers of said ink printer modules.

5,668,584

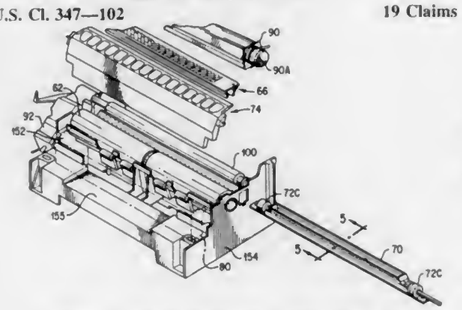
METHOD OF MULTIPLE ZONE HEATING OF INKJET MEDIA USING SCREEN PLATEN

Damon Broder, Austin, Tex.; Shelley I. Moore, San Diego, Calif.; Todd R. Medin, Vancouver, Wash., and Brent W. Richtsmeier, San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 876,942, May 1, 1992, Pat. No. 5,329,295, Ser. No. 56,287, Apr. 30, 1993, Pat. No. 5,479,199, and Ser. No. 7,766, Apr. 30, 1993, Pat. No. Des. 358,418. This application May 3, 1994, Ser. No. 238,091

Int. Cl.[6] B41J *2/01;11/02*

U.S. Cl. 347—102 **19 Claims**



1. A method of color inkjet printing, comprising the steps of:

passing media along a media path through a print zone across a first side of a stationary and non-rotating screen platen located in the print zone, said screen platen comprising an opening pattern defined in a screen platen surface, the screen platen and the opening pattern adapted to allow transfer of radiant and convective heat energy through the opening pattern while transmitting little if any conductive heat energy to said media as it is passed through the print zone;

applying ink at a given time to a first portion of the media which first portion partially overlies the screen platen;

generating said radiant heat energy on another side of the screen platen; and

transferring the radiant heat energy produced by said generating step through the opening pattern in the screen platen to the media in the print zone at the first media portion actually receiving ink during the given time as well as to a media portion not receiving ink during the given time, said transferring of heat resulting in accelerated drying of said ink applied to the media, and wherein little if any of said heat energy is transferred to the media by conduction to thereby minimize print anomalies due to nonuniform heat transfer.

5,668,585

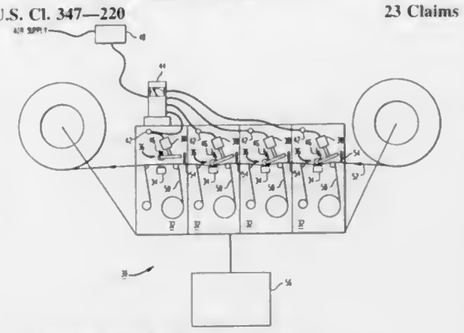
VARIABLE PLATEN PRESSURE CONTROL FOR A THERMAL TRANSFER PRINTER

Michael Richard Brechko, Windsor, N.Y., assignor to Azon Corp., Johnson City, N.Y.

Filed Oct. 3, 1996, Ser. No. 720,766

Int. Cl.[6] B41J *11/20*

U.S. Cl. 347—220 **23 Claims**



1. A thermal transfer printer comprising:

a thermal transfer printing head;

a printing ribbon having an ink of a pre-selected color;

a pivotally-mounted roller platen assembly for pressing said printing ribbon and a web of material to be printed upon, against said printing head at a variably selectable pressure to transfer said ink from said ribbon to the web of material; and

a cylinder device adjustably pressurized by a fluid medium, engaged with said roller platen assembly for applying said variably selectable pressure to said pivotally-mounted roller platen assembly.

5,668,586

RECORDING MEDIUM FOR USE IN THERMAL TRANSFER PRINTING OPERATIONS AND HOT-MELTING-TYPE THERMAL TRANSFER PRINT SYSTEM USING THE SAME

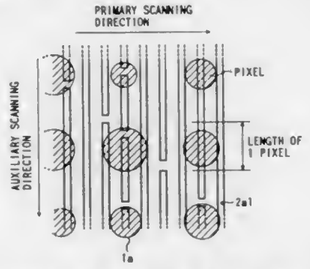
Hideshi Tanaka, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 10, 1995, Ser. No. 401,900

Claims priority, application Japan, Mar. 11, 1994, 6-067814

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—221 **12 Claims**



5. A hot-melting-type thermal transfer print system comprising:

an ink ribbon including a thin film on which a hot-melting-type ink is applied with a coating amount not larger than 2.5 g/m^2, said hot-melting-type ink being a mixture of paint material and hot-melting-type binder;

a multi-grooved recording medium including a substrate and a multi-grooved surface layer formed on said substrate, said multi-grooved surface layer having a plurality of thin substantially parallel grooves, etch thin groove having a width of 1–10 μm;

a thermal head with a plurality of heat generators, arrayed in a line so as to provide a temperature gradient with highest temperatures in a central region thereof and lower temperatures in a peripheral region thereof; and

a gradation control circuit controlling a power supply to said thermal head, so as to control a melting area of said ink when said ink is heated by said heat generators;

wherein said ink of said ink ribbon is laid on said multi-grooved surface layer of said multi-grooved recording medium, a pressing force is applied to said thermal head from the same side as said thin film of said ink ribbon, said gradation control circuit controls the melting area of said ink, thereby obtaining a gradational image on said multi-grooved recording medium.

5,668,587

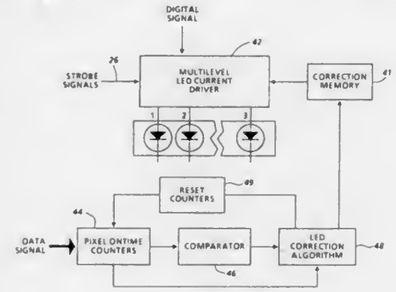
AUTOMATIC LED PRINTBAR UNIFORMITY AND ADJUSTMENT

Thomas J. Hammond, Penfield, and George A. Charnitski, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 205,425, Mar. 4, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,033

Int. Cl.[6] B41J *2/435;2/45*

U.S. Cl. 347—237 **1 Claim**



1. A method for correcting exposure non-uniformities in a printbar having a plurality of individual LEDs, said method comprising:

calibrating a printbar by determining a correction value for each corresponding one of the individual LEDs and storing each said determined correction value in a correction memory, each said correction value being a digital value for causing output of light of a substantially predetermined light intensity from the corresponding one of said individual LEDs;

determining an on time for each of the individual LEDs during a predetermined operational period;

determining a difference between the determined on time of an individual one of the LEDs having a greatest on time and the determined on time of an individual one of the LEDs having a shortest on time; and

generating a new correction value for each of at least a portion of said LEDs and storing each said new correction value in the correction memory when the determined difference exceeds a predetermined maximum difference.

5,668,588

SPIRAL SCANNING IMAGE RECORDING APPARATUS AND IMAGE RECORDING METHOD

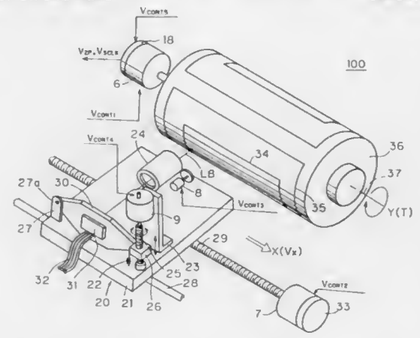
Yoshiaki Morizumi, and Kiyoomi Mitsuki, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Mar. 30, 1994, Ser. No. 220,010

Claims priority, application Japan, Apr. 1, 1993, 5-100384; Mar. 11, 1994, 6-041473

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;* **G02B** *26/00;27/00*

U.S. Cl. 342—242 **30 Claims**



1. A spiral scanning image recording apparatus comprising:

(a) a rotator continuously rotating in a main scanning direction;

(b) a photosensitive material being mounted on a major surface of said rotator;

(c) means for storing an image signal;

(d) means being movable in a subscanning direction being perpendicular to said main scanning direction for emitting a plurality of light beams being modulated in response to said image signal being outputted from said (c) means;

(e) means for inputting an input resolution signal corresponding to a number of exposure pixels to be imaged on said photosensitive material, to be finally included per unit length in a direction of arrangement thereof;

(f) means for deciding a magnification, an inclination angle between a direction of arrangement of imaging of said plurality of light beams on said photosensitive material and said subscanning direction and a moving speed of said (d) means in said subscanning direction with respect to a rotation speed of said rotator, said magnification and said inclination angle and said moving speed corresponding to said resolution on a basis of said input resolution signal, for generating a magnification control signal, an inclination angle control signal and a moving speed control signal as decided respectively;

(g) means being movable in said subscanning direction for imaging said plurality of light beams on said photosensitive material in response to said magnification control signal;

(h) means being movable in said subscanning direction for inclining said direction of arrangement of said plurality of light beams being emitted from said (d) means with respect to said subscanning direction in response to said inclination angle control signal so that said direction of imaging arrangement of said plurality of light means is inclined at said inclination angle with respect to said subscanning direction; and

(i) means for continuously moving said (d) means with said (g) means and said (h) means in said subscanning direction at said moving speed in response to said moving speed control signal.

5,668,589

THERMAL RECORDING DEVICE WITH CONTROLLER FOR CORRECTING LASER BEAM INTENSITY

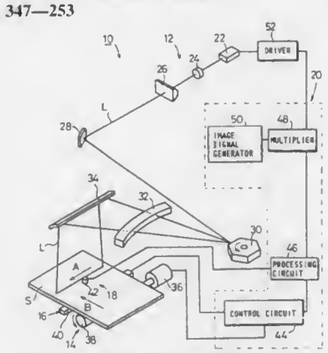
Takao Kuwabara, Ashigarakami-gun; Yoshihisa Usami, Fujinomiya, and Toshitaka Agano, Ashigarakami-gun, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 119,590, Sep. 13, 1993, abandoned. This application Mar. 31, 1994, Ser. No. 222,640

Claims priority, application Japan, Sep. 11, 1992, 4-243425; Oct. 12, 1992, 4-272972

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—253 **24 Claims**



1. A thermal recording device, comprising:

a thermosensitive recording medium which comprises a support coated with a coloring agent, a color developer, and a light absorbing dye and which produces a color having a density commensurate with the level of a thermal energy applied thereto, thereby to record an image thereon;

a laser beam applying mechanism for emitting and applying a laser beam modulated by an image signal to be recorded to the thermosensitive recording medium;

a temperature detecting mechanism for detecting a temperature with respect to the thermosensitive recording medium;

a humidity detecting mechanism for detecting a humidity with respect to the thermosensitive recording medium; and

a controller for correcting the intensity of the laser beam emitted by said laser beam applying mechanism based on the temperature detected by said temperature detecting mechanism and the humidity detected by said humidity detecting mechanism.

5,668,590

OPTICAL BEAM SCANNING SYSTEM WITH ROTATING BEAM COMPENSATION

Seiji Maruo, Hitachi; Akira Arimoto, Kodaira; Yoshihito Maeda, Mito, and Tatsuya Sugita, Hitachi, all of Japan, assignors to Hitachi, Ltd., and Hitachi Koki Co., Ltd., both of Tokyo, Japan

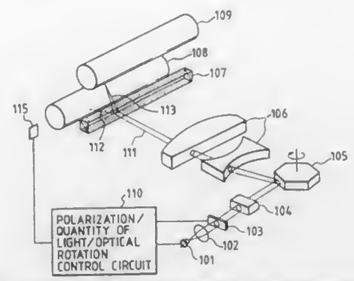
Filed Jun. 3, 1994, Ser. No. 253,553

Claims priority, application Japan, Jun. 24, 1993, 5-175887; Sep. 30, 1993, 5-244223

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—256 **13 Claims**

1. An optical scanning apparatus comprising a single laser beam source for producing a laser beam, information control means which provides different information for each of two polarized components of said laser beam from said laser beam source, polarizing control means which controls a quantity of polarization of said components of said laser beam on the basis of said information from said information control means to produce a light beam, scanning means for directing toward a predetermined exposure surface and scanning said light beam controlled by said polarizing control means, beam splitter means which separates said scanning light beam into two beams of light according to their states of polarization, and optical rotation control means disposed one of between said polarizing control means and said scanning means and between said scanning means and said beam splitter means, said optical rotation means controlling said laser beam to rotate it corresponding to a changing incident angle at which said scanning light beam from said scanning means enters said beam splitter means.



5,668,591

INFORMATION TERMINAL APPARATUS THAT IS REMOTELY PROGRAMMED BY RADIO WAVES AND THAT DISPLAYS INPUT KEYS OF PROGRAM FUNCTIONS ON A DISPLAY

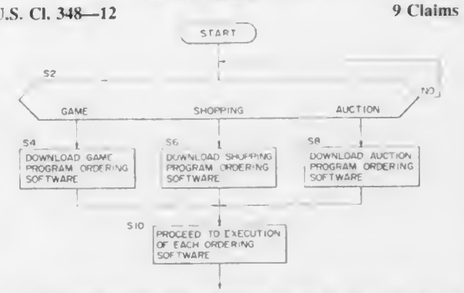
Peter Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,950

Claims priority, application Japan, Mar. 30, 1994, 6-085704

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—12 **9 Claims**



1. An information terminal apparatus having a cable box and an intelligent remote control unit, the intelligent remote control unit comprising:

an external information input port for receiving software transmitted thereto by radio transmission from said cable box;

a first memory for storing the software received by said external information input port;

a first controller operated in accordance with execution of the software stored in said first memory;

a console for inputting predetermined data in conformity with the execution of the software;

a display for visually representing information in conformity with the execution of the software; and

the cable box comprising:

a host processor;

an interface for transferring information to and from said host processor; and

a second memory for storing the information including software transmitted thereto from said host processor,

wherein said host processor includes means for controlling the information transfer between said interface, said second memory and said intelligent remote control unit, and

wherein said software is a program for playing a game, and input keys corresponding to relevant program functions are visually represented on said display.

5,668,592

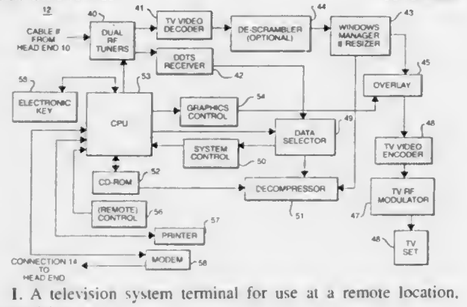
INTERACTIVE TELEVISION TERMINAL RESPONSIVE TO USER COMMANDS WHICH COMBINES STATIC SERVICE DATA AND RECURRENTLY BROADCAST DYNAMIC SERVICE DATA TO PRODUCE COMPOSITE SERVICE DISPLAY SIGNALS

John E. Spaulding, II, N. Miami, Fla., assignor to Interaxx Television Network, Inc., Miami, Fla.

Filed Apr. 6, 1994, Ser. No. 224,639

Int. Cl.[6] H04N *7/14;7/10*

U.S. Cl. 348—13 **33 Claims**



1. A television system terminal for use at a remote location, comprising:

a memory device for storing long-term static service data relating to one or more interactive services;

a data receiver for receiving a stream of dynamic service data recurrently broadcast from a central location, the dynamic service data relating to the one or more interactive services;

control circuitry, responsive to a user command for selecting one of the one or more interactive services, for reading the long-term static service data corresponding to the selected interactive service from said memory device, for selecting a portion of the dynamic service data corresponding to the selected interactive service from the data receiver, and for combining the read long-term static service data and the selected dynamic service data to produce a composite data service display signal.

5,668,593

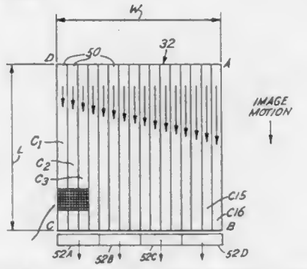
METHOD AND CAMERA SYSTEM FOR STEP FRAME RECONNAISSANCE WITH MOTION COMPENSATION

Andre G. Lareau, Bloomingdale; Gilbert W. Willey, Arlington Heights; Russell A. Bennett, McHenry, and Stephen R. Beran, Mount Prospect, all of Ill., assignors to Recon/Optical, Inc., Barrington, Ill.

Filed Jun. 7, 1995, Ser. No. 486,989

Int. Cl.[6] H04N *07/18*

U.S. Cl. 348—146 **22 Claims**



1. A method for imaging a scene with a framing camera comprising a two-dimensional array of photosensitive cells and a stepping mechanism, said array of cells storing pixel information and arranged in a plurality of rows and columns, said columns organized into a plurality of column groups including a first column group and a second column group, comprising, in combination, the sequence of operations of:

(a) directing with said stepping mechanism adjacent portions of an image of a scene upon said array, said operation of directing performed in a sequence of discrete preselected angular steps, each of said steps separated in time by a predetermined framing interval during which said photosensitive cells of said array are exposed to said image of said scene;

(b) during at least one of said predetermined framing intervals, transferring pixel information in said first column group of said array at a first transfer rate and simultaneously transferring pixel information in said second column group at a second transfer rate different from said first transfer rate, said transferring of pixel information compensating for different rates of image motion in said first and second column groups, respectively, to thereby prevent smearing of an image produced by said array;

(c) during a time period of each of said steps of said stepping mechanism, reading out said pixel information from said array of cells into a data storage or display device; and

(d) repeating operations (a), (b) and (c) in a series of cycles, thereby generating a series of frames of images of said scene with said array of cells.

5,668,594

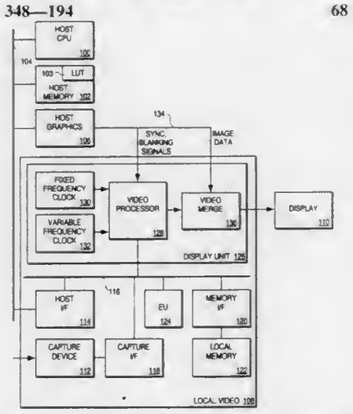
METHOD AND APPARATUS FOR ALIGNING AND SYNCHRONIZING A REMOTE VIDEO SIGNAL AND A LOCAL VIDEO SIGNAL

Benjamin M. Cahill, III, Ringoes, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 3, 1995, Ser. No. 367,957

Int. Cl.[6] H04N *17/04*

U.S. Cl. 348—194 **68 Claims**



1. Calibration circuitry for calibrating a local raster of a local video subsystem to a remote raster of a remote video subsystem, the remote video subsystem for providing a sync signal to the local video subsystem, the calibration circuitry comprising:

measurement circuitry for measuring a first duration of a first phase of the sync signal, and for measuring a second duration of a second phase of the sync signal, wherein the sync signal has a polarity, the first phase represents a high-level portion of the sync signal, and the second phase represents a low-level portion of the sync signal; and

processing logic for determining that the phase having the lesser of the first and second durations is an active phase, wherein the active phase corresponds to the polarity of the sync signal.

5,668,595

MULTI-LENS IMAGING APPARATUS HAVING A MECHANISM FOR COMBINING A PLURALITY OF IMAGES WITHOUT DISPLACEMENT OF REGISTRATION

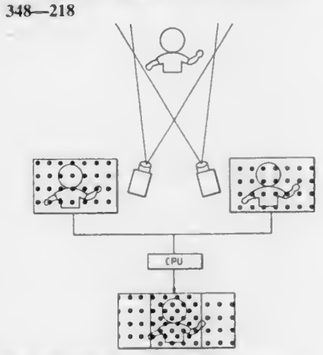
Tatsushi Katayama, Kawasaki; Yukichi Niwa, Narashino, and Shigeyuki Suda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,079

Claims priority, application Japan, Mar. 23, 1992, 4-065170; Jun. 11, 1992, 4-152214; Jun. 17, 1992, 4-158118

Int. Cl.[6] H04N 5/225;5/262;13/02

U.S. Cl. 348—218 23 Claims



1. A multi-lens imaging apparatus comprising:
a plurality of imaging optical systems;
image sensing means for sensing images of an object via said plurality of imaging optical systems;
detection means for detecting mis-registration amounts of said images, said detection means comprising:
convergence angle detection means for detecting an angle defined between optical axes of said plurality of imaging optical systems;
zoom encoders for detecting focal lengths of said imaging optical systems; and
focus encoders for detecting object distances to said imaging optical systems;
correction means for correcting said mis-registration amounts of said images to be less than a predetermined value according to a detection signal from said detection means; and
synthesizing means for synthesizing said images as said mis-registration amounts are corrected.

5,668,596

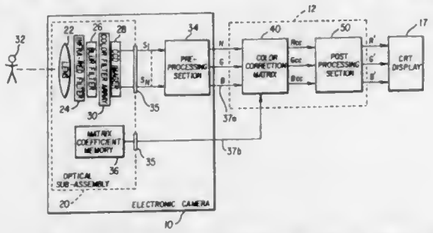
DIGITAL IMAGING DEVICE OPTIMIZED FOR COLOR PERFORMANCE

Richard M. Vogel, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,649

Int. Cl.[6] H04N 5/228

U.S. Cl. 348—222 28 Claims



1. A digital imaging device for capturing an image and generating a color signal from the image for application to an output device having specific color sensitivities, said imaging device further being one of many devices of the same type useful with the output device, said digital imaging device comprising:
a color sensor for capturing the image and generating the color signal from the captured image, said color sensor having predetermined spectral sensitivities;
an optical section having predetermined spectral characteristics, said optical section interposed in image light from the image directed to the color sensor thereby imparting the predetermined spectral characteristics to the image light, the combination of the spectral sensitivities of the color sensor and the spectral characteristics of the optical section uniquely distinguishing the imaging device from other imaging devices of the same type; and
a set of matrix coefficients uniquely determined for the imaging device in order to generate an optimized color signal, said matrix coefficients correcting the spectral sensitivities of the color sensor and the spectral characteristics of the optical section for the color sensitivities of the output device.

5,668,597

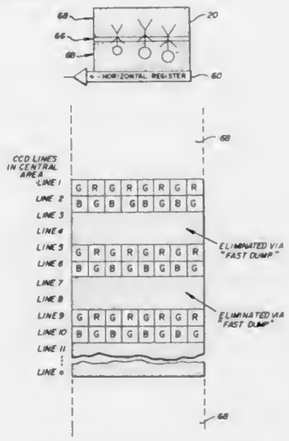
ELECTRONIC CAMERA WITH RAPID AUTOMATIC FOCUS OF AN IMAGE UPON A PROGRESSIVE SCAN IMAGE SENSOR

Kenneth A. Parulski, Rochester, N.Y.; Masaki Izumi, Yokohama, Japan; Seiichi Mizukoshi, Chigasaki, Japan, and Nobuyuki Mori, Setagaya-ku, Japan, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,404

Int. Cl.[6] H04N 5/232

U.S. Cl. 348—350 19 Claims



1. An electronic camera having an automatically focused lens that is operable to focus an image based on image data electronically obtained by the camera from a partial area of the whole image, said camera comprising:
an image sensor comprising a two-dimensional array of photosites arranged in lines and columns to provide image charge, the sensor having the capacity to eliminate some lines of image charge and to transfer other lines of image charge;
a timing and control section for controlling the sensor so as to eliminate a pattern of lines of image charge from the partial area utilized for autofocus so as to leave an array of intervening lines, and to transfer the intervening lines of image charge within the partial area; and
a processor for generating a focus adjustment signal based on the intervening lines of image charge transferred from the partial area.

5,668,598

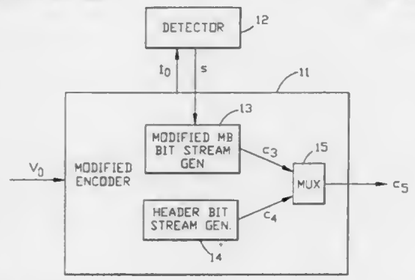
MOTION VIDEO COMPRESSION SYSTEM WITH GUARANTEED BIT PRODUCTION LIMITS

Elliot Neil Linzer, Bronx; Heidi Aarlien Peterson, New York, both of N.Y., and Eric Viscito, San Francisco, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1995, Ser. No. 410,786

Int. Cl.[6] H04N 7/28

U.S. Cl. 348—402 15 Claims



1. A motion video compression system, comprising:
means, responsive to a switching signal, for generating a bit stream comprising a first number of bits encoding a portion of a picture, the first number of bits being bounded by a first limit;
means, responsive to the switching signal, for generating a bit stream comprising a second number of bits encoding the portion of the picture, the second number of bits being bounded by a second limit, the second limit being smaller than the first limit; and
a switching signal generator for setting a state of the switching signal as a function of a number of bits predicted to be required to encode said portion of the picture.

5,668,599

MEMORY MANAGEMENT FOR AN MPEG2 COMPLIANT DECODER

Dennis Phillip Cheney, Vestal; Mark Louis Ciacelli; Steven Bradford Herndon, both of Endicott; John David Myers, and Chuck Hong Ngai, both of Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1996, Ser. No. 618,660

Int. Cl.[6] H04N 7/12

U.S. Cl. 348—402 12 Claims

1. A digital video decoder comprising an input data buffer, a variable length decoder, a dequantizer, an inverse discrete cosine transform decoder, a motion compensator, and a frame memory, said frame memory having at least a past reference frame buffer, a future reference frame buffer, a frame buffer for a frame currently being decoded, and a Spill Buffer, said Spill Buffer being dynamically allocable within said frame memory as frames are decoded, and where said three frame buffers are accessed on a rotating basis according to the following algorithm:

C=D*NBF+^NBF*(T*(PREV^=B)+P*(PREV=B*PRES^=B));
P=C*NBF+^NBF*F*(PRES^=B);
F=T*(PREV^=B*PRES=^B)+P*(PREV=B*PRES ^=B);
D=C*NBF+^NBF*(F*(PRES^=B)+T*(PREV^=B*PRES=B));
and
T=D;

MEMORY ADDRESS POINTER CONTROL FOR 3 BUFFERS

	PICTURE TYPE	CURRENT	PAST	FUTURE	DISPLAY	TEMPORARY
INITIAL VALUES	P	0	1	0	1	2
1	I	2	0	2	0	1
6	P	1	2	1	2	0
2	B	0	2	1	0	2
3	B	0	2	1	0	2
4	B	0	2	1	0	2
5	B	0	2	1	0	2
7	P	2	1	2	1	0
8	I	0	2	0	2	1
9	P	1	0	1	0	2
10	P	2	1	2	1	0
13	P	0	2	0	2	1
11	B	1	2	0	1	2
12	B	1	2	0	1	1
16	P	2	0	2	0	1
14	B	1	0	2	1	0
15	B	1	0	2	1	1

C = D+NBF + ^NBF*(T+(PREV^=B) + P+(PREV=B + PRES^=B))

P = C+NBF + ^NBF*F+(PRES^=B)

F = T+(PREV^=B + PRES=^B) + P+(PREV=B + PRES^=B)

D = C+NBF + ^NBF*(F+(PRES^=B) + T+(PREV^=B + PRES=B))

T = D

TE. C = CURRENT PICTURE POINTER
P = PAST PICTURE POINTER
F = FUTURE PICTURE POINTER
D = DISPLAY PICTURE POINTER
T = TEMPORARY POINTER
PRES = PRESENT PICTURE TYPE
PREV = PREVIOUS PICTURE TYPE
NBF = NO B FRAME MODE

where
C=Current picture pointer;
P=Past picture pointer;
F=Future picture pointer;
D=Display picture pointer;
T=Temporary pointer;
PRES=Present picture type;
PREV=Previous picture type; and
NBF=No B frame mode.

5,668,600

METHOD AND APPARATUS FOR ENCODING AND DECODING A VIDEO SIGNAL USING FEATURE POINT BASED MOTION ESTIMATION

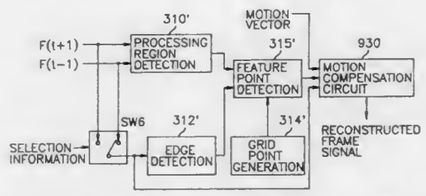
Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics, Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 28, 1996, Ser. No. 740,358

Claims priority, application Rep. of Korea, Oct. 28, 1995, 95-37865

Int. Cl.[6] H04N 7/32

U.S. Cl. 348—416 24 Claims



17. A method, for use in an image signal decoding system, for decoding an encoded bidirectionally predictive frame (encoded B frame) of an encoded digital video signal based on two reconstructed neighboring frames of the encoded B frame by employing a feature point based motion estimation approach to generate a reconstructed B frame signal, wherein the B frame includes a set of motion vectors and selection information, which comprises the steps of:
(a) selecting one of reconstructed neighboring frame as a reference frame based on the selection information;
(b) detecting a processing region representing a motion of a moving object of the digital video signal based on a difference between the reconstructed neighboring frames to generate region information denoting the detected processing region;

(c) selecting a number of pixels from pixels contained in the detected processing region of the reference frame as a set of feature points based on the region information; and

(d) providing the reconstructed B frame by using the set of motion vectors, the selected set of feature points and the reference frame.

5,668,601

AUDIO/VIDEO DECODING SYSTEM

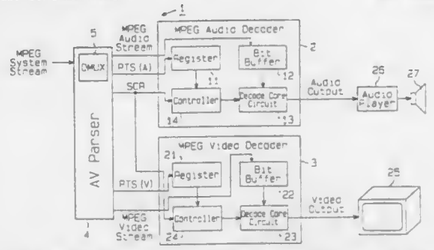
Shigeyuki Okada, Hashima, and Hideki Yamauchi, Ogaki, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 13, 1995, Ser. No. 387,581

Claims priority, application Japan, Feb. 17, 1994, 6-020653; Nov. 30, 1994, 6-297346; Dec. 20, 1994, 6-317114

Int. Cl.[6] H04N *2/62*

U.S. Cl. 348—423 **49 Claims**



1. A Moving Picture Experts Group (MPEG) compliant audio/video decoding system for decoding a multiplexed system stream of audio and video streams having audio and video time stamps and a system clock reference (SCR) into synchronized audio output and video output from said decoding system, said system comprising:

a parser for extracting audio and video streams, audio and video time stamps, and said SCR from said system stream;

an audio stream processor responsive to the audio stream to decode said audio stream into audio data;

an audio controller responsive to said audio time stamp and SCR for controlling the output of audio data from said audio stream processor based on an audio decoding time of said audio stream processor, said SCR and said audio time stamp;

a video stream processor responsive to the video stream to decode said video stream into video data; and

a video controller responsive to video time stamp and SCR for controlling the output of video data from said video stream processor based on a video decoding time of said video stream processor, said SCR and said video time stamp.

5,668,602

REAL-TIME TELEVISION IMAGE PIXEL MULTIPLICATION METHODS AND APPARATUS

Maher Ahmed Sid-Ahmed, 12703 Riverside Dr. E., Tecumseh Ontario, Canada, N8N 1A7

Continuation of Ser. No. 992,798, Dec. 18, 1992, abandoned. This application Aug. 9, 1995, Ser. No. 512,960

Int. Cl.[6] H04N *9/01*

U.S. Cl. 348—448 **8 Claims**

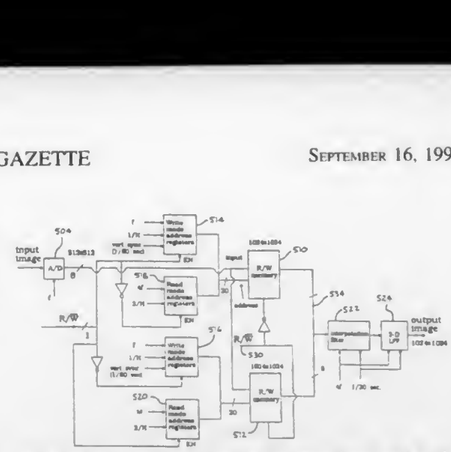
1. A method of expanding the number of pixels used to display a video image, comprising the steps of:

receiving pixels associated with an incoming digitized video image;

replicating each pixel;

low-pass filtering the replicated pixels in two dimensions using a square symmetrical filter to provide interpolated values;

converting the interpolated values into analog form; and



displaying the converted pixels at the same frame rate as that associated with the incoming digitized video image.

5,668,603

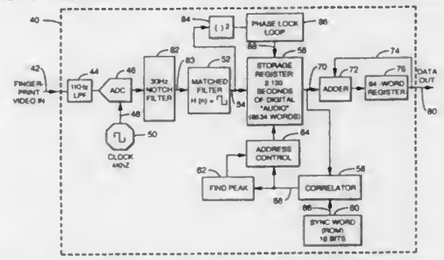
VIDEO FINGER PRINT METHOD AND APPARATUS

Gregory C. Copeland, San Jose, Calif., assignor to Macrovision Corporation, Sunnyvale, Calif.

Division of Ser. No. 294,983, Aug. 24, 1994. This application May 22, 1996, Ser. No. 651,480

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—473 **13 Claims**



1. An apparatus for detecting a source identification signal within an active picture area of a video signal comprising:

a low pass filter that receives said video input signal containing said source identification data signal within said active picture area;

a dock signal generator;

an analog to digital converter wherein said analog to digital converter receives said low passed video signal and said clock signal;

a matched filter wherein said matched filter detects said source identification data signal;

a sync word generator to generate a first sync word;

a storage and synchronization system to store said data and synchronize a second sync word contained within said source identification signal so as to produce a readable source identification signal;

a register to store said readable source identification signal; and

a display device to display information within said readable source identification signal.

5,668,604

HORIZONTAL MAGNIFYING CIRCUIT FOR VIDEO SIGNALS

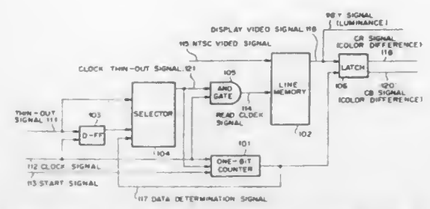
Hiromitsu Takano, and Nobuya Nakamoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,210

Int. Cl.[6] H04N *5/44*

U.S. Cl. 348—562 **3 Claims**

1. A horizontal magnifying circuit for NTSC digital video signals, comprising:



a line memory for storing color difference signals of the video signals and a luminance signal thereof so that the color difference signals correlate with the luminance signal,

means for reading the color difference signals from the line memory corresponding to a read clock signal so that the number of samples of the color difference signals is ½ or ¼ the number of samples of the luminance signal, and

means for thinning out the read clock signal stored in the line memory while a thin-out signal that is input at predetermined intervals is active so as to horizontally magnify the video signals read from the line memory, the horizontal magnifying circuit comprising:

an adjusting circuit for synchronizing both edges of the active portion of the thin-out signal with even number data of the color difference signals read from the line memory after a start signal that is a read start signal for the video signals stored in the line memory is input.

5,668,605

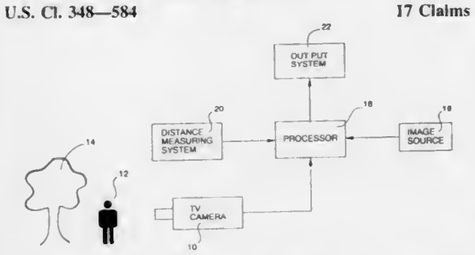
OBJECT KEYING IN VIDEO IMAGES BASED ON DISTANCE FROM CAMERA

Shalom Nachshon, Kfar Shmaryahu, and Menachem Polak, Tel Mond, both of Israel, assignors to R. T. Set, Givatayim, Israel

Filed Oct. 25, 1994, Ser. No. 329,116

Int. Cl.[6] H04N *5/275*

U.S. Cl. 348—584 **17 Claims**



1. A method for separating a first image into two or more portions based on the distance of the portions from a camera, comprising the steps of:

(a) detecting the first image using the camera;

(b) measuring distances from the camera to points in the first image;

(c) separating the first image into two or more portions based on the measured distance of said portions of the first image from the camera; and

(d) combining at least one of said portions of the first image with a second image to produce a composite image.

5,668,606

CONTOUR RESTORATION APPARATUS

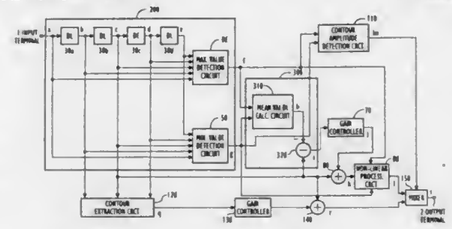
Takuji Okamoto, Sakai; Masanori Hamada, Kadoma; Kenta Sokawa, Hirakata; Kazuya Uyeda, Suita, and Hideaki Yamauchi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 22,303, Feb. 25, 1993, Pat. No. 5,546,135. This application Mar. 15, 1996, Ser. No. 616,283

Claims priority, application Japan, Feb. 28, 1992, 4-042557; May 14, 1992, 4-121669; Aug. 12, 1992, 4-214875; Aug. 14, 1992, 4-216755

Int. Cl.[6] H04N *5/208*

U.S. Cl. 348—625 **5 Claims**



5. A contour restoration apparatus comprising:

an input terminal for video signals;

a plurality of delay circuits connected in series to said input terminal, each of said plurality of delay circuits having a predetermined delay time for a signal input thereto;

a maximum value detection circuit for detecting a maximum value among an input video signal and output signals of said plurality of delay circuits;

a minimum value detection circuit for detecting a minimum value among signals same as those input to said maximum value detection circuit;

a mean value circuit for calculating a mean value of output signals of said maximum and minimum value detection circuits;

a subtraction means for subtracting said mean value from a delayed signal output from one of said plurality of delay circuits, wherein said delayed signal has a delay time of one-half of a delay time obtained by a total of said plurality of said delay circuits;

a gain controller for amplifying the output of said subtraction means with a predetermined gain;

an adder for adding the output of said gain controller and said delayed signal input to said subtraction means;

a non-linear processing circuit to which the output of said adder and the maximum and minimum values output by said maximum and minimum detection circuits are input, said non-linear processing circuit outputting the maximum value if the output signal of said adder is larger than the maximum value, outputting the minimum value if the output signal of said adder is smaller than the minimum value, and outputting the output signal of said adder if the output signal of said adder is between the maximum value and the minimum value;

an output terminal for outputting the output of said non-linear processing circuit as a contour restored signal;

a contour extraction circuit to which a signal located centrally among an input video signal and output signals of said plurality of delay circuits and signals locating before and after the signal are input, said contour extraction circuit comprising multipliers for multiplying each of three signals input thereto with a predetermined coefficient and an adder for adding the three multiplied signals;

another gain controller for amplifying the output of said contour extraction circuit with a predetermined gain;

another adder for adding the output of said another gain controller and the centrally located signal;

a contour amplitude circuit for detecting a difference between the maximum value and the minimum value detected by said maximum value detection circuit and minimum value detec-

tion circuit and for outputting a coefficient determined according to the difference detected; and

a mixer for mixing the output (I) of said non-linear processing circuit and the output (r) of said another adder according to an equation

$$kn \times I + (1-kn) \times r$$

wherein kn is a coefficient given by said contour amplitude detection circuit.

5,668,607

Patent Not Issued For This Number

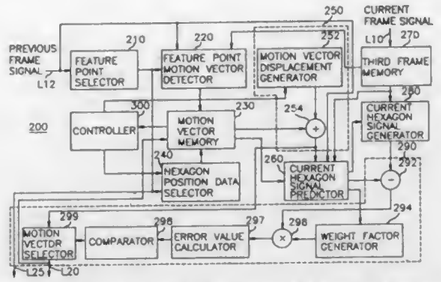
5,668,608

MOTION VECTOR ESTIMATION METHOD AND APPARATUS FOR USE IN AN IMAGE SIGNAL ENCODING SYSTEM

Min-Sup Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 26, 1995, Ser. No. 507,579
Int. Cl.[6] H04N *9/78*
U.S. Cl. 348—699 **6 Claims**

1. A method, for use in an image signal encoding system, for estimating a set of motion vectors for feature points, each of the feature points being a pixel point located at a node of a hexagon grid mapped on a previous frame, the method comprising the steps of:



(a) assigning each of the feature points as a subject feature point in sequence, wherein the subject feature point is surrounded by its six neighboring feature points, to thereby define a previous hexagon, the previous hexagon having a set of six triangle, each of the triangles being formed by connecting the subject feature point and its two neighboring feature points;

(b) detecting a first set of initial motion vectors for the feature points between a current frame and the previous frame;

(c) storing the first set of initial motion vectors;

(d) defining a current hexagon in the current frame corresponding to each previous hexagon by using the first set of initial motion vectors;

(e) sequentially adding each of the initial motion vectors for its corresponding subject feature point to one of predetermined N displacements, to thereby produce a set of N candidate motion vectors per one initial motion vector;

(f) deriving a predicted pixel value, for each pixel contained in each set of six triangles within each current hexagon, from the previous frame, and producing position data of each pixel in said each set;

(g) producing a differential pixel value for said each pixel contained in said each set of six triangles by subtracting the predicted pixel value from the pixel value of said each pixel;

(h) selectively assigning a predetermined weight factor in response to the position data of each pixel in said each set and that of a feature point in the current hexagon corresponding to each of the N candidate motion vectors;

(i) multiplying the differential pixel value with its corresponding weight factor to thereby produce a weighted differential pixel value;

(j) deriving N error values for said N sets of six triangles in said each current hexagon by averaging the weighted differential pixel values corresponding thereto;

(k) comparing said N error values to select a minimum error value;

(l) choosing a motion vector, which corresponds to the selected minimum error value, from each set of N candidate motion vectors;

(m) updating the stored initial motion vector for the subject feature point with the chosen motion vector; and

(n) repeating said steps (d) to (m) until all of the initial motion vectors are updated.

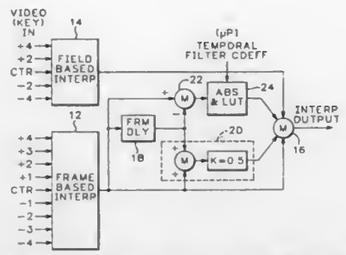
5,668,609

MOTION DETECTOR AND KEY SIGNAL INTERPOLATOR USING SAME

Brion L. Dunbar, Grass Valley, and Daniel J. Chaplin, Nevada City, both of Calif., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Sep. 8, 1994, Ser. No. 303,242
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—700 **4 Claims**

1. A motion detector comprising:



a frame based interpolator having as inputs adjacent lines in a frame of video data to provide a frame interpolated signal output for each line;

a field based interpolator having as inputs adjacent lines in a single field of video data to provide a field interpolated signal output for each line;

means for determining a mix signal based upon the difference between the frame interpolated signal and a delayed frame interpolated signal which is the frame interpolated signal delayed by one frame; and

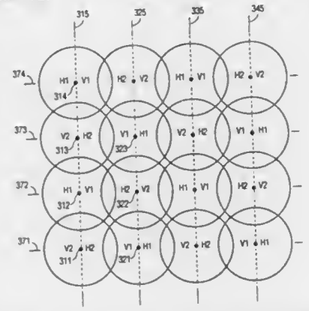
means for mixing the frame and field interpolated signals as a function of the mix signal to provide an output signal that is the field interpolated signal when motion is present and the frame interpolated signal when motion is not present.

5,668,610

LMDS TRANSMITTER ARRAY WITH POLARIZATION-DIVERSITY SUB-CELLS

Bernard Bossard, New York, and David R. Treacy, Pelham, both of N.Y., assignors to Cellularvision Technology & Telecommunications, L.P., Freehold, N.J.

Filed Dec. 4, 1995, Ser. No. 566,780
Int. Cl.[6] H04H *3/00*
U.S. Cl. 348—723 **14 Claims**



1. A low power, multi-function cellular television system, comprising a plurality of low power cell node transmitting stations spaced from each other, each transmitting station transmitting signals for reception in an area defining a cell, arranged such that adjoining cells overlap, wherein

each transmitting station radiates signals which are uniformly polarized with one polarization over a first sector about a symmetry axis from the transmitting station, and signals which are uniformly polarized with a different polarization over a second sector about said symmetry axis, the signals which are radiated over the first and second sectors of a given station having a same respective plurality of frequencies, the two sectors together providing substantially 360° coverage of the cell, and

stations in adjoining cells which are aligned approximately along said axis radiate the signals with said one polarization in a same direction,

stations in adjoining cells which are aligned approximately perpendicularly to said axis radiate the signals with said one polarization in opposite directions,

the transmitting station in a first of said cells transmits signals comprising a first plurality of individual channels occupying at least 90% of a given band,

the transmitting station in a second of said cells adjoining said first cell transmits signals comprising a second plurality of individual channels occupying at least 90% of said given band, and

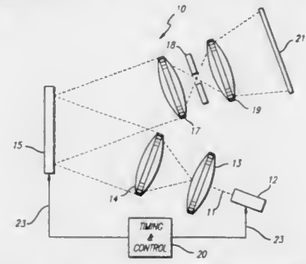
the carrier frequencies of the channels of the transmitting station of said second cell are different from the carrier frequencies of the channels of the transmitting station of said first cell.

5,668,611

FULL COLOR SEQUENTIAL IMAGE PROJECTION SYSTEM INCORPORATING PULSE RATE MODULATED ILLUMINATION

Michael N. Ernstoff; George C. Valley, both of Los Angeles, and Steven E. Shields, San Diego, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation-in-part of Ser. No. 360,870, Dec. 21, 1994. This application May 24, 1995, Ser. No. 449,586
Int. Cl.[6] H04N *5/74*
U.S. Cl. 348—771 **15 Claims**



1. A system for generating gray scale imagery comprising:

a variable count pulsating source of electromagnetic energy;

a spatial light modulator for directing energy from said variable count pulsating source, said spatial light modulator including an array of energy directing elements, said energy directing elements including micromirrors for facilitating the generation of gray scale imagery by selectively directing light from said source through an aperture; and

a timing and control circuit to selectively activate said micromirrors in said array in said spatial light modulator while selectively modulating said source to produce said gray scale imagery.

5,668,612

PIVOTABLE PROTECTIVE SCREEN STRUCTURE WHICH IS HEIGHT-ADJUSTABLE AND FORWARD/BACKWARD SHIFTABLE

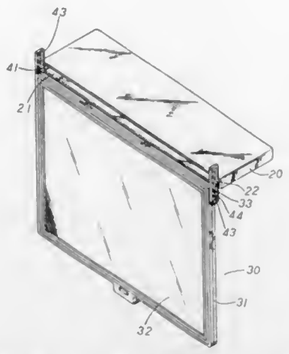
Wang-Ho Hung, No.181, Sec.5, Chang-Mei Rd., Ho-Mei Chen, Changhua Hsien, Taiwan

Filed Jun. 6, 1995, Ser. No. 466,967
Int. Cl.[6] H04N *5/65*
U.S. Cl. 348—818 **3 Claims**

1. A pivotable protective screen structure which is height-adjustable and forward/backward shiftable, comprising a base body, a protective screen body and two support racks, wherein:

the base body is a rectangular flat body formed with a slot passing through the entire base body and two pairs of slide channels disposed on two sides of the slot, in each pair of the slide channels being disposed opposite engaging teeth;

the protective screen body includes a protective screen and a frame body framing the protective screen, two shaft rods



being disposed on two sides of the frame body, a total width of the frame body and the two shaft rods being slightly less than that of the slot of the base body; and

each support rack is integrally formed and T-shaped, having two horizontal support levers defining a clearance therebetween and one lever is formed with upper engaging teeth and the other with lower engaging teeth and adapted to be slidably inserted in the slide channels of the base body, whereby the engaging teeth can engage with the engaging teeth of the slide channels, each support rack further having a vertical rectangular hanging frame connected to front ends of the support levers, a vertical row of hanging hooks being disposed in the hanging frame for the shaft rods of the protective screen body to pivotably hang thereon, whereby the support levers of the support rack are rearward inserted into and located in the slide channels of the base body, while the protective screen body is passed forward through the slot of the base body to protrude outside the base body with the shaft rods passing through the clearance between the support levers and entering the hanging frame and pivotably hung on the hanging hooks thereof, the shaft rods of the protective screen body being selectively hung on the hanging hooks of the support racks to adjust the height of the protective screen body, the support racks being forward or rearward slidable along the slide channels to adjust a distance between the protective screen body and a television, the protective screen body being also upward pivotable into a horizontal state in alignment with the slot of the base body and stably located on the television.

5,668,613

LIQUID CRYSTAL DISPLAY WITH A PLURALITY OF CONTIGUOUS PIXELS OR PIXEL GROUPS WITH THE SAME OR DIFFERENT STORAGE CAPACITANCES

Dong-Gyu Kim, Kyungki-do, and Sang-Soo Kim, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 31, 1996, Ser. No. 658,822

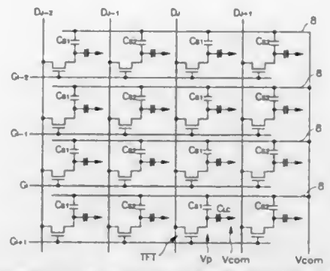
Claims priority, application Rep. of Korea, May 31, 1995, 95-14245

Int. Cl.[6] G02F *1/1343;1/136*

U.S. Cl. 349—38 **20 Claims**

1. A liquid crystal display, comprising:

a plurality of pixel groups having at least one pixel, each pixel having a liquid crystal capacitor and a storage capacitor with a storage capacitance, wherein the pixels in one pixel group



are contiguous, all the storage capacitances in the same pixel group are the same and at least two pixel groups have different storage capacitances.

5,668,614

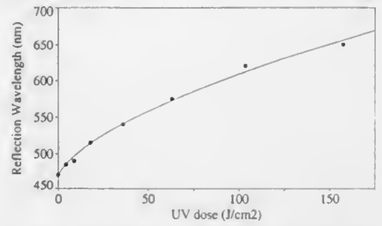
PIXELIZED LIQUID CRYSTAL DISPLAY MATERIALS INCLUDING CHIRAL MATERIAL ADOPTED TO CHANGE ITS CHIRALITY UPON PHOTO-IRRADIATION

Liang-Chy Chien, Stow, and Joseph William Doane, Kent, both of Ohio, assignors to Kent State University, Kent, Ohio

Filed May 1, 1995, Ser. No. 431,540

Int. Cl.[6] G02F *1/1335;1/13*

U.S. Cl. 349—115 **30 Claims**



1. A light modulating chiral nematic liquid crystal material including a chiral material adapted to change chirality upon application of an energy input, wherein said liquid crystal material includes a plurality of essentially distinct regions within which the liquid crystal has different pitch lengths, whereby said liquid crystal material can be made to reflect different wavelengths of light in different regions.

5,668,615

LCD DEVICE WITH ALIGNMENT FILMS HAVING A PRETILT CHANGING CHARACTERISTIC

Hirokatsu Miyata, Hadano, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,759

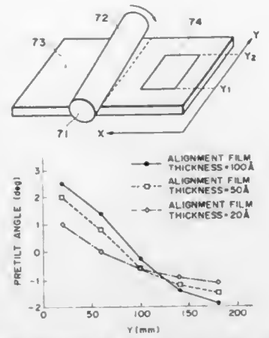
Claims priority, application Japan, Jan. 31, 1994, 6-025914

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 349—126 **11 Claims**

1. A liquid crystal display device, comprising: a pair of substrates each having thereon an electrode and a chiral smectic liquid crystal disposed between said substrates so that said liquid crystal assumes at least two optically stable states; at least one of the substrates having thereon an alignment film, said alignment film having a uniaxial aligning treatment direction and also a pretilt-changing characteristic such that it provides a pretilt angle which monotonously changes and is then inverted through 0 degree to a state providing a reverse molecular inclination with respect to said at least one substrate.

6. A process for producing a liquid crystal display device including a pair of substrates each having thereon an electrode and a chiral smectic liquid crystal disposed between the substrates so that



the liquid crystal assumes at least two optically stable states, at least one of the substrates having thereon an alignment film; said process comprising:

a first step of uniaxially alignment-treating the alignment film in a first direction so as to provide an alignment control force which changes monotonously in a second direction perpendicular to the first direction, and

a second step of uniaxially alignment-treating the alignment film in a third direction opposite to the first direction so as to provide an alignment control force which changes monotonously in a fourth direction reverse to the second direction, such that the alignment film has a pretilt-changing characteristic, and such that it provides a pretilt angle which monotonously changes and is then inverted through **0** degree to a state providing a reverse molecular inclination with respect to the at least one substrate.

5,668,616

FERROELECTRIC LIQUID CRYSTAL DEVICE WITH ALIGNMENT LAYERS HAVING SURFACE UNEVENNESS DIFFERENT FROM EACH OTHER

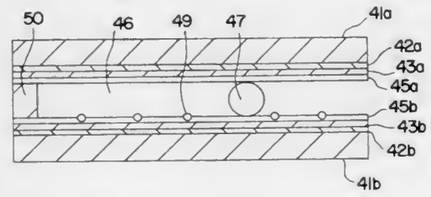
Katsutoshi Nakamura, Hiratsuka, and Nobuhiro Ito, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 312,922

Claims priority, application Japan, Sep. 30, 1993, 5-269750; Sep. 30, 1994, 6-261332

Int. Cl.[6] G02F *1/1337;1/141;1/1333*

U.S. Cl. 349—128 **18 Claims**



1. A liquid crystal device, comprising:

a pair of substrates disposed opposite to each other each having thereon an alignment control layer, and a liquid crystal disposed between the substrates,

wherein one of the alignment control layers has an uneven surface provided with a first surface unevenness and the other alignment control layer has a an uneven surface provided with a second surface unevenness different from the first surface unevenness.

5,668,617

THIN FILM-LIQUID CRYSTAL DISPLAY PANEL AND MANUFACTURING METHOD THEREOF

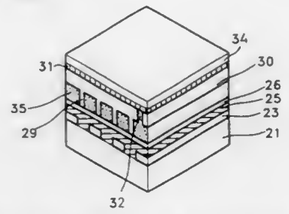
Kyoung-won Na, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 24, 1996, Ser. No. 590,820

Claims priority, application Rep. of Korea, Jan. 27, 1995, 95-1585

Int. Cl.[6] G02F *1/1339;1/1341*

U.S. Cl. 349—156 **9 Claims**



1. A thin-film liquid crystal display panel comprising:

a substrate;

a first electrode pattern disposed on the substrate;

a first electrically insulating layer disposed on the first electrode pattern and the substrate;

an alignment layer disposed on the first electrically insulating layer;

a plurality of spaced apart electrically insulating cell gap supports protruding from the alignment layer;

a second electrically insulating layer disposed on the plurality of cell gap supports, the second insulating layer and the cell gap supports being of the same material;

a liquid crystal material layer disposed between the alignment layer and the second electrically insulating layer adjacent the cell gap supports;

a second electrode pattern disposed on the second insulating layer;

a protective layer disposed on the second electrode pattern.

5,668,618

MULTILAYER LENS PARTICULARLY FOR SUNGLASSES

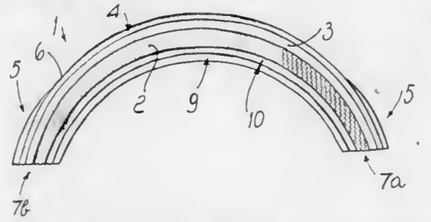
Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy

Filed Jul. 18, 1994, Ser. No. 276,141

Claims priority, application Italy, Jul. 20, 1993, TV930033 U

Int. Cl.[6] G02C *7/10;7/16;* **A61F** *9/02*

U.S. Cl. 351—44 **13 Claims**



1. A lens for sunglasses, comprising:

a main lens layer having at least one central view region and at least one lateral view region arranged adjacent said central view region, said central and lateral view regions being arranged such that a viewing field of a user includes said central and lateral view regions; and

a transparency affecting element arranged at said lateral view region of said main lens layer such that a degree of transparency of the lens is greater at said central view region than at said lateral view region, and such that a degree of transparency of the lens in the lateral view region decreases from

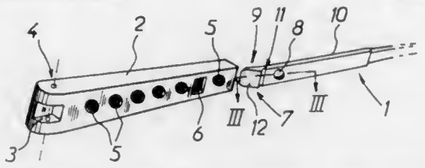
points nearer to the central view region to points arranged more distally to the central view region, wherein said transparency affecting element comprises a plurality of areas of said main lens layer at said lateral view region at which material has been removed from said main lens layer.

5,668,619

DEVICE FOR LOCKING AN INTERCHANGEABLE, LENGTH-ADJUSTABLE SPECTACLE SIDE-PIECE

Robert Bollé , Oyonnax, France, assignor to Etablissements Bolle, Oyonnax, France

Filed Nov. 14, 1995, Ser. No. 557,280
Claims priority, application France, Nov. 15, 1994, 94 13645
Int. Cl.[6] G02C *5/20;5/14*
U.S. Cl. 351—118 **6 Claims**



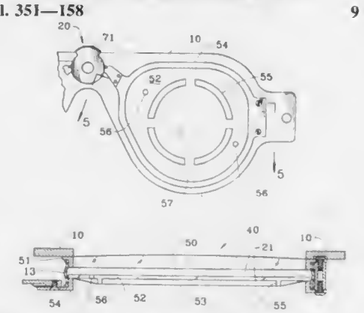
1. Device for locking an interchangeable, displaceable and length-adjustable spectacle side-piece, the fixed support of which is constituted by a sheath inside which said side-piece slides, the sheath being pierced by a plurality of identical positioning holes, and the displaceable side-piece bearing at least one boss corresponding to the profiles of the positioning holes, wherein the sheath (**2**) in which the side piece (**1**) is displaceable additionally comprises at least one locking hole (**6**) in alignment with the positioning holes, the profile of which is different from that of the positioning holes (**5**), and the displaceable side-piece further comprises, on the same side, another boss (**7**) the shape and size of which match the profile of the locking hole, which boss is spaced from boss (**8**) corresponding to the profiles of the positioning holes by a distance equal to that between the locking hole and a positioning hole.

5,668,620

VARIABLE FOCAL LENGTH LENSES WHICH HAVE AN ARBITRARILY SHAPED PERIPHERY

Stephen Kurtin, 3835 Kingswood Rd., Sherman Oaks, Calif. 91403; Daniel E. Fedele, 3007 N. Arlington Ave., Simi Valley, Calif. 93063, and Saul Epstein, 14558 Deervale Pl., Sherman Oaks, Calif. 91403

Filed Apr. 12, 1994, Ser. No. 226,344
Int. Cl.[6] G02C *1/00;* **G02B** *1/06*
U.S. Cl. 351—158 **9 Claims**



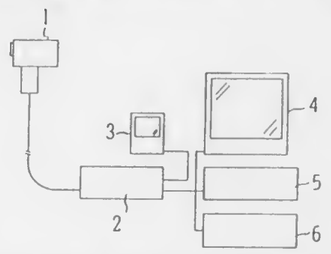
1. A variable focal length lens which comprises:
a rigid lens;
a membrane support member positioned across the field of view of said rigid lens and spaced therefrom, said membrane support member having a central portion including support means which supports a transparent distensible membrane whereby said membrane has a substantially circular free area, wherein said support means is in the form of a raised ridge projecting outward from a surface of said membrane support member, said membrane being positioned against said support means and being maintained at all times in contact with said support means in the region of said support means adjacent to said free area of said membrane;
a transparent liquid filling the space between said rigid lens and said membrane;
flexible sealing means for retaining said transparent liquid between said rigid lens and said membrane; and
variable spacing means acting between said rigid lens and said membrane support member for adjusting the spacing between said membrane support member and said rigid lens.

5,668,621

HAND-HELD FUNDUS CAMERA WITH SHARED LIGHT PATH

Tsuguo Nanjo, Toyohashi, Japan, assignor to Nidek Company, Ltd., Japan

Filed Apr. 29, 1996, Ser. No. 639,551
Claims priority, application Japan, Apr. 28, 1995, 7-129496
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—206 **6 Claims**



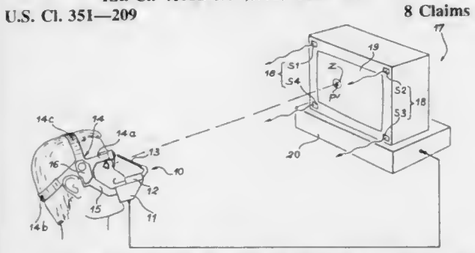
1. A fundus camera of hand-held type comprising:
first illumination optical system for illuminating an eye to be examined by using infrared light;
second illumination optical system for illuminating the eye to be examined by using visible light for photo-imaging, with part of light path being shared with that of said first illumination optical system;
an alignment index projection optical system for projecting an alignment index for the adjustment of working distance onto an cornea of the eye to be examined, wherein said alignment index projection optical system includes optical means for aligning coaxially its light axis with said first and second illumination optical system to share part of the light paths therewith;
an observation optical system having photoelectric imaging elements for observing the images of the focusing of said alignment index image and the fundus of the eye to be examined;
first display means for displaying images formed by the photoelectric imaging elements of said observation optical system;
a photographing optical system having photoelectric imaging elements for forming images of the fundus of the eye to be examined with part of light path being shared with that of said observation optical system; and
a beam splitter disposed along with the light path shared by said photographing optical system and said observation optical system for reflecting the illumination light into the eye to be examined, wherein said beam splitter is disposed at the examinee's eye side opposite to an objective lens which is used in common with said observation optical system and said photographing optical system;
wherein suitability of alignment is determined by observing on said first display means the images of the focusing of said alignment index image formed through said beam splitter onto the photoelectric imaging elements of said observation optical system.

5,668,622

DEVICE FOR MEASURING THE POSITION OF THE FIXING POINT OF AN EYE ON A TARGET, METHOD FOR ILLUMINATING THE EYE AND APPLICATION FOR DISPLAYING IMAGES WHICH CHANGE ACCORDING TO THE MOVEMENTS OF THE EYE

Colette Charbonnier, Pont de Claix, and Dominique Masse, Coublevie, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Mar. 18, 1996, Ser. No. 616,888
Claims priority, application France, Mar. 24, 1995, 95 00489
Int. Cl.[6] A61B *3/14;3/02;* **G02C** *1/00*
U.S. Cl. 351—209 **8 Claims**



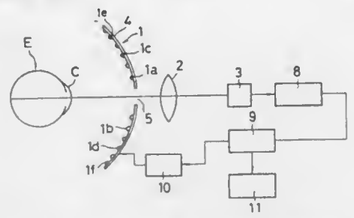
1. Device for measuring the position of the first mobile support (**10**) integral with the head of the subject and positioned close to the eye and on which secured are first means (**12**) for illuminating the eye and video means (**11**) to embody images of the eye, and a support means having a fixed support (**17**) distant from the eye and on which positioned are firstly the target (**19**) orientated so as to be approximately opposite the eye, and secondly second eye illumination means (**18**) able to create on the eye corneal reflections (R1, R2, R3, R4).

5,668,623

CORNEAL SHAPE MEASURING APPARATUS

Akio Sakurai; Takeyuki Kato, and Minoru Kamiya, all of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan

Filed Jul. 18, 1994, Ser. No. 276,465
Claims priority, application Japan, Jul. 16, 1993, 5-176678
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—212 **4 Claims**



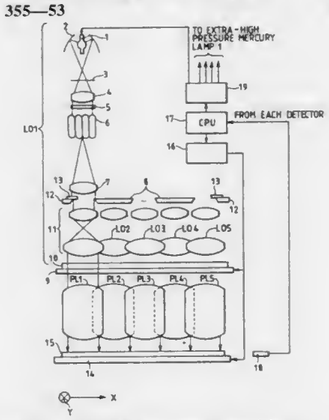
1. A corneal shape measuring apparatus comprising:
a ring image projecting system for concentrically projecting a plurality of ring images onto a cornea at the same time, said ring images each having the same wavelength;
a ring image receiving system for receiving the ring images projected on the cornea at the same time;
judgment means for judging whether or not the ring images are overlapped by analyzing the ring images received by said ring image receiving system; and
control means for controlling light emission from light sources which project the ring images when the ring images projected on the cornea are overlapped so that the ring images projected on the cornea are not overlapped based on a judgment result obtained by said judgment means;
a shape of the cornea being measured based on the ring images received by said ring image receiving system through said judgment means and said control means.

5,668,624

SCAN TYPE EXPOSURE APPARATUS

Tsuyoshi Naraki, Tokyo, and Kei Nara, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 358,590
Claims priority, application Japan, Dec. 22, 1993, 5-323717
Int. Cl.[6] H01L *21/027;* **G03B** *27/72*
U.S. Cl. 355—53 **20 Claims**



1. A scan type exposure apparatus, comprising:
a driving system for moving a mask having an exposure pattern and a photosensitive substrate in synchronism along a predetermined coordinate axis;
a plurality of illumination optical systems for illuminating, respectively, a plurality of partial areas of said mask;
a plurality of projection optical systems for projecting respective images of the illuminated plurality of partial areas onto corresponding portions of an exposure area of said photosensitive substrate; and
an exposure light amount adjusting device for, in a light path for illuminating a partial area of said mask at least at one side of said of said plurality of partial areas, adjusting an amount of illumination of said exposure pattern and an amount of illumination of a portion of said mask excluding said exposure pattern.

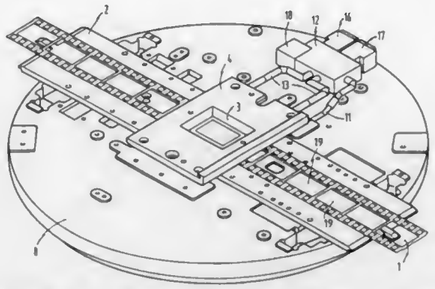
5,668,625

APPARATUS FOR AND METHOD FOR HANDLING FILM IN A PHOTOGRAPHIC PRINTER

Siegfried Bocklisch, Rüdersdorf; Wolfgang Fielder, Gera; Helmut Treiber, München; Rainer Leuschner, Gera; Wilfried Reichel, Münchenbernsdorf, and Michael Wilde, Gera, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 28, 1995, Ser. No. 508,619
Claims priority, application Germany, Jul. 29, 1994, 44 27 003.8
Int. Cl.[6] G03B *27/52;27/58;27/60;27/64*
U.S. Cl. 355—73 **12 Claims**

1. In apparatus for handling photographic film within a print-exposure section of a photographic printer, said film having at least



one film frame, said apparatus comprising (1) a film frame mask having a window for the frame with openings to be exposed to light and having at least one air duct with air openings adjacent the film and (2) a guide for the edges of the film that parallels the mask and demarcates a gap therewith for the passage of the film, the improvement comprising (a) air source means for producing an overpressure and an underpressure source of air, and (b) air control means, connected to said air source means and to said air duct, for supplying air at said overpressure or underpressure between the mask and the film through said air openings, the overpressure while the film is being advanced through the gap and the underpressure while the film frame is being exposed, and wherein the width of said gap remains constant while the film is being advanced and while the film is being exposed.

5,668,626

DISTANCE MEASURING APPARATUS

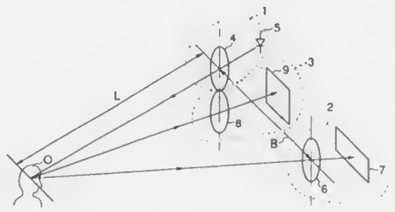
Ryutaro Shin, and Ryoichi Suzuki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,717

Claims priority, application Japan, Jun. 17, 1994, 6-135682; Sep. 14, 1994, 6-244961

Int. Cl.[6] G01C *3/00*; G03D *9/00*

U.S. Cl. 356—3.08 **11 Claims**



1. A distance measuring apparatus comprising:

light projecting means for projecting distance measuring light to an object;

first photosensor means disposed at a predetermined baseline length from said light projecting means;

second photosensor means disposed in a direction from said light projecting means crossing the direction of said baseline; and

signal forming means for correcting the output of said first photosensor means by using the output of said second photosensor means and forming a signal for indicating a distance from said device to said object, utilizing the corrected output.

5,668,627

OPTICAL LINE TESTING DEVICE AND METHOD FOR AUTOMATICALLY AND EFFICIENTLY MEASURING PROPERTIES OF THE OPTICAL LINE

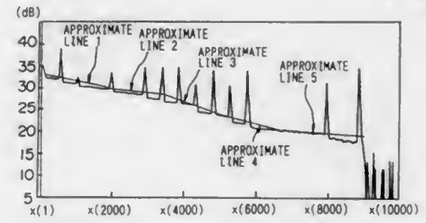
Takao Minami, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 635,490

Claims priority, application Japan, Apr. 28, 1995, 7-106663

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—73.1 **8 Claims**



1. An optical line testing device comprising:

light emitting means for emitting light pulses radiated to an optical line;

light receiving means for receiving response light, corresponding to each of the light pulses reflected by the optical line, for a predetermined period of time, and for converting the response light to a plurality of waveform data;

waveform processing means for averaging the plurality of waveform data to create averaged data;

memory means for storing the averaged data;

display means for visually displaying a response waveform, corresponding to the response light, based on the averaged data read out from the memory means; and

analyzing means for analyzing the response waveform to detect a property of the optical line, the analyzing means sets a data range defined between first data and last data selected from among the averaged data representing the response waveform, partitions the data range into a plurality of regions, and calculates an approximate line, using a method of least squares, with respect to each of the regions, the analyzing means performs comparison using a threshold value, which is set responsive to a level of the approximate line at the last data, to detect a plurality of data whose levels are higher than the threshold value, the analyzing means determines a terminal end of the optical line based on one data, among the plurality of data, that corresponds to a farthest side of the optical line.

5,668,628

DETECTION ANGLE CONTROL METHOD FOR LASER SENSOR

Fumikazu Terawaki, Yamanashi, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

Filed Jul. 14, 1995, Ser. No. 502,358

Claims priority, application Japan, Jul. 13, 1994, 6-183056

Int. Cl.[6] G01B *11/26*; B25J *9/00*

U.S. Cl. 356—139.03 **3 Claims**

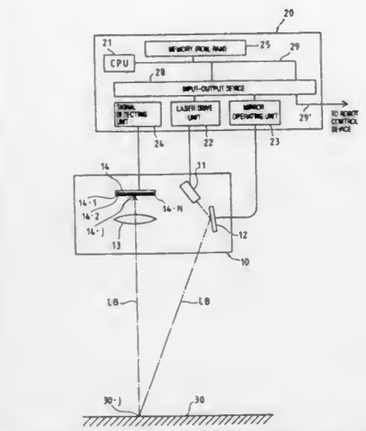
1. A detection angle control method for a laser sensor, comprising the steps of:

(a) moving a robot furnished with a laser sensor to a laser sensor detection angle adjustment position;

(b) emitting a laser beam from said laser sensor to an object of operation at a laser detection angle to scan said object with said laser beam;

(c) adjusting an attitude of said robot to allow a satisfactory light detection level of said laser beam reflected by said object and detected by the laser sensor at the laser sensor detection angle adjustment position;

(d) teaching the attitude to the robot; and



(e) executing a robot operation for the object of operation while maintaining the robot at said taught attitude.

5,668,629

REMOTE TRACKING SYSTEM PARTICULARY FOR MOVING PICTURE CAMERAS AND METHOD

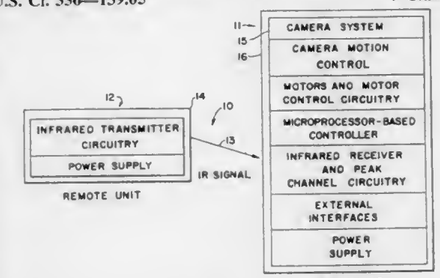
Jeffrey L. Parker, Ponte Vedra Bch; David F. Sorrells, Jacksonville; John D. Mix, Jacksonville, and Richard P. Daber, Jacksonville, all of Fla., assignors to ParkerVision, Inc., Jacksonville, Fla.

Continuation of Ser. No. 984,952, Dec. 3, 1992, which is a division of Ser. No. 569,643, Aug. 20, 1990, Pat. No. 5,179,421.

This application Sep. 25, 1995, Ser. No. 533,093

Int. Cl.[6] G01B *11/26*; H04N *5/225*; G05B *1/06*; G01C *21/02*

U.S. Cl. 356—139.05 **9 Claims**



1. A method of calculating the angular displacement of a moving object with respect to a reference angle and moving a movable means to automatically follow and track the moving object in response thereto comprising:

A. transmitting at the location of the moving object a signal from a radiant energy source into the area;

B. scanning the area for the transmitted signal by varying the view angle through which the transmitted signal can be received during a time interval;

C. receiving by a receiver the transmitted signal through the view angle;

D. determining the point in the time interval at which each angular position of the view angle occurs during the time interval;

E. automatically computing the angular displacement of the moving object with respect to the reference angle by comparing the point in the time interval at which the receiver received the transmitted signal with the angular position of the view angle through which the signal was received with respect to the same point in the time interval; and

F. automatically moving the movable means in response to the results obtained in step E to follow and track the moving object.

5,668,630

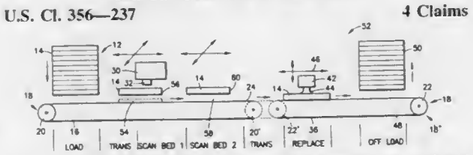
DUAL-BED SCANNER WITH REDUCED TRANSPORT TIME

Steven J. Bilodeau, Setauket, and William E. Yonescu, Smithtown, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Division of Ser. No. 435,821, May 5, 1995. This application Jun. 27, 1996, Ser. No. 671,065

Int. Cl.[6] G01N *21/00*; B07C *5/00*

U.S. Cl. 356—237 **4 Claims**



1. A method for scanning elements in a plurality of pocketed trays with an optical sensor, comprising:

moving a first pocketed tray of said plurality of pocketed trays containing said elements into an operable position with said optical sensor;

moving said optical sensor in a pattern for scanning said elements;

moving a second pocketed tray of said plurality of trays containing said elements toward a position adjacent said first pocketed tray while said optical sensor is performing said pattern over said first pocketed tray;

scanning elements in said pattern over said second pocketed tray upon completion of said pattern over said first pocketed tray, whereby said optical sensor is enabled to continue scanning with reduced transport delay.

5,668,631

MEASURING SYSTEM WITH IMPROVED METHOD OF READING IMAGE DATA OF AN OBJECT

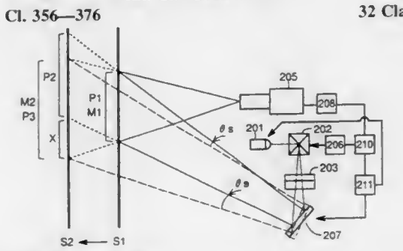
Toshio Norita, Mishima-Gun; Fumiya Yagi, Ibaraki, and Satoru Hirose, Tondahayashi, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Dec. 19, 1994, Ser. No. 358,306

Claims priority, application Japan, Dec. 20, 1993, 5-320245; Dec. 20, 1993, 5-320246; Dec. 20, 1993, 5-320247; Jun. 15, 1994, 6-132998

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **32 Claims**



1. A system, comprising:

a light projector which projects light toward an object and scans the object with the light, wherein a scanned area where the object is scanned with light can be varied;

a sensor, being apart from the light projector, which receives the light reflected on the object, wherein a sensed area is varied; and

a controller which controls the light projector so as to automatically change the scanned area on the basis of the current sensed area.

5,668,632

METHOD OF MEASURING THE SOILING OF FLOORING SURFACES

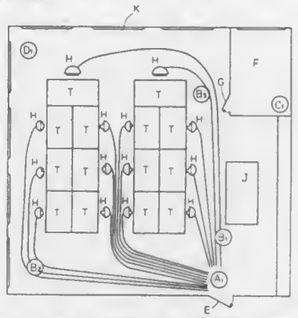
Shozaburo Kobayashi, Takarazuka, and Yasunobu Shimomura, Osaka, both of Japan, assignors to Kabushiki Kaisha Shimomura Komuten, Osaka, Japan

Filed Sep. 13, 1995, Ser. No. 527,375

Claims priority, application Japan, Oct. 13, 1994, 6-275765; Sep. 5, 1995, 7-254540

Int. Cl.[6] G01J *3/46*

U.S. Cl. 356—402 **6 Claims**



1. A cleaning control method for a cleaning control area of a flooring surface including a plurality of spots on the flooring surface perceived to be different from one another in the degree of soiling due to use of the flooring surface, comprising the following steps:

a step of appropriately selecting one of said plurality of spots perceived to be soiled most and another one of said plurality of spots perceived to be soiled least in the cleaning control area of the flooring surface,

a step of obtaining a relative difference in color difference between the two spots, and

a step of performing cleaning of said flooring surface to prevent the relative difference in color difference between said two spots from exceeding a predetermined value.

5,668,633

METHOD AND SYSTEM FOR FORMULATING A COLOR MATCH

William Estel Cheetam, Clifton Park, N.Y., and John Frederick Graf, Vienna, W. Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,493

Int. Cl.[6] G01J *3/50*

U.S. Cl. 356—402 **13 Claims**

1. A computer-implemented method for formulating a color match from a set of previously used color formulations, the method comprising the steps of:

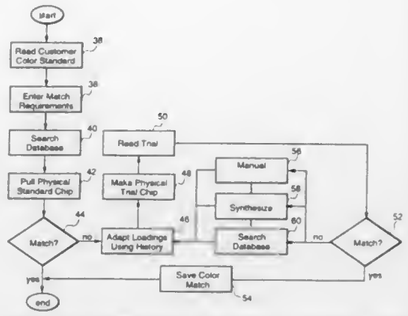
reading a color spectrum of a standard;

searching the set of previously used color formulations for a set of color formulas that approximates the color of the standard;

determining from the set of color formulas a color formula that best matches the color of the standard;

examining a test batch made from the color formula having the best match and determining the acceptability of the formula;

adapting the color formula of the test batch to the color of the standard if the formula is unacceptable, the adapting including at least one of manual adjusting color loadings of the color formula, synthesizing a new match with the color standard by



using new colorants and color loadings, or searching through the set of previously used color formulations until there is a more acceptable match;

determining if the adapted color formula matches the color of the standard; and

adapting the adapted color formula further until there is an acceptable match with the color of the standard.

5,668,634

QUALITY CONTROL AND GRADING SYSTEM FOR MEAT

Paul Bernard David Newman, Northcote House, Northlew, Okehampton EX20 3BT, England

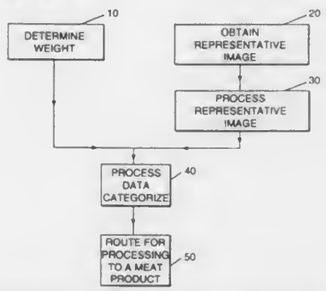
PCT No. PCT/GB93/01398, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO94/00997, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 5, 1993, Ser. No. 362,439

Claims priority, application United Kingdom, Jul. 3, 1992, 9214188; Oct. 7, 1992, 9221065; Mar. 23, 1993, 9306046

Int. Cl.[6] A22B *5/00*

U.S. Cl. 356—445 **5 Claims**



1. A method for grading a hind leg of a meat animal according to the amount of popliteal fat, comprising:

a) obtaining a representative image, or representative images, of an exposed surface of a hind leg of a meat animal;

b) processing said representative image or representative images to determine the amount of intermuscular fat present at the exposed surface, thereby providing data relatable to the amount of popliteal fat present in said hind leg;

c) processing data provided by step (b) so as to produce a parameter or plurality of parameters suitable for categorising said hind leg; and

d) routing said hind leg to a grade or category on the basis of said parameter or plurality of parameters.

5,668,635

FACSIMILE SYSTEM OPERABLE IN TONER SAVE MODE, DEPENDING UPON TYPE OF ORIGINAL IMAGE DATA

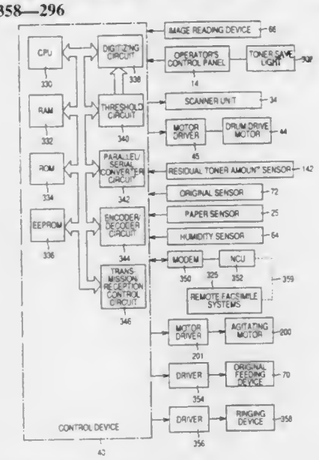
Wataru Tomida, Owariasahi, and Kazunobu Asai, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 18, 1995, Ser. No. 423,989

Claims priority, application Japan, Apr. 25, 1994, 6-086202

Int. Cl.[6] H04N *1/387;1/32;* **G03G** *21/00*

U.S. Cl. 358—296 **23 Claims**



1. A recording apparatus comprising:

a recording portion for effecting a recording operation on a recording medium in a matrix of dots by selective application of a toner to local spots on said medium, according to original image data representative of an original image to be reproduced, said local spots corresponding to picture elements of said dot matrix;

a non-toner-save control portion for controlling said recording portion according to said original image data to form said original image in a non-toner-save recording mode;

a toner-save control portion for controlling said recording portion according to a toner-save image data to form a toner-save image in a toner-save recording mode, said toner-save image having a lower density of image dots than said original image and being recognizable as an image similar to the original image, said toner-save control portion generating said toner-save image data on the basis of said original image data; and

mode selector means for activating one of said non-toner-save control portion and said toner-save control portion to select a corresponding one of said non-toner-save and toner-save recording modes, on the basis of a type of said original image data.

5,668,636

EMBEDDED DATA CONTROLLED DIGITAL HIGHLIGHT COLOR COPIER

Richard J. Beach; John Seely Brown, and John R. White, all of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

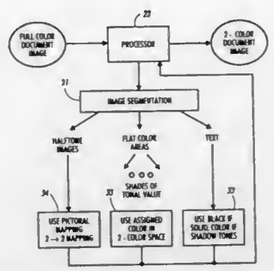
Filed Dec. 20, 1995, Ser. No. 575,764

Int. Cl.[6] G02B *7/00;* **G01D** *15/00*

U.S. Cl. 358—296 **10 Claims**

1. A process for reproducing highlight color copies of full color source images from hardcopy versions of said source images that are of unknown color fidelity; said process comprising the steps of

embedding a digital machine readable full color specification for at least a portion of a source image in a hardcopy version of said image;



scanning said hardcopy version of image to produce a digital representation thereof, including said digital full color representation;

processing said digital representation of said image to recover said full color specification;

indexing into a plurality of different full-color to highlight-color transforms in accordance with said full color specification to select at least one of said color transforms for rendering a highlight color copy of said image; and

printing said highlight color copy.

5,668,637

IMAGE PROCESSING APPARATUS HAVING A COPY FUNCTION

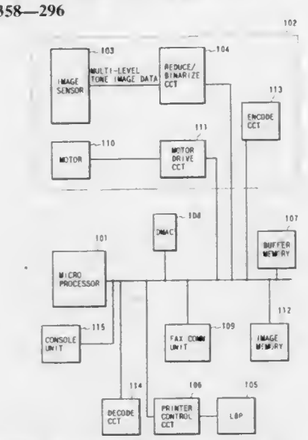
Shoichi Yamaguchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1996, Ser. No. 619,437

Claims priority, application Japan, Mar. 22, 1995, 7-088860; Mar. 6, 1996, 8-078383

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—296 **11 Claims**



1. An image processing apparatus comprising:

read means for reading a document sheet line by line with a first time interval between lines;

record means for recording image data line by line with a second time interval longer than the first time interval between lines;

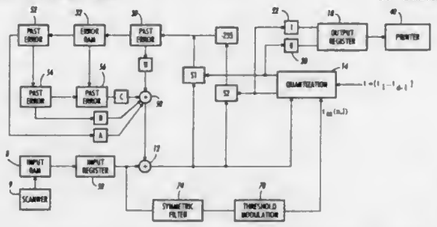
feed means for relatively moving said document sheet and said read means;

a buffer memory for temporarily storing the image data from said read means and outputting the stored image data to said record means;

drive means for driving said feed means in synchronism with the second time interval to relatively move said document sheet and said read means at a first constant speed; and

conversion means for converting the image data outputted from said read means at the first time interval to the image data of the second time interval.

5,668,638
ERROR DIFFUSION METHOD WITH SYMMETRIC ENHANCEMENT
Keith T. Knox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jun. 27, 1996, Ser. No. 671,479
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—298 **13 Claims**



1. A processing system for processing electronic images defined in terms of image signals, each image signal representing density at a discrete position within the electronic image, and quantizing image signals defined at "c" gray levels for use in a device requiring image signals defined at "d" levels, where c≧d, said system comprising:

an image input receiving at least a portion of the electronic image as input signals i(x);

an error adding circuit, adding error signals determined from any previous thresholding processing to said input signals to generate corrected input signals;

a thresholding processor, receiving corrected image signals defined at "c" levels, and quantizing said corrected image signals to "d" levels, by comparison to at least one threshold signal and outputting said corrected image signals at "d" levels as output signals;

an image output, outputting output signals defined at "d" levels;

a differencing circuit, generating a difference signal representative of the difference in image density between corresponding corrected input signals and the output signal;

an error distribution circuit, receiving said difference signals, and directing weighted portions thereof to said error adding circuit for addition to subsequent image signals in a predetermined spatial relationship to the input signals; and

a threshold modulation circuit producing a threshold modulation signal t(x) driving the threshold processor to vary the threshold signal proportionally to the input image, and recursively vary the threshold signal in response to previous threshold modulation signals.

5,668,639
METHOD FOR VIDEO EDITING
Jose N. Martin, Madrid, Spain, assignor to Comunicacion Integral, Madrid, Spain
Filed Mar. 21, 1995, Ser. No. 407,814
Int. Cl.[6] H04N *5/76; G11B 27/02*
U.S. Cl. 380—52 **12 Claims**

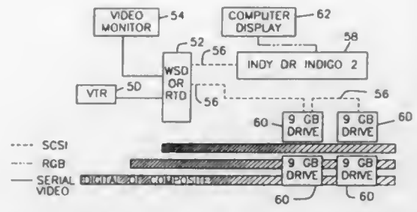
1. A method for editing video and associated audio data derived from film of video images, comprising the steps of:

forming said video data into a plurality of video clips;

uniquely identifying each one of said plurality of video clips;

displaying on a video display the ones of said plurality of video clips that occur over a given period of time relative to one another in the time domain;

arranging said plurality of video clips associated with a given frame of video into a vertical stacks, with each clip being

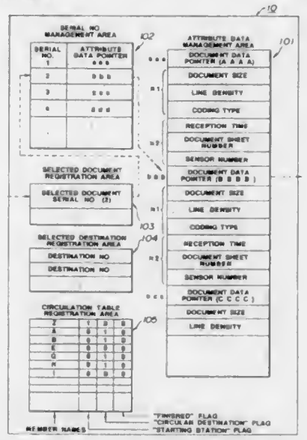


positioned in a layer its associated stack in a hierarchy from background to foreground at the time of occurrence of the associated frames;

selectively rearranging the positioning of video clips within a stack to obtain a desired effect; and

moving said video clips between stacks, to obtain a desired effect for successive frames of video.

5,668,640
FACSIMILE EQUIPMENT
Masako Nozawa, Urawa, and Yumiko Yamaguchi, Fuchu, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 960,698, Oct. 14, 1992, abandoned. This application Dec. 21, 1994, Ser. No. 361,166
Claims priority, application Japan, Oct. 14, 1991, 3-264746; Nov. 19, 1991, 3-303303
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—434 **12 Claims**



1. A facsimile communication system having at least three facsimile machines connected to each other through a communication channel, wherein document data is transmitted sequentially to the at least three facsimile machines based on circulation table data attached to the document data and transmitted with the document data, at least one of the facsimile machines comprising:

an image memory for storing the document data;

input means for inputting a plurality of facsimile circular transmission destinations according to a circulation order, the circulation order defining an order for sequentially transferring the document data to the at least three facsimile machines;

first management data memory means for storing the circular transmission destinations and the circulation order as a new circulation table data;

second management data memory means for storing the circulation table data attached to the document data received from another one of the facsimile machines;

circulation table data updating means for updating the circulation table data received from another one of the facsimile machines by entering that circulation is finished at a portion of the circulation table data that shows the at least one of the facsimile machines as a circular transmission destination, and by deleting the at least one of the facsimile machines as a circular transmission destination from the circulation table data;

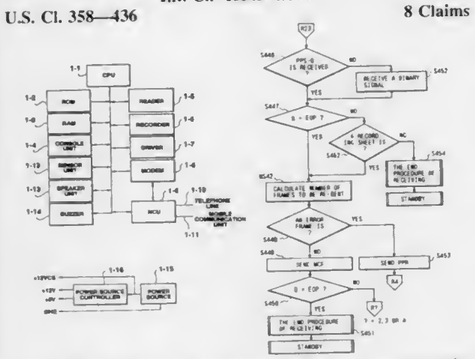
retrieval means for sequentially retrieving a next transmission destination on the basis of the new circulation table data or the updated circulation table data, the next transmission destination having the highest position in the circulation order among transmission destinations to which circulation has not finished;

calling control means for calling the next transmission destination, and if connection to the next transmission destination is unsuccessful, for sequentially calling the retrieved circular transmission destination having the subsequent highest position in the circulation order until interconnection to one of the circular transmission destinations is successful; and

transmission control means for transmitting, to the circular transmission destination connected through the calling operation by the calling control means, the document data stored in the image memory and the new circulation table data, or the document data received with the circulation table data and the updated circulation table data,

whereby the circulation order is updated according to the circulation table data received from the circular transmission destinations so that the document data is sequentially transmitted until the circulation table data indicates that circulation has finished to all of the circular transmission destinations.

5,668,641
FACSIMILE APPARATUS FOR ERROR RETRANSMISSION
Takeshi Tsukamoto, Kawasaki, and Yosuke Ezumi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 233,418, Apr. 28, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 680,884
Claims priority, application Japan, Apr. 28, 1993, 5-102748
Int. Cl.[6] H04N *1/333*
U.S. Cl. 358—436 **8 Claims**



1. A data communication apparatus having an error correction communication function, comprising:

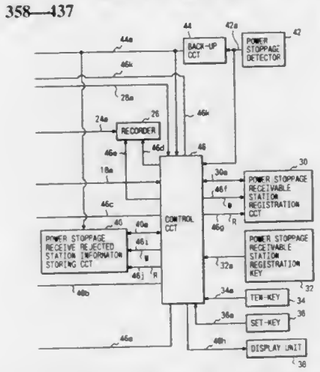
memory means for storing data received from a transmitter in an error correction communication mode;

processing means connected to said memory means for processing data stored in said memory means;

calculating means for calculating a data amount corresponding to a time required to process data which has been stored in said memory means but not yet processed by said processing means; and

sending means for sending a retransmission request signal to the transmitter to retransmit previously received data, wherein said sending means changes an amount of data to be retransmitted by the retransmission request signal based on the data amount calculated by said calculating means.

5,668,642
IMAGE DATA COMMUNICATION APPARATUS CAPABLE OF RECEIVING IMAGE DATA DURING POWER FAILURE
Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 230,518, Apr. 20, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,272
Claims priority, application Japan, Apr. 22, 1993, 5-095986
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—437 **53 Claims**



1. An image data communication apparatus, comprising:

main power supply means for supplying power to said apparatus;

detection means for detecting a power failure of said main power supply means;

reception means for receiving image data and receiving power from a secondary power supply means, while the power failure is detected by said detection means;

record means for recording the image data received by said reception means, said record means recording that data while receiving power from said main power supply means; and

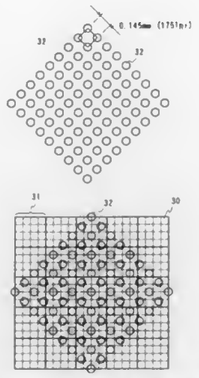
storage means for storing the image data received by said reception means and receiving power from the secondary supply means, while the power failure is detected by said detection means,

wherein, while the power failure is detected by said detecting means, the received image data is not recorded by said record means.

5,668,643
RECORDING APPARATUS HAVING A TEXT PROCESSING MODE USING A THRESHOLD AND AN IMAGE PROCESSING MODE USING A MEAN VALVE OF PIXEL DATA SAMPLES AS THE PIXEL GRADATION VALVE
Masaki Sakamoto; Yuki Oishi; Hideki Yorozu, and Kazutaka Suzuki, all of Iwate-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed May 28, 1996, Ser. No. 653,918
Claims priority, application Japan, Jun. 30, 1995, 7-166253; Jun. 30, 1995, 7-166255
Int. Cl.[6] H04N *1/403; 1/407*
U.S. Cl. 358—455 **4 Claims**

1. A recording apparatus comprising:

an image scanner for reading a document;



a controller for converting read data for one pixel composed of read data of N read units read by said image scanner into recording data and sequentially storing said recording data into a memory; and

a recording head to be controlled based on said recording data stored in said memory;

wherein, if said document is an image document, said controller has an image processing mode in which given M pieces of read data out of said read data of N read units are sampled, a mean value of the sampled M pieces of read data is calculated, and the calculated mean value is stored in said memory as gradation data of one pixel.

5,668,644

VIDEO CLOCK SIGNAL GENERATOR IN AN OPTICAL SCANNER IN WHICH A MASK INCLUDING A LINEAR SCALE PROVIDES TIMING FOR CONTROLLING THE AMPLITUDE OF A VIBRATING MIRROR

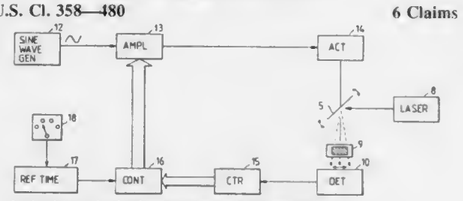
Yoshinori Kuroiwa, Chigasaki; Hiroshi Nishida, Tokyo, and Hisashi Okugawa, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 234,624, Apr. 28, 1994, Pat. No. 5,446,556, which is a continuation-in-part of Ser. No. 970,868, Nov. 3, 1992, abandoned. This application Mar. 29, 1995, Ser. No. 412,911

Claims priority, application Japan, Nov. 7, 1991, 3-291723; Nov. 7, 1991, 3-291724; Nov. 12, 1991, 3-295944; Jun. 25, 1993, 5-177598

Int. Cl.[6] H04N *1/04;1/053;1/113*

U.S. Cl. 358—480 **6 Claims**



1. A video clock signal generator comprising:

means for supplying a light beam;

a mask having opposite ends spaced by a predetermined distance;

a vibration scanner for reflecting the light beam and forming a light spot vibrating on the mask beyond the opposite ends thereof;

a detector for generating an output signal representing optical information from the mask;

a counter for counting a time required for the light spot to cross the opposite ends of the mask based on the output signal of the detector; and

means for controlling an amplitude of the scanner mirror in accordance with the time counted by the counter;

wherein said mask includes a linear scale having a plurality of gratings arranged at a predetermined pitch in a direction of vibration of the light spot, and said video clock signal generator further comprises processing means for generating the video clock signal in accordance with optical information from the linear scale.

5,668,645

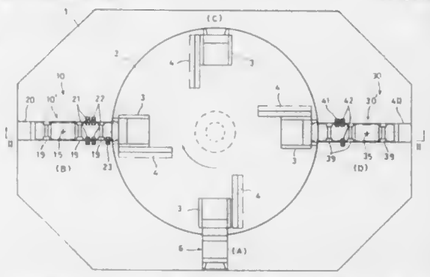
METHOD AND APPARATUS FOR PRINTING FILMS

Yoshiyuki Yamaji, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Dec. 29, 1994, Ser. No. 365,818

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—487 **11 Claims**



1. A method of printing photographic films, comprising the steps of:

a) supporting a plurality of film cartridges along the circumference of a rotary table;

b) moving the cartridges along a circular path having a fixed radius;

c) pulling film out of one of the film cartridges at a first processing position toward a scanner unit fixed outside of the circular path and along a diametrical line of the circular path, the scanner unit having a first film winding unit fixedly mounted thereto;

d) reading image data of the film with the scanner unit while winding the film with the first winding unit;

e) establishing printing conditions based upon the image data read in step of reading;

f) rewinding the film back into the one of the film cartridges;

g) moving the one of the film cartridges along the circular path to another processing position;

h) pulling the film out of the one of the film cartridges toward a printing and exposure unit fixed outside of the circular path along a diametrical line of the circular path, the printing and exposure unit having a second film winding unit fixedly mounted thereto;

i) exposing and printing each frame of the film in accordance with the printing conditions established in said step of establishing while winding the film with the second film winding unit;

j) rewinding the film back into the one of the film cartridges; and

k) carrying out said steps c–f for a second one of the film cartridges substantially concurrently with said steps h–j for the first one of the film cartridges, the scanner unit and the printing and exposure unit being provided independently of each other.

5,668,646

APPARATUS AND METHOD FOR DECODING DIFFERENTLY ENCODED MULTI-LEVEL AND BINARY IMAGE DATA, TIIE LATER CORRESPONDING TO A COLOR IN THE ORIGINAL IMAGE

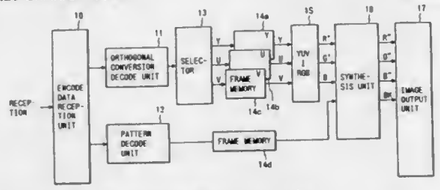
Akihiro Katayama, Kawasaki; Yasuhiko Yasuda, Musashino; Shigeo Kato, Saitama-ken, and Hirokazu Uchio, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 173,863, Dec. 23, 1993, Pat. No. 5,361,147, which is a continuation of Ser. No. 651,030, Feb. 5, 1991, abandoned. This application Aug. 12, 1994, Ser. No. 289,225

Claims priority, application Japan, Feb. 6, 1990, 2-27658; Jun. 5, 1990, 2-147035; Jun. 5, 1990, 2-147036; Sep. 30, 1990, 2-262798; Sep. 30, 1990, 2-262799

Int. Cl.[6] H04N *1/411;1/413;1/56;* **G06T** *9/00*

U.S. Cl. 358—530 **12 Claims**



1. An image decoding apparatus comprising:

a) input means for inputting multi-level image data encoded by a first encoding method and binary image information encoded by a second encoding method which is different from the first encoding method;

b) decoding means for decoding the multi-level image data and the binary image information; and

c) synthesizing means for synthesizing the multi-level image data and the binary image information decoded by said decoding means and outputting synthesized image data,

wherein both the multi-level image data and the binary image information are obtained from the same original image and wherein the binary image information corresponds to a color in the original image, the color being represented by a plurality of color component data.

5,668,647

METHOD AND APPARATUS AND FOR PROCESSING ULTRAFAST OPTICAL SIGNALS

Martin C. Nuss, Fair Haven, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 338,912, Nov. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 177,018, Jan. 4, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,972

Int. Cl.[6] G02B *27/46;* **G03H** *1/16*

U.S. Cl. 359—4 **26 Claims**

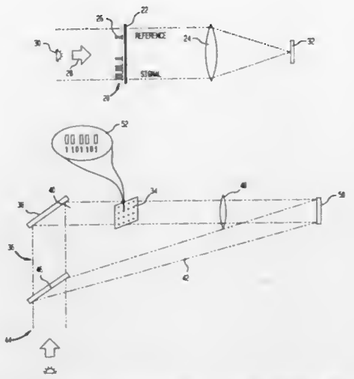
1. A method for recording a temporal optical pulse pattern in a hologram for time-domain processing of temporal optical data signals, without the need to synthesize the temporal optical signal to be stored, comprising the steps of:

mapping a reference pattern and temporal patterns representing the temporal optical data signals to spatial data patterns using a predetermined time-space scaling law;

providing the spatial data patterns to a spatial light modulator (SLM) to generate scaled spatial signals of the temporal optical data signals;

illuminating the spatial data patterns and pattern with a monochromatic light source;

converting the scaled spatial signals into Fourier transform spectra;



producing interference fringe patterns of the spatial data patterns and reference pattern; and

recording the interference fringe patterns with a holographic recording medium.

5,668,648

COMPUTER-ASSISTED HOLOGRAPHIC DISPLAY APPARATUS

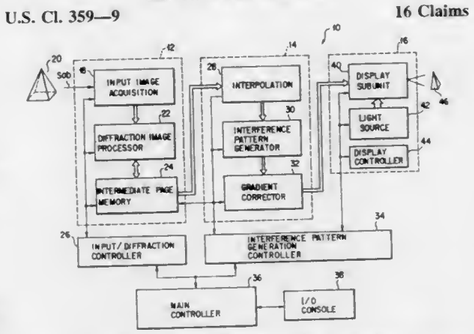
Tutomu Saito, Yokohama, and Toshikazu Matsui, Kobe, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 981,296, Nov. 25, 1992, Pat. No. 5,347,375. This application Jun. 17, 1994, Ser. No. 261,709

Claims priority, application Japan, Nov. 26, 1991, 3-336137; Nov. 26, 1991, 3-336138

Int. Cl.[6] G03H *1/08;1/04*

U.S. Cl. 359—9 **16 Claims**



12. A computer-assisted holographic-display apparatus comprising:

first computation means for receiving an input image signal representing an object and for computing corresponding diffraction pattern data with a first sampling density;

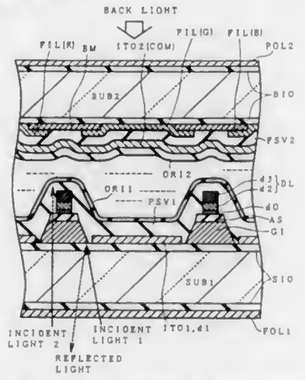
second computation means coupled to said first computation means, for interpolating the diffraction pattern data to generate interpolated diffraction pattern data with an increased second sampling density; and

modulated light forming means connected to said second computation means, for forming a holographic image of the object by use of the interpolated diffraction pattern data.

5,668,649
STRUCTURE OF LIQUID CRYSTAL DISPLAY DEVICE FOR ANTIREFLECTION

Masahiko Suzuki, Mobara; Kikuo Ono, Naka-machi; Junichi Ohwada, Mobara; Hikaru Itoh, Mobara; Tatsuo Kamei, Mobara, and Kuniyuki Matsunaga, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 255,958, Jul. 6, 1994, Pat. No. 5,541,748. This application Mar. 1, 1995, Ser. No. 396,774
Claims priority, application Japan, Mar. 7, 1994, 6-035613
Int. Cl.[6] G02F *1/1343;1/1335*
U.S. Cl. 349—42 **17 Claims**



1. A liquid crystal display device having a liquid crystal display panel comprising:

a first insulating substrate having:

a plurality of scan signal lines extending horizontally and arranged in a vertical direction;

a plurality of video signal lines extending vertically and arranged in a horizontal direction; and

a plurality of sets of a first pixel electrode and a switching element, each set disposed in each intersection area enclosed by two adjacent scan signal lines and two adjacent video signal lines; and

a second insulating substrate having:

opposing pixel electrodes disposed facing the first pixel electrodes, the first and second insulating substrates being stacked together with a predetermined gap therebetween and with a liquid crystal sealed between the first and second insulating substrates;

wherein a backlight is arranged on the second insulating substrate side, a semiconductor film is patterned along and in the same shape as the video signal lines between the video signal lines and the first insulating substrate for substantially preventing incident light from outside of the display device from being reflected to the outside by the video signal lines so as to improve image quality.

5,668,650
THIN FILM TRANSISTOR PANEL HAVING AN EXTENDED SOURCE ELECTRODE

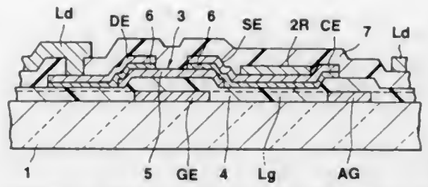
Hisatoshi Mori, Hachioji, and Hiroyuki Okimoto, Hino, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 300,050, Sep. 2, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 755,200
Claims priority, application Japan, Sep. 6, 1993, 5-220935
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—42 **15 Claims**

1. A thin film transistor panel comprising:

a substrate;

a plurality of pixel electrodes arranged on said substrate in rows and columns in a matrix form;



a plurality of gate lines provided in association with individual rows of said matrix of said pixel electrodes and each gate line extending in a row direction;

a plurality of data lines provided in association with individual columns of said matrix of said pixel electrodes and each data line extending in a column direction;

a plurality of thin film transistors arranged in association with said pixel electrodes, each thin film transistor having a gate electrode formed integrally at one side of an associated one of said gate lines and protruding therefrom, a gate insulating film covering said gate electrode, a semiconductor film formed, facing said gate electrode, on said gate insulating film, a first electrode connected to said semiconductor film and to said associated pixel electrode, and a second electrode connected to said semiconductor film and to an associated one of said data lines;

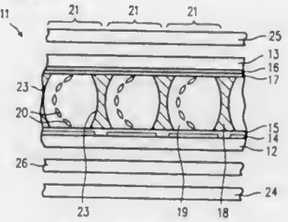
each gate line having an extending auxiliary electrode formed for each thin film transistor, and positioned close to the first electrode; and

each first electrode having an integrally formed extending part of the respective first electrode, the extending part of each said first electrode being integrally formed as a single, one-piece, continuous member with the respective first electrode and of the same material of the respective first electrode, and the extending part of each said first electrode having an end portion facing and being closely spaced from said auxiliary electrode with an insulating film therebetween.

5,668,651
POLYMER-WALL LCD HAVING LIQUID CRYSTAL MOLECULES HAVING A PLANE-SYMMETRICAL BEND ORIENTATION

Nobuaki Yamada, Higashiosaka; Wataru Horie, Hashimoto; Toshiyuki Hirai, Kashihara, and Shuichi Kozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1995, Ser. No. 394,472
Claims priority, application Japan, Mar. 18, 1994, 6-049332; Sep. 30, 1994, 6-237852
Int. Cl.[6] G02F *1/1335;1/1339*
U.S. Cl. 349—156 **23 Claims**



1. A liquid crystal display device comprising:

a pair of electrode substrates including a plurality of pixels arranged in a matrix shape and an electrode formed on a surface of each electrode substrate, at least one of the surfaces being subjected to a rubbing treatment;

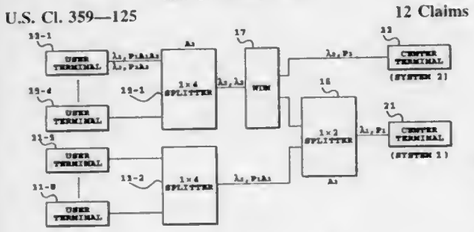
a wall-like structure formed between the pair of electrode substrates, the wall-like structure including unit walls, and each unit wall corresponding to one of the plurality of pixels; and

a liquid crystal layer at least partially partitioned by the wall-like structure and including liquid crystal regions between the pair of electrode substrates, each liquid crystal region corresponding to one of the plurality of pixels, wherein liquid crystal molecules in the liquid crystal regions have a plane-symmetrical bend orientation with respect to a plane taken in the middle of and in parallel to the electrode substrates.

5,668,652
OPTICAL WDM (WAVELENGTH DIVISION MULTIPLEXING) TRANSMISSION SYSTEM AND METHOD FOR CONFIGURING THE SAME

Masashi Hashomoto; Norio Tamaki, both of Yokosuka; Kiyomi Kumozaki, and Ryu-ichi Watanabe, both of Zushi, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Feb. 20, 1996, Ser. No. 602,493
Claims priority, application Japan, Feb. 24, 1995, 7-037198; Mar. 6, 1995, 7-045834
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—125 **12 Claims**



1. An optical WDM (Wavelength Division Multiplexing) transmission system comprising:

a first center terminal for outputting a first optical signal with a wavelength of λ_1 and an output power of P_1;

a second center terminal for outputting a second optical signal with a wavelength of λ_2 and an output power of P_2;

first optical splitting means connected to an output port of said first center terminal for splitting said first optical signal at an attenuation factor of A_1;

optical multiplexing means connected to an output port of said second center terminal and an output port of said first optical splitting means for combining said second optical signal and said first optical signal;

second optical splitting means connected to an output of said optical multiplexing means for splitting a multiplexed optical signal of said first optical signal and said second optical signal at an attenuation factor of A_2;

a first user terminal connected to an output of said second optical splitting means for receiving said first optical signal, said first user terminal having a minimum receiving level of R_1; and

a second user terminal connected to an output of said second optical splitting means for receiving said second optical signal, said second user terminal having a minimum receiving level of R_2; wherein following expressions are satisfied:

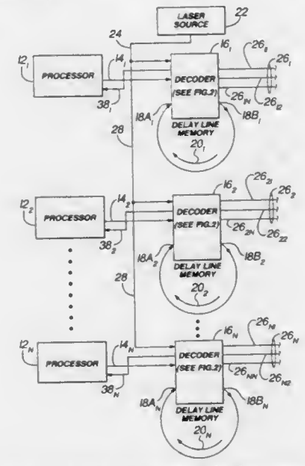
$$P_1 \times A_1 \times A_2 \geqq R_1, \text{ and}$$

$$P_2 \times A_2 \geqq R_2.$$

5,668,653
HIGH-SPEED SWITCH FOR FAST ROUTING OF DATA PACKETS

Joseph P. Garcia, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 19, 1995, Ser. No. 504,196
Int. Cl.[6] H04J *14/08;* **H04Q** *11/04*
U.S. Cl. 359—140 **10 Claims**



1. A network switching arrangement for interconnecting a plurality of processors of a number (n) each generating data some of which data might simultaneously be present, said network switching arrangement comprising:

(a) a plurality of decoders of said number (n) respectively connected to said plurality of processors and generating a first control signal responded to by the respective processor by generating said data which are received and decoded by said connected decoder to determine an intended destination thereof and also generating a corresponding decoder output signal therefor;

(b) a plurality of delay line memories of said number (n) each having a predetermined time delay respectively connected to said plurality of decoders and responsive to said decoder output signal to temporarily store said data by circulating said data therein;

(c) a plurality of optoelectronic means respectively connected to said plurality of decoders and responsive to said decoder output signal to convert said respective data to a light pulse signal having a corresponding intensity;

(d) a plurality of path selector switches of said number (n) respectively connected to said plurality of said optoelectronic means and respectively responsive to said decoder output signals so as to transmit said respective light pulse signals;

(e) a plurality of light responsive devices of said number (n) respectively connected to said path selector switches and receiving and converting said respective light pulses into electrical voltage signals having amplitudes proportional to the corresponding light intensities;

(f) contention resolution means receiving said electrical voltage signals from each of said plurality of light responsive devices, some of said electrical voltage signals being simultaneously present, and responding to said electrical voltage signal having the highest initial amplitude and generating a respective second control signal; and

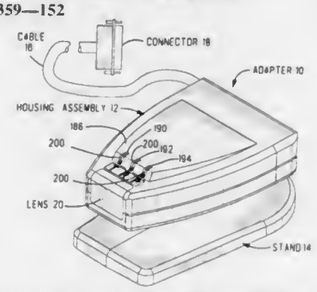
(g) a plurality of repeater switches of said number (n) respectively connected to said plurality of said path selector switches to transfer said respective second control signal to said respective decoder having means responsive to said second control signal to direct said respective data being circulated in said delay line memory onto said respective repeater

switches, said respective repeater switches routing said circulated data to said intended destination.

5,668,654
PACKAGE FOR AN INFRARED COMMUNICATIONS ADAPTER

Karen Elizabeth Benjamin; Jeffrey Byron McClinton; Robert Neil Whiteman, Jr.; Earl Chester Myers, Jr., and John Joseph Consoli, all of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 30, 1995, Ser. No. 453,729
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—152 **33 Claims**



1. A package for an infrared communications adapter including a circuit board having a communications circuit thereon including an infrared transceiver, said circuit arranged to interface with a data port by means of an electrical cable having a terminated connector, said package comprising: an upper housing half and a lower housing half, each of which includes first features that are integral to the respective housing halves and cooperate, and are the sole means, to position and interlock said housing halves together thereby forming a housing assembly having an interior cavity for holding said circuit board therein, said interior cavity having a longitudinal axis extending through said infrared transceiver near a first end of said cavity,

wherein said first features include;

at least one projection extending from one of said upper and lower housing halves and at least one opening in the other of said upper and lower housing halves in alignment with said projection and arranged for interferingly receiving said projection therein thereby effecting said position and said interlock of said housing halves together, wherein said at least one projection and said at least one opening have respective cross-sectional shapes that are mutually different.

5,668,655
TILT MIRROR ARRANGEMENT

Jürgen Schweizer, Westerhofen, and Reinhard Ludewig, Heidenheim, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim-Brenz, Germany

Filed Feb. 8, 1996, Ser. No. 598,703
Claims priority, application Germany, Feb. 11, 1995, 195 04 568.8
Int. Cl.[6] G02B *26/08;7/182*
U.S. Cl. 359—198 **25 Claims**

1. A tilt mirror arrangement comprising;

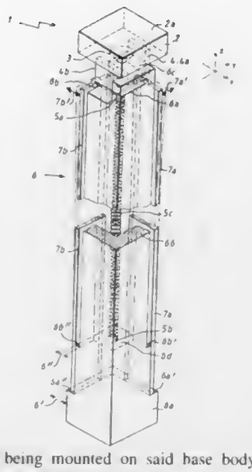
a base body defining a longitudinal axis;

a tilt mirror unit having a mirror defining a mirror surface extending transversely to said longitudinal axis;

a bearing defining at least an almost fixed pivot point between said tilt mirror unit and said base body for pivotally mounting said tilt mirror unit on said base body;

said tilt mirror unit having an outermost peripheral edge peripherally surrounding said mirror surface;

an actuator for tilting said mirror about an axis transverse to said longitudinal axis;



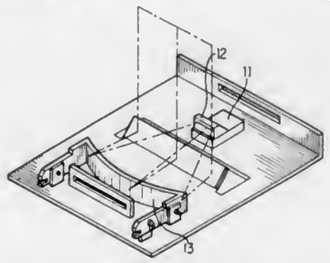
said actuator being mounted on said base body substantially entirely below said tilt mirror unit;

said tilt mirror unit, said bearing, said actuator and said base body conjointly defining an assembly which does not extend outwardly beyond said outermost peripheral edge when viewed in plan from above and along said longitudinal axis or extends only insignificantly beyond said outermost peripheral edge when said mirror is tilted and said assembly is viewed in plan from above and along said longitudinal axis.

5,668,656
LIGHT SUPPLYING OPTICAL DEVICE

Nobuhiro Fujinawa; Masayuki Inami, both of Kanagawa-ken, and Eisaku Maeda, Chiba-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 305,322
Claims priority, application Japan, Dec. 13, 1993, 5-341995
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—208 **38 Claims**



1. A light-supplying optical device comprising:

a light source that produces an elongated line of light that travels in a first direction along a path, said elongated line of light having a curved shape when viewed in said first direction;

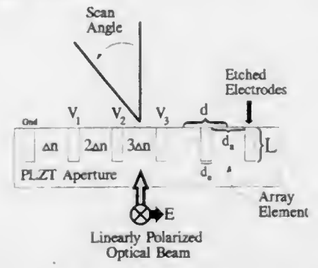
a reflector located in said path to reflect the curved line of light produced by said light source toward a planar surface;

wherein the curved elongated line of light produced by said light source nullifies a line bow phenomenon of the reflector so that a substantially straight elongated line of light is formed on the planar surface.

5,668,657
PLZT BASED ELECTRO-OPTIC PHASED ARRAY OPTICAL SCANNER

Pierre J. Talbot, Alder Creek, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 372,094, Jan. 13, 1995, abandoned. This application Feb. 5, 1996, Ser. No. 596,783
Int. Cl.[6] G02F *1/29*
U.S. Cl. 359—315 **12 Claims**



1. An electro-optic phased array scanner comprising:

a transparent quadratic electro-optic aperture for processing optical signals;

a plurality of electrodes that form an electrode grating within said transparent electro-optic aperture effective for inducing a grating index of refraction pattern within the transparent electro-optic aperture by applying a controlled current signal to the electrode grating;

a current source that produces a current I and that is connected to the electrode grating;

a set of input resistors interconnected in a circuit between each of the electrodes in the electrode grating to provide a plurality of controlled DC voltage signals to induce said grating index of refraction pattern; and

said set of input resistors being defined by

$$R_n = \frac{\sqrt{n}\, v_n}{I}, \quad n = 1, 2, 3 \ldots, N,$$

where

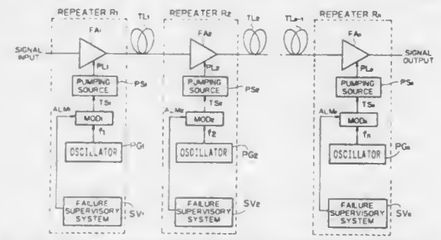
R_n is the resistance of the nth member of said set of input resistors, and

v_n is a controlled DC voltage signal.

5,668,658
TRANSFER OF REPEATER INFORMATION SIGNALS IN IN-LINE OPTICAL AMPLIFIER REPEATER SYSTEM

Satoshi Hamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,309
Int. Cl.[6] H04B *10/00;* **H01S** *3/00*
U.S. Cl. 359—341 **23 Claims**



1. An optical transmission system comprising a plurality of optical repeaters, each said optical repeater comprising:

in-line amplifying means for optically amplifying line-signal light, said amplifying means being pumped by pumping light;

oscillating means for generating an oscillation wave of a frequency different from that of an oscillation wave generated by an oscillating means of another optical repeater, said frequency being determined based on a gain of said in-line amplifying means and a modulation efficiency of said pumping light;

modulation means for frequency-modulating said oscillation wave based on repeater information which is generated in said optical repeater;

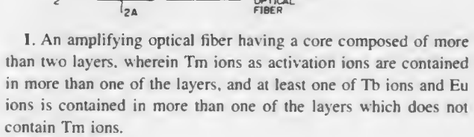
light-emitting means for generating said pumping light which is modulated according to said oscillation wave frequency-modulated by said modulation means; and

combining means for optically combining said pumping light generated by said light-emitting means with said line-signal light.

5,668,659
OPTICAL FIBERS FOR OPTICAL AMPLIFIERS

Tadashi Sakamoto; Terutoshi Kanamori; Makoto Yamada; Makoto Shimizu; Yasutake Ohishi, and Shoichi Sudo, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,498
Claims priority, application Japan, Sep. 27, 1994, 6-231348; Jun. 21, 1995, 7-154504
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—341 **4 Claims**



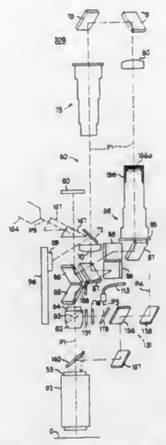
1. An amplifying optical fiber having a core composed of more than two layers, wherein Tm ions as activation ions are contained in more than one of the layers, and at least one of Tb ions and Eu ions is contained in more than one of the layers which does not contain Tm ions.

5,668,660
MICROSCOPE WITH PLURAL ZOOM LENS ASSEMBLIES IN SERIES

Gary D. Hunt, 22851 Ridge Route Dr., Lake Forest, Calif. 92630

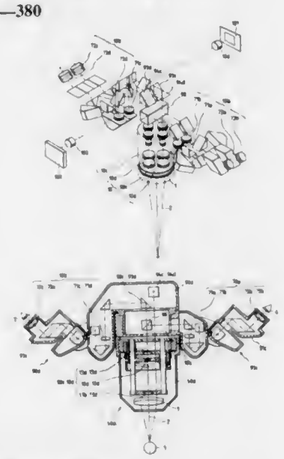
Filed Nov. 29, 1994, Ser. No. 346,028
Int. Cl.[6] G02B *21/00;23/00*
U.S. Cl. 359—380 **18 Claims**

1. A microscope for receiving light from an object along an optical path and magnifying an image of the object, said microscope comprising: a first zoom lens assembly disposed in a first housing in the optical path for receiving and enlarging an image of the object to produce a first zoom lens output, a second zoom lens assembly disposed in a second housing in the optical path spaced from the first housing for receiving and further enlarging the first



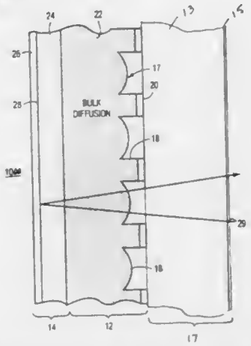
zoom lens output to produce a second zoom lens output, and viewing means in the optical path for receiving the second zoom lens output to produce a viewing output.

5,668,661
MICROSCOPE
Ken Tomioka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Dec. 5, 1994, Ser. No. 352,718
Claims priority, application Japan, Dec. 7, 1993, 5-306503; Aug. 22, 1994, 6-196761
Int. Cl.[6] G02B *21/00*
U.S. Cl. 359—380 **15 Claims**



1. A microscope comprising:
an objective lens having an optical axis; 1st, 2nd, 3rd and 4th magnification-varying optical systems of a same power, having optical axes parallel to the optical axis of said objective lens and positioned behind said objective lens and around the optical axis thereof;
a deflection optical system to direct two light beams transmitted by a specified two among said 1st, 2nd, 3rd and 4th magnification-varying optical systems, to a first direction and also to direct two light beams, among three light beams transmitted by three magnification-varying optical systems excluding either one of said specified two magnification-varying optical systems, to a second direction;
a first imaging optical system to respectively form images using the two light beams directed to said first direction;
a second imaging optical system provided rotatably about the optical axis of said objective lens with respect to said first imaging optical system and adapted to respectively form images by the two light beams directed to said second direction;
a first observation optical system to observe the two light beams from said first imaging optical system; and
a second observation optical system to observe the two light beams from said second imaging optical system.

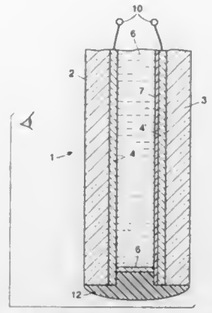
5,668,662
FRONT PROJECTION SCREEN WITH LENTICULAR FRONT SURFACE
Stephen Magocs, and Scott H. Baker, both of Knoxville, Tenn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 310,195, Sep. 21, 1994, Pat. No. 5,473,469, which is a continuation-in-part of Ser. No. 241,836, May 12, 1994, abandoned. This application Jul. 21, 1995, Ser. No. 505,415
Int. Cl.[6] G03B *21/60*
U.S. Cl. 359—452 **3 Claims**



1. A front projection screen having a front portion and a rear portion, each portion having a front surface and a rear surface, the front portion having light scattering particles defining a diffusion region between the front and rear surfaces, the front surface of the front portion defining a front lenticular lens array, the array comprised of mutually parallel lenticules extending longitudinally across the screen, and the rear portion defining a reflective surface in spaced apart relationship to the diffusion region of the front portion, and a front transparent stiffening layer, the stiffening layer comprising a plate having a front and a rear surface, the rear surface of the plate in contact with the front surface of the front portion defining the lenticular lens array, and the front surface of the plate having an anti-reflection layer.

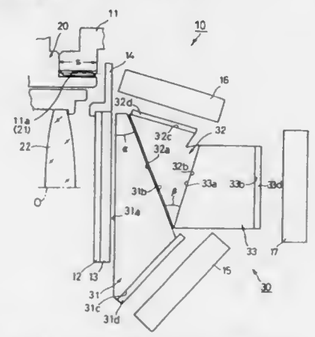
5,668,663
ELECTROCHROMIC MIRRORS AND DEVICES
Desaraju V. Varaprasad; Hamid Habibi; Ian A. McCabe, and Niall R. Lynam, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.
Filed May 5, 1994, Ser. No. 238,521
Int. Cl.[6] G02B *5/08*
U.S. Cl. 359—608 **38 Claims**

1. An electrochromic rearview mirror for a motor vehicle comprising:
(a) a substantially transparent substrate with a substantially transparent conductive electrode coating on its inward surface;



(b) a substrate with a conductive electrode coating on its inward surface, said substrate positioned in spaced-apart relationship with said substrate of (a);
(c) a layer of reflective material coated onto a surface of said substrate of (b);
(d) an electrochromic solid film coated onto said substantially transparent conductive electrode coating of (a) or onto said conductive electrode coating of (b);
(e) a sealing means positioned toward a peripheral edge of each of said substrate of (a) and said substrate of (b) and sealingly forming a cavity therebetween;
(f) an electrolyte comprising redox reaction promoters, wherein said redox reaction promoters comprise a metallocene in combination with a phenothiazine, and wherein said electrolyte is located within said cavity to form an electrochromic element; and
(g) a means for introducing an applied potential to said electrochromic element to controllably cause a variation in the amount of light reflected from said mirror.

5,668,664
COLOR SEPARATION PRISM ASSEMBLY FOR C-MOUNT CAMERA
Takayasu Shishido, Tokyo, Japan, assignor to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1996, Ser. No. 653,391
Claims priority, application Japan, Jun. 14, 1995, 7-147586; Jan. 17, 1996, 8-005860
Int. Cl.[6] G02B *27/14*
U.S. Cl. 359—634 **2 Claims**



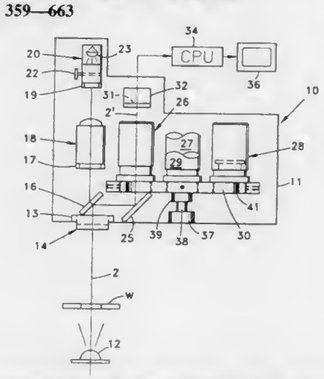
1. A color separation prism assembly, comprising:
an imaging lens;
a C-mount upon which said imaging lens is mounted;
a blue light separation prism having a light incident surface perpendicular to an optical axis of said imaging lens, a red light separation prism, and a green light transmission prism, arranged in this order behind said imaging lens and said C mount;
a blue light reflecting dichroic layer located between said blue light separation prism and said red light separation prism, and parallel to a night incident surface of said red light separation prism; and
a red light reflecting dichroic layer located between said red light separation prism and said green light transmission prism;
wherein said color separation prism assembly satisfies the following relationships:

$$20°<\alpha<22°$$

$$35°<\beta<37°$$

wherein,
α represents an angle defined between said light incident surface of said blue light separation prism and said blue light reflecting dichroic layer; and
β represents an angle defined between a light incident surface of said red light separation prism, parallel to said blue light reflecting dichroic layer, and said red light reflecting dichroic layer.

5,668,665
TELECENTRIC, PARFOCAL, MULTIPLE MAGNIFICATION OPTICAL SYSTEM FOR VIDEOINSPECTION APPARATUS
Albert G. Choate, Rush, N.Y., assignor to Optical Gaging Products, Inc., Rochester, N.Y.
Filed Jul. 10, 1995, Ser. No. 499,870
Int. Cl.[6] G01J *1/20*
U.S. Cl. 359—663 **15 Claims**



1. A telecentric, multiple magnification optical system for projecting the combined images of a workpiece and reticle to the camera of associated video inspection apparatus, comprising,
a first lens assembly secured to a movable support for movement thereby along a first axis toward and away from a workpiece,
a beamsplitter mounted on said support adjacent the side of said first lens assembly remote from said workpiece,
reticle projection means including a second lens assembly fixed on said support coaxially of a second axis parallel to and approximately coaxially of said first axis, and operative to project the image of a reticle in one direction through said beamsplitter and said first lens assembly and onto said workpiece,
a video camera fixed to said support and having therein an image detector disposed coaxially of a third axis laterally spaced from and extending parallel to said first and second axes,
said first lens assembly including a fixed objective lens having front and back focal points, respectively, and operable in an afocal mode to project a combined image of said workpiece and said reticle in the opposite direction through said first lens assembly to said beamsplitter, and

means including a plurality of magnification lens assemblies movable selectively and one by one into an operative position between said beamsplitter and said camera to project a magnified image of said combined workpiece and reticle image along said third axis to said image detector in said camera,

each of said magnification lens assemblies having a telecentric stop disposed to be positioned at said back focal point of said objective lens when a respective magnification lens assembly is in its operative position.

5,668,666

ZOOM LENS WITH AN ANAMORPHIC CONVERTER

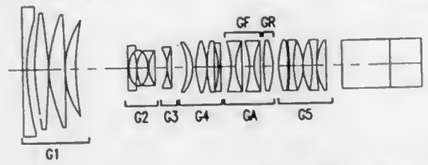
Takeshi Suzuki, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,530

Claims priority, application Japan, Jan. 5, 1995, 7-015533

Int. Cl.[6] G02B *15/02;15/14;9/60*

U.S. Cl. 359—674 **23 Claims**



1. A zoom lens having lens groups arranged along an optical axis from an object side to an image side, comprising:

a first lens group nearest the object side having positive refractive power and being fixed along the optical axis;

a second lens group, nearer to the image side than the first lens group, having negative refractive power and being movable along the optical axis when the zoom lens shifts from a maximum wide-angle state to a maximum telephoto state;

a third lens group nearer to the image side than the second lens group and having one of positive or negative refractive power;

a fourth lens group nearer to the image side than the third lens group and having positive refractive power;

a fifth lens group nearest the image side having positive refractive power; and

an anamorphic converter lens group, that has a first magnification within a specified plane including the optical axis and a second magnification within a plane intersecting perpendicularly with the specified plane, wherein the anamorphic converter lens group is freely attachable and detachable in the optical path between the fourth lens group and the fifth lens group, the anamorphic converter lens group comprising:

a front group nearest the object side with negative refractive power within the specified plane, and

a rear group nearer the image side with positive refractive power within the specified plane, wherein the anamorphic converter lens group has an angle magnification γ wherein $0.5<\gamma<1.0$.

5,668,667

ZOOM LENS

Motoyuki Ohtake, Ohmiya, Japan, assignor to Nikon Corporation, Tokyo, Japan

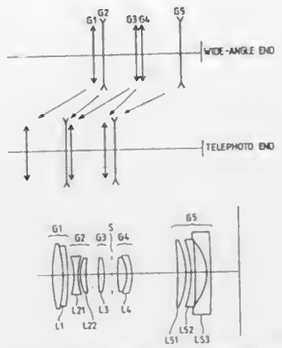
Division of Ser. No. 363,339, Dec. 23, 1994, Pat. No. 5,606,460. This application Feb. 28, 1996, Ser. No. 608,506

Claims priority, application Japan, Dec. 28, 1993, 5-353454

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **5 Claims**

1. A zoom lens comprising in the following order from the object side:



a first lens unit having positive refractive power and including a positive cemented lens having a positive lens element and a negative lens element with a concave cemented surface facing the object side;

a second lens unit having negative refractive power;

a third lens unit having positive or negative refractive power;

a fourth lens unit having positive refractive power; and

a last lens unit having negative refractive power,

wherein, upon zooming from a wide angle end to a telephoto end, at least said first lens unit and said last lens unit move toward the object side so as to increase an air gap between said first lens unit and said second lens unit but to decrease an air gap between said fourth lens unit and said last lens unit,

said zoom lens satisfying the following condition:

$$0.7<f1/(fw\cdot ft)^{1/2}<1.4$$

where f1 is the focal length of said first lens unit, fw is the focal length of the entire lens system at the wide angle end, and ft is the focal length of the entire lens system at the telephoto end.

5,668,668

ZOOM LENS WITH FIVE LENS GROUPS

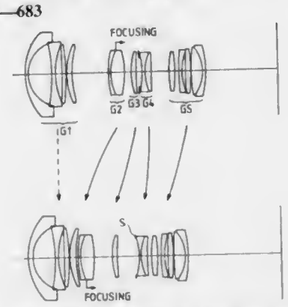
Atsushi Shibayama, Tokyo; Masatoshi Suzuki, Ohtawara, and Takanori Fujita, Kuroiso, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,254

Claims priority, application Japan, Mar. 8, 1995, 7-048339; Mar. 8, 1995, 7-048340; Mar. 8, 1995, 7-048341; Feb. 7, 1996, 8-020930

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—683 **11 Claims**



1. A zoom lens comprising at least, in order from the object side, a first lens group of a negative refractive power that is closer to the object side than any other lens group of the zoom lens, a second lens group of a positive refractive power, a third lens group of a positive refractive power, a fourth lens group of a negative refractive power, and a fifth lens group of a positive refractive power,

wherein, in the zooming operation from the wide angle end to the telephoto end, the distance between the first and second lens groups decreases, the distance between the second and third lens groups varies, the distance between the third and fourth lens groups increases, the distance between the fourth and fifth lens groups decreases, and the following condition is satisfied:

$$0.3<f2/f3<3$$

wherein

f2: focal length of the second lens group; and

f3: focal length of the third lens group.

5,668,669

COMPACT WIDE-ANGLE OBJECTIVE LENS

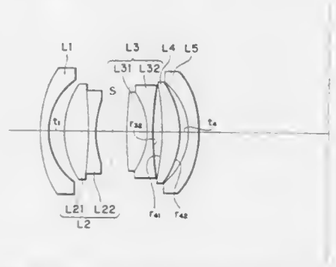
Motoyuki Ohtake, Ohmiya, and Motohisa Mori, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 173,084, Dec. 27, 1993, Pat. No. 5,528,428, which is a continuation-in-part of Ser. No. 80,971, Jun. 24, 1993, abandoned, which is a continuation of Ser. No. 973,614, Nov. 9, 1992, abandoned. This application Apr. 24, 1996, Ser. No. 636,946

Claims priority, application Japan, Nov. 13, 1991, 3-297444; May 13, 1993, 5-111289

Int. Cl.[6] G02B *15/14;9/00*

U.S. Cl. 359—684 **7 Claims**



5. A wide-angle objective lens system comprising, in order from an object side:

a first lens unit including, in order from the object side, a first lens component having negative refractive power and a second lens component having positive refractive power;

a stop; and

a second lens unit having positive refractive power,

wherein said lens system consists of seven lenses and satisfies the following condition:

$$0.4<D/f\leqq 1.0$$

where

f: the focal length of the entire lens system,

D: the total thickness of the lens system.

5,668,670

ZOOM LENS BARREL

Haruki Nakayama; Yuichi Honda, and Toshio Imaizumi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 226,562

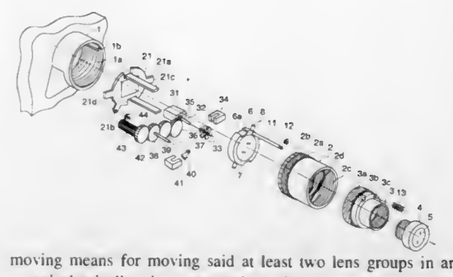
Claims priority, application Japan, Apr. 30, 1993, 5-104456

Int. Cl.[6] B02B *15/14*

U.S. Cl. 359—694 **3 Claims**

1. A zoom lens barrel comprising:

at least two lens groups including a front lens group and a rear lens group provided farther than said front lens group from an object;



moving means for moving said at least two lens groups in an optical axis direction to step-wise switch focal lengths and for focusing a zoom lens of said zoom lens barrel after a predetermined focal length is selected, wherein the moving means focuses by moving the at least two lens groups while a lens gap between said at least two lens groups is varied;

a front lens frame for holding said front lens group therein;

a rear lens frame for holding said rear lens group therein;

a stationary lens barrel fixed to a main body of a camera;

a cam barrel provided inside said stationary lens barrel, the cam barrel having a helicoid on an outer circumferential surface thereof to engage with said stationary lens barrel and a helicoid on an inner circumferential surface thereof to engage with said front lens frame;

a guide member for inhibiting rotation between said front lens frame and said rear lens frame;

a plurality of first cam grooves positioned perpendicular to an optical axis of said zoom lens barrel, the plurality of first cam grooves being disposed on one of said cam barrel and said rear lens frame;

a plurality of second cam grooves positioned at an incline to the optical axis, the plurality of second cam grooves being disposed on the one of said cam barrel and said rear lens frame such that each of said plurality of first cam grooves and each of said plurality of second cam grooves alternately communicate with each other; and

a plurality of cam pins for engaging with said plurality of first cam grooves and said plurality of second cam grooves, said plurality of cam pins being disposed on an other of said cam barrel and said rear lens frame,

wherein when a focal length is switched said plurality of cam pins engage said plurality of second cam grooves, and when a focusing operation is conducted said plurality of cam pins engage said plurality of first cam grooves.

5,668,671

DIOPTRIC LENS SYSTEM

Matthias Erdmann, München, Germany, assignor to British Aerospace Public Limited Co., Farnborough, United Kingdom

Filed Sep. 9, 1994, Ser. No. 302,818

Claims priority, application Germany, Sep. 17, 1993, 43 31 735.9

Int. Cl.[6] G02B *13/18;13/14*

U.S. Cl. 359—716 **21 Claims**

1. A dioptric lens system comprising

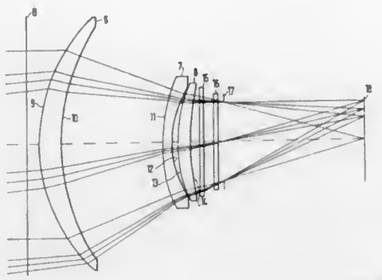
an object side lens having a positive refractive power and an aspherical object side surface,

an intermediate dispersing lens,

a first spacing between said object side lens and said intermediate lens,

an image side lens having a positive refractive power,

a second spacing between said image side lens and said intermediate lens, said second spacing being substantially smaller than said first spacing, and



a rear diaphragm constituting an exit pupil of said lens system, wherein a real image is formed behind the rear diaphragm.

5,668,672

CATADIOPTRIC SYSTEM AND EXPOSURE APPARATUS HAVING THE SAME

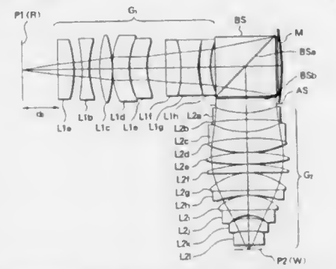
Yasuhiro Oomura, Oota-ku, Japan, assignor to Nikon Corporation, Japan

Filed Dec. 12, 1995, Ser. No. 570,922

Claims priority, application Japan, Dec. 16, 1994, 6-313354

Int. Cl.[6] G02B *17/00*

U.S. Cl. 359—727 **24 Claims**



1. A catadioptric optical system for forming a reduced image of a pattern of a first surface on a second surface, said catadioptric optical system comprising a first lens group, a beam splitter, a concave mirror having an enlarging magnification, and a second lens group;

wherein light from said first surface passes through said first lens group and said beam splitter, in this order, so as to be directed to said concave mirror, whereas light reflected by said concave mirror passes through said beam splitter and said second lens group, in this order, so as to be directed to said second surface;

wherein a rear-side principal point position of said second lens group is on said second surface side with respect to a light-entering surface of said second lens group on which the light having passed through said beam splitter is incident; and

wherein said catadioptric optical system satisfies the following conditions:

$$-1<1/\beta_{sr}<0.5$$

$$0.85<L_1/f_2$$

wherein β_{sr} is imaging magnification of said concave mirror, L_1 is distance between said rear-side principal point position and the light-entering surface of said second lens group, and f_2 is focal length of said second lens group.

5,668,673

CATADIOPTRIC REDUCTION PROJECTION OPTICAL SYSTEM

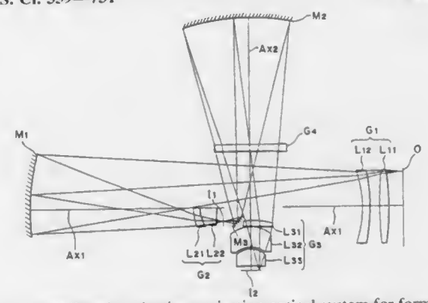
Yutaka Suenaga, Yokohama; Toshiro Ishiyama, Kawasaki; Yoshiyuki Shimizu, Miura, and Kiyoshi Hayashi, Koganei, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 167,209, Dec. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 95,919, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 65,046, May 24, 1993, abandoned, which is a continuation of Ser. No. 918,763, Jul. 27, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,624

Claims priority, application Japan, Aug. 5, 1991, 3-195500; Jul. 29, 1992, 4-202359; Dec. 24, 1992, 4-343976; Nov. 16, 1993, 5-286516; Jul. 7, 1994, 6-155799

Int. Cl.[6] G02B *17/00;21/00*

U.S. Cl. 359—731 **28 Claims**



1. A catadioptric reduction projection optical system for forming a reduced image of an object, comprising in a light path sequence from the object;

a first partial optical system including a first group of lenses having a positive refractive power, a first concave reflection mirror and a second group of lenses having a positive refractive power, for forming a primary reduced image of the object;

a second partial optical system including a second concave reflection mirror and a third group of lenses having a positive refractive power, for further reducing the primary reduced image to refocus the image; and

a reflection mirror arranged in a light path between said first partial optical system and said second partial optical system for deflecting the optical path.

5,668,674

REFLECTING PRISM AND A FINDER SYSTEM HAVING A REFLECTING PRISM

Moriyasu Kanai, and Sachio Hasushita, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,454

Claims priority, application Japan, Dec. 28, 1993, 5-338274

Int. Cl.[6] G02B *5/04;27/00;27/14;1/10*

U.S. Cl. 359—835 **19 Claims**

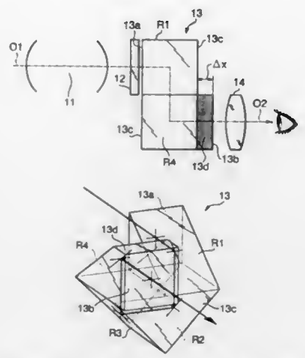
1. A double Porro prism comprising:

an incident surface for admitting light rays;

an exit surface for emitting said light rays;

a plurality of reflecting surfaces for internally reflecting said light rays from said incident surface to said exit surface, said plurality of reflecting surfaces comprising a final reflecting surface that is positioned near said exit surface, light rays incident onto said incident surface, along a first axis which is perpendicular to said incident surface, being emitted from said exit surface, along a second axis which is perpendicular to said exit surface, said first axis and said second axis extending in parallel; and

a ghost preventing surface that is formed between a ridge of said final reflecting surface and a ridge of said exit surface, said



ghost preventing surface comprising a flat surface, a plane containing said ghost preventing surface intersecting a plane containing said exit surface, said ghost preventing surface being space from said first axis.

5,668,675

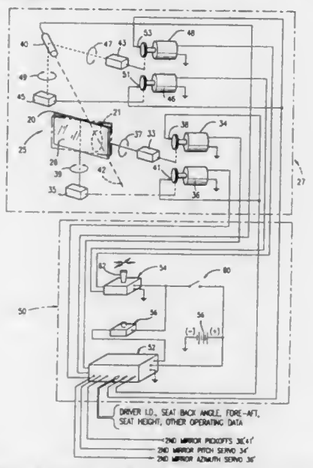
OPTO-ELECTRONIC AID FOR ALIGNMENT OF EXTERIOR VEHICLE MIRRORS TO MINIMIZE BLIND SPOT EFFECTS

Ronald J. Fredricks, 2046 Foxboro, NW., Grand Rapids, Mich. 49504

Filed Jan. 18, 1995, Ser. No. 374,220

Int. Cl.[6] G02B *5/08;* B60R *1/06*

U.S. Cl. 359—843 **8 Claims**



1. A method of aligning a first exterior sideview mirror located at a first fixed reference point on a vehicle to the eye position of a driver in a driver's seat generally positioned in a predetermined fore-aft seat plane relative to the axis of the vehicle to enable the driver to view rearward into an adjacent traffic lane along a first side of the vehicle including a first vehicle blind spot comprising the steps of:

emitting a light beam from a predetermined location of the vehicle in a light beam direction;

adjusting the light beam direction to an angle of adjustment so that the light beam is visible to the driver in the driver's seat in the fore-aft seat plane;

measuring the angle of adjustment of the light beam and providing a measured angle of adjustment;

deriving a first mirror positioning signal from the measured angle of adjustment and in correlation with the predetermined fore-aft seat plane, the first mirror reference point, and the first vehicle blind spot; and

employing the first mirror positioning signal to align the first sideview mirror to reflect an image of the first vehicle blind spot to the driver's eyes.

5,668,676

MAGNETIC HEAD WRITE AMPLIFIER INCLUDING CURRENT MIRRORS AND SWITCHABLE CURRENT SOURCES

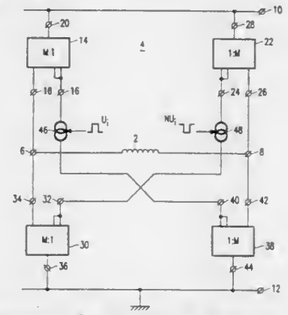
Johannes O. Voorman; Hendrik J. Pothast, and Ho W. Wong-Lam, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 9, 1995, Ser. No. 489,191

Claims priority, application European Pat. Off., Jun. 10, 1994, 94201660

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—46 **14 Claims**



1. An arrangement for recording an information signal on a magnetic record carrier, comprising: a write head for recording information on the record carrier, and a write amplifier for driving the write head in response to the information signal, the write amplifier comprising: a first write terminal and a second write terminal, coupled to the write head;

a first supply terminal and a second supply terminal for the connection of a supply voltage for the write amplifier;

a first current mirror having a first current input terminal, a first current output terminal coupled to the first write terminal, and a first common current terminal connected to the first supply terminal;

a second current mirror having a second current input terminal, a second current output terminal coupled to the second write terminal, and a second common current terminal connected to the first supply terminal; and

current switching means for establishing a current path between the first current output terminal and the second supply terminal via the first write terminal and the second write terminal for a first value of the information signal and for establishing a current path between the second current output terminal and the second supply terminal via the first write terminal and the second write terminal for a second value of the information signal, wherein the current switching means comprise:

a third current mirror having a third current input terminal, a third current output terminal coupled to the first write terminal, and a third common current terminal connected to the second supply terminal;

a fourth current mirror having a fourth current input terminal, a fourth current output terminal coupled to the second write terminal, and a fourth common current terminal connected to the second supply terminal;

a first switchable current source connected between the first current input terminal and the fourth current input terminal for supplying a first current for a first value of the information signal; and

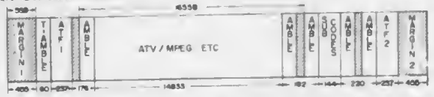
a second switchable current source connected between the second current input terminal and the third current input terminal for supplying a second current for the second value of the information signal.

5,668,677

APPARATUS FOR RECORDING AND REPRODUCING VARIABLE LENGTH CODES

Takahito Seki, and Yukio Kubota, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,172
Claims priority, application Japan, Mar. 30, 1993, 5-095366
Int. Cl.[6] G11B *5/09;5/00*
U.S. Cl. 360—48 **4 Claims**



1. A digital magnetic recording and/or reproducing apparatus which converts an input digital image signal into high efficiency codes and further into variable length codes and then records the thus obtained variable length codes, comprising:

means for reducing the amount of data representing a predetermined period shorter than one frame period, which data is a variable length coding output, to an amount smaller than a predetermined amount;

means for quantizing the image data converted into high efficiency codes with a particular quantization step;

synchronizing block conversion means for converting the variable length coding output representing the predetermined period into a construction of synchronizing blocks defining the data area length of the synchronizing blocks so that the variable length coding output for the predetermined period whose data amount has been controlled is included in an integral number of synchronizing blocks;

information addition means for adding information of the quantization step for each of the synchronizing blocks; and

means for recording an integral number of units of the quantized image data onto a track of a recording medium and recording or reproducing a plurality of different digital signals, including video, audio, or advanced television system data in a spaced relationship from each other by a distance equal to an integral number times the synchronizing block length on the track of the recording medium, said plurality of different digital signals having a same synchronizing block length.

5,668,678

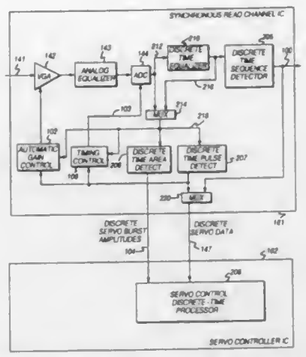
DETECTING SERVO DATA AND SERVO BURSTS FROM DISCRETE TIME SAMPLES OF AN ANALOG READ SIGNAL IN A SAMPLED AMPLITUDE READ CHANNEL

David E. Reed, Westminster; Richard T. Behrns, Louisville, and William G. Bliss, Thornton, all of Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Nov. 14, 1994, Ser. No. 325,842
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—51 **13 Claims**

1. A sampled amplitude read channel utilized in reading digital data recorded on a rotating magnetic disk, the magnetic disk comprises a plurality of information tracks wherein each track comprises a data field and a servo field, the servo field comprises a servo burst field comprising a plurality of servo bursts for positioning a magnetic read/write head over a selected track, the magnetic read/write head generates pulses in an analog signal representative of the digital data, said sampled amplitude read channel comprising:

(a) a sampling device, responsive to the analog signal from the magnetic read/write head, for generating a sequence of discrete time sample values;



(b) a discrete time sequence detector, responsive to the discrete time sample values, for detecting the digital data; and

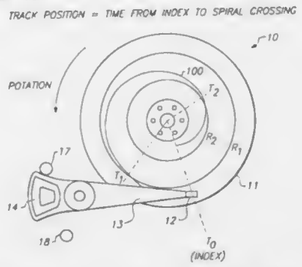
(c) a discrete time servo demodulator circuit, responsive to the discrete time sample values, for processing the servo field information and generating corresponding discrete servo control signals, wherein the discrete time servo demodulator comprises a discrete time burst amplitude detector, responsive to the servo burst field, for generating a first servo control signal.

5,668,679

SYSTEM FOR SELF-SERVOWRITING A DISK DRIVE

Paul A. Swearingen, San Jose, and Stanley H. Shepherd, Morgan Hill, both of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Dec. 21, 1995, Ser. No. 576,182
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **7 Claims**



1. A method of servowriting a disk drive having a magnetic read/write head and a rotating disk medium with a data storage region thereon, the method comprising:

detecting an index mark corresponding to a particular rotational phase of the disk medium, the detecting step including:

recording a generally circular clock track on the disk medium at a boundary of the data storage region;

reading the clock track to monitor rotational phase; and

outputting the index mark at the particular rotational phase;

writing a spiral data track in the data storage region beginning at a predetermined time relative to a detection of the index mark, as determined by the detecting step, by performing an open loop seek of the head from the clock track across the data storage region while concurrently writing a data pattern which includes embedded timing data;

moving the head to the data storage region;

reading a portion of the spiral data track;

extracting the embedded timing data from the read portion of the spiral data track to re-establish index mark at the particular rotational phase of the disk medium;

identifying rotational phase status of the disk medium relative to the re-established index mark based upon the extracted timing data;

determining a time offset from the reading of the portion of the spiral data track to the re-established index mark;

calculating radial head location information from said time offset;

selectively positioning the head radially within the data storage region using the calculated radial head location information; and

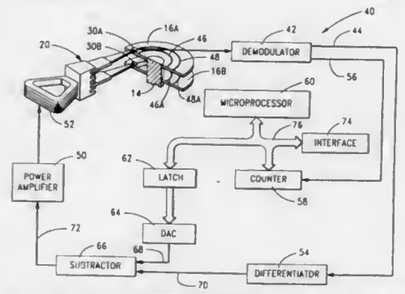
writing wedge servo data within the data storage region at the selected radial position at a selected rotational phase, as determined by the rotational phase status.

5,668,680

TIME OPTIMAL CONTROL OF A DISC DRIVE ACTUATOR WITH VIBRO-ACOUSTIC CONSTRAINTS

Brian P. Tremaine, San Jose, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Mar. 4, 1996, Ser. No. 608,019
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—78.07 **8 Claims**



1. In a disc drive of the type having a disc and an actuator adjacent the disc, the disc including a plurality of concentric tracks for the storage and retrieval of data by a head mounted to the actuator, the disc drive including a voice coil motor and servo positioning circuitry to position the head relative to the disc and to perform a seek wherein the head is moved from a position adjacent an initial track to a position adjacent a destination track through the controlled application of current to the voice coil motor, the servo positioning circuitry including the use of a velocity profile, the velocity profile characterized as a plurality of samples, each sample corresponding to a discrete radial velocity of the head, and wherein during a seek the servo positioning circuitry controls the velocity of the head in accordance with the velocity profile, an improved method for generating the velocity profile for the disc drive, comprising the steps of:

obtaining an input response of the disc drive, the input response characterized as the relationship of output mechanical acceleration to input current to the voice coil motor;

formulating a dynamic model of the disc drive, the dynamic model describing the electrical and mechanical characteristics of the disc drive;

providing an acceleration constraint, the acceleration constraint characterized as the maximum acceptable level of mechanical acceleration during a seek;

selecting a seek length comprising a selected number of tracks;

using the input response and the dynamic model to determine a minimum number of samples that achieves a level of mechanical acceleration equal to or less than the acceleration for the selected seek length;

optimizing the velocity profile values corresponding to the minimum number of samples to minimize the level of mechanical acceleration generated by a seek of the selected length;

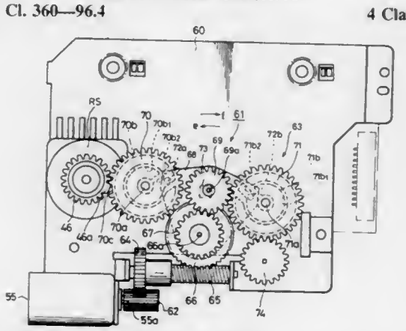
storing the velocity profile values in the disc drive; and thereafter, using the velocity profile values to perform a seek of the disc drive.

5,668,681

AUTOMATIC-REVERSE TAPE PLAYER WITH A SWITCHABLE ROTATIONAL GEAR ASSEMBLY

Koji Umezawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,911
Claims priority, application Japan, Jun. 27, 1994, 6-145012
Int. Cl.[6] G11B *15/44;15/18*
U.S. Cl. 360—96.4 **4 Claims**



1. A reversible tape player comprising:

a pair of capstans;

a pair of flywheels cooperating respectively with said pair of capstans;

a pair of reel bases;

a single capstan motor rotatable only in one direction for driving said pair of capstans;

belt means for transmitting rotation from said single capstan motor to rotate said pair of flywheels in respective directions different from each other;

a stationary low-speed-feed rotation transmitting gear rotatable by one of said flywheels for transmitting rotation therefrom through a slip mechanism;

switchable rotational gear means for selectively transmitting rotation from said stationary low-speed-feed rotation transmitting gear to one of said reel bases to feed a tape at a low speed; and

a switching mechanism for displacing said switchable rotational gear means away from said stationary low-speed-feed rotation transmitting gear into operative coupling with the other of said flywheels to allow said switchable rotational gear means to selectively transmit rotation from the other of said flywheels to one of said reel bases to feed the tape at a high speed relative to said low speed, wherein said switchable rotational gear means comprises a pair of gears arranged so that one of said gears is rotatable selectively by either said stationary low-speed-feed rotation transmitting gear or the other of said flywheels depending on an operation of said switching mechanism, and the other of said pair of gears transmits rotation to either one or the other of said reel bases.

5,668,682

HEAD LIFT MECHANISM IMPLEMENTED IN A REMOVABLE MAGNETIC DISK DRIVE

Takashi Matsumoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

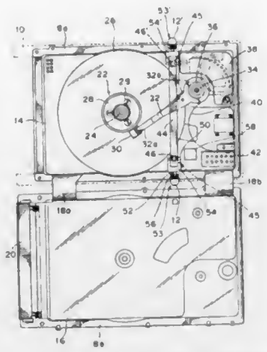
Continuation of Ser. No. 253,334, Jun. 3, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,903
Claims priority, application Japan, Sep. 9, 1993, 5-224416
Int. Cl.[6] G11B *5/54*
U.S. Cl. 360—105 **14 Claims**

1. A magnetic disk drive which is capable of being inserted into and removed from a slot formed in an information processing apparatus, comprising:

a housing having a base and a cover;

a spindle assembly supported for rotation on said base;

a magnetic disk mounted on said spindle assembly;



a magnetic head for writing and reading out data onto and from said magnetic disk;

an arm having said magnetic head supported at an end thereof;

first supporting means for pivotally supporting said arm;

actuator means operatively connected to the other end of said arm for pivoting said arm around said first supporting means;

a lift member movable towards and away from said arm, between a first position in which said lift member is spaced away from said arm to permit said magnetic head to be contacted with said magnetic disk when said magnetic disk drive is inserted into said slot of said information processing apparatus and a second position in which said lift member lifts said arm to bring said magnetic head out of contact with said magnetic disk when said magnetic disk drive is removed from said slot;

second supporting means for supporting said lift member for movement between the first and second positions thereon; and

interlocking means for moving said lift member to the first position when said magnetic disk drive is inserted into the slot of said information processing apparatus and for moving said lift member to the second position when said magnetic disk drive is removed from the slot of said information processing apparatus, said interlocking means including a block having an inclined face and a slide member such that said slide member rides along said inclined face to move said lift member between the first position and the second position.

5,668,683

COUNTER BALANCED ROTARY AIRLOCK ACTUATOR LATCH ASSEMBLY FOR DISK DRIVE

Thomas R. Stone, San Francisco, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed May 7, 1996, Ser. No. 646,410

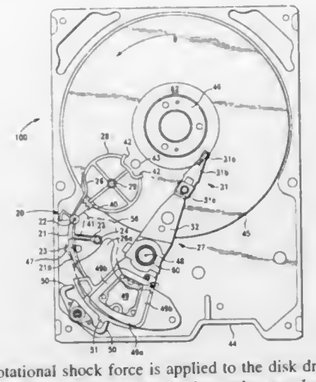
Int. Cl.[6] G11B *5/54*

U.S. Cl. 360—105 **15 Claims**

1. An airlock actuator latch assembly for restraining a transducer actuator assembly in a disk drive having at least one rotatable disk, the latch assembly comprising:

a latch member having a first inertia and a plurality of gear teeth and being pivotably mounted about a base in the disk drive, the latch member for engaging the transducer actuator assembly when the disk is not rotating, the latch member tending to release engagement with the actuator assembly when a rotational shock force is applied to the disk drive; and

a counter inertia member having a plurality of gear teeth being pivotably mounted about the base and being meshably engaged with the plurality of gear teeth of the latch member, thereby being rotatably coupled to the latch member, the counter inertia member having a second inertia which inertially counteracts the first inertia of the latch member when the rotational shock force is applied to the disk drive thereby negating the tendency of the latch member to release engagement with the actuator assembly.



5,668,684

ELECTRICAL INTERCONNECT FOR A HEAD/ARM ASSEMBLY OF COMPUTER DISK DRIVES

Darrell D. Palmer; A. David Erpelding, and Surya Pattanaik, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1996, Ser. No. 692,940

Int. Cl.[6] G11B *5/54;21/16*

U.S. Cl. 360—106 **11 Claims**

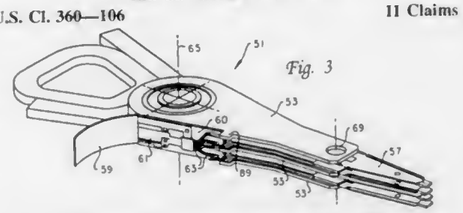


Fig. 3

1. An apparatus for reading and writing magnetic data, comprising:

an actuator selectively rotatable about an axis of rotation, having a plurality of substantially flat actuator arms, each located in a plane perpendicular to the axis of rotation;

a plurality of suspension assemblies, each of the suspension assemblies comprising a read/write head, a planar suspension member, an interconnect tab, a plurality of electrically conductive interconnect pads on the interconnect tab, and a plurality of electrically conducting paths extending along the planar suspension member from the read/write head to the interconnect pads;

each planar suspension member having a mounting portion secured to one of the actuator arms, a free end connected to the read/write head, and a leg extending from the mounting portion in a direction away from the corresponding read/write head;

each interconnect tab being attached to the leg of the suspension member, wherein each interconnect tab is inclined at a selected angle of inclination relative to the actuator arm to which the suspension member is mounted;

a conductive cable having a plurality of terminals secured to the actuator, wherein the terminals are aligned in a plurality of arrays, each of the arrays being at the same angle of inclination relative to the actuator arm as one of the interconnect tabs; and

each of the terminals in each of the arrays of the conductive cable being connected to one of the corresponding interconnect pads.

5,668,685

MAGNETIC DISC APPARATUS

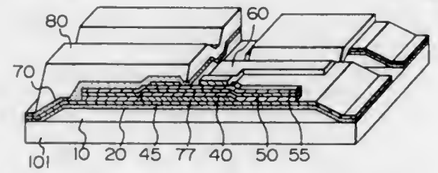
Susumu Soeya, Hitachiota; Shigeru Tadokoro; Takao Imagawa, both of Hitachi; Eiji Ashida, Hitachiota; Moriaki Fuyama; Hiroshi Fukui, both of Hitachi; Saburo Suzuki, Minamiashigara; Masayuki Takagi, Odawara, and Shinji Narishige, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 22,901, Feb. 26, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 351,562

Claims priority, application Japan, Feb. 26, 1992, 4-039186

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **30 Claims**



1. A magnetic disc apparatus comprising a magnetic head of magneto-resistance effect type including:

a magneto-resistance effect film for converting a magnetic signal into an electrical signal by use of the magneto-resistance effect, said magneto-resistance effect film being a ferromagnetic film in which an electrical resistance thereof changes in accordance with a direction of magnetization;

a pair of electrodes for supplying a signal detection current to said magneto-resistance effect film; and

a magnetic domain control layer of antiferromagnetic material for controlling the magnetic domain of said magneto-resistance effect film;

said magnetic disc apparatus comprising said magnetic head of magneto-resistance effect type further including an isolation film of a non-magnetic material formed in a magneto-sensitive portion of said magneto-resistance effect film between said magneto-resistance effect film and said magnetic domain control layer and in contact with said magneto-resistance effect film and said magnetic domain control layer for breaking the magnetic coupling between said magneto-resistance effect film and said magnetic domain control layer, and a ferromagnetic film having a soft magnetic characteristic for applying a laterally biasing magnetic field to said magneto-resistance effect film being provided at an opposite side of said magneto-resistance effect film from that of said magnetic domain control layer of antiferromagnetic material so that said magneto-resistance effect film is disposed between said magnetic domain control layer of antiferromagnetic material and said ferromagnetic film having the soft magnetic characteristic.

5,668,686

MAGNETO-RESISTIVE READING HEAD WITH REDUCED SIDE-LOBE

Shigeru Shouji, and Atsushi Toyoda, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 28, 1995, Ser. No. 579,928

Claims priority, application Japan, Dec. 29, 1994, 6-340503

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **11 Claims**

1. A magneto-resistance type head which is divided into an active region for detecting a magnetic field and inactive regions not contributing to the detection of the magnetic field, the magnetic-resistance type head comprising:

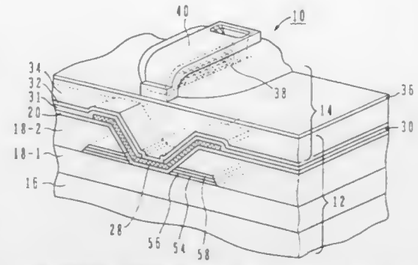
a base and a magnetic shield formed on the base, said magnetic shield having upper flat portions, slanted surfaces provided between the upper flat portions, and a lower flat portion provided between the slanted surfaces so as to define a recess, the magnetic shield comprising a lower magnetic shield sub-layer and an upper magnetic shield sub-layer formed on the lower magnetic shield sub-layer, and said recess being formed in the upper magnetic shield sub-layer;

a magneto-resistance material layer conformally formed over the magnetic shield;

a first spacer layer formed in the inactive regions and on the lower magnetic shield sub-layer;

a longitudinal bias means formed on the first spacer layer; and

a second spacer layer formed on the longitudinal bias means.



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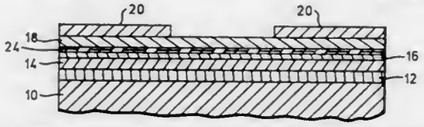
MAGNETORESISTIVE SENSOR EMPLOYING AN EXCHANGE-BIAS ENHANCING LAYER WITH A VARIABLE-COMPOSITION TRANSITION REGION

Mao-Min Chen; Kenneth Ting-Yuan Kung, both of San Jose, and Ching Hwa Tsang, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 174,748, Dec. 29, 1993, abandoned. This application Jan. 29, 1996, Ser. No. 593,654

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **20 Claims**



1. A magnetoresistive (MR) read transducer assembly comprising:

a thin MR layer of ferromagnetic material comprising an alloy of iron;

a thin biasing layer of antiferromagnetic material; and

a ferromagnetic transition region disposed between said MR layer and said biasing layer, said ferromagnetic transition region comprising an alloy of iron and having first and second opposing sides, said first side abutting the biasing layer at an interface therebetween, said second side abutting the MR layer, wherein iron percentage in said ferromagnetic transition region is elevated with respect to iron percentage in the MR layer.

5,668,688

CURRENT PERPENDICULAR-TO-THE-PLANE SPIN VALVE TYPE MAGNETORESISTIVE TRANSDUCER

John West Dykes, and Young Keun Kim, both of Boulder, Colo., assignors to Quantum Peripherals Colorado, Inc., Louisville, Colo.

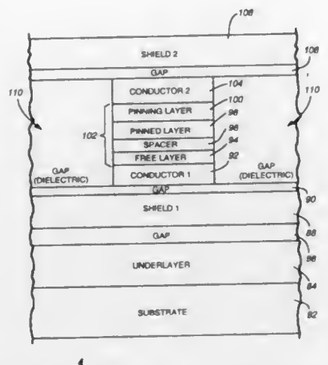
Filed May 24, 1996, Ser. No. 653,322

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **55 Claims**

1. A spin valve CPP magnetic data transducer having a read-only gap, said transducer comprising:

a self-biased spin valve stack of parallel and planar elements, said stack having a planar pinned ferromagnetic layer that



adjoins a first end of said stack, and said stack having a planar freely rotating ferromagnetic layer that adjoins a second end of said stack;

each of said ferromagnetic layers having an outer planar surface;

a first planar electrical current conductor electrically contacting said outer surface of said freely rotating ferromagnetic layer;

a second planar electrical current conductor electrically contacting said outer surface of said pinned ferromagnetic layer;

each of said conductors having an outer surface;

a first soft magnetic shield adjoining said outer surface of said first conductor;

a second soft magnetic shield adjoining said outer surface of said second conductor;

a physical spacing of said first and second magnetic shields defining said read-only gap; and

at least one of said magnetic shields having an outer surface.

5,668,689

INVERTED MAGNETORESISTIVE HEAD

Allan E. Schultz, St. Paul; Frank S. Stageberg, Edina; Kenneth P. Ash, Chanhassen, and Brian S. Zak, Excelsior, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 484,696, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 206,007, Mar. 3, 1994, abandoned. This application Aug. 8, 1996, Ser. No. 695,756

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **18 Claims**

18. An inverted magnetoresistive head for reading information from a storage medium and for writing information to the storage medium, the magnetoresistive head comprising:

a substrate having a recessed portion located distal from an air bearing surface of the head;

a bottom pole positioned on top of the substrate;

a polymer insulator positioned on top of the bottom pole above the recessed portion of the substrate distal from the air bearing surface of the head, the polymer insulator having a plurality of coils spaced throughout the polymer insulator;

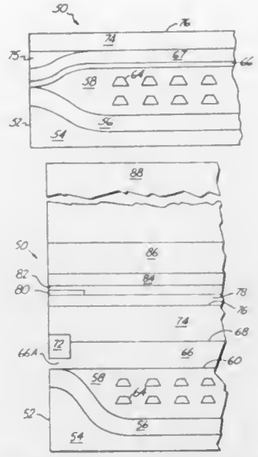
a write gap positioned on top of the polymer insulator distal to the air bearing surface and positioned on top of the bottom pole proximal to the air bearing surface;

a top pole positioned on top of the write gap;

an oxide layer positioned on top of a first portion of the top pole proximal to the air bearing surface, the oxide layer and a second portion of the top pole distal to the air bearing surface having a continuous planarized top surface in a single plane;

a bottom shield positioned on top of the second portion of the top pole distal to the air bearing surface and the oxide layer proximal to the air bearing surface, the bottom shield having a planarized top surface;

a first reader gap positioned on top of the top pole;



a magnetoresistive element positioned on top of the first reader gap proximal to the air bearing surface;

electrical contacts positioned on top of the magnetoresistive element connecting the magnetoresistive element to a region outside the magnetoresistive head;

a second reader gap on top of the magnetoresistive element and the contacts; and

a shield positioned on top of the second reader gap.

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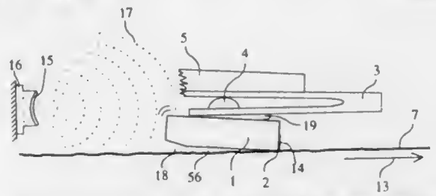
METHOD AND APPARATUS FOR LIFETIME PREDICTION OF GAS LUBRICATED INTERFACES IN DATA STORAGE DEVICES

Joshua C. Harrison, 2727 Nelson Rd., #F-206, Longmont, Colo. 80503

Filed Apr. 29, 1996, Ser. No. 639,548

Int. Cl.[6] G11B *21/21;5/60;* **G01B** *5/28*

U.S. Cl. 360—137 **15 Claims**



1. A method for increasing the surface wear rate associated with the relative tangential motion between two normally proximate surfaces, which are separated, or tending to be separated, by a thin layer, or partial layer, of gas entrained between the surfaces due to said motion taking place in an atmosphere of said gas, and in which:

a) said method includes induced vibration as a means to increase the intensity or frequency of contact between said surfaces, and

b) said vibration is induced by means of generating ultrasonic pressure waves in the gaseous atmosphere, which travel through said gaseous atmosphere and impinge upon said layer, or partial layer, of gas between surfaces, and

c) said ultrasonic pressure waves are generated with a frequency, or frequency range, which is chosen, or tuned, so as to selectively achieve resonance of, or resonance involving, the thin layer, or partial layer, of gas between said surfaces, and

d) said surfaces are surfaces of a magnetic recording head, and spinning disk media respectively.

5,668,691

ARRANGEMENT FOR GAS CIRCUIT BREAKER WITH REACTOR AND CAPACITOR CONNECTED IN SERIES AND METHOD FOR SETTING ITS CIRCUIT PARAMETER

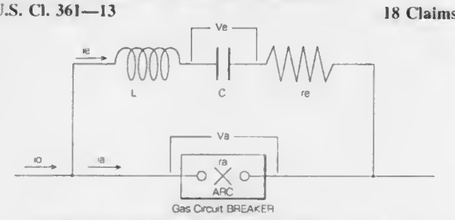
Hiroki Ito; Takashi Moriyama; Kenji Kamei; Suenobu Hamano; Etsuo Nitta, all of Tokyo; Naoaki Takeji, Osaka; Koji Yamaji, Takamatsu, and Masayuki Hatano, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; The Kansai Electric Power Co., Inc., Osaka; Electric Power Development Co., Ltd., Tokyo, and Shikoku Electric Power Co., Inc., Takamatsu, all of Japan

Filed Apr. 18, 1996, Ser. No. 634,232

Claims priority, application Japan, Apr. 28, 1995, 7-129317; Sep. 26, 1995, 7-247861

Int. Cl.[6] H02H *3/00;* **H01H** *9/30*

U.S. Cl. 361—13 **18 Claims**



1. An arrangement for a gas circuit breaker with a reactor and a capacitor connected in series to interrupt a DC current, said arrangement comprising:

a DC circuit breaker for controlling the flow of DC current in a power system;

a parallel impedance means connected in parallel with the DC circuit breaker and having a parallel capacitor and a parallel reactor;

an energy-absorbing element for said parallel capacitor; and

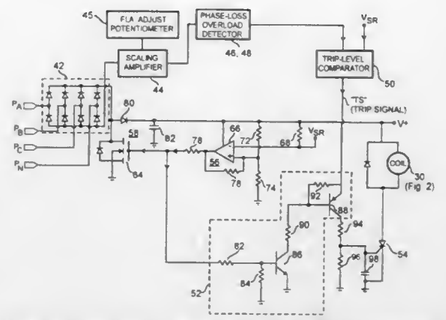
said parallel reactor having an inductance L (measured in μH) determined to satisfy

$$1.93\times10^{3}\frac{I_c^{5}}{i_o^{0.5}} \leqq L \leqq 5.17\times10^{3}\frac{I_c^{5}}{i_o^{0.5}}$$

where i_o is an interruption current value of the DC current (measured in amperes), and I_c is a critical normalized interruption current of said DC circuit breaker, while the normalized interruption current I_o is defined as

$$I_o=\frac{i_o}{\sqrt{nC\theta}}$$

where n is an energy loss of are generated when the DC current is interrupted, C is a capacitance of the parallel capacitor, and θ is a time constant of arc.



a trip lock-out circuit, responsive to an insufficient magnitude of accumulating energy, for preventing an interruption of the circuit path; and

a range control circuit, responsive to the current inducer circuit, for operating a power-related signal between a HIGH level and a LOW level to control the energy accumulator control circuit and the trip lock-out circuit.

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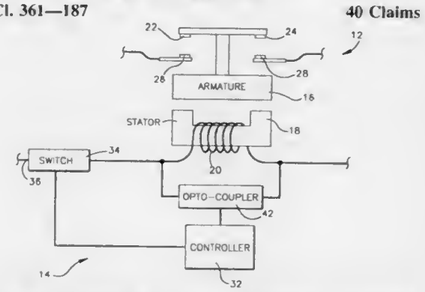
METHOD OF MONITORING A CONTACTOR

Charles J. Tennies, Waukesha; Jerome K. Hastings, and Matthew E. Hastings, both of Sussex, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 25, 1996, Ser. No. 670,085

Int. Cl.[6] H01H *47/28*

U.S. Cl. 361—187 **40 Claims**



1. A method of monitoring operation of a contactor, said method comprising the steps of operating the contactor from an actuated condition to an unactuated condition by de-energizing a coil of the contactor, applying a voltage of short duration across the coil of the contactor while maintaining the contactor in the unactuated condition, and determining the position of an armature of the contactor relative to a stator of the contactor while the contactor is in the unactuated condition by monitoring a characteristic of voltage across the coil of the contactor.

5,668,692

SELF-POWERED CIRCUIT INTERRUPTION ARRANGEMENT

Barry Noel Rodgers, and Timothy Brian Phillips, both of Raleigh, N.C., assignors to Square D Company, Palatine, Ill.

Filed Oct. 27, 1993, Ser. No. 143,948

Int. Cl.[6] H02H *3/18;9/02*

U.S. Cl. 361—93 **21 Claims**

1. A circuit interrupter arrangement for interrupting current in a circuit path, comprising:

a current inducer circuit for inducing a current signal having a magnitude corresponding to the current in the circuit path;

an energy accumulator for accumulating a magnitude of energy sufficient to cause interruption of the circuit path;

an energy accumulator control circuit controlling the magnitude of energy accumulating;

5,668,694

MULTILAYER CERAMIC CHIP CAPACITOR

Akira Sato; Naoki Kawano; Takeshi Nomura; Yukie Nakano; Tomohiro Arashi, and Junko Yamamatsu, all of c/o TDK Corporation, 13-1, Nihonbashi 1-chome, Chuo-ku, Tokyo, Japan

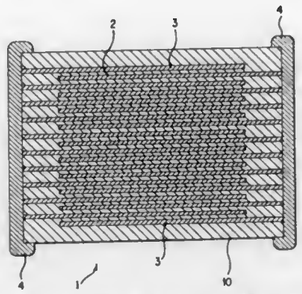
Filed Oct. 19, 1995, Ser. No. 545,255

Claims priority, application Japan, Oct. 19, 1994, 6-279867; Oct. 19, 1994, 6-279868

Int. Cl.[6] H01G *4/06;* **G11C** *11/24*

U.S. Cl. 361—321.4 **11 Claims**

1. A multilayer ceramic chip capacitor having a capacitor chip comprising alternately stacked dielectric layers and internal electrode layers, wherein



said dielectric layers comprise a dielectric layer material which comprises barium titanate, magnesium oxide, yttrium oxide, at least one selected from barium oxide and calcium oxide, silicon oxide, manganese oxide, and at least one selected from vanadium oxide and molybdenum oxide in such a proportion that there are present

MgO: 0.1 to 3 mol

Y_2O_3: more than 0 to 5 mol

BaO+CaO: 2 to 12 mol

SiO_2: 2 to 12 mol

MnO: more than 0 to 0.5 mol

V_2O_5: 0 to 0.3 mol

MoO_3: 0 to 0.3 mol

V_2O_5+MoO_3: more than 0 mol

per 100 mol of $BaTiO_3$, provided that the barium titanate, magnesium oxide, yttrium oxide, barium oxide, calcium oxide, silicon oxide, manganese oxide, vanadium oxide, and molybdenum oxide are calculated as $BaTiO_3$, MgO, Y_2O_3, BaO, CaO, SiO_2, MnO, V_2O_5, and MoO_3, respectively, and wherein

said dielectric layer material comprises crystal grains having a mean grain size of up to 0.45 μm, and wherein

in an X-ray diffraction chart of said dielectric layer material, a diffraction line of (**200**) plane and a diffraction line of (**002**) plane overlap one another to form a wide diffraction line which has a half-value width of up to 0.35°.

5,668,695

PORTABLE COMPUTER UTILIZABLE BY AN OVER HEAD PROJECTOR AND TILTING MECHANISM THEREOF

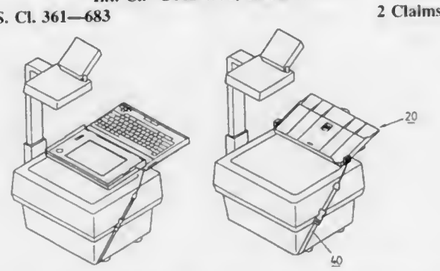
Fusanobu Nakamura, Yamato; Rieko Kataoka, Sagamihara, and Kenshin Yonemochi, Kamakura, all of Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 4, 1996, Ser. No. 610,650

Claims priority, application Japan, Mar. 3, 1995, 7-043925

Int. Cl.[6] G06F *1/16;* **H05K** *7/14*

U.S. Cl. 361—683 **2 Claims**



1. An overhead projector and portable computer assembly, said assembly comprising in combination:

an overhead projector including a horizontal projection surface upon which projection media can be placed;

a portable computer including a keyboard housing, a display housing, and a hinge rotatably connecting said keyboard housing to said display housing, said display housing including a display screen having a viewing surface and an opposing surface, said display housing including means for attaching a cover to said display housing adjacent said opposing surface of said display screen such that said portable computer can be operated in a back lighted display mode wherein a cover is attached to said display housing, and a transparent mode wherein a cover is detached from said display housing;

a strap attaching said portable computer to said overhead projector such that said display housing is positioned over said horizontal projection surface of said overhead projector for operation of said portable computer in said transparent mode; and

a tilting mechanism detachably connected to said portable computer for tilting and holding said keyboard housing at an acute angle relative to said horizontal surface of said projection surface of said overhead projector.

5,668,696

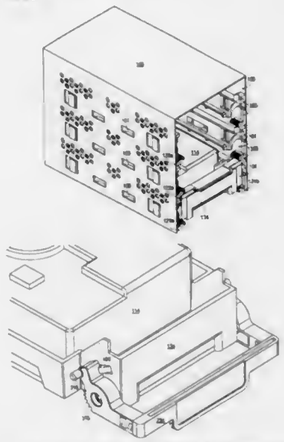
CARRIER-BASED MOUNTING STRUCTURE FOR COMPUTER PERIPHERAL CHASSIS

Ty Schmitt, Round Rock, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Filed Jul. 10, 1995, Ser. No. 421,656

Int. Cl.[6] H05K *7/00*

U.S. Cl. 361—685 **27 Claims**



1. A structure for removably mounting a chassis within a bay in a frame, comprising:

a stationary mount coupled to an inner wall of said bay, said stationary mount having a mount guide rail, a first gripping surface, and a cam slot associated therewith;

a chassis carrier having a cradle associated therewith for receiving a chassis and a carrier guide rail on an outer surface thereof; and

a mounting handle, rotatably coupled to said chassis carrier to rotate between an insertion orientation and a mounted orientation, said mounting handle having a cam follower and a second gripping surface associated therewith, said mount and carrier guide rails engageable to guide said chassis carrier along a substantially linear path through said bay, said cam follower engageable with said cam slot only when said mounting handle is substantially in said insertion orientation, said cam follower traversing said cam slot and said second gripping surface engaging said first gripping surface to urge said chassis carrier along said substantially linear path toward a mounted position as said mounting handle is rotated toward said mounted orientation.

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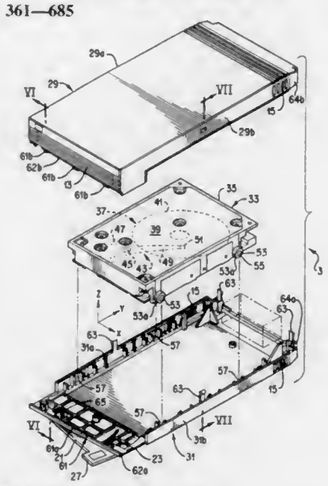
DATA STORAGE MODULE HAVING CRADLES ON HOUSING AND ELASTOMERIC MEMBER MOUNTED ON DATA STORAGE MECHANISM

James L. Dowdy, Eagle, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 20, 1995, Ser. No. 425,636

Int. Cl.[6] G06F *1/16;* **H05K** *7/00*

U.S. Cl. 361—685 **5 Claims**



1. A data storage module, comprising:

a. a module housing having opposed module housing sections and opposed module housing ends, each module housing section having housing sides;

b. cradles on said housing sides within each module housing section, respective cradles in one module housing section being opposed to respective cradles in the other module housing section;

c. a data storage mechanism;

d. elastomeric members mounted to said data storage mechanism in clamped engagement between opposed cradles in said module housing sections and in engagement with said housing sides, supporting said data storage mechanism on said elastomeric members within said opposed module housing sections;

e. a first attachment structure at one end of said opposite module housing ends and a second attachment structure at the remaining end of said opposite module housing ends for securing together said module housing sections;

f. said first attachment structure comprises a separable hinge having an axis, said separable hinge comprising a channel mounted to said one module housing section and a projection mounted to said other module housing section, said projection removably fitted into said channel;

g. said second attachment structure comprising a cantilever latch structure; and

h. said opposed module housing sections comprising side walls having opposed overlapping edges, said projection being slidably insertable into said channel after said other module housing section is positioned at an angle with respect to said one module housing section about an axis which is substantially parallel to said axis of said separable hinge, rotation of said opposed module housing sections toward each other about said axis of said separable hinge overlapping said opposed edges, engaging said cantilever latch structure and clamping said elastomeric members between said opposed cradles.

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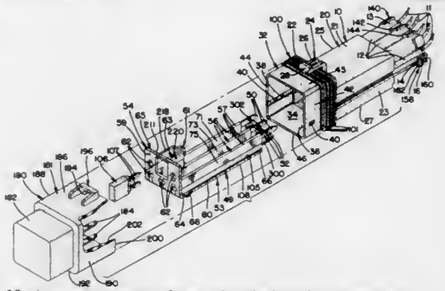
SMART CONNECTOR FOR AN ELECTRICAL DEVICE

Andrew Joseph Jozwiak, Warren, and Melodee Ann Chapin, Cortland, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1996, Ser. No. 589,689

Int. Cl.[6] H05K *5/06*

U.S. Cl. 361—752 **15 Claims**



10. A smart connector for an electrical device comprising:

a housing defining a cavity, wherein a first end of the housing terminates an electrical harness and a second end of the housing defines an opening into the cavity;

a circuit board in the cavity within the housing, the circuit board having male blades extending within the housing to the first end and engaging terminals on the electrical harness, the circuit board also including a plurality of receptacles within the housing at the second end, wherein

the electrical device includes male terminals engaging the receptacles and is in sealing engagement with the housing, sealing the circuit board within the housing.

5,668,699

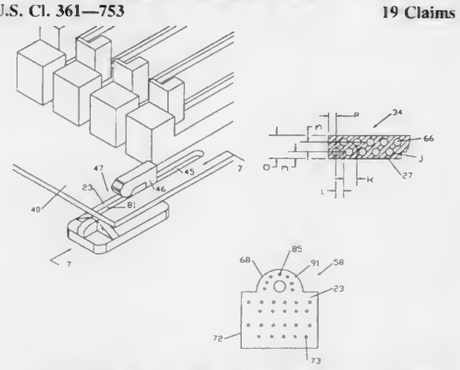
SYSTEM AND METHOD FOR PROVIDING UNIFORM SOLDER JIUNT HEIGHT FOR PRINTED CIRCUIT BOARDS AND THEIR ASSEMBLIES

James S. Bell, Cedar Park; Gita Khadem, and Joseph A. Vivio, both of Austin, all of Tex., assignors to Dell USA L.P., Round Rock, Tex.

Continuation of Ser. No. 270,848, Jul. 5, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,161

Int. Cl.[6] H05K *5/04;9/00*

U.S. Cl. 361—753 **19 Claims**



1. A printed wire assembly for a personal computer, wherein said printed wire assembly connects to the chassis of said computer by a mounting screw or mounting hook, said printed wire assembly including both surface mounted components and through hole mounted components, said printed wire assembly comprising:

a first solder mask layer as the bottom layer of the printed wire assembly;

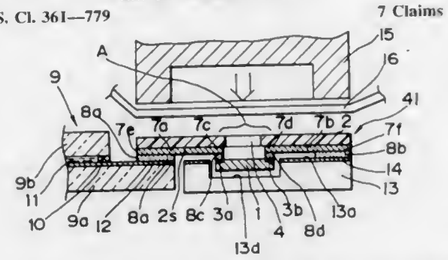
a first conductive layer coupled to said first solder mask layer;
an insulating layer coupled to said first conductive pad;
a second conductive layer coupled to said insulating layer;
a second solder mask coupled to said second conductive layer;
an elongated aperture through said printed wire assembly for receiving a mounting hook;
wherein said first solder mask includes a plurality of relatively small circular openings adjacent said aperture for exposing said first conductive pad, said small circular openings having a diameter of approximately 0.060"; and
wherein said second solder mask includes a relatively narrow opening strip adjacent said elongated aperture for exposing said second conductive layer.

5,668,700

PANEL ASSEMBLY STRUCTURE CAPABLE OF CONNECTING WIRING LINE WITH ELECTRODE AT FINE PITCH

Yasunobu Tagusa, Ikoma, and Shigeo Nakabu, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1995, Ser. No. 505,844
Claims priority, application Japan, Aug. 4, 1994, 6-183267
Int. Cl.[6] H05K *7/02;7/06*
U.S. Cl. 361—779 **7 Claims**



1. A panel assembly structure including: a flexible wiring board provided with a film-like substrate having a flexibility; an integrated circuit chip mounted in a specified area on a surface of the substrate, said integrated circuit chip having an output side electrode and an input side electrode connected respectively with an output side wiring line and an input side wiring line provided on the surface of the substrate each via a second connection material; a panel of which a peripheral portion has an electrode terminal, said electrode terminal being connected with an output terminal comprised of a part of the output side wiring line of the flexible wiring board via a first connection material; and a wiring board which has an electrode terminal for supplying a signal to the integrated circuit chip, said electrode terminal being connected with an input terminal comprised of a part of the input side wiring line of the flexible wiring board via a third connection material, wherein

an area which belongs to the surface of the substrate of the flexible wiring board and in which the integrated circuit chip is mounted is provided with a through hole which penetrates the substrate and has plane dimensions smaller than plane dimensions of the integrated circuit chip, and

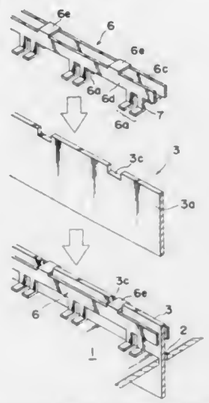
portions which belong respectively to the output side wiring line and the input side wiring line and are connected respectively with the output side electrode and the input side electrode of the integrated circuit chip are supported by the surface of the substrate around the through hole.

5,668,701

UP-DOWN TUNER HAVING A GROUNDING PLATE PROVIDED WITH GENERALLY L-SHAPED SOLDERING PORTIONS

Seiichirou Fukai, Kishiwada, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 27, 1995, Ser. No. 508,046
Claims priority, application Japan, Jul. 27, 1994, 6-175533
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—816 **21 Claims**



1. An up-down tuner in which a printed wiring board is soldered to a metal chassis that penetrates a slit formed in the printed wiring board, comprising:

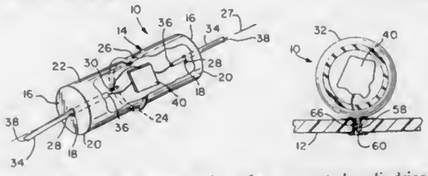
a grounding plate, engaged with the metal chassis, including at least one soldering portion having an approximately L-shaped profile, via which the printed wiring board and the metal chassis are soldered together, wherein the at least one soldering portion includes a through-hole.

5,668,702

COMBINATION AXIAL AND SURFACE MOUNT CYLINDRICAL PACKAGE CONTAINING ONE OR MORE ELECTRONIC COMPONENTS

Shary Nassimi, 2002 NW. 215 Cir., Ridgefield, Wash. 98642

Continuation-in-part of Ser. No. 230,693, Apr. 21, 1994, abandoned. This application May 6, 1996, Ser. No. 643,377
Int. Cl.[6] H05K *7/00;7/02;* **H01L** *23/053;23/055*
U.S. Cl. 361—820 **19 Claims**



1. A combination axial and surface mounted cylindrically-shaped package containing at least one electronic component and being surface mountable to a printed circuit board with electrical lands by the use of conventional axial component through hole mounting machinery, comprising:

a) a hollow, electrically-insulated, and generally circular-cylindrically-shaped housing having a longitudinal axis, and a generally cylindrically-shaped longitudinal surface with an outer face; said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing replicating a conventional cylindrically-shaped electronic axial component and thereby allowing a normally non-cylindrically-shaped electronic component to be packaged in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing to be surface mounted to the printed circuit board by use of the conventional axial component through hole mounting machinery; said generally cylindrically-shaped longitudinal surface of said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing being cylindrical and thereby allowing said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing containing said at least one electronic component to be mounted to the printed circuit board with any part of said generally cylindrically-shaped longitudinal surface of said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing being positioned adjacent to the printed circuit board, so that said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing can be surface mounted to the printed circuit board with 360 degrees of rotational freedom about said longitudinal axis of said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing;

b) at least one electronic component being contained in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing and having a plurality of electrical terminals;

c) a pair of electrically-conductive axial leads extending outwardly from said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing along said longitudinal axis of said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing and being in electrical communication with at least a portion of said plurality of electrical terminals of said at least one electronic component being contained in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing; said pair of electrically-conductive axial leads being in electrical communication with the electrical lands of the printed circuit board, so that said at least a portion of said plurality of electrical terminals of said at least one electronic component that is contained in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing is in electrical communication with the electrical lands of the printed circuit board; and

d) at least one circumferentially-disposed, laterally-oriented, and electrically-conductive ring being positioned on, concentric with, and encircling said outer face of said longitudinal surface of said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing and being in electrical communication with at least a portion of a remaining portion of said plurality of electrical terminals of said at least one electronic component being contained in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing; said at least one circumferentially-disposed, laterally-oriented, and electrically-conductive ring being in electrical communication with the electrical lands of the printed circuit board, so that said at least a portion of said remaining portion of said plurality of electrical terminals of said at least one electronic component that is contained in said hollow, electrically-insulated, and generally circular-cylindrically-shaped housing is in electrical communication with the electrical lands of the printed circuit board.

5,668,703

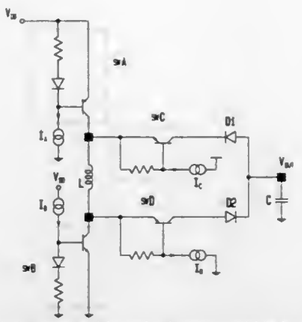
BOOST CONVERTER FOR DRIVING A CAPACITIVE LOAD

Domenico Rossi, Cilavegna, Italy, and Kazuyuki Tanaka, Yokohama, Japan, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Nov. 29, 1994, Ser. No. 346,139
Claims priority, application European Pat. Off., Nov. 29, 1993, 93830472
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—16 **34 Claims**

1. A two-way boost converter circuit for driving a capacitive load, for operation from first and second power supply connections, comprising:

an inductor connected between said first and second power supply connections to pass current in a first direction;



a first switch connected in series between said inductor and said first power supply connection, said first switch receiving a high frequency signal during a first phase to negatively charge said capacitive load;

a second switch connected in series between said inductor and said second power supply connection, said second switch receiving a high frequency signal during a second phase to positively charge said capacitive load;

a third switch connected to a first terminal of said inductor, and a fourth switch connected to a second terminal of said inductor; and

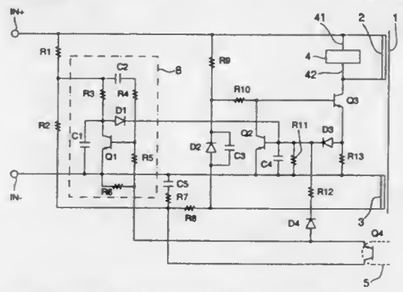
a first diode connected in series with said third switch between an output terminal and said first terminal of said inductor, and a second diode connected in series with said fourth switch between said output terminal and said second terminal of said inductor, wherein said first and second diodes are connected to said output terminal with opposite respective orientations.

5,668,704

SELF-EXCITING FLYBACK CONVERTER

Yoshio Higuchi, Daito, Japan, assignor to Funal Electric Co., Ltd., Osaka, Japan

Filed Aug. 9, 1995, Ser. No. 512,922
Claims priority, application Japan, Aug. 9, 1994, 6-187117
Int. Cl.[6] H02M *3/335;7/122;3/24*
U.S. Cl. 363—19 **6 Claims**



1. A self-exciting flyback converter comprising:

a photocoupler whose output indicates an error in an output voltage to be outputted to an external device;

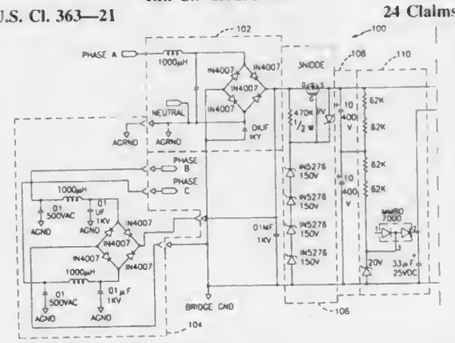
a switching transistor connected to the primary coil of a transformer for switching a current of said primary coil of said transformer;

a control transistor connected to said photocoupler and to said switching transistor, to which the output of said photocoupler is applied, for controlling a maximum value of a switching current of said switching transistor so as to stabilize the output voltage; and

a protective circuit connected to said photocoupler and to said control transistor, for bringing the switching current of said switching transistor to zero by increasing a current flowing

through said control transistor when the output of said photocoupler indicates a drop in the output voltage due to an overload.

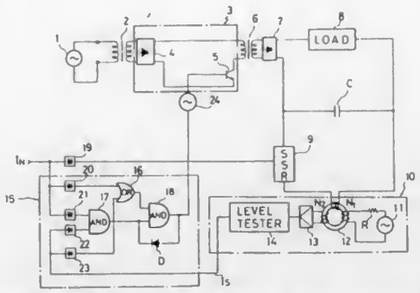
5,668,705
WIDE RANGE SINGLE-PHASE/POLYPHASE SWITCHING POWER SUPPLY
Richard A. Balch, N. Hampton, N.H.; Raymond B. Ridley, Battle Creek, Mich.; David D. Elmore, Somersworth, and Warren R. Germer, Hampton, both of N.H., assignors to General Electric Company, New York, N.Y.
Filed Nov. 30, 1995, Ser. No. 563,408
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **24 Claims**



1. A power supply comprising:
a first bridge circuit receptive to a first phase of a source, said first bridge circuit for generating a rectified signal thereof;
a preregulator circuit for limiting the voltage of said rectified signal, said voltage being substantially over 300 volts, to provide a preregulated signal;
a controller circuit for generating a control signal having a frequency and a duty cycle;
a flyback transformer receptive to said preregulated signal;
a switching circuit for switching said preregulated signal through a first primary winding of said flyback transformer, in response to said control signal, to provide a voltage output signal at a secondary winding of said flyback transformer; and
a voltage feedback circuit comprising an opto-isolated feedback circuit, for providing a feedback signal indicative of said output signal to said controller circuit, said control signal being varied, in response to said feedback signal, to compensate for variations in said voltage output signal.

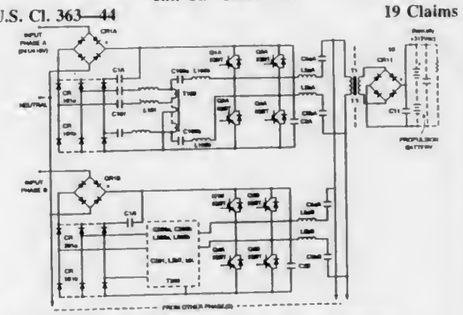
5,668,706
LOAD DRIVING CIRCUIT
Masayoshi Sakai, and Koichi Futsuhara, both of Urawa, Japan, assignors to Nippon Signal Co., Ltd., Tokyo, Japan
Division of Ser. No. 108,579, Sep. 2, 1993, Pat. No. 5,519,598. This application Apr. 12, 1996, Ser. No. 630,995
Claims priority, application Japan, Jan. 14, 1992, 4-5128; Jun. 9, 1992, 4-149402
Int. Cl.[6] H02M *3/335;* **G05F** *1/56*
U.S. Cl. 363—21 **9 Claims**

1. A load driving circuit for controlling the supply of power to a load by directly turning ON and OFF a switching element, which is connected in series with a power supply circuit of the load, according to a load driving instruction signal, comprising a switching power source having an input end electromagnetically coupled with a commercial primary AC power source through a first transformer and an output end electromagnetically coupled with the power supply circuit of the load through a second transformer, to supply a load driving current from the commercial AC power source to the power supply circuit of the load, a semiconductor



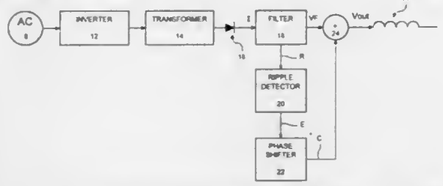
switching element serving as the switching element, connected in series with the load in the power supply circuit of the load, to close the power supply circuit in response to the load driving instruction signal so that the current from the switching power source is supplied to the load; semiconductor switching element status detection means for detecting an ON/OFF status of the semiconductor switching element and generating a low-level output of logical value 0 if the switching element is ON, as well as if the detection means itself is out of order, and a high-level output of logical value 1 if the switching element is OFF; and power source stoppage decision means for receiving an output of the semiconductor switching element status detection means and the load driving instruction signal, and if the load driving instruction signal is absent and the output of the detection means is at low level, determining that the switching element is abnormal and providing a low-level output to stop the power supplying operation of the switching power source.

5,668,707
MULTI-PHASE POWER CONVERTER WITH HARMONIC NEUTRALIZATION
Alfred Henry Barrett, Carmel, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.
Filed Oct. 4, 1994, Ser. No. 317,278
Int. Cl.[6] G05F *1/46*
U.S. Cl. 363—44 **19 Claims**



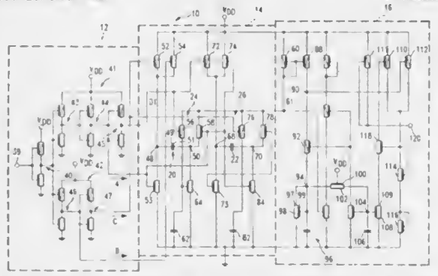
1. An n-phase AC to DC power converter comprising:
an n-phase source of AC power,
(n) non-isolated inputs for respective phases of said n-phase source of AC power,
(n) first rectifiers connected respectively to said (n) non-isolated inputs, each such first rectifier having an output,
load output terminals for delivering DC power to a load,
(n) power switching LC resonant inverters having inputs connected to respective outputs of
said first rectifiers, each such inverter having an output, and
(n) second rectifiers having inputs connected to respective outputs of said inverters through (n) respective transformers, said second rectifiers having outputs connected in a voltage additive relationship to the respective outputs of said first rectifiers, the added outputs of respective first and second rectifiers being connected to said load output terminals through isolation circuits for connecting each phase of said n-phase source to said load, while providing mutual isolation between said phases.

5,668,708
DC POWER SUPPLY WITH REDUCED RIPPLE
Cliff Scapellati, Sayville, N.Y., assignor to Spellman High Voltage Electronics Corp., Hauppage, N.Y.
Filed Mar. 13, 1996, Ser. No. 614,997
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—46 **17 Claims**



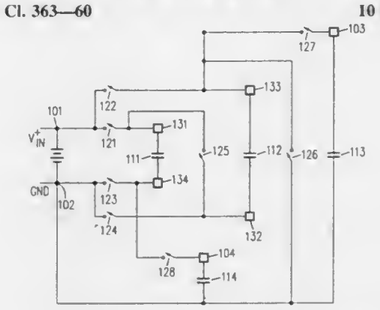
1. A low ripple output DC power supply having a DC output comprising:
input means for receiving an AC input;
rectifying means for generating a rectifier output from said AC input;
filter means for generating a filtered output having a DC component and a ripple component;
ripple sensing means for sensing said ripple component and generating a ripple correcting signal;
phase correction means for generating a phase corrected signal from said ripple correcting signal, whereby said phase corrected signal and said ripple component have opposite phases; and
summing means for summing said filtered output and said phase corrected signal to generated said DC output consisting substantially of said DC component, whereby said DC output is substantially free of ripple.

5,668,709
SWITCHED CAPACITOR CURRENT SOURCE
John Edwin Gersbach, Burlington, and Masayuki Hayashi, Williston, both of Vt., assignors to International Business Machine Corporation, Armonk, N.Y.
Filed Mar. 2, 1995, Ser. No. 398,395
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 **9 Claims**



1. A switched capacitor current source operable from a voltage source in accordance with alternating polarities of a reference signal, said current source comprising:
a non-linear capacitor comprising an accumulation capacitor, said accumulation capacitor being an FET transistor comprising a semiconductor device having an N-type region, a gate overlying at least a portion of said N-type region, a thin insulative layer interposed between said portion of said region and said gate, and an electrical connection to said N-type region whereby said electrical connection in conjunction with said portion of said N-type region forms a first electrode of said capacitor and said gate forms the second electrode of said capacitor; and
switching means coupled to said capacitor for charging said capacitor from said voltage source, in response to one polarity of said reference signal, and for then discharging said capacitor, in response to the other polarity of said reference signal.

5,668,710
CHARGE PUMP CIRCUIT HAVING INDEPENDENT INVERTED AND NON-INVERTED TERMINALS
Amado A. Caliboso, Sunnyvale; Ali Tasdighi, San Jose, and John P. Tero, Saratoga, all of Calif., assignors to TelCom Semiconductor, Inc., Mountain View, Calif.
Filed Jul. 3, 1996, Ser. No. 674,955
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 **10 Claims**

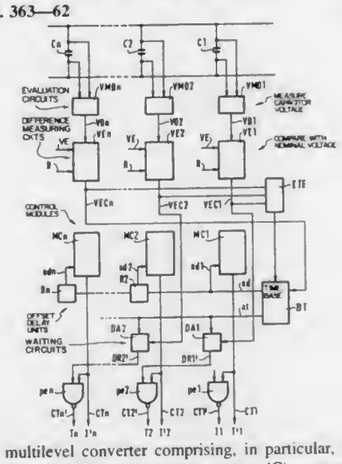


1. A circuit for providing bipolar voltage output having a magnitude which is multiple times that of a unipolar voltage source, comprising:
a first capacitor having a first terminal and a second terminal;
a second capacitor having a first terminal and a second terminal;
a first switch connected between the first terminal of the first capacitor and the unipolar voltage source;
a second switch connected between the first terminal of the second capacitor and the unipolar voltage source;
a third switch connected between the second terminal of the first capacitor and the ground potential;
a fourth switch connected between the second terminal of the second capacitor and the ground potential; and
a fifth switch;
wherein a first node is located between the first terminal of the first capacitor and the first switch, and a second node is located between the second terminal of the second capacitor and the fourth switch; and
wherein the first node is connectable to the second node through the fifth switch.

5,668,711
ELECTRONIC CIRCUIT FOR CONVERTING ELECTRICAL ENERGY, AND A POWER SUPPLY INSTALLATION MAKING USE THEREOF

Jean-Paul Lavieville, Gif sur Yvette; Philippe Carrere, and Thierry Meynard, both of Toulouse, all of France, assignors to Gec Alsthom Transport SA, Paris, France

PCT No. PCT/FR95/01748, § 371 Date Jul. 23, 1996, § 102(e) Date Jul. 23, 1996, PCT Pub. No. WO96/21267, PCT Pub. Date Jul. 11, 1996
PCT Filed Dec. 28, 1995, Ser. No. 676,393
Claims priority, application France, Dec. 29, 1994, 94 15864
Int. Cl.[6] H02M *3/06;3/18*
U.S. Cl. 363—62 **3 Claims**

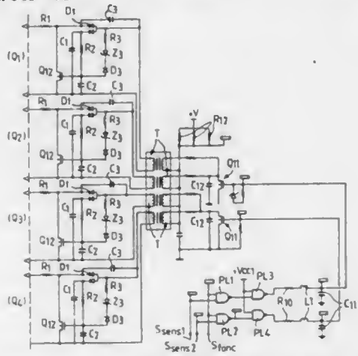


1. A multilevel converter comprising, in particular, between a voltage source (SE) and a current source (C), a succession of controllable switching cells (CL1, CL2, . . . , CLn), each having two switches (T1, T'1; T2, T'2; . . . ; Tn, T'n), with one pole of each of the two switches forming part of a pair of upstream poles and with the other pole of each of the switches forming one of a pair of downstream poles, the pair of downstream poles of an upstream cell being connected to the pair of upstream poles of a downstream cell, and the pair of upstream poles of a first cell (CL1) being connected to said current source (C) while the pair of downstream poles of a last cell (CLn) is connected to said voltage source (SE), the converter further comprising a capacitor (C1, C2, . . . , Cn) for each cell, except that the capacitor of the last cell may be omitted when said voltage source (SE) is suitable for performing the same role, each capacitor being connected between the two poles constituting the pair of downstream poles of the corresponding cell, the converter also comprising control means governing the nominal operation of the converter by acting on the switches of successive cells in such a manner that the two switches of any given cell are always in respective opposite conduction states, such that in response to a cell control signal (CT1, CT2, . . . , CTn) provided by said control means, one of the two switches in a given cell is successively in a first conduction state and then in a second conduction state during a cyclically repeated period, and such that in response to cell control signals that are identical but offset in time by a fraction of said period the switches of successive cells operate respectively in the same manner but offset in time by said fraction of a period, the successive capacitors (C1, C2, . . . , Cn) having respective increasing nominal charge voltages, the nominal charge voltage of the capacitor in each of said cells being equal to the product of a voltage (VE) from said voltage source (SE) multiplied by the reciprocal of the number of cells and by the rank of the cell, the converter being characterized in that it comprises control means (BT, DA1, . . . , DAn, pe2, . . . , pen) organized to evaluate said voltage of the voltage source of the converter (VECn) and as soon as it is less than a determined threshold, to suspend said nominal operation of the converter (sd) and to act on said switches (T1, T'1; T2, T'2, . . . ; Tn, T'n) in such a manner that while said voltage (VE) of the voltage source (SE) has a value lying between zero and a lowest one of said nominal charge voltages, it charges all of the capacitors of the converter, while said voltage of the voltage source exceeds said lowest nominal charge voltage the capacitor (C1) nominally charged to said voltage is taken out of circuit and said voltage of the voltage source continues to charge the capacitors (C2, . . . , Cn) requiring higher nominal charge voltages, while the voltage of the voltage source exceeds the immediately higher nominal charge voltage the capacitor (C2) nominally charged to said voltage is in turn taken out of circuit, with the voltage of the voltage source continuing to charge the other capacitors, and so on, until all of the capacitors of the converter are charged to their respective nominal charge voltages, after which said control means establish said nominal operation of the converter.

5,668,712
CIRCUIT FOR CONTROLLING A DC/AC CONVERTER IN A POWER SUPPLY CIRCUIT FOR A DISCHARGE LAMP OF A MOTOR VEHICLE HEADLIGHT

Bruno Cassese, Creteil; Patrick Wacheux, Villejuif; Gilles Paul, Fontenay-Aux-Roses; Eric Herzberger, Gagny, and Jean-Marc Nicolai, Courbevoie, all of France, assignors to Valeo Electronique, Creteil, France

Filed Mar. 29, 1996, Ser. No. 626,183
Claims priority, application France, Mar. 29, 1995, 95 03730
Int. Cl.[6] H03K *17/687*
U.S. Cl. 363—95 **7 Claims**

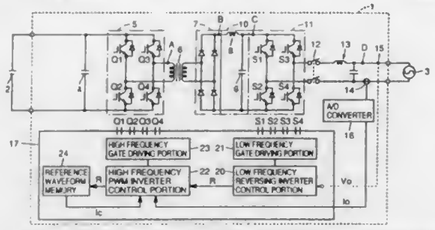


1. A circuit for controlling a DC/AC converter of a power supply circuit for a motor vehicle headlight discharge lamp, the circuit comprising a primary circuit, voltage-feed means for feeding the primary circuit with voltage, and a secondary circuit coupled to the primary circuit by mutual induction, the secondary circuit delivering a voltage controlling the non-conductive and conductive state of a MOSFET type transistor of the DC/AC converter, the voltage that the power supply means deliver to the primary circuit constituting a modulated high frequency carrier voltage, the secondary circuit including means for converting the high frequency voltage delivered to the primary circuit into a control voltage for the transistor that is greater than or less than a given non-conductive or conductive threshold, as a function of the modulation of said high frequency voltage, the conversion means of the, secondary circuit including a switch connected between the grid and the source of the transistor, said switch being controlled by the voltage of the first capacitor means, the conversion means comprising means which charge said first capacitor means, when the high frequency voltage is delivered to the primary circuit, so that the voltage of said capacitor means maintains the switch in open circuit, wherein said conversion means also charge a second capacitor means when the high frequency voltage is delivered to the primary circuit, said second capacitor means discharging in the first capacitor means when the high frequency voltage disappears, the voltage of the first capacitor means thus charged by the second capacitor means being of such a value that it keeps said switch in the conductive condition.

5,668,713
INVERTER CONTROL METHOD AND INVERTER CONTROL DEVICE PERFORMING FEEDBACK CONTROL BY SUPPRESSING DELAY

Masaki Eguchi, Uji; Hirokazu Kodama, Gojo; Tsukasa Takebayashi, and Hirofumi Nakata, both of Yamatotakada, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1996, Ser. No. 729,583
Claims priority, application Japan, Oct. 16, 1995, 7-267495
Int. Cl.[6] H02M *7/04*
U.S. Cl. 363—95 **12 Claims**



1. A method of controlling an inverter for adjusting a periodic inverter output waveform to a desired periodic waveform, comprising the steps of:

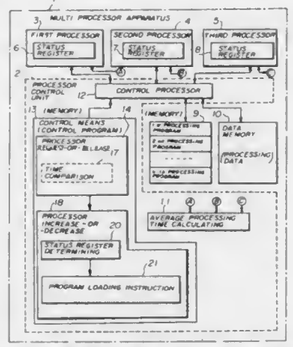
forming an error waveform pattern between an inverter output waveform of a present prescribed period and a desired periodic waveform generated in synchronization with said prescribed period, and

adding the error waveform pattern to an inverter driving waveform pattern of a last prescribed period for updating the inverter driving waveform pattern.

5,668,714
CONTROL SYSTEM FOR MULTI-PROCESSOR APPARATUS

Hisashi Morikawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 272,263, Jul. 8, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 662,264
Claims priority, application Japan, Sep. 16, 1993, 5-229990
Int. Cl.[6] G05B *15/02;19/18;* **G06F** *9/44*
U.S. Cl. 364—131 **12 Claims**



3. A control system for a multi-processor apparatus having a plurality of processors in which each of said plurality of processors are assigned to a process, said control system comprising:

first determining means for determining whether or not a number of processors assigned to the process is insufficient;

second determining means for determining whether or not a processor which is not busy is included in said plurality of processors; and

adding means for, when said first determining means determines that the number of processors assigned to the process is insufficient and when said second determining means determines that a processor which is not busy is included in said plurality of processors, adding the processor which is not busy to processors assigned to the process,

wherein said first determining means comprises:

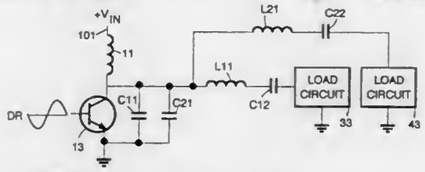
calculating means for calculating an average processing time for which each processor processes a predetermined amount of data in the process; and

comparing means for comparing a waiting time and the average processing time to each other, the waiting time being a time for which data for the process waits to be processed by one of the processors assigned to the process, wherein when the waiting time is equal to or greater than the average processing time, said determining means determines that the number of processors assigned to the process is insufficient.

5,668,715
MULTIPLE OUTPUT, ZERO VOLTAGE SWITCHING, SERIES RESONANT VHF INVERTER

Wilbur E. Hong; David M. Lusher, both of Torrance, and William B. Hwang, Los Angeles, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 27, 1996, Ser. No. 671,035
Int. Cl.[6] H02M *7/537;* **H04B** *1/18*
U.S. Cl. 363—131 **10 Claims**



1. A VHF DC to AC inverter comprising:

switching means connected between a supply voltage and a reference voltage, wherein said switching means includes a transistor having a first terminal and a second terminal, and an inductor connected between said first terminal and the supply voltage;

a first resonant waveshaping network responsive to said switching means, wherein said first resonant circuit includes a first resonant circuit first capacitor connected between said first terminal and said second terminal, and a first resonant circuit inductor and a first resonant circuit second capacitor connected to said first terminal;

a first load circuit responsive to said resonant waveshaping network;

a second resonant waveshaping network responsive to said switching means, wherein said second resonant circuit includes a second resonant circuit first capacitor connected between said first terminal and said second terminal, and a second resonant circuit inductor and a second resonant circuit second capacitor connected to said first terminal; and

a second load circuit responsive to said second resonant waveshaping network.

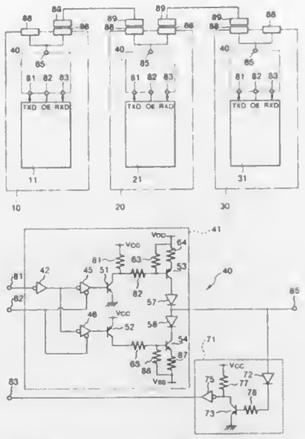
5,668,716
CONTROLLER FOR TWO-WAY SERIAL TRANSMISSION AND ADAPTER FOR SERIAL PORT

Masahiko Otomo, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,470
Claims priority, application Japan, Mar. 8, 1994, 6-036249
Int. Cl.[6] G06F *19/00;13/20*
U.S. Cl. 364—131 **21 Claims**

1. A controller having a two-way serial communication function, comprising:

a central processing unit; and



a serial communication device connected to said central processing unit, and including an interface having a serial data output port for outputting data transmitted from said central processing unit, and a serial data input port for inputting data transmitted to said central processing unit, said device further including an output buffer circuit, an input buffer circuit, and a data I/O terminal for transferring serial data to and from the outside;

said data I/O terminal being connected to said serial data output port via said output buffer circuit, and said data I/O terminal being connected to said serial data input port via said input buffer circuit, such that two-way serial data communication with said central processing unit can be conducted via said data I/O terminal and said serial data output and input ports.

5,668,717

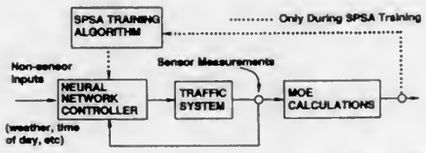
METHOD AND APPARATUS FOR MODEL-FREE OPTIMAL SIGNAL TIMING FOR SYSTEM-WIDE TRAFFIC CONTROL

James C. Spall, Ellicott City, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 364,069, Dec. 27, 1994, Pat. No. 5,513,098, which is a continuation of Ser. No. 73,371, Jun. 4, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 545,049

Int. Cl.[6] G05B *13/04*; **G06F** *15/18*

U.S. Cl. 364—148 **32 Claims**



1. A method for managing a complex transportation system, wherein a model governing the system dynamics and measurement process is unknown, to achieve optimal traffic flow by automatically adapting to both daily non-recurring events and to long-term changes in the system by approximating a controller for the system without having to first build the model therefor and without having, thereafter, to periodically and manually recalibrate the model, the method comprising the steps of:

using a plurality of sensors to obtain traffic flow information about the system;

inputting the traffic flow information into a data processing means;

approximating the controller using the data processing means and the traffic flow information comprising the steps of:

selecting a single function approximator to directly approximate the controller;

estimating the unknown parameters of the single function approximator in the controller using a stochastic approximation algorithm that does not require the model for the system; and

using the single function approximator to approximate the controller, wherein the controller is an output of the single function approximator; and

using the controller to control traffic control means to achieve optimal traffic flow.

5,668,718

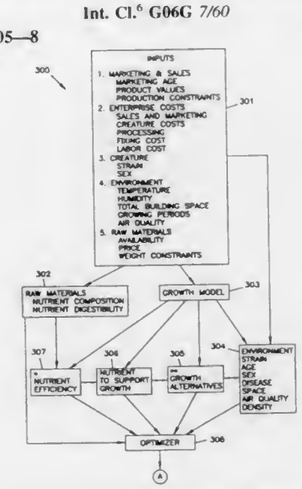
GENERATING GROWTH ALTERNATIVES

Jinkui Liu; Fazal Wala, both of St. Paul, and Harry E. Meek, Andover, all of Minn., assignors to American Institute of Nutrition and Management, Arden Hills, Minn.

Continuation-in-part of Ser. No. 289,652, Aug. 12, 1994, abandoned, which is a continuation of Ser. No. 125,409, Sep. 22, 1993, abandoned. This application May 16, 1995, Ser. No. 442,414

Int. Cl.[6] G06G *7/60*

U.S. Cl. 705—8 **50 Claims**



1. A method of determining the optimum growth of an animal, the method comprising the steps of:

(a) determining a plurality of equations representing a growth rate and yield of edible tissue of the animal, wherein each of the equations identifies the growth rate and yield given genetic and nongenetic characteristics;

(b) simultaneously solving the equations to optimize the growth rate and yield of the animal, thereby determining living factors of the non-genetic characteristics and optimized values; and

(c) controlling the living factors of the non-genetic characteristics in accordance with the optimized values thereby optimizing the age at which the animal achieves an optimum rate of growth.

5,668,719

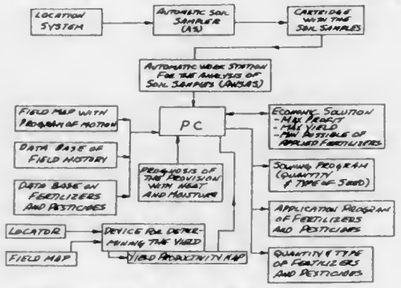
METHOD OF FERTILIZER APPLICATION AND FIELD TREATMENT

Vladimer A. Bobrov, Minsk, Belarus; Nickolay A. Kan, Novocherkassk, Russian Federation; Tamara G. Yanchevskaya, Minsk, Belarus; Donald E. McGrath, Benson, Minn., and Andrey V. Skotnikov, Minsk, Belarus, assignors to Tyler Limited Partnership, Benson, Minn.

Continuation-in-part of Ser. No. 286,476, Aug. 5, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 413,859

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—420 **20 Claims**



1. A method of treating a field of interest, comprising:

taking a plurality of soil samples from different geographic locations in the field of interest;

determining, for each of the plurality of samples, a geographic identifier identifying the geographic location from which the sample was taken;

analyzing the samples to determine a plurality of soil characteristics indicative of soil condition;

accessing data from a data base to obtain field characteristics corresponding to the field of interest, the field characteristics being indicative of current and historical information corresponding to the field of interest, wherein accessing data from a data base includes accessing humus information indicative of a forerunner crop in the field of interest;

determining a program for applying material to the field of interest based on the soil characteristics, the geographic identifiers and the field characteristics, wherein determining a program comprises determining a balance of humus in the field of interest based on plant residue of the forerunner crop and based on humus decomposition;

loading the program into a controller operably coupled to an applicator; and

controlling the applicator according to the program to apply material to the field of interest.

5,668,720

AIR BAG CONTROLLING APPARATUS

Toshinori Takahashi, Konan, and Jun Ito, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Apr. 25, 1995, Ser. No. 428,326

Claims priority, application Japan, Apr. 28, 1994, 6-113477; Apr. 28, 1994, 6-113478; Oct. 31, 1994, 6-292271; Oct. 31, 1994, 6-292272; Oct. 31, 1994, 6-292273; Oct. 31, 1994, 6-292274

Int. Cl.[6] B60R *21/32*

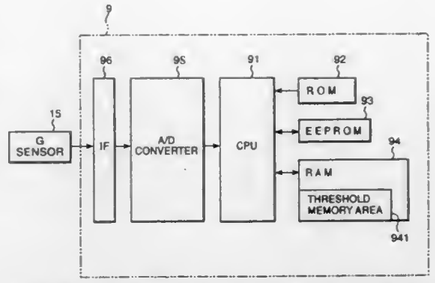
U.S. Cl. 701—46 **17 Claims**

1. An air bag controlling apparatus for controlling inflation of an air bag, comprising:

a sensor for detecting deceleration of a vehicle,

an inflator for discharging gas into said air bag;

first calculation means for integrating said detected deceleration with respect to time and for calculating a first velocity change value, said first calculation means providing said deceleration with a plus or minus sign with reference to a first deceleration reference value;



second calculation means for integrating said detected deceleration with respect to time and thereby calculating a second velocity change value, said second calculation means providing said deceleration with a plus or minus sign with reference to a second deceleration reference value greater than said first deceleration reference value;

a first memory device preserving a first velocity threshold value for said first velocity change value;

a second memory device preserving a second velocity threshold value for said second velocity change value;

ignition means for comparing said first velocity change value with said first velocity threshold value, for comparing said second velocity change value with said second velocity threshold value, and for igniting said inflator when said first velocity change value has reached said first velocity threshold value and said second velocity change value has reached said second velocity threshold value; and

threshold value updating means for increasing said second velocity threshold value when the time elapsed since said first velocity change value has become positive is within a first time reference value and said first velocity change value does not reach said first velocity threshold value.

5,668,721

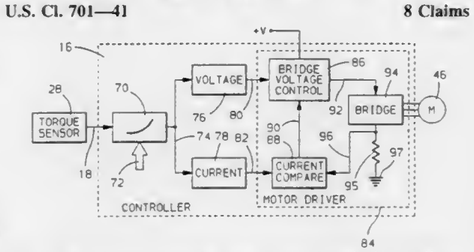
ELECTRIC POWER STEERING MOTOR CONTROL

Ashok Chandy, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1995, Ser. No. 537,604

Int. Cl.[6] B62D *5/04*

U.S. Cl. 701—41 **8 Claims**



1. An electric power steering motor control method according to the steps of:

determining a desired assist torque function indicating a desired assist torque in response to at least one steering system input parameter; and then

sensing a steering wheel torque;

responsive to the sensed steering wheel torque, determining a voltage torque command in a voltage mode, wherein the voltage torque command commands a first torque that is greater than the desired assist torque at low desired assist torques which are lower than a predetermined value, substantially equal to the desired assist torque at high desired assist torques which are higher than the predetermined value, and is substantially smooth and continuous over a range of said desired assist torques;

responsive to the sensed steering wheel torque, determining a curtain torque command in a current mode, wherein the current torque command is substantially equal to the desired assist torque at said low desired assist torques, greater than the desired assist torque at said high desired assist torques, and is substantially smooth and continuous over the range of said low and high desired assist torques; and

controlling an electric motor responsive to the voltage and current command torques, wherein the electric motor voltage is no greater than a voltage corresponding to the voltage torque command and the electric motor current is no greater than a current corresponding to the current torque command, wherein the motor provides torque assist to an electric power steering system and alternately operates in said current and voltage modes.

5,668,722

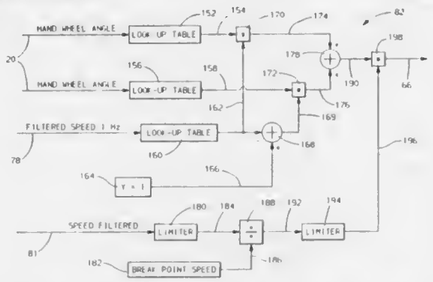
ELECTRIC POWER STEERING CONTROL

Timothy Wesley Kaufmann, Frankenmuth; Ashok Chandy, Fenton, and Steven James Collier-Hallman, Frankenmuth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1995, Ser. No. 537,605

Int. Cl.[6] B62D *5/04*

U.S. Cl. 701—41 **5 Claims**



1. An electric power steering control, according to the steps of:

measuring steering wheel torque;

measuring steering wheel angle;

measuring vehicle speed;

responsive to the measured steering wheel torque and vehicle speed, determining a power assist command;

determining a low vehicle speed return-to-center command responsive to the measured steering wheel angle and a first predetermined function;

determining a high vehicle speed return-to-center command responsive to the measured steering wheel angle and a second predetermined function; and

blending the low and high vehicle speed return-to-center commands responsive to the vehicle speed to determine a sum return-to-center command

subtracting the sum return-to-center command from the power assist command to obtain a motor command; and

commanding a power assist motor responsive to the motor command.

5,668,723

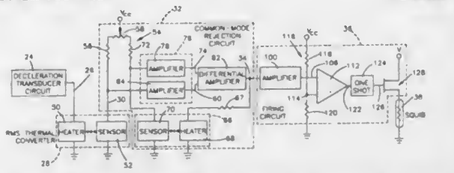
METHOD AND APPARATUS FOR SENSING A VEHICLE CRASH USING CRASH ENERGY

Brian K. Blackburn, Rochester, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 818,280, Jan. 8, 1992, Pat. No. 5,546,307, which is a continuation-in-part of Ser. No. 520,417, May 11, 1990, Pat. No. 5,216,607, which is a continuation-in-part of Ser. No. 358,875, May 30, 1989, Pat. No. 4,979,763. This application May 20, 1996, Ser. No. 650,424

Int. Cl.[6] B60R *21/32*

U.S. Cl. 701—45 **2 Claims**



1. An apparatus for providing a passenger restraint actuation signal for use in controlling actuation of a passenger restraint system in a vehicle, said apparatus comprising:

sensing means mountable to the vehicle for providing a signal having a characteristic indicative of crash acceleration;

means for determining from said sensing means signal a crash energy value functionally related to the square of the crash acceleration;

means for comparing the determined said crash energy value against an energy threshold value; and

means for providing said passenger restraint actuation signal when said comparing means indicates that said determined crash energy value is equal to or greater than said energy threshold value.

5,668,724

METHOD FOR IMPROVING THE CONTROLLABILTY OF MOTOR VEHICLES

Thomas Ehret, Seelbach; Friedrich Kost, Kornwestheim; Uwe Hartmann; Rainer Erhardt, both of Stuttgart; Anton Van Zanten, Ditzingen; Gerd Busch, Gerlingen; Karl-Josef Weiss, Stuttgart, and Wolf-Dieter Ruf, Waldstetten, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 859,438, Jul. 28, 1992, abandoned. This application Sep. 11, 1995, Ser. No. 526,280

Claims priority, application Germany, Sep. 28, 1990, 40 30 704.2

Int. Cl.[6] G06F *7/70;* **G06G** *7/76*

U.S. Cl. 701—80 **2 Claims**

1. Method for improving the controllability of a wheeled vehicle during braking of wheels of the vehicle, comprising the steps of:

measuring yawing speed ψ, wheel speeds V_{Ri}, steering angle δ and at least one of inlet pressure P_{inlet} and wheel brake cylinder pressures P_i, where i represents a respective wheel and equals 1, 2, 3 or 4;

supplying these measured variables ψ, V_{Ri}, δ, and at least one of P_{inlet} and wheel brake pressures P_i to a slip controller and, from these measured variables, determining longitudinal vehicle speed $\hat{V}_X$, longitudinal vehicle acceleration $\hat{V}_X$, respective wheel slip values $\hat{\lambda}_i$, and braking forces $\hat{F}_{Bi}$;

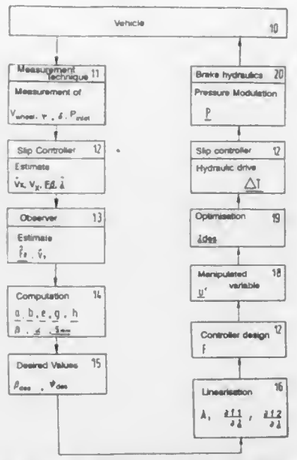
supplying the determined variables $\hat{F}_{Bi}$, $\hat{\lambda}_i$, and $\hat{V}_X$ to an observer which, with the aid of the measured variables λ and δ, determines tire forces $\hat{F}_{Ri}$ and a vehicle transverse speed $\hat{V}_Y$ from these variables;

supplying the determined variables $\hat{V}_X$, $\dot{\hat{V}}_X$, $\hat{\lambda}_i$, $\hat{F}_{Ri}$ and $\hat{V}_Y$ and the measured variables ψ and δ to a vehicle controller;

in the vehicle controller, and with the aid of a simple vehicle model and the determined and measured variables supplied to the vehicle controller, determining desired slip values λ_i^* that effect a better controllability of the vehicle for the respective wheels;

supplying the desired slip values λ_i^* to the slip controller; and

via the slip controller, controlling the respective wheel brake cylinder pressures P_i at the wheel brakes to achieve the desired slip values λ_i^* at the respective wheels.



5,668,725

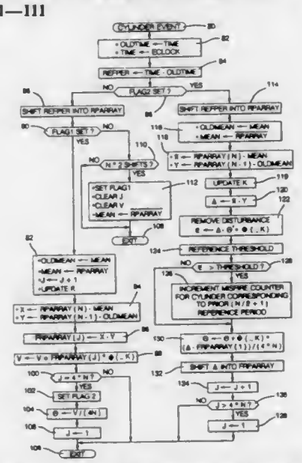
INTERNAL COMBUSTION ENGINE MISFIRE DETECTION

Sanjeev Manubhai Naik, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1995, Ser. No. 555,661

Int. Cl.[6] G01M *15/00;* **G06F** *15/00*

U.S. Cl. 701—111 **10 Claims**



1. In an internal combustion engine having a plurality of cylinders each cylinder having a piston mechanically linked to a crankshaft and reciprocally driven in the cylinder to rotate the crankshaft by cylinder combustion events in which an air-fuel mixture provided to the engine cylinders is ignited by timed application of an ignition drive signal to cylinder spark plugs, a method for diagnosing improper combustion conditions in the engine cylinders, comprising the steps of:

generating fuel injection control commands;

outputting the fuel injection control commands to control delivery of fuel to the engine;

generating ignition control commands;

outputting the ignition control commands to drive spark plugs of the engine cylinders;

generating reference signals at predetermined angular positions of the crankshaft;

determining reference periods as timed durations between each adjacent reference signal; diagnosing an improper combustion condition in a selected engine cylinder, by (a) identifying a first and second determined reference period corresponding to the selected engine cylinder, (b) calculating an ideal reference period for the identified first and second determined reference periods, (c) estimating noise and disturbance content in the identified first and second reference periods, (d) processing the identified first and second reference periods by removing the ideal reference period and the estimated noise and disturbance content from said first and second reference periods, (e) forming a misfire component as a difference between the processed first and second reference periods, (f) comparing the magnitude of the misfire component to a predetermined threshold component, and (g) diagnosing an improper cylinder combustion condition in the selected engine cylinder when the magnitude of the misfire component exceeds the predetermined threshold component.

5,668,726

DATA BACKUP APPARATUS UTILIZED IN AN ELECTRONIC CONTROL SYSTEM AND DATA BACKUP METHOD PERFORMED IN THE DATA BACKUP APPARATUS

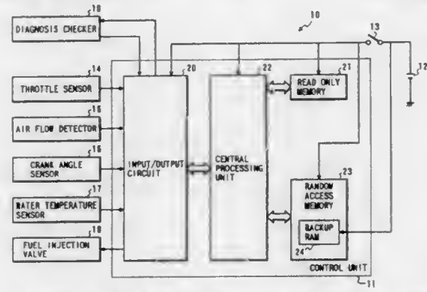
Hiroshi Kondo, Anjo; Takamasa Oguri, Toyoake; Masato Yano, Okazaki; Kazuyuki Okuda, Kariya, and Yoshihiro Kitagawa, Nagoya, all of Japan, assignors to Nippondenso Co, Ltd., Aichi-pref., Japan

Filed Dec. 16, 1994, Ser. No. 357,923

Claims priority, application Japan, Dec. 17, 1993, 5-318612; Mar. 18, 1994, 6-049038

Int. Cl.[6] G06F *11/16*

U.S. Cl. 701—115 **31 Claims**



1. A data backup apparatus utilized in an electronic control system, comprising:

control data storing means having a first memory region, a second memory region and a third memory region for storing pieces of updated control data in the first memory region, storing pieces of previous control data in the second memory region and storing a checking value in the third memory region regardless of whether an electric power is cut off;

control data copying means for copying the updated control data stored in the first memory region of the control data storing means to the second memory region of the control data storing means as the previous control data;

control data, renewing means for renewing one after another the updated control data which are stored in the first memory region of the control data storing means and are copied to the second memory region of the control data storing means, by the control data copying means on condition that the electric

power is supplied to the control data renewing means, the renewal of the updated control data being stopped during the renewal by cutting off the electric power supplied to the control data renewing means in the middle of the renewal;

checking data setting means for setting a piece of first checking data indicating a start of the renewal of the updated control data performed by the control data renewing means to the third memory region of the control data storing means in cases where the updated control data stored in the first memory region of the control data storing means is renewed by the control data renewing means, and setting a piece of second checking data indicating a finish of the renewal of the updated control data performed by the control data renewing means to the third memory region of the control data storing means in cases where the renewal of the updated control data performed by the control data renewing means is finished, the storage of the first checking data is maintained in the third memory region of the control data storing means in cases where the electric power supplied to the control data renewing means is cut off in the middle of the renewal performed by the control data renewing means; and

control data returning means for returning the previous data copied to the second memory region of the control data storing means by the control data copying means to the first memory region of the control data storing means as the updated control data in cases where the electric power cut off is again supplied to the control data renewing means on condition that the storage of the first checking data is maintained in the third memory region of the control data storing means.

5,668,727

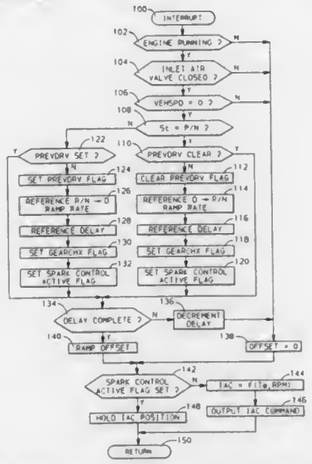
POWERTRAIN TORQUE CONTROL METHOD

Brian James Pellerito, Milford, and Lucius B. Allen, Commerce Township, both of Mich., assignors to General Motors Corporations, Detroit, Mich.

Filed Apr. 28, 1995, Ser. No. 430,649

Int. Cl.[6] B60K *41/02*; **F02P** *5/145*

U.S. Cl. 701—105 **3 Claims**



1. In an automotive internal combustion engine including an idle air control valve which is positioned to govern inlet air to the engine when the engine is at idle,

a torque control method in which automotive internal combustion engine spark timing is controlled to vary engine output torque to compensate for automotive powertrain mechanical load disturbances, comprising the steps of:

sensing a powertrain mechanical load disturbance;

determining a time rate of change in spark timing for compensating the sensed mechanical load disturbance;

varying spark timing in accord with the determined time rate of change;

sensing when the engine is at idle; and

holding the idle air control valve at a substantially constant position while the spark timing is being varied in accord with the determined time rate of change.

5,668,728

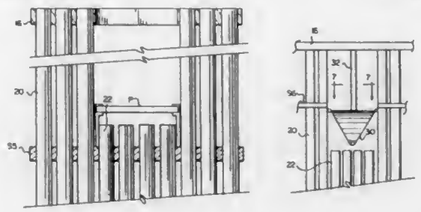
REMOVABLE DEFLECTORS FOR BWR FUEL WITH STEAM VENTS AND PART-LENGTH RODS

Gary E. Dix, Saratoga, and Bruce Matzner, San Jose, both of Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 7, 1995, Ser. No. 551,770

Int. Cl.[6] G21C *3/322*

U.S. Cl. 376—443 **14 Claims**



1. A fuel bundle for boiling water reactors comprising:

a plurality of vertically aligned, laterally spaced-apart fuel rods within said fuel bundle for generation of a fission reaction in the presence of water moderator;

a lower tie plate for admitting water moderator through said lower tie plate to the interstices of said fuel rods and supporting said vertically aligned, spaced-apart fuel rods;

an upper tie plate for enabling water and steam to be discharged from the top of the fuel bundle and maintaining said vertically aligned, spaced-apart fuel rods in upstanding, spaced-apart, side-by-side relation;

a plurality of spacers vertically spaced from one another between said upper and lower tie plates for maintaining said fuel rods laterally spaced from one another;

a surrounding fuel channel for confining moderator flow along the fuel rods and from said lower tie plate to said upper tie plate;

at least one of said fuel rods being a part-length rod extending vertically from the lower tie plate and terminating short of the upper tie plate wherein the upper end of said one part-length rod defines with respect to the surrounding fuel rods a volume overlying said part-length rod under said upper tie plate;

at least one deflector in substantial vertical registration with said at least one part-length rod and disposed in said volume for deflecting flow of liquid laterally away from said volume and into the interstices of laterally adjacent fuel rods, enabling reduction in void fraction in said interstices;

a support for said deflector connected between at least one of said upper tie plate and said spacers for releasably securing said deflector to said fuel bundle enabling access to and removal of said part-length fuel rod through the top of said fuel bundle upon removal of said deflector.

5,668,729

FRANKING MACHINE

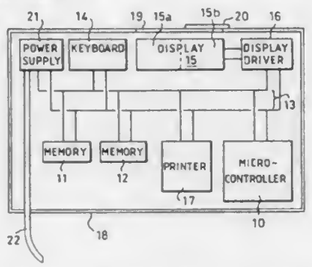
Raymond John Herbert, Leigh-on-Sea, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom

Filed Jan. 27, 1995, Ser. No. 379,968

Claims priority, application United Kingdom, Jan. 31, 1994, 9401759.7

Int. Cl.[6] G07B *17/02*

U.S. Cl. 364—464.2 **6 Claims**



1. A franking machine including electronic means operable to carry out accounting and control functions during franking operations to frank mail items; input means for input to the electronic means of a selected value of postage charge; a printer operable by said electronic means to print franking impressions including an indication of the selected value of postage charge on mail items; display means operable by said electronic means to display information relating to operation of the franking machine during franking operations, said display means being effective to retain an image of said information until such time as updated information is input to the display means by said electronic means wherein said display means includes first and second liquid crystal display elements each having stable states and in which said first and second liquid crystal display elements are set selectively from a first stable state to a second stable state by input of a drive signal thereto; said first liquid crystal display element being operable to display user information and said second liquid crystal display element being operable to display machine information and including sealed means effective to obscure said machine information displayed by said second liquid crystal display element.

5,668,730

METHOD FOR AUTOMATICALLY GENERATING CHAIN STITCHES

Anastasios Tsonis, Conestogo; Brian J. Goldberg, Thornhill; Aaron Martin Divinsky, Mississauga; Alexander Nicolaou, Mississauga; Benito Chia, Jr., Mississauga, and Niranjan Mayya, Mississauga, all of Canada, assignors to Pulse Microsystems Ltd., Canada

Continuation-in-part of Ser. No. 323,156, Oct. 14, 1994, Pat. No. 5,510,994. This application Sep. 11, 1995, Ser. No. 526,412

Int. Cl.[6] G06F *19/00*

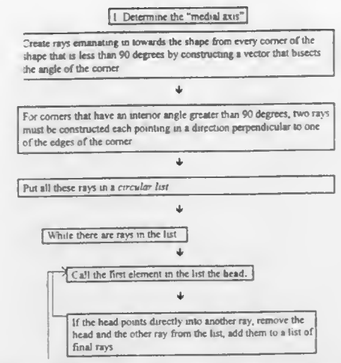
U.S. Cl. 364—470.09 **16 Claims**

1. In a method for automatically generating chain stitched stitch patterns in a computer aided design system comprising a computer means capable of generating stitch patterns for controlling a stitching apparatus in accordance with a selected chain stitch pattern generated by said computer means, wherein said chain stitched stitch patterns comprise stitch patterns having a polygon type shape and an associated fill density; the improvement comprising:

selecting a stitch pattern for said computer means to generate for controlling said stitching apparatus, said selected stitch pattern having an associated polygon type shape having an outer edge;

determining a Voronoi Diagram comprising Voronoi edges for said selected polygon type shape in said computer means;

constructing a plurality of spaced apart polygon type shapes in said computer means which are concentric to said selected polygon type shape and extending from said outer edge to said Voronoi edges, said computer constructed polygon type shapes being spaced apart from an adjacent concentric polygon type shape by a predetermined distance comprising a determinant of the fill density associated with said selected polygon type shape;



sorting said constructed polygon type shapes in said computer means in order for providing for proper sequencing and minimal jumping of said selected stitch pattern in said stitching apparatus from one part of said associated shape to another part of said associated shape; and

generating a plurality of chain stitches in said computer means and placing said plurality of computer generated chain stitches in said stitching apparatus on the perimeter of at least one of said computer constructed concentric polygons at a predetermined length under control of said computer means;

whereby said chain stitches are automatically generated from said selected stitch pattern.

5,668,731

METHOD AND APPARATUS FOR PLOTTING A TRACE PATTERN ON THE TREAD BAND OF A TIRE

Federico Mancosu, and Alessandro Volpi, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

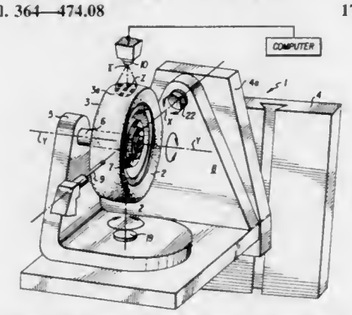
Filed Feb. 24, 1995, Ser. No. 393,471

Claims priority, application Italy, Feb. 24, 1994, MI94A0334

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Int. Cl.[6] G06F *19/00*; **B23K** *26/00*

U.S. Cl. 364—474.08 **17 Claims**



1. A method for plotting a trace pattern on the tread band of a tire, comprising the steps of:

storing a base data sequence relative to a predetermined trace pattern in an electronic computer;

storing a detection data sequence in the electronic computer, which data correspond to the geometrical conformation and surface of the radially external surface of a tire;

processing said base data sequence depending on said detection data sequence, so as to create an application data sequence corresponding to the trace pattern to be reproduced on said tire surface;

plotting said trace pattern on the radially external surface of the tire, as a sequential sum of a plurality of distinct elementary portions, through movement of a laser beam controlled by the electronic computer, based on said application data sequence,

said laser beam plotting a predetermined elementary portion of said trace pattern by oscillating on said tire surface within a cone of predetermined width in which a vertex of said laser beam is at the laser beam emitting point and an axis of symmetry thereof is perpendicular to an axis of rotation of the tire, a focal distance of said laser beam being the distance of the emitting point from the tire surface.

5,668,732

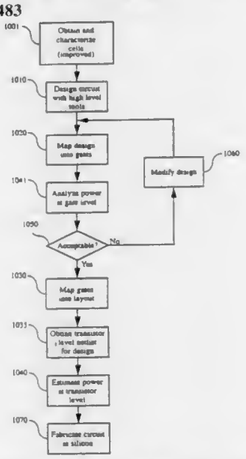
METHOD FOR ESTIMATING POWER CONSUMPTION OF A CYCLIC SEQUENTIAL ELECTRONIC CIRCUIT

Adel Khouja, Saratoga; Shankar Krishnamoorthy, Sunnyvale; Frederic G. Mailhot, Palo Alto, and Stephen F. Meier, Sunnyvale, all of Calif., assignors to Synopsys, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 400,103, Mar. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 400,232, Mar. 3, 1995, abandoned, which is a continuation-in-part of Ser. No. 253,538, Jun. 3, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,940

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—483 **28 Claims**



1. A method for estimating average power consumption of an electronic circuit that includes sequential elements represented as a netlist stored in an electronic memory comprising the steps of:

producing in the electronic memory a graph representing the electronic circuit in which sequential elements are represented as nodes and combinational logic elements connected between sequential elements are represented as directed arcs;

removing from the graph a first node that forms part of a cyclic path within the graph and that represents a first sequential element of the electronic circuit;

producing in the graph a first source node that represents the first sequential element of the electronic circuit;

producing in the graph a first load node that represents the first sequential element of the electronic circuit;

producing in the graph a respective corresponding first source arc that represents a respective arc output from the removed first node, each respective first source arc having the first source node as its origin and having a destination that is the same as its corresponding arc output of the removed first node;

producing in the graph a respective corresponding first load arc that represents a respective arc input to the removed first node, each respective first load arc having the first load node as its destination and having a source that is the same as its corresponding arc input to the removed first node;

grouping the nodes and the arcs of the graph into respective graph levels, each corresponding to a respective group of sequential logic of the electronic circuit and to a respective group of combinational logic of the electronic circuit that feeds such respective group of sequential logic wherein groups of deeper levels within the graph feed signals to groups of less deep levels; and

computing respective switching activity values for nets of the netlist in an order prescribed by the graph by computing switching activity values for nets of a respective group of nets representing a respective group of combinatorial logic corresponding to a given graph level, using as respective primary inputs to the respective group of nets, switching activity values computed for another respective group of nets representing a respective group of deeper logic level combinatorial logic corresponding to a respective deeper graph level.

5,668,733

SUBSTRATE PROCESSING APPARATUS AND METHOD

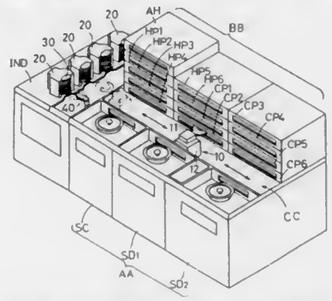
Toru Morimoto; Kenji Hashinoki; Tetsuya Hamada, and Kenji Kamel, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Apr. 6, 1995, Ser. No. 417,800

Claims priority, application Japan, Apr. 8, 1994, 6-071036

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—488 **16 Claims**



1. A substrate processing apparatus for processing a precedent and a subsequent lot each of which is formed by a plurality of substrates, comprising:

a plurality of first processing parts each of which processes said substrates of said precedent lot one by one;

a plurality of second processing parts each of which processes said substrates of said subsequent lot one by one;

transport means for circulating among said first processing parts while holding said substrates of said precedent lot to perform circulating transportation for said precedent lot, thereby to process said substrates of said precedent lot by first processing and circulating among said second processing parts while holding said substrates of said subsequent lot to perform circulating transportation for said subsequent lot, thereby to process said substrates of said subsequent lot by second processing, said transport means being capable of carrying only single substrate at the same time from one of said plurality of first or second processing parts to another; and

double flow control means for controlling said transport means to perform double flow processing in which said circulating transportation for said precedent and subsequent lots are performed by repetition of unit circulation which circulates among said first or second processing parts, and in which said circulating transportation for said precedent lot is interrupted after starting of the circulating transportation of the first substrate of said precedent lot before starting of the circulating transportation of the last substrate of said precedent lot and then at least one unit circulation of said circulating transportation for said subsequent lot is performed.

5,668,734

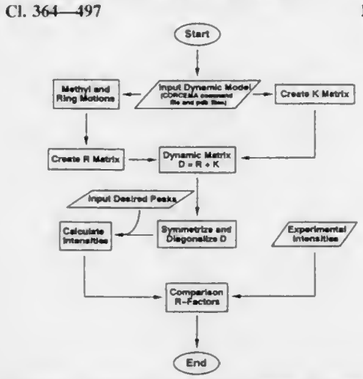
METHOD FOR ANALYZING 2D TRANSFERRED NOESY SPECTRA OF MOLECULES UNDERGOING MULTISTATE CONFORMATIONAL EXCHANGE

Nepalli Rama Krishna, Birmingham, and Hunter N. B. Moseley, Hoover, both of Ala., assignors to The UAB Research Foundation, Birmingham, Ala.

Filed Apr. 10, 1995, Ser. No. 420,846

Int. Cl.[6] G01N *24/08;* **G06F** *17/16*

U.S. Cl. 364—497 **14 Claims**



1. A method of using a modelling computer to determine two-dimensional nuclear- or rotating frame-Overhauser effect spectroscopy intensities for a ligand-enzyme system liaving flexible active sites, wherein the ligand-enzyme system has at least two conformational states, the method comprising:

(a) inputting data into a modeling computer, wherein the data relates to coordinates for each molecule on the enzyme and ligand, kinetic data, correlation times, and concentrations of ligand and enzyme;

(b) creating a K matrix file containing a kinetic matrix of the kinetic data;

(c) creating an R matrix file containing an R matrix derived from the correlation times and the coordinates;

(d) creating a D matrix file containing a D matrix that is the sum of the K matrix and the R matrix;

(e) modifying the D matrix file by symmetrizing the D matrix with a symmetrizing matrix S_N followed by diagonalization, wherein S_N is as follows:

$$S_N = \begin{matrix} [L_1]^{1/2} & & & & \\ & [E_1]^{1/2} & & & \\ & & [L_2]^{1/2} & & \\ & & & [E_2]^{1/2} & \\ & & & & \cdots \\ & & & & [L_N]^{1/2} \\ & & & & & [E_N]^{1/2} \end{matrix}$$

wherein N is the number of conformational states for the ligand and enzyme, with L and E representing ligand and enzyme states, respectively; and

(f) determining the Overhauser effect spectroscopy intensifies from the symmetrized D matrix.

5,668,735

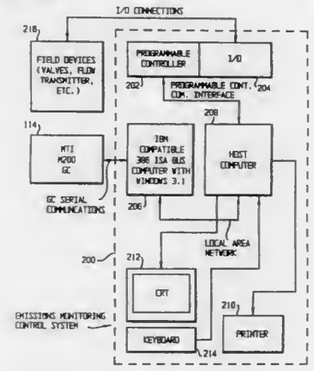
METHOD AND APPARATUS FOR CONTINUOUS EMISSIONS MONITORING SYSTEM USING GAS CHROMATOGRAPHY

Luis Mayan Dominguez; Forrest Wendell Bowling; William Monroe Coleman, III, and Bert Miller Gordon, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 530,506, Sep. 19, 1995, Pat. No. 5,610,835, which is a continuation of Ser. No. 273,234, Jul. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 114,598, Aug. 31, 1993, abandoned. This application May 31, 1996, Ser. No. 657,922

Int. Cl.[6] G01N *30/02*

U.S. Cl. 364—497 **28 Claims**



1. Apparatus for determining the concentration of at least one of a plurality of compounds contained in air carrying said at least one of a plurality of compounds comprising:

at least one gas chromatograph;

a sample collection means connected between said air and said at least one gas chromatograph for providing at least one sample of said plurality of compounds to said at least one gas chromatograph, said sample collection means including a plurality of conduit means connected to receive a plurality of samples containing said at least one of a plurality of compounds;

a first, second and third calibrating gas means connected to said at least one gas chromatograph for calibrating said at least one gas chromatograph;

a digital data processor connected to operate and control said at least one gas chromatograph, said sample collection means and said first, second and third calibrating gas means for analyzing said at least one sample to determine the concentration of said at least one of a plurality of compounds in said air and thereby the presence of different types of emissions in said air; and

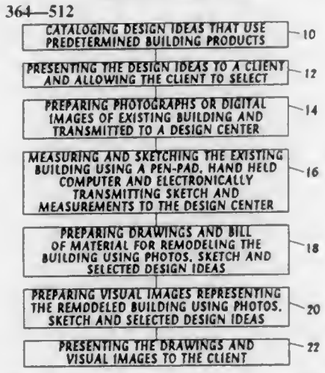
wherein said sample collection means further comprises a plurality of valves connected between said first, second and third calibrating gas means and said plurality of conduit means and said at least one gas chromatograph in order to alternatingly provide said first, second and third calibrating gases and each one of said plurality of samples to said at least one gas chromatograph for one of calibration and analysis.

5,668,736

METHOD FOR DESIGNING AND ILLUSTRATING ARCHITECTURAL ENHANCEMENTS TO EXISTING BUILDINGS

Edwin S. Douglas, Flintridge, Calif., and Daryl V. Turner, Scottsdale Ranch, Ariz., assignors to Mr. Arch, Inc., Glendale, Calif.

Filed Jan. 25, 1995, Ser. No. 377,702
Int. Cl.[6] G06T *11/00*
U.S. Cl. 364—512 15 Claims



1. A method for remodeling an existing building, said method comprising:

cataloging design ideas that utilize predetermined building products;

presenting the design ideas to a client;

allowing the client to select a design idea that utilizes a selected predetermined building product;

preparing photographs or digital images of the building and transmitting a photograph or digital image to a design center;

measuring and sketching the building and transmitting a sketch and measurements to the design center;

preparing a drawing at the design center from the photograph or digital image, sketch and measurements, said drawing incorporating the design idea selected by the client into the building; and

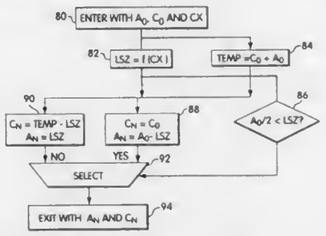
preparing a visual image from the photograph or digital image, sketch and measurements, said visual image representing the building remodeled with the design idea selected by the client.

5,668,737

HIGH-SPEED DATA PROCESSOR AND CODING METHOD

John Iler, Burlington, Mass., assignor to Pixel Magic, Inc., Andover, Mass.

Filed Mar. 22, 1995, Ser. No. 408,215
Int. Cl.[6] H04N *5/76*
U.S. Cl. 395—800.01 14 Claims



1. A high-speed data processor comprising:

an input module for receiving an input data stream from an input port;

an encoder coupled to the input module for encoding the input data stream;

an output module for providing an encoded data stream from the encoder to an output port;

wherein the encoder performs a combination of parallel and serial processing steps during encoding of the input data stream including

(a) receiving as inputs first and second parameters having initial values and which are representative of properties of the input data stream,

(b) determining a value for a reference parameter using a lookup table,

(c) comparing the fraction of the initial value for the first parameter with the value for a reference parameter and, in parallel, computing first and second updated values for each of the first and second parameters,

(d) if the fraction of the initial value for the parameter is less than the value for a reference parameter, selecting for output the first updated values for the first and second parameters,

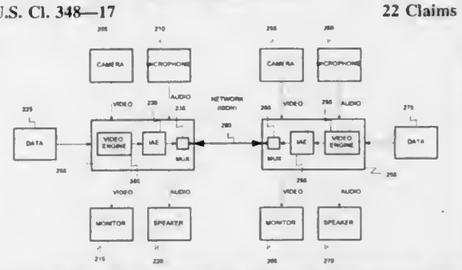
(e) if the fraction of the initial value for the parameter is not less than the value for a reference parameter, selecting for output the second updated values for the first and second parameters.

5,668,738

DYNAMIC IDLE AGGREGATION IN DIGITAL SIGNAL TRANSMISSION

William S. Ataras, III, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 31, 1996, Ser. No. 657,839
Int. Cl.[6] H04L *12/00*
U.S. Cl. 348—17 22 Claims



1. A method for transmitting blocks of time-sensitive data and blocks of other data over a communications channel, comprising the steps of:

(a) generating sets of time-sensitive data for transmission over the communications channel in a computer system in which transitions between the blocks of time-sensitive and other data must be separated by a minimum duration;

(b) characterizing the sizes of the sets of time-sensitive data; and

(c) aggregating the sets of time-sensitive data as needed into the blocks of time-sensitive data to ensure that transmission of each block of time-sensitive data and each block of other data is longer than the minimum duration.

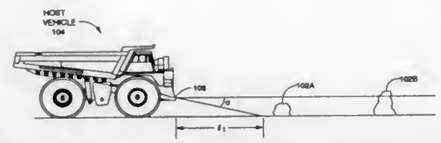
5,668,739

SYSTEM AND METHOD FOR TRACKING OBJECTS USING A DETECTION SYSTEM

Richard B. League, and Norman Keith Lay, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 299,093, Sep. 2, 1994, Pat. No. 5,587,929. This application Jun. 4, 1996, Ser. No. 657,509
Int. Cl.[6] G01S *13/00*
U.S. Cl. 382—103 23 Claims

1. An autonomous mining system, comprising:



at least one mining truck having a sensor, wherein said sensor is configured to detect objects within a field of view;

means for sampling each detector at a sample time to generate a current frame of datapoints, wherein each datapoint represents an object detected by said detector;

means for converting said datapoints into datapoints represented in global coordinates;

means for mapping said converted datapoints into a next frame of datapoints generated at a next sample time to create a new frame of datapoints, wherein said new frame of datapoints represents objects detected in said next frame as well as objects detected in one or more previous frames;

means for blob coloring said new frame of datapoints to define objects;

means for making list of said defined objects; and

wherein said means for blob coloring comprises:

means for scanning said new frame to locate a bin having datapoint having a non-zero power value;

means for labeling said located bin with a new label where said located bin is not adjacent to a previously-labeled bin; and

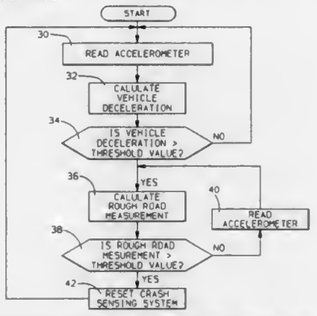
means for labeling said located bin with the same label as was assigned to said previously-labeled bin where said located bin is adjacent to said previously-labeled bin.

5,668,740

METHOD FOR DETECTING A ROUGH ROAD SURFACE

Jenne-Tai Wang, Troy, Mich., and Richard Jay Yun, Marysville, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1994, Ser. No. 360,142
Int. Cl.[6] B60R *21/32*
U.S. Cl. 364—550 1 Claim



1. A method for detecting a rough road surface upon which a vehicle is traveling, the method comprising:

providing a signal responsive to vehicle deceleration;

sampling the vehicle deceleration signal at a predetermined sampling rate to obtain discrete values of deceleration;

comparing discrete values of deceleration with a deceleration threshold to detect the onset of a crash event;

computing absolute values of the discrete values of deceleration;

determining difference values as a function of a difference between the absolute values and the discrete values of deceleration;

determining rough road measurement values as an integral of the difference values;

comparing the rough road measurement values with a predetermined time-dependent boundary curve; and

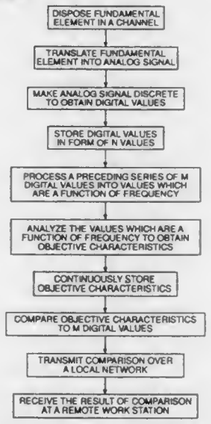
indicating a rough road surface when the rough road measurement value exceeds a corresponding value of the boundary curve for the appropriate time into the crash event.

5,668,741

PROCESS AND DEVICE TO CONTINUOUSLY AND IN REAL TIME CONTROL A COMPLEX MANUFACTURING PROCESS

Thierry Prigent, Sainte-Helene, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 156,754, Nov. 23, 1993, abandoned. This application Oct. 24, 1996, Ser. No. 736,306
Claims priority, application France, Nov. 26, 1992, 92 14680
Int. Cl.[6] G05B *23/00*
U.S. Cl. 364—551.01 10 Claims



1. A method for continuously monitoring a complex manufacturing process of a material being transformed through a plurality of steps during a predetermined time period, in order to apprehend, in a continuous and complete manner, a transient or perturbing phenomena occurring during the manufacturing process, the method comprising the steps of:

disposing fundamental elements in separate channels situated in the immediate vicinity of a machine so that each fundamental element is continuously monitored by a sensor and connected to at least one remote work station, through a local network;

translating, within each channel in the immediate vicinity of the sensor, a fundamental element into an analog signal by means of a sensor fixed to the machine;

making, within each channel in the mediate vicinity of the sensor, the analog signal discrete with a frequency determined in relationship to the fundamental element associated with the channel in order to obtain a succession of digital values representing the instantaneous values of the analog signal as a function of the time;

storing, within each channel in the immediate vicinity of the sensor, the digital values corresponding to the analog signal in the form of series of N values, said digital values being accessible during the predetermined time period;

processing, within each channel in the immediate vicinity of the sensor, a preceding series of M digital values where M>N, the processing of the preceding series of M digital values being carried out by the use of spectral estimation techniques making it possible to transform the signal variations with respect to time into values which are a function of the frequency, and then storing the values which are a function of the frequency;

analyzing, within each channel in the immediate vicinity of the sensor, the values which are a function of the frequency in order to obtain objective characteristics depending on the series of M digital values processed and the number of characteristics of which is less than N;

continuously storing, within each channel in the immediate vicinity of the sensor, the objective characteristics;

comparing, within each channel in the immediate vicinity of the sensor, the objective characteristics corresponding to the series of M digital values either with given values or with the objective characteristics corresponding to one or more of the preceding series so as to provide a result of the comparison;

transmitting, within each channel in the immediate vicinity of the sensor, the result of the comparison over the local network;

receiving, at the remote work station, the result of the comparison for each channel for the purpose of observation and use in real time with optionally storing of the results of the various comparisons in each channel, the objective characteristics, and the series of N digital values so as to be able to carry out subsequently an analysis in delayed time over all the fundamental elements of the complex process; and

transferring, upon reception of an abnormal result of the comparison from any of the channels, from each of the channels to the remote work station the digital values stored during the predetermined time period and representing the instantaneous state of the fundamental elements as a function of time in order to time correlate each signal having occurred at the time the material experienced the fundamental element monitored by the respective sensor.

5,668,742

APPARATUS FOR DETERMINING POSITION OF MOVING BODY

Osamu Murayama, Ischara, Japan, assignor to Komatsu Ltd., Japan

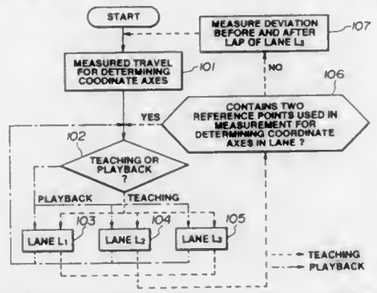
PCT No. PCT/JP94/02044, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO95/16184, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 6, 1994, Ser. No. 666,329

Claims priority, application Japan, Dec. 7, 1993, 5-306702; Dec. 14, 1993, 5-313609

Int. Cl.[6] G01B *11/14*

U.S. Cl. 364—559 **4 Claims**



1. An apparatus for determining a position of a moving body, comprising:

estimate calculation means for estimating the position and traveling direction of the moving body on predetermined coordinate axes, and;

relative position detection means for detecting a relative position of the moving body with respect to reference points established intermittently along a predetermined lane for the moving body;

the position and traveling direction of the moving body estimated by the estimate calculation means being corrected intermittently on the basis of an output of the relative position detection means and positions of the reference points so that the moving body travels along the predetermined lane on the basis of the corrected position and traveling direction;

wherein the predetermined lane comprises:

a closed-loop first lane which has first and second reference points immediately forward of a start point; and

a closed-loop second lane which has no first or second reference point,

the apparatus comprises:

reference point position calculation means for calculating the position of the first reference point on the basis of the estimated position output by the estimate calculation means when the moving body passes the first reference point on the first lane and of the relative position of the moving body with respect to the first reference point output by the relative position detection means, and for calculating the position of the second reference point on the basis of the estimated position output by the estimate calculation means when the moving body passes the second reference point on the predetermined lane and of the relative position of the moving body with respect to the second reference point output by the relative position detection means;

coordinate transformation calculation means for establishing new coordinate axes, which differ from the predetermined coordinate axes, on the basis of the positions of the first and second reference points on the predetermined coordinate axes calculated by the reference point position calculation means, performing calculations to transform the position and traveling direction on the predetermined coordinate axes output by the estimate calculation means into a position and traveling direction on the newly established coordinate axes, and using the transformed position and traveling direction as initial value settings for estimate calculation by the estimate calculation means;

first deviation calculation means for storing the positions of the first and second reference points as positions on the newly established coordinate axes in the coordinate transformation calculation means, calculating the positions of the first and second reference points with the reference point position calculation means just before the moving body returns to the start point after completing a lap of the first lane, and calculating a reference point deviation produced when the moving body has completed a lap of the first lane on the basis of the positions of the first and second reference points stored in the coordinate transformation calculation means and the positions of the first and second reference points which have been recalculated just before the moving body returns to the start point after completing a lap of the first lane;

first correction means for correcting the position and traveling direction of the moving body each time that the moving body completes a lap of the first lane and returns to the start point, on the basis of the deviation calculated by the first deviation calculation means;

second deviation calculation means for calculating with the reference point position calculation means the positions of two reference points immediately after the start point on a second lane as positions on the coordinate axes that have been established in the coordinate transformation calculation means for the first lane as the moving body travels on the second lane, recalculating the positions of the two reference points with the reference point position calculation means when the moving body has completed a lap of the second lane, returned to the start point, and subsequently continued to travel, and calculating a reference point deviation produced when the moving body has completed a lap of the second lane on the basis of the positions of the two reference points calculated just after starting a lap of the second lane and the positions of the two reference points recalculated after the moving body has returned to the start point after completing a lap of the second lane; and

second correction means for correcting the position and traveling direction of the moving body each time that the moving body completes a lap of the second lane and returns to the start point on the basis of the deviation calculated by the second deviation calculation means.

5,668,743

METHOD FOR VISION TESTING

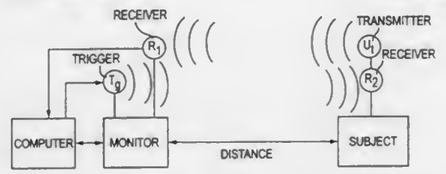
Avraham Kushelvesky, Metar, Israel, assignor to Optitest Ltd., Ofakim, Israel

Filed Aug. 2, 1995, Ser. No. 510,332

Claims priority, application Israel, Aug. 2, 1994, 110547

Int. Cl.[6] A01B *3/10*

U.S. Cl. 364—561 **10 Claims**



10. A system for automatically conveying to a computer a distance between the subject and a test object on a computer display unit for use in a vision testing system, comprising a measuring device interfaced with the computer, wherein the distance measuring device is comprised of a receiver/transmitter controlled by the computer; a receiver/transmitter unit attached to the subject's body; and electronic timing circuits interfaced to and controlled by the computer.

5,668,744

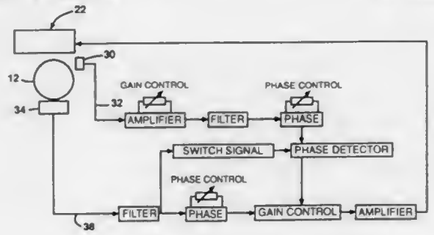
ACTIVE NOISE CONTROL USING PIEZOELECTRIC SENSORS AND ACTUATORS

Vijay K. Varadan; Vasundara V. Varadan; Xiao-Qi Bao, all of State College, Pa.; Kenneth B. Carney, Granville, Ohio; John L. Olinger, and Fred S. Coffey, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed May 5, 1995, Ser. No. 437,122

Int. Cl.[6] H03F *1/26*

U.S. Cl. 364—574 **20 Claims**



1. A method for reducing noise generated by the operation of a noise-producing machine comprising:

sensing the noise of the machine with a piezoelectric sensor;

sending an activation signal, responsive to the sensed noise of the machine, to activate a piezoelectric actuator to reduce the noise of the machine, where the piezoelectric actuator is independent of a wave guide;

sensing a parameter of the machine indicative of the speed of the machine with a second sensor; and

correcting the activation signal, responsive to the sensed parameter of the machine, to optimize the noise reduction of the piezoelectric material.

5,668,745

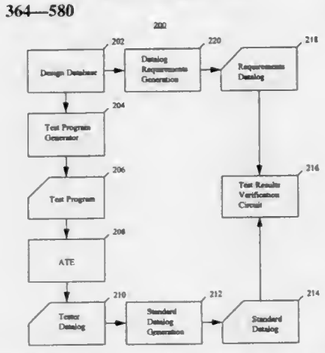
METHOD AND APPARATUS FOR TESTING OF SEMICONDUCTOR DEVICES

Chris Day, Mt. View, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 20, 1995, Ser. No. 545,879

Int. Cl.[6] G06F *11/00*

U.S. Cl. 364—580 **11 Claims**



1. A method useful in a computer system having a data processing unit operative with a memory, data retrieval circuitry and a user interface to determine whether a semiconductor device conforms to design requirements based on data stored in a design database and an automatic test equipment ("ATE") data log, the method comprising:

retrieving design database data from the design database;

retrieving ATE data from the automatic test equipment ("ATE") datalog, the ATE data being generated by a test program executed on the ATE which applies test data to the semiconductor device, the test program being responsive to the design database data;

generating a standard datalog responsive to the ATE data such that the standard datalog represents actual data produced by the semiconductor device in response to the test data applied to the semiconductor device by the ATE;

generating a requirements datalog from the design database data such that a one-to-one correspondence exists between each test performed by the ATE and verification data in the requirements datalog whereby the verification data represents data to verify that the actual data produced by the semiconductor device conforms to design requirements;

comparing the requirements datalog to the standard datalog to determine whether the semiconductor device conforms to design requirements.

5,668,746

REPRODUCED WAVEFORM EQUALIZATION CIRCUIT

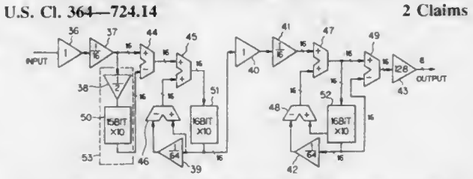
Tetsuo Iwaki, Yamatokoriyama; Toshiaki Harada, Tenri, and Chiaki Yamawaki, Habikino, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1994, Ser. No. 364,187

Claims priority, application Japan, Dec. 27, 1993, 5-330448

Int. Cl.[6] G06F *17/10;* **G11B** *5/00;5/07;5/035*

U.S. Cl. 364—724.14 **2 Claims**



1. An infinite impulse response digital filter for use in a reproduced waveform equalization circuit in a magnetic reproducing apparatus for reproducing a digital signal from a magnetic record-

ing medium in which digital signals are modulated and recorded as modulated digital signals, said infinite impulse response digital filter comprising:

a first shifter multiplying an input digital signal by $\frac{1}{2}^{l}$ (l: an integer);

a coefficient multiplying circuit composed of either a second shifter multiplying the output from said first shifter by $\frac{1}{2}^{m}$ (m: and integer) and a first shift register providing a preset delay to the output from said second shifter, or a first shift register providing a preset delay to the output from said first shifter and a second shifter multiplying the output from said first shift register by $\frac{1}{2}^{m}$ (m: an integer);

a first subtracter receiving the output from said first shifter at its addition input and receiving the output from said coefficient multiplying circuit at its subtraction input;

a first adder receiving the output from said first subtracter at one of two input terminals thereof;

a second shift register providing a preset delay to the output from said first adder;

a third shifter multiplying the output from said second shift register by $\frac{1}{2}^{n}$ (n: an integer);

a second subtracter receiving the output from said second shift register at its addition input and receiving the output from said third shifter at its subtraction input to provide an output to the other input to said first adder;

a fourth shifter multiplying the output from said second shift register by $\frac{1}{2}^{p}$ (p: an integer);

a second adder receiving the output from said fourth shifter at one of two input terminals thereof;

a third shift register providing a preset delay to the output from said second adder;

a fifth shifter multiplying the output from said third shift register by $\frac{1}{2}^{q}$ (q: an integer);

a third subtracter receiving the output from said third shift register at its addition input and receiving the output from said fifth shifter at its subtraction input to provide an output to the other input to said second adder;

a fourth subtracter receiving the output from said second adder at its addition input and receiving the output from said third shift register at its subtraction input; and

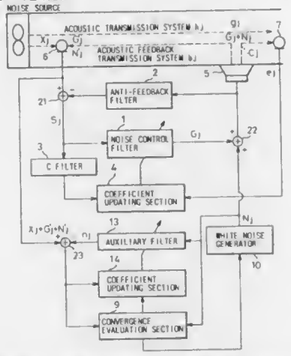
a sixth shifter multiplying the output from said fourth subtracter by $\frac{1}{2}^{r}$ (r: an integer).

5,668,747

COEFFICIENT UPDATING METHOD FOR AN ADAPTIVE FILTER

Tadashi Ohashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 25, 1995, Ser. No. 377,726
Claims priority, application Japan, Mar. 9, 1994, 6-065645
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—724.19 **16 Claims**



11. An adaptive filter coefficient updating method comprising the steps of:

inputting a reference signal from a reference signal generator to a transmission system and a first filter;

subtracting an output of the first filter from the transmitted reference signal to determine an error signal;

updating coefficients of the first filter in response to the error signal;

inputting the error signal into an estimation scattering filter;

updating coefficients of the estimation scattering filter to simulate the transmission system; and

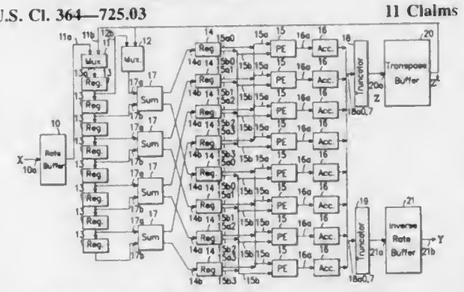
stopping coefficient updating of said estimation scattering filter when the error signal reaches a minimum value.

5,668,748

APPARATUS FOR TWO-DIMENSIONAL DISCRETE COSINE TRANSFORM

Po-Chuan Huang, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Jun. 23, 1995, Ser. No. 493,897
Int. Cl.[6] G06F *17/14*
U.S. Cl. 364—725.03 **11 Claims**



1. An apparatus for real time two-dimensional (2-D) discrete cosine transform (DCT) comprising:

a rate buffer for inputting an N×N data at a first rate and outputting said data at a second rate;

a first multiplexer for providing either a first data path or a second data path for data transmission said first data path being provided for said data from said rate buffer during a first 1-D DCT process, while during a second 1-D DCT process, said second data path is provided for a transposed data;

N first registers connected in series, one of said first registers being connected to said first multiplexer for sequentially writing the data provided by said first multiplexer to a next said first register;

a second multiplexer for providing either a third data path for data from said first register which is connected to said first multiplexer or a fourth data path for a feedback data;

N/2 summing elements connected to said first registers for subtracting and adding the data provided by said first registers and said second multiplexer;

N second registers for storing data from said summing elements;

N parameter extractors for generating parameters by the data stored in said second registers;

N accumulators for accumulating as transformed data the parameters of said parameter extractors;

a transpose buffer for transposing said transformed data from said accumulators; wherein said transposed data is generated by said transpose buffer and is stored therein during said first 1-D DCT process; and

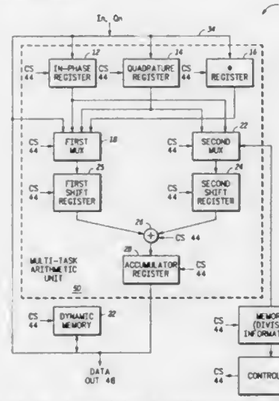
an inverse rate buffer for acquiring data from said accumulators, during said second 1-D DCT process, at said second rate, and outputting an N×N data at said first rate.

5,668,749

CIRCUIT FOR PERFORMING ARITHMETIC OPERATIONS IN A DEMODULATOR

Jose G. Corleto, and Gregg S. Kodra, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1995, Ser. No. 435,105
Int. Cl.[6] G06F *7/38*
U.S. Cl. 364—736.01 **13 Claims**



1. A circuit for determining a radius value and a phase value from an in-phase signal and a quadrature signal, the circuit comprising:

an in-phase register;

a quadrature register;

an angular register;

a first multiplexer operably coupled to the in-phase register, the quadrature register, and the angular register;

memory for storing phase divider information;

a second multiplexer operably coupled to the in-phase register, the quadrature register, and the memory;

shift register operably coupled to the second multiplexer, wherein the shift register performs at least a portion of multiplication operations;

adder operably coupled to the shift register and the first multiplexer;

accumulator register operably coupled to an output of the adder, the in-phase register, the quadrature register, and the angular register; and

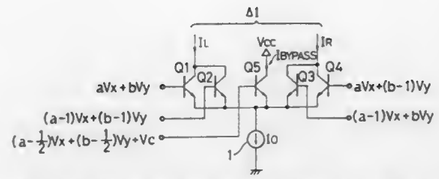
controller that provides control signals to the in-phase register, the quadrature register, the angular register, the first multiplexer, the second multiplexer, the shift register, the adder, the accumulator register, and the memory, wherein, based on the control signals, the radius value and the phase value are determined from the in-phase signal and the quadrature signal by iteratively approximating the radius value and the phase value based upon the in-phase signal and the quadrature signal.

5,668,750

BIPOLAR MULTIPLIER WITH WIDE INPUT VOLTAGE RANGE USING MULTITAIL CELL

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1996, Ser. No. 629,390
Claims priority, application Japan, Jul. 28, 1995, 7-212632
Int. Cl.[6] G06G *7/16;* **G06F** *7/556*
U.S. Cl. 364—841 **29 Claims**



1. A bipolar multiplier for multiplying a first initial input signal V_x and a second initial input signal V_y, said multiplier comprising:

(a) a first transistor pair of a first bipolar transistor having an input end and an output end and a second bipolar transistor having an input end and an output end;

said output ends of said first bipolar transistor and said second bipolar transistor being coupled together, thereby forming one of differential output ends of said multiplier;

said input end of said first bipolar transistor being applied with a first input signal of (aV_x+bV_y), where a and b are constants;

said input end of said second bipolar transistor being applied with a second input signal of $(a-1)V_x+(b-1)V_y$;

(b) a second transistor pair of a third bipolar transistor having an input end and an output end and a fourth bipolar transistor having an input end and an output end;

said output ends of said third bipolar transistor and said fourth bipolar transistor being coupled together, thereby forming the other of said differential output ends of said multiplier;

said input end of said third bipolar transistor being applied with a third input signal of $(a-1)V_x+bV_y$;

said input end of said fourth bipolar transistor being applied with a fourth input signal of $aV_x+(b-1)V_y$; and

(c) a fifth bipolar transistor having an input end and an output end;

said input end of said fifth bipolar transistor being applied with a fifth input signal of $\{a-(\frac{1}{2})\}V_x+\{b-(\frac{1}{2})\}V_y+V_c$, where V_c is a positive dc voltage; and

(d) said first transistor pair, said second transistor pair, and said fifth bipolar transistor being driven by a common tail current, thereby forming a multitail cell:

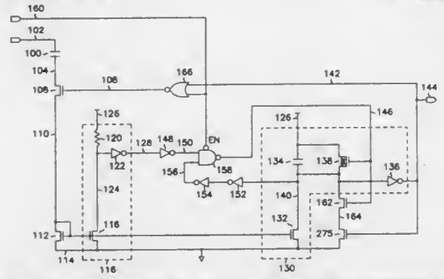
(e) wherein the multiplication result $V_x \cdot V_y$ of said first initial input signal V_x and said second initial input signal V_y is differentially output from said differential output ends.

5,668,751

ANTIFUSE PROGRAMMING METHOD AND APPARATUS

Joseph C. Sher, and Brent Keeth, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 1, 1996, Ser. No. 690,777
Int. Cl.[6] G11C *17/00;7/00*
U.S. Cl. 365—96 **24 Claims**



24. A programming circuit for an antifuse, the programming circuit comprising:

a diode-connected field-effect transistor (FET) having a gate terminal and a drain terminal, wherein the gate terminal is coupled to the drain terminal and to the antifuse, that monitors current through the antifuse;

a first current mirror FET having a gate terminal and a drain terminal, the gate terminal of the first current mirror FET coupled to the gate and drain terminals of the diode-connected FET;

a resistor coupling a bias voltage to the drain terminal of the first current mirror FET;

a first comparator having a first comparator input terminal coupled to the drain terminal of the first current mirror FET that compares the monitored current to a selected level;

a switch that interrupts the current through the antifuse;

a second current mirror FET having a gate terminal and a drain terminal, the gate terminal of the second current mirror FET coupled to the gate and drain terminals of the diode-connected FET;

a capacitor that receives a current from the second current mirror FET and integrates the received current to produce a resulting voltage, wherein the capacitor has first and second capacitor terminals, and the first capacitor terminal is coupled to the drain terminal of the second current mirror FET, and the second capacitor terminal receives a bias voltage; and

a second comparator having second comparator input and output terminals, wherein the second comparator input terminal is coupled to the first capacitor terminal and the output terminal provides a signal that causes interruption of current through the antifuse.

5,668,752

MULTI-STAGE ROM WHEREIN A CELL CURRENT OF A SELECTED MEMORY CELL IS COMPARED WITH A PLURALITY OF CONSTANT CURRENTS WHEN DRIVEN TO READ VOLTAGES

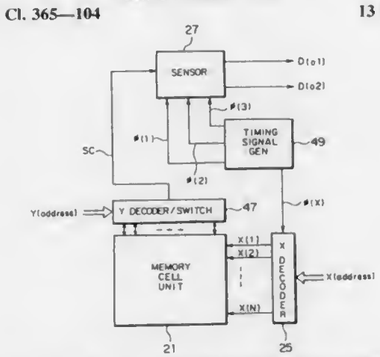
Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 1, 1996, Ser. No. 625,994

Claims priority, application Japan, Mar. 31, 1995, 7-075766

Int. Cl.[6] G11C *17/10*

U.S. Cl. 365—104 **13 Claims**



3. A multi-stage semiconductor memory device comprising:

a plurality of transistor memory cells, each given a selected threshold level selected from a zeroth threshold level, a first threshold level higher than said zeroth threshold level, a second threshold level higher than said first threshold level, and a third threshold level higher than said second threshold level;

selecting means responsive to address signals for selecting a selected memory cell from said transistor memory cells;

supply means responsive to a control signal variable between first and second logic levels for supplying said selecting means with a first voltage between said zeroth and said first threshold levels and a second voltage between said second and said third threshold levels while said control signal has said first and said second logic levels, respectively;

first judging means for judging on or off of said selected memory cell while said control signal has said first logic level; and

second judging means for judging, by comparison between a predetermined constant current and a cell current flowing through said selected memory cell while said control signal has said second logic level, whether or not said selected threshold level is said zeroth threshold level.

5,668,753

FERROELECTRIC MEMORY AND METHOD FOR CONTROLLING OPERATION OF THE SAME

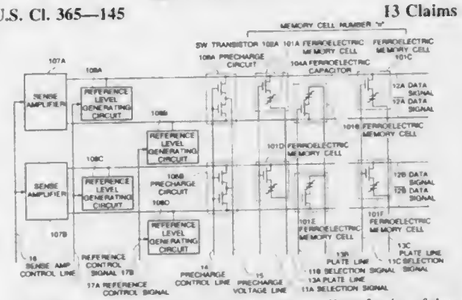
Hiroki Koike, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 4, 1996, Ser. No. 582,734

Claims priority, application Japan, Jan. 4, 1995, 7-000065

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **13 Claims**



1. A ferroelectric memory comprising, a plurality of pairs of data signal lines for outputting and receiving data, a plurality of selection signal lines selected in accordance with an address signal, and a plurality of unitary memory cell arrays each arranged along a corresponding one pair of data signal lines of said plurality of pairs of data signal lines, each of said unitary memory cell arrays including:

a plurality of memory cells each including a ferroelectric capacitor having a capacitor dielectric composed of a ferroelectric material and sandwiched between a pair of opposing electrodes, a switching means connected to said ferroelectric capacitor and one of said corresponding pair of data signal lines, and controlled by a corresponding one of said selection signal lines, so that different polarized conditions of said ferroelectric capacitor correspond to different conditions of stored data, respectively, and when a first voltage, which is not zero, is applied between the opposing electrodes of said ferroelectric capacitor, since a current flowing between said ferroelectric capacitor and the corresponding data signal line is different dependently upon the polarized condition of said ferroelectric capacitor, the current is detected or a voltage appearing on the corresponding pair of data signal lines due to the current is detected for the purpose of reading out the stored data; and

a means connected to the corresponding one pair of data signal lines, for detecting said current or said voltage difference appearing between the corresponding pair of data signal lines,

at least enough of said memory cells connected to each one data signal line to adjust a parasitic capacitance of each said data signal line, when data is read out from a memory cell, so as to minimize a variation of the voltage on said at least one of the corresponding pair of data signal lines caused by said parasitic capacitance.

5,668,754

FERROELECTRIC MEMORY CELL AND READING/WRITING METHOD THEREOF

Atsushi Yamashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 587,790

Claims priority, application Japan, Dec. 27, 1994, 6-323444

Int. Cl.[6] G11C *11/22*

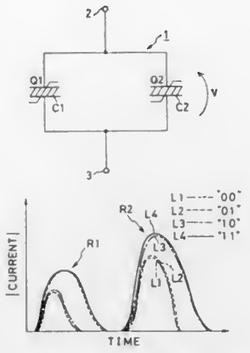
U.S. Cl. 365—145 **16 Claims**

1. A ferroelectric memory cell comprising:

first to n-th ferroelectric capacitors connected in parallel where n is an integer greater than unity; and

said first to n-th capacitors having different reverse voltages from each other, where each of said first to n-th reverse voltages is defined as an applied voltage at which a direction of polarization is reversed;

wherein each of said first to n-th capacitors stores a two-valued information, thereby generating a function of a 2^n-bit or 2^n-valued memory cell.



5,668,755

SEMICONDUCTOR MEMORY DEVICE HAVING WELL REGION

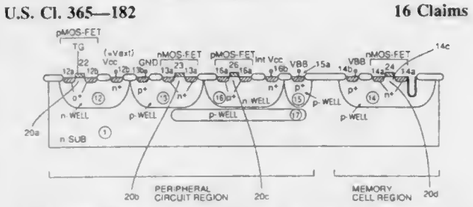
Hideto Hidaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 637,907

Claims priority, application Japan, Jun. 9, 1995, 7-142933; Nov. 6, 1995, 7-287487

Int. Cl.[6] Q11C *13/00*

U.S. Cl. 365—182 **16 Claims**



4. A semiconductor memory device including a memory cell region and a peripheral circuit region on a semiconductor substrate of a first conductivity type having a main surface, wherein

said memory cell region includes a first well region of the first conductivity type formed on the main surface of said semiconductor substrate and a memory cell field effect transistor of a second conductivity type formed in a surface of said first well region,

said peripheral circuit region includes a second well region of the second conductivity type formed in the main surface of said semiconductor substrate, a third well region of the first conductivity type formed in the main surface of said semiconductor substrate, a fourth well region of the second conductivity type formed so as to cover said third well region, and a complementary type field effect transistor constituted of a first field effect transistor of the first conductivity type formed in a surface of said second well region and a second field effect transistor of the second conductivity type formed in a surface of said third well region, and

said second well region of the second conductivity type and said fourth well region of the second conductivity type are formed with a predetermined space so as to be isolated by said semiconductor substrate of the first conductivity type.

5,668,756

MULTI-VALUE LEVEL TYPE NON-VOLATILE SEMICONDUCTOR MEMORY UNIT AND METHOD OF REWRITING THE SAME

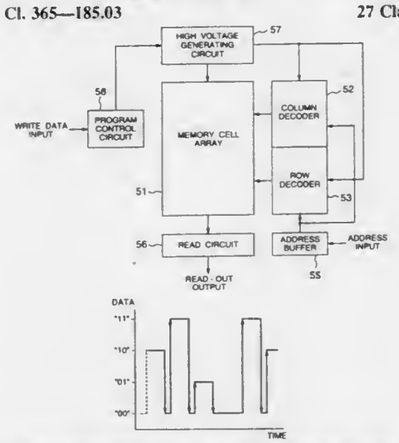
Yugo Tomioka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,086

Claims priority, application Japan, Dec. 26, 1994, 6-337223

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.03 **27 Claims**



1. A non-volatile semiconductor memory unit comprising:

a memory cell having a semiconductor substrate, a control gate formed over said semiconductor substrate, an electric charge accumulative layer formed between said semiconductor substrate and said control gate, and a source and drain both of which are formed in said semiconductor substrate, said memory cell storing tertiary or more data by accumulating electric charge in said electric charge accumulative layer;

detection means for detecting a storage state before data rewrite of said memory cell;

comparison means for comparing the storage state before data rewrite, which is detected by said detection means, with a storage state after data rewrite to produce a difference between the storage state before data rewrite and said storage state after data rewrite; and

rewrite means for rewriting the storage state of said memory cell by applying predetermined voltages to said source, said drain and said control gate of said memory cell, respectively, in accordance with the difference produced in said comparison means.

5,668,757

SCALABLE FLASH EEPROM MEMORY CELL AND ARRAY

Ching-Shi Jeng, 13030 Cumbra Vista Ct., Los Altos Hills, Calif. 94022

Filed Mar. 18, 1996, Ser. No. 619,258

Int. Cl.[6] G11C *16/02;* **H01L** *29/78*

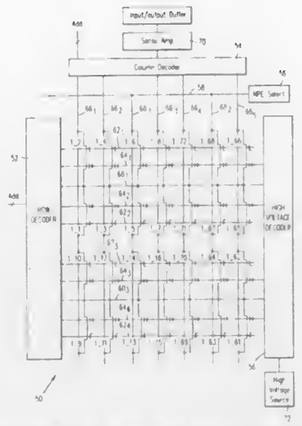
U.S. Cl. 365—185.1 **23 Claims**

1. An electrically erasable and programmable read only memory array, said memory array comprising:

a semiconductor substrate;

a plurality of floating gate memory transistors arranged in a matrix of a plurality of rows and a plurality of columns, each memory transistor having four terminals;

a plurality of first column lines, each first column line connecting a first terminal of all the memory transistors arranged in the same column;



a plurality of first row lines, each first row line connecting a second terminal of all the memory transistors arranged in the same row;

a plurality of second row lines, each second row line connecting a third terminal of all the memory transistors arranged in the same row;

a plurality of third row lines, each third row line connecting a fourth terminal of all the memory transistors arranged in the same row;

said memory transistors arranged in the same row having the same first, second and third row lines;

column decoding means for receiving a column address signal and for selecting one of a plurality of first column lines in response thereto; and

row decoding means for receiving a row address signal and for selecting one of a plurality of first, second and third row lines in response thereto.

5,668,758

DECODED WORDLINE DRIVER WITH POSITIVE AND NEGATIVE VOLTAGE MODES

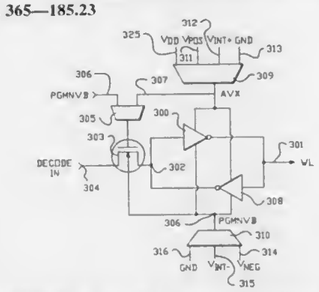
Tom Dang-Hsing Yiu, Milpitas, Calif.; Chun-Hsiung Hung, Hsin-Chu, Taiwan; Ray-Lin Wan, Milpitas, Calif.; Yao-Wu Cheng, Taipei, Taiwan, and Teruhiko Kamei, Yokohama, Japan, assignors to Macronix Int'l Co., Ltd., Hsinchu, Taiwan

PCT No. PCT/US95/01031, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO96/23307, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 26, 1995, Ser. No. 612,923

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.23 **23 Claims**



1. An apparatus for driving a plurality of wordlines in a memory array, comprising:

a positive voltage source providing a positive voltage;

a negative voltage source providing a negative voltage;

a plurality of wordline voltage drivers, wordline voltage drivers in the plurality having:

respective wordline select inputs,

a first mode which selectively drives the positive voltage or a first mode reference voltage to the wordline in response to the wordline select input,

a second mode which selectively drives the negative voltage or a second mode reference voltage to the wordline in response to the wordline select input, and

a feedback circuit, having an input coupled to the wordline, and having an output coupled to the wordline select input of the driver to hold the wordline select input during the second mode.

5,668,759

METHOD FOR ERASING AND VERIFYING NONVOLATILE SEMICONDUCTOR MEMORY

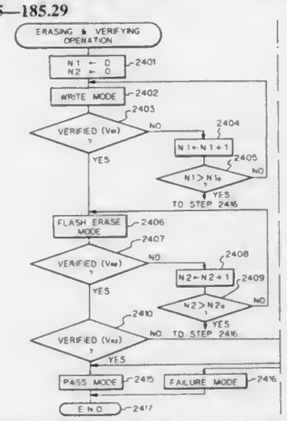
Tetsuya Ohtsuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 419,897

Claims priority, application Japan, Apr. 11, 1994, 6-071716

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.29 **36 Claims**



1. A method for erasing and verifying a nonvolatile semiconductor memory device including nonvolatile memory cells, comprising the steps of:

a) performing a write operation upon a certain number of said nonvolatile memory cells;

b) determining whether or not said write operation is carried out normally;

c) performing a flash erase operation upon said certain number of said nonvolatile memory cells after said write operation is carried out normally;

d) determining whether or not said flash erase operation is carried out normally;

e) determining whether or not at least one of said certain number of said nonvolatile memory cells is in a depletion state after said flash erase operation is carried out normally;

f) performing a threshold voltage recovering operation upon said certain number of said nonvolatile memory cells until all of said certain number of said nonvolatile memory cells enter an enhancement state only after at least one of said certain number of said nonvolatile memory cells is determined to be in a depletion state;

g) determining whether or not said certain number of said nonvolatile memory cells are in an erase completion state after said threshold voltage recovering operation is carried out; and

h) determining said nonvolatile semiconductor memory device as a defective device when at least one of said nonvolatile memory cells is in a non-erase completion state.

5,668,760

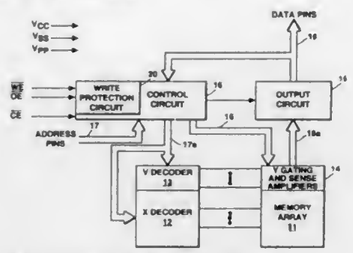
NONVOLATILE MEMORY WITH A WRITE PROTECTION CIRCUIT

Peter K. Hazen, Auburn, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 23, 1996, Ser. No. 636,529

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—189.01 **16 Claims**



1. A nonvolatile memory, comprising:

(A) a memory array;

(B) a control circuit having a command latch and a command decoder, the control circuit receiving an output enable signal and a write enable signal to control memory operations of the memory array in accordance with a command latched into the command latch via the command decoder;

(C) a write protection circuit that disables the command latch and the command decoder when the output and write enable signals are both active.

5,668,761

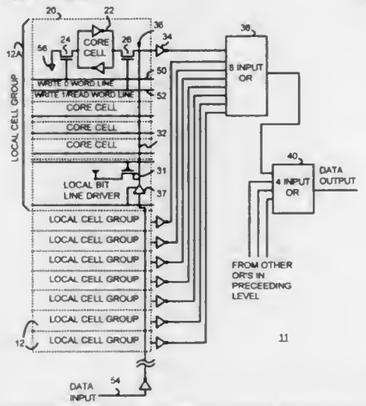
FAST READ DOMINO SRAM

John Stephen Muhich; Robert Paul Masleid, and Larry Bryce Phillips, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,935

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **7 Claims**



1. A domino random access memory having a core cell coupled to a local bit line, the domino random access memory comprising:

a domino node coupled to the local bit line;

a first transistor;

a first word line coupled to the first transistor;

a second transistor coupled to the local bit line; and

a second word line coupled to the second transistor,

the first and second word lines for reading and writing data to the core cell, wherein when reading data from the core cell, only the second word-line is activated to drive the second transistor, such that when a binary 1 is read from the core cell, the second word-line and second transistor produce a voltage across the local bit line causing the domino node to discharge.

5,668,762

SEMICONDUCTOR MEMORY DEVICE ALLOWING REDUCTION OF POWER CONSUMED IN A SHARED SENSE AMPLIFIER TYPE SENSE AMPLIFIER

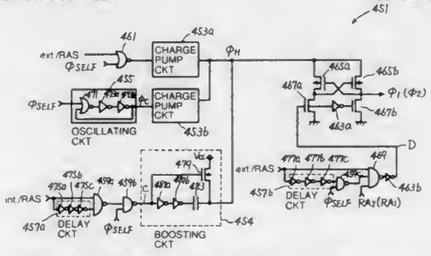
Makoto Suwa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,627

Claims priority, application Japan, Dec. 2, 1994, 6-299930

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—189.11 **11 Claims**



1. A semiconductor memory device, comprising:

a first bit line pair to one of which bit lines a memory cell is connected;

a second bit line pair to one of which bit lines a memory cell is connected;

a sense amplifier for amplifying potential of said first bit line pair or said second bit line pair;

control signal generating means, responsive to an active state of a control signal, for generating a first control signal or a second control signal which is at a potential level, higher than a power supply potential level, for a prescribed time period after the control signal changes from the active state to an inactive state;

a first connection transistor for connecting said first bit line pair to said sense amplifier in response to application of the first control signal generated by said control signal generating means to its control electrode; and

a second connection transistor for connecting said second bit line pair and said sense amplifier in response to application of the second control signal generated by said control signal generating means to its control electrode.

5,668,763

SEMICONDUCTOR MEMORY FOR INCREASING THE NUMBER OF HALF GOOD MEMORIES BY SELECTING AND USING GOOD MEMORY BLOCKS

Shinya Fujioka; Atsushi Hatakeyama, and Hirohiko Mochizuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 26, 1996, Ser. No. 606,819

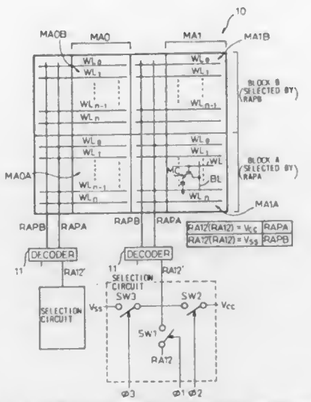
Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—200 **17 Claims**

1. A semiconductor memory selectively enabled for operation as a complete operative memory or a partial operative memory, comprising:

a plurality of memory arrays, each memory array comprising a plurality of memory blocks; and

a plurality of selection circuits respectively associated with said plurality of memory arrays, selectively and independently



disabling a defective memory block and selecting a normal memory block of a memory array for enabling operation thereof as a partial operative memory.

5,668,764

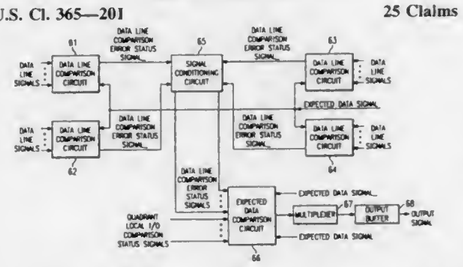
TESTABILITY APPARATUS AND METHOD FOR FASTER DATA ACCESS AND SILICON DIE SIZE REDUCTION

Vipul A. Surlekar, Bombay, India, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 22, 1995, Ser. No. 408,515

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—201 **25 Claims**



1. Testing apparatus for testing the storage and retrieval of an applied data signal in an array of storage cells in an integrated circuit memory unit, wherein said storage cells are arranged in a plurality of storage cell groups, said apparatus comprising:

a plurality of first comparison circuits, each first comparison circuit associated with a storage cell group, each first comparison circuit receiving a plurality of data signals from addressed storage cells in said associated storage cell group, each first comparison circuit also receiving an applied data signal, each comparison circuit providing a status signal in response to a comparison of said data signals and said applied data signal, and

a second comparison circuit associated with a selected storage cell group, said second comparison circuit receiving said status signals and said applied data signal, said comparison circuit providing an error signal when at least one of said retrieved data signal is not said applied data signal.

5,668,765

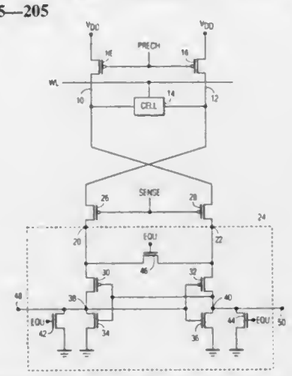
CHARGE TRANSFER SENSE AMPLIFIER

Michael Anthony Ang, Santa Clara, Calif., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 6, 1996, Ser. No. 659,384

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—205 **10 Claims**



1. An electronic circuit with a memory that has:

a memory cell for storing data;

a bit line selectively connected to the cell;

a voltage sense amplifier having an input selectively connected to the bit line for sensing a bit line voltage representative of the data, and an output for providing an output signal representative of the data, wherein:

the voltage sense amplifier is powered by the bit line voltage through transfer of electric charge from the bit line to the voltage sense amplifier,

the output supplies the output signal created from the charge being redistributed between the bit line and the output of the voltage sense amplifier, and

the sense amplifier has means for precharging the output so that the output is electrically connected to the bit line when the sense amplifier starts sensing.

5,668,766

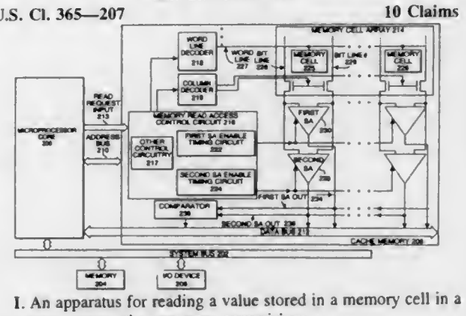
METHOD AND APPARATUS FOR INCREASING MEMORY READ ACCESS SPEED USING DOUBLE-SENSING

Arkady Bramnik, Kizijat Motzkin, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed May 16, 1996, Ser. No. 648,684

Int. Cl.[6] G11C 7/02

U.S. Cl. 365—207 **10 Claims**



1. An apparatus for reading a value stored in a memory cell in a computer system, the apparatus comprising:

a first sense amplifier coupled to the memory cell, the first sense amplifier having an input coupled to receive a first sense enable signal at a first sense time, and an output coupled to provide to a data bus a first indicated data value responsive to the first sense enable signal, the data bus being coupled to a processor such that the first indicated value is provided to the processor at the first sense time;

a second sense amplifier coupled to the memory cell, the second sense amplifier having an input coupled to receive a second sense enable signal at a second, later sense time, and an output coupled to provide a second indicated data value responsive to the second sense enable signal; and

a comparator coupled to the first and second sense amplifiers, the comparator issuing a signal to invalidate the first indicated data value and providing the second indicated data value to the processor if the first and second indicated data values are different.

5,668,767

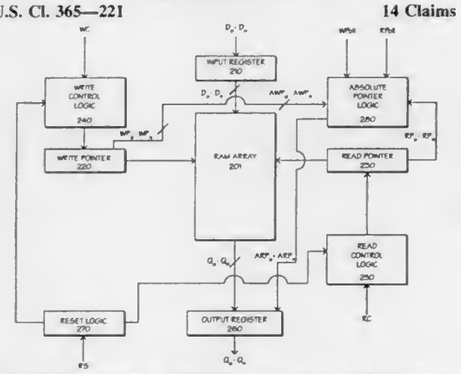
POLLED FIFO FLAGS

David Barringer, Milpitas, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 29, 1995, Ser. No. 580,832

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—221 **14 Claims**



1. A First-In-First-Out (FIFO) Integrated Circuit (IC) comprising:

a memory having a plurality of storage locations;

an internal address circuit coupled to said memory and configured to indicate one of said plurality of storage locations to be accessed during a next write operation and one of said plurality of storage locations to be accessed during a next read operation, said internal address circuit further having a read pointer and write pointer; and logic circuitry coupled to said internal address circuit and configured to receive one or more polling signals and to generate one or more absolute pointer values in response thereto, said absolute pointer values indicating one or more absolute states of said storage locations of said memory array.

5,668,768

Patent Not Issued For This Number

5,668,769

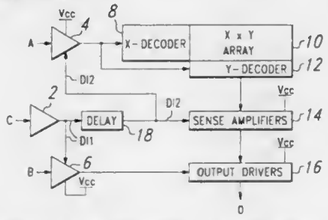
MEMORY DEVICE PERFORMANCE BY DELAYED POWER-DOWN

Tim M. Coffman; Ronald J. Syzdek, both of Sugar Land; Timothy J. Coots, The Woodlands; Phat C. Truong, and Sung-Wei Lin, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 21, 1995, Ser. No. 560,229

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—226 **5 Claims**



1. A method of reducing voltage on power busses of an integrated circuit caused by short chip-disable durations, said method comprising:

detecting an external chip-disable pulse occurring before a minimum time duration;

preventing said chip-disable pulse from powering down selected internal DC paths of said integrated circuit; and

simultaneously, preserving the output-driver high-impedance functionality of the chip-disable signal.

5,668,770

STATIC MEMORY CELL HAVING INDEPENDENT DATA HOLDING VOLTAGE

Kiyoo Itoh, Higashi-kurume, and Koichiro Ishibashi, Warabi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1996, Ser. No. 655,823

Claims priority, application Japan, Jun. 2, 1995, 7-136349; Feb. 15, 1996, 8-027574

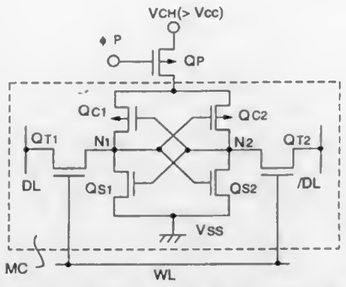
Int. Cl.[6] G11C 5/14

U.S. Cl. 365—227 **50 Claims**

1. A semiconductor integrated circuit, comprising:

a static memory cell including MOS transistors having gates and drains cross-coupled to each other, wherein said cross-coupled MOS transistors conduct substantially no electric current between their drains and sources when their respective gates and sources have equal voltages;

a switch connecting a power supplying node of said static memory cell to a first supply voltage, wherein said switch is



open when said static memory cell is activated, wherein said switch is closed when said static memory cell is inactivated; and

wherein said first supply voltage is higher than the maximum voltage of a data line of said static memory cell.

5,668,771

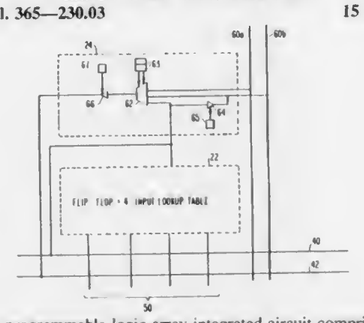
PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUITS

Richard G. Cliff, Milpitas; L. Todd Cope, San Jose; Cameron R. McClintock, Mountain View; William Leong, San Francisco; James A. Watson, Santa Clara; Joseph Huang, San Jose, and Bahram Ahanin, Cupertino, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 245,509, May 8, 1994, Pat. No. 5,550,782, which is a continuation-in-part of Ser. No. 111,693, Aug. 25, 1993, Pat. No. 5,436,575, which is a continuation-in-part of Ser. No. 754,017, Sep. 3, 1991, Pat. No. 5,260,610, and Ser. No. 880,942, May 8, 1992, Pat. No. 5,260,611. This application May 24, 1996, Ser. No. 655,870

Int. Cl.[6] G11C *13/00*; G11B *7/00*

U.S. Cl. 365—230.03 **15 Claims**



3. A programmable logic array integrated circuit comprising:

a two dimensional array of Logic Array Blocks ("LABs"), each comprising:

a memory block having a plurality of memory columns, each of said memory columns having a plurality of data inputs, a plurality of address inputs, and at least one data output;

control means coupled to said memory columns;

first interface means having a plurality of inputs coupled to said control means, a plurality of data inputs, and a plurality of outputs coupled to said data inputs of said memory columns;

second interface means having a plurality of inputs coupled to said control means and a plurality of outputs coupled to said address inputs of said memory columns;

third interface means having a plurality of inputs coupled to said data output of said plurality of memory columns, a plurality of inputs coupled to said control means, and a plurality of outputs;

an intra-LAB plurality of conductors being programmably coupled to said control means;

a plurality of first programmable selectors ("PLCs") coupled between said intra-LAB plurality of conductors and said control means for selectively connecting said intra-LAB conductors to said control means; and

a plurality of first function control elements ("FCEs") coupled to said plurality of first PLCs for programmably controlling said first plurality of PLCs;

a first plurality of conductors, each of which extends along a first dimension of said two dimensional array;

a second plurality of conductors, each of which extends along a second dimension of said two dimensional array;

a plurality of second PLCs coupled between said intra-LAB conductors and said first conductors for connecting a selected number of said first plurality of conductors to said intra-LAB plurality of conductors;

a plurality of second function control elements ("FCEs") coupled to said plurality of second PLCs for programmably controlling said plurality of second PLCs; and

a plurality of output buffers coupled between said outputs of said third interface and said second conductors, each of said output buffers having a control input.

5,668,772

SEMICONDUCTOR MEMORY DEVICE AND ACCESS METHOD FOR THE SAME

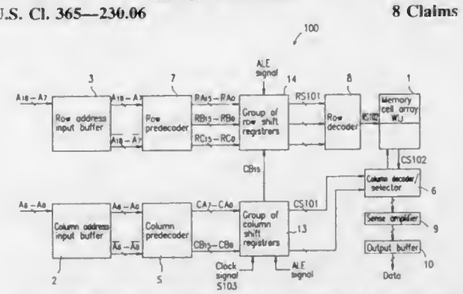
Yasuhiro Hotta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 13, 1996, Ser. No. 713,664

Claims priority, application Japan, Nov. 13, 1995, 7-294606

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **8 Claims**



1. A semiconductor memory device comprising a memory cell array including a plurality of memory cells, the device comprising:

a predecoder for dividing a plurality of bits of an address signal into at least two bit strings so as to decode each bit string and output predecoded results of each bit string in parallel;

a series of shift registers, each shift register being provided for a respective bit string, receiving the predecoded results of the corresponding bit string as shift data, shifting the received shift data, thereby generating and outputting predecoded signal bits; and

a main decoder for decoding the predecoded signal bits output from the plurality of shift registers and selecting a memory cell in the memory cell array in accordance with the results of the decoding.

5,668,773

SYNCHRONOUS BURST EXTENDED DATA OUT DRAM

Paul S. Zagar; Troy A. Manning, and Todd Merritt, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

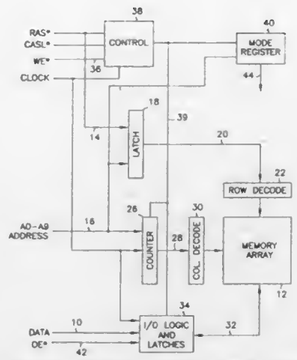
Continuation-in-part of Ser. No. 370,761, Dec. 23, 1994, Pat. No. 5,526,320. This application Nov. 2, 1995, Ser. No. 552,199

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233 **2 Claims**

1. A memory device comprising:

a plurality of addressable memory elements; and



addressing circuitry adapted to receive a first memory element address in response to a transition of a clock signal and an address latch signal, and further adapted to generate a second memory element address in response to a subsequent transition of the clock signal,

wherein the clock signal is provided on an output enable input.

5,668,774

DYNAMIC SEMICONDUCTOR MEMORY DEVICE HAVING FAST OPERATION MODE AND OPERATING WITH LOW CURRENT CONSUMPTION

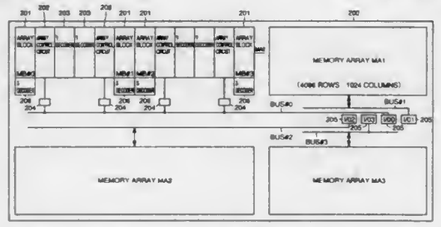
Kiyohiro Furutani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1996, Ser. No. 651,025

Claims priority, application Japan, May 22, 1995, 7-122439

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233 **19 Claims**



1. A semiconductor memory device including a memory array having a plurality of memory cells arranged in a matrix of rows and columns, comprising:

first signal generating means responsive to deactivation of a row address strobe signal instructing a start of selection of a row in said memory array to generate a signal resetting an operation related to selection of the row in said memory cell array;

delay means for delaying the deactivation of said row address strobe signal by a predetermined time; and

second signal generating means responsive to deactivation of the delayed row address strobe signal from said delay means and deactivation of a column address strobe signal instructing a start of selection of a column in said memory array to generate an output allowance signal for setting an output buffer outputting data of a selected memory cell to a data output terminal to an output high impedance state.

5,668,775

METHODS FOR DETERMINING THE POSITION OF SEISMIC EQUIPMENT, AND APPLICATIONS OF THE METHODS

Kjell Hatteland, Røyken, Norway, assignor to GECO A.S., Stavanger, Norway

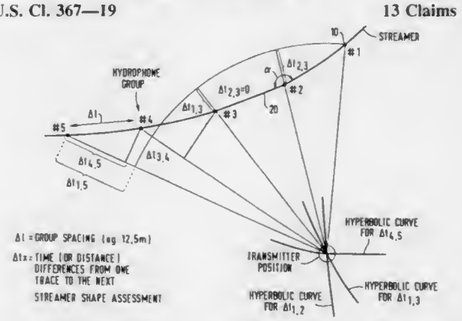
PCT No. PCT/NO94/00186, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO95/14246, PCT Pub. Date May 26, 1995

PCT Filed Nov. 18, 1994, Ser. No. 492,010

Claims priority, application Norway, Nov. 19, 1993, 934208

Int. Cl.[6] G01V *1/38*

U.S. Cl. 367—19 **13 Claims**



1. A method for determining the position of seismic equipment, especially seismic sources and seismic streamers, wherein the seismic equipment is arranged to transmit and receive acoustic signals, said method comprising the steps of: generating a spread spectrum signal having an orthogonally encoded signal sequence, said spread spectrum signal having a prominent peak in an autocorrelation function thereof; transmitting the spread spectrum signal using acoustic transmitters provided in the seismic equipment; detecting the spread spectrum signal transmitted by said acoustic transmitters using acoustic receivers in the seismic equipment and adapted for the detection of the spread spectrum signal; cross-correlating the spread spectrum signal detected by said acoustic receivers with the orthogonally encoded signal sequence of the spread spectrum signal; determining a time difference between detection of the spread spectrum signal received by said acoustic receivers on the basis of a prominent peak in a cross-correlation function of the spread spectrum signal as received by each acoustic receiver; determining a distance between said acoustic transmitters and said acoustic receivers on the basis of said time difference and a known distance between said acoustic receivers; and forming on the basis of the distance determined during said step of determining a distance, a spatial network indicative of the seismic equipment's exact geometrical configuration, the location of at least one point in said spatial network being defined by relating the network to at least one conventionally determined geographical position.

5,668,776

VELOCITY MEASUREMENT APPARATUS OF MOVING OBJECT

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1996, Ser. No. 601,942

Claims priority, application Japan, Feb. 23, 1995, 7-034916

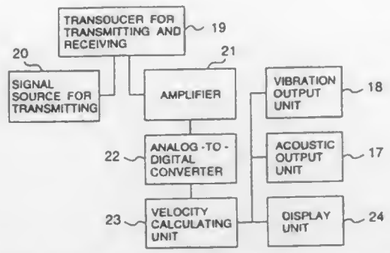
Int. Cl.[6] G01S *13/58*

U.S. Cl. 367—89 **19 Claims**

1. A velocity measurement apparatus comprising:

a transducer for transmitting a signal wave to a target object repeatedly a plurality of times at a predetermined time interval and for receiving a reflected signal from said target object repeatedly a plurality of times, said transducer having a plurality of elements arrayed in a direction; and

a velocity calculating unit to calculate a moving velocity in a radial direction for said target object approaching said trans-



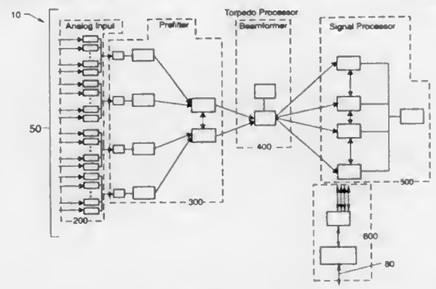
ducer and being in a fixed direction relative to said transducer, said velocity calculating unit comprising Fourier transforming means for two-dimensionally Fourier transforming a two-dimensional received signal at a specific time of the reflected signal by said transducer in an array direction of said plurality of elements and in a time axis direction defined by the transmitting time of the signal wave to said target object repeatedly a plurality of times.

5,668,777

TORPEDO SIGNAL PROCESSOR

Walter T. Schneider, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 8, 1996, Ser. No. 687,064
Int. Cl.[6] G01J *15/66*; F42B *19/00*
U.S. Cl. 367—96 **12 Claims**



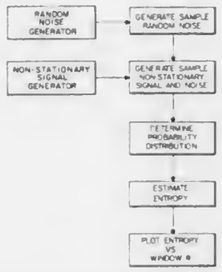
1. A torpedo sonar signal processor comprising:
an analog input component operating with only internal memory and receiving input signals from a sonar array;
a prefilter component operating with only internal memory, said prefilter component attached to and receiving input signals from said analog input component;
a beamformer component having an external memory, said beamformer attached to and receiving input signals from said prefilter component;
a signal processor component having external memory, said signal processor component attached to and receiving input signals from said beamforming component; and
a network controller component receiving input data signals from and sending control signals to said signal processor component and further providing output signals to a torpedo control processor.

5,668,778

METHOD FOR DETECTING ACOUSTIC SIGNALS FROM AN UNDERWATER SOURCE

Azizul H. Quazi, East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 9, 1996, Ser. No. 677,205
Int. Cl.[6] H04B *1/06*
U.S. Cl. 367—135 **5 Claims**



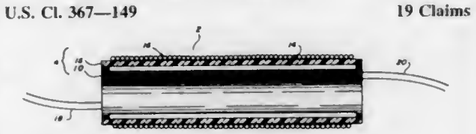
1. A method for detecting radiated and reflected acoustic signals from an underwater source, wherein the acoustic signals are present in a random noise environment and form an output therewith, the method comprising the steps of:
operating an entropy-based acoustic receiver to receive said output;
calculating the entropy of said output;
comparing the calculated entropy with a selected entropy threshold value;
wherein a substantial difference revealed by the comparison of the calculated entropy and the selected entropy threshold value is indicative of the presence of an acoustic signal from an underwater source; and
wherein a less than substantial difference revealed by the comparison of the calculated entropy and the selected entropy threshold value is indicative of lack of presence of an acoustic signal from an underwater source.

5,668,779

HYDROPHONE GROUP DESIGN FOR SHALLOW TOWED APPLICATIONS

Anthony Dandridge, Burke, Va.; Alan B. Tveten, Fort Washington, Md., and Aileen M. Yurek, Moosup, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1996, Ser. No. 625,081
Int. Cl.[6] H04R *1/44*
U.S. Cl. 367—149 **19 Claims**



1. A mandrel for a hydrophone comprising:
an extended solid frame substantially non-compliant along a longitudinal axis, said extended solid frame provided with a channel around the periphery of said extended solid frame, said channel extending substantially the entire length of said extended solid frame; and

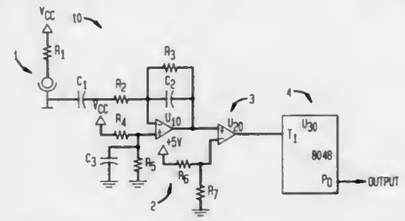
a flexible outer covering surrounding said extended solid frame such that said channel forms an air gap with said flexible outer covering, said flexible outer covering being compliant in a radial direction extending from the longitudinal axis.

5,668,780

BABY CRY RECOGNIZER

Chau-Kai Hsieh, Chiung Lin, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 30, 1992, Ser. No. 968,747
Int. Cl.[6] G10L *5/00*
U.S. Cl. 367—198 **22 Claims**



1. A baby cry recognizer comprising:
an amplifier circuit capable of amplifying a received sound signal,
a pulse generator circuit, connected to said amplifier circuit, generating a pulse signal having zero crossings which are aligned with zero crossings of said amplified signal, and
a signal recognition circuit, receiving said pulse signal, capable of obtaining the zero crossing rate of said pulse signal during each of a preselected number of frames in a predetermined length time interval and determining whether the received sound signal is a baby cry when: the zero crossing rate of said pulse signal, in more than a first threshold number of said preselected number of frames, falls within a particular frequency range, and the zero crossing rate of said pulse signal over said entire time interval at least equals a second low threshold but at most equals a third high threshold; and for outputting an indication signal when the received sound signal is determined to be a baby cry.

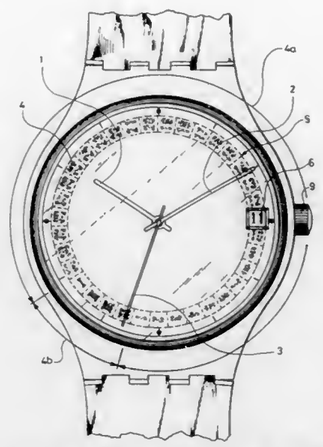
5,668,781

ANALOG ELECTRONIC TIMEPIECE HAVING A MULTIFUNCTIONAL CALENDAR DISC

Nicolas Jeannet, Bôle, and Pierre Schmidli, Bienne, both of Switzerland, assignors to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Mar. 14, 1996, Ser. No. 615,842
Claims priority, application Switzerland, Mar. 28, 1995, 00 871/95
Int. Cl.[6] G04B *19/24*
U.S. Cl. 368—28 **9 Claims**

1. An electronic analog timepiece for displaying time by means of hands driven by a motor M_1, and displaying at least two other items of time information by means of a second display having a disc and indicator, one of which is movable relative to the other by means of a second, reversible stepping motor M_2, said timepiece comprising:
a time-keeping circuit and a driving circuit for driving the motor M_1 to display the time delivering a daily signal S_J;
an exterior control means for selecting a category of time information to be displayed;
an interpretation circuit for interpreting manipulations of the exterior control means and delivering a signal S_K representing the selected category of time information;
a management circuit for a perpetual calendar comprising on the one hand a master block, provided with calendar counters and a multiplexer, and delivering in response to the signals S_J and



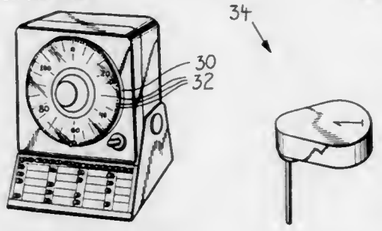
S_K an order signal S_C representative of the ranking of said information on the display, and also comprising a slave block provided with a comparator-subtractor and a counter delivering to the comparator-subtractor a disc signal S_D representing the value of the instantaneous ranking of the time information displayed, wherein the comparator-subtractor also receives the order signal S_C and delivers at its output a signal S_R making it possible both to define the direction of rotation of the motor M_2 by means of a driving circuit and to increase or decrease the counter in a recurring manner until S_D=S_C, and in that the second display has at least two distinct zones provided with different symbols for each category of time information, the symbols of said zones occupying successive rankings on said display.

5,668,782

PROGRAMMED MULTI TIME INTERVAL PIN

Jack F. Crawford, 5 Sea Shore Dr., Ormond Beach, Fla. 32176

Filed Sep. 5, 1995, Ser. No. 523,693
Int. Cl.[6] G04F *8/00*
U.S. Cl. 368—107 **4 Claims**



1. A timing device comprising:
an instrument case comprising a disc rotatably mounted thereto, a scale on said instrument case visible through said disc, said disc comprising a plurality of disc holes, an electrical signal circuit including switch means and signal means connected to be energized upon activation of said switch means, said switch means being normally biased to a position rendering said signal means inoperative, and switch actuation means removably carried by said disc in selected ones of said holes for sequentially operating said switch means to render said signal operative to signal elapsed time; and
said switch actuation means comprises at least one multi time interval pin having a cap rotatably attached to a carrier base and a carrier base projection extending over an edge of said disc whereby said multi time interval pin is prevented from rotating relative to said disc when said cap is rotated relative

to said carrier base, said cap comprising a window wherethrough indicia on said carrier base is visible.

5,668,783

SOUND GENERATOR IN PARTICULAR FOR A TIMEPIECE

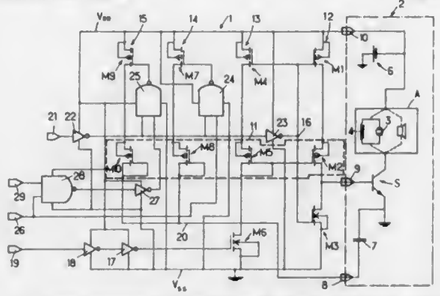
Rudolf Bugmann, Erlach, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Sep. 13, 1996, Ser. No. 710,250

Claims priority, application Switzerland, Sep. 21, 1995, 02 669/95

Int. Cl.[6] G04C *21/00;21/16;* **G10H** *1/02*

U.S. Cl. 368—250 **9 Claims**



I. A sound generator, in particular for use an alarm in a timepiece, intended to generate sounds of variable amplitude and comprising an acoustic system connected in series with a controlled current source, a control electrode of said controlled current source being connected to a control circuit comprising a capacitor and which is capable of providing a control signal having a frequency which determines the note to be produced and having an envelope corresponding to said variable amplitude, wherein said control circuit further comprises a current mirror the output branch of which supplies said control electrode and an input branch of which is connected in series with said capacitor.

5,668,784

WATCH BAND ATTACHMENT MECHANISM

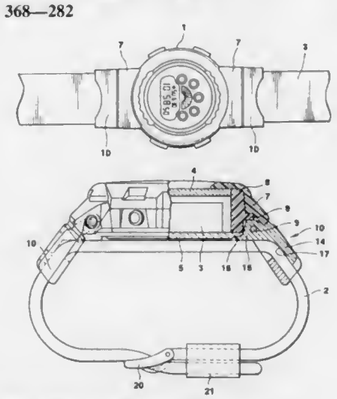
Hajime Iguchi, Fuchu, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1996, Ser. No. 611,243

Claims priority, application Japan, Mar. 7, 1995, 7-047417

Int. Cl.[6] G04B *37/00*

U.S. Cl. 368—282 **7 Claims**



1. A band attachment mechanism comprising:

a watch case provided with a pair of band attachment portions on an outer peripheral surface thereof; and

a pair of band holding members detachably attached to the band attachment portions, each extending from a back surface of the watch case in a direction opposite to a front surface of the watch case, and each having a watch band insertion slot extending from a first position which is positioned at or away from the back surface of the watch case in the opposite direction, to a second position which is positioned further away from the back surface of the watch case in the opposite direction than the first position, the band insertion slot opened at the first and second positions, wherein both end portions of a watch band consisting of one band piece are inserted into the band insertion slots of the band holding members to project the both end portions from the openings of the second positions of the watch band insertion slots of the band holding members toward outsides of the band holding members and to extend along the back surface of the watch case between the openings of the first positions of the watch band insertion slots of the band holding embers while the band holding members are detachably attached to the band attachment portions of the watch case.

5,668,785

MULTIPLE AUDIO SIGNAL RECORDING AND REPRODUCING APPARATUS

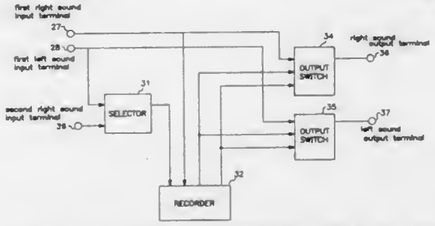
Hiroki Monta, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 156,101, Nov. 22, 1993, Pat. No. 5,594,551. This application Jun. 5, 1995, Ser. No. 461,528

Claims priority, application Japan, Nov. 20, 1992, 4-311755

Int. Cl.[6] H04B *1/20*

U.S. Cl. 369—5 **2 Claims**



1. A recording/reproducing apparatus for recording input signals having left and right stereo sound signals, said apparatus comprising:

a first right sound signal input terminal and a first left sound signal input terminal for receiving a first stereo sound signal;

a second right sound signal input terminal for receiving a second stereo sound signal;

a recording switch connected to said first left sound signal input terminal and said second right sound signal input terminal for passing and outputting an input signal from said second right sound signal input terminal when two of said input signals are to be recorded and for passing and outputting an input signal from said first left sound signal input terminal when one of said first input signals is to be recorded;

recorder means connected to said output of said recording switch and to said first right sound signal input terminal for recording the stereo sound signals, said recorder means having a right sound signal output and a left sound signal output;

left sound signal output means connected to said first left sound signal input terminal and said output of said recorder means for passing and outputting an input signal from said first left sound signal input terminal in the recording mode and for passing and outputting an output signal of said recorder means in the playback mode;

right sound signal output means connected to said first right sound signal input terminal and said signal output of said recorder means for passing and outputting in the recording mode an input signal from said first right sound signal input terminal and in playback mode for passing an output signal of said signal output of said recorder means;

a left sound signal output terminal connected to said output of said left sound signal output means; and

a right sound signal output terminal connected to said output of said right sound signal output means.

5,668,786

MAGNETO-OPTIC DISK APPARATUS HAVING MEANS FOR ELIMINATING FLUCTUATION COMPONENT IN REPRODUCTION MAGNETO-OPTIC SIGNAL

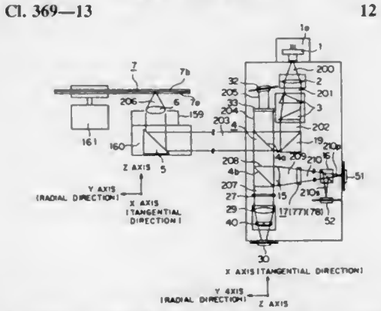
Tohru Sasaki, Yokohama; Takeshi Shimano, Tokorozawa; Yoshiro Konishi; Toshimasa Kamisada, both of Hiratsuka; Motoyuki Suzuki; Naoki Mori, both of Yokohama, and Masayuki Fukui, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1996, Ser. No. 634,360

Claims priority, application Japan, Apr. 19, 1995, 7-093703; Aug. 22, 1995, 7-212275

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **12 Claims**



1. A magneto-optic disk apparatus for use with a magneto-optic disk in which a recording surface made of a magneto-optic information recording medium is formed on a transparent substrate having a birefringence, the magneto-optic disk apparatus comprising:

an optical head for performing a recording and a reproduction by a laser beam for the recording surface; and

a unit for eliminating a fluctuation component occurring in a reproduction magneto-optic signal, the fluctuation component eliminating unit being arranged in a convergent light up to an analyzer in a detection optical system.

5,668,787

MARK LENGTH RECORDING SYSTEM WITH TRIAL WRITING TO MAXIMIZE RECORDING POWER AND ERROR RECOVERY

Kazuo Shigematsu, Saitama-ken; Yoji Tomono, Hiratsuka; Atsushi Ichikawa, Tsukuba, and Toshiyasu Hattori, Minami-ashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 403,979, Mar. 15, 1995, Pat. No. 5,537,370, which is a division of Ser. No. 148,996, Nov. 8, 1993, Pat. No. 5,420,832. This application May 9, 1996, Ser. No. 645,010

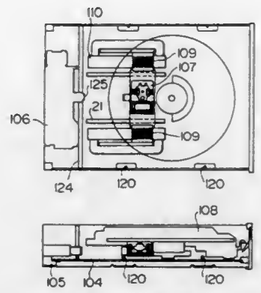
Claims priority, application Japan, Nov. 13, 1992, 4-303494; Dec. 2, 1992, 4-323337

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **5 Claims**

1. A disk recording and reproducing apparatus comprising:

a disk having a format in which a recording area is divided into a plurality of zones in a radius direction so that a recording density of each zone is substantially constant independent of said radius direction; and



means for producing a recording mark, the recording mark producing means including:

a double Phase Locked Loop for independently discriminating data applied to a front edge and a tail edge,

a trail writing control which controls a setting of recording power in accordance with previously written data in at least one region of said disk,

a modulation circuit which converts information to be recorded into a Run Length Limiting code, and

a direct edge detector which adjusts a gain of a reproduced signal from said disk automatically by equalizing said reproduced signal without differentiating.

5,668,788

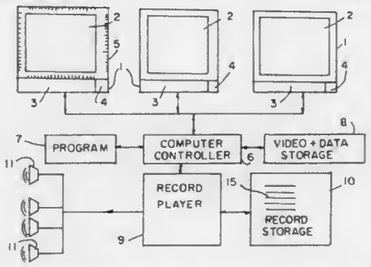
PROGRAMMED JUKE BOX CAPABLE OF CALCULATING A CONTINUOUS UPDATED PLAYLIST

Avery Vince Allison, 355 Hazel Green Dr., Wetumpka, Ala. 36092

Filed Jun. 10, 1996, Ser. No. 660,851

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—30 **4 Claims**



1. A system for audience controlled playing of audio recordings comprising:

at least one terminal to be operated by operators who are members of the audience;

the terminal having a video display and means for operator control of information displayed and recorded performances to be played;

a computer controller connected to the at least one terminal;

a program means connected to the controller for enabling operation of the controller;

record storage means for storing record units, the record units containing the recorded performances;

a record player connected to the record storage means for manipulating and playing the recorded performances;

loudspeakers connected to the record player for emitting audible signals derived from the recorded performances played on the record player, the record player being operatively connected to the computer controller;

a video and data storage means storing data and video information on each of the recorded performances contained on the record units, the data including stop and start addresses, text, and graphics from the album cover for each recorded perfor-

mance, the video and data storage means being operatively connected to the computer controller;

the system adapted for displaying album covers under operator control and registering operator's choices on the at least one terminal; and

the program means enabling the system to prepare a continuously updated playlist whose order of playing is based upon the order of selections, the number of times a performance has been selected, and a delay of a minimum preset time interval between repeated playings of said performance and then enabling the record player to play the recorded performance later in the sequence.

5,668,789

RECORDING METHOD OF RECORDING MEDIUM

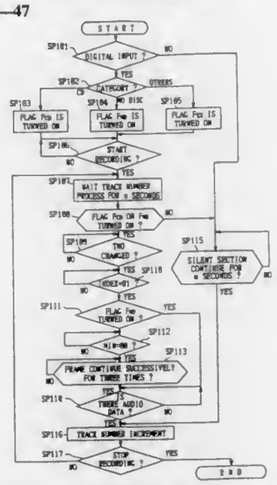
Teppei Yokota; Junichi Aramaki, both of Chiba, and Nobuyuki Kihara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 462,970, Jun. 5, 1995, abandoned, which is a division of Ser. No. 178,105, Jan. 6, 1994, abandoned. This application Oct. 28, 1996, Ser. No. 738,182

Claims priority, application Japan, Jan. 6, 1993, 5-015887; Jan. 6, 1993, 5-015888; Feb. 16, 1993, 5-050188

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **6 Claims**



1. A recording method in which an inputted analog signal is converted into a digital signal to be recorded on program area of a recording medium which also has a management area, comprising the steps of:

detecting the signal level of the inputted analog signal; and

stopping a recording operation to the program area of the recording medium when it is detected that the signal level of the inputted analog signal becomes and remains lower than a predetermined signal level for a predetermined time after it is detected that the detected signal level becomes lower than the predetermined signal level; and

editing the management area of the recording medium in accordance with an address of the recording stop position.

5,668,790

DISK REPRODUCING APPARATUS WITH PLURAL DISK TRAYS

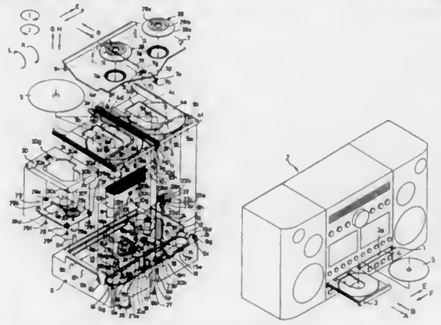
Satoru Koizumi; Hiroshi Matsukawa, and Hiroaki Miyashige, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,464

Claims priority, application Japan, Jun. 7, 1995, 7-140953

Int. Cl.[6] G11B *17/04*

U.S. Cl. 369—194 **29 Claims**



I. A disk reproducing device, comprising:

a reproducing unit for reproducing information recorded on a disk;

first and second trays mounted on a housing so as to be aligned in parallel to one another, said first and second trays arranged so as to reciprocate between an unloading position at which said disk is detachable and a loading position at which information can be reproduced from said disk;

a moving member arranged so as to reciprocate between said first tray and said second tray;

a moving cam for moving said reproducing unit by being linked with said moving member which moves from one of said first and second trays to the other of said first and second trays, said moving cam moving said reproducing unit from a reproducible position at which information can be reproduced from a selected disk accommodated in one of said first and second trays to a retreat position which is apart from a recording surface of the selected disk in a substantially vertical direction, said moving cam further moving said reproducing unit to a retreat position of the other of said first and second trays and to its reproducible position; and

drive means for driving the other of said first and second trays to reciprocate between its loading position and its unloading position when said reproducing unit is at the reproducible position with respect to one of said first and second trays,

wherein a reciprocating movement of the other of said first and second trays by said drive means is guided by an engagement with said moving member, and

said drive means also serves as a drive source for said moving member.

5,668,791

DAMPER MECHANISM FOR A RECORDING AND/OR REPRODUCING APPARATUS

Tomohiro Yamada, Chiba, and Yoshihiko Wakabayashi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

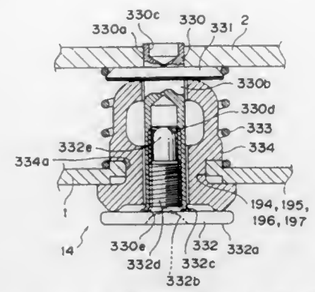
Division of Ser. No. 295,266, Aug. 24, 1994. This application Sep. 19, 1995, Ser. No. 530,697

Claims priority, application Japan, Aug. 26, 1993, 5-234275; Aug. 26, 1993, 5-234276; Dec. 14, 1993, 5-313063

Int. Cl.[6] G11B *33/08*

U.S. Cl. 369—247 **3 Claims**

1. A damper mechanism for mounting a base member containing a recording/reproducing apparatus to a frame to reduce the amount of vibrations being coupled between the frame and the base member, the base member and frame each having a through-hole, the damper mechanism comprising:



a solid shaft member having a caulking recess in one end, and a threaded opening in an opposite end, said caulking recess dimensioned to secure said one end of said shaft member to the through-hole of the base member by filling said base member through-hole, wherein a periphery of the caulking recess is outwardly expandable to fill the base member through-hole;

a vibration absorbing member having a center through-hole which receives said shaft member therein, said vibration absorbing member having substantially cylindrical shaped first and second portions provided along a longitudinal axis of the shaft member with an engagement recess being formed between said first and second portions which engages the frame through-hole, said cylindrical second portion being larger in diameter than said cylindrical first portion;

a set screw having a flanged-shaped head and a threaded shaft portion that engages said threaded opening of said shaft member so that said flanged-shaped head engages said second portion to secure said vibration absorbing member to said shaft member; and

an elastic member formed on an outer side of said first cylindrically shaped portion and extending between the frame and the base member to bias the frame away from the base member.

5,668,792

TURNTABLE OF A DISC PLAYER FOR BOTH A COMPACT DISC AND A MINI DISC

Youngsuk Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 361,488

Claims priority, application Rep. of Korea, Dec. 24, 1993, 93/29447

Int. Cl.[6] G11B *17/028;17/04*

U.S. Cl. 369—271 **3 Claims**

1. A turntable of a disc player for both a compact disc and a mini disc comprising:

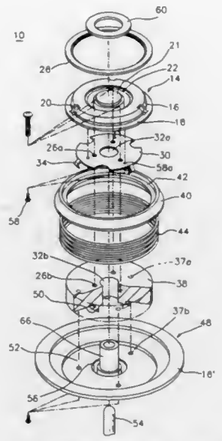
a mini disc cartridge loading means for loading a disc cartridge encasing the mini disc thereon, the mini disc cartridge loading means having an inclined guide surface formed at the upper periphery thereof, a mini disc loading surface extending horizontally a predetermined width outward from the lower end of the guide surface, at least three engagement holes formed in the guide surface and spaced out regular circumferential intervals apart from each other, and a magnet receiving recess formed concentrically within the guide surface surrounding a center portion of the mini disc cartridge loading means and having a predetermined depth to receive a magnet, the magnet generating a magnetic force to secure the mini disc on the mini disc loading surface when the mini disc is loaded;

a compact disc loading means disposed under the mini disc cartridge loading means for loading the compact disc larger than the mini disc thereon;

an assembling means for assembling the mini disc cartridge loading means and the compact disc loading means with each other wherein the compact disc loading means has a receiving recess formed at a center thereof to receive the assembling means, an annular disc loading surface formed at an outer periphery of the compact disc loading means receiving recess and having a predetermined width, and a center opening formed at a center of a lower surface of the compact disc loading means receiving recess in order for hooks of the assembling means to be engaged therein;

a mini disc cartridge guiding means fitted in a lower part of the mini disc cartridge loading means for guiding loading of the disc cartridge and preventing the mini disc cartridge from being separated from the turntable, the mini disc cartridge guiding means having a plurality of elastic protuberances formed at a periphery thereof to be fitted in the engagement holes, a mini disc supporting shelf formed at an upper part of the mini disc cartridge guiding means and protruding inwardly a predetermined width therefrom to support the mini disc cartridge loading means put thereon, and a spring receiving groove formed at a lower surface of the mini disc cartridge guiding means to receive a spring, the number of the elastic protuberances being equal to that of the engagement holes; and

a compact disc guiding means elastically disposed on the compact disc loading means for guiding loading of the compact disc.



5,668,793

DISK CARTRIDGE DRIVING APPARATUS

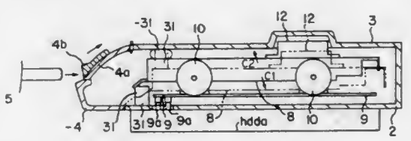
Takashi Ogawa, Yokohama; Masaaki Sofue, Hadano, and Hideo Inuzuka, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 186,779, Jan. 26, 1994, abandoned. This application May 31, 1996, Ser. No. 656,550

Claims priority, application Japan, Jan. 26, 1993, 5-010973

Int. Cl.[6] G11B *33/14*

U.S. Cl. 369—77.2 **13 Claims**



13. A method of keeping dust from a disk cartridge containing a record disk comprising:

providing a loading base and a cover defining therebetween a substantially enclosed space except for a front opening into said space, and a door mounted to selectively close the front opening;

mounting a cartridge holder in said enclosed space to move between a loading position in which said holder is aligned with said front opening for the insertion therethrough into the holder of a cartridge containing a record disk and a playing position in which information in a record disk in a cartridge inserted into the holder is accessible;

wherein said holder in one of said positions is closer to the cover than in the other position, and wherein in each position the holder is spaced from the cover; and

utilizing a first resilient partitioning member secured to said cover and engaging at all times a front portion of said holder, said first resilient partitioning member expanding away from said cover when the cartridge holder moves from the loading position to the playing position and compresses toward the cover when the cartridge holder moves from the playing position to the loading position to block movement of dust to said cartridge and record disk through the space between the holder and said cover.

5,668,794

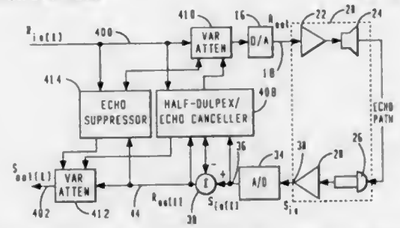
VARIABLE GAIN ECHO SUPPRESSOR

Shawn Robert McCaslin, and Nariankadu Datatreya Hemkumar, both of Austin, Tex., assignors to Crystal Semiconductor, Austin, Tex.

Continuation-in-part of Ser. No. 536,986, Sep. 29, 1995, Pat. No. 5,631,900, and Ser. No. 536,054, Sep. 29, 1995. This application Nov. 3, 1995, Ser. No. 552,558

Int. Cl.[6] H04B *3/20*

U.S. Cl. 370—288 **20 Claims**



1. A variable gain echo suppressor for use with a full-duplex communication system for connecting between a far end and a near end, comprising:

a first variable attenuator disposed between the far end and the near end;

a near-end power detector for receiving the near end transmit signal and determining the power level thereof;

a near-end normalizer for normalizing the power level at the output of said near-end power detector to provide a near-end normalized power signal;

a far-end power detector for receiving the far-end transmit signal and determining the power associated therewith;

a far-end normalizer for normalizing the power level at the output of said far-end power detector to provide a far-end normalized power signal; and

a controller for setting the attenuation of said first variable attenuator as a function of said near-end and far-end normalized power levels, to allow for full-duplex communication.

5,668,795

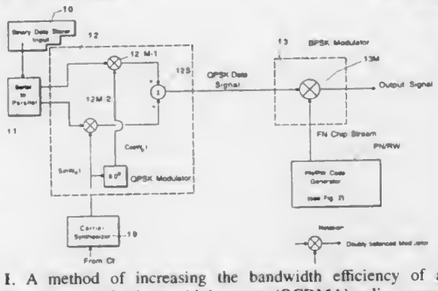
MODULATION SYSTEM FOR SPREAD SPECTRUM CDMA COMMUNICTION

David T. Magill, Palo Alto; Herman A. Bustamante, Millbrae, both of Calif., and Francis D. Natali, Pt. Townsend, Wash., assignors to Stanford Telecommunications, Inc., Sunnyvale, Calif.

Filed Jun. 6, 1995, Ser. No. 470,540

Int. Cl.[6] H04B *7/216;* **H04J** *13/00*

U.S. Cl. 370—209 **9 Claims**



1. A method of increasing the bandwidth efficiency of an orthogonal code division multiple access (OCDMA) radio communication system in which a set of orthogonal functions are overlaid with a pseudo-noise (PN) signal forming a coded spreading sequence for an information signal, each of the orthogonal functions of a set carries voice/data signals for a single user on the system and a carrier signal is selected from a source of carrier signals, comprising:

MPSK modulating said voice/data signals on said carrier signal to form a transmit signal, M being selected from 4, 8, 16, and

BPSK modulating said coded spreading sequence on said transmit signal.

5,668,796

DUPLEXING AND SWITCHING SYSTEM AND METHOD IN A MULTIPLEXED SYSTEM

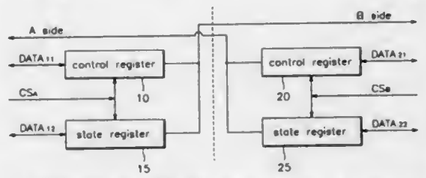
Chang-Hyun No, Kyonggi-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Aug. 17, 1995, Ser. No. 516,296

Claims priority, application Rep. of Korea, Mar. 24, 1995, 95-6426

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—217 **2 Claims**



2. A duplexing and switching method for use in a multiplexed system comprising the steps of:

(a) checking whether a particular side is an "A" side or a "B" side and setting the particular side to an active state and the other side to a standby state;

(b) determining whether the side set to the active state in step (a) is in normal operation;

(c) if normal operation is determined in step (b), representing the normal operation and performing step (b) repeatedly;

(d) if abnormal operation is detected in step (b), using the unit addresses and group addresses to switch to a counterpart of the side with the faulty condition, and resetting the counterpart to an active state; and

(e) dispatching state register in faulty state, analyzing, representing and storing the type and condition of failure.

5,668,797

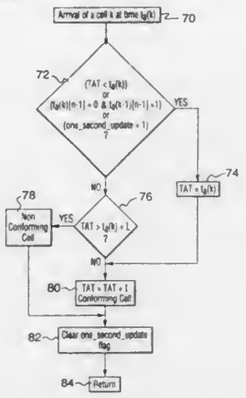
TRAFFIC CONTROLLER FOR CELL-BASED TRANSMISSION

Maher Nihad Fahmi, Vancouver, and John Richard Bradshaw, Burnaby, both of Canada, assignors to PMC-Sierra, Inc., Canada

Filed Dec. 6, 1995, Ser. No. 568,379

Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—229 **5 Claims**



1. A system for determining compliance of cells in a cell based transmission system having an initial theoretical cell arrival time, TAT, the system comprising:

(a) an n-bit word-length counter having an input coupled to a source of clock pulses;

(b) a parallel n-bit word-length gate coupled to a parallel output of said n-bit word-length counter and having a gate input coupled to a source of cell arrival signals;

(c) a processor coupled to an output of said gate, having

(i) means for determining each of (aa) if TAT is less than an arrival time for a kth cell, $t_a(k)$, where k is an integer, and (bb) if in $(n-1)^{th}$ bit of $t_a(k)$, namely $t_a(k)[n-1]$, is zero and an $(n-1)^{th}$ bit of an arrival time for a $(k-1)^{th}$ cell, namely $t_a(k-1)[n-1]$, is one; (

ii) means for setting TAT equal to $t_a(k)$ if either of the two conditions (aa) and (bb) in (c)(i) are true;

(iii) means for determining if TAT is greater than $t_a(k)+L$, where L is a limit value for cell time of arrival variation, if each of the two conditions in (c)(i) are not true;

(iv) means for identifying a cell non-conforming if TAT is greater than $t_a(k)+L$; and

(v) means for incrementing TAT by a numeric value 1 and identifying a cell conforming if either of the two conditions in (c)(i) are true or the condition in (c)(iii) is not true.

5,668,798

MULTIPLEXED TC SUBLAYER FOR ATM SWITCH

Gilles Toubol, Villenouve Loubet; Jean Calvignac, La Gaude; Jean-Luc Frenoy; Daniel Orsatti, both of Cagnes sur Mer; Luc Torres, Gattieres, and Fabrice Verplanken, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1995, Ser. No. 547,827

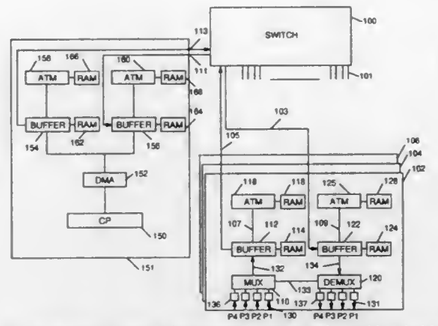
Claims priority, application European Pat. Off., Apr. 5, 1995, 95480041

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—230 **4 Claims**

1. A data cell switching device comprising:

a) a switching element, having multiple input leads and multiple output leads, for switching data cells received on any one of said multiple input leads to any one of said mulitiple output leads;



b) one or more output adapters, each connected to said switching element through one of the multiple output leads and each having an output internal bus, and each having mulitiple output ports and demultiplexer device for distributing data cells transported on the output internal bus to one of said multiple output ports; and

c) one or more input adapters, each connected to said switching element through one of said multiple input leads and each having an input internal bus, and each having multiple input ports, a multiplexer device for multiplexing data cells received from said multiple inputs ports onto said input internal bus, and wherein each of said input adapters and said output adapters includes a respective common counter for maintaining counts based on the properties of cells recevied on said input ports, said common counter comprising a random access memory having at least three storage location reserved for each of said input ports.

5,668,799

BUS LINE TRAFFIC CONTROL ADAPTER APPARATUS

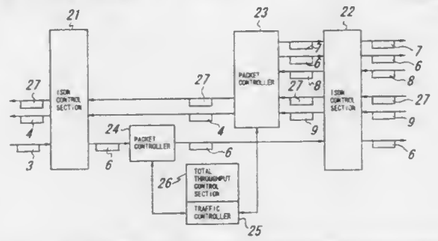
Hiroyuki Nobesawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,430

Claims priority, application Japan, Dec. 28, 1994, 6-328642

Int. Cl.[6] H04L *12/40;12/56*

U.S. Cl. 370—230 **3 Claims**



1. A bus line traffic control adapter apparatus interposed between a service unit and a plurality of data terminals connected to said service unit by way of a bus line, comprising:

a total throughput control section for storing current total throughput information of said bus line;

a first packet controller for extracting, when a call request packet transmitted from one of said plurality of data terminals and including data transmission throughput information is received by way of said bus line, the throughput information and sending out a call request packet in response to permission of origination of a call to said service unit;

a second packet controller for receiving and identifying a packet inputted thereto from a network side by way of said service unit; and

a traffic controller for subtracting, when the throughput information is inputted thereto from said first packet controller, the current total throughput information obtained from said total throughput control section from a transmission capacity of said bus line, comparing a value obtained by the subtraction with the throughput information inputted thereto from said first packet controller to determine whether or not the call request should be accepted, and notifying, when the call request should be accepted, permission of origination of a call to said first packet controller and changing the current total throughput information stored in said total throughput control to a value obtained by addition of the throughput information to the current total throughput information, but cancelling, when the call request should be rejected, the received call request packet and sending to said first packet controller an instruction to send out a clear indication packet to said bus line.

5,668,800

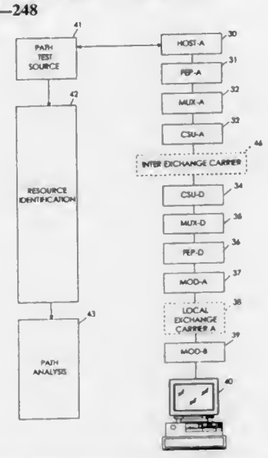
PATH TESTING IN COMMUNICATIONS NETWORKS

John George Stevenson, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1994, Ser. No. 236,800

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—248 **26 Claims**



19. A single physical resource along a particular connection path in a data communications network comprising a plurality of network resources connected by transmission links, comprising

means responsive to a path test command arriving on said connection path for generating an identification of said physical resource, and

means for transmitting said physical identification of said physical resource back on said connection path,

means associated with said physical resource for generating a representation of the current time, and

means for transmitting said current time representation back on said connection path.

5,668,801

METHOD FOR EVALUATING A NUMBER OF DISCRIMINATED DIGITAL DATA UNITS AND FOR ESTIMATING THE RESPONSE TIME

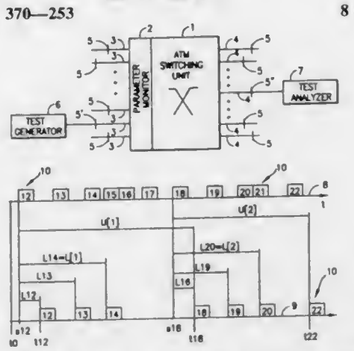
Reto Grünenfelder, Dietlikon, Switzerland, assignor to Alcatel STR AG, Zurich, Switzerland

Filed Jul. 21, 1995, Ser. No. 505,450

Claims priority, application Switzerland, Jul. 28, 1994, 02381/94

Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—253 **8 Claims**



1. A method for evaluating the number (X{n}) of digital data units discriminated as a consequence of a parameter control (**2**) at an interface (**5'**) of a digital network and for estimating a response time at a location of the evaluation (**5"**) in the network, characterized by the following steps:

initiating a starting temporal distance (**L12**) upon the arrival of a first non-discriminated digital data unit (**12**), said temporal distance based upon the arrival time (t) of said first non-discriminated digital data unit (**12**) at the evaluation location (**5"**) and a starting time (z);

permanently monitoring the completeness of the arriving non-discriminated data units by means of an identification number (k) carried by each data unit, and permanently updating the temporal distance between the arrival time (t) of each data unit and said starting time (z);

upon detecting an omission by the monitoring step, storing the last updated temporal distance (**L14**) as the lower bound (L{n}) of the response time, storing the temporal distance (**L18**) of the most recently received non-discriminated digital data unit (**18**) as an upper bound (U{n}) of the response time, determining the number of missing identification numbers, and storing the number of missing identification numbers as the number (X{n}) of discriminated digital data units.

5,668,802

HIGH-SPEED DIGITAL SUBSCRIBER LINES

David Christopher Chalmers, Middlesex, and Frederick Michael Clayton, Bedfordshire, both of United Kingdom, assignors to GPT Limited, United Kingdom

Filed Nov. 7, 1994, Ser. No. 334,938

Claims priority, application United Kingdom, Nov. 11, 1993, 9323337

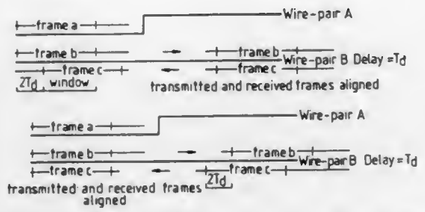
Int. Cl.[6] H04J *11/00;4/00*

U.S. Cl. 370—276 **14 Claims**

9. A communications system employing a high-speed digital link with discrete multiple tone (DMT) modulation, comprising:

a plurality of outward paths carrying transmitted data from a central transmitter/receiver to further transmitter/receivers, each of the outward paths using one set of carrier frequency channels;

a plurality of return signal paths from the further transmitter/receivers to the central transmitter/receiver carrying data from the further transmitter/receivers to be received by the central



transmitter/receiver, each of the return paths using a different set of carrier frequency channels; and

said transmitted and received data being in an alignment, and said alignment being based on commands sent by the central transmitter/receiver to the further transmitter/receivers.

5,668,803

PROTOCOL FOR PACKET DATA COMMUNICATION SYSTEM

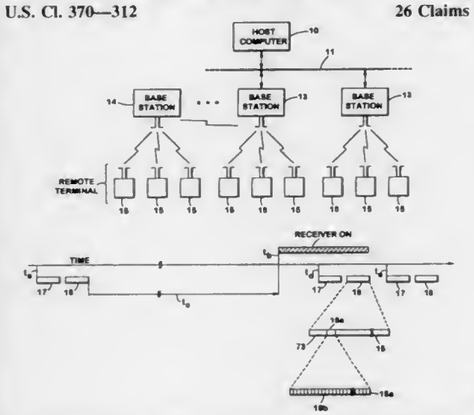
LaRoy Tymes, Cameron Park, and Gregory B. Ennis, Los Gatos, both of Calif., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation-in-part of Ser. No. 183,069, Jan. 18, 1994, Pat. No. 5,479,441, which is a division of Ser. No. 799,172, Nov. 27, 1991, Pat. No. 5,280,498, which is a continuation-in-part of Ser. No. 635,859, Dec. 28, 1990, Pat. No. 5,142,550, which is a continuation-in-part of Ser. No. 374,452, Jun. 29, 1989, Pat. No. 5,029,183. This application Nov. 23, 1994, Ser. No. 344,737

Claims priority, application Canada, Mar. 17, 1994, 2119334

Int. Cl.[6] H04J *3/24;* **H04B** *7/24*

U.S. Cl. 370—312 **26 Claims**



1. A method of operating a communication system which has a base station and a plurality of remote units, comprising the steps of:

a) sending from said base station an announcement message having an identification of particular ones of said remote units which have data messages waiting at said base station for transmission to said particular ones;

b) intermittently turning on a receiver at each one of said remote units to receive said announcement message;

c) sending from each one of said particular ones to said base station an inquiry message at a time selected by each respective one of said particular ones; and

d) sending a data message from said base station to each one of said particular ones of said remote units.

5,668,804

BASE STATION WITH TIME-ALIGNED MOBILE TRANSMITTING MOMENTS ACCORDING TO DISTANCE TO BASE STATION

Jukka Suonvieri, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

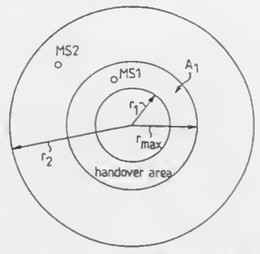
PCT No. PCT/FI94/00298, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/02306, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 29, 1994, Ser. No. 581,599

Claims priority, application Finland, Jul. 5, 1993, 933091

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—331 **11 Claims**



1. A base station for a digital time division multiple access (TDMA) radio network, the base station comprising:

a radio transceiver,

means for measuring a time difference between the transmissions of the transceiver and a mobile radio station due to a distance between the base station and the mobile radio station,

means for controlling the mobile radio station to adjust its transmission relative to the transmission of the transceiver by a predetermined timing advance compensating for said time difference, said timing advance having a maximum value determining a maximum radius r_{MAX} for an effective service area of the base station transceiver,

means for providing a timing offset between the reception and the transmission of the transceiver in a manner that the maximum radius of the service area of the transceiver is r_1+r_{MAX}, and the service area has a central area which has a radius r_1 and within which the transceiver is not capable of providing services to mobile radio stations, where r_1 is directly proportional to said timing offset, and

a second radio transceiver where the timing between reception and transmission is normal and the outer radius of the service area of which is at a distance r_{MAX} from the base station, said offset between transmission and reception being selected so that the service areas of the first-mentioned transceiver and the second transceiver overlap.

5,668,805

MULTIPLEX BROADCASTING METHOD AND SYSTEM

Hitoshi Yoshinobu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 344,751

Claims priority, application Japan, Nov. 25, 1993, 5-319101

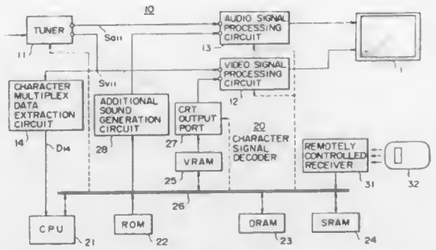
Int. Cl.[6] H04H *5/00;* **H04J** *13/00*

U.S. Cl. 370—335 **22 Claims**

8. A multiplex broadcasting system, comprising,

a broadcasting station including means for coding sub broadcasting information together with district limit information defining a geographic area, means for multiplexing the coded information with main broadcasting information, and means for transmitting the multiplexed broadcasting information; and

a receiving apparatus including means for receiving the multiplexed broadcasting information from said broadcasting station, means for separating the coded sub broadcasting information from the received multiplexed broadcasting station,



means for decoding the thus separated coded sub broadcasting information, means for comparing the district limit information included in the decoded sub broadcasting information with particular district limit information defining a geographic area and allowing outputting of the sub broadcasting information when the comparison proves that the particular district limit information and the district limit information of the sub broadcasting information coincide with each other.

5,668,806

SPREAD SPECTRUM COMMUNICATION APPARATUS

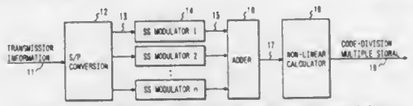
Yasuyuki Arai, Yokosuka, and Tetsuo Kanda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 501,144

Claims priority, application Japan, Jul. 21, 1994, 6-191140; Jun. 20, 1995, 7-176773

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—342 **28 Claims**



1. A spread spectrum transmission apparatus comprising:

generating means for generating a code-division multiple signal;

conversion means for non-linearly converting the code-division multiple signal; and

transmission means for transmitting a transmission signal corresponding to the code-division multiple signal converted by said conversion means,

wherein said converting means converts the code-division multiple signal so that the transmission signal has a plurality of amplitude values.

5,668,807

SYNCHRONIZATION OF TRANSPARENT TDM SUPERCHANNELS

Boaz Shachar, Givatayim; Nahum Rozen, Natanya; Yoram Yeivin, Petah Tikva, and Eli Wietz, Hucon, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1995, Ser. No. 566,418

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—378 **21 Claims**

10. A method of synchronizing Time Division Multiplexer (TDM) Superchannels, wherein:

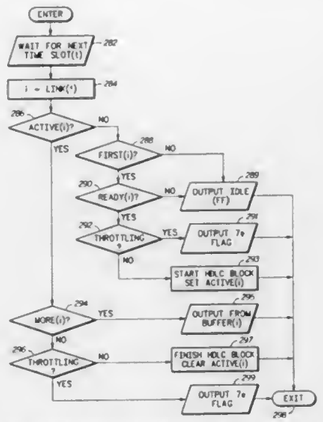
a data stream transmitted as signals over a high speed link is divided into a plurality of fixed length divisions,

a plurality of the fixed length divisions are eight bit code words,

each of the plurality of fixed length divisions corresponds to one of a plurality of time slots on a cyclical basis,

each of one or more logical channels is assigned a different set of one or more of the plurality of time slots, and

at least one of the one or more logical channels is a Superchannel, wherein:



each said Superchannel is assigned two or more of the plurality of time slots, and

each said Superchannel has a first time slot,

said method comprising the steps of:

(a) storing a plurality of channel tables in a Memory, wherein: each channel table corresponds to a different one of the one or more logical channels;

(b) determining whether output is active on a selected Superchannel;

(c) determining whether a given time slot is the first time slot of the selected Superchannel by testing an index corresponding to the given time slot against an entry in a corresponding channel table;

(d) determining whether output is available for the selected Superchannel;

(e) starting output for the selected Superchannel in the given time slot when output was determined not to be active in step (b), the given time slot was determined to be the first time slot in step (c), and output was determined to be available in step (d); and

(f) postponing starting output for the selected Superchannel in the given time slot when output was determined not to be active in step (b) and the given time slot was determined not to be the first time slot in the selected Superchannel in step (c).

5,668,808

PATH ROUTE RETRIEVAL METHOD IN A TIME MULTIPLEXER NETWORK

Naoko Sato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

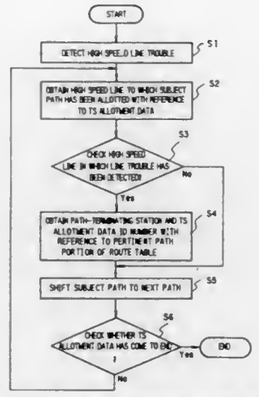
Filed May 28, 1996, Ser. No. 653,778

Claims priority, application Japan, May 25, 1995, 7-126376

Int. Cl.[6] H04J *1/16;* **H04L** *1/00;* **H04B** *3/38*

U.S. Cl. 370—378 **3 Claims**

1. A path route retrieval method in a time division multiplexer network including three or more stations, each station including respective time division multiplexers and a plurality of transmission lines, in which time slot allotment is executed based on time slot allotment data describing the allotment of specific time slot to one of the plurality of transmission lines, the time division multiplexers each being capable of obtaining working path data on the basis of ID number data for each path and each multiplexer having renewable route data including, for each path ID number, opposite



station numbers and the path ID number of the opposite stations until reaching an end station, the working path data being obtained with reference to the route data.

5,668,809

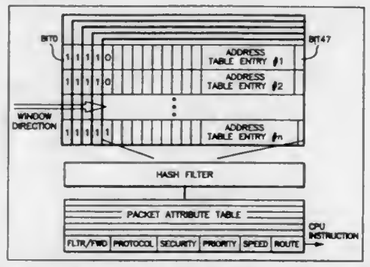
SINGLE CHIP NETWORK HUB WITH DYNAMIC WINDOW FILTER

Michael D. Rostoker, Boulder Creek, and D. Tony Stelliga, Pleasanton, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Oct. 20, 1993, Ser. No. 139,997

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—392 **9 Claims**



1. A single chip hub for an electrical data communications network, comprising:

a packet memory for storing data packets;

a processor for processing said data packets;

a plurality of media access control interfaces;

a memory controller for transferring packets between the packet memory, the processor and the media control interfaces; and

a dynamic address window filter for identifying the address of a packet being processed by examining only a predetermined portion of said address.

5,668,810

DATA TRANSMISSION PROTOCOL METHOD AND APPARATUS

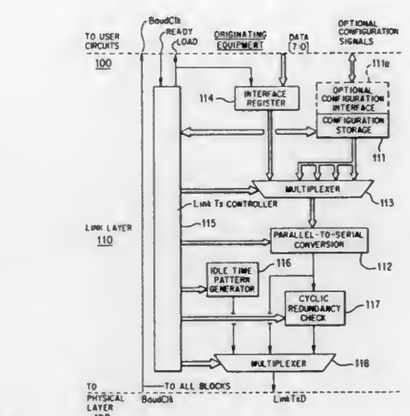
James E. Cannella, Jr., Roswell, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Apr. 26, 1995, Ser. No. 429,160

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—392 **45 Claims**

26. In a system for communicating messages between signal originating equipment and signal receiving equipment in which the signal originating equipment outputs data packets comprising first



and second headers and data via single path media, the signal receiving equipment comprising

a first header detector for detecting a start code field of said first header comprising less than or equal to three bytes and for determining the beginning of the second header,

a second header capture circuit for evaluating the value of the second header,

a controller for inhibiting first header detection and for counting bytes of data according to the value of the second header while said first header detection is inhibited, and

an output for outputing the data bytes.

5,668,811

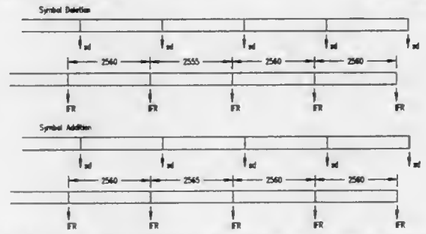
METHOD OF MAINTAINING FRAME SYNCHRONIZATION IN A COMMUNICATION NETWORK

Debra J. Worsley, Vista, and Brian C. Edem, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 147,359, Nov. 1, 1993, Pat. No. 5,566,169, which is a continuation-in-part of Ser. No. 969,916, Nov. 2, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,110

Int. Cl.[6] H04J *3/07;* **H04L** *12/43*

U.S. Cl. 370—424 **18 Claims**



1. In a data communications network having a first station with a plurality of ports, each port coupled to one of a first plurality of other stations, said network providing a series of communication time periods, each communication time period having a nominal length and beginning with a start delimiter signal, said ports communicating with said other stations in a series of time frames of a nominal length, each time frame beginning with a frame reference signal, a method for maintaining a desired temporal relationship between said series of communication time periods and said series of time frames, comprising:

determining the delay period between receipt of said start delimiter signal and said frame reference signal;

replacing a time frame of said nominal length with a shortened time frame in said series of time frames when said frame reference signal occurs more than a first predetermined period after said start-delimiter signal; and

replacing a time frame of said nominal length with a lengthened time frame in said series of time frames when said frame reference signal occurs less than a second predetermined period after said start delimiter signal.

5,668,812

APPARATUS FOR DETECTING AND CONTROLLING LOSS OF ATM CELL

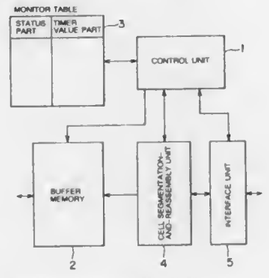
Hitomi Akiyoshi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 20, 1995, Ser. No. 530,874

Claims priority, application Japan, Dec. 28, 1994, 6-327158

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—474 **8 Claims**



1. An ATM switching equipment comprising:

segmenting/reassembling means for segmenting an ATM cell received and reassembling it into frame data;

a buffer memory for temporarily storing the reassembled frame data;

discriminating means for discriminating whether the received cell is an intermediate cell or a last cell;

monitoring means for monitoring a cell-to-cell receiving time or a receiving time between a head cell and the last cell; and

releasing means for determining that a cell loss is detected when the receiving time exceeds a set time and releasing said buffer memory.

5,668,813

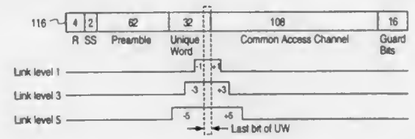
DYNAMIC SYNCHRONIZATION CODE DETECTION WINDOW

Charles J. Malek, 915 Camelot Dr., Crystal Lake, Ill. 60014, and David L. Weigand, 1035 Aster Ave., Sunnyvale, Calif. 94086

Continuation-in-part of Ser. No. 502,875, Jul. 17, 1995, Pat. No. 5,598,419. This application Mar. 21, 1996, Ser. No. 620,089

Int. Cl.[6] H04J *3/06;* **H04L** *7/00*

U.S. Cl. 370—514 **7 Claims**



1. A synchronization method performed by a TDMA communication system, said system transmitting and receiving bursts of serial data within time slots, said method comprising the steps of:

comparing received data with a predetermined slot synchronization code;

detecting a first match between a received synchronization code and said predetermined synchronization code;

determining an amount of time which has elapsed without detecting said synchronization code;

dynamically adjusting a size of a time window for detecting a last bit of a subsequently received synchronization code matching said predetermined synchronization code, wherein said size of said time window is selected based upon an amount of time that has elapsed without attempting to detect said synchronization code; and

detecting a received synchronization code whose last bit occurs within said time window and, in response to such detection, synchronizing slot times in said TDMA communication system with said received synchronization code.

5,668,814

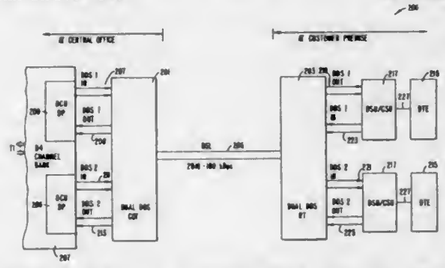
DUAL DDS DATA MULTIPLEXER

Nicholas A. Balatoni, Santa Clara, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 20, 1995, Ser. No. 408,585

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—540 **26 Claims**



14. An apparatus for transferring digital data over a single twisted pair from a first location, said apparatus comprising:

a plurality of 4-wire DDS signals sources from a channel bank at the first location, each of said plurality of 4-wire DDS signals being a bipolar signal; and

a central office circuit combining said plurality of 4-wire DDS signals into a binary signal, converting said binary signal into a digital signal; and for transferring said digital signal over a single twisted pair telephone line for use at said second location, said digital signal being selected from a group consisting of a 2B1Q format and a 4B3T format.

5,668,815

METHOD FOR TESTING INTEGRATED MEMORY USING AN INTEGRATED DMA CONTROLLER

Robert Paul Gittinger, and David Allen Spilo, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 14, 1996, Ser. No. 696,734

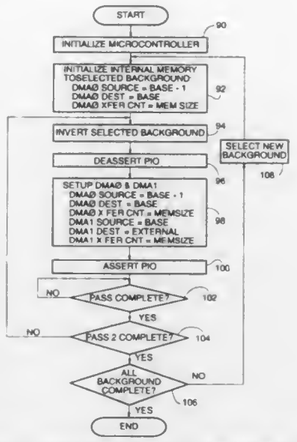
Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—21.2 **23 Claims**

1. A method for testing a memory of an integrated circuit having an integrated DMA controller comprising:

initializing a plurality of storage locations comprising said memory to a predefined value;

performing a first DMA transfer in said DMA controller to access each of said plurality of storage locations; and



performing a second DMA transfer in said DMA controller to update each of said plurality of storage locations to a complement of said predefined value.

5,668,816

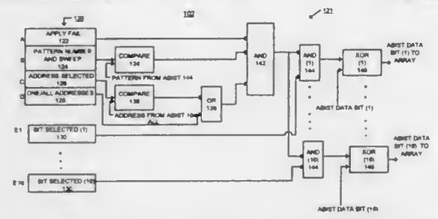
METHOD AND APPARATUS FOR INJECTING ERRORS INTO AN ARRAY BUILT-IN SELF-TEST

Steven Michael Douskey, and Paul W. Wong, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1996, Ser. No. 697,036

Int. Cl.[6] G06F *11/08*

U.S. Cl. 371—21.3 **12 Claims**



1. Apparatus for injecting errors in an array built-in self-test (ABIST) for an array in an integrated circuit comprising:

means coupled to the ABIST for selecting error injection;

means coupled to the ABIST for selecting a predetermined ABIST test pattern; and

means coupled to the ABIST for selecting an address in the array for injecting an error in said predetermined ABIST test pattern.

5,668,817

SELF-TESTABLE DIGITAL SIGNAL PROCESSOR AND METHOD FOR SELF-TESTING OF INTEGRATING CIRCUITS INCLUDING DSP DATA PATHS

Saman M. I. Adham, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 11, 1996, Ser. No. 680,314

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.4 **20 Claims**

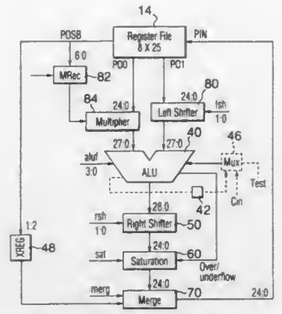
1. A integrated circuit including a self-testable digital signal processor comprising:

a programmable data path comprising an arithmetic and logic unit (ALU), a register, and a plurality of logic blocks for digital signal processing (DSP) functions comprising non-arithmetic and non-linear functions,

a multiplexor responsive to a test signal for switching the datapath between

a first mode for normal operation of the digital signal processor, and

a second (test) mode for test operation of the digital signal processor wherein the ALU functions as a test pattern generator and a test data compactor, wherein a carry out bit of the ALU is circulated back to the ALU as a carry in bit.



5,668,818

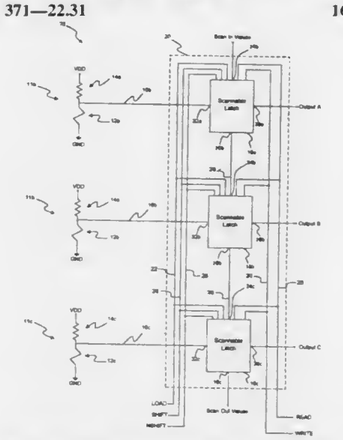
SYSTEM AND METHOD FOR SCAN CONTROL OF A PROGRAMMABLE FUSE CIRCUIT IN AN INTEGRATED CIRCUIT

Michael J. Bennett, Timnath, and Robert W. Proulx, Ft. Collins, both of Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Aug. 6, 1996, Ser. No. 692,736

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.31 **16 Claims**



1. A scan controllable, programmable fuse circuit for use in an integrated circuit and having a circuit output, comprising:

a fuse circuit having a fuse output, said fuse circuit including a fuse that can be blown in order to change a logic level of said fuse output; and

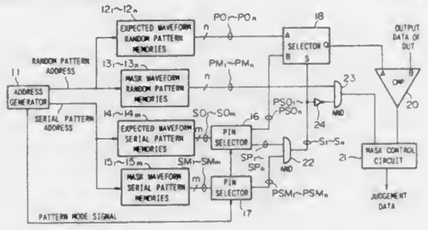
a scannable latch connected to said fuse output and configured for controlling said circuit output so as to allow output values to be loaded into said scannable latch means from said fuse output and then shifted to said circuit output, and to allow other output values to be scanned into said scannable latch means and then shifted to said circuit output.

5,668,819

MASK CONTROL DEVICE FOR LSI TESTER

Takeo Fukushima, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 668,228
Claims priority, application Japan, Jun. 29, 1995, 7-186440
Int. Cl.[6] G01R 31/28
U.S. Cl. 371—25.1 2 Claims



1. A mask control device comprising:

an address generator for generating a random pattern address, a serial pattern address, and a pattern mode signal;

an expected waveform random pattern memory for storing random pattern expected waveform data designating expected waveform data to be outputted from a device under test (DUT) in a random pattern test;

a mask waveform random pattern memory for storing random pattern mask waveform data for use in the random pattern test;

an expected waveform serial pattern memory for storing serial pattern expected waveform data designating expected waveform data to be outputted from the DUT in a serial pattern test;

a mask waveform serial pattern memory for storing serial pattern mask waveform data for use in the serial pattern test;

a first pin selector for arranging the serial pattern expected waveform data to generate serial pattern expected waveform data corresponding to tester pins and for generating serial mode designating signals designating pins to which the serial pattern test is to be applied;

a second pin selector for arranging the serial pattern mask waveform data to generate serial pattern mask waveform data corresponding to the tester pins;

a selector for selecting the random pattern expected waveform data or the serial pattern expected waveform data generated by the first pin selector based on the serial mode designating signals;

a comparator for comparing output waveform data obtained from the DUT with the random pattern expected waveform data or the serial pattern expected waveform data selected by the selector;

a logical operation circuit comprising

a first AND gate for outputting logical products of the serial mode designating signals and the serial pattern mask waveform data corresponding to the tester pins as select signals,

an inverter for inverting the select signals, and

a second AND gate for modulating the random pattern mask waveform data based on the inverted select signals from the inverter to generate mask waveform data; and

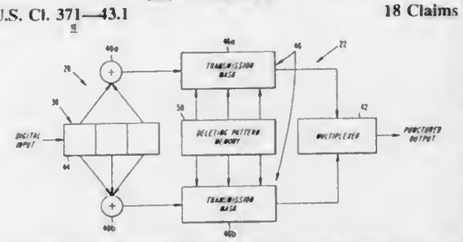
a mask control circuit for carrying out a mask control of a comparison result of the comparator using the mask waveform data generated by the logical operation circuit.

5,668,820

DIGITAL COMMUNICATION SYSTEM HAVING A PUNCTURED CONVOLUTIONAL CODING SYSTEM AND METHOD

Rajaram Ramesh, and Barbara Davis Molnar, both of Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Jan. 23, 1995, Ser. No. 377,073
Int. Cl.[6] H03M 13/12
U.S. Cl. 371—43.1 18 Claims



1. A device for convolutionally coding a digital input to produce a convolutional coded output, and for puncturing the convolutional coded output to generate a punctured output for transmission comprising:

a. a convolutional coding circuit of code rate k/n for receiving the digital input and defining input k-tuples of k-bits, and for outputting for each k-tuple a corresponding n-tuple of n-bits where the n-tuples form a convolutional coded output;

b. a puncturing circuit for receiving the convolutional coded output and for puncturing the convolutional coded output on a block-by-block basis so as to output a punctured output at a punctured code rate of z/q, where z=γk, the puncturing circuit including:

i) a transmission mask circuit for grouping the convolutional coded output into puncturing blocks as the convolutional coded output passes through the puncturing circuit, and for puncturing each puncturing block according to a deleting pattern having transmission and nontransmission bits,

ii) a deleting pattern memory for storing the deleting pattern, and

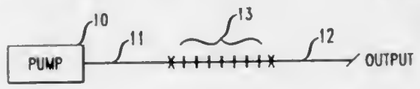
iii) wherein the deleting pattern and each puncturing block has a bit length equal to pγn, where p is an integer ≧2.

5,668,821

OPTICAL SYSTEMS AND DEVICES EMPLOYING SPECTRALLY FLATTENED AMPLIFIED SPONTANEOUS EMISSION

Craig W. Hodgson, Mountainview, Calif., and Ashish Madhukar Vengsarkar, Berkeley Heights, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 16, 1996, Ser. No. 586,414
Int. Cl.[6] H01S 3/30
U.S. Cl. 372—6 8 Claims



1. A broadband light source for optical fiber comprising:

a first length of rare earth doped optical fiber;

a pump source coupled into said fiber for exciting spontaneous optical emission in said fiber; and

a long period grating coupled to said rare earth doped fiber for flattening and broadening the spectral output of optical emission from said fiber, said long period grating comprising a length of fiber having a plurality of index perturbations of width w spaced apart by a periodic distance Λ where 10 μm≦Λ≦2000 μm, wherein the periodic distance Λ is selected

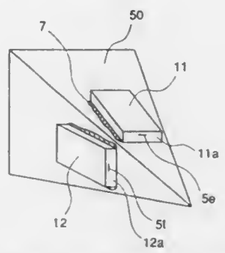
to shift, substantially without reflection, transmitted light in the region of a selected wavelength α_p from a guided mode into a non-guided mode, thereby reducing in intensity a band of light centered about λ_p.

5,668,822

INTEGRATED SEMICONDUCTOR LASER DEVICE

Hitoshi Tada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,545
Claims priority, application Japan, Aug. 5, 1994, 6-184732
Int. Cl.[6] H01S 3/04
U.S. Cl. 372—36 2 Claims



1. An integrated semiconductor laser device comprising:

a pyramidal heat sink having a plurality of side surfaces; and

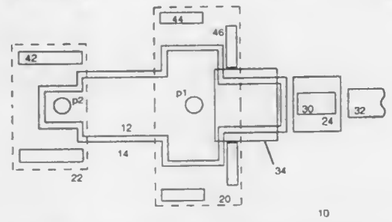
semiconductor laser chips die-bonded to the side surfaces of the heat sink.

5,668,823

INJECTION LASER ASSEMBLY INCORPORATING A MONITOR PHOTOSENSOR

Paul Mark Harrison, Springfield; Robert George Peall, Harlow, and Terry Victor Clapp, Standon, all of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 17, 1995, Ser. No. 560,312
Claims priority, application United Kingdom, Nov. 18, 1994, 9423282
Int. Cl.[6] H01S 3/098; 3/19; G02B 6/32
U.S. Cl. 372—50 7 Claims



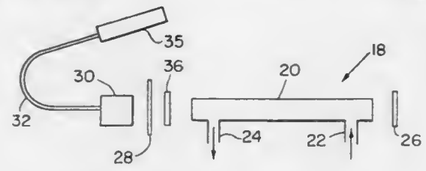
1. An injection laser assembly comprising a single crystal substrate upon which an injection laser is mounted, characterised in that the substrate is provided with an etched groove, a graded index lens having an axis, said lens being fixedly located in the etched groove by bump stop techniques wherein radiation from the laser back facet is directed towards the lens, off the axis of the lens, whereby emissions from the back facet are directed at a sensor mounted on the substrate.

5,668,824

METHOD AND APPARATUS FOR REPLENISHING DYE SOLUTION IN A DYE LASER

Horace W. Furumoto, Wellesley; Harry L. Ceccon, Boston; George E. S. Cho, Hopkinton, and Mark P. Hacker, Burlington, all of Mass., assignors to Cynosure, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 98,467, Jul. 28, 1993, abandoned. This application Dec. 10, 1993, Ser. No. 165,331
Int. Cl.[6] H01S 3/20
U.S. Cl. 372—54 15 Claims



1. A composition for use in dye lasers comprising:

a laser dye or dye mixture;

a pH buffer or buffer mixture; and

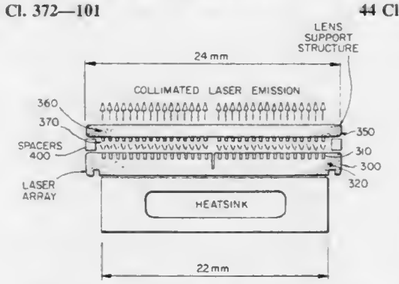
a solvent or solvent mixture.

5,668,825

LENS SUPPORT STRUCTURE FOR LASER DIODE ARRAYS

Arthur A. Karpinski, Jordan, N.Y., assignor to Laser Diode Array, Inc., Auburn, N.Y.

Continuation-in-part of Ser. No. 252,891, Jun. 2, 1994, Pat. No. 5,526,373. This application Apr. 30, 1996, Ser. No. 640,124
Int. Cl.[6] H01S 3/08
U.S. Cl. 372—101 44 Claims



1. A lens support structure for use with a laser diode array having a plurality of laser diodes disposed in said array at a first predetermined pitch with respect to each other, said lens support structure comprising:

a base having first and second major surfaces, a plurality of grooves being formed in one of said first major surface or said second major surface at a second predetermined pitch, different from said first predetermined pitch; and

a plurality of optical elements disposed in said grooves so as to allow optical radiation to pass through the optical elements;

wherein said base is adjustable relative to said laser diode array so as to align said optical elements with said laser diodes to provide desired optical transmission.

5,668,826

ELECTRO-OPTICAL DEVICE COMPRISING A CONTROLLED LASER DIODE

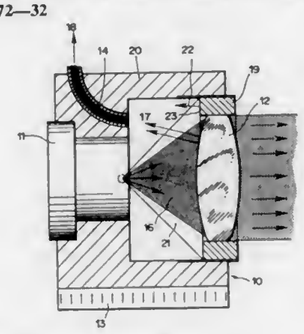
Alex Bezinge, Yens; Christophe Moser, Pully; Pierre Thomann, Fountainemelon, and Alain Jornod, Colombier, all of Switzerland, assignors to Tesa Brown & Sharpe SA, Renens, Switzerland

Filed Mar. 6, 1996, Ser. No. 611,632

Claims priority, application European Pat. Off., Mar. 14, 1995, 95810168

Int. Cl.[6] H01S *3/13*; **G02B** *6/00*; **G01B** *9/02*; **H04B** *10/04*

U.S. Cl. 372—32 **19 Claims**



1. An electro-optical device-comprising:

a laser diode having a front face,

a lens mounted in front of said laser diode,

an optical fiber,

and a control module for controlling said laser diode, said laser diode emitting from said front face a light beam traversing said lens to constitute an operating light beam, at least part of the light emitted by said laser diode constituting a controlling light beam, said controlling light beam being conveyed by said optical fiber to said control module, said control module using said controlling light beam to determine at least one operating parameter of said laser diode, and said optical fiber being coupled to said laser module for collecting part of the light reflected and diffused by said lens.

5,668,827

CRUCIBLE FOR INDUCTION MELTING

Wilfried Goy, Kelsterbach, Germany, assignor to Ald Vacuum Technologies GmbH, Erlensee, Germany

Filed Jul. 25, 1995, Ser. No. 506,839

Claims priority, application Germany, Aug. 18, 1994, 44 29 340.2

Int. Cl.[6] H05B *6/22*

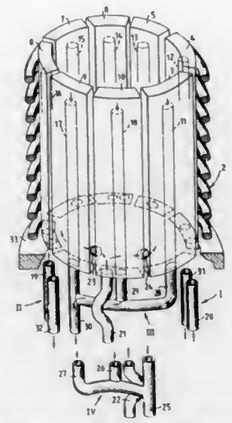
U.S. Cl. 373—156 **3 Claims**

1. Crucible for melting electrically conductive materials, said crucible comprising

a plurality of upright spaced apart metal palisades arranged in parallel to form a circumferential wall, said palisades being provided with coolant cavities,

an insulating base supporting said palisades, and

conductive connecting means connecting at least two palisades to form at least two groups of electrically connected palisades, each group being electrically insulated from each other group



and circumferentially separated from each other group by a single palisade for each group, said single palisades being electrically insulated from said groups.

5,668,828

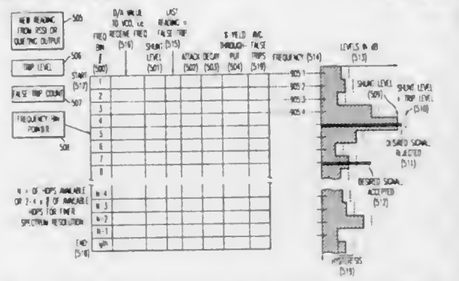
ENHANCED FREQUENCY AGILE RADIO

H. Britton Sanderford, Jr., New Orleans; Robert J. Davis, Metairie, and Robert E. Rouquette, Kenner, all of La., assignors to Sanconix, Inc., New Orleans, La.

Continuation-in-part of Ser. No. 103,993, Aug. 10, 1993, Pat. No. 5,377,222, which is a division of Ser. No. 880,268, May 8, 1992, Pat. No. 5,311,541. This application Sep. 23, 1994, Ser. No. 311,774

Int. Cl.[6] H04B *1/713*

U.S. Cl. 375—202 **45 Claims**



1. A method, using a frequency-agile receiver in a frequency-agile radio system, for receiving signals from a transmitter transmitting information messages on a plurality of pseudo-random frequencies, comprising the steps of:

scanning an available radio spectrum;

measuring, in a portion of the scanned available radio spectrum, at least one of receiver signal strength and quieting and signal lock quality, as a measurement;

generating, based at least in part on the measurement, a prediction of a level of interference signal energy, within the portion of the available radio spectrum, expected in a future scan of said available radio spectrum by said frequency-agile receiver; and

storing the prediction of the level of interference signal energy in a memory location associated with the portion of the scanned available radio spectrum.

5,668,829

SPREAD SPECTRUM COMMUNICATION APPARATUS

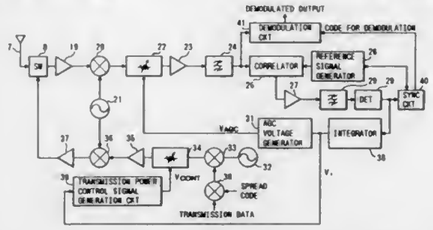
Katsuo Saito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,224

Claims priority, application Japan, Mar. 1, 1994, 6-031388

Int. Cl.[6] H04B *15/00*

U.S. Cl. 375—208 **20 Claims**



1. A spread spectrum communication apparatus comprising:

correlating means for correlating a received signal and a reference signal and for outputting a synchronizing signal based on a correlation of the received signal and the reference signal;

synchronizing means for synchronizing codes for receiving a spread spectrum signal according to the synchronizing signal outputted from said correlating means; and

control means for controlling a transmission power according to the synchronizing signal outputted from said correlating means.

5,668,830

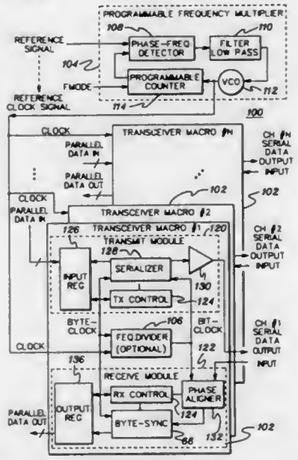
DIGITAL PHASE ALIGNMENT AND INTEGRATED MULTICHANNEL TRANSCEIVER EMPLOYING SAME

Christos John Georgiou, White Plains; Thor Arne Larsen, Hopewell Junction, and Ki Won Lee, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 420,102, Apr. 11, 1995, Pat. No. 5,550,860, which is a division of Ser. No. 152,108, Nov. 12, 1993, Pat. No. 5,533,072. This application May 3, 1996, Ser. No. 642,570

Int. Cl.[6] H04L *25/34*

U.S. Cl. 375—220 **5 Claims**



4. A data transfer network wherein data is transferred along multiple channels asynchronously among a plurality of subsystems, said network comprising:

multiple synchronous subsystems, each synchronous subsystem having a transceiver circuit comprising

(i) multiple transceiver macros, each transceiver macro being coupled to a different one of the multiple channels, and comprising a receiver circuit and a transmitter circuit, each receiver circuit having a digitally implemented phase aligner for aligning a received input signal with a reference clock signal for subsequent synchronous data operations within the subsystem of the multiple subsystems, and

(ii) means, coupled to said multiple transceiver macros, for generating the reference clock signal from one of a plurality of reference clock signals, wherein each receiver circuit of said multiple transceiver macros may receive the reference clock signal such that at least some unique reference clock signals of different frequency are provided to the multiple transceiver macros; and

said multiple channels coupling said plurality of subsystems.

5,668,831

SIGNAL PROCESSING APPARATUS AND METHOD

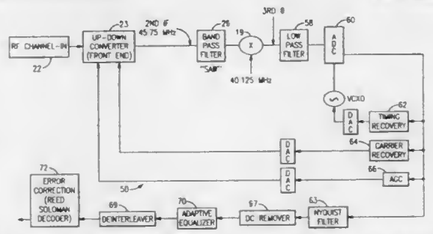
Anthony Peter J. Claydon, Bath; Charles D. MacFarlane, Dursley; Richard J. Gammack; Anthony Mark Jones, both of Bristol; William P. Robbins, Cam, and Mark Barnes, Chippenham, all of United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Filed Jun. 7, 1995, Ser. No. 481,107

Claims priority, application United Kingdom, Jun. 7, 1995, 9511568

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—232 **66 Claims**



1. A signal processing apparatus for the reception of data packets that are transmitted through a channel as a modulated signal having pretransmission characteristics, the signal processing apparatus comprising:

an analog-to-digital converter that samples an input signal at sampling intervals and has an ADC output;

a timing recovery circuit coupled to said ADC output, for adjusting a frequency and a phase of said sampling intervals;

a carrier recovery circuit coupled to said ADC output, for adjusting a frequency and a phase of said input signal;

a filter for conforming a characteristic of said ADC output to a pretransmission characteristic of said input signal;

an adaptive equalizer coupled to said filter;

an error correcting circuit coupled to said equalizer; and

an output interface, coupled to said error correcting circuit;

wherein said equalizer comprises:

a phase tracking circuit for producing an in-phase component and a quadrature component that is representative of said modulated signal in accordance with the formula

$$\text{data}=a(t)\cos\phi+\hat{a}(t)\sin\phi$$

wherein

data is an output

ϕ is phase error;

a(t) is transmitted data;

$\hat{a}(t)$ is the quadrature component of a(t);

wherein an output of said phase tracking circuit is in accordance with the formula

output$_c$=$a(t)$ (cos θ cos ϕ+sin θ sin θ)+$d(t)$ (sin ϕ cos θ −cos ϕ sin θ)

wherein θ is an angle of rotation of a signal constellation of said modulated signal, said phase tracking circuit comprising:

a first response filter;

a second response filter; and

circuit means including said second response filter for estimating said angle θ according to a least-mean-square algorithm;

wherein said timing recovery circuit, said carrier recovery circuit, said equalizer, said error correcting circuit, and said output interface comprise a semiconductor integrated circuit.

5,668,832

AUTOMATIC EQUALIZER FOR REMOVING INTER-CODE INTERFERENCE WITH FADING AND METHOD OF CONTROLLING TAP COEFFICIENTS THEREOF

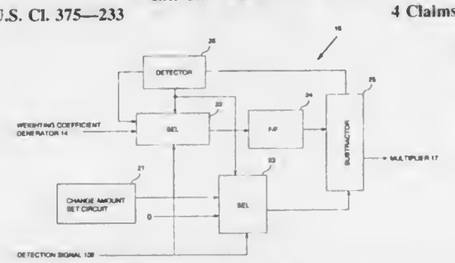
Takeshi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 28, 1995, Ser. No. 411,537

Claims priority, application Japan, Mar. 28, 1994, 6-057589

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—233 **4 Claims**



1. An automatic equalizer comprising:

a demodulator for outputting a detection signal which indicates synchronous status as well as demodulating analog base band signals from received signals;

an analog to digital converter for converting said analog base band signals to a first digital signal string by sample-quantizing said analog base band signals;

an adaptive matched filter for converting said first digital signal string to a second digital signal string;

a decision feedback equalizer for equalizing intersymbol interferences in said second digital signal string and outputting a decision signal as an equalized result;

a plurality of correlators, each of said correlators for correlating said decision signal with a signal on each tap of said adaptive matched filter;

a plurality of integrators, each of said integrators for averaging outputs of a correlator; and

a control means for multiplying an output of an integrator by a weighting coefficient based on said detection signal and outputting a result for each tap coefficient of said adaptive matched filter, for multiplying outputs of said integrators corresponding to minus taps located in an input side from a center tap of said adaptive matched filter by a weighted coefficient 0 when said detection signal indicates synchronous status, for multiplying outputs of said integrators corresponding to said minus taps by a weighting coefficient 1 when said detection signal indicates asynchronous status, and for gradually decreasing a weighting coefficient from 1 to 0 at a rate lower than the tracking rate of said decision feedback equalizer when indication of said detection signal changes to said synchronous status from said asynchronous status;

said control means including a first selector and a second selector, each of said first and second selectors for switching output based on said detection signal, a flip-flop connected with said first selector, and a subtracter for subtracting an output of said second selector from an output of said flip-flop, said subtracter having an output, wherein:

said first selector inputs said output of said subtracter and said output of a weighting coefficient generator, said first selector selects an output of said weighting coefficient generator when said detection signal indicates said synchronous status, and selects an output of said subtracter when said detection signal indicates said asynchronous status; and

said second selector inputs a tap coefficient change amount and a value 0, selects said value 0 when said detection signal indicates said synchronous status, and selects said tap coefficient change amount when said detection signal indicates said asynchronous status.

5,668,833

DECISION-FEEDBACK TYPE EQUALIZER

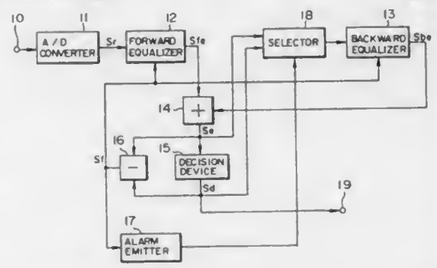
Yuzo Kurokami, and Hideki Matsuura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,534

Claims priority, application Japan, Mar. 15, 1995, 7-084675

Int. Cl.[6] H03H *7/30;7/40;* **H03K** *5/159*

U.S. Cl. 375—233 **3 Claims**



1. A decision-feedback type equalizer comprising:

a forward equalizer for receiving digital pre-equalization signals and error signals, as input signals, for reducing intersymbol interference caused by the lead echo of said pre-equalization signals, and for outputting forward equalization signals;

a backward equalizer for reducing intersymbol interference caused by the delay echo of input signals, and for producing output in the form of backward equalization signals;

an adder for adding forward equalization signals and backward equalization signals, and for outputting equalization signals;

a decision device for comparing said equalization signals with reference values, and for outputting decision signals;

a subtracter for subtracting said equalization signals and decision signals, and for producing and outputting error signals which are differences;

an alarm emitter for detecting, from the signal states of said error signals, whether an abnormal state exists, and for emitting an alarm signal when an abnormal state is detected; and

a selection circuit which, depending on whether an alarm emitter output alarm signal is present or absent, is used for selecting either equalization signals or decision signals, and which, when there is alarm signal input, is used for selecting equalization signals and for supplying them as input signals to said backward equalizer.

5,668,834

SIGNAL TRANSMITTING DEVICE SUITABLE FOR FAST SIGNAL TRANSMISSION INCLUDING AN ARRANGEMENT TO REDUCE SIGNAL AMPLITUDE IN A SECOND STAGE TRANSMISSION LINE

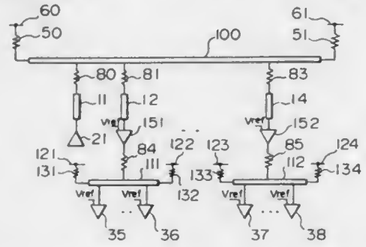
Toshitsugu Takekuma, Ebina; Akira Yamagiwa, Kanagawa-ken, and Ryoichi Kurihara, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 269,352, Jun. 30, 1994, Pat. No. 5,548,226. This application Feb. 15, 1995, Ser. No. 388,990

Claims priority, application Japan, Dec. 28, 1993, 5-334631; Feb. 15, 1994, 6-018082

Int. Cl.[6] H04B *1/40;* **H03K** *17/16;19/0175*

U.S. Cl. 375—257 **29 Claims**



26. A memory module connectable to a main transmission line terminated by a first element having a resistance equal to or close to an impedance value of said main transmission line, comprising:

a transmitting/receiving circuit for receiving a signal and transmitting said received signal;

a first intra-block transmission line for transmitting a signal inputted from said main transmission line to said transmitting/receiving circuit and including a second element having a resistance in order to suppress signal reflexions at branching points,

a receiving circuit for receiving the signal outputted from said transmitting/receiving circuit;

a second intra-block transmission line for transmitting a signal between said transmitting/receiving circuit and said receiving circuit, and

a third element connected between said transmitting/receiving circuit and said second intra-block transmission line for producing a voltage drop thereacross.

5,668,835

Patent Not Issued For This Number

5,668,836

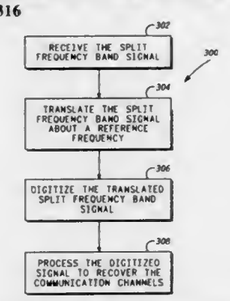
SPLIT FREQUENCY BAND SIGNAL DIGITIZER AND METHOD

Paul Fielding Smith, North Richland Hills, and Danny Thomas Pinckley, Arlington, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1994, Ser. No. 366,347

Int. Cl.[6] H04L *5/06;* **H04B** *1/26;* **H03M** *1/12*

U.S. Cl. 375—316 **20 Claims**



1. A split frequency signal digitizer comprising:

a first frequency translator coupled to receive an analog split frequency band signal, the analog split frequency band signal including a first segment having a first bandwidth and a second segment having a second bandwidth, the analog split frequency band signal having a total bandwidth greater than the sum of the first and second bandwidths, the frequency translator producing a frequency translated signal from the received signal, the frequency translated signal having substantially the same total bandwidth as the total bandwidth of the analog split frequency band signal;

an analog-to-digital converter responsive to the frequency translator, the analog-to-digital converter digitizing the frequency translated signal by sampling the frequency translated signal at a sampling rate less than twice the total bandwidth of the split frequency band signal to produce a digital signal, the digital signal including a digitized version of the first and second segments and aliased versions of the first and second segments.

5,668,837

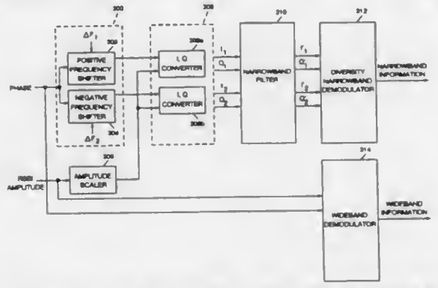
DUAL-MODE RADIO RECEIVER FOR RECEIVING NARROWBAND AND WIDEBAND SIGNALS

Paul W. Dent, Stehag, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 135,542, Oct. 14, 1993. This application Feb. 3, 1995, Ser. No. 383,036

Int. Cl.[6] H03K *9/00*

U.S. Cl. 375—316 **37 Claims**



1. A radio receiver for receiving radio signals containing first narrowband signals at a first radio channel frequency and second narrowband signals at a second radio channel frequency, comprising:

a. a downconverter for downconverting the radio signals to generate downconverted signals;

b. wideband filter means for filtering the downconverted signals with a wide filter bandwidth to generate filtered signals, wherein the filtered signals have a first subband containing the first narrowband signals and a second subband containing the second narrowband signals;

c. a digitizer for digitizing the filtered signals to generate digital signals, wherein the digital signals represent the radio signals in polar form and include phase signals and amplitude signals,

d. first frequency-shifting means for shifting the digital signals so as to shift the first narrowband signals by adding a first phase slope to the phase signals to a predetermined center frequency and generate first frequency-shifted signals;

e. second frequency-shifting means for shifting the digital signals so as to shift the second narrowband signals by adding a second phase slope to the phase signals to the predetermined center frequency and generate second frequency-shifted signals,

f. narrowband filter means for filtering the frequency-shifted signals with a filter bandwidth adapted to the narrowband signals so as to extract the first and second narrowband signals; and

g. demodulator means for demodulating the extracted first and second narrowband signals and generating demodulated signals.

5,668,838

INSTANTANEOUS PHASE DETECTING CIRCUIT AND CLOCK RECOVERY SIGNAL GENERATING CIRCUIT INCORPORATED IN DIFFERENTIAL DEMODULATOR

Seizo Nakamura; Yuji Iguchi, and Akinobu Kodama, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 307,632, Sep. 20, 1994, Pat. No. 5,537,442. This application Mar. 26, 1996, Ser. No. 621,646

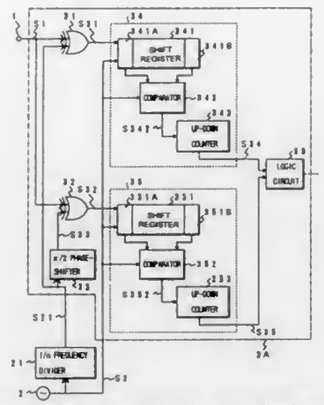
Claims priority, application Japan, Jan. 22, 1993, 5-008851

Int. Cl.[6] H03D *1/00;* **H04L** *27/06*

U.S. Cl. 375—340 **5 Claims**

1. An instantaneous phase detecting circuit for detecting the phase of a digital phase modulation wave signal comprising:

a first logic circuit receiving the modulation wave signal and a first carrier signal, said first logic circuit performing a logical



operation using said modulation wave signal and said first carrier signal to generate a first arithmetic output;

a second logic circuit receiving the modulation wave signal and a second carrier signal, the phase of said second carrier signal being delayed by a fixed period with respect to the phase of said first carrier signal, said second logic circuit performing a logical operation using said modulation wave signal and said second carrier signal to generate a second arithmetic output;

a first phase detecting circuit receiving said first arithmetic output and said first carrier signal, said first phase detecting circuit detecting the phase of said first arithmetic output and generating a first detection output signal;

a second phase detecting circuit receiving said second arithmetic output and said first carrier signal, said second phase detecting circuit detecting the phase of said second arithmetic output and generating a second detection output signal; and

a third logic circuit receiving said first and second detection output signals, said third logic circuit comparing a periodic deviation of said first and second detection output signals thereby detecting the phase of the modulation wave signal.

5,668,839

IF SIGNAL COMBINER FOR MINIMIZING THE BER IN A SPACE OR ANGLE DIVERSITY DIGITAL RADIO RECEIVER

Antonio Bernasconi, Seregno; Antonella Dal Lago, Paullo, and Maria Pia Sirtori, Bussero, all of Italy, assignors to Siemens Telecommunicazioni S.p.A., Milan, Italy

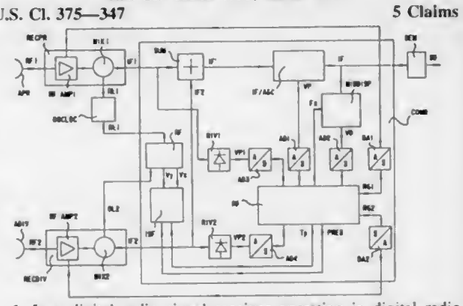
PCT No. PCT/EP93/02758, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/09573, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 8, 1993, Ser. No. 416,906

Claims priority, application Italy, Oct. 14, 1992, MI92A2347

Int. Cl.[6] H04B *7/10;* **H04L** *1/02*

U.S. Cl. 375—347 **5 Claims**



1. In a digital radio signal receiver operating in digital radio links and protected with space or angle diversity, the digital radio

signal receiver having two radio receivers and a demodulator providing a demodulated output signal, a signal combiner connected between the two radio receivers and the demodulator, the signal combiner comprising:

an adder for summing intermediate frequency signals issuing from the radio receivers and forming a combined signal having a residual power attenuation and a residual amplitude dispersion due to propagation conditions;

a network connected to said adder for measuring the residual amplitude dispersion and a relative position of a notch frequency, whereby the notch frequency is defined such that a residual amplitude attenuation in a spectrum of the combined signal is a maximum;

a measuring device connected to said adder for measuring the residual power attenuation;

a digital signal processor connected to said measuring device and receiving measurement results therefrom, said digital signal processor generating control signals setting an amplitude and a mutual phase shift of the intermediate frequency signals, and said digital signal processor adaptively perturbing the control signals for minimizing a bit error rate BER in the output signal of the demodulator, by minimizing a polynomial function of a normalized residual amplitude dispersion and of the residual power attenuation, the polynomial function approximating a parametric logarithmic representation of the bit error rate BER also being a function of the normalized residual amplitude dispersion and of the residual power attenuation, wherein constant BER values are taken as many values of a parameter of said parametric representation, and said digital signal processor normalizing the residual amplitude dispersion with respect to the relative position of the notch frequency and reducing a further dependency of the representation of the BER on the relative position of the notch frequency.

5,668,840

SYNCHRONIZING CIRCUIT FOR USE IN A DIGITAL AUDIO SIGNAL COMPRESSING/EXPANDING SYSTEM

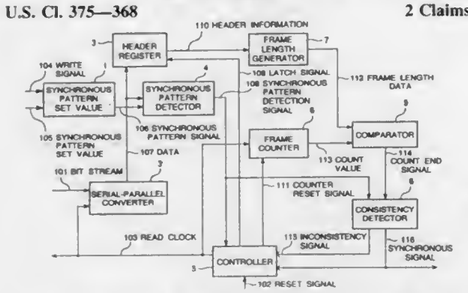
Hideto Takano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 1, 1996, Ser. No. 625,915

Claims priority, application Japan, Mar. 30, 1995, 7-072805

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—368 **2 Claims**



1. A synchronizing circuit configured to receive a bit stream including header information having a synchronous pattern and frame length determining information in each frame, and to detect a frame boundary so as to generate a frame synchronous signal corresponding to the header information, the synchronizing circuit comprising:

a synchronous pattern holding means for holding an expected pattern value corresponding to at least a portion of said frame length determining a data converting means for converting said bit stream of said synchronous pattern and said frame length determining information into parallel data;

a synchronous pattern detecting means for detecting said synchronous pattern and said frame length determining information from said parallel data, and generating a synchronous pattern detection signal when said synchronous pattern and said frame length determining information from said parallel data are consistent with a predetermined pattern and when a portion of said frame length determining information from said parallel data is consistent with said expected pattern value; and

a synchronous pattern discriminating means receiving said synchronous pattern detection signal, for generating a predetermined synchronous signal.

5,668,841

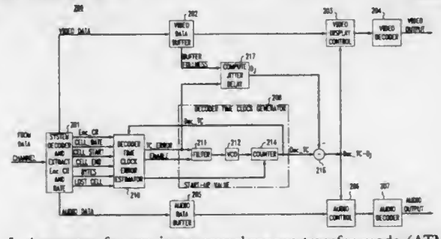
TIMING RECOVERY FOR VARIABLE BIT-RATE VIDEO ON ASYNCHRONOUS TRANSFER MODE (ATM) NETWORKS

Barin Geoffry Haskell, Tinton Falls, and Amy Ruth Reibman, East Windsor, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 250,252, May 27, 1994, abandoned. This application Jan. 22, 1996, Ser. No. 589,428

Int. Cl.[6] H04J *3/06;* **H04L** *7/027;7/033*

U.S. Cl. 375—371 **7 Claims**



1. Apparatus for use in an asynchronous transfer mode (ATM) transmission network for recovering timing in a receiver comprising:

means for receiving an asynchronous digital signal including system clock reference values and transmission rate values;

means for extracting said system clock reference values and said transmission rate values from the received asynchronous digital signal;

means supplied with said extracted system clock reference values and extracted transmission rate values for generating estimated clock reference values between the times indicated by said extracted system clock reference values; and

means for utilizing said extracted system clock reference values and estimated clock reference values for generating a system time clock at the receiver.

5,668,842

HIGH-SPEED DIGITAL-TO-RF-CONVERTER

Ronald E. Sorace, Redondo Beach; Victor S. Reinhardt, Rancho Palos Verdes, and Steven A. Vaughn, Sun City, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 28, 1995, Ser. No. 395,946

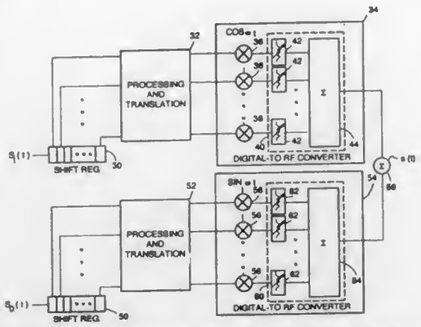
Int. Cl.[6] H04K *1/02*

U.S. Cl. 375—308 **8 Claims**

1. A system for predistorting a digital signal and converting the digital signal to a radio frequency signal, the digital signal representative of a time-dependent data word having a plurality of bits, the system comprising:

a plurality of biphase modulators, each of the biphase modulators modulating a sinusoidal radio frequency signal with a corresponding one of the bits to form a biphase modulated signal based upon the corresponding one of the bits, whereby the biphase modulators form a plurality of biphase modulated signals; and

a summing network containing a plurality of variable attenuators having an attenuation dependent upon a transfer function of a



communication channel, each of the attenuators responsive to a corresponding one of the biphase modulated signals, the attenuators attenuating the biphase modulated signals to form a plurality of attenuated signals, wherein the summing network combines the attenuated signals to form the radio frequency signal.

5,668,843

STORAGE CAGE FOR STORAGE AND TRANSPORT OF FUEL ASSEMBLIES

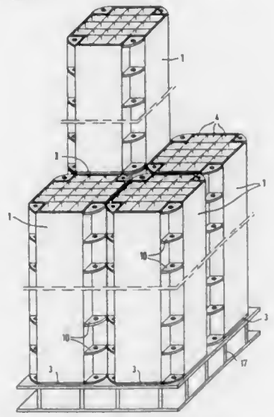
Kari Wasinger, Mühlheim am Main, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 24, 1996, Ser. No. 685,846

Claims priority, application Germany, Jan. 26, 1994, 44 02 218.2

Int. Cl.[6] G21C *19/07;* **G21F** *5/012*

U.S. Cl. 376—272 **11 Claims**



2. A storage cage assembly, comprising:

a plurality of storage cages each for the storage and transport of a plurality of fuel assemblies, each of said storage cages including:

a baseplate having apertures formed therein;

a plurality of casings each having an interior and each standing on said baseplate for receiving and storing a fuel assembly;

each of said casings being associated with at least one of said apertures leading into said interior of said casing for supplying and discharging cooling liquid;

each of said casings having a plurality of slots formed therein for supplying and discharging cooling gas; and

at least one supporting wall forming a load-bearing part with said baseplate, said casings being fastened to said at least one supporting wall.

5,668,844

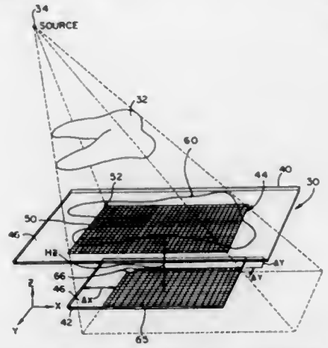
SELF-CALIBRATED TOMOSYNTHETIC, RADIOGRAPHIIC-IMAGING SYSTEM, METHOD, AND DEVICE

Richard L. Webber, 1240 Chester Rd., Winston-Salem, N.C. 27104-1355

Continuation of Ser. No. 875,249, Apr. 28, 1992, Pat. No. 5,359,637. This application Oct. 20, 1994, Ser. No. 326,332

Int. Cl.[6] G01T *1/00*

U.S. Cl. 378—2 **65 Claims**



1. A device for recording radiographic images of a selected object irradiated by a source of radiation comprising:

(a) a support;

(b) a first radiographic recording medium supported on the support for recording a projected radiographic image of the selected object;

(c) a second radiographic recording medium supported relative to the support in fixed position relative to the first radiographic recording medium and at a selected orientation relative to the first radiographic recording medium for recording a projected radiographic image; and

(d) a radiopaque fiducial reference supported relative to the support at a fixed position relative to the first and second radiographic recording mediums to permit a projected radiographic image of the radiopaque fiducial reference to be recorded on the second radiographic recording medium wherein the fiducial reference includes a frequency indicator for exhibiting a selected frequency pattern at the fiducial reference.

5,668,845

COMPUTED-TOMOGRAPHY APPARATUS AND CONTROL METHOD THEREOF

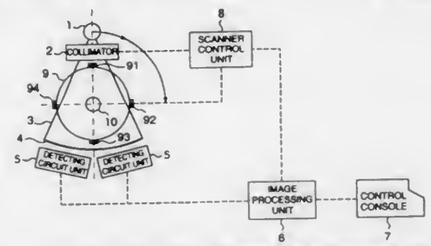
Shinichi Migita, Ryugasaki, Japan, assignor to Hitachi Medical Corp., Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 611,851

Claims priority, application Japan, Apr. 13, 1995, 7-088258

Int. Cl.[6] G21K *5/10*

U.S. Cl. 378—4 **25 Claims**



1. A computed-tomography apparatus for acquiring a cross-sectional image of an object on the basis of projection data of said object obtained by scanning said object with radiation while rotating a scanner around said object, comprising:

image processing means for assigning individual weights to projection data in a predetermined rotation angle range including the vicinity of a scan start rotation position of said scanner and the vicinity of a scan end rotation position thereof and projection data in a rotation angle range opposite to said predetermined rotation angle range, respectively, determining corrected data for the entire circumference of said object by use of the projection data assigned with said weights and projection data assigned with no weight, and generating said cross-sectional image on the basis of said corrected data;

determining means for determining one of rotation positions of said scanner which has a smaller attenuation of radiation; and

scanner controlling means for controlling the operation of said scanner so that the scan is started from said rotation position having the smaller attenuation.

5,668,846

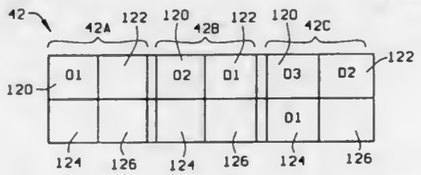
METHODS AND APPARATUS FOR SCANNING AN OBJECT AND DISPLAYING AN IMAGE IN A COMPUTED TOMOGRAPHY SYSTEM

Stanley H. Fox, Brookfield; Robert Senzig, Germantown, and Jiang Hsieh, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 18, 1996, Ser. No. 733,502

Int. Cl.[6] A61B *6/00*

U.S. Cl. 378—4 **20 Claims**



1. A method for scanning an object in a computed tomography system, the computed tomography system including an x-ray source for projecting x-rays, a detector for detecting x-rays from the x-ray source and attenuated by the object, a display, and a processor coupled to the detector and coupled to the display for generating images on the display, said method comprising the steps of:

obtaining scan projection data;

processing the projection data to generate image data; and

displaying at least one image slice and one three-dimensional image simultaneously on the display.

5,668,847

APPARATUS AND METHOD FOR ADJUSTING RADIATION IN A RADIATION-EMITTING DEVICE

Francisco M. Hernandez, Concord, Calif., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Continuation of Ser. No. 504,937, Jul. 20, 1995, Pat. No. 5,563,925. This application Jun. 13, 1996, Ser. No. 665,153

Int. Cl.[6] G21F *5/04*

U.S. Cl. 378—65 **11 Claims**

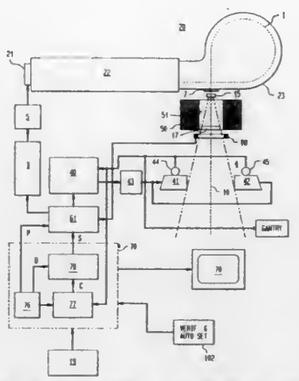
1. A method for adjusting radiation output delivered to an object from a radiation source, the method comprising the steps of:

generating a radiation beam having a variable radiation output from a radiation source to the object;

delimiting the beam path by moving at least one beam-shielding device;

defining a field on the object for irradiation;

calculating a wedge correction signal, the wedge correction signal indicating how to change the variable radiation output to a desired dose distribution for the area on the object, the desired dose distribution having a wedge factor; and



varying the radiation output of the radiation beam with the beam-shielding device, the varying being directly related to the wedge correction signal such that the wedge factor for the radiation output is constant regardless of the size of the irradiated field.

5,668,848

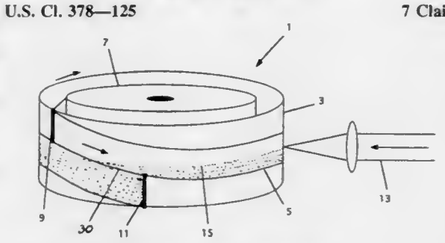
X-RAY TARGET TAPE SYSTEM

Harry Rieger, San Diego, Calif., assignor to Jamar Technology Co, San Diego, Calif.

Filed Jan. 16, 1996, Ser. No. 585,695

Int. Cl.[6] H01J *35/10*

U.S. Cl. 378—125 **7 Claims**



1. An X-ray target tape system comprising:

A) a tape drum defining a tape drum outside surface and a circumference,

B) a drum rotating means for rotating said drum,

C) a tape having a constant width, wrapped helically around said tape drum at least slightly more than one complete turn so as to define an overlap section such that a first section of said tape is positioned parallel to a second section of said tape,

D) a tape advancing means for advancing said tape across the outside surface of said drum at a speed which is a small fraction of the tangential surface speed of said drum, the distance traveled by sections of said tape on the outside surface of said rotating drum defining an overlapping tape path, and

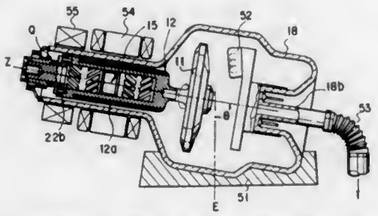
E) a laser producing a laser beam focused on a fixed spot located on said overlapping tape path of said tape so as to ablate portions of said tape to produce x-rays.

5,668,849

METHOD OF MANUFACTURING A ROTATING ANODE X-RAY TUBE

Hiroyuki Sugiura, Tochigi-ken; Katsuhiro Ono, Utsunomiya, and Hidero Anno, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 282,486, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 7,894, Jan. 22, 1993, abandoned. This application Mar. 26, 1996, Ser. No. 621,705
Claims priority, application Japan. Jan. 24, 1992, 4-010440
Int. Cl.[6] H01J *35/10*
U.S. Cl. 378—133 **4 Claims**



1. A method of manufacturing a rotating anode X-ray tube, comprising the steps of:

providing an anode structure having a rotary axis and an anode target;

providing a rotary structure to which the anode target is fixed and a stationary structure for rotatably supporting the rotary structure, one of the rotary and stationary structures having an opening;

injecting a liquid metal lubricant having a predetermined volume through the opening into one of the rotary and stationary structures;

applying liquid metal lubricant to dynamic pressure type bearing sections having helical grooves and bearing gap and positioned between said rotary and stationary structures and to a reservoir communicated with said bearing sections and formed in one of said rotary and stationary structures, the predetermined volume of the liquid metal lubricant being within a range of 20% to 70% of the total volume of the bearing sections and reservoir;

closing the opening in one of the rotary and stationary structures so as to have a small gap in a liquid tight state;

locating the anode structure in an envelope and arranging a cathode so as to oppose the anode target in the envelope;

evacuating the envelope;

repeatedly changing the posture of the X-ray tube between a vertical position in which the rotary axis set to be vertical and an inclined position in which the rotary axis is set to be either horizontal or inclined during the evacuation of the X-ray tube;

energizing said X-ray tube to rotate the rotary structure and cause the cathode to emit an electron beam to land on the anode target during the evacuation of the X-ray tube; and

sealing the envelope.

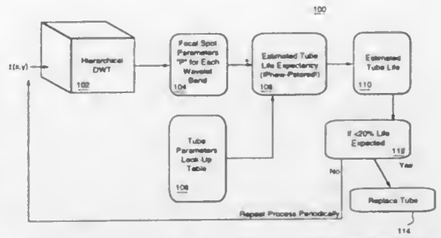
5,668,850

SYSTEMS AND METHODS OF DETERMINING X-RAY TUBE LIFE

Aiman Albert Abdel-Malek, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1996, Ser. No. 652,210
Int. Cl.[6] H05G *1/08*
U.S. Cl. 378—210 **14 Claims**

7. A system for estimating remaining life of an operating x-ray source, the x-ray source being at least partially optically aligned with a detector array so that an x-ray beam produced by the x-ray source at least partially impinges on the detector array at an optical focal spot, said system comprising:



a memory element having focal spot spectral parameters P_{stored} representing optical focal spot energy levels for different life expectancy values stored therein; and

processor means coupled to said memory element and adapted to perform the operations of:

sampling signals I(x,y) representative of the x-ray beam optical focal spot detected by the detector array, where I represents beam intensity and x and y represent beam spot locations in a Cartesian coordinate system;

applying a wavelet transform to the sampled signals I(x,y) to generate at least one energy level P_{new} for a wavelet band;

comparing energy level P_{new} with stored energy levels P_{stored} to identify one of said energy levels P_{stored} which, when subtracted from energy level P_{new}, results in a statistically non-significant value; and

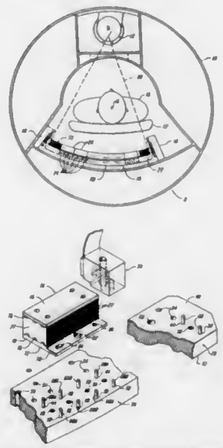
estimating the remaining life of the x-ray source as being equal to the life expectancy value corresponding to the identified energy level P_{stored}.

5,668,851

X-RAY TOMOGRAPHY SYSTEM WITH STABILIZED DETECTOR RESPONSE

John Dobbs, Hamilton, Mass., assignor to Analogic Corporation, Peabody, Mass.

Filed Jun. 21, 1996, Ser. No. 668,538
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—19 **10 Claims**



1. An x-ray scanning system of the type including (a) a gantry including a disk for supporting at least an x-ray source, and a frame for rotatably supporting the disk for rotation about a rotation axis, (b) an x-ray detector assembly including a plurality of x-ray detectors cooperative with said x-ray source, (c) an anti-scatter plate assembly having a plurality of anti-scatter plates disposed in the radiation path between said source and said detector assembly, and (d) a support structure connected to said disk for supporting said detector assembly and said anti-scatter plate assembly, said support structure having a base reference surface, said scanning system further comprising:

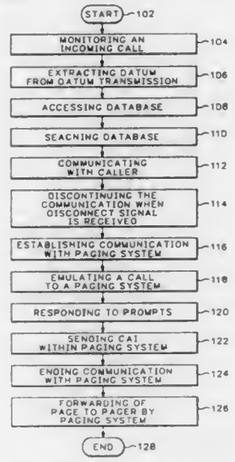
means for stabilizing said signals against modulation due to relative movement of said x-ray source, said detectors and said anti-scatter plates.

5,668,852

AUTOMATIC CALLER-ASSOCIATED INFORMATION PROVISION SYSTEM, IMPROVEMENT AND METHOD FOR PAGING SYSTEM

Terry M. Holmes, 13250 Clairepointe Way, Oakland, Calif. 94619-3507

Continuation of Ser. No. 375,394, Jan. 18, 1995, abandoned. This application Nov. 15, 1996, Ser. No. 749,412
Int. Cl.[6] H04Q *7/06;7/10;7/16*
U.S. Cl. 405—31.2 **15 Claims**



1. A method of automatically providing a telephone number of a caller to a paging system, wherein the caller originates an incoming telephone call to a designated pager through a paging system and that incoming call is transmitted across a telephone network to the paging system, wherein the paging system forwards the caller's telephone number with a page to the designated pager, the method comprising:

intercepting the incoming call before the call is received by the paging system, wherein the incoming call includes an automatic number identification (ANI) signal that includes the caller's telephone number, wherein the caller's telephone number in the ANI signal is automatically provided by the telephone network;

extracting the caller's telephone number from the ANI signal;

searching a database, using the caller's telephone number as an index, for caller information that has been stored therein prior to said intercepting of the incoming call;

establishing communication with the paging system and emulating a call to a paging system which is directed to the same designated pager to which the incoming call was directed, wherein the stored caller information includes information other than the caller's telephone number; and

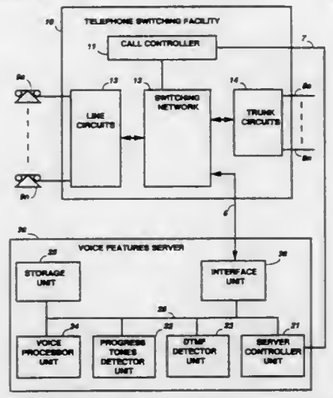
forwarding the caller's telephone number to the paging system to enable the paging system to send the caller's telephone number with the page to the designated pager and further forwarding to the paging system the caller's telephone number along with such caller information.

5,668,853

TELECOMMUNICATIONS CALLING FEATURE METHOD AND APPARATUS

Lloyd Malcolm Florence, Scarborough, and Paul Michael Brennan, Toronto, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 10, 1992, Ser. No. 942,876
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **9 Claims**



1. A method for operating a telephone switching facility for serving at least one telephone set, the telephone switching facility being connected in combination with a voice features service apparatus whereby a calling party may redirect a call progress, the method comprising the steps of:

(a) initiating the call progress on behalf of the calling party in response to digits dialled by the calling party;

(b) in an event of the call progress being forwarded to the voice features service apparatus, continuing the call progress in the voice features service apparatus while detecting any secondary signalling which may be generated by the calling party; and

(c) in the event that a secondary signalling is detected prior to a completion of a solicitation portion of the call progress, and if the secondary signalling is not within the protocol of the voice features service apparatus, responding to the secondary signalling in the telephone switching facility by resuming the call progress in accordance with the secondary signalling.

5,668,854

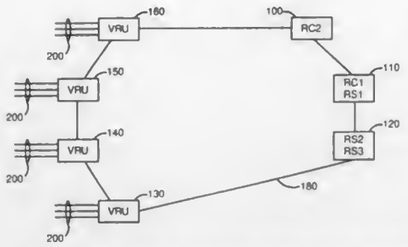
DISTRIBUTED SYSTEM FOR CALL PROCESSING

Michael Ken Minakami, Sunnyvale, Calif.; Brian Hulse, Hunters Crescent, England; Jonathan Cook, North End Portsmouth, England, and John Brian Pickering, St Cross Winchester, England, assignors to International Business Machine Corp., Armonk, N.Y.

Continuation of Ser. No. 156,193, Nov. 23, 1993, Pat. No. 5,471,521. This application Oct. 6, 1995, Ser. No. 539,983
Claims priority, application United Kingdom, Jul. 29, 1993, 9315695
Int. Cl.[6] H04M *1/64;3/42*
U.S. Cl. 379—88 **37 Claims**

18. A distributed system connected to a telephone network for interactively processing first and second telephone calls, comprising at least a first computer, a second computer, and a third computer, connected together by a communications network, wherein said first computer handles said first telephone call, and said third computer handles said second telephone call, said system having the ability to play out speech synthesized from text during the first and second telephone calls,

the first computer including first interface means for attachment to the telephone network for receiving a telephone signal over said telephone network and for transmitting a telephone signal



out over said telephone network; means for forwarding a first request over the communications network to the second computer, said first request containing first text to be synthesized; and means for receiving a first voice data response from the second computer, and for forwarding said first voice data response to the first interface means for transmission over the telephone network;

the third computer including second interface means for attachment to the telephone network for receiving a telephone signal over said telephone network and for transmitting a telephone signal out over said telephone network; means for forwarding a second request over the communications network to the second computer, said second request containing second text to be synthesized; and means for receiving a second voice data response from the second computer, and for forwarding said second voice data response to the second interface means for transmission over the telephone network;

the second computer including server means for generating said first voice data response by performing a speech synthesis function on the first text in the first request from the first computer, and for generating said second voice data response by performing a speech synthesis function on the second text in the second request from the third computer; and means for transmitting the first voice data response and the second voice data response to the first computer and third computer respectively.

5,668,855

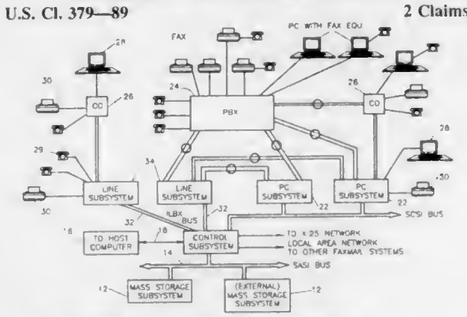
MESSAGE MANAGEMENT SYSTEM

Boaz Misholi, Ramat'Hasharon; Itzchak Danziger, Petach Tikva, both of Israel; Stephen R. Kowarsky, Massapequa, N.Y., and Nimrod Sandlerman, Ramat Gan, Israel, assignors to Comverse Technology, Inc., Woodbury, N.Y., and Efrat Future Technology Ltd., Tel Aviv, Israel

Division of Ser. No. 241,990, May 12, 1994, Pat. No. 5,586,173, which is a continuation of Ser. No. 985,231, Dec. 2, 1992, Pat. No. 5,317,628, which is a continuation of Ser. No. 580,521, Sep. 11, 1990, abandoned, which is a continuation of Ser. No. 887,793, Jul. 17, 1986, Pat. No. 5,008,926. This application Apr. 16, 1996, Ser. No. 633,180

Int. Cl.[6] H04M *3/50;11/00;* **H04N** *1/32;1/42*

U.S. Cl. 379—89 **2 Claims**



1. A message management system comprising:

means for storing messages having a facsimile portion and an aurally sensible portion;

means for interfacing said storing means with a telephone network to which a facsimile machine and an associated DTMF telephone set are connected;

means for accepting messages having a facsimile portion and an aurally sensible portion received over said telephone network by said interfacing means for storage by said storing means; and

means, connected to said interfacing means and said storing means, for accepting DTMF commands from said telephone set to retrieve a selected one of said messages stored in said storing means and causing said storing means to output said facsimile portion and said aurally sensible portion of said selected message through said interfacing means for receipt by said facsimile machine and said telephone set, respectively, during the same call in which said DTMF commands were transmitted.

5,668,856

METHOD AND SYSTEM FOR SCREENING CALLS DIRECTED TO AN INTERNATIONAL TELEPHONE OPERATOR

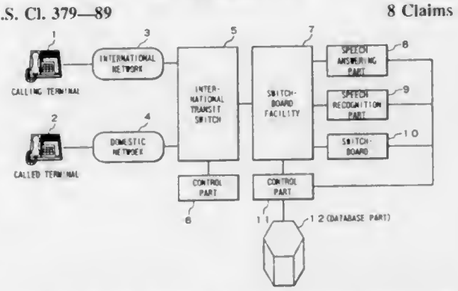
Kaoru Nishimatsu; Hideki Amano, and Shin-ichi Sakayori, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Continuation of Ser. No. 438,410, May 10, 1995, abandoned. This application Jun. 13, 1996, Ser. No. 662,489

Claims priority, application Japan, Aug. 5, 1995, 6-202962

Int. Cl.[6] H04M *3/00*

U.S. Cl. 379—89 **8 Claims**



6. An international incoming phone call screening system for an international incoming phone call service where an international telephone operator is called directly by a caller in a calling country, comprising:

means for determining from an international incoming phone call whether said call is directed to an international telephone operator;

means for determining from said call whether said call is from one of a plurality of predetermined countries if it is determined that said call is directed to the international telephone operator;

automatic announcement means for sending an announcement to the caller inquiring whether said call is intended for connection to the international operator;

means for receiving a response to the announcement; and

means for connecting said call to the international telephone operator if the response to said announcement indicates an intention that the call be connected to the international telephone operator.

5,668,857

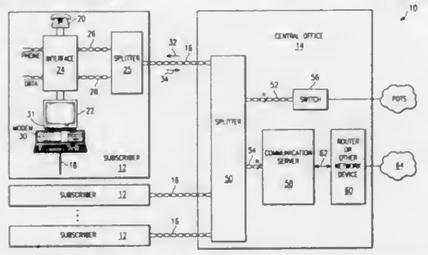
COMMUNICATION SERVER APPARATUS AND METHOD

John F. McHale, Dallas, Tex., assignor to Netspeed, Inc., Austin, Tex.

Filed Mar. 29, 1996, Ser. No. 625,769

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.07 **32 Claims**



21. A method for coupling selected subsets of a plurality of twisted pair subscriber lines to a plurality of XDSL modems in order to off-load high bandwidth data service from a telephone switch, the method comprising:

splitting each twisted pair subscriber line into a twisted pair data line and a twisted pair phone line, each twisted pair subscriber line forming a local loop to a subscriber;

detecting a need for data service on a selected inactive twisted pair data line;

selecting one of the plurality of XDSL modems in response to detecting the need; and

coupling the selected inactive twisted pair data line to the selected XDSL modem, wherein the high bandwidth data service is provided to the subscriber using the selected XDSL modem rather than the telephone switch.

5,668,858

CONTROL DEVICE FOR A FACSIMILE APPARATUS

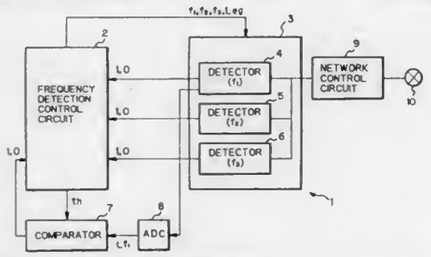
Hirokazu Mukai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 564,799

Claims priority, application Japan, Nov. 30, 1994, 6-296560

Int. Cl.[6] H04M *11/00;* **H04N** *1/32*

U.S. Cl. 379—100.01 **3 Claims**



1. A facsimile apparatus comprising:

a network control circuit for controlling connection of said facsimile apparatus to a public telephone network;

a frequency detection circuit for detecting a frequency of a terminating signal input from the public telephone network, and an input level at said frequency; and

a frequency detection control circuit for controlling said frequency detection circuit so as to execute automatic call termination on the basis of a result of detection of said frequency detection circuit;

said frequency detection circuit comprising:

a first detector for detecting the input level at the frequency of the terminating signal for automatic call termination; and

a second detector for detecting an input level at a frequency which is rarely included in the terminating signal for automatic call termination;

said frequency detection control circuit comprising means for executing the automatic call termination if the input level detected by said first detector is higher than or equal to a predetermined level, and if the input level detected by said second detector is lower than said predetermined level.

5,668,859

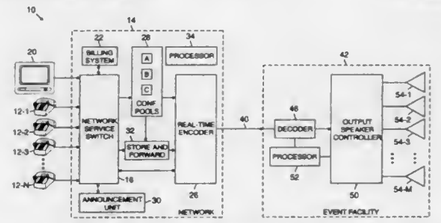
APPARATUS AND METHOD FOR CONNECTING REMOTE CALLERS TO LOUDSPEAKERS OR OTHER PROJECTING MEANS IN AN EVENT FACILITY

Steven C. Salimando, Little Silver, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 28, 1994, Ser. No. 365,630

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—101.01 **17 Claims**



1. In an effective barrage telecommunication system in which a potentially large number of users communicate information from user terminals over a network to an event facility with an ongoing event having an audience, an apparatus for directing a communication from a user comprising:

routing means to direct information in the user communication to the event facility;

control means to receive and process the information in the user communication; and

projecting means at the event facility responsive to the control means for projecting in the event facility during the ongoing event an audio signal corresponding to the user communication to effectively permit the user to participate in a manner similar to an audience member at the event facility, the projecting means providing an audio output volume level which varies as a function of the number of users communicating information to the event facility.

5,668,860

CALL SCREENING AT A HIERARCHICAL SWITCH BASED ON ORGANIZATIONAL MEMBERSHIP OF THE PARTIES

Donald Lee Andruska, Glen Ellyn, and Liane Toy Tsai, Wheaton, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

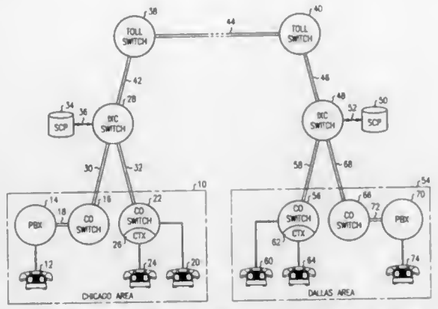
Filed Nov. 16, 1995, Ser. No. 556,328

Int. Cl.[6] H04M *3/00;3/42;7/00;* **H04Q** *11/04*

U.S. Cl. 379—196 **16 Claims**

1. In a telecommunication network having first and second subscribers connected to first and second telecommunication switches, respectively, a method for providing call origination screening of calls made by first subscribers to second subscribers comprising the steps of:

receiving, at a third switch disposed at a hierarchical level above the second switch, a call setup message generated in response to a call request made by one of the first subscribers via the first switch, the call setup message including a first group affiliation parameter defining one organization of which the one first subscriber is a member and a destination number of



one of the second subscribers called by the one of the first subscribers, said third switch being capable of direct call origination services;

locating a first record in a first database coupled to the third switch in response to receiving the call setup message, the located first record based on the destination number contained in the call setup message;

identifying a call screening parameter stored in said first record;

making a determination of whether the call will be allowed to terminate to the one of the second subscribers based on a comparison of the call screening parameter and the first group affiliation parameter, whereby call screening is based on membership of the one of the first subscribers in the one organization.

5,668,861

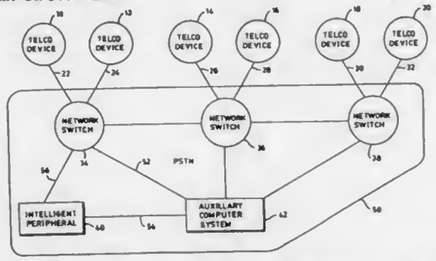
TELECOMMUNICATIONS SYSTEM WITH NOTIFICATION HOLD

Ronald F. Watts, Denton, Tex., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 23, 1993, Ser. No. 173,385

Int. Cl.[6] H04M *3/50*

U.S. Cl. 379—201 **4 Claims**



1. A method of notifying a calling telecommunications device, connected to a network switch, that a called telecommunications device, connected to a network switch, is requesting connection to the calling telecommunications device which has been placed on hold, the method comprising the steps of:

accepting a call by the network switch of said calling telecommunications device;

connecting said call to the network switch of said called telecommunications device and automatically storing at said network switch of said called telecommunications device a calling phone number;

placing on hold by said network switch of said called telecommunications device said call and notifying said calling telecommunications device of the hold;

receiving from said calling telecommunications device a signal to monitor the availability of said called telecommunications device;

disconnecting said calling telecommunications device from said network switch of the calling telecommunications device;

notifying said called telecommunications device that a connection was requested by said calling telecommunications device identified by said automatically stored calling phone number;

receiving at any time from said calling telecommunications device a discontinuation code to discontinue the notifying of the called telecommunications device of said call placed on hold;

reattaching said call after being discontinued by receiving from said calling telecommunications device a reattach code to resume the notifying of said called telecommunications device that a connection was requested by said calling telecommunications device;

receiving from said called telecommunications device a signal to request a connection between said calling and called telecommunications device;

notifying said calling telecommunications device that said called telecommunications device has given a signal to request connection between said calling and called telecommunications device; and

said network switch recognizing said codes within a telecommunications system.

5,668,862

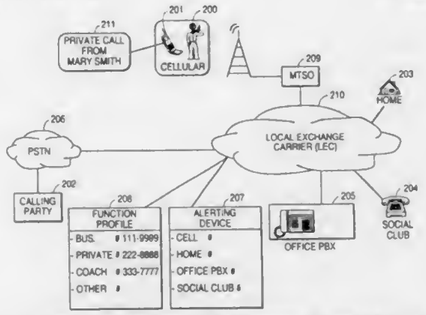
METHOD AND APPARATUS FOR PROVIDING USER CONTROLLED CALL MANAGEMENT SERVICES

Cecil H. Bannister; F. Marco Marchetti, both of Plano; Richard C. Mo, Dallas; Tod W. Switzer, Allen, and Dhawal Balkrishna Moghe, Plano, all of Tex., assignors to Northern Telecom Limited, Quebec, Canada

Division of Ser. No. 466,189, Jun. 6, 1995, Pat. No. 5,548,636, which is a continuation of Ser. No. 75,332, Jun. 11, 1993, abandoned. This application Mar. 1, 1996, Ser. No. 609,629

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **5 Claims**



1. A method for providing call screening to subscribers of a personal communications service, comprising the steps of:

defining a respective role for each of a plurality of directory numbers assigned to a subscriber of said personal communications service;

storing a list of said directory numbers and the respective role corresponding to each of said directory numbers in a subscriber database associated with said subscriber;

assigning a network address corresponding to a call alerting device used by said subscriber;

storing said network address in said subscriber database;

accessing said subscriber database when a calling party places a call to one of said directory numbers on said list;

identifying the respective role defined for said one of said directory numbers;

transmitting, via a public switched telephone network (PSTN), a first signal indicating the identified role to said call alerting device via said network address; and

transducing said first signal at said call alerting device and presenting said identified role to said subscriber.

5,668,863

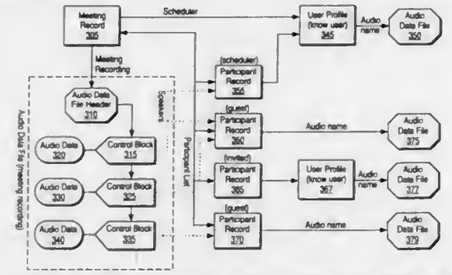
METHOD AND APPARATUS FOR RECORDING AND RETRIEVAL OF AUDIO CONFERENCES

David N. Bieselin, Menlo Park; Glenn A. Eaton, San Jose; Joseph A. McFadden, Palo Alto; Stuart A. Taylor, Menlo Park; Edward D. Tracy, Palo Alto, and Emil C. W. Wang, Menlo Park, all of Calif., assignors to Latitude Communications, Sunnyvale, Calif.

Continuation of Ser. No. 509,390, Jul. 31, 1995, Pat. No. 5,559,875. This application Apr. 26, 1996, Ser. No. 638,196

Int. Cl.[6] H04M *3/56;3/50*

U.S. Cl. 379—202 **32 Claims**



1. A method for recording an audio conference comprising the steps of:

prompting each conference participant to record a spoken name identifying the conference participant;

recording and storing in first audio data files in memory the spoken names of the conference participants, each first audio data file containing the spoken name of one conference participant;

capturing combined voice signals generated by conference participants during the conference and storing the captured combined voice signals in a conference data file in memory; and

providing first data links between the first audio data files comprising the spoken name of each conference participant and the conference data file.

5,668,864

DATA COMMUNICATION METHOD AND APPARATUS INCLUDING VOLATILE AND NON-VOLATILE STORAGE

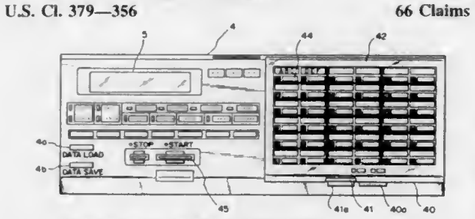
Mitsuhiro Kageyama, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 614,262, Mar. 12, 1996, Pat. No. 5,590,190, which is a continuation of Ser. No. 400,388, Mar. 3, 1995, abandoned, which is a continuation of Ser. No. 76,928, Jun. 16, 1993, abandoned, which is a continuation of Ser. No. 604,166, Oct. 29, 1990, abandoned. This application Sep. 27, 1996, Ser. No. 721,944

Claims priority, application Japan, Oct. 31, 1989, 1-281818; Oct. 31, 1989, 1-281820

Int. Cl.[6] H04M *1/27*

U.S. Cl. 379—356 **66 Claims**



1. A communication apparatus comprising:

a rewritable volatile memory for storing a plurality of addresses;

manual selecting means for manually selecting one of the addresses stored in said volatile memory;

transmitting means for transmitting data to the selected address;

a non-volatile storage device for storing the data to be transmitted by said transmitting means;

preserving means for preserving the plurality of addresses and the data which have been stored with a predetermined file name to be distinguishable from other data stored therein; and

reading means for reading the plurality of addresses, which has been preserved by said preserving means, out of said non-volatile storage device and storing the plurality of addresses into said volatile memory.

5,668,865

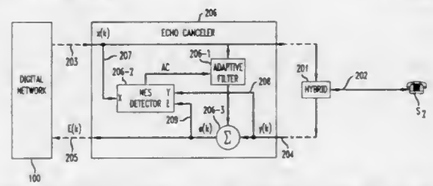
ECHO CANCELER E-SIDE SPEECH DETECTOR

Donald Lars Duttweiler, Rumson; Cheng Kim, Lincroft, and Ying Get Tao, Manalapan, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 26, 1996, Ser. No. 606,934

Int. Cl.[6] H04B *3/23;3/20*

U.S. Cl. 379—410 **14 Claims**



14. A method of operating an echo canceler, said echo canceler including an adaptive filter, adder circuit and first and second near-end speech detectors, said method comprising the steps of

receiving speech signals via a connection extending to a far-end source of speech signals and processing the received speech signals to derive a representation of the signal level of the far-end speech,

at said second near-end detector, responsive to the derivation of said signal level, determining as a function of said representation and a current value of a threshold variable if an output from said echo canceler has a magnitude larger than that of an echo signal only, and

at said second near-end detector, responsive to said signal having said larger magnitude and an absence of an indication of a presence of near-end speech from said first near-end speech detector, for decreasing the value of the threshold variable, otherwise increasing the value of the threshold variable.

5,668,866

APPARATUS FOR PROTECTING A SUBSCRIBER LINE INTERFACE CIRCUIT AGAINST OVERVOLTAGES

Hans O. Eriksson, Järfälla, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE95/00800, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO96/01015, PCT Pub. Date Jun. 28, 1995

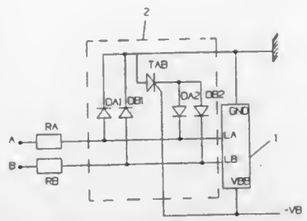
PCT Filed Jun. 28, 1995, Ser. No. 602,838

Claims priority, application Sweden, Jun. 28, 1994, 9402277

Int. Cl.[6] H04M *1/74;* **H02H** *9/04*

U.S. Cl. 379—412 **4 Claims**

1. An apparatus for protecting a subscriber line interface circuit against overvoltages exceeding a supply voltage source supplied to the subscriber line interface circuit, wherein said overvoltages occur on first and second input wires which are connected to said interface circuit via respective first and second input terminals of said interface circuit, wherein resistors are connected in series with respective said input wires, wherein said first and second input terminals are connected to anodes of respective first and second diodes, and wherein cathodes of the first and second diodes are



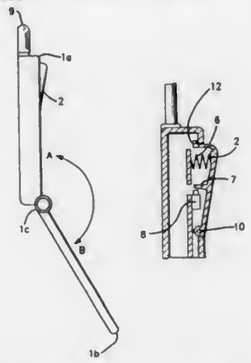
connected to a positive terminal of the supply voltage source, further wherein said first and second input terminals are also connected to cathodes of respective third and fourth diodes, wherein anodes of said third and fourth diodes are connected to a cathode of a thyristor, wherein an anode of the thyristor is connected to the positive terminal of the supply voltage source and a gate of said thyristor is connected to a negative terminal of said supply voltage source.

5,668,867

FOLDABLE PORTABLE TELEPHONE WITH IMPROVED ANTENNA GAIN

Michio Nagai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 356,674, Dec. 15, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 723,508
Claims priority, application Japan, Dec. 28, 1993, 5-335116
Int. Cl.[6] H04M *1/00;* **H04B** *1/38*
U.S. Cl. 379—433 **5 Claims**



1. A foldable portable telephone comprising:

a first casing having at least a receiver portion comprising an earpiece having means for facilitating passage of sound to a user's ear;

a second casing mounted on said first casing and movable toward and away from said first casing; and

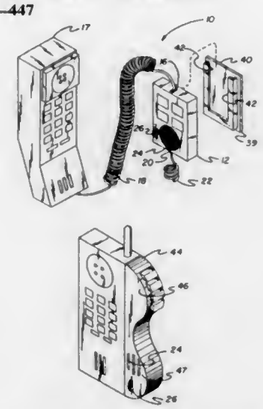
means for causing said receiver portion to protrude from said first casing when said first casing and said second casing are unfolded, such that an upper portion of said receiver portion projects from said first casing farther than a lower portion of said receiver portion, thereby to increase a spacing between a user's head and an antenna mounted adjacent said upper portion.

5,668,868

MEMORANDUM RECORDER FOR USE WITH A TELEPHONE

Tina L. Nordenstrom, 40800 Breezy Pass Rd. #C, Palm Desert, Calif. 92211

Filed Apr. 8, 1996, Ser. No. 628,986
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—447 **1 Claim**



1. A new and improved memorandum recorder for use with a telephone comprising, in combination:

a recorder unit including:

a housing with an upper semicircular portion having an arcuate edge and a planar edge and a lower semicircular portion having an arcuate edge and a planar edge continuous with the planar edge of the upper section whereby the arcuate edge of the upper portion and the arcuate edge of the lower portion form a valley therebetween at a central extent of the housing, a total length of the combination of the upper planar edge and the lower planar edge being a length of the telephone and adapted to be coupled thereto;

an input jack for accepting a communication line coupled to the telephone,

an output jack for accepting a communication line coupled to a telecommunication means,

a speaker with an associated volume control means for adjusting the volume of audio signals emined therefrom,

memory means comprising an EPROM situated within an interior space of the housing and adapted to store audio signals thereon, and

control means situated within the interior space of the housing and coupled to the input jack, output jack, speaker, and memory means, the control means adapted to allow communication between the input jack and output jack in a first mode of operation thereby allowing use of the telephone and telecommunication means, to allow storage of audio signals from a mouthpiece of the telephone via the input jack in a second mode of operation upon the depression of a record button, and to allow playback of stored audio signals via the speaker in a third mode of operation upon the depression of a playback button whereby a user may selectively control the playback of the audio signals by depressing a rewind button and a forward button;

said control means further adapted to record audio information received via the telecommunication means;

said control means also adapted to allowing operation of the telephone regardless in which mode of operation the control means is being employed;

said playback button and record button being situated on the arcuate edge of the upper portion of the housing;

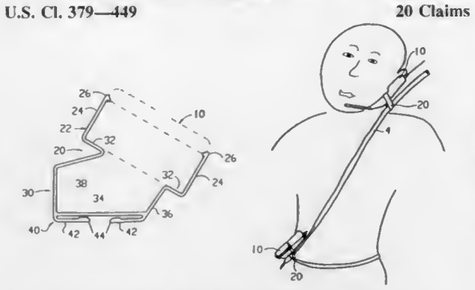
said speaker means being situated on a top surface of the lower portion of the housing.

5,668,869

MOBILE TELEPHONE HANDSET HOLDER

Raphael Zinno, 31 Edith Drive, Toronto, Ontario, Canada, M4R 1Y9

Filed Feb. 14, 1996, Ser. No. 601,607
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—449 **20 Claims**



1. A holder for a mobile telephone handset comprising

handset gripping means for gripping the handset, and

strap clipping means including a resilient clip arm spaced from a clip base attached to the handset gripping means, for slidably engaging the holder to a shoulder strap of a seat belt in an automobile,

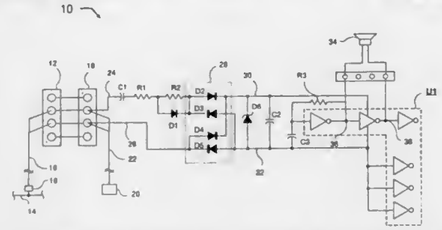
whereby the strap clipping means frictionally engages the shoulder strap to retain the holder supported by the shoulder strap at a selected position along the shoulder strap, such that the frictional engagement can be overcome by a user to slide the holder along the shoulder strap to thereby support the holder at .a different position, such that the handset is supported near a level of the user's shoulder during a telephone conversation.

5,668,870

AUDIBLE SIGNALING DEVICE FOR INFORMING WHEN A TELEPHONE LINE IS AVAILABLE OR IN USE

James E. Dahlquist, 947 Saratoga Dr., Palatine, Ill. 60067

Filed Dec. 21, 1995, Ser. No. 587,768
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—377 **11 Claims**



1. A line-powered telephone line signaling circuit and device for detecting and indicating the on-hook and off-hook status of a telephone line, comprising:

(a) circuit connector means for connection into the telephone line;

(b) a first capacitor for sensing voltage changes between on-hook and off-hook states of the telephone line;

(c) a first resistor connected in series to said first capacitor;

(d) a second resistor connected in series to said first resistor;

(e) a first diode connected in parallel to said second resistor;

(f) a bridge rectifier circuit including a second diode, third diode, fourth diode, and fifth diode, the bridge rectifier circuit connected to said second resistor and first diode and having a first output line and a second output line;

(g) a zener diode connected in parallel between the first output line and the second output line;

(h) a second capacitor connected in parallel to the zener diode; and

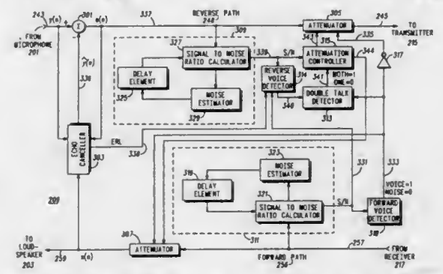
(i) output means connected in parallel to the second capacitor for producing auditory signals corresponding to on-hook and off-hook states of the telephone line, the output means being powered by telephone line voltage transitions occurring between on-hook and off-hook states of the telephone line which are electrically conveyed from the first capacitor.

5,668,871

AUDIO SIGNAL PROCESSOR AND METHOD THEREFOR FOR SUBSTANTIALLY REDUCING AUDIO FEEDBACK IN A CUMMUNICATION UNIT

Steven Adam Urbanski, Round Lake Beach, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,614
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—406 **28 Claims**



15. In an audio signal processor including a first signal path having a first audio signal and a second signal path having a second audio signal, wherein at least a portion of the first audio signal is coupled to the second signal path to produce a feedback audio signal on the second signal path, a method for substantially reducing audio feedback in a communication unit, comprising the steps of:

measuring a signal estimate and a noise estimate of the feedback audio signal; and

attenuating the second audio signal responsive to the measure of the signal estimate; and the noise estimate of the feedback audio signal.

5,668,872

INFORMATION PROCESSING METHOD AND SYSTEM

Hideki Morishima, Atsugi; Kiyonobu Endo, Yokohama; Susumu Matsumura, Kawaguchi; Hiroaki Hoshi, Yokohama; Koyo Hasegawa, Tokyo; Masakuni Yamamoto, Yamato; Eiji Yamaguchi, Zama, and Ichiro Iida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,261, Oct. 21, 1992, abandoned. This application Feb. 7, 1995, Ser. No. 385,374
Claims priority, application Japan, Oct. 25, 1991, 3-305705
Int. Cl.[6] H04N *7/167;* **G11B** *5/02*
U.S. Cl. 380—4 **19 Claims**

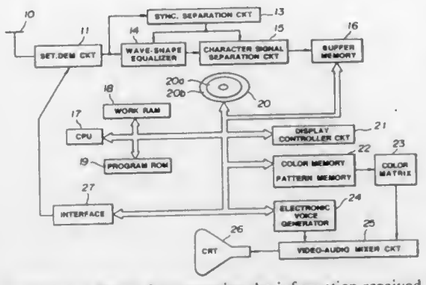
1. An information processing system comprising:

receiving means for receiving transmitted information, the information being coded or incomplete and in a non-usable form;

a self-contained recording medium, decoding information needed to demodulate the received information being pre-recorded on said self-contained recording medium, said self-contained recording medium having a first area in which the received information is to be written and a second area in which the decoding information is pre-recorded;

writing means for writing the information received by said receiving means in the first area of said recording medium, the received information remaining coded or incomplete and in a non-usable form;

reading means for reading out the pre-recorded decoding information from said recording medium; and



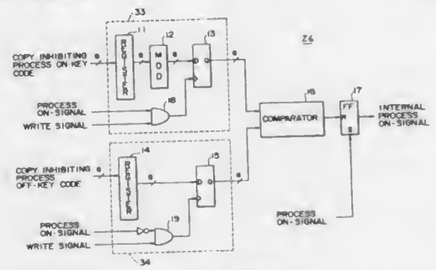
demodulating means for converting the information received by said receiving means to a usable form using the pre-recorded decoding information read out by said reading means.

5,668,873

VIDEO SIGNAL PROCESSOR WITH COPY PREVENTION FUNCTION

Etsuro Yamauchi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 404,998
Claims priority, application Japan, Mar. 27, 1994, 6-080892
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—5 **13 Claims**



1. A video signal processor comprising:

receiving means for receiving a digital video signal:

video signal transformation means for transforming the digital video signal to a standard analog television signal;

inhibitor means for inhibiting proper recording of the standard analog television signal;

a memory for storing a specific code inputted when enabling the inhibitor means, and also for storing a disable request code inputted in response to a request for disabling the inhibitor means;

means for judging the correspondence between the specific code and the disable request code outputted from the memory; and

means for deciding an operation to disable the inhibitor means in accordance with an output from the means for judging,

wherein the memory includes a plurality of registers, and at least one of the bit components of the specific code and the disable request code are stored dispersedly in the plurality of registers in the memory, and

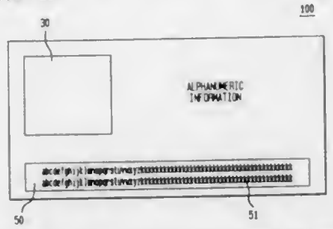
wherein the inhibitor means includes copy inhibit signal generator means and adder means for adding the standard analog television signal and the copy inhibit signal to each other; the means for deciding includes first and second registers for respectively storing the specific code and the disable request code outputted from the memory; and all of the adder means, copy inhibit signal generator means, first register, second register and means for judging are unified to form an integrated circuit.

5,668,874

IDENTIFICATION CARD VERIFICATION SYSTEM AND METHOD

David M. Kristol, Summit, and Lawrence P. O'Gorman, Madison, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1995, Ser. No. 396,307
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—23 **58 Claims**



1. A self-verifying identification card system for use with an identification card having an image and an image signature, wherein said image signature is derived from optical values contained within said image at at least one reference point, said system comprising:

a scanner for scanning the identification card, wherein said scanner reads said optical values associated with said at least one reference point in said image and reads said image signature; and

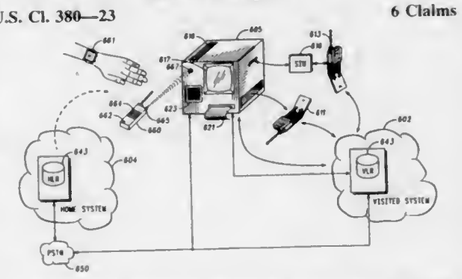
a processor coupled to said scanner for comparing said optical values associated with said at least one reference point in said image to optical values represented in said image signature.

5,668,875

METHOD AND APPARATUS FOR AUTHENTICATION IN A COMMUNICATION SYSTEM

Daniel Peter Brown, Elmhurst, and Louis David Finkelstein, Wheeling, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 282,832, Jul. 29, 1994, Pat. No. 5,537,474. This application Jul. 15, 1996, Ser. No. 683,590
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 380—23 **6 Claims**



2. A method of generating authentication information for use in autheticating a subscriber unit of a wireless communication system, the method comprising the steps of:

receiving a request for service from the subscriber unit;

generating a first authentication challenge based on a first authentication protocol; and

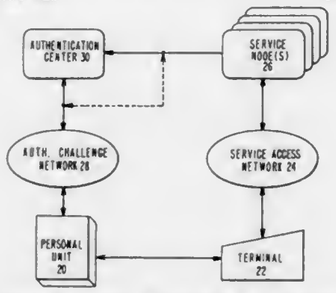
converting the first authentication challenge into a second authentication challenge in a second authentication protocol.

5,668,876

USER AUTHENTICATION METHOD AND APPARATUS

Johan Per Falk, Stockholm, and Björn Erik Rutget Jonsson, Järfälla, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 24, 1994, Ser. No. 264,939
Int. Cl.[6] H04L *9/32;9/00*
U.S. Cl. 380—25 **37 Claims**



22. A system for granting access to an electronic service, comprising:

a personal unit for receiving a challenge code, for receiving a user input, and generating a response code according to a received challenge code and said user input;

a terminal linked to an authentication center, said terminal receiving said response code; and

a network independent of said electronic service for sending said challenge code when access to a service is attempted; said network interconnecting

comparing means for comparing said response code generated by said personal unit to an expected response code and

permitting means for permitting access to said service only when a result of said comparison of said response code generated by said personal unit to said expected response code is accepted.

5,668,877

METHOD AND APPARATUS FOR STEPPING PAIR KEYS IN A KEY-MANAGEMENT SCHEME

Ashar Aziz, Fremont, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 258,272, Jun. 10, 1994, Pat. No. 5,588,060, and a continuation-in-part of Ser. No. 258,344, Jun. 10, 1994, Pat. No. 5,416,842. This application Dec. 2, 1994, Ser. No. 348,725
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 **40 Claims**

1. A method for a first data processing device (node I) to send data to a second data processing device (node J), comprising the steps of:

providing a secret value i and a first public value to said node I;

providing a context variable N_i to said node I;

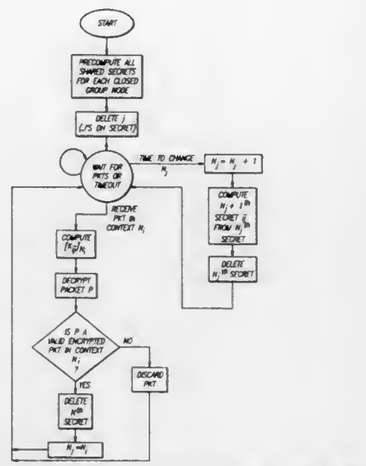
providing a secret value j, and a second public value to said node J;

said node I performing the steps of:

obtaining a certificate for node J and determining said second public value for node J from said certificate for node J;

computing a key $\{K_{ij}\}_{N_i}$ from a shared secret derived from said second public value, said secret value i, and said context variable N_i;

utilizing said key $\{K_{ij}\}_{N_i}$ to encrypt a randomly generated transient key K_p, and encrypting a data packet to be transmitted to node J using said key K_p;



said node I sending said data packet encrypted using said key K_p to said node J;

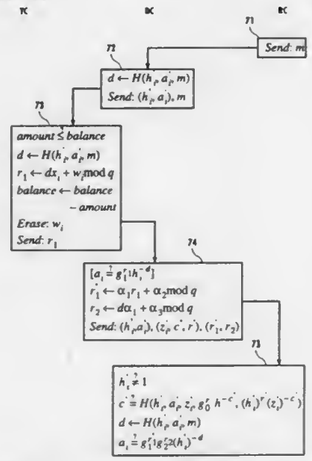
said node J notifying said node J of the current value of N_i.

5,668,878

SECURE CRYPTOGRAPHIC METHODS FOR ELECTRONIC TRANSFER OF INFORMATION

Stefanus Alfonsus Brands, Ioa Boudier-Bakkerlaan 143 (iii), XW Utrecht, Netherlands, 3582

Continuation-in-part of Ser. No. 203,231, Feb. 28, 1994, Pat. No. 5,521,980. This application Aug. 31, 1995, Ser. No. 521,768
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 **16 Claims**



1. A method for a user-controlled first computing device to reduce the computational burden of a tamper-resistant second computing device, the second computing device having a first and second secret key and having to perform a cryptographic action with respect to a public key corresponding to the first secret key, the method comprising the steps of:

computing by a third computing device, at least one number, by applying a one-way function to the second secret key and a first serial number;

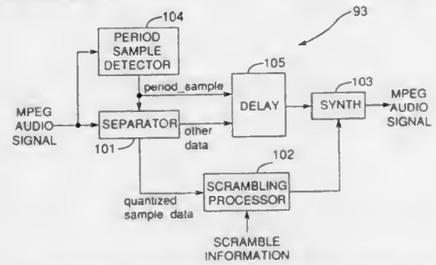
providing by the third computing device to the first computing device, the at least one number;
computing by the first computing device, information based on the at least one number, the information being synchronized with a second serial number of the tamper-resistant computing device;
providing by the first computing device to the second computing device, the information;
computing by the second computing device, at least one output, the output being based on the first secret key, the information, and an application of the one-way function to at least the second secret key and the second serial number; and
updating by the second computing device, the second serial number by applying an update function.

5,668,879

AUDIO SCRAMBLING SYSTEM FOR SCRAMBLING AND DESCRAMBLING AUDIO SIGNALS

Susumu Ibaraki, Toyonaka; Noboru Katta, Itami; Seiji Nakamura, Toyonaka, and Hiroki Murakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 321,766, Oct. 12, 1994, Pat. No. 5,617,476. This application Mar. 21, 1996, Ser. No. 619,236
Claims priority, application Japan, Oct. 12, 1993, 5-254183; Dec. 7, 1993, 5-306386; Dec. 7, 1993, 5-306387
Int. Cl.[6] H04K *1/02;1/00;* **H04M** *1/68*
U.S. Cl. 380—41 **15 Claims**



1. A scrambling system comprising a scrambling apparatus and a descrambling apparatus for scrambling and descrambling digital audio codes having a plurality of sub-band units, each sub-band unit comprising at least a scale factor and a quantized sample data quantized after scaling with the scale factor,
said scrambling apparatus comprising:
first detection means for detecting a sample period during which said quantized sample data is present; and
scrambling means for scrambling only said quantized sample data at said sample period; and
said descrambling apparatus comprising:
second detection means for detecting a sample period during which said quantized sample data is present; and
descrambling means for descrambling only said scrambled quantized sample data at said sample period.

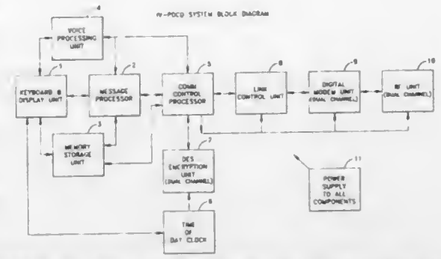
5,668,880

INTER-VEHICLE PERSONAL DATA COMMUNICATIONS DEVICE

Philip Michael Alajajian, 336 Wellman Ave., North Chelmsford, Mass. 01863

Continuation of Ser. No. 95,254, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 726,699, Jul. 8, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,499
Int. Cl.[6] H04L *9/00;* **H04B** *1/69;7/216;* **H04J** *13/02*
U.S. Cl. 380—49 **20 Claims**

8. A device for two-way communications of digital information signals over an electromagnetic medium between geographically



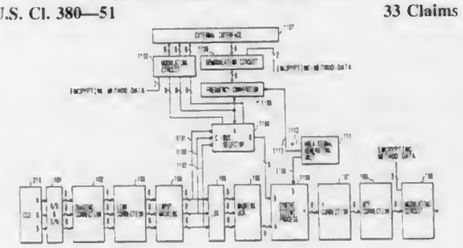
separate and distinct entities, each said entity being equipped with said device and identifiable by a unique alpha-numeric identifier; said device consisting of a man-machine interface means, a message processor means, a communications control processor means, and a transceiver means;
said man-machine interface means providing a mechanism for input of said alpha-numeric entity identifiers and information from said operator;
said man-machine interface means communicating with said message processor for transfer of said alpha-numeric entity identifiers and operator-entered information;
said message processor means providing a menu generation and control function for said man-machine interface means, and a function for formatting of said operator-entered information;
said message processor means interfaces with said communications control processor means for transfer of said alpha-numeric entity identifiers and said operator-entered information;
said communications control processor means providing a function for reformatting said operator-entered information received from said message processor means and said transceiver means, a function for identifying network communications parameter values from said alpha-numeric entity identifiers, and a function for configuring transceiver subsystems with said network communications parameter values;
said communications control processor means interfaces with said transceiver means for conveyance of said operator-entered message information and said network communications parameter values;
said transceiver means comprising a link control unit means, a digital modem unit means, and a radio frequency unit means to support electro-magnetic communications between devices.

5,668,881

ENCRYPTION OF DATA IN DIFFERENT FORMATS

Mitsuru Kurita, Tokyo; Yasumichi Suzuki, and Koichi Ishimoto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 126,649
Claims priority, application Japan, Sep. 28, 1992, 4-258212
Int. Cl.[6] G09C *5/00;* **H04N** *1/64*
U.S. Cl. 380—51 **33 Claims**



1. An image processing apparatus comprising:
first encrypting means for encrypting image data, said first encrypting means being capable of supplying the encrypted image data to a first apparatus; and

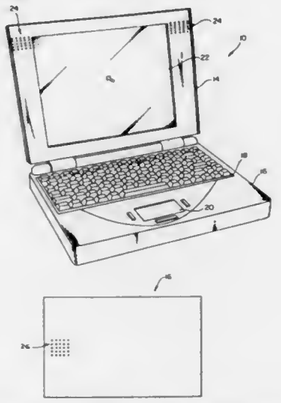
second encrypting means for encrypting image data, the format of which is different from that of said image data encrypted by said first encrypting means, said second encrypting means being capable of supplying encrypted image data to a second apparatus different from the first apparatus,
wherein said first and second encrypting means independently execute the encryption.

5,668,882

NOTEBOOK COMPUTER SPEAKERS

Scott Nobel Hickman; Mark A. Smith; Brian G. Spreadbury, all of Corvallis, and Dennis R. Esterberg, Philomath, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 25, 1996, Ser. No. 637,948
Int. Cl.[6] H04R *5/00*
U.S. Cl. 381—24 **13 Claims**



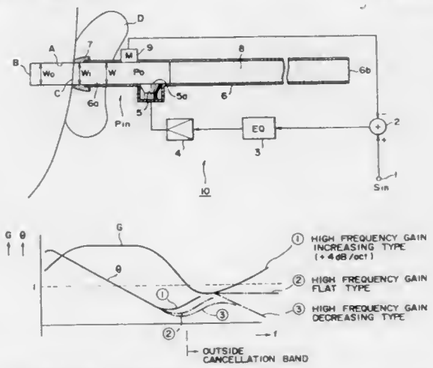
1. A portable computer comprising: an upper housing, a lower housing, a display screen, a processor board, a keyboard, a first electro-magnetic speaker and a second electro-magnetic speaker; and
wherein the display screen and first speaker reside in the upper housing, and the processor board, keyboard and second speaker reside in the lower housing; and
wherein the lower housing defines a speaker-grill at a base surface of the portable computer, the second speaker being mounted in proximity to the speaker-grill and being oriented downward to project sound waves through the speaker-grill; an internal speaker-box for the second speaker defined by the base surface and adjacent surfaces within the lower housing, the internal speaker box defining a high pass acoustic filter for the second speaker; and
wherein an external speaker box is defined by the base surface and a support surface upon which the portable computer base surface rests, the external speaker box defining a low pass acoustic filter for the second speaker, the internal speaker box and external speaker box defining a bandpass acoustic filter for the second speaker.

5,668,883

HEADPHONE APPARATUS INCLUDING AN EQUALIZER SYSTEM HAVING AN OPEN LOOP CHARACTERISTIC WITH A RISING SLOPE OUTSIDE THE CANCELLATION BAND

Kensaku Abe, Saitama, and Takahiro Muraguchi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,723
Claims priority, application Japan, Sep. 5, 1994, 6-234522
Int. Cl.[6] A61F *11/06*
U.S. Cl. 381—72 **4 Claims**



1. A headphone, comprising:
an acoustic pipe having an inner diameter substantially equal to an inner diameter of an external auditory canal of a user of the headphone, said acoustic pipe having a mounting portion provided at one end thereof for being mounted on an outer ear of the user, said acoustic pipe having an acoustically non-reflective end at another end thereof;
a loudspeaker unit provided on one side of said acoustic pipe with a sound emitting face thereof facing an inside of said acoustic pipe;
a microphone unit provided on another side of said acoustic pipe with a sound collecting face thereof facing the inside of said acoustic pipe; and
a feedback circuit for feeding back an output signal of said microphone unit to an input side of said loudspeaker unit, said feedback circuit including equalizer means to which the output signal of said microphone unit and a signal to be supplied to said loudspeaker unit are supplied, said equalizer means having an open loop characteristic, wherein an attenuation characteristic of said equalizer means in a frequency band higher than a frequency band in which noise can be canceled has a rising slope.

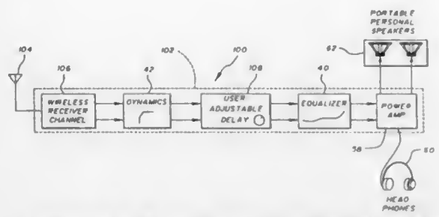
5,668,884

ENHANCED CONCERT AUDIO SYSTEM

Roy Barry Clair, Jr., Lititz, and Ronald D. Borthwick, Manheim, both of Pa., assignors to Clair Bros. Audio Enterprises, Inc., Lititz, Pa.

Continuation of Ser. No. 213,136, Mar. 15, 1994, Pat. No. 5,432,858, which is a continuation of Ser. No. 922,448, Jul. 30, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 380,511
Int. Cl.[6] H04B *3/00*
U.S. Cl. 381—82 **8 Claims**

1. An audio enhancement system comprising:
at least one main electro-acoustic transducer for generating a primary sound in response to a first electrical signal;
transmission means for converting said first electrical signal into a transmission signal and for wirelessly transmitting said transmission signal;
at least one personal electro-acoustic transducer unit, said at least one personal electro-acoustic transducer unit including



at least one auxiliary electro-acoustic transducer having a low maximum output sound level, wherein said maximum output sound level can be heard by people only within a range of several feet of said auxiliary electro-acoustic transducer in ambient sound, and

a receiver for receiving and converting said transmission signal into a second electrical signal, said at least one auxiliary electro-acoustic transducer generating an augmenting sound in response to said second electrical signal; and

delay means for delaying at least one of said first and said second electrical signals by a period of time substantially equal to an amount of time required for said primary sound to reach said at least one personal unit, such that said augmenting sound augments said primary sound to enhance audio perception by at least one user within said range of said at least one auxiliary electro-acoustic transducer, wherein said transmission means transmits said transmission signal via a single predetermined channel, wherein said at least one personal electro-acoustic transducer unit includes said delay means for delaying said second electrical signal by a period of time substantially equal to an amount of time required for said primary sound to reach said at least one personal unit.

5,668,885

LOW FREQUENCY AUDIO CONVERSION CIRCUIT

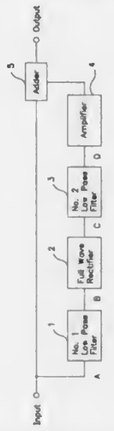
Mikio Oda, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1996, Ser. No. 607,435

Claims priority, application Japan, Feb. 27, 1995, 7-038330

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—98 **2 Claims**



1. A low frequency audio conversion circuit comprising:

a first low pass filter for preferentially passing a low frequency audio component of an input audio signal lower than the lowest frequency which can be reproduced by a speaker,

a full wave rectifier coupled to said first low pass filter, for producing even-numbered harmonics of the low frequency audio component passed by said first low pass filter,

a second low pass filter coupled to said full wave rectifier, for passing a signal which includes secondary harmonics to the relative exclusion of other even-numbered harmonics supplied from said full wave rectifier,

an amplifier, coupled to said second low pass filter, for amplifying the signal passed by said second low pass filter to produce an output signal, and

an adder for adding the output signal from said amplifier and the input audio signal, to produce an output audio signal.

5,668,886

LOUDSPEAKER STRUCTURE

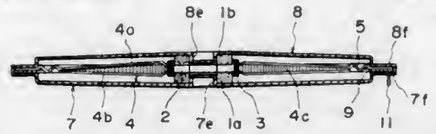
Yoshio Sakamoto, and Shuhei Ohta, both of Hachioji, Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan

Continuation of Ser. No. 219,528, Mar. 29, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 662,291

Claims priority, applicatinn Japan, Mar. 30, 1993, 5-071625

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—199 **5 Claims**



1. A structure of a loudspeaker having two magnets magnetized in the thickness direction and disposed with the same poles being faced each other, a magnetic member interposed between the two magnets, and a diaphragm with a voice coil disposed in a magnetic field generated in the vicinity of the outer circumference of the magnetic member, said diaphragm and a suspension bonded to the outer circumference of said diaphragm being disposed at a level in the winding width range of said voice coil, wherein said magnets are held by holding sections formed on two outer frames of the loudspeaker, said outer frames having sound radiating areas, and the outer circumference areas of said frames holding the outer circumference areas of said suspension wherein said holding sections of said outer frames are projections formed on a central area of said outer frames and extending inwardly.

5,668,887

COATING DENSITY ANALYZER AND METHOD USING NON-SYNCHRONOUS TDI CAMERA

H. Galen Parker, Rochester, and Richard Dean Young, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 891,318, May 29, 1992, Pat. No. 5,533,139. This application Apr. 20, 1995, Ser. No. 425,640

Int. Cl.[6] G01N *21/00*

U.S. Cl. 382—108 **17 Claims**

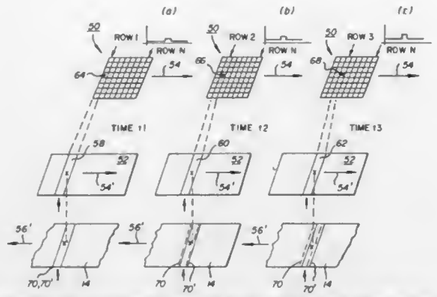
1. A method of detecting streak imperfections in elongated moving webs comprising the steps of:

moving the web to be imaged in a longitudinal direction of movement through an imaging region at a predetermined rate of movement;

illuminating said moving web in said imaging region with light from a light source;

providing a time-delay integrating camera having an array of light sensitive, charge-coupled, image sensor elements, each image sensor element providing discrete light sensitive element pixel charge values dependent on the intensity of light impinging thereon from a discrete pixel image area imaged thereon;

imaging said imaging region of said illuminated moving web onto said time-delay integrating camera array;



shifting the pixel charge values from one discrete light sensitive element to the next discrete light sensitive element across said array during a shift clock cycle time at a shift clock frequency asynchronously related to said rate of movement of said web through said imaging region such that the discrete pixel areas of imaging region imaged by successive light sensitive elements across said array change over the time that the pixel charge values are shifted and summed through all of the successive light sensitive elements;

accumulating the shifted and summed pixel charge values; and

processing the accumulated pixel charge values to provide an enhanced image of any streak imperfections in said moving web extending in said direction of movement.

5,668,888

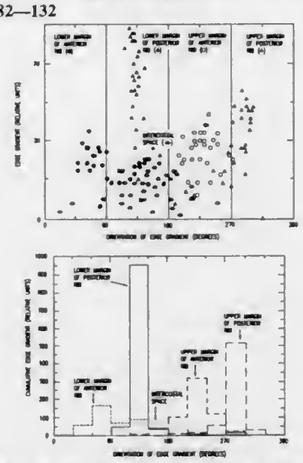
METHOD AND SYSTEM FOR AUTOMATIC DETECTION OF RIBS AND PNEUMOTHORAX IN DIGITAL CHEST RADIOGRAPHS

Kunio Doi, Willowbrook, Ill., and Shigeru Sanada, Iwademachi, Japan, assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 617,080, Nov. 21, 1990, abandoned. This application Dec. 29, 1993, Ser. No. 174,175

Int. Cl.[6] G06G *7/60*

U.S. Cl. 382—132 **33 Claims**



1. A method for the detection of a anatomic feature in a chest radiograph, comprising:

(a) defining plural regions of interest in said radiograph;

(b) determining edge gradients in at least one of said plural regions of interest and corresponding orientations of said edge gradients for each of a plurality of pixels included in said at least one of said regions of interest;

(c) determining a cumulative edge gradient of the edge gradients and corresponding orientations determined in said at least one of said plural regions of interest in step (b) by summing in said at least one of said plural regions of interest the edge gradients having the same orientation; and

(d) detecting at least one edge of said anatomic feature based upon the cumulative edge gradient determined in said at least one of said plural regions of interest, comprising,

(d1) determining which regions of interest in aid cumulative edge gradient have an orientation within a predetermined range of orientations; and

(d2) determining a location of an edge of said anatomic feature based on locations of regions of interest which are determined in step (d1) to have said orientation within said predetermined range of orientations; and

(e) producing a representation of said anatomic feature using said at least one detected edge.

5,668,889

APPARATUS FOR DETERMINING AN IMAGE POSITION, AND METHOD FOR ADJUSTING READ-OUT CONDITIONS AND/OR IMAGE PROCESSING CONDITIONS FOR A RADIATION IMAGE

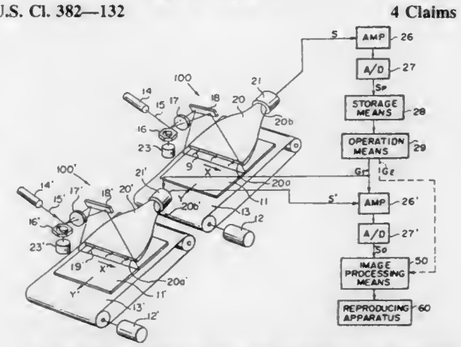
Shoji Hara, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 687,263, Apr. 18, 1991, Pat. No. 5,481,623. This application Jun. 7, 1995, Ser. No. 478,404

Claims priority, application Japan, Apr. 19, 1990, 2-103393; Apr. 26, 1990, 2-111147; Apr. 27, 1990, 2-114610; Jun. 21, 1990, 2-163140

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **4 Claims**



1. A method for adjusting read-out conditions and/or image processing conditions for a radiation image, wherein a first image signal made up of a series of image signal components representing a radiation image, in which an object image is embedded at part, is obtained by exposing a stimulable phosphor sheet, on which the radiation image has been stored, to stimulating rays, which cause the stimulable phosphor sheet to emit light in proportion to the amount of energy stored thereon during its exposure to radiation, the emitted light being detected,

a second image signal representing the radiation image is thereafter obtained by again exposing the stimulable phosphor sheet to stimulating rays, the light emitted by the stimulable phosphor sheet being detected, and

read-out conditions, under which the second image signal is to be obtained, and/or image processing conditions, under which the second image signal having been obtained is to be image processed, are adjusted on the basis of the first image signal,

the method for adjusting read-out conditions and/or image processing conditions for a radiation image comprising the steps of:

i) detecting a change in said first image signal at an edge of said object image,

ii) thereby finding a plurality of points, which are spaced apart from each other and located at positions in the vicinity of

the edge of said object image, said positions being slightly spaced apart from said object image,

iii) creating a probability density function of the image signal components of said first image signal corresponding to a region, which is surrounded by lines connecting the plurality of the thus found points and which approximately corresponds to said object image, and

iv) adjusting the read-out conditions and/or the image processing conditions on the basis of the results of an analysis of said probability density function.

5,668,890

METHOD AND APPARATUS FOR THE AUTOMATIC ANALYSIS OF DENSITY RANGE, COLOR CAST, AND GRADATION OF IMAGE ORIGINALS ON THE BASIS OF IMAGE VALUES TRANSFORMED FROM A FIRST COLOR SPACE INTO A SECOND COLOR SPACE

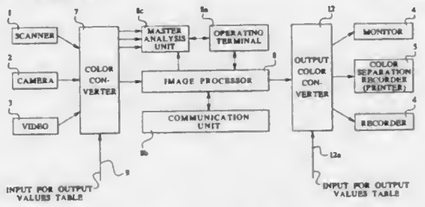
Kurt-Helfried Winkelman, Kiel, Germany, assignor to Linotype-Hell AG, Eschborn, Germany

Continuation of Ser. No. 299,140, Sep. 1, 1994, abandoned, which is a continuation of Ser. No. 43,276, Apr. 6, 1993, abandoned. This application Aug. 19, 1996, Ser. No. 699,189

Claims priority, application Germany, Apr. 6, 1992, 42 11 444.6; Apr. 2, 1993, 43 10 727.3

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—167 **13 Claims**



1. A method for master analysis of an image original to be reproduced by evaluating image values acquired by point-by-point and line-by-line trichromatic scanning of an image original with an image processing input device, comprising the steps of:

transforming each scanned image value of a first RGB color space allocated to the input device into: a corresponding image value of a CIEXYZ color value system as a reference color system based on visual properties of the human eye, and then transforming each image value in the CIEXYZ system into a corresponding image value of a device independent second color space that is independent of the first color space, said second color space having an equidistant three-dimensional construction and is in conformity with human sensation, the image values of the second color space including a luminance component and first and second color components; and carrying out an automatic master analysis of the image original for calculating setting values for the image processing for image scope, image gradation, and color cast on the basis of the transformed image values of the second color space without manual intervention by an operator.

5,668,891

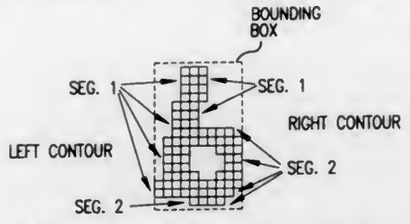
METHODS FOR DETERMINING FONT ATTRIBUTES OF CHARACTERS

Zhigang Fan, Webster, N.Y.; Robert Cooperman, Middlesex County; Robert Shuchatowitz, Brighton, both of Mass.; Lucy Hadden, La Jolla, Calif.; Emil Raincro, Penfield, and Frederick Roberts, Jr., Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1995, Ser. No. 369,440

Int. Cl.[6] G06K *9/00;9/46*

U.S. Cl. 382—168 **24 Claims**



1. A method for estimating at least one stroke-based font attribute of a group of characters of an input image independently of any character identification information of the group of characters, comprising:

decomposing each character of the group of characters into strokes;

generating, for each stroke, two best fit parabolas, each best fit parabola having parameters;

classifying each stroke based on the parameters from the two best fit parabolas corresponding to that stroke, each best fit parabola having a curvature parameter, an orientation parameter and a position parameter;

forming at least one histogram from the classified strokes;

identifying at least one frequency peaks of the at least one stroke histogram; and

estimating at least one stroke-based attribute based on the at least one identified frequency peak.

5,668,892

TABLE RECOGNITION APPARATUS

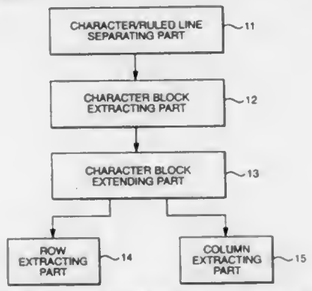
Katsuhiko Itonori, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 138,203, Oct. 20, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,099

Claims priority, application Japan, Oct. 27, 1992, 4-310861

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—177 **2 Claims**



1. A table recognition apparatus for recognizing a table image including coexistent characters and ruled lines, said table recognition apparatus comprising:

character/ruled line separating means for separating said characters from said ruled lines in said table image;

character block extracting means for extracting character blocks having edges defined by said characters of said table image which are separated from said ruled lines by said character/ruled line separating means; and

character block extending means for extending said character blocks extracted by said character block extracting means, wherein said character block extending means examines said edges of said character blocks in vertical and horizontal directions, and extends said edges of said character blocks horizontally and vertically until said edges are aligned with edges of a largest character block in closest proximity, and wherein said character block extending means continues to extend said edges of each character block until said edges cannot be extended without overlapping edges of another character block.

5,668,893

METHOD FOR DETERMINING ORIENTATION OF CONTOUR LINE SEGMENT IN LOCAL AREA AND FOR DETERMINING STRAIGHT LINE AND CORNER

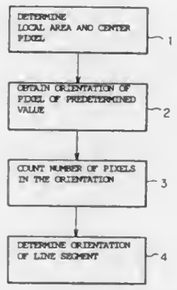
Shinji Kanda; Jun Wakitani; Tsugito Maruyama, and Toshihiko Morita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 70,450, Jun. 2, 1993, Pat. No. 5,586,199. This application Jul. 8, 1996, Ser. No. 676,512

Claims priority, application Japan, Oct. 2, 1991, 3-255353; Apr. 13, 1992, 4-092996

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—197 **41 Claims**



2. A computer readable product storing at least one program, for determining an orientation of a local line segment in a contour in a local area of a binary contour image, in a storage memory unit, where said at least one program when executed by a processing unit, causes the processing unit and its associated hardware to carry out the steps of:

a first step for obtaining the numbers of pixels each having a first predetermined value and located in a plurality of orientations around one of plural pixels, located in the local area and having said first predetermined value, wherein the pixels are stored in the storage memory unit; and

a second step for determining that a local line segment exists in an orientation in which the number of pixels located in the orientation is greater than a second predetermined value using the processing unit.

5,668,894

METHOD FOR PROCESSING THREE-DIMENSIONAL SHAPE DATA

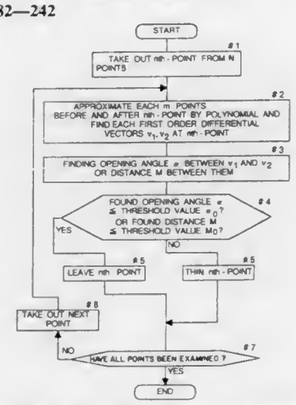
Seiji Hamano, Osaka; Takashi Ichiyanagi, Hirakata; Tsuyoshi Nomura, Kyoto, and Kouhei Hamamura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 22, 1994, Ser. No. 277,308

Claims priority, application Japan, Jul. 23, 1993, 5-182580

Int. Cl.[6] G06T *5/30*

U.S. Cl. 382—242 **6 Claims**



1. A method for processing three-dimensional shape data, comprising:

a first step of obtaining a plurality of data points positionally indicative of respective surface points located along a surface of an object having a three-dimensional shape;

a second step of extracting one of said data points as a to-be-processed data point;

a third step of extracting a predetermined plural number of first data points among said data points which precede said to-be-processed data point, and extracting a predetermined plural number of second data points among said data points which succeed said to-be-processed data point;

a fourth step of subjecting said first data points and said to-be-processed data point to a polynomial approximation to obtain a first approximated line of said first data points and said to-be-processed data point;

a fifth step of subjecting said second data points and said to-be-processed data point to a polynomial approximation to obtain a second approximated line of said second data points and said to-be-processed data point;

a sixth step of obtaining a first unit vector which is tangential said first approximated line and which extends from said to-be-processed data point, and a second unit vector which is tangential said second approximated line and which extends from said to-be-processed data point;

a seventh step of finding an opening angle between said first and second unit vectors;

an eight step of comparing said opening angle with a predetermined threshold opening angle value;

a ninth step of thinning said to-be-processed data point and not storing said to-be-processed data point in a storage unit when said opening angle is larger than said threshold opening angle value, and leaving said to-be-processed data point as is without thinning and storing said to-be-processed data point in the storage unit when said opening angle is not larger than said threshold opening angle value; and,

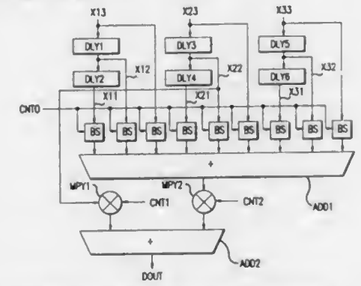
a tenth step of repeating said second through ninth steps for each of the remaining data points such that each remaining data point is extracted and processed as said to-be-processed data point.

5,668,895

DIGITAL FILTER FOR IMAGE PROCESSING

Motohiro Yamazaki, and Yasutoshi Morita, both of Tokyo, Japan, assignors to Nippon Precision Circuits Ltd., Tokyo, Japan

Continuation of Ser. No. 427,471, Apr. 24, 1995, abandoned, which is a continuation of Ser. No. 124,082, Sep. 20, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 621,372
Claims priority, application Japan, Oct. 14, 1992, 4-276002
Int. Cl.[6] G06K *9/40*
U.S. Cl. 382—260 7 Claims



2. A digital filter for image processing, comprising:

a plurality of bit shifters for separately and simultaneously multiplying picture element data of a k×k matrix by a coefficient which corresponds to the respective element, where:

k is an odd number and k≧3,

each said coefficient is only equal to $1/2^n$ where n is an integer,

at least one of said coefficients is different from another of said coefficients, and

each of said picture element data is input into corresponding bit shifters in a parallel form;

a first adder circuit for adding output data of each of said bit shifters;

a first multiplier circuit for multiplying picture element data of a center picture element of said k×k matrix by a predetermined coefficient;

a second multiplier circuit for multiplying output data of said first adder circuit by a predetermined coefficient other than 1; and

a second adder circuit for adding output data of said first multiplier circuit and that of said second multiplier circuit to produce output data which is picture element data of said center picture element after digital filtering by said digital filter.

5,668,896

METHOD OF AND APPARATUS FOR PROCESSING IMAGE HAVING A PLURALITY OF IMAGE AREAS

Hideaki Kitamura; Katsuya Yamaguchi, and Hiroshi Shibazaki, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 6,206, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 586,133, Sep. 21, 1990, abandoned. This application May 28, 1996, Ser. No. 654,024
Claims priority, application Japan, Sep. 21, 1989, 1-245985; Jan. 8, 1990, 2-2175
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—282 6 Claims

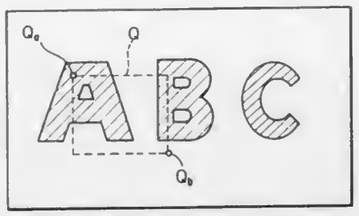
1. A method of processing an image, comprising the steps of:

assigning initial colors to image areas of an image;

generating a table in which the initial colors are registered for the image areas, respectively;

displaying the image and thereby creating a displayed image;

selecting on of the initial colors to thereby determine a selected color;



designating a two-dimensional closed graphic on the displayed image, so that two-dimensional closed graphic intersects with at least one image area having the selected color and encompasses at least part of the at least one image area of the selected color and at least part of an image area not having the selected color;

determining as an objective area any image area having the selected color which intersects with the two-dimensional closed graphic and has points encompassed by the two-dimensional closed graphic; and

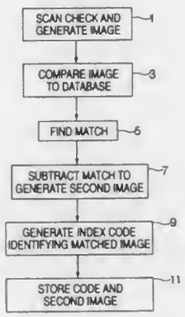
changing the table so that the initial color of areas-to-be-processed is converted to a designated color, the areas-to-be-processed being: (1) the objective image area or (2) all of the areas of the image other than the objective image area.

5,668,897

METHOD AND APPARATUS FOR IMAGING, IMAGE PROCESSING AND DATA COMPRESSION MERGE/PURGE TECHNIQUES FOR DOCUMENT IMAGE DATABASES

Salvatore J. Stolfo, 80 Kenilworth Rd., Ridgewood, N.J. 07450

Continuation-in-part of Ser. No. 259,527, Jun. 14, 1994, which is a continuation-in-part of Ser. No. 224,273, Apr. 7, 1994, abandoned, and a continuation-in-part of Ser. No. 213,795, Mar. 15, 1994, Pat. No. 5,497,486. This application Jun. 7, 1995, Ser. No. 488,333
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—283 18 Claims



1. A method for processing at least two images and storing the images in a database, comprising the steps of:

(a) scanning the image to create a first digital image thereof;

(b) comparing said first digital image against a codebook of stored digital images;

(c) matching said first digital image with one of said stored digital images;

(d) producing an index code identifying said one of said stored digital images as having matched said first digital image;

(e) subtracting said one of said stored digital images from said first digital image to produce a second digital image;

(f) storing said second digital image together with its respective index code as a record in the database;

(g) repeating steps (a) through (g) at least once for another image;

(h) clustering said stored images with their respective index codes based upon the use of at least one key, wherein said at least, one key comprises a first key and second key;

(i) computing said first key for each record in the database by extracting at least a portion of a first field;

(j) merge sorting the records in the database using said first key;

(k) comparing to each other a predetermined number of sequential reports sorted according to said first key to determine if one or more of the records match;

(l) storing identifiers for any matching records;

(m) computing said second key for each record in the database by extracting at least a portion of a second field;

(n) merge sorting the records in the database using said second key;

(o) comparing to each other a predetermined number of sequential records sorted according to said second key to determine if one or more of the records match;

(p) storing identifiers for any matching records;

(q) creating union of said stored identifiers; and

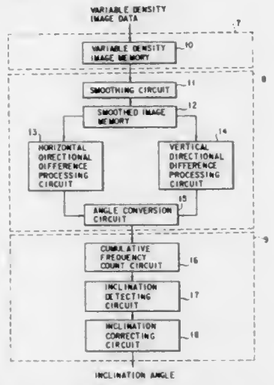
(r) subjecting said union to transitive closure.

5,668,898

DEVICE FOR DETECTING THE INCLINATION OF IMAGE

Seiji Tatsuta, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1994, Ser. No. 276,117
Claims priority, application Japan, Jul. 23, 1993, 5-182568
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—290 5 Claims



1. An inclination detecting device which is used for a document image-reading device and which reads a document image and detects inclinations of characters and graphics in the document without reference to a positional relationship among a plurality of characters in the document image even if the plurality of characters are scattered, said inclination detecting device comprising:

variable density image memory means for storing at least part of a variable density image obtained as a result of optically scanning a document image;

density varying direction-detecting means for detecting a density varying direction from the variable density image stored in the variable density image memory means; and

inclination detecting means for detecting an inclination of characters and graphics in the document from a distribution of density varying directions detected by the density varying direction detecting-means;

said density varying direction-detecting means including:

means for detecting a first density varying direction which is determined by a brightness of at least three pixels which satisfy first predetermined positional relationships, and a second density varying direction which is determined by another brightness of at least three pixels which satisfy second predetermined positional relationships, said three pixels which determine the first density varying direction and said three pixels which determine the second density varying direction differing from each other at least partially;

means for controlling a detection output on the basis of components of the first and second density varying directions;

a horizontal directional difference processing circuit for calculating horizontal directional difference between the brightness of a target pixel and the brightness of a pixel adjacent thereto in a horizontal direction;

a first vertical directional difference processing circuit for calculating a first vertical directional difference between a brightness of the target pixel and a brightness of a pixel adjacent thereto in a vertical direction;

a second vertical directional difference processing circuit for calculating a second vertical directional difference by delaying the vertical directional difference obtained by the first vertical directional difference processing circuit and by reversing a sign of the vertical directional difference; and

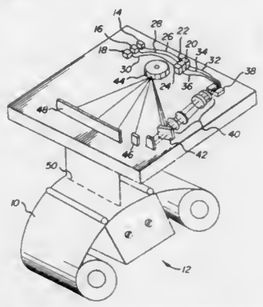
an angle conversion circuit for calculating a first density varying direction on the basis of a ratio of the horizontal directional difference to the first vertical directional difference and for calculating a second density varying direction on the basis of the ratio of a horizontal directional difference to the second vertical directional difference.

5,668,899

OPTICAL RADIATION COUPLER FOR AN OPTICAL FIBER

Bradley S. Jadrich, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1996, Ser. No. 638,899
Int. Cl.[6] G02B *6/32*
U.S. Cl. 385—33 12 Claims



1. Apparatus for coupling a radiation beam to an optical fiber, said apparatus comprising:

means for holding a received optical fiber having a radiation-receiving end;

a housing adapted to receive the radiation beam along an optical path toward the end of a received optical fiber;

a lens in the housing along the optical path to interact with the beam;

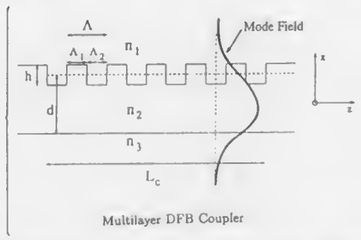
a flexure for angular and longitudinal alignment of at least one of: (i) the lens and (ii) the optical fiber holding means, relative to the other of (i) the lens and (ii) the optical fiber holding means, for positioning and focusing of the beam on the radiation-receiving end of a received optical fiber wherein the flexure holds the lens with three degrees of freedom of movement relative to the radiation-receiving end of the received optical fiber.

5,668,900

TAPER SHAPES FOR SIDELOBE SUPPRESSION AND BANDWIDTH MINIMIZATION IN DISTRIBUTED FEEDBACK OPTICAL REFLECTION FILTERS

Brent Little, Cambridge, Mass., and Chi Wu, Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 1, 1995, Ser. No. 548,304
Int. Cl.[6] G02B *6/34*; H01S *3/08*
U.S. Cl. 385—37 **8 Claims**



Multilayer DFB Coupler

1. A distributed feedback optical reflection filter coupler wherein the interaction strength reflection function along the length z of the coupler, is specified by the design:

$$K_S(z)=L_0(z)+SL_1(z)+S^2L_2(z)+S^3L_3(z)$$

where $K_S(z)$ is the normalized interaction strength along the propagation direction, S is the desired sidelobe level in ldBl, $L_i(z)$ (i=0,1,2,3) are functions of the propagation distance z, and the functions $L_i(z)$ are given by

$$L_i(z)=\frac{4}{L_c}\sum_{j=1}^{6} b_{i,j}\cos\left((2j-1)\pi\frac{z}{L_c}\right)$$

where L_c is the physical length of the coupler, and the set of constant coefficients $b_{i,j}$ are given by

	j			
$b_{i,j}$	1	2	3	4
$b_{0,j}$	1.316	−0.4430	2.839e-1	−1.902e-1
$b_{1,j}$	1.308e-2	1.906e-2	−1.778e-2	1.229e-2
$b_{2,j}$	−1.540e-4	−1.136e-4	2.736e-4	−2.359e-4
$b_{3,j}$	7.10e-7	1.541e-7	−1.397e-6	1.414e-6

	j	
$b_{i,j}$	5	6
$b_{0,j}$	1.337e-1	−9.33e-2
$b_{1,j}$	−8.188e-3	5.436e-3
$b_{2,j}$	1.615e-4	−1.048e-4
$b_{3,j}$	1.0279e-6	6.680e-7

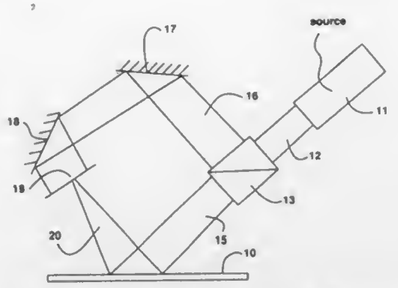
5,668,901

LOW REFLECTIVITY FIBER BRAGG GRATING WITH RECTANGULAR REFLECTION FUNCTION

Donald B. Keck, Big Flats, and Robert A. Modavis, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Feb. 14, 1996, Ser. No. 601,201
Int. Cl.[6] G02B *6/34*
U.S. Cl. 385—37 **23 Claims**

1. A fiber Bragg grating having a core patterned with a varied index of refraction corresponding to varied intensities of an interference pattern of actinic radiation incident on the fiber core from interference of a plane wavefront beam and a diffracted beam.

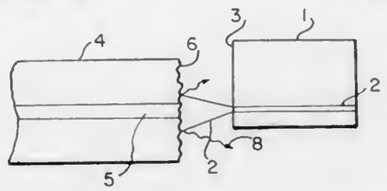


5,668,902

COUPLING STRUCTURE BETWEEN A SEMICONDUCTOR LASER AND AN OPTICAL FIBER AND COUPLING METHOD THEREOF

Kazuhiko Kurata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 394,161, Feb. 22, 1995, Pat. No. 5,479,549. This application Oct. 19, 1995, Ser. No. 545,386
Claims priority, application Japan, Feb. 23, 1994, 6-024614
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—38 **7 Claims**



1. A coupling method for coupling a semiconductor laser to an optical fiber, comprising the steps of:
forming an end face of said optical fiber by polishing said end face with abrasive particles of grain size in a range from 8 μm to 20 μm; and
optically coupling an output laser light from said semiconductor laser to a core of said optical fiber by arranging said formed end face of said optical fiber in close proximity to an output end of said semiconductor laser, wherein said end face is formed so as to have an average surface roughness in a range between 0.04 μm and 0.06 μm.

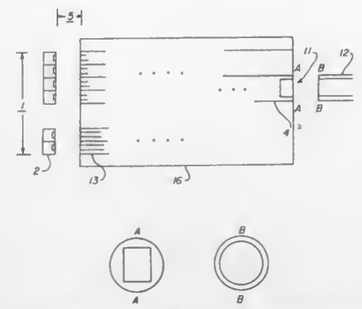
5,668,903

COMPOUND LASER SYSTEM FOR HIGH POWER DENSITIES

Wolfgang Neuberger, F.T.Labuan, Malaysia; Vladimir A. Sychugov, Moscow, Russian Federation; Nikolai M. Lyndin, Moscow, Russian Federation, and Sergej G. Krivoshlykov, Moscow, Russian Federation, assignors to CeramOptec Industries, Inc., East Longmeadow, Mass.

Continuation-in-part of Ser. No. 361,774, Dec. 22, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 553,140
Int. Cl.[6] G02B *6/28*
U.S. Cl. 385—38 **14 Claims**

1. A flexible compound laser system comprising:
a diode laser subsystem having at least two diode lasers or an array of diode lasers whose output is non-circular in shape and generally have an astigmatic numerical aperture;
an optical combiner subsystem;



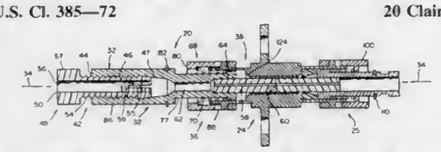
a set of optical waveguides for optically connecting said diode laser subsystem to said optical combiner subsystem with each diode laser in said laser subsystem having its output captured by an optical waveguide;
said optical waveguide having a core cross section that is contoured in shape to match a cross section of a beam irradiated by said diode laser and functioning as an input port of said combiner subsystem;
said optical waveguides having shaped ends or lenses on an end facing said diode lasers to substantially approximate numerical apertures of said diode laser's beam in both its major and minor axes;
said optical combiner subsystem combining individual beams from said optical waveguides capturing said diode laser output into a single output, wherein said single output has a geometry that is substantially a superposition of said input waveguides, allowing said output to substantially maintain an initial input power density; and
means for delivering said output.

5,668,904

FIBER OPTIC CABLE CONNECTOR APPARATUS AND METHOD

Martin A. Sutherland, Tacoma, and Donald L. Barney, Kent, both of Wash., assignors to Northwest Fiberoptic Technologies Inc., Fife, Wash.

Filed Jul. 25, 1996, Ser. No. 686,345
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—72 **20 Claims**



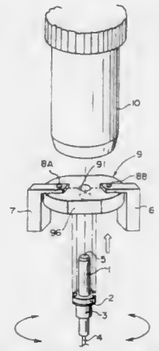
1. A reusable fiber optic connector for use with coupling devices of the type having a portion thereof adapted to receive the fiber optic connector, the connector being arranged for connecting and splicing fiber optic cables of the type that include a protective outer jacket, the jacket being provided to protect a coaxially disposed optical fiber core, the connector comprising:
a connector frame disposed about a longitudinal frame axis, the connector frame having an inserted end adapted for insertion into the receiving portion of the coupling device, and an opposing compression end spaced along the frame axis, the compression end defining a compression bore disposed coaxially about the frame axis, a portion of said compression bore having a radially disposed threaded inner surface;
means disposed on connector frame at the inserted end thereof for positioning the optical fiber core coaxially along the frame axis into the coupling device;
a passage extending from the compression bore to the positioning means for guiding the optical fiber core from the compression end to the inserted end of the connector frame;
means for biasing the connector frame toward the coupling device so that the inserted end of the connector frame is urged into the receiving portion of the coupling device;
a compressible retaining collet for securing the fiber optic cable in position relative to the connector frame in coaxial alignment with the frame axis, the retaining collet having a radially disposed inner gripping surface, and a radially disposed outer compression surface, said inner gripping surface defining a coaxial gripping bore sized to receive the outer jacket of the fiber optic cable in close fitting relationship;
said retaining collet being compressible between a first uncompressed condition where the retaining collet is threadedly disengaged from the connector frame for receiving a fiber optic cable through the gripping bore, to a second compressed condition where the compression surface of said retaining collet threadedly engages the threaded inner surface of the compression bore of the connector frame, and
wherein as the retaining collet threadedly engages the threaded inner surface of the compression bore, advancing the retaining collet therein to the second compressed condition, portions of the inner gripping surface are urged against the outer jacket of the fiber optic cable.

5,668,905

OPTICAL FIBER FERRULE ASSEMBLY HAVING ANGULAR INDEX SHOWING POLARIZATION PLANE

Mitsuo Takahashi; Kunio Yamada, both of Matsudo; Shuichi Takashi, and Naotoshi Shiokawa, both of Kamagaya, all of Japan, assignors to Seikoh Giken Co., Ltd., Chiba-ken, Japan

Filed Apr. 16, 1996, Ser. No. 633,039
Claims priority, application Japan, Sep. 14, 1995, 7-262373
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 **4 Claims**



1. An optical fiber ferrule assembly comprising:
a polarization plane maintaining optical fiber;
an optical fiber ferrule for accepting said optical fiber to fixedly hold said optical fiber in a state that its tip portion is exposed;
an angular index member which is rotatable with respect to said ferrule until said angular index member is fixed at a predetermined angle with respect to a polarization plane of said optical fiber, said angular index member having a central hole which rotatably accommodates said ferrule and having a circumferential section with an index section to indicate said polarization plane of said optical fiber; and
a flange body which is fixedly secured to a portion of said ferrule and which accommodates a coated portion of said optical fiber,
wherein said optical fiber is fixed to said optical fiber ferrule, said angular index member and said optical fiber ferrule are temporarily assembled, said angular index member is temporarily secured to a stage of a microscope in a state such that said ferrule is in a rotatably supported state, said ferrule is rotated while an enlarged image of a tip end surface of said

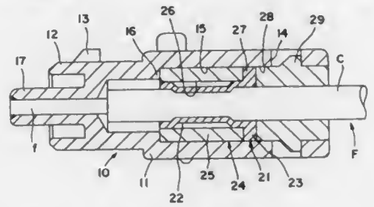
optical fiber is observed with said microscope, and said angular index member and said ferrule are fixedly adhered when the enlarged image reaches a given relation to said index section of said angular index member, so that said angular index makes said predetermined angle with respect to the polarization plane and indicates said polarization plane of said optical fiber.

5,668,906

CONNECTOR ASSEMBLY FOR ELONGATED ELEMENTS

Takehiko Yamamura, and Hayato Yuuki, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Jun. 13, 1996, Ser. No. 662,913
Claims priority, application Japan, Jun. 13, 1995, 7-146348
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—83 **12 Claims**



1. A retaining assembly for at least one elongated element having a central core surrounded by a coating, said assembly comprising a fixing device including a clamping member and a holding member, said clamping member having a securing portion, an axial portion of said coating secured within said securing portion, said holding member comprising at least a first receiving element having a first channel therein, a part of said securing portion in said first channel, a flange extending radially outward from said clamping member, a first recess on said first receiving element, a part of said flange in said first recess,

a second receiving element having a second channel therein, a part of said securing portion not in said first channel, in said second channel, a second recess on said second receiving element, a part of said flange not in said first recess, in said second recess, whereby said elongated element is secured to said fixing device.

5,668,907

THIN OPTICAL DISPLAY PANEL

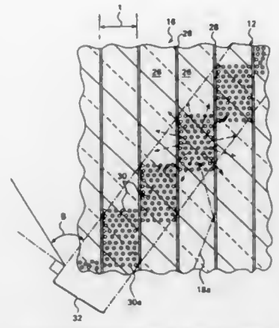
James Thomas Veligdan, Manorville, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Jan. 11, 1996, Ser. No. 584,045
Int. Cl.[6] G02B *6/04*
U.S. Cl. 385—120 **20 Claims**

1. An optical display **12** comprising a plurality of optical waveguides **16** each including a core **26** and bounding cladding layer **28** for guiding internal display light **18***a* between first and second opposite ends **16***a,b* thereof by internal reflection;

said waveguides **16** being stacked together between said first and second ends **16***a,b* to define a collective display thickness; and

each of said cores **26** including a heterogeneous portion defining a light scattering site **30** disposed longitudinally between and spaced from said first and second ends **16***a,b*, with adjacent ones of said sites **30** being longitudinally offset from each other for forming a longitudinal internal image display **32**



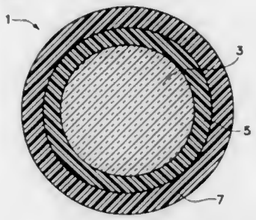
over said display thickness for scattering said internal display light **18***a* thereagainst for generating a display image **22***a*.

5,668,908

FIBER OPTIC GYRO SENSOR COIL WITH IMPROVED TEMPERATURE STABILITY

Amado Cordova, West Hills, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Dec. 22, 1995, Ser. No. 577,432
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—128 **12 Claims**



1. A fiber optic gyro coil for use at temperatures between T1 and T2, T1 being less than −30° C. and T2 being greater than 60° C., the coil being wound with single-mode or single-mode polarization-maintaining optical fiber having one or more jackets, the one or more jackets being made of materials with glass transition regions outside the temperature range from T1 to T2.

5,668,909

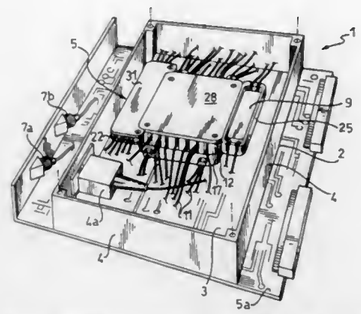
CONTAINER FOR HOUSING OPTICAL COMPONENTS IN AN ACTIVE FIBER OPTICAL AMPLIFIER

Gianfranco Mozzati, Pioltello, Italy, assignor to Pirelli Cavi S.p.A., Italy

Filed Dec. 5, 1995, Ser. No. 567,493
Claims priority, application Italy, Feb. 15, 1994, M194A2531
Int. Cl.[6] G02B *6/46*
U.S. Cl. 385—134 **20 Claims**

1. Container for housing optical components within an enclosure of an active fibre optical amplifier, such components including at least one active fibre, a plurality of passive optical components and a plurality of welds between optical fibres and the components and in which the passive optical components and the welds have an elongated cylindrical form with ends from which lengths of optical fibre extent and characterised by comprising:

a first box element for reception of the passive optical components, said first box element having a base and side walls for receiving said optical components between said side walls and aligning said passive optical components substantially in directions parallel to each other;



a second box element for reception of the active fibre in the form of a loop, said second box and said first box element being superimposed and being removably secured to each other; and

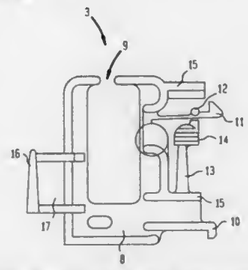
a third box element for reception of the weld, said third box element having side walls for receiving said welds therebetween and aligning said welds substantially parallel to each other and to said passive optical components, said third box element being removably secured to one of said first box element and said second box element.

5,668,910

WIRE GUIDE AND OPTICAL FIBER STORAGE SPOOL ASSEMBLY

Jaime Ray Arnett, Fishers, Ind., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 395,735, Feb. 28, 1995, Pat. No. 5,559,922. This application May 29, 1996, Ser. No. 657,461
Int. Cl.[6] G02B *6/43*
U.S. Cl. 385—134 **10 Claims**



1. A wire guide for use with a patch panel housing connectors coupled to conductive wires, the wire guide comprising:

a C-shaped part for receiving and confining conductive wire, having a first side,

a first angled member extending from the first side of the C-shaped part of the wire guide;

a second angled member extending from the first side of the C-shaped part, the second angled member capable of flexing along a path in a first direction toward the first angled member; and

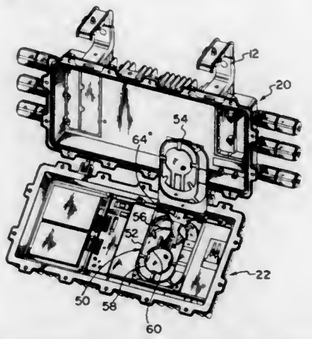
a locking member supported by the first side of the C-shaped part, the locking member normally disposed with an end in close proximity to the second angled member to prevent the second angled member from flexing, the locking member capable of flexing in a second direction transverse to the first direction in which the second angled member is flexed toward the first angled member, to clear the path along which the second angled member can be flexed toward the first angled member.

5,668,911

STORAGE HOLDERS FOR OPTICAL FIBERS

George Debortoli, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 11, 1996, Ser. No. 680,285
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—135 **9 Claims**



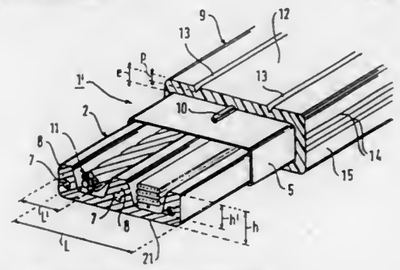
1. A storage holder for optical fibers comprising a base and a lid movable for opening or closing an access side to a storage chamber provided within the base for storing the fibers in the form of at least one winding with a minimum bend radius to the winding, and having an inlet and an outlet to the chamber for fibers, and the base and lid having cooperable means to ensure that the at least one winding remains within the storage chamber with the holder closed and remains within the storage chamber with the holder open until manually removed from within the chamber the cooperable means comprising spaced winding retaining means provided by the base, the winding retaining means extending across the access side to the chamber to retain the winding within the chamber, and the winding retaining means providing a winding insertion and removal gap for lateral insertion into and removal of the winding from the chamber, and the cooperable means also comprising at least one rib provided by the lid, the rib extending to a position adjacent to each retaining means to prevent fiber in the winding from entering laterally into the removal gap.

5,668,912

RECTANGULAR OPTICAL FIBER CABLE

David A. Keller, Conover, N.C., assignor to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Feb. 7, 1996, Ser. No. 598,178
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—100 **36 Claims**



1. A flat slotted core cable comprising:

a cable jacket;

a slotted frame arranged inside said cable jacket, having at least one slot and having at least one strength member embedded therein;

at least one fiber arranged in said slot; and

one or more rip cords being embedded either in the cable jacket, or under the cable jacket, to be located between V-shaped grooves to facilitate quick removal of the cable jacket.

5,668,913

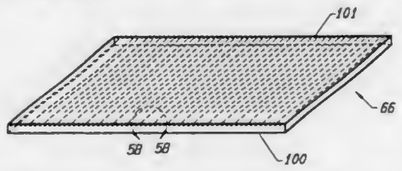
LIGHT EXPANDING SYSTEM FOR PRODUCING A LINEAR OR PLANAR LIGHT BEAM FROM A POINT-LIKE LIGHT SOURCE

Ping-Kaung Tai, 3326 Christie Blvd., Toledo, Ohio 43606, and Han Zou, 3375 Airport Hwy., Apt. No. 24, Toledo, Ohio 43609

Division of Ser. No. 332,262, Oct. 19, 1994, Pat. No. 5,506,929. This application Jan. 5, 1996, Ser. No. 583,679

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—146 **10 Claims**



1. A light expanding system for producing collimated light from a divergent light beam emitted from a point-like light source, comprising:

a light pipe having first, second and third surfaces, wherein:

the first and second surfaces are substantially perpendicular; and

the third surface is opposite the second surface;

a beam collector positioned between said point-like source and the first surface of said light pipe for directing light from the point-like light source into said light pipe in a predetermined way;

a prismatic diffuser for one-dimensionally increasing the divergence angle and changing the propagation direction of collimated light positioned between said light pipe and said beam collector, said prismatic diffuser comprising:

a transparent film; and

a plurality of microprisms, each microprism further comprising:

a base surface that is positioned adjacent to surface of the film; and

a light refracting surface including a plurality of sections, wherein:

at least one of the sections is curved; and

viewed in a plane parallel to the direction of light passing through the prismatic diffuser, the light refracting surface is asymmetric.

5,668,914

VIDEO SIGNAL REPRODUCTION PROCESSING METHOD AND APPARATUS FOR REPRODUCTION OF A RECORDED VIDEO SIGNAL AS EITHER A SHARP STILL IMAGE OR A CLEAR MOVING IMAGE

Masafumi Inuiya, Asaka, and Kazuyuki Masugane, Miyagi-ken, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 73,474, Jun. 9, 1993, Pat. No. 5,473,441. This application Jun. 22, 1995, Ser. No. 493,701

Claims priority, application Japan, Jun. 12, 1992, 4-177757; Jun. 12, 1992, 4-177758

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—46 **10 Claims**

1. A method of video signal reproduction processing comprising the steps of:

a) reading a video signal from a recording medium, the video signal having been recorded on the recording medium with a high shutter speed and including image data representing a current image and image data representing a preceding image one frame ahead of the current image;

b) processing the image data of the read video signal to blur contour of the current image and the preceding image;

c) extracting from the processed image data of said step b) image data representative of moving portions of the blurred current image; and

d) synthesizing a composite video signal based on the extracted image data and the image data representing the current image.

5,668,915

METHOD FOR AUTOMATICALLY SETTING VCR CLOCK BASED ON A BROADCAST TIME SIGNAL AND DISPLAYING TIME

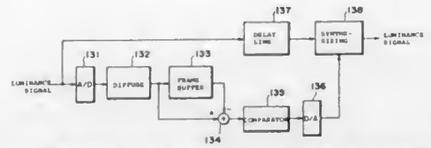
Bok Hyun Baik, Kyungki-do; Jung Hoe Hur, Seoul, and Dae Sul Shim, Inchun-si, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

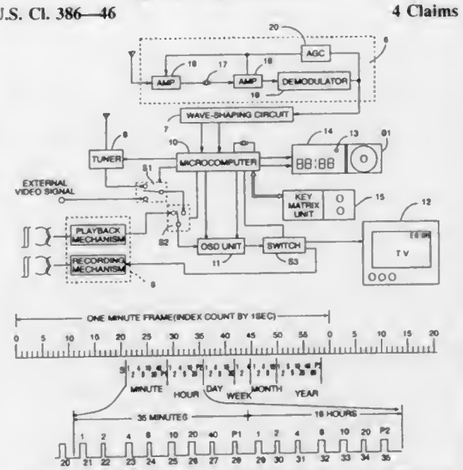
Continuation of Ser. No. 466,242, Jun. 6, 1995, abandoned, Division of Ser. No. 132,181, Oct. 5, 1993, Pat. No. 5,500,741. This application Oct. 23, 1996, Ser. No. 731,985

Claims priority, application Rep. of Korea, Feb. 18, 1993, 2245/1993

Int. Cl.[6] H04N *5/91;7/00*

U.S. Cl. 386—46 **4 Claims**





1. A method of displaying time of a VCR, comprising the steps of:

(a) checking whether current time data is received from a broadcast signal, determining states of the received current time data corresponding to a duty cycle at times when the current time data is received and converting the determined states of the current time data to a time data of an internal clock;

(b) advancing the time of said internal clock at times when said current time data is not received from the broadcast signal and converting the time data of said internal clock to the current time data when said current time data is received from the broadcast signal;

(c) displaying the time of said internal clock; and

(d) superimposing the time data of said internal clock on a video signal and displaying a resultant superimposed signal.

5,668,916

APPARATUS FOR REPRODUCING DATA NOT SUCCESSIVELY LOCATED ON A RECORDING MEDIUM

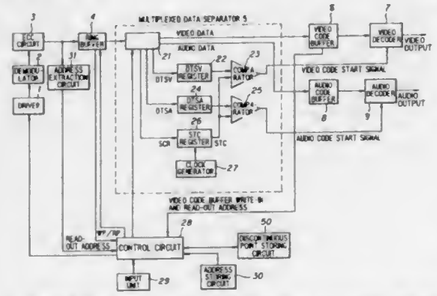
Yasushi Fujinami, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1994, Ser. No. 321,986

Claims priority, application Japan, Oct. 15, 1993, 5-257960

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—47 **12 Claims**



1. Apparatus for reproducing data from a recording medium, comprising:

reproducing means for reproducing the data from said recording medium to provide reproduced data;

first storing means for storing the reproduced data;

reading means for reading data from said first storing means;

decoding means for decoding data read from said first storing means;

location detection means for detecting a location on said recording medium where the reproduced data is not successively located, said location being defined as a non-successive location;

second storing means for storing a first position in said first storing means where the reproduced data from said non-successive location is stored in said first storing means; and

read control means for controlling said reading means to selectively start or inhibit reading data from said first storing means in accordance with said first position stored in said second storing means to minimize the time the reproduced data is unavailable for decoding.

5,668,917

APPARATUS AND METHOD FOR DETECTION OF UNWANTED BROADCAST INFORMATION

Donald A. Lewine, 40 Maclean Dr., Sudbury, Mass. 01776

Continuation of Ser. No. 270,592, Jul. 5, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 581,183

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—52 **10 Claims**

1. In a system for detecting commercials or other repeated information, said system having:

(1) an image memory for holding frames of information;

(2) said image memory being addressable and having a first frame and additional sequential frames;

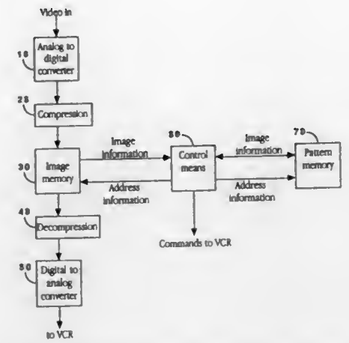
(3) a pointer for addressing said image memory;

a method for detecting commercials comprising:

(a) placing frames of information into said image memory;

(b) setting said pointer to address said first frame in said image memory;

(c) scanning said image memory for a second frame which matches the frame pointed to by said pointer;



(d) if no match is found, incrementing said pointer and repeating step (c).

5,668,918

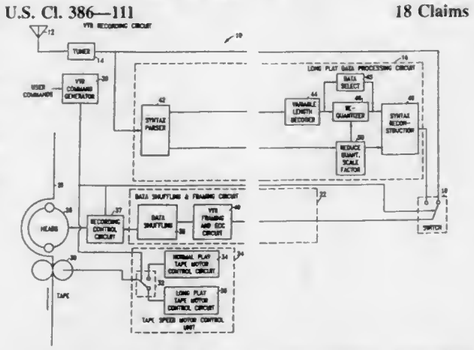
METHOD FOR RECORDING DIGITAL DATA USING A SERIES OF ADJACENT HEADS OF ALTERNATING AZIMUTHS LOCATED ON A HEADWHEEL TO RECORD DATA AT A RATE THAT IS LESS THAN THE FULL RECORDING RATE POSSIBLE USING THE HEADS

Joseph E. Augenbraun, Princeton; Jill M. Boyce, East Windsor, both of N.J., and Larry A. Pearlstein, Newtown, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation of Ser. No. 385,390, Feb. 7, 1995, Pat. No. 5,493,456, which is a division of Ser. No. 184,716, Jan. 21, 1994, Pat. No. 5,444,575. This application Feb. 16, 1996, Ser. No. 602,882

Int. Cl.[6] H04N *5/782;5/92*

U.S. Cl. 386—111 **18 Claims**



1. A method of operating a tape recorder capable of recording data on a tape at a first rate to record data on the tape at a second rate that is lower than the first rate, the tape recorder including a headwheel having a series of H heads of alternating azimuths, the series of H heads being located at a single location on the headwheel, the second rate being (2m/H) times the first rate, where m is a positive integer less than H/2, and where H is an even positive integer greater than three representing the number of heads in the series of H heads, the tape recorder rotating the headwheel at a preselected rotation rate and moving the tape at a preselected normal play tape speed when recording data at the first rate, the method of recording data at the second rate comprising the steps of:

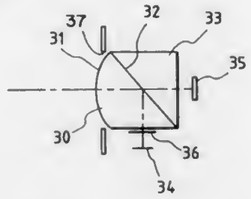
a) positioning the tape in close proximity to the headwheel;

b) moving the tape at a speed of (2m/H) times the preselected normal play tape speed;

c) rotating the headwheel at the preselected rotation rate;

d) passing the series of H heads over the tape by continuing to rotate the headwheel at the preselected rotation rate;
e) controlling a set of 2m adjacent heads of the series of H heads to record data from the reduced rate bit stream on the tape while the set of 2m adjacent heads pass over the tape and inhibiting the ones of the H heads not included in the set of 2m adjacent heads from recording data on the tape while the series of H heads passes over the tape;
f) continuing to rotate the headwheel at the preselected rotation rate to rotate the headwheel approximately 360 degrees from the point where the set of H heads began to pass over the tape;
g) passing the series of H heads over the tape by continuing to rotate the headwheel at the preselected rotation rate;
h) controlling the set of 2m adjacent heads of the series of H heads to record data on the tape while the set of 2m adjacent heads pass over the tape and inhibiting the ones of the H heads not included in the set of 2m adjacent heads from recording data on the tape while the series of H heads passes over the tape; and
i) repeating steps f through h.

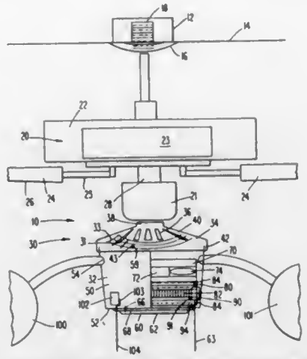
5,668,919
CAMERA
Kazumi Ito, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 13, 1996, Ser. No. 663,519
Claims priority, application Japan, Jun. 20, 1995, 7-153473
Int. Cl.[6] G03B *7/099;13/18;13/20*
U.S. Cl. 396—268 **16 Claims**



1. A camera, comprising:
a photometric optical system and a range measuring optical system which are provided independently of a photographing optical system, said range measuring optical system having a projection system and a reception system;
a path splitting surface which splits a common optical path passing through a single entrance window in said camera into respective optical paths for said photometric optical system and for one of said projection system and said reception system of said range measuring optical system; and
an optical element arranged between said path splitting surface and a photometric element of said photometric optical system.

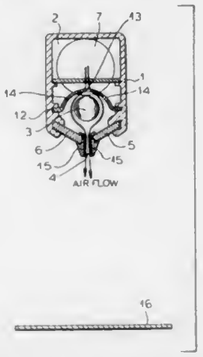
5,668,920
CEILING FAN WITH ATTACHABLE HEATER HOUSING HAVING AN ADDITIONAL FAN THEREIN
Kosta L. Pelonis, Taipei, Taiwan, assignor to Pelonis USA Ltd., Malvern, Pa.
Filed Jan. 17, 1996, Ser. No. 587,378
Int. Cl.[6] F24H *3/02*
U.S. Cl. 392—361 **20 Claims**

1. A dual fan room heater comprising:
a) a ceiling fan assembly comprising a plurality of radially extending fan blades and a first fan motor adapted for operation at low rotational speed to circulate air within a room, and
b) a heating assembly comprising at least one resistive electrical heating element, an additional heating fan assembly, independent of the ceiling fan, including a plurality of fan blades and



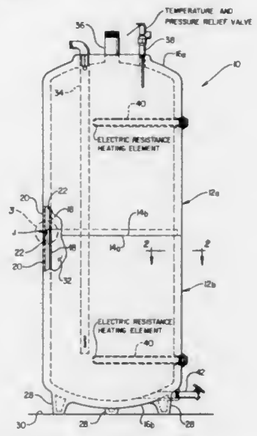
a second motor for directing an airstream over the at least one resistive heating element to provide a heated airstream.

5,668,921
HOT-AIR DRYER WITH INFRARED HEATER AND SLIT-SHAPED OUTLET
Karl-Hermann Essler, Koppeldamm 20, D-25436 Tornesch, Germany
Filed Oct. 13, 1995, Ser. No. 543,186
Claims priority, application Germany, Oct. 14, 1994, 44 36 713.9
Int. Cl.[6] A61H *33/08*
U.S. Cl. 392—379 **18 Claims**



1. An apparatus for drying an article comprising:
a housing forming an elongated plenum formed with a slit opening toward an article to be dried;
means for feeding drying air to said plenum whereby said article is treated with warm air emerging from said slit;
an infrared irradiator in said housing,
said slit extending along a longitudinal dimension of said slit and said infrared irradiator being elongated and extends in said housing along said slit, said slit being defined between two walls composed of radiation-permeable material whereby said article is exposed to radiation from said infrared irradiator through said walls and said air by combustion before said warm air passes through said slit.

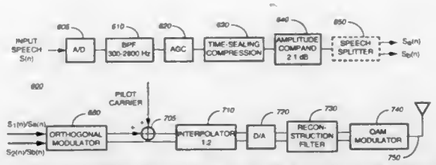
5,668,922
WATER HEATER HAVING MOLDED PLASTIC STORAGE TANK AND ASSOCIATED FABRICATION METHODS
David O. Ross, Montgomery; Timothy D. Gantt, Pike Road, both of Ala., and David C. Poole, Quincy, Ill., assignors to Rheem Manufacturing Company, New York, N.Y.
Filed Nov. 16, 1995, Ser. No. 558,680
Int. Cl.[6] F24H *1/18*
U.S. Cl. 392—441 **20 Claims**



1. Water storage apparatus comprising:
a plurality of molded plastic one piece hollow tubular body sections positioned in a coaxial, end-to-end orientation in which there is at least one axially adjacent pair of body sections, and including first and second opposite end sections having closed outer ends, each of said body sections having at least one open end portion and further having:
(1) a tubular inner shell section,
(2) a tubular outer shell section coaxially circumscribing said tubular inner shell section and forming between said inner and outer shell sections an annular insulation space, and
(3) a circumferentially spaced series of ribs extending radially across said annular insulation space and dividing said annular insulation space into circumferential segments, said ribs being integrally molded with said inner and outer shell sections, and said closed outer ends of said first and second opposite end sections being integrally molded with said first and second opposite end sections; and
joining means for permanently and sealingly joining opposing contiguous open end portions of each axially adjacent pair of said plurality of body sections in a manner forming from said plurality of body sections a hollow water storage body structure having an internal water storage vessel portion defined entirely by said inner shell sections, outwardly enveloped by said annular insulation spaces and structurally reinforced, via said ribs, by said outer shell sections.

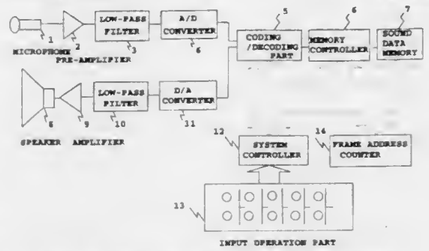
5,668,923
VOICE MESSAGING SYSTEM AND METHOD MAKING EFFICIENT USE OF ORTHOGONAL MODULATION COMPONENTS
Kazimierz Siwiak, Coral Springs; Sunil Satyamurti, Delray Beach, and William Joseph Kuznicki, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 28, 1995, Ser. No. 396,306
Int. Cl.[6] G10L *3/02;9/00;* **H04H** *5/00*
U.S. Cl. 704—204 **19 Claims**

1. A method for transmitting a message to a receiver comprising steps of:



temporally splitting the message into first and second message portions which are time contiguous portions of the message;
orthogonally modulating first and second orthogonal components with the first and second message portions, respectively, to generate first and second orthogonally modulated components; and
simultaneously transmitting the first and second orthogonally modulated components.

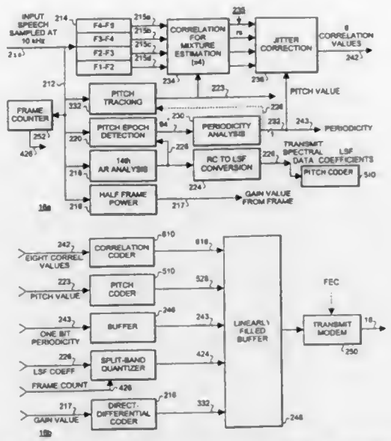
5,668,924
DIGITAL SOUND RECORDING AND REPRODUCTION DEVICE USING A CODING TECHNIQUE TO COMPRESS DATA FOR REDUCTION OF MEMORY REQUIREMENTS
Hidetaka Takahashi, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan
Filed Sep. 27, 1995, Ser. No. 534,362
Claims priority, application Japan, Jan. 18, 1995, 7-005948; Jan. 30, 1995, 7-012878
Int. Cl.[6] G10L *9/14*
U.S. Cl. 704—219 **10 Claims**



1. A sound recording and reproducing device comprising:
an adaptive code book which is created by past excitation signals;
a stochastic code book having a plurality of different stochastic signals;
a pulse code book having a plurality of different pulse signals;
a code excited linear predictive coder for coding a sound data frame-by-frame by using said adaptive code book, said stochastic code book and said pulse code book;
a memory for storing the coded sound data as a coded data; and
a code excited linear predictive decoder for decoding said coded data.

5,668,925
LOW DATA RATE SPEECH ENCODER WITH MIXED EXCITATION
Joseph Harvey Rothweiler; John Charles Carmody, both of Ellicott City, and Srinivas Nandkumar, Columbia, all of Md., assignors to Martin Marietta Corporation, Bethesda, Md.
Filed Jun. 1, 1995, Ser. No. 482,322
Int. Cl.[6] G10L *9/00*
U.S. Cl. 704—220 **5 Claims**

1. A signal transmission system, for receiving information signals at an input port, and for transmitting the information signals over a limited-bandwidth path to a reproducing arrangement, said system comprising:
pitch tracking means coupled to said input port, for determining the average pitch value of said information signals during



each of a plurality of recurrent, sequential frame intervals, to thereby generate average pitch value signals;

frame portion power determining means coupled to said input port, for dividing each of said frames into at least first and second temporal portions, and for determining the power in said information signals during at least said first temporal portion of each of said frames, to produce frame power signals;

autoregression coefficient analyzing means coupled to said input port, for, during each of said frame intervals, generating at least ten autoregression coefficients from said information signals, representing line spectrum frequencies;

pitch epoch detecting means coupled to said input port and to said autoregression coefficient analyzing means, for, during each frame, determining at least amplitude and time interval pitch parameters of said information signals, to thereby produce pitch parameter signals;

periodicity analysis means coupled to said pitch epoch detecting means, for analyzing said pitch parameter signals, to form periodicity parameter signals in response to the presence or absence of voiced components in said speech and the periodicity of pitch pulses if said pitch pulses are periodic, and the ratio of the largest to the smallest pitch intervals if said pitch pulses are aperiodic, to produce jitter-representative signals;

a filter bank coupled to said input port, said filter bank including a plurality of filters, each covering a different portion of the expected bandwidth of said information signals, for filtering said information signals into a plurality of nonoverlapping frequency bands, to thereby form a plurality of bandlimited signals;

correlation means coupled to said filter bank and to said pitch tracking means, for correlating said band-limited signals at an interval responsive to said average pitch value signals, to thereby form estimated mixture signals;

jitter correction means coupled to said correlation means and to said periodicity analysis means, for correcting said estimated mixture signals in response to said periodicity parameter signals, to thereby generate corrected correlation signals;

coding means coupled to said pitch tracking means, to said frame portion power determining means, to said correlation means, and to said autoregression coefficient analyzing means, for generating codewords representative of said average pitch value signals, said frame power signals, estimated mixture signals, and said line spectrum frequencies, respectively, for producing codes;

codeword generating means coupled to said coding means and to said periodicity analysis means, for joining said codes with said jitter-representative signals to form codewords for transmission;

transmitting means coupled to said codeword generated means, for transmitting said codewords over said path; and

reproducing means, coupled to a receiving end of said path, for receiving said codewords, and for decoding said codewords, and for generating a simile of said information signals.

5,668,926

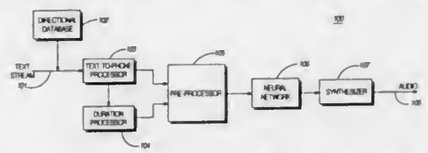
METHOD AND APPARATUS FOR CONVERTING TEXT INTO AUDIBLE SIGNALS USING A NEURAL NETWORK

Orhan Karaali, Rolling Meadows; Gerald Edward Corrigan, Chicago, and Ira Alan Gerson, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 234,330, Apr. 28, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 622,237

Int. Cl.[6] G10L *5/06*

U.S. Cl. 704—232 **32 Claims**



1. A method for training and utilizing a neural network that is used to convert text streams into audible signals, the method comprising the steps of:

wherein training a neural network utilizes the steps of:

1a) inputting recorded audio messages;

1b) dividing the recorded audio messages into a series of audio frames, wherein each audio frame has a fixed duration;

1c) assigning, for each audio frame of the series of audio frames, a phonetic representation of a plurality of phonetic representations that include articulation characteristics;

1d) generating a context description of a plurality of context descriptions for each audio frame based on the phonetic representation of the each audio frame and the phonetic representation of at least some other audio frames of the series of audio frames, generating syntactic boundary information based on the phonetic representation of the audio frame and the phonetic representation of at least some other audio frames of the series of audio frames, generating phonetic boundary information based on the phonetic representation of the audio frame and the phonetic representation of at least some other audio frames of the series of audio frames, and generating a description of prominence of syntactic information based on the phonetic representation of the audio frame and the phonetic representation of at least some other audio frames of the series of audio frames;

1e) assigning, for the each audio frame, a target acoustic representation of a plurality of acoustic representations;

1f) training a feed-forward neural network with a recurrent input structure to associate an acoustic representation of the plurality of acoustic representations with the context description of the each audio frame, wherein the acoustic representation substantially matches the target acoustic representation;

wherein upon receiving a text stream, converting the text stream into an audible signal utilizing the steps of:

1g) converting the text stream into a series of phonetic frames, wherein a phonetic frame of the series of phonetic frames includes one of the plurality of phonetic representations, and wherein a phonetic frame has the fixed duration;

1h) assigning one of the plurality of context descriptions to the phonetic frame based on the one of the plurality of phonetic representations and phonetic representations of at least some other phonetic frames of the series of phonetic frames;

1i) converting, by the neural network, the phonetic frame into one of the plurality of acoustic representations, based on the one of the plurality of context descriptions; and

1j) converting the one of the plurality of acoustic representations into an audible signal.

5,668,927

METHOD FOR REDUCING NOISE IN SPEECH SIGNALS BY ADAPTIVELY CONTROLLING A MAXIMUM LIKELIHOOD FILTER FOR CALCULATING SPEECH COMPONENTS

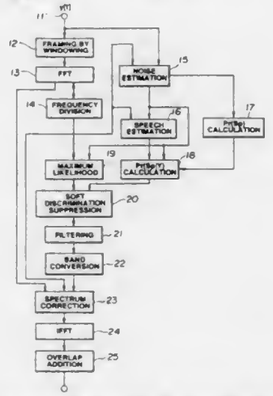
Joseph Chan, Tokyo, and Masayuki Nishiguchi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 1, 1995, Ser. No. 431,746

Claims priority, application Japan, May 13, 1994, 6-099869

Int. Cl.[6] G10L *5/06*

U.S. Cl. 704—240 **7 Claims**



1. A method for reducing noise in an input speech signal in which noise suppression is done by adaptively controlling a maximum likelihood filter adapted for calculating speech components based on a probability of speech occurrence, wherein the improvement comprises the steps of:

calculating a spectrum of said input speech signal;

estimating a noise spectrum and a signal to-noise ratio of said input signal;

employing a difference between said spectrum of said input speech signal and said estimated noise spectrum in calculating said probability of speech occurrence; and

controlling said maximum likelihood filter using said calculated probability of speech occurrence and said signal-to-noise ratio.

5,668,928

SPEECH RECOGNITION SYSTEM AND METHOD WITH AUTOMATIC SYNTAX GENERATION

Gabriel F. Groner, Palo Alto, Calif., assignor to Kor Team International, Inc., Los Gatos, Calif.

Filed Jan. 31, 1995, Ser. No. 381,202

Int. Cl.[6] G10L *9/00;5/06*

U.S. Cl. 704—243 **18 Claims**

6. A syntax rule authoring system for use in conjunction with a syntax based speech recognition system, comprising:

memory for storing an application program having an associated set of user selectable predefined inputs;

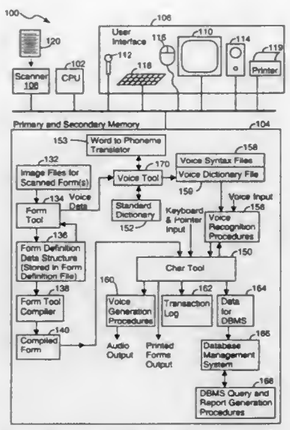
a first data structure defining for each of said predefined inputs an associated sequence of one or more words, wherein each said associated sequence of one or more words comprises a longest word sequence for uniquely identifying each said associated sequence's predefined input;

a voice syntax generation procedure, including

a word sequence generation procedure, having access to said first data structure, for automatically generating for each said predefined input a set of potential identifying word sequences, each of said potential identifying word sequences including a subset of said longest word sequence associated with said each predefined input; said word sequence generation procedure storing said potential identifying word sequences for all of said predefined inputs in a second data structure;

a redundant word sequence elimination procedure, having access to said second data structure, for identifying redundant sets of matching word sequences in said second data structure, where each said identified redundant set of matching word sequences includes said potential identifying word sequences for at least two distinct ones of said predefined inputs whose word sequences satisfy predefined match criteria; and

a syntax generation procedure for generating syntax rules, each said generated syntax rule corresponding to those of said potential identifying word sequences for a distinct one of said predefined inputs included in any of said identified redundant sets; wherein said generated syntax rules are for use in said syntax based speech recognition system.



5,668,929

SPEECH ACTIVATED SECURITY SYSTEMS AND METHODS

Richard W. Foster, Jr., Costa Mesa, Calif., assignor to Hirsch Electronics Corporation, Irvine, Calif.

Continuation of Ser. No. 417,098, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 7,096, Jan. 21, 1993, abandoned. This application Jul. 22, 1996, Ser. No. 686,824

Int. Cl.[6] G06F *7/04;* **H03G** *3/20;* **G10L** *3/00*

U.S. Cl. 704—273 **41 Claims**

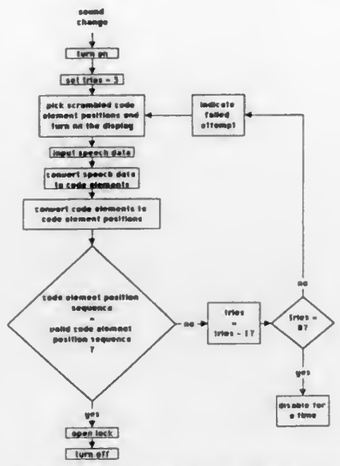
1. A speech activated device comprising:

display means for visually displaying to a user of said device a plurality of code symbols, each in one of a plurality of spatial positions in a predetermined spatial pattern of code symbol positions, each of said code symbols having a predetermined pronunciation;

means coupled to said display means for causing the display of said plurality of code symbols and for varying the position of at least some code symbols in the spatial pattern of code symbols;

microphone means for generating microphone signals in response to a plurality of speech input commands that correlate to spatial code symbol positions of a sequence of code symbols;

means for converting said microphone signals generated from said spoken spatial code symbol positions to code symbols



and comparing said symbols to a valid code for a user of the device, and for providing an output signal in response thereto.

5,668,930

OFF-LINE TEACHING METHOD FOR A ROBOT

Masayuki Hamura; Kenji Aztuma, and Shinsuke Sakamoto, all of Minamitsuru-gun, Japan, assignors to Fanuc Ltd, Yamanashi, Japan

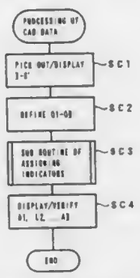
PCT No. PCT/JP94/00910, § 371 Date Feb. 6, 1995, § 102(e) Date Feb. 6, 1995, PCT Pub. No. WO94/29775, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 6, 1994, Ser. No. 381,815

Claims priority, application Japan, Jun. 7, 1993, 5-163239

Int. Cl.[6] G05B *19/04*

U.S. Cl. 395—87 **8 Claims**



1. An off-line teaching method for a robot for teaching the robot a position and a posture through software processing using an information processing means, comprising the steps of:

(a) preparing, in a form capable of being processed by said information processing means, the coordinate data representing the original teaching points for defining an operation line along which said robot is to be moved, said original teaching points including at least one bent junction at which two linear segments intersects with each other;

(b) defining a first point on one of said two linear segments, a second point on the other linear segment and a third point in the vicinity of said bent junction in order to define a circular arc of a small radius, which continuously joins the two linear segments intersecting at said bent junction, using the data relating to said bent junction in said coordinate data representing said original teaching points, said third point being situated on said small-radius circular arc which tangentially joins said two linear segments at said first and second points; and

(c) teaching said robot a position and a posture at said first, second and third points in place of said bent junction.

5,668,931

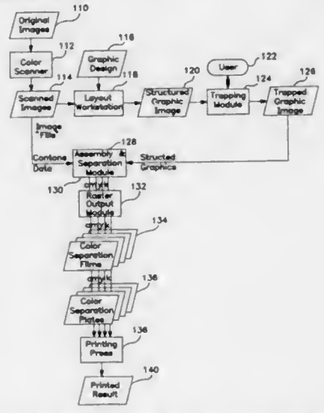
METHOD FOR AUTOMATIC TRAP SELECTION FOR CORRECTING FOR PLATE MISREGISTRATION IN COLOR PRINTING

Richard A. Dermer, 4 Enfield Dr., Andover, Mass. 01810

Filed Mar. 31, 1993, Ser. No. 40,724

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—104 **14 Claims**



1. A method for automatic trap selection comprising the steps of:

(A) ranking CANDIDATE TRAPS by a plurality of methods with an overall score which represents the sum of weighted ranks obtained by said plurality of methods with the weights applicable to said overall score being previously determined; and,

(B) using said overall score as the basis for automatic selection among said CANDIDATE TRAPS.

5,668,932

DIGITAL VIDEO DATA COMPRESSION TECHNIQUE

Stuart T. Laney, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 11,317, Jan. 29, 1993, Pat. No. 5,544,286. This application May 9, 1996, Ser. No. 647,366

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—109 **20 Claims**

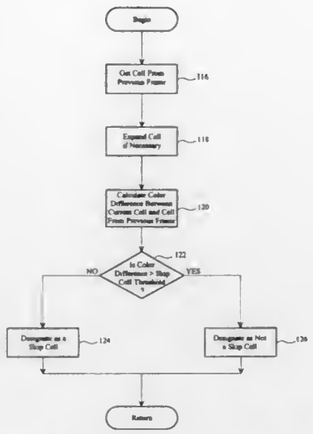
1. A computer-readable storage medium for use in a data processing system, said medium holding instructions for performing a method of compressing color data for pixels in a first cell of a frame of color data to produce compressed color data, said method comprising the steps of:

a) for each pixel in the first cell, comparing the color data for the pixel in the first cell with color data for a pixel in a second cell of pixels in a previous frame of color data to determine whether the color data in the first cell and the color data in the second cell are substantially the same;

b) if the color data in the first cell is substantially the same as the color data for the second cell, producing the compressed color data by encoding the color data for the pixels of the first cell as a duplicate of the color data for the pixels of the second cell;

c) if the compressed color data for the first cell has not been produced by the preceding steps, producing the compressed color data by performing the following steps:

(i) calculating the luminanee of each of the pixels in the first cell;



(ii) dividing the pixels in the first cell into a set of brighter pixels and a set of dimmer pixels, based on the calculated luminances;

(iii) calculating an average color of pixels in the set of brighter pixels and calculating an average color of pixels in the set of dimmer pixels;

(iv) assigning the average color of pixels in the set of brighter pixels to each of the pixels in the set of brighter pixels; and

(v) assigning the average color of pixels in the dimmer set of pixels.

5,668,933

IMAGE TRANSFORMATION APPARATUS FOR PRODUCING AN IMAGE COLLAPSING EFFECT

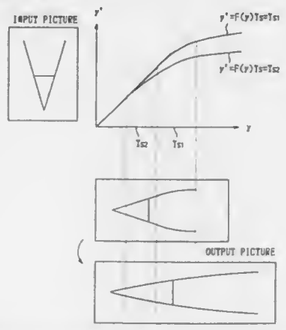
Katsuakira Moriwake, and Toshihiro Shiraishi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1994, Ser. No. 224,680

Claims priority, application Japan, Apr. 17, 1993, 5-113779

Int. Cl.[6] H04N *5/262*

U.S. Cl. 395—110 **8 Claims**



1. An image transformation apparatus for performing an image transformation process on an input video signal, comprising:

storing means for storing said input video signal;

read address generating means for generating a sequential read address (x, y); and

transformation means for transforming said read address (x, y) into a transformed read address (X, Y) based on formulas:

$$X=x$$

$$Y=F(y+G(x)-G(x)$$

indicated by a function F(y) having a first differential coefficient which reduces monotonously in a manner approaching "0" from "1" and a pattern function G(x) representing a collapsing shape, said transformed read address (X, Y) is supplied to said storing means as a read address signal, thereby providing an image collapsing effect to said input video signal.

5,668,934

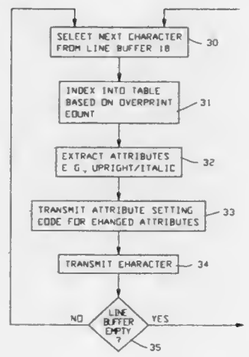
INTERFACE TO SOPHISTICATED PRINTERS

David George Maw, Lake Elsinore, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 92,636, Jul. 16, 1993. This application Feb. 7, 1996, Ser. No. 598,129

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—110 **2 Claims**



1. In a computer system having a CPU with a memory coupled thereto, a line buffer within said memory, an I/O processor coupled to said CPU and to said memory and a printer connected to said system through said I/O processor, a method for modifying commands to said printer, said method operating in said CPU comprising the steps of:

a. storing in said line buffer a block of characters to be printed;

b. examining said block of characters for an operation code to determine if a line of said block of characters is to be overprinted, and if said line is to be overprinted;

c. examining each position in said line of said block of characters to be printed for the same character, and if the same character is found, incrementing an overprint count stored in said memory for said same character;

d. for each character to be printed, indexing into a table of attributes stored in said memory as a function of said overprint count of step c hereof;

e. extracting an attribute setting code from said table for each of said characters to be printed based upon said overprint count of step c hereof;

f. transmitting said attribute setting code extracted in step e hereof to said printer for printing;

g. determining if said line buffer is empty, and if empty, getting a next block of characters to be printed and repeating all of the steps above; and,

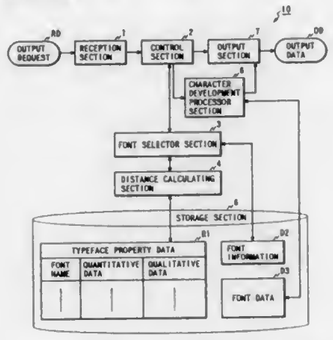
h. if said line buffer is not empty, selecting a next character to be printed and its corresponding overprint count from said memory for indexing into said table.

5,668,935

CHARACTER OUTPUT DEVICE

Osamu Endo, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,425
Claims priority, application Japan, Jul. 19, 1995, 7-183130
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—110 **5 Claims**



1. A character output device which selects a font with a desired typeface from among a plural number of fonts with different typefaces in response to a font-use request, and outputs a character using the selected font, comprising:

storage means for storing quantitative information of specific parts of specific characters, which is information indicative of features of fonts, in the form of typeface property information in connection with the fonts;

font select means for selecting a font with a typeface the use of which is requested when the font is coincident with any of the plural number of fonts, and a font of which the typeface property information stored in said storage means is closest to that of the use requested font when the use requested font is not included in the plural number of fonts; and

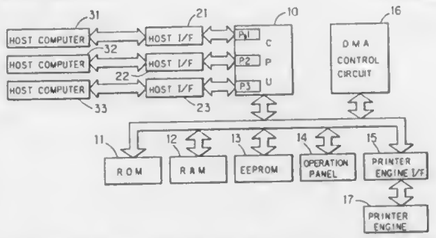
character output means for outputting a character on the basis of the font selected by said font select means.

5,668,936

PRINTER FOR EXCLUSIVELY SELECTING A HOST APPARATUS AND A COMMAND SYSTEM FOR USE WITH THE SELECTED HOST APPARATUS

Shigenori Motooka, Nishinomiya, and Kouichi Shibata, Sakai, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 14, 1992, Ser. No. 944,330
Claims priority, application Japan, Sep. 25, 1991, 3-274665; Sep. 25, 1991, 3-274666
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **10 Claims**



1. A printer for performing printing processing on the basis of data sent from a host apparatus having a command system, the host apparatus data having control characters including an escape character, and one or more characters subsequent to the escape character, the printer comprising:

first storing means for storing a plurality of printing programs corresponding to a plurality of command systems, the command systems each assigning different meanings to at least some characters subsequent to the escape character;

second storing means for storing, for each command system, the presence or absence of at least those control characters employed by each command system which are not common to all of the command systems;

third storing means for storing priorities assigned to each of the plurality of command systems;

first judging means for judging which of the plurality of command systems is a command system employing control characters included in data sent from the host apparatus on the basis of data stored in the second storing means, to thereby determine which of the plurality of command systems is a command system associated with the data sent from the host apparatus, the first judging means judging

a) for each of the plurality of command systems, in ascending priority order of each of the plurality of command systems, whether or not one or more of the control characters included in the data sent from the host apparatus is employed by each command system, and excluding command systems that do not employ the one or more of the control characters from being associated with the data sent from the host apparatus,

b) when a number of command systems which are not excluded from being associated with data sent from the host apparatus is one, that the one not excluded command system is to be associated with data sent from the host apparatus, and

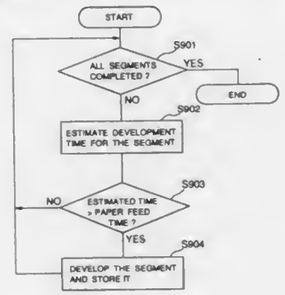
c) when (i) every control character in the data sent from the host apparatus has been judged to determine whether each control character included in the data sent from the host apparatus is employed by each command system, and (ii) a number of command systems which are not excluded from being associated with data sent from the host apparatus is at least two, that the command system assigned a higher priority out of the at least two command systems is a command system to which the data sent from the host apparatus is associated.

5,668,937

OUTPUT METHOD AND APPARATUS

Masaaki Shimizu, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 281,116, Jul. 27, 1994, abandoned, which is a continuation of Ser. No. 218,457, Mar. 28, 1994, abandoned, which is a continuation of Ser. No. 868,124, Apr. 14, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,046
Claims priority, application Japan, Apr. 23, 1991, 3-092309
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—115 **36 Claims**



1. An output apparatus comprising:

means for presuming a time required to convert code data corresponding to each of a plurality of partial regions constructing one page into bit map data;

determining means for determining whether or not the code data of each region should previously be converted into bit map data and stored based on the presumed time obtained by said presuming means and based on an inherent printing speed of a printer engine;

means for storing the bit map data of a region, which has been determined by the determining means to be a region which should previously be converted into bit map data, prior to printing; and

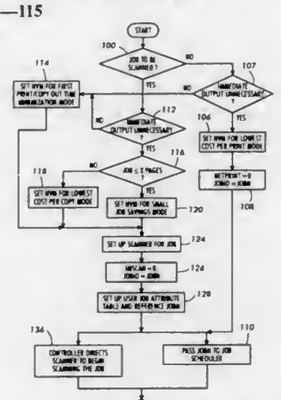
transfer means for transferring bit map data by a partial region unit in sequence of one page to the printer engine upon printing one page, wherein, in the case the code data of a region is previously converted into bit map data and stored in said storing means, said transfer means transfers the stored bit map data to the printer engine and, in the case the code data of that region is not previously converted into bit map data, said transfer means converts that code data into bit map data and transfers the converted bit map data to the printer engine.

5,668,938

CONTROL SYSTEM FOR PROGRAMMING FIRST PRINT OUT TIME IN A PRINTING SYSTEM

Ronald S. Tomory, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,587
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—115 **23 Claims**



1. In a printing system for producing one or more sets of prints from a job including a set of image data, buffered in a first memory section, and a set of instructions for controlling the production of the one or more print sets, each of the prints in at least one of the one or more print sets being provided to an output area, a control system for controlling when production of a first print in the at least one of the one or more print sets begins and thus the rate at which the first print is provided to the output area, comprising:

a second memory section for storing a threshold printing value;

an image capture subsystem for reading a document and generating the set of image data therefrom with the set of image data including at least one image;

a third memory section for storing a cumulative captured image value which is incremented each time an image is captured by said image capture subsystem;

a job scheduler, communicating with both said second and third memory sections, for detecting when the at least one image has been captured by said image capture device;

a print subsystem, communicating with said job scheduler, for producing one or more prints from the set of buffered image data;

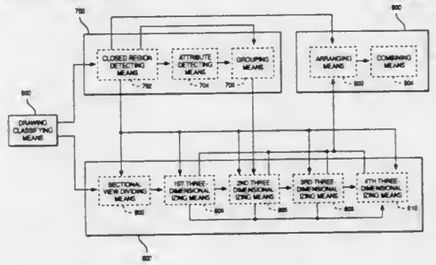
wherein, each time an image is captured, said job scheduler compares the cumulative captured image value stored in said third memory section with the threshold printing value stored in said second memory section, and when the cumulative captured image value is equal to or greater then the threshold printing value, said job scheduler transmits an enabling signal to said print subsystem for causing said same to commence production of the first print.

5,668,939

METHOD AND APPARATUS FOR RENDERING A SOLID THREE DIMENSIONAL MODEL FROM TWO DIMENSIONAL INPUT INFORMATION INCLUDING CLOSED REGION RECOGNIZING AND THREE DIMENSIONAL RENDERING

Masayuki Numao, Kawasaki, and Hiroshi Masuda, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 310,694, Sep. 22, 1994, abandoned. This application Mar. 28, 1996, Ser. No. 623,099
Claims priority, application Japan, Sep. 30, 1993, 5-245384
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—427 **2 Claims**



1. A solid model generating system comprising:

drawing classifying means for classifying input two-dimensional drawing data either as plan view data or sectional view data;

closed region recognizing means for automatically detecting and identifying closed regions and information regarding the positional relationships received from the classified plan view data, detecting attributes of the detected closed regions, and grouping the detected closed regions based on the detected attributes of the closed regions;

closed region three-dimensionalizing means for dividing the classified sectional view data based on the detected closed region data, three-dimensionalizing selected portions of the closed regions based on the divided sectional view data, and three-dimensionalizing closed regions not belonging to a three-dimensionalized portion of the closed regions but belonging to the same group as a three-dimensionalized closed region in a like manner as performed on the selected portions of the three dimensionsalized closed region; and

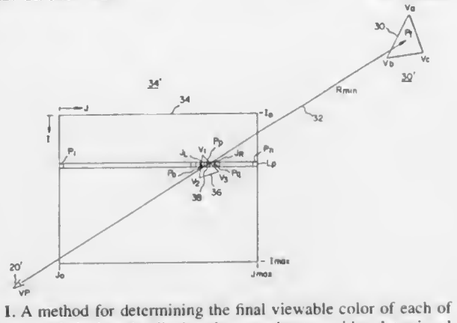
solid model generating means for generating a solid model by combining the three-dimensionalized closed regions based on the detected positional information on the relationship among the respective closed regions.

5,668,940

METHOD AND APPARATUS FOR ANTI-ALIASING POLYGON EDGES IN A COMPUTER IMAGING SYSTEM

Walter Robert Steiner, and Michael Leroy Morgan, both of Ormond Beach, Fla., assignors to Martin Marietta Corporation, King of Prussia, Pa.

Filed Aug. 19, 1994, Ser. No. 292,209
Int. Cl.[6] G06T *11/40*
U.S. Cl. 345—429 **20 Claims**



1. A method for determining the final viewable color of each of an array of pixels to be displayed responsive to a video data signal output of a computer image generator, comprising the steps of:

(a) first receiving input data signals characterizing a set of display space (I,J) coordinates of each of at least three vertices of each of at least one face polygon to be displayed, each different pair of the vertices defining a different edge of the associated face polygon;

(b) generating, responsive to the received vertex data signals, a data signal describing a location of a crossing, if any, of each face polygon edge along an associated one of a plurality of edge segments bounding each pixel of the display pixel array;

(c) storing, on a per-pixel basis, the edge segment crossing data signals for all face polygons affecting that pixel, along with color data for each of the face polygons occupying any portion of that pixel;

(d) processing, for each pixel to be displayed, stored data for a plurality of different edge segments of a selected constellation of a plurality of adjacent pixels, to obtain a color intensity data signal for each corner of each displayable pixel; and

(e) mixing color intensity data signals for all corners of a presently-processed pixel, to determine the final, observable color of that display pixel.

5,668,941

OPTIMUM IMPLEMENTATION OF X-Y CLIPPING ON PIXEL BOUNDARY

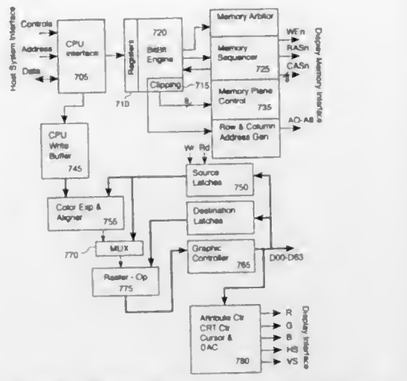
Ali Noorbakhsh, Danville, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 22, 1995, Ser. No. 493,665
Int. Cl.[6] G06T *15/30*
U.S. Cl. 345—434 **22 Claims**

1. A display controller for performing a clipping function by reading source image data from a display memory coupled to the display controller, said source image data representing a clipped portion of an image to be color expanded or a pattern to be copied, and generating an image signal for displaying an image comprising a color expanded clipped portion of an image or a repeated pattern on a display device, said display controller including:

a bit block transfer engine, for performing a bit block transfer of a block of the source image data from a source memory, processing the block of source image data, and storing a processed block of image data in a destination memory, said bit block transfer engine including:

a clip mask register for storing a clip mask value representing a number of pixels at the beginning of each BITBLT line to be masked out;



source memory address adjustment means, coupled to said clip mask register, for receiving a source memory address, and the clip mask value, and adjusting the source memory address in accordance with the clip mask value if a start boundary of the block of source image data does not fall on a byte boundary; and

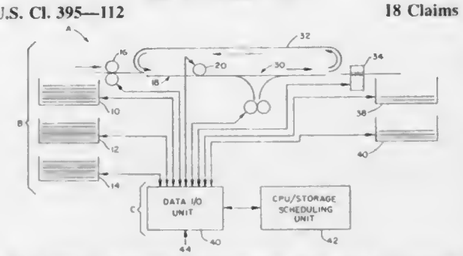
byte masking means, coupled to said clip mask register, for masking bytes of the processed block of image data according to the clip mask value for data corresponding to image data not falling within the block of source image data when storing the processed block of image data in the destination memory.

5,668,942

GENERIC SYSTEM FOR DESCRIBING AND USING RESOURCES FOR PRINT ENGINE SCHEDULING

Markus P. J. Fromherz, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 472,151
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—112 **18 Claims**



8. A method of modelling print engine resources for scheduling of printing tasks comprising:

retrieving, from components of a print engine, resource availability data representative of all resources available thereto, at least one of the components being a physical element of the print engine, each of the components being described independent of reference to descriptions of or interactions with other components;

communicating retrieved resource availability data to an associated generic scheduler, the associated generic scheduler configured without component specific information;

retrieving, from each component, resource allocation data representative of a resource requirement and a required time interval during which an associated resource is required;

communicating retrieved resource allocation data to the associated generic scheduler;

retrieving, from each component, resource constraint data representative of acceptability of multiple allocations of a same resource;

communicating retrieved resource constraint data to the associated generic scheduler; and

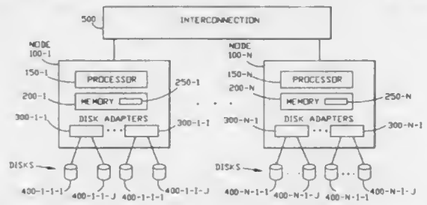
composing each of the retrieved and communicated resource availability data, resource allocation data, and resource constraint data to obtain an overall model of a print engine, whereby the associated generic scheduler is adapted to schedule printing tasks of each component in order to obtain overall print engine resources for scheduling of printing tasks.

5,668,943

VIRTUAL SHARED DISKS WITH APPLICATION TRANSPARENT RECOVERY

Clement Richard Attanaslo, Peekskill; Maria Angela Butrico, Blauvelt, both of N.Y.; James Lyle Peterson, Austin, Tex.; Christos Alkiviadis Polyzois, White Plains, and Stephen Edwin Smith, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 332,157, Oct. 31, 1994, abandoned. This application May 24, 1996, Ser. No. 653,098
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.05 **9 Claims**



1. A clustered multi-processing system comprising:

at least three interconnected nodes wherein less than all nodes are server nodes, each node including a memory;

a multi-ported disk having at least a primary tail physically attached to a primary server node and a secondary tail physically attached to a secondary server node;

a disk access request mechanism, coupled to the nodes, for communicating a disk access request from an originating node to a server node physically attached to the disk along one of at least a primary disk access path and a secondary disk access path defined between the originating node, the server nodes and the disk;

a failure detection mechanism, coupled to the nodes, for detecting failures along one of the primary disk access path and the secondary disk access path; and,

proxy logic stored in the memory on each of the nodes and coupled to the failure detection mechanism, for redirecting subsequent disk access requests along a non-failing disk access path to the disk, when a failure is detected;

said proxy logic comprising a two-phase commit protocol including:

a coordinator node being adapted for broadcasting a suspend message to participant nodes to suspend access to a failed disk access path and waiting for an acknowledge message from all participant nodes;

each participant node receiving the suspend message being adapted for suspending said access to the failed disk access path, sending the acknowledge message to the coordinator node confirming suspension of said access to the failed disk access path, and waiting for a resume message from the coordinator node;

the coordinator node being further adapted for sending the resume message upon receipt of the acknowledge message from said all participant nodes; and

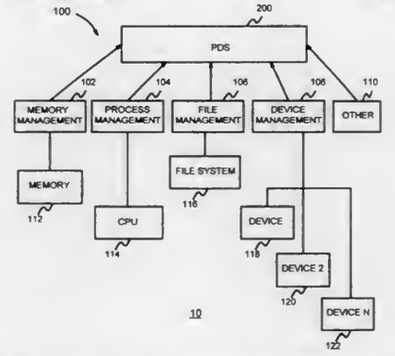
said each participant node being further adapted for redirecting said subsequent disk access requests along the non-failing disk access path to the disk, upon receipt of the resume message.

5,668,944

METHOD AND SYSTEM FOR PROVIDING PERFORMANCE DIAGNOSIS OF A COMPUTER SYSTEM

Robert Francis Berry, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1994, Ser. No. 301,089
Int. Cl.[6] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 395—184.01 **15 Claims**



8. A performance diagnosis system (PDS) for providing an indication of the performance of a computer system; the computer system including an operating system, the operating system including a plurality of resource managers; the performance diagnosis system comprising:

a plurality of collector means; each of the collector means being coupled to one of the plurality of resource managers for receiving data therefrom; wherein each of the collector means further comprises:

means for requesting status information from the associated resource manager;

means for collecting historical information from the associated resource manager;

means responsive to the collecting means for requesting a record; and

means for sending the record to the database;

a database coupled to the plurality of collection means for providing historical and configuration information responsive to the received data, the database including an application program interface for providing the historical and configuration information in a standard format;

reporter means responsive to the historical and configuration information from the database for providing a report of the performance of the computer system;

collector control means coupled to the plurality of collector means for controlling information provided to the database;

reporter control means coupled to the reporter means for controlling the reports generated by the reporter;

retention control means coupled to the database for retaining configuration and historical information for a predetermined time period;

wherein the retention control means includes:

means for reading a retention file;

means responsive to the retention file reading means, for reading records in the database;

means responsive to the records reading means for determining if a record is to be kept in the database; and

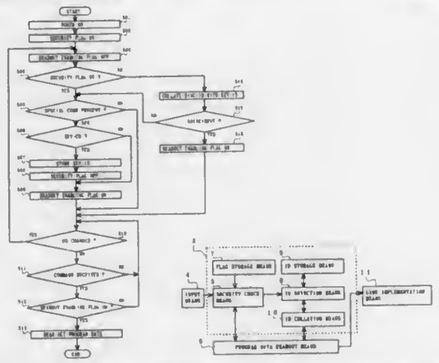
timing means coupled to the collector control, reporter control and retention control means for timing the operation of the plurality of collectors, the reporter and the database.

5,668,945

DATA SECURITY APPARATUS AND METHOD

Toshihiro Ohba, and Toshinori Asai, both of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan

Filed Feb. 23, 1995, Ser. No. 393,055
Claims priority, application Japan, Feb. 28, 1994, 6-030590
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—186 **18 Claims**



1. A data security apparatus for controlling whether program data stored in a replaceable, external storage medium is to be processed by a data processor, the data security apparatus comprising:

a security check means for detecting the presence or absence of a security code stored in an external storage medium;

an internal storage means for storing an identification code read out from the external storage medium;

a replacement detect means for detecting a replacement of the external storage medium with a second external storage medium;

a judgment means for comparing the identification code stored in the internal storage means with an identification code read out from the second external storage medium and judging whether the codes correspond;

a control means for controlling whether the program data stored in the external storage medium or the second external storage device is to be processed by the data processor or not;

wherein, when the presence of the security code in the external storage medium is detected by the security check means, and the replacement means detects a replacement of the external storage medium with the second external storage medium, and the judgment means judges that the identification code stored in the internal storage means and the identification code read out of the second external storage medium correspond, then the security check means does not check the second external storage medium for the security code and the control means permits the program data stored on the second external storage medium to be processed by the data processor,

and when the absence of the security code in the external storage medium is detected by the security check means, and the replacement means detects a replacement of the external storage medium with the second external storage medium, the security check means checks the second external storage medium for the security code,

and when the external storage medium has a security code but does not have an identification code, and the replacement means detects a replacement of the external storage medium with the second external storage medium, the security check means checks the second external storage medium for the security code,

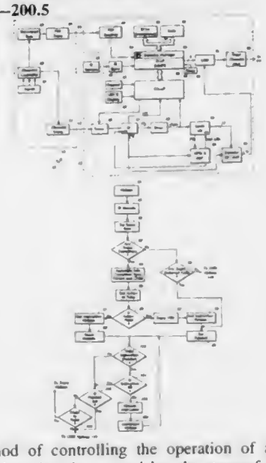
and when the presence of the security code in the external storage medium is detected by the security check means, and the replacement means does not detect a replacement of the external storage medium with the second external storage medium, then the control means permits any program data stored on the external storage medium to be processed by the data processor.

5,668,946

SYSTEM FOR CABLE COMMUNICATION WHEREIN INTERPRETIVELY CODED DATA TRANSMITTED FROM HEADEND SELECTIVELY INITIATE LOOP FREE INSTRUCTION SETS STORED IN RECEIVER-DECODER TO AFFECT THE BEHAVIOR THEREOF

Caitlin B. Bestler, Chicago; Mack S. Daily, Round Lake Park, and Shu-Yuan V. Yang, Glenview, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 1, 1993, Ser. No. 115,378
Int. Cl.[6] G06F *15/16;13/18*
U.S. Cl. 395—200.5 **16 Claims**



1. A method of controlling the operation of a cable system end-user receiver-decoder comprising the steps of:

maintaining in the receiver-decoder a download memory having a program stored therein which includes a plurality of instruction sets for controlling receiver-decoder behavior, each set being free of loop portions or branch backward instructions and each beginning with an initial instruction;

forming data for affecting the behavior of the receiver-decoder in an interpretive code in the headend;

transmitting said data to said receiver-decoder;

receiving said transmitted data at said receiver-decoder and presenting it to an interpreter;

receiving from said interpreter an instruction which corresponds to said transmitted data, the instruction being in the form of a direction to implement a specific initial instruction within said program; and

implementing said initial instruction and its corresponding instruction set to thereby affect the behavior of the receiver-decoder.

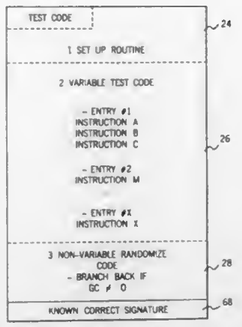
5,668,947

MICROPROCESSOR SELF-TEST APPARATUS AND METHOD

Kenneth William Batcher, Hudson, Ohio, assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Apr. 18, 1996, Ser. No. 634,483
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.06 **23 Claims**

1. A method of testing a digital integrated circuit for faults, the integrated circuit having access to a memory for storing a test code including a plurality of separate instructions and a known correct IC signature, a microprocessor for performing the test code, an



operand register having a plurality of register slots for storing operands manipulated by the microprocessor according to the test code, a data bus for transferring bus data to and from the register slots and the memory, and a random data generator including a signature register storing a signature word, the method comprising the steps of:

a) supplying each register slot with initial register data and the signature register with an initial signature word;

b) performing the test code and, while performing the test code, periodically combining the signature word and said bus data to provide a modified signature word;

c) after performing the test code, altering the test code as a function of the modified signature word to provide a modified test code as the test code;

d) repeating steps b) and c) for a predetermined number of passes through the test code;

e) after said predetermined number of passes, comparing the signature word to the known correct IC signature; and

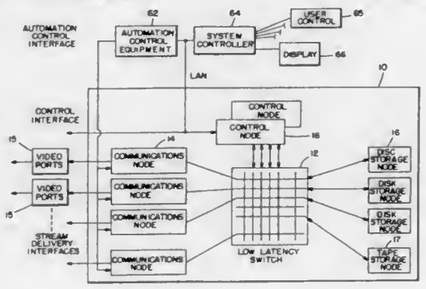
f) where the signature word is not identical to the known correct IC signature, signaling a faulty integrated circuit.

5,668,948

MEDIA STREAMER WITH CONTROL NODE ENABLING SAME ISOCHRONOUS STREAMS TO APPEAR SIMULTANEOUSLY AT OUTPUT PORTS OR DIFFERENT STREAMS TO APPEAR SIMULTANEOUSLY AT OUTPUT PORTS

William Russell Belknap, San Jose, Calif.; Louise Irene Cleary, Boca Raton, Fla.; James W. Eldridge, San Jose, Calif.; Larry William Fitchett, Morgan Hill, Calif.; Stephen G. Luning, San Jose, Calif.; Christopher S. Murray, Boynton Beach, Fla.; Howard T. Olnowich, Endwell, N.Y.; Ashok Raj Saxena, San Jose, Calif.; Karl David Schubert, San Jose, Calif., and Buddy Floyd Stansbury, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1994, Ser. No. 302,625
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—200.61 **14 Claims**



1. A media streamer, comprising:

at least one storage node for storing a digital representation of a video presentation, said video presentation requiring a time T to present in its entirety, and stored as a plurality of N data blocks, each data block storing data corresponding approximately to a T/N period of said video presentation;

a plurality of communication nodes each having at least one input port and at least one output port, each communication node including request queue means for requesting a data block from said at least one storage node when said data block is to be readied for dispatch, and output means for converting said data block to an isochronous output stream and applying said isochronous output stream to said output port;

a circuit switch connected between said at least one storage node and input ports of said plurality of communication nodes, said circuit switch selectively coupling one or more of said input ports to said at least one storage node to enable the data blocks stored thereat to be dispatched to one or more of said communication nodes; and

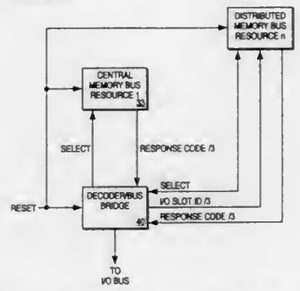
at least one control node coupled at least to said plurality of communication nodes and to said at least one storage node for converting input user commands into control commands for said plurality of communication nodes, said at least one control node further enabling (i) isochronous data streams corresponding to a same one of said N blocks to appear simultaneously at a plurality of said output ports and (ii) isochronous data streams corresponding to different ones of said N blocks to appear simultaneously at a plurality of said output ports.

5,668,949

SYSTEM UTILIZING MULTIPLE ADDRESS DECODE RESOURCES AND DECODER RECEIVING ADDRESS DETERMINES ADDRESS CORRESPONDING TO RESOURCE BASED ON SELECT AND READY SIGNALS BY THAT PARTICULAR RESOURCE

Joseph M. Nardone; Michael J. McTague, both of Portland, and Howard S. David, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 150,978, Nov. 12, 1993, abandoned.
This application Oct. 19, 1995, Ser. No. 545,374
Int. Cl.[6] G06F *12/10;13/12*
U.S. Cl. 395—200.31 **14 Claims**



1. A method of carrying out a transaction at an address in a computer system having a first, second, and third resource, and a processing unit requesting said transaction, the method comprising the steps of:

(a) if said address corresponds to said first resource, then
(i) said first resource asserting a select signal to said second resource;
(ii) said first resource deasserting a ready signal;
(iii) said fast resource completing said transaction;
(b) if said address corresponds to said second resource, then
(i) said second resource deasserting said ready signal;
(ii) said second resource completing said transaction;
(c) if said address does not correspond to the first resource or the second resource, then
(i) said second resource deasserting said ready signal;
(ii) said second resource forwarding said address to said third resource.

5,668,950

NETWORK SERVICE SYSTEM AND COMMUNICATION UNIT FOR GAME MACHINE AND GAME MACHINE CAPABLE OF USING SAID NETWORK SERVICE SYSTEM

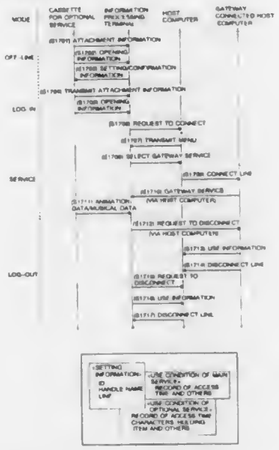
Misao Kikuchi; Kunimasa Imasono; Yasushi Kitagawa; Kenji Noma; Tadayuki Tahara, all of Kawasaki; Yoshinori Saito, Sendai; Hisayoshi Hayasaka, Sendai; Kiyotaka Yago, Sendai, and Kenji Kawasaki, Oyama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 13, 1994, Ser. No. 355,032

Claims priority, application Japan, Apr. 1, 1994, 6-065339; Jul. 25, 1994, 6-172964

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.47 **19 Claims**



1. A network service system, comprising:
a network of host computers connected together for providing services through said network;
a storage device storing a service identifier identifying a type of network service; and
an information processing terminal, connected to said network, identifying the service identifier and connecting to one of the host computers based on the service identifier to receive the type of network service identified by the service identifier when said storage device is attached thereto.

5,668,951

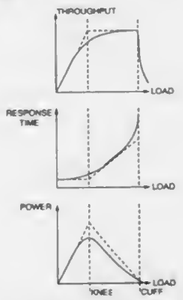
AVOIDING CONGESTION SYSTEM FOR REDUCING TRAFFIC LOAD ON SELECTED END SYSTEMS WHICH UTILIZING ABOVE THEIR ALLOCATED FAIR SHARES TO OPTIMIZE TIIROUGHPUT AT INTERMEDIATE NODE

Rajendra K. Jain, Sudbury; K. K. Ramakrishnan, Maynard, and Dah-Ming Chiu, Lexington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 494,502, Jun. 26, 1995, which is a continuation of Ser. No. 294,291, Aug. 23, 1994, Pat. No. 5,491,801, which is a continuation of Ser. No. 183,927, Jan. 21, 1994, Pat. No. 5,377,327, which is a continuation of Ser. No. 696,257, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 184,945, Apr. 22, 1988, abandoned. This application Nov. 20, 1995, Ser. No. 559,866

Int. Cl.[6] G06F *13/12;13/14*

U.S. Cl. 395—200.65 **78 Claims**



1. A method for avoiding congestion in a network of end systems communicating by means of transmission and reception of digital packets routed through at least one intermediate system, wherein throughput of the intermediate system as a function of load is characterized by a knee, said method comprising the steps of:
A. detecting at an intermediate system when the intermediate system is operating in a region where a load presented to it is greater than the load at the knee of its load-throughput characteristic; and
B. in response to detecting said operation above the knee, (i) selecting end systems that are operating above their respective fair shares of the load and (ii) reducing the load presented to said intermediate system by at least one of said selected end systems so as to urge the intermediate system to operate approximately at said knee.

5,668,952

METHOD FOR RESOLVING NETWORK ADDRESS BY SENDING RERESOLVE REQUEST TO NODES AT SELECTED TIME PERIOD AFTER ESTABLISHING ADDRESS TABLE, AND UPDATING THE TABLE WITH RECEIVED REPLY THERETO

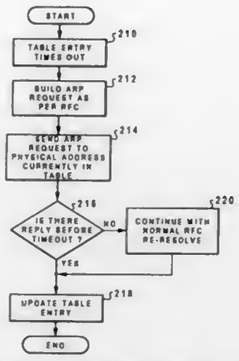
Albert Alfonse Slane, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1994, Ser. No. 287,314

Int. Cl.[6] G06F *13/00;* **H04L** *12/24*

U.S. Cl. 395—200.75 **3 Claims**

1. A method of operating a network system having a plurality of nodes, each node having an assigned address, the method comprising the steps of:
establishing in an address table an address mapping associated with each of said plurality of nodes on the network system at a given time;
detecting passage of a selected time period after said given time and generating a timeout signal in response thereto;



upon occurrence of said timeout signal, generating a target address for a selected node whose address is found in said table;
sending a reresolve request to said selected node associated with said address currently in said address table;
waiting for a reply from said targeted address of said node;
upon receipt of a reply, updating said address table with said target address for said node;
upon failure to receive a reply within a given time, broadcasting a message across said network system until a response is received from said targeted node;
upon the receipt of said response, updating said address table with said received response.

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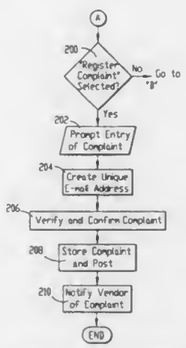
METHOD AND APPARATUS FOR HANDLING A COMPLAINT

Marshall Allan Sloo, 4746 Roanoke Pkwy. - #702, Kansas City, Mo. 64112

Filed Feb. 22, 1995, Ser. No. 392,053

Int. Cl.[6] G06F *17/60;19/00*

U.S. Cl. 705—1 **37 Claims**



1. A method of handling user complaints concerning products provided by a plurality of different vendors comprising the steps of:
providing complaint handling computer means operable for receiving one of said complaints and a response thereto, said complaint handling computer means including memory means for storing said complaint and response and retrieving means for retrieving said complaint and response;
receiving into said complaint handling computer means said complaint concerning a product provided by a vendor and storing said complaint in a directory categorized by a characteristic relating to said product;
notifying the vendor of the receipt of said complaint in said complaint handling computer means;
receiving into said complaint handling computer means said response to said complaint from the vendor of said product and storing said response in said directory in association with said complaint;
creating a private message area in said complaint handling computer means which can only be accessed by the complainant and the vendor; and
receiving into said private message area negotiations between the complainant and the vendor regarding said complaint for the resolution of said complaint.

5,668,954

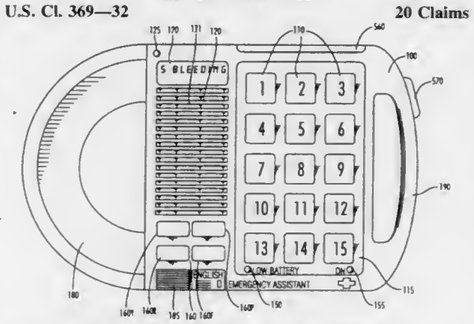
INSTRUCTIONAL CD PLAYER

David L. Feder, 10708 W. 115th Pl., Overland Park, Kans. 66210, and Milton L. Goff, Ramona, Calif., assignors to David L. Feder, Kansas City, Mo.

Division of Ser. No. 239,242, May 6, 1994, Pat. No. 5,521,812. This application Nov. 14, 1995, Ser. No. 555,883

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—32 **20 Claims**



17. A device for giving audio instruction comprising:
(a) a controller including a processor and a control program;
(b) a CD player coupled to the controller and operative under the control of the controller;
(c) a plurality of playback selectors coupled to the controller;
(d) an amplifier coupled to the CD player;
(e) a speaker coupled to the amplifier;
(f) a plurality of individually selectable program selectors for selecting specific programs on a CD to be played, the selectors coupled to the controller;
(g) a handle having a longitudinal axis and
(h) a flashlight aimed about 90° from the longitudinal axis of the handle.

5,668,955

CONTROLLER FOR ACCESSING SERVICES FROM MULTIPLE PROVIDERS OF SERVICES

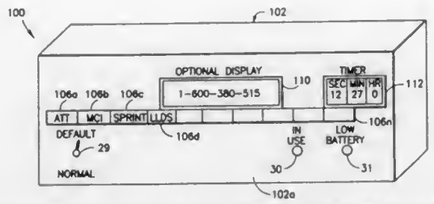
Ernest deCiutiis, Peoria, and William L. Martin, Mesa, both of Ariz., assignors to Demar L.P., Mesa, Ariz.

Filed Sep. 15, 1995, Ser. No. 529,008

Int. Cl.[6] H04M *15/00;7/00;1/00;3/00*

U.S. Cl. 379—130 **22 Claims**

1. Controller for accessing a predetermined service by a subscriber from one of multiple service providers each identified and selectable by a unique access code, the controller comprising means for monitoring a subscriber unit which serves to initiate the desired service, the controller including means for detecting when the subscriber elects to obtain the predetermined service from one of the service providers; and selection means for selecting one of the multiple service providers by generating a telephone service provider access code corresponding to one of the service providers in accordance with a predetermined algorithm which provides a



desired distribution of usage by the subscriber of a plurality of the service providers, which selects a service provider substantially independently of the destination of the call being made, whereby the subscriber will obtain said predetermined service from each of said plurality of service providers with continued use of the controller.

5,668,956

BUS SYSTEM FOR USE WITH INFORMATION PROCESSING APPARATUS

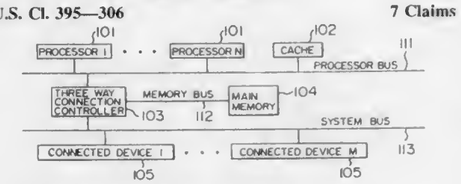
Koichi Okazawa, Tokyo; Koichi Kimura; Hitoshi Kawaguchi, both of Yokohama; Ichiharu Aburano, Hitachi; Kazushi Kobayashi, Ebina, and Tetsuya Mochida, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 311,893, Sep. 26, 1994, Pat. No. 5,483,642, which is a continuation of Ser. No. 705,701, May 23, 1991, abandoned. This application May 24, 1995, Ser. No. 449,088

Claims priority, application Japan, Jun. 4, 1990, 2-144301; May 10, 1991, 3-105536

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—306 **7 Claims**



1. A data processing system comprising:

a processor;

a cable;

a processor bus connected to said processor and said cache, said processor bus comprising an address bus and a bus for transferring data;

a main memory;

a memory bus connected to said main memory, said memory bus comprising a bus for transferring data, an address bus and a control bus;

at least one device;

a system bus connected to said device, said system bus comprising an address bus and a bus for transferring data; and,

a three-way connection controller for controlling data transfer among said processor, said main memory and said device,

wherein said three-way connection controller controls transfer of first data between said processor and said memory without having any of said transferred first data appear on said bus for transferring data of said system bus and said address bus of said system bus, controls transfer of second data between said device and said main memory without having of any said transferred second data appear on said bus for transferring data of said processor bus, and with having an address of said second data appearing on said address bus of said processor bus, and controls transfer of third data between said processor and said device without having any of said transferred third data appear on said bus for transferring data of said memory bus and said address bus of said memory bus.

5,668,957

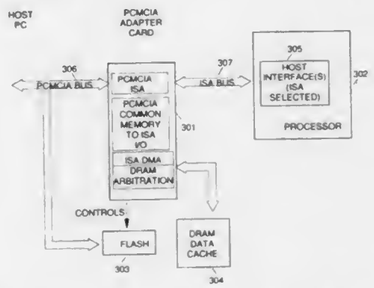
METHOD AND APPARATUS FOR PROVIDING VIRTUAL DMA CAPABILITY ON AN ADAPTER CONNECTED TO A COMPUTER SYSTEM BUS WITH NO DMA SUPPORT

Gordon Taylor Davis, Raleigh, N.C.; Robert James Devins, Essex Junction, Vt.; Patrick Kwong-hung Kam, Pickering, Canada; James L. Patrick, Jr., Cary, N.C., and John Michael Krause, Schaumburg, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1995, Ser. No. 556,773

Int. Cl.[6] G06F *13/10;13/12*

U.S. Cl. 395—309 **16 Claims**



1. An interface circuit for providing virtual direct memory access (DMA) capability to an adapter card connected to a computer system bus without DMA support, the interface circuit comprising:

DMA-capable bus connections;

non-DMA-capable bus connections;

cache memory address and data connections;

cache memory command and control connections;

a multiplexer array disposed between the DMA and non-DMA capable bus connections and the cache memory address and data connections so that a cache memory can be alternatively interfaced to a DMA and a non-DMA capable bus;

bus cycle state control logic disposed between the cache memory command and control connections and the multiplexer array;

refresh and arbitration logic connected to the bus cycle state control logic and the multiplexer array, the refresh and arbitration logic and the bus cycle state control logic for controlling the multiplexer array; and

memory command and wait logic disposed between the memory command and control connections and the refresh and arbitration and bus cycle state control logic.

5,668,958

HETEROGENEOUS FILING SYSTEM WITH COMMON API AND RECONCILED FILE MANAGEMENT RULES

Edward Joseph Bendert, Vestal; Robert Bradley Bennett, Endwell; Eve Suzanne Berman, Binghamton; Susan Marie Farrell; Eugene Johnson, both of Vestal; Robert Michael Nugent, Nichols, and Mary Ellen Vendryes, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1995, Ser. No. 526,937

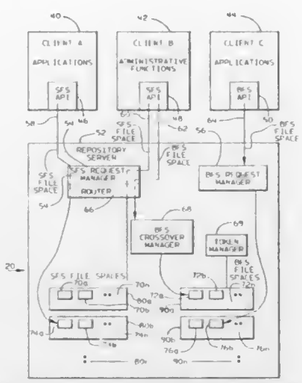
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—308 **22 Claims**

1. A computer system for managing first and second different file systems, said system comprising:

first and second different file managers having first and second different APIs for said first and second file systems, respectively; and

hybrid means for controlling atomicity of said second file system based on requests made using said first API, at least one request permitted under said second API for access to said second file system not being permitted with concurrent access



to said second file system using said first API such that said one request does not violate file management rules of said second API.

5,668,959

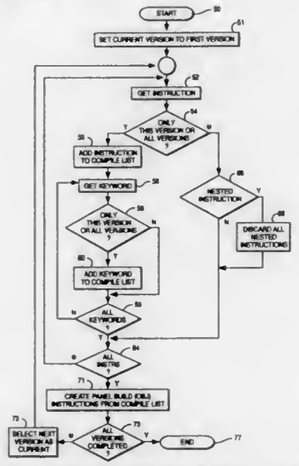
CREATING MULTIPLE VERSIONS OF PANELS FROM A SINGLE PANEL DEFINITION FILE

Jerry Walter Malcolm, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 253,193, Jun. 2, 1994, abandoned, which is a continuation of Ser. No. 747,169, Aug. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 483,903

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—333 **16 Claims**



1. A method of preparing interactive display panels for use in a graphical user interface to an application program comprising the steps of:

constructing at build time of the application program a data file containing display layout parameters for a plurality of related panels, said data file correlating each display layout parameter with a respective set of related panels, wherein at least one set of related panels differs from any other set of related panels;

generating from said data file a set of panel build instruction groups incorporated in the application program, each one of said panel build instruction groups containing the display layout parameters for a respective one of said plurality of related panels; and

responsive to an application call, accessing during application program run time said set of panel build instruction groups for displaying application program designated ones of said related panels.

5,668,960

DATA PROCESSING DEVICE WITH MEANS FOR DISPLAYING FILES IN ACCORDANCE WITH APPLICATIONS WITH WHICH THE FILES CAN BE READ

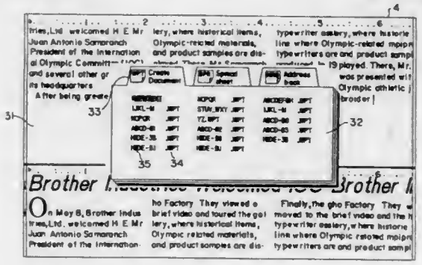
Misao Kataoka, Mie-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 333,510, Nov. 2, 1994, abandoned. This application Nov. 29, 1995, Ser. No. 563,857

Claims priority, application Japan, Nov. 4, 1993, 5-301100

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—333 **18 Claims**



1. A data processing device comprising:

a plurality of applications;

a data entry device for entering data;

a display device for displaying said entered data;

a data storage device for storing said data as files, each of said files having a file name and an extension name, said extension name being indicative of an application with which said file can be read;

an index actuator for initiating a display of an index of said file names of said files stored in said storage device on said display device;

wherein each of said files has a file name and an extension name,

means for arranging said index of said file names in a plurality of windows displayed on said display device, said plurality of windows being in one-to-one correspondence with said plurality of applications each of said windows containing an index of said file names having a similar extension, said windows arranged to partially overlap each other,

said arranging means further arranging one of said windows which contains an index of said file names having an extension corresponding to files readable by a currently operating application, to be displayed in front of the other of said windows.

5,668,961

SYSTEM AND METHOD FOR FAST DISPLAY OF DATA OBJECTS IN A TABLE

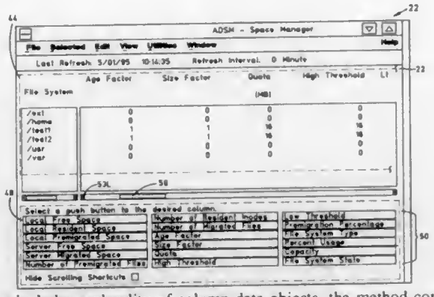
Vivian Louise Healy, San Jose; Hanhsi Huang, Cupertino, and Tin Luong Nguyen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1995, Ser. No. 450,283

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—339 **19 Claims**

1. In a computer system having a display with a screen and a graphical user interface, and further having memory coupled to the display, a method for displaying a specified column data object on the screen, wherein the column data object is part of a data table



that includes a plurality of column data objects, the method comprising the unordered machine-executed steps of:

displaying an object metaphor on the screen that represents a column data object;

responsive to a user selecting the object metaphor on the screen, determining a particular column data object specified by the selection of the object metaphor;

storing an indexed location of the particular column data object relative to a value representing the total quantity of column data objects in the table;

determining and storing a first value representing the maximum allowable pixel character positions that the screen is adapted to display;

combining the indexed location with the first value to create a second value that is stored in memory;

creating a first signal proportional to the second value and having a second value component that represents the second value;

creating a second signal from the first signal by combining the second value component of the signal with the value representing the total quantity of column data objects in the table; and

translating the second signal into a pixel character position and displaying that pixel character position on the screen, thereby displaying the specified column data object on the screen.

5,668,962

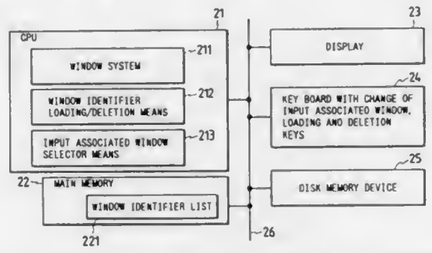
WINDOW MANAGING SYSTEM FOR SELECTING A WINDOW IN A USER DESIGNATED IDENTIFIER LIST

Toshikazu Kitami, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 188,364, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 595,615, Oct. 10, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,829

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—340 **5 Claims**



1. A window managing system for managing and concurrently displaying a plurality of windows on a display of the window managing system, said display being common to the plurality of windows, said window managing system comprising:

main memory means having list storage means for storing an identifier list and a plurality of window identifiers each associated with one of the plurality of windows;

a keyboard connected to the window managing system and having a plurality of keys allowing input to the window managing system; and

a central processing unit, the central processing unit, the display, the keyboard, and the main memory means being interconnected via a bus in the window managing system, said central processing unit comprising:

window identifier loading/deletion means, connected to the list storage means, for loading selected window identifiers from the plurality of window identifiers to the identifier list or deleting selected window identifiers from the identifier list, wherein the selected window identifiers are less than the plurality of window identifiers,

window selector means, responsive to a depression of a selector key of the keyboard, and connected to the list storage means, for selecting a specified window identifier from the plurality of window identifiers of the identifier list by depressing said selector key until said specified identifier is selected, and

a window system, connected to the window selector means and the window identifier loading/deletion means, for creating, deleting, displaying, and controlling the plurality of windows.

5,668,963

Patent Not Issued For This Number

5,668,964

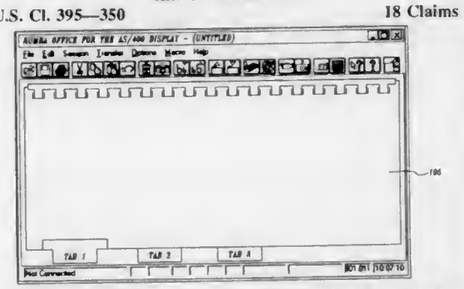
GRAPHICAL USER INTERFACE FOR CREATING A NEW NOTEBOOK WITH A DRAGGED PAGE

Brett L. Helsel; Jay R. Gindin, both of Woodinville; John P. Lemire, Duvall; Patrick D. Jenny, Redmond, and Mark A. Mortensen, Mercer Island, all of Wash., assignors to Wall Data Incorporated, Kirkland, Wash.

Filed Aug. 24, 1995, Ser. No. 518,914

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—350 **18 Claims**



1. A method of increasing the capabilities of an object, linking and embedding (OLE) graphical user interfaces (GUIs) in a GUI system, said GUI system including a personal computer consisting of a display, a user input device for control of a display cursor, and a central processing unit (CPLD, said method including the steps of:

(a) representing said GUI on said display as a first notebook consisting of at least one page with a tab, said page representing an OLE object of a loaded application;

(b) initiating a drag-drop operation of a selected page of said first notebook by using said user input device;

(c) dragging the selected page to a location outside of said notebook, said location of the selected page determined by the position of said cursor on said display;

(d) releasing the dragged page onto an area outside of said first notebook and within a second notebook;

(e) displaying the dragged page in said second notebook and removing the dragged page from said first notebook;

(f) maintaining said first notebook as an active window; and

wherein the step of releasing the dragged page further includes creating a new notebook containing the dragged page if the dragged page is released outside of the window's boundary of said first notebook and outside of a window of any other user created notebooks.

5,668,965

MENU SYSTEM FOR DATA PROCESSOR

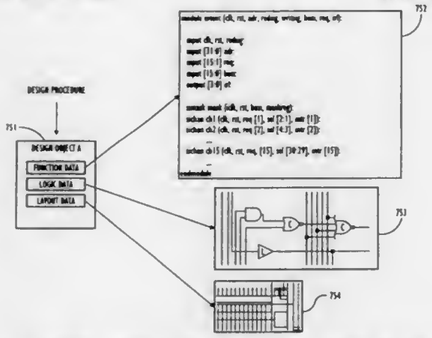
Noriko Matsumoto, Kyoto; Toshiro Furusawa, and Tamotsu Nishiyama, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 119,597, Sep. 13, 1993, abandoned. This application Mar. 15, 1996, Ser. No. 616,763

Claims priority, application Japan, Sep. 14, 1992, 4-244379; Sep. 6, 1993, 5-220373

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—352 **14 Claims**



1. A computer system for designing a circuit, wherein the circuit is represented by a hierarchical structure of connected circuit blocks, the computer system comprising:

object memory means for memorizing a plurality of objects, each object having information on a single circuit block, including physical information describing the shape and scale of a layout area of the circuit block;

object specifying means for specifying objects from said plurality of objects memorized by said object memory means;

menu creation means including

object input means for inputting objects specified by said object specifying means, and

hierarchy design means for designing a hierarchical structure of a menu corresponding to information of the objects input by said object input means;

menu display means for displaying a first window to represent a first object specified by said object specifying means and for displaying a first figure block group on said first window to represent the objects specified by said object specifying means and displayed in accordance with said menu creation means to represent that each object displayed in the first figure block group belongs to a lower hierarchy of the object represented by said first window, and wherein said hierarchy design means determines floor plan data of the circuit to be designed based on the respective shapes and scales of said objects displayed on said first window by said first figure block group;

object selection means for selecting an object to be processed from the objects in said first figure block group on said first window;

processing specifying means for specifying a design processing step to be applied to an object selected by said object selection means to be processed; and

processing execution means for executing the design processing step specified by said processing specifying means on the object selected by said object selection means.

5,668,966

SYSTEM AND METHOD FOR DIRECT MANIPULATION OF SEARCH PREDICATES USING A GRAPHICAL USER INTERFACE

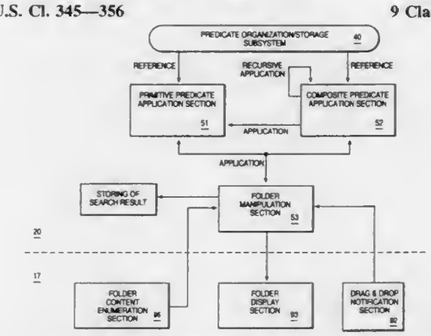
Kiyoshi Ono, Yokohama, and Yoichi Yoshida, Zama, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1995, Ser. No. 381,260

Claims priority, application Japan, Feb. 15, 1994, 6-018639

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—356 **9 Claims**



1. A graphical search interface implemented in a computer system, said computer system having processing means, a display, a keyboard for console input, a pointing device for selecting coordinate values, and storage means for storing and managing one or more objects, said computer system including a Window Manager supporting display of objects on said display, said graphical search interface comprising:

(a) predicate creation means for creating a predicate for searching for desired objects in storage, said predicate being a primitive predicate if it is a single indivisible search item, or a composite predicate if it is comprised of other predicates;

(b) predicate organization/storage means for hierarchically organizing and storing created predicates, said organization/storage means being responsive to said pointing device to hierarchically group said predicates, said organization/storage means storing each primitive predicate as a predicate object hierarchically related to other predicate objects by a predicate relation;

(c) predicate application means for applying stored predicates to one or more objects in storage said predicate application means including:

(1) primitive predicate application means for applying a primitive predicate to the object in said storage, said primitive predicate application means being responsive to said pointing device to select the object in storage; and

(2) composite predicate application means for applying a composite predicate to the object in said storage, said primitive predicate application means being responsive to said pointing device to select the object in storage; and

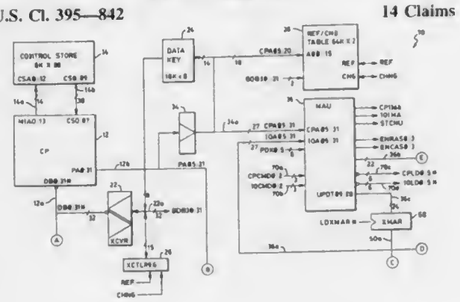
(d) display means for displaying a search result selected from said objects in storage and satisfying said predicate.

5,668,967

APPARATUS AND METHODS FOR REDUCING NUMBERS OF READ-MODIFY-WRITE CYCLES TO A MEMORY, AND FOR IMPROVING DMA EFFICIENCY

Stephen W. Olson, Wilmington; James B. MacDonald, Dracut; Edward D. Mann, Methuen, all of Mass., and James W. Petersen, Jr., Hudson, N.H., assignors to Wang Laboratories, Inc., Billerica, Mass.

Continuation of Ser. No. 134,806, Oct. 12, 1993, Pat. No. 5,377,338. This application Sep. 9, 1994, Ser. No. 303,853
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—842 14 Claims



1. A data processing system having a central processor (CP), a memory, an address bus coupled to said CP having signal lines for conveying memory addresses that are generated by said CP, and a data bus coupled to said CP for transferring data to and from said CP for memory read and memory write operations, respectively, said system further comprising:

address buffer means connected within said address bus between said CP and said memory for receiving and buffering memory addresses that are generated by said CP, said address buffer means comprising,

a plurality of distinct address registers, each of said plurality of distinct address registers having a width sufficient for storing a first portion of a memory address received from said CP during a CP write to memory operation, said plurality of distinct address registers including a first address register for storing a first portion of a first memory address received from said CP during a CP write to memory operation, and a second address register for storing a duplicate copy of said first portion of said first memory address received from said CP during a CP write to memory operation, said stored first portion of said first memory address being a content of said second address register; and

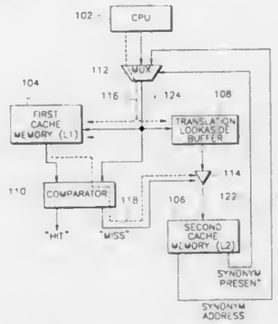
comparator means having a first input that is coupled to an output of said second address register and a second input that is coupled to said address bus, for comparing said first portion of a second memory address that is received from said CP to said content of said second address register, said comparator means having an output for indicating, when in a first state, that (a) said first portion of said second memory address that is received from said CP is equal to said content of said second address register, and that (b) a write to memory operation for which said second memory address is generated can be combined with an as yet unexecuted write to memory operation for which said first memory address was generated.

5,668,968

TWO-LEVEL VIRTUAL/REAL SET ASSOCIATIVE CACHE SYSTEM AND METHOD WITH IMPROVED SYNONYM DETECTION

Ching-Farn E. Wu, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 844,812, Mar. 2, 1992, abandoned. This application Nov. 22, 1994, Ser. No. 345,802
Int. Cl.[6] G06F *12/10;12/08*
U.S. Cl. 711—3 14 Claims



1. A two-level virtual/real cache system comprising:

a virtual cache having virtually addressed memory locations for storing data, wherein each of said virtually addressed memory locations has a virtual tag and a real pointer associated therewith;

a real cache having real addressed memory locations for storing data, wherein each of said real addressed memory locations has a real tag, a virtual pointer and synonym information associated therewith, the associated synonym information indicating whether data stored in an associated real addressed memory location is also stored in one of said virtually addressed memory locations; and

a translation-lookaside buffer for translating virtual addresses into real addresses:

wherein when said virtual cache receives a request for data having a virtual address, said virtual cache compares the virtual address of said request with the associated virtual tag of each of said virtually addressed memory locations which are indexed to determine whether data associated with said request is stored in said virtual cache, and

(a) if the comparison results in a match, said virtual cache outputs the requested data, or

(b) if the comparison does not result in a match,

said virtual cache selects a cache line in said virtual cache to be replaced and sends information about the selected line to said real cache,

said translation-lookaside buffer translates the virtual address of said request into a real address of said request and sends the real address of said request to said real cache, and

said real cache compares the real address of said request with the associated real tag of each of said real addressed memory locations which are indexed to determine whether the data associated with said request is stored in said real cache and whether a synonym exists, and

(a) if the data associated with said request is stored in said real cache and said synonym does not exist, then said real cache outputs the data associated with said request to said virtual cache using said information about the selected line,

(b) if the data associated with said request is not stored in said real cache, then said real cache selects a cache line in said real cache to be replaced, or

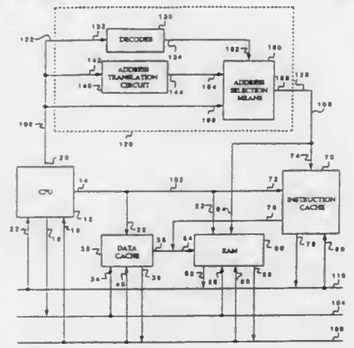
(c) if the data associated with said request is stored in said real cache and said synonym exists, then said real cache resolves said synonym using the associated virtual pointer and the associated synonym information to locate the requested data within said virtual cache.

5,668,969

ADDRESS SELECTIVE EMULATION ROUTINE POINTER ADDRESS MAPPING SYSTEM

Jonathan Fitch, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 124,302, Sep. 20, 1993, Pat. No. 5,392,408. This application Sep. 26, 1994, Ser. No. 311,880
Int. Cl.[6] G06F *12/10*
U.S. Cl. 711—202 14 Claims



1. An address selective address mapping system for a host computer system having a central processing unit (CPU) having data inputs and address outputs, and a memory having address inputs and data outputs, the data inputs of said CPU and the data outputs of said memory coupled to a data bus, the address selective address mapping system for selectively mapping a memory address output by said CPU to a cache address, the memory address and the cache address each storing a pointer to an emulation routine, the address selective address mapping system comprising:

a cache having address inputs, data inputs, and data outputs, for storing a plurality of pointers, each pointer corresponding to an emulation routine, the data inputs and data outputs of said cache coupled to said data bus;

a decoder having inputs and an output for controlling whether the address from the CPU is translated to a cache address by determining whether the address received corresponds to an address at which a pointer to an emulation routine pointer for a source instruction within a source instruction set is stored, the inputs of said decoder coupled to receive an address signal from said CPU;

an address translation circuit having inputs and outputs for determining whether an address received from said CPU corresponds to an instruction that has pointer stored in the cache, the inputs of the address translation circuit coupled to receive an entire address signal from said CPU; and

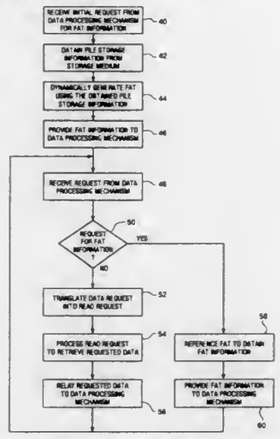
an address selection means having a control input, first data inputs, second data inputs and outputs, the address selection means generating an address for said memory and said cache by selectively outputting the signals from the first data inputs and the second data inputs, the control input of said address selection means coupled to the output of said decoder, the first data inputs coupled to the outputs of said address translation circuit, the second data inputs coupled to receive an entire address signal from said CPU, and the outputs of said address selection means coupled to the address inputs of said cache and the address inputs of said memory.

5,668,970

METHOD AND APPARATUS FOR GENERATING A FILE ALLOCATION TABLE FOR A STORAGE MEDIUM WITH NO FILE ALLOCATION TABLE USING FILE STORAGE INFORMATION

Richard Cowart, Savannah, and Larry Cowart, Bloomingdale, both of Ga., assignors to CD ROM, U.S.A., Inc., Golden, Colo.

Filed Jun. 20, 1994, Ser. No. 261,793
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—206 21 Claims



1. A method for interfacing a data processing mechanism with a storage medium having no file allocation table stored thereon and having compressed data stored thereon, to directly locate the compressed data from said storage medium, comprising:

receiving a request for file allocation table information from the data processing mechanism;

gathering file storage information directly from the storage medium by reading portions of the medium;

generating dynamically in response to the request a file allocation table (FAT) using said gathered file storage information, said FAT having a format compatible with said data processing mechanism; and

providing information from said FAT to said data processing mechanism to allow said mechanism to directly access said compressed data stored on said storage medium.

5,668,971

POSTED DISK READ OPERATIONS PERFORMED BY SIGNALLING A DISK READ COMPLETE TO THE SYSTEM PRIOR TO COMPLETION OF DATA TRANSFER

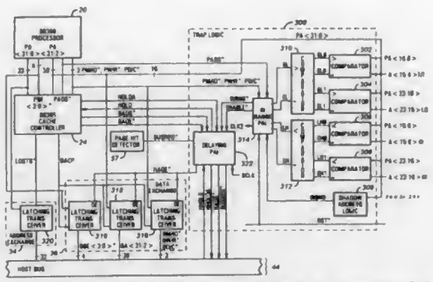
E. David Neufeld, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 983,815, Dec. 1, 1992, abandoned. This application Feb. 27, 1996, Ser. No. 607,598
Int. Cl.[6] G06F *13/20*
U.S. Cl. 711—111 18 Claims

1. In a computer system running an applications task which halts operation after requesting data from disk until a disk read complete indication is provided, a method for performing posted disk read operations, the steps comprising:

generating a disk read request after receiving the applications task disk data request to transfer data from a disk to a range of main memory locations, said range of main memory locations having a starting memory address and a length;

providing the disk read complete indication after said disk read request is generated to cause the computer system to resume



execution of the applications task prior to transfer of data from said disk to said range of main memory locations;

transferring data from said disk to said range of main memory locations after receipt of said disk read request;

delaying memory read access to said range of main memory locations after said disk read request is generated and until completion of said disk read request data transfer; and

permitting memory read access to said range of main memory locations upon completion of said disk read request data transfer.

5,668,972

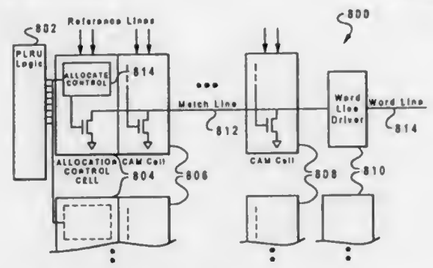
METHOD AND SYSTEM FOR EFFICIENT MISS SEQUENCE CACHE LINE ALLOCATION UTILIZING AN ALLOCATION CONTROL CELL STATE TO ENABLE A SELECTED MATCH LINE

Peichun Peter Liu, and Brian David Branson, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1994, Ser. No. 319,202

Int. Cl.[6] G06F *12/12*

U.S. Cl. 711—136 **10 Claims**



1. A data cache array comprising:

a plurality of cache lines, each of said plurality of cache lines including:

a selected block of information;

a content addressable field, said content addressable field containing at least a portion of an address for said selected block of information;

a match line coupled to said content addressable field;

a data status field, said data status field including an indication of validity or invalidity of said selected block of information; and

an allocation control cell coupled to said match line;

a least recently utilized logic block within said data cache array for selecting and setting a particular allocation control cell in a selected cache line among a plurality of cache lines in response to an indication of invalidity of said selected block of information or in response to utilization of said plurality of cache lines wherein said match line is enabled for said selected cache line; and

cache line allocation means for selecting a particular cache line among said plurality of cache lines for replacement in response to a state of said allocation control cell within said particular cache line.

5,668,973

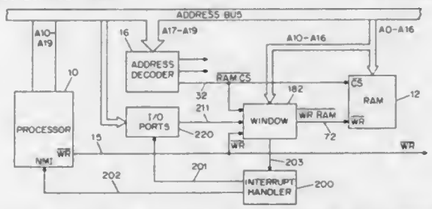
PROTECTION SYSTEM FOR CRITICAL MEMORY INFORMATION

Peter Stutz, Hinterkappelen; Martin Müller, Langenthal, and Daniel Flückiger, Zäziwil, all of Switzerland, assignors to Ascom Hasler Mailing Systems AG, Bern, Switzerland

Filed Apr. 14, 1995, Ser. No. 422,435

Int. Cl.[6] G06F *12/16;13/00*

U.S. Cl. 711—152 **19 Claims**



12. A method for protecting memory for use in a computer system comprising a processor having address outputs and executing a stored program, a memory having a control input, and window means, said window means comprising: range detection means responsive to the address outputs for generating a range-detection signal indicative of an address from the processor being within a protected range, the protected range non-identical to the entirety of the space of addresses within the memory; request means responsive to an output from the processor for recognizing a request from the processor and generating a request signal; and denying means intermediate the processor and the memory and responsive to the range-detection signal and the request signal for denying the control input to the memory if the range-detection signal is asserted in the absence of the request signal; the method comprising the steps of:

receiving address outputs from the processor at the range detection means;

generating the range-detection signal if the address outputs from the processor are indicative of the address from the processor being within the protected range; and

denying the control input to the memory if the range-detection signal is asserted in the absence of assertion of the request signal.

5,668,974

MEMORY WITH VARIABLE LEVELS OF INTERLEAVING AND ASSOCIATED CONFIGURATOR CIRCUIT

Antonio Grassi, Como, and Daniele Zanzottera, Milano, both of Italy, assignors to Bull HN Information Systems

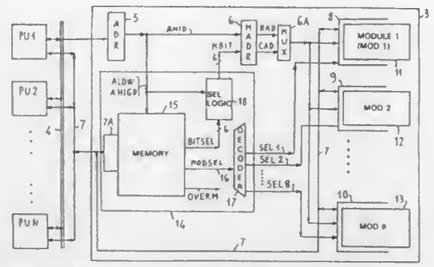
Filed May 23, 1994, Ser. No. 247,548

Claims priority, application European Pat. Off., Jun. 16, 1993, 93830263

Int. Cl.[6] G06F *13/10;12/00*

U.S. Cl. 711—157 **15 Claims**

1. A configurator circuit for a memory having variable levels of interleaving, said memory comprising a plurality of independently addressable modules each having a capacity equal to either a basic capacity or a multiple of said basic capacity, wherein said memory is addressed by memory addresses each comprising at least a first field of lower order bits and a second field of higher order bits, and wherein said modules are each selectable by one of a plurality of module selection signals in accordance with an interleaving level dependent of the number and capacities of said modules, and said



modules are addressed by module addresses comprising portions of said memory addresses, said configurator circuit comprising:

circuit means for receiving said first and second fields as inputs and outputting an address bit selection code and one of said module selection signals, said circuit means being configured with information related to the number of modules in said memory and their capacities; and

selection means, coupled to said circuit means, for generating signals representing bits of said module addresses, said selection means being controlled by said address bit selection code and receiving as inputs as least a portion of said first field and at least a portion of said second field.

5,668,975

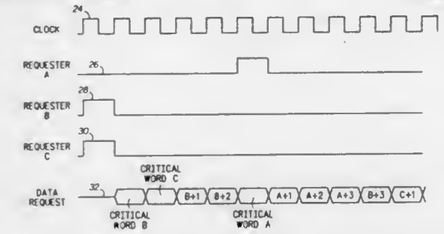
METHOD OF REQUESTING DATA BY INTERLACING CRITICAL AND NON-CRITICAL DATA WORDS OF MULTIPLE DATA REQUESTS AND APPARATUS THEREFOR

John D. Coddington, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 43,114, Apr. 5, 1993, abandoned. This application Sep. 30, 1996, Ser. No. 722,694

Int. Cl.[6] G06F *13/362*

U.S. Cl. 711—169 **7 Claims**



1. A method of requesting data in a data processing system comprising the steps of:

receiving a first request for first data from a first requester and a second request for second data from a second requester by a request arbitrator, the first request comprising a first critical datum and a first plurality of non-critical data, the second request comprising a second critical datum and a second plurality of non-critical data;

at a first time, the request arbitraior requesting the first critical datum;

at a second time subsequent to the first time, the request arbitrator requesting the second critical datum;

at a third time subsequent to the second time, the request arbitrator requesting the first plurality of non-critical data; and

at a fourth time subsequent to the second time, the request arbitrator requesting the second plurality of non-critical data.

5,668,976

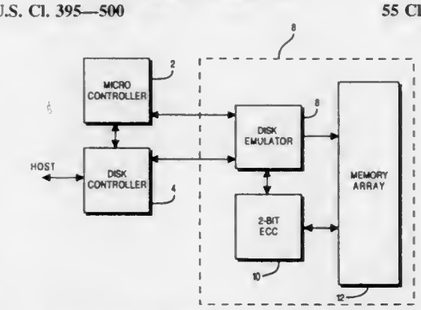
ERROR CORRECTION METHOD AND APPARATUS FOR DISK DRIVE EMULATOR

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 306,918, Sep. 16, 1994, Pat. No. 5,555,516, which is a continuation-in-part of Ser. No. 147,758, Nov. 4, 1994, abandoned. This application Oct. 21, 1994, Ser. No. 327,681

Int. Cl.[6] G06F *11/10*

U.S. Cl. 395—500 **55 Claims**



1. An error correction system for a solid state disk drive which emulates the operation of a magnetic disk drive, the error correction system comprising:

an ECC/remainder generator which sequentially receives bytes of a sector and generates ECC bytes in a write operation and check remainder bytes in a read operation;

a bank of remainder registers which are loaded with the check remainder bytes;

a calculation circuit which serially receives contents of the bank of remainder registers for generating two syndromes.

5,668,977

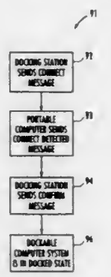
DOCKABLE COMPUTER SYSTEM CAPABLE OF ELECTRIC AND ELECTROMAGNETIC COMMUNICATION

Scott Swanstrom, Cedar Park, and Douglas D. Gephardt, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Continuation of Ser. No. 217,952, Mar. 25, 1994, abandoned. This application May 6, 1996, Ser. No. 642,188

Int. Cl.[6] G06F *13/00;15/177*

U.S. Cl. 395—500 **23 Claims**



1. A dockable computer system including a host station and a mobile computer unit wherein said host station includes a station bus, and said mobile computer unit includes a unit bus, a unit processor and unit memory, wherein said mobile computer unit resides in at least two distinct states, a docked state in which said unit is operatively associated and physically communicating with said station and an undocked state in which said unit is physically separate from said station, and further wherein said mobile computer unit is in electromagnetic communication with said host

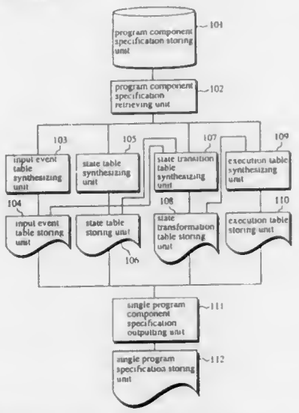
station when said system is in said undocked state preparatory to assuming said docked state to transmit information via a wireless communication link between said unit and said station to prepare the dockable computer system for docking while said unit is, physically separate and physically proximate said station said information including prodock configuration information, said predock configuration information including bus speed information and identification information.

5,668,978

APPARATUS AND METHOD FOR SYNTHESIZING PROGRAM SPECIFICATION FROM INDEPENDENT SETS OF TABLES

Kouichi Yasutake, Kyoto, and Norio Sanada, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 148,938, Nov. 8, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 520,227
Claims priority, application Japan, Nov. 9, 1992, 4-298768
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—500 **7 Claims**



1. An apparatus for synthesizing a plurality of program component specifications into a single program component specification, each program component transforming its state in operation responding to an input of an event and, in turn, outputting another event in accordance with the transformation to the other program components, said apparatus comprising:

program component specification storing means for storing a plurality of program component specifications, each including a table showing events to be inputted therein, a table showing states of the program component in operation, a table showing state transformations in response to the input events, and a table showing events to be outputted therefrom to the other program components according to the state transformations;

input event table synthesizing means for synthesizing input event tables for the plurality of program component specifications into a single input event table for said single program component specification;

state table synthesizing means for synthesizing state tables for the plurality of program component specifications into a single state table for said single program component specification;

state transformation table synthesizing means for finding how each of the states in the single state table is transformed in response to each of the input events in the single input event table, by tracing paths of state transformation by referring to the state transformation tables and the output event tables, both for the plurality of program component specifications;

output event table synthesizing means for finding which one of the output events in the single output event table is outputted while each of the states is being transformed, and by responding to each of the input events in the single input event table, by referring to the state transformation tables and the output event tables, both for the plurality of program component specifications; and

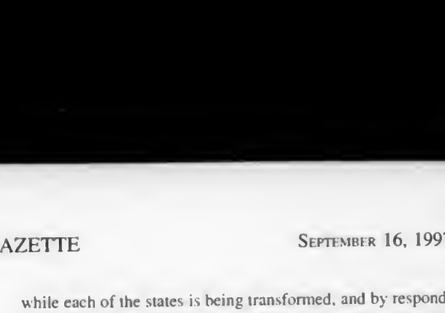
retrieving means for retrieving the input event tables, the state tables, the state transformation tables, and the output event tables stored in said program component specification storing means, and for outputting the retrieved input event tables to said input event table synthesizing means, the retrieved state tables to said state table synthesizing means, the retrieved state transformation tables to said state transformation table synthesizing means, and the retrieved output event tables to said output event table synthesizing means.

5,668,979

STORAGE OF CLIPPING PLANE DATA IN SUCCESSIVE BIT PLANES OF RESIDUAL FRAME BUFFER MEMORY

William Francis Lawless, Red Hook, N.Y., and Richard Jesse Mitchell, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 123,823, Sep. 20, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,577
Int. Cl.[6] G06T *1/60*
U.S. Cl. 345—509 **7 Claims**



1. A clipping plane storage system using residual address space, the space not used for directly storing displayed data, in a multiple bit plane frame buffer, comprising:

the multiple bit frame buffer organized in an X-Y format, with equal X and Y direction address space, providing data storage at displayable and residual address space;

means for driving display organized in an X-Y format, with unequal X and Y direction address space, connected to receive data from address space in the frame buffer;

means for dividing the Y direction address space of the X-Y organized displayable frame buffer address space into two or more portions;

means for translating clipping plane data Y direction addresses in the divided two or more portions directly into Y direction addresses situated within the residual address space of the frame buffer; and

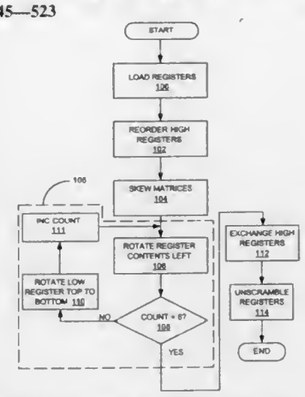
means for storing clipping plane data, related by X-Y addresses to successive frame buffer Y direction portions, in successive bit planes of the residual address space responsive to translated clipping plane data Y direction addresses.

5,668,980

SYSTEM FOR PERFORMING ROTATION OF PIXEL MATRICES

Eric W. Schieve, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 31, 1995, Ser. No. 509,487
Int. Cl.[6] G06F *13/00*
U.S. Cl. 345—523 **20 Claims**



1. A method for rotating a source pixel matrix to provide a rotated destination matrix, the method operating on a computer system, the computer system including a processor, a memory and a temporary storage portion, the temporary storage portion including a plurality of rows, each row including a plurality of storage locations, the method comprising

loading a first set of rows of the temporary storage portion with a lower portion of the source pixel matrix,

loading a second set of rows of the temporary storage portion with an upper portion of the source pixel matrix,

skewing the source pixel matrix loaded in first and second sets of rows to provide a skewed pixel matrix,

alternately rotating selected portions of the skewed pixel matrix stored in selected rows of the first and second sets of rows horizontally and vertically to provide a rotated pixel matrix, and

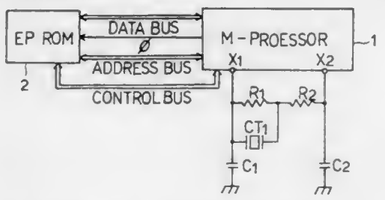
unscrambling the rotated pixel matrix to provide the rotated destination matrix.

5,668,981

APPARATUS HAVING RADIATING NOISE DAMPING MEANS FOR CONTROLLING POWER APPLIANCES

Hong-Kweon Moon, Kyongki-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Jul. 21, 1995, Ser. No. 505,022
Claims priority, application Rep. of Korea, Jul. 22, 1994, 1994-18276
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—559 **3 Claims**



1. An apparatus for controlling power appliances, having a microprocessor driving an external crystal, generating clock signals and operating in accordance with said clock signals, the apparatus comprising:

an oscillating means installed within said microprocessor for driving said external crystal and generating oscillating signals;

a clock signal generating means installed within said microprocessor, for receiving said oscillating signals and outputting said clock signals; and

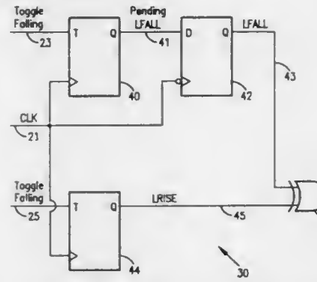
a damping means installed between said oscillating means and said external crystal for damping signals outputted from said external crystal and applying said damped signals to said oscillating means.

5,668,982

SYSTEM AND METHOD FOR USING A HALF-CLOCK MODULE TO IMPLEMENT COMPUTER TIMING CONTROL CIRCUITRY

Ian E. Davis, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 30, 1995, Ser. No. 565,502
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—559 **20 Claims**



1. A half-clock timing control module comprising:

clock signal input means for receiving a system clock signal;

control signal input means for receiving module control signals;

module means responsive to the clock signal and the module control signals for generating a module output signal which changes state on selected rising and falling edges of the system clock signal; and

module signal output means for providing the module output signal.

5,668,983

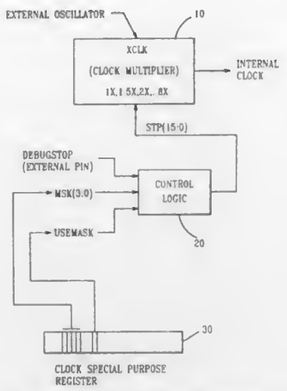
PRECISE STOPPING OF A HIGH SPEED MICROPROCESSOR CLOCK

Robert Maurice Houle, Winooski, and Kenneth Michael Zick, Essex, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1994, Ser. No. 359,233
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—560 **18 Claims**

1. Apparatus for precisely controlling the stopping of a microprocessor internal multiphase clock, comprising:

means for receiving an external clock signal and deriving an internal clock signal therefrom with a frequency that is a



multiple of the frequency of said external clock signal and with each cycle of said external clock signal being divided into a plurality of phases; and

means for selectively stopping said internal clock on each of said phases.

5,668,984

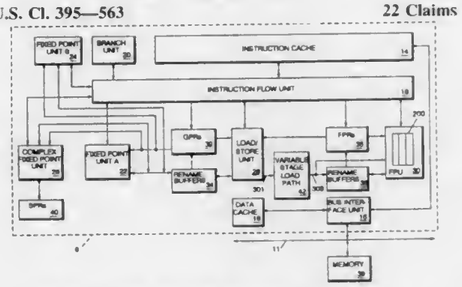
VARIABLE STAGE LOAD PATH AND METHOD OF OPERATION

Michael Preston Taborn; Roger Ned Bailey, and Steven Michael Burchfiel, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1995, Ser. No. 394,868

Int. Cl.[6] G06F *9/302;7/38*

U.S. Cl. 395—563 **22 Claims**



1. A digital number processing system, comprising:

a multiple stage pipelined unit for executing instructions to perform operations on operands; and

a variable stage load path connected to a source of operands and connected to said pipelined unit for providing said operands to said pipelined unit, said variable stage load path further comprising:

control means for detecting whether an operand is in a valid form while said operand is being loaded into a first stage of said pipelined unit, said control means staging execution of an instruction when said operand is in invalid form;

logic means for converting said operand to a valid form while said operand would otherwise be processed by said first stage of said pipelined unit thereby introducing one stage of delay;

gate means for presenting said converted operand to said pipelined unit for processing after said one stage of delay.

5,668,985

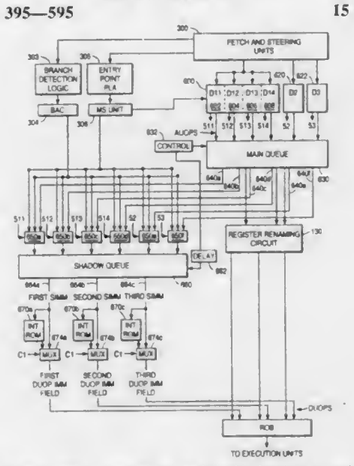
DECODER HAVING A SPLIT QUEUE SYSTEM FOR PROCESSING INTSTRUCTIONS IN A FIRST QUEUE SEPARATE FROM THEIR ASSOCIATED DATA PROCESSED IN A SECOND QUEUE

Adrian L. Carbine, Hillsboro; Gary L. Brown, Aloha; Bradley D. Hoyt, Portland; Donald D. Parker, Portland, and Rajesh Kumar, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 204,992

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—595 **15 Claims**



6. In a split queue system for a decoder having a main queue coupled to the decoder, a next processing stage coupled to the main queue, a shadow queue coupled to the decoder, a control circuit coupled to the main queue and the shadow queue, a branch address calculator coupled to the shadow queue, a constant ROM coupled to the output of the shadow queue and a selector, a method of decoding instructions comprising:

(a) receiving instruction in the decoder;

(b) transmitting a micro-operation from the instruction to the main queue;

(c) transmitting data associated with the micro-operation to the shadow queue;

(d) outputting a processed micro-operation from the main queue in a first clock cycle; and

(e) outputting data associated with the micro-operation from the shadow queue in a second clock cycle.

5,668,986

METHOD AND APPARATUS FOR HANDLING DATA STORAGE REQUESTS IN A DISTRIBUTED DATA BASE ENVIRONMENT

Kenneth Nilsen, Ridgefield, and David Garcia, Danbury, both of Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

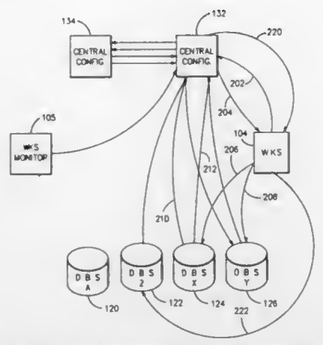
Continuation of Ser. No. 259,376, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 770,056, Oct. 2, 1991, abandoned. This applicatinn Jun. 7, 1995, Ser. No. 483,646

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—610 **7 Claims**

1. A computer implemented method for handling a request for data storage access in a distributed database environment having a data requestor and a plurality of database servers, said request originating from said requestor, said data requestor and said database servers being connected by a communications network, said method comprising the steps of:

maintaining usage information regarding said database servers in a configuration controller connected to said data requestor



and to said database servers via said network, said usage information indicating the availability of said database servers for storage of new data;

transmitting said request for data storage access from said data requestor to said configuration controller;

selecting a database server for said data storage access in accordance with said usage information;

transmitting database server access information identifying the selected database server from said configuration controller to said data requestor;

transmitting said new data from said data requestor to the database server identified by said access information; and

updating said usage information to indicate the database server storing said new data.

5,668,987

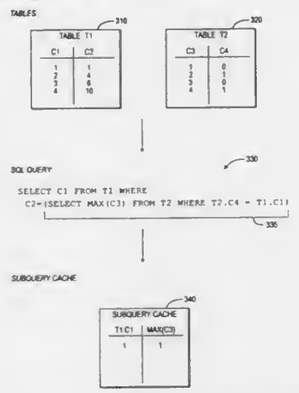
DATABASE SYSTEM WITH SUBQUERY OPTIMIZER

Peter Schneider, San Ramon, Calif., assignor to Sybase, Inc., Emeryville, Calif.

Filed Aug. 31, 1995, Ser. No. 522,047

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—603 **24 Claims**



1. In a computer system having a processor, a memory, and a storage device, said storage device storing a database comprising rows of data records, each data record storing information in database columns, a method for executing a database query for selecting particular ones of said data records, the method comprising:

(a) receiving a database query specifying selection of particular ones of said data records, said database query comprising an expression specifying a query condition and further comprising at least one database subquery nested within the database query, said subquery comprising an expression specifying a subquery result which is determined before evaluation of the expression for the database query is undertaken, the expression for the subquery being dependent upon at least one input value from a database column of said database;

(b) creating a subquery cache in said memory for storing subquery results computed for corresponding input values from said database, wherein

said subquery cache is divided into a plurality of cache rows, each row for storing a subquery result computed for corresponding input values,

said cache rows are arranged from top to bottom of said subquery cache, said top of said subquery cache storing a most-recently computed subquery result, and

said subquery cache has a size; and

(c) executing said database query by:

(i) scanning each said data records of said database for evaluating whether the data record being scanned meets the query condition;

(ii) as each data record is scanned, if said at least one input value is already stored in said subquery cache, evaluating said expression for the subquery by retrieving the corresponding subquery result;

(iii) storing cache statistics in said memory, said cache statistics including a number of hits, a number of misses, and a number indicating the maximum depth in said subquery cache a hit has occurred; and

(iv) adjusting said size of said subquery cache based on said cache statistics.

5,668,988

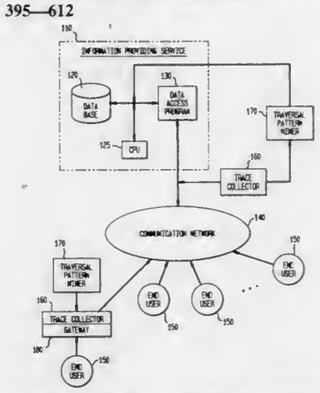
METHOD FOR MINING PATH TRAVERSAL PATTERNS IN A WEB ENVIRONMENT BY CONVERTING AN ORIGINAL LOG SEQUENCE INTO A SET OF TRAVERSAL SUB-SEQUENCES

Ming-Syan Chen, Yorktown Heights, and Philip Shi-lung Yu, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1995, Ser. No. 525,891

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—612 **14 Claims**



14. A program storage device readable by a computer tangibly embodying a program of instructions executable by said computer to perform method steps for determining frequent node traversal patterns in a communications network coupled to a computer which includes a memory and a trace collector for collecting node traversal sequences, said method steps comprising:

collecting and storing the node traversal sequences, each node traversal sequence including an end user identifier, a source node and a destination node;

sorting the node traversal sequences by said end user identifier into a series of time-ordered pairs, responsive to said steps of collecting and storing;

determining a set of maximal forward references from said series of time-ordered pairs;

determining a set of large reference sequences from said set of maximal forward references, a large reference sequence being a consecutive subsequence of said maximal forward references which occurs in excess of a predetermined threshold;

constructing a set of maximal reference sequences from said large reference sequences, wherein a maximal reference sequence is not a subset of another maximal reference sequence; and

caching said maximal reference sequences for reducing an access time to the frequent node traversal pattern associated with said maximal reference sequence.

5,668,989

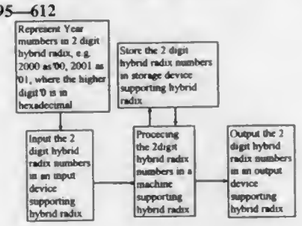
TWO-DIGIT HYBRID RADIX YEAR NUMBERS FOR YEAR 2000 AND BEYOND

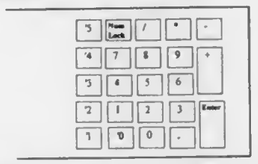
Decao Mao, 19 Orchard Hill Rd., Newtown, Conn. 06470

Filed Sep. 18, 1996, Ser. No. 715,616

Int. Cl.[6] G06F *3/023;9/30*

U.S. Cl. 395—612 **8 Claims**





1. A method for using 2 digit "hybrid radix" numeric fields for inputting, generating, storing, processing, and outputting year numbers ranging from 1900 to 2059 in a data processing system, comprising the steps of:

a) representing a 4 digit decimal year number with a biased 2 digit hybrid radix year number, with a hexadecimal most significant digit and a decimal least significant digit, and;

b) inputting the higher digit of a 2 digit hybrid radix year number in hexadecimal, from an input device capable of entering 2 digit hybrid radix numbers, and storing the digit in the most significant digit position of a 2 digit numeric field in hexadecimal, and inputting the lower digit of the number in decimal, and storing the digit in the least significant digit position of said 2 digit numeric field, and optionally;

b') whenever necessary, generating such a 2 digit hybrid radix year number, and storing the generated number in a 2 digit numeric field, and optionally;

c) whenever a computational operation is to be applied to a stored 2 digit hybrid radix number, applying hexadecimal arithmetic rules to the most significant digit, and applying decimal arithmetic rules to the least significant digit, and;

c') alternatively, whenever a computational operation is to be applied to a stored 2 digit hybrid radix number, expanding the number into 3 digit decimal first, then applying decimal arithmetic rules to all the digits and converting the result back into 2 digit, and optionally;

d) whenever necessary, outputting the stored 2 digit hybrid radix year number to an output device capable of displaying or printing 2 digit hybrid radix numbers, with the higher digit in hexadecimal and the lower digit in decimal, and;

e) providing a central processor to carry out said operations, whereby a compatibility with the 2 digit pure decimal year numbers used in the existing data files, database records, software, and user interface, can be maintained after year 1999.

5,668,990

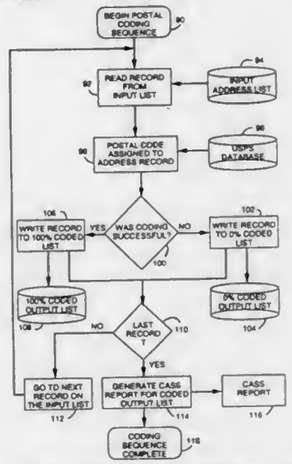
APPARATUS AND METHOD FOR GENERATING 100 UNITED STATES POSTAL SERVICE BAR CODED LISTS

Andrew P. Bajorinas, Stamford, and Gabriel E. Pettner, Orange, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 30, 1995, Ser. No. 413,653

Int. Cl.[6] G06F *3/03;3/06;3/12;12/04*

U.S. Cl. 395—615 **9 Claims**



1. A method for generating coded address lists, comprising the steps of:

(a) inputting an address list to a data processing device;

(b) reading a first record, and then subsequent records if any, from said address list;

(c) applying a set of rules to said first record, and then to said subsequent records, to determine whether or not a bar code corresponds to said first record and/or to said subsequent record;

(d) writing a second record, comprising said first record, and said corresponding bar code, to a first list if a bar code is determined for said first record, or writing said first record to a second list if said corresponding bar code is not determined; said writing to continue for said subsequent records in the same manner as said first record;

(e) outputting said first list to a language interpreter of a printer;

(f) retaining said second list in a memory of said data processing device; and

(g) generating a report in respect of said first list.

5,668,991

DATABASE MANAGEMENT SYSTEM

Stephen Dunn, Levenshulme, and Peter Kelbie, Guildford, both of England, assignors to International Computers Limited, London, United Kingdom

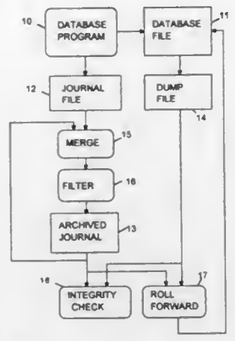
Filed Feb. 9, 1995, Ser. No. 385,912

Claims priority, application United Kingdom, Mar. 31, 1994, 9406564

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—618 **4 Claims**

1. A database system comprising:



(a) a database file comprising a plurality of database records, each record having a database identifier;

(b) a database dump file comprising a copy of said database file at a particular point in time;

(c) a journal file and an archived journal file, each comprising a sequence of after-image records, each said after-image record having a database identifier indicating which of said database records that record relates to;

(d) means for performing a series of updates on said database file and, for each of said updates, writing an after-image record into said journal file;

(e) means for periodically merging said journal file into said archived journal file and for filtering said archived journal file by sorting the after-image records in said archived journal file into order of their database identifiers and removing all but the latest after-image record relating to each database record; and

(f) recovery means, operative in the event of a database failure, for applying said archived journal file to said database dump file, to reconstruct said database file.

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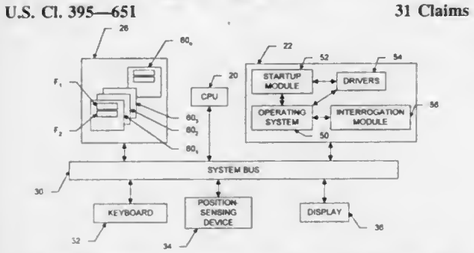
SELF-CONFIGURING COMPUTER SYSTEM

Jack L. Hammer, Lexington; Jeffrey V. Ford, Nicholasville, both of Ky., and L. Bowen Caldwell, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 1, 1994, Ser. No. 284,014

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—651 **31 Claims**



1. A self-configuring data processing system comprising a processor unit, at least one mass-storage disk and a video display, the system comprising:

a. a first set of discrete files electronically stored on a disk, each file containing processor instructions capable of directing the operation of an operating system on a different hardware platform;

b. a second set of discrete files electronically stored on a disk, each file containing processor instructions capable of directing the operation of a plurality of video displays;

c. a third set of discrete files electronically stored on a disk, each file containing processor instructions capable of directing the operation of a plurality of hardware accessories;

d. an interrogation module for interrogating the system to determine parameters associated with at least one disk, the video display and system accessories; and

e. a startup module for permanently designating a subset of each of the first, second and third sets of discrete files for automatic selection each time the processor is actuated based on the interrogation, the startup module establishing the size of at least one disk based on the disk parameters determined by the interrogation module and creating at least one logical drive including uncompressed disk files and a compressed volume file to facilitate disk compression.

5,668,993

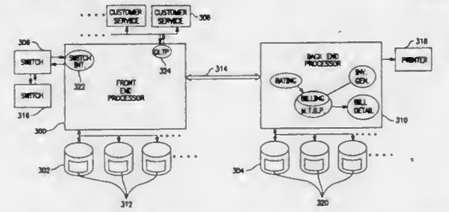
MULTITHREADED BATCH PROCESSING SYSTEM

Michael S. Peters; Clayton Walter Holt, both of Greensboro, and David J. Arnold, Jr., Asheboro, all of N.C., assignors to Teleflex Information Systems, Inc., Greensboro, N.C.

Continuation of Ser. No. 203,531, Feb. 28, 1994, abandoned. This application Apr. 19, 1994, Ser. No. 229,526

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—671 **21 Claims**



1. A method for processing a plurality of discrete events in a processing system having at least one processor, each discrete event comprising a plurality of independent sub-events, said method comprising the steps of:

distributing each discrete event into one of a plurality of segments, each segment comprising a sequence of at least one discrete event to be processed;

initiating each of said plurality of segments to execute concurrently on said at least one processor;

for each segment, processing each discrete event contained within said segment sequentially; and

for each discrete event, processing each independent sub-event of said discrete event sequentially and then storing the results of said processing;

wherein said step of distributing said discrete events comprises the steps of:

determining a number of processors designated for processing said discrete events;

setting the number of segments to equal the number of processors designated if a user override is not set;

setting the number of segments to equal a user selected number of segments if a user override is set; and

determining the number of discrete events to be processed;

allocating each of the discrete events into a segment; and

wherein said step of allocating said discrete events comprises the steps of:

dividing said number of discrete events by said number of segments to determine a segment size and a remainder;

selecting a number of segments equal to the remainder;

incrementing the segment size of each selected segment; and

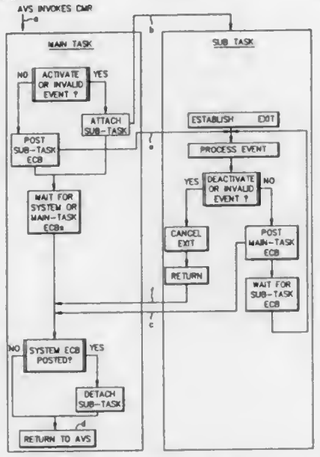
distributing sequentially into each segment a number of discrete events equal to the segment size for each segment.

5,668,994

CONVERSATION MANAGEMENT ROUTINE FOR CO-OPERATIVE PROCESSING APPLICATIONS

Richard E. Swagerman, Scarborough, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,042
Claims priority, application Canada, Apr. 30, 1993, 2095311
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—672 **12 Claims**



1. A computer system implementing multiple virtual machines, and forming one station in a network including at least one other station running a program for which said one station can, on request, perform host processes using virtual machines which it implements; the system having the resources to provide a pool of preconfigured virtual machines to service such requests and the system implementation including means to manage conversations associated with such requests by responding to events relating to such conversations; and the conversation management means comprising a main task and a sub-task spawned by the main task to preestablish an exit from the conversation management means in the event of error, said system further comprising:

means for providing data as to the identity and status of virtual machines in said pool of preconfigured machines; sub-task routines, associated with said means for providing, called selectively to handle different events relating to conversations;

means for maintaining said providing means by the sub-task in accordance with said events; and said main task having means for controlling spawning or waking-up of the sub-task in direct response to an event, and kills or leaves dormant the sub-task in response to messages from the sub-task following processing of an event.

5,668,995

METHOD AND APPARATUS FOR CAPACITY PLANNING FOR MULTIPROCESSOR COMPUTER SYSTEMS IN CLIENT/SERVER ENVIRONMENTS

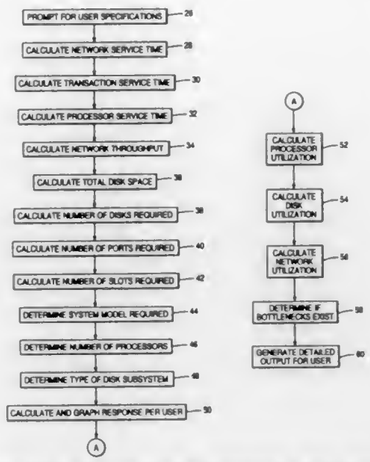
Kabekode V. Bhat, Naperville, Ill., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 22, 1994, Ser. No. 231,538
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—674 **20 Claims**

1. A computer-implemented capacity planning system, comprising:

(a) a computer with a monitor coupled thereto;

(b) capacity planning means, performed by the computer and displayed on the monitor, for accepting workload parameters, for identifying a computer system configuration based on the



workload parameters, and for outputting a report describing the identified computer system configuration;

(c) wherein the workload parameters are selected from a group comprising a number of users, an amount of disk storage required, an average number of transactions per second per user, an average input data size per transaction, an average output data size per transaction, an average processor service time per transaction, an average number of disk accesses per transaction, an average disk service time per disk access, a number of networks, and a network bandwidth; and

(d) wherein the report is selected from a group comprising a recommended multiprocessor computer system, a number of processors needed in the system, an amount of memory required, and a configuration of a disk subsystem suitable for the system, including a number of disk drives, a size of each of the disk drives, and how the disk drives should be configured for performance.

5,668,996

RENDERING CD REDBOOK AUDIO USING ALTERNATIVE STORAGE LOCATIONS AND FORMATS

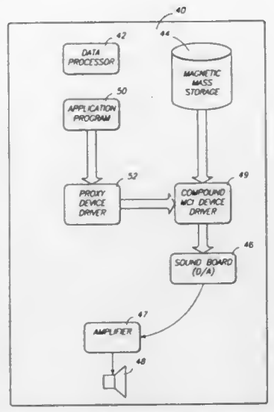
Wayne L. Radinsky, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Apr. 29, 1996, Ser. No. 641,053
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—681 **41 Claims**

1. In a multimedia presentation system for running an application program, wherein the application program normally renders continuous media content from a default source medium using a simple device driver that is not part of the application program, and wherein the application program identifies the default source medium in terms of a local media drive that both reads and renders the continuous media content, a method of running the application program to render the continuous media content from a mass storage device rather than from the default source medium, the method comprising:

installing a proxy device driver that functions in place of the simple device driver normally used by the application program;

the proxy device driver, in response to instructions from the application program to render the continuous media content, reading the continuous media content from the mass storage



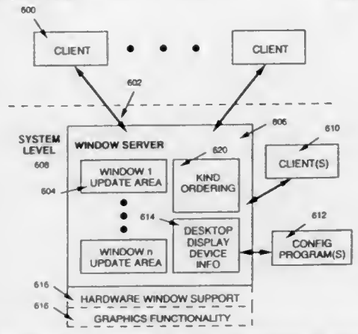
device and rendering the continuous media content from the mass storage device without any modifications to the application program.

5,668,997

OBJECT-ORIENTED SYSTEM FOR SERVICING WINDOWS

Lawrence A. Lynch-Freshner, Boulder Creek; Donald M. Marsh, Mountain View; Steve H. Milne, Palo Alto, and Jeff A. Zias, Saratoga, all of Calif., assignors to Object Technology Licensing Corp., Cupertino, Calif.

Continuation of Ser. No. 328,230, Oct. 25, 1994, abandoned.
This application Dec. 18, 1995, Ser. No. 573,916
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—683 **14 Claims**



1. An apparatus for allocating and managing a plurality of windows on a display device for use by client applications and a user, the apparatus comprising:

(a) a screen buffer for storing display information, the display information being mapped to picture elements of the display device;

(b) a display adapter for obtaining the display information from the screen buffer and responsively causing an image to be displayed on the display device;

(c) a memory holding the client applications;

(d) a processor under the control of the client applications;

(e) visible area managing means, responsive to a user window manipulation request, for maintaining visible area definitions of each of the windows, each visible area definition defining a clipping region of an associated window and specifying a portion of the screen buffer to hold screen information for the associated window;

(f) update area managing means, responsive to a user window manipulation request, for maintaining update area definitions for each of the windows, each update area definition defining a damaged region of the window that is damaged as a result of the user manipulation request, the update area managing means including notification means for notifying a client application that the update area definition of a window is non-empty; and

(g) window creation means, responsive to a client application window creation request, for creating a new window on the display device, the window creation means including means for creating in an address space of the memory associated with the requesting client application a window object associated with the new window, the window object having means for obtaining a valid cached copy of a visible area definition for the associated window from the visible area managing means;

wherein each client application Includes means for issuing a window creation request to the window creation means to thereby create an associated window object, and wherein the client application further includes means for invoking the window object created in the address space of the client application to obtain a valid cached copy of a visible area definition;

means for directly storing display information in the portion of the screen buffer specified by the obtained, valid cached visible area definition; and

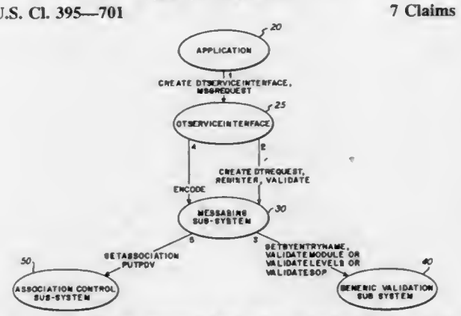
means for updating a damaged region of a window under the control of an update area definition and in response to being notified by the notification means.

5,668,998

APPLICATION FRAMEWORK OF OBJECTS FOR THE PROVISION OF DICOM SERVICES

Donald Mason, Garland, and Betsy Ann Zimmerman, Plano, both of Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1995, Ser. No. 429,397
Int. Cl.[6] G06F *7/06*
U.S. Cl. 395—701 **7 Claims**



1. A method for creating application programs that provide DICOM services on a computer comprising the steps of:

(a) providing a framework of service objects mapped to a DICOM standard;

(b) providing a baseclass for each service object in the framework;

(c) deriving a plurality of related service objects from the framework;

(d) providing a service handler and service provider for each derived service object;

(e) providing an application interface to the framework of service objects;

(f) accepting from the application interface a request for service request to generate an application program to provide the requested service;

(g) determining a set of related objects to perform the requested service;

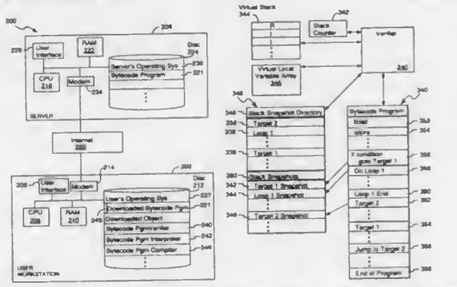
(h) providing a first mapping from the related service objects to a set of methods which perform a selected service;
(i) providing a DICOM service by invoking the execution of the related objects selected by the mapping; and
(j) providing a unique association between the service handler and the service provider;
(k) providing a map between the association and the service handler and the service provider;
(l) providing object-oriented call-backs between the service handler and the service provider; and
(m) sending and receiving messages between the service handler and the service provider over the unique association;
(n) instantiating a service object;
(o) providing a service class provider;
(p) providing a unique association between the service object and service class provider; and
(q) providing a service interface object to encapsulate information and data.

5,668,999

SYSTEM AND METHOD FOR PRE-VERIFICATION OF STACK USAGE IN BYTECODE PROGRAM LOOPS

James A. Gosling, Woodside, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 20, 1994, Ser. No. 359,882
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—704 **12 Claims**



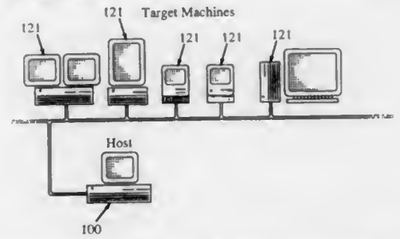
1. A method of operating a computer system, the steps of the method comprising:
(A) storing a program in a memory, the program including a sequence of bytecodes, where each of a multiplicity of said bytecodes each represents an operation on data of a specific data type; said each bytecode having associated data type restrictions on the data type of data to be manipulated by said each bytecode;
(B) prior to execution of said program, preprocessing said program by:
(B1) determining the state of a virtual stack associated with said program before and after execution of each said bytecode in the program, said virtual stack state storing data type values for operands that would be stored in an operand stack during execution of said program;
(B2) determining whether execution of any bytecode in said program would violate said data type restrictions for that bytecode and generating a program fault signal when execution of any bytecode in said program would violate the data type restrictions for that bytecode; and
(B3) determining whether execution of any loop in said program would result in a net addition or deletion of operands to said operand stack and generating a program fault signal when execution of any loop in said program would produce a net addition or deletion of operands to said operand stack;
(C) when said preprocessing of said program results in the generation of no program fault signals, enabling execution of said program; and
(D) when said preprocessing of said program results in the generation of a program fault, preventing execution of said program.

5,669,000

INTERPRETER FOR PERFORMING REMOTE TESTING OF COMPUTER SYSTEMS

Jay Alan Jessen, Santa Clara; Palanivelu Nagarajan, Campbell; Sean Ludlow Flynn, Cupertino, and James Alan Schneider, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 284,196, Aug. 2, 1994, Pat. No. 5,410,681, which is a continuation of Ser. No. 795,913, Nov. 20, 1991, abandoned. This application Jan. 31, 1995, Ser. No. 381,636
Int. Cl.[6] G06F *11/30;11/32*
U.S. Cl. 395—704 **7 Claims**



1. An interpretive language for use with a first computer system coupled to a second computer system, the first computer system causing the second computer system to perform a plurality of specified actions according to one or more commands contained in the interpretive language, the interpretive language comprising:
a. a set of descriptors which define a plurality of abstractions, the second computer system having a display for displaying a plurality of user interface objects, the plurality of abstractions being descriptive of said plurality of user interface objects, said descriptors comprising a plurality of traits;
b. a first set of commands which direct emulated user actions to be performed on the user interface objects; and
c. a second set of commands, each user interface object of the plurality of user interface objects having a state, the second set of commands requesting information regarding the state of one or more user interface objects of the plurality of user interface objects.

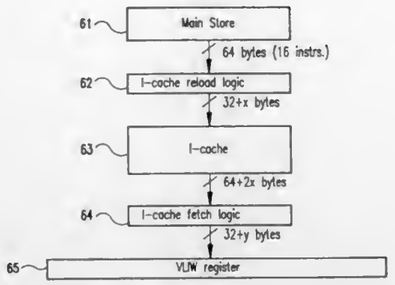
5,669,001

OBJECT CODE COMPATIBLE REPRESENTATION OF VERY LONG INSTRUCTION WORD PROGRAMS

Jaime Humberto Moreno, Hartsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1995, Ser. No. 410,431
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—706 **7 Claims**

1. A method of storing in computer memory and translating very long instruction words (VLIWs) for execution by VLIW processors with different organizations and providing object code compatibility with scalar and superscalar processors, said method comprising the steps of:
storing in a computer memory of a processor associated with the computer memory a program to be executed by the processor, the program being stored in the computer memory as a set of tree instructions composed of an unlimited number of internal nodes and an unlimited number of arcs, said internal nodes corresponding to conditional branch instructions and generating two arcs, primitive operations of said processor being associated with said arcs;



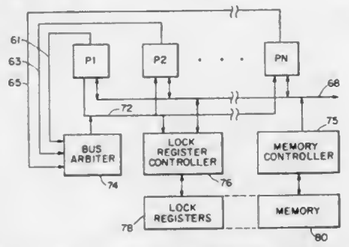
accessing said computer memory to fetch a memory block containing a tree instruction;
decomposing a fetched tree instruction into a plurality of sequential instructions as variable length VLIWs according to resources of the processor associated with the computer memory and on which the program is to be executed;
writing the variable length VLIWs in a line of an instruction cache (I-cache) for access by said processor associated with the computer memory; and
executing by said processor associated with the computer memory the variable length VLIWs written in said I-cache.

5,669,002

MULTI-PROCESSOR RESOURCE LOCKING MECHANISM WITH A LOCK REGISTER CORRESPONDING TO EACH RESOURCE STORED IN COMMON MEMORY

Bruce D. Buch, Westborough, Mass., assignor to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 305,510, Sep. 13, 1994, abandoned, which is a continuation of Ser. No. 204,896, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 546,037, Jun. 28, 1990, abandoned. This application Dec. 8, 1995, Ser. No. 569,555
Int. Cl.[6] G06F *12/02;12/14;15/167*
U.S. Cl. 395—726 **45 Claims**



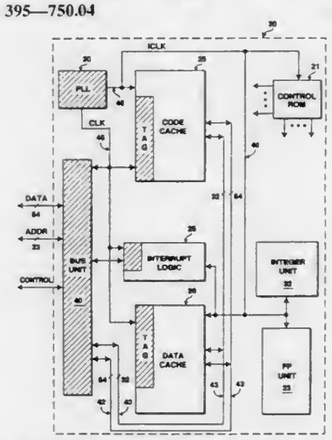
1. In a computer system operable with two processors couplable via a communication bus to a plurality of lock registers, the processors and registers couplable via the bus to a resource, such resource comprising a plurality of stored records each one of which can be indicated as locked for exclusive use, and the lock register addressable by an address unique to the lock register on the bus, a method for indicating locked status of each one of the plurality of stored records, the method comprising the steps of:
(a) associating each one of the lock registers with a corresponding one of the stored records, such lock registers and records stored in a common memory coupled to the communication bus;
(b) assigning or denying exclusive use of the stored record to a given one of the processors depending on whether the stored record is unlocked or locked at the time the given processor issues a read command via the bus to the unique address of the lock register, and
(c) indicating a locked status in the lock register and, if locked by a processor other than the given processor, returning from the lock register to the given processor an indication that the stored record is locked by the other processor, such that, without further commands from the given processor, the stored record is indicated to be available for use only by the given processor.

5,669,003

METHOD OF MONITORING SYSTEM BUS TRAFFIC BY A CPU OPERATING WITH REDUCED POWER

Douglas M. Carmean, Beaverton, Oreg., and John Crawford, Santa Clara, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 23, 1994, Ser. No. 363,744
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750.04 **24 Claims**



8. In a data processing system including first and second microprocessors each having internal logic that includes a data cache and a bus unit coupled to a system bus, a method of system operation to maintain cache coherency comprising the steps of:
(a) reducing the power consumption of the first microprocessor by decoupling a clock signal to a majority of the internal logic of the first microprocessor, but still coupling the clock signal to the bus interface of the first microprocessor;
(b) starting a write cycle on the system bus by the second microprocessor to request a cache line of data;
(c) snooping the write cycle on the system bus by the bus interface of the first microprocessor while reducing the power consumption of the first microprocessor; and
(d) signaling to the second microprocessor by the first microprocessor that a modified cache line of the data is stored in the data cache of the first microprocessor while reducing the power consumption of the first microprocessor.

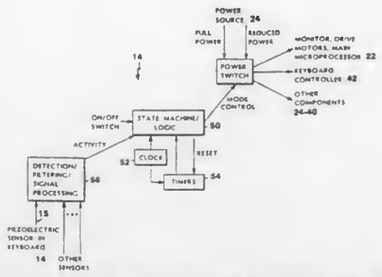
5,669,004

REDUCING POWER USAGE IN A PERSONAL COMPUTER

Charles A. Sellers, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 301,664, Sep. 7, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 640,989
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750.06 **21 Claims**

1. A method for reducing power usage in a personal computer comprising
repetitively performing the following sequence of steps:



a. generating a wake-up signal, using a person sensor, in connection with a user beginning to interact with the computer,

b. in response to the wake-up signal, switching the computer into a first mode in which at least a first portion of the computer is switched to a more fully powered mode, and

c. keeping the computer in the first mode only as long as the user is interacting with the computer, and thereafter switching the computer into a second mode in which at least the first portion is switched to a less fully powered mode and in which the amount of power delivered respectively to the first portion and a second portion of the computer are based on the periods required for the portions respectively to return to fully operational states from being less fully powered.

5,669,005

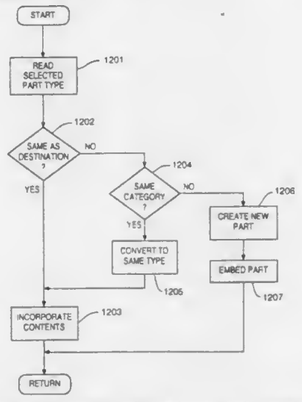
SYSTEM FOR AUTOMATICALLY EMBEDDING OR INCORPORATING CONTENTS ADDED TO A DOCUMENT

David Curbow, Sunnyvale; David Canfield Smith, Saratoga; Kurt Piersol, Soquel, and Mark Ludwig Stern, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 58,257, May 10, 1993. This application Oct. 11, 1995, Ser. No. 538,942

Int. Cl.[6] G06F *17/30;17/21*

U.S. Cl. 395—777 **12 Claims**



11. A method for adding information to a document containing information which forms intrinsic contents of the document, comprising the steps of:

selecting information to be added to the document;

identifying a data format associated with said selected information;

determining whether said data format is the same as a data format associated with said intrinsic contents;

incorporating the selected information into the intrinsic contents of the document if they are determined to have the same data format;

identifying a category of information to which the selected information belongs if they do not have the same data format;

determining whether said category is the same as a category of information to which said intrinsic contents belong;

converting the data format of said selected information into the data format of said intrinsic contents if they belong to the same category, and incorporating the selected information into the intrinsic contents; and

adding the selected information to the document as a set of information that is separate from said intrinsic contents if they do not belong to the same category.

5,669,006

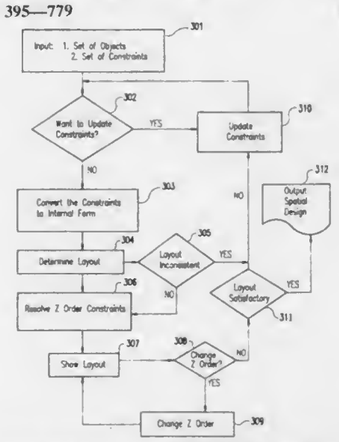
METHOD FOR AUTOMATICALLY OBTAINING SPATIAL LAYOUT FOR MULTIMEDIA PRESENTATIONS

Leo Joskowicz, Bronx; Michelle Yoonkyung Kim, and Junehwa Song, both of Scarsdale, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1995, Ser. No. 392,717

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—779 **8 Claims**



1. A computer implemented method for automatically obtaining a spatial layout for multimedia presentations comprising the steps of:

inputting a set of objects which are to be displayed simultaneously on a computer display screen during a multimedia presentation, the set of objects being defined as a clique and a multimedia presentation being comprised of a plurality of cliques in a predefined order, and inputting a set of base constraints, defining sizes and aspect ratios, and relative constraints, defining relative positions of objects in the clique;

operating on the constraints of the objects in the clique to determine an initial layout according to predetermined constraints;

resolving a spatial design for a multimedia clique in terms of three dimensions, two dimensions defining a plane of a computer display screen and a third dimension defining a depth of overlapping objects, to determine locations of associated objects and their respective depths on the computer display screen;

displaying the spatial design as a layout of the objects, some of which may be overlapping, on the computer display screen;

upon displaying the spatial design, providing a user with an option to accept the spatial design;

if not accepted, prompting the user to change the constraints of the objects in the clique before attempting to again resolve the spatial design for the multimedia clique, a spatial design when accepted by the user being stored as a temporal clique of a multimedia presentation; and

repeating the process for each clique in the multimedia presentation.

5,669,007

METHOD AND SYSTEM FOR ANALYZING THE LOGICAL STRUCTURE OF A DOCUMENT

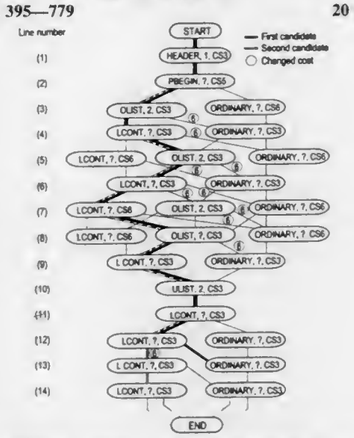
Yuka Tateishi, Machida, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1995, Ser. No. 395,559

Claims priority, application Japan, Jun. 16, 1994, 6-134014

Int. Cl.[6] G06F *17/27*

U.S. Cl. 395—779 **20 Claims**



10. In a method for analyzing the logical structure of a document printed on paper in a predetermined format by a computer system processing,

a method for analyzing the logical structure of a document comprising the steps of:

(a) optically scanning the paper on which said document is printed, thereby to create a document image which can be processed by said computer system;

(b) analyzing said document image to determine the margins and paragraphs of the document;

(c) performing character column slicing and character recognition based on the determination of the margins and paragraphs of said document, and storing the result in a memory means in a form which can be processed by said computer system on a line-by-line basis for the document;

(d) reading said document on a line-by-line basis into the memory region of said compute system;

(e) determining attributes of line comprising the start of a list, the continuation of a list, and the attributes of an ordinary line read into said memory region in accordance with a predetermined line attribute determination criterion to allow for the determining of a plurality of attributes and associate with each determination a cost value indicating the validity of the determination;

(f) in response to the completion of the attribute determination for all of the lines of said document, generating a starting node and then, for the first line of said document, generating as many nodes as the number of the attribute determinations of said first line, and, in accordance with a predetermined attribute-based node linking rule, linking said starting node with the nodes generated for said first line;

(g) for the next line, generating as many nodes as the number of attribute determinations of said next line, and, in accordance with a predetermined node linking rule based on said attribute and cost value, linking through links the nodes generated for the line preceding said next line with the nodes generated for said next line, and giving costs to said generated nodes and links;

(h) sequentially performing said step (g) until reaching the last line to construct a directed graph directed from said starting node t the ending node;

(i) traveling said directed graph from said starting node while summing the costs for the nodes an links en route to find a plurality of paths reaching the ending node; and

(j) ranking said plurality of paths found based on the sum of the costs associated with said individual paths.

5,669,008

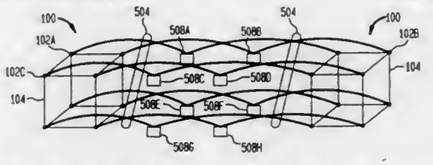
HIERARCHICAL FAT HYPERCUBE ARCHITECTURE FOR PARALLEL PROCESSING SYSTEMS

Michael B. Galles, Los Altos, and Daniel E. Lenoski, San Jose, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed May 5, 1995, Ser. No. 435,451

Int. Cl.[6] G06F *15/80*

U.S. Cl. 395—800.12 **16 Claims**



10. A hierarchical fat hypercube topology for a multi-processor network, comprising:

a first level comprising a plurality of n-dimensional hypercubes, each said n-dimensional hypercube comprising 2^n first-level nodes, wherein each said first-level node is connected to n other first-level nodes using n first edges;

a second level comprising a p-dimensional metacube, wherein said metacube comprises 2^p second-level nodes, wherein each said second-level node comprises 2^n routers and wherein each said second-level node is connected to p other second-level nodes using $p2^n$ second edges; and

a plurality of third edges for connecting each said n-dimensional hypercube of said first level to one of said second-level nodes, wherein each node of each said n-dimensional hypercube is connected to one of said 2^n routers in one of said second-level nodes;

wherein said 2^n routers are not connected together with edges.

5,669,009

SIGNAL PROCESSING ARRAY

Jerald A. Buktenica, Northridge, and Michael D. Yoo, West Hills, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 269,426, Jun. 30, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 606,511

Int. Cl.[6] G06F *13/00;15/00*

U.S. Cl. 395—800.35 **3 Claims**

1. A modular signal processing array architecture comprising:

a plurality of processing nodes wherein each node comprises:

(a) a local memory comprising:

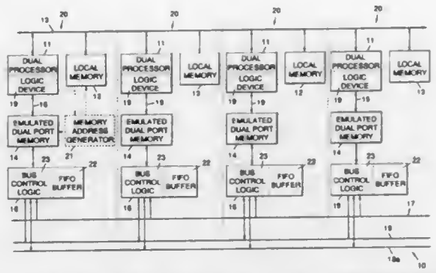
(i) first memory,

(ii) second memory, and

(ii) a dual port memory coupled between the first and second memories;

(b) a RAM loader bus coupled to the local memory;

(c) an emulated multiport memory comprising:



(i) a dual port memory coupled to data lines of the local bus, wherein semaphore and interrupt structure with modular bus arbitration is implemented in said dual port memory to permit inter-program communication between said processing nodes,

(ii) first global memory coupled to address lines of the local bus,

(iii) second global memory coupled to address lines of the local bus,

(iv) an input sensor memory coupled to the address lines of the local bus,

(v) a first FIFO buffer coupled to the first and second global memories and to the address lines of the local bus,

(vi) a register coupled between the first FIFO buffer and dual port memory and the global bus,

(vii) a second FIFO buffer coupled to the input sensor memory, to the address lines of the local bus, and to the local bus,

(viii) a second register coupled between the data lines of the local bus and the global memories, and

(ix) a third register coupled between the data lines of the local bus and the input sensor memory;

(d) a processor coupled to said RAM loader bus, comprising:

(i) first boot programmable read only memories for storing startup routines,

(ii) second boot programmable read only memory for storing startup routines,

(iii) first program memory for storing processing algorithms,

(iv) second program memory for strong processing algorithms,

(v) a memory loader controller coupled to the RAM loader bus and the first and second program memories for controlling the flow of data to and from the local memory,

(vi) first and second cache registers coupled to the local memory, and

(vii) first and second cache controllers coupled to the cache registers for controlling the flow of data to and from the local memory;

(e) a local bus coupled between the processor and the emulated multiport memory;

(f) a sensor bus for transferring sensor signals derived from an external sensor to the plurality of processing nodes;

(g) a global bus for coupling signals between the plurality of processing nodes, said global bus comprised of a time delay multiplexed bus; and

(h) a bus controller coupled between the emulated multiport memory and the sensor and global busses for controlling movement of signals to and from the emulated multiport memory carried by the sensor and global busses.

5,669,010

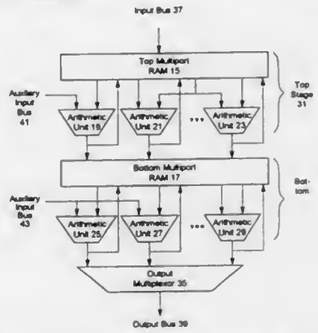
CASCADED TWO-STAGE COMPUTATIONAL SIMD ENGINE HAVING MULTI-PORT MEMORY AND MULTIPLE ARITHMETIC UNITS

Jerome F. Duluk, Jr., Santa Clara County, Calif., assignor to Silicon Engines, Palo Alto, Calif.

Continuation of Ser. No. 885,163, May 18, 1992. This application Mar. 6, 1996, Ser. No. 608,993

Int. Cl.[6] G06F *7/38*

U.S. Cl. 395—800.22 **30 Claims**



1. A Single Instruction Multiple Data (SIMD) two-stage computational machine comprising:

a top computational stage directly cascaded to a bottom computational stage without any intermediate intervening computational stage;

said top computational stage including: top multi-port memory means for storing data having a plurality of inputs and a plurality of outputs; and at least one top arithmetic unit for processing said data coupled to at least one of the top memory means outputs, and each one of said top arithmetic units having an output coupled to at least one of the top memory means inputs;

said bottom computational stage including: bottom multi-port memory means for storing data having a plurality of inputs and a plurality of outputs, the bottom memory means inputs being directly coupled to the top arithmetic unit outputs without any intervening processor stages; and at least one bottom arithmetic unit for processing said data coupled to at least one of the bottom memory means outputs, and each one of said bottom arithmetic units having an output coupled to at least one of the bottom memory means inputs; and

an instruction bus coupled to said top memory means, to said top arithmetic units, to said bottom memory means, and to said bottom arithmetic units, for simultaneously specifying the same single instruction to each stage of said two-stage computational machine, said single instruction simultaneously specifying a plurality of operations including all the operations of each of said top and bottom arithmetic units, and all memory means address and control operations; and

a plurality of busses for providing simultaneous plural input and output operations, said plurality of busses including: an input bus for coupling operands from a first external operand source to said top memory means; an output bus for coupling arithmetic unit results stored in said bottom memory means to an external destination for said results; and at least one auxiliary data input means for optionally coupling special operands from a second external operand source to one of said top or bottom arithmetic units.

5,669,011

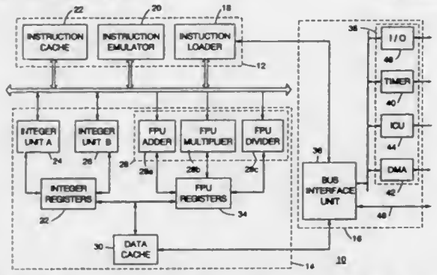
PARTIALLY DECODED INSTRUCTION CACHE

Donald B. Alpert, Santa Clara; Dror Avnon, Milpitas; Amos Ben-Meir, Fremont, all of Calif., and Ran Talmudi, Ra'Anana, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 434,470, May 4, 1995, abandoned, which is a continuation of Ser. No. 323,586, Oct. 17, 1994, which is a continuation of Ser. No. 150,581, Nov. 9, 1993, which is a continuation of Ser. No. 529,869, May 29, 1990. This application Jun. 18, 1996, Ser. No. 665,586

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800.23 **16 Claims**



1. A microprocessor that includes at least first and second parallel-operating execution units such that each of the first and second execution units responds to periodic cycles of a system clock signal by executing instructions in parallel with the execution of instructions by the other of the first and second execution units such that the microprocessor executes instructions at a rate of greater than one instruction per system clock cycle, encoded instructions being retrieved from a main memory that is external to the microprocessor and that is connectable to the microprocessor via a system bus, the microprocessor comprising:

an instruction cache that includes a plurality of individual instruction cache entries, each individual instruction cache entry including a first storage slot for storing a first partially-decoded instruction and a second storage slot for storing a second partially-decoded instruction;

a bus interface unit connected to the system bus for sequentially retrieving first and second encoded instructions from the external main memory, the first encoded instruction having a length different than the length of the second encoded instruction, and

an instruction loader that is connected to the bus interface unit for sequentially translating the first encoded instruction to a first partially-decoded instruction and the second encoded instruction to a second partially-decoded instruction, the instruction loader being connected to the instruction cache for sequentially storing the first and second partially-decoded instructions in the first and second storage slots, respectively, of a selected instruction cache entry.

5,669,012

DATA PROCESSOR AND CONTROL CIRCUIT FOR INSERTING/EXTRACTING DATA TO/FROM AN OPTIONAL BYTE POSITION OF A REGISTER

Toru Shimizu; Shunichi Iwata; Toshio Doi, and Shigeo Mizugaki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

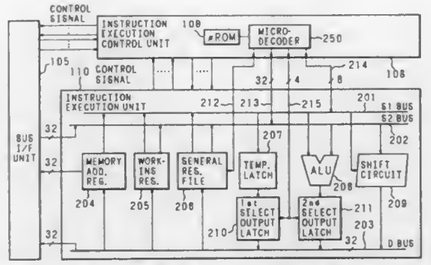
Continuation of Ser. No. 245,792, May 19, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 720,455

Claims priority, application Japan, May 21, 1993, 5-120014

Int. Cl.[6] G06F *9/35*

U.S. Cl. 395—800.01 **17 Claims**

1. A data processor for executing instructions which insert or extract data to or from an optional byte position of a register, the data processor comprising:



instruction decoding means for decoding a digital instruction code including a source operand specifying part, a destination operand specifying part, information specifying a byte position in the source operand and an operation specifying part and outputting a decoding result specifying a source data corresponding to said source operand specifying part, a memory or destination register corresponding to said destination operand specifying part, a position in the source data corresponding to said information specifying a byte position, and a length of the bit string to be inserted or extracted, comprising one or a plurality of bits, corresponding to said operation specifying part;

a memory and a register file having one or a plurality of registers, at least one of the memory and the one or a plurality of registers being specified as the destination operand by said decoding result;

instruction executing means, connected to said instruction decoding means and receiving said decoding result, for reading source data specified by said decoding result and inserting a bit string, the length of which is specified by said decoding result, into said source data at the position specified by said decoding result, and storing the resulting source data in the memory or register specified by said decoding result; and

instruction executing controlling means, connected to said instruction executing means, for operating said instruction executing means when said operation specifying part decoded by said instruction decoding means is a predetermined code.

5,669,013

SYSTEM FOR TRANSFERRING M ELEMENTS X TIMES AND TRANSFERRING N ELEMENTS ONE TIME FOR AN ARRAY THAT IS X*M+N LONG RESPONSIVE TO VECTOR TYPE INSTRUCTIONS

Akira Watanabe, San Jose; Dinesh C. Maheshwari, Santa Clara; Bruce T. McKeever, Cupertino, and Madian Somasundaram, San Jose, all of Calif., assignors to Fujitsu Limited, Japan

Continuation-in-part of Ser. No. 131,758, Oct. 5, 1993, abandoned. This application Sep. 22, 1994, Ser. No. 310,683

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—825 **21 Claims**

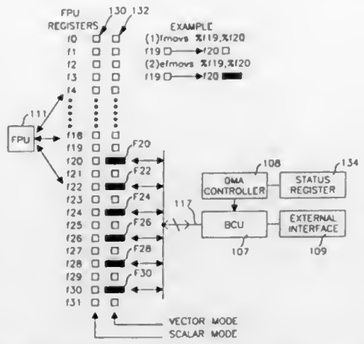
1. A computer system comprising:

memory means for storing a first set of instructions for scalar type data processing, a second set of instructions for vector type data processing, individual scalar data elements upon which the instructions of the first set operate, and arrays of vector data elements upon which the instructions of the second set operate, the instructions in the first and second sets each having a type designating field and a register designating field;

a processing unit operating upon individual data elements responsive to the instructions stored in the memory means;

means for monitoring the type designating field and the register designating field of each instruction in, turn;

a plurality of scalar registers assigned addresses stored in the register designating field of the instructions, each scalar register having a depth of one element or less;



means for connecting the scalar registers between the memory means and to the processing unit to transfer data therebetween;

a plurality of vector registers assigned the same addresses as some of the scalar registers, such addresses being stored in the register designating field of the instructions so the vector registers are visible in the scalar register address space, each vector register having a depth of a plurality of elements;

means for connecting the vector registers between the memory means and to the processing unit to transfer data therebetween;

means responsive to the monitoring means in the presence of a scalar type instruction for transferring an individual element of scalar data between the memory means and the processing unit via one or more registers designated by the instruction to operate upon the scalar data in the processing unit;

means responsive to the monitoring means in the presence of a vector type instruction for transferring an entire array of vector data between the memory means and the processing unit via one or more vector registers designated by the instruction to operate upon the vector data in the processing unit, wherein the depth of the designated vector register is M elements long, the array is X*M+N elements long, where M is larger than N, the means for transferring an entire array comprising means for transferring M element X times and means for transferring N elements one time; and

means for controlling the vector registers to sequence the transfer of vector data between the memory means and the processing unit to occur one element at a time until the entire array has been processed.

5,669,014

SYSTEM AND METHOD HAVING PROCESSOR WITH SELECTABLE BURST OR NO-BURST WRITE BACK MODE DEPENDING UPON SIGNAL INDICATING THE SYSTEM IS CONFIGURED TO ACCEPT BIT WIDTH LARGER THAN THE BUS WIDTH

Sundaravarathan R. Iyengar, San Jose, and Mustafiz R. Choudhury, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 29, 1994, Ser. No. 297,487

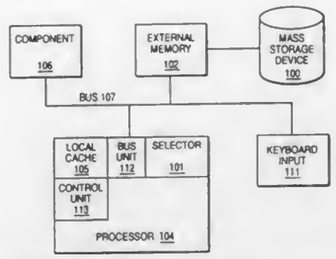
Int. Cl.[6] C06F *13/00*

U.S. Cl. 395—842 **5 Claims**

1. A computer system comprising:

a bus having a first bit width;

a processor coupled to said bus, the processor having a selector unit that selects either a write-burst mode or a non-burst mode of transferring information from the processor to the external memory for a write-back cycle; an external device coupled to the bus that transmits a first signal which indicates that the computer system is configured to accept write cycle having a second bit width larger than the first bit width; and



the processor further having a pin coupled to receive the first signal from the external device, wherein the selector unit selects the write-burst mode responsive to the first signal; otherwise the selector unit selects the non-write burst mode.

5,669,015

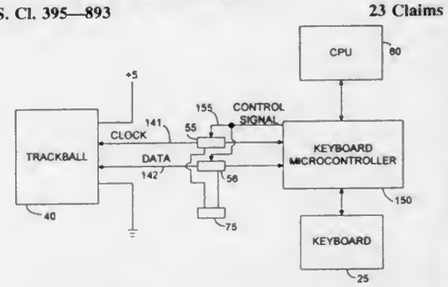
SYSTEM FOR SELECTIVELY COUPLING TRACKBALL AND MOUSE THROUGH A SWITCH WHERE INPUT DEVICE PROVIDES CODED SIGNAL TO DISABLE TRACKBALL WHILE PERMITTING SIGNALS FROM MOUSE

Philip D. Chidester, Austin, and Martin Melendez, Pflugerville, both of Tex., assignors to Dell USA L.P., Austin, Tex.

Filed Jul. 25, 1994, Ser. No. 279,733

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—893 **23 Claims**



1. A system for disabling or enabling a trackball for a portable computer, comprising:

a keyboard controller selectively coupled to the trackball through a switch for receiving signals therefrom and for generating signals indicative of trackball movement and wherein said switch also selectively couples said keyboard controller to a mouse;

a central processing unit coupled to said keyboard controller for receiving said signals indicative of either trackball or mouse movement;

an input device coupled to said keyboard controller for providing input signals to said keyboard controller,

wherein said input device provides a coded signal to said keyboard controller to indicate that said trackball is to be disabled, and in response said keyboard controller prevents signals from said trackball from being received by said central processing unit, while permitting said central processing unit to receive input signals from said input device and said mouse.

5,669,016

LENS-FITTED PHOTO FILM UNIT AND METHOD OF PRODUCING THE SAME

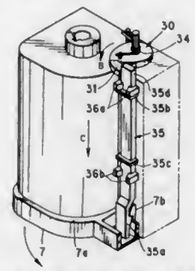
Kenji Negishi; Osamu Noguchi; Shinsuke Aoshima, and Kazuo Kamata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1996, Ser. No. 645,214

Claims priority, application Japan, May 15, 1995, 7-116018; Apr. 19, 1996, 8-098716

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—6 **36 Claims**



1. A lens-fitted photo film unit, having a photo film roll chamber and a cassette containing chamber, wherein said cassette containing chamber contains a cassette, said roll chamber contains a roll of photo film drawn from said cassette, said cassette incorporates a port shutter rotatable between a closed position of closing a photo film passage port and an open position of opening said passage port, said photo film is wound into said cassette as much as one frame each time one frame is exposed, and said cassette is removed from said cassette containing chamber after winding said photo film entirely into said cassette, said lens-fitted photo film unit comprising:

an exit opening through which said cassette is removed from said cassette containing chamber;

an openable lid disposed to close said exit opening, and opened for said removal of said cassette;

a port shutter rotating mechanism, connected to said port shutter from outside said cassette containing chamber, for rotating said port shutter from said open position to said closed position; and

a transmission mechanism for transmitting opening motion of said lid to said port shutter rotating mechanism, to set said port shutter in said closed position.

5,669,017

LENS-FITTED PHOTOGRAPHIC FILM UNIT HAVING AN ACCESS OPENING FORMED IN FRONT COVER TO MOVE A SWINGABLE SHUTTER BLADE

Yasuhiro Yamashina; Kazuo Itakura, and Yukihiko Yamaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 973,624, Nov. 9, 1992. This application Oct. 21, 1996, Ser. No. 734,698

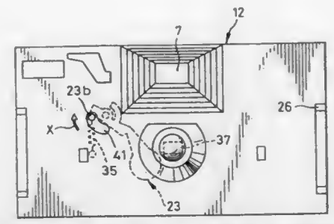
Claims priority, application Japan, Nov. 7, 1991, 3-291763; Jan. 9, 1992, 4-2450

Int. Cl.[6] G03B *17/02;17/38*

U.S. Cl. 396—6 **1 Claim**

1. A lens-fitted photographic film unit having a main body and a front cover attached to a front of said main body, said main body being preloaded with photographic film and provided with a shutter device mounted on a front of said main body behind said front cover, said lens-fitted photographic film unit comprising:

an access opening formed in said front cover for the insertion of a member causing said shutter device to move forcibly from a closed state to an open state and to hold said shutter device in said open state when said front cover is attached to said main body;



said shutter device comprising a shutter blade, said front cover being. disposed directly in front of and forwardly covering said shutter blade.

5,669,018

LENS-FITTED PHOTO FILM UNIT AND METHOD OF UNLOADING A CASSETTE FROM THE SAME

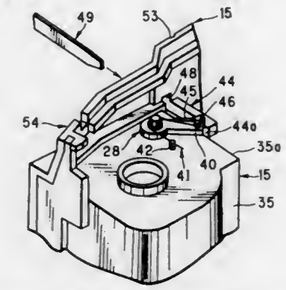
Kazuo Kamata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 16, 1996, Ser. No. 764,880

Claims priority, application Japan, Dec. 18, 1995, 7-329183

Int. Cl.[6] G03B *17/02;17/26*

U.S. Cl. 396—6 **18 Claims**



1. A lens-fitted photo film unit including a cassette containing chamber and a photo film roll chamber, said cassette containing chamber containing a cassette, said roll chamber containing a roll of unexposed photo film drawn out of said cassette, said cassette incorporating a photo film port shutter rotatable between a closed position to block a photo film passage port and an open position to open said photo film passage port, said photo film being wound into said cassette by one frame after an exposure is taken thereon, said cassette being unloaded from said cassette containing chamber after-said photo film is wound therein, said lens-fitted photo film unit comprising:

a rotating member connected to said port shutter and rotatable between first and second positions, said port shutter having said open position when said rotating member has said first position, and said port shutter having said closed position when said rotating member has said second position, said rotating member being disconnected from said port shutter at a time of moving said cassette in said cassette containing chamber for unloading said cassette from said cassette containing chamber; and

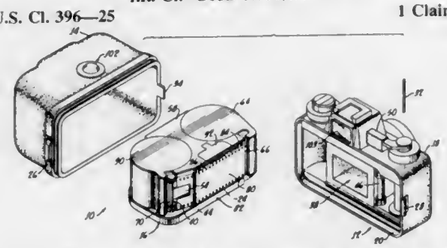
a drive mechanism for rotating said rotating member from said first position to said second position in response to external operation effected prior to moving said cassette in said cassette containing chamber.

5,669,019

WATERPROOF LARGE CAPACITY FILM MAGAZINE

Robert L. Woltz, Laguna Beach, and Richard D. Balentine, Costa Mesa, both of Calif., assignors to Robert Woltz Associates, Inc., Newport Beach, Calif.

Filed May 17, 1994, Ser. No. 245,462
Int. Cl.[6] G03B *17/08;1/00*
U.S. Cl. 396—25 1 Claim



1. A waterproof large capacity film magazine for use with an existing camera having a drive sprocket therein for advancing film, the magazine comprising:

an outer magazine housing having large film capacity and having means for removably coupling with an existing camera body having a small film capacity, said existing camera body having a back removed therefrom;

film handling means, disposed in said outer magazine housing, for transporting film across a focal plane of said existing camera body;

retractable roller means for guiding a portion of film against the drive sprocket disposed in the existing camera body; and

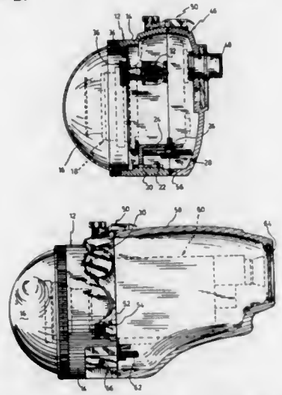
arm means for moving said retractable roller means to engage the film portion with the drive sprocket when said outer magazine housing engages the existing camera body.

5,669,020

UNDERWATER CAMERA HOUSING HAVING INTERCHANGEABLE BACK MEMBERS TO ACCEPT STILL AND VIDEO CAMERAS

Stanley Hopmeyer, 764 Upper Belmont, Westmount, Quebec, Canada, H3Y 1K4

PCT No. PCT/CA94/00023, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/17444, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 20, 1994, Ser. No. 504,706
Claims priority, application Canada, Jan. 20, 1993, 2087662
Int. Cl.[6] B65D *85/38;* G03B *17/08;* H04N *5/225*
U.S. Cl. 396—27 6 Claims



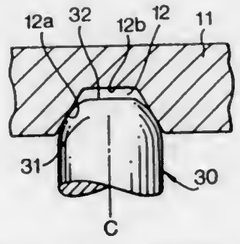
1. A camera housing system adaptable for still cameras and video cameras, the system comprising a front member having a frame portion, a lens mounted in said frame portion, cooperative locking means on said frame portion, a first back member adapted to enclose a still camera, said first back member having cooperative locking means associated therewith adapted to engage said locking means on said frame portion, a second back member adapted to enclose a video camera, said second back member having locking means adapted to cooperatively engage with said cooperative locking means on said frame portion.

5,669,021

CAM MECHANISM FOR LENS MOVEMENT

Norio Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 274,022, Jul. 12, 1994, abandoned.
This application Jun. 27, 1996, Ser. No. 669,803
Claims priority, application Japan, Jul. 12, 1993, 5-043162 U
Int. Cl.[6] G03B *1/18*
U.S. Cl. 396—72 26 Claims



1. A cam mechanism for moving a lens along a lens optical axis, said cam mechanism comprising:

a cam ring having at least one cam groove formed in an inner surface of said cam ring;

at least one cam follower pin extending substantially perpendicular to the lens optical axis and secured to a lens frame for guiding said lens frame along the optical axis, a distal end of said at least one cam follower pin extending into and contactingly following said at least one cam groove; and

contacting surfaces of said at least one cam groove and said at least one cam follower pin being shaped such that a contact area between said at least one cam groove and said at least one cam follower pin remains substantially constant within a predetermined range of angular positions of said at least one cam follower pin away from a position substantially perpendicular to the lens optical axis.

5,669,022

OPTICAL APPARATUS INCLUDING A LIGHT MODULATION FINDER OPTICAL SYSTEM

Terutake Kadohara, and Yoshihiko Aihara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,817
Claims priority, application Japan, May 31, 1994, 6-139625
Int. Cl.[6] G03B *19/12*
U.S. Cl. 396—111 18 Claims

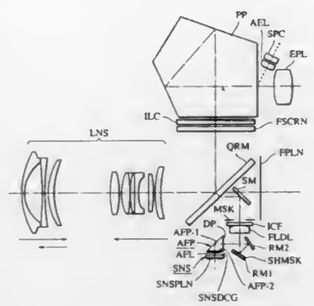
1. An optical apparatus comprising:

a projection optical system for projecting an image of an object;

a detection system for detecting a defocus state the image of the object with respect to a photosensitive plane with light emitted from said projection optical system;

a finder system for observing the object with the light emitted from said projection optical system, said finder system being provided with light modulation means for creating a light transmission state when electric energy is input and a cutoff state when the electric energy is not input, and said light modulation means being disposed so as to cover the entire view field of said finder system; and

control means for controlling the input of electric energy to said light modulation means, said control means controlling the input so as not to input electric energy during a defocus state detection operation when a user does not look through said finder system.

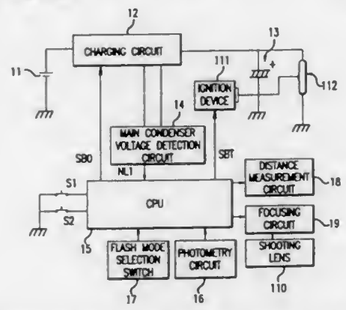


5,669,023

OPTIMAL CHARGING AND ENERGY CONSERVING APPARATUS AND METHOD FOR CONTROLLING CAMERA FUNCTIONS IN AN AUTOMATIC FLASH CAMERA

Yoshikazu Iida, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 24, 1995, Ser. No. 562,630
Claims priority, application Japan, Jul. 25, 1995, 7-189621
Int. Cl.[6] G03B *15/05*
U.S. Cl. 396—129 17 Claims



1. A camera having a power switch, the camera comprising:

a distance measurement circuit that measures a distance between the camera and a photographic object;

a condenser that when charged stores sufficient electric charge for a flash lighting of the photographic object during exposure;

an electric charge amount circuit that determines whether the condenser has been charged to a predetermined amount prior to the distance measurement by the distance measurement circuit, the electric charge amount circuit prohibiting the distance measurement circuit from measuring the distance between the camera and the object when the electric charge amount stored in the condenser does not reach the predetermined amount; and

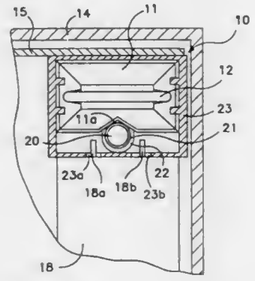
a light emitting determination circuit that selects one of emitting the flash lighting during exposure and preventing the flash lighting during exposure, the distance measurement circuit measuring the distance between the camera and the object when the light emitting determination circuit prevents the flash lighting during exposure regardless of the determination by the electric charge amount circuit, the condenser charging after actuation of the power switch and prior to the light emitting determination circuit selecting the one of emitting and preventing.

5,669,024

CAMERA HAVING A RED-EYE REDUCTION LAMP ARRANGED WITH RESPECT TO A STROBE LIGHT GENERATING UNIT TO PROVIDE A COMPACT CAMERA

Hidefumi Ohta, Kawasaki, and Kiyosada Machida, Urawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jan. 2, 1996, Ser. No. 581,991
Claims priority, application Japan, Feb. 24, 1995, 7-036696
Int. Cl.[6] G03B *15/03*
U.S. Cl. 396—176 29 Claims



1. A camera, comprising:

a strobe capacitor having a pair of projecting terminals; and

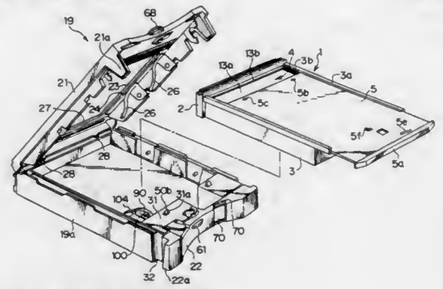
a light generating member having at least a portion located between the pair of projecting terminals at a height in the camera which overlaps with a height of the pair of projecting terminals.

5,669,025

FILM PACK HOLDER

Tokuji Sato, Saitama, and Hirokazu Ohno, Nagano, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1996, Ser. No. 632,392
Claims priority, application Japan, Apr. 13, 1995, 7-088064; Aug. 25, 1995, 7-217396
Int. Cl.[6] G03B *19/10;17/26*
U.S. Cl. 396—360 7 Claims



1. A film pack holder comprising:

a main body of a holder;

a lid which is attached at the main body of the holder in such a manner to open and close freely and wherein an opening for photographing is formed;

a film pack at which a slide is attached in such a manner to move back and forth freely and shields sheet film units which are piled to be stored therein from light, when the slide is closed;

a slide frame which is incorporated in the main body of the holder and is provided in such a manner to move back and forth freely with respect to the main body of the holder, and wherein the film pack is set;

a nail portion which is provided at the main body of the holder and is engaged with the slide to move when the slide is moved;

a display mechanism provided at the main body of the holder for indicating that a preparation for photographing is completed in connection with the movement of the nail portion;

a regulating member which is abutted against the nail portion for regulating the movement of the nail portion; and

a releasing member which is pushed by the film pack and retracts the regulating member from the nail portion so as to release the regulation by the regulating member when the film pack is set.

5,669,026

CAMERA HAVING PUSH BUTTON WHICH PRESSES CIRCUIT BOARD MOUNTED IN FILM RESTRAINING PLATE

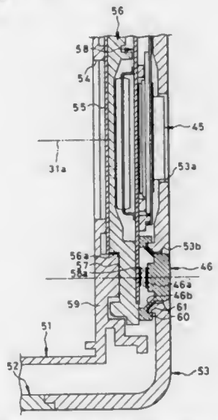
Yasuhiko Tanaka, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Dec. 9, 1996, Ser. No. 762,058

Claims priority, application Japan, Jan. 29, 1996, 8-012918

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—440 **12 Claims**



11. A camera having a plate for supporting a photo film from a rear surface thereof, comprising:

a push button being operatable from an outside of said camera; and

a projection which contacts with said plate for keeping a gap between said plate and said photo film at a constant, said projection prevents said plate from being moved by said push button when said push button is pressed.

5,669,027

CAMERA WITH LIGHT SHIELDING BARREL AND STEPPED FILM CHAMBER DEFINING SPACE FOR FLASH CONDENSER

Yuji Katano, Kawasaki, and Hiroshi Wakabayashi, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 848,920, Mar. 10, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 352,214

Claims priority, application Japan, Mar. 18, 1991, 3-078651

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—535 **2 Claims**

1. A camera with a built-in flash light unit, comprising:

a light shielding barrel of truncated cone shape that is disposed to shield an optical path between a photographic lens at a front of the camera and a film plane at a rear of the camera, a smaller end of said truncated cone residing at the photographic lens;

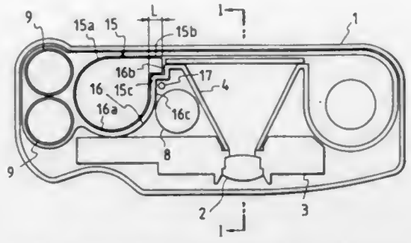
a cartridge chamber provided at one side of the light shielding barrel;

a power source condenser that provides power to the flash light unit;

a film cartridge enclosed in said cartridge chamber having a cylinder for including a film wound therein and a feed step tangentially projecting out from a circumference of the cylinder for film feed therefrom;

wherein said cartridge chamber comprises a first room defined by a curved wall shaped to fit to said cylinder, and a second room connected to said first room and defined by a wall shaded to fit to said feed step, said cartridge chamber having a predetermined rear-to-front dimension, said light shielding barrel and both of said cartridge chamber walls defining a space between the cartridge chamber and the light shielding barrel, said wall shaped to fit said feed step providing increased space for placement of said power source condenser; and

wherein said power source condenser and a film feed transmission member are disposed in said space between said cartridge chamber and said light shielding barrel within a rear-to-front dimension of said space that is within said predetermined dimension of said cartridge chamber.



5,669,028

CAMERA EFFECTIVELY UTILIZING INTERNAL SPACE FOR DECREASING SIZE

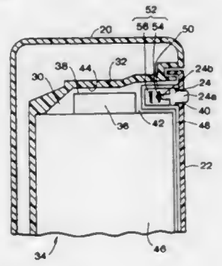
Yuji Katano, Kawasaki, Japan, assignor to Nikon Corporation, Shinagawa-ku, Japan

Continuation of Ser. No. 578,392, Dec. 26, 1995, abandoned, which is a continuation of Ser. No. 393,032, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 118,750, Sep. 10, 1993, abandoned. This application Sep. 20, 1996, Ser. No. 716,878

Claims priority, application Japan, Sep. 11, 1992, 4-243776

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—535 **8 Claims**



1. A camera comprising:

a camera body;

a cartridge compartment formed inside said camera body and including internal walls;

a film cartridge loaded into said cartridge compartment, said film cartridge having a spool shaft projecting from one end of the cartridge;

a space inside said cartridge compartment defined by a surface of said film cartridge, a side surface of said spool shaft, and an internal wall of said cartridge compartment;

a switch located in said space; and

an operating member operatively coupled to said switch for operating said switch, said operating member partially projecting externally from a back surface of the camera body and partially positioned in said space.

a power-failure detecting circuit for detecting the interruption of the feeding of electrical energy from the utility power source; and

a cutter control circuit which actuates the cutter using the electrical energy fed from the utility power source and the electrical energy from the capacitor if the film end sensor detects the tail end of the film during normal feeding conditions, and which actuates the cutter using the electrical energy discharged from the capacitor by means of the capacitor discharging circuit if the power-failure detecting circuit detects a power failure and the film end sensor detects the tail end of the film.

5,669,029

PHOTOGRAPHIC PROCESSING

John Richard Fyson, Hackney; Christopher Barrie Rider, New Malden, and Andrew Benoy, Herts, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1996, Ser. No. 642,384

Claims priority, application United Kingdom, May 4, 1995, 9509040

Int. Cl.[6] G03D *3/06; G03C 5/31*

U.S. Cl. 396—566 **7 Claims**

1. A method of controlling the replenishment of a processing solution used for processing a photographic material in a photographic processing apparatus, comprising the steps of:

adding replenishment chemistry to the processing solution; and

controlling the replenishment rate of said replenishment chemistry by using an algorithm having at least one of the terms of the algorithm determined by information associated with the replenishment chemistry.

5,669,030

FILM FEEDER FOR AUTOMATIC DEVELOPING MACHINE

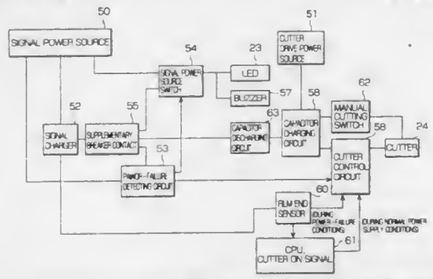
Akira Oshiro; Makoto Ochi, and Makoto Takahashi, all of Itabashi-ku, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,669

Claims priority, application Japan, Dec. 28, 1994, 6-327607

Int. Cl.[6] G05D *13/00;* **G03D** *3/08*

U.S. Cl. 396—567 **6 Claims**



1. A film feeder for an automatic developing machine which withdraws a film from a film cartridge and feeds the thus withdrawn film to an automatic developing machine that automatically processes the film while conveying the same, the film feeder comprising:

a film end sensor for detecting the tail end of the film withdrawn from the film cartridge;

a cutter for cutting the film in the vicinity of the tail end thereof;

a capacitor for actuating the cutter which is charged by a utility power source during normal feeding conditions;

a capacitor charging circuit for charging the capacitor;

a capacitor discharging circuit for causing the capacitor to discharge electrical energy stored therein;

5,669,031

APPARATUS FOR PROCESSING PHOTOGRAPHIC SENSITIVE MATERIAL

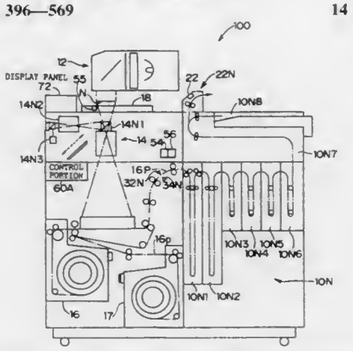
Takatoshi Ishikawa, and Fumio Mogi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 11, 1996, Ser. No. 661,596

Claims priority, application Japan, Jun. 13, 1995, 7-146632; Jun. 13, 1995, 7-146637

Int. Cl.[6] G03D *3/06*

U.S. Cl. 396—569 **14 Claims**



1. An apparatus for processing a photographic sensitive material comprising:

film processing unit for processing a photographic sensitive material, used for taking pictures, with processing solutions;

print processing unit having exposing means for exposing images recorded on the photographic sensitive material processed by said film processing unit to a photosensitive material for forming prints;

calculating means which integrates exposure of the prints performed by said exposing means so as to calculate a mean exposure; and

comparison means for subjecting a result of calculation performed by said calculating means to a comparison with a predetermined reference exposure for prints.

5,669,032

CONSTRAINED FILM HEAT PROCESSOR AND METHOD OF DEVELOPING DIGITAL FILM USING CONDUCTION HEAT TRANSFER

Abu S. Islam, Mt. Vernon; Robert J. Kleckner, Yorktown Heights; Leo Chin, Bronx, all of N.Y., and Sandra Graveson, Waterbury, Conn., assignors to Xerox Corporation, Stamford, Conn.

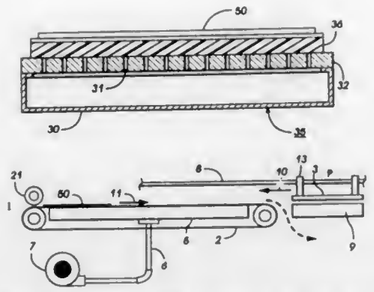
Filed Oct. 27, 1995, Ser. No. 549,293

Int. Cl.[6] G03D *7/00*

U.S. Cl. 396—579 **15 Claims**

1. An apparatus for processing film, comprising:

a film support and constraining device;



a heating device for developing the film on said film support and constraining device without contacting the film wherein said heating device is a conductive heating element and wherein said film support and constraining device comprises:

a vacuum source;

a plenum chamber adapted to be connected to said vacuum source;

a porous support surface connected to said plenum so that the film on said surface is held thereto by a vacuum wherein said porous support surface comprises a structural substrate and a smooth porous insulative layer between said structural substrate and the film.

5,669,033

DRIVE FORCE TRANSMITTING MECHANISM

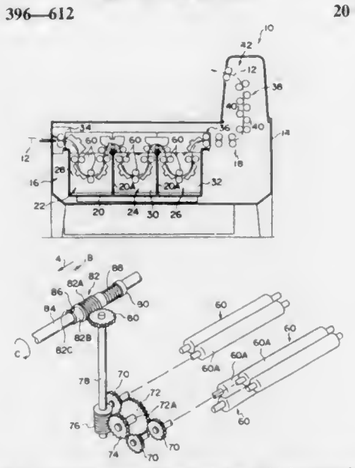
Kenji Takata, and Hiroshi Nakahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1996, Ser. No. 602,342

Claims priority, application Japan, Mar. 22, 1995, 7-062739

Int. Cl.[6] G03D *3/08*

U.S. Cl. 396—612 **20 Claims**



1. A drive force transmitting mechanism which comprises:

a first rotating shaft member which is rotated by receiving the drive force from a drive source;

a first worm gear having a through hole through which said first rotating shaft member passes so that said first worm gear is rotated with said first rotating shaft member serving as a central axis of rotation of said first worm gear;

a rotatable mechanism which is driven by the rotation of said first worm gear, said rotatable mechanism producing a thrust force which acts on said first worm gear when rotation of said rotatable mechanism is prevented;

an urging means for urging said first worm gear so as to be movable to one direction along the central axis of rotation; and

means for engaging said first worm gear with said first rotating shaft member so as to be integrally rotated due to the urging of said urging means in the one direction, and for allowing said first worm gear to move relative to said first rotating shaft member in the other direction against the urging force by said urging means, to release the engagement of said first worm gear with said first rotating shaft member, such that said first worm gear and said first rotating shaft member rotate relative to each other by the thrust force acting on said first worm gear when the rotation of said rotatable mechanism is prevented.

5,669,034

PHOTOGRAPHIC MATERIAL DEVELOPING APPARATUS

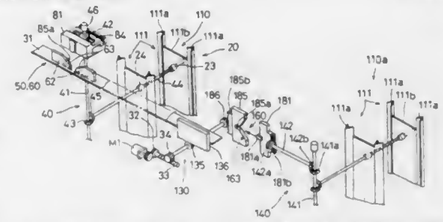
Junji Yamada, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Feb. 12, 1996, Ser. No. 600,405

Claims priority, application Japan, Feb. 16, 1995, 7-027970

Int. Cl.[6] G03D *3/08*

U.S. Cl. 396—615 **9 Claims**



1. A photographic material developing apparatus having processing tanks, and rack units removably mounted in the processing tanks, respectively, said apparatus comprising:

a pair of guide members mounted in each of said rack units for guiding a photographic material passing through said processing tanks, said guide members being movable relative to each other to vary a distance therebetween defining a passage width of said photographic material;

guide width varying means for varying a relative position between said guide members to adjust said passage width;

a first drive line disposed outside each of said rack units;

a second drive line provided for each of said rack units and connected to said guide width varying means for driving said guide width varying means with power received from said first drive line; and

coupling means disposed between said first drive line and said second drive line for enabling and disabling power transmission from said first drive line to said second drive line, said coupling means including:

a connected member disposed on said first drive line;

a connecting member disposed on said second drive line for connection to said connected member; and

automatic adjusting means for automatically adjusting a relative position between said connecting member and said connected member, said automatic adjusting means comprising a guide mechanism for assisting said connecting member in displacement relative to said connected member to allow said connecting member and said connected member to be connected to each other in a predetermined relative position;

said connecting member being displaceable with said connected member, while connected in said predetermined relative position, to cause said guide width varying means to vary said distance between said guide members.

5,669,035

APPARATUS FOR PROCESSING A SILVER HALIDE PHOTOSENSITIVE MATERIAL

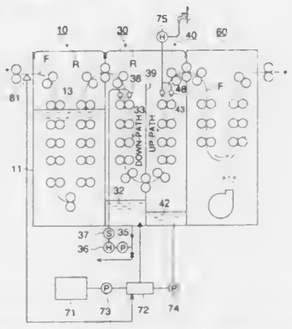
Masayuki Kurematsu; Hiroko Ennyu, and Nobuya Yamamoto, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 27, 1996, Ser. No. 697,646

Claims priority, application Japan, Aug. 30, 1995, 7-221991; Apr. 12, 1996, 8-091064

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—626 **15 Claims**



1. An apparatus for processing a photosensitive material with a solution, comprising:

first processing means having a first retaining member in which a solution is stored, the first processing means supplying the solution from the first retaining member to the photosensitive material;

first feeding means for replenishing a solution into the first retaining member;

second processing means positioned beneath the first processing means and having a second retaining member in which a solution is stored, the second processing means supplying the solution from the second retaining member to the photosensitive material;

second feeding means for shifting the solution from the first retaining member to the second retaining member; and

conveyance means for conveying the photosensitive material upward from the second processing means to the first processing means so that the photosensitive material is firstly processed by the second processing means and thereafter processed by the first processing means.

5,669,036

IMAGE FORMING METHOD

Yozo Hotta; Masahiro Goto, and Toshio Miyamoto, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1996, Ser. No. 590,333

Claims priority, application Japan, Jan. 25, 1995, 7-009779; Apr. 26, 1995, 7-102379

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—53 **8 Claims**

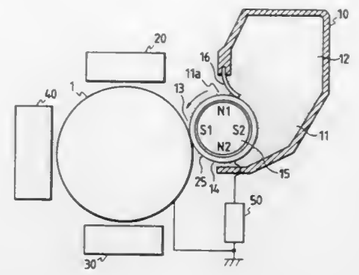
1. An image forming method comprising the steps of:

forming an electrostatic latent image on an electrostatic latent image bearing member;

modulating light intensity in accordance with image information to form the electrostatic latent image on said electrostatic latent image bearing member;

followed by development of said electrostatic latent image, wherein;

at the time of formation of the electrostatic latent image formed of the smallest isolated dots on the electrostatic latent image bearing member, the charge density distribution, weight average particle diameter of a toner, and Q/M distribution of the toner satisfy the relationship of:



$$f > \frac{a}{x^A y^B}$$

wherein f is a number percentage (expressed in decimal form where 1 represents 100%) of a toner having Q/M of |5| (μC/g) or more based on the whole toner, where Q/M is a charge quantity Q per unit weight M; x is a potential difference |Vd−Vl| (V) of the latent image formed of the smallest isolated dots, where Vd is a dark portion potential of the latent image and Vl a light portion potential, y is a weight average particle diameter (m) of the toner; a is a positive constant, where $a=2.89\times10^{-12}$; and A and B are exponents of x and y, respectively, where A=0.4 and B=2.2.

5,669,037

TONER CONCENTRATION CONTOLLER

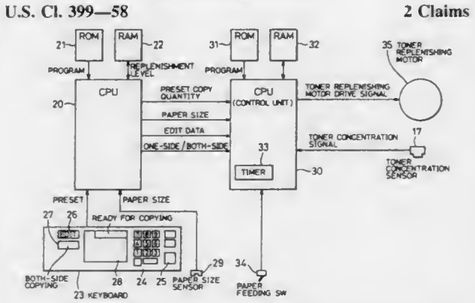
Tsukasa Sugiyama, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 1, 1996, Ser. No. 609,247

Claims priority, application Japan, Mar. 7, 1995, 7-046761

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—58 **2 Claims**



1. A toner concentration controller which activates and deactivates a toner replenishing motor to replenish a toner when a concentration of the toner in a developer unit which develops an electrostatic latent image on a photoreceptor is lower than or equal to a predetermined reference value, said toner concentration controller comprising controlling means for controlling ON and OFF periods of the toner replenishing motor based on paper feed information of a copy sheet to which a developed image is to be transferred; and wherein said paper feed information is information on whether an image is to be transferred to one side of the copy sheet or to beth sides of the copy sheet, and wherein said controlling means controls the ON and OFF periods of the toner replenishing motor so that in one-side image formation, a toner replenishment amount is larger than in both-side image formation.

5,669,038

HEATER CONTROLLING APPARATUS AND A FIXING APPARATUS OF AN ELECTROPHOTOGRAPHIC APPARATUS IN USE THEREWITH

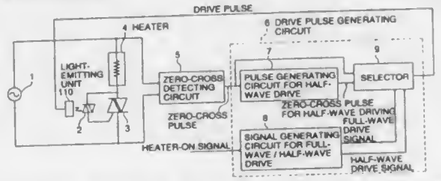
Tadao Kishimoto, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Apr. 19, 1996, Ser. No. 635,326

Claims priority, application Japan, Apr. 27, 1995, 7-103578; Sep. 7, 1995, 7-230225

Int. Cl.[6] G03G *15/20; H05B 1/02*

U.S. Cl. 399—67 **11 Claims**



1. A fixing apparatus for an image forming apparatus, said fixing apparatus comprising:

a heater, adapted in said fixing apparatus, for heating a fixing member;

a zero-cross detector for detecting zero-cross timings of electric power when a voltage of said electric power is at zero volts;

a switching device for turning on and turning off supply of said electric power to said heater;

a controller for controlling said switching device so as to provide a first state in which said electric power is continuously supplied to said heater for a multiple of half-cycles from one of said zero-cross timings, and a second state in which said electric power is prevented to be supplied to said heater for a multiple of half-cycles from another of said zero-cross timings;

wherein said electric power is supplied to said heater with an intermittent pattern, including said second state, for a predetermined period after at least one of a turn-on operation of said heater and a turn-off operation of said heater.

5,669,039

IMAGE HEATING APPARATUS CAPABLE OF VARYING FEEDING INTERVALS BETWEEN RECORDING MATERIALS

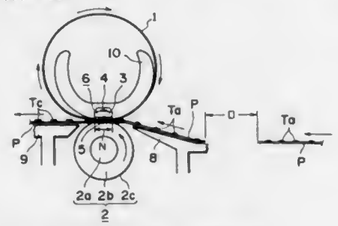
Yasumasa Ohtsuka; Koulchi Okuda, both of Yokohama; Yohji Tomoyuki, Ichikawa; Akira Hayakawa, and Daizo Fukuzawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 543,524, Oct. 16, 1995, abandoned, which is a continuation of Ser. No. 151,751, Nov. 15, 1993, abandoned. This application Sep. 30, 1996, Ser. No. 720,470

Claims priority, application Japan, Nov. 13, 1992, 4-328837

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—68 **7 Claims**



1. An image heating apparatus comprising:

a heater which is stationary in use;

a film slidable on said heater;

a backup member cooperable with said heater to form a nip, with said film being interposed between said backup member and said heater, wherein an image carried on a recording material is heated through said film while in the nip by heat from said heater; and

feeding interval controlling means for varying the recording material interval, wherein said control means expands the feeding interval each time the consecutive feeding of the recording material reaches a predetermined number as the recording materials are being consecutively fed.

5,669,040

IMAGE FORMING APPARATUS CAPABLE OF ALTERING A JOB CONTENT AND JOB CONTENT ALTERING METHOD

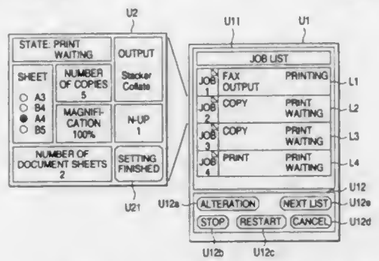
Masayuki Hisatake, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 10, 1996, Ser. No. 644,110

Claims priority, application Japan, May 11, 1995, 7-113466

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—83 **18 Claims**



1. An image forming apparatus for processing jobs requiring image formation, comprising:

means for inputting job information based on which each of the jobs can be identified;

means for determining an execution order of the jobs corresponding to the job information input through said job information inputting means;

means for storing the job information input through said job information inputting means;

means for displaying the job information stored in said job information storing means so that the job information is correlated with the execution order determined by said execution order determining means;

means for executing the jobs in the execution order determined by said execution order determination means while referencing the job information stored in said job information storing means; and

means for designating a particular job from among the job information displayed by said display means, thereby allowing alteration of a processing content of the designated job.

5,669,041

RETRACTING CLEANER WITH DEFINED PIVOT POINTS AND/OR SLIDING SEALS

Bruce E. Thayer; Dennis G. Gerbasi, both of Webster, and Norman E. LaTour, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,029

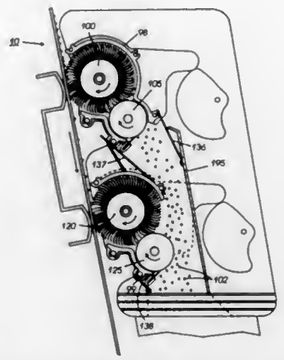
Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—102 **18 Claims**

1. An apparatus having a cleaner subsystem for removing articles from an imaging surface, comprising:

means for cleaning particles from the surface said cleaning means movement between at least two positions including a first position and a second position;

means for detoning particles from said cleaning means;



an internal cavity in the cleaner subsystem for collecting the particles being removed from the surface;

means for containing the particles in the internal cavity to prevent the particles from escaping therefrom, said containing means comprises means for pivoting said cleaning means between the first position and the second position the first position having said cleaning means in contact with the surface and the second position having said cleaning means out of contact with the surface said cleaning means comprising a first brush and a second brush capable of between the first position and the second position about said pivoting means, said first brush being located upstream, from said second brush, in a direction of motion of the surface said pivoting means comprises: a first pivot point enabling movement of the first brush between the first position and the second position; and a second pivot point enabling movement of the second brush between a first position and a second position, opposite the direction of movement of first brush; and

means for transporting the articles collected in said internal cavity to a waste container.

5,669,042

IMAGE FORMING SYSTEM HAVING MEANS TO SUPPORT AT LEAST ONE COMPONENT OF A PROCESS CARTRIDGE

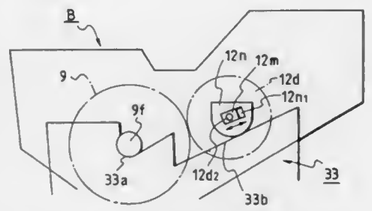
Kazunori Kobayashi; Kazumi Sekine; Tadayuki Tsuda; Isao Ikemoto, all of Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago, Tokyo; Masanobu Saito, Kawasaki, and Shinya Noda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 952,698, Sep. 28, 1992, abandoned. This application Mar. 17, 1994, Ser. No. 214,163

Claims priority, application Japan, Jun. 30, 1992, 4-194657

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—111 **88 Claims**



23. An image forming system for forming an image on a recording medium and having a main body in which a process cartridge including a frame; an electrophotographic photosensitive member; a toner carrying member, including a developing sleeve having a shaft supported by a bearing, for conveying toner; and an attachment member for attaching the toner carrying member to the frame is mountable; said image forming system comprising:

supporting means comprising a sloped surface sloping downwardly toward a mounted position of the electrophotographic photosensitive member for removably supporting the process cartridge at the attachment member supporting the shaft of the developing sleeve via the bearing when the process cartridge is mounted in said image forming system; and

feeding means for feeding the recording medium.

5,669,043

FILM PHOTOCONDUCTOR HOLDING MECHANISM

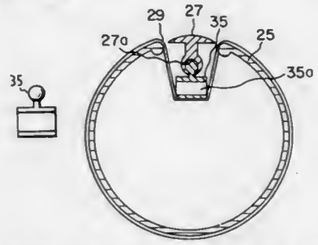
Shinichi Nishino; Osamu Nishino, and Toshitaka Ogawa, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 642,667, May 3, 1996, Pat. No. 5,630,197, which is a continuation of Ser. No. 407,280, Mar. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 129,361, Sep. 30, 1993, abandoned. This application Jul. 8, 1996, Ser. No. 676,842

Claims priority, application Japan, Sep. 30, 1992, 4-261187

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—116 **9 Claims**



5. A film photoconductor which is held by a substantially-cylindrical support having an opening which is shaped so as to have a notch at a part of a circumferential portion of said support in a longitudinal direction thereof, said film photoconductor comprising:

a film which defines a side surface;

a guide bar, disposed at the side surface of the film of said film photoconductor, for guiding installation of the film in said support; and

an elastic member, disposed at the side surface of the film of said film photoconductor, for holding the film in said support by a predetermined tension after the film has been installed in said support.

5,669,044

ARTICLE AND METHOD FOR DISPENSING TONER AND THE LIKE

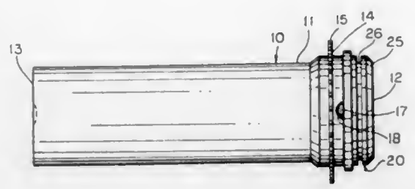
Laura Cuthbert, Watertown, Mass., assignor to Nashua Corporation, Nashua, N.H.

Continuation of Ser. No. 481,764, Jun. 7, 1995, abandoned. This application Jan. 21, 1997, Ser. No. 786,413

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—120 **14 Claims**

1. An article for dispensing toner and the like to an electrophotographic copier, the article comprising a generally cylindrical housing with an open end and a closed end, the open end having a flanged collar adjacent thereto, the collar having outwardly extending teeth for enabling the article's rotation upon driving engagement with a dispensing device of the copier, the article open end further comprising a lip and flange portions which loosely secure a ring thereto, the ring having edges configured for engaging a receptacle of the dispensing device so as to limit ring movement relative to the receptacle, while allowing rotation of the article, the



ring also having lip portions configured for minimizing spillage of toner upon removal of the article from the receptacle.

5,669,045

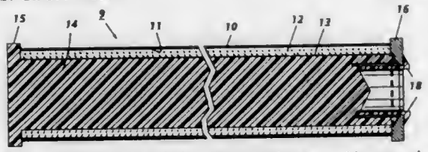
ELECTROSTATOGRAPHIC IMAGING MEMBER AND PROCESS FOR FABRICATING MEMBER

Eugene A. Swain, Webster, N.Y., assignor to Xerox Corp., Stamford, Conn.

Continuation of Ser. No. 296,762, Aug. 26, 1994, abandoned. This application May 23, 1996, Ser. No. 652,254

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—159 **23 Claims**



1. An electrostatographic imaging member assembly comprising a hollow cylindrical electrostatographic imaging member, said member comprising a substrate, an exterior imaging surface, an interior back surface, a first end and a second end, a rigid cylindrical core support member located within the interior of and coaxially aligned with said cylindrical electrostatographic imaging member, said cylindrical core support member having a rounded end and extending from at least said first end to said second end of said imaging member and having an outer surface spaced from said interior back surface of said hollow cylindrical photoreceptor, and at least one preformed resilient compressible sleeve under compression between said back surface of said imaging member and outer surface of said cylindrical core support, said compression being sufficient to render said electrostatographic imaging member substantially rigid and substantially free from distortion under electrostatographic image cycling conditions, said sleeve having an inside diameter and said cylindrical core having an outside diameter prior to inserting said cylindrical core support member within said interior of said cylindrical electrostatographic imaging member, and said inside diameter of said sleeve being less than said outside diameter of said cylindrical core.

5,669,046

TRANSMISSION/COUPLING DEVICE AND IMAGE FORMING APPARATUS HAVING SAME

Hiroaki Yoshida, and Yukinari Okawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 26, 1996, Ser. No. 639,927

Claims priority, application Japan, Jun. 28, 1995, 7-162165

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—167 **7 Claims**

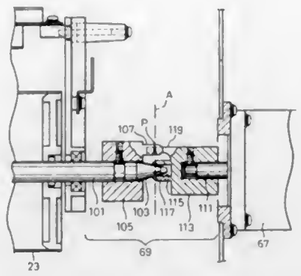
1. A transmission/coupling device for coupling first and second coupling members, comprising:

said first coupling member including a taper section extending on a rotary axis thereof and an engagement section; and

said second coupling member including a cylindrical bore section extending on a rotary axis thereof and a mating engagement section corresponding to the engagement section on the first coupling member, and

wherein, when coupling both the first and second coupling members to each other, the taper section on the first coupling member is brought into a line contact with the cylindrical bore on the second coupling member to define an engagement circle, and

wherein the engagement section on the first coupling member is engaged with the mating engagement section on the second coupling member to define at least one power transmission point in a bisector plane including the engagement circle.



5,669,047

CHARGING MEMBER, ELECTROPHOTOGRAPHIC APPARATUS AND CHARGING METHOD USING THE SAME

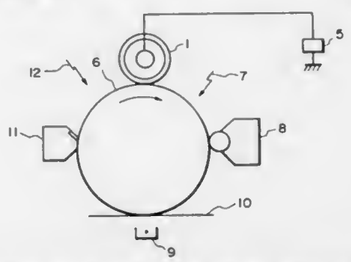
Masami Okuda; Hisami Tanaka, both of Yokohama; Junichi Kishi; Hiroyuki Ohmori, both of Tokyo; Takashi Koyama, Yokohama, and Masafumi Hisamura, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 161,443, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 487,377, Mar. 2, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 465,577

Claims priority, application Japan, Mar. 3, 1989, 1-051623

Int. Cl.[6] G03G *15/02;13/00;* **H01T** *23/00*

U.S. Cl. 399—174 **8 Claims**



1. A device for providing contact charging comprising: an electrophotographic photosensitive member and a charging member, wherein the charging member has an electroconductive substrate and a surface layer thereon for contacting the electrophotographic photosensitive member, wherein the surface layer has a value of volume resistivity higher than that of the electroconductive substrate and comprises:

(a) a resin selected from the group consisting of polyurethane resins and polycarbonate resins, and

(b) an alkali metal salt contained therein, and wherein the electroconductive substrate is electrically connected to an external power supply and transfers a charge to an outer surface of said surface layer for contact charging the electrophotographic photosensitive member.

5,669,048

EXPOSURE DEVICE HAVING A MOVABLE LIGHT-ATTENUATING FILTER FOR CONTROLLING AN AMOUNT OF EXPOSURE LIGHT AND EXPOSURE METHOD THEREOF

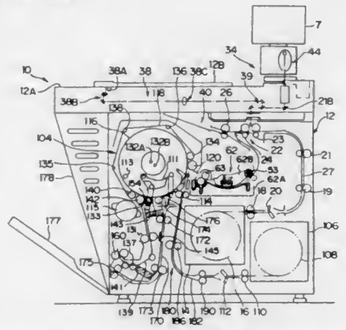
Tomonori Nishio, and Kanji Nagashima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1995, Ser. No. 569,288

Claims priority, application Japan, Dec. 12, 1994, 6-307838; Dec. 14, 1994, 6-310889

Int. Cl.[6] G03G *15/04;15/28;15/30*

U.S. Cl. 399—206 **32 Claims**



1. An exposure device used by an image recording device or an image reading device, in which a light-receiving element is exposed with at least one of light scanning an original and transmitted through the original and light scanning the original and reflected at the original, comprising:

a light source which illuminates the original;

a light-adjusting filter which adjusts light from said light source in accordance with color of an image recorded on the original;

illumination means which gathers at least one of light from said light source and light adjusted by said light adjusting filter and irradiates the gathered light onto the original;

moving means which causes at least one of said light source, said light-adjusting filter and said illumination means, and the original to move relatively during exposure to effect scanning;

a light-attenuating filter which can move in a direction of the relative movement and has a light-attenuating region of a fixed transmittance, which attenuates light illuminated onto the original, an area of said light attenuating region gradually increasing in the direction of the relative movement;

filter moving means which moves said light-attenuating filter such that an amount of light illuminated onto the original becomes a target amount of light;

an imaging optical system which causes light from the original to be imaged at the image-receiving element; and

a slit which changes light imaged at the image-receiving element by said imaging optical system into slit light, said slit being formed in that a longitudinal direction thereof is disposed in a direction crossing the direction of the relative movement.

5,669,049

MULTI-ROLL DEVELOPER HOUSING WITH CONVERGING BELT TO ROLL SPACING

Kenneth S. Palumbo, Irondequoit, and Patricia J. Donaldson, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1995, Ser. No. 573,687

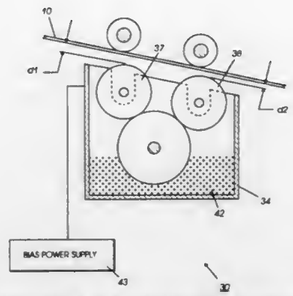
Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—265 **12 Claims**

1. An apparatus for developing a latent image recorded on a surface moving in a predetermine path, comprising:

a first housing defining a chamber storing a supply of toner of a first color, said first housing including a first toner donor member spaced a first predetermined spacing immediately adjacent from the surface and being adapted to transport toner of said first color to a region opposed from the surface, and a second toner donor member spaced a second predetermined spacing immediately adjacent from the surface and being adapted to transport toner of said first color to the region opposed from the surface; and

wherein said first predetermined spacing is substantially greater than said second predetermined spacing.



5,669,050

DEVELOPING APPARATUS USING BLANK PULSE BIAS

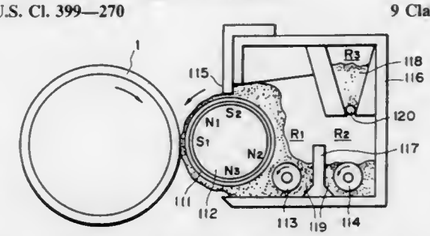
Yuji Sakemi, Inagi; Koji Amemiya; Takeshi Menjo, both of Tokyo; Masahiro Inoue, and Masami Izumizaki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,034

Claims priority, application Japan, Dec. 29, 1993, 5-352168; Mar. 25, 1994, 6-055727

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—270 **9 Claims**



1. An image forming apparatus comprising:

an image bearing member for bearing an electrostatic image;

a developer carrying member, opposed to said image bearing member, for carrying a developer containing toner;

bias voltage applying means for applying a developing bias voltage to said developer carrying member, said bias voltage satisfying:

$$T1 < 8.94d/\sqrt{|V2 - V1|},$$

$$T3 > (133d^2/T2|V2 - V1|) - 1/2T2$$

V1 (V): a voltage applying force to the toner toward said developer carrying member away from said image bearing member;

T1 (sec): a time period of application of the voltage V1;

V2 (V): a voltage applying force to the toner away from said developer carrying member toward said image bearing member;

T2 (sec): a time period of application of the voltage V2;

T3 (sec): a time period of application of a voltage V3 which is (V1+V2)/2;

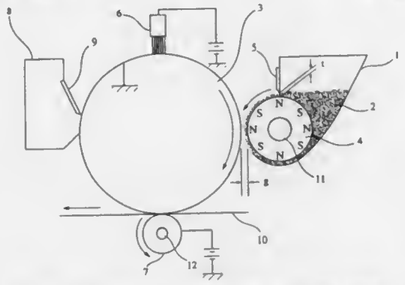
d (m): distance between said image bearing member and said developer carrying member.

5,669,051

METHOD OF ELECTROSTATICALLY FORMING VISUAL IMAGE

Masahisa Ochiai, Fukaya; Tsutomu Saitoh, and Masumi Asanae, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Apr. 3, 1996, Ser. No. 627,182
Claims priority, application Japan, Apr. 4, 1995, 7-078778
Int. Cl.[6] G03G *13/09*
U.S. Cl. 399—277 **8 Claims**



1. A method of electrostatically forming a visual image, comprising the steps of:

charging the surface of a rotating photoconductive drum to a uniform potential by a charging brush;

exposing the charged surface of said photoconductive drum to a light image to form an electrostatic latent image;

forming a visual toner image on said photoconductive drum by developing said electrostatic latent image in a developing zone with a two-component magnetic developer which is transported to said developing zone by a rotating cylindrical permanent magnet member having on the circumferential surface thereof a plurality of magnetic poles extending along the axial direction, said magnetic developer comprising a magnetic carrier having a specific volume resistance of 10^5–10^{10} Ω·cm and a magnetic or non-magnetic toner;

transferring said toner image to a recording sheet by means of a transfer roll having an elastic surface; and

fixing the transferred toner image to said recording sheet, wherein an outer diameter (D) of said permanent magnet, a peripheral speed (Vm) of said permanent magnet member, a number, (M) of magnetic poles on a circumferential surface of said permanent magnet member, and a peripheral speed (Vp) of said photoconductive drum are selected such that (πD·Vp)/(M·Vm) is less than 2 mm.

5,669,052

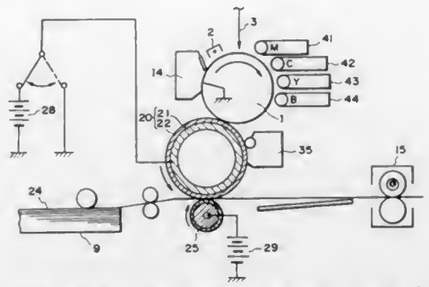
IMAGE FORMING APPARATUS AND INTERMEDIATE TRANSFER MEMBER

Takashi Kusaba, Kodaira; Hiroyuki Kobayashi, Fujl; Akihiko Nakazawa, Shlroyamamachi; Atsushi Tanaka, and Tsunenori Ashibe, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 658,625
Claims priority, application Japan, Jun. 6, 1995, 7-139330
Int. Cl.[6] G03G *15/16*
U.S. Cl. 399—308 **11 Claims**

1. An image forming apparatus, comprising: a first image-forming member, and an intermediate transfer member for receiving an image formed on the first image-bearing member and transferring the image onto a second image-bearing member;

wherein said intermediate transfer member has a surface layer comprising a binder and a powder dispersed therein; the binder having a tensile strength of at least 300 kg-f/cm^2, an elongation of at least 150%, and a tensile stress of at most 250 kg-f/cm^2 at an elongation of 100%.

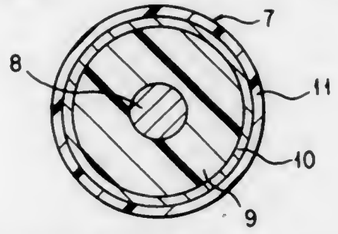


5,669,053

ROLLER TRANSFER DEVICE AND TRANSFER ROLLER MANUFACTURING METHOD

Hiroshi Hashizume, and Yoshiaki Okano, both of Hino, Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Aug. 14, 1995, Ser. No. 514,954
Claims priority, application Japan, Aug. 17, 1994, 6-193279
Int. Cl.[6] G03G *15/16*
U.S. Cl. 399—313 **16 Claims**



1. A roller transfer device comprising:

a transfer roller including a metal core shaft, a conductive elastic layer formed on said core shaft and having a heat resistance of not less than 150° C., an adhesive layer formed on said conductive elastic layer, and a fluorine-based film resistance layer formed on said adhesive layer; and

a voltage application member connected to said transfer roller; wherein:

said conductive elastic layer has an Asker C hardness of approximately 25 to 38 and a volume resistivity of 10 to 10^6 Ω·cm; and

said adhesive layer essentially consists of at least one type of a material selected from the group consisting of a conductive vinyl chloride resin and a conductive polyurethane resin.

5,669,054

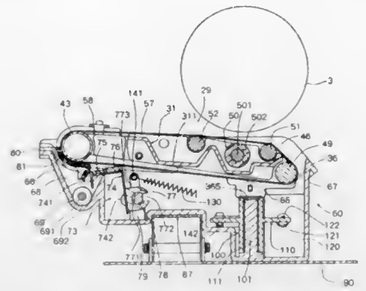
MULTI-DIRECTIONAL DRIVING MECHANISM AND TRANSFER DEVICE FOR AN IMAGE FORMING MACHINE USING SUCH MECHANISM

Michio Uchida; Ryuji Wataki; Noritaka Okazaki; Shigeo Fujita, and Yuzuru Nanjo, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 20, 1995, Ser. No. 559,604
Claims priority, application Japan, Nov. 21, 1994, 6-309485
Int. Cl.[6] G03G *15/14*
U.S. Cl. 399—313 **7 Claims**

1. A multi-directional driving mechanism comprising:

a supporting shaft;



a moving plate supported pivotably on the supporting shaft and having an input portion and a plurality of output portions;

a solenoid coupled to the input portion of the moving plate for causing the moving plate to pivot through a predetermined angle on said supporting shaft; and

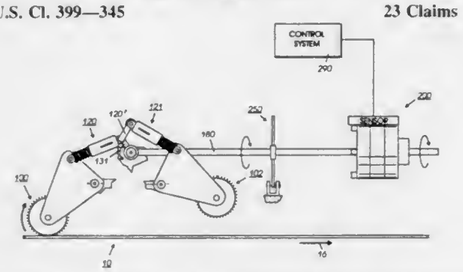
a plurality of coupling members, each coupling member having a first end coupled to one of the plurality of output portions provided on the moving plate and a second end adapted to be coupled to an output member, for moving the output member in response to pivoting of the moving plate due to actuation of the solenoid.

5,669,055

DUAL BRUSH CLEANER RETRACTION MECHANISM AND VARIABLE INERTIA DRIFT CONTROLLER FOR RETRACTABLE CLEANER

Bruce E. Thayer; Dennis G. Gerbasi, both of Webster; Norman E. LaTour, and Christopher B. Miller, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 29, 1996, Ser. No. 624,160
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—345 **23 Claims**



1. An apparatus for cleaning particles from a movable surface of a multipass image on image printing machine, comprising:

at least two means for cleaning the surface including a first cleaning means and a second cleaning means, said first cleaning means being located upstream from said second cleaning means in a direction of motion of the surface; and

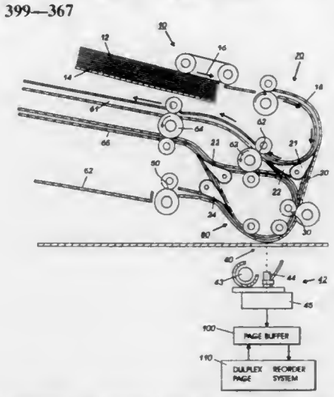
a multibar linkage, with each bar of said multibar linkage being pivotally connected to another bar of said multibar linkage, for pivotally supporting said first cleaning means and said second cleaning means, having an actual pivot point on an axis parallel to and above the surface and perpendicular to the direction of motion of said multibar linkage enabling said first cleaning means and said second cleaning means to sequentially retract from and engage with the surface, said multibar linkage controlling said cleaning means interference with the surface and enabling changeability of retraction and engagement timing parameters using software clutch actuation times.

5,669,056

DUPLEX DOCUMENT HANDLING SYSTEM

Robert F. Rubscha, 21 S. Gate, Fairport, N.Y. 14450

Filed Mar. 25, 1996, Ser. No. 620,819
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—367 **3 Claims**



1. An automatic document handling system for automatically sequentially feeding a set of multiple duplex and simplex document sheets from an input tray to be imaged at a single digital electronic imaging station and converted to electronic page images and then restacking the document sheets in correct collated order in an output tray, including a duplex document inverting system for inverting duplex documents between imagings of the opposite sides thereof, for imaging both sides of the duplex documents at said imaging station, the improvement comprising:

upper and lower independent superposed inversion loop document sheet feeding paths,

said upper inversion loop path providing pre-inversion of a duplex document sheet fed from said input tray prior to feeding the duplex document sheet to said imaging station,

and said lower inversion loop path providing inversion of another said duplex document sheet therein between said imagings of the opposite sides thereof, concurrently with said pre-inversion of the other duplex document sheet in said upper inversion loop, to increase the effective imaging rate of the duplex document sheets;

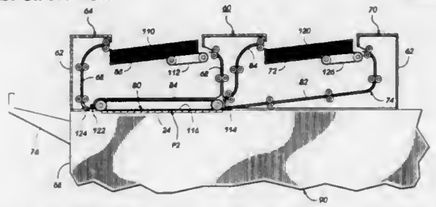
wherein a sheet bypass system for bypassing said upper inversion loop path is provided for feeding of the simplex documents to be imaged and restacked in said same output tray in correct collated order.

5,669,057

REPRODUCTION MACHINE HAVING A TANDEM AUTOMATIC DOCUMENT HANDLER

John F. Whiting, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1995, Ser. No. 538,658
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—369 **14 Claims**



1. A Tandem Automatic Document Handler (TADH) for use in an electrostatographic reproduction machine, the TADH comprising:

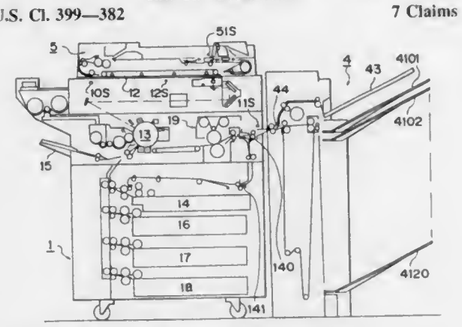
(a) a housing for mounting over a platen of the reproduction machine;
(b) a first Recirculating Automatic Document Feeder (RADF) assembly mounted within said housing, said first RADF assembly including a first RADF tray and a first document path for recirculatingly moving sheets of documents seriatim from said first RADF tray onto the platen, and back into said first RADF tray;
(c) a second Recirculating Automatic Document Feeder (RADF) assembly mounted within said housing and in alignment with said first RADF assembly, said second RADF assembly including a second RADF tray and a second document path for recirculatingly feeding sheets of documents seriatim from said second RADF tray onto the platen, and back into said second RADF tray; and
(d) an electronic control subsystem connected to said first RADF and said second RADF and having a control panel, a first programming channel, a second programmable channel, and means for programming a second job in one of said first and said second RADH even while a first job is still being run in another of said first and said second RADH.

5,669,058

COPYING MACHINE WITH COPYING MODES FOR COPYING ON OVERHEAD PROJECTOR SHEETS AND PAPER

Hiroyasu Ito, Okazaki, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 394,611, Feb. 22, 1995, abandoned. This application Oct. 16, 1996, Ser. No. 733,073
Claims priority, application Japan, Feb. 24, 1994, 6-053152
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—382 **7 Claims**



1. An image forming apparatus which comprises:
image forming means for optically scanning a document to accomplish an image formation;
first accommodating means for accommodating a batch of OHP sheets;
second accommodating means for accommodating a batch of copying papers;
first setting means for setting an OHP copy mode as one operation relative to one document during which, after a copy paper supplied from the second accommodating means has been discharged, an OHP sheet is supplied from the first accommodating means and is, after an image has been formed thereon by said image forming means, discharged;
second setting means for setting a multi-copy mode in which using the copy papers accommodated in the second accommodating means a multiple copy is carried out;
third setting means for setting a copying condition; and
control means for controlling the copying condition set by the third setting means so as to be applied only during the multi-copy mode, set by the second setting means, when the OHP copy mode is set by the first setting means and, at the same time, the multi-copy mode is set by the second setting means.

5,669,059

METAL MATRIX COMPOSITIONS AND METHOD OF MANUFACTURING THEREOF

Robin A. Carden, Costa Mesa, Calif., assignor to Alyn Corporation, Irvine, Calif.

Division of Ser. No. 183,728, Jan. 19, 1994, Pat. No. 5,486,223. This application Sep. 29, 1995, Ser. No. 536,695
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—12 **6 Claims**

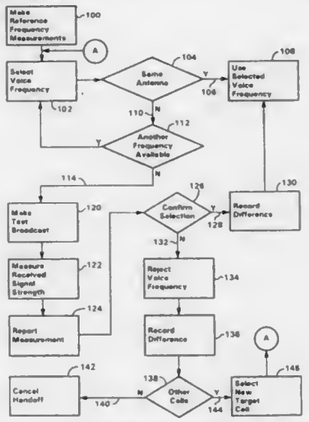
1. A method of fabricating a metal matrix composite comprising the following steps:
a) blending powders of a bore material metal, boron carbide and at least one metal additive having an inter-metallic phase temperature below the melting point of said base material metal; wherein said boron carbide constitutes about 10% to 16% of the powders by weight and said additive constitutes less than about 1.5% of said powders;
b) degassing said blended powders;
c) isopressing said blended powders at a pressure of at least 65,000 psi;
d) heating said isopressed powders up to at least 625 degrees Centigrade over a selected period of time;
e) configuring said isopressed and sintered powders to the desired shape; and
f) heat treating the resulting shape of step e).

5,669,060

METHOD AND APPARATUS FOR ENHANCING CALL SET-UP AND HANDOFF QUALITY

Vincent Guimont, Blainville, Canada, assignor to Telefonaktiebolaget L M Ericsson (publ), Stockholm, Sweden

Filed Mar. 4, 1996, Ser. No. 610,425
Int. Cl.[6] H04Q *7/00;9/00*
U.S. Cl. 455—436 **21 Claims**



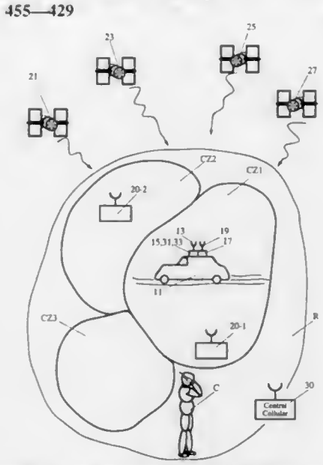
1. A voice frequency selection method comprising the steps of:
selecting one of a plurality of voice frequencies to carry a cellular communication in a cell;
determining whether an antenna used by the cell for the selected voice frequency is the same as an antenna used by the cell for a reference frequency; and
if not:
making a test broadcast on the selected voice frequency;
measuring received signal strength for the test broadcast;
confirming use of the cell from a sufficient measured test broadcast received signal strength; and
responsive to the confirmation of the cell, establishing the cellular communication over the selected voice frequency.

5,669,061

AUTOMATIC CELLULAR PHONE TRACKING

John F. Schipper, Palo Alto, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Aug. 19, 1994, Ser. No. 292,856
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 455—429 **22 Claims**



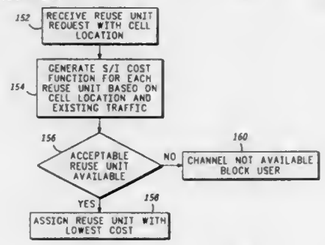
1. A method for providing handoff between at least two cellzones for a mobile cellphone user, the method comprising the steps of:
providing a cellphone user with a cellular telephone that can communicate with a selected telephone through a first cellular telephone service provider, when the cellular telephone is located within a first cellzone, and can communicate with the selected telephone through a second cellular telephone service provider, when the cellular telephone is located within a second cellzone that is adjacent to the first cellzone;
providing the cellphone user with a Satellite Positioning System (SATPS) antenna and SATPS receiver/processor and with a transmitter, to receive SATPS signals from a plurality of SATPS satellites, to determine the present location of the SATPS antenna from analysis of these SATPS signals, and to transmit information on the present location of the SATPS antenna to a cellular telephone service provider for a cellzone in which the antenna is presently located;
providing the cellphone user with a microprocessor and associated memory, connected to the cellular telephone and to the SATPS receiver/processor, that contains an electronic map of at least the first and second cellzones;
providing a cellzone boundary curve B12 between the first and second cellzones, where B12 is defined on the electronic map by an equation $h_{B12}(x_{B12},y_{B12},z_{B12})=0$, where $(x_{B12},y_{B12},z_{B12})$ are the spatial location coordinates of a point lying on the boundary curve B12, where the equation $h_{B12}(x,y,z)<0$ indicates that a point with coordinates (x,y,z) is within a first region including the first cellzone and not including the second cellzone, and where the equation $h_{B12}(x,y,z)>0$ indicates that the point with coordinates (x,y,z) is within a second region including the second cellzone and not including the first cellzone;
providing a first quasi-boundary curve QB1 within the first cellzone that is defined on the map by a curve of points with coordinates $(x_{QB1},y_{QB1},z_{QB1})$ within the first cellzone for which the perpendicular footer distance d_{fB12} (x,y,z) of each point $(x_{QB1},y_{QB1},z_{QB1})$ on the curve QB1 to its perpendicular footer on the curve B12 satisfies the relation d_{fB12} $(x_{QB1},y_{QB1},z_{QB1})=d1$, where d1 is a selected positive distance;
providing a second quasi-boundary curve QB2 within the second cellzone that is defined on the map by a curve of points with coordinates $(x_{QB2},y_{QB2},z_{QB2})$ within the second cellzone for which the perpendicular footer distance d_{fB12} (x,y,z) of each point $(x_{QB2},y_{QB2},z_{QB2})$ on the curve QB2 to its perpendicular footer on the curve B12 satisfies the relation d_{fB12} $(x_{QB2},y_{QB2},z_{QB2})=d2$, where d2 is a selected positive distance;
defining a region CR12 of points lying between the first quasi-boundary curve QB1 and the second quasi-boundary curve QB2, including at least a portion of the boundary curve B12;
when the SATPS antenna is within at least one of the first cellzone and the second cellzone, determining the antenna's spatial location coordinates (x(t),y(t),z(t)), which may vary with time t;
determining whether the SATPS antenna's spatial location coordinates satisfy the two relations $h_{B12}(x(t),y(t),z(t))<0$ and d_{fB12} $(x(t),y(t),z(t))\geq d1$, and when these two relations are both satisfied, determining that the cellphone user is presently in the first cellzone;
when the SATPS antenna is within the first cellzone and not within the region CR12, providing cellular telephone service for the cellphone user with the first cellular telephone service provider;
determining whether the SATPS antenna's spatial location coordinates satisfy the two relations $h_{B12}(x(t),y(t),z(t))<0$ and d_{fB12} $(x(t),y(t),z(t))<d1$, and when these two relations are both satisfied and the distance d_{fB12} $(x(t),y(t),z(t))$ is decreasing with increasing time t, notifying at least one of the first and second cellular telephone service providers that the cellphone user will soon pass from the first cellzone into the second cellzone; and
determining whether the SATPS antenna's spatial location coordinates satisfy the relation $h_{B12}(x(t),y(t),z(t))>0$, and when this relation is satisfied and the distance d_{fB12} $(x(t),y(t),z(t))$ is increasing with increasing time t, notifying at least one of the first and second cellular telephone service providers that the cellphone user has passed from the first cellzone into the second cellzone.

5,669,062

METHODS OF DEMAND-BASED ADAPTIVE CHANNEL REUSE FOR TELECOMMUNICATIONS SYSTEMS

Keith A. Olds; Victor H. Cutler, Jr., both of Mesa, Ariz., and Gerald J. Davieau, Eldersburg, Md., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 329,926, Oct. 27, 1994, abandoned. This application Sep. 9, 1996, Ser. No. 709,927
Int. Cl.[6] H04B *7/26;7/185;* **H04Q** *7/36*
U.S. Cl. 455—509 **16 Claims**



14. A method for managing and reusing channels in a telecommunication system, the method comprising the steps of:
(a) receiving a request from a user located in a cell for a channel, wherein the request includes the cell's location;
(b) generating for each of a plurality of unused channels a cost of interference based on the cell's location and an average signal-to-interference ratio of a corresponding one of the unused channels used at various points in the cell; and
(c) assigning one of the unused channels having the lowest cost of interference to the user.

5,669,063

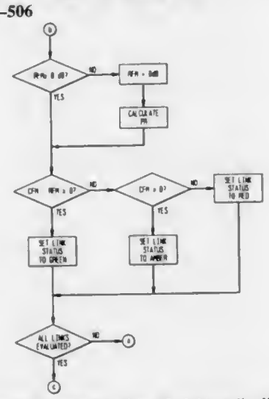
METHOD OF ESTABLISHING LINE OF SIGHT PROPAGATION

Kenneth H. Brockel, Neptune; William P. Sudnikovich, Laurence Harbor; Joseph Inserra, Toms River; Francis Loso, Keyport, and Kerri E. Schulz, Bricktown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 437,861, May 8, 1995, abandoned, which is a continuation of Ser. No. 952,448, Sep. 28, 1992, abandoned. This application Jun. 24, 1996, Ser. No. 668,870

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—506 **1 Claim**



1. An improved terrestrial, line of sight radio linked network having a predetermined number of terrestrial, line of sight radio transmitters and receivers, the terrestrial, line of sight radio transmitters and receivers having predetermined physical parameters and known multipath fade margin capabilities and being spaced over a predetermined distance and terrain, the improvement comprising:

an automated system and software program which automatically calculates a required multipath fade margin given a climatic factor, radio wave path inclination, desired reliability and radio frequency for each terrestrial, line of sight radio link;

means within the automated system and software program to compare the required multipath fade margin to the multipath fade margin capabilities;

means to alter the predetermined physical parameters of the terrestrial, line of sight radio transmitters and receivers if the difference between the multipath fade margin capabilities and the required multipath fade margin is less than or equal to zero; and

means to alter the predetermined distance between the terrestrial, line of sight radio transmitters and receivers if the difference between the multipath fade margin capabilities and the required multipath fade margin is less than or equal to zero.

5,669,064

MOBILE METHOD AND APPARATUS FOR STANDBY CONTROL IN A COMMUNICATION SYSTEM

Takayuki Iseyama, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1994, Ser. No. 316,580

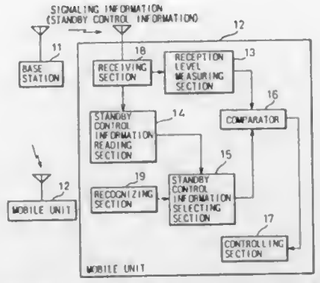
Claims priority, application Japan, Mar. 17, 1994, 6-047489

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—517 **6 Claims**

2. A standby control method for a mobile unit, comprising the steps of:

a) receiving signaling information containing standby control information from a base station;



b) determining a reception level threshold value for standby control, based on the standby control information contained in the signaling information and on information concerning the reception performance of the mobile unit;

c) measuring a reception level;

d) comparing the measured reception level with the reception level threshold value; and

e) controlling standby state on the basis of the result of the comparison,

wherein the standby control information includes a reception level threshold value corresponding to a reference mobile unit reception performance type, and step b) includes the substeps of

i) reading out the reception level threshold value, and

ii) converting the read-out reception level threshold value into a reception level threshold value corresponding to the reception performance of the mobile unit.

5,669,065

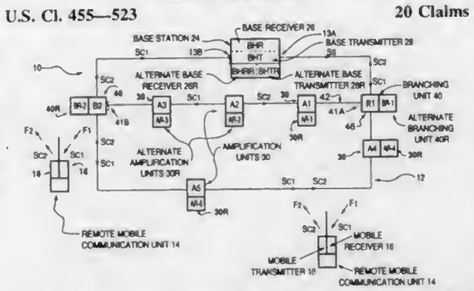
COMPLETELY REDUNDANT COMMUNICATION SYSTEM UTILIZING RADIATING TRANSMISSION LINE

Patrick M.Y. Waye, Stouffville, and Kenneth John Morrell, Sunderland, both of Canada, assignors to Mine Radio Systems Inc., Sunderland, Canada

Continuation-in-part of Ser. No. 305,300, Sep. 15, 1994. This application Dec. 22, 1994, Ser. No. 362,199

Int. Cl.[6] H04B *3/02*

U.S. Cl. 455—523 **20 Claims**



1. A radio frequency communication system for communicating signals from and to remote mobile communication units comprising:

a radiating transmission line having a first end and a second end;

a first remote mobile communication unit comprising mobile receiver means for receiving a first communication signal from the transmission line at a first frequency and mobile transmitter means for transmitting a second communication signal to the transmission line at a second frequency;

a base station coupled to the first end and the second end of the radiating transmission line, said base station comprising:

base transmitter means for transmitting the first communication signal at the first frequency into the first end or into the second end of the transmission line; and

base receiver means for receiving the second communication signal at the second frequency from the first end or the second end of the transmission line; and

wherein if a fault develops in the system such that either the first communication signal or the second communication signal cannot be transmitted through the fault, the base transmitter means commences transmitting the first communication signal to the first end and the second end of the transmission line and the base receiver means commences receiving the second communication signal from the first end and the second end of the radiating transmission line.

5,669,066

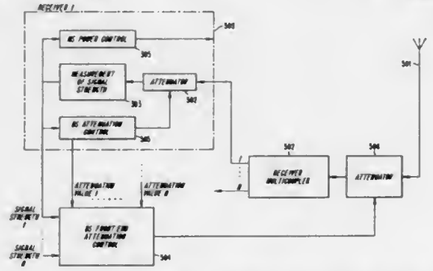
DYNAMIC CONTROL OF TRANSMITTING POWER AT A TRANSMITTER AND ATTENUATION AT A RECEIVER

Lars Uno Borg, Stockholm, and Lars Magnus Lindroth, Täby, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 14, 1993, Ser. No. 61,043

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—69 **19 Claims**



1. An apparatus for use in a communications system having a receiver that receives a communications signal transmitted by a transmitter, the transmitter including transmitter power control means, responsive to a received power control signal, for controlling a power level at which the transmitter transmits the transmitted communications signal, the apparatus comprising:

measurement means for generating a signal strength measurement signal based on the received communications signal;

means for attenuating the received communications signal by an attenuation amount dynamically determined by a control signal, thereby producing an attenuated signal to be supplied as an input to the receiver;

attenuation control means, coupled to the measurement means and the attenuating means, for using the signal strength measurement signal to generate the control signal and for supplying the control signal to the attenuating means; and

first power control means, coupled to the measurement means, for using the signal strength measurement signal to generate the power control signal to be communicated to the transmitter;

wherein the attenuation control means and the first power control means coordinate with one another to dynamically control, respectively, the attenuation amount and the transmitter power level so as to substantially optimize communications system performance, and

wherein the attenuation control means dynamically adjusts the attenuation amount to produce an effective dynamic range for receiving only signals having a signal strength level that is higher than a signal strength level of a disturbance signal, while at the same time the first power control means adjusts the transmitter power level so that the transmitter will produce an adjusted communications signal that is within the effective dynamic range of the receiver.

5,669,067

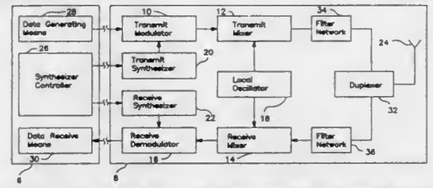
REMOTELY CONTROLLABLE VARIABLE INTERMEDIATE FREQUENCY TRANSCEIVER

Philip Mambo, Dorval, Canada, assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 29, 1994, Ser. No. 267,435

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—76 **15 Claims**



1. A transceiver for transmitting a transmit signal and for receiving a receive signal, said transceiver comprising a remote unit and a local unit located away from said remote unit;

said remote unit comprising:

a frequency conversion section comprising a single, fixed-frequency local oscillator for up-converting an intermediate transmit signal to produce said transmit signal and for down-converting said receive signal to produce an intermediate receive signal;

a modulation section for modulating an intermediate frequency (IF) transmit data signal to produce said intermediate transmit signal and for demodulating said intermediate receive signal to produce a receive data signal of IF receive data frequency; and, said local unit comprising remote control means for separately controlling variation of modulation of said intermediate transmit signal and variation of demodulation of said intermediate receive signal in said modulation section.

5,669,068

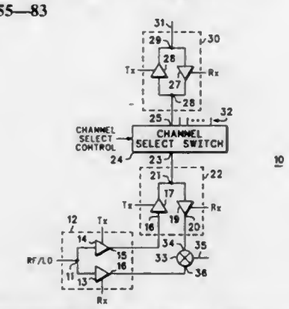
COMPLIMENTARY SWITCHED AMPLIFIER TRANSCEIVER SYSTEM

Ronald F. Kielmeyer, Tempe; Craig L. Fullerton, Chandler; John D. Goshinska, Gilbert; Hugh R. Malone, Phoenix; Paul L. Brownlee; Richard J. Christensen, both of Mesa, and Michael L. Fraser, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1995, Ser. No. 497,835

Int. Cl.[6] H04B *1/44*

U.S. Cl. 455—83 **8 Claims**



1. A complimentary switched amplifier transceiver, comprising:

a combined amplifier switch;

a first bi-directional amplifier having a first bi-directional amplifier input coupled to a first switch output of the combined amplifier switch;

a channel select switch having a common port coupled to a bi-directional port of the first bi-directional amplifier;

a second bi-directional amplifier having a first bi-directional port coupled to a channel select port of the channel select switch;

a channel transition coupled to a second bi-directional port of the second bi-directional amplifier; and

a mixer having an RF port coupled to a first bi-directional amplifier output, and an LO port coupled to a second switch output of the combined amplifier switch;

wherein each of the first and second bi-directional amplifiers has a first mode where a transmitter amplifier thereof is biased in an ON state while a receiver amplifier thereof is biased in an OFF state and a second mode where the transmitter amplifier thereof is biased in an OFF state while the receive amplifier thereof is biased in an ON state.

5,669,069

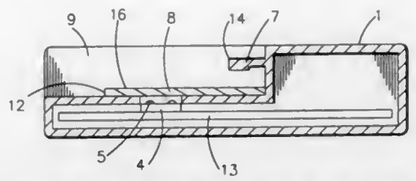
CARD READING CONFIGURATION IN A MOBILE PHONE

Heikki Rautila, Espoo, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland

Filed Apr. 18, 1995, Ser. No. 423,979
Claims priority, application Finland, Apr. 19, 1994, 941812
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—558 **1 Claim**

1. A card reading configuration in a mobile phone, comprising a space for the card in the housing, the space being covered by the battery unit as it is put into position, and being laterally defined by the side walls of the housing, and provided with contacts joining matching contact areas in the card with the card in position, characterized in that it comprises:

guide grooves in the side walls of the space, which the edges of the card engage as the card is being inserted, and serving to position the card laterally and to stop the card essentially totally from moving in any other direction than the longitudinal direction of the card and the housing;



a stop in the housing, which serves to position the card and to limit its movement in the said longitudinal direction as the card is being inserted;

matching guide members in the battery unit and in the housing, which require the battery unit to be pushed in the said longitudinal direction at the end of its insertion;

a first stopper of the battery unit; which at the end of the insertion of the battery unit presses against the rear edge of the card relative to the pushing direction, thus forcing the card into the location determined by the guide grooves and the stop, with the battery unit in position; and

a second stopper of the battery unit, which presses against the card and keeps it pressed against the contacts when the battery unit is in position.

DESIGNS

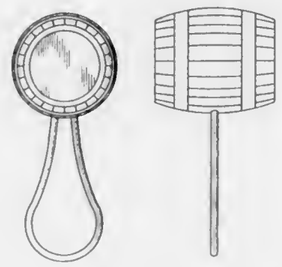
SEPTEMBER 16, 1997

383,585

CHILDREN'S MEDICATED SUCKER

Robert M. Perez, San Francisco, Calif., assignor to Robert Matthew Perez, San Francisco, Calif.

Filed Aug. 8, 1996, Ser. No. 58,123
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—102

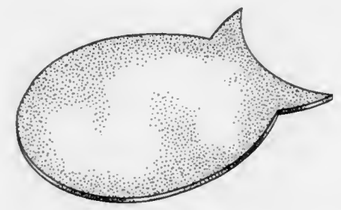


383,587

FISH SHAPED TORTILLA CHIP

Jose Francisco Morales, Oxnard, Calif., assignor to Casa Herrera, Inc., Pomona, Calif.

Filed Jul. 26, 1996, Ser. No. 57,499
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—111

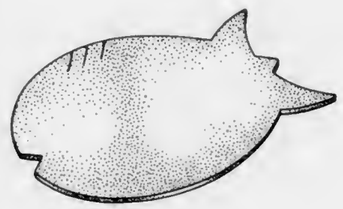


383,586

FISH SHAPED TORTILLA CHIP

Jose Francisco Morales, Oxnard, and Alfred J. Herrera, La Mirada, both of Calif., assignors to Casa Herrera, Inc., Pomona, Calif.

Filed Jul. 26, 1996, Ser. No. 57,498
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—111

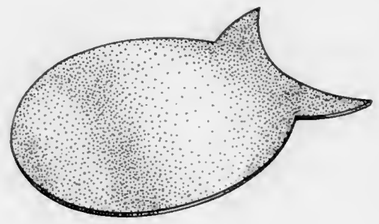


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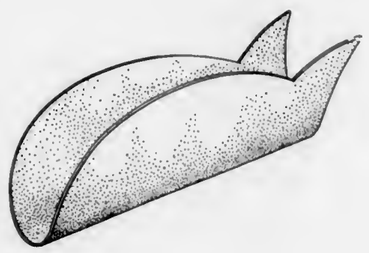
FISH SHAPED TORTILLA CHIP

Jose Francisco Morales, Oxnard, Calif., assignor to Casa Herrera, Inc., Pomona, Calif.

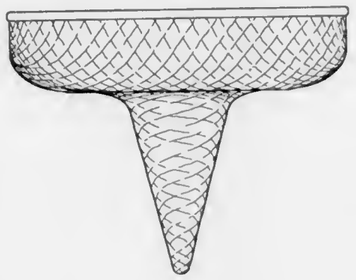
Filed Jul. 26, 1996, Ser. No. 57,501
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—111



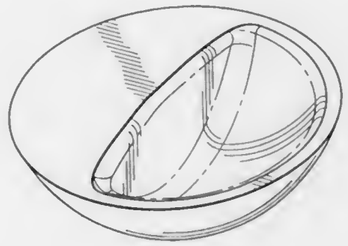
383,589
FISH SHAPED TACO SHELL
Jose Francisco Morales, Oxnard, Calif., assignor to Casa Herrera, Inc., Pomona, Calif.
Filed Jul. 26, 1996, Ser. No. 57,502
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—111



383,590
SUNDAY CONE
Newton A. Parker, 67 Concord Pl., Lafayette, N.J. 07848
Filed Feb. 26, 1996, Ser. No. 50,739
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—119



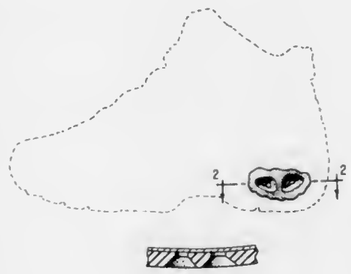
383,591
BREAST AUGMENTATION APPARATUS
Michelle Hyde, 2736 Falcon Way, Sandy, Utah 84093
Filed Aug. 2, 1996, Ser. No. 57,899
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—706



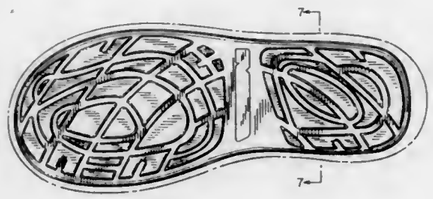
383,592
SURGICAL GOWN AND HOOD
Albert N. Santilli, Mayfield Heights, Ohio, assignor to Surgical Specialty Products, Inc., Cleveland, Ohio
Filed Feb. 21, 1996, Ser. No. 50,956
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—720



383,593
ELEMENT OF A SHOE SOLE
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 5, 1996, Ser. No. 55,417
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—947



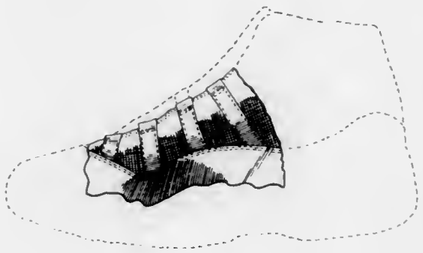
383,594
SHOE SOLE
Shannon Bruce Elliott, Pasadena, Calif., assignor to Vans, Inc., Orange, Calif.
Filed Jul. 30, 1996, Ser. No. 57,722
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—954



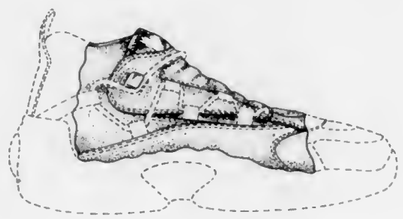
383,595
SHOE UPPER
Jonathan R. Morris, 100 Technology Center Dr., Stoughton, Mass. 02072
Filed Oct. 20, 1995, Ser. No. 45,486
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—970



383,596
SIDE ELEMENT OF A SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 40,371, Jun. 16, 1995, Pat. No. Des. 371,898, which is a continuation-in-part of Ser. No. 32,079, Dec. 2, 1994, Pat. No. Des. 361,885. This application May 22, 1996, Ser. No. 54,814
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



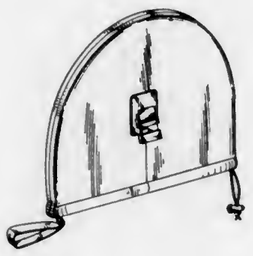
383,597
ELEMENT OF A SHOE UPPER
Marni L. Gerber, West Linn, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 30, 1996, Ser. No. 55,118
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



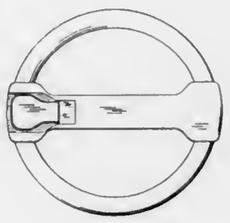
383,599
KEY RING
Chang June Song, 6740 Comstock Road, Richmond, British Columbia, Canada
Division of Ser. No. 36,222, Mar. 15, 1995, Pat. No. Des. 371,999. This application Jul. 23, 1996, Ser. No. 57,311
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—207



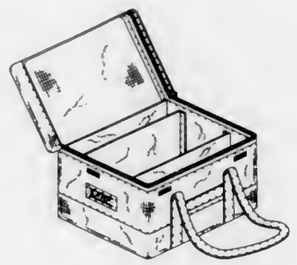
383,598
PROTECTIVE CARRY BAG FOR A HELMET
Alex Brucki, Flat 12, 705 Park Street, Brunswick, Victoria 3056, Australia
Filed Feb. 20, 1996, Ser. No. 50,641
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—201



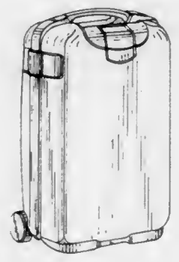
383,600
KEY RING
Chang June Song, 6740 Comstock Road, Richmond, British Columbia, Canada
Division of Ser. No. 36,222, Mar. 15, 1995, Pat. No. Des. 371,999. This application Jul. 23, 1996, Ser. No. 57,312
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—207



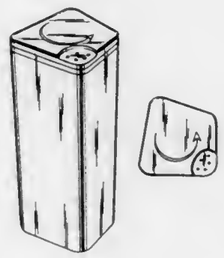
383,601
TACKLE CONTAINER
Richard L. Jones, and Joseph L. Evering, both of 1426 Valley Forge Way, Abingdon, Md. 21009
Filed Sep. 14, 1995, Ser. No. 43,949
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—260



383,603
MOLDED WHEELED LUGGAGE CASE
Roger Pedlar, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 1, 1996, Ser. No. 51,294
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—279



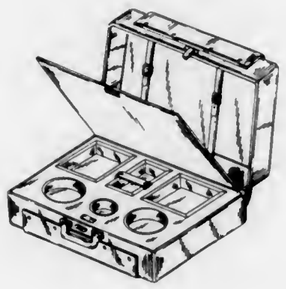
383,602
SUNGLASSES CASE
Jeff Theodosakis, Carlsbad, and Dave Miller, Anaheim, both of Calif., assignors to Spy Optic, Inc., Carlsbad, Calif.
Filed Mar. 29, 1996, Ser. No. 55,740
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—265



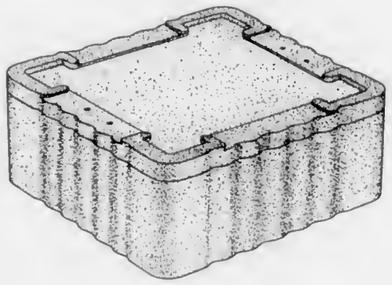
383,604
MULTI-WHEELED LUGGAGE CASE
William L. King; Bonnie M. Earl, and David A. Crumrine, all of Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Mar. 7, 1996, Ser. No. 51,358
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—279



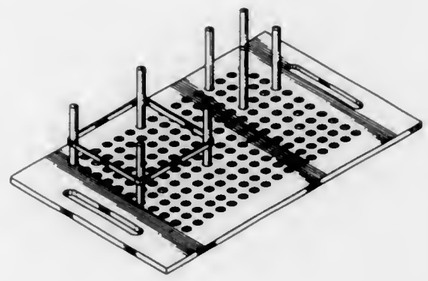
383,605
CARRYING CASE
Richard V. Usuriello, 20 Collins St., Salisbury, Mass. 01952-1814
Filed Apr. 10, 1996, Ser. No. 53,030
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—284



383,606
COMBINED CONTAINER AND LID
Richard Bourbonnais, Pointe-Claire, Canada, assignor to Polymos Inc., Vaudreuil, Canada
Filed May 6, 1996, Ser. No. 54,017
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—302



383,607
TRAY WITH PEGS AND ELASTIC BAND TO HOLD OBJECTS THEREON
Larry W. Whitlock, 609 Old Stage Rd., Dandridge, Tenn. 37725
Filed Mar. 26, 1996, Ser. No. 52,233
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—305



383,608
TOOTHBRUSH
Atsushi Yamamoto, Takatsuki, and Kazumi Oishi, Kusatsu, both of Japan, assignors to Sunstar Kabushiki Kaisha, Japan
Filed Feb. 29, 1996, Ser. No. 51,045
Claims priority, application Japan, Aug. 29, 1995, 7-25225
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



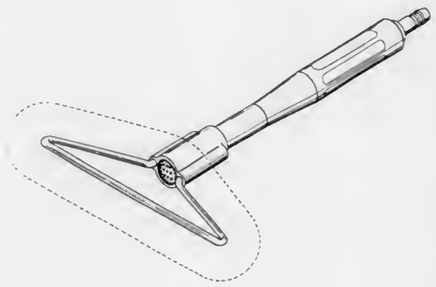
383,609
SOFT SQUEEZE TOOTHBRUSH
Iona Phillips, 205 Rock St. Bldg. J-1, Philadelphia, Pa. 19128
Filed Aug. 8, 1994, Ser. No. 17,216
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—108



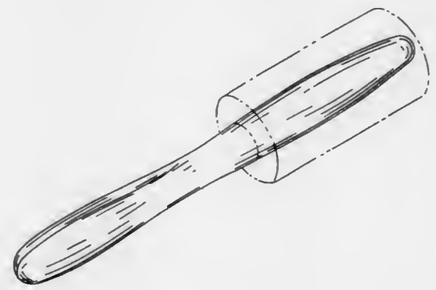
383,610
LINT MITT
Cliff Ross Cole, and Elaine McPherson, both of 1259 Sweeten Creek Rd., Asheville, N.C. 28803
Filed Mar. 18, 1994, Ser. No. 9,415
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—137



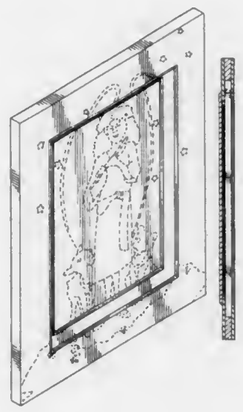
383,611
CLEANSING APPLICATOR FRAME AND HANDLE UNIT
Chin Lizn Tsai, 1th, No. 28-79, Yu Shan Road, Chia I City, Taiwan
Filed Jun. 21, 1994, Ser. No. 24,749
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D4—138



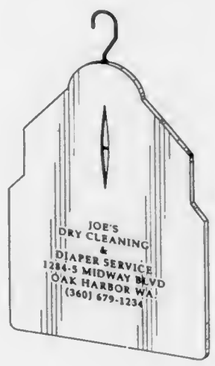
383,612
ROUND HAIR BRUSH HANDLE
Eric P. Chan, and Jeffrey F. Miller, both of New York, N.Y., assignors to Goody Products, Inc., Peach Tree City, Ga.
Filed Apr. 3, 1996, Ser. No. 52,706
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—138



383,613
PICTURE DISPLAY
Milton E. Handler, Northbrook, Ill., assignor to M & R Pictures U.S.A., Inc., Fox Lake, Ill.
Filed May 20, 1996, Ser. No. 54,676
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—300



383,614
CLOTHES HANGER
Phillip E. Colby, VAQ - 138, Unit 25412, FPO AP 96601-6422, Wash. 98277
Filed Apr. 12, 1996, Ser. No. 53,045
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—315



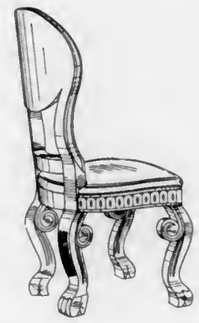
383,615
BENCH
Gerald P. Skalka, Potomac, Md., assignor to Victor Stanley, Inc., Dunkirk, Md.
Division of Ser. No. 47,596, Dec. 8, 1995. This application Jul. 16, 1996, Ser. No. 57,084
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



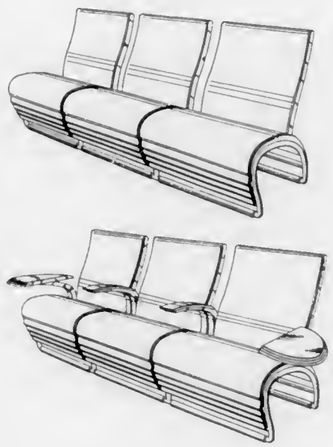
383,616
CHAIR
John W. Caldwell, South Pasadena, Calif., assignor to Tropitone Furniture Co., Inc., Irvine, Calif.
Filed Apr. 21, 1995, Ser. No. 37,879
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—376



383,617
CHAIR
Jorge Estapé , and Joyce Estapé , both of 2453 San Pasqual Valley Rd., Escondido, Calif. 92027
Filed Mar. 29, 1996, Ser. No. 52,582
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—380



383,618
TANDEM SEATING
Bruce Burdick; Susan K. Burdick; Cameron Imani, and Johnson Chow, all of San Francisco, Calif., assignors to The Burdick Group, Inc., San Francisco, Calif.
Filed Jul. 3, 1995, Ser. No. 41,060
The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



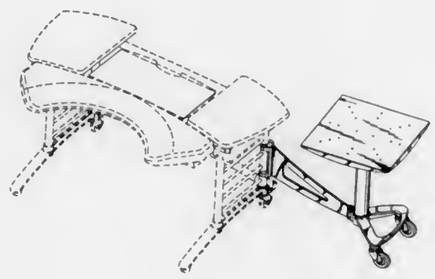
383,619
SEAT
Ranson Culler, High Point, N.C., assignor to Classic Leather, Inc., Hickory, N.C.
Filed Jul. 3, 1996, Ser. No. 56,628
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



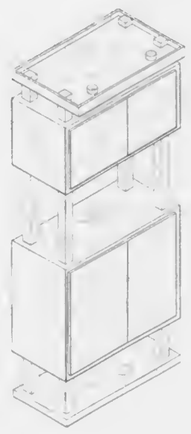
383,620
COMPACT DISK HOLDER
Mark R. Smith, Carmel, and Philip G. Wessells, Mill Valley, both of Calif., assignors to ACCO USA, Inc., Wheeling, Ill.
Filed Dec. 13, 1995, Ser. No. 47,870
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—407



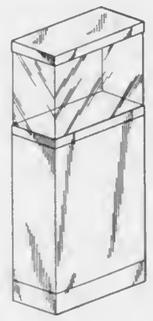
383,621
MONITOR SUPPORT
Roque Matias Corpuz, Jr., Grand Rapids, Mich., assignor to Haworth, Inc., Holland, Mich.
Filed Apr. 5, 1996, Ser. No. 52,783
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—418



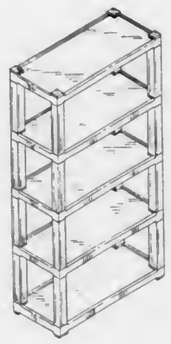
383,622
MODULAR CABINETWORK
Robert L. Thompson, 2219 Edenton Dr., Fort Wayne, Ind. 46804
Filed Mar. 21, 1996, Ser. No. 52,039
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—438



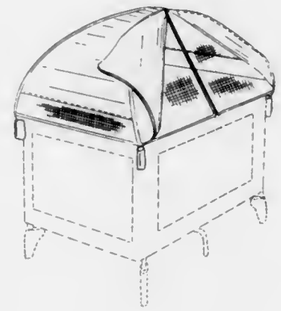
383,623
DISPLAY CASE
David Malcom Goodwin, Pyrford, and Nicholas Mernor Hamnett, Epson, both of England, assignors to Parker Pen Products, Isleworth, England
Division of Ser. No. 31,974, Dec. 9, 1994. This application Jul. 9, 1996, Ser. No. 56,769
Claims priority, application United Kingdom, Jun. 27, 1994, 2039957
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—470



383,624
MULTI-TIERED STAND
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed May 10, 1996, Ser. No. 53,509
Claims priority, application WIPO, Nov. 10, 1995, DMA/003138
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—479



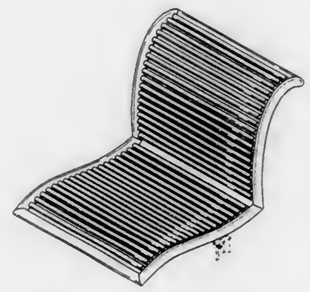
383,625
CANOPY FOR A CHILD PLAY AREA
James Dillner, Leola, Pa., assignor to Graco Children's Products, Inc., Elverson, Pa.
Filed Nov. 9, 1995, Ser. No. 46,239
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



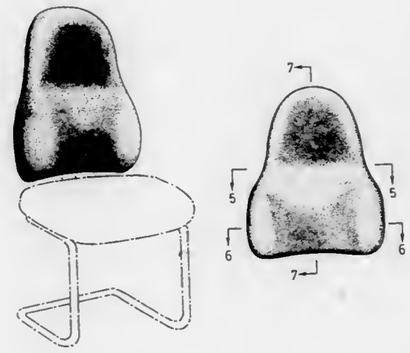
383,626
FURNITURE LEG
Diandrea Colt, 11834 Pine Mountain Dr., Brighton, Mich. 48116
Filed Aug. 2, 1996, Ser. No. 57,902
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—497



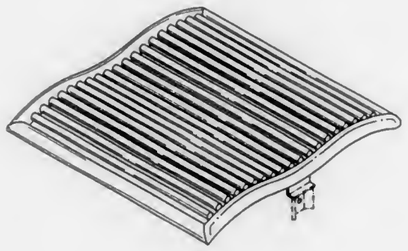
383,627
SEAT FOR MODULAR SEATING SYSTEM
Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1996, Ser. No. 52,447
The portion of the term of this patent subsequent to Jul. 29, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—500



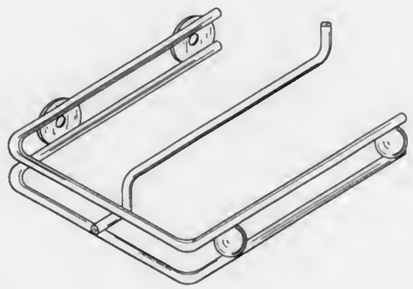
383,628
CHAIR
David Shamir, Thornhill, Canada, assignor to DSI Upholstery Inc., Concord, Canada
Filed Nov. 3, 1995, Ser. No. 45,993
Claims priority, application Canada, Nov. 1, 1995, 1995-2447
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—502



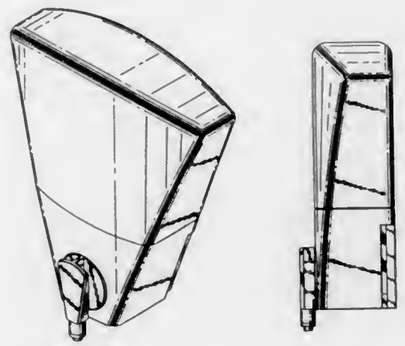
383,629
SEAT FOR MODULAR SEATING SYSTEM
Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1996, Ser. No. 51,013
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—502



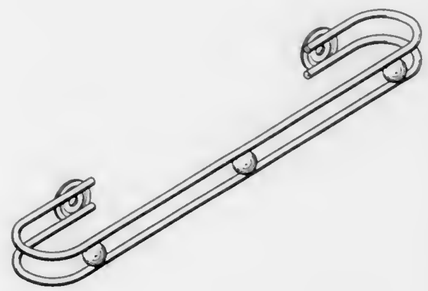
383,630
TOILET PAPER HOLDER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139
Filed Jun. 5, 1996, Ser. No. 55,321
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—523



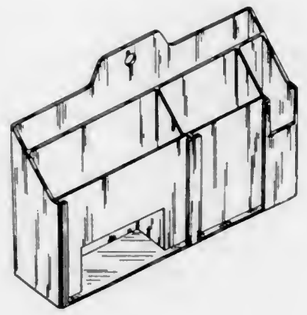
383,631
RESERVOIR ASSEMBLY FOR A PRODUCT DISPENSER
David F. Wirt, Prescott, and Floyd L. Foslien, Troy Township, both of Wis., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jun. 21, 1996, Ser. No. 56,066
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—545



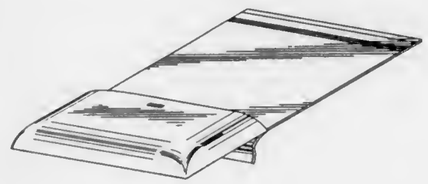
383,632
TOWEL BAR
Sheldon H. Goodman, 30905 Statford, Solon, Ohio 44139
Filed Jun. 5, 1996, Ser. No. 55,322
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—549



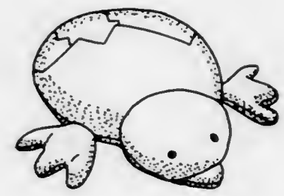
383,633
ARTICLE HOLDER
Robert A. Schweitzer, Robbinsdale, Minn., assignor to Minnesota American, Inc., Minnetonka, Minn.
Filed Jun. 21, 1996, Ser. No. 56,099
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—567



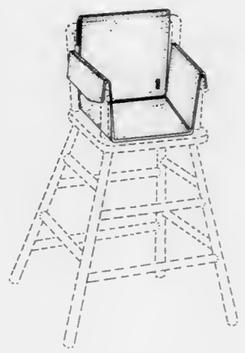
383,634
COMBINATION PILLOW-BLANKET
Zelda Selph, Rte. #2, Box 35, McRae, Ga. 31055
Filed Jun. 27, 1996, Ser. No. 56,386
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



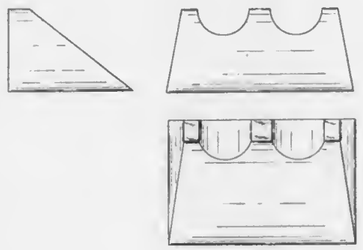
383,635
PILLOW
Hillard Bear, Beverly Hills, Calif., assignor to KKH Corp., Culver City, Calif.
Filed Jul. 10, 1996, Ser. No. 56,857
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—598



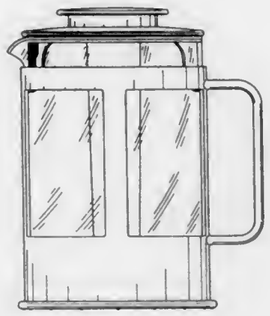
383,636
HIGH CHAIR CUSHION
Michael B. Harris, 18860 NW. 12th St., Pembroke Pines, Fla. 33029
Filed Apr. 19, 1996, Ser. No. 53,028
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



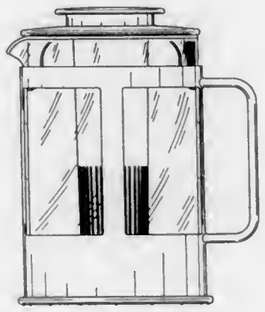
383,637
BACK PILLOW
Paul F. Musco, 738 Savin Ave., West Haven, Conn. 06516
Filed Jun. 6, 1996, Ser. No. 55,543
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



383,639
ICE TEA JUG WITH ICE INSERT
Carsten Jorgensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed May 23, 1996, Ser. No. 54,834
Claims priority, application Denmark, Feb. 19, 1996, 171/96
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—319



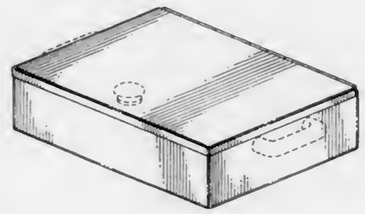
383,638
ICE TEA JUG WITH STRAINER
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed May 23, 1996, Ser. No. 54,834
Claims priority, application Denmark, Feb. 19, 1996, 170/96
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—319



383,640
BARBECUE COOKER
Norman Y.C. Yu, No. 57, Sec. 1, Ten-Sin Rd., Fong-Yuan City, Taichung Hsien, Taiwan
Filed Jun. 26, 1996, Ser. No. 56,309
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—337



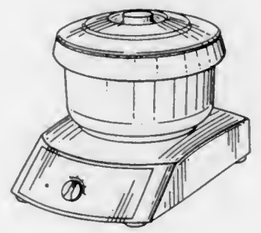
383,641
BARBECUE STEAMER
Carl Maton, 1709 Heritage Cir., Anaheim, Calif. 92804
Filed Jul. 8, 1996, Ser. No. 56,707
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



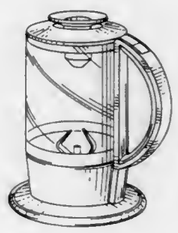
383,643
QUICK CHANGE ACCELERATOR TUBE ASSEMBLY FOR HYDRAULIC FOOD CUTTER
George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705
Continuation-in-part of Ser. No. 121,600, Sep. 15, 1993, Pat. No. 5,568,755, which is a continuation of Ser. No. 19,581, Feb. 18, 1993, Pat. No. 5,421,226. This application Mar. 5, 1996, Ser. No. 51,183
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—412



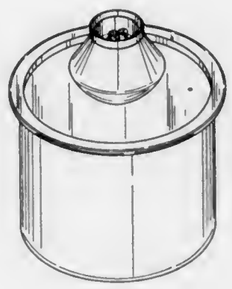
383,642
ELECTROMOTIVE KITCHEN APPLIANCE
Rolf Feil, Günzburg, Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Germany
Filed Apr. 22, 1996, Ser. No. 53,528
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—376



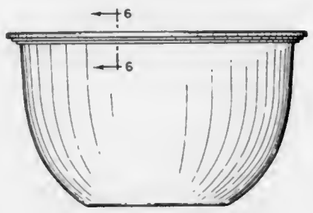
383,644
BLENDER CONTAINER
Rolf Feil, Günzburg, Germany, assignor to Bosch-Siemens Hausgeraete AG, Munich, Germany
Filed Jun. 18, 1996, Ser. No. 53,525
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—413



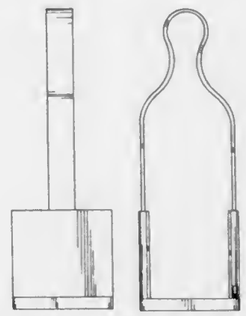
383,645
CHAFING DISH FUEL CANISTER
Ross W. Hoffmann, 6701 Shelburn Dr., Crestwood, Ky. 40014
Filed Aug. 6, 1996, Ser. No. 57,990
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—417



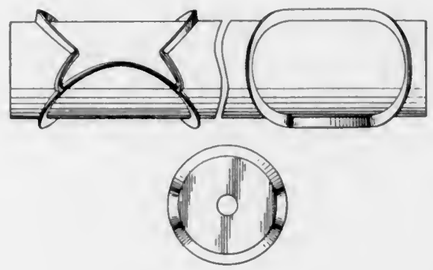
383,646
BOWL
Hanne Dalsgaard Jeppesen, Holte; Jakob Heiberg, Charlottenlund, and Stig Lillelund, Gentofte, all of Denmark, assignors to Dart Industries, Orlando, Fla.
Filed Dec. 22, 1995, Ser. No. 48,202
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—584



383,647
BAGEL HOLDER ASSEMBLY
Coleman R. Parker, Grand Isle, Vt., assignor to Unusual Homes, Inc., South Hero, Vt.
Filed Jun. 24, 1996, Ser. No. 56,145
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—601



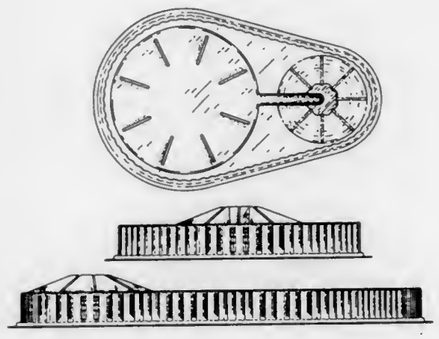
383,648
FISH SHAPED TORTILLA CUTTER
Jose Francisco Morales, Oxnard, Calif., assignor to Casa Herrera, Inc., Pomona, Calif.
Filed Jul. 26, 1996, Ser. No. 57,497
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—676



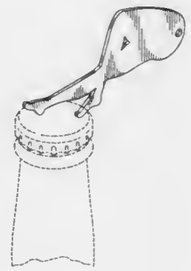
383,649
PLANT WATERING WICK HOLDER
Richard S. Peacock, and Joe L. Peacock, both of Jacksonville, Tex., assignors to Speedy Products Co., Jacksonville, Tex.
Filed Sep. 21, 1995, Ser. No. 44,262
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



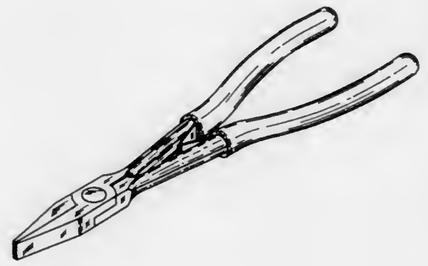
383,650
PLANT WATERER
James V. Pieri, Ranch Santa Fe, Calif., assignor to New Creative Ways, LLC, Chula Vista, Calif.
Filed Jun. 13, 1996, Ser. No. 55,845
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



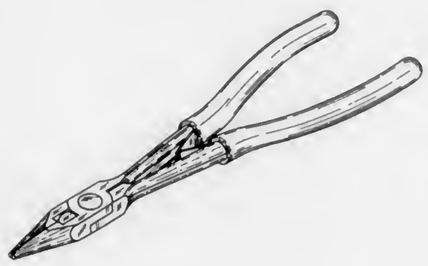
383,651
COMBINATION KEY TAG AND BOTTLE OPENER
Robert A. Van Wyk, Madeira Beach, Fla., assignor to LaserArt Corporation; Renaissance Irrevocable Trust, both of Sarasota, Fla., and AMF Irrevocable Trust, Grand Rapids, Mich., a part interest
Filed Jun. 21, 1996, Ser. No. 58,315
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D8—34



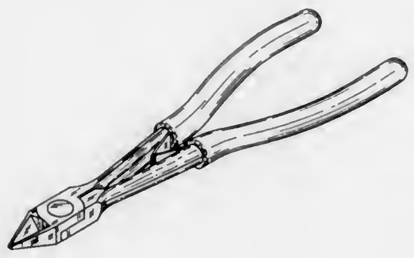
383,652
HAND TOOL
Stephen L. Brantley, Las Vegas, Nev., assignor to JS Products, Inc., Las Vegas, Nev.
Filed Sep. 12, 1995, Ser. No. 43,763
The portion of the term of this patent subsequent to Jul. 29, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



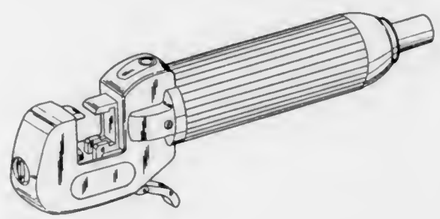
383,653
HAND TOOL
Stephen L. Brantley, Las Vegas, Nev., assignor to JS Products, Inc., Las Vegas, Nev.
Filed Sep. 12, 1995, Ser. No. 43,764
The portion of the term of this patent subsequent to Jul. 29, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



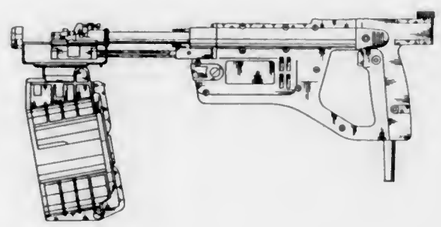
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HAND TOOL
Stephen L. Brantley, Las Vegas, Nev., assignor to JS Products, Inc., Las Vegas, Nev.
Filed Sep. 12, 1995, Ser. No. 43,767
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Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



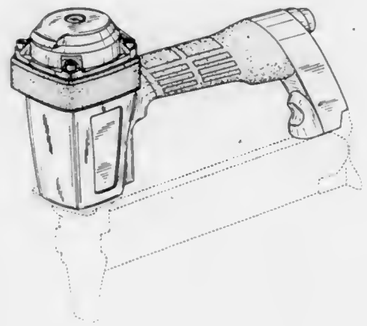
383,655
TOOL HEAD
Sven-Eric Juhlin, Stockholm; Håkan Bergkvist, and Hans Himbert, both of Bromma, all of Sweden, assignors to Pressmaster Tool AB, Alvdalen, Sweden
Filed Aug. 9, 1995, Ser. No. 42,408
Claims priority, application Sweden, Feb. 23, 1995, 950383
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—61



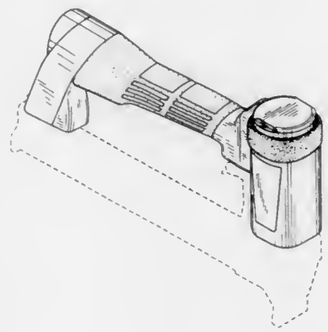
383,656
SUCCESSIVE SCREW FEEDER DRIVER
Narahiko Muro, Tokyo, Japan, assignor to Muro Corporation, Tokyo, Japan
Filed May 20, 1996, Ser. No. 54,685
Claims priority, application Japan, Nov. 22, 1995, 7-35127
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—68



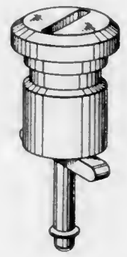
383,657
FASTENER DRIVING DEVICE HOUSING
David W. Kaiser, North Haven, Conn., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.
Filed May 17, 1996, Ser. No. 54,631
Term of patent 14 years
LOC (6) Cl. 08 - *02*
U.S. Cl. D8—69



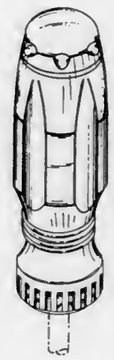
383,658
PORTABLE FASTENER DRIVING DEVICE HOUSING
David W. Kaiser, N. Haven, Conn., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.
Filed May 17, 1996, Ser. No. 54,632
Term of patent 14 years
LOC (6) Cl. 08 - *02*
U.S. Cl. D8—69



383,659
GRINDING PIN
Murray Norman, P.O. Box 652, 379 Tower Dr., North Bay, Ontario, Canada, P1B 8J5
Filed Jun. 9, 1995, Ser. No. 40,097
Claims priority, application Canada, Dec. 12, 1994, 1994-2395
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—70



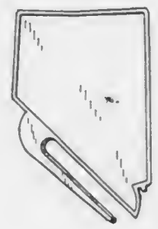
383,660
TOOL HANDLE
Wayne Anderson, 65 Grove St., Northport, N.Y. 11768
Filed Mar. 14, 1996, Ser. No. 51,628
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—83



383,661
HANDLE FOR A SCREWDRIVER
Jing-Sheng Chang, No. 101, Alley 81, Lane 2, Sec. 1, Chung Hsin Road, Ta-Li, Taichung Hsien, Taiwan
Filed Apr. 1, 1996, Ser. No. 52,719
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—83



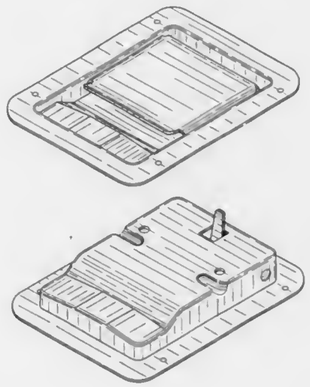
383,663
LETTER OPENER
Thomas Gray, and Robert Gray, both of 9051 Shasta, Phelan, Calif. 92371
Filed Jul. 15, 1996, Ser. No. 56,983
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—102



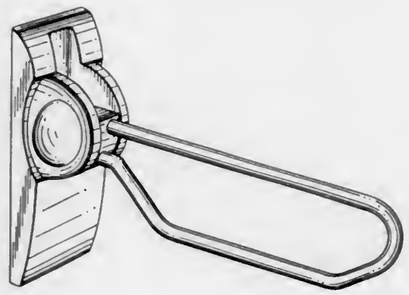
383,664
PADDLE LATCH
Cameron L. Bennett, Cleveland Heights, Ohio, assignor to Cleveland Hardware & Forging Company, Cleveland, Ohio
Filed Oct. 6, 1995, Ser. No. 46,588
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—331

383,662
WRECKING BAR
Martin T. Ackerman, Lexington, Ky., assignor to James L. Parsons, and Arthur R. Thomas, both of Lexington, Ky.
Filed Apr. 25, 1996, Ser. No. 53,568
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—89





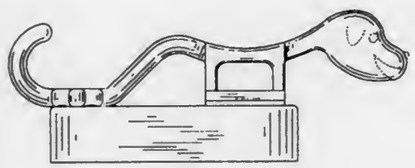
383,665
HINGED ARM SUPPORT
Johan A. A. J. Vissers, Breda, and J. J. v. d. Vliet, Schipluiden, both of Netherlands, assignors to B.V. Linido, Weteringweg, Netherlands
Filed Feb. 2, 1996, Ser. No. 49,890
Claims priority, application Benelux TM/Des. Off., Aug. 4, 1995, 70999-00
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—363



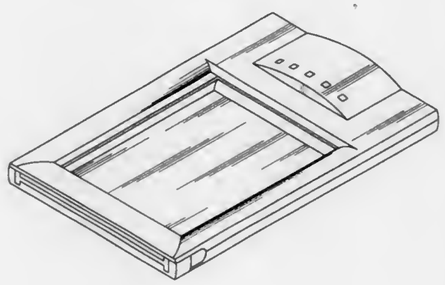
383,667
COMBINED SPRAY BOTTLE AND CAP
Friedrich E. Frerichs, Achim, Germany, assignor to Trader B's Merchandising Lizenverwertungssesellschaft mbH, Oldenburg, Germany
Filed Oct. 19, 1995, Ser. No. 45,423
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—310



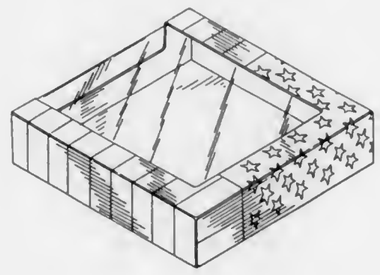
383,666
SPRING CLIP
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Jan. 16, 1996, Ser. No. 48,978
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



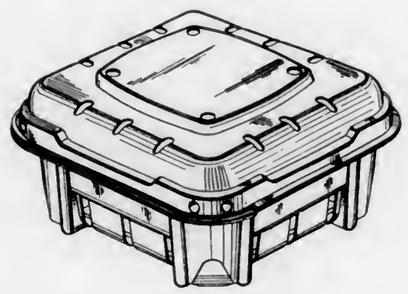
383,668
PORTABLE ELECTRONIC MEDICATION DISPENSER
Todd Elliott Siegel, Seminole, Fla., and Scott Kaminski, San Ramon, Calif., assignors to Medical Technology Systems, Inc.
Filed Nov. 1, 1994, Ser. No. 30,673
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—417



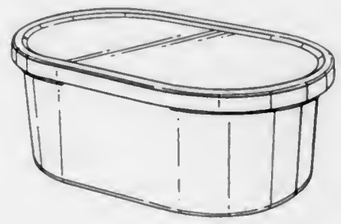
383,669
PRODUCT DISPLAY CARTON
Donna J. Taylor, New Carlisle, Ind., assignor to Indiana Carton Company, Inc., Bremen, Ind.
Filed Aug. 7, 1996, Ser. No. 58,307
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—418



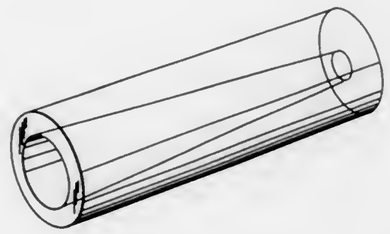
383,670
PRODUCE CONTAINER
Germán F. Gübeli, El Toqui 1878, Las Condas, Chile
Filed Jun. 20, 1996, Ser. No. 56,034
Claims priority, application Chile, Jan. 10, 1996, 049-96
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—425



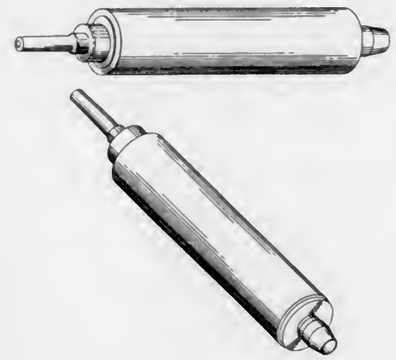
383,671
CONTAINER
James Harman Phillips, Rowner Road, Gosport, Hampshire PO13 0PR, United Kingdom
Filed Dec. 13, 1995, Ser. No. 47,856
Claims priority, application United Kingdom, Jun. 13, 1995, 2048132
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—429



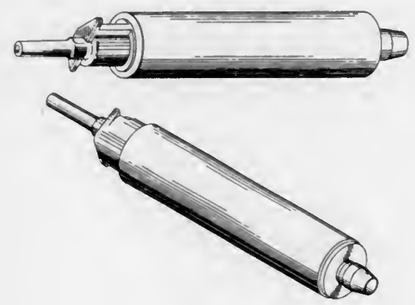
383,672
SEALING CAP
Alexander Mangos, Askersundsgatan 4, S-124 67 Bandhagen, Sweden
Filed Nov. 15, 1995, Ser. No. 46,457
Claims priority, application Sweden, May 17, 1995, 95-1012
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—444



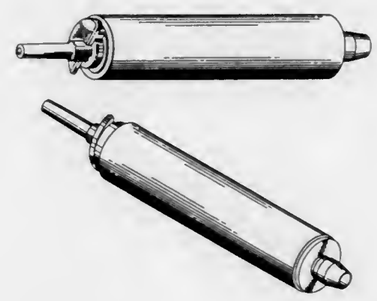
383,673
PUMP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Feb. 8, 1996, Ser. No. 50,102
The portion of the term of this patent subsequent to Jul. 23, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



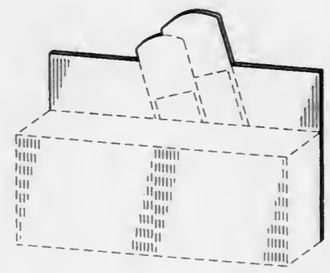
383,674
PUMP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Feb. 8, 1996, Ser. No. 50,103
The portion of the term of this patent subsequent to Jul. 23, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



383,675
PUMP FOR A SOAP DISPENSER
Warren S. Daansen, P.O. Box 614, Nashua, N.H. 03061
Filed Feb. 8, 1996, Ser. No. 50,111
The portion of the term of this patent subsequent to Jul. 23, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



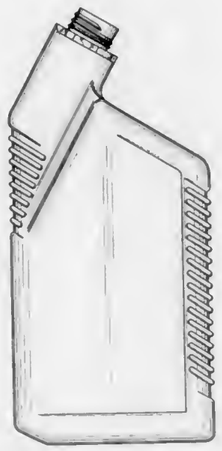
383,676
LIP FOR A BANDAGE PACKAGE
Howard Koenig, Dana Point, Calif., assignor to American White Cross, Inc., Dayville, Conn.
Filed Apr. 18, 1996, Ser. No. 53,237
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—457



383,677
BOTTLE
Richard C. Darr, Seville, Ohio, assignor to Plastipak Packaging, Inc., Plymouth, Mich.
Filed Sep. 11, 1996, Ser. No. 59,462
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



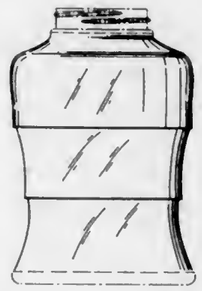
383,678
ANGLE-NECKED BOTTLE
Gerald M. Syrek, Washingtonville, N.Y., assignor to Reckitt & Colman Inc., Montvale, N.J.
Filed Dec. 14, 1995, Ser. No. 47,901
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—526



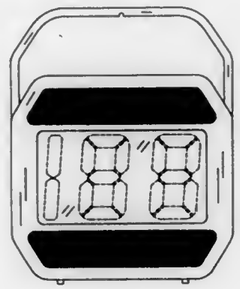
383,679
SIDEWALLS FOR A BOTTLE
Missy Wilson, New York, N.Y.; Jeff Johnson, and Chittamai Suvongse, both of Minneapolis, Minn., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Nov. 8, 1995, Ser. No. 46,147
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—552



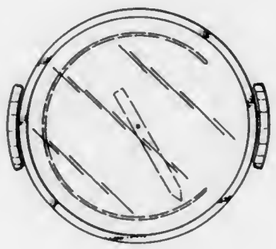
383,680
PORTION OF A CONTAINER
Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35662
Filed Mar. 12, 1996, Ser. No. 51,501
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—560



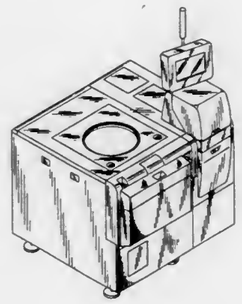
383,681
ELECTRONIC SPEED DETECTOR FOR SPORTING ACTIVITIES
John Chiappetta, 62 Fieldcroft Court, Maple, Ontario, Canada, L6A 1J3, and Mark John Francis, 303 Melita Avenue, Toronto, Ontario, Canada, M6G 3X1
Filed Jun. 5, 1996, Ser. No. 55,421
Term of patent 14 years
LOC (6) Cl. 10 - *03*
U.S. Cl. D10—40



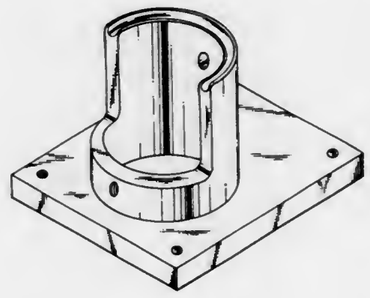
383,682
GRILL THERMOMETER
Gary K. Swanson, Oakville, Conn., assignor to Cooper Instrument Corporation, Middlefield, Conn.
Filed Jun. 5, 1996, Ser. No. 55,408
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—57



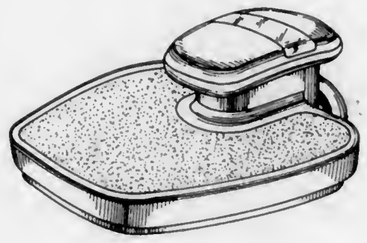
383,683
WAFER PROBER
Osamu Kamata, Kofu; Masahiko Sugiyama, Nirasaki; Munetoshi Nagasaka, Yamanashi-ken; Haruhiko Yoshioka, Yamanashi-ken, and Kazumi Yamagata, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo-To, Japan
Filed Apr. 25, 1996, Ser. No. 53,608
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—75



383,684
STATOR CONNECTOR WITH GENERALLY UPRIGHT ATTACHMENT MEMBER THERETO WITH GENERALLY L-SHAPED NOTCH THEREIN FOR ATTACHMENT TO A LOWER END OF A VISCOMETER MODULE OF A SENSITIVE ROTATIONAL VISCOMETER
Theodore W. Selby; Gregory C. Miller, both of Midland, and James Louis Kovacs, Mt. Pleasant, all of Mich., assignors to Tannas Co., Midland, Mich.
Continuation-in-part of Ser. No. 486,881, Jun. 7, 1995, Pat. No. 5,548,994, which is a continuation-in-part of Ser. No. 308,918, Sep. 20, 1994, Pat. No. 5,513,517. This application Jul. 29, 1996, Ser. No. 57,609
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—80



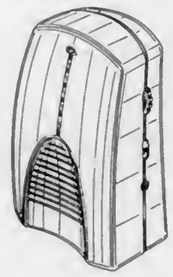
383,685
SCALE HOUSING
John W. Van Akkeren, and Matthew A. Stone, both of Chicago, Ill., assignors to Health o meter, Inc., Bridgeview, Ill.
Filed Jul. 19, 1996, Ser. No. 57,215
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—52



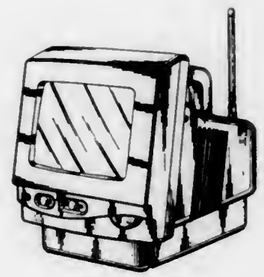
383,686
SCALE HOUSING
John D. Walther, Loveland, and Phillip L. Brookshire, Cincinnati, both of Ohio, assignors to Health o meter, Inc., Bridgeview, Ill.
Filed Jul. 19, 1996, Ser. No. 58,385
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—92



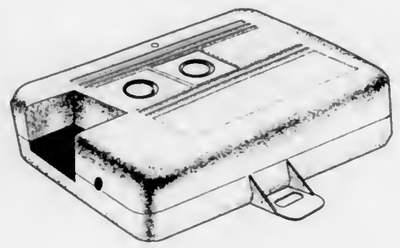
383,687
NURSERY MONITOR
Ann Marie Conrado, Chicago; Michael C. Thuma, Des Plaines; Craig S. Scherer, Wilmette, and Brian Woodard, Chicago, all of Ill., assignors to BRK Brands, Inc., Aurora, Ill.
Filed Jul. 15, 1996, Ser. No. 56,995
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



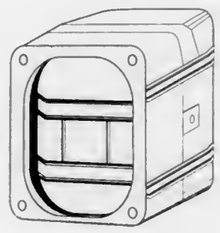
383,688
BABY MONITOR TELEVISION RECEIVER
Randy L. Abrams, Leominster, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Aug. 22, 1996, Ser. No. 58,786
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



383,689
SECURITY SYSTEM HOUSING
Darrell E. Issa, 2560 Progress St., Vista, Calif. 92083
Filed Aug. 26, 1996, Ser. No. 58,851
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



383,690
SECURITY SYSTEM HOUSING AND SIREN
Darrell E. Issa, 2560 Progress St., Vista, Calif. 92083
Filed Aug. 27, 1996, Ser. No. 58,899
Term of patent 14 years
LOC (6) Cl. 10 - *06*
U.S. Cl. D10—120



383,691
NECKLACE
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Filed Sep. 29, 1995, Ser. No. 44,684
Claims priority, application Hague Agreement, Apr. 18, 1995, DM/032784
The portion of the term of this patent subsequent to Jan. 14, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—6



383,692
WATCH STRAP
Moon K. Woo, Palisades Park, N.J., and Desmond Fung, Fotan, Hong Kong, assignors to Timex Corporation, Middlebury, Conn.
Filed May 30, 1996, Ser. No. 55,160
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—3



383,693
NECKLACE
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Division of Ser. No. 28,054, Sep. 6, 1994, Pat. No. Des. 373,095. This application Jun. 3, 1996, Ser. No. 55,251
Claims priority, application European Pat. Off., Mar. 7, 1994, DMA/002444
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—12



383,694
NECKLACE
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Division of Ser. No. 28,054, Sep. 6, 1994, Pat. No. Des. 373,095. This application Jun. 3, 1996, Ser. No. 55,267
Claims priority, application European Pat. Off., Mar. 7, 1994, DMA/002444
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—12



383,695
JEWELRY CHAIN
David Rozenwasser, 26 Har Dafna Street, Savion, Israel
Filed Apr. 23, 1996, Ser. No. 53,524
Claims priority, application Israel, Oct. 23, 1995, 25284; Oct. 23, 1995, 25285; Oct. 23, 1995, 25286; Oct. 23, 1995, 25287
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—13



383,696
ORNAMENTAL CHAIN
Andrew Nydick, 22 Goodhart Dr., Livingston, N.J. 07039
Filed May 30, 1996, Ser. No. 55,149
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—13



383,697
RING
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Division of Ser. No. 28,054, Sep. 6, 1994, Pat. No. Des. 373,095. This application Jun. 3, 1996, Ser. No. 55,248
Claims priority, application European Pat. Off., Mar. 7, 1994, DMA/002444
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—35



383,698
GAMING CHIP JEWELRY
Gordon C. Fletcher, 2851 Valley View, Las Vegas, Nev. 89102
Filed Dec. 15, 1995, Ser. No. 47,948
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—40



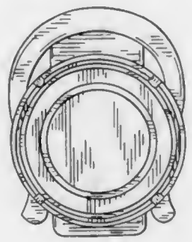
383,699
EARRING
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Division of Ser. No. 28,054, Sep. 6, 1994, Pat. No. Des. 373,095. This application Jun. 3, 1996, Ser. No. 55,264
Claims priority, application Hague Agreement, Mar. 7, 1994, DMA/002444
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—40



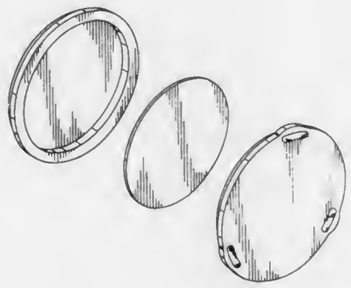
383,700
EARRING
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Division of Ser. No. 28,054, Sep. 6, 1994, Pat. No. Des. 373,095. This application Jun. 3, 1996, Ser. No. 55,250
Claims priority, application European Pat. Off., Mar. 7, 1994, DMA/002444
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—43



383,701
HORSESHOE MONEY CLIP
Gordon C. Fletcher, 2851 Valley View, Las Vegas, Nev. 89102
Filed Jun. 11, 1996, Ser. No. 55,690
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—78.1



383,702
MEDICAL I. D. JEWELRY MEDALLION
Sumner MacDonald, 44 Ballou Blvd., Bristol, R.I. 02809
Filed May 6, 1996, Ser. No. 54,020
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—79



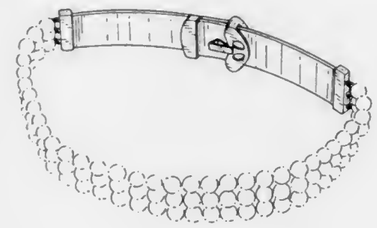
383,703
JEWELRY PENDANT
Afram Koumi, 17 Alwyn Tr., Rutherford, N.J. 07070
Filed May 23, 1996, Ser. No. 54,846
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—83



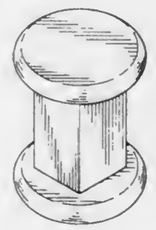
383,704
ANGEL PENDANT
Jerry Morrison, Austin, Tex., assignor to CJC Holdings, Inc., Austin, Tex.
Filed Jul. 23, 1996, Ser. No. 57,368
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—83



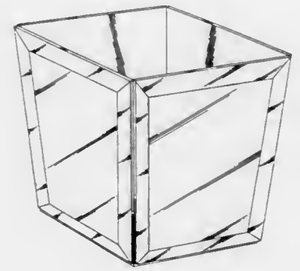
383,705
JEWELRY CLASP
Haruo Hayakawa, Kofu, Japan, assignor to Twallje Co., Ltd., Kofu, Japan
Filed Apr. 25, 1996, Ser. No. 53,571
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—87



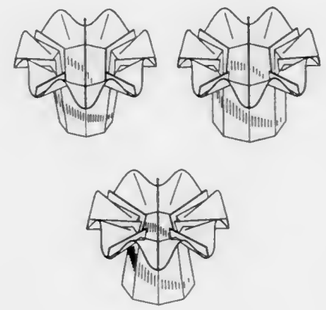
383,706
FINDING FOR EARRING POST
Carl Archambault, 71 Alden St., Pawtucket, R.I. 02861
Continuation-in-part of Ser. No. 33,629, Jan. 17, 1995, Pat. No. Des. 365,779. This application Nov. 17, 1995, Ser. No. 46,856
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—88



383,707
BEVELLED MIRRORED PLANTER
John C. Waszkiewicz, III, New Hartford, N.Y., assignor to FasterForm Corporation, New Hartford, N.Y.
Filed Dec. 14, 1995, Ser. No. 47,894
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—155



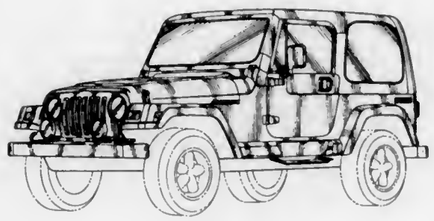
383,708
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla., not individually, but as trustee of The Family Trust U/T/A dated December 8, 1995, Charles A. Codding, Authorized Signatory for Southpac Trust International, Inc. trustee
Division of Ser. No. 6,101, Mar. 19, 1993, Pat. No. Des. 368,875, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Feb. 29, 1996, Ser. No. 50,904
The portion of the term of this patent subsequent to Jul. 1, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



383,709
CAR BODY
Michael C. Cheiky, Santa Barbara, Calif., assignor to Dreisbach Electromotive, Inc., Kirtland, Ohio
Filed May 26, 1995, Ser. No. 39,369
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91



383,710
VEHICLE BODY
Gary D. Guichard; John P. Sgalla, both of Farmington Hills; Trevor M. Creed, West Bloomfield, all of Mich.; Michael Santoro, La Costa, Calif.; Ricardo Z. Aneiros, Dearborn, and Clyde W. Ney, Waterford, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Division of Ser. No. 24,426, Jun. 14, 1994, abandoned. This application May 2, 1996, Ser. No. 53,964
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91



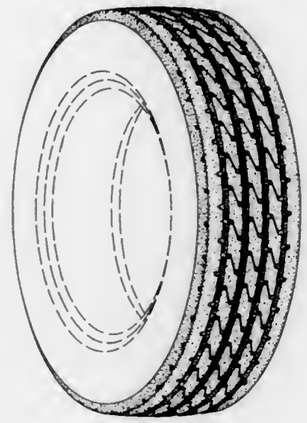
383,711
CONVERTIBLE CAR SEAT AND STROLLER
Bethanie C. Smithley, 610 Hillside Ave., Ligonier, Pa. 15658
Filed Dec. 26, 1995, Ser. No. 48,333
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—129



383,712
TIRE TREAD
Daniel Scheuren, Bastogne, and Michel Pierre Charles Robert, Fauvillers, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 23, 1996, Ser. No. 53,458
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—143



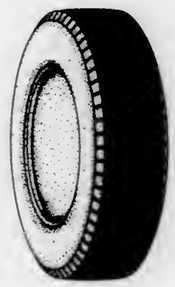
383,713
TIRE TREAD
Paul Phillip Grosskopf, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Aug. 28, 1995, Ser. No. 43,384
The portion of the term of this patent subsequent to Jan. 3, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



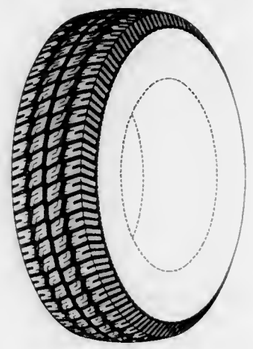
383,714
TIRE TREAD
Maurice Graas, Reichlange; Marc Joseph Eicher, Schrondweiler, and Jan Hendrik Van Tuyl, Ettelbruck, all of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 6, 1996, Ser. No. 51,348
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



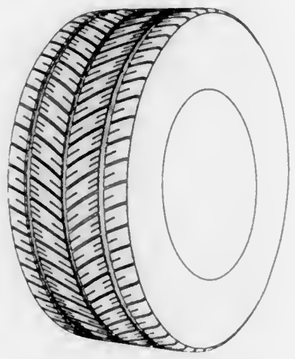
383,715
AUTOMOBILE TIRE
Naoya Ochi, and Kazunori Shinohara, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Mar. 27, 1996, Ser. No. 52,465
Claims priority, application Japan, Sep. 29, 1995, 7-29018
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



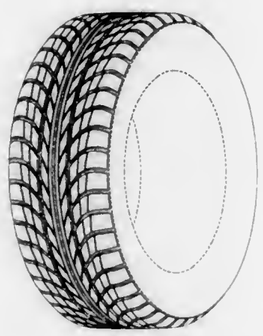
383,716
TIRE TREAD
Stephanie Carol Brown, Akron; Efimia Ellen Rohweder, Uniontown; Michael Alois Kolowski, Mogadore, and Frederick William Miller, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 11, 1996, Ser. No. 53,499
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



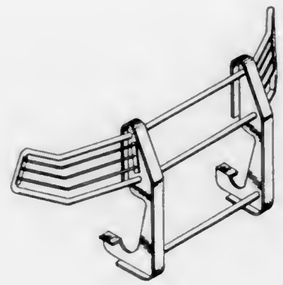
383,717
TREAD FOR A TIRE
Anthony Lee Freund, Akron; Randall Raymond Brayer, North Canton, and Charles Kenneth Schmalix, Canal Fulton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 24, 1996, Ser. No. 57,382
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



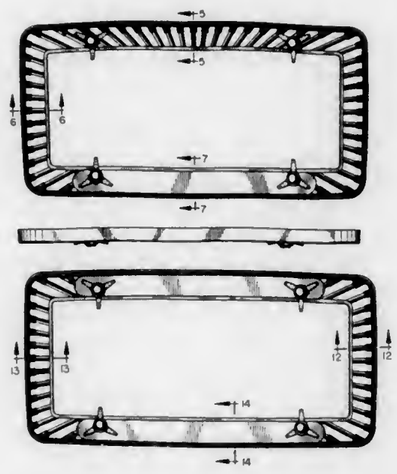
383,718
TIRE TREAD
Maurice Graas, Reichlange; Marc Joseph Eicher, Schrondweiler, both of Luxembourg, and Jan Hendrik Van Tuyl, Keppeshausen, Germany, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 29, 1996, Ser. No. 57,664
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



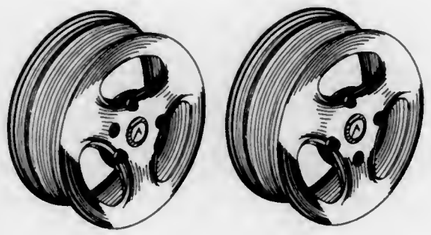
383,719
GRILLE GUARD
Nicholas Thorne, Simi Valley, and Marcus Meakin, Los Angeles, both of Calif., assignors to Manik Motors, Inc., Los Angeles, Calif.
Filed Jul. 5, 1996, Ser. No. 56,659
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—171



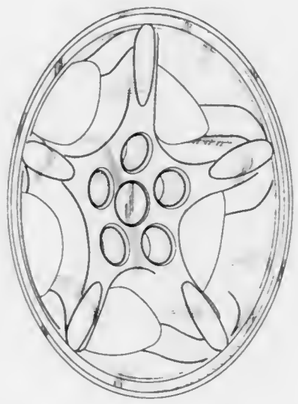
383,720
SPOKED LICENSE PLATE FRAME
Paul E. Spencer, 23302 S. Normandie Ave., Torrance, Calif. 90502
Filed Dec. 26, 1995, Ser. No. 48,335
The portion of the term of this patent subsequent to Sep. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—193



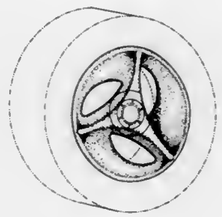
383,721
WHEEL FOR VEHICLES
Arthur D. Baker, Santa Monica, and Kenneth D. Holt, Marino Valley, both of Calif., assignors to SEC Alloy Wheels, Div. of NASCO Automotive Corp., Los Angeles, Calif.
Filed Sep. 19, 1995, Ser. No. 44,144
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



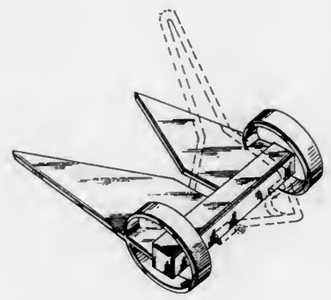
383,722
VEHICLE WHEEL FRONT FACE SEGMENT
John P. Sgalia, Farmington Hills, and Glenn Abbott, Waterford, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Mar. 14, 1996, Ser. No. 51,886
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



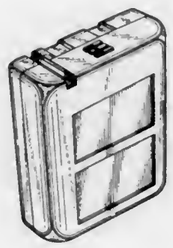
383,723
FRONT FACE OF A VEHICLE WHEEL
Marco Muzzarelli, Milan, and Giuseppe Amati, Varese, both of Italy, assignors to Claus Ettensberger Corp., Gardena, Calif.
Filed May 24, 1996, Ser. No. 54,941
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



383,724
ANCHOR
Ralph Ireland, 617 Riverdale Rd., Mankato, Minn. 56001
Filed Apr. 4, 1996, Ser. No. 52,763
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—215



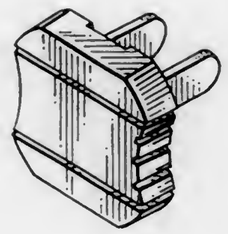
383,725
BATTERY
Masanori Settsu, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1995, Ser. No. 47,968
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



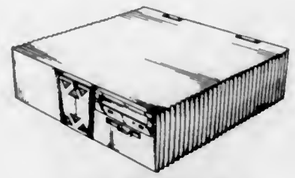
383,726
ELECTRICAL EXTENSION CORD INCORPORATING A SWITCH
Hal Nelson, 821 4th St., Carmi, Ill. 62821
Filed Sep. 26, 1995, Ser. No. 44,547
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—142

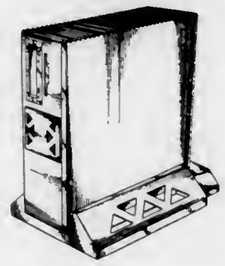


383,727
PROTECTIVE ELECTRICAL OUTLET PLUG
James F. Caruso, Evanston; Craig S. Scherer, Wilmette, and Michael C. Thuma, Desplaines, all of Ill., assignors to BRK Brands, Inc., Aurora, Ill.
Filed May 20, 1996, Ser. No. 54,712
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156

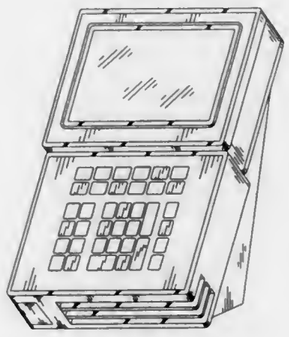


383,728
COMBINED COMPUTER HOUSING AND STAND THEREFOR
Philip G. Yurkonis, Campbell; Mike Antonczak, Aptos; Michael Dann, Mountain View; Steven J. Furuta, Santa Clara; Herbert Pfeifer, and Paul Montgomery, both of San Francisco, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Nov. 7, 1995, Ser. No. 46,074
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100

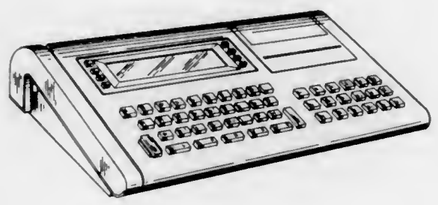




383,729
COMPUTER TERMINAL FOR MANUFACTURING DATA ACQUISITION
Wolfgang Fischer, Boeblingen, and Klaus Werse, Rottenburg, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 16, 1996, Ser. No. 48,989
Claims priority, application Germany, Jul. 14, 1995, M 95 05 534.7
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



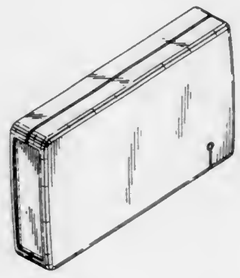
383,730
PERSONAL DIGITAL ELECTRONIC DEVICE
James Roland Jones, and Robert Leo Gault, both of Raleigh, N.C., assignors to DataMark Corporation, Raleigh, N.C.
Filed Apr. 22, 1996, Ser. No. 53,403
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



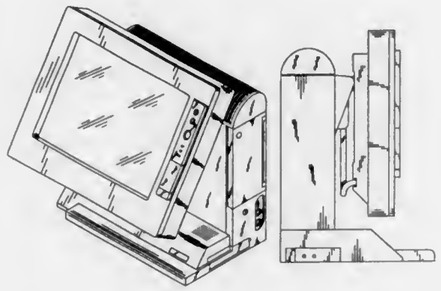
383,731
PERSONAL COMPUTER HOUSING
Nariaki Mieki, Yokohama, and Kazuhiko Yamazaki, Hiratsuka, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1996, Ser. No. 53,734
Claims priority, application Japan, Nov. 10, 1995, 7-34119
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



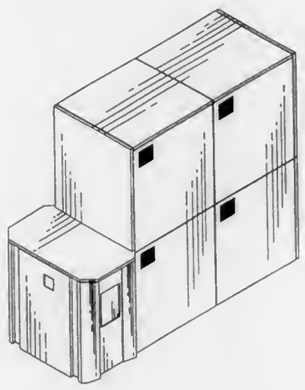
383,732
DATA STORAGE DEVICE
Jonathan D. Haley, Chichester, and Martin Parsons, Portsmouth, both of United Kingdom, assignors to Havant International Limited, Havant, England
Filed May 1, 1996, Ser. No. 53,862
Claims priority, application United Kingdom, Nov. 8, 1995, 2051801
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



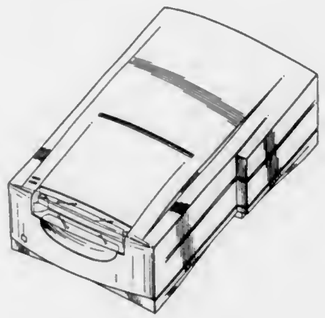
383,733
PERSONAL COMPUTER
Nariaki Mieki, Yokohama, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 24, 1996, Ser. No. 54,885
Claims priority, application Japan, Nov. 27, 1995, 7-35668
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



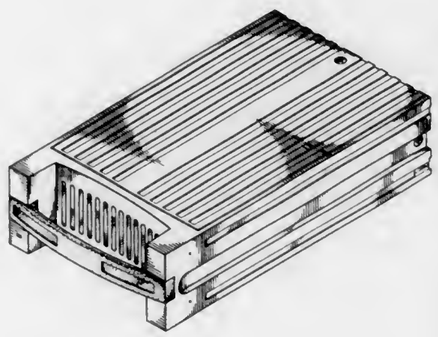
383,734
DIGITAL SIMULATION COMPUTER HOUSING
Gerard Francis Muenkel, Highland; Jeffrey James Hare, Staatsburg, and Wade Harold White, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 3, 1996, Ser. No. 52,318
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—102



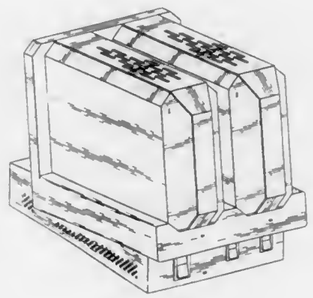
383,735
SCANNING APPARATUS
David J. Privitera, Georgetown; Stacy L. Galbreath, Brighton, and Mark A. Nichols, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 18, 1996, Ser. No. 53,263
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



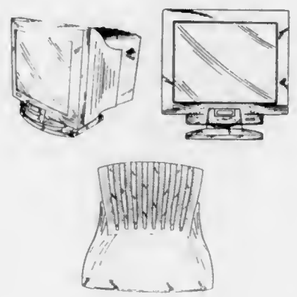
383,736
REMOVABLE HARD DISK DRIVE MODULE
Richard A. Corrington, Tustin, and Alan B. Gordon, Costa Mesa, both of Calif., assignors to Micronet Technology, Inc.
Filed Mar. 15, 1996, Ser. No. 51,676
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—109



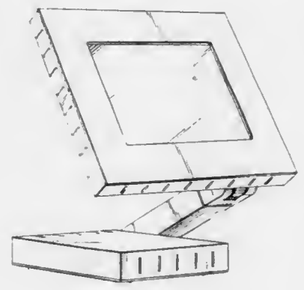
383,737
REMOVABLE DRIVE BAY DEVICE
Wolfgang Zinck, 1790 Skyline Blvd., Reno, Nev. 89509
Filed Apr. 10, 1996, Ser. No. 52,850
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—109



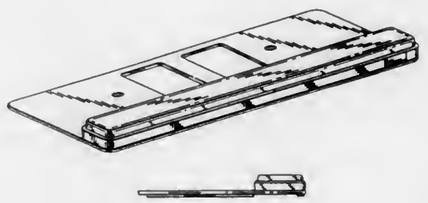
383,738
MONITOR
Michael Kao, Taipei, Taiwan, assignor to Chuntex Electronic Co., Ltd., Taiwan
Continuation-in-part of Ser. No. 32,111, Dec. 2, 1994, Pat. No. Des. 368,899. This application Apr. 15, 1996, Ser. No. 53,133
Claims priority, application China, Sep. 2, 1994, 94311003.3
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—113



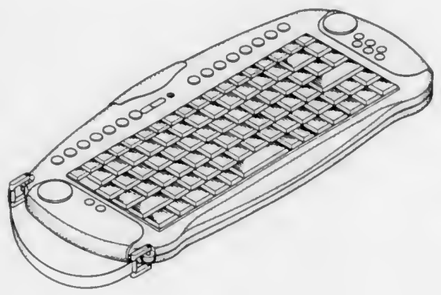
383,739
COMPUTER MONITOR
Daniel Gilgen, Franfurt am Main, Germany, assignor to KS-Design GmbH, Frankfurt, Germany
Filed May 6, 1996, Ser. No. 54,091
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—113



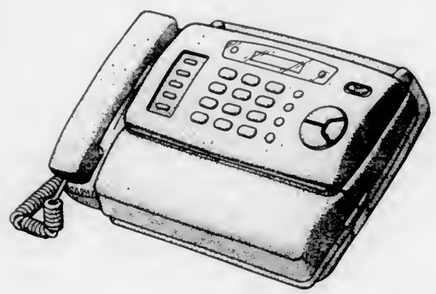
383,740
WRIST REST
Kenneth J. Kirchhoff, Gem Lake, and Robert J. Wolf, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 19, 1996, Ser. No. 51,895
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



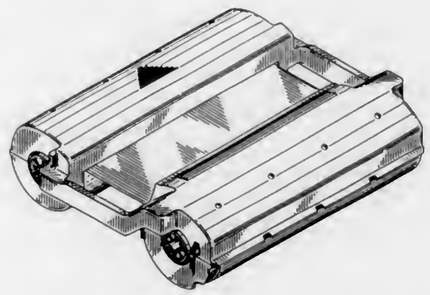
383,741
KEYBOARD
Jay Terng, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Apr. 24, 1996, Ser. No. 53,560
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



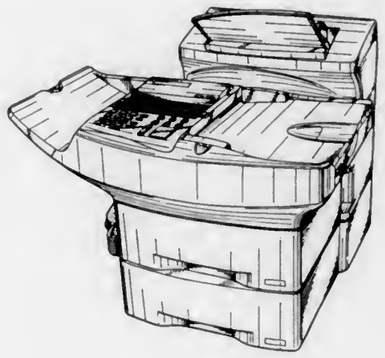
383,742
FACSIMILE MACHINE
Masaji Sawada, Kyoto-fu, and Takashi Matsushima, Nara-ken, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 28, 1995, Ser. No. 34,920
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D14—118



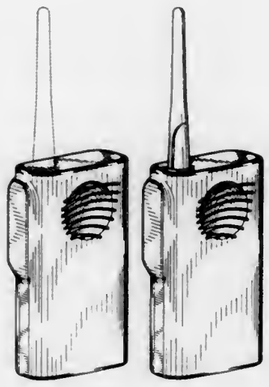
383,743
INK RIBBON CARTRIDGE FOR FACSIMILE TRANSMITTER-RECEIVER
Kazumi Suwa, Toyoake, and Satoru Hattori, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Aug. 24, 1995, Ser. No. 43,049
Claims priority, application Japan, Apr. 4, 1995, 7-9469
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D14—118



383,744
FACSIMILE MACHINE
Takashi Matsushima, and Shin Takahashi, both of Nara-ken, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 28, 1996, Ser. No. 56,414
Claims priority, application Japan, Dec. 28, 1995, 7-39437
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D14—118



383,745
PORTABLE TWO-WAY COMMUNICATION DEVICE
Phillip E. Lindeman, Gurnee; Joseph R. Rauch, Cary, and Paige M. Painter, Bartlett, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 5, 1996, Ser. No. 57,922
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



383,746
HOUSING FOR A PORTABLE COMMUNICATIONS DEVICE
Scott H. Richards, Plantation, and Wille Kottke, Miami, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 24, 1996, Ser. No. 53,545
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



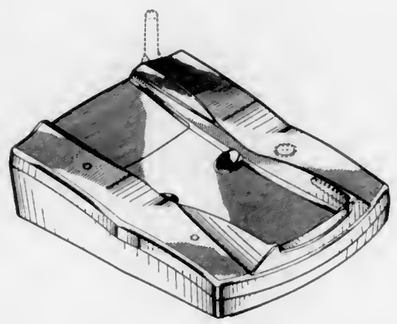
383,747
HOUSING FOR A PORTABLE COMMUNICATIONS DEVICE
Scott H. Richards, Plantation, and Willie Kottke, Miami, both of Fla., assignors to Motorola, INc., Schaumburg, Ill.
Division of Ser. No. 53,345, Apr. 24, 1996. This application Aug. 5, 1996, Ser. No. 57,936
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



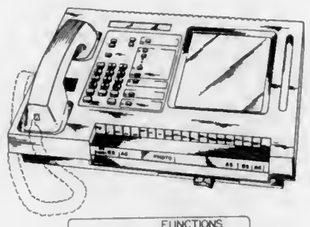
383,748
PORTABLE TELEPHONE
Daryl R. Harris, Rolling Meadows; Daniel L. Williams, Vernon Hills; Richard Huang, Palatine, and Frank H. Stone, Waukegan, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 51,565, Mar. 13, 1996. This application Sep. 4, 1996, Ser. No. 59,185
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138

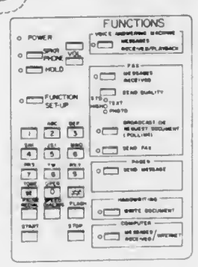


383,749
MODULAR BASE FOR A CORDLESS PORTABLE TELEPHONE
Albert Leo Nagele, Wilmette; Louis Lundell, Buffalo Grove; James Palmer, Deerfield; Sang Oh, Schaumburg, and Leonid Soren, Lincolnwood, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 24, 1996, Ser. No. 57,414
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149

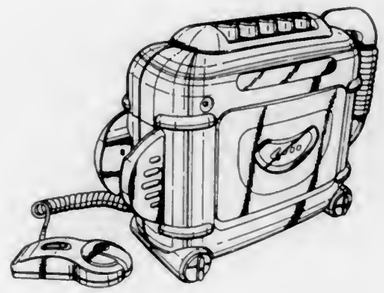


383,750
PERSONAL TELECOMMUNICATIONS TERMINAL
Frank J. Disanto, North Hills, and Denis A. Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.
Filed Mar. 22, 1996, Ser. No. 52,063
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—151

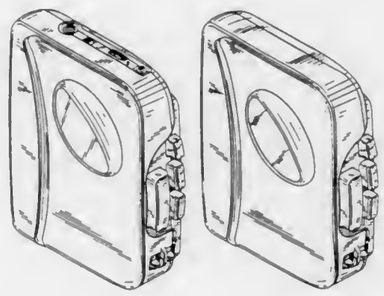




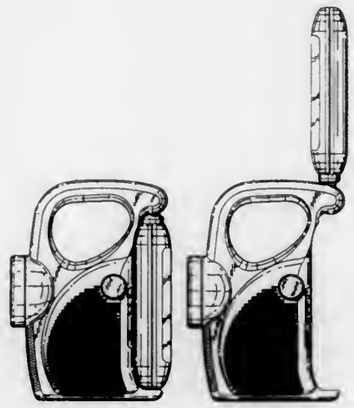
383,751
CASSETTE PLAYER
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Apr. 30, 1996, Ser. No. 53,802
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—165



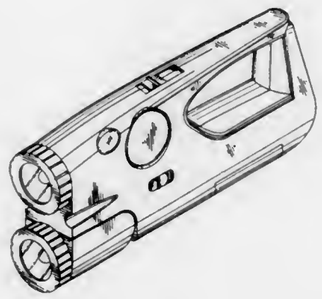
383,752
TAPE PLAYER
Youzou Matsuzaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 15, 1996, Ser. No. 54,575
Claims priority, application Rep. of Korea, Jan. 29, 1996, 1996-1324
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—165



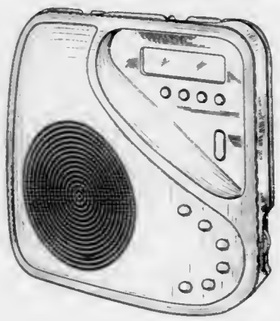
383,753
COMBINED RADIO, SIREN, SPOTLIGHT, FLUORESCENT LAMP AND FLASHING LIGHT
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Nov. 20, 1995, Ser. No. 46,549
Claims priority, application United Kingdom, May 31, 1995, 2 047 842
The portion of the term of this patent subsequent to Jan. 7, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



383,754
COMBINATION RADIO LANTERN
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 29, 1996, Ser. No. 55,089
Claims priority, application United Kingdom, Dec. 6, 1995, 2052495
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



383,755
COMBINED ENVIRONMENTAL SOUND MACHINE AND DIGITAL ALARM CLOCK
Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,961
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—171



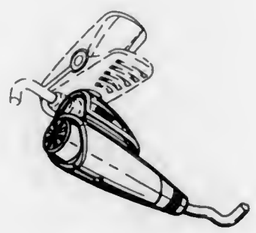
383,756
SELECTIVE CALL RECEIVER
Gregory Lane Henderson, Watauga; Son Quang Le, Fort Worth; Thomas Glenn Beaumont, Bedford, and James Talmage Davis, II, Fort Worth, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 15, 1996, Ser. No. 57,040
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



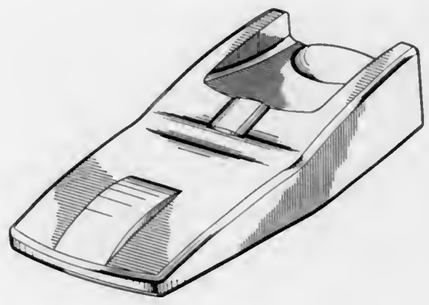
383,757
WIRELESS EAR-WORN AUDIO DEVICE
Christoph Dobrusskin, Eindhoven; Peter Verbeek, Geldrop; Bastiaan Pieter Verhoeven, Den Bosch, and Francis Wa Chu, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 16, 1996, Ser. No. 53,091
Claims priority, application WIPO, Nov. 14, 1995, 003141
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—223



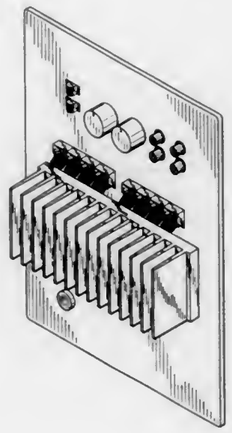
383,758
LAPEL MICROPHONE
Rick E. Emerson, San Jose, and George Crothall, Santa Clara, both of Calif., assignors to Heilo Direct, Inc., San Jose, Calif.
Filed May 6, 1996, Ser. No. 54,099
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—228



383,759
RECEPTACLE FOR A TELEPHONE HANDSET
Albert L. Nagele, Wilmette, and Leonid Soren, Lincolnwood, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 3, 1995, Ser. No. 44,917
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—253



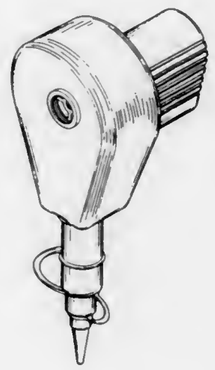
383,760
AMPLIFIER CONTROL PANEL
Norman J. Olson, Hillsborough, Calif., assignor to Audiosource, Inc., Burlingame, Calif.
Filed May 21, 1996, Ser. No. 54,730
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—265



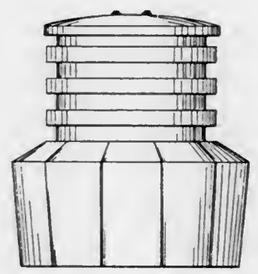
383,761
ELECTROMAGNETIC PISTON AND CYLINDER HEAD
Banner Huntzinger, 145 Timber Way, Coos Bay, Oreg. 97420
Filed May 17, 1996, Ser. No. 54,462
Term of patent 14 years
LOC (6) Cl. 15 - *01*
U.S. Cl. D15—5



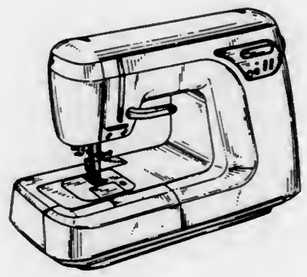
383,762
ELECTRONIC PUMP
Tsai Lung-Po, Taipei Hien, Taiwan, assignor to Ho Lee Co., Ltd., Taipei, Taiwan
Filed Jun. 11, 1996, Ser. No. 55,697
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—7



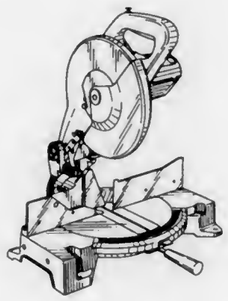
383,763
COMBINED ONE-PIECE TANK SUMP WITH INTEGRAL DUST COVER
Andrew Youngs, Granger, Ind., assignor to Advanced Polymer Technology, Inc., Elkhart, Ind.
Filed Jun. 13, 1996, Ser. No. 55,792
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—7



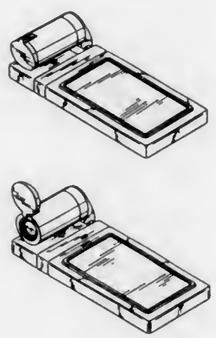
383,764
SEWING MACHINE
Tetsuo Ueyama, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan
Filed Nov. 13, 1995, Ser. No. 46,298
Claims priority, application Japan, Oct. 4, 1995, 7-29641
Term of patent 14 years
LOC (6) Cl. 15 - *06*
U.S. Cl. D15—70



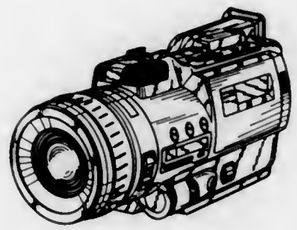
383,765
MITER SAW
Toshiyuki Kani, and Kiyotaka Ichikawa, both of Anjo, Japan, assignors to Makita Corporation, Aichi-ken, Japan
Filed Jul. 3, 1996, Ser. No. 56,624
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



383,766
VIDEO CAMERA
Toshiyuki Yamauchi, and Yoshiki Miyamoto, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 47,487
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



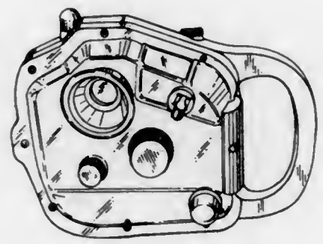
383,767
CAMCORDER
Chang Kyung Sung, Kyungki-do, and Hyun Chul Choi, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Japan
Filed Mar. 6, 1996, Ser. No. 51,225
Claims priority, application Rep. of Korea, Dec. 21, 1995, 1995-25320
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



383,768
ELECTRONIC STILL CAMERA WITH MONITOR DISPLAY
Yukihiko Ida, Higashikurume, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 22, 1996, Ser. No. 53,424
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



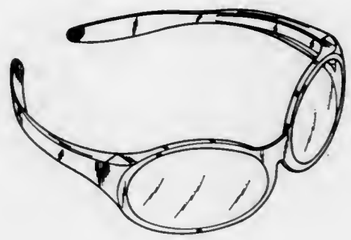
383,769
UNDERWATER CAMERA HOUSING
Steven L. Ogles, 828 H Ave., Coronado, Calif. 92118-2522
Filed Jun. 3, 1996, Ser. No. 55,301
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—204



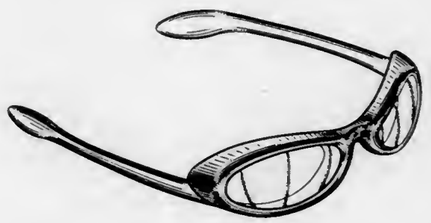
383,770
EYEGLASSES
Kai-Mou Tsai, 4/F., No. 1, Lane 135, Tao-Hsiang Rd., Peitou Dist., Taipei City, Taiwan
Filed May 14, 1996, Ser. No. 54,412
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—306



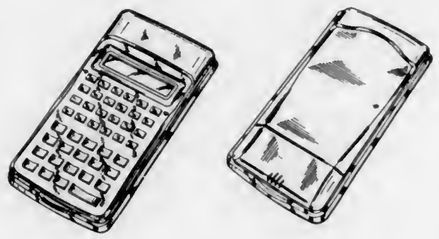
383,771
EYEGLASSES
Kai-Mou Tsai, 4/F., No. 1, Lane 135, Tao-Hsiang Rd., Peitou Dist., Tapei City, Taiwan
Filed May 14, 1996, Ser. No. 54,417
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



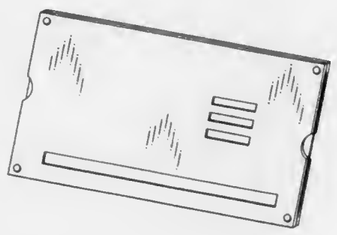
383,772
EYEGLASS FRAME
Hermidas Atabeyki, Courbevoie, France, assignor to Sporoptic Pouilloux S.A., Paris, France
Filed May 23, 1996, Ser. No. 54,842
Claims priority, application France, Mar. 22, 1996, 961759
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



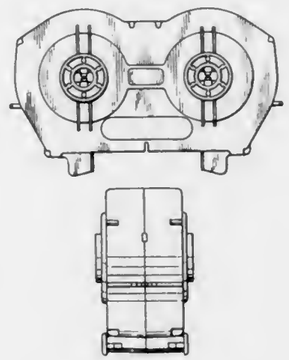
383,773
ELECTRONIC CALCULATOR
Hidetoshi Tamaki, and Satoshi Ito, both of Nara-ken, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 10, 1996, Ser. No. 56,865
Claims priority, application Japan, Jan. 10, 1996, 8-361 U
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—7



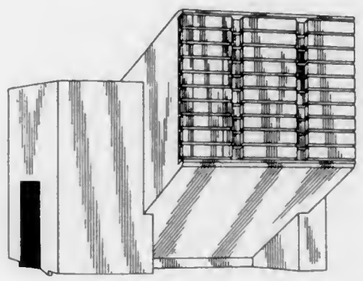
383,774
MANUAL CALCULATOR
Kirk T. Winn, 1718 Belmont La., Redondo Beach, Calif. 90278
Filed Apr. 30, 1996, Ser. No. 53,811
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—9



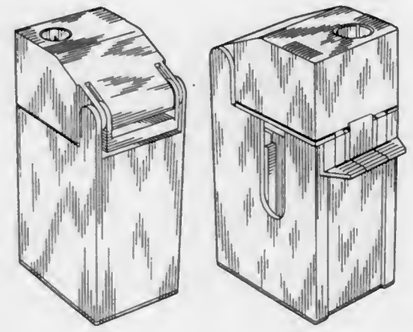
383,775
INK RIBBON CASSETTE
Peter John Watson, Rayleigh, and Craig Ronald King, Haddenham near Ely, both of United Kingdom, assignors to Neopost Limited, Essex, United Kingdom
Filed Apr. 23, 1996, Ser. No. 53,494
Claims priority, application United Kingdom, Nov. 17, 1995, 2052080
Term of patent 14 years
LOC (6) Cl. 18 - *01*
U.S. Cl. D18—12



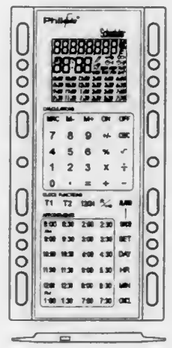
383,776
SORTER FOR PRINTER
Tomoyuki Kobayashi, Yokohama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jun. 18, 1996, Ser. No. 56,247
Term of patent 14 years
LOC (6) Cl. 18 - *99*
U.S. Cl. D18—48



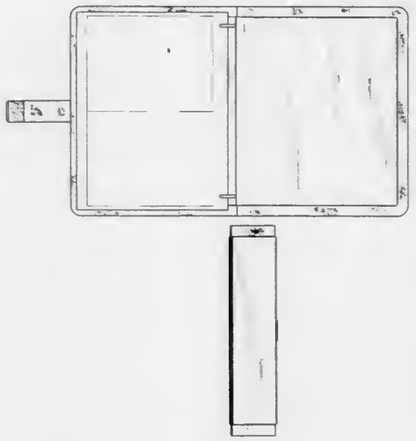
383,777
COMBINED STORAGE AND SUPPLY CONTAINER FOR REPLENISHING INK IN AN INK JET PRINTHEAD
Giorgio Solero, Turin, Italy, assignor to Baltea S.p.A., Italy
Filed Mar. 22, 1996, Ser. No. 52,053
Claims priority, application Italy, Oct. 23, 1995, T09500204
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



383,778
SCHEDULER
Richard Henry Greenwood, Cambridge, United Kingdom, assignor to Maison International (H.K.) Ltd., Hong Kong
Filed Apr. 24, 1996, Ser. No. 55,116
Claims priority, application United Kingdom, Oct. 25, 1995, 2051425
Term of patent 14 years
LOC (6) Cl. 19 - *03*
U.S. Cl. D19—20



383,779
PHOTO ALBUM
E. Dianne Yaukey, 148 Oak Manor Dr., York, Pa. 17402
Filed Apr. 5, 1996, Ser. No. 52,775
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—27



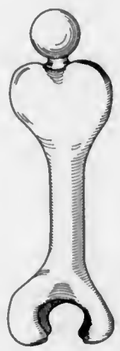
383,780
WRITING INSTRUMENT
Brian Q. Young, P.O. Box 862469 Terminal Annex, Los Angeles, Calif. 90086-2469
Filed Jul. 24, 1996, Ser. No. 57,409
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—49



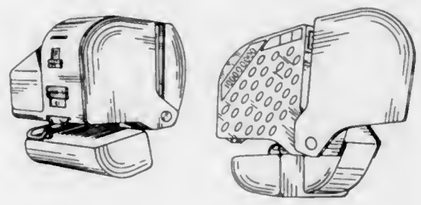
383,781
PAGE TURNING DEVICE
Jennifer L. Buckner, 8406 W. 98th St., Overland Park, Kans. 66212
Filed Jul. 15, 1996, Ser. No. 57,049
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—54



383,782
EDUCATIONAL BUILDING BONES
Debbie Julia Decker, Vienna, Va., assignor to Debbie Decker, Vienna, Va.
Filed Nov. 29, 1995, Ser. No. 47,236
Term of patent 14 years
LOC (6) Cl. 19 - *07*
U.S. Cl. D19—64



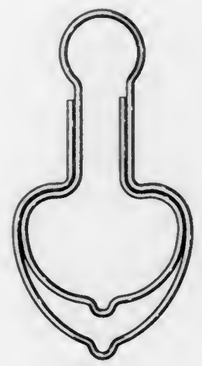
383,783
HAND-HELD, MULTI-FUNCTIONAL DEVICES IN ONE HOUSING INCLUDING A STAPLER, STAPLE REMOVER, PENCIL SHARPENER, HOLE PUNCH, CALCULATOR, TAPE MEASURE, ARCHITECTURAL AND ENGINEERING SCALE
Ruane Sharon Jeter, and Sheila Lynn Jeter, both of 1779 Alvira St., Los Angeles, Calif. 90035
Filed Apr. 12, 1996, Ser. No. 52,979
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—65



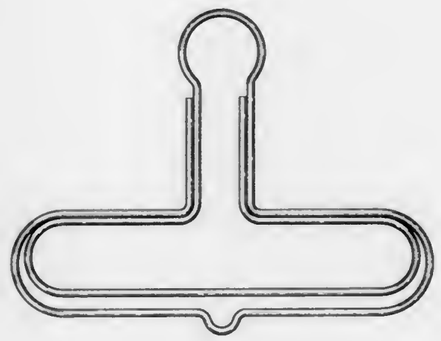
383,784
PAPER CLIP WITH V SHAPE
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92656
Continuation-in-part of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,665
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



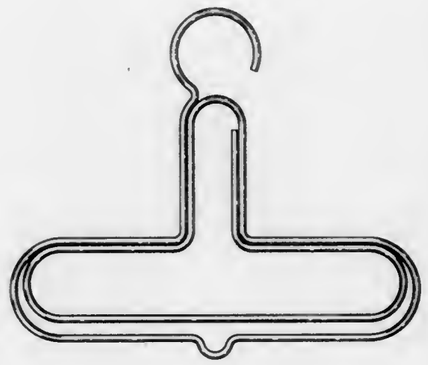
383,785
PAPER CLIP WITH HEART SHAPE
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92656
Continuation-in-part of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,667
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



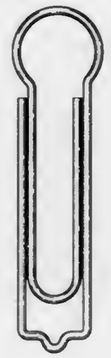
383,786
PAPER CLIP WITH T-SHAPED END
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92636
Continuation-in-part of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,668
Term of patent 14 years
LOC (6) Cl. 19 - *65*
U.S. Cl. D19—65



383,787
PAPER CLIP WITH HOOK END AND T SHAPED END
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92656
Division of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,669
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



383,788
PAPER CLIP WITH SQUARE END
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92656
Continuation-in-part of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,673
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



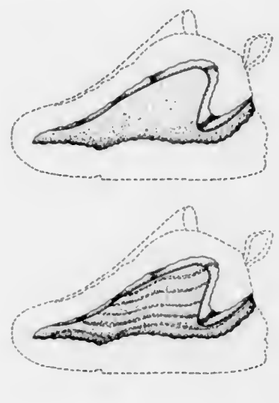
383,789
PAPER CLIP WITH HOOK END AND V-SHAPED END
Jenq-Pyng Shyu, 26231 Carmel St., Laguna Hills, Calif. 92656
Continuation-in-part of Ser. No. 378,958, Jan. 26, 1995. This application Jul. 5, 1996, Ser. No. 56,674
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



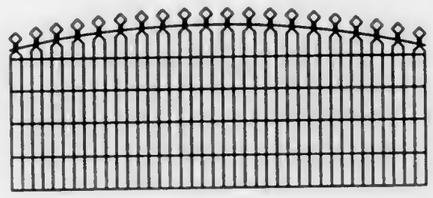
383,790
PORTABLE SUPPORT FOR WRITING MATERIALS
Steven Leveen; Anthony Altmann, both of Boca Raton; Denise Tedaldi, Jupiter; Madeleine Vogel, Parkland, and Chris D. Wheeler, Boca Raton, all of Fla., assignors to Levenger Company, Delray Beach, Fla.
Filed Mar. 28, 1996, Ser. No. 52,384
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—88



383,791
SIDE ELEMENT OF A SHOE UPPER
Eric P. Avar, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 30, 1996, Ser. No. 61,749
Term of patent 14 years
LOC (6) Cl. 02 - *79*
U.S. Cl. D2—972



383,792
FENCE
Stephan Stephani, Unna, Germany, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Nov. 7, 1996, Ser. No. 62,091
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—45



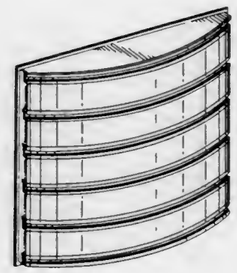
383,793
CURVED PICTURE FRAME
Timothy J. Mullen, 2200 Jerrold Ave., Unit O, San Francisco, Calif. 94124
Filed Jun. 26, 1997, Ser. No. 65,728
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—301



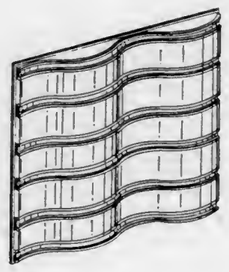
383,794
PICTURE FRAME
Timothy J. Mullen, 2200 Jerrold Ave., Unit O, San Francisco, Calif. 94124
Filed Jun. 26, 1997, Ser. No. 65,729
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—300



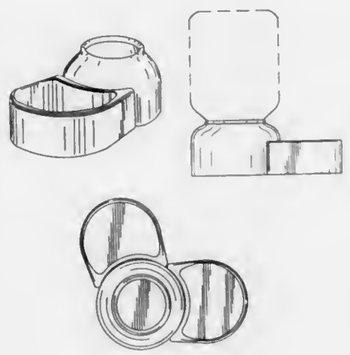
383,795
CONVEX DISPLAY PANEL
Dan A. Rinicella, Chagrin Falls, and Thomas H. Defelice, Canton, both of Ohio, assignors to Darko Company, Inc., Twinsburg, Ohio
Filed Oct. 6, 1995, Ser. No. 46,581
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—42



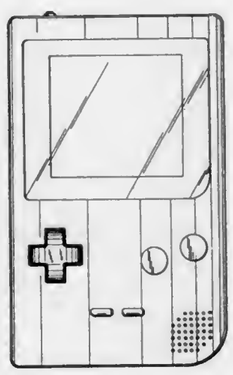
383,796
HORIZONTAL WAVE DISPLAY PANEL
Dan A. Rinicella, Chagrin Falls, and Thomas H. Defelice, Canton, both of Ohio, assignors to Darko Company, Inc., Twinsburg, Ohio
Filed Oct. 6, 1995, Ser. No. 46,582
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—42



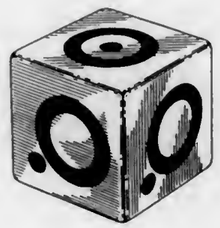
383,797
ANIMAL WATERER
Michael E. Finnegan, 2143 Northern Ave., Kingman, Ariz. 86401
Filed Aug. 15, 1996, Ser. No. 58,484
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—132



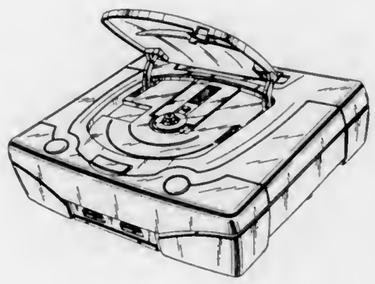
383,798
HAND HELD ELECTRONIC GAME
Gumpei Yokoi; Hideo Nagata; Kenichi Sugino; Noboru Wakitani; Yuji Hori, and Norikatsu Furuta, all of Higashiyamaku, Japan, assignors to Nintendo Co., Ltd., Japan
Filed Jul. 10, 1996, Ser. No. 56,840
Claims priority, application Japan, Mar. 11, 1996, 8-6685
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



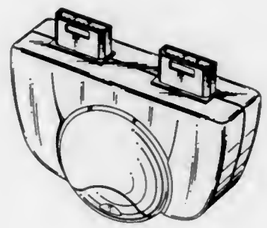
383,799
DIE FOR A GOLF GAME
Mario Beaumier, Laval, and Benoit Kelly, Montreal, both of Canada, assignors to Corporation des Jeux de Societe le Golf, Montreal, Canada
Filed Apr. 26, 1996, Ser. No. 53,635
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—41



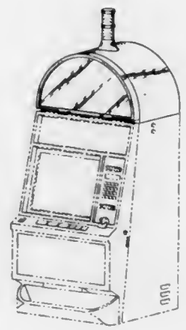
383,800
VIDEO GAME MACHINE
Masami Ishizaki, Miyoshi-Machi, and Akitoshi Oikawa, Tokyo, both of Japan, assignors to Sega Enterprises, Ltd., Tokyo, Japan
Filed Jul. 17, 1996, Ser. No. 57,132
Claims priority, application Japan, Jan. 19, 1996, 8-1143
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



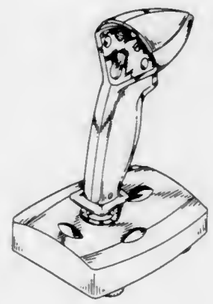
383,801
INFRARED RAY RECEIVER FOR VIDEO GAME MACHINE
Akitoshi Oikawa, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Jul. 17, 1996, Ser. No. 57,133
Claims priority, application Japan, Jan. 19, 1996, 8-1145
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



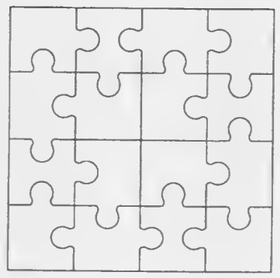
383,802
CAP FOR A GAMING DEVICE
Richard Levy, Henderson, Nev., assignor to Casino Data Systems, Las Vegas, Nev.
Filed Jul. 30, 1996, Ser. No. 57,696
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



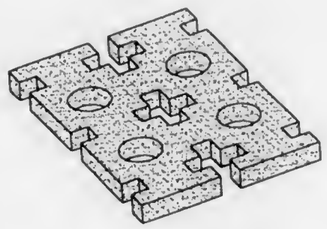
383,803
JOY STICK
Fu Chin Cheng, Taipei Hsien, Taiwan, assignor to Sysgration, Ltd., Taipei Hsien, Taiwan
Filed Aug. 8, 1996, Ser. No. 58,142
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



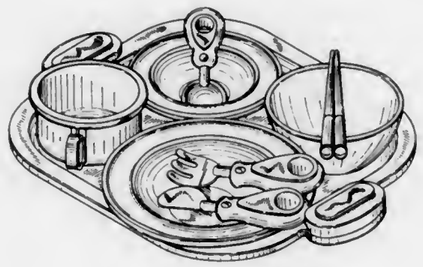
383,804
PUZZLE
Eric Parein, Bosduifstraat 3, B-2018 Antwerpen, Belgium
Filed Jun. 21, 1996, Ser. No. 56,062
Claims priority, application Benelux TM/Des. Off., Dec. 22, 1995, 05889-00
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



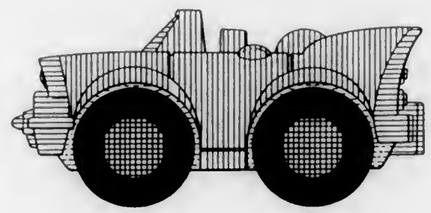
383,805
CONSTRUCTIONAL TOY PIECE
Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722
Filed Jul. 15, 1996, Ser. No. 57,053
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



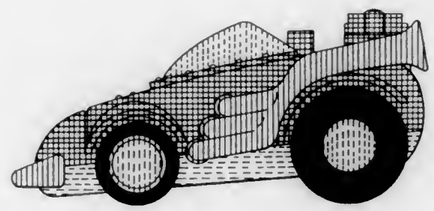
383,806
TOY DINNER SET
Chin-Long Yang, No. 48, Lane 502, Wen Shyan Rd., Tainan, Talwan
Filed Jan. 13, 1995, Ser. No. 33,488
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—121



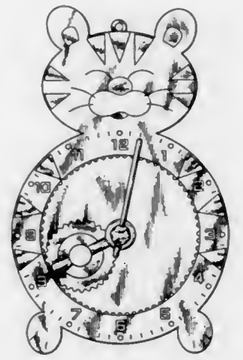
383,807
TOY CAR
Kevin Kei Fung Choi, 26th Floor, 38 Russell Street, Causeway Bay, Hong Kong
Filed Feb. 12, 1996, Ser. No. 50,193
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—136



383,808
TOY RACE CAR
Kevin Kei Fung Choi, 26th Floor, 38 Russell Street, Causeway Bay, Hong Kong
Filed Feb. 12, 1996, Ser. No. 50,195
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—137



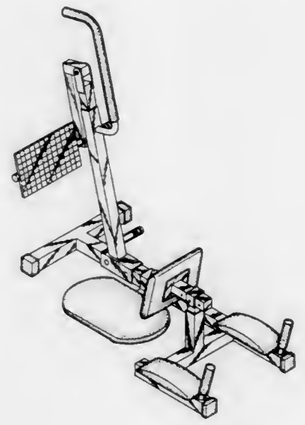
383,809
CLOCK FIGURE TOY
Julius C. Ekeoba, 3403 University Blvd., Kensington, Md. 20895
Filed Sep. 26, 1995, Ser. No. 44,527
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—144



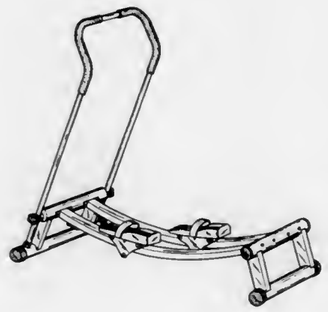
383,810
BUTTOCK EXERCISE DEVICE
William T. Wilkinson, P.O. Box 73, Salem, N.J. 08079
Filed Apr. 29, 1996, Ser. No. 53,670
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—191



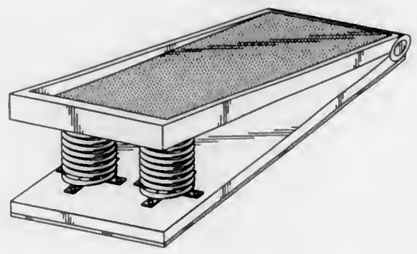
383,811
EXERCISER
Charles Ho, 3F, No. 9, Alley 1, Lane 94, Ta Chih Street, Taipei, Taiwan
Filed May 20, 1996, Ser. No. 54,708
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—191



383,812
STRIDING EXERCISER
Chung-Yen Lo, and Fu-Shun Chien, both of No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Apr. 19, 1996, Ser. No. 53,380
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—192



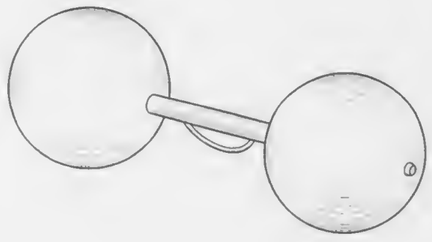
383,813
FOOT EXERCISE DEVICE
Robert G. Zolier, 4693 Slade Dr., Fairfield, Ohio 45014
Filed Feb. 20, 1996, Ser. No. 50,460
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—193



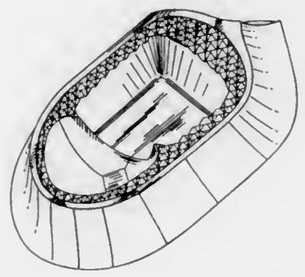
383,814
LIFE TONER
Ken Ward, 1122 S. 2250 West, Salt Lake City, Utah 84104
Filed Jun. 18, 1996, Ser. No. 56,258
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—195



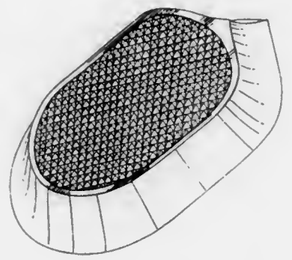
383,815
BUOYANT EXERCISE BARBELL
Nathan Isaacson, 2555 Gross Point Rd., Evanston, Ill. 60201
Filed Sep. 8, 1995, Ser. No. 43,670
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—197



383,816
KICKING TEE
H. Jay Spiegel, P.O. Box 444, Mount Vernon, Va. 22121
Division of Ser. No. 34,733, Feb. 10, 1995, Pat. No. Des. 372,062. This application Jul. 19, 1996, Ser. No. 57,228
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—209



383,817
KICKING TEE
H. Jay Spiegel, P.O. Box 444, Mount Vernon, Va. 22121
Division of Ser. No. 34,733, Feb. 10, 1995, Pat. No. Des. 372,062. This application Jul. 19, 1996, Ser. No. 57,229
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—209



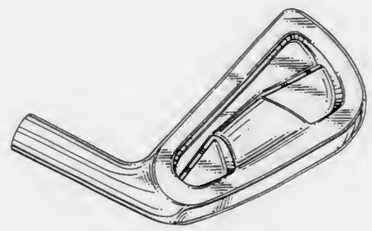
383,818
GOLF CLUB HEAD
Robert J. Williams, Jr., 75-150 Sheryl Ave. Suite B, Palm Desert, Calif. 92211
Filed Apr. 15, 1996, Ser. No. 53,140
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



383,819
GOLF CLUB HEAD
Kunihiko Takahashi, Musashino, and Yasuto Imai, Higashikurume, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 24, 1996, Ser. No. 53,488
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



383,820
GOLF CLUB HEAD
Tomomi Watanabe, Osaka, Japan, assignor to Mizuno Corporation, Osaka, Japan
Filed Jun. 4, 1996, Ser. No. 55,359
Claims priority, application Japan, Dec. 6, 1995, 7-37000
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



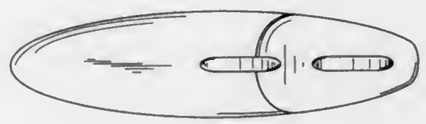
383,821
CORK GOLF CLUB GRIP
David A. Wood, Humble, Tex., assignor to Wood Brothers/ Switch, Inc., Humble, Tex.
Filed May 20, 1996, Ser. No. 54,695
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



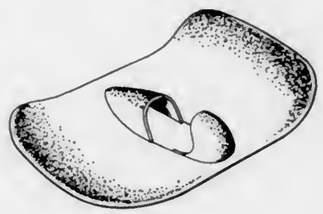
383,822
GRIP
David L. Boone; Loren Smeltzer, both of Phoenix; Jeannette Huffman, Scottsdale, and Ricky Ray Dillman, Sr., Glendale, all of Ariz., assignors to Royal Grip, Inc., Tempe, Ariz.
Division of Ser. No. 27,960, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 27,170, Aug. 15, 1994, Pat. No. Des. 363,963. This application Aug. 5, 1996, Ser. No. 58,306
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



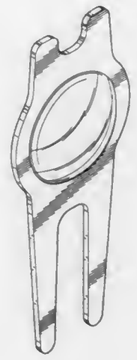
383,823
WATER SKATEBOARD
Martin O. Grimes, Jr., 57 Kay St., Newport, R.I. 02840
Filed Jun. 15, 1995, Ser. No. 40,322
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—228



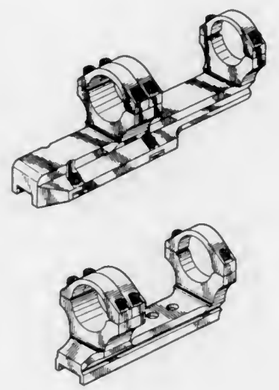
383,824
INDIVIDUAL SNOWBOARD FOR EACH FOOT
Albert Mendoza, and Valetta Mendoza, both of 1243 12th St. Apt. No. 2, Santa Monica, Calif. 90401
Filed Sep. 17, 1996, Ser. No. 59,829
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—228



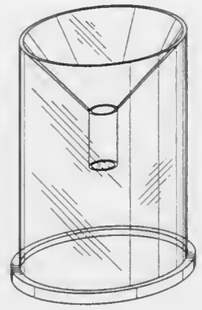
383,825
GOLF TOOL
Jordan Rhodes, 69 Maple Dr., New Hyde Park, N.Y. 11040
Filed May 1, 1996, Ser. No. 53,863
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



383,826
SCOPE MOUNT
Jack Weigand, Mountaintop, Pa., assignor to Weigand Combat Handguns, Inc., Mountaintop, Pa.
Filed Jan. 5, 1996, Ser. No. 48,596
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—110



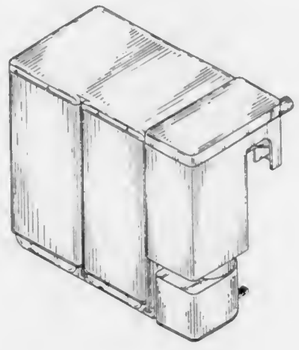
383,827
INSECT TRAP
Andrew J. Barbone, 5 Temple Ave., Stratford, N.J. 08084
Filed Jul. 25, 1996, Ser. No. 57,484
Term of patent 14 years
LOC (6) Cl. 22 - *06*
U.S. Cl. D22—122



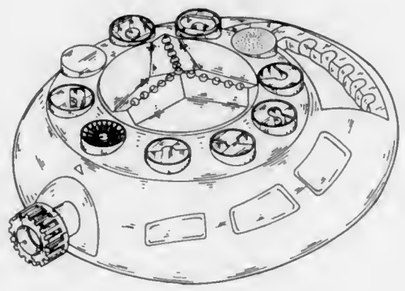
383,828
REEL SEAT FOR CASTING
Steve Grice, Spirit Lake, Iowa, assignor to Berkley, Inc., Spirit Lake, Iowa
Filed Apr. 16, 1996, Ser. No. 53,112
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142



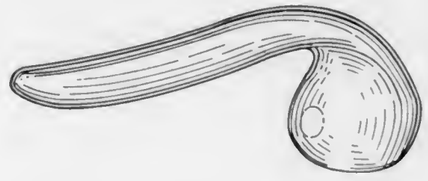
383,829
FILTER FOR AN AQUARIUM
Shoei Her Guo, P.O. Box 82-144, Taipei, Taiwan
Filed May 26, 1995, Ser. No. 39,805
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—210



383,830
LAWN SPRINKLER
Wen-Li Guo, No. 10, Fang Dong Road, Wen Gin Tsuen, Fang Yuan Hsiang, Chang Hua Hsien, Taiwan
Filed May 28, 1996, Ser. No. 54,983
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—214



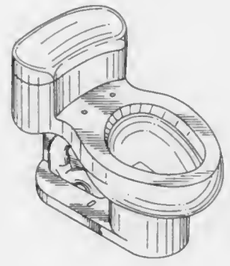
383,831
PLUMBING FITTING HANDLE
John C. Esche, Kohler, and Jill E. Hundley, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 5, 1996, Ser. No. 52,584
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—252



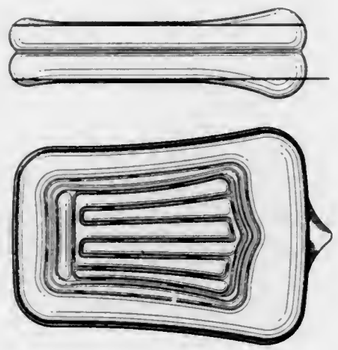
383,832
COMBINED TOILET BASIN, TOILET SEAT AND SEAT COVER
Seijiro Kawamura, and Noriko Yoshii Hashida, both of Kitakyushu, Japan, assignors to Toto, Ltd., Japan
Division of Ser. No. 25,034, Jun. 27, 1994, Pat. No. Des. 369,400, and a continuation-in-part of Ser. No. 1,004, Oct. 30, 1992, Pat. No. Des. 354,121. This application Dec. 19, 1995, Ser. No. 48,074
Claims priority, application Japan, Dec. 28, 1993, 5-39883; Dec. 28, 1993, 5-39884; Dec. 28, 1993, 5-39885; Dec. 28, 1993, 5-39886; Dec. 28, 1993, 5-39887; Dec. 28, 1993, 5-39888
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—295



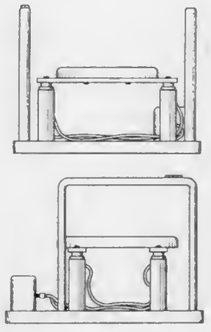
383,833
WATER CLOSET
Ayse Birsel, and Koichi Watanabe, both of Kitakyushu, Japan, assignors to Toto Ltd., Fukuoka-ken, Japan
Filed Jun. 24, 1995, Ser. No. 41,753
Claims priority, application Japan, Jan. 25, 1995, 7-1629; Jan. 25, 1995, 7-1630
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—301



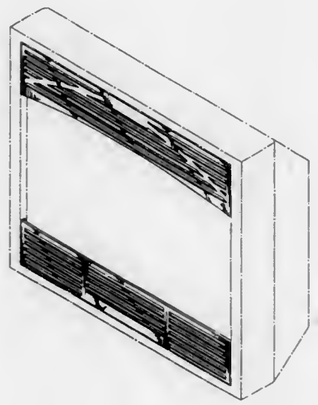
383,834
BATH TUB INSERT
Gail B. Frankel, Dallas, Tex., assignor to Kel-Gar, Inc., Dallas, Tex.
Filed Mar. 15, 1996, Ser. No. 51,680
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—304



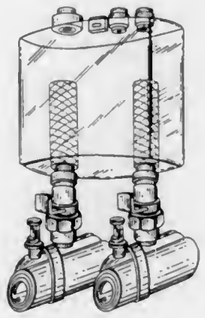
383,835
LIFT FOR TOILET
Sadina M. Gibbs, 4705 Ezekiel Ave., N. Charleston, S.C. 29406
Filed Aug. 8, 1996, Ser. No. 58,127
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—311



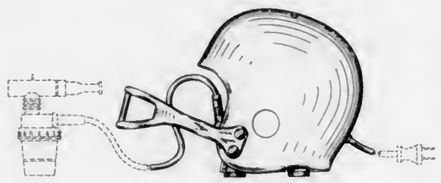
383,836
FIREPLACE GRILLE
Fred B. Gerth, La Mirada, Calif., assignor to Marco Manufacturing, Inc., Lynwood, Calif.
Filed Jun. 28, 1996, Ser. No. 56,453
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—403



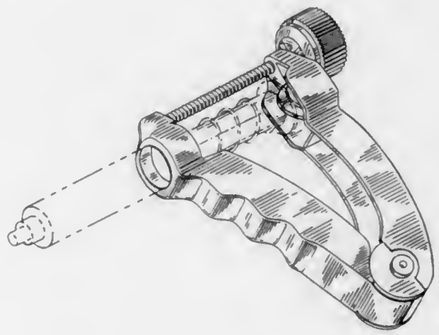
383,837
COMBINED BLOOD RECEIVING CONTAINER AND REINFUSION BAGS
Robert F. Cotter, Duxbury, Mass., assignor to Duxbury Scientific, Inc., Duxbury, Mass.
Filed Mar. 25, 1996, Ser. No. 52,171
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—108



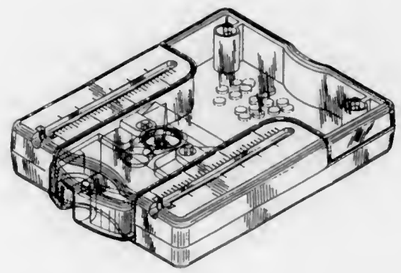
383,838
NEBULIZER PUMP
Rey Solano, 30 Pilot St., Bronx, N.Y. 10464
Filed Dec. 7, 1995, Ser. No. 47,579
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—110



383,839
SYRINGE STROKE CONTROLLER WITH FINGER-MOLDED PISTOL GRIP
James J. Sullivan, P.O. Box 1799, Ojai, Calif. 93024
Continuation-in-part of Ser. No. 44,769, Apr. 12, 1993, abandoned. This application Apr. 13, 1995, Ser. No. 37,471
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—113



383,840
DENTAL REAMER STOP DISPENSER
Sanford Grossman, Canoga Park, Calif., assignor to Preceision Dental International, Inc., Canoga Park, Calif.
Filed Sep. 23, 1996, Ser. No. 60,097
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—121



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16th DAY OF SEPTEMBER, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.P.I.S. Medical B.V.: *See*—
van den Haak, Abraham, 5,667,494, Cl. 604-195.000.
A. R. Wilfley & Sons, Inc.: *See*—
Whittier, John D.; and Drussel, Douglas W., 5,667,356, Cl. 415-34.000.
AAF International: *See*—
Haas, Daniel R.; and Baer, Brian K., 5,667,544, Cl. 55-382.000.
Aaslyng, Dorrit A.: *See*—
Yaver, Debbie Sue; Xu, Feng; Dalbøge, Henrik; Schneider, Palle; and Aaslyng, Dorrit A., 5,667,531, Cl. 8-401.000.
ABB Vetco Gray Inc.: *See*—
Slider, Mark D.; and Galle, Gary L., 5,667,014, Cl. 166-378.000.
Abbott Laboratories: *See*—
Birkenmeyer, Larry; and Mushahwar, Isa K., 5,667,974, Cl. 435-6.000.
Brooks, Clint D. W.; Bhatia, Pramila; and Kolasa, Teodozyj, 5,668,146, Cl. 514-311.000.
Brooks, Clint D.W.; Kolasa, Teodozyj; and Gunn, David E., 5,668,150, Cl. 514-314.000.
Casey, James M.; Bode, Suzanne L.; Zeck, Billy J.; Yamaguchi, Julie; Frail, Donald E.; Desai, Suresh M.; and Devare, Sushil G., 5,667,992, Cl. 435-69.300.
Ma, Zhenkun; Cooper, Curt S.; Fung, Anthony K. L.; and Chu, Daniel T., 5,668,164, Cl. 514-376.000.
Paul, Deborah A.; and Knigge, Mark E., 5,667,966, Cl. 435-5.000.
Shiosaki, Kazumi; Gu, Yu Gui; and Michaelides, Michael, 5,668,141, Cl. 514-285.000.
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Abe, Shunichi; and Ohmae, Seizo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and production method thereof. 5,668,404, Cl. 257-668.000.
Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, to Mitsui Toatsu Chemicals, Inc. Process for preparing high-molecular weight acrylamide polymer. 5,668,229, Cl. 526-93.000.
Abe, Tsutomu, to Canon Kabushiki Kaisha. Container for recording head. 5,667,063, Cl. 206-204.000.
Abel, Allison L.; D'Orazio, Paul A.; Dalzell, Bonnie C.; McCaffrey, Robert R.; and Uretsky, Laura S., to Chiron Diagnostics Corporation. Reagents with enhanced performance in clinical diagnostic systems. 5,667,983, Cl. 435-14.000.
Abitibi-Price Inc.: *See*—
Whiting, Philip, 5,667,698, Cl. 210-761.000.
Abraham, Donald J.; Harris, Louis S.; Meade, B. J.; Munson, Albert E.; Swerdlow, Paul S.; and Patrick, Graham A., to Virginia Commonwealth University. Method of calming or sedating an animal with a hydroxy benzaldehyde compound. 5,668,182, Cl. 514-699.000.
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Okazawa, Koichi; Kimura, Koichi; Kawaguchi, Hitoshi; Aburano, Ichiharu; Kobayashi, Kazushi; and Mochida, Tetsuya, 5,668,956, Cl. 395-306.000.
Acer Peripherals, Inc : *See*—
Chang, Pi-Chun, 5,667,072, Cl. 206-523.000.
Acuson Corporation: *See*—
Wright, J. Nelson; Maslak, Samuel H.; Finger, David J.; and Gee, Albert, 5,667,373, Cl. 128-660.070.
Adachi, Michio: *See*—
Ushida, Masayasu; and Adachi, Michio, 5,666,914, Cl. 123-90.170.
Adams, Charles L., to PVI Industries, Inc. Water heater or boiler with improved tank design. 5,666,943, Cl. 126-360.00R.
Adams, John M.; Braunshteyn, Mikhail S.; Counts, Mary Ellen; Dale, Gerald M.; Harris, Charles W.; Jones, Donald H.; Keen, Billy J., Jr.; Sanderson, Wesley G.; Smith, Barry S.; Stevenson, Brett W.; and Wrenn, Susan E., to Philip Morris Incorporated. Cigarette and method of manufacturing cigarette for electrical smoking system. 5,666,976, Cl. 131-94.000.
Adams, Julian: *See*—
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Adams, Lee: *See*—
Prospero, Richard M.; Lunde, Erik; Swanson, Harry; and Adams, Lee, 5,666,782, Cl. 53-155.000.
Adams Mfg. Corp.: *See*—
Adams, William E., 5,667,174, Cl. 248-156.000.
Adams, William E., to Adams Mfg. Corp. Decorative light stake. 5,667,174, Cl. 248-156.000.
Adapco, Inc.: *See*—
Bryan, Avron; and Resch, Darrel, 5,667,558, Cl. 95-8.000.
Adelson, Alexander M.: *See*—
Swartz, Jerome; Shepard, Howard M.; Barkan, Eric F.; Krichever, Mark J.; Metlitsky, Boris; Barkan, Edward; and Adelson, Alexander M., 5,668,364, Cl. 235-472.000.
Adham, Saman M. I., to Northern Telecom Limited. Self-testable digital signal processor and method for self-testing of integrating circuits including DSP data paths. 5,668,817, Cl. 371-22.400.
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Baziard-Mouysset, Geneviéve; Younes, Sallouma; Labssita, Youssef; Payard, Marc; Caignard, Daniel-Henri; Renard, Pierre; and Rettori, Marie-Claire, 5,668,138, Cl. 514-255.000.
Lesieur, Daniel; Depreux, Patrick; Leclerc, Véronique; Delagrange, Philippe; and Renard, Pierre, 5,668,180, Cl. 514-630.000.
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Adolor Corporation: *See*—
Farrar, John J.; Maycock, Alan L.; Kumar, Virendra; and Balogh, Imre (Jim), 5,667,773, Cl. 424-78.050.
ADRA Corporation: *See*—
Brady, J. Lee, 5,667,175, Cl. 248-166.000.
Advanced Design & Research Corp.: *See*—
Cvetkov, Nikolai E., 5,666,712, Cl. 29-458.000.
Advanced Micro Devices, Inc.: *See*—
Duley, Raymond S., 5,668,463, Cl. 320-15.000.
Gittinger, Robert Paul; and Spilo, David Allen, 5,668,815, Cl. 371-21.200.
Hewitt, Larry D.; Suggs, David N.; and Norris, David, 5,668,338, Cl. 84-629.000.
Schieve, Eric W., 5,668,980, Cl. 345-523.000.
Sharpe-Geisler, Bradley A.; and Fontana, Fabiano, 5,668,488, Cl. 327-108.000.
Swanstrom, Scott; and Gephardt, Douglas D., 5,668,977, Cl. 395-500.000.
Advanced Performance Technology, Inc.: *See*—
Dye, Richard; and Lowsky, John, 5,667,678, Cl. 210-232.000.
Advanced Sterilization Products: *See*—
Jacobs, Paul Taylor; Lin, Szu-Min; and Chen, Xiaolan, 5,667,753, Cl. 422-29.000.
Aerojet-General Corporation: *See*—
Malik, Aslam A., 5,668,250, Cl. 528-402.000.
Malik, Aslam A.; and Carlson, Roland P., 5,668,251, Cl. 528-402.000.
Aerospace Corporation, The: *See*—
Gelbwachs, Jerry A., 5,667,304, Cl. 374-137.000.
Aerospatiale Societe Nationale Industrielle: *See*—
Coquin, Laurent; and Le Draoullec, Christine, 5,668,541, Cl. 340-959.000.
Fantino, Lucien; and Cahuzac, Georges, 5,667,613, Cl. 156-182.000.
AESOP, Inc.: *See*—
Slocum, Alexander Henry, 5,667,204, Cl. 267-136.000.
Affymax Technologies N.V.: *See*—
Barrett, Ronald W.; England, Bruce P.; Schatz, Peter J.; Sloan, Derek; and Chen, Min-Jia, 5,668,110, Cl. 514-13.000.
Agano, Toshitaka: *See*—
Kuwabara, Takao; Usami, Yoshihisa; and Agano, Toshitaka, 5,668,589, Cl. 347-253.000.
Agency of Industrial Science and Technology: *See*—
Yamamoto, Tadashi, 5,666,814, Cl. 62-118.000.
Agency of Industrial Science & Technology, Ministry of International Trade & Industry: *See*—
Suzuki, Kenzi; and Inukai, Keiichi, 5,667,561, Cl. 95-139.000.
Agfa: *See*—
Missfeldt, Michael; Willsau, Johannes; Büscher, Ralf; Bell, Peter; and Borst, Hans-Ulrich, 5,667,956, Cl. 430-600.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
Bocklisch, Siegfried; Fielder, Wolfgang; Treiber, Helmut; Leuschner, Rainer; Reichel, Wilfried; and Wilde, Michael, 5,668,625, Cl. 355-73.000.
Agfa-Gevaert, N.V.: *See*—
Vermeersch, Joan; and Kokkelenberg, Dirk, 5,667,939, Cl. 430-302.000.
Agrawal, Sudhir: *See*—
Tan, Weitian; Iyer, Radhakrishnan P.; Jiang, Zhiwei; Yu, Dong; and Agrawal, Sudhir, 5,668,262, Cl. 536-22.100.
Ahanin, Bahram: *See*—

Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,668,771, Cl. 365-230.030.

AHC Inc.: *See*—
Kubo, Kazuhiro, 5,667,779, Cl. 424-93.462.

Ahigian, Edward E.: *See*—
Jaminet, Jerome F.; Kowalczyk, Thomas M.; Ahigian, Edward E.; McHugh, Thomas M.; He, Thomas; Peruggi, Richard E.; Kulak, Richard E.; and Barrett, David W., 5,668,355, Cl. 187-316.000.

Ahmad, Aftab: *See*—
Prall, Kirk; Fazan, Pierre C.; Ahmad, Aftab; Rhodes, Howard E.; Juengling, Werner; Pan, Pai-Hung; and Lowrey, Tyler, 5,668,037, Cl. 438-238.000.

Ahrens, Robert Roy: *See*—
Rungta, Ravi; Ahrens, Robert Roy; and Zhu, Mingguang, 5,667,599, Cl. 148-259.000.

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Aihara, Toru: *See*—
Yoshida, Masaaki; and Aihara, Toru, 5,667,610, Cl. 156-133.000.

Aihara, Yoshihiko: *See*—
Kadohara, Terutake; and Aihara, Yoshihiko, 5,669,022, Cl. 396-111.000.

Aikens, Isaac. Plug lock. 5,666,829, Cl. 70-57.000.

Ailinger, Robert E.: *See*—
Frassica, James J.; and Ailinger, Robert E., 5,667,476, Cl. 600-149.000.

Air Cargo Equipment Corporation: *See*—
Neustadt, Ariel, 5,667,002, Cl. 160-368.100.

Air Products and Chemicals, Inc.: *See*—
Asako, Shinichi; and Uchida, Hajime, 5,668,187, Cl. 521-137.000.
Smith, Arthur Ramsden; and Woodward, Donald Winston, 5,666,823, Cl. 62-646.000.
Sorensen, James Christian; and Scharpf, Eric William, 5,666,800, Cl. 60-39.020.

Airhart, Forrest A.; and Whited, Jeffrey Alan, to Bettcher Industries, Inc. Method and apparatus for sharpening curved blades. 5,667,427, Cl. 451-45.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ito, Koji; and Kawai, Taneichi, 5,667,244, Cl. 280-735.000.
Takeda, Nobuhiko, 5,667,275, Cl. 297-408.000.

Aiyama, Fumihiko, to Kioritz Corporation. Power working machine. 5,666,730, Cl. 30-220.000.

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Kimura, Teiji; Watanabe, Nobuhisa; Takase, Yasutaka; Hayashi, Kenji; Matsui, Makoto; Ikuta, Hironori; Yamagishi, Youji; Akasaka, Kozo; Tanaka, Hiroshi; Ohtsuka, Issei; Saeki, Takao; Kogushi, Motoji; Fujimori, Tohru; and Saito, Isao, 5,668,136, Cl. 514-255.000.

Akashi, Akira; and Matsushima, Hiroshi, to Canon Kabushiki Kaisha. Focus detecting device. 5,667,270, Cl. 396-128.000.

Akashi, Koji: *See*—
Kubo, Kazuo; and Akashi, Koji, 5,667,367, Cl. 417-313.000.

Akazaki, Shusuke: *See*—
Maki, Hidetaka; Akazaki, Shusuke; Hasegawa, Yusuke; and Nishimura, Yoichi, 5,666,934, Cl. 123-679.000.

Akiba, Yoshitaka: *See*—
Ichikawa, Kaoru; Yamamoto, Kunio; and Akiba, Yoshitaka, 5,667,127, Cl. 227-142.000.

Akimoto, Takashi; Tagaya, Kiyomi; Ojima, Susumu; and Takeda, Seiki, to Ookubo Co., Ltd. Polarization plate gluing apparatus. 5,667,624, Cl. 156-389.000.

Akimoto, Takeshi, to NEC Corporation. Method for fabricating multilayer semiconductor device. 5,668,053, Cl. 438-625.000.

Akiyama, Teruo: *See*—
Yamashita, Koji; Akiyama, Teruo; Saito, Kouji; and Shinozaki, Shinichi, 5,666,808, Cl. 60-426.000.

Akiyoshi, Hitomi, to Fujitsu Limited. Apparatus for detecting and controlling loss of ATM cell. 5,668,812, Cl. 370-474.000.

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Aktiebolaget Electrolux: *See*—
Jönsson, Åke; and Grufman, Hans, 5,666,894, Cl. 112-103.000.
Lindholm, Tage, 5,667,332, Cl. 403-359.000.
Mortin, Bo S., 5,667,431, Cl. 451-88.000.

Akzo Nobel, N.V.: *See*—
Cornelius, Lammert; and Rijke, Eric Onno, 5,667,784, Cl. 424-204.100.
Petitou, Maurice; and van Boeckel, Constant Adriaan Anton, 5,668,274, Cl. 536-124.000.

Alabaster, Ramon John; Cottrell, Ian Frank; Gibson, Andrew William; and Johnson, Simon Adrian, to Merck Sharp & Dohme Limited. Chemical synthesis of a chiral oxazinone. 5,668,280, Cl. 544-173.000.

Alajajian, Philip Michael. Inter-vehicle personal data communications device. 5,668,880, Cl. 380-49.000.

Alarcon-Lopez, Manuel; Roman-Gomez, Lenin; Rojas-Cortes, Rafael-Jorge; and Enciso-Aguilar, Victor-Octavio, to Vidrio Plano de Mexico, S.A. de C.V. Method and system to automatically lift the curtains of the exit hood of a machine for the production of float flat glass. 5,667,549, Cl. 65-29.180.

Alaska, Andrew B. Side-packed chromatographic column. 5,667,676, Cl. 210-198.200.

Albert, James Robert; and Sondermeyer, Jack C., to Peavey Electronics Corporation. Tube type power amplifier with distortion control. 5,668,499, Cl. 330-118.000.

Alberts, Heinrich: *See*—
Eichenauer, Herbert; Bohnenpoll, Martin; Schmidt, Adolf; and Alberts, Heinrich, 5,668,218, Cl. 525-265.000.

Alcatel Espace: *See*—
Rouffet, Denis; Berthault, Frédéric; Mazzella, Michel; and Tanguy, Yannick, 5,668,556, Cl. 342-354.000.

Alcatel Mobile Communication France: *See*—
Baro, José, 5,668,559, Cl. 343-702.000.

Alcatel NA Cable Systems, Inc.: *See*—
Keller, David A., 5,668,912, Cl. 385-100.000.

Alcatel STR AG: *See*—
Grünenfelder, Reto, 5,668,801, Cl. 370-253.000.

Alcide Corporation: *See*—
Kross, Robert D., 5,667,817, Cl. 424-661.000.

Alcoa Fujikura Ltd.: *See*—
Trafton, Michael L., 5,667,413, Cl. 439-843.000.

Alcon Laboratories, Inc.: *See*—
Yanni, John M.; Robertson, Stella M.; Okumura, Shigetoshi; Tanaka, Hitoshi; and Saito, Tadayuki, 5,668,133, Cl. 514-253.000.

Ald Vacuum Technologies GmbH: *See*—
Goy, Wilfried, 5,668,827, Cl. 373-156.000.

Alen, Constantine: *See*—
Papadakis, Stavros, 5,667,783, Cl. 424-195.100.

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Papadakis, Stavros, 5,667,783, Cl. 424-195.100.

Alexander, Samuel Ray; Alexander, Sarah Rheagan; and Hiler, Gaylord Allen, to Du Pont de Nemours, E. I., and Company. Pallett assembly. 5,666,886, Cl. 108-56.300.

Alexander, Sarah Rheagan: *See*—
Alexander, Samuel Ray; Alexander, Sarah Rheagan; and Hiler, Gaylord Allen, 5,666,886, Cl. 108-56.300.

Al Ghatta, Hussain; and Giovannini, Arianna, to Sinco Engineering S.p.A. Process for extracting water and acetic acid from the aqueous phase of cellulose acetate. 5,667,691, Cl. 210-634.000.

Alikhan, Mir Inayeth, to Kimberly-Clark Worldwide, Inc. Method for making a fibrous laminated web. 5,667,619, Cl. 156-253.000.

Alikhan, Mir Inayeth, to Kimberly-Clark Worldwide, Inc. Apparatus for forming a fibrous laminated material. 5,667,625, Cl. 156-553.000.

Alkermes, Inc.: *See*—
Johnson, OluFunmi Lily; Ganmukhi, Medha M.; Bernstein, Howard; Auer, Henry; and Khan, M. Amin, 5,667,808, Cl. 424-501.000.

Allegro Microsystems, Inc.: *See*—
Martiska, Thomas J.; and Darling, Stephen, 5,667,922, Cl. 430-9.000.

Allen-Bradley Company, Inc.: *See*—
Batcher, Kenneth William, 5,668,947, Cl. 395-183.060.

Allen, John, to Ring Screw Works. Bolt including a cleaning thread point tip. 5,667,443, Cl. 470-12.000.

Allen, John Michael; Wilson, Alan Kent; Lucas, Paul Lee; and Curtis, Larry Gerald, to Eastman Chemical Company. Carboxyalkyl cellulose esters. 5,668,273, Cl. 536-66.000.

Allen, Lucius B.: *See*—
Pellerito, Brian James; and Allen, Lucius B., 5,668,727, Cl. 701-105.000.

Allen, Sean A. Mechanism for cutting an umbilical cord. 5,667,516, Cl. 606-120.000.

Alliance Pharmaceutical Corp.: *See*—
Trevino, Leo A.; Dellamary, Luis A.; Tarara, Thomas E.; Weers, Jeffry G.; and Ranney, Helen M., 5,667,809, Cl. 424-501.000.

Alliant Techsystems Inc.: *See*—
Lin, Hsiu-Ping W.; and Burgess, Kevin, 5,667,660, Cl. 205-59.000.

Allied Logic Corporation: *See*—
White, Mark S.; and Kovach, Dennis, 5,666,902, Cl. 114-357.000.

AlliedSignal Inc.: *See*—
Miller, H. John, III, 5,667,246, Cl. 280-806.000.
Petri, Fred, 5,668,329, Cl. 73-862.590.

AlliedSignal Truck Brake Systems Co.: *See*—
Herbst, Robert J.; and Johnson, Duane R., 5,666,995, Cl. 137-627.500.

Allison, Avery Vince. Programmed juke box capable of calculating a continuous updated playlist. 5,668,788, Cl. 369-30.000

Almersand, Åke: *See*—
Hessman, Ingemar; and Almersand, Åke, 5,667,343, Cl. 407-36.000.

Aloise, Arthur, to Cooper Instrument Corporation. Method and apparatus for calculating super heat in an air conditioning system. 5,666,815, Cl. 62-129.000.

Alpern, Marvin: *See*—
Cerwin, Robert; Alpern, Marvin; and Huang, Yufei, 5,667,155, Cl. 242-50.000.

Alpert, Donald B.; Avnon, Dror; Ben-Meir, Amos; and Talmudi, Ran, to National Semiconductor Corporation. Partially decoded instruction cache. 5,669,011, Cl. 395-800.230.

Alpha Scientific Corporaton: *See*—
Levine, Marshall S.; Levine, Daniel S.; and Levine, David E., 5,667,098, Cl. 222-1.000.

Alps Electric Co., Ltd.: *See*—
Sakamoto, Masaki; Oishi, Yuki; Yorozu, Hideki; and Suzuki, Kazutaka, 5,668,643, Cl. 358-455.000.

ALSA GmbH: *See*—
Herber, Karl-Heinz; and Kohlhepp, Karl-Ernst, 5,667,815, Cl. 425-119.000.

Alt, Helmut G.: *See*—
Schertl, Peter; Alt, Helmut G.; and Welch, M. Bruce, 5,668,230, Cl. 526-160.000.

Altera Corporation: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron R.; Leong, William; Watson, James A.; Huang, Joseph; and Ahanin, Bahram, 5,668,771, Cl. 365-230.030.

Alternative Fuel Technology Systems, Ltd. Co.: *See*—
Parkman, Michael K.; Whittaker, John W.; and Donaldson, Curtis J., 5,668,310, Cl. 73-113.000.

Aluminum Company of America: *See*—
Fang, Que-Tsang; Jones, Steven A., Van Wert, James R.; and Dickenson, Roger C., 5,667,602, Cl. 148-549.000.

Alusuisse Technology & Management Ltd.: *See*—
Meier, Johannes; and Gabi, Urs, 5,667,867, Cl. 428-116.000.

Alvord, Robert J.; Huffington, Jeffrey M.; Kano, Yoshio W.; Calabrese, Joseph S.; and Mirza, Kayvan K., to Eaton Corporation. Multiple switch assembly including spring biased rotary cam with concentric cam tracks for selectively operating switches. 5,668,359, Cl. 200-6.00B.

Alyn Corporation: *See*—
Carden, Robin A., 5,669,059, Cl. 419-12.000.

ALZA Corporation: *See*—
Gyory, J. Richard, 5,668,170, Cl. 514-449.000.
Merrill, Sonya; Ayer, Atul Devdatt; Hwang, Paul; and Kuczynski, Anthony L., 5,667,805, Cl. 424-473.000.
Wong, Patrick S.-L.; Edgren, David Emil; Dong, Liang C.; and Ferrari, Vincent Joseph, 5,667,804, Cl. 424-472.000.

Amamiya, Shoji: *See*—
Maruyama, Akio; Sako, Harumi; Nakamura, Kazushige; and Amamiya, Shoji, 5,667,926, Cl. 430-97.000.

Aman, Robert Santry: *See*—
Kapaan, Hendrikus Jan; Aman, Robert Santry; and De Vries, Alexander Jan Carel, 5,667,313, Cl. 384-544.000.

Amano, Hideki: *See*—
Nishimatsu, Kaoru; Amano, Hideki; and Sakayori, Shin-ichi, 5,668,856, Cl. 379-89.000.

Ambrose, Frederic C.; and Hawley, David. Keyboard, palm rest, and, mouse tray positioning system. 5,667,320, Cl. 400-472.000.

Amemiya, Koji: *See*—
Sakemi, Yuji; Amemiya, Koji; Menjo, Takeshi; Inoue, Masahiro; and Izumizaki, Masami, 5,669,050, Cl. 399-270.000.

Amemori, Masanori; Hasegawa, Toshiyuki; Miyamoto, Takeshi; Nozaki, Shinya; and Kobayashi, Takashi, to Zexel Corporation. Flowmeter having reversible transmitter and receiver. 5,668,327, Cl. 73-861.770.

Amerace Corporation: *See*—
Luzzi, Glenn J., 5,667,060, Cl. 200-302.100.

American Cyanamid Company: *See*—
Hadcock, John Richard; Ozenberger, Bradley Alton; and Pausch, Mark Henry, 5,668,006, Cl. 435-252.300.

American Home Products Corporation: *See*—
Sabb, Annmarie L.; and Stein, Reinhardt P., 5,668,144, Cl. 514-305.000.

American Institute of Nutrition and Management: *See*—
Liu, Jinkui; Wala, Fazal; and Meek, Harry E., 5,668,718, Cl. 705-8.000.

American Woodmark Corporation: *See*—
Schroer, John M.; and Smith, Gary E., 5,667,208, Cl. 269-21.000.

Amersham International plc: *See*—
Price, Roger Malcolm; May, Christopher Charles; Buckley, Elizabeth Margaret; and Stone, Timothy, 5,667,763, Cl. 424-1.110.

Ammatelli, Francis J.; and McMullen, Edward L. Toilet seat. 5,666,673, Cl. 4-254.000.

AMS Medinvent, S.A.: *See*—
Mikulich, Michael A.; Clerc, Claude O.; Jedwab, Michael R.; Furrer, Adrian; Mariller, Alain; Burton, John H.; and Tihon, Claude, 5,667,486, Cl. 604-8.000.

Analog Devices, Inc.: *See*—
Ashe, James, 5,668,553, Cl. 341-154.000.
Garavan, Patrick J.; and Byrne, Eanonn, 5,668,551, Cl. 341-120.000.

Analogic Corporation: *See*—
Dobbs, John, 5,668,851, Cl. 378-19.000.

Anatolievich, Pomozov Pyotr. Device for improving erection. 5,666,971, Cl. 128-842.000.

Anayama, Chikashi: *See*—
Kondo, Makoto; Anayama, Chikashi; and Shoji, Hajime, 5,668,048, Cl. 438-46.000.

Andersen Corporation: *See*—
Librande, Charles J.; Jensen, Brian A.; Bruchu, Todd W.; and Lynn, Jeffrey M., 5,666,773, Cl. 52-202.000.

Andersen, Henrik Sune: *See*—
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,668,129, Cl. 514-183.000.
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, to Novo Nordisk A/S. N-substituted azaheterocyclic carboxylic acids and esters thereof. 5,668,129, Cl. 514-183.000.

Andersen, Ole Nygaard, to Cleamatool A/S. Floor cleaning machine. 5,666,689, Cl. 15-384.000.

Andersen, Rick E. Boat anchor retrieval system and apparatus. 5,666,899, Cl. 114-297.000.

Anderson, Edward MacNally; Johnson, Thomas Alfred; Garnier, John Edward; Hatton, Kenneth Scott; Landini, Dennis James; and Patel, Aspi Nanabhai, to Lanxide Technology Company, LP. Self-supporting aluminum titanate composites and products relating thereto. 5,667,898, Cl. 428-469.000.

Anderson, Eric D.: *See*—
Emrich, Robert K.; and Anderson, Eric D., 5,666,748, Cl. 37-453.000.

Andersson, Par, to Tetra Laval Holdings & Finance S.A. Method for the integral molding of a synthetic thermoplastics part. 5,667,745, Cl. 264-275.000.

Ando Electric Co., Ltd.: *See*—
Fukushima, Takeo, 5,668,819, Cl. 371-25.100.
Minami, Takao, 5,668,627, Cl. 356-73.100.

Ando, Naotami; Masuda, Toshiyuki; Hatano, Takanori; and Nakayama, Kazuya, to Kanegafuchi Chemical Industry Co., Ltd. Room temperature curing composition. 5,668,194, Cl. 523-201.000.

Ando, Shin: *See*—
Yanagisawa, Kunikazu; and Ando, Shin, 5,666,850, Cl. 72-450.000.

Andritz Sprout-Bauer, Inc.: *See*—
Prew, Stanley R., 5,667,157, Cl. 241-27.000.

Androphy, Elliot J.; and Barsoum, James G., to Biogen, Inc.; and New England Medical Center Hospitals, Inc. Papillomavirus E2 trans-activation repressors. 5,667,965, Cl. 435-5.000.

Andruska, Donald Lee; and Tsai, Liane Toy, to Lucent Technologies Inc. Call screening at a hierarchical switch based on organizational membership of the parties. 5,668,860, Cl. 379-196.000.

Ang, Michael Anthony, to Philips Electronics North America Corporation. Charge transfer sense amplifier. 5,668,765, Cl. 365-205.000.

Anno, Hidero: *See*—
Sugiura, Hiroyuki; Ono, Katsuhiro; and Anno, Hidero, 5,668,849, Cl. 378-133.000.

Anscher, Joseph; and Fraze, Gary, to National Molding Corporation. Lockable strap separator for use with bicycle helmets and the like. 5,666,700, Cl. 24-163.00R.

Anson, Donald: *See*—
George, Paul E., II; Wilkinson, William; Anson, Donald; Creamer, Kurt; Dickson, Douglas; Grassi, Michael J.; and Grimes, Steve, 5,666,910, Cl. 122-40.000.

Anthropharm Pty. Limited: *See*—
Cullis-Hill, David; and Ghosh, Peter, 5,668,116, Cl. 514-54.000.

Antonelli, Joseph Albert; Scopazzi, Christopher; and Vanderlinde, William Bertus, to Du Pont de Nemours, E. I., and Company. Cathodic electrocoating compositions containing methane sulfonic acid as a neutralizing agent. 5,667,894, Cl. 428-413.000.

Antonis, Basil: *See*—
Everest, Steven J.; and Antonis, Basil, 5,668,433, Cl. 313-313.000.

Aoki, Takayuki: *See*—
Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, 5,668,440, Cl. 313-635.000.

Aoki, Toyoaki; and Tsugura, Hiroshi, to Kabushiki Kaisha Meidensha. Device and method for estimating three nitrogen-including ionic substances in water. 5,668,014, Cl. 436-110.000.

Aoki, Yasuo, to Motohiro Kurauchi. Binders. 5,667,324, Cl. 402-46.000.

Aoshima, Shinsuke: *See*—
Negishi, Kenji; Noguchi, Osamu; Aoshima, Shinsuke; and Kamata, Kazuo, 5,669,016, Cl. 396-6.000.

Aoyagi, Takuo: *See*—
Fuse, Masayoshi; and Aoyagi, Takuo, 5,666,952, Cl. 128-633.000.

Aoyama, Hirokazu: *See*—
Omure, Yukio; Aoyama, Hirokazu; Ide, Satoshi; and Matsuda, Takahiro, 5,667,594, Cl. 134-26.000.

Aoyama, Yukiyasu: *See*—
Sato, Masahiro; Aoyama, Yukiyasu; Takagi, Nobuoki; and Kohsaka, Shoji, 5,668,069, Cl. 501-97.200.

APIC Yamada Corporation: *See*—
Yanagisawa, Kunikazu; and Ando, Shin, 5,666,850, Cl. 72-450.000.

Appel, Philip W.: *See*—
Edwards, Dean B.; and Appel, Philip W., 5,667,917, Cl. 429-228.000.

Apple Computer, Inc.: *See*—
Curbow, David; Smith, David Canfield; Piersol, Kurt; and Stern, Mark Ludwig, 5,669,005, Cl. 395-777.000.
Fitch, Jonathan, 5,668,969, Cl. 711-202.000.
Jackson, Richard C.; Riley, Raymond W.; Laituri, David; and Clary, Bob, 5,667,399, Cl. 439-341.000.
Jessen, Jay Alan; Nagarajan, Palanivelu; Flynn, Sean Ludlow; and Schneider, James Alan, 5,669,000, Cl. 395-704.000.

Appleton Papers Inc.: *See*—
Cove, Michael Gerald; and Schulz, Mary Ellen, 5,668,080, Cl. 503-209.000.

Applied Materials, Inc.: *See*—
Sato, Arthur; and Qian, Xue-Yu, 5,667,701, Cl. 216-61.000.
Xu, Zheng; Yao, Tse-Yong; Kieu, Hoa; and Aranovich, Julio, 5,668,055, Cl. 438-637.000.

Applied Power Inc.: *See*—
Mentink, Laurentius A.G., 5,666,809, Cl. 60-484.000.
Steber, George R.; Knutson, Dale A.; and Miller, Douglas P., 5,668,328, Cl. 73-862.230.

Arai, Kenichi: *See*—
Yamamoto, Hiroshi; and Arai, Kenichi, 5,667,148, Cl. 241-3.000.
Arai, Yasuyuki; and Kanda, Tetsuo, to Canon Kabushiki Kaisha. Spread spectrum communication apparatus. 5,668,806, Cl. 370-342.000.
Arakawa, Hiroharu: *See*—
Kojiri, Katsuhisa; Kondo, Hisao; Arakawa, Hiroharu; Ohkubo, Mitsuru; and Suda, Hiroyuki, 5,668,271, Cl. 536-27.100.
Aramaki, Junichi: *See*—
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, 5,668,789, Cl. 369-47.000.
Aranovich, Julio: *See*—
Xu, Zheng; Yao, Tse-Yong; Kieu, Hoa; and Aranovich, Julio, 5,668,055, Cl. 438-637.000.
Arashi, Tomohiro: *See*—
Sato, Akira; Kawano, Naoki; Nomura, Takeshi; Nakano, Yukie; Arashi, Tomohiro; and Yamamatsu, Junko, 5,668,694, Cl. 361-321.400.
Arasmith, Jeffrey Scott: *See*—
Arasmith, Stanley Dale; and Arasmith, Jeffrey Scott, 5,667,150, Cl. 241-18.000.
Arasmith, Stanley Dale; and Arasmith, Jeffrey Scott. Pulverizing, filtering, and transporting apparatus. 5,667,150, Cl. 241-18.000.
Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, to Corning Incorporated. High purity fused silica having high resistance to optical damage. 5,668,067, Cl. 501-54.000.
Arbeiter, Markus; and Neumann, Klaus, to Fichtel & Sachs AG. Latching shifter for a bicycle transmission. 5,666,859, Cl. 74-489.000.
Arch Development Corporation: *See*—
Doi, Kunio; and Sanada, Shigeru, 5,668,888, Cl. 382-132.000.
Arch Mineral Corporation: *See*—
Christopher, David A.; and Offutt, Larry G., 5,667,279, Cl. 299-1.900.
Archer, Michael Anthony, to Lucas Industries public limited company. Method of detecting when a moving compoment attains a final position. 5,668,476, Cl. 324-546.000.
Archimedes Surgical, Inc.: *See*—
Kieturakis, Maciej J., 5,667,479, Cl. 600-207.000.
ARCO Chemical Technology, L.P.: *See*—
Kinkelaar, Mark R.; Critchfield, Frank E.; and Lambach, James L., 5,668,191, Cl. 521-174.000.
Arend, Jürgen; and Steckel, Horst, to PWH Anlagen + Systeme GmbH. Bulk ship unloader. 5,667,350, Cl. 414-141.100.
Arens, Robert P.; Birkholz, Russell D.; Johnson, Dee Lynn; Labuza, Theodore P.; Larson, Curtis L.; and Yarusso, David J., to Minnesota Mining and Manufacturing Company. Time-temperature integrating indicator device. 5,667,303, Cl. 374-102.000.
Argus Machine Co. Ltd.: *See*—
Poffenroth, Ken D., 5,667,027, Cl. 175-325.300.
Arika, Tadashi: *See*—
Nakano, Jun; Fukui, Hideto; Shibata, Tetsuo; Senda, Hisato; Maejima, Tetsuro; Watanuki, Yayoi; and Arika, Tadashi, 5,668,147, Cl. 514-312.000.
Arimoto, Akira: *See*—
Maruo, Seiji; Arimoto, Akira; Maeda, Yoshihito; and Sugita, Tatsuya, 5,668,590, Cl. 347-256.000.
Arita, Masahobu: *See*—
Mizutani, Tomozi; Yokota, Katsuyuki; Arita, Masahobu; and Kojyou, Hisashi, 5,667,813, Cl. 425-71.000.
Ariyoshi, Akihiko, to Mitsubishi Denki Kabushiki Kaisha. Superconductive magnet apparatus. 5,668,515, Cl. 335-216.000.
Armament Systems and Procedures, Inc.: *See*—
Parsons, Kevin L., 5,667,441, Cl. 463-47.700.
Armstrong, Eric J.: *See*—
Hamilton, Robert H.; and Armstrong, Eric J., 5,667,082, Cl. 211-15.000.
Armstrong, Harold James, to John Lindsay & Son (Decorators) Ltd. Submarine weapon-handling and discharge system. 5,666,897, Cl. 114-20.100.
Arndt, Uwe: *See*—
Bellinghausen, Rainer; Helker, Heinrich; Strehlow, Paul; Moretto, Hans-Heinrich; Spreckelmeyer, Bernhard; Lönhoff, Norbert; Batz, Michael; Weber, Rainer; Rinkes, Hans; Block, Hans-Dieter; and Arndt, Uwe, 5,667,759, Cl. 423-61.000.
Arneson, Howard M. Marine outdrive with surface piercing propeller and stabilizing shroud. 5,667,415, Cl. 440-66.000.
Arnett, Jaime Ray, to Lucent Technologies Inc. Wire guide and optical fiber storage spool assembly. 5,668,910, Cl. 385-134.000.
Arnold, David J., Jr.: *See*—
Peters, Michael S.; Holt, Clayton Walter; and Arnold, David J., Jr., 5,668,993, Cl. 395-671.000.
Arturo Salice S.p.A.: *See*—
Salice, Luciano, 5,667,327, Cl. 403-231.000.
Asada, Kazuhiko: *See*—
Kakutani, Yuzuru; Konishi, Hitoshi; Asada, Kazuhiko; and Kashihara, Shinichiro, 5,667,005, Cl. 165-114.000.
Asada, Satoshi: *See*—
Sekiya, Mutuo; Asada, Satoshi; Tochimoto, Takakazu; and Okada, Hidetoshi, 5,666,804, Cl. 60-284.000.
Asahi Glass Company Ltd.: *See*—
Todoriki, Hitoshi; and Terao, Ichiro, 5,667,551, Cl. 65-160.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kanai, Moriyasu; and Hasushita, Sachio, 5,668,674, Cl. 359-835.000.
Sato, Norio, 5,669,021, Cl. 396-72.000.
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Shishido, Takayasu, 5,668,664, Cl. 359-634.000.
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Breen, Patrick J.; and Towner, James W., 5,667,727, Cl. 252-331.000.
Harrell, John W.; Johnson, Michael H.; Turick, Daniel J.; and Watkins, Larry A., 5,667,023, Cl. 175-45.000.
Henderson, William D.; and Lembcke, Jeffrey J., 5,667,016, Cl. 166-387.000.
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Balentine, Richard D.: *See*—
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Palmer, Darrel; and Houghton, William R., 5,667,500, Cl. 604-283.000.

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Grigsby, John M.; Banks, Jeffrey C.; and Grigsby, John M., Jr., 5,667,620, Cl. 156-254.000.

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Claydon, Anthony Peter J.; MacFarlane, Charles D.; Gammack, Richard J.; Jones, Anthony Mark; Robbins, William P.; and Barnes, Mark, 5,668,831, Cl. 375-232.000.

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Baro, José, to Alcatel Mobile Communication France. Antenna for portable radio devices. 5,668,559, Cl. 343-702.000.

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Barth, Terry D. Flotation device and swimming aid. 5,667,416, Cl. 441-130.000.

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Wuestefeld, Renate; and Simenc, Toni, 5,667,848, Cl. 427-389.900.

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Titus, Charles H.; Cohn, Daniel R.; and Surma, Jeffrey E., 5,666,891, Cl. 110-250.000.

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Baumann, Hans; Otto, Karl-Heinz; Hinrichs, Kai-Jurgen; Graczyk, Wolfgang; and Peters, Jorg-Roger. Process for the adjustment of a switchable flow limiting apparatus, and an apparatus operating according to the process. 5,667,504, Cl. 604-891.100.

Baumann, Hans-Uwe; and Mertens, Carsten-Joerg, to Dr. Ing. h.c.F. Porsche AG. Gas pedal arrangement for a motor vehicle. 5,666,860, Cl. 74-513.000.

Baumer S.R.L.: *See—*
Gambetti, Mario, 5,667,055, Cl. 198-419.300.

Baumgart, Dieter: *See—*
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Bayer AG: *See—*
Eichenauer, Herbert; Bohnenpoll, Martin; Schmidt, Adolf; and Alberts, Heinrich, 5,668,218, Cl. 525-265.000.
Langstein, Gerhard; Freitag, Dieter; Lanzendörfer, Michael; and Weiss, Karin, 5,668,232, Cl. 526-189.000.
Oehlen, Wolfgang; Jonas, Friedrich; and Buxbaum, Gunter, 5,667,579, Cl. 106-456.000.

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Bellinghausen, Rainer; Helker, Heinrich; Strehlow, Paul; Moretto, Hans-Heinrich; Spreckelmeyer, Bernhard; Lönhoff, Norbert; Batz, Michael; Weber, Rainer; Rinkes, Hans; Block, Hans-Dieter; and Arndt, Uwe, 5,667,759, Cl. 423-61.000.
Dehne, Heinz-Wilhelm; and Lunkenheimer, Winfried, 5,668,163, Cl. 514-376.000.

Hürner, Ingrid; Danz, Peter; Walter, Reinhard; Maasz, Joachim; and Frank, Georg, 5,667,807, Cl. 424-489.000.
Meier, Helmut-Martin; Westeppe, Uwe; Dhein, Rolf; Freitag, Dieter; and Constant, Dieter, 5,668,204, Cl. 524-267.000.

Bayer Corporation: *See—*
Dormish, Jeffrey F., 5,668,211, Cl. 524-590.000.
Nodelman, Neil H.; Steppan, David D.; Clatty, Jan L. R.; and Meltzer, A. Donald, 5,668,239, Cl. 528-60.000.
Yorek, Kenneth P.; Gindin, Lyuba K.; and Wicks, Douglas A., 5,668,238, Cl. 528-45.000.

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Bloedel-Pawlik, Juergen; Fanese, Wolfgang; Flierl, Rudolf; Santiago, Enrique; Krieger, Ernst; and Grescher, Bernhard, 5,666,805, Cl. 60-299.000.

Bayley, Denise R.: *See—*
Ciccarelli, Roger N.; Bertrand, Jacques C.; Pickering, Thomas R.; and Bayley, Denise R., 5,667,929, Cl. 430-106.000.

Baylor University: *See—*
Pinkus, A. G.; and Hariharan, Rajan, 5,668,224, Cl. 525-444.000.

Baymiller, Judith: *See—*
McCullough, John E.; and Baymiller, Judith, 5,667,989, Cl. 435-69.100.

Baziard-Mouysset, Geneviéve; Younes, Sallouma; Labssita, Youssef; Payard, Marc; Caignard, Daniel-Henri; Renard, Pierre; and Rettori, Marie-Claire, to Adir Et Compagnie. Phenoyalkylpiperazine derivatives. 5,668,138, Cl. 514-255.000.

Beach, Richard J.; Brown, John Seely; and White, John R., to Xerox Corporation. Embedded data controlled digital highlight color copier. 5,668,636, Cl. 358-296.000.

Bealing, Andrew A.; Parekh, Vinod; and Grigg, Kurt, to Lear Corporation. Method of attaching insulation to molded automotive floors. 5,666,691, Cl. 16-4.000.

Bean, Bruce M. Log coping jig. 5,667,000, Cl. 144-136.700.

Bear Archery, Inc.: *See—*
Simonds, Gary L., 5,666,938, Cl. 124-90.000.

Beasom, James D.: *See—*
Davis, Christopher K.; Bajor, George; Beasom, James D.; Crandell, Thomas L.; Jung, Taewon; and Rivoli, Anthony L., 5,668,397, Cl. 257-520.000.

Beatty, Scott M.; Foss, David; and Willis, James L., to Whirlpool Corporation. Fixed hinge-door removal/door seal resolution. 5,666,764, Cl. 49-397.000.

Beaver, Jeffrey L.: *See—*
Villalta, Josue J.; Passemard, Jean Robert; Warthan, Jimmie E.; and Beaver, Jeffrey L., 5,667,481, Cl. 600-224.000.

Beckenbach, Martin J. Protective floor mat for carpet and the like. 5,667,873, Cl. 428-141.000.

Becker, Christine Cynthia, to Siemens Electric Limited. Throttle shaft and plate construction. 5,666,988, Cl. 137-15.000.

Beckman Instruments, Inc.: *See—*
Baum, Samuel; Carstens, Bradley D.; and Glen, Stephan J., 5,667,755, Cl. 422-101.000.

Becton, Dickinson and Company: *See—*
Bronson, Duane David; and Hemperly, John Jacob, 5,667,978, Cl. 435-7.100.
Dilly, Karen Ann; Bustos, Silvia A.; Rostkowski, Christine Ann; and Berger, Dolores M., 5,667,994, Cl. 435-91.200.
Nadeau, James G.; Ciolkowski, Mary Lee; and Vogler, Erwin A., 5,668,265, Cl. 536-23.100.
O'Leary, Robert K.; Stevens, Timothy; and Griffith, Richard L., 5,667,985, Cl. 435-29.000.
Smith, Ward C.; and Carroll, Richard L., 5,667,963, Cl. 435-2.000.
Tingey, Kevin G.; Williamitis, Victor A.; Daugherty, Charles W.; Lambert, Jeanne E.; and Mersch, Steven H., 5,667,840, Cl. 427-8.000.
Van Ness, Jeffrey; Petrie, Charles R.; Tabone, John C.; Vermeulen, Nicolaas M.J.; and Reed, Michael W., 5,667,976, Cl. 435-6.000.

Becton Dickinson France S.A.: *See—*
Bitdinger, Ralf V.; and Grimard, Jean Pierre, 5,667,495, Cl. 604-220.000.

Bedard, Robert L.; King, Lisa M.; and Sherman, John D., to UOP. Process for removing contaminant metal ions from liquid streams using metallo germanate molecular sieves. 5,667,695, Cl. 210-681.000.

Beehive, Inc.: *See—*
Baughman, Dean E.; and Goldston, Thomas C., 5,667,435, Cl. 452-138.000.

Beer, Reginald; Cutts, Stanley John; Kew, Steven Brian; Morris, Neil; and Newmarch, David, to International Business Machines Corporation. Fault tolerant cooling in electrical apparatus. 5,668,532, Cl. 340-506.000.

Beeson and Sons Limited: *See—*
King, Roger Milner; and King, Witney Milner, 5,667,088, Cl. 215-252.000.

Behems, Richard T.: *See—*
Reed, David E.; Behems, Richard T.; and Bliss, William G., 5,668,678, Cl. 360-51.000.

Behm, William F.; Tevis, Mark C.; Walton, Bradley W.; and Litman, Stanley. Game ticket confusion patterns. 5,667,250, Cl. 283-102.000.

Behr GmbH & Co.: *See—*
Burk, Roland, 5,666,791, Cl. 62-474.000.
Hauser, Kurt, 5,667,360, Cl. 416-183.000.

Beimesch, Wayne Edward: *See—*
Chapman, Benjamin Edgar; Rogers, Steven Barrett; France, Paul Amaat; and Beimesch, Wayne Edward, 5,668,099, Cl. 510-444.000.

Belardinelli, Luiz; Olsson, Ray; Baker, Stephen; Scammells, Peter J.; Milner, Peter G.; Pfister, Jürg R.; and Schreiner, George F., to University of Flordia Research Foundation, Inc. A1 adenosine receptor agonists and antagonists. 5,668,139, Cl. 514-263.000.

Belec, Eric A.; and Boggiano, Bryan L., to Pitney Bowes Inc. Envelope turning and aligning apparatus. 5,667,214, Cl. 271-225.000.

Belknap, William Russell; Cleary, Louise Irene; Eldridge, James W.; Fitchett, Larry William; Luning, Stephen G.; Murray, Christopher S.; Olnowich, Howard T.; Saxena, Ashok Raj; Schubert, Karl David; and Stansbury, Buddy Floyd, to International Business Machines Corporation. Media streamer with control node enabling same isochronous streams to appear simultaneously at output ports or different streams to appear simultaneously at output ports. 5,668,948, Cl. 395-200.610.

Bell, Donald R.: *See—*
Chesley, Jason A.; Bell, Donald R.; Rude, Harold E.; Sheffield, William F.; Slama, David F.; and Stephens, Alan N., 5,667,540, Cl. 51-293.000.

Bell, James S.; Khadem, Gita; and Vivio, Joseph A., to Dell USA L.P. System and method for providing uniform solder jiunt height for printed circuit boards and their assemblies. 5,668,699, Cl. 361-753.000.

Bell, Michael R.: *See—*
Young, William O., Jr.; Bell, Michael R.; and Lark, George, 5,667,122, Cl. 226-20.000.

Bell, Peter: *See—*
Missfeldt, Michael; Willsau, Johannes; Büscher, Ralf; Bell, Peter; and Borst, Hans-Ulrich, 5,667,956, Cl. 430-600.000.

Bell, Stanley R.: *See—*
Rickerby, David S.; Bell, Stanley R.; and Wing, Rodney G., 5,667,663, Cl. 205-170.000.

Bell, Wesley K. Equipment for raising sunken vessels. 5,666,898, Cl. 114-54.000.

Bellinghausen, Rainer; Helker, Heinrich; Strehlow, Paul; Moretto, Hans-Heinrich; Spreckelmeyer, Bernhard; Lönhoff, Norbert; Batz, Michael; Weber, Rainer; Rinkes, Hans; Block, Hans-Dieter; and Arndt, Uwe, to Bayer Aktiengesellschaft. Method for manufacturing alkali chromates from chromium ore. 5,667,759, Cl. 423-61.000.

Bellus, Jacques; Pichard, Claude; Jolly, Pierre; Forest, Daniel; and Robat, Daniel, to Ascometal. Method of fabrication of a piece of structural steel, and the steel fabricated thereby. 5,667,605, Cl. 148-644.000.

Beloit Technologies, Inc.: *See—*
Luthi, Oscar, 5,667,642, Cl. 162-358.100.

Benasra, Michel. Frosted terry cloth and method for producing same. 5,667,530, Cl. 8-102.000.

Bendert, Edward Joseph; Bennett, Robert Bradley; Berman, Eve Suzanne; Farrell, Susan Marie; Johnson, Eugene; Nugent, Robert Michael; and Vendryes, Mary Ellen, to International Business Machines Corporation. Heterogeneous filing system with common API and reconciled file management rules. 5,668,958, Cl. 395-308.000.

Benge, W. Dennis, to Procter & Gamble Company, The. Personal cleansing implement using knitted tubing and method of construction. 5,667,612, Cl. 156-148.000.

Benian Filter Company, Inc.: *See—*
Benian, Robert, 5,667,683, Cl. 210-409.000.

Benian, Robert, to Benian Filter Company, Inc. Backwashable liquid filter system using rotating spray. 5,667,683, Cl. 210-409.000.

Benjamin, Karen Elizabeth; McClinton, Jeffrey Byron; Whiteman, Robert Neil, Jr.; Myers, Earl Chester, Jr.; and Consoli, John Joseph, to Whitaker Corporation, The. Package for an infrared communications adapter. 5,668,654, Cl. 359-152.000.

Ben-Meir, Amos: *See—*
Alpert, Donald B.; Avnon, Dror; Ben-Meir, Amos; and Talmudi, Ran, 5,669,011, Cl. 395-800.230.

Bennett, Michael J.; and Proulx, Robert W., to Hewlett-Packard Co. System and method for scan control of a programmable fuse circuit in an integrated circuit. 5,668,818, Cl. 371-22.310.

Bennett, Robert Bradley: *See—*
Bendert, Edward Joseph; Bennett, Robert Bradley; Berman, Eve Suzanne; Farrell, Susan Marie; Johnson, Eugene; Nugent, Robert Michael; and Vendryes, Mary Ellen, 5,668,958, Cl. 395-308.000.

Bennett, Russell A.: *See—*
Lareau, Andre G.; Willey, Gilbert W.; Bennett, Russell A.; and Beran, Stephen R., 5,668,593, Cl. 348-146.000.

Benoy, Andrew: *See—*
Fyson, John Richard; Rider, Christopher Barrie; and Benoy, Andrew, 5,669,029, Cl. 396-566.000.

Benz, Rolf: *See—*
De Jager, Godert; Lehnert, Frank; and Benz, Rolf, 5,666,998, Cl. 139-194.000.

Beran, Stephen R.: *See—*
Lareau, Andre G.; Willey, Gilbert W.; Bennett, Russell A.; and Beran, Stephen R., 5,668,593, Cl. 348-146.000.

Berard, Mark T.: *See—*
Effler, Lawrence J., Jr.; Wright, George D.; and Berard, Mark T., 5,668,220, Cl. 525-333.600.

Beretta, Mario, to Tenax S.p.A. Predrawn net particularly for geotechnical use. 5,667,869, Cl. 428-131.000.

Berg, Charles John, Jr.: *See—*
Young, Mark Douglas; Erspamer, John Paul; Forry, Mark Edwin; and Berg, Charles John, Jr., 5,666,787, Cl. 53-438.000.

Berg, Richard A., to Collagen Corporation. Human recombinant collagen in the milk of transgenic animals. 5,667,839, Cl. 426-657.000.

Berg, Todd A.: *See—*
Welch, Jeffrey M.; Berg, Todd A.; Bachinski, Thomas J.; and Klitz, Kevin M., 5,667,499, Cl. 604-282.000.

Berger, Christina S.: *See—*
Evans, Ronald M.; Heyman, Richard A.; Berger, Christina S.; and Stein, Robert B., 5,668,175, Cl. 514-569.000.

Berger, Curtis W.: *See—*
Johnson, Steven B.; Berger, Curtis W.; Garrido, Miguel A.; and Hoop, William G., 5,667,140, Cl. 239-265.330.

Berger, Dolores M.: *See—*
Dilly, Karen Ann; Bustos, Silvia A.; Rostkowski, Christine Ann; and Berger, Dolores M., 5,667,994, Cl. 435-91.200.

Berger-Paskin, Tirtsah: *See—*
Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; Sterling, Jeffrey; Lerner, David; Berger-Paskin, Tirtsah; and Yellin, Haim, 5,668,181, Cl. 514-657.000.

Berka, Randy Michael; Yoder, Wendy; Takagi, Shinobu; and Boominathan, Karuppan Chettier, to Novo Nordisk Biotech, Inc. Aspergillus expression system. 5,667,990, Cl. 435-69.100.

Berlin, Roger: *See—*
Simon, Thomas; and Berlin, Roger, 5,667,794, Cl. 424-401.000.

Berman, Eve Suzanne: *See—*
Bendett, Edward Joseph; Bennett, Robert Bradley; Berman, Eve Suzanne; Farrell, Susan Marie; Johnson, Eugene; Nugent, Robert Michael; and Vendryes, Mary Ellen, 5,668,958, Cl. 395-308.000.

Bernard, Bruno; Lenoir, Marie-Cécile; Shroot, Braham; Darmon, Yves-Michel; and Asselineau, Daniel, to Centre International De Recherches Dermatologigues Galderma (Cird Galderma). Skin substitute. 5,667,961, Cl. 435-1.000.

Bernard, Claude: *See—*
Steinman, Lawrence; Oksenberg, Jorge; and Bernard, Claude, 5,667,967, Cl. 435-6.000.

Bernardon, Jean-Michel; and Pilgrim, William Robert, to Centre International de Recherches Dermatologiques Galderma (Cird Galderma). Di (aromatic) compounds and their use in human and veterinary medicine and in cosmetics. 5,668,156, Cl. 514-348.000.

Bernasconi, Antonio; Dal Lago, Antonella; and Sirtori, Maria Pia, to Siemens Telecommunicazioni S.p.A. IF signal combiner for minimizing the BER in a space or angle diversity digital radio receiver. 5,668,839, Cl. 375-347.000.

Bernhardt, Helmut; and Larsonneur, René, to Balzers-Pfeiffer, GmbH. Magnetically supported friction pump. 5,667,363, Cl. 417-44.100.

Bernstein, Howard: *See—*
Johnson, OluFunmi Lily; Ganmukhi, Medha M.; Bernstein, Howard; Auer, Henry; and Khan, M. Amin, 5,667,808, Cl. 424-501.000.

Berrens, Lubertus, to Laboratorios Leti S.A. Use of specific properties of allergens, allergens from animal or botanical sources and methods for their isolation. 5,667,979, Cl. 435-7.400.

Berry, Christopher, to Synthelabo. Method of maintaining remission from venous ulcers with sulphasalazine and its metabolite. 5,668,123, Cl. 514-166.000.

Berry, Robert Francis, to International Business Machines Corporation. Method and system for providing performance diagnosis of a computer system. 5,668,944, Cl. 395-184.010.

Berthault, Frédéric: *See—*
Rouffet, Denis; Berthault, Frédéric; Mazzella, Michel; and Tanguy, Yannick, 5,668,556, Cl. 342-354.000.

Bertoldi, Massimo; and Kirk, Mark P., to Minnesota Mining and Manufacturing Company. Silver halide photographic material comprising mercaptotetrazole compound(s). 5,667,953, Cl. 430-567.000.

Bertrand, Jacques C.: *See—*
Ciccarelli, Roger N.; Bertrand, Jacques C.; Pickering, Thomas R.; and Bayley, Denise R., 5,667,929, Cl. 430-106.000.

Besemer, Arie Cornelis: *See—*
Doddema, Harmannus Johannes; Besemer, Arie Cornelis; and Harkes, Marinus Pieter, 5,667,690, Cl. 210-631.000.

Bestler, Caitlin B.; Daily, Mack S.; and Yang, Shu-Yuan V., to Zenith Electronics Corporation. System for cable communication wherein interpretively coded data transmitted from headend selectively initiate loop free instruction sets stored in receiver-decoder to affect the behavior thereof. 5,668,946, Cl. 395-200.500.

Bettcher Industries, Inc.: *See—*
Airhart, Forrest A.; and Whited, Jeffrey Alan, 5,667,427, Cl. 451-45.000.

Bettinsoli, Emidio, to Garden Light, S.R.L. Mounting structure for lamps, street lamps and similar devices. 5,667,188, Cl. 248-558.000.

Betty, Paul L. Patio/floor assembly. 5,666,772, Cl. 52-177.000.

BetzDearborn Inc.: *See—*
Hart, Paul R., 5,667,669, Cl. 208-131.000.
Polizzotti, David M.; Liao, Wen P.; and Roe, Donald C., 5,668,219, Cl. 525-294.000.
Rodzewich, Edward A.; and Gunagan, Barry P., 5,668,096, Cl. 510-265.000.

Beveridge, Christopher J.; and Jones, Andrew K., to Asea Brown Boveri Inc. Smelt spout for a recovery furance. 5,667,201, Cl. 266-196.000.

Bezinge, Alex; Moser, Christophe; Thomann, Pierre; and Jornod, Alain, to Tesa Brown & Sharpe SA. Electro-optical device comprising a controlled laser diode. 5,668,826, Cl. 372-32.000.

BFI Entsorgungstechnologie GmbH: *See—*
Wintrich, Franz; and Wintrich, Hartmut, 5,668,367, Cl. 250-227.200.

Bhat, Kabekode V., to NCR Corporation. Method and apparatus for capacity planning for multiprocessor computer systems in client/server environments. 5,668,995, Cl. 395-674.000.

Bhatia, Pramila: *See—*
Brooks, Clint D. W.; Bhatia, Pramila; and Kolasa, Teodozyj, 5,668,146, Cl. 514-311.000.

Biancheria, Donald L., to Caterpillar Inc. Oil processor circuit. 5,666,807, Cl. 60-329.000.

Bieber, Hermann, to Josef Fröhling GmbH. Floor-type cluster mill, preferably with direct hydraulic adjustment. 5,666,844, Cl. 72-238.000.

Bieck, Torsten; Haage, Manfred; Erath, Herbert; and Plocher, Bernd, to fischerwerke,Artur Fisch GmbH & CO KG. Device for the variable division of a motor vehicle boot and for securing the loaded cargo. 5,667,120, Cl. 224-542.000.

Bieffebi S.p.A.: *See—*
Zanoli, Alberto, 5,666,881, Cl. 101-477.000.

Biegger, Dennis: *See—*
Rodriguez, Pedro; Biegger, Dennis; and Lenkiewicz, Andrew, 5,667,909, Cl. 429-127.000.

Bierbaum, Gabriele: *See—*
Koller, Klaus-Peter; Sahl, Hans Georg; and Bierbaum, Gabriele, 5,667,991, Cl. 435-69.100.

Bierer, Donald E.: *See—*
Truong, Thien V.; Bierer, Donald E.; Dener, Jeffrey M.; Hector, Richard; Tempesta, Michael S.; Loev, Bernard; Yang, Wu; and Koreeda, Masato, 5,668,168, Cl. 514-436.000.

Bieselin, David N.; Eaton, Glenn A.; McFadden, Joseph A.; Taylor, Stuart A.; Tracy, Edward D.; and Wang, Emil C. W., to Latitude Communications. Method and apparatus for recording and retrieval of audio conferences. 5,668,863, Cl. 379-202.000.

Bigge, Christopher Franklin; and Li, James Jia-He, to Warner-Lambert Company. Glutamate (NMDA) receptor antagonists. 5,668,121, Cl. 514-114.000.

Bilodeau, Steven J.; and Yonescu, William E., to Robotic Vision Systems, Inc. Dual-bed scanner with reduced transport time. 5,668,630, Cl. 356-237.000.

Biogen, Inc.: *See—*
Androphy, Elliot J.; and Barsoum, James G., 5,667,965, Cl. 435-5.000.

Biomechanics Inc.: *See—*
Fredberg, Jeffrey; Glass, Gary; Lehr, John; and Louis, Bruno, 5,666,960, Cl. 128-716.000.

Birkenmeyer, Larry; and Mushahwar, Isa K., to Abbott Laboratories. Method for detecting nucleic acid sequences using competitive amplification. 5,667,974, Cl. 435-6.000.

Birkholz, Russell D.: *See—*
Arens, Robert P.; Birkholz, Russell D.; Johnson, Dee Lynn; Labuza, Theodore P.; Larson, Curtis L.; and Yarusso, David J., 5,667,303, Cl. 374-102.000.

Birkmayer, Joerg G. D., to Birkmayer Pharmaceuticals. NADH and NADPH pharmaceuticals for treating hypertension. 5,668,114, Cl. 514-52.000.

Birkmayer Pharmaceuticals: *See—*
Birkmayer, Joerg G. D., 5,668,114, Cl. 514-52.000.

Birsel, Ayse; Hiraga, Noriko; Tani, Junichi; Nagato, Kenichi; Watanabe, Koichi; and Shinohara, Kuniaki, to Toto Ltd. Toilet attachment with easily detachable seat. 5,666,672, Cl. 4-236.000.

Bischof, Gerald: *See—*
Zirk, Wolfgang; and Bischof, Gerald, 5,667,234, Cl. 280-276.000.

Bitdinger, Ralf V.; and Grimard, Jean Pierre, to Becton Dickinson France S.A. Backstop device for a syringe. 5,667,495, Cl. 604-220.000.

BJ Services Company: *See—*
Harestad, Kristian; and Herigstad, Thor-Peter, 5,667,015, Cl. 166-383.000.

Black & Decker Inc.: *See—*
Kosten, Richard B.; and St. John, Robert A., 5,666,735, Cl. 30-410.000.

Black, Donald Lee: *See—*
Irving, Mark Edward; and Black, Donald Lee, 5,667,954, Cl. 430-567.000.

Black, Sheldon L.; Bailey, John H.; and Fischer, Dan E., to Ultradent Products, Inc. Apparatus, system, and method for readapting a dental appliance. 5,667,386, Cl. 433-213.000.

Blackburn, Brian K., to TRW Vehicle Safety Systems Inc. Method and apparatus for sensing a vehicle crash using crash energy. 5,668,723, Cl. 701-45.000.

Blackman, Sanford. Adjustable chair. 5,667,274, Cl. 297-338.000.

Blagburn, Byron L.: *See—*
Tidwell, Richard R.; Hall, James E.; Boykin, David W.; Dykstra, Christine C.; Perfect, John; and Blagburn, Byron L., 5,668,167, Cl. 514-411.000.

Blake, Jeffrey T.: *See—*
Weber, Richard G.; Blake, Jeffrey T.; O'Connor, William E.; and Smart, Charles F., 5,666,710, Cl. 29-243.523.

Blanc, Emmanuel: *See—*
Chapelon, Jean-Yves; Cathignol, Dominique; Gelet, Albert; and Blanc, Emmanuel, 5,666,954, Cl. 128-660.030.

Blanchard, Richard A., to SGS-Thomson Microelectronics, Inc. Method of making a FET with dielectrically isolated sources and drains. 5,668,025, Cl. 438-207.000.

Blanck, Hervé: *See—*
Delage, Sylvain; Poisson, Marie-Antoinette; Brylinski, Christian; and Blanck, Hervé, 5,668,388, Cl. 257-197.000.

Bleeker, Erwin Paulus Petrus: *See—*

Baardman, Frank; Bradford, Arleen Marie; Jubb, Jayne; Scheerman, Pieter; Wijngaarden, Rudolf Jacobus; Bleeker, Erwin Paulus Petrus; and Van Broekhoven, Johannes Adrianus Maria, 5,668,249, Cl. 528-392.000.

Bliss, William G.: *See—*
Reed, David E.; Behems, Richard T.; and Bliss, William G., 5,668,678, Cl. 360-51.000.

Block, Hans-Dieter: *See—*
Bellinghausen, Rainer; Helker, Heinrich; Strehlow, Paul; Moretto, Hans-Heinrich; Spreckelmeyer, Bernhard; Lönhoff, Norbert; Batz, Michael; Weber, Rainer; Rinkes, Hans; Block, Hans-Dieter; and Arndt, Uwe, 5,667,759, Cl. 423-61.000.

Block, Thomas R.: *See—*
Streit, Dwight C.; and Block, Thomas R., 5,668,387, Cl. 257-192.000.

Bloedel-Pawlik, Juergen; Fanese, Wolfgang; Flierl, Rudolf; Santiago, Enrique; Krieger, Ernst; and Grescher, Bernhard, to Bayerische Motoren Werke Aktiengesellschaft. Emission control system for internal-combustion engines. 5,666,805, Cl. 60-299.000.

Blood Center Research Foundation, Inc., The: *See—*
Newman, Peter J.; Gumina, Richard J.; and Kirshbaum, Nancy, 5,668,012, Cl. 435-320.100.

Blount, Inc.: *See—*
Burrows, James O.; Jensen, Randall D.; and Huntington, Kent L., 5,666,871, Cl. 83-834.000.

Blum, Charles; and Hutchison, Alan, to Neurogen Corporation. Certain aryl substituted pyrrolopyrazines; a new class of GABA brain receptor ligands. 5,668,283, Cl. 544-345.000.

Blumenstock, Andreas: *See—*
Denz, Helmut; Wild, Ernst; Blumenstock, Andreas; and Mallebrein, Georg, 5,666,925, Cl. 123-520.000.

Board of Regents, The University of Texas Sys.: *See—*
Lipsky, Peter E.; and Thiele, Dwain L., 5,668,112, Cl. 514-19.000.

Board of Regents, The University of Texas System: *See—*
Cuthbert, Jennifer A.; and Lipsky, Peter E., 5,668,171, Cl. 514-460.000.

Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, The: *See—*
Cincotta, Anthony H.; Meier, Albert H.; and Wilson, John M., 5,668,155, Cl. 514-340.000.

Bobrov, Vladimer A.; Kan, Nickolay A.; Yanchevskaya, Tamara G.; McGrath, Donald E.; and Skotnikov, Andrey V., to Tyler Limited Partnership. Method of fertilizer application and field treatment. 5,668,719, Cl. 364-420.000.

BOC Group, Inc., The: *See—*
Satchell, Donald Prentice, Jr.; Natarajan, Venkat; and Clarke, Richard Henry, 5,667,643, Cl. 202-154.000.

BOC Group plc, The: *See—*
Clare, Stephen Roger; and Hartley, Robert, 5,666,822, Cl. 62-646.000.

Bocklisch, Siegfried; Fielder, Wolfgang; Treiber, Helmut; Leuschner, Rainer; Reichel, Wilfried; and Wilde, Michael, to Agfa-Gevaert Aktiengesellschaft. Apparatus for and method for handling film in a photographic printer. 5,668,625, Cl. 355-73.000.

Bode, Suzanne L.: *See—*
Casey, James M.; Bode, Suzanne L.; Zeck, Billy J.; Yamaguchi, Julie; Frail, Donald E.; Desai, Suresh M.; and Devare, Sushil G., 5,667,992, Cl. 435-69.300.

Boecker, Monika: *See—*
Schmid, Karl; Syldath, Andreas; Kischkel, Ditmar; Krohnen, Thomas; Neuss, Michael; Pawelczyk, Hubert; Boecker, Monika; and Welling, Hermann-Josef, 5,668,100, Cl. 510-446.000.

Boehringer Ingelheim Pharmaceuticals, Inc.: *See—*
Grozinger, Karl G.; Hargrave, Karl D.; and Adams, Julian, 5,668,287, Cl. 546-250.000.

Boeing Company, The: *See—*
Tran, Chuong B.; and White, Stephen, 5,667,166, Cl. 244-76.00C.

Boerstler, David William; and Dreps, Daniel Mark, to International Business Machines Corporation. Noise generator for evaluating mixed signal integrated circuits. 5,668,507, Cl. 331-78.000.

Boff, Jane Sarah; Clark, Bernard Arthur; Stanley, Paul Louis; Watts, Christina Mary; and Singer, Stephen Paul, to Eastman Kodak Company. Photographic material containing magenta dye forming coupler. 5,667,946, Cl. 430-386.000.

Boggiano, Bryan L.: *See—*
Belec, Eric A.; and Boggiano, Bryan L., 5,667,214, Cl. 271-225.000.

Boggs, Roger A.; Grasshoff, Jurgen M.; Mischke, Mark R.; Puttick, Anthony J.; Telfer, Stephen J.; Waller, David P.; and Waterman, Kenneth C., to Polaroid Corporation. Process for thermochemical generation of acid and for thermal imaging, and imaging medium for use therein. 5,667,943, Cl. 430-343.000.

Bohnenpoll, Martin: *See—*
Eichenauer, Herbert; Bohnenpoll, Martin; Schmidt, Adolf; and Alberts, Heinrich, 5,668,218, Cl. 525-265.000.

Boitnott, Charles A.; Caughran, James W.; and Egbert, Steve, to Gasonics International. Process chamber sleeve with ring seals for isolating individual process modules in a common cluster. 5,667,592, Cl. 118-719.000.

Boldt, Brent R., to Dana Corporation. Ultraviolet radiation cured gasket coating. 5,667,227, Cl. 277-227.000.

Bolger, Justin C. Area bonding conductive adhesive preforms. 5,667,884, Cl. 428-323.000.

Bollé , Maurice, to Etablissements Bolle. Adapter for protective mask for a helmet. 5,666,663, Cl. 2-10.000.

Bollé , Robert, to Etablissements Bolle. Device for locking an interchangeable, length-adjustable spectacle side-piece. 5,668,619, Cl. 351-118.000.

Bollier, Walter; and Keller, Arnold, to Luwa AG. Forced air cleaning system for textile machines. 5,666,996, Cl. 139-1.00C.

Bologna, William J.; and Levine, Howard L., to Columbia Laboratories, Inc. Use and composition of an anti-sexually transmitted diseases formulation. 5,667,492, Cl. 604-57.000.

Boman, Wendy: *See—*
Olsen, Steven; Hönemann, Rudolf; and Boman, Wendy, 5,667,042, Cl. 192-3.290.

Bomont, Catherine: *See—*
Brunengraber, Henri; Dugas, Hermann; Quinze, Khadija; and Bomont, Catherine, 5,667,962, Cl. 435-1.200.

Bonachera, Richard: *See—*
Pineau, Jean Claude; and Bonachera, Richard, 5,667,425, Cl. 451-27.000.

Bonaddio, Vincenzo A.; and Contreras, Jose DeJesus M. Mattress pad of adjustable size. 5,666,682, Cl. 5-736.000.

Bonaquist, Dante Patrick, to Praxair Technology, Inc. Cryogenic rectification system with staged feed air condensation. 5,666,824, Cl. 62-646.000.

Bonaquist, Dante Patrick: *See—*
Howard, Henry Edward; Bonaquist, Dante Patrick; and Just, Paul Louis, 5,666,828, Cl. 62-644.000.

Bonfilio, Ciriaco: *See—*
Rohrle, Dieter; and Bonfilio, Ciriaco, 5,667,053, Cl. 192-214.100.

Bonnefont, Marc; Padwo, Zalman; Peyron, Jean-Baptiste; and Sabatier, Paul, to CLECIM. Process and installation for planishing a thin metal strip. 5,666,836, Cl. 72-7.200.

Bonnet, Henri, to United Parcel Service of America, Inc. Powered conveyor belt turn. 5,667,058, Cl. 198-831.000.

Bonutti, Peter M., to General Surgical Innovations, Inc. Method of performing balloon dissection. 5,667,520, Cl. 606-190.000.

Booij, Martin: *See—*
Hendrix, Jan A. J.; Booij, Martin; and Frentzen, Yvonne H., 5,668,277, Cl. 540-540.000.

Boominathan, Karuppan Chettier: *See—*
Berka, Randy Michael; Yoder, Wendy; Takagi, Shinobu; and Boominathan, Karuppan Chettier, 5,667,990, Cl. 435-69.100.

Booth, Thomas C., to Chrysler Corporation. Snap-in attachment clip for plastic panel. 5,667,271, Cl. 296-192.000.

Bootsma, Nicholas: *See—*
Perham, George James; Aslett, Anthony John; and Bootsma, Nicholas, 5,667,447, Cl. 473-212.000.

Borden, Timothy W.; and Yates, Daniel D. Reusable tear through banner. 5,667,855, Cl. 428-8.000.

Borello, Gianpiero: *See—*
Ferrera, Massimo; Gianotti, Pietro; Mauro, Marco; Gozzelino, Riccardo; Audisio, Filippo; and Borello, Gianpiero, 5,666,926, Cl. 123-525.000.

Borg, Lars Uno; and Lindroth, Lars Magnus, to Telefonaktiebolaget LM Ericsson. Dynamic control of transmitting power at a transmitter and attenuation at a receiver. 5,669,066, Cl. 455-69.000.

Borgund, Per: *See—*
Thormodsen, Tom; and Borgund, Per, 5,666,759, Cl. 43-42.740.

Boring, Douglas J., to Conair Group, Inc., The. Fitting for conveying granular material. 5,667,546, Cl. 55-503.000.

Bornstein, Avraham. Ballistic panel. 5,668,344, Cl. 89-36.020.

Borrelli, Nicholas F.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, 5,668,067, Cl. 501-54.000.

Borri, Luigi: *See—*
Richiardone, Valter; Rossetti, Furio; Zampolli, Marco; Tosco, Paolo; D'Oria, Francesco; Vitali, Mario; Buscotti, Aurelio; Mostarda, Franco; and Borri, Luigi, 5,667,537, Cl. 29-623.200.

Borst, Hans-Ulrich: *See—*
Missfeldt, Michael; Willsau, Johannes; Büscher, Ralf; Bell, Peter; and Borst, Hans-Ulrich, 5,667,956, Cl. 430-600.000.

Borthwick, Ronald D.: *See—*
Clair, Roy Barry, Jr.; and Borthwick, Ronald D., 5,668,884, Cl. 381-82.000.

Borzatta, Valerio: *See—*
Suhadolnik, Joseph; Ravichandran, Ramanathan; Borzatta, Valerio; and Vignali, Graziano, 5,668,198, Cl. 524-99.000.
Suhadolnik, Joseph; Ravichandran, Ramanathan; Borzatta, Valerio; and Vignali, Graziano, 5,668,199, Cl. 524-99.000.

Bosch, Warren E.: *See—*
Menow, Steven M.; Jaffe, Jonathan Adam; Sannito, Patrick J.; and Bosch, Warren E., 5,667,420, Cl. 446-433.000.

Bossard, Bernard; and Treacy, David R., to Cellularvision Technology & Telecommunications, L.P. LMDS transmitter array with polarization-diversity sub-cells. 5,668,610, Cl. 348-723.000.

Bostian, Chris: *See—*
Price, Ellie E.; Hardin, William C., Jr.; and Bostian, Chris, 5,666,704, Cl. 26-74.000.

Boston, Timothy A.: *See—*
Gottshall, Paul C.; Boston, Timothy A.; and Ehrenhardt, Kevin D., 5,668,536, Cl. 340-620.000.

Bottinger, Stefan, to Claas oHG Beschrankt haftende offene Handelsgesellschaft. Combine operation with operating data register. 5,666,793, Cl. 56-10.20R.

Bottom Line Industries, Inc.: *See—*
Wittliff, James R., 5,667,024, Cl. 175-72.000.

Boucek, Robert V. Tool for actuating a pair of fastener ejecting guns. 5,667,126, Cl. 227-109.000.

Bouffard, Frances A.: *See—*
Balkovec, James M.; Bouffard, Frances A.; and Hammond, Milton L., 5,668,105, Cl. 514-11.000.

Bourboulon, Marie-Alix: *See—*
Junino, Alex; Lagrange, Alain; N'Guyen, Quang Lan; and Bourboulon, Marie-Alix, 5,667,792, Cl. 424-401.000.

Bourgeois, Raymond A. Crop sprayer guidance system. 5,666,893, Cl. 111-200.000.

Bourgeois, Ronnie J., Jr.; and Oliver, Harry A., Jr. The E-Z draw cuff. 5,667,524, Cl. 606-202.000.

Bourque, Richard A. Carrying apparatus for a portable computer. 5,667,114, Cl. 224-270.000.

Böwe Systec AG: *See—*
Gamperling, Rudolf, 5,667,355, Cl. 414-797.700.

Bowers, Lee N.: *See—*
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Bowling, Forrest Wendell: *See—*
Dominguez, Luis Mayan; Bowling, Forrest Wendell; Coleman, William Monroe, III; and Gordon, Bert Miller, 5,668,735, Cl. 364-497.000.

Boyce, James Edward, to Dresser Industries, Inc. Method of hard facing a substrate, and weld rod used in hard facing a substrate. 5,667,903, Cl. 428-558.000.

Boyce, Jill M.: *See—*
Augenbraun, Joseph E.; Boyce, Jill M.; and Pearlstein, Larry A., 5,668,918, Cl. 386-111.000.

Boyce, Joseph Santin; Freitas, Glenn Alexander; and Magee, Constance Lee, to Foster-Miller, Inc. Reinforced joint for composite structures and method of joining composite parts. 5,667,859, Cl. 428-59.000.

Boyce, Thomas P., to Stimsonite Corporation. Base for roadway marker. 5,667,334, Cl. 404-9.000.

Boyd, John H., Jr.; and Saban, Daniel M., to General Electric Company. Dynamoelectric machine and method for manufacturing same. 5,668,429, Cl. 310-254.000.

Boyd, John Wesley; Jorgensen, John Balslev; and Maxwell, Victor Freeman, to Steelhead Reclamation Ltd. Process and plug for well abandonment. 5,667,010, Cl. 166-292.000.

Boyd, Trace L.; and Yeoman, Martin F., to Lam Research Corporation. Vacuum chamber gate valve and method for making same. 5,667,197, Cl. 251-193.000.

Boykin, David W.: *See—*
Dykstra, Christine C.; Tidwell, Richard R.; Boykin, David W.; and Wilson, W. David, 5,667,975, Cl. 435-6.000.
Tidwell, Richard R.; Hall, James E.; and Boykin, David W., 5,668,166, Cl. 514-411.000.
Tidwell, Richard R.; Hall, James E.; Boykin, David W.; Dykstra, Christine C.; Perfect, John; and Blagburn, Byron L., 5,668,167, Cl. 514-411.000.

Bozenmayer, Kurt; and Sciandra, Peter, to Graver Chemical Company. Filter having a filter element quick-disconnect mount. 5,667,679, Cl. 210-232.000.

BP Chemicals Limited: *See—*
Chinh, Jean-Claude; Filippelli, Michel C. H.; Newton, David; and Power, Michael Bernard, 5,668,228, Cl. 526-67.000.

Brackmann, Horst: *See—*
Kleefeldt, Frank; Bartel, Peter; Brackmann, Horst; and Menke, Theodor, 5,667,263, Cl. 292-336.300.

Bradbury, Robert Hugh: *See—*
Phillips, Paul John; Ballard, Peter Grahame; Bradbury, Robert Hugh; and James, Roger, 5,668,137, Cl. 514-255.000.

Bradford, Arleen Marie: *See—*
Baardman, Frank; Bradford, Arleen Marie; Jubb, Jayne; Scheerman, Pieter; Wijngaarden, Rudolf Jacobus; Bleeker, Erwin Paulus Petrus; and Van Broekhoven, Johannes Adrianus Maria, 5,668,249, Cl. 528-392.000.

Bradshaw, John Richard: *See—*
Fahmi, Maher Nihad; and Bradshaw, John Richard, 5,668,797, Cl. 370-229.000.

Brady, J. Lee, to ADRA Corporation. Versatile, wind-resistant sign stand. 5,667,175, Cl. 248-166.000.

Brainerd, Steve K.; and Rolfson, J. Brett, to Micron Technology, Inc. Method of lithography using reticle pattern blinders. 5,667,918, Cl. 430-5.000.

Bramblett, Ronald F.; and Walker, Clinton W., III. Fishing line lock. 5,666,760, Cl. 43-44.830.

Bramnik, Arkady, to Intel Corporation. Method and apparatus for increasing memory read access speed using double-sensing. 5,668,766, Cl. 365-207.000.

Brands, Stefanus Alfonsus. Secure cryptographic methods for electronic transfer of information. 5,668,878, Cl. 380-30.000.

Branson, Brian David: *See—*
Liu, Peichun Peter; and Branson, Brian David, 5,668,972, Cl. 711-136.000.

Branson, Greg W.: *See—*
Meyer, Eric R.; Branson, Greg W.; Schuman, Richard J.; and Ulrich, David J., 5,666,681, Cl. 5-727.000.

Braun Aktiengesellschaft: *See—*
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Braun, Peter: *See—*
Schaper, Wolfgang; Salbeck, Gerhard; Ehrhardt, Heinz; Braun, Peter; Knauf, Werner; Sachse, Burghard; Waltersdorfer, Anna; Kern, Manfred; and Lümmen, Peter, 5,668,140, Cl. 514-269.000.

Braun, Thomas; and Gwinner, Werner, to OPTIMA-Maschinenfabrik Dr. Bühler GmbH & Co. Single valve dispensing balance. 5,667,108, Cl. 222-181.100.

Braunbach, Hans Peter: *See—*
Unsin, Joachim; Braunbach, Hans Peter; and Tax, Manfred, 5,667,581, Cl. 106-724.000.

Braunshteyn, Mikhail S.: *See—*
Adams, John M.; Braunshteyn, Mikhail S.; Counts, Mary Ellen; Dale, Gerald M.; Harris, Charles W.; Jones, Donald H.; Keen, Billy J., Jr.; Sanderson, Wesley G.; Smith, Barry S.; Stevenson, Brett W.; and Wrenn, Susan E., 5,666,976, Cl. 131-94.000.

Bravar, Dario V.: *See—*
Gaven, Thomas J.; and Bravar, Dario V., 5,667,850, Cl. 427-510.000.

Brayton, Scott Vance; and Miller, Donald Gene, to Hach Company. Device for chloride ion removal prior to chemical oxygen demand analysis. 5,667,754, Cl. 422-61.000.

Brechko, Michael Richard, to Azon Corp. Variable platen pressure control for a thermal transfer printer. 5,668,585, Cl. 347-220.000.

Bredero Price Company: *See—*
Hanson, George, 5,667,623, Cl. 156-367.000.

Breen, Dennis J.; and Wilson, Lawrence, to Transhumance. Process of packaging fresh meat. 5,667,827, Cl. 426-129.000.

Breen, Patrick J.; and Towner, James W., to Baker Hughes Incorporated. Polymer compositions for demulsifying crude oil. 5,667,727, Cl. 252-331.000.

Brehmer, Geoffrey E. Strobed comparator for a large common mode range. 5,668,486, Cl. 327-66.000.

Brennan, Paul Michael: *See—*
Florence, Lloyd Malcolm; and Brennan, Paul Michael, 5,668,853, Cl. 379-67.000.

Breslow, Ronald; Marks, Paul A.; and Rifkind, Richard A., to Trustees of Columbia University in the City of New York, The; and Sloan-Kettering Institute for Cancer Research. Potent inducers of terminal differentiation and method of use thereof. 5,668,179, Cl. 514-629.000.

Brew, Joseph Edward; and Keung, Jay Kin, to Mobil Oil Corporation. High moisture barrier polypropylene-based film. 5,667,902, Cl. 428-518.000.

Bridgestone Corporation: *See—*
Tabata, Keiichiro; Nabeshima, Yoichi; Fujita, Taikyu; Yokoyama, Kazufumi; and Hashimoto, Torao, 5,667,741, Cl. 264-54.000.

Briggs, Charles Whitford: *See—*
Moss, William Gregory; Roberts, Kenneth Dale; and Briggs, Charles Whitford, 5,667,170, Cl. 244-135.00A.

Bright, Gene Michael, to Pfizer Inc. Amino-substituted pyrazoles having CRF antagonistic activity. 5,668,145, Cl. 514-307.000.

Bril, Vlad: *See—*
Pai, Prakash; and Bril, Vlad, 5,668,571, Cl. 345-113.000.

Briley Manufacturing Co.: *See—*
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Brink, Gerhard: *See—*
Kinkel, Johannes; Brink, Gerhard; Ernet, Walter; Schulze, Joachim; and Wierer, Konrad, 5,668,216, Cl. 525-170.000.

Brinker, Anita Marie: *See—*
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Bristol-Myers Squibb Company: *See—*
Bronson, Joanne J.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Matiskella, John D.; Misco, Peter F., Jr.; Luh, Bing Yu; Springer, Dane M.; Ueda, Yasutsugu; and Wichtowski, John A., 5,668,290, Cl. 546-298.000.
Buckbinder, Leonard; Talbott, Randy; Seizinger, Bernd R.; and Kley, Nikolai, 5,667,987, Cl. 435-69.100.
Kim, Choung U.; Misco, Peter F., Jr.; Wichtowski, John A.; Ueda, Yasutsugu; Hudyma, Thomas W.; Matiskella, John D.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Miller, Raymond F.; Mansuri, Muzammil M.; and Bronson, Joanne J., 5,668,284, Cl. 546-24.000.
McCullough, John E.; and Baymiller, Judith, 5,667,989, Cl. 435-69.100.
Poindexter, Graham S.; Bruce, Marc; Johnson, Graham; Leboulluec, Karen; and Sloan, Charles P., 5,668,151, Cl. 514-318.000.

British Aerospace Public Limited Co.: *See—*
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British Nuclear Fuels plc: *See—*
Burns, Kevin John, 5,666,848, Cl. 72-326.000.

British Technology Group Limited: *See—*
Bull, Christine Roberta; Spencer, Diane Susan; Mottram, Toby Trevor Fury; Street, Michael John; and Tillett, Robin Deirdre, 5,666,903, Cl. 119-14.010.
Deans, Anne Catherine; Genevier, Eric Serge Gilles; and Steer, Philip James, 5,666,959, Cl. 128-698.000.
Grindal, Robert Joseph, 5,666,904, Cl. 119-14.020.

Brockel, Kenneth H.; Sudnikovich, William P.; Inserra, Joseph; Loso, Francis; and Schulz, Kerri E., to United States of America, Army, Method of establishing line of sight propagation. 5,669,063, Cl. 455-506.000.

Broden, David A., to Rosemount Inc. Apparatus for coupling a transmitter to process fluid having a sensor extension selectively positionable at a plurality of angles. 5,668,322, Cl. 73-756.000.

Broder, Damon; Moore, Shelley I.; Medin, Todd R.; and Richtsmeier, Brent W., to Hewlett-Packard Company. Method of multiple zone heating of inkjet media using screen platen. 5,668,584, Cl. 347-102.000.

Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, to Hoechst Aktiengesellschaft. Deacetylase genes for the production of phosphinothricin or phosphinothricyl-alanyl-alanine, process for their isolation, and their use. 5,668,297, Cl. 800-205.000.

Broering, Karin: *See—*
Vaverka, Ingrid; Gelderie, Udo; Broering, Karin; Mattes, Guenter; and Reul, Bernhard, 5,667,595, Cl. 136-251.000.

Bronson, Duane David; and Hemperly, John Jacob, to Becton, Dickinson and Company. Antibody to the neural cell adhesion molecule and methods of use. 5,667,978, Cl. 435-7.100.

Bronson, Joanne J.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Matiskella, John D.; Misco, Peter F., Jr.; Luh, Bing Yu; Springer, Dane M.; Ueda, Yasutsugu; and Wichtowski, John A., to Bristol-Myers Squibb Company. Substituted 4-thio pyridones. 5,668,290, Cl. 546-298.000.

Bronson, Joanne J.: *See—*
Kim, Choung U.; Misco, Peter F., Jr.; Wichtowski, John A.; Ueda, Yasutsugu; Hudyma, Thomas W.; Matiskella, John D.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Miller, Raymond F.; Mansuri, Muzammil M.; and Bronson, Joanne J., 5,668,284, Cl. 546-24.000.

Brooke, Barbara Catherine: *See—*
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Brooks, Clint D. W.; Bhatia, Pramila; and Kolasa, Teodozyj, to Abbott Laboratories. Symmetrical bis-heteroarylmethoxyphenyliminoxyalkyl carboxylates as inhibitors of leukotriene biosynthesis. 5,668,146, Cl. 514-311.000.

Brooks, Clint D.W.; Kolasa, Teodozyj; and Gunn, David E., to Abbott Laboratories. Non-symmetrical bis-heteroarylmethoxyphenylalkyl carboxylates as inhibitors of leukotriene biosynthesis. 5,668,150, Cl. 514-314.000.

Brooks, Dennis L.: *See—*
Imran, Mir A.; Brooks, Dennis L.; and Gandhi, Deepak R., 5,666,968, Cl. 128-772.000.

Broomhead, Rowena Allison; and Huizinga, Hindrik, to Van den Bergh Foods Co., Division of Conopco, Inc. Edible fat product. 5,667,837, Cl. 426-603.000.

Brophy, Jere H.: *See—*
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Broschard, John L., III; and Slupe, David S., to Whitaker Corporation, The. Smart card connector. 5,667,397, Cl. 439-188.000.

Broschard, John L., III; Jacobs, Edmund L.; Katzaman, Ronald E.; and Larkin, John T., Jr., to Whitaker Corporation, The. Smart card connector with preloaded data contacts. 5,667,408, Cl. 439-630.000.

Brossard, André. Method for controlling the reflex response of the muscles of a living body joint. 5,667,484, Cl. 602-21.000.

Broten, Theodore P.: *See—*
Bagley, Scott W.; Broten, Theodore P.; Chakravarty, Prasun K.; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Kevin, Nancy Jo; Kieczykowski, Gerard R.; Pettibone, Douglas J.; Tata, James R.; Rivero, Ralph A.; Walsh, Thomas F.; Williams, David L., Jr.; Mathews, Jay M.; and Toupence, Richard B., 5,668,176, Cl. 514-569.000.

Brother Kogyo Kabushiki Kaisha: *See—*
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Kataoka, Misao, 5,668,960, Cl. 345-333.000.
Sago, Akira, 5,667,321, Cl. 400-642.000.
Tomida, Wataru; and Asai, Kazunobu, 5,668,635, Cl. 358-296.000.

Brouwers, Jozef Johannes Hubertus, to Romico Hold A.V.V. Rotating particle separator with non-parallel separating ducts, and a separating unit. 5,667,543, Cl. 55-317.000.

Brown, Alvin E., to Dieterich Technology Holding Corp. Method and apparatus for detecting and aligning a signal. 5,668,326, Cl. 73-861.280.

Brown, Daniel J.: *See—*
Valle, Jorge Del; Hicks, Fred L.; Spires, Steven W.; and Brown, Daniel J., 5,667,744, Cl. 264-225.000.

Brown, Daniel Peter; and Finkelstein, Louis David, to Motorola, Inc. Method and apparatus for authentication in a communication system. 5,668,875, Cl. 380-23.000.

Brown, Gary L.: *See—*
Carbine, Adrian L.; Brown, Gary L.; Hoyt, Bradley D.; Parker, Donald D.; and Kumar, Rajesh, 5,668,985, Cl. 395-595.000.

Brown, Janis M.: *See—*
Rasmussen, Perry A. D.; and Brown, Janis M., 5,667,881, Cl. 428-272.000.

Brown, John Seely: *See—*
Beach, Richard J.; Brown, John Seely; and White, John R., 5,668,636, Cl. 358-296.000.

Brown, Roger: *See—*
Truax, David; and Brown, Roger, 5,667,028, Cl. 175-428.000.

Brownlee, Paul L.: *See—*
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Brox, Steven J.: *See—*
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Bruce, Marc: *See—*
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Bruchu, Todd W.: *See—*
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Brune, Paul C. Air conditioning system with reheater. 5,666,813, Cl. 62-90.000.

Brunelle, Daniel Joseph; Kailasam, Ganesh; Serth-Guzzo, Judith Ann; and Wilson, Paul Russell, to General Electric Company. Process for depolymerizing polyesters. 5,668,186, Cl. 521-48.000.

Brunengraber, Henri; Dugas, Hermann; Quinze, Khadija; and Bomont, Catherine, to Case Western Reserve University. Pyruvate thiolester for the prevention of reperfusion injury. 5,667,962, Cl. 435-1.200.

Brunmair, Frwin: *See—*
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Brunninger, Manfred: *See—*
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Brunsvold, William Ross: *See—*
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Brush Wellman, Inc.: *See—*
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Bruske, Johannes F.; and Morhenne, Siegfried, to Barmag AG. Heating device with exchangeable yarn guides. 5,666,797, Cl. 57-290.000.

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Ishihara, Shunichi, 5,667,597, Cl. 136-258.000.
Iwasaki, Yukiko, 5,668,050, Cl. 438-69.000.
Kadohara, Terutake; and Aihara, Yoshihiko, 5,669,022, Cl. 396-111.000.
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Okuda, Masami; Tanaka, Hisami; Kishi, Junichi; Ohmori, Hiroyuki; Koyama, Takashi; and Hisamura, Masafumi, 5,669,047, Cl. 399-174.000.
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Buch, Bruce D., 5,669,002, Cl. 395-726.000.
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Carter, John W.; Lewno, Jeffrey A.; Fisher, Daniel J.; and Rankin, Joseph D., III, 5,667,896, Cl. 428-425.600.
Varaprasad, Desaraju V.; Habibi, Hamid; McCabe, Ian A.; and Lynam, Niall R., 5,668,663, Cl. 359-608.000.

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Sanderson, Philip E.; Naylor-Olsen, Adel M.; Dyer, Dona L.; Vacca, Joseph P.; Isaacs, Richard C. A.; Dorsey, Bruce D.; and Fraley, Mark E., 5,668,289, Cl. 546-293.000.
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Harris, Robert F.; Townsend, Paul H., III; Frye, Donald C.; and Schmidt, Donald L., 5,668,210, Cl. 524-588.000.

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Wu, An-hsiang; and Drake, Charles A., 5,668,074, Cl. 502-332.000.

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Roe, Donald Carroll; and Dreier, Kimberly Ann, 5,667,503, Cl. 604-385.100.

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Drummond, Michaline M. Shoulder-strap retainer apparatus. 5,666,701, Cl. 24-302.000.

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Antonelli, Joseph Albert; Scopazzi, Christopher; and Vanderlinde, William Bertus, 5,667,894, Cl. 428-413.000.
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Face, Dean Willett; and Myers, Kirsten Elizabeth, 5,667,650, Cl. 204-298.070.
Feiring, Andrew Edward; and Rozen, Shlomo, 5,668,233, Cl. 526-247.000.
Fleming, Christopher Andrew; Grot, Walther G.; and Thorpe, John Anton, 5,667,557, Cl. 75-729.000.
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Tai, Tsung-Ming; Rodini, David J.; Masson, James C.; and Leonard, Richard L., 5,667,743, Cl. 264-184.000.
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Ducharme, Yves; Gauthier, Jacques Yves; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; Therien, Michel; Hill, Raymond George; and Sirinathsinghji, Dalip Jaicaran Sastri, to Merck Sharp & Dohme Limited. Use of inhibitors of cyclooxygenase in the treatment of neurodegenerative diseases. 5,668,169, Cl. 514-438.000.

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Duluk, Jerome F., Jr., to Silicon Engines. Cascaded two-stage computational SIMD engine having multi-port memory and multiple arithmetic units. 5,669,010, Cl. 395-800.220.

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Durham, James H.; Gleadall, Wilfred L.; Carmichael, Richard A.; and Medcalf, Ray E., to Hubbell Incorporated. Hydrogen vent for remote terminal cabinets. 5,668,349, Cl. 174-17.0VA.

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Goldberg, Gary L.; Hilgeman, Paul E.; Rector, James V.; McArthur, Malcolm J.; Jeorling, David E.; Dutart, Charles H.; and Desai, Mahendra P., 5,667,051, Cl. 192-85.00R.

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Allen, John Michael; Wilson, Alan Kent; Lucas, Paul Lee; and Curtis, Larry Gerald, 5,668,273, Cl. 536-66.000.
Heidt, Philip C.; Foster, Charles H.; and Witzeman, J. Stewart, 5,667,901, Cl. 428-482.000.
Rundquist, Paul Andrew; Smith, Ernest Phillip; Poteat, Stephen Louis; Rutstrom, Dante Joseph; and Stuart, Richard Kingsley, Jr., 5,667,575, Cl. 106-271.000.
Yau, Cheuk Chung; and Moody, Leslie Shane, 5,668,243, Cl. 528-280.000.

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Burns, Elizabeth G.; and Fleming, James C., 5,667,860, Cl. 428-64.100.
Fyson, John Richard; Rider, Christopher Barrie; and Benoy, Andrew, 5,669,029, Cl. 396-566.000.
Haboian, Mark Scott; and Rudd, Charles Edward, 5,668,534, Cl. 340-605.000.
Irving, Mark Edward; and Black, Donald Lee, 5,667,954, Cl. 430-567.000.
Jadrich, Bradley S., 5,668,899, Cl. 385-33.000.
Lushington, Kenneth James; and Gysling, Henry James, 5,667,957, Cl. 430-603.000.
Maskasky, Joe Edward, 5,667,955, Cl. 430-567.000.
Mason, Donald; and Zimmerman, Betsy Ann, 5,668,998, Cl. 395-701.000.
McGuckin, Hugh Gerald; Badger, John Stuart; and Kurz, Edward Albert, 5,667,948, Cl. 430-463.000.
Parker, H. Galen; and Young, Richard Dean, 5,668,887, Cl. 382-108.000.
Parulski, Kenneth A.; Izumi, Masaki; Mizukoshi, Seiichi; and Mori, Nobuyuki, 5,668,597, Cl. 348-350.000.
Prigent, Thierry, 5,668,741, Cl. 364-551.010.
Reem, Richard Carroll; and Sutton, James Edward, 5,667,944, Cl. 430-359.000.
Schmidt, Ronald James, 5,667,950, Cl. 430-510.000.
Simpson, William Henry; Brust, David P.; Hastreiter, Jacob John, Jr.; and Oldfield, Mary Catherine S., 5,668,081, Cl. 503-227.000.
Szajewski, Richard Peter, 5,667,949, Cl. 430-489.000.
Tang, Ping Wah; and Cowan, Stanley W., 5,667,952, Cl. 430-558.000.
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Vogel, Richard M., 5,668,596, Cl. 348-222.000.

Easy Lift Care Products, Inc.: *See*—
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Kyrtsos, Christos T., 5,668,529, Cl. 340-454.000.
Mody, Hemant K.; and Grass, William E., 5,667,711, Cl. 219-505.000.
Tennies, Charles J.; Hastings, Jerome K.; and Hastings, Matthew E., 5,668,693, Cl. 361-187.000.

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Murai, Yukio; and Toguchi, Seiichi, 5,667,362, Cl. 417-41.000.

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Lamert, Berthold; Schmitt, Wolfgang; and Eckel, Hans-Gerd, 5,668,426, Cl. 310-168.000.

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Kantor, Martin L., 5,667,806, Cl. 424-484.000.

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Knight, Gary W.; Taylor, Julia C.; Clem, Michael F.; Eaves, Felmont F., III; and Lumsden, Alan B., 5,667,480, Cl. 600-210.000.

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Maurer, Donald D.; and Kipnis, Alexander, 5,667,615, Cl. 156-242.000.

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Mohwinkel, Clifford A.; Johnson, Edwin F.; and Stoneham, Edward B., 5,668,512, Cl. 333-247.000.

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Shribbs, John M.; Ensminger, Michael P.; and Green, Laddie L., 5,668,089, Cl. 504-348.000.

Entact, Inc.: *See—*
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Epstein, Saul: *See—*
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Erdmann, Matthias, to British Aerospace Public Limited Co. Dioptric lens system. 5,668,671, Cl. 359-716.000.

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Van Leeuwen, Martin; and Schraven, Henk A.W.M., 5,667,177, Cl. 248-74.200.
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Kinkel, Johannes; Brink, Gerhard; Ernet, Walter; Schulze, Joachim; and Wierer, Konrad, 5,668,216, Cl. 525-170.000.

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Errico, Joseph P.: *See—*
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Essaff, Robert: *See—*
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Estrada, Felix M. Ergonomic inertia bowstring release. 5,666,936, Cl. 124-35.200.

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Jeannet, Nicolas; and Schmidli, Pierre, 5,668,781, Cl. 368-28.000.

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ETB Endoskopische Technik GmbH Berlin: *See—*
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Ethicon, Inc.: *See—*
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Georgopoulos, Philip, 5,667,912, Cl. 429-170.000.

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Faasse, James P. Panniers rack. 5,667,118, Cl. 224-430.000.

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Fabris, Mario. Quick change mandrel for an engine lathe etc. 5,667,228, Cl. 279-143.000.

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Takata, Kenji; and Nakahashi, Hiroshi, 5,669,033, Cl. 396-612.000.
Takayanagi, Takashi; Takeda, Akihiko; and Shinozaki, Fumiaki, 5,667,921, Cl. 430-7.000.
Takeuchi, Kiyoshi; Nakamura, Koki; Taguchi, Toshiki; Nakamura, Koichi; and Makuta, Toshiyuki, 5,667,945, Cl. 430-380.000.
Takizawa, Hiroo; Nakamine, Takeshi; Yoshioka, Yasuhiro; and Morigaki, Masakazu, 5,667,951, Cl. 430-551.000.
Yamada, Kohzaburoh; Takeuchi, Hiroshi; Hoshimiya, Takashi; Kubo, Toshiaki; and Hirano, Shigeo, 5,667,936, Cl. 430-264.000.
Yamada, Tsukasa, 5,667,854, Cl. 428-1.000.
Yamashina, Yasuhiro; Itakura, Kazuo; and Yamaguchi, Yukihiko, 5,669,017, Cl. 396-6.000.
Fuji Photo Optical Co., Ltd.: *See*—
Nishimura, Shigeru, 5,667,474, Cl. 600-109.000.
Okaniwa, Masayuki, 5,667,880, Cl. 428-212.000.
Segawa, Youichi, 5,667,477, Cl. 600-153.000.
Tanaka, Yasuhiko, 5,669,026, Cl. 396-440.000.
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Endo, Osamu, 5,668,935, Cl. 395-110.000.
Hisatake, Masayuki, 5,669,040, Cl. 399-83.000.
Itonori, Katsuhiko, 5,668,892, Cl. 382-177.000.
Kitami, Toshikazu, 5,668,962, Cl. 345-340.000.
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Kimura, Teiji; Watanabe, Nobuhisa; Takase, Yasutaka; Hayashi, Kenji; Matsui, Makoto; Ikuta, Hironori; Yamagishi, Youji; Akasaka, Kozo; Tanaka, Hiroshi; Ohtsuka, Issei; Saeki, Takao; Kogushi, Motoji; Fujimori, Tohru; and Saito, Isao, 5,668,136, Cl. 514-255.000.
Fujinami, Yasushi, to Sony Corporation. Apparatus for reproducing data not successively located on a recording medium. 5,668,916, Cl. 386-47.000.
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Fujita, Akio: *See*—
Ozaki, Yoshihiro; Fujita, Akio; and Muraki, Mineo, 5,667,598, Cl. 148-111.000.
Fujita, Kouichi: *See*—
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Matsumoto, Hirofumi; Shoumura, Mitsunobu; Fujita, Norimasa; Inaba, Masaichi; and Tanaka, Yasuyuki, 5,666,717, Cl. 29-603.120.
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Uchida, Michio; Wataki, Ryuji; Okazaki, Noritaka; Fujita, Shigeo; and Nanjo, Yuzuru, 5,669,054, Cl. 399-313.000.
Fujita, Taikyu: *See*—
Tabata, Keiichiro; Nabeshima, Yoichi; Fujita, Taikyu; Yokoyama, Kazufumi; and Hashimoto, Torao, 5,667,741, Cl. 264-54.000.
Fujita, Takanori: *See*—
Shibayama, Atsushi; Suzuki, Masatoshi; and Fujita, Takanori, 5,668,668, Cl. 359-683.000.
Fujita, Yoshio: *See*—
Kurihayashi, Hirotaka; Kobayashi, Hironai; Hirakata, Takashi; Gotoh, Kazuhiro; and Fujita, Yoshio, 5,668,334, Cl. 84-602.000.
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Iseyama, Takayuki, 5,669,064, Cl. 455-517.000.
Kanata, Hiroyuki, 5,667,923, Cl. 430-30.000.
Kanda, Shinji; Wakitani, Jun; Maruyama, Tsugito, and Morita, Toshihiko, 5,668,893, Cl. 382-197.000.
Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji, 5,668,950, Cl. 395-200.470.
Kondo, Makoto; Anayama, Chikashi; and Shoji, Hajime, 5,668,048, Cl. 438-46.000.
Kuwabara, Kiyoshi; Yamada, Tetsuro; Nishiyama, Takeshi; and Sakuraoka, Masahiko, 5,667,401, Cl. 439-405.000.
Makiuchi, Masao; and Yamamoto, Naoki, 5,668,386, Cl. 257-184.000.
Matsuda, Genichi; and Tanaka, Toshiaki, 5,668,353, Cl. 178-18.000.
Matsumoto, Takashi, 5,668,682, Cl. 360-105.000.
Morikawa, Hisashi, 5,668,714, Cl. 364-131.000.
Nakao, Yoshiyuki; and Hirose, Minoru, 5,667,942, Cl. 430-327.000.
Ohashi, Tadashi, 5,668,747, Cl. 364-724.190.
Sukegawa, Kiyoshi; and Takada, Kunio, 5,668,531, Cl. 340-506.000.
Tashiro, Kazuhiro; and Wakabayashi, Tetsushi, 5,668,407, Cl. 257-692.000.
Watanabe, Akira, Maheshwari, Dinesh C.; McKeever, Bruce T.; and Somasundaram, Madian, 5,669,013, Cl. 395-825.000.
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Nishimori, Eiji; and Matsui, Takashi, 5,668,506, Cl. 331-66.000.
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Fukai, Seiichirou, to Sharp Kabushiki Kaisha. Up-down tuner having a grounding plate provided with generally L-shaped soldering portions. 5,668,701, Cl. 361-816.000.
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Fukuda, Eiji: *See*—
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Fukuda, Masao, to Ishida Co., Ltd. Apparatus for correcting zigzag motion of an elongated traveling web. 5,667,123, Cl. 226-21.000.
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Fukui, Hiroshi: *See*—

Soeya, Susumu; Tadokoro, Shigeru; Imagawa, Takao; Ashida, Eiji; Fuyama, Moriaki; Fukui, Hiroshi; Suzuki, Saburo; Takagi, Masayuki; and Narishige, Shinji, 5,668,685, Cl. 360-113.000.
Fukui, Masayuki: *See*—
Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro; Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, 5,668,786, Cl. 369-13.000.
Fukuma, Kooji: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,668,447, Cl. 315-368.260.
Fukushima, Makoto; Kimura, Kazuhiro; Yamauchi, Hirohiko; Morishita, Kenichi; and Takahashi, Keietsu, to Nihon Medi-Physics Co., Ltd. Method for preventing adhesion of thallium 201 to container. 5,667,762, Cl. 424-1.110.
Fukushima, Takeo, to Ando Electric Co., Ltd. Mask control device for LSI tester. 5,668,819, Cl. 371-25.100.
Fukuyoshi, Kenzo; Kimura, Yukihiro; Imayoshi, Koji; Koga, Osamu; and Horachi, Katsunori, to Toppan Printing Co., Ltd. Multilayered conductive film, and transparent electrode substrate and liquid crystal device using the same. 5,667,853, Cl. 428-1.000.
Fukuzawa, Daizo: *See*—
Ohtsuka, Yasumasa; Okuda, Kouichi; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,669,039, Cl. 399-68.000.
Fuller, John W.: *See*—
Chansky, Leonard M.; Fuller, John W.; Land, Ronald A.; and Whitten, Robert, 5,668,537, Cl. 340-825.060.
Fullerton, Craig L.: *See*—
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Funamoto, Tatsuaki: *See*—
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Funawatari, Takatsugu, to Sony Corporation. Disc cartridge molding method and apparatus. 5,667,616, Cl. 156-245.000.
Fung, Anthony K. L.: *See*—
Ma, Zhenkun; Cooper, Curt S.; Fung, Anthony K. L.; and Chu, Daniel T., 5,668,164, Cl. 514-376.000.
Furihata, Tomoyoshi; and Yamada, Motoyuki, to Shin-Etsu Chemical Co., Ltd. 2,4-diamino-s-triazinyl group-containing polymer and negative radiation-sensitive resist composition containing the same. 5,668,226, Cl. 525-484.000.
Furneaux, Henry M.: *See*—
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Furrer, Adrian: *See*—
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Furumoto, Horace W.; Ceccon, Harry L.; Cho, George E. S.; and Hacker, Mark P., to Cynosure, Inc. Method and apparatus for replenishing dye solution in a dye laser. 5,668,824, Cl. 372-54.000.
Furusawa, Toshiro: *See*—
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Furutani, Hiroyuki; Danno, Kazuhisa; Okamoto, Yoshifumi; Ida, Junya; Oonari, Yoshihide; Nojiri, Hitoshi; and Nagano, Hirosaku, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Thermoplastic polyimide, polyamide acid, and thermally fusible laminated film for covering conductive wires. 5,668,247, Cl. 528-353.000.
Furutani, Kiyohiro, to Mitsubishi Denki Kabushiki Kaisha. Dynamic semiconductor memory device having fast operation mode and operating with low current consumption. 5,668,774, Cl. 365-233.000.
Furutani, Koji; Kato, Mitsuhide; and Tsuru, Teruhisa, to Murata Manufacturing Co., Ltd. Low-pass filter. 5,668,511, Cl. 333-204.000.
Fuse, Masayoshi; and Aoyagi, Takuo, to Nihon Kohden Corporation. Tissue transmitted light sensor. 5,666,952, Cl. 128-633.000.
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Fyson, John Richard; Rider, Christopher Barrie; and Benoy, Andrew, to Eastman Kodak Company. Photographic processing. 5,669,029, Cl. 396-566.000.
G. D. Searle & Co.: *See*—
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Talley, John J.; Carter, Jeffery S.; Collins, Paul W.; Kramer, Steven W.; Penning, Thomas D.; Rogier, Donald J., Jr.; and Rogers, Roland S., 5,668,161, Cl. 514-365.000.
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Weller, James M.; and Field, John C., 5,667,471, Cl. 600-39.000.
Gairdner, James R. Deck cleaning tool. 5,666,683, Cl. 15-104.001.
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Galbraith, Stephen L.: *See*—
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Gallagher, Peter Thaddeus; Owton, William Martin; and Williams, Andrew Caerwyn, to Lilly Industries Limited. Anthraquinone pharmaceutical compounds and uses therefor. 5,668,172, Cl. 514-557.000.
Gallagher, Terry A.: *See*—
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Galles, Michael B.; and Lenoski, Daniel E., to Silicon Graphics, Inc. Hierarchical fat hypercube architecture for parallel processing systems. 5,669,008, Cl. 395-800.120.
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Gankin, Yuriy V.: *See*—
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Gao, Sheen-Youl; Wu, Rong-Faa; Chiao, Ming-Shyang; Lai, Cheng-Wen; Lin, San-Yi; Kuo, Ching-Chuan; and Don, Lan-Kun, to Tong-Lung Metal Industry Co., Ltd. Reinforcing apparatus for a lever handle of a door lock. 5,666,833, Cl. 70-224.000.
Garabedian, Raffi, to University of California, The Regents of the. Micromachined accelerometer. 5,668,319, Cl. 73-514.090.
Garavan, Patrick J.; and Byrne, Eanonn, to Analog Devices, Inc. Power-up calibration of charge redistribution analog-to-digital converter. 5,668,551, Cl. 341-120.000.
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Garfinkle, Benjamin L. Modular sign system. 5,666,751, Cl. 40-605.000.
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Gariboldi, Roberto: *See*—

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Gauckler, Ludwig J.: *See—*
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Gaul, Gregory R., to Westinghouse Electric Corporation. Method for reducing steady state rotor blade tip clearance in a land-based gas turbine to improve efficiency. 5,667,358, Cl. 415-173.200.
Gaul, Stephen Joseph, to Harris Corporation. Integrated circuit with edge connections and method. 5,668,409, Cl. 257-723.000.
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Gaven, Thomas J.; and Bravar, Dario V., to Gavenco, LLC. Method of curing with ultraviolet radiation on substrates requiring low heat. 5,667,850, Cl. 427-510.000.
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Gavin, Norman W. Collapsible handle assembly for concrete covers. 5,666,768, Cl. 52-125.400.
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Gebhard, Albert W. Releasable carrying handle for bottles. 5,667,265, Cl. 294-27.100.
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Gec Alsthom Transport SA: *See—*
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Ducharme, Yves; Gauthier, Jacques Yves; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; Therien, Michel; Hill, Raymond George; and Sirinathsinghji, Dalip Jaicaran Sastri, 5,668,169, Cl. 514-438.000.
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Meyer, Eric R.; Branson, Greg W.; Schuman, Richard J.; and Ulrich, David J., 5,666,681, Cl. 5-727.000.
Hillemann, Doris: *See*—
Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,668,297, Cl. 800-205.000.
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O Mara, David P.; and Hinds, Arron C., 5,667,364, Cl. 417-151.000.
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Baumann, Hans; Otto, Karl-Heinz; Hinrichs, Kai-Jurgen; Graczyk, Wolfgang; and Peters, Jorg-Roger, 5,667,504, Cl. 604-891.100.
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Ueda, Yoshisuke; Takase, Fuyuto; Oku, Kiyoshi; Hira, Takayuki; and Ashizawa, Atsushi, 5,668,458, Cl. 318-716.000.

Hiraga, Noriko: *See—*
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Yamada, Nobuaki; Horie, Wataru; Hirai, Toshiyuki; and Kozaki, Shuichi, 5,668,651, Cl. 349-156.000.

Hirakata, Takashi: *See—*
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Hirano, Shigeo: *See—*
Yamada, Kohzaburoh; Takeuchi, Hiroshi; Hoshimiya, Takashi; Kubo, Toshiaki; and Hirano, Shigeo, 5,667,936, Cl. 430-264.000.

Hirasawa, Teruhiko: *See—*
Fukuda, Tsuguo; Sakaguchi, Susumu; Kamioka, Tadashi; Yamada, Toru; and Hirasawa, Teruhiko, 5,667,585, Cl. 117-49.000.

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Hiromori Inc.: *See—*
Hiromori, Junji, 5,667,183, Cl. 248-451.000.

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Hirsch Electronics Corporation: *See—*
Foster, Richard W., Jr., 5,668,929, Cl. 704-273.000.

Hisamura, Masafumi: *See—*
Okuda, Masami; Tanaka, Hisami; Kishi, Junichi; Ohmori, Hiroyuki; Koyama, Takashi; and Hisamura, Masafumi, 5,669,047, Cl. 399-174.000.

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Augenbraun, Joseph E.; Boyce, Jill M.; and Pearlstein, Larry A., 5,668,918, Cl. 386-111.000.

Hitachi Chemical Co., Ltd.: *See—*
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Yusa, Masami; Takeda, Shinji; Masuko, Takashi; Miyadera, Yasuo; and Yamazaki, Mitsuo, 5,667,899, Cl. 428-473.500.

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Hitachi Electronics Devices Co., Ltd.: *See—*
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Hitachi Koki Co., Ltd.: *See—*
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Itoh, Kiyoo; and Ishibashi, Koichiro, 5,668,770, Cl. 365-227.000.
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Kajiwara, Toshiyuki; Sugiyama, Tokuji; Takakura, Yoshio; Sakanaka, Takao; Yoshimura, Yasutsugu; Yasuda, Ken-ichi; and Kaga, Shinichi, 5,666,837, Cl. 72-14.400.
Kambara, Hideki, 5,667,656, Cl. 204-603.000.
Katakura, Kageyoshi, 5,668,776, Cl. 367-89.000.
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Okamoto, Yoshihiko; and Moriuchi, Noboru, 5,667,941, Cl. 430-313.000.
Okazawa, Koichi; Kimura, Koichi; Kawaguchi, Hitoshi; Aburano, Ichiharu; Kobayashi, Kazushi; and Mochida, Tetsuya, 5,668,956, Cl. 395-306.000.
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,668,447, Cl. 315-368.260.
Ono, Kikuo; Tsumura, Makoto; Ogawa, Kazuhiro; Sakuta, Hiroki; Suzuki, Masahiko; Kaneko, Toshiki; Nakayoshi, Yoshiaki; Onisawa, Kenichi; Hashimoto, Kenichi; and Minemura, Tetsuro, 5,668,379, Cl. 257-59.000.
Oyagi, Tomohito; Nakagawa, Mitsuo; Sakai, Junji; Okouchi, Takahiko; and Okoshi, Hitoshi, 5,667,310, Cl. 384-137.000.
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Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro; Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, 5,668,786, Cl. 369-13.000.
Shigematsu, Kazuo; Tomono, Yoji; Ichikawa, Atsushi; and Hattori, Toshiyasu, 5,668,787, Cl. 369-13.000.
Soeya, Susumu; Tadokoro, Shigeru; Imagawa, Takao; Ashida, Eiji; Fuyama, Moriaki; Fukui, Hiroshi; Suzuki, Saburo; Takagi, Masayuki; and Narishige, Shinji, 5,668,685, Cl. 360-113.000.
Suzuki, Masahiko; Ono, Kikuo; Ohwada, Junichi; Itoh, Hikaru; Kamei, Tatsuo; and Matsunaga, Kuniyuki, 5,668,649, Cl. 349-42.000.
Takekuma, Toshitsugu; Yamagiwa, Akira; and Kurihara, Ryoichi, 5,668,834, Cl. 375-257.000.
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Yano, Masayoshi; Mimura, Tadao; and Kato, Yoshiaki, 5,668,370, Cl. 250-288.000.

Hitachi Maxell, Ltd.: *See—*
Nishida, Masato; Ishituka, Tomoaki; and Oshima, Toshio, 5,668,363, Cl. 235-468.000.

Hitachi Media Electronics Co., Ltd.: *See—*
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Kondo, Shinichi; Sasaki, Akira; Kanda, Hiroshi; Mitake, Tsuyoshi; and Okada, Kazutaka, 5,666,955, Cl. 128-660.040.
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Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, 5,669,051, Cl. 399-277.000.
Yamashita, Keitaro, 5,668,519, Cl. 335-302.000.

Hitachi Powdered Metals Co., Ltd.: *See—*
Shimbori, Hiroshi, 5,667,729, Cl. 252-508.000.

Hitachi Zosen Corporation: *See—*
Miura, Yoshimasa; Ogino, Etsuo; Ito, Michio; and Takakura, Chitose, 5,667,151, Cl. 241-20.000.

Hitomi, Isamu. *See—*
Kitao, Shigetaka; Kimura, Ayumu; Ootani, Yasuhiko; Hitomi, Isamu; and Kuroiwa, Akihiko, 5,668,528, Cl. 340-436.000.

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Hoaglin, Christine L.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, 5,668,067, Cl. 501-54.000.

Hobgood, Hudson McDonald: *See—*
Glass, Robert C.; Gaida, Walter E.; Ronallo, Ronald R.; and Hobgood, Hudson McDonald, 5,667,587, Cl. 117-200.000.

Hobson, William Scott: *See—*
Chakrabarti, Utpal Kumar; Hobson, William Scott; Ren, Fan; and Schnoes, Melinda Lamont, 5,668,049, Cl. 438-33.000.

Hochberg, Alan M., to Dade Chemistry Systems Inc. Method for determining DNA sequences. 5,667,971, Cl. 435-6.000.

Hodge, Rachel: *See—*
Spencer, Margaret Elizabeth; and Hodge, Rachel, 5,668,007, Cl. 435-252.300.

Hodgson, Craig W.; and Vengsarkar, Ashish Madhukar, to Lucent Technologies Inc. Optical systems and devices employing spectrally flattened amplified spontaneous emission. 5,668,821, Cl. 372-6.000.

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Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,668,297, Cl. 800-205.000.
Engels, Joachim; Herrlein, Mathias; Konrad, Renate; and Mag, Matthias, 5,668,269, Cl. 536-25.320.
Koller, Klaus-Peter; Sahl, Hans Georg; and Bierbaum, Gabriele, 5,667,991, Cl. 435-69.100.
Kramer, Werner; and Wess, Günther, 5,668,126, Cl. 514-176.000.
Kremer, Gernot; and Lorke, Horst, 5,668,093, Cl. 508-262.000.
Schaper, Wolfgang; Salbeck, Gerhard; Ehrhardt, Heinz; Braun, Peter; Knauf, Werner; Sachse, Burghard; Waltersdorfer, Anna; Kern, Manfred; and Lümmen, Peter, 5,668,140, Cl. 514-269.000.
Winter, Andreas; Vollmar, Annette; Kloos, Friedrich; and Bachmann, Bernd, 5,668,235, Cl. 526-351.000.

Hoechst Celanese Corp.: *See—*

Mortazavi, Mohammad; Yoon, Hyun Nam; and Teng, Chia-Chi, 5,667,719, Cl. 252-299.010.
Yu, Wei-Ching; and Dwiggins, Carlton F., 5,667,911, Cl. 429-144.000.

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Bauer, Wolfgang; Baumgart, Dieter; and Zöller, Walter, 5,668,260, Cl. 534-806.000.

Hoeft, Shelley E.: *See—*
Bronson, Joanne J.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Matiskella, John D.; Misco, Peter F., Jr.; Luh, Bing Yu; Springer, Dane M.; Ueda, Yasutsugu; and Wichtowski, John A., 5,668,290, Cl. 546-298.000.
Kim, Choung U.; Misco, Peter F., Jr.; Wichtowski, John A.; Ueda, Yasutsugu; Hudyma, Thomas W.; Matiskella, John D.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Miller, Raymond F.; Mansuri, Muzammil M.; and Bronson, Joanne J., 5,668,284, Cl. 546-24.000.

Hoekstra, Robert Louis: *See—*
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Hoeschst Schering AgrEvo GmbH: *See—*
Hartfiel, Uwe; Dorfmeister, Gabriele; Franke, Helga; Geisler, Jens; Johann, Gerhard; and Rees, Richard, 5,668,278, Cl. 544-48.000.

Hoeve, Johanna Ten: *See—*
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Hoffmann, Joachim: *See—*
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Devos, Rene; Fiers, Walter; van der Heyden, Jose; Plaetinck, Geert; and Tavernier, Jan, 5,668,256, Cl. 530-350.000.

Hoffmann, Rolf; and Mücke, Jörg, to Awab Umformtechnik GmbH & Co. KG. Atomizer for generating water-mists in fire-fighting systems. 5,667,017, Cl. 169-38.000.

Hoffmeister, Richard M.; and Quan, Clifton, to Hughes Electronics. Modified coaxial to GCPW vertical solderless interconnects for stack MIC assemblies. 5,668,509, Cl. 333-33.000.

Höfle, Siegfried, to Hi Hi Aktiengesellschaft. Attachment member. 5,667,328, Cl. 403-282.000.

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Edlinger, Alfred, 5,667,147, Cl. 241-1.000.

Holik, Herbert: *See—*
Bubik, Alfred; Brunmair, Erwin; Hess, Harald; Holik, Herbert; Leitenberger, Werner; Merath, Thomas; Moser, Johann; Stieb, Helmet; and Weisshuhn, Elmer, 5,666,741, Cl. 34-117.000.

Holland, John P.; and Demos, Alex T., to Lam Research Corporation. Dry etching of transparent electrodes in a low pressure plasma reactor. 5,667,631, Cl. 216-13.000.

Holland, Lowell W.: *See—*
Kinzer, Kevin E.; Holland, Lowell W.; Sridhar, Krishnamurthy; Kellen, James N.; and Pribnow, Richard W., 5,667,893, Cl. 428-413.000.

Holland, Robert S. Vacuum pump seal-water recycling and waste disposal system for dental operatories. 5,667,382, Cl. 433-92.000.

Holliday, Randall A. Coaxial cable connector for CATV systems. 5,667,405, Cl. 439-585.000.

Holliger, Herbert: *See—*
Barra, Jordi Berenuger; Holliger, Herbert; and Sorolla, Jose Rocas, 5,668,259, Cl. 534-684.000.

Hollingsworth, James L.: *See—*
Weinerman, Lee S.; Kuminski, Arthur J.; and Hollingsworth, James L., 5,667,261, Cl. 292-247.000.

Holloman, Charles J., to Trans-Lux Corporation. Interface for LED matrix display with buffers with random access input and direct memory access output. 5,668,568, Cl. 345-83.000.

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Vacca, Joseph P.; Dorsey, Bruce D.; Guare, James P.; Holloway, M. Katharine; Hungate, Randall W.; and Levin, Rhonda B., 5,668,132, Cl. 514-252.000.

Holmberg, Scott H.; and Vu, Quy. Active matrix ESD protection and testing scheme. 5,668,032, Cl. 438-144.000.

Holmes, Terry M. Automatic caller-associated information provision system, improvement and method for paging system. 5,668,852, Cl. 405-31.200.

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Holmgren, Tommy: *See—*
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Cook, Melvin S., 5,667,527, Cl. 606-219.000.

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Chang, Herman; and Hou, Yueh-Mei, 5,668,544, Cl. 341-26.000.

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Homm, Karl Georg; and Wittkaemper, Michael, to Hewing GmbH. Ceiling cooling. 5,666,820, Cl. 62-259.100.

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Keng, Leon, 5,667,390, Cl. 439-76.100.

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Kawashima, Fuminori; Ueshima, Hideo; Ohtsu, Keiji; Tsuji, Yoshihito; and Takahashi, Masayuki, 5,666,915, Cl. 123-196.00R.
Maki, Hidetaka; Akazaki, Shusuke; Hasegawa, Yusuke; and Nishimura, Yoichi, 5,666,934, Cl. 123-679.000.
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Sunada, Satoru; and Fukuchi, Masamitsu, 5,666,863, Cl. 74-731.100.

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Ebenstein, Scott M.; and Bowers, Lee N., 5,666,855, Cl. 74-475.000.

Honda, Yuichi: *See—*
Nakayama, Haruki; Honda, Yuichi; and Imaizumi, Toshio, 5,668,670, Cl. 359-694.000.

Hone, George Dean; and Mitchell, Gary Ronald, to FMC Corporation. Fire control foam distribution system for use in distributing foam beneath a passenger boarding bridge. 5,667,018, Cl. 169-54.000.

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Olsen, Steven; Hönemann, Rudolf; and Boman, Wendy, 5,667,042, Cl. 192-3.290.

Honeywell Inc.: *See—*
Haji-Sheikh, Michael J., 5,667,879, Cl. 428-209.000.

Hong, Gary: *See—*
Hsue, Chen-Chiu; and Hong, Gary, 5,667,940, Cl. 430-312.000.

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Fredberg, Jeffrey; Glass, Gary; Lehr, John; and Louis, Bruno, 5,666,960, Cl. 128-716.000.

Hook, Wilfred L., Jr. Grip control glove for a handgun. 5,666,667, Cl. 2-159.000.

Hoong, Ting Yeow: *See—*
Slow, Wee Min; Hoong, Ting Yeow; and Kang, Beng Hong, 5,666,694, Cl. 16-368.000.

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Johnson, Steven B.; Berger, Curtis W.; Garrido, Miguel A.; and Hoop, William G., 5,667,140, Cl. 239-265.330.

Hooven, Michael Dawson, to Ethicon, Inc. Endoscopic surgical system with sensing means. 5,667,517, Cl. 606-151.000.

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Hopmeyer, Stanley. Underwater camera housing having interchangeable back members to accept still and video cameras. 5,669,020, Cl. 396-27.000.

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Hsiao, Cheng-Kuo; Hor, Ah-Mee; Gardner, Sandra J.; Gaynor, Roger E.; and Poitras, Jacques, 5,668,276, Cl. 540-144.000.

Horachi, Katsunori: *See—*
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Horan, Paul K.: *See—*
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Imaizumi, Toshio: *See—*
Nakayama, Haruki; Honda, Yuichi; and Imaizumi, Toshio, 5,668,670, Cl. 359-694.000.
Imanishi, Makoto: *See—*
Morita, Makoto; Nagaike, Masaru; Gueler, Richard; Imanishi, Makoto; and Yonezawa, Takahiro, 5,667,130, Cl. 228-110.100.
Imasono, Kunimasa: *See—*
Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji, 5,668,950, Cl. 395-200.470.
Imayoshi, Koji: *See—*
Fukuyoshi, Kenzo; Kimura, Yukihiro; Imayoshi, Koji; Koga, Osamu; and Horachi, Katsunori, 5,667,853, Cl. 428-1.000.
Immink, David A.: *See—*
Dame, Paul G.; Immink, David A.; Klaiber, Walter K.; and Merkt, Konrad, 5,666,888, Cl. 108-144.000.
Imperial Chemical Industries PLC: *See—*
Gough, Thane Colin; Jeffels, Pamela Moira; and Harrison, Anthony Garry, 5,667,886, Cl. 428-331.000.
Katsura, Naomi; Takeuchi, Hikaru; and Watanabe, Yuka, 5,667,889, Cl. 428-353.000.
Impra, Inc.: *See—*
Bynon, Anne Nina; Cundy, Sandra M.; and Kowligi, Rajagopal R., 5,667,523, Cl. 606-198.000.
Imran, Mir A.; Brooks, Dennis L.; and Gandhi, Deepak R., to Intelliwire, Inc. Flexible guide wire with extension capability and guide wire extension for use therewith. 5,666,968, Cl. 128-772.000.
Inaba, Hideki: *See—*
Honda, Minoru; and Inaba, Hideki, 5,667,545, Cl. 55-497.000.
Inaba, Masaichi: *See—*
Matsumoto, Hirofumi; Shoumura, Mitsunobu; Fujita, Norimasa; Inaba, Masaichi; and Tanaka, Yasuyuki, 5,666,717, Cl. 29-603.120.
Inami, Masayuki: *See—*
Fujinawa, Nobuhiro; Inami, Masayuki; and Maeda, Eisaku, 5,668,656, Cl. 359-208.000.
Industria Meccanica F. lli Tortella S.p.A.: *See—*
Tortella, Michele; and Tortella, Carlo, 5,666,892, Cl. 111-52.000.
Industrial Technology Research Institute: *See—*
Chao, Cheng-Lung; Lee, Juh-Shyong; and Chang, Feng-Chih, 5,668,215, Cl. 525-67.000.
Chen, Chin-Fu; Lu, Wen-Hwa; and Chueh, Shan-Chang, 5,666,846, Cl. 72-254.000.
Chen, Tian-Rein, 5,668,545, Cl. 341-50.000.
Hsieh, Chau-Kai, 5,668,780, Cl. 367-198.000.
Infectech, Inc.: *See—*
Felder, Mitchell S.; and Ollar, Robert- A., 5,668,010, Cl. 435-287.900.
Ing. C. Olive i & C., S.p.A.: *See—*
Manzone, Mario; and Pace, Piero, 5,668,582, Cl. 347-49.000.
Ingersoll-Dresser Pump Company: *See—*
Buse, Frederic W.; and Thamarus, Francis W., 5,667,357, Cl. 415-110.000.
Ingersoll, Jerald Dee: *See—*
Gerber, Jay Dean; and Ingersoll, Jerald Dee, 5,667,785, Cl. 424-221.100.
Inno Design, Inc.: *See—*
Kim, Young S., 5,667,172, Cl. 248-98.000.
Inoguchi, Hirokazu: *See—*
Watanabe, Shoichi; Inoguchi, Hirokazu; Kanzaka, Yoshihiro; Tanaka, Yoshiharu; Ikehara, Hideji; Saiki, Ryuji; Yamato, Nobukatsu; Mori, Tomohiro; and Senna, Minoru, 5,667,857, Cl. 422-36.200.
Inoue, Jiro, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Anti-theft mechanism for a vehicle door lock device. 5,666,834, Cl. 70-237.000.
Inoue, Katsuhiko: *See—*
Tsuzuki, Koji; Inoue, Katsuhiko; Takada, Takeshi; and Takeyama, Yoshifumi, 5,667,596, Cl. 136-256.000.
Inoue, Keisaku: *See—*
Yasuda, Shinichiro; and Inoue, Keisaku, 5,667,099, Cl. 222-1.000.
Inoue, Masahiro: *See—*
Sakemi, Yuji; Amemiya, Koji; Menjo, Takeshi; Inoue, Masahiro; and Izumizaki, Masami, 5,669,050, Cl. 399-270.000.
Inserra, Joseph: *See—*
Brockel, Kenneth H.; Sudnikovich, William P.; Inserra, Joseph; Loso, Francis; and Schulz, Kerri E., 5,669,063, Cl. 455-506.000.
Inspex Inc.: *See—*
Drake, Steven R., 5,667,353, Cl. 414-744.300.
Institut Francais Du Petrole: *See—*
Cholet, Henri, 5,667,369, Cl. 417-448.000.
Forestiere, Alain; Yout, Pierre; and Delhomme, Henri, 5,668,293, Cl. 585-269.000.
Institut Straumann AG: *See—*
Sutter, Franz; Grande, Vincenzo; and Sutter, Francis J., 5,667,384, Cl. 433-172.000.
Instituto Tecnologico and de Estudios Superiores: *See—*
Manrique-Valadez, José Angel, 5,666,818, Cl. 62-235.100.
Instrumentarium Oy: *See—*
Weckström, Kurt Peter; Meriläinen, Pekka Tuomo; and Rantala, Börje Tor, 5,668,376, Cl. 250-495.100.
Intel Corporation: *See—*
Ataras, William S., III, 5,668,738, Cl. 348-17.000.
Bramnik, Arkady, 5,668,766, Cl. 365-207.000.
Cahill, Benjamin M., III, 5,668,594, Cl. 348-194.000
Carbine, Adrian L.; Brown, Gary L.; Hoyt, Bradley D.; Parker, Donald D.; and Kumar, Rajesh, 5,668,985, Cl. 395-595.000.
Carmean, Douglas M.; and Crawford, John, 5,669,003, Cl. 395-750.040.
Cottrell, Stephen E., 5,667,388, Cl. 439-74.000.
Hazen, Peter K., 5,668,760, Cl. 365-189.010.
Iyengar, Sundaravarathan R.; and Choudhury, Mustafiz R., 5,669,014, Cl. 395-842.000.
Jassowski, Michael; and Smith, Keith, 5,668,389, Cl. 257-207.000.
Nardone, Joseph M.; McTague, Michael J.; and David, Howard S., 5,668,949, Cl. 395-200.310.
Sery, George E.; and Smudski, Jan A., 5,668,034, Cl. 438-266.000.
Intelliwire, Inc.: *See—*
Imran, Mir A.; Brooks, Dennis L.; and Gandhi, Deepak R., 5,666,968, Cl. 128-772.000.
Interaxx Television Network, Inc.: *See—*
Spaulding, John E., II, 5,668,592, Cl. 348-13.000.
International Business Machine Corporation: *See—*
Gersbach, John Edwin; and Hayashi, Masayuki, 5,668,709, Cl. 363-60.000.
Minakami, Michael Ken; Hulse, Brian; Cook, Jonathan; and Pickering, John Brian, 5,668,854, Cl. 379-88.000.
International Business Machines Corporation: *See—*
Attanasio, Clement Richard; Butrico, Maria Angela; Peterson, James Lyle; Polyzois, Christos Alkiviadis; and Smith, Stephen Edwin, 5,668,943, Cl. 395-182.050.
Bantu, Nageshwer Rao; Brunsvold, William Ross; Hefferon, George Joseph; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic Changwon, 5,667,938, Cl. 430-270.100.
Beer, Reginald; Cutts, Stanley John; Kew, Steven Brian; Morris, Neil; and Newmarch, David, 5,668,532, Cl. 340-506.000.
Belknap, William Russell; Cleary, Louise Irene; Eldridge, James W.; Fitchett, Larry William; Luning, Stephen G.; Murray, Christopher S.; Olnowich, Howard T.; Saxena, Ashok Raj; Schubert, Karl David; and Stansbury, Buddy Floyd, 5,668,948, Cl. 395-200.610.
Bendert, Edward Joseph; Bennett, Robert Bradley; Berman, Eve Suzanne; Farrell, Susan Marie; Johnson, Eugene; Nugent, Robert Michael; and Vendryes, Mary Ellen, 5,668,958, Cl. 395-308.000.
Berry, Robert Francis, 5,668,944, Cl. 395-184.010.
Boerstler, David William; and Dreps, Daniel Mark, 5,668,507, Cl. 331-78.000.
Chen, Mao-Min; Kung, Kenneth Ting-Yuan; and Tsang, Ching Hwa, 5,668,523, Cl. 338-32.00R.
Chen, Mao-Min; Kung, Kenneth Ting-Yuan; and Tsang, Ching Hwa, 5,668,687, Cl. 360-113.000.
Chen, Ming-Syan; and Yu, Philip Shi-lung, 5,668,988, Cl. 395-612.000.
Cheney, Dennis Phillip; Ciacelli, Mark Louis; Herndon, Steven Bradford; Myers, John David; and Ngai, Chuck Hong, 5,668,599, Cl. 348-402.000.

Chiu, Tom Tien-Cheng; Mikan, Donald George, Jr.; and Muhich, John Stephen, 5,668,525, Cl. 340-146.200.
Christie, Frederick Richard; Papathomas, Kostas I.; and Wang, David Wei, 5,668,059, Cl. 438-118.000.
Cronin, John Edward; and Gortych, Joseph Edward, 5,668,018, Cl. 430-5.000.
Cronin, John Edward; and Hiltebeitel, John Andrew, 5,668,399, Cl. 257-532.000.
Davis, Gordon Taylor; Devins, Robert James; Kam, Patrick Kwong-hung; Patrick, James L., Jr.; and Krause, John Michael, 5,668,957, Cl. 395-309.000.
Douskey, Steven Michael; and Wong, Paul W., 5,668,816, Cl. 371-21.300.
Ek, Bruce Allen; Gates, Stephen McConnell; Guarin, Fernando Jose; Iyer, Subramanian Srikanteswara; and Powell, Adrian Roger, 5,667,586, Cl. 117-84.000.
Georgiou, Christos John; Larsen, Thor Arne; and Lee, Ki Won, 5,668,830, Cl. 375-220.000.
Gersbach, John Edwin; and Hayashi, Masayuki, 5,668,503, Cl. 331-1.00A.
Hammer, Jack L.; Ford, Jeffrey V.; and Caldwell, L. Bowen, 5,668,992, Cl. 395-651.000.
Hasegawa, Isahiro; Muller, Karl Paul; Poschenriedes, Bernhard L.; Timme, Hans-Joerg; and Van Kessel, Theodore, 5,667,622, Cl. 156-345.000.
Healy, Vivian Louise; Huang, Hanhsi; and Nguyen, Tin Luong, 5,668,961, Cl. 345-339.000.
Houle, Robert Maurice; and Zick, Kenneth Michael, 5,668,983, Cl. 395-560.000.
Joskowicz, Leo; Kim, Michelle Yoonkyung; and Song, Junehwa, 5,669,006, Cl. 395-779.000.
Lawless, William Francis; and Mitchell, Richard Jesse, 5,668,979, Cl. 345-509.000.
Linzer, Elliot Neil; Peterson, Heidi Aarlien; and Viscito, Eric, 5,668,598, Cl. 348-402.000.
Liu, Peichun Peter; and Branson, Brian David, 5,668,972, Cl. 711-136.000.
Malcolm, Jerry Walter, 5,668,959, Cl. 345-333.000.
Markovich, Voya Rista; Mehta, Ashit Arvind; Skarvinko, Eugene Roman; and Wei Wang, David, 5,667,934, Cl. 430-280.100.
Moreno, Jaime Humberto, 5,669,001, Cl. 395-706.000.
Muhich, John Stephen; Masleid, Robert Paul; and Phillips, Larry Bryce, 5,668,761, Cl. 365-189.050.
Nakamura, Fusanobu; Kataoka, Rieko; and Yonemochi, Kenshin, 5,668,695, Cl. 361-683.000.
Nilsen, Kenneth; and Garcia, David, 5,668,986, Cl. 395-610.000.
Numao, Masayuki; and Masuda, Hiroshi, 5,668,939, Cl. 345-427.000.
Ono, Kiyoshi; and Yoshida, Yoichi, 5,668,966, Cl. 345-356.000.
Palmer, Darrell D.; Erpelding, A. David; and Pattanaik, Surya, 5,668,684, Cl. 360-106.000.
Pedersen, Mark Eric; and Wohl, Peter, 5,668,492, Cl. 327-291.000.
Slane, Albert Alfonse, 5,668,952, Cl. 395-200.750.
Smith, William Charles, Jr.; and Lord, Donn Allan, 5,666,985, Cl. 134-142.000.
Stevenson, John George, 5,668,800, Cl. 370-248.000.
Swagerman, Richard E., 5,668,994, Cl. 395-672.000.
Taborn, Michael Preston; Bailey, Roger Ned; and Burchfiel, Steven Michael, 5,668,984, Cl. 395-563.000.
Tateishi, Yuka, 5,669,007, Cl. 395-779.000.
Toubol, Gilles; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Torres, Luc; and Verplanken, Fabrice, 5,668,798, Cl. 370-230.000.
Walach, Eugene, 5,667,078, Cl. 209-584.000.
Wu, Ching-Farn E., 5,668,968, Cl. 711-3.000.
International Computers Limited: *See—*
Dunn, Stephen; and Kelbie, Peter, 5,668,991, Cl. 395-618.000.
Inuiya, Masafumi; and Masugane, Kazuyuki, to Fuji Photo Film Co., Ltd. Video signal reproduction processing method and apparatus for reproduction of a recorded video signal as either a sharp still image or a clear moving image. 5,668,914, Cl. 386-46.000.
Inukai, Keiichi: *See—*
Suzuki, Kenzi; and Inukai, Keiichi, 5,667,561, Cl. 95-139.000.
Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, to Toshiba Lighting & Technology Corporation. Nitride layer for discharge lamps. 5,668,440, Cl. 313-635.000.
Inuzuka, Hideo: *See—*
Ogawa, Takashi; Sofue, Masaaki; and Inuzuka, Hideo, 5,668,793, Cl. 369-77.200.
Inventio AG: *See—*
Spiess, Peter, 5,667,039, Cl. 187-334.000.
IPG Corporation: *See—*
Packo, Joseph J., 5,666,812, Cl. 62-85.000.
Irikura, Takayuki: *See—*
Sakamoto, Hiroshi; and Irikura, Takayuki, 5,666,869, Cl. 83-168.000.
Irmich, Franz-Josef, to Zimmermann & Jansen GmbH. Slide valve to close large fluid conduits, in particular double-disk slide valve. 5,667,196, Cl. 251-193.000.
Irokawa, Shigenobu: *See—*
Chida, Hiroaki; Sato, Mitsuo; and Irokawa, Shigenobu, 5,667,213, Cl. 270-58.030.
Irving, Mark Edward; and Black, Donald Lee, to Eastman Kodak Company. Photographic emulsions of enhanced sensitivity and reduced contrast. 5,667,954, Cl. 430-567.000.
Isaacs, Richard C. A.: *See—*
Sanderson, Philip E.; Naylor-Olsen, Adel M.; Dyer, Dona L.; Vacca, Joseph P.; Isaacs, Richard C. A.; Dorsey, Bruce D.; and Fraley, Mark E., 5,668,289, Cl. 546-293.000.
Iseyama, Takayuki, to Fujitsu Limited. Mobile method and apparatus for standby control in a communication system. 5,669,064, Cl. 455-517.000.
Ishibashi, Hiroyuki: *See—*
Kurata, Yasushi; Kurashige, Kazuhisa; and Ishibashi, Hiroyuki, 5,667,583, Cl. 117-13.000.
Ishibashi, Kazuyoshi, to Universal Sales Co., Inc. Ltd. Variable display gaming machine. 5,667,219, Cl. 273-143.00R.
Ishibashi, Kenshi, Hitomi Kato Ishibashi, heirs: *See—*
Ishibashi, Yayoi, deceased, 5,667,525, Cl. 606-206.000.
Ishibashi, Koichiro: *See—*
Itoh, Kiyoo; and Ishibashi, Koichiro, 5,668,770, Cl. 365-227.000.
Ishibashi, Yayoi, deceased (by Kenshi Ishibashi, Hitomi Kato Ishibashi, heirs), to Olympus Optical Co. Grasping forceps for endoscope. 5,667,525, Cl. 606-206.000.
Ishida Co., Ltd.: *See—*
Fukuda, Masao, 5,667,123, Cl. 226-21.000.
Ishida, Masaharu: *See—*
Mizoguchi, Mitsuaki; Kobayashi, Nobuhisa; Ishida, Masaharu; and Yoshida, Minoru, 5,667,299, Cl. 366-145.000.
Ishige, Atsushi: *See—*
Ohno, Akihiko; Ishige, Atsushi; Koyama, Hiroshi; and Asami, Koichi, 5,667,872, Cl. 428-141.000.
Ishihara, Shunichi, to Canon Kabushiki Kaisha. Polycrystalline silicon semiconductor having an amorphous silicon buffer layer. 5,667,597, Cl. 136-258.000.
Ishii, Mariko: *See—*
Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
Ishii, Takayuki: *See—*
Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
Ishii, Yoshio: *See—*
Mikoshiba, Hisashi; Takizawa, Hiroo; Hosokawa, Junichiro; Ishii, Yoshio; Mihayashi, Keiji; and Morigaki, Masakazu, 5,667,959, Cl. 430-607.000.
Ishijima, Tatsuyuki: *See—*
Tokairin, Takeshi; and Ishijima, Tatsuyuki, 5,667,351, Cl. 414-225.000.
Ishikawa, Takatoshi; and Mogi, Fumio, to Fuji Photo Film Co., Ltd. Apparatus for processing photographic sensitive material. 5,669,031, Cl. 396-569.000.
Ishimoto, Koichi: *See—*
Kurita, Mitsuru; Suzuki, Yasumichi; and Ishimoto, Koichi, 5,668,881, Cl. 380-51.000.
Ishituka, Tomoaki: *See—*
Nishida, Masato; Ishituka, Tomoaki; and Oshima, Toshio, 5,668,363, Cl. 235-468.000.
Ishiyama, Keiichi: *See—*
Minami, Kohji; Tokita, Hiroyuki; Ishiyama, Keiichi; and Suzuki, Nobuo, 5,667,426, Cl. 451-41.000.
Ishiyama, Toshiro: *See—*
Suenaga, Yutaka; Ishiyama, Toshiro; Shimizu, Yoshiyuki; and Hayashi, Kiyoshi, 5,668,673, Cl. 359-731.000.
Ishizuki, Masafumi: *See—*
Nawa, Ikuichiro; and Ishizuki, Masafumi, 5,667,184, Cl. 248-500.000.
Isis Innovation Limited: *See—*
Southern, Edwin, 5,667,667, Cl. 205-687.000.
ISK Biosciences Corporation: *See—*
Fraley, Richard Wayne; and Rogers, Paul, 5,667,795, Cl. 424-405.000.
Islam, Abu S.; Kleckner, Robert J.; Chin, Leo; and Graveson, Sandra, to Xerox Corporation. Constrained film heat processor and method of developing digital film using conduction heat transfer. 5,669,032, Cl. 396-579.000.
Itagaki, Masaaki: *See—*
Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, 5,667,841, Cl. 427-235.000.
Itakura, Kazuo: *See—*
Yamashina, Yasuhiro; Itakura, Kazuo; and Yamaguchi, Yukihiko, 5,669,017, Cl. 396-6.000.
Ito, Hirokazu, to Sumitomo Wiring Systems, Ltd. Fuse puller. 5,666,865, Cl. 81-3.800.
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, to Mitsubishi Denki Kabushiki Kaisha; Kansai Electric Power Co., Inc., The; Electric Power Development Co., Ltd.; and Shikoku Electric Power Co., Inc. Arrangement for gas circuit breaker with reactor and capacitor connected in series and method for setting its circuit parameter. 5,668,691, Cl. 361-13.000.
Ito, Hiroyasu, to Minolta Co., Ltd. Copying machine with copying modes for copying on overhead projector sheets and paper. 5,669,058, Cl. 399-382.000.

Ito, Jun: *See*—
Takahashi, Toshinori; and Ito, Jun, 5,668,720, Cl. 701-46.000.
Ito, Katsuo: *See*—
Okada, Masanobu; and Ito, Katsuo, 5,667,395, Cl. 439-131.000.
Ito, Kazumi, to Olympus Optical Co., Ltd. Camera. 5,668,919, Cl. 396-268.000.
Ito, Koji; and Kawai, Taneichi, to Aisin Seiki Kabushiki Kaisha. Method and apparatus for detecting an impact on a vehicle. 5,667,244, Cl. 280-735.000.
Ito, Michio: *See*—
Miura, Yoshimasa; Ogino, Etsuo; Ito, Michio; and Takakura, Chitose, 5,667,151, Cl. 241-20.000.
Ito, Naoki: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,668,447, Cl. 315-368.260.
Ito, Nobuei: *See*—
Sugiura, Kazuhiko; Katayama, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,667,607, Cl. 156-67.000.
Ito, Nobuhiro: *See*—
Nakamura, Katsutoshi; and Ito, Nobuhiro, 5,668,616, Cl. 349-128.000.
Ito, Seishi: *See*—
Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; Kyo, Yoshiko; and Minegishi, Natsuko, 5,668,087, Cl. 504-247.000.
Ito, Shinichi: *See*—
Kondo, Masao; Ito, Shinichi; and Nakazono, Hiroki, 5,668,337, Cl. 84-609.000.
Ito, Toshiyasu; and Sato, Shigeru, to Yamaichi Electronics Co., Ltd. Card upside-down insertion preventative apparatus. 5,668,365, Cl. 235-486.000.
Ito, Yoshihiko; and Tani, Yasuhide, to Nippondenso Co., Ltd. Fuel supply system for use with internal combustion engine. 5,666,920, Cl. 123-432.000.
Itoh, Akira: *See*—
Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, 5,668,440, Cl. 313-635.000.
Itoh, Hikaru: *See*—
Suzuki, Masahiko; Ono, Kikuo; Ohwada, Junichi; Itoh, Hikaru; Kamei, Tatsuo; and Matsunaga, Kuniyuki, 5,668,649, Cl. 349-42.000.
Itoh, Hiroshi: *See*—
Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, 5,668,229, Cl. 526-93.000.
Itoh, Kiyoo; and Ishibashi, Koichiro, to Hitachi, Ltd. Static memory cell having independent data holding voltage. 5,668,770, Cl. 365-227.000.
Itoi, Kirio, to Shin-Etsu Handotai Co., Ltd. Method and apparatus for slicing workpiece. 5,667,423, Cl. 451-5.000.
Itonori, Katsuhiko, to Fuji Xerox Co., Ltd. Table recognition apparatus. 5,668,892, Cl. 382-177.000.
ITT Automotive Electrical Systems, Inc.: *See*—
Buschur, Jeffrey J., 5,668,478, Cl. 324-690.000.
ITT Automotive Inc.: *See*—
Hartig, Julie A., 5,666,991, Cl. 137-316.000.
ITT Corporation: *See*—
Frommer, Juergen; Illg, Manfred; and Schock, Manfred, 5,667,407, Cl. 439-610.000.
Ivanov, Vladimir V.: *See*—
Kulik, Pavel P.; Ivanov, Vladimir V.; Zornia, Eugenia N.; and Gay, John A., 5,667,852, Cl. 427-577.000.
Ivasauskas, Jonas: *See*—
Convertino, Steven; and Ivasauskas, Jonas, 5,667,672, Cl. 210-169.000.
Iwabuchi, Mitsunobu: *See*—
Natori, Kazuya; Iwabuchi, Mitsunobu; and Kawamura, Shigenori, 5,668,469, Cl. 324-121.00R.
Iwabuchi, Yuko; Sato, Mitsugu; and Ose, Yoichi, to Hitachi, Ltd. Scanning electron microscope and its analogous device. 5,668,372, Cl. 250-310.000.
Iwai, Kiyoshi; Hashimoto, Jyunichi; Nakamura, Takeshi; Heinouchi, Yoshiaki; Kumada, Akira; Kawai, Yoshio; Kanbayashi, Tsuguji; and Morikawa, Atushi, to Murata Manufacturing Co., Ltd. Vibrating gyroscope. 5,668,316, Cl. 73-493.000.
Iwaki, Tetsuo; Harada, Toshiaki; and Yamawaki, Chiaki, to Sharp Kabushiki Kaisha. Reproduced waveform equalization circuit. 5,668,746, Cl. 364-724.140.
Iwama, Jun, to Sony Corporation. Electro-optical display device. 5,668,567, Cl. 345-60.000.
Iwasaki, Yukiko, to Canon Kabushiki Kaisha. Solar cell manufacturing method. 5,668,050, Cl. 438-69.000.
Iwata, Shunichi: *See*—
Shimizu, Toru; Iwata, Shunichi; Doi, Toshio; and Mizugaki, Shigeo, 5,669,012, Cl. 395-800.010.
Iwaya, Yukiharu; Yamada, Mamoru; Kondo, Hitoshi; and Hagiwara, Toshimitsu, to Takasago International Corporation. Antiferroelectric liquid crystal compound and antiferroelectric liquid crystal composition containing the same. 5,667,722, Cl. 252-299.610.
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Lindenthal, Hans, 5,667,331, Cl. 403-359.000.
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Nakamura, Keisuke; and Tamada, Tomohiko, 5,667,874, Cl. 428-178.000.
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Shindo, Yuichiro; and Suzuki, Tsuneo, 5,667,665, Cl. 205-589.000.
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Jensen, Brian A.: *See*—
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Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.
Jensen, Eric Lee, to General Motors Corporation. Suspension strut with hydraulic stop. 5,667,041, Cl. 188-284.000.
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Jin, Sang-hyun, to Samsung Electronics, Co., Ltd. Dead-time generating circuit. 5,668,489, Cl. 327-173.000.
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Johnson, Chris E.: *See*—
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Johnson, Dee Lynn: *See*—
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Johnson, Duane R.: *See*—
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Johnson, Edwin F.: *See*—
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Johnson, James Robert: *See*—
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Johnson, Michael H.: *See*—
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Johnson, OluFunmi Lily; Ganmukhi, Medha M.; Bernstein, Howard; Auer, Henry; and Khan, M. Amin, to Alkermes, Inc. Composition for sustained release of human growth hormone. 5,667,808, Cl. 424-501.000.
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Jonas, Friedrich: *See*—
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Jones, Ernie Clebeart. Bow mounted boat latching mechanism. 5,666,901, Cl. 114-343.000.
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Jones, Martin Allen; Rosar, Edward Charles; and Pattengill, Maurice Glenn, to Western Aggregates, Inc. Lightweight dust suppressing aggregate for antiskidding applications. 5,667,718, Cl. 252-70.000.
Jones, Martin Kelly, to Global Research Systems, Inc. Advance notification system and method utilizing passenger calling report generator. 5,668,543, Cl. 340-994.000.
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Greff, Richard J.; Jones, Michael L.; and Evans, Scott, 5,667,767, Cl. 424-9.411.
Jones, Neil; and Morris, Mark D., to TRW Inc. Power steering system. 5,667,034, Cl. 180-422.000.
Jones, Robert. Apparatus for testing vehicle air brakes. 5,668,314, Cl. 73-129.000.
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Fang, Que-Tsang; Jones, Steven A.; Van Wert, James R.; and Dickenson, Roger C., 5,667,602, Cl. 148-549.000.
Jongebloed, Kenneth W. Automated multi-grade wastepaper recycle center sorting system. 5,667,079, Cl. 209-589.000.
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Josef, Kurt A.: *See*—
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Jouffreau, Christian; and Filonniere, Jean-Pierre Naude, to Chris-Craft Industrial Products, Inc. Method and apparatus for in-line printing on a water soluble film. 5,666,785, Cl. 53-411.000.
Joyce, Charles E. Multiple pill dispensing unit. 5,667,097, Cl. 221-93.000.
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Junino, Alex; Lagrange, Alain; N'Guyen, Quang Lan; and Bourboulon, Marie-Alix, to L'Oreal. Derivatives of 2,5-dihydroxyphenylcarboxylic acids, and their utilization in cosmetic or dermatological compositions with a depigmenting action. 5,667,792, Cl. 424-401.000.
Junkel, Eric F.; and Usher, Linda M., to Circulair, Inc. Portable fan device for use with a spray misting bottle. 5,667,731, Cl. 261-24.000.
Juric, Drago D.; Shaw, Raymond W.; Houston, Geoffrey J.; and Coad, Ian A., to Comalco Aluminum Limited. Ledge-free aluminum smelting cell. 5,667,664, Cl. 205-372.000.
Jurkowski, Thomasz; Jarny, Yvon; and Delaunay, Didier, to Universite de Nantes, Laboratoire de Thermocinetique de l'Isitem. Device for measuring the heat conductivity or heat capacity of an injectable or non-injectable material. 5,667,301, Cl. 374-43.000.
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Juto, Jan-Erik. Method and device for rhinostereometric measurement. 5,666,957, Cl. 128-665.000.
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Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Nishimori, Eiji; and Matsui, Takashi, 5,668,506, Cl. 331-66.000.
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Nozawa, Masako; and Yamaguchi, Yumiko, 5,668,640, Cl. 358-434.000.
Ohyu, Shigeharu, 5,668,472, Cl. 324-248.000.
Saito, Tutomu; and Matsui, Toshikazu, 5,668,648, Cl. 359-9.000.
Sugiura, Hiroyuki; Ono, Katsuhiro; and Anno, Hidero, 5,668,849, Cl. 378-133.000.
Yoshino, Tsutomu, 5,667,215, Cl. 271-258.010.
Kacic, Alan D. Abrasive sheet material for litter box. 5,666,907, Cl. 119-706.000.
Kadohara, Terutake; and Aihara, Yoshihiko, to Canon Kabushiki Kaisha. Optical apparatus including a light modulation finder optical system. 5,669,022, Cl. 396-111.000.
Kadota, Yoichi, to Mitsubishi Denki Kabushiki Kaisha. Malfunction diagnosis device for fuel-evaporated-gas processing device. 5,666,924, Cl. 123-520.000.
Kaga, Shinichi: *See*—
Kajiwara, Toshiyuki; Sugiyama, Tokuji; Takakura, Yoshio; Sakanaka, Takao; Yoshimura, Yasutsugu; Yasuda, Ken-ichi; and Kaga, Shinichi, 5,666,837, Cl. 72-14.400.
Kageyama, Mitsuhiro, to Canon Kabushiki Kaisha. Data communication method and apparatus including volatile and non-volatile storage. 5,668,864, Cl. 379-356.000.
Kai, Yukio: *See*—
Yoshida, Tadahiro; Kobayashi, Taro; Okuzono, Nobuhiro; and Kai, Yukio, 5,667,685, Cl. 210-510.100.
Kailasam, Ganesh: *See*—
Brunelle, Daniel Joseph; Kailasam, Ganesh; Serth-Guzzo, Judith Ann; and Wilson, Paul Russell, 5,668,186, Cl. 521-48.000.
Kaji, Makoto: *See*—
Hagiwara, Hideo; Kaji, Makoto; Nishizawa, Hiroshi; Suzuki, Kenji; and Kojima, Yasunori, 5,668,248, Cl. 528-353.000.
Kajita, Yuuji: *See*—
Mori, Tomoyuki; Fujita, Kouichi; Kajita, Yuuji; and Takai, Masaki, 5,667,644, Cl. 203-17.000.
Kajiwara, Toshiyuki; Sugiyama, Tokuji; Takakura, Yoshio; Sakanaka, Takao; Yoshimura, Yasutsugu; Yasuda, Ken-ichi; and Kaga, Shinichi, to Hitachi Ltd. Rolling mill and method of using the same. 5,666,837, Cl. 72-14.400.
Kaken Pharmaceutical Co., Ltd.: *See*—
Nakano, Jun; Fukui, Hideto; Shibata, Tetsuo; Senda, Hisato; Maejima, Tetsuro; Watanuki, Yayoi; and Arika, Tadashi, 5,668,147, Cl. 514-312.000.
Kakutani, Yuzuru; Konishi, Hitoshi; Asada, Kazuhiko; and Kashihara, Shinichiro, to JGC Corporation; and Kobe Steel, Ltd. Heat exchanging unit and heat exchanging apparatus. 5,667,005, Cl. 165-114.000.

Kalsi, Swarn S., to Grumman Aerospace Corporation. High-temperature AC superconducting magnets for a magnetic levitation system. 5,668,090, Cl. 505-166.000.
Kam, Patrick Kwong-hung: *See*—
Davis, Gordon Taylor; Devins, Robert James; Kam, Patrick Kwong-hung; Patrick, James L., Jr.; and Krause, John Michael, 5,668,957, Cl. 395-309.000.
Kaman, Richard A., to Products Research, Inc. Portable apparatus for testing electronic engine control systems. 5,668,312, Cl. 73-116.000.
Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photo film unit and method of unloading a cassette from the same. 5,669,018, Cl. 396-6.000.
Kamata, Kazuo: *See*—
Negishi, Kenji; Noguchi, Osamu; Aoshima, Shinsuke; and Kamata, Kazuo, 5,669,016, Cl. 396-6.000.
Kambara, Hideki, to Hitachi, Ltd. DNA detector and DNA detection method. 5,667,656, Cl. 204-603.000.
Kamei, Kenji: *See*—
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.
Morimoto, Toru; Hashinoki, Kenji; Hamada, Tetsuya; and Kamei, Kenji, 5,668,733, Cl. 364-488.000.
Kamei, Shigeru; Igari, Yasutaka; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Sustained-release preparation. 5,668,111, Cl. 514-15.000.
Kamei, Tatsuo: *See*—
Suzuki, Masahiko; Ono, Kikuo; Ohwada, Junichi; Itoh, Hikaru; Kamei, Tatsuo; and Matsunaga, Kuniyuki, 5,668,649, Cl. 349-42.000.
Kamei, Teruhiko: *See*—
Yiu, Tom Dang-Hsing; Hung, Chun-Hsiung; Wan, Ray-Lin; Cheng, Yao-Wu; and Kamei, Teruhiko, 5,668,758, Cl. 365-185.230.
Kamen, Melvin E., to Revlon Consumer Products Corporation. Surface treated applicators and related methods. 5,667,878, Cl. 428-198.000.
Kamen, Melvin Edwin; and Patel, Bhupendra, to Revlon Consumer Products Corporation. Radiation curable pigmented compositions and decorated substrates. 5,667,856, Cl. 428-34.600.
Kamioka, Tadashi: *See*—
Fukuda, Tsuguo; Sakaguchi, Susumu; Kamioka, Tadashi; Yamada, Toru; and Hirasawa, Teruhiko, 5,667,585, Cl. 117-49.000.
Kamisada, Toshimasa: *See*—
Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro; Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, 5,668,786, Cl. 369-13.000.
Kamiya, Minoru: *See*—
Sakurai, Akio; Kato, Takeyuki; and Kamiya, Minoru, 5,668,623, Cl. 351-212.000.
Kamlukin, Igor. Self propelled mower with low radius pivoted rear wheel steering. 5,667,032, Cl. 180-256.000.
Kan, Nickolay A.: *See*—
Bobrov, Vladimer A.; Kan, Nickolay A.; Yanchevskaya, Tamara G.; McGrath, Donald E.; and Skotnikov, Andrey V., 5,668,719, Cl. 364-420.000.
Kanaboshi, Akihiro: *See*—
Eda, Kazuo; Taguchi, Yutaka; Kanaboshi, Akihiro; and Ogura, Tetsuyoshi, 5,668,057, Cl. 438-113.000.
Tomita, Yoshihiro; Kanaboshi, Akihiro; Taguchi, Yutaka; and Eda, Kazuo, 5,666,706, Cl. 29-25.350.
Kanai, Moriyasu; and Hasushita, Sachio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Reflecting prism and a finder system having a reflecting prism. 5,668,674, Cl. 359-835.000.
Kanamori, Katuhiko: *See*—
Ohara, Fumio; Yoshihara, Shinji; Kanamori, Katuhiko; and Kurahashi, Takashi, 5,668,033, Cl. 438-113.000.
Kanamori, Terutoshi: *See*—
Sakamoto, Tadashi; Kanamori, Terutoshi; Yamada, Makoto; Shimizu, Makoto; Ohishi, Yasutake; and Sudo, Shoichi, 5,668,659, Cl. 359-341.000.
Kanata, Hiroyuki, to Fujitsu Limited. Charged particle beam exposure compensating proximity effect. 5,667,923, Cl. 430-30.000.
Kanayama, Hitoshi: *See*—
Tominaga, Takayuki; Senda, Kouji; Idogaki, Takaharu; Kaneko, Takashi; and Kanayama, Hitoshi, 5,668,432, Cl. 310-328.000.
Kanbayashi, Tsuguji: *See*—
Iwai, Kiyoshi; Hashimoto, Jyunichi; Nakamura, Takeshi; Heinouchi, Yoshiaki; Kumada, Akira; Kawai, Yoshio; Kanbayashi, Tsuguji; and Morikawa, Atushi, 5,668,316, Cl. 73-493.000.
Kanda, Hiroshi: *See*—
Kondo, Shinichi; Sasaki, Akira; Kanda, Hiroshi; Mitake, Tsuyoshi; and Okada, Kazutaka, 5,666,955, Cl. 128-660.040.
Kanda, Masahiro: *See*—
Okazaki, Kiyotaka; Kogure, Sinichi; Kanda, Masahiro; and Kobayashi, Shiroh, 5,668,225, Cl. 525-478.000.
Kanda, Shinji; Wakitani, Jun; Maruyama, Tsugito; and Morita, Toshihiko, to Fujitsu Limited. Method for determining orientation of contour line segment in local area and for determining straight line and corner. 5,668,893, Cl. 382-197.000.
Kanda, Tetsuo. *See*—
Arai, Yasuyuki; and Kanda, Tetsuo, 5,668,806, Cl. 370-342.000.
Kanebako, Hideki: *See*—
Nose, Tamotsu; and Kanebako, Hideki, 5,667,308, Cl. 384-99.000.
Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Ando, Naotami; Masuda, Toshiyuki; Hatano, Takanori; and Nakayama, Kazuya, 5,668,194, Cl. 523-201.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Furutani, Hiroyuki; Danno, Kazuhisa; Okamoto, Yoshifumi; Ida, Junya; Oonari, Yoshihide; Nojiri, Hitoshi; and Nagano, Hirosaku, 5,668,247, Cl. 528-353.000.
Kaneko, Takashi: *See*—
Tominaga, Takayuki; Senda, Kouji; Idogaki, Takaharu; Kaneko, Takashi; and Kanayama, Hitoshi, 5,668,432, Cl. 310-328.000.
Kaneko, Toshiki: *See*—
Ono, Kikuo; Tsumura, Makoto; Ogawa, Kazuhiro; Sakuta, Hiroki; Suzuki, Masahiko; Kaneko, Toshiki; Nakayoshi, Yoshiaki; Onisawa, Kenichi; Hashimoto, Kenichi; and Minemura, Tetsuro, 5,668,379, Cl. 257-59.000.
Kang, Beng Hong: *See*—
Siow, Wee Min; Hoong, Ting Yeow; and Kang, Beng Hong, 5,666,694, Cl. 16-368.000.
Kang, Bok-Moon; and Yoo, Seung-Moon, to Samsung Electronics Co., Ltd. Direct-current voltage generating circuit intermittently activated for reducing electric power consumption. 5,668,497, Cl. 327-544.000.
Kang, Shih-Chang. Apparatus for collecting roll film. 5,667,288, Cl. 312-211.000.
Kang, Tae Wook; and Lee, Kam Gyu, to LG Electronics, Inc. Fin tube heat exchanger. 5,667,006, Cl. 165-151.000.
Kang, Yun-seok: *See*—
Jeong, Seong-wook; Kim, Jae-in; and Kang, Yun-seok, 5,666,816, Cl. 62-154.000.
Kano, Yoshio W.: *See*—
Alvord, Robert J.; Huffington, Jeffrey M.; Kano, Yoshio W.; Calabrese, Joseph S.; and Mirza, Kayvan K., 5,668,359, Cl. 200-6.00B.
Kansai Electric Power Co., Inc., The: *See*—
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.
Ueda, Yoshisuke; Takase, Fuyuto; Oku, Kiyoshi; Hira, Takayuki; and Ashizawa, Atsushi, 5,668,458, Cl. 318-716.000.
Kansei Corporation: *See*—
Nagami, Masafumi, 5,668,415, Cl. 307-9.100.
Kantner, Richard D.: *See*—
Streckert, Holger H.; and Kantner, Richard D., 5,667,224, Cl. 277-3.000.
Kantor, Martin L., to Emisphere Technologies, Inc. Spray drying method and apparatus. 5,667,806, Cl. 424-484.000.
Kanzaka, Yoshihiro: *See*—
Watanabe, Shoichi; Inoguchi, Hirokazu; Kanzaka, Yoshihiro; Tanaka, Yoshiharu; Ikehara, Hideji; Saiki, Ryuji; Yamato, Nobukatsu; Mori, Tomohiro; and Senna, Minoru, 5,667,857, Cl. 422-36.200.
Kao, Chih-Chuan. Agricultural product preserving device. 5,666,763, Cl. 47-84.000.
Kao Corporation: *See*—
Tadayuki, Suzuki; Keiko, Hasabe; Kazuhiko, Kurita; and Yuichi, Hioki, 5,668,086, Cl. 504-235.000.
Yasuda, Shinichiro; and Inoue, Keisaku, 5,667,099, Cl. 222-1.000.
Kapaan, Hendrikus Jan; Aman, Robert Santry; and De Vries, Alexander Jan Carel, to SKF Industrial Trading and Development Company B.V. Bearing assembly for a vehicle hub. 5,667,313, Cl. 384-544.000.
Kapitex Healthcare Ltd.: *See*—
Smith, Rory James Maxwell, 5,666,950, Cl. 128-207.140.
Karaali, Orhan; Corrigan, Gerald Edward; and Gerson, Ira Alan, to Motorola, Inc. Method and apparatus for converting text into audible signals using a neural network. 5,668,926, Cl. 704-232.000.
Karacora, Sami, to Stocko Metallwarenfabriken Henkels & Sohn GmbH & Co. Lockable flat plug sleeve for an electrical connector. 5,667,414, Cl. 439-849.000.
Karch, Jörg, to RIWO-Drahtwerk GmbH. Process for the manufacture of a scraper or brush wire. 5,667,604, Cl. 148-598.000.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Mista, Kresimir, 5,666,826, Cl. 66-114.000.
Karpik, Gerard John, to Polaris Industries Partners L.P. Long travel suspension for tracked vehicle. 5,667,031, Cl. 180-193.000.
Karpinski, Arthur A., to Laser Diode Array, Inc. Lens support structure for laser diode arrays. 5,668,825, Cl. 372-101.000.
Kasahara, Masayoshi, to NEC Corporation. Wafer drying apparatus with balancing mechanism for turntable therein. 5,667,535, Cl. 29-25.010.
Kasano, Makiko: *See*—
Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
Kashihara, Keiichiro: *See*—
Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,668,041, Cl. 438-240.000.
Kashihara, Shinichiro: *See*—
Kakutani, Yuzuru; Konishi, Hitoshi; Asada, Kazuhiko; and Kashihara, Shinichiro, 5,667,005, Cl. 165-114.000.
Kashiwaya, Toshikatsu; Yamaguchi, Hirofumi; and Otagiri, Tadashi, to NGK Insulators, Ltd. Piezoelectric porcelain. 5,668,071, Cl. 501-136.000.
Katakura, Kageyoshi, to Hitachi, Ltd. Velocity measurement apparatus of moving object. 5,668,776, Cl. 367-89.000.
Katakura, Shusaku: *See*—
Narita, Yasushi; Niikura, Yasuhiro; Hattori, Noboru; Katakura, Shusaku; and Tohjima, Hisaaki, 5,667,458, Cl. 477-169.000.

Katano, Yuji; and Wakabayashi, Hiroshi, to Nikon Corporation. Camera with light shielding barrel and stepped film chamber defining space for flash condenser. 5,669,027, Cl. 396-535.000.

Katano, Yuji, to Nikon Corporation. Camera effectively utilizing internal space for decreasing size. 5,669,028, Cl. 396-535.000.

Kataoka, Misao, to Brother Kogyo Kabushiki Kaisha. Data processing device with means for displaying files in accordance with applications with which the files can be read. 5,668,960, Cl. 345-333.000.

Kataoka, Rieko: *See*—
Nakamura, Fusanobu; Kataoka, Rieko; and Yonemochi, Kenshin. 5,668,695, Cl. 361-683.000.

Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, to Canon Kabushiki Kaisha. Apparatus and method for decoding differently encoded multi-level and binary image data, the later corresponding to a color in the original image. 5,668,646, Cl. 358-530.000.

Katayama, Masayuki: *See*—
Sugiura, Kazuhiko; Katayama, Masayuki; Ito, Nobuei; and Hattori, Tadashi. 5,667,607, Cl. 156-67.000.

Katayama, Tatsushi; Niwa, Yukichi; and Suda, Shigeyuki, to Canon Kabushiki Kaisha. Multi-lens imaging apparatus having a mechanism for combining a plurality of images without displacement of registration. 5,668,595, Cl. 348-218.000.

Katnani, Ahmad D.: *See*—
Bantu, Nageshwer Rao; Brunsvold, William Ross; Hefferon, George Joseph; Huang, Wu-Song; Katnani, Ahmad D.; Khojasteh, Mahmoud M.; Sooriyakumaran, Ratnam; and Yang, Dominic Changwon. 5,667,938, Cl. 430-270.100.

Kato, Ippei; Kimura, Yuji; and Hesler, Lee James, to Du Pont de Nemours, E. I., and Company; and Mishima Paper Ltd. Aramid paper with high surface smoothness. 5,667,900, Cl. 428-474.700.

Kato, Masahiko, to Sanshin Kogyo Kabushiki Kaisha. Fuel injection control for engine. 5,666,935, Cl. 123-687.000.

Kato, Mitsuhide: *See*—
Furutani, Koji; Kato, Mitsuhide; and Tsuru, Teruhisa. 5,668,511, Cl. 333-204.000.

Kato, Nobuo, to Usui Kokusai Sangyo Kaisha Ltd. Joint structure for joining a branch member to a high pressure fuel rail. 5,667,255, Cl. 285-133.400.

Kato, Seiji, to Daiwa Seiko, Inc. Method of forming artificial bait. 5,667,739, Cl. 264-50.000.

Kato, Shigeo: *See*—
Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu. 5,668,646, Cl. 358-530.000.

Kato, Takeyuki: *See*—
Sakurai, Akio; Kato, Takeyuki; and Kamiya, Minoru. 5,668,623, Cl. 351-212.000.

Kato, Tatsuo; and Ono, Akihiko, to SMK Corp. Co-axial connector for high-frequency cable. 5,667,404, Cl. 439-578.000.

Kato, Yoshiaki: *See*—
Yano, Masayoshi; Mimura, Tadao; and Kato, Yoshiaki. 5,668,370, Cl. 250-288.000.

Katsumata, Ikuo: *See*—
Nakagoshi, Isao; Shimura, Hiromi; Katsumata, Ikuo; and Suzuki, Osamu. 5,667,071, Cl. 206-455.000.

Katsura, Naomi; Takeuchi, Hikaru; and Watanabe, Yuka, to Imperial Chemical Industries PLC. Polymeric film. 5,667,889, Cl. 428-353.000.

Katta, Noboru: *See*—
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki. 5,668,879, Cl. 380-41.000.

Katyl, Robert H.: *See*—
Greene, Raymond G.; Katyl, Robert H.; Krusius, J. Peter; and Yost, Boris. 5,668,569, Cl. 345-103.000.

Katzaman, Ronald E.: *See*—
Broschard, John L., III; Jacobs, Edmund L.; Katzaman, Ronald E.; and Larkin, John T., Jr.. 5,667,408, Cl. 439-630.000.

Kaufmann, Timothy Wesley; Chandy, Ashok; and Collier-Hallman, Steven James, to General Motors Corporation. Electric power steering control. 5,668,722, Cl. 701-41.000.

Kaushal, Deepack: *See*—
Millard, Julian W. F.; Edwards, Keith William; Tucker, Howard J.; and Kaushal, Deepack. 5,667,325, Cl. 403-119.000.

Kawachi, Yoshiko: *See*—
Tsuji, Kikunosuke; Watanabe, Takeshi; Baba, Kohichi; Satake, Kenichi; Kawachi, Yoshiko; Hori, Setsuo; and Koyama, Shigeo. 5,668,581, Cl. 347-37.000.

Kawagishi, Fumikazu; Yamada, Keiko; and Iguchi, Hiroshi, to Kowa Tekuno Sachi Co., Ltd. Method of treating hyperparathyroidism. 5,668,174, Cl. 514-560.000.

Kawaguchi, Hironobu; Tomimatsu, Noriyuki; Yoshioka, Kazuo; and Matsumoto, Sadayuki, to Mitsubishi Denki Kabushiki Kaisha. Display fluorescent lamp and display device. 5,668,443, Cl. 315-169.100.

Kawaguchi, Hitoshi: *See*—
Okazawa, Koichi; Kimura, Koichi; Kawaguchi, Hitoshi; Aburano, Ichiharu; Kobayashi, Kazushi; and Mochida, Tetsuya. 5,668,956, Cl. 395-306.000.

Kawahata, Kazunari, to Murata Manufacturing Co., Ltd. Surface-mount antenna and communication device using same. 5,668,557, Cl. 343-700.0MS.

Kawai, Taneichi: *See*—
Ito, Koji; and Kawai, Taneichi. 5,667,244, Cl. 280-735.000.

Kawai, Yoshio: *See*—
Iwai, Kiyoshi; Hashimoto, Jyunichi; Nakamura, Takeshi; Heinouchi, Yoshiaki; Kumada, Akira; Kawai, Yoshio; Kanbayashi, Tsuguji; and Morikawa, Atushi. 5,668,316, Cl. 73-493.000.

Kawamura, Shigenori: *See*—
Natori, Kazuya; Iwabuchi, Mitsunobu; and Kawamura, Shigenori. 5,668,469, Cl. 324-121.00R

Kawano, Genji: *See*—
Nakahata, Tatsutoshi; Kawano, Genji; Sudo, Tetsuo; and Kojima, Katsuaki. 5,668,104, Cl. 514-2.000.

Kawano, Naoki: *See*—
Sato, Akira; Kawano, Naoki; Nomura, Takeshi; Nakano, Yukie; Arashi, Tomohiro; and Yamamatsu, Junko. 5,668,694, Cl. 361-321.400.

Kawano, Tamotsu: *See*—
Osajima, Yutaka; Shimoda, Mitsuya; and Kawano, Tamotsu. 5,667,835, Cl. 426-521.000.

Kawasaki, Kenji: *See*—
Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji. 5,668,950, Cl. 395-200.470.

Kawasaki, Mayumi: *See*—
Miyazaki, Tetsuya; Kawasaki, Mayumi; and Ohno, Takao. 5,667,726, Cl. 252-315.200.

Kawasaki Steel Corporation: *See*—
Komatsubara, Michiro; Hayakawa, Yasuyuki; Takeuchi, Humihiko; and Yamada, Masataka. 5,666,842, Cl. 72-200.000.
Ozaki, Yoshihiro; Fujita, Akio; and Muraki, Mineo. 5,667,598, Cl. 148-111.000.

Kawase, Takeo: *See*—
Miyazawa, Hiromu; Ootsuki, Shinya; Kawase, Takeo; and Nebashi, Satoshi. 5,667,887, Cl. 428-332.000.

Kawashima, Fuminori; Ueshima, Hideo; Ohtsu, Keiji; Tsuji, Yoshihito; and Takahashi, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Oil passage structure in an engine. 5,666,915, Cl. 123-196.00R.

Kawashima, Miki; Yamaguchi, Takeo; Horiuchi, Kunio; and Uchida, Hiromi, to Toyo Ink Manufacturing Co., Ltd. Liquid polyesters from cyclic acid anhydrides. 5,668,244, Cl. 528-297.000.

Kawata, Masahiko: *See*—
Mochizuki, Kazuhiro; Goto, Shigeo; Kusano, Chushirou; Kawata, Masahiko; Masuda, Hiroshi; Mitani, Katsuhiko; and Takahashi, Susumu. 5,668,402, Cl. 257-627.000.

Kayaba Kogyo Kabushiki Kaisha: *See*—
Sato, Kosuke; Haniuda, Nobuyoshi; and Kozuma, Fumihide. 5,666,770, Cl. 52-167.200.

Kazen, Gaius D. Flue insert to control exhaust gases. 5,666,942, Cl. 126-307.00R.

Kazuhiko, Kurita: *See*—
Tadayuki, Suzuki; Keiko, Hasabe; Kazuhiko, Kurita; and Yuichi, Hioki. 5,668,086, Cl. 504-235.000.

Keck, Donald B.; and Modavis, Robert A., to Corning Incorporated. Low reflectivity fiber bragg grating with rectangular reflection function. 5,668,901, Cl. 385-37.000.

Keck, John S.: *See*—
Christian, Kevin G.; Keck, John S.; and Skoog, Steven K., 5,668,352, Cl. 178-18.000.

Keegel, Joseph F., Jr., to Complete Recovery Process, LLC. Methods for recycling electric arc furnace dust. 5,667,553, Cl. 75-10.630.

Keeler, Eric L.: *See*—
Baker, William R.; Shaopei, Cai; and Keeler, Eric L., 5,668,127, Cl. 514-183.000.

Keen, Billy J., Jr.: *See*—
Adams, John M.; Braunshteyn, Mikhail S.; Counts, Mary Ellen; Dale, Gerald M.; Harris, Charles W.; Jones, Donald H.; Keen, Billy J., Jr.; Sanderson, Wesley G.; Smith, Barry S.; Stevenson, Brett W.; and Wrenn, Susan E., 5,666,976, Cl. 131-94.000.
Counts, Mary Ellen; Deevi, Seetharama C.; Fleischhauer, Grier S.; Hajalogol, Mohammad R.; Hayes, Patrick H.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Laroy, Bernard C.; Lipowicz, Peter J.; Miser, Donald E.; Nichols, Constance H.; Stevens, William H.; Subbiah, Mantharam; Watkins, Michael L.; and Wrenn, Susan E., 5,666,978, Cl. 131-194.000.

Keeth, Brent: *See*—
Sher, Joseph C.; and Keeth, Brent, 5,668,751, Cl. 365-96.000.

Kehoe, Gary Steven: *See*—
Carroll, Thomas Joseph; and Kehoe, Gary Steven, 5,667,823, Cl. 426-3.000.

Keiko, Hasabe: *See*—
Tadayuki, Suzuki; Keiko, Hasabe; Kazuhiko, Kurita; and Yuichi, Hioki. 5,668,086, Cl. 504-235.000.

Keith, Peter T.; Atkinson, Robert E.; Ressemann, Thomas V.; and Mische, Hans, to SciMed Life Systems, Inc. Ablation device drive assembly including catheter connector. 5,667,490, Cl. 604-22.000.

Kelbie, Peter: *See*—
Dunn, Stephen; and Kelbie, Peter. 5,668,991, Cl. 395-618.000.

Kellen, James N.: *See*—
Kinzer, Kevin E.; Holland, Lowell W.; Sridhar, Krishnamurthy; Kellen, James N.; and Pribnow, Richard W., 5,667,893, Cl. 428-413.000.

Keller, Arnold: *See*—
Bollier, Walter; and Keller, Arnold. 5,666,996, Cl. 139-1.00C.

Keller, David A., to Alcatel NA Cable Systems, Inc. Rectangular optical fiber cable. 5,668,912, Cl. 385-100.000.

Keller, Ernst. Key and installation double cylinder for a security lock. 5,666,835, Cl. 70-397.000.

Keller, Wilhelm A. Cartridge with an exchangeable content package. 5,667,102, Cl. 222-95.000.

Kelleter, Jörg; Kohl, Claus-Dieter; and Petig, Heinz, to RWE Energie Aktiengesellschaft. Apparatus for measuring a state variable in a gas with at least one semiconductive gas sensor. 5,668,304, Cl. 73-31.050.

Kelley, Michael L., Jr. Concrete building block system. 5,667,200, Cl. 264-219.000.

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Lau, Jark Chong; and Haynes, Bryan David, 5,667,749, Cl. 264-555.000.
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Voelker, Toni Alois; Davies, Huw Maelor; and Knutzon, Deborah, 5,667,997, Cl. 435-172.300.

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Kuribayashi, Hirotaka; Kobayashi, Hironai; Hirakata, Takashi; Gotoh, Kazuhiro; and Fujita, Yoshio, 5,668,334, Cl. 84-602.000.

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Kusaba, Takashi; Kobayashi, Hiroyuki; Nakazawa, Akihiko; Tanaka, Atsushi; and Ashibe, Tsunenori, 5,669,052, Cl. 399-308.000.

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Kobayashi, Michio: *See*—
Salmen, Kristine S.; Choo, Pek Lee, Picco, David A.; and Kobayashi, Michio, 5,667,697, Cl. 210-727.000.

Kobayashi, Naoki: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Sugimura, Shigeo; Koeda, Hiroshi; Kobayashi, Naoki; and Oguchi, Asahiro, 5,668,579, Cl. 347-10.000.

Kobayashi, Nobuhisa: *See*—
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Kobe Steel, Ltd.: *See*—
Kakutani, Yuzuru; Konishi, Hitoshi; Asada, Kazuhiko; and Kashihara, Shinichiro, 5,667,005, Cl. 165-114.000.

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Nohr, Ronald Sinclair; MacDonald, John Gavin; and Kobylivker, Peter Michelovich, 5,667,750, Cl. 264-555.000.

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Kodama, Hirokazu: *See*—
Eguchi, Masaki; Kodama, Hirokazu; Takebayashi, Tsukasa; and Nakata, Hirofumi, 5,668,713, Cl. 363-95.000.

Kodama, Kunihiko: *See*—
Sato, Kenichiro; Kodama, Kunihiko; and Momota, Makoto, 5,667,932, Cl. 430-192.000.

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Corleto, Jose G.; and Kodra, Gregg S., 5,668,749, Cl. 364-736.010.

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Shimizu, Shinkichi; Watanabe, Nanao; and Kuranishi, Hideki, 5,668,281, Cl. 544-336.000.

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Wittmann, Walter, 5,667,737, Cl. 264-40.100.

Koga, Osamu: *See*—
Fukuyoshi, Kenzo; Kimura, Yukihiro; Imayoshi, Koji; Koga, Osamu; and Horachi, Katsunori, 5,667,853, Cl. 428-1.000.

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Kogushi, Motoji: *See*—
Kimura, Teiji; Watanabe, Nobuhisa; Takase, Yasutaka; Hayashi, Kenji; Matsui, Makoto; Ikuta, Hironori; Yamagishi, Youji; Akasaka, Kozo; Tanaka, Hiroshi; Ohtsuka, Issei; Saeki, Takao; Kogushi, Motoji; Fujimori, Tohru; and Saito, Isao, 5,668,136, Cl. 514-255.000.

Koh, Kwang Jin; Jang, Byoung Youl; Lee, Jin Hee; Lee, Kang Pyo; and Kong, Un Young, to Cheil Jedang Corporation. Process for preparing a fermentation product having SOD activity using a microorganism and a beverage containing the same. 5,667,999, Cl. 435-189.000.

Koh, Risho; and Ogura, Atsushi, to NEC Corporation. Method of producing a semiconductor on insulating substrate, and a method of forming transistor thereon. 5,668,046, Cl. 438-481.000.

Kohjin Co., Ltd.: *See*—
Mizutani, Tomozi; Yokota, Katsuyuki; Arita, Masahobu; and Kojyou, Hisashi, 5,667,813, Cl. 425-71.000.

Kohl, Claus-Dieter: *See*—
Kelleter, Jörg; Kohl, Claus-Dieter; and Petig, Heinz, 5,668,304, Cl. 73-31.050.

Köhl, Horst: *See*—
Kückens, Alexander; and Köhl, Horst, 5,667,769, Cl. 424-70.100.

Kohlhepp, Karl-Ernst: *See*—
Herber, Karl-Heinz; and Kohlhepp, Karl-Ernst, 5,667,815, Cl. 425-119.000.

Kohsaka, Shoji: *See*—
Sato, Masahiro; Aoyama, Yukiyasu; Takagi, Nobuoki; and Kohsaka, Shoji, 5,668,069, Cl. 501-97.200.

Kohzaki, Shuichi: *See*—
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Ichinose, Hiroki; Takeda, Keiso; Kojima, Susumu; and Sadakane, Shinji, 5,666,919, Cl. 123-399.000.
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Hagiwara, Hideo; Kaji, Makoto; Nishizawa, Hiroshi; Suzuki, Kenji; and Kojima, Yasunori, 5,668,248, Cl. 528-353.000.
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Mizutani, Tomozi; Yokota, Katsuyuki; Arita, Masahobu; and Kojyou, Hisashi, 5,667,813, Cl. 425-71.000.
Kokkelenberg, Dirk: *See*—
Vermeersch, Joan; and Kokkelenberg, Dirk, 5,667,939, Cl. 430-302.000.
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Nishimatsu, Kaoru; Amano, Hideki; and Sakayori, Shin-ichi, 5,668,856, Cl. 379-89.000.
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Kolasa, Teodozyj: *See*—
Brooks, Clint D. W.; Bhatia, Pramila; and Kolasa, Teodozyj, 5,668,146, Cl. 514-311.000.
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Koller, Klaus-Peter, Sahl, Hans Georg; and Bierbaum, Gabriele, to Hoechst Aktiengesellschaft. Recombinant mersacidin and a method for production. 5,667,991, Cl. 435-69.100.
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Kolodziej, Edward R., to Robotron. Multiple sequence welding controller. 5,667,704, Cl. 219-108.000.
Kolomeitsev, Sergei F., to Dana Corporation. Dual-sectioned switched reluctance motor. 5,668,430, Cl. 310-266.000.
Kolsun, George J., to United States of America, Energy. Installation and assembly device and method of using. 5,666,724, Cl. 29-888.020.
Komatsu, Kazuki: *See*—
Sasaki, Masafumi; Yumoto, Takemi; Komatsu, Kazuki; and Shiragami, Noriyuki, 5,667,440, Cl. 463-29.000.
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Murayama, Osamu, 5,668,742, Cl. 364-559.000.
Komatsubara, Michiro; Hayakawa, Yasuyuki; Takeuchi, Humihiko; and Yamada, Masataka, to Kawasaki Steel Corporation. Method of cold rolling grain-oriented silicon steel sheet having excellent and uniform magnetic characteristics along rolling direction of coil and a roll cooling controller for cold rolling mill using the cold rolling method. 5,666,842, Cl. 72-200.000.
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Kumabe, Takashi; Hamano, Takashi; Uehara, Isao; and Kikuya, Takumi, 5,667,218, Cl. 273-138.300.
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, to Yazaki Corporation. Slowly-breaking fuse and method of production. 5,668,522, Cl. 337-198.000.
Kondo, Hiroshi; Oguri, Takamasa; Yano, Masato; Okuda, Kazuyuki; and Kitagawa, Yoshihiro, to Nippondenso Co, Ltd. Data backup apparatus utilized in an electronic control system and data backup method performed in the data backup apparatus. 5,668,726, Cl. 701-115.000.
Kondo, Hisao: *See*—
Kojiri, Katsuhisa; Kondo, Hisao; Arakawa, Hiroharu; Ohkubo, Mitsuru; and Suda, Hiroyuki, 5,668,271, Cl. 536-27.100.
Kondo, Hitoshi: *See*—
Iwaya, Yukiharu; Yamada, Mamoru; Kondo, Hitoshi; and Hagiwara, Toshimitsu, 5,667,722, Cl. 252-299.610.
Kondo, Makoto; Anayama, Chikashi; and Shoji, Hajime, to Fujitsu Limited. Method of making a semiconductor device utilizing crystal orientation dependence of impurity concentration. 5,668,048, Cl. 438-46.000.
Kondo, Masao; Ito, Shinichi; and Nakazono, Hiroki, to Yamaha Corporation. Automatic performance device having a note conversion function. 5,668,337, Cl. 84-609.000.
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Kondou, Tsutomu, to Mitsubishi Chemical Corporation. Coating composition for preparing solid preparations and solid preparations. 5,667,573, Cl. 106-194.200.
Konetzka, Georg, to Hosokawa Alpine Aktiengesellschaft. Classifying wheel for centrifugal-wheel classifiers. 5,667,075, Cl. 209-303.000.
Kong, Un Young: *See*—
Koh, Kwang Jin; Jang, Byoung Youl; Lee, Jin Hee; Lee, Kang Pyo; and Kong, Un Young, 5,667,999, Cl. 435-189.000.
Konica Corporation: *See*—
Kishimoto, Tadao, 5,669,038, Cl. 399-67.000.
Kurematsu, Masayuki; Ennyu, Hiroko; and Yamamoto, Nobuya, 5,669,035, Cl. 396-626.000.
Nakayama, Haruki; Honda, Yuichi; and Imaizumi, Toshio, 5,668,670, Cl. 359-694.000.
Usagawa, Yasushi; and Nishizeki, Masato, 5,667,960, Cl. 430-622.000.
Konishi, Hitoshi: *See*—
Kakutani, Yuzuru; Konishi, Hitoshi; Asada, Kazuhiko; and Kashihara, Shinichiro, 5,667,005, Cl. 165-114.000.
Konishi, Yoshiro: *See*—
Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro, Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, 5,668,786, Cl. 369-13.000.
Konrad, Renate: *See*—
Engels, Joachim; Herrlein, Mathias; Konrad, Renate; and Mag, Matthias, 5,668,269, Cl. 536-25.320.
Konzelmann, Uwe: *See*—
Hecht, Hans; Tank, Dieter; and Konzelmann, Uwe, 5,668,313, Cl. 73-118.200.
Kooiman, Johan Anton. Tensioning system and method for an orthodontic outer brace. 5,667,380, Cl. 433-5.000.
Koop, Hermann; Fritsche, Wolf-Eckhart; and Hensel, Bernd, to Leybold Aktiengesellschaft. Master for the duplication of sound recordings and process for its production. 5,667,658, Cl. 205-50.000.
Kopetzky, Robert: *See*—
Mitzkus, Jürgen; and Kopetzky, Robert, 5,667,161, Cl. 242-374.000.
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, to Zynaxis, Inc. Compounds, compositions and methods for binding bio-affecting substances to surface membranes of bio-particles. 5,667,764, Cl. 424-1.450.
Koprowski, Hilary: *See*—
Linnenbach, Alban J.; Koprowski, Hilary; and Szala, Stanislaw, 5,668,002, Cl. 435-325.000.
Kor Team International, Inc.: *See*—
Groner, Gabriel F., 5,668,928, Cl. 704-243.000.
Korea Kumho Petrochemical Co., Ltd.: *See*—
Lee, Dae-Youp; Kim, Ki-Dae; Kim, Ji Hong; and Kim, Seong-ju, 5,667,931, Cl. 430-191.000.
Korea Telecommunication Authority: *See*—
Cho, Deok-Ho; Lee, Soo-Min; Han, Tae-Hyeon; Ryum, Byung-Ryul; and Pyun, Kwang-Eui, 5,668,022, Cl. 438-320.000.
Koreeda, Masato: *See*—
Truong, Thien V.; Bierer, Donald E.; Dener, Jeffrey M.; Hector, Richard; Tempesta, Michael S.; Loev, Bernard; Yang, Wu, and Koreeda, Masato, 5,668,168, Cl. 514-436.000.
Koriyama, Masao, to Yamaha Hatsudoki Kabushiki Kaisha. Sleeveless cylinder block without marginal plating coating. 5,666,933, Cl. 123-668.000.
Korsnas AB: *See*—
Pettersson, Bertil; Granqvist, Bertil; and Eriksson, Ingemar, 5,667,633, Cl. 162-30.110.
Korsunsky, Iosif: *See*—
Grabbe, Dimitry; and Korsunsky, Iosif, 5,667,393, Cl. 439-83.000.
Korthuis, Donald L., to Korvan Industries, Inc. Beater rod assembly and method for a mobile harvesting machine. 5,666,796, Cl. 56-330.000.
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Korthuis, Donald L., 5,666,796, Cl. 56-330.000.
Kost, Friedrich: *See*—
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Kosten, Richard B.; and St. John, Robert A., to Black & Decker Inc. Can opener with moving lid retainer. 5,666,735, Cl. 30-410.000.
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White, Mark S.; and Kovach, Dennis, 5,666,902, Cl. 114-357.000.
Kovacs, Gregory J.: *See*—
Sacripante, Guerino G.; Pontes, Fatima M.; Drappel, Stephan V.; Paine, Anthony J.; and Kovacs, Gregory J., 5,667,568, Cl. 106-20.00R.
Kowa Tekuno Sachi Co., Ltd.: *See*—
Kawagishi, Fumikazu; Yamada, Keiko; and Iguchi, Hiroshi, 5,668,174, Cl. 514-560.000.
Kowalczyk, Thomas M.: *See*—
Jaminet, Jerome F.; Kowalczyk, Thomas M.; Ahigian, Edward E.; McHugh, Thomas M.; He, Thomas; Peruggi, Richard E.; Kulak, Richard E.; and Barrett, David W., 5,668,355, Cl. 187-316.000.
Kowarsky, Stephen R.: *See*—
Misholi, Boaz; Danziger, Itzchak; Kowarsky, Stephen R.; and Sandlerman, Nimrod, 5,668,855, Cl. 379-89.000.
Kowel Precision Co., Ltd.: *See*—
Im, Kisu, 5,667,370, Cl. 418-9.000.
Kowligi, Rajagopal R.: *See*—
Bynon, Anne Nina; Cundy, Sandra M.; and Kowligi, Rajagopal R., 5,667,523, Cl. 606-198.000.
Koyama, Hiroshi: *See*—
Ohno, Akihiko; Ishige, Atsushi; Koyama, Hiroshi; and Asami, Koichi, 5,667,872, Cl. 428-141.000.
Koyama, Shigeo: *See*—
Tsuji, Kikunosuke, Watanabe, Takeshi; Baba, Kohichi; Satake, Kenichi; Kawachi, Yoshiko; Hori, Setsuo, and Koyama, Shigeo, 5,668,581, Cl. 347-37.000.
Koyama, Takashi: *See*—
Okuda, Masami; Tanaka, Hisami; Kishi, Junichi; Ohmori, Hiroyuki; Koyama, Takashi; and Hisamura, Masafumi, 5,669,047, Cl. 399-174.000.
Koyama, Yoshinari: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; Koyama, Yoshinari; and Iijima, Motoko, 5,667,725, Cl. 252-309.000.
Koyo Seiko Co., Ltd.: *See*—

Shimizu, Yoshinobu; and Nakano, Shiro, 5,667,033, Cl. 180-272.000.
Kozaki, Shuichi: *See*—
Yamada, Nobuaki; Horie, Wataru; Hirai, Toshiyuki; and Kozaki, Shuichi, 5,668,651, Cl. 349-156.000.
Kozuma, Fumihide: *See*—
Sato, Kosuke; Haniuda, Nobuyoshi; and Kozuma, Fumihide, 5,666,770, Cl. 52-167.200.
Kraemer, Matthew G.: *See*—
Curtin, Richard M.; Smith, Paul K.; and Kraemer, Matthew G., 5,667,352, Cl. 414-667.000.
Kraemer, Steve. Electrical heater device for heating the interior of an automobile. 5,667,710, Cl. 219-202.000.
Kraff, Colman Ross; and Kraff, Manus Colman. Expansile surgical sleeve apparatus and method for using same. 5,667,489, Cl. 604-22.000.
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Kramer, Andreas: *See*—
Wolleb, Heinz; and Kramer, Andreas, 5,668,227, Cl. 525-507.000.
Kramer, Steven W.: *See*—
Talley, John J.; Carter, Jeffery S.; Collins, Paul W.; Kramer, Steven W.; Penning, Thomas D.; Rogier, Donald J., Jr.; and Rogers, Roland S., 5,668,161, Cl. 514-365.000.
Kramer, Werner; and Wess, Günther, to Hoechst Aktiengesellschaft. Bile acid derivatives, processes for their preparation, and use as pharmaceuticals. 5,668,126, Cl. 514-176.000.
Krause, John Michael: *See*—
Davis, Gordon Taylor; Devins, Robert James; Kam, Patrick Kwong-hung; Patrick, James L., Jr.; and Krause, John Michael, 5,668,957, Cl. 395-309.000.
Krawza, Kenneth I.: *See*—
Miller, Arthur L.; and Krawza, Kenneth I., 5,667,365, Cl. 417-151.000.
Krein, Philip T.; and Midya, Pallab, to University of Illinois, The Board of Trustees of the. Feedforward active filter for output ripple cancellation in switching power converters. 5,668,464, Cl. 323-259.000.
Kreiter, James H., to Kreiter, James H. Post-supported barbecue assembly. 5,666,940, Cl. 126-30.000.
Kremer, Gernot; and Lorke, Horst, to Hoechst Aktiengesellschaft. Use of alkenylsuccinic acid half-amides. 5,668,093, Cl. 508-262.000.
Kressner, Bernhardt Edward: *See*—
Win, Maug Hla; Burazin, Mark Alan; Engel, Steven Alexander; Kressner, Bernhardt Edward; Lloyd, William Dee; and Schultz, Walter Theodore, 5,667,635, Cl. 162-109.000.
Kribs, David E. Device to hold reading material. 5,667,182, Cl. 248-448.000.
Krichever, Mark J.: *See*—
Swartz, Jerome; Shepard, Howard M.; Barkan, Eric F.; Krichever, Mark J.; Metlitsky, Boris; Barkan, Edward; and Adelson, Alexander M., 5,668,364, Cl. 235-472.000.
Krieger, Ernst: *See*—
Bloedel-Pawlik, Juergen; Fanese, Wolfgang; Flierl, Rudolf; Santiago, Enrique; Krieger, Ernst; and Grescher, Bernhard, 5,666,805, Cl. 60-299.000.
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Krimmer, Erwin; Jauernig, Peter; Hezel, Bruno; and Rosenbusch, Andreas-Bernd, to Robert Bosch GmbH. Fuel line connector. 5,666,922, Cl. 123-470.000.
Krishna, Nepalli Rama; and Moseley, Hunter N. B., to UAB Research Foundation, The. Method for analyzing 2D transferred noesy spectra of molecules undergoing multistate conformational exchange. 5,668,734, Cl. 364-497.000.
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Khouja, Adel; Krishnamoorthy, Shankar; Mailhot, Frederic G.; and Meier, Stephen F., 5,668,732, Cl. 364-483.000.
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Neuberger, Wolfgang; Sychugov, Vladimir A.; Lyndin, Nikolai M.; and Krivoshlykov, Sergej G., 5,668,903, Cl. 385-38.000.
Kroetsch, Karl Paul, to General Motors Corporation. Molded plastic heat exchanger mounting channel. 5,667,004, Cl. 165-41.000.
Krohnen, Thomas: *See*—
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Kroll, Elizabeth C.: *See*—
Ziolo, Ronald F.; Kroll, Elizabeth C.; and Pieczynski, Rachel, 5,667,716, Cl. 252-62.520.
Krone Aktiengesellschaft: *See*—
Janczak, Andreas; and Gerke, Dieter, 5,667,400, Cl. 439-395.000.
Kross, Robert D., to Alcide Corporation. Method and composition for prevention and treatment of female lower genital tract microbial infections. 5,667,817, Cl. 424-661.000.
Krueger, Waldemar. Energy conservation coupler. 5,666,739, Cl. 34-86.000.
Krusius, J. Peter: *See*—
Greene, Raymond G.; Katyl, Robert H.; Krusius, J. Peter; and Yost, Boris, 5,668,569, Cl. 345-103.000.
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Yamada, Kohzaburoh; Takeuchi, Hiroshi; Hoshimiya, Takashi; Kubo, Toshiaki; and Hirano, Shigeo, 5,667,936, Cl. 430-264.000.
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Negi, Taichi; Ikeda, Kaoru; and Nakano, Hiromichi, 5,668,213, Cl. 525-57.000.

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Bailey, Vance Allen; Highsmith, Monte Reeves; Highsmith, Ray Allen; and Bailey, Stephen Joseph, 5,667,021, Cl. 173-21.000.

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Greve, Christopher G.; and O'Connor, Ronald M., 5,666,742, Cl. 34-218.000.

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Jackson, Richard C.; Riley, Raymond W.; Laituri, David; and Clary, Bob, 5,667,399, Cl. 439-341.000.

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Holland, John P.; and Demos, Alex T., 5,667,631, Cl. 216-13.000.

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Tamm, Wilhelm; Olbrich, Walter; Dippon, Siegfrid; Weitmann, Michael; and Lam, Si-Ty, 5,666,722, Cl. 29-847.000.

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Lamert, Berthold; Schmitt, Wolfgang; and Eckel, Hans-Gerd, to Firma Carl Freudenberg. Rotational frequency sensing device with pulse generating wheel having two-axial position supporting sleeve. 5,668,426, Cl. 310-168.000.

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Chansky, Leonard M.; Fuller, John W.; Land, Ronald A.; and Whitten, Robert, 5,668,537, Cl. 340-825.060.

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Lange, Neville E., to Serck Baker Limited. Cyclone. 5,667,687, Cl. 210-512.200.

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Dwivedi, Ratnesh Kumar; Henderson, Thomas James; and Friel, David Francis, 5,667,742, Cl. 264-658.000.

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Lareau, Andre G.; Willey, Gilbert W.; Bennett, Russell A.; and Beran, Stephen R., to Recon/Optical, Inc. Method and camera system for step frame reconnaissance with motion compensation. 5,668,593, Cl. 348-146.000.

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Counts, Mary Ellen; Deevi, Seetharama C.; Fleischhauer, Grier S.; Hajalogol, Mohammad R.; Hayes, Patrick H.; Higgins, Charles T.; Houck, Willie G., Jr.; Keen, Billy J., Jr.; Laroy, Bernard C.; Lipowicz, Peter J.; Miser, Donald E.; Nichols, Constance H.; Stevens, William H.; Subbiah, Mantharam; Watkins, Michael L.; and Wrenn, Susan E., 5,666,978, Cl. 131-194.000.

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Urick, Michael J.; Bachinski, Thomas J.; Prather, Richard R.; and Larson, Marian L., 5,666,969, Cl. 128-772.000.

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Karpinski, Arthur A., 5,668,825, Cl. 372-101.000.

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Bieselin, David N.; Eaton, Glenn A.; McFadden, Joseph A.; Taylor, Stuart A.; Tracy, Edward D.; and Wang, Emil C. W., 5,668,863, Cl. 379-202.000.

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Lay, Norman Keith: *See*—
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Lazes, Richard J. Rotating containment and repelling boom and method for confining a material floatable on a liquid surface. 5,667,337, Cl. 405-63.000.

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Poindexter, Graham S.; Bruce, Marc; Johnson, Graham; Leboulluec, Karen; and Sloan, Charles P., 5,668,151, Cl. 514-318.000.

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Sakemi, Shoji, 5,666,721, Cl. 29-843.000.
Tomita, Yoshihiro; Kanaboshi, Akihiro; Taguchi, Yutaka; and Eda, Kazuo, 5,666,706, Cl. 29-25.350.
Yasufuku, Kenji; and Kudo, Yasuchika, 5,667,062, Cl. 200-536.000.
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Bagley, Scott W.; Broten, Theodore P.; Chakravarty, Prasun K.; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Kevin, Nancy Jo; Kieczykowski, Gerard R.; Pettibone, Douglas J.; Tata, James R.; Rivero, Ralph A.; Walsh, Thomas F.; Williams, David L., Jr.; Matthews, Jay M.; and Toupence, Richard B., 5,668,176, Cl. 514-569.000.

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Matzner, Bruce: *See—*
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Maucher, Edmund, to LUK Lamell und Kupplungsbau. Clutch disengaging device. 5,667,048, Cl. 192-70.250.

Mauerhofer, Alex, to Geberit Technik AG. Control device and process for the contactless control of a unit, especially a plumbing unit. 5,668,366, Cl. 250-221.000.

Maurer, Donald D.; and Kipnis, Alexander, to Empi, Inc. Method of making an incontinence electrode. 5,667,615, Cl. 156-242.000.
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Maxdem Incorporated: *See—*
Marrocco, Matthew L., III; Wang, Ying; and Lee, Virgil J., 5,668,245, Cl. 528-327.000.
Maxwell, Victor Freeman: *See—*
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May, Christopher Charles: *See—*
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May, David C.: *See—*
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Mayer, Lisa. Greeting card with detachable message covers. 5,667,248, Cl. 283-67.000.
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Mazzella, Michel: *See—*
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MBT Holding AG: *See—*
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McCaffrey, Robert R.: *See—*
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McCollum, Robert; Telesz, Gregory T.; and Liepheimer, Jerry K., to Trotter, Inc. Multidirectional cam. 5,667,465, Cl. 482-100.000.
McColm, Andrew Alexander, to Glaxo Group Limited. Medicament for treating gastrointestinal disorders. 5,668,130, Cl. 514-184.000.
McCormick, Matthew H., to McCormick, Matthew Howard. Fluid drain apparatus. 5,667,195, Cl. 251-149.600.
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McCullough, John E.; and Baymiller, Judith, to Bristol-Myers Squibb Company. Fungal cell wall Protein CLY4. 5,667,989, Cl. 435-69.100.
McCullough, Kevin Albert, to Chip Coolers, Inc. Plastic article with interrupted interior threads for securing a threaded heat sink to a beat generating member. 5,667,870, Cl. 428-131.000.
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McDonald, Douglas A.: *See—*
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McDonald, James Barrett, to McDonald, Michael J.; and McDonald, Ben N. Removable closure for an opening in an aluminum refining pot. 5,667,648, Cl. 204-245.000.
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McFarlin, Whitney A.; Barthel, Thomas C.; and Finn, Miles A., to Clarus Medical Systems, Inc. Surgical instrument with stick-on fiber-optic viewing system and method of using. 5,667,478, Cl. 600-182.000.
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McGuckin, Hugh Gerald; Badger, John Stuart; and Kurz, Edward Albert, to Eastman Kodak Company. Processing silver halide films with an aqueous phospholipid rinse solution. 5,667,948, Cl. 430-463.000.
McHale, John F., to Netspeed, Inc. Communication server apparatus and method. 5,668,857, Cl. 379-93.070.
McHale, Michael: *See—*
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McLachlan, Paul Anthony, to Pivotal Engineering Limited c/o Mace Engineering Ltd. Internal combustion engine. 5,666,912, Cl. 123-65.00R.
McLaughlin, Steven W., to Optex Corporation. M=6 (3,6) runlength limited code for multi-level data. 5,668,546, Cl. 341-59.000.
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McNeil, Kevin Benson; and Johnson, James Robert, to Procter & Gamble Company, The. Turret winder mandrel cupping assembly. 5,667,162, Cl. 242-533.400.
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Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
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Motooka, Shigenori; and Shibata, Kouichi, 5,668,936, Cl. 395-114.000.
Sugiyama, Tsukasa, 5,669,037, Cl. 399-58.000.
Tsuji, Kikunosuke; Watanabe, Takeshi; Baba, Kohichi; Satake, Kenichi; Kawachi, Yoshiko; Hori, Setsuo; and Koyama, Shigeo, 5,668,581, Cl. 347-37.000.
Uchida, Michio; Wataki, Ryuji; Okazaki, Noritaka; Fujita, Shigeo; and Nanjo, Yuzuru, 5,669,054, Cl. 399-313.000.
Mitake, Tsuyoshi: *See—*
Kondo, Shinichi; Sasaki, Akira; Kanda, Hiroshi; Mitake, Tsuyoshi; and Okada, Kazutaka, 5,666,955, Cl. 128-660.040.
Mitani, Katsuhiko: *See—*
Mochizuki, Kazuhiro; Goto, Shigeo; Kusano, Chushirou; Kawata, Masahiko; Masuda, Hiroshi; Mitani, Katsuhiko; and Takahashi, Susumu, 5,668,402, Cl. 257-627.000.
Mitchell, Gary Ronald: *See—*
Hone, George Dean; and Mitchell, Gary Ronald, 5,667,018, Cl. 169-54.000.
Mitchell, James L., to Ridewell Corporation. Air spring suspension that reduces dynamic braking loads on the air spring. 5,667,240, Cl. 280-712.000.
Mitchell, Martin R.: *See—*
Zamarripa, Michael P.; and Mitchell, Martin R., 5,667,176, Cl. 248-231.510.
Mitchell, Richard Jesse: *See—*
Lawless, William Francis; and Mitchell, Richard Jesse, 5,668,979, Cl. 345-509.000.
Mitchell, Robert William: *See—*
Forbes, James Carnegie; Henriet, Michel Maurice; Hewitt, Samuel; and Mitchell, Robert William, 5,668,085, Cl. 504-206.000.
Mitra, Sundari S.; Greenhill, David; and Ferolito, Philip A., to Sun Microsystems, Inc. Flip-flop with full scan capability. 5,668,490, Cl. 327-203.000.
Mitsubishi Chemical Corporation: *See—*
Kondou, Tsutomu, 5,667,573, Cl. 106-194.200.
Mori, Tomoyuki; Fujita, Kouichi; Kajita, Yuuji; and Takai, Masaki, 5,667,644, Cl. 203-17.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Abe, Shunichi; and Ohmae, Seizo, 5,668,404, Cl. 257-668.000.
Ariyoshi, Akihiko, 5,668,515, Cl. 335-216.000.
Furutani, Kiyohiro, 5,668,774, Cl. 365-233.000.
Hidaka, Hideto, 5,668,755, Cl. 365-182.000.
Higashisaka, Norio; and Ohta, Akira, 5,668,491, Cl. 327-277.000.
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.
Kadota, Yoichi, 5,666,924, Cl. 123-520.000.
Kawaguchi, Hironobu; Tomimatsu, Noriyuki; Yoshioka, Kazuo; and Matsumoto, Sadayuki, 5,668,443, Cl. 315-169.100.
Kobayashi, Kazuhiro; Murai, Hiroyuki; Sakamoto, Takao; and Masutani, Yuichi, 5,668,019, Cl. 438-163.000.
Kunikiyo, Tatsuya, 5,668,403, Cl. 257-639.000.
Matsumoto, Junko; and Sakamori, Shigenori, 5,668,052, Cl. 438-624.000.
Ohno, Yoshikazu, 5,668,044, Cl. 438-433.000.
Okudaira, Tomonori; Kuroiwa, Takeharu; Fujiwara, Nobuo; and Kashihara, Keiichiro, 5,668,041, Cl. 438-240.000.
Sekiya, Mutuo; Asada, Satoshi; Tochimoto, Takakazu; and Okada, Hidetoshi, 5,666,804, Cl. 60-284.000.
Shimizu, Toru; Iwata, Shunichi; Doi, Toshio; and Mizugaki, Shigeo, 5,669,012, Cl. 395-800.010.
Suwa, Makoto, 5,668,762, Cl. 365-189.110.
Tada, Hitoshi, 5,668,822, Cl. 372-36.000.
Watanabe, Motohiko, 5,668,416, Cl. 307-10.500.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Minagawa, Shunichiro; Imagawa, Shigeki; Terao, Iwao; and Tahara, Torakazu, 5,667,996, Cl. 435-146.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,667,429, Cl. 451-87.000.
Mitsubishi Shindoh Co., Ltd.: *See—*
Suzuki, Takeshi; Futatsuka, Rensei; Kuwahara, Manpei; and Kumagai, Seiji, 5,667,752, Cl. 420-494.000.
Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Inoue, Jiro, 5,666,834, Cl. 70-237.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Yoshida, Tadahiro; Kobayashi, Taro; Okuzono, Nobuhiro; and Kai, Yukio, 5,667,685, Cl. 210-510.100.
Mitsui Mining Smelting Co., Ltd. et al.: *See—*
Yamagushi, Yasuhide; Yamazaki, Masatoshi; Fujishima, Akira; and Hashimoto, Kazuhito, 5,668,076, Cl. 502-343.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Miyazaki, Tetsuya; Kawasaki, Mayumi; and Ohno, Takao, 5,667,726, Cl. 252-315.200.
Mitsui Toatsu Chemicals, Inc.: *See—*
Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, 5,668,229, Cl. 526-93.000.
Mitsuki, Kiyoomi: *See—*
Morizumi, Yoshiaki; and Mitsuki, Kiyoomi, 5,668,588, Cl. 342-242.000.
Mitsumi Electric Co., Ltd.: *See—*
Nawa, Ikuichiro; and Ishizuki, Masafumi, 5,667,184, Cl. 248-500.000.
Ogino, Toshikazu; Shibano, Hayato; and Hosaka, Eiki, 5,668,563, Cl. 343-713.000.
Mitzkus, Jürgen; and Kopetzky, Robert, to Takata (Europe) Vehicle Safety Technology GmbH. Belt tensioner for safety belts for motor vehicles. 5,667,161, Cl. 242-374.000.
Miura, Yoshimasa; Ogino, Etsuo; Ito, Michio; and Takakura, Chitose, to Hitachi Zosen Corporation. Process and apparatus for collecting waste plastics as separated. 5,667,151, Cl. 241-20.000.
Mix, John D.: *See—*
Parker, Jeffrey L.; Sorrells, David F.; Mix, John D.; and Daber, Richard P., 5,668,629, Cl. 356-139.050.
Miyachi, Yoshikazu: *See—*
Uchida, Kiyoshi; Miyachi, Yoshikazu; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,667,429, Cl. 451-87.000.
Miyadera, Yasuo: *See—*
Yusa, Masami; Takeda, Shinji; Masuko, Takashi; Miyadera, Yasuo; and Yamazaki, Mitsuo, 5,667,899, Cl. 428-473.500.
Miyamoto, Takeshi: *See—*

Amemori, Masanori; Hasegawa, Toshiyuki; Miyamoto, Takeshi; Nozaki, Shinya; and Kobayashi, Takashi, 5,668,327, Cl. 73-861.770.

Miyamoto, Toshio: *See—*
Hotta, Yozo; Goto, Masahiro; and Miyamoto, Toshio, 5,669,036, Cl. 399-53.000.

Miyano, Yasuhisa, to Yamaha Corporation. Music system, tone generator and musical tone-synthesizing method. 5,668,336, Cl. 84-605.000.

Miyao, Takeshi: *See—*
Yaginuma, Atsushi; Miyao, Takeshi; and Fujiki, Hironao, 5,668,190, Cl. 521-142.000.

Miyashige, Hiroaki: *See—*
Koizumi, Satoru; Matsukawa, Hiroshi; and Miyashige, Hiroaki, 5,668,790, Cl. 369-194.000.

Miyashita, Ikuhiro: *See—*
Fujii, Masahiro; Miyashita, Ikuhiro; Sugimura, Shigeo; Koeda, Hiroshi; Kobayashi, Naoki; and Oguchi, Asahiro, 5,668,579, Cl. 347-10.000.

Miyashita, Kinya: *See—*
Hayashi, Tomoyuki; Tatsumi, Yoshiaki; and Miyashita, Kinya, 5,667,822, Cl. 425-275.000.

Miyashita, Yuko: *See—*
Motomura, Tadahiro; Miyashita, Yuko; Ohwada, Takashi; Onishi, Makoto; and Yamamoto, Naoki, 5,667,684, Cl. 210-506.000.

Miyata, Hirokatsu, to Canon Kabushiki Kaisha. LCD device with alignment films having a pretilt changing characteristic. 5,668,615, Cl. 349-126.000.

Miyazaki, Shigeki; and Seki, Atsushi, to Sony Corporation. Discharge chamber and method of manufacturing the same. 5,667,705, Cl. 219-121.520.

Miyazaki, Tetsuya; Kawasaki, Mayumi; and Ohno, Takao, to Mitsui Petrochemical Industries, Ltd. Highly light-transmitting dust protective film, process for preparation thereof and dust protective member. 5,667,726, Cl. 252-315.200.

Miyazawa, Hiromu; Ootsuki, Shinya; Kawase, Takeo; and Nebashi, Satoshi, to Seiko Epson Corporation. Magneto-optical media. 5,667,887, Cl. 428-332.000.

Miziorko, Henry M., to MCW Research Foundation, Inc. 3-hydroxy-3-methyl-glutaryl-coa synthase preparation with improved stability. 5,668,001, Cl. 435-232.000.

Mizoguchi, Junji: *See—*
Tsubotani, Shigetoshi; Takizawa, Masayuki; Shirasaki, Mikio; Mizoguchi, Junji; and Shimizu, Yoshiaki, 5,668,128, Cl. 514-183.000.

Mizoguchi, Mitsuaki; Kobayashi, Nobuhisa; Ishida, Masaharu; and Yoshida, Minoru, to Japan Steel Works, Ltd., The. Cylinder temperature controlling device for controlling the temperature of upper and lower cylinder blocks independently. 5,667,299, Cl. 366-145.000.

Mizugaki, Shigeo: *See—*
Shimizu, Toru; Iwata, Shunichi; Doi, Toshio; and Mizugaki, Shigeo, 5,669,012, Cl. 395-800.010.

Mizuishi, Koji: *See—*
Iino, Eiichi; Takano, Kiyataka; Kimura, Masanori; Mizuishi, Koji; and Yamagishi, Hirotoshi, 5,667,588, Cl. 117-217.000.

Mizukami, Noboru: *See—*
Uchida, Go; Shirai, Shoji; Kinami, Takashi; and Mizukami, Noboru, 5,668,435, Cl. 313-414.000.

Mizukoshi, Seiichi: *See—*
Parulski, Kenneth A.; Izumi, Masaki; Mizukoshi, Seiichi; and Mori, Nobuyuki, 5,668,597, Cl. 348-350.000.

Mizuno, Kensuke: *See—*
Yoshitake, Noriaki; Mizuno, Kensuke; and Ogino, Takao, 5,667,843, Cl. 427-305.000.

Mizutani, Tomozi; Yokota, Katsuyuki; Arita, Masahohu; and Kojyou, Hisashi, to Kohjin Co., Ltd. Mandrel for cooling. 5,667,813, Cl. 425-71.000.

Mo, Richard C.: *See—*
Bannister, Cecil H.; Marchetti, F. Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal Balkrishna, 5,668,862, Cl. 379-201.000.

Mohil Oil Corporation: *See—*
Brew, Joseph Edward; and Keung, Jay Kin, 5,667,902, Cl. 428-518.000.

Mochida, Tetsuya: *See—*
Okazawa, Koichi; Kimura, Koichi; Kawaguchi, Hitoshi; Aburano, Ichiharu; Kobayashi, Kazushi; and Mochida, Tetsuya, 5,668,956, Cl. 395-306.000.

Mochizuki, Hirohiko: *See—*
Fujioka, Shinya; Hatakeyama, Atsushi; and Mochizuki, Hirohiko, 5,668,763, Cl. 365-200.000.

Mochizuki, Kazuhiro; Goto, Shigeo; Kusano, Chushirou; Kawata, Masahiko; Masuda, Hiroshi; Mitani, Katsuhiko; and Takahashi, Susumu, to Hitachi, Ltd. Semiconductor device. 5,668,402, Cl. 257-627.000.

Modavis, Robert A.: *See—*
Keck, Donald B.; and Modavis, Robert A., 5,668,901, Cl. 385-37.000.

Mody, Hemant K.; and Grass, William E., to Eaton Corporation. Circuit breaker incorporating trip coil as shunt resistor in parallel with current limiting polymer. 5,667,711, Cl. 219-505.000.

Moghe, Dhawal Balkrishna: *See—*
Bannister, Cecil H.; Marchetti, F. Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal Balkrishna, 5,668,862, Cl. 379-201.000.

Mogi, Fumio: *See—*
Ishikawa, Takatoshi; and Mogi, Fumio, 5,669,031, Cl. 396-569.000.

Mohwinkel, Clifford A.; Johnson, Edwin F.; and Stoneham, Edward B., to Endgate Corporation. Coplanar waveguide-mounted flip chip having coupled ground conductors. 5,668,512, Cl. 333-247.000.

Molex Incorporated: *See—*
O'Sullivan, Michael; and Wetter, James A., 5,667,411, Cl. 439-701.000.

Moller, Clifford, to Briley Manufacturing Co. Shotgun having light weight interchangeable barrel tubes with improved fit. 5,666,756, Cl. 42-77.000.

Molnar, Barbara Davis: *See—*
Ramesh, Rajaram; and Molnar, Barbara Davis, 5,668,820, Cl. 371-43.100.

Molvar, Allen E.: *See—*
Souza, Therese R.; and Molvar, Allen E., 5,667,659, Cl. 205-109.000.

Momota, Makoto: *See—*
Sato, Kenichiro; Kodama, Kunihiko; and Momota, Makoto, 5,667,932, Cl. 430-192.000.

Monarch Marking Systems, Inc.: *See—*
Fogle, Ronald L., 5,667,617, Cl. 156-247.000.

Möncke, Hartmut; and Traore, Ibrahim, to Siemens Aktiengesellschaft. Vacuum-type circuit breaker with connection terminals. 5,668,361, Cl. 218-118.000.

Monsanto Company: *See—*
Forbes, James Carnegie; Henriet, Michel Maurice; Hewitt, Samuel; and Mitchell, Robert William, 5,668,085, Cl. 504-206.000.
Hamper, Bruce C.; and Mc Dermott, Lisa L., 5,668,088, Cl. 504-280.000.

Monta, Hiroki, to Matsushita Electric Industrial Co., Ltd. Multiple audio signal recording and reproducing apparatus. 5,668,785, Cl. 369-5.000.

Montelongo, Ramiro: *See—*
Rubio, Manuel Jesus; and Montelongo, Ramiro, 5,667,834, Cl. 426-503.000.

Montie, Edwin A.; Ketting, Alfred; and Van Der Wilk, Ronald, to U.S. Philips Corporation. Picture display device provided with an electron gun, and electron gun for use in such a device. 5,668,448, Cl. 315-382.100.

Montreuil, Richard; and DuBois, Jean-Denis. Numerical temperature reading apparatus for spa, swimming pool and whirlpool. 5,667,306, Cl. 374-208.000.

Moody, Leslie Shane: *See—*
Yau, Cheuk Chung; and Moody, Leslie Shane, 5,668,243, Cl. 528-280.000.

Moog Inc.: *See—*
Nintzel, Arthur James, 5,668,480, Cl. 324-709.000.

Moon, Hong-Kweon, to Samsung Electro-Mechanics Co., Ltd. Apparatus having radiating noise damping means for controlling power appliances. 5,668,981, Cl. 395-559.000.

Moore, Boyd B., to Quick Connectors, Inc. Seal electrical conductor arrangement for use with a well bore in hazardous areas. 5,667,008, Cl. 166-65.100.

Moore, Boyd B. Rubber boots for electrical connection for down hole well. 5,667,009, Cl. 166-65.100.

Moore Business Forms, Inc.: *See—*
Olson, James L.; and Ropson, Elaine C., 5,667,134, Cl. 229-928.000.

Moore Business Formsk Inc.: *See—*
Ramsburg, E. Douglas; Nassoiy, Stephen R.; and Zutant, Dennis V., 5,667,247, Cl. 283-61.000.

Moore, David N., to Phoenix Closures, Inc. Closure having a wrap-around seal. 5,667,089, Cl. 215-351.000.

Moore, Denilda S.: *See—*
Moore, Gilbert A.; and Moore, Denilda S., 5,666,906, Cl. 119-672.000.

Moore, Gilbert A.; and Moore, Denilda S. Animal dusting bag. 5,666,906, Cl. 119-672.000.

Moore, Samuel B., to Burlington Chemical Co., Inc. Liquid alkali for reactive dyeing of textiles. 5,667,532, Cl. 8-543.000.

Moore, Shelley I.: *See—*
Broder, Damon; Moore, Shelley I.; Medin, Todd R.; and Richtsmeier, Brent W., 5,668,584, Cl. 347-102.000.

Moore, Walter A.: *See—*
Schroeder, David D.; Hussey, Brett; and Moore, Walter A., 5,668,345, Cl. 102-289.000.

Mooring, Jonathan E. Safety system for a wood chipper. 5,667,152, Cl. 241-37.500.

Moran, Stephen W.; Jackson, John R.; Gallivan, Timothy J.; and Loftfield, Richard E., to Huron Tech Corp. Electrolysis process for removal of caustic in hemicellulose caustic. 5,667,668, Cl. 205-698.000.

Moreno, Jaime Humberto, to International Business Machines Corporation. Object code compatible representation of very long instruction word programs. 5,669,001, Cl. 395-706.000

Moretto, Hans-Heinrich: *See—*
Bellinghausen, Rainer; Helker, Heinrich; Strehlow, Paul; Moretto, Hans-Heinrich; Spreckelmeyer, Bernhard; Lönhoff, Norbert; Batz, Michael; Weber, Rainer; Rinkes, Hans; Block, Hans-Dieter; and Arndt, Uwe, 5,667,759, Cl. 423-61.000.

Morgado, Julie Cooper. Baby bib dribble roll. 5,666,665, Cl. 2-49.100.

Morgan, Michael Leroy: *See—*
Steiner, Walter Robert; and Morgan, Michael Leroy, 5,668,940, Cl. 345-429.000.

Morhenne, Siegfried: *See—*
Bruske, Johannes F.; and Morhenne, Siegfried, 5,666,797, Cl. 57-290.000.

Mori, Hisatoshi; and Okimoto, Hiroyuki, to Casio Computer Co., Ltd. Thin film transistor panel having an extended source electrode. 5,668,650, Cl. 349-42.000.

Mori, Motohisa: *See—*
Ohtake, Motoyuki; and Mori, Motohisa, 5,668,669, Cl. 359-684.000.

Mori, Naoki: *See—*
Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro; Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, 5,668,786, Cl. 369-13.000.

Mori, Nobuyuki: *See—*
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Mori, Tomohiro: *See—*
Watanabe, Shoichi; Inoguchi, Hirokazu; Kanzaka, Yoshihiro; Tanaka, Yoshiharu; Ikehara, Hideji; Saiki, Ryuji; Yamato, Nobukatsu; Mori, Tomohiro; and Senna, Minoru, 5,667,857, Cl. 422-36.200.

Mori, Tomoyuki; Fujita, Kouichi; Kajita, Yuuji; and Takai, Masaki, to Mitsubishi Chemical Corporation. Method for producing a dimerized aldehyde. 5,667,644, Cl. 203-17.000.

Moriarty, Brian C.: *See—*
Mueller, Wayne E.; Dhillon, Jermanjit S.; Howell, Raymond A.; Moriarty, Brian C.; and Perosky, Edward, 5,667,036, Cl. 184-6.120.

Morigaki, Masakazu: *See—*
Mikoshiba, Hisashi; Takizawa, Hiroo; Hosokawa, Junichiro; Ishii, Yoshio; Mihayashi, Keiji; and Morigaki, Masakazu, 5,667,959, Cl. 430-607.000.
Takizawa, Hiroo; Nakamine, Takeshi; Yoshioka, Yasuhiro; and Morigaki, Masakazu, 5,667,951, Cl. 430-551.000.

Morikawa, Atushi: *See—*
Iwai, Kiyoshi; Hashimoto, Jyunichi; Nakamura, Takeshi; Heinouchi, Yoshiaki; Kumada, Akira; Kawai, Yoshio; Kanbayashi, Tsuguji; and Morikawa, Atushi, 5,668,316, Cl. 73-493.000.

Morikawa, Hisashi, to Fujitsu Limited. Control system for multi-processor apparatus. 5,668,714, Cl. 364-131.000.

Morikawa Industries Corporation: *See—*
Horikawa, Kenji; Obinata, Hiroshi; Omata, Kazuo; Sato, Toshihiko; Nakajima, Yoshihiko; and Ichikawa, Seigo, 5,666,984, Cl. 134-95.200.

Morimoto, Michihiro, to NEC Corporation. Solid-state image sensor with element isolation region of high impurity concentration and method of manufacturing the same. 5,668,390, Cl. 257-232.000.

Morimoto, Toru; Hashinoki, Kenji; Hamada, Tetsuya; and Kamei, Kenji, to Dainippon Screen Mfg. Co., Ltd. Substrate processing apparatus and method. 5,668,733, Cl. 364-488.000.

Morishima, Hideki; Endo, Kiyonobu; Matsumura, Susumu; Hoshi, Hiroaki; Hasegawa, Koyo; Yamamoto, Masakuni; Yamaguchi, Eiji; and Iida, Ichiro, to Canon Kabushiki Kaisha. Information processing method and system. 5,668,872, Cl. 380-4.000.

Morishita, Kenichi: *See—*
Fukushima, Makoto; Kimura, Kazuhiro; Yamauchi, Hirohiko; Morishita, Kenichi; and Takahashi, Keietsu, 5,667,762, Cl. 424-1.110.

Morita, Isao. Spindle motor having recessed stator coils. 5,668,427, Cl. 310-216.000.

Morita, Koichi; Misawa, Yoshihiko; Saeki, Keiji; Kabeshita, Akira; and Watanabe, Nobuhisa, to Matsushita Electric Industrial Co., Ltd. IC component mounting method and apparatus. 5,667,129, Cl. 228-102.000.

Morita, Makoto; Nagaike, Masaru; Gueler, Richard; Imanishi, Makoto; and Yonezawa, Takahiro, to Matsushita Electric Industrial Co., Ltd. Ultrasonic wire bonding apparatus and method. 5,667,130, Cl. 228-110.100.

Morita, Toshihiko: *See—*
Kanda, Shinji; Wakitani, Jun; Maruyama, Tsugito; and Morita, Toshihiko, 5,668,893, Cl. 382-197.000.

Morita, Yasutoshi: *See—*
Yamazaki, Motohiro; and Morita, Yasutoshi, 5,668,895, Cl. 382-260.000.

Moriuchi, Noboru: *See—*
Okamoto, Yoshihiko; and Moriuchi, Noboru, 5,667,941, Cl. 430-313.000.

Moriwake, Katsuakira; and Shiraishi, Toshihiro, to Sony Corporation. Image transformation apparatus for producing an image collapsing effect. 5,668,933, Cl. 395-110.000.

Moriyama, Takashi: *See—*
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.

Morizumi, Yoshiaki; and Mitsuki, Kiyoomi, to Dainippon Screen Mfg. Co., Ltd. Spiral scanning image recording apparatus and image recording method. 5,668,588, Cl. 342-242.000.

Mornay, Emmanuel: *See—*
Simon, Georges; and Mornay, Emmanuel, 5,668,343, Cl. 89-12.000.

Morrell, Kenneth John: *See—*
Waye, Patrick M.Y.; and Morrell, Kenneth John, 5,669,065, Cl. 455-523.000.

Morris, Corydon E.: *See—*
Gustafson, Richard J.; and Morris, Corydon E., 5,666,913, Cl. 123-90.160.

Morris, Mark D.: *See—*
Jones, Neil; and Morris, Mark D., 5,667,034, Cl. 180-422.000.

Morris, Neil: *See—*
Beer, Reginald; Cutts, Stanley John; Kew, Steven Brian; Morris, Neil; and Newmarch, David, 5,668,532, Cl. 340-506.000.

Morrison, Robert L., to WCI Outdoor Products, Inc. Guide bar coding system. 5,666,734, Cl. 30-387.000.

Mortazavi, Mohammad; Yoon, Hyun Nam; and Teng, Chia-Chi, to Hoechst Celanese Corp. High extinction polarizer films comprising liquid crystal polymeric moieties. 5,667,719, Cl. 252-299.010.

Mortensen, Mark A.: *See—*
Helsel, Brett L.; Gindin, Jay R.; Lemire, John P.; Jenny, Patrick D.; and Mortensen, Mark A., 5,668,964, Cl. 395-350.000.

Mortin, Bo S., to Aktiebolaget Electrolux. Dishwasher machine. 5,667,431, Cl. 451-88.000.

Morton International, Inc.: *See—*
Bunker, S. Mark; Minert, Daniel G.; Green, David J.; Saderholm, Davin G.; and Storey, J. Kirk, 5,667,241, Cl. 280-730.200.
McKinley, Andrew J.; and Shah, Pankaj, 5,668,222, Cl. 525-415.000.
Schroeder, David D.; Hussey, Brett; and Moore, Walter A., 5,668,345, Cl. 102-289.000.

Morvan, Jean Claude: *See—*
Petrick, Scott W.; Skrenes, Larry R.; and Morvan, Jean Claude, 5,668,375, Cl. 250-370.090.

Moseley, Hunter N. B.: *See—*
Krishna, Nepalli Rama; and Moseley, Hunter N. B., 5,668,734, Cl. 364-497.000.

Moser, Christophe: *See—*
Bezinge, Alex; Moser, Christophe; Thomann, Pierre; and Jornod, Alain, 5,668,826, Cl. 372-32.000.

Moser, Johann: *See—*
Bubik, Alfred; Brunmair, Erwin; Hess, Harald; Holik, Herbert; Leitenberger, Werner; Merath, Thomas; Moser, Johann; Stieb, Helmet; and Weisshuhn, Elmer, 5,666,741, Cl. 34-117.000.

Moss, James Iredell, to J.T. Eaton & Co., Inc. Pest-controlling compostion. 5,667,816, Cl. 424-659.000.

Moss, William Gregory; Roberts, Kenneth Dale; and Briggs, Charles Whitford, to Tracor Flight Systems, Inc. Pod mounted refueling system. 5,667,170, Cl. 244-135.00A.

Mössmer, Michael: *See—*
Haack, Eberhard; and Mössmer, Michael, 5,667,153, Cl. 241-82.500.

Mostarda, Franco: *See—*
Richiardone, Valter; Rossetti, Furio; Zampolli, Marco; Tosco, Paolo; D'Oria, Francesco; Vitali, Mario; Buscotti, Aurelio; Mostarda, Franco; and Borri, Luigi, 5,667,537, Cl. 29-623.200.

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Duggal, Gurpinder; and Sachathamakul, Rakeshwar, 5,667,084, Cl. 215-11.400.

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Petersen, Ronald O., 5,667,724, Cl. 252-301.60R.
Shi, Song Q.; Lee, Hsing-Chung; Harvey, Thomas B., III; and So, Franky, 5,668,438, Cl. 313-504.000.

Motorola, Inc.: *See—*
Brown, Daniel Peter; and Finkelstein, Louis David, 5,668,875, Cl. 380-23.000.
Burton, Richard S.; and Grivna, Gordon M., 5,667,632, Cl. 438-570.000.
Chi, Soon Man; and Kim, Sungh, 5,668,305, Cl. 73-37.000.
Coddington, John D., 5,668,975, Cl. 711-169.000.
Corleto, Jose G.; and Kodra, Gregg S., 5,668,749, Cl. 364-736.010.
Karaali, Orhan; Corrigan, Gerald Edward; and Gerson, Ira Alan, 5,668,926, Cl. 704-232.000.
Kielmeyer, Ronald F.; Fullerton, Craig L.; Goshinska, John D.; Malone, Hugh R.; Brownlee, Paul L.; Christensen, Richard J.; and Fraser, Michael L., 5,669,068, Cl. 455-83.000.
Olds, Keith A.; Cutler, Victor H., Jr.; and Davieau, Gerald J., 5,669,062, Cl. 455-509.000.
Perrotta, Alessandro; and Minasi, David H., 5,668,561, Cl. 343-702.000.
Rohde, Terry L.; and Kurtz, Kenneth D., 5,667,128, Cl. 228-49.500.
Shachar, Boaz; Rozen, Nahum; Yeivin, Yoram; and Wietz, Eli, 5,668,807, Cl. 370-378.000.
Siwiak, Kazimierz; Satyamurti, Sunil; and Kuznicki, William Joseph, 5,668,923, Cl. 704-204.000.
Smith, Paul Fielding; and Pinckley, Danny Thomas, 5,668,836, Cl. 375-316.000.
Subramanian, Chitra K.; and Hayden, James D., 5,668,021, Cl. 438-282.000.
Urbanski, Steven Adam, 5,668,871, Cl. 379-406.000.

Mottram, Toby Trevor Fury: *See—*
Bull, Christine Roberta; Spencer, Diane Susan; Mottram, Toby Trevor Fury; Street, Michael John; and Tillett, Robin Deirdre, 5,666,903, Cl. 119-14.010.

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Pawson, Anthony; and Reedijk, Michael, 5,667,980, Cl. 435-7.800.

Moysan, Stephen R., III; and Sugg, Rolin W., to Baldwin Hardware Corporation. Article having a decorative and protective coating simulating brass. 5,667,904, Cl. 428-627.000.

Mozzati, Gianfranco, to Pirelli Cavi S.p.A. Container for housing optical components in an active fiber optical amplifier. 5,668,909, Cl. 385-134.000.

Mr. Arch, Inc.: *See*—
Douglas, Edwin S.; and Turner, Daryl V., 5,668,736, Cl. 364-512.000.
MTU-Motoren-Und Turbinen-Union: *See*—
Schmidt, Ralph-Michael; Teetz, Christoph; and Rauscher, Martin, 5,667,145, Cl. 239-533.120.
Mücke, Jörg: *See*—
Hoffmann, Rolf; and Mücke, Jörg, 5,667,017, Cl. 169-38.000.
Mucznik, Cheryl, to Press Engineering (Proprietary) Limited. Binder and folder combination. 5,667,322, Cl. 402-8.000.
Mueller, Wayne E.; Dhillon, Jermanjit S.; Howell, Raymond A.; Moriarty, Brian C.; and Perosky, Edward, to New Venture Gear, Inc. Lubrication system for transmissions. 5,667,036, Cl. 184-6.120.
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Chiu, Tom Tien-Cheng; Mikan, Donald George, Jr.; and Muhich, John Stephen, 5,668,525, Cl. 340-146.200.
Muirhead, Katharine A.: *See*—
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.
Mukai, Hirokazu, to NEC Corporation. Control device for a facsimile apparatus. 5,668,858, Cl. 379-100.010.
Mulder, Frank T. G.: *See*—
Reef, Martin J.; Houpst, Ronald H.; and Mulder, Frank T. G., 5,667,366, Cl. 417-198.000.
Müller, Alfred, to SMS Schloemann-Siemag Aktiengesellschaft. Light section rolling mill particularly wire rolling mill. 5,666,843, Cl. 72-234.000.
Muller, Bodo; and Martin, Eric, to BASF Lacke+Farben Aktiengesellschaft. Process for the production of a multicoat protective and/or decorative coating and water-dilutable coating compositions. 5,667,847, Cl. 427-385.500.
Müller, Egbert, to Merck Patent Gesellschaft mit beschrankter Haftung. Method and supports for gel permeation chromatography. 5,667,692, Cl. 210-635.000.
Muller, Karl Paul: *See*—
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Müller, Michael: *See*—
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Mulligan, David Neal: *See*—
Collier, Robert Kirk, Jr.; Hoekstra, Robert Louis; Mulligan, David Neal; and Hahn, Douglas Edward, 5,666,923, Cl. 123-488.000.
Mullins, Donald B. Remotely guided brush cutting, chipping and clearing apparatus and method. 5,666,792, Cl. 56-10.20A.
Müllner, Hubert: *See*—
Broer, Inge; Hillemann, Doris; Pühler, Alfred; Wohlleben, Wolfgang; Donn, Günter; Müllner, Hubert; and Bartsch, Klaus, 5,668,297, Cl. 800-205.000.
Multisorb Technologies, Inc.: *See*—
Cullen, John S.; Idol, Ronald C.; and Powers, Thomas H., 5,667,863, Cl. 428-68.000.
Munchbach, George E.: *See*—
Walton, Richard C.; and Munchbach, George E., 5,666,703, Cl. 26-18.600.
Munesada, Kiyotaka: *See*—
Yamada, Hiroyoshi; Munesada, Kiyotaka; and Taniguchi, Mikio, 5,668,286, Cl. 546-209.000.
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Munson, Albert E.: *See*—
Abraham, Donald J.; Harris, Louis S.; Meade, B. J.; Munson, Albert E.; Swerdlow, Paul S.; and Patrick, Graham A., 5,668,182, Cl. 514-699.000.
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Murai, Hiroyuki: *See*—
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Murai, Yukio; and Toguchi, Seiichi, to Ebara Corporation. Pump system and method for operating the same. 5,667,362, Cl. 417-41.000.
Murakami, Hiroki: *See*—
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,668,879, Cl. 380-41.000.
Murakami, Koichi, to Nissan Motor Co., Ltd. Input protection device with Zener diodes for electronic device. 5,668,384, Cl. 257-106.000.
Muraki, Mineo: *See*—
Ozaki, Yoshihiro; Fujita, Akio; and Muraki, Mineo, 5,667,598, Cl. 148-111.000.
Murata Manufacturing Co., Ltd.: *See*—
Furutani, Koji; Kato, Mitsuhide; and Tsuru, Teruhisa, 5,668,511, Cl. 333-204.000.
Iwai, Kiyoshi; Hashimoto, Jyunichi; Nakamura, Takeshi; Heinouchi, Yoshiaki; Kumada, Akira; Kawai, Yoshio; Kanbayashi, Tsuguji; and Morikawa, Atushi, 5,668,316, Cl. 73-493.000.
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Murata Mfg. Co., Ltd.: *See*—
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Murayama, Osamu, to Komatsu Ltd. Apparatus for determining position of moving body. 5,668,742, Cl. 364-559.000.
Muroya, Yoshiharu, to NEC Corporation. Method for fabricating InP diffraction grating and distributed feedback laser. 5,668,047, Cl. 438-31.000.
Murphy, John R., to Seragen, Inc. Hybrid molecules having translocation region and cell-binding region. 5,668,255, Cl. 530-350.000.
Murphy, Michael K. Safety control grip brake for wheelchairs. 5,667,236, Cl. 280-304.100.
Murphy, Ronald Patrick. Building block having interlocking formations. 5,666,777, Cl. 52-604.000.
Murr, Donna J.: *See*—
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Belknap, William Russell; Cleary, Louise Irene; Eldridge, James W.; Fitchett, Larry William; Luning, Stephen G.; Murray, Christopher S.; Olnowich, Howard T.; Saxena, Ashok Raj; Schubert, Karl David; and Stansbury, Buddy Floyd, 5,668,948, Cl. 395-200.610.
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Mushahwar, Isa K.: *See*—
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Musil, Joseph E.; and Wilson, Douglas A., to Cedarapids, Inc. Portable concrete mixer with weigh/surge systems. 5,667,298, Cl. 366-18.000.
Musschoot, Albert, to General Kinematics Corporation. Jointed weight for a vibratory apparatus. 5,666,852, Cl. 74-87.000.
Muto, Shinyo; and Shimokura, Ken-ichiro, to Nippon Telegraph and Telephone Corporation. Method of calculating points and normal lines of contact and apparatus therefor. 5,668,453, Cl. 318-568.170.
Mutoh, Yuji; and Satori, Kazutoshi, to Yamashita Rubber Kabushiki Kaisha. Fluid-sealed type anti-vibration rubber device. 5,667,205, Cl. 267-140.130.
Mycogen Corporation: *See*—
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Myers, Earl Chester, Jr.: *See*—
Benjamin, Karen Elizabeth; McClinton, Jeffrey Byron; Whiteman, Robert Neil, Jr.; Myers, Earl Chester, Jr.; and Consoli, John Joseph, 5,668,654, Cl. 359-152.000.
Myers, John David: *See*—
Cheney, Dennis Phillip; Ciacelli, Mark Louis; Herndon, Steven Bradford; Myers, John David; and Ngai, Chuck Hong, 5,668,599, Cl. 348-402.000.
Myers, Kirsten Elizabeth: *See*—
Face, Dean Willett; and Myers, Kirsten Elizabeth, 5,667,650, Cl. 204-298.070.
Myerson, Allan S.; Burrows, Charles A.; Sanzenbacher, Charles W.; and DiBella, Paul R., to Metals Recycling Technologies Corp. Method for the removal of calcium by products during the production of an iron feedstock. 5,667,555, Cl. 75-419.000.
N.V. Michel Van De Wiele: *See*—
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Na, Kyoung-won, to Samsung Display Devices Co., Ltd. Thin film-liquid crystal display panel and manufacturing method thereof. 5,668,617, Cl. 349-156.000.
Nabeshima, Yoichi: *See*—
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Carroll, Thomas Joseph; and Kehoe, Gary Steven, 5,667,823, Cl. 426-3.000.
Nachshon, Shalom; and Polak, Menachem, to R. T. Set. Object keying in video images based on distance from camera. 5,668,605, Cl. 348-584.000.
Nadeau, James G.; Ciolkowski, Mary Lee; and Vogler, Erwin A., to Becton Dickinson and Company. Bi-directional oligonucleotides that bind thrombin. 5,668,265, Cl. 536-23.100.
Nagai, Michio, to NEC Corporation. Foldable portable telephone with improved antenna gain. 5,668,867, Cl. 379-433.000.
Nagaike, Masaru: *See*—
Morita, Makoto; Nagaike, Masaru; Gueler, Richard; Imanishi, Makoto; and Yonezawa, Takahiro, 5,667,130, Cl. 228-110.100.
Nagami, Masafumi, to Kansei Corporation. Arrangement of harnesses in a vehicle. 5,668,415, Cl. 307-9.100.
Nagamine, Masayuki; Omaru, Atsuo; and Nakajima, Naoyuki, to Sony Corporation. Process for preparing carbonaceous material for negative electrode of cell and non-aqueous electrolyte secondary cell using same. 5,667,914, Cl. 429-194.000.
Nagano, Hirosaku: *See*—

Furutani, Hiroyuki; Danno, Kazuhisa; Okamoto, Yoshifumi; Ida, Junya; Oonari, Yoshihide; Nojiri, Hitoshi; and Nagano, Hirosaku, 5,668,247, Cl. 528-353.000.
Nagarajan, Palanivelu: *See*—
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Nagato, Kenichi: *See*—
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Naik, Sanjeev Manubhai, to General Motors Corporation. Internal combustion engine misfire detection. 5,668,725, Cl. 701-111.000.
Naito, Hiroyuki, to Naito, Shizu. Aqueous organosiloxane liquid composition and its use. 5,668,212, Cl. 524-701.000.
Naito, Shizu: *See*—
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Nakabu, Shigeo: *See*—
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Nakagami, Hiroyuki: *See*—
Horie, Masao; Kishigami, Yoshikazu; Nakagami, Hiroyuki; and Takatera, Masayuki, 5,666,966, Cl. 128-760.000.
Nakagawa, Mitsuo: *See*—
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Nakagoshi, Isao; Shimura, Hiromi; Katsumata, Ikuo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Photosensitive material package and packaging apparatus for the same. 5,667,071, Cl. 206-455.000.
Nakahashi, Hiroshi: *See*—
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Nakahata, Tatsutoshi; Kawano, Genji; Sudo, Tetsuo; and Kojima, Katsuaki, to Toray Industries, Inc. Hematopoietic stem cell growth-promoting compositions containing a fibroblast-derived fragment of fibronectin and a growth factor, and methods employing them in vitro or in vivo. 5,668,104, Cl. 514-2.000.
Nakai, Hiroshi: *See*—
Ueyama, Tomoyuki; Harada, Shoji; Nakamata, Toshiaki; Shibata, Masuo; Doi, Toshimitsu; Ogawa, Shunichi; Matsumoto, Ichiro; and Nakai, Hiroshi, 5,667,709, Cl. 219-137.0PS.
Nakajima, Naoyuki: *See*—
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Nakajima, Yoshihiko: *See*—
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Nakamata, Toshiaki: *See*—
Ueyama, Tomoyuki; Harada, Shoji; Nakamata, Toshiaki; Shibata, Masuo; Doi, Toshimitsu; Ogawa, Shunichi; Matsumoto, Ichiro; and Nakai, Hiroshi, 5,667,709, Cl. 219-137.0PS.
Nakamine, Takeshi: *See*—
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Nakamoto, Nobuya: *See*—
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Nakamura, Fusanobu; Kataoka, Rieko; and Yonemochi, Kenshin, to International Business Machines Corp. Portable computer utilizable by an over head projector and tilting mechanism thereof. 5,668,695, Cl. 361-683.000.
Nakamura, Katsutoshi; and Ito, Nobuhiro, to Canon Kabushiki Kaisha. Ferroelectric liquid crystal device with alignment layers having surface unevenness different from each other. 5,668,616, Cl. 349-128.000.
Nakamura, Kazushige: *See*—
Maruyama, Akio; Sako, Harumi; Nakamura, Kazushige; and Amamiya, Shoji, 5,667,926, Cl. 430-97.000.
Nakamura, Keisuke; and Tamada, Tomohiko, to Japan Aviation Electronics Industry, Ltd. Embossed tape with oblique housing portions for packaging parts. 5,667,874, Cl. 428-178.000.
Nakamura, Kenichi: *See*—
Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, 5,668,229, Cl. 526-93.000.
Nakamura, Koichi: *See*—
Takeuchi, Kiyoshi; Nakamura, Koki; Taguchi, Toshiki; Nakamura, Koichi; and Makuta, Toshiyuki, 5,667,945, Cl. 430-380.000.
Nakamura, Koki: *See*—
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Nakamura, Masakazu: *See*—
Ohmi, Tadahiro; and Nakamura, Masakazu, 5,667,133, Cl. 228-219.000.
Nakamura, Seiji: *See*—
Ibaraki, Susumu; Katta, Noboru; Nakamura, Seiji; and Murakami, Hiroki, 5,668,879, Cl. 380-41.000.
Nakamura, Seizo; Iguchi, Yuji; and Kodama, Akinobu, to OKI Electric Industry Co., Ltd. Instantaneous phase detecting circuit and clock recovery signal generating circuit incorporated in differential demodulator. 5,668,838, Cl. 375-340.000.
Nakamura, Takeshi: *See*—
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Nakane, Yasuaki; Igarashi, Shuichi; Tamada, Sakuya; Sakamoto, Susumu; and Chiba, Teruo, to Sony Corporation. Magneto-optical disk. 5,667,862, Cl. 428-64.300.
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Nakano, Jun; Fukui, Hideto; Shibata, Tetsuo; Senda, Hisato; Maejima, Tetsuro; Watanuki, Yayoi; and Arika, Tadashi, to Kaken Pharmaceutical Co., Ltd. Quinolinecarboxylic acid derivatives and salts thereof. 5,668,147, Cl. 514-312.000.
Nakano, Shiro: *See*—
Shimizu, Yoshinobu; and Nakano, Shiro, 5,667,033, Cl. 180-272.000.
Nakano, Yukie: *See*—
Sato, Akira; Kawano, Naoki; Nomura, Takeshi; Nakano, Yukie; Arashi, Tomohiro; and Yamamatsu, Junko, 5,668,694, Cl. 361-321.400.
Nakao, Yoshiyuki; and Hirose, Minoru, to Fujitsu Limited. Resist pattern forming method. 5,667,942, Cl. 430-327.000.
Nakari, Leena Johanna: *See*—
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Nakata, Hirofumi: *See*—
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Nakata, Tomio; and Shiroshita, Kenji, to Tamagawa Seiki Kabushiki Kaisha. Servo motor encoder. 5,668,456, Cl. 318-602.000.
Nakayama, Haruki; Honda, Yuichi; and Imaizumi, Toshio, to Konica Corporation. Zoom lens barrel. 5,668,670, Cl. 359-694.000.
Nakayama, Kazuya: *See*—
Ando, Naotami; Masuda, Toshiyuki; Hatano, Takanori; and Nakayama, Kazuya, 5,668,194, Cl. 523-201.000.
Nakayoshi, Yoshiaki: *See*—
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Nakazawa, Akihiko: *See*—
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Nakazawa, Touji, to Tescon Co., Ltd. Two-dimensional manipulating robot. 5,667,354, Cl. 414-744.500.
Nakazawa, Yasushi; Ohashi, Masayoshi; Tashiro, Yasushi; Yasuoka, Tadashi; and Sugiura, Akio, to Honda Giken Kogyo Kabushiki Kaisha; and Showa Aluminum Corporation. Method of correcting the dimension of workpieces. 5,666,849, Cl. 72-377.000.
Nakazono, Hiroki: *See*—
Kondo, Masao; Ito, Shinichi; and Nakazono, Hiroki, 5,668,337, Cl. 84-609.000.
Nakazumi, Hiroyuki: *See*—
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Nalco Chemical Company: *See*—
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Nandkumar, Srinivas: *See*—
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Nanjo, Takeshi, to Ricoh Company, Ltd. Semiconductor device including via hole. 5,668,413, Cl. 257-774.000.
Nanjo, Tsuguo, to Nidek Company, Ltd. Hand-held fundus camera with shared light path. 5,668,621, Cl. 351-206.000.
Nanjo, Yuzuru: *See*—
Uchida, Michio; Wataki, Ryuji; Okazaki, Noritaka; Fujita, Shigeo; and Nanjo, Yuzuru, 5,669,054, Cl. 399-313.000.
NanoSystems LLC: *See*—
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Nara, Kei: *See*—
Naraki, Tsuyoshi; and Nara, Kei, 5,668,624, Cl. 355-53.000.
Nara, Peter L.: *See*—
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Naraki, Tsuyoshi; and Nara, Kei, to Nikon Corporation. Scan type exposure apparatus. 5,668,624, Cl. 355-53.000.
Nardone, Edward A.; Caron, Paul R.; Rothwell, Christian S.; and Schofield, Harold D., to Atlantek Inc. Card printing apparatus. 5,667,316, Cl. 400-120.160.
Nardone, Joseph M.; McTague, Michael J.; and David, Howard S., to Intel Corporation. System utilizing multiple address decode resources and decoder receiving address determines address corresponding to resource based on select and ready signals by that particular resource. 5,668,949, Cl. 395-200.310.
Narishige, Shinji: *See*—
Soeya, Susumu; Tadokoro, Shigeru; Imagawa, Takao; Ashida, Eiji; Fuyama, Moriaki; Fukui, Hiroshi; Suzuki, Saburo; Takagi, Masayuki; and Narishige, Shinji, 5,668,685, Cl. 360-113.000.
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Cuthbert, Laura, 5,669,044, Cl. 399-120.000.
Nassimi, Shary. Combination axial and surface mount cylindrical package containing one or more electronic components. 5,668,702, Cl. 361-820.000.
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Sakai, Katsuhiko; Nasu, Osamu; and Ose, Yoichi, 5,668,368, Cl. 250-251.000.
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Magill, David T.; Bustamante, Herman A.; and Natali, Francis D., 5,668,795, Cl. 370-209.000.
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Satchell, Donald Prentice, Jr.; Natarajan, Venkat; and Clarke, Richard Henry, 5,667,643, Cl. 202-154.000.
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Anscher, Joseph; and Fraze, Gary, 5,666,700, Cl. 24-163.00R.
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Prasad, A. V. Krishna; and Richards, James C., 5,668,272, Cl. 536-55.300.
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Chen, Show-An; and Lin, Liang-Chang, 5,667,913, Cl. 429-192.000.
Sheu, Meng-Lieh; and Lee, Chung-Len, 5,668,481, Cl. 326-16.000.
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Alpert, Donald B.; Avnon, Dror; Ben-Meir, Amos; and Talmudi, Ran, 5,669,011, Cl. 395-800.230.
Davis, Ian E., 5,668,982, Cl. 395-559.000.
Huang, Chuck; and Yeh, Chune-Sin, 5,668,392, Cl. 257-340.000.
Opris, Ion E.; and Lewicki, Laurence D., 5,668,549, Cl. 341-118.000.
Pease, Robert Allen, 5,668,467, Cl. 323-315.000.
Worsley, Debra J.; and Edem, Brian C., 5,668,811, Cl. 370-424.000.
Natori, Kazuya; Iwabuchi, Mitsunobu; and Kawamura, Shigenori, to Hitachi Denshi Kabushiki Kaisha. Digital oscilloscope using color plane display device and data display method therefore. 5,668,469, Cl. 324-121.00R.
Nauthe, Alfred; and Göhler, Wolfgang, to Rieter Ingolstadt Spinnereimaschinenbau AG. Air-assisted introduction of fiber sliver before the nip of calender disks. 5,666,698, Cl. 19-157.000.
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Sanderson, Philip E.; Naylor-Olsen, Adel M.; Dyer, Dona L.; Vacca, Joseph P.; Isaacs, Richard C. A.; Dorsey, Bruce D.; and Fraley, Mark E., 5,668,289, Cl. 546-293.000.
NCR Corporation: *See—*
Bhat, Kabekode V., 5,668,995, Cl. 395-674.000.
Evans, James Gifford; Schneider, Martin Victor; and Tran, Cuong, 5,668,560, Cl. 343-702.000.
Lorenz, Michael A.; Rosenbaum, John C.; and Roth, Joseph D., 5,667,883, Cl. 428-321.500.
Tan, Yaoping, 5,667,317, Cl. 400-197.000.
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Miyazawa, Hiromu; Ootsuki, Shinya; Kawase, Takeo; and Nebashi, Satoshi, 5,667,887, Cl. 428-332.000.
NEC Corporation: *See—*
Akimoto, Takeshi, 5,668,053, Cl. 438-625.000.
Chonan, Toru, 5,668,487, Cl. 327-80.000.
Egawa, Hidenori, 5,668,406, Cl. 257-690.000.
Hamada, Satoshi, 5,668,658, Cl. 359-341.000.
Hashimoto, Kiyokazu, 5,668,752, Cl. 365-104.000.
Kasahara, Masayoshi, 5,667,535, Cl. 29-25.010.
Kimura, Katsuji, 5,668,750, Cl. 364-841.000.
Koh, Risho; and Ogura, Atsushi, 5,668,046, Cl. 438-481.000.
Koike, Hiroki, 5,668,753, Cl. 365-145.000.
Kubota, Yasuhiro, 5,666,713, Cl. 29-525.010.
Kurata, Kazuhiko, 5,668,902, Cl. 385-38.000.
Kurokami, Yuzo; and Matsuura, Hideki, 5,668,833, Cl. 375-233.000.
Morimoto, Michihiro, 5,668,390, Cl. 257-232.000.
Mukai, Hirokazu, 5,668,858, Cl. 379-100.010.
Muroya, Yoshiharu, 5,668,047, Cl. 438-31.000.
Nagai, Michio, 5,668,867, Cl. 379-433.000.
Nobesawa, Hiroyuki, 5,668,799, Cl. 370-230.000.
Nomura, Masahiro, 5,668,484, Cl. 326-93.000.
Ohtsuki, Tetsuya, 5,668,759, Cl. 365-185.290.
Sato, Fumihiko, 5,668,396, Cl. 257-517.000.
Sato, Naoko, 5,668,808, Cl. 370-378.000.
Takano, Hideto, 5,668,840, Cl. 375-368.000.
Takano, Hiromitsu; and Nakamoto, Nobuya, 5,668,604, Cl. 348-562.000.
Tanioka, Michinobu; and Suzuki, Motoji, 5,668,058, Cl. 438-108.000.
Tsuruoka, Eriko; and Hirano, Akira, 5,667,925, Cl. 430-59.000.
Umezu, Keiichi, 5,668,513, Cl. 333-252.000.
Yamamoto, Takeshi, 5,668,832, Cl. 375-233.000.
Yamashita, Atsushi, 5,668,754, Cl. 365-145.000.
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Neer, Kirk William: *See—*
Gehres, Clint Edwin; Vigh, Anthony David; and Neer, Kirk William, 5,666,895, Cl. 112-114.000.
Negawati Technologies Inc.: *See—*
Baker, James Allan, 5,668,446, Cl. 315-294.000.
Negi, Taichi; Ikeda, Kaoru; and Nakano, Hiromichi, to Kuraray Co., Ltd. Resin composition and multilayered structure comprising the same. 5,668,213, Cl. 525-57.000.
Negishi, Kenji; Noguchi, Osamu; Aoshima, Shinsuke; and Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Lens-fitted photo film unit and method of producing the same. 5,669,016, Cl. 396-6.000.
Nelson, Carl T.; and Essaff, Robert, to Linear Technology Corporation. Circuits and methods for increasing switch turn-off speed in high-speed switching regulator drive circuits. 5,668,493, Cl. 327-309.000.
Nemoto, Masaru, to Suguro Nemoto. Method of fabricating article by using non-sand core and article produced thereby, and core structure. 5,667,191, Cl. 249-61.000.
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Tsui, Pui-Hing, 5,667,295, Cl. 362-252.000.
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Herbert, Raymond John, 5,668,729, Cl. 364-464.200.
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Delatour, Michel; and Servaux, Jean, 5,667,087, Cl. 215-252.000.
Juengling, Daniele; Hauser, Thomas Wilhelm; Lechthaler, Jürg; Rusconi, Luca; Dos Santos Pousa, Armando; and Meyer, Philipp Paul, 5,667,833, Cl. 426-496.000.
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McHale, John F., 5,668,857, Cl. 379-93.070.
Neuberger, Wolfgang; Sychugov, Vladimir A.; Lyndin, Nikolai M.; and Krivoshlykov, Sergej G., to CeramOptec Industries, Inc. Compound laser system for high power densities. 5,668,903, Cl. 385-38.000.
Neufeld, E. David, to Compaq Computer Corporation. Posted disk read operations performed by signalling a disk read complete to the system prior to completion of data transfer. 5,668,971, Cl. 711-111.000.
Neumann, Klaus: *See—*
Arbeiter, Markus; and Neumann, Klaus, 5,666,859, Cl. 74-489.000.
Neurogen Corporation: *See—*
Blum, Charles; and Hutchison, Alan, 5,668,283, Cl. 544-345.000.
Neuss, Michael: *See—*
Schmid, Karl; Syldath, Andreas; Kischkel, Ditmar; Krohnen, Thomas; Neuss, Michael; Pawelczyk, Hubert; Boecker, Monika; and Welling, Hermann-Josef, 5,668,100, Cl. 510-446.000.
Neustadt, Ariel, to Air Cargo Equipment Corporation. Single-point tensioning door system for containers. 5,667,002, Cl. 160-368.100.
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Androphy, Elliot J.; and Barsoum, James G., 5,667,965, Cl. 435-5.000.
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New Venture Gear, Inc.: *See—*
Mueller, Wayne E.; Dhillon, Jermanjit S.; Howell, Raymond A.; Moriarty, Brian C.; and Perosky, Edward, 5,667,036, Cl. 184-6.120.
New York Air Brake Corporation: *See—*
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New York Institute of Technology: *See—*
Urban, Edward F.; and Mavroudis, George E., 5,667,029, Cl. 180-65.200.
Newburg, David S.: *See—*
Peterson, Jerry A.; Newburg, David S.; and Yolken, Robert H., 5,667,797, Cl. 424-439.000.
Newman, Amy H.: *See—*
Rice, Kenner C.; and Newman, Amy H., 5,668,285, Cl. 546-44.000.
Newman, Paul Bernard David. Quality control and grading system for meat. 5,668,634, Cl. 356-445.000.
Newman, Peter J.; Gumina, Richard J.; and Kirshbaum, Nancy, to Blood Center Research Foundation, Inc., The. Platelet endothelial cell adhesion molecule-1 promoters and uses thereof. 5,668,012, Cl. 435-320.100.
Newman, Ralph R., to Newstripe, Inc. Spray gun with removable supply line. 5,667,142, Cl. 239-346.000.
Newmarch, David: *See—*
Beer, Reginald; Cutts, Stanley John; Kew, Steven Brian; Morris, Neil; and Newmarch, David, 5,668,532, Cl. 340-506.000.
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Newton, David: *See—*
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NeXstar Pharmaceuticals, Inc.: *See—*
Janjic, Nebojsa; and Gold, Larry, 5,668,264, Cl. 536-23.100.
Ngai, Chuck Hong: *See—*
Cheney, Dennis Phillip; Ciacelli, Mark Louis; Herndon, Steven Bradford; Myers, John David; and Ngai, Chuck Hong, 5,668,599, Cl. 348-402.000.
NGK Insulators, Ltd.: *See—*
Kashiwaya, Toshikatsu; Yamaguchi, Hirofumi; and Otagiri, Tadashi, 5,668,071, Cl. 501-136.000.
NGK Spark Plug Co., Ltd.: *See—*
Sato, Kazuhisa; and Kimura, Kazuo, 5,668,060, Cl. 438-123.000.
Nguyen, Anh: *See—*

McPhee, William S.; and Nguyen, Anh, 5,667,430, Cl. 451-87.000.
Nguyen, Charles C.; Martin, Verne J.; Pauley, Edward P.; Buccigross, Henry L.; and Rudolph, Stephen, to Penford Products Company. Reinforced films made from water soluble polymers. 5,667,885, Cl. 428-327.000.
N'Guyen, Quang Lan: *See—*
Junino, Alex; Lagrange, Alain; N'Guyen, Quang Lan; and Bourboulon, Marie-Alix, 5,667,792, Cl. 424-401.000.
Nguyen, Thai Minh: *See—*
Bae, Young C.; Ottoboni, Thomas B.; Chan, Kwan; Nguyen, Thai Minh; Lim, Fredric J.; and Soane, David S., 5,667,735, Cl. 264-1.700.
Nguyen, Tin Luong: *See—*
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Nice Pak Products: *See—*
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Nichols, Constance H.: *See—*
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Nichols, Monte Carl: *See—*
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Nicholson, Dean B., to Hewlett-Packard Company. Pin grid array solution for microwave multi-chip modules. 5,668,408, Cl. 257-699.000.
Nicolai, Jean-Marc: *See—*
Cassese, Bruno; Wacheux, Patrick; Paul, Gilles; Herzberger, Eric; and Nicolai, Jean-Marc, 5,668,712, Cl. 363-95.000.
Nicolaou, Alexander: *See—*
Tsonis, Anastasios; Goldberg, Brian J.; Divinsky, Aaron Martin; Nicolaou, Alexander; Chia, Benito, Jr.; and Mayya, Niranjan, 5,668,730, Cl. 364-470.090.
Nicollini, Germano; and Pernici, Sergio, to SGS-Thomson Microelectronics S.r.l. Circuit and method for driving alternatively electric loads with low impedance. 5,668,494, Cl. 327-416.000.
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Nanjo, Tsuguo, 5,668,621, Cl. 351-206.000.
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Leinonen, Antti; Pentersson, Henrik; Salminen, Risto; Niemikko, Hannu; Kivimaa, Juha; Heikkilä , Pertti; Lento, Tapio; and Kiilavuori, Erkki, 5,666,740, Cl. 34-114.000.
Nihei, Yasukazu; and Harada, Akinori, to Fuji Photo Film Co., Ltd. Method for fabricating ferroleiectric domain reversals, and optical wavelength converter element. 5,668,578, Cl. 346-74.300.
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Goto, Toshio; Kitagawa, Yoshinori; Ito, Seishi; Shibuya, Katsuhiko; Ukawa, Kazuhiro; Kyo, Yoshiko; and Minegishi, Natsuko, 5,668,087, Cl. 504-247.000.
Nihon Kohden Corporation: *See—*
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Nihon Medi-Physics Co., Ltd.: *See—*
Fukushima, Makoto; Kimura, Kazuhiro; Yamauchi, Hirohiko; Morishita, Kenichi; and Takahashi, Keietsu, 5,667,762, Cl. 424-1.110.
Niikura, Yasuhiro: *See—*
Narita, Yasushi; Niikura, Yasuhiro; Hattori, Noboru; Katakura, Shusaku; and Tohjima, Hisaaki, 5,667,458, Cl. 477-169.000.
Nikdel, Seifollah; Burgener, Paul E.; and Grillo, Angelo C., to Florida Dept. of Citrus. System and method for pasteurizing citrus juice using microwave energy. 5,667,828, Cl. 426-231.000.
Nikko Co., Ltd.: *See—*
Uetake, Tsugio, 5,667,421, Cl. 446-470.000.
Nikon Corporation: *See—*
Fujinawa, Nobuhiro; Inami, Masayuki; and Maeda, Eisaku, 5,668,656, Cl. 359-208.000.
Iida, Yoshikazu, 5,669,023, Cl. 396-129.000.
Katano, Yuji; and Wakabayashi, Hiroshi, 5,669,027, Cl. 396-535.000.
Katano, Yuji, 5,669,028, Cl. 396-535.000.
Kuroiwa, Yoshinori; Nishida, Hiroshi; and Okugawa, Hisashi, 5,668,644, Cl. 358-480.000.
Matsui, Hideki, 5,668,445, Cl. 315-241.00P.
Naraki, Tsuyoshi; and Nara, Kei, 5,668,624, Cl. 355-53.000.
Ohta, Hidefumi; and Machida, Kiyosada, 5,669,024, Cl. 396-176.000.
Ohtake, Motoyuki, 5,668,667, Cl. 359-683.000.
Ohtake, Motoyuki; and Mori, Motohisa, 5,668,669, Cl. 359-684.000.
Oomura, Yasuhiro, 5,668,672, Cl. 359-727.000.
Otomo, Masahiko, 5,668,716, Cl. 364-131.000.
Shibayama, Atsushi; Suzuki, Masatoshi; and Fujita, Takanori, 5,668,668, Cl. 359-683.000.
Suenaga, Yutaka; Ishiyama, Toshiro; Shimizu, Yoshiyuki; and Hayashi, Kiyoshi, 5,668,673, Cl. 359-731.000.
Suzuki, Takeshi, 5,668,666, Cl. 359-674.000.
Tomioka, Ken, 5,668,661, Cl. 359-380.000.
Nilsen, Kenneth; and Garcia, David, to International Business Machines Corporation. Method and apparatus for handling data storage requests in a distributed data base environment. 5,668,986, Cl. 395-610.000.
Nim, Danny Chi: *See—*
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Nintzel, Arthur James, to Moog Inc. Variable-phase resistive transducer, and method of operating same. 5,668,480, Cl. 324-709.000.
Nippan Tansan Co., Ltd.: *See—*
Osajima, Yutaka; Shimoda, Mitsuya; and Kawano, Tamotsu, 5,667,835, Cl. 426-521.000.
Nippon Kayaku Kabushiki-Kaisha: *See—*
Kitao, Shigetaka; Kimura, Ayumu; Ootani, Yasuhiko; Hitomi, Isamu; and Kuroiwa, Akihiko, 5,668,528, Cl. 340-436.000.
Nippon Mektron, Ltd.: *See—*
Matsumoto, Hirofumi; Shoumura, Mitsunobu; Fujita, Norimasa; Inaba, Masaichi; and Tanaka, Yasuyuki, 5,666,717, Cl. 29-603.120.
Saito, Satoru; Tatsu, Haruyoshi; Sterlin, Sergei Rafailovich; Zeifman, Yurii Vilovich; and Postovoi, Sergei Anatol'evich, 5,668,221, Cl. 525-359.300.
Nippon Nyukazai Co. Ltd.: *See—*
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Nippon Precision Circuits Ltd.: *See—*
Yamazaki, Motohiro; and Morita, Yasutoshi, 5,668,895, Cl. 382-260.000.
Nippon Shokubai Co., Ltd.: *See—*
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Nippon Signal Co., Ltd.: *See—*
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Nippon Steel Chemical Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
Ohta, Akira; Kushima, Kohsei; and Furuki, Satoshi, 5,667,748, Cl. 264-515.000.
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Nippon Steel Semiconductor Corporation: *See—*
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Nippon Telegraph & Telephone Corporation: *See—*
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Muto, Shinyo; and Shimokura, Ken-ichiro, 5,668,453, Cl. 318-568.170.
Sakamoto, Tadashi; Kanamori, Terutoshi; Yamada, Makoto; Shimizu, Makoto; Ohishi, Yasutake; and Sudo, Shoichi, 5,668,659, Cl. 359-341.000.
Nippondenso Co, Ltd.: *See—*
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Nippondenso Co., Ltd.: *See—*
Honda, Minoru; and Inaba, Hideki, 5,667,545, Cl. 55-497.000.
Ito, Yoshihiko; and Tani, Yasuhide, 5,666,920, Cl. 123-432.000.
Ohara, Fumio; Yoshihara, Shinji; Kanamori, Katuhiko; and Kurahashi, Takashi, 5,668,033, Cl. 438-113.000.
Sugiura, Kazuhiko; Katayama, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,667,607, Cl. 156-67.000.
Tominaga, Takayuki; Senda, Kouji; Idogaki, Takaharu; Kaneko, Takashi; and Kanayama, Hitoshi, 5,668,432, Cl. 310-328.000.
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Nishida, Hiroshi: *See—*
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Nishida, Masato; Ishituka, Tomoaki; and Oshima, Toshio, to Hitachi Maxell, Ltd. Optical reading apparatus for reading latent image mark. 5,668,363, Cl. 235-468.000.
Nishiguchi, Masayuki: *See—*
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Nishikawa, Kazuhiro: *See—*
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Nishimatsu, Kaoru; Amano, Hideki; and Sakayori, Shin-ichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Method and system for screening calls directed to an international telephone operator. 5,668,856, Cl. 379-89.000.
Nishimi, Haruyuki: *See—*
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Nishimori, Eiji: *See—*
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Nishimura, Shigeru, to Fuji Photo Optical Co., Ltd. Visible and infrared imaging apparatus with movement detecting circuits for affecting freeze and noise reducing operations. 5,667,474, Cl. 600-109.000.
Nishimura, Yoichi: *See—*
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Nishino, Atsushi: *See—*
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Nishino, Osamu: *See—*
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Nishishita, Kunihiko, to Zexel Corporation. Laminated heat exchanger. 5,667,007, Cl. 165-153.000.
Nishitani, Keizo: *See*—
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Nishiyama, Takeshi: *See*—
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Nishizeki, Masato: *See*—
Usagawa, Yasushi; and Nishizeki, Masato, 5,667,960, Cl. 430-622.000.
Nissan Chemical Industries Ltd.: *See*—
Watanabe, Yoshitane; Suzuki, Keitaro; Koyama, Yoshinari; and Iijima, Motoko, 5,667,725, Cl. 252-309.000.
Nissan Motor Co., Ltd.: *See*—
Murakami, Koichi, 5,668,384, Cl. 257-106.000.
Narita, Yasushi; Niikura, Yasuhiro; Hattori, Noboru; Katakura, Shusaku; and Tohjima, Hisaaki, 5,667,458, Cl. 477-169.000.
Nissen, Uwe: *See*—
Prenger, Rainer; and Nissen, Uwe, 5,667,269, Cl. 296-107.000.
Nissha Printing co., Ltd.: *See*—
Ikura, Kenichirou; and Nishikawa, Kazuhiro, 5,668,576, Cl. 345-173.000.
Nisshinbo Industries, Inc.: *See*—
Hayashi, Tomoyuki; Tatsumi, Yoshiaki; and Miyashita, Kinya, 5,667,822, Cl. 425-275.000.
Nissho Corporation: *See*—
Horie, Masao; Kishigami, Yoshikazu; Nakagami, Hiroyuki; and Takatera, Masayuki, 5,666,966, Cl. 128-760.000.
Nitschmann, Karl, to Stihl, Andreas. Guide bar for a motor chainsaw. 5,666,733, Cl. 30-387.000.
Nitta, Etsuo: *See*—
Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.
Nitto Boseki Co., Ltd.: *See*—
Watanabe, Shoichi; Inoguchi, Hirokazu; Kanzaka, Yoshihiro; Tanaka, Yoshiharu; Ikehara, Hideji; Saiki, Ryuji; Yamato, Nobukatsu; Mori, Tomohiro; and Senna, Minoru, 5,667,857, Cl. 422-36.200.
Nivell System Aktiebolag: *See*—
Lundquist, Lars-Olof, 5,666,769, Cl. 52-126.100.
Niwa, Yukichi: *See*—
Katayama, Tatsushi; Niwa, Yukichi; and Suda, Shigeyuki, 5,668,595, Cl. 348-218.000.
No, Chang-Hyun, to Hyundai Electronics Industries Co., Ltd. Duplexing and switching system and method in a multiplexed system. 5,668,796, Cl. 370-217.000.
Nobesawa, Hiroyuki, to NEC Corporation. Bus line traffic control adapter apparatus. 5,668,799, Cl. 370-230.000.
Nobushige, Tadashi: *See*—
Uchida, Kiyoshi; Miyachi, Yoshikazu; Hamanaka, Kengo; Ban, Yoichiro; Minami, Nagio; and Nobushige, Tadashi, 5,667,429, Cl. 451-87.000.
Noda, Shinya: *See*—
Kobayashi, Kazunori; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Saito, Masanobu; and Noda, Shinya, 5,669,042, Cl. 399-111.000.
Nodelman, Neil H.; Steppan, David D.; Clatty, Jan L. R.; and Meltzer, A. Donald, to Bayer Corporation. High modulus, high impact polyurethane/polyurea RIM. 5,668,239, Cl. 528-60.000.
Nogi, Toshiharu: *See*—
Fujieda, Mamoru; Nogi, Toshiharu; Oyama, Yoshishige; Ohsuga, Minoru; and Shiraishi, Takuya, 5,666,916, Cl. 123-295.000.
Noguchi, Osamu: *See*—
Negishi, Kenji; Noguchi, Osamu; Aoshima, Shinsuke; and Kamata, Kazuo, 5,669,016, Cl. 396-6.000.
Nohr, Ronald Sinclair; MacDonald, John Gavin; and Kobylivker, Peter Michelovich, to Kimberly-Clark Corporation. Process of making a nonwoven web. 5,667,750, Cl. 264-555.000.
Nojiri, Hitoshi: *See*—
Furutani, Hiroyuki; Danno, Kazuhisa; Okamoto, Yoshifumi; Ida, Junya; Oonari, Yoshihide; Nojiri, Hitoshi; and Nagano, Hirosaku, 5,668,247, Cl. 528-353.000.
Nokia Mobile Phones Limited: *See*—
Rautila, Heikki, 5,669,069, Cl. 455-558.000.
Nokia Telecommunications Oy: *See*—
Suonvieri, Jukka, 5,668,804, Cl. 370-331.000.
Noll, Ronald C. Side table and glider assembly. 5,667,273, Cl. 297-171.000.
Noma, Kenji: *See*—
Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji, 5,668,950, Cl. 395-200.470.
Nomura, Masahiro, to NEC Corporation. High frequency clock signal distribution circuit with reduced clock skew. 5,668,484, Cl. 326-93.000.
Nomura, Takeshi: *See*—
Sato, Akira; Kawano, Naoki; Nomura, Takeshi; Nakano, Yukie; Arashi, Tomohiro; and Yamamatsu, Junko, 5,668,694, Cl. 361-321.400.
Nomura, Tsuyoshi: *See*—
Hamano, Seiji; Ichiyanagi, Takashi; Nomura, Tsuyoshi; and Hamamura, Kouhei, 5,668,894, Cl. 382-242.000.
Noorbakhsh, Ali, to Cirrus Logic, Inc. Optimum implementation of X-Y clipping on pixel boundary. 5,668,941, Cl. 345-434.000.
Nordam Group, Inc., The: *See*—
Reese, Roy Jefferson, Jr., 5,667,866, Cl. 428-116.000.
Nordenstrom, Tina L. Memorandum recorder for use with a telephone. 5,668,868, Cl. 379-447.000.
Nordic Water Products AB: *See*—
Haeffner, Roger Clarence, 5,667,680, Cl. 210-331.000.
Nordson Corporation: *See*—
Shutic, Jeffrey R.; and Lenhart, Kevin, 5,667,342, Cl. 406-122.000.
Norita, Toshio; Yagi, Fumiya; and Hirose, Satoru, to Minolta Co., Ltd. Measuring system with improved method of reading image data of an object. 5,668,631, Cl. 356-376.000.
Noritsu Koki Co., Ltd.: *See*—
Yamada, Junji, 5,669,034, Cl. 396-615.000.
Yamaji, Yoshiyuki, 5,668,645, Cl. 358-487.000.
Norris, David: *See*—
Hewitt, Larry D.; Suggs, David N.; and Norris, David, 5,668,338, Cl. 84-629.000.
North American Container Corporation: *See*—
Grigsby, John M.; Banks, Jeffrey C.; and Grigsby, John M., Jr., 5,667,620, Cl. 156-254.000.
North American Manufacturing Company: *See*—
Robertson, Thomas F.; Miller, Todd A.; and Quinn, Dennis E., 5,667,376, Cl. 431-115.000.
North, Bernard: *See*—
Dragner, Louis Robert; and North, Bernard, 5,667,638, Cl. 162-158.000.
Northern Telecom Limited: *See*—
Adham, Saman M. I., 5,668,817, Cl. 371-22.400.
Bannister, Cecil H.; Marchetti, F. Marco; Mo, Richard C.; Switzer, Tod W.; and Moghe, Dhawal Balkrishna, 5,668,862, Cl. 379-201.000.
Debortoli, George, 5,668,911, Cl. 385-135.000.
Florence, Lloyd Malcolm; and Brennan, Paul Michael, 5,668,853, Cl. 379-67.000.
Harrison, Paul Mark; Peall, Robert George; and Clapp, Terry Victor, 5,668,823, Cl. 372-50.000.
Little, Brent; and Wu, Chi, 5,668,900, Cl. 385-37.000.
Saw, John Choo-Beng; Leib, Harry; and Kipens, George Alfred, 5,668,431, Cl. 310-313.00R.
Northrop Gruman Corporation: *See*—
Glass, Robert C.; Gaida, Walter E.; Ronallo, Ronald R.; and Hobgood, Hudson McDonald, 5,667,587, Cl. 117-200.000.
Northwest Fiberoptic Technologies Inc.: *See*—
Sutherland, Martin A.; and Barney, Donald L., 5,668,904, Cl. 385-72.000.
Northwestern University: *See*—
Razeghi, Manijeh, 5,668,395, Cl. 257-441.000.
Norwalk Wastewater Equipment Company: *See*—
Graves, Jan D., 5,667,689, Cl. 210-621.000.
Nose, Tamotsu; and Kanebako, Hideki, to Sanaky Seiki Mfg. Co., Ltd. Bearing device for use in a motor. 5,667,308, Cl. 384-99.000.
Nose, Tamotsu, to Sankyo Seiki Mfg. Co., Ltd. Bearing seal system. 5,667,309, Cl. 384-132.000.
Novartis Corporation: *See*—
Fink, Cynthia Anne, 5,668,158, Cl. 514-354.000.
Novavax, Inc.: *See*—
Lemley, Paul V., Jr.; and Frankel, Arthur E., 5,667,786, Cl. 424-236.100.
Novo Nordisk A/S: *See*—
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,668,129, Cl. 514-183.000.
Fujita, Yuko; Awaji, Haruo; Shimoto, Hidesato; and Sharyou, Masaki, 5,667,634, Cl. 162-72.000.
Yaver, Debbie Sue; Xu, Feng; Dalbøge, Henrik; Schneider, Palle; and Aaslyng, Dorrit A., 5,667,531, Cl. 8-401.000.
Novo Nordisk Biotech, Inc.: *See*—
Berka, Randy Michael; Yoder, Wendy; Takagi, Shinobu; and Boominathan, Karuppan Chettier, 5,667,990, Cl. 435-69.100.
Yaver, Debbie Sue; Xu, Feng; Dalbøge, Henrik; Schneider, Palle; and Aaslyng, Dorrit A., 5,667,531, Cl. 8-401.000.
Novopress GmbH Pressen und Presswerkzeuge & Co.: *See*—
Pfeiffer, Heinrich, 5,666,711, Cl. 29-272.000.
Novotny, Vojtech; and Spindler, Zdenek, to Rieter Deutschland GmbH. Positive and negative pressure rotor cleaning assembly for a rotor spinning machine. 5,666,798, Cl. 57-301.000.
Nowicki, Steven R.: *See*—
Bullock, Brian C.; and Nowicki, Steven R., 5,667,158, Cl. 241-33.000.
Nozaki, Shinya: *See*—

Amemori, Masanori; Hasegawa, Toshiyuki; Miyamoto, Takeshi; Nozaki, Shinya; and Kobayashi, Takashi, 5,668,327, Cl. 73-861.770.
Nozawa, Masako; and Yamaguchi, Yumiko, to Kabushiki Kaisha Toshiba. Facsimile equipment. 5,668,640, Cl. 358-434.000.
NSK Ltd.: *See*—
Suzuki, Hiroshi; and Oumi, Hayato, 5,667,455, Cl. 475-331.000.
NTN Corporation: *See*—
Ichikawa, Masanori; Yoshioka, Tadayoshi; Toyoda, Katsumasa; and Takizawa, Shinichi, 5,667,603, Cl. 148-589.000.
Nugent, Robert Michael: *See*—
Bendert, Edward Joseph; Bennett, Robert Bradley; Berman, Eve Suzanne; Farrell, Susan Marie; Johnson, Eugene; Nugent, Robert Michael; and Vendryes, Mary Ellen, 5,668,958, Cl. 395-308.000.
Numao, Masayuki; and Masuda, Hiroshi, to International Business Machines Corporation. Method and apparatus for rendering a solid three dimensional model from two dimensional input information including closed region recognizing and three dimensional rendering. 5,668,939, Cl. 345-427.000.
Numata, Masaaki: *See*—
Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
Nuovo Pignone S.p.A.: *See*—
Vinciguerra, Costantino; and Galanti, Alessandro, 5,666,997, Cl. 139-57.000.
Nuss, Martin C., to Lucent Technologies Inc. Method and apparatus and for processing ultrafast optical signals. 5,668,647, Cl. 359-4.000.
Nutcher, Peter B.; and Waldern, Peter J., to Process Combustion Corporation. Premix single stage low NOx burner. 5,667,374, Cl. 431-7.000.
Nutto, Uwe. Fastening device. 5,667,117, Cl. 224-417.000.
Nybro, Leif. Calibration and measuring tool. 5,666,738, Cl. 33-567.000.
O. Mustad & Son A.S.: *See*—
Thormodsen, Tom; and Borgund, Per, 5,666,759, Cl. 43-42.740.
Obara, Masao: *See*—
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,668,447, Cl. 315-368.260.
Obinata, Hiroshi: *See*—
Horikawa, Kenji; Obinata, Hiroshi; Omata, Kazuo; Sato, Toshihiko; Nakajima, Yoshihiko; and Ichikawa, Seigo, 5,666,984, Cl. 134-95.200.
Object Technology Licensing Corp.: *See*—
Lynch-Freshner, Lawrence A.; Marsh, Donald M.; Milne, Steve H.; and Zias, Jeff A., 5,668,997, Cl. 395-683.000.
Oce Printing Systems GmbH: *See*—
Köfferlein, Rainer; and Hoffmann, Joachim, 5,667,125, Cl. 226-191.000.
Ochi, Makoto: *See*—
Oshiro, Akira; Ochi, Makoto; and Takahashi, Makoto, 5,669,030, Cl. 396-567.000.
Ochiai, Masahisa; Saitoh, Tsutomu; and Asanae, Masumi, to Hitachi Metals, Ltd. Method of electrostatically forming visual image. 5,669,051, Cl. 399-277.000.
O'Connor, Ronald M.: *See*—
Greve, Christopher G.; and O'Connor, Ronald M., 5,666,742, Cl. 34-218.000.
O'Connor, William E.: *See*—
Weber, Richard G.; Blake, Jeffrey T.; O'Connor, William E.; and Smart, Charles F., 5,666,710, Cl. 29-243.523.
Oda, Mikio, to Matsushita Electric Industrial Co., Ltd. Low frequency audio conversion circuit. 5,668,885, Cl. 381-98.000.
O'Donnell, Michael E., to Cornell Research Foundation, Inc. DNA polymerase III holoenzyme from *Escherichia coli*. 5,668,004, Cl. 435-194.000.
Oe, Takeo: *See*—
Hoshino, Masaru; Sano, Toyokazu; and Oe, Takeo, 5,668,514, Cl. 333-261.000.
Oehlerking, A. Dean: *See*—
Dierks, Dale J.; Oehlerking, A. Dean; Paradis, Ray E.; and Voelzke, Harry E., 5,667,231, Cl. 280-149.200.
Oehlert, Wolfgang; Jonas, Friedrich; and Buxbaum, Gunter, to Bayer AG. Thermally stable iron oxide pigments, a process for their preparation and their use. 5,667,579, Cl. 106-456.000.
Offutt, Larry G.: *See*—
Christopher, David A.; and Offutt, Larry G., 5,667,279, Cl. 299-1.900.
Ogawa, Kazuhiro: *See*—
Ono, Kikuo; Tsumura, Makoto; Ogawa, Kazuhiro; Sakuta, Hiroki; Suzuki, Masahiko; Kaneko, Toshiki; Nakayoshi, Yoshiaki; Onisawa, Kenichi; Hashimoto, Kenichi; and Minemura, Tetsuro, 5,668,379, Cl. 257-59.000.
Ogawa, Shunichi: *See*—
Ueyama, Tomoyuki; Harada, Shoji; Nakamata, Toshiaki; Shibata, Masuo; Doi, Toshimitsu; Ogawa, Shunichi; Matsumoto, Ichiro; and Nakai, Hiroshi, 5,667,709, Cl. 219-137.0PS.
Ogawa, Takashi; Sofue, Masaaki; and Inuzuka, Hideo, to Ricoh Company, Ltd. Disk cartridge driving apparatus. 5,668,793, Cl. 369-77.200.
Ogawa, Tomoya: *See*—
Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.
Ogawa, Toshitaka: *See*—
Nishino, Shinichi; Nishino, Osamu; and Ogawa, Toshitaka, 5,669,043, Cl. 399-116.000.
Ogawa, Yasuaki: *See*—
Kamei, Shigeru; Igari, Yasutaka; and Ogawa, Yasuaki, 5,668,111, Cl. 514-15.000.
Ogden, Brian Leslie; and Whiting, Peter Albert, to Warner Lambert Co. Cap for a container. 5,667,085, Cl. 215-220.000.
Ogino, Etsuo: *See*—
Miura, Yoshimasa; Ogino, Etsuo; Ito, Michio; and Takakura, Chitose, 5,667,151, Cl. 241-20.000.
Ogino, Takao: *See*—
Yoshitake, Noriaki; Mizuno, Kensuke; and Ogino, Takao, 5,667,843, Cl. 427-305.000.
Ogino, Toshikazu; Shibano, Hayato; and Hosaka, Eiki, to Mitsumi Electric Co., Ltd. Integral type flat antenna provided with converter function. 5,668,563, Cl. 343-713.000.
O'Gorman, Lawrence P.: *See*—
Kristol, David M.; and O'Gorman, Lawrence P., 5,668,874, Cl. 380-23.000.
Oguchi, Asahiro: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Sugimura, Shigeo; Koeda, Hiroshi; Kobayashi, Naoki; and Oguchi, Asahiro, 5,668,579, Cl. 347-10.000.
Oguma, Hironori; and Tachiwana, Kazuo, to Hoya Corporation. Near infrared absorption filter glass. 5,668,066, Cl. 501-45.000.
Ogura, Atsushi: *See*—
Koh, Risho; and Ogura, Atsushi, 5,668,046, Cl. 438-481.000.
Ogura Clutch Co., Ltd.: *See*—
Hasegawa, Tomoya, 5,667,050, Cl. 192-84.961.
Ogura, Tetsuyoshi: *See*—
Eda, Kazuo; Taguchi, Yutaka; Kanaboshi, Akihiro; and Ogura, Tetsuyoshi, 5,668,057, Cl. 438-113.000.
Oguri, Takamasa: *See*—
Kondo, Hiroshi; Oguri, Takamasa; Yano, Masato; Okuda, Kazuyuki; and Kitagawa, Yoshihiro, 5,668,726, Cl. 701-115.000.
Oh, Seibang, to Littelfuse, Inc. Three piece female blade fuse assembly having fuse link terminal with a clip receiving portion. 5,668,521, Cl. 337-186.000.
Ohara, Fumio; Yoshihara, Shinji; Kanamori, Katuhiko; and Kurahashi, Takashi, to Nippondenso Co., Ltd. Method for manufacturing a semiconductor acceleration sensor device. 5,668,033, Cl. 438-113.000.
Ohashi, Masayoshi: *See*—
Nakazawa, Yasushi; Ohashi, Masayoshi; Tashiro, Yasushi; Yasuoka, Tadashi; and Sugiura, Akio, 5,666,849, Cl. 72-377.000.
Ohashi, Tadashi, to Fujitsu Limited. Coefficient updating method for an adaptive filter. 5,668,747, Cl. 364-724.190.
Ohba Building Maintenance Co., Ltd.: *See*—
Ohba, Tadao, 5,666,767, Cl. 52-101.000.
Ohba, Tadao, to Ohba Building Maintenance Co., Ltd. Apparatus for inhibitively preventing birds from crowding. 5,666,767, Cl. 52-101.000.
Ohba, Toshihiro; and Asai, Toshinori, to Sega Enterprises, Ltd. Data security apparatus and method. 5,668,945, Cl. 395-186.000.
Ohgane, Shinichi, to Walbro Corporation. Carburetor with regulating valve limiting device. 5,667,734, Cl. 261-71.000.
Ohishi, Yasutake: *See*—
Sakamoto, Tadashi; Kanamori, Terutoshi; Yamada, Makoto; Shimizu, Makoto; Ohishi, Yasutake; and Sudo, Shoichi, 5,668,659, Cl. 359-341.000.
Ohkawa, Hideo: *See*—
Akiyoshi, Megumi; Yabusaki, Yoshiyasu; Sakaki, Toshiyuki; and Ohkawa, Hideo, 5,668,000, Cl. 435-189.000.
Ohkubo, Mitsuru: *See*—
Kojiri, Katsuhisa; Kondo, Hisao; Arakawa, Hiroharu; Ohkubo, Mitsuru; and Suda, Hiroyuki, 5,668,271, Cl. 536-27.100.
Ohmae, Seizo: *See*—
Abe, Shunichi; and Ohmae, Seizo, 5,668,404, Cl. 257-668.000.
Ohmi, Tadahiro; and Nakamura, Masakazu, to Ohmi, Tadahiro; and Osaka Sanso Kogyo Ltd. Method and apparatus for forming an oxide passivation film on a weld. 5,667,133, Cl. 228-219.000.
Ohmori, Hiroyuki: *See*—
Okuda, Masami; Tanaka, Hisami; Kishi, Junichi; Ohmori, Hiroyuki; Koyama, Takashi; and Hisamura, Masafumi, 5,669,047, Cl. 399-174.000.
Ohno, Akihiko; Ishige, Atsushi; Koyama, Hiroshi; and Asami, Koichi, to Oji Yuka Goseishi Co., Ltd. Synthetic paper with multi-layer structure and excellent printing property. 5,667,872, Cl. 428-141.000.
Ohno, Hirokazu: *See*—
Sato, Tokuji; and Ohno, Hirokazu, 5,669,025, Cl. 396-360.000.
Ohno, Takao: *See*—
Miyazaki, Tetsuya; Kawasaki, Mayumi; and Ohno, Takao, 5,667,726, Cl. 252-315.200.
Ohno, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Method of forming element isolating region in a semiconductor device. 5,668,044, Cl. 438-433.000.
Ohsuga, Minoru: *See*—
Fujieda, Mamoru; Nogi, Toshiharu; Oyama, Yoshishige; Ohsuga, Minoru; and Shiraishi, Takuya, 5,666,916, Cl. 123-295.000.
Ohta, Akira; Kushima, Kohsei; and Furuki, Satoshi, to Nippon Steel Chemical Co., Ltd.; and Nippon Steel Corporation. Process and apparatus for multilayer blow molding and articles blow-molded therewith. 5,667,748, Cl. 264-515.000.
Ohta, Akira: *See*—

Higashisaka, Norio; and Ohta, Akira, 5,668,491, Cl. 327-277.000.
Ohta, Hidefumi; and Machida, Kiyosada, to Nikon Corporation. Camera having a red-eye reduction lamp arranged with respect to a strobe light generating unit to provide a compact camera. 5,669,024, Cl. 396-176.000.
Ohta, Shuhei: *See*—
Sakamoto, Yoshio; and Ohta, Shuhei, 5,668,886, Cl. 381-199.000.
Ohtaka, Kazuto; and Samejima, Masakuni, to Yazaki Corporation. Method of producing connector terminal. 5,666,723, Cl. 29-874.000.
Ohtake, Motoyuki, to Nikon Corporation. Zoom lens. 5,668,667, Cl. 359-683.000.
Ohtake, Motoyuki; and Mori, Motohisa, to Nikon Corporation. Compact wide-angle objective lens. 5,668,669, Cl. 359-684.000.
Ohtsu, Keiji: *See*—
Kawashima, Fuminori; Ueshima, Hideo; Ohtsu, Keiji; Tsuji, Yoshihito; and Takahashi, Masayuki, 5,666,915, Cl. 123-196.00R.
Ohtsuka, Issei: *See*—
Kimura, Teiji; Watanabe, Nobuhisa; Takase, Yasutaka; Hayashi, Kenji; Matsui, Makoto; Ikuta, Hironori; Yamagishi, Youji; Akasaka, Kozo; Tanaka, Hiroshi; Ohtsuka, Issei; Saeki, Takao; Kogushi, Motoji; Fujimori, Tohru; and Saito, Isao, 5,668,136, Cl. 514-255.000.
Ohtsuka, Yasumasa; Okuda, Kouichi; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, to Canon Kabushiki Kaisha. Image heating apparatus capable of varying feeding intervals between recording materials. 5,669,039, Cl. 399-68.000.
Ohtsuki, Tetsuya, to NEC Corporation. Method for erasing and verifying nonvolatile semiconductor memory. 5,668,759, Cl. 365-185.290.
Ohwada, Junichi: *See*—
Suzuki, Masahiko; Ono, Kikuo; Ohwada, Junichi; Itoh, Hikaru; Kamei, Tatsuo; and Matsunaga, Kuniyuki, 5,668,649, Cl. 349-42.000.
Ohwada, Takashi: *See*—
Motomura, Tadahiro; Miyashita, Yuko; Ohwada, Takashi; Onishi, Makoto; and Yamamoto, Naoki, 5,667,684, Cl. 210-506.000.
Ohyu, Shigeharu, to Kabushiki Kaisha Toshiba. Multichannel flux measuring apparatus having function for compensating interference due to crosstalk. 5,668,472, Cl. 324-248.000.
Oishi, Yuki: *See*—
Sakamoto, Masaki; Oishi, Yuki; Yorozu, Hideki; and Suzuki, Kazutaka, 5,668,643, Cl. 358-455.000.
Oji Yuka Goseishi Co., Ltd.: *See*—
Ohno, Akihiko; Ishige, Atsushi; Koyama, Hiroshi; and Asami, Koichi, 5,667,872, Cl. 428-141.000.
Ojima, Susumu: *See*—
Akimoto, Takashi; Tagaya, Kiyomi; Ojima, Susumu; and Takeda, Seiki, 5,667,624, Cl. 156-389.000.
Okada, Hidetoshi: *See*—
Sekiya, Mutuo; Asada, Satoshi; Tochimoto, Takakazu; and Okada, Hidetoshi, 5,666,804, Cl. 60-284.000.
Okada, Kazuhiro, to Wacoh Corporation. Angular velocity sensor. 5,668,318, Cl. 73-504.110.
Okada, Kazuo, to Universal Sales Co., Ltd. Gaming machine. 5,667,439, Cl. 463-20.000.
Okada, Kazutaka: *See*—
Kondo, Shinichi; Sasaki, Akira; Kanda, Hiroshi; Mitake, Tsuyoshi; and Okada, Kazutaka, 5,666,955, Cl. 128-660.040.
Okada, Masanobu; and Ito, Katsuo, to Murata Mfg. Co., Ltd. Communication card and structure of jack for use in the same. 5,667,395, Cl. 439-131.000.
Okada, Shigeyuki; and Yamauchi, Hideki, to Sanyo Electric Co., Ltd. Audio/video decoding system. 5,668,601, Cl. 348-423.000.
Okamoto Industries, Inc.: *See*—
Hiro, Takumitsu; and Watanabe, Akinori, 5,666,974, Cl. 128-861.000.
Okamoto, Takuji; Hamada, Masanori; Sokawa, Kenta; Uyeda, Kazuya; and Yamauchi, Hideaki, to Matsushita Electric Industrial Co., Ltd. Contour restoration apparatus. 5,668,606, Cl. 348-625.000.
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Bourgeois, Ronnie J., Jr.; and Oliver, Harry A., Jr., 5,667,524, Cl. 606-202.000.
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Felder, Mitchell S.; and Ollar, Robert- A., 5,668,010, Cl. 435-287.900.
Olnowich, Howard T.: *See*—
Belknap, William Russell; Cleary, Louise Irene; Eldridge, James W.; Fitchett, Larry William; Luning, Stephen G.; Murray, Christopher S.; Olnowich, Howard T.; Saxena, Ashok Raj; Schubert, Karl David; and Stansbury, Buddy Floyd, 5,668,948, Cl. 395-200.610.
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Ishibashi, Yayoi, deceased, 5,667,525, Cl. 606-206.000.
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Ito, Kazumi, 5,668,919, Cl. 396-268.000.
Takahashi, Hidetaka, 5,668,924, Cl. 704-219.000.
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Nagamine, Masayuki; Omaru, Atsuo; and Nakajima, Naoyuki, 5,667,914, Cl. 429-194.000.
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Vickery, Earl, 5,667,559, Cl. 95-110.000.
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Kato, Tatsuo; and Ono, Akihiko, 5,667,404, Cl. 439-578.000.
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Sugiura, Hiroyuki; Ono, Katsuhiro; and Anno, Hidero, 5,668,849, Cl. 378-133.000.
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Ono, Takashi; Yagyu, Tatsuya; and Sawatari, Yoshihiro, to Orient Chemical Industries, Ltd. Solvent-based black ink composition. 5,667,571, Cl. 106-31.480.
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Akimoto, Takashi; Tagaya, Kiyomi; Ojima, Susumu; and Takeda, Seiki, 5,667,624, Cl. 156-389.000.
Oomura, Yasuhiro, to Nikon Corporation. Catadioptric system and exposure apparatus having the same. 5,668,672, Cl. 359-727.000.
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Opris, Ion E.; and Lewicki, Laurence D., to National Semiconductor Corporation. Radix 2 architecture and calibration technique for pipelined analog to digital converters. 5,668,549, Cl. 341-118.000.
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McLaughlin, Steven W., 5,668,546, Cl. 341-59.000.
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Choate, Albert G., 5,668,665, Cl. 359-663.000.
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Braun, Thomas; and Gwinner, Werner, 5,667,108, Cl. 222-181.100.
Optitest Ltd.: *See*—
Kushelvesky, Avraham, 5,668,743, Cl. 364-561.000.
Oraby, Moustafa E., to Atlantic Richfield Company. Method and apparatus for lithology-independent well log analysis of formation water saturation. 5,668,369, Cl. 250-269.500.
Orban, Andre E.; and Long, Timothy Leslie, to Schlumberger Technology Corporation. Induction logging sonde including a folded array apparatus having a plurality of receiver cowound coils and bucking coils. 5,668,475, Cl. 324-339.000.
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McKay, Michael Leonard, 5,666,947, Cl. 128-200.210.
Orbital Science Corporation: *See*—
Robinson, Anthony D., 5,668,565, Cl. 343-895.000.
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Orlamünder, Andreas: *See*—
Weiss, Michael; Sudau, Jörg; Schierling, Bernhard; Wirth, Thomas; Kleifges, Jürgen; Feldhaus, Reinhard; Orlamünder, Andreas; and Knaupp, Eberhard, 5,667,047, Cl. 192-55.610.
Orlitzky, Anton. Lubrication system. 5,667,037, Cl. 184-39.000.
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Orr, Steven K.; and Roth, Julie, to Cincinnati Microwave, Inc. Radar detector display. 5,668,554, Cl. 342-20.000.
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Toubol, Gilles; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Torres, Luc; and Verplanken, Fabrice, 5,668,798, Cl. 370-230.000.
Orth, Andreas; Weber, Peter; Härter, Uwe; and Wallis, Ernst, to Metallgesellschaft Aktiengesellschaft. Method of reprocessing zinc- and iron oxide-containing residual material. 5,667,556, Cl. 75-450.000.
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Severns, John Cort; Sivik, Mark Robert; Hartman, Frederick Anthony; Denutte, Hugo Robert Germain; Costa, Jill Bonham; Chung, Alex Haejoon; and Ortiz, Rafael, 5,668,102, Cl. 510-504.000.
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Ohmi, Tadahiro; and Nakamura, Masakazu, 5,667,133, Cl. 228-219.000.
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Honda, Masanobu; and Ose, Toshio, 5,668,436, Cl. 313-440.000.
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Ho, Wei-Hsien; and Osheroff, Phyllis L., 5,667,780, Cl. 424-139.100.
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Tolson, Sidney S., 5,666,788, Cl. 53-442.000.
O'Sullivan, Michael; and Wetter, James A., to Molex Incorporated. Electrical connector having terminal alignment means. 5,667,411, Cl. 439-701.000.
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Powell, Bruce A.; Stanley, Jannah; and Sirag, David J., Jr., 5,668,356, Cl. 187-382.000.
Otomo, Masahiko, to Nikon Corporation. Controller for two-way serial transmission and adapter for serial port. 5,668,716, Cl. 364-131.000.
Otten, Klaus. Method for producing ceramic implant materials, preferably ceramic implant materials including hydroxyl apatite. 5,667,796, Cl. 424-422.000.
Otto, Karl-Heinz: *See*—
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Bae, Young C.; Ottoboni, Thomas B.; Chan, Kwan; Nguyen, Thai Minh; Lim, Fredric J.; and Soane, David S., 5,667,735, Cl. 264-1.700.

Oumi, Hayato: *See—*
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Overseas Publishers Association: *See—*
Kulik, Pavel P.; Ivanov, Vladimir V.; Zornia, Eugenia N.; and Gay, John A., 5,667,852, Cl. 427-577.000.

Owens, Aaron Douglas: *See—*
Jackson, Timothy James; Owens, Aaron Douglas; Ford, Milledge Delonia; Rutland, Richard Ward; and Shuping, Charles Henry, 5,667,865, Cl. 428-92.000.

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Varadan, Vijay K.; Varadan, Vasundara V.; Bao, Xiao-Qi; Carney, Kenneth B.; Olinger, John L.; and Coffey, Fred S., 5,668,744, Cl. 364-574.000.

Own, James. Flashlight with illumination and alerting effect. 5,667,293, Cl. 362-184.000.

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Parekh, Rajesh B.; and Prime, Sally B., 5,667,984, Cl. 435-18.000.

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Oy Polymer Corex Kuopio Ltd.: *See—*
Paronen, Timo Petteri; Peltonen, Soili Hellevi; Urtti, Arto Olavi; and Nakari, Leena Johanna, 5,667,803, Cl. 424-465.000.

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Fujieda, Mamoru; Nogi, Toshiharu; Oyama, Yoshishige; Ohsuga, Minoru; and Shiraishi, Takuya, 5,666,916, Cl. 123-295.000.

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Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, 5,668,229, Cl. 526-93.000.

Ozaki, Yoshihiro; Fujita, Akio; and Muraki, Mineo, to Kawasaki Steel Corporation. Production method for grain oriented silicion steel sheet having excellent magnetic characteristics. 5,667,598, Cl. 148-111.000.

Ozeki, Eiichi: *See—*
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Ozenberger, Bradley Alton: *See—*
Hadcock, John Richard; Ozenberger, Bradley Alton; and Pausch, Mark Henry, 5,668,006, Cl. 435-252.300.

Pace, Jeffrey B.; and Warner, Vernon R., to Siemens Automotive Corporation. Fuel/air supply system for a fuel injector and methods of operation. 5,666,927, Cl. 123-533.000.

Pace, Piero: *See—*
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Pacholok, David R., to Everbrite, Inc. Soft-transition FSK dimmer for gaseous luminous tube lights. 5,668,444, Cl. 315-224.000.

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Packo, Joseph J., to IPG Corporation. Apparatus and process for renewing refrigerants. 5,666,812, Cl. 62-85.000.

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Bonnefont, Marc; Padwo, Zalman; Peyron, Jean-Baptiste; and Sabatier, Paul, 5,666,836, Cl. 72-7.200.

Pai, Prakash; and Bril, Vlad, to Cirrus Logic, Inc. Method and apparatus for generating hardware icons and cursors. 5,668,571, Cl. 345-113.000.

Paine, Anthony J.: *See—*
Sacripante, Guerino G.; Pontes, Fatima M.; Drappel, Stephan V.; Paine, Anthony J.; and Kovacs, Gregory J., 5,667,568, Cl. 106-20.00R.

Pallett, Tobias J.; Hieb, Bradley J.; and Robichaux, Jerry D., to Ford Motor Company. Engine airflow controller with feedback loop compensation for changes in engine operating conditions. 5,666,918, Cl. 123-350.000.

Palm, Harlan Arthur: *See—*
Vought, Michael Lee; and Palm, Harlan Arthur, 5,666,794, Cl. 56-15.200.

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Palmer, Darrel; and Houghton, William R., to Ballard Medical Products. Medical lavage apparatus and methods. 5,667,500, Cl. 604-283.000.

Palmer, Darrell D.; Erpelding, A. David; and Pattanaik, Surya, to International Business Machines Corporation. Electrical interconnect for a head/arm assembly of computer disk drives. 5,668,684, Cl. 360-106.000.

Palmer, Richard D.; and Rapp, Joseph A., to Caterpillar Inc. Circle and drawbar assembly for a motor grader. 5,667,020, Cl. 172-781.000.

Palumbo, Kenneth S.; and Donaldson, Patricia J., to Xerox Corporation. Multi-roll developer housing with converging belt to roll spacing. 5,669,049, Cl. 399-265.000.

Pan, H. T.; Chen, Chu-Mei; and Hon, Ming-Yow, to Tongrand Limited. Memory card connector with card ejection mechanism. 5,667,396, Cl. 439-160.000.

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Pan, Yang, to Chartered Semiconductor Manufacturing Pte Ltd. New chemical mechanical planarization (CMP) end point detection apparatus. 5,667,424, Cl. 451-6.000.

Pan, Yang; and Zheng, Jiazhen, to Chartered Semiconductor Manufactuing Pte, Ltd. Method and apparatus for determination of the end point in chemical mechanical polishing. 5,667,629, Cl. 438-13.000.

Pannell, William P. Method and implements for performing a vasectomy. 5,667,518, Cl. 606-151.000.

Pansu, Danielle: *See—*
Descroix-Vagne, Monique; Pansu, Danielle; and Tarrade, Thierry, 5,668,109, Cl. 514-13.000.

Papadakis, Stavros, to Alen, Constantine; and Alen, Polexene. Method of treating HIV positive subjects. 5,667,783, Cl. 424-195.100.

Papathomas, Kostas I.: *See—*
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Par-Way Group: *See—*
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Poitras, Jacques: *See*—
Hsiao, Cheng-Kuo; Hor, Ah-Mee; Gardner, Sandra J.; Gaynor, Roger E.; and Poitras, Jacques, 5,668,276, Cl. 540-144.000.

Pokorny, Richard J., to Minnesota Mining and Manufacturing Company. Pressure sensitive adhesive composition and products. 5,667,858, Cl. 428-41.800.

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Nachshon, Shalom; and Polak, Menachem, 5,668,605, Cl. 348-584.000.

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Boggs, Roger A.; Grasshoff, Jurgen M.; Mischke, Mark R.; Puttick, Anthony J.; Telfer, Stephen J.; Waller, David P.; and Waterman, Kenneth C., 5,667,943, Cl. 430-343.000.
Cargill, Gary E.; Taylor, Edward C.; Viski, Peter; and Orvig, Christopher E. R., 5,667,933, Cl. 430-200.000.
Chiulli, Carl A.; MacLatchy, John E.; and Miller, Harris R., 5,667,920, Cl. 430-7.000.

Polizzotti, David M.; Liao, Wen P.; and Roe, Donald C., to BetzDearborn Inc. Cationic block polymer agglomeration agents for mineral bearing ores. 5,668,219, Cl. 525-294.000.

Pollard, Owen Craig. Spiked shoe protector with adjustable strap to accommodate different shoe sizes. 5,666,746, Cl. 36-135.000.

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Robinson, Walter G.; and Dupes, David B., 5,667,111, Cl. 222-508.000.

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Spydevold, Steinar, 5,667,740, Cl. 264-54.000.

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Ponko, Frank X.: *See*—
Pirl, William E.; Pope, Wesley G.; Cole, William G.; Lutz, Rodney A.; and Ponko, Frank X., 5,667,706, Cl. 219-121.640.

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Popall, Michael; Schulz, Jochen; Olsowski, Birke; and Pilz, Monika, to E.I. DuPont de Nemours and Company; and Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung. Silicon and zirconium based lacquer, its use as a substrate coating and substrates thus obtained. 5,668,237, Cl. 528-9.000.

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Klopries, Burkhard; Metz, Harald; Dibowski, Wilma; Kyewski, Dietmar; and Pospiech, Jürgen, 5,668,077, Cl. 502-347.000.

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Power Conversion, Inc.: *See*—
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Power, Michael Bernard: *See*—
Chinh, Jean-Claude; Filippelli, Michel C. H.; Newton, David; and Power, Michael Bernard, 5,668,228, Cl. 526-67.000.

Power Superconductor Applications Co., Inc.: *See*—
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Powers, Frederick A.: *See*—
Sebion, Timothy L.; Powers, Frederick A.; and Pasvogel, Calvin H., 5,667,143, Cl. 239-415.000.

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Prager, Jay: *See*—
Vinciarelli, Patrizio; and Prager, Jay, 5,668,466, Cl. 323-282.000.

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Prather, Richard R.: *See*—
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Pratt, Michael K.: *See*—
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Howard, Henry Edward; Bonaquist, Dante Patrick; and Just, Paul Louis, 5,666,828, Cl. 62-644.000.

Precigout, Claude: *See*—
Loustau, Marie-Thérèse; Verhoog, Roelof; and Precigout, Claude, 5,667,915, Cl. 429-211.000.

Premark FEG L.L.C.: *See*—
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Prenger, Rainer; and Nissen, Uwe, to Wilhelm Karmann GmbH. Three section convertible top. 5,667,269, Cl. 296-107.000.

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Mucznik, Cheryl, 5,667,322, Cl. 402-8.000.

Prest, J. David. Universal waste water outlet coupling. 5,667,251, Cl. 285-12.000.

Prew, Stanley R., to Andritz Sprout-Bauer, Inc. Bearing clearance adjustment. 5,667,157, Cl. 241-27.000.

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Prigent, Thierry, to Eastman Kodak Company. Process and device to continuously and in real time control a complex manufacturing process. 5,668,741, Cl. 364-551.010.

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Priou, Christian: *See*—
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Benge, W. Dennis, 5,667,612, Cl. 156-148.000.
Calderas, Jonathan Javier; Graumlich, Thomas Ray; Jenkins, Leonard; and Sabin, Robert Phillip, 5,667,831, Cl. 426-330.300.
Carballada, Jose Antonio; Thaman, Lauren Ann; and Clarizia, Mario Paul, 5,667,771, Cl. 424-70.120.
Chapman, Benjamin Edgar; Rogers, Steven Barrett; France, Paul Amaat; and Beimesch, Wayne Edward, 5,668,099, Cl. 510-444.000.
Convents, Andre Christian; Busch, Alfred; and Baeck, Andre Cesar, 5,668,073, Cl. 502-320.000.
Liu, Vincent B., 5,667,609, Cl. 156-73.100.
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Roe, Donald Carroll; and Dreier, Kimberly Ann, 5,667,503, Cl. 604-385.100.
Severns, John Cort; Sivik, Mark Robert; Hartman, Frederick Anthony; Denute, Hugo Robert Germain; Costa, Jill Bonham; Chung, Alex Haejoon; and Ortiz, Rafael, 5,668,102, Cl. 510-504.000.
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Smith, James Arthur; Graumlich, Thomas Ray; Sabin, Robert Phillip; and Vigar, Judith Wells, 5,667,830, Cl. 426-330.300.
Surutzidis, Athanasios; and Fisk, Andrew Albon, 5,668,095, Cl. 510-221.000.
Trinh, Toan; Cappel, Jerome Paul; Geis, Philip Anthony; McCarty, Mark Lee; Pilosof, David; and Zwerdling, Susan Schmaedecke, 5,668,097, Cl. 510-293.000.
Wong, Vincent York-Leung; and Sackenheim, Richard Joseph, 5,667,838, Cl. 426-633.000.
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Prolinx, Inc.: *See—*
Stolowitz, Mark L., 5,668,257, Cl. 530-391.100.
Stolowitz, Mark L., 5,668,258, Cl. 530-391.100.
Prospero, Richard M.; Lunde, Erik; Swanson, Harry; and Adams, Lee, to Johnson & Johnson Consumer Products, Inc. Fixture for assembling dental floss dispenser products. 5,666,782, Cl. 53-155,000.
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PSC, Inc.: *See—*
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Pulsafeeder, Inc.: *See—*
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Tsonis, Anastasios; Goldberg, Brian J.; Divinsky, Aaron Martin; Nicolaou, Alexander; Chia, Benito, Jr.; and Mayya, Niranjan, 5,668,730, Cl. 364-470.090.
Pulvirenti, Francesco; Ursino, Riccardo; and Gariboldi, Roberto, to Co.Ri.M.Me - Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno; and SGS-Thomson Microelectronics S.r.l. Oscillator circuit having oscillation frequency independent from the supply voltage value. 5,668,508, Cl. 331-111.000.
Pund-Hogan, Kathleen. Organizing device for sorting and mating socks and garments which exist as a pair of members. 5,667,081, Cl. 211-10.000.
Puryear, John W.: *See—*
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PWH Anlagen + Systeme GmbH: *See—*
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Pyrogenesis Inc.: *See—*
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Quantum Corporation: *See—*
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Swearingen, Paul A.; and Shepherd, Stanley H., 5,668,679, Cl. 360-75.000.
Quantum Peripherals Colorado, Inc.: *See—*
Dykes, John West; and Kim, Young Keun, 5,668,688, Cl. 360-113.000.
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R.A. Miller Industries, Inc.: *See—*
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Ra, Chang-Ho: *See—*
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Radinsky, Wayne L., to Microsoft Corporation. Rendering CD redbook audio using alternative storage locations and formats. 5,668,996, Cl. 395-681.000.
Radlicz, Andrew, to J.L. Clark, Inc. Informative card made of sheet metal. 5,667,876, Cl. 428-192.000.
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Rainero, Emil: *See—*
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Rajamannan, A. H. J. Method of controlling soil and plant pests with a naphthalene containing composition. 5,668,184, Cl. 514-765.000.
Ralph, James D.: *See—*
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Raychem Corporation: *See—*
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Raymond, Wynn R.: *See—*
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Razeghi, Manijeh, to Northwestern University. Composition for InSB and GaAs thin film on silicon substrate for use in photodetectors. 5,668,395, Cl. 257-441.000.
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Mahmoudian, Mostafa; Buttar, Jagdeep S.; Gergel, Oleg A.; and Motiska, Neil, 5,668,477, Cl. 324-613.000.
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Reali, Angelo; and Reznik, Igor, to Crumbrubber Technology Co., Inc. Magnetic separator. 5,667,074, Cl. 209-224.000.
Ream, Ronald L.; Corriveau, Christine; McHale, Michael; and Van Horn, Sharon, to Wm. Wrigley Jr. Company, The. Method and apparatus for forming miniature size confectionery products. 5,667,824, Cl. 426-5.000.
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Reed, David E.; Behrns, Richard T.; and Bliss, William G., to Cirrus Logic, Inc. Detecting servo data and servo bursts from discrete time samples of an analog read signal in a sampled amplitude read channel. 5,668,678, Cl. 360-51.000.
Reed, Michael W.: *See—*
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Reem, Richard Carroll; and Sutton, James Edward, to Eastman Kodak Company. Digital process sensitivity correction. 5,667,944, Cl. 430-359.000.
Rees, Richard: *See—*
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Regents Of The University Of Michigan, The: *See—*
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Richiardone, Valter; Rossetti, Furio; Zampolli, Marco; Tosco, Paolo; D'Oria, Francesco; Vitali, Mario; Buscotti, Aurelio; Mostarda, Franco; and Borri, Luigi, to Edison Termoelettrica, S.P.A.; and CSI Ricera Applicata Montedison S.r.L. Forming a lead acid bipolar battery electrode having a peripheral sealing frame and relevant product. 5,667,537, Cl. 29-623.200.

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Rickerby, David S.; Bell, Stanley R.; and Wing, Rodney G., to Chromalloy United Kingdom Limited; and Rolls-Royce plc. Method of applying a thermal barrier coating to a superalloy article and a thermal barrier coating. 5,667,663, Cl. 205-170.000.

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Rijns, Johannes J. F., to U.S. Philips Corporation. Amplifier stage having a switchable gain and reduced distortion. 5,668,502, Cl. 330-254.000.

Riley, David M.; Olson, Curtis W.; Williamson, Jeffrey S.; Attard, Brian M.; and Pratt, Michael K., to DSC Communications Corporation. Rack lift assembly. 5,667,230, Cl. 280-79.110.

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Rivero, Ralph A.: *See*—
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Robat, Daniel: *See*—
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Robert Bosch GmbH: *See*—
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Ehret, Thomas; Kost, Friedrich; Hartmann, Uwe; Erhardt, Rainer; Van Zanten, Anton; Busch, Gerd; Weiss, Karl-Josef; and Ruf, Wolf-Dieter, 5,668,724, Cl. 701-80.000.
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Robinson, John W.; Lebold, Alan R.; and Travers, Mark, to Unifrax Corporation. Method of making a mounting mat for fragile structures such as catalytic converters. 5,666,726, Cl. 29-890.000

Robinson, Shaugnessy; Bacon, Edward R.; and Josef, Kurt A., to NanoSystems LLC. 3-amido-triiodophenyl esters as x-ray contrast agents. 5,668,196, Cl. 424-9.451.

Robinson, Walter G.; and Dupes, David B., to Poly Pro, Division of Roberts Systems, Inc. Plastic pour-spout and container. 5,667,111, Cl. 222-508.000.

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Rochester Gunsmiths, Inc.: *See*—
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Rodzewich, Edward A.; and Gunagan, Barry P., to BetzDearborn Inc. Cleaning and passivating treatment for metals. 5,668,096, Cl. 510-265.000.

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Roemen, Arlen M.; and Glenn, William F. Bathroom cabinet with personal hygienic components. 5,666,676, Cl. 4-443.000.

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Rohrer, John W. Combined cycle power plant with integrated CFB devolatilizer and CFB boiler. 5,666,801, Cl. 60-39.020.

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Rollier, Michel, to Rollomatic S.A. Grinding machine. 5,667,432, Cl. 451-242.000.

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Ron, Yacov: *See*—
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Ronquillo, Chad N. Cap with front size adjustment and rear flap. 5,666,668, Cl. 2-172.000.

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Sarner, Larry W.; Smith, Lee S.; and Malpass, Kenneth B., to Mark Voting Systems, Inc. Suitcase voting booth with access for handicapped persons. 5,666,765, Cl. 52-36.100.

Sarver, John J. Ski having compound curve undersurface. 5,667,238, Cl. 280-609.000.
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Kobayashi, Kazunori; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Saito, Masanohu; and Noda, Shinya, 5,669,042, Cl. 399-111.000.
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Sasaki, Katsushi: *See*—
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Sasaki, Masafumi; Yumoto, Takemi; Komatsu, Kazuki; and Shiragami, Noriyuki, to Pioneer Electronic Corporation. Bidirectional communication system. 5,667,440, Cl. 463-29.000.
Sasaki, Tohru; Shimano, Takeshi; Konishi, Yoshiro; Kamisada, Toshimasa; Suzuki, Motoyuki; Mori, Naoki; and Fukui, Masayuki, to Hitachi, Ltd. Magneto-optic disk apparatus having means for eliminating fluctuation component in reproduction magneto-optic signal. 5,668,786, Cl. 369-13.000.
Sassa, Robert L., to W. L. Gore & Associates, Inc. Fabric of commingled fiberglass and polytetrafluoroethylene and method of producing same. 5,667,611, Cl. 156-148.000.
Satake, Kenichi: *See*—
Tsuji, Kikunosuke; Watanabe, Takeshi; Baba, Kohichi; Satake, Kenichi; Kawachi, Yoshiko; Hori, Setsuo; and Koyama, Shigeo, 5,668,581, Cl. 347-37.000.
Satchell, Donald Prentice, Jr.; Natarajan, Venkat; and Clarke, Richard Henry, to BOC Group, Inc., The. Heat exchanger and double distillation column. 5,667,643, Cl. 202-154.000.
Satloff, James. Simplified computer keyboard. 5,667,319, Cl. 400-472.000.
Sato, Akira; Kawano, Naoki; Nomura, Takeshi; Nakano, Yukie; Arashi, Tomohiro; and Yamamatsu, Junko. Multilayer ceramic chip capacitor. 5,668,694, Cl. 361-321.400.
Sato, Arthur; and Qian, Xue-Yu, to Applied Materials, Inc. Method of measuring the amount of capacitive coupling of RF power in an inductively coupled plasma. 5,667,701, Cl. 216-61.000.
Sato, Fumihiko, to NEC Corporation. Bipolar transistor having thin intrinsic base with low base resistance and method for fabricating the same. 5,668,396, Cl. 257-517.000.
Sato, Kazuhisa; and Kimura, Kazuo, to NGK Spark Plug Co., Ltd. Outer lead for a semiconductor IC package and a method of fabricating the same. 5,668,060, Cl. 438-123.000.
Sato, Kenichiro; Kodama, Kunihiko; and Momota, Makoto, to Fuji Photo Film Co., Ltd. Positive photoresist composition. 5,667,932, Cl. 430-192.000.
Sato, Kosuke; Haniuda, Nobuyoshi; and Kozuma, Fumihide, to Kayaba Kogyo Kabushiki Kaisha. Vibration damping equipment. 5,666,770, Cl. 52-167.200.
Sato, Masahiro; Aoyama, Yukiyasu; Takagi, Nobuoki; and Kohsaka, Shoji, to Kyocera Corporation. Cutting tool composed of silicon nitride. 5,668,069, Cl. 501-97.200.
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Sato, Mitsuo: *See*—
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Sato, Naoko, to NEC Corporation. Path route retrieval method in a time multiplexer network. 5,668,808, Cl. 370-378.000.
Sato, Norio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Cam mechanism for lens movement. 5,669,021, Cl. 396-72.000.
Sato, Shigeru: *See*—
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Sato, Tokuji; and Ohno, Hirokazu, to Fuji Photo Film Co., Ltd. Film pack holder. 5,669,025, Cl. 396-360.000.
Sato, Toshihiko: *See*—
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Saw, John Choo-Beng; Leib, Harry; and Kipens, George Alfred, to Northern Telecom Limited. Surface wave devices for differential coherent detectors. 5,668,431, Cl. 310-313.00R.
Sawatari, Yoshihiro: *See*—
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Sawyer, Tomi: *See*—
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Saxena, Ashok Raj: *See*—
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Scammells, Peter J.: *See*—
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Scapellati, Cliff, to Spellman High Voltage Electronics Corp. DC power supply with reduced ripple. 5,668,708, Cl. 363-46.000.
Schädle, Erwin. Peeling device. 5,666,877, Cl. 99-588.000.
Schaefer, Randal Ray: *See*—
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Schaefer, Robert J., to Sweetheart Cup Company, Inc. Thermal insulating sleeve for drink cups. 5,667,135, Cl. 229-403.000.
Schafer, Bruce William; Sloman, Mark Aaron; Gryder, Stanley Mark; and Schaefer, Randal Ray, to Framatome Technologies, Inc. Internal sleeve with a plurality of lands and teeth. 5,667,252, Cl. 285-15.000.
Schaper, Wolfgang; Salbeck, Gerhard; Ehrhardt, Heinz; Braun, Peter; Knauf, Werner; Sachse, Burghard; Waltersdorfer, Anna; Kern, Manfred; and Lümmen, Peter, to Hoechst Aktiengesellschaft. Substituted 4-aminopyrimidines, processes for their preparation, and their use as pesticides. 5,668,140, Cl. 514-269.000.
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Schatz, Peter J.: *See*—
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Baardman, Frank; Bradford, Arleen Marie; Jubb, Jayne; Scheerman, Pieter; Wijngaarden, Rudolf Jacobus; Bleeker, Erwin Paulus Petrus; and Van Brockhoven, Johannes Adrianus Maria, 5,668,249, Cl. 528-392.000.
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Schenk, Donald Edward: *See*—
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Schieve, Eric W., to Advanced Micro Devices, Inc. System for performing rotation of pixel matrices. 5,668,980, Cl. 345-523.000.
Schilling, Peter, to Westvaco Corporation. Adhesion promoters for anionic bituminous emulsions. 5,667,578, Cl. 106-277.000.
Schilling, Peter, to Westvaco Corporation. Anionic bituminous emulsions. 5,668,197, Cl. 524-61.000.
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Schipper, John F., to Trimble Navigation Limited. Automatic cellular phone tracking. 5,669,061, Cl. 455-429.000.
Schlise, Larry. Method and device for removing waste oil from oil filters. 5,667,699, Cl. 210-800.000.
Schlumberger Technology Corporation: *See*—
Haessly, John G.; and LaDue, Duane F., 5,667,025, Cl. 175-78.000.
Hoover, Mat; and McIntire, William Ray, 5,667,012, Cl. 166-308.000.
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Schmid, Karl; Syldath, Andreas; Kischkel, Ditmar; Krohnen, Thomas; Neuss, Michael; Pawelczyk, Hubert; Boecker, Monika; and Welling, Hermann-Josef, to Henkel Kommanditgesellschaft auf Aktien. Detergent mixtures and detergents or cleaning formulations with improved dissolving properties. 5,668,100, Cl. 510-446.000.
Schmid, Thomas: *See*—
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Schmidt, Ralph-Michael; Teetz, Christoph; and Rauscher, Martin, to MTU-Motoren-Und Turbinen-Union. Injection nozzle. 5,667,145, Cl. 239-533.120.
Schmidt, Ronald James, to Eastman Kodak Company. High-contrast photographic elements protected against halation. 5,667,950, Cl. 430-510.000.
Schmidt, Ryszard Jan: *See*—
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Schmitt, Ty, to Dell USA, L.P. Carrier-based mounting structure for computer peripheral chassis. 5,668 696, Cl. 361-685.000.
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Schneider, Peter, to Sybase, Inc. Database system with subquery optimizer. 5,668,987, Cl. 395-603.000.
Schneider, Walter T., to United States of America, Navy. Torpedo signal processor. 5,668,777, Cl. 367-96.000.
Schnoes, Melinda Lamont: *See*—
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Schnoor, Richard J.; and Schnoor, John A. Dual matrix media storage unit. 5,667,083, Cl. 211-41.120.
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Schroer, John M.; and Smith, Gary E., to American Woodmark Corporation. Vacuum clamping system for assembling cabinets. 5,667,208, Cl. 269-21.000.
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Schubert, Mark F., to United States Filter Corporation. Hydrocyclone for liquid - liquid separation and method. 5,667,686, Cl. 210-512.100.
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Schultz, Allan E.; Stageberg, Frank S.; Ash, Kenneth P.; and Zak, Brian S., to Seagate Technology, Inc. Inverted magnetoresistive head. 5,668,689, Cl. 360-113.000.
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Scott, Samuel C.; and Scott, William C., III. Object bracket holder for concrete forms. 5,667,190, Cl. 249-16.000.
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Sebastiani, Enrico. Gas combustion apparatus and method for controlling the same. 5,667,375, Cl. 431-12.000.
Sebazco, Roy. Steering and braking control system for a vehicle. 5,666,857, Cl. 74-481.000.
Sebion, Timothy L.; Powers, Frederick A.; and Pasvogel, Calvin H., to Wanner Engineering, Inc. Spray gun for spraying two fluids. 5,667,143, Cl. 239-415.000.
Securitron Magnalock Corporation: *See*—
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Seeger, Horst; Thiele, Dieter; and Wagner, Hans, to Siemens Aktiengesellschaft. Method for work-hardening by rolling a component. 5,666,841, Cl. 72-110.000.

Seetharaman, Viswanath; Baldauf, Dale Lee; Schenk, Donald Edward; and Jacob, William Vincent, to General Motors Corporation. Central hydraulics brake system. 5,667,285, Cl. 303-116.200.

Sega Enterprises, Ltd.: *See—*
Ohba, Toshihiro; and Asai, Toshinori, 5,668,945, Cl. 395-186.000.

Segan, Marc H.; and Strauss, Gary, to M.H. Segan Limited Partnership. Decorative article with flake circulating means. 5,666,750, Cl. 40-410.000.

Segawa, Youichi, to Fuji Photo Optical Co., Ltd. Inner structure of endoscope. 5,667,477, Cl. 600-153.000.

Seiko Epson Corporation: *See—*
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Fujii, Masahiro; Miyashita, Ikuhiro; Sugimura, Shigeo; Koeda, Hiroshi; Kobayashi, Naoki; and Oguchi, Asahito, 5,668,579, Cl. 347-10.000.
Miyazawa, Hiromu; Ootsuki, Shinya; Kawase, Takeo; and Nebashi, Satoshi, 5,667,887, Cl. 428-332.000.
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Seiko Seiki Kabushiki Kaisha: *See—*
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Seikoh Giken Co., Ltd.: *See—*
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Seikosha Co., Ltd.: *See—*
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Seizinger, Bernd R.: *See—*
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Seki, Atsushi: *See—*
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Seki, Takahito; and Kubota, Yukio, to Sony Corporation. Apparatus for recording and reproducing variable length codes. 5,668,677, Cl. 360-48.000.

Sekine, Kazumi: *See—*
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Sekiya, Mutuo; Asada, Satoshi; Tochimoto, Takakazu; and Okada, Hidetoshi, to Mitsubishi Denki Kabushiki Kaisha. Secondary air supplying apparatus for internal combustion engine and air heating apparatus thereof. 5,666,804, Cl. 60-284.000.

Selby, Theodore W.; and Cluff, Brian J., to Tannas Co. Selective volatilization and collection. 5,667,302, Cl. 374-54.000.

Sellers, Billy B., Jr. Aluminum chlorhydrate as a treatment for acne and rosacea. 5,667,790, Cl. 424-401.000.

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Semon, Joseph R., to Casket Shells, Incorporated. Above ground entombment casket. 5,666,705, Cl. 27-19.000.

Semrau, Robert Francis: *See—*
Bauerle, Paul Alan; Semrau, Robert Francis; and Stockbridge, John Norman, 5,666,932, Cl. 123-571.000.

Senda, Hisato: *See—*
Nakano, Jun; Fukui, Hideto; Shibata, Tetsuo; Senda, Hisato; Maejima, Tetsuro; Watanuki, Yayoi; and Arika, Tadashi, 5,668,147, Cl. 514-312.000.

Senda, Kouji: *See—*
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Watanabe, Shoichi; Inoguchi, Hirokazu; Kanzaka, Yoshihiro; Tanaka, Yoshiharu; Ikehara, Hideji; Saiki, Ryuji; Yamato, Nobukatsu; Mori, Tomohiro; and Senna, Minoru, 5,667,857, Cl. 422-36.200.

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Peterson, Jerry A.; Newburg, David S.; and Yolken, Robert H., 5,667,797, Cl. 424-439.000.

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Kitao, Shigetaka; Kimura, Ayumu; Ootani, Yasuhiko; Hitomi, Isamu; and Kuroiwa, Akihiko, 5,668,528, Cl. 340-436.000.

Senzig, Robert: *See—*
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Sequa Chemicals, Inc.: *See—*
Dragner, Louis Robert; and North, Bernard, 5,667,638, Cl. 162-158.000.

Seragen, Inc.: *See—*
Murphy, John R., 5,668,255, Cl. 530-350.000.

Serck Baker Limited: *See—*
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Serth-Guzzo, Judith Ann: *See—*
Brunelle, Daniel Joseph; Kailasam, Ganesh; Serth-Guzzo, Judith Ann; and Wilson, Paul Russell, 5,668,186, Cl. 521-48.000.

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Delatour, Michel; and Servaux, Jean, 5,667,087, Cl. 215-252.000.

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Vaillier, George Louis, deceased; and Seung, by Francine, 5,666,758, Cl. 43-17.200.

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Seward, Glen J.; Lynas, Robert M.; Miller, Paul E.; and Ennenga, Robert B., to R.A. Miller Industries, Inc. Combined AM/FM/cellular telephone antenna system. 5,668,564, Cl. 343-791.000.

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Favot, Jean-Jacques; Perbet, Jean-Noël; Barbier, Bruno; and Lach, Patrick, 5,668,573, Cl. 345-156.000.

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Sgrignoli, Gary J., to Zenith Electronics Corporation. Controlling FPLL polarity using pilot signal and polarity inverter. 5,668,498, Cl. 329-360.000.

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Blanchard, Richard A., 5,668,025, Cl. 438-207.000.
Bryant, Frank Randolph, 5,668,028, Cl. 438-287.000.
Carobolante, Francesco, 5,668,449, Cl. 318-254.000.

SGS-Thomson Microelectronics S.A.: *See—*
Rodriques Ramalho, Rui Paulo, 5,668,504, Cl. 331-1.00A.

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Nicollini, Germano; and Pernici, Sergio, 5,668,494, Cl. 327-416.000.
Pulvirenti, Francesco; Ursino, Riccardo; and Gariboldi, Roberto, 5,668,508, Cl. 331-111.000.
Rossi, Domenico; and Tanaka, Kazuyuki, 5,668,703, Cl. 363-16.000.

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Guzek, Donald B.; Hausman, Russell J.; and Shah, Bharat K., 5,667,593, Cl. 127-30.000.

Shah, Mitesh: *See—*
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Shah, Pankaj: *See—*
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Ballard, Larry E.; and Savoy, Marc R., 5,667,890, Cl. 428-364.000.

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Truong, Thien V.; Bierer, Donald E.; Dener, Jeffrey M.; Hector, Richard; Tempesta, Michael S.; Loev, Bernard; Yang, Wu; and Koreeda, Masato, 5,668,168, Cl. 514-436.000.

Shanks, Brent Howard: *See—*
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Shanview Patents Limited: *See—*
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Eguchi, Masaki; Kodama, Hirokazu; Takebayashi, Tsukasa; and Nakata, Hirofumi, 5,668,713, Cl. 363-95.000.
Fukai, Seiichirou, 5,668,701, Cl. 361-816.000.
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Koizumi, Satoru; Matsukawa, Hiroshi; and Miyashige, Hiroaki, 5,668,790, Cl. 369-194.000.
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Yamada, Nobuaki; Horie, Wataru; Hirai, Toshiyuki; and Kozaki, Shuichi, 5,668,651, Cl. 349-156.000.

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Shatzman, Allan R.: *See—*

Hoyer, Lois L.; Livi, George P.; and Shatzman, Allan R., 5,668,263, Cl. 536-23.100.

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Wiscombe, Nathan; and Shaw, Ronald D., 5,668,417, Cl. 307-64.000.

Shea, Thomas M. Holder for use with a razor blade. 5,666,732, Cl. 30-329.000.

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Shell Oil Company: *See—*
Baardman, Frank; Bradford, Arleen Marie; Jubb, Jayne; Scheerman, Pieter; Wijngaarden, Rudolf Jacobus; Bleeker, Erwin Paulus Petrus; and Van Broekhoven, Johannes Adrianus Maria, 5,668,249, Cl. 528-392.000.
Gill, Daljit Singh; Lohbeck, Wilhelmus Christianus Maria; Stewart, Robert Bruce; and Van Vliet, Jacobus Petrus Maria, 5,667,011, Cl. 166-295.000.
Milam, Stanley Nemec; and Shanks, Brent Howard, 5,668,075, Cl. 502-338.000.

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Shelor, John Richard, to Phase Metrics. Automatic testing system for magnetoresistive heads. 5,668,470, Cl. 324-202.000.

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Shepard, Howard M.: *See—*
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Shepherd, Stanley H.: *See—*
Swearingen, Paul A.; and Shepherd, Stanley H., 5,668,679, Cl. 360-75.000.

Sher, Joseph C.; and Keeth, Brent, to Micron Technology, Inc. Antifuse programming method and apparatus. 5,668,751, Cl. 365-96.000.

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Bedard, Robert L.; King, Lisa M.; and Sherman, John D., 5,667,695, Cl. 210-681.000.

Shester, Gary Anthony: *See—*
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Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.

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Shibata, Kouichi: *See—*
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Shibata, Masuo: *See—*
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Shields, Steven E.: *See—*
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Shigematsu, Kazuo; Tomono, Yoji; Ichikawa, Atsushi; and Hattori, Toshiyasu, to Hitachi, Ltd. Mark length recording system with trial writing to maximize recording power and error recovery. 5,668,787, Cl. 369-13.000.

Shikata, Shin-ichi: *See—*
Toda, Naohiro; Nishibayashi, Yoshiki; Tomikawa, Tadashi; and Shikata, Shin-ichi, 5,668,382, Cl. 257-77.000.

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Shim, Dae Sul: *See—*
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Shimadu Corporation: *See—*
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Shimano, Takeshi: *See—*
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Shimizu, Keiji, to Sumitomo Rubber Industries, Ltd. Tire vulcanizing mold. 5,667,812, Cl. 425-46.000.

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Shimizu, Masaaki, to Canon Kabushiki Kaisha. Output method and apparatus. 5,668,937, Cl. 395-115.000.

Shimizu, Shinkichi; Watanabe, Nanao; and Kuranishi, Hideki, to Koei Chemical Co., Ltd. Process for preparing tertiary amine-N-oxide. 5,668,281, Cl. 544-336.000.

Shimizu, Toru; Iwata, Shunichi; Doi, Toshio; and Mizugaki, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Data processor and control circuit for inserting/extracting data to/from an optional byte position of a register. 5,669,012, Cl. 395-800.010.

Shimizu, Yoshiaki: *See—*
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Shimizu, Yoshinobu; and Nakano, Shiro, to Koyo Seiko Co., Ltd. Electric power steering system. 5,667,033, Cl. 180-272.000.

Shimizu, Yoshiyuki: *See—*
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Shimoda, Mitsuya: *See—*
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Shimokura, Ken-ichiro: *See—*
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Shimomura, Yasunobu: *See—*
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Shimoto, Hidesato: *See—*
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Shimura, Hiromi: *See—*
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Shin, Chang-Joo: *See—*
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Shin-Etsu Chemical Co., Ltd.: *See—*
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Shin-Etsu Handotai Co., Ltd.: *See—*
Iino, Eiichi; Takano, Kiyataka; Kimura, Masanori; Mizuishi, Koji; and Yamagishi, Hirotoshi, 5,667,588, Cl. 117-217.000.
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Shindo, Yuichiro; and Suzuki, Tsuneo, to Japan Energy Corporation. Process of producing high purity cobalt. 5,667,665, Cl. 205-589.000.

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Birsel, Ayse; Hiraga, Noriko; Tani, Junichi; Nagato, Kenichi; Watanabe, Koichi; and Shinohara, Kuniaki, 5,666,672, Cl. 4-236.000.

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Shintani, Peter, to Sony Corporation. Information terminal apparatus that is remotely programmed by radio waves and that displays input keys of program functions on a display. 5,668,591, Cl. 348-12.000.

Shiokawa, Naotoshi: *See—*
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Shiosaki, Kazumi; Gu, Yu Gui; and Michaelides, Michael, to Abbott Laboratories. Trans-2,6-,3,6-and 4,6-diaza-5,6,6a,7,8,12b-hexahydrobenzo[c]phenanthrene compounds as dopamine agonists. 5,668,141, Cl. 514-285.000.

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Shiragami, Noriyuki: *See—*
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Shiraishi, Toshihiro: *See—*
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Shiraki, Kazuyuki: *See—*
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Shiroshita, Kenji: *See—*
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Shoji, Hajime: *See—*
Kondo, Makoto; Anayama, Chikashi; and Shoji, Hajime, 5,668,048, Cl. 438-46.000.

Shouji, Shigeru; and Toyoda, Atsushi, to Yamaha Corporation. Magnetoresistive reading head with reduced side-lobe. 5,668,686, Cl. 360-113.000.

Shoumura, Mitsunobu: *See—*
Matsumoto, Hirofumi; Shoumura, Mitsunohu; Fujita, Norimasa; Inaba, Masaichi; and Tanaka, Yasuyuki, 5,666,717, Cl. 29-603.120.

Showa Aluminum Corporation: *See—*
Nakazawa, Yasushi; Ohashi, Masayoshi; Tashiro, Yasushi; Yasuoka, Tadashi; and Sugiura, Akio, 5,666,849, Cl. 72-377.000.

Shreiner, Thomas A.; and Barr, Roger W., to Construction Specialties, Inc. Expansion joint cover. 5,666,775, Cl. 52-396.040.

Shribbs, John M.; Ensminger, Michael P.; and Green, Laddie L., to Zeneca Limited. Selective corn herbicide. 5,668,089, Cl. 504-348.000.

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Shutic, Jeffrey R.; and Lenhart, Kevin, to Nordson Corporation. Method and apparatus for unloading powder coating material from a drum shaped container. 5,667,342, Cl. 406-122.000.

Shutske, Gregory M.: *See—*
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Shuuichi, Azechi: *See—*
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SiBond, L.L.C.: *See—*
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Sid-Ahmed, Maher Ahmed, Real-time television image pixel multiplication methods and apparatus. 5,668,602, Cl. 348-448.000.

Siegfried, David Glen: *See—*
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Siemens Automotive Corporation: *See—*
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Siemens Electric Limited: *See—*
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Siemens Measurements Limited: *See—*
Warwick, Ronald, 5,668,538, Cl. 340-870.020.

Siemens Medical Systems, Inc.: *See—*
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Siemens, plc: *See—*
Bartlett-Hooker, William; Ediriweera, Sanath; and Ward, Stuart, 5,668,330, Cl. 73-864.810.

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Bernasconi, Antonio; Dal Lago, Antonella; and Sirtori, Maria Pia, 5,668,839, Cl. 375-347.000.

Sikorsky Aircraft Corporation: *See—*
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Silicon Engines: *See—*
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Silicon Graphics, Inc.: *See—*
Galles, Michael B.; and Lenoski, Daniel E., 5,669,008, Cl. 395-800.120.

Silva, John C., Jr. Air ionization system. 5,667,563, Cl. 96-50.000.

Silva, Jose Belchior. Cuticle trimmer. 5,666,728, Cl. 30-28.000.

Simenc, Toni: *See—*
Wuestefeld, Renate; and Simenc, Toni, 5,667,848, Cl. 427-389.900.

Simioni, Luciano, to Killer Loop S.p.A. Multilayer lens particularly for sunglasses. 5,668,618, Cl. 351-44.000.

Simon, Georges; and Mornay, Emmanuel, to CTA International. Gatling type multi-barrel weapon with sliding chambers. 5,668,343, Cl. 89-12.000.

Simon, Thomas; and Berlin, Roger, to Merck & Co., Inc. Heartburn treatment. 5,667,794, Cl. 424-401.000.

Simon, Ulrich; and Hahn, Siegfried, to Huels Aktiengesellschaft. Polyesters for the bonding of textiles. 5,668,242, Cl. 528-272.000.

Simonds, Gary L., to Bear Archery, Inc. Bow string kisser button. 5,666,938, Cl. 124-90.000.

Simons, Andrew E., Sr. Painting mask for use when painting a rim that is secured to a tire. 5,667,590, Cl. 118-504.000.

Simonson, Roy. Plate-loaded shoulder press exercise machine and method of exercise. 5,667,464, Cl. 482-97.000.

Simpson, Danny, to Seymour Housewares Corporation. Collapsible laundry hamper assembly with latching feature. 5,667,066, Cl. 206-278.000.

Simpson, Matthew A.; Hay, Robert A.; and Brox, Steven J., to Saint-Gobain/Norton Industrial Ceramics Corp. CVD diamond cutting tools with oriented crystal grain boundaries. 5,667,344, Cl. 407-118.000.

Simpson Strong-Tie Company, Inc.: *See—*
Commins, Alfred D., 5,666,774, Cl. 52-298.000.

Simpson, William Henry; Brust, David P.; Hastreiter, Jacob John, Jr.; and Oldfield, Mary Catherine S., to Eastman Kodak Company. Thermal dye transfer dye-donor element with transferable protection overcoat. 5,668,081, Cl. 503-227.000.

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Al Ghatta, Hussain; and Giovannini, Arianna, 5,667,691, Cl. 210-634.000.

Singer, Stephen Paul: *See—*
Boff, Jane Sarah; Clark, Bernard Arthur; Stanley, Paul Louis; Watts, Christina Mary; and Singer, Stephen Paul, 5,667,946, Cl. 430-386.000.

Sippican, Inc.: *See—*
Carroll, Alf L., III; Partee, William D.; Manning, Mark C.; Mather, John E.; and Wapner, Michael P., 5,666,900, Cl. 114-316.000.

Sirag, David J., Jr.: *See—*
Powell, Bruce A.; Stanley, Jannah; and Sirag, David J., Jr., 5,668,356, Cl. 187-382.000.

Sirinathsinghji, Dalip Jaicaran Sastri: *See—*
Ducharme, Yves; Gauthier, Jacques Yves; Prasit, Petpiboon; Leblanc, Yves; Wang, Zhaoyin; Leger, Serge; Therien, Michel; Hill, Raymond George; and Sirinathsinghji, Dalip Jaicaran Sastri, 5,668,169, Cl. 514-438.000.

Sirtori, Maria Pia: *See—*
Bernasconi, Antonio; Dal Lago, Antonella; and Sirtori, Maria Pia, 5,668,839, Cl. 375-347.000.

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Severns, John Cort; Sivik, Mark Robert; Hartman, Frederick Anthony; Denutte, Hugo Robert Germain; Costa, Jill Bonham; Chung, Alex Haejoon; and Ortiz, Rafael, 5,668,102, Cl. 510-504.000.

Siwiak, Kazimierz; Satyamurti, Sunil; and Kuznicki, William Joseph, to Motorola, Inc. Voice messaging system and method making efficient use of orthogonal modulation components. 5,668,923, Cl. 704-204.000.

Skaria, Mani: *See—*

Eayre, Cynthia G.; and Skaria, Mani, 5,668,008, Cl. 435-254.100.

Skarvinko, Eugene Roman: *See—*
Markovich, Voya Rista; Mehta, Ashit Arvind; Skarvinko, Eugene Roman; and Wei Wang, David, 5,667,934, Cl. 430-280.100.

SKF Industrial Trading and Development Company B.V.: *See—*
Kapaan, Hendrikus Jan; Aman, Robert Santry; and De Vries, Alexander Jan Carel, 5,667,313, Cl. 384-544.000.

Skoog, Steven K.: *See—*
Christian, Kevin G.; Keck, John S.; and Skoog, Steven K., 5,668,352, Cl. 178-18.000.

Skotnikov, Andrey V.: *See—*
Bobrov, Vladimer A.; Kan, Nickolay A.; Yanchevskaya, Tamara G.; McGrath, Donald E.; and Skotnikov, Andrey V., 5,668,719, Cl. 364-420.000.

Skrenes, Larry R.: *See—*
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Slaber, Arthur W., Jr.; and Gallagher, Terry A., to Chicago Bridge & Iron Technical Services Company. Mounting system for floating roof seals. 5,667,091, Cl. 220-224.000.

Slack, Timothy D.; and Buchanan, William R., to TRW Vehicle Safety Systems Inc. Frame member for a seat mounted vehicle safety apparatus. 5,667,242, Cl. 280-730.200.

Slama, David F.: *See—*
Chesley, Jason A.; Bell, Donald R.; Rude, Harold E.; Sheffield, William F.; Slama, David F.; and Stephens, Alan N., 5,667,540, Cl. 51-293.000.

Slane, Albert Alfonse, to International Business Machines Corporation. Method for resolving network address by sending reresolve request to nodes at selected time period after establishing address table, and updating the table with received reply thereto. 5,668,952, Cl. 395-200.750.

Slater, Charles R.: *See—*
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Sledge, George W.: *See—*
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Sleep, Darrell: *See—*
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Slezak, Sue Ellen: *See—*
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.

Slider, Mark D.; and Galle, Gary L., to ABB Vetco Gray Inc. Self-removing choke insert system. 5,667,014, Cl. 166-378.000.

Sliskovic, Drago Robert: *See—*
Domagala, John Michael; Lee, Helen Tsenwhei; Ramharack, Randy Ranjee; Roth, Bruce David; Sawyer, Tomi; and Sliskovic, Drago Robert, 5,668,162, Cl. 514-373.000.

Sloan, Charles P.: *See—*
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Sloan, Derek: *See—*
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Sloan-Kettering Institute for Cancer Research: *See—*
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Posner, Jerome B.; and Furneaux, Henry M., 5,668,013, Cl. 435-320.100.

Slocum, Alexander Henry, to AESOP, Inc. Slit-tube replicated in-place constrained layer damper and method. 5,667,204, Cl. 267-136.000.

Sloman, Mark Aaron: *See—*
Schafer, Bruce William; Sloman, Mark Aaron; Gryder, Stanley Mark; and Schaefer, Randal Ray, 5,667,252, Cl. 285-15.000.

Sloo, Marshall Allan. Method and apparatus for handling a complaint. 5,668,953, Cl. 705-1.000.

Slow, Wee Min; Hoong, Ting Yeow; and Kang, Beng Hong, to Hewlett-Packard Company. Hinge arrangement. 5,666,694, Cl. 16-368.000.

Slupe, David S.: *See—*
Broschard, John L., III; and Slupe, David S., 5,667,397, Cl. 439-188.000.

Smart, Charles F.: *See—*
Weber, Richard G.; Blake, Jeffrey T.; O'Connor, William E.; and Smart, Charles F., 5,666,710, Cl. 29-243.523.

Smesko, Sally Ann: *See—*
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SMH Management Services AG: *See—*
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Smith & Nephew Dyonics Inc.: *See—*
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Smith, Arthur Ramsden; and Woodward, Donald Winston, to Air Products and Chemicals, Inc. High pressure combustion turbine and air separation system integration. 5,666,823, Cl. 62-646.000.

Smith, Barry S.: *See—*
Adams, John M.; Braunshteyn, Mikhail S.; Counts, Mary Ellen; Dale, Gerald M.; Harris, Charles W.; Jones, Donald H.; Keen, Billy J., Jr.; Sanderson, Wesley G.; Smith, Barry S.; Stevenson, Brett W.; and Wrenn, Susan E., 5,666,976, Cl. 131-94.000.

Smith, Charlene: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Hoaglin, Christine L.; and Smith, Charlene, 5,668,067, Cl. 501-54.000.

Smith, David Canfield: *See—*
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Smith, Ernest Phillip: *See—*
Rundquist, Paul Andrew; Smith, Ernest Phillip; Poteat, Stephen Louis; Rutstrom, Dante Joseph; and Stuart, Richard Kingsley, Jr., 5,667,575, Cl. 106-271.000.

Smith, Gary E.: *See—*
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Smith, Graham: *See—*
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Smith, Iain S. R., to Heart Rhythm Technologies, Inc. Locking mechanism for catheters. 5,666,970, Cl. 128-772.000.

Smith International, Inc.: *See—*
Denton, Robert M., 5,668,092, Cl. 508-146.000.
Truax, David; and Brown, Roger, 5,667,028, Cl. 175-428.000.

Smith, James Arthur; Graumlich, Thomas Ray; Sabin, Robert Phillip; and Vigar, Judith Wells, to Procter & Gamble Co., The. Noncarbonated beverage products having superior microbial stability and process for preparing same. 5,667,830, Cl. 426-330.300.

Smith, Keith: *See—*
Jassowski, Michael; and Smith, Keith, 5,668,389, Cl. 257-207.000.

Smith, Kevin W.: *See—*
Bales, Thomas O.; Slater, Charles R.; and Smith, Kevin W., 5,666,965, Cl. 128-749.000.

Smith, Larry. Apparatus for stuffing a snailed endless pre-inked ribbon into a ribbon cartridge. 5,666,720, Cl. 29-806.000.

Smith, Lawrence G., to Travelers Express Company, Inc. Method and apparatus for dispensing money orders. 5,667,315, Cl. 400-78.000.

Smith, Lee S.: *See—*
Sarner, Larry W.; Smith, Lee S.; and Malpass, Kenneth B., 5,666,765, Cl. 52-36.100.

Smith, Mark A.: *See—*
Hickman, Scott Nobel; Smith, Mark A.; Spreadbury, Brian G.; and Esterberg, Dennis R., 5,668,882, Cl. 381-24.000.

Smith, Michael S.: *See—*
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Smith, Morton R.; and Maassel, James L., to Macro Specialty Industries, Inc. Tool treating process. 5,667,844, Cl. 427-318.000.

Smith, Paul Fielding; and Pinckley, Danny Thomas, to Motorola, Inc. Split frequency band signal digitizer and method. 5,668,836, Cl. 375-316.000.

Smith, Paul K.: *See—*
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Smith, Robert Samuel. Ballistic force exerciser. 5,667,460, Cl. 482-8.000.

Smith, Rory James Maxwell, to Kapitex Healthcare Ltd. Filter device for a tracheostoma. 5,666,950, Cl. 128-207.140.

Smith, Stephen Edwin: *See—*
Attanasio, Clement Richard; Butrico, Maria Angela; Peterson, James Lyle; Polyzois, Christos Alkiviadis; and Smith, Stephen Edwin, 5,668,943, Cl. 395-182.050.

Smith, Ward C.; and Carroll, Richard L., to Becton Dickinson and Company. Anticoagulant solution for use in blood chemistry-related techniques and apparatus. 5,667,963, Cl. 435-2.000.

Smith, William Charles, Jr.; and Lord, Donn Allan, to International Business Machines Corporation. Programmable apparatus for cleaning semiconductor elements. 5,666,985, Cl. 134-142.000.

SmithKline Beecham Corporation: *See—*
Hoyer, Lois L.; Livi, George P.; and Shatzman, Allan R., 5,668,263, Cl. 536-23.100.

SMK Corp.: *See—*
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SMS Schloemann-Siemag Aktiengesellschaft: *See—*
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SMT spol. s.r.o.: *See—*
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Smudski, Jan A.: *See—*
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Snelling, Christopher R.; Facci, John S.; Levy, Michael J.; Mashtare, Dale R.; and Smith, Michael S., to Xerox Corporation. High voltage power supply. 5,668,439, Cl. 310-339.000.

Snetting, Mark E., to Wagner Spray Tech Corporation. Paint gun with co-molded swirl valve. 5,667,144, Cl. 239-491.000.

Snyder, Francis J.: *See—*
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So, Franky: *See—*
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So, Ho Yun. Animal training device. 5,666,908, Cl. 119-720.000.

So, Koon Chong: *See*—
Lin, True-Lon; Hshieh, Fwu-luan; Nim, Danny Chi; So, Koon Chong; and Tsui, Yan Man, 5,668,026, Cl. 438-272.000.
Soane, David S.: *See*—
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Societe de Conseils de Recherches et D'Applications Scientifiques (S.C.R.A.S.): *See*—
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Societe Procedes Machines Speciales S.P.M.S.: *See*—
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Soehner, Robert Anthony: *See*—
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Soeya, Susumu; Tadokoro, Shigeru; Imagawa, Takao; Ashida, Eiji; Fuyuma, Moriaki; Fukui, Hiroshi; Suzuki, Sahum; Takagi, Masayuki; and Narishige, Shinji, to Hitachi, Ltd. Magnetic disc apparatus. 5,668,685, Cl. 360-113.000.
Sofue, Masaaki: *See*—
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Sohzohkagaku Co., Ltd.: *See*—
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Sommer, Phillip R.: *See*—
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Sondermeyer, Jack C.: *See*—
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Song, Junehwa: *See*—
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Song, Ok-Kyu: *See*—
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Sonnenberg, Wade; Houle, Patrick J.; Luong, Thong B.; Shelnut, James G.; and Fisher, Gordon, to Shipley Company, L.L.C. Electroplating process and composition. 5,667,662, Cl. 205-162.000.
Sonnewald, Ursula: *See*—
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Miyazaki, Shigeki; and Seki, Atsushi, 5,667,705, Cl. 219-121.520.
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Nakane, Yasuaki; Igarashi, Shuichi; Tamada, Sakuya; Sakamoto, Susumu; and Chiba, Teruo, 5,667,862, Cl. 428-64.300.
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Sorace, Ronald E.; Reinhardt, Victor S.; and Vaughn, Steven A., to Hughes Aircraft Company. High-speed digital-to-RF-converter. 5,668,842, Cl. 375-308.000.
Sordahl, Blaine. Mobile wire dispenser. 5,667,163, Cl. 242-557.000.
Sorensen, James Christian; and Scharpf, Eric William, to Air Products and Chemicals, Inc. Gasification combined cycle power generation process with heat-integrated chemical production. 5,666,800, Cl. 60-39.020.
Sorolla, Jose Rocas: *See*—
Barra, Jordi Berenuger; Holliger, Herbert; and Sorolla, Jose Rocas, 5,668,259, Cl. 534-684.000.
Sorrells, David F.: *See*—
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Soula, Richard; Marchand, Didier; and Diot, Henri, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and gaseous mixture for arc welding of aluminium components. 5,667,702, Cl. 219-75.000.
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Southern, Edwin, to Isis Innovation Limited. Electrochemical treatment of surfaces. 5,667,667, Cl. 205-687.000.
Southpac Trust International, Inc.: *See*—
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Southwest Research Institute: *See*—
Wellinghoff, Stephen T., 5,668,185, Cl. 514-772.300.
Souza, Therese R.; and Molvar, Allen E., to Handy & Harman. Low friction solder electrodeposits. 5,667,659, Cl. 205-109.000.
Spall, James C., to Johns Hopkins University, The. Method and apparatus for model-free optimal signal timing for system-wide traffic control. 5,668,717, Cl. 364-148.000.
Spar Aerospace Limited: *See*—
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Spaulding, John E., II, to Interaxx Television Network, Inc. Interactive television terminal responsive to user commands which combines static service data and recurrently broadcast dynamic service data to produce composite service display signals. 5,668,592, Cl. 348-13.000.
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Spiess, Peter, to Inventio AG. Rollers for the roller guide of sliding elevator doors. 5,667,039, Cl. 187-334.000
Spilo, David Allen: *See*—
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Spindler, Zdenek: *See*—
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Suzuki, Kenji: *See*—
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Masumura, Hisashi; and Suzuki, Kiyoshi, 5,667,567, Cl. 106-3.000.

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Suzuki, Takahisa, 5,666,709, Cl. 29-243.560.

Suzuki, Masahiko; Ono, Kikuo; Ohwada, Junichi; Itoh, Hikaru; Kamei, Tatsuo; and Matsunaga, Kuniyuki, to Hitachi, Ltd. Structure of liquid crystal display device for antireflection. 5,668,649, Cl. 349-42.000.

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Suzuki, Nobuo: *See*—
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Suzuki, Osamu: *See*—
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Suzuki, Saburo: *See*—
Soeya, Susumu; Tadokoro, Shigeru; Imagawa, Takao; Ashida, Eiji; Fuyama, Moriaki; Fukui, Hiroshi; Suzuki, Saburo; Takagi, Masayuki; and Narishige, Shinji, 5,668,685, Cl. 360-113.000.

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Klimstra, Paul Dale; Roniker, Barbara; and Swabb, Edward Allen, 5,668,134, Cl. 514-254.000.

Swagerman, Richard E., to International Business Machines Corporation. Conversation management routine for co-operative processing applications. 5,668,994, Cl. 395-672.000.

Swain, Eugene A., to Xerox Corp. Electrostatographic imaging member and process for fabricating member. 5,669,045, Cl. 399-159.000.

Swan, David A.: *See*—
Jegers, Viktor J.; Lau, Robert G.; and Swan, David A., 5,666,695, Cl. 16-381.000.

Swanson, Harry: *See*—
Prospero, Richard M.; Lunde, Erik; Swanson, Harry; and Adams, Lee, 5,666,782, Cl. 53-155.000.

Swanstrom, Scott; and Gephardt, Douglas D., to Advanced Micro Devices, Inc. Dockable computer system capable of electric and electromagnetic communication. 5,668,977, Cl. 395-500.000.

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Sweeney, Charles T. Methods for sweetening hydrocarbons. 5,667,760, Cl. 423-224.000.

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Swenson, Michael R.; and Healey, Robert, to University of California, The Regents of the. Moving-stimulus thermal sensitivity testing device. 5,666,963, Cl. 128-742.000.

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Sybase, Inc.: *See*—
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Synopsys, Inc.: *See—*
Khouja, Adel; Krishnamoorthy, Shankar; Mailhot, Frederic G.; and Meier, Stephen F., 5,668,732, Cl. 364-483.000.
Synthelabo: *See—*
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Syracuse University: *See—*
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Syzdek, Ronald J.: *See—*
Coffman, Tim M.; Syzdek, Ronald J.; Coots, Timothy J.; Truong, Phat C.; and Lin, Sung-Wei, 5,668,769, Cl. 365-226.000.
Szajewski, Richard Peter, to Eastman Kodak Company. Rapid image forming process utilizing high chloride tabular grain silver halide emulsions with (iii) crystallographic faces. 5,667,949, Cl. 430-489.000.
Szala, Stanislaw: *See—*
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Szczesny, David Stanley; Pauza, William V.; and Fetterolf, James Ray, Sr. Electrical connector having a two part articulated housing. 5,667,391, Cl. 439-79.000.
Szweda, John Anthony; and Lutrario, Celeste Anne, to Elizabeth Arden Company, Division of Conopco, Inc. Long wearing lipstick. 5,667,770, Cl. 424-64.000.
T. Kruger Systems AS: *See—*
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Tabata, Keiichiro; Nabeshima, Yoichi; Fujita, Taikyu; Yokoyama, Kazufumi; and Hashimoto, Torao, to Bridgestone Corporation. Method of manufacturing a molding for energy absorbent pads and mold used in the method. 5,667,741, Cl. 264-54.000.
Tabata, Masaaki; and Hayashi, Hiroyuki, to Sumitomo Wiring Systems, Ltd. Waterproof seal for connector and method for forming same. 5,667,406, Cl. 439-587.000.
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Taborn, Michael Preston; Bailey, Roger Ned; and Burchfiel, Steven Michael, to International Business Machines Corporation. Variable stage load path and method of operation. 5,668,984, Cl. 395-563.000.
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Tada, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Integrated semiconductor laser device. 5,668,822, Cl. 372-36.000.
Tadayuki, Suzuki; Keiko, Hasabe; Kazuhiko, Kurita; and Yuichi, Hioki, to Kao Corporation. Herbicide composition. 5,668,086, Cl. 504-235.000.
Tadokoro, Shigeru: *See—*
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Taguchi, Toshiki: *See—*
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Taguchi, Yutaka: *See—*
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Tomita, Yoshihiro; Kanaboshi, Akihiro; Taguchi, Yutaka; and Eda, Kazuo, 5,666,706, Cl. 29-25.350.
Tagusa, Yasunobu; and Nakabu, Shigeo, to Sharp Kabushiki Kaisha. Panel assembly structure capable of connecting wiring line with electrode at fine pitch. 5,668,700, Cl. 361-779.000.
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Kikuchi, Misao; Imasono, Kunimasa; Kitagawa, Yasushi; Noma, Kenji; Tahara, Tadayuki; Saito, Yoshinori; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Kawasaki, Kenji, 5,668,950, Cl. 395-200.470.
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Tai, Ping-Kaung; and Zou, Han. Light expanding system for producing a linear or planar light beam from a point-like light source. 5,668,913, Cl. 385-146.000.
Tai, Tsung-Ming; Rodini, David J.; Masson, James C.; and Leonard, Richard L., to Du Pont de Nemours, E. I., and Company. Wet spinning process for aramid polymer containing salts. 5,667,743, Cl. 264-184.000.
Taiwan Semiconductor Manufacturing Company: *See—*
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Taiwan Semiconductor Manufacturing Company Ltd: *See—*
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Chen, Chan Yuan; and Peng, Shih Bin, 5,668,051, Cl. 438-558.000.
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Huang, Yuan-Chang; Wang, Chen-Jong; and Liang, Mong-Song, 5,668,038, Cl. 438-396.000.
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Takada, Takeshi: *See—*
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Takagi, Masayuki: *See—*
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Takagi, Shinobu: *See—*
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Takahashi, Keietsu: *See—*
Fukushima, Makoto; Kimura, Kazuhiro; Yamauchi, Hirohiko; Morishita, Kenichi; and Takahashi, Keietsu, 5,667,762, Cl. 424-1.110.
Takahashi, Makoto; and Saito, Yukio, to DDK Ltd. Press-in contact. 5,667,412, Cl. 439-751.000.
Takahashi, Makoto: *See—*
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Takahashi, Masayuki: *See—*
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Takahashi, Mitsuo; Yamada, Kunio; Takashi, Shuichi; and Shiokawa, Naotoshi, to Seikoh Giken Co., Ltd. Optical fiber ferrule assembly having angular index showing polarization plane. 5,668,905, Cl. 385-78.000.
Takahashi, Osamu; Hiroshi, Yabe; and Takakura, Akira, to Seiko Epson Corporation. Spring driven electricity generator with a control circuit to regulate the release of energy in the spring. 5,668,414, Cl. 290-1.00E.
Takahashi, Susumu: *See—*
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Takahashi, Toshinori; and Ito, Jun, to Toyoda Gosei Co., Ltd. Air bag controlling apparatus. 5,668,720, Cl. 701-46.000.
Takahashi, Yoshinobu, to YKK Corporation. Cord fastener. 5,666,699, Cl. 24-115.00G.
Takai, Masaki: *See—*
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Takano, Hideto, to NEC Corporation. Synchronizing circuit for use in a digital audio signal compressing/expanding system. 5,668,840, Cl. 375-368.000.
Takano, Hiromitsu; and Nakamoto, Nobuya, to NEC Corporation. Horizontal magnifying circuit for video signals. 5,668,604, Cl. 348-562.000.
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Iino, Eiichi; Takano, Kiyataka; Kimura, Masanori; Mizuishi, Koji; and Yamagishi, Hirotoshi, 5,667,588, Cl. 117-217.000.
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Takata, Kenji; and Nakahashi, Hiroshi, to Fuji Photo Film Co., Ltd. Drive force transmitting mechanism. 5,669,033, Cl. 396-612.000.
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Takatera, Masayuki: *See—*
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Takayanagi, Takashi; Takeda, Akihiko; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Black matrix and process for forming the same. 5,667,921, Cl. 430-7.000.
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Takeda, Nobuhiko, to Aisin Seiki Kabushiki Kaisha. Head-rest apparatus. 5,667,275, Cl. 297-408.000.
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Ito, Hiroki; Moriyama, Takashi; Kamei, Kenji; Hamano, Suenobu; Nitta, Etsuo; Takeji, Naoaki; Yamaji, Koji; and Hatano, Masayuki, 5,668,691, Cl. 361-13.000.
Takekuma, Toshitsugu; Yamagiwa, Akira; and Kurihara, Ryoichi, to Hitachi, Ltd. Signal transmitting device suitable for fast signal transmission including an arrangement to reduce signal amplitude in a second stage transmission line. 5,668,834, Cl. 375-257.000.
Takeuchi, Esther S.; and Smesko, Sally Ann, to Wilson Greatbatch Ltd. Electrochemical cell having a cathode comprising differing active formulations and method. 5,667,910, Cl. 429-128.000.
Takeuchi, Esther S.: *See—*
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Takeuchi, Hikaru: *See—*
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Takeuchi, Kiyoshi; Nakamura, Koki; Taguchi, Toshiki; Nakamura, Koichi; and Makuta, Toshiyuki, to Fuji Photo Film Co., Ltd. Color developing agent, silver halide photographic light-sensitive material and image forming method. 5,667,945, Cl. 430-380.000.
Takeyama, Atsushi: *See—*
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Takiguchi, Syuji; Ichikawa, Hiroshi; and Nishitani, Keizo, to Yazaki Corporation. Seat combination switch. 5,668,357, Cl. 200-5.00R.
Takimoto, Kazuhide, to Takigen Manufacturing Co. Ltd. Latch assembly. 5,667,258, Cl. 292-113.000.
Takita, Kazuo: *See—*
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Takizawa, Hiroo; Nakamine, Takeshi; Yoshioka, Yasuhiro; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material containing photographic yellow dye-forming coupler. 5,667,951, Cl. 430-551.000.
Takizawa, Hiroo: *See—*
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Talana Investments Limited: *See—*
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Langham, Robert Fred, Jr.; Techlin, William; Soehner, Robert Anthony; and Harakay, Gary Lee, 5,667,090, Cl. 220-6.000.

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Guimont, Vincent, 5,669,060, Cl. 455-436.000.

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Havemann, Robert H.; and Jeng, Shin-puu, 5,668,398, Cl. 257-522.000.
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Hyun, Dae-Jin; and Connor, James L., 5,668,062, Cl. 438-462.000.
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Roskell, Derek, 5,668,482, Cl. 326-31.000.
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Murai, Yukio; and Toguchi, Seiichi, 5,667,362, Cl. 417-41.000.

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Yoshida, Akihiko; Ikeda, Masaki; Kimura, Kunio; Nishino, Atsushi; Nakazumi, Hiroyuki; Tohge, Noboru; and Minami, Tsutomu, 5,667,888, Cl. 428-336.000.

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Narita, Yasushi; Niikura, Yasuhiro; Hattori, Noboru; Katakura, Shusaku; and Tohjima, Hisaaki, 5,667,458, Cl. 477-169.000.

Tohoku Ricoh Co., Ltd.: *See—*

Chida, Hiroaki; Sato, Mitsuo; and Irokawa, Shigenobu, 5,667,213, Cl. 270-58.030.

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Minami, Kohji; Tokita, Hiroyuki; Ishiyama, Keiichi; and Suzuki, Nobuo, 5,667,426, Cl. 451-41.000.

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Toyoda, Shigeru; Yagi, Shuichi; and Itagaki, Masaaki, 5,667,841, Cl. 427-235.000.

Toledo, George F., to Jackson Corporation. Adjustable power closure. 5,666,692, Cl. 16-80.000.

Tolson, Sidney S., to Ossid Corporation. Method for transverse sealing of film wrapped around a product. 5,666,788, Cl. 53-442.000.

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Fink, David M.; Kurys, Barbara E.; Shutske, Gregory M.; and Tomer, John D., IV, 5,668,154, Cl. 514-338.000.

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Kawaguchi, Hironobu; Tomimatsu, Noriyuki; Yoshioka, Kazuo; and Matsumoto, Sadayuki, 5,668,443, Cl. 315-169.100.

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Osawa, Ryoichi; Suda, Isao; Numata, Masaaki; Sugimoto, Mamoru; Tomita, Kenkichi; Kibushi, Nobuyuki; Ishii, Takayuki; Sugiyama, Naokazu; Kasano, Makiko; Yasunaga, Tae; Tanaka, Makoto; Ogawa, Tomoya; and Ishii, Mariko, 5,668,115, Cl. 514-54.000.

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Tomoegawa Paper Co., Ltd.: *See—*
Kubota, Hideyuki; and Ozeki, Eiichi, 5,667,927, Cl. 430-109.000.

Tomono, Yoji: *See—*
Shigematsu, Kazuo; Tomono, Yoji; Ichikawa, Atsushi; and Hattori, Toshiyasu, 5,668,787, Cl. 369-13.000.

Tomory, Ronald S., to Xerox Corporation. Control system for programming first print out time in a printing system. 5,668,938, Cl. 395-115.000.

Tomotaki, Katsura, to Seiko Seiki Kabushiki Kaisha. Dressing apparatus. 5,667,646, Cl. 204-217.000.

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Ohtsuka, Yasumasa; Okuda, Kouichi; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,669,039, Cl. 399-68.000.

Tong-Lung Metal Industry Co., Ltd.: *See—*
Gao, Sheen-Youl; Wu, Rong-Faa; Chiao, Ming-Shyang; Lai, Cheng-Wen; Lin, San-Yi; Kuo, Ching-Chuan; and Don, Lan-Kun, 5,666,833, Cl. 70-224.000.

Tongrand Limited: *See—*
Pan, H. T.; Chen, Chu-Mei; and Hon, Ming-Yow, 5,667,396, Cl. 439-160.000.

Top Game & Company Ltd.: *See—*
Cheng, Chou, 5,667,220, Cl. 273-148.00B.

Toppan Printing Co., Ltd.: *See—*
Fukuyoshi, Kenzo; Kimura, Yukihiro; Imayoshi, Koji; Koga, Osamu; and Horachi, Katsunori, 5,667,853, Cl. 428-1.000.

Toray Industries, Inc.: *See—*
Nakahata, Tatsutoshi; Kawano, Genji; Sudo, Tetsuo; and Kojima, Katsuaki, 5,668,104, Cl. 514-2.000.

Torkowski, Thorsten, to Kiekert AG. Power actuator for child-safety motor-vehicle door latch. 5,667,259, Cl. 292-201.000.

Torotrak (Development) Limited: *See—*
Fellows, Thomas George, 5,667,456, Cl. 476-42.000.

Torres, Luc: *See—*
Toubol, Gilles; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Torres, Luc; and Verplanken, Fabrice, 5,668,798, Cl. 370-230.000.

Torrie, Paul A.; and Smith, Graham, to Smith & Nephew Dyonics Inc. Soft tissue anchor delivery apparatus. 5,667,513, Cl. 606-104.000.

Tortella, Carlo: *See—*
Tortella, Michele; and Tortella, Carlo, 5,666,892, Cl. 111-52.000.

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Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, 5,668,440, Cl. 313-635.000.

Toto Ltd.: *See—*
Birsel, Ayse; Hiraga, Noriko; Tani, Junichi; Nagato, Kenichi; Watanabe, Koichi; and Shinohara, Kuniaki, 5,666,672, Cl. 4-236.000.

Totsuka, Mitsuhiko: *See—*
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,668,522, Cl. 337-198.000.

Toubol, Gilles; Calvignac, Jean; Frenoy, Jean-Luc; Orsatti, Daniel; Torres, Luc; and Verplanken, Fabrice, to International Business Machines Corporation. Multiplexed TC sublayer for ATM switch. 5,668,798, Cl. 370-230.000.

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Bagley, Scott W.; Broten, Theodore P.; Chakravarty, Prasun K.; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Kevin, Nancy Jo; Kieczykowski, Gerard R.; Pettibone, Douglas J.; Tata, James R.; Rivero, Ralph A.; Walsh, Thomas F.; Williams, David L., Jr.; Mathews, Jay M.; and Toupence, Richard B., 5,668,176, Cl. 514-569.000.

Towner, James W.: *See—*
Breen, Patrick J.; and Towner, James W., 5,667,727, Cl. 252-331.000.

Townsend, Paul H., III: *See—*
Harris, Robert F.; Townsend, Paul H., III; Frye, Donald C.; and Schmidt, Donald L., 5,668,210, Cl. 524-588.000

Toyo Ink Manufacturing Co., Ltd.: *See—*
Kawashima, Miki; Yamaguchi, Takeo; Horiuchi, Kunio; and Uchida, Hiromi, 5,668,244, Cl. 528-297.000.

Toyoda, Atsushi: *See—*
Shouji, Shigeru; and Toyoda, Atsushi, 5,668,686, Cl. 360-113.000

Toyoda Boshoku Corporation: *See—*
Honda, Minoru; and Inaba, Hideki, 5,667,545, Cl. 55-497.000.

Toyoda Gosei Co., Ltd.: *See—*
Takahashi, Toshinori; and Ito, Jun, 5,668,720, Cl. 701-46.000.

Toyoda, Katsumasa: *See—*
Ichikawa, Masanori; Yoshioka, Tadayoshi; Toyoda, Katsumasa; and Takizawa, Shinichi, 5,667,603, Cl. 148-589.000.

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Fukuda, Masaru; Fukuda, Eiji; Shiraki, Kazuyuki; and Shirouzu, Kouichi, 5,667,403, Cl. 439-489.000.
Ichinose, Hiroki; Takeda, Keiso; Kojima, Susumu; and Sadakane, Shinji, 5,666,919, Cl. 123-399.000.

Tracor Flight Systems, Inc.: *See—*
Moss, William Gregory; Roberts, Kenneth Dale; and Briggs, Charles Whitford, 5,667,170, Cl. 244-135.00A.

Tracy, Edward D.: *See—*
Bieselin, David N.; Eaton, Glenn A.; McFadden, Joseph A.; Taylor, Stuart A.; Tracy, Edward D.; and Wang, Emil C. W., 5,668,863, Cl. 379-202.000.

Trafton, Michael L., to Alcoa Fujikura Ltd. Socket-type electrical connector. 5,667,413, Cl. 439-843.000.

Tran, Chuong B.; and White, Stephen, to Boeing Company, The. Aircraft frequency adaptive modal suppression system. 5,667,166, Cl. 244-76.00C.

Tran, Cuong: *See—*
Evans, James Gifford; Schneider, Martin Victor; and Tran, Cuong, 5,668,560, Cl. 343-702.000.

Trans-Lux Corporation: *See—*
Holloman, Charles J., 5,668,568, Cl. 345-83.000.

Transhumance: *See—*
Breen, Dennis J.; and Wilson, Lawrence, 5,667,827, Cl. 426-129.000.

Transportation Investors Service Corporation: *See—*
Wike, Paul S., 5,666,885, Cl. 105-168.000.

Traore, Ibrahim: *See—*
Möncke, Hartmut; and Traore, Ibrahim, 5,668,361, Cl. 218-118.000.

Travelers Express Company, Inc.: *See—*
Smith, Lawrence G., 5,667,315, Cl. 400-78.000

Travers, Mark: *See—*
Robinson, John W.; Lebold, Alan R.; and Travers, Mark, 5,666,726, Cl. 29-890.000.

Treacy, David R.: *See—*
Bossard, Bernard; and Treacy, David R., 5,668,610, Cl. 348-723.000.

Treboux, Jean-Paul Rene; and Knaub, Philippe Martin, to Polyol International B.V. Polyol compositions and their use in the preparation of high resilience polyurethane foams. 5,668,378, Cl. 252-182.270.

Treiber, Helmut: *See—*
Bocklisch, Siegfried; Fielder, Wolfgang; Treiber, Helmut; Leuschner, Rainer; Reichel, Wilfried; and Wilde, Michael, 5,668,625, Cl. 355-73.000.

Tremaine, Brian P., to Seagate Technology, Inc. Time optimal control of a disc drive actuator with vibro-acoustic constraints. 5,668,680, Cl. 360-78.070.

Trevino, Leo A.; Dellamary, Luis A.; Tarara, Thomas E.; Weers, Jeffry G.; and Ranney, Helen M., to Alliance Pharmaceutical Corp. Continuous fluorochemical microdispersions for the delivery of lipophilic pharmaceutical agents. 5,667,809, Cl. 424-501.000.

Trico Industries, Inc.: *See—*
O Mara, David P.; and Hinds, Arron C., 5,667,364, Cl. 417-151.000.

Trimble Navigation Limited: *See—*
Schipper, John F., 5,669,061, Cl. 455-429.000

Trinh, Toan; Cappel, Jerome Paul; Geis, Philip Anthony; McCarty, Mark Lee; Pilosof, David; and Zwerdling, Susan Schmaedecke, to Procter & Gamble Company, The. Uncomplexed cyclodextrin solutions for odor control on inanimate surfaces. 5,668,097, Cl. 510-293.000.

Trinh, Toan: *See—*
Bacon, Dennis Ray; Chung, Alex Haejoon; Trinh, Toan; Hartman, Frederick Anthony; and Mermelstein, Robert, 5,668,094, Cl. 510-101.000.

Tristrata Technology, Inc.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., 5,668,177, Cl. 514-574.000.

Tromans, Keith, to Scottish and Newcastle PLC. Method and device for foam generation by dispersion of bubbles. 5,667,832, Cl. 426-394.000.

Trotter, Inc.: *See—*
McCollum, Robert; Telesz, Gregory T.; and Liepheimer, Jerry K., 5,667,465, Cl. 482-100.000.

Troutner, David E.: *See—*
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.

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Trumpf GmbH & Co.: *See—*
Klingel, Hans; and Weick, Juergen Michael, 5,667,707, Cl. 219-121.670.

Truong, Phat C.: *See—*
Coffman, Tim M.; Syzdek, Ronald J.; Coots, Timothy J.; Truong, Phat C.; and Lin, Sung-Wei, 5,668,769, Cl. 365-226.000.

Truong, Thien V.; Bierer, Donald E.; Dener, Jeffrey M.; Hector, Richard; Tempesta, Michael S.; Loev, Bernard; Yang, Wu; and Koreeda, Masato, to Shaman Pharmaceuticals, Inc.; and University of Michigan, The Regents of the. 1,2-dithiin antiinfective agents. 5,668,168, Cl. 514-436.000.

Trustees of Columbia University in the City of New York, The: *See—*
Breslow, Ronald; Marks, Paul A.; and Rifkind, Richard A., 5,668,179, Cl. 514-629.000.
Zhang, Peisen, 5,667,970, Cl. 435-6.000.

Trustees of Tufts College: *See—*
Robbat, Albert, Jr.; and Gankin, Yuriy V., 5,668,373, Cl. 250-339.120.

TRW Inc.: *See—*
Jones, Neil; and Morris, Mark D., 5,667,034, Cl. 180-422.000.
Streit, Dwight C.; and Block, Thomas R., 5,668,387, Cl. 257-192.000.

TRW Vehicle Safety Systems Inc.: *See—*
Blackburn, Brian K., 5,668,723, Cl. 701-45.000.
Slack, Timothy D.; and Buchanan, William R., 5,667,242, Cl. 280-730.200.

Tsai, Chaochieh; and Hsu, Shun-Liang, to Taiwan Semiconductor Manufacturing Company. CMOS device structure with reduced risk of salicide bridging and reduced resistance via use of a ultra shallow, junction extension, ion implantation process. 5,668,024, Cl. 438-199.000.

Tsai, Liane Toy: *See—*
Andruska, Donald Lee; and Tsai, Liane Toy, 5,668,860, Cl. 379-196.000.

Tsai, Ming-Hsing: *See—*
Sun, Shi-Chung; Chiu, Hien-Tien; and Tsai, Ming-Hsing, 5,668,054, Cl. 438-653.000.

Tsai, Wen-Po: *See—*
Oroszlan, Stephen; Tsai, Wen-Po; Nara, Peter L.; and Kung, Hsiang-Fu, 5,668,149, Cl. 514-313.000.

Tsang, Ching Hwa: *See—*
Chen, Mao-Min; Kung, Kenneth Ting-Yuan; and Tsang, Ching Hwa, 5,668,523, Cl. 338-32.00R.
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Tsantrizos, Peter G.: *See—*
Poirier, Nicole A.; and Tsantrizos, Peter G., 5,667,641, Cl. 162-207.000.

Tseng, Betty Jyue: *See—*
Chirovsky, Leo Maria Freishyn; D'Asaro, Lucian Arthur; Dahringer, Donald William; Hui, Sanghee Park; and Tseng, Betty Jyue, 5,667,132, Cl. 228-180.220.

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Tsubakimoto Chain Co.: *See—*
Tanaka, Koji, 5,667,442, Cl. 464-49.000.

Tsuboi, Keishi: *See—*
Yokoi, Tokihiro; and Tsuboi, Keishi, 5,668,252, Cl. 528-503.000.

Tsubotani, Shigetoshi; Takizawa, Masayuki; Shirasaki, Mikio; Mizoguchi, Junji; and Shimizu, Yoshiaki, to Takeda Chemical Industries, Ltd. Aziridine derivatives, their production and use. 5,668,128, Cl. 514-183.000.

Tsuchiya, Chikara: *See—*
Watanabe, Takao; Hayashi, Mutsuo; Matsumoto, Kazunari; Tsuchiya, Chikara; Nishimori, Eiji; and Matsui, Takashi, 5,668,506, Cl. 331-66.000.

Tsuda, Tadayuki: *See—*
Kobayashi, Kazunori; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Saito, Masanobu; and Noda, Shinya, 5,669,042, Cl. 399-111.000.

Tsugura, Hiroshi: *See—*
Aoki, Toyoaki; and Tsugura, Hiroshi, 5,668,014, Cl. 436-110.000.

Tsui, Pui-Hing, to Neon King Limited. Modular honeycomb light and lightbulb module structure. 5,667,295, Cl. 362-252.000.

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Lin, True-Lon; Hshieh, Fwu-Iuan; Nim, Danny Chi; So, Koon Chong; and Tsui, Yan Man, 5,668,026, Cl. 438-272.000.

Tsuji, Kikunosuke; Watanabe, Takeshi; Baba, Kohichi; Satake, Kenichi; Kawachi, Yoshiko; Hori, Setsuo; and Koyama, Shigeo, to Mita Industrial Co., Ltd. Ink jet printing apparatus. 5,668,581, Cl. 347-37.000.

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Ono, Kikuo; Tsumura, Makoto; Ogawa, Kazuhiro; Sakuta, Hiroki; Suzuki, Masahiko; Kaneko, Toshiki; Nakayoshi, Yoshiaki; Onisawa, Kenichi; Hashimoto, Kenichi; and Minemura, Tetsuro, 5,668,379, Cl. 257-59.000.

Tsuru, Teruhisa: *See—*
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Tsuruoka, Eriko; and Hirano, Akira, to NEC Corporation. Electrophotographic photosensitive product. 5,667,925, Cl. 430-59.000.

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Abe, Takashi; Itoh, Hiroshi; Tsuruta, Manabu; Oyanagi, Shoko; and Nakamura, Kenichi, 5,668,229, Cl. 526-93.000.

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Height, Trevor Maxwell; Sutton, Ross Herbert; and Shester, Gary Anthony, 5,666,714, Cl. 29-527.400.

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Price, Ellie E.; Hardin, William C., Jr.; and Bostian, Chris, 5,666,704, Cl. 26-74.000.

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Millard, Julian W. F.; Edwards, Keith William; Tucker, Howard J.; and Kaushal, Deepack, 5,667,325, Cl. 403-119.000.

Tucker, Kevin H.: *See—*
Turchin, Henry; Dinevski, Cindy S.; and Tucker, Kevin H., 5,667,349, Cl. 413-25.000.

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Harrell, John W.; Johnson, Michael H.; Turick, Daniel J.; and Watkins, Larry A., 5,667,023, Cl. 175-45.000.

Turner, Daryl V.: *See—*
Douglas, Edwin S.; and Turner, Daryl V., 5,668,736, Cl. 364-512.000.

Turner, F. Jonathan M.: *See—*
Sharp, David L., 5,667,346, Cl. 411-10.000.

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Fowler, Michael; Burrow, Thomas Richard; Turner, Terence Dudley; Schmidt, Ryszard Jan; and Chung, Lip Yong, 5,667,501, Cl. 604-304.000.

Tveten, Alan B.: *See—*
Dandridge, Anthony; Tveten, Alan B.; and Yurek, Aileen M., 5,668,779, Cl. 367-149.000.

Twist, Peter Jeffery; and Winscom, Christopher John, to Eastman Kodak Company. Photographic developer/amplifier compositions. 5,667,947, Cl. 430-414.000.

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Menow, Steven M.; Jaffe, Jonathan Adam; Sannito, Patrick J.; and Bosch, Warren E., 5,667,420, Cl. 446-433.000.

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Bobrov, Vladimer A.; Kan, Nickolay A.; Yanchevskaya, Tamara G.; McGrath, Donald E.; and Skornikov, Andrey V., 5,668,719, Cl. 364-420.000.

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Knowlton, James L.; and Workman, Alan J., 5,666,929, Cl. 123-546.000.

Tymes, LaRoy; and Ennis, Gregory B., to Symbol Technologies, Inc. Protocol for packet data communication system. 5,668,803, Cl. 370-312.000.

UAB Research Foundation, The: *See—*
Krishna, Nepalli Rama; and Moseley, Hunter N. B., 5,668,734, Cl. 364-497.000.
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Uchida, Go; Shirai, Shoji; Kinami, Takashi; and Mizukami, Noboru, to Hitachi, Ltd.; and Hitachi Electronics Devices Co., Ltd. Color display system with color cathode ray tube having a high breakdown voltage. 5,668,435, Cl. 313-414.000.

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Kawashima, Miki; Yamaguchi, Takeo; Horiuchi, Kunio; and Uchida, Hiromi, 5,668,244, Cl. 528-297.000.

Uchida, Kazuiki: *See*—
Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, 5,668,440, Cl. 313-635.000.

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Uchio, Hirokazu: *See*—
Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, 5,668,646, Cl. 358-530.000.

Ueda, Yasutsugu: *See*—
Bronson, Joanne J.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Matiskella, John D.; Misco, Peter F., Jr.; Luh, Bing Yu; Springer, Dane M.; Ueda, Yasutsugu; and Wichtowski, John A., 5,668,290, Cl. 546-298.000.
Kim, Choung U.; Misco, Peter F., Jr.; Wichtowski, John A.; Ueda, Yasutsugu; Hudyma, Thomas W.; Matiskella, John D.; D'Andrea, Stanley V.; Hoeft, Shelley E.; Miller, Raymond F.; Mansuri, Muzammil M.; and Bronson, Joanne J., 5,668,284, Cl. 546-24.000.

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Uehara, Isao: *See*—
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Universite de Nantes, Laboratoire de Thermocinetique de l'Isitem: *See*—
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University College Cardiff Consultants Limited: *See*—
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Meagher, Richard B.; and Summers, Anne O., 5,668,294, Cl. 800-205.000.

University of Illinois, The Board of Trustees of the: *See*—
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University of Illinois Corp., The Board of Trustees of the: *See*—
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University of Medicine and Dentistry of New Jersey: *See*—
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Bedard, Robert L.; King, Lisa M.; and Sherman, John D., 5,667,695, Cl. 210-681.000.
Dunne, Stephen R., 5,667,560, Cl. 95-113.000.

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van den Goor, Jacobus M., to Vanderlande Industries Nederland B.V. Conveyor. 5,667,054, Cl. 198-370.040.

van den Haak, Abraham, to A.P.I.S. Medical B.V. Prefilled injection syringe assembly. 5,667,494, Cl. 604-195.000.

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Van Der Wilk, Ronald: *See*—
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Van Gijsel, Geradus Emanual Cornelus: *See*—
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Vanguard International Semiconductor Corp.: *See*—
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Van Kessel, Theodore: *See*—
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Van Ness, Jeffrey; Petrie, Charles R.; Tabone, John C.; Vermeulen, Nicolaas M.J.; and Reed, Michael W., to Becton Dickinson and Company. Solid supports for nucleic acid hybridization assays. 5,667,976, Cl. 435-6.000.
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Verhaeg, Martien. Vehicle interior storage container. 5,667,115, Cl. 224-275.000.
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Tanaka, Hideshi, 5,668,586, Cl. 347-221.000.
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Vigar, Judith Wells: *See—*
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von Grolman, Tassilo; Heise, Bernhard; and Dingert, Uwe, 5,666,685, Cl. 15-121.000.
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Viscito, Eric: *See—*
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Visionary Design, Inc.: *See—*
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Viski, Peter: *See—*
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Voith Sulzer Papiermaschinen GmbH: *See—*
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Volpi, Alessandro: *See—*
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von Grolman, Tassilo; Heise, Bernhard; and Dingert, Uwe, to Vileda GmbH. Hand-held implement for cleaning smooth surfaces. 5,666,685, Cl. 15-121.000.
Voorman, Johannes O.; Pothast, Hendrik J.; and Wong-Lam, Ho W., to U.S. Philips Corporation. Magnetic head write amplifier including current mirrors and switchable current sources. 5,668,676, Cl. 360-46.000.
Vora, Madhukar B.; and West, Burnell G., to DynaChip Corporation. BiC-MOS reprogrammable logic. 5,668,495, Cl. 327-432.000.
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Vu, Hoai X.; and Vu, Toan, to Symbol Technologies, Inc. Ring oscillator having two rings whose outputs are combined. 5,668,505, Cl. 331-49.000.
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Phoa, Tek Tjin; Lauber, Monika; Hanuschik, Dirk; and Wulfhorst, Burkhard, 5,666,799, Cl. 57-417.000.
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Wada, Toshio: *See—*
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Wagner Spray Tech Corporation: *See—*
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Waldron, Clive, to Eli Lilly and Company. Selectable marker for development of vectors and transformation systems in plants. 5,668,298, Cl. 800-205.000.
Waldron, David W., Sr., to Lowndes Engineering Co., Inc. Aerosol generator and method for effecting the size of droplets dispersed thereby. 5,667,733, Cl. 261-30.000.
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Walker, James A.: *See—*
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Walker, James Thomas, to Ford Motor Company. Low force high pressure port. 5,667,305, Cl. 374-148.000.
Wall, Cameron Frank. Ground covering system. 5,666,678, Cl. 5-417.000.
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Helsel, Brett L.; Gindin, Jay R.; Lemire, John P.; Jenny, Patrick D.; and Mortensen, Mark A., 5,668,964, Cl. 395-350.000.
Waller, David P.: *See—*
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Bagley, Scott W.; Broten, Theodore P.; Chakravarty, Prasun K.; Dhanoa, Daljit S.; Fitch, Kenneth J.; Greenlee, William J.; Kevin, Nancy Jo; Kieczykowski, Gerard R.; Pettibone, Douglas J.; Tata, James R.; Rivero, Ralph A.; Walsh, Thomas F.; Williams, David L., Jr.; Matthews, Jay M.; and Toupence, Richard B., 5,668,176, Cl. 514-569.000.
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Walton, Richard C.; and Munchbach, George E., to Walton, Richard C. Apparatus for compressively treating flexible sheet materials. 5,666,703, Cl. 26-18.600.
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Yiu, Tom Dang-Hsing; Hung, Chun-Hsiung; Wan, Ray-Lin; Cheng, Yao-Wu; and Kamei, Teruhiko, 5,668,758, Cl. 365-185.230.
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Wang, Chung-Che. Saucepan permitting placing of a stirring spoon in a stable manner thereon. 5,666,874, Cl. 99-348.000.
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Sebion, Timothy L.; Powers, Frederick A.; and Pasvogel, Calvin H., 5,667,143, Cl. 239-415.000.
Wanser, Keith H.: *See—*
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Warkentin, Robert K. Grape drying system. 5,666,761, Cl. 47-46.000.
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Convertino, Steven; and Ivasauskas, Jonas, 5,667,672, Cl. 210-169.000.
Domagala, John Michael; Elslager, Edward Faith; and Gogliotti, Rocco Dean, 5,668,291, Cl. 546-316.000.
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Ferraro, Frank A., 5,666,729, Cl. 30-50.000.
Lamey, Philip-John, 5,666,962, Cl. 128-736.000.
Ogden, Brian Leslie; and Whiting, Peter Albert, 5,667,085, Cl. 215-220.000.
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Warwick, Ronald, to Siemens Measurements Limited. Modular electricity meter arrangement having remotely controllable switch. 5,668,538, Cl. 340-870.020.
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Weaver, Casimir Paul; Kiik, Matti; Schultz, William J.; and Stapleton, Patrick T., to Elk Corporation of Dallas. Laminated roofing shingle. 5,666,776, Cl. 52-557.000.
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Windisch, D. Anthony. Vectored thrust compressor for remote controlled aircraft. 5,666,803, Cl. 60-232.000.

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Winkeljann, Antonius: *See—*
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Wong, Chee-Chiu J., to Xerox Corporation. Solenoid impact control device. 5,668,517, Cl. 335-257.000.

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Fukuda, Masaru; Fukuda, Eiji; Shiraki, Kazuyuki; and Shirouzu, Kouichi, 5,667,403, Cl. 439-489.000.
Kondo, Hiroki; Totsuka, Mitsuhiko; Kudo, Toshiharu; and Hanazaki, Hisashi, 5,668,522, Cl. 337-198.000.
Ohtaka, Kazuto; and Samejima, Masakuni, 5,666,723, Cl. 29-874.000.
Okazaki, Kiyotaka; Kogure, Sinichi; Kanda, Masahiro; and Kobayashi, Shiroh, 5,668,225, Cl. 525-478.000.
Sugiyama, Osamu, 5,667,131, Cl. 228-173.500.
Takiguchi, Syuji; Ichikawa, Hiroshi; and Nishitani, Keizo, 5,668,357, Cl. 200-5.00R.
Yanase, Takeshi, 5,668,350, Cl. 174-50.000.
Yedid, Avraham. Strategy board game and method of play thereof. 5,667,223, Cl. 273-261.000.
Yee, Phillip: *See*—
Kelly, Matthew F.; Kelly, Bryan M.; Yee, Phillip; and Heyes, Kevin A., 5,667,217, Cl. 273-126.00R.
Yeh, Chune-Sin: *See*—
Huang, Chuck; and Yeh, Chune-Sin, 5,668,392, Cl. 257-340.000.
Yeivin, Yoram: *See*—
Shachar, Boaz; Rozen, Nahum; Yeivin, Yoram; and Wietz, Eli, 5,668,807, Cl. 370-378.000.
Yellin, Haim: *See*—
Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; Sterling, Jeffrey; Lerner, David; Berger-Paskin, Tirtsah; and Yellin, Haim, 5,668,181, Cl. 514-657.000.
Yen, Kerl. Wireless computer picture transmission device. 5,668,566, Cl. 345-2.000.
Yeoman, Martin F.: *See*—
Boyd, Trace L.; and Yeoman, Martin F., 5,667,197, Cl. 251-193.000.
Yiu, Tom Dang-Hsing; Hung, Chun-Hsiung; Wan, Ray-Lin; Cheng, Yao-Wu; and Kamei, Teruhiko, to Macronix Int'l Co., Ltd. Decoded wordline driver with positive and negative voltage modes. 5,668,758, Cl. 365-185.230.
YKK Corporation: *See*—
Takahashi, Yoshinobu, 5,666,699, Cl. 24-115.00G.
Yocum, John F.: *See*—
Fowell, Richard A.; and Yocum, John F., 5,667,171, Cl. 244-165.000.
Yoder, James Franz: *See*—
Huang, Joseph Chun-Chi; Shirk, James Alan; and Yoder, James Franz, 5,666,866, Cl. 83-77.000.
Yoder, James Herbert, Jr. Quick change PVC pipe connection system. 5,667,329, Cl. 403-327.000.
Yoder, Wendy: *See*—
Berka, Randy Michael; Yoder, Wendy; Takagi, Shinobu; and Boominathan, Karuppan Chettier, 5,667,990, Cl. 435-69.100.
Yokohama Rubber Co., Ltd., The: *See*—
Yoshida, Masaaki; and Aihara, Toru, 5,667,610, Cl. 156-133.000.
Yokoi, Tokihiro; and Tsuboi, Keishi, to Nippon Shokubai Co., Ltd. Drying process of viscous solution containing (meth)acrylic acid-based polymer. 5,668,252, Cl. 528-503.000.
Yokota, Katsuyuki: *See*—
Mizutani, Tomozi; Yokota, Katsuyuki; Arita, Masahobu; and Kojyou, Hisashi, 5,667,813, Cl. 425-71.000.
Yokota, Teppei; Aramaki, Junichi; and Kihara, Nobuyuki, to Sony Corporation. Recording method of recording medium. 5,668,789, Cl. 369-47.000.
Yokoyama, Kazufumi: *See*—
Tabata, Keiichiro; Nabeshima, Yoichi; Fujita, Taikyu; Yokoyama, Kazufumi; and Hashimoto, Torao, 5,667,741, Cl. 264-54.000.
Yolken, Robert H.: *See*—
Peterson, Jerry A.; Newburg, David S.; and Yolken, Robert H., 5,667,797, Cl. 424-439.000.
Yonek, Kenneth P.; Gindin, Lyuba K.; and Wicks, Douglas A., to Bayer Corporation. Blocked polyisocyanates with improved thermal stability. 5,668,238, Cl. 528-45.000.
Yonemochi, Kenshin: *See*—
Nakamura, Fusanobu; Kataoka, Rieko; and Yonemochi, Kenshin, 5,668,695, Cl. 361-683.000.
Yonescu, William E.: *See*—
Bilodeau, Steven J.; and Yonescu, William E., 5,668,630, Cl. 356-237.000.
Yonezawa, Akihiro: *See*—
Inukai, Shinji; Takita, Kazuo; Nishizawa, Makoto; Itoh, Akira; Okamura, Kazuyoshi; Uchida, Kazuiki; Aoki, Takayuki; Yoshikawa, Kazuhiko; Yonezawa, Akihiro; and Sasaki, Hiroki, 5,668,440, Cl. 313-635.000.
Yonezawa, Takahiro: *See*—
Morita, Makoto; Nagaike, Masaru; Gueler, Richard; Imanishi, Makoto; and Yonezawa, Takahiro, 5,667,130, Cl. 228-110.100.
Yoo, Michael D.: *See*—
Buktenica, Jerald A.; and Yoo, Michael D., 5,669,009, Cl. 395-800.350.
Yoo, Seung-Moon: *See*—
Kang, Bok-Moon; and Yoo, Seung-Moon, 5,668,497, Cl. 327-544.000.
Yoon, Hyun Nam: *See*—
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Yorkshire Water plc: *See*—
Bartlett-Hooker, William; Ediriweera, Sanath; and Ward, Stuart, 5,668,330, Cl. 73-864.810.
Yorozu, Hideki: *See*—
Sakamoto, Masaki; Oishi, Yuki; Yorozu, Hideki; and Suzuki, Kazutaka, 5,668,643, Cl. 358-455.000.
Yoshida, Akihiko; Ikeda, Masaki; Kimura, Kunio; Nishino, Atsushi; Nakazumi, Hiroyuki; Tohge, Noboru; and Minami, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Color filters and methods of manufacturing the same. 5,667,888, Cl. 428-336.000.

Yoshida, Hiroaki; and Okawa, Yukinari, to Fujitsu Limited. Transmission/coupling device and image forming apparatus having same. 5,669,046, Cl. 399-167.000.
Yoshida, Masaaki; and Aihara, Toru, to Yokohama Rubber Co., Ltd., The. Method of supplying sheet materials. 5,667,610, Cl. 156-133.000.
Yoshida, Minoru: *See—*
Mizoguchi, Mitsuaki; Kobayashi, Nobuhisa; Ishida, Masaharu; and Yoshida, Minoru, 5,667,299, Cl. 366-145.000.
Yoshida, Tadahiro; Kobayashi, Taro; Okuzono, Nobuhiro; and Kai, Yukio, to Mitsui Mining & Smelting Co., Ltd. Filter for the filtration of molten aluminum. 5,667,685, Cl. 210-510.100.
Yoshida, Takehiro, to Canon Kabushiki Kaisha. Image data communication apparatus capable of receiving image data during power failure. 5,668,642, Cl. 358-437.000.
Yoshida, Takeo; and Shuuichi, Azechi, to Shin-Etsu Chemical Co., Ltd. Silicone rubber compositions for high-voltage electrical insulators. 5,668,205, Cl. 524-268.000.
Yoshida, Yoichi: *See—*
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Yoshihara, Shinji: *See—*
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Yoshikawa, Kazuhiko: *See—*
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Yoshimura, Yasutsugu: *See—*
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Yoshino, Tsutomu, to Kabushiki Kaisha Toshiba. Paper conveying device. 5,667,215, Cl. 271-258.010.
Yoshinobu, Hitoshi, to Sony Corporation. Multiplex broadcasting method and system. 5,668,805, Cl. 370-335.000.
Yoshioka, Hiroshi: *See—*
Okuyama, Nobutaka; Sakurai, Soichi; Fukuma, Kooji; Yoshioka, Hiroshi; Obara, Masao; Ito, Naoki; Takeyama, Atsushi; and Satoh, Yoshio, 5,668,447, Cl. 315-368.260.
Yoshioka, Kazuo: *See—*
Kawaguchi, Hironobu; Tomimatsu, Noriyuki; Yoshioka, Kazuo; and Matsumoto, Sadayuki, 5,668,443, Cl. 315-169.100.
Yoshioka, Tadayoshi: *See—*
Ichikawa, Masanori; Yoshioka, Tadayoshi; Toyoda, Katsumasa; and Takizawa, Shinichi, 5,667,603, Cl. 148-589.000.
Yoshioka, Yasuhiro: *See—*
Takizawa, Hiroo; Nakamine, Takeshi; Yoshioka, Yasuhiro; and Morigaki, Masakazu, 5,667,951, Cl. 430-551.000.
Yoshitake, Noriaki; Mizuno, Kensuke; and Ogino, Takao, to Henkel Corporation. Pre-treating zinciferous surfaces before conventional chromating to improve rust resistance. 5,667,843, Cl. 427-305.000.
Yost, Boris: *See—*
Greene, Raymond G.; Katyl, Robert H.; Krusius, J. Peter; and Yost, Boris, 5,668,569, Cl. 345-103.000.
You, Dong-Ok; and You, Ok-Jung. Exciter for generating vibration in a pager. 5,668,423, Cl. 310-81.000.
You, Ok-Jung: *See—*
You, Dong-Ok; and You, Ok-Jung, 5,668,423, Cl. 310-81.000.
Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; Sterling, Jeffrey; Lerner, David; Berger-Paskin, Tirtsah; and Yellin, Haim, to Teva Pharmaceutical Industries Ltd.; and Technion Research and Development Foundation Ltd. Use of the R-enantiomers of N-propargyl-1-aminoindan compounds for the treatment of depression. 5,668,181, Cl. 514-657.000.
Younes, Sallouma: *See—*
Baziard-Mouysset, Geneviéve; Younes, Sallouma; Labssita, Youssef; Payard, Marc; Caignard, Daniel-Henri; Renard, Pierre; and Rettori, Marie-Claire, 5,668,138, Cl. 514-255.000.
Young, Barry S., to Dental Components, Inc. Telescopic arm assembly for the support of dental tools. 5,667,381, Cl. 433-79.000.
Young, Chihsin S.: *See—*
Chan, Darrell K.; and Young, Chihsin S., 5,668,580, Cl. 347-37.000.
Young Engineering, Inc.: *See—*
Young, William O., Jr.; Bell, Michael R.; and Lark, George, 5,667,122, Cl. 226-20.000.
Young, Mark Douglas; Erspamer, John Paul; Forry, Mark Edwin; and Berg, Charles John, Jr., to Proctor & Gamble Company, The. Dispensing package for discrete stage compressed diapers compressed diapers therefor, and method of dispensing such diapers. 5,666,787, Cl. 53-438.000.
Young, Richard Dean: *See—*
Parker, H. Galen; and Young, Richard Dean, 5,668,887, Cl. 382-108.000.
Young, Steven D.: *See—*
Payne, Linda S.; Young, Steven D.; and Zaborowski, Mary Jo L., 5,668,148, Cl. 514-314.000.
Young, William O., Jr.; Bell, Michael R.; and Lark, George, to Young Engineering, Inc. Apparatus and method for controlling moving material and the like. 5,667,122, Cl. 226-20.000.
Yout, Pierre: *See—*
Forestiere, Alain; Yout, Pierre; and Delhomme, Henri, 5,668,293, Cl. 585-269.000.
Yu, Dong: *See—*
Tan, Weitian; Iyer, Radhakrishnan P.; Jiang, Zhiwei; Yu, Dong; and Agrawal, Sudhir, 5,668,262, Cl. 536-22.100.
Yu, Philip Shi-lung: *See—*
Chen, Ming-Syan; and Yu, Philip Shi-lung, 5,668,988, Cl. 395-612.000.
Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of treating wrinkles using tartaric acid. 5,668,177, Cl. 514-574.000.
Yu, Wei-Ching; and Dwiggins, Carlton F., to Hoechst Celanese Corporation. Methods of making cross-ply microporous membrane battery separator, and the battery separators made thereby. 5,667,911, Cl. 429-144.000.
Yu, Zhizhou: *See—*
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.
Yuichi, Hioki: *See—*
Tadayuki, Suzuki; Keiko, Hasabe; Kazuhiko, Kurita; and Yuichi, Hioki, 5,668,086, Cl. 504-235.000.
Yu-Mei, Tien Lin. Milk powder container. 5,667,109, Cl. 222-456.000.
Yumoto, Takemi: *See—*
Sasaki, Masafumi; Yumoto, Takemi; Komatsu, Kazuki; and Shiragami, Noriyuki, 5,667,440, Cl. 463-29.000.
Yun, Richard Jay: *See—*
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Yurek, Aileen M.: *See—*
Dandridge, Anthony; Tveten, Alan B.; and Yurek, Aileen M., 5,668,779, Cl. 367-149.000.
Yusa, Masami; Takeda, Shinji; Masuko, Takashi; Miyadera, Yasuo; and Yamazaki, Mitsuo, to Hitachi Chemical Co. Ltd. Electrically conductive bonding films. 5,667,899, Cl. 428-473.500.
Yuschak, Gregory: *See—*
Debe, Mark K.; Miller, Lowell R.; Parsonage, Edward E.; Poirier, Richard J.; and Yuschak, Gregory, 5,666,949, Cl. 128-202.220.
Yuuki, Hayato: *See—*
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Zaborowski, Mary Jo L.: *See—*
Payne, Linda S.; Young, Steven D.; and Zaborowski, Mary Jo L., 5,668,148, Cl. 514-314.000.
Zagar, Paul S.; Manning, Troy A.; and Merritt, Todd, to Micron Technology, Inc. Synchronous burst extended data out DRAM. 5,668,773, Cl. 365-233.000.
Zak, Brian S.: *See—*
Schultz, Allan E.; Stageberg, Frank S.; Ash, Kenneth P.; and Zak, Brian S., 5,668,689, Cl. 360-113.000.
Zamanzadeh, Mehrooz: *See—*
Carey, Jay F., II; and Zamanzadeh, Mehrooz, 5,667,849, Cl. 427-431.000.
Zamarripa, Michael P.; and Mitchell, Martin R. Radar detector unit mounting device for attachment to rearview mirror. 5,667,176, Cl. 248-231.510.
Zampolli, Marco: *See—*
Richiardone, Valter; Rossetti, Furio; Zampolli, Marco; Tosco, Paolo; D'Oria, Francesco; Vitali, Mario; Buscotti, Aurelio; Mostarda, Franco; and Borri, Luigi, 5,667,537, Cl. 29-623.200.
Zanoli, Alberto, to Bieffebi S.p.A. Machine for mounting flexible printing plates on plate-holder cylinders of flexographic printing machines and for printing proofs. 5,666,881, Cl. 101-477.000.
Zanzottera, Daniele: *See—*
Grassi, Antonio; and Zanzottera, Daniele, 5,668,974, Cl. 711-157.000.
Zastrow, Leonhard; Stanzl, Klaus; and Röding, Joachim, to Lancaster Group AG. Preparation containing a fluorocarbon emulsion and usable as cosmetics or dermatics. 5,667,772, Cl. 424-18.020.
Zebco Div. of Brunswick Corporation: *See—*
Carpenter, Robert L.; Zurcher, John A.; Puryear, John W.; and Kim, Hyunkyu, 5,667,159, Cl. 242-233.000.
Zeck, Billy J.: *See—*
Casey, James M.; Bode, Suzanne L.; Zeck, Billy J.; Yamaguchi, Julie; Frail, Donald E.; Desai, Suresh M.; and Devare, Sushil G., 5,667,992, Cl. 435-69.300.
Zeifman, Yurii Vilovich: *See—*
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Zeneca Inc.: *See—*
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Zeneca Limited: *See—*
Clough, John Martin; Crowley, Patrick Jelf; and Delaney, John Stephen, 5,668,160, Cl. 514-364.000.
Phillips, Paul John; Ballard, Peter Grahame; Bradbury, Robert Hugh; and James, Roger, 5,668,137, Cl. 514-255.000.
Shribbs, John M.; Ensminger, Michael P.; and Green, Laddie L., 5,668,089, Cl. 504-348.000.
Zenith Electronics Corporation: *See—*
Bestler, Caitlin B.; Daily, Mack S.; and Yang, Shu-Yuan V., 5,668,946, Cl. 395-200.500.
Libman, Philomena C.; and Tello, Felix E., 5,667,655, Cl. 204-485.000.
Sgrignoli, Gary J., 5,668,498, Cl. 329-360.000.
Zexel Corporation: *See—*
Amemori, Masanori; Hasegawa, Toshiyuki; Miyamoto, Takeshi; Nozaki, Shinya; and Kobayashi, Takashi, 5,668,327, Cl. 73-861.770.
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ZF Friedrichshafen AG: *See—*

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Zhang, Junming: *See—*
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Zhang, Peisen, to Trustees of Columbia University in the City of New York, The. Method of mapping DNA fragments. 5,667,970, Cl. 435-6.000.
Zhang, Weide: *See—*
Zhang, Xiaoyun; Zheng, Dali; and Zhang, Weide, 5,667,469, Cl. 600-9.000.
Zhang, Xiaoyun; Zheng, Dali; and Zhang, Weide. Strong magnetism therapeutic apparatus with permanent-magnets rotating at low frequency. 5,667,469, Cl. 600-9.000.
Zhang, Yuan Qing, to Chi May Co., Ltd. Starch-based composition for preparing an environment degradable α-olefinic polymer molding material. 5,667,574, Cl. 106-209.100.
Zheng, Dali: *See—*
Zhang, Xiaoyun; Zheng, Dali; and Zhang, Weide, 5,667,469, Cl. 600-9.000.
Zheng, Jiazhen: *See—*
Pan, Yang; and Zheng, Jiazhen, 5,667,629, Cl. 438-13.000.
Zhu, Mingguang: *See—*
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Zias, Jeff A.: *See—*
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Zick, Kenneth Michael: *See—*
Houle, Robert Maurice; and Zick, Kenneth Michael, 5,668,983, Cl. 395-560.000.
Ziegler, Jochen; and Erhard, Helmut S., to Heidelberger Zement Aktiengesellschaft. Method for dry desulfurizing flue gases. 5,667,582, Cl. 106-761.000.
Ziegler, Kelly W., to Riverwood International Corporation. Stacked article cartoning apparatus. 5,666,789, Cl. 53-447.000.
Zimmerman, Betsy Ann: *See—*
Mason, Donald; and Zimmerman, Betsy Ann, 5,668,998, Cl. 395-701.000.
Zimmerman, Robert; and Marafino, Benedict J., Jr., to Chiron Corporation. Treatment for biological damage using tumor necrosis factor and a free-radical scavenger. 5,667,776, Cl. 424-85.100.
Zimmermann & Jansen GmbH: *See—*
Irnich, Franz-Josef, 5,667,196, Cl. 251-193.000.
Zinno, Raphael. Mobile telephone handset holder. 5,668,869, Cl. 379-449.000.
Ziolo, Ronald F.; Kroll, Elizabeth C., and Pieczynski, Rachel, to Xerox Corporation. High magnetization aqueous ferrofluids and processes for preparation and use thereof. 5,667,716, Cl. 252-62.520.
Ziolo, Ronald F., to Xerox Corporation. Superparamagnetic image character recognition compositions and processes of making and using. 5,667,924, Cl. 430-39.000.
Zirk, Wolfgang; and Bischof, Gerald, to Fichtel & Sachs AG. Bicycle, a front fork and a shock absorber mechanism for the front fork of a bicycle. 5,667,234, Cl. 280-276.000.
Zoiss, Edward J.; and Chavannes, Theodore E., to Harris Corporation. Electrically operated impact tool gun. 5,666,715, Cl. 29-566.400.
Zöller, Walter: *See—*
Bauer, Wolfgang; Baumgart, Dieter; and Zöller, Walter, 5,668,260, Cl. 534-806.000.
Zook, Christopher P., to Cirrus Logic, Inc. Error correction method and apparatus for disk drive emulator. 5,668,976, Cl. 395-500.000.
Zornia, Eugenia N.: *See—*
Kulik, Pavel P.; Ivanov, Vladimir V.; Zornia, Eugenia N.; and Gay, John A., 5,667,852, Cl. 427-577.000.
Zou, Han: *See—*
Tai, Ping-Kaung; and Zou, Han, 5,668,913, Cl. 385-146.000.
Zur, Benjamin, to Technion Research and Development Foundation. Furrow irrigation. 5,667,336, Cl. 405-37.000.
Zurcher, John A.: *See—*
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Zutant, Dennis V.: *See—*
Ramsburg, E. Douglas; Nassoiy, Stephen R.; and Zutant, Dennis V., 5,667,247, Cl. 283-61.000.
Zwerdling, Susan Schmaedecke: *See—*
Trinh, Toan; Cappel, Jerome Paul; Geis, Philip Anthony; McCarty, Mark Lee; Pilosof, David; and Zwerdling, Susan Schmaedecke, 5,668,097, Cl. 510-293.000.
Zynaxis, Inc.: *See—*
Kopia, Gregory A.; Horan, Paul K.; Gray, Brian D.; Troutner, David E.; Muirhead, Katharine A.; Sheth, Kamleshkumar A.; Lin, Chia-En; Yu, Zhizhou; Jensen, Bruce D.; and Slezak, Sue Ellen, 5,667,764, Cl. 424-1.450.
1138037 Ontario Ltd.: *See—*
Patchell, John W., 5,668,539, Cl. 340-903.000.
2C Optics, Inc.: *See—*
Bae, Young C.; Ottoboni, Thomas B.; Chan, Kwan; Nguyen, Thai Minh; Lim, Fredric J.; and Soane, David S., 5,667,735, Cl. 264-1.700.
3D Systems, Inc.: *See—*
Heller, Timmy B.; Hill, Ray M.; Greenhalgh, Michael R.; and Saggal, Abdalla F., 5,667,820, Cl. 425-135.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16th DAY OF SEPTEMBER, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ajinomoto Co., Inc.: *See—*
Otani, Masaru; and Tanabe, Toshiya, RE. 35,609, Cl. 536-22.100.

Iomega Corporation: *See—*
Perona, Mark W., RE. 35,606, Cl. 360-93.000.

Kanao, Yoshiyuki: *See—*
Nagamune, Akio; Tezuka, Koichi; and Kanao, Yoshiyuki, RE. 35,607, Cl. 364-561.000.

Lassiter, Robert F. Roofing material with nail tabs. RE. 35,603, Cl. 52-408.000.

McDonough, John T., Jr. Rake apparatus. RE. 35,604, Cl. 56-400.160.

Nagamune, Akio; Tezuka, Koichi; and Kanao, Yoshiyuki, to NKK Corporation. Distance measuring method and apparatus therefor. RE. 35,607, Cl. 364-561.000.

Nissan Motor Co., Ltd.: *See—*
Nomaru, Minoru; and Takahama, Atsushi, RE. 35,605, Cl. 294-119.100.

NKK Corporation: *See—*
Nagamune, Akio; Tezuka, Koichi; and Kanao, Yoshiyuki, RE. 35,607, Cl. 364-561.000.

Nomaru, Minoru; and Takahama, Atsushi, to Nissan Motor Co., Ltd. Work positioning device for assembly line. RE. 35,605, Cl. 294-119.100.

Otani, Masaru; and Tanabe, Toshiya, to Ajinomoto Co., Inc. Process for purifying 2', 3'-dideoxynucleosides. RE. 35,609, Cl. 536-22.100.

Perona, Mark W., to Iomega Corporation. Low profile tape drive for driving a mini-data cartridge. RE. 35,606, Cl. 360-93.000.

Sony Corporation: *See—*
Yamatani, Wataru, RE. 35,608, Cl. 369-13.000.

Takahama, Atsushi: *See—*
Nomaru, Minoru; and Takahama, Atsushi, RE. 35,605, Cl. 294-119.100.

Tanabe, Toshiya: *See—*
Otani, Masaru; and Tanabe, Toshiya, RE. 35,609, Cl. 536-22.100.

Tezuka, Koichi: *See—*
Nagamune, Akio; Tezuka, Koichi; and Kanao, Yoshiyuki, RE. 35,607, Cl. 364-561.000.

Yamatani, Wataru, to Sony Corporation. Recording and/or reproducing apparatus for using magneto-optical disc. RE. 35,608, Cl. 369-13.000.

Yancy, William C. Bird feeder device. RE. 35,610, Cl. 119-57.800.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Amano, Norio: *See—*
Hayashi, Motoshige; Amano, Norio; Taki, Takeshi; and Hirai, Takaaki, B1 000,991, Cl. 428-36.500.

Basic Fun, Inc.: *See—*
Kind, Michael; Dorfman, Alan; and Ku, Io N., B1 579,669, Cl. 83-13.000.

Davy, William, to Raxco, Inc. Method for eliminating file fragmentation and reducing average seek times in a magnetic disk media environment. B1 398,142, Cl. 360-48.000.

deAngelis, Alfredo O. Method of three-dimensional rapid prototyping through controlled layerwise deposition/extraction and apparatus therefor. B1 398,193, Cl. 364-468.260.

Dorfman, Alan: *See—*
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Mullen, Timothy J. Picture frame. 383,794, Cl. D6-300.000.
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Usuriello, Richard V. Carrying case. 383,605, Cl. D3-284.000.
Van Akkeren, John W.; and Stone, Matthew A., to Health o meter, Inc. Scale housing. 383,685, Cl. D10-52.000.
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Van Wyk, Robert A., to LaserArt Corporation; Renaissance Irrevocable Trust; and AMF Irrevocable Trust. Combination key tag and bottle opener. 383,651, Cl. D8-34.000.
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Walther, John D.; and Brookshire, Phillip L., to Health o meter, Inc. Scale housing. 383,686, Cl. D10-92.000.
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Waszkiewicz, John C., III, to FasterForm Corporation. Bevelled mirrored planter. 383,707, Cl. D11-155.000.
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Zheng, Yu. Constructional toy piece. 383,805, Cl. D21-108.000.

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CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 16, 1997

NOTE—First number, class; second number, subclass; third number, patent number

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195.1 5,666,669
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162 5,667,639
203 5,667,640
207 5,667,641
358.1 5,667,642

CLASS 165

41 5,667,004
114 5,667,005
151 5,667,006
153 5,667,007
274 5,667,003

CLASS 166

65.1 5,667,008
5,667,009
292 5,667,010
295 5,667,011
308 5,667,012
348 5,667,013
378 5,667,014
383 5,667,015
387 5,667,016

CLASS 169

38 5,667,017
54 5,667,018

CLASS 172

49.5 5,667,019
781 5,667,020

CLASS 173

21 5,667,021
105 5,667,022

CLASS 174

16.3 5,668,348
17 VA 5,668,349
50 5,668,350
68.3 5,668,351

CLASS 175

45 5,667,023
71 B1 5,388,650
72 5,667,024
78 5,667,025
162 5,667,026
325.3 5,667,027
428 5,667,028

CLASS 178

18 5,668,352
5,668,353
B1 4,878,553

CLASS 180

65.2 5,667,029
68.4 5,667,030
193 5,667,031
227 B1 4,765,432
256 5,667,032
272 5,667,033
422 5,667,034

CLASS 181

135 5,668,354

CLASS 182

142 5,667,035

CLASS 184

6.12 5,667,036
39 5,667,037

CLASS 185

27 5,667,038

CLASS 187

316 5,668,355
334 5,667,039
382 5,668,356

CLASS 188

52 5,667,040
284 5,667,041

CLASS 192

3.29 5,667,042
5,667,043
3.58 5,667,044
18 A 5,667,045
45 5,667,046
55.61 5,667,047
70.25 5,667,048
5,667,049
84.961 5,667,050
85 R 5,667,051
5,667,052
214.1 5,667,053

CLASS 198

370.04 5,667,054
419.3 5,667,055
463.5 5,667,056
742 5,667,057
831 5,667,058

CLASS 200

5 A 5,668,358
5 R 5,668,357
6 B 5,668,359
296 5,667,059
302.1 5,667,060
533 5,667,061
536 5,667,062

CLASS 202

154 5,667,643

CLASS 203

17 5,667,644

CLASS 204

192.13 5,667,645
217 5,667,646
237 5,667,647
245 5,667,648
290 R 5,667,649
298.07 5,667,650
401 5,667,651
412 5,667,652
431 5,667,653
458 5,667,654
485 5,667,655
603 5,667,656
604 5,667,657

CLASS 205

50 5,667,658
59 5,667,660
95 5,667,851
109 5,667,659
138 5,667,661
162 5,667,662
170 5,667,663
372 5,667,664
589 5,667,665
640 5,667,666
687 5,667,667
698 5,667,668

CLASS 206

204 5,667,063
214 5,667,064
278 5,667,066
355 5,667,067
363 5,667,068
370 5,667,069
427 5,667,070
455 5,667,071
523 5,667,072
599 5,667,065
713 5,667,073

CLASS 208

131 5,667,669

CLASS 209

224 5,667,074
303 5,667,075
447 5,667,076
573 5,667,077
584 5,667,078
589 5,667,079
614 5,667,080

CLASS 210

86 5,667,670
151 5,667,671
169 5,667,672
170 5,667,673
198.2 5,667,674
5,667,675
5,667,676
222 5,667,677
232 5,667,678
5,667,679
331 5,667,680
374 5,667,681
407 5,667,682
409 5,667,683
506 5,667,684
510.1 5,667,685
512.1 5,667,686
512.2 5,667,687
605 5,667,688
621 5,667,689
631 5,667,690
634 5,667,691
635 5,667,692
5,667,693
679 5,667,694
681 5,667,695
702 5,667,696
727 5,667,697
761 5,667,698
800 5,667,699

CLASS 211

10 5,667,081
15 5,667,082
41.12 5,667,083

CLASS 215

11.4 5,667,084
220 5,667,085
251 5,667,086
252 5,667,087
5,667,088
351 5,667,089

CLASS 216

12 5,667,700
13 5,667,631
61 5,667,701

CLASS 218

5 5,668,360
118 5,668,361

CLASS 219

75 5,667,702
5,667,703
108 5,667,704
121.52 5,667,705
121.64 5,667,706
121.67 5,667,707
5,667,708
137 PS 5,667,709
202 5,667,710
505 5,667,711
535 5,667,712
544 5,667,713
753 5,667,714

CLASS 220

6 5,667,090
224 5,667,091
259 5,667,092
293 5,667,093
339 5,667,094
640 5,667,095

CLASS 221

6 5,667,096
93 5,667,097

CLASS 222

1 5,667,098
5,667,099
92 5,667,101
95 5,667,102
129 5,667,103
143 5,667,104
148 5,667,105
158 5,667,106
173 5,667,107
181 1 5,667,108
386.5 5,667,110
456 5,667,109
508 5,667,111
539 5,667,112
608 5,667,113

CLASS 224

270 5,667,114
275 5,667,115
319 5,667,116
417 5,667,117
430 5,667,118
482 5,667,119
542 5,667,120

CLASS 225

43 5,667,121

CLASS 226

20 5,667,122
21 5,667,123
191 5,667,125

CLASS 227

109 5,667,126
142 5,667,127

CLASS 228

49.5 5,667,128
102 5,667,129
110.1 5,667,130
173.5 5,667,131
180.22 5,667,132
219 5,667,133

CLASS 229

403 5,667,135
928 5,667,134

CLASS 232

43.2 5,667,136

CLASS 235

467 5,668,362
468 5,668,363
472 5,668,364
486 5,668,365

CLASS 239

14.2 5,667,137
225.1 5,667,138
263.3 5,667,139
265.33 5,667,140
332 5,667,141
346 5,667,142
415 5,667,143
491 5,667,144
533.12 5,667,145
587.1 5,667,146

CLASS 241

1 5,667,147
3 5,667,148
18 5,667,149
5,667,150
20 5,667,151
24 13 5,667,156
27 5,667,157
33 5,667,158
37.5 5,667,152
82.5 5,667,153
184 5,667,154

CLASS 242

50 5,667,155
233 5,667,159
348 5,667,160
374 5,667,161
533.4 5,667,162
557 5,667,163
564.4 5,667,164
588.2 5,667,165
615.11 5,667,124

CLASS 244

76 C 5,667,166
110 E 5,667,167
117 A 5,667,168
129.5 5,667,169
135 A 5,667,170
165 5,667,171

CLASS 248

74.2 5,667,177
98 5,667,172
100 5,667,173
156 5,667,174
166 5,667,175
231.51 5,667,176
262 5,667,178
278.1 5,667,179
311 2 5,667,180
343 5,667,181
448 5,667,182
451 5,667,183
500 5,667,184
541 5,667,185
550 5,667,186
551 5,667,187
558 5,667,188
601 5,667,189

CLASS 249

16 5,667,190
61 5,667,191
82 5,667,192

CLASS 250

221 5,668,366
227.2 5,668,367
251 5,668,368
269.5 5,668,369
288 5,668,370
306 5,668,371
310 5,668,372
339.12 5,668,373
5,668,374
370.09 5,668,375
495.1 5,668,376
504 R 5,668,377

CLASS 251

104 5,667,193
129.01 5,667,194
149.6 5,667,195
193 5,667,196
5,667,197
300 5,667,198

CLASS 252

62.52 5,667,715
5,667,716
62.62 5,667,717
70 5,667,718
182.27 5,668,378
299.01 5,667,719
5,667,720
299.61 5,667,721
5,667,722
301.4 R 5,667,723
301.6 R 5,667,724
309 5,667,725
315.2 5,667,726
331 5,667,727
350 5,667,728
508 5,667,729

CLASS 256

65 5,667,199

CLASS 257

59 5,668,379
66 5,668,380
72 5,668,381
77 5,668,382
80 5,668,383
106 5,668,384
139 5,668,385
184 5,668,386
192 5,668,387
197 5,668,388
207 5,668,389
232 5,668,390
328 5,668,391
340 5,668,392
398 5,668,393
413 5,668,394
441 5,668,395
517 5,668,396
520 5,668,397
522 5,668,398
532 5,668,399
618 5,668,400
620 5,668,401
627 5,668,402
639 5,668,403
668 5,668,404
5,668,405
690 5,668,406
692 5,668,407
699 5,668,408
723 5,668,409
737 5,668,410
751 5,668,411
773 5,668,412
774 5,668,413

CLASS 261

18.3 5,667,730
24 5,667,731
28 5,667,732
30 5,667,733
71 5,667,734

CLASS 264

1.7 5,667,735
2.5 5,667,736
40.1 5,667,737
45.5 5,667,738
50 5,667,739
54 5,667,740
5,667,741
86 5,667,548
184 5,667,743
219 5,667,200
225 5,667,744
275 5,667,745
321 5,667,746
510 5,667,747
515 5,667,748
555 5,667,749
5,667,750
658 5,667,742

CLASS 266

196 5,667,201

CLASS 267

33 5,667,202
64 23 5,667,203
136 5,667,204
140.13 5,667,205
148 5,667,206

CLASS 269

17 5,667,207
21 5,667,208
93 5,667,209

CLASS 270

37 5,667,210
52.16 5,667,211
5,667,212
58.03 5,667,213

CLASS 271

225 5,667,214
258.01 5,667,215

CLASS 273

126 R 5,667,217
138.3 5,667,218
143 R 5,667,219
148 B 5,667,220
153 R 5,667,221
261 5,667,223

CLASS 277

3 5,667,224
68 5,667,225
189 5,667,226
227 5,667,227

CLASS 279

143 5,667,228

CLASS 280

22 5,667,229
79.11 5,667,230
149.2 5,667,231
202 5,667,232
238 5,667,233
276 5,667,234
304.1 5,667,235
5,667,236
607 5,667,237
609 5,667,238
646 5,667,239
712 5,667,240
730.2 5,667,241
5,667,242
5,667,243
735 5,667,244
763.1 5,667,245
806 5,667,246

CLASS 283

61 5,667,247
67 5,667,248
70 5,667,249
102 5,667,250

CLASS 285

12 5,667,251
15 5,667,252
26 5,667,253
123.14 5,667,254
133.4 5,667,255
148.23 5,667,256
212 5,667,257

CLASS 290

1 E 5,668,414

CLASS 292

113 5,667,258
201 5,667,259
5,667,260
247 5,667,261
288 5,667,262
336.3 5,667,263

CLASS 294

1.4 5,667,264
27.1 5,667,265
119.1 Re.35,605
170 5,667,266

CLASS 296

26 5,667,267
100 5,667,268
107 5,667,269
192 5,667,271

CLASS 297

140 5,667,272
171 5,667,273
338 5,667,274
408 5,667,275
410 5,667,276
411.36 5,667,277
423.13 5,667,278

CLASS 299

1.9 5,667,279

CLASS 301

5.3 5,667,280
37.37 5,667,281

CLASS 303

3 5,667,282
115.2 5,667,283
5,667,284
116.2 5,667,285
140 5,667,286

CLASS 307

9.1 5,668,415
10.5 5,668,416
64 5,668,417
105 5,668,418
126 5,668,419

CLASS 310

11 5,668,420
12 5,668,421
71 5,668,422
81 5,668,423
103 5,668,424
162 5,668,425
168 5,668,426
216 5,668,427
233 5,668,428
254 5,668,429
266 5,668,430
313 R 5,668,431
328 5,668,432
339 5,668,439

CLASS 312

108 5,667,287
211 5,667,288

CLASS 313

313 5,668,433
346 R 5,668,434
414 5,668,435
440 5,668,436
495 5,668,437
504 5,668,438
635 5,668,440
637 5,668,441

CLASS 315

39 5,668,442
169.1 5,668,443
224 5,668,444
241 P 5,668,445
294 5,668,446
368.26 5,668,447
382.1 5,668,448

CLASS 318

254 5,668,449
5,668,450
466 5,668,451
568.16 5,668,452
568.17 5,668,453
602 5,668,455
5,668,456
606 5,668,457
716 5,668,458
798 5,668,459

CLASS 320

2 5,668,460
5 5,668,461
12 5,668,462
15 5,668,463
39 5,668,465

CLASS 323

259 5,668,464
282 5,668,466
315 5,668,467
316 5,668,468

CLASS 324

121 R 5,668,469
202 5,668,470
207.21 5,668,471
248 5,668,472
252 5,668,473
309 5,668,474
339 5,668,475
546 5,668,476
613 5,668,477
690 5,668,478
695 5,668,479
709 5,668,480

CLASS 326

16 5,668,481
31 5,668,482
34 5,668,483
93 5,668,484
108 5,668,485

CLASS 327

66 5,668,486
80 5,668,487
108 5,668,488
173 5,668,489
203 5,668,490
277 5,668,491
291 5,668,492
309 5,668,493
416 5,668,494
432 5,668,495
457 5,668,496
544 5,668,497

CLASS 329

360 5,668,498

CLASS 330

118 5,668,499
253 5,668,500
254 5,668,501
5,668,502

CLASS 331

1 A 5,668,503
5,668,504
49 5,668,505
66 5,668,506
78 5,668,507
111 5,668,508

CLASS 333

33 5,668,509
127 5,668,510
204 5,668,511
247 5,668,512
252 5,668,513
261 5,668,514

CLASS 335

216 5,668,515
5,668,516
257 5,668,517
296 5,668,518
302 5,668,519

CLASS 336

84 R 5,668,520

CLASS 337

186 5,668,521
198 5,668,522

CLASS 338

32 R 5,668,523
308 5,668,524

CLASS 340

146.2 5,668,525
326 5,668,526
396.1 5,668,527
436 5,668,528
454 5,668,529
471 5,668,530
506 5,668,531
5,668,532
547 5,668,533
605 5,668,534
607 5,668,535
620 5,668,536
825.06 5,668,537
870.02 5,668,538
903 5,668,539
933 5,668,540
959 5,668,541
971 5,668,542
994 5,668,543

CLASS 341

26 5,668,544
50 5,668,545
59 5,668,546
63 5,668,547
67 5,668,548
118 5,668,549
119 5,668,550
120 5,668,551
143 5,668,552
154 5,668,553

CLASS 342

20 5,668,554
179 5,668,555
242 5,668,588
354 5,668,556

CLASS 343

700 MS 5,668,557
5,668,558
702 5,668,559
5,668,560
5,668,561
703 5,668,562
713 5,668,563
791 5,668,564
895 5,668,565

CLASS 345

2 5,668,566
60 5,668,567
83 5,668,568
103 5,668,569
113 5,668,571
150 5,668,572
156 5,668,573
158 5,668,574
163 5,668,575
173 5,668,570
5,668,576
197 5,668,577
333 5,668,959
5,668,960
339 5,668,961
340 5,668,962
352 5,668,965
356 5,668,966
427 5,668,939
429 5,668,940
434 5,668,941
509 5,668,979
523 5,668,980

CLASS 346

74.3 5,668,578

CLASS 347

10 5,668,579
37 5,668,580
5,668,581
49 5,668,582
71 5,668,583
102 5,668,584
220 5,668,585
221 5,668,586
237 5,668,587
253 5,668,589
256 5,668,590

CLASS 348

12 5,668,591
13 5,668,592
17 5,668,738
146 5,668,593
194 5,668,594
218 5,668,595
222 5,668,596
350 5,668,597
402 5,668,598
5,668,599
416 5,668,600
423 5,668,601
448 5,668,602
473 5,668,603
562 5,668,604
584 5,668,605
625 5,668,606
699 5,668,608
700 5,668,609
723 5,668,610
771 5,668,611
818 5,668,612

CLASS 349

38 5,668,613
42 5,668,649
5,668,650
115 5,668,614
126 5,668,615
128 5,668,616
156 5,668,617
5,668,651

CLASS 351

44 5,668,618
118 5,668,619
158 5,668,620
206 5,668,621
209 5,668,622
212 5,668,623

CLASS 355

53 5,668,624
73 5,668,625

CLASS 356

3.08 5,668,626
73.1 5,668,627
139.03 5,668,628
139.05 5,668,629
237 5,668,630
376 5,668,631
402 5,668,632
5,668,633
445 5,668,634

CLASS 358

296 5,668,635
5,668,636
5,668,637
298 5,668,638
434 5,668,640
436 5,668,641
437 5,668,642
455 5,668,643
480 5,668,644
487 5,668,645
530 5,668,646

CLASS 359

4 5,668,647
9 5,668,648
125 5,668,652
140 5,668,653
152 5,668,654
198 5,668,655
208 5,668,656
315 5,668,657
341 5,668,658
5,668,659
380 5,668,660
5,668,661
452 5,668,662
608 5,668,663
634 5,668,664
663 5,668,665
674 5,668,666
683 5,668,667
5,668,668
684 5,668,669
694 5,668,670
716 5,668,671
727 5,668,672
731 5,668,673
835 5,668,674
843 5,668,675

CLASS 360

46 5,668,676
48 5,668,677
B1 5,398,142
51 5,668,678
75 5,668,679
78.07 5,668,680
93 Re.35,606
96.4 5,668,681
105 5,668,682
5,668,683
106 5,668,684
113 5,668,685
5,668,686
5,668,687
5,668,688
5,668,689
137 5,668,690

CLASS 361

13 5,668,691
93 5,668,692
187 5,668,693
321.4 5,668,694
683 5,668,695
685 5,668,696
5,668,697
5,668,698
753 5,668,699
779 5,668,700
816 5,668,701
820 5,668,702

CLASS 362

31 5,667,289
72 5,667,290
105 5,667,291
106 5,667,292
184 5,667,293
250 5,667,294
252 5,667,295
267 5,667,296
297 5,667,297

CLASS 363

16 5,668,703
19 5,668,704
21 5,668,705
5,668,706
44 5,668,707
46 5,668,708
60 5,668,709
5,668,710
62 5,668,711
95 5,668,712
5,668,713
131 5,668,715

CLASS 364

131 5,668,714
5,668,716
148 5,668,717
420 5,668,719
464.2 5,668,729
468.26 B1 5,398,193
470.09 5,668,730
474.08 5,668,731
483 5,668,732
488 5,668,733
497 5,668,734
5,668,735
512 5,668,736
550 5,668,740
551.01 5,668,741
559 5,668,742
561 Re.35,607
5,668,743
574 5,668,744
580 5,668,745
724.14 5,668,746
724.19 5,668,747
725.03 5,668,748
736.01 5,668,749
841 5,668,750

CLASS 365

96 5,668,751
104 5,668,752
145 5,668,753
5,668,754
182 5,668,755
185.03 5,668,756
185.1 5,668,757
185.23 5,668,758
185.29 5,668,759
189.01 5,668,760
189.05 5,668,761
189.11 5,668,762
200 5,668,763
201 5,668,764
205 5,668,765
207 5,668,766
221 5,668,767
226 5,668,769
227 5,668,770
230.03 5,668,771
230.06 5,668,772
233 5,668,773
5,668,774

CLASS 366

18 5,667,298
145 5,667,299

CLASS 367

19 5,668,775
89 5,668,776
96 5,668,777
135 5,668,778
149 5,668,779
198 5,668,780

CLASS 368

28 5,668,781
107 5,668,782
250 5,668,783
282 5,668,784

CLASS 369

5 5,668,785
13 Re.35,608
5,668,786
5,668,787
30 5,668,788
32 5,668,954
47 5,668,789
77.2 5,668,793
194 5,668,790
247 5,668,791
271 5,668,792

CLASS 370

209 5,668,795
217 5,668,796
229 5,668,797
230 5,668,798
5,668,799
248 5,668,800
253 5,668,801
276 5,668,802
288 5,668,794
312 5,668,803
331 5,668,804
335 5,668,805
342 5,668,806
378 5,668,807
5,668,808
392 5,668,809
5,668,810
424 5,668,811
474 5,668,812
514 5,668,813
540 5,668,814

CLASS 371

21.2 5,668,815
21.3 5,668,816
22.31 5,668,818
22.4 5,668,817
25.1 5,668,819
43.1 5,668,820

CLASS 372

6 5,668,821
32 5,668,826
36 5,668,822
50 5,668,823
54 5,668,824
101 5,668,825

CLASS 373

156 5,668,827

CLASS 374

43 5,667,300
5,667,301
54 5,667,302
102 5,667,303

137 5,667,304
148 5,667,305
208 5,667,306

CLASS 375

202 5,668,828
208 5,668,829
220 5,668,830
232 5,668,831
233 5,668,832
5,668,833
257 5,668,834
298 5,668,835
308 5,668,842
316 5,668,836
5,668,837
340 5,668,838
347 5,668,839
368 5,668,840
371 5,668,841

CLASS 376

272 5,668,843
443 5,668,728

CLASS 378

2 5,668,844
4 5,668,845
5,668,846
19 5,668,851
65 5,668,847
125 5,668,848
133 5,668,849
210 5,668,850

CLASS 379

67 5,668,853
88 5,668,854
89 5,668,855
5,668,856
93.07 5,668,857
100.01 5,668,858
101.01 5,668,859
130 5,668,955
196 5,668,860
201 5,668,861
5,668,862
202 5,668,863
356 5,668,864
377 5,668,870
406 5,668,871
410 5,668,865
412 5,668,866
433 5,668,867
447 5,668,868
449 5,668,869

CLASS 380

4 5,668,872
5 5,668,873
23 5,668,874
5,668,875
25 5,668,876
30 5,668,877
5,668,878
41 5,668,879
49 5,668,880
51 5,668,881
52 5,668,639

CLASS 381

24 5,668,882
72 5,668,883
82 5,668,884
98 5,668,885
199 5,668,886

CLASS 382

103 5,668,739
108 5,668,887
132 5,668,888
5,668,889
167 5,668,890
168 5,668,891
177 5,668,892
197 5,668,893
242 5,668,894
260 5,668,895
282 5,668,896
283 5,668,897
290 5,668,898

CLASS 383

107 5,667,307

CLASS 384

99 5,667,308
132 5,667,309
137 5,667,310
441 5,667,311
446 B1 4,778,286
450 5,667,312
544 5,667,313
619 5,667,314

CLASS 385

33 5,668,899
37 5,668,900
5,668,901
38 5,668,902
5,668,903
72 5,668,904
78 5,668,905
83 5,668,906
100 5,668,912
120 5,668,907
128 5,668,908
134 5,668,909
5,668,910
135 5,668,911
146 5,668,913

CLASS 386

46 5,668,914
5,668,915
47 5,668,916
52 5,668,917
111 5,668,918

CLASS 392

361 5,668,920
379 5,668,921
441 5,668,922

CLASS 395

87 5,668,930
104 5,668,931
109 5,668,932
110 5,668,933
5,668,934
5,668,935
112 5,668,942
114 5,668,936
115 5,668,937
5,668,938
182.05 5,668,943
183.06 5,668,947
184.01 5,668,944
186 5,668,945
200.31 5,668,949
200.47 5,668,950
200.5 5,668,946
200.61 5,668,948
200.65 5,668,951
200.75 5,668,952
306 5,668,956
308 5,668,958
309 5,668,957
350 5,668,964
500 5,668,976
5,668,977
5,668,978
559 5,668,981
5,668,982
560 5,668,983
563 5,668,984
595 5,668,985
603 5,668,987
610 5,668,986
612 5,668,988
5,668,989
615 5,668,990
618 5,668,991
651 5,668,992
671 5,668,993
672 5,668,994
674 5,668,995
681 5,668,996
683 5,668,997
701 5,668,998
704 5,668,999
5,669,000
706 5,669,001
726 5,669,002
750.04 5,669,003
750.06 5,669,004
777 5,669,005
779 5,669,006
5,669,007
800.01 5,668,737
5,669,012
800.12 5,669,008
800.22 5,669,010
800.23 5,669,011
800.35 5,669,009
825 5,669,013
842 5,668,967
5,669,014
893 5,669,015

CLASS 396

6 5,669,016
5,669,017
5,669,018
25 5,669,019
27 5,669,020
72 5,669,021
111 5,669,022
128 5,667,270
129 5,669,023
176 5,669,024
268 5,668,919
360 5,669,025
440 5,669,026
535 5,669,027
5,669,028
566 5,669,029
567 5,669,030
569 5,669,031
579 5,669,032
612 5,669,033
615 5,669,034
626 5,669,035

CLASS 399

53 5,669,036
58 5,669,037
67 5,669,038
68 5,669,039
83 5,669,040
102 5,669,041
111 5,669,042
116 5,669,043
120 5,669,044
159 5,669,045
167 5,669,046
174 5,669,047
206 5,669,048
265 5,669,049
270 5,669,050
277 5,669,051
308 5,669,052
313 5,669,053
5,669,054
345 5,669,055
367 5,669,056
369 5,669,057
382 5,669,058

CLASS 400

78 5,667,315
120.16 5,667,316
197 5,667,317
208 5,667,318
472 5,667,319
5,667,320
642 5,667,321

CLASS 402

8 5,667,322
26 5,667,323
46 5,667,324

CLASS 403

119 5,667,325
176 5,667,326
231 5,667,327
282 5,667,328
327 5,667,329
328 5,667,330
359 5,667,331
5,667,332
369 5,667,333

CLASS 404

9 5,667,334
14 5,667,335

CLASS 405

31.2 5,668,852
37 5,667,336
63 5,667,337
66 5,667,338
130 5,667,339
223 5,667,340
228 5,667,341

CLASS 406

122 5,667,342

CLASS 407

36 5,667,343
118 5,667,344

CLASS 408

1 R 5,667,345

CLASS 411

10 5,667,346
150 5,667,347
420 5,667,348

CLASS 413

25 5,667,349

CLASS 414

141.1 5,667,350
225 5,667,351
667 5,667,352
744.3 5,667,353
744.5 5,667,354
797.7 5,667,355

CLASS 415

34 5,667,356
110 5,667,357
173.2 5,667,358

CLASS 416

96 A 5,667,359
183 5,667,360
193 R 5,667,361

CLASS 417

41 5,667,362
44.1 5,667,363
151 5,667,364
5,667,365
198 5,667,366
313 5,667,367
385 5,667,368
448 5,667,369

CLASS 418

9 5,667,370
55.1 5,667,371
63 5,667,372

CLASS 419

12 5,669,059

CLASS 420

8 5,667,751
494 5,667,752

CLASS 422

29 5,667,753
36.2 5,667,857
61 5,667,754
101 5,667,755
186.18 5,667,756
198 5,667,757
5,667,758

CLASS 423

61 5,667,759
224 5,667,760
305 5,667,761
345 5,668,188

CLASS 424

1.11 5,667,762
5,667,763
1.45 5,667,764
9.2 5,667,766
9.411 5,667,767
9.451 5,668,196
18.02 5,667,772
59 5,667,765
61 5,667,768
64 5,667,770
70.1 5,667,769
70.12 5,667,771
78.05 5,667,773
78.08 5,667,774
78.11 5,667,775
85.1 5,667,776
93.1 5,667,777
93.462 5,667,779
93.7 5,667,778
139.1 5,667,780
143.1 5,667,781
192.1 5,667,782
195.1 5,667,783
204.1 5,667,784
221.1 5,667,785
236.1 5,667,786
253.1 5,667,787
401 5,667,789
5,667,790
5,667,791
5,667,792
5,667,793
5,667,794
405 5,667,795
422 5,667,796
439 5,667,797
449 5,667,798
5,667,799
450 5,667,800
457 5,667,801
464 5,667,802
465 5,667,803
472 5,667,804
473 5,667,805
484 5,667,806
489 5,667,807
501 5,667,808
5,667,809
520 5,667,810
530 5,667,811
659 5,667,816
661 5,667,817

CLASS 425

46 5,667,812
71 5,667,813
72.2 5,667,814
119 5,667,815
130 5,667,819
133.1 5,667,818
135 5,667,820
218 5,667,821
275 5,667,822

CLASS 426

3 5,667,823
5 5,667,824
74 5,667,825
104 5,667,826
129 5,667,827
231 5,667,828
238 5,667,829
330.3 5,667,830
5,667,831
394 5,667,832
496 5,667,833
503 5,667,834
521 5,667,835
563 5,667,836
603 5,667,837
633 5,667,838
657 5,667,839

CLASS 427

8 5,667,840
235 5,667,841
258 5,667,842
305 5,667,843
318 5,667,844
337 5,667,845
379 5,667,846
385.5 5,667,847
389.9 5,667,848
431 5,667,849
510 5,667,850
577 5,667,852

CLASS 428

1 5,667,853
5,667,854
8 5,667,855
5,667,856
34.6 B1 5,000,991
36.5 5,667,858
41.8 5,667,859
59 5,667,860
64.1 5,667,861
64.3 5,667,862
5,667,863
68 5,667,864
74 5,667,865
92 5,667,866
116 5,667,867
5,667,868
120 5,667,869
131 5,667,870
5,667,871
136 5,667,872
141 5,667,873
5,667,874
178 5,667,875
182 5,667,876
192 5,667,877
195 5,667,878
198 5,667,879
209 5,667,880
212 5,667,881
272 5,667,883
321.5 5,667,884
323 5,667,885
327 5,667,886
331 5,667,887
332 5,667,888
336 5,667,889
353 5,667,890
364 5,667,891
389 5,667,892
403 5,667,893
413 5,667,894
5,667,895
424.4 5,667,896
425.6 5,667,897
426 5,667,898
469 5,667,899
473.5 5,667,900
474.7 5,667,901
482 5,667,902
518 5,667,903
558 5,667,904
627 5,667,905
690 5,667,906

CLASS 429

90 5,667,907
94 5,667,908
96 5,667,909
127 5,667,910
128 5,667,911
144 5,667,912
170 5,667,913
192 5,667,914
194 5,667,915
211 5,667,916
218 5,667,917
228

CLASS 430

5 5,667,918
5,667,919
5,668,018
7 5,667,920
5,667,921
9 5,667,922
30 5,667,923
39 5,667,924
59 5,667,925
97 5,667,926
106 5,667,929
109 5,667,927
134 5,667,928
176 5,667,930
191 5,667,931
192 5,667,932
200 5,667,933
256 5,667,935
264 5,667,936
270.1 5,667,937
5,667,938
280.1 5,667,934
302 5,667,939
312 5,667,940
313 5,667,941
327 5,667,942
343 5,667,943
359 5,667,944
380 5,667,945
386 5,667,946
414 5,667,947
463 5,667,948
489 5,667,949
510 5,667,950
551 5,667,951
558 5,667,952
567 5,667,953
5,667,954
5,667,955
5,667,956
600 5,667,956
603 5,667,957
604 5,667,958
607 5,667,959
622 5,667,960

CLASS 431

7 5,667,374
12 5,667,375
115 5,667,376
344 5,667,377

CLASS 432

241 5,667,378
258 5,667,379

CLASS 433

5 5,667,380
79 5,667,381
92 5,667,382
132 5,667,383
172 5,667,384
201.1 5,667,385
213 5,667,386

CLASS 434

224 5,667,387

CLASS 435

1 5,667,961
1.2 5,667,962
2 5,667,963
5 5,667,964
5,667,965
5,667,966
6 5,667,967
5,667,969
5,667,970
5,667,971
5,667,972
5,667,973
5,667,974
5,667,975
5,667,976
7.1 5,667,978
7.23 5,667,981
7.24 5,667,982
7.4 5,667,979
7.8 5,667,980
14 5,667,983
18 5,667,984
29 5,667,985

69.1 5,667,986
5,667,987
5,667,988
5,667,989
5,667,990
5,667,991
69.3 5,667,992
91.2 5,667,993
5,667,994
135 5,667,995
146 5,667,996
172.3 5,667,997
5,667,998
189 5,667,999
5,668,000
194 5,668,004
5,668,005
232 5,668,001
252.3 5,668,006
5,668,007
254.1 5,668,008
263 5,668,009
287.9 5,668,010
309.1 5,668,011
320.1 5,668,012
5,668,013
325 5,668,002
335 5,668,003

CLASS 436

110 5,668,014
146 5,668,015
179 5,668,016
518 5,668,017

CLASS 437

61 5,668,043
303 5,668,020

CLASS 438

5 5,668,063
13 5,667,629
18 5,668,042
31 5,668,047
33 5,668,049
46 5,668,048
69 5,668,050
106 5,668,056
108 5,668,058
113 5,668,033
5,668,057
118 5,668,059
123 5,668,060
144 5,668,032
163 5,668,019
199 5,668,024
207 5,668,025
238 5,668,037
239 5,668,035
240 5,668,041
253 5,668,036
266 5,668,034
272 5,668,026
275 5,668,031
278 5,668,029
282 5,668,021
287 5,668,028
303 5,668,065
305 5,668,027
320 5,668,022
387 5,668,039
396 5,668,038
5,668,040
401 5,668,030
433 5,668,044
459 5,668,045
462 5,668,062
463 5,668,061
481 5,668,046
558 5,668,051
570 5,667,632
624 5,668,052
625 5,668,053
637 5,668,055
5,668,064
653 5,667,630
5,668,054

CLASS 439

74 5,667,388
75 5,667,389
76.1 5,667,390
79 5,667,391
5,667,392
83 5,667,393
86 5,667,394
131 5,667,395
160 5,667,396
188 5,667,397
248 5,667,398
341 5,667,399
395 5,667,400
405 5,667,401
409 5,667,402
489 5,667,403
578 5,667,404
585 5,667,405
587 5,667,406
610 5,667,407
630 5,667,408
654 5,667,409
700 5,667,410
701 5,667,411
751 5,667,412
843 5,667,413
849 5,667,414

CLASS 440

66 5,667,415

CLASS 441

130 5,667,416

CLASS 442

388 5,667,882

CLASS 445

24 5,667,417
25 5,667,418

CLASS 446

72 5,667,419
433 5,667,420
470 5,667,421

CLASS 450

30 5,667,422

CLASS 451

5 5,667,423
6 5,667,424
27 5,667,425
41 5,667,426
45 5,667,427
70 5,667,428
87 5,667,429
5,667,430
88 5,667,431
242 5,667,432
287 5,667,433
552 5,667,434

CLASS 452

138 5,667,435
149 5,667,436

CLASS 454

302 5,667,437

CLASS 455

69 5,669,066
76 5,669,067
83 5,669,068
429 5,669,061
436 5,669,060
506 5,669,063
509 5,669,062
517 5,669,064
523 5,669,065
558 5,669,069

CLASS 463

9 5,667,438
20 5,667,439
29 5,667,440
47.7 5,667,441

CLASS 464

49 5,667,442

CLASS 470

12 5,667,443

CLASS 472

92 5,667,444
117 5,667,445

CLASS 473

73 A 5,667,216
134 5,667,222
212 5,667,447

CLASS 474

18 5,667,448
28 5,667,449
157 5,667,450

CLASS 475

44 5,667,451
81 5,667,452
129 5,667,453
205 5,667,454
331 5,667,455

CLASS 476

42 5,667,456

CLASS 477

156 5,667,457
169 5,667,458

CLASS 482

4 5,667,459
8 5,667,460
69 5,667,461
80 5,667,462
97 5,667,463
5,667,464
100 5,667,465
105 5,667,466

CLASS 493

342 5,667,467
475 5,667,468

CLASS 501

45 5,668,066
54 5,668,067
88 5,668,068
97.2 5,668,069
126 5,668,070
136 5,668,071
152 5,668,072

CLASS 502

320 5,668,073
332 5,668,074
338 5,668,075
343 5,668,076
347 5,668,077
402 5,668,078
407 5,668,079

CLASS 503

209 5,668,080
227 5,668,081

CLASS 504

113 5,668,082
138 5,668,083
158 5,668,084
206 5,668,085
235 5,668,086
247 5,668,087
280 5,668,088
348 5,668,089

CLASS 505

166 5,668,090

CLASS 508

123 5,668,091
146 5,668,092
262 5,668,093

CLASS 510

101 5,668,094
221 5,668,095
265 5,668,096
293 5,668,097
350 5,668,098
444 5,668,099
446 5,668,100
466 5,668,101
504 5,668,102

CLASS 512

4 5,668,103

CLASS 514

2 5,668,104
11 5,668,105
12 5,667,968
5,668,106
5,668,107
5,668,108
13 5,668,109
5,668,110
15 5,668,111
19 5,668,112
42 5,668,113
52 5,668,114
54 5,668,115
5,668,116
55 5,668,117
56 5,668,118
5,668,119
102 5,668,120
114 5,668,121
152 5,668,122
166 5,668,123
175 5,668,124
5,668,125
176 5,668,126
183 5,668,127
5,668,128
42 5,668,129
184 5,668,130
234.5 5,668,131
252 5,668,132
253 5,668,133
254 5,668,134
255 5,668,136
5,668,137
5,668,138
263 5,668,139
269 5,668,140
285 5,668,141
5,668,142
299 5,668,143
305 5,668,144
307 5,668,145
311 5,668,146
312 5,668,147
313 5,668,149
314 5,668,148
5,668,150
318 5,668,151
323 5,668,152
5,668,153
338 5,668,154
340 5,668,155
348 5,668,156
353 5,668,157
354 5,668,158
363 5,668,159
364 5,668,160
365 5,668,161
373 5,668,162
376 5,668,163
5,668,164
397 5,668,165
411 5,668,166
5,668,167
436 5,668,168
438 5,668,169
449 5,668,170
460 5,668,171
557 5,668,172
5,668,173
560 5,668,174
569 5,668,175
5,668,176
574 5,668,177
618 5,668,178
629 5,668,179
630 5,668,180
657 5,668,181
699 5,668,182
725 5,668,183
765 5,668,184
772.3 5,668,185

CLASS 521

48 5,668,186
137 5,668,187
5,668,189
142 5,668,190
174 5,668,191

CLASS 523

112 5,668,193
201 5,668,194

CLASS 524

5 5,668,195
61 5,668,197
99 5,668,198
5,668,199
100 5,668,200
114 5,668,201
154 5,668,202
265 5,668,203
267 5,668,204
268 5,668,205
291 5,668,206
483 5,668,207
505 5,668,208
555 5,668,209
588 5,668,210
590 5,668,211
701 5,668,212

CLASS 525

57 5,668,213
64 5,668,214
67 5,668,215
170 5,668,216
194 5,668,217
265 5,668,218
294 5,668,219
333.6 5,668,220
359.3 5,668,221
415 5,668,222
440 5,668,223
444 5,668,224
478 5,668,225
484 5,668,226
507 5,668,227

CLASS 526

67 5,668,228
93 5,668,229
160 5,668,230
173 5,668,231
189 5,668,232
247 5,668,233
329.7 5,668,234
351 5,668,235

CLASS 528

9 5,668,237
45 5,668,238
60 5,668,239
66 5,668,240
5,668,241
272 5,668,242
280 5,668,243
297 5,668,244
310 5,668,236
327 5,668,245
336 5,668,246
353 5,668,247
5,668,248
392 5,668,249
402 5,668,250
503 5,668,252

CLASS 530

326 5,668,253
328 5,668,254
350 5,668,255
5,668,256
391.1 5,668,257
5,668,258

CLASS 534

684 5,668,259
806 5,668,260

CLASS 536

18.5 5,668,261
22.1 Re.35,609
5,668,262
23.1 5,668,263
5,668,264
5,668,265
23.5 5,668,267
25.3 5,668,266
5,668,268
25.32 5,668,269
26.71 5,668,270
27.1 5,668,271
55.3 5,668,272
66 5,668,273
124 5,668,274
127 5,668,275

CLASS 540

144 5,668,276
540 5,668,277

CLASS 544

48 5,668,278
119 5,668,279
173 5,668,280
336 5,668,281
343 5,668,282
345 5,668,283

CLASS 546

24 5,668,284
44 5,668,285
209 5,668,286
250 5,668,287
257 5,668,288
293 5,668,289
298 5,668,290
316 5,668,291

CLASS 552

31 5,668,192

CLASS 585

269 5,668,293

CLASS 600

9 5,667,469
28 5,667,470
39 5,667,471
104 5,667,472
5,667,473
109 5,667,474
127 5,667,475
149 5,667,476
153 5,667,477
182 5,667,478
207 5,667,479
210 5,667,480
224 5,667,481

CLASS 601

112 5,667,482
162 5,667,483

CLASS 602

21 5,667,484
33 5,667,529

CLASS 604

4 5,667,485
8 5,667,486
20 5,667,487
22 5,667,488
5,667,489
5,667,490
50 5,667,491
57 5,667,492
96 5,667,493
195 5,667,494
220 5,667,495
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289 B1 5,441,490
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342 5,667,502
385.1 5,667,503
891.1 5,667,504

CLASS 606

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202 5,667,524
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219 5,667,527
224 5,667,528

CLASS 701

41 5,668,721
5,668,722
45 5,668,723
46 5,668,720
80 5,668,724
105 5,668,727
111 5,668,725
115 5,668,726

CLASS 704

204 5,668,923
219 5,668,924
220 5,668,925
232 5,668,926
240 5,668,927
243 5,668,928
273 5,668,929

CLASS 705

1 5,668,953
8 5,668,718

CLASS 711

3 5,668,968
111 5,668,971
136 5,668,972
152 5,668,973
157 5,668,974
169 5,668,975
202 5,668,969
206 5,668,970

CLASS 800

205 5,668,292
5,668,294
5,668,295
5,668,297
5,668,298
230 5,668,299

CLASSIFICATION OF DESIGNS

D1—	102	383,585		567	383,633		75	383,683		107	383,735			383,786		133	383,841
	111	383,586		596	383,634		80	383,684		109	383,736			383,787		169	383,842
		383,587		598	383,635		92	383,686			383,737			383,788		176	383,843
		383,588		601	383,636		104	383,687		113	383,738			383,789		180	383,844
		383,589			383,637			383,688			383,739		88	383,790		181	383,845
	119	383,590	D7—	319	383,638			383,689		114	383,740	D20—	42	383,795		190	383,846
D2—	706	383,591			383,639		120	383,690		115	383,741			383,796		197	383,847
	720	383,592		337	383,640	D11—	3	383,692		118	383,742	D21—	13	383,798		206	383,848
	947	383,593		354	383,641		6	383,691			383,743		41	383,799		215	383,849
	954	383,594		376	383,642		12	383,693			383,744		48	383,800			383,850
	970	383,595		412	383,643			383,694		137	383,745			383,801		224	383,851
	972	383,596		413	383,644		13	383,695		138	383,746			383,802			383,852
		383,597		417	383,645			383,696			383,747			383,803			383,853
		383,791		564	383,646		35	383,697			383,748		104	383,804	D25—	2	383,854
D3—	201	383,598		601	383,647		40	383,698		149	383,749		108	383,805		16	383,792
	207	383,599		676	383,648			383,699		151	383,750		121	383,806		45	383,855
		383,600	D8—	1	383,649		43	383,700		165	383,751		136	383,807		52	383,856
	260	383,601			383,650		78.1	383,701			383,752		137	383,808		102	383,857
	265	383,602		34	383,651		79	383,702		168	383,753		144	383,809		115	383,858
	279	383,603		52	383,652		83	383,703			383,754		191	383,810		164	383,859
		383,604			383,653			383,704		171	383,755			383,811	D26—	9	383,860
	284	383,605			383,654		87	383,705		191	383,756		192	383,812		28	383,861
	302	383,606		61	383,655		88	383,706		223	383,757		193	383,813			383,862
	305	383,607		68	383,656		155	383,707		228	383,758		195	383,814		31	383,863
D4—	104	383,608		69	383,657		164	383,708		253	383,759		197	383,815		46	383,864
	108	383,609			383,658	D12—	91	383,709		265	383,760		209	383,816		51	383,865
	137	383,610		70	383,659			383,710	D15—	5	383,761			383,817		67	383,866
	138	383,611		83	383,660		129	383,711		7	383,762		214	383,818			383,867
		383,612			383,661		143	383,712			383,763		220	383,819		68	383,869
D6—	300	383,613		89	383,662		146	383,713		70	383,764			383,820		80	383,868
		383,794		102	383,663			383,714		133	383,765		222	383,821		85	383,870
	301	383,793		331	383,664		147	383,715	D16—	202	383,766			383,822		110	383,871
	315	383,614		363	383,665			383,716			383,767		228	383,823			383,872
	370	383,615		395	383,666			383,717			383,768			383,824			383,873
	376	383,616	D9—	310	383,667			383,718		204	383,769		234	383,825	D28—	18	383,874
	380	383,617		417	383,668		171	383,719		306	383,770	D22—	110	383,826	D29—	103	383,875
	381	383,618		418	383,669		193	383,720		326	383,771		122	383,827			383,876
		383,619		425	383,670		209	383,721			383,772		142	383,828	D30—	119	383,877
	407	383,620		429	383,671			383,722	D18—	7	383,773	D23—	210	383,829		124	383,878
	418	383,621		444	383,672			383,723		9	383,774		214	383,830		132	383,797
	438	383,622		448	383,673		215	383,724		12	383,775			383,883	D32—	3	383,879
	470	383,623			383,674	D13—	103	383,725		48	383,776		252	383,831			383,880
	479	383,624			383,675		142	383,726		56	383,777		295	383,832		30	383,881
	491	383,625		457	383,676		156	383,727	D19—	20	383,778		301	383,833		31	383,882
	497	383,626		520	383,677	D14—	100	383,728		27	383,779		304	383,834		42	383,884
	500	383,627		526	383,678			383,729		49	383,780		311	383,835			
	502	383,628		552	383,679			383,730		54	383,781		403	383,836			
		383,629		560	383,680			383,731		64	383,782	D24—	108	383,837			
	523	383,630	D10—	40	383,681			383,732		65	383,783		110	383,838			
	545	383,631		52	383,685			383,733			383,784		113	383,839			
	549	383,632		57	383,682		102	383,734			383,785		121	383,840			

CLASSIFICATION OF PLANTS

P—	51.1	0,027			0,029		87.15	0,031			0,033
	68.1	0,028		87.1	0,030		87.6	0,032		88.1	0,034

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,666,665		5,667,051		5,667,631		5,668,257		5,668,683		5,669,014
	5,666,776		5,667,067		5,667,654		5,668,258		5,668,684		5,669,019
	5,667,106		5,667,069		5,667,657		5,668,266		5,668,687		5,669,059
	5,667,175		5,667,076		5,667,671		5,668,270		5,668,710		5,669,061
	5,667,790		5,667,097		5,667,675		5,668,284		5,668,715	08 :	5,666,707
	5,667,855		5,667,105		5,667,701		5,668,292		5,668,728		5,666,765
	5,667,975		5,667,110		5,667,719		5,668,307		5,668,732		5,666,970
	5,668,107		5,667,114		5,667,735		5,668,309		5,668,736		5,667,142
	5,668,734		5,667,115		5,667,753		5,668,319		5,668,745		5,667,190
	5,668,788		5,667,138		5,667,755		5,668,320		5,668,757		5,667,265
	5,668,922		5,667,152		5,667,767		5,668,326		5,668,758		5,667,356
04 :	5,666,907		5,667,171		5,667,776		5,668,332		5,668,760		5,667,405
	5,667,020		5,667,172		5,667,780		5,668,387		5,668,765		5,667,464
	5,667,251		5,667,180		5,667,781		5,668,389		5,668,767		5,667,467
	5,667,274		5,667,185		5,667,797		5,668,392		5,668,771		5,667,507
	5,667,291		5,667,197		5,667,799		5,668,408		5,668,795		5,667,514
	5,667,523		5,667,217		5,667,804		5,668,419		5,668,803		5,667,652
	5,667,632		5,667,224		5,667,805		5,668,442		5,668,809		5,667,718
	5,667,724		5,667,238		5,667,809		5,668,449		5,668,811		5,667,969
	5,667,881		5,667,239		5,667,811		5,668,460		5,668,814		5,668,264
	5,668,321		5,667,292		5,667,827		5,668,467		5,668,821		5,668,325
	5,668,323		5,667,294		5,667,839		5,668,470		5,668,842		5,668,352
	5,668,438		5,667,304		5,667,967		5,668,477		5,668,847		5,668,461
	5,668,955		5,667,325		5,667,968		5,668,483		5,668,848		5,668,678
	5,669,062		5,667,326		5,667,981		5,668,488		5,668,852		5,668,688
	5,669,068		5,667,364		5,667,988		5,668,490		5,668,854		5,668,690
05 :	5,666,764		5,667,373		5,667,990		5,668,493		5,668,863		5,668,818
	5,667,898		5,667,383		5,667,993		5,668,495		5,668,868		5,668,976
06 :	Re.35,606		5,667,388		5,667,997		5,668,500		5,668,877	09 :	5,666,679
	5,666,682		5,667,399		5,668,003		5,668,505		5,668,908		5,666,710
	5,666,692		5,667,410		5,668,009		5,668,509		5,668,928		5,666,729
	5,666,715		5,667,415		5,668,025		5,668,512		5,668,929		5,666,735
	5,666,716		5,667,417		5,668,026		5,668,523		5,668,934		5,666,768
	5,666,722		5,667,418		5,668,032		5,668,537		5,668,941		5,666,815
	5,666,731		5,667,433		5,668,034		5,668,549		5,668,942		5,667,092
	5,666,746		5,667,445		5,668,055		5,668,553		5,668,948		5,667,214
	5,666,751		5,667,460		5,668,063		5,668,562		5,668,961		5,667,249
	5,666,752		5,667,461		5,668,065		5,668,570		5,668,969		5,667,361
	5,666,761		5,667,479		5,668,089		5,668,571		5,668,982		5,667,382
	5,666,774		5,667,488		5,668,106		5,668,577		5,668,987		5,667,487
	5,666,880		5,667,493		5,668,108		5,668,580		5,668,997		5,667,528
	5,666,885		5,667,516		5,668,110		5,668,603		5,668,999		5,667,565
	5,666,939		5,667,521		5,668,168		5,668,609		5,669,000		5,667,593
	5,666,945		5,667,530		5,668,170		5,668,611		5,669,005		5,667,732
	5,666,958		5,667,531		5,668,175		5,668,620		5,669,008		5,667,871
	5,666,963		5,667,559		5,668,188		5,668,636		5,669,009		5,668,145
	5,666,968		5,667,564		5,668,245		5,668,660		5,669,010		5,668,151
	5,666,981		5,667,592		5,668,250		5,668,679		5,669,011		5,668,176
	5,667,002		5,667,621		5,668,251		5,668,680		5,669,013		5,668,283

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